Baffinland Iron Mines LP
Mary River Expansion Project

Construction Summary Report: Milne Port Water Management Structures

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date APRIL 28, 2020
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

REGISTERED PROFESSIONAL ENGINEER
G.A. PEACE
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APRIL 28, 2020
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Port Water Management Report H353004-40000-220-230-0008

1. Facility Description

1.1 Purpose and Design Basis

Infrastructure improvements were required at Milne Port in order to improve efficiency of the operation. and to provide environmental optimizations to improve surface water management at Milne Port.

These improvements consisted of additional ditching, berms and laydown areas.

1.2 Location and Base Elevations

Stormwater Diversion P-SWD-3 is located at SSE corner of LP2 Laydown. Highpoint Northing 7975753.235, Easting 503874.022 and low point Northing 7975824.003 Easting 504053.441. Berm high point EL 21.026 meters above sea level (masl), ditch low point 19.17 masl.

Stormwater Diversion P-SWD-5 is located NW of Quarry 1. Setting out data – center of channel – start Northing 7974964.397, Easting 503861.738 EL 53.753 masl and end Northing 7975542.484 Easting 503967.015 EL 51.598 masl. Total length 642 m.

Stormwater Diversion P-SWD-6 is located south of SWD-5. Setting out data – center of channel – start Northing 7974967.890, Easting 503917.506 EL 57.324 masl and end Northing 7974466.790 Easting 503878.542 EL 55.800 masl. Total length 510 m.

Stormwater Diversion P-SWD-7 is located east of the new freight dock. Setting out data – ditch and culvert – start Northing 7976381.381, Easting 504168.381 EL 3.227 masl and end Northing 7976425.571, Easting 504069.463 EL 2.181 masl.

P-Culv-22 consists of 2x900mm diameter Corrugated Steel Pipe (CSP) culverts 32 m long under the Tote Road north of the B-Train laydown area. Upstream Northing 7975488.350, Easting 503462.190 EL 12.339, downstream Northing 7975474.959, Easting 503430.944 EL12.020 masl.

P-Culv-23 (Culv-2018-H in the Water Management Plan) consists of 2 x 900 mm diameter CSP culverts 36 m long located at the end of SWD-6. Upstream Northing 7974483.967, Easting 503870.967 EL 54.5 m, downstream Northing 7974468.967, Easting 503839.273 EL 54.1 masl.

P-Culv-32 consists of 2x900mm diameter CSP culverts 24.15 m long located to take water from culvert 23. Upstream Northing 7974415.110, Easting 503802.11 EL 36.5 m, downstream Northing 7974399.888, Easting 503783.482 EL 35.35 masl.

LP2 Laydown is located South and West of the Port Site Camp (PSC). It is between Northing 7975946.098 and 7975784.677, Easting 503598.678 and 504042.756 with elevations varying between EL 13.42 and 21 masl.

LP3 Laydown is located South of the ore Stockyard. It is between Northing 7975594.298 and 7974769.702, Easting 502948.303 and 503363.977 with elevations varying between EL 9.695 and 11.57 masl.

LP5 Laydown is located South and East of LP 3. It is between Northing 7974770.159 and 7975049.645, Easting 503167.524 and 503578.537 with elevations varying between EL 11.4 and 30 masl.

LP6 Laydown is located South of LP 5. It is between Northing 7974864.011 and 7974770.181, Easting 503585.775 and 503257.607 with elevations varying between EL 12.712 and 32.6 masl.

LP7 Laydown is located east of the Tote Road. It is between Northing 7974841.332 and 7974569.732, Easting 503790.636 and 503670.432 with elevations varying between EL 51.463 and 56.500 masl.

The Delivery Road starts at the freight dock and ends at LP5 Laydown for a total of 1.903 km.

1.3 Geometry and Access

Refer to as-built drawings for details of geometry and access.

2. Construction Activity Summary

Construction activities were started on May 3, 2018 and were completed on September 11, 2019.

The following summarizes the construction activities for the Milne Port Water Management Structures. Refer to Appendix D for an explanation of the different Types of fill material.

2.1 Stormwater Diversion P-SWD-3

- Snow and ice removal and disposal.
- Excavation to subgrade levels.
- Placement of geotextile in ditch.
- Placement of and compaction of Type 8 (jaw run).

2.2 Stormwater Diversion P-SWD-5

- Snow and ice removal and disposal.
- Excavation to subgrade levels.
- Placement of geotextile in ditch.
- Placement of and compaction of Type 8 (jaw run).
- Placement of rip-rap at channel outlet.

2.3 Stormwater Diversion P-SWD-6

- Snow and ice removal and disposal.
- Excavation to subgrade levels.
- Placement of geotextile in ditch.
- Placement of and compaction of Type 8 (jaw run).

2.4 Stormwater Diversion P-SWD-7

- Clearing of work area.
- Excavation to subgrade levels.
- Placement of geotextile in ditch.
- Filter rock placed and compacted.
- Placement of geotextile under erosion protection apron.
- Installation of additional water diversion berm.

2.5 P-Culv-22

- Subgrade foundation prepared.
- Type 5 (32 mm minus) placed and compacted.
- 2 x 900 mm diameter culverts each 34 meters long were installed.
- Type 5 placed and compacted.
- Type 8 (jaw run) placed and compacted.
- Type 5 placed and compacted.
- Geotextile placed upstream and downstream.
- Rip Rap – Type 12 – Run of Quarry (ROQ) placed upstream and downstream.
- Compaction of type 12.
- Type 19 (150 clear) placed upstream and downstream.
- Compaction of type 19.

2.6 P-Culv-23 (Culv-2018-H)

- Subgrade foundation prepared.
- Type 5 (32 mm minus) placed and compacted.
- 2 x 900mm culverts each 35.94 meters long were installed.
- Type 5 placed and compacted.

- Type 8 (jaw run) placed and compacted.
- Type 5 placed and compacted.
- Geotextile placed upstream and downstream.
- Rip Rap – Type 12 (ROQ) placed upstream and downstream.
- Compaction of type 12.
- Type 19 (150 clear) placed upstream and downstream.
- Compaction of type 19.

2.7 P-Culv-32

- Subgrade foundation prepared.
- Type 5 (32 mm minus) placed and compacted.
- 2 x 900 mm culverts each 24.15 meters long were installed.
- Type 5 placed and compacted.
- Type 8 (jaw run) placed and compacted.
- Type 5 placed and compacted.
- Geotextile placed upstream and downstream.
- Rip Rap - Type 12 (ROQ) placed upstream and downstream.
- Compaction of type 12.
- Type 19 (150 clear) placed upstream and downstream.
- Compaction of type 19.

2.8 LP2 Laydown

- Cleared snow and ice.
- Proof rolled and compacted subgrade.
- Type 12 (ROQ) placed and compacted.
- Type 8 (jaw run) placed and compacted.
- Type 5 (32 mm minus) placed and compacted.
- Culvert pipe bed excavated at access ramp.
- Culvert bedding placement.
- Installation of 1 x 400 mm steel pipe culvert (P-Culv-36).

- Placement of culvert backfill.
- Culvert upstream and downstream erosion protection placed.
- Note: the arch culvert shown on the drawings was not installed.

2.9 LP3 Laydown

- Cleared works location.
- Excavated OG to subgrade elevation.
- Proof rolled and compacted subgrade.
- Type 12 (ROQ) placed.
- Compaction of type 12.
- Type 8 (jaw run) placed.
- Compaction of type 8.
- Type 5 (32 mm minus) placed.
- Compaction of type 5.
- Type 19 (150 clear) placed.
- Compaction of type 19.
- Type 22 (600 mm minus) placed.
- Compaction of type 22.
- 1 x 600 mm diameter culvert 29.98 meters long (Culv-2018-F) was installed.
- 1 x 900 mm diameter culvert (Culv-2018-E) was installed. Initial length was 30.68 meters long, but it was extended to the west edge of LP3.

2.10 LP5 Laydown

- Cleared works location.
- Excavated to subgrade.
- Type 12 (ROQ) placed and compacted.
- Type 8 (jaw run) placed and compacted.
- Type 5 (32 mm minus) placed and compacted.

2.11 LP6 Laydown

- Cleared snow and ice.

- ROQ placed and compacted.
- Type 5 (32 mm minus) placed and compacted.

2.11 LP7 Laydown

- Cleared snow and ice.
- Excavated to subgrade.
- Type 12 (ROQ) placed and compacted.
- Type 8 (jaw run) placed and compacted.

2.12 W10B Laydown

- Cleared snow and ice.
- Excavated to subgrade.
- Type 12 (ROQ) placed and compacted.
- Type 8 (jaw run) placed and compacted.
- Type 5 (32 mm minus) placed and compacted.

2.13 W10A Laydown

- Cleared snow and ice.
- Placed and compacted minimal aggregate.

2.14 Tote Road

- Three existing culverts crossing the Tote Road near LP5 and W10A Laydowns were blocked.

2.14 Delivery Road

- The area for the delivery road was cleared of ice and snow and other obstructions.
- Excavation to subgrade was completed as required.
- In locations required Type 12 (ROQ) was placed and compacted.
- 1 x 1200mm diameter culvert 39.9 meters long (Culv-2018-A) was installed.
- Type 8 (jaw run) was placed and compacted.
- Type 5 (32 minus) was placed and compacted.

2.15 Stormwater Diversion SWD-2018-A

- Snow and ice removal and disposal.
- Excavation to subgrade levels.

- Placement of geotextile in ditch.
- Placement of and compaction of Type 8 (jaw run).
- Placement of rip-rap.

3. QA/QC

Quality Assurance (QA) was performed by the Hatch Construction Supervisor during daily audits with the Allnorth surveyor and Allnorth Geotechnician as well as the Nuna Supervisor as applicable. Quality Control (QC) was performed by Nuna survey and QC personnel.

Inspection and Test Plans (ITP's) were produced, reviewed and accepted.

Inspection were performed of the soil subgrade prior to installing the first layer of fill and at the completion of the installation of each layer prior to proceeding with the next layer.

For documentation of the preparation of the subgrade, installation and final inspection of completed structures, see Appendix B.

4. Photographic Records

Photo 4-1: SWD 3 Excavation

Photo 4-2: SWD 3 Berm

Photo 4-3: SWD 5

Photo 4-4: SWD 5 Downstream Armouring

Photo 4-5: SWD 6 Excavation

Photo 4-6: SWD 6 Geotextile Installation

Photo 4-7: SWD 6

Photo 4-8: SWD 7 Excavation of Subgrade

Photo 4-9: SWD 7

Photo 4-10: Culvert 22 Base

Photo 4-11: Culvert 22 Installed

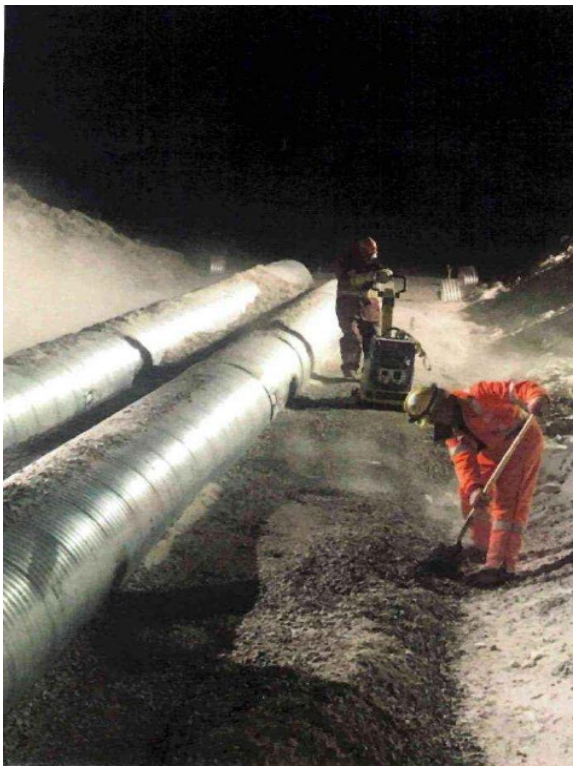


Photo 4-12: Culvert 23 Installation

Photo 4-13: Culvert 23 Installed

Photo 4-14: Preparation for Culvert 32

Photo 4-15: Culvert 32 Installation

Photo 4-16: Laydown LP 2 ROQ and Type 8 Placement

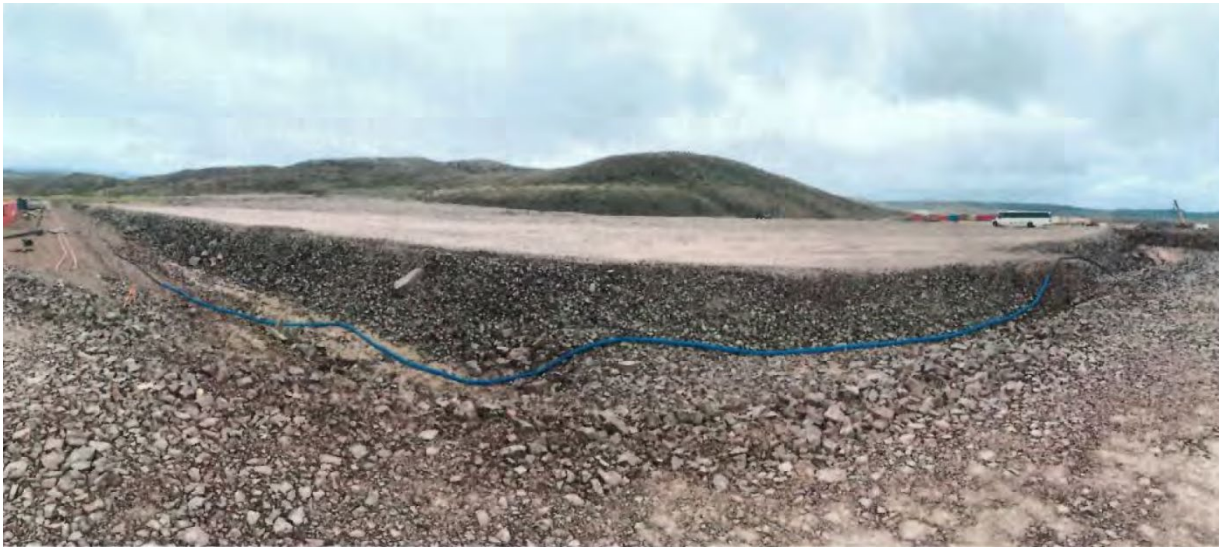


Photo 4-17: Laydown LP 2

Photo 4-18: Laydown LP 6 Clearing SnowPhoto

Photo 4-19: Laydown LP 3 Removing Overburden

Photo 4-20: Laydown LP 3 Placing Type 8

Photo 4-21: Laydown LP2 Placing Type 12

Photo 4-22: Laydown LP5

Photo 4-23: Laydowns LP3, LP5 and W10B

Photo 4-24: Delivery Road Subgrade

Photo 4-25: Delivery Road Placing ROQ

Photo 4-26: Delivery Road Drilling to assist Ripping

Photo 4-27: Delivery Road Placing Type 8

Photo 4-28: Delivery Road at Intersection to Ore Stockpile Ramp

Photo 4-29: Tote Road Culvert being Blocked

5. Design Changes

The following changes were made to the designs of the Port Water Management Structures after the completion of the Water Management Plan (H353004-40000-200-210-0001, Rev. 0):

- LP5 Laydown

During detailed design it was determined that the amount of laydown space as per 2019 work plan was in excess of requirement . Based on this the completed area of LP5 was reduced from 65,000 M2 to 48,000 M2. The uncompleted area was partially utilized for stockpiling material during construction of LP5. The uncompleted portion of LP5 will drain to the north west. There will be a potential of ponding water on the Western edge of the central depression where the laydown was not constructed. During freshet this area will have to be monitored and if build up becomes excessive a pump will need to be installed to drain ponded water to the nearest drainage ditch..

- LP3 Laydown

The design in the Water Management Plan called for installation of a geomembrane on the west side of LP3 due to the potential for standing surface water to accumulate. During design development it was determined that the catchment area that would feed this low lying area would be covered or diverted through culverts and drains and therefore the amount of standing water would be negligible.

Culvert Culv-2018-E was extended to the West side of LP3 laydown.

Culvert Culv-2018-I was not installed due to no water in this area and none anticipated.

- Delivery Road

There is an existing temporary culvert and swale in close proximity to the proposed location of culvert Culv-2018-B, 2018-SWD-B and 2018-SWD-C. As the existing culvert and swale serve the same purpose as this culvert and SWD's it was left as is.

SWD-2018-D and SWD-2018-E were not installed. Ditching was done on the east and west side of the module delivery road to accommodate the requirement for drainage.

Existing culvert Culv EXG-A was blocked off as the area upstream was filled in resulting in no flow to the culvert.

Culverts Culv-2018-C was not installed due to the areas of depression that this culvert was to drain were filled in due to construction requirements.

- Port Water Management Report

Appendix G, the Port Water Management Report (H353004-40000-220-230-0008) summarizes the final result of the construction activities.

6. As-built Drawings

The as-built drawings incorporate contractor red line markups, field instructions, requests for information, field sketches and all other inputs provided by the EPCM field team. As-built drawings are attached in Appendix A. These drawings are representative of the final as-built conditions.

Table 6-1: As-built Drawing List

Drawing Number	Title	Revision
H353004-40000-228-271-0004-0001	Port Site Stormwater Diversion P-SWD-3 Layout, Profile and Details	1
H353004-40000-228-271-0002-0001	Port Site Stormwater Diversion P-SWD-5 Layout, Profile and Details	0
H353004-40000-220-272-0006-0001	Milne Port 2018 Surface Water Management Plan	B
H353004-40000-228-271-0003-0001	Port Site Stormwater Diversion P-SWD-6 Layout, Profile and Details	0
H353004-40000-228-271-0008-0001	Port Site Stormwater Diversion P-SWD-7 Plan/Profile	1
H353004-00000-221-294-0001-0001	Site Wide Standard Drawing Typical Culvert Details	1
H353004-40000-228-271-0005-0001	Port Site Module Road and Tote Road Drainage Details	1
H353004-40000-221-271-0002-0002	Port Site Rail Unloading Area Access Road Plan and Profile Sheet 2 of 2	0
H353004-00000-221-294-0001-0001	Site Wide Standard Drawing Typical Culvert Details	1
H353004-40000-223-271-0009-0003	Port Site Tote Road Upgrade Plan and Profile Sheet 3 of 3	1
H353004-40000-221-271-0004-0001	Port Site Laydown Area LP2 Plan and Sections	5
H353004-40000-228-272-0011-0001	Port Site Laydown Area LP2 Drainage Plan	4
H353004-40000-228-272-0012-0001	Port Site Laydown Area LP3 Drainage Plan	1
H353004-40000-221-271-0010-0001	Port Site Laydown Area LP5 Layout Plan	1
H353004-40000-221-271-0010-0002	Port Site Laydown Area LP5 Longitudinal Profiles	1
H353004-40000-221-271-0009-0001	Port Site Laydown Area LP6 Layout and Profiles	1
H353004-40000-228-272-0016-0001	Port Site Laydown Area LP6 Drainage Plan	1
H353004-40000-221-271-0006-0001	Port Site Laydown Area LP7 Layout and Sections	1
H353004-40000-228-272-0013-0001	Port Site Laydown Area LP7 Drainage Plan	1
H353004-40000-221-271-0008-0001	Port Site Laydown Area W10B Plan and Sections	1
H353004-40000-228-272-0015-0001	Port Site Laydown Area W10B Drainage Plan	1
H353004-40000-223-271-0007-0001	Port Site Module Delivery Road Plan and Profile Sheet 1 of 4	1

Drawing Number	Title	Revision
H353004-40000-223-271-0007-0002	Port Site Module Delivery Road Plan and Profile Sheet 2 of 4	1
H353004-40000-223-271-0007-0003	Port Site Module Delivery Road Plan and Profile Sheet 3 of 4	1
H353004-40000-223-271-0007-0004	Port Site Module Delivery Road Plan and Profile Sheet 4 of 4	1
H353004-40000-228-271-0005-0001	Port Site Module Road and Tote Road Drainage Details	1
H353004-40000-221-273-0001-0001	Port Site Module, Primary, Secondary Roads Typical Cross Sections	1

7. Field Decisions

The following section describes the field decisions made during construction:

- Laydown LP2
  - A temporary access to LP2 was built due to the permanent utility arch not being available. Plastibond utility enclosures along with a steel plate and 600 mm of cover were utilized to protect existing utility cables, new utility cables were run through 6 inch schedule 80 pipe. A temporary 16 inch diameter 20 foot long steel pipe culvert was also installed to accommodate drainage (Request For Information (RFI) E353004-CC006-400-465-0029).
  - As LP2 is intended as a temporary laydown it was were constructed using 300 mm (minimum) ROQ with a running surface of 150 mm of type 5 (32 mm minus) (RFI E353004-CC006-400-465-0048). Due to the proximity to the Weatherhaven and Port Site Camps compaction at the west end of LP2 was conducted using static rolling and haul traffic (RFI E353004-CC006-400-465-0045).
  - Due to the saturated nature of the Tundra at the east end of LP2 a second lift of Run of Quarry (ROQ) 300 mm thick was placed (RFI E353004-CC006-400-465-0073).
- Culverts
  - The distance between double culverts greater than 900 mm in diameter was increased to 700 mm from the design of 500 mm to allow for use of a plate tamper for compaction
    (RFI E353004-CC006-400-465-0016).
  - P-Culv-17 (Culv-2018-B) was not installed due to an existing temporary culvert being successful in transferring flows during the 2019 freshet (RFI E353004-CC006-400-465-0082).
  - Culv-2018-I was not installed due to no observed water flow in this area and non anticipated due to observations on site (RFI E353004-CC006-400-465-0082).

- A second barrel was added to culvert P-Culv-22 after discussion between construction and design, resulting in 2 x 900 culverts being installed.

- Laydown LP3
  - Due to the water flow on LP3 in June of 2019 Culv-2018-E was extended to the west and the slope on the west side of LP3 modified to improve drainage. The drainage slopes on LP3 near the culvert 2018-E were modified to accommodate extensions to the culvert in order to improve drainage (RFI E353004-CC006-400-465-0050). This was reviewed with the design team and accepted based on the fact that the volume of flow in the culvert would not change.
- Laydown LP5
  - See comments in Section 5.
- Laydown LP6
  - LP6 is a temporary laydown and was constructed using 300 mm (minimum) ROQ with a running surface of 150 mm of type 5 (32 mm minus).
- Storm Water Diversion P-SWD-5
  - Due to concern about downstream erosion during freshet a section of armouring material was placed downstream of P-SWD-5.
- Storm Water Diversion P-SWD-7 – In order improve constructability the following changes were agreed by engineering (RFI E-353004-CC006-400-465-0036):
  - The elevation at the top of the filter layer was changed to 2.1 masl from Sta.60 to Sta 129.71 in order to ensure a 1.9m minimum requirement of the Armour.
  - The raised key was removed.
  - The transition was modified as noted in the RFI.
- Culv-2018-D
  - Culvert Culv-2018-D was not installed due to constraints in scheduling a shutdown of a critical access. This will result in an area of ponding that will need to be monitored during freshet.
- Delivery Road
  - The road was raised by 1.4 m to accommodate the cable crossing near the Port Powerhouse (RFI E353004-CC006-400-465-0026). This resulted in a requirement to regrade the road toward the freight dock (RFI E353004-CC006-400-465-0057).
  - The delivery road was widened in the area of the “Tretan Shop” in order to avoid encroachment area at the corner of the shop (RFI E353004-CC006-400-465-0070).

- The utility culvert near the freight dock was not installed as it was not required at the time (RFI E353004-CC006-400-465-0069).

8. Performance Evaluation

There have been no adverse observations in the operational performance of the water management structures. However there are some locations that if left as is could result in adverse situations during the 2020 freshet:

- In LP5 there are two areas where ponding will occur to a depth of 300mm to 400mm at which point they will overflow onto the final grade. In order to prevent degradation of the ground in these areas pumping will be required once water starts to collect.
- A windrow of construction earthworks is located on the south side of LP6. This material may cause a change in path from the drainage design and/or distribution of some of this material downstream. Monitoring will be required and potentially remedial action to avoid adverse results.

9. Vibration Monitoring and Quarrying Activity

All materials for this work was sourced from Quarry 1.

Vibration monitoring was not done during construction as it was not deemed necessary based on the scope of the construction activities.

10. Environmental Monitoring

Environmental monitoring during the construction of the Port Water Management Structures was conducted as per the Environmental Protection Plan (EPP), Baffinland document number BAF-PH1-830-P16-0008.

In addition to the EPP, construction followed the requirements of the Environmental Health and Safety Management Framework, Baffinland document number BAF-PH1-830-STD-0001.

The Spill Contingency Plan, BAF-PH1-830-P16-0036, in conjunction with the Emergency Response Plan, BAF-PH1-830-P16-0007, provides guidance and instructions for first responders and Baffinland Management in the event of a spill event or other emergency such as fire or accident.

The risks to the water quality in Milne Inlet as a result of construction of the Port Water Management Structures would originate from the following sources based on construction methodology:

- Spills from equipment.
- Increase in sediment load to surface water.

There was 1 minor spill reported from equipment used at the construction site during construction. Environmental incident reports are included in Appendix C.

During the period of construction, water quality monitoring conducted at downstream stations under Part D, Item 15 and Schedule I, of the Type “A” Water Licence 2AM-MRY1325 indicated total suspended solids (TSS) and other parameter at levels below the specified Water Licence criteria. The results for water quality monitoring were provided in monthly reports submitted to the Nunavut Water Board and other stakeholders. In consideration of the above, the environmental mitigation strategies were effective in maintaining runoff water quality.

11. Earthworks Data

The survey data collected has been included in Appendix B.

12. Unanticipated Observations

There were no unanticipated observations during construction.

13. Surface Monitoring

Not conducted.

14. Required Maintenance

There was no maintenance required during construction.

15. Adaptive Management

During construction site conditions and observations resulted in questions regarding the design. The questions were forwarded to Hatch by the Contractors using the Request For Information (RFI) document and process. These RFI’s are included in the turnover documents that are in Appendix B.

16. Concordance with Type "A" Water Licence

Baffinland's Type A Water Licence, Schedule D, outlines the requirements for Construction Summary/Monitoring Reports. Table 16-1 provides a concordance of this report with the requirements of Schedule D.

Table 16-1: Concordance for Schedule D

Schedule D Item No.	Schedule D Description	Corresponding Section in this Report
1a	Description of all infrastructure and facilities designed and constructed to contain, withhold, divert or retain Water and/or Waste;	1
1b	A summary of construction activities including photographic records before, during and after construction of the facilities and infrastructure designed to contain, withhold, divert or retain Water and/or Waste;	2, 3, 4
1c	As-built drawings and design for facilities and infrastructure, in Item 1(a) of this schedule, designed and constructed to contain, withhold, divert or retain Water and/or Waste;	6 Appendix A
1d	Documentation of field decisions that deviate from the original plans and any data used to support or developed facilities and infrastructure to withhold, divert or retain Water and/or Waste;	7
1e	A comparison of measured versus predicted performance of infrastructure and facilities;	8
1f	Any blast vibration monitoring and control for quarrying activity carried out in close proximity to fish bearing waters;	9
1g	Monitoring conducted for sediment and explosives residue release from construction areas;	10
1h	Monitoring undertaken in accordance with Part D of the Water Licence during the Construction Phase of the Project;	9, 10
1i	Details confirming that the requirements of the CCME guidance document entitled "Aboveground Storage Tank Systems for Petroleum and Allied Petroleum Products (2003)" have been met by the Licensee;	N/A
1j	Data collected from instrumentation used to monitor earthworks and the interpretation of that data;	13
1k	A discussion of any unanticipated observations including changes in risk and mitigation measures implemented to reduce risk during construction;	12
1l	An overview of any method including frequency used to monitor deformations, seepage and geothermal responses;	11
1m	A summary of maintenance work undertaken as a result of settlement or deformation of dikes and dams;	14
1n	A summary of adaptive management principles and practices applied during the relevant phases of the Project and their overall effectiveness.	15

17. Concordance with Commercial Lease Requirements

Table 17-1 provides a concordance of this report with the requirements of the Commercial Lease for As-built reporting:

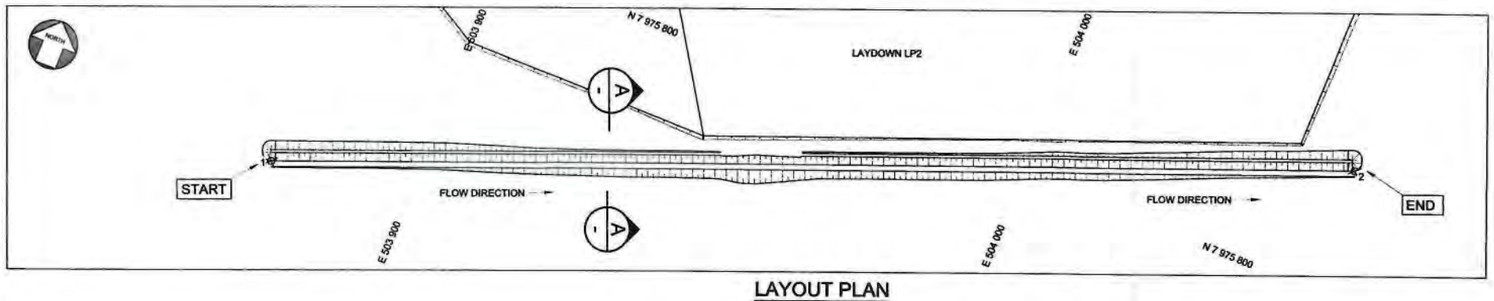
Table 17-1: Concordance for Commercial Lease As-built Requirements

Component	Minimum Information Requirements	Corresponding Section in this Report
1	The name and contact information of the person and company responsible for completing the construction, construction monitoring and preparing the As-built Report	Appendix F
2	The name and contact information of the Baffinland representatives(s) that QIA can contact should it have any questions or comments regarding the As-built Report	Appendix F
3	An introduction to the infrastructure or facilities including but not limited to the construction background, concept and construction history	1, 2
4	Construction records including As-built drawings signed and stamped by a professional engineer detailing surveys, planar and cross sections that illustrate all designed components. This should be provided in PDF format and if requested the native file (e.g. CAD, .dxf, etc.)	Appendix A
5	Detailed description of any deviations from the For Construction Design. Deviations that should be noted include, but are not limited to, changes in design and construction materials, construction methodology or monitoring	6, 7 Appendix B
6	Observed performance of the construction including a comparison to predicted performance. Recommendations for performance monitoring based on observations during construction if applicable	8
7	A description and list of instrumentation installed, if applicable, and results of construction monitoring including all environmental data. Recommendations for additional performance or environmental monitoring based on observations and monitoring results, if applicable.	N/A
8	A summary of quality assurance testing results, if applicable, and comparison of these results to construction/design requirements to ensure performance of the infrastructure or facilities.	3 Appendix A Appendix B
9	A summary of adaptive management principles and practices related to environmental management and monitoring applied during the relevant phases of the Project and their overall effectiveness	15
10	Photographic records before, during and after construction of the facilities or infrastructure.	4
11	Map(s) to illustrate the completed construction in relation to Lease boundaries and water bodies. The minimum distance from completed or modified facilities and infrastructure to the surveyed boundary of the Property, surveyed boundary of the Impact Area, and the original high water mark should be provided.	Appendix E

Appendix A

As-built Drawings

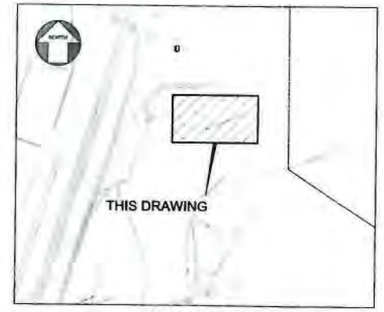
DWG. No. H353004-40000-228-271-0004-0001



LAYOUT PLAN
SCALE 1:500

LEGEND

EG	EXISTING GROUND
CH	CHAINAGE
L	LENGTH
R	RADIUS
DA	DEFLECTION ANGLE
TL	TANGENT LENGTH
AL	ARC LENGTH
BCC	BEGINNING OF CURVE
ECC	END OF CURVE
PI	POINT OF INTERSECTION
HWL	HIGH WATER LEVEL
FB	FREE BOARD
→	FLOW DIRECTION
	DIVERSION CENTERLINE

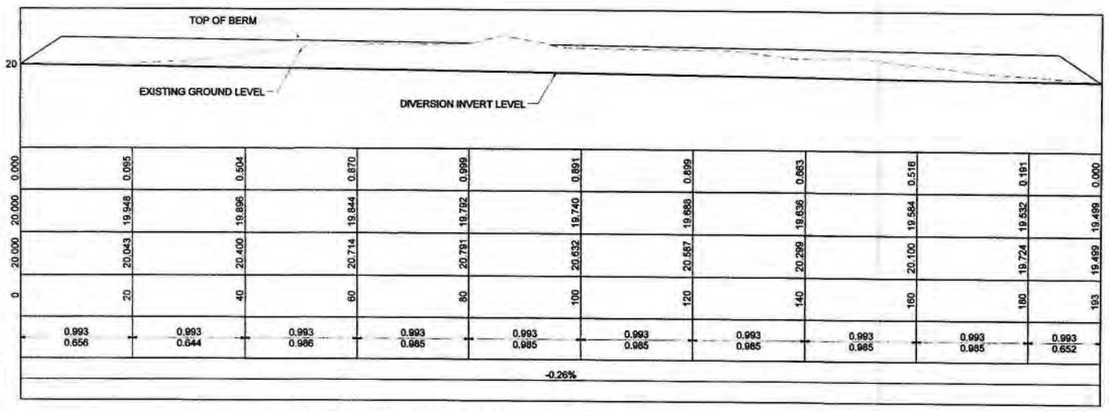


KEY PLAN
NTS

EG
INVERT

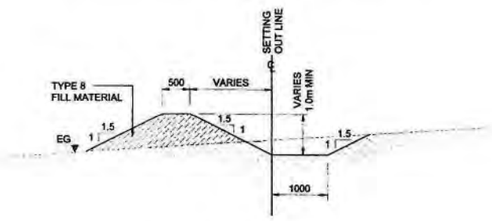
SCALES:
Horizontal 1:500
Vertical 1:100

DATUM 17.000



DEPTH TO INVERT (m)	0.000	0.095	0.504	0.870	0.999	0.891	0.899	0.863	0.516	0.191	0.000
INVERT LEVELS (m)	20.000	19.548	19.896	19.844	19.792	19.740	19.688	19.636	19.584	19.532	19.499
GROUND LEVELS ON CL (m)	20.000	20.043	20.400	20.714	20.791	20.632	20.587	20.299	20.100	19.724	19.499
DISTANCE (m)	0	20	40	60	80	100	120	140	160	180	193
HYDRAULICS Q(m3/s)		0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993
HYDRAULICS V(m/s)		0.656	0.644	0.986	0.985	0.985	0.985	0.985	0.985	0.985	0.652
VERTICAL PROFILE GRADES											

DIVERSION LONGITUDINAL PROFILE



SECTION A-A
SCALE 1:50

SWD-3 BERM SETTING OUT CO-ORDINATES

POINT	X	Y
1	7975753.235	503874.022
2	7975824.093	504053.441

NOTES:
1. LIDAR SURVEY PROVIDED BY PHOTSAT (2016)
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS AND ELEVATIONS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS ARE IN MILLIMETER UNLESS SPECIFIED OTHERWISE

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ✓ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT
NAME/SIGN: Bradford Watkin COMPANY: Nuna East
DATE OF AS-BUILT: May 11, 2019 ✓ CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:

Released for Use

Bradford Watkin QA/QC Reviewed

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date 2016-11-1
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

0 5 10
SCALE 1:250 IN METERS

H353004-00000-221-294-0002-0010	STANDARD DRAWING - EARTHWORKS AND DRAINAGE				
H353004-40000-221-271-0004-0001	LAYDOWN AREA LP2 - PLAN AND SECTIONS				
H353004-40000-228-272-0011-0001	LAYDOWN AREA LP2 - DRAINAGE PLAN				
DRAWING No.	DRAWING TITLE				
REFERENCE DRAWINGS		REG. PROFESSIONAL			

REGISTERED PROFESSIONAL ENGINEER D STANGER LICENSE 2016-11-1 NT/NU

FOR CONSTRUCTION

THIS DRAWING WAS PREPARED BY HATCH LTD. (HATCH) FOR THE EXCLUSIVE USE OF BAFFINLAND IRON MINES LP (BIOMP) AND ITS USE IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN HATCH AND THE THE CLIENT, INCLUDING ANY LIMITATIONS ON LIABILITY CONTAINED THEREIN. THIS DRAWING AND ITS CONTENTS REMAIN THE INTELLECTUAL PROPERTY OF HATCH SUBJECT TO CLIENT'S ROYALTY-FREE, IRREVOCABLE, PERPETUAL, AND NON-EXCLUSIVE LICENSE TO USE AND REPRODUCE THE DRAWING FOR PURPOSES CONNECTED WITH THE PROJECT, INCLUDING THE CONSTRUCTION, COMPLETION, MAINTENANCE, EXTENSION, REINSTATEMENT AND REPAIR OF THE PROJECT. THIS DRAWING, AND THE INFORMATION CONTAINED HEREIN, SHALL BE TREATED AS CONFIDENTIAL FOR ALL OTHER PURPOSES AND SHALL NOT BE MODIFIED WITHOUT THE WRITTEN CONSENT OF HATCH.

No.	DESCRIPTION	BY	CHK'D	DATE
1	STORMWATER DIVERSION BERM RE-DESIGNED AND MOVED TO ACCOMMODATE LAYDOWN LP2 EXPANSION	IHB	FH	25/010/2018
0	FOR CONSTRUCTION	HH	FH	23/03/2018
REVISIONS				

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	H HERBST	NR	23/03/2018
DESIGNER	H HERBST	NR	23/03/2018
CHECKER	F HUGO		2018-10-31
DESIGN COORD.	R GOOSEN		2018-10-31
RESP. ENG.	R HALIM		
LEAD DISC. ENG.	A GROBBELAAR		31 October 20
AREA LEAD	V LAVRIC		2018-11-07
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		18-11-07
DRAWING APPROVAL STATUS:	Approved for Construction		

Baffinland

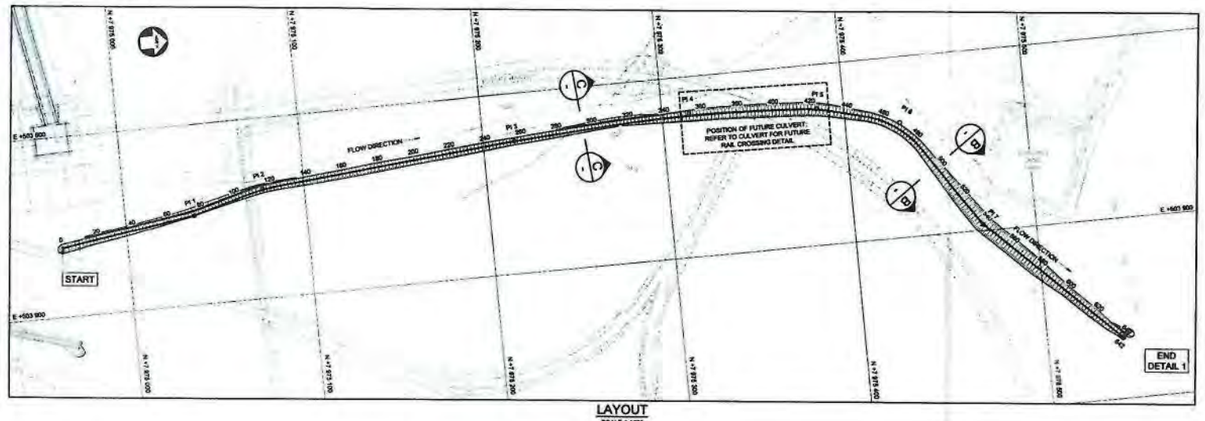
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
STORMWATER DIVERSION P-SWD-3
LAYOUT, PROFILE AND DETAILS

SCALE	DWG. No.	REV
1:500 OR AS NOTED	H353004-40000-228-271-0004-0001	1

SHEET SIZE: D

$USERNAMES $DATES $FILES $TIMES



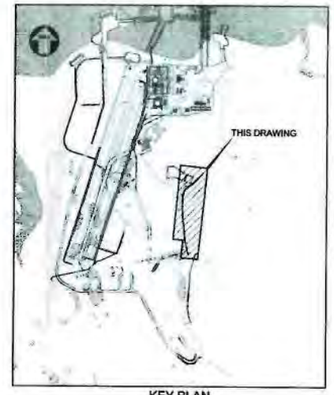
LAYOUT
SCALE 1:1000

LEGEND:

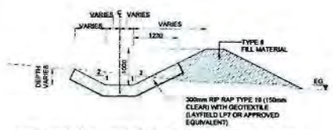
EG	EXISTING GROUND
CH	CHAINAGE
L	LENGTH
R	RADIUS
DA	DEFLECTION ANGLE
TL	TANGENT LENGTH
AL	ARC LENGTH
BCC	BEGINNING OF CURVE
ECC	END OF CURVE
PI	POINT OF INTERSECTION
HWL	HIGH WATER LEVEL
FB	FREE BOARD
	FLOW DIRECTION
	DIVERSION CENTER LINE

NOTES:

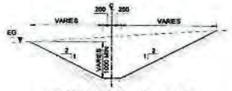
1. LIDAR SURVEY PROVIDED BY PIXSTRAT (2016)
2. COORDINATE GRID AS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS AND ELEVATIONS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS ARE IN MILLIMETER UNLESS SPECIFIED OTHERWISE
5. FINAL CULVERT POSITIONS TO BE CONFIRMED ON SITE.
6. FUTURE CULVERT TO BE CONSTRUCTED IN CONJUNCTION WITH RAILWAY LINE CONSTRUCTION.



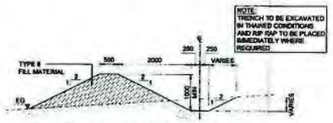
KEY PLAN
NTS



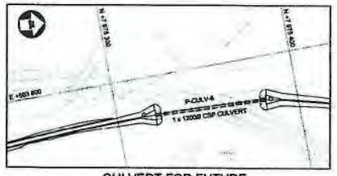
SECTION A-A - RIP RAP AT CHANNEL OUTLET
SCALE 1:50



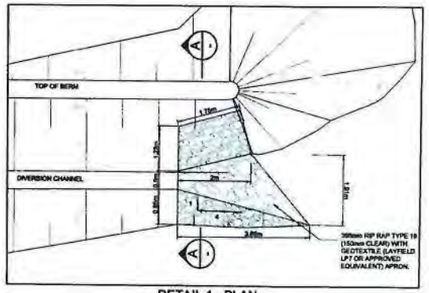
SECTION B-B - CHANNEL
SCALE 1:50



SECTION C-C - BERM AND CHANNEL
SCALE 1:50



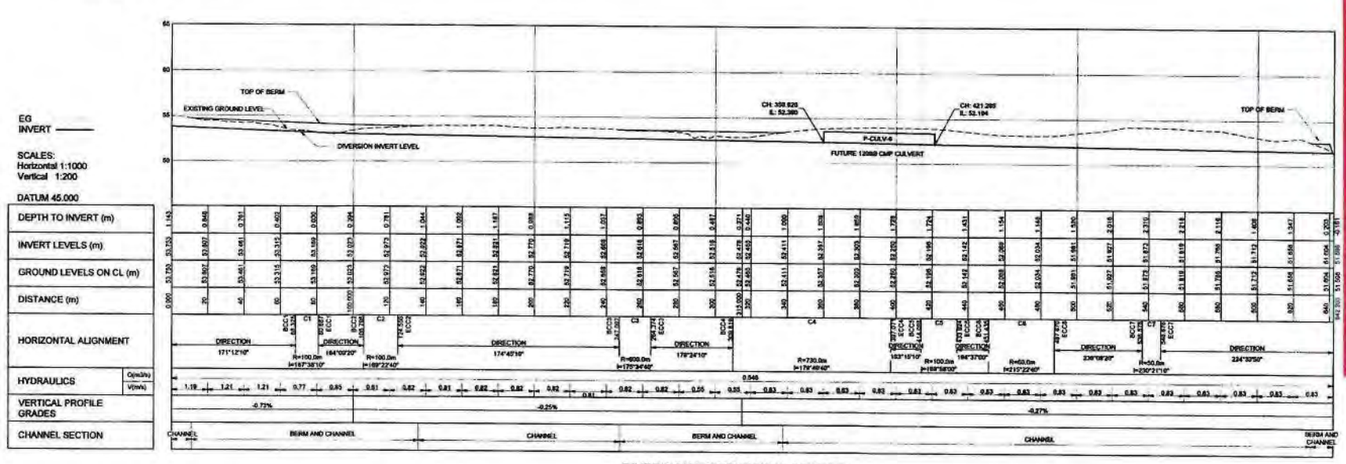
CULVERT FOR FUTURE RAIL CROSSING DETAIL
SCALE 1:1000



DETAIL 1 - PLAN
SCALE 1:20

STORMWATER CUTOFF P-SWD-5 SETTING OUT DATA (CENTER LINE OF CHANNEL)

NAME	CH	E	N	DETAILS
START	0.000	503661.736	7974854.367	L 68.525m
BCC1	68.325	503651.298	7975731.818	R 100.000m
PI1		503636.326	7975736.133	DA 7°11'52"
ECC1	80.887	503649.563	7975644.179	TL 6.298m
				AL 12.562m
BCC2	105.796	503641.729	7975589.123	R 100.000m
PI2		503636.137	7975577.167	DA 12°49'00"
ECC2	124.558	503638.277	7975568.535	TL 9.406m
				AL 18.780m
BCC3	247.097	503627.072	7975206.583	R 600.000m
PI3		503626.262	7975217.169	DA 1°36'00"
ECC3	264.374	503625.740	7975235.768	TL 8.036m
				AL 17.277m
BCC4	305.819	503622.895	7975271.144	R 730.000m
PI4		503620.149	7975314.726	DA 8°10'00"
ECC4	327.071	503622.626	7975358.343	TL 43.678m
				AL 87.252m
BCC5	414.096	503623.501	7975375.332	R 100.000m
PI5		503624.168	7975385.267	DA 11°21'00"
ECC5	433.824	503626.647	7975394.895	TL 9.950m
				AL 19.830m
BCC6	461.435	503631.085	7975411.845	R 50.000m
PI6		503635.585	7975430.161	DA 41°37'20"
ECC6	487.670	503651.606	7975440.742	TL 18.955m
				AL 36.235m
BCC7	540.914	503666.427	7975470.815	DA 113°34'30"
PI7		503666.983	7975474.425	TL 5.099m
ECC7	546.678			AL 10.101m
END	642.303	503667.515	7975542.464	L 95.527m



DIVERSION LONGITUDINAL PROFILE

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ✓ CONSTRUCTION COMMISIONING SUSTAINMENT

NAME/SIGN: Bradford Watkin COMPANY: Nuna East

DATE OF AS-BUILT: April 7, 2019 ✓ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

PERMIT TO PRACTICE HATCH LTD.
Signature
Date
PERMIT NUMBER: P 013
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

0 10 20 30 40 50
SCALE IN METERS

DRAWING No.	DRAWING TITLE
H353004-08000-221-294-0002-0010	STANDARD DRAWING - EARTHWORKS AND DRAINAGE
H353004-00000-221-294-0001-0001	STANDARD DRAWING - TYPICAL CULVERT DETAIL
H353004-00000-229-272-0008-0001	PORT SITE - BLOCK PLAN

REFERENCE DRAWINGS

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHKD	DATE
0	FOR CONSTRUCTION	HH	FH	23/03/2018

REVISIONS

HATCH

DRAFTSPERSON	H HERBST	HH	23/03/2018
DESIGNER	H HERBST	HH	23/03/2018
CHECKER	F HUGO		2018-03-23
DESIGN COORD.	R GOOSEN		2018-03-23
RESP. ENGR.	R HAUM		2018-03-26
LEAD DISC. ENG.	A GROBBELAAR		2018-03-26
AREA LEAD			2018-03-27
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATAPA		18-4-4

ROLE	NAME	SIGNATURE	DATE

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER PROJECT

PORT SITE
STORMWATER DIVERSION P-SWD-5
LAYOUT, PROFILE AND DETAILS

SCALE	DWG. No.	REV.
1:1000	H353004-40000-228-271-0002-0001	0

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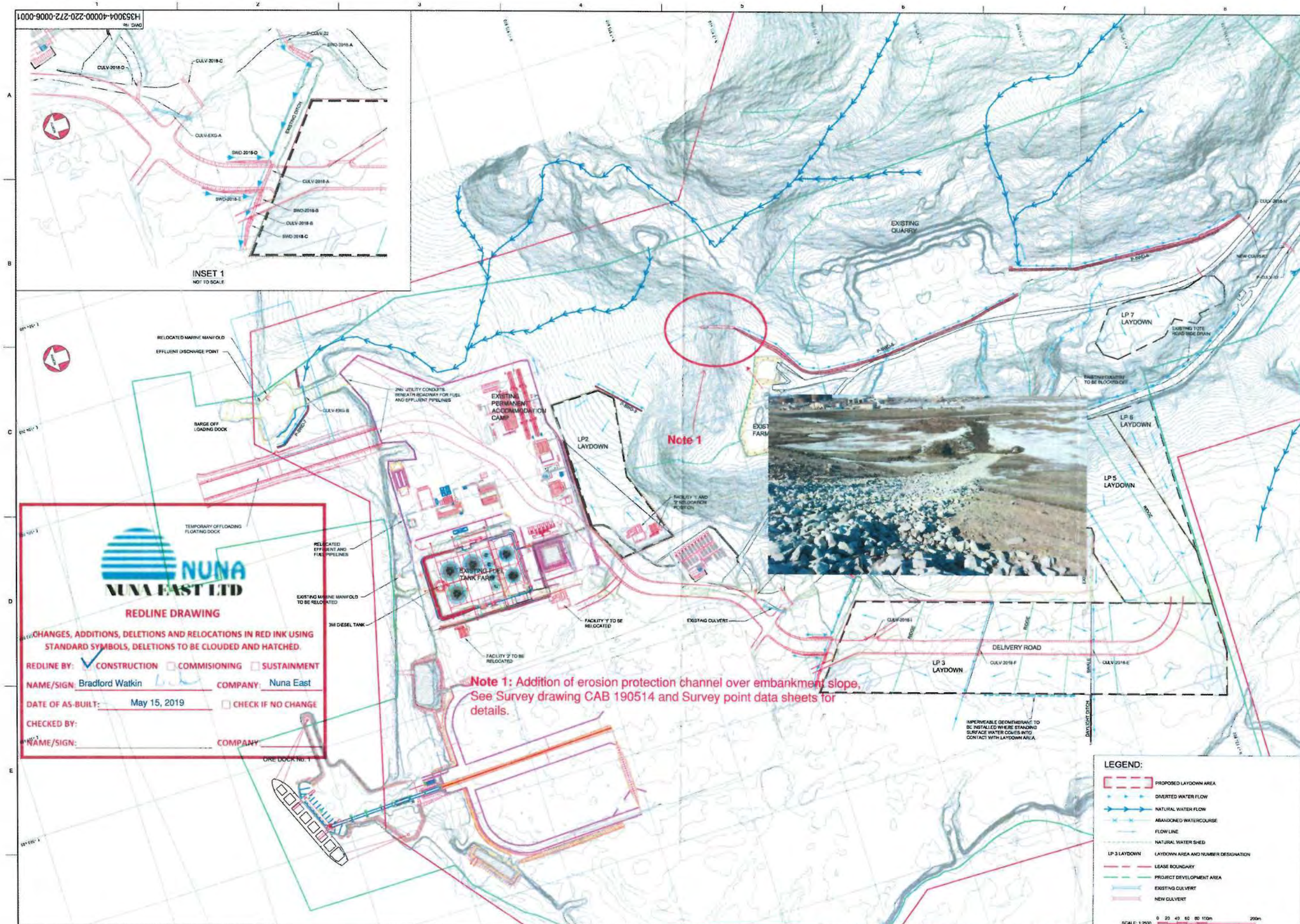


NOT FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
A	APPROVED FOR PERMITTING	HB	FH	15/02/2019

REVISIONS

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER PROJECT

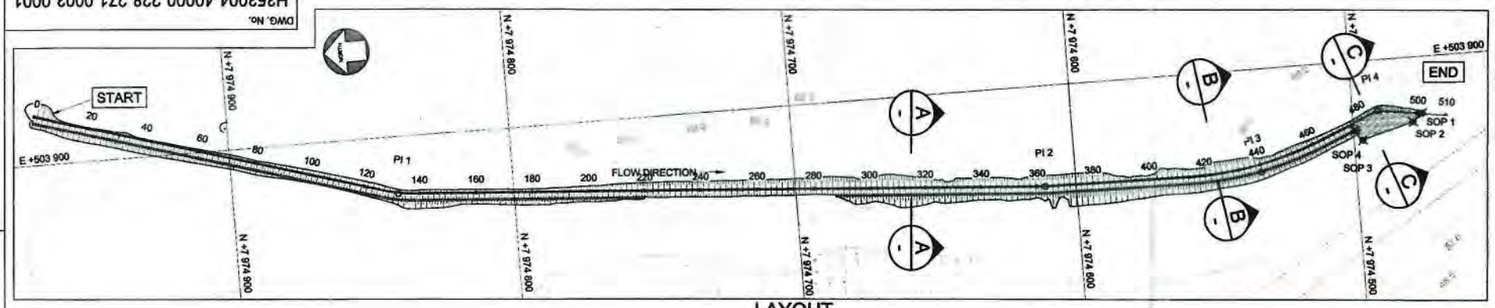
MILNE PORT
2018 SURFACE WATER MANAGEMENT PLAN

DRAWING APPROVAL STATUS: Approved for Use

SCALE 1:2500 DWG. No. H353004-40000-220-272-0006-0001 REV B

SHEET SIZE: E

DWG. NO. H353004-40000-228-271-0003-0001



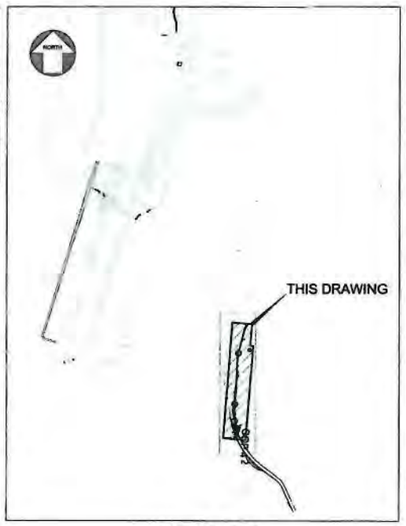
LAYOUT
SCALE 1:1000

P-SWD-6 DIVERSION OUTLET SETTING OUT COORDINATES

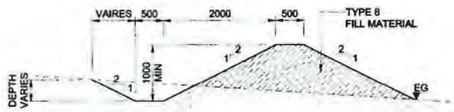
POINT	E	N	LEVEL
SOP 1	503879.9589	7974475.0641	55.800
SOP 2	503877.1900	7974478.6124	55.792
SOP 3	503871.7137	7974497.0050	55.956
SOP 4	503875.4826	7974499.5919	56.865

LEGEND:

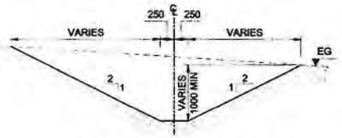
EG	EXISTING GROUND
CH	CHAINAGE
L	LENGTH
R	RADIUS
DA	DEFLECTION ANGLE
TL	TANGENT LENGTH
AL	ARC LENGTH
BCC	BEGINNING OF CURVE
ECC	END OF CURVE
PI	POINT OF INTERSECTION
HWL	HIGH WATER LEVEL
FB	FREE BOARD
→	FLOW DIRECTION
—·—	DIVERSION CENTER LINE



KEY PLAN
NTS



SECTION A-A - BERM AND CHANNEL
SCALE 1:50



SECTION B-B - CHANNEL
SCALE 1:50

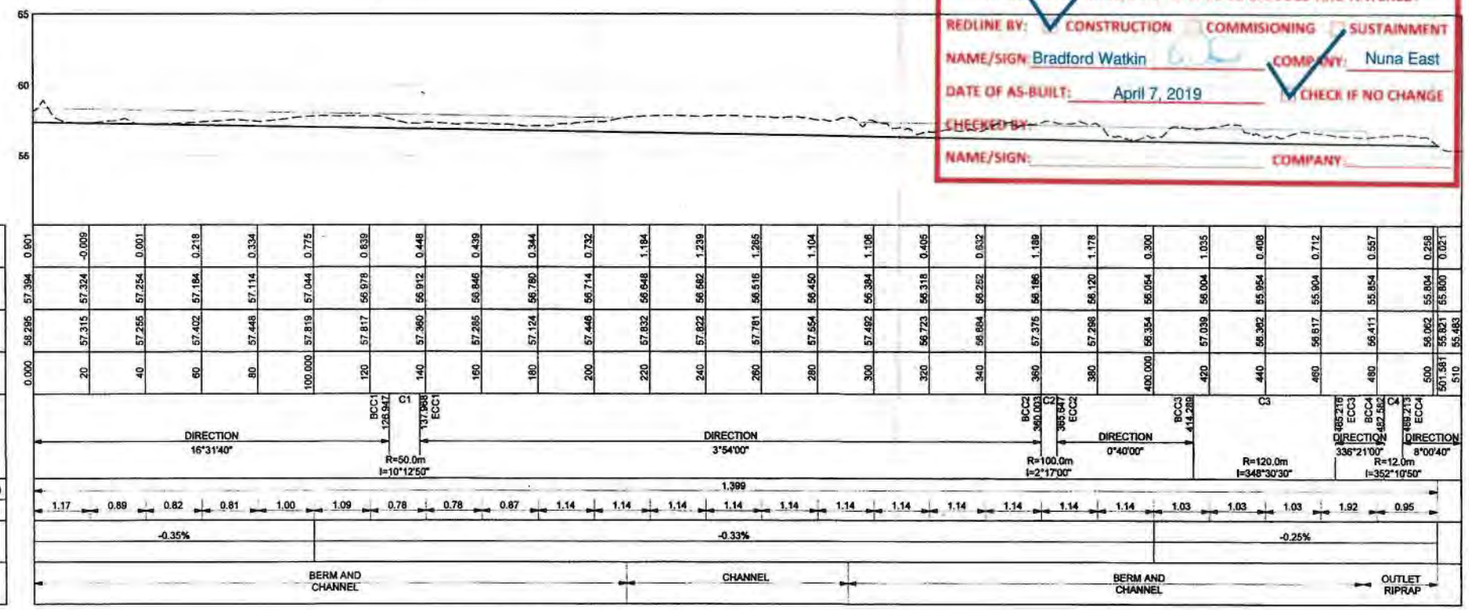
SECTION C-C - CHANNEL OUTLET & RIPRAP
SCALE 1:50

NUNA EAST LTD

REDLINE DRAWING
CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ✓ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT
NAME/SIGN: Bradford Watkin COMPANY: Nuna East
DATE OF AS-BUILT: April 7, 2019 ✓ CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:

NOTES:
1. LIDAR SURVEY PROVIDED BY PHOTSAT (2016)
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS AND ELEVATIONS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS ARE IN MILLIMETER UNLESS SPECIFIED OTHERWISE



DIVERSION LONGITUDINAL PROFILE

SETTING OUT DATA-P-SWD-6

NAME	CH	E	N	DETAILS
START	0.000	503917.506	7974967.890	L 126.947m
BCC1 PI1 ECC1	126.947 137.968	503881.390 503879.816 503879.439	7974846.189 7974840.885 7974835.364	R 50.000m DA 12°37'50" TL 5.533m AL 11.021m
BCC2 PI2 ECC2	360.003 365.647	503864.338 503864.146 503864.114	7974613.844 7974611.027 7974608.204	R 100.000m DA 3°14'00" TL 2.823m AL 5.644m
BCC3 PI3 ECC3	414.289 465.216	503863.548 503863.248 503873.619	7974559.566 7974533.715 7974510.033	R 120.000m DA 24°19'00" TL 25.853m AL 50.928m
BCC4 PI4 ECC4	482.582 489.213	503880.585 503881.950 503881.476	7974494.126 7974491.009 7974487.640	R 12.000m DA 31°39'40" TL 3.403m AL 6.631m
END	510.268	503878.542	7974466.790	L 21.055m

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date 2018-03-26
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

0 10 20 30 40 50
SCALE IN METERS

DRAWING No.	DRAWING TITLE
H353004-00000-221-294-0002-0010	STANDARD DRAWING - EARTHWORKS AND DRAINAGE
H353004-00000-221-294-0001-0001	STANDARD DRAWING - TYPICAL CULVERT DETAIL
H353004-00000-220-272-0001-0001	PORT SITE - BLOCK PLAN

REFERENCE DRAWINGS

REGISTERED PROFESSIONAL ENGINEER — R. A. HALIM — LICENSEE — 2018-03-26 — NWT/NU

REG. PROFESSIONAL

FOR CONSTRUCTION

THIS DRAWING WAS PREPARED BY HATCH LTD. ("HATCH") FOR THE EXCLUSIVE USE OF BAFFINLAND IRON MINES LP ("CLIENT") AND ITS USE IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN HATCH AND THE THE CLIENT, INCLUDING ANY LIMITATIONS ON LIABILITY CONTAINED THEREIN. THIS DRAWING AND ITS CONTENTS REMAIN THE INTELLECTUAL PROPERTY OF HATCH SUBJECT TO CLIENT'S ROYALTY-FREE, IRREVOCABLE, PERPETUAL, AND NON-EXCLUSIVE LICENSE TO USE AND REPRODUCE THE DRAWING FOR PURPOSES CONNECTED WITH THE PROJECT, INCLUDING THE CONSTRUCTION, COMPLETION, MAINTENANCE, EXTENSION, REINSTATEMENT AND REPAIR OF THE PROJECT. THIS DRAWING, AND THE INFORMATION CONTAINED HEREIN, SHALL BE TREATED AS CONFIDENTIAL FOR ALL OTHER PURPOSES AND SHALL NOT BE COPIED WITHOUT THE WRITTEN CONSENT OF HATCH.

No.	DESCRIPTION	BY	CHK'D	DATE
0	FOR CONSTRUCTION	HH	FH	23/03/2018

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	H HERBST	NR	23/03/2018
DESIGNER	H HERBST	NR	23/03/2018
CHECKER	F HUGO		2018-03-23
DESIGN COORD.	R GOOSEN		2018-03-23
RESP. ENG.	R HALIM		2018-03-26
LEAD DISC. ENG.	A GROBBELAAR		2018-03-23
AREA LEAD			2018-03-27
ENG. MANAGER	D STANGER		2018-03-27
AREA MANAGER	T. ARPA		18-4-20

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

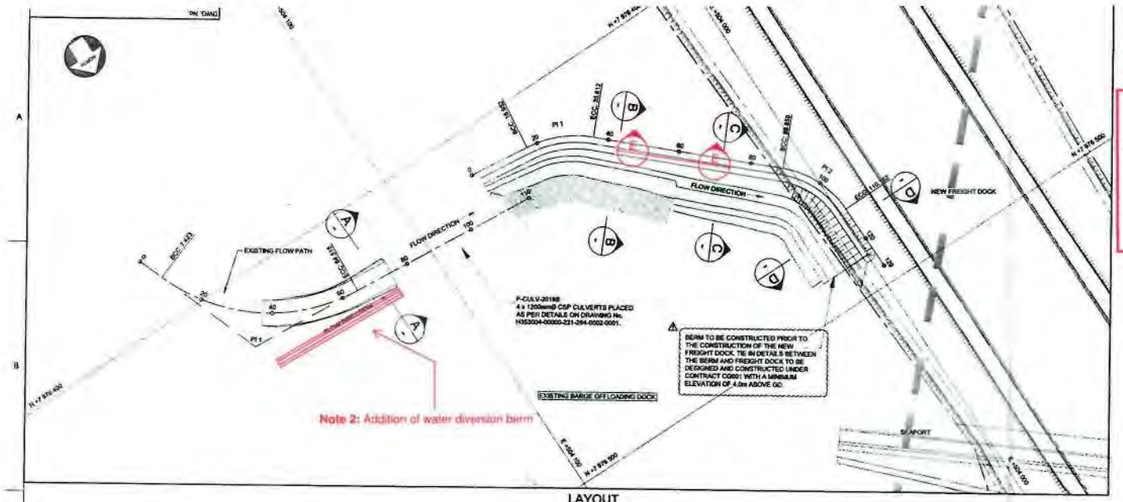
BAFFINLAND IRON MINES LP
MARY RIVER PROJECT

PORT SITE
STORMWATER DIVERSION P-SWD-6
LAYOUT, PROFILE AND DETAILS

SCALE 1:1000 OR AS NOTED | DWG. No. H353004-40000-228-271-0003-0001 | REV 0

SHEET SIZE: D

$USERNAMES
$DATES
$FILES
$TIMES



LAYOUT
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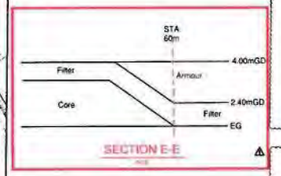


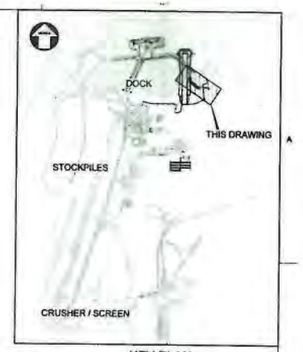
SECTION E-E

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTSAT (2016)
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS AND ELEVATIONS ARE IN METERS CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS ARE IN METERS UNLESS NOTED OTHERWISE.
5. THE CULVERTS ARE CONSIDERED FISH BEARING AND THEREFORE ONE OF THE PIPES SHALL BE PLACED 120mm LOWER THAN THE REST AS PER THE DETAILS ON DRAWING No. H353004-00000-221-294-0001
6. ALL DESIGNS ARE SUBJECT TO CHANGE PENDING AN ENVIRONMENTAL DESIGN CRITERIA TO BE ISSUED BY THE CLIENT.
7. LEVELS ON THIS DRAWING ARE SHOWN AS GEODETIC DATUM.

LEGEND:

EG	EXISTING GROUND
CH	CHAINAGE
GD	GEODETIC DATUM
L	LENGTH
R	RADIUS
DA	DEFLECTION ANGLE
TL	TANGENT LENGTH
AL	ARC LENGTH
BCC	BEGINNING OF CURVE
ECC	END OF CURVE
PI	POINT OF INTERSECTION
CHWL	CULVERT HEAD WATER LEVEL
HAT	HIGHEST ASTRONOMICAL TIDE
FB	FREE BOARD
	FLOW DIRECTION
	DIVERSION CENTER LINE



KEY PLAN

BERM NOTES:

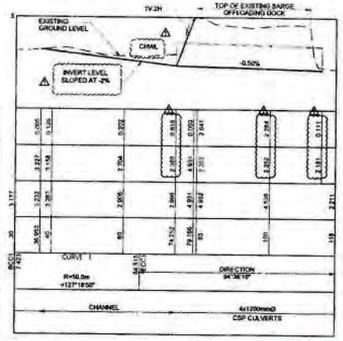
1. REFERENCES:
   - H353004-00000-221-078-0001 PLACEMENT OF FILL
   - H353004-00000-280-078-0002 QUARRIED FILL MATERIAL REQUIREMENTS
   - BIM-BD-CA-DE-DN-51001 ORE DOCK CAUSEWAY HYDRAULIC DESIGN
   - BIM-BD-FD-DE-DN-59002 FREIGHT DOCK EXPANSION BASIS OF DESIGN
2. GEOTEXTILE 1/8-IN TO SITE DETAIL AND APPROVED BY ENGINEERING REPRESENTATIVE.
3. DIVERSION BERM TO BE TIED INTO THE EXISTING BARGE OFFLOADING DOCK SIDE SLOPE BY MINIMUM 1.0m.
4. DIVERSION BERM NEEDS TO BE TIED INTO NEW BARGE OFFLOADING DOCK TO PREVENT EROSION FOCAL POINT FORMING BETWEEN STRUCTURES.
5. EXISTING GROUND TO BE MODIFIED TO ENSURE THAT MINIMUM LAYER THICKNESS ARE ADHERED TO:
   - FILTER LAYER MINIMUM THICKNESS 900mm
   - ARMOUR LAYER MINIMUM THICKNESS 1900mm
6. BERM TO BE CONSTRUCTED PRIOR TO NEW FREIGHT DOCK.

BERM LEGEND:
ARMOUR: 1000-3000Kg ARMOUR ROCK
FILTER: 60-300Kg FILTER ROCK
CORE: TYPE2 600mm MINUS SELECTED CRUSHED ROCK FILL
GEOTEXTILE: LAYFIELD LP7 OR APPROVED EQUIVALENT

SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 0.000

DEPTH TO INVERT (m)	
INVERT LEVELS (m)	
GROUND LEVELS ON CL (m)	
DISTANCE (m)	
HORIZONTAL ALIGNMENT	
CHANNEL SECTION	



DITCH AND CULVERT LONGITUDINAL SECTION

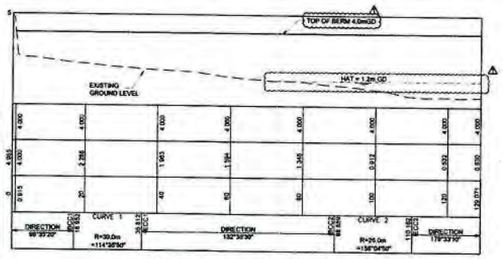
CULVERT SCHEDULE
(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DWG. No. H353004-00000-221-284-0001-0001-TYPICAL CULVERT DETAILS)

CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	CULVERT AT UPSTREAM NORTHING	CULVERT AT UPSTREAM EASTING	US INV. ELEV (m)	RIP RAP REQ'D	CULVERT AT DOWNSTREAM NORTHING	CULVERT AT DOWNSTREAM EASTING	NOTE: FINAL U/S INVERT AND D/S INVERT LEVELS ARE TO BE CONFIRMED ON SITE: D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)
P-CULV-20188	Y	4	1200	38.968	120	4300	CSP	7979422.050	504113.18	2.380	Y	7979425.263	504073.294	2.161	Y	500	4.800	0.500	90

SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 0.000

TOP OF BERM LEVELS (m)	
GROUND LEVELS ON CL (m)	
DISTANCE (m)	
HORIZONTAL ALIGNMENT	



BERM LONGITUDINAL SECTION

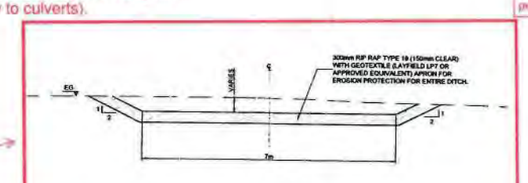
Note 1: Elimination of filter material "Key" as per RFI-0036.
Note 2: Addition of Diversion Berm for water management.
Note 3: Erosion protection apron installation delayed due to original culvert elevation issue, new culverts to be installed post sealift and apron to be completed at that time. (Although Section A-A was brought to Subgrade elevation to allow water flow to culverts).

SETTING OUT DATA - DITCH AND CULVERT

NAME	CH	E	N	DETAILS
START	0.000	504108.381	7978381.536	L 7.423m
BCC1 PI1 ECC1	7.423 84.515	504185.848 504184.876 504122.866	7978368.512 7978418.804 7978421.271	R 50.000m DA 85°-27'20" TL 52.115m AL 57.092m
END	118.091	504069.463	7978425.571	L 53.576m

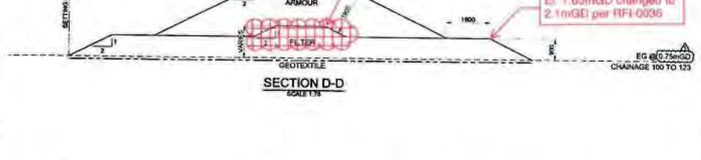
SETTING OUT DATA - BERM

NAME	CH	E	N	DETAILS
START	0.000	504078.014	7978411.097	L 15.952m
BCC1 PI1 ECC1	15.952 35.912	504092.173 504102.405 504045.306	7978413.942 7978414.761 7978421.363	R 30.000m DA 38°01'10" TL 9.753m AL 19.960m
BCC2 PI2 ECC2	86.859 110.162	504008.253 503997.854 503997.865	7978457.275 7978464.818 7978478.207	R 26.000m DA 46°56'40" TL 11.200m AL 21.302m
END	129.071	503997.717	7978495.118	L 18.910m

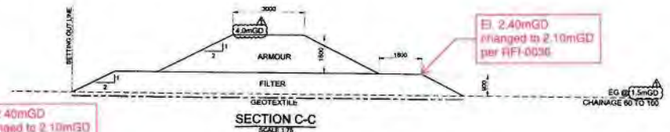


Note 3:

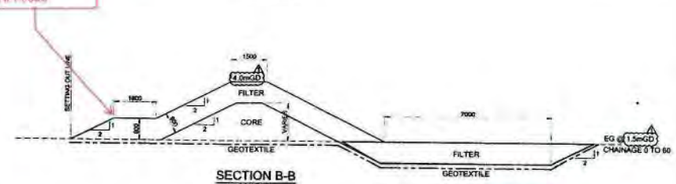
SECTION A-A
SCALE 1:50



SECTION D-D
SCALE 1:75



SECTION C-C
SCALE 1:75



SECTION B-B
SCALE 1:75

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☐ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT
NAME/SIGN: Bradford Watkin COMPANY: Nuna East
DATE OF AS-BUILT: May 15, 2019 ☐ CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:

BIM-BD-FD-DE-DN-59002	FREIGHT DOCK EXPANSION BASIS OF DESIGN
BIM-BD-CA-DE-DN-51001	ORE DOCK CAUSEWAY HYDRAULIC DESIGN
H353004-00000-280-078-0002	QUARRIED FILL MATERIAL REQUIREMENTS
H353004-00000-221-078-0001	PLACEMENT OF FILL
H353004-00000-221-294-0002-0010	STANDARD DRAWING - EARTHWORKS AND DRAINAGE
DRAWING No.	DRAWING TITLE

REFERENCE DRAWINGS

Released for Use

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	CULVERT INVERT LEVEL LOWERED, DATUM DEFINITION, LEGEND AND NOTES UPDATED	KVDM	FH	24/08/2018
0	APPROVED FOR CONSTRUCTION	FH	HH	09/04/2018

REVISIONS

HATCH

DRAFTSPERSON	K VAN DER MERWE	NR	09/04/2018
DESIGNER	F HUSIC	NR	09/04/2018
CHECKER	R HERRIST	JH	2018-04-24
DESIGN COORD	R GODSEN		2018-04-25
RESP. ENG.	R HALIM		2018-04-25
LEAD DISC. ENG.	A GROSSELAR		25 April 18
AREA LEAD	V LAVRIC		25 April 18
ENG. MANAGER	D STANGER		25 April 18
AREA MANAGER	T ATIBA		25 April 18
ROLE	NAME	SIGNATURE	DATE

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
STORMWATER DIVERSION P-SWD-7
PLAN/PROFILE

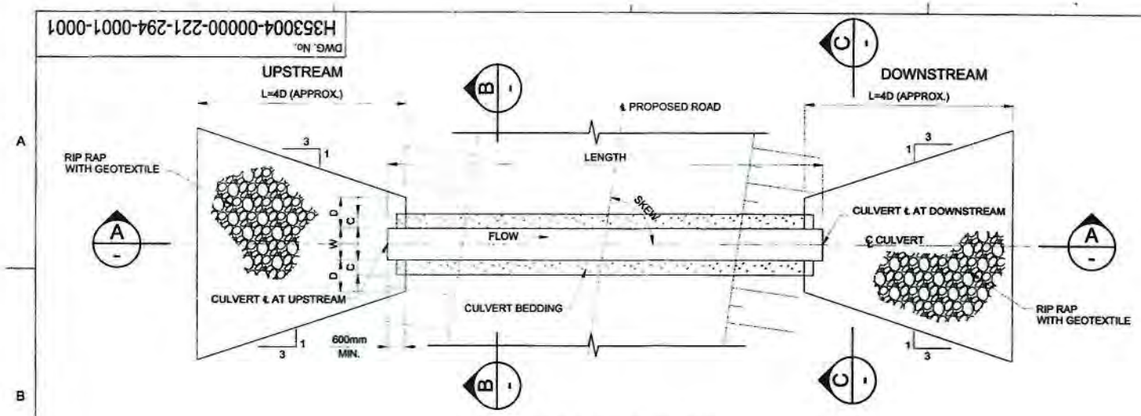
SCALE 1:500 OR AS NOTED
DWG. No. H353004-40000-228-271-0008-0001
REV 1
SHEET SIZE E

PERMIT TO PRACTICE
NAPEG LTD.
Signature
Date
PERMIT NUMBER P 512
The Association of Professional Engineers, Geologists and Geophysicists of Nunavut

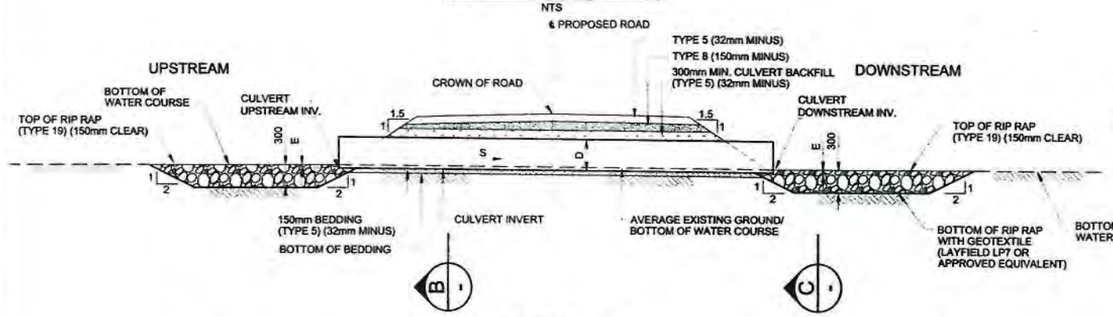
Bradford Watkin
DATE
Reviewed

1 2 3 4 5 6 7 8

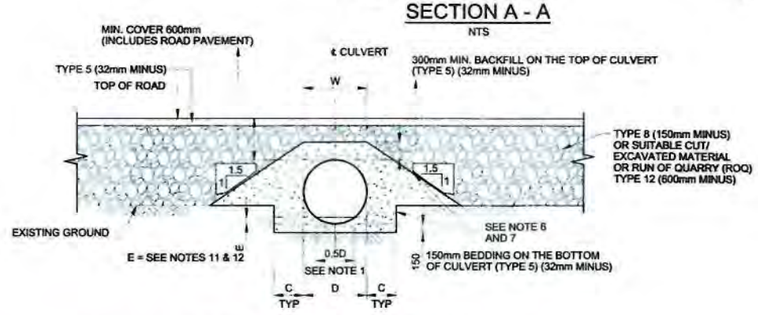
DWG. No. H353004-00000-221-294-0001-0001



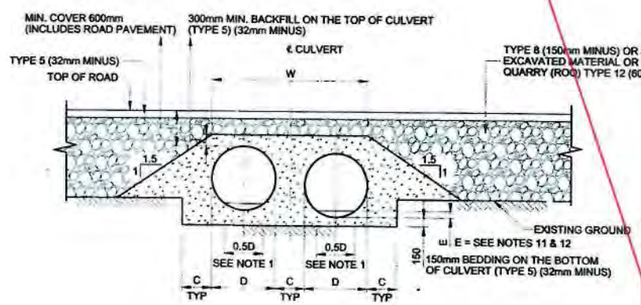
CULVERT PLAN VIEW
NTS



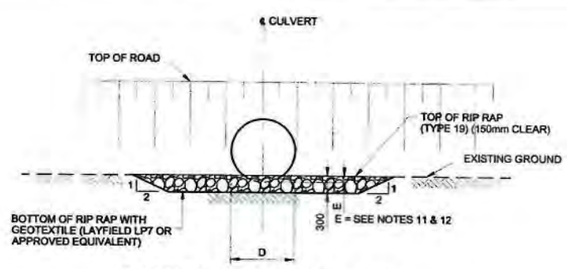
SECTION A - A
NTS



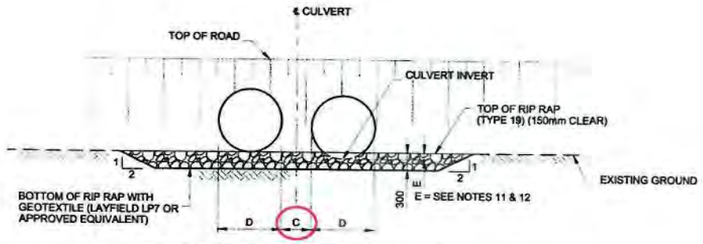
SECTION B - B (SINGLE PIPE)
NTS



SECTION B - B (DOUBLE PIPE)
NTS



SECTION C - C (SINGLE PIPE)
NTS



SECTION C - C (DOUBLE PIPE)
NTS

NOTES:

1. THE PIPE BED SHALL BE SHAPED TO RECEIVE THE BOTTOM OF THE PIPE.
2. GRANULAR MATERIAL PLACED UNDER THE HAUNCH MUST BE COMPACTED.
3. BEDDING AND BACKFILL MATERIAL SHALL BE HOMOGENEOUS GRANULAR MATERIAL, AND SHALL BE PLACED AND COMPACTED UNIFORMLY AROUND THE PIPE.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE
5. ALL ELEVATIONS ARE IN METERS UNLESS NOTED OTHERWISE.
6. WHERE VERTICAL EXCAVATION IS NOT POSSIBLE, MODIFY EXCAVATION SLOPE TO MIN. 1.5H: 1V.
7. PROVIDE 300mm TYPE 8 (150mm MINUS) AROUND BEDDING AND BACK FILL MATERIAL ONLY WHEN ROCKFILL IS PRESENT.
8. THE CULVERT UPSTREAM AND DOWNSTREAM LOCATIONS AND INVERT ELEVATIONS ARE BASED ON LIDAR DATA. NO BOTTOM OF STREAM SURVEY DATA WAS AVAILABLE AT THE TIME OF PREPERATION OF THIS DRAWING.
9. ADJUST CULVERT START AND END COORDINATES AND INVERT ELEVATIONS IN THE FIELD AS APPROVED BY COMPANY'S REPRESENTATIVE.
10. FLOW DIRECTION MUST BE FROM UPSTREAM TO DOWNSTREAM. PROVIDE AVERAGE STREAM SLOPE ALONG THE CULVERT AS CULVERT SLOPE BASED ON ACTUAL FIELD CONDITION.
11. FOR FISH BEARING CULVERT, E=0.1D
    FOR NON-FISH BEARING CULVERT, E=0
12. FOR FISH BEARING CULVERT WITH MULTIPLE PIPES, ONLY ONE PIPE SHALL BE EMBEDDED BY "E" (APPROXIMATELY 0.1D) AND ALL OTHER PIPES SHALL BE PLACED ON GROUND/BOTTOM OF WATER COURSE.

MATERIAL AND COMPACTION SPECIFICATION:

SUBGRADE PREPARATION:
THE SUBGRADE SHOULD SHOULD BE PROOF-ROLLED AND INSPECTED PRIOR TO PLACING FILL MATERIALS. THE IDENTIFIED SOFT AREAS SHALL BE FURTHER COMPACTED, OR IF NECESSARY, BE MITIGATED USING GRANULAR OR ROCK FILL. A QUALIFIED GEOTECHNICAL ENGINEER SHALL INSPECT AND APPROVE THE SUBGRADE.
THE ROCKFILL SHALL NOT BE PLACED IN WATER OR ON ICE. DEWATERING IS REQUIRED WHERE PONDING WATER IS ENCOUNTERED. OVER-EXCAVATION IS REQUIRED FOR GROUND ICE, IF ENCOUNTERED.
THE SUBGRADE ON THE GROUND SHALL BE LEFT AS IT IS NATURALLY BEFORE CONSTRUCTION AS MUCH AS POSSIBLE. THE OVER-EXCAVATION SHOULD BE MINIMIZED TO AVOID DISTURBANCE OF THE EXISTING PERMAFROST.

TYPE 5 (CRUSHER RUN 32mm MINUS MATERIAL) OR TYPE 3 (CRUSHER RUN 50mm MINUS):
THE MATERIAL MUST BE PLACED IN LIFTS NOT EXCEEDING 200mm AND SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVELY, THE COMPACTION SHOULD ACHIEVE A MINIMUM OF 100 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY TEST METHOD ASTM D698.

TYPE 8 (CRUSHER RUN 150mm MINUS):
THE ROCKFILL MUST BE PLACED IN LIFTS NOT EXCEEDING 500mm. THE PLACEMENT SHALL AVOID SEGREGATION AND NESTING OF COARSE PARTICLES. IT SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). EACH LIFT MUST BE "PROOF-ROLLED" PRIOR TO PLACING THE SUBSEQUENT LIFT.

TYPE 12 (RUN OF MINE, TYPICALLY 600mm MINUS):
THE ROCKFILL, IF USED, MUST BE PLACED IN LIFTS NOT EXCEEDING 1000mm. THE ROCKFILL SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVE COMPACTORS SUCH AS HEAVY LOADED RUBBER TIRED HAUL TRUCKS CAN ONLY BE USED AS PER A WRITTEN APPROVAL FROM THE ENGINEER.

1 An increase to 700mm in "C" distance per RFI-0016

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
C	CULVERT SPACING AND BEDDING CLEARANCE C = 500 WHILE D > 900mm C = 300 WHILE D <= 900mm
W	CULVERT BACKFILL TOP WIDTH W = (n*D) + (n-1)*C
TYPE	CULVERT MATERIAL
U/S INV.	CULVERT UPSTREAM INVERT ELEVATION
D/S INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	RIPRAP APRON LENGTH L = 4xD (APPROX)
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

Bradford Watkin QA/QC Reviewed

CULVERT SCHEDULE

CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	UPSTREAM CULVERT CENTRE NORTHING	UPSTREAM CULVERT CENTRE EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	DOWNSTREAM CULVERT CENTRE NORTHING	DOWNSTREAM CULVERT CENTRE EASTING	D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)

NUNA EAST LTD
REDLINE DRAWING
CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED
REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT
NAME/SIGN: COMPANY:
DATE OF AS-BUILT: APRIL 1, 2019 ☐ CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:
DRAWING No. DRAWING TITLE

REFERENCE DRAWINGS

REGISTERED PROFESSIONAL ENGINEER — Reg. L1247 — R. A. HALIM — LICENSEE — 2018-09-20 — NWT/NU

REG. PROFESSIONAL

FOR CONSTRUCTION

THIS DRAWING WAS PREPARED BY HATCH LTD. (HATCH) FOR THE EXCLUSIVE USE OF BAFFINLAND IRON MINES LP ("CLIENT") AND ITS USE IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN HATCH AND THE THE CLIENT, INCLUDING ANY LIMITATIONS ON LIABILITY CONTAINED THEREIN. THIS DRAWING AND ITS CONTENTS REMAIN THE INTELLECTUAL PROPERTY OF HATCH SUBJECT TO CLIENT'S ROYALTY-FREE, IRREVOCABLE, PERPETUAL AND NON-EXCLUSIVE LICENSE TO USE AND REPRODUCE THE DRAWING FOR PURPOSES CONNECTED WITH THE PROJECT, INCLUDING THE CONSTRUCTION, COMPLETION, MAINTENANCE, EXTENSION, REINSTATEMENT AND REPAIR OF THE PROJECT. THIS DRAWING, AND THE INFORMATION CONTAINED HEREIN, SHALL BE TREATED AS CONFIDENTIAL FOR ALL OTHER PURPOSES AND SHALL NOT BE MODIFIED WITHOUT THE WRITTEN CONSENT OF HATCH.

No.	DESCRIPTION	BY	CHK'D	DATE
1	MATERIAL AND COMPACTION SPECIFICATION ADDED	IHB	FH	18/09/2018
0	APPROVED FOR CONSTRUCTION	IHB	FH	01/12/2017

REVISIONS

Released for Use

PERMIT TO PRACTICE HATCH LTD.
Signature
Date
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

HATCH

DRAFTSPERSON	I BARNARD	NR	
DESIGNER	I BARNARD	NR	
CHECKER	F HUGO		2018-09-20
DESIGN COORD.	R GOOSEN		2018-09-20
RESP. ENG.	R HALIM		2018-09-20
LEAD DISC. ENG.	A GROBBELAAR		20 September
AREA LEAD	V LAVRIC		2018-09-20
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		2018.09.25
ROLE	NAME	SIGNATURE	DATE

DRAWING APPROVAL STATUS: Approved for Construction

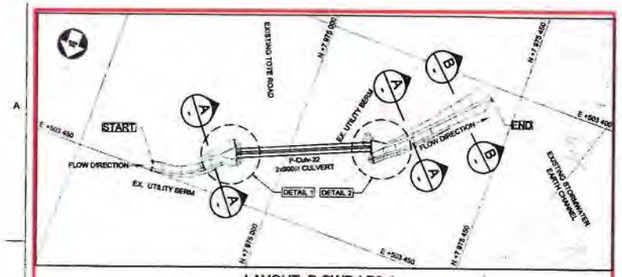
Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

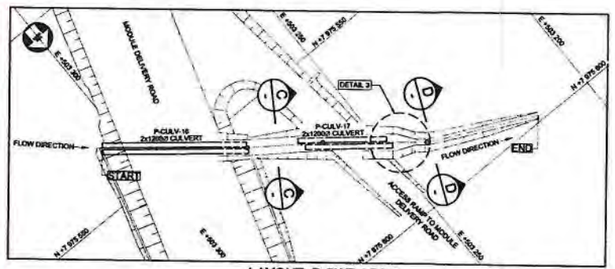
SITE WIDE
STANDARD DRAWING
TYPICAL CULVERT DETAILS

SCALE: NTS OR AS NOTED
DWG. No. H353004-00000-221-294-0001-0001
REV 1
SHEET SIZE: D

$USERNAMES $DATES $FILES $TIMES



LAYOUT: P-SWD-LP3-1
SCALE 1:500



LAYOUT: P-SWD-LP3-2
SCALE 1:500

SETTING OUT DATA-P-SWD-LP3-1

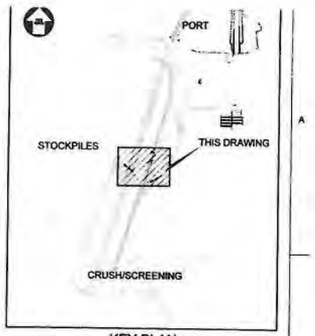
NAME	CH	E	N	DETAILS
START	0.000	503481.237	7975497.573	L 4.188m
BCC1 PI1 ECC1	4.189 11.432	503477.139 503473.521 503470.592	7975496.749 7975496.029 7975493.837	R 16.320m DA 25°00'00" TL 3.601m AL 7.243m
BCC2 PI2 ECC2	16.078 21.868	503466.625 503464.488 503461.816	7975491.574 7975490.345 7975488.189	R 25.000m DA 13°18'10" TL 2.909m AL 5.789m
BCC3 PI3 ECC3	56.551 84.875	503429.842 503426.109 503423.321	7975474.526 7975472.802 7975469.915	R 20.000m DA 23°16'20" TL 4.119m AL 8.124m
END	90.012	503405.877	7975461.329	L 25.337m

SETTING OUT DATA-P-SWD-LP3-2

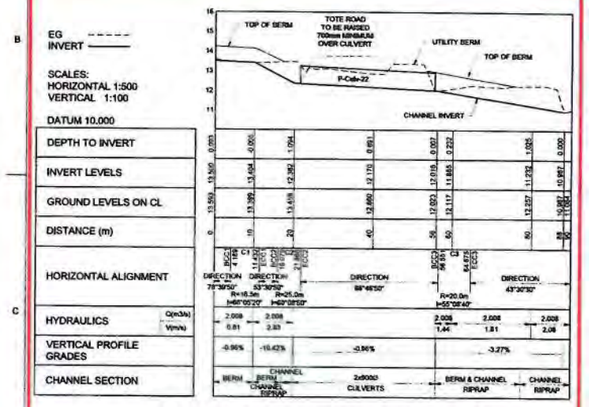
NAME	CH	E	N	DETAILS
START	0.000	503308.825	7975833.849	L 39.920m
PI1	39.920	503276.731	7975558.404	L 39.920m
PI2	59.041	503291.126	7975569.463	L 19.121m
PI3	84.321	503240.725	7975596.029	L 26.280m
END	113.370	503214.548	7975599.551	L 29.049m

EG EXISTING GROUND
CH CHAINAGE
L LENGTH
R RADIUS
DA DEFLECTION ANGLE
TL TANGENT LENGTH
AL ARC LENGTH
BCC BEGINNING OF CURVE
ECC END OF CURVE
PI POINT OF INTERSECTION
HWL HIGH WATER LEVEL
FB FREE BOARD
FLOW DIRECTION
DIVERSION CENTER LINE
RIPRAP

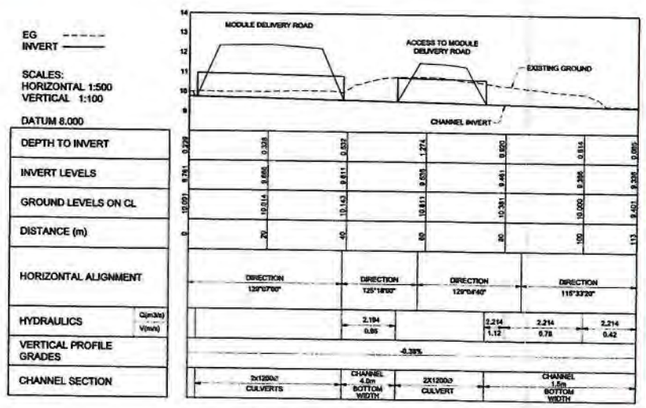
NOTES:
1. LIDAR SURVEY PROVIDED BY PHOTSAT (2016)
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS AND ELEVATIONS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS ARE IN MILLIMETER UNLESS NOTED OTHERWISE.
5. FINAL CULVERT POSITIONS TO BE CONFIRMED ON SITE.



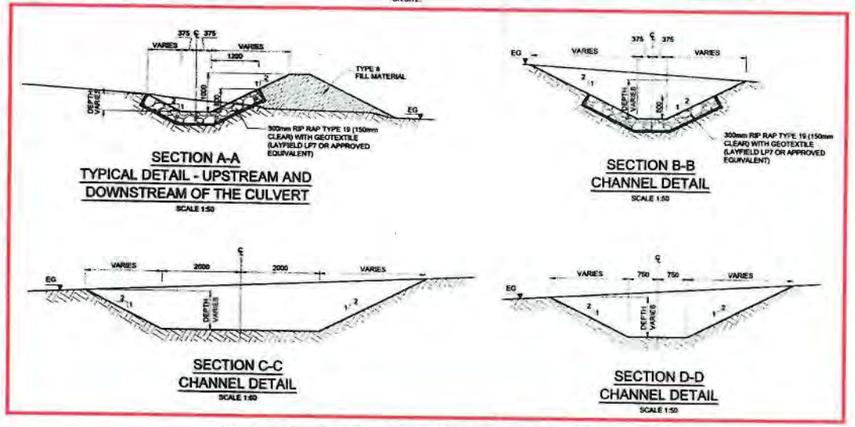
KEY PLAN

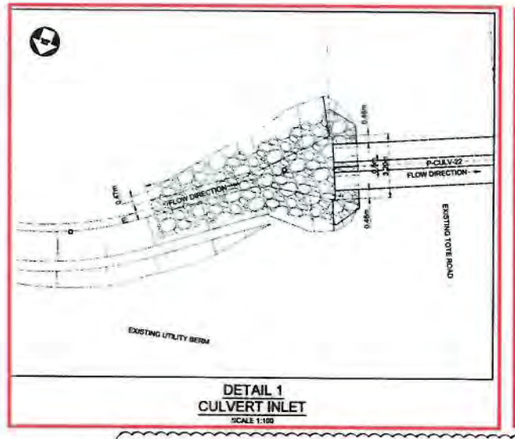


P-SWD-LP3-1 DIVERSION LONGITUDINAL SECTION

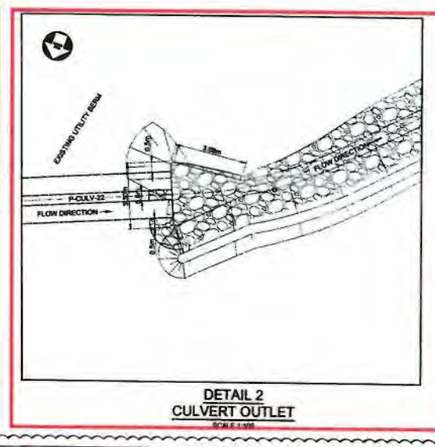


P-SWD-LP3-2 DIVERSION LONGITUDINAL SECTION

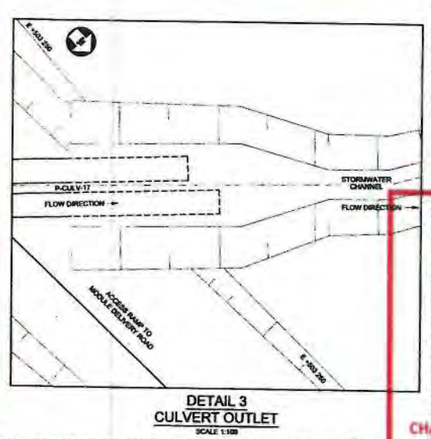




DETAIL 1
CULVERT INLET
SCALE 1:100



DETAIL 2
CULVERT OUTLET
SCALE 1:100



DETAIL 3
CULVERT OUTLET
SCALE 1:100

DETAIL 4
CULV-2018-C AND D
SCALE 1:1000

CULVERT SCHEDULE
(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-00000-221-294-0001-0091-TYPICAL CULVERT DETAILS

CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	CULVERT AT UPSTREAM NORTHING	CULVERT AT UPSTREAM EASTING	CULVERT AT UPSTREAM US INV. ELEV (m)	CULVERT AT UPSTREAM RIP RAP REQ'D	CULVERT AT DOWNSTREAM NORTHING	CULVERT AT DOWNSTREAM EASTING	CULVERT AT DOWNSTREAM DIS INVERT ELEV (m)	CULVERT AT DOWNSTREAM RIP RAP REQ'D	NOTE: FINAL US INVERT AND DS INVERT LEVELS ARE TO BE CONFIRMED ON SITE C (mm)	L (m)	S (%)	SKEW (DEGREES)
P-CULV-16	N	2	1200	39.900	0	3000	CSP	7975535.240	503305.45	9.754	N	7975559.404	503276.731	9.616	N	500	4.8	0.370	45
P-CULV-17	N	2	1200	22.245	0	3000	CSP	7975568.310	503285.480	9.564	Y	7975580.076	503248.094	9.491	Y	500	4.8	0.370	15
P-CULV-22	N	2	900	34.900	0	2300	CSP	7975488.350	503462.190	12.338	Y	7975474.959	503430.944	12.020	Y	300	2.4	0.930	30
CULV-2018-C	N	1	600	40.125	0	900	CSP	7975907.324	503432.367	10.685	N	7975893.850	503394.848	10.000	N	300	-	2.205	45
CULV-2018-D	N	1	600	20.835	0	900	CSP	7975957.582	503444.885	10.200	N	7975985.380	503425.374	10.000	N	300	-	0.960	60

CULVERT SCHEDULE LEGEND:
D CULVERT DIAMETER
E EMBEDMENT DEPTH
C CULVERT SPACING AND BEDDING CLEARANCE
C = 500 WHILE D > 900mm
C = 300 WHILE D <= 900mm
W CULVERT BACKFILL TOP WIDTH
W = (n*D) + (n-1)*C
n = No. OF PIPES / CULVERTS
TYPE CULVERT MATERIAL
US INV. CULVERT UPSTREAM INVERT ELEVATION
DIS INV. CULVERT DOWNSTREAM INVERT ELEVATION
L RIPRAP APRON LENGTH
L = 4xD (APPROX)
S CULVERT SLOPE
LENGTH CULVERT LENGTH
CSP CORRUGATED STEEL PIPE

REDLINE DRAWING
CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.
REDLINE BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT
NAME/SIGN: Bradford Watkin COMPANY: NUNA EAST
DATE OF AS-BUILT: April 1, 2019 ☑ CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:

PERMIT TO PRACTICE HATCH LTD.
Signature
Date
PERMIT NUMBER P 512
The Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGA)

SCALE 1:500 IN METERS

H353004-00000-221-294-0002-0010	STANDARD DRAWING - EARTHWORKS AND DRAINAGE
H353004-00000-221-294-0001-0001	STANDARD DRAWING - TYPICAL CULVERT DETAIL
H353004-00000-220-272-0001-0001	PORT SITE - BLOCK PLAN
DRAWING No.	DRAWING TITLE

REFERENCE DRAWINGS

Released for Use

Bradford Watkin QA/QC Reviewed

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	EDC STAMP REMOVED. DETAIL 4 ADDED AND CULVERT SCHEDULE UPDATED	EndM	FH	07/09/2018
0	FOR CONSTRUCTION	HH	FH	09/04/2018

REVISIONS

HATCH

DRAFTSPERSON	H HERBST	NR	09/04/2018
DESIGNER	H HERBST	NR	09/04/2018
CHECKER	F HUSO		2018-09-14
DESIGN COORD.	R GOOSEN		2018-09-14
RESP. ENG.	R HALIM		2018-09-14
LEAD DISC. ENG.	A GROSBELAAR		2018-09-14
AREA LEAD	V LAVRIC		2018-09-14
ENG. MANAGER	D STANGER		2018-09-14
AREA MANAGER			
ROLE	NAME	SIGNATURE	DATE

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

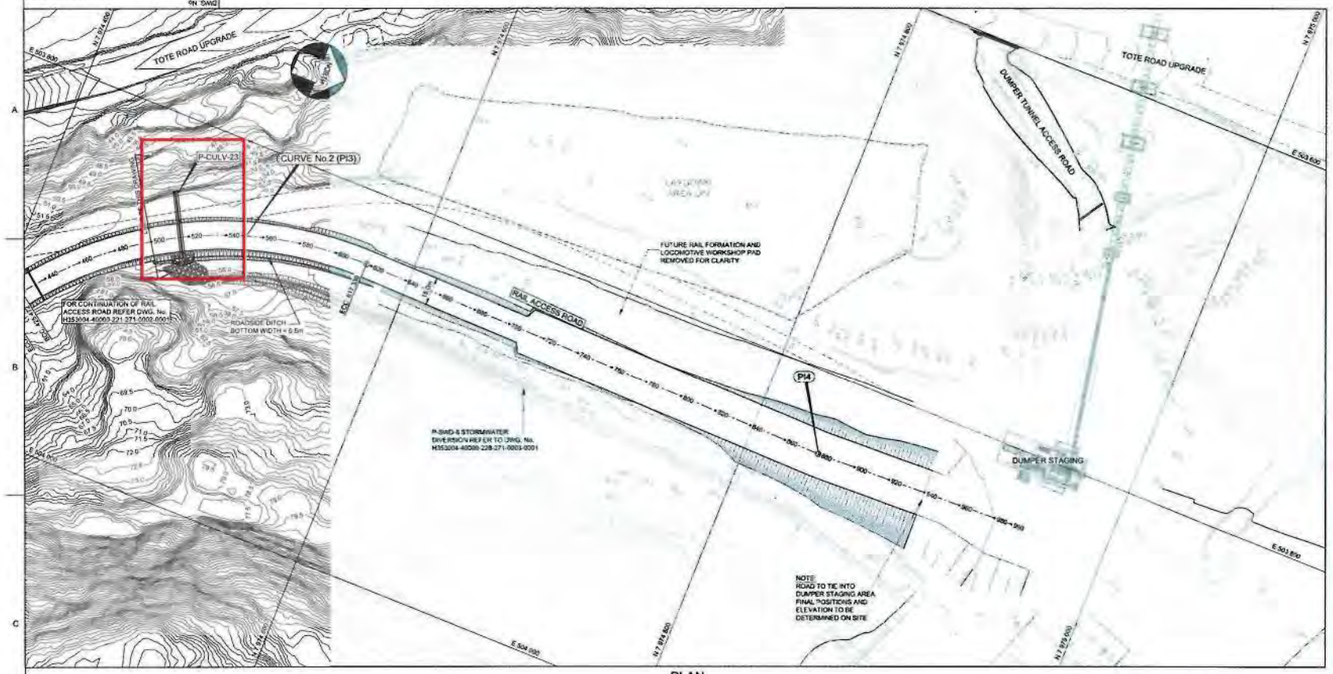
BAFFINLAND IRON MINES LP
MARY RIVER PROJECT

PORT SITE
MODULE ROAD AND TOTE ROAD DRAINAGE DETAILS

SCALE 1:500 OR AS NOTED
DWG No. H353004-40000-228-271-0005-0001
REV 1
SHEET SIZE: E

BLUEBEAM'S DO NOT SCALE

DWG No. H353004-40000-221-271-0002-0002



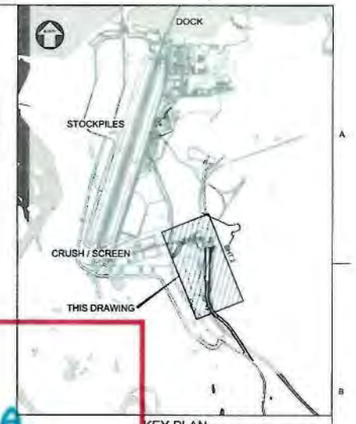
PLAN
SCALE 1:1000

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR TYPICAL CROSS SECTIONS REFER TO DRAWING No. H353004-40000-221-273-0001-0001
6. ROAD WIDTH IS 15.0m

ROAD DATA LEGEND:

BVC	BEGINNING VERTICAL CURVE
EVC	END VERTICAL CURVE
BCC	BEGINNING CIRCULAR CURVE
ECC	END CIRCULAR CURVE
R	RADIUS (CURVE)
DA	DEFLECTION ANGLE (CURVE)
TL	TANGENT LENGTH (CURVE)
AL	ARC LENGTH (CURVE)



KEY PLAN

LEGEND:

LAYDOWN AREA BOUNDARY

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ✓ CONSTRUCTION ☐ COMMISSIONING ✓ SUSTAINMENT

NAME/SIGN: BRADFORD L. WATKINS COMPANY: NUNA

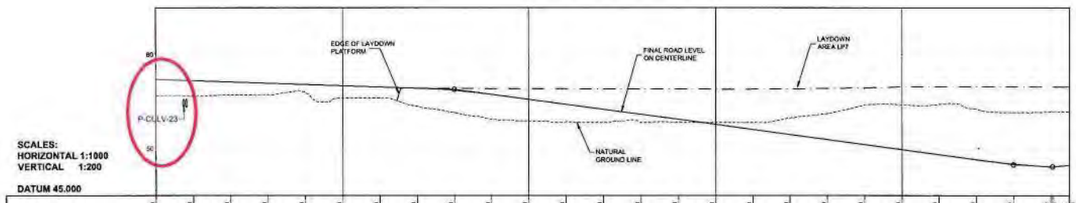
DATE OF AS-BUILT: 4/4/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: _____ COMPANY: _____

CULVERT SCHEDULE
(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-00000-221-294-0001-0001-TYPICAL CULVERT DETAILS)

								CULVERT AT UPSTREAM				CULVERT AT DOWNSTREAM				NOTE: FINAL U/S INVERT AND D/S INVERT LEVELS ARE TO BE CONFIRMED ON SITE			
CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	NORTHING	EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	NORTHING	EASTING	D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)
P-CULV-23	N	2	900	35.94	0	2300	CSP	7974483.967	503870.934	54.500	Y	7974466.9870	503839.273	54.100	Y	500	3.6	1.11	90



RAIL UNLOADING AREA ACCESS ROAD
CH. 500.000 TO CH. 990.000

SETTING OUT DATA
RAIL UNLOADING AREA ACCESS ROAD

NAME	CH	E	N	DETAILS
START	0.000	504 176.317	7 974 074.403	L 56.775m
PI1	56.775	504 142.412	7 974 119.943	L 56.775m
BCC1 PI2 ECC1	266.186 414.552	504 029.674 503 989.161 503 928.373	7 974 296.416 7 974 359.833 7 974 404.191	R 400.000m DA 21° 18' 30" TL 75.232m AL 148.766m
BCC2 PI3 ECC2	425.472 617.339	503 919.874 503 839.833 503 837.802	7 974 410.392 7 974 477.718 7 974 575.737	R 200.000m DA 54°58'00" TL 104.037m AL 191.867m
PI4	880.867	503 842.788	7 974 839.218	L 263.526m
END	990.900	503 838.965	7 974 948.284	L 106.133m

Bradford Watkins QA/QC Reviewer

PERMIT TO PRACTICE
HATCH LTD.
Signature _____
Date _____
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGA)

H353004-40000-226-271-0003-0001	P-SWD-6 STORMWATER DIVERSION
H353004-40000-223-271-0005-0001	DUMPER TUNNEL ACCESS ROAD
H353004-40000-221-271-0002-0001	RAIL UNLOADING AREA ACCESS ROAD - PLAN AND PROFILE SHEET 1 OF 2
H353004-40000-223-271-0009-0002	TOTE ROAD UPGRADE - SHEET 2
H353004-40000-228-271-0002-0001	CONSTRUCTION PHASE: ACCESS ROADS DRAINAGE DETAILS
H353004-00000-221-294-0002-0010	STANDARD DRAWING - EARTHWORKS AND DRAINAGE
H353004-00000-221-294-0001-0001	STANDARD DRAWING - TYPICAL CULVERT DETAIL
DRAWING No	DRAWING TITLE

REFERENCE DRAWINGS

Released for Use

FOR CONSTRUCTION

No	DESCRIPTION	BY	CHK'D	DATE
0	APPROVED FOR CONSTRUCTION	KVDM	FH	25/07/2018

REVISIONS

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	E BALEGAMIRE	NR	25/07/2018
DESIGNER	E BALEGAMIRE	NR	24/07/2018
CHECKER	F HUDO		2018-07-27
DESIGN COORD	R GOOSEN		2018-07-27
RESP. ENG	N HAUM		2018-07-27
LEAD DISC. ENG	A GROBNIKLAR		2018-07-27
AREA LEAD	V LAVRIC		
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		

DRAWING APPROVAL STATUS: Client Review

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

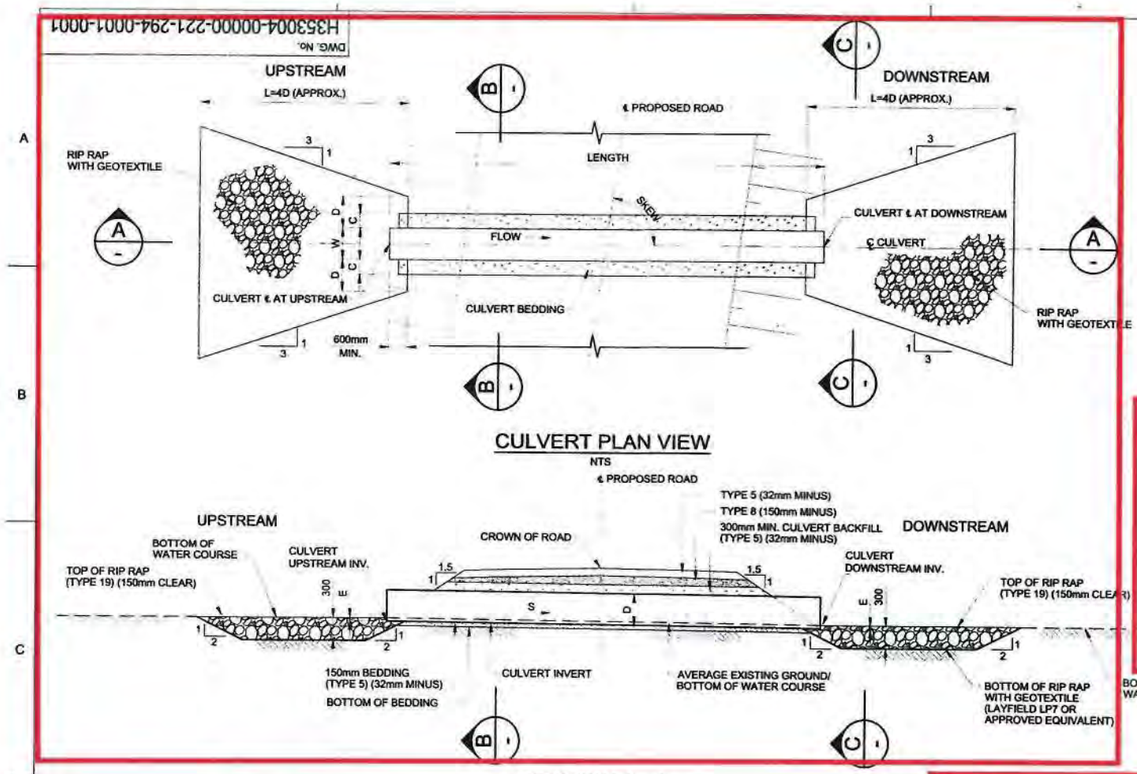
PORT SITE
RAIL UNLOADING AREA ACCESS ROAD
PLAN AND PROFILE SHEET 2 OF 2

SCALE 1:1000 (at A1 scale)
DWG No. H353004-40000-221-271-0002-0002
REV 0
SHEET SIZE E

REG. PROFESSIONAL

STAKES
SURVEYNAMES
STAKES
DETAILS

DWG. No. H353004-00000-221-294-0001-0001

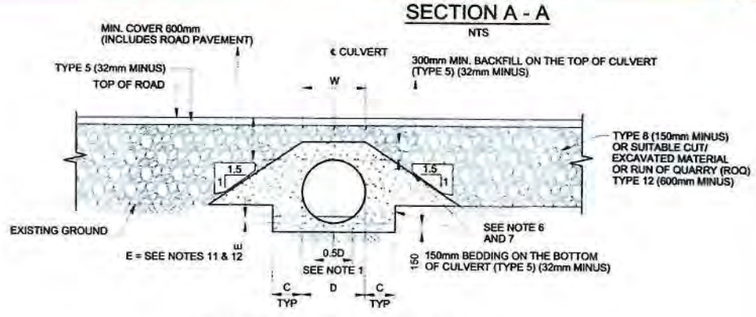


CULVERT PLAN VIEW

NTS

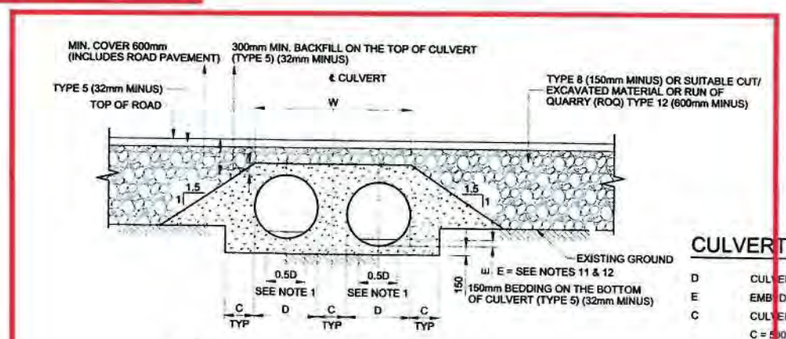
SECTION A - A

NTS



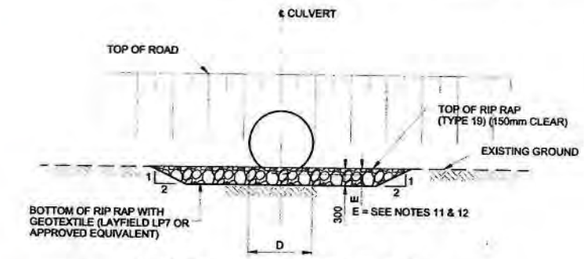
SECTION B - B (SINGLE PIPE)

NTS



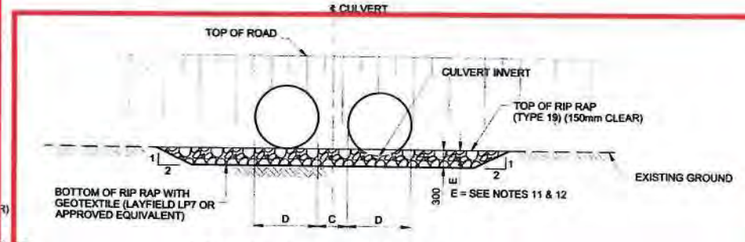
SECTION B - B (DOUBLE PIPE)

NTS



SECTION C - C (SINGLE PIPE)

NTS



SECTION C - C (DOUBLE PIPE)

NTS

NOTES:

1. THE PIPE BED SHALL BE SHAPED TO RECEIVE THE BOTTOM OF THE PIPE.
2. GRANULAR MATERIAL PLACED UNDER THE HAUNCH MUST BE COMPACTED.
3. BEDDING AND BACKFILL MATERIAL SHALL BE HOMOGENEOUS GRANULAR MATERIAL, AND SHALL BE PLACED AND COMPACTED UNIFORMLY AROUND THE PIPE.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE
5. ALL ELEVATIONS ARE IN METERS UNLESS NOTED OTHERWISE.
6. WHERE VERTICAL EXCAVATION IS NOT POSSIBLE, MODIFY EXCAVATION SLOPE TO MIN. 1.5H: 1V.
7. PROVIDE 300mm TYPE 8 (150mm MINUS) AROUND BEDDING AND BACK FILL MATERIAL ONLY WHEN ROCKFILL IS PRESENT.
8. THE CULVERT UPSTREAM AND DOWNSTREAM LOCATIONS AND INVERT ELEVATIONS ARE BASED ON LIDAR DATA. NO BOTTOM OF STREAM SURVEY DATA WAS AVAILABLE AT THE TIME OF PREPERATION OF THIS DRAWING.
9. ADJUST CULVERT START AND END COORDINATES AND INVERT ELEVATIONS IN THE FIELD AS APPROVED BY COMPANY'S REPRESENTATIVE.
10. FLOW DIRECTION MUST BE FROM UPSTREAM TO DOWNSTREAM. PROVIDE AVERAGE STREAM SLOPE ALONG THE CULVERT AS CULVERT SLOPE BASED ON ACTUAL FIELD CONDITION.
11. FOR FISH BEARING CULVERT, E=0.1D
    FOR NON-FISH BEARING CULVERT, E=0
12. FOR FISH BEARING CULVERT WITH MULTIPLE PIPES, ONLY ONE PIPE SHALL BE EMBEDDED BY "E" (APPROXIMATELY 0.1D) AND ALL OTHER PIPES SHALL BE PLACED ON GROUND/BOTTOM OF WATER COURSE.

MATERIAL AND COMPACTION SPECIFICATION:

SUBGRADE PREPARATION:
THE SUBGRADE SHOULD SHOULD BE PROOF-ROLLED AND INSPECTED PRIOR TO PLACING FILL MATERIALS. THE IDENTIFIED SOFT AREAS SHALL BE FURTHER COMPACTED, OR IF NECESSARY, BE MITIGATED USING GRANULAR OR ROCK FILL. A QUALIFIED GEOTECHNICAL ENGINEER SHALL INSPECT AND APPROVE THE SUBGRADE.
THE ROCKFILL SHALL NOT BE PLACED IN WATER OR ON ICE. DEWATERING IS REQUIRED WHERE PONDING WATER IS ENCOUNTERED. OVER-EXCAVATION IS REQUIRED FOR GROUND ICE, IF ENCOUNTERED.
THE SUBGRADE ON THE GROUND SHALL BE LEFT AS IT IS NATURALLY BEFORE CONSTRUCTION AS MUCH AS POSSIBLE. THE OVER-EXCAVATION SHOULD BE MINIMIZED TO AVOID DISTURBANCE OF THE EXISTING PERMAFROST.

TYPE 5 (CRUSHER RUN 32mm MINUS MATERIAL) OR TYPE 3 (CRUSHER RUN 50mm MINUS):
THE MATERIAL MUST BE PLACED IN LIFTS NOT EXCEEDING 200mm AND SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVELY, THE COMPACTION SHOULD ACHIEVE A MINIMUM OF 100 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY TEST METHOD ASTM D698.

TYPE 8 (CRUSHER RUN 150mm MINUS):
THE ROCKFILL MUST BE PLACED IN LIFTS NOT EXCEEDING 500mm. THE PLACEMENT SHALL AVOID SEGREGATION AND NESTING OF COARSE PARTICLES. IT SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). EACH LIFT MUST BE "PROOF-ROLLED" PRIOR TO PLACING THE SUBSEQUENT LIFT.

TYPE 12 (RUN OF MINE, TYPICALLY 600mm MINUS):
THE ROCKFILL, IF USED, MUST BE PLACED IN LIFTS NOT EXCEEDING 1000mm. THE ROCKFILL SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVE COMPACTORS SUCH AS HEAVY LOADED RUBBER TIRED HAUL TRUCKS CAN ONLY BE USED AS PER A WRITTEN APPROVAL FROM THE ENGINEER.

CULVERT SCHEDULE

CULVERT ID	FISH BEARING	NUMBER OF PIPES	LENGTH (m)	E (mm)	W (mm)	TYPE	UPSTREAM CULVERT CENTRE NORTHING	UPSTREAM CULVERT CENTRE EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	DOWNSTREAM CULVERT CENTRE NORTHING	DOWNSTREAM CULVERT CENTRE EASTING	D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
C	CULVERT SPACING AND BEDDING CLEARANCE C = 300 WHILE D > 900mm C = 300 WHILE D < = 900mm
W	CULVERT BACKFILL TOP WIDTH W = (n*D) + (n-1)*C
[illegible]	CULVERT MATERIAL
U/S INV.	CULVERT UPSTREAM INVERT ELEVATION
D/S INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	RIPRAP APRON LENGTH L = 4xD (APPROX)
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

Bradford Watkin QA/QC Reviewed

Released for Use

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

NUNA EAST LTD
REDLINE DRAWING
CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.
REDLINE BY: CONSTRUCTION COMMISIONING SUSTAINMENT
NAME/SIGN: COMPANY:
DATE OF AS-BUILT: 4/4/19 CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:

REFERENCE DRAWINGS | DRAWING No. | DRAWING TITLE

REG. PROFESSIONAL: REGISTERED PROFESSIONAL ENGINEER R. A. HALIM LICENSEE 2018-09-20 NWT/NU

FOR CONSTRUCTION

THIS DRAWING WAS PREPARED BY HATCH LTD. (HATCH) FOR THE EXCLUSIVE USE OF BAFFINLAND IRON MINES LP (FOLIDENT) AND ITS USE IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN HATCH AND THE THE CLIENT, INCLUDING ANY LIMITATIONS ON LIABILITY CONTAINED THEREIN. THIS DRAWING AND ITS CONTENTS REMAIN THE INTELLECTUAL PROPERTY OF HATCH SUBJECT TO CLIENT'S ROYALTY-FREE, IRREVOCABLE, PERPETUAL AND NON-EXCLUSIVE LICENSE TO USE AND REPRODUCE THE DRAWING FOR PURPOSES CONNECTED WITH THE PROJECT, INCLUDING THE CONSTRUCTION, COMPLETION, MAINTENANCE, EXTENSION, REINSTATEMENT AND REPAIR OF THE PROJECT. THIS DRAWING, AND THE INFORMATION CONTAINED HEREIN, SHALL BE TREATED AS CONFIDENTIAL FOR ALL OTHER PURPOSES AND SHALL NOT BE MODIFIED WITHOUT THE WRITTEN CONSENT OF HATCH.

No.	DESCRIPTION	BY	CHK'D	DATE
1	MATERIAL AND COMPACTION SPECIFICATION ADDED	IHB	FH	18/09/2018
0	APPROVED FOR CONSTRUCTION	IHB	FH	01/12/2017

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	I BARNARD	NR	
DESIGNER	I BARNARD	NR	
CHECKER	F HUGO		2018-09-20
DESIGN COORD.	R GOOSEN		2018-09-20
RESP. ENG.	R HALIM		2018-09-20
LEAD DISC. ENG.	A GROBBELAAR		20 September
AREA LEAD	V LAVRIC		2018-09-20
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		2018.09.23

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

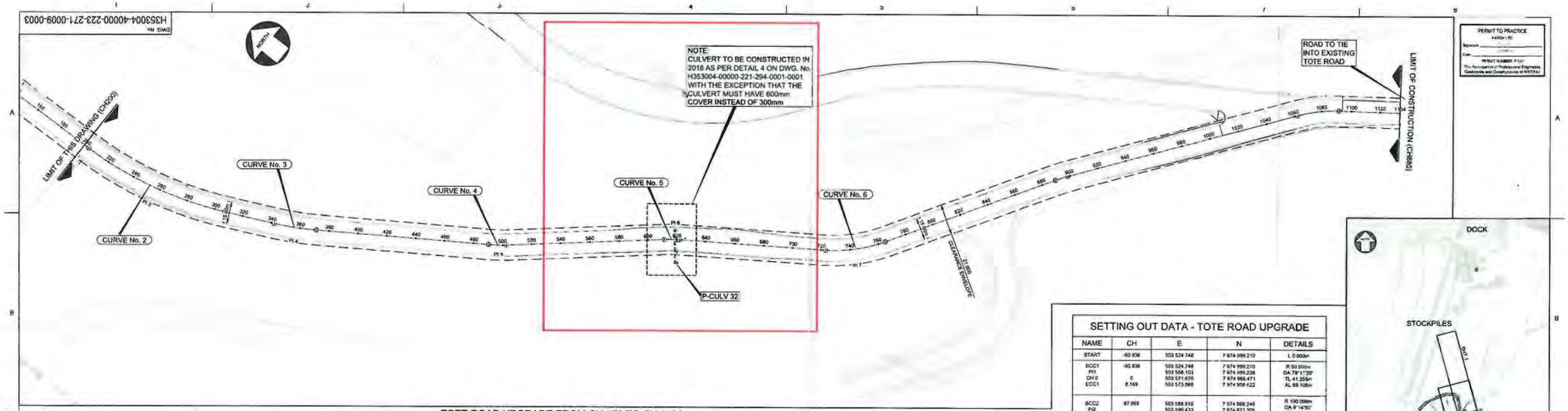
SITE WIDE
STANDARD DRAWING
TYPICAL CULVERT DETAILS

SCALE: NTS OR AS NOTED | DWG. No. H353004-00000-221-294-0001-0001 | REV 1

SHEET SIZE: D

$USERNAMES $TIMES
$DATES
$FILES

DWG. No. H353004-40000-223-271-0009-0003



TOTE ROAD UPGRADE FROM CH.170 TO CH.1134

SCALE 1:1000

CULVERT SCHEDULE

(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-00000-221-294-0001-0001-TYPICAL CULVERT DETAILS)

								CULVERT AT UPSTREAM			CULVERT AT DOWNSTREAM		NOTE: FINAL U/S INVERT AND D/S INVERT LEVELS ARE TO BE CONFIRMED ON SITE				
CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	NORTHING	EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	NORTHING	EASTING	D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)
P-CULV 32	N	2	900	24.150	0	2300	CSP	7974415.110	503502.11	36.500	Y	7974399.885	503783.482	35.350	Y	500	3.6000	4.7500	90

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. REFER TO PRIMARY ROAD - TYPICAL CROSS SECTION ON DRAWING No H353004-40000-221-273-0001-0001 FOR TYPICAL LAYER WORKS. ROAD WIDTH TO BE 15m.

LEGEND:

198 — CONTOUR ELEVATION

LIMIT OF CONSTRUCTION UNDER THIS CONTRACT

SETTING OUT DATA - TOTE ROAD UPGRADE

NAME	CH	E	N	DETAILS
START	-60.936	503 524.748	7 974 999.210	L 0.000m
ECC1	-60.936	503 524.748	7 974 999.210	R 50.000m
PI1		503 506.103	7 974 999.238	DA 78°1'20"
CH 0	0	503 571.670	7 974 966.471	TL 41.255m
ECC1	8.169	503 573.868	7 974 958.622	AL 69.105m
SCC2	87.969	503 588.910	7 974 880.246	R 100.000m
PI2		503 590.433	7 974 872.305	DA 9°14'30"
ECC2	104.509	503 590.659	7 974 864.221	TL 8.087m
				AL 16.135m
SCC3	283.298	503 593.434	7 974 765.070	R 250.000m
PI3		503 594.908	7 974 712.400	DA 23°48'10"
ECC3	307.159	503 617.514	7 974 694.806	TL 52.995m
				AL 103.861m
SCC4	342.041	503 632.479	7 974 633.297	R 200.000m
PI4		503 638.756	7 974 620.083	DA 8°22'00"
ECC4	371.248	503 645.868	7 974 607.923	TL 14.629m
				AL 29.206m
SCC5	490.493	503 713.178	7 974 508.800	R 100.000m
PI5		503 716.550	7 974 503.758	DA 6°56'20"
ECC5	502.610	503 720.507	7 974 499.160	TL 6.066m
				AL 12.117m
SCC6	611.116	503 791.267	7 974 416.916	R 100.000m
PI6		503 794.769	7 974 412.847	DA 5°26'50"
ECC6	621.845	503 797.936	7 974 408.426	TL 5.369m
				AL 10.721m
SCC7	722.946	503 859.201	7 974 325.176	R 100.000m
PI7		503 857.238	7 974 307.707	DA 23°57'20"
ECC7	764.756	503 885.332	7 974 296.630	TL 21.215m
				AL 41.805m
END	885.116	503 987.982	7 974 233.787	L 120.360m

PERMIT TO PRACTICE
HATCH LTD
Signature
Date
PERMIT NUMBER: P 537
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

DOCK
STOCKPILES
CRUSH / SCREEN
THIS DRAWING
KEY PLAN

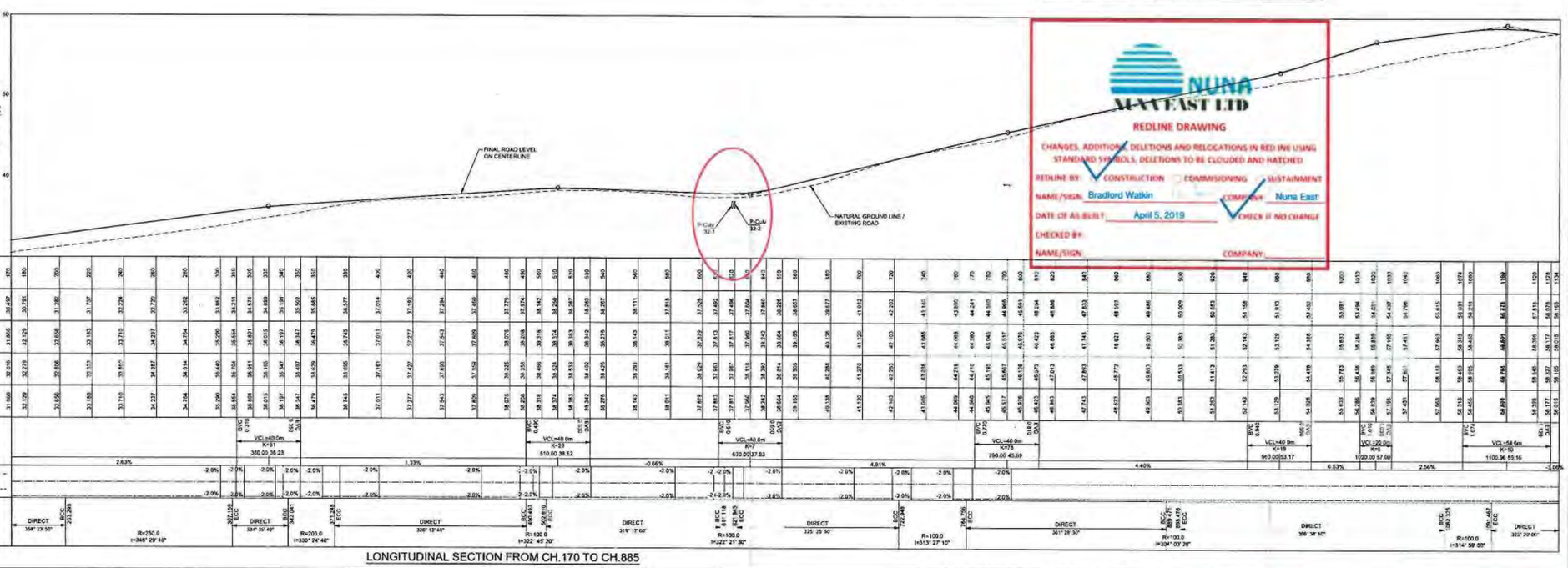
LONGITUDINAL SECTION FROM CH.170 TO CH.885

ROAD DATA LEGEND:

BVC	BEGINNING VERTICAL CURVE
EVC	END VERTICAL CURVE
BCC	BEGINNING CIRCULAR CURVE
ECC	END CIRCULAR CURVE
R	RADIUS (CURVE)
DA	DEFLECTION ANGLE (CURVE)
TL	TANGENT LENGTH (CURVE)
AL	ARC LENGTH (CURVE)
CH	CHAINAGE

SCALES:
HORIZONTAL 1:1000
VERTICAL 1:200

DATUM 30.000



NUNA MAT EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: Bradford Watkin COMPANY: Nuna East

DATE OF AS BUILT: April 5, 2019 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

H353004-00000-221-294-0001-0001	TYPICAL CULVERT DETAILS						
H353004-40000-221-273-0001-0001	MODULE, PRIMARY AND SECONDARY ROADS - TYPICAL CROSS SECTIONS						
H353004-40000-223-271-0009-0002	TOTE ROAD UPGRADE - PLAN AND PROFILE SHEET 2 OF 3						
DRAWING No.	DRAWING TITLE						
REFERENCE DRAWINGS							

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	EDC STAMP REMOVED	KVDM	FH	21/08/2018
0	APPROVED FOR CONSTRUCTION	B	FH	10/04/2018

REVISIONS

REG. PROFESSIONAL

DRAFTSPERSON	I. BARNARD	NR	10/04/2018
DESIGNER	E. BALEGAMIRE	NR	10/04/2018
CHECKER	F. HUGO		2018-08-14
DESIGN COORD.	R. GOOSEN		2018-09-13
RESP. ENG.	R. HALIM		2018-09-14
LEAD DISC. ENG.	A. GROMBELAAR		2018-09-12
AREA LEAD	V. LAVRIC		
ENG. MANAGER	D. STANGER		
AREA MANAGER	T. ATIBA		
ROLE	NAME	SIGNATURE	DATE

DRAWING APPROVAL STATUS: Approved for Construction

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
TOTE ROAD UPGRADE
PLAN AND PROFILE SHEET 3 OF 3

SCALE 1:1000 ON AS NOTED | DWG No. H353004-40000-223-271-0009-0003 | REV 1

SHEET SIZE E

DWG No. H353004-40000-221-271-0004-0001

NORTH

MODULE DELIVERY ROAD

NEW ACCESS RAMP TO LAYDOWN LP2 PAD SEE ENLARGED DETAIL 1

STORMWATER DIVERSION BERM

EXISTING DRAINAGE DITCH

EXISTING UTILITY BERM

FOR DETAILS OF UTILITY CULVERT SEE ENLARGED DETAIL 1

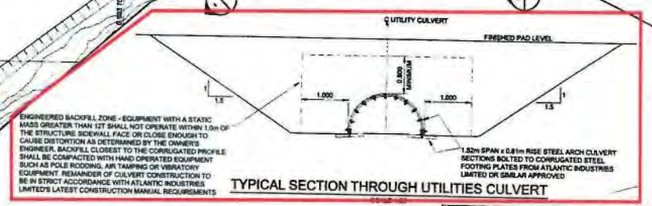
FOR DETAILS OF DRAINAGE CULVERT P-CULV-36 REFER TO DWG. No. H353004-40000-228-272-0011-0001

Placement as per RFI-041

Temporary installation of Plastibeton SRT-T2016 utility enclosure per RFI-029

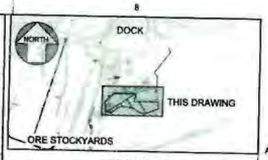
NOTE:
FOR PAD LAYER WORKS REFER TO DETAIL 1 ON DWG No. H353004-00000-221-294-0002-0001

PLAN ON LAYDOWN LP2
SCALE 1:500



TYPICAL SECTION THROUGH UTILITIES CULVERT

P-SWD-3 REFER TO DRAWING No H353004-40000-228-271-0004-0001



KEY PLAN

LAYDOWN LP2
SETTING OUT CO-ORDINATES

POINT	E	N	LEVEL
1	503 696.878	7 975 873.542	13.800
2	503 671.119	7 975 943.609	13.692
3	503 653.359	7 975 946.026	13.420
4	503 653.350	7 975 912.953	14.603
5	504 042.756	7 975 825.106	19.800
6	503 943.743	7 975 786.090	21.000
7	503 744.950	7 975 839.934	13.800
8	505 702.161	7 975 824.445	13.700
9	503 649.463	7 975 784.677	13.800
10	503 608.298	7 975 789.725	13.800
11	503 634.464	7 975 908.154	13.800
12	503 623.018	7 975 925.591	12.800
13	503 632.135	7 975 929.924	12.850
14	503 641.780	7 975 915.231	13.800
15	503 656.312	7 975 929.287	13.692
16	503 671.119	7 975 936.419	13.692
17	503 672.319	7 975 941.825	14.196
18	503 847.570	7 975 944.019	13.628
19	503 898.563	7 975 786.090	19.800
20	503 826.283	7 975 829.178	17.300
21	503 635.214	7 975 806.917	13.788
22	503 690.741	7 975 842.344	13.679
23	503 727.535	7 975 865.820	13.569
24	503 781.099	7 975 899.995	13.508
25	503 845.935	7 975 940.787	13.430
26	503 843.439	7 975 912.936	14.458
27	503 843.438	7 975 905.736	14.705
28	503 841.062	7 975 885.737	15.042
29	503 841.058	7 975 878.392	15.684
30	503 882.724	7 975 878.392	18.320
31	504 042.756	7 975 878.392	17.824

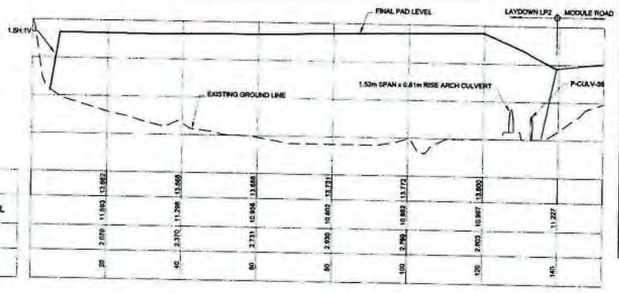
NOTE: THE LEVELS GIVEN FOR POINTS 17 AND 18 ARE TO TOP OF THE BERM

SECTION B - B

SCALES:
HORIZONTAL 1:500
VERTICAL 1:50

DATUM 10.000

CENTRE LINE (CL)	
GROUND LEVELS ON CL	
DEPTH OF FILL	
DISTANCE (m)	



ENLARGED DETAIL 1
SCALE 1:20

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016) CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
2. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
3. ALL DIMENSIONS SHOWN ARE IN METERS. UNLESS NOTED OTHERWISE.
4. FOR TYPICAL PAD LAYERWORKS CONSTRUCTION REFER TO DETAIL 1 ON DWG No. H353004-00000-221-294-0003-0001.

SECTION C-C

SCALES:
HORIZONTAL 1:500
VERTICAL 1:50

DATUM 12.000

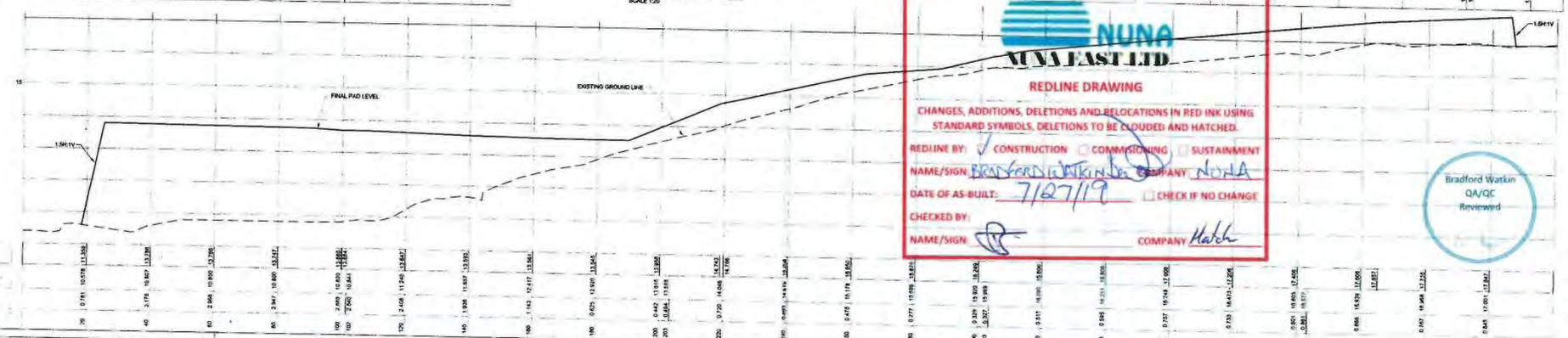
CENTRE LINE (CL)	
GROUND LEVELS ON CL	
DEPTH OF FILL	
DISTANCE (m)	

SECTION A-A

SCALES:
HORIZONTAL 1:500
VERTICAL 1:50

DATUM 10.000

CENTRE LINE (CL)	
GROUND LEVELS ON CL	
DEPTH OF FILL	
DISTANCE (m)	



NUNA
NUNAVAST LTD.

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: BRADFORD WATKINS COMPANY: NUNA

DATE OF AS-BUILT: 7/27/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY: Hatch

Bradford Watkin
QA/QC
Reviewed

H353004-40000-221-272-0014-0001	PORT SITE COMPLEX EXPANSION - CROSS SECTIONS
H353004-40000-221-272-0013-0001	PORT SITE COMPLEX EXPANSION - LAYOUT PLAN
H353004-00000-221-294-0004-0001	STANDARD DRAWING - EARTHWORKS & DRAINAGE DETAILS
H353004-40000-228-271-0004-0001	STORMWATER DIVERSION P-SWD-3 - LAYOUT AND SECTIONS
H353004-40000-228-272-0011-0001	LAYDOWN AREA LP2 - DRAINAGE PLAN
H353004-00000-221-294-0003-0001	STANDARD DRAWING - EARTHWORKS & DRAINAGE DETAILS
DRAWING No.	DRAWING TITLE

REFERENCE DRAWINGS

Released for Use

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
5	LEVELS IN CO ORDINATE TABLE UPDATED	SHD	FH	06/05/2019
4	LP2 FOOTPRINT EXTENTS REVISED	SHD	FH	13/01/2019
3	UTILITY CULVERT DETAILS AMENDED	SHD	FH	19/11/2018
2	LP2 EXTENDED TO THE EAST	SHD	FH	29/10/2018
1	EDC STAMP REMOVED	KvdM	FH	16/09/2018
0	APPROVED FOR CONSTRUCTION	GPM	FH	18/04/2018

REVISIONS

HATCH

DRAFTSPERSON	G MEADES	NR	22/03/2018
DESIGNER	I BARNARD	NR	22/03/2018
CHECKER	F HUSO		2018-05-10
DESIGN COORD	R GODDEN		2018-05-10
RESP. ENG.	R HALIM		
LEAD DISC. ENG.	A GROSBELAAR		2018/05/10
AREA LEAD	N MASON		2018/05/10
ENG. MANAGER	R GODDEN		2018-05-10
AREA MANAGER	D HENKELMAN		

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP2
PLAN AND SECTIONS

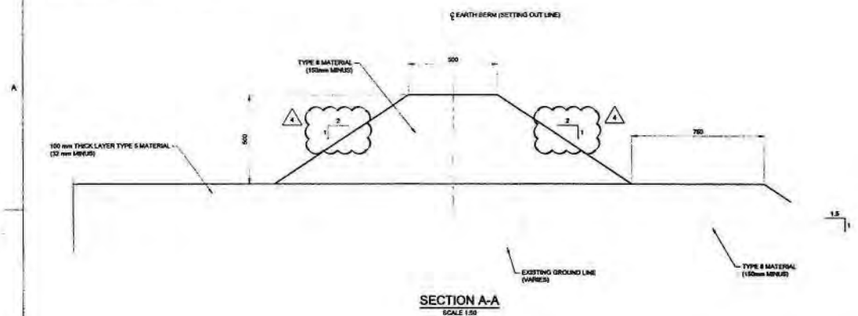
ROLE	NAME	SIGNATURE	DATE

SCALE 1:500 OR AS NOTED

DWG No. H353004-40000-221-271-0004-0001

REV 5

SHEET SIZE: E



SECTION A-A
SCALE 1:50

CULVERT SCHEDULE

CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	UPSTREAM CULVERT CENTRE NORTHING	UPSTREAM CULVERT CENTRE EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	DOWNSTREAM CULVERT CENTRE NORTHING	DOWNSTREAM CULVERT CENTRE EASTING	D/S INV ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)
P-CULV-36	NO	1	805	16.09	0	600	CSP	7975926	503637	11.65	NO	7975915	503625	10.89	NO	300	-	1.00	85

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
C	CULVERT SPACING AND BEDDING CLEARANCE C = 800 WHILE D < 800mm C = 300 WHILE D >= 800mm
W	CULVERT BACKFILL TOP WIDTH W = (n*D) + (n-1)*C
n	NUMBER OF PIPES
TYPE	CULVERT MATERIAL
U/S INV.	CULVERT UPSTREAM INVERT ELEVATION
D/S INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	RIPRAP APRON LENGTH L = 4xD (APPROX)
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

LEGEND:

OFF PAD FLOW DIRECTION

ON PAD FLOW DIRECTION

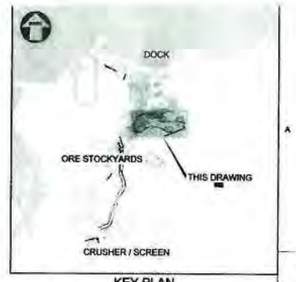
MATERIAL AND COMPACTION SPECIFICATION:

TYPE 5 (CRUSHER RUN) OR TYPE 3 (CRUSHER RUN):
THE MATERIAL MUST BE PLACED IN LIFTS NOT EXCEEDING 200mm AND SHALL BE COMPACTED BY MINIMUM 8 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1550 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2kmh). ALTERNATIVELY, THE COMPACTION SHOULD ACHIEVE A MINIMUM OF 100 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY TEST METHOD ASTM D698.

TYPE 8 (CRUSHER RUN):
THE ROCKFILL MUST BE PLACED IN LIFTS NOT EXCEEDING 500mm. THE PLACEMENT SHALL AVOID SEGREGATION AND NESTING OF COARSE PARTICLES. IT SHALL BE COMPACTED BY MINIMUM 8 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1550 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2kmh). EACH LIFT MUST BE "PROOF-ROLLED" PRIOR TO PLACING THE SUBSEQUENT LIFT.

TYPE 12 (RUN OF QUARRY):
THE ROCKFILL, IF USED, MUST BE PLACED IN LIFTS NOT EXCEEDING 1000mm. THE ROCKFILL SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2kmh). ALTERNATIVE COMPACTORS SUCH AS HEAVY LOADED RUBBER TIRED HAUL TRUCKS CAN ONLY BE USED AS PER A WRITTEN APPROVAL FROM THE ENGINEER.

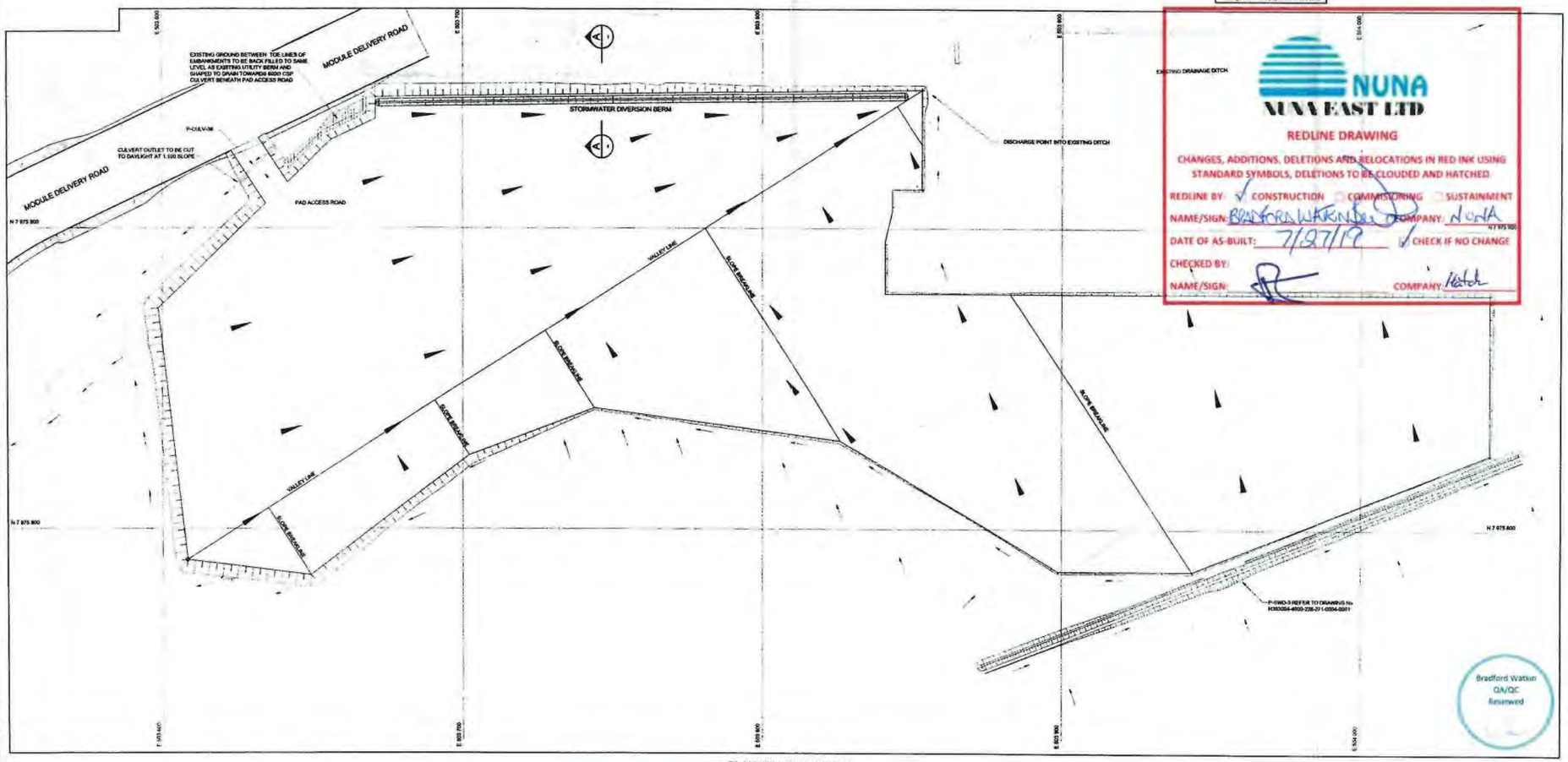
PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU



KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2018)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR PAD LAYER/WORKS CONSTRUCTION REFER TO DETAIL 1 ON DWG. No. H353004-00000-221-294-0002-0001.



PLAN ON LAYDOWN LP2
SCALE 1:500

NUNA
NUNAVAST LTD
REDLINE DRAWING
CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED
REDLINE BY: ✓ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT
NAME/SIGN: BRADFORD WATKUN COMPANY: NUNA
DATE OF AS-BUILT: 7/27/19 ✓ CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY: Hatch

H353004-40000-228-272-0018-0001	PORT SITE COMPLEX EXPANSION - DRAINAGE PLAN
H353004-40000-221-272-0014-0001	PORT SITE COMPLEX EXPANSION - CROSS SECTIONS
H353004-40000-221-272-0013-0001	PORT SITE COMPLEX EXPANSION - LAYOUT PLAN
H353004-40000-221-273-0004-0001	LAYDOWN AREA LP2 - LAYOUT AND SECTIONS
H353004-01000-221-294-0002-0001	STANDARD DRAWING - EARTHWORKS AND DRAINAGE DETAILS
DRAWING No.	DRAWING TITLE

REFERENCE DRAWINGS

Released for Use

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
4	STORMWATER DIVERSION BERM SIDE SLOPES REVISED			
3	LP 2 FOOTPRINT REVISED TO ACCOMMODATE NEW PSC			
2	LP2 EXTENDED TO THE EAST			
1	EDC STAMP REMOVED			
0	APPROVED FOR CONSTRUCTION			

REVISIONS

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	G MEADES		22/03/2018
DESIGNER	I BARNARD		22/03/2018
CHECKER	F HUGO		2018-05-08
DESIGN COORD.	R GOOSEN		2018-05-08
R&I ENG.	R HALIM		
LEAD DISC. ENG.	A GROBBELAAR		2018-05-25
AREA LEAD	R MASON		2018-05-30
ENG. MANAGER	R GOOSEN		2018-05-30
AREA MANAGER	D HENRELMAN		2018-05-31

DRAWING APPROVAL STATUS: Approved for Construction

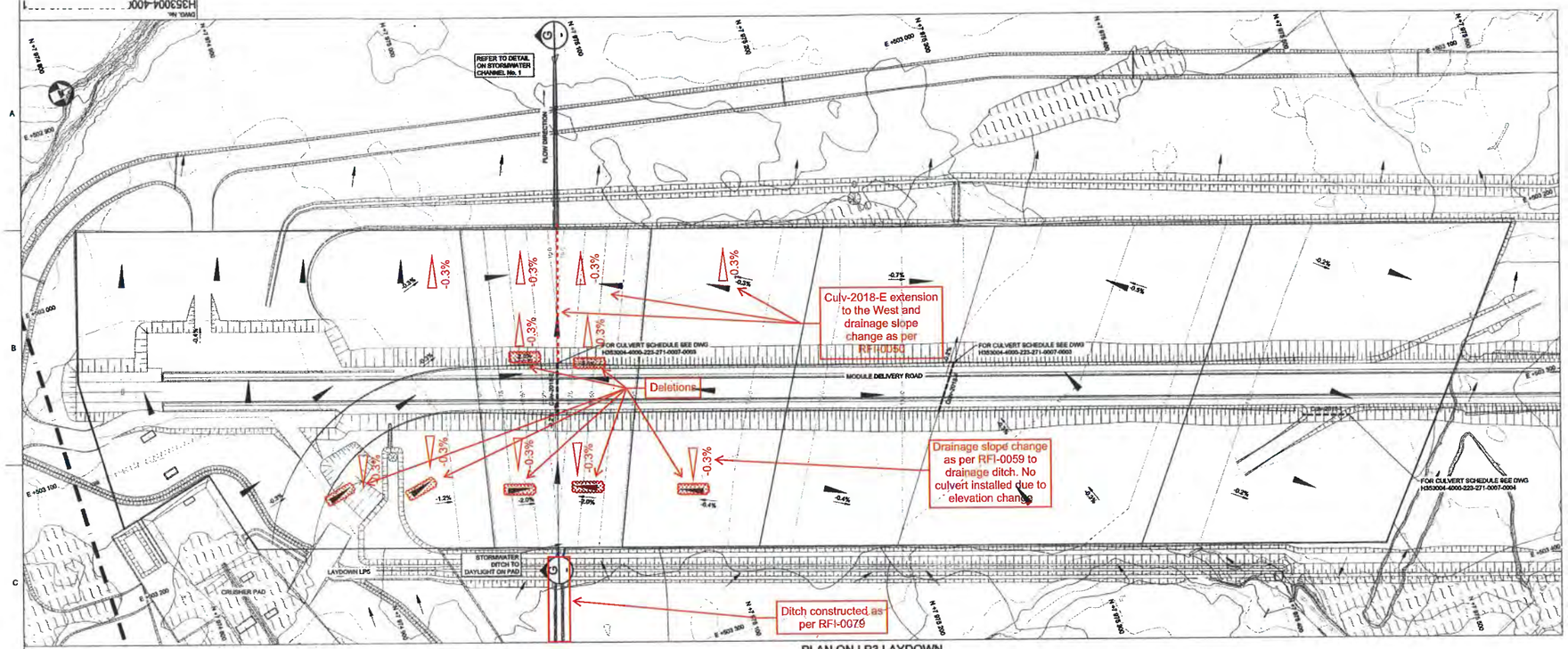
HATCH

Baffinland

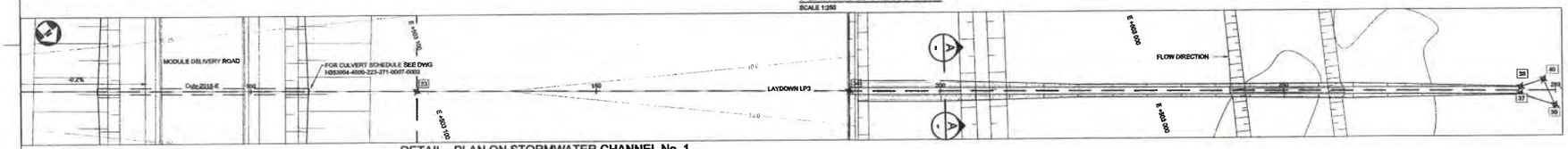
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP2
DRAINAGE PLAN

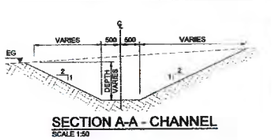
SCALE 1:500 OR AS NOTED
DWG. No. H353004-40000-228-272-0011-0001
REV 4
SHEET SIZE: E



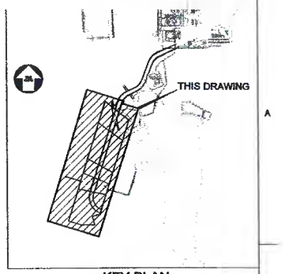
PLAN ON LP3 LAYDOWN
SCALE 1:250



DETAIL - PLAN ON STORMWATER CHANNEL No. 1
SCALE 1:250



SECTION A-A - CHANNEL
SCALE 1:50



KEY PLAN

NOTES:

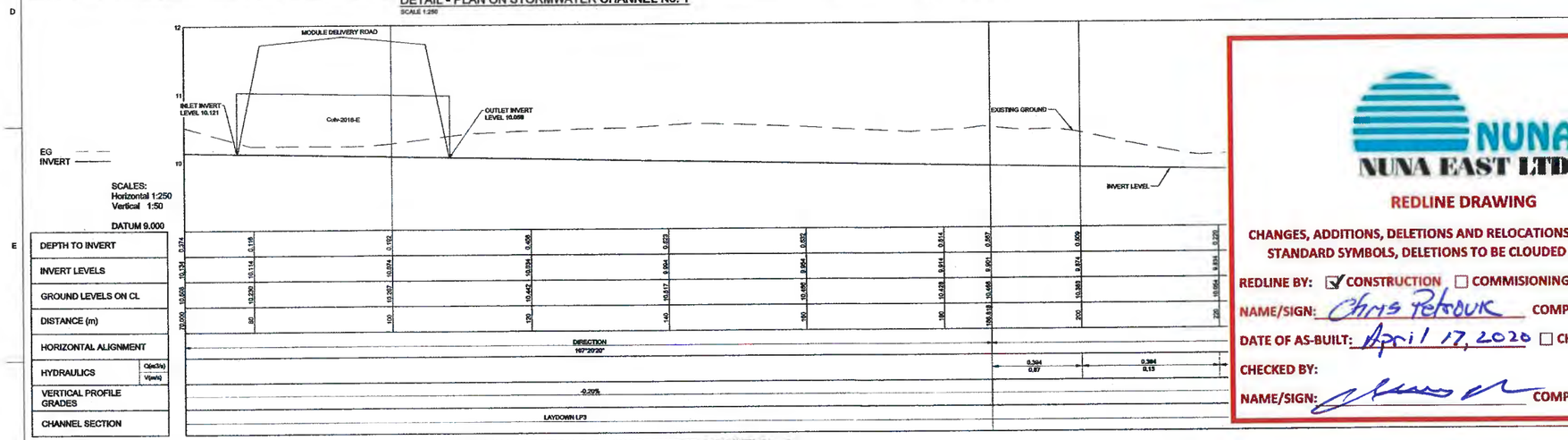
1. LIDAR SURVEY PROVIDED BY PHOTSAT (2016)
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. EG CONTOURS AND ELEVATIONS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. LAYDOWN CONTOURS AND ELEVATIONS ARE IN METERS. CONTOUR INTERVAL IS 0.25m
5. ALL DIMENSIONS ARE IN MILLIMETER UNLESS NOTED OTHERWISE.
6. FOR TYPICAL LAYERWORKS FOR FINISHED GRADING, REFER TO DETAIL 1 ON DWG No. H353004-00000-221-284-0003-0001
7. FOR ROAD LAYERWORKS REFER TO TYPICAL DETAILS SHOWN ON DWG. No. H353004-40000-221-273-0001-0001

LEGEND:

- 10.20 — CONTOUR ELEVATION
- 43 — SETTING OUT POINT NUMBER
- EG — EXISTING GROUND
- CH — CHAINAGE
- EL — ELEVATION
- OFF PAD FLOW DIRECTION
- ON PAD FLOW DIRECTION

LAYDOWN LP3 SETTING OUT COORDINATES

POINT	E	N	LEVEL
34	503041.498	7975062.620	9.901
37	502943.601	7975092.145	9.705
38	502948.503	7975091.190	9.709
39	502944.325	7975090.224	9.695
40	502944.802	7975091.124	9.899



LONGITUDINAL SECTION G-G - STORMWATER CHANNEL No. 1

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT
NAME/SIGN: Chris Petrouk COMPANY: Nuna.
DATE OF AS-BUILT: April 17, 2020 ☐ CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY: Nuna.

NUNA EAST LTD

PERMIT TO PRACTICE HATCH LTD.
Signature
Date
PERMIT NUMBER: P 013
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

H353004-00000-221-284-0002-0001	EARTHWORKS AND DRAINAGE DETAILS
H353004-40000-223-271-0007-0004	MODULE DELIVERY ROAD PLAN AND PROFILE SHEET 4 OF 4
H353004-40000-223-271-0007-0003	MODULE DELIVERY ROAD PLAN AND PROFILE SHEET 3 OF 4
H353004-00000-221-284-0001-0001	STANDARD DRAWING - TYPICAL CULVERT DETAIL
H353004-40000-221-271-0005-0001	LAYDOWN AREA LP3
H353004-00000-221-284-0008-0001	STANDARD DRAWINGS - TYPICAL PAD, DITCH AND BERM SECTIONS
H353004-40000-221-273-0001-0001	HAUL, PRIMARY AND SECONDARY ROADS - TYPICAL CROSS SECTIONS
H353004-00000-229-272-0001-0001	PORT SITE - BLOCK PLAN
DRAWING No.	DRAWING TITLE

REFERENCE DRAWINGS

Released for Use

Bradford Watkin QA/QC Reviewed

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	EDC STAMP REMOVED	KWM	FH	20/05/2018
0	APPROVED FOR CONSTRUCTION	NH	FH	17/04/2018

REVISIONS

HATCH

DRAFTSPERSON	H HERBST	NR	15/03/2018
DESIGNER	H HERBST	NR	15/03/2018
CHECKER	F HUGO		2018-09-14
DESIGN COORD.	R GOOBEN		2018-09-17
RESP. ENG.	R YHLM		2018-09-14
LEAD DISC. ENG.	A GROBBELAAR		2018-09-17
AREA LEAD	V LAVRIC		2018-09-17
ENG. MANAGER	D STANGER		2018-09-17
AREA MANAGER	T ATIBA		2018-09-17
ROLE	NAME	SIGNATURE	DATE

DRAWING APPROVAL STATUS: Approved for Construction

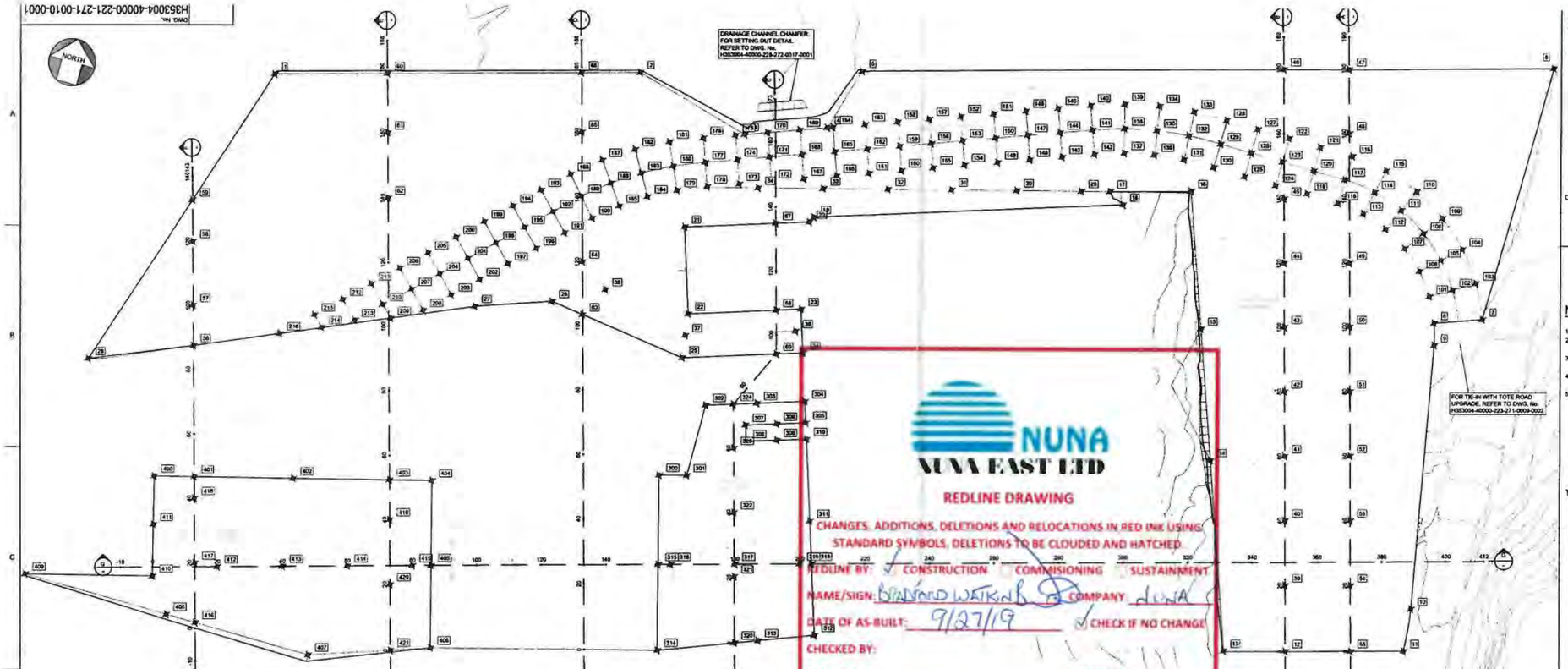
Baffinland

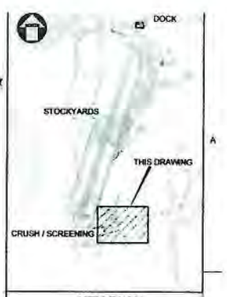
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
DRAINAGE PLAN

SCALE 1:1000 OR AS NOTED
DWG. No. H353004-40000-228-272-0012-0001
REV 1
SHEET SIZE: E

BORDERNAMES STAMES BFILES





KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2018)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. REFER TO DETAIL 1 ON DRAWING No: H353004-40000-221-294-0002-0001 FOR TYPICAL LAYER WORKS DETAILS.

LEGEND:

10.20 CONTOUR ELEVATION

43 SETTING OUT POINT NUMBER

NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ✓ CONSTRUCTION COMMISIONING SUSTAINMENT

NAME/SIGN: DIANNA WATKINS COMPANY: NUNA

DATE OF AS-BUILT: 9/27/19 ✓ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: _____ COMPANY: _____

PLAN

SCALE 1:500

LAYDOWN LP5 SUB-AREA 1 SETTING OUT COORDINATES

POINT	E	N	LEVEL
1	503188.917	7974939.968	11.400
2	503307.432	7974971.318	11.500
3	503343.613	7974961.806	13.174
4	503387.430	7974970.758	14.235
5	503373.040	7974990.273	13.900
6	503578.537	7975049.845	22.382
7	503578.747	7974909.068	24.351
8	503564.623	7974963.895	24.350
9	503668.522	7974967.210	24.758
10	503581.879	7974878.988	29.400
11	503583.182	7974884.011	30.000
12	503648.134	7974854.000	24.905
13	503529.784	7974846.053	23.490
14	503508.687	7974904.090	21.056
15	503495.686	7974942.410	20.493
16	503480.944	7974962.743	18.000
17	503458.956	7974975.764	16.723
18	503461.923	7974973.915	16.306
19	505371.033	7974943.215	14.464
20	503370.101	7974941.368	13.500
21	503333.473	7974929.382	13.500
22	503341.844	7974903.541	13.500
23	503375.210	7974914.558	13.500
24	503379.465	7974901.529	15.075
25	503343.849	7974889.884	13.250
26	503300.304	7974895.783	13.250
27	503277.858	7974887.800	12.300
28	503187.524	7974839.634	11.650
29	503448.380	7974973.451	15.500
30	503429.111	7974968.204	15.000
31	503439.851	7974962.956	14.500
32	503360.812	7974957.708	14.000
33	503371.343	7974952.461	13.500
34	503352.113	7974947.213	13.000

LAYDOWN LP5 SUB-AREA 1 SETTING OUT COORDINATES

POINT	E	N	LEVEL
36	503375.438	7974907.426	13.500
37	503342.885	7974896.752	12.795
38	503315.247	7974903.880	12.500
39	503542.585	7974873.213	24.165
40	503637.026	7974892.426	24.004
41	503531.472	7974911.640	23.767
42	503525.823	7974930.856	23.644
43	503520.373	7974950.069	23.209
44	503514.823	7974969.284	21.809
45	503509.273	7974988.498	20.520
46	503498.306	7975026.483	19.056
47	503517.520	7975032.015	19.855
48	503522.958	7975013.194	21.017
49	503514.081	7974974.766	22.705
50	503539.612	7974955.552	23.778
51	503545.163	7974936.337	24.739
52	503560.715	7974917.123	25.302
53	503558.266	7974897.909	25.761
54	503581.817	7974878.695	26.541
55	503567.368	7974859.482	27.702
56	503197.784	7974852.372	11.811
57	503194.277	7974864.510	11.724
58	503188.725	7974883.724	11.587
59	503185.169	7974898.027	11.509
60	503232.161	7974949.571	13.461
61	503237.198	7974932.137	11.800
62	503242.750	7974917.923	11.937
63	503310.558	7974894.374	13.250
64	503305.964	7974910.279	12.607
65	503294.864	7974948.708	11.988
66	503289.821	7974966.230	11.566
67	503360.336	7974938.187	13.500
68	503367.884	7974912.125	13.500
69	503371.661	7974898.961	14.675

LAYDOWN LP5 SUB-AREA 1 THROUGH ROAD SETTING OUT COORDINATES

POINT	E	N	LEVEL
101	503580.912	7974871.516	23.847
102	503567.320	7974875.451	23.808
103	503573.728	7974879.385	23.870
104	503586.758	7974888.507	23.388
105	503591.273	7974893.392	23.375
106	503605.788	7974978.277	23.359
107	503649.372	7974983.826	22.885
108	503563.743	7974989.945	22.804
109	503568.100	7974998.573	22.982
110	503548.141	7975001.751	22.365
111	503545.081	7974991.364	22.371
112	503542.005	7974986.022	22.364
113	503533.951	7974990.870	21.859
114	503538.598	7974998.026	21.808
115	503537.252	7975005.345	21.853
116	503525.837	7975008.790	21.370
117	503525.884	7974999.182	21.368
118	503525.531	7974991.685	21.371
119	503515.873	7974991.927	20.900
120	503515.868	7974999.204	20.900
121	503516.683	7975006.704	20.900
122	503505.898	7975006.897	20.432
123	503505.791	7974999.197	20.432
124	503505.673	7974991.697	20.431
125	503495.873	7974991.690	19.961
126	503495.897	7974999.190	19.961
127	503495.882	7975006.690	19.961
128	503485.695	7975006.708	19.493
129	503485.844	7974999.183	19.500
130	503485.873	7974991.683	19.492

LAYDOWN LP5 SUB-AREA 1 THROUGH ROAD SETTING OUT COORDINATES

POINT	E	N	LEVEL
131	503476.188	7974991.461	19.028
132	503475.888	7974998.944	19.028
133	503475.181	7975006.428	19.028
134	503464.516	7975005.185	18.550
135	503468.765	7974997.709	18.529
136	503467.008	7974990.384	18.552
137	503457.902	7974988.319	18.094
138	503458.008	7974995.616	18.079
139	503454.031	7975002.826	18.034
140	503443.801	7974999.480	17.843
141	503445.529	7974992.488	17.843
142	503449.167	7974985.447	17.843
143	503439.788	7974981.882	17.217
144	503437.138	7974988.936	17.224
145	503434.530	7974995.971	17.228
146	503425.169	7974992.453	16.809
147	503427.791	7974985.427	16.808
148	503430.427	7974978.384	16.800
149	503421.089	7974974.845	16.383
150	503418.415	7974981.903	16.380
151	503415.809	7974988.936	16.381
152	503408.447	7974985.418	15.974
153	503409.085	7974978.397	15.974
154	503411.692	7974971.365	15.973
155	503402.323	7974967.868	15.558
156	503399.883	7974974.868	15.558
157	503397.086	7974981.800	15.557
158	503387.725	7974978.383	15.140
159	503389.364	7974971.362	15.140
160	503392.970	7974964.329	15.138

LAYDOWN LP5 SUB-AREA 1 THROUGH ROAD SETTING OUT COORDINATES

POINT	E	N	LEVEL
161	503343.823	7974980.776	14.714
162	503380.894	7974987.829	14.722
163	503378.348	7974974.858	14.722
164	503388.884	7974971.047	14.306
165	503371.829	7974964.321	14.306
166	503374.349	7974957.294	14.304
167	503384.881	7974953.740	13.880
168	503382.272	7974960.786	13.888
169	503369.827	7974957.823	13.888
170	503360.282	7974944.312	13.471
171	503362.830	7974957.291	13.471
172	503355.527	7974950.259	13.470
173	503346.158	7974946.792	13.053
174	503343.550	7974953.758	13.053
175	503340.921	7974960.794	13.054
176	503331.580	7974957.276	12.637
177	503334.198	7974950.258	12.637
178	503338.837	7974943.235	12.637
179	503328.143	7974939.803	12.511
180	503324.945	7974946.429	12.509
181	503321.838	7974953.256	12.508
182	503312.293	7974949.163	12.438
183	503316.137	7974941.706	12.453
184	503318.870	7974936.282	12.455
185	503312.313	7974950.103	12.396
186	503307.854	7974936.143	12.394
187	503303.355	7974942.183	12.358
188	503296.089	7974935.342	12.322
189	503300.128	7974929.779	12.343
190	503305.187	7974924.217	12.343

LAYDOWN LP5 SUB-AREA 2 SETTING OUT COORDINATES

POINT	E	N	LEVEL
300	503347.006	7974852.800	13.250
301	503356.215	7974858.121	13.250
302	503354.827	7974877.710	13.697
303	503370.043	7974882.965	14.570
304	503364.121	7974887.241	16.382
305	503386.179	7974886.977	15.587
306	503377.885	7974878.168	15.642
307	503368.481	7974875.179	15.493
308	503370.040	7974870.420	15.522
309	503379.061	7974873.354	16.650
310	503387.746	7974876.178	15.587
311	503385.683	7974881.950	15.587
312	503405.617	7974818.807	15.587
313	503393.378	7974812.305	14.560
314	503361.178	7974800.875	12.712
315	503364.375	7974826.292	12.974
316	503357.942	7974827.321	12.975
317	503377.158	7974832.873	14.140
318	503395.797	7974838.414	15.587
319	503396.370	7974838.424	15.365
320	503383.565	7974809.982	14.129
321	503377.958	7974829.120	14.125
322	503372.480	7974848.010	14.136
323	503366.907	7974867.303	15.044
324	503363.123	7974880.392	14.170

LAYDOWN LP5 SUB-AREA 3 SETTING OUT COORDINATES

POINT	E	N	LEVEL
400	503167.029	7974810.118	11.750
401	503209.074	7974813.304	11.830
402	503238.422	7974821.071	12.025
403	503267.095	7974828.680	12.215
404	503279.816	7974832.027	12.300
405	503286.719	7974806.744	12.562
406	503293.351	7974782.458	12.814
407	503257.807	7974773.181	12.814
408	503212.251	7974770.170	12.382
409	503166.886	7974770.150	11.750
410	503264.939	7974780.227	11.750
411	503200.855	7974795.550	11.750
412	503223.443	7974768.482	12.190
413	503242.557	7974764.614	12.386
414	503261.671	7974759.585	12.508
415	503281.085	7974605.118	12.569
416	503221.536	7974770.172	12.391
417	503216.486	7974787.655	12.037
418	503210.934	7974806.663	11.924
419	503276.506	7974816.852	12.388
420	503276.058	7974797.638	12.814
421	503281.609	7974778.424	12.814

PERMIT TO PRACTICE
HATCH LTD
Signature: _____
Date: _____
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

REFERENCE DRAWINGS	
H353004-40000-221-273-0003-0001	CRUSHING AND SCREENING PAD CROSS SECTIONS
H353004-40000-221-273-0002-0001	CRUSHING FEED STOCKPILE PAD CROSS SECTIONS
H353004-40000-223-271-0009-0002	TOTE ROAD UPGRADE PLAN AND PROFILE SHEET 2 OF 3
H353004-40000-228-272-0017-0001	LAYDOWN LP 5 - DRAINAGE PLAN
H353004-40000-221-271-0010-0002	LAYDOWN LP 5 - PROFILES
H353004-40000-221-271-0005-0001	LAYDOWN AREA LP3
H353004-40000-221-271-0008-0001	LAYDOWN AREA W10B
H353004-40000-221-271-0006-0001	LAYDOWN AREA LP6 - LAYOUT AND PROFILES
DRAWING No.	DRAWING TITLE

Released for Use

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHKD	DATE
1	EDC STAMP AND DUMPER MODULE STORAGE PAD REMOVED	KwM	FH	17/08/2018
0	FOR CONSTRUCTION	HH	IS	16/04/2018

REVISIONS

DRAFTSPERSON	H HERBST	MR	16/04/2018	
DESIGNER	F HUGO	HR	16/04/2018	
CHECKER	I BARNARD		2018-05-14	
DESIGN COORD	R GOOSEN		2018-05-14	
RESP. ENG.	R HAUM		2018-05-14	
LEAD DISC. ENG	A GROBBELAAR		2018-05-14	
AREA LEAD	V LAVRIC		2018-05-14	
ENG. MANAGER	D STANGER		2018-05-14	
AREA MANAGER	T ATIBA		17-05-18	
DRAWING APPROVAL STATUS	Approved for Construction			

HATCH

Baffinland

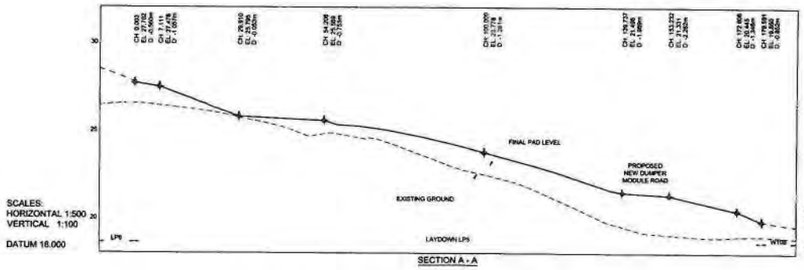
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP5
LAYOUT PLAN

SCALE	DWG No	REV
1:500 OR AS NOTED	H353004-40000-221-271-0010-0001	1

SHEET SIZE: ANSI D

BASEMARKS: STAKES & LICES



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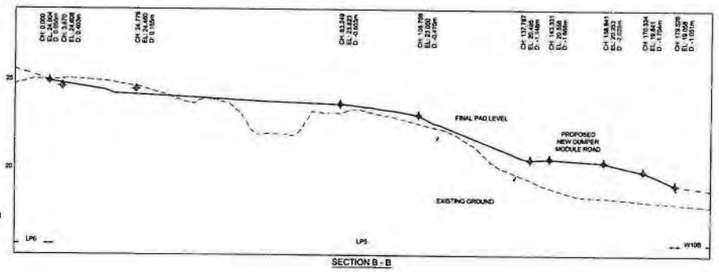
VERTICAL 1:100

DATUM 18.000

SECTION A - A



SCALES:
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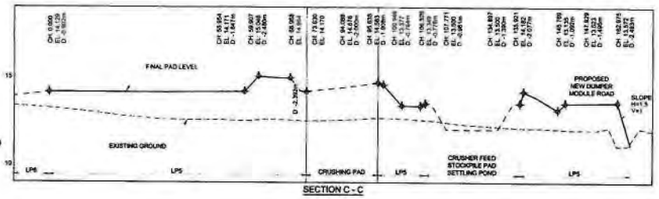
VERTICAL 1:100

DATUM 15.000

SECTION B - B



SCALES:
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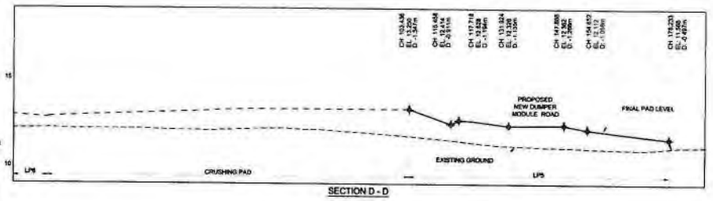
VERTICAL 1:100

DATUM 9.000

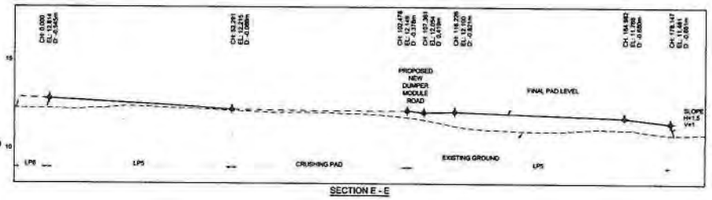
SECTION C - C



SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 9.000

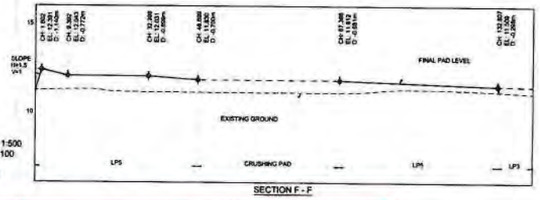
SECTION D - D



SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 8.000

SECTION E - E

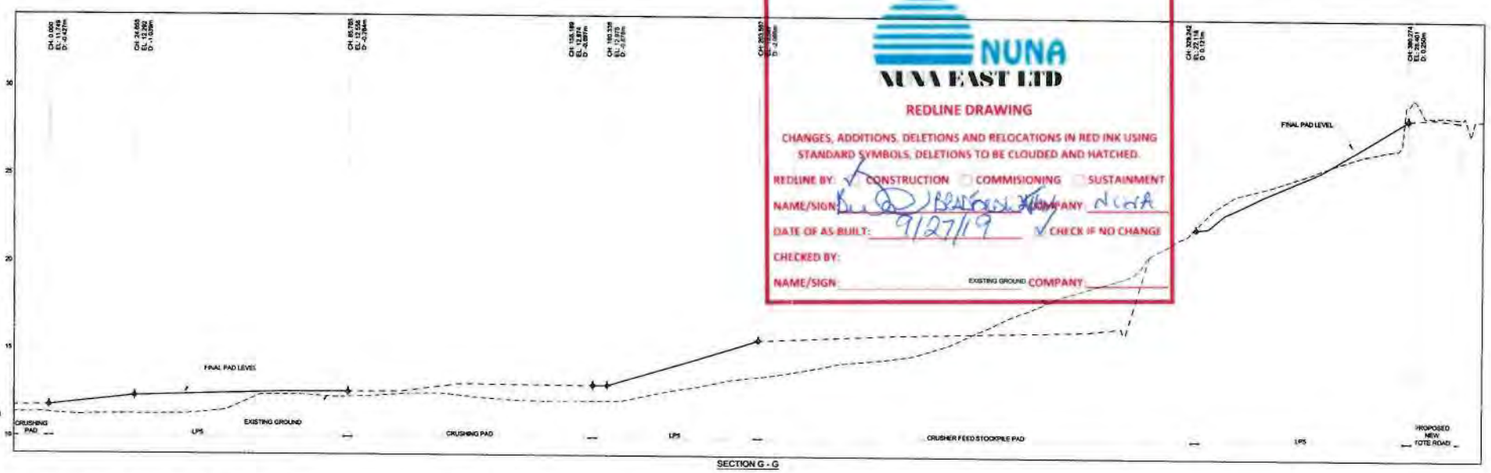


SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 8.000

SECTION F - F

LEGEND:
CH = CHAINAGE
EL = ELEVATION
D = DEPTH



SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 9.000

SECTION G - G

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ✓ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: [illegible] COMPANY: NUNA

DATE OF AS-BUILT: 9/27/19 ✓ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

PERMIT TO PRACTICE
HATCH LTD.
Signature:
Date: 2019-10-11
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

DRAWING No.	DRAWING TITLE
H353004-40000-221-273-0002-0001	CRUSHING FEED STOCKPILE PAD CROSS SECTIONS
H353004-40000-22	272-0002-0001, CRUSHING FEED STOCKPILE PAD LAYOUT PLAN
H353004-40000-221-271-0010-0001	LAYDOWN AREA LP5 - LAYOUT
H353004-40000-221-271-0005-0001	LAYDOWN AREA LP3
H353004-40000-221-271-0006-0001	LAYDOWN AREA W100
H353004-40000-221-271-0009-0001	LAYDOWN AREA LP8 - LAYOUT AND SECTIONS

REFERENCE DRAWINGS

Released for Use

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	EDC STAMP REMOVED	RvdM	FH	17/05/2018
2	FOR CONSTRUCTION	NH	FH	16/04/2018

REVISIONS

REG. PROFESSIONAL

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	H HERBST	NR	16/04/2018
DESIGNER	F DAVID	NR	16/04/2018
CHECKER	T BARNARD		
DESIGN COORD.	R GOOSEN		2019-09-13
RESP. ENG.	R VALM		
LEAD DISC. ENG.	A GROBBELAAR		
AREA LEAD	V LAVRIC		
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		

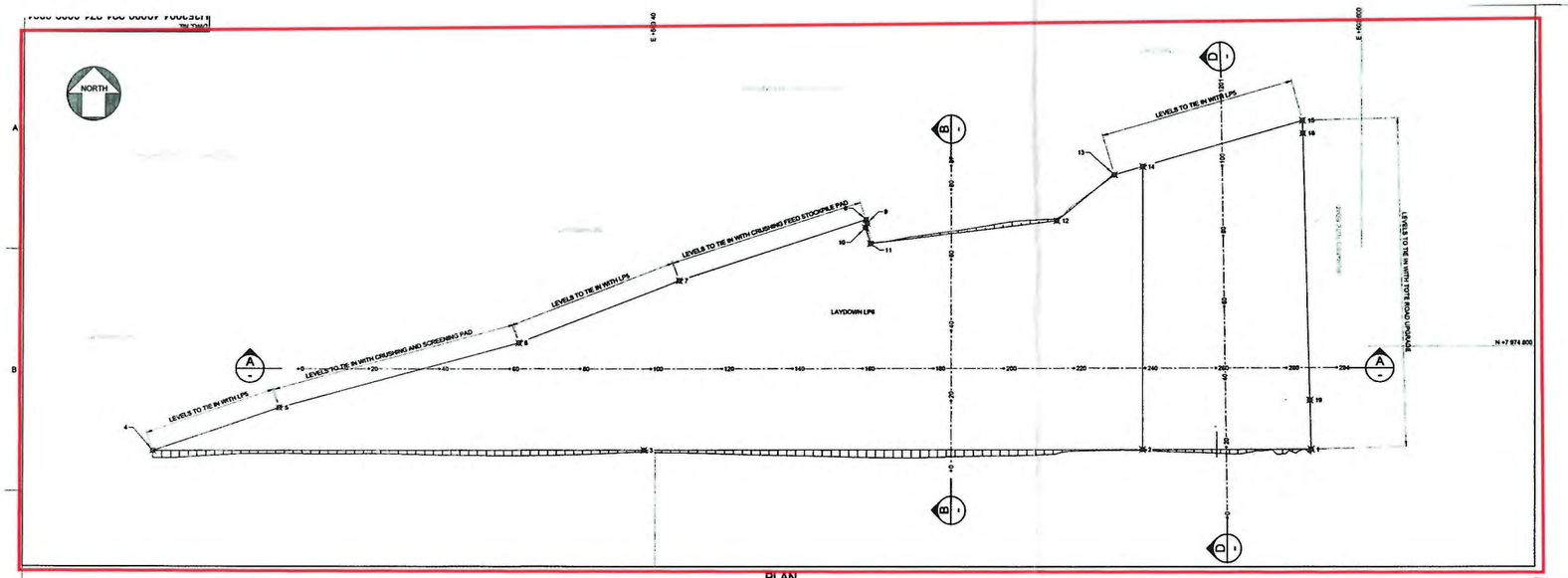
DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP5
LONGITUDINAL PROFILES

SCALE: 1:500
DWG No: H353004-40000-221-271-0010-0002
REV: 1
SHEET SIZE: E



PLAN
SCALE 1:500

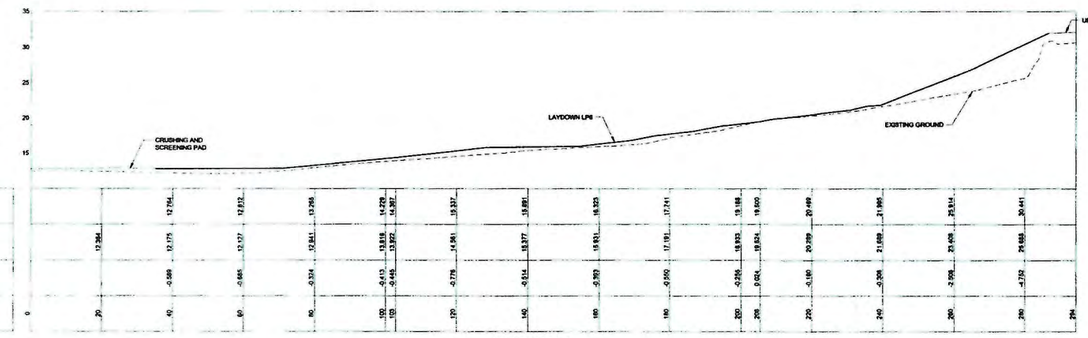
KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016)
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. REFER TO DETAIL 1 ON DRAWING No. H353004-00000-221-294-0002-0001 FOR TYPICAL LAYER WORKS DETAILS.

LEGEND:

	CONTOUR
19	SETTING OUT POINT
	EXISTING GROUND



SCALES:
HORIZONTAL 1:500
VERTICAL 1:250

DATUM 10.000

CENTRE LINE (CL)			12.754		12.832		13.256		14.228	14.367	15.337		15.891		16.933		17.741		18.188	19.600	20.449		21.995		25.814		30.441
GROUND LEVELS ON CL	12.394		12.175		12.127		12.841		13.818	13.922	14.961		15.977		16.943		17.781		18.193	19.624	20.359		21.689		25.439		29.689
DEPTH OF FILL			-0.580		-0.695		-0.374		-0.413	-0.445	-0.376		-0.914		-0.993		-0.960		-0.995	-0.024	-0.091		-0.306		-0.375		-0.752
DISTANCE (m)	0	20		40		60		80		100	120		140		160		180		200	220	240		260		280		294

SECTION A-A

SCALES:
HORIZONTAL 1:500
VERTICAL 1:250

DATUM 15.000

CENTRE LINE (CL)		18.067		18.003		18.052	
GROUND LEVELS ON CL	18.929	17.168	17.995	17.379	18.952	18.299	
DEPTH OF FILL		-0.919		-0.106	0.873		
DISTANCE (m)	0	20	40		60	80	87

SECTION B-B

SCALES:
HORIZONTAL 1:500
VERTICAL 1:250

DATUM 20.000

CENTRE LINE (CL)		23.533	25.378	25.889	27.945	28.886	29.473	29.999
GROUND LEVELS ON CL	22.452	23.643	23.540	24.316	24.922	25.887	28.886	29.051
DEPTH OF FILL		-0.849	-1.838	-1.543	-3.023	-3.000	-0.588	-0.948
DISTANCE (m)	0	20	40	60	80	100	120	130

SECTION D-D

LAYDOWN LP6
SETTING OUT CO-ORDINATES

POINT	E	N	LEVEL
1	503 586.775	7 974 770.628	31.490
2	503 537.972	7 974 770.591	21.225
3	503 306.780	7 974 770.370	13.233
4	503 257.607	7 974 770.191	12.814
5	503 293.350	7 974 782.457	12.814
6	503 361.178	7 974 808.975	12.712
7	503 408.917	7 974 818.057	15.587
8	503 459.529	7 974 835.851	18.088
9	503 459.876	7 974 834.891	15.888
10	503 468.359	7 974 833.882	15.673
11	503 480.880	7 974 829.093	15.820
12	503 513.717	7 974 835.825	21.000
13	503 529.868	7 974 848.725	23.502
14	503 537.880	7 974 851.019	23.411
15	503 583.162	7 974 864.811	29.124
16	503 583.262	7 974 860.413	30.250
19	503 585.383	7 974 784.833	32.250

Cut/Fill for Laydown Area LP6 to be as per E-mail correspondence dated 10/30/18.

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: BRAYFORD WATKINS COMPANY: NUNA

DATE OF AS-BUILT: 10/1/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY: Hatch

PERMIT TO PRACTICE HATCH LTD. Signature Date YY M M D PERMIT NUMBER: P 512 The Association of Professional Engineers, Geologists and Geophysicists of (NWT/NU)

H353004-00000-221-294-0002-0001	STANDARD DRAWING - EARTHWORKS & DRAINAGE DETAILS
H353004-40000-223-271-0009-0002	TOTE ROAD UPGRADE - PLAN AND PROFILE SHEET 2 OF 3
H353004-40000-221-272-0003-0001	CRUSHING AND SCREENING PAD - LAYOUT PLAN
H353004-40000-221-272-0002-0001	CRUSHING FEED STOCKPILE PAD - LAYOUT PLAN
H353004-40000-221-271-0010-0001	LAYDOWN AREA LP5 - PLAN AND PROFILES
H353004-40000-228-272-0016-0001	LAYDOWN AREA LP5 - DRAINAGE PLAN
DRAWING No.	DRAWING TITLE

REFERENCE DRAWINGS

Released for Use

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	EDC STAMP AND DUMPER MODULE STORAGE PAD REMOVED	KvdM	FH	16/05/2018
0	APPROVED FOR CONSTRUCTION	GPM	IS	16/04/2018

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	F HUGO		NR 04/04/2018
DESIGNER	F HUGO		NR 04/04/2018
CHECKER	I BARNARD		2018-09-14
DESIGN COORD.	R GOOSEN		2018-09-14
RESP. ENG.	R HAJMI		2018-09-14
LEAD DISC. ENG.	A GROBBELAAR		2018-09-14
AREA LEAD	V LAVRIC		2018-09-14
ENG. MANAGER	D STANGER		2018-09-14
AREA MANAGER	T ATTIA		2018-09-12

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

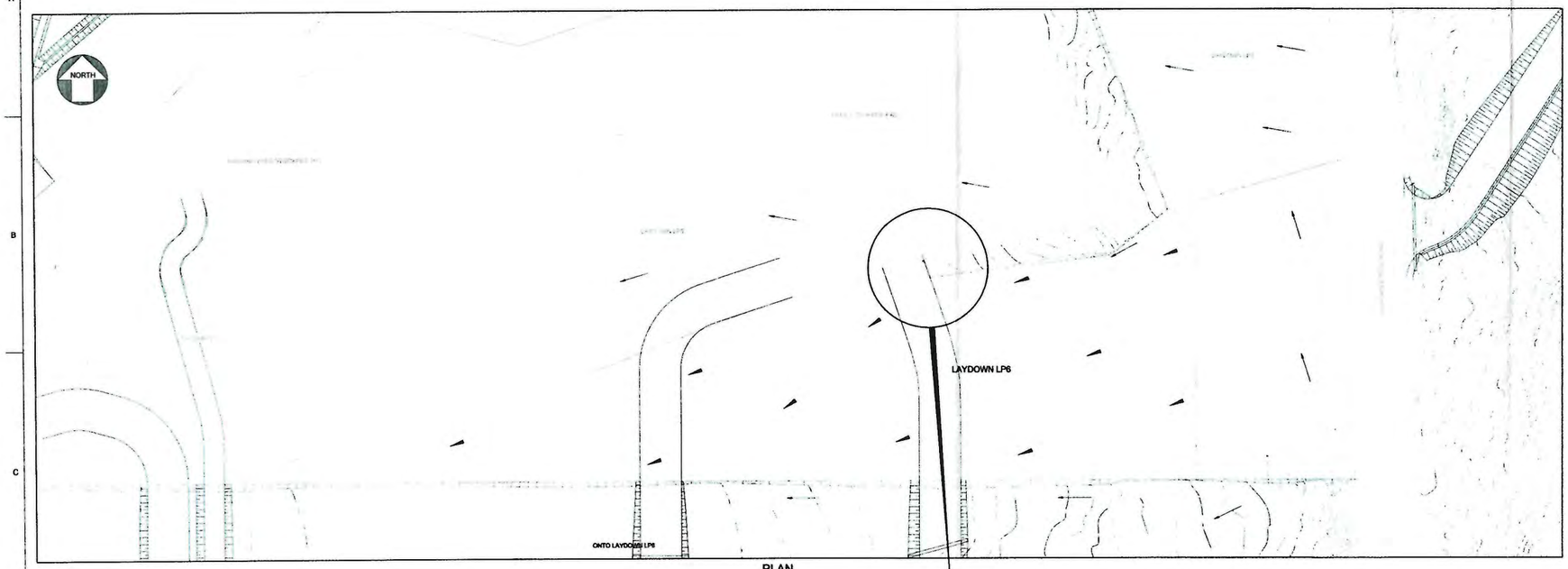
PORT SITE
LAYDOWN AREA LP6
LAYOUT AND PROFILES

SCALE	DWG. No.	REV
1:500 UNLESS OTHERWISE NOTED	H353004-40000-221-271-0009-0001	1

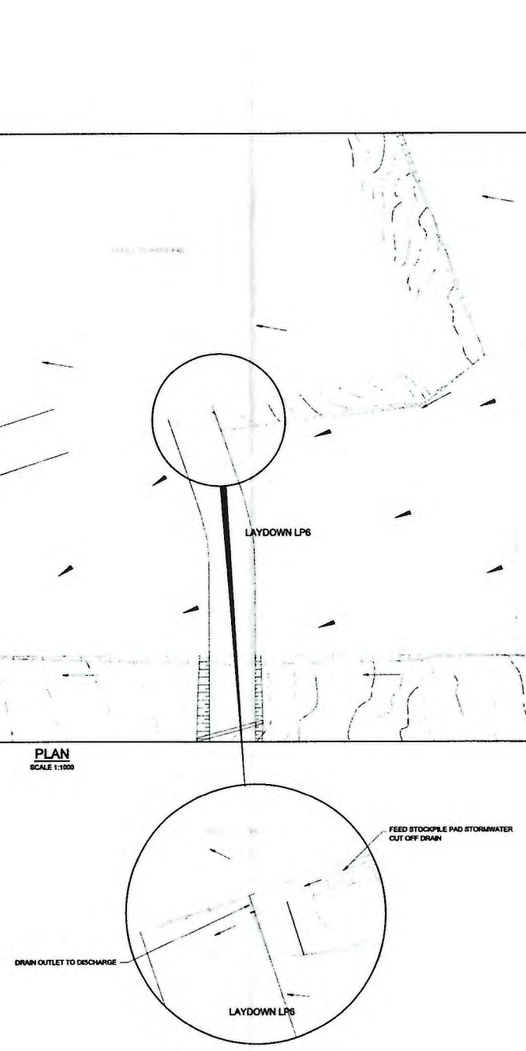
SHEET SIZE: ANSI D

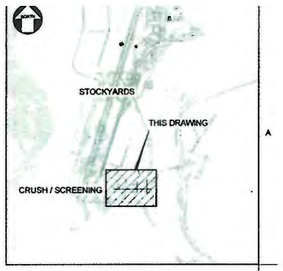
BLUEBEAM'S STAMPS

DWG. No. H353004-40000-228-272-0016-0001



PLAN
SCALE 1:1000





KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.

LEGEND:

—26.5—	CONTOUR
	OFF PAD FLOW DIRECTION
	ON PAD FLOW DIRECTION

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: BRADFORD CATKE COMPANY: NUNA

DATE OF AS-BUILT: 10/1/19 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: _____ COMPANY: _____

PERMIT TO PRACTICE
HATCH LTD.
Signature: _____
Date: _____
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

Released for Use

REG. PROFESSIONAL

FOR CONSTRUCTION

THE ENGINEERING PROPOSALS OF HATCH LTD. THROUGH THIS DRAWING ARE SUBJECT TO THE TERMS AND CONDITIONS OF THE AGREEMENT BETWEEN HATCH AND THE CLIENT, INCLUDING ANY LIMITATIONS ON LIABILITY EXPRESSED THEREIN. THIS DRAWING AND ITS CONTENTS REMAIN THE INTELLECTUAL PROPERTY OF HATCH SUBJECT TO CLIENT'S ROYALTY-FREE, ENGINEERING, INSPECTION, AND CONSTRUCTION LICENSE TO USE AND REPRODUCE THE DRAWING FOR THE PURPOSES CONTEMPLATED UNDER THE AGREEMENT. ANY USE, REPRODUCTION, ADAPTATION, DISTRIBUTION OR REVISION OF THIS DRAWING BY THE CLIENT, THIS DRAWING FOR THE PURPOSES CONTEMPLATED UNDER THE AGREEMENT, OR BY PERSONS OR CORPORATIONS, FOR ANY OTHER PURPOSE MAY BE MADE AT CLIENT'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO HATCH.

No.	DESCRIPTION	BY	CHK'D	DATE
1	EDC STAMP REMOVED, DUMPER AND INDEXER STORAGE PAD REMOVED	KwM	FH	20/08/2018
0	APPROVED FOR CONSTRUCTION	BHB	FH	16/04/2018

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	I BARNARD		NR 16/04/2018
DESIGNER	I BARNARD		NR 16/04/2018
CHECKER	F HUGO		2018-09-14
DESIGN COORD.	R GOOSEN		2018-09-14
RESP. ENG.	R HALIM		2018-09-14
LEAD DISC. ENG.	A GROBBELAAR		2018-09-14
AREA LEAD	V LAVRIC		2018-09-17
ENG. MANAGER	D STANGER		2018-09-19
AREA MANAGER	T ATIBA		19-09-19

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

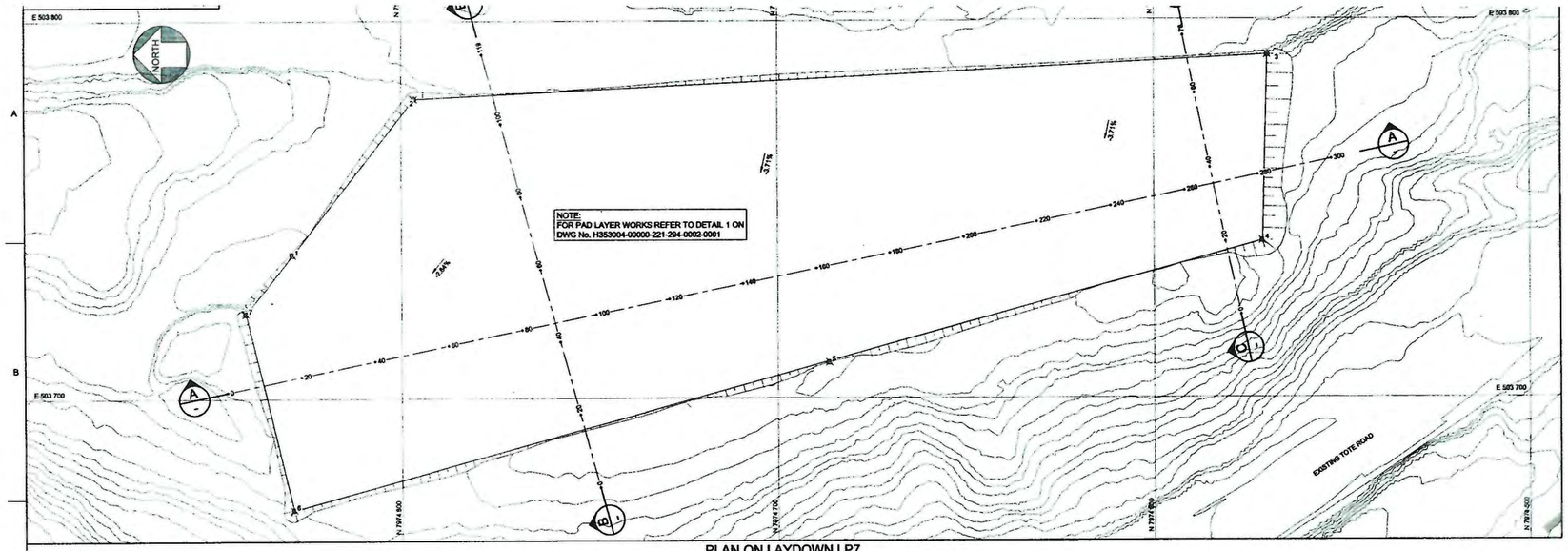
PORT SITE
LAYDOWN AREA LP6
DRAINAGE PLAN

DRAWING No.	DRAWING TITLE
H353004-40000-221-271-0009-0001	LAYDOWN AREA LP6 - LAYOUT AND PROFILES

REFERENCE DRAWINGS

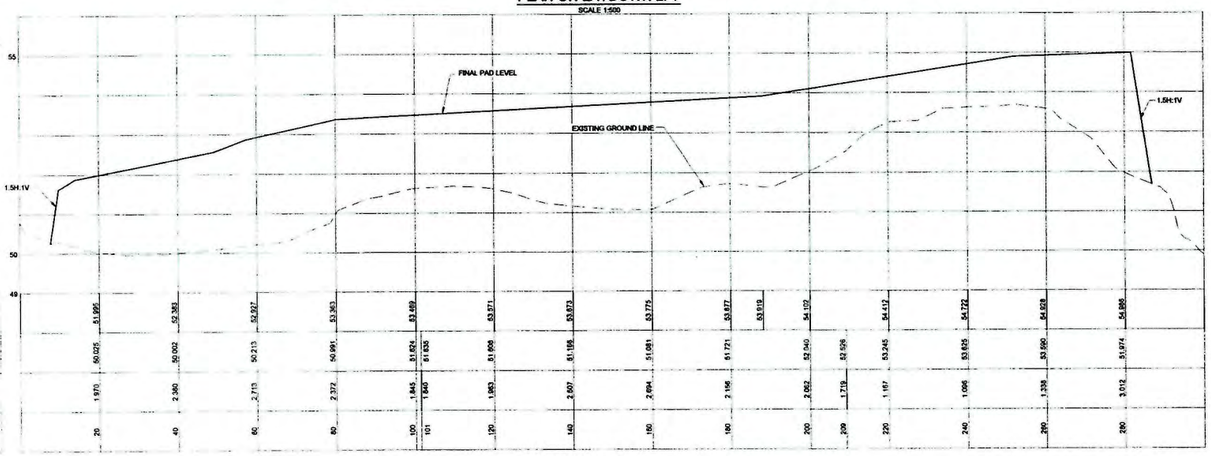
SCALE 1:1,000 OR AS NOTED | DWG. No. H353004-40000-228-272-0016-0001 | REV 1 | SHEET SIZE: E

SUBDOMAINS: STAGES
BOATS:
DOCS:



PLAN ON LAYDOWN LP7

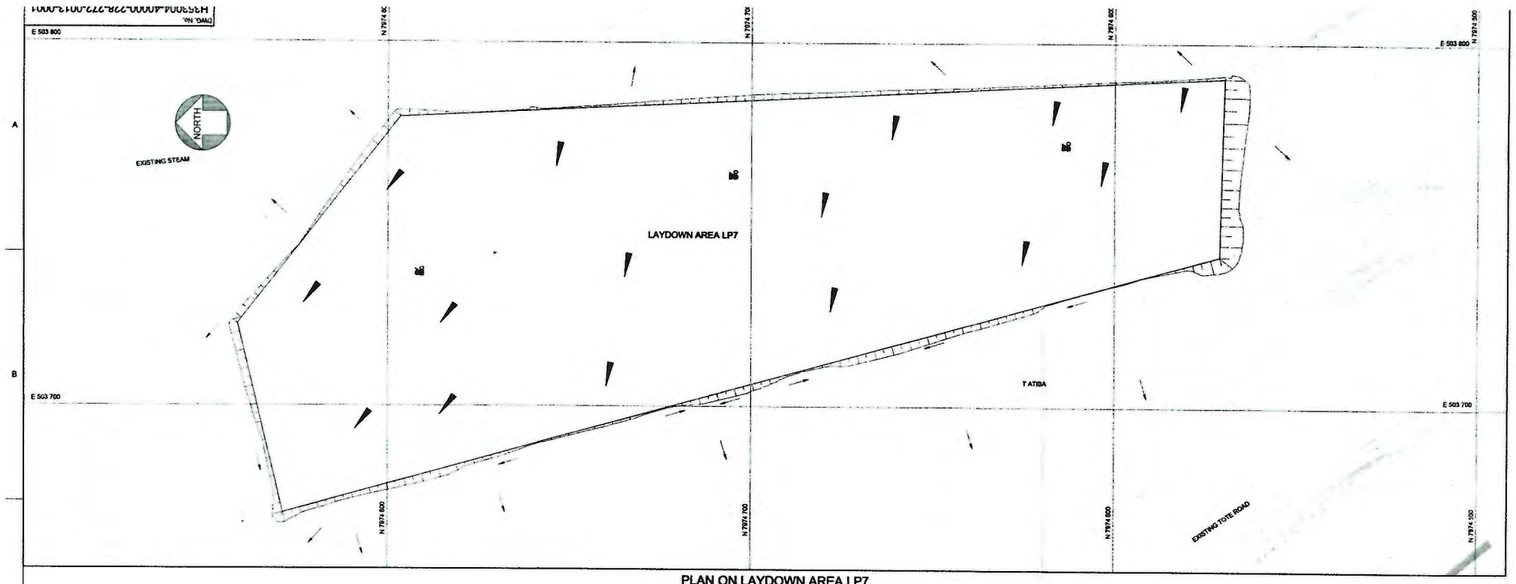
SCALE 1:500



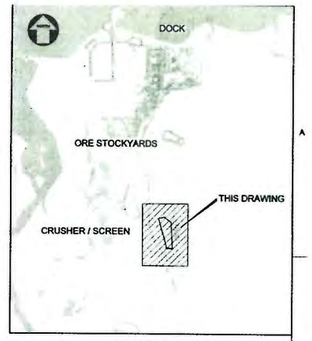
SCALES:
HORIZONTAL 1:500
VERTICAL 1:50

DATUM 49.000

| | | |



PLAN ON LAYDOWN AREA LP7
SCALE 1:500



KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS, CONTOUR INTERVAL IS 0.5m
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.

LEGEND:

- OFF PAD FLOW DIRECTION
- ON PAD FLOW DIRECTION

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: Bradford Watkin COMPANY: Nuna East

DATE OF AS-BUILT: April 7, 2019 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

DRAWING No.	DRAWING TITLE
H353004-00000-221-294-0002-0001	STANDARD DRAWING - EARTHWORKS AND DRAINAGE DETAILS
H353004-40000-221-271-0006-0001	LAYDOWN AREA LP7 - LAYOUT AND SECTIONS

REFERENCE DRAWINGS

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	EDC STAMP REMOVED	KwSM	FH	20/08/2018
0	APPROVED FOR CONSTRUCTION	GPM	FH	05/04/2018

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	G MEADES	NR	22/03/2018
DESIGNER	I BARNARD	NR	22/03/2018
CHECKER	F HUGO		2018-09-14
DESIGN COORD.	R GOOSEN		2018-09-14
RESP. ENG.	R HALIM		2018-09-14
LEAD DISC. ENG.	A GROBBELAAR		2018-09-14
AREA LEAD	V LAVRIC		2018-09-14
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

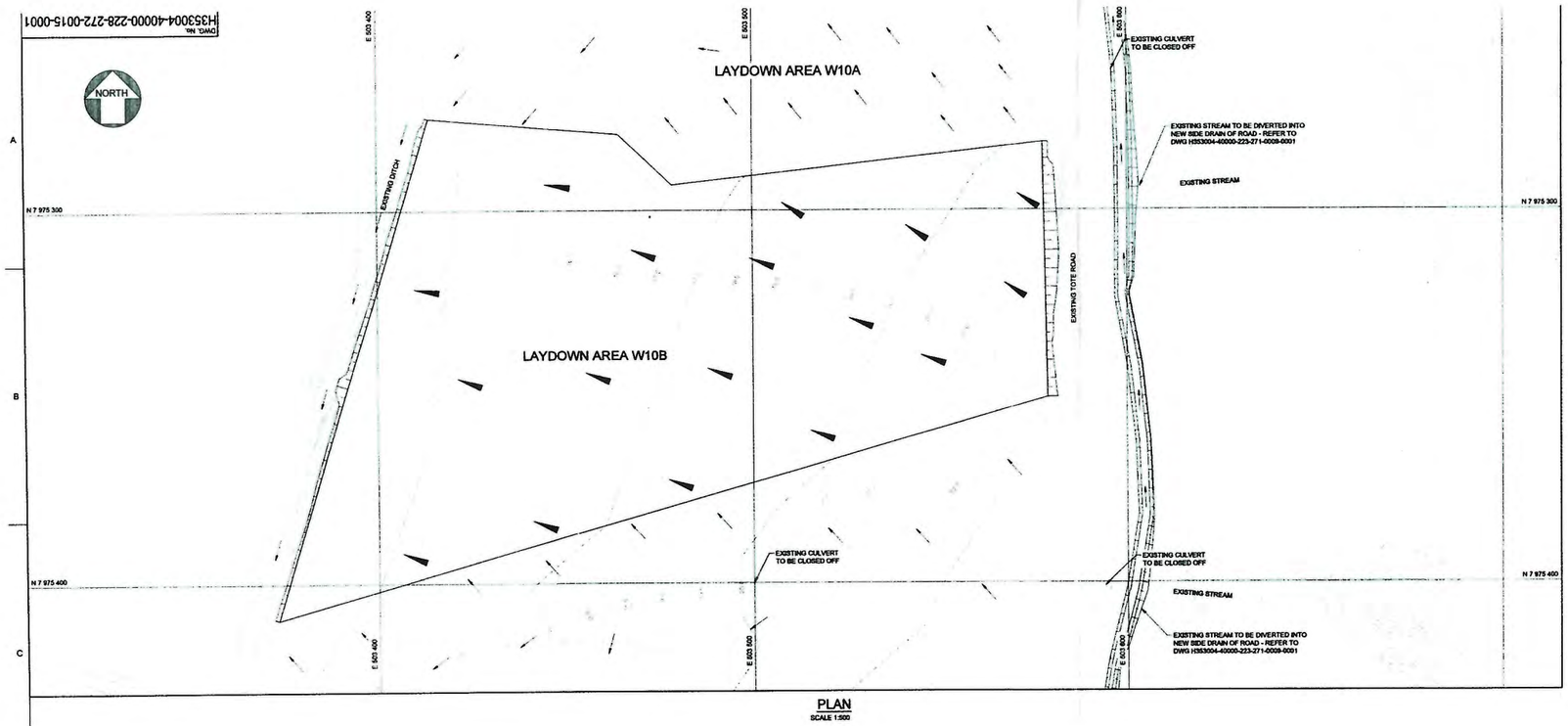
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP7
DRAINAGE PLAN

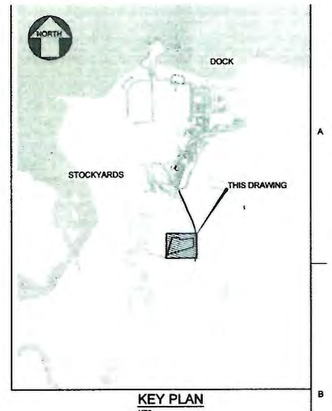
SCALE 1:500 OR AS NOTED | DWG. No. H353004-40000-228-272-0013-0001 | REV 1

SHEET SIZE: E

DWG. No. H353004-40000-228-272-0015-0001



PLAN
SCALE 1:500



KEY PLAN
NTS

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.

LEGEND:

- OFF PAD FLOW DIRECTION
- ON PAD FLOW DIRECTION

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: BRADFORD WATKIN COMPANY: NUNA

DATE OF AS-BUILT: 10/1/19 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date 2018-09-14
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

DRAWING No.	DRAWING TITLE
H353004-40000-223-271-0009-0001	TOTE ROAD DRAINAGE UPGRADE
H353004-40000-221-271-0008-0001	LAYDOWN AREA W10B - LAYOUT AND SECTIONS
H353004-00000-221-294-0002-0001	STANDARD DRAWING - EARTHWORKS & DRAINAGE DETAILS

REFERENCE DRAWINGS

Released for Use

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	EDC STAMP REMOVED	KvdM	FH	20/08/2018
0	APPROVED FOR CONSTRUCTION	GPM	FH	09/04/2018

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	GP Meades	NR	27/03/2018
DESIGNER	I BARNARD	NR	27/03/2018
CHECKER	F HUGO		2018-09-14
DESIGN COORD.	R GOOSEN		2018-09-13
RESP. ENG.	R HALIM		2018-09-14
LEAD DISC. ENG.	A GROBBELAAR		2018-09-13
AREA LEAD	V LAVRIC		2018-09-13
ENG. MANAGER	D STRANGER		
AREA MANAGER	T ATIBA		18-09-13

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

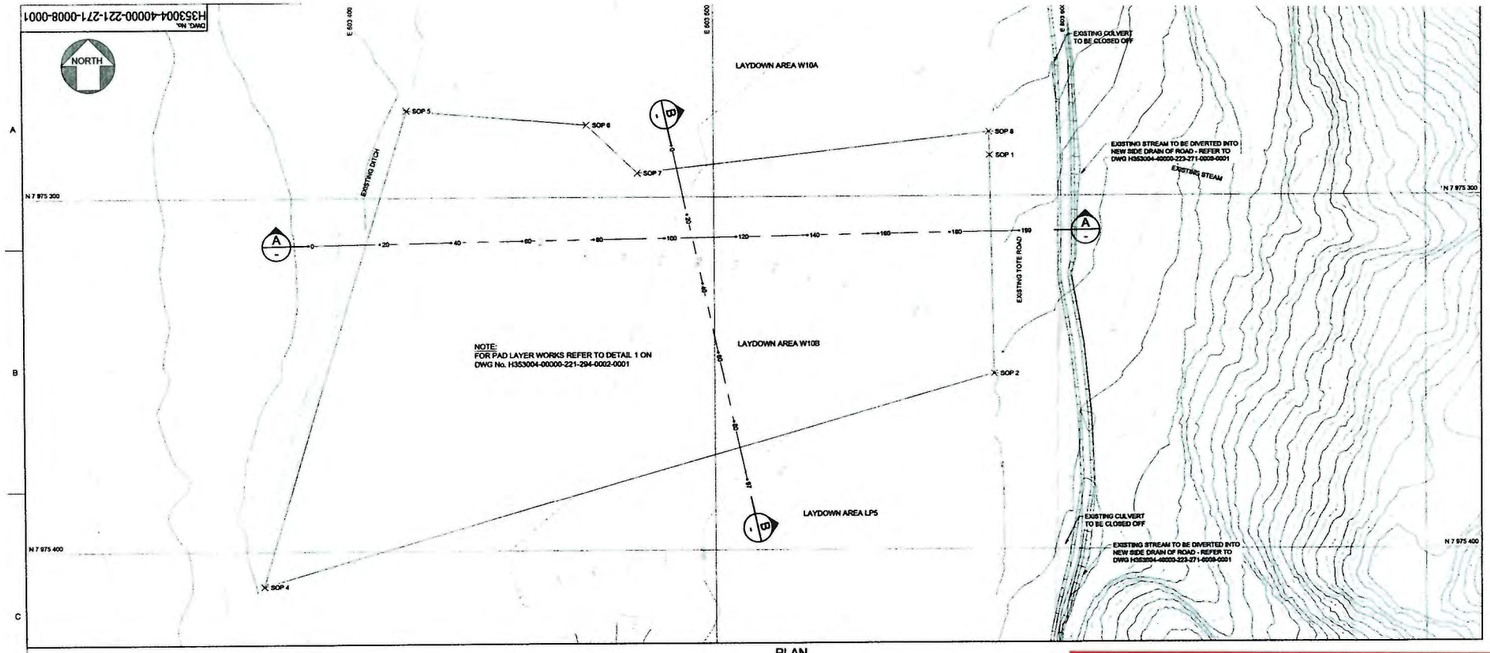
PORT SITE
LAYDOWN AREA W10B
DRAINAGE PLAN

SCALE 1:500 OR AS NOTED | DWG. No. H353004-40000-228-272-0015-0001 | REV 1

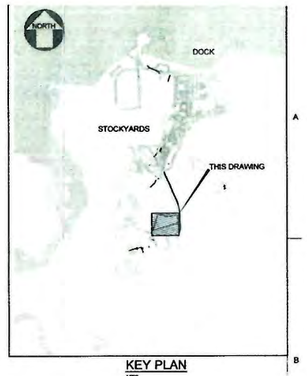
SHEET SIZE: E

SUBSERNAMES

DWG. No. H353004-40000-221-271-0008-0001



PLAN
SCALE 1:500



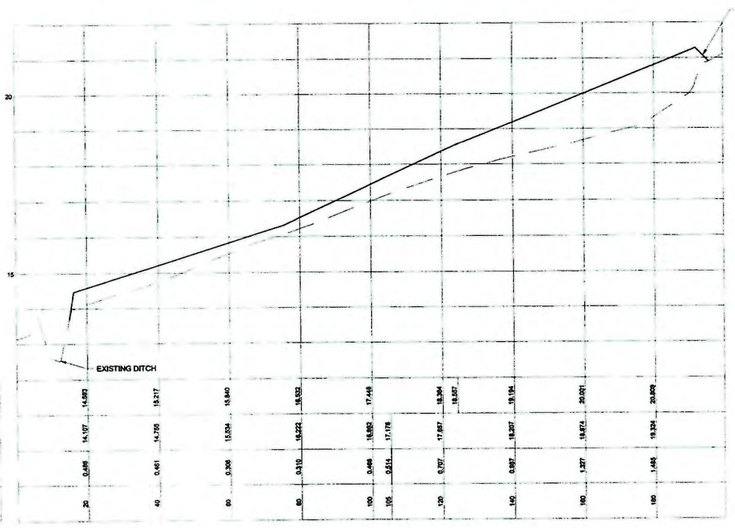
KEY PLAN
NTS

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2018)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. REFER TO DETAIL 1 ON DRAWING No. H353004-00000-221-294-0002-0001 FOR TYPICAL LAYER WORKS DETAILS.

LAYDOWN W10B
SETTING OUT COORDINATES

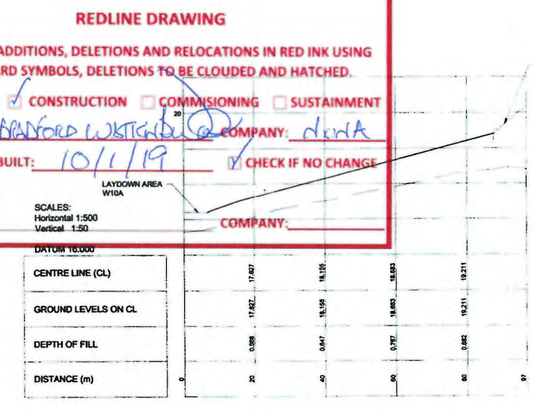
POINT	E	N	LEVEL
SOP 1	503 577.487	7 975 111.431	20.700
SOP 2	503 579.537	7 975 049.845	22.362
SOP 3	503 373.040	7 974 990.273	13.800
SOP 4	503 373.048	7 974 990.264	13.900
SOP 5	503 413.828	7 975 134.533	14.700
SOP 6	503 464.293	7 975 120.340	16.400
SOP 7	503 478.886	7 975 108.795	16.788
SOP 8	503 577.375	7 975 118.043	20.359



SCALES:
Horizontal 1:500
Vertical 1:50

DATUM 12.000																				
CENTRE LINE (CL)	14.983	15.217	15.343	15.552	17.448	18.264	18.587	19.194	20.021	20.809										
GROUND LEVELS ON CL	14.107	14.755	15.034	15.242	16.990	17.178	17.807	18.207	18.474	19.324										
DEPTH OF FILL	0.876	0.461	0.309	0.310	0.458	0.814	0.707	0.987	1.277	1.485										
DISTANCE (m)	20	40	60	80	100	105	120	140	160	180										

SECTION A-A



SCALES:
Horizontal 1:500
Vertical 1:50

DATUM 16.000																				
CENTRE LINE (CL)	17.407	18.155	18.693	19.211																
GROUND LEVELS ON CL	17.407	18.155	18.693	19.211																
DEPTH OF FILL	0.000	0.047	0.707	0.882																
DISTANCE (m)	0	20	40	60	80	97														

SECTION B-B

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: BRADFORD WATCHMAN COMPANY: NUNA

DATE OF AS-BUILT: 10/1/19 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

H353004-40000-223-271-0008-0001	TOTE ROAD DRAINAGE UPGRADE - PLAN AND PROFILE
H353004-40000-221-271-0010-0001	LAYDOWN AREA LP5 - LAYOUT AND SECTIONS
H353004-40000-221-271-0007-0001	LAYDOWN AREA 110A - LAYOUT AND SECTIONS
H353004-40000-228-272-0015-0001	LAYDOWN AREA W10B - DRAINAGE PLAN
H353004-40000-231-294-0002-0001	STANDARD DRAWING - EARTHWORKS & DRAINAGE DETAILS
DRAWING No.	DRAWING TITLE

REFERENCE DRAWINGS

Released for Use

REG. PROFESSIONAL ENGINEER — P. A. HALM — LICENSE 2019-09-25 — NWT/NU

FOR CONSTRUCTION

THIS DRAWING PREPARED BY HATCH LTD. FOR USE BY THE CLIENT FOR THE PURPOSE AS AUTHORIZED AND SIGNED IN CONTRACT, AND ON AND IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN HATCH AND THE END CLIENT. ANY USE OF THIS DRAWING BY ANY THIRD PARTY IS AT THE SOLE RISK OF THE THIRD PARTY. THIS DRAWING IS THE PROPERTY OF HATCH. HATCH RETAINS ALL RIGHTS IN THIS DRAWING, INCLUDING COPYRIGHT, AND HAS EXCLUSIVE LICENSE TO USE AND REPRODUCE THIS DRAWING FOR PURPOSES CONNECTED WITH THE PROJECT, INCLUDING THE CONSTRUCTION, OPERATION, MAINTENANCE, MODIFICATION AND DECOMMISSIONING OF THE PROJECT. ANY REUSE, DISCLOSURE, COPYING, OR MODIFICATION OF THIS DRAWING WITHOUT HATCH'S PRIOR WRITTEN CONSENT IS PROHIBITED, AND HATCH HAS NO LIABILITY FOR ANY REUSE OR MODIFICATION OF THIS DRAWING FOR PURPOSES OTHER THAN THOSE AUTHORIZED BY HATCH.

No.	DESCRIPTION	BY	CHK'D	DATE
1	EDC STAMP REMARKED	KwSM	FH	16/08/2018
0	APPROVED FOR CONSTRUCTION	GPM	FH	09/04/2018

REVISIONS

HATCH

DRAFTSPERSON	GP MEADES	NR	27/03/2018
DESIGNER	I BARNARD	NR	27/03/2018
CHECKER	F HUGO		2018-09-25
DESIGN COORD.	R GOOSEN		2018-09-25
RESP. ENG.	R HALM		2018-09-25
LEAD DISC. ENG.	A GROBBELAAR		20 September 2018
AREA LEAD	V LAVRIC		2018-09-25
ENG. MANAGER	D STANGER		2018-09-25
AREA MANAGER	T ATIBA		25 Sept 2018
ROLE	NAME	SIGNATURE	DATE

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER PROJECT

PORT SITE
LAYDOWN AREA W10B
PLAN AND SECTIONS

SCALE 1:500 (24 x 36 NOTED)
DWG No. H353004-40000-221-271-0008-0001
REV 1
SHEET SIZE E

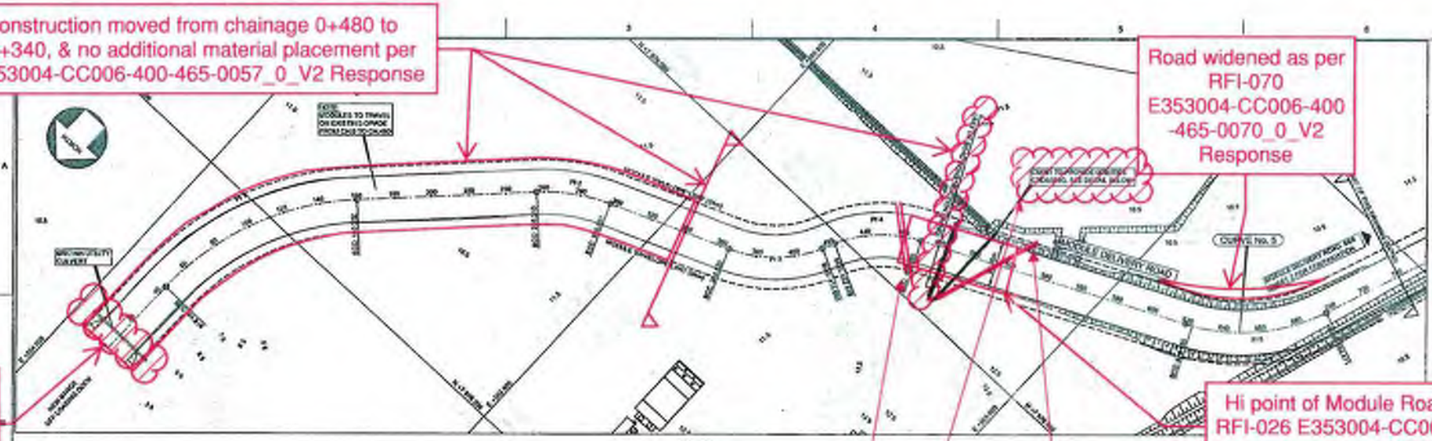
1 2 3 4 5 6 7 8

Limit of construction moved from chainage 0+480 to chainage 0+340, & no additional material placement per RFI-057 E353004-CC006-400-465-0057_0_V2 Response

Road widened as per RFI-070 E353004-CC006-400-465-0070_0_V2 Response

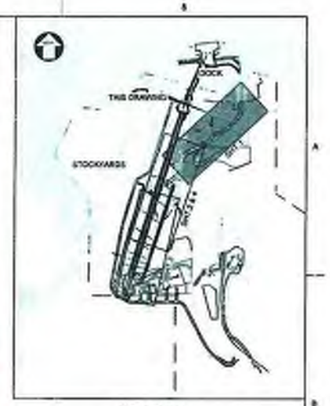
Deleted from scope per RFI-069 E353004-CC006-400-465-0069_0_V2 Response

Hi point of Module Road raised by ~1.4m per RFI-026 E353004-CC006-400-465-0026_0_V2 Response



SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
SCC1	64.916	559952.276	7 [illegible]	R 150.000m
TS1	107.916	559971.670	7 [illegible]	DA 64°33'00"
ECC1	142.253	559984.816	7 [illegible]	TL 93.574m
				AL 169.248m
SCC2	256.340	559920.429	7 [illegible]	R 150.000m
PIE	256.801	559917.898	7 [illegible]	DA 2°12'00"
ECC2				TL 2.882m
				AL 5.763m
SCC3	344.523	559.856.282	7 [illegible]	R 150.000m
PIE		559.845.406	7 [illegible]	DA 41°12'00"
ECC3	415.619	559.826.529	7 [illegible]	TL 56.787m
				AL 111.925m
SCC4	452.648	559.824.096	7 [illegible]	R 150.000m
PIE		559.814.869	7 [illegible]	DA 56° 0'00"
ECC4	498.840	559.802.572	7 [illegible]	TL 84.145m
				AL 171.564m
SCC5	618.935	559.807.304	7 [illegible]	R 150.000m
PIE		559.821.214	7 [illegible]	DA 41°18'00"
ECC5	664.431	559.840.998	7 [illegible]	TL 56.978m
				AL 115.274m
SCC7	826.004	559.884.986	7 [illegible]	R 150.000m
PIE		559.896.974	7 [illegible]	DA 49°21'00"
ECC7	892.284	559.913.222	7 [illegible]	TL 69.744m
				AL 131.514m
SCC8	948.524	559.931.894	7 [illegible]	R 150.000m
PIE		559.943.578	7 [illegible]	DA 56° 0'00"
ECC8	1.014.840	559.957.558	7 [illegible]	TL 84.145m
				AL 171.564m

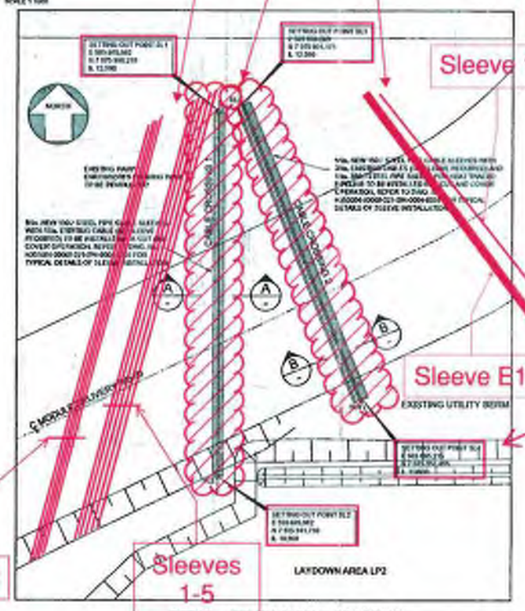


KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2018)
2. COORDINATE GRID IS NAD83 (CSRS) UTM ZONE 17, HEIGHTS ARE IN METERS.
3. [illegible]
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR TYPICAL CROSS SECTION OF MODULE ROAD REFER TO DRAWING [illegible]
6. FOR TYPICAL DETAILS OF SLEEVE CROSSINGS UNDER ROAD REFER TO DRAWING [illegible]

PLAN



DETAIL - UTILITY SLEEVE CROSSING

Utility Sleeve crossings settling out points vary as per field conditions, see Survey As-Built drawings and data

ROAD DATA LEGEND:

VAC VERTICAL ALIGNMENT CURVE
CVC CUSP VERTICAL CURVE
RCC REVERSING CIRCULAR CURVE
ECC CUSP CIRCULAR CURVE
R RADIUS (METRES)
DA DEFLECTION ANGLE (DEGREE)
TL TANGENT LENGTH (METRES)
AL ARC LENGTH (METRES)

SCALES:
Horizontal 1:1000
Vertical 1:200

DATUM 0.000

CHAINAGE (CH)		
GROUND LEVELS ON CL		
FINAL DESIGN ROAD LEVELS	LEFT EDGE (RE)	
	CENTRE LINE (CL)	
	RIGHT EDGE (RE)	
VERTICAL PROFILE GRADES		
HORIZONTAL ALIGNMENT		

MODULE DELIVERY ROUTE
FROM CH.480.000 TO CH.740.000

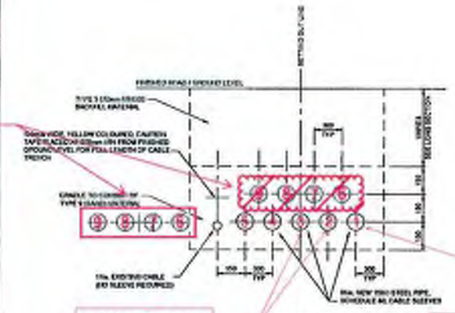
CENTRE LINE (CL)	
GROUND LEVELS ON CL	
CUT / FILL	
DISTANCE (m)	

CABLE CROSSING 1 - LONGITUDINAL SECTION

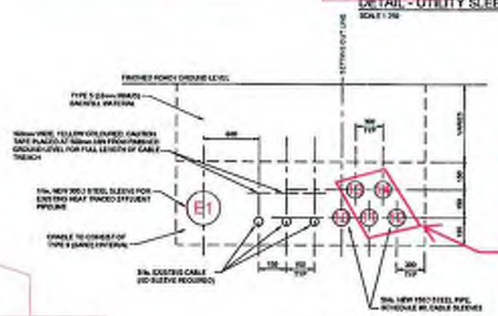
CENTRE LINE (CL)	
GROUND LEVELS ON CL	
CUT / FILL	
DISTANCE (m)	

CABLE CROSSING 2 - LONGITUDINAL SECTION

Sleeves 6-9 deleted from this location & placed @ this location per RFI-097 E353004-CC006-400-465-0097_0_V2 Response



SECTION A - A



SECTION B - B

Not installed Yet, see punchlist in turnover package & RFI-097 E353004-CC006-400-465-0097_0_V2 Response

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: [illegible] COMPANY: NUNA

DATE OF AS-BUILT: 10/20/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: _____ COMPANY: _____

FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 1 OF 4

H353004-40000-223-271-0007-0001 | 1

Addition of new Culvert to scope per RFI-046 E353004-CC006-400-465-0046_0 _V2 Response

Deleted from scope per RFI-0082 E353004-CC006-400-465-0082_0 _V2 Response

Deleted from scope per RFI-053 E353004-CC006-400-465-0053_0 _V2 Response

NUNA

NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

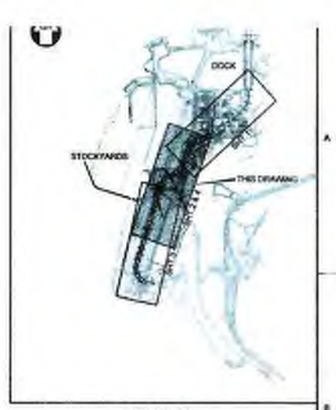
REDLINE BY: ✓ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: BRADFORD WATKIN COMPANY: NUNA

DATE OF AS-BUILT: 10/20/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:



KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2019).
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS, CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR TYPICAL CROSS-SECTION OF MODULE ROAD REFER TO DRAWING NUMBER E353004-40000-221-272-0004-0001

⚠ 4 FOR TYPICAL CROSS-SECTION REFER TO DRAWING NUMBER E353004-40000-221-272-0004-0001

CULVERT SCHEDULE LEGEND:

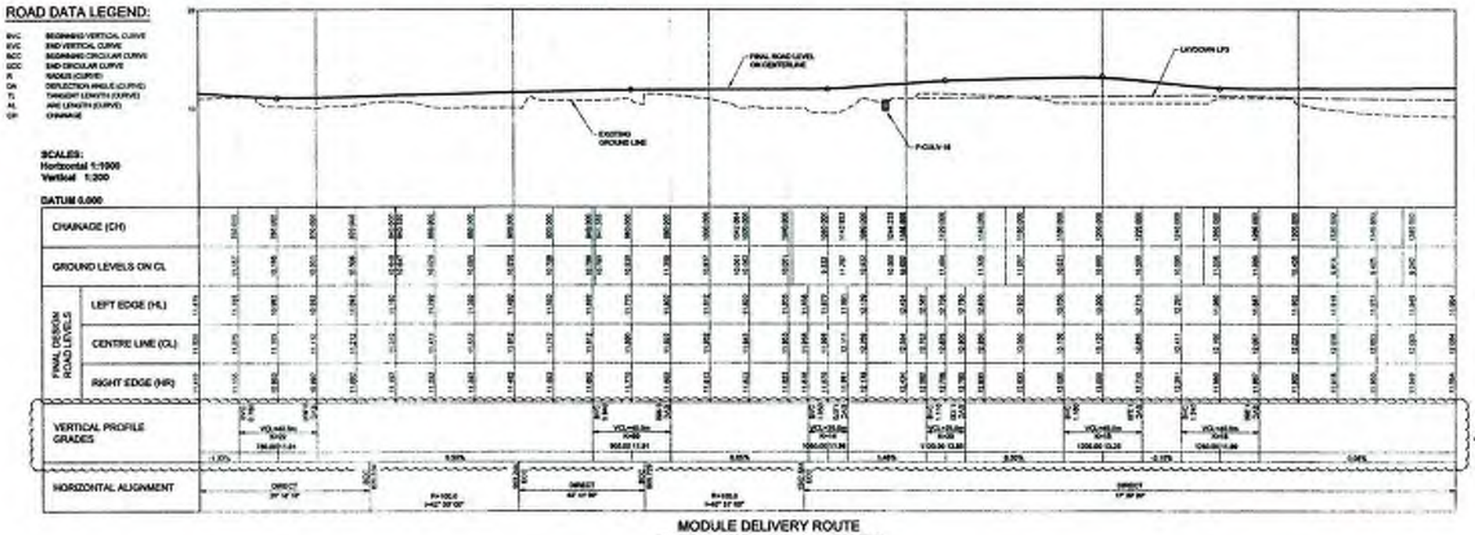
D	CULVERT DIAMETER
S	EMBEDMENT DEPTH
C	CULVERT SPACING AND REQUIRED CLEARANCE C = 600 WHILE D < 900mm C = 900 WHILE D ≥ = 900mm
W	CULVERT BACKFILL TOP WIDTH W = 3(TD) + (k+1)*C
TYPE	k = No. OF PIPE CULVERT CULVERT MATERIAL
US INV.	CULVERT UPSTREAM INVERT ELEVATION
DS INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	INPROP APRON LENGTH L = 4xD (APPROX)
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

PLAN
SCALE 1:1000

CULVERT SCHEDULE

(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DWG. No. H353004-00000-221-274-0001-0001-TYPICAL CULVERT DETAILS

CULVERT ID	FISH BEARING	NUMBER OF PIPES	CULVERT AT UPSTREAM D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	NORTHING	EASTING	CULVERT AT UPSTREAM US INV. ELEV.(m)	RIP RAP REQ'D	CULVERT AT DOWNSTREAM NORTHING	EASTING	NOTE: FINAL US INVERT AND DS INVERT LEVELS ARE TO BE CONFIRMED ON SITE DS INV. ELEV.(m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)
P-CULV-16	N	2	1200	39.900	0	3600	CSP	7676035.240	503305.45	9.754	N	7675958.404	503276.731	9.816	N	600	4.8	5.4	31
CULV-2018-I	N	2	900	27.500	0	600	CSP	7676464.920	503278.619	11.178	N	7676420.989	503286.143	11.100	N	300	2.4	5.2	47



ROAD DATA LEGEND:

BVC	BEGINNING VERTICAL CURVE
EVC	END VERTICAL CURVE
BCC	BEGINNING CIRCULAR CURVE
ECC	END CIRCULAR CURVE
R	RADIUS (CURVE)
DA	DEFLECTION ANGLE (CURVE)
TL	TANGENT LENGTH (CURVE)
AL	ARC LENGTH (CURVE)
CH	CHAINAGE

SCALES:
Horizontal 1:1000
Vertical 1:200

DATUM 0.000

MODULE DELIVERY ROUTE
FROM CH.740.000 TO CH.1380.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
START	0.000	503012.739	7 676 110.096	L 44.8 Hm
BCC1 PI1 ECC1	44.816 150.252	503072.195 503087.671 503029.706	7 676 153.272 7 676 254.556 7 676 181.573	R 150.000m DA 84°34'56" TL 93.113m AL 105.596m
BCC2 PI2 ECC2	205.310 296.881	503081.438 503047.000 503017.996	7 676 262.010 7 676 378.416 7 676 370.681	R 100.000m DA 27°12'57" TL 24.02.5m AL 46.61 m
BCC3 PI3 ECC3	364.520 415.595	503105.267 503140.455 503070.720	7 676 340.168 7 676 335.009 7 676 310.989	R 70.500m DA 41°12'57" TL 25.75.7m AL 51.167m
BCC4 PI4 ECC4	433.936 489.896	503725.562 503744.852 503662.112	7 676 304.556 7 676 443.126 7 676 371.004	R 70.500m DA 38°31'51" TL 24.33.5m AL 47.155m
BCC5 PI5 ECC5	819.196 858.471	503691.958 503721.214 503691.958	7 675 967.974 7 675 896.458 7 675 852.234	R 150.000m DA 41°12'57" TL 40.563m AL 77.271m
BCC7 PI7 ECC7	826.504 952.294	503445.901 503445.173 503412.002	7 675 735.446 7 675 842.041 7 675 875.430	R 185.000m DA 47°32'57" TL 39.79 m AL 76.74 m
BCC8 PI8 ECC8	986.729 1047.644	503324.864 503316.304 503340.547	7 675 644.418 7 675 621.663 7 675 587.456	R 125.000m DA 48°31'40" TL 56.5 m AL 56.515m
BCC9 PI9 ECC9	1081.256 1098.199 1152.222	503114.715 503099.812 503237.643	7 676 952.336 7 676 909.629 7 676 934.381	R 150.000m DA 15°21'44" TL 162.125m AL 215.922m
END	1552.222	502237.643	7 676 837.982	L 5.894 Hm

PERMIT TO PRACTICE

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	VERTICAL ALIGNMENT ADJUSTED AND DRAINAGE DITCHES INDICATED - NOTE 4 ADDED	NR	TH	15/09/2019
0	FOR CONSTRUCTION	KGH	TH	29/05/2019

REVISIONS

HATCH

DRAFTSPERSON	K. CHRISTOPHERSEN	NR	29/05/2019
DESIGNER	E. BALDWARES	NR	29/05/2019
CHECKED	T. HUGO		29/05/2019
DESIGN COORD.	R. GOODEN		29/05/2019
RESP. ENG.	R. HAUN		
LEAD DISC. ENG.	A. GAUDREAULT		
AREA LEAD	V. LAVRIC		
ENG. MANAGER	R. GOODEN		
AREA MANAGER	T. ATIMA		
ROLE	NAME	SIGNATURE	DATE

DRAWING APPROVAL STATUS: Approved for Construction

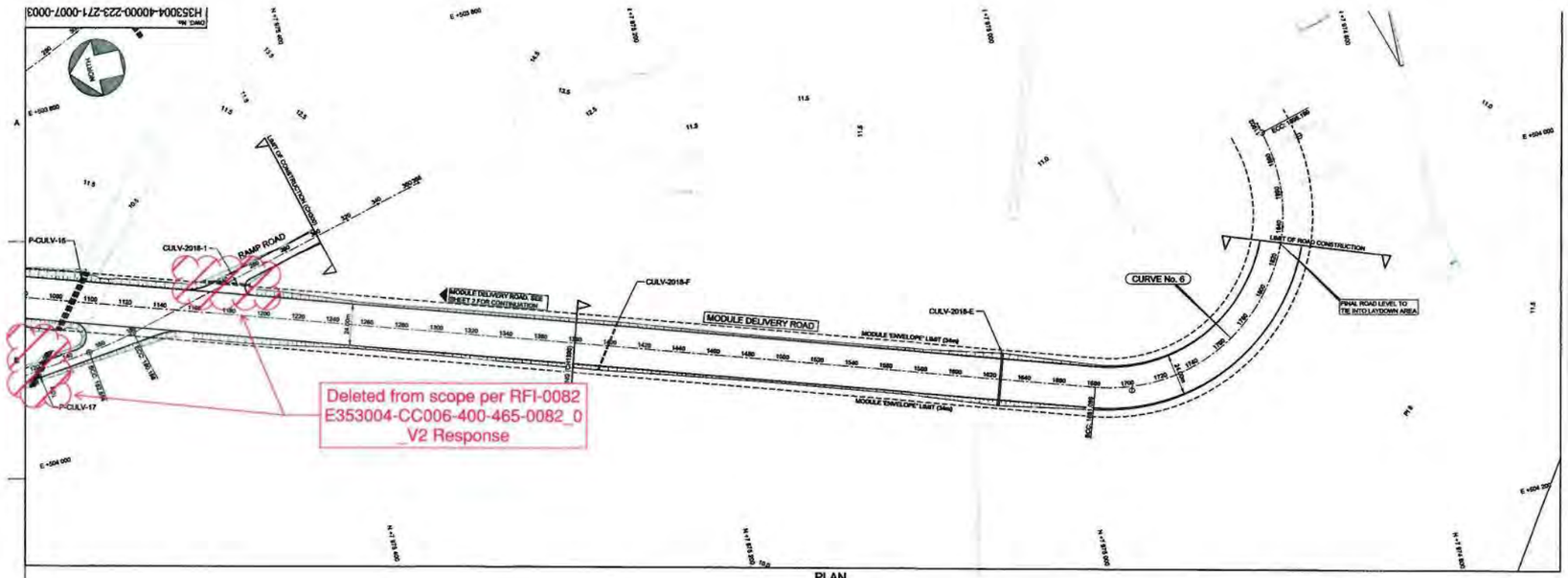
Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

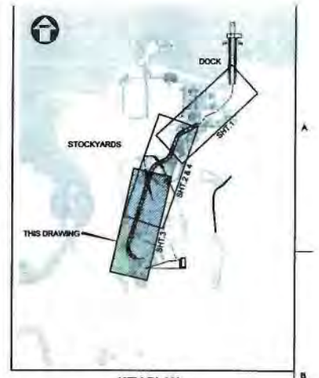
PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 2 OF 4

SCALE	DWG. No.	REV.
1:1,000	H353004-40000-223-271-0007-0002	1

SHEET SIZE: E



PLAN
SCALE 1:1000



KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2018)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS, CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR TYPICAL CROSS SECTION OF MODULE ROAD REFER TO DRAWING No.H353004-40000-221-273-0001-0001

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
C	CULVERT SPACING AND BEDDING CLEARANCE C = 500 WHILE D = 900mm C = 300 WHILE D = < 900mm
W	CULVERT BACKFILL TOP WIDTH W = (n*D) + (n-1)*C n = No. OF PIPE/CULVERT
TYPE	CULVERT MATERIAL
U/S INV.	CULVERT UPSTREAM INVERT ELEVATION
D/S INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	RIPRAP APRON LENGTH L = 4xD (APPROX)
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

CULVERT SCHEDULE

(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-00000-221-294-0001-0001-TYPICAL CULVERT DETAILS

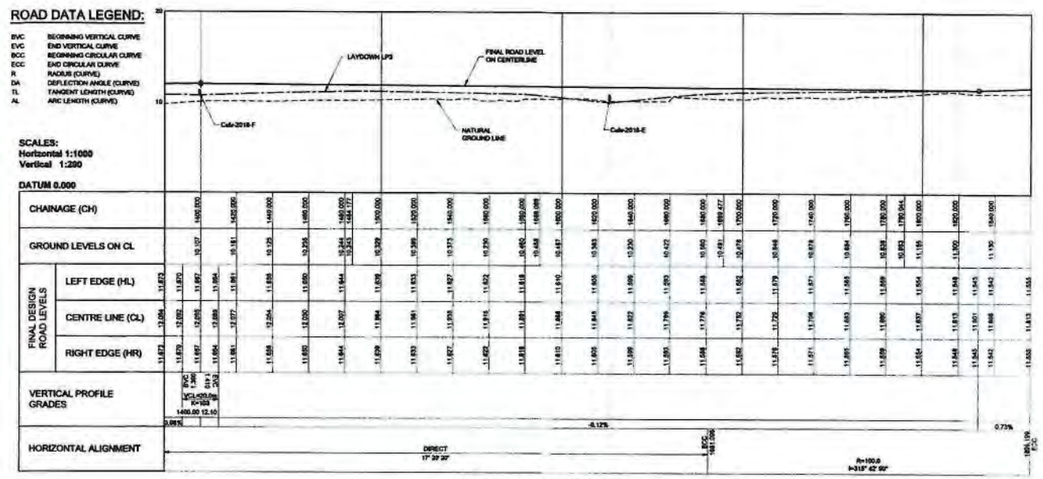
									CULVERT AT UPSTREAM				CULVERT AT DOWNSTREAM		NOTE: FINAL U/S INVERT AND D/S INVERT LEVELS ARE TO BE CONFIRMED ON SITE					
CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	NORTHING	EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	NORTHING	EASTING	D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)
CULV-2018-F	N	1	600	29.980	0	600	CSP	7975343.040	503211.090	10.852	N	7975280.091	503188.431	10.790	N	300	2.4	0.2	17
CULV-2018-E	N	1	600	30.685	0	600	CSP	7975030.080	503145.890	10.121	Y	7975039.235	503118.401	10.059	Y	300	2.4	0.2	60

ROAD DATA LEGEND:

BVC	BEGINNING VERTICAL CURVE
EVC	END VERTICAL CURVE
BCC	BEGINNING CIRCULAR CURVE
ECC	END CIRCULAR CURVE
R	RADIUS (CURVE)
DA	DEFLECTION ANGLE (CURVE)
TL	TANGENT LENGTH (CURVE)
AL	ARC LENGTH (CURVE)

SCALES:
Horizontal 1:1000
Vertical 1:200

DATUM 0.000



MODULE DELIVERY ROUTE
FROM CH.1380.000 TO CH.1860.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
START	0.000	503972.709	7 978 310.089	L 44.816m
SCC1 PI1 ECC1	44.816 149.292	503972.298 503971.875 503929.956	7 978 265.272 7 978 304.588 7 978 161.373	R 150.000m DA 44°04'30" TL 66.717m AL 115.389m
BCC2 PI2 ECC2	256.210 299.801	503951.439 503947.010 503927.996	7 978 053.019 7 978 076.418 7 978 070.881	R 100.000m DA 25°12'00" TL 20.527m AL 43.491m
SCC3 PI3 ECC3	384.325 415.890	503785.257 503745.455 503738.730	7 978 045.180 7 978 055.060 7 978 010.094	R 70.000m DA 41°32'59" TL 26.787m AL 51.167m
SCC4 PI4 ECC4	422.839 488.865	503725.588 503714.333 503692.712	7 978 004.509 7 975 982.525 7 975 972.003	R 70.000m DA 38°35'02" TL 24.612m AL 47.165m
SCC5 PI5 ECC5	519.195 558.471	503557.909 503521.214 503507.288	7 975 957.954 7 975 885.450 7 975 852.334	R 100.000m DA 44°18'30" TL 40.667m AL 77.277m
SCC7 PI7 ECC7	628.504 692.244	503481.991 503446.175 503412.593	7 975 730.390 7 975 693.081 7 975 675.430	R 100.000m DA 43°23'30" TL 39.791m AL 75.741m
SCC8 PI8 ECC8	694.729 1047.644	503354.894 503318.308 503303.547	7 975 644.806 7 975 627.863 7 975 887.009	R 100.000m DA 64°21'40" TL 62.819m AL 80.915m
SCC6 PI6 ECC6	1081.098 1098.198	503114.776 503098.812 503257.643	7 974 982.338 7 974 805.629 7 974 958.387	R 100.000m DA 123°14'07" TL 185.120m AL 215.103m
END	1902.092	503237.643	7 974 857.982	L 5.863m

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER P 012
The Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGA)

H353004-40000-223-271-0007-0004	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 4 OF 4
H353004-40000-223-271-0007-0002	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 2 OF 4
H353004-40000-223-271-0007-0001	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 1 OF 4
H353004-40000-221-273-0001-0001	MODULE, PRIMARY, SECONDARY ROADS TYPICAL CROSS SECTIONS
H353004-00000-221-294-0001-0001	TYPICAL CULVERT DETAILS
DRAWING No.	DRAWING TITLE

REFERENCE DRAWINGS

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
0	FOR CONSTRUCTION	KVDM	FH	04/05/2018

REVISIONS

HATCH

DRAFTSPERSON	K VAN DER MERWE	HR	04/05/2018
DESIGNER	E BALFOUR	HR	04/05/2018
CHECKER	F HUDD		2018-04-05
DESIGN COORD.	R GOOSEN		2018-04-05
RESP. ENG.	R HALM		2018-04-05
LEAD DISC. ENG.	A GROBELAAR		2018-04-05
AREA LEAD	V LAWRIC		2018-04-05
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		04-05-18

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 3 OF 4

SCALE	OWG. No.	REV
1:1,000 (OR AS NOTED)	H353004-40000-223-271-0007-0003	0

SHEET SIZE: E

NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: BRADFORD STAKING COMPANY: NUNA

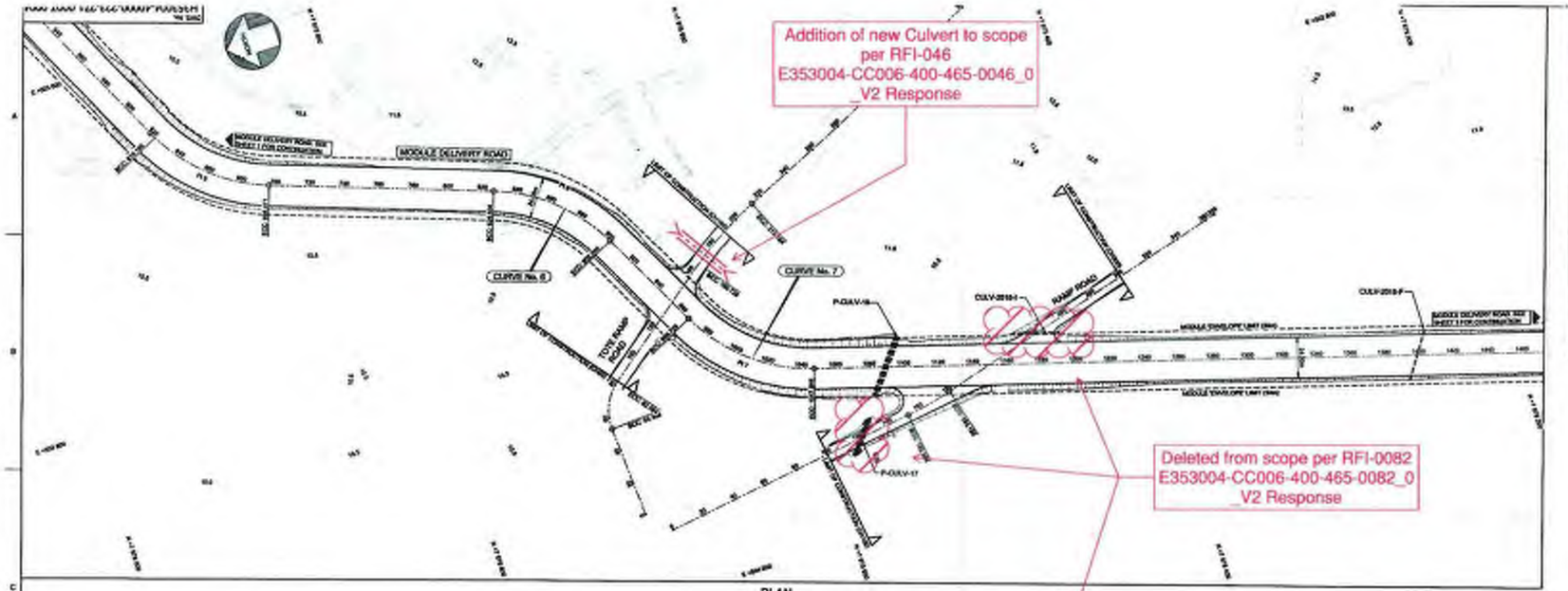
DATE OF AS-BUILT: 10/20/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

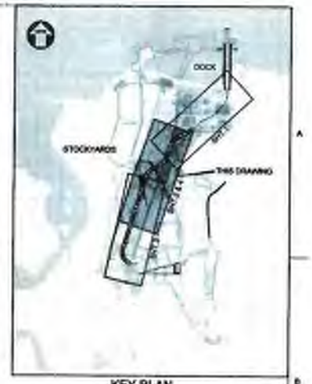
NAME/SIGN: _____ COMPANY: _____

Addition of new Culvert to scope per RFI-046 E353004-CC006-400-465-0046_0 _V2 Response

Deleted from scope per RFI-0082 E353004-CC006-400-465-0082_0 _V2 Response



PLAN



KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR TYPICAL CROSS SECTION OF MODULE ROAD REFER TO DRAWING No.H353004-40000-221-274-0001-0001

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
C	CULVERT SPACING AND BARRING CLEARANCE C = 300 WHEN D < = 900mm C = 600 WHEN D > = 900mm
W	CULVERT BACKFILL TOP WIDTH W = (n*D) + (n-1)*C n = No. OF PARALLEL CULVERT
TYPE	CULVERT MATERIAL
U/S INV.	CULVERT UPSTREAM INVERT ELEVATION
D/S INV.	CULVERT DOWNSTREAM INVERT ELEVATION
I	SLOPE ACROSS CULVERT I = U/S ELEVATION
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

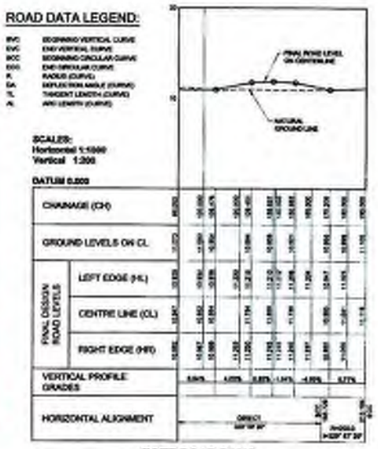
CULVERT SCHEDULE

(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-40000-221-254-0001-0001-TYPICAL CULVERT DETAILS

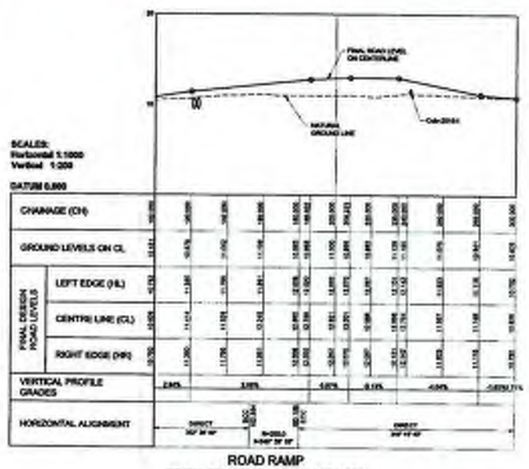
CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	CULVERT AT UPSTREAM NORTHING	CULVERT AT UPSTREAM EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	CULVERT AT DOWNSTREAM NORTHING	CULVERT AT DOWNSTREAM EASTING	NOTE: FINAL U/S INVERT AND D/S INVERT LEVELS ARE TO BE CONFIRMED ON SITE D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)
P-CULV-16	N	1	1200	36.500	0	1200	CSP	7975835.240	603305.45	9.764	Y	7975808.404	603278.721	9.616	Y	600	6.0	3.4	45
P-CULV-17	N	1	1200	22.248	0	1200	CSP	7975808.310	603284.49	9.804	Y	7975795.574	603284.504	9.491	Y	600	6.0	3.4	90
CULV-20054	N	1	900	27.300	0	900	CSP	7975444.824	603213.910	11.179	N	7975421.880	603286.140	11.130	N	300	2.4	0.2	47

ROAD DATA LEGEND:

BVC	BEGINNING VERTICAL CURVE
EVC	END VERTICAL CURVE
BCC	BEGINNING CIRCULAR CURVE
ECC	END CIRCULAR CURVE
R	RADIUS (CURVE)
DA	DEFLECTION ANGLE (CURVE)
TL	TANGENT LENGTH (CURVE)
AL	ARC LENGTH (CURVE)



TOTE ROAD RAMP
FROM 86.000 TO 190.000



ROAD RAMP
FROM CH.100.000 TO CH.300.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
START	0.000	603873.709	7 976 910.696	L 44.216m
BCC1 PI1 ECC1	44.216 144.216 188.252	603871.264 603871.678 603858.856	7 976 260.213 7 976 204.333 7 976 161.573	R 100.000m DA 44°56'50" TL 80.210m AL 116.036m
BCC2 PI2 ECC2	358.310 394.251 394.573	603861.438 603847.910 603827.884	7 975 963.216 7 975 926.418 7 975 879.481	R 100.000m DA 23°27'05" TL 35.553m AL 46.481m
BCC3 PI3 ECC3	394.573 418.886	603769.267 603748.456 603734.709	7 975 845.393 7 975 835.082 7 975 819.096	R 75.000m DA 41°52'02" TL 28.727m AL 51.397m
BCC4 PI4 ECC4	422.806 466.845	603725.249 603714.909 603692.712	7 975 824.209 7 975 802.503 7 975 813.164	R 75.000m DA 38°34'53" TL 24.512m AL 47.109m
BCC5 PI5 ECC5	478.789 538.471	603637.858 603601.214 603581.988	7 975 807.884 7 975 856.486 7 975 858.764	R 100.000m DA 34°16'02" TL 30.881m AL 59.731m
BCC7 PI7 ECC7	609.604 665.344	603480.981 603446.126 603443.283	7 975 750.385 7 975 695.981 7 975 674.434	R 100.000m DA 33°23'02" TL 29.974m AL 58.716m
BCC8 PI8 ECC8	668.726 694.644 1047.844	603364.894 603343.369 603305.047	7 975 649.208 7 975 627.464 7 975 587.324	R 100.000m DA 42°21'48" TL 38.577m AL 82.618m
BCC9 PI9 ECC9	1051.000 1089.618 1090.158	603314.779 603308.812 603257.943	7 975 582.339 7 975 544.409 7 975 536.367	R 100.000m DA 123°19'40" TL 146.105m AL 215.103m
END	1302.943	603257.943	7 975 357.262	L 3.000m

H353004-40000-223-271-0007-0003	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 3 OF 4
H353004-40000-223-271-0007-0002	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 2 OF 4
H353004-40000-223-271-0007-0001	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 1 OF 4
H353004-40000-221-276-0001-0001	MODULE PRIMARY SECONDARY ROADS TYPICAL CROSS SECTIONS
H353004-40000-221-254-0001-0001	TYPICAL CULVERT DETAILS
DRAWING No.	DRAWING TITLE
REFERENCE DRAWINGS	

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED

REDLINE BY: ✓ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: [signature] COMPANY: NUNA

DATE OF AS-BUILT: 10/20/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: _____ COMPANY: _____

NUNA
NUNAEAST LTD

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
0	FOR CONSTRUCTION			

REVISIONS

DRAWING APPROVAL STATUS: Approved for Construction

ROLE	NAME	SIGNATURE	DATE
DESIGNER			
CHECKER			
DESIGN COORD.			
RESP. ENG.			
LEAD DISC. ENG.			
AREA LEAD			
ENG. MANAGER			
AREA MANAGER			

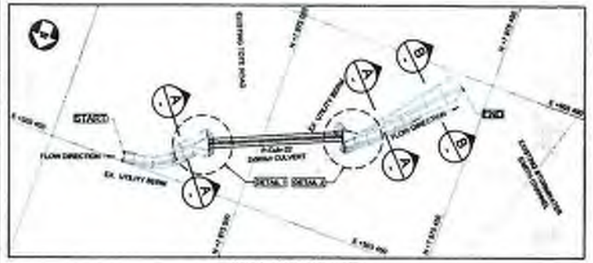
HATCH

Baffinland

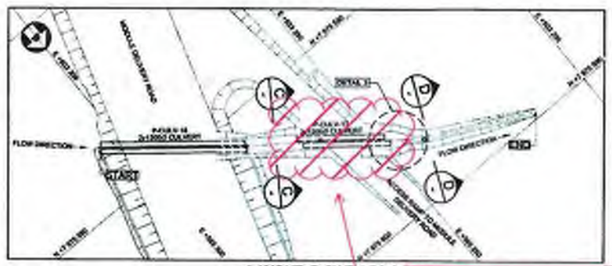
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 4 OF 4

SCALE 1:1000 (24 IN HORIZ.)
DWG No. H353004-40000-223-271-0007-0004
REV 0
SHEET SIZE: D



LAYOUT: P-SWD-LP3-1



LAYOUT: P-SWD-LP3-2

Deleted from scope per RFI-0082
E353004-CC006-400-465-0082_0
V2 Response

SETTING OUT DATA-P-SWD-LP3-1

NAME	CH	E	N	DETAILS
START	0.000	6594491.207	7975481.573	L 4.159m
BCC1	4.159	6594477.150	7975484.748	R 15.000m
PI1	13.432	6594473.521	7975486.629	DA 25°36'07"
ECC1	13.432	6594470.849	7975485.837	TL 3.561m
				AL 6.240m
BCC2	16.078	6594466.824	7975481.574	R 20.000m
PI2	22.318	6594464.446	7975486.948	DA 17°38'15"
ECC2	22.318	6594461.618	7975486.199	TL 2.956m
				AL 6.240m
BCC3	58.501	6594429.842	7975474.826	R 20.000m
PI3	64.675	6594426.136	7975472.852	DA 19°18'39"
ECC3	64.675	6594425.321	7975468.845	TL 4.119m
				AL 6.742m
END	90.043	6594406.477	7975481.539	L 25.367m

SETTING OUT DATA-P-SWD-LP3-2

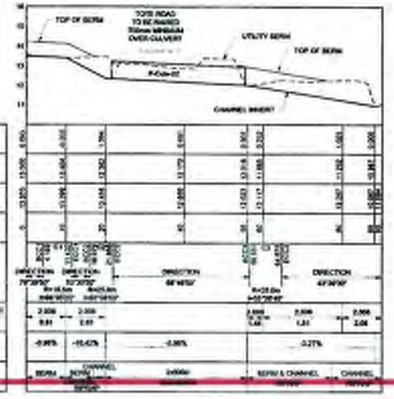
NAME	CH	E	N	DETAILS
START	0.000	6593306.826	7975552.648	L 38.926m
PI1	38.926	6593276.711	7975558.494	L 58.822m
	64.641	6593251.128	7975566.453	L 18.121m
	84.321	6593240.726	7975566.929	L 25.256m
	109.576	6593214.614	7975566.091	L 25.040m

EG
INVERT

SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 10.000

DEPTH TO INVERT	
INVERT LEVELS	
GROUND LEVELS ON CL	
DISTANCE (m)	
HORIZONTAL ALIGNMENT	
HYDRAULICS	Q(m³/s) V(m/s)
VERTICAL PROFILE GRADES	
CHANNEL SECTION	



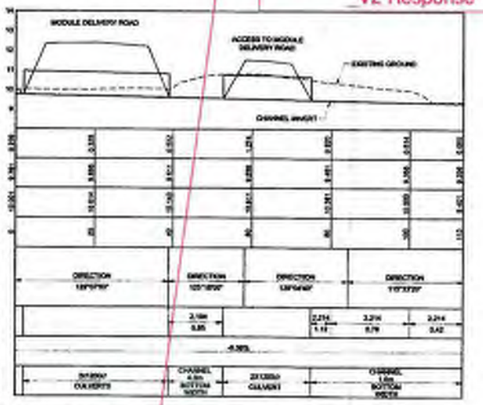
P-SWD-LP3-1 DIVERSION LONGITUDINAL SECTION

EG
INVERT

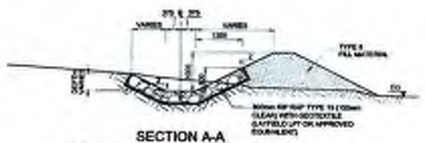
SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 8.000

DEPTH TO INVERT	
INVERT LEVELS	
GROUND LEVELS ON CL	
DISTANCE (m)	
HORIZONTAL ALIGNMENT	
HYDRAULICS	Q(m³/s) V(m/s)
VERTICAL PROFILE GRADES	
CHANNEL SECTION	

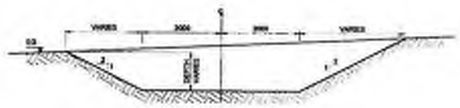


P-SWD-LP3-2 DIVERSION LONGITUDINAL SECTION



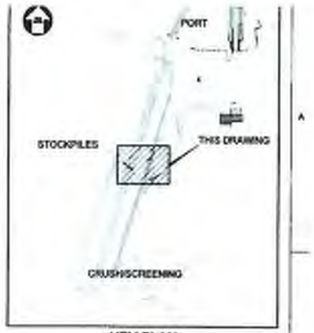
SECTION A-A
TYPICAL DETAIL - UPSTREAM AND DOWNSTREAM OF THE CULVERT
SCALE 1:50

SECTION B-B
CHANNEL DETAIL
SCALE 1:50



SECTION C-C
CHANNEL DETAIL
SCALE 1:50

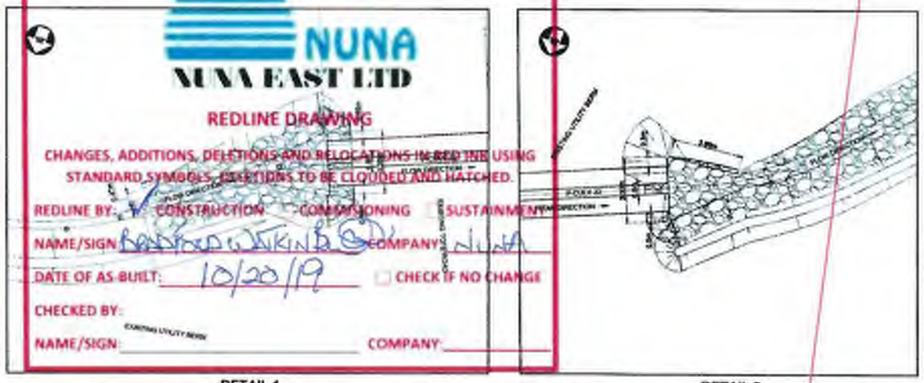
SECTION D-D
CHANNEL DETAIL
SCALE 1:50



KEY PLAN

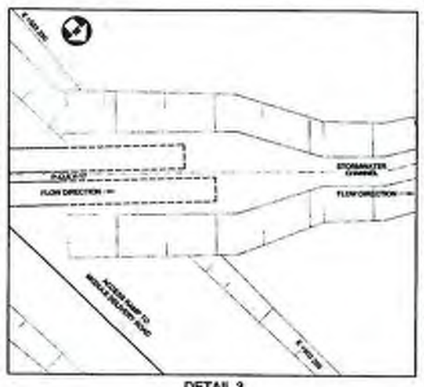
EG	EXISTING GROUND
CH	CHAINAGE
L	LENGTH
R	RADIUS
DA	DEFLECTION ANGLE
TL	TANGENT LENGTH
AL	ARC LENGTH
BCC	BEGINNING OF CURVE
ECC	END OF CURVE
PI	POINT OF INTERSECTION
HWL	HIGH WATER LEVEL
FB	FREE BOARD
	FLOW DIRECTION
	DIVERSION CENTER LINE
	RIPRAP

NOTES:
1. LIDAR SURVEY PROVIDED BY PROTSAT (2018).
2. COORDINATES GRID (E SHOWN IS UTM (NAD83) ZONE 17 AND (N IN METERS.
3. CONTOURS AND ELEVATIONS ARE IN METERS CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS ARE IN MILLIMETER UNLESS NOTED OTHERWISE.
5. FINAL CULVERT POSITIONS TO BE CONFIRMED ON SITE.

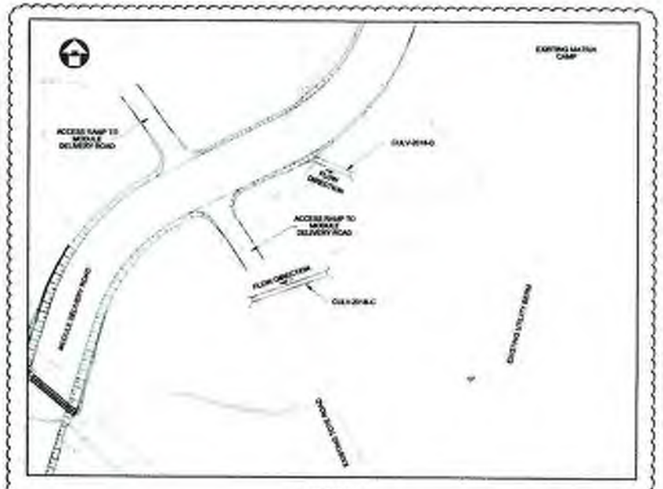


DETAIL 1
CULVERT INLET
SCALE 1:100

DETAIL 2
CULVERT OUTLET
SCALE 1:100



DETAIL 3
CULVERT OUTLET
SCALE 1:100



DETAIL 4
CULV-2018-C AND D
SCALE 1:100

CULVERT SCHEDULE
(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-40000-221-ZZH-0001-0001 TYPICAL CULVERT DETAILS)

CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (m/m)	LENGTH (m)	E (mm)	W (mm)	TYPE	CULVERT AT UPSTREAM NORTHING	CULVERT AT UPSTREAM EASTING	CULVERT AT UPSTREAM US INV. ELEV.(m)	CULVERT AT UPSTREAM RIP RAP REQ'D	CULVERT AT DOWNSTREAM NORTHING	CULVERT AT DOWNSTREAM EASTING	CULVERT AT DOWNSTREAM DS INV. ELEV.(m)	CULVERT AT DOWNSTREAM RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREES)
P-CUV-22	N	1	2000	40.000	0	2000	CSP	7975481.573	6594491.207	0.000	N	7975486.948	6594461.618	-0.600	N	500	4.8	5.000	90
CULV-2018-C	N	1	800	43.125	0	800	CSP	7975487.324	6594452.967	10.845	N	7975500.850	6594444.846	10.000	N	500	-	3.000	45
CULV-2018-D	N	1	800	20.838	0	800	CSP	7975487.092	6594444.886	14.206	N	7975490.390	6594425.374	10.000	N	500	-	6.990	90

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
C	CULVERT SPACING AND WIDDING CLEARANCE C = 800 WHEN D = 800mm; C = 500 WHEN D = 500mm
W	CULVERT BACKFILL TOP WIDTH W = (ATS + 2) + 2C; n = No. OF PIPES = CULVERTS
TYPE	CULVERT MATERIAL
US INV.	CULVERT UPSTREAM INVERT ELEVATION
DS INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	RIPRAP APRON LENGTH L = wd (APRON)
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

PERMIT TO PRACTICE
(NAME OF)
Signature
Date
PERMIT NUMBER: P 012
The Association of Professional Engineers and Geoscientists of NEWFOUNDLAND & LABRADOR

SCALE 1:500 IN METRES

REFERENCE DRAWINGS

DRAWING No.	DRAWING TITLE
H353004-40000-221-ZNH-0001-0010	STANDARD DRAWING - LAYOUT, ROADS AND DRAINAGE
H353004-40000-221-ZNH-0001-0001	STANDARD DRAWING - TYPICAL CULVERT DETAIL
H353004-40000-228-270-0001-0001	PORT SITE - SLOPE PLAN

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	ENGR	CHKD	DATE
1	IDOL STAMP REQUIRED. DETAIL 4 ADDED AND CULVERT SCHEDULE UPDATED	EMH	PH	07/NOV/2019
0	FOR CONSTRUCTION	MH	PH	28/OCT/2019

REVISIONS

HATCH

QUALIFICATION	H HERBST	NB	28/OCT/2019
DESIGNED	H HERBST	NB	28/OCT/2019
CHECKED	P HEJDA		28/OCT/2019
DESIGN LOCKED	R GOODEN		28/OCT/2019
RESP. ENG.	R HALM		28/OCT/2019
LEAD DISC. ENG.	A GROBECKER		28/OCT/2019
APPLICABLE	V VALVO		28/OCT/2019

ROLE	NAME	SIGNATURE	DATE
ENGINEER MANAGER	D STANGER		28/OCT/2019
AREA MANAGER			

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

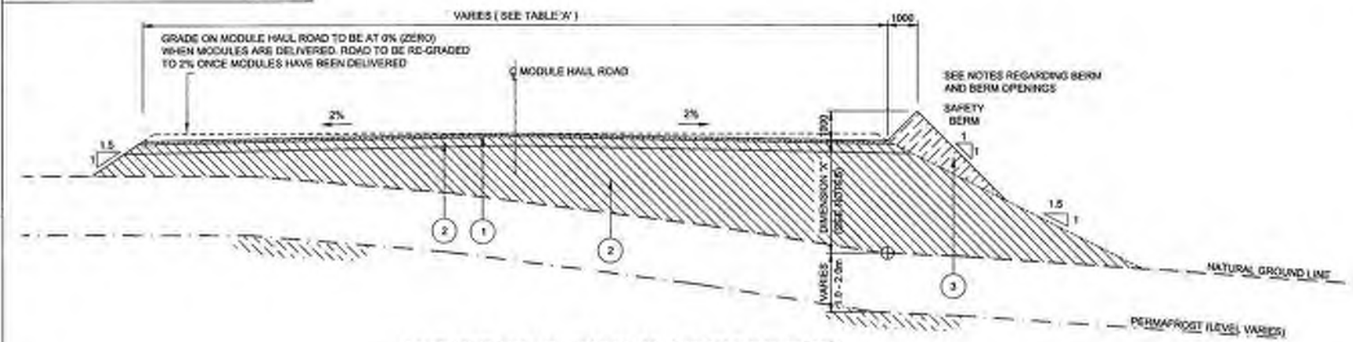
BAFFINLAND IRON MINES LP
MARY RIVER PROJECT

PORT SITE
MODULE ROAD AND TOTE ROAD
DRAINAGE DETAILS

SCALE	DWG. No.	REV
1:500	H353004-40000-228-271-0005-0001	1

SHEET SIZE: E

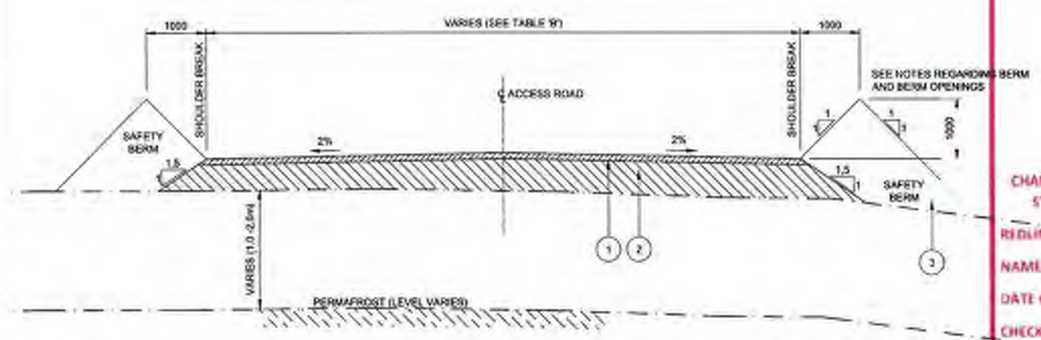
DWG. No. H353004-40000-221-273-0001-0001



MODULE ROAD - TYPICAL CROSS SECTION

SCALE 1:100

TABLE 'A'		
MODULE	ROAD WIDTH	APPLICABLE DRAWING NUMBER
RAIL CAR DUMPER / INDEXER	15.000m (STRAIGHTS)	H353004-40000-223-271-0007-0001 TO 0004
RAIL CAR DUMPER / INDEXER	17.000m (CURVES)	H353004-40000-223-271-0007-0001 TO 0004
STOCKPILE APRON FEEDER	15.000m	H353004-40000-223-271-0007-0001 TO 0004
SCREENING BUILDING	24.000m	H353004-40000-223-271-0007-0001 TO 0004
CRUSHING BUILDING	24.000m	H353004-40000-223-271-0007-0001 TO 0004
STACKER RECLAIMER AND TRIPPER CAR	24.000m	H353004-40000-223-271-0007-0001 TO 0004
STOCKYARD CONVEYOR AND CONVEYOR SECTIONS	24.000m	H353004-40000-223-271-0007-0001 TO 0004



PRIMARY ROAD - TYPICAL CROSS SECTION

SCALE 1:50

TABLE 'B'		
ROAD	ROAD WIDTH	APPLICABLE DRAWING NUMBER
DRIVE STATION ACCESS	20.000m	H353004-40000-221-272-0005-0001
SOUTHERN BYPASS	12.000m	H353004-40000-223-271-0006-0001 TO 0004
DUMPER TUNNEL ACCESS	10.000m	H353004-40000-221-272-0005-0001

MATERIAL AND COMPACTION SPECIFICATION:

TYPE 5 (CRUSHER RUN 32mm MINUS MATERIAL) OR TYPE 3 (CRUSHER RUN 50mm MINUS):
THE MATERIAL MUST BE PLACED IN LIFTS NOT EXCEEDING 200mm AND SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVELY, THE COMPACTION SHOULD ACHIEVE A MINIMUM OF 100 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY TEST METHOD ASTM D698.

TYPE 6 (CRUSHER RUN 150mm MINUS):
THE ROCKFILL MUST BE PLACED IN LIFTS NOT EXCEEDING 500mm. THE PLACEMENT SHALL AVOID SEGREGATIONAND NESTING OF COARSE PARTICLES. IT SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). EACH LIFT MUST BE "PROOF-ROLLED" PRIOR TO PLACING THE SUBSEQUENT LIFT.

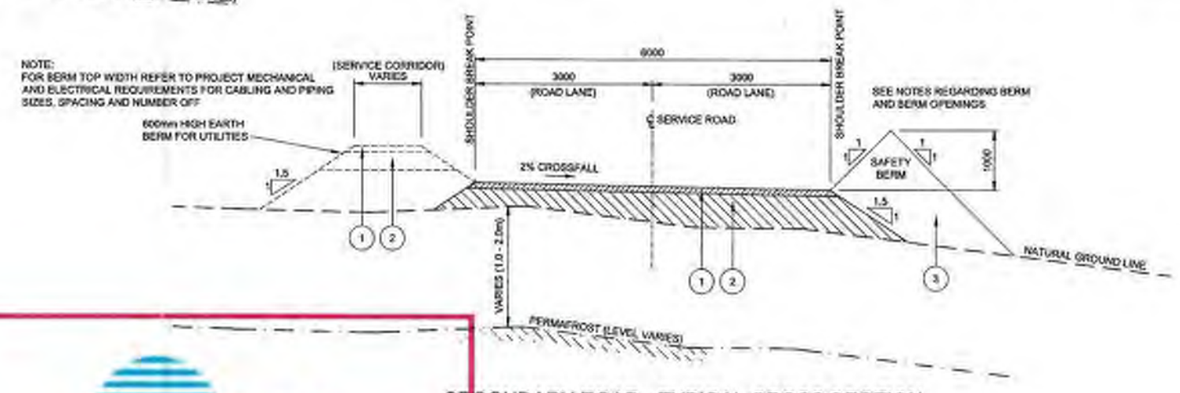
TYPE 12 (RUN OF MINE, TYPICALLY 600mm MINUS):
THE ROCKFILL, IF USED, MUST BE PLACED IN LIFTS NOT EXCEEDING 1000mm. THE ROCKFILL SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVE COMPACTORS SUCH AS HEAVY LOADED RUBBER TIRED HAUL TRUCKS CAN ONLY BE USED AS PER A WRITTEN APPROVAL FROM THE ENGINEER.

ROAD MATERIAL IDENTIFICATION:

1. 100mm WEARING COURSE / BASE LAYER, TYPE 5 (-32mm) MATERIAL
2. 300mm ROCK SUBBASE LAYER, TYPE 8 (-150mm) MATERIAL WHERE FILL IS LESS THAN 600mm THICK.
   OR
   TYPE 12 (-600mm) MATERIAL WHERE FILL IS GREATER THAN 600mm
3. GENERAL FILL TYPE 12 (-600mm) MATERIAL

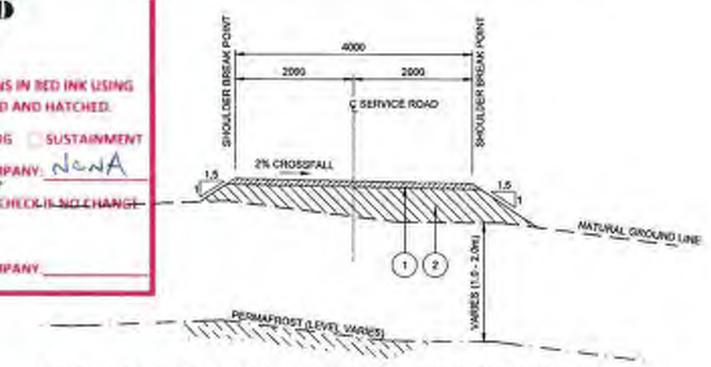
GENERAL NOTES:

1. SAFETY BARRIERS FOR ALL ROADS SHALL BE PROVIDED BASED ON THE NUNAVUT MINE HEALTH AND SAFETY ACT.
1.1 THIS BARRIER SHALL BE PROVIDED WHERE THE ELEVATION DIFFERENCE IS GREATER THAN 3.0m (DIMENSION 'X'), MEASURED AT THE ROAD SHOULDER BREAK POINT, SEE TYPICAL SECTIONS FOR LOCATION. BERMS TO BE CONSTRUCTED AS PRESCRIBED BY THE ENGINEER ON SITE.
2. 1.0m WIDE OPENINGS ARE TO BE PROVIDED IN THE BERMS AT 25.0m C/C FOR WATER RUN OFF AND SNOW CLEARANCE DURING MAINTENANCE.
3. THICKNESS FOR ROAD FILL MATERIALS ARE MINIMUM, AND ARE TO BE ADJUSTED IN THE FIELD DEPENDING ON SITE AND LOCAL CONDITIONS.



SECONDARY ROAD - TYPICAL CROSS SECTION

SCALE 1:50



TERTIARY AND TEMPORARY ROAD - TYPICAL CROSS SECTION

SCALE 1:50

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: CONSTRUCTION COMMISSIONING SUSTAINMENT

NAME/SIGN: BRADFORD WATSON B. COMPANY: NUNA

DATE OF AS-BUILT: 10/20/19 ✓ CHECK IS NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date 2018-04-05
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

FOR CONSTRUCTION

THIS DRAWING WAS PREPARED BY HATCH LTD. (HATCH) FOR THE EXCLUSIVE USE OF BAFFINLAND IRON MINES CORPORATION AND IT'S USE IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN HATCH AND THE CLIENT, INCLUDING ANY LIMITATIONS ON USES AT CONTAINED THEREIN. THIS DRAWING AND ITS CONTENTS REMAIN THE INTELLECTUAL PROPERTY OF HATCH SUBJECT TO CLIENT'S NON-EXCLUSIVE, IRREVOCABLE, PERPETUAL AND NON-EXCLUSIVE LICENSE TO USE AND REPRODUCE THE DRAWING FOR PURPOSES CONNECTED WITH THE PROJECT, INCLUDING ITS CONSTRUCTION, COMPLETION, MAINTENANCE, EXTENSION, REINSTATEMENT AND REPAIR OF THE PROJECT. THIS DRAWING, AND THE INFORMATION CONTAINED HEREIN, SHALL BE TREATED AS CONFIDENTIAL FOR ALL OTHER PURPOSES AND SHALL NOT BE DISCLOSED WITHOUT THE WRITTEN CONSENT OF HATCH.

No.	DESCRIPTION	BY	CHK'D	DATE
0	APPROVED FOR CONSTRUCTION	RB	FH	20/03/2018

REVISIONS

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	I BARNARD	NR	
DESIGNER	I BARNARD	NR	
CHECKER	F HUGO		2018-03-26
DESIGN COORD.	R GOOSEN		2018-03-26
RESP. ENG.	R HAUM		2018-04-05
LEAD DISC. ENG.	A GROBBELAAR		2018-03-26
AREA LEAD			2018-04-05
ENG. MANAGER	D STANGER		
AREA MANAGER			

DRAWING APPROVAL STATUS: Approved for Construction

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE, PRIMARY, SECONDARY ROADS
TYPICAL CROSS SECTIONS

SCALE	DWG. No.	REV
1:100 OR AS NOTED	H353004-40000-221-273-0001-0001	0

SHEET SIZE: D

$USERNAMES $TIMES $DATES

REFERENCE DRAWINGS

DRAWING No. | DRAWING TITLE

REG. PROFESSIONAL

Appendix B

Quality Documentation

Quality documentation including Survey Data and Requests for Information (RFI's) for the Port Water Management Structures can be found in the following files which form this Appendix:

File Number	Description
E353004-CC006-130-124-0003	QC Turnover Package P-SWD-3
E353004-CC006-130-124-0005	QC Turnover Package P-SWD-5
E353004-CC006-130-124-0006	QC Turnover Package P-SWD-6
E353004-CC006-130-124-0007	QC Turnover Package P-SWD-7
E353004-CC006-130-124-0008	QC Turnover Package P-Culv-22
E353004-CC006-130-124-0009	QC Turnover Package P-Culv-23 (Culv-2018-H)
E353004-CC006-130-124-0010	QC Turnover Package P-Culv-32
E353004-CC006-130-124-0012	QC Turnover Package Laydown LP2
E353004-CC006-130-124-0013	QC Turnover Package Laydown LP7
E353004-CC006-130-124-0014	QC Turnover Package Laydown LP3
E353004-CC006-130-124-0015	QC Turnover Package Laydown LP5
E353004-CC006-130-124-0016	QC Turnover Package Laydown LP6
E353004-CC006-130-124-0017	QC Turnover Package Delivery Road
E353004-CC006-130-124-0019	QC Turnover Package Laydown W10B

HATCH **Vendor/Contractor Document Review**

Doc Number	E353004-CC006-130-124-0003	**SUB**	01
Date Received			

Review Grade	**Next Submittal Status**
☐ **C1** - Proceed to next submission & status ☐ **C2** - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ **C3** - Do not proceed. Revise as noted & resubmit	☐ Internal Review
Next Submittal Date:	☐ Certified/☐ As-Built
☒ **C4** - No further submission required - Complete (select status below) ☐ Certified Final ☒ Final ☐ Cancelled ☐ Superseded	

Package Engineer: Name, signature and date

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibility for correct design, details & dimensions shall remain with the party submitting the drawing/document.

NUNA

NUNA EAST LTD

Job # CC006-0009A
Hatch WBS Ref: 4810

Stream Diversion Berms - Damage (SWD-3)

Mine Port

CC006

Baffinland Iron Mines Corp.: Mary River Expansion, Nu. 2019

NUNA

NUNA EAST LTD

Job #:

CC006-0009A

SWD-3

Mary River Expansion Project

H353004

Port Site Civil Works

09Section 1
Completion of Construction Declaration / Transfer of Care, Control & Custody

Section 2
Inspection & Test Plan (ITP)

Section 3
Redline / As-Built Drawings

Section 4
Survey Data Documentation

Section 5
Sieves / Statements of Compliance

Section 6
Request for Information Documents (RFIs)

Section 7
Non-Conformance Reports (NCRs)

Section 8
Land Disturbance Form (LDF)

Section 9
Signature Log

Section 10
Quality Control Documents

Section 11
Walkdown

Section 12
Deficiency/Punchlist

Section 13
Acceptance of Completion of Construction Declaration

Section 14
Construction Photographs

NUNA

NUNA EAST LTD

(Section 1)

Completion of Construction Declaration / Transfer of Care, Control & Custody (TCCC) Forms

COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Mines Corporation
2. **Contractor:** Nuna East Limited
3. **Construction:** Stormwater Diversion Installation
4. **Location:** Port Site
5. **Description:** Installation of Stormwater diversion Berm & Trench P-SWD-3

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turn over documentation has been forwarded to the owner.

	Bradford Watkin	QC Coordinator	9/1/19
(Signature)	(Print Name)	(Title)	(Date)
Nuna East Ltd.	14, 6194 – 50 Street NW Edmonton, AB, CA		T6B 2N7
(Company)	(Address)		(City, Postal Code)

Transfer of Care, Custody and Control

FROM GROUP "A"	NUNA EAST LTD.	**Job File No.:**	CC006-0009A SWD-3
To Group "B"	Hatch Engineering	**WBS No.:**	N/A
Location:	SSE Corner of LP2 Laydown	**Date:**	May 12, 2019

ORIGINATING JOB FILE NO. DETAILS:	Construct a Stormwater Diversion Ditch Involving: • SNOW, ICE REMOVAL; • ESTABLISHING A SUB-GRADE ; • PLACEMENT OF GEOTEXTILE; • AGGREGATE PLACEMENT.
Comments:	

THIS IS NOTICE TO GROUP "B" HATCH ENGINEERING THAT THE FOLLOWING WORK/MATERIAL AS PER P.O./CONTRACT IS/ARE BEING TRANSFERRED BY GROUP "A" NUNA EAST LTD. AND IS/ARE BEING FULLY ACCEPTED BY GROUP "B" HATCH ENGINEERING FROM GROUP "A" NUNA EAST LTD.
WITH EXCEPTIONS AS LISTED BELOW (IF ANY).

Description: No exceptions noted.	**Reference Drawing(s):** H353004-40000-228-271-0004-0001 Rev 1.

EXCEPTIONS:	**DATE CORRECTED:**	**SIGNED OFF:**
1.		
2.		

"Exceptions Accepted and released"

From Group "A": Nuna East Ltd.

Date: 5/14/19

Print Name: BRADFORD WATKIN Signature:

To Group "B": Hatch Engineering.

Date: 5/14/19

Print Name: ROSS BAKER Signature:

I CONFIRM THE CONDITIONS LISTED BELOW HAVE BEEN MET (WITH NOTED EXCEPTIONS OR DEFICIENCIES) AND RELEASE OF CARE, CUSTODY AND CONTROL OF THE ITEM(S) LISTED ABOVE TO THE RECIPIENT.

☑ All requests for Inspection are complete and all issues are resolved.

☑ All deficiencies have been resolved.

☑ All Redlines / As-Builts have been received.

N/A ☐ All relevant manuals and vendor data have been received.

Client Representative:

Name: ROY BANGA Signature:

Date: 19-MAY-2019

NUNA

NUNA EAST LTD

(Section 2)

Inspection & Test Plan (ITP)

Nuna Logistics Limited
Package Dividers

NUNA EAST LTD

QUALITY MANAGEMENT SYSTEM
INSPECTION &TEST PLAN
(Civil / Structural Installations)

CLIENT: Hatch	**ITEM / DESCRIPTION / SCOPE:** Stormwater Diversion Ditch **P-SWD-3** / Water Diversion Ditch / Earthworks material production, Excavation, Haulage, Placement, & Compaction.	**NUNA ITP NO.:** CC006-0009A	**REVISION NO.:** 0
CONTRACTOR: Nuna East Ltd.		**AFFILIATED SUB-CONTRACTOR(S):** N/A	
CONTACT PERSON: Bradford Watkin	**CONTACT INFORMATION:** bradfordw@nunalogistics.com	**DATE:** May 9, 2019	
CONTRACT No.: H353004-CC006	**HATCH PROJECT NUMBER:** H353004-CC006	**HATCH DOCUMENT TITLE:** Mary River Expansion Project-Remaining Early Earthworks	
NUNA JOB No.: CC006-0009A	**PURCHASE ORDER No.:** N/A	**PROJECT MANAGER(s):** Chris Petrovic, Stephen Nugent	
LOCATION(S): Milne Port Site		**LEGEND:** **H:** A mandatory hold on manufacturer until release by inspector or official waiver from client. **M:** Inspection stage by inspector on a spot basis, but not a mandatory hold point. **HR:** A mandatory hold / review & acceptance / approval of the specified documentation. **W:** To be informed and invited to inspect. Construction to continue if inspector does not attend. **R:** Review of report / certifications. **A:** Audit (Review at Random).	
CWP No.: N/A			

Approved For Construction

Stephen Nugent		May 9, 2019
Nuna Project Manager / Engineer (Print)	Signature	Date
Bradford Watkin		May 9, 2019
Nuna Quality Representative (Print)	Signature	Date
Hatch Representative (Print)	Signature	Date

Hatch Stamp

HATCH Vendor/Contractor Document Review

Doc Number	E353004-CC006-130-051-0009	SUB	02
Date Received			
Review Grade		Next Submittal Status	
☐ C1 - Proceed to next submission & status		☐ Certified	
☐ C2 - Proceed with exceptions as noted to next submission & status		☐ As-Built	
☐ C3 - Do not proceed. Revise as noted & resubmit		☐ Internal Review	
Next Submittal Date:		☐ Certified ☐ As-Built	
☐ ~~C4~~ No further submission required - Complete (select status below) ☐ Certified Final ☐ ~~Final~~ ☐ Cancelled ☐ Superseded			
Package Engineer: Name, signature and date			

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibility for correct design, details & dimensions shall remain with the party submitting the drawing/document.

Final Review

BRADFORD WATKIN			9/1/19
Nuna Quality Representative	(Print)	Signature	Date
Hatch Quality Representative	(Print)	Signature	Date

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	*Description of Activities* (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	*Functional Responsibility*	*Quality Control Activity*	*Verification Frequency*	*Reference Document(s)/ Controlling Procedure*	*Acceptance Criteria*	*Verification Document(s) (Reporting)*	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	*Comments*
1.	Contract Review / Approval	NUNA	Review / Verify Document	Prior to project start	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract				R		5/9/19	R			

ACTIVITY DATA							VERIFICATION DATA											
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
2.	Approval of ITP	NUNA / HATCH Representatives	Review	Prior to start	NUNA Quality System Manual	Signed ITP by Client representative, NUNA Quality System Manual	Signed acceptance of document (Exhibit 1.0)				HR	BW	5/17/19	HR			
3.	Scope and Associated Documents	NUNA	Review For Errors	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R	BW	5/9/19	A			
4.	Land Disturbance Approval obtained	NUNA	Review	Prior to start	BIM Environmental Protection Plan	IFC Drawings & Client contract scope, BIM Environmental Protection Plan	Land Disturbance Form BAF-PH1-830-P16-0008				HR	BW	2/3/19	R			
5.	Work Method of Statement	NUNA / HATCH	Review	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R	BW	9/1/19	A			N/A
6.	Signature Log	NUNA	Review, obtain signatures	Ongoing	NUNA Quality System Manual	NUNA Quality System Manual	NUNA Signature Log				R	BW	5/9/19	R			
7.	Initial Survey Layout	NUNA / ALL NORTH	Cross Check of IFC Layout	Ongoing	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				HR	BW	5/9/19	R			
8.	Materials verification	NUNA	Review	As required	IFC Drawings, Hatch Spec. 280-078-0002 Rev 0, ASTM C-136	IFC Drawings, Hatch Spec.280-078-0002 Rev 0, ASTM C-136	Sieve Test Reports, QSRs				HR	BW	5/8/19	HR			• Type 8
9.	RFI	NUNA	Resolution of RFIs	As required	NUNA Quality System Manual	Disposition, Approved, closed and log updated	RFIs				HR	BW	9/1/19	R			
10.	Clearing of works location completed	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				HR W	BW	5/16/19	R			• Snow / Ice removal / Disposal

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
11.	Subgrade foundation preparation completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				HR W	BW	5/11/19	HR			
12.	Collector ditch cut completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	BW	5/11/19	W			
Type 8 Jaw Run 150 minus																	
13.	Type 8 Jaw Run 150 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	BW	5/11/19	M			
14.	Compaction of Type 8 Jaw Run 150 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	BW	5/11/19	M			
15.	Survey of Type 8 Jaw Run 150 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR	BW	5/12/19	R			
16.	As built Survey	NUNA	Review	Continuous During Operations	IFC Drawings	IFC Drawings, Hatch Specifications	As built Drawings & Data				HR	BW	5/12/19	R			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
17.	Final Walk down	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Contract Requirements	Final Walkdown Attendees' Report				**W**	BW	5/14/19	**HR**			
18.	Deficiency List / Punch list generated	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per contract Requirements	Item form punch list items resolved				**HR**	BW	5/14/19	**HR**			
19.	NCR's closed.	NUNA / HATCH	Review of NCRs, Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Requirements	NCR log cleared				**HR**	BW	5/14/19	**A**			*NO NCR'S GENERATED
20.	As-built / Redline drawings completed.	NUNA	Review / Verify	Post Final Walk down	IFC Drawings, Contract	As-builts / Redlines to Reflect All Field Changes	As-builts / Redlines				**HR**	BW	5/11/19	**A**			
21.	Final Acceptance and ITP Sign off	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP				**HR**	BW	5/1/19	**HR**			
22.	Inspection Acceptance and Sign-Off Form signed by Engineer of record.	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP, Acceptance of Completion of Construction Form				**HR**			**HR**			
23.	Turnover package completed and sent to client.	NUNA	Review / Verify	Post project completion	NUNA Quality System Manual, IFC Drawings, Contract	Contract, Code & applicable specifications.	Quality Management System Quality Control Turnover package.				**HR**			**A**			

Note: Nuna ITP Sign-Offs based on supporting documentation.

Comments:

ITP ISSUE APPROVALS

Stephen Nugent	Site Project Manager		May 9, 2019
Nuna Contractor Project Manager / Engineer *(Print)*	Title	Signature	Date *(mm/dd/yy)*
Bradford Watkin	QC Coordinator		May 9, 2019
Nuna Contractor Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

ITP CLOSEOUT AND WORK ACCEPTANCE APPROVALS

Nuna Contractor Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

NUNA

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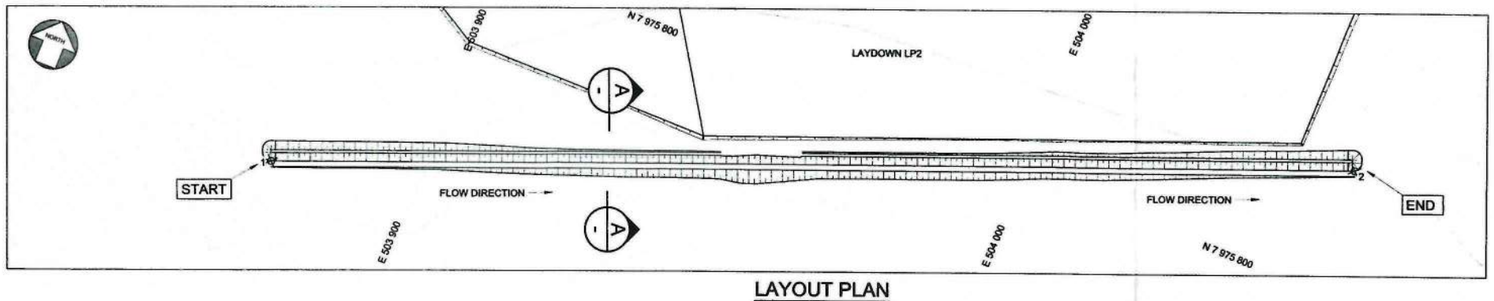
(Section 3)

Redline / As-Built Drawings

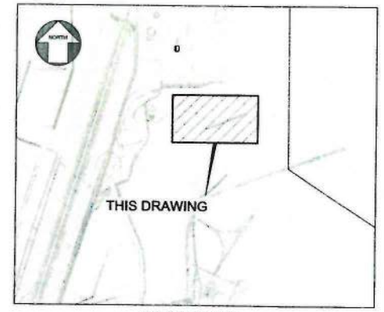
DWG. No. H353004-40000-228-271-0004-0001



LAYOUT PLAN
SCALE 1:500

LEGEND

EG	EXISTING GROUND
CH	CHAINAGE
L	LENGTH
R	RADIUS
DA	DEFLECTION ANGLE
TL	TANGENT LENGTH
AL	ARC LENGTH
BCC	BEGINNING OF CURVE
ECC	END OF CURVE
PI	POINT OF INTERSECTION
HWL	HIGH WATER LEVEL
FB	FREE BOARD
→	FLOW DIRECTION
	DIVERSION CENTERLINE



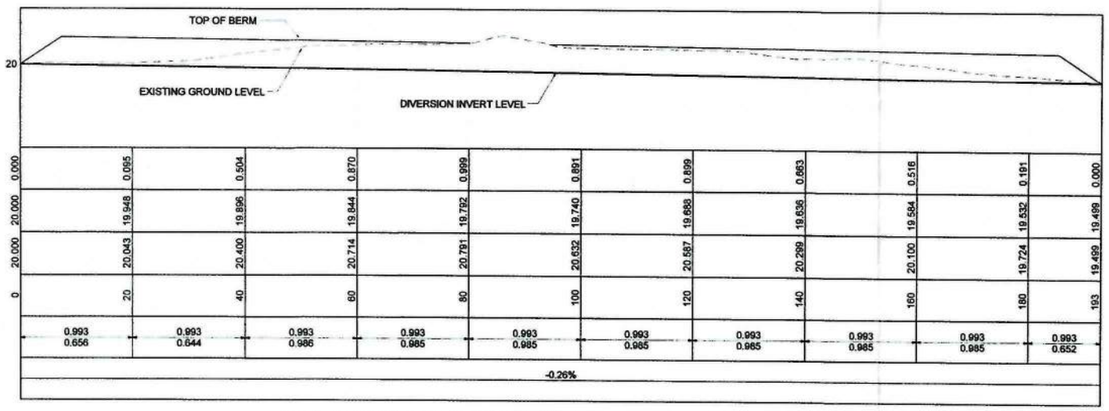
KEY PLAN
NTS

NOTES:
1. LIDAR SURVEY PROVIDED BY PHOTSAT (2016)
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS AND ELEVATIONS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS ARE IN MILLIMETER UNLESS SPECIFIED OTHERWISE

EG -----
INVERT ——

SCALES:
Horizontal 1:500
Vertical 1:100

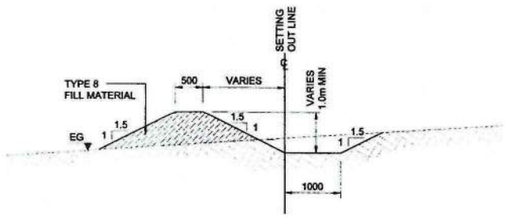
DATUM 17.000



DIVERSION LONGITUDINAL PROFILE

SWD-3 BERM SETTING OUT CO-ORDINATES

POINT	X	Y
1	7975753.235	503874.022
2	7975824.093	504053.441



SECTION A-A
SCALE 1:50

NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: Bradford Watkin COMPANY: Nuna East

DATE OF AS-BUILT: May 11, 2019 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

Released for Use

Bradford Watkin QA/QC Reviewed

PERMIT TO PRACTICE HATCH LTD. Signature Date 2016-11-1 PERMIT NUMBER: P 512 The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

0 5 10
SCALE 1:250 IN METERS

DRAWING No.	DRAWING TITLE
H353004-00000-221-294-0002-0010	STANDARD DRAWING - EARTHWORKS AND DRAINAGE
H353004-40000-221-271-0004-0001	LAYDOWN AREA LP2 - PLAN AND SECTIONS
H353004-40000-228-272-0011-0001	LAYDOWN AREA LP2 - DRAINAGE PLAN

REFERENCE DRAWINGS

REG. PROFESSIONAL

REGISTERED PROFESSIONAL ENGINEER D STANGER LICENSEE 2018-11-1 NT/NU

FOR CONSTRUCTION

THIS DRAWING WAS PREPARED BY HATCH LTD. (HATCH) FOR THE EXCLUSIVE USE OF BAFFINLAND IRON MINES LP (CLIENT) AND ITS USE IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN HATCH AND THE THE CLIENT, INCLUDING ANY LIMITATIONS ON LIABILITY CONTAINED THEREIN. THIS DRAWING AND ITS CONTENTS REMAIN THE INTELLECTUAL PROPERTY OF HATCH SUBJECT TO CLIENT'S ROYALTY-FREE, IRREVOCABLE, PERPETUAL AND NON-EXCLUSIVE LICENSE TO USE AND REPRODUCE THE DRAWING FOR PURPOSES CONNECTED WITH THE PROJECT, INCLUDING THE CONSTRUCTION, COMPLETION, MAINTENANCE, EXTENSION, REINSTATEMENT AND REPAIR OF THE PROJECT. THIS DRAWING, AND THE INFORMATION CONTAINED HEREIN, SHALL BE TREATED AS CONFIDENTIAL FOR ALL OTHER PURPOSES AND SHALL NOT BE MODIFIED WITHOUT THE WRITTEN CONSENT OF HATCH.

No.	DESCRIPTION	BY	CHK'D	DATE
1	STORMWATER DIVERSION BERM RE-DESIGNED AND MOVED TO ACCOMMODATE LAYDOWN LP2 EXPANSION	IHB	FH	25/010/2018
0	FOR CONSTRUCTION	HH	FH	23/03/2018

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	H HERBST	NR	23/03/2018
DESIGNER	H HERBST	NR	23/03/2018
CHECKER	F HUGO		2018-10-31
DESIGN COORD.	R GOOSEN		2018-10-31
RESP. ENG.	R HALIM		
LEAD DISC. ENG.	A GROBBELAAR		31 October 20
AREA LEAD	V LAVRIC		2018-11-01
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		18-11-02

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
STORMWATER DIVERSION P-SWD-3
LAYOUT, PROFILE AND DETAILS

SCALE	DWG. No.	REV
1:500 OR AS NOTED	H353004-40000-228-271-0004-0001	1

SHEET SIZE: D

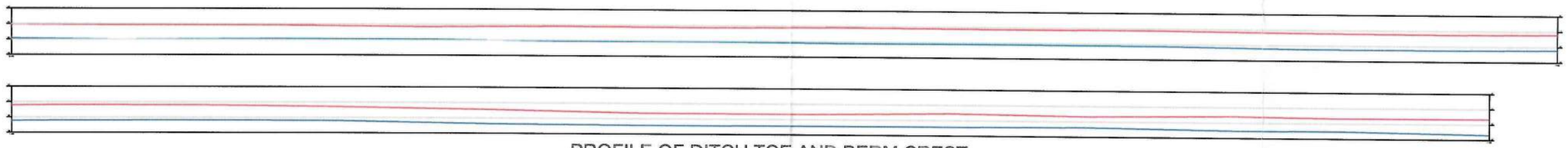
$USERNAMES $DATES $FILES $TIMES

NUNA

NUNA EAST LTD

(Section 4)

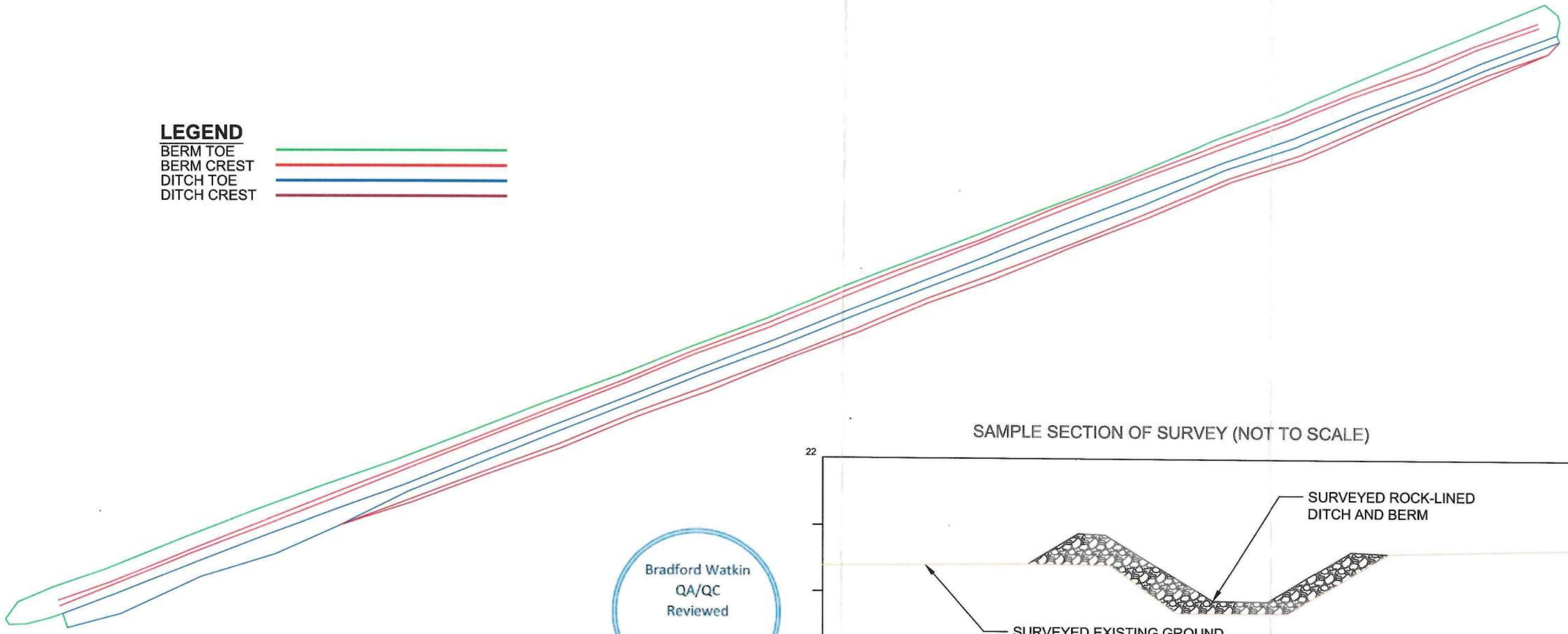
Survey Documentation



PROFILE OF DITCH TOE AND BERM CREST

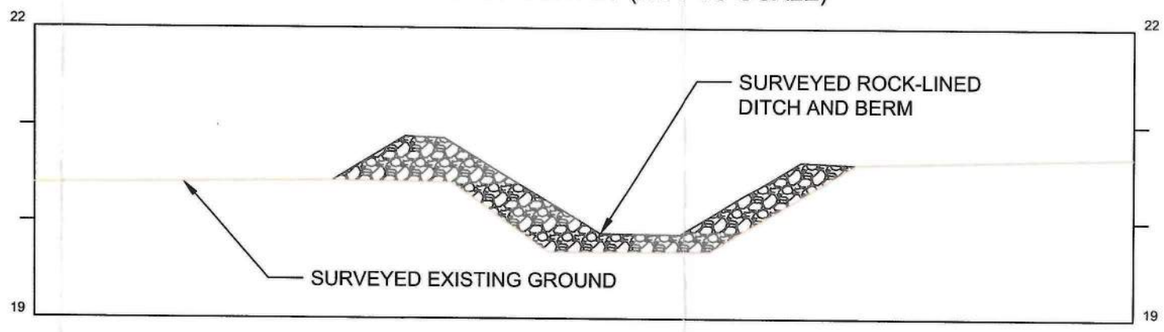
LEGEND

BERM TOE
BERM CREST
DITCH TOE
DITCH CREST



Bradford Watkin
QA/QC
Reviewed

SAMPLE SECTION OF SURVEY (NOT TO SCALE)



NOTES:

OWNER: BAFFINLAND IRON MINES LP	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0		SWD-3
PROJECT: MARY RIVER EXPANSION PROJECT			DRAWING TITLE: ASBUILT SURVEY OF SWD-3
	DRAWN BY: MATT WALSH	SCALE: BARSCALE	DATE: May 12, 2019
			DRAWING NAME (YYMMDD): AB 190510 SWD3 FINAL.dwg

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Stream Diversion Berms Drainage SWD-3
Final As-Built

Final As-Built SWD-3

Point Number	Northing	Easting	Elevation	Description
3131000	7975752.767	503865.642	20.967	SWD3 BERM CREST
3131001	7975752.07	503866.062	21.026	SWD3 BERM CREST
3131002	7975754.342	503872.305	20.976	SWD3 BERM CREST
3131003	7975755.019	503872.119	20.976	SWD3 BERM CREST
3131004	7975756.852	503878.59	20.925	SWD3 BERM CREST
3131005	7975757.249	503878.451	20.94	SWD3 BERM CREST
3131006	7975760.819	503888.353	20.937	SWD3 BERM CREST
3131007	7975761.223	503888.235	20.937	SWD3 BERM CREST
3131008	7975764.222	503897.326	20.887	SWD3 BERM CREST
3131009	7975764.721	503897.078	20.867	SWD3 BERM CREST
3131010	7975767.888	503905.115	20.916	SWD3 BERM CREST
3131011	7975767.331	503905.243	20.942	SWD3 BERM CREST
3131012	7975770.767	503913.904	20.868	SWD3 BERM CREST
3131013	7975771.194	503913.721	20.879	SWD3 BERM CREST
3131014	7975774.152	503922.486	20.894	SWD3 BERM CREST
3131015	7975774.503	503922.285	20.921	SWD3 BERM CREST
3131016	7975777.815	503931.795	20.888	SWD3 BERM CREST
3131017	7975778.204	503931.611	20.871	SWD3 BERM CREST
3131018	7975781.461	503941.268	20.868	SWD3 BERM CREST
3131019	7975781.842	503941.107	20.886	SWD3 BERM CREST
3131020	7975785.029	503949.777	20.805	SWD3 BERM CREST
3131021	7975785.444	503949.616	20.807	SWD3 BERM CREST
3131022	7975788.378	503958.912	20.777	SWD3 BERM CREST
3131023	7975788.923	503958.741	20.746	SWD3 BERM CREST
3131024	7975792.247	503968.224	20.798	SWD3 BERM CREST
3131025	7975792.82	503967.988	20.814	SWD3 BERM CREST
3131026	7975796.185	503976.408	20.811	SWD3 BERM CREST
3131027	7975795.569	503976.358	20.737	SWD3 BERM CREST
3131028	7975798.885	503984.918	20.709	SWD3 BERM CREST
3131029	7975799.227	503984.797	20.72	SWD3 BERM CREST
3131030	7975803.172	503993.946	20.562	SWD3 BERM CREST
3131031	7975802.584	503994.055	20.551	SWD3 BERM CREST
3131032	7975806.702	504003.088	20.356	SWD3 BERM CREST
3131033	7975806.284	504003.206	20.362	SWD3 BERM CREST
3131034	7975810.211	504013.538	20.34	SWD3 BERM CREST
3131035	7975810.706	504013.203	20.341	SWD3 BERM CREST
3131036	7975813.853	504021.85	20.439	SWD3 BERM CREST
3131037	7975813.399	504022.01	20.44	SWD3 BERM CREST
3131038	7975817.23	504029.857	20.321	SWD3 BERM CREST

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Stream Diversion Berms Drainage SWD-3
Final As-Built

3131039	7975816.75	504029.936	20.351	SWD3 BERM CREST
3131040	7975820.491	504038.648	20.416	SWD3 BERM CREST
3131041	7975819.913	504038.889	20.35	SWD3 BERM CREST
3131042	7975823.097	504044.826	20.332	SWD3 BERM CREST
3131043	7975822.675	504045.111	20.359	SWD3 BERM CREST
3131044	7975825.923	504052.463	20.327	SWD3 BERM CREST
3131045	7975825.389	504052.606	20.332	SWD3 BERM CREST
3131046	7975828.274	504053.327	19.172	SWD3 TOE
3131047	7975827.008	504054.909	19.228	SWD3 TOE
3131048	7975826.217	504055.174	19.21	SWD3 TOE
3131049	7975824.546	504054.843	19.314	SWD3 TOE
3131050	7975824.46	504044.172	19.405	SWD3 TOE
3131051	7975821.932	504038.151	19.533	SWD3 TOE
3131052	7975818.238	504029.34	19.734	SWD3 TOE
3131053	7975814.696	504021.528	19.901	SWD3 TOE
3131054	7975811.398	504013.038	20.014	SWD3 TOE
3131055	7975806.981	504002.825	20.071	SWD3 TOE
3131056	7975803.47	503993.71	20.312	SWD3 TOE
3131057	7975799.817	503984.364	20.412	SWD3 TOE
3131058	7975796.725	503976.313	20.442	SWD3 TOE
3131059	7975793.329	503967.649	20.45	SWD3 TOE
3131060	7975789.501	503958.576	20.438	SWD3 TOE
3131061	7975785.997	503949.458	20.397	SWD3 TOE
3131062	7975782.563	503940.891	20.427	SWD3 TOE
3131063	7975779.036	503931.268	20.272	SWD3 TOE
3131064	7975775.409	503921.929	20.217	SWD3 TOE
3131065	7975772.084	503913.252	20.119	SWD3 TOE
3131066	7975769.114	503904.603	19.938	SWD3 TOE
3131067	7975766.139	503896.392	19.803	SWD3 TOE
3131068	7975762.773	503887.611	19.718	SWD3 TOE
3131069	7975758.824	503877.769	19.816	SWD3 TOE
3131070	7975756.642	503871.442	19.852	SWD3 TOE
3131071	7975754.809	503867.135	20.206	SWD3 TOE
3131072	7975752.122	503868.178	20.654	SWD3 TOE
3131073	7975752.902	503871.218	20.113	SWD3 TOE
3131074	7975753.39	503872.593	20.078	SWD3 TOE
3131075	7975751.692	503873.192	20.187	SWD3 TOE
3131076	7975753.401	503879.727	19.978	SWD3 TOE
3131077	7975755.76	503878.951	19.998	SWD3 TOE
3131078	7975759.71	503888.858	20.05	SWD3 TOE
3131079	7975757.969	503889.605	20.023	SWD3 TOE
3131080	7975763.146	503897.792	20.053	SWD3 TOE
3131081	7975760.748	503898.609	19.973	SWD3 TOE

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Stream Diversion Berms Drainage SWD-3
Final As-Built

3131082	7975766.109	503905.791	19.957	SWD3 TOE
3131083	7975764.275	503906.532	20.06	SWD3 TOE
3131084	7975768.362	503914.874	19.983	SWD3 TOE
3131085	7975769.212	503914.502	19.958	SWD3 TOE
3131086	7975772.649	503923.121	19.9	SWD3 TOE
3131087	7975771.778	503923.498	19.934	SWD3 TOE
3131088	7975775.552	503932.908	19.912	SWD3 TOE
3131089	7975776.366	503932.516	19.903	SWD3 TOE
3131090	7975779.185	503942.179	19.871	SWD3 TOE
3131091	7975779.969	503941.899	19.881	SWD3 TOE
3131092	7975783.377	503950.536	19.76	SWD3 TOE
3131093	7975782.648	503950.749	19.791	SWD3 TOE
3131094	7975786.069	503959.996	19.786	SWD3 TOE
3131095	7975786.873	503959.569	19.736	SWD3 TOE
3131096	7975790.663	503968.875	19.794	SWD3 TOE
3131097	7975789.84	503969.217	19.822	SWD3 TOE
3131098	7975793.194	503977.707	19.875	SWD3 TOE
3131099	7975794.098	503977.435	19.81	SWD3 TOE
3131100	7975797.257	503985.507	19.794	SWD3 TOE
3131101	7975796.325	503985.851	19.745	SWD3 TOE
3131102	7975800.075	503995.414	19.641	SWD3 TOE
3131103	7975801.078	503994.716	19.623	SWD3 TOE
3131104	7975803.526	504004.613	19.645	SWD3 TOE
3131105	7975804.658	504003.918	19.56	SWD3 TOE
3131106	7975808.764	504014.414	19.572	SWD3 TOE
3131107	7975807.918	504014.724	19.582	SWD3 TOE
3131108	7975810.727	504023.299	19.591	SWD3 TOE
3131109	7975811.735	504022.908	19.572	SWD3 TOE
3131110	7975814.956	504030.628	19.614	SWD3 TOE
3131111	7975814.114	504031.07	19.563	SWD3 TOE
3131112	7975818.491	504039.769	19.475	SWD3 TOE
3131113	7975817.601	504040.047	19.474	SWD3 TOE
3131114	7975821.086	504045.788	19.483	SWD3 TOE
3131115	7975820.202	504046.124	19.463	SWD3 TOE
3131116	7975823.688	504055.146	19.312	SWD3 TOE
3131117	7975822.194	504053.794	19.609	SWD3 CREST
3131118	7975819.589	504046.405	19.69	SWD3 CREST
3131119	7975819.109	504046.611	19.672	SWD3 CREST
3131120	7975816.962	504040.206	19.781	SWD3 CREST
3131121	7975816.475	504040.376	19.707	SWD3 CREST
3131122	7975813.072	504031.424	19.981	SWD3 CREST
3131123	7975812.6	504031.65	19.93	SWD3 CREST
3131124	7975809.75	504023.904	20.132	SWD3 CREST

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Stream Diversion Berms Drainage SWD-3
Final As-Built

3131125	7975809.205	504024.142	20.133	SWD3 CREST
3131126	7975806.829	504015.111	20.18	SWD3 CREST
3131127	7975806.378	504015.32	20.186	SWD3 CREST
3131128	7975802.509	504005.026	20.305	SWD3 CREST
3131129	7975801.984	504005.159	20.295	SWD3 CREST
3131130	7975798.851	503996.051	20.6	SWD3 CREST
3131131	7975798.517	503996.179	20.638	SWD3 CREST
3131132	7975795.076	503986.344	20.71	SWD3 CREST
3131133	7975794.48	503986.54	20.783	SWD3 CREST
3131134	7975792.05	503978.199	20.756	SWD3 CREST
3131135	7975791.531	503978.376	20.723	SWD3 CREST
3131136	7975788.367	503969.771	20.743	SWD3 CREST
3131137	7975787.88	503969.98	20.721	SWD3 CREST
3131138	7975784.751	503960.746	20.726	SWD3 CREST
3131139	7975784.428	503960.846	20.659	SWD3 CREST
3131140	7975781.171	503951.257	20.702	SWD3 CREST
3131141	7975780.608	503951.558	20.639	SWD3 CREST
3131142	7975778.08	503942.756	20.628	SWD3 CREST
3131143	7975777.558	503942.987	20.602	SWD3 CREST
3131144	7975774.227	503933.469	20.749	SWD3 CREST
3131145	7975773.742	503933.744	20.792	SWD3 CREST
3131146	7975770.752	503924.012	20.561	SWD3 CREST
3131147	7975770.351	503924.171	20.585	SWD3 CREST
3131148	7975767.469	503915.216	20.41	SWD3 CREST
3131149	7975767.093	503915.404	20.401	SWD3 CREST

NUNA

NUNA EAST LTD

(Section 5)

Sieve Analysis / Statement of Compliance

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	10-May-19	Report Number:	18SJ0001
File Number:	T08P001	Inspector:	R.chaisson
Client:	Hatch	Sampled By:	R.Chaisson
Project:	Baffinland	Sample Date:	8-May-19
Location:	Port Site	Copy To:	
Contractor:	Nuna		

TEST RESULTS

SIEVE SIZE (mm)			200	150	100	56	50	19	4.75	2.50	1.25	0.630	0.315	0.160	0.080
MAX % PASS SPEC			100.0	100.0	100.0		60.0	35.0	25.0						5.0
MIN % PASS SPEC			100.0	95.0	50.0		30.0	15.0	10.0						0.0
% PASS RESULTS			100.0	100.0	88.0	45.3		39.7	15.8	13.1	9.8	6.6	3.6	2.0	1.1

MATERIAL TYPE

Type 8

SIEVE METHOD

Washed

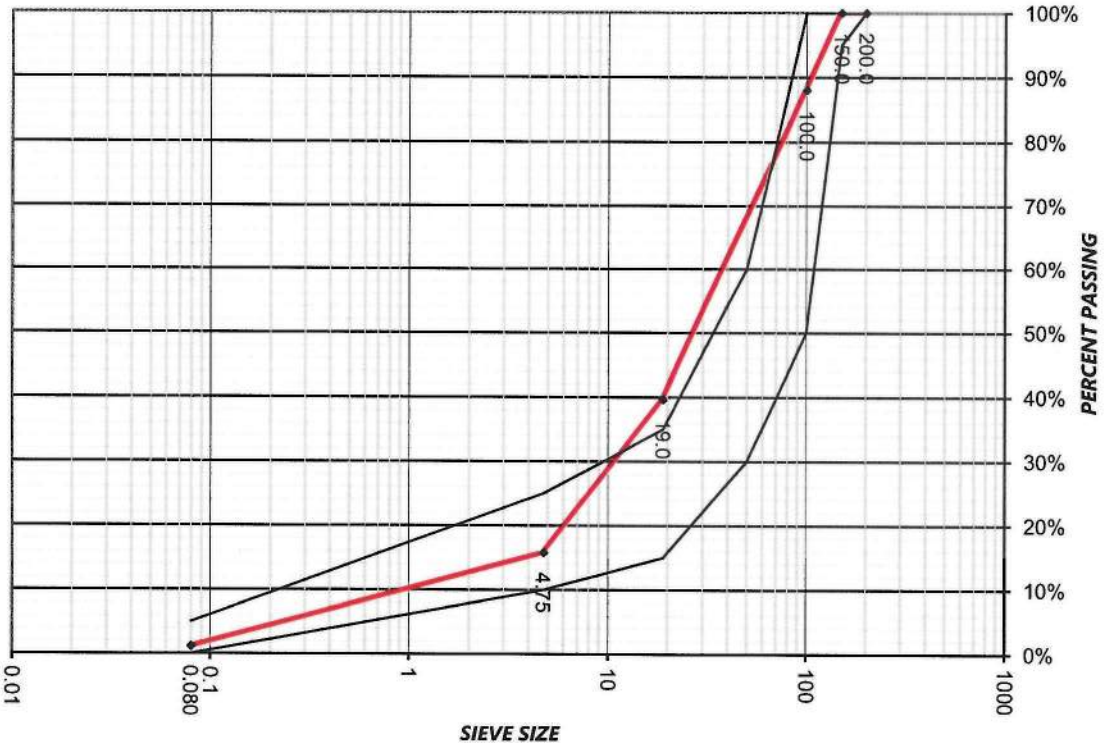
% FRACTURE

% MOISTURE

7.1%

GRADATIONS

GRAVEL	84.2%
SAND	14.6%
SILT/CLAY	1.1%



COMMENTS

Sample is fine on the 19mm (39.7% passing). All other sizes are within specification

Used 56mm sieve due to availability.

Reviewed By:

Bradford Watkin
QA/QC
Reviewed

M Kirkbride P.Eng.

NUNA

NUNA EAST LTD

(Section 6)

No Request for Information Documentation (RFI) Generated

NUNA

NUNA EAST LTD

(Section 7)

No Non-Conformance Reports (NCRs) Generated

NON-CONFORMANCE REPORT LOG

Project: CC006 **Date:** 8-29-19

Area: Mary River Expansion - Milne Port **Contract/Work Pkg. No.:** CC006-0009A SWD-3

CWP#: N/A **Originator:** Bradford Watkin

NCR No.	Description	Disposition	Date.	Rectified	Date
	No NCR's generated for this work package				

NUNA

NUNA EAST LTD

(Section 8)

Land Disturbance Forms (LDF)

Baffinland

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.		**Department:**	Projects
Date:	1/5/18	**Name/Position:**	**Brandon Urquhart /Project Coordinator**
Project location:	Port Site		Laydown LP2
Project Duration:	Start 1/6/19	Finish	1/13/19

Project Details

GPS Coordinates: Lat: N+7975900 Long: E+503800 (NAD 83)

Land disturbance area: 40300 m2

Type of disturbance (Drilling, Excavation, Rutting due to site access, etc.)

Material placement over tundra, ice removal if present

Detailed description of planned work.

Construction of permanent laydown
- ROQ fill with at least 300mm of Type 8 fill; 100mm thick topping of Type 5 crushed gravel.
- Area to be graded for free draining
- Utility crossing and culvert at Laydown entrance

Ditching around Laydown as per Port water management plan.

Check List

1	**Has the Environmental Concerns in section 2.3.1. of the Environmental Protection plan been reviewed?** - If No, please review the list of concerns on page 4 of this form.	Yes
	Will work be completed within 31m of the High Water Mark of any stream or water body?. - If Yes, please contact the Environment Department.	No
3	**Is there a stream or waterbody >31m of the work site?.** - If Yes, Include a detailed description of the Sediment and Erosion Control Measures on Page 3.	No
4	**Has the area been cleared by Archaeology?.** - If No or Unknown, Please contact the Environment Department.	Yes
5	**Will the land disturbance occur between May 31 and August 31?.** - If Yes, An Active Migration Bird Survey is required prior to start.	No

Approval

Approved by: William Bowden Position: Environmental Superintendent

Approved on: Feb 3 2019

Valid Unit:

Comments and recommendations by the Environment Department:

Land Distrubance for the LP2 laydown is approved as agreed upon following confirmation of the field fit mitigation measures which include; removal of ice as required, grading the historical ditch on the north side of the laydown to flow East bound, and rip rap and line P-SWD-3

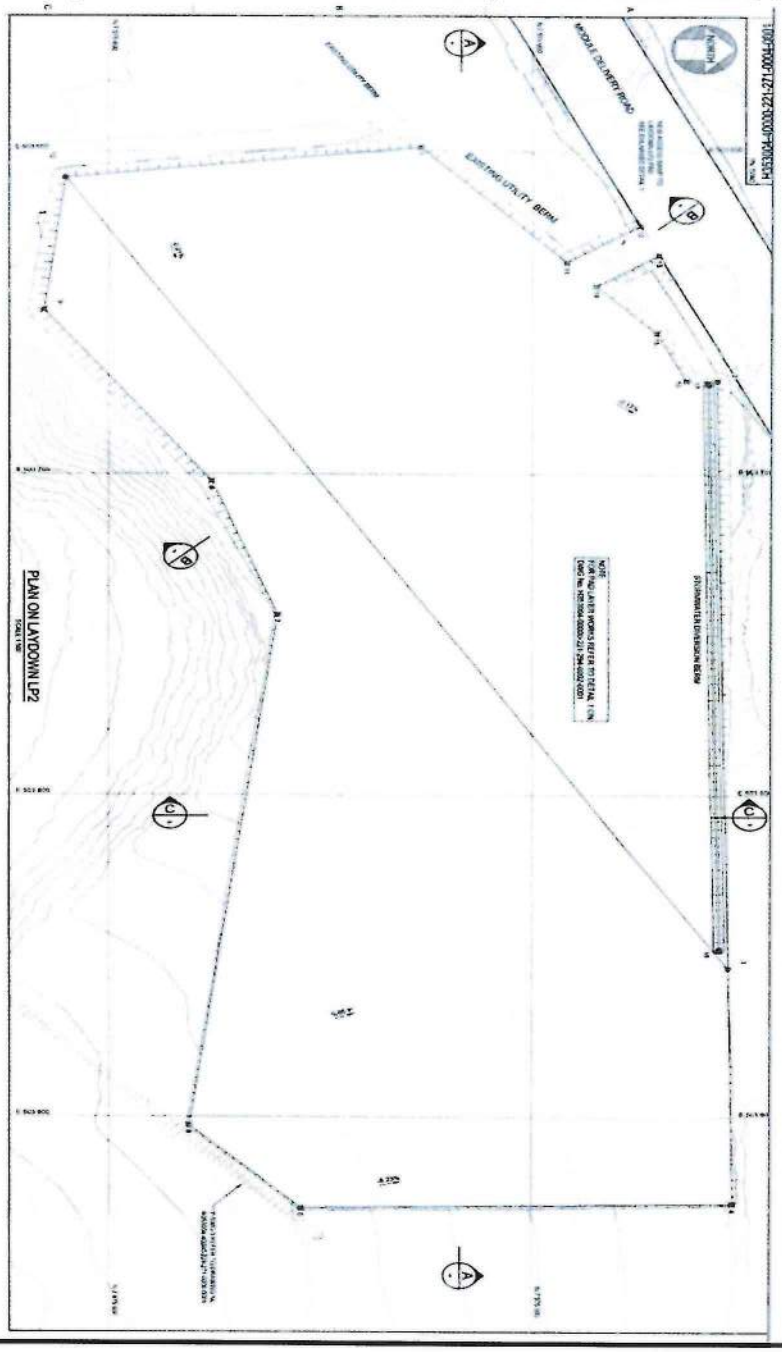
LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	1/5/18		
Project location:	Port Site		

Design/Engineering Drawing

See drawing H353004-40000-221-271-0004-0001, H353004-00000-221-294-0002-0001



Baffinland

LAND DISTRURBANCE FORM

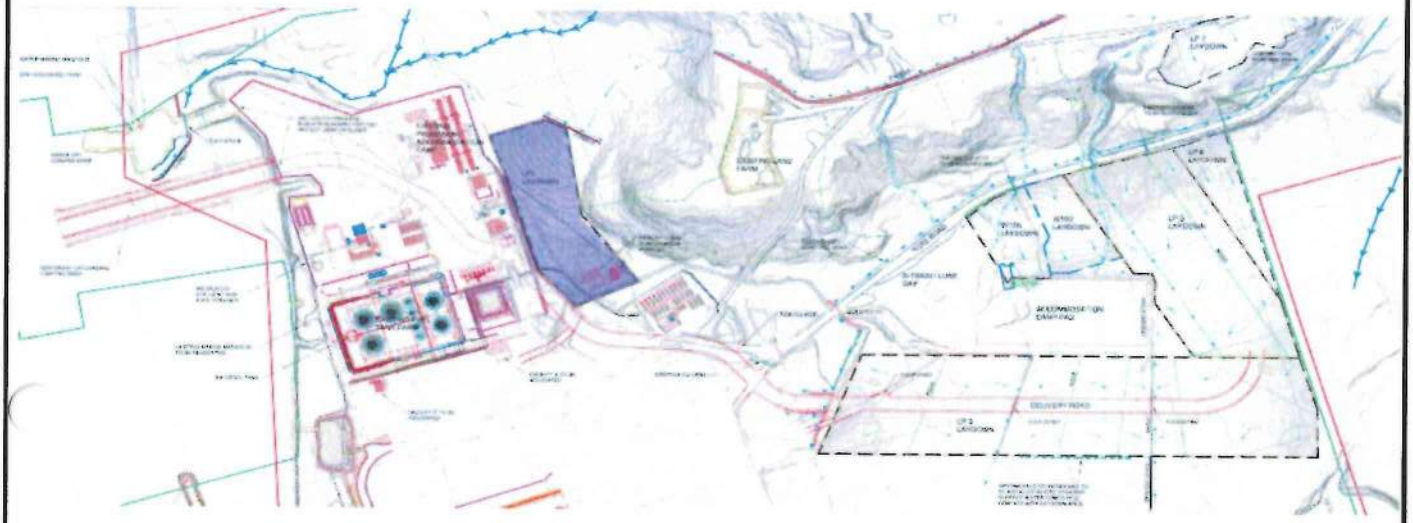
Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	1/5/18		
Project location:	Port Site		

Sediment and Erosion Control Measures

Please give a detailed description of the run-off control measure which will be put in place.
Include all water bodies and streams, slope direction and materials to be used.

- Laydown will be graded to be free draining



Baffinland

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	1/5/18		
Project location:	Port Site		

2.3.1 ENVIRONMENTAL CONCERN

2.3.1 ENVIRONMENTAL CONCERN

The Arctic is a fragile environment where the recovery of vegetation within this region is slow. Ground disturbance shall be minimized to protect archaeological resources, wildlife habitats, sensitive landforms, such as ice-rich permafrost features, and prevent erosion and the movement of sediment into watercourses and water bodies. Various permits, licences and approvals issued to Baffinland are specific in regards to ground disturbances and outline the necessary protection measures that need to be taken to minimize this aspect of the Project.

The following measures are to be implemented to minimize ground disturbance:

- Equipment and personnel must stay on existing roads and trails
- Approval for new areas of disturbance must be approved by the Operations Manager
- Rutting (furrow creation) shall be avoided on ground surfaces; overland travel of equipment or vehicle will be suspended when rutting occurs
- All camps shall be located on gravel, sand or other durable land
- No materials shall be stored on the surface ice of streams
- No material shall be removed from below the ordinary high water mark of any stream
- Greywater sumps must be located a distance of at least thirty (30) metres above the ordinary high water mark of any water body

Bradford Watkin

From: Ken Humby
Sent: Thursday, April 11, 2019 7:13 AM
To: Bradford Watkin
Subject: FW: [External]RE: [External]RE: [External]FW: [External]Milne Port Laydown Land Disturbance Forms
Attachments: Land Disturbance Form Laydown LP2 (00000002).xlsx; Land Disturbance Form_LP3 Laydown Dewatering_.xlsx; Land Disturbance Form Laydown LP3 (2).xlsx; Land Disturbance Form Laydown LP5 (2).xlsx

Ken Humby
Project Superintendent
E kenh@nunalogistics.com

NUNA EAST LTD.
PO Box 370
Pond Inlet, Nunavut, Canada, X0A 0X0
nunalogistics.com

You may withdraw consent for email communications from the Nuna Group of Companies by responding to the email with "Unsubscribe" in the subject line.

From: William Bowden <William.Bowden@baffinland.com>
Sent: Sunday, February 3, 2019 2:31 PM
To: Gionet, Stephane <stephane.gionet@hatch.com>
Cc: Mills, Nick <nick.mills@hatch.com>; Ken Humby <kenh@nunalogistics.com>; Brandon Urquhart <brandonu@nunalogistics.com>; Marlon Coakley <marlon.coakley@hatch.com>; Sten Sundin <Sten.Sundin@baffinland.com>; Connor Devereaux <Connor.Devereaux@baffinland.com>; Dominic Ritgen <Dominic.Ritgen@baffinland.com>; Timothy Ray Sewell <Timothy.Sewell@baffinland.com>
Subject: RE: [External]RE: [External]RE: [External]FW: [External]Milne Port Laydown Land Disturbance Forms

Hello Stephane,

As requested please see the attached approved land disturbance forms for LP2, LP3 and LP5.

Thank you to yourself and Nick(Feb 1st email) for answering our enquiries on these designs and associated concerns. Please ensure Projects commitments and responses in the series of emails below are completed for construction prior freshet. Melt can occur as early as beginning of May.

Cheers,

Bill

William Bowden | Environmental Superintendent
Mary River Mine Site
T: +1 647 253 0596 x6016

NUNA

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(Section 9)

Signature Log

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)	Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN	[illegible]	[illegible]
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC	[illegible]	[illegible]
ALLNORTH	Materials technician	Kenny MacRae	[illegible]	[illegible]
Hatch	Hatch Civil	Stephane Granet	SG	[illegible]
NUNA EAST	PROJECT COORDINATOR	BRANDON URQUHART	[illegible]	[illegible]
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]	[illegible]	[illegible]
HATCH	FIELD ENG. MANAGER	GLEN PEACE	SOP	[illegible]
NUNA EAST	SITE SUPERINTENDENT	ANTHONY STEWART	[illegible]	[illegible]
NUNA EAST	SITE SUPERINTENDENT	HARVEY BLOUIN	[illegible]	[illegible]
Hatch	Hatch Super	Roger Landry	[illegible]	[illegible]
Nuna East	Project Manager	Stephen Nugent	[illegible]	[illegible]
HATCH	CONSTRUCTION SUPERINTENDENT	ROY BADER	RB.	[illegible]
BVJV	Project Engineer	David Garcia	D.G	[illegible]
Hatch	QA Manager	Ronny Franken	R.F.	[illegible]

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Mine Port)			**Code:**	N/A
Contractor:	Nuna East Ltd.	**Contract/Job No.:**	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	**ITP No.:**	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN		
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC		
ALLNORTH	Materials technician	Kenny MacRae		
Hatch	Hatch Civil	Stephane Grant		
NUNA EAST	PROJECT COORDINATOR	BRANDON UPGUHART		
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]ER		
HATCH	FIELD ENG. MANAGER	GLEN PEACE		
Hatch	Construction Super	Dean Moffett		
Hatch	Construction Super	Roger Landry		

NUNA

NUNA EAST LTD

(Section 10)

Quality Control Documents

Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

Excavation & Sub-Base Approval

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0009A
Description of Area Inspected:	*Excavation & Sub-Base Approval* ***Work Scope Location:*** *Stormwater Diversion SWD-3* ***Location Section:*** *See attached Mapping*
Parties Present at Inspection	*Bradford Watkin, (Representing Nuna), Robert Chaisson (Allnorth representing Hatch)*

Comments:

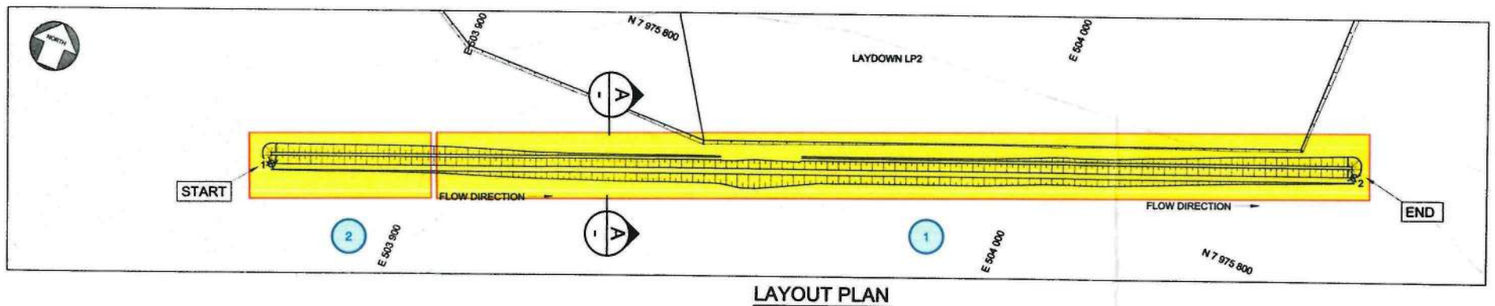
A visual inspection of the Stormwater Diversion (SWD-3) excavation to sub-grade was completed prior to placement of Type 8 construction material.

Excavation & Sub-Grade: *The excavation to sub-grade was found to be acceptable to specification and IFC drawing at time of inspection. The sub-grade was found compliant to specification at time of inspection and was released for aggregate placement.*

See attached Drawing(s):

Area number:	Date:	Description of Work	Nuna Representative	Hatch Representative
1.	5/10/19	Excavation & Sub-Base Preparation		RC
2.	5/11/19	Excavation & Sub-Base Preparation		RC
3.				
4.				
5.				

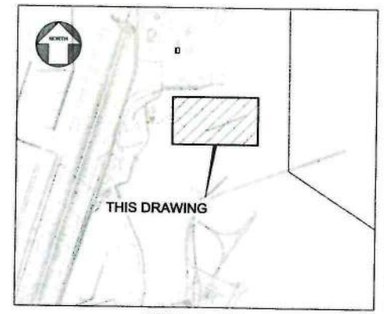
DWG. No. H353004-40000-228-271-0004-0001



LAYOUT PLAN
SCALE 1:500

LEGEND

EG	EXISTING GROUND
CH	CHAINAGE
L	LENGTH
R	RADIUS
DA	DEFLECTION ANGLE
TL	TANGENT LENGTH
AL	ARC LENGTH
BCC	BEGINNING OF CURVE
ECC	END OF CURVE
PI	POINT OF INTERSECTION
HWL	HIGH WATER LEVEL
FB	FREE BOARD
→	FLOW DIRECTION
- - -	DIVERSION CENTERLINE



KEY PLAN
NTS

SWD-3 BERM SETTING OUT CO-ORDINATES

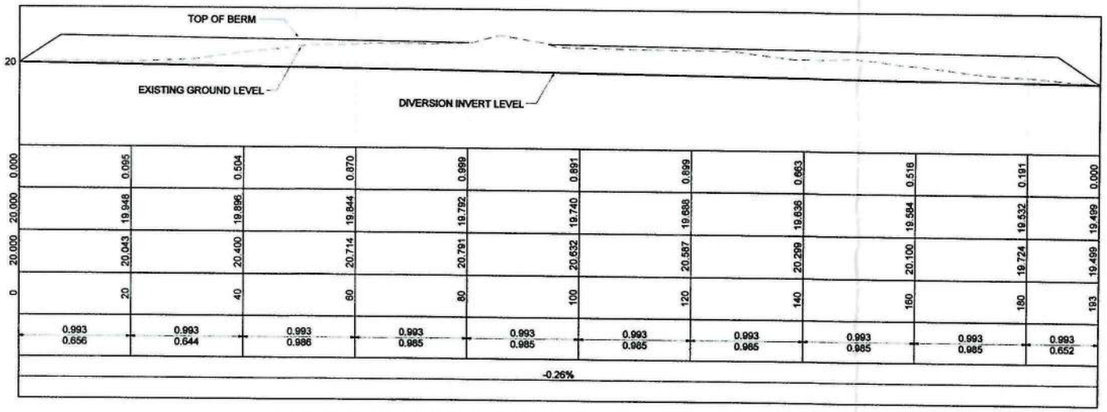
POINT	X	Y
1	7975753.235	503874.022
2	7975824.093	504053.441

NOTES:
1. LIDAR SURVEY PROVIDED BY PHOTSAT (2016)
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS AND ELEVATIONS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS ARE IN MILLIMETER UNLESS SPECIFIED OTHERWISE

EG ------
INVERT ———

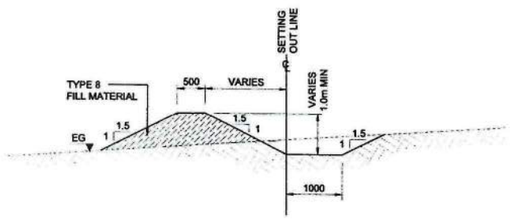
SCALES:
Horizontal 1:500
Vertical 1:100

DATUM 17.000



DEPTH TO INVERT (m)	0.000	0.095	0.504	0.870	0.999	0.891	0.899	0.663	0.516	0.191	0.000
INVERT LEVELS (m)	20.000	19.948	19.896	19.844	19.792	19.740	19.688	19.636	19.584	19.532	19.499
GROUND LEVELS ON CL (m)	20.000	20.043	20.400	20.714	20.791	20.632	20.587	20.299	20.100	19.724	19.499
DISTANCE (m)	0	20	40	60	80	100	120	140	160	180	193
HYDRAULICS Q(m3/s)		0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993
HYDRAULICS V(m/s)		0.656	0.644	0.986	0.985	0.985	0.985	0.985	0.985	0.985	0.652
VERTICAL PROFILE GRADES											

DIVERSION LONGITUDINAL PROFILE



SECTION A-A
SCALE 1:50

Released for Use

Bradford Watkin QA/QC Reviewed

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date 2018-11-1
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

0 5 10
SCALE 1:250 IN METERS

REFERENCE DRAWINGS	
DRAWING No.	DRAWING TITLE
H353004-00000-221-294-0002-0010	STANDARD DRAWING - EARTHWORKS AND DRAINAGE
H353004-40000-221-271-0004-0001	LAYDOWN AREA LP2 - PLAN AND SECTIONS
H353004-40000-228-272-0011-0001	LAYDOWN AREA LP2 - DRAINAGE PLAN

REG. PROFESSIONAL

D. STANGER LICENSEE 2018-11-1 NT/NU

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No.	DESCRIPTION	BY	CHK'D	DATE
1	STORMWATER DIVERSION BERM RE-DESIGNED AND MOVED TO ACCOMMODATE LAYDOWN LP2 EXPANSION	IHB	FH	25/010/2018
0	FOR CONSTRUCTION	HH	FH	23/03/2018

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	H HERBST	NR	23/03/2018
DESIGNER	H HERBST	NR	23/03/2018
CHECKER	F HUGO		2018-10-31
DESIGN COORD.	R GOOSEN		2018-10-31
RESP. ENG.	R HALIM		
LEAD DISC. ENG.	A GROBBELAAR		31 October 20
AREA LEAD	V LAVRIC		2018-11-02
ENG. MANAGER	D STANGER		18-11-02
AREA MANAGER	T ATIBA		

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
STORMWATER DIVERSION P-SWD-3
LAYOUT, PROFILE AND DETAILS

SCALE	DWG. No.	REV
1:500 OR AS NOTED	H353004-40000-228-271-0004-0001	1

SHEET SIZE: D

$USERNAMES
$DATES
$FILES
$TIMES

NUNA NUNA EAST LTD

Baffinland Iron Mines Corporation

HATCH™

Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

Type 8 Placement Approval

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0009A
Description of Area Inspected:	*Type 8 Approval* ***Work Scope Location:*** *Stormwater Diversion SWD-3* ***Location Section:*** *See attached Mapping*
Parties Present at Inspection	*Bradford Watkin, (Representing Nuna), Robert Chaisson (Allnorth representing Hatch)*

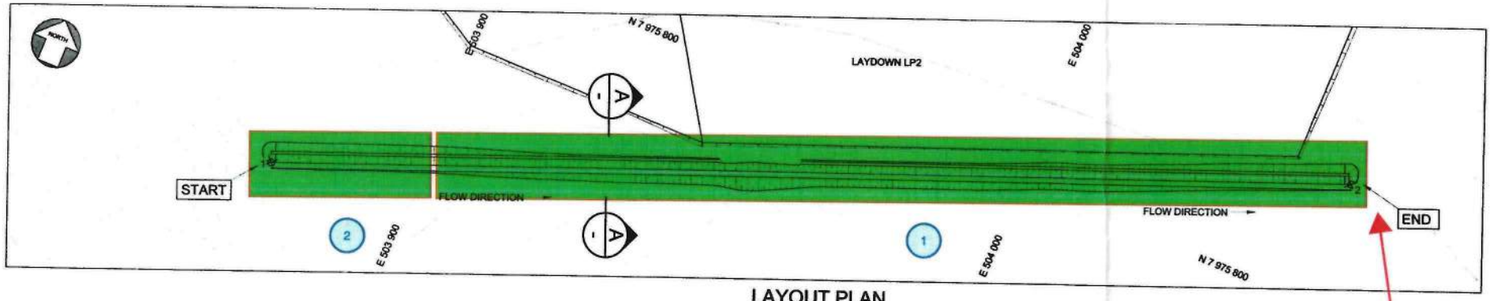
Comments:

A visual inspection of the Stormwater Diversion (SWD-3) Type 8 placement.

Type 8: *The Type 8 aggregate placement was found to be acceptable to specification and IFC drawing at time of inspection.*
* THIS INCLUDES EXCAVATION OF COLLECTOR DITCH
See attached Drawing(s):

Area number:	Date:	Description of Work	Nuna Representative	Hatch Representative
1.	5/10/19	Excavation & Sub-Base Preparation		
2.	5/11/19	Excavation & Sub-Base Preparation		
3.				
4.				
5.				

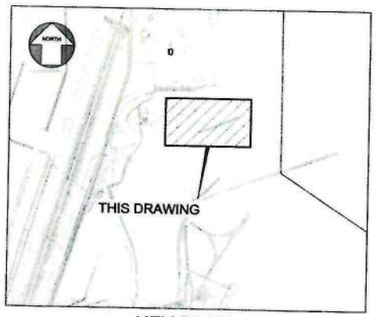
DWG. No. H353004-40000-228-271-0004-0001



LAYOUT PLAN
SCALE 1:500

LEGEND

EG	EXISTING GROUND
CH	CHAINAGE
L	LENGTH
R	RADIUS
DA	DEFLECTION ANGLE
TL	TANGENT LENGTH
AL	ARC LENGTH
BCC	BEGINNING OF CURVE
ECC	END OF CURVE
PI	POINT OF INTERSECTION
HWL	HIGH WATER LEVEL
FB	FREE BOARD
→	FLOW DIRECTION
	DIVERSION CENTERLINE

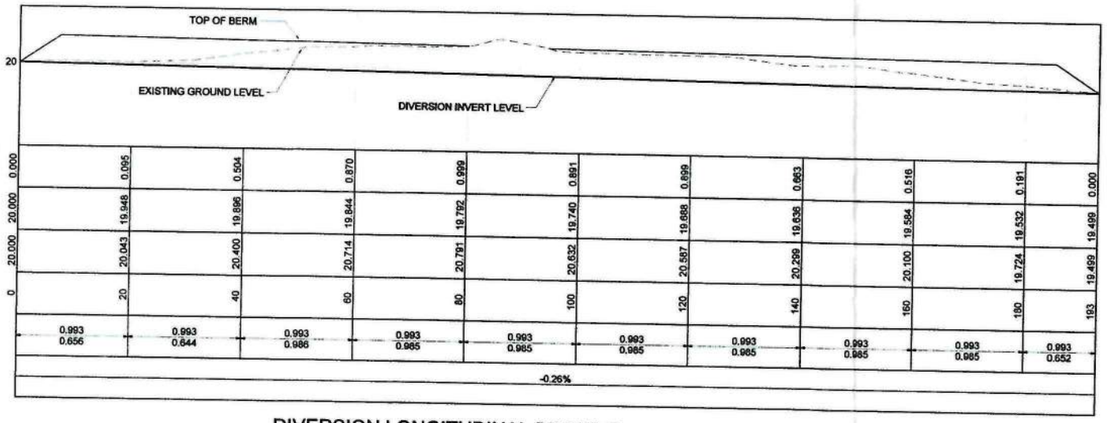


KEY PLAN
NTS

EG
INVERT

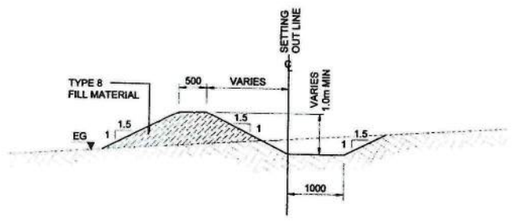
SCALES:
Horizontal 1:500
Vertical 1:100

DATUM 17.000



DEPTH TO INVERT (m)	
INVERT LEVELS (m)	
GROUND LEVELS ON CL (m)	
DISTANCE (m)	
HYDRAULICS	Q(m3/s)
	V(m/s)
VERTICAL PROFILE GRADES	

DIVERSION LONGITUDINAL PROFILE



SECTION A-A
SCALE 1:50

SWD-3 BERM SETTING OUT CO-ORDINATES

POINT	X	Y
1	7975753.235	503874.022
2	7975824.093	504053.441

Note: End of Ditch / Berm tied into existing terrain.

NOTES:
1. LIDAR SURVEY PROVIDED BY PHOTSAT (2016)
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS AND ELEVATIONS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS ARE IN MILLIMETER UNLESS SPECIFIED OTHERWISE

Released for Use

Bradford Watkin QA/QC Reviewed

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date 2018-11-1
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SCALE 1:250 IN METERS

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DRAWING No.	DRAWING TITLE
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H353004-40000-228-272-0011-0001	LAYDOWN AREA LP2 - DRAINAGE PLAN

REG. PROFESSIONAL: D. STANGER, LICENSEE, 2018-11-1, NT/NU

FOR CONSTRUCTION

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0	FOR CONSTRUCTION	HH	FH	23/03/2018

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	H HERBST	NR	23/03/2018
DESIGNER	H HERBST	NR	23/03/2018
CHECKER	F HUGO		2018-10-31
DESIGN COORD.	R GOOSEN		2018-10-31
RESP. ENG.	R HALIM		
LEAD DISC. ENG.	A GROBBELAAR		31 October 20
AREA LEAD	V LAVRIC		2018-11-01
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		18-11-02

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
STORMWATER DIVERSION P-SWD-3
LAYOUT, PROFILE AND DETAILS

SCALE 1:500 OR AS NOTED
DWG. No. H353004-40000-228-271-0004-0001
REV 1
SHEET SIZE: D

$USERNAMES $DATES $FILES $TIMES

NUNA

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(Section 11)

Walkdown

NUNA EAST LTD	WALKDOWN REPORT	Exhibit 5 Revision 0

WALKDOWN ATTENDEES LIST	(Page 1 of 1)

Project Name: Mary River Expansion	Contractor's Name: Nuna East Ltd.	Job File No.: CC006-0009A
System CWP Description: Milne Port Stormwater Diversion SWD-3	Location: SSE corner of LP2 Laydown	Plant No.: N/A

This record indicates that this system was formally walked down and inspected in the field by the undersigned on the date as indicated below

Name	Company Name	Role	Signature	Date *(mm/dd/yy)*
BRADFORD WATKIN	NUNA EAST LTD	QC		5/14/19
ROY BAUER	ATCA	CONSTRUCTION		5/14/19

NUNA

NUNA EAST LTD

(Section 12)

Deficiency/Punchlist

DEFICIENCY / PUNCH ITEMS RECORD

Project Name: Mary River Expansion	**Walkdown Date (mm/dd/yy):** 5-14-19	**Area Number:** N/A
Area Name or Area Description: Stormwater Diversion SWD-3	**Job Number:** CC006-0009A	**Plant Number:** N/A

PURPOSE:

1. **For modules and vendor packages, open punch items are listed at release for shipment.**
2. **As part of a final walkdown package, this form lists the Contactor's open punch items that are transferred into the Nuna Turnover database**
3. **This form is used to capture Punch Items during Final Walkdown**

Tag Number	Description of Deficiency / Punch Item	Cat.	Discipline	Originator	Responsible for resolution	Vendor Y/N	Remarks
	No deficiencies found						

Punch Item Categories captured during Final Walkdown: A, B or C. A- To be rectified before final acceptance. B- To be addressed at a later time. C- Acceptable to be As-Built

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(Section 13)

Acceptance of Completion of Construction

ACCEPTANCE OF COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the acceptance of the Quality Control Turnover documentation for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Ore Mines
2. **Contractor:** Nuna East Limited
3. **Construction:** Stormwater Diversion Installation
4. **Location:** Port Site
5. **Description:** Installation of Stormwater diversion Berm & Trench P-SWD-3

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turnover documentation has been forwarded to and accepted by the owner.

Nuna Representative:

Signature	Print Name	Title	Date
	BRADFORD WATSON	QC COORDINATOR	

Client Representative:

Signature	Print Name	Title	Date

NUNA

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(Section 14)

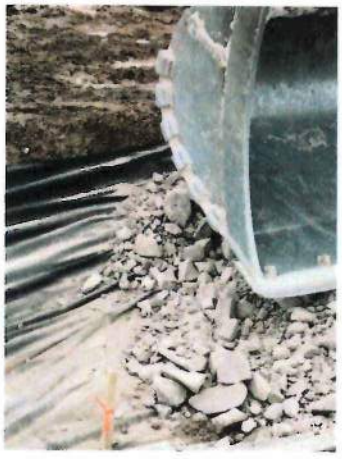
Construction Photographs

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH™

Mary River Expansion Project
Stormwater Diversion SWD-3



HATCH **Vendor/Contractor Document Review**

Doc Number	E353004-CC006-130-124-0005	**SUB**	01
Date Received			

Review Grade	**Next Submittal Status**
☐ **C1** - Proceed to next submission & status ☐ **C2** - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ **C3** - Do not proceed. Revise as noted & resubmit	☐ Internal Review
Next Submittal Date:	☐ Certified/☐ As-Built

☒ **C4** - No further submission required - Complete (select status below)
☐ Certified Final ☒ Final ☐ Cancelled ☐ Superseded

Package Engineer: Name, signature and date

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibilty for correct design, details & dimensions shall remain with the party submitting the drawing/document.

NUNA

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CC006

Baffinland Iron Mines Corp.: Mary River Expansion, Nu. 2019

NUNA

NUNA EAST LTD

Job #:

CC006-0009A

SWD-5

Mary River Expansion Project

H353004

Port Site Civil Works

09Section 1
Completion of Construction Declaration / Transfer of Care, Control & Custody

Section 2
Inspection & Test Plan (ITP)

Section 3
Redline / As-Built Drawings

Section 4
Survey Data Documentation

Section 5
Sieves / Statements of Compliance

Section 6
Request for Information Documents (RFIs)

Section 7
Non-Conformance Reports (NCRs)

Section 8
Land Disturbance Form (LDF)

Section 9
Signature Log

Section 10
Quality Control Documents

Section 11
Walkdown

Section 12
Deficiency/Punchlist

Section 13
Acceptance of Completion of Construction Declaration

Section 14
Construction Photographs

NUNA

NUNA EAST LTD

(Section 1)

Completion of Construction Declaration / Transfer of Care, Control & Custody (TCCC) Forms

COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Mines Corporation
2. **Contractor:** Nuna East Limited
3. **Construction:** Stormwater Diversion Installation
4. **Location:** Port Site
5. **Description:** Installation of Stormwater diversion Berm & Trench P-SWD-5

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turn over documentation has been forwarded to the owner.

	Bradford Watkin	QC Coordinator	9/1/19
(Signature)	(Print Name)	(Title)	(Date)
Nuna East Ltd.	14, 6194 – 50 Street NW Edmonton, AB, CA		T6B 2N7
(Company)	(Address)		(City, Postal Code)

Transfer of Care, Custody and Control

FROM GROUP "A"	NUNA EAST LTD.	**Job File No.:**	CC006-0009A SWD-5
To Group "B"	Hatch Engineering	**WBS No.:**	4810
Location:	East of Quarry access road	**Date:**	May 12, 2019

ORIGINATING JOB FILE NO. DETAILS:	Construct a Stormwater Diversion Ditch Involving: • SNOW, ICE REMOVAL; • ESTABLISHING A SUB-GRADE ; • PLACEMENT OF GEOTEXTILE; • AGGREGATE PLACEMENT.
Comments:	Extension of berm / ditch from original engineered design. See Redline/ As-Built and Survey data for details. (SEE S1-013) BC

THIS IS NOTICE TO GROUP "B" HATCH ENGINEERING THAT THE FOLLOWING WORK/MATERIAL AS PER P.O./CONTRACT IS/ARE BEING TRANSFERRED BY GROUP "A" NUNA EAST LTD. AND IS/ARE BEING FULLY ACCEPTED BY GROUP "B" HATCH ENGINEERING FROM GROUP "A" NUNA EAST LTD.
WITH EXCEPTIONS AS LISTED BELOW (IF ANY).

Description: No exceptions noted.	**Reference Drawing(s):** H353004-40000-228-271-0004-0001 Rev 1.

EXCEPTIONS:	**DATE CORRECTED:**	**SIGNED OFF:**
1.		
2.		

"Exceptions Accepted and released"

From Group "A": Nuna East Ltd.

Date: 5/14/19

Print Name: BRADFORD WATKIN Signature:

To Group "B": Hatch Engineering.

Date: 5/14/19

Print Name: ROY BADER Signature:

I CONFIRM THE CONDITIONS LISTED BELOW HAVE BEEN MET (WITH NOTED EXCEPTIONS OR DEFICIENCIES) AND RELEASE OF CARE, CUSTODY AND CONTROL OF THE ITEM(S) LISTED ABOVE TO THE RECIPIENT.

- [x] All requests for Inspection are complete and all issues are resolved.
- [x] All deficiencies have been resolved.
- [x] All Redlines / As-Builts have been received.
- [x] All relevant manuals and vendor data have been received.

Client Representative:

Name: ROY BADER Signature:

Date: 14-MAY 2019

NUNA

NUNA EAST LTD

(Section 2)

Inspection & Test Plan (ITP)

NUNA EAST LTD

QUALITY MANAGEMENT SYSTEM
INSPECTION &TEST PLAN
(Civil / Structural Installations)

CLIENT: Hatch	**ITEM / DESCRIPTION / SCOPE:** Stormwater Diversion Ditch **P-SWD-5** / Water Diversion Ditch / Earthworks material production, Haulage, Placement, & Compaction.	**NUNA ITP NO.:** CC006-0009A	**REVISION NO.:** 2
CONTRACTOR: Nuna East Ltd.		**AFFILIATED SUB-CONTRACTOR(S):** N/A	
CONTACT PERSON: Bradford Watkin	**CONTACT INFORMATION:** bradfordw@nunalogistics.com	**DATE:** April 17, 2019	
CONTRACT No.: H353004-CC006	**HATCH PROJECT NUMBER:** H353004-CC006	**HATCH DOCUMENT TITLE:** Mary River Expansion Project-Remaining Early Earthworks	
NUNA JOB No.: CC006-0009A	**PURCHASE ORDER No.:** N/A	**PROJECT MANAGER:** Chris Petrovic	
LOCATION(S): Milne Port Site		**LEGEND:** **H:** A mandatory hold on manufacturer until release by inspector or official waiver from client. **M:** Inspection stage by inspector on a spot basis, but not a mandatory hold point. **HR:** A mandatory hold / review & acceptance / approval of the specified documentation. **W:** To be informed and invited to inspect. Construction to continue if inspector does not attend. **R:** Review of report / certifications. **A:** Audit (Review at Random).	
CWP No.: N/A			

Approved For Construction

Stephen Nugent		April 17, 2019
Nuna Project Manager / Engineer (Print)	Signature	Date
Bradford Watkin		April 17, 2019
Nuna Quality Representative (Print)	Signature	Date
Hatch Representative (Print)	Signature	Date

Hatch Stamp

HATCH Vendor/Contractor Document Review

Doc Number	E353004-CC006-130-051-0007	SUB	03
Date Received	2019-04-18		
Review Grade		Next Submittal Status	
☐ C1 - Proceed to next submission & status		☐ Certified	
☐ C2 - Proceed with exceptions as noted to next submission & status		☐ As-Built	
☐ C3 - Do not proceed. Revise as noted & resubmit		☐ Internal Review	
Next Submittal Date:		☐ Certified/☐ As-Built	
☒ C4 - No further submission required - Complete (select status below)			
☐ Certified Final ☒ Final ☐ Cancelled ☐ Superseded			

Package Engineer: Name, signature and date farrokh.nooriaha tch.com

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibility for correct design, details & dimensions shall remain with the party submitting the drawing/document.

Final Review

BRADFORD WATKIN			9/1/19
Nuna Quality Representative (Print)	Signature		Date
Hatch Quality Representative (Print)	Signature		Date

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	*Description of Activities* (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	*Functional Responsibility*	*Quality Control Activity*	*Verification Frequency*	*Reference Document(s)/ Controlling Procedure*	*Acceptance Criteria*	*Verification Document(s) (Reporting)*	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	*Comments*
1.	Contract Review / Approval	NUNA	Review / Verify Document	Prior to project start	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract				R		4/17/19	R			

ACTIVITY DATA							VERIFICATION DATA											
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
2.	Approval of ITP	NUNA / HATCH Representatives	Review	Prior to start	NUNA Quality System Manual	Signed ITP by Client representative, NUNA Quality System Manual	Signed acceptance of document (Exhibit 1.0)				HR	BW	5/3/19	HR			
3.	Scope and Associated Documents	NUNA	Review For Errors	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R	BW	4/17/19	A			
4.	Land Disturbance Approval obtained	NUNA	Review	Prior to start	BIM Environmental Protection Plan	IFC Drawings & Client contract scope, BIM Environmental Protection Plan	Land Disturbance Form BAF-PH1-830-P16-0008				HR	BW	9/21/18	R			
5.	Work Method of Statement	NUNA / HATCH	Review	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R	BW	9/1/19	A			N/A
6.	Signature Log	NUNA	Review, obtain signatures	Ongoing	NUNA Quality System Manual	NUNA Quality System Manual	NUNA Signature Log				R	BW	4/17/19	R			ADDITIONAL SIGNATORIES ONGOING.
7.	Initial Survey Layout	NUNA / ALL NORTH	Cross Check of IFC Layout	Ongoing	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				HR	BW	4/30/19	R			ALL NORTH
8.	Materials verification	NUNA	Review	As required	IFC Drawings, Hatch Spec. 280-078-0002 Rev 0, ASTM C-136	IFC Drawings, Hatch Spec.280-078-0002 Rev 0, ASTM C-136	Sieve Test Reports, QSRs				HR	BW	9/1/19	HR			• Type 8 • Type 19 NO SIEVES AVAILABLE QC SIGN-OFF
9.	RFI	NUNA	Resolution of RFIs	As required	NUNA Quality System Manual	Disposition, Approved, closed and log updated	RFIs				HR	BW	9/1/19	R			NO RFIS GENERATED.
10.	Clearing of works location completed • Snow / Ice removal / Disposal	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W	BW	1/21/19	R			- NO REPORT AVAILABLE, JUST SURVEY.

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	**Description of Activities** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	**Functional Responsibility**	**Quality Control Activity**	**Verification Frequency**	**Reference Document(s)/ Controlling Procedure**	**Acceptance Criteria**	**Verification Document(s) (Reporting)**	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Comments**
11.	Subgrade foundation preparation completed • Compaction	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W	BW	9/1/19	HR			NO REPORT AVAILABLE, PHOTOS + SURVEY REPORT.
12.	Placement of Geotextile cloth (Layfield LP7 or equivalent) completed	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	BW	9/1/19	W			NO REPORT AVAILABLE, PHOTOS + SURVEY REPORT.
Type 8 Jaw Run 150 minus																	
13.	Type 8 Jaw Run 150 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	BW	1/2/19	M			
14.	Compaction of Type 8 Jaw Run 150 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	BW	9/1/19	M			NO REPORT AVAILABLE, PICTURES & SURVEY REPORT.
15.	Survey of Type 8 Jaw Run 150 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR	BW	1/19/19	R			ALL NORTH
16.	As built Survey	NUNA	Review	Continuous During Operations	IFC Drawings	IFC Drawings, Hatch Specifications	As built Drawings & Data				HR	BW	1/19/19	R			ALL NORTH

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
17.	Final Walk down	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Contract Requirements	Final Walkdown Attendees' Report				W	BW	5/14/19	HR			
18.	Deficiency List / Punch list generated	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per contract Requirements	Item form punch list items resolved				HR	BW	5/14/19	HR			NO DEFICIENCIES.
19.	NCR's closed.	NUNA / HATCH	Review of NCRs, Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Requirements	NCR log cleared				HR	BW	9/1/19	A			NO NCR'S GENERATED.
20.	As-built / Redline drawings completed.	NUNA	Review / Verify	Post Final Walk down	IFC Drawings, Contract	As-builts / Redlines to Reflect All Field Changes	As-builts / Redlines				HR	BW	4/7/19	A			
21.	Final Acceptance and ITP Sign off	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP (Exhibit 1.0)				HR			HR			
22.	Inspection Acceptance and Sign-Off Form signed by Engineer of record.	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP, Acceptance of Completion of Construction Form				HR			HR			
23.	Turnover package completed and sent to client.	NUNA	Review / Verify	Post project completion	NUNA Quality System Manual, IFC Drawings, Contract	Contract, Code & applicable specifications.	Quality Management System Quality Control Turnover package.				HR			A			

Note: Nuna ITP Sign-Offs based on supporting documentation.

Comments:

ITP ISSUE APPROVALS

Stephen Nugent	Site Project Manager		April 17, 2019
Nuna Contractor Project Manager / Engineer *(Print)*	Title	Signature	Date *(mm/dd/yy)*
Bradford Watkin	QC Coordinator		April 17, 2019
Nuna Contractor Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

ITP CLOSEOUT AND WORK ACCEPTANCE APPROVALS

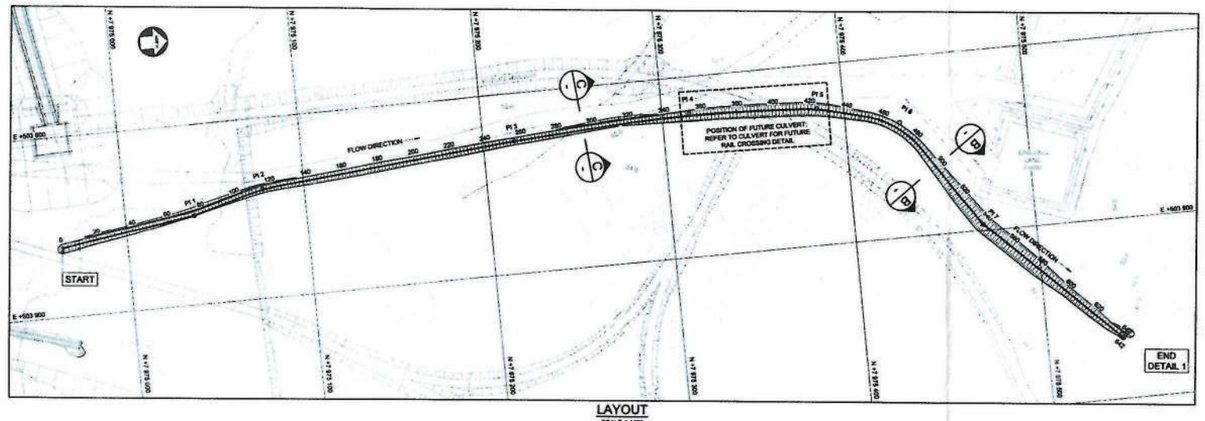
Nuna Contractor Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

NUNA

NUNA EAST LTD

(Section 3)

Redline / As-Built Drawings



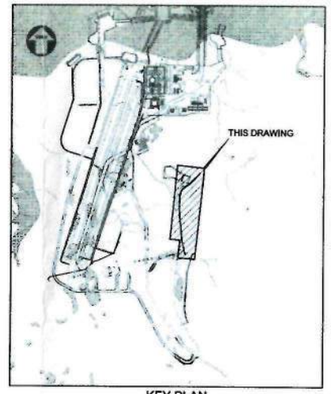
LAYOUT
SCALE 1:1000

LEGEND:

EG	EXISTING GROUND
CH	CHAINAGE
L	LENGTH
R	RADIUS
DA	DEFLECTION ANGLE
TL	TANGENT LENGTH
AL	ARC LENGTH
BCC	BEGINNING OF CURVE
ECC	END OF CURVE
PI	POINT OF INTERSECTION
HWL	HIGH WATER LEVEL
FB	FREE BOARD
	FLOW DIRECTION
	DIVERSION CENTER LINE

NOTES:

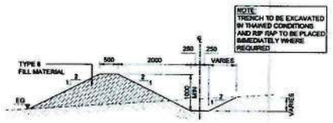
1. LIDAR SURVEY PROVIDED BY PHOTSAT (2016)
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS AND ELEVATIONS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS ARE IN MILLIMETER UNLESS SPECIFIED OTHERWISE
5. FINAL CULVERT POSITIONS TO BE CONFIRMED ON SITE.
6. FUTURE CULVERT TO BE CONSTRUCTED IN CONJUNCTION WITH RAILWAY LINE CONSTRUCTION.



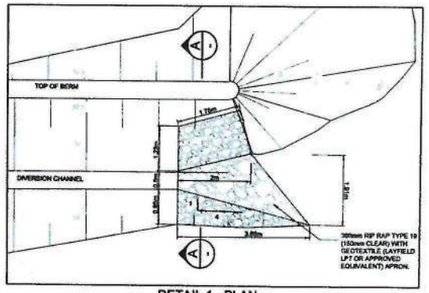
KEY PLAN
NTS

SECTION A-A - RIP RAP AT CHANNEL OUTLET
SCALE 1:50

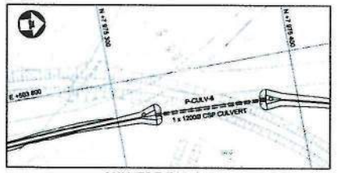
SECTION B-B - CHANNEL
SCALE 1:50



SECTION C-C - BERM AND CHANNEL
SCALE 1:50



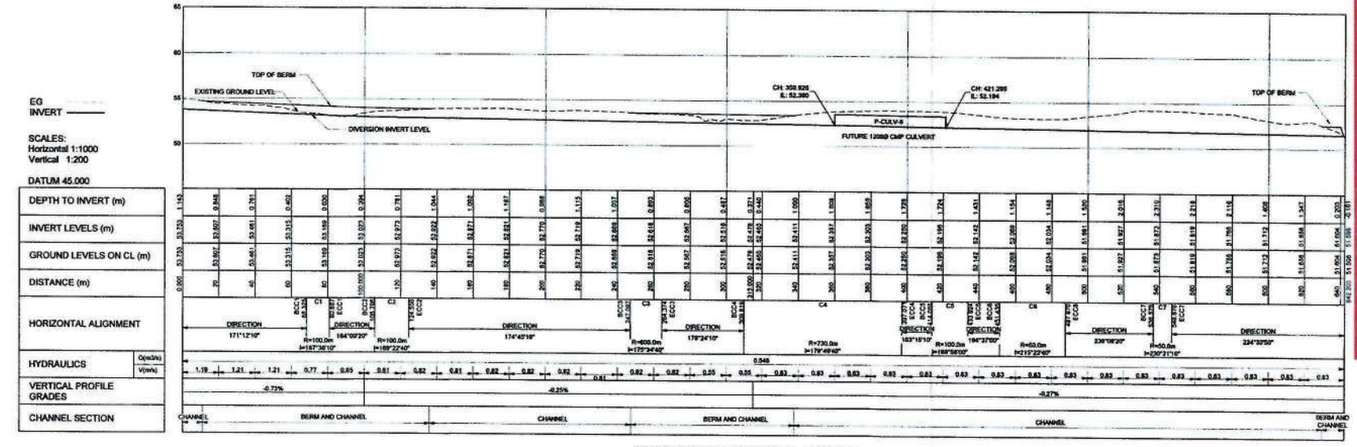
DETAIL 1 - PLAN
SCALE 1:20



CULVERT FOR FUTURE RAIL CROSSING DETAIL
SCALE 1:1000

STORMWATER CUTOFF P-SWD-5 SETTING OUT DATA (CENTER LINE OF CHANNEL)

NAME	CH	E	N	DETAILS
START	0.000	503991.738	7974854.397	L 68.325m
BCC1	68.325	503851.268	7975231.818	R 100.000m
PI1		503838.326	7975238.153	DA 7°11'52"
ECC1	80.867	503849.563	7975244.179	TL 6.298m
				AL 12.562m
BCC2	105.796	503841.729	7975089.123	R 100.000m
PI2		503839.137	7975077.167	DA 10°49'00"
ECC2	124.558	503838.277	7975068.535	TL 9.408m
				AL 18.780m
BCC3	247.097	503827.072	7975208.563	R 600.000m
PI3		503826.282	7975217.199	DA 1°39'00"
ECC3	264.374	503825.740	7975225.768	TL 8.839m
				AL 17.277m
BCC4	305.819	503822.899	7975271.144	R 730.000m
PI4		503820.149	7975314.735	DA 8°10'00"
ECC4	307.071	503822.926	7975358.343	TL 43.678m
				AL 87.252m
BCC5	414.096	503823.501	7975375.332	R 100.000m
PI5		503824.108	7975385.267	DA 11°21'00"
ECC5	433.924	503826.587	7975384.895	TL 9.950m
				AL 19.830m
BCC6	451.435	503831.085	7975411.845	R 50.000m
PI6		503835.585	7975430.161	DA 41°37'20"
ECC6	487.670	503851.606	7975440.742	TL 18.955m
				AL 36.235m
BCC7	544.678	503866.427	7975470.815	DA 11°34'30"
PI7		503866.983	7975474.425	TL 5.898m
ECC7	546.676			AL 10.101m
END	642.203	503967.515	7975542.484	L 95.527m



DIVERSION LONGITUDINAL PROFILE

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: Bradford Watkin COMPANY: Nuna East

DATE OF AS-BUILT: April 7, 2019 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

PERMIT TO PRACTICE
NVTO LTD.
Signature
Date
PERMIT NUMBER: P 012
The Association of Professional Engineers, Geologists and Geophysicists of NU(TAC)

0 10 20 30 40 50
SCALE IN METERS

H353004-00000-221-294-0002-0010	STANDARD DRAWING - EARTHWORKS AND DRAINAGE
H353004-00000-221-294-0001-0001	STANDARD DRAWING - TYPICAL CULVERT DETAIL
H353004-00000-220-272-0008-0001	PORT SITE - BLOCK PLAN
DRAWING No.	DRAWING TITLE

REFERENCE DRAWINGS

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	HH BY	YH CHKD	DATE
0	FOR CONSTRUCTION			23/03/2018

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	H HERBST		23/03/2018
DESIGNER	H HERBST		23/03/2018
CHECKER	F HUGO		2018-03-23
DESIGN COORD.	R GOOSEN		2018-03-23
RESP. ENG.	R HALM		2018-03-26
LEAD DISC. ENG.	A GROBBELAAR		2018-03-26
AREA LEAD			2018-03-27
ENG. MANAGER	D STANGER		
AREA MANAGER	T. Arpa		11-4-18

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER PROJECT

PORT SITE
STORMWATER DIVERSION P-SWD-5
LAYOUT, PROFILE AND DETAILS

SCALE	DWG. No.	REV
1:1000 OR AS NOTED	H353004-40000-228-271-0002-0001	0

SHEET SIZE: E

H353004-40000-220-272-0006-0001

INSET 1
NOT TO SCALE

EXISTING QUARRY

LP 7 LAYDOWN

LP 6 LAYDOWN

LP 5 LAYDOWN

LP2 LAYDOWN

LP 3 LAYDOWN

DELIVERY ROAD

Note 1

RELOCATED MARINE MANIFOLD

EFFLUENT DISCHARGE POINT

BARGE OFF LOADING DOCK

2No. UTILITY CONDUITS BENEATH ROADWAY FOR FUEL AND EFFLUENT PIPELINES

EXISTING PERMANENT ACCOMMODATION CAMP

TEMPORARY OFFLOADING FLOATING DOCK

RELOCATED EFFLUENT AND FUEL PIPELINES

EXISTING MARINE MANIFOLD TO BE RELOCATED

EXISTING FUEL TANK FARM

350 DIESEL TANK

FACILITY '1' TO BE RELOCATED

FACILITY '2' TO BE RELOCATED

EXISTING CULVERT

ORE DOCK No. 1

IMPERMEABLE GEOMEMBRANE TO BE INSTALLED WHERE STANDING SURFACE WATER COMES INTO CONTACT WITH LAYDOWN AREA

Note 1: Addition of erosion protection channel over embankment slope. See Survey drawing CAB 190514 and Survey point data sheets for details.

NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: Bradford Watkin COMPANY: Nuna East

DATE OF AS-BUILT: May 15, 2019 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

LEGEND:

- PROPOSED LAYDOWN AREA
- DIVERTED WATER FLOW
- NATURAL WATER FLOW
- ABANDONED WATERCOURSE
- FLOW LINE
- NATURAL WATER SHED
- LP 3 LAYDOWN — LAYDOWN AREA AND NUMBER DESIGNATION
- LEASE BOUNDARY
- PROJECT DEVELOPMENT AREA
- EXISTING CULVERT
- NEW CULVERT

SCALE: 1:2500 0 20 40 60 80 100m 200m

NOT FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER PROJECT

MILNE PORT
2018 SURFACE WATER MANAGEMENT PLAN

DRAWING No. H353004-40000-220-272-0006-0001 REV B

SCALE 1:2500

DRAWING TITLE:

REFERENCE DRAWINGS:

NAME:
SIGNATURE:
ENG REG NUMBER:
REVISION DATE:
ORIGINAL DATE:
REG. PROFESSIONAL:

No.	DESCRIPTION	BY	CHKD	DATE
A	APPROVED FOR PERMITTING	HB	TH	15/02/2019

REVISIONS

ROLE:	NAME:	SIGNATURE:	DATE:
DRAFTSPERSON	I.BARNARD		NR
DESIGNER	I.BARNARD		NR
CHECKER	F.HUGO		
DESIGN COORD.	R.GOOSEN		
RESP. ENG.	R.HALIM		
LEAD DISC. ENG.	A.GROBBELAAR		
AREA MANAGER	V.LAVRIC		
PROJ. MANAGER	D.STANGER		
CLIENT			

DRAWING APPROVAL STATUS: Approved for Use

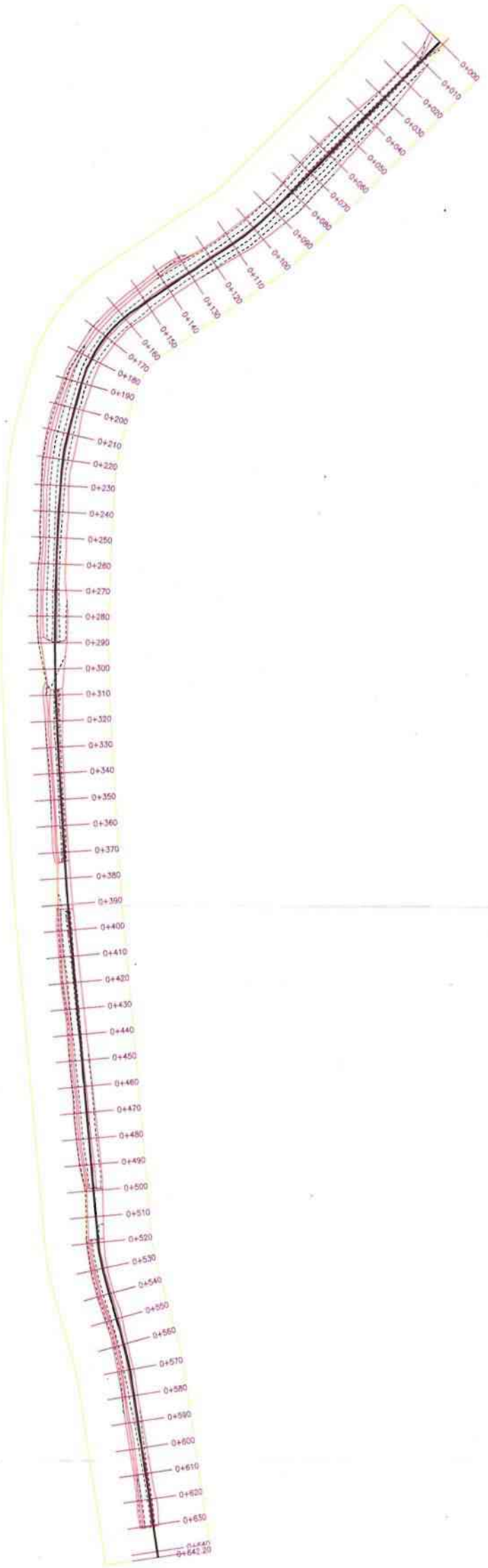
SHEET SIZE: E

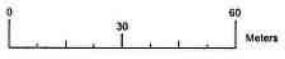
NUNA

NUNA EAST LTD

(Section 4)

Survey Documentation





REV	YY/MM/DD	DESCRIPTION	DRWN	APVD

CLIENT: HATCH / Allnorth

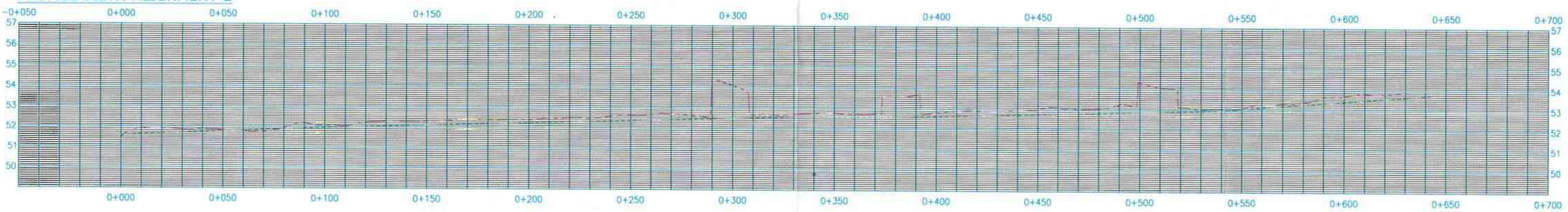
TITLE: **Storm Water Ditch 5 Type 8 Asbuilt Overview**

CLIENT NO:	185/0001	DRWN:	PCN	DATE:	19/01/30
PROJECT NO:	-	DSGN:	-	DATE:	-
DRAWING SIZE:	ANSI "D"	CHKD:	-	DATE:	-
SCALE:	AS NOTED	APVD:	-	DATE:	-

PROJECT: **Baffinland Iron Mines Mary River Expansion Project**

DWG NO: **180130PCN001-1** REV: **0**

PROFILE VIEW: ALIGNMENT-2



REFERENCE DRAWINGS		
DRAWING NO.	DRAWING DESCRIPTION/TITLE	REF
-	-	1

REV	YY/MM/DD	DESCRIPTION	DRWN	APVD

CLIENT: HATCH / Allnorth

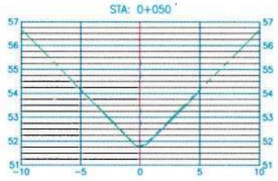
TITLE: **Storm Water Ditch 5 Type 8 Asbuilt Profile**

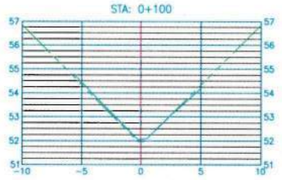
CLIENT NO:	185J0001	DRWN: PCN	DATE: 19/01/30
PROJECT NO:		DSGN:	DATE:
DRAWING SIZE:	ANSI "D"	CHKD: -	DATE:
SCALE:	AS NOTED	APVD: -	DATE:

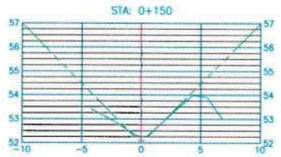
PROJECT: **Baffinland Iron Mines Mary River Expansion Project**

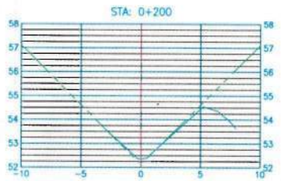
DWG NO: **180130PCN001-2** REV: **0**

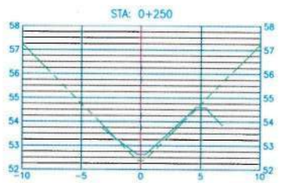
Date: 2019/01/30 | User: Patrick Nickerson | File: C:\Hatch\185J0001 Local Content\1060 Drawings\1018 Survey\01 Production\Port Site\Ditches\180130PCN Asbuilt P-SWD 5 | Layout: 'D' Landscape (Horizontal Title) (2) | Paper Size: 863.6 mm x 558.8 mm

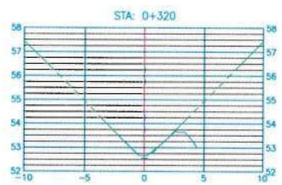


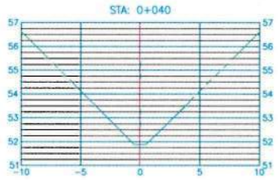


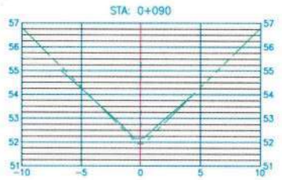


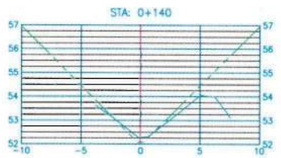


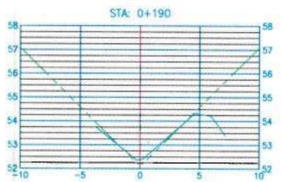


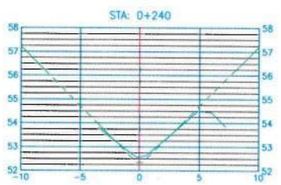


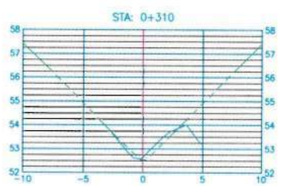


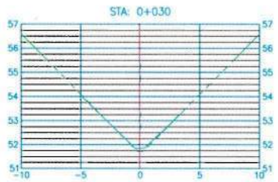


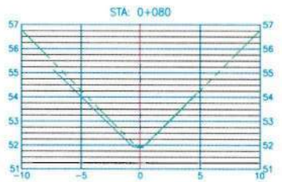


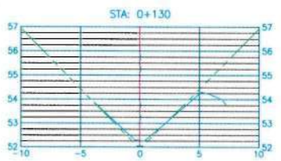


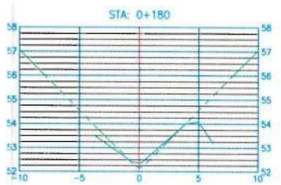


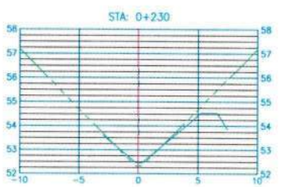


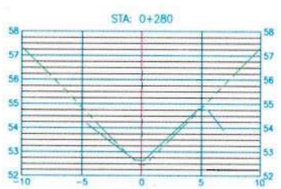


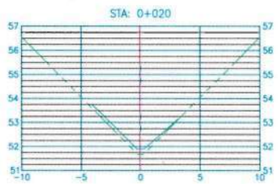


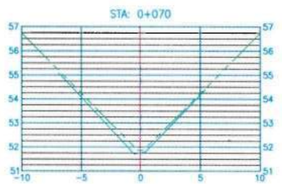


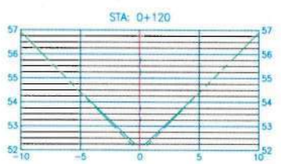


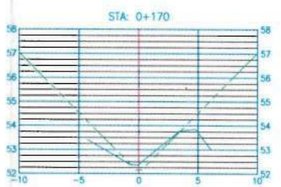


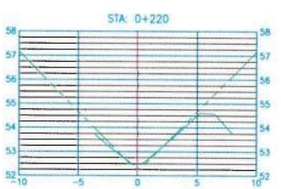


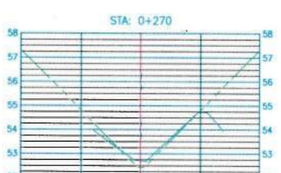


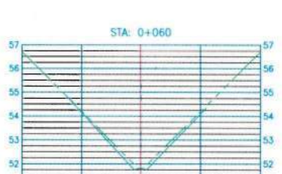


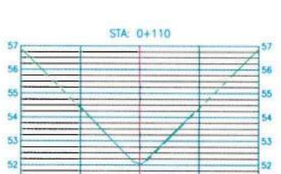


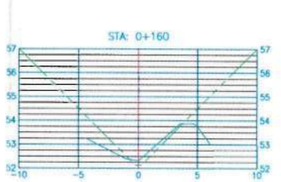












REFERENCE DRAWINGS		
DRAWING NO.	DRAWING DESCRIPTION/TITLE	REF.
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REV	YY/MM/DD	DESCRIPTION	DRWN	APVD

CLIENT: HATCH / Allnorth

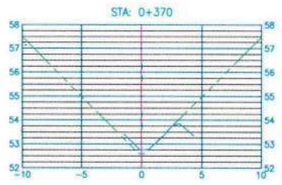
TITLE: **Storm Water Ditch 5 Type 8 Asbuilt Cross section 0+010 - 0+320**

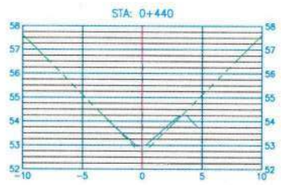
CLIENT NO:	185J0001	DRWN:	PCN	DATE:	19/01/30
PROJECT NO:		DSGN:	-	DATE:	-
DRAWING SIZE:	ANSI "D"	CHKD:	-	DATE:	-
SCALE:	AS NOTED	APVD:	-	DATE:	-

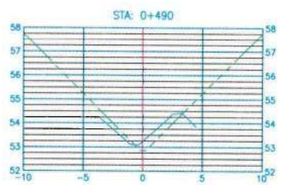
PROJECT: **Baffinland Iron Mines Mary River Expansion Project**

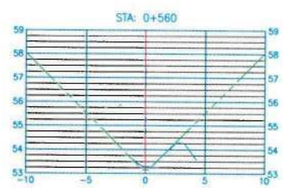
DWG NO: **180130PCN001-3** REV: **0**

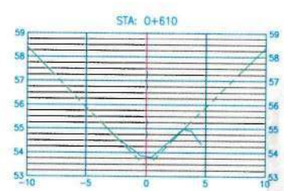
Date: 2019/01/30 | User: Patrick Nickerson | File: C:\Users\185J0001-Local Content\1200-Drawings\2018-Survey\03-Production\Port Site\Ditches\190130PCN Asbuilt P SWD-5 | Layout: 'D' Landscape (Horizontal Title) (3) (2) | Paper Size: 863.6mm x 558.8mm

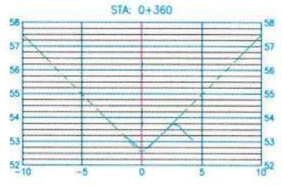


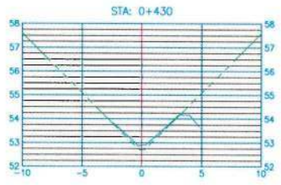


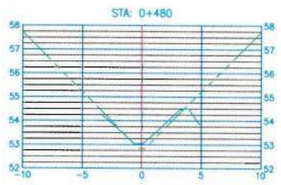


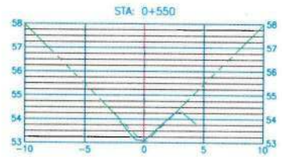


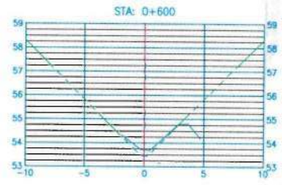


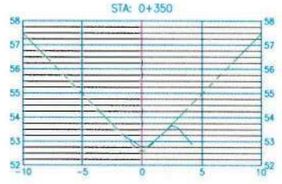


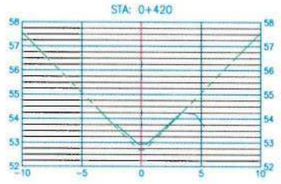


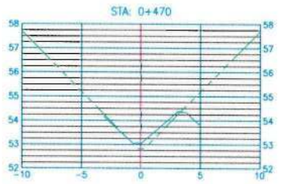


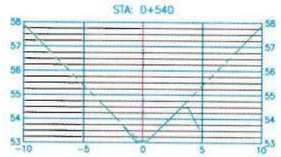


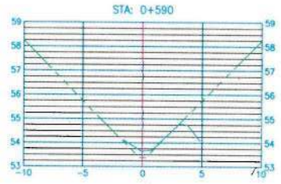


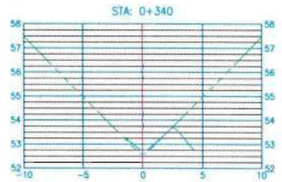


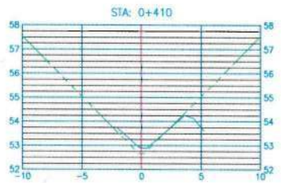


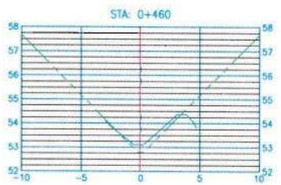


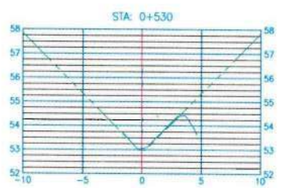


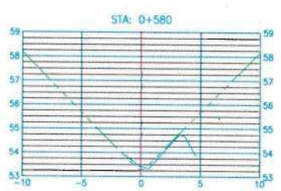


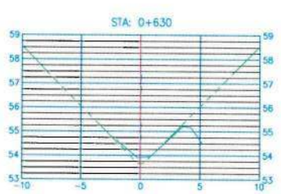


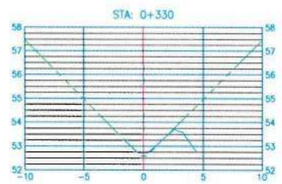


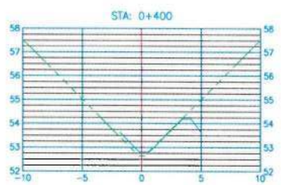


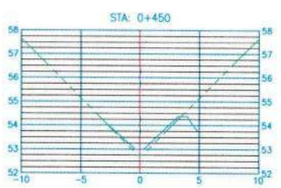


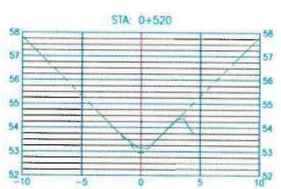


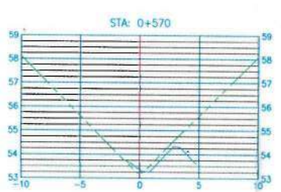


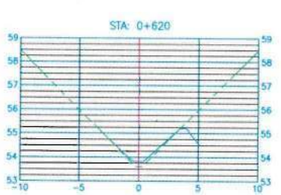












REFERENCE DRAWINGS		
DRAWING NO.	DRAWING DESCRIPTION/TITLE	REF
-	-	1

REV	YY/MM/DD	DESCRIPTION	DRWN	APVD

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CLIENT: HATCH / Allnorth

TITLE: **Storm Water Ditch 5**
Type 8 Asbuilt
Cross section 0+330 - 0+630

CLIENT NO:	185/0001	DRWN:	PCN	DATE:	19/01/30
PROJECT NO:		DSGN:	-	DATE:	-
DRAWING SIZE:	ANSI "D"	CHKD:	-	DATE:	-
SCALE:	AS NOTED	APVD:	-	DATE:	-

PROJECT: **Baffinland Iron Mines**
Mary River Expansion Project

DWG NO: **180130PCN001-4** REV: **0**

Date: 2019/01/30 | User: Patrick Nickerson | File: C:\Jobs\185\0001_Local Content\1000 Drawings\1018 Survey\03-Production\Ron Site\Ditches\SW5\180PCN Asbuilt P SWD 5 | Layout: 'D' Landscape (Horizontal Title) | Paper Size: 863.6mm x 558.8mm

Mary River Expansion Project
Baffin - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Stormwater Diversion Ditch SWD-5

Subgrade Placement As-Built

Point Number	Northing	Easting	Elevation	Description
012bn200	7975230.436	503824.646	52.67	DITCH
012bn201	7975230.611	503825.895	52.676	DITCH
012bn202	7975237.324	503825.462	52.601	DITCH
012bn203	7975242.319	503823.875	52.571	DITCH
012bn204	7975242.54	503824.946	52.52	DITCH
012bn205	7975251.583	503823.861	52.564	DITCH
012bn206	7975251.834	503823.21	52.557	DITCH
012bn207	7975251.914	503824.675	52.621	DITCH
012bn208	7975261.867	503823.986	52.572	DITCH
012bn209	7975261.792	503822.982	52.536	DITCH
012bn210	7975270.104	503822.432	52.439	DITCH
012bn211	7975269.957	503823.441	52.514	DITCH
012bn212	7975281.344	503822.005	52.414	DITCH
012bn213	7975280.82	503823.163	52.434	DITCH
012bn214	7975292.115	503821.857	52.313	DITCH
0113ajb001	7975542.623	503966.749	51.079	DITCH
0113ajb002	7975541.546	503967.07	51.22	DITCH
0113ajb003	7975532.737	503957.897	51.692	DITCH
0113ajb004	7975533.092	503957.087	51.653	DITCH
0113ajb005	7975526.475	503950.593	51.677	DITCH
0113ajb006	7975525.841	503951.078	51.708	DITCH
0113ajb007	7975517.809	503943.102	51.753	DITCH
0113ajb008	7975518.214	503942.623	51.699	DITCH
0113ajb009	7975511.805	503937.463	51.7	DITCH
0113ajb010	7975512.421	503936.885	51.63	DITCH
0113ajb011	7975504.468	503930.089	51.743	DITCH
0113ajb012	7975505.07	503929.593	51.712	DITCH
0113ajb013	7975497.326	503923.309	51.465	DITCH
0113ajb014	7975497.753	503922.194	51.537	DITCH
0113ajb015	7975461.111	503881.488	52.027	DITCH
0113ajb016	7975460.555	503881.983	51.992	DITCH
0113ajb017	7975466.107	503890.602	51.927	DITCH
0113ajb018	7975467.065	503889.857	51.925	DITCH
0113ajb019	7975473.474	503897.982	51.924	DITCH
0113ajb020	7975472.631	503898.82	51.921	DITCH
0113ajb021	7975480.384	503905.332	51.888	DITCH
0113ajb022	7975479.572	503906.004	51.85	DITCH
0113ajb023	7975487.77	503911.522	51.747	DITCH
0113ajb024	7975486.306	503913.077	51.81	DITCH
0113ajb025	7975492.798	503919.672	51.698	DITCH

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Stormwater Diversion Ditch SWD-5

0113ajb026	7975494.327	503918.192	51.564	DITCH
0114ajb001	7975538.284	503964.502	51.321	TOE
0114ajb002	7975540.197	503966.306	50.862	TOE
0114ajb003	7975542.527	503967.891	50.693	TOE
0114ajb004	7975543.945	503966.32	50.469	TOE
0114ajb005	7975545.491	503964.078	50.594	TOE
0114ajb006	7975543.056	503962.389	50.976	TOE
0114ajb007	7975541.143	503960.962	51.15	TOE
0114ajb008	7975539.647	503962.815	51.125	SPOT
0114ajb009	7975541.52	503964.599	50.8	SPOT
0114ajb010	7975543.031	503965.547	50.595	SPOT
0116ajb001	7975454.678	503869.856	52.016	DITCH
0116ajb002	7975453.667	503870.646	52.082	DITCH
0116ajb003	7975448.25	503863.908	52.064	DITCH
0116ajb004	7975449.508	503862.838	52.034	DITCH
0116ajb005	7975443.997	503854.584	52.095	DITCH
0116ajb006	7975442.582	503855.99	52.109	DITCH
0117ajb001	7975439.291	503851.901	52.095	DITCH
0117ajb002	7975440.426	503850.783	52.095	DITCH
0117ajb003	7975433.922	503843.035	52.17	DITCH
0117ajb005	7975432.476	503844.646	52.122	DITCH
0117ajb006	7975425.628	503838.648	52.129	DITCH
0117ajb007	7975426.127	503837.249	52.139	DITCH
0117ajb008	7975416.402	503833.974	52.174	DITCH
0117ajb009	7975417.157	503832.305	52.163	DITCH
0117ajb010	7975407.371	503830.925	52.223	DITCH
0117ajb011	7975407.832	503829.413	52.191	DITCH
0117ajb012	7975398.169	503826.844	52.219	DITCH
0117ajb013	7975397.734	503828.651	52.209	DITCH
0117ajb014	7975387.564	503826.625	52.266	DITCH
0117ajb015	7975387.904	503824.586	52.236	DITCH
0117ajb016	7975378.529	503822.893	52.297	DITCH
0117ajb017	7975378.347	503824.377	52.334	DITCH
0117ajb018	7975367.647	503823.982	52.348	DITCH
0117ajb019	7975367.632	503822.649	52.356	DITCH
0117ajb020	7975357.326	503823.864	52.356	DITCH
0117ajb021	7975357.567	503822.077	52.365	DITCH
0117ajb022	7975348.426	503823.314	52.394	DITCH
0117ajb023	7975348.408	503821.826	52.348	DITCH
0117ajb024	7975338.812	503821.265	52.41	DITCH
0117ajb025	7975338.652	503822.724	52.443	DITCH
0117ajb026	7975327.832	503822.545	52.443	DITCH
0117ajb027	7975327.914	503821.006	52.419	DITCH

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Stormwater Diversion Ditch SWD-5

0117ajb028	7975318.245	503821.869	52.487	DITCH
0117ajb029	7975318.281	503820.928	52.471	DITCH
0120bn215	7975292.027	503822.817	52.351	DITCH
0120bn216	7975294.712	503822.829	52.481	DITCH
0120bn217	7975294.538	503821.689	52.528	DITCH
0123bn500	7975105.712	503837.439	52.853	DITCH
0123bn501	7975105.62	503836.544	52.911	DITCH
0123bn502	7975114.579	503835.749	52.801	DITCH
0123bn503	7975114.786	503836.751	52.795	DITCH
0123bn504	7975122.392	503834.601	52.873	DITCH
0123bn505	7975122.447	503835.683	52.815	DITCH
0123bn506	7975130.876	503833.878	52.742	DITCH
0123bn507	7975130.915	503834.967	52.793	DITCH
0123bn508	7975137.72	503833.054	52.745	DITCH
0123bn509	7975137.819	503834.12	52.755	DITCH
0123bn510	7975145.252	503832.36	52.711	DITCH
0123bn511	7975145.353	503833.457	52.709	DITCH
0123bn512	7975152.651	503831.477	52.788	DITCH
0123bn513	7975152.644	503832.673	52.755	DITCH
0123bn514	7975161.875	503830.649	52.756	DITCH
0123bn515	7975161.994	503831.894	52.666	DITCH
0123bn516	7975169.954	503829.89	52.748	DITCH
0123bn517	7975170.146	503831.076	52.735	DITCH
0123bn518	7975177.658	503828.946	52.728	DITCH
0123bn519	7975177.99	503830.337	52.723	DITCH
0123bn520	7975185.56	503828.322	52.608	DITCH
0123bn521	7975185.739	503829.601	52.673	DITCH
0123bn522	7975193.286	503827.568	52.598	DITCH
0123bn523	7975193.233	503828.934	52.625	DITCH
0123bn524	7975201.234	503826.646	52.577	DITCH
0123bn525	7975201.41	503827.995	52.581	DITCH
0123bn526	7975211.007	503825.907	52.582	DITCH
0123bn527	7975210.978	503827.204	52.642	DITCH
0126bn800	7975081.879	503839.077	52.881	DITCH
0126bn801	7975081.83	503838.273	52.888	DITCH
0126bn802	7975074.155	503840.591	52.88	DITCH
0126bn803	7975073.898	503839.668	52.846	DITCH
0126bn804	7975066.189	503842.973	52.885	DITCH
0126bn805	7975065.853	503841.902	52.883	DITCH
0126bn806	7975057.932	503845.165	52.952	DITCH
0126bn807	7975057.742	503844.214	52.972	DITCH
0126bn808	7975051.076	503847.237	53.033	DITCH
0126bn809	7975050.973	503846.274	53.021	DITCH

Mary River Expansion Project
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Stormwater Diversion Ditch SWD-5

0126bn810	7975043.1	503849.297	53.1	DITCH
0126bn811	7975042.927	503848.452	53.121	DITCH
0126bn812	7975035.347	503851.086	53.141	DITCH
0126bn813	7975035.223	503850.187	53.084	DITCH
0126bn814	7975027.566	503852.259	53.219	DITCH
0126bn815	7975027.447	503851.541	53.216	DITCH
0126bn816	7975019.441	503853.502	53.32	DITCH
0126bn817	7975019.088	503852.611	53.31	DITCH
0126bn818	7975010.952	503854.97	53.418	DITCH
0126bn819	7975010.863	503854.26	53.383	DITCH
0126bn820	7975003.702	503856.082	53.44	DITCH
0126bn821	7975003.57	503855.31	53.467	DITCH
0126bn822	7974997.023	503857.125	53.522	DITCH
0126bn823	7974996.859	503856.411	53.53	DITCH
0126bn824	7974988.591	503858.421	53.581	DITCH
0126bn825	7974988.554	503857.759	53.575	DITCH
0126bn826	7974980.592	503859.949	53.632	DITCH
0126bn827	7974980.195	503858.7	53.592	DITCH
0126bn828	7974975.82	503860.396	53.708	DITCH
0126bn829	7974975.537	503859.474	53.648	DITCH
rtcm-ref 0000	7976257.943	503553.329	15.095	

Mary River Expansion Project
Baffin - Milne Port Earthworks H353004-CC006
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Stormwater Diversion Ditch SWD-5

RipRap Placement As-Built

Point Number	Northing	Easting	Elevation	Description
0130bn100	7975532.982	503961.818	53.192	CREST
0130bn101	7975525.949	503956.292	53.701	CREST
0130bn102	7975516.932	503949.072	54.102	CREST
0130bn103	7975510.106	503942.943	54.406	CREST
0130bn104	7975503.593	503937.099	54.648	CREST
0130bn105	7975496.082	503930.318	54.917	CREST
0130bn106	7975490.516	503925.38	55.04	CREST
0130bn107	7975484.982	503920.184	55.091	CREST
0130bn108	7975477.81	503913.825	55.11	CREST
0130bn109	7975469.679	503903.861	54.922	CREST
0130bn110	7975463.921	503896.209	54.631	CREST
0130bn111	7975459.174	503888.08	54.508	CREST
0130bn112	7975455.046	503881.125	54.197	CREST
0130bn113	7975451.304	503874.339	53.881	CREST
0130bn114	7975447.351	503868.168	53.682	CREST
0130bn115	7975441.503	503859.799	53.464	CREST
0130bn116	7975437.908	503855.457	53.34	CREST
0130bn117	7975433.172	503848.641	53.21	CREST
0130bn118	7975428.259	503844.089	53.389	CREST
0130bn119	7975420.338	503838.289	53.512	CREST
0130bn120	7975413.972	503835.585	53.72	CREST
0130bn121	7975409.146	503834.158	53.786	CREST
0130bn122	7975401.264	503831.554	53.675	CREST
0130bn123	7975392.913	503830.058	53.671	CREST
0130bn124	7975385.162	503828.479	53.741	CREST
0130bn125	7975378.667	503826.815	53.618	CREST
0130bn126	7975370.909	503826.306	53.593	CREST
0130bn127	7975361.843	503826.376	53.836	CREST
0130bn128	7975354.78	503825.665	53.728	CREST
0130bn129	7975346.341	503825.504	53.87	CREST
0130bn130	7975346.062	503825.334	53.781	CREST
0130bn131	7975337.09	503825.225	53.907	CREST
0130bn132	7975329.393	503825.914	54.004	CREST
0130bn133	7975322.794	503826.14	54.198	CREST
0130bn134	7975314.625	503825.929	54.163	CREST
0130bn136	7975315.563	503817.029	54.676	CREST
0130bn137	7975322.16	503816.765	54.797	CREST
0130bn138	7975322.256	503815.937	54.753	CREST
0130bn139	7975315.248	503815.885	54.723	CREST
0130bn140	7975329.881	503816.63	54.746	CREST

Mary River Expansion Project
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Stormwater Diversion Ditch SWD-5

0130bn141	7975329.887	503816	54.719	CREST
0130bn142	7975338.338	503817.143	54.653	CREST
0130bn143	7975338.322	503816.02	54.683	CREST
0130bn144	7975346.764	503817.598	54.551	CREST
0130bn145	7975346.84	503816.357	54.479	CREST
0130bn146	7975355.134	503817.85	54.615	CREST
0130bn147	7975355.294	503817.028	54.607	CREST
0130bn148	7975363.502	503818.057	54.5	CREST
0130bn149	7975363.164	503816.895	54.441	CREST
0130bn150	7975372.216	503818.133	54.533	CREST
0130bn151	7975372.42	503816.803	54.535	CREST
0130bn152	7975381.167	503818.821	54.588	CREST
0130bn153	7975381.428	503817.561	54.577	CREST
0130bn154	7975391.293	503820.265	54.609	CREST
0130bn155	7975391.465	503818.924	54.484	CREST
0130bn156	7975399.402	503822.365	54.596	CREST
0130bn157	7975399.573	503821.047	54.408	CREST
0130bn158	7975408.104	503824.796	54.491	CREST
0130bn159	7975408.63	503823.75	54.319	CREST
0130bn160	7975417.134	503827.971	54.246	CREST
0130bn161	7975417.793	503826.754	54.168	CREST
0130bn162	7975424.483	503831.827	53.997	CREST
0130bn163	7975424.998	503830.97	54.07	CREST
0130bn164	7975431.932	503837.218	53.76	CREST
0130bn165	7975432.89	503836.193	53.843	CREST
0130bn166	7975438.805	503843.446	53.82	CREST
0130bn167	7975440.032	503842.846	53.832	CREST
0130bn168	7975445.347	503851.035	53.996	CREST
0130bn169	7975446.343	503850.311	53.915	CREST
0130bn170	7975451.283	503858.524	53.92	CREST
0130bn171	7975452.193	503857.73	53.887	CREST
0130bn172	7975456.533	503865.428	54.357	CREST
0130bn173	7975457.401	503864.839	54.217	CREST
0130bn174	7975461.648	503874.008	54.247	CREST
0130bn175	7975466.33	503881.778	54.241	CREST
0130bn176	7975472.593	503890.234	54.28	CREST
0130bn177	7975478.506	503897.356	54.161	CREST
0130bn178	7975485.024	503904.49	53.94	CREST
0130bn179	7975492.582	503910.657	54.334	CREST
0130bn180	7975499.619	503916.934	54.41	CREST
0130bn181	7975505.84	503923.39	54.29	CREST
0130bn182	7975512.345	503930.548	54.018	CREST
0130bn183	7975518.088	503937.418	53.56	CREST

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0130bn184	7975524.156	503944.557	53.174	CREST
0130bn185	7975530.76	503951.057	53.139	CREST
0130bn186	7975536.518	503957.151	52.892	CREST
0130bn187	7975540.729	503960.456	52.234	CREST
0130bn188	7975546.389	503963.134	51.474	CREST
0130bn189	7975544.373	503964.136	51.159	TOE
0130bn190	7975539.892	503961.949	51.672	TOE
0130bn191	7975536	503959.65	51.929	TOE
0130bn192	7975535.443	503960.7	51.922	TOE
0130bn193	7975537.984	503963.306	51.768	TOE
0130bn194	7975540.898	503967.512	51.687	TOE
0130bn195	7975543.809	503970.222	51.227	TOE
0130bn196	7975530.355	503955.378	51.897	TOE
0130bn197	7975530.748	503954.955	51.911	TOE
0130bn198	7975525.087	503950.377	51.874	TOE
0130bn199	7975525.572	503949.902	51.913	TOE
0130bn200	7975518.803	503944.256	51.805	TOE
0130bn201	7975519.238	503943.624	51.811	TOE
0130bn202	7975513.616	503939.288	51.884	TOE
0130bn203	7975514.197	503938.489	51.883	TOE
0130bn204	7975508.188	503933.737	51.825	TOE
0130bn205	7975508.852	503933.159	51.899	TOE
0130bn206	7975502.107	503928.097	51.841	TOE
0130bn207	7975502.943	503927.374	51.77	TOE
0130bn208	7975496.386	503922.445	51.71	TOE
0130bn209	7975497.184	503921.618	51.754	TOE
0130bn210	7975490.729	503916.802	51.709	TOE
0130bn211	7975491.378	503916.209	51.788	TOE
0130bn212	7975484.926	503911.208	51.922	TOE
0130bn213	7975485.572	503910.578	51.942	TOE
0130bn214	7975479.506	503905.69	52.179	TOE
0130bn215	7975480.025	503905.12	52.2	TOE
0130bn216	7975473.756	503899.851	52.044	TOE
0130bn217	7975474.3	503899.488	52.097	TOE
0130bn218	7975468.711	503894.029	52.054	TOE
0130bn219	7975469.462	503893.558	52.093	TOE
0130bn220	7975464.195	503887.453	52.132	TOE
0130bn221	7975464.718	503887.091	52.037	TOE
0130bn222	7975459.728	503880.579	52.235	TOE
0130bn223	7975460.313	503880.11	52.218	TOE
0130bn224	7975455.134	503873.893	52.289	TOE
0130bn225	7975455.808	503873.501	52.237	TOE
0130bn226	7975450.95	503867.084	52.27	TOE

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0130bn227	7975451.525	503866.768	52.307	TOE
0130bn228	7975445.949	503859.643	52.265	TOE
0130bn229	7975446.688	503858.977	52.306	TOE
0130bn230	7975441.053	503853.113	52.328	TOE
0130bn231	7975441.805	503852.642	52.273	TOE
0130bn232	7975435.346	503846.357	52.417	TOE
0130bn233	7975436.154	503845.618	52.324	TOE
0130bn234	7975429.231	503840.464	52.406	TOE
0130bn235	7975429.728	503839.968	52.343	TOE
0130bn236	7975422.633	503835.954	52.391	TOE
0130bn237	7975423.16	503835.29	52.39	TOE
0130bn238	7975418.275	503833.523	52.334	TOE
0130bn239	7975418.419	503832.889	52.372	TOE
0130bn240	7975410.159	503830.791	52.368	TOE
0130bn241	7975410.219	503830.266	52.422	TOE
0130bn242	7975402.742	503828.985	52.36	TOE
0130bn243	7975402.907	503828.291	52.373	TOE
0130bn244	7975395.384	503827.135	52.454	TOE
0130bn245	7975395.499	503826.443	52.442	TOE
0130bn246	7975387.294	503825.355	52.445	TOE
0130bn247	7975387.599	503824.506	52.447	TOE
0130bn248	7975379.411	503824.225	52.473	TOE
0130bn249	7975379.572	503823.523	52.499	TOE
0130bn250	7975371.65	503823.648	52.484	TOE
0130bn251	7975371.655	503823.077	52.437	TOE
0130bn252	7975363.876	503823.176	52.543	TOE
0130bn253	7975363.984	503822.385	52.623	TOE
0130bn254	7975355.299	503822.744	52.637	TOE
0130bn255	7975355.247	503822.019	52.634	TOE
0130bn256	7975347.501	503822.287	52.61	TOE
0130bn257	7975347.56	503821.681	52.676	TOE
0130bn258	7975340.083	503822.204	52.67	TOE
0130bn259	7975340.042	503821.524	52.733	TOE
0130bn260	7975332.928	503822.203	52.73	TOE
0130bn261	7975332.845	503821.196	52.675	TOE
0130bn262	7975325.029	503822.143	52.695	TOE
0130bn263	7975324.839	503821.327	52.64	TOE
0130bn264	7975316.588	503822.044	52.562	TOE
0130bn265	7975316.599	503821.365	52.553	TOE
0130bn266	7975314.007	503822.12	52.464	TOE
0130bn267	7975314.007	503821.226	52.436	TOE
0130bn268	7975313.24	503815.088	53.865	TOE
0130bn269	7975321.706	503814.569	53.901	TOE

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0130bn270	7975330.889	503814.685	53.945	TOE
0130bn271	7975340.145	503814.764	53.903	TOE
0130bn272	7975349.147	503815.658	53.844	TOE
0130bn273	7975357.302	503815.465	53.847	TOE
0130bn274	7975366.44	503815.842	53.876	TOE
0130bn275	7975375.465	503816.098	53.856	TOE
0130bn276	7975383.461	503816.389	53.749	TOE
0130bn277	7975392.715	503817.777	53.722	TOE
0130bn278	7975402.159	503819.993	53.655	TOE
0130bn279	7975410.208	503823.133	53.603	TOE
0130bn280	7975418.447	503825.582	53.225	TOE
0130bn281	7975426.3	503830.331	53.19	TOE
0130bn282	7975433.401	503834.839	52.962	TOE
0130bn283	7975439.866	503840.882	53.036	TOE
0130bn284	7975445.587	503847.278	53.051	TOE
0130bn285	7975451.232	503854.582	52.999	TOE
0130bn286	7975455.827	503860.41	53.145	TOE
0130bn287	7975459.519	503866.175	53.5	TOE
0130bn288	7975461.19	503869.336	53.91	TOE
0130bn289	7975230.435	503826.98	53.493	CREST
0130bn290	7975240.033	503826.182	53.216	CREST
0130bn291	7975247.893	503825.555	53.13	CREST
0130bn292	7975256.758	503825.322	53.227	CREST
0130bn293	7975264.599	503824.789	53.276	CREST
0130bn294	7975273.303	503824.437	53.282	CREST
0130bn295	7975281.134	503824.327	53.405	CREST
0130bn296	7975288.25	503824.505	53.662	CREST
0130bn297	7975296.074	503824.299	53.652	CREST
0130bn298	7975295.215	503819.777	53.671	CREST
0130bn299	7975288.129	503819.232	53.795	CREST
0130bn300	7975279.614	503819.932	53.598	CREST
0130bn301	7975270.176	503820.271	53.766	CREST
0130bn302	7975261.009	503821.054	53.695	CREST
0130bn303	7975252.158	503821.562	53.654	CREST
0130bn304	7975243.728	503822.026	53.734	CREST
0130bn305	7975235.802	503822.411	53.803	CREST
0130bn306	7975229.732	503823.276	53.65	CREST
0130bn309	7975238.686	503824.575	52.737	TOE
0130bn310	7975238.685	503825.177	52.72	TOE
0130bn311	7975247.42	503823.94	52.696	TOE
0130bn312	7975247.49	503824.584	52.725	TOE
0130bn313	7975254.974	503823.483	52.784	TOE
0130bn314	7975255.143	503824.056	52.808	TOE

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0130bn315	7975263.626	503822.987	52.754	TOE
0130bn316	7975263.696	503823.589	52.762	TOE
0130bn317	7975272.322	503822.451	52.721	TOE
0130bn318	7975272.471	503823.252	52.729	TOE
0130bn319	7975280.184	503822.066	52.634	TOE
0130bn320	7975280.448	503822.805	52.648	TOE
0130bn321	7975288.877	503821.846	52.711	TOE
0130bn322	7975288.995	503822.601	52.736	TOE
0130bn323	7975294.952	503822.061	52.524	TOE
0130bn324	7975295.238	503822.625	52.572	TOE
0130bn325	7975298.272	503817.702	53.451	TOE
0130bn326	7975294.888	503816.787	53.234	TOE
0130bn327	7975285.785	503817.741	53.086	TOE
0130bn328	7975276.861	503818.07	52.819	TOE
0130bn329	7975267.64	503818.777	52.746	TOE
0130bn330	7975258.8	503819.483	52.801	TOE
0130bn331	7975249.902	503820.043	52.913	TOE
0130bn332	7975241.73	503820.454	53.105	TOE
0130bn333	7975234.15	503820.749	53.327	TOE
0130bn334	7975229.247	503821.857	53.357	TOE
0130bn335	7975229.411	503822.582	53.804	CREST
0130bn336	7975237.057	503821.647	53.888	CREST
0130bn337	7975245.867	503821.515	53.566	CREST
0130bn338	7975254.226	503820.952	53.556	CREST
0130bn339	7975263.267	503820.291	53.482	CREST
0130bn340	7975271.964	503819.62	53.599	CREST
0130bn341	7975279.492	503818.914	53.619	CREST
0130bn342	7975287.142	503818.773	53.692	CREST
0130bn343	7975294.098	503818.117	54.024	CREST
0130bn344	7975297.378	503818.517	54.136	CREST
0130bn345	7975211.671	503828.423	53.484	CREST
0130bn346	7975204.401	503829.281	53.607	CREST
0130bn347	7975196.505	503830.121	53.695	CREST
0130bn348	7975187.984	503831.069	53.743	CREST
0130bn349	7975179.402	503831.986	53.785	CREST
0130bn350	7975171.117	503832.924	53.823	CREST
0130bn351	7975162.641	503833.797	53.857	CREST
0130bn352	7975154.697	503834.79	54.039	CREST
0130bn353	7975146.106	503835.773	54.06	CREST
0130bn354	7975137.173	503836.674	54.126	CREST
0130bn355	7975128.822	503837.672	54.24	CREST
0130bn356	7975120.421	503838.664	54.268	CREST
0130bn357	7975111.291	503839.654	54.173	CREST

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0130bn358	7975104.901	503839.954	54.348	CREST
0130bn359	7975105.009	503834.572	54.327	CREST
0130bn360	7975105.007	503833.955	54.377	CREST
0130bn361	7975112.355	503833.484	54.369	CREST
0130bn362	7975112.243	503832.775	54.402	CREST
0130bn363	7975120.625	503831.964	54.488	CREST
0130bn364	7975120.5	503831.239	54.577	CREST
0130bn365	7975129.026	503831.135	54.4	CREST
0130bn366	7975129.042	503830.319	54.365	CREST
0130bn367	7975138.883	503830.479	54.34	CREST
0130bn368	7975138.777	503829.917	54.321	CREST
0130bn369	7975147.742	503829.422	54.408	CREST
0130bn370	7975147.678	503828.548	54.417	CREST
0130bn371	7975157.291	503828.58	54.339	CREST
0130bn372	7975157.21	503827.879	54.351	CREST
0130bn373	7975166.59	503828.057	54.135	CREST
0130bn374	7975166.512	503827.338	54.218	CREST
0130bn375	7975175.407	503826.926	54.19	CREST
0130bn376	7975175.25	503826.064	54.154	CREST
0130bn377	7975184.574	503825.899	54.264	CREST
0130bn378	7975184.309	503824.733	54.187	CREST
0130bn379	7975194.814	503824.706	54.25	CREST
0130bn380	7975194.788	503824.057	54.144	CREST
0130bn381	7975204.247	503824.046	54.186	CREST
0130bn382	7975204.222	503823.347	54.194	CREST
0130bn383	7975211.664	503823.716	54.086	CREST
0130bn384	7975211.648	503822.991	54.09	CREST
0130bn385	7975210.691	503826.848	52.723	TOE
0130bn386	7975210.535	503826.258	52.759	TOE
0130bn387	7975203.01	503827.779	52.809	TOE
0130bn388	7975202.689	503826.946	52.818	TOE
0130bn389	7975195.883	503828.411	52.896	TOE
0130bn390	7975195.743	503827.861	52.854	TOE
0130bn391	7975187.601	503829.23	52.949	TOE
0130bn392	7975187.615	503828.467	52.945	TOE
0130bn393	7975179.365	503830.001	52.87	TOE
0130bn394	7975179.337	503829.412	52.922	TOE
0130bn395	7975171.211	503830.809	52.878	TOE
0130bn396	7975171.089	503830.177	52.914	TOE
0130bn397	7975163.048	503831.748	52.976	TOE
0130bn398	7975162.929	503830.923	53.034	TOE
0130bn399	7975155.485	503832.336	52.958	TOE
0130bn400	7975155.468	503831.651	52.979	TOE

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0130bn401	7975148.188	503833.102	53.122	TOE
0130bn402	7975147.882	503832.199	53.132	TOE
0130bn403	7975138.997	503834.155	53.092	TOE
0130bn404	7975138.975	503833.57	53.02	TOE
0130bn405	7975130.096	503834.903	52.997	TOE
0130bn406	7975130.098	503834.243	53.031	TOE
0130bn407	7975121.348	503835.825	53.075	TOE
0130bn408	7975121.187	503834.929	53.075	TOE
0130bn409	7975112.907	503836.976	53.118	TOE
0130bn410	7975112.786	503836.351	53.086	TOE
0130bn411	7975105.381	503837.589	53.144	TOE
0130bn412	7975105.448	503836.695	53.103	TOE
0130bn413	7975104.344	503833.403	53.831	TOE
0130bn414	7975113.094	503831.374	53.84	TOE
0130bn415	7975122.321	503830.12	53.848	TOE
0130bn416	7975131.755	503829.115	53.848	TOE
0130bn417	7975140.717	503828.612	53.831	TOE
0130bn418	7975149.634	503827.62	53.809	TOE
0130bn419	7975159.394	503826.763	53.748	TOE
0130bn420	7975168.956	503826.17	53.68	TOE
0130bn421	7975178.014	503824.828	53.686	TOE
0130bn422	7975187.291	503823.615	53.664	TOE
0130bn423	7975196.965	503823.032	53.575	TOE
0130bn424	7975205.482	503822.304	53.61	TOE
0130bn425	7975212.147	503822.342	53.614	TOE
0130bn426	7974975.563	503856.45	55.191	CREST
0130bn427	7974975.421	503855.811	55.184	CREST
0130bn428	7974983.563	503855.206	55.228	CREST
0130bn429	7974983.444	503854.583	55.242	CREST
0130bn430	7974992.705	503854.116	55.072	CREST
0130bn431	7974992.88	503853.473	54.952	CREST
0130bn432	7975000.965	503853.022	54.869	CREST
0130bn433	7975000.88	503852.294	54.871	CREST
0130bn434	7975009.028	503851.988	54.729	CREST
0130bn435	7975008.897	503851.113	54.747	CREST
0130bn436	7975017.179	503850.357	54.792	CREST
0130bn437	7975017.088	503849.702	54.746	CREST
0130bn438	7975026.079	503848.907	54.738	CREST
0130bn439	7975025.92	503848.462	54.672	CREST
0130bn440	7975035.497	503847.755	54.318	CREST
0130bn441	7975035.291	503847.198	54.285	CREST
0130bn442	7975042.533	503846.234	54.317	CREST
0130bn443	7975042.311	503845.587	54.286	CREST

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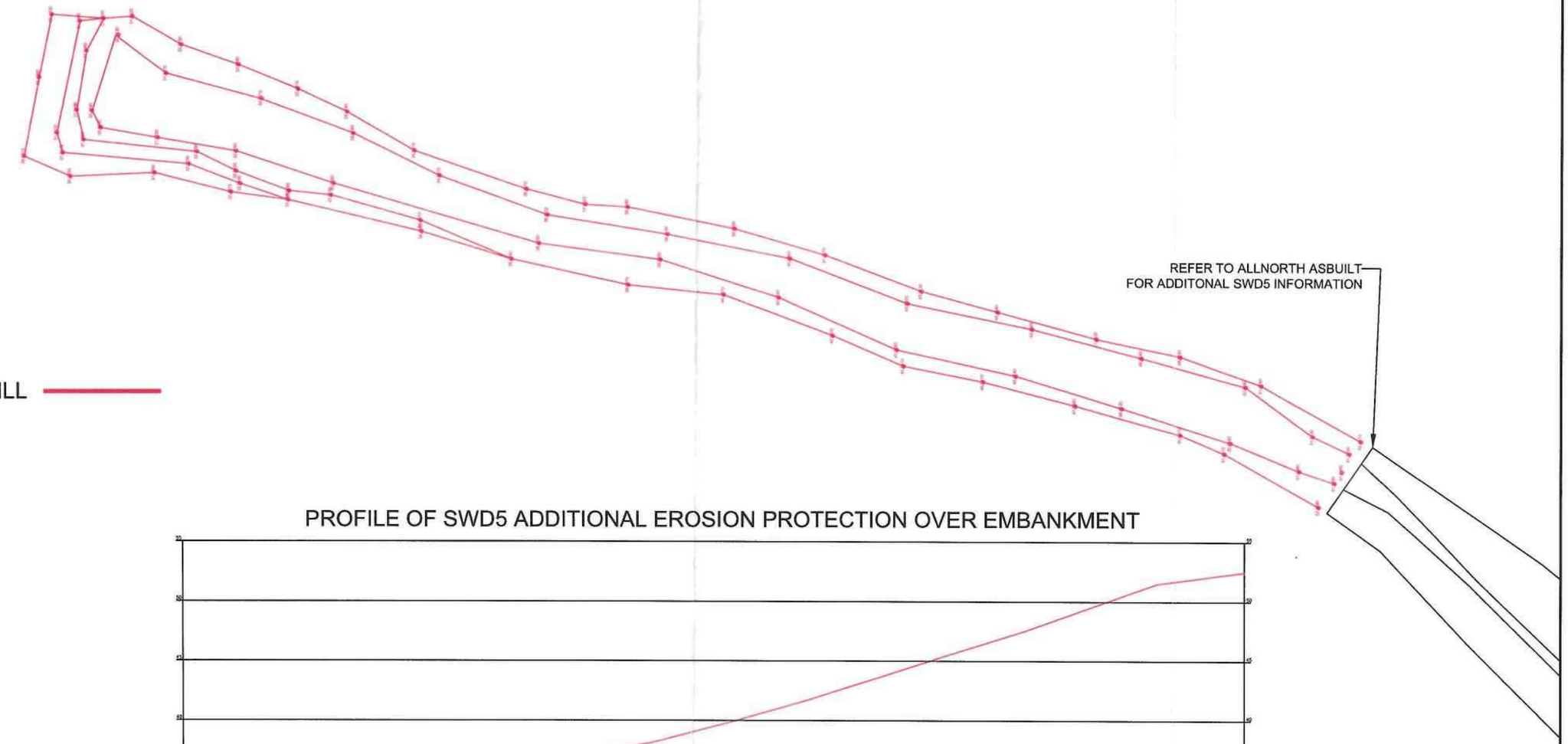
0130bn444	7975049.228	503844.699	54.204	CREST
0130bn445	7975048.999	503844.141	54.229	CREST
0130bn446	7975056.243	503842.362	54.282	CREST
0130bn447	7975056.015	503841.826	54.307	CREST
0130bn448	7975062.841	503839.84	54.488	CREST
0130bn449	7975062.632	503839.303	54.477	CREST
0130bn450	7975070.387	503837.966	54.38	CREST
0130bn451	7975070.296	503837.363	54.404	CREST
0130bn452	7975077.938	503836.328	54.418	CREST
0130bn453	7975077.847	503835.639	54.485	CREST
0130bn454	7975085.213	503835.406	54.306	CREST
0130bn455	7975085.168	503834.768	54.359	CREST
0130bn456	7975085.758	503840.449	53.851	CREST
0130bn457	7975078.631	503840.967	53.8	CREST
0130bn458	7975072.224	503842.24	53.645	CREST
0130bn459	7975064.287	503844.51	53.651	CREST
0130bn460	7975057.541	503847.06	53.959	CREST
0130bn461	7975049.728	503848.648	53.759	CREST
0130bn462	7975040.911	503850.623	53.615	CREST
0130bn463	7975033.125	503852.462	53.833	CREST
0130bn464	7975024.505	503853.729	53.881	CREST
0130bn465	7975016.887	503855.191	54.089	CREST
0130bn466	7975008.565	503856.783	54.306	CREST
0130bn467	7974999.963	503858.229	54.428	CREST
0130bn468	7974991.778	503859.661	54.509	CREST
0130bn469	7974984.427	503861.32	54.837	CREST
0130bn470	7974976.315	503861.902	54.616	CREST
0130bn471	7974975.802	503860.238	53.912	TOE
0130bn472	7974975.812	503859.125	53.954	TOE
0130bn473	7974983.604	503858.353	53.832	TOE
0130bn474	7974983.858	503859.235	53.829	TOE
0130bn475	7974992.326	503857.067	53.8	TOE
0130bn476	7974992.429	503857.841	53.826	TOE
0130bn477	7974998.548	503855.978	53.788	TOE
0130bn478	7974998.609	503856.899	53.873	TOE
0130bn479	7975007.115	503854.706	53.669	TOE
0130bn480	7975007.449	503855.344	53.688	TOE
0130bn481	7975015.584	503853.03	53.707	TOE
0130bn482	7975015.756	503853.946	53.668	TOE
0130bn483	7975023.57	503852.03	53.333	TOE
0130bn484	7975023.89	503852.649	53.442	TOE
0130bn485	7975031.814	503850.473	53.301	TOE
0130bn486	7975031.973	503851.175	53.298	TOE

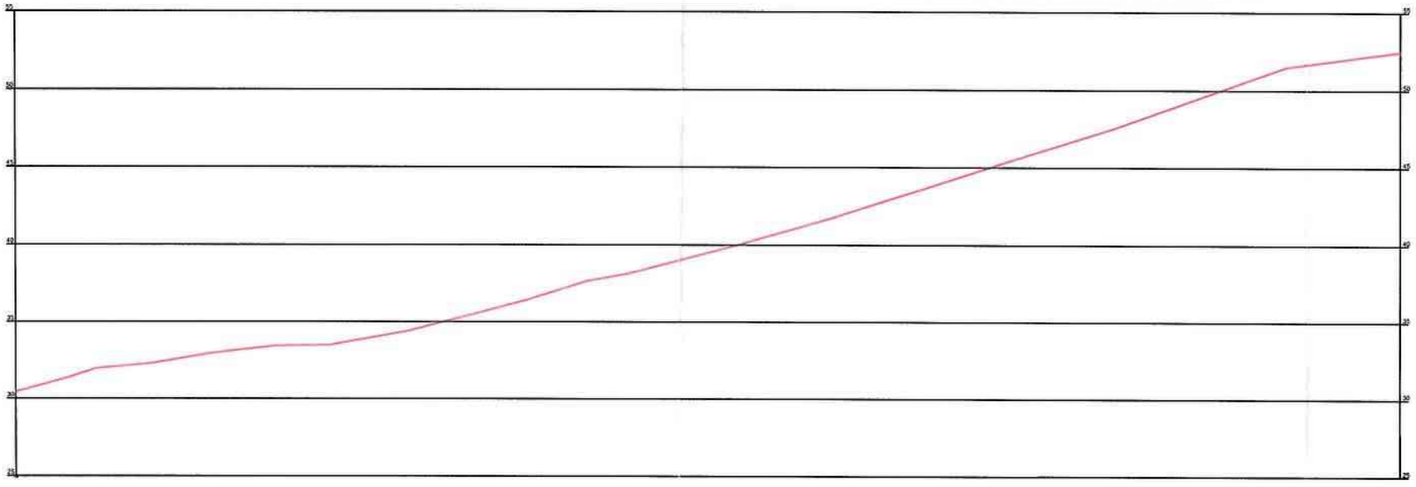
Mary River Expansion Project
Baffin - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Stormwater Diversion Ditch SWD-5

0130bn487	7975039.841	503849.049	53.242	TOE
0130bn488	7975040.047	503849.727	53.302	TOE
0130bn489	7975048.236	503847.099	53.286	TOE
0130bn490	7975048.468	503847.777	53.292	TOE
0130bn492	7975056.4	503845.152	53.05	TOE
0130bn493	7975056.661	503845.827	53.084	TOE
0130bn494	7975063.538	503842.63	53.084	TOE
0130bn495	7975063.98	503843.581	53.056	TOE
0130bn496	7975072.764	503840.122	53.067	TOE
0130bn497	7975072.933	503840.915	53.014	TOE
0130bn498	7975081.411	503838.293	53.131	TOE
0130bn499	7975081.651	503839.065	53.148	TOE
0130bn502	7975086.052	503833.735	53.746	TOE
0130bn503	7975079.097	503834.703	53.704	TOE
0130bn504	7975070.684	503836.045	53.559	TOE
0130bn505	7975062.035	503838.497	53.582	TOE
0130bn506	7975053.832	503841.328	53.806	TOE
0130bn507	7975046.942	503843.578	53.58	TOE
0130bn508	7975036.937	503845.597	53.561	TOE
0130bn509	7975026.307	503847.514	53.847	TOE
0130bn510	7975015.667	503848.916	54.075	TOE
0130bn511	7975007.099	503850.365	54.155	TOE
0130bn512	7974997.82	503851.887	54.301	TOE
0130bn513	7974988.875	503853.086	54.457	TOE
0130bn514	7974980.285	503853.742	54.648	TOE
0130bn515	7974974.982	503854.936	54.508	TOE



TYPE 8 ROCK FILL

PROFILE OF SWD5 ADDITIONAL EROSION PROTECTION OVER EMBANKMENT



Bradford Watkin
QA/QC
Reviewed

NOTES:

OWNER: BAFFINLAND IRON MINES LP	PREPARED BY: NUNA EAST LTD. PO BOX 370 POND INLET, NU X0A 0X0	NUNA		STORM WATER DIVERSION 5
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: MWALSH	SCALE: NTS	DATE: May 15, 2019	DRAWING TITLE: SWD5 ADDITIONAL EROSION PROTECTION
				DRAWING NAME (YYMMDD): CAB 190514 SWD5 ADDITIONAL WORK.dwg

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Stream Diversion Berms Drainage SWD-5
Final As-Built Field Fit Area Down Slope

Storm Water Diversion Ditch SWD-5

Point Number	Northing	Easting	Elevation	Description
2130028	7975607.345	503980.247	33.225	ASB CREST
2130029	7975610.783	503981.536	32.88	ASB CREST
2130030	7975613.295	503982.782	32.329	ASB CREST
2130031	7975620.635	503983.556	31.196	ASB CREST
2130032	7975621.09	503985.485	31.218	ASB CREST
2130033	7975620.456	503989.364	31.346	ASB CREST
2130034	7975619.345	503991.433	31.334	ASB CREST
2130035	7975617.465	503991.569	31.952	ASB CREST
2130036	7975614.322	503989.757	32.279	ASB CREST
2130037	7975610.612	503988.455	32.955	ASB CREST
2130038	7975606.768	503986.87	33.431	ASB CREST
2130039	7975603.59	503985.385	33.474	ASB CREST
2130040	7975599.173	503982.865	34.391	ASB CREST
2130041	7975591.935	503980.372	36.407	ASB CREST
2130042	7975588.095	503979.381	37.662	ASB CREST
2130043	7975585.376	503979.217	38.148	ASB CREST
2130044	7975578.425	503977.821	39.998	ASB CREST
2130045	7975572.55	503976.122	41.727	ASB CREST
2130046	7975566.283	503973.796	43.813	ASB CREST
2130047	7975561.353	503972.472	45.464	ASB CREST
2130048	7975554.92	503970.727	47.543	ASB CREST
2130049	7975549.474	503969.606	49.518	ASB CREST
2130050	7975544.232	503967.769	51.474	ASB CREST
2130051	7975537.748	503964.216	52.451	ASB CREST
2130052	7975538.496	503963.409	51.775	ASB TOE
2130053	7975538.977	503962.227	51.895	ASB TOE
2130054	7975539.467	503961.494	51.736	ASB TOE
2130055	7975540.494	503959.925	52.439	ASB CREST
2130056	7975546.582	503963.372	51.401	ASB CREST
2130057	7975549.46	503964.583	50.097	ASB CREST
2130058	7975556.316	503966.441	47.598	ASB CREST
2130059	7975562.288	503967.968	45.341	ASB CREST
2130060	7975567.434	503968.966	43.841	ASB CREST
2130061	7975572.038	503970.93	42.22	ASB CREST
2130062	7975579.121	503973.554	40.167	ASB CREST
2130063	7975585.347	503974.169	38.337	ASB CREST
2130064	7975592.905	503975.838	36.535	ASB CREST
2130065	7975598.712	503977.624	34.798	ASB CREST
2130066	7975604.634	503979.975	33.273	ASB CREST

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Stream Diversion Berms Drainage SWD-5
Final As-Built Field Fit Area Down Slope

2130067	7975607.401	503979.668	33.244	ASB CREST
2130068	7975610.506	503980.716	32.84	ASB CREST
2130069	7975613.832	503981.99	32.27	ASB CREST
2130070	7975621.983	503982.716	31.047	ASB CREST
2130071	7975622.362	503984.002	31.101	ASB CREST
2130072	7975620.889	503991.275	31.24	ASB CREST
2130073	7975622.689	503991.701	30.423	ASB TOE
2130074	7975623.5	503987.609	30.156	ASB TOE
2130075	7975624.462	503982.484	29.931	ASB TOE
2130076	7975621.489	503981.175	30.155	ASB TOE
2130077	7975616.046	503981.411	31.225	ASB TOE
2130078	7975611.102	503980.161	32.167	ASB TOE
2130079	7975619.535	503984.345	30.555	ASB TOE
2130080	7975620.106	503985.444	30.474	ASB TOE
2130081	7975618.39	503990.378	30.912	ASB TOE
2130082	7975615.291	503987.888	31.287	ASB TOE
2130083	7975615.839	503983.696	31.223	ASB TOE
2130084	7975610.766	503982.826	32.076	ASB TOE
2130085	7975609.138	503986.251	32.301	ASB TOE
2130086	7975603.18	503983.992	33.176	ASB TOE
2130087	7975604.473	503980.753	33.032	ASB TOE
2130088	7975598.777	503978.339	34.481	ASB TOE
2130089	7975597.537	503981.246	34.641	ASB TOE
2130090	7975590.602	503978.705	36.503	ASB TOE
2130091	7975591.144	503976.861	36.493	ASB TOE
2130092	7975583.275	503975.807	38.369	ASB TOE
2130093	7975582.818	503977.464	38.414	ASB TOE
2130094	7975574.846	503975.897	40.68	ASB TOE
2130095	7975575.58	503973.382	40.824	ASB TOE
2130096	7975567.871	503970.015	43.226	ASB TOE
2130097	7975567.178	503973.016	43.262	ASB TOE
2130098	7975559.097	503971.363	45.93	ASB TOE
2130099	7975560.169	503968.343	45.874	ASB TOE
2130100	7975553.261	503966.28	48.312	ASB TOE
2130101	7975551.998	503969.505	48.554	ASB TOE
2130102	7975545.242	503967.671	50.986	ASB TOE
2130103	7975546.21	503964.081	50.955	ASB TOE
2130104	7975541.75	503962.268	51.498	ASB TOE
2130105	7975540.879	503964.533	51.613	ASB TOE

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(Section 5)

No sieves available.

(Acceptance forms approved by Hatch)

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HATCH

Nuna East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks
Description of Item/Area Inspected:	*Construction Material Approval* *Type:* Type 8 *Source:* Q1 Quarry Stockpile
Date of Inspection:	
Parties Present at Inspection	Allnorth, Stephane Granet

Comments:

A visual inspection of the Type 8 *Material from* Q1 Quarry *was conducted to confirm* Type 8 *Material conforms to specifications.*

Construction Material: Type 8 *conforms to specifications and is approved for placement at*

SWD - 5

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	BRANDON URQUHART		02/01/2019
HATCH Representative:	Stephane Granet		01/02/19

NUNA

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(Section 6)

No Request for Information Documentation (RFI) Generated

NUNA

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(Section 7)

No Non-Conformance Reports (NCRs) Generated

NON-CONFORMANCE REPORT LOG

Project: CC006 **Date:** 8-29-19

Area: Mary River Expansion - Milne Port **Contract/Work Pkg. No.:** CC006-0009A SWD-5

CWP#: N/A **Originator:** Bradford Watkin

NCR No.	Description	Disposition	Date.	Rectified	Date
	No NCR's generated for this work package				

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(Section 8)

Land Disturbance Forms (LDF)

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.		**Department:**	Projects
Date:	9/19/18	**Name/Position:**	**Brandon Urquhart/Project Coordinator**
Project location:	Port Site		Q1 Quarry - Storm Water Diversion Ditches SWD5 / SWD6
Project Duration:	Start 9/21/18	Finish	10/5/18

Project Details

GPS Coordinates: Lat: N+7974964 Long: E+503861 (NAD 83)

Land disturbance area: 2000 m2

Type of disturbance (Drilling, Blasting,Excavation, Rutting due to site access, etc.)

Material placement over tundra

Detailed description of planned work.

Construction of temporary laydown and access road with culvert.

Specifications for field designed laydown:

- Blasting and excavation of ditch ~.5m wide x 1m deep
- Construction of berm ~1m height at 2:1 slope, .5m width at top along certain sections of channel
- Lay geotextile and riprap at channel outlet
- Culvert to be 1.2m diameter and installed as directed by Hatch representative.

Check List

1	**Has the Environmental Concerns in section 2.3.1. of the Environmental Protection plan been reviewed** - If No, please review the list of concerns on page 4 of this form.	Yes
2	**Will work be completed within 31m of the High Water Mark of any stream or water body?.** - If Yes, please contact the Environment Department.	No
3	**Is there a stream or waterbody >31m of the work site?.** - If Yes, Include a detailed description of the Sediment and Erosion Control Measures on Page 3.	No
4	**Has the area been cleared by Archaeology?.** - If No or Unknown, Please contact the Environment Department.	Yes
5	**Will the land disturbance occur between May 31 and August 31?.** - If Yes, An Active Migration Bird Survey is required prior to start.	No

Approval

Approved by: Position:

Approved on:

Valid Unit:

Comments and recommendations by the Environment Department:

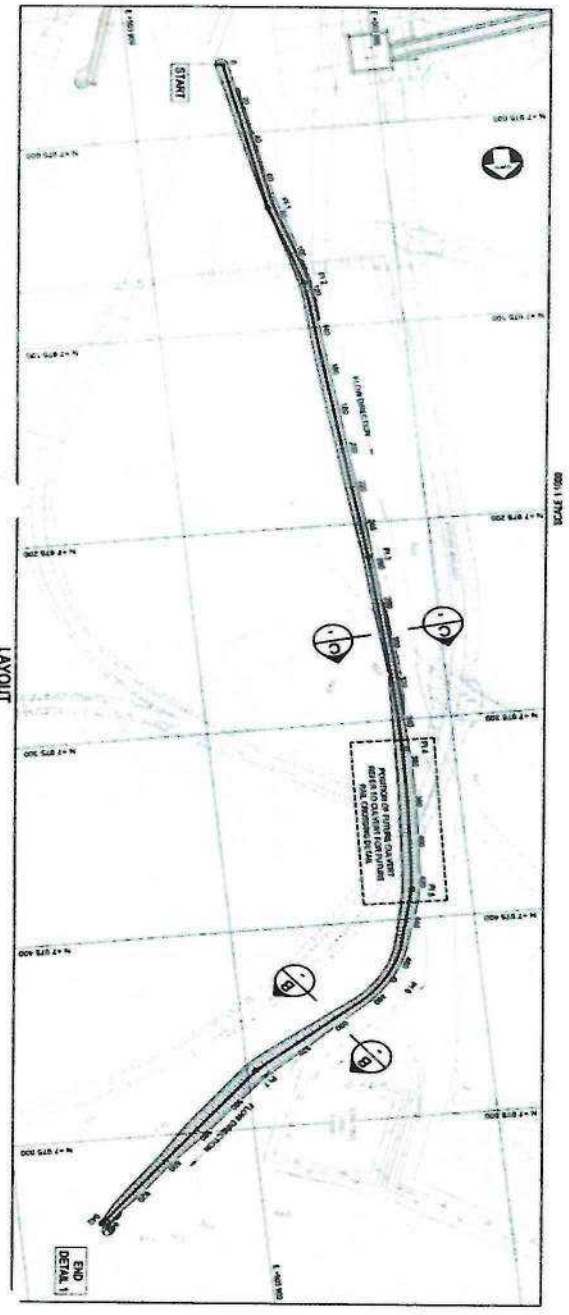
LAND DISTRURBANCE FORM

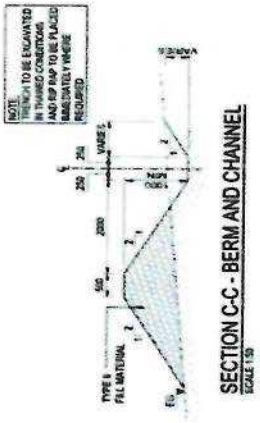
Document # BAF-PH1-830-P16-0008, Section 2.3

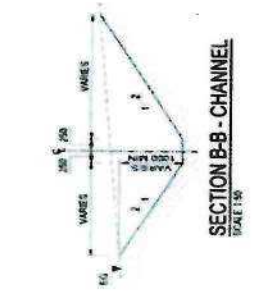
Form No.	0	**Department:**	Projects
Date:	9/19/18		
Project location:	Port Site		

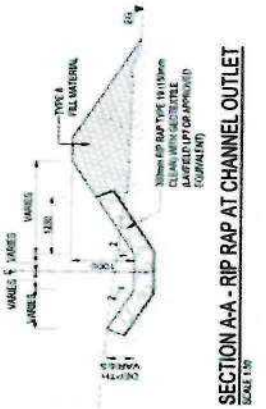
Design/Engineering Drawing

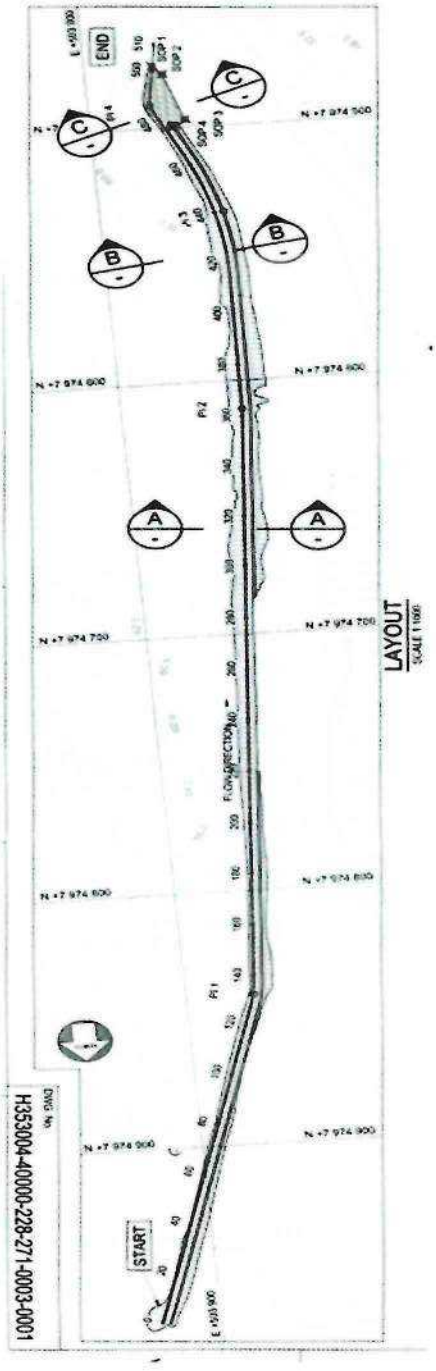
See Attached Drawing.











Baffinland

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	9/19/18		
Project location:	Port Site		

Sediment and Erosion Control Measures

Please give a detailed discription of the run-off control measure which will be put in place.
Include all water bodies and streams, slope direction and materials to be used.

- Due to season and weather conditions, runoff and erosion is unlikely to occur

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	9/19/18		
Project location:	Port Site		

2.3.1 ENVIRONMENTAL CONCERN

2.3.1 ENVIRONMENTAL CONCERN

The Arctic is a fragile environment where the recovery of vegetation within this region is slow. Ground disturbance shall be minimized to protect archaeological resources, wildlife habitats, sensitive landforms, such as ice-rich permafrost features, and prevent erosion and the movement of sediment into watercourses and water bodies. Various permits, licences and approvals issued to Baffinland are specific in regards to ground disturbances and outline the necessary protection measures that need to be taken to minimize this aspect of the Project.

The following measures are to be implemented to minimize ground disturbance:

- Equipment and personnel must stay on existing roads and trails
- Approval for new areas of disturbance must be approved by the Operations Manager
- Rutting (furrow creation) shall be avoided on ground surfaces; overland travel of equipment or vehicle will be suspended when rutting occurs
- All camps shall be located on gravel, sand or other durable land
- No materials shall be stored on the surface ice of streams
- No material shall be removed from below the ordinary high water mark of any stream
- Greywater sumps must be located a distance of at least thirty (30) metres above the ordinary high water mark of any water body

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(Section 9)

Signature Log

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)	**Code:**	N/A
Contractor:	Nuna East Ltd.	**Contract/Job No.:**	CC006 – All Contract Jobs
Area/System/CWP No.:	All Areas/Systems/CWPs	**ITP No.:**	All ITPs

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN	[illegible]	[illegible]
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC	[illegible]	[illegible]
ALLNORTH	Materials technician	Kenny MacRae	[illegible]	[illegible]
Hatch	Hatch Civil	Stephane Granet	SG	[illegible]
NUNA EAST	PROJECT COORDINATOR	BRANDON URQUHART	[illegible]	[illegible]
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]	[illegible]	[illegible]
HATCH	FIELD ENG. MANAGER	GLEN PEACE	[illegible]	[illegible]
NUNA EAST	SITE SUPERINTENDENT	ANTHONY STEWART	[illegible]	[illegible]
NUNA EAST	SITE SUPERINTENDENT	HARVEY BLOVIN	[illegible]	[illegible]
Hatch	Hatch Super	Roger Landry	[illegible]	[illegible]
Nuna East	Project Manager	Stephen Nugent	[illegible]	[illegible]
HATCH	CONSTRUCTION SUPERINTENDENT	ROY BADER	RB	[illegible]
BVJV	Project Engineer	David Garcia	D.G	[illegible]
Hatch	QA Manager	Ronny Franken	R.F.	[illegible]

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN		
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC		
ALLNORTH	Materials technician	Kenny MacRae		
Hatch	Hatch Civil	Stephane Grant		
NUNA EAST	PROJECT COORDINATOR	BRANDON UPGUHART		
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]FER		
HATCH	FIELD ENG. MANAGER	GLEN PEACE		
Hatch	Construction Super	Dean Moffett		
Hatch	Construction Super	Roger Landry		

NUNA

NUNA EAST LTD

(Section 10)

Quality Control Documents

NUNA
NUNA EAST LTD

Baffinland
HATCH

Nuna East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval -* SWD-5 Section 0 → 500
Date of Inspection:	January 20, 2019
Parties Present at Inspection	Stephane Gionet, Allnorth

Comments:

A visual inspection of the SWD-5 *surface/sub-grade was conducted prior to placement of fill Material.*

Sub-grade:

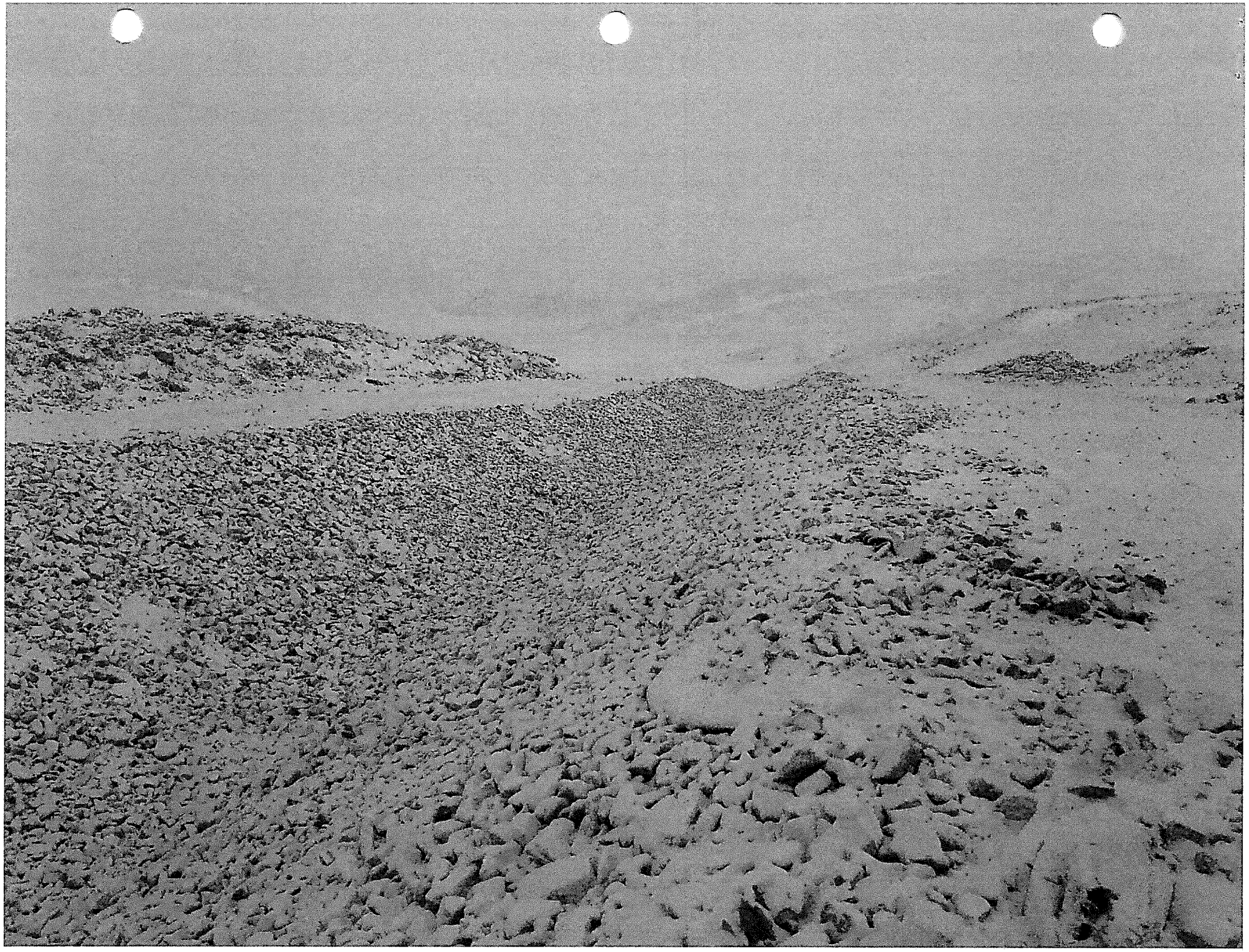
SWD-5 Section 0-290
310-370
390-500

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	BRANDON URQUHART		02/01/2019
HATCH Representative:	Stephane Gionet		01/02/19



NUNA
NUNA EAST LTD

Baffinland
HATCH

Nuna East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval -* SWD-5 Section 500-630
Date of Inspection:	January 26, 2019
Parties Present at Inspection	Stephane Gionet, Allnorth

Comments:

A visual inspection of the SWD-5 *surface/sub-grade was conducted prior to placement of fill Material.*

Sub-grade: SWD-5
Section 500-630 (end)

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	BRANDON UNSWORTH		02/01/2019
HATCH Representative:	Stephane Gionet		01/02/19

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Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material.* *Type:* Geotextile *Location:* SWD-5 Section 0-500
Date of Inspection:	January 25, 2019
Parties Present at Inspection	Stephane Gianet, Allnorth

Comments:

An inspection of the Geotextile *material placement was conducted.*

SWD-5 0-500

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	BRANDON VERHART		02/01/2019
HATCH Representative:	Stephane Gianet		01/02/19

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material.* *Type:* Geotextile *Location:* SWD-5 Section 0-290
Date of Inspection:	January 21, 2019
Parties Present at Inspection	Stephane Gionet, Allnorth

Comments:

An inspection of the Geotextile *material placement was conducted.*

Section 0-290

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	BRANDON URQUHART		02/01/2019
HATCH Representative:	Stephane Gionet		01/02/19

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material.* *Type:* Type 8 *Location:* SWD-5
Date of Inspection:	January 31, 2019
Parties Present at Inspection	Allnorth / Stephane Grignet

Comments:

An inspection of the Type 8 *material placement was conducted.*

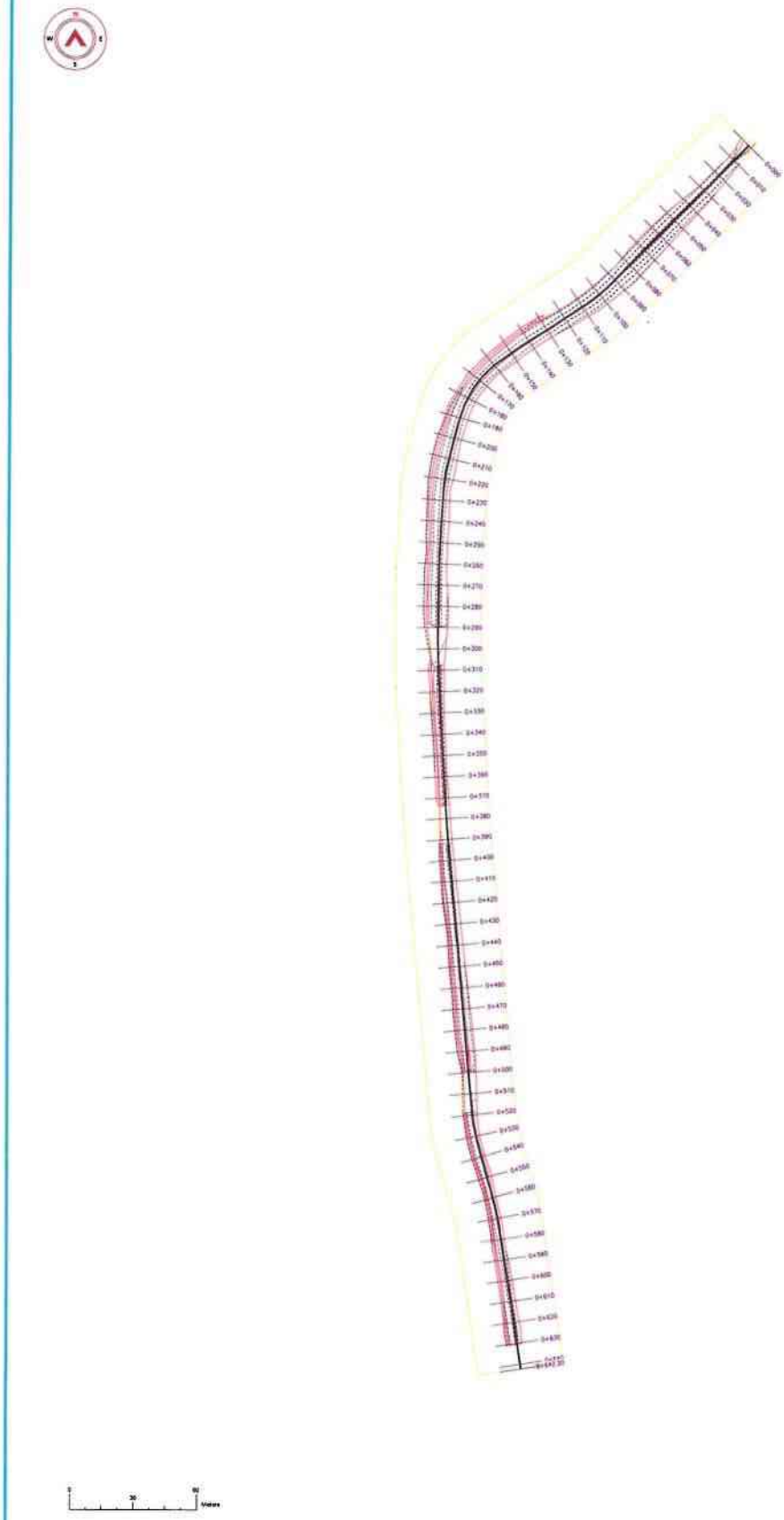
0-630

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		02/01/2019
HATCH Representative:	Stephane Grignet		01/02/19



HATCH

Allnorth

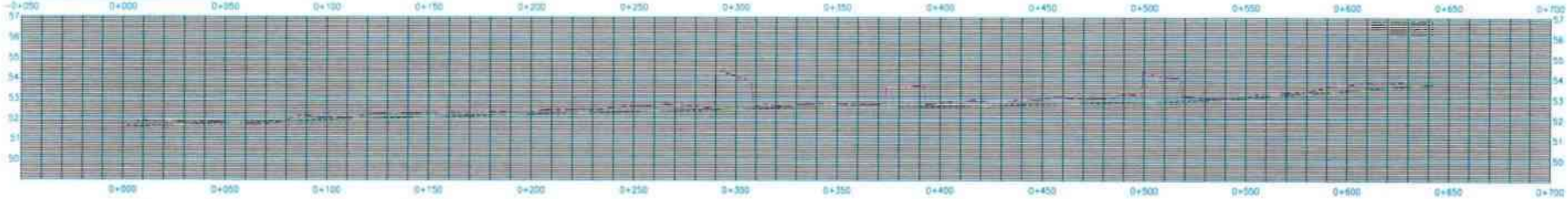
Storm Water Ditch 5
Type 8 Asbuilt
Overview

Baffinland Iron Mines
Mary River Expansion Project

180130PCN001-1

0

PROFILE VIEW: ALIGNMENT-2



REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION TITLE	REV
		1

REV	PREPARED	DESCRIPTION	DRWN	APVD

CLIENT: HATCH

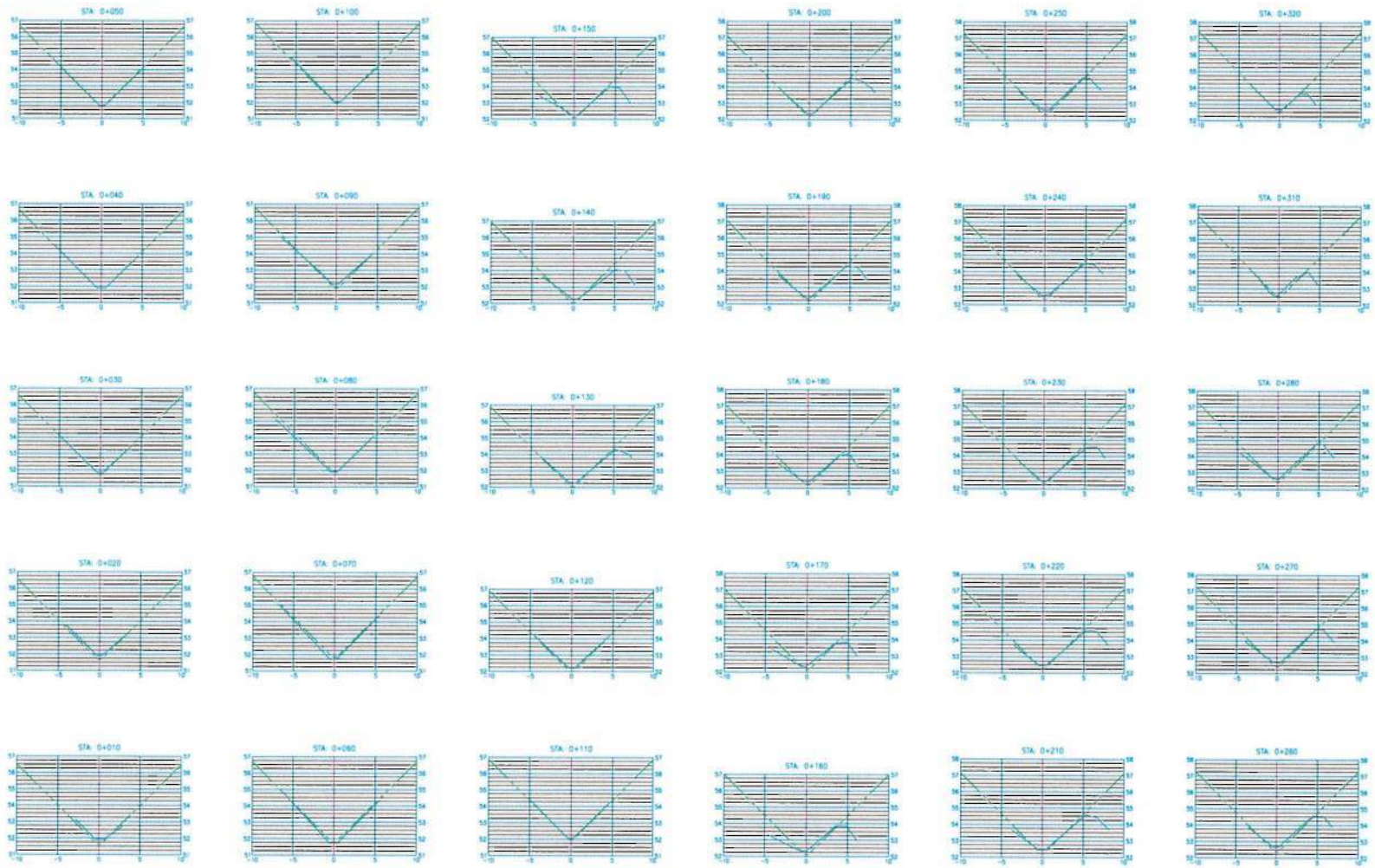
Allnorth

TITLE: Storm Water Ditch 5 Type 8 Asbuilt Profile

CLIENT NO	DESIGNED	DRWN	PLN	DATE	23/12/21
PROJECT NO		DSGN		DATE	
DRAWING SIZE	ANSI "D"	CHKD		DATE	
SCALE	AS NOTED	APVD		DATE	

PROJECT: Baffinland Iron Mines Mary River Expansion Project

DWG NO: 180130PCN001-2 REV: 0



REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
		1

REV	YY/MM/DD	DESCRIPTION	DRWN	APVD

CLIENT

HATCH

Allnorth

TITLE

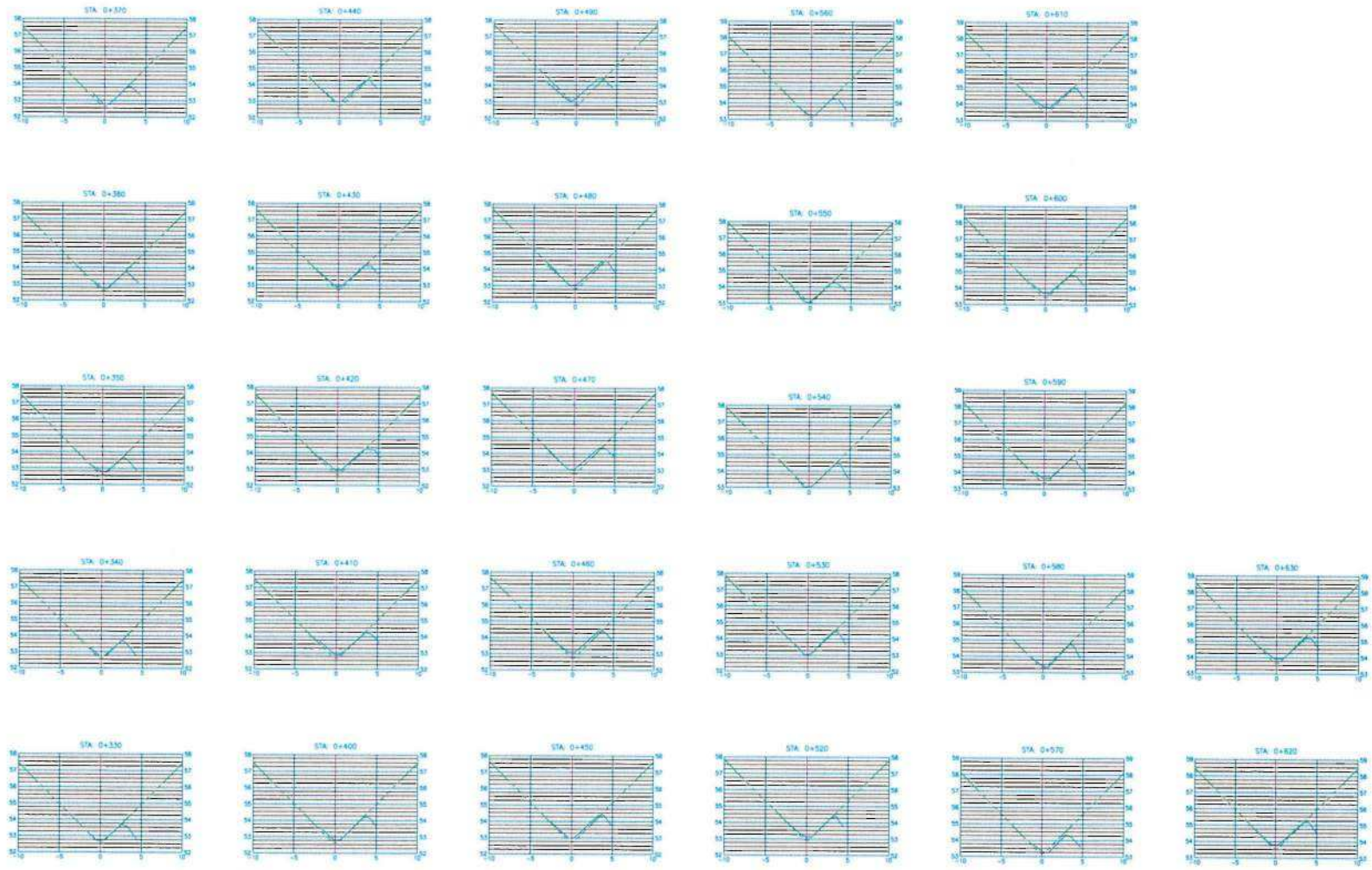
Storm Water Ditch 5
Type 8 Asbuilt
Cross section 0+010 - 0+320

CLIENT NO	185/FIRE	DRWN	PCN	DATE	11/12/01
PROJECT NO	-	DSGN	-	DATE	-
DRAWING SIZE	ANSI "D"	CHKD	-	DATE	-
SCALE	AS NOTED	APVD	-	DATE	-

PROJECT

Baffinland Iron Mines
Mary River Expansion Project

DWG NO **180130PCN001-3** REV **0**



REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
		1

REV	YY/MM/DD	DESCRIPTION	DRWN	APVD

CLIENT

HATCH

Allnorth

TITLE

Storm Water Ditch 5
Type 8 Asbuilt
Cross section 0+330 - 0+630

CLIENT NO	185/PRI	DRWN	PCN	DATE	19/01/01
PROJECT NO		DSGN	-	DATE	-
DRAWING SIZE	ANSI "D"	CHKD	-	DATE	-
SCALE	AS NOTED	APVD	-	DATE	-

PROJECT

Baffinland Iron Mines
Mary River Expansion Project

DWG NO **180130PCN001-4** REV **0**

NUNA

NUNA EAST LTD

(Section 11)

Walkdown

NUNA EAST LTD	WALKDOWN REPORT	Exhibit 5 Revision 0

WALKDOWN ATTENDEES LIST	(Page 1 of 1)

Project Name: Mary River Expansion	Contractor's Name: Nuna East Ltd.	Job File No.: CC006-0009A
System CWP Description: Milne Port Stormwater Diversion SWD-5	Location: East of Quarry access road.	Plant No.: N/A

This record indicates that this system was formally walked down and inspected in the field by the undersigned on the date as indicated below

Name	Company Name	Role	Signature	Date (mm/dd/yy)
BRADFORD WATKINS	NUNA EAST LTD	QC		5/13/15
ROY BADGA	HATCH	CONSTRUCTION		5/13/15

NUNA

NUNA EAST LTD

(Section 12)

Deficiency/Punchlist

DEFICIENCY / PUNCH ITEMS RECORD

Project Name: Mary River Expansion	**Walkdown Date (mm/dd/yy):** 5-14-19	**Area Number:** N/A
Area Name or Area Description: Stormwater Diversion SWD-5	**Job Number:** CC006-0009A	**Plant Number:** N/A

PURPOSE:

1. **For modules and vendor packages, open punch items are listed at release for shipment.**
2. **As part of a final walkdown package, this form lists the Contactor's open punch items that are transferred into the Nuna Turnover database**
3. **This form is used to capture Punch Items during Final Walkdown**

Tag Number	Description of Deficiency / Punch Item	Cat.	Discipline	Originator	Responsible for resolution	Vendor Y/N	Remarks
	No deficiencies found						

Punch Item Categories captured during Final Walkdown: A, B or C. A- To be rectified before final acceptance. B- To be addressed at a later time. C- Acceptable to be As-Built

NUNA

NUNA EAST LTD

(Section 13)

Acceptance of Completion of Construction

ACCEPTANCE OF COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the acceptance of the Quality Control Turnover documentation for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Ore Mines
2. **Contractor:** Nuna East Limited
3. **Construction:** Stormwater Diversion Installation
4. **Location:** Port Site
5. **Description:** Installation of Stormwater diversion Berm & Trench P-SWD-5

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turnover documentation has been forwarded to and accepted by the owner.

Nuna Representative:

Signature	Print Name	Title	Date
	BRANFORD WATKIN	QC COORDINATOR	9/1/19

Client Representative:

Signature	Print Name	Title	Date

NUNA

NUNA EAST LTD

(Section 14)

Construction Photographs

NUNA
NUNA EAST LTD

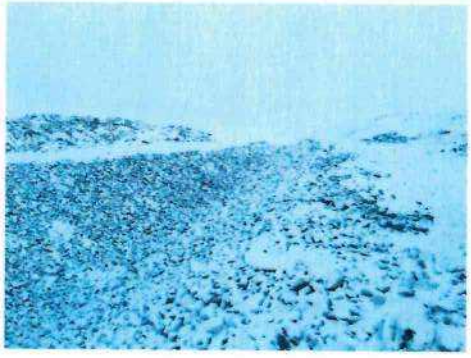
Baffinland
Iron Mines Corporation

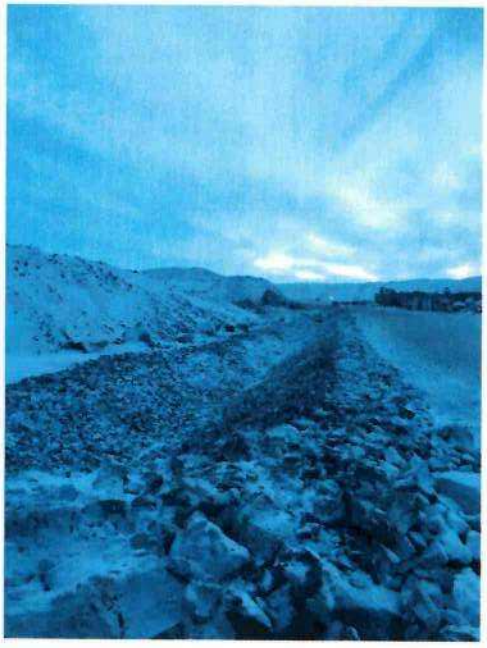
HATCH™

Baffinland – Milne Port Earthworks H353004-CC006

Job File Photographs

SWD-5





HATCH **Vendor/Contractor Document Review**

Doc Number	E353004-CC006-130-124-0006	**SUB**	02
Date Received			

Review Grade	**Next Submittal Status**
☐ **C1** - Proceed to next submission & status ☐ **C2** - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ **C3** - Do not proceed. Revise as noted & resubmit	☐ Internal Review
Next Submittal Date:	☐ Certified/☐ As-Built
☒ **C4** - No further submission required - Complete (select status below) ☐ Certified Final ☒ Final ☐ Cancelled ☐ Superseded	

Package Engineer: Name, signature and date

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibilty for correct design, details & dimensions shall remain with the party submitting the drawing/document.

NUNA EAST LTD

Job # CC006-0009A
Hatch WBS Ref: 4810

Stream Diversion Berms & Drainage (SWD-6)

Mine Port

CC006

Baffinland Iron Mines Corp.: Mary River Expansion, Nu. 2019

NUNA

NUNA EAST LTD

Job #:

CC006-0009A

SWD-6

Mary River Expansion Project

H353004

Port Site Civil Works

09Section 1
Completion of Construction Declaration / Transfer of Care, Control & Custody

Section 2
Inspection & Test Plan (ITP)

Section 3
Redline / As-Built Drawings

Section 4
Survey Data Documentation

Section 5
Sieves / Statements of Compliance

Section 6
Request for Information Documents (RFIs)

Section 7
Non-Conformance Reports (NCRs)

Section 8
Land Disturbance Form (LDF)

Section 9
Signature Log

Section 10
Quality Control Documents

Section 11
Walkdown

Section 12
Deficiency/Punchlist

Section 13
Acceptance of Completion of Construction Declaration

Section 14
Construction Photographs

NUNA

NUNA EAST LTD

(Section 1)

Completion of Construction Declaration / Transfer of Care, Control & Custody (TCCC) Forms

COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Mines Corporation
2. **Contractor:** Nuna East Limited
3. **Construction:** Stormwater Diversion Installation
4. **Location:** Port Site
5. **Description:** Installation of Stormwater diversion Berm & Trench P-SWD-6

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turn over documentation has been forwarded to the owner.

(Signature)	Bradford Watkin (Print Name)	QC Coordinator (Title)	9/1/19 (Date)
Nuna East Ltd. (Company)	14, 6194 – 50 Street NW Edmonton, AB, CA (Address)		T6B 2N7 (City, Postal Code)

Transfer of Care, Custody and Control

FROM GROUP "A"	NUNA EAST LTD.	**Job File No.:**	CC006-0009A
To Group "B"	Hatch Engineering	**WBS No.:**	4810
Location:	East of Quarry access road	**Date:**	May 12, 2019

ORIGINATING JOB FILE NO. DETAILS:	SWD-6 Construct a Stormwater Diversion Ditch Involving: • SNOW, ICE REMOVAL; • ESTABLISHING A SUB-GRADE ; • PLACEMENT OF GEOTEXTILE; • AGGREGATE PLACEMENT.
Comments:	See Redline/ As-Built and Survey data for details.

THIS IS NOTICE TO GROUP "B" HATCH ENGINEERING THAT THE FOLLOWING WORK/MATERIAL AS PER P.O./CONTRACT IS/ARE BEING TRANSFERRED BY GROUP "A" NUNA EAST LTD. AND IS/ARE BEING FULLY ACCEPTED BY GROUP "B" HATCH ENGINEERING FROM GROUP "A" NUNA EAST LTD.
WITH EXCEPTIONS AS LISTED BELOW (IF ANY).

Description: No exceptions noted.	**Reference Drawing(s):** H353004-40000-228-271-0003-0001 Rev 0.

EXCEPTIONS:	**DATE CORRECTED:**	**SIGNED OFF:**
1.		
2.		

"Exceptions Accepted and released"

From Group "A": Nuna East Ltd.

Date: 5/27/19

Print Name: BRADFORD WATKIN Signature:

To Group "B": Hatch Engineering.

Date: 27-MAY-2019

Print Name: ROYSBADER Signature:

I CONFIRM THE CONDITIONS LISTED BELOW HAVE BEEN MET (WITH NOTED EXCEPTIONS OR DEFICIENCIES) AND RELEASE OF CARE, CUSTODY AND CONTROL OF THE ITEM(S) LISTED ABOVE TO THE RECIPIENT.

☑ All requests for Inspection are complete and all issues are resolved.

☑ All deficiencies have been resolved.

☑ All Redlines / As-Builts have been received.

☑ All relevant manuals and vendor data have been received.

Client Representative:

Name: ROYSBADER Signature:

Date: 27-MAY-2019

NUNA

NUNA EAST LTD

(Section 2)

Inspection & Test Plan (ITP)

NUNA EAST LTD

QUALITY MANAGEMENT SYSTEM
INSPECTION &TEST PLAN
(Civil / Structural Installations)

CLIENT: Hatch	**ITEM / DESCRIPTION / SCOPE:** Stormwater Diversion Ditch **P-SWD-6** / Water Diversion Ditch / Earthworks material production, Haulage, Placement, & Compaction.	**NUNA ITP NO.:** CC006-0009A	**REVISION NO.:** 2
CONTRACTOR: Nuna East Ltd.		**AFFILIATED SUB-CONTRACTOR(S):** N/A	
CONTACT PERSON: Bradford Watkin	**CONTACT INFORMATION:** bradfordw@nunalogistics.com	**DATE:** April 17, 2019	
CONTRACT No.: H353004-CC006	**HATCH PROJECT NUMBER:** H353004-CC006	**HATCH DOCUMENT TITLE:** Mary River Expansion Project-Remaining Early Earthworks	
NUNA JOB No.: CC006-0009A	**PURCHASE ORDER No.:** N/A	**PROJECT MANAGER:** Chris Petrovic	
LOCATION(S): Milne Port Site		**LEGEND:** **H:** A mandatory hold on manufacturer until release by inspector or official waiver from client. **M:** Inspection stage by inspector on a spot basis, but not a mandatory hold point. **HR:** A mandatory hold / review & acceptance / approval of the specified documentation. **W:** To be informed and invited to inspect. Construction to continue if inspector does not attend. **R:** Review of report / certifications. **A:** Audit (Review at Random).	
CWP No.: N/A			

Approved For Construction

Stephen Nugent — April 17, 2019
Nuna Project Manager / Engineer (Print) — Signature — Date

Bradford Watkin — April 17, 2019
Nuna Quality Representative (Print) — Signature — Date

Hatch Representative (Print) — Signature — Date

HATCH Vendor/Contractor Document Review

Doc Number	E353004-CC006-130-051-0008	SUB	03
Date Received	2019-04-18		
Review Grade		Next Submittal Status	
☐ C1 - Proceed to next submission & status ☐ C2 - Proceed with exceptions as noted to next submission & status		☐ Certified ☐ As-Built	
☐ C3 - Do not proceed. Revise as noted & resubmit		☐ Internal Review	
Next Submittal Date:		☐ Certified/☐ As-Built	
~~☐ C4~~ - No further submission required - Complete (select status below) ☐ Certified Final ~~☐ Final~~ ☐ Cancelled ☐ Superseded			
Package Engineer: Name, signature and date			

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibility for correct design, details & dimensions shall remain with the party submitting the drawing/document.

Hatch Stamp

Final Review

BRADFORD WATKIN — 9/1/19
Nuna Quality Representative (Print) — Signature — Date

Hatch Quality Representative (Print) — Signature — Date

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	*Description of Activities* (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	*Functional Responsibility*	*Quality Control Activity*	*Verification Frequency*	*Reference Document(s)/ Controlling Procedure*	*Acceptance Criteria*	*Verification Document(s) (Reporting)*	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	*Comments*
1.	Contract Review / Approval	NUNA	Review / Verify Document	Prior to project start	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract				R		4/17/19	R			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
2.	Approval of ITP	NUNA / HATCH Representatives	Review	Prior to start	NUNA Quality System Manual	Signed ITP by Client representative, NUNA Quality System Manual	Signed acceptance of document (Exhibit 1.0)				HR	BW	5/3/19	HR			
3.	Scope and Associated Documents	NUNA	Review For Errors	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R	BW	4/17/19	A			
4.	Land Disturbance Approval obtained	NUNA	Review	Prior to start	BIM Environmental Protection Plan	IFC Drawings & Client contract scope, BIM Environmental Protection Plan	Land Disturbance Form BAF-PH1-830-P16-0008				HR	BW	9/01/18	R			
5.	Work Method of Statement	NUNA / HATCH	Review	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R	BW	9/1/19	A			N/A
6.	Signature Log	NUNA	Review, obtain signatures	Ongoing	NUNA Quality System Manual	NUNA Quality System Manual	NUNA Signature Log				R	BW	9/1/19	R			
7.	Initial Survey Layout	NUNA / ALL NORTH	Cross Check of IFC Layout	Ongoing	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				HR	BW	1/19/19	R			ALL NORTH
8.	Materials verification	NUNA	Review	As required	IFC Drawings, Hatch Spec. 280-078-0002 Rev 0, ASTM C-136	IFC Drawings, Hatch Spec.280-078-0002 Rev 0, ASTM C-136	Sieve Test Reports, QSRs				HR	BW	9/1/19	HR			• Type 8 • Type 19 NO SIEVES AVAILABLE INSPECTION REPORT APPROVAL
9.	RFI	NUNA	Resolution of RFIs	As required	NUNA Quality System Manual	Disposition, Approved, closed and log updated	RFIs				HR	BW	9/1/19	R			NO RFI'S GENERATED FOR THIS JOB FILE.
10.	Clearing of works location completed • Snow / Ice removal / Disposal	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W	BW	9/2/19	R			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	*Description of Activities* (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	*Functional Responsibility*	*Quality Control Activity*	*Verification Frequency*	*Reference Document(s)/ Controlling Procedure*	*Acceptance Criteria*	*Verification Document(s) (Reporting)*	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	*Comments*
11.	Subgrade foundation preparation completed ~~Compaction~~ BW 2/A	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W	BW	1/2/19	HR			
12.	Placement of Geotextile cloth (Layfield LP7 or equivalent) completed	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	BW	1/2/19	W			
	Type 8 Jaw Run 150 minus																
13.	Type 8 Jaw Run 150 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	BW	1/2/19	M			
14.	Compaction of Type 8 Jaw Run 150 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	BW	1/2/19	M			COMPACTED WITH SHOVEL.
15.	Survey of Type 8 Jaw Run 150 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR	BW	1/19/19	R			ALL NORTH
16.	As built Survey	NUNA	Review	Continuous During Operations	IFC Drawings	IFC Drawings, Hatch Specifications	As built Drawings & Data				HR	BW	1/19/19	R			ALL NORTH

ACTIVITY DATA							VERIFICATION DATA											
								Subcontractor			Nuna			Hatch				
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
17.	Final Walk down	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Contract Requirements	Final Walkdown Attendees' Report				W		5/07/19	HR			
18.	Deficiency List / Punch list generated	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per contract Requirements	Item form punch list items resolved				HR		5/14/19	HR			NO DEFICIENCIES.
19.	NCR's closed.	NUNA / HATCH	Review of NCRs, Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Requirements	NCR log cleared				HR		9/11/19	A			NO NCR'S GENERATED.
20.	As-built / Redline drawings completed.	NUNA	Review / Verify	Post Final Walk down	IFC Drawings, Contract	As-builts / Redlines to Reflect All Field Changes	As-builts / Redlines				HR		9/7/19	A			
21.	Final Acceptance and ITP Sign off	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP (Exhibit 1.0)				HR			HR			
22.	Inspection Acceptance and Sign-Off Form signed by Engineer of record.	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP, Acceptance of Completion of Construction Form				HR			HR			
23.	Turnover package completed and sent to client.	NUNA	Review / Verify	Post project completion	NUNA Quality System Manual, IFC Drawings, Contract	Contract, Code & applicable specifications.	Quality Management System Quality Control Turnover package.				HR			A			

Note: Nuna ITP Sign-Offs based on supporting documentation.

Comments:

ITP ISSUE APPROVALS

Stephen Nugent	Site Project Manager		April 17, 2019
Nuna Contractor Project Manager / Engineer *(Print)*	Title	Signature	Date *(mm/dd/yy)*
Bradford Watkin	QC Coordinator		April 17, 2019
Nuna Contractor Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

ITP CLOSEOUT AND WORK ACCEPTANCE APPROVALS

Nuna Contractor Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

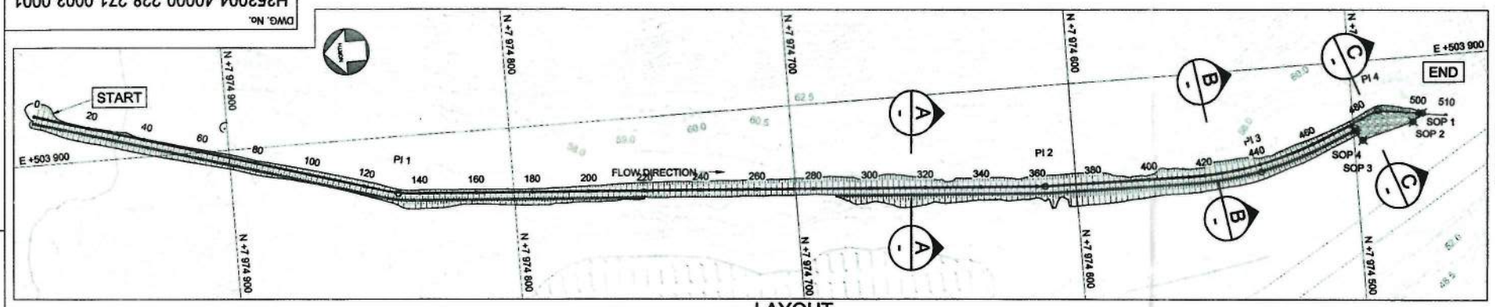
NUNA

NUNA EAST LTD

(Section 3)

Redline / As-Built Drawings

DWG. No. H353004-40000-228-271-0003-0001

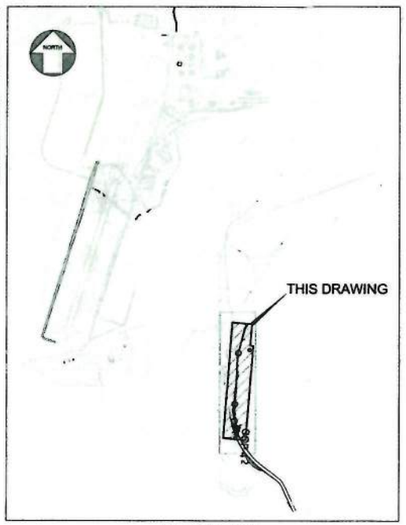


LAYOUT
SCALE 1:1000

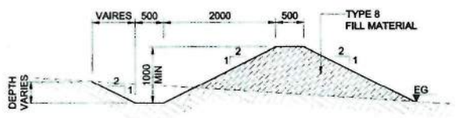
P-SWD-6 DIVERSION OUTLET SETTING OUT COORDINATES			
POINT	E	N	LEVEL
SOP 1	503879.9589	7974475.0641	55.800
SOP 2	503877.1900	7974478.6124	55.792
SOP 3	503871.7137	7974497.0050	55.956
SOP 4	503875.4826	7974499.5919	56.865

LEGEND:

EG	EXISTING GROUND
CH	CHAINAGE
L	LENGTH
R	RADIUS
DA	DEFLECTION ANGLE
TL	TANGENT LENGTH
AL	ARC LENGTH
BCC	BEGINNING OF CURVE
ECC	END OF CURVE
PI	POINT OF INTERSECTION
HWL	HIGH WATER LEVEL
FB	FREE BOARD
→	FLOW DIRECTION
———	DIVERSION CENTER LINE



KEY PLAN
NTS



SECTION A-A - BERM AND CHANNEL
SCALE 1:50

SECTION B-B - CHANNEL
SCALE 1:50

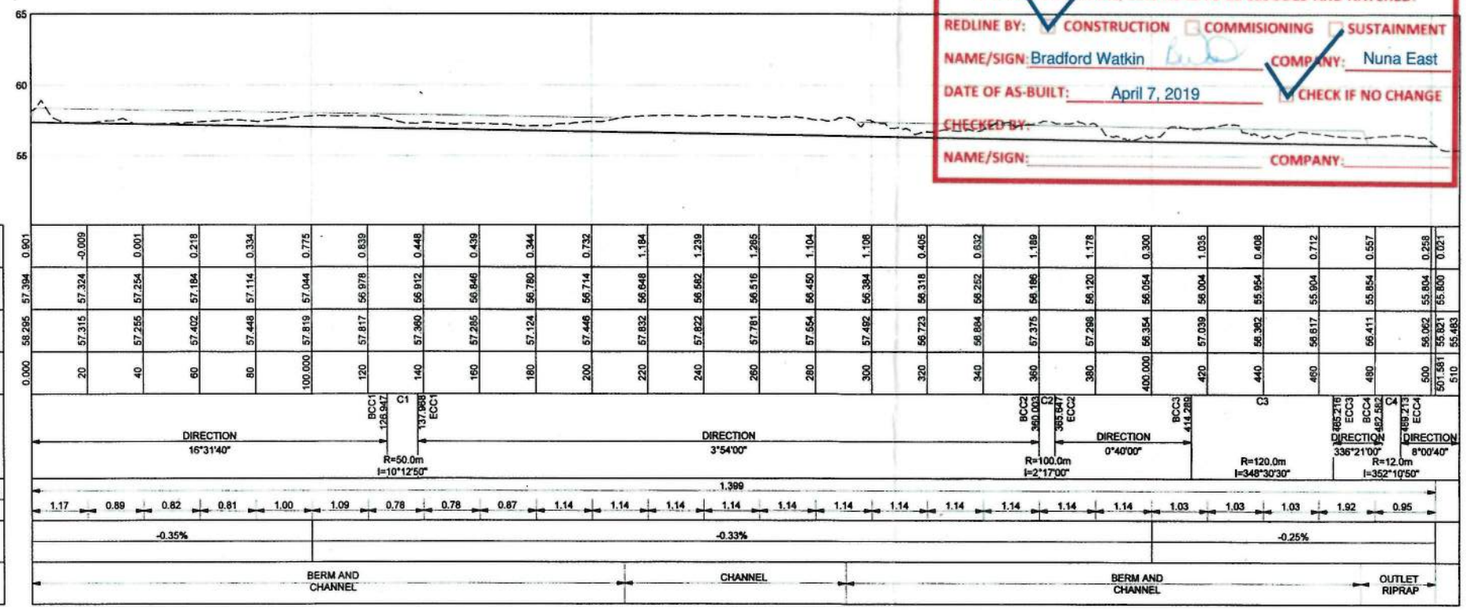
SECTION C-C - CHANNEL OUTLET & RIPRAP
SCALE 1:50

REDLINE DRAWING
CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT
NAME/SIGN: Bradford Watkin COMPANY: Nuna East
DATE OF AS-BUILT: April 7, 2019 ☑ CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTSAT (2016)
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS AND ELEVATIONS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS ARE IN MILLIMETER UNLESS SPECIFIED OTHERWISE



DIVERSION LONGITUDINAL PROFILE

SETTING OUT DATA-P-SWD-6				
NAME	CH	E	N	DETAILS
START	0.000	503917.506	7974967.890	L 126.947m
BCC1	126.947	503881.390	7974846.189	R 50.000m
PI1		503879.816	7974840.885	DA 12°37'50"
ECC1	137.968	503879.439	7974835.364	TL 5.533m
				AL 11.021m
BCC2	360.003	503864.338	7974613.844	R 100.000m
PI2		503864.146	7974611.027	DA 3°14'00"
ECC2	365.647	503864.114	7974608.204	TL 2.823m
				AL 5.644m
BCC3	414.289	503863.548	7974559.566	R 120.000m
PI3		503863.248	7974533.715	DA 24°19'00"
ECC3	465.216	503873.619	7974510.033	TL 25.853m
				AL 50.928m
BCC4	482.582	503880.585	7974494.126	R 12.000m
PI4		503881.950	7974491.009	DA 31°39'40"
ECC4	489.213	503881.476	7974487.640	TL 3.403m
				AL 6.631m
END	510.268	503878.542	7974466.790	L 21.055m

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date 2018-03-26
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

0 10 20 30 40 50
SCALE IN METERS

REFERENCE DRAWINGS		REG. PROFESSIONAL
H353004-00000-221-294-0002-0010	STANDARD DRAWING - EARTHWORKS AND DRAINAGE	
H353004-00000-221-294-0001-0001	STANDARD DRAWING - TYPICAL CULVERT DETAIL	
H353004-00000-220-272-0001-0001	PORT SITE - BLOCK PLAN	
DRAWING No.	DRAWING TITLE	

REGISTERED PROFESSIONAL ENGINEER — R. A. HALIM — LICENSEE — 2018-03-26 — NWT/NU

FOR CONSTRUCTION

THIS DRAWING WAS PREPARED BY HATCH LTD. ("HATCH") FOR THE EXCLUSIVE USE OF BAFFINLAND IRON MINES LP ("CLIENT") AND ITS USE IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN HATCH AND THE THE CLIENT, INCLUDING ANY LIMITATIONS ON LIABILITY CONTAINED THEREIN. THIS DRAWING AND ITS CONTENTS REMAIN THE INTELLECTUAL PROPERTY OF HATCH SUBJECT TO CLIENT'S ROYALTY-FREE, IRREVOCABLE, PERPETUAL, AND NON-EXCLUSIVE LICENSING TO USE AND REPRODUCE THE DRAWING FOR PURPOSES CONNECTED WITH THE PROJECT, INCLUDING THE CONSTRUCTION, COMPLETION, MAINTENANCE, EXTENSION, REINSTATEMENT AND REPAIR OF THE PROJECT. THIS DRAWING, AND THE INFORMATION CONTAINED HEREIN, SHALL BE TREATED AS CONFIDENTIAL FOR ALL OTHER PURPOSES AND SHALL NOT BE MODIFIED WITHOUT THE WRITTEN CONSENT OF HATCH.

No.	REVISIONS	BY	CHK'D	DATE
0	FOR CONSTRUCTION	HH	FH	23/03/2018

DRAWING APPROVAL STATUS: Approved for Construction			
ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	H HERBST	NR	23/03/2018
DESIGNER	H HERBST	NR	23/03/2018
CHECKER	F HUGO		2018-03-23
DESIGN COORD.	R GOOSEN		2018-03-23
RESP. ENG.	R HALIM		2018-03-26
LEAD DISC. ENG.	A GROBBELAAR		2018-03-23
AREA LEAD			2018-03-27
ENG. MANAGER	D STANGER		2018-03-27
AREA MANAGER	T. ARPA		18-4-20

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER PROJECT

PORT SITE
STORMWATER DIVERSION P-SWD-6
LAYOUT, PROFILE AND DETAILS

SCALE	DWG. No.	REV
1:1000 OR AS NOTED	H353004-40000-228-271-0003-0001	0

SHEET SIZE: D

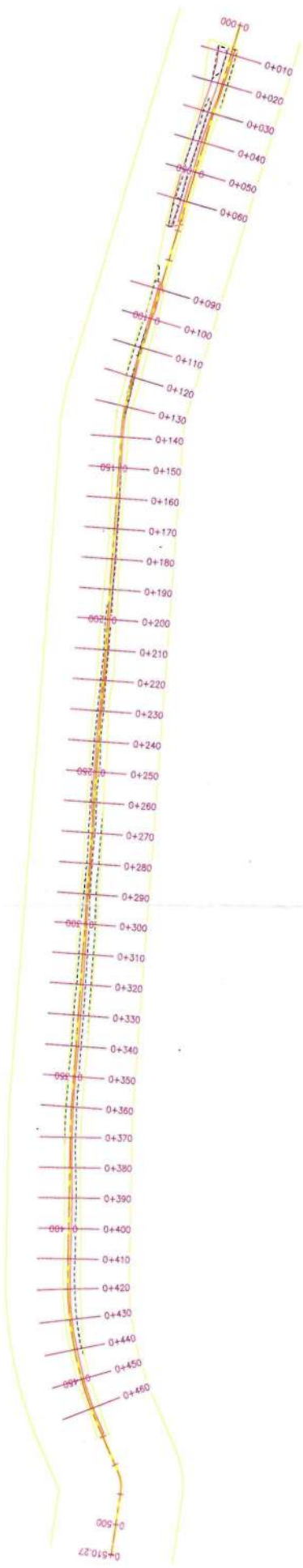
$USERNAMES
$DATES
$FILES
$TIMES

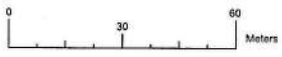
NUNA

NUNA EAST LTD

(Section 4)

Survey Documentation





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REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
-	-	-	-	-

CLIENT: HATCH

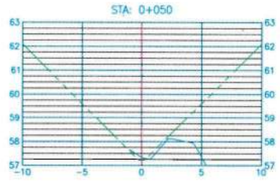
Allnorth

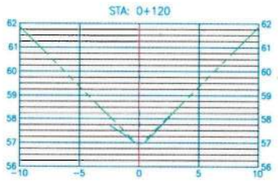
TITLE: **Storm Water Ditch 6 Type 8 Asbuilt Overview**

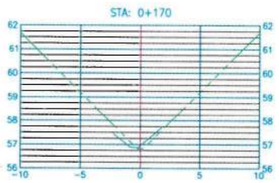
CLIENT NO:	185J0001	DRWN:	PCN	DATE:	19/01/30
PROJECT NO:	-	DSGN:	-	DATE:	-
DRAWING SIZE:	ANSI "D"	CHKD:	-	DATE:	-
SCALE:	AS NOTED	APVD:	-	DATE:	-

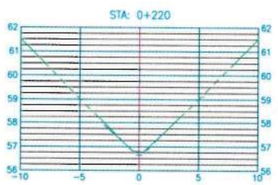
PROJECT: **Baffinland Iron Mines Mary River Expansion Project**

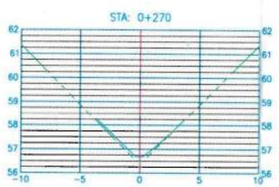
DWG NO: **180130PCN002-1** REV: **0**

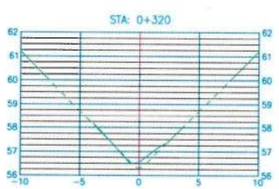


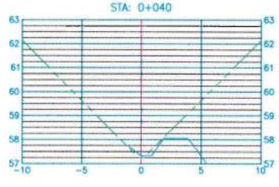


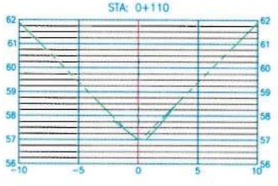


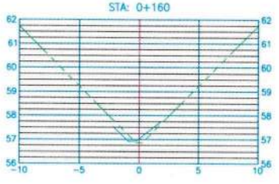


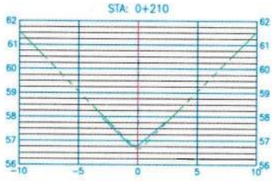


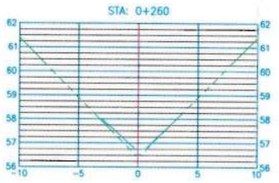


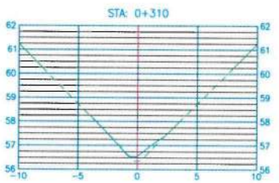


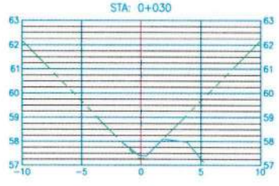


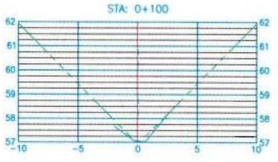


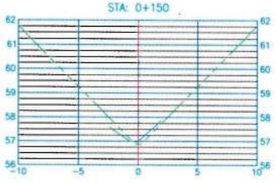


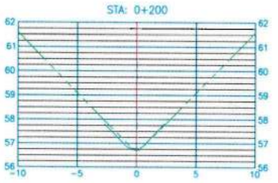


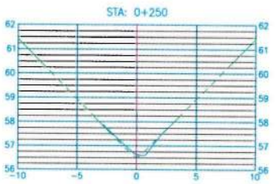


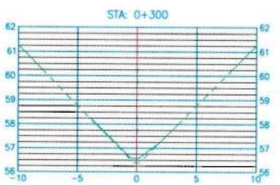


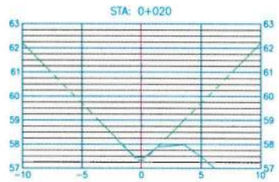


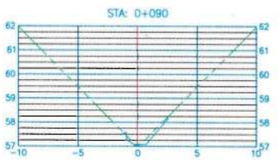


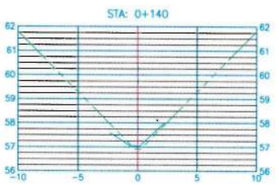


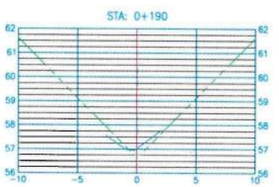


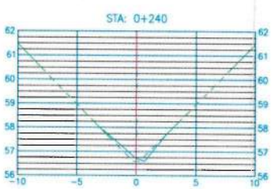


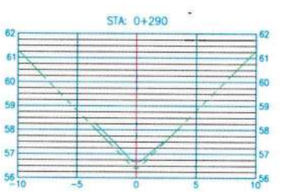


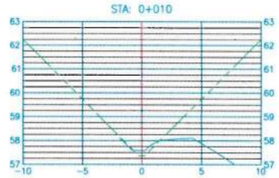


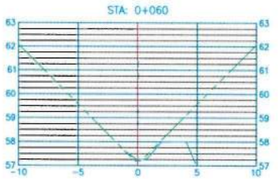


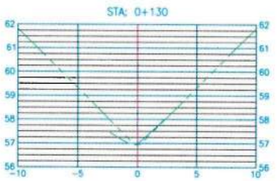


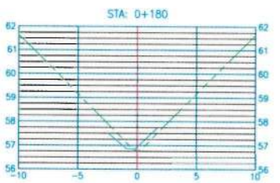


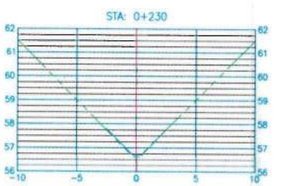


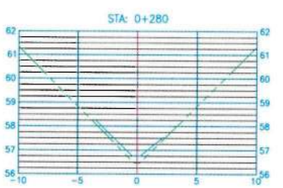












REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
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REV	YY/MM/DD	DESCRIPTION	DRWN	APVD

CLIENT: HATCH

Allnorth

TITLE:
Storm Water Ditch 6
Type 8 Asbuilt
Cross Sections 0+010 - 0+320

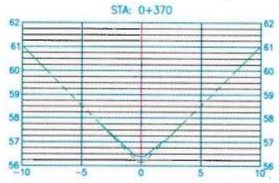
CLIENT NO:	185J0001	DRWN:	PCN	DATE:	19/01/30
PROJECT NO:	-	DSGN:		DATE:	-
DRAWING SIZE:	ANSI "D"	CHKD:		DATE:	-
SCALE:	AS NOTED	APVD:	-	DATE:	-

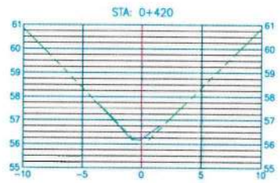
PROJECT:
Baffinland Iron Mines
Mary River Expansion Project

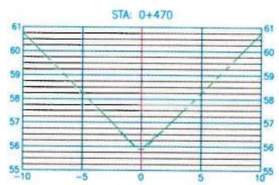
DWG NO: **180130PCN002-3**

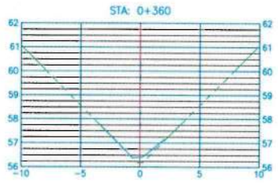
REV: **0**

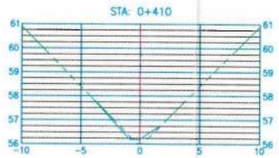
Date: 2019/01/30 | User: Patrick Nickerson | File: C:\Jobs\185J0001 Local Content\2000-Drawings\1018 Surveys\02-Production\Port Site\Ditches\180130PCN Asbuilt Type 8 P-SWD 6 | Layout: 'D' Landscape (Horizontal Title) (2) | Paper Size: 863.6mm x 558.8mm

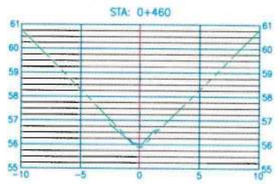


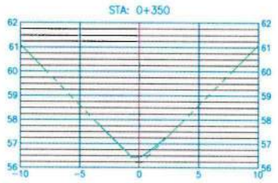


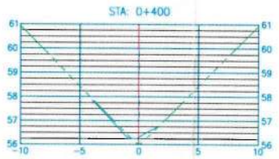


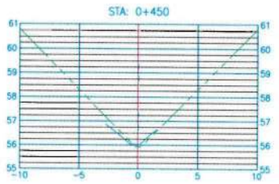


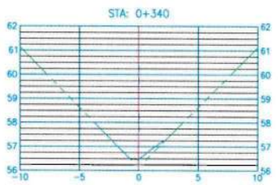


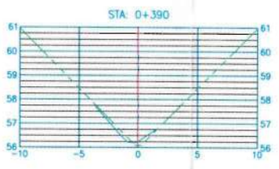


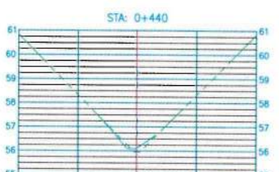


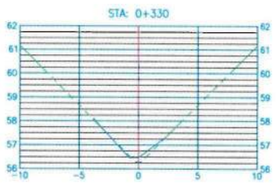


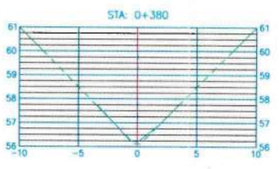


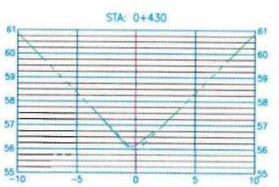












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REV	YY/MM/DD	DESCRIPTION	DRWN	APVD

CLIENT: HATCH

Allnorth

TITLE: **Storm Water Ditch 6 Type 8 Asbuilt Cross Sections 0+330 - 0+480**

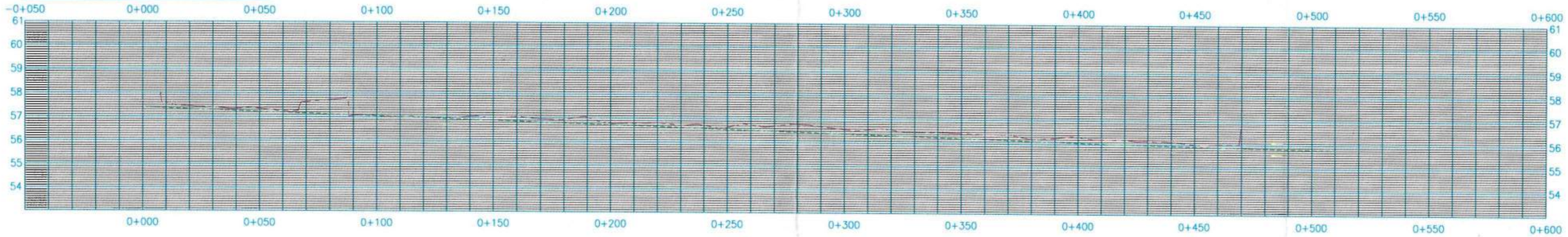
CLIENT NO:	185J0001	DRWN:	PCN	DATE:	19/01/30
PROJECT NO:		DSGN:	-	DATE:	-
DRAWING SIZE:	ANSI "D"	CHKD:	-	DATE:	-
SCALE:	AS NOTED	APVD:	-	DATE:	-

PROJECT: **Baffinland Iron Mines Mary River Expansion Project**

DWG NO: **180130PCN002-4** REV: **0**

Date: 2019/01/31 | User: Patrick Nickerson | File: C:\Jobs\185J0001-Local Content\1200-Drawings\1018-Survey\01-Production\Port Site\Ditches\180130PCN-AsbuiltType 8 P-SWD 6 | Layout: Tb-Landscape (Horizontal Title) | Paper Size: 863.6mm x 558.8mm

PROFILE VIEW: ALIGNMENT-1



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CLIENT: HATCH / Allnorth

TITLE: **Storm Water Ditch 6 Type 8 Asbuilt Profile**

CLIENT NO:	185J0001	DRWN:	PCN	DATE:	19/01/30
PROJECT NO:	-	DSGN:	-	DATE:	-
DRAWING SIZE:	ANSI "D"	CHKD:	-	DATE:	-
SCALE:	AS NOTED	APVD:	-	DATE:	-

PROJECT: **Baffinland Iron Mines Mary River Expansion Project**

DWG NO: **180130PCN002-2** REV: **0**

Date: 2019/01/30 | User: Patrick Nickerson | File: C:\Jobs\185J0001 Local Content\2000 Drawings\2018 Survey\03 Production\Port Site\Ditches\180130PCN Asbuilt Type 8 P SWD-6 | Layout: TB Landscape Horizontal Title (3) | Paper Size: 863.6mm x 558.8mm

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Job File CC006-0009A
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Subgrade Placement As-Built

Point Number	Northing	Easting	Elevation	Description
0127bn100	7974881.785	503892.643	57.057	DITCH
0127bn101	7974881.963	503891.254	57.12	DITCH
0127bn102	7974873.646	503889.919	57.101	DITCH
0127bn103	7974873.58	503888.82	57.066	DITCH
0127bn104	7974866.919	503887.78	57.028	DITCH
0127bn105	7974867.031	503887.288	56.946	DITCH
0127bn106	7974860.962	503886.118	57.034	DITCH
0127bn107	7974861.15	503885.529	56.988	DITCH
0127bn108	7974852.718	503883.715	57.021	DITCH
0127bn109	7974852.88	503883.113	56.996	DITCH
0127bn110	7974845.212	503881.566	56.981	DITCH
0127bn111	7974845.438	503880.97	56.993	DITCH
0127bn112	7974837.373	503879.956	56.95	DITCH
0127bn113	7974837.577	503879.308	56.914	DITCH
0127bn114	7974829.563	503879.338	56.934	DITCH
0127bn115	7974829.678	503878.792	56.957	DITCH
0127bn116	7974821.604	503878.829	56.882	DITCH
0127bn117	7974821.362	503878.326	56.893	DITCH
0127bn118	7974813.22	503878.152	56.842	DITCH
0127bn119	7974813.171	503877.595	56.777	DITCH
0127bn120	7974805.274	503877.607	56.824	DITCH
0127bn121	7974805.29	503877.13	56.734	DITCH
0127bn122	7974797.716	503877.262	56.793	DITCH
0127bn123	7974797.66	503876.546	56.714	DITCH
0127bn124	7974789.71	503876.597	56.789	DITCH
0127bn125	7974789.75	503875.99	56.807	DITCH
0127bn126	7974781.558	503876.116	56.68	DITCH
0127bn127	7974781.634	503875.462	56.714	DITCH
0127bn128	7974773.76	503875.468	56.689	DITCH
0127bn129	7974773.803	503874.785	56.66	DITCH
0127bn130	7974765.638	503874.98	56.668	DITCH
0127bn131	7974765.772	503874.383	56.632	DITCH
0127bn132	7974757.569	503874.389	56.68	DITCH
0127bn133	7974757.683	503873.718	56.663	DITCH
0127bn134	7974748.747	503873.75	56.602	DITCH
0127bn135	7974748.787	503873.073	56.644	DITCH
0127bn136	7974741.355	503873.354	56.615	DITCH
0127bn137	7974741.456	503872.77	56.648	DITCH
0127bn138	7974733.629	503872.77	56.604	DITCH

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0127bn139	7974733.734	503871.925	56.508	DITCH
0127bn140	7974725.663	503872.272	56.552	DITCH
0127bn141	7974725.702	503871.624	56.494	DITCH
0127bn142	7974717.725	503871.821	56.594	DITCH
0127bn143	7974717.754	503871.017	56.536	DITCH
0127bn144	7974709.554	503871.19	56.551	DITCH
0127bn145	7974709.55	503870.428	56.56	DITCH
0127bn146	7974701.392	503870.626	56.46	DITCH
0127bn147	7974701.524	503869.971	56.452	DITCH
0127bn148	7974692.688	503870.216	56.488	DITCH
0127bn149	7974692.634	503869.285	56.529	DITCH
0127bn150	7974685.504	503869.559	56.417	DITCH
0127bn151	7974685.483	503868.844	56.384	DITCH
0127bn152	7974677.591	503869.143	56.343	DITCH
0127bn153	7974677.678	503868.143	56.378	DITCH
0127bn154	7974671.076	503868.581	56.333	DITCH
0127bn155	7974671.059	503867.847	56.316	DITCH
0127bn156	7974663.341	503868.29	56.247	DITCH
0127bn157	7974663.327	503867.425	56.298	DITCH
0127bn158	7974655.655	503868.041	56.245	DITCH
0127bn159	7974655.727	503866.837	56.324	DITCH
0127bn160	7974647.245	503867.239	56.147	DITCH
0127bn161	7974647.327	503866.221	56.231	DITCH
0127bn162	7974639.85	503866.908	56.186	DITCH
0127bn163	7974639.707	503865.681	56.224	DITCH
0127bn164	7974630.305	503866.287	56.226	DITCH
0127bn165	7974630.24	503864.774	56.295	DITCH
0127bn166	7974623.652	503865.7	56.203	DITCH
0127bn167	7974623.72	503864.564	56.251	DITCH
0127bn168	7974615.568	503865.074	56.122	DITCH
0127bn169	7974615.589	503864.078	56.21	DITCH
0127bn170	7974607.152	503864.65	56.175	DITCH
0127bn171	7974607.203	503863.666	56.188	DITCH
0127bn172	7974599.727	503864.548	56.085	DITCH
0127bn173	7974599.719	503863.508	56.109	DITCH
0127bn174	7974591.623	503864.468	56.056	DITCH
0127bn175	7974591.69	503863.47	56.13	DITCH
0127bn176	7974583.235	503864.888	55.997	DITCH
0127bn177	7974583.1	503863.607	55.986	DITCH
0127bn178	7974574.916	503864.529	55.89	DITCH
0127bn179	7974574.992	503863.462	56.076	DITCH
0127bn180	7974565.904	503864.296	56.03	DITCH

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0127bn181	7974565.811	503863.202	56.006	DITCH
0127bn182	7974557.077	503864.778	56.064	DITCH
0127bn183	7974556.782	503863.665	56.097	DITCH
0127bn184	7974548.216	503865.005	56.13	DITCH
0127bn185	7974548.106	503863.908	56.144	DITCH
0127bn186	7974537.69	503866.443	55.972	DITCH
0127bn187	7974537.369	503865.3	55.981	DITCH
0127bn188	7974530.469	503869.674	56.552	CREST
0127bn189	7974538.62	503868.26	57.213	CREST
0127bn190	7974545.776	503867.868	57.726	CREST
0127bn191	7974555.693	503867.097	57.519	CREST
0127bn192	7974564.964	503867.144	57.576	CREST
0127bn193	7974571.737	503869.343	58.393	CREST
0127bn194	7974578.789	503869.488	58.6	CREST
0127bn195	7974587.633	503869.329	58.404	CREST
0127bn196	7974597.033	503869.27	58.374	CREST
0127bn197	7974604.198	503869.304	58.42	CREST
0127bn198	7974614.041	503869.691	58.583	CREST
0127bn199	7974622.516	503870.3	58.484	CREST
0127bn200	7974630.87	503871.127	58.613	CREST
0127bn201	7974638.755	503871.635	58.577	CREST
0127bn202	7974647.59	503872.116	58.587	CREST
0127bn203	7974650.448	503870.517	57.953	CREST
0127bn204	7974659.141	503870.981	57.92	CREST
0127bn205	7974667.353	503871.295	57.99	CREST
0127bn206	7974674.45	503871.826	58.026	CREST
0127bn207	7974682.677	503872.381	58.185	CREST
0127bn208	7974691.161	503872.663	58.166	CREST
0127bn209	7974699.378	503873.6	58.181	CREST
0127bn210	7974708.492	503874.122	58.065	CREST
0127bn211	7974717.205	503874.356	57.913	CREST
0127bn212	7974727.313	503874.906	57.905	CREST
0127bn213	7974736.7	503875.352	57.883	CREST
0127bn214	7974745.881	503876.099	57.795	CREST
0127bn215	7974753.793	503877.843	57.89	CREST
0127bn216	7974762.56	503879.039	57.779	CREST
0127bn217	7974771.701	503879.364	57.719	CREST
0127bn218	7974781.046	503879.216	57.484	CREST
0127bn219	7974787.729	503879.81	57.365	CREST
0127bn220	7974798.182	503879.57	57.217	CREST
0127bn221	7974805.55	503880.697	57.192	CREST
0127bn222	7974813.364	503880.791	57.13	CREST

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0127bn223	7974820.739	503881.335	57.316	CREST
0127bn224	7974829.486	503881.544	57.417	CREST
0127bn225	7974836.852	503882.339	57.271	CREST
0127bn226	7974844.734	503884.285	57.411	CREST
0127bn227	7974852.24	503886.366	57.532	CREST
0127bn228	7974861.57	503888.687	57.487	CREST
0127bn229	7974869.845	503890.959	57.483	CREST
0127bn230	7974879.334	503894.096	57.358	CREST
0127bn231	7974883.142	503894.25	57.123	CREST
0127bn300	7974884.957	503890.179	57.979	CREST
0127bn301	7974875.675	503887.455	57.868	CREST
0127bn302	7974867.384	503884.144	58.09	CREST
0127bn303	7974859.624	503881.576	58.125	CREST
0127bn304	7974851.353	503879.807	58.017	CREST
0127bn305	7974845.93	503878.47	58.075	CREST
0127bn306	7974841.104	503877.627	57.933	CREST
0127bn307	7974832.937	503877.232	57.87	CREST
0127bn308	7974823.942	503876.886	57.815	CREST
0127bn309	7974814.691	503876.249	57.732	CREST
0127bn310	7974804.853	503875.446	57.596	CREST
0127bn311	7974795.353	503874.99	57.646	CREST
0127bn312	7974785.58	503873.972	57.778	CREST
0127bn313	7974775.925	503873.271	57.796	CREST
0127bn314	7974766.536	503872.646	57.637	CREST
0127bn315	7974757.417	503871.953	57.565	CREST
0127bn316	7974747.702	503870.995	57.616	CREST
0127bn317	7974738.598	503870.11	57.587	CREST
0127bn318	7974730.021	503869.411	57.611	CREST
0127bn319	7974721.079	503868.876	57.552	CREST
0127bn320	7974712.356	503868.546	57.304	CREST
0127bn321	7974702.788	503868.12	57.275	CREST
0127bn322	7974694.297	503867.698	57.458	CREST
0127bn323	7974684.789	503866.934	57.421	CREST
0127bn324	7974675.939	503866.377	57.264	CREST
0127bn325	7974666.76	503865.787	57.258	CREST
0127bn326	7974658.07	503865.457	57.201	CREST
0127bn327	7974649.128	503864.987	57.255	CREST
0127bn328	7974639.558	503864.168	57.213	CREST
0127bn329	7974630.247	503863.187	57.205	CREST
0127bn330	7974621.322	503862.611	57.151	CREST
0127bn331	7974612.352	503862.417	57.117	CREST
0127bn332	7974603.71	503862.219	56.968	CREST

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0127bn333	7974594.128	503861.853	56.886	CREST
0127bn334	7974585.179	503862.32	56.707	CREST
0127bn335	7974577.333	503862.274	56.632	CREST
0127bn336	7974569.315	503862.079	56.674	CREST
0127bn337	7974559.409	503861.969	56.713	CREST
0127bn338	7974550.268	503862.058	56.839	CREST
0127bn339	7974542.849	503862.702	56.821	CREST
0127bn340	7974536.464	503863.589	56.821	CREST

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RipRap Placement As-Built

Point Number	Northing	Easting	Elevation	Description
0130bn200	7974505.457	503873.651	56.663	CREST
0130bn201	7974513.781	503870.881	56.527	CREST
0130bn202	7974522.257	503867.362	56.632	CREST
0130bn203	7974531.498	503864.974	56.602	CREST
0130bn204	7974540.493	503863.207	56.734	CREST
0130bn205	7974549.243	503862.242	56.749	CREST
0130bn206	7974559.397	503861.989	56.726	CREST
0130bn207	7974569.042	503862.256	56.683	CREST
0130bn208	7974578.357	503862.328	56.714	CREST
0130bn209	7974586.483	503862.416	56.744	CREST
0130bn210	7974594.25	503862.007	56.955	CREST
0130bn211	7974602.231	503862.149	57.013	CREST
0130bn212	7974611.058	503862.114	57.135	CREST
0130bn213	7974620.528	503862.595	57.214	CREST
0130bn214	7974629.468	503863.274	57.216	CREST
0130bn215	7974638.056	503863.968	57.252	CREST
0130bn216	7974644.859	503864.485	57.195	CREST
0130bn217	7974652.48	503864.838	57.331	CREST
0130bn218	7974659.171	503865.344	57.279	CREST
0130bn219	7974666.541	503865.625	57.393	CREST
0130bn220	7974673.813	503866.487	57.233	CREST
0130bn221	7974682.565	503866.719	57.507	CREST
0130bn222	7974692.042	503867.451	57.531	CREST
0130bn223	7974700.474	503867.968	57.529	CREST
0130bn224	7974707.234	503868.187	57.63	CREST
0130bn225	7974716.595	503868.903	57.617	CREST
0130bn226	7974725.917	503869.53	57.672	CREST
0130bn227	7974737.593	503870.02	57.832	CREST
0130bn228	7974745.165	503870.776	57.735	CREST
0130bn229	7974753.87	503871.817	57.562	CREST
0130bn230	7974762.775	503872.141	57.789	CREST
0130bn231	7974771.832	503872.772	57.804	CREST
0130bn232	7974780.523	503873.482	57.769	CREST
0130bn233	7974789.384	503874.565	57.791	CREST
0130bn234	7974798.08	503875.227	57.644	CREST
0130bn235	7974806.965	503875.649	57.735	CREST
0130bn236	7974815.742	503876.301	57.724	CREST
0130bn237	7974825.444	503876.817	57.867	CREST
0130bn238	7974834.391	503877.133	57.995	CREST
0130bn239	7974841.995	503877.904	58.009	CREST

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0130bn240	7974849.747	503880.179	57.895	CREST
0130bn241	7974858.558	503881.887	58.335	CREST
0130bn242	7974867.196	503884.572	58.361	CREST
0130bn243	7974875.91	503887.843	58.048	CREST
0130bn244	7974884.849	503890.048	58.211	CREST
0130bn245	7974902.512	503895.531	58.222	CREST
0130bn246	7974902.584	503894.63	58.014	CREST
0130bn247	7974909.905	503898.267	57.973	CREST
0130bn248	7974910.682	503896.285	57.981	CREST
0130bn249	7974918.852	503900.589	58.119	CREST
0130bn250	7974919.59	503898.601	57.926	CREST
0130bn251	7974928.944	503903.924	58.057	CREST
0130bn252	7974929.381	503902.037	58.058	CREST
0130bn253	7974939.572	503907.193	58.097	CREST
0130bn254	7974940.12	503905.255	57.968	CREST
0130bn255	7974947.51	503910.09	57.847	CREST
0130bn256	7974947.863	503907.865	57.926	CREST
0130bn257	7974956.026	503912.3	58.093	CREST
0130bn258	7974956.253	503910.113	58.138	CREST
0130bn259	7974960.491	503913.979	57.955	CREST
0130bn260	7974961.268	503910.816	58.068	CREST
0130bn261	7974963.322	503907.582	57.008	TOE
0130bn262	7974953.006	503906.307	57.003	TOE
0130bn263	7974945.029	503905.436	57.102	TOE
0130bn264	7974936.42	503902.58	57.14	TOE
0130bn265	7974927.886	503899.941	56.962	TOE
0130bn266	7974919.33	503897.535	57.017	TOE
0130bn267	7974910.841	503895.539	57.114	TOE
0130bn268	7974902.874	503893.547	57.414	TOE
0130bn269	7974903.798	503897.804	57.31	TOE
0130bn270	7974903.78	503898.929	57.235	TOE
0130bn271	7974915.718	503901.101	57.271	TOE
0130bn272	7974915.521	503901.802	57.255	TOE
0130bn273	7974923.165	503903.451	57.292	TOE
0130bn274	7974923.308	503904.241	57.37	TOE
0130bn275	7974931.167	503905.668	57.334	TOE
0130bn276	7974930.887	503906.514	57.326	TOE
0130bn277	7974938.736	503908.35	57.378	TOE
0130bn278	7974938.673	503909.02	57.408	TOE
0130bn279	7974945.866	503910.72	57.423	TOE
0130bn280	7974945.693	503911.374	57.393	TOE
0130bn281	7974953.791	503913.119	57.45	TOE
0130bn282	7974953.447	503913.943	57.505	TOE

Mary River Expansion Project
Baffin - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Stormwater Diversion Ditch SWD-6

0130bn283	7974960.034	503914.934	57.613	TOE
0130bn284	7974959.899	503916.003	57.609	TOE
0130bn285	7974960.066	503917.035	58.077	CREST
0130bn286	7974951.334	503914.728	58.181	CREST
0130bn287	7974943.884	503912.447	58.135	CREST
0130bn288	7974936.181	503909.665	57.914	CREST
0130bn289	7974930.233	503907.545	57.767	CREST
0130bn290	7974923.602	503905.422	57.688	CREST
0130bn291	7974916.021	503903.188	57.62	CREST
0130bn292	7974907.365	503900.782	57.601	CREST
0130bn293	7974902.865	503899.478	57.674	CREST
0130bn294	7974880.069	503892.968	57.454	CREST
0130bn295	7974872.805	503891.369	57.645	CREST
0130bn296	7974865.405	503889.205	57.784	CREST
0130bn297	7974856.818	503886.819	57.788	CREST
0130bn298	7974848.273	503884.73	57.64	CREST
0130bn299	7974839.869	503881.867	57.356	CREST
0130bn300	7974831.445	503881.545	57.627	CREST
0130bn301	7974823.588	503880.992	57.556	CREST
0130bn302	7974815.146	503880.256	57.548	CREST
0130bn303	7974805.755	503879.587	57.417	CREST
0130bn304	7974796.978	503879.248	57.499	CREST
0130bn305	7974788.223	503878.698	57.517	CREST
0130bn306	7974779.358	503878.335	57.589	CREST
0130bn307	7974771.934	503877.837	57.851	CREST
0130bn308	7974764.175	503877.567	57.926	CREST
0130bn309	7974756.21	503877.343	57.994	CREST
0130bn310	7974747.293	503875.805	57.73	CREST
0130bn311	7974738.026	503875.422	57.882	CREST
0130bn312	7974728.593	503875.074	57.883	CREST
0130bn313	7974720.91	503874.381	57.867	CREST
0130bn314	7974711.731	503874.037	57.975	CREST
0130bn315	7974703.558	503873.999	58.22	CREST
0130bn316	7974695.17	503873.43	58.245	CREST
0130bn317	7974686.876	503872.685	58.269	CREST
0130bn318	7974678.057	503872.526	58.291	CREST
0130bn319	7974669.753	503872.186	58.263	CREST
0130bn320	7974661.411	503871.606	58.263	CREST
0130bn321	7974652.243	503870.819	58.167	CREST
0130bn322	7974643.174	503870.115	58.1	CREST
0130bn323	7974633.796	503869.384	57.98	CREST
0130bn324	7974623.348	503868.472	57.856	CREST
0130bn325	7974614.435	503867.765	57.791	CREST

Mary River Expansion Project
Baffin - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Stormwater Diversion Ditch SWD-6

0130bn326	7974605.167	503867.369	57.682	CREST
0130bn327	7974596.769	503867.229	57.729	CREST
0130bn328	7974588.354	503867.414	57.7	CREST
0130bn329	7974578.488	503867.424	57.689	CREST
0130bn330	7974570.697	503867.814	57.944	CREST
0130bn331	7974561.595	503867.63	57.927	CREST
0130bn332	7974552.59	503867.638	57.837	CREST
0130bn333	7974543.221	503868.266	57.77	CREST
0130bn334	7974535.644	503868.492	57.22	CREST
0130bn335	7974528.043	503870.113	56.856	CREST
0130bn336	7974519.543	503872.75	56.881	CREST
0130bn337	7974512.682	503875.093	56.806	CREST
0130bn338	7974506.202	503877.406	56.678	CREST
0130bn339	7974506.394	503875.17	56.011	TOE
0130bn340	7974506.657	503875.833	56.035	TOE
0130bn341	7974514.019	503871.763	56.01	TOE
0130bn342	7974514.336	503872.503	56.057	TOE
0130bn343	7974522.383	503868.792	55.987	TOE
0130bn344	7974522.658	503869.548	56.023	TOE
0130bn345	7974530.744	503866.694	56.085	TOE
0130bn346	7974530.99	503867.573	56.12	TOE
0130bn347	7974540.067	503864.888	56.116	TOE
0130bn348	7974540.145	503865.529	56.081	TOE
0130bn349	7974547.809	503863.998	56.133	TOE
0130bn350	7974548.796	503864.538	56.113	TOE
0130bn351	7974548.86	503863.931	56.12	TOE
0130bn352	7974558.423	503863.523	56.202	TOE
0130bn353	7974558.475	503864.323	56.242	TOE
0130bn354	7974567.17	503863.789	56.159	TOE
0130bn355	7974567.186	503864.499	56.142	TOE
0130bn356	7974576.074	503863.908	56.281	TOE
0130bn357	7974576.077	503864.694	56.307	TOE
0130bn358	7974585.321	503864.063	56.173	TOE
0130bn359	7974585.511	503864.755	56.201	TOE
0130bn360	7974594.907	503863.85	56.218	TOE
0130bn361	7974595.093	503864.487	56.235	TOE
0130bn362	7974603.651	503863.795	56.385	TOE
0130bn363	7974603.501	503864.548	56.418	TOE
0130bn364	7974612.402	503864.083	56.398	TOE
0130bn365	7974612.418	503864.876	56.392	TOE
0130bn366	7974621.148	503864.636	56.425	TOE
0130bn367	7974621.172	503865.378	56.417	TOE
0130bn368	7974629.73	503865.455	56.453	TOE

Mary River Expansion Project
Baffin - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Stormwater Diversion Ditch SWD-6

0130bn369	7974629.857	503866.112	56.475	TOE
0130bn370	7974639.324	503866.131	56.447	TOE
0130bn371	7974639.319	503866.842	56.465	TOE
0130bn372	7974648.346	503866.689	56.473	TOE
0130bn373	7974648.321	503867.452	56.443	TOE
0130bn374	7974657.516	503867.416	56.575	TOE
0130bn375	7974657.536	503868.144	56.566	TOE
0130bn376	7974668.598	503868.08	56.512	TOE
0130bn377	7974668.725	503868.764	56.546	TOE
0130bn378	7974679.752	503868.487	56.631	TOE
0130bn379	7974679.712	503869.173	56.636	TOE
0130bn380	7974688.939	503869.117	56.734	TOE
0130bn381	7974688.944	503869.894	56.772	TOE
0130bn382	7974697.652	503869.799	56.768	TOE
0130bn383	7974697.665	503870.391	56.744	TOE
0130bn384	7974707.742	503870.431	56.643	TOE
0130bn385	7974707.757	503871.081	56.652	TOE
0130bn386	7974717.11	503870.517	56.812	TOE
0130bn387	7974717.22	503871.538	56.775	TOE
0130bn388	7974726.108	503871.331	56.507	TOE
0130bn389	7974726.174	503872.176	56.602	TOE
0130bn390	7974735.907	503871.923	56.625	TOE
0130bn391	7974735.85	503872.655	56.749	TOE
0130bn392	7974744.468	503872.769	56.695	TOE
0130bn393	7974744.38	503873.524	56.697	TOE
0130bn394	7974752.425	503873.394	56.771	TOE
0130bn395	7974752.315	503874.266	56.817	TOE
0130bn396	7974762.183	503874.467	56.783	TOE
0130bn397	7974762.198	503875.128	56.814	TOE
0130bn398	7974772.495	503874.871	56.75	TOE
0130bn399	7974772.83	503875.879	56.797	TOE
0130bn400	7974784.08	503876.174	56.954	TOE
0130bn401	7974783.97	503876.864	56.984	TOE
0130bn402	7974794.389	503876.854	56.822	TOE
0130bn403	7974794.308	503877.549	56.844	TOE
0130bn404	7974803.522	503877.466	56.863	TOE
0130bn405	7974803.548	503878.124	56.895	TOE
0130bn406	7974812.347	503878.102	56.938	TOE
0130bn407	7974812.306	503878.772	56.908	TOE
0130bn408	7974820.87	503878.6	56.933	TOE
0130bn409	7974820.922	503879.192	56.962	TOE
0130bn410	7974830.28	503878.899	57.053	TOE
0130bn411	7974830.105	503879.685	57.072	TOE

Mary River Expansion Project
Baffin - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Stormwater Diversion Ditch SWD-6

0130bn412	7974839.45	503879.708	56.99	TOE
0130bn413	7974839.493	503880.516	57.008	TOE
0130bn414	7974849.158	503881.918	56.967	TOE
0130bn415	7974849.034	503882.754	56.976	TOE
0130bn416	7974857.675	503884.231	57.007	TOE
0130bn417	7974857.813	503885.061	57.038	TOE
0130bn418	7974866.462	503886.685	56.977	TOE
0130bn419	7974866.598	503887.386	56.989	TOE
0130bn420	7974875.159	503889.357	57.05	TOE
0130bn421	7974875.08	503890.498	57.116	TOE
0130bn422	7974883.305	503891.667	57.064	TOE
0130bn423	7974883.396	503892.604	57.025	TOE
0131bn700	7974517.87	503868.912	56.591	CREST
0131bn701	7974510.656	503871.531	56.66	CREST
0131bn702	7974502.756	503874.708	56.7	CREST
0131bn703	7974494.404	503878.791	56.401	CREST
0131bn704	7974496.178	503882.697	56.944	CREST
0131bn705	7974501.025	503879.461	56.602	CREST
0131bn706	7974507.295	503876.919	56.696	CREST
0131bn707	7974507.493	503875.423	56.023	TOE
0131bn708	7974507.212	503874.555	56.028	TOE
0131bn709	7974500.418	503878.186	56.002	TOE
0131bn710	7974500.075	503877.445	56.026	TOE
0131bn711	7974494.985	503881.008	55.99	TOE
0131bn712	7974494.545	503880.028	55.953	TOE
0131bn713	7974492.607	503882.167	56.033	TOE
0131bn714	7974492.083	503880.559	55.895	TOE
0131bn715	7974492.257	503877.147	55.636	TOE
0131bn716	7974496.572	503875.161	55.673	TOE
0131bn717	7974498.873	503873.847	55.846	TOE
0131bn718	7974500.159	503874.599	56.393	CREST
0131bn719	7974495.55	503876.923	56.241	CREST
0131bn720	7974492.724	503878.195	56.153	CREST

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(Section 5)

No sieves available.

(Acceptance forms approved by Hatch)

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Nuna East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks
Description of Item/Area Inspected:	*Construction Material Approval* *Type:* Type 8 *Source:* Q1 Quarry Stockpile
Date of Inspection:	
Parties Present at Inspection	Allnorth, Stephane Gionet

Comments:

A visual inspection of the Type 8 *Material from* Q1 Quarry *was conducted to confirm* Type 8 *Material conforms to specifications.*

Construction Material: Type 8 *conforms to specifications and is approved for placement at* SWD-6

Bradford Watkin
QA/QC
Reviewed

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	BRANDON UECKERHART		02/01/2019
HATCH Representative:	Stephane Gionet		01/02/19

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(Section 6)

No Request for Information Documentation (RFI) Generated

NUNA

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(Section 7)

No Non-Conformance Reports (NCRs) Generated

NON-CONFORMANCE REPORT LOG

Project: CC006 **Date:** 8-29-19

Area: Mary River Expansion - Milne Port **Contract/Work Pkg. No.:** CC006-0009A SWD-6

CWP#: N/A **Originator:** Bradford Watkin

NCR No.	Description	Disposition	Date.	Rectified	Date
	No NCR's generated for this work package				

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(Section 8)

Land Disturbance Forms (LDF)

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.		**Department:**	Projects
Date:	9/19/18	**Name/Position:**	**Brandon Urquhart/Project Coordinator**
Project location:	Port Site		Q1 Quarry - Storm Water Diversion Ditches SWD5 / SWD6
Project Duration:	Start 9/21/18	Finish	10/5/18

Project Details

GPS Coordinates: Lat: N+7974964 Long: E+503861 (NAD 83)

Land disturbance area: 2000 m2

Type of disturbance (Drilling, Blasting,Excavation, Rutting due to site access, etc.)

Material placement over tundra

Detailed description of planned work.

Construction of temporary laydown and access road with culvert.

Specifications for field designed laydown:

- Blasting and excavation of ditch ~.5m wide x 1m deep
- Construction of berm ~1m height at 2:1 slope, .5m width at top along certain sections of channel
- Lay geotextile and riprap at channel outlet
- Culvert to be 1.2m diameter and installed as directed by Hatch representative.

Check List

1	**Has the Environmental Concerns in section 2.3.1. of the Environmental Protection plan been reviewed** - If No, please review the list of concerns on page 4 of this form.	Yes
2	**Will work be completed within 31m of the High Water Mark of any stream or water body?.** - If Yes, please contact the Environment Department.	No
3	**Is there a stream or waterbody >31m of the work site?.** - If Yes, Include a detailed description of the Sediment and Erosion Control Measures on Page 3.	No
4	**Has the area been cleared by Archaeology?.** - If No or Unknown, Please contact the Environment Department.	Yes
5	**Will the land disturbance occur between May 31 and August 31?.** - If Yes, An Active Migration Bird Survey is required prior to start.	No

Approval

Approved by: Position:

Approved on:

Valid Unit:

Comments and recommendations by the Environment Department:

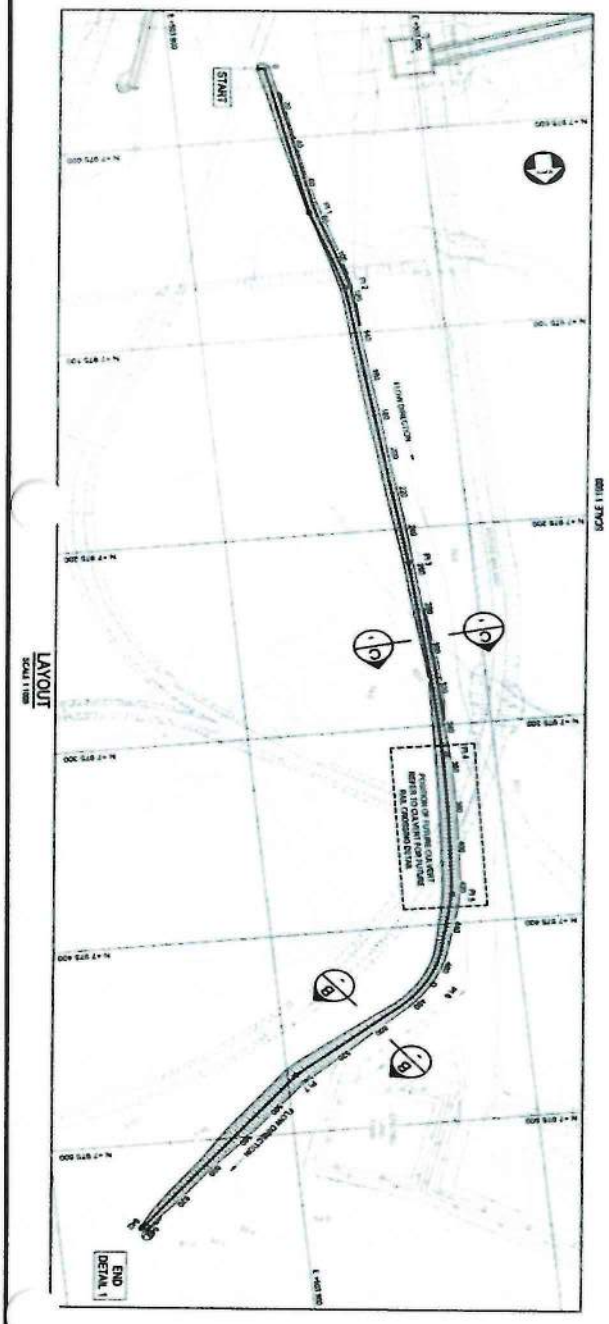
LAND DISTRURBANCE FORM

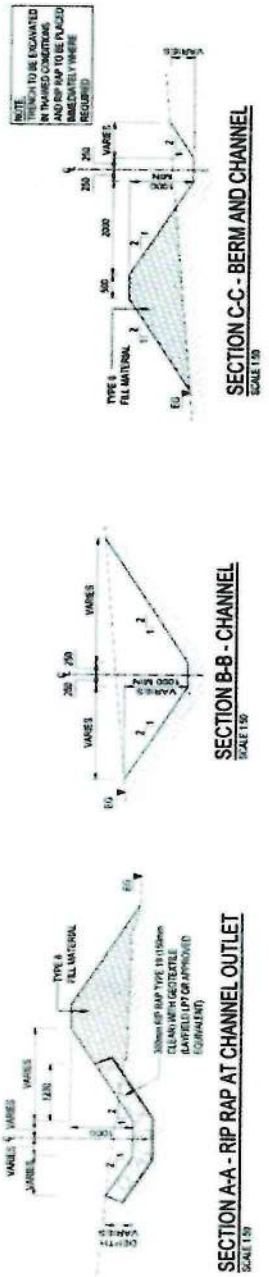
Document # BAF-PH1-830-P16-0008, Section 2.3

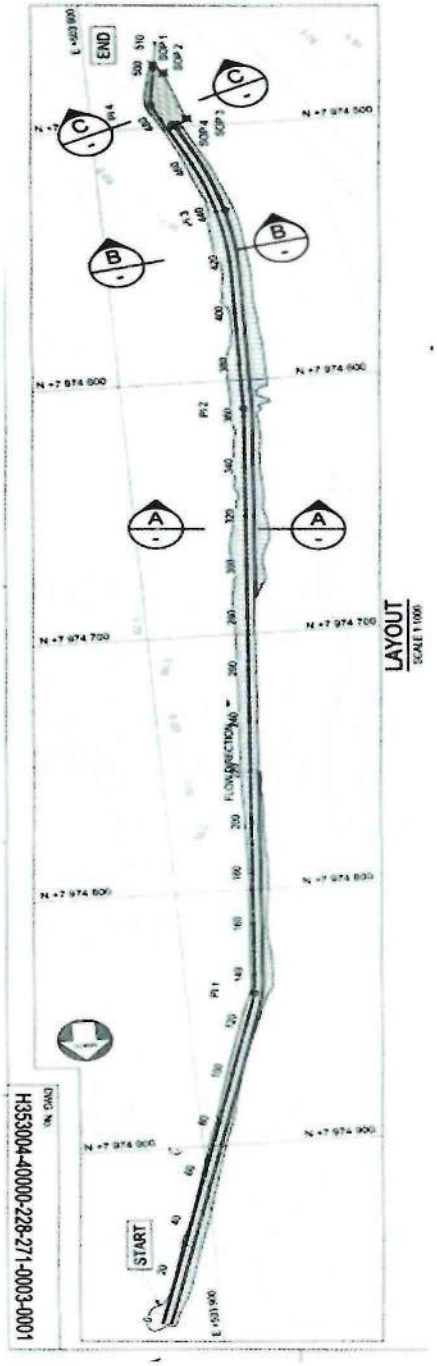
Form No.	0	**Department:**	Projects
Date:	9/19/18		
Project location:	Port Site		

Design/Engineering Drawing

See Attached Drawing.







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LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	9/19/18		
Project location:	Port Site		

Sediment and Erosion Control Measures

Please give a detailed discription of the run-off control measure which will be put in place.
Include all water bodies and streams, slope direction and materials to be used.

- Due to season and weather conditions, runoff and erosion is unlikely to occur

Baffinland

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	9/19/18		
Project location:	Port Site		

2.3.1 ENVIRONMENTAL CONCERN

2.3.1 ENVIRONMENTAL CONCERN

The Arctic is a fragile environment where the recovery of vegetation within this region is slow. Ground disturbance shall be minimized to protect archaeological resources, wildlife habitats, sensitive landforms, such as ice-rich permafrost features, and prevent erosion and the movement of sediment into watercourses and water bodies. Various permits, licences and approvals issued to Baffinland are specific in regards to ground disturbances and outline the necessary protection measures that need to be taken to minimize this aspect of the Project.

The following measures are to be implemented to minimize ground disturbance:

- Equipment and personnel must stay on existing roads and trails
- Approval for new areas of disturbance must be approved by the Operations Manager
- Rutting (furrow creation) shall be avoided on ground surfaces; overland travel of equipment or vehicle will be suspended when rutting occurs
- All camps shall be located on gravel, sand or other durable land
- No materials shall be stored on the surface ice of streams
- No material shall be removed from below the ordinary high water mark of any stream
- Greywater sumps must be located a distance of at least thirty (30) metres above the ordinary high water mark of any water body

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(Section 9)

Signature Log

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN		
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC		
ALLNORTH	Materials technician	Kenny MacRae		
Hatch	Hatch Civil	Stephane Gifford		
NUNA EAST	PROJECT COORDINATOR	BRANDON UGALMART		
NUNA EAST	PROJECT COORDINATOR	[illegible]		
HATCH	FIELD ENG. MANAGER	GLEN PEACE		
NUNA EAST	SITE SUPERINTENDENT	ANTHONY STEWART		
NUNA EAST	SITE SUPERINTENDENT	HARVEY BLOVIN		
Hatch	Hatch Super	Roger Landry		
Nuna East	Project Manager	Stephen Nugent		
HATCH	CONSTRUCTION SUPERINTENDENT	ROB BADER		
BVJV	Project Engineer	David Garcia		
Hatch	QA Manager	Ronny Franken		

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN		
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC		
ALLNORTH	Materials technician	Kenny MacRae		
Hatch	Hatch Civil	Stephane Grant	SG	
NUNA EAST	PROJECT COORDINATOR	BRANDON UPGUHART		
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]ER		
HATCH	FIELD ENG. MANAGER	GLEN PEACE	GP	
Hatch	Construction Super	Dean Moffett	D.M.	
Hatch	Construction Super	Roger Landry	R.L	

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(Section 10)

Quality Control Documents

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HATCH

Nuna East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval -* SWD-6 Section 0-350
Date of Inspection:	January 28th, 2019
Parties Present at Inspection	Allnorth, Stephane Gionet

Comments:

A visual inspection of the SWD-6 *surface/sub-grade was conducted prior to placement of fill Material.*

Sub-grade: SWD-6 Section 0-350

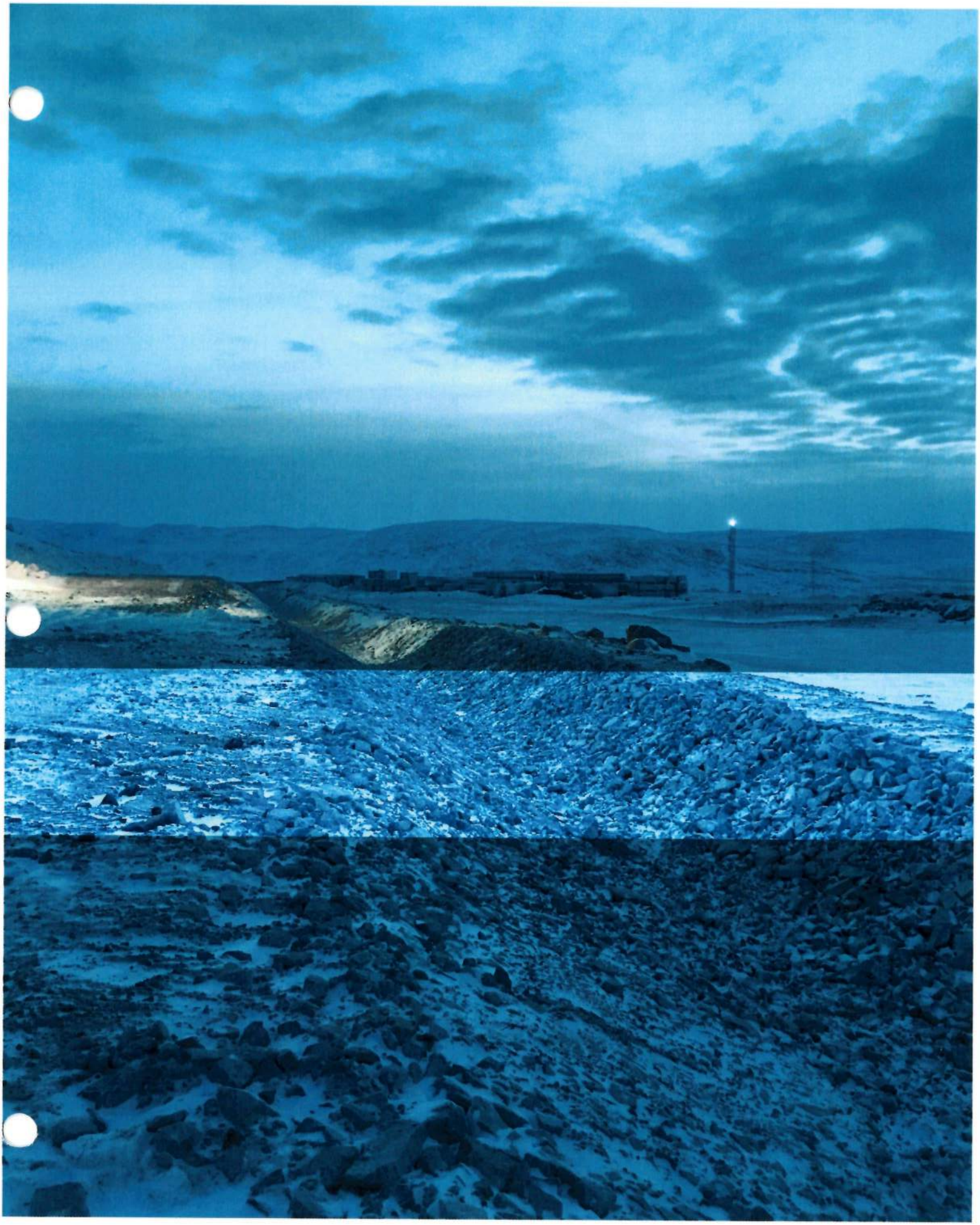
The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	BRANDON UREQUHART		02/01/2019
HATCH Representative:	Stephane Gionet		01/02/19

Bradford Watkin
QA/QC
Reviewed



NUNA
NUNA EAST LTD

Baffinland
HATCH

Nuna East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval -* SWD-6 Section 350-500
Date of Inspection:	January 30, 2019
Parties Present at Inspection	Allnorth, Stephane Gicnet

Comments:

A visual inspection of the SWD-6 *surface/sub-grade was conducted prior to placement of fill Material.*

Sub-grade: SWD-6 Section 350-500

Bradford Watkin
QA/QC
Reviewed

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	BRANDON URQUHART		02/01/2019
HATCH Representative:	Stephane Gicnet		01/02/19

CAT

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material.* *Type:* Geotextile *Location:* SWD-6 0-350
Date of Inspection:	January 24, 2019
Parties Present at Inspection	Allnorth, Stephane Gionet

Comments:

An inspection of the Geotextile *material placement was conducted.*

Section 0-350

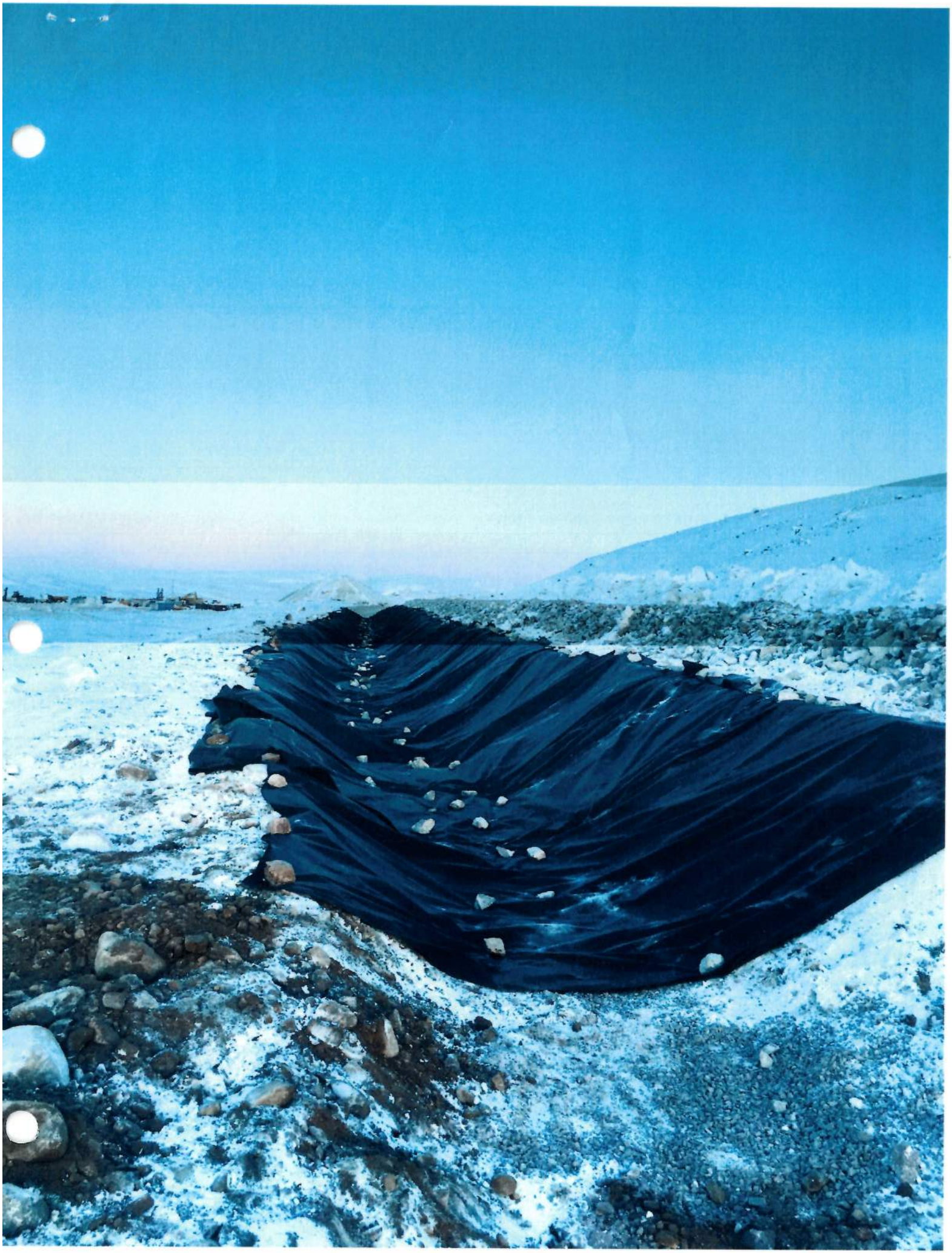
The grade, elevation and compaction were found to be acceptable.

Bradford Watkin
QA/QC
Reviewed

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	BRANDON URQUHART		02/01/2019
HATCH Representative:	Stephane Gionet		01/02/19



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NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material.* *Type:* Geotextile *Location:* SWD-6 350-500
Date of Inspection:	January 31, 2019
Parties Present at Inspection	Allnorth Stephane Grenet

Comments:

An inspection of the Geotextile *material placement was conducted.*

Section 350-500

Bradford Watkin
QA/QC
Reviewed

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	BRANDON VROOMEN		02/01/2019
HATCH Representative:	Stephane Grenet		01/02/19

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HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material.* *Type:* Type 8 *Location:* SWD-6
Date of Inspection:	January 31, 2019
Parties Present at Inspection	Allnorth, Stephane Gionet

Comments:

An inspection of the Type 8 *material placement was conducted.*

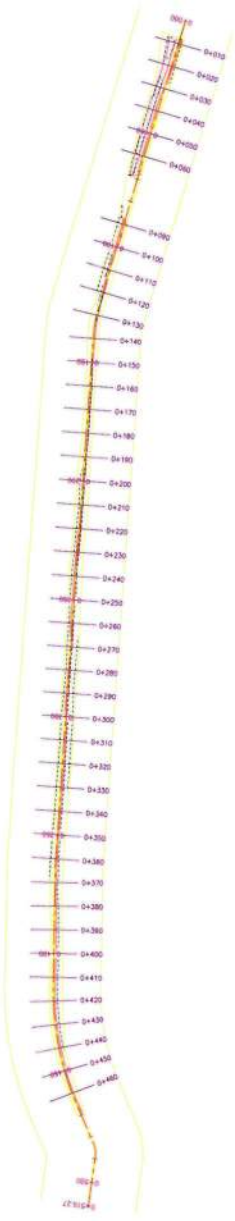
The grade, elevation and compaction were found to be acceptable.

Bradford Watkin
QA/QC
Reviewed

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		02/01/2019
HATCH Representative:	Stephane Gionet		01/02/19



0 30 60 Meters

REV	YY/MM/DD	DESCRIPTION	DRWN	APVD

CLIENT: HATCH

Allnorth

TITLE: Storm Water Ditch 6 Type 8 Asbuilt Overview

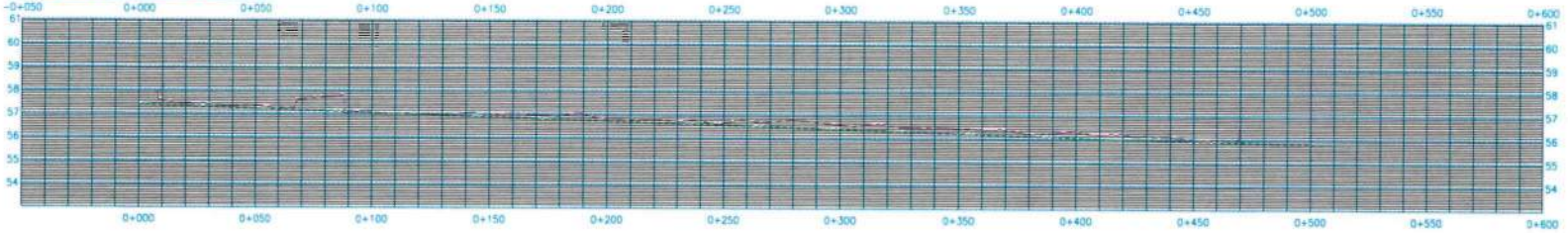
CLIENT NO.	185/0001	DRWN	PCN	DATE 18/01/30
PROJECT NO.		DSGN		DATE
DRAWING SIZE	ANSI "D"	CHKD		DATE
SCALE	AS NOTED	APVD		DATE

PROJECT: Baffinland Iron Mines Mary River Expansion Project

DWG NO: 180130PCN002-1

REV: 0

PROFILE VIEW: ALIGNMENT-1



REFERENCE DRAWINGS

DRAWING NO.	DRAWING DESCRIPTION/TITLE	REV
		1

REV	YY/MM/DD	DESCRIPTION	DRWN	APVD

CLIENT: HATCH / Allnorth

TITLE: Storm Water Ditch 6 Type 8 Asbuilt Profile

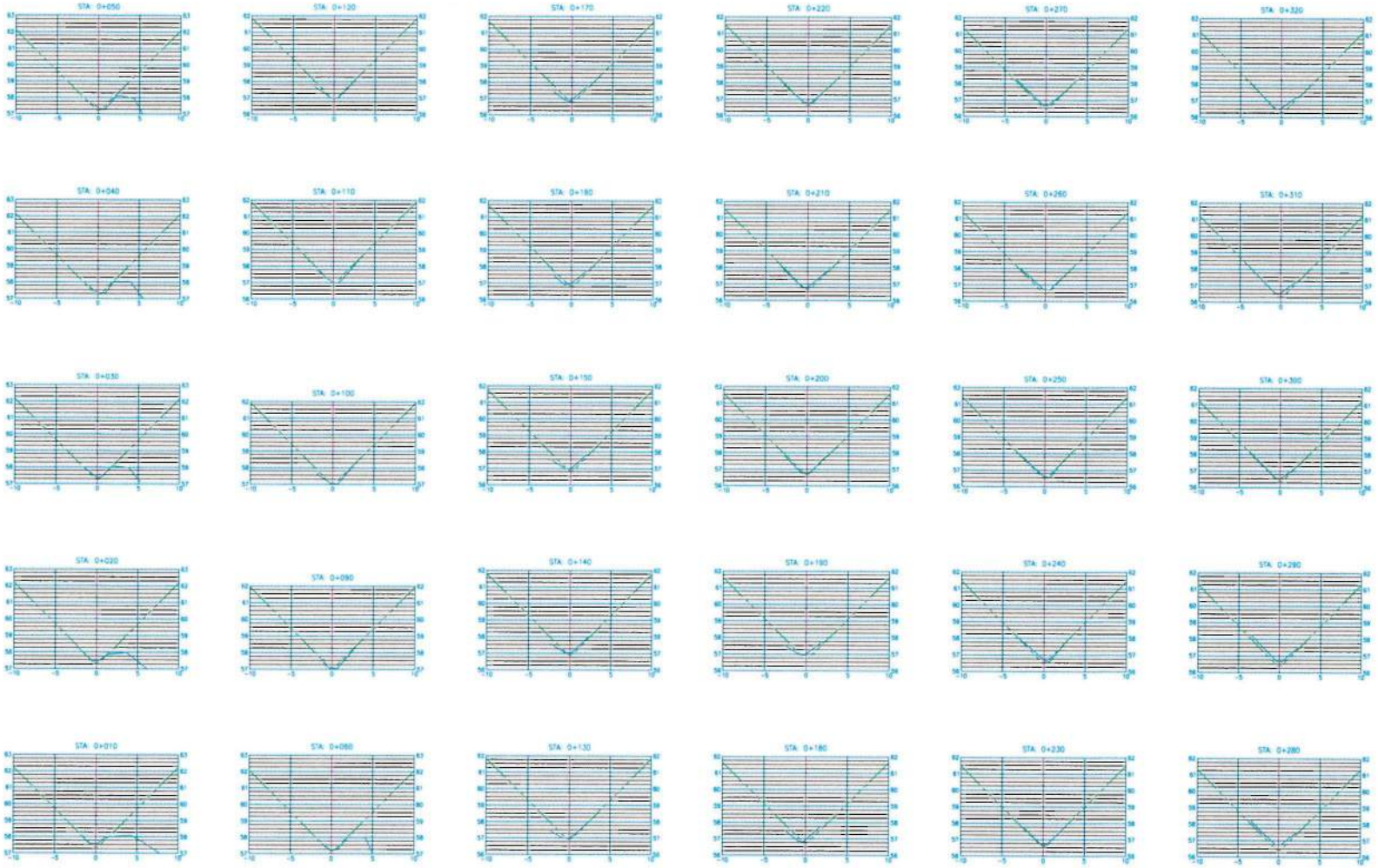
CLIENT NO	180PR01	DRWN	PCN
PROJECT NO		DSGN	
DRAWING SIZE	ANSI 'D'	CHKD	
SCALE	AS NOTED	APVD	

DATE: 19-01-30

PROJECT: Baffinland Iron Mines Mary River Expansion Project

DWG NO: 180130PCN002-2

REV: 0



REFERENCE DRAWINGS

DRAWING NO.	DRAWING DESCRIPTION/TITLE	REF

REV	YY/MM/DD	DESCRIPTION	DRWN	APVD

CLIENT: HATCH

Allnorth

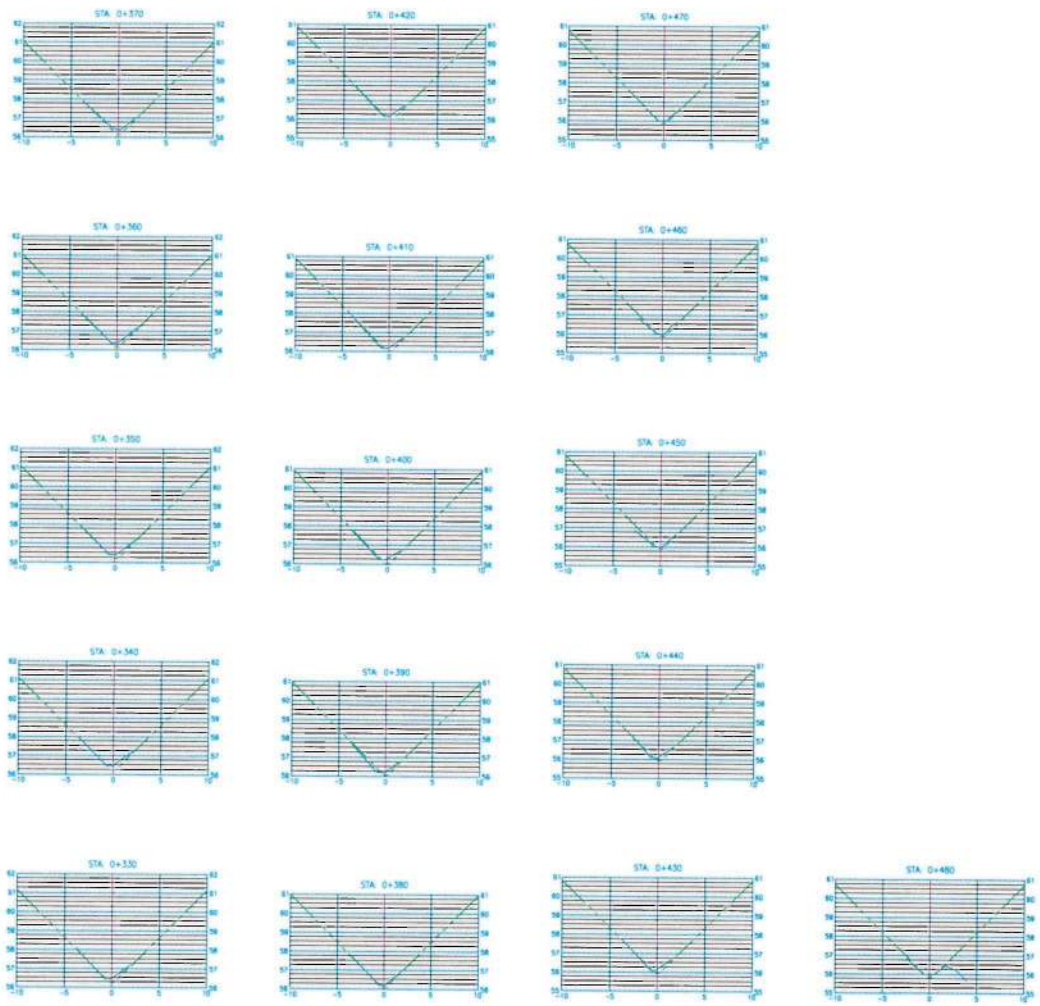
TITLE: **Storm Water Ditch 6 Type 8 Asbuilt Cross Sections 0+010 - 0+320**

CLIENT NO.	DRAWING	DRWN: PCN	DATE: 15/01/30	
PROJECT NO.		DSGN: -	DATE: -	
DRAWING SIZE:	ANSI 'D'	CHKD: -	DATE: -	
SCALE:	AS NOTED	APVD: -	DATE: -	

PROJECT: **Baffinland Iron Mines Mary River Expansion Project**

DWG NO: **180130PCN002-3**

REV: **0**



REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
		1

REV	YY/MM/DD	DESCRIPTION	DRWN	APVD

CLIENT

HATCH

Allnorth

TITLE

Storm Water Ditch 6
Type 8 Asbuilt
Cross Sections 0+330 - 0+480

CLIENT NO	185/XXXX	DRWN	PCN	DATE	19/03/30
PROJECT NO	-	DSGN	-	DATE	-
DRAWING SIZE	ANSI "D"	CHKD	-	DATE	-
SCALE	AS NOTED	APVD	-	DATE	-

PROJECT

Baffinland Iron Mines
Mary River Expansion Project

DWG NO **180130PCN002-4** REV **0**

NUNA

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(Section 11)

Walkdown

NUNA EAST LTD	WALKDOWN REPORT	Exhibit 5 Revision 0

WALKDOWN ATTENDEES LIST	(Page 1 of 1)

Project Name: Mary River Expansion	**Contractor's Name:** Nuna East Ltd.	**Job File No.:** CC006-0009A
System CWP Description: Milne Port Stormwater Diversion SWD-6	**Location:** East of Quarry access road.	**Plant No.:** N/A

This record indicates that this system was formally walked down and inspected in the field by the undersigned on the date as indicated below

Name	Company Name	Role	Signature	Date *(mm/dd/yy)*
BRADFORD WATKIN	NUNA EAST	QC		5/27/19
ROY BAMON	ATCIT	SUPERINTENDENT		5/27/19

NUNA

NUNA EAST LTD

(Section 12)

Deficiency/Punchlist

DEFICIENCY / PUNCH ITEMS RECORD

Project Name: Mary River Expansion	**Walkdown Date (mm/dd/yy):** 5-14-19	**Area Number:** N/A
Area Name or Area Description: Stormwater Diversion SWD-6	**Job Number:** CC006-0009A	**Plant Number:** N/A

PURPOSE:

1. **For modules and vendor packages, open punch items are listed at release for shipment.**
2. **As part of a final walkdown package, this form lists the Contactor's open punch items that are transferred into the Nuna Turnover database**
3. **This form is used to capture Punch Items during Final Walkdown**

Tag Number	Description of Deficiency / Punch Item	Cat.	Discipline	Originator	Responsible for resolution	Vendor Y/N	Remarks
	No deficiencies found						

Punch Item Categories captured during Final Walkdown: A, B or C. A- To be rectified before final acceptance. B- To be addressed at a later time. C- Acceptable to be As-Built

NUNA

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(Section 13)

Acceptance of Completion of Construction

ACCEPTANCE OF COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the acceptance of the Quality Control Turnover documentation for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Ore Mines
2. **Contractor:** Nuna East Limited
3. **Construction:** Stormwater Diversion Installation
4. **Location:** Port Site
5. **Description:** Installation of Stormwater diversion Berm & Trench P-SWD-6

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turnover documentation has been forwarded to and accepted by the owner.

Nuna Representative:

Signature	Print Name	Title	Date
	BRANDON WATKIN	QC COORDINATOR	

Client Representative:

Signature	Print Name	Title	Date

NUNA

NUNA EAST LTD

(Section 14)

Construction Photographs

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH™

Baffinland – Milne Port Earthworks H353004-CC006

Job File Photographs

SWD-6

HATCH **Vendor/Contractor Document Review**

Doc Number	E353004-CC006-130-124-0007	**SUB**	02
Date Received			

Review Grade	**Next Submittal Status**
☐ **C1** - Proceed to next submission & status ☐ **C2** - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ **C3** - Do not proceed. Revise as noted & resubmit	☐ Internal Review
Next Submittal Date:	☐ Certified/☐ As-Built

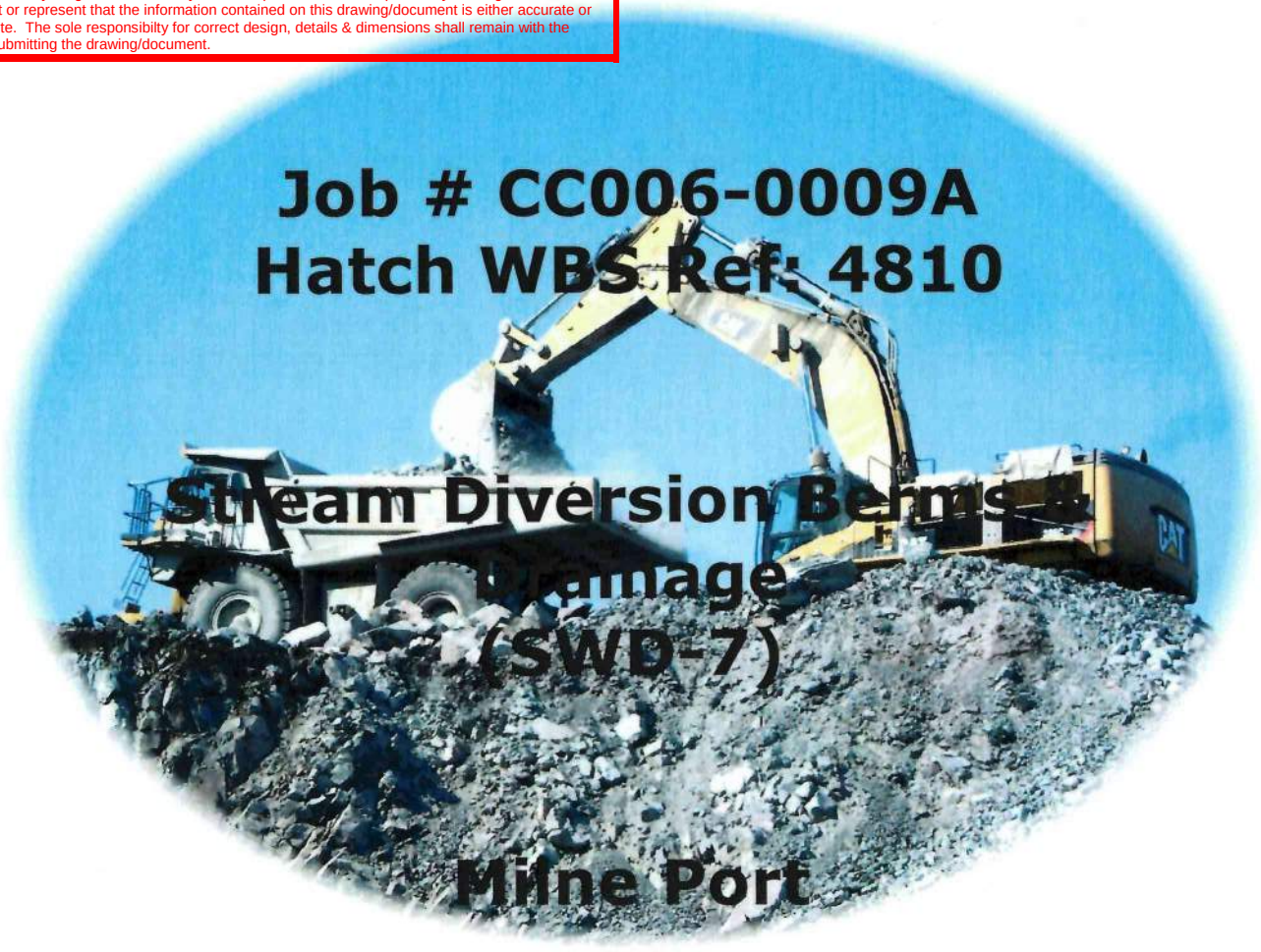
☒ **C4** - No further submission required - Complete (select status below)

☐ Certified Final ☒ Final ☐ Cancelled ☐ Superseded

Package Engineer: Name, signature and date

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibilty for correct design, details & dimensions shall remain with the party submitting the drawing/document.

NUNA EAST LTD



Job # CC006-0009A
Hatch WBS Ref: 4810

Stream Diversion Berms - Damage (SWD-7)

Mine Port

CC006

NUNA

NUNA EAST LTD

Job #:

CC006-0009A

SWD-7

Mary River Expansion Project

H353004

Port Site Civil Works

09Section 1
Completion of Construction Declaration / Transfer of Care, Control & Custody

Section 2
Inspection & Test Plan (ITP)

Section 3
Redline / As-Built Drawings

Section 4
Survey Data Documentation

Section 5
Sieves / Statements of Compliance

Section 6
Request for Information Documents (RFIs)

Section 7
Non-Conformance Reports (NCRs)

Section 8
Land Disturbance Form (LDF)

Section 9
Signature Log

Section 10
Quality Control Documents

Section 11
Walkdown

Section 12
Deficiency/Punchlist

Section 13
Acceptance of Completion of Construction Declaration

Section 14
Construction Photographs

NUNA

NUNA EAST LTD

(Section 1)

Completion of Construction Declaration / Transfer of Care, Control & Custody (TCCC) Forms

COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Mines Corporation
2. **Contractor:** Nuna East Limited
3. **Construction:** Stormwater Diversion Installation
4. **Location:** Port Site
5. **Description:** Installation of Stormwater diversion Berm & Trench P-SWD-7

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turn over documentation has been forwarded to the owner.

	Bradford Watkin	QC Coordinator	9/1/19
(Signature)	(Print Name)	(Title)	(Date)
Nuna East Ltd.	14, 6194 – 50 Street NW Edmonton, AB, CA		T6B 2N7
(Company)	(Address)		(City, Postal Code)

Transfer of Care, Custody and Control

FROM GROUP "A"	NUNA EAST LTD.	**Job File No.:**	CC006-0009A
To Group "B"	Hatch Engineering	**WBS No.:**	4810
Location:	East of Freight Dock	**Date:**	May 16, 2019

ORIGINATING JOB FILE NO. DETAILS:	Construct a Stormwater Diversion Ditch Involving: • SNOW, ICE REMOVAL; • ESTABLISHING A SUB-GRADE ; • PLACEMENT OF GEOTEXTILE; • AGGREGATE PLACEMENT.
Comments:	1. An additional diversion berm was installed for the Environment dept. and will be captured of the Redline/As-Built drawing. 2. There was an elimination of the Key section of filter stone @ section D-D, see Redline /As-Built for details.

THIS IS NOTICE TO GROUP "B" HATCH ENGINEERING THAT THE FOLLOWING WORK/MATERIAL AS PER P.O./CONTRACT IS/ARE BEING TRANSFERRED BY GROUP "A" NUNA EAST LTD. AND IS/ARE BEING FULLY ACCEPTED BY GROUP "B" HATCH ENGINEERING FROM GROUP "A" NUNA EAST LTD.
WITH EXCEPTIONS AS LISTED BELOW (IF ANY).

Description: No exceptions noted.	**Reference Drawing(s):** H353004-40000-228-271-0008-0001 Rev 1.

EXCEPTIONS:	**DATE CORRECTED:**	**SIGNED OFF:**
1.		
2.		

"Exceptions Accepted and released"

From Group "A": Nuna East Ltd.

Date: 5/27/19

Print Name: BRADFORD WATKIN Signature:

To Group "B": Hatch Engineering.

Date: 27-MAY-2019

Print Name: ROY BAKER Signature:

I CONFIRM THE CONDITIONS LISTED BELOW HAVE BEEN MET (WITH NOTED EXCEPTIONS OR DEFICIENCIES) AND RELEASE OF CARE, CUSTODY AND CONTROL OF THE ITEM(S) LISTED ABOVE TO THE RECIPIENT.

☑ All requests for Inspection are complete and all issues are resolved.

☑ All deficiencies have been resolved.

☑ All Redlines / As-Builts have been received.

☑ All relevant manuals and vendor data have been received.

Client Representative:

Name: ROY BAKER Signature:

Date: 27-JUN-2019

NUNA

NUNA EAST LTD

(Section 2)

Inspection & Test Plan (ITP)

Nuna Logistics Limited
Package Dividers

NUNA EAST LTD	QUALITY MANAGEMENT SYSTEM INSPECTION &TEST PLAN (Civil / Structural Installations)	Exhibit 1.0 Revision 0 Page 1 of 6

CLIENT: Hatch	**ITEM / DESCRIPTION / SCOPE:** Stormwater Diversion Ditch **P-SWD-7** / Water Diversion Ditch / Earthworks material production, Haulage, Placement, & Compaction.	**NUNA ITP NO.:** CC006-0009A	**REVISION NO.: 1**
CONTRACTOR: Nuna East Ltd.		**AFFILIATED SUB-CONTRACTOR(S):** N/A	
CONTACT PERSON: Bradford Watkin	**CONTACT INFORMATION:** bradfordw@nunalogistics.com	**DATE:** May 9, 2019	
CONTRACT No.: H353004-CC006	**HATCH PROJECT NUMBER:** H353004-CC006	**HATCH DOCUMENT TITLE:** Mary River Expansion Project-Remaining Early Earthworks	
NUNA JOB No.: CC006-0009A	**PURCHASE ORDER No.:** N/A	**PROJECT MANAGER(s):** Chris Petrovic / Stephen Nugent	
LOCATION(S): Milne Port Site		**LEGEND:** **H:** A mandatory hold on manufacturer until release by inspector or official waiver from client. **M:** Inspection stage by inspector on a spot basis, but not a mandatory hold point. **HR:** A mandatory hold / review & acceptance / approval of the specified documentation. **W:** To be informed and invited to inspect. Construction to continue if inspector does not attend. **R:** Review of report / certifications. **A:** Audit (Review at Random).	
CWP No.: N/A			

Approved For Construction

Stephen Nugent		May 29, 2019
Nuna Project Manager / Engineer (Print)	Signature	Date
Bradford Watkin		May 29, 2019
Nuna Quality Representative (Print)	Signature	Date
Hatch Representative (Print)	Signature	Date

HATCH Vendor/Contractor Document Review

Doc Number	E353004-CC006-130-051-0018	SUB	02
Date Received			

Review Grade	Next Submittal Status
☐ C1 - Proceed to next submission & status ☐ C2 - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ C3 - Do not proceed. Revise as noted & resubmit	☐ Internal Review ☐ Certified/☐ As-Built
Next Submittal Date:	
☐ C4 - No further submission required - Complete (select status below) ☐ Certified Final ☒ Final ☐ Cancelled ☐ Superseded	

Package Engineer: Name, signature and date

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibility for correct design, details & dimensions shall remain with the party submitting the drawing/document.

Hatch Stamp

Final Review

BRADFORD WATKIN		9/1/19
Nuna Quality Representative (Print)	Signature	Date
Hatch Quality Representative (Print)	Signature	Date

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	*Description of Activities* *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	*Functional Responsibility*	*Quality Control Activity*	*Verification Frequency*	*Reference Document(s)/ Controlling Procedure*	*Acceptance Criteria*	*Verification Document(s)* *(Reporting)*	Type	Initials	Date *(mm/dd/yy)*	Type	Initials	Date *(mm/dd/yy)*	Type	Initials	Date *(mm/dd/yy)*	*Comments*
1.	Contract Review / Approval	NUNA	Review / Verify Document	Prior to project start	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract				R	BJ	5/29/19	R			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
2.	Approval of ITP	NUNA / HATCH Representatives	Review	Prior to start	NUNA Quality System Manual	Signed ITP by Client representative, NUNA Quality System Manual	Signed acceptance of document (Exhibit 1.0)				HR	BW	5/31/19	HR			
3.	Scope and Associated Documents	NUNA	Review For Errors	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R	BW	5/29/19	R			
4.	Land Disturbance Approval obtained	NUNA	Review	Prior to start	BIM Environmental Protection Plan	IFC Drawings & Client contract scope, BIM Environmental Protection Plan	Land Disturbance Form BAF-PH1-830-P16-0008				HR	BW	5/3/19	HR			
5.	Work Method of Statement	NUNA / HATCH	Review	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R	BW	9/1/19	HR			N/A
6.	Signature Log	NUNA	Review, obtain signatures	Ongoing	NUNA Quality System Manual	NUNA Quality System Manual	NUNA Signature Log				R	BW	9/1/19	R			
7.	Initial Survey Layout	NUNA / ALL NORTH	Cross Check of IFC Layout	Ongoing	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				HR	BW	5/21/19	HR			
8.	Materials verification	NUNA	Review	As required	IFC Drawings, Hatch Spec. 280-078-0002 Rev 0, ASTM C-136	IFC Drawings, Hatch Spec.280-078-0002 Rev 0, ASTM C-136	Sieve Test Reports, ~~QSRs~~ BW				HR	BW	5/13/19	HR			• Type 22 ~~Filter~~ Rock - 60-300Kg • Armour – 1000-3000Kg - TYPE 22 - TYPE C
9.	RFI	NUNA	Resolution of RFIs	As required	NUNA Quality System Manual	Disposition, Approved, closed and log updated	RFIs				HR	BW	5/21/19	R			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
10.	Clearing of works location completed	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W		5/14/19	W			• Snow / Ice removal / Disposal
11.	Subgrade foundation preparation completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W		5/14/19	W			• Compaction
12.	Placement of Geotextile cloth (Layfield LP7 or equivalent) completed	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W		5/14/19	W			
Filter Rock 60-300Kg																	
13.	Filter Rock Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W		5/13/18	HR			• 60-300Kg Filter Rock • Including Section B-B
14.	Compaction of Filter Rock Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W		5/13/18	W			
15.	Survey of Filter Rock Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR		5/13/18	W			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
Armour 1000-3000Kg																	
16.	Armour Rock Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				**W**		5/15/19	**W**			• 1000-3000Kg Armour Rock
17.	Survey of Filter Rock Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				**HR**		5/15/19	**HR**			
Erosion Protection Apron																	
18.	Placement of Geotextile cloth under erosion protection apron completed	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				**W**		5/16/19	**W**			• Layfield LP7 or equivalent
19.	300mm Riprap placement on erosion protection apron completed	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				**W**		5/16/19	**W**			• Above geotextile.
20.	As built Survey	NUNA	Review	Continuous During Operations	IFC Drawings	IFC Drawings, Hatch Specifications	As built Drawings & Data				**HR**		5/27/19	**HR**			
21.	Final Walk down	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Contract Requirements	Final Walkdown Attendees' Report				**W**		5/27/19	**HR**			
22.	Deficiency List / Punch list generated	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per contract Requirements	Item form punch list items resolved				**HR**		5/14/19	**HR**			no DEFICIENCIES
23.	NCR's closed.	NUNA / HATCH	Review of NCRs, Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Requirements	NCR log cleared				**HR**		9/24/19	**HR**			no NCRS

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s)*** *(Reporting)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
24.	As-built / Redline drawings completed.	NUNA	Review / Verify	Post Final Walk down	IFC Drawings, Contract	As-builts / Redlines to Reflect All Field Changes	As-builts / Redlines				**HR**		15/19	**HR**			
25.	Final Acceptance and ITP Sign off	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP (Exhibit 1.0)				**HR**			**HR**			
26.	Inspection Acceptance and Sign-Off Form signed by Engineer of record.	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP, Acceptance of Completion of Construction Form				**HR**			**HR**			
27.	Turnover package completed and sent to client.	NUNA	Review / Verify	Post project completion	NUNA Quality System Manual, IFC Drawings, Contract	Contract, Code & applicable specifications.	Quality Management System Quality Control Turnover package.				**HR**			**R**			

Note: Nuna ITP Sign-Offs based on supporting documentation.

Comments:

ITP ISSUE APPROVALS

Stephen Nugent	Site Project Manager		May 29, 2019
Nuna Contractor Project Manager / Engineer *(Print)*	Title	Signature	Date *(mm/dd/yy)*
Bradford Watkin	QC Coordinator		May 29, 2019
Nuna Contractor Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

ITP CLOSEOUT AND WORK ACCEPTANCE APPROVALS

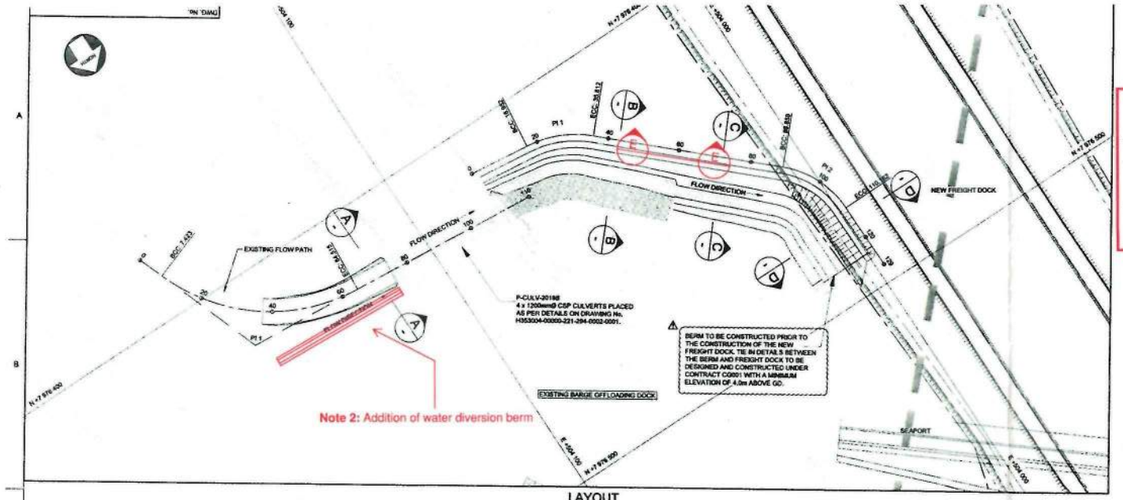
Nuna Contractor Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

NUNA

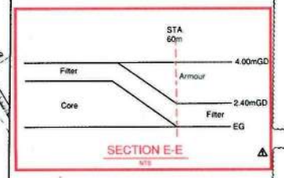
NUNA EAST LTD

(Section 3)

Redline / As-Built Drawings



LAYOUT
SCALE 1:500



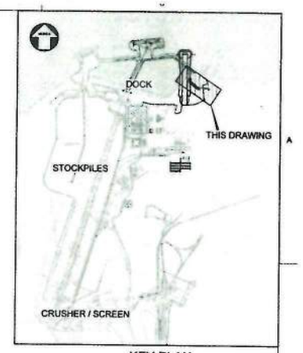
SECTION E-E
NTS

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTSAT (2016)
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS AND ELEVATIONS ARE IN METERS CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS ARE IN METERS UNLESS NOTED OTHERWISE.
5. THE CULVERTS ARE CONSIDERED FISH BEARING AND THEREFORE ONE OF THE PIPES SHALL BE PLACED 120mm LOWER THAN THE REST AS PER THE DETAILS ON DRAWING No. H353004-00000-221-294-0001
6. ALL DESIGNS ARE SUBJECT TO CHANGE PENDING AN ENVIRONMENTAL DESIGN CRITERIA TO BE ISSUED BY THE CLIENT.
7. LEVELS ON THIS DRAWING ARE SHOWN AS GEODETIC DATUM.

LEGEND:

EG	EXISTING GROUND
CH	CHAINAGE
GD	GEODETIC DATUM
L	LENGTH
R	RADIUS
DA	DEFLECTION ANGLE
TL	TANGENT LENGTH
AL	ARC LENGTH
BCC	BEGINNING OF CURVE
ECC	END OF CURVE
PI	POINT OF INTERSECTION
CHWL	CULVERT HEAD WATER LEVEL
HAT	HIGHEST ASTRONOMICAL TIDE
FB	FREE BOARD
	FLOW DIRECTION
	DIVERSION CENTER LINE



KEY PLAN

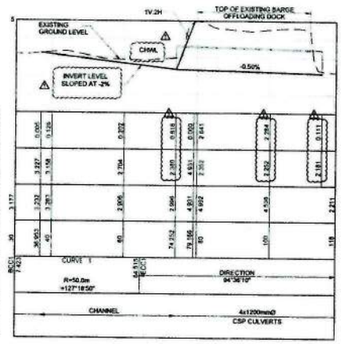
BERM NOTES:

1. REFERENCES:
   - H353004-00000-221-078-0001 PLACEMENT OF FILL
   - H353004-00000-280-078-0002 QUARRIED FILL MATERIAL REQUIREMENTS
   - BIM-BD-CA-DE-ON-51001 ORE DOCK CAUSEWAY HYDRAULIC DESIGN
   - BIM-BD-FD-DE-ON-59002 FREIGHT DOCK EXPANSION BASIS OF DESIGN
2. GEOTEXTILE 18-IN TO SITE DETAIL AND APPROVED BY ENGINEERING REPRESENTATIVE.
3. DIVERSION BERM TO BE TIED INTO THE EXISTING BARGE OFFLOADING DOCK SIDE SLOPE BY MINIMUM 1.0m.
4. DIVERSION BERM NEEDS TO BE TIED INTO NEW BARGE OFFLOADING DOCK TO PREVENT EROSION FOCAL POINT FORMING BETWEEN STRUCTURES.
5. EXISTING GROUND TO BE MODIFIED TO ENSURE THAT MINIMUM LAYER THICKNESSES ARE ADHERED TO.
   - FILTER LAYER MINIMUM THICKNESS 900mm
   - ARMOUR LAYER MINIMUM THICKNESS 1900mm
6. BERM TO BE CONSTRUCTED PRIOR TO NEW FREIGHT DOCK.

SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 0.000

DEPTH TO INVERT (m)	0.000	0.326	0.322	0.818	0.500	2.641	2.294	3.111
INVERT LEVELS (m)	3.827	3.158	3.794	2.331	4.531	2.353	2.352	2.181
GROUND LEVELS ON CL (m)	3.177	3.232	3.261	3.976	2.994	4.831	4.646	4.739	5.271
DISTANCE (m)	36.953	40	80	74.152	79.795	80	100	118
HORIZONTAL ALIGNMENT	BCC1	CURVE 1 R=50.0m =127°18'00"	DIRECTION 84°36'10"	DIRECTION 94°36'10"	CURVE 2 R=50.0m =127°18'00"	ECC2
CHANNEL SECTION	CHANNEL	4x1200mmØ CSP CULVERTS



DITCH AND CULVERT LONGITUDINAL SECTION

CULVERT SCHEDULE

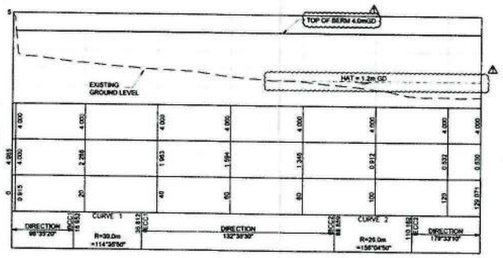
(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DWG. No. H353004-00000-221-294-0001-0001-TYPICAL CULVERT DETAILS

CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	CULVERT AT UPSTREAM NORTHING	CULVERT AT UPSTREAM EASTING	CULVERT AT UPSTREAM U/S INV. ELEV (m)	CULVERT AT UPSTREAM RIP RAP REQ'D	CULVERT AT DOWNSTREAM NORTHING	CULVERT AT DOWNSTREAM EASTING	NOTE: FINAL U/S INVERT AND D/S INVERT LEVELS ARE TO BE CONFIRMED ON SITE D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)
P-CULV-20188	Y	4	1200	38.569	120	4300	CSP	7979422.050	5041113.15	2.380	Y	7979425.263	5040073.294	2.181	Y	500	4.800	0.500	90

SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 0.000

TOP OF BERM LEVELS (m)	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
GROUND LEVELS ON CL (m)	4.000	2.788	1.963	1.994	1.345	0.912	0.592	0.830	1.291
DISTANCE (m)	0.913	20	40	60	80	100	120	129.071
HORIZONTAL ALIGNMENT	DIRECTION 90°00'00"	CURVE 1 R=30.0m =114°35'50"	DIRECTION 132°35'50"	CURVE 2 R=26.0m =136°04'50"	DIRECTION 179°33'10"



BERM LONGITUDINAL SECTION

BERM LEGEND:

ARMOUR: 1000-3000Kg ARMOUR ROCK
FILTER: 60-300Kg FILTER ROCK
CORE: TYPE2 600mm MINUS SELECTED CRUSHED ROCK FILL
GEOTEXTILE: LAYFIELD LP7 OR APPROVED EQUIVALENT

Note 1: Elimination of filter material "Key" as per RFI-0036.
Note 2: Addition of Diversion Berm for water management.
Note 3: Erosion protection apron installation delayed due to original culvert elevation issue, new culverts to be installed post sealift and apron to be completed at that time. (Although Section A-A was brought to Subgrade elevation to allow water flow to culverts).

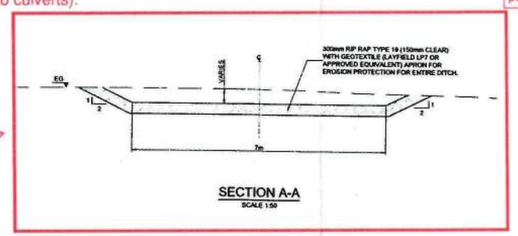
SETTING OUT DATA - DITCH AND CULVERT

NAME	CH	E	N	DETAILS
START	0.000	504108.381	7978381.536	L 7.423m
BCC1	7.423	504105.848	7978368.512	R 50.000m
PI1		504154.876	7978419.894	DA 85° 27'20"
ECC1	84.515	504122.866	7978421.271	TL 52.113m
				AL 57.092m
END	118.091	504069.463	7978425.571	L 53.576m

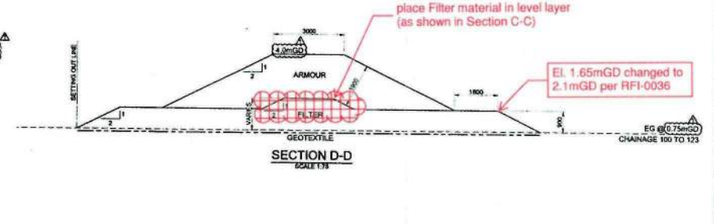
SETTING OUT DATA - BERM

NAME	CH	E	N	DETAILS
START	0.000	504078.014	7978411.897	L 18.952m
BCC1	18.952	504052.173	7978413.042	R 30.000m
PI1		504052.485	7978414.761	DA 38°01'10"
ECC1	35.812	504045.306	7978421.383	TL 9.733m
				AL 18.860m
BCC2	88.859	504008.253	7978457.225	R 26.000m
PI2		503997.954	7978464.918	DA 46°50'40"
ECC2	110.162	503997.865	7978478.207	TL 11.200m
				AL 21.302m
END	129.071	503997.717	7978495.116	L 18.910m

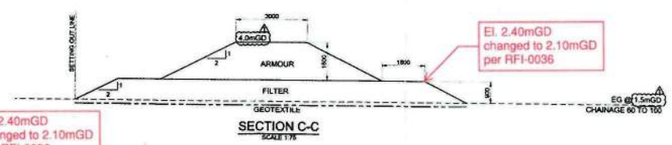
Note 3:



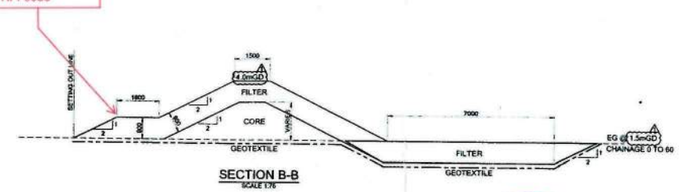
SECTION A-A
SCALE 1:50



SECTION D-D
SCALE 1:75



SECTION C-C
SCALE 1:75



SECTION B-B
SCALE 1:75

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT
NAME/SIGN: Bradford Watkin COMPANY: Nuna East
DATE OF AS-BUILT: May 15, 2019 ☐ CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:

Bradford Watkin QA/QC Reviewed

PERMIT TO PRACTICE HATCH LTD
Signature
Date
PERMIT NUMBER P 012
The Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGA)

BIM-BD-FD-DE-ON-59002	FREIGHT DOCK EXPANSION BASIS OF DESIGN
BIM-BD-CA-DE-ON-51001	ORE DOCK CAUSEWAY HYDRAULIC DESIGN
H353004-00000-280-078-0002	QUARRIED FILL MATERIAL REQUIREMENTS
H353004-00000-221-078-0001	PLACEMENT OF FILL
H353004-00000-221-294-0002-0010	STANDARD DRAWING - EARTHWORKS AND DRAINAGE
DRAWING No.	DRAWING TITLE

REFERENCE DRAWINGS

Released for Use

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	CULVERT INVERT LEVEL LOWERED, DATUM DEFINITION, LEGEND AND NOTES UPDATED	KVDM	FH	24/08/2018
0	APPROVED FOR CONSTRUCTION	FH	HH	09/04/2018

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	K VAN DER MERWE		NR 09/04/2018
DESIGNER	F HUGO		NR 09/04/2018
CHECKER	H HERRIST		2019-05-24
DESIGN COORD	R GOOSEN		2019-05-24
RESP. ENG.	R HAJIM		2019-05-24
LEAD DISC. ENG.	A GROSBELAR		24 September 2019
AREA LEAD	V LAWRIE		24 September 2019
ENG. MANAGER	D STANGER		24 September 2019
AREA MANAGER	T ATIBA		24 September 2019

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
STORMWATER DIVERSION P-SWD-7
PLAN/PROFILE

SCALE 1:500 OR AS NOTED | DWG. No. H353004-40000-228-271-0008-0001 | REV 1

SHEET SIZE E

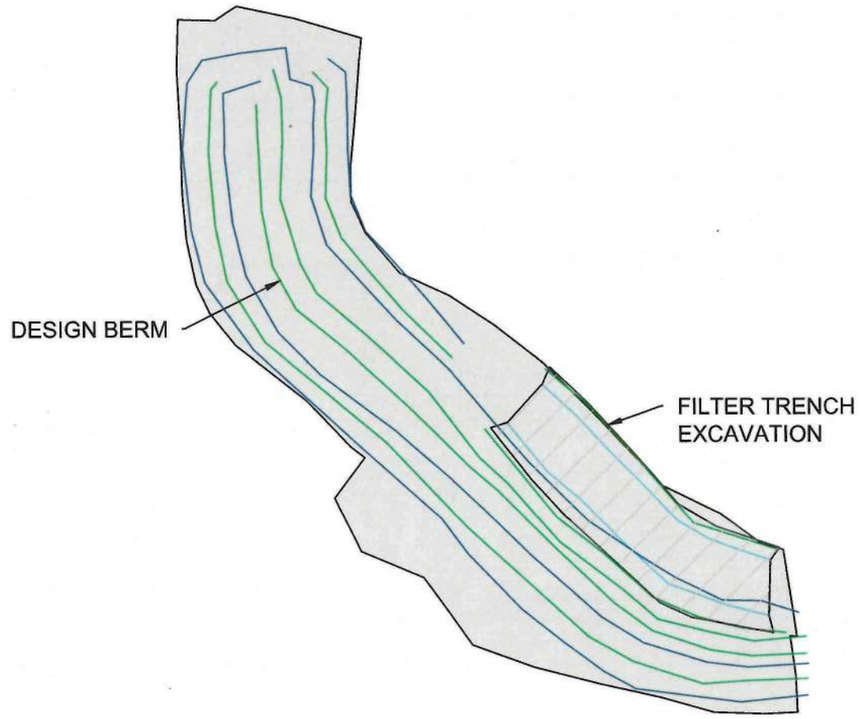
NUNA

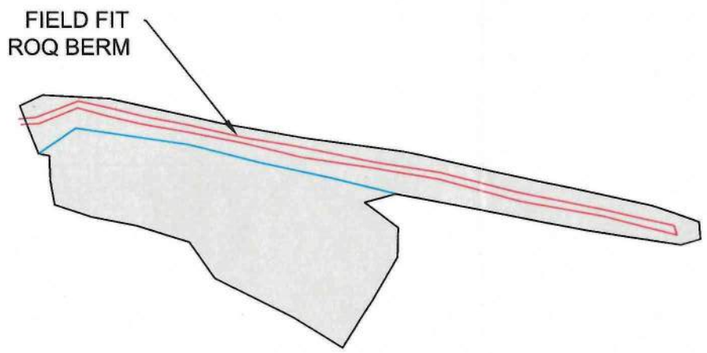
NUNA EAST LTD

(Section 4)

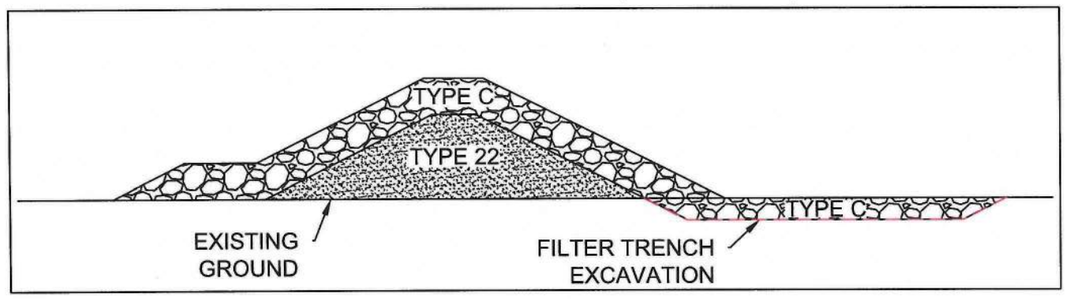
Survey Documentation

Nuna Logistics Limited
Package Dividers





SAMPLE SECTION OF AS-BUILT (NOT TO SCALE)



Bradford Watkin
QA/QC
Reviewed

LEGEND:
- EXISTING GROUND
- FILTER TRENCH EXCAVATION
- TYPE C CREST
- TYPE C TOE
- ROQ CREST
- ROQ TOE

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

SCALE: 1:750

DATE: May 27, 2019

SWD7

DRAWING TITLE:
AS-BUILT SURVEY
SURVEYED UP TO MAY 27, 2019

DRAWING NAME (YYMMDD): 190527 SWD7 AS-BUILT.dwg

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Port Site Stormwater Diversion SWD-7
Existing Ground

SWD-7 Existing Ground Point Data

Point Number	Northing	Easting	Elevation	Description
1122100	7976451.62	504022.148	1.265	EG CREST
1122101	7976448.309	504026.462	1.375	EG CREST
1122102	7976443.076	504030.751	1.412	EG CREST
1122103	7976441.738	504032.579	1.53	EG CREST
1122104	7976440.076	504039.161	1.636	EG CREST
1122105	7976438.383	504044.261	1.683	EG CREST
1122106	7976436.711	504052.06	1.71	EG CREST
1122107	7976435.725	504053.794	1.7	EG CREST
1122108	7976432.364	504057.677	1.725	EG CREST
1122109	7976429.9	504062.99	1.908	EG CREST
1122110	7976424.18	504066.599	2.079	EG CREST
1122111	7976422.513	504072.772	2.033	EG
1122112	7976415.199	504073.817	2.219	EG
1122113	7976416.944	504066.656	2.119	EG
1122114	7976419.008	504058.268	1.955	EG
1122115	7976420.623	504049.521	1.823	EG
1122116	7976420.547	504042.123	1.74	EG
1122117	7976425.028	504034.219	1.613	EG
1122118	7976427.512	504027.094	1.541	EG
1122119	7976430.856	504019.272	1.356	EG
1122120	7976437.603	504015.97	1.284	EG
1122121	7976443.669	504020.509	1.291	EG
1122122	7976438.252	504028.335	1.405	EG
1122123	7976434.143	504035.328	1.52	EG
1122124	7976431.246	504042.286	1.683	EG
1122125	7976428.689	504048.719	1.841	EG
1122126	7976427.683	504056.14	2.04	EG
1122127	7976419.108	504033.236	1.687	EG
1122128	7976416.402	504040.845	1.749	EG
1122129	7976414.226	504049.344	1.849	EG
1122130	7976412.534	504056.888	1.979	EG
1122131	7976410.679	504063.581	2.056	EG
1122132	7976410.491	504069.929	2.151	EG
1122133	7976410.689	504074.002	2.2	EG
3125000	7976430.163	504035.796	1.667	EG SW7
3125001	7976432.914	504031.855	1.582	EG SW7
3125002	7976436.212	504027.393	1.468	EG SW7
3125003	7976439.945	504023.328	1.329	EG SW7
3125004	7976444.011	504018.07	1.382	EG SW7

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Port Site Stormwater Diversion SWD-7
Existing Ground

3125005	7976449.77	504012.504	1.16	EG SW7
3125006	7976453.116	504008.284	0.942	EG SW7
3125007	7976456.65	504003.73	0.978	EG SW7
3125008	7976460.675	504000.504	0.879	EG SW7
3125009	7976464.15	503998.855	0.351	EG SW7
3125010	7976469.74	503997.669	0.63	EG SW7
3125011	7976475.59	503997.159	0.53	EG SW7
3125012	7976482.953	503996.952	0.414	EG SW7
3125013	7976491.096	503996.53	0.284	EG SW7
3125014	7976497.471	503996.683	0.144	EG SW7
3125015	7976497.337	504001.243	0.223	EG SW7
3125016	7976491.569	504001.332	0.27	EG SW7
3125017	7976485.612	504001.826	0.443	EG SW7
3125018	7976479.613	504002.218	0.524	EG SW7
3125019	7976474.565	504002.504	0.63	EG SW7
3125020	7976469.226	504003.989	0.452	EG SW7
3125021	7976465.576	504005.375	0.682	EG SW7
3125022	7976462.164	504008.062	0.881	EG SW7
3125023	7976458.872	504011.682	0.917	EG SW7
3125024	7976455.817	504015.935	1.174	EG SW7
3125025	7976451.481	504021.252	1.201	EG SW7
3125026	7976448.219	504025.5	1.333	EG SW7
3125027	7976444.887	504028.989	1.426	EG SW7
3125028	7976441.162	504032.916	1.468	EG SW7
3125029	7976440.989	504035.271	1.513	EG SW7
3125030	7976441.881	504035.242	1.386	EG SW7
3125031	7976442.803	504033.366	1.201	EG SW7
3125032	7976447.536	504028.667	1.007	EG SW7
3125033	7976447.33	504027.243	1.335	EG SW7
3125034	7976450.555	504023.326	1.23	EG SW7
3125035	7976451.819	504023.595	0.99	EG SW7
3125036	7976455.234	504019.719	1.09	EG SW7
3125037	7976454.726	504019.01	1.157	EG SW7
3125038	7976457.643	504015.599	0.897	EG SW7
3125039	7976445.86	504034.811	1.132	EG SW7
3125040	7976450.428	504038.15	1.052	EG SW7
3125041	7976454.405	504042.272	1.144	EG SW7
3125042	7976459.125	504036.105	1.066	EG SW7
3125043	7976454.687	504032.72	0.986	EG SW7
3125044	7976450.415	504028.784	1.036	EG SW7
3125045	7976454.138	504023.309	0.924	EG SW7
3125046	7976458.917	504027.331	0.933	EG SW7

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Port Site Stormwater Diversion SWD-7
Existing Ground

3125047	7976462.775	504030.463	0.95	EG SW7
3125048	7976465.593	504024.29	0.93	EG SW7
3125049	7976461.843	504021.29	0.892	EG SW7
3125050	7976458.266	504018.049	0.928	EG SW7
3125051	7976463.966	504011.633	0.692	EG SW7
3125052	7976467.423	504015.852	0.698	EG SW7
3125053	7976470.68	504019.93	0.691	EG SW7
3125054	7976474.606	504018.16	0.612	EG SW7
3125055	7976473.22	504012.466	0.616	EG SW7
3125056	7976470.931	504006.208	0.64	EG SW7
3125057	7976476.531	504004.293	0.446	EG SW7
3125058	7976478.322	504010.325	0.482	EG SW7
3125059	7976479.027	504018.133	0.536	EG SW7
3125060	7976485.492	504018.73	0.509	EG SW7
3125061	7976485.686	504009.87	0.407	EG SW7
3125062	7976485.376	504003.623	0.344	EG SW7
3125063	7976492.695	504004.279	0.367	EG SW7
3125064	7976492.482	504010.793	0.32	EG SW7
3125065	7976492.169	504019.241	0.486	EG SW7
3125066	7976495.094	504019.54	0.565	EG SW7
3125067	7976497.575	504011.175	0.344	EG SW7
3125068	7976499.122	504003.942	0.297	EG SW7
3128100	7976419.909	504153.035	2.952	SWD7 EAST EG
3128101	7976416.803	504157.246	3.14	SWD7 EAST EG
3128102	7976412.313	504155.102	3.078	SWD7 EAST EG
3128103	7976416.228	504147.531	2.972	SWD7 EAST EG
3128104	7976421.447	504148.99	2.928	SWD7 EAST EG
3128105	7976424.566	504141.564	2.872	SWD7 EAST EG
3128106	7976419.508	504138.572	2.616	SWD7 EAST EG
3128107	7976421.634	504131.304	2.515	SWD7 EAST EG
3128108	7976427.202	504133.314	2.676	SWD7 EAST EG
3128109	7976428.976	504125.659	2.521	SWD7 EAST EG
3128110	7976425.019	504124.082	2.395	SWD7 EAST EG
3128111	7976425.435	504117.395	2.385	SWD7 EAST EG
3128112	7976429.88	504117.924	2.396	SWD7 EAST EG
3128113	7976429.337	504115.234	2.415	SWD7 EAST EG
3128114	7976425.722	504113.47	2.341	SWD7 EAST EG
3128115	7976422.634	504113.545	2.058	SWD7 EAST EG
3128116	7976419.633	504114.107	2.165	SWD7 EAST EG
3128117	7976418.098	504118.725	2.22	SWD7 EAST EG
3128118	7976422.142	504119.813	2.181	SWD7 EAST EG
3128119	7976421.856	504125.514	2.278	SWD7 EAST EG

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3128120	7976417.039	504124.336	2.331	SWD7 EAST EG
3128121	7976414.978	504130.977	2.411	SWD7 EAST EG
3128122	7976420.347	504133.222	2.329	SWD7 EAST EG
3128123	7976417.841	504138.953	2.358	SWD7 EAST EG
3128124	7976413.956	504136.779	2.443	SWD7 EAST EG
3128125	7976410.47	504134.203	2.635	SWD7 EAST EG
3128126	7976409.139	504140.315	2.644	SWD7 EAST EG
3128127	7976411.827	504141.636	2.486	SWD7 EAST EG
3128128	7976414.79	504143.233	2.542	SWD7 EAST EG
3128129	7976412.07	504148.56	2.536	SWD7 EAST EG
3128130	7976410.652	504147.165	2.626	SWD7 EAST EG
3128131	7976405.471	504144.244	2.774	SWD7 EAST EG
3128132	7976401.793	504150.231	2.739	SWD7 EAST EG
3128133	7976405.701	504152.655	2.84	SWD7 EAST EG
3128134	7976407.704	504153.971	2.593	SWD7 EAST EG
3128135	7976408.922	504154.64	2.989	SWD7 EAST EG
3128136	7976413.036	504157.147	3.176	SWD7 EAST EG
4115001	7976431.712	504069.672	1.847	EG
4115002	7976435.529	504064.565	1.649	EG
4115003	7976439.067	504057.295	1.428	EG
4115004	7976447.845	504048.867	1.249	EG
4115005	7976453.422	504041.495	1.167	EG
4115006	7976455.411	504040.942	1.155	EG
4115007	7976430.994	504072.323	2.139	EG
4115008	7976426.989	504069.57	1.834	EG
4115009	7976430.651	504061.783	1.787	EG
4115010	7976431.038	504061.889	1.672	EG
4115011	7976433.826	504056.355	1.505	EG
4115012	7976433.542	504056.13	1.669	EG
4115013	7976436.317	504052.955	1.688	EG
4115014	7976436.783	504052.99	1.468	EG
4115015	7976438.325	504044.709	1.658	EG
4115016	7976439.19	504044.713	1.31	EG
4115017	7976441.238	504035.915	1.53	EG
4115018	7976438.458	504038.549	1.649	EG
4115019	7976433.753	504044.656	1.668	EG
4115020	7976428.938	504050.451	1.886	EG
4115021	7976427.205	504054.425	2.014	EG
4115022	7976424.581	504061.753	2.011	EG
4115023	7976421.677	504069.306	2.119	EG
4115024	7976420.124	504073.963	2.177	EG
4115025	7976420.749	504064.512	2.096	EG

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4115026	7976420.707	504064.351	2.101	EG
4115027	7976421.205	504060.358	2.014	EG
4115028	7976425.633	504051.885	1.892	EG
4115029	7976433.585	504072.128	1.698	INVRT1.1
4115030	7976436.053	504073.081	1.609	INVRT1.1
4115031	7976436.206	504072.936	1.564	INVRT1.1

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Port Site Stormwater Diversion SWD-7
Type 12 (ROQ) Placement

SWD-7 Type 12 (ROQ) Placement Point Data

Point Number	Northing	Easting	Elevation	Description
30069	7976432.024	504109.756	3.202	TOE ROQ
30070	7976433.37	504112.685	2.851	TOE ROQ
30071	7976432.919	504121.001	2.417	TOE ROQ
30072	7976429.751	504135.363	2.572	TOE ROQ
30073	7976427.975	504145.34	2.805	TOE ROQ
30074	7976426.202	504158.121	3.219	TOE ROQ
30075	7976423.602	504169.793	3.339	TOE ROQ
30076	7976421.634	504179.188	3.563	TOE ROQ
30077	7976419.473	504189.274	4.147	TOE ROQ
30078	7976417.484	504194.999	4.685	TOE ROQ
30079	7976415.338	504195.141	4.936	TOE ROQ
30080	7976414.602	504192.705	4.634	TOE ROQ
30081	7976416.439	504180.826	3.743	TOE ROQ
30082	7976418.908	504167.98	3.547	TOE ROQ
30083	7976420.944	504156.951	3.147	TOE ROQ
30084	7976422.947	504148.715	2.885	TOE ROQ
30085	7976424.799	504139.952	2.902	TOE ROQ
30086	7976427.072	504130.902	2.468	TOE ROQ
30087	7976428.343	504122.339	2.427	TOE ROQ
30088	7976429.169	504116.771	2.428	TOE ROQ
30089	7976425.945	504112.118	2.557	TOE ROQ
30090	7976415.801	504192.237	5.403	CREST ROQ
30091	7976416.955	504191.879	5.257	CREST ROQ
30092	7976418.178	504182.856	4.855	CREST ROQ
30093	7976419.005	504182.858	4.81	CREST ROQ
30094	7976420.006	504172.609	4.463	CREST ROQ
30095	7976421.181	504172.072	4.488	CREST ROQ
30096	7976422.731	504162.428	4.278	CREST ROQ
30097	7976423.568	504162.459	4.341	CREST ROQ
30098	7976424.884	504154.158	4.018	CREST ROQ
30099	7976424.162	504153.771	4.073	CREST ROQ
30100	7976425.474	504144.986	3.977	CREST ROQ
30101	7976426.865	504144.352	3.93	CREST ROQ
30102	7976427.209	504137.983	3.765	CREST ROQ
30103	7976427.914	504138.06	3.731	CREST ROQ
30104	7976429.566	504130.836	3.556	CREST ROQ
30105	7976428.656	504130.674	3.626	CREST ROQ
30106	7976430.618	504125.333	3.321	CREST ROQ

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Type 12 (ROQ) Placement

30107	7976429.658	504125.137	3.176	CREST ROQ
30108	7976430.593	504121.054	3.404	CREST ROQ
30109	7976431.765	504120.754	3.388	CREST ROQ
30110	7976432.549	504117.137	3.419	CREST ROQ
30111	7976431.69	504117.06	3.555	CREST ROQ
30112	7976429.723	504112.238	4.029	CREST ROQ
30113	7976430.511	504111.883	4.097	CREST ROQ
30114	7976429.625	504110.012	4.55	CREST ROQ
30115	7976430.31	504109.743	4.38	CREST ROQ

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SWD-7 Final As-Built Point Data

Point Number	Northing	Easting	Elevation	Description
30001	7976454.21	504038.235	1.05	TOE
30002	7976456.835	504032.543	1.028	TOE
30064	7976459.736	504023.869	1.888	BREAK
30065	7976455.883	504027.864	1.978	BREAK
30066	7976455.62	504031.145	1.997	CREST
30067	7976454.041	504033.343	2.148	CREST
30068	7976451.982	504032.324	2.085	CREST
2130153	7976435.076	504029.332	1.452	ASB TOE
2130154	7976430.541	504032.736	1.544	ASB TOE
2130155	7976423.651	504039.375	1.641	ASB TOE
2130156	7976419.392	504044.805	1.719	ASB TOE
2130157	7976415.828	504049.698	1.79	ASB TOE
2130158	7976413.612	504053.723	2.008	ASB TOE
2130159	7976412.741	504060.539	2.089	ASB TOE
2130160	7976411.94	504066.93	2.108	ASB TOE
2130161	7976412.8	504075.3	2.243	ASB TOE
2130162	7976414.877	504075.325	3.246	ASB CREST
2130163	7976416.756	504075.38	3.29	ASB TOE
2130164	7976417.999	504075.189	3.94	ASB CREST
2130165	7976420.122	504075.097	3.956	ASB CREST
2130166	7976423.097	504074.162	2.374	ASB TOE
2130167	7976424.524	504069.529	2.022	ASB TOE
2130168	7976419.532	504068.555	3.933	ASB CREST
2130169	7976417.703	504068.335	3.923	ASB CREST
2130170	7976416.294	504067.865	3.233	ASB TOE
2130171	7976414.59	504067.574	3.175	ASB CREST
2130172	7976414.209	504062.172	3.038	ASB CREST
2130173	7976416.894	504062.649	3.133	ASB TOE
2130174	7976418.434	504063.13	3.888	ASB CREST
2130175	7976420.584	504063.407	3.864	ASB CREST
2130176	7976424.618	504064.602	1.86	ASB TOE
2130177	7976427.375	504058.914	1.681	ASB TOE
2130178	7976422.237	504056.566	3.91	ASB CREST
2130179	7976420.833	504055.835	3.857	ASB CREST
2130180	7976419.335	504054.733	2.898	ASB TOE
2130181	7976417.031	504053.364	3.037	ASB CREST
2130182	7976420.151	504047.776	2.718	ASB CREST
2130183	7976422.592	504049.416	2.794	ASB TOE

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2130184	7976424.366	504050.971	3.81	ASB CREST
2130185	7976425.94	504052.167	3.886	ASB CREST
2130186	7976430.121	504054.499	1.705	ASB TOE
2130187	7976434.704	504047.834	1.538	ASB TOE
2130188	7976432.002	504044.289	3.844	ASB CREST
2130189	7976431.48	504043.519	3.721	ASB CREST
2130190	7976430.299	504040.73	2.591	ASB TOE
2130191	7976428.491	504038.612	2.631	ASB CREST
2130192	7976433.921	504032.65	2.262	ASB CREST
2130193	7976436.347	504034.588	2.268	ASB TOE
2130194	7976438.459	504036.607	3.894	ASB CREST
2130195	7976439.402	504037.818	3.934	ASB CREST
2130196	7976442.001	504040.536	1.592	ASB TOE
2130197	7976447.837	504035.401	1.437	ASB TOE
2130199	7976442.681	504034.244	3.943	ASB CREST
2130200	7976441.399	504033.137	3.844	ASB CREST
2130201	7976440.061	504030.6	2.231	ASB TOE
2130202	7976442.517	504021.01	1.509	ASB TOE
2130203	7976444.536	504022.571	2.06	ASB CREST
2130204	7976445.994	504023.741	2.18	ASB TOE
2130205	7976448.651	504025.697	3.75	ASB CREST
2130206	7976450.823	504027.839	3.704	ASB CREST
2130207	7976453.561	504030.466	2.276	ASB TOE
2130208	7976455.037	504030.817	2.083	ASB CREST
2130209	7976456.767	504032.346	1.004	ASB TOE
2130210	7976462.977	504027.19	0.869	ASB TOE
2130211	7976461.022	504024.615	1.892	ASB CREST
2130212	7976459.86	504023.701	1.962	ASB TOE
2130213	7976457.994	504019.978	3.575	ASB CREST
2130214	7976456.118	504017.495	3.757	ASB CREST
2130215	7976453.026	504014.234	1.974	ASB TOE
2130216	7976456.055	504005.975	1.137	ASB TOE
2130217	7976457.055	504007.373	2.003	ASB CREST
2130218	7976458.27	504009.046	1.901	ASB TOE
2130219	7976461.108	504011.316	3.608	ASB CREST
2130220	7976463.125	504013.865	3.631	ASB CREST
2130221	7976465.525	504018.508	1.923	ASB TOE
2130222	7976466.18	504020.211	1.86	ASB CREST
2130223	7976467.891	504022.79	0.774	ASB TOE
2130224	7976470.872	504020.011	0.736	ASB TOE
2130225	7976470.081	504016.973	1.88	ASB CREST

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2130226	7976469.163	504015.109	1.804	ASB TOE
2130227	7976466.847	504011.823	3.556	ASB CREST
2130228	7976466.518	504008.343	3.528	ASB CREST
2130229	7976465.324	504005.016	1.85	ASB TOE
2130230	7976464.607	504002.686	1.778	ASB CREST
2130231	7976464.494	503999.903	0.724	ASB TOE
2130232	7976471.134	503998.221	0.806	ASB TOE
2130233	7976471.608	504001.222	1.912	ASB CREST
2130234	7976471.944	504003.371	1.953	ASB TOE
2130235	7976473.445	504007.02	3.563	ASB CREST
2130236	7976474.919	504009.35	3.593	ASB CREST
2130237	7976475.229	504013.176	2.006	ASB TOE
2130238	7976475.029	504015.013	1.948	ASB CREST
2130239	7976475.52	504018.137	0.651	ASB TOE
2130240	7976481.194	504017.823	0.611	ASB TOE
2130241	7976480.968	504015.177	1.912	ASB CREST
2130242	7976481.228	504013.526	2.054	ASB TOE
2130243	7976481.84	504009.459	3.651	ASB CREST
2130244	7976480.172	504006.704	3.499	ASB CREST
2130245	7976480.707	504002.383	2	ASB TOE
2130246	7976480.818	504000.45	1.879	ASB CREST
2130247	7976481.121	503997.178	0.952	ASB TOE
2130248	7976489.415	503997.814	0.595	ASB TOE
2130249	7976492.331	503999.689	0.458	ASB TOE
2130250	7976493.212	504004.399	0.498	ASB TOE
2130251	7976493.881	504010.15	0.515	ASB TOE
2130252	7976492.478	504015.462	0.534	ASB TOE
2130253	7976490.86	504017.617	0.623	ASB TOE
2130254	7976487.548	504017.753	0.728	ASB TOE
2130255	7976484.888	504015.02	1.934	ASB CREST
2130256	7976488.846	504015.372	1.897	ASB CREST
2130257	7976490.852	504013.502	1.98	ASB CREST
2130258	7976491.163	504008.571	1.898	ASB CREST
2130259	7976489.631	504001.574	1.88	ASB CREST
2130260	7976488.682	504000.812	1.952	ASB CREST
2130261	7976487.233	504000.716	1.936	ASB CREST
2130262	7976482.291	504002.422	2.005	ASB TOE
2130263	7976488.167	504002.315	1.783	ASB TOE
2130264	7976489.668	504006.916	1.841	ASB TOE
2130265	7976489.919	504010.634	1.857	ASB TOE
2130266	7976489.076	504013.38	1.833	ASB TOE

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2130267	7976487.169	504013.684	1.881	ASB TOE
2130268	7976484.434	504013.479	1.981	ASB TOE
2130269	7976482.167	504009.645	3.59	ASB CREST
2130270	7976483.026	504006.495	3.534	ASB CREST
2130271	7976486.739	504006.408	3.575	ASB CREST
2130272	7976487.517	504009.54	3.297	ASB CREST

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SWD-7 Type C Berm Survey As-Built

SWD-7 Berm Final As-Built Survey Point Data

Point Number	Northing	Easting	Elevation	Description
30001	7976454.21	504038.235	1.05	TOE
30002	7976456.835	504032.543	1.028	TOE
30064	7976459.736	504023.869	1.888	BREAK
30065	7976455.883	504027.864	1.978	BREAK
30066	7976455.62	504031.145	1.997	CREST
30067	7976454.041	504033.343	2.148	CREST
30068	7976451.982	504032.324	2.085	CREST
2130153	7976435.076	504029.332	1.452	ASB TOE
2130154	7976430.541	504032.736	1.544	ASB TOE
2130155	7976423.651	504039.375	1.641	ASB TOE
2130156	7976419.392	504044.805	1.719	ASB TOE
2130157	7976415.828	504049.698	1.79	ASB TOE
2130158	7976413.612	504053.723	2.008	ASB TOE
2130159	7976412.741	504060.539	2.089	ASB TOE
2130160	7976411.94	504066.93	2.108	ASB TOE
2130161	7976412.8	504075.3	2.243	ASB TOE
2130162	7976414.877	504075.325	3.246	ASB CREST
2130163	7976416.756	504075.38	3.29	ASB TOE
2130164	7976417.999	504075.189	3.94	ASB CREST
2130165	7976420.122	504075.097	3.956	ASB CREST
2130166	7976423.097	504074.162	2.374	ASB TOE
2130167	7976424.524	504069.529	2.022	ASB TOE
2130168	7976419.532	504068.555	3.933	ASB CREST
2130169	7976417.703	504068.335	3.923	ASB CREST
2130170	7976416.294	504067.865	3.233	ASB TOE
2130171	7976414.59	504067.574	3.175	ASB CREST
2130172	7976414.209	504062.172	3.038	ASB CREST
2130173	7976416.894	504062.649	3.133	ASB TOE
2130174	7976418.434	504063.13	3.888	ASB CREST
2130175	7976420.584	504063.407	3.864	ASB CREST
2130176	7976424.618	504064.602	1.86	ASB TOE
2130177	7976427.375	504058.914	1.681	ASB TOE
2130178	7976422.237	504056.566	3.91	ASB CREST
2130179	7976420.833	504055.835	3.857	ASB CREST
2130180	7976419.335	504054.733	2.898	ASB TOE
2130181	7976417.031	504053.364	3.037	ASB CREST
2130182	7976420.151	504047.776	2.718	ASB CREST
2130183	7976422.592	504049.416	2.794	ASB TOE
2130184	7976424.366	504050.971	3.81	ASB CREST
2130185	7976425.94	504052.167	3.886	ASB CREST

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Port Site Stormwater Diversion SWD-7
SWD-7 Type C Berm Survey As-Built

2130186	7976430.121	504054.499	1.705	ASB TOE
2130187	7976434.704	504047.834	1.538	ASB TOE
2130188	7976432.002	504044.289	3.844	ASB CREST
2130189	7976431.48	504043.519	3.721	ASB CREST
2130190	7976430.299	504040.73	2.591	ASB TOE
2130191	7976428.491	504038.612	2.631	ASB CREST
2130192	7976433.921	504032.65	2.262	ASB CREST
2130193	7976436.347	504034.588	2.268	ASB TOE
2130194	7976438.459	504036.607	3.894	ASB CREST
2130195	7976439.402	504037.818	3.934	ASB CREST
2130196	7976442.001	504040.536	1.592	ASB TOE
2130197	7976447.837	504035.401	1.437	ASB TOE
2130199	7976442.681	504034.244	3.943	ASB CREST
2130200	7976441.399	504033.137	3.844	ASB CREST
2130201	7976440.061	504030.6	2.231	ASB TOE
2130202	7976442.517	504021.01	1.509	ASB TOE
2130203	7976444.536	504022.571	2.06	ASB CREST
2130204	7976445.994	504023.741	2.18	ASB TOE
2130205	7976448.651	504025.697	3.75	ASB CREST
2130206	7976450.823	504027.839	3.704	ASB CREST
2130207	7976453.561	504030.466	2.276	ASB TOE
2130208	7976455.037	504030.817	2.083	ASB CREST
2130209	7976456.767	504032.346	1.004	ASB TOE
2130210	7976462.977	504027.19	0.869	ASB TOE
2130211	7976461.022	504024.615	1.892	ASB CREST
2130212	7976459.86	504023.701	1.962	ASB TOE
2130213	7976457.994	504019.978	3.575	ASB CREST
2130214	7976456.118	504017.495	3.757	ASB CREST
2130215	7976453.026	504014.234	1.974	ASB TOE
2130216	7976456.055	504005.975	1.137	ASB TOE
2130217	7976457.055	504007.373	2.003	ASB CREST
2130218	7976458.27	504009.046	1.901	ASB TOE
2130219	7976461.108	504011.316	3.608	ASB CREST
2130220	7976463.125	504013.865	3.631	ASB CREST
2130221	7976465.525	504018.508	1.923	ASB TOE
2130222	7976466.18	504020.211	1.86	ASB CREST
2130223	7976467.891	504022.79	0.774	ASB TOE
2130224	7976470.872	504020.011	0.736	ASB TOE
2130225	7976470.081	504016.973	1.88	ASB CREST
2130226	7976469.163	504015.109	1.804	ASB TOE
2130227	7976466.847	504011.823	3.556	ASB CREST
2130228	7976466.518	504008.343	3.528	ASB CREST
2130229	7976465.324	504005.016	1.85	ASB TOE

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Port Site Stormwater Diversion SWD-7
SWD-7 Type C Berm Survey As-Built

2130230	7976464.607	504002.686	1.778	ASB CREST
2130231	7976464.494	503999.903	0.724	ASB TOE
2130232	7976471.134	503998.221	0.806	ASB TOE
2130233	7976471.608	504001.222	1.912	ASB CREST
2130234	7976471.944	504003.371	1.953	ASB TOE
2130235	7976473.445	504007.02	3.563	ASB CREST
2130236	7976474.919	504009.35	3.593	ASB CREST
2130237	7976475.229	504013.176	2.006	ASB TOE
2130238	7976475.029	504015.013	1.948	ASB CREST
2130239	7976475.52	504018.137	0.651	ASB TOE
2130240	7976481.194	504017.823	0.611	ASB TOE
2130241	7976480.968	504015.177	1.912	ASB CREST
2130242	7976481.228	504013.526	2.054	ASB TOE
2130243	7976481.84	504009.459	3.651	ASB CREST
2130244	7976480.172	504006.704	3.499	ASB CREST
2130245	7976480.707	504002.383	2	ASB TOE
2130246	7976480.818	504000.45	1.879	ASB CREST
2130247	7976481.121	503997.178	0.952	ASB TOE
2130248	7976489.415	503997.814	0.595	ASB TOE
2130249	7976492.331	503999.689	0.458	ASB TOE
2130250	7976493.212	504004.399	0.498	ASB TOE
2130251	7976493.881	504010.15	0.515	ASB TOE
2130252	7976492.478	504015.462	0.534	ASB TOE
2130253	7976490.86	504017.617	0.623	ASB TOE
2130254	7976487.548	504017.753	0.728	ASB TOE
2130255	7976484.888	504015.02	1.934	ASB CREST
2130256	7976488.846	504015.372	1.897	ASB CREST
2130257	7976490.852	504013.502	1.98	ASB CREST
2130258	7976491.163	504008.571	1.898	ASB CREST
2130259	7976489.631	504001.574	1.88	ASB CREST
2130260	7976488.682	504000.812	1.952	ASB CREST
2130261	7976487.233	504000.716	1.936	ASB CREST
2130262	7976482.291	504002.422	2.005	ASB TOE
2130263	7976488.167	504002.315	1.783	ASB TOE
2130264	7976489.668	504006.916	1.841	ASB TOE
2130265	7976489.919	504010.634	1.857	ASB TOE
2130266	7976489.076	504013.38	1.833	ASB TOE
2130267	7976487.169	504013.684	1.881	ASB TOE
2130268	7976484.434	504013.479	1.981	ASB TOE
2130269	7976482.167	504009.645	3.59	ASB CREST
2130270	7976483.026	504006.495	3.534	ASB CREST
2130271	7976486.739	504006.408	3.575	ASB CREST
2130272	7976487.517	504009.54	3.297	ASB CREST

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Port Site Stormwater Diversion SWD-7
SWD-7 Filter Trench Excavation Survey As-Built

SWD-7 Filter Trench Excavation Survey Point Data

Point Number	Northing	Easting	Elevation	Description
3129001	7976420.557	504071.05	2.205	Trench Crest
3129002	7976421.673	504065.254	2.091	Trench Crest
3129003	7976422.481	504060.883	2.056	Trench Crest
3129004	7976424.324	504056.77	1.909	Trench Crest
3129005	7976429.77	504050.947	1.685	Trench Crest
3129006	7976435.373	504044.91	1.711	Trench Crest
3129007	7976439.867	504040.793	1.554	Trench Crest
3129008	7976446.37	504035.609	1.147	Trench Crest
3129009	7976453.895	504043.07	1.172	Trench Crest
3129010	7976449.498	504047.808	1.279	Trench Crest
3129011	7976444.604	504052.352	1.276	Trench Crest
3129012	7976440.428	504056.113	1.388	Trench Crest
3129013	7976436.836	504059.16	1.432	Trench Crest
3129014	7976433.919	504063.976	1.627	Trench Crest
3129015	7976431.271	504071.864	2.053	Trench Crest
3129016	7976432.095	504069.421	1.798	Trench Crest
3129017	7976429.638	504070.687	1.146	Trench Toe
3129018	7976431.243	504065.945	0.977	Trench Toe
3129019	7976432.328	504063.031	0.707	Trench Toe
3129020	7976434.638	504059.108	0.504	Trench Toe
3129021	7976438.911	504055.06	0.467	Trench Toe
3129022	7976443.511	504050.481	0.358	Trench Toe
3129023	7976447.95	504046.318	0.27	Trench Toe
3129024	7976451.79	504042.145	0.398	Trench Toe
3129025	7976446.991	504037.713	0.279	Trench Toe
3129026	7976440.8	504042.871	0.445	Trench Toe
3129027	7976437.296	504047.017	0.472	Trench Toe
3129028	7976431.76	504052.427	0.595	Trench Toe
3129029	7976426.64	504057.928	0.71	Trench Toe
3129030	7976424.052	504065.058	0.997	Trench Toe
3129031	7976422.704	504070.48	1.167	Trench Toe

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Port Site Stormwater Diversion SWD-7
Type C Filter Trench

SWD-7 Type C Filter Trench Final Grade

Point Number	Northing	Easting	Elevation	Description
2	7976420.569	504072.607	2.122	FILTER TRENCH FG
3	7976421.182	504067.125	2.122	FILTER TRENCH FG
4	7976422.514	504061.6	1.992	FILTER TRENCH FG
5	7976424.986	504055.876	1.878	FILTER TRENCH FG
6	7976430.515	504049.772	1.744	FILTER TRENCH FG
7	7976435.118	504043.968	1.64	FILTER TRENCH FG
8	7976442.147	504038.274	1.361	FILTER TRENCH FG
9	7976446.184	504034.969	1.202	FILTER TRENCH FG
10	7976453.633	504042.59	1.151	FILTER TRENCH FG
11	7976449.367	504047.649	1.184	FILTER TRENCH FG
12	7976443.255	504053.375	1.373	FILTER TRENCH FG
13	7976437.317	504058.502	1.547	FILTER TRENCH FG
14	7976434.351	504061.068	1.632	FILTER TRENCH FG
15	7976430.963	504071.704	1.927	FILTER TRENCH FG

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0009A
Port Site Stormwater Diversion SWD-7
Filter Trench

SWD-7 Filter Trench Point Data

Point Number	Northing	Easting	Elevation	Description
3129001	7976420.557	504071.05	2.205	Trench Crest
3129002	7976421.673	504065.254	2.091	Trench Crest
3129003	7976422.481	504060.883	2.056	Trench Crest
3129004	7976424.324	504056.77	1.909	Trench Crest
3129005	7976429.77	504050.947	1.685	Trench Crest
3129006	7976435.373	504044.91	1.711	Trench Crest
3129007	7976439.867	504040.793	1.554	Trench Crest
3129008	7976446.37	504035.609	1.147	Trench Crest
3129009	7976453.895	504043.07	1.172	Trench Crest
3129010	7976449.498	504047.808	1.279	Trench Crest
3129011	7976444.604	504052.352	1.276	Trench Crest
3129012	7976440.428	504056.113	1.388	Trench Crest
3129013	7976436.836	504059.16	1.432	Trench Crest
3129014	7976433.919	504063.976	1.627	Trench Crest
3129015	7976431.271	504071.864	2.053	Trench Crest
3129016	7976432.095	504069.421	1.798	Trench Crest
3129017	7976429.638	504070.687	1.146	Trench Toe
3129018	7976431.243	504065.945	0.977	Trench Toe
3129019	7976432.328	504063.031	0.707	Trench Toe
3129020	7976434.638	504059.108	0.504	Trench Toe
3129021	7976438.911	504055.06	0.467	Trench Toe
3129022	7976443.511	504050.481	0.358	Trench Toe
3129023	7976447.95	504046.318	0.27	Trench Toe
3129024	7976451.79	504042.145	0.398	Trench Toe
3129025	7976446.991	504037.713	0.279	Trench Toe
3129026	7976440.8	504042.871	0.445	Trench Toe
3129027	7976437.296	504047.017	0.472	Trench Toe
3129028	7976431.76	504052.427	0.595	Trench Toe
3129029	7976426.64	504057.928	0.71	Trench Toe
3129030	7976424.052	504065.058	0.997	Trench Toe
3129031	7976422.704	504070.48	1.167	Trench Toe

NUNA

NUNA EAST LTD

(Section 5)

Sieve Analysis / Statement of Compliance

Material Inspection Report

Baffin Island Material Testing			
Date:	May 13th/2019	Project Number:	18SJ0001
Project Name:	Baffinland	Report Number:	
Location/ Area:	Port Site	Allnorth Site Representative:	R. Chaisson
Client Site Representative:	Marlon Coakley	Copy to:	

Bradford Watkin
QA/QC
Reviewed

Visual Inspection Report

Material: Type 12 with Limited Fines

Based on visual inspections of "Type 12 with limited fines" material stockpiled in the quarry, during placement and after compaction:

To stockpile material, Nuna uses a screening bucket on the excavator. The screening bucket openings are approximately 150mm in size, the excavator digs into the ROQ pile and shakes the majority of the material below the 150mm out; the end product is a very course material with very little if any fines.

After placement and compaction, no fines are present and the surface is ridged from the coarse material. When comparing Type 12 and "Type 12 with limited fines" next to each other, the difference is very apparent.

Based on visual observations this material meets the required standard as noted in **Request for Information (RFI) #28.**

"Type 12 with limited fines" Shall be considered Type 22 per RFI-028 **"Type 12"**

Allnorth Designate-Signature		Title:	Materials Technician	Date: 05/13/2019

NUNA

NUNA EAST LTD

(Section 6)

Request for Information Documentation (RFI)

Project Name:	Mary River Expansion Stage 3	Project Number:	H353004
CWP No:		RFI No: 0036	
Contractor: Nuna East Ltd.		Contract No: CC006	
Initiated By: Darko Filipic		Cost Impact?	Y☐ / N☒
Date of Submittal: 2019-05-01		Schedule Impact?	Y☐ / N☒

Information Requested:

Nuna has been working to build the design model based on the IFC drawing, but there are some discrepancies on the IFC drawing and within the model provided.

1) The armour layer minimum thickness is stated as 1900mm on the Berm Notes, but on Section C-C it shows it at 1600mm. The model provided also shows a thickness of 1600mm.
2) The transitions between the layers at the section breaks are unclear.

In lieu of Hatch providing the requested layerworks design files for SWD-7, Nuna is proposing the following modifications to the design of the SDW-7 berm that will simplify the drafting of the model for layout in the field.

1) Set the elevation of the top of the Filter layer at 2.4mGD from Sta.60 to the Sta. 129.071.
2) The armour stone minimum thickness will be 1600mm.
3) Eliminate the raised key section of filter stone shown in Section D-D and place the filter layer in a level lift as shown in Section C-C.
4) The transition between Core, Filter and Armour layers from Sections B-B to C-C to be constructed as illustrated in Section E-E on attached markup drawing.

Nuna will provide As-Built CAD file upon completion of the work as part of the turnover package

Reference Document No.	Revision	Title/Description
H353004-40000-228-271-0008-0001	1	Port Site Stormwater Diversion P-SWD-7 Plan/Profile

RFI Classification:

Design	☒	Construction	☐	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☐	Other	☐

Project Response: [attach sufficient detail as required]

1. Set elevation of the top of the Filter layer at 2.1m GD from Sta.60 to Sta 129.71. This is to ensure the 1.9m minimum requirement in the Armour. This will also result in the Filter being a minimum of 600mm and will vary in depth as the chainages increase.
2. Minimum to be 1900mm. Refer to the above point number 1
3. Raised key may be removed
4. Transition as illustrated in section E-E of Nuna's RFI attachment is acceptable.

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RFI Follow-up Requirements:

Contract Order Issued Yes ☐/No ☐ (Insert associated tracking #:) Back-Charge Required (Yes ☐/No ☐)

As-Built Required Yes ☐/No ☐ Materials Required (Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	Vern Shaver		2019-05-02
Hatch Engineering Home Office ☐ Site ☐	Glen Peace		2019-05-02
Hatch Project Management			
Client (as required):			

Request for Information

Note: The response to this RFI is NOT an authorization to perform a change to the Contract. Work may proceed in accordance with the response only if such work involves NO change in cost or schedule. In the case where the response may involve change in cost or schedule, a Contractual instrument must be issued by Hatch and received by the Contractor before the response can be executed. Where no Contractual instrument is indicated, action must be taken in accordance with (reference appropriate Contract Sections that authorize execution of any change in schedule and cost).

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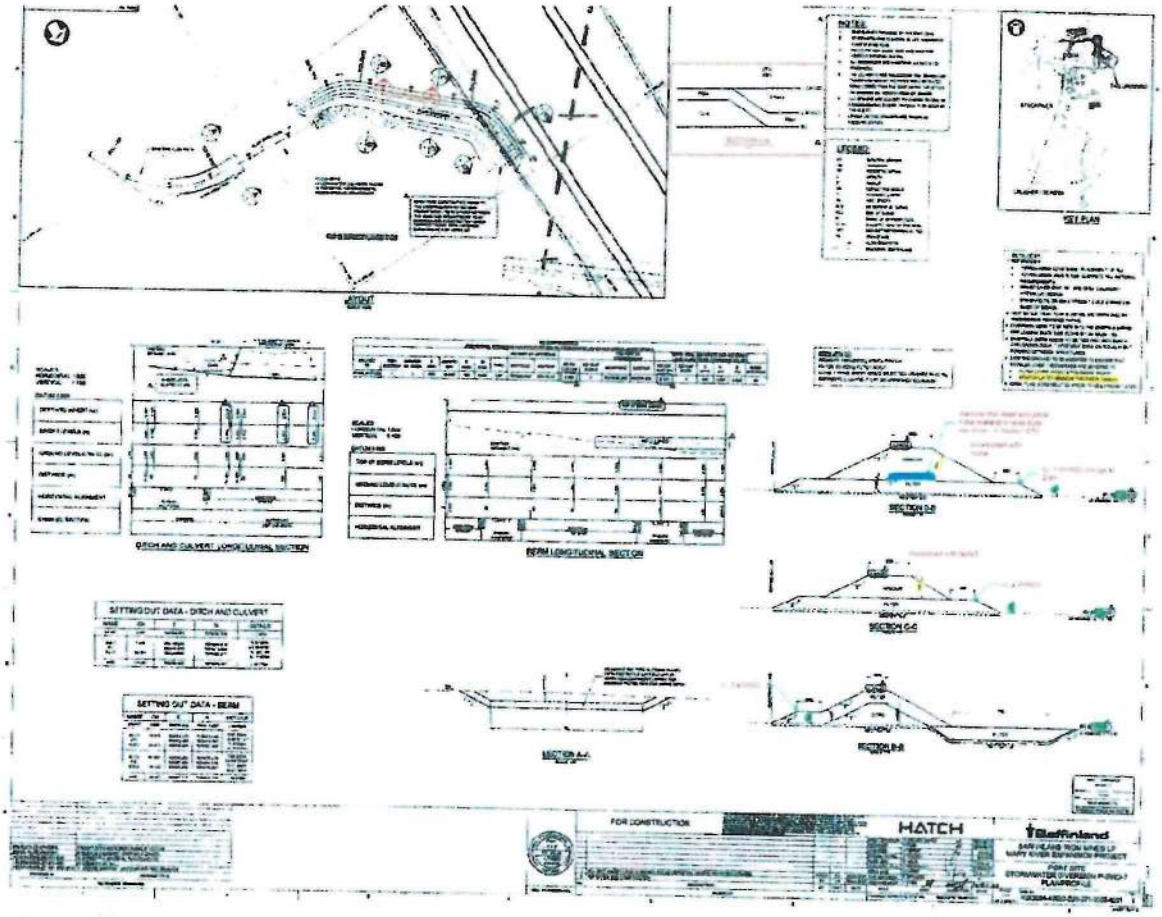
SETTING OUT DATA - DITCH AND CULVERT
SETTING OUT DATA - BERM
SECTION A-A
SECTION B-B
SECTION C-C
SECTION D-D
FOR CONSTRUCTION
HATCH
Baffinland

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(Section 7)

Non-Conformance Reports (NCRs)

NON-CONFORMANCE REPORT LOG

Project: CC006
Area: Milne Port Expansion
CWP#: N/A
Date: May 11, 2019
Contract/Work Pkg. No.: CC006
Originator: Bradford Watkin

NCR No.	Description	Disposition	Date.	Rectified	Date
001	Out of Spec. Aggregate material placement.	Closed	May 11, 2019	Yes	May 11, 2019
002	Quarried Material ROQ out of Spec	Closed	July 2, 2019	Yes	July 2, 2019

NUNA EAST LTD	NCR	Exhibit 2.6 Revision 0 Page 1 of 1

NON-CONFORMANCE REPORT

NCR No.: 001

ORIGINATOR:	Bradford Watkin	**NCR ISSUED TO:**	Nuna East Ltd.
		CONTRACTOR:	Nuna East Ltd.
SIGNATURE:		**CONTRACT No.:**	CC006
DATE:	May 11, 2019	**CWP:**	N/A

SPECIFICATION No.: H353004-00000-280-078-0002 Rev 0 ☐ **AUDIT No.:** _____ ☐ **S.I. No.:** _____

DRAWING No.(s): H353004-40000-228-271-0008-0001 Rev 1 ☐ **CAR No.:** _____ ☐ **PAR No.:** _____

LOCATION: Storm Water Diversion Berm SWD-7 ☐ **QSR No.:** _____ ☒ **OTHER:**

1. **DESCRIPTION OF NON-CONFORMANCE:** During site inspection of aggregate placement, it was noted that the material being utilized was not conformant to the construction specification. The Type 12 being utilized was not the Type 12 with limited fines called for. The foreman was notified immediately to stop work.

ROOT CAUSE(s): Quarry personnel not aware of load requirement.

2. **SUGGESTED DISPOSITION:** **ACCEPT AS IS** ☐ **REPAIR** ☐ **REMOVE/REPLACE** ☒
Remove and replace with Type 12 limited fines material.

NAME: Bradford Watkin **TITLE:** QC coordinator **COMPANY:** Nuna East Ltd. **DATE:** May 11, 2019

3. **DISPOSITION REVIEW & EVALUATION:** **[Check appropriate box for attached document(s)]**

☐ **Site Engineering Disposition –**

☐ **Project Site Disposition –** Material removed and correct material placed.

FIELD TECHNICAL MANAGER: N/A **DATE**: N/A

QA MANAGER: Bradford Watkin **DATE**: May 11, 2019

4. **DISPOSITION ACTION COMPLETED, VERIFIED AND ACCEPTED:** (To be completed by Originator, Field Technical or QA)
NOTE BELOW: Verification method used to determine "Acceptance":

CONTRACTOR NAME: (print) Bradford Watkin **SIGNATURE:** **DATE**: May 11, 2019

CLIENT NAME: (print) **SIGNATURE:** **DATE:**

5. **NON-CONFORMANCE CLOSE OUT**: (To be completed by QA)

NAME: (print) Bradford Watkin **SIGNATURE:** **DATE**: May 11, 2019

TYPE OF NCR:	☐	Design (Std, Spec, Code)	☒ Rework, Cost Impact
	☐	Damage to Material, Equipment, Environment	

NCR DISCIPLINE IDENTIFIER: F=Process T=Civil S=Structural R=Architectural M=Mechanical P=Piping E=Electrical I=Controls & Instrumentation

Daily Field Report

Baffin Island Materials Testing

Date:	May 12th, 2019	Report #:	102
Contractor:	NUNA	Contract Number:	18SJ0001
Contractor Representative:	Scott Mackenzie	Weather Conditions:	Overcast 2 °C
Allnorth Representative:	Rob Chaisson	Location:	Port Site

DAILY CONSTRUCTION ACTIVITIES:

Safety Meeting – Mounting equipment

Today's Activity's

Freight Dock

- Nuna continuing to break ice with excavator.
- Investigation completed at end of Freight Dock in open water.
  - Looking at subgrade material, excavator taking buckets below the water and placed on dock for inspection.
  - Top surface looked to be a loose sand with gravel (Geotechnical unit 0A). As excavator continued to excavate down ~2.0 – 2.5m the material started to change to a clean sand with traces of small pebbles. (Geotechnical Unit 2).
  - Based on investigation, it didn't appear that the silty sand layer (Geotechnical Unit 0b) was present in the area of investigation. (~Sta. 0+84)
- Placing "Type 12 with limited fines" berm core material on south side of SDW7.

Stability Trench

- Continued drilling at very south end of Stability Trench, south west of 380 man camp.

LP2

- Subgrade approved by Hatch representative Marlon Coakley.
- Placing first lift of Type 12 on west side of LP2 by access road.
  - Lift placed ~900mm thick.
  - No compaction on material; building pad big enough to safely compact material while dozer and trucks operating in area.

LP3

- No activity.

- All material placement stopped at 4:30PM due to blast at 5:00PM.

*Continuing to update drawings for placement and subgrade approvals.

ISSUES OR CONCERNS:

- During inspection of material being used for the core on south side of SWD7, it was noticed Nuna was using Type 12 instead of the specified "Type 12 with limited fines" specified in drawing "H353004-40000-228-271-0008-0001 – Storm water Diversion P-SWD7"
  - Nuna was notified and the Type 12 material was removed and replaced with "Type 12 with limited fines".

Photos:

Placing Type 12 by access road at LP2.

Excavator removing subgrade from underneath the water at ~Sta. 0+84

Clean sand found at ~2.0-2.5m deep into subgrade.

Rob Chaisson

May 12th, 2019

Allnorth Representative

NUNA

NUNA EAST LTD

(Section 8)

Land Disturbance Forms (LDF)

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.		**Department:**	Projects
Date:	5/3/19	**Name/Position:**	**Ryan Dicker/Project Coordinator**
Project location:	Port Site		Storm Water Diversion Ditches SWD 7
Project Duration:	Start 5/3/18	Finish	5/17/18

Project Details

GPS Coordinates: Lat: N+7976400 Long: E+504100 (NAD 83)

Land disturbance area: 2800 m2

Type of disturbance (Drilling, Blasting, Excavation, Rutting due to site access, etc.)

Material placement over tundra/oceanfront - Diversion of water flow

Detailed description of planned work.

Construction of Storm Water Diversion between existing freight ramp and the newly constructed freight dock.

- Drilling, ripping and excavation of ditch 7m wide x 0.9m deep x 80m long - No blasting will be conducted as the holes would be too short to have an effective blast
- Lay geotextile under berm and in ditch section. Fill ditch with 60-300kg Filter Rock material
- Construction of berm to the west of the existing freight ramp with 0.9m of filter material + 1.6m height of armour, 1.5m - 3m variable width at top

Check List

1	**Has the Environmental Concerns in section 2.3.1. of the Environmental Protection plan been reviewed** - If No, please review the list of concerns on page 4 of this form.	Yes
2	**Will work be completed within 31m of the High Water Mark of any stream or water body?.** - If Yes, please contact the Environment Department.	Yes
3	**Is there a stream or waterbody >31m of the work site?.** - If Yes, Include a detailed description of the Sediment and Erosion Control Measures on Page 3.	Yes
4	**Has the area been cleared by Archaeology?.** - If No or Unknown, Please contact the Environment Department.	Yes
5	**Will the land disturbance occur between May 31 and August 31?.** - If Yes, An Active Migration Bird Survey is required prior to start.	No

Approval

Approved by: William Bowden Position: Environment Superintendent

Approved on: 2019 05 03

Valid Unit:

Comments and recommendations by the Environment Department:

Design for culverts above the PWSD-7 called for 2 additonal culverts to accomodate increaed flows from water diversion ungradient. Without these installed it is recommended that a berm be contructed upstream of the culverts on the north side ne water sourcing to the culvert at the L turn. A pump is also recommended to be stationed here in case of emergencies. The culverts shold be constructed when it is feasible.

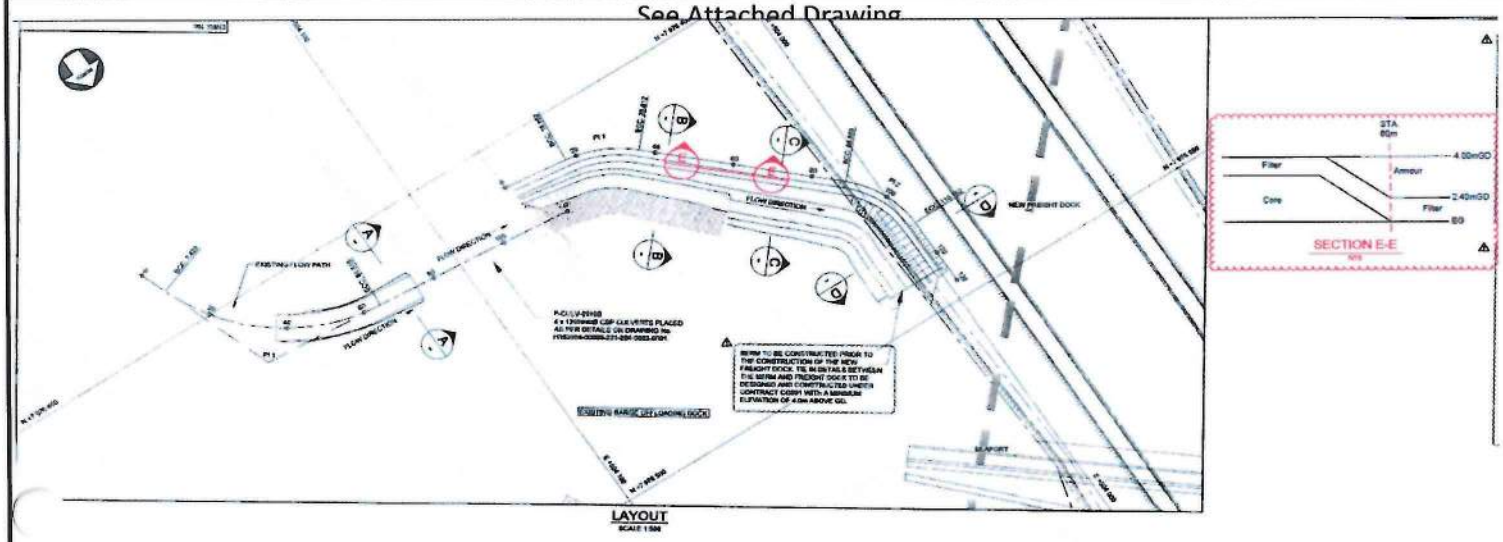
LAND DISTRURBANCE FORM

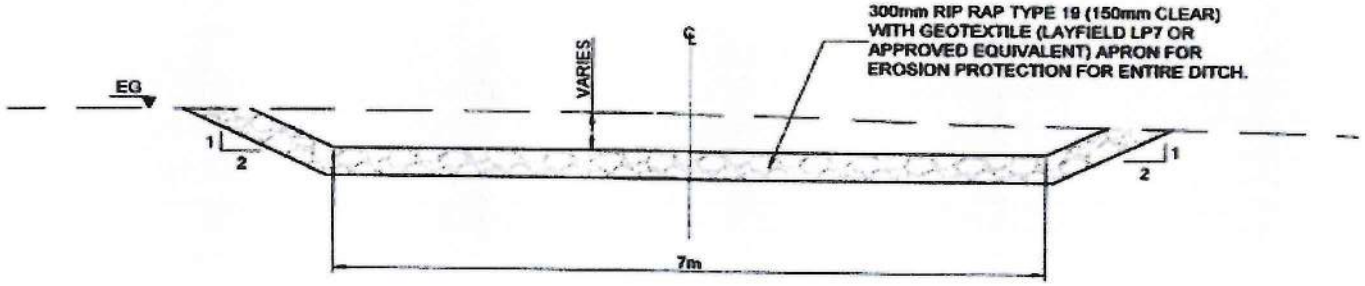
Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	5/3/19		
Project location:	Port Site		

Design/Engineering Drawing

See Attached Drawing





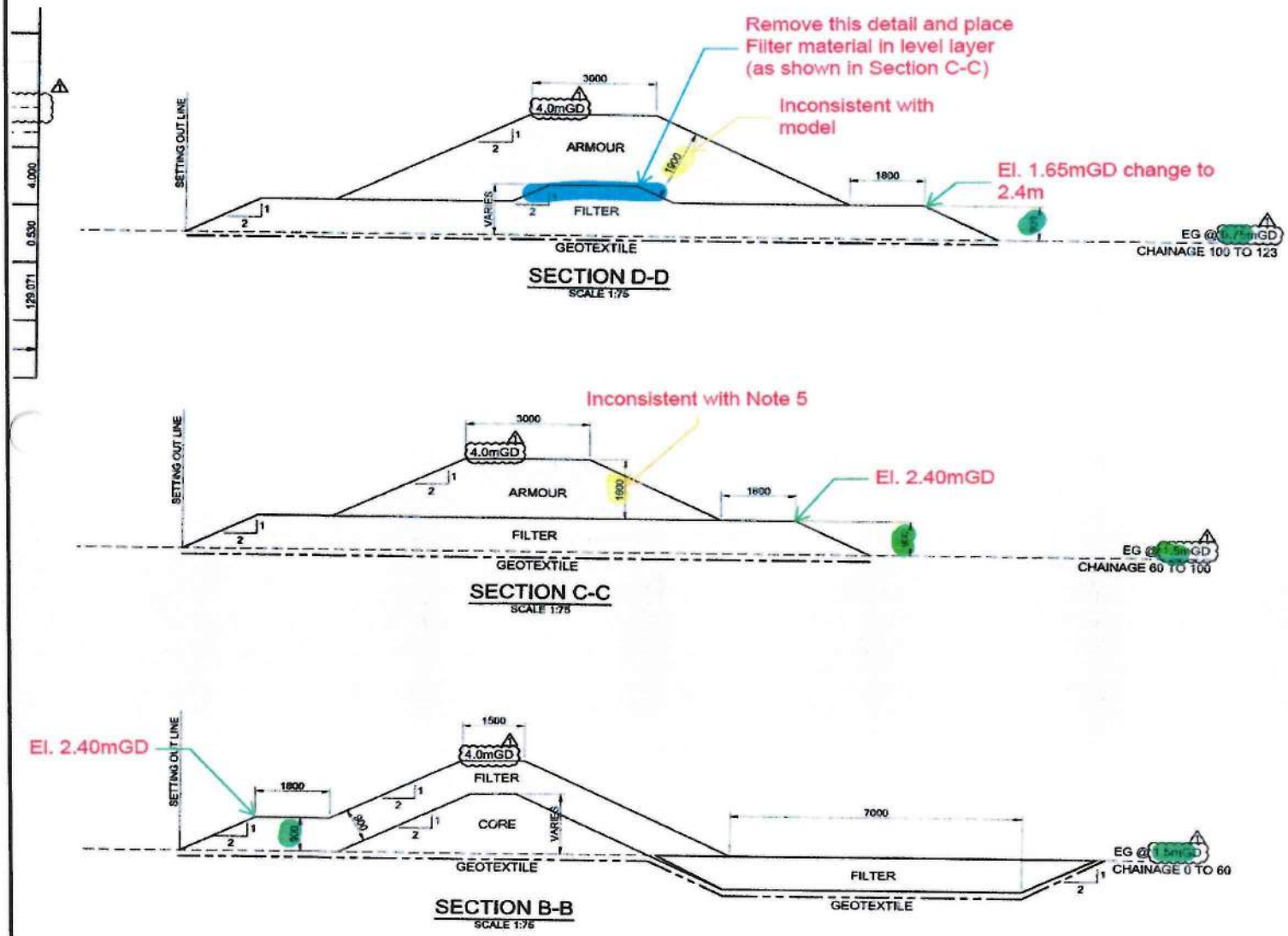
SECTION A-A
SCALE 1:50

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	5/3/19		
Project location:	Port Site		

Design / Engineering Drawing



Baffinland

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	5/3/19		
Project location:	Port Site		

Sediment and Erosion Control Measures

Please give a detailed description of the run-off control measure which will be put in place.
Include all water bodies and streams, slope direction and materials to be used.

- Due to season and weather conditions, runoff and erosion is unlikely to occur

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	5/3/19		
Project location:	Port Site		

2.3.1 ENVIRONMENTAL CONCERN

2.3.1 ENVIRONMENTAL CONCERN

The Arctic is a fragile environment where the recovery of vegetation within this region is slow. Ground disturbance shall be minimized to protect archaeological resources, wildlife habitats, sensitive landforms, such as ice-rich permafrost features, and prevent erosion and the movement of sediment into watercourses and water bodies. Various permits, licences and approvals issued to Baffinland are specific in regards to ground disturbances and outline the necessary protection measures that need to be taken to minimize this aspect of the Project.

The following measures are to be implemented to minimize ground disturbance:

- Equipment and personnel must stay on existing roads and trails
- Approval for new areas of disturbance must be approved by the Operations Manager
- Rutting (furrow creation) shall be avoided on ground surfaces; overland travel of equipment or vehicle will be suspended when rutting occurs
- All camps shall be located on gravel, sand or other durable land
- No materials shall be stored on the surface ice of streams
- No material shall be removed from below the ordinary high water mark of any stream
- Greywater sumps must be located a distance of at least thirty (30) meters above the ordinary high water mark of any water body

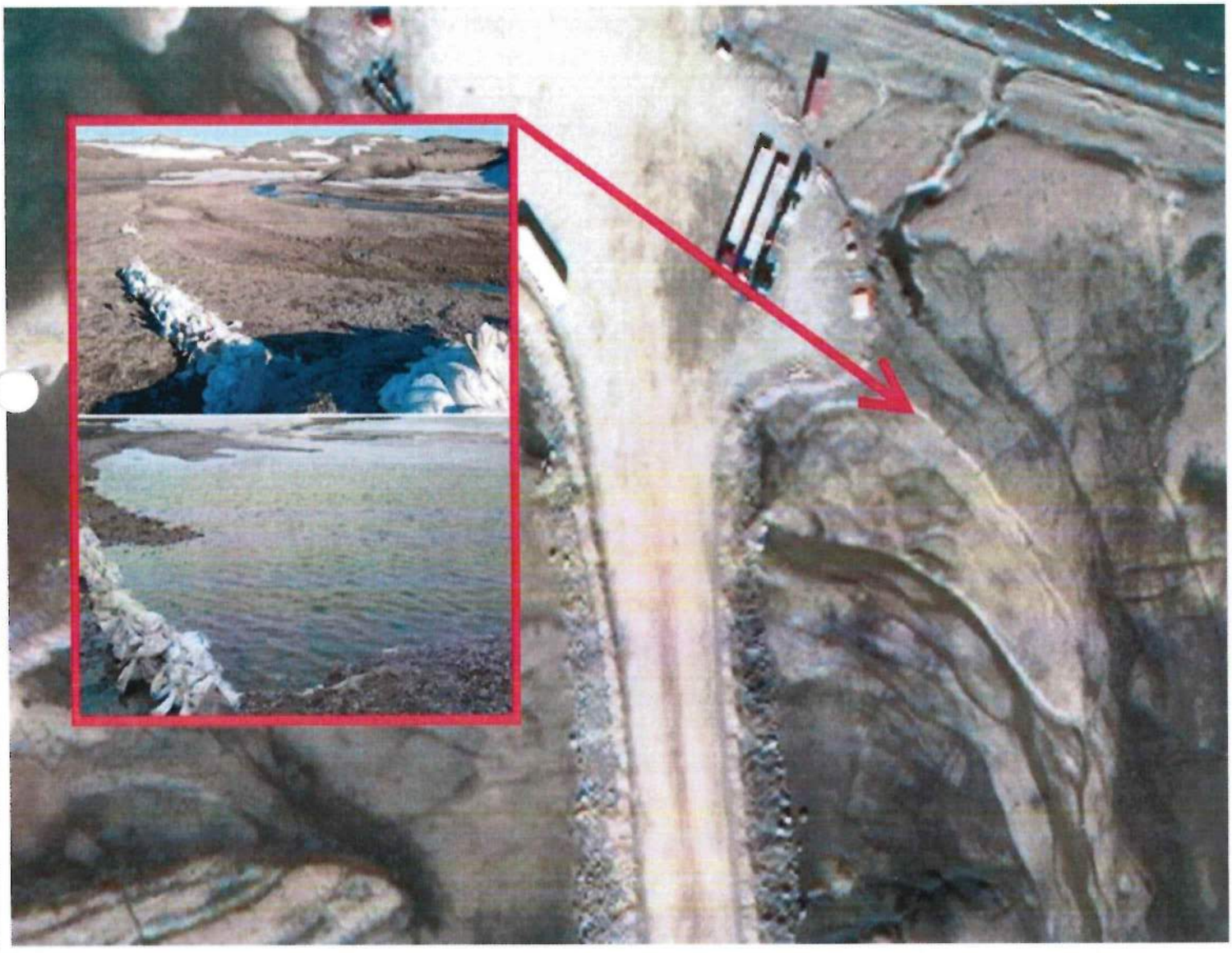
Baffinland

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	5/3/19		
Project location:	Port Site		

Photo of water upstream of culverts prior to addittional water diversion being contructed up gradient



Bradford Watkin

From: Stephen Nugent
Sent: Saturday, May 4, 2019 5:09 AM
To: Ryan Dicker
Subject: FW: [External]SWD-7 Land Disturbance Form
Attachments: Land Disturbance Form_Stormwater Diversion P-SWD 7.xlsx

Ryan,

See attached.

Stephen Nugent
Project Manager
E stephenn@nunalogistics.com
T +17804084527
C +15873353278

NUNA EAST LTD.
PO Box 370
Pond Inlet, Nunavut, Canada, X0A 0X0
nunalogistics.com

You may withdraw consent for email communications from the Nuna Group of Companies by responding to the email with "Unsubscribe" in the subject line.

From: William Bowden <William.Bowden@baffinland.com>
Sent: Friday, May 3, 2019 6:53 PM
To: Leonel Dabor <leonel.dabor@baffinland.com>
Cc: Dave Burry <Dave.Burry@Hatch.com>; kevin campbell <kevin.campbell@hatch.com>; Gionet, Stephane <stephane.gionet@hatch.com>; Marlon Coakley <marlon.coakley@hatch.com>; Brian Chaput <Brian.chaput@hatch.com>; Ken Humby <kenh@nunalogistics.com>; Scott Mackenzie <ScottMackenzie@nunalogistics.com>; Stephen Nugent <stephenn@nunalogistics.com>; Darko Filipic <DarkoF@nunalogistics.com>; Bradford Watkin <bradfordw@nunalogistics.com>; Sten Sundin <Sten.Sundin@baffinland.com>; Connor Devereaux <Connor.Devereaux@baffinland.com>; Dominic Ritgen <Dominic.Ritgen@baffinland.com>
Subject: RE: [External]SWD-7 Land Disturbance Form

Hi Leonel,

See attached approved land disturbance form with some recommendations concerning upstream of the ditch.

Bill

William Bowden | Environmental Superintendent
Mary River Mine Site
T: +1 647 253 0596 x6016

(Section 9)

Signature Log

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN		
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC		
ALLNORTH	Materials technician	Kenny MacRae		
Hatch	Hatch Civil	Stephane Grenier		
NUNA EAST	PROJECT COORDINATOR	BRANDON URQUHART		
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]		
HATCH	FIELD ENG. MANAGER	GLEN PEACE		
NUNA EAST	SITE SUPERINTENDENT	ANTHONY STEWART		
NUNA EAST	SITE SUPERINTENDENT	HARVEY BLOVIN		
Hatch	Hatch Super	Roger Landry		
Nuna East	Project Manager	Stephen Nugent		
HATCH	CONSTRUCTION SUPERINTENDENT	ROSS BAKER		
BVJV	Project Engineer	David Garcia		
Hatch	QA Manager	Ronny Franken		

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN		
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC		
ALLNORTH	Materials technician	Kenny MacRae		
Hatch	Hatch Civil	Stephane Grant		
NUNA EAST	PROJECT COORDINATOR	BRANDON VARGHART		
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]ER		
HATCH	FIELD ENG. MANAGER	GLEN PEACE		
Hatch	Construction Super-	Dean Moffett		
Hatch	Construction Super	Roger Landry		

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(Section 10)

Quality Control Documents

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Iron Mines Corporation

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Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

Surface / Sub-grade Approval

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0009A BIM WBS: 4810
Description of Area Inspected:	*Surface/Sub-grade Preparation Approval* ***Work Scope Location:*** *Eastside of Freight Dock* ***Location Section:*** *Stream Diversion Berms and Drainage SWD-7*
Date of Inspection:	*May 11, 2019*
Parties Present at Inspection	*Bradford Watkin (Representing Nuna), Robert Chaisson Allnorth (Representing Hatch)*

Comments:

A visual inspection of Stream Diversion Berms and Drainage SWD-7 surface/sub-grade was completed prior to placement of Material.

Sub-grade: Was found to be free of Ice and snow, the surface/subgrade was found to be acceptable at time of inspection for placement of Geotextile and aggregate.

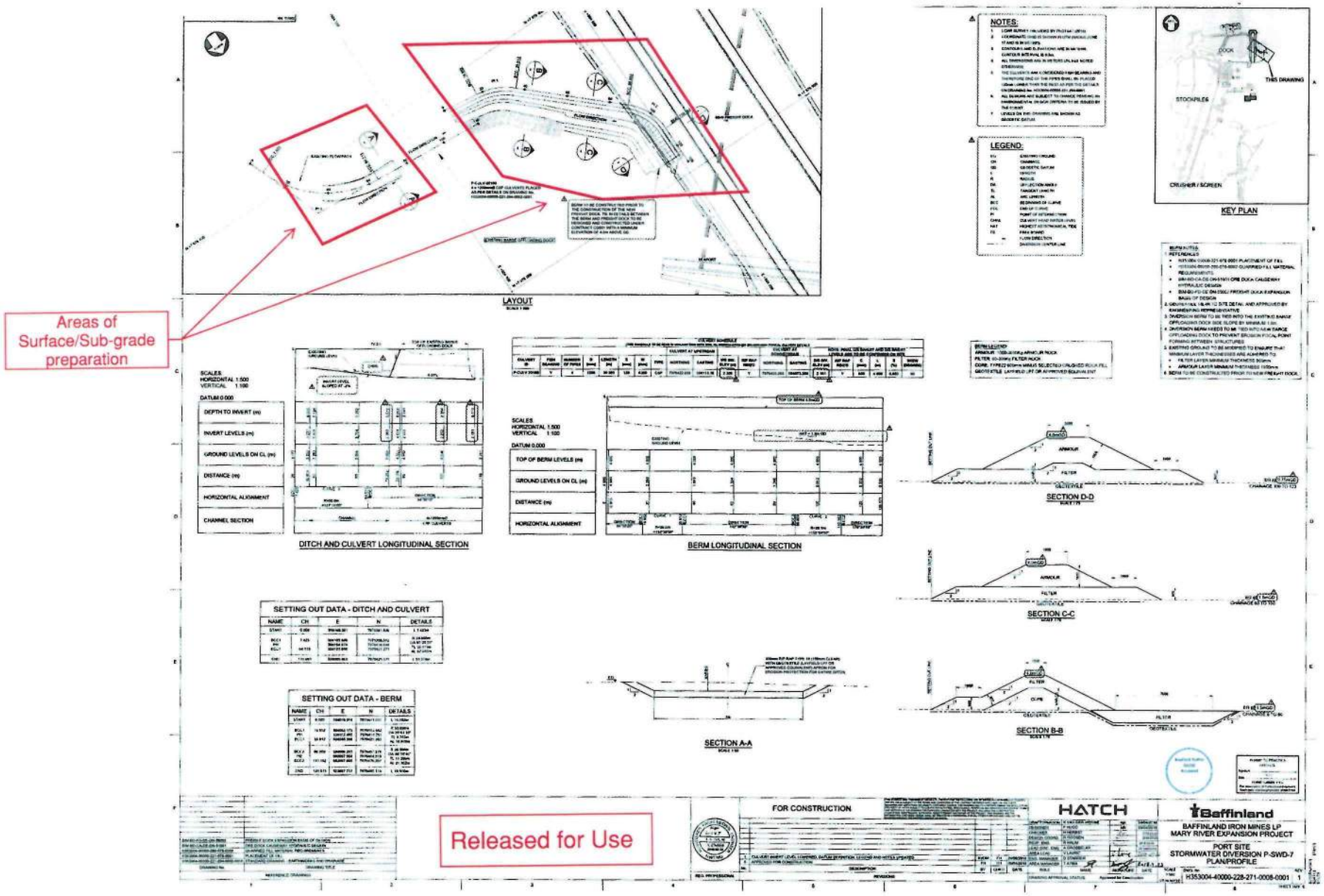
The outlined area is approved for placement of material (See attached Drawing).

H353004-40000-228-271-0008-0001_1_V5 - Stormwater Diversion P-SWD-7 Plan and Profile

Acceptance:

These works have been built in accordance with the Project Technical Specifications and Construction Drawings provided by the Engineer. The contractor may proceed with construction.

	Name	Signature	Date
Nuna Representative:	BRADFORD WATKIN		MAY 11, 2019
Hatch Representative:			


Areas of Surface/Sub-grade preparation
LAYOUT
NOTES:
LEGEND:
KEY PLAN
DOCK
THIS DRAWING
STOCKPILES
CRUSHER / SCREEN
DITCH AND CULVERT LONGITUDINAL SECTION
BERM LONGITUDINAL SECTION
SECTION D-D
SECTION C-C
SECTION B-B
SECTION A-A
SETTING OUT DATA - DITCH AND CULVERT
SETTING OUT DATA - BERM
FOR CONSTRUCTION
HATCH
Baffinland
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT
PORT SITE
STORMWATER DIVERSION P-SWD-7
PLAN/PROFILE
H353004-40000-228-271-0008-0001
Released for Use

Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

Type 12 (ROQ) Placement Approval

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0009A BIM WBS: 6141
Description of Area Inspected:	*Type 12 (ROQ) Approval* ***Work Scope Location:*** *Port Site East side of Freight Dock Expansion* ***Location Section:*** *Stream Diversion Berms and Drainage SWD-7*
Parties Present at Inspection	*Bradford Watkin, Darko Filipic, Brandon Urquhart (Representing Nuna), Robert Chaisson , Ken MacRae (Allnorth representing Hatch)*

Comments:

A visual inspection of Stream Diversion Berms and Drainage SWD-7 Type 22 Placement was completed.

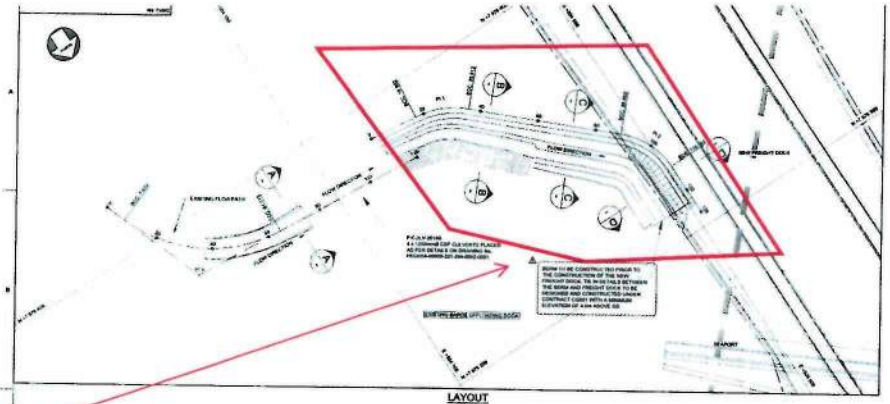
Placement conformed to the IFC drawings and client specifications.

See attached Drawing for details.

Acceptance:

These works have been built in accordance with the Project Technical Specifications and IFC Construction Drawings provided by the Engineer. The contractor may proceed with construction.

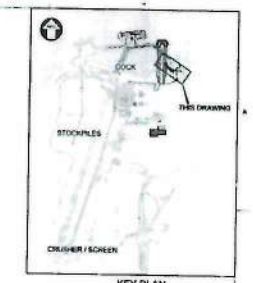
	Name	Signature	Date
Nuna Representative:	BRADFORD WATKIN		5/13/19
Hatch Representative:			



Area of Type 12 (ROQ) Placement

NOTES:

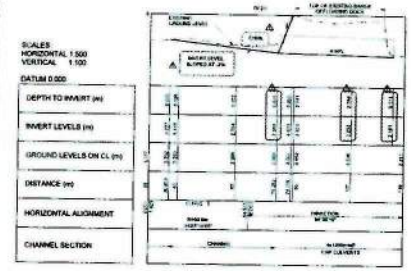
LEGEND:



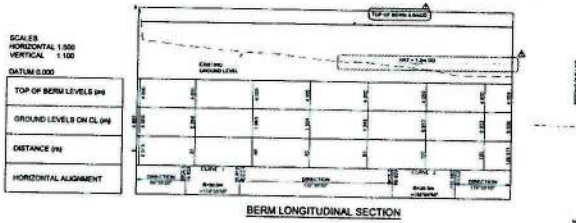
KEY PLAN

BERM NOTES:

BERM LEGEND:

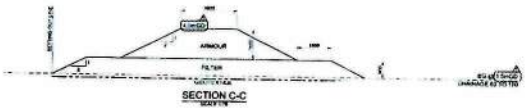


DITCH AND CULVERT LONGITUDINAL SECTION



BERM LONGITUDINAL SECTION

SECTION D-D



SECTION C-C

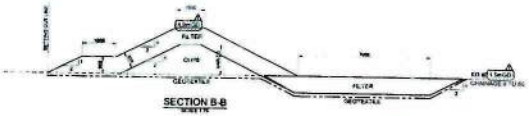
SETTING OUT DATA - DITCH AND CULVERT

NAME	CH	E	N	DETAILS
START	0.000	7573361.324		
PC1	7.425	7573356.574		
PT1	44.516	7573316.534		
END	114.481	7573276.511		

SETTING OUT DATA - BERM

NAME	CH	E	N	DETAILS
START	0.000	7573361.324		
BC1.1	16.652	7573352.172		
PC	33.652	7573341.751		
PT	33.652	7573341.751		
EC1.2	66.356	7573316.534		
END	116.481	7573276.511		

SECTION A-A



SECTION B-B

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HATCH

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BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
STORMWATER DIVERSION P-SWD-7
PLAN/PROFILE

H353004-40000-228-271-0008-0001

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH™

Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

Type C (Filter Stone) Placement Approval

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0009A BIM WBS: 6141
Description of Area Inspected:	*Type C Stone (Filter Stone) Approval* ***Work Scope Location:*** *Port Site East side of Freight Dock Expansion* ***Location Section:*** *Stream Diversion Berms and Drainage SWD-7*
Parties Present at Inspection	*Bradford Watkin, Darko Filipic, Brandon Urquhart (Representing Nuna), Robert Chaisson , Ken MacRae (Allnorth representing Hatch)*

Comments:

A visual inspection of Stream Diversion Berms and Drainage SWD-7 Type C placement was completed.

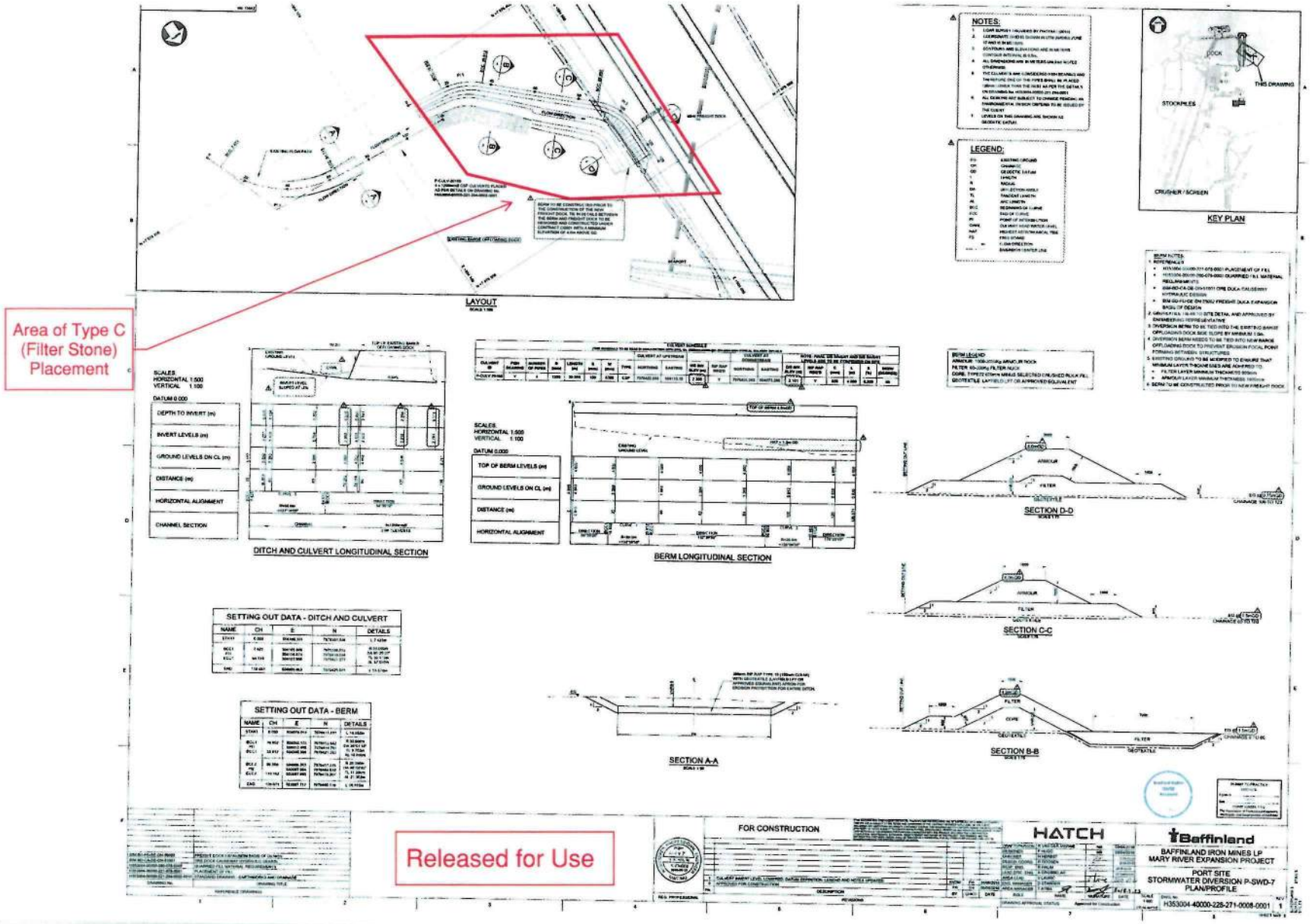
Placement conformed to the IFC drawings and client specifications.

See attached Drawing for details.

Acceptance:

These works have been built in accordance with the Project Technical Specifications and IFC Construction Drawings provided by the Engineer. The contractor may proceed with construction.

	Name	Signature	Date
Nuna Representative:	BRADFORD WATKIN		5/15/19
Hatch Representative:			


Area of Type C (Filter Stone) Placement
LAYOUT
NOTES:
LEGEND:
KEY PLAN
DOCK
THIS DRAWING
STOCKPILES
CRUSHER / SCREEN
BERM NOTES:
SCALES
HORIZONTAL 1:500
VERTICAL 1:100
DATUM 0.000
DEPTH TO INVERT (m)
INVERT LEVELS (m)
GROUND LEVELS ON CL (m)
DISTANCE (m)
HORIZONTAL ALIGNMENT
CHANNEL SECTION
DITCH AND CULVERT LONGITUDINAL SECTION
CULVERT SCHEDULE
SCALES
HORIZONTAL 1:500
VERTICAL 1:100
DATUM 0.000
TOP OF BERM LEVELS (m)
GROUND LEVELS ON CL (m)
DISTANCE (m)
HORIZONTAL ALIGNMENT
BERM LONGITUDINAL SECTION
BERM LEGEND
SECTION D-D
SECTION C-C
SECTION B-B
SECTION A-A
SETTING OUT DATA - DITCH AND CULVERT
NAME
CH
E
N
DETAILS
SETTING OUT DATA - BERM
NAME
CH
E
N
DETAILS
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STORMWATER DIVERSION P-SWD-7
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H353004-40000-228-271-0008-0001

NUNA EAST LTD

Baffinland Iron Mines Corporation

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Baffinland – Milne Port Earthworks H353004-CC006

Quality Control
Visual Inspection Report

Placement of Type 12 (ROQ) Berm

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0009A BIM WBS: 6141
Description of Area Inspected:	*Type 12 placement for Water Diversion Berm addition Approval* ***Work Scope Location:*** *Port Site - East side of Freight Dock Expansion.* ***Location Section:*** *Stream Diversion Berms and Drainage SWD-7, east side of Barge access road*
Date of Inspection:	
Parties Present at Inspection	*Bradford Watkin, Darko Filipic, Brandon Urquhart (Representing Nuna), Robert Chaisson , Ken MacRae (Allnorth representing Hatch)*

Comments:

A visual inspection of Stream Diversion Berms and Drainage SWD-7 Water Diversion Berm addition was completed.

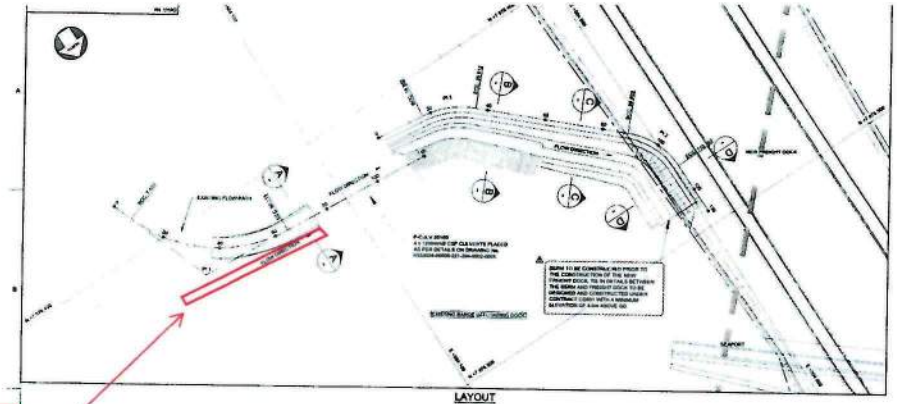
The placement conformed to the Environmental Dept. / Hatch request and client construction specifications. Placement of Type 12 (ROQ) and Geotextile materials was approved.

See attached Drawing for details.

Acceptance:

These works have been built in accordance with the Project Technical Specifications and IFC Construction Drawings provided by the Engineer. The contractor may proceed with construction.

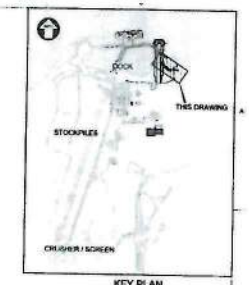
	Name	Signature	Date
Nuna Representative:	BRADFORD WATKIN		5/16/19
Hatch Representative:			



Area of additional water diversion berm placement

NOTES:

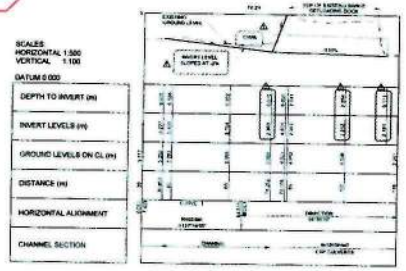
LEGEND:



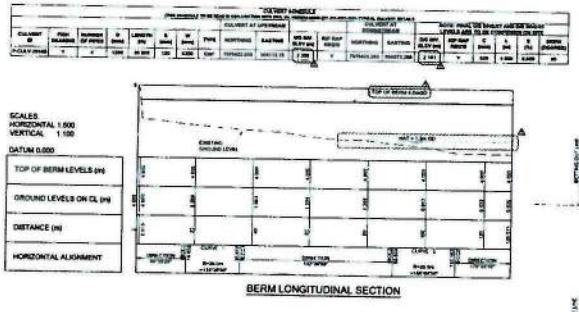
KEY PLAN

BERM NOTES

BERM LEGEND

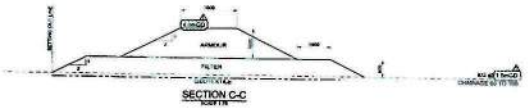


DITCH AND CULVERT LONGITUDINAL SECTION



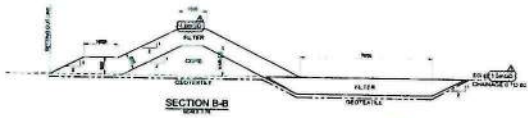
BERM LONGITUDINAL SECTION

SECTION D-D



SECTION C-C

SECTION A-A



SECTION B-B

SETTING OUT DATA - DITCH AND CULVERT

NAME	CH	E	N	DETAILS

SETTING OUT DATA - BERM

NAME	CH	E	N	DETAILS

Released for Use

FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
STORMWATER DIVERSION P-SWD-7
PLAN/PROFILE

H353004-40000-226-271-0008-0001

NUNA

NUNA EAST LTD

(Section 11)

Walkdown

NUNA EAST LTD	WALKDOWN REPORT	Exhibit 5 Revision 0

WALKDOWN ATTENDEES LIST	(Page 1 of 1)

Project Name: Mary River Expansion	**Contractor's Name:** Nuna East Ltd.	**Job File No.:** CC006-0009A
System CWP Description: Milne Port Stormwater Diversion SWD-7	**Location:** West of Freight Dock	**Plant No.:** N/A

This record indicates that this system was formally walked down and inspected in the field by the undersigned on the date as indicated below

Name	Company Name	Role	Signature	Date *(mm/dd/yy)*
BRADFORD WATKIN	NUNA EAST	QC		5/27/19
ROY BINDER	HATCH	SUPERINTENDENT		5/27/19

NUNA

NUNA EAST LTD

(Section 12)

Deficiency/Punchlist

DEFICIENCY / PUNCH ITEMS RECORD

Project Name: Mary River Expansion	**Walkdown Date (mm/dd/yy):** 5-14-19	**Area Number:** N/A
Area Name or Area Description: Stormwater Diversion SWD-7	**Job Number:** CC006-0009A	**Plant Number:** N/A

PURPOSE:

1. **For modules and vendor packages, open punch items are listed at release for shipment.**
2. **As part of a final walkdown package, this form lists the Contactor's open punch items that are transferred into the Nuna Turnover database**
3. **This form is used to capture Punch Items during Final Walkdown**

Tag Number	Description of Deficiency / Punch Item	Cat.	Discipline	Originator	Responsible for resolution	Vendor Y/N	Remarks
	No deficiencies found						

Punch Item Categories captured during Final Walkdown: A, B or C. A- To be rectified before final acceptance. B- To be addressed at a later time. C- Acceptable to be As-Built

(Section 13)

Acceptance of Completion of Construction

ACCEPTANCE OF COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the acceptance of the Quality Control Turnover documentation for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Ore Mines
2. **Contractor:** Nuna East Limited
3. **Construction:** Stormwater Diversion Installation
4. **Location:** Port Site
5. **Description:** Installation of Stormwater diversion Berm & Trench P-SWD-7

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turnover documentation has been forwarded to and accepted by the owner.

Nuna Representative:

Signature	Print Name	Title	Date
	BRADFORD WATKIN	QC COORDINATOR	9/2/19

Client Representative:

Signature	Print Name	Title	Date

NUNA

NUNA EAST LTD

(Section 14)

Construction Photographs

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH™

Baffinland – Milne Port Earthworks H353004-CC006

Job File Photographs

SWD-7

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH™

Baffinland – Milne Port Earthworks H353004-CC006

NUNA

NUNA EAST LTD

HATCH **Vendor/Contractor Document Review**

Doc Number	E353004-CC006-130-124-0008 SUB 01
Date Received	

Review Grade	**Next Submittal Status**
☐ **C1** - Proceed to next submission & status ☐ **C2** - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ **C3** - Do not proceed. Revise as noted & resubmit	☐ Internal Review
Next Submittal Date:	☐ Certified/☐ As-Built

☒ **C4** - No further submission required - Complete (select status below)

☐ Certified Final ☒ Final ☐ Cancelled ☐ Superseded

Package Engineer: Name, signature and date

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibilty for correct design, details & dimensions shall remain with the party submitting the drawing/document.

CC006

Baffinland Iron Mines Corp.: Mary River Expansion, Nu. 2019

NUNA

NUNA EAST LTD

Job #:

CC006-0010A

Culvert 22

Mary River Expansion Project

H353004

Port Site Civil Works

Section 1
Completion of Construction Declaration / Transfer of Care, Control & Custody

Section 2
Inspection & Test Plan (ITP)

Section 3
Redline / As-Built Drawings

Section 4
Survey Data Documentation

Section 5
Sieves / Statements of Compliance

Section 6
Request for Information Documents (RFIs)

Section 7
Non-Conformance Reports (NCRs)

Section 8
Land Disturbance Form (LDF)

Section 9
Signature Log

Section 10
Quality Control Documents

Section 11
Signature Log

Section 12
Walkdown

Section 13
Deficiency/Punchlist

Section 14
Acceptance of Completion of Construction Declaration

Section 15
Construction Photographs

NUNA

NUNA EAST LTD

(Section 1)

Completion of Construction Declaration / Transfer of Care, Control & Custody (TCCC) Forms

COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Mines Corporation
2. **Contractor:** Nuna East Limited
3. **Construction:** Culvert Installation
4. **Location:** Port Site Tote Road
5. **Description:** Installation of Culvert 22 under Tote Road

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turn over documentation has been forwarded to the owner.

(Signature)	Bradford Watkin (Print Name)	QC Coordinator (Title)	5/27/19 (Date)
Nuna East Ltd. (Company)	14, 6194 – 50 Street NW Edmonton, AB, CA (Address)		T6B 2N7 (City, Postal Code)

Transfer of Care, Custody and Control

FROM GROUP "A"	NUNA EAST LTD.	**Job File No.:**	CC006-0010A
To Group "B"	Hatch Engineering	**WBS No.:**	4810
Location:	Tote Road @~ P-SWD-PL3-1	**Date:**	April 1, 2019

ORIGINATING JOB FILE NO. DETAILS:	Culvert 22 Installation Involving: • SNOW, ICE REMOVAL; • ESTABLISHING A SUB-GRADE ; • PLACEMENT OF GEOTEXTILE; • AGGREGATE PLACEMENT.
Comments:	See Redline/ As-Built and Survey data for details.

THIS IS NOTICE TO GROUP "B" HATCH ENGINEERING THAT THE FOLLOWING WORK/MATERIAL AS PER P.O./CONTRACT IS/ARE BEING TRANSFERRED BY GROUP "A" NUNA EAST LTD. AND IS/ARE BEING FULLY ACCEPTED BY GROUP "B" HATCH ENGINEERING FROM GROUP "A" NUNA EAST LTD.
WITH EXCEPTIONS AS LISTED BELOW (IF ANY).

Description: No exceptions noted.	**Reference Drawing(s):** H353004-40000-228-271-0005-0001 Rev 1; H353004-00000-221-294-0001-0001 Rev 1.

EXCEPTIONS:	**DATE CORRECTED:**	**SIGNED OFF:**
1.		
2.		

"Exceptions Accepted and released"

From Group "A": Nuna East Ltd.

Date: 5/27/19

Print Name: BRADFORD WATKIN Signature:

To Group "B": Hatch Engineering.

Date: 27-MAY-2019

Print Name: ROY BADER Signature:

I CONFIRM THE CONDITIONS LISTED BELOW HAVE BEEN MET (WITH NOTED EXCEPTIONS OR DEFICIENCIES) AND RELEASE OF CARE, CUSTODY AND CONTROL OF THE ITEM(S) LISTED ABOVE TO THE RECIPIENT.

- ☑ All requests for Inspection are complete and all issues are resolved.
- ☑ All deficiencies have been resolved.
- ☑ All Redlines / As-Builts have been received.
- ☑ All relevant manuals and vendor data have been received.

Client Representative:

Name: ROY BADER Signature:

Date: 27-MAY-2019

NUNA

NUNA EAST LTD

(Section 2)

Inspection & Test Plan (ITP)

NUNA EAST LTD	QUALITY MANAGEMENT SYSTEM INSPECTION &TEST PLAN (Civil / Structural Installations)	Exhibit 1.0 Revision 0 Page 1 of 7

CLIENT: Hatch	**ITEM / DESCRIPTION / SCOPE:** Installation of Culvert 22 along Port site Tote road @ P-SWD-LP3	**NUNA ITP NO.:** CC006-0010A	**REVISION NO.:** 2
CONTRACTOR: Nuna East Ltd.		**AFFILIATED SUB-CONTRACTOR(S):** N/A	
CONTACT PERSON: Bradford Watkin	**CONTACT INFORMATION:** bradfordw@nunalogistics.com	**DATE:** May 14, 2019	
CONTRACT No.: H353004-CC006	**HATCH PROJECT NUMBER:** H353004-CC006	**HATCH DOCUMENT TITLE:** Mary River Expansion Project-Remaining Early Earthworks	
NUNA JOB No.: CC006-0010A	**PURCHASE ORDER No.:** N/A	**PROJECT MANAGER:** Chris Petrovic	
LOCATION(S): Milne Port Site		**LEGEND:** **H:** A mandatory hold on manufacturer until release by inspector or official waiver from client. **M:** Inspection stage by inspector on a spot basis, but not a mandatory hold point. **HR:** A mandatory hold / review & acceptance / approval of the specified documentation. **W:** To be informed and invited to inspect. Construction to continue if inspector does not attend. **R:** Review of report / certifications. **A:** Audit (Review at Random).	
CWP No.: N/A			

Approved For Construction

Stephen Nugent		May 14, 2019
Nuna Project Manager / Engineer (Print)	Signature	Date
Bradford Watkin		May 14, 2019
Nuna Quality Representative (Print)	Signature	Date
Hatch Representative (Print)	Signature	Date

Hatch Stamp

HATCH Vendor/Contractor Document Review

Doc Number	E353004-CC006-130-051-0011	SUB	03
Date Received			

Review Grade	Next Submittal Status
☐ C1 - Proceed to next submission & status ☐ C2 - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ C3 - Do not proceed. Revise as noted & resubmit	☐ Internal Review ☐ Certified/☐ As-Built
Next Submittal Date:	
☑ C4 - No further submission required - Complete (select status below) ☐ Certified Final ☑ Final ☐ Cancelled ☐ Superseded	

Package Engineer: Name, signature and date

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibility for correct design, details & dimensions shall remain with the party submitting the drawing/document.

Final Review

BRADFORD WATKIN		9/4/19
Nuna Quality Representative (Print)	Signature	Date
Hatch Quality Representative (Print)	Signature	Date

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	*Description of Activities* (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	*Functional Responsibility*	*Quality Control Activity*	*Verification Frequency*	*Reference Document(s)/ Controlling Procedure*	*Acceptance Criteria*	*Verification Document(s)* (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	*Comments*
1.	Contract Review / Approval	NUNA	Review / Verify Document	Prior to project start	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract				R		9/4/19	R			

ACTIVITY DATA							VERIFICATION DATA											
								Subcontractor			Nuna			Hatch			
Activity Number	**Description of Activities** (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	**Functional Responsibility**	**Quality Control Activity**	**Verification Frequency**	**Reference Document(s)/ Controlling Procedure**	**Acceptance Criteria**	**Verification Document(s) (Reporting)**	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	**Comments**
2.	Approval of ITP	NUNA / HATCH Representatives	Review	Prior to start	NUNA Quality System Manual	Signed ITP by Client representative, NUNA Quality System Manual	Signed acceptance of document (Exhibit 1.0)				HR	BW	5/29/19	R			
3.	Scope and Associated Documents	NUNA	Review For Errors	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R	BW	5/14/19	R			
4.	Signature Log	NUNA	Review, obtain signatures	Ongoing	NUNA Quality System Manual	NUNA Quality System Manual	NUNA Signature Log				R	BW	9/4/19	R			
5.	Verify land disturbance approval	NUNA	Verify	Prior to start	BIM site specification	BIM Approval	Approved documents				HR	BW	9/4/19	R			
6.	Locate and mark any underground obstructions / utilities	NUNA / ALL NORTH	Verify	Prior to start	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				H	N/A		H			
7.	Initial Survey Layout	NUNA / ALL NORTH	Cross Check of IFC Layout	Ongoing	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				HR	BW	3/27/19	HR			
8.	Work Method of Statement	NUNA / HATCH	Review	Prior to Start	IFC Drawings, NUNA Quality System Manual Hatch Spec. 221-078-0001 Rev 0	IFC Drawings, NUNA Quality System Manual, Hatch Spec. 221-078-0001 Rev 0	Nuna Operational Work Plan				R	N/A		R			Also referred to as a Nuna Operation Work Plan.
9.	Materials verification	NUNA	Review	As required	IFC Drawings, Hatch Spec. 280-078-0002 Rev 0, ASTM C-136	IFC Drawings, Hatch Spec.280-078-0002 Rev 0, ASTM C-136	Sieve Test Reports, QSRs				HR	BW	9/4/19	R			• Type 5 * NO SIEVES • Type 8 • Type 12 AVAILABLE • Type 19 • Geotextile (LP7 or equivalent) • Culvert Type CSP
10.	RFI	NUNA	Resolution of RFIs	As required	NUNA Quality System Manual	Disposition, Approved, closed and log updated	RFIs				HR	BW	9/22/19	R			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
11.	Excavation of works location completed	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W	BW	3/25/19	W			• Snow / Ice removal • No water seepage • Foreign objects • Debris • Disposal
12.	Subgrade foundation preparation completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W	BW	3/25/19	W			• ~~Compaction~~ BW N/A
Type 5 32 minus																	
13.	Type 5 32 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	BW	3/30/19	W			
14.	Compaction of Type 5 32 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	BW	3/30/19	W			
15.	Survey of Type 5 32 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR	BW	3/31/19	W			
Type 8 Jaw Run 150 minus																	
16.	Type 8 Jaw Run 150 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	BW	3/30/19	W			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
17.	Compaction of Type 8 Jaw Run 150 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W		3/30/19	W			
18.	Survey of Type 8 Jaw Run 150 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR		3/30/19	W			
ROQ (Type 12)																	
19.	ROQ (Type 12) Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W			W			
20.	Compaction of ROQ (Type 12) Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR	N/A			W			W			
21.	Survey of ROQ Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR			W			
Type 19 150 Clear																	
22.	Type 19 150 Clear Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP			N/A	W			W			

ACTIVITY DATA							VERIFICATION DATA											
								Subcontractor			Nuna			Hatch				
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
23.	Compaction of Type 19 150 Clear Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR		N/A		**W**			**W**			
24.	Survey of Type 19 150 Clear Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				**HR**			**W**			
25.	As built Survey	NUNA	Review	Continuous During Operations	IFC Drawings	IFC Drawings, Hatch Specifications	As built Drawings & Data				**R**		4/3/19	**W**			
26.	Final Walk down	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Contract Requirements	Final Walkdown Attendees' Report				**W**		5/07/19	H			
27.	Deficiency List / Punch list generated	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per contract Requirements	Item form punch list items resolved				**HR**		9/14/19	**HR**			
28.	NCR's closed.	NUNA / HATCH	Review of NCRs, Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Requirements	NCR log cleared				**HR**		9/14/19	**HR**			
29.	As-built / Redline drawings completed.	NUNA	Review / Verify	Post Final Walk down	IFC Drawings, Contract	As-builts / Redlines to Reflect All Field Changes	As-builts / Redlines				**HR**		9/1/19	**W**			
30.	Final Acceptance and ITP Sign off	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP (Exhibit 1.0)				**H**			**H**			
31.	Inspection Acceptance and Sign-Off Form signed by Engineer of record.	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP, Acceptance of Completion of Construction Form				**H**			**H**			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
32.	Turnover package completed and sent to client.	NUNA	Review / Verify	Post project completion	NUNA Quality System Manual, IFC Drawings, Contract	Contract, Code & applicable specifications.	Quality Management System Quality Control Turnover package.				H			A			

Note: Nuna ITP Sign-Offs based on supporting documentation.

Comments:

ITP ISSUE APPROVALS

Stephen Nugent	Site Project Manager		May 14, 2019
Nuna Contractor Project Manager / Engineer *(Print)*	Title	Signature	Date *(mm/dd/yy)*
Bradford Watkin	QC Coordinator		May 14, 2019
Nuna Contractor Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

ITP CLOSEOUT AND WORK ACCEPTANCE APPROVALS

Nuna Contractor Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

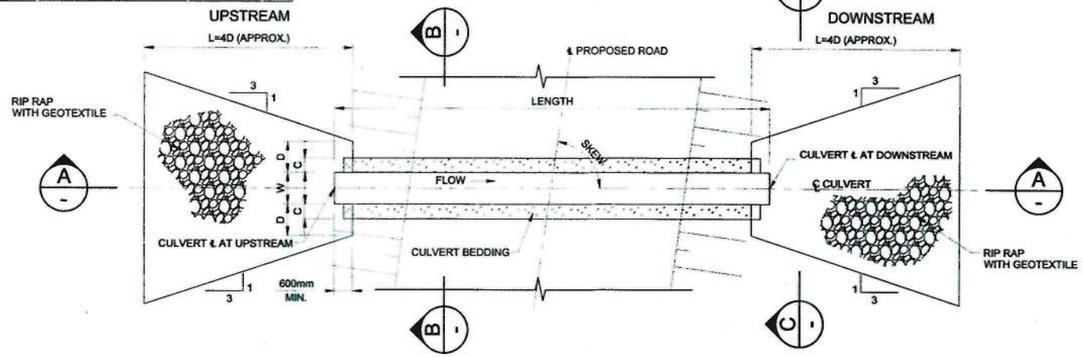
NUNA

NUNA EAST LTD

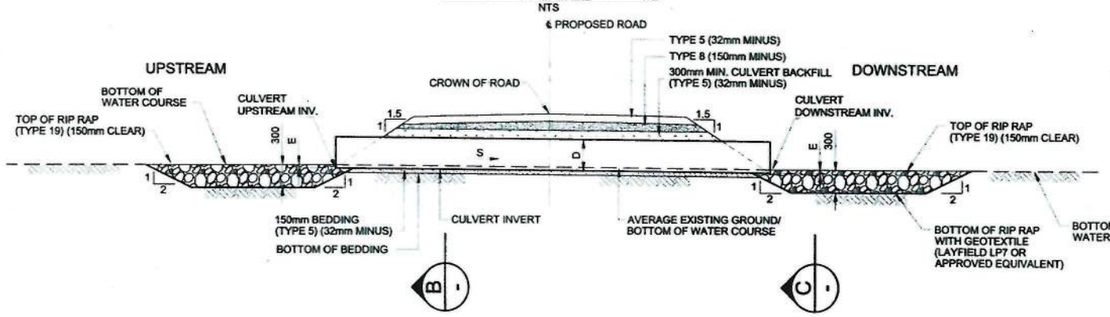
(Section 3)

Redline / As-Built Drawings

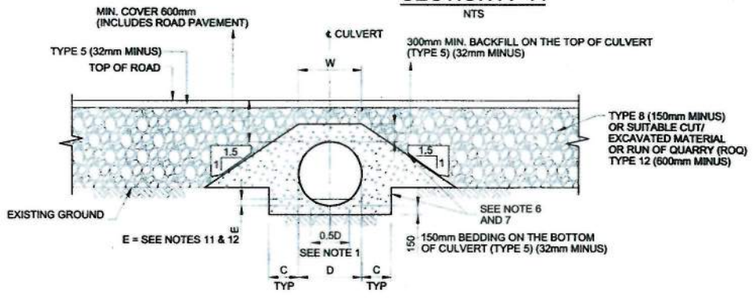
DWG. No. H353004-00000-221-294-0001-0001



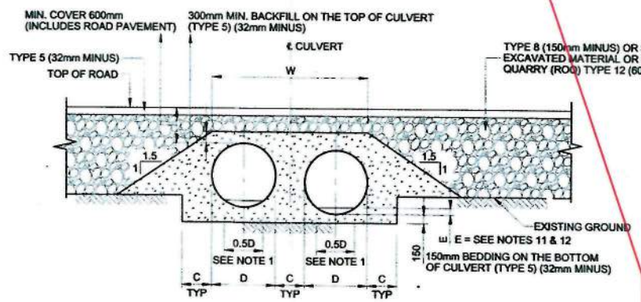
CULVERT PLAN VIEW
NTS



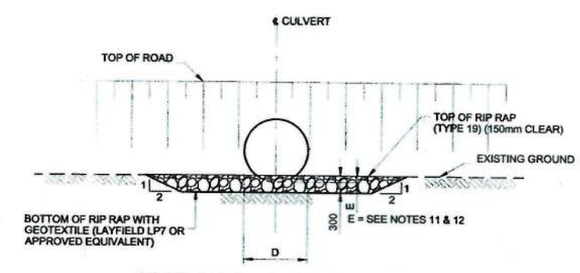
SECTION A - A
NTS



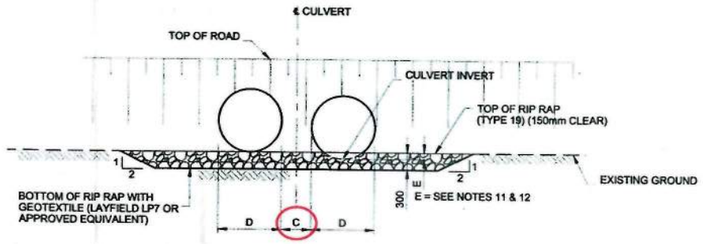
SECTION B - B (SINGLE PIPE)
NTS



SECTION B - B (DOUBLE PIPE)
NTS



SECTION C - C (SINGLE PIPE)
NTS



SECTION C - C (DOUBLE PIPE)
NTS

NOTES:

1. THE PIPE BED SHALL BE SHAPED TO RECEIVE THE BOTTOM OF THE PIPE.
2. GRANULAR MATERIAL PLACED UNDER THE HAUNCH MUST BE COMPACTED.
3. BEDDING AND BACKFILL MATERIAL SHALL BE HOMOGENEOUS GRANULAR MATERIAL, AND SHALL BE PLACED AND COMPACTED UNIFORMLY AROUND THE PIPE.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE
5. ALL ELEVATIONS ARE IN METERS UNLESS NOTED OTHERWISE.
6. WHERE VERTICAL EXCAVATION IS NOT POSSIBLE, MODIFY EXCAVATION SLOPE TO MIN. 1.5H: 1V.
7. PROVIDE 300mm TYPE 8 (150mm MINUS) AROUND BEDDING AND BACK FILL MATERIAL ONLY WHEN ROCKFILL IS PRESENT.
8. THE CULVERT UPSTREAM AND DOWNSTREAM LOCATIONS AND INVERT ELEVATIONS ARE BASED ON LIDAR DATA. NO BOTTOM OF STREAM SURVEY DATA WAS AVAILABLE AT THE TIME OF PREPERATION OF THIS DRAWING.
9. ADJUST CULVERT START AND END COORDINATES AND INVERT ELEVATIONS IN THE FIELD AS APPROVED BY COMPANY'S REPRESENTATIVE.
10. FLOW DIRECTION MUST BE FROM UPSTREAM TO DOWNSTREAM. PROVIDE AVERAGE STREAM SLOPE ALONG THE CULVERT AS CULVERT SLOPE BASED ON ACTUAL FIELD CONDITION.
11. FOR FISH BEARING CULVERT, E=0.1D
    FOR NON-FISH BEARING CULVERT, E=0
12. FOR FISH BEARING CULVERT WITH MULTIPLE PIPES, ONLY ONE PIPE SHALL BE EMBEDDED BY "E" (APPROXIMATELY 0.1D) AND ALL OTHER PIPES SHALL BE PLACED ON GROUND/BOTTOM OF WATER COURSE.

MATERIAL AND COMPACTION SPECIFICATION:

SUBGRADE PREPARATION:
THE SUBGRADE SHOULD SHOULD BE PROOF-ROLLED AND INSPECTED PRIOR TO PLACING FILL MATERIALS. THE IDENTIFIED SOFT AREAS SHALL BE FURTHER COMPACTED, OR IF NECESSARY, BE MITIGATED USING GRANULAR OR ROCK FILL. A QUALIFIED GEOTECHNICAL ENGINEER SHALL INSPECT AND APPROVE THE SUBGRADE.
THE ROCKFILL SHALL NOT BE PLACED IN WATER OR ON ICE. DEWATERING IS REQUIRED WHERE PONDING WATER IS ENCOUNTERED. OVER-EXCAVATION IS REQUIRED FOR GROUND ICE, IF ENCOUNTERED.
THE SUBGRADE ON THE GROUND SHALL BE LEFT AS IT IS NATURALLY BEFORE CONSTRUCTION AS MUCH AS POSSIBLE. THE OVER-EXCAVATION SHOULD BE MINIMIZED TO AVOID DISTURBANCE OF THE EXISTING PERMAFROST.

TYPE 5 (CRUSHER RUN 32mm MINUS MATERIAL) OR TYPE 3 (CRUSHER RUN 50mm MINUS):
THE MATERIAL MUST BE PLACED IN LIFTS NOT EXCEEDING 200mm AND SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVELY, THE COMPACTION SHOULD ACHIEVE A MINIMUM OF 100 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY TEST METHOD ASTM D698.

TYPE 8 (CRUSHER RUN 150mm MINUS):
THE ROCKFILL MUST BE PLACED IN LIFTS NOT EXCEEDING 500mm. THE PLACEMENT SHALL AVOID SEGREGATION AND NESTING OF COARSE PARTICLES. IT SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). EACH LIFT MUST BE "PROOF-ROLLED" PRIOR TO PLACING THE SUBSEQUENT LIFT.

TYPE 12 (RUN OF MINE, TYPICALLY 600mm MINUS):
THE ROCKFILL, IF USED, MUST BE PLACED IN LIFTS NOT EXCEEDING 1000mm. THE ROCKFILL SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVE COMPACTORS SUCH AS HEAVY LOADED RUBBER TIRED HAUL TRUCKS CAN ONLY BE USED AS PER A WRITTEN APPROVAL FROM THE ENGINEER.

An increase to 700mm in "C" distance per RFI-0016

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
C	CULVERT SPACING AND BEDDING CLEARANCE C = 500 WHILE D > 900mm C = 300 WHILE D <= 900mm
W	CULVERT BACKFILL TOP WIDTH W = (n*D) + (n-1)*C
TYPE	CULVERT MATERIAL
U/S INV.	CULVERT UPSTREAM INVERT ELEVATION
D/S INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	RIPRAP APRON LENGTH L = 4xD (APPROX)
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

Bradford Watkin QA/QC Reviewed

CULVERT SCHEDULE

CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	UPSTREAM CULVERT CENTRE NORTHING	UPSTREAM CULVERT CENTRE EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	DOWNSTREAM CULVERT CENTRE NORTHING	DOWNSTREAM CULVERT CENTRE EASTING	D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)

NUNA EAST LTD
REDLINE DRAWING
CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.
REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT
NAME/SIGN: BRADYARD WATKIN COMPANY: DCAA
DATE OF AS-BUILT: APRIL 1, 2019 ☐ CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:
DRAWING No. DRAWING TITLE

REFERENCE DRAWINGS

REGISTERED PROFESSIONAL ENGINEER — R. A. HALIM — LICENSEE — 2018-09-20 — NWT/NU

REG. PROFESSIONAL

FOR CONSTRUCTION

THIS DRAWING WAS PREPARED BY HATCH LTD. ("HATCH") FOR THE EXCLUSIVE USE OF BAFFINLAND IRON MINES LP ("CLIENT") AND ITS USE IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN HATCH AND THE THE CLIENT, INCLUDING ANY LIMITATIONS ON LIABILITY CONTAINED THEREIN. THIS DRAWING AND ITS CONTENTS REMAIN THE INTELLECTUAL PROPERTY OF HATCH SUBJECT TO CLIENT'S ROYALTY-FREE, IRREVOCABLE, PERPETUAL AND NON-EXCLUSIVE LICENSE TO USE AND REPRODUCE THE DRAWING FOR PURPOSES CONNECTED WITH THE PROJECT, INCLUDING THE CONSTRUCTION, COMPLETION, MAINTENANCE, EXTENSION, REINSTATEMENT AND REPAIR OF THE PROJECT. THIS DRAWING, AND THE INFORMATION CONTAINED HEREIN, SHALL BE TREATED AS CONFIDENTIAL FOR ALL OTHER PURPOSES AND SHALL NOT BE MODIFIED WITHOUT THE WRITTEN CONSENT OF HATCH.

No.	DESCRIPTION	BY	CHK'D	DATE
1	MATERIAL AND COMPACTION SPECIFICATION ADDED	IHB	FH	18/09/2018
0	APPROVED FOR CONSTRUCTION	IHB	FH	01/12/2017

REVISIONS

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	I BARNARD	NR	
DESIGNER	I BARNARD	NR	
CHECKER	F HUGO		2018-09-20
DESIGN COORD.	R GOOSEN		2018-09-20
RESP. ENG.	R HALIM		2018-09-20
LEAD DISC. ENG.	A GROBBELAAR		20 September
AREA LEAD	V LAVRIC		2018-09-20
ENG. MANAGER	D STANGER		2018.09.21
AREA MANAGER	T ATIBA		2018.09.23

DRAWING APPROVAL STATUS: Approved for Construction

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

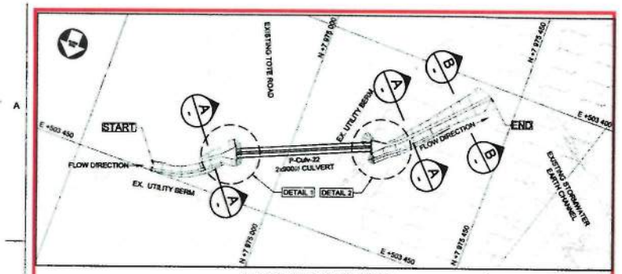
SITE WIDE
STANDARD DRAWING
TYPICAL CULVERT DETAILS

SCALE: NTS OR AS NOTED
DWG. No. H353004-00000-221-294-0001-0001
REV 1
SHEET SIZE: D

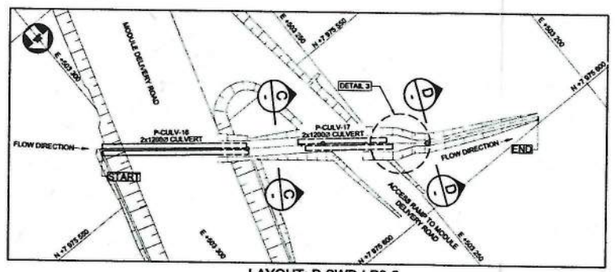
PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

Released for Use

$USERNAMES $DATES $FILES $TIMES



LAYOUT: P-SWD-LP3-1
SCALE 1:500



LAYOUT: P-SWD-LP3-2
SCALE 1:500

SETTING OUT DATA-P-SWD-LP3-1

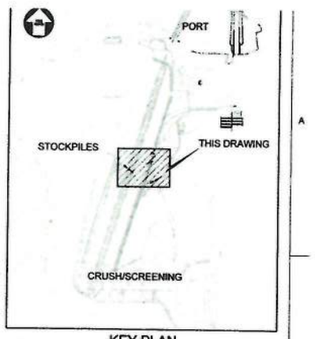
NAME	CH	E	N	DETAILS
START	0.000	503481.237	7975497.573	L 4.168m
BCC1 PI1 ECC1	4.189 11.432	503477.139 503473.521 503470.592	7975496.749 7975498.029 7975493.837	R 16.000m DA 25°00'00" TL 3.681m AL 7.243m
BCC2 PI2 ECC2	16.079 21.865	503458.825 503464.488 503461.816	7975491.574 7975480.345 7975488.189	R 25.000m DA 13°18'10" TL 2.909m AL 5.786m
BCC3 PI3 ECC3	56.551 64.875	503429.842 503426.108 503423.321	7975474.526 7975472.802 7975469.915	R 20.000m DA 23°16'20" TL 4.119m AL 8.124m
END	90.012	503405.877	7975461.539	L 25.357m

SETTING OUT DATA-P-SWD-LP3-2

NAME	CH	E	N	DETAILS
START	0.000	503308.928	7975833.849	L 38.920m
PI1	38.920	503276.731	7975558.494	L 36.920m
PI2	58.041	503291.126	7975588.453	L 19.121m
PI3	84.321	503240.725	7975596.029	L 26.280m
END	113.370	503214.518	7975598.551	L 29.049m

EG EXISTING GROUND
CH CHAINAGE
L LENGTH
R RADIUS
DA DEFLECTION ANGLE
TL TANGENT LENGTH
AL ARC LENGTH
BCC BEGINNING OF CURVE
ECC END OF CURVE
PI POINT OF INTERSECTION
HWL HIGH WATER LEVEL
FB FREE BOARD
FLOW DIRECTION
DIVERSION CENTER LINE
RIPRAP

NOTES:
1. LIDAR SURVEY PROVIDED BY PHOTSAT (2016)
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS AND ELEVATIONS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS ARE IN MILLIMETER UNLESS NOTED OTHERWISE.
5. FINAL CULVERT POSITIONS TO BE CONFIRMED ON SITE.

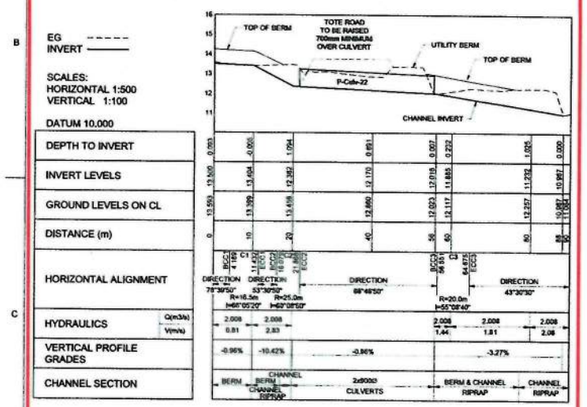


KEY PLAN

EG ----- INVERT ——

SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 10.000

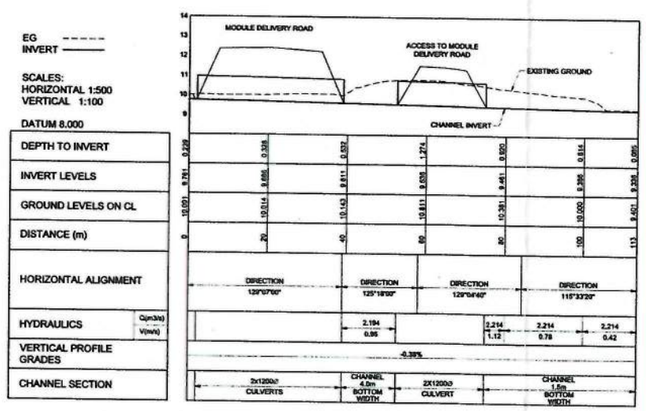


P-SWD-LP3-1 DIVERSION LONGITUDINAL SECTION

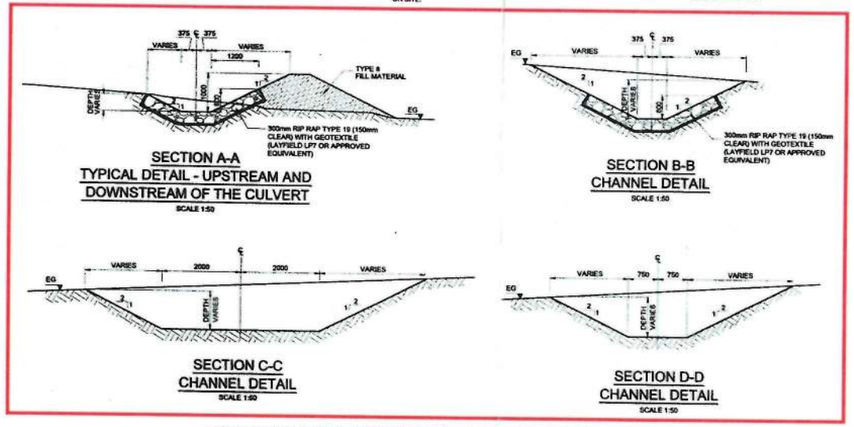
EG ----- INVERT ——

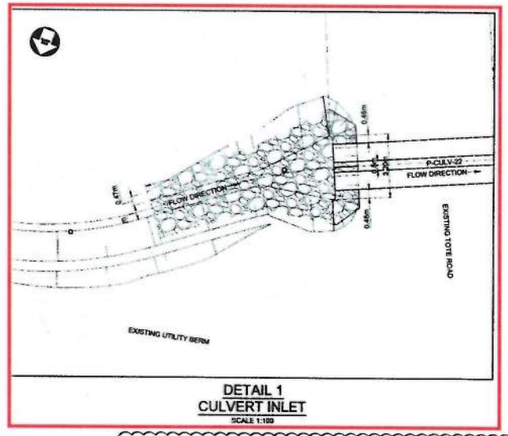
SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 8.000

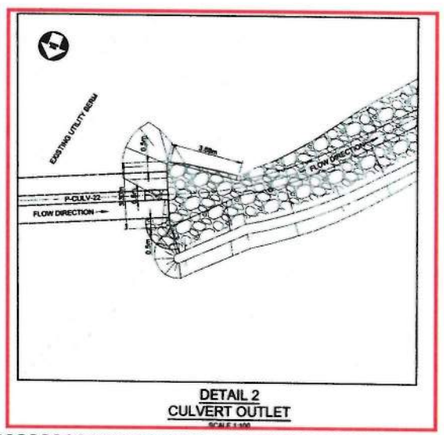


P-SWD-LP3-2 DIVERSION LONGITUDINAL SECTION

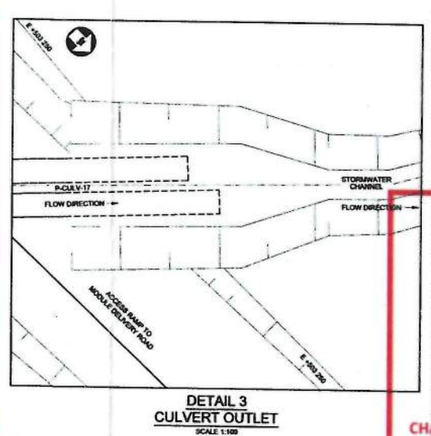




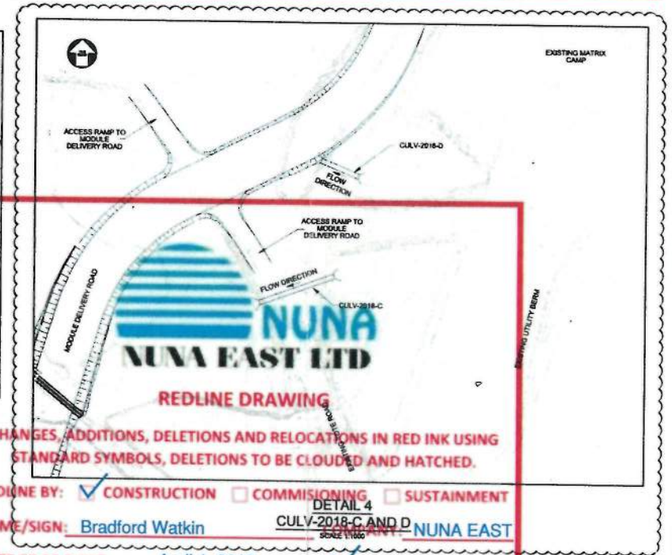
DETAIL 1
CULVERT INLET
SCALE 1:100



DETAIL 2
CULVERT OUTLET
SCALE 1:100



DETAIL 3
CULVERT OUTLET
SCALE 1:100



DETAIL 4
CULV-2018-C AND D
SCALE 1:1000

CULVERT SCHEDULE
(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-00000-221-294-0001-0001-TYPICAL CULVERT DETAILS

CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	CULVERT AT UPSTREAM NORTHING	CULVERT AT UPSTREAM EASTING	CULVERT AT UPSTREAM US INV. ELEV (m)	CULVERT AT UPSTREAM RIP RAP REQ'D	CULVERT AT DOWNSTREAM NORTHING	CULVERT AT DOWNSTREAM EASTING	NOTE: FINAL US INVERT AND DS INVERT LEVELS ARE TO BE CONFIRMED ON SITE: DS INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)
P-CULV-16	N	2	1200	39.900	0	3900	CSP	7975535.240	503305.45	9.754	N	7975558.404	503276.731	9.616	N	500	4.8	0.370	45
P-CULV-17	N	2	1200	22.245	0	3900	CSP	7975566.310	503285.480	9.564	Y	7975580.076	503248.004	9.481	Y	500	4.8	0.370	15
P-CULV-22	N	2	900	34.900	0	2300	CSP	7975486.360	503462.190	12.339	Y	7975474.959	503430.944	12.020	Y	300	2.4	0.930	90
CULV-2018-C	N	1	600	40.125	0	900	CSP	7975907.324	503432.367	10.685	N	7975893.850	503394.848	10.000	N	300	-	2.205	45
CULV-2018-D	N	1	600	20.835	0	900	CSP	7975957.587	503444.885	10.200	N	7975885.380	503425.374	10.000	N	300	-	0.960	90

CULVERT SCHEDULE LEGEND:

D CULVERT DIAMETER
E EMBEDMENT DEPTH
C CULVERT SPACING AND BEDDING CLEARANCE
C = 500 WHILE D > 900mm
C = 300 WHILE D <= 900mm
W CULVERT BACKFILL TOP WIDTH
W = (n*D) + (n-1)*C
n = No. OF PIPES / CULVERTS
TYPE CULVERT MATERIAL
US INV. CULVERT UPSTREAM INVERT ELEVATION
DS INV. CULVERT DOWNSTREAM INVERT ELEVATION
L RIPRAP APRON LENGTH
L = 4xD (APPROX)
S CULVERT SLOPE
LENGTH CULVERT LENGTH
CSP CORRUGATED STEEL PIPE

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT
NAME/SIGN: Bradford Watkin COMPANY: NUNA EAST
DATE OF AS-BUILT: April 1, 2019 ☑ CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:

PERMIT TO PRACTICE HATCH LTD.
Signature
Date
PERMIT NUMBER # NU
The Association of Professional Engineers, Geologists and Geophysicists of NUNAVUT

SCALE 1:500 IN METERS

DRAWING No.	DRAWING TITLE
REFERENCE DRAWINGS	
H353004-00000-221-294-0002-0010	STANDARD DRAWING - EARTHWORKS AND DRAINAGE
H353004-00000-221-294-0001-0001	STANDARD DRAWING - TYPICAL CULVERT DETAIL
H353004-00000-220-272-0001-0001	PORT SITE - BLOCK PLAN

Released for Use

Bradford Watkin
QA/QC
Reviewed

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	EDC STAMP REMOVED. DETAIL 4 ADDED AND CULVERT SCHEDULE UPDATED	KmM	FH	07/09/2018
0	FOR CONSTRUCTION	FH	FH	09/04/2018

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	H HERBST		09/04/2018
DESIGNER	H HERBST		09/04/2018
CHECKER	F HUGO		2018-09-10
DESIGN COORD.	R GOOSEN		2018-09-11
RESP. ENG.	R HALIM		2018-09-11
LEAD DISC. ENG.	A GROSSELAAR		2018-09-12
AREA LEAD	V LAVRIC		2018-09-12
ENG. MANAGER	D STANGER		2018-09-12
AREA MANAGER			

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER PROJECT

PORT SITE
MODULE ROAD AND TOTE ROAD
DRAINAGE DETAILS

SCALE 1:500 OR AS NOTED
DWG. No. H353004-40000-228-271-0005-0001
REV 1
SHEET SIZE: E

ELSER NAMES
XREFS
SPACES

(Section 4)

Survey Documentation

NUNA

NUNA EAST LTD

(Section 4)

Survey Documentation as supplied by Hatch Engineering C/O AllNorth QA

Mary River Expansion Project
Baffin - Milne Port Earthworks H353004-CC006
Job File CC006-0010A
Culvert 22 @ P-SWD-LP3

Rock placed pre-Bedding

Point Numbers	Northing	Easting	Elevation	Description
0327DE 100	7975486.031	503463.858	11.793	RK
0327DE 101	7975483.462	503458.849	11.742	RK
0327DE 102	7975481.063	503451.557	11.885	RK
0327DE 103	7975477.502	503442.954	11.931	RK
0327DE 104	7975473.967	503432.927	11.783	RK
0327DE 105	7975473.091	503428.72	11.923	RK
0327DE 106	7975476.933	503427.995	11.941	RK
0327DE 107	7975479.667	503434.87	11.798	RK
0327DE 108	7975482.242	503442.434	11.848	RK
0327DE 109	7975485.588	503450.933	11.754	RK
0327DE 110	7975488.413	503457.04	11.784	RK
0327DE 111	7975490.678	503462.15	11.886	RK
RTCM-Ref 0000	7976257.943	503553.329	15.095	

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0010A
Culvert 22 @ P-SWD-LP3

Bedding Cover & Pipe As-Built

Point Number	Northing	Easting	Elevation	Description
0327DE 100	7975477.215	503430.03	12.014	
0327DE 101	7975478.979	503435.342	12.06	
0327DE 102	7975474.999	503435.834	12.042	
0327DE 103	7975473.773	503431.273	12.016	
0327DE 104	7975473.751	503431.266	11.99	
0327DE 105	7975476.575	503441.297	12.149	
0327DE 106	7975481.208	503440.237	12.087	
0327DE 107	7975484.9	503449.221	12.155	
0327DE 108	7975480.171	503450.305	12.177	
0327DE 109	7975487.286	503455.137	12.248	
0327DE 110	7975482.837	503457.225	12.259	
0327DE 111	7975485.942	503463.532	12.373	
0327DE 112	7975490.562	503461.069	12.337	
RTCM-Ref 0000	7976257.943	503553.329	15.095	

Mary River Expansion Project
Baffin - Milne Port Earthworks H353004-CC006
Job File CC006-0010A
Culvert 22 @ P-SWD-LP3

Point Number	Northing	DIV Easting	Elevation	Description
0331DE	7975512.768	503429.847	12.457	TOE
0332DE	7975502.852	503432.537	12.337	TOE
0333DE	7975488.529	503435.48	12.686	TOE
0334DE	7975488.453	503435.483	12.675	TOE
0335DE	7975480.11	503435.766	13.108	TOE
0336DE	7975478.54	503435.546	13.289	TOE
0337DE	7975474.048	503435.595	13.365	TOE
0338DE	7975469.818	503435.181	12.782	TOE
0339DE	7975455.796	503434.29	12.674	TOE
0340DE	7975443.769	503430.525	12.819	TOE
0341DE	7975440.761	503429.558	12.865	CREST
0342DE	7975451.723	503433.809	12.995	CREST
0343DE	7975465.34	503436.545	13.537	CREST
0344DE	7975476.204	503437.353	13.836	CREST
0345DE	7975486.376	503437.833	13.764	CREST
0346DE	7975493.325	503436.562	13.42	CREST
0347DE	7975505.364	503432.707	12.907	CREST
0348DE	7975515.168	503429.611	12.509	CREST
0349DE	7975516.817	503445.685	12.625	CREST
0350DE	7975508.207	503449.562	13.186	CREST
0351DE	7975493.739	503457.068	13.801	CREST
0352DE	7975484.629	503461.548	13.849	CREST
0353DE	7975475.99	503465.285	13.845	CREST
0354DE	7975467.388	503469.677	13.872	CREST
0355DE	7975453.55	503475.221	13.779	CREST
0356DE	7975446.194	503478.588	13.692	CREST
0357DE	7975447.821	503478.471	13.479	TOE
0358DE	7975458.969	503473.734	13.311	TOE
0359DE	7975470.308	503469.265	13.207	TOE
0360DE	7975477.949	503465.206	13.265	TOE
0361DE	7975484.423	503462.724	13.241	TOE
0362DE	7975485.851	503463.251	13.193	TOE
0363DE	7975490.643	503460.971	13.01	TOE
0364DE	7975495.807	503458.271	12.946	TOE
0365DE	7975496.003	503456.68	13.009	TOE
0366DE	7975506.429	503450.808	12.773	TOE
0367DE	7975510.534	503449.377	12.802	TOE
0368DE	7975530.405	503430.136	12.157	CL
0369DE	7975515.286	503436.668	12.657	CL
0370DE	7975499.381	503443.429	13.438	CL
0371DE	7975486.266	503449.542	13.896	CL

Mary River Expansion Project
Baffin - Milne Port Earthworks H353004-CC006
Job File CC006-0010A
Culvert 22 @ P-SWD-LP3

0372DE	7975468.629	503457.084	14.041	CL
0373DE	7975452.697	503464.131	13.861	CL
0374DE	7975439.841	503470.295	13.681	CL
0375DE	7975434.175	503473.234	13.716	CL
0376DE	7975424.453	503477.601	13.935	CL
0377DE	7975413.372	503482.363	14.05	CL
0378DE	7975411.62	503476.431	14.027	SPOT
0379DE	7975415.473	503487.929	13.98	SPOT
0380DE	7975428.263	503484.655	13.826	SPOT
0381DE	7975435.997	503481.469	13.803	SPOT
0382DE	7975426.152	503470.424	13.806	SPOT
0383DE	7975432.837	503466.054	13.634	SH
0384DE	7975442.616	503459.943	13.736	SH
0385DE	7975457.545	503452.933	13.882	SH
0386DE	7975472.144	503447.535	13.912	SH
0387DE	7975462.509	503447.197	13.633	SH
0388DE	7975452.681	503446.566	13.361	SH
0389DE	7975439.662	503444.798	13.007	SH
0390DE	7975440.33	503445.37	12.927	SPOT
0391DE	7975449.734	503447.891	13.263	SPOT
0392DE	7975462.939	503448.569	13.726	SPOT
0393DE	7975455.342	503452.13	13.658	SPOT
0394DE	7975445.907	503455.543	13.401	SPOT
0395DE	7975439.384	503458.366	13.485	SPOT
0396DE	7975438.535	503438.827	13.076	CL
0397DE	7975450.1	503440.78	13.18	CL
0398DE	7975460.134	503442.118	13.521	CL
0399DE	7975473.765	503443.563	13.997	CL
0400DE	7975482.064	503444.748	13.947	CL

Mary River Expansion Project
Baffin - Milne Port Earthworks H353004-CC006
Job File CC006-0010A
Culvert 22 @ P-SWD-LP3

Top of Bedding & Inverts

Point Number	Northing	Easting	Elevation	Description
0328DE 100	7975486.023	503462.321	13.656	TOP BEDDING
0328DE 101	7975489.973	503460.211	13.603	TOP BEDDING
0328DE 102	7975486.872	503453.125	13.374	TOP BEDDING
0328DE 103	7975482.111	503442.838	13.342	TOP BEDDING
0328DE 104	7975477.264	503431.193	13.248	TOP BEDDING
0328DE 105	7975473.751	503432.802	13.319	TOP BEDDING
0328DE 106	7975476.74	503440.804	13.408	TOP BEDDING
0328DE 107	7975480.74	503450.117	13.474	TOP BEDDING
0328DE 108	7975483.331	503456.539	13.499	TOP BEDDING
0328DE 109	7975487.877	503463.456	13.382	TOP PIPE
0328DE 110	7975489.5	503462.774	13.357	TOP PIPE
0328DE 111	7975489.508	503462.809	12.462	INVERT
0328DE 112	7975487.921	503463.482	12.487	INVERT
0328DE 113	7975475.36	503429.735	12.063	INVERT
0328DE 114	7975473.883	503430.319	12.047	INVERT
0328DE 115	7975473.894	503430.368	12.966	TOP PIPE
0328DE 116	7975475.38	503429.778	12.978	TOP PIPE

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0010A
Culvert 22 @ P-SWD-LP3

Final Culvert Invert Data April 3, 2019

AB 190403 Culv 22

Point Number	Northing	Easting	Elevation	Description
1093001	7975488	503463.477	12.449	INV CULV22
1093002	7975489	503462.81	12.428	INV CULV22
1093003	7975475	503429.734	12.05	INV CULV22
1093004	7975474	503430.35	12.041	INV CULV22

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(Section 5)

No sieves or statements of compliance available.

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(Section 6)

Request for Information Documentation (RFI)

Request for Information

Project Name:	**Mary River Expansion Stage 3**	**Project Number:**	**H353004**
CWP No:		**RFI No:0016**	
Contractor: Nuna East Ltd.		**Contract No: CC006**	
Initiated By: Darko Filipic		**Cost impact?**	**Y☐ / N☒**
Date of Submittal: 2019-01-22		**Schedule Impact?**	**Y☐ / N☒**

Information Requested:
Nuna is proposing to increase the distance "C" between the double culverts to 700mm in order to accommodate the width of the plate tampers so that compaction of the Type 5 fill material can be achieved. The current design calls for a spacing "C" of 500mm for culverts >900mm in diameter. The operating width of the plate tamper is 600mm. A culvert spacing of 700mm will allow for the plate tamper to pass between the culverts including the coupler sections where the flange sticks out.

Reference Document No.	Revision	Title/Description
H353004-00000-221-294-0001-0001	1	Site Wide Standard Drawing Typical Culvert Details

RFI Classification:

Design	☒	Construction	☐	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☐	Other	☐

Project Response: [attach sufficient detail as required]

Approved Proceed

RFI Follow-up Requirements:

Contract Order Issued	Yes ☐/No ☐ ([insert associated tracking #])	Back-Charge Required	(Yes ☐/No ☐)
As-Built Required	Yes ☐/No ☐	Materials Required	(Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	Nick Mills		Jan 22 / 19
Hatch Engineering Home Office ☐ Site ☐	Glen Peace		2019-01-22
Hatch Project Management			
Client (as required):			

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Note: The response to this RFI is NOT an authorization to perform a change to the Contract. Work may proceed in accordance with the response only if such work involves NO change in cost or schedule. In the case where the response may involve change in cost or schedule, a Contractual instrument must be issued by Hatch and received by the Contractor before the response can be executed. Where no Contractual instrument is indicated, action must be taken in accordance with (reference appropriate Contract Sections that authorize execution of any change in schedule and cost).

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(Section 7)

No Non-Conformance Reports (NCRs) Generated

NON-CONFORMANCE REPORT LOG

Project: CC006 **Date:** 8-23-19

Area: Mary River Expansion - Milne Port **Contract/Work Pkg. No.:** CC006-0010A

CWP#: N/A **Originator:** Bradford Watkin

NCR No.	Description	Disposition	Date.	Rectified	Date
	No NCR's generated for this work package				

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(Section 8)

Land Disturbance Form (LDF)

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.		**Department:**	Projects
Date:	1/13/19	**Name/Position:**	**Darko Filipic/Project Coordinator**
Project location:	Tote Road		P-CULV-22 @ ~KM1.5
Project Duration:	Start 1/18/19	Finish	2/1/19

Project Details

GPS Coordinates: Lat: N+7975500 Long: E+5034500 (NAD 83)

Land disturbance area: 1000 m2

Type of disturbance (Excavation of tote road for culvert, placement of culvert and backfill)

Material placement over tundra for temporary tote road bypass around culvert.

Detailed description of planned work.

Construction of twin culvert across tote road at ~KM1.5. Temporary bypass lane for tote road traffic to be built on up slope side of tote road.

- Temp bypass lane to be built with ROQ, Type 8 and Type 5 material.
- Culvert to be 2 x 900mm dia x 36m long.
- ditch leading into culvert will be built as per IFC, with erosion control measures.

Check List

1	**Has the Environmental Concerns in section 2.3.1. of the Environmental Protection plan been reviewed** - If No, please review the list of concerns on page 4 of this form.	Yes
2	**Will work be completed within 31m of the High Water Mark of any stream or water body?.** - If Yes, please contact the Environment Department.	No
3	**Is there a stream or waterbody >31m of the work site?.** - If Yes, Include a detailed description of the Sediment and Erosion Control Measures on Page 3.	No
4	**Has the area been cleared by Archaeology?.** - If No or Unknown, Please contact the Environment Department.	Yes
5	**Will the land disturbance occur between May 31 and August 31?.** - If Yes, An Active Migration Bird Survey is required prior to start.	No

Approval

Approved by: Position:

Approved on:

Valid Unit:

Comments and recommendations by the Environment Department:

LAND DISTRURBANCE FORM

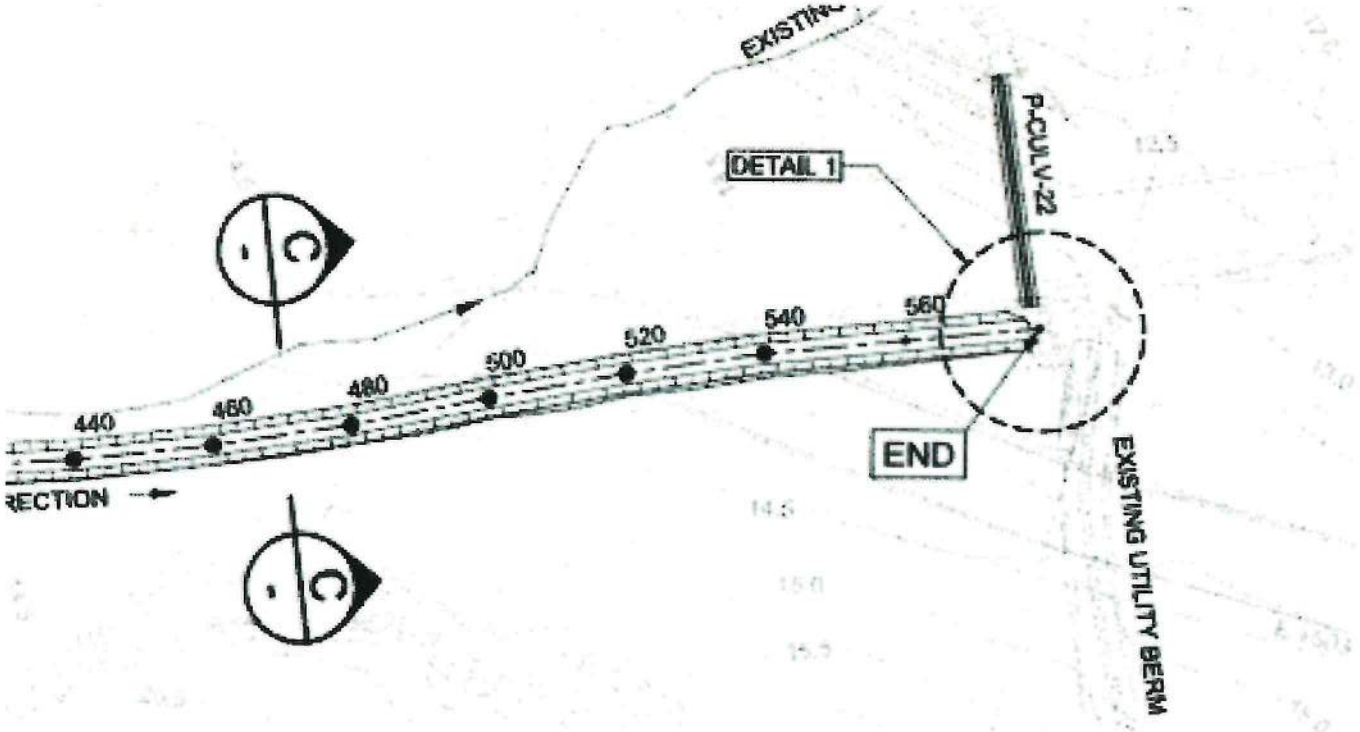
Document # BAF-PH1-830-P16-0008, Section 2.3

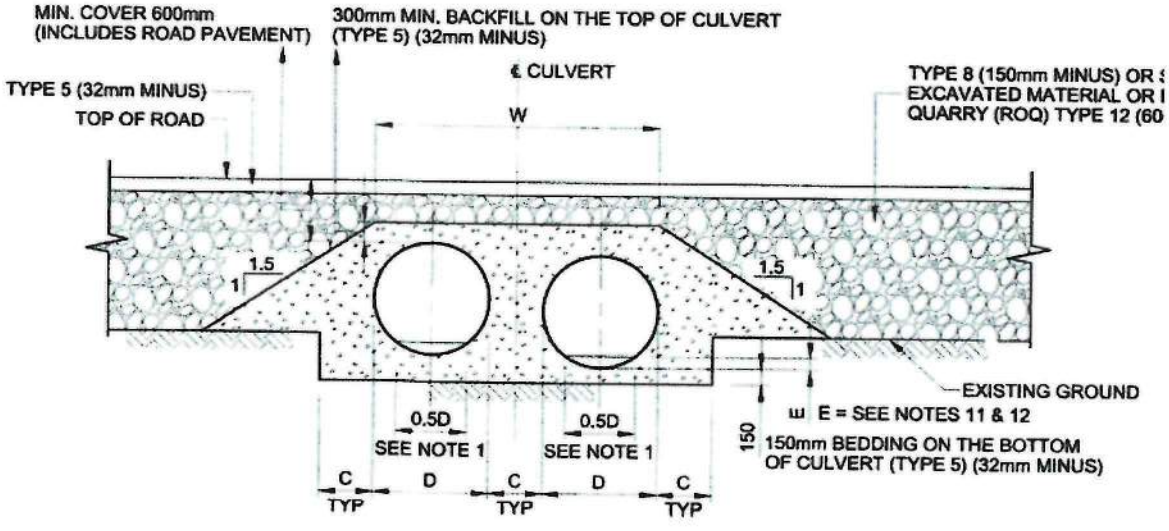
Form No.	0	**Department:**	Projects
Date:	1/13/19		
Project location:	Tote Road		

Design/Engineering Drawing

See Attached Drawing, No IFC drawings exist for this temporary laydown.

See drawings: H353004-40000-223-271-0009-0001r1, H353004-00000-221-294-0001-0001r1





SECTION B - B (DOUBLE PIPE)

NTS

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	1/13/19		
Project location:	Tote Road		

Sediment and Erosion Control Measures

Please give a detailed discription of the run-off control measure which will be put in place.
Include all water bodies and streams, slope direction and materials to be used.

- construction to take place in freezing conditions so no run off controls are necessary.
- temporary bypass road will be removed upon completion of the culvert installation.
- after removal of the temp bypass road, the ditch leading into the culverts will be lined with geotextile and rip rap

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	1/13/19		
Project location:	Tote Road		

2.3.1 ENVIRONMENTAL CONCERN

2.3.1 ENVIRONMENTAL CONCERN

The Arctic is a fragile environment where the recovery of vegetation within this region is slow. Ground disturbance shall be minimized to protect archaeological resources, wildlife habitats, sensitive landforms, such as ice-rich permafrost features, and prevent erosion and the movement of sediment into watercourses and water bodies. Various permits, licences and approvals issued to Baffinland are specific in regards to ground disturbances and outline the necessary protection measures that need to be taken to minimize this aspect of the Project.

The following measures are to be implemented to minimize ground disturbance:

- Equipment and personnel must stay on existing roads and trails
- Approval for new areas of disturbance must be approved by the Operations Manager
- Rutting (furrow creation) shall be avoided on ground surfaces; overland travel of equipment or vehicle will be suspended when rutting occurs
- All camps shall be located on gravel, sand or other durable land
- No materials shall be stored on the surface ice of streams
- No material shall be removed from below the ordinary high water mark of any stream
- Greywater sumps must be located a distance of at least thirty (30) metres above the ordinary high water mark of any water body

Bradford Watkin

From: Brandon Urquhart
Sent: Thursday, April 11, 2019 7:13 AM
To: Bradford Watkin
Subject: FW: [External]JEA Tote Road Culverts

Culvert 22, 23, 32

Brandon Urquhart
Project Coordinator
E brandonu@nunalogistics.com
C +17806913582

NUNA EAST LTD.
PO Box 370
Pond Inlet, Nunavut, Canada, X0A 0X0
nunalogistics.com

You may withdraw consent for email communications from the Nuna Group of Companies by responding to the email with "Unsubscribe" in the subject line.

From: Brandon Urquhart
Sent: Tuesday, January 29, 2019 11:03 AM
To: Connor Devereaux <Connor.Devereaux@baffinland.com>
Subject: RE: [External]JEA Tote Road Culverts

Thank you and will do.

Brandon Urquhart
Project Coordinator
E brandonu@nunalogistics.com
C +17806913582

NUNA EAST LTD.
PO Box 370
Pond Inlet, Nunavut, Canada, X0A 0X0
nunalogistics.com

You may withdraw consent for email communications from the Nuna Group of Companies by responding to the email with "Unsubscribe" in the subject line.

From: Connor Devereaux <Connor.Devereaux@baffinland.com>
Sent: Tuesday, January 29, 2019 10:00 AM
To: Brandon Urquhart <brandonu@nunalogistics.com>
Cc: stephane.gionet@hatch.com; darlene.hofer@hatch.com; D Gardiner <d.gardiner@hatch.com>; Ken Humby <kenh@nunalogistics.com>; Darko Filipic <DarkoF@nunalogistics.com>; William Bowden

<William.Bowden@baffinland.com>; Timothy Ray Sewell <Timothy.Sewell@baffinland.com>; Sten Sundin <Sten.Sundin@baffinland.com>; Connor Paquette <Connor.Paquette@baffinland.com>; Dominic Ritgen <Dominic.Ritgen@baffinland.com>
Subject: RE: [External]JEA Tote Road Culverts

Hello Brandon,

Attached is the approved Hatch JEA and LDFs for the referenced work. Construction of both culverts is approved and the team will monitor construction daily. Please send notice when the work has been completed for JEA close out.

Connor

Connor Devereaux | Environmental Superintendent
Mary River Mine Site
T: +1 647 253 0596 x6016
C: +1 647 456 9067

Baffinland

2275 Upper Middle Road East, Suite 300, Oakville, Ontario, Canada, L6H 0C3
www.baffinland.com

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From: Brandon Urquhart [mailto:brandonu@nunalogistics.com]
Sent: Tuesday, January 29, 2019 8:35 AM
To: Connor Devereaux <Connor.Devereaux@baffinland.com>
Cc: stephane.gionet@hatch.com; darlene.hofer@hatch.com; D Gardiner <d.gardiner@hatch.com>; Ken Humby <kenh@nunalogistics.com>; Darko Filipic <DarkoF@nunalogistics.com>; William Bowden <William.Bowden@baffinland.com>
Subject: [External]JEA Tote Road Culverts

CAUTION: This email was received from outside of Baffinland systems. It may contain malicious attachments or links. If you are not familiar with the content of the email do not open the attachments or click embedded links.

Hello Connor,

Please see the attached Hatch JEA for the Tote Road culverts for signoff. I have attached the relevant drawings and approved LDF's as well.

Thank you,

Brandon Urquhart
Project Coordinator
E brandonu@nunalogistics.com
C +17806913582

NUNA EAST LTD.
PO Box 370

Pond Inlet, Nunavut, Canada, X0A 0X0
nunalogistics.com

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(Section 9)

Quality Control Reports

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Baffinland
HATCH

Nuna East Limited Quality Department
QCD-001 Sub-Grade Approval
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval- P-CULV-22*
Date of Inspection:	*3/28/19*
Parties Present at Inspection	*Darko Filipic*

Comments:

A visual inspection of the Culvert P-CULV-22 surface/sub-grade was conducted prior to placement of fill Material.

Sub-grade: Excavation of subgrade is to the grades and elevations specified on the IFC drawings, as confirmed by Survey. Subgrade material is frozen and compact.

The outlined area is approved for placement of material – for bedding.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

NUNA Representative:	Darko Filipic		3/28/19
	Name	Signature	Date
HATCH Representative:			
	Name	Signature	Date

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Baffinland
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NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material.* *Type: 5* *Location: P-CULV-22*
Date of Inspection:	*3/30/19*
Parties Present at Inspection	Darko Filipic

Comments:

An inspection of the Type 5 material placement was conducted.
Material was place according to spec. Compaction was achieved using a 1000 lbs plate tamper. (20 passes per lift).

The grade, elevation and compaction were found to be acceptable. Bedding & Hatch

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

NUNA Representative:	Darko Filipic		3/30/19
	Name	Signature	Date
HATCH Representative:			
	Name	Signature	Date

NUNA EAST LTD

Baffinland HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material.* *Type: 8* *Location: P-CULV-22*
Date of Inspection:	*3/31/19*
Parties Present at Inspection	

Comments:

An inspection of the Type 8 material placement was conducted.
Material was place according to spec. Compaction was achieved using a 1000 lbs plate tamper. 20 passes.

The grade, elevation and compaction were found to be acceptable. Fill

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Darko Filipic		3/31/19
HATCH Representative:			

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HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material.* *Type: ~~8~~ 5* *Location: P-CULV-22*
Date of Inspection:	*4/3/19*
Parties Present at Inspection	Darko Filipic

Comments:

An inspection of the Type 5 material placement was conducted.- road capping.
Material was place according to spec. Compaction was achieved using a 1000 lbs plate tamper. 20 passes.

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Darko Filipic	[signature]	April 3, 2019
HATCH Representative:			

Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0002A BIM WBS: 4810
Description of Area Inspected:	*Work Scope Location: P-Culvert 22* *Location Section: Tote Road by P-SWD-PL3-1*
Date of Inspection:	*April 4, 2019*
Parties Present at Inspection	*Bradford Watkin (Nuna), Don Webber (Nuna).*

Comments:

A final visual inspection was completed of P-Culvert 22, at time of inspection construction was found to meet all design criteria as per the IFC drawings and specifications.

See page 2 for progress and final photos.

Acceptance:

These works have been built in accordance with the Project Technical Specifications and IFC Construction Drawings provided by the Engineer. The contractor may proceed with construction.

Nuna Representative:	Bradford Watkin		April 4, 2019
	Name	Signature	Date
Hatch Representative:			
	Name	Signature	Date

Page 2

Subbase & Fill

Vest Side of Road (Upstream)

East Side of Road (Downstream)

(Section 10)

Signature Log

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC005

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			**Code:**	N/A
Contractor:	Nuna East Ltd.	**Contract/Job No.:**	CC005 All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	**ITP No.:**	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN	[illegible]	[illegible]
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC	[illegible]	[illegible]
ALLNORTH	Materials technician	Kenny MacRae	[illegible]	[illegible]
Hatch	Hatch Civil	Stephane Grenet	SG	[illegible]
NUNA EAST	PROJECT COORDINATOR	BRANDON URQUHART	[illegible]	[illegible]
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]	[illegible]	[illegible]
HATCH	FIELD ENG. MANAGER	GLEN PEACE	SOP	[illegible]
NUNA EAST	SITE SUPERINTENDENT	ANTHONY STEWART	[illegible]	[illegible]
NUNA EAST	SITE SUPERINTENDENT	HARVEY BLOVIN	[illegible]	[illegible]
Hatch	Hatch Super	Roger Landry	[illegible]	[illegible]
Nuna East	Project Manager	Stephen Nugent	[illegible]	[illegible]
HATCH	CONSTRUCTION SUPERINTENDENT	ROY BADER	R.B.	[illegible]
BVTV	Project Engineer	David Garcia	D.G	[illegible]
Hatch	QA Manager	Ronny Franken	R.F.	[illegible]

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC005

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			**Code:**	N/A
Contractor:	Nuna East Ltd.	**Contract/Job No.:**	CC005 All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	**ITP No.:**	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN		
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC		
ALLNORTH	Materials technician	Kenny MacRae		
Hatch	Hatch Civil	Stephane Grenier		
NUNA EAST	PROJECT COORDINATOR	BRANDON UNGUHART		
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]FER		
HATCH	FIELD ENG. MANAGER	GLEN PEACE		
Hatch	Construction Super	Dean Moffett		
Hatch	Construction Super	Roger Landry		

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(Section 11)

Walkdown

NUNA EAST LTD	WALKDOWN REPORT	Exhibit 5 Revision 0

WALKDOWN ATTENDEES LIST	(Page 1 of 1)

Project Name: Mary River Expansion	**Contractor's Name:** Nuna East Ltd.	**Job File No.:** CC006-0010A
System CWP Description: Milne Port Mod Road & Tote Road Drainage Culvert 22	**Location:** Tote Road @~ P-SWD-PL3-1.	**Plant No.:** N/A

This record indicates that this system was formally walked down and inspected in the field by the undersigned on the date as indicated below

Name	Company Name	Role	Signature	Date *(mm/dd/yy)*
BRADFORD WATKIN	NUNA EAST	QC		5/27/19
ROY BAKER	HATCH	SUPERINTENDENT		5/27/19

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(Section 12)

Deficiency / Punchlist Record

DEFICIENCY / PUNCH ITEMS RECORD

Project Name: Mary River Expansion	**Walkdown Date (mm/dd/yy):** 5-27-19	**Area Number:** N/A
Area Name or Area Description: Culvert 22	**Job Number:** CC006-0010A	**Plant Number:** N/A

PURPOSE:

1. **For modules and vendor packages, open punch items are listed at release for shipment.**
2. **As part of a final walkdown package, this form lists the Contactor's open punch items that are transferred into the Nuna Turnover database**
3. **This form is used to capture Punch Items during Final Walkdown**

Tag Number	Description of Deficiency / Punch Item	Cat.	Discipline	Originator	Responsible for resolution	Vendor Y/N	Remarks
	No deficiencies found						

Punch Item Categories captured during Final Walkdown: A, B or C. A- To be rectified before final acceptance. B- To be addressed at a later time. C- Acceptable to be As-Built

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(Section 13)

Acceptance of Completion of Construction Declaration

ACCEPTANCE OF COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the acceptance of the Quality Control Turnover documentation for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Ore Mines
2. **Contractor:** Nuna East Limited
3. **Construction:** Culvert Installation
4. **Location:** Tote Road
5. **Description:** Culvert 22 installation beneath Tote Road for Stormwater Management

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turnover documentation has been forwarded to and accepted by the owner.

Nuna Representative:

Signature	Print Name	Title	Date
	BRADFORD WATKIN	QC COORDINATOR	8/24/19

Client Representative:

Signature	Print Name	Title	Date

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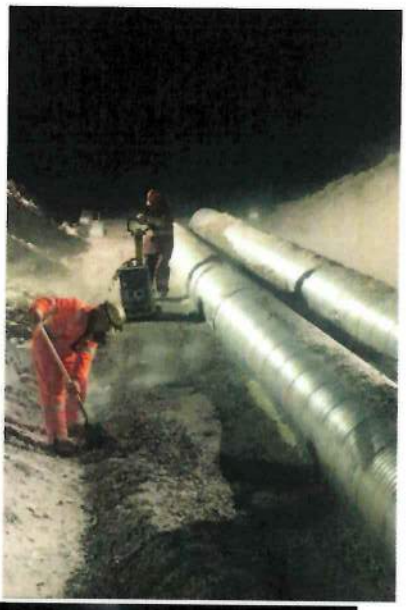
(Section 14)

Construction Photographs



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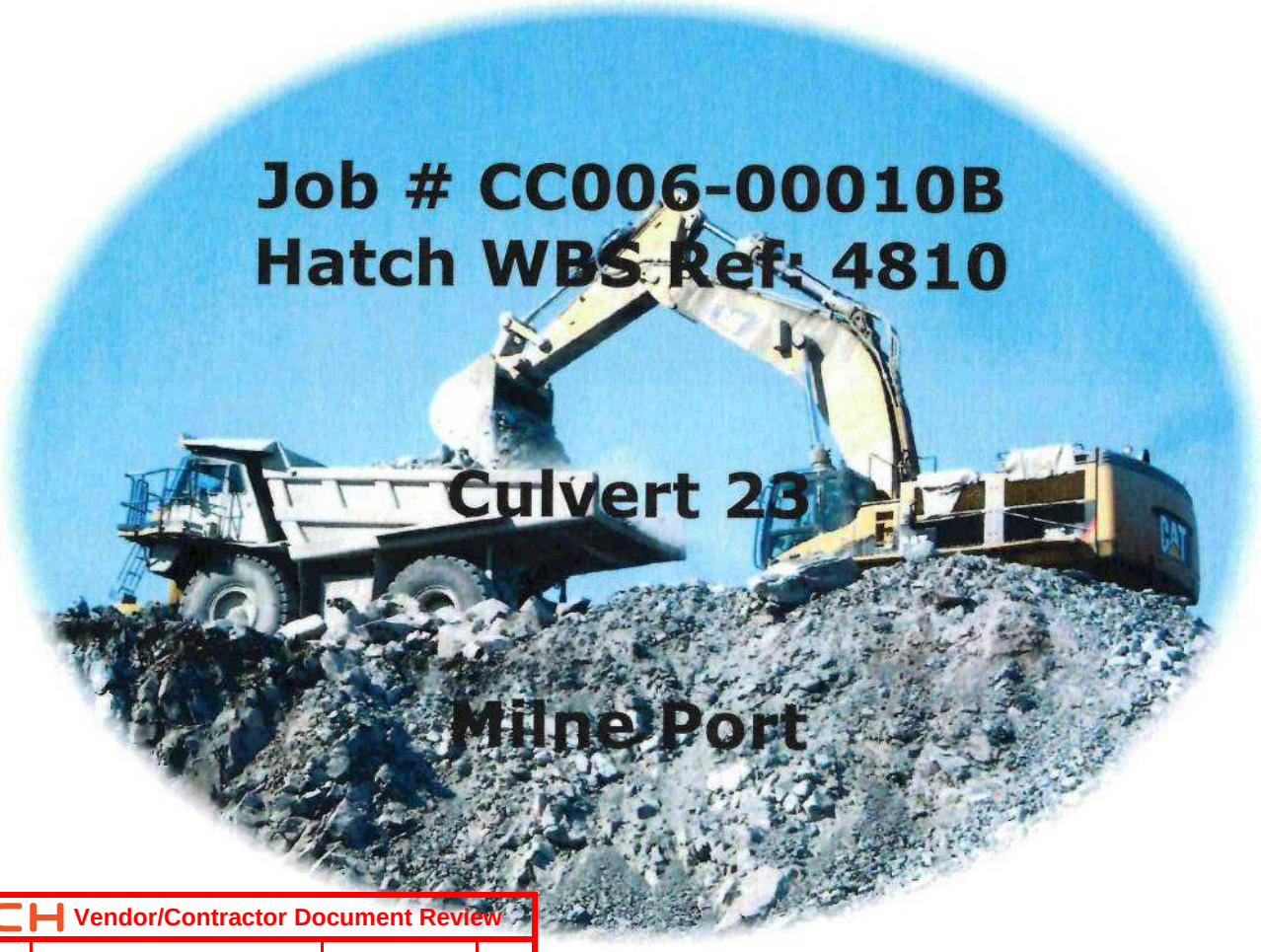


HATCH **Vendor/Contractor Document Review**

Doc Number	E353004-CC006-130-124-0009	**SUB**	01
Date Received			

Review Grade	**Next Submittal Status**
☐ **C1** - Proceed to next submission & status ☐ **C2** - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ **C3** - Do not proceed. Revise as noted & resubmit	☐ Internal Review
Next Submittal Date:	☐ Certified/☐ As-Built

☒ **C4** - No further submission required - Complete (select status below)

☐ Certified Final ☒ Final ☐ Cancelled ☐ Superseded

Package Engineer: Name, signature and date

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibilty for correct design, details & dimensions shall remain with the party submitting the drawing/document.

CC006

NUNA

NUNA EAST LTD

Job #:

CC006-0010B

Culvert 23

Mary River Expansion Project

H353004

Port Site Civil Works

Section 1
Completion of Construction Declaration / Transfer of Care, Control & Custody

Section 2
Inspection & Test Plan (ITP)

Section 3
Redline / As-Built Drawings

Section 4
Survey Data Documentation

Section 5
Sieves / Statements of Compliance

Section 6
Request for Information Documents (RFIs)

Section 7
Non-Conformance Reports (NCRs)

Section 8
Land Disturbance Form (LDF)

Section 9
Quality Control Documents

Section 10
Signature Log

Section 11
Final Walkdown Attendees List

Section 12
Deficiency/Punch Items Record

Section 13
Acceptance of Completion of Construction Declaration

Section 14
Construction Photographs

NUNA

NUNA EAST LTD

(Section 1)

Completion of Construction Declaration / Transfer of Care, Control & Custody (TCCC) Forms

COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility: Baffinland Iron Mines Corporation**
2. **Contractor: Nuna East Limited**
3. **Construction: Culvert Installation**
4. **Location: Port Site Tote Road**
5. **Description: Installation of Culvert 23 under Rail Access Road**

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turn over documentation has been forwarded to the owner.

	Bradford Watkin	QC Coordinator	9/3/19
(Signature)	(Print Name)	(Title)	(Date)
Nuna East Ltd.	14, 6194 – 50 Street NW Edmonton, AB, CA		T6B 2N7
(Company)	(Address)		(City, Postal Code)

Transfer of Care, Custody and Control

FROM GROUP "A"	NUNA EAST LTD.	**Job File No.:**	CC006-0010B
To Group "B"	Hatch Engineering	**WBS No.:**	4810
Location:	Rail Access Road @~ 0+518	**Date:**	April 4, 2019

ORIGINATING JOB FILE NO. DETAILS:	Culvert 23 Installation Involving: • SNOW, ICE REMOVAL; • ESTABLISHING A SUB-GRADE ; • PLACEMENT OF GEOTEXTILE; • AGGREGATE PLACEMENT.
Comments:	See Redline/ As-Built and Survey data for details.

THIS IS NOTICE TO GROUP "B" HATCH ENGINEERING THAT THE FOLLOWING WORK/MATERIAL AS PER P.O./CONTRACT IS/ARE BEING TRANSFERRED BY GROUP "A" NUNA EAST LTD. AND IS/ARE BEING FULLY ACCEPTED BY GROUP "B" HATCH ENGINEERING FROM GROUP "A" NUNA EAST LTD.
WITH EXCEPTIONS AS LISTED BELOW (IF ANY).

Description: No exceptions noted.	**Reference Drawing(s):** H353004-40000-228-271-0002-0002 Rev 0; H353004-00000-221-294-0001-0001 Rev 1.

EXCEPTIONS:	**DATE CORRECTED:**	**SIGNED OFF:**
1.		
2.		

"Exceptions Accepted and released"

From Group "A": Nuna East Ltd.

Date: 5/27/19

Print Name: BRADFORD WATKIN Signature:

To Group "B": Hatch Engineering.

Date: 27-MAY-2019

Print Name: ROY BAKER Signature:

I CONFIRM THE CONDITIONS LISTED BELOW HAVE BEEN MET (WITH NOTED EXCEPTIONS OR DEFICIENCIES) AND RELEASE OF CARE, CUSTODY AND CONTROL OF THE ITEM(S) LISTED ABOVE TO THE RECIPIENT.

☑ All requests for Inspection are complete and all issues are resolved.

☑ All deficiencies have been resolved.

☑ All Redlines / As-Builts have been received.

☑ All relevant manuals and vendor data have been received.

Client Representative:

Name: ROY BAKER Signature:

Date: 27-MAY-2019

NUNA

NUNA EAST LTD

(Section 2)

Inspection & Test Plan (ITP)

NUNA EAST LTD

QUALITY MANAGEMENT SYSTEM
INSPECTION &TEST PLAN
(Civil / Structural Installations)

CLIENT: Hatch	**ITEM / DESCRIPTION / SCOPE:** Installation of P-Culvert 23 along the Rail Access Road curve No. 2 (P13) @ ~ marker 515	**NUNA ITP NO.:** CC006-0010B	**REVISION NO.:** 2
CONTRACTOR: Nuna East Ltd.		**AFFILIATED SUB-CONTRACTOR(S):** N/A	
CONTACT PERSON: Bradford Watkin	**CONTACT INFORMATION:** bradfordw@nunalogistics.com	**DATE:** May 14, 2019	
CONTRACT No.: H353004-CC006	**HATCH PROJECT NUMBER:** H353004-CC006	**HATCH DOCUMENT TITLE:** Mary River Expansion Project-Remaining Early Earthworks	
NUNA JOB No.: CC006-0010A	**PURCHASE ORDER No.:** N/A	**PROJECT MANAGER:** Chris Petrovic	
LOCATION(S): Milne Port Site		**LEGEND:** **H:** A mandatory hold on manufacturer until release by inspector or official waiver from client. **M:** Inspection stage by inspector on a spot basis, but not a mandatory hold point. **HR:** A mandatory hold / review & acceptance / approval of the specified documentation. **W:** To be informed and invited to inspect. Construction to continue if inspector does not attend. **R:** Review of report / certifications. **A:** Audit (Review at Random).	
CWP No.: N/A			

Approved For Construction

Stephen Nugent		May 14, 2019
Nuna Project Manager / Engineer (Print)	Signature	Date
Bradford Watkin		May 14, 2019
Nuna Quality Representative (Print)	Signature	Date
Hatch Representative (Print)	Signature	Date

Hatch Stamp

HATCH Vendor/Contractor Document Review

Doc Number	E353004-CC006-130-051-0006	SUB 04
Date Received		
Review Grade		Next Submittal Status
☐ C1 - Proceed to next submission & status ☐ C2 - Proceed with exceptions as noted to next submission & status		☐ Certified ☐ As-Built
☐ C3 - Do not proceed. Revise as noted & resubmit		☐ Internal Review
Next Submittal Date:		☐ Certified/☐ As-Built
☑ C4 - No further submission required - Complete (select status below) ☐ Certified Final ☑ Final ☐ Cancelled ☐ Superseded		
Package Engineer: Name, signature and date	farrokh.noorigha tch.com	

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibility for correct design, details & dimensions shall remain with the party submitting the drawing/document.

Final Review

BRADFORD WATKIN			9/3/19
Nuna Quality Representative	(Print)	Signature	Date
Hatch Quality Representative	(Print)	Signature	Date

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	*Description of Activities* (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	*Functional Responsibility*	*Quality Control Activity*	*Verification Frequency*	*Reference Document(s)/ Controlling Procedure*	*Acceptance Criteria*	*Verification Document(s)* (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	*Comments*
1.	Contract Review / Approval	NUNA	Review / Verify Document	Prior to project start	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract				R		5/14/19	R			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
2.	Approval of ITP	NUNA / HATCH Representatives	Review	Prior to start	NUNA Quality System Manual	Signed ITP by Client representative, NUNA Quality System Manual	Signed acceptance of document (Exhibit 1.0)				HR	BW	5/29/19	R			
3.	Scope and Associated Documents	NUNA	Review For Errors	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R	BW	5/14/19	R			
4.	Signature Log	NUNA	Review, obtain signatures	Ongoing	NUNA Quality System Manual	NUNA Quality System Manual	NUNA Signature Log				R	BW	9/3/19	R			
5.	Verify land disturbance approval	NUNA	Verify	Prior to start	BIM site specification	BIM Approval	Approved documents				HR	BW	9/14/19	R			
6.	Locate and mark any underground obstructions / utilities	NUNA / ALL NORTH	Verify	Prior to start	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				H	BW	9/13/19	H			N/A
7.	Initial Survey Layout	NUNA / ALL NORTH	Cross Check of IFC Layout	Ongoing	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				HR	BW	1/13/19	HR			
8.	Work Method of Statement	NUNA / HATCH	Review	Prior to Start	IFC Drawings, NUNA Quality System Manual Hatch Spec. 221-078-0001 Rev 0	IFC Drawings, NUNA Quality System Manual, Hatch Spec. 221-078-0001 Rev 0	Nuna Operational Work Plan				R	BW	9/13/19	R			Also referred to as a Nuna Operation Work Plan. N/A
9.	Materials verification	NUNA	Review	As required	IFC Drawings, Hatch Spec. 280-078-0002 Rev 0, ASTM C-136	IFC Drawings, Hatch Spec.280-078-0002 Rev 0, ASTM C-136	Sieve Test Reports, QSRs				HR	BW	1/22/19	R			• Type 5 • Type 8 • Type 12 • Type 19 • Geotextile (LP7 or equivalent) • Culvert Type CSP
10.	RFI	NUNA	Resolution of RFIs	As required	NUNA Quality System Manual	Disposition, Approved, closed and log updated	RFIs				HR	BW	1/22/19	R			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
11.	Excavation of works location completed	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W	BW	1/3/19	W			• Snow / Ice removal • No water seepage • Foreign objects • Debris • Disposal
12.	Subgrade foundation preparation completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W	BW	1/3/19	W			• ~~Compaction~~ N/A BW
Type 5 32 minus																	
13.	Type 5 32 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	BW	1/23/19 (HATCH)	W			1/24/19 CAPPING OVER TYPE 8 FILL.
14.	Compaction of Type 5 32 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	BW	1/23/19	W			1/24/19 "
15.	Survey of Type 5 32 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR	BW	1/23/19	W			1/24/19 "
Type 8 Jaw Run 150 minus																	
16.	Type 8 Jaw Run 150 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	BW	1/23/19	W			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
17.	Compaction of Type 8 Jaw Run 150 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W		1/23/19	W			
18.	Survey of Type 8 Jaw Run 150 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR		1/23/19	W			
ROQ (Type 12)																	
19.	ROQ (Type 12) Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W			W			
20.	Compaction of ROQ (Type 12) Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W		N/A	W			
21.	Survey of ROQ Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR			W			
Type 19 150 Clear																	
22.	Type 19 150 Clear Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W		N/A	W			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
23.	Compaction of Type 19 150 Clear Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W			W			
24.	Survey of Type 19 150 Clear Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR			W			
25.	As built Survey	NUNA	Review	Continuous During Operations	IFC Drawings	IFC Drawings, Hatch Specifications	As built Drawings & Data				R		5/24/19	W			5/07/19 NUNA VERIFICATION OF FINAL AS-BUILT
26.	Final Walk down	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Contract Requirements	Final Walkdown Attendees' Report				W		5/27/19	H			
27.	Deficiency List / Punch list generated	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per contract Requirements	Item form punch list items resolved				HR		9/3/19	HR			
28.	NCR's closed.	NUNA / HATCH	Review of NCRs, Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Requirements	NCR log cleared				HR		9/3/19	HR			
29.	As-built / Redline drawings completed.	NUNA	Review / Verify	Post Final Walk down	IFC Drawings, Contract	As-builts / Redlines to Reflect All Field Changes	As-builts / Redlines				HR		9/14/19	W			
30.	Final Acceptance and ITP Sign off	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP (Exhibit 1.0)				H			H			
31.	Inspection Acceptance and Sign-Off Form signed by Engineer of record.	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP, Acceptance of Completion of Construction Form				H			H			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	*Description of Activities* (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	*Functional Responsibility*	*Quality Control Activity*	*Verification Frequency*	*Reference Document(s)/ Controlling Procedure*	*Acceptance Criteria*	*Verification Document(s)* (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	*Comments*
32.	Turnover package completed and sent to client.	NUNA	Review / Verify	Post project completion	NUNA Quality System Manual, IFC Drawings, Contract	Contract, Code & applicable specifications.	Quality Management System Quality Control Turnover package.				H			A			

Note: Nuna ITP Sign-Offs based on supporting documentation.

Comments:

ITP ISSUE APPROVALS

Stephen Nugent Nuna Contractor Project Manager / Engineer *(Print)*	Site Project Manager Title	 Signature	May 14, 2019 Date *(mm/dd/yy)*
Bradford Watkin Nuna Contractor Quality Manager / Representative *(Print)*	QC Coordinator Title	 Signature	May 14, 2019 Date *(mm/dd/yy)*
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

ITP CLOSEOUT AND WORK ACCEPTANCE APPROVALS

Nuna Contractor Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

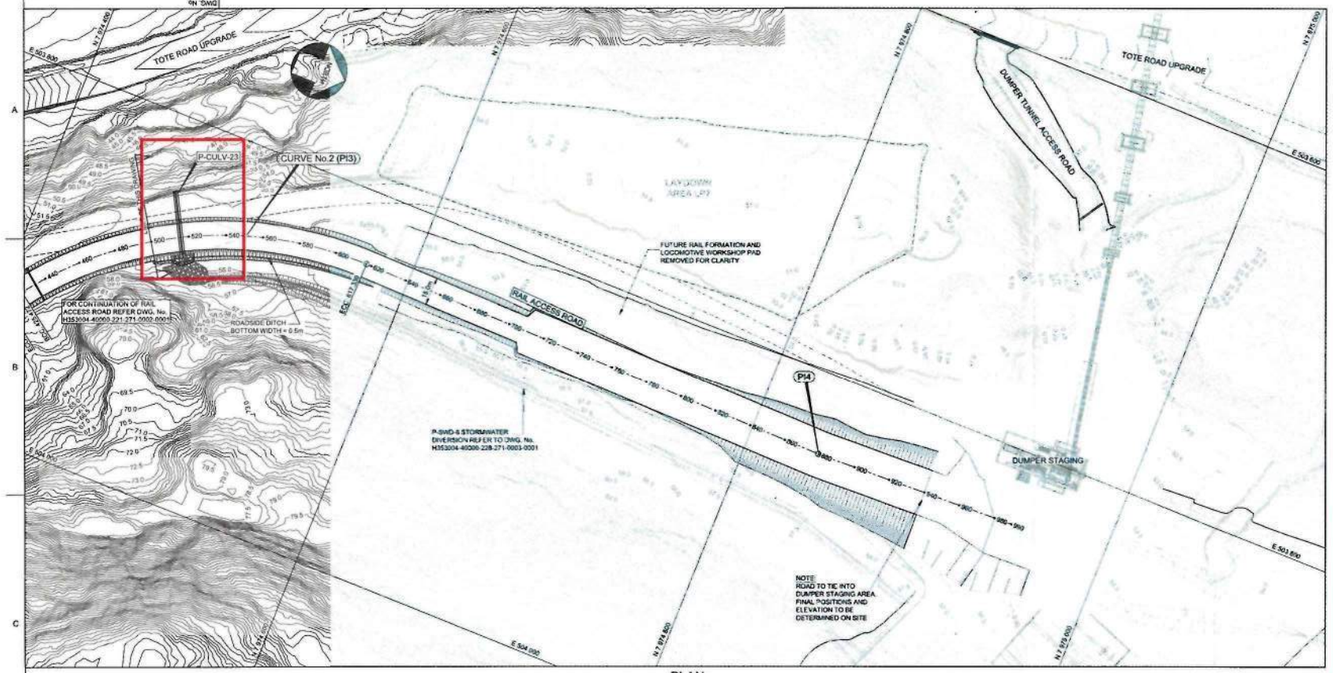
NUNA

NUNA EAST LTD

(Section 3)

Redline / As-Built Drawings

DWG No. H353004-40000-221-271-0002-0002



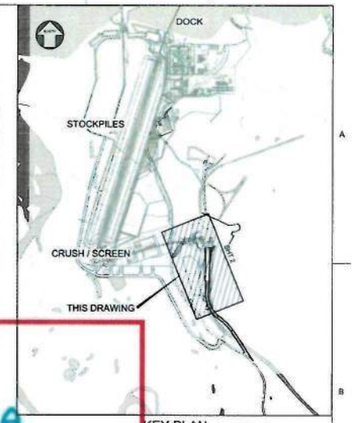
PLAN
SCALE 1:1000

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS.
4. CONTOUR INTERVAL IS 0.5m
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR TYPICAL CROSS SECTIONS REFER TO DRAWING No. H353004-40000-221-273-0001-0001
6. ROAD WIDTH IS 15.0m

ROAD DATA LEGEND:

BVC	BEGINNING VERTICAL CURVE
EVC	END VERTICAL CURVE
BCC	BEGINNING CIRCULAR CURVE
ECC	END CIRCULAR CURVE
R	RADIUS (CURVE)
DA	DEFLECTION ANGLE (CURVE)
TL	TANGENT LENGTH (CURVE)
AL	ARC LENGTH (CURVE)



KEY PLAN

LEGEND:

LAYDOWN AREA BOUNDARY

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ✓ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: BRADFORD L WATKINS COMPANY: NUNA

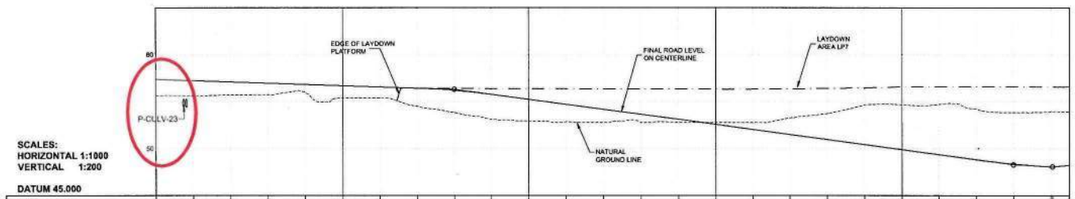
DATE OF AS-BUILT: 4/4/19 ✓ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: _____ COMPANY: _____

CULVERT SCHEDULE
(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-80000-221-294-0001-0001-TYPICAL CULVERT DETAILS)

								CULVERT AT UPSTREAM				CULVERT AT DOWNSTREAM				NOTE: FINAL U/S INVERT AND D/S INVERT LEVELS ARE TO BE CONFIRMED ON SITE			
CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	NORTHING	EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	NORTHING	EASTING	D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)
P-CULV-23	N	2	900	35.94	0	2300	CSP	7974483.967	503870.934	54.500	Y	7974466.9670	503839.273	54.100	Y	500	3.6	1.11	90



RAIL UNLOADING AREA ACCESS ROAD
CH. 500.000 TO CH. 990.000

SETTING OUT DATA
RAIL UNLOADING AREA ACCESS ROAD

NAME	CH	E	N	DETAILS
START	0.000	504 176.317	7 974 074.403	L 56.775m
PI1	56.775	504 142.412	7 974 119.943	L 56.775m
BCC1 PI2 ECC1	266.186 414.552	504 029.674 503 989.161 503 928.373	7 974 296.416 7 974 359.833 7 974 404.191	R 400.000m DA 21°18'30" TL 75.252m AL 148.766m
BCC2 PI3 ECC2	425.472 617.339	503 919.874 503 835.833 503 837.802	7 974 410.392 7 974 471.718 7 974 575.737	R 200.000m DA 54°58'00" TL 104.037m AL 191.867m
PI4	880.867	503 842.789	7 974 839.218	L 263.526m
END	990.000	503 838.965	7 974 948.284	L 109.133m

Bradford Watkins
QA/QC
Reviewed

PERMIT TO PRACTICE
HATCH LTD.
Signature _____
Date _____
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

H353004-40000-228-271-0003-0001	P-SWD-6 STORMWATER DIVERSION
H353004-40000-223-271-0005-0001	DUMPER TUNNEL ACCESS ROAD
H353004-40000-221-271-0002-0001	RAIL UNLOADING AREA ACCESS ROAD - PLAN AND PROFILE SHEET 1 OF 2
H353004-40000-223-271-0009-0002	TOTE ROAD UPGRADE - SHEET 2
H353004-40000-228-271-0002-0001	CONSTRUCTION PHASE: ACCESS ROADS DRAINAGE DETAILS
H353004-00000-221-294-0002-0010	STANDARD DRAWING - EARTHWORKS AND DRAINAGE
H353004-00000-221-294-0001-0001	STANDARD DRAWING - TYPICAL CULVERT DETAIL
DRAWING No	DRAWING TITLE

REFERENCE DRAWINGS

Released for Use

REG. PROFESSIONAL

FOR CONSTRUCTION

No	DESCRIPTION	BY	CHK'D	DATE
0	APPROVED FOR CONSTRUCTION	KVDM	FH	25/07/2018

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	E BALEGAMIRE	NR	25/07/2018
DESIGNER	E BALEGAMIRE	NR	25/07/2018
CHECKER	F HUGO		2018-07-27
DESIGN COORD	R GOOSEN		2018-07-27
RESP. ENG	N HAUM		2018-07-27
LEAD DISC. ENG	A GROBBELAAR		2018-07-27
AREA LEAD	V LAVRIC		
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		

DRAWING APPROVAL STATUS Client Review

Baffinland

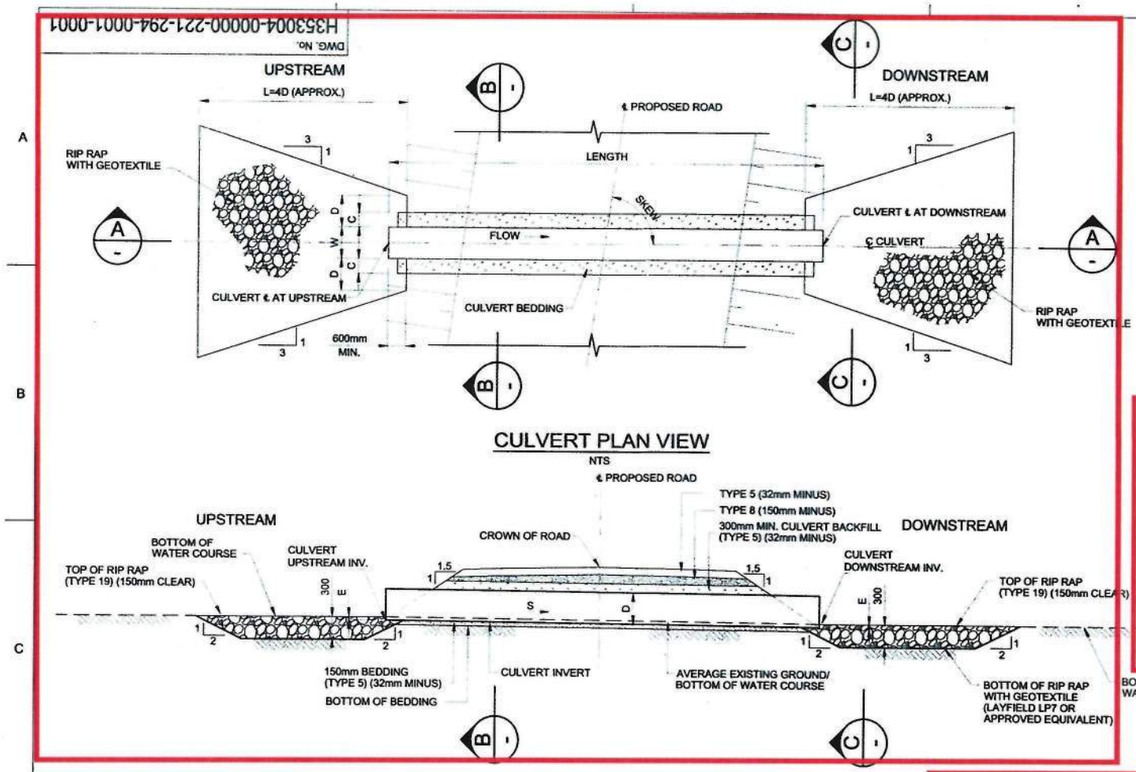
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
RAIL UNLOADING AREA ACCESS ROAD
PLAN AND PROFILE SHEET 2 OF 2

SCALE 1:1000 (ON A1 SHEET)
DWG No H353004-40000-221-271-0002-0002
REV 0
SHEET SIZE E

SURFSMAKES STAKES SFILES

DWG. No. H353004-00000-221-294-0001-0001

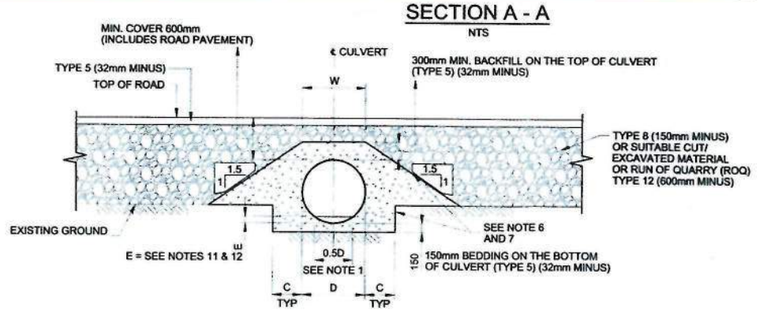


CULVERT PLAN VIEW

NTS

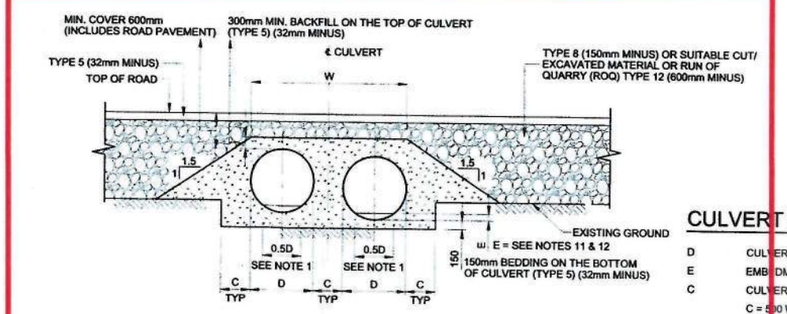
SECTION A - A

NTS



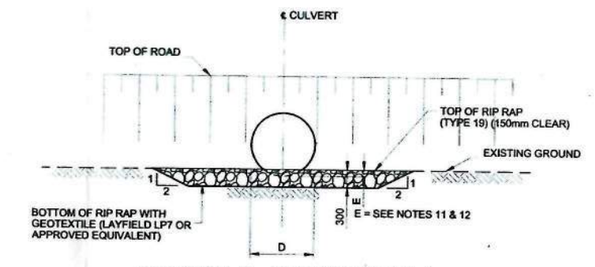
SECTION B - B (SINGLE PIPE)

NTS



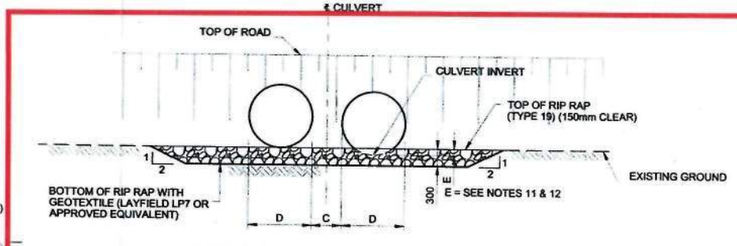
SECTION B - B (DOUBLE PIPE)

NTS



SECTION C - C (SINGLE PIPE)

NTS



SECTION C - C (DOUBLE PIPE)

NTS

NOTES:

1. THE PIPE BED SHALL BE SHAPED TO RECEIVE THE BOTTOM OF THE PIPE.
2. GRANULAR MATERIAL PLACED UNDER THE HAUNCH MUST BE COMPACTED.
3. BEDDING AND BACKFILL MATERIAL SHALL BE HOMOGENEOUS GRANULAR MATERIAL, AND SHALL BE PLACED AND COMPACTED UNIFORMLY AROUND THE PIPE.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE
5. ALL ELEVATIONS ARE IN METERS UNLESS NOTED OTHERWISE.
6. WHERE VERTICAL EXCAVATION IS NOT POSSIBLE, MODIFY EXCAVATION SLOPE TO MIN. 1.5H: 1V.
7. PROVIDE 300mm TYPE 8 (150mm MINUS) AROUND BEDDING AND BACK FILL MATERIAL ONLY WHEN ROCKFILL IS PRESENT.
8. THE CULVERT UPSTREAM AND DOWNSTREAM LOCATIONS AND INVERT ELEVATIONS ARE BASED ON LIDAR DATA. NO BOTTOM OF STREAM SURVEY DATA WAS AVAILABLE AT THE TIME OF PREPERATION OF THIS DRAWING.
9. ADJUST CULVERT START AND END COORDINATES AND INVERT ELEVATIONS IN THE FIELD AS APPROVED BY COMPANY'S REPRESENTATIVE.
10. FLOW DIRECTION MUST BE FROM UPSTREAM TO DOWNSTREAM. PROVIDE AVERAGE STREAM SLOPE ALONG THE CULVERT AS CULVERT SLOPE BASED ON ACTUAL FIELD CONDITION.
11. FOR FISH BEARING CULVERT, E=0.1D
    FOR NON-FISH BEARING CULVERT, E=0
12. FOR FISH BEARING CULVERT WITH MULTIPLE PIPES, ONLY ONE PIPE SHALL BE EMBEDDED BY "E" (APPROXIMATELY 0.1D) AND ALL OTHER PIPES SHALL BE PLACED ON GROUND/BOTTOM OF WATER COURSE.

MATERIAL AND COMPACTION SPECIFICATION:

SUBGRADE PREPARATION:
THE SUBGRADE SHOULD SHOULD BE PROOF-ROLLED AND INSPECTED PRIOR TO PLACING FILL MATERIALS. THE IDENTIFIED SOFT AREAS SHALL BE FURTHER COMPACTED, OR IF NECESSARY, BE MITIGATED USING GRANULAR OR ROCK FILL. A QUALIFIED GEOTECHNICAL ENGINEER SHALL INSPECT AND APPROVE THE SUBGRADE.
THE ROCKFILL SHALL NOT BE PLACED IN WATER OR ON ICE. DEWATERING IS REQUIRED WHERE PONDING WATER IS ENCOUNTERED. OVER-EXCAVATION IS REQUIRED FOR GROUND ICE, IF ENCOUNTERED.
THE SUBGRADE ON THE GROUND SHALL BE LEFT AS IT IS NATURALLY BEFORE CONSTRUCTION AS MUCH AS POSSIBLE. THE OVER-EXCAVATION SHOULD BE MINIMIZED TO AVOID DISTURBANCE OF THE EXISTING PERMAFROST.

TYPE 5 (CRUSHER RUN 32mm MINUS MATERIAL) OR TYPE 3 (CRUSHER RUN 50mm MINUS):
THE MATERIAL MUST BE PLACED IN LIFTS NOT EXCEEDING 200mm AND SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVELY, THE COMPACTION SHOULD ACHIEVE A MINIMUM OF 100 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY TEST METHOD ASTM D698.

TYPE 8 (CRUSHER RUN 150mm MINUS):
THE ROCKFILL MUST BE PLACED IN LIFTS NOT EXCEEDING 500mm. THE PLACEMENT SHALL AVOID SEGREGATION AND NESTING OF COARSE PARTICLES. IT SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). EACH LIFT MUST BE "PROOF-ROLLED" PRIOR TO PLACING THE SUBSEQUENT LIFT.

TYPE 12 (RUN OF MINE, TYPICALLY 600mm MINUS):
THE ROCKFILL, IF USED, MUST BE PLACED IN LIFTS NOT EXCEEDING 1000mm. THE ROCKFILL SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVE COMPACTORS SUCH AS HEAVY LOADED RUBBER TIRED HAUL TRUCKS CAN ONLY BE USED AS PER A WRITTEN APPROVAL FROM THE ENGINEER.

CULVERT SCHEDULE

CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	UPSTREAM CULVERT CENTRE: TYPE	NORTHING	EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	DOWNSTREAM CULVERT CENTRE: NORTHING	EASTING	D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
C	CULVERT SPACING AND BEDDING CLEARANCE C = 300 WHILE D > 900mm C = 300 WHILE D < = 900mm
W	CULVERT BACKFILL TOP WIDTH W = (n*D) + (n-1)*C
TYPE	CULVERT MATERIAL
U/S INV.	CULVERT UPSTREAM INVERT ELEVATION
D/S INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	RIPRAP APRON LENGTH L = 4xD (APPROX)
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

Bradford Watkin QA/QC Reviewed

Released for Use

PERMIT TO PRACTICE HATCH LTD.
Signature
Date 2018-09-20
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

NUNA EAST LTD
REDLINE DRAWING
CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.
REDLINE BY: CONSTRUCTION COMMISIONING SUSTAINMENT
NAME/SIGN: Bradford Watkin COMPANY: Hatch
DATE OF AS-BUILT: 4/4/19 CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:

REGISTERED PROFESSIONAL ENGINEER L1247 R. A. HALIM LICENSEE 2018-09-20 NWT/NU

FOR CONSTRUCTION

THIS DRAWING WAS PREPARED BY HATCH LTD. (HATCH) FOR THE EXCLUSIVE USE OF BAFFINLAND IRON MINES LP (CLIENT), AND ITS USE IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN HATCH AND THE THE CLIENT, INCLUDING ANY LIMITATIONS ON LIABILITY CONTAINED THEREIN. THIS DRAWING AND ITS CONTENTS REMAIN THE INTELLECTUAL PROPERTY OF HATCH SUBJECT TO CLIENT'S ROYALTY-FREE, IRREVOCABLE, PERPETUAL AND NON-EXCLUSIVE LICENSE TO USE AND REPRODUCE THE DRAWING FOR PURPOSES CONNECTED WITH THE PROJECT, INCLUDING THE CONSTRUCTION, COMPLETION, MAINTENANCE, EXTENSION, REINSTATEMENT AND REPAIR OF THE PROJECT. THIS DRAWING, AND THE INFORMATION CONTAINED HEREIN, SHALL BE TREATED AS CONFIDENTIAL FOR ALL OTHER PURPOSES AND SHALL NOT BE MODIFIED WITHOUT THE WRITTEN CONSENT OF HATCH.

No.	DESCRIPTION	BY	CHK'D	DATE
1	MATERIAL AND COMPACTION SPECIFICATION ADDED	IHB	FH	18/09/2018
0	APPROVED FOR CONSTRUCTION	IHB	FH	01/12/2017

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	I BARNARD	NR	
DESIGNER	I BARNARD	NR	
CHECKER	F HUGO		2018-09-20
DESIGN COORD.	R GOOSEN		2018-09-20
RESP. ENG.	R HALIM		2018-09-20
LEAD DISC. ENG.	A GROBBELAAR		20 September
AREA LEAD	V LAVRIC		2018-09-20
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		2018.09.25

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

SITE WIDE
STANDARD DRAWING
TYPICAL CULVERT DETAILS

SCALE: NTS OR AS NOTED
DWG. No. H353004-00000-221-294-0001-0001
REV 1
SHEET SIZE: D

DRAWING No. | DRAWING TITLE | REFERENCE DRAWINGS | REG. PROFESSIONAL

$USERNAMES $DATES $FILES $TIMES

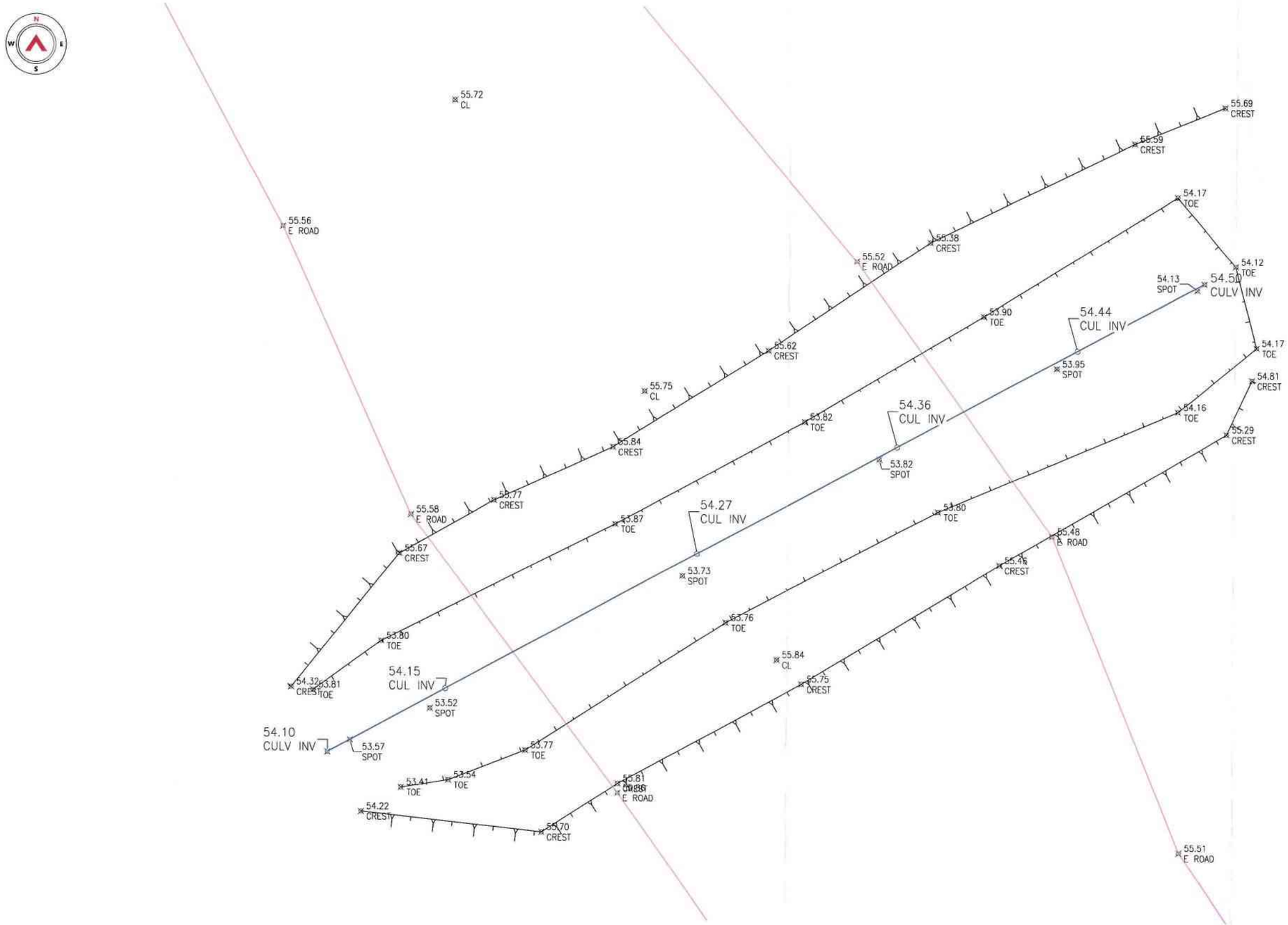
NUNA

NUNA EAST LTD

(Section 4)

Survey Documentation

(As Supplied by Allnorth)



Bradford Watkin
QA/QC
Reviewed

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
4353004-40000-221-211-0002-0002	RAIL UNLOADING AREA ACCESS ROAD	1
4353004-00000-221-294-0001-0001	TYPICAL CULVERT DETAILS	2

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REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
-	-	-	-	-

CLIENT: Baffinland

HATCH

Allnorth

TITLE: P-CULV-23 QUARRY ROAD SUB GRADE SURVEY

CLIENT NO:	-	DRWN:	SMR	DATE:	19/01/13
PROJECT NO:	-	DSGN:	-	DATE:	-
DRAWING SIZE:	ANSI "B"	CHKD:	-	DATE:	-
SCALE:	AS NOTED	APVD:	-	DATE:	-

PROJECT: BAFFINLAND IRON MINES LP MARY RIVER EXPANSION PROJECT

DWG NO: 190113-P-CULV-23-ACL-SMR

REV: 0

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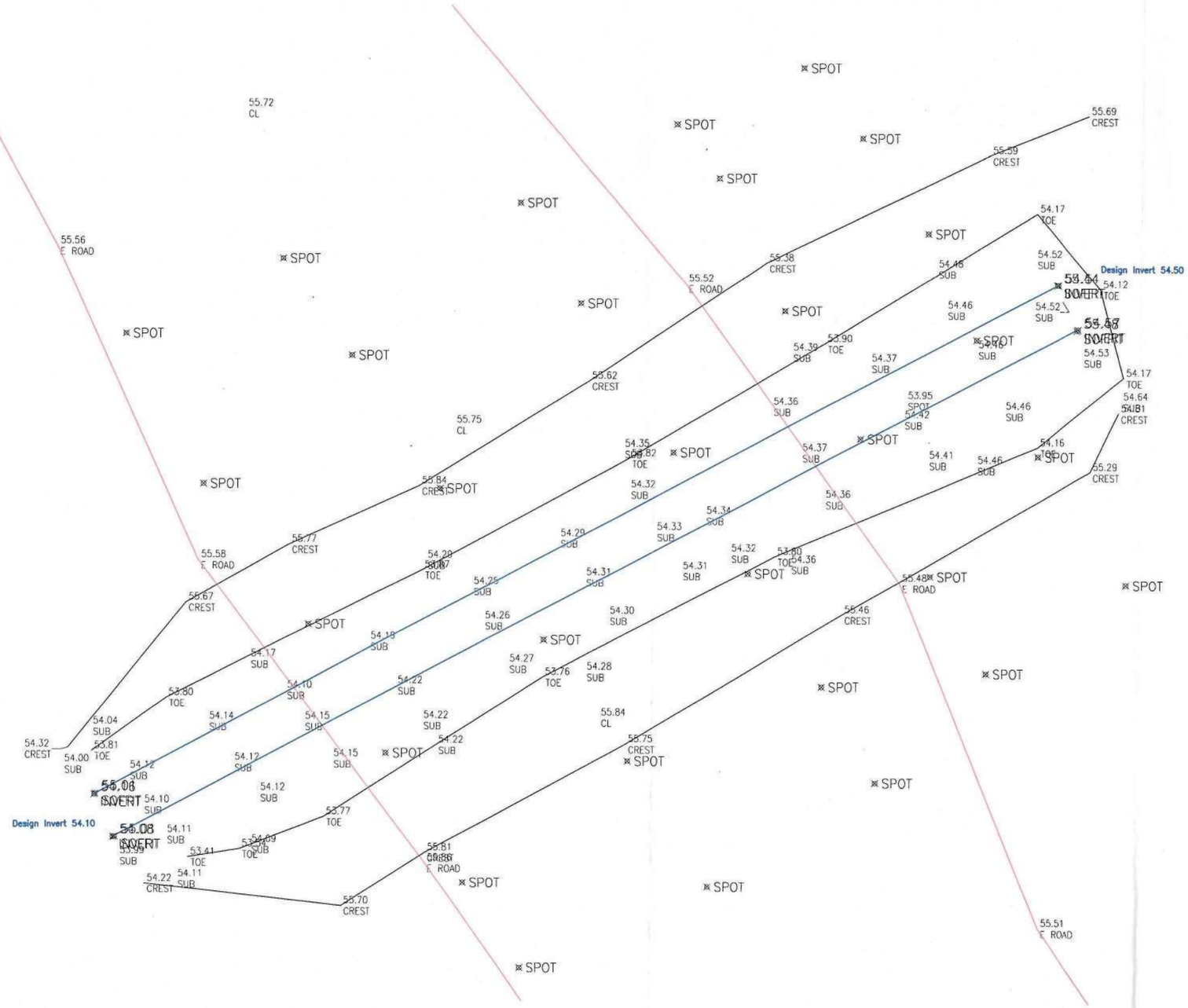
Date: ---- | User: Darrell Mayo | File: CADInorth-Standards\02-Borders\Inorth NL Surveyors - Template | Layout: -000-2120-000 - (Legal Landscape) | Paper Size: 558.8mm x 431.8mm



REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
H353004-40000-271-271-0002-0001	RAIL UNLOADING AREA ACCESS ROAD	1
H353004-00000-221-294-0001-0001	TYPICAL CULVERT DETAILS	2

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REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
-	-	-	-	-

CLIENT: Baffinland

HATCH

Allnorth

TITLE: **P-CULV-23 QUARRY ROAD ASBUILT SURVEY**

CLIENT NO:	-	DRWN:	SMR	DATE:	19/01/24
PROJECT NO:	-	DSGN:	-	DATE:	-
DRAWING SIZE:	ANSI "B"	CHKD:	-	DATE:	-
SCALE:	AS NOTED	APVD:	-	DATE:	-

PROJECT: **BAFFINLAND IRON MINES LP MARY RIVER EXPANSION PROJECT**

DWG NO: **190123-P-CULV-23 SUB-ACL-SMR** REV: **0**

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0010B
Milne Port Rail Access Road Drainage Culvert 23
Subgrade

Culvert 23 Subgrade Survey Points

Point Number	Northing	Easting	Elevation	Description
0112ajb001	7974435.422	503869.878	56.091	E ROAD
0112ajb002	7974445.046	503863.251	56.031	E ROAD
0112ajb003	7974455.496	503856.872	55.9	E ROAD
0112ajb004	7974465.535	503849.785	55.863	E ROAD
0112ajb005	7974470.351	503855.521	55.837	CL
0112ajb006	7974459.514	503862.32	55.841	CL
0112ajb007	7974448.471	503868.991	55.887	CL
0112ajb008	7974437.985	503877.156	55.953	CL
0112ajb009	7974443.257	503881.225	55.694	E ROAD
0112ajb010	7974455.213	503875.773	55.515	E ROAD
0112ajb011	7974463.477	503870.13	55.514	E ROAD
0112ajb012	7974474.853	503865.492	55.475	E ROAD
0112ajb013	7974490.341	503871.652	55.689	CREST
0112ajb014	7974489.022	503868.403	55.593	CREST
0112ajb015	7974485.411	503861.03	55.385	CREST
0112ajb016	7974481.469	503855.186	55.62	CREST
0112ajb017	7974477.979	503849.585	55.841	CREST
0112ajb018	7974476.039	503845.277	55.771	CREST
0112ajb019	7974474.099	503841.868	55.674	CREST
0112ajb020	7974475.512	503842.28	55.58	E ROAD
0112ajb021	7974485.877	503837.606	55.565	E ROAD
0112ajb022	7974496.981	503831.572	55.599	E ROAD
0112ajb023	7974501.66	503836.614	55.771	CL
0112ajb024	7974490.442	503843.79	55.722	CL
0112ajb025	7974479.982	503850.716	55.754	CL
0112ajb026	7974484.714	503858.367	55.524	E ROAD
0112ajb027	7974494.349	503850.167	55.683	E ROAD
0112ajb028	7974503.824	503842.462	55.811	E ROAD
0112ajb029	7974469.188	503838.76	53.809	TOE
0112ajb030	7974469.288	503837.961	54.315	CREST
0112ajb032	7974464.813	503840.494	54.221	CREST
0112ajb033	7974470.952	503841.212	53.798	TOE
0112ajb034	7974475.207	503849.685	53.874	TOE
0112ajb035	7974478.909	503856.507	53.819	TOE
0112ajb036	7974482.741	503862.98	53.9	TOE
0112ajb037	7974487.105	503869.969	54.167	TOE
0112ajb038	7974484.604	503872.076	54.115	TOE
0112ajb039	7974481.676	503872.855	54.172	TOE
0112ajb040	7974479.349	503870.019	54.158	TOE
0112ajb041	7974475.705	503861.351	53.799	TOE

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0010B
Milne Port Rail Access Road Drainage Culvert 23
Subgrade

0112ajb042	7974471.679	503853.674	53.764	TOE
0112ajb043	7974467.054	503846.431	53.771	TOE
0112ajb044	7974465.972	503843.642	53.535	TOE
0112ajb045	7974465.698	503841.932	53.407	TOE
0112ajb050	7974480.881	503865.637	53.952	SPOT
0112ajb052	7974480.498	503872.696	54.806	CREST
0112ajb053	7974478.56	503871.773	55.287	CREST
0112ajb054	7974473.785	503863.593	55.465	CREST
0112ajb055	7974469.481	503856.422	55.75	CREST
0112ajb056	7974465.877	503849.788	55.813	CREST
0112ajb057	7974464.095	503847.017	55.703	CREST
0121bn200	7974466.437	503841.165	54.109	SUB
0121bn201	7974467.418	503840.417	54.097	SUB
0121bn202	7974468.549	503839.942	54.116	SUB
0121bn203	7974470.173	503842.556	54.136	SUB
0121bn204	7974468.823	503843.401	54.125	SUB
0121bn205	7974467.837	503844.252	54.121	SUB
0121bn206	7974468.962	503846.682	54.149	SUB
0121bn207	7974470.185	503845.73	54.154	SUB
0121bn208	7974471.214	503845.134	54.096	SUB
0121bn209	7974472.832	503847.908	54.187	SUB
0121bn210	7974471.383	503848.807	54.221	SUB
0121bn211	7974470.235	503849.66	54.221	SUB
0121bn212	7974472.109	503852.492	54.27	SUB
0121bn213	7974473.527	503851.682	54.255	SUB
0121bn214	7974474.673	503851.304	54.253	SUB
0121bn215	7974476.275	503854.165	54.294	SUB
0121bn216	7974474.988	503855.025	54.314	SUB
0121bn217	7974473.709	503855.799	54.296	SUB
0121bn218	7974475.216	503858.225	54.313	SUB
0121bn219	7974476.501	503857.361	54.326	SUB
0121bn220	7974477.894	503856.483	54.319	SUB
0121bn221	7974477.048	503858.986	54.34	SUB
0121bn222	7974475.805	503859.815	54.318	SUB
0121bn223	7974477.604	503862.95	54.36	SUB
0121bn224	7974479.127	503862.167	54.366	SUB
0121bn225	7974480.648	503861.193	54.364	SUB
0121bn226	7974482.105	503864.442	54.371	SUB
0121bn227	7974480.242	503865.539	54.415	SUB
0121bn228	7974478.912	503866.356	54.407	SUB
0121bn229	7974480.548	503868.887	54.461	SUB
0121bn230	7974482.578	503867.971	54.463	SUB
0121bn231	7974483.883	503866.94	54.465	SUB

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0010B
Milne Port Rail Access Road Drainage Culvert 23
Subgrade

0121bn232	7974485.605	503869.895	54.525	SUB
0121bn233	7974484.203	503870.826	54.523	SUB
0121bn234	7974482.34	503871.465	54.534	SUB
0121bn235	7974480.895	503872.768	54.645	SUB
0121bn236	7974478.755	503867.967	54.458	SUB
0121bn237	7974475.447	503861.821	54.358	SUB
0121bn238	7974471.859	503855.048	54.281	SUB
0121bn239	7974469.425	503850.153	54.215	SUB
0121bn240	7974466.124	503843.965	54.09	SUB
0121bn241	7974464.972	503841.518	54.106	SUB
0121bn242	7974465.73	503839.603	53.988	SUB
0121bn243	7974468.75	503837.767	54.001	SUB
0121bn244	7974469.994	503838.722	54.045	SUB
0121bn245	7974472.233	503843.937	54.166	SUB
0121bn246	7974475.536	503849.782	54.288	SUB
0121bn247	7974479.224	503856.277	54.353	SUB
0121bn248	7974482.447	503861.847	54.386	SUB
0121bn249	7974485.256	503866.63	54.477	SUB
0125bn700	7974491.854	503862.234	55.416	SPOT
0125bn701	7974489.553	503864.185	55.68	SPOT
0125bn702	7974486.417	503866.37	56.14	SPOT
0125bn703	7974482.89	503867.99	56.146	SPOT
0125bn704	7974479.045	503870.037	55.923	SPOT
0125bn705	7974474.832	503872.979	55.445	SPOT
0125bn706	7974471.87	503868.368	55.485	SPOT
0125bn707	7974475.073	503866.496	55.822	SPOT
0125bn708	7974479.591	503864.174	56.221	SPOT
0125bn709	7974483.813	503861.65	56.197	SPOT
0125bn710	7974488.209	503859.448	55.708	SPOT
0125bn711	7974489.98	503858.046	55.531	SPOT
0125bn712	7974487.362	503852.882	55.649	SPOT
0125bn713	7974484.027	503854.894	55.912	SPOT
0125bn714	7974479.11	503857.976	56.31	SPOT
0125bn715	7974475.132	503860.447	56.152	SPOT
0125bn716	7974471.405	503862.926	55.779	SPOT
0125bn717	7974468.251	503864.711	55.611	SPOT
0125bn718	7974464.788	503859.155	55.718	SPOT
0125bn719	7974468.923	503856.486	56.032	SPOT
0125bn720	7974472.897	503853.708	56.406	SPOT
0125bn721	7974477.89	503850.266	56.387	SPOT
0125bn722	7974482.274	503847.337	55.971	SPOT
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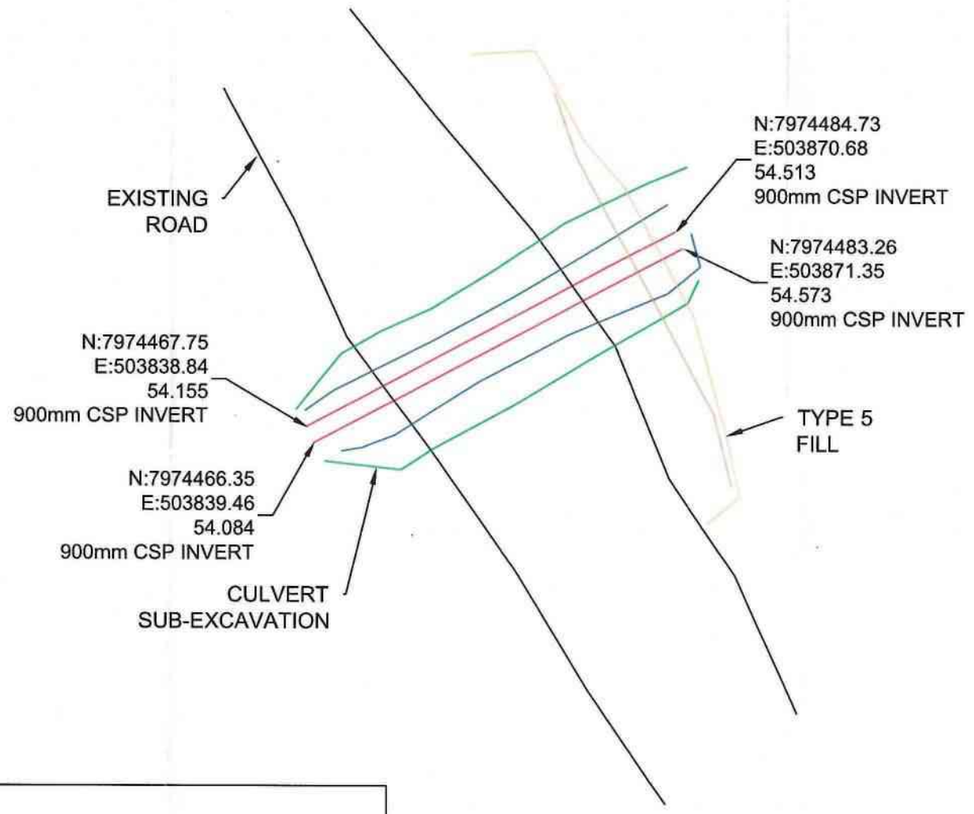
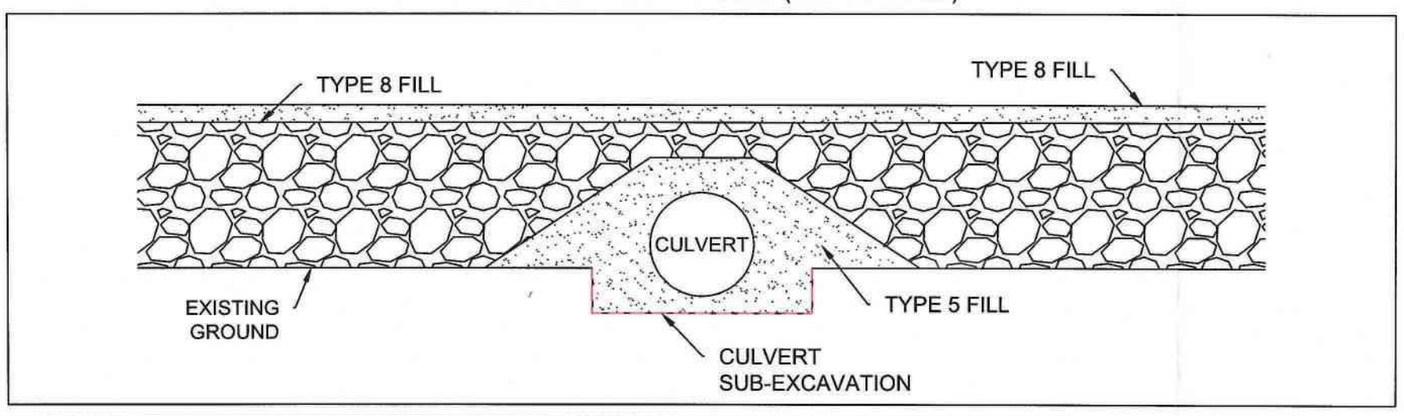


SAMPLE SECTION OF AS-BUILT (NOT TO SCALE)



Bradford Watkin
QA/QC
Reviewed

LEGEND:
- EXISTING ROAD
- CULVERT
- SUB-EXC CREST
- SUB-EXC TOE
- TYPE 5 CREST
- TYPE 5 TOE

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

SCALE: 1:500

DATE: May 27, 2019

CULVERT 23

DRAWING TITLE:
AS-BUILT SURVEY
SURVEYED UP TO MAY 26, 2019

DRAWING NAME (YYMMDD): 190527 CULVERT 23 AS-BUILT.dwg

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0010B
Milne Port Rail Access Road Drainage Culvert 23
Original Ground

Culvert 23 OG Survey Data

Point Number	Northing	Easting	Elevation	Description
220	7974435.422	503869.878	56.091	E ROAD
221	7974445.046	503863.251	56.031	E ROAD
222	7974455.496	503856.872	55.9	E ROAD
223	7974465.535	503849.785	55.863	E ROAD
224	7974470.351	503855.521	55.837	CL
225	7974459.514	503862.32	55.841	CL
226	7974448.471	503868.991	55.887	CL
227	7974437.985	503877.156	55.953	CL
228	7974443.257	503881.225	55.694	E ROAD
229	7974455.213	503875.773	55.515	E ROAD
230	7974463.477	503870.13	55.514	E ROAD
231	7974474.853	503865.492	55.475	E ROAD
239	7974475.512	503842.28	55.58	E ROAD
240	7974485.877	503837.606	55.565	E ROAD
241	7974496.981	503831.572	55.599	E ROAD
242	7974501.66	503836.614	55.771	CL
243	7974490.442	503843.79	55.722	CL
244	7974479.982	503850.716	55.754	CL
245	7974484.714	503858.367	55.524	E ROAD
246	7974494.349	503850.167	55.683	E ROAD
247	7974503.824	503842.462	55.811	E ROAD

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0010B
Milne Port Rail Access Road Drainage Culvert 23
Subgrade Excavation As-Built

Culvert 23 Subgrade Excavation

Point Number	Northing	Easting	Elevation	Description
232	7974490.341	503871.652	55.689	CREST
233	7974489.022	503868.403	55.593	CREST
234	7974485.411	503861.03	55.385	CREST
235	7974481.469	503855.186	55.62	CREST
236	7974477.979	503849.585	55.841	CREST
237	7974476.039	503845.277	55.771	CREST
238	7974474.099	503841.868	55.674	CREST
248	7974469.188	503838.76	53.809	TOE
249	7974469.288	503837.961	54.315	CREST
251	7974464.813	503840.494	54.221	CREST
252	7974470.952	503841.212	53.798	TOE
253	7974475.207	503849.685	53.874	TOE
254	7974478.909	503856.507	53.819	TOE
255	7974482.741	503862.98	53.9	TOE
256	7974487.105	503869.969	54.167	TOE
257	7974484.604	503872.076	54.115	TOE
258	7974481.676	503872.855	54.172	TOE
259	7974479.349	503870.019	54.158	TOE
260	7974475.705	503861.351	53.799	TOE
261	7974471.679	503853.674	53.764	TOE
262	7974467.054	503846.431	53.771	TOE
263	7974465.972	503843.642	53.535	TOE
264	7974465.698	503841.932	53.407	TOE
269	7974480.881	503865.637	53.952	SPOT
271	7974480.498	503872.696	54.806	CREST
272	7974478.56	503871.773	55.287	CREST
273	7974473.785	503863.593	55.465	CREST
274	7974469.481	503856.422	55.75	CREST
275	7974465.877	503849.788	55.813	CREST
276	7974464.095	503847.017	55.703	CREST
287	7974466.437	503841.165	54.109	SUB
288	7974467.418	503840.417	54.097	SUB
289	7974468.549	503839.942	54.116	SUB
290	7974470.173	503842.556	54.136	SUB
291	7974468.823	503843.401	54.125	SUB
292	7974467.837	503844.252	54.121	SUB
293	7974468.962	503846.682	54.149	SUB
294	7974470.185	503845.73	54.154	SUB
295	7974471.214	503845.134	54.096	SUB

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0010B
Milne Port Rail Access Road Drainage Culvert 23
Subgrade Excavation As-Built

296	7974472.832	503847.908	54.187	SUB
297	7974471.383	503848.807	54.221	SUB
298	7974470.235	503849.66	54.221	SUB
299	7974472.109	503852.492	54.27	SUB
300	7974473.527	503851.682	54.255	SUB
301	7974474.673	503851.304	54.253	SUB
302	7974476.275	503854.165	54.294	SUB
303	7974474.988	503855.025	54.314	SUB
304	7974473.709	503855.799	54.296	SUB
305	7974475.216	503858.225	54.313	SUB
306	7974476.501	503857.361	54.326	SUB
307	7974477.894	503856.483	54.319	SUB
308	7974477.048	503858.986	54.34	SUB
309	7974475.805	503859.815	54.318	SUB
310	7974477.604	503862.95	54.36	SUB
311	7974479.127	503862.167	54.366	SUB
312	7974480.648	503861.193	54.364	SUB
313	7974482.105	503864.442	54.371	SUB
314	7974480.242	503865.539	54.415	SUB
315	7974478.912	503866.356	54.407	SUB
316	7974480.548	503868.887	54.461	SUB
317	7974482.578	503867.971	54.463	SUB
318	7974483.883	503866.94	54.465	SUB
319	7974485.605	503869.895	54.525	SUB
320	7974484.203	503870.826	54.523	SUB
321	7974482.34	503871.465	54.534	SUB
322	7974480.895	503872.768	54.645	SUB
323	7974478.755	503867.967	54.458	SUB
324	7974475.447	503861.821	54.358	SUB
325	7974471.859	503855.048	54.281	SUB
326	7974469.425	503850.153	54.215	SUB
327	7974466.124	503843.965	54.09	SUB
328	7974464.972	503841.518	54.106	SUB
329	7974465.73	503839.603	53.988	SUB
330	7974468.75	503837.767	54.001	SUB
331	7974469.994	503838.722	54.045	SUB
332	7974472.233	503843.937	54.166	SUB
333	7974475.536	503849.782	54.288	SUB
334	7974479.224	503856.277	54.353	SUB
335	7974482.447	503861.847	54.386	SUB
336	7974485.256	503866.63	54.477	SUB

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0010B
Milne Port Rail Access Road Drainage Culvert 23
Subgrade

0125bn725	7974478.022	503842.434	55.952	SPOT
0125bn726	7974473.383	503845.911	56.384	SPOT
0125bn727	7974469.151	503848.494	56.447	SPOT
0125bn728	7974464.885	503851.036	56.118	SPOT
0125bn729	7974462.06	503852.934	55.83	SPOT
0123bn200	7974466.354	503839.457	54.084	INVERT
0123bn201	7974467.752	503838.843	54.155	INVERT
0123bn202	7974484.728	503870.683	54.513	INVERT
0123bn203	7974483.264	503871.351	54.573	INVERT
0124bn600	7974483.229	503871.312	55.485	SOFFIT
0124bn601	7974466.364	503839.505	55.01	SOFFIT
0124bn602	7974467.79	503838.871	55.011	SOFFIT
0124bn603	7974484.731	503870.647	55.436	SOFFIT

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0010B
Milne Port Rail Access Road Drainage Culvert 23
Culvert Inverts As-Built

Culvert 23 Invert Survey Data

Point Number	Northing	Easting	Elevation	Description
380	7974466.354	503839.457	54.084	900mm CSP INVERT
381	7974467.752	503838.843	54.155	900mm CSP INVERT
382	7974484.728	503870.683	54.513	900mm CSP INVERT
383	7974483.264	503871.351	54.573	900mm CSP INVERT

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0010B
Milne Port Rail Access Road Drainage Culvert 23
Type 5 Fill As-Built

Culvert 23 Type 5 Survey Data

Point Numbers	Northing	Easting	Elevation	Description
1002	7974499.992	503852.917	55.581	TOE OF T5
1003	7974500.336	503858.445	55.456	TOE OF T5
1004	7974492.565	503862.797	55.473	TOE OF T5
1005	7974488.632	503866.266	55.392	TOE OF T5
1006	7974477.341	503872.29	55.282	TOE OF T5
1007	7974467.464	503875.037	55.214	TOE OF T5
1008	7974461.861	503876.286	55.292	TOE OF T5
1009	7974459.586	503873.556	55.407	TOE OF T5
1010	7974462.708	503875.539	55.281	T5TOP1
1011	7974468.982	503874.013	55.454	T5TOP1
1012	7974474.883	503870.85	55.868	T5TOP1
1013	7974483.91	503866.017	56.294	T5TOP1
1014	7974491.376	503862.014	55.931	T5TOP1
1015	7974496.696	503860.16	55.569	T5TOP1
1016	7974495.708	503847.875	55.729	T5SPT
1017	7974487.187	503854.64	56.081	T5SPT
1018	7974478.382	503859.775	56.197	T5SPT
1019	7974469.368	503864.343	55.902	T5SPT
1020	7974460.805	503868.895	55.521	T5SPT
1021	7974456.024	503861.687	55.904	T5SPT
1022	7974465.478	503855.806	56.231	T5SPT
1023	7974476.724	503849.56	56.31	T5SPT
1024	7974487.729	503843.169	55.844	T5SPT
1025	7974493.949	503839.832	55.7	T5SPT
1026	7974491.988	503834.987	55.451	T5SPT
1027	7974482.133	503839.568	55.969	T5SPT
1028	7974473.61	503846.761	56.386	T5SPT
1029	7974462.382	503853.129	56.36	T5SPT
1030	7974453.15	503858.918	55.881	T5SPT

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(Section 5)

No sieves available.

(Acceptance forms approved by Hatch)

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Nuna East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks
Description of Item/Area Inspected:	*Construction Material Approval* *Type:* 5 *Source:* Q1 Quarry
Date of Inspection:	January 22 2019
Parties Present at Inspection	

Comments:

A visual inspection of the Type 5 *Material from* Q1 Quarry *was conducted to confirm* backfill *Material conforms to specifications.*

Material was produced and stockpiled in Q1 by Sana in 2018 Samples were taken and sent to BIM materials lab. Results to be provided by Hatch.

Construction Material: Type 5 *conforms to specifications and is approved for placement at* CULV-23 on Quarry Road

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Darko Filipic		1/22/19
HATCH Representative:	Stephane Gionet		1/23/19

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Nuna East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks
Description of Item/Area Inspected:	*Construction Material Approval* *Type:* 8 (150 mm minus) *Source:* Q1 Quarry
Date of Inspection:	Jan 22 2019
Parties Present at Inspection	Darko Filipic

Comments:

A visual inspection of the Type 8 *Material from* Q1 Quarry *was conducted to confirm* road fill *Material conforms to specifications.*
Material was produced and stockpiled by Sana in 2018.
No lab tests were done on this material.

Construction Material: Type 8 *conforms to specifications and is approved for placement at* P-CulV -23 on Quarry Access Road

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Darko Filipic		1/22/19
HATCH Representative:	Stephane Giguet		22/01/19

(Section 6)

Request for Information Documentation (RFI)

Request for Information

Project Name:	**Mary River Expansion Stage 3**	**Project Number:**	**H353004**
CWP No:		**RFI No:0016**	
Contractor: Nuna East Ltd.		**Contract No: CC006**	
Initiated By: Darko Filipic		**Cost impact?**	Y☐ / N☒
Date of Submittal: 2019-01-22		**Schedule Impact?**	Y☐ / N☒

Information Requested:
Nuna is proposing to increase the distance "C" between the double culverts to 700mm in order to accommodate the width of the plate tampers so that compaction of the Type 5 fill material can be achieved. The current design calls for a spacing "C" of 500mm for culverts >900mm in diameter. The operating width of the plate tamper is 600mm. A culvert spacing of 700mm will allow for the plate tamper to pass between the culverts including the coupler sections where the flange sticks out.

Reference Document No.	Revision	Title/Description
H353004-00000-221-294-0001-0001	1	Site Wide Standard Drawing Typical Culvert Details

RFI Classification:

Design	☒	Construction	☐	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☐	Other	☐

Project Response: [attach sufficient detail as required]

Approved Proceed

RFI Follow-up Requirements:

Contract Order Issued Yes ☐/No ☐ ([insert associated tracking #]) Back-Charge Required (Yes ☐/No ☐)

As-Built Required Yes ☐/No ☐ Materials Required (Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	Nick Mills		Jan 22 / 19
Hatch Engineering Home Office ☐ Site ☐	Glen Peace		2019-01-22
Hatch Project Management			
Client (as required):			

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Note: The response to this RFI is NOT an authorization to perform a change to the Contract. Work may proceed in accordance with the response only if such work involves NO change in cost or schedule. In the case where the response may involve change in cost or schedule, a Contractual instrument must be issued by Hatch and received by the Contractor before the response can be executed. Where no Contractual instrument is indicated, action must be taken in accordance with (reference appropriate Contract Sections that authorize execution of any change in schedule and cost).

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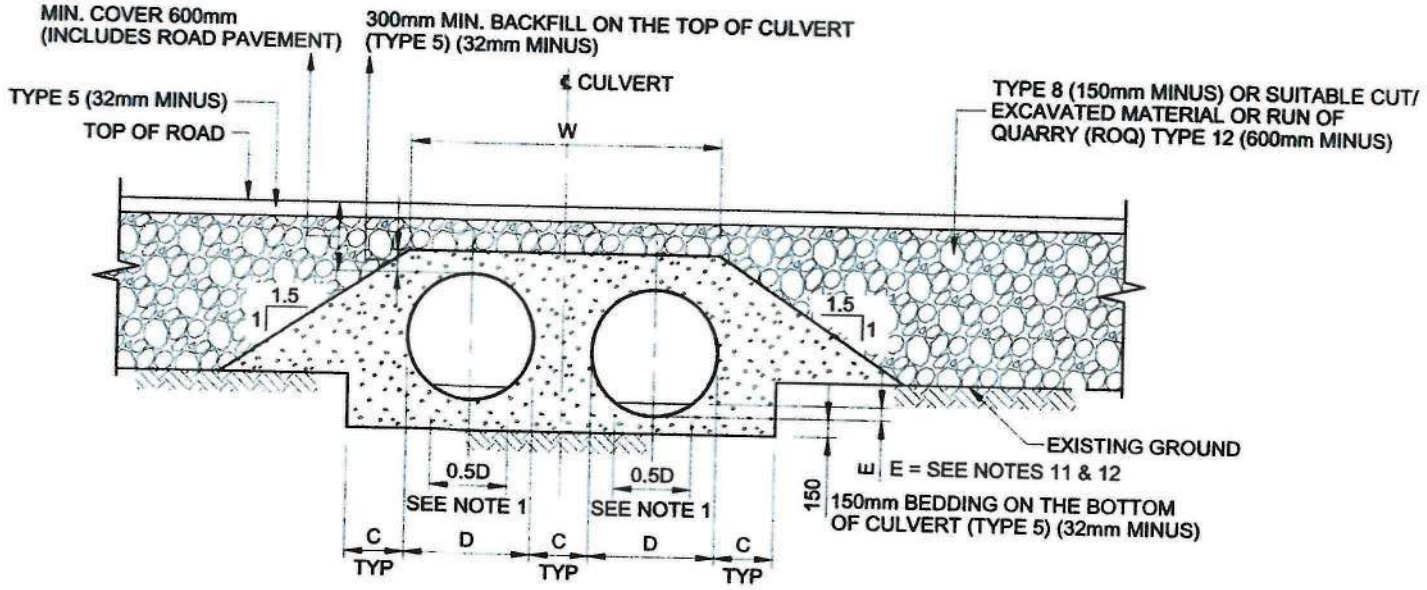
RFI-0016 - Double Culvert Spacing

Proposal to increase the distance "C" between the double culverts to 700mm in order to accommodate the width of the plate tampers so that compaction of the Type 5 fill material can be achieved. The current design calls for a spacing "C" of 500mm for culverts >900mm in diameter. The operating width of the plate tamper is 600mm. A culvert spacing of 700mm will allow for the plate tamper to pass between the culverts including the coupler sections where the flange sticks out.



SECTION B - B (DOUBLE PIPE)

NTS

C	CULVERT SPACING AND BEDDING CLEARANCE C = 500 WHILE D > 900mm C = 300 WHILE D < = 900mm
W	CULVERT BACKFILL TOP WIDTH W = (n*D) + (n-1)*C

DWG. No.	REV
H353004-00000-221-294-0001-0001	1

DPU5545Heh Technical specifications

Operating width (with extension plates) in	23.6in/ 600mm

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(Section 7)

No Non-Conformance Reports (NCRs) Generated

NON-CONFORMANCE REPORT LOG

Project: CC006
Area: Mary River Expansion - Milne Port
CWP#: N/A
Date: 8-23-19
Contract/Work Pkg. No.: CC006-0010B
Originator: Bradford Watkin

NCR No.	Description	Disposition	Date.	Rectified	Date
	No NCR's generated for this work package				

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(Section 8)

Land Disturbance Form (LDF)

Bradford Watkin

From: Brandon Urquhart
Sent: Thursday, April 11, 2019 7:13 AM
To: Bradford Watkin
Subject: FW: [External]JEA Tote Road Culverts

Culvert 22, 23, 32

Brandon Urquhart
Project Coordinator
E brandonu@nunalogistics.com
C +17806913582

NUNA EAST LTD.
PO Box 370
Pond Inlet, Nunavut, Canada, X0A 0X0
nunalogistics.com

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From: Brandon Urquhart
Sent: Tuesday, January 29, 2019 11:03 AM
To: Connor Devereaux <Connor.Devereaux@baffinland.com>
Subject: RE: [External]JEA Tote Road Culverts

Thank you and will do.

Brandon Urquhart
Project Coordinator
E brandonu@nunalogistics.com
C +17806913582

NUNA EAST LTD.
PO Box 370
Pond Inlet, Nunavut, Canada, X0A 0X0
nunalogistics.com

You may withdraw consent for email communications from the Nuna Group of Companies by responding to the email with "Unsubscribe" in the subject line.

From: Connor Devereaux <Connor.Devereaux@baffinland.com>
Sent: Tuesday, January 29, 2019 10:00 AM
To: Brandon Urquhart <brandonu@nunalogistics.com>
Cc: stephane.gionet@hatch.com; darlene.hofer@hatch.com; D Gardiner <d.gardiner@hatch.com>; Ken Humby <kenh@nunalogistics.com>; Darko Filipic <DarkoF@nunalogistics.com>; William Bowden

<William.Bowden@baffinland.com>; Timothy Ray Sewell <Timothy.Sewell@baffinland.com>; Sten Sundin <Sten.Sundin@baffinland.com>; Connor Paquette <Connor.Paquette@baffinland.com>; Dominic Ritgen <Dominic.Ritgen@baffinland.com>
Subject: RE: [External]JEA Tote Road Culverts

Hello Brandon,

Attached is the approved Hatch JEA and LDFs for the referenced work. Construction of both culverts is approved and the team will monitor construction daily. Please send notice when the work has been completed for JEA close out.

Connor

Connor Devereaux | Environmental Superintendent
Mary River Mine Site
T: +1 647 253 0596 x6016
C: +1 647 456 9067

Baffinland

2275 Upper Middle Road East, Suite 300, Oakville, Ontario, Canada, L6H 0C3
www.baffinland.com

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From: Brandon Urquhart [mailto:brandonu@nunalogistics.com]
Sent: Tuesday, January 29, 2019 8:35 AM
To: Connor Devereaux <Connor.Devereaux@baffinland.com>
Cc: stephane.gionet@hatch.com; darlene.hofer@hatch.com; D Gardiner <d.gardiner@hatch.com>; Ken Humby <kenh@nunalogistics.com>; Darko Filipic <DarkoF@nunalogistics.com>; William Bowden <William.Bowden@baffinland.com>
Subject: [External]JEA Tote Road Culverts

CAUTION: This email was received from outside of Baffinland systems. It may contain malicious attachments or links. If you are not familiar with the content of the email do not open the attachments or click embedded links.

Hello Connor,

Please see the attached Hatch JEA for the Tote Road culverts for signoff. I have attached the relevant drawings and approved LDF's as well.

Thank you,

Brandon Urquhart
Project Coordinator
E brandonu@nunalogistics.com
C +17806913582

NUNA EAST LTD.
PO Box 370

Pond Inlet, Nunavut, Canada, X0A 0X0
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(Section 9)

Quality Control Reports

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Nuna East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Mary River Expansion Stage 3 Early Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval -* P-CULV-23
Date of Inspection:	JAN 13 2019
Parties Present at Inspection	DARKO FILIPIC ROBERT KENNEDY

Comments:

A visual inspection of the culvert P-CULV-23 *surface/sub-grade was conducted prior to placement of fill Material.*

Sub-grade: Excavation of subgrade is to the grades and elevations specified on the IFC drawings, as confirmed by survey. Subgrade material is frozen and compact.
-0.30 below Culvert Invert Sh

The outlined area is approved for placement of material. for bedding.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

NEL Representative:	Darko Filipic Name	 Signature	Jan 13/19 Date
HATCH Representative:	Robert Kennedy Name	 Signature	Jan 13/19 Date

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NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material.* *Type:* 5 *Location:* P-CULV -23
Date of Inspection:	JAN 24, 2019
Parties Present at Inspection	Darko Filipic

Comments:

An inspection of the Type 5 *material placement was conducted.*

Material was placed on night shift in 6" lifts. Compaction was achieved using a 1000 lb plate tamper - 20 passes per lift. - bedding at trench

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Darko Filipic		1/24/19
HATCH Representative:	Stephane Grignet		24/01/19

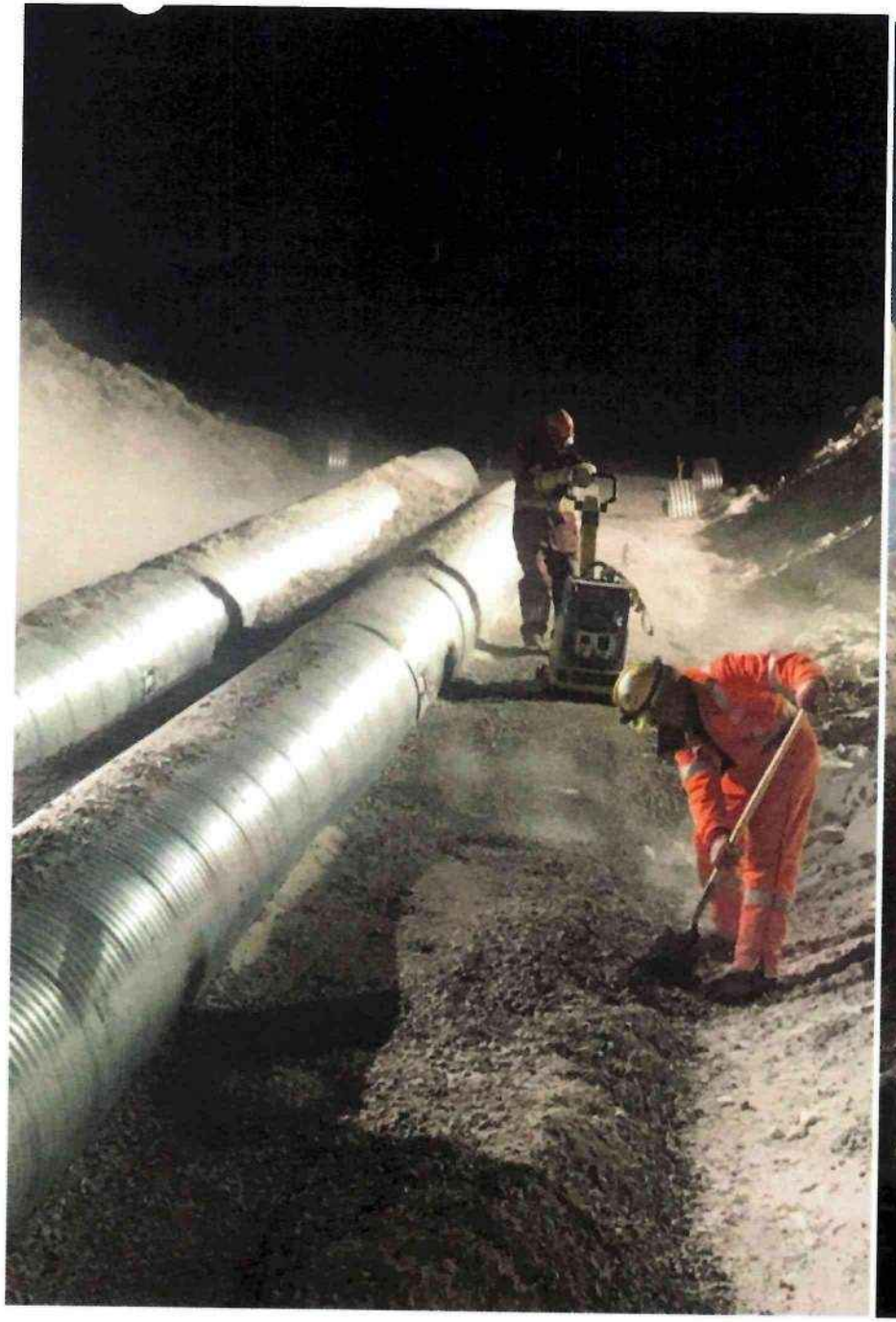
1/22/19

1/22/19

1/22/19

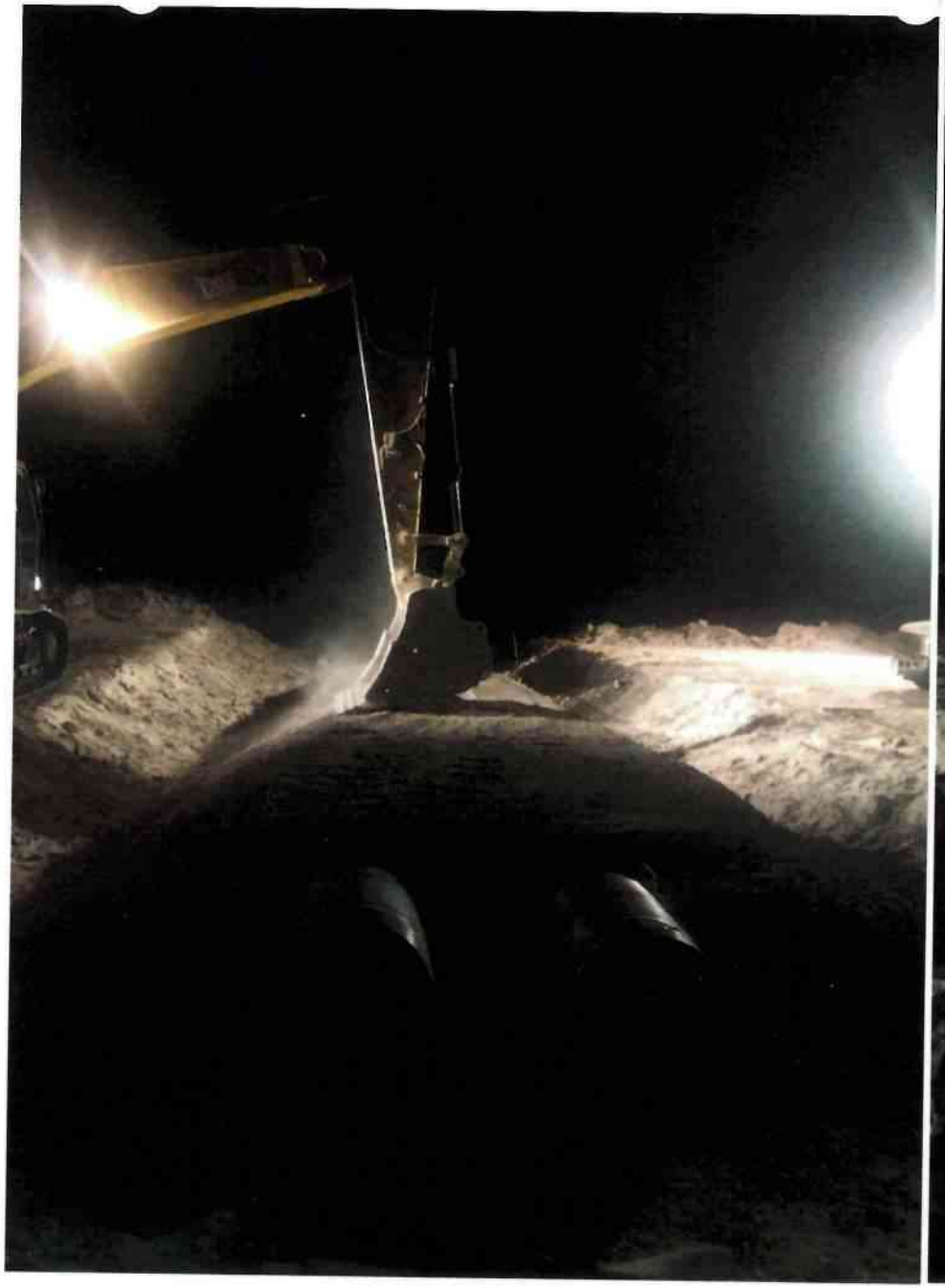
1/22/19

CA



1/22/19

1/22/19



1/22/19

1/22/19

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NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval for placement of* Type 8 *layer.* *Material Type:* Type 8 over Type 5 *Location:* P-CULV-23
Date of Inspection:	Jan 23 2019
Parties Present at Inspection	Grant Lapointe

Comments:

An inspection of the Type 5 *layer was conducted prior to placement of the next lift.*

The compaction was found to have been completed to the specifications provided.

The outlined area is approved for placement of the next lift.

One more lift of Type 5 need to achieve 300 mm cover over culvert prior to Type 8 fill over culvert.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Darko Filipic		1/23/19
HATCH Representative:	Stephane Giguet		1/23/19

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NUNA East Limited Quality Department
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material.* *Type:* 8 (150mm minus) *Location:* P-CULV. 23
Date of Inspection:	Jan 24 2019
Parties Present at Inspection	Darko Filipic

Comments:

An inspection of the Type 8 *material placement was conducted.*

Following placement of Type 5 material to a minimum of 300mm above top of culvert, Type 8 material was placed and track packed to build up the road to match the existing road surface.

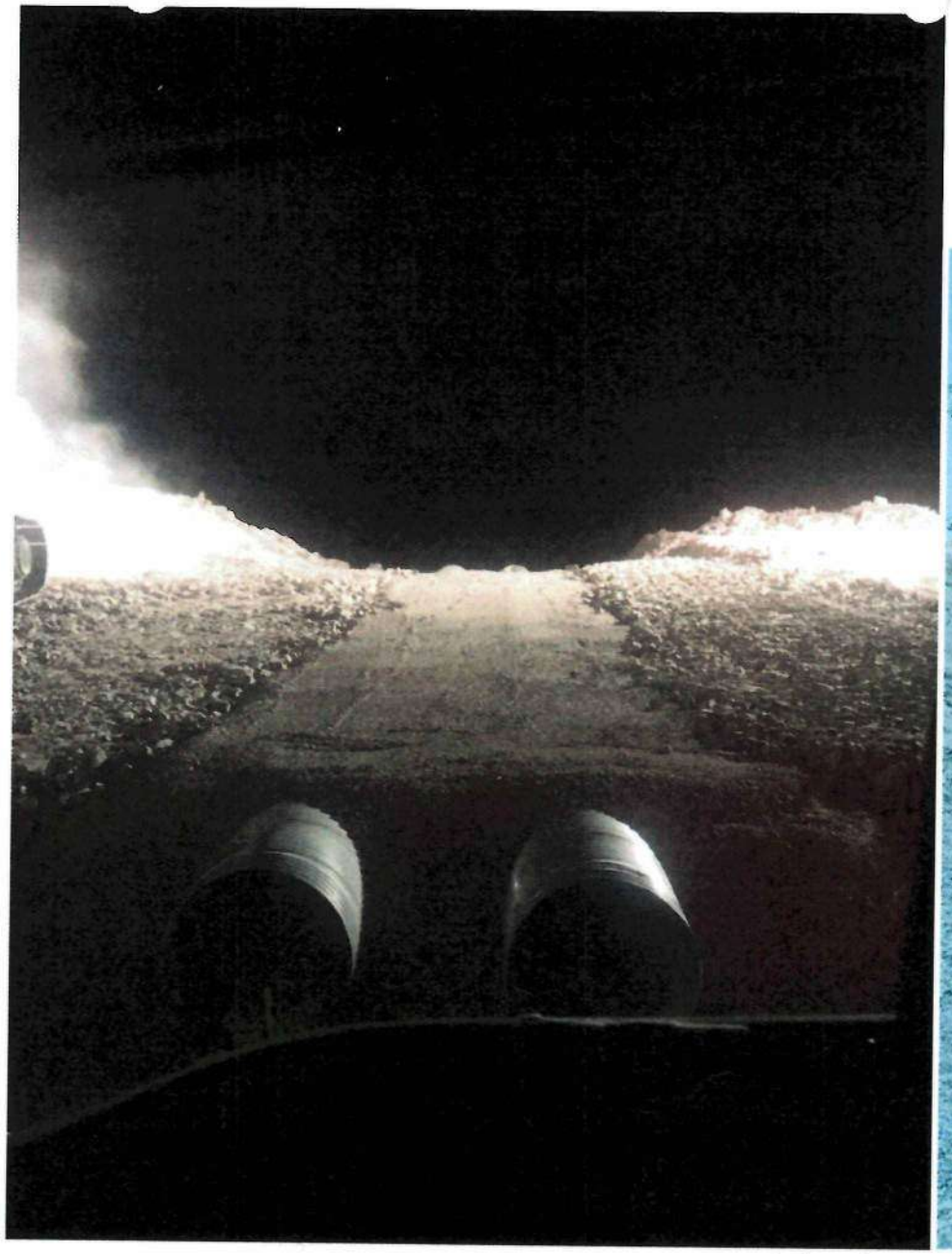
No roller compactor is available for use to compact the material.

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

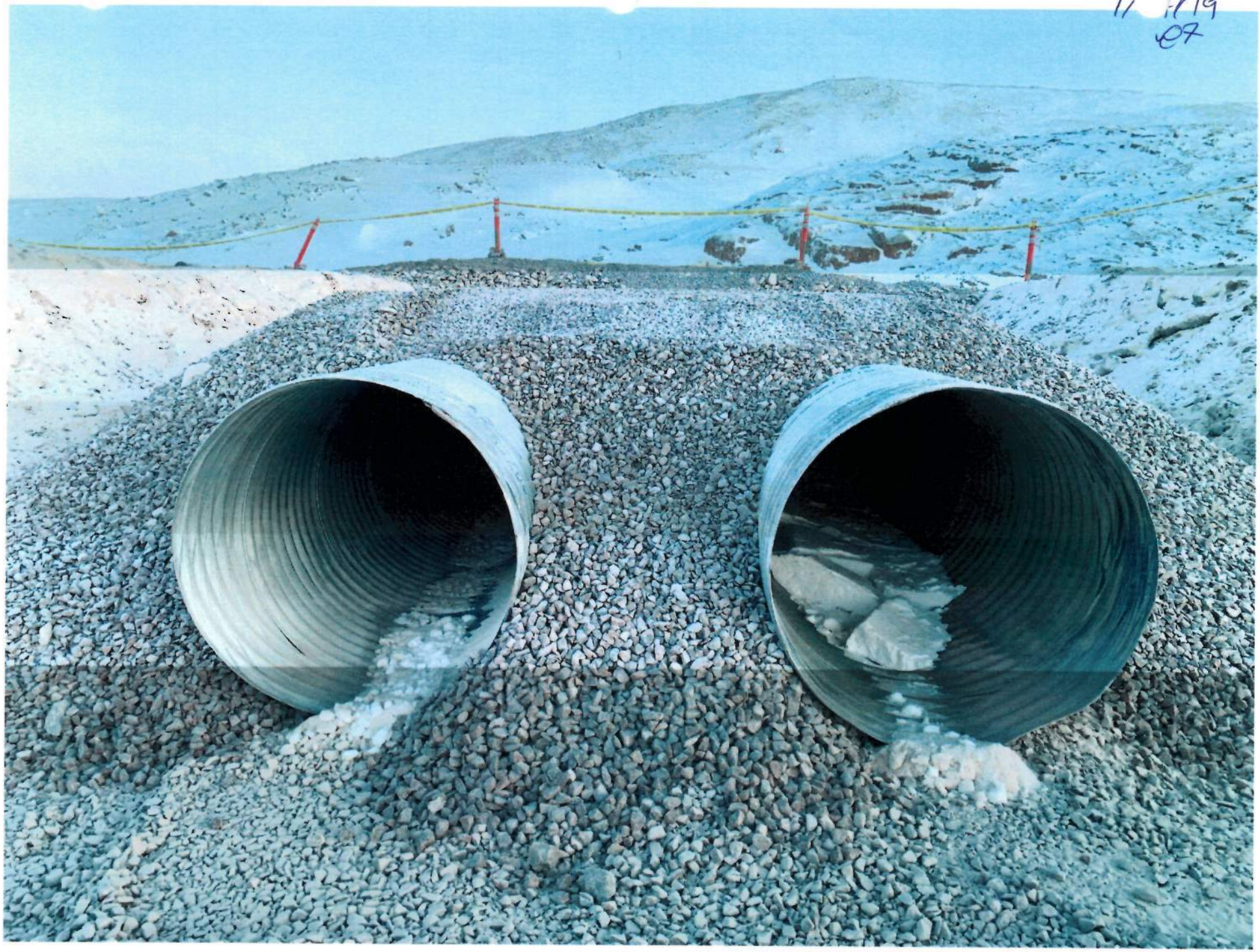
The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Darko Filipic		1/24/19
HATCH Representative:	Stephane Grenier		24/01/19



1/22/19

1/23/19



1/24/19

NUNA

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(Section 10)

Signature Log

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			**Code:**	N/A
Contractor:	Nuna East Ltd.	**Contract/Job No.:**	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	**ITP No.:**	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN	BW	
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC	DF	
ALLNORTH	Materials technician	Kenny MacRae	KMR	
Hatch	Hatch Civil	Stephane Gosset	SG	
NUNA EAST	PROJECT COORDINATOR	BRANDON UNGULHART	BU	
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]	RT	
HATCH	FIELD ENG. MANAGER	GLEN PEACE	GDP	
NUNA EAST	SITE SUPERINTENDENT	ANTHONY STEWART	AWS	
NUNA EAST	SITE SUPERINTENDENT	HARVEY BLOVIN	HB	
Hatch	Hatch Super	Roger Landry	RL	
Nuna East	Project Manager	Stephen Nugent	SN	
HATCH	CONSTRUCTION SUPERINTENDENT	ROB BADER	RB	
BVJV	Project Engineer	David Garcia	DG	
Hatch	QA Manager	Ronny Franken	RF	

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN		
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC		
ALLNORTH	Materials technician	Kenny MacRae		
Hatch	Hatch Civil	Stephane Grenier		
NUNA EAST	PROJECT COORDINATOR	BRANDON URQUHART		
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]STER		
HATCH	FIELD ENG. MANAGER	GLEN PEACE		
Hatch	Construction Super	Dean Moffett		
Hatch	Construction Super	Roger Landry		

NUNA

NUNA EAST LTD

(Section 11)

Final Walkdown Attendees List

NUNA EAST LTD	WALKDOWN REPORT	Exhibit 5 Revision 0

WALKDOWN ATTENDEES LIST

(Page 1 of 1)

Project Name: Mary River Expansion	Contractor's Name: Nuna East Ltd.	Job File No.: CC006-0010B
System CWP Description: Milne Port Rail Access Road Drainage Culvert 23	Location: Rail Access Road @~ 0+518.	Plant No.: N/A

This record indicates that this system was formally walked down and inspected in the field by the undersigned on the date as indicated below

Name	Company Name	Role	Signature	Date (mm/dd/yy)
BRADFORD WATKIN	NUNA EAST	QC		5/27/19
ROY BAUCH	BATCH	SUPERINTENDENT		5/27/19

NUNA

NUNA EAST LTD

(Section 12)

Deficiency/Punch Items Record

DEFICIENCY / PUNCH ITEMS RECORD

Project Name: Mary River Expansion	**Walkdown Date (mm/dd/yy):** 5-27-19	**Area Number:** N/A
Area Name or Area Description: Culvert 23	**Job Number:** CC006-0010B	**Plant Number:** N/A

PURPOSE:

1. **For modules and vendor packages, open punch items are listed at release for shipment.**
2. **As part of a final walkdown package, this form lists the Contactor's open punch items that are transferred into the Nuna Turnover database**
3. **This form is used to capture Punch Items during Final Walkdown**

Tag Number	Description of Deficiency / Punch Item	Cat.	Discipline	Originator	Responsible for resolution	Vendor Y/N	Remarks
	No deficiencies found						

Punch Item Categories captured during Final Walkdown: A, B or C. A- To be rectified before final acceptance. B- To be addressed at a later time. C- Acceptable to be As-Built

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(Section 13)

Acceptance of Completion of Construction Declaration

ACCEPTANCE OF COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the acceptance of the Quality Control Turnover documentation for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Ore Mines
2. **Contractor:** Nuna East Limited
3. **Construction:** Culvert Installation
4. **Location:** Rail Access Road
5. **Description:** Culvert 23 installation beneath Rail Access Road for Stormwater Management

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turnover documentation has been forwarded to and accepted by the owner.

Nuna Representative:

Signature	Print Name	Title	Date
	BRADFORD WATKIN	QC COORDINATOR	

Client Representative:

Signature	Print Name	Title	Date

NUNA

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(Section 14)

Construction Photographs

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH™

Baffinland – Milne Port Earthworks H353004-CC006

Job File Photographs

NUNA

NUNA EAST LTD

HATCH **Vendor/Contractor Document Review**

Doc Number	E353004-CC006-130-124-0010	**SUB**	01
Date Received			

Review Grade	**Next Submittal Status**
☐ **C1** - Proceed to next submission & status ☐ **C2** - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ **C3** - Do not proceed. Revise as noted & resubmit	☐ Internal Review
Next Submittal Date:	☐ Certified/☐ As-Built
☒ **C4** - No further submission required - Complete (select status below) ☐ Certified Final ☒ Final ☐ Cancelled ☐ Superseded	

Package Engineer: Name, signature and date

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibilty for correct design, details & dimensions shall remain with the party submitting the drawing/document.

CC006

Baffinland Iron Mines Corp.: Mary River Expansion, Nu. 2019

NUNA

NUNA EAST LTD

Job #:

CC006-00010C

Culvert 32

Mary River Expansion Project

H353004

Port Site Civil Works

Section 1
Completion of Construction Declaration / Transfer of Care, Control & Custody

Section 2
Inspection & Test Plan (ITP)

Section 3
Redline / As-Built Drawings

Section 4
Survey Data Documentation

Section 5
Sieves / Statements of Compliance

Section 6
Request for Information Documents (RFIs)

Section 7
Non-Conformance Reports (NCRs)

Section 8
Land Disturbance Form (LDF)

Section 9
Signature Log

Section 10
Quality Control Documents

Section 11
Walkdown

Section 12
Deficiency/Punchlist

Section 13
Acceptance of Completion of Construction Declaration

Section 14
Construction Photographs

NUNA

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(Section 1)

Completion of Construction Declaration / Transfer of Care, Control & Custody (TCCC) Forms

COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Mines Corporation
2. **Contractor:** Nuna East Limited
3. **Construction:** Culvert Installation
4. **Location:** Port Site Tote Road
5. **Description:** Installation of Culvert 32 under Tote Road

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turn over documentation has been forwarded to the owner.

	Bradford Watkin	QC Coordinator	9/3/19
(Signature)	(Print Name)	(Title)	(Date)
Nuna East Ltd.	14, 6194 – 50 Street NW Edmonton, AB, CA		T6B 2N7
(Company)	(Address)		(City, Postal Code)

Transfer of Care, Custody and Control

FROM GROUP "A"	NUNA EAST LTD.	**JOB FILE NO.:**	JOB # CC006-0010C CULVERT 32
To Group "B"	Hatch Engineering	**WBS No.:**	4810
Location:	Tote Road curve No. 5 @ ~ marker 620	**Date:**	May 13, 2019

ORIGINATING JOB FILE NO. DETAILS:	Installation of P-Culvert 32
Comments:	

THIS IS NOTICE TO GROUP "B" HATCH ENGINEERING THAT THE FOLLOWING WORK/MATERIAL AS PER P.O./CONTRACT IS/ARE BEING TRANSFERRED BY GROUP "A" NUNA EAST LTD. AND IS/ARE BEING FULLY ACCEPTED BY GROUP "B" HATCH ENGINEERING FROM GROUP "A" NUNA EAST LTD.
WITH EXCEPTIONS AS LISTED BELOW (IF ANY).

Description:	**Reference Drawing(s):**
No exceptions noted.	H353004-40000-223-271-0009-0003 Rev 1.

EXCEPTIONS:	**DATE CORRECTED:**	**SIGNED OFF:**
1.		
2.		

"Exceptions Accepted and released"

From Group "A": Nuna East Ltd.

Date: 5/14/19

Print Name: BRADFORD WATKIN Signature:

To Group "B": Hatch Engineering.

Date: 27-MAY-2019

Print Name: ROYBARON Signature:

I CONFIRM THE CONDITIONS LISTED BELOW HAVE BEEN MET (WITH NOTED EXCEPTIONS OR DEFICIENCIES) AND RELEASE OF CARE, CUSTODY AND CONTROL OF THE ITEM(S) LISTED ABOVE TO THE RECIPIENT.

☑ All requests for Inspection are complete and all issues are resolved.

☑ All deficiencies have been resolved.

☑ All Redlines / As-Builts have been received.

☑ All relevant manuals and vendor data have been received.

Client Representative:

Name: ROYBARON Signature:

Date: 27-MAY-2019

NUNA

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(Section 2)

Inspection & Test Plan (ITP)

NUNA EAST LTD

QUALITY MANAGEMENT SYSTEM
INSPECTION &TEST PLAN
(Civil / Structural Installations)

CLIENT: Hatch	**ITEM / DESCRIPTION / SCOPE:** Installation of P-Culvert 32 along the Tote Road curve No. 5 @ ~ marker 620	**NUNA ITP NO.:** CC006-001C	**REVISION NO.:** 2
CONTRACTOR: Nuna East Ltd.		**AFFILIATED SUB-CONTRACTOR(S):** N/A	
CONTACT PERSON: Bradford Watkin	**CONTACT INFORMATION:** bradfordw@nunalogistics.com	**DATE:** May 14, 2019	
CONTRACT No.: H353004-CC006	**HATCH PROJECT NUMBER:** H353004-CC006	**HATCH DOCUMENT TITLE:** Mary River Expansion Project-Remaining Early Earthworks	
NUNA JOB No.: CC006-0010A	**PURCHASE ORDER No.:** N/A	**PROJECT MANAGER:** Chris Petrovic	
LOCATION(S): Milne Port Site		**LEGEND:** **H:** A mandatory hold on manufacturer until release by inspector or official waiver from client. **M:** Inspection stage by inspector on a spot basis, but not a mandatory hold point. **HR:** A mandatory hold / review & acceptance / approval of the specified documentation. **W:** To be informed and invited to inspect. Construction to continue if inspector does not attend. **R:** Review of report / certifications. **A:** Audit (Review at Random).	
CWP No.: N/A			

Approved For Construction

Stephen Nugent — May 14, 2019
Nuna Project Manager / Engineer (Print) — Signature — Date

Bradford Watkin — May 14, 2019
Nuna Quality Representative (Print) — Signature — Date

Hatch Representative (Print) — Signature — Date

HATCH Vendor/Contractor Document Review

Doc Number	E353004-CC006-130-051-0010	SUB	03
Date Received			

Review Grade	Next Submittal Status
☐ C1 - Proceed to next submission & status ☐ C2 - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ C3 - Do not proceed. Revise as noted & resubmit	☐ Internal Review
Next Submittal Date:	☐ Certified/☐ As-Built
☐ C4 - No further submission required - Complete (select status below) ☐ Certified Final ☑ Final ☐ Cancelled ☐ Superseded	

Package Engineer: Name, signature and date farrokh.noon@hatch.com

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibility for correct design, details & dimensions shall remain with the party submitting the drawing/document.

Hatch Stamp

Final Review

BRADFORD WATKIN — 9/3/19
Nuna Quality Representative (Print) — Signature — Date

Hatch Quality Representative (Print) — Signature — Date

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	*Description of Activities* (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	*Functional Responsibility*	*Quality Control Activity*	*Verification Frequency*	*Reference Document(s)/ Controlling Procedure*	*Acceptance Criteria*	*Verification Document(s) (Reporting)*	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	*Comments*
1.	Contract Review / Approval	NUNA	Review / Verify Document	Prior to project start	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract				R		5/14/19	R			

ACTIVITY DATA							VERIFICATION DATA											
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
2.	Approval of ITP	NUNA / HATCH Representatives	Review	Prior to start	NUNA Quality System Manual	Signed ITP by Client representative, NUNA Quality System Manual	Signed acceptance of document (Exhibit 1.0)				HR	BW	5/08/19	R			
3.	Scope and Associated Documents	NUNA	Review For Errors	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R	BW	5/14/19	R			
4.	Signature Log	NUNA	Review, obtain signatures	Ongoing	NUNA Quality System Manual	NUNA Quality System Manual	NUNA Signature Log				R	BW	9/24/19	R			
5.	Verify land disturbance approval	NUNA	Verify	Prior to start	BIM site specification	BIM Approval	Approved documents				HR	BW	10/21/19	R			
6.	Locate and mark any underground obstructions / utilities	NUNA / ALL NORTH	Verify	Prior to start	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				H		N/A	H			
7.	Initial Survey Layout	NUNA / ALL NORTH	Cross Check of IFC Layout	Ongoing	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				HR		2/19/19	HR			
8.	Work Method of Statement	NUNA / HATCH	Review	Prior to Start	IFC Drawings, NUNA Quality System Manual Hatch Spec. 221-078-0001 Rev 0	IFC Drawings, NUNA Quality System Manual, Hatch Spec. 221-078-0001 Rev 0	Nuna Operational Work Plan				R		N/A	R			Also referred to as a Nuna Operation Work Plan.
9.	Materials verification	NUNA	Review	As required	IFC Drawings, Hatch Spec. 280-078-0002 Rev 0, ASTM C-136	IFC Drawings, Hatch Spec.280-078-0002 Rev 0, ASTM C-136	Sieve Test Reports, QSRs				HR	* NO SIEVES AVAILABLE		R			• Type 5 • Type 8 • Type 12 • Type 19 • Geotextile (LP7 or equivalent) • Culvert Type CSP
10.	RFI	NUNA	Resolution of RFIs	As required	NUNA Quality System Manual	Disposition, Approved, closed and log updated	RFIs				HR	BW	10/21/19	R			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
11.	Excavation of works location completed	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W	BW	2/19/19	W			• Snow / Ice removal • No water seepage • Foreign objects • Debris • Disposal
12.	Subgrade foundation preparation completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W	BW	2/19/19	W			• ~~Compaction~~ N/A
Type 5 32 minus																	
13.	Type 5 32 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	BW	2/19/19	W			- BEDDING
14.	Compaction of Type 5 32 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	BW	2/19/19	W			- BEDDING
15.	Survey of Type 5 32 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR	BW	2/19/19	W			
Type 8 Jaw Run 150 minus																	
16.	Type 8 Jaw Run 150 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	BW	2/19/19	W			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
17.	Compaction of Type 8 Jaw Run 150 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	BeJ	2/19/19	W			
18.	Survey of Type 8 Jaw Run 150 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR	BeJ	2/19/19	W			
ROQ (Type 12)																	
19.	ROQ (Type 12) Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W			W			
20.	Compaction of ROQ (Type 12) Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W			W			
21.	Survey of ROQ Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR			W			
Type 19 150 Clear																	
22.	Type 19 150 Clear Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W			W			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	Type	Initials	Date *(mm/dd/yy)*	Type	Initials	Date *(mm/dd/yy)*	Type	Initials	Date *(mm/dd/yy)*	***Comments***
23.	Compaction of Type 19 150 Clear Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W			W			
24.	Survey of Type 19 150 Clear Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR			W			
25.	As built Survey	NUNA	Review	Continuous During Operations	IFC Drawings	IFC Drawings, Hatch Specifications	As built Drawings & Data				R		3/10/19	W			
26.	Final Walk down	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Contract Requirements	Final Walkdown Attendees' Report				W		3/27/19	H			
27.	Deficiency List / Punch list generated	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per contract Requirements	Item form punch list items resolved				HR		4/1/19	HR			
28.	NCR's closed.	NUNA / HATCH	Review of NCRs, Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Requirements	NCR log cleared				HR		4/1/19	HR			
29.	As-built / Redline drawings completed.	NUNA	Review / Verify	Post Final Walk down	IFC Drawings, Contract	As-builts / Redlines to Reflect All Field Changes	As-builts / Redlines				HR		4/5/19	W			
30.	Final Acceptance and ITP Sign off	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP (Exhibit 1.0)				H			H			
31.	Inspection Acceptance and Sign-Off Form signed by Engineer of record.	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP, Acceptance of Completion of Construction Form				H			H			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s)*** *(Reporting)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
32.	Turnover package completed and sent to client.	NUNA	Review / Verify	Post project completion	NUNA Quality System Manual, IFC Drawings, Contract	Contract, Code & applicable specifications.	Quality Management System Quality Control Turnover package.				**H**			**A**			

Note: Nuna ITP Sign-Offs based on supporting documentation.

Comments:

ITP ISSUE APPROVALS

Stephen Nugent	Site Project Manager		May 14, 2019
Nuna Contractor Project Manager / Engineer *(Print)*	Title	Signature	Date *(mm/dd/yy)*
Bradford Watkin	QC Coordinator		May 14, 2019
Nuna Contractor Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

ITP CLOSEOUT AND WORK ACCEPTANCE APPROVALS

Nuna Contractor Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

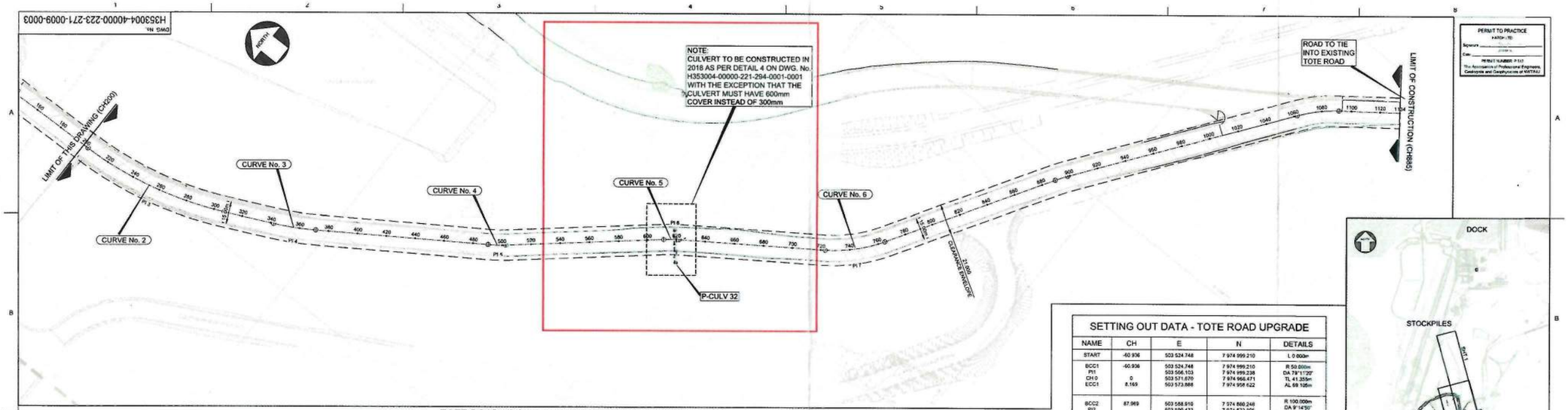
NUNA

NUNA EAST LTD

(Section 3)

Redline / As-Built Drawings

DWG No. H353004-40000-223-271-0009-0003



TOTE ROAD UPGRADE FROM CH.170 TO CH.1134

SCALE 1:1000

CULVERT SCHEDULE

(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-00000-221-294-0001-0001-TYPICAL CULVERT DETAILS)

								CULVERT AT UPSTREAM				CULVERT AT DOWNSTREAM		NOTE: FINAL U/S INVERT AND D/S INVERT LEVELS ARE TO BE CONFIRMED ON SITE				
CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	NORTHING	EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	NORTHING	EASTING	D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)
P-CULV. 32	N	2	900	24.150	0	2300	CSP	7974415.110	503802.11	36.500	Y	7974399.888	503783.482	35.350	Y	500	3.6000	4.7500	90

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. REFER TO PRIMARY ROAD - TYPICAL CROSS SECTION ON DRAWING No. H353004-40000-221-273-0001-0001 FOR TYPICAL LAYER WORKS. ROAD WIDTH TO BE 15m

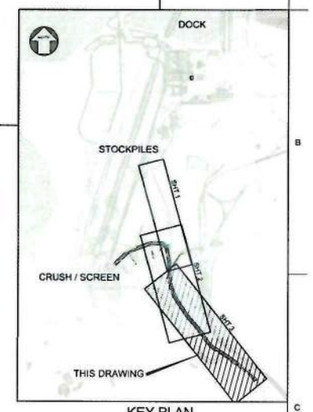
LEGEND:

198 — CONTOUR ELEVATION

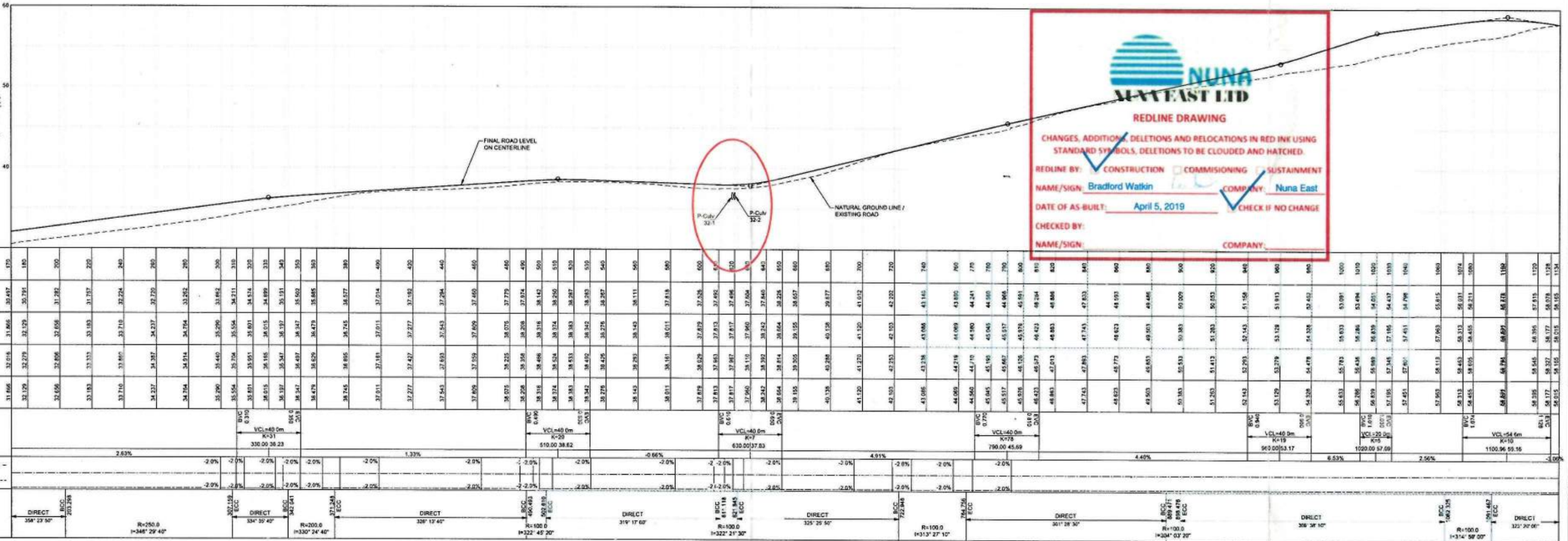
LIMIT OF CONSTRUCTION UNDER THIS CONTRACT

SETTING OUT DATA - TOTE ROAD UPGRADE

NAME	CH	E	N	DETAILS
START	-60.936	503 524.748	7 974 999.210	L 0.000m
BCC1	-60.936	503 524.748	7 974 999.210	R 50.000m
PI1		503 506.103	7 974 959.238	DA 78°11'20"
CH 0	0	503 571.670	7 974 966.471	TL 41.355m
ECC1	8.169	503 573.868	7 974 958.622	AL 68.195m
BCC2	87.969	503 588.910	7 974 880.248	R 100.000m
PI2		503 590.433	7 974 872.305	DA 9°14'30"
ECC2	104.109	503 590.859	7 974 864.221	TL 8.087m
				AL 16.139m
BCC3	203.298	503 593.434	7 974 765.070	R 250.000m
PI3		503 594.908	7 974 717.400	DA 23°48'10"
ECC3	307.159	503 617.514	7 974 664.806	TL 52.695m
				AL 103.861m
BCC4	342.041	503 632.479	7 974 633.297	R 200.000m
PI4		503 636.756	7 974 620.083	DA 8°22'00"
ECC4	371.248	503 646.868	7 974 607.923	TL 14.620m
				AL 29.206m
BCC5	490.493	503 713.178	7 974 508.800	R 100.000m
PI5		503 716.550	7 974 503.758	DA 6°56'20"
ECC5	502.610	503 720.507	7 974 499.160	TL 6.066m
				AL 12.117m
BCC6	611.118	503 791.267	7 974 416.916	R 100.000m
PI6		503 794.789	7 974 412.847	DA 5°08'50"
ECC6	621.845	503 797.936	7 974 408.426	TL 5.369m
				AL 10.727m
BCC7	722.946	503 859.201	7 974 325.176	R 100.000m
PI7		503 867.236	7 974 307.707	DA 23°57'20"
ECC7	764.756	503 885.332	7 974 296.630	TL 21.215m
				AL 41.806m
END	885.116	503 887.982	7 974 233.787	L 120.360m



KEY PLAN



LONGITUDINAL SECTION FROM CH.170 TO CH.885

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: Bradford Watkin COMPANY: Nuna East

DATE OF AS-BUILT: April 5, 2019 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

H353004-00000-221-294-0001-0001	TYPICAL CULVERT DETAILS	
H353004-40000-221-273-0001-0001	MODULE, PRIMARY AND SECONDARY ROADS - TYPICAL CROSS SECTIONS	
H353004-40000-223-271-0009-0002	TOTE ROAD UPGRADE - PLAN AND PROFILE SHEET 2 OF 3	
DRAWING No.	DRAWING TITLE	
REFERENCE DRAWINGS		

FOR CONSTRUCTION

REG. PROFESSIONAL

No.	DESCRIPTION	BY	CHKD	DATE
1	EDC STAMP REMOVED	KVDM	FH	21/08/2018
0	APPROVED FOR CONSTRUCTION	IB	FH	10/04/2018

REVISIONS

HATCH

DRAFTSPERSON	I. BARNARD	NR	10/04/2018
DESIGNER	E. BALEGAMIRE	NR	10/04/2018
CHECKER	F. HUGO		2018-05-14
DESIGN COORD	R. GOOSEN		2018-09-13
RESP. ENG.	R. HALIM		2018-09-14
LEAD DISC. ENG.	A. GROBBELAAR		2018-09-13
AREA LEAD	V. LAVRIC		
ENG. MANAGER	D. STANGER		
AREA MANAGER	T. ATIBA		

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

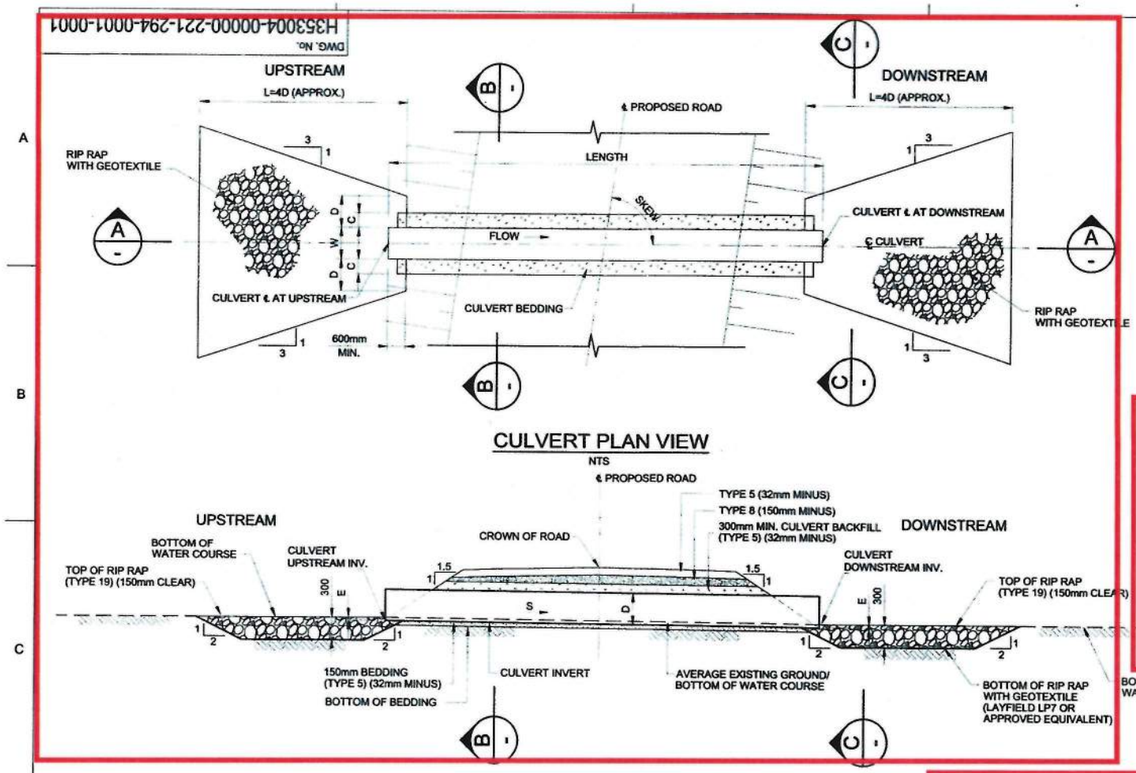
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
TOTE ROAD UPGRADE
PLAN AND PROFILE SHEET 3 OF 3

SCALE 1:1,000 OR AS NOTED | DWG. No. H353004-40000-223-271-0009-0003 | REV 1

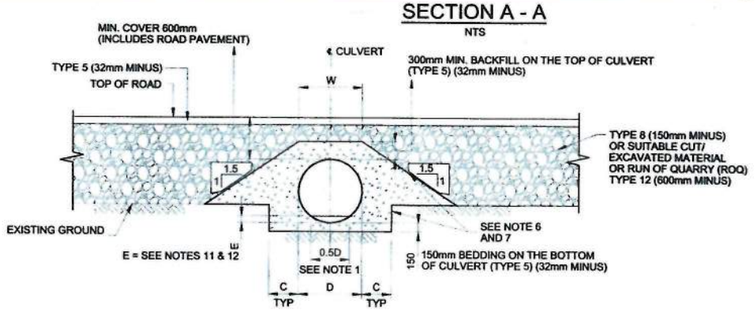
SHEET SIZE: E

DWG. No. H353004-00000-221-294-0001-0001

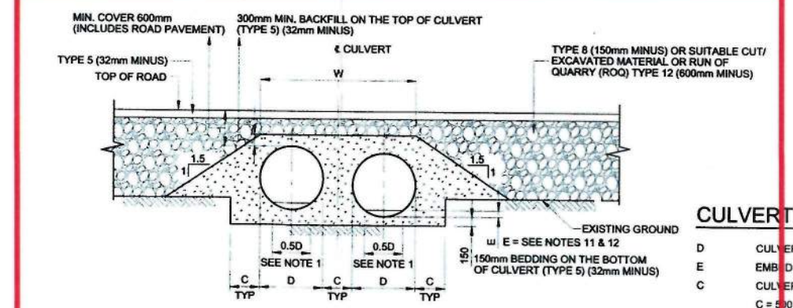


CULVERT PLAN VIEW
NTS

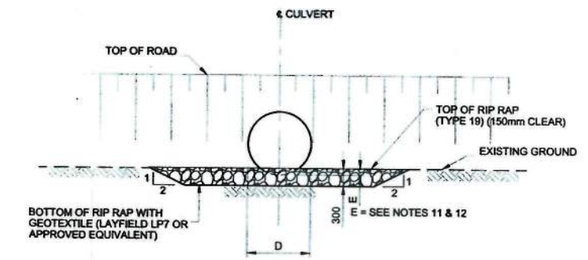
SECTION A - A
NTS



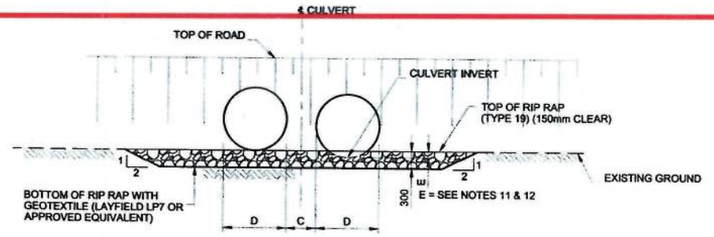
SECTION B - B (SINGLE PIPE)
NTS



SECTION B - B (DOUBLE PIPE)
NTS



SECTION C - C (SINGLE PIPE)
NTS



SECTION C - C (DOUBLE PIPE)
NTS

NOTES:

1. THE PIPE BED SHALL BE SHAPED TO RECEIVE THE BOTTOM OF THE PIPE.
2. GRANULAR MATERIAL PLACED UNDER THE HAUNCH MUST BE COMPACTED.
3. BEDDING AND BACKFILL MATERIAL SHALL BE HOMOGENEOUS GRANULAR MATERIAL, AND SHALL BE PLACED AND COMPACTED UNIFORMLY AROUND THE PIPE.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE
5. ALL ELEVATIONS ARE IN METERS UNLESS NOTED OTHERWISE.
6. WHERE VERTICAL EXCAVATION IS NOT POSSIBLE, MODIFY EXCAVATION SLOPE TO MIN. 1.5H: 1V.
7. PROVIDE 300mm TYPE 8 (150mm MINUS) AROUND BEDDING AND BACK FILL MATERIAL ONLY WHEN ROCKFILL IS PRESENT.
8. THE CULVERT UPSTREAM AND DOWNSTREAM LOCATIONS AND INVERT ELEVATIONS ARE BASED ON LIDAR DATA. NO BOTTOM OF STREAM SURVEY DATA WAS AVAILABLE AT THE TIME OF PREPERATION OF THIS DRAWING.
9. ADJUST CULVERT START AND END COORDINATES AND INVERT ELEVATIONS IN THE FIELD AS APPROVED BY COMPANY'S REPRESENTATIVE.
10. FLOW DIRECTION MUST BE FROM UPSTREAM TO DOWNSTREAM. PROVIDE AVERAGE STREAM SLOPE ALONG THE CULVERT AS CULVERT SLOPE BASED ON ACTUAL FIELD CONDITION.
11. FOR FISH BEARING CULVERT, E=0.1D
    FOR NON-FISH BEARING CULVERT, E=0
12. FOR FISH BEARING CULVERT WITH MULTIPLE PIPES, ONLY ONE PIPE SHALL BE EMBEDDED BY "E" (APPROXIMATELY 0.1D) AND ALL OTHER PIPES SHALL BE PLACED ON GROUND/BOTTOM OF WATER COURSE.

MATERIAL AND COMPACTION SPECIFICATION:

SUBGRADE PREPARATION:
THE SUBGRADE SHOULD SHOULD BE PROOF-ROLLED AND INSPECTED PRIOR TO PLACING FILL MATERIALS. THE IDENTIFIED SOFT AREAS SHALL BE FURTHER COMPACTED, OR IF NECESSARY, BE MITIGATED USING GRANULAR OR ROCK FILL. A QUALIFIED GEOTECHNICAL ENGINEER SHALL INSPECT AND APPROVE THE SUBGRADE.
THE ROCKFILL SHALL NOT BE PLACED IN WATER OR ON ICE. DEWATERING IS REQUIRED WHERE PONDING WATER IS ENCOUNTERED. OVER-EXCAVATION IS REQUIRED FOR GROUND ICE, IF ENCOUNTERED.
THE SUBGRADE ON THE GROUND SHALL BE LEFT AS IT IS NATURALLY BEFORE CONSTRUCTION AS MUCH AS POSSIBLE. THE OVER-EXCAVATION SHOULD BE MINIMIZED TO AVOID DISTURBANCE OF THE EXISTING PERMAFROST.

TYPE 5 (CRUSHER RUN 32mm MINUS MATERIAL) OR TYPE 3 (CRUSHER RUN 50mm MINUS):
THE MATERIAL MUST BE PLACED IN LIFTS NOT EXCEEDING 200mm AND SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVELY, THE COMPACTION SHOULD ACHIEVE A MINIMUM OF 100 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY TEST METHOD ASTM D698.

TYPE 8 (CRUSHER RUN 150mm MINUS):
THE ROCKFILL MUST BE PLACED IN LIFTS NOT EXCEEDING 500mm. THE PLACEMENT SHALL AVOID SEGREGATION AND NESTING OF COARSE PARTICLES. IT SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). EACH LIFT MUST BE "PROOF-ROLLED" PRIOR TO PLACING THE SUBSEQUENT LIFT.

TYPE 12 (RUN OF MINE, TYPICALLY 600mm MINUS):
THE ROCKFILL, IF USED, MUST BE PLACED IN LIFTS NOT EXCEEDING 1000mm. THE ROCKFILL SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVE COMPACTORS SUCH AS HEAVY LOADED RUBBER TIRED HAUL TRUCKS CAN ONLY BE USED AS PER A WRITTEN APPROVAL FROM THE ENGINEER.

CULVERT SCHEDULE

CULVERT ID	FISH BEARING	NUMBER OF PIPES	LENGTH (m)	E (mm)	W (mm)	UPSTREAM CULVERT CENTRE TYPE	UPSTREAM CULVERT CENTRE NORTHING	UPSTREAM CULVERT CENTRE EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	DOWNSTREAM CULVERT CENTRE NORTHING	DOWNSTREAM CULVERT CENTRE EASTING	D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
C	CULVERT SPACING AND BEDDING CLEARANCE C = 0.5D WHILE D > 900mm C = 450 WHILE D <= 900mm
W	CULVERT BACKFILL TOP WIDTH W = (n*D) + (n-1)*C
TYPE	CULVERT MATERIAL
U/S INV.	CULVERT UPSTREAM INVERT ELEVATION
D/S INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	RIPRAP APRON LENGTH L = 4xD (APPROX)
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

Bradford Watkin QA/QC Reviewed

Released for Use

PERMIT TO PRACTICE HATCH LTD.
Signature
Date 2018-09-20
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

NUNA EAST LTD
REDLINE DRAWING
CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE SLOUDED AND HATCHED.
REDLINE BY: CONSTRUCTION / COMMISIONING / SUSTAINMENT
NAME/SIGN: Bradford Watkin COMPANY: NUNA
DATE OF AS-BUILT: 4/5/19 CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:

REGISTERED PROFESSIONAL ENGINEER R. A. HALIM L1247 LICENSEE 2018-09-20 NWT/NU

FOR CONSTRUCTION

THIS DRAWING WAS PREPARED BY HATCH LTD. ("HATCH") FOR THE EXCLUSIVE USE OF BAFFINLAND IRON MINES LP ("CLIENT") AND ITS USE IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN HATCH AND THE THE CLIENT, INCLUDING ANY LIMITATIONS ON LIABILITY CONTAINED THEREIN. THIS DRAWING AND ITS CONTENTS REMAIN THE INTELLECTUAL PROPERTY OF HATCH SUBJECT TO CLIENT'S ROYALTY-FREE, IRREVOCABLE, PERPETUAL AND NON-EXCLUSIVE LICENSE TO USE AND REPRODUCE THE DRAWING FOR PURPOSES CONNECTED WITH THE PROJECT, INCLUDING THE CONSTRUCTION, COMPLETION, MAINTENANCE, EXTENSION, REINSTATEMENT AND REPAIR OF THE PROJECT. THIS DRAWING, AND THE INFORMATION CONTAINED HEREIN, SHALL BE TREATED AS CONFIDENTIAL FOR ALL OTHER PURPOSES AND SHALL NOT BE MODIFIED WITHOUT THE WRITTEN CONSENT OF HATCH.

No.	DESCRIPTION	BY	CHK'D	DATE
1	MATERIAL AND COMPACTION SPECIFICATION ADDED	IHB	FH	18/09/2018
0	APPROVED FOR CONSTRUCTION	IHB	FH	01/12/2017

REVISIONS

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	I BARNARD	NR	
DESIGNER	I BARNARD	NR	
CHECKER	F HUGO		2018-09-20
DESIGN COORD.	R GOOSEN		2018-09-20
RESP. ENG.	R HALIM		2018-09-20
LEAD DISC. ENG.	A GROBBELAAR		20 September
AREA LEAD	V LAVRIC		2018-09-20
ENG. MANAGER	D STANGER		2018.09.25
AREA MANAGER	T ATIBA		

DRAWING APPROVAL STATUS: Approved for Construction

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

SITE WIDE
STANDARD DRAWING
TYPICAL CULVERT DETAILS

SCALE NTS OR AS NOTED
DWG. No. H353004-00000-221-294-0001-0001
REV 1
SHEET SIZE: D

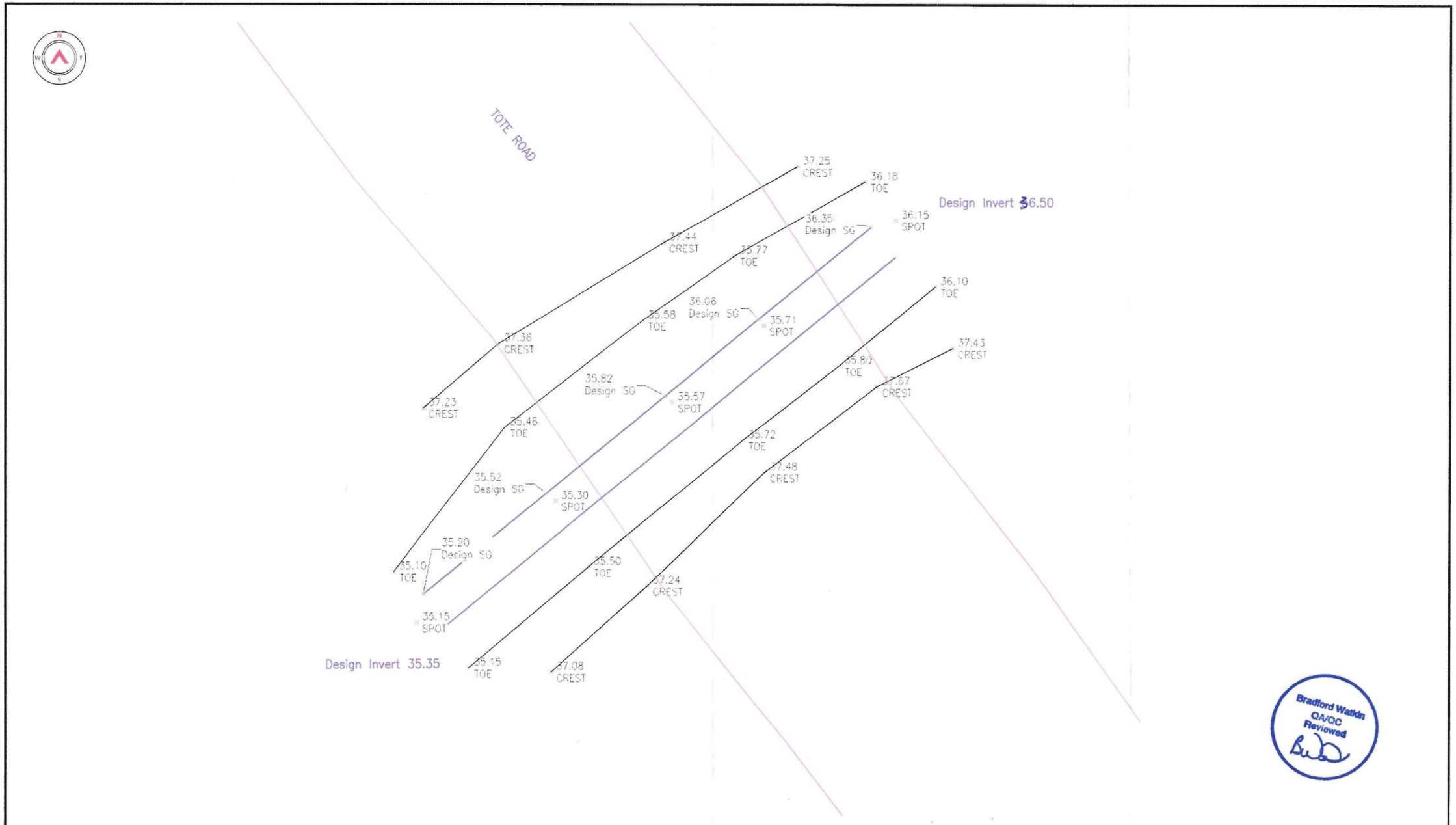
DRAWING No.
DRAWING TITLE
REFERENCE DRAWINGS
REG. PROFESSIONAL

$USERNAMES
$DATES
$FILES
$TIMES

(Section 4)

Survey Documentation

Nuna Logistics Limited
Package Dividers



REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
[illegible]	TYPICAL CULVERT DETAILS	1

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REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
-	-	-	-	-

CLIENT: Baffinland

HATCH

Allnorth

TITLE: **P-CULV-32 TOTE ROAD SUB GRADE SURVEY**

CLIENT NO:	-	DRWN:	AJB	DATE:	19/02/19
PROJECT NO:	-	DSGN:	-	DATE:	-
DRAWING SIZE:	ANSI "B"	CHKD:	-	DATE:	-
SCALE:	1:150	APVD:	-	DATE:	-

PROJECT: **BAFFINLAND IRON MINES LP MARY RIVER EXPANSION PROJECT**

DWG NO: **190219-P-CULV-32 SUB-ACL-AJB** REV: **0**

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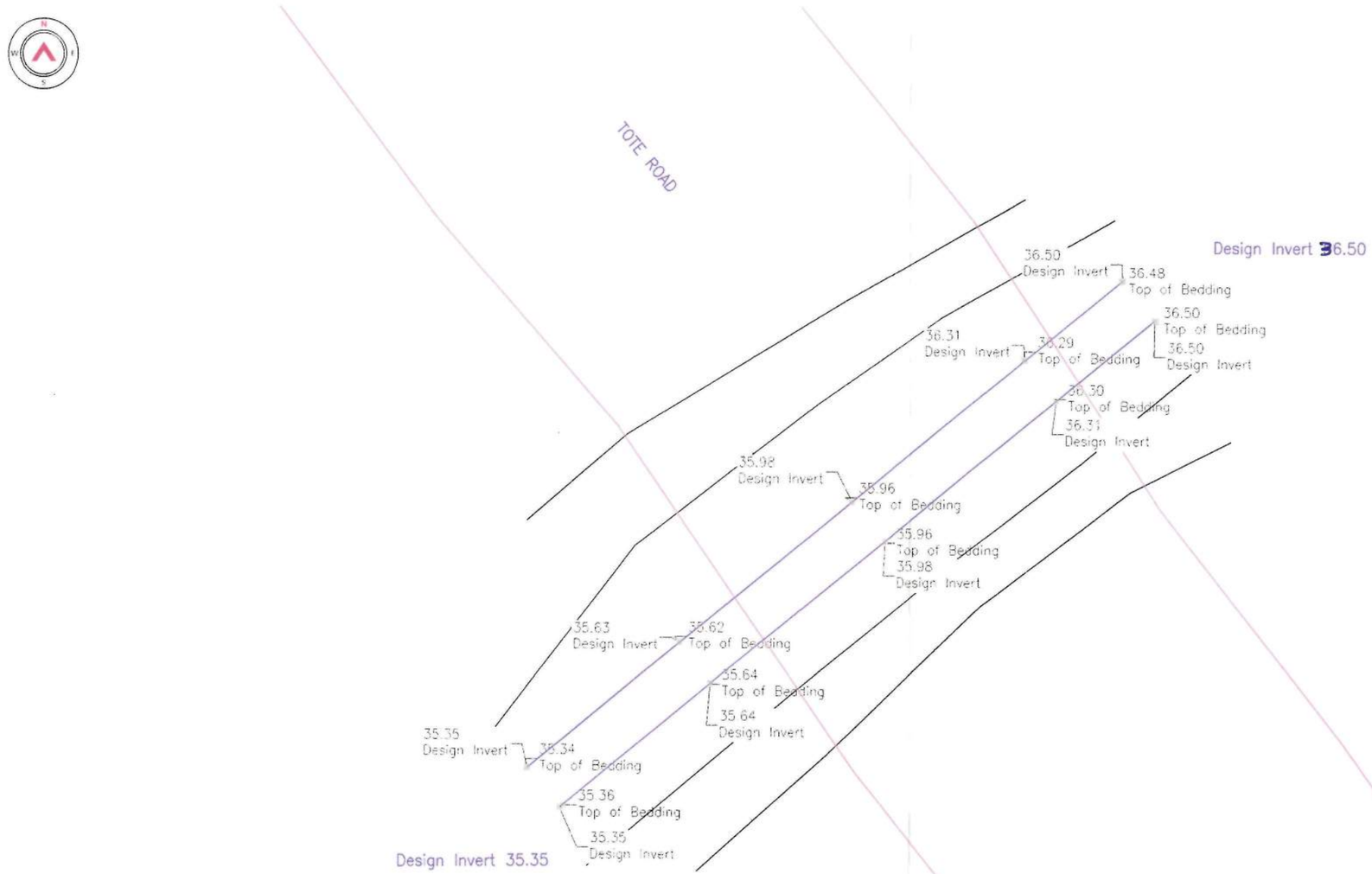

Bradford Watkin
QA/QC
Reviewed

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
P-0310-0002-271-PM-0001-0001	TYPICAL CULVERT DETAILS	1

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REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
-	-	-	-	-

CLIENT: Baffinland

HATCH

Allnorth

TITLE:
P-CULV-32
TOTE ROAD
TOP OF BEDDING SURVEY

CLIENT NO:	-	DRWN:	AJB	DATE:	19/02/19
PROJECT NO:	-	DSGN:	-	DATE:	-
DRAWING SIZE:	ANSI "B"	CHKD:	-	DATE:	-
SCALE:	1:150	APVD:	-	DATE:	-

PROJECT:
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

DWG NO: 190219-P-CULV-32 BED-ACL-AJB
REV: 0

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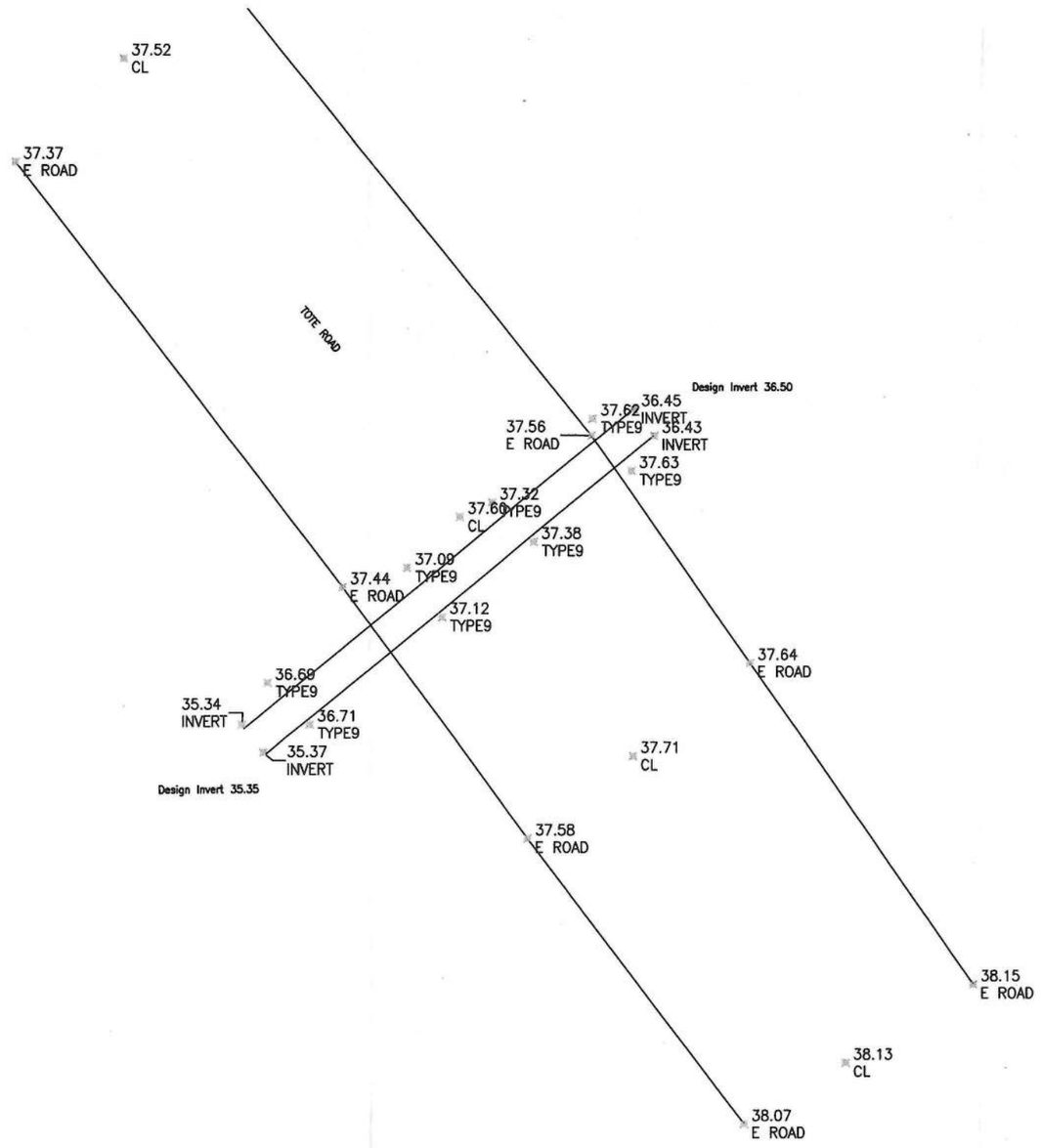

Bradford Watkin
QA/QC
Reviewed

P-CULV-32
TOTE ROAD
FINAL GRADE TOPO

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION
PROJECT

190226-P-CULV-32 FINAL-ACL-SMR | 0

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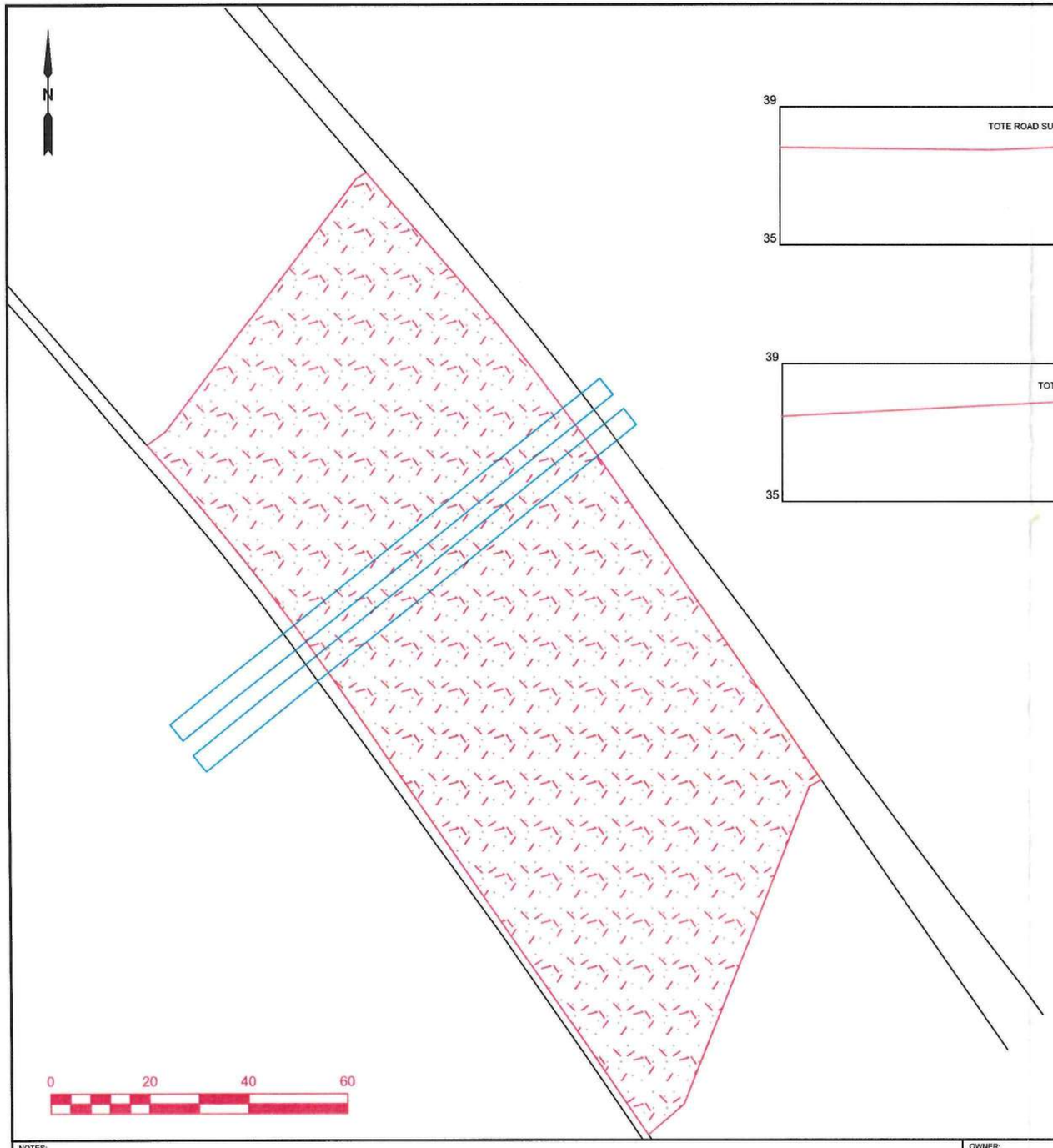
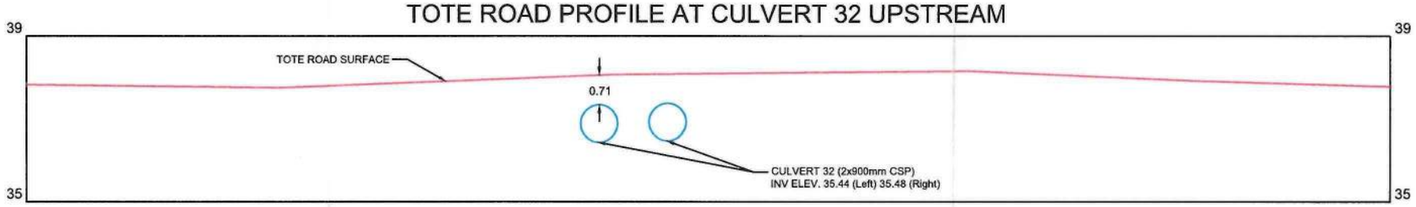
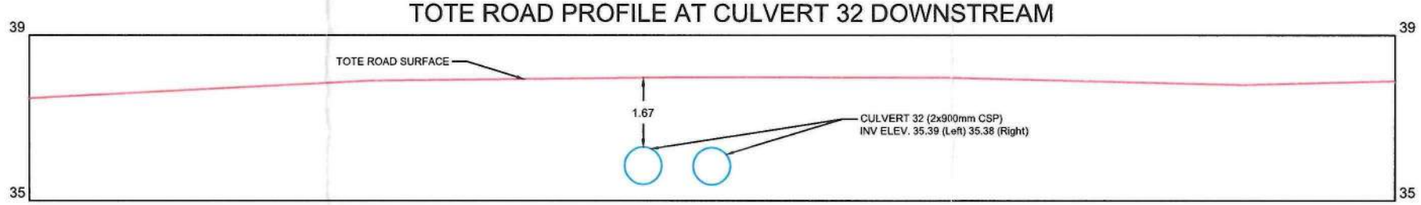


TOTE ROAD PROFILE AT CULVERT 32 UPSTREAM



TOTE ROAD PROFILE AT CULVERT 32 DOWNSTREAM



EXISTING TOTE ROAD

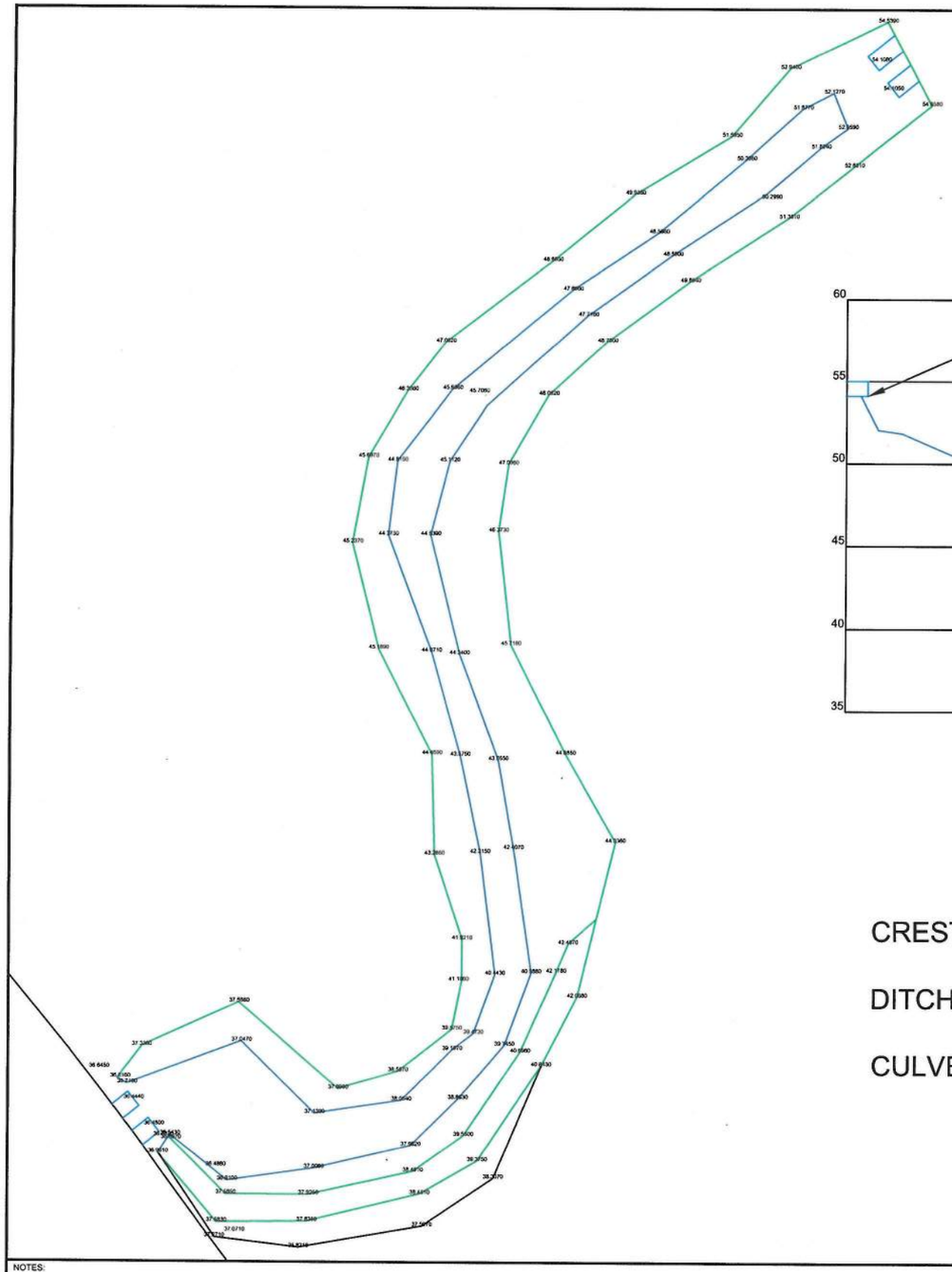
CULVERTS

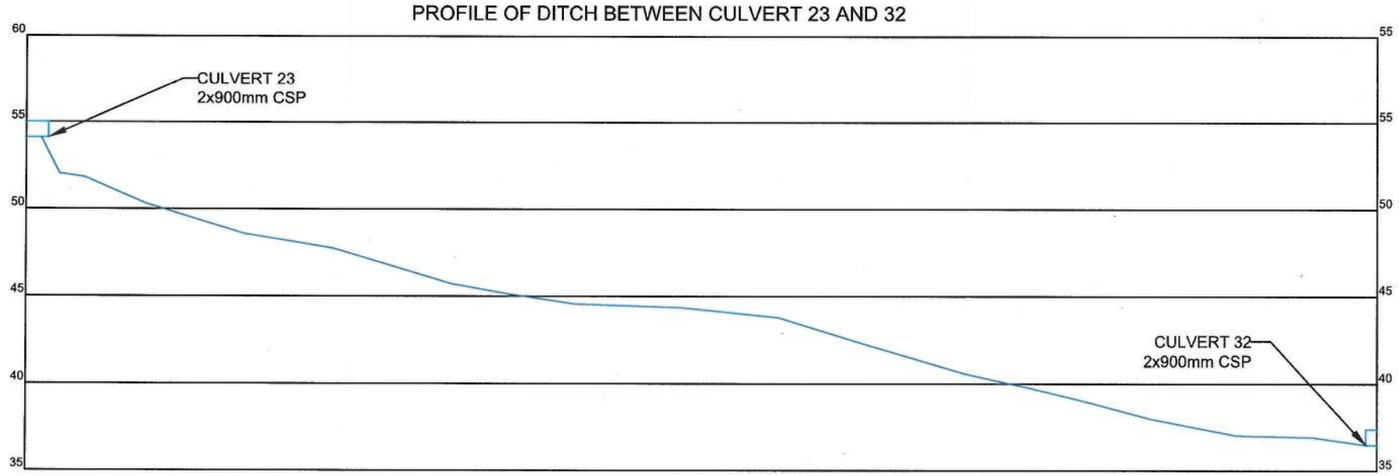
CRUSHED MATERIAL ADDED AND GRADED TO MAINTAIN COVER ABOVE CULVERTS

Bradford Watkin QA/QC Reviewed

NOTES:

OWNER: BAFFINLAND IRON MINES LP	PREPARED BY: NUNA EAST LTD. PO BOX 370 POND INLET, NU X0A 0X0	NUNA	TOTE ROAD UPGRADES	
PROJECT: MARY RIVER EXPANSION PROJECT			DRAWING TITLE: CULVERT 32 ADDED CRUSHED MATERIAL	
	DRAWN BY: MWALSH	SCALE: BARSCALE	DATE: May 15, 2019	DRAWING NAME (YYMMDD): AB 190511 CULV32.dwg





CREST OF RIPRAP MATERIAL

DITCH BOTTOM

CULVERTS

Bradford Watkin
QA/QC
Reviewed

NOTES:

OWNER: BAFFINLAND IRON MINES LP	PREPARED BY: NUNA EAST LTD. PO BOX 370 POND INLET, NU X0A 0X0	NUNA		SITE DRAINAGE
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: MWALSH	SCALE: BARSCALE	DATE: May 15, 2019	DRAWING TITLE: DITCH CONNECTING CULVERT 23 AND 32
				DRAWING NAME (YYMMDD): AB 190515 CULV 23 32 DITCH.dwg

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0010C
Tote Road Stormwater Drainage Culvert 32
Subgrade and Road Original Ground

Subgrade & Road OG Survey Data

Point Number	Northing	Easting	Elevation	Description
0218AJB001	7974417.646	503801.354	36.177	TOE
0218AJB002	7974414.544	503795.92	35.773	TOE
0218AJB003	7974411.859	503792.082	35.582	TOE
0218AJB004	7974406.908	503796.288	35.723	TOE
0218AJB005	7974409.982	503800.293	35.805	TOE
0218AJB006	7974413.262	503804.289	36.099	TOE
0218AJB007	7974416.036	503802.653	36.15	SPOT
0218AJB008	7974411.642	503797.149	35.714	SPOT
0218AJB009	7974408.469	503793.321	35.572	SPOT
0218AJB010	7974401.439	503781.724	35.101	TOE
0218AJB011	7974399.332	503782.697	35.148	SPOT
0218AJB012	7974397.462	503784.851	35.152	TOE
0218AJB013	7974401.644	503789.85	35.495	TOE
0218AJB014	7974404.363	503788.476	35.297	SPOT
0218AJB015	7974407.434	503786.341	35.461	TOE
0218AJB016	7974410.71	503805.025	37.428	CREST
0218AJB017	7974409.129	503801.881	37.672	CREST
0218AJB018	7974405.572	503797.195	37.485	CREST
0218AJB019	7974400.867	503792.312	37.243	CREST
0218AJB020	7974397.298	503788.292	37.08	CREST
0218AJB021	7974400.352	503793.25	37.268	E ROAD
0218AJB022	7974404.581	503796.798	37.484	CL
0218AJB023	7974398.088	503802.369	37.546	CL
0218AJB024	7974394.346	503798.145	37.498	E ROAD
0218AJB025	7974388.497	503802.662	37.782	E ROAD
0218AJB026	7974391.683	503808.275	37.812	CL
0218AJB027	7974395.301	503812.896	37.965	E ROAD
0218AJB028	7974401.504	503808.434	37.699	E ROAD
0218AJB029	7974408.641	503802.78	37.645	E ROAD
0218AJB030	7974418.28	503798.532	37.251	CREST
0218AJB031	7974418.711	503797.802	37.348	E ROAD
0218AJB032	7974415.366	503792.514	37.445	CL
0218AJB033	7974415.092	503792.955	37.439	CREST
0218AJB034	7974410.896	503786.089	37.362	CREST
0218AJB035	7974408.223	503782.951	37.231	CREST
0218AJB036	7974411.132	503785.808	37.374	E ROAD
0218AJB037	7974417.763	503780.029	37.362	E ROAD
0218AJB038	7974421.747	503785.236	37.403	CL
0218AJB039	7974426.048	503790.033	37.489	E ROAD

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Tote Road Stormwater Drainage Culvert 32
Subgrade and Road Original Ground

0218AJB040	7974432.609	503783.637	37.531	E ROAD
0218AJB041	7974428.803	503780.228	37.481	CL
0218AJB042	7974424.374	503775.062	37.41	E ROAD
0218AJB043	7974405.763	503790.398	35.549	6INCH
0218AJB044	7974408.563	503788.735	35.606	6INCH
0218AJB045	7974404.274	503791.756	35.529	6INCH
0218AJB046	7974409.923	503799.761	36.101	6INCH
0218AJB047	7974411.822	503798.061	36.094	6INCH
0218AJB048	7974414.062	503796.498	36.046	6INCH
0218AJB049	7974417.152	503801.893	36.342	6INCH
0218AJB050	7974415.747	503803.2	36.268	6INCH
0218AJB051	7974413.38	503804.508	36.316	6INCH
0218AJB053	7974400.495	503782.946	35.344	INVERT
0218AJB054	7974399.328	503784.099	35.358	INVERT
0218AJB055	7974403.116	503788.717	35.642	INVERT
0218AJB056	7974404.418	503787.744	35.596	INVERT
0218AJB057	7974408.818	503793.124	35.959	INVERT
0218AJB058	7974407.594	503794.183	35.964	INVERT
0218AJB059	7974411.971	503799.53	36.305	INVERT
0218AJB060	7974413.258	503798.516	36.293	INVERT
0218AJB061	7974415.706	503801.557	36.476	INVERT
0218AJB062	7974414.46	503802.657	36.5	INVERT
RTCM-Ref 0000	7976257.943	503553.329	15.095	

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Tote Road Stormwater Drainage Culvert 32
Invert As-Built Topo of Type 9 over Culvert

Inverts and Topo of Type 9 Survey Data

Point Numbers	Northing	Easting	Elevation	Description
0221AJB030	7974415.744	503801.645	36.453	INVERT
0221AJB031	7974414.467	503802.631	36.432	INVERT
0221AJB032	7974412.781	503801.533	37.626	TYPE9
0221AJB033	7974415.289	503799.681	37.621	TYPE9
0221AJB034	7974411.274	503794.848	37.325	TYPE9
0221AJB035	7974409.418	503796.863	37.384	TYPE9
0221AJB036	7974405.84	503792.438	37.116	TYPE9
0221AJB037	7974408.196	503790.78	37.093	TYPE9
0221AJB038	7974402.697	503784.11	36.691	TYPE9
0221AJB039	7974400.685	503786.104	36.713	TYPE9
0221AJB040	7974399.357	503783.884	35.366	INVERT
0221AJB041	7974400.686	503782.876	35.335	INVERT

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Tote Road Stormwater Drainage Culvert 32
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Survey Point Data

Point Number	Northing	Easting	Elevation	Description
32 up	7974415.11	503802.11	36.5	P-CULV-32
32 down	7974399.888	503783.482	35.35	P-CULV-32
0218ajb001	7974417.646	503801.354	36.177	TOE
0218ajb002	7974414.544	503795.92	35.773	TOE
0218ajb003	7974411.859	503792.082	35.582	TOE
0218ajb004	7974406.908	503796.288	35.723	TOE
0218ajb005	7974409.982	503800.293	35.805	TOE
0218ajb006	7974413.262	503804.289	36.099	TOE
0218ajb007	7974416.036	503802.653	36.15	SPOT
0218ajb008	7974411.642	503797.149	35.714	SPOT
0218ajb009	7974408.469	503793.321	35.572	SPOT
0218ajb010	7974401.439	503781.724	35.101	TOE
0218ajb011	7974399.332	503782.697	35.148	SPOT
0218ajb012	7974397.462	503784.851	35.152	TOE
0218ajb013	7974401.644	503789.85	35.495	TOE
0218ajb014	7974404.363	503788.476	35.297	SPOT
0218ajb015	7974407.434	503786.341	35.461	TOE
0218ajb016	7974410.71	503805.025	37.428	CREST
0218ajb017	7974409.129	503801.881	37.672	CREST
0218ajb018	7974405.572	503797.195	37.485	CREST
0218ajb019	7974400.867	503792.312	37.243	CREST
0218ajb020	7974397.298	503788.292	37.08	CREST
0218ajb021	7974400.352	503793.25	37.268	E ROAD
0218ajb022	7974404.581	503796.798	37.484	CL
0218ajb023	7974398.088	503802.369	37.546	CL
0218ajb024	7974394.346	503798.145	37.498	E ROAD
0218ajb025	7974388.497	503802.662	37.782	E ROAD
0218ajb026	7974391.683	503808.275	37.812	CL
0218ajb027	7974395.301	503812.896	37.965	E ROAD
0218ajb028	7974401.504	503808.434	37.699	E ROAD
0218ajb029	7974408.641	503802.78	37.645	E ROAD
0218ajb030	7974418.28	503798.532	37.251	CREST
0218ajb031	7974417.631	503796.9102	37.348	E ROAD
0218ajb032	7974415.366	503792.514	37.445	CL
0218ajb033	7974415.092	503792.955	37.439	CREST
0218ajb034	7974410.896	503786.089	37.362	CREST
0218ajb035	7974408.223	503782.951	37.231	CREST
0218ajb036	7974411.132	503785.808	37.374	E ROAD
0218ajb037	7974417.763	503780.029	37.362	E ROAD

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0218ajb038	7974421.747	503785.236	37.403	CL
0218ajb039	7974426.048	503790.033	37.489	E ROAD
0218ajb040	7974432.609	503783.637	37.531	E ROAD
0218ajb041	7974428.803	503780.228	37.481	CL
0218ajb042	7974424.374	503775.062	37.41	E ROAD
0218ajb043	7974405.763	503790.398	35.549	6INCH
0218ajb044	7974408.563	503788.735	35.606	6INCH
0218ajb045	7974404.274	503791.756	35.529	6INCH
0218ajb046	7974409.923	503799.761	36.101	6INCH
0218ajb047	7974411.822	503798.061	36.094	6INCH
0218ajb048	7974414.062	503796.498	36.046	6INCH
0218ajb049	7974417.152	503801.893	36.342	6INCH
0218ajb050	7974415.747	503803.2	36.268	6INCH
0218ajb051	7974413.38	503804.508	36.316	6INCH
0218ajb053	7974400.495	503782.946	35.344	Top of Bedding
0218ajb054	7974399.328	503784.099	35.358	Top of Bedding
0218ajb055	7974403.116	503788.717	35.642	Top of Bedding
0218ajb056	7974404.418	503787.744	35.625	Top of Bedding
0218ajb057	7974408.818	503793.124	35.959	Top of Bedding
0218ajb058	7974407.594	503794.183	35.964	Top of Bedding
0218ajb059	7974411.971	503799.53	36.305	Top of Bedding
0218ajb060	7974413.258	503798.516	36.293	Top of Bedding
0218ajb061	7974415.706	503801.557	36.476	Top of Bedding
0218ajb062	7974414.46	503802.657	36.5	Top of Bedding
	7974400.515	503782.9695	35.2	Design SG
	7974404.694	503788.0835	35.516	Design SG
	7974408.738	503793.0318	35.821	Design SG
	7974411.92	503796.9264	36.062	Design SG
	7974415.737	503801.5975	36.35	Design SG
	7974399.269	503783.9882	35.35	Design Invert
	7974403.127	503788.7104	35.642	Design Invert
	7974407.597	503794.18	35.979	Design Invert
	7974411.969	503799.5309	36.31	Design Invert
	7974414.491	503802.6162	36.5	Design Invert
	7974415.73	503801.6038	36.5	Design Invert
	7974413.232	503798.5478	36.311	Design Invert
	7974408.807	503793.1328	35.977	Design Invert
	7974404.409	503787.7506	35.634	Design Invert
	7974400.508	503782.9758	35.35	Design Invert
0221ajb030	7974415.744	503801.645	36.453	INVERT
0221ajb031	7974414.467	503802.631	36.432	INVERT
0221ajb032	7974412.781	503801.533	37.626	TYPE9

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0221ajb033	7974415.289	503799.681	37.621	TYPE9
0221ajb034	7974411.274	503794.848	37.325	TYPE9
0221ajb035	7974409.418	503796.863	37.384	TYPE9
0221ajb036	7974405.84	503792.438	37.116	TYPE9
0221ajb037	7974408.196	503790.78	37.093	TYPE9
0221ajb038	7974402.697	503784.11	36.691	TYPE9
0221ajb039	7974400.685	503786.104	36.713	TYPE9
0221ajb040	7974399.357	503783.884	35.366	INVERT
0221ajb041	7974400.686	503782.876	35.335	INVERT
0227ajb100	7974436.406	503782.026	37.607	E ROAD
0227ajb101	7974432.538	503777.314	37.519	CL
0227ajb102	7974427.632	503772.154	37.37	E ROAD
0227ajb103	7974407.275	503787.699	37.444	E ROAD
0227ajb104	7974410.592	503793.309	37.604	CL
0227ajb105	7974414.478	503799.623	37.56	E ROAD
0227ajb106	7974403.646	503807.204	37.637	E ROAD
0227ajb107	7974399.178	503801.582	37.706	CL
0227ajb108	7974395.253	503796.525	37.582	E ROAD
0227ajb109	7974381.61	503806.876	38.068	E ROAD
0227ajb110	7974384.562	503811.743	38.127	CL
0227ajb111	7974388.337	503817.837	38.15	E ROAD

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Tote Road Stormwater Drainage Culvert 32
As-Built

As-Built Survey Data

Point Number	Northing	Easting	Elevation	Description
2129044	7974425.388	503791.348	37.561	TOTE CREST
2129045	7974421.228	503794.368	37.601	TOTE CREST
2129046	7974420.29	503794.986	37.753	TOTE CREST
2129047	7974414.024	503800.007	38.07	TOTE CREST
2129048	7974406.921	503805.012	38.151	TOTE CREST
2129049	7974402.243	503807.937	37.914	TOTE CREST
2129050	7974398.351	503810.46	37.772	TOTE CREST
2129051	7974396.564	503807.26	37.846	TOTE RD EG
2129052	7974402.62	503803.193	38.021	TOTE RD EG
2129053	7974408.395	503799.159	38.095	TOTE RD EG
2129054	7974412.62	503795.877	37.924	TOTE RD EG
2129055	7974418.533	503791.55	37.643	TOTE RD EG
2129056	7974421.967	503789.356	37.521	TOTE RD EG
2129057	7974418.677	503784.748	37.463	TOTE RD EG
2129058	7974412.224	503789.213	37.754	TOTE RD EG
2129059	7974408.934	503791.57	37.934	TOTE RD EG
2129060	7974404.831	503794.206	38.036	TOTE RD EG
2129061	7974400.119	503797.599	37.962	TOTE RD EG
2129062	7974392.295	503802.989	37.823	TOTE RD EG
2129063	7974386.464	503807.5	37.938	TOTE RD EG
2129064	7974384.575	503804.949	37.965	TOTE CREST
2129065	7974384.597	503804.939	37.974	TOTE CREST
2129066	7974384.596	503804.934	37.972	TOTE CREST
2129067	7974390.516	503800.423	37.789	TOTE CREST
2129068	7974396.022	503795.817	37.962	TOTE CREST
2129069	7974401.128	503791.812	37.972	TOTE CREST
2129070	7974404.288	503789.052	38.053	TOTE CREST
2129071	7974407.101	503787.359	37.891	TOTE CREST
2129072	7974413.796	503782.515	37.468	TOTE CREST
2129073	7974400.716	503782.926	35.388	INVERT
2129074	7974399.388	503783.926	35.375	INVERT
2129075	7974415.736	503801.67	36.444	INVERT
2129076	7974414.431	503802.702	36.48	INVERT
2129077	7974421.069	503795.164	37.352	TOE
2129078	7974418.771	503797.726	37.35	TOE
2129079	7974417.311	503799.929	36.645	TOE
2129080	7974416.821	503800.988	36.516	TOE
2129081	7974413.88	503803.175	36.402	TOE

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2129082	7974412.377	503805.797	36.488	TOE
2129083	7974409.137	503806.749	37.071	TOE
2129084	7974403.842	503810.932	37.047	TOE
2129085	7974398.937	503814.404	37.214	TOE

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Tote Road Stormwater Drainage Culvert 32
Final Grade (FG)

Final Grade FG Survey Data

Point Number	Northing	Easting	Elevation	Description
0310BN100	7974415.678	503801.603	37.357	TOP
0310BN101	7974414.379	503802.625	37.385	TOP
0310BN102	7974400.799	503782.956	36.298	TOP
0310BN103	7974399.459	503784.016	36.284	TOP
0310BN104	7974409.713	503786.748	37.495	SPOT
0310BN105	7974405.527	503790.017	37.593	SPOT
0310BN106	7974399.856	503793.885	37.599	SPOT
0310BN107	7974402.556	503797.196	37.65	SPOT
0310BN108	7974406.986	503794.074	37.626	SPOT
0310BN109	7974411.45	503791.03	37.539	SPOT
0310BN110	7974414.356	503794.802	37.609	SPOT
0310BN111	7974410.819	503797.564	37.633	SPOT
0310BN112	7974407.302	503800.095	37.634	SPOT
0310BN113	7974409.606	503803.056	37.65	SPOT
0310BN114	7974412.622	503800.757	37.615	SPOT
0310BN115	7974414.091	503799.529	37.562	SPOT
0310BN116	7974417.16	503797.065	37.536	SPOT
0310BN117	7974426.602	503788.37	37.539	SPOT
0310BN118	7974423.434	503783.429	37.459	SPOT
0310BN119	7974419.888	503778.419	37.435	SPOT
0310BN120	7974398.884	503794.473	37.592	SPOT
0310BN121	7974405.956	503804.986	37.654	SPOT
0310BN122	7974401.966	503799.238	37.658	SPOT
RTCM-Ref 0000	7976257.943	503553.329	15.095	

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Tote Road Stormwater Drainage Culvert 32
Stormwater Control Ditch Running Between Culverts 23 32 As-Built

Stormwater Ditch Survey Data

Point Number	Northing	Easting	Elevation	Description
3135000	7974413.739	503803.544	36.897	ARMOUR BERM
3135001	7974413.039	503802.907	36.961	ARMOUR BERM
3135002	7974409.595	503805.843	37.583	ARMOUR BERM
3135003	7974410.987	503806.306	37.585	ARMOUR BERM
3135004	7974410.977	503810.442	37.925	ARMOUR BERM
3135005	7974409.642	503810.369	37.836	ARMOUR BERM
3135006	7974412.141	503815.643	38.491	ARMOUR BERM
3135007	7974411.014	503815.985	38.451	ARMOUR BERM
3135008	7974412.68	503818.855	39.375	ARMOUR BERM
3135009	7974413.952	503818.156	39.55	ARMOUR BERM
3135010	7974418.173	503820.985	40.698	ARMOUR BERM
3135011	7974417.485	503822.031	40.843	ARMOUR BERM
3135012	7974420.942	503823.804	42.068	ARMOUR BERM
3135013	7974422.178	503822.755	42.178	ARMOUR BERM
3135014	7974423.586	503823.345	42.487	ARMOUR BERM
3135020	7974466.352	503839.408	54.105	C23 INV
3135021	7974467.779	503838.797	54.108	C23 INV
3135022	7974469.734	503839.125	54.539	RIPRAP CREST
3135023	7974467.387	503834.209	52.94	RIPRAP CREST
3135024	7974463.994	503831.301	51.595	RIPRAP CREST
3135025	7974461.101	503826.478	49.938	RIPRAP CREST
3135026	7974457.74	503822.387	48.665	RIPRAP CREST
3135027	7974453.649	503817.051	47.062	RIPRAP CREST
3135028	7974451.2	503815.171	46.336	RIPRAP CREST
3135029	7974447.851	503813.224	45.697	RIPRAP CREST
3135030	7974443.566	503812.474	45.237	RIPRAP CREST
3135031	7974438.306	503813.791	45.189	RIPRAP CREST
3135032	7974433.017	503816.496	44.459	RIPRAP CREST
3135033	7974428.028	503816.639	43.286	RIPRAP CREST
3135034	7974423.801	503818.044	41.921	RIPRAP CREST
3135035	7974421.75	503817.884	41.106	RIPRAP CREST
3135036	7974419.301	503817.555	39.575	RIPRAP CREST
3135037	7974417.196	503814.879	38.557	RIPRAP CREST
3135038	7974416.3	503811.905	37.866	RIPRAP CREST
3135039	7974420.637	503806.921	37.586	RIPRAP CREST
3135040	7974418.424	503802.065	37.338	RIPRAP CREST
3135041	7974416.799	503800.842	37.018	RIPRAP CREST
3135042	7974416.527	503801.339	36.719	DITCH TOE
3135043	7974413.954	503803.506	36.543	DITCH TOE

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3135044	7974411.67	503806.371	36.91	DITCH TOE
3135045	7974412.295	503810.716	37.008	DITCH TOE
3135046	7974415.053	503810.731	37.139	DITCH TOE
3135047	7974418.671	503807.056	37.047	DITCH TOE
3135048	7974415.721	503815.045	38.054	DITCH TOE
3135049	7974413.441	503815.529	37.982	DITCH TOE
3135050	7974415.804	503817.87	38.863	DITCH TOE
3135051	7974418.279	503817.575	39.107	DITCH TOE
3135052	7974419.101	503818.632	39.473	DITCH TOE
3135053	7974418.505	503820.185	39.745	DITCH TOE
3135054	7974422.137	503821.518	40.588	DITCH TOE
3135055	7974422.054	503819.7	40.443	DITCH TOE
3135056	7974428.127	503818.93	42.215	DITCH TOE
3135057	7974428.325	503820.604	42.407	DITCH TOE
3135058	7974432.739	503819.813	43.765	DITCH TOE
3135059	7974432.952	503817.911	43.575	DITCH TOE
3135060	7974438.169	503816.436	44.071	DITCH TOE
3135061	7974438.047	503817.833	44.34	DITCH TOE
3135062	7974443.957	503816.353	44.539	DITCH TOE
3135063	7974443.948	503814.241	44.373	DITCH TOE
3135064	7974447.656	503814.68	44.815	DITCH TOE
3135065	7974447.653	503817.283	45.112	DITCH TOE
3135066	7974451.125	503818.739	45.708	DITCH TOE
3135067	7974451.275	503817.406	45.636	DITCH TOE
3135068	7974456.285	503823.405	47.668	DITCH TOE
3135069	7974454.996	503824.18	47.716	DITCH TOE
3135070	7974459.168	503827.682	48.586	DITCH TOE
3135071	7974458.04	503828.385	48.58	DITCH TOE
3135072	7974462.833	503832.048	50.398	DITCH TOE
3135073	7974460.928	503833.323	50.299	DITCH TOE
3135074	7974463.431	503835.779	51.824	DITCH TOE
3135075	7974465.375	503834.855	51.877	DITCH TOE
3135076	7974466.165	503836.415	52.127	DITCH TOE
3135077	7974464.408	503837.138	52.059	DITCH TOE
3135078	7974465.569	503841.347	54.658	RIPRAP CREST
3135079	7974462.501	503837.47	52.831	RIPRAP CREST
3135080	7974459.943	503834.199	51.381	RIPRAP CREST
3135081	7974456.726	503829.272	49.894	RIPRAP CREST
3135082	7974453.688	503825.146	48.75	RIPRAP CREST
3135083	7974451.006	503822.236	48.082	RIPRAP CREST
3135084	7974447.519	503820.232	47.006	RIPRAP CREST
3135085	7974444.149	503819.753	46.373	RIPRAP CREST

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0010C
Tote Road Stormwater Drainage Culvert 32
Stormwater Control Ditch Running Between Culverts 23 32 As-Built

3135086	7974438.52	503820.415	45.718	RIPRAP CREST
3135087	7974433.032	503823.18	44.885	RIPRAP CREST
3135088	7974428.669	503825.681	44.336	RIPRAP CREST
3135089	7974411.817	503819.652	38.307	BERM TOE
3135090	7974409.422	503816.104	37.507	BERM TOE
3135091	7974408.341	503809.958	36.821	BERM TOE
3135092	7974408.845	503805.745	37.271	BERM TOE

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(Section 5)

No sieves available.

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(Section 6)

Request for Information Documentation (RFI)

Nuna Logistics Limited
Package Dividers

Request for Information

Project Name:	**Mary River Expansion Stage 3**	**Project Number:**	**H353004**
CWP No:		**RFI No:0016**	
Contractor: Nuna East Ltd.		**Contract No: CC006**	
Initiated By: Darko Filipic		**Cost impact?**	Y☐ / N☒
Date of Submittal: 2019-01-22		**Schedule Impact?**	Y☐ / N☒

Information Requested:
Nuna is proposing to increase the distance "C" between the double culverts to 700mm in order to accommodate the width of the plate tampers so that compaction of the Type 5 fill material can be achieved. The current design calls for a spacing "C" of 500mm for culverts >900mm in diameter. The operating width of the plate tamper is 600mm. A culvert spacing of 700mm will allow for the plate tamper to pass between the culverts including the coupler sections where the flange sticks out.

Reference Document No.	Revision	Title/Description
H353004-00000-221-294-0001-0001	1	Site Wide Standard Drawing Typical Culvert Details

RFI Classification:

Design	☒	Construction	☐	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☐	Other	☐

Project Response: [attach sufficient detail as required]

Approved Proceed

RFI Follow-up Requirements:

Contract Order Issued Yes ☐/No ☐ (insert associated tracking #) Back-Charge Required (Yes ☐/No ☐)

As-Built Required Yes ☐/No ☐ Materials Required (Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	Nick Mills		Jan 22 / 19
Hatch Engineering Home Office ☐ Site ☐	Glen Peace		2019-01-22
Hatch Project Management			
Client (as required):			

E353004-CC006-400-465-0016

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Note: The response to this RFI is NOT an authorization to perform a change to the Contract. Work may proceed in accordance with the response only if such work involves NO change in cost or schedule. In the case where the response may involve change in cost or schedule, a Contractual instrument must be issued by Hatch and received by the Contractor before the response can be executed. Where no Contractual instrument is indicated, action must be taken in accordance with (reference appropriate Contract Sections that authorize execution of any change in schedule and cost).

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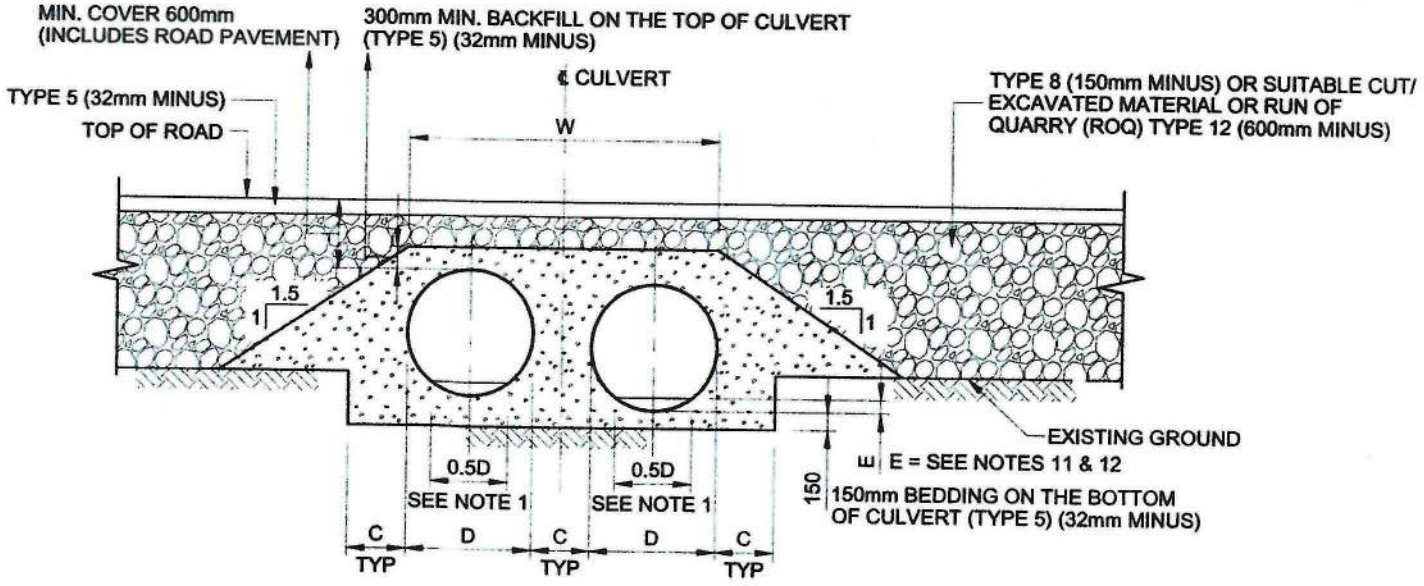
RFI-0016 - Double Culvert Spacing

Proposal to increase the distance "C" between the double culverts to 700mm in order to accommodate the width of the plate tampers so that compaction of the Type 5 fill material can be achieved. The current design calls for a spacing "C" of 500mm for culverts >900mm in diameter. The operating width of the plate tamper is 600mm. A culvert spacing of 700mm will allow for the plate tamper to pass between the culverts including the coupler sections where the flange sticks out.



SECTION B - B (DOUBLE PIPE)

NTS

C — CULVERT SPACING AND BEDDING CLEARANCE

C = 500 WHILE D > 900mm

C = 300 WHILE D < = 900mm

W — CULVERT BACKFILL TOP WIDTH

W = (n*D) + (n-1)*C

DWG. No.	REV
H353004-00000-221-294-0001-0001	1

DPU5545Heh Technical specifications

Operating width (with extension plates) in	23.6in / 600mm

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(Section 7)

No Non-Conformance Reports (NCRs) Generated

NON-CONFORMANCE REPORT LOG

Project: CC006 **Date:** 8-23-19

Area: Mary River Expansion - Milne Port **Contract/Work Pkg. No.:** CC006-0010C

CWP#: N/A **Originator:** Bradford Watkin

NCR No.	Description	Disposition	Date.	Rectified	Date
	No NCR's generated for this work package				

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(Section 8)

Land Disturbance Form

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.		**Department:**	Projects
Date:	1/12/19	**Name/Position:**	**Darko Filipic/Project Coordinator**
Project location:	Tote Road		P-CULV-32 @ ~KM3
Project Duration:	Start 1/15/19	Finish	1/29/19

Project Details

GPS Coordinates: Lat: N+7974600 Long: E+503800 (NAD 83)

Land disturbance area: 1000 m2

Type of disturbance (Excavation of tote road for culvert, placement of culvert and backfill)

Material placement over tundra for temporary tote road bypass around culvert.

Detailed description of planned work.

Construction of twin culvert across tote road at ~KM3. Temporary bypass lane for tote road traffic to be built on up slope side of tote road.

- Temp bypass lane to be built with ROQ, Type 8 and Type 5 material.
- Culvert to be 2 x 900mm dia x 36m long.
- ditch leading into culvert will be lined with geotextile and rip rap.

Check List

1	**Has the Environmental Concerns in section 2.3.1. of the Environmental Protection plan been reviewed** - If No, please review the list of concerns on page 4 of this form.	Yes
2	**Will work be completed within 31m of the High Water Mark of any stream or water body?.** - If Yes, please contact the Environment Department.	No
3	**Is there a stream or waterbody >31m of the work site?.** - If Yes, Include a detailed description of the Sediment and Erosion Control Measures on Page 3.	No
4	**Has the area been cleared by Archaeology?.** - If No or Unknown, Please contact the Environment Department.	Yes
5	**Will the land disturbance occur between May 31 and August 31?.** - If Yes, An Active Migration Bird Survey is required prior to start.	No

Approval

Approved by:	Connor Devereaux	Position:	Enviromental Superintendant
Approved on:	1/29/19		
Valid Unit:	6/29/19		

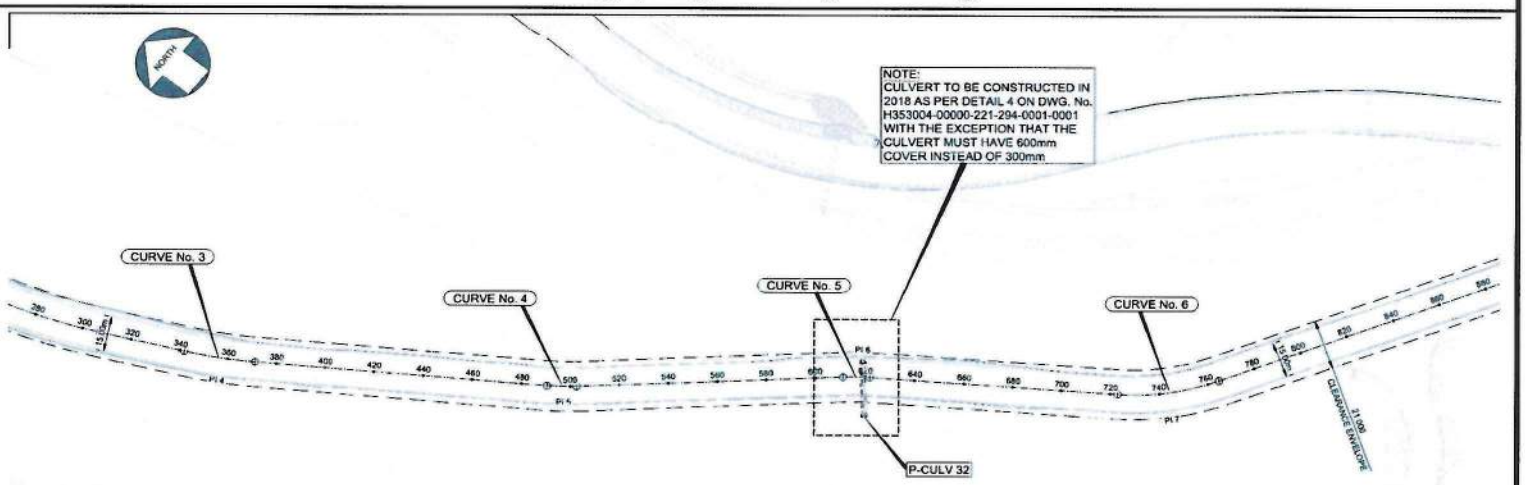
Comments and recommendations by the Environment Department:

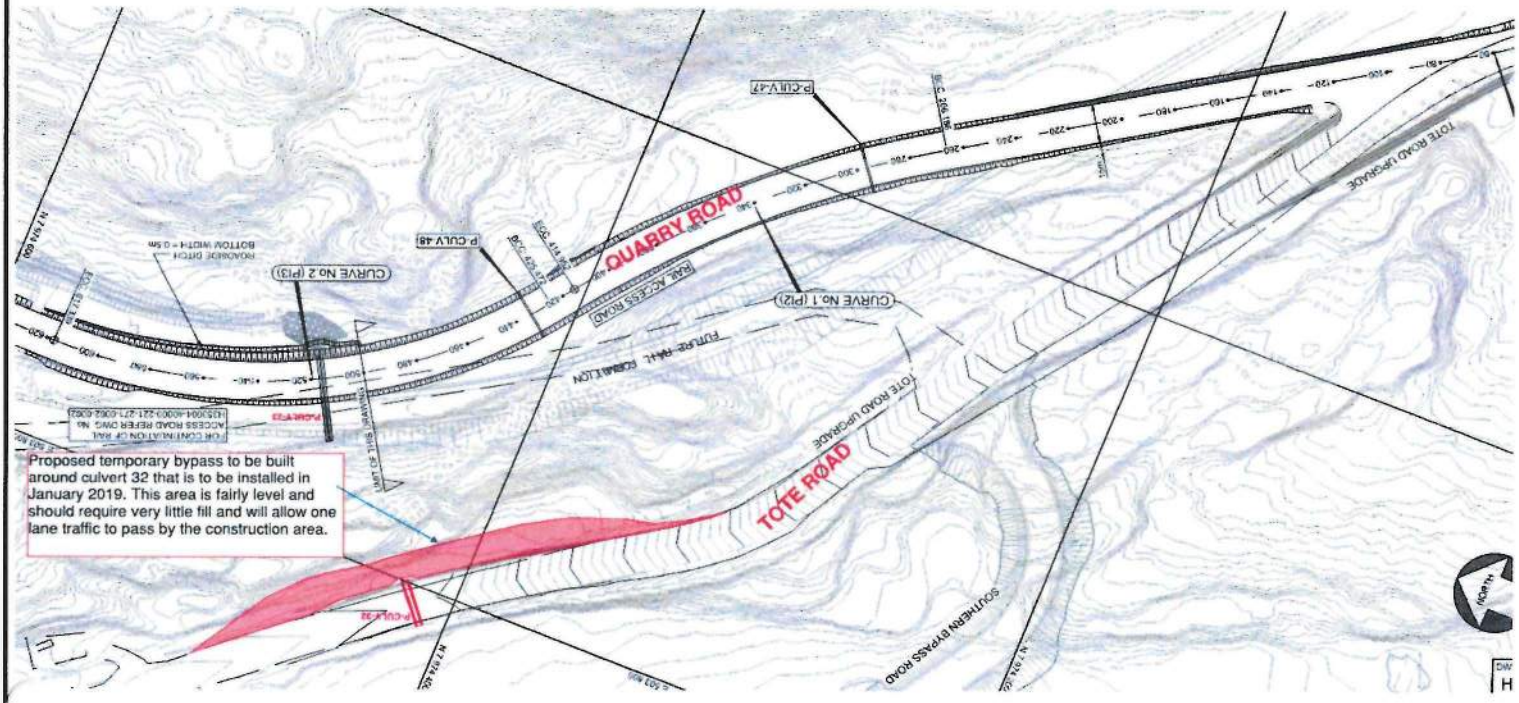
LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	1/12/19		
Project location:	Tote Road		

Design/Engineering Drawing





LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	1/12/19		
Project location:	Tote Road		

Sediment and Erosion Control Measures

Please give a detailed discription of the run-off control measure which will be put in place.
Include all water bodies and streams, slope direction and materials to be used.

- construction to take place in freezing conditions so no run off controls are necessary.
- temporary bypass road will be removed upon completion of the culvert installation.
- after removal of the temp bypass road, the ditch leading into the culverts will be lined with geotextile and rip rap

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	1/12/19		
Project location:	Tote Road		

2.3.1 ENVIRONMENTAL CONCERN

2.3.1 ENVIRONMENTAL CONCERN

The Arctic is a fragile environment where the recovery of vegetation within this region is slow. Ground disturbance shall be minimized to protect archaeological resources, wildlife habitats, sensitive landforms, such as ice-rich permafrost features, and prevent erosion and the movement of sediment into watercourses and water bodies. Various permits, licences and approvals issued to Baffinland are specific in regards to ground disturbances and outline the necessary protection measures that need to be taken to minimize this aspect of the Project.

The following measures are to be implemented to minimize ground disturbance:

- Equipment and personnel must stay on existing roads and trails
- Approval for new areas of disturbance must be approved by the Operations Manager
- Rutting (furrow creation) shall be avoided on ground surfaces; overland travel of equipment or vehicle will be suspended when rutting occurs
- All camps shall be located on gravel, sand or other durable land
- No materials shall be stored on the surface ice of streams
- No material shall be removed from below the ordinary high water mark of any stream
- Greywater sumps must be located a distance of at least thirty (30) metres above the ordinary high water mark of any water body

Bradford Watkin

From: Brandon Urquhart
Sent: Thursday, April 11, 2019 7:13 AM
To: Bradford Watkin
Subject: FW: [External]JEA Tote Road Culverts

Culvert 22, 23, 32

Brandon Urquhart
Project Coordinator
E brandonu@nunalogistics.com
C +17806913582

NUNA EAST LTD.
PO Box 370
Pond Inlet, Nunavut, Canada, X0A 0X0
nunalogistics.com

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From: Brandon Urquhart
Sent: Tuesday, January 29, 2019 11:03 AM
To: Connor Devereaux <Connor.Devereaux@baffinland.com>
Subject: RE: [External]JEA Tote Road Culverts

Thank you and will do.

Brandon Urquhart
Project Coordinator
E brandonu@nunalogistics.com
C +17806913582

NUNA EAST LTD.
PO Box 370
Pond Inlet, Nunavut, Canada, X0A 0X0
nunalogistics.com

You may withdraw consent for email communications from the Nuna Group of Companies by responding to the email with "Unsubscribe" in the subject line.

From: Connor Devereaux <Connor.Devereaux@baffinland.com>
Sent: Tuesday, January 29, 2019 10:00 AM
To: Brandon Urquhart <brandonu@nunalogistics.com>
Cc: stephane.gionet@hatch.com; darlene.hofer@hatch.com; D Gardiner <d.gardiner@hatch.com>; Ken Humby <kenh@nunalogistics.com>; Darko Filipic <DarkoF@nunalogistics.com>; William Bowden

<William.Bowden@baffinland.com>; Timothy Ray Sewell <Timothy.Sewell@baffinland.com>; Sten Sundin <Sten.Sundin@baffinland.com>; Connor Paquette <Connor.Paquette@baffinland.com>; Dominic Ritgen <Dominic.Ritgen@baffinland.com>
Subject: RE: [External]JEA Tote Road Culverts

Hello Brandon,

Attached is the approved Hatch JEA and LDFs for the referenced work. Construction of both culverts is approved and the team will monitor construction daily. Please send notice when the work has been completed for JEA close out.

Connor

Connor Devereaux | Environmental Superintendent
Mary River Mine Site
T: +1 647 253 0596 x6016
C: +1 647 456 9067

Baffinland

2275 Upper Middle Road East, Suite 300, Oakville, Ontario, Canada, L6H 0C3
www.baffinland.com

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From: Brandon Urquhart [mailto:brandonu@nunalogistics.com]
Sent: Tuesday, January 29, 2019 8:35 AM
To: Connor Devereaux <Connor.Devereaux@baffinland.com>
Cc: stephane.gionet@hatch.com; darlene.hofer@hatch.com; D Gardiner <d.gardiner@hatch.com>; Ken Humby <kenh@nunalogistics.com>; Darko Filipic <DarkoF@nunalogistics.com>; William Bowden <William.Bowden@baffinland.com>
Subject: [External]JEA Tote Road Culverts

CAUTION: This email was received from outside of Baffinland systems. It may contain malicious attachments or links. If you are not familiar with the content of the email do not open the attachments or click embedded links.

Hello Connor,

Please see the attached Hatch JEA for the Tote Road culverts for signoff. I have attached the relevant drawings and approved LDF's as well.

Thank you,

Brandon Urquhart
Project Coordinator
E brandonu@nunalogistics.com
C +17806913582

NUNA EAST LTD.
PO Box 370

Pond Inlet, Nunavut, Canada, X0A 0X0
nunalogistics.com

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(Section 9)

Signature Log

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN		
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC		
ALLNORTH	Materials technician	Kenny MacRae		
Hatch	Hatch Civil	Stephane Grenier		
NUNA EAST	PROJECT COORDINATOR	BRANDON UGLUMAT		
NUNA EAST	PROJECT COORDINATOR	[illegible]		
HATCH	FIELD ENG. MANAGER	GLEN PEACE		
NUNA EAST	SITE SUPERINTENDENT	ANTHONY STEWART		
NUNA EAST	SITE SUPERINTENDENT	HARVEY BLOVIN		
Hatch	Hatch Super	Roger Landry		
Nuna East	Project Manager	Stephen Nugent		
HATCH	CONSTRUCTION SUPERINTENDENT	ROB BAKER		
BVTV	Project Engineer	David Garcia		
Hatch	QA Manager	Ronny Franken		

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN		
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC		
ALLNORTH	Materials technician	Kenny MacRae		
Hatch	Hatch Civil	Stephane Grant		
NUNA EAST	PROJECT COORDINATOR	BRANDON UNGUHART		
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]STER		
HATCH	FIELD ENG. MANAGER	GLEN PEACE		
Hatch	Construction Super	Dean Moffett		
Hatch	Construction Super	Roger Landry	R.L	

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(Section 10)

Quality Control Documentation

Nuna Logistics Limited
Package Dividers

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HATCH

Nuna East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval -* P-CULV-32
Date of Inspection:	Feb 18 2019
Parties Present at Inspection	Darko Filipic

Comments:

A visual inspection of the P-CULV-32 *surface/sub-grade was conducted prior to placement of fill Material.*

Sub-grade: Excavated subgrade has been inspected and is approved for fill.
survey confirmed the excavations is a minimum 150 mm below culvert invert.

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Darko Filipic		2/18/19
HATCH Representative:	Alex Beauvais		2/20/19

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NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material.* *Type:* 5 (32mm minus) *Location:* P-CULV-32 bedding
Date of Inspection:	2 / 18 / 2019
Parties Present at Inspection	Darko Filipic

Comments:

An inspection of the Type 5 bedding/trench *material placement was conducted.*

The bedding material was placed and compacted to the correct grades and is ready for culvert placement.

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Darko Filipic		2/18/19
HATCH Representative:	Alex Beauregard		2/20/19

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(Section 11)

Walkdown

NUNA EAST LTD	WALKDOWN REPORT	Exhibit 5 Revision 0

WALKDOWN ATTENDEES LIST	(Page 1 of 1)

Project Name: Mary River Expansion	**Contractor's Name:** Nuna East Ltd.	**Job File No.:** CC006-0010C
System CWP Description: Installation of P-Culvert 32	**Location:** Along the Tote Road curve No. 5 @ ~ marker 620	**Plant No.:** N/A

This record indicates that this system was formally walked down and inspected in the field by the undersigned on the date as indicated below

Name	Company Name	Role	Signature	Date *(mm/dd/yy)*
BRADFORD WATKIN	NUNA EAST LTD	QC		5/14/19
ROY BAKER	HATCH	SUPERINTENDENT		24/MAY/2019

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(Section 12)

Deficiency/Punchlist

DEFICIENCY / PUNCH ITEMS RECORD

Project Name: Mary River Expansion	**Walkdown Date (mm/dd/yy):** 5-14-19	**Area Number:** N/A
Area Name or Area Description: Culvert 32	**Job Number:** CC006-0010B	**Plant Number:** N/A

PURPOSE:

1. **For modules and vendor packages, open punch items are listed at release for shipment.**
2. **As part of a final walkdown package, this form lists the Contactor's open punch items that are transferred into the Nuna Turnover database**
3. **This form is used to capture Punch Items during Final Walkdown**

Tag Number	Description of Deficiency / Punch Item	Cat.	Discipline	Originator	Responsible for resolution	Vendor Y/N	Remarks
	No deficiencies found						

Punch Item Categories captured during Final Walkdown: A, B or C. A- To be rectified before final acceptance. B- To be addressed at a later time. C- Acceptable to be As-Built

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(Section 13)

Acceptance of Completion of Construction Declaration

ACCEPTANCE OF COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the acceptance of the Quality Control Turnover documentation for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Ore Mines
2. **Contractor:** Nuna East Limited
3. **Construction:** Culvert Installation
4. **Location:** Tote Road ~ KM 3
5. **Description:** Culvert 32 installation beneath Tote Road for Stormwater Management

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turnover documentation has been forwarded to and accepted by the owner.

Nuna Representative:

Signature	Print Name	Title	Date
BRANDON WATKIN	[signature]	QC COORDINATOR	7/4/19

Client Representative:

Signature	Print Name	Title	Date

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(Section 14)

Construction Photographs

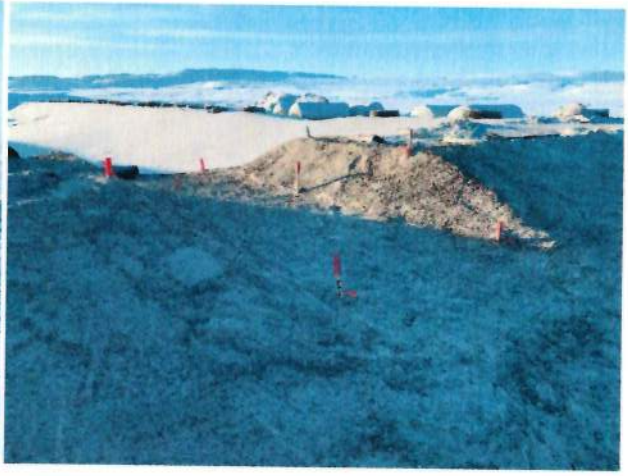
NUNA EAST LTD

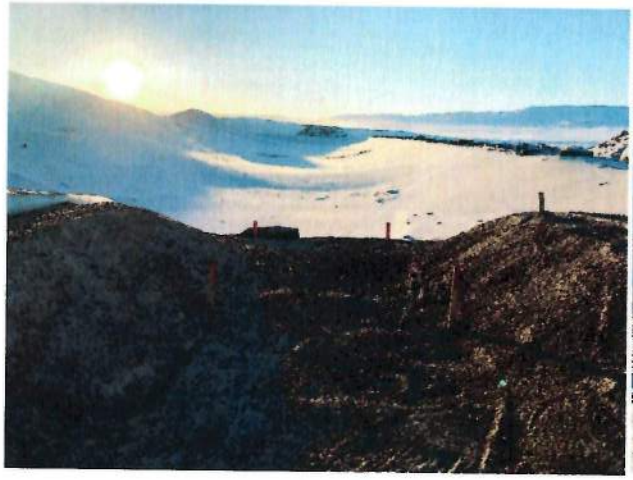
Baffinland Iron Mines Corporation

HATCH™

Baffinland – Milne Port Earthworks H353004-CC006

Job File Photographs





HATCH **Vendor/Contractor Document Review**

Doc Number	E353004-CC006-130-124-0012	**SUB**	01
Date Received			

Review Grade	**Next Submittal Status**
☐ **C1** - Proceed to next submission & status ☐ **C2** - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ **C3** - Do not proceed. Revise as noted & resubmit	☐ Internal Review
Next Submittal Date:	☐ Certified/☐ As-Built
☒ **C4** - No further submission required - Complete (select status below) ☐ Certified Final ☒ Final ☐ Cancelled ☐ Superseded	

Package Engineer: Name, signature and date

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibilty for correct design, details & dimensions shall remain with the party submitting the drawing/document.

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Job #:

CC006-0001A

Laydown Area

LP2

Mary River Expansion Project

H353004

Port Site Civil Works

Section 1
Completion of Construction Declaration / Transfer of Care, Control & Custody

Section 2
Inspection & Test Plan (ITP)

Section 3
Redline / As-Built Drawings

Section 4
Survey Data Documentation

Section 5
Sieves / Statements of Compliance

Section 6
Request for Information Documents (RFIs)

Section 7
Non-Conformance Reports (NCRs)

Section 8
Communications:
Engineering Change Notices (ECNs), Site instructions (Sis), Contract Variation Request (CVRs), Emails.

Section 9
Land Disturbance Form

Section 10
Quality Control Documents

Section 11
Signature Log

Section 12
Walkdown

Section 13
Deficiency/Punchlist

Section 14
Acceptance of Completion of Construction Declaration

Section 15
Construction Photographs

NUNA

NUNA EAST LTD

(Section 1)

Completion of Construction Declaration / Transfer of Care, Control & Custody (TCCC) Forms

Nuna Logistics Limited
Package Dividers

COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Mines Corporation
2. **Contractor:** Nuna East Limited
3. **Construction:** Laydown Pad
4. **Location:** Port Site
5. **Description:** Port Site Laydown Area LP2

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turn over documentation has been forwarded to the owner.

	Bradford Watkin	QC Coordinator	9/25/19
(Signature)	(Print Name)	(Title)	(Date)
Nuna East Ltd.	14, 6194 – 50 Street NW Edmonton, AB, CA		T6B 2N7
(Company)	(Address)		(City, Postal Code)

Transfer of Care, Custody and Control

FROM GROUP "A"	Nuna East Ltd.	**Job File No.:**	CC006-0001A
To Group "B"	Hatch Engineering	**WBS No.:**	6180
Location:	Milne Port Site	**Date:**	AUGUST 30, 2019

Originating job file no. details:	Construct a Laydown Pad: LP2 • Earthworks haulage, placement & compaction.
Comments:	This TCCC covers the area as outlined on the attached drawing.

THIS IS NOTICE TO GROUP "B" Hatch Engineering THAT THE FOLLOWING WORK/MATERIAL AS PER P.O./CONTRACT IS/ARE BEING TRANSFERRED BY GROUP "A" Nuna East Ltd. AND IS/ARE BEING FULLY ACCEPTED BY GROUP "B" Hatch Engineering FROM GROUP "A" Nuna East Ltd.
WITH EXCEPTIONS AS LISTED BELOW (IF ANY).

Description:	**Reference Drawing(s):** • H353004-40000-221-271-0004-0001_5_V9 LP2 Plan & Sections; • H353004-40000-228-272-0011-0001_4_V8 Drainage Plan; • H353004-00000-221-294-0001-0001_1_V3 - Typical Culvert Details; • H353004-00000-221-294-0004-0001_1_V3 - Typical Earthworks Drainage; • H353004-00000-221-294-0002-0001_1_V3 - Typical Earthworks Drainage.

Exceptions:	**Date Corrected:**	**Signed Off:**
1. NO EXCEPTIONS.		
2.		

NUNA EAST LTD	TCCC	Exhibit: 1-12 QDG Revision 1 Page 1 of 1

"Exceptions Accepted and released"

From Group "A": Nuna East Ltd.

Date: AUG 30, 2019

Print Name: BRADFORD WATKIN Signature:

To Group "B": Hatch Engineering.

Date: 30-AUG-2019

Print Name: ROY BADGER Signature:

I confirm the conditions listed below have been met (with or without noted exceptions or deficiencies) and transfer of care, custody and control of the item(s) listed above are acceptable to the recipient.

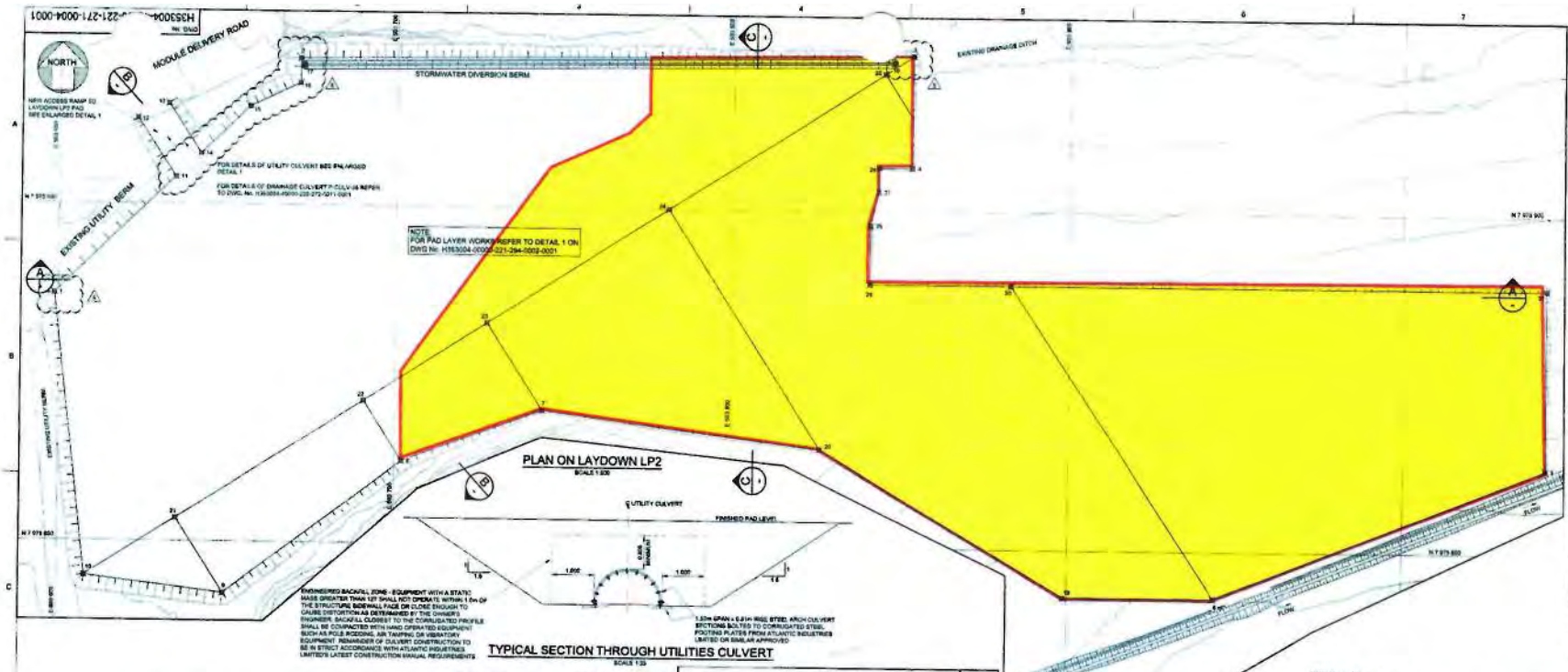
- ☑ All Inspections are complete, and all technical issues are resolved.
- ☑ All deficiencies have been noted.
- ☑ All Redlines / As-Builts have been reviewed.
- ☑ All relevant manuals and vendor data have been received.

Recipient

Client representative:

Name: ROY BADGER Signature:

Date: 30-AUG-2019



LAYDOWN LP2 SETTING OUT CO-ORDINATES

POINT	E	N	LEVEL
1	603 609.076	7 975 872.540	13.830
2	603 671.151	7 976 042.009	13.660
3	603 853.398	7 976 045.556	13.400
4	604 050.307	7 976 232.903	13.665
5	604 042.752	7 976 828.178	16.850
6	603 943.742	7 977 106.030	21.050
7	603 744.550	7 977 326.634	13.921
8	603 702.191	7 975 524.445	13.750
9	603 648.643	7 975 764.977	13.800
10	603 605.268	7 975 782.735	13.800
11	603 634.404	7 975 508.154	13.600
12	603 623.018	7 975 328.281	13.627
13	603 632.135	7 975 329.924	13.606
14	603 641.782	7 975 915.231	13.801
15	603 666.312	7 975 972.287	13.650
16	603 671.118	7 975 936.418	13.882
17	603 672.769	7 975 841.628	14.139
18	603 647.570	7 975 844.119	13.924
19	603 666.803	7 975 786.580	13.600
20	603 636.283	7 975 829.178	17.300
21	603 636.214	7 975 909.917	13.788
22	603 680.781	7 975 842.344	13.679
23	603 727.805	7 975 885.620	13.599
24	603 781.763	7 975 899.966	13.616
25	603 848.035	7 975 940.787	13.433
26	603 843.430	7 975 912.936	14.438
27	603 843.436	7 975 901.736	14.728
28	603 841.061	7 975 886.737	15.042
29	603 841.068	7 975 878.992	16.084
30	603 862.724	7 975 878.302	16.330
31	604 042.724	7 975 878.302	17.624

NOTE: THE LEVELS GIVEN FOR POINTS 17 AND 18 ARE TO TOP OF THE BERM

Bradford Watkin
QA/QC
Reviewed

Released for Use

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER: P 012
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
5	LEVELS IN CO-ORDINATE TABLE UPDATED	RB	FH	06/05/2019
4	LP1 FOOTPRINT EXTENTS REVISED	RB	FH	15/01/2019
3	UTILITY CULVERT DETAILS AMENDED	RB	FH	16/11/2018
2	LP1 EXTENDED TO THE EAST	RB	FH	09/10/2018
1	EOL STAMP REMOVED	RJBT	FH	18/09/2018
0	APPROVED FOR CONSTRUCTION	GPM	FS	19/04/2018

	CRAFTSPERSON	C MEADES	NR	20/03/2018
	DRAWER	I BARNARD	NR	20/03/2018
	CHECKER	K HUGO		2019-05-06
	DESIGN COORD	R BOOKEY		2019-05-06
	ENGR. ENG.	K HALIM		2019-05-06
	LEAD DISC. ENG.	A GROMAN AAR		2019-05-06
	AREA LEAD	K MASON		2019-05-06
	ENG. MANAGER	R BOOKEY		2019-05-06
	AREA MANAGER	D HENKELMAN		2019-05-06

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP2
PLAN AND SECTIONS

DWG No: H353004-40000-221-271-0004-0001 | 5

REFERENCE DRAWINGS
H353004-40000-221-272-0014-0001 PORT SITE COMPLEX EXPANSION - CROSS SECTIONS
H353004-40000-221-272-0013-0001 PORT SITE COMPLEX EXPANSION - LAYOUT PLAN
H353004-00000-221-284-0004-0001 STANDARD DRAWING - EARTHWORKS & DRAINAGE DETAILS
H353004-40000-228-271-0004-0001 STORMWATER DIVERSION P-SWD-1 - LAYOUT AND SECTIONS
H353004-40000-228-273-0011-0001 LAYDOWN AREA LP2 - DRAINAGE PLAN
H353004-00000-221-284-0002-0001 STANDARD DRAWING - EARTHWORKS & DRAINAGE DETAILS
DRAWING No.
DRAWING TITLE

Transfer of Care, Custody and Control

FROM GROUP "A"	Nuna East Ltd.	**Job File No.:**	CC006-0001A
To Group "B"	Hatch Engineering	**WBS No.:**	6180
Location:	Milne Port Site	**Date:**	July 29, 2019

Originating job file no. details:	Construct a Laydown Pad: • Earthworks haulage, placement & compaction.
Comments:	This covers the area as outlined on the attached Survey As-Built 1900728 LP2 Intermittent Turnover dated July 28, 2019.

THIS IS NOTICE TO GROUP "B" Hatch Engineering THAT THE FOLLOWING WORK/MATERIAL AS PER P.O./CONTRACT IS/ARE BEING TRANSFERRED BY GROUP "A" Nuna East Ltd. AND IS/ARE BEING FULLY ACCEPTED BY GROUP "B" Hatch Engineering FROM GROUP "A" Nuna East Ltd.
WITH EXCEPTIONS AS LISTED BELOW (IF ANY).

Description:	**Reference Drawing(s):**
	• H353004-40000-221-271-0004-0001_5_V9 LP2 Plan & Sections; • H353004-40000-228-272-0011-0001_4_V8 Drainage Plan; • H353004-00000-221-294-0001-0001_1_V3 - Typical Culvert Details; • H353004-00000-221-294-0004-0001_1_V3 - Typical Earthworks Drainage; • H353004-00000-221-294-0002-0001_1_V3 - Typical Earthworks Drainage.

Exceptions:	**Date Corrected:**	**Signed Off:**
1.		
2.		

NUNA EAST LTD	TCCC	Exhibit: 1-12 QDG Revision 1 Page 1 of 1

"Exceptions Accepted and released"

From Group "A": Nuna East Ltd.

Date: JULY 29, 2019

Print Name: BRANDON WATKIN Signature:

To Group "B": Hatch Engineering.

Date: 29-JUL-2019

Print Name: ROY BADER Signature:

I confirm the conditions listed below have been met (with or without noted exceptions or deficiencies) and transfer of care, custody and control of the item(s) listed above are acceptable to the recipient.

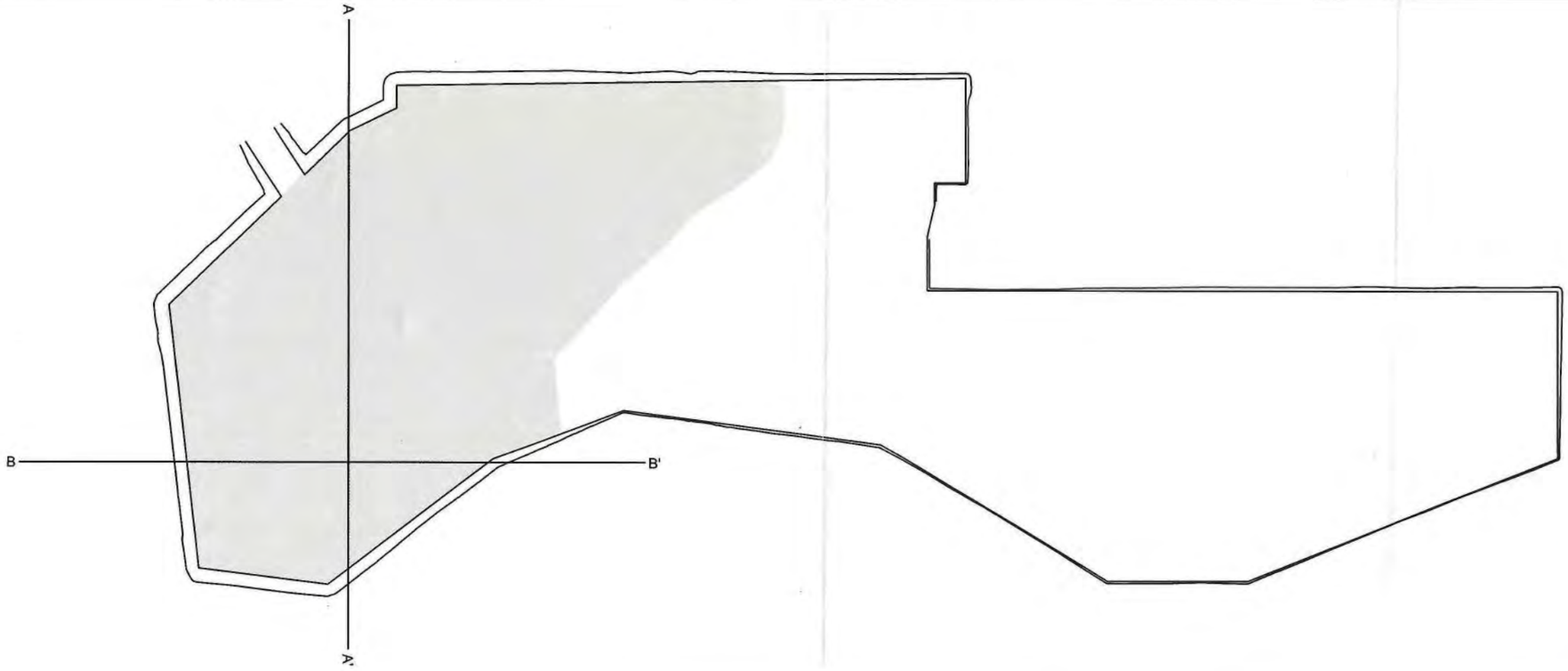
- ☐ All Inspections are complete, and all technical issues are resolved.
- ☐ All deficiencies have been noted.
- ☐ All Redlines / As-Builts have been reviewed.
- ☐ All relevant manuals and vendor data have been received.

Recipient

Client representative:

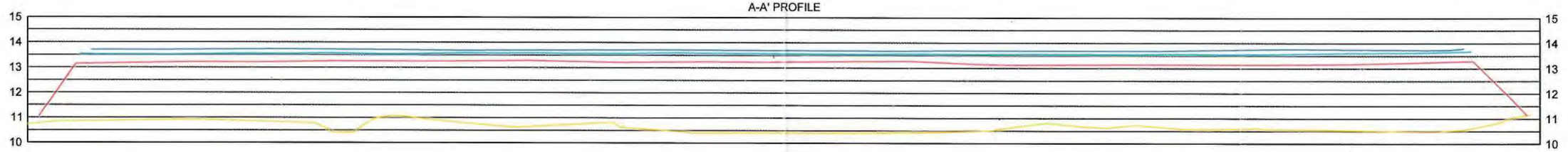
Name: ROY BADER Signature:

Date: 29-JUL-2019

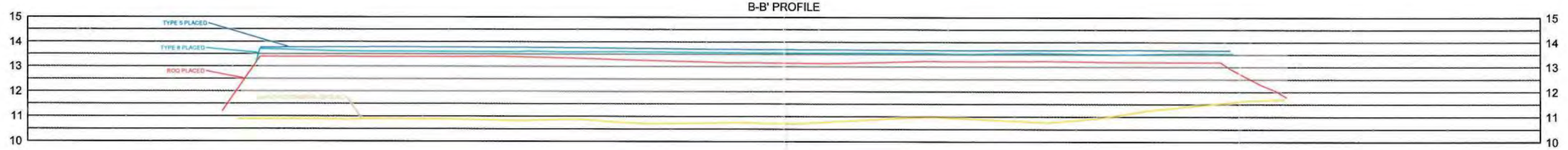


Bradford Watkin
QA/QC
Reviewed

A-A' PROFILE



B-B' PROFILE



TYPE 5 PLACED AS OF JULY 28, 2019

OWNER: BAFFINLAND IRON MINES LP	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	LAYDOWN LP-2
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: NTS / DATE: July 29, 2019	DRAWING TITLE: LP-2 SURFACE AS-BUILT SURVEYED UP TO JULY 28, 2019
			DRAWING NAME (YYMMDD): 190728 LP2 INTERMITTENT TURNOVER.dwg

NUNA

NUNA EAST LTD

(Section 2)

Inspection & Test Plan (ITP)

NUNA
NUNA EAST LTD

QUALITY MANAGEMENT SYSTEM
INSPECTION &TEST PLAN
(Civil / Structural Installations)

Exhibit 1.0
Revision 0
Page 1 of 7

CLIENT: Hatch	**ITEM / DESCRIPTION / SCOPE:** LP2 / Laydown / Earthworks material production, Haulage, Placement & compaction.	**NUNA ITP NO.:** CC006-0001A	**REVISION NO.:** 1
CONTRACTOR: Nuna East Ltd.		**AFFILIATED SUB-CONTRACTOR(S):** N/A	
CONTACT PERSON: Bradford Watkin	**CONTACT INFORMATION:** bradfordw@nunalogistics.com	**DATE:** May 29, 2019	
CONTRACT No.: H353004-CC006	**HATCH PROJECT NUMBER:** H353004-CC006	**HATCH DOCUMENT TITLE:** Mary River Expansion Project-Remaining Early Earthworks	
NUNA JOB No.: CC006-0001A	**PURCHASE ORDER No.:** N/A	**PROJECT MANAGER(s):** Chris Petrovic / Stephen Nugent	
LOCATION(S): Milne Port Site		**LEGEND:** **H:** A mandatory hold on manufacturer until release by inspector or official waiver from client. **M:** Inspection stage by inspector on a spot basis, but not a mandatory hold point. **HR:** A mandatory hold / review & acceptance / approval of the specified documentation. **W:** To be informed and invited to inspect. Construction to continue if inspector does not attend. **R:** Review of report / certifications. **A:** Audit (Review at Random).	
CWP No.: N/A			

Approved For Construction

Stephen Nugent	[signature]	May 29, 2019
Nuna Project Manager / Engineer (Print)	Signature	Date
Bradford Watkin	[signature]	May 29, 2019
Nuna Quality Representative (Print)	Signature	Date
Hatch Representative (Print)	Signature	Date

HATCH Vendor/Contractor Document Review

Doc Number	E353004-CC006-130-051-0012	SUB	03
Date Received			

Review Grade	Next Submittal Status
☐ C1 - Proceed to next submission & status ☐ C2 - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ C3 - Do not proceed. Revise as noted & resubmit	☐ Internal Review
Next Submittal Date	☐ Certified ☐ As-Built
☑ C4 - No further submission required - Complete (select status below) ☐ Certified Final ☑ Final ☐ Cancelled ☐ Superseded	

Package Engineer: Name, signature and date: farokh.noor@hatch.com

Hatch Stamp

Final Review

BRADFORD WATKIN	[signature]	9/24/19
Nuna Quality Representative (Print)	Signature	Date
Hatch Quality Representative (Print)	Signature	Date

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
1.	Contract Review / Approval	NUNA	Review / Verify Document	Prior to project start	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract				R	[signature]	5/29/19	R	R.F.	9/28/19	

ACTIVITY DATA							VERIFICATION DATA											
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
2.	Approval of ITP	NUNA / HATCH Representatives	Review	Prior to start	NUNA Quality System Manual	Signed ITP by Client representative, NUNA Quality System Manual	Signed acceptance of document (Exhibit 1.0)				HR	BW	5/3/19	HR	R.F.	9/28/19	
3.	Scope and Associated Documents	NUNA	Review For Errors	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R	BW	5/07/19	R	R.F.	9/28/19	
4.	Land Disturbance Approval obtained	NUNA	Review	Prior to start	BIM Environmental Protection Plan	IFC Drawings & Client contract scope, BIM Environmental Protection Plan	Land Disturbance Form BAF-PH1-830-P16-0008				HR	BW	5/6/19	HR	R.F.	9/28/19	
5.	Work Method of Statement	NUNA / HATCH	Review	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R		N/A	HR	R.F.	9/28/19	
6.	Signature Log	NUNA	Review, obtain signatures	Ongoing	NUNA Quality System Manual	NUNA Quality System Manual	NUNA Signature Log				R	BW	5/6/19	R	R.F.	9/28/19	
7.	Initial Survey Layout	NUNA / ALL NORTH	Cross Check of IFC Layout	Ongoing	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				HR	BW	5/10/19	HR	R.F.	9/28/19	
8.	Materials verification	NUNA	Review	As required	IFC Drawings, Hatch Spec. 280-078-0002 Rev 0, ASTM C-136	IFC Drawings, Hatch Spec 280-078-0002 Rev 0, ASTM C-136	Sieve Test Reports, QSRs				HR	BW	5/30/19	HR	R.F.	9/28/19	• Type 5 * BACKFILL THRU OUT CONSTRUCTION • Type 8 • Type 12
9.	RFI	NUNA	Resolution of RFIs	As required	NUNA Quality System Manual	Disposition, Approved, closed and log updated	RFIs				HR	BW	5/25/19	HR	R.F.	9/28/19	
10.	Clearing of works location completed • Snow / Ice / Water removal / Disposal	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W	BW	5/10/19	W	R.F.	9/28/19	

ACTIVITY DATA							VERIFICATION DATA											
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
11.	Subgrade foundation preparation completed • Compaction • Proof rolling	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W	BW	9/12/19	HR	9/28/19	R.F.	
Type 5 32 minus																		
12.	Type 5 32 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	BW	9/9/19	W	9/28/19	R.F.	
13.	Compaction of Type 5 32 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	BW	9/9/19	W	9/28/19	R.F.	
14.	Survey of Type 5 32 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR W	BW	9/9/19	W	9/28/19	R.F.	
Type 8 Jaw run 150 minus																		
15.	Type 8 150 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	BW	7/24/19	W	9/28/19	R.F.	
16.	Compaction of Type 8 150 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	BW	7/24/19	W	9/28/19	R.F.	

ACTIVITY DATA							VERIFICATION DATA											
								Subcontractor			Nuna			Hatch				
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
17.	Survey of Type 8 150 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR W	BW	11/21/19	W	R.F.		
	ROQ (Type 12)																
18.	ROQ (Type 12) Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initiated ITP				W	BW	9/19/19	W	R.F.		
19.	Compaction of ROQ (Type 12) Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	BW	9/19/19	W	R.F.		
20.	Survey of ROQ Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR	BW	9/19/19	W	R.F.		
	Culvert Installation						* TBD SEE DEFICIENCY/PUNCHLIST * BW 9/25/19										
21.	Culvert Pipe Bed Excavation Completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W			W			• Culvert 36
22.	Culvert bedding, placement & backfill completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W			W			• Culvert upstream & downstream inverts verified. • Note: Culvert haunch under pipe to be compacted. • Type 5 • Type 8

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
23.	Culvert @ upstream & downstream water courses erosion protection completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W			W			• Type 19 • Geotextile LP7 or approved equivalent.
						Arch Culvert Installation	* TBD SEE DEFICIENCY / PUNCHLIST * BW 9/25/19										
24.	Arch Culvert trench excavation completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W			W			
25.	Arch Culvert constructed and placed in excavation	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W			W			• 1.52m span x 0.81m rise. • Culvert inlet & outlet inverts verified.
26.	Culvert engineered backfill zone completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W			W			• Type 5 • Min. .800mm cover. • 1m lateral cover.
27.	Arch Culvert Trench backfill completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W			W			• To finished pad level.
28.	As built Survey	NUNA	Review	Continuous During Operations	IFC Drawings	IFC Drawings, Hatch Specifications	As built Drawings & Data				HR	BW 9/9/19		HR	R.F.	9/28/19	
29.	Final Walk down	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Contract Requirements	Final Walkdown Attendees' Report				W	BW 9/30/19		HR	R.F.	9/28/19	
30.	Deficiency List / Punch list generated	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per contract Requirements	Item form punch list items resolved				HR	BW 9/30/19		HR	R.F.	9/28/19	

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	**Description of Activities** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	**Functional Responsibility**	**Quality Control Activity**	**Verification Frequency**	**Reference Document(s)/ Controlling Procedure**	**Acceptance Criteria**	**Verification Document(s) (Reporting)**	Type	Initials	Date *(mm/dd/yy)*	Type	Initials	Date *(mm/dd/yy)*	Type	Initials	Date *(mm/dd/yy)*	**Comments**
31.	NCR's closed.	NUNA / HATCH	Review of NCRs, Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Requirements	NCR log cleared				HR	BW	9/25/19	HR	R.F.	9/28/19	
32.	As-built / Redline drawings completed.	NUNA	Review / Verify	Post Final Walk down	IFC Drawings, Contract	As-builts / Redlines to Reflect All Field Changes	As-builts / Redlines				HR	BW	9/27/19	HR	R.F.	9/28/19	
33.	Final Acceptance and ITP Sign off	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP (Exhibit 1.0)				HR			HR			
34.	Inspection Acceptance and Sign-Off Form signed by Engineer of record.	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP, Acceptance of Completion of Construction Form				HR			HR			
35.	Turnover package completed and sent to client.	NUNA	Review / Verify	Post project completion	NUNA Quality System Manual, IFC Drawings, Contract	Contract, Code & applicable specifications.	Quality Management System Quality Control Turnover package.				HR			R			

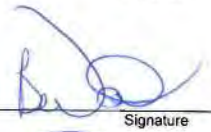
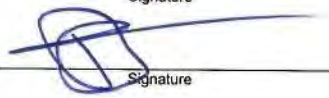
Note: Nuna ITP Sign-Offs based on supporting documentation.

Comments:

ITP ISSUE APPROVALS

Stephen Nugent Nuna Contractor Project Manager / Engineer *(Print)*	Site Project Manager Title	 Signature	May 29, 2019 Date *(mm/dd/yy)*
Bradford Watkin Nuna Contractor Quality Manager / Representative *(Print)*	QC Coordinator Title	 Signature	May 29, 2019 Date *(mm/dd/yy)*
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

ITP CLOSEOUT AND WORK ACCEPTANCE APPROVALS

BRADFORD WATKIN Nuna Contractor Quality Manager / Representative *(Print)*	QC COORDINATOR Title	 Signature	9/25/19 Date *(mm/dd/yy)*
Ronny Franken HATCH Quality Manager / Representative *(Print)*	Quality Assurance Manager Title	 Signature	9/28/19 Date *(mm/dd/yy)*

NUNA

NUNA EAST LTD

(Section 3)

Redline Drawings

DWG No. H353004-40000-221-271-0004-0001

NORTH

MODULE DELIVERY ROAD

NEW ACCESS RAMP TO LAYDOWN LP2 PAD SEE ENLARGED DETAIL 1

STORMWATER DIVERSION BERM

EXISTING DRAINAGE DITCH

EXISTING UTILITY BERM

FOR DETAILS OF UTILITY CULVERT SEE ENLARGED DETAIL 1

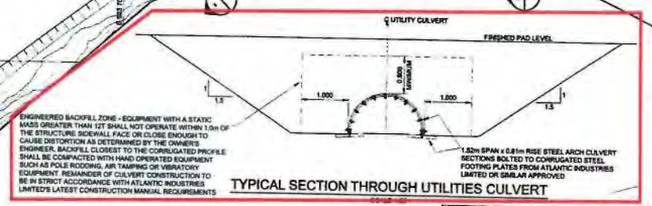
FOR DETAILS OF DRAINAGE CULVERT P-CULV-36 REFER TO DWG. No. H353004-40000-228-272-0011-0001

Placement as per RFI-041

Temporary installation of Plastibeton SRT-T2016 utility enclosure per RFI-029

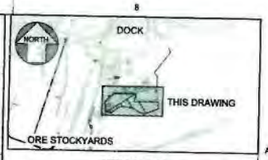
NOTE:
FOR PAD LAYER WORKS REFER TO DETAIL 1 ON DWG No. H353004-00000-221-294-0002-0001

PLAN ON LAYDOWN LP2
SCALE 1:500



TYPICAL SECTION THROUGH UTILITIES CULVERT

P-SWD-3 REFER TO DRAWING No H353004-40000-228-271-0004-0001



KEY PLAN

LAYDOWN LP2
SETTING OUT CO-ORDINATES

POINT	E	N	LEVEL
1	503 696.878	7 975 873.542	13.800
2	503 671.119	7 975 943.609	13.692
3	503 653.359	7 975 946.026	13.420
4	503 653.350	7 975 912.953	14.603
5	504 042.756	7 975 825.106	19.800
6	503 943.743	7 975 786.090	21.000
7	503 744.950	7 975 839.934	13.800
8	505 702.161	7 975 824.445	13.700
9	503 649.463	7 975 784.677	13.800
10	503 608.298	7 975 789.725	13.800
11	503 634.464	7 975 908.154	13.800
12	503 623.018	7 975 925.591	12.800
13	503 632.135	7 975 929.924	12.850
14	503 641.780	7 975 915.231	13.800
15	503 656.312	7 975 929.287	13.692
16	503 671.119	7 975 936.419	13.692
17	503 672.319	7 975 941.825	14.196
18	503 847.570	7 975 944.019	13.628
19	503 898.563	7 975 786.090	19.800
20	503 826.283	7 975 829.178	17.300
21	503 635.214	7 975 806.917	13.788
22	503 690.741	7 975 842.344	13.679
23	503 727.535	7 975 865.820	13.569
24	503 781.099	7 975 899.995	13.508
25	503 845.935	7 975 940.787	13.430
26	503 843.439	7 975 912.936	14.458
27	503 843.438	7 975 905.736	14.705
28	503 841.062	7 975 885.737	15.042
29	503 841.058	7 975 878.392	15.684
30	503 882.724	7 975 878.392	18.320
31	504 042.756	7 975 878.392	17.824

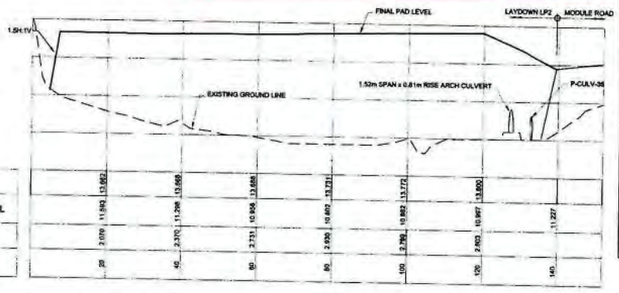
NOTE: THE LEVELS GIVEN FOR POINTS 17 AND 18 ARE TO TOP OF THE BERM

SECTION B - B

SCALES:
HORIZONTAL 1:500
VERTICAL 1:50

DATUM 10.000

CENTRE LINE (CL)	
GROUND LEVELS ON CL	
DEPTH OF FILL	
DISTANCE (m)	



ENLARGED DETAIL 1
SCALE 1:20

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016) CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
2. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
3. ALL DIMENSIONS SHOWN ARE IN METERS. UNLESS NOTED OTHERWISE.
4. FOR TYPICAL PAD LAYERWORKS CONSTRUCTION REFER TO DETAIL 1 ON DWG No. H353004-00000-221-294-0003-0001.

SECTION C-C

SCALES:
HORIZONTAL 1:500
VERTICAL 1:50

DATUM 12.000

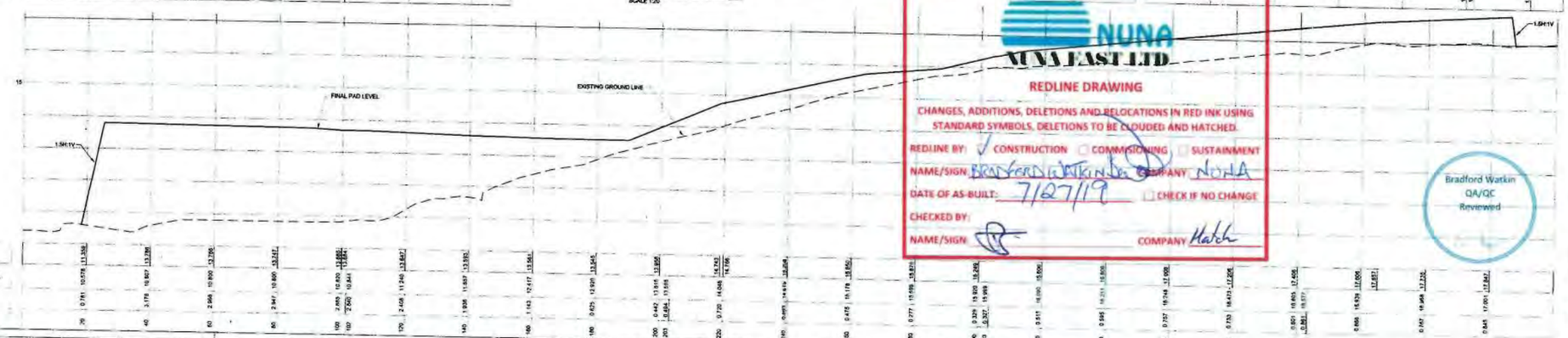
CENTRE LINE (CL)	
GROUND LEVELS ON CL	
DEPTH OF FILL	
DISTANCE (m)	

SECTION A-A

SCALES:
HORIZONTAL 1:500
VERTICAL 1:50

DATUM 10.000

CENTRE LINE (CL)	
GROUND LEVELS ON CL	
DEPTH OF FILL	
DISTANCE (m)	



NUNA
NUNAVAST LTD.

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: BRADFORD WATKINS COMPANY: NUNA

DATE OF AS-BUILT: 7/27/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY: Hatch

Bradford Watkin
QA/QC
Reviewed

H353004-40000-221-272-0014-0001	PORT SITE COMPLEX EXPANSION - CROSS SECTIONS
H353004-40000-221-272-0013-0001	PORT SITE COMPLEX EXPANSION - LAYOUT PLAN
H353004-00000-221-294-0004-0001	STANDARD DRAWING - EARTHWORKS & DRAINAGE DETAILS
H353004-40000-228-271-0004-0001	STORMWATER DIVERSION P-SWD-3 - LAYOUT AND SECTIONS
H353004-40000-228-272-0011-0001	LAYDOWN AREA LP2 - DRAINAGE PLAN
H353004-00000-221-294-0003-0001	STANDARD DRAWING - EARTHWORKS & DRAINAGE DETAILS
DRAWING No.	DRAWING TITLE

REFERENCE DRAWINGS

Released for Use

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
5	LEVELS IN CO ORDINATE TABLE UPDATED	SHD	FH	06/05/2019
4	LP2 FOOTPRINT EXTENTS REVISED	SHD	FH	13/01/2019
3	UTILITY CULVERT DETAILS AMENDED	SHD	FH	19/11/2018
2	LP2 EXTENDED TO THE EAST	SHD	FH	29/10/2018
1	EDC STAMP REMOVED	KvdM	FH	16/09/2018
0	APPROVED FOR CONSTRUCTION	GPM	FH	18/04/2018

REVISIONS

HATCH

DRAFTSPERSON	G MEADES	NR	22/03/2018
DESIGNER	I BARNARD	NR	22/03/2018
CHECKER	F HUSO		2018-05-10
DESIGN COORD	R GODDEN		2018-05-10
RESP. ENG.	R HALIM		
LEAD DISC. ENG.	A GROSBELAAR		2018/05/10
AREA LEAD	N MASON		2018/05/10
ENG. MANAGER	R GODDEN		2018-05-10
AREA MANAGER	D HENKELMAN		

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP2
PLAN AND SECTIONS

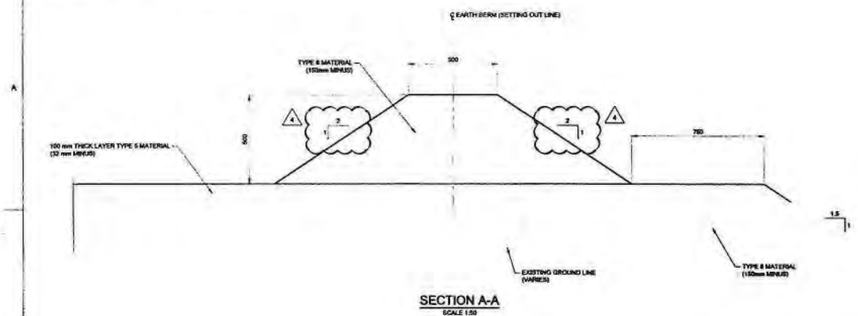
ROLE	NAME	SIGNATURE	DATE

SCALE 1:500 OR AS NOTED

DWG No. H353004-40000-221-271-0004-0001

REV 5

SHEET SIZE: E



SECTION A-A
SCALE 1:50

CULVERT SCHEDULE

CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	UPSTREAM CULVERT CENTRE NORTHING	UPSTREAM CULVERT CENTRE EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	DOWNSTREAM CULVERT CENTRE NORTHING	DOWNSTREAM CULVERT CENTRE EASTING	D/S INV ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)
P-CULV-36	NO	1	805	16.09	0	600	CSP	7975926	503637	11.65	NO	7975915	503625	10.89	NO	300	-	1.00	85

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
C	CULVERT SPACING AND BEDDING CLEARANCE C = 800 WHILE D < 800mm C = 300 WHILE D >= 800mm
W	CULVERT BACKFILL TOP WIDTH W = (n*D) + (n-1)*C
n	NUMBER OF PIPES
TYPE	CULVERT MATERIAL
U/S INV.	CULVERT UPSTREAM INVERT ELEVATION
D/S INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	RIPRAP APRON LENGTH L = 4xD (APPROX)
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

LEGEND:

OFF PAD FLOW DIRECTION

ON PAD FLOW DIRECTION

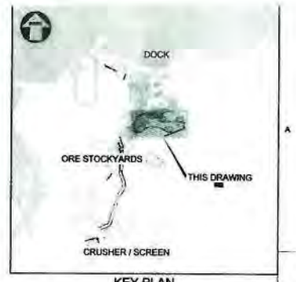
MATERIAL AND COMPACTION SPECIFICATION:

TYPE 5 (CRUSHER RUN) OR TYPE 3 (CRUSHER RUN):
THE MATERIAL MUST BE PLACED IN LIFTS NOT EXCEEDING 200mm AND SHALL BE COMPACTED BY MINIMUM 8 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1550 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2kmh). ALTERNATIVELY, THE COMPACTION SHOULD ACHIEVE A MINIMUM OF 100 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY TEST METHOD ASTM D698.

TYPE 8 (CRUSHER RUN):
THE ROCKFILL MUST BE PLACED IN LIFTS NOT EXCEEDING 500mm. THE PLACEMENT SHALL AVOID SEGREGATION AND NESTING OF COARSE PARTICLES. IT SHALL BE COMPACTED BY MINIMUM 8 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1550 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2kmh). EACH LIFT MUST BE "PROOF-ROLLED" PRIOR TO PLACING THE SUBSEQUENT LIFT.

TYPE 12 (RUN OF QUARRY):
THE ROCKFILL, IF USED, MUST BE PLACED IN LIFTS NOT EXCEEDING 1000mm. THE ROCKFILL SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2kmh). ALTERNATIVE COMPACTORS SUCH AS HEAVY LOADED RUBBER TIRED HAUL TRUCKS CAN ONLY BE USED AS PER A WRITTEN APPROVAL FROM THE ENGINEER.

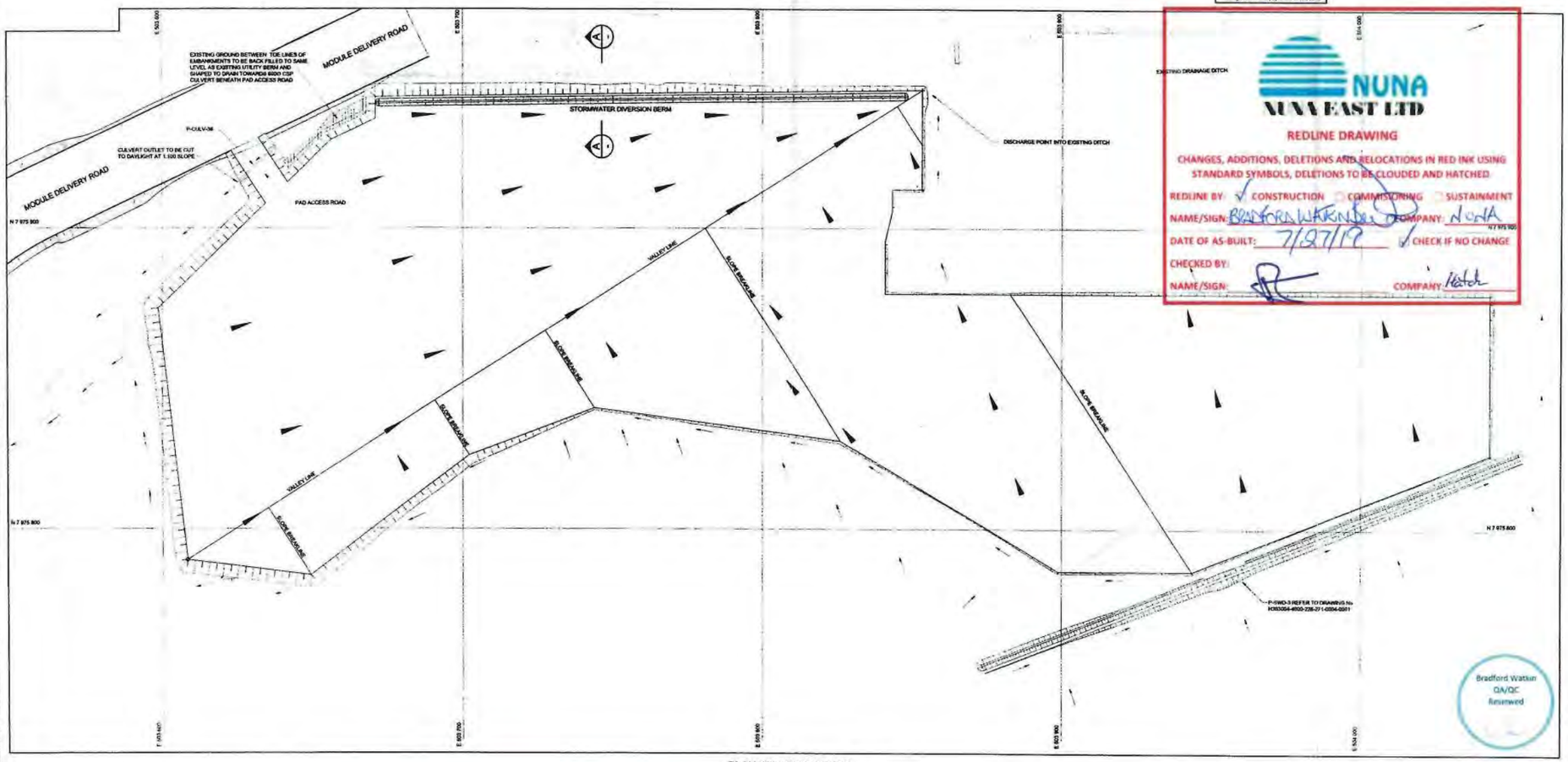
PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU



KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2018)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR PAD LAYER/WORKS CONSTRUCTION REFER TO DETAIL 1 ON DWG. No. H353004-00000-221-294-0002-0001.



PLAN ON LAYDOWN LP2
SCALE 1:500

NUNA
NUNAVAST LTD
REDLINE DRAWING
CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED
REDLINE BY: ✓ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT
NAME/SIGN: BRADFORD WATKUN COMPANY: NUNA
DATE OF AS-BUILT: 7/27/19 ✓ CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY: Hatch

H353004-40000-228-272-0018-0001	PORT SITE COMPLEX EXPANSION - DRAINAGE PLAN
H353004-40000-221-272-0014-0001	PORT SITE COMPLEX EXPANSION - CROSS SECTIONS
H353004-40000-221-272-0013-0001	PORT SITE COMPLEX EXPANSION - LAYOUT PLAN
H353004-40000-221-273-0004-0001	LAYDOWN AREA LP2 - LAYOUT AND SECTIONS
H353004-01000-221-294-0002-0001	STANDARD DRAWING - EARTHWORKS AND DRAINAGE DETAILS
DRAWING No.	DRAWING TITLE

REFERENCE DRAWINGS

Released for Use

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
4	STORMWATER DIVERSION BERM SIDE SLOPES REVISED			
3	LP 2 FOOTPRINT REVISED TO ACCOMMODATE NEW PSC			
2	LP2 EXTENDED TO THE EAST			
1	EDC STAMP REMOVED			
0	APPROVED FOR CONSTRUCTION			

REVISIONS

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	G MEADES		22/03/2018
DESIGNER	I BARNARD		22/03/2018
CHECKER	F HUGO		2018-05-08
DESIGN COORD.	R GOOSEN		2018-05-08
R&I ENG.	R HALIM		
LEAD DISC. ENG.	A GROBBELAAR		2018-05-25
AREA LEAD	R MASON		2018-05-30
ENG. MANAGER	R GOOSEN		2018-05-30
AREA MANAGER	D HENRELMAN		2018-05-31

DRAWING APPROVAL STATUS: Approved for Construction

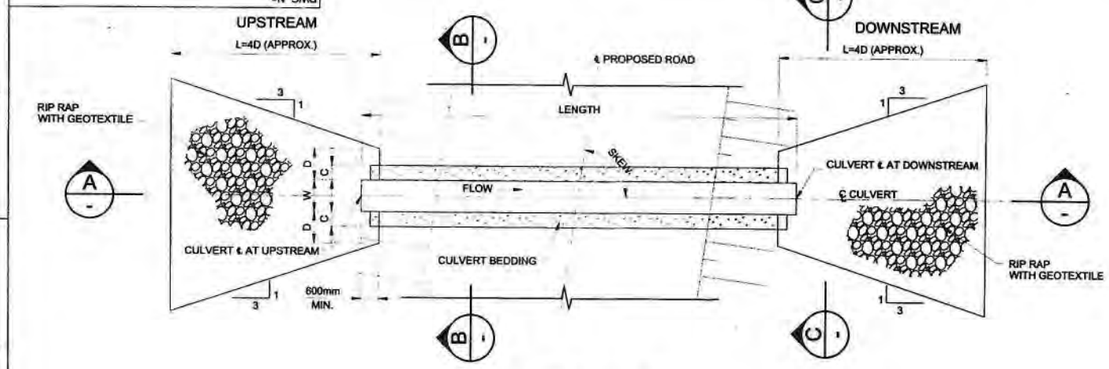
HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

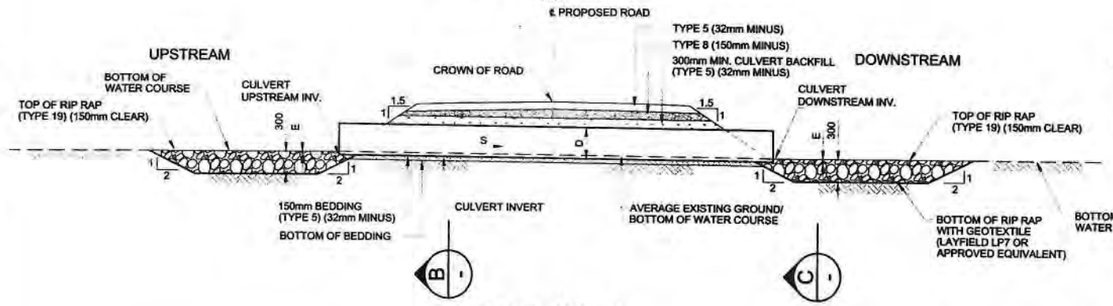
PORT SITE
LAYDOWN AREA LP2
DRAINAGE PLAN

SCALE 1:500 OR AS NOTED
DWG. No. H353004-40000-228-272-0011-0001
REV 4
SHEET SIZE: E



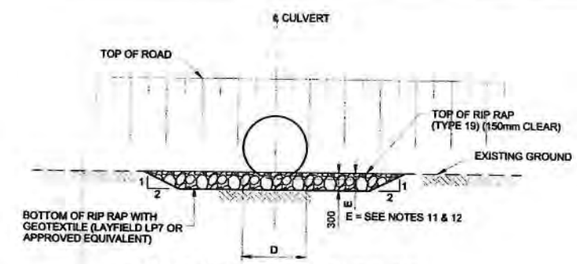
CULVERT PLAN VIEW

NTS



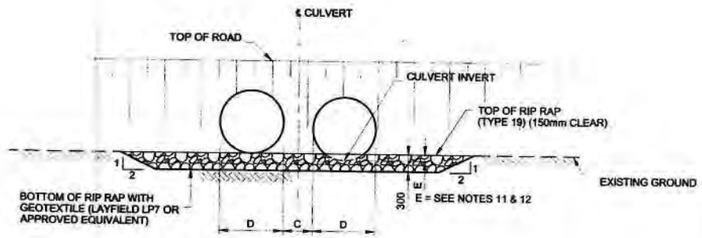
SECTION A - A

NTS



SECTION C - C (SINGLE PIPE)

NTS



SECTION C - C (DOUBLE PIPE)

NTS

NOTES:

1. THE PIPE BED SHALL BE SHAPED TO RECEIVE THE BOTTOM OF THE PIPE.
2. GRANULAR MATERIAL PLACED UNDER THE HAUNCH MUST BE COMPACTED.
3. BEDDING AND BACKFILL MATERIAL SHALL BE HOMOGENEOUS GRANULAR MATERIAL, AND SHALL BE PLACED AND COMPACTED UNIFORMLY AROUND THE PIPE.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE
5. ALL ELEVATIONS ARE IN METERS UNLESS NOTED OTHERWISE.
6. WHERE VERTICAL EXCAVATION IS NOT POSSIBLE, MODIFY EXCAVATION SLOPE TO MIN. 1.5H: 1V.
7. PROVIDE 300mm TYPE 8 (150mm MINUS) AROUND BEDDING AND BACK FILL MATERIAL ONLY WHEN ROCKFILL IS PRESENT.
8. THE CULVERT UPSTREAM AND DOWNSTREAM LOCATIONS AND INVERT ELEVATIONS ARE BASED ON LIDAR DATA. NO BOTTOM OF STREAM SURVEY DATA WAS AVAILABLE AT THE TIME OF PREPERATION OF THIS DRAWING.
9. ADJUST CULVERT START AND END COORDINATES AND INVERT ELEVATIONS IN THE FIELD AS APPROVED BY COMPANY'S REPRESENTATIVE.
10. FLOW DIRECTION MUST BE FROM UPSTREAM TO DOWNSTREAM. PROVIDE AVERAGE STREAM SLOPE ALONG THE CULVERT AS CULVERT SLOPE BASED ON ACTUAL FIELD CONDITION.
11. FOR FISH BEARING CULVERT, E=0.1D
    FOR NON-FISH BEARING CULVERT, E=0
12. FOR FISH BEARING CULVERT WITH MULTIPLE PIPES, ONLY ONE PIPE SHALL BE EMBEDDED BY "E" (APPROXIMATELY 0.1D) AND ALL OTHER PIPES SHALL BE PLACED ON GROUND/BOTTOM OF WATER COURSE.

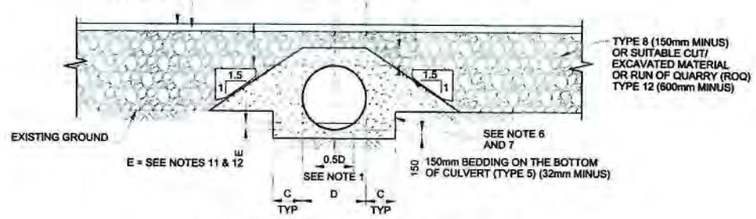
MATERIAL AND COMPACTION SPECIFICATION:

SUBGRADE PREPARATION:
THE SUBGRADE SHOULD SHOULD BE PROOF-ROLLED AND INSPECTED PRIOR TO PLACING FILL MATERIALS. THE IDENTIFIED SOFT AREAS SHALL BE FURTHER COMPACTED, OR IF NECESSARY, BE MITIGATED USING GRANULAR OR ROCK FILL. A QUALIFIED GEOTECHNICAL ENGINEER SHALL INSPECT AND APPROVE THE SUBGRADE.
THE ROCKFILL SHALL NOT BE PLACED IN WATER OR ON ICE. DEWATERING IS REQUIRED WHERE PONDING WATER IS ENCOUNTERED. OVER-EXCAVATION IS REQUIRED FOR GROUND ICE, IF ENCOUNTERED.
THE SUBGRADE ON THE GROUND SHALL BE LEFT AS IT IS NATURALLY BEFORE CONSTRUCTION AS MUCH AS POSSIBLE. THE OVER-EXCAVATION SHOULD BE MINIMIZED TO AVOID DISTURBANCE OF THE EXISTING PERMAFROST.

TYPE 5 (CRUSHER RUN 32mm MINUS MATERIAL) OR TYPE 3 (CRUSHER RUN 50mm MINUS):
THE MATERIAL MUST BE PLACED IN LIFTS NOT EXCEEDING 200mm AND SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVELY, THE COMPACTION SHOULD ACHIEVE A MINIMUM OF 100 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY TEST METHOD ASTM D698.

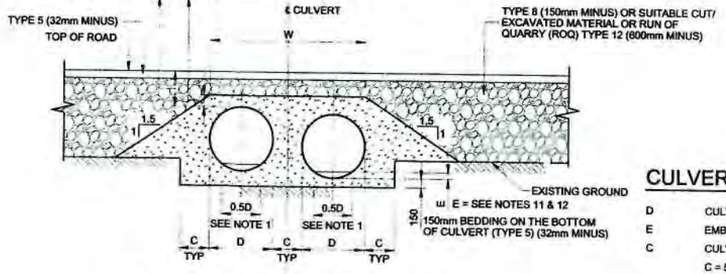
TYPE 8 (CRUSHER RUN 150mm MINUS):
THE ROCKFILL MUST BE PLACED IN LIFTS NOT EXCEEDING 500mm. THE PLACEMENT SHALL AVOID SEGREGATION AND NESTING OF COARSE PARTICLES. IT SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). EACH LIFT MUST BE "PROOF-ROLLED" PRIOR TO PLACING THE SUBSEQUENT LIFT.

TYPE 12 (RUN OF MINE, TYPICALLY 600mm MINUS):
THE ROCKFILL, IF USED, MUST BE PLACED IN LIFTS NOT EXCEEDING 1000mm. THE ROCKFILL SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVE COMPACTORS SUCH AS HEAVY LOADED RUBBER TIRED HAUL TRUCKS CAN ONLY BE USED AS PER A WRITTEN APPROVAL FROM THE ENGINEER.



SECTION B - B (SINGLE PIPE)

NTS



SECTION B - B (DOUBLE PIPE)

NTS

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
C	CULVERT SPACING AND BEDDING CLEARANCE C = 500 WHILE D > 900mm C = 300 WHILE D < = 900mm
W	CULVERT BACKFILL TOP WIDTH W = (n*D) + (n-1)*C
TYPE	CULVERT MATERIAL
U/S INV.	CULVERT UPSTREAM INVERT ELEVATION
D/S INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	RIPRAP APRON LENGTH L = 4xD (APPROX)
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

Bradford Watson QA/QC Reviewed

CULVERT SCHEDULE

CULVERT	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	UPSTREAM CULVERT CENTRE NORTHING	UPSTREAM CULVERT CENTRE EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	DOWNSTREAM CULVERT CENTRE NORTHING	DOWNSTREAM CULVERT CENTRE EASTING	D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)

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Signature
Date
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

NUNAVEAST LTD
REDLINE DRAWING
CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INCLUDING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.
REDLINE BY: CONSTRUCTION COMMISSIONING SUSTAINMENT
NAME/SIGN: COMPANY:
DATE OF AS-BUILT: CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:
DRAWING No. DRAWING TITLE
REFERENCE DRAWINGS

REGISTERED PROFESSIONAL ENGINEER — R.A. HALIM — LICENSEE 2018-09-20 — NWT/NU
REG. PROFESSIONAL

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No.	DESCRIPTION	BY	CHK'D	DATE
1	MATERIAL AND COMPACTION SPECIFICATION ADDED	IHB	FH	18/09/2018
0	APPROVED FOR CONSTRUCTION	IHB	FH	01/12/2017

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	I BARNARD	NR	
DESIGNER	I BARNARD	NR	
CHECKER	F HUGO		2018-09-20
DESIGN COORD.	R GOOSEN		2018-09-20
RESP. ENG.	R HALIM		2018-09-20
LEAD DISC. ENG.	A GROBBELAAR		20 September
AREA LEAD	V LAVRIC		2018-09-20
ENG. MANAGER	D STANGER		2018-09-20
AREA MANAGER	T ATIBA		2018-09-20

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

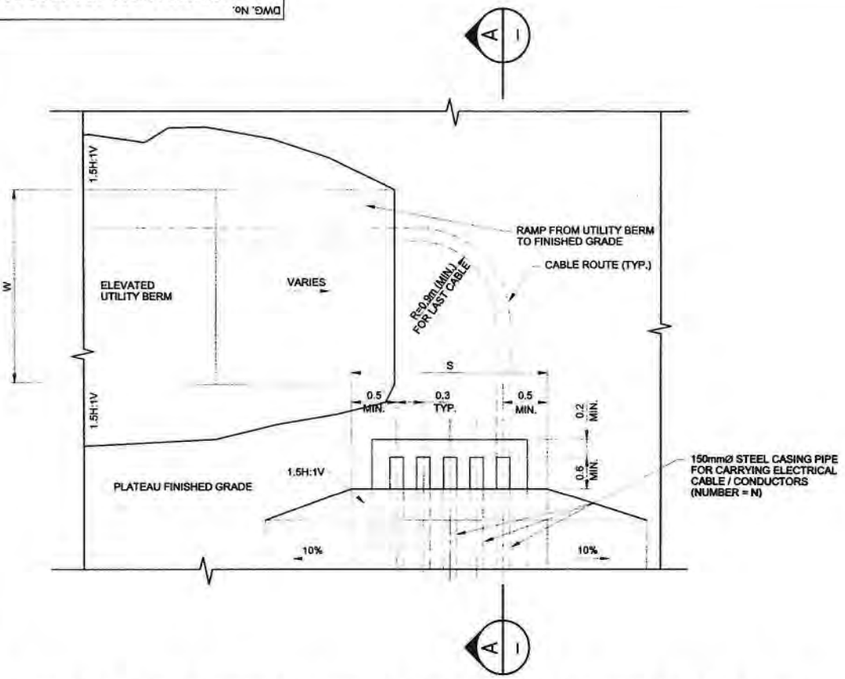
SITE WIDE
STANDARD DRAWING
TYPICAL CULVERT DETAILS

SCALE: NTS OR AS NOTED
DWG. No.: H353004-00000-221-294-0001-0001
REV: 1
SHEET SIZE: D

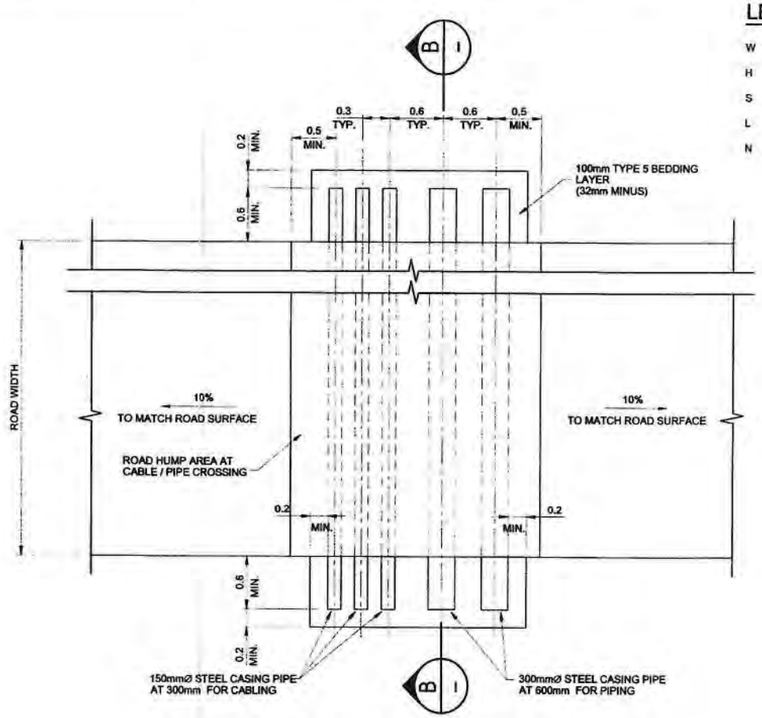
$USERNAMES $TIMES
$DATES
$FILES

1 2 3 4 5 6 7 8

DWG. No. H353004-00000-221-294-0004-0001



DETAIL 1 - UTILITY BERM TO STEEL CASING ON TOP OF DRIVABLE SURFACE



DETAIL 2 - ROAD UTILITY BERM CROSSING

LEGEND:

W	UTILITY BERM TOP WIDTH
H	UTILITY BERM HEIGHT
S	UTILITY CROSSING TOP WIDTH
L	UTILITY BERM RAMP LENGTH
N	NUMBER OF STEEL CASING PIPES

NOTES:

1. ALL DIMENSIONS AND ELEVATIONS SHOWN ARE IN METERS UNLESS NOTED OTHERWISE.
2. FOR FILL DEPTH >600mm AND DEPENDING ON FILL EXTENT, USE TYPE 12, I.E. RUN OF QUARRY (600mm MINUS)
3. THIS DRAWING ONLY COVERS THE UTILITY BERM EARTHWORKS AND ALL OF DIMENSIONS AND DETAILS ARE PARAMETRIC AND SHOULD BE READ IN CONJUNCTION WITH ELECTRICAL / MECHANICAL REQUIREMENTS.
4. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH PROJECT UTILITY SERVICES DRAWINGS FOR CABLING AND PIPING. ALL CABLING AND PIPING UTILITIES ARE TO BE LAID DIRECTLY ON THE BERM, NO PIPE SUPPORTS ETC ARE REQUIRED.
5. NUMBERS AND DIAMETERS OF STEEL CASING PIPES, WHERE APPLICABLE, SHALL BE PLACED ACCORDING TO ELECTRICAL / MECHANICAL REQUIREMENTS AS DEFINED ON THE PROJECT UTILITY SERVICES DRAWINGS.

MATERIAL AND COMPACTION SPECIFICATION:

SUBGRADE PREPARATION:
THE SUBGRADE SHOULD SHOULD BE PROOF-ROLLED AND INSPECTED PRIOR TO PLACING FILL MATERIALS. THE IDENTIFIED SOFT AREAS SHALL BE FURTHER COMPACTED, OR IF NECESSARY, BE MITIGATED USING GRANULAR OR ROCK FILL. A QUALIFIED GEOTECHNICAL ENGINEER SHALL INSPECT AND APPROVE THE SUBGRADE.
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THE SUBGRADE ON THE GROUND SHALL BE LEFT AS IT IS NATURALLY BEFORE CONSTRUCTION AS MUCH AS POSSIBLE. THE OVER-EXCAVATION SHOULD BE MINIMIZED TO AVOID DISTURBANCE OF THE EXISTING PERMAFROST.

1 TYPE 5 (CRUSHER RUN 32mm MINUS MATERIAL) OR TYPE 3 (CRUSHER RUN 50mm MINUS):
THE MATERIAL MUST BE PLACED IN LIFTS NOT EXCEEDING 200mm AND SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVELY, THE COMPACTION SHOULD ACHIEVE A MINIMUM OF 100 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY TEST METHOD ASTM D698.

TYPE 8 (CRUSHER RUN 150mm MINUS):
THE ROCKFILL MUST BE PLACED IN LIFTS NOT EXCEEDING 500mm. THE PLACEMENT SHALL AVOID SEGREGATION AND NESTING OF COARSE PARTICLES. IT SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). EACH LIFT MUST BE "PROOF-ROLLED" PRIOR TO PLACING THE SUBSEQUENT LIFT.

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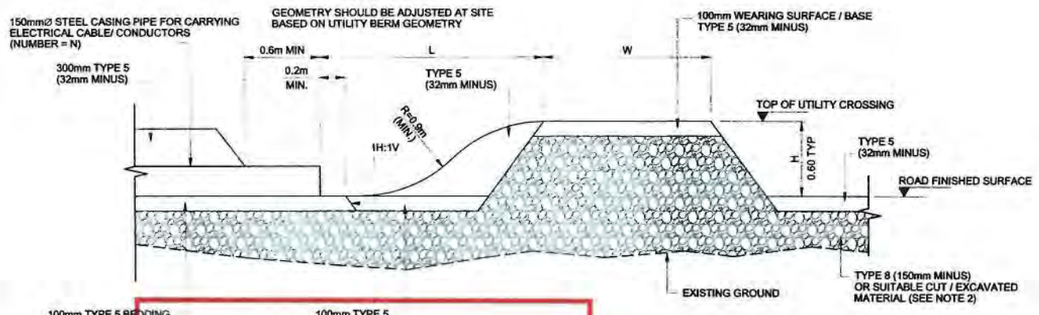
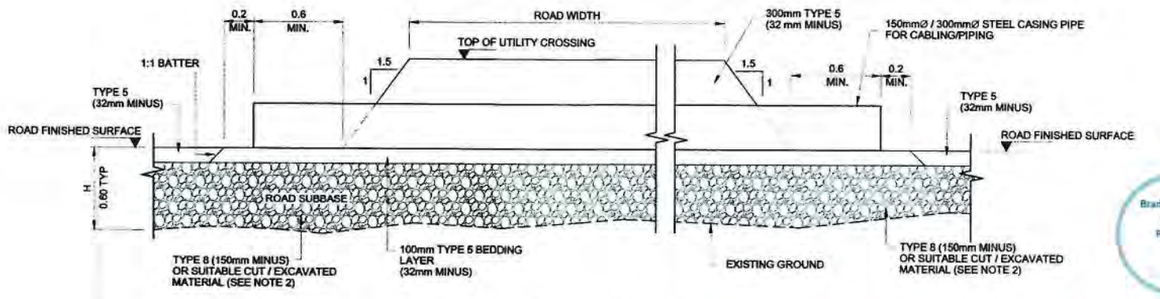


SECTION A - A



SECTION B - B

Bradford Watkin QA/QC Reviewed

Released for Use

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HATCH LTD.
Signature
Date 2018-09-27
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

NUNA EAST LTD
REDLINE DRAWING
CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED
REDLINE BY: ✓ CONSTRUCTION COMMISSIONING SUSTAINMENT
NAME/SIGN: BRADFORD WATKIN COMPANY: NUNA
DATE AS-BUILT: 7/27/19 CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY: Hatch

REGISTERED PROFESSIONAL ENGINEER R.A. HALIM LICENSEE 2018-09-27 NWT/NU

FOR CONSTRUCTION

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No.	DESCRIPTION	BY	CHK'D	DATE
1	MATERIAL AND COMPACTION SPECIFICATION ADDED	IHB	FH	18/09/2018
0	APPROVED FOR CONSTRUCTION	IHB	FH	01/12/2017

REVISIONS

HATCH

DRAFTSPERSON	I BARNARD	NR	01/12/2017
DESIGNER	I BARNARD	NR	01/12/2017
CHECKER	F HUGO		2018-09-27
DESIGN COORD.	R GOOSEN		2018-09-27
RESP. ENG.	R HALIM		2018-09-27
LEAD DISC. ENG.	A GROBBELAAR		21 September
AREA LEAD	V LAVRIC		
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		2018-09-27
ROLE	NAME	SIGNATURE	DATE

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

SITE WIDE
STANDARD DRAWING
EARTHWORKS & DRAINAGE DETAILS

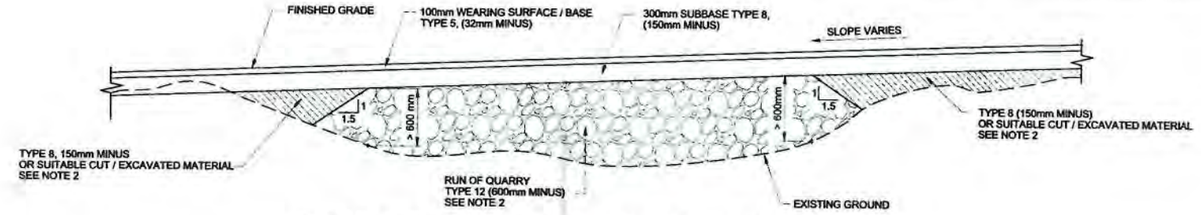
SCALE	DWG. No.	REV
NTS OR AS NOTED	H353004-00000-221-294-0004-0001	1

SHEET SIZE: D

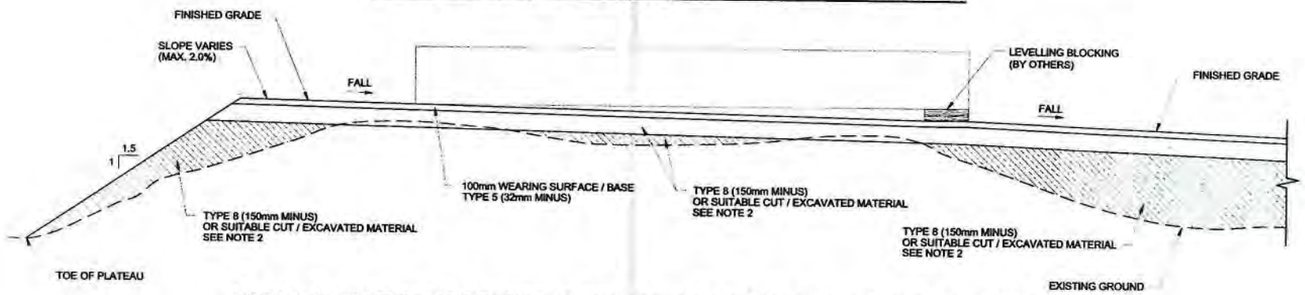
DRAWING No. | DRAWING TITLE | REFERENCE DRAWINGS | REG. PROFESSIONAL

$USERNAMES

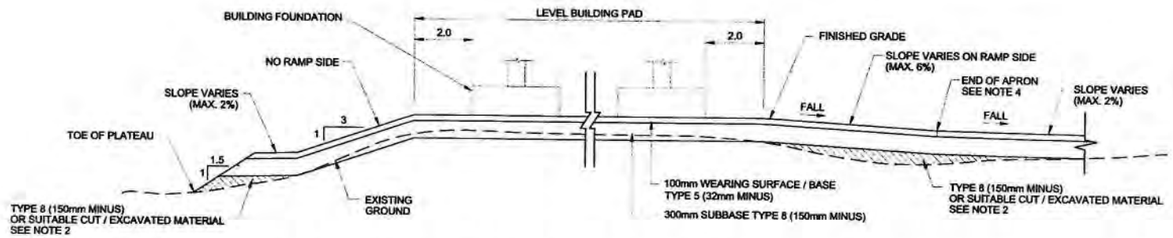
DWG. No. H353004-00000-221-294-0002-0001



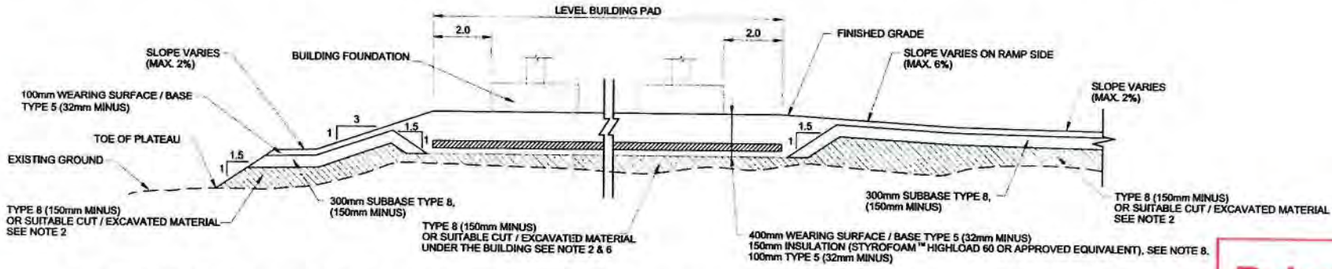
DETAIL 1 - TYPICAL EARTHWORKS FOR FINISHED GRADING



DETAIL 2 - TYPICAL EARTHWORKS FOR SKIDDED BUILDINGS - ALL GROUND MATERIALS



DETAIL 3 - TYPICAL EARTHWORKS FOR "FOLD-AWAY" / "FABRIC" BUILDINGS - IN NON-FROST SUSCEPTIBLE GROUND MATERIAL



DETAIL 4 - TYPICAL EARTHWORKS FOR "FOLD-AWAY" / "FABRIC" BUILDINGS - IN FROST SUSCEPTIBLE GROUND MATERIAL

NOTES:

1. ALL DIMENSIONS SHOWN ARE IN METRES, UNLESS OTHERWISE NOTED.
2. FOR FILL DEPTH > 600mm AND DEPENDING ON FILL EXTENT, USE TYPE 12 MATERIAL, ie RUN OF QUARRY (600mm MINUS).
3. THE FOUNDATIONS SHOWN ON THESE DETAILS ARE PRELIMINARY AND SHOULD BE VALIDATED AFTER FINALIZING THE BUILDINGS / STRUCTURES.
4. FOR BUILDINGS WITH NO TRUCK ACCESS RAMP REQUIREMENTS, SLOPE FINISH GRADE FROM EDGE OF BUILDING PAD TO SURROUNDING GRADE AT 3H:1V AS INDICATED ON THE DRAWING COVERING THE SPECIFIC BUILDING, OTHERWISE SLOPE AWAY TO THE SURROUNDING GRADE AT 2% MAXIMUM.
5. CUT / EXCAVATION MATERIAL USED AS FILL SHALL BE FREE FROM FROZEN MATERIAL, ICE, ORGANIC MATERIAL AND SHALL BE COMPACTED AS APPROVED BY THE COMPANY'S REPRESENTATIVE.
6. IF RUN OF QUARRY IS USED, THEN PLACE 300mm TYPE 8 MATERIAL (150mm MINUS) UNDER TYPE 5 (32mm MINUS).
7. "FROST SUSCEPTIBLE" AND "NON-FROST SUSCEPTIBLE" GROUND MATERIAL IS TO BE DETERMINED BY THE GEOTECHNICAL ENGINEER ON SITE OR THEIR DESIGNATE.
8. INSULATION UNDER BUILDINGS TO BE PROVIDED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER.

MATERIAL AND COMPACTION SPECIFICATION:

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NUNA
NUNA EAST LTD
REDLINE DRAWING
CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.
REDLINE BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT
NAME/SIGN: BRADFORD WATKINS COMPANY: NUNA
DATE OF AS-BUILT: 7/27/19 ☐ CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:

Bradford Watkins QA/QC Reviewed

Released for Use

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

REGISTERED PROFESSIONAL ENGINEER — R. A. HALIM — L1247 — LICENSEE — 2018-09-14 — NWT/NU

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No.	DESCRIPTION	BY	CHK'D	DATE
1	MATERIAL AND COMPACTION SPECIFICATION ADDED	IHB	FH	16/08/2018
0	APPROVED FOR CONSTRUCTION	IHB	FH	01/12/2017

REVISIONS

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	I BARNARD	NR	16/08/2018
DESIGNER	I BARNARD	NR	16/08/2018
CHECKER	F HUGO		2018-09-14
DESIGN COORD.	R GOOSEN		2018-09-14
RESP. ENG.	R HALIM		2018-09-14
LEAD DISC. ENG.	A GROBBELAAR		2018-09-14
AREA LEAD	V LAVRIC	N/A	
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		05-09-18

DRAWING APPROVAL STATUS: Approved for Construction

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

SITE WIDE
STANDARD DRAWING
EARTHWORKS & DRAINAGE DETAILS

DRAWING No.	DRAWING TITLE
REFERENCE DRAWINGS	REG. PROFESSIONAL

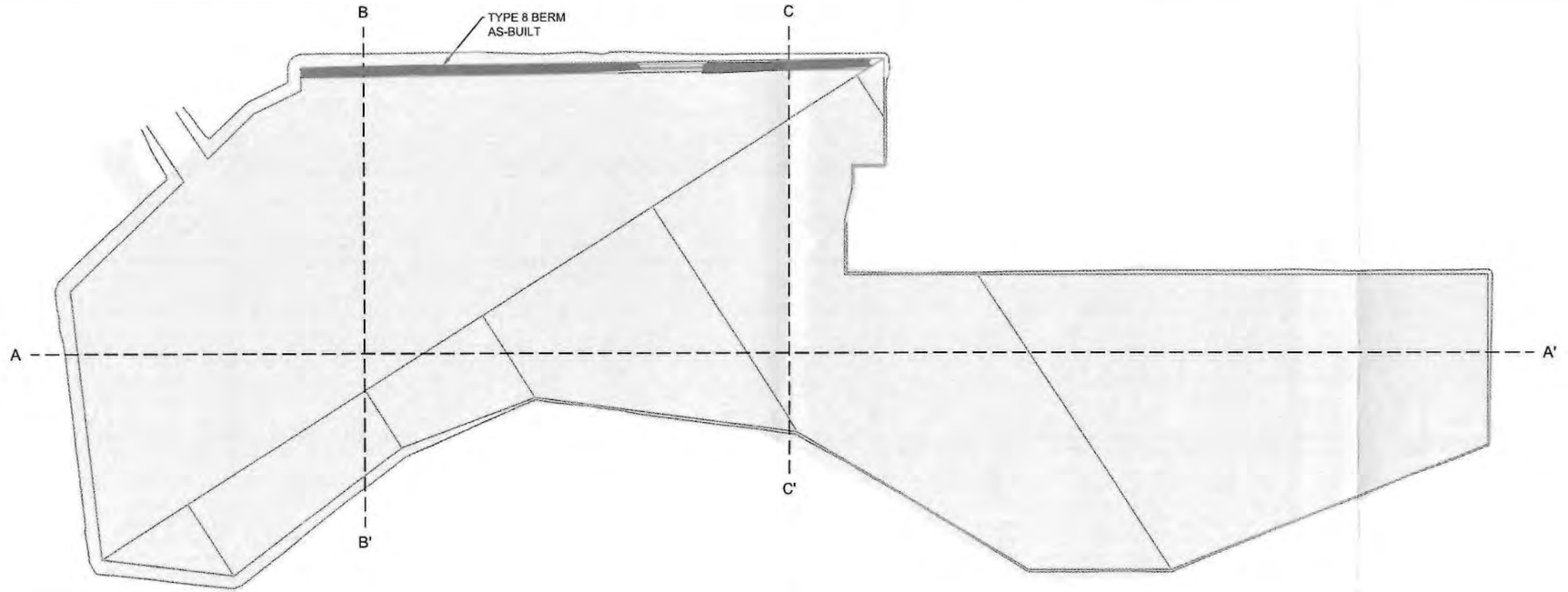
SCALE: NTS OR AS NOTED
DWG. No. H353004-00000-221-294-0002-0001
REV 1
SHEET SIZE: D

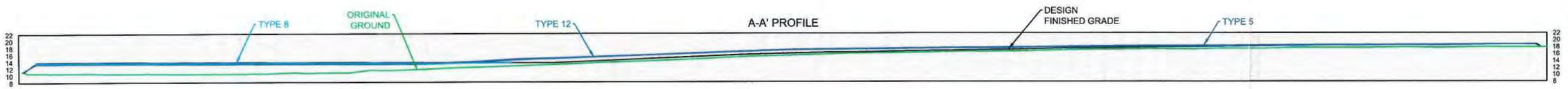
NUNA

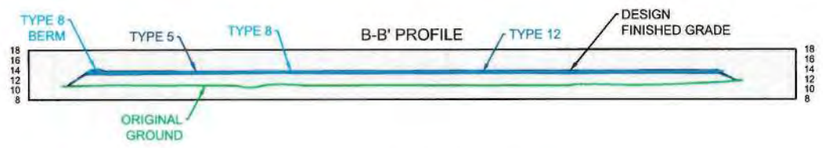
NUNA EAST LTD

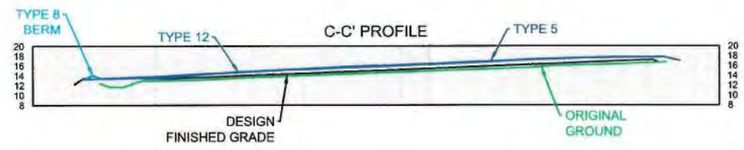
(Section 4)

Survey Data









LEGEND:
LP2 DESIGN
AS-BUILT AREA

OWNER:
BAFFINLAND IRON MINES LP

PROJECT:
MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

SCALE: AS SHOWN

DATE: Sept. 9, 2019

LAYDOWN AREA LP2

DRAWING TITLE:
AS-BUILT SURVEY
SURVEYED UP TO SEPTEMBER 9, 2019

DRAWING NAME (YYMMDD):
190909 LAYDOWN AREA LP2 AS-BUILT.dwg

NUNA

NUNA EAST LTD

(Section 4)

Survey Data
Original Ground
(OG)

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0001A
Port Site Laydown Area LP2
Original Ground (OG)

Laydown LP2 Original Ground (OG) Survey Data

Point Number	Northing	Easting	Elevation	Description
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2130002	7975811.956	504020.121	19.975	EG CREST
2130003	7975815.922	504029.957	19.763	EG CREST
2130004	7975819.125	504038.683	19.627	EG CREST
2130005	7975822.477	504047.89	19.488	EG CREST
2130006	7975820.576	504049.266	19.556	EG CREST
2130007	7975816.541	504039.805	19.786	EG CREST
2130008	7975811.767	504028.986	19.93	EG CREST
2130009	7975809.54	504024.986	20.107	EG CREST
2130010	7975808.327	504012.387	19.382	EG TOE
2130011	7975811.435	504020.8192	19.443	EG TOE
2130012	7975815.676	504030.426	19.503	EG TOE
2130013	7975813.647	504031.27	19.399	EG TOE
2130014	7975816.443	504040.0735	19.36	EG TOE
2130015	7975818.881	504038.979	19.338	EG TOE
2130016	7975822.216	504047.623	19.353	EG TOE
2130017	7975820.336	504048.302	19.412	EG TOE
2130018	7975819.735	504054.367	19.585	EG
2130019	7975827.401	504051.436	19.207	EG
2130020	7975825.942	504054.458	19.228	EG
2130021	7975822.132	504055.74	19.41	EG
2130022	7975829.279	504048.748	19.076	EG
2130023	7975824.905	504036.435	19.377	EG
2130024	7975821.983	504028.255	19.502	EG
2130025	7975817.452	504016.788	19.679	EG
2130026	7975815.462	504005.899	19.694	EG
2130027	7975812.464	503994.783	19.789	EG

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Point Number	Northing	Easting	Elevation	Description
2130031	7975798.456	503873.708	18.68	EG LP2
2130032	7975808.442	503874.742	18.335	EG LP2
2130033	7975819.497	503875.457	17.792	EG LP2
2130034	7975828.417	503876.412	17.545	EG LP2
2130035	7975838.327	503877.971	17.206	EG LP2
2130036	7975846.493	503878.744	16.979	EG LP2
2130037	7975855.28	503879.374	16.592	EG LP2
2130038	7975863.91	503880.126	16.384	EG LP2
2130039	7975872.974	503880.673	16.017	EG LP2
2130040	7975879.751	503880.683	15.693	EG LP2
2130041	7975887.556	503880.317	15.255	EG LP2
2130042	7975888.807	503889.394	15.321	EG LP2
2130043	7975880.973	503890.319	15.617	EG LP2
2130044	7975872.965	503891.823	16.026	EG LP2
2130045	7975862.937	503891.607	16.516	EG LP2
2130046	7975852.19	503892.004	16.874	EG LP2
2130047	7975842.278	503892.799	17.386	EG LP2
2130048	7975832.585	503894.78	17.641	EG LP2
2130049	7975819.824	503895.957	17.978	EG LP2
2130050	7975811.143	503894.579	18.252	EG LP2
2130051	7975801.829	503895.553	18.604	EG LP2
2130052	7975792.414	503895.658	18.88	EG LP2
2130053	7975784.149	503894.026	19.324	EG LP2
2130054	7975782.302	503903.011	19.616	EG LP2
2130055	7975790.531	503902.462	19.144	EG LP2
2130056	7975799.999	503903.417	18.716	EG LP2
2130057	7975808.971	503903.782	18.432	EG LP2
2130058	7975818.66	503904.36	18.208	EG LP2
2130059	7975828.361	503904.946	17.899	EG LP2
2130060	7975837.496	503905.831	17.666	EG LP2
2130061	7975847.814	503905.665	17.397	EG LP2
2130062	7975857.07	503905.593	16.966	EG LP2
2130063	7975867.24	503905.739	16.507	EG LP2
2130064	7975877.984	503906.51	16.056	EG LP2
2130065	7975886.199	503905.829	15.617	EG LP2
2130066	7975888.975	503916.461	15.467	EG LP2
2130067	7975882.677	503917.277	15.762	EG LP2
2130068	7975874.509	503917.213	16.299	EG LP2
2130069	7975864.68	503917.379	16.724	EG LP2

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2130070	7975854.277	503917.447	17.237	EG LP2
2130071	7975842.852	503917.836	17.747	EG LP2
2130072	7975833.337	503918.261	18.083	EG LP2
2130073	7975825.054	503918.569	18.314	EG LP2
2130074	7975817.044	503918.601	18.549	EG LP2
2130075	7975806.174	503916.49	18.83	EG LP2
2130076	7975797.417	503915.352	19.15	EG LP2
2130077	7975787.281	503916.684	19.61	EG LP2
2130078	7975778.897	503915.299	19.983	EG LP2
2130079	7975781.62	503927.152	20.086	EG LP2
2130080	7975789.754	503925.735	19.672	EG LP2
2130081	7975807.041	503928.9	19.042	EG LP2
2130082	7975816.859	503928.452	18.839	EG LP2
2130083	7975826.431	503928.696	18.46	EG LP2
2130084	7975835.96	503929.092	18.191	EG LP2
2130085	7975845.04	503929.263	17.797	EG LP2
2130086	7975855.316	503930.167	17.326	EG LP2
2130087	7975864.938	503929.777	16.828	EG LP2
2130088	7975874.099	503929.763	16.233	EG LP2
2130089	7975881.683	503929.708	15.814	EG LP2
2130090	7975888.217	503929.836	15.405	EG LP2
2130091	7975889.051	503940.397	15.468	EG LP2
2130092	7975879.956	503940.938	15.97	EG LP2
2130093	7975871.652	503940.729	16.482	EG LP2
2130094	7975862.665	503940.217	16.857	EG LP2
2130095	7975853.227	503939.652	17.367	EG LP2
2130096	7975844.055	503939.207	17.913	EG LP2
2130097	7975835.173	503939.564	18.331	EG LP2
2130098	7975825.225	503939.118	18.667	EG LP2
2130099	7975815.046	503937.875	19.073	EG LP2
2130100	7975804.695	503938.064	19.367	EG LP2
2130101	7975796.343	503939.606	19.807	EG LP2
2130102	7975787.18	503939.218	20.148	EG LP2
2130103	7975782.037	503939.379	20.359	EG LP2
2130104	7975785.956	503949.176	20.375	EG LP2
2130105	7975795.615	503948.835	19.995	EG LP2
2130106	7975806.147	503949.262	19.554	EG LP2
2130107	7975816.478	503949.13	19.17	EG LP2
2130108	7975827.438	503948.817	18.781	EG LP2
2130109	7975838.181	503949.181	18.246	EG LP2
2130110	7975847.801	503949.437	17.762	EG LP2
2130111	7975857.319	503949.996	17.375	EG LP2

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2130112	7975868.568	503950.022	16.669	EG LP2
2130113	7975876.931	503949.945	16.119	EG LP2
2130114	7975886.353	503950.218	15.642	EG LP2
2130115	7975886.926	503961.326	15.809	EG LP2
2130116	7975878.361	503961.244	16.344	EG LP2
2130117	7975867.819	503961.48	16.884	EG LP2
2130118	7975857.766	503962.131	17.344	EG LP2
2130119	7975851.005	503961.177	17.606	EG LP2
2130120	7975842.189	503960.689	18.119	EG LP2
2130121	7975832.763	503961.152	18.588	EG LP2
2130122	7975822.515	503961.682	18.991	EG LP2
2130123	7975812.381	503961.914	19.541	EG LP2
2130124	7975802.401	503961.906	20.011	EG LP2
2130125	7975790.813	503961.654	20.376	EG LP2
2130126	7975795.378	503972.619	20.392	EG LP2
2130127	7975804.444	503972.098	20.091	EG LP2
2130128	7975813.828	503971.457	19.694	EG LP2
2130129	7975825.37	503971.372	19.122	EG LP2
2130130	7975839.486	503972.004	18.392	EG LP2
2130131	7975856.864	503971.655	17.612	EG LP2
2130132	7975865.656	503972.442	17.1	EG LP2
2130133	7975874.929	503972.65	16.557	EG LP2
2130134	7975883.49	503972.315	16.072	EG LP2
2130135	7975884.466	503982.363	16.176	EG LP2
2130136	7975875.476	503982.482	16.626	EG LP2
2130137	7975865.388	503982.804	17.131	EG LP2
2130138	7975854.417	503983.34	17.718	EG LP2
2130139	7975843.303	503982.582	18.244	EG LP2
2130140	7975833.075	503982.051	18.73	EG LP2
2130141	7975823.692	503982.04	19.188	EG LP2
2130142	7975812.661	503982.564	19.87	EG LP2
2130143	7975803.713	503983.297	20.191	EG LP2
2130144	7975799.692	503984.055	20.393	EG LP2
2130145	7975803.489	503993.68	20.291	EG LP2
2130146	7975812.809	503991.817	19.807	EG LP2
2130147	7975819.14	503991.161	19.491	EG LP2
2130148	7975829.568	503990.565	19.005	EG LP2
2130149	7975841.281	503991.149	18.415	EG LP2
2130150	7975852.826	503992.112	17.791	EG LP2
2130151	7975863.956	503992.845	17.327	EG LP2
2130152	7975873.848	503992.647	16.843	EG LP2
2130153	7975885.481	503992.273	16.299	EG LP2

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2130154	7975885.209	504003.038	16.481	EG LP2
2130155	7975874.49	504003.594	16.915	EG LP2
2130156	7975863.182	504003.842	17.374	EG LP2
2130157	7975854.406	504004.041	17.886	EG LP2
2130158	7975845.821	504002.879	18.353	EG LP2
2130159	7975838.402	504002.097	18.573	EG LP2
2130160	7975829.434	504003.098	19.09	EG LP2
2130161	7975819.475	504002.822	19.492	EG LP2
2130162	7975807.599	504004.056	20.031	EG LP2
2130163	7975813.026	504014.577	19.929	EG LP2
2130164	7975822.997	504013.999	19.328	EG LP2
2130165	7975831.693	504013.422	18.895	EG LP2
2130166	7975841.432	504013.841	18.404	EG LP2
2130167	7975849.895	504013.734	17.859	EG LP2
2130168	7975858.65	504013.17	17.603	EG LP2
2130169	7975867.247	504012.899	17.196	EG LP2
2130170	7975874.881	504012.755	16.737	EG LP2
2130171	7975884.645	504012.09	16.448	EG LP2
2130172	7975886.71	504022.853	16.339	EG LP2
2130173	7975875.856	504023.953	16.827	EG LP2
2130174	7975866.311	504025.614	17.231	EG LP2
2130175	7975763.454	503869.601	19.548	EG LP2
2130176	7975830.739	504025.61	19.049	EG LP2
2130177	7975840.367	504023.785	18.594	EG LP2
2130178	7975848.925	504022.787	18.08	EG LP2
2130179	7975858.493	504022.649	17.718	EG LP2
2130180	7975867.436	504022.058	17.139	EG LP2
2130181	7975886.314	504023.632	16.254	EG LP2
2130182	7975886.716	504034.202	16.42	EG LP2
2130183	7975876.94	504034.642	16.78	EG LP2
2130184	7975868.043	504034.362	17.302	EG LP2
2130185	7975858.808	504033.783	17.645	EG LP2
2130186	7975849.059	504033.271	18.158	EG LP2
2130187	7975838.09	504032.679	18.727	EG LP2
2130188	7975828.679	504033.635	19.205	EG LP2
2130189	7975830.568	504045.55	19.08	EG LP2
2130190	7975839.825	504044.469	18.575	EG LP2
2130191	7975850.013	504045.39	18.138	EG LP2
2130192	7975858.288	504046.751	17.627	EG LP2
2130193	7975866.891	504047.116	17.223	EG LP2
2130194	7975876.949	504047.086	16.831	EG LP2
2130195	7975886.563	504046.571	16.419	EG LP2

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2130196	7975773.8	503882.018	19.403	EG LP2
2130197	7975783.584	503881.249	19.263	EG LP2
2130198	7975791.33	503885.295	19.055	EG LP2
2130199	7975800.269	503885.529	18.637	EG LP2
2130200	7975810.303	503883.631	18.244	EG LP2
2130201	7975820.291	503885.039	17.913	EG LP2
2130202	7975832.818	503887.329	17.556	EG LP2

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Original Ground (OG)

Laydown LP2 Original Ground (OG) Survey Data

Point Number	Northing	Easting	Elevation	Description
3130001	7975823.769	503708.053	11.678	EG LP2
3130002	7975837.496	503706.846	11.552	EG LP2
3130003	7975849.525	503705.467	11.403	EG LP2
3130004	7975860.317	503704.837	11.381	EG LP2
3130005	7975877.406	503704.185	11.556	EG LP2
3130006	7975887.328	503704.938	11.404	EG LP2
3130007	7975889.605	503705.145	11.054	EG LP2
3130008	7975891.65	503705.185	11.077	EG LP2
3130009	7975892.553	503705.308	11.181	EG LP2
3130010	7975904.807	503706.148	11.088	EG LP2
3130011	7975911.046	503706.08	11.25	EG LP2
3130012	7975914.407	503705.685	10.645	EG LP2
3130013	7975919.107	503705.271	10.905	EG LP2
3130014	7975925.279	503706.402	10.964	EG LP2
3130015	7975941.338	503714.302	10.849	EG LP2
3130016	7975926.577	503714.766	11.088	EG LP2
3130017	7975918.415	503714.243	11.12	EG LP2
3130018	7975908.621	503715.249	11.486	EG LP2
3130019	7975898.187	503716.554	11.808	EG LP2
3130020	7975887.018	503718.462	11.675	EG LP2
3130021	7975872.932	503719.297	11.841	EG LP2
3130022	7975858.619	503721.322	11.981	EG LP2
3130023	7975844.586	503724.566	12.23	EG LP2
3130024	7975833.296	503727.545	12.386	EG LP2
3130025	7975838.096	503737.891	12.852	EG LP2
3130026	7975852.065	503737.383	12.549	EG LP2
3130027	7975865.27	503737.137	12.435	EG LP2
3130028	7975877.792	503735.71	12.206	EG LP2
3130029	7975890.078	503734.352	12.033	EG LP2
3130030	7975899.067	503733.515	11.774	EG LP2
3130031	7975908.911	503731.785	11.565	EG LP2
3130032	7975914.772	503732.096	11.564	EG LP2
3130033	7975918.349	503731.938	10.895	EG LP2
3130034	7975921.354	503731.638	10.74	EG LP2
3130035	7975925.578	503731.522	11.05	EG LP2
3130036	7975936.092	503730.761	10.882	EG LP2
3130037	7975947.496	503731.04	10.874	EG LP2
3130038	7975945.888	503745.24	10.809	EG LP2
3130039	7975934.745	503744.482	10.778	EG LP2

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3130040	7975925.392	503743.699	11.231	EG LP2
3130041	7975924.321	503743.423	10.661	EG LP2
3130042	7975921.063	503743.734	10.686	EG LP2
3130043	7975919.08	503743.844	11.271	EG LP2
3130044	7975914.753	503743.547	11.797	EG LP2
3130045	7975900.6	503744.231	11.981	EG LP2
3130046	7975888.314	503745.18	12.34	EG LP2
3130047	7975877.415	503745.987	12.561	EG LP2
3130048	7975866.294	503745.983	12.745	EG LP2
3130049	7975853.499	503745.865	12.811	EG LP2
3130050	7975839.359	503747.211	13.169	EG LP2
3130051	7975838.673	503758.191	14.008	EG LP2
3130052	7975844.56	503758.582	13.294	EG LP2
3130053	7975860.849	503760.072	13.259	EG LP2
3130054	7975877.123	503761.504	12.943	EG LP2
3130055	7975887.969	503760.363	12.783	EG LP2
3130056	7975904.02	503759.047	12.283	EG LP2
3130057	7975913.65	503758.941	12.056	EG LP2
3130058	7975921.291	503758.622	11.764	EG LP2
3130059	7975923.933	503758.854	10.957	EG LP2
3130060	7975927.767	503758.84	11.064	EG LP2
3130061	7975929.289	503758.817	11.488	EG LP2
3130062	7975937.8	503758.25	11	EG LP2
3130063	7975947.461	503759.411	10.812	EG LP2
3130064	7975946.73	503774.864	11.182	EG LP2
3130065	7975936.718	503774.125	11.649	EG LP2
3130066	7975931.783	503773.759	11.539	EG LP2
3130067	7975930.617	503774.158	11.103	EG LP2
3130068	7975927.098	503774.03	11.157	EG LP2
3130069	7975925.251	503774.569	11.933	EG LP2
3130070	7975913.381	503774.507	12.331	EG LP2
3130071	7975898.453	503774.124	12.833	EG LP2
3130072	7975881.482	503772.764	13.267	EG LP2
3130073	7975866.43	503771.518	13.515	EG LP2
3130074	7975854.099	503770.208	13.739	EG LP2
3130075	7975839.159	503768.686	13.889	EG LP2
3130076	7975836.743	503768.56	14.172	EG LP2
3130077	7975834.597	503783.707	14.637	EG LP2
3130078	7975849.401	503783.602	14.244	EG LP2
3130079	7975865.311	503781.498	13.831	EG LP2
3130080	7975881.094	503782.317	13.52	EG LP2
3130081	7975894.557	503785.149	13.333	EG LP2

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3130082	7975909.107	503786.888	12.864	EG LP2
3130083	7975915.925	503788.154	12.57	EG LP2
3130084	7975926.633	503788.59	12.394	EG LP2
3130085	7975930.125	503787.75	11.275	EG LP2
3130086	7975933.506	503787.165	11.32	EG LP2
3130087	7975936.298	503800.866	11.519	EG LP2
3130088	7975932.994	503800.866	11.436	EG LP2
3130089	7975935.2	503810.169	11.683	EG LP2
3130090	7975938.941	503808.842	12.024	EG LP2
3130091	7975939.191	503803.841	12.256	EG LP2
3130092	7975936.194	503793.56	11.87	EG LP2
3130093	7975940.137	503792.423	12.006	EG LP2
3130094	7975944.739	503792.314	11.64	EG LP2
3130095	7975945.267	503802.18	12.146	EG LP2
3130096	7975928.22	503801.342	12.568	EG LP2
3130097	7975914.088	503798.792	12.913	EG LP2
3130098	7975897.271	503797.887	13.531	EG LP2
3130099	7975884.538	503796.331	13.837	EG LP2
3130100	7975872.461	503796.81	14.166	EG LP2
3130101	7975859.047	503796.322	14.495	EG LP2
3130102	7975844.918	503796.364	14.906	EG LP2
3130103	7975831.622	503795.391	15.143	EG LP2
3130104	7975829.193	503808.274	15.924	EG LP2
3130105	7975840.039	503809.534	15.667	EG LP2
3130106	7975847.529	503811.264	15.54	EG LP2
3130107	7975862.199	503812.151	15.004	EG LP2
3130108	7975873.042	503812.168	14.621	EG LP2
3130109	7975884.897	503811.381	14.292	EG LP2
3130110	7975898.839	503810.528	13.788	EG LP2
3130111	7975907.115	503810.319	13.431	EG LP2
3130112	7975922.698	503809.475	12.764	EG LP2
3130113	7975933.633	503823.088	12.926	EG LP2
3130114	7975924.117	503824.006	13.066	EG LP2
3130115	7975910.273	503825.195	13.682	EG LP2
3130116	7975893.499	503825.105	14.227	EG LP2
3130117	7975882.346	503825.163	14.672	EG LP2
3130118	7975867.852	503825.759	15.203	EG LP2
3130119	7975855.963	503825.193	15.577	EG LP2
3130120	7975850.142	503824.886	15.995	EG LP2
3130121	7975837.706	503828.86	16.47	EG LP2
3130122	7975826.69	503825.302	16.775	EG LP2
3130123	7975820.967	503838.048	17.455	EG LP2

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3130124	7975829.341	503838.771	17.087	EG LP2
3130125	7975842.946	503840.225	16.58	EG LP2
3130126	7975853.648	503840.004	16.205	EG LP2
3130127	7975864.816	503839.392	15.699	EG LP2
3130128	7975879.506	503838.759	15.029	EG LP2
3130129	7975891.553	503838.074	14.563	EG LP2
3130130	7975904.04	503837.869	14.104	EG LP2
3130131	7975916.52	503837.199	13.53	EG LP2
3130132	7975927.172	503837.14	13.264	EG LP2
3130133	7975935.885	503837.469	13.182	EG LP2
3130134	7975935.063	503850.344	13.54	EG LP2
3130135	7975936.213	503858.283	13.321	EG LP2
3130136	7975926.477	503858.005	13.421	EG LP2
3130137	7975925.363	503850.714	13.382	EG LP2
3130138	7975912.266	503850.914	13.854	EG LP2
3130139	7975911.985	503857.782	13.937	EG LP2
3130140	7975901.975	503857.745	14.339	EG LP2
3130141	7975900.075	503846.13	14.252	EG LP2
3130142	7975886.058	503846	14.889	EG LP2
3130143	7975870.273	503846.653	15.563	EG LP2
3130144	7975859.747	503847.762	16.027	EG LP2
3130145	7975848.678	503849.237	16.542	EG LP2
3130146	7975832.795	503848.934	17.126	EG LP2
3130147	7975821.428	503848.056	17.609	EG LP2
3130148	7975815.403	503846.873	17.724	EG LP2
3130149	7975806.998	503857.833	18.247	EG LP2
3130150	7975807.034	503857.843	18.223	EG LP2
3130151	7975822.379	503855.808	17.761	EG LP2
3130152	7975831.332	503857.352	17.291	EG LP2
3130153	7975840.867	503857.594	16.991	EG LP2
3130154	7975858.011	503855.455	16.164	EG LP2
3130155	7975869.111	503856.344	15.86	EG LP2
3130156	7975885.649	503856.628	15.048	EG LP2
3130157	7975882.152	503873.229	15.467	EG LP2
3130158	7975866.881	503874.065	16.276	EG LP2
3130159	7975857.287	503875.342	16.663	EG LP2
3130160	7975845.519	503874.783	16.971	EG LP2
3130161	7975836.173	503875.3	17.323	EG LP2
3130162	7975826.964	503875.384	17.558	EG LP2
3130163	7975815.65	503875.253	18.069	EG LP2
3130164	7975801.904	503875.654	18.664	EG LP2
3130165	7975797.421	503875.816	18.726	EG LP2

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3130166	7975901.69	503667.265	11.084	EG LP2
3130167	7975928.548	503703.066	10.873	EG LP2
3130168	7975939.428	503702.641	10.911	EG LP2
3130169	7975944.711	503702.444	10.806	EG LP2
3130170	7975948.634	503702.09	10.607	EG LP2
3130171	7975946.245	503690.058	10.788	EG LP2
3130172	7975938.465	503690.978	10.948	EG LP2
3130173	7975926.405	503692.969	10.855	EG LP2
3130174	7975914.372	503693.598	10.852	EG LP2
3130175	7975912.554	503693.738	10.41	EG LP2
3130176	7975910.639	503694.256	10.429	EG LP2
3130177	7975908.326	503694.829	10.989	EG LP2
3130178	7975900.845	503696.53	10.854	EG LP2
3130179	7975892.62	503698.34	10.663	EG LP2
3130180	7975881.754	503699.456	11.29	EG LP2
3130181	7975868.991	503699.715	11.421	EG LP2
3130182	7975856.995	503701.012	11.407	EG LP2
3130183	7975841.583	503701.723	11.336	EG LP2
3130184	7975828.662	503703.174	11.452	EG LP2
3130185	7975820.532	503703.731	11.734	EG LP2
3130186	7975814.56	503695.341	11.684	EG LP2
3130187	7975822.205	503693.906	11.296	EG LP2
3130188	7975832.451	503692.915	10.907	EG LP2
3130189	7975843.193	503692.981	11.091	EG LP2
3130190	7975845.262	503692.843	11.025	EG LP2
3130191	7975846.248	503692.735	10.746	EG LP2
3130192	7975853.306	503693.255	10.76	EG LP2
3130193	7975855.789	503695.914	11.455	EG LP2
3130194	7975860.238	503691.579	10.752	EG LP2
3130195	7975861.042	503693.002	11.354	EG LP2
3130196	7975864.41	503691.506	11.072	EG LP2
3130197	7975864.826	503690.844	10.731	EG LP2
3130198	7975870.631	503690.797	10.782	EG LP2
3130199	7975870.438	503693.543	11.187	EG LP2
3130200	7975880.639	503690.866	10.878	EG LP2
3130201	7975893.809	503689.466	10.774	EG LP2
3130202	7975899.366	503688.913	10.773	EG LP2
3130203	7975902.728	503688.066	11.076	EG LP2
3130204	7975906.519	503687.196	10.926	EG LP2
3130205	7975909.353	503686.853	10.416	EG LP2
3130206	7975910.959	503686.636	10.374	EG LP2
3130207	7975913.244	503686.448	10.902	EG LP2

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Original Ground (OG)

3130208	7975924.825	503684.362	10.989	EG LP2
3130209	7975925.949	503684.048	10.786	EG LP2
3130210	7975927.104	503683.906	10.761	EG LP2
3130211	7975928.04	503683.717	10.924	EG LP2
3130212	7975939.496	503681.812	10.805	EG LP2
3130213	7975943.451	503682.021	10.746	EG LP2
3130214	7975949.478	503681.341	10.743	EG LP2
3130215	7975948.717	503672.573	10.722	EG LP2
3130216	7975948.667	503672.587	10.722	EG LP2
3130217	7975948.878	503666.63	10.762	EG LP2
3130218	7975945.526	503667.857	10.693	EG LP2
3130219	7975940.893	503670.27	10.737	EG LP2
3130220	7975931.312	503672.829	10.91	EG LP2
3130221	7975919.291	503675.587	10.873	EG LP2
3130222	7975911.841	503677.008	10.905	EG LP2
3130223	7975909.366	503677.383	10.356	EG LP2
3130224	7975906.87	503677.608	10.295	EG LP2
3130225	7975903.991	503678.006	10.947	EG LP2
3130226	7975892.374	503678.893	10.77	EG LP2
3130227	7975884.534	503678.806	10.748	EG LP2
3130228	7975874.191	503679.345	10.82	EG LP2
3130229	7975868.261	503679.205	10.967	EG LP2
3130230	7975867.876	503679.133	10.655	EG LP2
3130231	7975861.211	503679.044	10.454	EG LP2
3130232	7975854.964	503679.902	10.58	EG LP2
3130233	7975844.195	503681.26	10.565	EG LP2
3130234	7975837.916	503682.426	10.412	EG LP2
3130235	7975836.632	503683.121	10.675	EG LP2
3130236	7975825.929	503687.471	10.764	EG LP2
3130237	7975814.809	503690.427	11.394	EG LP2
3130238	7975810.444	503689.888	11.78	EG LP2
3130239	7975804.853	503683.512	11.829	EG LP2
3130240	7975799.69	503676.762	11.898	EG LP2
3130241	7975809.601	503674.987	11.285	EG LP2
3130242	7975811.132	503674.503	10.908	EG LP2
3130243	7975816.371	503673.35	10.728	EG LP2
3130244	7975824.592	503671.87	11.021	EG LP2
3130245	7975828.954	503671.243	10.457	EG LP2
3130246	7975831.063	503671.284	10.506	EG LP2
3130247	7975832.009	503670.811	10.889	EG LP2
3130248	7975839.895	503670.305	10.513	EG LP2
3130249	7975850.214	503669.72	10.463	EG LP2

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Original Ground (OG)

3130250	7975848.571	503672.335	10.891	EG LP2
3130251	7975846.473	503673.254	10.98	EG LP2
3130252	7975846.691	503674.964	10.929	EG LP2
3130253	7975848.159	503676.515	10.836	EG LP2
3130254	7975851.228	503676.134	10.968	EG LP2
3130255	7975850.352	503675.652	10.98	EG LP2
3130256	7975848.607	503674.531	11.028	EG LP2
3130257	7975850.088	503669.485	10.513	EG LP2
3130258	7975852.997	503666.856	10.451	EG LP2
3130259	7975859.18	503664.874	10.476	EG LP2
3130260	7975866.682	503664.286	10.451	EG LP2
3130261	7975874.303	503664.176	10.862	EG LP2
3130262	7975884.4	503663.807	10.745	EG LP2
3130263	7975891.682	503663.978	10.586	EG LP2
3130264	7975893.541	503664.164	11.06	EG LP2
3130265	7975901.384	503663.855	10.906	EG LP2
3130266	7975903.818	503663.174	10.397	EG LP2
3130267	7975905.708	503662.788	10.395	EG LP2
3130268	7975907.921	503662.142	10.966	EG LP2
3130269	7975922.958	503660.399	10.938	EG LP2
3130270	7975932.736	503660.047	10.892	EG LP2
3130271	7975938.649	503658.736	10.621	EG LP2
3130272	7975928.494	503648.168	10.779	EG LP2
3130273	7975912.456	503651.678	10.914	EG LP2
3130274	7975904.639	503652.803	10.846	EG LP2
3130275	7975902.738	503652.991	10.362	EG LP2
3130276	7975900.865	503653.524	10.47	EG LP2
3130277	7975898.801	503653.864	10.837	EG LP2
3130278	7975897.465	503653.894	11.063	EG LP2
3130279	7975887.605	503658.169	10.684	EG LP2
3130280	7975875.448	503655.589	10.814	EG LP2
3130281	7975874.856	503655.497	10.618	EG LP2
3130282	7975867.626	503654.506	10.388	EG LP2
3130283	7975858.665	503654.859	10.399	EG LP2
3130284	7975851.495	503656.259	10.396	EG LP2
3130285	7975843.271	503656.323	10.429	EG LP2
3130286	7975836.675	503656.076	10.515	EG LP2
3130287	7975829.457	503657.011	10.77	EG LP2
3130288	7975816.901	503658.885	10.643	EG LP2
3130289	7975808.52	503660.492	10.665	EG LP2
3130290	7975798.506	503663.258	10.864	EG LP2
3130291	7975790.914	503665.399	11.176	EG LP2

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Port Site Laydown Area LP2
Original Ground (OG)

3130292	7975797.183	503656.718	10.436	EG LP2
3130293	7975802.244	503655.324	10.434	EG LP2
3130294	7975800.244	503649.8	10.392	EG LP2
3130295	7975794.126	503643.114	10.322	EG LP2
3130296	7975788.99	503638.792	10.314	EG LP2
3130297	7975786.125	503640.798	10.44	EG LP2
3130298	7975789.276	503648.28	10.455	EG LP2
3130299	7975792.905	503653.283	10.441	EG LP2
3130300	7975841.977	503653.338	10.444	EG LP2
3130301	7975842.466	503645.961	10.455	EG LP2
3130302	7975848.843	503644.921	10.4	EG LP2
3130303	7975855.979	503643.637	10.449	EG LP2
3130304	7975853.516	503633.798	10.502	EG LP2
3130305	7975842.56	503636.763	10.379	EG LP2
3130306	7975838.581	503621.992	10.419	EG LP2
3130307	7975842.834	503619.871	10.543	EG LP2
3130308	7975850.921	503620.694	10.436	EG LP2
3130309	7975847.349	503611.68	10.414	EG LP2
3130310	7975839.462	503613.391	10.428	EG LP2
3130311	7975863.519	503633.671	10.511	EG LP2
3130312	7975871.888	503637.123	10.438	EG LP2
3130313	7975876.785	503639.47	10.368	EG LP2
3130314	7975874.152	503644.704	10.359	EG LP2

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Port Site Laydown Area LP2
Original Ground (OG)

Laydown LP2 Original Ground (OG) Survey Data

Point Number	Northing	Easting	Elevation	Description
2132001	7975869.822	503588.736	10.359	EG LP2
2132002	7975868.445	503591.558	10.396	EG LP2
2132003	7975866.043	503594	10.434	EG LP2
2132004	7975864.227	503595.698	10.337	EG LP2
2132005	7975863.497	503596.09	10.33	EG LP2
2132006	7975862.99	503595.551	10.388	EG LP2
2132007	7975856.045	503597.787	10.565	EG LP2
2132008	7975855.172	503598.026	10.625	EG LP2
2132009	7975846.483	503599.892	10.752	EG LP2
2132010	7975838.692	503599.597	10.855	EG LP2
2132011	7975828.908	503601.564	10.778	EG LP2
2132012	7975819.237	503602.172	10.951	EG LP2
2132013	7975812.798	503602.913	10.799	EG LP2
2132014	7975812.739	503602.012	11.212	EG LP2
2132015	7975803.078	503603.328	11.012	EG LP2
2132016	7975803.001	503604.34	10.656	EG LP2
2132017	7975796.225	503604.187	11.255	EG LP2
2132018	7975796.182	503604.956	10.882	EG LP2
2132019	7975786.032	503605.543	11.276	EG LP2
2132020	7975785.971	503606.581	10.872	EG LP2
2132021	7975776.627	503606.764	11.25	EG LP2
2132022	7975776.598	503607.964	10.829	EG LP2
2132023	7975778.035	503616.143	10.683	EG LP2
2132024	7975787.068	503616.107	10.803	EG LP2
2132025	7975794.885	503615.503	10.717	EG LP2
2132026	7975803.208	503615.284	10.864	EG LP2
2132027	7975810.677	503614.829	10.836	EG LP2
2132028	7975816.582	503613.758	10.854	EG LP2
2132029	7975823.767	503612.704	10.87	EG LP2
2132030	7975831.754	503611.833	10.641	EG LP2
2132031	7975840.094	503611.168	10.468	EG LP2
2132032	7975849.067	503609.224	10.481	EG LP2
2132033	7975857.598	503607.147	10.648	EG LP2
2132034	7975865.94	503604.179	10.521	EG LP2
2132035	7975867.736	503603.448	10.247	EG LP2
2132036	7975871.491	503601.627	10.22	EG LP2
2132037	7975872.334	503600.992	10.436	EG LP2
2132038	7975877.771	503597.039	10.339	EG LP2
2132039	7975882.435	503602.312	10.282	EG LP2

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Original Ground (OG)

2132040	7975887.865	503607.615	10.451	EG LP2
2132041	7975893.423	503613.629	10.491	EG LP2
2132042	7975899.634	503619.802	10.694	EG LP2
2132043	7975892.101	503624.928	10.766	EG LP2
2132044	7975888.564	503620.647	10.804	EG LP2
2132045	7975892.134	503620.086	10.941	EG LP2
2132046	7975889.386	503616.294	10.568	EG LP2
2132047	7975886.063	503617.732	10.575	EG LP2
2132048	7975881.36	503611.439	10.434	EG LP2
2132049	7975876.377	503605.661	10.453	EG LP2
2132050	7975868.063	503589.731	10.887	EG LP2
2132051	7975863.601	503592.64	10.985	EG LP2
2132052	7975854.397	503596.654	11.141	EG LP2
2132053	7975844.469	503598.471	11.163	EG LP2
2132054	7975833.364	503599.803	11.164	EG LP2
2132055	7975874.199	503611.003	10.181	EG LP2
2132056	7975873.126	503611.529	10.445	EG LP2
2132057	7975865.369	503614.123	10.77	EG LP2
2132058	7975863.354	503614.197	10.762	EG LP2
2132059	7975862.615	503614.303	10.691	EG LP2
2132060	7975862.003	503614.619	10.973	EG LP2
2132061	7975853.369	503616.535	10.536	EG LP2
2132062	7975849.469	503617.116	10.45	EG LP2
2132063	7975847.061	503617.073	10.496	EG LP2
2132064	7975843.028	503617.328	10.539	EG LP2
2132065	7975840.258	503617.835	10.472	EG LP2
2132066	7975835.818	503620.171	10.474	EG LP2
2132067	7975829.228	503621.543	10.73	EG LP2
2132068	7975820.589	503622.473	10.954	EG LP2
2132069	7975811.721	503623.595	10.967	EG LP2
2132070	7975804.361	503624.225	10.838	EG LP2
2132071	7975803.038	503624.258	10.641	EG LP2
2132072	7975795.181	503624.706	10.792	EG LP2
2132073	7975787.027	503624.297	10.774	EG LP2
2132074	7975778.709	503624.458	10.725	EG LP2
2132075	7975778.152	503635.11	10.725	EG LP2
2132076	7975785.669	503634.717	10.68	EG LP2
2132077	7975794.467	503634.457	10.672	EG LP2
2132078	7975802.858	503633.978	10.696	EG LP2
2132079	7975811.702	503633.41	10.713	EG LP2
2132080	7975821.591	503633.034	10.841	EG LP2
2132081	7975830.911	503632.536	10.87	EG LP2

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Original Ground (OG)

2132082	7975836.201	503631.98	10.517	EG LP2
2132083	7975837.981	503631.819	10.417	EG LP2
2132084	7975834.885	503641.987	10.453	EG LP2
2132085	7975832.377	503642.112	10.792	EG LP2
2132086	7975828.778	503642.509	10.804	EG LP2
2132087	7975827.61	503642.598	10.595	EG LP2
2132088	7975826.613	503642.724	10.613	EG LP2
2132089	7975826.154	503642.618	10.94	EG LP2
2132090	7975824.412	503642.946	10.843	EG LP2
2132091	7975823.674	503642.819	10.721	EG LP2
2132092	7975814.32	503644.593	10.508	EG LP2
2132093	7975807.019	503646.543	10.644	EG LP2
2132094	7975802.024	503647.822	10.502	EG LP2
2132095	7975801.563	503648.562	10.454	EG LP2
2132096	7975778.193	503643.838	11.085	EG LP2
2132097	7975780.485	503652.561	11.236	EG LP2
2132098	7975783.151	503651.204	11.024	EG LP2
2132099	7975785.962	503649.65	10.461	EG LP2
2132100	7975784.441	503643.732	10.358	EG LP2
2132101	7975783.77	503643.844	10.36	EG LP2
2132102	7975783.571	503643.945	10.703	EG LP2
2132103	7975780.538	503644.857	10.94	EG LP2
2132104	7975786.801	503659.806	11.067	EG LP2
2132105	7975791.183	503657.627	10.573	EG LP2
2132106	7975793.473	503656.379	10.476	EG LP2
2132107	7975790.475	503664.87	11.16	EG LP2
2132108	7975796.669	503663.116	10.833	EG LP2
2132109	7975804.834	503660.608	10.598	EG LP2
2132110	7975811.462	503657.224	10.592	EG LP2
2132111	7975817.682	503655.433	10.564	EG LP2
2132112	7975822.873	503654.658	10.736	EG LP2
2132113	7975827.018	503654.602	10.569	EG LP2
2132114	7975833.394	503654.961	10.829	EG LP2
2132115	7975839.348	503655.06	10.483	EG LP2
2132116	7975857.437	503619.388	10.765	EG LP2
2132117	7975857.14	503619.565	10.604	EG LP2
2132118	7975854.091	503621.21	10.482	EG LP2
2132119	7975852.203	503629.303	10.464	EG LP2
2132120	7975859.437	503627.879	10.571	EG LP2
2132121	7975859.805	503627.747	10.819	EG LP2
2132122	7975867.725	503623.495	10.698	EG LP2
2132123	7975878.097	503617.412	10.47	EG LP2

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Port Site Laydown Area LP2
Original Ground (OG)

2132124	7975885.433	503625.117	10.365	EG LP2
2132125	7975884.525	503626.043	10.741	EG LP2
2132126	7975876.341	503631.722	10.829	EG LP2
2132127	7975872.289	503634.311	10.785	EG LP2
2132128	7975871.741	503634.798	10.495	EG LP2
2132129	7975869.176	503638.489	10.544	EG LP2
2132130	7975868.746	503638.892	10.795	EG LP2
2132131	7975866.306	503640.111	10.814	EG LP2
2132132	7975866.152	503640.14	10.634	EG LP2
2132133	7975866.154	503642.583	10.811	EG LP2
2132134	7975868.604	503643.848	10.818	EG LP2
2132135	7975868.634	503644.075	10.5	EG LP2
2132136	7975870.683	503641.27	10.478	EG LP2
2132137	7975870.315	503641.261	10.795	EG LP2
2132138	7975871.018	503638.833	10.698	EG LP2
2132139	7975871.617	503638.67	10.525	EG LP2
2132140	7975870.066	503638.786	10.56	EG LP2
2132141	7975869.779	503638.957	10.732	EG LP2
2132142	7975897.144	503645.481	10.972	EG CREST
2132143	7975897.819	503642.997	10.971	EG CREST
2132144	7975899.602	503642.867	10.539	EG CREST
2132145	7975900.464	503643.151	10.825	EG CREST
2132146	7975901.965	503645.374	10.892	EG CREST
2132147	7975899.905	503646.219	10.389	EG TOE
2132148	7975898.88	503646.569	10.385	EG TOE
2132149	7975897.407	503647.162	11.022	EG CREST
2132150	7975900.028	503659.503	10.994	EG CREST
2132151	7975902.507	503658.821	10.425	EG TOE
2132152	7975904.738	503658.544	10.419	EG TOE
2132153	7975906.318	503658.208	10.759	EG CREST
2132154	7975909.763	503669.871	10.925	EG CREST
2132155	7975907.587	503670.007	10.41	EG TOE
2132156	7975905.366	503670.378	10.378	EG TOE
2132157	7975903.106	503670.834	10.94	EG CREST
2132158	7975905.081	503681.973	11.014	EG CREST
2132159	7975907.871	503681.946	10.402	EG TOE
2132160	7975910.464	503681.785	10.391	EG TOE
2132161	7975912.184	503681.706	10.831	EG CREST
2132162	7975914.163	503693.689	10.812	EG CREST
2132163	7975912.567	503693.887	10.403	EG TOE
2132164	7975910.401	503694.365	10.447	EG TOE
2132165	7975908.788	503694.854	10.888	EG CREST

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Original Ground (OG)

2132166	7975909.943	503700.031	11.032	EG CREST
2132167	7975910.68	503700.246	10.925	EG CREST
2132168	7975910.591	503699.645	10.656	EG TOE
2132169	7975911.288	503700.222	10.589	EG TOE
2132170	7975913.813	503699.938	10.605	EG TOE
2132171	7975914.371	503700.391	10.814	EG CREST
2132172	7975916.583	503710.753	11.022	EG CREST
2132173	7975915.981	503710.453	10.576	EG TOE
2132174	7975914.223	503710.736	10.618	EG TOE
2132175	7975913.433	503710.861	11.073	EG CREST
2132176	7975916.163	503722.674	11.146	EG CREST
2132177	7975916.909	503722.596	10.706	EG TOE
2132178	7975918.828	503722.491	10.706	EG TOE
2132179	7975919.501	503722.484	11.085	EG CREST
2132180	7975921.621	503730.688	10.886	EG CREST
2132181	7975923.948	503733.716	10.944	EG CREST
2132182	7975925.277	503740.041	11.047	EG CREST
2132183	7975926.694	503746.898	11.163	EG CREST
2132184	7975923.849	503747.55	10.336	EG TOE
2132185	7975923.461	503744.003	10.182	EG TOE
2132186	7975922.173	503741.904	10.336	EG TOE
2132187	7975922.313	503739.797	10.274	EG TOE
2132188	7975922.54	503738.355	10.221	EG TOE
2132189	7975921.32	503734.057	10.179	EG TOE
2132190	7975919.337	503733.072	10.297	EG TOE
2132191	7975919.614	503736.213	10.278	EG TOE
2132192	7975920.371	503739.789	10.226	EG TOE
2132193	7975921.922	503747.431	10.327	EG TOE
2132194	7975918.414	503748.444	11.623	EG CREST
2132195	7975917.248	503740.075	11.589	EG CREST
2132196	7975916.127	503734.187	11.492	EG CREST
2132197	7975919.854	503757.352	11.816	EG CREST
2132198	7975923.555	503756.701	10.757	EG TOE
2132199	7975925.693	503756.626	10.71	EG TOE
2132200	7975929.014	503756.528	11.372	EG CREST
2132201	7975931.478	503768.457	11.461	EG CREST
2132202	7975928.734	503768.73	10.911	EG TOE
2132203	7975925.551	503769.218	10.893	EG TOE
2132204	7975922.099	503769.56	12.006	EG CREST
2132205	7975924.851	503781.907	12.071	EG CREST
2132206	7975928.174	503781.514	10.976	EG TOE
2132207	7975931.843	503781.147	10.921	EG TOE

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2132208	7975934.415	503780.59	11.672	EG CREST
2132209	7975937.876	503796.243	12.005	EG CREST
2132210	7975935.357	503796.318	11.364	EG TOE
2132211	7975931.864	503796.553	11.369	EG TOE
2132212	7975928.111	503796.97	12.354	EG CREST
2132213	7975931.086	503808.18	12.476	EG CREST
2132214	7975934.767	503807.819	11.544	EG TOE
2132215	7975936.833	503807.922	11.612	EG TOE
2132216	7975939.444	503807.749	12.175	EG CREST
2132217	7975941.728	503819.51	12.331	EG CREST
2132218	7975939.264	503819.618	11.609	EG TOE
2132219	7975937.03	503819.928	11.532	EG TOE
2132220	7975933.911	503819.975	12.693	EG CREST
2132221	7975936.073	503832.686	12.706	EG CREST
2132222	7975939.609	503832.613	11.856	EG TOE
2132223	7975942.348	503832.63	11.815	EG TOE
2132224	7975943.817	503832.422	12.355	EG CREST
2132225	7975945.684	503844.989	12.28	EG CREST
2132226	7975944.34	503844.986	11.767	EG TOE
2132227	7975941.322	503844.896	11.94	EG TOE
2132228	7975937.326	503844.622	13.163	EG CREST
2132229	7975939.62	503857.873	13.078	EG CREST
2132230	7975944.303	503857.688	11.845	EG TOE
2132231	7975946.546	503857.615	11.842	EG TOE
2132232	7975947.608	503857.723	12.291	EG CREST
2132233	7975949.287	503865.879	12.363	EG CREST
2132234	7975947.909	503865.808	11.847	EG TOE
2132235	7975944.918	503865.612	12.002	EG TOE
2132236	7975941.342	503865.267	13.073	EG CREST

NUNA

NUNA EAST LTD

(Section 4)

Survey Data
Type 12
(ROQ)

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Port Site Laydown Area LP2
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Laydown LP2 Type 12 (ROQ) Survey Data

Point Number	Northing	Easting	Elevation	Description
60000	7975904.404	503626.041	12.366	12
60001	7975911.73	503637.135	11.999	12
60002	7975922.893	503649.752	12.037	12
60003	7975932.528	503662.547	12.005	12
60004	7975941.545	503673.851	12.037	12
60005	7975944.026	503687.303	12.067	12
60006	7975944.419	503700.209	12.133	12
60007	7975944.63	503714.844	12.197	12
60008	7975944.259	503732.996	12.177	12
60009	7975944.568	503748.232	12.095	12
60010	7975945.106	503761.579	12.025	12
60011	7975930.076	503758.622	12.082	12
60012	7975917.684	503760.235	12.467	12
60013	7975913.89	503771.307	13.009	12
60014	7975915.748	503785.057	12.939	12
60015	7975905.996	503790.522	13.263	12
60016	7975893.236	503790.379	13.598	12
60017	7975882.782	503790.627	13.875	12
60018	7975881.751	503782.274	13.663	12
60019	7975876.274	503769.498	13.443	12
60020	7975872.674	503762.56	13.38	12
60021	7975861.193	503759.853	13.365	12
60022	7975850.202	503758.846	13.439	12
60023	7975843.09	503758.325	13.508	12
60024	7975843.285	503750.67	13.447	12
60025	7975840.784	503734.823	13.031	12
60026	7975833.143	503719.625	12.613	12
60027	7975825.274	503704.022	12.357	12
60028	7975816.249	503689.082	12.239	12
60029	7975805.257	503676.867	12.276	12
60030	7975795.214	503661.237	12.197	12
60031	7975787.795	503650.707	12.26	12
60032	7975785.807	503643.112	12.2	12
60033	7975787.094	503627.974	12.237	12
60034	7975788.709	503616.643	12.191	12
60035	7975794.154	503609.606	12.114	12
60036	7975804.608	503606.337	12.132	12
60037	7975816.576	503604.371	12.099	12
60038	7975830.311	503602.576	12.006	12

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60039	7975844.546	503600.672	11.923	12
60040	7975856.289	503599.596	11.8	12
60041	7975869.008	503598.966	11.563	12
60042	7975877.134	503604.247	11.562	12
60043	7975889.054	503614.514	11.658	12
60044	7975897.456	503623.159	12.005	12
60045	7975869.156	503610.652	11.778	12
60046	7975852.04	503613.854	11.976	12
60047	7975834.787	503616.264	12.053	12
60048	7975825.165	503617.49	12.117	12
60049	7975803.282	503621.136	12.162	12
60050	7975795.53	503635.908	12.113	12
60051	7975810.379	503637.282	12.091	12
60052	7975829.332	503634.197	12.107	12
60053	7975849.328	503632.718	12.125	12
60054	7975870.956	503631.355	12.054	12
60055	7975888.143	503628.021	11.933	12
60056	7975900.894	503633.602	12.011	12
60057	7975889.573	503643.522	12.092	12
60058	7975872.537	503643.222	12.193	12
60059	7975856.173	503649.435	12.188	12
60060	7975833.725	503653.871	12.22	12
60061	7975819.306	503653.869	12.082	12
60062	7975805.973	503654.059	12.131	12
60063	7975812.721	503670.991	12.249	12
60064	7975829.769	503671.059	12.217	12
60065	7975850.901	503670.752	12.191	12
60066	7975876.145	503665.641	12.126	12
60067	7975894.358	503659.467	12.119	12
60068	7975909.567	503658.445	12.099	12
60069	7975926.447	503666.021	12.103	12
60070	7975915.713	503672.901	12.221	12
60071	7975897.402	503671.149	12.163	12
60072	7975879.563	503680.438	12.274	12
60073	7975862.165	503692.191	12.294	12
60074	7975843.634	503695.616	12.272	12
60075	7975840.018	503713.892	12.35	12
60076	7975860.556	503715.34	12.314	12
60077	7975883.212	503709.039	12.345	12
60078	7975903.566	503694.111	12.368	12
60079	7975923.181	503682.601	12.199	12
60080	7975936.276	503681.129	12.119	12

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60081	7975936.65	503698.902	12.121	12
60082	7975921.821	503700.915	12.234	12
60083	7975901.109	503707.011	12.461	12
60084	7975887.279	503720.245	12.457	12
60085	7975874.869	503730.226	12.756	12
60086	7975862.958	503735.19	12.966	12
60087	7975852.152	503736.752	13.044	12
60088	7975849.793	503748.509	13.336	12
60089	7975867.014	503750.849	13.178	12
60090	7975886.658	503746.279	12.906	12
60091	7975908.999	503733.078	12.489	12
60092	7975934.805	503718.762	12.284	12
60093	7975937.053	503735.117	12.242	12
60094	7975934.343	503749.157	12.143	12
60095	7975923.468	503749.297	12.2	12
60096	7975894.776	503748.087	12.827	12
60097	7975889.127	503762.096	13.098	12
60098	7975891.43	503779.067	13.474	12
60099	7975903.102	503783.845	13.232	12
60100	7975915.442	503777.027	13.082	12
60101	7975925.011	503774.45	13.109	12
60102	7975933.714	503775.727	13.03	12
60103	7975940.576	503770.28	13.033	12
60104	7975944.515	503768.058	13.032	12
60105	7975945.452	503777.891	13.022	12
60106	7975945.444	503785.438	12.914	12
60107	7975944.186	503794.003	12.974	12
60108	7975943.554	503798.359	13.088	12
60109	7975933.373	503801.524	12.994	12
60110	7975923	503804.475	12.94	12
60111	7975915.35	503800.879	13.036	12
60112	7975910.831	503794.698	13.181	12
60113	7975919.894	503789.915	12.913	12
60114	7975930.356	503789.22	12.98	12
60115	7975938.764	503786.485	12.965	12

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Laydown LP2 Type 12 (ROQ) Survey Data

Point Number	Northing	Easting	Elevation	Description
30262	7975944.112	503694.576	13.146	T12 CRSEST
30263	7975944.202	503705.91	13.185	FGCREST 10825
30264	7975944.378	503717.494	13.157	T12 CREST
30265	7975944.54	503728.716	13.115	T12 CREST
30266	7975944.664	503738.567	13.128	T12 CREST
30267	7975944.949	503754.054	13.077	T12 CREST
30268	7975945.081	503767.69	13.121	T12 CREST
30269	7975945.267	503778.763	13.051	T12 CREST
30270	7975945.332	503790.156	12.842	T12 CREST
30271	7975945.539	503797.332	12.92	T12 CREST
30272	7975940.524	503797.983	12.91	T12 CREST
30273	7975938.371	503786.966	12.946	T12 CREST
30274	7975937.896	503775.538	13.009	T12 CREST
30275	7975936.567	503762.32	12.989	T12 CREST
30276	7975936.406	503749.589	13.12	T12 SS
30277	7975936.479	503743.599	13.141	T12 SS
30278	7975935.696	503731.399	13.166	T12 SS
30279	7975934.723	503722.807	13.125	T12 SS
30280	7975934.832	503711.816	13.182	T12 SS
30281	7975932.832	503699.72	13.085	T12 SS
30282	7975925.707	503706.938	13.172	T12 SS
30283	7975925.09	503712.632	13.204	T12 SS
30284	7975926.576	503725.156	13.173	T12 SS
30285	7975926.559	503737.286	13.184	T12 SS
30286	7975926.672	503751.238	13.156	T12 SS
30287	7975926.625	503762.849	13.063	T12 SS
30288	7975926.95	503775.024	12.992	T12 SS
30289	7975926.466	503788.069	12.94	T12 SS
30290	7975926.944	503801.047	12.903	T12 SS
30291	7975926.983	503804.589	12.958	T12 SS
30292	7975917.281	503801.646	12.995	T12 SS
30293	7975917.515	503790.985	12.978	T12 SS
30294	7975916.951	503777.11	13.004	T12 SS
30295	7975917.143	503762.478	12.992	T12 SS
30296	7975916.395	503751.378	13.146	T12 SS
30297	7975916.33	503738.065	13.172	T12 SS
30298	7975915.284	503724.771	13.211	T12 SS
30299	7975914.171	503718.089	13.211	T12 SS
30300	7975906.27	503724.576	13.187	T12 SS

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30301	7975907.321	503737.293	13.226	T12 SS
30302	7975907.693	503749.62	13.142	T12 SS
30303	7975907.674	503761.812	13.037	T12 SS
30304	7975907.705	503773.743	13.043	T12 SS
30305	7975907.932	503785.186	13.086	T12 SS
30306	7975907.938	503794.741	13.12	T12 SS
30307	7975899.226	503790.45	13.361	T12 SS
30308	7975898.553	503786.457	13.38	T12 SS
30309	7975899.551	503779.002	13.266	T12 SS
30310	7975898.61	503766.55	13.167	T12 SS
30311	7975898.783	503752.625	13.078	T12 SS
30312	7975898.422	503741.925	13.141	T12 SS
30313	7975897.836	503731.153	13.156	T12 SS
30314	7975888.532	503736.507	13.23	T12 SS
30315	7975889.74	503749.368	13.168	T12 SS
30316	7975890.636	503761.54	13.157	T12 SS
30317	7975892.186	503781.498	13.379	T12 SS
30318	7975891.914	503790.303	13.552	T12 SS
30319	7975882.104	503788.892	13.781	T12 SS
30320	7975883.149	503777.303	13.516	T12 SS
30321	7975884.001	503765.575	13.22	T12 SS
30322	7975884.283	503754.408	13.12	T12 SS
30323	7975884.445	503742.427	13.114	T12 SS
30324	7975883.561	503738.676	13.153	T12 SS
30325	7975879.235	503742.121	13.147	T12 SS
30326	7975879.723	503750.57	13.15	T12 SS
30327	7975830.795	503716.501	13.199	T12 CREST
30328	7975825.874	503706.434	13.22	T12 CREST
30329	7975824.306	503702.319	13.19	T12 CREST
30330	7975816.463	503691.83	13.153	T12 CREST
30331	7975807.843	503680.544	13.253	T12 CREST
30332	7975799.99	503672.513	13.268	T12 CREST
30333	7975793.258	503661.969	13.282	T12 CREST
30334	7975787.099	503652.907	13.294	T12 CREST
30336	7975784.648	503649.69	13.212	T12 CREST
30337	7975784.663	503635.06	13.237	T12 CREST
30338	7975787.131	503622.641	13.371	T12 CREST
30339	7975789.596	503608.345	13.332	T12 CREST
30340	7975800.127	503606.985	13.361	T12 CREST
30341	7975812.84	503605.336	13.335	T12 CREST
30342	7975826.709	503603.864	13.397	T12 CREST
30343	7975838.706	503602.385	13.335	T12 CREST

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Port Site Laydown Area LP2
Type 12 (ROQ)

30344	7975848.623	503601.307	13.31	T12 CREST
30345	7975861.863	503599.247	13.269	T12 CREST
30347	7975873.269	503598.375	13.184	T12 CREST
30348	7975883.016	503608.256	13.267	T12 CREST
30349	7975890.666	503615.983	13.297	T12 CREST
30350	7975898.61	503622.511	13.33	T12 CREST
30351	7975900.989	503621.953	12.962	T12 CREST
30352	7975902.839	503621.021	12.806	T12 CREST
30353	7975907.083	503625.952	12.973	T12 CREST
30354	7975906.1	503628.946	13.321	T12 CREST
30355	7975915.177	503639.314	13.276	T12 CREST
30356	7975923.651	503648.729	13.159	T12 CREST
30357	7975929.608	503655.983	13.142	T12 CREST
30359	7975935.816	503665.515	13.183	T12 CREST
30360	7975938.697	503669.741	13.276	T12 CREST
30361	7975943.896	503669.617	13.193	T12 CREST
30362	7975944.34	503683.419	13.12	T12 CREST
30364	7975865.175	503757.301	13.225	T12
30365	7975861.574	503753.288	13.181	T12
30366	7975856.377	503742.963	13.121	T12
30367	7975852.013	503741.216	13.188	T12
30368	7975841.929	503740.881	13.249	T12
30369	7975841.082	503741.717	13.183	T12
30370	7975841.35	503751.15	13.532	T12
30371	7975841.311	503758.05	13.587	T12
30372	7975850.541	503756.437	13.342	T12
30373	7975840.257	503752.29	13.193	T12 TOE
30374	7975840.36	503742.289	12.858	T12 TOE
30375	7975838.425	503734.34	12.62	T12 TOE
30376	7975832.821	503723.761	12.14	T12 TOE
30377	7975828.595	503716.808	11.946	T12 TOE
30378	7975822.532	503706.38	11.756	T12 TOE
30379	7975817.112	503698.305	11.586	T12 TOE
30380	7975811.724	503691.094	11.654	T12 TOE
30381	7975806.036	503683.762	11.672	T12 TOE
30382	7975799.421	503675.788	11.696	T12 TOE
30383	7975793.743	503667.257	11.331	T12 TOE
30384	7975787.532	503660.766	10.985	T12 TOE
30385	7975783.045	503654.976	11.168	T12 TOE
30386	7975778.958	503649.785	11.26	T12 TOE
30387	7975780.988	503640.883	11.609	T12 TOE
30388	7975783.052	503627.061	11.485	T12 TOE

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30389	7975784.686	503613.901	11.329	T12 TOE
30390	7975785.794	503608.07	11.373	T12 TOE
30391	7975790.576	503604.219	11.219	T12 TOE
30392	7975803.639	503602.597	11.135	T12 TOE
30393	7975815.728	503601.179	11.102	T12 TOE
30394	7975827.543	503600.042	11.246	T12 TOE
30395	7975839.457	503598.719	11.287	T12 TOE
30396	7975853.015	503596.8	11.181	T12 TOE
30397	7975861.867	503594.412	11.017	T12 TOE
30398	7975868.546	503593.876	10.503	T12 TOE
30399	7975874.95	503593.741	10.405	T12 TOE
30400	7975881.667	503600.124	10.583	T12 TOE
30401	7975888.354	503606.968	10.551	T12 TOE
30402	7975896.482	503615.662	10.763	T12 TOE
30403	7975900.656	503619.437	11.022	T12 TOE
30404	7975909.278	503628.542	11.053	T12 TOE
30405	7975917.443	503636.045	11.138	T12 TOE
30406	7975922.021	503640.797	11.027	T12 TOE
30407	7975926.187	503647.302	11.085	T12 TOE
30408	7975931.38	503653.048	11.005	T12 TOE
30409	7975936.708	503661.387	11.152	T12 TOE
30410	7975937.664	503664.25	11.233	T12 TOE
30411	7975940.014	503666.32	11.275	T12 TOE
30412	7975947.055	503667.493	11.012	T12 TOE
30413	7975947.565	503675.946	11.155	T12 TOE
30414	7975947.578	503686.36	11.352	T12 TOE
30415	7975947.511	503697.935	11.329	T12 TOE
30416	7975948.498	503709.003	11.184	T12 TOE
30417	7975947.926	503717.829	11.326	T12 TOE
30418	7975947.687	503723.035	11.37	T12 TOE
30419	7975947.877	503734.025	11.337	T12 TOE
30420	7975947.717	503746.006	11.444	T12 TOE
30421	7975947.708	503754.41	11.576	T12 TOE
30422	7975948.805	503766.788	11.553	T12 TOE
30423	7975948.536	503776.013	11.671	T12 TOE
30424	7975948.533	503789.106	11.673	T12 TOE
30425	7975948.361	503797.739	11.65	T12 TOE
30426	7975943.562	503802.426	12.142	T12 TOE
30427	7975929.604	503804.801	12.602	T12 TOE
30428	7975920.637	503805.28	12.891	T12 TOE
30429	7975912.086	503799.581	13.004	T12 TOE

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Point Number	Northing	Easting	Elevation	Description
1000	7975852.792	503739.918	13.234	ROQ
1001	7975843.168	503717.476	13.225	ROQ
1002	7975838.094	503709.328	13.206	ROQ
1003	7975831.963	503700.89	13.196	ROQ
1004	7975828.197	503691.688	13.213	ROQ
1005	7975822.096	503683.188	13.224	ROQ
1006	7975815.211	503675.733	13.218	ROQ
1007	7975812.949	503666.546	13.237	ROQ
1008	7975804.111	503658.629	13.17	ROQ
1009	7975797.261	503650.902	13.175	ROQ
1010	7975795.056	503642.643	13.21	ROQ
1011	7975795.934	503633.529	13.232	ROQ
1012	7975795.921	503624.694	13.387	ROQ
1013	7975795.563	503615.482	13.35	ROQ
1014	7975805.237	503614.396	13.371	ROQ
1015	7975814.769	503613.187	13.39	ROQ
1016	7975825.254	503612.164	13.397	ROQ
1017	7975836.665	503610.902	13.397	ROQ
1018	7975847.029	503611.003	13.356	ROQ
1019	7975856.987	503609.479	13.303	ROQ
1020	7975866.901	503607.937	13.206	ROQ
1021	7975876.77	503614.719	13.207	ROQ
1022	7975885.592	503621.664	13.22	ROQ
1023	7975892.474	503627.927	13.281	ROQ
1024	7975900.015	503635.264	13.292	ROQ
1025	7975906.98	503643.097	13.295	ROQ
1026	7975913.604	503651.142	13.214	ROQ
1027	7975920.422	503658.559	13.216	ROQ
1028	7975926.769	503665.723	13.183	ROQ
1029	7975933.159	503672.563	13.279	ROQ
1030	7975937.176	503679.749	13.15	ROQ
1031	7975936.282	503690.546	13.079	ROQ
1032	7975926.734	503696.979	13.133	ROQ
1033	7975922.521	503687.629	13.199	ROQ
1034	7975920.399	503677.648	13.203	ROQ
1035	7975915.847	503667.958	13.179	ROQ
1036	7975909.251	503660.699	13.213	ROQ
1037	7975901.609	503654.063	13.263	ROQ
1038	7975894.549	503646.154	13.309	ROQ

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1039	7975887.643	503639.287	13.209	ROQ
1040	7975881.297	503631.826	13.271	ROQ
1041	7975873.911	503625.672	13.304	ROQ
1042	7975867.467	503618.236	13.299	ROQ
1043	7975857.744	503617.834	13.302	ROQ
1044	7975846.756	503620.272	13.394	ROQ
1045	7975852.463	503630.06	13.345	ROQ
1046	7975862.358	503630.509	13.271	ROQ
1047	7975872.148	503637.733	13.278	ROQ
1048	7975878.225	503646.471	13.277	ROQ
1049	7975884.131	503654.841	13.286	ROQ
1050	7975891.322	503662.485	13.217	ROQ
1051	7975899.801	503669.149	13.179	ROQ
1052	7975907.777	503675.25	13.211	ROQ
1053	7975913.657	503683.967	13.224	ROQ
1054	7975919.091	503693.704	13.222	ROQ
1055	7975914.396	503706.153	13.213	ROQ
1056	7975909.016	503696.196	13.333	ROQ
1057	7975902.736	503687.955	13.303	ROQ
1058	7975896.404	503680.656	13.275	ROQ
1059	7975889.69	503673.478	13.261	ROQ
1060	7975881.12	503668.086	13.177	ROQ
1061	7975872.761	503661.599	13.174	ROQ
1062	7975867.314	503654.48	13.242	ROQ
1063	7975861.905	503645.716	13.251	ROQ
1064	7975857.838	503638.771	13.326	ROQ
1065	7975848.302	503642.68	13.292	ROQ
1066	7975842.504	503634.345	13.353	ROQ
1067	7975839.248	503625.266	13.371	ROQ
1068	7975829.287	503625.836	13.413	ROQ
1069	7975830.556	503635.28	13.327	ROQ
1070	7975820.758	503639.198	13.283	ROQ
1071	7975815.42	503630.488	13.378	ROQ
1072	7975814.505	503620.904	13.345	ROQ
1073	7975804.236	503622.066	13.372	ROQ
1074	7975804.335	503632.044	13.285	ROQ
1075	7975801.164	503641.23	13.174	ROQ
1076	7975811.239	503642.587	13.236	ROQ
1077	7975808.565	503653.075	13.147	ROQ
1078	7975813.883	503660.607	13.127	ROQ
1079	7975822.566	503661.831	13.124	ROQ
1080	7975823.379	503651.2	13.158	ROQ

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1081	7975831.1	503646.323	13.178	ROQ
1082	7975839.228	503641.852	13.265	ROQ
1083	7975844.957	503650.409	13.241	ROQ
1084	7975836.504	503657.995	13.108	ROQ
1085	7975827.168	503672.91	13.211	ROQ
1086	7975835.748	503666.807	13.187	ROQ
1087	7975846.227	503664.181	13.303	ROQ
1088	7975854.609	503659.686	13.27	ROQ
1089	7975859.6	503651.366	13.206	ROQ
1090	7975861.676	503661.444	13.243	ROQ
1091	7975855.325	503670.644	13.217	ROQ
1092	7975848.014	503676.136	13.264	ROQ
1093	7975838.822	503680.904	13.224	ROQ
1094	7975830.428	503683.527	13.256	ROQ
1095	7975835.869	503692.994	13.209	ROQ
1096	7975845.226	503692.177	13.142	ROQ
1097	7975854.272	503689.358	13.218	ROQ
1098	7975861.359	503683.663	13.203	ROQ
1099	7975868.981	503676.845	13.196	ROQ
1100	7975874.748	503671.006	13.172	ROQ
1101	7975881.427	503682.251	13.252	ROQ
1102	7975871.743	503687.86	13.174	ROQ
1103	7975862.999	503693.337	13.26	ROQ
1104	7975855.802	503699.883	13.138	ROQ
1105	7975847.63	503704.736	13.147	ROQ
1106	7975848.22	503715.008	13.289	ROQ
1107	7975858.201	503713.178	13.197	ROQ
1108	7975866.418	503708.734	13.263	ROQ
1109	7975872.505	503701.859	13.248	ROQ
1110	7975881.337	503698.382	13.212	ROQ
1111	7975888.602	503692.509	13.15	ROQ
1112	7975895.332	503700.45	13.171	ROQ
1113	7975899.384	503709.918	13.197	ROQ
1114	7975905.124	503718.434	13.244	ROQ
1115	7975897.689	503726.822	13.156	ROQ
1116	7975890.757	503719.291	13.199	ROQ
1117	7975886.865	503710.842	13.194	ROQ
1118	7975876.707	503711.772	13.113	ROQ
1119	7975882.461	503722.096	13.203	ROQ
1120	7975885.56	503732.024	13.174	ROQ
1121	7975878.507	503740.372	13.118	ROQ
1122	7975871.049	503732.606	13.107	ROQ

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1123	7975867.911	503724.212	13.251	ROQ
1124	7975857.991	503727.259	13.21	ROQ
1125	7975858.052	503737.677	13.132	ROQ
1126	7975860.635	503747.247	13.125	ROQ
1127	7975870.085	503750.863	13.192	ROQ

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Port Site Laydown Area LP2
Type 12 (ROQ)

Laydown LP2 Type 12 (ROQ) Survey Data

Point Number	Northing	Easting	Elevation	Description
48	7975813.532	503931.211	19.485	ROQ
49	7975813.677	503931.296	19.534	ROQ
50	7975828.612	503934.035	19.113	ROQ
51	7975844.329	503939.293	18.485	ROQ
52	7975857.47	503946.964	17.718	ROQ
53	7975866.163	503955.75	17.352	ROQ
54	7975876.515	503965.557	16.948	ROQ
55	7975873.566	503973.732	17.052	ROQ
56	7975856.71	503967.147	18.13	ROQ
57	7975843.471	503960.237	18.62	ROQ
58	7975821.814	503952.225	19.529	ROQ
59	7975813.115	503948.081	19.852	ROQ
60	7975800.232	503940.705	20.137	ROQ
61	7975790.572	503935.265	20.32	ROQ
62	7975793.67	503949.281	20.52	ROQ
63	7975808.368	503958.956	20.208	ROQ
64	7975817.567	503965.506	19.857	ROQ
65	7975828.679	503970.569	19.524	ROQ
66	7975839.555	503976.087	18.98	ROQ
67	7975850.386	503982.846	18.358	ROQ
68	7975861.872	503988.75	17.765	ROQ
69	7975872.443	503993.725	17.32	ROQ
70	7975872.265	504006.082	17.42	ROQ
71	7975858.416	504001.477	17.951	ROQ
72	7975845.166	503994.399	18.66	ROQ
73	7975834.287	503988.502	19.215	ROQ
74	7975821.963	503981.235	19.788	ROQ
75	7975808.408	503977.098	20.495	ROQ
76	7975812.072	503993.011	20.182	ROQ
77	7975826.075	503998.919	19.65	ROQ
78	7975837.069	504004.197	18.96	ROQ
79	7975848.865	504012.083	18.385	ROQ
80	7975859.792	504018.621	17.961	ROQ
81	7975871.237	504026.044	17.565	ROQ
82	7975869.832	504038.359	17.685	ROQ
83	7975858.602	504033.759	18.098	ROQ
84	7975847.901	504028.327	18.564	ROQ
85	7975836.3	504022.233	19.104	ROQ
86	7975824.827	504017.009	19.51	ROQ

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Type 12 (ROQ)

87	7975826.372	504028.489	19.585	ROQ
88	7975827.861	504035.998	19.23	ROQ
89	7975839.512	504033.77	18.955	ROQ
100	7975839.166	503745.363	13.036	TOE-ROQ
101	7975841.323	503745.647	13.623	CREST-ROQ
102	7975840.242	503754.905	13.938	CREST-ROQ
103	7975839.224	503754.892	13.718	TOE
104	7975837.148	503763.171	14.325	TOE
105	7975840.987	503735.386	13.506	ROQ CREST
106	7975839.028	503735.993	12.599	ROQ TOE
107	7975839.021	503736.004	12.593	ROQ TOE
108	7975839.301	503744.091	12.983	ROQ TOE
109	7975841.661	503745.091	13.651	ROQ CREST
110	7975840.101	503752.256	13.914	ROQ CREST
111	7975838.732	503752.074	13.837	ROQ TOE
112	7975838.599	503759.392	14.219	ROQ TOE
113	7975839.876	503759.809	14.139	ROQ CREST
114	7975837.926	503766.877	14.524	ROQ CREST
115	7975836.637	503767.134	14.419	ROQ TOE
116	7975834.662	503774.548	14.655	ROQ TOE
117	7975836.578	503774.916	14.774	ROQ CREST
118	7975833.5	503785.264	14.651	ROQ TOE
119	7975835.696	503785.556	15.067	ROQ CREST
120	7975835.676	503792.32	15.56	ROQ CREST
121	7975832.878	503793.282	14.99	ROQ TOE
122	7975832.505	503801.165	15.476	ROQ TOE
123	7975834.998	503801.397	15.961	ROQ CREST
124	7975833.727	503809.736	16.246	ROQ CREST
125	7975831.827	503809.277	15.876	ROQ TOE
126	7975830.321	503816.317	16.224	ROQ TOE
127	7975832.357	503817.143	16.671	ROQ CREST
128	7975829.805	503825.386	17.173	ROQ CREST
129	7975829.027	503824.767	16.553	ROQ TOE
130	7975824.204	503832.003	17.634	ROQ CREST
131	7975823.068	503831.453	17.054	ROQ TOE
132	7975816.967	503835.873	17.299	ROQ TOE
133	7975818.075	503836.865	17.944	ROQ CREST
134	7975814.861	503837.06	17.345	ROQ CREST
135	7975815.611	503837.474	17.504	ROQ TOE
136	7975816.719	503838.388	17.986	ROQ CREST
137	7975815.51	503844.916	17.705	ROQ TOE
138	7975816.348	503845.318	18.167	ROQ CREST

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139	7975813.019	503851.77	17.855	ROQ TOE
140	7975814.585	503852.98	18.38	ROQ CREST
141	7975811.528	503859.855	18.81	ROQ CREST
142	7975809.813	503858.983	18.121	ROQ TOE
143	7975805.153	503865.694	18.378	ROQ TOE
144	7975806.115	503866.534	18.787	ROQ CREST
145	7975800.513	503873.76	18.64	ROQ TOE
146	7975801.476	503873.871	19	ROQ CREST
147	7975795.403	503882.158	18.842	ROQ CREST
148	7975796.154	503882.775	19.254	ROQ CREST
149	7975795.2	503881.947	18.841	ROQ TOE
150	7975795.953	503883.41	19.337	ROQ CREST
151	7975791.521	503889.846	19.432	ROQ CREST
152	7975790.305	503890.002	18.817	ROQ TOE
153	7975788.377	503893.612	18.969	ROQ TOE
154	7975788.921	503894.145	19.351	ROQ CREST
155	7975785.301	503896.492	19.206	ROQ TOE
156	7975786.325	503897.012	19.654	ROQ CREST
157	7975785.427	503905.731	19.753	ROQ CREST
158	7975784.181	503905.799	19.428	ROQ TOE
159	7975785.905	503916.882	19.957	ROQ CREST
160	7975784.963	503917.202	19.7	ROQ TOE
161	7975786.548	503926.214	20.076	ROQ CREST
162	7975785.088	503926.667	19.782	ROQ TOE
163	7975784.462	503935.52	19.982	ROQ TOE
164	7975785.67	503935.214	20.372	ROQ CREST
165	7975786.411	503942.765	20.568	ROQ CREST
166	7975784.448	503944.005	20.266	ROQ TOE
167	7975789.106	503951.429	20.223	ROQ TOE
168	7975790.162	503951.185	20.453	ROQ CREST
169	7975793.21	503961.213	20.306	ROQ TOE
170	7975794.068	503961.506	20.552	ROQ CREST
171	7975796.694	503971.067	20.282	ROQ TOE
172	7975798.077	503970.749	20.622	ROQ CREST
173	7975801.244	503981.817	20.239	ROQ TOE
174	7975802.674	503981.69	20.655	ROQ CREST
175	7975805.691	503992.683	20.116	ROQ TOE
176	7975806.758	503992.117	20.418	ROQ CREST
177	7975810.49	504004.624	19.826	ROQ TOE
178	7975811.564	504004.801	20.06	ROQ CREST
179	7975815.181	504014.824	19.754	ROQ TOE
180	7975816.159	504014.12	19.997	ROQ CREST

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Port Site Laydown Area LP2
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181	7975821.052	504026.048	19.426	ROQ TOE
182	7975822.093	504025.715	19.693	ROQ CREST
183	7975820.332	504029.763	19.534	ROQ TOE
184	7975821.336	504029.879	19.785	ROQ CREST
185	7975825.105	504042.034	19.182	ROQ TOE
186	7975825.486	504040.837	19.596	ROQ CREST
187	7975839.324	504042.746	18.672	ROQ TOE
188	7975839.76	504041.594	18.985	ROQ CREST
189	7975849.473	504042.761	18.592	ROQ CREST
190	7975850.041	504043.943	18.076	ROQ TOE
191	7975859.981	504041.791	18.1	ROQ CREST
192	7975860.374	504043.47	17.617	ROQ TOE
193	7975869.514	504043.028	17.817	ROQ CREST
194	7975870.158	504044.45	17.103	ROQ TOE
195	7975877.055	504042.742	17.563	ROQ CREST
196	7975878.253	504043.21	16.787	ROQ TOE
197	7975879.168	504032.813	16.627	ROQ TOE
198	7975877.879	504032.41	17.174	ROQ TOE
199	7975879.722	504021.875	16.492	ROQ TOE
200	7975878.578	504022.175	17.066	ROQ CREST
201	7975879.547	504010.353	16.524	ROQ TOE
202	7975878.237	504010.401	17.168	ROQ CREST
203	7975878.935	504000.219	16.671	ROQ TOE
204	7975877.79	504000.839	17.18	ROQ CREST
205	7975879.533	503989.475	16.465	ROQ TOE
206	7975878.326	503989.744	16.994	ROQ CREST
207	7975879.735	503977.686	16.352	ROQ TOE
208	7975878.442	503977.588	16.78	ROQ CREST
209	7975880.059	503965.496	16.146	ROQ TOE
210	7975879.164	503965.487	16.722	ROQ CREST
211	7975880.247	503955.551	15.938	ROQ TOE
212	7975878.034	503955.071	16.809	ROQ CREST
213	7975880.958	503943.066	15.842	ROQ TOE
214	7975878.686	503943.076	16.506	ROQ CREST
215	7975880.287	503929.87	15.921	ROQ TOE
216	7975878.348	503929.866	16.474	ROQ CREST
217	7975879.94	503918.894	15.886	ROQ TOE
218	7975878.154	503919.178	16.468	ROQ CREST
219	7975877.873	503908.694	16.403	ROQ CREST
220	7975879.263	503908.668	15.856	ROQ TOE
221	7975879.228	503896.698	15.792	ROQ TOE
222	7975877.137	503896.874	16.617	ROQ CREST

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223	7975877.767	503884.095	15.707	ROQ TOE
224	7975875.51	503883.768	16.546	ROQ CREST
225	7975878.308	503872.482	15.73	ROQ TOE
226	7975876.022	503872.144	16.362	ROQ CREST
227	7975877.132	503863.683	15.989	ROQ CREST
228	7975879.743	503863.672	15.365	ROQ TOE
229	7975876.972	503855.157	15.812	ROQ CREST
230	7975878.576	503854.847	15.328	ROQ TOE
231	7975877.47	503846.545	15.466	ROQ CREST
232	7975878.657	503846.732	14.995	ROQ TOE
233	7975878.036	503841.779	15.697	ROQ CREST
234	7975879.145	503842.884	14.861	ROQ TOE
235	7975889.46	503841.249	14.5	ROQ TOE
236	7975889.708	503840.211	15.013	ROQ CREST
237	7975898.035	503841.652	14.733	ROQ CREST
238	7975898.251	503842.266	14.276	ROQ TOE
239	7975903.451	503845.05	14.174	ROQ TOE
240	7975903.649	503842.909	14.52	ROQ CREST
241	7975911.396	503842.638	13.821	ROQ TOE
242	7975911.476	503841.196	14.1	ROQ CREST
243	7975912.464	503848.534	13.919	ROQ TOE
244	7975914.033	503848.305	14.372	ROQ CREST
245	7975913.133	503853.198	13.89	ROQ TOE
246	7975914.467	503852.014	14.252	ROQ CREST
247	7975924.085	503853.99	13.401	ROQ TOE
248	7975924.65	503852.314	13.796	ROQ CREST
249	7975929.003	503853.055	13.769	ROQ CREST
250	7975929.403	503853.79	13.408	ROQ TOE
251	7975938.627	503853.823	13.173	ROQ TOE
252	7975938.813	503852.325	13.643	ROQ CREST
253	7975946.371	503851.327	13.191	ROQ TOE
254	7975944.071	503852.095	13.384	ROQ CREST
255	7975945.954	503851.277	13.221	ROQ CREST
256	7975947.282	503852.53	12.297	ROQ TOE
257	7975945.91	503854.569	11.718	ROQ TOE
258	7975911.989	503835.913	14.003	ROQ
259	7975911.46	503825.426	13.909	ROQ
260	7975911.415	503813.946	13.766	ROQ
261	7975910.252	503803.893	13.577	ROQ
262	7975904.248	503798.457	13.717	ROQ
263	7975895.286	503789.679	13.597	ROQ
264	7975887.041	503781.508	13.734	ROQ

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265	7975877.281	503774.37	13.751	ROQ
266	7975867.249	503767.065	13.915	ROQ
267	7975858.37	503759.738	13.678	ROQ
268	7975850.62	503750.11	13.458	ROQ
269	7975847.07	503746.357	13.617	ROQ
270	7975844.543	503759.114	14	ROQ
271	7975853.825	503767.355	14.091	ROQ
272	7975861.175	503775.079	14.186	ROQ
273	7975870.624	503783.717	14.243	ROQ
274	7975880.108	503792.657	14.336	ROQ
275	7975890.105	503801.598	14.191	ROQ
276	7975899.248	503809.878	14.036	ROQ
277	7975910.348	503818.336	13.912	ROQ
278	7975910.639	503833.994	14.002	ROQ
279	7975901.481	503827.342	14.183	ROQ
280	7975892.447	503818.982	14.381	ROQ
281	7975883.378	503810.104	14.602	ROQ
282	7975873.368	503804.14	14.762	ROQ
283	7975865.708	503793.11	14.722	ROQ
284	7975856.24	503784.564	14.629	ROQ
285	7975846.734	503777.28	14.753	ROQ
286	7975842.691	503772.971	14.652	ROQ
287	7975840.674	503786.431	15.143	ROQ
288	7975849.498	503796.18	15.282	ROQ
289	7975859.342	503804.157	15.273	ROQ
290	7975867.411	503814.094	15.252	ROQ
291	7975874.99	503823.903	15.278	ROQ
292	7975884.075	503832.269	15.254	ROQ
293	7975875.178	503839.022	15.574	ROQ
294	7975864.924	503829.171	15.806	ROQ
295	7975855.671	503820.344	15.84	ROQ
296	7975846.767	503810.707	15.856	ROQ
297	7975839.556	503806.006	15.916	ROQ
298	7975836.875	503820.119	16.651	ROQ
299	7975847.768	503830.166	16.513	ROQ
300	7975856.461	503838.646	16.358	ROQ
301	7975865.977	503845.214	16.045	ROQ
302	7975873.213	503850.699	15.817	ROQ
303	7975873.651	503863.831	16.22	ROQ
304	7975864.062	503855.58	16.398	ROQ
305	7975852.722	503847.957	16.697	ROQ
306	7975843.243	503840.501	16.988	ROQ

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307	7975834.349	503832.977	17.052	ROQ
308	7975824.57	503841.659	17.724	ROQ
309	7975833.519	503849.447	17.438	ROQ
310	7975842.474	503857.399	17.182	ROQ
311	7975853.222	503864.025	17.173	ROQ
312	7975864.163	503871.211	16.888	ROQ
313	7975871.136	503876.246	16.635	ROQ
314	7975872.266	503888.215	16.713	ROQ
315	7975860.572	503883.454	17.181	ROQ
316	7975850.892	503875.173	17.342	ROQ
317	7975840.095	503870.182	17.685	ROQ
318	7975829.765	503862.991	18.073	ROQ
319	7975820.591	503856.656	18.303	ROQ
320	7975813.811	503869.71	18.527	ROQ
321	7975824.597	503877.4	18.239	ROQ
322	7975836.212	503883.4	18.043	ROQ
323	7975847.635	503888.852	17.761	ROQ
324	7975857.525	503896.7	17.419	ROQ
325	7975867.718	503902.964	17.077	ROQ
326	7975872.569	503906.261	16.849	ROQ
327	7975874.752	503919.352	16.655	ROQ
328	7975864.647	503915.275	17.17	ROQ
329	7975854.229	503908.062	17.772	ROQ
330	7975844.726	503901.246	18.014	ROQ
331	7975835.114	503894.23	18.232	ROQ
332	7975823.911	503890.062	18.475	ROQ
333	7975814.718	503883.478	18.616	ROQ
334	7975807.187	503878.915	18.894	ROQ
335	7975800.185	503888.843	19.237	ROQ
336	7975809.777	503897.174	19.031	ROQ
337	7975820.393	503904.596	18.753	ROQ
338	7975831.535	503910.008	18.618	ROQ
339	7975842.463	503916.387	18.357	ROQ
340	7975852.068	503923.396	17.982	ROQ
341	7975861.735	503930.181	17.523	ROQ
342	7975870.968	503935.103	16.9	ROQ
343	7975874.539	503937.722	16.839	ROQ
344	7975874.995	503953.611	16.994	ROQ
345	7975863.835	503947.098	17.398	ROQ
346	7975853.758	503940.228	17.882	ROQ
347	7975843.844	503932.442	18.435	ROQ
348	7975834.261	503924.476	18.632	ROQ

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349	7975821.716	503919.794	18.956	ROQ
350	7975811.485	503913.169	19.083	ROQ
351	7975801.217	503907.55	19.283	ROQ
352	7975793.539	503899.94	19.498	ROQ
353	7975789.707	503917.056	19.766	ROQ
354	7975801.051	503924.434	19.755	ROQ

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Type 12 (ROQ)

Laydown LP2 Type 12 (ROQ) Survey Data

Point Number	Northing	Easting	Elevation	Description
1	7975911.315	503840.932	15.099	ROQ
2	7975912.406	503832.777	15.026	ROQ
3	7975913.247	503826.512	14.722	ROQ
4	7975913.739	503816.333	14.512	ROQ
5	7975914.916	503808.419	14.281	ROQ
6	7975915.925	503799.947	14.005	ROQ
7	7975916.713	503791.989	13.548	ROQ
8	7975911.751	503784.018	13.46	ROQ
9	7975910.179	503790.571	13.986	ROQ
10	7975909.007	503798.451	14.424	ROQ
11	7975908.265	503805.498	14.76	ROQ
12	7975907.482	503813.73	14.805	ROQ
13	7975906.002	503822.55	15.079	ROQ
14	7975903.7	503833.177	15.303	ROQ
15	7975902.192	503841.781	15.539	ROQ
16	7975896.821	503840.033	15.729	ROQ
17	7975896.328	503836.893	15.799	ROQ
18	7975894.487	503833.865	15.884	ROQ
19	7975894.925	503828.279	15.523	ROQ
20	7975895.642	503822.015	15.389	ROQ
21	7975895.979	503814.603	15.274	ROQ
22	7975896.6	503808.57	15.081	ROQ
23	7975896.468	503800.848	15.023	ROQ
24	7975897.16	503793.188	14.731	ROQ
25	7975897.525	503786.291	14.473	ROQ
26	7975897.869	503779.474	14.206	ROQ
27	7975898.603	503772.995	13.857	ROQ
28	7975899.057	503766.414	13.531	ROQ
29	7975892.955	503759.234	13.442	ROQ
30	7975890.937	503767.625	14.076	ROQ
31	7975890.83	503777.572	14.345	ROQ
32	7975891.263	503787.479	14.753	ROQ
33	7975891.338	503795.869	15.043	ROQ
34	7975891.245	503804.837	15.202	ROQ
35	7975891.46	503816.461	15.51	ROQ
36	7975890.542	503824.719	15.686	ROQ
37	7975889.865	503832.36	15.78	ROQ
38	7975880.267	503832.809	16.261	ROQ
39	7975879.495	503824.533	16.011	ROQ

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Port Site Laydown Area LP2
Type 12 (ROQ)

40	7975879.575	503814.527	15.725	ROQ
41	7975880.031	503804.786	15.601	ROQ
42	7975880.784	503795.439	15.392	ROQ
43	7975882.003	503786.602	15.117	ROQ
44	7975883.335	503777.383	14.738	ROQ
45	7975884.371	503769.646	14.365	ROQ
46	7975885.236	503762.087	13.963	ROQ
47	7975885.2	503754.547	13.66	ROQ
90	7975879.545	503746.861	13.559	ROQ
91	7975877.846	503754.202	14.123	ROQ
92	7975877.063	503763.869	14.46	ROQ
93	7975876.389	503774.467	14.728	ROQ
94	7975875.514	503783.314	15.151	ROQ
95	7975873.759	503793.301	15.574	ROQ
96	7975871.79	503803.56	15.873	ROQ
97	7975869.944	503811.959	15.946	ROQ
98	7975868.982	503820.062	16.189	ROQ
99	7975868.544	503828.426	16.619	ROQ
355	7975868.086	503835.855	17.076	ROQ
356	7975857.647	503835.817	17.299	ROQ
357	7975857.188	503825.834	17.155	ROQ
358	7975857.991	503815.817	16.705	ROQ
359	7975858.982	503805.699	16.352	ROQ
360	7975860.294	503795.849	15.949	ROQ
361	7975862.41	503785.026	15.518	ROQ
362	7975864.047	503776.099	15.234	ROQ
363	7975865.359	503766.423	14.676	ROQ
364	7975866.376	503756.823	14.61	ROQ
365	7975866.82	503748.599	14.407	ROQ
366	7975867.727	503740.961	13.8	ROQ
367	7975869.019	503733.224	13.366	ROQ
368	7975858.169	503728.622	13.481	ROQ
369	7975856.936	503737.648	14.148	ROQ
370	7975857.259	503751.531	14.645	ROQ
371	7975856.605	503761.077	14.838	ROQ
372	7975855.506	503770.764	15.199	ROQ
373	7975853.91	503780.296	15.631	ROQ
374	7975852.473	503790.052	15.896	ROQ
375	7975850.962	503798.922	16.266	ROQ
376	7975849.424	503808.709	16.527	ROQ
377	7975846.096	503820.507	17.212	ROQ
378	7975844.384	503829.819	17.7	ROQ

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379	7975842.511	503838.255	17.97	ROQ
380	7975830.025	503830.839	18.208	ROQ
381	7975833.582	503820.314	17.699	ROQ
382	7975835.091	503809.146	17.06	ROQ
383	7975835.405	503799.786	16.684	ROQ
384	7975834.909	503789.159	16.296	ROQ
385	7975836.572	503777.305	16.057	ROQ
386	7975838.238	503766.749	15.628	ROQ
387	7975841.248	503754.511	15.023	ROQ
388	7975842.216	503744.45	14.624	ROQ
389	7975841.735	503738.47	14.474	ROQ
390	7975839.718	503729.899	14.252	ROQ
391	7975838.622	503725.106	13.695	ROQ
392	7975836.39	503728.929	12.399	ROQ TOE
393	7975838.588	503736.254	12.714	ROQ TOE
394	7975840.409	503742.882	13.035	ROQ TOE
395	7975840.022	503747.546	13.81	ROQ TOE
396	7975838.679	503755.768	14.025	ROQ TOE
397	7975837.504	503764.79	14.664	ROQ TOE
398	7975835.719	503773.861	14.759	ROQ TOE
399	7975833.933	503781.927	14.746	ROQ TOE
400	7975833.563	503789.733	15.182	ROQ TOE
401	7975833.744	503796.242	15.707	ROQ TOE
402	7975834.069	503801.215	15.99	ROQ TOE
403	7975834.041	503806.681	16.154	ROQ TOE
404	7975833.409	503813.37	16.513	ROQ TOE
405	7975832.243	503822.175	16.979	ROQ TOE
406	7975829.539	503825.969	17.009	ROQ TOE
407	7975828.691	503830.119	17.313	ROQ TOE
408	7975833.194	503834.152	17.219	ROQ TOE
409	7975840.663	503838.833	17.137	ROQ TOE
410	7975847.226	503841.092	16.791	ROQ TOE
411	7975855.789	503840.043	16.433	ROQ TOE
412	7975858.234	503837.781	16.314	ROQ TOE
413	7975868.329	503838.346	15.841	ROQ TOE
414	7975874.148	503838.162	15.576	ROQ TOE
415	7975878.813	503836.079	15.419	ROQ TOE
416	7975882.768	503833.469	15.278	ROQ TOE
417	7975891.407	503834.566	14.846	ROQ TOE
418	7975895.747	503841.299	14.694	ROQ TOE
419	7975900.862	503843.543	14.334	ROQ TOE
420	7975901.979	503842.896	14.539	ROQ TOE

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421	7975907.797	503844.44	14.085	ROQ TOE
422	7975911.758	503843.792	13.835	ROQ TOE
423	7975912.275	503842.856	14.1	ROQ TOE
424	7975913.628	503841.23	14.167	ROQ TOE
425	7975917.002	503839.164	14.168	ROQ TOE
426	7975919.193	503828.944	13.926	ROQ TOE
427	7975919.837	503818.509	13.87	ROQ TOE
428	7975919.602	503806.563	13.646	ROQ TOE
429	7975920.729	503799.054	13.537	ROQ TOE

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Port Site Laydown Area LP2
Type 12 (ROQ)

Laydown LP2 Type 12 (ROQ) Survey Data

Point Number	Northing	Easting	Elevation	Description
500028	7975868.56	503884.596	17.247	T12 FINAL
500029	7975854.708	503884.294	17.698	T12 FINAL
500030	7975854.69	503884.284	17.693	T12 FINAL
500031	7975840.818	503882.728	18.197	T12 FINAL
500032	7975825.649	503879.551	18.627	T12 FINAL
500033	7975813.837	503876.947	19.028	T12 FINAL
500034	7975803.027	503869.871	19.251	CREST T12 FINAL
500035	7975811.606	503856.85	18.765	CREST T12 FINAL
500036	7975816.782	503847.002	18.379	CREST T12 FINAL
500037	7975826.555	503830.46	17.997	CREST T12 FINAL
500038	7975828.586	503826.693	17.861	CREST T12 FINAL
500039	7975834.196	503816.547	17.473	CREST T12 FINAL
500040	7975835.919	503800.104	16.523	CREST T12 FINAL
500041	7975834.945	503787.382	16.239	CREST T12 FINAL
500042	7975837.062	503772.984	15.893	CREST T12 FINAL
500043	7975840.073	503758.918	15.292	CREST T12 FINAL
500044	7975841.97	503745.778	14.623	CREST T12 FINAL
500045	7975840.592	503733.827	14.402	CREST T12 FINAL
500046	7975839.273	503729.005	14.04	CREST T12 FINAL
500047	7975849.221	503722.859	13.381	T12 FINAL
500048	7975849.506	503734.851	14.189	T12 FINAL
500049	7975849.68	503748.964	14.646	T12 FINAL
500050	7975848.895	503762.797	14.986	T12 FINAL
500051	7975847.364	503778.554	15.814	T12 FINAL
500052	7975846.462	503792.479	16.12	T12 FINAL
500053	7975845.735	503804.58	16.611	T12 FINAL
500054	7975844.347	503818.941	17.155	T12 FINAL
500055	7975841.408	503828.526	17.689	T12 FINAL
500056	7975841.564	503842.172	17.816	T12 FINAL
500057	7975838.719	503856.074	17.943	T12 FINAL
500058	7975837.213	503867.278	18.142	T12 FINAL
500059	7975834.153	503877.648	18.409	T12 FINAL
500060	7975823.613	503875.438	18.725	T12 FINAL
500061	7975826.467	503861.412	18.441	T12 FINAL
500062	7975830.075	503850.158	18.163	T12 FINAL
500063	7975830.649	503839.693	17.85	T12 FINAL
500064	7975822.212	503845.513	18.13	T12 FINAL
500065	7975816.584	503857.277	18.67	T12 FINAL
500066	7975811.502	503866.751	18.811	T12 FINAL

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500067	7975799.648	503868.986	18.628	TOE T12 FINAL
500068	7975805.921	503860.652	18.339	TOE T12 FINAL
500069	7975811.139	503849.943	17.839	TOE T12 FINAL
500070	7975814.399	503844.032	17.66	TOE T12 FINAL
500071	7975821.652	503831.611	17.087	TOE T12 FINAL
500072	7975827.987	503824.042	16.558	TOE T12 FINAL
500073	7975830.751	503811.056	15.82	TOE T12 FINAL
500074	7975832.286	503801.403	15.321	TOE T12 FINAL
500075	7975832.809	503788.974	14.634	TOE T12 FINAL
500076	7975834.557	503777.535	14.512	TOE T12 FINAL
500077	7975838.591	503760.61	14.157	TOE T12 FINAL
500078	7975838.881	503753.368	13.832	TOE T12 FINAL
500079	7975838.474	503746.246	12.931	TOE T12 FINAL
500080	7975839.967	503741.313	12.725	TOE T12 FINAL
500081	7975836.183	503728.929	12.265	TOE T12 FINAL
500082	7975857.57	503726.926	13.324	T12 FINAL
500083	7975862.722	503729.486	13.31	T12 FINAL
500084	7975861.604	503737.237	13.946	T12 FINAL
500085	7975860.466	503750.642	14.609	T12 FINAL
500086	7975859.568	503761.304	14.818	T12 FINAL
500087	7975858.98	503767.62	14.833	T12 FINAL
500088	7975858.239	503778.893	15.536	T12 FINAL
500089	7975856.561	503791.666	15.913	T12 FINAL
500090	7975854.719	503806.175	16.424	T12 FINAL
500091	7975853.573	503817.257	16.85	T12 FINAL
500092	7975852.857	503830.163	17.207	T12 FINAL
500093	7975850.105	503842.545	17.465	T12 FINAL
500094	7975849.044	503856.185	17.55	T12 FINAL
500095	7975846.715	503868.448	17.778	T12 FINAL
500096	7975846.577	503877.276	17.913	T12 FINAL
500097	7975856.047	503877.883	17.565	T12 FINAL
500098	7975857.247	503868.378	17.357	T12 FINAL
500099	7975859.624	503856.25	17.123	T12 FINAL
500100	7975862.041	503844.684	16.876	T12 FINAL
500101	7975864.681	503832.698	16.853	T12 FINAL
500102	7975865.49	503818.455	16.369	T12 FINAL
500103	7975866.034	503805.287	16.096	T12 FINAL
500104	7975867.401	503794.296	15.798	T12 FINAL
500105	7975869.083	503783.069	15.304	T12 FINAL
500106	7975868.738	503772.059	14.961	T12 FINAL
500107	7975869.916	503760.081	14.596	T12 FINAL
500108	7975872.233	503747.833	14.076	T12 FINAL

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500109	7975874.97	503737.672	13.409	T12 FINAL
500110	7975882.356	503747.897	13.505	T12 FINAL
500111	7975878.633	503757.839	14.211	T12 FINAL
500112	7975880.831	503771.463	14.586	T12 FINAL
500113	7975880.089	503782.509	15.046	T12 FINAL
500114	7975877.157	503795.727	15.572	T12 FINAL
500115	7975874.673	503810.077	15.842	T12 FINAL
500116	7975873.646	503824.677	16.115	T12 FINAL
500117	7975873.507	503831.253	16.232	T12 FINAL
500118	7975884.307	503832.747	15.797	T12 FINAL
500119	7975885.809	503818.416	15.546	T12 FINAL
500120	7975887.452	503805.467	15.365	T12 FINAL
500121	7975888.258	503789.912	14.979	T12 FINAL
500122	7975889.535	503776.41	14.394	T12 FINAL
500123	7975892.573	503765.054	13.812	T12 FINAL
500124	7975895.095	503760.374	13.416	T12 FINAL
500125	7975903.496	503770.294	13.387	T12 FINAL
500126	7975899.37	503783.487	14.276	T12 FINAL
500127	7975894.584	503795.222	14.95	T12 FINAL
500128	7975892.744	503808.979	15.231	T12 FINAL
500129	7975900.239	503797.229	14.805	T12 FINAL
500130	7975907.975	503787.577	13.966	T12 FINAL
500131	7975912.988	503783.202	13.416	T12 FINAL
500132	7975916.321	503788.307	13.432	T12 FINAL
500133	7975908.017	503797.915	14.435	T12 FINAL
500134	7975899.437	503808.174	15.088	T12 FINAL
500135	7975891.239	503818.831	15.396	T12 FINAL
500136	7975884.43	503828.942	15.852	T12 FINAL
500137	7975875.72	503837.735	16.341	T12 FINAL
500138	7975869.465	503849.584	16.677	T12 FINAL
500139	7975867.639	503857.575	16.702	T12 FINAL
500140	7975865.799	503868.637	17.133	T12 FINAL
500141	7975865.738	503879.256	17.207	T12 FINAL
500142	7975875.773	503882.865	16.883	CREST T12 FINAL
500143	7975877.346	503865.66	16.373	CREST T12 FINAL
500144	7975878.239	503855.561	16.31	CREST T12 FINAL
500145	7975877.821	503841.486	16.297	CREST T12 FINAL
500146	7975879.97	503842.517	15.034	TOE T12 FINAL
500147	7975880.063	503853.886	15.329	TOE T12 FINAL
500148	7975878.97	503867.269	15.49	TOE T12 FINAL
500149	7975878.488	503881.898	15.598	TOE T12 FINAL

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Laydown LP2 Type 12 (ROQ) Survey Data

Point Number	Northing	Easting	Elevation	Description
20150	7975911.72	503775.654	13.553	T12
20151	7975901.541	503765.795	13.521	T12
20152	7975889.448	503754.577	13.524	T12
20153	7975877.747	503741.44	13.427	T12
20154	7975871.081	503733.499	13.34	T12
20155	7975864.95	503729.902	13.361	T12
20156	7975859.94	503727.066	13.333	T12
20157	7975855.228	503722.203	13.388	T12
20158	7975848.241	503721.781	13.434	T12
20159	7975837.79	503723.738	13.471	T12
20160	7975846.548	503730.076	13.969	T12
20161	7975843.357	503736.38	14.369	T12
20162	7975848.071	503740.023	14.522	T12
20163	7975858.478	503737.712	14.117	T12
20164	7975865.891	503745.695	14.195	T12
20165	7975861.489	503751.894	14.611	T12
20166	7975848.775	503746.55	14.716	T12
20167	7975843.961	503743.932	14.657	T12
20168	7975840.96	503740.528	14.619	CREST T12
20169	7975840.861	503751.946	15.033	CREST T12
20170	7975838.359	503766.087	15.549	CREST T12
20171	7975835.552	503783.862	16.232	CREST T12
20172	7975835.381	503797.966	16.715	CREST T12
20173	7975833.772	503812.138	17.26	CREST T12
20174	7975826.464	503827.101	17.793	CREST T12
20175	7975818.885	503839.302	18.269	CREST T12
20176	7975812.295	503853.712	18.589	CREST T12
20177	7975801.956	503867.472	19.246	CREST T12
20178	7975799.342	503871.882	19.328	CREST T12
20179	7975808.932	503874.706	19.167	T12
20180	7975818.539	503859.096	18.691	T12
20181	7975822.907	503849.625	18.407	T12
20182	7975823.269	503848.294	18.48	T12
20183	7975829.008	503837.48	18.073	T12
20184	7975835.797	503825.464	17.702	T12
20185	7975841.57	503814.777	17.215	T12
20186	7975848.401	503801.903	16.559	T12
20187	7975854.679	503790.285	16.028	T12
20188	7975861.209	503778.966	15.446	T12

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20189	7975866.559	503768.993	15.088	T12
20190	7975871.512	503759.576	14.702	T12
20191	7975876.055	503752.954	14.262	T12
20192	7975866.209	503754.621	14.703	T12
20193	7975859.311	503766.403	15.115	T12
20194	7975853.028	503775.203	15.541	T12
20195	7975844.087	503791.168	16.266	T12
20196	7975846.042	503765.745	15.333	T12
20197	7975849.589	503755.923	14.977	T12
20198	7975852.138	503748.124	14.718	T12
20199	7975881.394	503757.118	14.237	T12
20200	7975878.298	503763.131	14.487	T12
20201	7975876.064	503772.135	14.848	T12
20202	7975868.848	503785.145	15.512	T12
20203	7975863.184	503794.645	15.996	T12
20204	7975857.339	503804.53	16.449	T12
20205	7975850.204	503816.96	17.079	T12
20206	7975845.118	503826.232	17.57	T12
20207	7975835.644	503841.149	17.955	T12
20208	7975830.716	503852.248	18.245	T12
20209	7975825.03	503862.665	18.592	T12
20210	7975818.393	503873.813	19.05	T12
20211	7975817.571	503881.314	19.105	T12
20212	7975828.506	503887.011	18.701	T12
20213	7975831.2	503877.989	18.627	T12
20214	7975835.236	503864.433	18.291	T12
20215	7975840.864	503851.311	17.941	T12
20216	7975847.091	503837.625	17.668	T12
20217	7975852.286	503827.289	17.34	T12
20218	7975857.04	503819.481	16.981	T12
20219	7975866.596	503807.136	16.24	T12
20220	7975871.544	503797.062	15.798	T12
20221	7975877.565	503784.95	15.203	T12
20222	7975882.516	503776.015	14.83	T12
20223	7975886.866	503768.318	14.437	T12
20224	7975890.059	503763.47	14.009	T12
20225	7975898.37	503774.919	14.211	T12
20226	7975892.882	503783.759	14.728	T12
20227	7975887.024	503792.374	15.237	T12
20228	7975880.772	503802.68	15.623	T12
20229	7975875.943	503810.273	15.996	T12
20230	7975869.467	503820.88	16.446	T12

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20231	7975863.036	503833.301	16.876	T12
20232	7975854.729	503845.447	17.378	T12
20233	7975849.582	503855.89	17.672	T12
20234	7975845.106	503866.274	18.022	T12
20235	7975841.937	503877.944	18.123	T12
20236	7975840.737	503885.786	18.256	T12
20237	7975851.492	503883.755	17.809	T12
20238	7975857.738	503872.865	17.534	T12
20239	7975861.649	503864.379	17.268	T12
20240	7975865.97	503855.639	17.006	T12
20241	7975870.037	503848.565	16.76	T12
20242	7975869.919	503860.087	16.916	T12
20243	7975868.963	503873.162	17.14	T12
20244	7975867.614	503880.566	17.232	T12
20245	7975862.304	503882.388	17.406	T12
20246	7975875.599	503885.042	16.937	CREST T12
20247	7975876.288	503874.496	16.721	CREST T12
20248	7975878.897	503855.96	16.401	CREST T12
20249	7975877.794	503841.025	16.353	CREST T12
20250	7975889.342	503838.829	15.717	CREST T12
20251	7975901.666	503841.851	15.319	CREST T12
20252	7975910.696	503841.999	14.938	CREST T12
20253	7975911.548	503844.652	13.754	TOE T12
20254	7975903.687	503845.146	14.161	TOE T12
20255	7975892.629	503841.204	14.497	TOE T12
20256	7975886.231	503841.296	14.811	TOE T12
20257	7975880.666	503842.643	14.905	TOE T12
20258	7975877.911	503835.471	16.268	T12
20259	7975878.491	503826.55	16.133	T12
20260	7975881.683	503816.683	15.917	T12
20261	7975885.345	503809.402	15.537	T12
20262	7975889.915	503798.451	15.207	T12
20263	7975896.463	503789.093	14.762	T12
20264	7975903.278	503782.226	14.238	T12
20265	7975914.231	503783.878	13.48	T12
20266	7975910.374	503790.864	14.122	T12
20267	7975903.82	503802.936	14.692	T12
20268	7975898.324	503812.257	15.077	T12
20269	7975892.577	503822.048	15.454	T12
20270	7975889.934	503829.81	15.721	T12
20271	7975900.702	503834.751	15.361	T12
20272	7975904.045	503826.87	15.207	T12

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20273	7975906.605	503815.888	14.86	T12
20274	7975908.902	503808.437	14.623	T12
20275	7975911.716	503802.063	14.446	T12
20276	7975917.285	503796.276	13.853	T12
20277	7975923.353	503802.678	13.624	T12
20278	7975920.07	503810.913	14.061	T12
20279	7975916.916	503825.816	14.506	T12
20280	7975915.283	503837.039	14.511	T12
20281	7975925.111	503839.86	13.857	T12
20282	7975926.472	503827.584	13.774	T12
20283	7975926.402	503816.5	13.738	T12
20284	7975925.939	503808.423	13.699	T12
20285	7975877.076	503901.85	17.227	CREST T12
20286	7975878.007	503914.699	17.168	CREST T12
20287	7975878.808	503927.893	17.094	CREST T12
20288	7975878.598	503944.904	17.057	CREST T12
20289	7975878.729	503959.949	17.104	CREST T12
20290	7975878.374	503972.857	17.324	CREST T12
20291	7975877.809	503986.982	17.425	CREST T12
20292	7975876.968	503999.757	17.69	CREST T12
20293	7975877.689	504013.917	17.562	CREST T12
20294	7975877.731	504026.927	17.628	CREST T12
20295	7975876.088	504037.649	17.724	CREST T12
20296	7975869.873	504043.401	17.895	CREST T12
20297	7975857.959	504042.292	18.457	CREST T12
20298	7975840.048	504041.431	19.295	CREST T12
20299	7975827.611	504043.818	19.655	CREST T12
20300	7975821.843	504026.188	19.971	CREST T12
20301	7975817.143	504016.863	20.082	CREST T12
20302	7975810.093	504004.983	20.289	CREST T12
20303	7975807.246	503998.823	20.46	CREST T12
20304	7975803.831	503985.42	20.659	CREST T12
20305	7975800.176	503975.469	20.781	CREST T12
20306	7975795.793	503963.338	20.732	CREST T12
20307	7975791.073	503952.602	20.703	CREST T12
20308	7975786.337	503942.211	20.646	CREST T12
20309	7975785.338	503931.052	20.352	CREST T12
20310	7975786.234	503916.585	20.299	CREST T12
20311	7975784.872	503901.198	20.01	CREST T12
20312	7975792.147	503886.241	19.594	CREST T12
20313	7975795.558	503880.348	19.482	CREST T12
20314	7975798.068	503872.219	18.729	TOE T12

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20315	7975792.283	503883.551	18.925	TOE T12
20316	7975784.574	503897.113	19.205	TOE T12
20317	7975782.795	503906.175	19.638	TOE T12
20318	7975783.502	503918.166	19.801	TOE T12
20319	7975783.58	503936.979	20.139	TOE T12
20320	7975786.762	503949.433	20.279	TOE T12
20321	7975791.157	503958.187	20.162	TOE T12
20322	7975795.335	503969.455	20.319	TOE T12
20323	7975799.688	503981	20.178	TOE T12
20324	7975803.95	503990.938	20.055	TOE T12
20325	7975806.464	504000.501	19.976	TOE T12
20326	7975810.55	504009.077	19.868	TOE T12
20327	7975815.624	504018.238	19.653	TOE T12
20328	7975819.819	504025.309	19.453	TOE T12
20329	7975820.109	504029.767	19.448	TOE T12
20330	7975823.579	504037.952	19.522	TOE T12
20331	7975824.762	504041.985	19.129	TOE T12
20332	7975826.213	504044.444	19.072	TOE T12
20333	7975830.476	504045.544	18.89	TOE T12
20334	7975835.214	504043.076	18.741	TOE T12
20335	7975838.335	504043.809	18.624	TOE T12
20336	7975846.649	504044.615	18.182	TOE T12
20337	7975853.139	504044.35	17.863	TOE T12
20338	7975860.678	504043.886	17.536	TOE T12
20339	7975862.765	504045.025	17.52	TOE T12
20340	7975870.375	504044.711	17.002	TOE T12
20341	7975878.452	504043.596	16.7	TOE T12
20342	7975879.397	504032.233	16.482	TOE T12
20343	7975879.885	504023.091	16.462	TOE T12
20344	7975879.875	504012.85	16.432	TOE T12
20345	7975878.961	504002.552	16.588	TOE T12
20346	7975879.696	503988.473	16.351	TOE T12
20347	7975880.288	503984.253	16.341	TOE T12
20348	7975880.372	503972.818	16.145	TOE T12
20349	7975880.761	503961.089	16.004	TOE T12
20350	7975879.866	503951.743	15.896	TOE T12
20351	7975881.592	503942.826	16.066	TOE T12
20352	7975881.207	503931.918	15.793	TOE T12
20353	7975880.045	503923.931	15.977	TOE T12
20354	7975879.521	503912.951	15.917	TOE T12
20355	7975879.58	503907.034	15.832	TOE T12
20356	7975879.622	503897.51	15.826	TOE T12

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Port Site Laydown Area LP2
Type 12 (ROQ)

20357	7975878.577	503887.462	15.61	TOE T12
20358	7975878.747	503879.915	15.627	TOE T12
20359	7975878.697	503873.193	15.584	TOE T12
20360	7975879.932	503866.216	15.493	TOE T12
20361	7975880.693	503861.86	15.282	TOE T12
20362	7975880.659	503855.846	15.323	TOE T12
20363	7975879.844	503850.574	15.171	TOE T12
33333	7975913.678	503845.061	14.42	T12 CREST
33334	7975929.257	503852.736	13.79	T12 CREST
33335	7975945.403	503851.89	13.318	T12 CREST
33336	7975946.116	503820.26	13.289	T12 CREST
33337	7975945.466	503811.624	13.168	T12 CREST
33338	7975945.682	503830.804	13.269	T12 CREST
33340	7975933.286	503853.112	13.733	T12 CREST
33341	7975914.406	503853.455	14.326	T12 CREST
33342	7975922.872	503847.285	13.994	T12
33343	7975928.026	503832.835	13.669	T12
33344	7975930.803	503825.288	13.496	T12
33345	7975931.66	503815.611	13.436	T12
33346	7975929.411	503807.81	13.437	T12
33347	7975937.401	503810.968	13.337	T12
33348	7975937.473	503826.6	13.424	T12
33349	7975937.75	503835.252	13.532	T12
33350	7975938.705	503845.198	13.473	T12
33351	7975932.825	503844.308	13.738	T12
33352	7975929.388	503837.605	13.701	T12
33353	7975802.022	503882.752	19.473	T12
33354	7975814.091	503887.153	19.236	T12
33355	7975826.136	503891.905	18.877	T12
33356	7975837.768	503894.68	18.574	T12
33357	7975848.101	503896.502	18.182	T12
33358	7975857.754	503896.165	17.848	T12
33359	7975865.879	503897.678	17.52	T12
33360	7975869.73	503905.825	17.393	T12
33361	7975859.101	503905.371	17.828	T12
33362	7975849.162	503904.731	18.197	T12
33363	7975834.702	503901.457	18.619	T12
33364	7975823.315	503898.273	19.032	T12
33365	7975811.209	503894.242	19.369	T12
33366	7975800.622	503892.648	19.629	T12
33367	7975794.699	503900.774	19.853	T12
33368	7975806.193	503903.721	19.644	T12

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Port Site Laydown Area LP2
Type 12 (ROQ)

33369	7975818.761	503906.89	19.27	T12
33370	7975833.349	503909.392	18.856	T12
33371	7975845.817	503912.211	18.427	T12
33372	7975857.279	503913.634	17.896	T12
33373	7975868.532	503913.828	17.452	T12
33374	7975869.255	503925.871	17.33	T12
33375	7975857.134	503925.622	18.068	T12
33376	7975842.364	503923.148	18.614	T12
33377	7975828.273	503921.601	19.271	T12
33378	7975817.543	503917.508	19.501	T12
33379	7975808.092	503915.515	19.672	T12
33380	7975795.439	503914.9	19.984	T12
33381	7975873.816	503931.513	17.099	T12
33382	7975872.496	503933.989	17.175	T12
33383	7975869.26	503938.297	17.321	T12
33384	7975863.487	503941.191	17.643	T12
33385	7975856.475	503942.419	17.962	T12
33386	7975851.844	503942.374	18.287	T12
33387	7975843.701	503942.064	18.649	T12
33388	7975835.673	503942.073	19.003	T12
33389	7975828.118	503941.758	19.331	T12
33390	7975814.996	503942.691	19.869	T12
33391	7975810.193	503943.589	19.987	T12
33392	7975803.64	503946.441	20.221	T12
33393	7975804.029	503955.707	20.434	T12
33394	7975810.839	503955.327	20.154	T12
33395	7975820.803	503953.878	19.771	T12
33396	7975829.615	503953.106	19.436	T12
33397	7975841.834	503952.007	18.791	T12
33398	7975857.358	503950.865	18.055	T12
33399	7975865.127	503950.966	17.672	T12
33400	7975872.68	503960.919	17.334	T12
33401	7975861.872	503965.367	17.892	T12
33402	7975851.926	503961.774	18.461	T12
33403	7975842.543	503962.294	18.908	T12
33404	7975834.053	503963.365	19.307	T12
33405	7975826.049	503965.043	19.742	T12
33406	7975818.352	503967.279	20.089	T12
33407	7975810.73	503970.024	20.428	T12
33408	7975806.397	503977.718	20.597	T12
33409	7975815.283	503981.442	20.171	T12
33410	7975824.046	503979.393	19.876	T12

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Type 12 (ROQ)

33411	7975830.629	503977.686	19.536	T12
33412	7975837.273	503975.999	19.183	T12
33413	7975849.929	503973.713	18.51	T12
33414	7975864.74	503970.732	17.698	T12
33415	7975869.955	503965.518	17.517	T12
33416	7975808.95	503931.439	19.912	T12
33417	7975824.939	503928.386	19.326	T12
33418	7975837.268	503928.942	18.923	T12
33419	7975848.527	503929.169	18.418	T12
33420	7975869.503	503945.924	17.439	T12
33421	7975864.407	503956.491	17.716	T12
33422	7975869.482	503968.849	17.572	T12
33423	7975869.08	503976.127	17.57	T12
33424	7975869.71	503983.32	17.559	T12
33425	7975864.009	503983.331	17.86	T12
33426	7975858.504	503982.701	18.262	T12
33427	7975851.814	503983.22	18.496	T12
33428	7975845.184	503984.642	18.92	T12
33429	7975837.351	503985.377	19.291	T12
33430	7975829.603	503986.395	19.671	T12
33431	7975821.493	503987.68	20.075	T12
33432	7975812.647	503988.981	20.35	T12
33433	7975812.641	503999.307	20.257	T12
33434	7975818.092	503997.489	20.056	T12
33435	7975821.465	503996.807	19.965	T12
33436	7975825.839	503995.902	19.88	T12
33437	7975831.777	503994.99	19.583	T12
33438	7975838.939	503995.071	19.171	T12
33439	7975844.544	503994.624	18.968	T12
33440	7975848.966	503994.532	18.641	T12
33441	7975855.39	503994.546	18.357	T12
33442	7975861.251	503995.429	18.129	T12
33443	7975868.108	503996.139	17.831	T12
33444	7975874.868	504007.345	17.529	T12
33445	7975870.663	504007.714	17.714	T12
33446	7975863.359	504007.861	18.047	T12
33447	7975857.877	504008.191	18.256	T12
33448	7975851.053	504007.992	18.683	T12
33449	7975846.903	504007.205	18.712	T12
33450	7975843.091	504007.664	18.959	T12
33451	7975837.599	504008.199	19.237	T12
33452	7975832.661	504009.048	19.534	T12

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Port Site Laydown Area LP2
Type 12 (ROQ)

33453	7975826.321	504010.266	19.691	T12
33454	7975822.853	504010.974	19.83	T12
33455	7975819.571	504012.381	19.905	T12
33456	7975823.017	504021.441	19.822	T12
33457	7975827.519	504020.664	19.688	T12
33458	7975835.042	504018.656	19.394	T12
33459	7975840.236	504017.52	19.173	T12
33460	7975845.357	504016.124	18.921	T12
33461	7975850.874	504015.603	18.606	T12
33462	7975854.9	504014.923	18.376	T12
33463	7975859.207	504014.53	18.181	T12
33464	7975866.163	504014.919	17.959	T12
33465	7975870.846	504021.874	17.782	T12
33466	7975864.268	504023.415	18.086	T12
33467	7975859.054	504024.472	18.328	T12
33468	7975852.114	504025.941	18.657	T12
33469	7975841.694	504026.105	19.114	T12
33470	7975833.587	504029.023	19.498	T12
33471	7975826.228	504032.503	19.694	T12
33472	7975828.803	504037.425	19.679	T12
33473	7975835.043	504036.782	19.497	T12
33474	7975840.753	504035.689	19.193	T12
33475	7975848.591	504035.497	18.846	T12
33476	7975854.327	504035.674	18.692	T12
33477	7975860.015	504035.477	18.285	T12
33478	7975867.774	504034.747	17.987	T12

NUNA

NUNA EAST LTD

(Section 4)

Survey Data
Type 8
(150mm minus)

Mary River Expansion Project
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Port Site Laydown Area LP2
Type 8 Fill (150mm minus)

Laydown LP2 Type 8 Fill (150mm minus) Survey Data

Point Number	Northing	Easting	Elevation	Description
2000	7975834.178	503719.554	13.609	T8 FG
2001	7975832.127	503710.235	13.661	T8 FG
2002	7975833.016	503699.648	13.713	T8 FG
2003	7975834.335	503690.085	13.694	T8 FG
2004	7975838.622	503680.796	13.746	T8 FG
2005	7975840.672	503669.913	13.766	T8 FG
2006	7975848.342	503663.086	13.729	T8 FG
2007	7975858.013	503658.258	13.719	T8 FG
2008	7975870.406	503659.033	13.647	T8 FG
2009	7975881.278	503659.235	13.684	T8 FG
2010	7975891.462	503657.449	13.681	T8 FG
2011	7975896.644	503674.291	13.593	T8 FG
2012	7975906.647	503674.089	13.57	T8 FG
2013	7975918.327	503672.712	13.57	T8 FG
2014	7975927.759	503671.105	13.547	T8 FG
2015	7975938.719	503669.687	13.546	T8 FG
2016	7975933.026	503662.625	13.566	T8 FG
2017	7975921.507	503664.638	13.59	T8 FG
2018	7975911.988	503664.302	13.536	T8 FG
2019	7975897.145	503665.829	13.649	T8 FG
2020	7975943.105	503669.505	13.633	T8 FG
2021	7975944.402	503681.173	13.609	T8 FG
2022	7975943.811	503693.287	13.762	T8 FG
2023	7975944.222	503706.172	13.726	T8 FG
2024	7975944.399	503718.619	13.618	T8 FG
2025	7975944.538	503730.388	13.557	T8 FG
2026	7975944.471	503742.115	13.541	T8 FG
2027	7975944.636	503753.985	13.409	T8 FG
2028	7975945.074	503766.831	13.481	T8 FG
2029	7975945.061	503778.807	13.466	T8 FG
2030	7975945.578	503790.756	13.409	T8 FG
2031	7975944.859	503799.475	13.347	T8 FG
2032	7975933.024	503801.303	13.504	T8 FG
2033	7975932.172	503787.387	13.386	T8 FG
2034	7975931.506	503775.242	13.378	T8 FG
2035	7975930.715	503765.992	13.409	T8 FG
2036	7975930.686	503754.273	13.43	T8 FG
2037	7975930.729	503741.979	13.459	T8 FG
2038	7975931.394	503729.419	13.467	T8 FG

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Port Site Laydown Area LP2
Type 8 Fill (150mm minus)

2039	7975931.928	503717.977	13.504	T8 FG
2040	7975931.948	503705.314	13.662	T8 FG
2041	7975930.603	503692.696	13.626	T8 FG
2042	7975929.815	503680.306	13.607	T8 FG
2043	7975917.216	503680.928	13.596	T8 FG
2044	7975917.538	503693.943	13.61	T8 FG
2045	7975917.534	503706.745	13.586	T8 FG
2046	7975918.189	503718.864	13.529	T8 FG
2047	7975918.63	503731.628	13.411	T8 FG
2048	7975918.667	503743.837	13.434	T8 FG
2049	7975917.944	503757.663	13.443	T8 FG
2050	7975917.924	503771.753	13.468	T8 FG
2051	7975917.771	503786.305	13.487	T8 FG
2052	7975916.901	503799.567	13.515	T8 FG
2053	7975904.066	503792.132	13.515	T8 FG
2054	7975904.152	503784.563	13.474	T8 FG
2055	7975904.352	503771.538	13.399	T8 FG
2056	7975902.791	503758.802	13.42	T8 FG
2057	7975903.121	503744.301	13.447	T8 FG
2058	7975901.948	503732.239	13.509	T8 FG
2059	7975902.312	503718.589	13.533	T8 FG
2060	7975903.441	503705.497	13.545	T8 FG
2061	7975902.139	503692.301	13.613	T8 FG
2062	7975888.326	503692.508	13.562	T8 FG
2063	7975887.493	503679.716	13.587	T8 FG
2064	7975888.785	503705.729	13.59	T8 FG
2065	7975888.908	503719.213	13.499	T8 FG
2066	7975888.206	503732.784	13.456	T8 FG
2067	7975887.977	503746.325	13.496	T8 FG
2068	7975888.436	503759.694	13.475	T8 FG
2069	7975888.427	503772.347	13.495	T8 FG
2070	7975875.186	503760.653	13.545	T8 FG
2071	7975873.854	503746.061	13.471	T8 FG
2072	7975873.125	503732.341	13.429	T8 FG
2073	7975871.995	503719.447	13.508	T8 FG
2074	7975872.739	503705.712	13.584	T8 FG
2075	7975872.254	503692.793	13.609	T8 FG
2076	7975871.367	503679.371	13.623	T8 FG
2077	7975857.398	503680.362	13.646	T8 FG
2078	7975859.308	503692.635	13.682	T8 FG
2079	7975860.669	503707.482	13.6	T8 FG
2080	7975861.445	503719.045	13.536	T8 FG

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Port Site Laydown Area LP2
Type 8 Fill (150mm minus)

2081	7975859.975	503733.172	13.432	T8 FG
2082	7975859.737	503744.812	13.497	T8 FG
2083	7975848.973	503736.989	13.621	T8 FG
2084	7975849.049	503726.24	13.538	T8 FG
2085	7975846.63	503714.868	13.518	T8 FG
2086	7975844.951	503706.353	13.592	T8 FG
2087	7975845.9	503691.932	13.573	T8 FG
2088	7975845.075	503680.165	13.749	T8 FG
2089	7975841.041	503730.805	13.56	T8 FG

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Port Site Laydown Area LP2
Type 8 Fill (150mm minus)

Laydown LP2 Type 8 Fill (150mm minus) Survey Data

Point Number	Northing	Easting	Elevation	Description
2157049	7975836.756	503674.552	13.785	EG
2157050	7975832.625	503665.086	13.627	EG T8
2157051	7975831.458	503643.774	13.733	EG T8
2157052	7975831.745	503630.257	13.684	EG T8
2157053	7975832.691	503615.42	13.77	EG T8
2157054	7975831.885	503603.7	13.82	CREST T8
2157055	7975832.163	503602.885	13.276	TOE T8
2157056	7975843.52	503602.32	13.333	TOE T8
2157057	7975843.75	503603.15	13.758	CREST T8
2157058	7975844.55	503609.731	13.818	EG T8
2157059	7975844.717	503621.725	13.773	EG T8
2157060	7975844.563	503635.665	13.597	EG T8
2157061	7975845.141	503652.15	13.604	EG T8
2157062	7975846.685	503666.519	13.734	EG T8
2157063	7975846.227	503678.947	13.713	EG T8
2157064	7975856.779	503667.628	13.537	EG T8
2157065	7975855.754	503657.679	13.621	EG T8
2157066	7975855.556	503645.089	13.517	EG T8
2157067	7975855.214	503631.787	13.739	EG T8
2157068	7975855.317	503619.517	13.666	EG T8
2157069	7975855.416	503607.137	13.749	EG T8
2157070	7975855.461	503600.784	13.675	CREST T8
2157071	7975855.564	503600.205	13.334	TOE T8
2157072	7975866.007	503598.407	13.443	TOE T8
2157073	7975866.192	503599.143	13.792	CREST T8
2157074	7975865.767	503607.186	13.602	EG T8
2157075	7975865.429	503616.797	13.774	EG T8
2157076	7975864.627	503629.357	13.662	EG T8
2157077	7975865.444	503642.821	13.569	EG T8
2157078	7975865.478	503656.888	13.593	EG T8
2157079	7975865.934	503669.76	13.671	EG T8
2157080	7975876.052	503665.842	13.531	EG T8
2157081	7975889.246	503661.36	13.538	EG T8
2157082	7975902.753	503657.91	13.484	EG T8
2157083	7975914.244	503654.688	13.48	EG T8
2157084	7975923.402	503653.038	13.434	EG T8
2157085	7975926.7	503652.353	13.485	CREST T8
2157086	7975927.274	503652.314	13.147	TOE T8
2157087	7975919.755	503645.251	13.509	CREST T8

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Port Site Laydown Area LP2
Type 8 Fill (150mm minus)

2157088	7975920.455	503644.648	13.004	TOE T8
2157089	7975914.791	503647.649	13.514	EG T8
2157090	7975906.308	503649.862	13.58	EG T8
2157091	7975896.812	503651.581	13.628	EG T8
2157092	7975884.519	503652.391	13.563	EG T8
2157093	7975872.403	503655.149	13.712	EG T8
2157094	7975870.191	503642.128	13.704	EG T8
2157095	7975879.836	503640.65	13.647	EG T8
2157096	7975896.285	503639.367	13.638	EG T8
2157097	7975906.415	503636.457	13.627	EG T8
2157098	7975909.545	503635.842	13.621	CREST T8
2157099	7975910.181	503635.546	13.32	TOE T8
2157100	7975903.587	503629.452	13.232	TOE T8
2157101	7975902.894	503629.806	13.54	CREST T8
2157102	7975901.366	503629.187	13.625	EG T8
2157103	7975891.585	503631.623	13.582	EG T8
2157104	7975878.964	503634.391	13.481	EG T8
2157105	7975871.897	503633.538	13.551	EG T8
2157106	7975871.356	503621.989	13.794	EG T8
2157107	7975870.182	503612.845	13.558	EG T8
2157108	7975871.482	503603.289	13.715	EG T8
2157109	7975873.62	503599.992	13.712	CREST T8
2157110	7975874.103	503598.658	13.289	TOE T8
2157111	7975879.135	503604.44	13.327	TOE T8
2157112	7975878.435	503605.205	13.637	CREST T8
2157113	7975875.833	503608.194	13.588	CREST T8
2157114	7975877.27	503616.71	13.504	CREST T8
2157115	7975880.095	503627.655	13.665	CREST T8
2157116	7975887.843	503623.448	13.6	CREST T8
2157117	7975883.44	503613.824	13.519	CREST T8
2157118	7975883.022	503609.231	13.547	CREST T8
2157119	7975883.523	503608.712	13.123	TOE T8
2157120	7975893.214	503618.194	13.427	CREST T8
2157121	7975894.133	503618.139	13.03	TOE T8
2158083	7975932.042	503692.581	13.683	EG
2158084	7975917.087	503695.083	13.674	EG
2158085	7975903.133	503697.238	13.539	EG
2158086	7975891.694	503697.426	13.505	EG
2158087	7975877.748	503697.529	13.628	EG
2158088	7975866.624	503697.68	13.605	EG
2158089	7975855.399	503698.218	13.509	EG
2158090	7975842.887	503698.269	13.552	EG

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2158091	7975832.691	503698.465	13.633	EG
2158092	7975822.637	503699.641	13.51	CREST
2158093	7975815.948	503691.226	13.621	CREST
2158094	7975818.661	503690.734	13.599	EG
2158095	7975826.466	503689.533	13.652	EG
2158096	7975836.911	503689.395	13.631	EG
2158097	7975843.654	503689.797	13.61	EG
2158098	7975856.137	503689.761	13.537	EG
2158099	7975870.272	503688.665	13.646	EG
2158100	7975883.796	503687.502	13.579	EG
2158101	7975898.071	503686.126	13.581	EG
2158102	7975911.028	503684.355	13.701	EG
2158103	7975921.019	503682.724	13.652	EG
2158104	7975933.666	503680.95	13.655	EG
2158105	7975944.081	503679.596	13.69	CREST
2158106	7975943.054	503669.472	13.464	CREST
2158107	7975939.252	503669.935	13.53	CREST
2158108	7975934.586	503670.137	13.517	EG
2158109	7975921.061	503670.676	13.568	EG
2158110	7975906.437	503670.996	13.482	EG
2158111	7975894.034	503673.421	13.608	EG
2158112	7975880.287	503675.628	13.599	EG
2158113	7975864.803	503678.467	13.666	EG
2158114	7975852.011	503680.623	13.616	EG
2158115	7975842.594	503681.927	13.709	EG
2158116	7975831.881	503682.086	13.738	EG
2158117	7975820.679	503682.793	13.773	EG
2158118	7975811.149	503684.271	13.659	CREST
2158119	7975805.424	503677.471	13.723	CREST
2158120	7975804.879	503677.683	13.352	TOE
2158121	7975799.271	503669.805	13.162	TOE
2158122	7975799.77	503669.518	13.615	CREST
2158123	7975793.696	503659.861	13.714	CREST
2158124	7975793.026	503660.068	13.252	TOE
2158125	7975784.92	503649.245	13.797	CREST
2158126	7975784.107	503649.437	13.215	TOE
2158127	7975784.057	503642.418	13.631	CREST
2158128	7975783.221	503642.516	13.188	TOE
2158129	7975785.044	503632.824	13.701	CREST
2158130	7975784.346	503632.896	13.314	TOE
2158131	7975786.987	503622.398	13.276	TOE
2158132	7975788.299	503612.154	13.695	CREST

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2158133	7975787.743	503611.944	13.252	TOE
2158134	7975789.66	503608.685	13.681	CREST
2158135	7975789.472	503608.129	13.194	TOE
2158136	7975795.14	503608.251	13.759	CREST
2158137	7975795.144	503607.444	13.285	TOE
2158138	7975796.125	503617.126	13.652	EG
2158139	7975796.91	503626.441	13.673	EG
2158140	7975798.372	503635.527	13.625	EG
2158141	7975799.263	503645.353	13.695	EG
2158142	7975799.848	503654.042	13.674	EG
2158143	7975801.658	503662.494	13.641	EG
2158144	7975811.875	503672.493	13.661	EG
2158145	7975821.622	503669.996	13.66	EG
2158146	7975818.445	503660.256	13.538	EG
2158147	7975814.816	503650.151	13.69	EG
2158148	7975810.629	503641.1	13.583	EG
2158149	7975808.58	503631.453	13.666	EG
2158150	7975807.664	503622.885	13.633	EG
2158151	7975804.191	503613.367	13.639	EG
2158152	7975803.301	503607.453	13.741	CREST
2158153	7975803.256	503606.639	13.429	TOE
2158154	7975813.751	503605.418	13.259	TOE
2158155	7975813.827	503606.194	13.699	CREST
2158156	7975814.731	503615.475	13.678	EG
2158157	7975815.838	503626.406	13.648	EG
2158158	7975817.049	503637.242	13.623	EG
2158159	7975817.741	503649.06	13.716	EG
2158160	7975826.868	503677.563	13.624	EG
2158161	7975827.357	503661.821	13.564	EG
2158162	7975826.828	503648.043	13.667	EG
2158163	7975826.228	503632.21	13.723	EG
2158164	7975825.397	503620.397	13.72	EG
2158165	7975823.857	503609.17	13.737	EG
2158166	7975823.858	503604.304	13.704	CREST
2158167	7975824.102	503603.745	13.156	TOE

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Laydown LP2 Type 8 Fill (150mm minus) Survey Data

Point Number	Northing	Easting	Elevation	Description
1000	7975944.575	503726.611	13.485	T8 CREST
1001	7975944.975	503711.449	13.502	T8 CREST
1002	7975944.488	503697.424	13.487	T8 CREST
1003	7975944.235	503683.546	13.528	T8 CREST
1004	7975944.151	503670.327	13.556	T8 CREST
1005	7975943.615	503670.021	13.582	T8 CREST
1006	7975938.804	503669.373	13.598	T8 CREST
1007	7975932.461	503660.905	13.559	T8 CREST
1008	7975928.515	503655.004	13.534	T8 CREST
1009	7975920.088	503646.121	13.623	T8 CREST
1010	7975907.525	503633.07	13.702	T8 CREST
1011	7975897.944	503623.763	13.606	T8 CREST
1012	7975884.481	503609.951	13.62	T8 CREST
1013	7975874.355	503598.865	13.67	T8 CREST
1014	7975859.595	503599.886	13.661	T8 CREST
1015	7975840.28	503602.331	13.653	T8 CREST
1016	7975822.785	503604.287	13.709	T8 CREST
1017	7975804.437	503606.307	13.657	T8 CREST
1018	7975790.095	503608.06	13.67	T8 CREST
1019	7975788.845	503609.244	13.699	T8 CREST
1020	7975786.658	503628.488	13.7	T8 CREST
1021	7975783.645	503643.522	13.679	T8 CREST
1022	7975783.349	503647.11	13.719	T8 CREST
1023	7975791.676	503659.406	13.66	T8 CREST
1024	7975799.921	503670.583	13.627	T8 CREST
1025	7975806.403	503679.889	13.61	T8 CREST
1026	7975815.174	503691.429	13.596	T8 CREST
1027	7975823.918	503703.017	13.529	T8 CREST
1028	7975830.419	503716.899	13.503	T8 CREST
1029	7975833.748	503724.724	13.487	T8 CREST
10000	7975843.247	503721.273	13.476	T8
40000	7975939.162	503730.192	13.469	T8
40001	7975939.052	503724.909	13.476	T8
40002	7975938.64	503719.863	13.495	T8
40003	7975938.318	503714.338	13.491	T8
40004	7975938.349	503708.89	13.502	T8
40005	7975938.214	503703.748	13.48	T8
40006	7975938.101	503698.316	13.525	T8
40007	7975937.837	503693.322	13.53	T8

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40008	7975936.721	503688.064	13.547	T8
40009	7975934.746	503682.959	13.518	T8
40010	7975932.52	503677.914	13.577	T8
40011	7975930.253	503672.756	13.543	T8
40012	7975927.969	503668.058	13.514	T8
40013	7975925.276	503663.314	13.547	T8
40014	7975921.98	503658.678	13.495	T8
40015	7975918.701	503654.101	13.535	T8
40016	7975915.48	503650.042	13.557	T8
40017	7975911.71	503646.103	13.603	T8
40018	7975907.697	503642.183	13.594	T8
40019	7975903.994	503638.705	13.613	T8
40020	7975900.233	503635.23	13.556	T8
40021	7975896.351	503631.558	13.583	T8
40022	7975892.46	503628.172	13.624	T8
40023	7975888.279	503624.352	13.593	T8
40024	7975884.224	503620.655	13.603	T8
40025	7975880.005	503616.877	13.583	T8
40026	7975875.601	503613.239	13.617	T8
40027	7975870.672	503610.481	13.624	T8
40028	7975865.062	503609.462	13.623	T8
40029	7975859.972	503609.353	13.619	T8
40030	7975854.81	503609.364	13.639	T8
40031	7975849.669	503609.495	13.632	T8
40032	7975844.516	503609.681	13.668	T8
40033	7975839.269	503610.276	13.641	T8
40034	7975834.016	503610.857	13.68	T8
40035	7975828.815	503611.302	13.619	T8
40036	7975823.718	503611.661	13.625	T8
40037	7975818.726	503611.924	13.606	T8
40038	7975813.697	503612.304	13.612	T8
40039	7975808.176	503613.055	13.613	T8
40040	7975803.102	503614.803	13.615	T8
40041	7975799.217	503618.494	13.618	T8
40042	7975797.022	503623.636	13.612	T8
40043	7975795.917	503628.642	13.64	T8
40044	7975795.608	503633.796	13.583	T8
40045	7975796.409	503639.515	13.594	T8
40046	7975797.423	503645.119	13.583	T8
40047	7975798.748	503650.41	13.579	T8
40048	7975800.907	503655.259	13.613	T8
40049	7975803.596	503659.914	13.571	T8

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40050	7975806.417	503664.572	13.585	T8
40051	7975809.334	503669.058	13.612	T8
40052	7975812.115	503673.663	13.606	T8
40053	7975815.156	503678.265	13.544	T8
40054	7975818.381	503683.001	13.543	T8
40055	7975821.225	503687.359	13.526	T8
40056	7975823.989	503691.885	13.498	T8
40057	7975826.394	503696.644	13.518	T8
40058	7975828.807	503701.383	13.521	T8
40059	7975831.368	503706.07	13.501	T8
40060	7975833.972	503710.882	13.47	T8
40061	7975836.613	503715.424	13.502	T8
40062	7975840.751	503719.244	13.423	T8
40063	7975846.075	503721.212	13.449	T8
40064	7975851.212	503722.22	13.451	T8
40065	7975856.423	503723.098	13.425	T8
40066	7975861.561	503723.702	13.39	T8
40067	7975866.744	503724.185	13.397	T8
40068	7975872.104	503724.725	13.416	T8
40069	7975877.521	503725.412	13.434	T8
40070	7975882.809	503726.154	13.458	T8
40071	7975888.051	503726.736	13.462	T8
40072	7975893.151	503727.285	13.456	T8
40073	7975898.254	503727.828	13.445	T8
40074	7975903.392	503728.443	13.44	T8
40075	7975908.518	503729.161	13.461	T8
40076	7975913.576	503729.808	13.452	T8
40077	7975919.097	503730.049	13.482	T8
40078	7975924.293	503727.843	13.471	T8
40079	7975927.756	503724.223	13.474	T8
40080	7975929.582	503719.022	13.506	T8
40081	7975929.209	503713.994	13.507	T8
40082	7975928.444	503708.518	13.496	T8
40083	7975928.013	503702.748	13.497	T8
40084	7975928.045	503697.75	13.528	T8
40085	7975927.635	503692.205	13.518	T8
40086	7975926.814	503686.938	13.515	T8
40087	7975925.318	503681.672	13.552	T8
40088	7975923.116	503676.57	13.529	T8
40089	7975921.021	503671.913	13.581	T8
40090	7975918.444	503667.528	13.561	T8
40091	7975915.508	503662.838	13.532	T8

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40092	7975912.355	503658.242	13.555	T8
40093	7975908.95	503653.756	13.555	T8
40094	7975905.714	503649.698	13.638	T8
40095	7975902.217	503645.643	13.594	T8
40096	7975898.582	503641.567	13.603	T8
40097	7975894.534	503637.446	13.627	T8
40098	7975890.744	503633.699	13.635	T8
40099	7975887.088	503630.223	13.555	T8
40100	7975883.109	503626.224	13.597	T8
40101	7975879.458	503622.742	13.591	T8
40102	7975875.473	503619.456	13.605	T8
40103	7975870.741	503617.131	13.631	T8
40104	7975865.627	503616.083	13.62	T8
40105	7975860.299	503616.075	13.625	T8
40106	7975854.619	503616.632	13.604	T8
40107	7975848.899	503617.8	13.597	T8
40108	7975843.287	503619	13.617	T8
40109	7975837.911	503620.52	13.618	T8
40110	7975832.705	503622.084	13.613	T8
40111	7975827.738	503623.589	13.608	T8
40112	7975823.01	503625.444	13.599	T8
40113	7975818.354	503628.695	13.596	T8
40114	7975815.188	503633.266	13.597	T8
40115	7975813.817	503638.573	13.603	T8
40116	7975814.119	503643.667	13.627	T8
40117	7975815.858	503648.755	13.607	T8
40118	7975818.09	503653.292	13.574	T8
40119	7975820.561	503658.211	13.557	T8
40120	7975822.684	503662.742	13.548	T8
40121	7975824.73	503667.43	13.548	T8
40122	7975826.609	503672.361	13.557	T8
40123	7975828.602	503677.321	13.529	T8
40124	7975830.615	503682.237	13.497	T8
40125	7975832.649	503686.926	13.537	T8
40126	7975834.778	503691.514	13.542	T8
40127	7975837.083	503696.002	13.531	T8
40128	7975839.607	503700.473	13.493	T8
40129	7975842.435	503704.795	13.504	T8
40130	7975845.838	503708.66	13.495	T8
40131	7975849.657	503712.097	13.427	T8
40132	7975854.12	503714.538	13.407	T8
40133	7975859.01	503716.06	13.398	T8

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40134	7975864.043	503717.052	13.351	T8
40135	7975869.709	503718.089	13.464	T8
40136	7975875.321	503718.635	13.441	T8
40137	7975881.122	503718.955	13.412	T8
40138	7975886.913	503719.239	13.452	T8
40139	7975891.977	503719.478	13.464	T8
40140	7975897.069	503719.525	13.541	T8
40141	7975902.095	503719.328	13.431	T8
40142	7975907.637	503718.537	13.485	T8
40143	7975911.902	503715.902	13.486	T8
40144	7975914.186	503710.824	13.527	T8
40145	7975915.194	503705.769	13.523	T8
40146	7975915.619	503700.566	13.531	T8
40147	7975914.803	503695.514	13.508	T8
40148	7975913.574	503690.388	13.528	T8
40149	7975911.888	503685.325	13.527	T8
40150	7975910.02	503680.521	13.549	T8
40151	7975908.046	503675.725	13.554	T8
40152	7975905.682	503670.676	13.525	T8
40153	7975902.878	503665.768	13.515	T8
40154	7975900.011	503660.75	13.522	T8
40155	7975897.442	503656.387	13.532	T8
40156	7975894.892	503651.982	13.616	T8
40157	7975892.278	503647.5	13.636	T8
40158	7975889.505	503643.084	13.577	T8
40159	7975886.549	503638.941	13.605	T8
40160	7975882.854	503634.668	13.594	T8
40161	7975878.834	503630.863	13.579	T8
40162	7975874.163	503628.213	13.601	T8
40163	7975868.95	503626.854	13.607	T8
40164	7975863.499	503626.891	13.601	T8
40165	7975858.04	503628.075	13.59	T8
40166	7975852.796	503629.995	13.603	T8
40167	7975848.133	503632.666	13.602	T8
40168	7975844.087	503635.935	13.555	T8
40169	7975840.566	503639.482	13.554	T8
40170	7975836.435	503642.948	13.566	T8
40171	7975832.571	503646.437	13.536	T8
40172	7975828.198	503649.973	13.504	T8
40173	7975824.197	503653.251	13.554	T8
40174	7975820.241	503656.906	13.563	T8
40175	7975816.753	503660.897	13.548	T8

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40176	7975814.143	503665.275	13.567	T8
40177	7975813.134	503670.72	13.595	T8
40178	7975814.736	503675.547	13.609	T8
40179	7975817.871	503679.704	13.592	T8
40180	7975821.314	503683.643	13.563	T8
40181	7975824.908	503687.45	13.509	T8
40182	7975828.115	503691.517	13.507	T8
40183	7975831.097	503695.728	13.49	T8
40184	7975833.758	503699.997	13.501	T8
40185	7975836.38	503704.28	13.475	T8
40186	7975839.296	503708.677	13.515	T8
40187	7975842.938	503712.876	13.481	T8
40188	7975847.358	503715.841	13.425	T8
40189	7975852.135	503717.548	13.427	T8
40190	7975857.02	503719.329	13.416	T8
40191	7975862.087	503720.723	13.413	T8
40192	7975867.391	503721.678	13.429	T8
40193	7975872.823	503722.322	13.414	T8
40194	7975878.301	503722.789	13.412	T8
40195	7975883.544	503723.201	13.418	T8
40196	7975889.082	503723.81	13.452	T8
40197	7975894.151	503724.421	13.409	T8
40198	7975899.324	503725.05	13.431	T8
40199	7975904.478	503725.378	13.44	T8
40200	7975910.121	503725.192	13.462	T8
40201	7975915.505	503724.803	13.463	T8
40202	7975920.29	503723.314	13.482	T8
40203	7975923.33	503719.137	13.493	T8
40204	7975922.628	503713.617	13.472	T8
40205	7975921.476	503708.229	13.493	T8
40206	7975920.049	503703.39	13.494	T8
40207	7975918.556	503698.223	13.523	T8
40208	7975917.498	503692.838	13.545	T8
40209	7975916.332	503687.747	13.545	T8
40210	7975915.049	503682.81	13.547	T8
40211	7975913.836	503677.831	13.567	T8
40212	7975912.395	503672.883	13.534	T8
40213	7975910.247	503668.03	13.512	T8
40214	7975908.034	503663.176	13.534	T8
40215	7975905.788	503658.133	13.559	T8
40216	7975903.302	503653.053	13.596	T8
40217	7975900.451	503648.153	13.583	T8

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Port Site Laydown Area LP2
Type 8 Fill (150mm minus)

40218	7975897.613	503644.029	13.628	T8
40219	7975894.589	503639.981	13.649	T8
40220	7975891.138	503636.277	13.62	T8
40221	7975886.993	503632.462	13.597	T8
40222	7975882.978	503629.195	13.541	T8
40223	7975878.858	503626.057	13.559	T8
40224	7975874.423	503623.121	13.592	T8
40225	7975869.672	503621.341	13.604	T8
40226	7975864.566	503622.166	13.613	T8
40227	7975859.306	503623.197	13.586	T8
40228	7975853.929	503623.484	13.6	T8
40229	7975848.822	503624.371	13.587	T8
40230	7975843.5	503625.073	13.609	T8
40231	7975838.217	503625.779	13.632	T8
40232	7975833.275	503627.91	13.607	T8
40233	7975828.081	503629.372	13.567	T8
40234	7975822.864	503629.047	13.588	T8
40235	7975817.341	503628.216	13.609	T8
40236	7975811.942	503627.873	13.612	T8
40237	7975806.949	503627.234	13.596	T8
40238	7975802.523	503624.704	13.579	T8
40239	7975799.9	503620.177	13.577	T8
40240	7975801.227	503615.023	13.599	T8
40241	7975805.614	503612.58	13.631	T8
40242	7975810.634	503612.918	13.61	T8
40243	7975815.244	503615.001	13.61	T8
40244	7975818.488	503619.564	13.583	T8
40245	7975820.696	503624.526	13.604	T8
40246	7975822.504	503629.241	13.626	T8
40247	7975824.414	503634.446	13.58	T8
40248	7975826.133	503639.307	13.585	T8
40249	7975827.957	503644.216	13.559	T8
40250	7975829.892	503649.241	13.546	T8
40251	7975831.942	503654.613	13.559	T8
40252	7975833.782	503659.438	13.518	T8
40253	7975835.566	503664.224	13.532	T8
40254	7975837.67	503669.615	13.547	T8
40255	7975839.689	503674.791	13.546	T8
40256	7975841.579	503679.807	13.534	T8
40257	7975843.442	503685.011	13.528	T8
40258	7975845.107	503689.795	13.547	T8
40259	7975846.697	503694.729	13.503	T8

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Port Site Laydown Area LP2
Type 8 Fill (150mm minus)

40260	7975848.27	503699.727	13.505	T8
40261	7975849.771	503704.683	13.557	T8
40262	7975852.214	503709.435	13.471	T8
40263	7975856.356	503712.462	13.469	T8
40264	7975861.421	503711.117	13.446	T8
40265	7975862.732	503706.086	13.528	T8
40266	7975860.119	503701.352	13.504	T8
40267	7975857.278	503697.001	13.539	T8
40268	7975854.301	503692.715	13.498	T8
40269	7975851.146	503688.264	13.544	T8
40270	7975848.121	503683.643	13.585	T8
40271	7975845.137	503679.257	13.554	T8
40272	7975842.369	503674.643	13.552	T8
40273	7975839.732	503669.764	13.563	T8
40274	7975837.224	503665.002	13.558	T8
40275	7975834.841	503660.223	13.544	T8
40276	7975832.669	503655.474	13.562	T8
40277	7975830.606	503650.679	13.544	T8
40278	7975828.815	503645.871	13.525	T8
40279	7975827.564	503640.727	13.577	T8
40280	7975827.837	503635.579	13.542	T8
40281	7975831.553	503631.86	13.57	T8
40282	7975836.602	503632.372	13.604	T8
40283	7975839.795	503636.399	13.585	T8
40284	7975840.63	503641.657	13.594	T8
40285	7975841.549	503646.602	13.562	T8
40286	7975842.967	503651.775	13.555	T8
40287	7975844.645	503656.594	13.562	T8
40288	7975846.622	503661.805	13.573	T8
40289	7975848.656	503666.681	13.576	T8
40290	7975850.626	503671.64	13.579	T8
40291	7975852.274	503676.736	13.571	T8
40292	7975853.802	503681.855	13.544	T8
40293	7975855.543	503686.997	13.481	T8
40294	7975857.167	503691.967	13.524	T8
40295	7975858.816	503696.948	13.54	T8
40296	7975860.523	503702.104	13.518	T8
40297	7975862.361	503706.836	13.496	T8
40298	7975864.472	503711.886	13.429	T8
40299	7975866.636	503716.501	13.425	T8
40300	7975869.83	503720.778	13.423	T8
40301	7975874.22	503723.249	13.451	T8

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Port Site Laydown Area LP2
Type 8 Fill (150mm minus)

40302	7975879.317	503722.392	13.445	T8
40303	7975882.191	503718.281	13.391	T8
40304	7975881.835	503713.278	13.495	T8
40305	7975880.145	503708.566	13.479	T8
40306	7975878.218	503703.814	13.51	T8
40307	7975876.067	503699.245	13.494	T8
40308	7975873.929	503694.686	13.555	T8
40309	7975871.572	503689.804	13.567	T8
40310	7975869.021	503684.909	13.575	T8
40311	7975866.612	503680.344	13.56	T8
40312	7975864.187	503675.906	13.583	T8
40313	7975861.378	503671.449	13.577	T8
40314	7975858.273	503666.853	13.582	T8
40315	7975855.2	503662.587	13.575	T8
40316	7975851.888	503658.149	13.549	T8
40317	7975848.945	503654.057	13.55	T8
40318	7975845.973	503650.004	13.554	T8
40319	7975842.914	503645.75	13.581	T8
40320	7975839.698	503641.394	13.577	T8
40321	7975836.778	503637.28	13.587	T8
40322	7975835.246	503631.972	13.579	T8
40323	7975836.994	503626.835	13.599	T8
40324	7975841.313	503623.692	13.641	T8
40325	7975846.391	503623.532	13.631	T8
40326	7975850.684	503626.746	13.605	T8
40327	7975852.902	503631.264	13.597	T8
40328	7975854.307	503636.093	13.569	T8
40329	7975855.735	503640.885	13.542	T8
40330	7975857.308	503646.123	13.519	T8
40331	7975858.915	503651.39	13.556	T8
40332	7975860.486	503656.341	13.571	T8
40333	7975862.073	503661.369	13.553	T8
40334	7975863.626	503666.489	13.596	T8
40335	7975865.205	503671.912	13.573	T8
40336	7975867.029	503676.835	13.541	T8
40337	7975869.125	503681.778	13.519	T8
40338	7975870.926	503686.832	13.554	T8
40339	7975872.568	503692.187	13.544	T8
40340	7975874.005	503697.567	13.475	T8
40341	7975875.087	503702.636	13.519	T8
40342	7975876.299	503707.651	13.491	T8
40343	7975877.628	503712.988	13.409	T8

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Port Site Laydown Area LP2
Type 8 Fill (150mm minus)

40344	7975878.964	503717.971	13.453	T8
40345	7975880.796	503722.954	13.44	T8
40346	7975884.187	503726.765	13.471	T8
40347	7975889.12	503727.866	13.437	T8
40348	7975893.302	503724.732	13.442	T8
40349	7975894.168	503719.525	13.462	T8
40350	7975892.992	503714.564	13.518	T8
40351	7975891.268	503709.619	13.498	T8
40352	7975889.439	503704.509	13.507	T8
40353	7975887.619	503699.429	13.517	T8
40354	7975885.452	503694.445	13.542	T8
40355	7975883.163	503689.843	13.494	T8
40356	7975880.843	503685.126	13.542	T8
40357	7975878.801	503680.502	13.531	T8
40358	7975876.875	503675.743	13.561	T8
40359	7975875.016	503670.871	13.548	T8
40360	7975873.037	503665.905	13.579	T8
40361	7975870.862	503661.259	13.572	T8
40362	7975868.616	503656.583	13.599	T8
40363	7975866.175	503651.668	13.581	T8
40364	7975863.544	503646.82	13.553	T8
40365	7975860.776	503641.971	13.551	T8
40366	7975858.117	503637.47	13.57	T8
40367	7975855.311	503632.686	13.588	T8
40368	7975853.807	503627.826	13.624	T8
40369	7975854.795	503622.653	13.603	T8
40370	7975859.067	503619.382	13.613	T8
40371	7975864.148	503619.754	13.607	T8
40372	7975867.746	503623.417	13.588	T8
40373	7975868.598	503628.617	13.573	T8
40374	7975868.999	503633.847	13.547	T8
40375	7975869.74	503639.009	13.544	T8
40376	7975871.292	503644.257	13.563	T8
40377	7975872.523	503649.269	13.569	T8
40378	7975874.265	503654.272	13.57	T8
40379	7975876.418	503659.11	13.557	T8
40380	7975878.853	503663.628	13.549	T8
40381	7975881.32	503668.46	13.542	T8
40382	7975883.04	503673.57	13.507	T8
40383	7975883.77	503678.653	13.524	T8
40384	7975884.233	503683.7	13.53	T8
40385	7975884.673	503689.123	13.513	T8

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Port Site Laydown Area LP2
Type 8 Fill (150mm minus)

40386	7975885.319	503694.56	13.534	T8
40387	7975886.904	503699.544	13.477	T8
40388	7975889.078	503704.4	13.52	T8
40389	7975890.966	503709.476	13.485	T8
40390	7975892.821	503714.429	13.471	T8
40391	7975895.885	503718.542	13.46	T8
40392	7975900.778	503720.392	13.501	T8
40393	7975905.116	503717.269	13.506	T8
40394	7975904.968	503712.154	13.468	T8
40395	7975903.785	503707.057	13.492	T8
40396	7975903.403	503701.932	13.488	T8
40397	7975902.689	503696.718	13.53	T8
40398	7975901.545	503691.378	13.519	T8
40399	7975899.739	503686.284	13.555	T8
40400	7975897.693	503681.617	13.514	T8
40401	7975895.287	503677.002	13.534	T8
40402	7975892.618	503672.397	13.485	T8
40403	7975890.198	503667.635	13.525	T8
40404	7975887.909	503662.967	13.584	T8
40405	7975884.924	503658.491	13.604	T8
40406	7975881.78	503654.16	13.569	T8
40407	7975878.747	503649.975	13.587	T8
40408	7975875.451	503645.434	13.588	T8
40409	7975872.406	503641.312	13.552	T8
40410	7975869.091	503636.902	13.569	T8
40411	7975865.655	503632.986	13.583	T8
40412	7975864.024	503628.021	13.596	T8
40413	7975866.674	503623.571	13.599	T8
40414	7975871.753	503622.716	13.578	T8
40415	7975875.933	503626.056	13.57	T8
40416	7975876.38	503631.305	13.573	T8
40417	7975875.498	503636.435	13.579	T8
40418	7975876.889	503641.516	13.589	T8
40419	7975879.284	503646.398	13.576	T8
40420	7975881.893	503650.741	13.606	T8
40421	7975884.668	503655.017	13.577	T8
40422	7975886.822	503659.703	13.551	T8
40423	7975888.571	503664.792	13.554	T8
40424	7975890.419	503669.849	13.513	T8
40425	7975892.613	503674.596	13.521	T8
40426	7975895.482	503679.302	13.55	T8
40427	7975898.238	503683.827	13.525	T8

Mary River Expansion Project
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Port Site Laydown Area LP2
Type 8 Fill (150mm minus)

40428	7975900.854	503688.527	13.485	T8
40429	7975903.538	503693.205	13.501	T8
40430	7975906.063	503697.533	13.508	T8
40431	7975908.531	503702.196	13.488	T8
40432	7975910.228	503707.074	13.486	T8
40433	7975910.132	503712.615	13.484	T8
40434	7975907.414	503717.135	13.489	T8
40435	7975902.733	503719.294	13.44	T8
40436	7975897.859	503717.697	13.461	T8
40437	7975895.957	503712.821	13.473	T8
40438	7975897.094	503707.736	13.505	T8
40439	7975897.13	503702.465	13.507	T8
40440	7975896.099	503697.468	13.526	T8
40441	7975894.378	503692.671	13.512	T8
40442	7975892.823	503687.91	13.544	T8
40443	7975891.651	503682.862	13.54	T8
40444	7975890.72	503677.741	13.525	T8
40445	7975890.966	503672.469	13.522	T8
40446	7975891.553	503667.158	13.539	T8
40447	7975890.582	503661.838	13.569	T8
40448	7975889.33	503656.668	13.576	T8
40449	7975887.698	503651.487	13.615	T8
40450	7975885.647	503646.804	13.605	T8
40451	7975883.063	503642.332	13.573	T8
40452	7975880.055	503638.219	13.568	T8
40453	7975876.532	503634.487	13.599	T8
40454	7975872.311	503631.314	13.591	T8
40455	7975867.95	503628.855	13.555	T8
40456	7975862.963	503626.557	13.594	T8
40457	7975858.181	503624.823	13.616	T8
40458	7975852.841	503623.42	13.615	T8
40459	7975847.942	503622.256	13.635	T8
40460	7975842.917	503620.979	13.638	T8
40461	7975837.921	503619.336	13.616	T8
40462	7975832.636	503617.769	13.627	T8
40463	7975827.572	503616.511	13.609	T8
40464	7975822.162	503615.634	13.604	T8
40465	7975816.672	503615.257	13.611	T8
40466	7975811.33	503615.324	13.618	T8
40467	7975806.477	503617.395	13.617	T8
40468	7975804.545	503622.094	13.633	T8
40469	7975805.901	503626.952	13.595	T8

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Port Site Laydown Area LP2
Type 8 Fill (150mm minus)

40470	7975807.41	503631.721	13.577	T8
40471	7975808.377	503636.981	13.616	T8
40472	7975807.545	503642.15	13.599	T8
40473	7975807.166	503647.181	13.635	T8
40474	7975808.365	503652.37	13.584	T8
40475	7975810.705	503657.444	13.545	T8
40476	7975813.551	503662.038	13.581	T8
40477	7975816.616	503666.28	13.557	T8
40478	7975820.134	503670.54	13.539	T8
40479	7975823.937	503674.769	13.512	T8
40480	7975827.516	503678.93	13.545	T8
40481	7975831.041	503683.011	13.539	T8
40482	7975834.702	503687.235	13.508	T8
40483	7975838.482	503691.46	13.542	T8
40484	7975841.956	503695.189	13.508	T8
40485	7975845.449	503698.973	13.518	T8
40486	7975848.867	503702.719	13.566	T8
40487	7975852.604	503706.441	13.503	T8
40488	7975857.015	503709.647	13.468	T8
40489	7975861.847	503711.151	13.443	T8
40490	7975866.899	503710.384	13.463	T8
40491	7975870.85	503707.143	13.521	T8
40492	7975872.062	503701.888	13.498	T8
40493	7975870.513	503697.016	13.559	T8
40494	7975868.59	503692.231	13.544	T8
40495	7975866.728	503687.216	13.567	T8
40496	7975864.979	503682.016	13.555	T8
40497	7975863.71	503676.908	13.579	T8
40498	7975862.97	503671.263	13.555	T8
40499	7975863.439	503666.157	13.606	T8
40500	7975864.968	503660.96	13.578	T8
40501	7975866.795	503655.929	13.581	T8
40502	7975868.97	503651.269	13.575	T8
40503	7975871.93	503646.484	13.591	T8
40504	7975875.355	503642.061	13.581	T8
40505	7975878.83	503638.339	13.576	T8
40506	7975882.455	503634.817	13.569	T8
40507	7975886.347	503631.236	13.578	T8
40508	7975890.267	503627.792	13.567	T8

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Port Site Laydown Area LP2
Type 8 Fill (150mm minus)

Laydown LP2 Type 8 Fill (150mm minus) Survey Data

Point Number	Northing	Easting	Elevation	Description
1	7975944.218	503723.909	13.45	T8
2	7975937.504	503724.215	13.45	T8
3	7975926.372	503724.643	13.439	T8
4	7975914.746	503724.996	13.474	T8
5	7975901.923	503724.553	13.43	T8
6	7975889.507	503725.064	13.459	T8
7	7975879.352	503725.038	13.446	T8
8	7975869.759	503725.461	13.479	T8
9	7975860.812	503726.158	13.373	T8
10	7975857.428	503726.139	13.439	T8
11	7975873.636	503736.023	13.328	T8
12	7975883.286	503735.868	13.44	T8
13	7975891.96	503735.833	13.434	T8
14	7975900.239	503735.57	13.378	T8
15	7975908.794	503735.564	13.419	T8
16	7975917.986	503735.685	13.465	T8
17	7975927.124	503734.46	13.468	T8
18	7975935.053	503734.145	13.474	T8
19	7975944.517	503734.351	13.453	T8
20	7975944.624	503746.35	13.454	T8
21	7975933.211	503746.984	13.384	T8
22	7975922.275	503747.73	13.42	T8
23	7975910.579	503748.583	13.348	T8
24	7975897.224	503750.171	13.346	T8
25	7975889.631	503750.566	13.344	T8
26	7975897.286	503760.522	13.361	T8
27	7975906.885	503760.625	13.363	T8
28	7975918.898	503760.298	13.406	T8
29	7975930.691	503759.381	13.413	T8
30	7975940.287	503758.979	13.398	T8
31	7975944.827	503759.168	13.406	T8
32	7975944.992	503772.347	13.384	T8
33	7975932.019	503774.165	13.356	T8
34	7975920.969	503776.41	13.389	T8
35	7975909.496	503778.15	13.443	T8
36	7975916.913	503789.338	13.455	T8
37	7975928.234	503789.456	13.352	T8
38	7975939.896	503789.365	13.347	T8
39	7975945.271	503790.14	13.348	T8

Mary River Expansion Project
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Port Site Laydown Area LP2
Type 8 Fill (150mm minus)

40	7975945.366	503800.882	13.321	T8
41	7975937.049	503801.304	13.285	T8
42	7975927.613	503801.889	13.394	T8
43	7975922.632	503801.775	13.336	T8

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(Section 4)

Survey Data
Type 8 Berm
(150mm minus)

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
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Port Site Laydown Area LP2
Type 8 Berm Fill (150mm minus)

Laydown LP2 Type 8 Berm Fill (150mm minus) Survey Data

Point Number	Northing	Easting	Elevation	Description
10	7975940.48	503670.975	13.801	T8 TOE
11	7975943.203	503670.727	13.823	T8 TOE
12	7975942.79	503671.273	14.122	T8 CREST
13	7975941.122	503671.343	14.182	T8 CREST
14	7975941.508	503680.854	14.18	T8 CREST
15	7975943.268	503681.038	14.1	T8 CREST
16	7975943.859	503681.035	13.733	T8 TOE
17	7975940.817	503681.394	13.681	T8 TOE
18	7975941.071	503694.302	13.697	T8 TOE
19	7975943.965	503695.137	13.536	T8 TOE
20	7975943.169	503695.285	14.111	T8 CREST
21	7975941.927	503695.599	14.184	T8 CREST
22	7975943.452	503707.698	14.055	T8 CREST
23	7975942.175	503707.164	14.085	T8 CREST
24	7975941.364	503707.104	13.672	T8 TOE
25	7975944.291	503707.137	13.502	T8 TOE
26	7975944.181	503720.835	13.487	T8 TOE
27	7975941.304	503720.512	13.645	T8 TOE
28	7975942.055	503720.691	14.127	T8 CREST
29	7975943.391	503720.978	14.079	T8 CREST
30	7975943.375	503733.653	14.063	T8 CREST
31	7975942.182	503733.931	14.088	T8 CREST
32	7975941.43	503733.885	13.612	T8 TOE
33	7975944.176	503734.609	13.455	T8 TOE
34	7975944.23	503747.702	13.496	T8 TOE
35	7975941.673	503747.327	13.564	T8 TOE
36	7975942.572	503747.613	14.082	T8 CREST
37	7975943.43	503747.697	14.05	T8 CREST
38	7975943.814	503759.442	14.012	T8 CREST
39	7975942.697	503759.457	14.028	T8 CREST
40	7975941.896	503759.296	13.573	T8 TOE
41	7975944.582	503759.488	13.419	T8 TOE
42	7975944.661	503776.043	13.543	T8 TOE
43	7975944.263	503775.954	13.949	T8 CREST
44	7975943.081	503775.71	13.919	T8 CREST
45	7975942.639	503775.613	13.538	T8 TOE
46	7975944.142	503777.024	13.52	T8 TOE
47	7975942.598	503777.347	13.581	T8 TOE
48	7975944.007	503797.184	13.486	T8 TOE

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Port Site Laydown Area LP2
Type 8 Berm Fill (150mm minus)

49	7975944.894	503798.496	13.372	T8 TOE
50	7975941.625	503796.81	13.488	T8 TOE
51	7975942.178	503797.743	14.088	T8 CREST
52	7975944.146	503798.367	13.905	T8 CREST
53	7975943.863	503802.776	14.011	T8 CREST
54	7975942.685	503802.699	14.049	T8 CREST
55	7975941.657	503802.683	13.414	T8 TOE
56	7975944.921	503803.108	13.374	T8 TOE
57	7975944.915	503814.739	13.305	T8 TOE
58	7975943.937	503815.027	13.858	T8 CREST
59	7975942.941	503815.066	13.908	T8 CREST
60	7975942.191	503815.009	13.43	T8 TOE
61	7975945.242	503825.318	13.357	T8 TOE
62	7975944.327	503825.222	13.865	T8 CREST
63	7975943.301	503825.25	13.895	T8 CREST
64	7975942.605	503825.109	13.448	T8 TOE
65	7975942.889	503837.496	13.472	T8 TOE
66	7975943.625	503837.531	13.896	T8 CREST
67	7975944.468	503837.732	13.858	T8 CREST
68	7975945.502	503837.868	13.302	T8 TOE
69	7975945.754	503849.261	13.232	T8 TOE
70	7975943.727	503849.8	13.433	T8 TOE
71	7975944.116	503848.934	13.803	T8 CREST
72	7975944.973	503848.724	13.815	T8 CREST

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(Section 4)

Survey Data
Type 5
(32mm minus)

Mary River Expansion Project
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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

Laydown LP2 Type 5 Fill (32mm minus) Survey Data

Point Number	Northing	Easting	Elevation	Description
40000	7975874.358	503602.085	13.793	T5
40001	7975878.204	503605.889	13.783	T5
40002	7975882.136	503609.89	13.782	T5
40003	7975885.705	503613.401	13.749	T5
40004	7975889.52	503617.252	13.751	T5
40005	7975893.579	503621.332	13.748	T5
40006	7975897.156	503624.851	13.763	T5
40007	7975901.354	503628.832	13.763	T5
40008	7975904.89	503632.486	13.818	T5
40009	7975908.696	503636.186	13.771	T5
40010	7975912.571	503640.174	13.793	T5
40011	7975916.341	503644.104	13.741	T5
40012	7975919.753	503648.024	13.759	T5
40013	7975923.045	503651.902	13.734	T5
40014	7975926.194	503655.855	13.705	T5
40015	7975929.237	503659.934	13.694	T5
40016	7975932.07	503664.208	13.693	T5
40017	7975934.809	503668.594	13.675	T5
40018	7975937.905	503673.17	13.683	T5
40019	7975940.297	503677.7	13.675	T5
40020	7975941.733	503682.802	13.643	T5
40021	7975942.349	503687.85	13.644	T5
40022	7975942.487	503693.656	13.64	T5
40023	7975942.599	503698.958	13.607	T5
40024	7975942.611	503704.152	13.624	T5
40025	7975942.729	503709.628	13.606	T5
40026	7975942.764	503715.127	13.591	T5
40027	7975942.798	503720.481	13.589	T5
40028	7975942.811	503725.661	13.589	T5
40029	7975942.773	503730.733	13.563	T5
40030	7975942.787	503736.246	13.572	T5
40031	7975942.841	503741.735	13.58	T5
40032	7975942.946	503747.343	13.567	T5
40033	7975943.025	503752.625	13.559	T5
40034	7975943.066	503758.168	13.551	T5
40035	7975943.174	503763.547	13.533	T5
40036	7975943.319	503768.781	13.539	T5
40037	7975943.447	503773.906	13.515	T5
40038	7975943.525	503779.653	13.506	T5

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

40039	7975943.48	503784.802	13.497	T5
40040	7975942.334	503790.255	13.48	T5
40041	7975938.154	503793.212	13.453	T5
40042	7975932.781	503794.198	13.473	T5
40043	7975927.482	503794.551	13.459	T5
40044	7975922.534	503792.317	13.472	T5
40045	7975918.93	503788.429	13.441	T5
40046	7975915.642	503784.045	13.459	T5
40047	7975912.238	503779.145	13.505	T5
40048	7975909.172	503774.877	13.482	T5
40049	7975906.031	503770.497	13.494	T5
40050	7975902.901	503766.358	13.497	T5
40051	7975899.077	503761.755	13.484	T5
40052	7975895.186	503757.372	13.498	T5
40053	7975891.205	503753.788	13.521	T5
40054	7975887.514	503750.054	13.497	T5
40055	7975884.077	503746.12	13.51	T5
40056	7975880.691	503741.904	13.534	T5
40057	7975877.637	503737.627	13.522	T5
40058	7975873.916	503733.536	13.536	T5
40059	7975869.389	503730.22	13.518	T5
40060	7975865.299	503727.194	13.545	T5
40061	7975861.342	503723.923	13.547	T5
40062	7975856.742	503721.232	13.569	T5
40063	7975851.707	503720.647	13.573	T5
40064	7975846.19	503721.871	13.522	T5
40065	7975840.805	503722.289	13.579	T5
40066	7975835.963	503720.428	13.606	T5
40067	7975832.723	503716.364	13.612	T5
40068	7975830.249	503711.992	13.6	T5
40069	7975827.641	503707.048	13.624	T5
40070	7975824.936	503702.15	13.65	T5
40071	7975822.09	503697.764	13.681	T5
40072	7975818.83	503693.347	13.694	T5
40073	7975815.347	503688.832	13.708	T5
40074	7975811.665	503684.193	13.677	T5
40075	7975807.917	503679.394	13.666	T5
40076	7975804.289	503674.453	13.71	T5
40077	7975800.923	503669.584	13.721	T5
40078	7975797.666	503664.989	13.72	T5
40079	7975794.489	503660.532	13.739	T5
40080	7975791.167	503655.574	13.725	T5

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

40081	7975788.702	503650.682	13.737	T5
40082	7975787.576	503645.478	13.755	T5
40083	7975787.374	503639.822	13.773	T5
40084	7975787.791	503633.872	13.784	T5
40085	7975788.332	503628.075	13.754	T5
40086	7975788.89	503622.987	13.732	T5
40087	7975789.629	503617.986	13.755	T5
40088	7975791.794	503613.102	13.762	T5
40089	7975796.435	503609.991	13.751	T5
40090	7975801.774	503608.762	13.769	T5
40091	7975806.803	503608.132	13.742	T5
40092	7975812.661	503607.3	13.769	T5
40093	7975818.176	503606.474	13.769	T5
40094	7975823.995	503605.659	13.77	T5
40095	7975830.014	503604.889	13.769	T5
40096	7975836.171	503604.225	13.772	T5
40097	7975842.329	503603.553	13.787	T5
40098	7975848.362	503602.824	13.77	T5
40099	7975854.101	503602.073	13.769	T5
40100	7975859.481	503601.418	13.782	T5
40101	7975864.53	503601.284	13.741	T5
40102	7975869.895	503602.836	13.743	T5
40103	7975874.116	503606.416	13.794	T5
40104	7975877.832	503610.923	13.777	T5
40105	7975881.217	503614.91	13.768	T5
40106	7975884.889	503619.044	13.781	T5
40107	7975888.819	503623.347	13.764	T5
40108	7975892.812	503627.589	13.779	T5
40109	7975896.786	503631.75	13.741	T5
40110	7975900.85	503635.921	13.752	T5
40111	7975904.997	503640.201	13.783	T5
40112	7975909.134	503644.593	13.757	T5
40113	7975913.09	503648.992	13.721	T5
40114	7975916.927	503653.415	13.705	T5
40115	7975920.667	503658.037	13.662	T5
40116	7975924.276	503662.771	13.615	T5
40117	7975927.535	503667.786	13.638	T5
40118	7975930.251	503673.265	13.654	T5
40119	7975932.296	503679.074	13.652	T5
40120	7975933.938	503684.963	13.627	T5
40121	7975935.094	503691	13.6	T5
40122	7975935.892	503697.123	13.589	T5

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

40123	7975936.256	503703.117	13.601	T5
40124	7975936.363	503709.064	13.602	T5
40125	7975936.424	503715.114	13.614	T5
40126	7975936.531	503720.118	13.585	T5
40127	7975936.653	503725.253	13.58	T5
40128	7975936.75	503730.468	13.565	T5
40129	7975936.869	503735.753	13.569	T5
40130	7975937.079	503741.106	13.568	T5
40131	7975937.423	503746.461	13.563	T5
40132	7975937.827	503751.691	13.54	T5
40133	7975938.191	503756.759	13.538	T5
40134	7975938.542	503762.854	13.531	T5
40135	7975938.744	503768.428	13.52	T5
40136	7975938.53	503773.597	13.503	T5
40137	7975936.918	503778.936	13.51	T5
40138	7975933.418	503783.238	13.5	T5
40139	7975928.434	503784.822	13.493	T5
40140	7975923.931	503782.313	13.48	T5
40141	7975920.896	503778.33	13.48	T5
40142	7975917.409	503774.271	13.51	T5
40143	7975913.658	503770.276	13.521	T5
40144	7975910.149	503766.573	13.532	T5
40145	7975906.444	503762.757	13.536	T5
40146	7975902.695	503758.769	13.537	T5
40147	7975898.844	503754.768	13.528	T5
40148	7975895.044	503750.692	13.543	T5
40149	7975891.342	503746.562	13.552	T5
40150	7975887.592	503742.37	13.525	T5
40151	7975883.665	503738.202	13.552	T5
40152	7975879.609	503734.045	13.55	T5
40153	7975875.51	503730.049	13.555	T5
40154	7975871.486	503726.04	13.549	T5
40155	7975867.457	503722.009	13.571	T5
40156	7975863.443	503717.977	13.584	T5
40157	7975859.55	503714.084	13.582	T5
40158	7975855.661	503710.209	13.587	T5
40159	7975851.679	503706.214	13.601	T5
40160	7975847.612	503702.055	13.643	T5
40161	7975843.335	503697.807	13.648	T5
40162	7975838.961	503693.354	13.67	T5
40163	7975835.426	503689.764	13.666	T5
40164	7975831.883	503686.158	13.67	T5

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

40165	7975828.334	503682.551	13.678	T5
40166	7975824.79	503678.933	13.679	T5
40167	7975821.3	503675.248	13.692	T5
40168	7975817.848	503671.508	13.694	T5
40169	7975814.475	503667.709	13.693	T5
40170	7975810.457	503663.044	13.71	T5
40171	7975806.696	503658.438	13.732	T5
40172	7975803.391	503653.825	13.732	T5
40173	7975800.735	503649.083	13.738	T5
40174	7975798.835	503644.173	13.751	T5
40175	7975797.522	503639.225	13.735	T5
40176	7975796.766	503633.532	13.761	T5
40177	7975796.958	503627.981	13.733	T5
40178	7975798.453	503623.094	13.733	T5
40179	7975801.602	503619.014	13.774	T5
40180	7975806.359	503616.476	13.766	T5
40181	7975811.407	503615.262	13.775	T5
40182	7975816.625	503614.069	13.77	T5
40183	7975821.707	503613.031	13.765	T5
40184	7975827.594	503611.974	13.771	T5
40185	7975832.834	503611.127	13.775	T5
40186	7975837.96	503610.393	13.768	T5
40187	7975843.527	503609.702	13.768	T5
40188	7975848.65	503609.076	13.75	T5
40189	7975853.715	503608.463	13.744	T5
40190	7975859.464	503607.981	13.762	T5
40191	7975864.519	503607.849	13.766	T5
40192	7975869.729	503608.768	13.751	T5
40193	7975874.746	503611.25	13.813	T5
40194	7975879.582	503614.748	13.759	T5
40195	7975883.32	503618.32	13.748	T5
40196	7975886.913	503622.02	13.759	T5
40197	7975890.956	503626.434	13.735	T5
40198	7975894.189	503630.716	13.745	T5
40199	7975897.578	503635.103	13.725	T5
40200	7975901.105	503639.513	13.753	T5
40201	7975904.809	503643.93	13.755	T5
40202	7975908.631	503648.238	13.751	T5
40203	7975912.424	503652.561	13.723	T5
40204	7975916.153	503656.906	13.686	T5
40205	7975919.763	503661.133	13.658	T5
40206	7975922.879	503665.675	13.646	T5

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

40207	7975925.052	503670.772	13.675	T5
40208	7975926.032	503676.337	13.675	T5
40209	7975926.263	503682.045	13.618	T5
40210	7975926.292	503687.783	13.612	T5
40211	7975926.444	503693.568	13.619	T5
40212	7975926.695	503699.448	13.612	T5
40213	7975927.048	503705.445	13.61	T5
40214	7975927.725	503711.45	13.585	T5
40215	7975928.536	503717.345	13.599	T5
40216	7975929.349	503723.18	13.582	T5
40217	7975930.264	503728.915	13.561	T5
40218	7975931.157	503734.636	13.561	T5
40219	7975932.011	503740.371	13.539	T5
40220	7975932.846	503746.075	13.533	T5
40221	7975933.451	503751.703	13.532	T5
40222	7975933.619	503756.952	13.519	T5
40223	7975933.129	503762.543	13.504	T5
40224	7975931.472	503767.42	13.495	T5
40225	7975927.086	503770.869	13.493	T5
40226	7975921.745	503770.492	13.484	T5
40227	7975917.576	503766.951	13.5	T5
40228	7975914.377	503762.999	13.512	T5
40229	7975910.998	503758.775	13.528	T5
40230	7975907.152	503754.482	13.526	T5
40231	7975903.717	503750.687	13.52	T5
40232	7975900.009	503746.789	13.498	T5
40233	7975896.381	503742.604	13.535	T5
40234	7975892.778	503738.425	13.557	T5
40235	7975889.117	503734.253	13.547	T5
40236	7975885.326	503730.041	13.539	T5
40237	7975881.332	503725.761	13.555	T5
40238	7975877.301	503721.465	13.584	T5
40239	7975873.221	503717.141	13.548	T5
40240	7975869.124	503712.822	13.585	T5
40241	7975865.118	503708.518	13.595	T5
40242	7975861.014	503704.305	13.612	T5
40243	7975856.993	503700.302	13.614	T5
40244	7975852.953	503696.375	13.632	T5
40245	7975848.965	503692.567	13.641	T5
40246	7975845.36	503689.096	13.645	T5
40247	7975841.605	503685.387	13.667	T5
40248	7975837.811	503681.441	13.682	T5

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

40249	7975834.25	503677.746	13.689	T5
40250	7975830.029	503673.63	13.68	T5
40251	7975826.105	503669.913	13.7	T5
40252	7975821.964	503665.995	13.721	T5
40253	7975817.819	503662.052	13.702	T5
40254	7975813.843	503658.192	13.716	T5
40255	7975810.158	503654.563	13.724	T5
40256	7975806.768	503650.817	13.716	T5
40257	7975803.822	503645.734	13.757	T5
40258	7975802.477	503640.306	13.765	T5
40259	7975802.448	503635.016	13.734	T5
40260	7975803.626	503629.919	13.717	T5
40261	7975806.449	503625.419	13.727	T5
40262	7975810.996	503622.41	13.767	T5
40263	7975816.544	503621.059	13.782	T5
40264	7975821.678	503620.414	13.788	T5
40265	7975827.269	503620.013	13.775	T5
40266	7975833.048	503619.673	13.767	T5
40267	7975838.697	503619.396	13.777	T5
40268	7975844.227	503619.03	13.752	T5
40269	7975849.611	503618.636	13.752	T5
40270	7975854.797	503618.095	13.769	T5
40271	7975859.812	503617.44	13.748	T5
40272	7975865.543	503616.686	13.748	T5
40273	7975871.079	503616.373	13.76	T5
40274	7975876.555	503617.021	13.796	T5
40275	7975881.773	503619.076	13.763	T5
40276	7975886.634	503622.257	13.751	T5
40277	7975890.895	503626.207	13.759	T5
40278	7975894.271	503630.797	13.761	T5
40279	7975897.353	503635.712	13.736	T5
40280	7975900.157	503639.926	13.752	T5
40281	7975903.064	503644.18	13.741	T5
40282	7975905.816	503648.484	13.741	T5
40283	7975908.806	503653.641	13.699	T5
40284	7975911.76	503658.538	13.685	T5
40285	7975914.77	503663.3	13.668	T5
40286	7975917.596	503668.048	13.673	T5
40287	7975919.603	503672.686	13.706	T5
40288	7975921.142	503677.922	13.648	T5
40289	7975921.88	503683.048	13.626	T5
40290	7975922.461	503688.929	13.621	T5

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

40291	7975922.685	503694.175	13.614	T5
40292	7975922.823	503699.606	13.632	T5
40293	7975923.055	503705.34	13.6	T5
40294	7975923.343	503711.142	13.585	T5
40295	7975923.662	503716.959	13.595	T5
40296	7975923.965	503722.809	13.582	T5
40297	7975924.301	503728.717	13.563	T5
40298	7975924.644	503734.693	13.541	T5
40299	7975925.004	503740.584	13.579	T5
40300	7975925.349	503746.327	13.552	T5
40301	7975925.678	503751.865	13.531	T5
40302	7975925.47	503757.638	13.497	T5
40303	7975923.503	503762.335	13.5	T5
40304	7975919.017	503764.554	13.489	T5
40305	7975914.337	503762.727	13.485	T5
40306	7975911.875	503757.702	13.513	T5
40307	7975910.446	503752.575	13.514	T5
40308	7975908.002	503747.512	13.528	T5
40309	7975904.952	503743.107	13.516	T5
40310	7975901.169	503738.626	13.52	T5
40311	7975897.743	503734.791	13.568	T5
40312	7975894.115	503731.015	13.537	T5
40313	7975890.458	503726.929	13.572	T5
40314	7975886.484	503722.779	13.559	T5
40315	7975882.457	503718.542	13.575	T5
40316	7975878.436	503714.396	13.555	T5
40317	7975874.565	503710.181	13.608	T5
40318	7975870.632	503705.956	13.602	T5
40319	7975866.653	503701.646	13.616	T5
40320	7975862.534	503697.42	13.626	T5
40321	7975858.317	503693.188	13.653	T5
40322	7975854.118	503688.99	13.631	T5
40323	7975850.017	503684.865	13.645	T5
40324	7975845.955	503680.696	13.661	T5
40325	7975841.919	503676.561	13.687	T5
40326	7975837.951	503672.43	13.66	T5
40327	7975834.096	503668.394	13.662	T5
40328	7975830.452	503664.576	13.666	T5
40329	7975826.961	503660.88	13.689	T5
40330	7975823.4	503657.261	13.711	T5
40331	7975819.242	503653.11	13.705	T5
40332	7975815.334	503649.028	13.707	T5

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

40333	7975812.66	503644.571	13.716	T5
40334	7975811.644	503639.411	13.715	T5
40335	7975814.082	503634.805	13.711	T5
40336	7975819.324	503632.839	13.734	T5
40337	7975824.839	503633.147	13.753	T5
40338	7975830.65	503633.014	13.748	T5
40339	7975836.436	503632.436	13.748	T5
40340	7975841.53	503631.704	13.75	T5
40341	7975846.58	503630.843	13.729	T5
40342	7975851.487	503629.893	13.735	T5
40343	7975856.884	503628.655	13.732	T5
40344	7975862.399	503627.327	13.732	T5
40345	7975867.761	503626.078	13.739	T5
40346	7975872.846	503624.966	13.729	T5
40347	7975877.816	503623.941	13.76	T5
40348	7975882.887	503623.622	13.767	T5
40349	7975887.82	503624.733	13.755	T5
40350	7975891.953	503627.953	13.766	T5
40351	7975893.966	503632.569	13.744	T5
40352	7975893.83	503637.973	13.748	T5
40353	7975894.966	503643.303	13.759	T5
40354	7975897.79	503648.171	13.774	T5
40355	7975901.306	503652.847	13.747	T5
40356	7975904.633	503657.016	13.708	T5
40357	7975907.953	503661.083	13.666	T5
40358	7975911.093	503665.177	13.655	T5
40359	7975914.089	503669.26	13.677	T5
40360	7975916.389	503673.924	13.655	T5
40361	7975917.356	503679.166	13.664	T5
40362	7975917.105	503684.573	13.656	T5
40363	7975916.597	503690.069	13.639	T5
40364	7975915.99	503695.708	13.627	T5
40365	7975915.424	503701.608	13.624	T5
40366	7975915.164	503706.734	13.613	T5
40367	7975915.121	503711.919	13.592	T5
40368	7975915.466	503717.121	13.591	T5
40369	7975915.948	503722.386	13.573	T5
40370	7975916.644	503727.639	13.562	T5
40371	7975917.364	503732.861	13.569	T5
40372	7975918.117	503737.915	13.558	T5
40373	7975919.055	503743.722	13.514	T5
40374	7975919.657	503749.498	13.53	T5

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

40375	7975920.33	503755.205	13.529	T5
40376	7975921.186	503760.601	13.534	T5
40377	7975922.934	503765.297	13.518	T5
40378	7975925.206	503770.453	13.494	T5
40379	7975924.871	503775.66	13.47	T5
40380	7975921.094	503779.106	13.496	T5
40381	7975915.716	503778.459	13.479	T5
40382	7975912.666	503774.103	13.492	T5
40383	7975912.552	503769.041	13.508	T5
40384	7975912.42	503764.001	13.499	T5
40385	7975911.666	503758.87	13.519	T5
40386	7975909.808	503753.803	13.519	T5
40387	7975908.286	503748.627	13.521	T5
40388	7975907.168	503743.534	13.543	T5
40389	7975905.081	503738.504	13.56	T5
40390	7975902.264	503733.863	13.575	T5
40391	7975899.121	503729.491	13.551	T5
40392	7975895.567	503724.876	13.55	T5
40393	7975892.289	503721.051	13.556	T5
40394	7975888.951	503717.102	13.592	T5
40395	7975885.54	503713.055	13.591	T5
40396	7975882.061	503709.104	13.589	T5
40397	7975878.637	503705.324	13.612	T5
40398	7975874.527	503701.114	13.633	T5
40399	7975870.596	503697.18	13.642	T5
40400	7975866.854	503693.278	13.628	T5
40401	7975863.34	503689.416	13.668	T5
40402	7975859.894	503685.735	13.652	T5
40403	7975855.955	503681.64	13.651	T5
40404	7975851.966	503677.66	13.689	T5
40405	7975847.922	503673.708	13.701	T5
40406	7975843.73	503669.76	13.694	T5
40407	7975840.121	503666.19	13.685	T5
40408	7975836.029	503662.207	13.679	T5
40409	7975832.328	503658.483	13.672	T5
40410	7975828.577	503654.631	13.685	T5
40411	7975825.538	503650.647	13.704	T5
40412	7975823.032	503646.025	13.721	T5
40413	7975821.924	503640.839	13.727	T5
40414	7975824.491	503636.438	13.708	T5
40415	7975829.828	503635.064	13.731	T5
40416	7975835.193	503636.08	13.741	T5

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

40417	7975841.038	503636.514	13.745	T5
40418	7975846.613	503636.448	13.727	T5
40419	7975852.248	503635.784	13.725	T5
40420	7975857.716	503634.905	13.718	T5
40421	7975862.902	503634.252	13.726	T5
40422	7975867.872	503634.797	13.709	T5
40423	7975872.917	503637.142	13.731	T5
40424	7975877.651	503639.376	13.747	T5
40425	7975883.108	503639.611	13.763	T5
40426	7975887.906	503637.169	13.777	T5
40427	7975891.441	503632.985	13.783	T5
40428	7975891.925	503627.731	13.791	T5
40429	7975888.087	503624.3	13.787	T5
40430	7975882.91	503625.659	13.742	T5
40431	7975878.922	503629.5	13.758	T5
40432	7975876.824	503634.086	13.762	T5
40433	7975877.061	503639.658	13.736	T5
40434	7975879.682	503644.186	13.727	T5
40435	7975882.812	503648.484	13.731	T5
40436	7975886.347	503652.893	13.739	T5
40437	7975889.509	503657.543	13.733	T5
40438	7975892.309	503662.524	13.695	T5
40439	7975894.63	503667.7	13.68	T5
40440	7975896.769	503672.806	13.666	T5
40441	7975898.759	503678.12	13.665	T5
40442	7975900.508	503683.694	13.657	T5
40443	7975901.622	503688.575	13.649	T5
40444	7975902.716	503693.47	13.636	T5
40445	7975903.922	503698.358	13.612	T5
40446	7975905.372	503704.165	13.615	T5
40447	7975906.83	503709.9	13.597	T5
40448	7975907.979	503714.784	13.596	T5
40449	7975909.132	503719.805	13.58	T5
40450	7975909.98	503724.877	13.582	T5
40451	7975910.575	503730.799	13.553	T5
40452	7975911.069	503736.49	13.56	T5
40453	7975911.617	503742.008	13.531	T5
40454	7975912.465	503747.381	13.531	T5
40455	7975913.376	503752.634	13.532	T5
40456	7975915.155	503758.127	13.518	T5
40457	7975918.533	503762.163	13.53	T5
40458	7975923.327	503763.854	13.547	T5

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

40459	7975928.797	503762.549	13.545	T5
40460	7975932.164	503758.405	13.53	T5
40461	7975932.492	503753.07	13.556	T5
40462	7975929.694	503748.403	13.561	T5
40463	7975925.536	503745.58	13.538	T5
40464	7975920.466	503743.684	13.531	T5
40465	7975916.101	503741.079	13.53	T5
40466	7975912.443	503737.072	13.553	T5
40467	7975908.967	503732.688	13.585	T5
40468	7975905.458	503727.956	13.565	T5
40469	7975902.522	503723.842	13.569	T5
40470	7975899.44	503719.655	13.599	T5
40471	7975896.067	503715.339	13.587	T5
40472	7975892.566	503711.033	13.602	T5
40473	7975888.985	503706.858	13.594	T5
40474	7975885.373	503702.836	13.615	T5
40475	7975881.703	503699.038	13.656	T5
40476	7975877.997	503695.303	13.625	T5
40477	7975874.264	503691.524	13.66	T5
40478	7975870.507	503687.807	13.67	T5
40479	7975866.737	503684.134	13.674	T5
40480	7975863.023	503680.478	13.683	T5
40481	7975859.408	503676.882	13.693	T5
40482	7975855.939	503673.165	13.654	T5
40483	7975853.005	503669.106	13.689	T5
40484	7975850.704	503664.105	13.699	T5
40485	7975850.024	503658.372	13.721	T5
40486	7975851.661	503653.064	13.704	T5
40487	7975855.418	503649.324	13.708	T5
40488	7975859.989	503647.095	13.716	T5
40489	7975864.79	503645.541	13.713	T5
40490	7975869.948	503644.837	13.704	T5
40491	7975875.069	503646.44	13.727	T5
40492	7975878.436	503650.617	13.727	T5
40493	7975880.077	503655.721	13.724	T5
40494	7975881.324	503661.124	13.727	T5
40495	7975882.75	503666.09	13.71	T5
40496	7975884.523	503671.518	13.678	T5
40497	7975886.67	503677.108	13.675	T5
40498	7975888.693	503681.805	13.669	T5
40499	7975890.769	503686.59	13.663	T5
40500	7975892.886	503691.366	13.648	T5

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

40501	7975895.09	503696.175	13.627	T5
40502	7975897.004	503701.152	13.614	T5
40503	7975898.805	503706.009	13.613	T5
40504	7975900.635	503710.712	13.587	T5
40505	7975903.04	503716.003	13.605	T5
40506	7975906.113	503720.029	13.584	T5
40507	7975910.398	503723.689	13.579	T5
40508	7975914.373	503727.356	13.56	T5
40509	7975916.374	503732.384	13.542	T5
40510	7975915.419	503737.37	13.535	T5
40511	7975911.506	503741.329	13.549	T5
40512	7975906.244	503742.288	13.518	T5
40513	7975901.465	503740.184	13.521	T5
40514	7975898.616	503735.752	13.55	T5
40515	7975897.944	503730.787	13.558	T5
40516	7975898.346	503725.436	13.553	T5
40517	7975899.228	503719.91	13.586	T5
40518	7975900.147	503714.286	13.601	T5
40519	7975899.922	503709.155	13.612	T5
40520	7975898.171	503704.219	13.64	T5
40521	7975895.791	503699.369	13.624	T5
40522	7975894.031	503694.11	13.637	T5
40523	7975893.433	503688.928	13.671	T5
40524	7975890.514	503684.54	13.688	T5
40525	7975885.101	503684.488	13.637	T5
40526	7975879.718	503684.127	13.658	T5
40527	7975874.865	503682.346	13.67	T5
40528	7975870.287	503679.278	13.695	T5
40529	7975866.171	503676.139	13.687	T5
40530	7975861.711	503672.715	13.713	T5
40531	7975857.371	503669.622	13.673	T5
40532	7975852.685	503666.663	13.68	T5
40533	7975847.97	503663.785	13.693	T5
40534	7975843.436	503661.164	13.691	T5
40535	7975838.114	503659.243	13.697	T5
40536	7975832.786	503658.023	13.683	T5
40537	7975827.697	503656.643	13.702	T5
40538	7975822.72	503654.977	13.701	T5
40539	7975817.2	503654.742	13.724	T5
40540	7975812.859	503657.374	13.731	T5
40541	7975810.133	503661.593	13.736	T5
40542	7975809.45	503666.899	13.751	T5

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

40543	7975810.608	503671.933	13.735	T5
40544	7975813.175	503676.843	13.721	T5
40545	7975816.155	503681.05	13.707	T5
40546	7975819.585	503685.759	13.698	T5
40547	7975822.709	503689.981	13.686	T5
40548	7975825.905	503694.572	13.667	T5
40549	7975828.436	503699.577	13.656	T5
40550	7975830.565	503704.529	13.664	T5
40551	7975834.049	503709.184	13.644	T5
40552	7975838.389	503712.03	13.64	T5
40553	7975843.751	503712.301	13.656	T5
40554	7975848.199	503709.962	13.638	T5
40555	7975850.922	503705.563	13.619	T5
40556	7975851.552	503700.422	13.646	T5
40557	7975850.515	503695.296	13.657	T5
40558	7975848.568	503690.293	13.662	T5
40559	7975846.371	503685.234	13.668	T5
40560	7975843.809	503680.314	13.699	T5
40561	7975841.173	503675.45	13.686	T5
40562	7975838.991	503670.382	13.714	T5
40563	7975837.065	503665.554	13.708	T5
40564	7975835.639	503660.761	13.704	T5
40565	7975834.626	503655.258	13.693	T5
40566	7975835.769	503650.143	13.712	T5
40567	7975839.311	503646.064	13.707	T5
40568	7975844.321	503644.247	13.719	T5
40569	7975849.429	503645.116	13.712	T5
40570	7975853.617	503648.608	13.723	T5
40571	7975855.986	503653.138	13.721	T5
40572	7975858.589	503657.715	13.722	T5
40573	7975861.701	503662.011	13.714	T5
40574	7975865.069	503665.824	13.735	T5
40575	7975869.119	503669.228	13.731	T5
40576	7975873.364	503672.476	13.703	T5
40577	7975877.709	503675.507	13.707	T5
40578	7975882.227	503678.326	13.663	T5
40579	7975887.206	503680.067	13.671	T5
40580	7975892.213	503680.627	13.695	T5
40581	7975897.451	503678.931	13.675	T5
40582	7975901.718	503675.213	13.724	T5
40583	7975904.016	503670.536	13.67	T5
40584	7975905.364	503664.912	13.677	T5

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Port Site Laydown Area LP2
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40585	7975905.361	503659.598	13.737	T5
40586	7975904.159	503654.579	13.71	T5

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

Laydown LP2 Type 5 Fill (32mm minus) Survey Data

Point Number	Northing	Easting	Elevation	Description
20080	7975944.033	503795.631	13.482	T5 CREST
20081	7975945.156	503786.014	13.497	T5 CREST
20082	7975945.051	503774.586	13.56	T5 CREST
20083	7975944.53	503761.91	13.536	T5 CREST
20084	7975944.481	503748.049	13.571	T5 CREST
20085	7975944.275	503740.025	13.591	T5 CREST
20086	7975943.836	503731.34	13.552	T5 CREST
20087	7975944.273	503720.529	13.553	T5 CREST
20088	7975944.197	503710.118	13.629	T5 CREST
20089	7975943.75	503696.411	13.653	T5 CREST
20090	7975944.109	503684.688	13.642	T5 CREST
20091	7975943.774	503670.92	13.759	T5 CREST
20092	7975938.051	503670.465	13.696	T5 CREST
20093	7975936.885	503669.954	13.684	T5 CREST
20094	7975931.747	503660.974	13.692	T5 CREST
20095	7975924.86	503651.733	13.715	T5 CREST
20096	7975918.18	503644.155	13.771	T5 CREST
20097	7975909.87	503635.755	13.763	T5 CREST
20098	7975904.301	503629.839	13.737	T5 CREST
20099	7975905.507	503623.967	13.115	T5 CREST
20100	7975913.779	503619.699	12.818	T5 CREST
20101	7975922.698	503618.597	12.531	T5 CREST
20102	7975916.774	503605.562	12.454	T5 CREST
20103	7975916.516	503606.387	12.432	T5 CREST
20104	7975908.311	503612.764	12.683	T5 CREST
20105	7975900.833	503618.038	13.184	T5 CREST
20106	7975894.492	503620.289	13.707	T5 CREST
20107	7975889.818	503615.739	13.742	T5 CREST
20108	7975883.693	503609.746	13.773	T5 CREST
20109	7975877.257	503602.748	13.792	T5 CREST
20110	7975873.334	503598.106	13.756	T5 CREST
20111	7975870.818	503597.761	13.762	T5 CREST
20112	7975862.969	503599.545	13.863	T5 CREST
20113	7975852.516	503600.88	13.776	T5 CREST
20114	7975842.571	503602.098	13.767	T5 CREST
20115	7975829.133	503603.698	13.79	T5 CREST
20116	7975816.773	503604.98	13.73	T5 CREST
20117	7975804.986	503606.548	13.736	T5 CREST
20118	7975795.543	503607.409	13.781	T5 CREST

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

20119	7975789.299	503608.543	13.676	T5 CREST
20120	7975788.038	503618.074	13.762	T5 CREST
20121	7975786.719	503630.981	13.73	T5 CREST
20122	7975785.868	503640.972	13.785	T5 CREST
20123	7975785.105	503649.37	13.916	T5 CREST
20124	7975792.452	503659.051	13.731	T5 CREST
20125	7975800.435	503671.08	13.752	T5 CREST
20126	7975809.689	503683.186	13.66	T5 CREST
20127	7975818.833	503695.31	13.681	T5 CREST
20128	7975824.939	503704.386	13.658	T5 CREST
20129	7975829.609	503714.534	13.626	T5 CREST
20130	7975833.606	503724.326	13.585	T5 CREST
20131	7975839.793	503723.245	13.617	T5 LIMIT
20132	7975856.829	503721.679	13.549	T5 LIMIT
20133	7975862.817	503727.828	13.578	T5 LIMIT
20134	7975874.329	503733.901	13.469	T5 LIMIT
20135	7975879.602	503743.125	13.571	T5 LIMIT
20136	7975892.044	503756.821	13.526	T5 LIMIT
20137	7975902.152	503766.009	13.476	T5 LIMIT
20138	7975913.547	503783.155	13.472	T5 LIMIT
20139	7975919.899	503790.876	13.462	T5 LIMIT
20140	7975933.974	503795.286	13.435	T5 LIMIT
20141	7975943.848	503795.15	13.59	T5 LIMIT

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

Laydown LP2 Type 5 Fill (32mm minus) Survey Data

Point Number	Northing	Easting	Elevation	Description
820001	7975943.261	503849.866	13.461	TYPE5
820002	7975942.724	503839.787	13.478	TYPE5
820003	7975942.389	503828.472	13.458	TYPE5
820004	7975942.051	503817.931	13.432	TYPE5
820005	7975941.666	503806.99	13.427	TYPE5
820006	7975941.323	503800.456	13.386	TYPE5
820007	7975941.559	503796.71	13.496	TYPE5
820008	7975935.148	503795.877	13.41	TYPE5
820009	7975930.188	503795.662	13.495	TYPE5
820010	7975930.734	503806.065	13.592	TYPE5
820011	7975931.206	503815.386	13.664	TYPE5
820012	7975931.755	503825.412	13.767	TYPE5
820013	7975932.365	503835.714	13.781	TYPE5
820014	7975932.447	503845.52	13.809	TYPE5
820015	7975932.176	503852.026	13.786	TYPE5
820016	7975921.086	503851.896	14.129	TYPE5
820017	7975921.156	503843.635	14.303	TYPE5
820018	7975920.987	503834.009	14.362	TYPE5
820019	7975920.581	503823.202	14.372	TYPE5
820020	7975920.406	503812.16	14.139	TYPE5
820021	7975920.746	503801.589	13.955	TYPE5
820022	7975921.495	503791.86	13.663	TYPE5
820023	7975915.213	503784.419	13.744	TYPE5
820024	7975913.859	503794.332	14.179	TYPE5
820025	7975912.642	503804.609	14.478	TYPE5
820026	7975911.601	503816.262	14.769	TYPE5
820027	7975911.345	503826.571	14.927	TYPE5
820028	7975910.896	503836.385	15.008	TYPE5
820029	7975909.934	503842.504	14.976	TYPE5
820030	7975914.278	503845.173	14.646	TYPE5
820031	7975914.972	503851.619	14.358	TYPE5
820032	7975899.094	503840.056	15.48	TYPE5
820033	7975900.498	503830.889	15.467	TYPE5
820034	7975901.187	503822.338	15.332	TYPE5
820035	7975901.749	503813.067	15.101	TYPE5
820036	7975902.064	503804.25	14.928	TYPE5
820037	7975902.951	503794.47	14.714	TYPE5
820038	7975904.014	503785.195	14.448	TYPE5
820039	7975905.137	503776.102	14.019	TYPE5

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Port Site Laydown Area LP2
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820040	7975906.117	503769.812	13.623	TYPE5
820041	7975899.172	503762.139	13.579	TYPE5
820042	7975897.861	503771.682	14.169	TYPE5
820043	7975897.132	503780.321	14.577	TYPE5
820044	7975896.864	503789.449	14.893	TYPE5
820045	7975896.195	503798.13	15.069	TYPE5
820046	7975894.71	503807.652	15.291	TYPE5
820047	7975893.783	503817.317	15.548	TYPE5
820048	7975892.349	503827.165	15.841	TYPE5
820049	7975890.559	503837.615	15.836	TYPE5
820050	7975880.702	503838.102	16.35	TYPE5
820051	7975881.41	503828.042	16.223	TYPE5
820052	7975882.399	503818.696	16.009	TYPE5
820053	7975883.704	503810.101	15.758	TYPE5
820054	7975885.091	503800.921	15.604	TYPE5
820055	7975886.686	503791.435	15.327	TYPE5
820056	7975887.371	503783.135	15.051	TYPE5
820057	7975888.31	503773.639	14.697	TYPE5
820058	7975889.541	503765.198	14.294	TYPE5
820059	7975890.735	503756.251	13.683	TYPE5
820060	7975891.539	503753.735	13.512	TYPE5
820061	7975883.929	503746.902	13.539	TYPE5
820062	7975883.184	503755.857	14.14	TYPE5
820063	7975881.974	503765.644	14.625	TYPE5
820064	7975880.455	503776.796	15.025	TYPE5
820065	7975878.688	503787.096	15.431	TYPE5
820066	7975877.048	503798.018	15.84	TYPE5
820067	7975875.335	503809.044	16.173	TYPE5
820068	7975873.544	503819.865	16.392	TYPE5
820069	7975871.729	503830.918	16.644	TYPE5
820070	7975870.532	503838.686	16.806	TYPE5
820071	7975859.676	503837.431	17.226	TYPE5
820072	7975860.835	503828.482	17.085	TYPE5
820073	7975862.281	503818.169	16.852	TYPE5
820074	7975864.283	503807.303	16.483	TYPE5
820075	7975865.797	503797.81	16.16	TYPE5
820076	7975867.572	503787.267	15.764	TYPE5
820077	7975869.39	503776.993	15.36	TYPE5
820078	7975871.657	503766.067	14.965	TYPE5
820079	7975873.919	503756.745	14.609	TYPE5
820080	7975875.609	503746.458	14.001	TYPE5
820081	7975876.725	503738.433	13.535	TYPE5

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

820082	7975868.931	503730.025	13.539	TYPE5
820083	7975867.412	503739.218	13.987	TYPE5
820084	7975866.46	503749.732	14.631	TYPE5
820085	7975865.624	503759.89	14.927	TYPE5
820086	7975862.853	503770.105	15.305	TYPE5
820087	7975861.018	503780.676	15.681	TYPE5
820088	7975858.618	503792.167	16.136	TYPE5
820089	7975856.007	503803.57	16.6	TYPE5
820090	7975853.322	503815.504	17.064	TYPE5
820091	7975850.702	503826.523	17.499	TYPE5
820092	7975849.584	503837.712	17.668	TYPE5
820093	7975840.557	503837.094	17.942	TYPE5
820094	7975842.188	503826.832	17.722	TYPE5
820095	7975843.906	503817.256	17.388	TYPE5
820096	7975845.687	503807.363	17.004	TYPE5
820097	7975847.037	503797.761	16.627	TYPE5
820098	7975848.938	503785.239	16.095	TYPE5
820099	7975850.199	503773.355	15.668	TYPE5
820100	7975851.727	503762.392	15.296	TYPE5
820101	7975853.255	503751.494	14.93	TYPE5
820102	7975855.107	503740.674	14.578	TYPE5
820103	7975856.181	503731.599	13.924	TYPE5
820104	7975857.025	503721.824	13.51	TYPE5
820105	7975857.392	503717.697	13.546	TYPE5
820106	7975848.3	503717.559	13.544	TYPE5
820107	7975838.498	503718.142	13.522	TYPE5
820108	7975831.353	503718.466	13.633	TYPE5
820109	7975835.983	503727.186	13.799	TYPE5
820110	7975844.244	503728.627	14.041	TYPE5
820111	7975850.612	503730.4	14.053	TYPE5
820112	7975848.555	503743.472	14.804	TYPE5
820113	7975841.758	503743.563	14.894	TYPE5
820114	7975840.741	503755.217	15.292	TYPE5
820115	7975849.095	503756.432	15.196	TYPE5
820116	7975844.119	503768.657	15.671	TYPE5
820117	7975838.391	503767.55	15.781	TYPE5
820118	7975836.395	503779.211	16.215	TYPE5
820119	7975844.024	503780.772	16.084	TYPE5
820120	7975841.478	503792.566	16.563	TYPE5
820121	7975835.054	503791.335	16.695	TYPE5
820122	7975835.156	503802.641	17.077	TYPE5
820123	7975833.763	503811.779	17.412	TYPE5

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Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

820124	7975830.251	503821.602	17.7	TYPE5
820125	7975837.209	503823.374	17.766	TYPE5
820126	7975832.091	503833.847	18.07	TYPE5
820127	7975823.492	503832.57	18.176	TYPE5
820128	7975818.104	503843.212	18.538	TYPE5
820129	7975828.154	503844.834	18.368	TYPE5
820130	7975839.329	503846.615	18.091	TYPE5
820131	7975849.886	503848.738	17.753	TYPE5
820132	7975861.193	503848.461	17.274	TYPE5
820133	7975872.045	503848.567	16.845	TYPE5
820134	7975877.773	503849.244	16.503	TYPE5
820135	7975877.32	503860.882	16.662	TYPE5
820136	7975866.363	503860.703	17.178	TYPE5
820137	7975855.625	503861.424	17.651	TYPE5
820138	7975844.468	503861.776	18.087	TYPE5
820139	7975832.821	503862.036	18.47	TYPE5
820140	7975820.928	503861.262	18.818	TYPE5
820141	7975807.989	503859.31	19.044	TYPE5
820142	7975800.882	503869.442	19.31	TYPE5
820143	7975811.843	503871.154	19.214	TYPE5
820144	7975822.698	503872.736	19.012	TYPE5
820145	7975834.213	503874.909	18.59	TYPE5
820146	7975846.466	503877.133	18.135	TYPE5
820147	7975857.594	503877.61	17.704	TYPE5
820148	7975869.027	503877.962	17.242	TYPE5
820149	7975875.699	503878.467	16.958	TYPE5
820150	7975875.8	503892.836	17.154	TYPE5
820151	7975860.99	503892.719	17.686	TYPE5
820152	7975848.147	503892.774	18.161	TYPE5
820153	7975836.204	503892.308	18.644	TYPE5
820154	7975824.8	503891.672	19.121	TYPE5
820155	7975810.355	503890.433	19.497	TYPE5
820156	7975797.42	503888.854	19.707	TYPE5
820157	7975790.879	503888.155	19.627	TYPE5
820158	7975785.86	503899.189	19.975	TYPE5
820159	7975797.285	503900.394	19.927	TYPE5
820160	7975811.699	503901.952	19.627	TYPE5
820161	7975823.703	503903.438	19.255	TYPE5
820162	7975835.285	503904.753	18.836	TYPE5
820163	7975852.18	503906.467	18.221	TYPE5
820164	7975863.468	503907.313	17.779	TYPE5
820165	7975876.455	503908.318	17.242	TYPE5

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Type 5 Fill (32mm minus)

820166	7975877.31	503921.358	17.149	TYPE5 NP
820167	7975865.273	503921.737	17.745	TYPE5 NP
820168	7975852.471	503921.006	18.374	TYPE5 NP
820169	7975838.427	503920.078	18.918	TYPE5 NP
820170	7975828.66	503919.635	19.372	TYPE5 NP
820171	7975817.45	503919.005	19.676	TYPE5 NP
820172	7975804.082	503918.51	19.971	TYPE5 NP
820173	7975792.269	503918.445	20.246	TYPE5 NP
820174	7975784.572	503918.113	20.484	TYPE5 NP
820175	7975784.477	503931.228	20.483	TYPE5 NP
820176	7975795.926	503931.821	20.281	TYPE5 NP
820177	7975807.865	503932.204	20.121	TYPE5 NP
820178	7975819.753	503933.06	19.727	TYPE5 NP
820179	7975834.2	503934.129	19.203	TYPE5 NP
820180	7975846.306	503934.38	18.642	TYPE5 NP
820181	7975858.058	503935.184	18.102	TYPE5 NP
820182	7975869.127	503936.046	17.512	TYPE5 NP
820183	7975878.251	503937.041	17.083	TYPE5 NP
820184	7975877.562	503950.75	17.121	TYPE5 NP
820185	7975866.869	503950.327	17.747	TYPE5 NP
820186	7975858.644	503950.103	18.134	TYPE5 NP
820187	7975846.485	503949.666	18.684	TYPE5 NP
820188	7975835.233	503948.628	19.222	TYPE5 NP
820189	7975824.066	503947.548	19.706	TYPE5 NP
820190	7975812.762	503947.036	20.107	TYPE5 NP
820191	7975799.831	503946.234	20.438	TYPE5 NP
820192	7975786.151	503945.107	20.739	TYPE5 NP
820193	7975791.295	503956.01	20.814	TYPE5 NP
820194	7975800.267	503956.532	20.647	TYPE5 NP
820195	7975810.826	503957.49	20.331	TYPE5 NP
820196	7975821.39	503958.347	19.962	TYPE5 NP
820197	7975832.912	503959.161	19.425	TYPE5 NP
820198	7975843.909	503959.862	18.932	TYPE5 NP
820199	7975854.873	503960.658	18.404	TYPE5 NP
820200	7975866.852	503961.887	17.778	TYPE5 NP
820201	7975878.202	503962.754	17.279	TYPE5 NP
820202	7975878.491	503976.709	17.45	TYPE5 NP
820203	7975867.412	503977.261	17.808	TYPE5 NP
820204	7975855.647	503976.204	18.411	TYPE5 NP
820205	7975840.826	503974.661	19.125	TYPE5 NP
820206	7975830.032	503973.646	19.712	TYPE5 NP
820207	7975818.67	503972.676	20.2	TYPE5 NP

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Port Site Laydown Area LP2
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820208	7975808.711	503971.892	20.631	TYPE5 NP
820209	7975797.502	503972.071	20.873	TYPE5 NP
820210	7975802.345	503986.341	20.749	TYPE5 NP
820211	7975814.671	503986.52	20.389	TYPE5 NP
820212	7975825.58	503986.727	19.99	TYPE5 NP
820213	7975836.494	503987.753	19.474	TYPE5 NP
820214	7975848.181	503988.441	18.827	TYPE5 NP
820215	7975859.451	503988.694	18.363	TYPE5 NP
820216	7975870.02	503989.756	17.823	TYPE5 NP
820217	7975877.536	503990.936	17.646	TYPE5 NP
820218	7975877.337	504004.244	17.669	TYPE5 NP
820219	7975865.872	504003.902	18.055	TYPE5 NP
820220	7975854.005	504004.231	18.596	TYPE5 NP
820221	7975840.714	504004.766	19.193	TYPE5 NP
820222	7975831.354	504003.585	19.748	TYPE5 NP
820223	7975818.198	504002.866	20.117	TYPE5 NP
820224	7975808.428	504002.372	20.451	TYPE5 NP
820225	7975813.579	504014.754	20.226	TYPE5 NP
820226	7975824.953	504014.25	19.902	TYPE5 NP
820227	7975834.706	504014.847	19.556	TYPE5 NP
820228	7975845.567	504016.238	19.054	TYPE5 NP
820229	7975856.618	504017.714	18.485	TYPE5 NP
820230	7975869.633	504019.262	17.947	TYPE5 NP
820231	7975877.78	504020.672	17.725	TYPE5 NP
820232	7975877.195	504031.36	17.696	TYPE5 NP
820233	7975866.04	504031.502	18.165	TYPE5 NP
820234	7975856.185	504031.685	18.666	TYPE5 NP
820235	7975842.813	504032.065	19.176	TYPE5 NP
820236	7975832.386	504032.861	19.658	TYPE5 NP
820237	7975823.514	504034.819	19.879	TYPE5 NP
820238	7975827.043	504043.347	19.736	TYPE5 NP
820239	7975838.399	504042.411	19.344	TYPE5 NP
820240	7975850.867	504042.187	18.852	TYPE5 NP
820241	7975864.408	504042.583	18.181	TYPE5 NP
820242	7975876.872	504041.232	17.669	TYPE5 NP

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0001A
Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

Laydown LP2 Type 5 Fill (32mm minus) Survey Data

Point Number	Northing	Easting	Elevation	Description
1001	7975875.67	503880.712	16.966	T5 FINAL
1002	7975862.494	503880.349	17.462	T5 FINAL
1003	7975849.265	503878.908	18.095	T5 FINAL
1004	7975836.281	503876.835	18.55	T5 FINAL
1005	7975825.424	503875.342	18.944	T5 FINAL
1006	7975812.036	503873.341	19.197	T5 FINAL
1007	7975798.783	503871.384	19.307	T5 FINAL
1008	7975793.147	503881.801	19.476	T5 FINAL
1009	7975807.5	503885.464	19.468	T5 FINAL
1010	7975819.681	503888.615	19.234	T5 FINAL
1011	7975833.817	503891.566	18.694	T5 FINAL
1012	7975844.731	503893.484	18.307	T5 FINAL
1013	7975856.768	503893.881	17.84	T5 FINAL
1014	7975867.164	503894.895	17.498	T5 FINAL
1015	7975876.355	503896.042	17.171	T5 FINAL
1016	7975877.009	503907.06	17.215	T5 FINAL
1017	7975867.451	503906.942	17.563	T5 FINAL
1018	7975857.221	503906.126	18.001	T5 FINAL
1019	7975844.417	503906.494	18.524	T5 FINAL
1020	7975834.275	503906.77	18.873	T5 FINAL
1021	7975822.971	503906.631	19.251	T5 FINAL
1022	7975810.923	503905.568	19.627	T5 FINAL
1023	7975798.137	503901.425	19.895	T5 FINAL
1024	7975784.745	503899.494	19.977	T5 FINAL
1025	7975784.411	503910.505	20.119	T5 FINAL
1026	7975794.36	503912.483	20.092	T5 FINAL
1027	7975806.744	503916.268	19.847	T5 FINAL
1028	7975819.419	503919.119	19.568	T5 FINAL
1029	7975830.876	503919.473	19.222	T5 FINAL
1030	7975842.696	503919.163	18.731	T5 FINAL
1031	7975858.001	503920.556	18.084	T5 FINAL
1032	7975868.191	503921.486	17.54	T5 FINAL
1033	7975877.705	503921.491	17.141	T5 FINAL
1034	7975878.289	503934.835	17.064	T5 FINAL
1035	7975866.844	503934.333	17.571	T5 FINAL
1036	7975852.942	503932.618	18.337	T5 FINAL
1037	7975839.824	503931.628	18.912	T5 FINAL
1038	7975826.029	503931.107	19.48	T5 FINAL
1039	7975813.192	503929.994	19.906	T5 FINAL

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0001A
Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

1040	7975800.013	503930.586	20.201	T5 FINAL
1041	7975784.416	503929.148	20.413	T5 FINAL
1042	7975785.113	503943.078	20.756	T5 FINAL
1043	7975795.927	503943.833	20.514	T5 FINAL
1044	7975807.628	503945.385	20.224	T5 FINAL
1045	7975820.503	503946.824	19.812	T5 FINAL
1046	7975834.567	503948.196	19.246	T5 FINAL
1047	7975847.936	503949.935	18.635	T5 FINAL
1048	7975860.913	503951.527	18.01	T5 FINAL
1049	7975872.097	503951.046	17.457	T5 FINAL
1050	7975877.882	503951.176	17.086	T5 FINAL
1051	7975878.766	503965.035	17.273	T5 FINAL
1052	7975866.858	503965.105	17.752	T5 FINAL
1053	7975853.666	503964.088	18.446	T5 FINAL
1054	7975840.761	503964.799	19.101	T5 FINAL
1055	7975827.501	503965.723	19.789	T5 FINAL
1056	7975813.115	503965.202	20.37	T5 FINAL
1057	7975802.228	503964.629	20.69	T5 FINAL
1058	7975794.668	503964.924	20.786	T5 FINAL
1059	7975798.518	503975.514	20.769	T5 FINAL
1060	7975809.089	503975.116	20.622	T5 FINAL
1061	7975821.214	503977.227	20.17	T5 FINAL
1062	7975831.214	503978.481	19.673	T5 FINAL
1063	7975843.09	503981.107	19.097	T5 FINAL
1064	7975855.422	503979.883	18.491	T5 FINAL
1065	7975868.005	503978.758	17.739	T5 FINAL
1066	7975878.896	503980.592	17.446	T5 FINAL
1067	7975877.861	503993.373	17.544	T5 FINAL
1068	7975867.416	503992.587	17.911	T5 FINAL
1069	7975855.448	503992.806	18.49	T5 FINAL
1070	7975844.452	503993.01	19.078	T5 FINAL
1071	7975832.615	503992.558	19.632	T5 FINAL
1072	7975821.015	503992.574	20.151	T5 FINAL
1073	7975809.133	503991.795	20.523	T5 FINAL
1074	7975804.398	503991.567	20.642	T5 FINAL
1075	7975808.253	504002.325	20.442	T5 FINAL
1076	7975818.504	504001.727	20.127	T5 FINAL
1077	7975827.557	504002.411	19.841	T5 FINAL
1078	7975837.968	504002.637	19.309	T5 FINAL
1079	7975847.11	504004.706	18.888	T5 FINAL
1080	7975859.479	504005.787	18.362	T5 FINAL
1081	7975869.99	504006.16	17.871	T5 FINAL

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0001A
Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

1082	7975877.686	504006.856	17.633	T5 FINAL
1083	7975877.833	504017.535	17.619	T5 FINAL
1084	7975866.158	504017.528	18.098	T5 FINAL
1085	7975856.41	504015.916	18.509	T5 FINAL
1086	7975847.023	504015.919	18.95	T5 FINAL
1087	7975836.568	504016.685	19.463	T5 FINAL
1088	7975824.526	504016.169	19.882	T5 FINAL
1089	7975814.449	504017.195	20.109	T5 FINAL
1090	7975819.726	504027.834	19.977	T5 FINAL
1091	7975831.027	504027.694	19.676	T5 FINAL
1092	7975839.383	504027.957	19.34	T5 FINAL
1093	7975850.397	504028.584	18.861	T5 FINAL
1094	7975859.55	504029.69	18.487	T5 FINAL
1095	7975869.779	504031.207	18.018	T5 FINAL
1096	7975876.991	504032.477	17.65	T5 FINAL
1097	7975877.312	504041.504	17.589	T5 FINAL
1098	7975868.018	504042.269	18.089	T5 FINAL
1099	7975858.795	504042.306	18.532	T5 FINAL
1100	7975850.269	504042.294	18.845	T5 FINAL
1101	7975841.151	504042.395	19.316	T5 FINAL
1102	7975827.114	504044.098	19.617	T5 FINAL

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0001A
Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

Laydown LP2 Type 5 Fill (32mm minus) Survey Data

Point Number	Northing	Easting	Elevation	Description
908183	7975838.984	503733.911	14.327	CREST
909001	7975838.979	503733.934	14.333	CREST
909002	7975841.536	503742.447	14.861	CREST
909003	7975841.67	503746.395	15.005	CREST
909004	7975841.655	503746.394	15.014	CREST
909005	7975839.621	503760.5	15.567	CREST
909006	7975837.585	503773.562	16.031	CREST
909007	7975835.634	503785.324	16.447	CREST
909008	7975835.236	503798.489	16.935	CREST
909009	7975834.472	503805.664	17.157	CREST
909010	7975831.121	503815.15	17.42	CREST
909011	7975826.628	503825.682	17.881	CREST
909012	7975821.177	503836.452	18.273	CREST
909013	7975815.532	503846.57	18.543	CREST
909014	7975809.442	503856.193	18.878	CREST
909015	7975803.618	503865.475	19.102	CREST
909016	7975798.004	503874.63	19.337	CREST
909017	7975792.088	503885.835	19.559	CREST
909018	7975786.126	503897.158	19.866	CREST
909019	7975785.002	503901.068	19.969	CREST
909020	7975784.298	503912.398	20.126	CREST
909021	7975784.403	503923.696	20.352	CREST
909022	7975784.548	503936.143	20.526	CREST
909023	7975783.494	503935.418	19.988	TOE
909024	7975783.284	503924.888	19.784	TOE
909025	7975783.386	503913.529	19.754	TOE
909026	7975783.55	503903.225	19.459	TOE
909027	7975783.788	503897.529	19.296	TOE
909028	7975789.246	503888.53	19.099	TOE
909029	7975793.195	503880.145	19.058	TOE
909030	7975798.678	503870.505	18.839	TOE
909031	7975804.433	503861.846	18.492	TOE
909032	7975810.27	503851.847	18.14	TOE
909033	7975817.509	503839.101	17.644	TOE
909034	7975820.945	503830.003	17.281	TOE
909035	7975825.438	503821.349	16.903	TOE
909036	7975828.261	503815.326	16.724	TOE
909037	7975829.493	503807.121	15.973	TOE
909038	7975829.982	503799.73	15.437	TOE

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0001A
Port Site Laydown Area LP2
Type 5 Fill (32mm minus)

909039	7975830.878	503791.82	15.036	TOE
909040	7975831.694	503784.249	14.862	TOE
909041	7975833.161	503777.324	14.822	TOE
909042	7975835.168	503770.724	14.952	TOE
909043	7975836.737	503762.023	14.716	TOE
909044	7975837.836	503754.388	14.385	TOE
909045	7975837.782	503750.783	14.042	TOE
909046	7975836.932	503746.201	13.371	TOE
909047	7975837.348	503743.846	13.17	TOE
909048	7975834.911	503734.609	12.599	TOE
909049	7975835.523	503732.617	12.572	TOE
909050	7975835.039	503730.248	12.475	TOE
909051	7975836.311	503728.237	13.826	CREST

NUNA

NUNA EAST LTD

(Section 5)

Sieves / Aggregate Statements of Compliance

Oikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190086
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-29

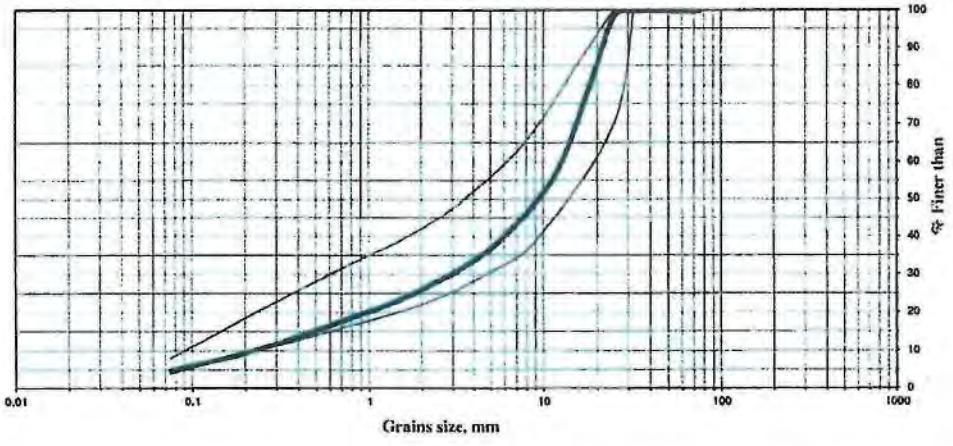
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-29_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-29

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	82	62	50	36	26	21	17	12	8	4.9
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	64.0%	Cu = 57	D_{85} = 19.8	D_{15} = 0.5
Sand %	31.1%	Cc = 3	D_{60} = 12.5	D_{10} = 0.2
Silt/Clay %	4.9%		D_{50} = 9.3	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Alexandre Beaumont

Signature: [signature]

Date: 2019/08/30

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	SAMPLE number:	MP-190083
SITE:	Baffinland, Milne Port	DATE:	2019-08-28

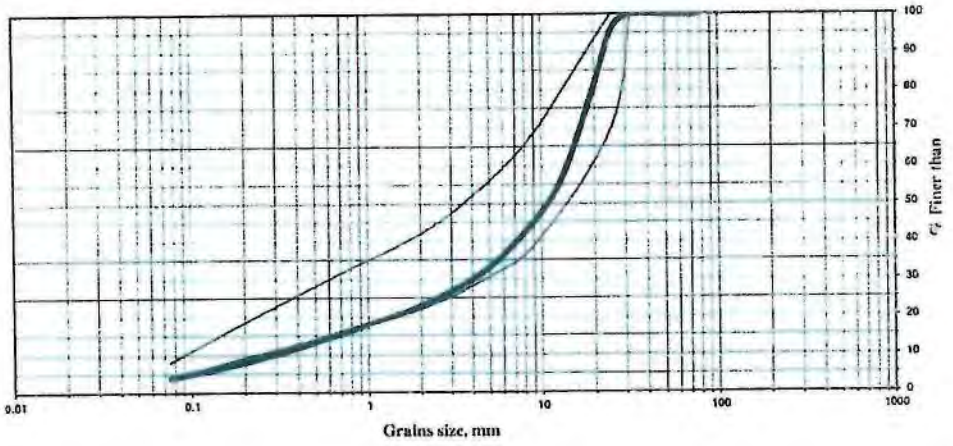
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-28_D
Stone source:	Quarry 1, Milne Port	Sampled By:	Maxime Côté
Type of Use:		Sampling Date:	2019-08-28

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	96	79	58	47	32	23	19	[illegible]	11	7	4.2
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	67.5%	Cu = 50	D_{85} = 20.9	D_{15} = 0.6
Sand %	28.3%	Cc = 4	D_{60} = 13.7	D_{10} = 0.3
Silt/Clay %	4.2%		D_{50} = 10.5	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Olivier Jacques

Signature:

Date: 2019-08-29

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190081
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-27

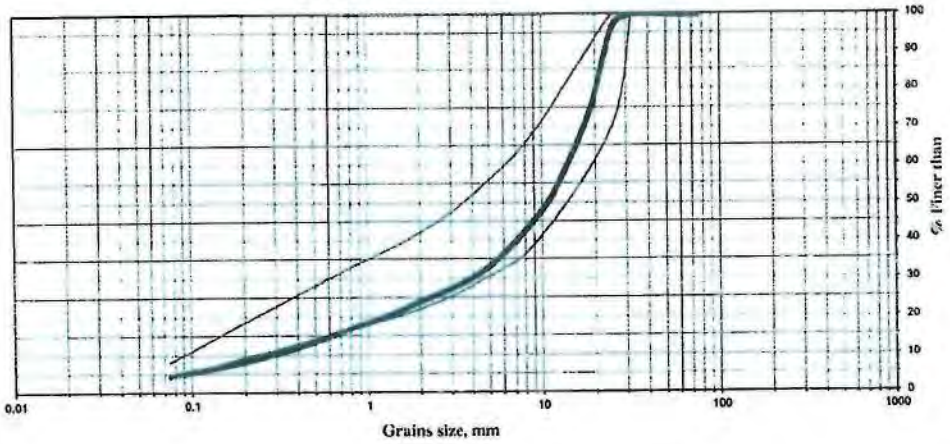
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-27 D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-27

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	97	76	58	47	33	24	20	15	11	7	4.5
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	67.5%	Cu = 50	D_{85} = 21.4	D_{15} = 0.6
Sand %	28.0%	Cc = 4	D_{60} = 13.8	D_{10} = 0.3
Silt/Clay %	4.5%		D_{50} = 10.4	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Olivier Jacques

Signature:

Date: 2019-08-29

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190077
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-26

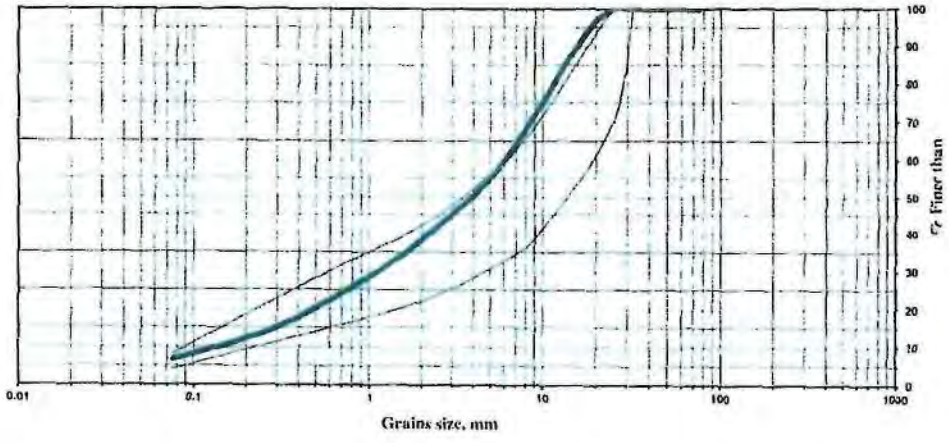
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-25_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Hugo Perron
Type of Use:		**Sampling Date:**	2019-08-26

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	37.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	100	96	85		54	39	31	23	16	11	6.8
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	45.9%	Cu = 43	D_{85} = 13.3	D_{15} = 0.3
Sand %	47.3%	Cc = 2	D_{60} = 5.8	D_{10} = 0.1
Silt/Clay %	6.8%		D_{50} = 3.8	

Notes: Gap for the following sieves: 9.5 mm

Prepared By: Hugo Perron

Verified By: Maxime Côté

Signature: [signature] **Date:** 19-08-27

Qikqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190080
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-26

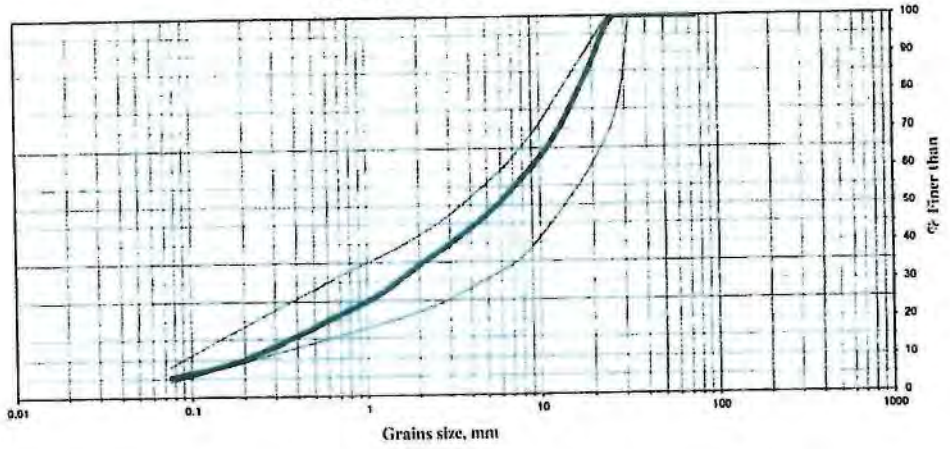
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-26_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Hugo Perron
Type of Use:		**Sampling Date:**	2019-08-26

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	86	71	61	47	34	27	20	14	9	5.4
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	53.3%	Cu = 46	D_{85} = 18.6	D_{15} = 0.4
Sand %	41.3%	Cc = 1	D_{60} = 8.9	D_{10} = 0.2
Silt/Clay %	5.4%		D_{50} = 5.6	

Notes: Aggregate compliant with specs

Prepared By: Hugo Perron

Verified By: Maxime Côté

Signature: [signature] **Date:** 19-08-27

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190070
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-13

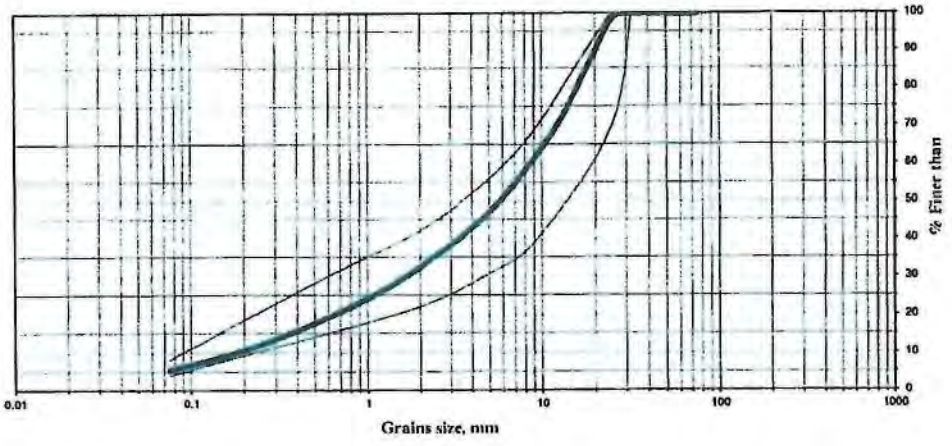
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-13_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Hugo Perron
Type of Use:		**Sampling Date:**	2019-08-13

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	88	73	63	46	33	26	19	14	9	5.8
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	53.8%	Cu = 48	D_{85} = 17.8	D_{15} = 0.4
Sand %	40.4%	Cc = 2	D_{60} = 8.4	D_{10} = 0.2
Silt/Clay %	5.8%		D_{50} = 5.6	

Notes: Aggregate compliant with specs

Prepared By: Hugo Perron

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/14

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190069
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-12

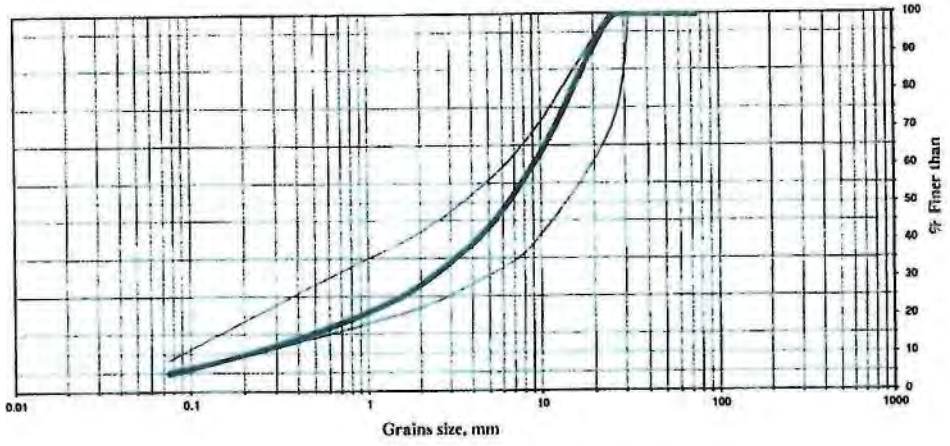
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-12_D
Stone source:	Quarry 1. Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-12

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	**100**	99	90	74	62	42	28	22	17	12	8	5.1
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	57.6%	Cu = 43	D_{85} = 17.0	D_{15} = 0.5
Sand %	37.3%	Cc = 3	D_{60} = 8.9	D_{10} = 0.2
Silt/Clay %	5.1%		D_{50} = 6.2	

Notes: Aggregate compliant with specs

Prepared By: Hugo Perron

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/14

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190068
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-12

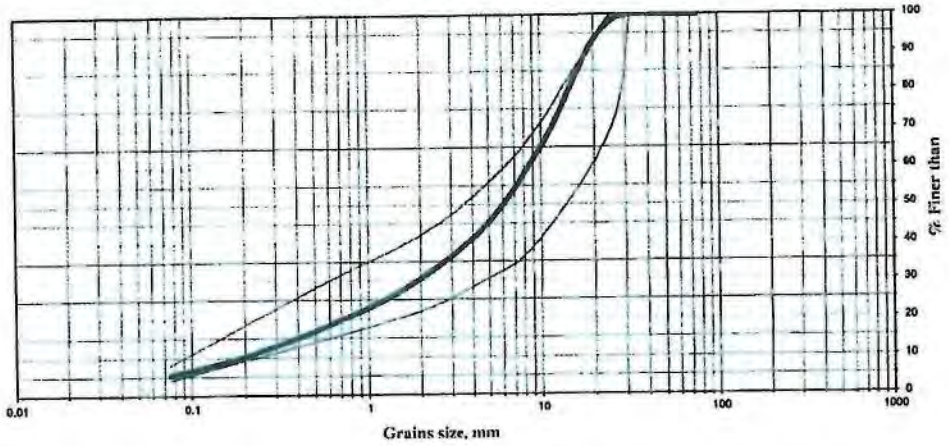
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08 11_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-12

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	98	92	76	64	44	31	25	19	14	9	5.5
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	55.6%	Cu = 45	D_{85} = 16.2	D_{15} = 0.4
Sand %	38.9%	Cc = 2	D_{60} = 8.3	D_{10} = 0.2
Silt/Clay %	5.5%		D_{50} = 5.8	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/12

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190067
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-11

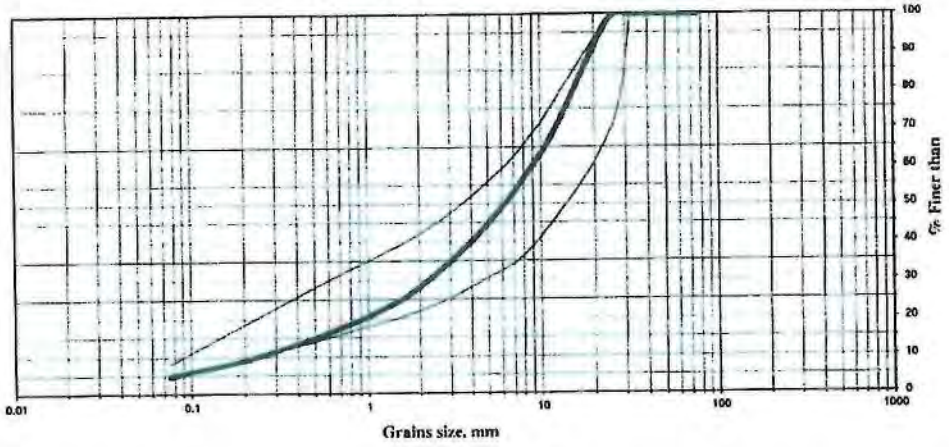
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-11_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-11

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	**100**	100	90	74	62	44	28	22	16	12	8	4.9
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	56.3%	Cu = 38	D_{85} = 17.1	D_{15} = 0.5
Sand %	38.8%	Cc = 2	D_{60} = 8.8	D_{10} = 0.2
Silt/Clay %	4.9%		D_{50} = 6.0	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/12

LC Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190066
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-11

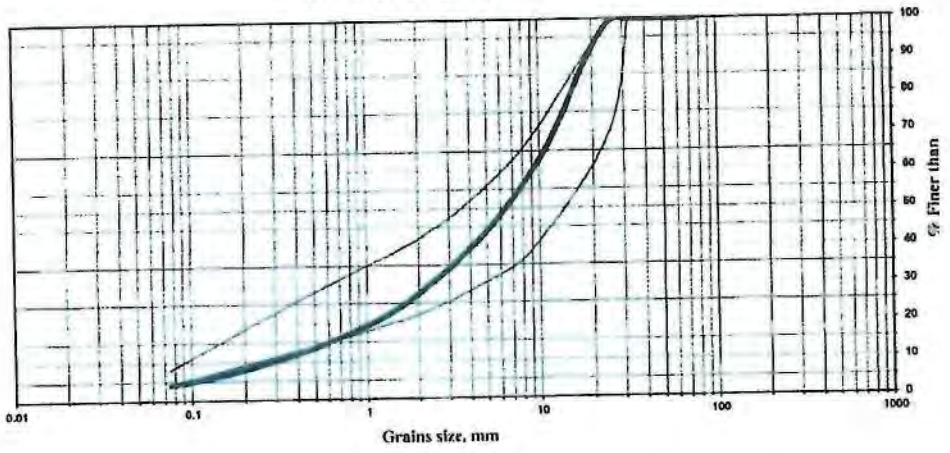
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-10 .N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-11

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	91	74	61	43	28	21	15	11	7	4.2
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	57.0%	Cu = 33	D_{85} = 16.9	D_{15} = 0.6
Sand %	38.8%	Cc = 2	D_{60} = 9.0	D_{10} = 0.3
Silt/Clay %	4.2%		D_{50} = 6.2	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/12

LC: Informatique
DV 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190065
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-10

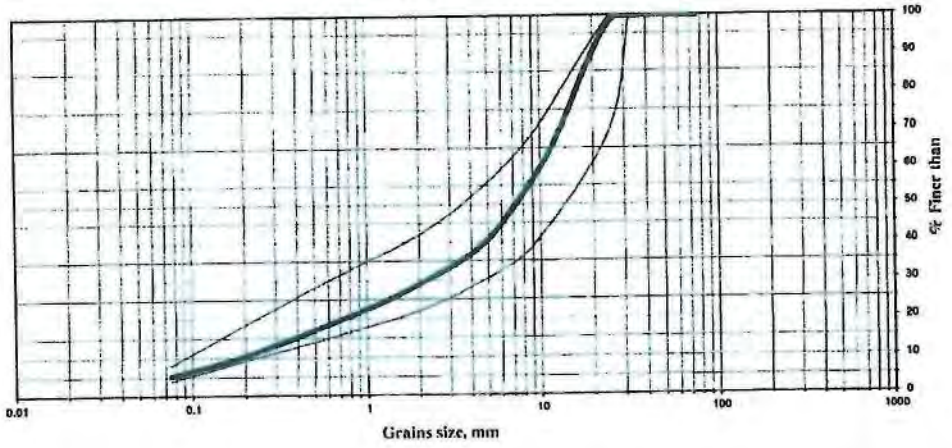
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-10_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-10

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	88	71	58	40	29	24	19	14	9	5.4
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	60.2%	Cu = 54	D_{85} = 17.7	D_{15} = 0.4
Sand %	34.4%	Cc = 3	D_{60} = 9.9	D_{10} = 0.2
Silt/Clay %	5.4%		D_{50} = 6.9	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature: [signature]

Date: 2019/08/12

Qikaqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190064
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-09

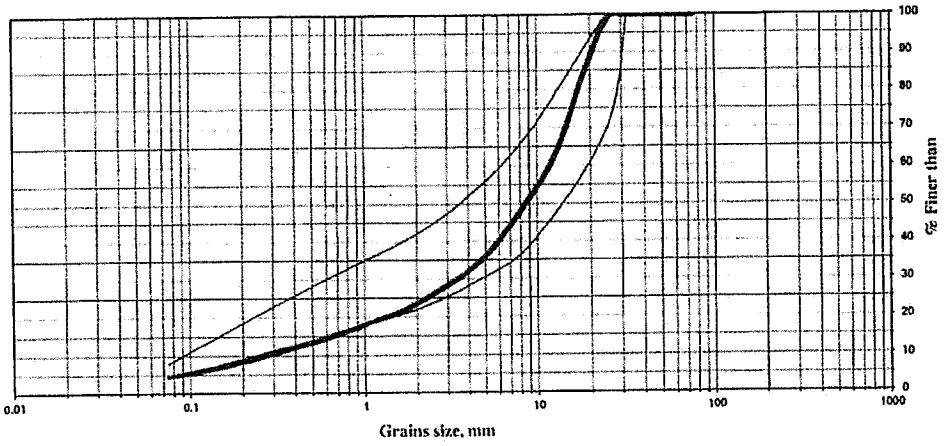
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-09_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-09

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	87	65	53	35	24	19	15	11	7	4.5
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	64.8%	Cu = 43	D_{85} = 18.5	D_{15} = 0.6
Sand %	30.8%	Cc = 3	D_{60} = 11.4	D_{10} = 0.3
Silt/Clay %	4.5%		D_{50} = 8.3	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/10

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190063
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-09

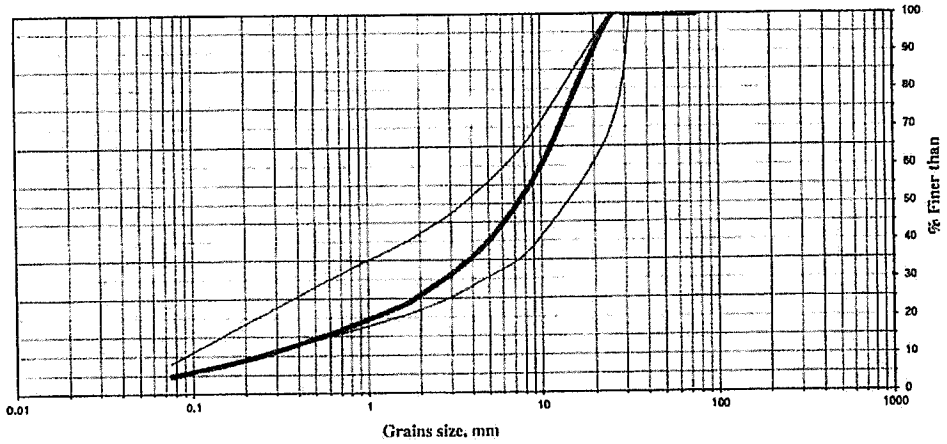
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-09_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-09

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	100	89	72	59	39	26	21	16	12	8	4.9
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve

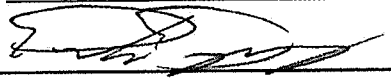


Gravel/Stone%	60.9%	Cu = 42	O_{85} = 17.4	O_{15} = 0.5
Sand %	34.2%	Cc = 3	D_{60} = 9.9	D_{10} = 0.2
Silt/Clay %	4.9%		O_{50} = 7.0	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature: 

Date: 2019/08/10

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190062
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-09

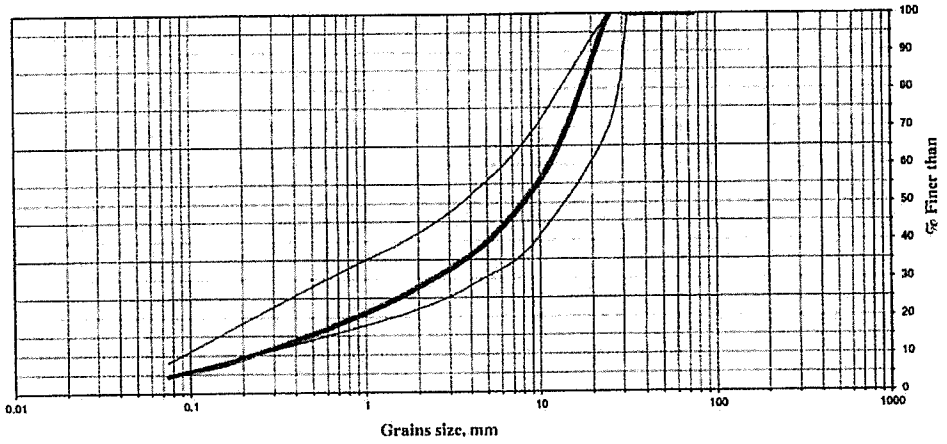
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-08_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-09

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	100	85	66	55	39	28	23	17	12	8	4.6
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	61.0%	Cu = 50	D_{85} = 19.0	D_{15} = 0.5
Sand %	34.4%	Cc = 2	D_{60} = 11.0	D_{10} = 0.2
Silt/Clay %	4.6%		D_{50} = 7.7	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/10

LC. Informatique
OV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190061
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-08

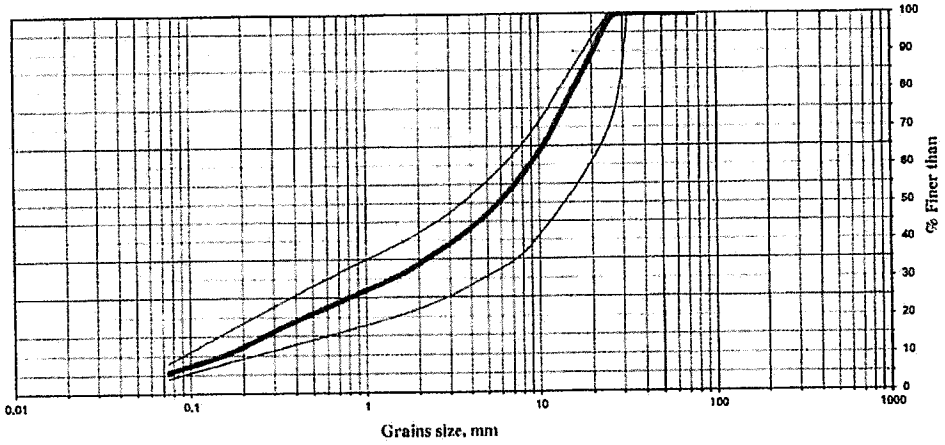
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-08_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-08

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	88	74	62	46	34	29	23	17	10	5.8
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	53.8%	Cu = 58	D_{85} = 17.8	D_{15} = 0.3
Sand %	40.5%	Cc = 1	D_{60} = 8.6	D_{10} = 0.1
Silt/Clay %	5.8%		D_{50} = 5.6	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/16

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190060
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-08

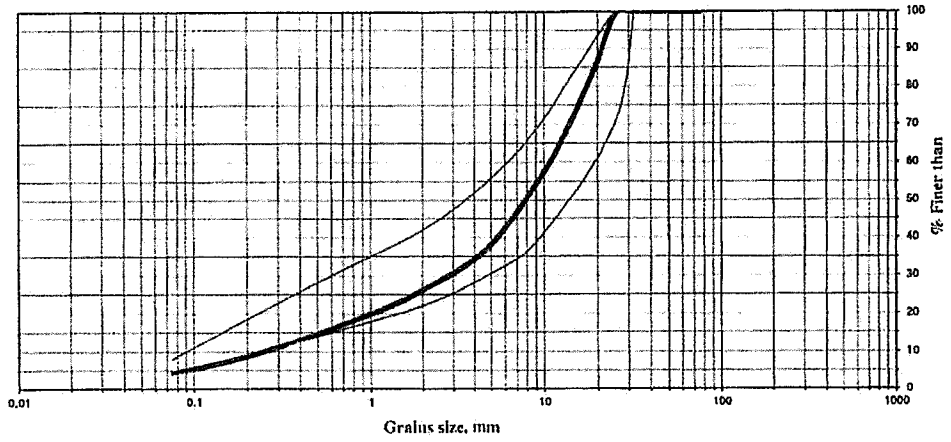
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-07_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-08

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	**100**	99	84	68	56	37	26	21	16	12	8	4.4
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	62.7%	Cu = 44	D_{85} = 19.2	D_{15} = 0.5
Sand %	32.9%	Cc = 3	D_{60} = 10.6	D_{10} = 0.2
Silt/Clay %	4.4%		D_{50} = 7.6	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/16

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190059
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-07

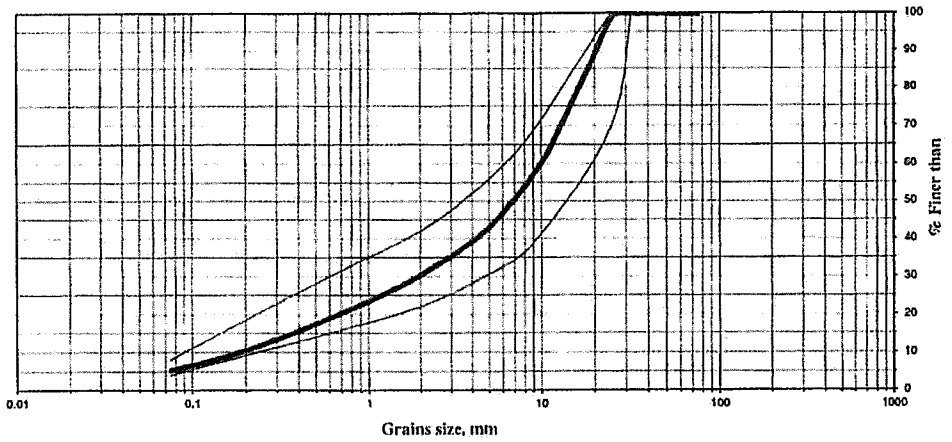
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-07_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-07

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	87	71	59	42	31	25	19	14	9	5.3
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	57.8%	Cu = 54	D_{85} = 18.2	D_{15} = 0.4
Sand %	36.8%	Cc = 2	D_{60} = 9.8	D_{10} = 0.2
Silt/Clay %	5.3%		D_{50} = 6.6	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/10

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190053
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-04

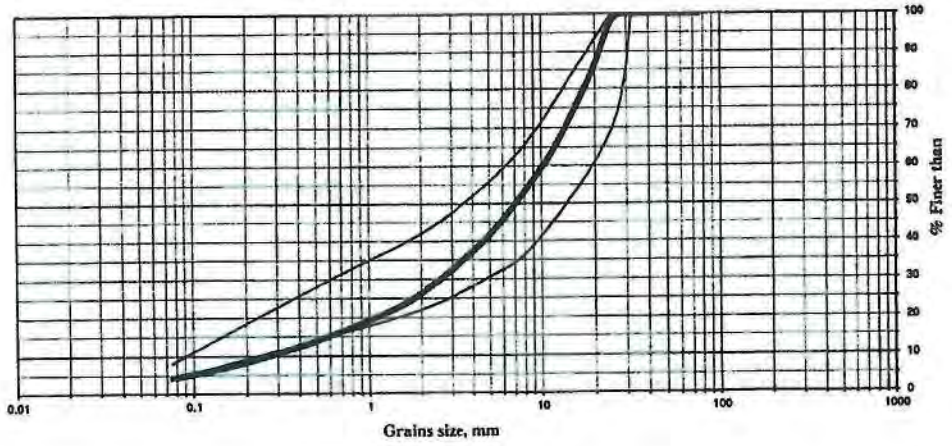
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-03_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-04

Gradation (% Finer than) (ASTM C136-05)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	84	69	58	41	26	21	15	11	7	4.3
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	59.4%	Cu = 39	D_{85} = 19.3	D_{15} = 0.6
Sand %	36.4%	Cc = 2	D_{60} = 10.1	D_{10} = 0.3
Silt/Clay %	4.3%		D_{50} = 6.9	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: Alex Vézina **Date:** 2019-08-04

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190052
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-04

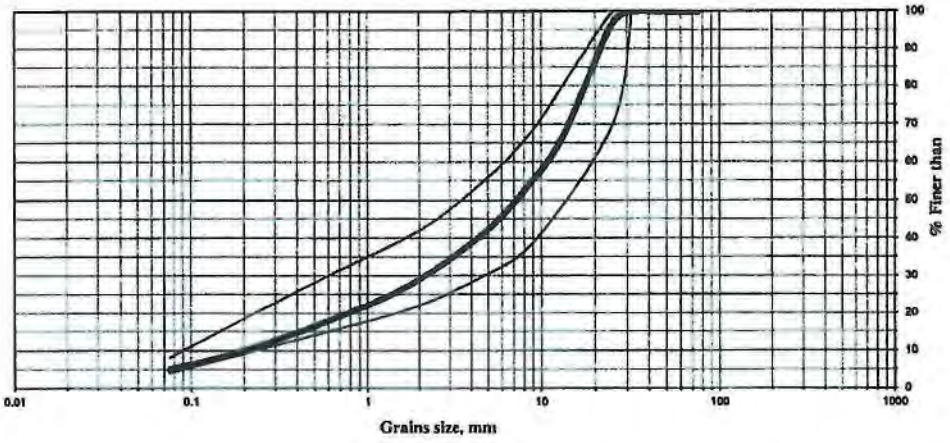
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-03_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-03

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	97	84	67	57	41	29	24	18	13	9	5.1
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	58.6%	Cu = 54	D_{85} = 19.4	D_{15} = 0.4
Sand %	36.3%	Cc = 2	D_{60} = 10.6	D_{10} = 0.2
Silt/Clay %	5.1%		D_{50} = 7.0	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: Alexandre Vézina **Date:** 2019-08-04

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC004A
		Contractor Project #:	11 837
PROJECT:	Expansion Project - Site Crushing Services	SAMPLE number:	MP-190051
SITE:	Baffinland, Milne Port	DATE:	2019-08-03

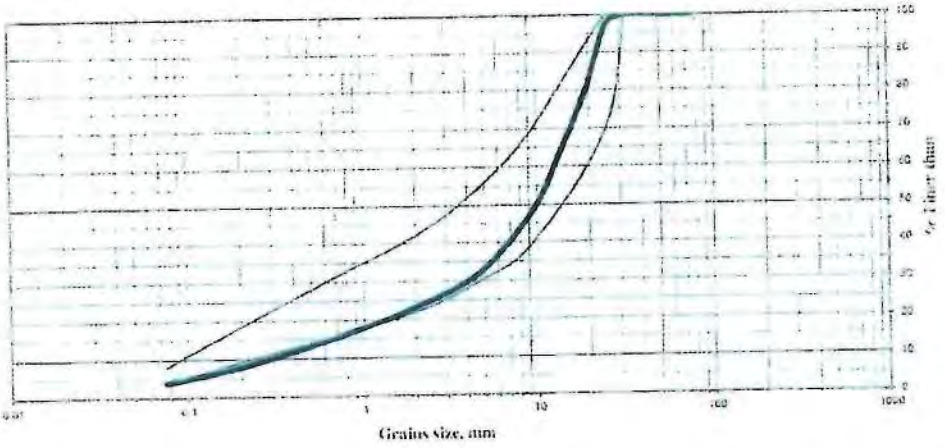
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile, C.S. Ch
Comments:	32mm Minus		Production 2019-08-02_D
Stone source:	Quarry 1, Milne Port	Sampled By:	Maxime Côté
Type of Use:		Sampling Date:	2019-08-02

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulative Results				100	100	100	97	80	63	49	32	23	19	19	16	7	3.9
Individual Results																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	67.7%	Cu = 43	D_{60} = 20.6	D_{10} = 0.6
Sand %	28.4%	Cc = 4	D_{30} = 12.4	D_{15} = 0.5
Silt/Clay %	3.9%		D_{50} = 9.6	

Notes: Gap for the following sieves: 0.6, 0.075 mm

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: Alex Vézina

Date: 2019-08-03

Qikoqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC004A
		Contractor Project #:	11-537
PROJECT:	Expansion Project - Site Crushing Services	SAMPLE number:	MP-190050
SITE:	Bartimand, Mine Port	DATE:	2019-08-02

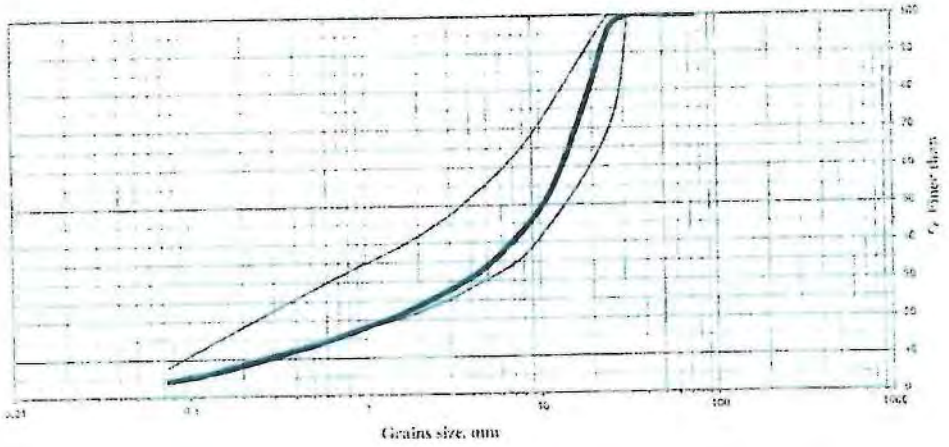
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile C.S. C1
Comments:	32mm Minus		Production 2019-08-02 C
Stone source:	Quarry 1, Mine Port	Sampled By:	Maxime Côté
Type of Use:		Sampling Date:	2019-08-02

Gradation (% Finer than) (ASTM C136-06)

Sieves			75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulative Results			100	100	100	96	79	60	48	33	24	19	15	11	7	4.9
Individual Result																
Spec	min				100	70			40	30	22		15			4.0
	max				100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	66.8%	Cu = 49	D_{60} = 20.6	D_{30} = 0.5
Sand %	29.0%	Cc = 3	D_{10} = 13.3	D_{15} = 4.3
Silt/Clay %	4.3%		D_{50} = 10.2	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: Alex Vézina

Date: 20A-08-03

Qikiqtaaluk SANA

Soil & Aggregates Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC004A
PROJECT:	Expansion Project - Site Crushing Services	Contractor Project #:	11 837
SITE:	Baffinland, Mine Port	SAMPLE number:	MP 190049
		DATE:	2019-08-02

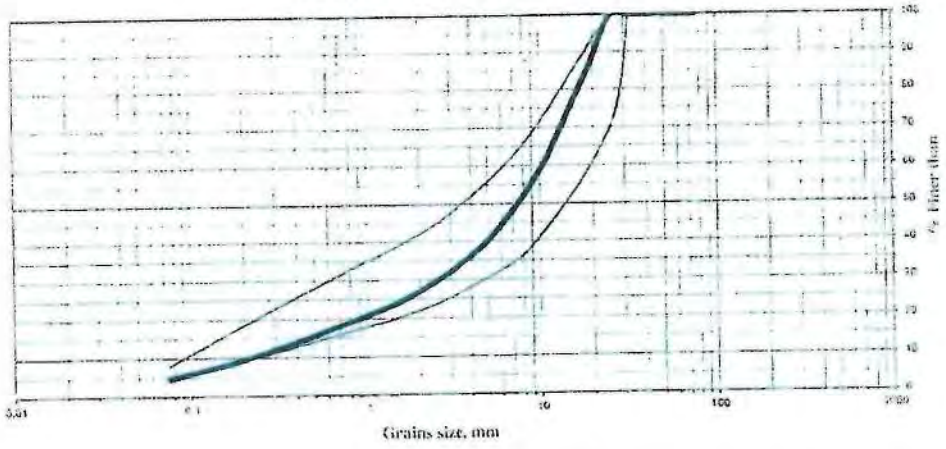
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile C & D1
Contractor:	Direct Metal		Production 2019-08-02
Stone source:	Quarry 1 Mine Port	Sampled By:	Maxime Côté
Type of Use:		Sampling Date:	2019-08-02

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	100	86	71	57	39	27	22	17	12	8	4.9
Individual Results																	
Spec.	min.					100	70			40	30	22		15			1.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	60.7%	Cu = 47	D_{60} = 18.4	D_{10} = 0.5
Sand %	34.5%	Cc = 3	D_{30} = 1.6	D_{50} = 0.2
Silt/Clay %	4.8%		D_{15} = 0.7	

Notes: Aggregate conforming with specs

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: Alex Vézina Date: 2019-08-03

Qikiqtaaluk SANA

Soil & Aggregates Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC004A
PROJECT:	Expansion Project - Site Crushing Services	Contractor Project #:	11-637
		SAMPLE number:	MP-190048
SITE:	Baffinland, Mine Port	DATE:	2019-08-02

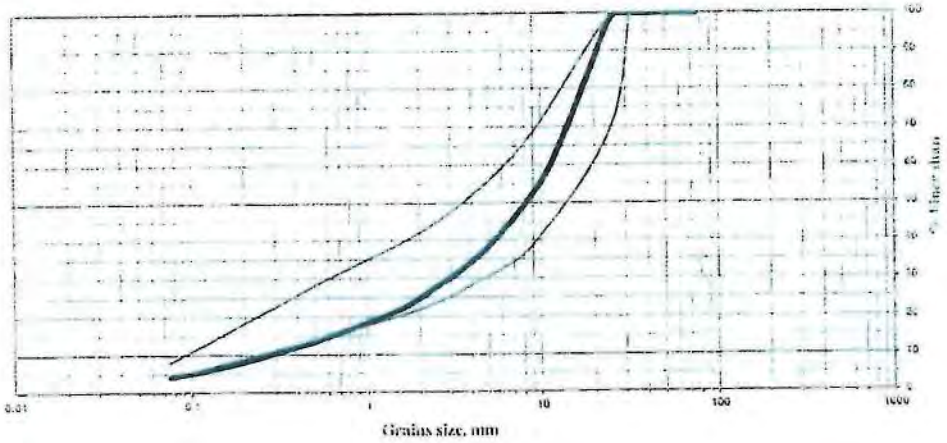
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile C.S. 01
Comments:	22mm Minus		Production 2019-08-01 @
Stone source:	Quarry 1, Mine Port	Sampled By:	Maxime Côté
Type of Use:		Sampling Date:	2019-08-01

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	37.5 mm	25 mm	19 mm	12.5 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.160 mm	0.075 mm
Cumulatives Results				100	100	100	99	85	67	54	37	25	20	15	12	7	4.0
Subsidiary Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 22mm Minus

Gradation Curve



Gravel/Stone%	62.7%	Cu = 40	D_{60} = 19.3	D_{10} = 0.5
Sand %	33.3%	Cc = 3	D_{30} = 11.0	D_{15} = 0.8
Silt/Clay %	4.0%		D_{15} = 8.6	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Alexandre Viljoen

Signature: Alex Viljoen Date: 2019-08-03

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	25-Jul-19	Report Number:	18SJ0001	
File Number:		Inspector:	B. Mullins	
Client:	Hatch	Sampled By:	B. Mullins	
Project:	Baffinland	Sample Date:	25-Jul-19	1:30
Location:	Crusher Pad	Copy To:		
Contractor:	Nuna			

TEST RESULTS

SIEVE SIZE (mm)				32	25	19	13.2	9.5	4.75	2.00	1.18	0.600	0.315	0.160	0.075
MAX % PASS SPEC				100.0	100.0			70.0	55.0	42.0		30.0			8.0
MIN % PASS SPEC				100.0	70.0			40.0	30.0	22.0		15.0			4.0
% PASS RESULTS				100.0	97.6	79.1	64.8	54.8	39.8	28.3	22.6	16.7	11.7	7.5	4.2

MATERIAL TYPE

Type 5

SIEVE METHOD

Washed

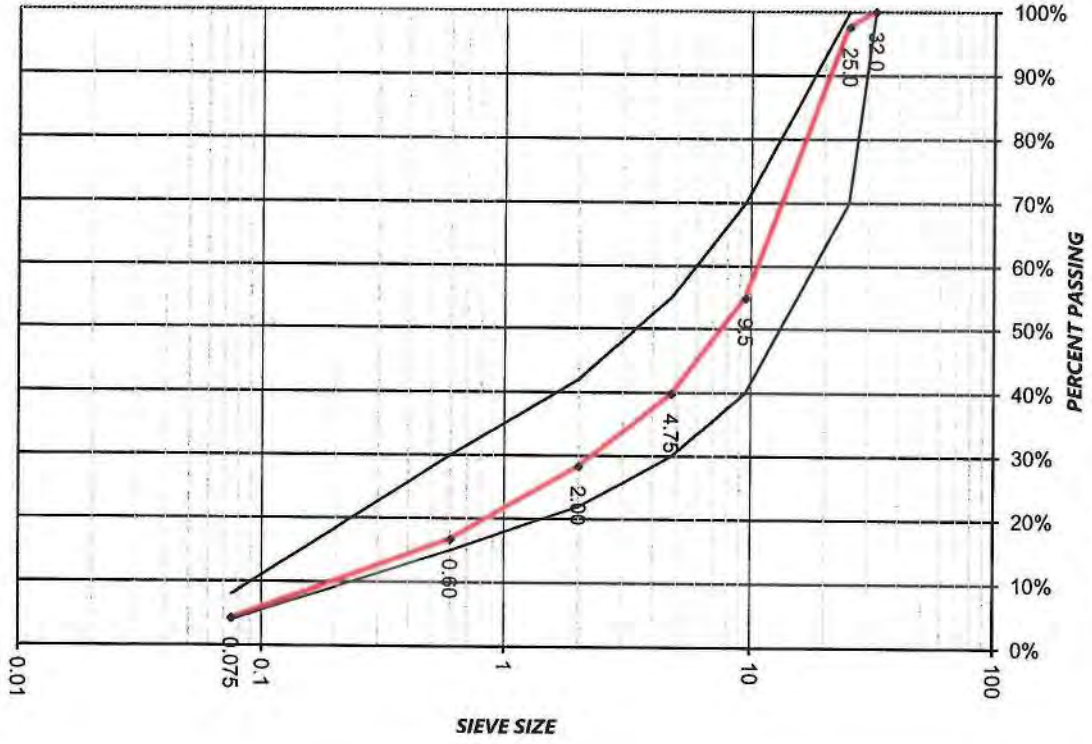
% FRACTURE

% MOISTURE

1.3%

GRADATIONS

GRAVEL	60.2%
SAND	35.6%
SILT/CLAY	4.2%



COMMENTS

Material meets specifications for the project.

Reviewed By:

Matt Tabor, Materials Lead

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	24-Jul-19	Report Number:	18SJ0001	
File Number:		Inspector:	B. Mullins	
Client:	Hatch	Sampled By:	B. Mullins	
Project:	Baffinland	Sample Date:	24-Jul-19	20:40
Location:	MOD Road STA: 0+465	Copy To:		
Contractor:	Nuna			

TEST RESULTS

SIEVE SIZE (mm)				32	25	19	13.2	9.5	4.75	2.00	1.18	0.600	0.315	0.160	0.075
MAX % PASS SPEC				100.0	100.0			70.0	55.0	42.0		30.0			8.0
MIN % PASS SPEC				100.0	70.0			40.0	30.0	22.0		15.0			4.0
% PASS RESULTS				100.0	96.8	81.0	63.7	52.0	35.4	25.0	20.1	15.0	10.7	6.8	3.9

MATERIAL TYPE

Type 5

SIEVE METHOD

Washed

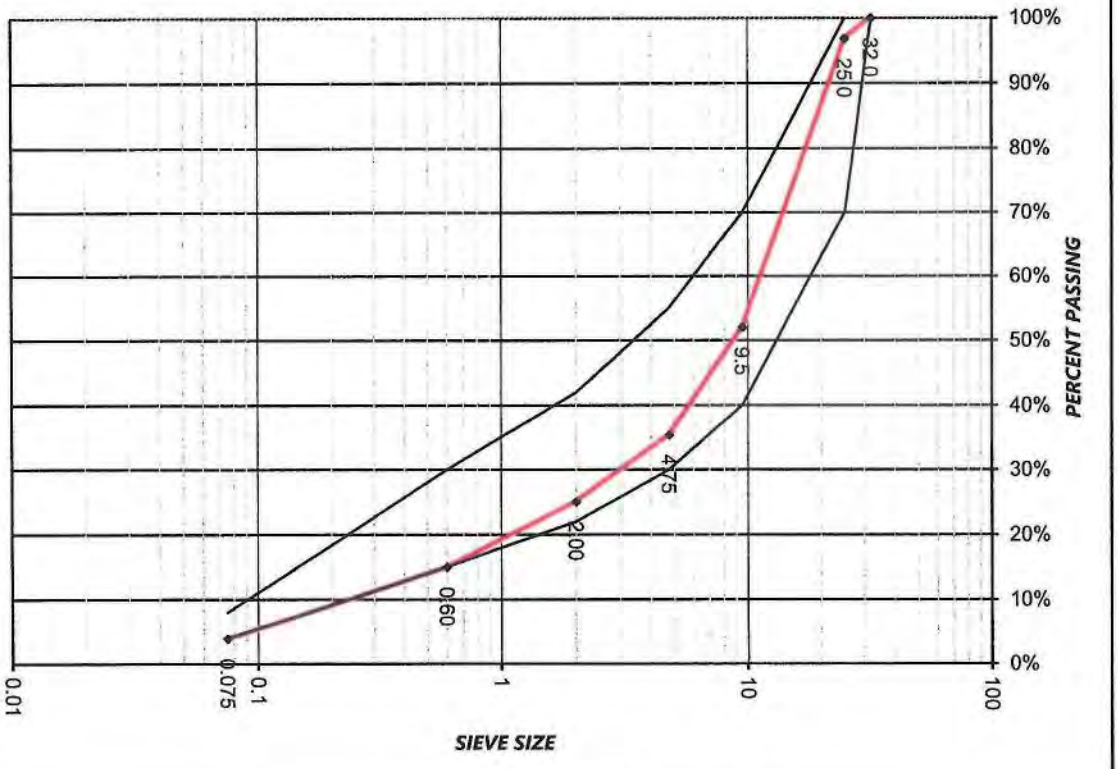
% FRACTURE

% MOISTURE

0.9%

GRADATIONS

GRAVEL	64.6%
SAND	31.5%
SILT/CLAY	3.9%



COMMENTS

Material slight outside specification on 0.075

Reviewed By:

Matthew Tabor, Materials Lead

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190037
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-21

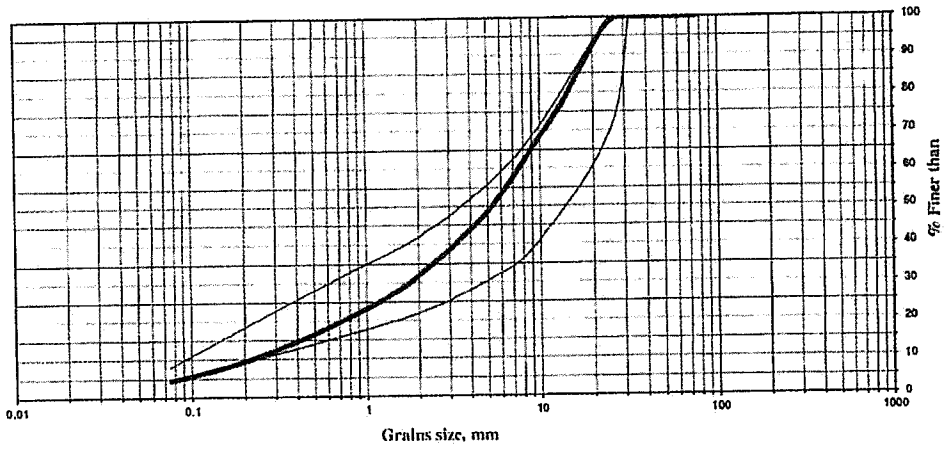
Type of Material:	Type 5 Fill	**Sampling location:**	Twin screen Conveyor, C.S, Q1
Comments:	32mm Minus		Production 2019-07-20_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-21

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	91	77	67	47	32	25	18	13	8	4.3
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	52.5%	Cu = 34	D_{85} = 16.3	D_{15} = 0.4
Sand %	43.2%	Cc = 2	D_{60} = 7.4	D_{10} = 0.2
Silt/Clay %	4.3%		D_{50} = 5.2	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By:

Signature:

Date: 2019/07/21

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190035
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-20

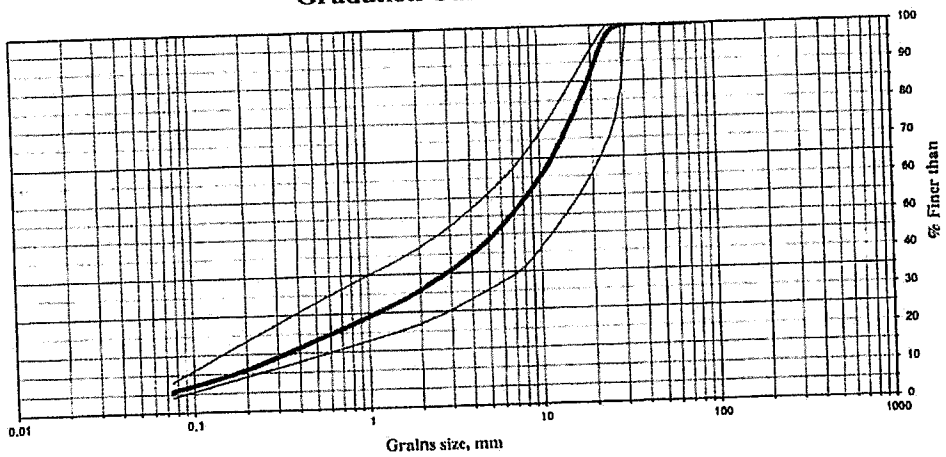
Type of Material:	Type 5 Fill	**Sampling location:**	Scalpe Conveyor, C.S, Q1
Comments:	32mm Minus		Production 2019-07-19_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-20

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	98	85	69	59	43	31	26	20	14	10	5.7
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	57.4%	Cu = 58	D_{85} = 19.0	D_{15} = 0.3
Sand %	36.9%	Cc = 2	D_{60} = 9.9	D_{10} = 0.2
Silt/Clay %	5.7%		D_{50} = 6.5	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/07/20

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190036
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-20

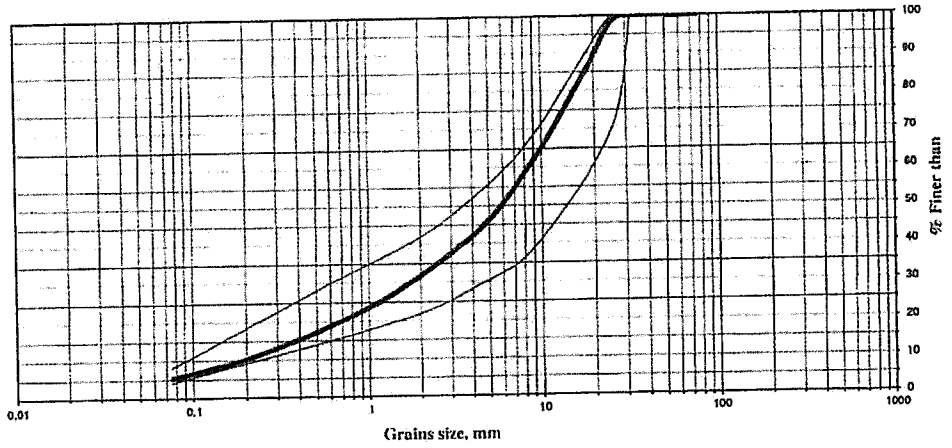
Type of Material:	Type 5 Fill	**Sampling location:**	Twin screen Conveyor, C.S. Q1
Comments:	32mm Minus		Production 2019-07-20_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-20

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	98	88	75	64	45	32	25	19	14	9	5.3
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	54.7%	Cu = 44	D_{85} = 17.6	D_{15} = 0.4
Sand %	40.0%	Cc = 2	D_{60} = 8.2	D_{10} = 0.2
Silt/Clay %	5.3%		D_{50} = 5.7	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By:

Signature:

Date: 2019/07/21

LC: Informatique
OV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates Analysis

CLIENT:	HATCH / BIM	**HATCH Project # :**	11-837
PROJET:	Expansion Project - Site Crushing Services	**Q-SANA Project # :**	CC004A
		SAMPLE Number:	MP190012
SITE:	Baffinland, Milne Port	**DATE:**	2019-06-02

Type of Material	Type 5 Fill	**Sampling location:**	Type 5 Stockpile
Comments	32mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-02

Gradation (% Finer than) (ASTM C136-06)

Seives				75 mm	50 mm	32 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.50 mm	1.25 mm	0.63 mm	0.315 mm	0.16 mm	0.08 mm
Cumulatives Results				100	100	100	94	77	58	47	33	25	19	15	11	7	4.5
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

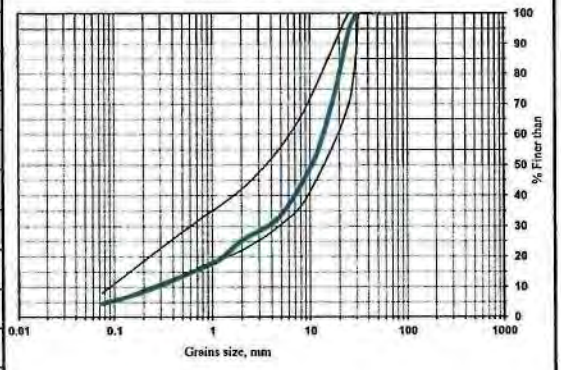
Other Standard Tests	Results	Specifications min.	Specifications max.

Proctor Essay (NQ 2501-255)	Résultats
Maximum Dry Density	(kg/m^3)
Optimal Moisture countain	(%)

Proctor at 0% of stone : kg/m3
Correction Factor:

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel %	67.2%	Cu = 50	D_{85} = 21.7	D_{15} = 0.6
Sand %	28.3%	Cc = 3	D_{60} = 13.6	D_{10} = 0.3
Silt/Clay %	4.5%		D_{50} = 10.3	

Notes:	Material within specifications		
Prepared By:	Hugo Perron, Tech	Verified By:	Christopher Gilbert, P. Eng.

Qikiqtaaluk SANA

Soil & Aggregates Analysis

CLIENT:	HATCH / BIM	**HATCH Project # :**	11-837
PROJET:	Expansion Project - Site Crushing Services	**Q-SANA Project # :**	CC004A
		SAMPLE Number:	MP190008
SITE:	Baffinland, Milne Port	**DATE:**	2019-06-01

Type of Material	Type 5 Fill	**Sampling location:**	Type 5 Stockpile
Comments	32mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-05-31

Gradation (% Finer than) (ASTM C136-06)

Seives				75 mm	50 mm	32 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.50 mm	1.25 mm	0.63 mm	0.315 mm	0.16 mm	0.08 mm
Cumulatives Results				100	100	100	96	81	64	52	36	27	20	15	11	8	4.7
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

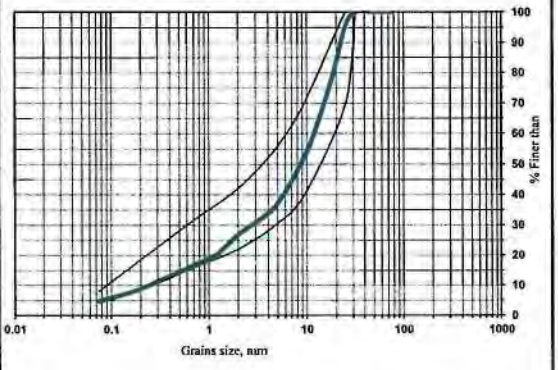
Other Standard Tests	Results	Specifications min.	Specifications max.

Proctor Essay (NQ 2501-255)	Résultats
Maximum Dry Density	(kg/m^3)
Optimal Moisture countain	(%)

Proctor at 0% of stone : kg/m3
Correction Factor:

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel %	63.9%	Cu = 48	D_{85} = 20.6	D_{15} = 0.6
Sand %	31.4%	Cc = 3	D_{60} = 11.7	D_{10} = 0.2
Silt/Clay %	4.7%		D_{50} = 8.6	

Notes: Material within specifications

Prepared By: Hugo Perron, Tech

Verified By: Christopher Gilbert, P. Eng.

Qikiqtaaluk SANA

Soil & Aggregates Analysis

CLIENT:	HATCH / BIM	**HATCH Project # :**	11-837
PROJET:	Expansion Project - Site Crushing Services	**Q-SANA Project # :**	CC004A
		SAMPLE Number:	MP190003
SITE:	Baffinland, Milne Port	**DATE:**	2019-05-30

Type of Material	Type 5 Fill	**Sampling location:**	Type 5 Stockpile
Comments	32mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-05-30

Gradation (% Finer than) (ASTM C136-06)

Seives				75 mm	50 mm	31,5 mm	28 mm	20 mm	14 mm	10 mm	5 mm	2,50 mm	1,25 mm	0,63 mm	0,315 mm	0,16 mm	0,08 mm
Cumulatives Results				100	100	100	100	80	65	55	41	31	24	18	13	9	5,4
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4,0
	max.					100	100			70	55	42		30			8,0

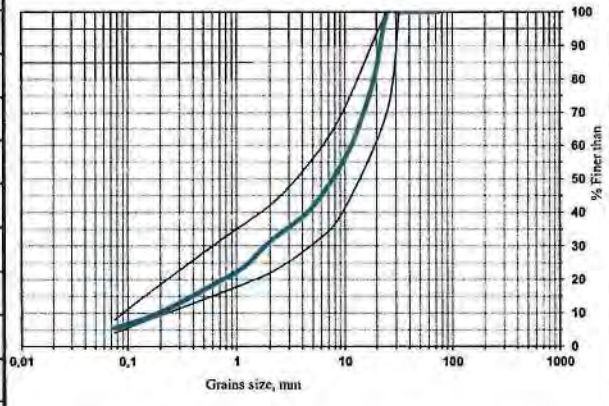
Other Standard Tests	Results	Specifications min.	Specifications max.

Proctor Essay (NQ 2501-255)	Résultats
Maximum Dry Density	(kg/m^3)
Optimal Moisture countain	(%)

Proctor at 0% of stone : kg/m3
Correction Factor:

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel %	59,3%	Cu = 59	D_{85} = 20,3	D_{15} = 0,4
Sand %	35,2%	Cc = 2	D_{60} = 11,3	D_{10} = 0,2
Silt/Clay %	5,4%		D_{50} = 7,5	

Notes:	Material within specifications		
Prepared By:	Hugo Perron, Tech	Verified By:	Christopher Gilbert, P. Eng.

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP190027
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-14

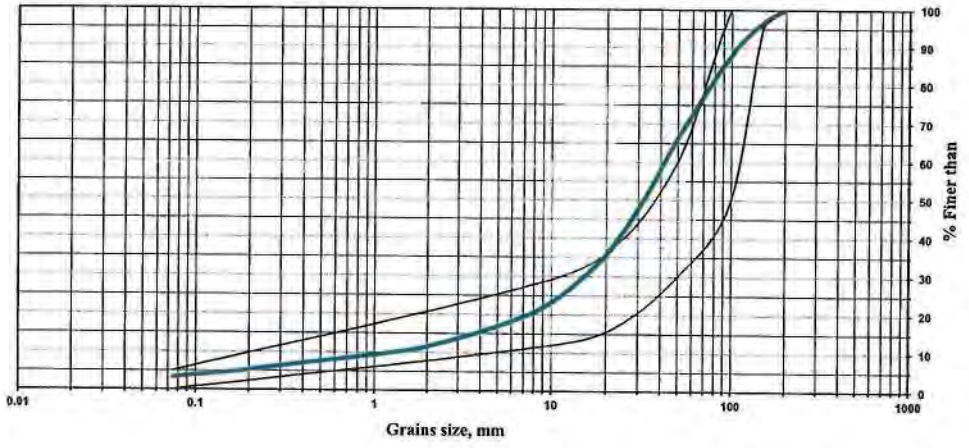
Type of Material:	Type 8 Fill	**Sampling location:**	Convayor C.S, Q1
Comments:	Jaw Run - 150mm Minus		Stockpile Type C.S
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-13

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	96	88	M	49	34	22	16	11	10	8	6	5	3.2
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	83.6%	Cu = 33	D_{85} = 91.6	D_{15} = 3.7
Sand %	13.2%	Cc = 4	D_{60} = 42.6	D_{10} = 1.3
Silt/Clay %	3.2%		D_{50} = 32.5	

Notes: Gap for the following sieves: 50 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N. Tremblay **Date:** 2019-07-15

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190026
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-12

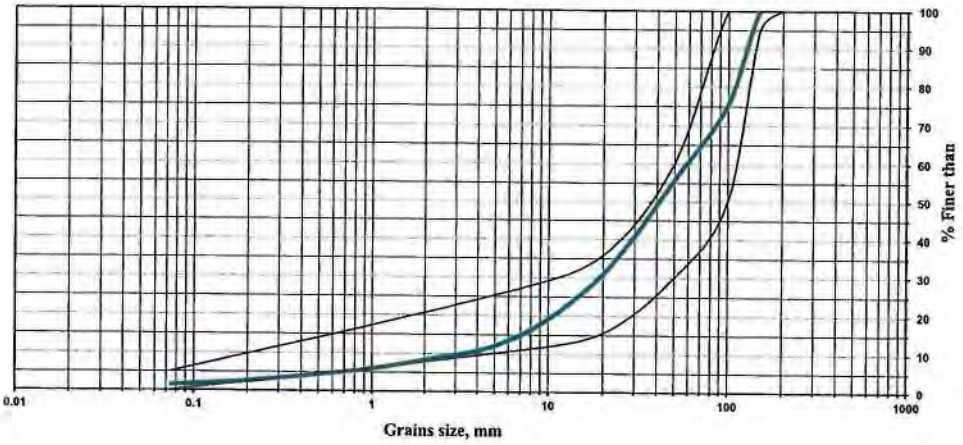
Type of Material:	Type 8 Fill	**Sampling location:**	Convayor F.T, Q1
Comments:	Jaw Run - 150mm Minus		Stockpile Type 8 #3
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-12

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	75	56	42	30	18	12	8	6	5	3	2	1.4
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	88.4%	Cu = 18	D_{85} = #DIV/0!	D_{15} = 6.8
Sand %	10.2%	Cc = 2	D_{60} = 58.5	D_{10} = 3.2
Silt/Clay %	1.4%		D_{50} = 41.4	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N-C-T-L **Date:** 2019-07-15

LC: Informatique
DV: 5 ans

Oikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190025
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-10

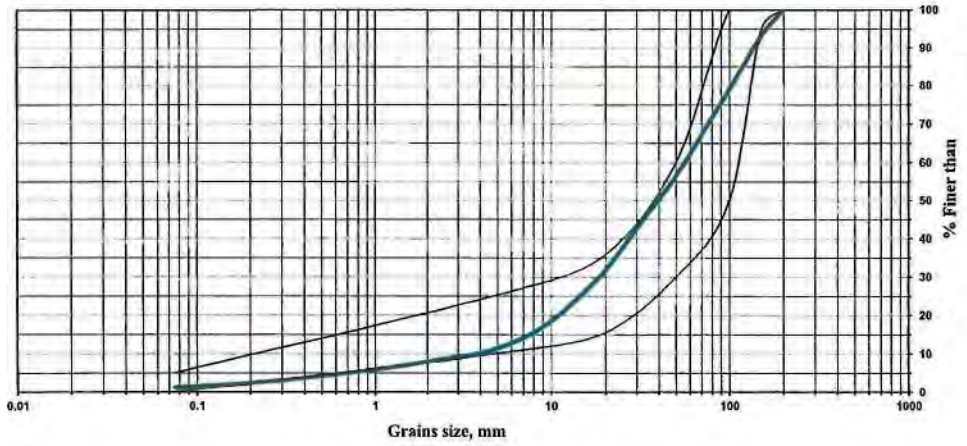
Type of Material:	Type 8 Fill	**Sampling location:**	CS Type 8 Stokcpile
Comments:	Jaw Run - 150mm Minus		
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-09

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	93	79	56	44	30	18	11	8	6	5	3	2	1.2
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	89.0%	Cu = 15	D_{85} = #DIV/0!	D_{15} = 7.2
Sand %	9.8%	Cc = 2	D_{60} = 55.9	D_{10} = 3.6
Silt/Clay %	1.2%		D_{50} = 39.5	

Notes: Gap for the following sieves: 150 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N-C-T-M **Date:** 2019-07-15

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190024
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-09

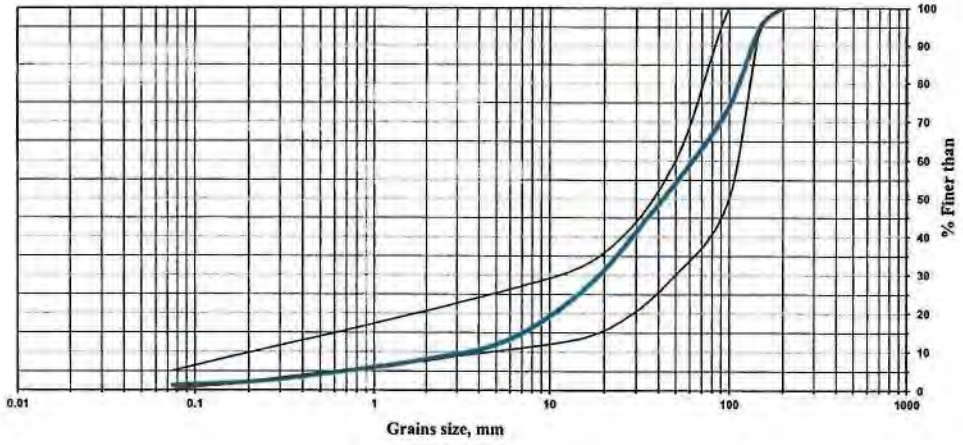
Type of Material:	Type 8 Fill	**Sampling location:**	FT Type 8 Stokcpile
Comments:	Jaw Run - 150mm Minus		
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-08

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	[illegible]	74	54	43	30	18	11	8	6	5	3	2	1.2
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	88.6%	Cu = 18	D_{85} = #DIV/0!	D_{15} = 6.8
Sand %	10.2%	Cc = 2	D_{60} = 61.8	D_{10} = 3.4
Silt/Clay %	1.2%		D_{50} = 42.7	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Nicolas Tremlay

Signature: N-Côté

Date: 2019-07-15

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190021
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-05

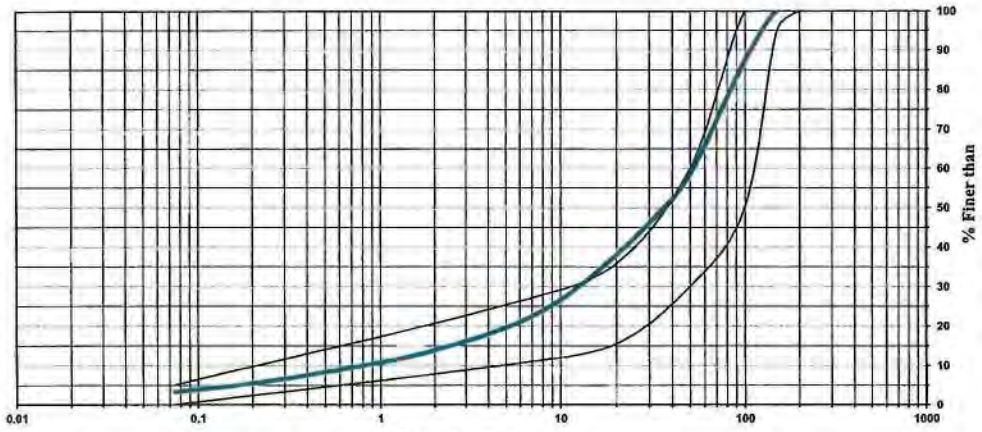
Type of Material	Type 8 Fill	**Sampling location:**	F.T Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Maxime Côté
Type of Use		**Sampling Date**	2019-07-04

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	87	58	47	37	26	19	14	11	9	7	5	3.2
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	81.0%	Cu = 62	D_{85} = 95.4	D_{15} = 2.5
Sand %	15.8%	Cc = 3	D_{60} = 52.2	D_{10} = 0.8
Silt/Clay %	3.2%		D_{50} = 35.7	

Notes: Gap for the following sieves: 19 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N Côté **Date:** 2019-07-15

LC : Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190020
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-03

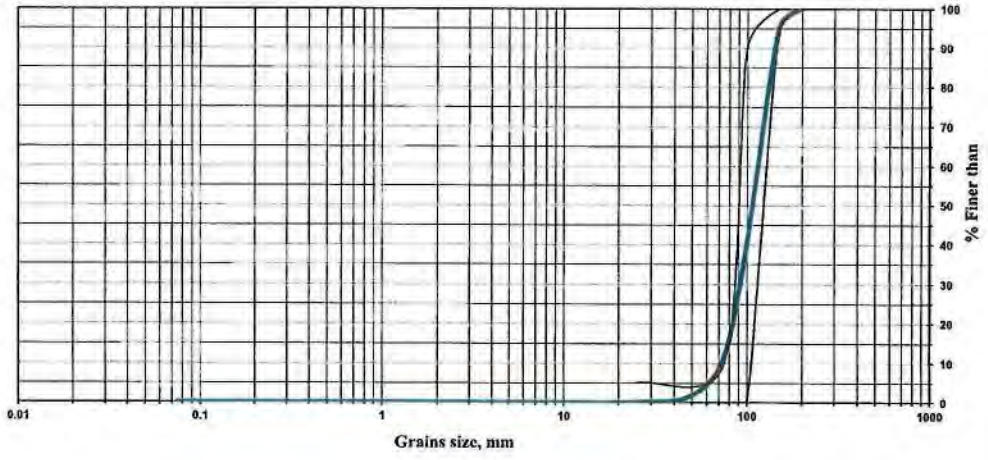
Type of Material	Type 19 Fill	**Sampling location:**	MP, Q1
Comments	150mm Clear		type 19* stockpile
Stone source	Quarry 1, Milne Port	**Sampled By**	Maxime Côté
Type of Use		**Sampling Date**	2019-07-03

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	75 mm	50 mm	25 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	95	40	12	2	0	0	0	0	0	0	0	0	0.0
Individual Result																	
Spec.	min.			100	95	0	0		0								
	max.			100	100	90	10		5								

Type of material : Type 19 Fill: 150mm Clear

Gradation Curve



Gravel/Stone%	100.0%	Cu = #DIV/0!	D_{85} = #DIV/0!	D_{15} = 77.6
Sand %	0.0%	Cc = #DIV/0!	D_{60} = #DIV/0!	D_{10} = 70.1
Sill/Clay %	0.0%		D_{50} = #DIV/0!	

Notes: Gap for the following sieves: 75 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N L-t-y **Date:** 2019-07-15

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190019
SITE:	Baffinland, Milne Port	**DATE:**	19-06-29

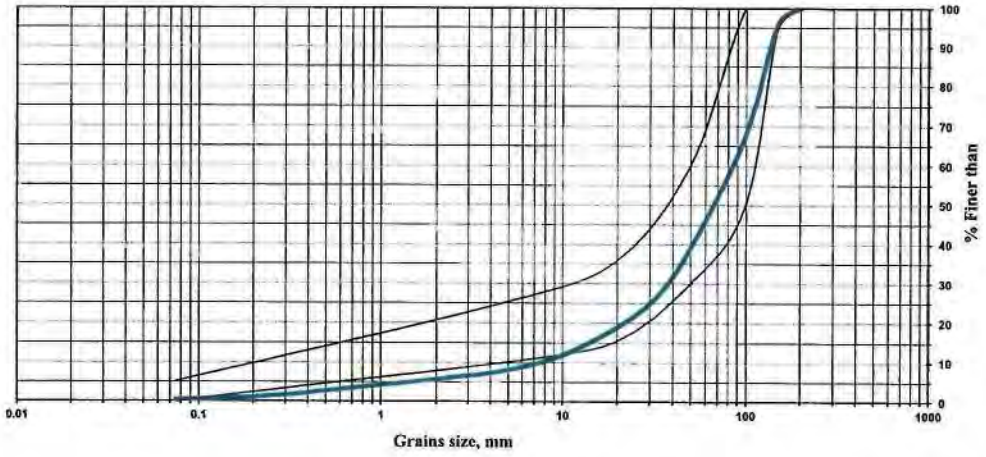
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 C.S. Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-29

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	96	67	39	26	18	11	8	6	4	3	2	1	0.4
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	92.2%	Cu = 11	D_{85} = #DIV/0!	D_{15} = 13.8
Sand %	7.4%	Cc = 2	D_{60} = 83.6	D_{10} = 7.4
Silt/Clay %	0.4%		D_{50} = 65.7	

Notes: Gap for the following sieves: 4.75 mm

Prepared By: Hugo Perron, tech

Verified By: Maxime Côté

Signature:

Date: 2019-07-15

LC : Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190014
SITE:	Baffinland, Milne Port	**DATE:**	19-06-27

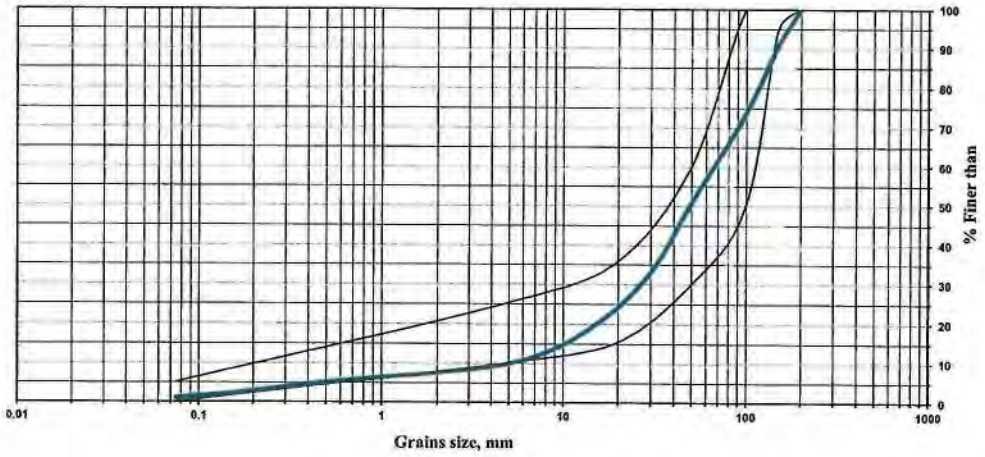
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 F.T. Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-27

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	91	73	50	35	23	14	10	7	7	5	4	2	1.0
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	90.4%	Cu = 13	D_{85} = #DIV/0!	D_{15} = 10.2
Sand %	8.6%	Cc = 2	D_{60} = 67.0	D_{10} = 5.0
Silt/Clay %	1.0%		D_{50} = 49.6	

Notes: Gap for the following sieves: 150 mm

Prepared By: Hugo Perron, tech

Verified By: Maxime Côté

Signature:

Date: 2019-07-02

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	INT-190017
SITE:	Baffinland, Milne Port	**DATE:**	19-06-25

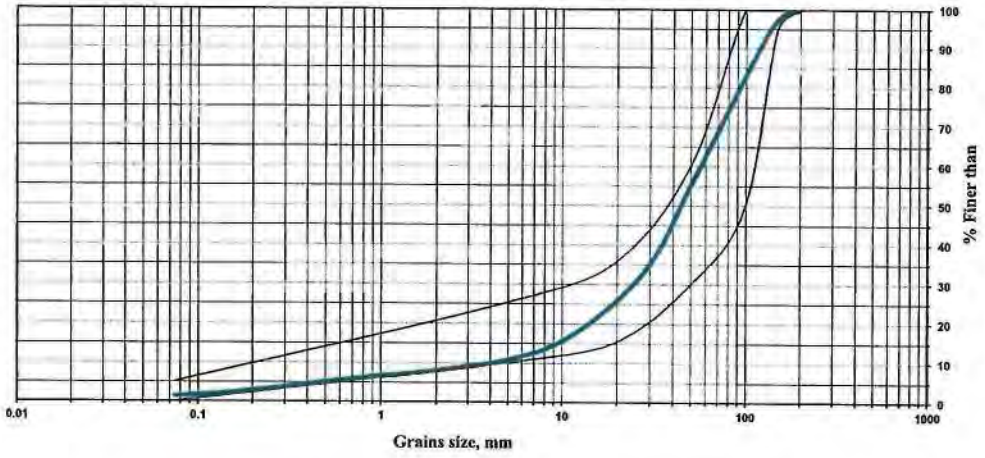
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 C.S. Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-25

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	97	83	55	37	25	15	11	8	7	5	4	2	1.3
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	89.4%	Cu = 15	D_{85} = #DIV/0!	D_{15} = 9.6
Sand %	9.2%	Cc = 3	D_{60} = 57.1	D_{10} = 3.9
Silt/Clay %	1.3%		D_{50} = 44.5	

Notes: Aggregate compliant with specs

Prepared By: Hugo Perron, tech

Verified By: Hugo Perron, tech

Signature:

Date: 2019-06-26

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190016
SITE:	Baffinland, Milne Port	**DATE:**	19-06-22

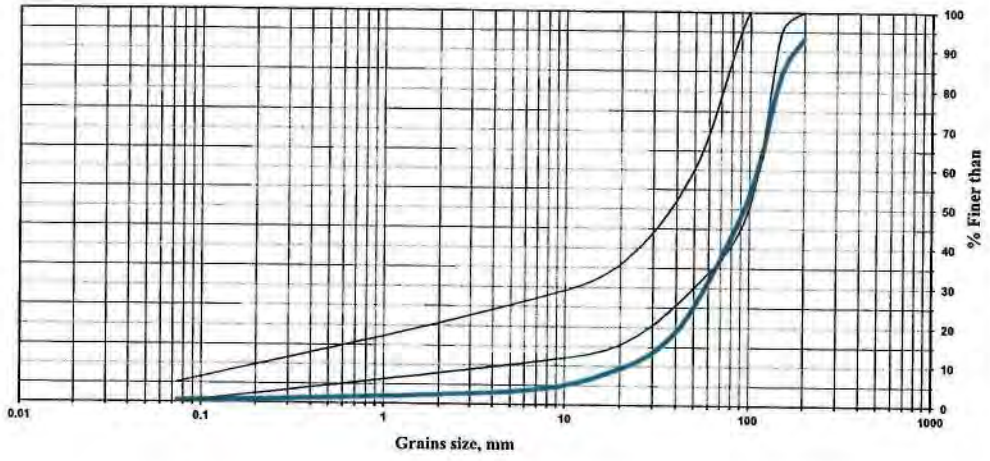
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-22

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				[illegible]	[illegible]	53	[illegible]	14	[illegible]	5	[illegible]	2	2	1	1	1	0.5
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	96.9%	Cu = #DIV/0!	D_{85} = #DIV/0!	D_{15} = 32.9
Sand %	2.6%	Cc = #DIV/0!	D_{60} = #DIV/0!	D_{10} = 21.4
Silt/Clay %	0.5%		D_{50} = 93.1	

Notes: Gap for the following sieves: 200, 150, 50, 19, 4.75 mm

Prepared By: Hugo Perron

Verified By: Maxime Côté

Signature:

Date: 2019-07-15

LC: Informatique
DV: 5 ans

Groupe SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190015
SITE:	Baffinland, Milne Port	**DATE:**	19-06-19

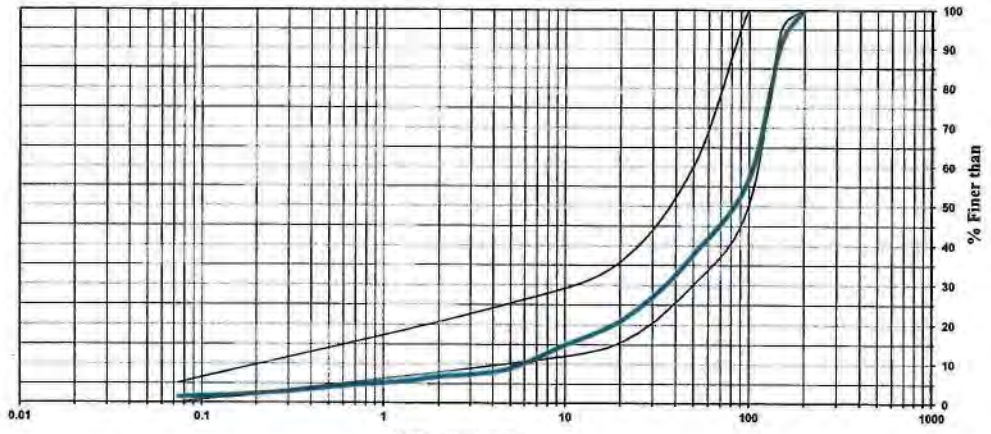
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-19

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100		56	38	28	20	14		7	5	4	3	2	1.4
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	91.6%	Cu = #DIV/0!	D_{85} = #DIV/0!	D_{15} = 10.4
Sand %	7.0%	Cc = #DIV/0!	D_{60} = #DIV/0!	D_{10} = 5.7
Silt/Clay %	1.4%		D_{50} = 79.0	

Notes: Gap for the following sieves: 150, 4.75 mm

Prepared By: Hugo Perron

Verified By: Maxime Côté

Signature:

Date: 2019-07-15

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190014
SITE:	Baffinland, Milne Port	**DATE:**	19-06-08

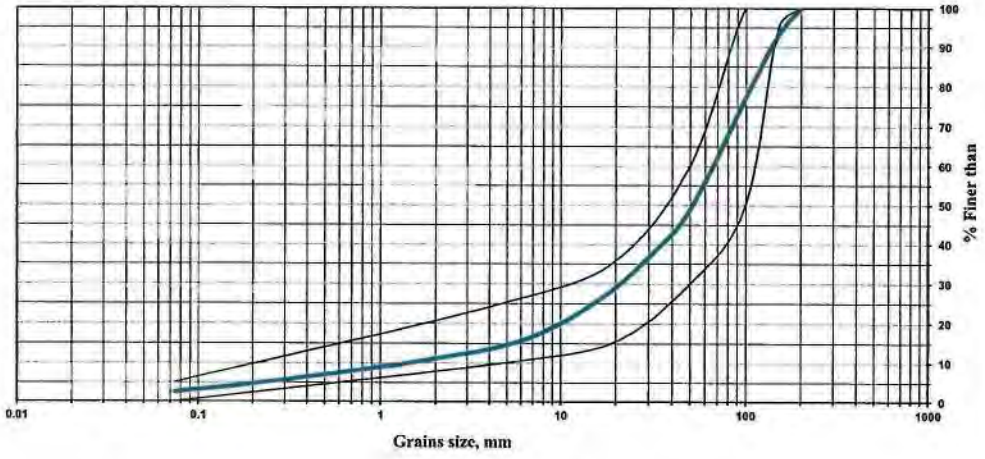
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Maxime Côté
Type of Use		**Sampling Date**	2019-06-07

Gradation (% Finer than) (ASTM C136-06)

Scives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	93	77	49	38	28	19	14	11	9	7	6	4	2.5
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	85.8%	Cu = 45	D_{85} = #DIV/0!	D_{15} = 5.3
Sand %	11.7%	Cc = 4	D_{60} = 66.1	D_{10} = 1.5
Silt/Clay %	2.5%		D_{50} = 51.7	

Notes: Gap for the following sieves: 150 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N. Trembl

Date: 2019-07-15

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190013
SITE:	Baffinland, Milne Port	**DATE:**	19-06-06

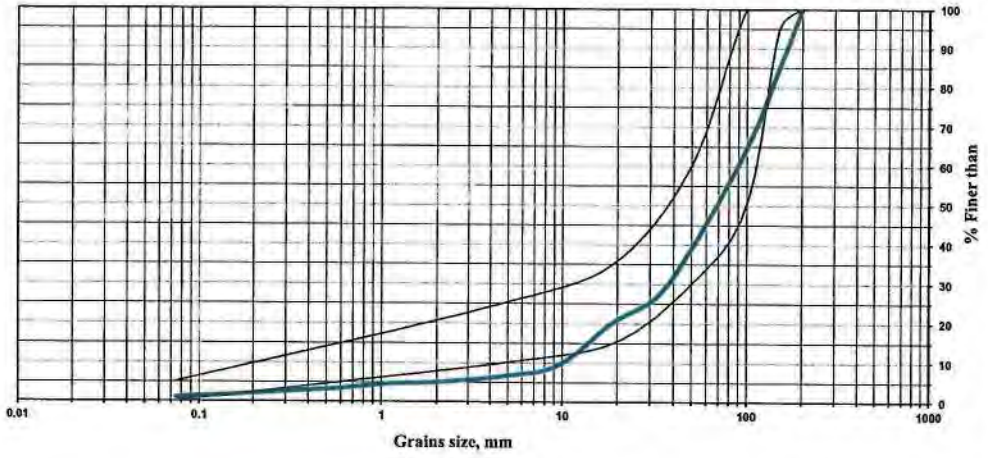
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Maxime Côté
Type of Use		**Sampling Date**	2019-06-06

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	85	64	39	26	20	9	6	5	5	3	2	2	1.0
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	93.5%	Cu = 9	D_{85} = #DIV/0!	D_{15} = 13.7
Sand %	5.5%	Cc = 2	D_{60} = 89.2	D_{10} = 10.0
Sill/Clay %	1.0%		D_{50} = 68.0	

Notes: Gap for the following sieves: 150, 4.75 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N L T.M **Date:** 2019-07-15

LC: Informatique
DV: 5 ans

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

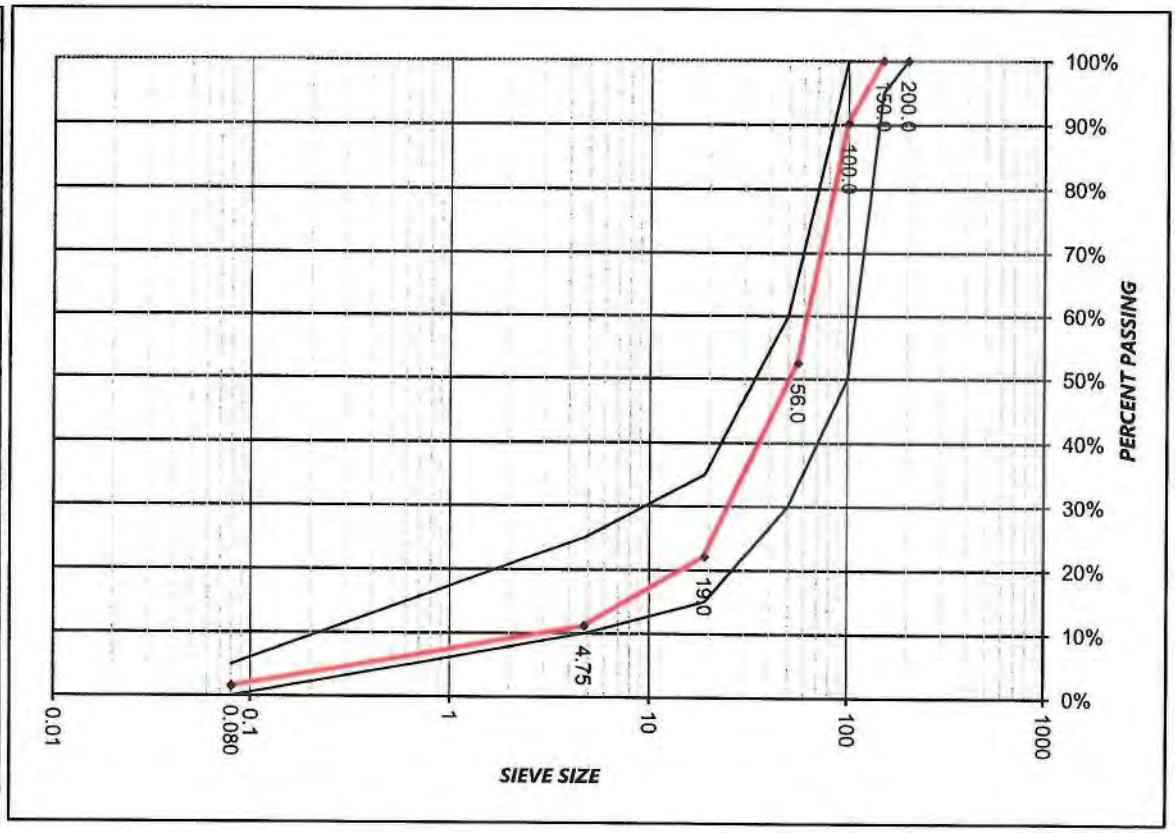
Test Date:	27-May-19	Report Number:	18SJ0001
File Number:	T08P003	Inspector:	R.chaisson
Client:	Hatch	Sampled By:	R.Chaisson
Project:	Baffinland	Sample Date:	27-May-19
Location:	Port Site	Copy To:	
Contractor:	Nuna		

TEST RESULTS

SIEVE SIZE (mm)			200	150	100	56	50	19	4.75	2.50	1.25	0.630	0.315	0.160	0.080
MAX % PASS SPEC			100.0	100.0	100.0		60.0	35.0	25.0						5.0
MIN % PASS SPEC			100.0	95.0	50.0		30.0	15.0	10.0						0.0
% PASS RESULTS			100.0	100.0	90.3	52.4		22.1	11.1	7.5	5.8	4.7	3.5	2.4	1.5

MATERIAL TYPE
Type 8
SIEVE METHOD
Washed
% FRACTURE
% MOISTURE
1.3%
GRADATIONS

GRAVEL	88.9%
SAND	9.6%
SILT/CLAY	1.5%



COMMENTS	
Sample meets all project specifications for site.	**Reviewed By:**
Used 56mm sieve due to availability.	
	M Kirkbride P.Eng.

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	25-May-19	Report Number:	18SJ0001
File Number:	T08P002	Inspector:	R.chaisson
Client:	Hatch	Sampled By:	R.Chaisson
Project:	Baffinland	Sample Date:	25-May-19
Location:	Port Site	Copy To:	
Contractor:	Nuna		

TEST RESULTS

SIEVE SIZE (mm)			200	150	100	56	50	19	4.75	2.50	1.25	0.630	0.315	0.160	0.080
MAX % PASS SPEC			100.0	100.0	100.0		60.0	35.0	25.0						5.0
MIN % PASS SPEC			100.0	95.0	50.0		30.0	15.0	10.0						0.0
% PASS RESULTS			100.0	100.0	87.2	57.1		22.8	11.0	7.6	6.1	5.1	3.9	2.8	1.9

MATERIAL TYPE

Type 8

SIEVE METHOD

Washed

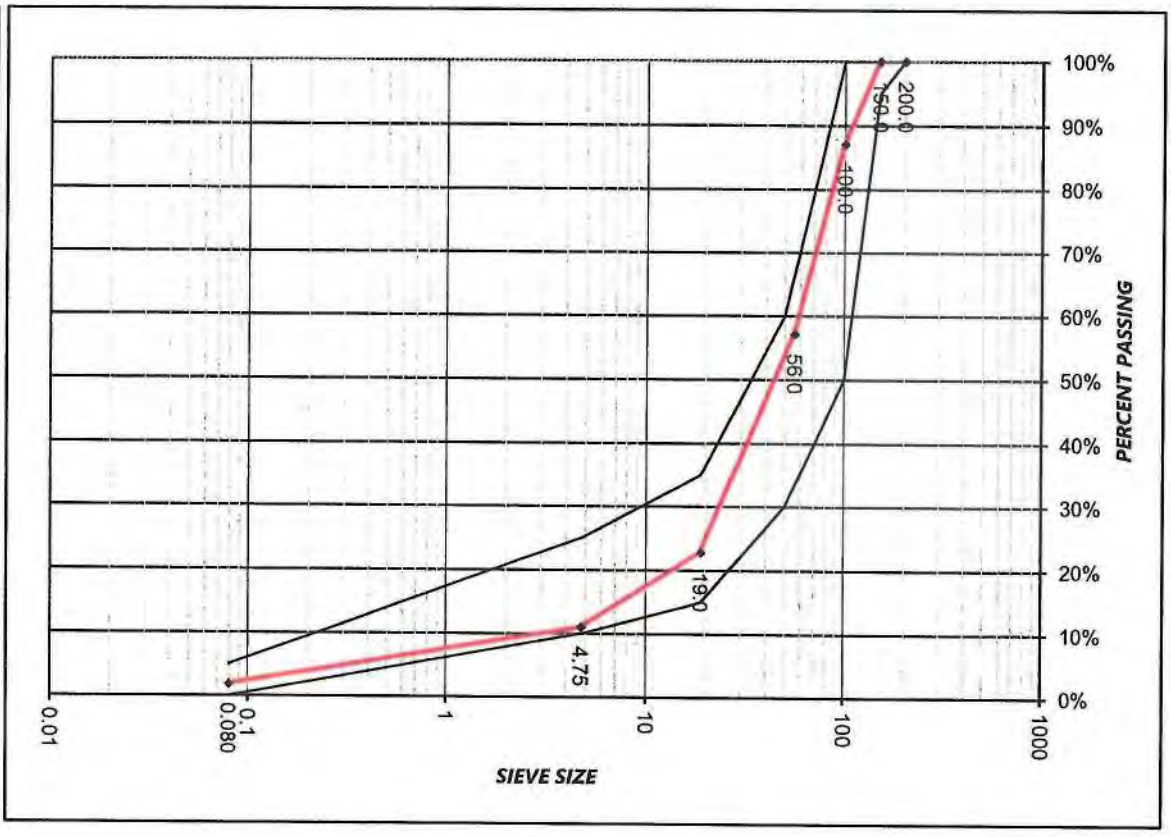
% FRACTURE

% MOISTURE

3.7%

GRADATIONS

GRAVEL	89.0%
SAND	9.2%
SILT/CLAY	1.9%



COMMENTS

Sample meets all project specifications for site.

Used 56mm sieve due to availability.

Reviewed By:

M Kirkbride P.Eng.

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	10-May-19	Report Number:	18SJ0001
File Number:	T08P001	Inspector:	R.chaisson
Client:	Hatch	Sampled By:	R.Chaisson
Project:	Baffinland	Sample Date:	8-May-19
Location:	Port Site	Copy To:	
Contractor:	Nuna		

TEST RESULTS

SIEVE SIZE (mm)			200	150	100	56	50	19	4.75	2.50	1.25	0.630	0.315	0.160	0.080
MAX % PASS SPEC			100.0	100.0	100.0		60.0	35.0	25.0						5.0
MIN % PASS SPEC			100.0	95.0	50.0		30.0	15.0	10.0						0.0
% PASS RESULTS			100.0	100.0	88.0	45.3		39.7	15.8	13.1	9.8	6.6	3.6	2.0	1.1

MATERIAL TYPE

Type 8

SIEVE METHOD

Washed

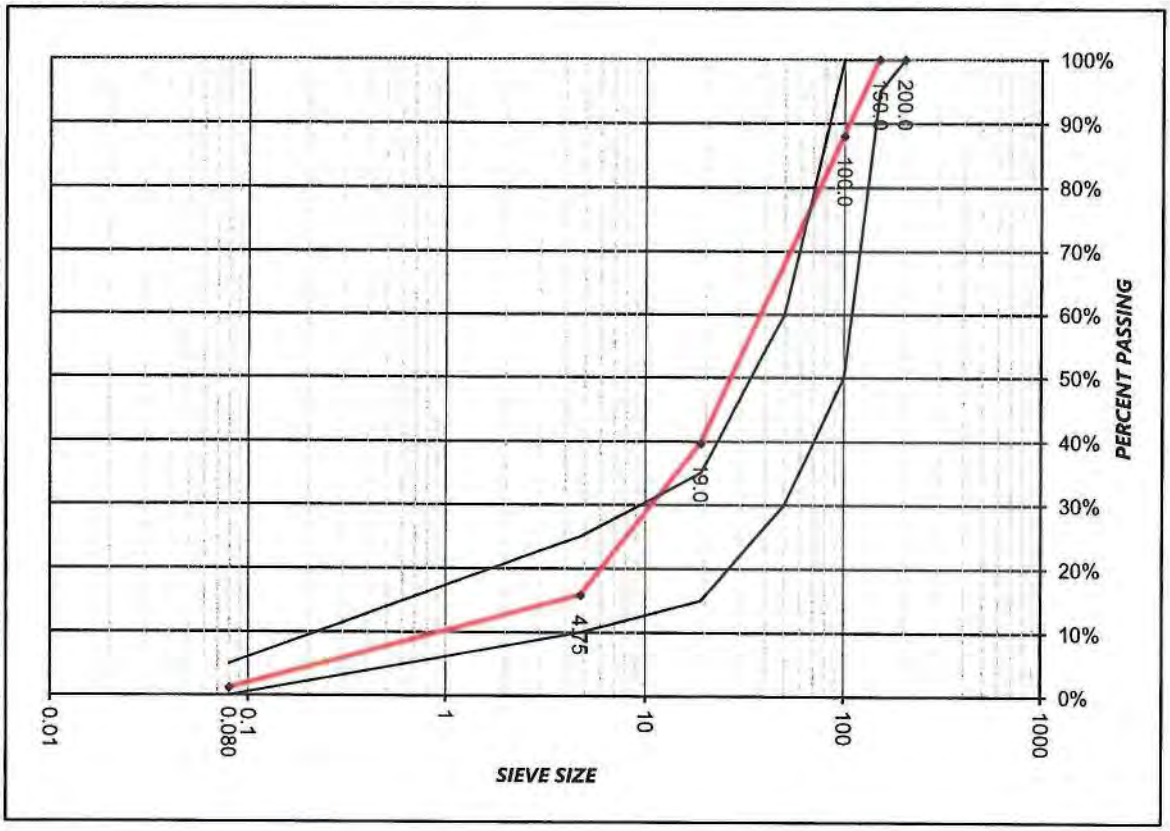
% FRACTURE

% MOISTURE

7.1%

GRADATIONS

GRAVEL	84.2%
SAND	14.6%
SILT/CLAY	1.1%



COMMENTS

Sample is fine on the 19mm (39.7% passing). All other sizes are within specification

Used 56mm sieve due to availability.

Reviewed By:

M Kirkbride P.Eng.

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-023

Inspection date 2019-07-01
Shift Day

Crucher type Primary F.T.
Jaw opening 4" 1/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	234		
2	Yes	Yes	No	1156		
3	Yes	Yes	No	2034		
4	Yes	Yes	No	3090		
5	Yes	Yes	No	3387		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-07-01

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-022

Inspection date 2019-06-30
Shift Day

Crucher type Primary F.T.
Jaw opening 4" 1/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	183		
2	Yes	Yes	No	926		
3	Yes	Yes	No	2023		
4	Yes	Yes	No	3076		
5	Yes	Yes	No	4083		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-30

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-021

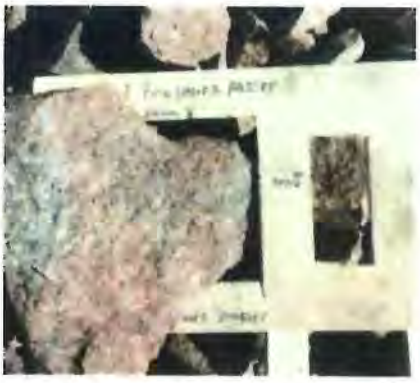
Inspection date 2019-06-29
Shift Day

Crucher type Primary F.T.
Jaw opening 4" 1/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	1065		
2	N/A	No	Yes	1634		
3	N/A	No	Yes	2570		
4	Yes	Yes	No	3482		
5	Yes	Yes	No	5007		
6						
7						
8						
9						
10						

Comments: Material is pretty much coarsy during the morning. Needs more fine material.
No particule retained over 200mm after jaw ajustment at 12h

Representatives Pictures



Biggest particule retained over 200mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-29

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-020

Inspection date 2019-06-29
Shift Day
Crucher type Primary C.S
Jaw opening 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	315		
2	Yes	Yes	No	1224		
3	Yes	Yes	No	1997		
4	Yes	Yes	No	2644		
5	Yes	Yes	No	4502		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-29

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-019

Inspection date 2019-06-28 **Crucher type** Primary F.T.
Shift Day **Jaw opening** 4" 1/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	293		
2	Yes	Yes	No	1400		
3	Yes	Yes	No	1880		
4	Yes	Yes	No	2764		
5	Yes	Yes	No	4567		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP **Date:** 2019-06-28

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-018

Inspection date 2019-06-28
Shift Day
Crucher type Primary C.S
Jaw opening 4'' 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	143		
2	N/A	No	Yes	1417		
3	Yes	Yes	No	2264		
4	Yes	Yes	No	2920		
5	Yes	Yes	No	4120		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
One aggregate bigger than 200mm has been found.
Conform sieves analysis done.

Representatives Pictures

Biggest particule retained over 200mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-28

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-017

Inspection date 2019-06-27
Shift Day

Crucher type Primary C.S.
Jaw opening 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	145		
2	Yes	Yes	No	1310		
3	N/A	No	Yes	2348		
4	Yes	Yes	No	3248		
5	Yes	Yes	No	3996		
6						
7						
8						
9						
10						

Comments: Material is pretty much coarsy. Needs more fine material.
One aggregate bigger than 200mm has been found.

Representatives Pictures

Biggest particule retained over 200mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-27

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-014

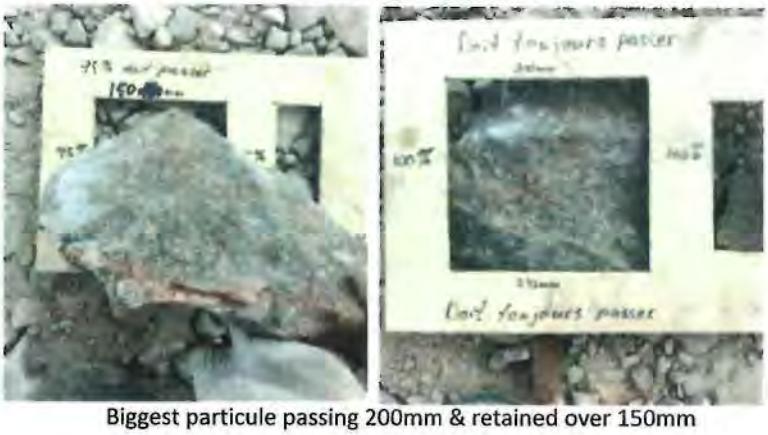
Inspection date 2019-06-26
Shift Day

Crucher type Primary C.S
Jaw opening 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	157		
2	Yes	Yes	No	1189		
3	Yes	Yes	No	2129		
4	Yes	Yes	No	2804		
5	Yes	Yes	No	4512		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures



Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-26

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-013

Inspection date 2019-06-25
Shift Day
Crucher type Primary C.S
Jaw opening 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	610		
2	Yes	Yes	No	1685		
3	Yes	Yes	No	2453		
4	Yes	Yes	No	2831		
5	Yes	Yes	No	3750		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HPR

Date: 2019-06-25

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-012

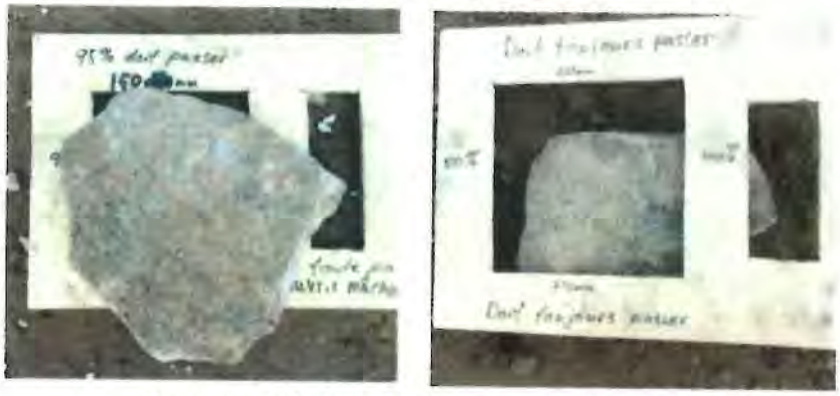
Inspection date 2019-06-24
Shift Day

Crucher type Primary C.S
Jaw opening 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	336		
2	Yes	Yes	No	885		
3	Yes	Yes	No	1565		
4	Yes	Yes	No	2277		
5	Yes	Yes	No	2731		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures



Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-24

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-011

Inspection date 2019-06-23
Shift Day
Crucher type Primary C.S
Jaw opening 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	152		
2	Yes	Yes	No	724		
3						
4						
5						
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm sieve
Only 2 inspections because downtime

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-23

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-010

Inspection date 2019-06-22 **Crucher type** Primary C.S

Shift Day **Jaw opening** 4" 3/8

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	Yes	286		
2	Yes	Yes	No	724		
3	Yes	Yes	No	1466		
4	Yes	Yes	No	2578		
5	Yes	Yes	No	3087		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm sieve after the jaw adjustment.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP **Date:** 2019-06-22

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-11 **Crucher type** Primary C.S

Shift Day **Jaw opening** 4" 3/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	135		
2	Yes	Yes	No	486		
3	Yes	Yes	No	1282		
4	Yes	Yes	No	1417		
5	Yes	Yes	No	2513		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule reatained over 200mm sieve.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

Bradford Watson
QA/QC
Reviewed

QC Name: Maxime Côté

QC Signature: **Date:** 2019-06-11

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-10
Shift Day

Crucher type Primary C.S
Jaw opening 4" 3/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	372		
2	Yes	Yes	No	858		
3	Yes	Yes	No	1932		
4	Yes	Yes	No	2815		
5						
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule reatained over 200mm sieve.
Only 4 tests due to downtime.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Maxime Côté

QC Signature:

Date: 2019-06-10

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-09
Shift Day

Crucher type Primary C.S
Jaw opening 4" 3/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	867		
2	Yes	Yes	No	1820		
3	Yes	Yes	No	2911		
4	Yes	Yes	No	3946		
5	Yes	Yes	No	4856		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule reatained over 200mm sieve.
No production on 2019-06-08 Day shift

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Maxime Côté

QC Signature:

Date: 2019-06-09

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-07
Shift Day

Crucher type Primary C.S
Jaw opening 4" 3/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	603		
2	Yes	Yes	No	1264		
3	Yes	Yes	No	2134		
4	Yes	Yes	No	2878		
5	Yes	Yes	No	3684		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule reatained over 200mm sieve.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Maxime Côté

QC Signature:

Date: 2019-06-07

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-06 **Crucher type** Primary C.S

Shift Day **Jaw opening** 5"

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	690		
2	Yes	Yes	No	1607		
3	Yes	Yes	No	2137		
4	Yes	Yes	No	2866		
5	Yes	Yes	No	3832		
6						
7						
8						
9						
10						

Comments: Material is pretty much coarsy. Needs more fine material.
No particule reatained over 200mm sieve.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Maxime Côté

QC Signature: **Date:** 2019-06-06

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-05 **Crucher type** Primary C.S

Shift Day **Jaw opening** 5"

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	70		
2	Yes	Yes	No	460		
3	Yes	Yes	No	1303		
4	Yes	Yes	No	2191		
5	N/A	No	Yes	2431		
6						
7						
8						
9						
10						

Comments: Material is pretty much coarsy. Needs more fine material.
One particule bigger than 200mm have been found.

Representatives Pictures

Particule retained over 200mm

QC Name: Maxime Côté

QC Signature: **Date:** 2019-06-05

Material Inspection Report			
Baffin Island Material Testing			
Date:	May 12th/2019	Project Number:	18SJ0001
Project Name:	Baffinland	Report Number:	
Location/ Area:	Port Site	Allnorth Site Representative:	R. Chaisson
Client Site Representative:	Marlon Coakley	Copy to:	

Visual Inspection Report

Material: Type 12

Based on visual inspections of Type 12 material stockpiled in the quarry, during placement and after compaction:

The Type 12 appears to visually meet gradation specification of coarse material with sufficient fines; no oversize present during placement, operators in quarry pick out all oversize material before loading trucks.
After compacting with 10T vibrating roller making 5+ passes, the Type 12 is well compacted with no deflection occurring when driven on by rock trucks and heavy equipment.

Based on visual observations this material meets the required specifications from document **"H353004-00000-280-078-002 – Quarried Fill materials".**

Allnorth Designate-Signature		Title:	Materials Technician	Date: 05/12/2019

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	June 9 2019	Report Number:	18SJ0001
File Number:	T05P003	Inspector:	M.Tabor
Client:	Hatch	Sampled By:	M.Tabor
Project:	Baffinland	Sample Date:	June 5 2019
Location:	Port Site	Copy To:	
Contractor:	Nuna		

TEST RESULTS

SIEVE SIZE (mm)					32	25	13.2	9.5	4.75	2.00	1.18	0.600	0.315	0.160	0.075
MAX % PASS SPEC					100.0	100.0		70.0	55.0	42.0		30.0			8.0
MIN % PASS SPEC					100.0	70.0		40.0	30.0	22.0		15.0			4.0
% PASS RESULTS					100.0	96.9	74.4	65.4	51.3	35.6	29.0	22.1	16.1	10.6	6.4

MATERIAL TYPE

Type 5

SIEVE METHOD

Washed

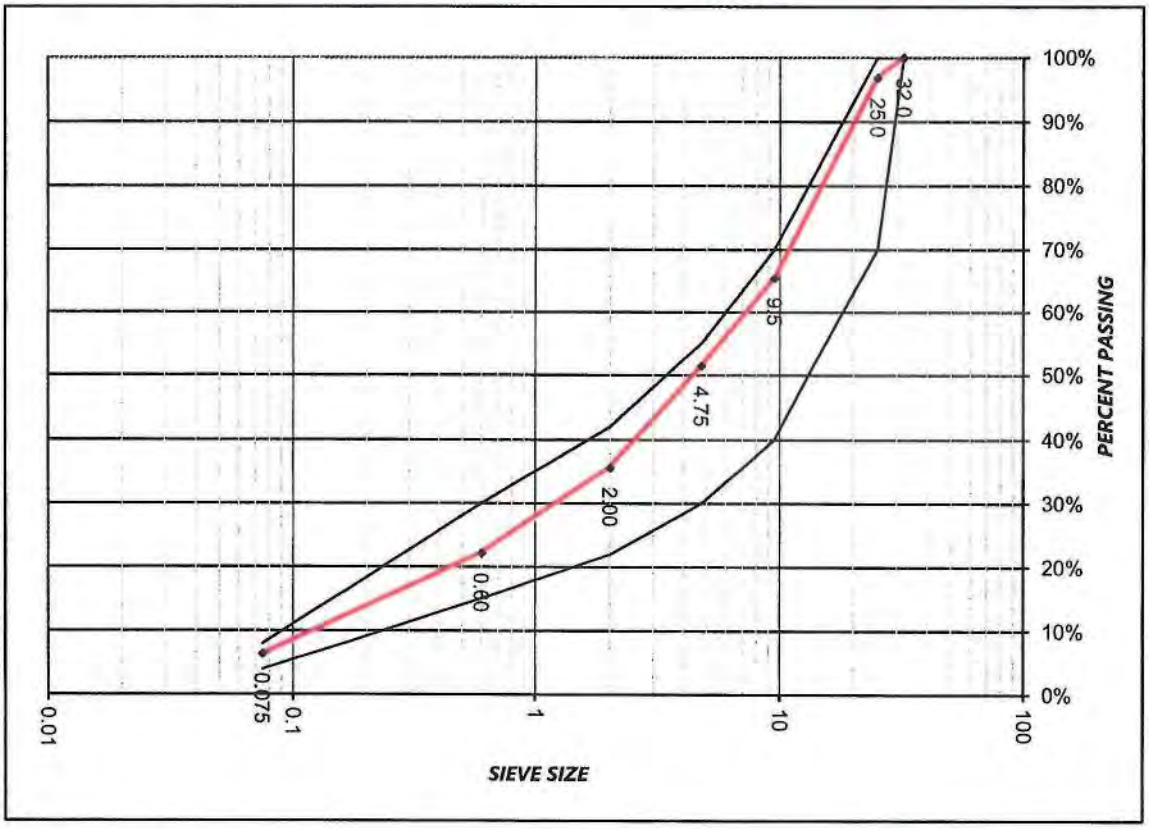
% FRACTURE

% MOISTURE

1.9%

GRADATIONS

GRAVEL	48.7%
SAND	45.0%
SILT/CLAY	6.4%



COMMENTS

Sample meets all project specifications for site.	**Reviewed By:**
	M. Tabor

NUNA

NUNA EAST LTD

(Section 6)

Request for Information (RFIs)

Project Name:	Mary River Expansion Stage 3	Project Number:	H353004
CWP No:		RFI No:0018	
Contractor: Nuna East Ltd.		Contract No: CC006	
Initiated By: Brandon Urquhart		Cost impact?	Y☐ / N☒
Date of Submittal: 2019-02-05		Schedule Impact?	Y☐ / N☒

Information Requested:
Nuna is working on the Milne Port Earthworks scope for 2019. In order to access and build LP2, an 18.6m long, by 1.52m span x 0.81m rise steel arch culvert with corrugated steel footing plates is required for an electrical cable crossing. Nuna has been advised that this will be sent up on 2019 sealift by which point this laydown already needs to be complete. Nuna has been told that a temporary solution can be used. We will require a design for this solution in order to adequately protect the cables in the crossing from any traffic running over the crossing.

Reference Document No.	Revision	Title/Description
H353004-40000-221-271-0004-0001	4	Port Site Laydown Area LP2 Plan and Sections

RFI Classification:

Design ☒ Construction ☐ Fabricator/Vendor ☐
Routine Request ☐ Clarification ☐ Other ☐

Project Response: [attach sufficient detail as required]

The details on the drawings show that existing cables are to be covered in sand. We need to do this plus a wood plank 2 x 10 or 2 x12 plus warning tape. Refer to drwgs H353004-40000-223-271-0007-0001 Rev1 and H353004-00000-221-294-0004-0001 Rev1

RFI Follow-up Requirements:

Contract Order Issued Yes ☐/No ☐ (insert associated tracking #) Back-Charge Required (Yes ☐/No ☐)
As-Built Required Yes ☐/No ☐ Materials Required (Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	N Mills		Feb 5 / 19
Hatch Engineering Home Office ☐ Site ☐	Glen Peace		2019-01-06
Hatch Project Management			

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Client (as required):			

Request for Information

Note: The response to this RFI is NOT an authorization to perform a change to the Contract. Work may proceed in accordance with the response only if such work involves NO change in cost or schedule. In the case where the response may involve change in cost or schedule, a Contractual instrument must be issued by Hatch and received by the Contractor before the response can be executed. Where no Contractual instrument is indicated action must be taken in accordance with (reference appropriate Contract Sections that authorize execution of any change in schedule and cost).

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Baffinland

HATCH

Baffinland Iron Mines LP
Mary River Expansion Stage 3
H353004

Construction Management Form
Site Contracts Administration
Request for Information

Project Name:	**Mary River Expansion Stage 3**	**Project Number:**	**H353004**
CWP No:		**RFI No:0029**	
Contractor: Nuna East Ltd.		**Contract No: CC006**	
Initiated By: Darko Filipic		**Cost impact?**	Y☒ / N☐
Date of Submittal: 2019-03-28		**Schedule Impact?**	Y☐ / N☒

Information Requested:

In order to build access to the LP2 laydown prior to the permanent utility arch being delivered to site, Nuna is proposing to construct at temporary access road directly to the east of the future permanent access.
To cross the existing utilities on the utility corridor (3x 5kV, 1 Fiber Optic, 1 ground), Nuna proposes to use Plastibeton SRT-T2016 utility enclosures, available on site, to contain and protect the cables. These enclosures will be covered with a steel plate to distribute the load from the road fill and equipment.
Additionally, 2ea 6" steel pipe casings will be placed for new utility cables to be installed. In the ditch bottom a steel pipe culvert will be placed to allow water to pass under the road.
This temp access is proposed to be built so the toe of the road is at least 3m from the end of the future permanent road culvert. The road top will be built to accommodate 1 lane traffic for a 745 haul truck.
See attached sketch for details.

Please advise if this proposal is acceptable.

Reference Document No.	Revision	Title/Description
Plastibeton SRT-T2016	0	Product Spec Sheet
H353004-40000-221-271-0004-0001	4	Laydown Area LP2 Plan and Sections

RFI Classification:

Design	☒	Construction	☒	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☐	Other	☐

Project Response: (Must accept or detail as required)

Procede AS Requested, EXCEPT 600 mm cover is required Approved

RFI Follow-up Requirements:

Contract Order Issued	Yes ☐/No ☐	([insert associated tracking #])	Back-Charge Required	(Yes ☐/No ☐)
As-Built Required	Yes ☐/No ☐		Materials Required	(Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>

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Hatch Construction Management	N. MILLS		APR 24/19
Hatch Engineering Home Office ☐ Site ☑	G. PERLO		2019-04-26
Hatch Project Management			
Client (as required):			

Request for Information

Note: The response to this RFI is NOT an authorization to perform a change to the Contract. Work may proceed in accordance with the response only if such work involves NO change in cost or schedule. In the case where the response may involve change in cost or schedule, a Contractual Instrument must be issued by Hatch and received by the Contractor before the response can be executed. Where no Contractual Instrument is indicated, action must be taken in accordance with (reference appropriate Contract Sections that authorize execution of any change in schedule and cost).

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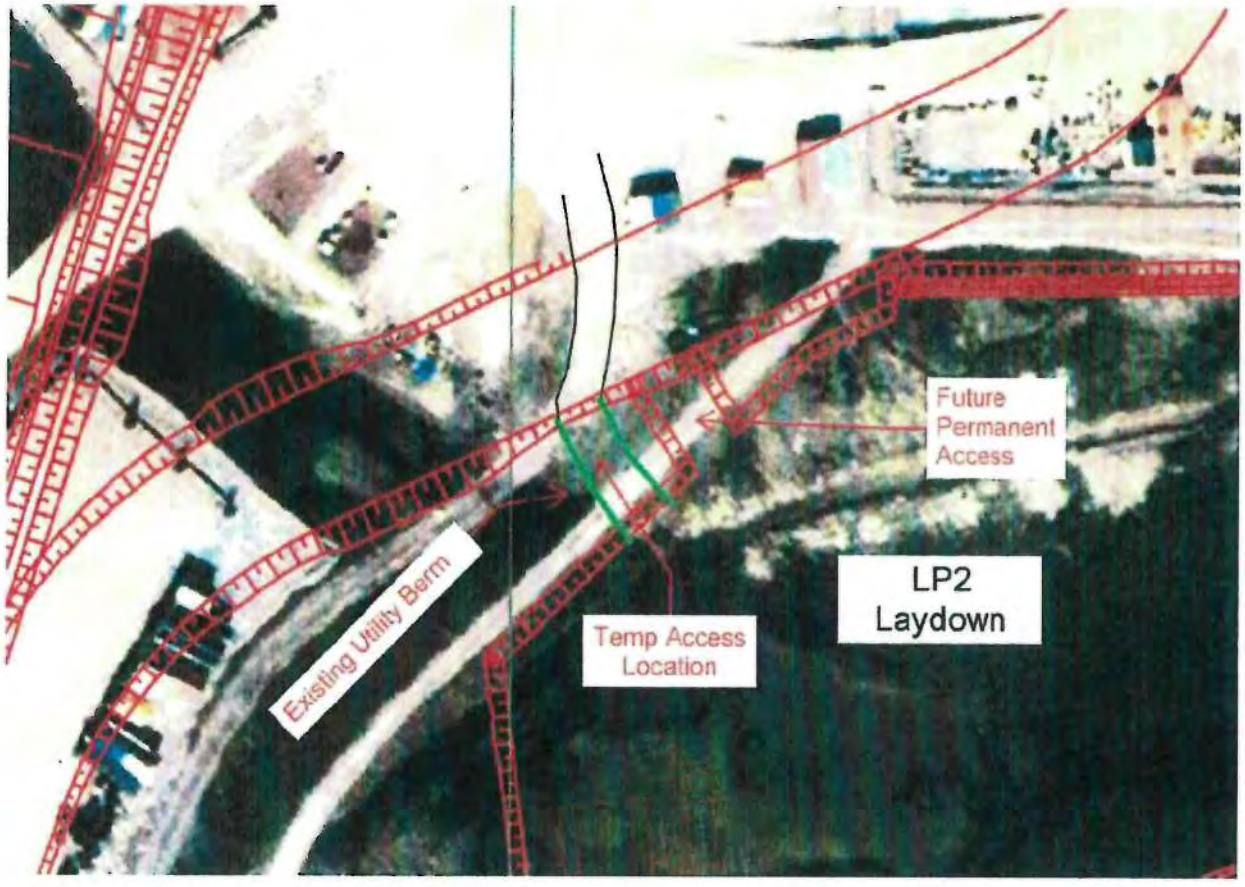
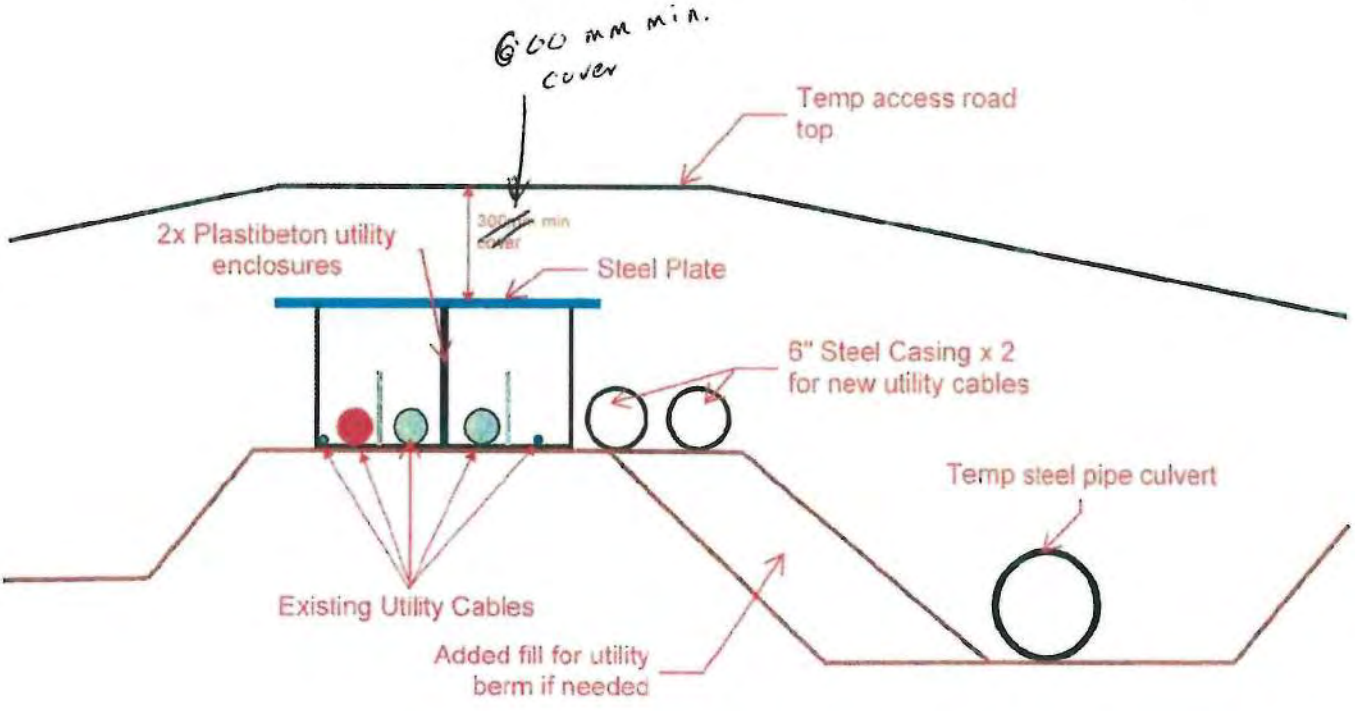
RFI-029 - LP2 Temporary Utility Crossing





Project Name:	Mary River Expansion Stage 3	Project Number:	H353004
CWP No:		RFI No: 0037	
Contractor: Nuna East Ltd.		Contract No: CC006	
Initiated By: Darko Filipic		Cost Impact?	Y☐ / N☒
Date of Submittal: 2019-05-02		Schedule Impact?	Y☐ / N☒

Information Requested:

Nuna requires clarification regarding a few discrepancies within the IFC drawings and the CAD files for Laydown LP2.

1) The Model that was provided matches the Drainage Plan drawing, but not the Plan and Sections drawing
2) The Drainage Plan shows the flow of water going to the East across the North half of the laydown, however the setting out coordinates shown on the Plan and Sections drawing show the elevation along the northern perimeter of the pad to be 1m lower than the CAD model which would cause water to flow to the North West. (Points 1, 2, 3, 11, 14, 15, 16, 18)
3) The berm along the north perimeter of the laydown has a side slope of 1.5:1, as shown in Section A-A on the Drainage Plan drawing, however the model has a 2:1 slope. Which is correct?

Nuna proposes to layout and build the LP2 laydown pad as per the CAD model provided, since it matches the Drainage Plan, which is important for site water management.

Reference Document No.	Revision	Title/Description
H353004-40000-221-271-0004-0001 H353004-40000-228-272-0011-0001	4 3	Port Site Laydown Area LP2 Plan and Sections Port Site Laydown Area LP2 Drainage Plan

RFI Classification:

Design	☒	Construction	☐	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☒	Other	☐

Project Response: (attach sufficient detail as required)

Nuna is to use the model as that contains the correct information. This includes the berm which must be 2:1 slope as per the model. Hatch will issue revisions of the affected drawings.

RFI Follow-up Requirements:

Contract Order Issued	Yes ☐/No ☐ ((insert associated tracking #))	Back-Charge Required	(Yes ☐/No ☐)
As-Built Required	Yes ☐/No ☐	Materials Required	(Yes ☐/No ☐)

RFI Receipts and Approvals

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Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	Vern Shaver	Roger Landry FOR VN	2019-05-05
Hatch Engineering Home Office ☐ Site ☐	Glen Peace	Glen Peace	2019-05-05
Hatch Project Management			
Client (as required):			

Request for Information

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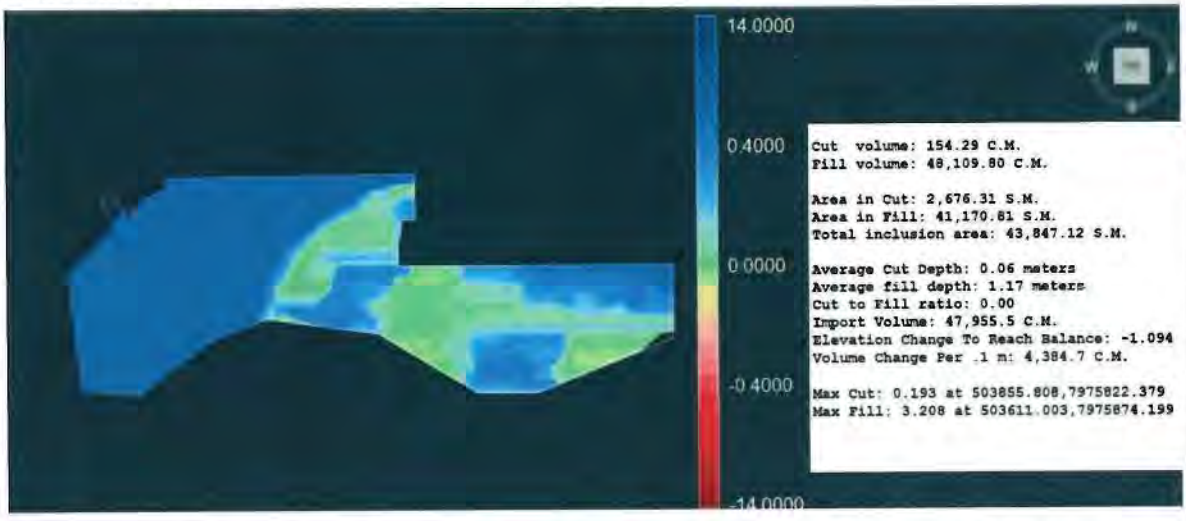
Project Name:	Mary River Expansion Stage 3	Project Number:	H353004
CWP No: LP2 Laydown		RFI No: 0041	
Contractor: Nuna East Ltd.		Contract No: CC006	
Initiated By: Ryan Dicker		Cost impact?	Y☐ / N☒
Date of Submittal: 2019-05-16		Schedule Impact?	Y☐ / N☒

Information Requested:

Nuna is constructing the LP2 Laydown at Milne Inlet. Upon comparison of the design subgrade surface and the existing ground surface picked up by Nuna survey, it has been determined that some areas of the eastern half of the laydown will require a small amount of cut prior to fill placement. See below cut/fill heat map (negative numbers/colours indicate a cut in meters to the design sub-grade:



The LP2 Laydown Plan and Profile drawing (H353004-00000-221-271-0004-0001 R4) indicates that the fill will follow the Pad Layerworks Detail 1 (H353004-00000-221-294-0002-0001). In areas of LP2 where the existing ground is close to subgrade or has a small cut, the only fill that will be placed is 300mm of Type 8 and 100mm of Type 5.

Given the fact that this is a particularly wet area, as Nuna has experienced in the past, the 400mm of fill will not be sufficient to sustain an effective laydown space once the ground thaws. This will be particularly true in the cut areas which are 190mm at the most. The top of the pad in these spots would only be 210mm above the existing tundra.

Nuna is proposing the following:

- Set the minimum total fill on the pad to at least 1m (600mm of ROQ, 300mm of Type 8 and 100mm of Type 5). A design revision would be needed to account for the additional fill and effect on adjacent camp pad extension.
- With the minimum fill to subgrade at 0.6m, the need to cut for sub-grade would be eliminated.

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Reference Document No.	Revision	Title/Description
		LP2 Cut / Fill Map
H353004-00000-221-294-0002-0001	R1	Site Wide Standard Drawing - Earthworks & Drainage Details
H353004-00000-221-271-0004-0001	R4	Port Site Laydown Area LP2 Plan and Sections

RFI Classification:

Design ☒ Construction ☒ Fabricator/Vendor ☐

Routine Request ☐ Clarification ☒ Other ☐

Project Response: [attach sufficient detail as required]

RFI Follow-up Requirements:

Contract Order Issued Yes ☐/No ☐ ([insert associated tracking #]) Back-Charge Required (Yes ☐/No ☐)

As-Built Required Yes ☐/No ☐ Materials Required (Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management			
Hatch Engineering Home Office ☐ Site ☐			
Hatch Project Management			
Client (as required):			

Request for Information

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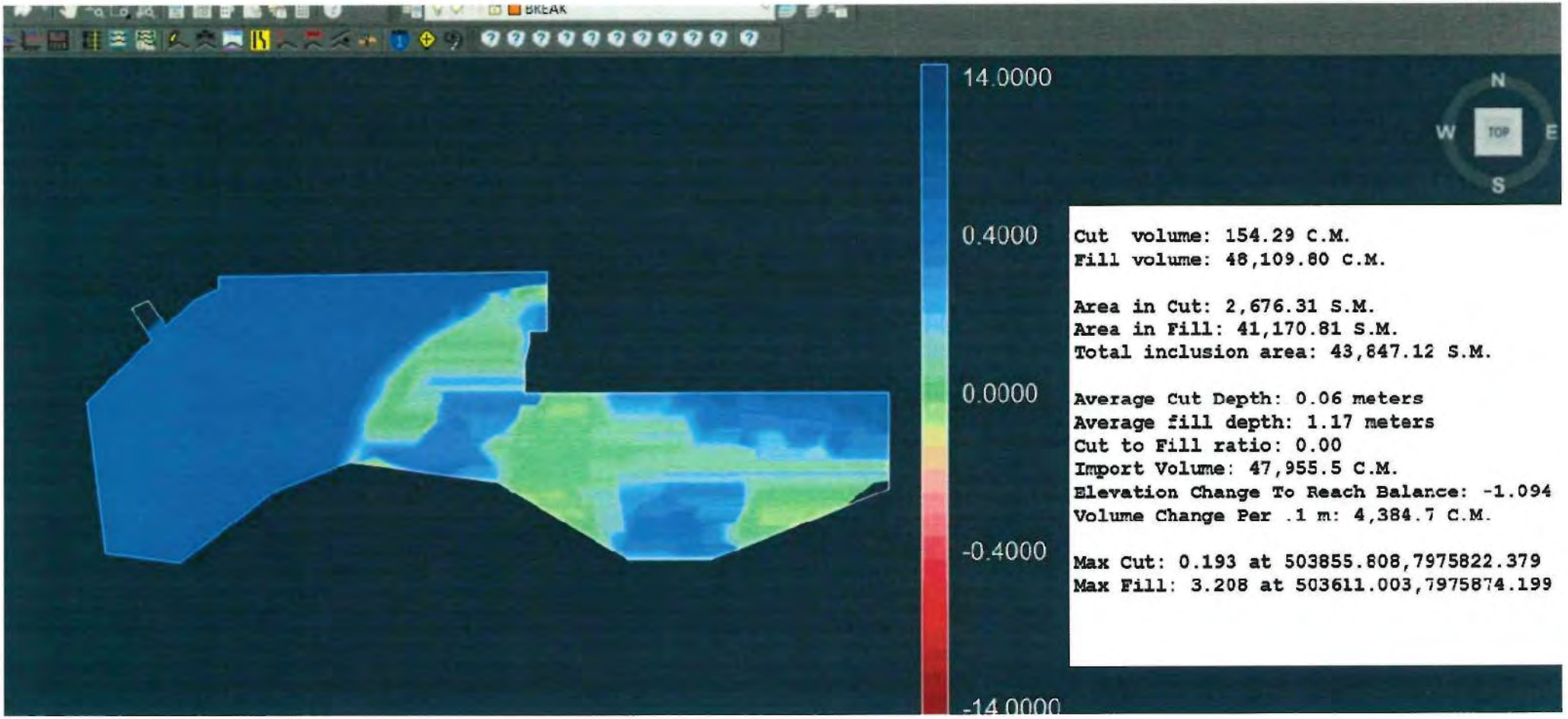
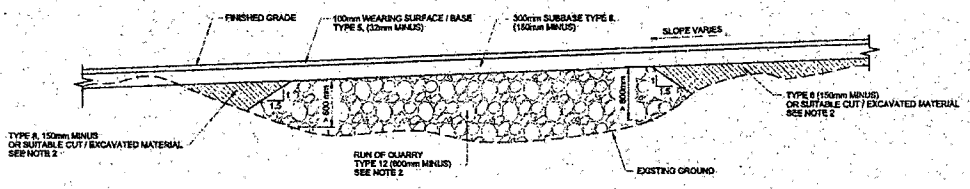
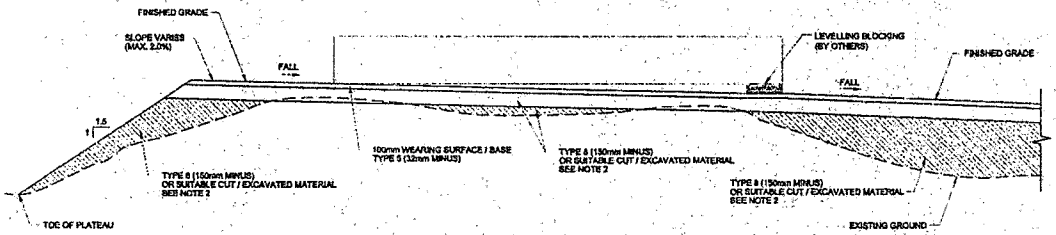
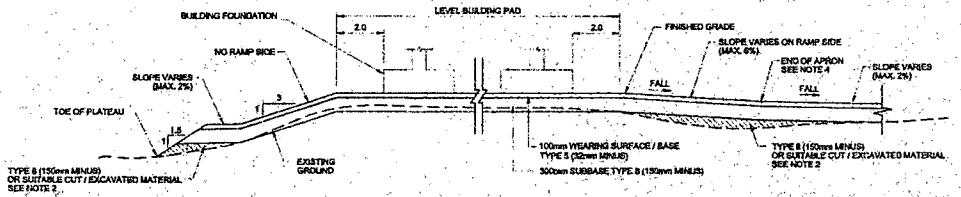

14.0000
0.4000
0.0000
-0.4000
-14.0000
N
W
TOP
E
S
Cut volume: 154.29 C.M.
Fill volume: 48,109.80 C.M.
Area in Cut: 2,676.31 S.M.
Area in Fill: 41,170.81 S.M.
Total inclusion area: 43,847.12 S.M.
Average Cut Depth: 0.06 meters
Average fill depth: 1.17 meters
Cut to Fill ratio: 0.00
Import Volume: 47,955.5 C.M.
Elevation Change To Reach Balance: -1.094
Volume Change Per .1 m: 4,384.7 C.M.
Max Cut: 0.193 at 503855.808,7975822.379
Max Fill: 3.208 at 503611.003,7975874.199



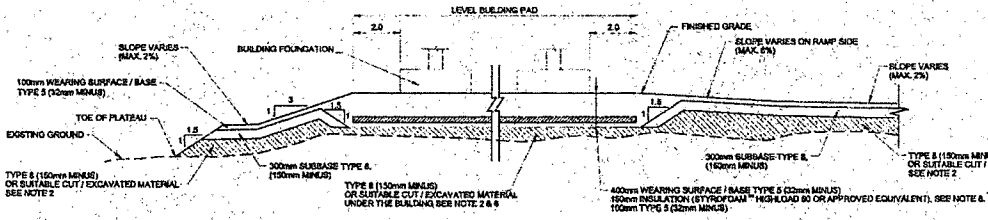
DETAIL 1 - TYPICAL EARTHWORKS FOR FINISHED GRADING



DETAIL 2 - TYPICAL EARTHWORKS FOR SKIDDED BUILDINGS - ALL GROUND MATERIALS



DETAIL 3 - TYPICAL EARTHWORKS FOR "FOLD-AWAY" / "FABRIC" BUILDINGS - IN NON-FROST SUSCEPTIBLE GROUND MATERIAL



DETAIL 4 - TYPICAL EARTHWORKS FOR "FOLD-AWAY" / "FABRIC" BUILDINGS - IN FROST SUSCEPTIBLE GROUND MATERIAL

NOTES:

1. ALL DIMENSIONS SHOWN ARE IN METRES. UNLESS OTHERWISE NOTED.
2. FOR FILL DEPTH > 600mm AND DEPENDING ON FILL EXTENT, USE TYPE 12 MATERIAL: ie RUN OF QUARRY (600mm MINUS).
3. THE FOUNDATIONS SHOWN ON THESE DETAILS ARE PRELIMINARY AND SHOULD BE VALIDATED AFTER FINALIZING THE BUILDINGS / STRUCTURES.
4. FOR BUILDINGS WITH NO TRUCK ACCESS RAMP REQUIREMENTS, SLOPE FINISH GRADE FROM EDGE OF BUILDING PAD TO SURROUNDING GRADE AT 3H:1V AS INDICATED ON THE DRAWING COVERING THE SPECIFIC BUILDING; OTHERWISE SLOPE AWAY TO THE SURROUNDING GRADE AT 2% MAXIMUM.
5. CUT / EXCAVATION MATERIAL USED AS FILL SHALL BE FREE FROM FROZEN MATERIAL, ICE, ORGANIC MATERIAL AND SHALL BE COMPACTED AS APPROVED BY THE COMPANY'S REPRESENTATIVE.
6. IF RUN OF QUARRY IS USED, THEN PLACE 300mm TYPE 8 MATERIAL (150mm MINUS) UNDER TYPE 5 (32mm MINUS).
7. "FROST SUSCEPTIBLE" AND "NON-FROST SUSCEPTIBLE" GROUND MATERIAL IS TO BE DETERMINED BY THE GEOTECHNICAL ENGINEER ON SITE OR THEIR DESIGNATE.
8. INSULATION UNDER BUILDINGS TO BE PROVIDED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER.

MATERIAL AND COMPACTION SPECIFICATION:

SUBGRADE PREPARATION:
THE SUBGRADE SHOULD SHOULD BE PROOF-RULLED AND INSPECTED PRIOR TO PLACING FILL MATERIALS. THE IDENTIFIED SOFT AREAS SHALL BE FURTHER COMPACTED, OR IF NECCESARY, BE MITIGATED USING GRANULAR OR ROCK FILL. A QUALIFIED GEOTECHNICAL ENGINEER SHALL INSPECT AND APPROVE THE SUBGRADE.
THE ROCKFILL SHALL NOT BE PLACED IN WATER OR ON ICE. DEWATERING IS REQUIRED WHERE PONDING WATER IS ENCOUNTERED. OVER-EXCAVATION IS REQUIRED FOR GROUND ICE, IF ENCOUNTERED.
THE SUBGRADE ON THE GROUND SHALL BE LEFT AS IT IS NATURALLY BEFORE CONSTRUCTION AS MUCH AS POSSIBLE. THE OVER-EXCAVATION SHOULD BE MINIMIZED TO AVOID DISTURBANCE OF THE EXISTING PERMAFROST.

TYPE 5 (CRUSHER RUN 32mm MINUS MATERIAL) OR TYPE 3 (CRUSHER RUN 50mm MINUS):
THE MATERIAL MUST BE PLACED IN LIFTS NOT EXCEEDING 200mm AND SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 16 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVELY, THE COMPACTION SHOULD ACHIEVE A MINIMUM OF 100 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY TEST METHOD ASTM D698.

TYPE 8 (CRUSHER RUN 150mm MINUS):
THE ROCKFILL MUST BE PLACED IN LIFTS NOT EXCEEDING 500mm. THE PLACEMENT SHALL AVOID SEGREGATION AND NESTING OF COARSE PARTICLES. IT SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). EACH LIFT MUST BE "PROOF-ROLLED" PRIOR TO PLACING THE SUBSEQUENT LIFT.

TYPE 12 (RUN OF MINE, TYPICALLY 600mm MINUS):
THE ROCKFILL, IF USED, MUST BE PLACED IN LIFTS NOT EXCEEDING 1000mm. THE ROCKFILL SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVE COMPACTORS SUCH AS HEAVY LOADED RUBBER TIRED HAUL TRUCKS CAN ONLY BE USED AS PER A WRITTEN APPROVAL FROM THE ENGINEER.

PERMIT TO PRACTICE HATCH LTD.
Signature ____ Date ____
PERMIT NUMBER: P 912
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	MATERIAL AND COMPACTION SPECIFICATION ADDED	MB	FH	16/08/2018
0	APPROVED FOR CONSTRUCTION	MB	FH	01/12/2017

HATCH

DRAFTSPERSON	I BARNARD	NR	16/08/2018
DESIGNER	I BARNARD	NR	16/08/2018
CHECKER	F HUGO		2018-08-14
DESIGN COORD.	R GOOSEN		2018-08-14
RESP. ENG.	R HALIM		2018-08-14
LEAD DISC. ENG.	A GROBBELAAR		2018-08-14
AREA LEAD	V LAVRIC		
ENG. MANAGER	D STANDER		
AREA MANAGER	T ATIBA		

DRAWING APPROVAL STATUS: Approved for Construction

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF ALBERTA R. A. HALIM LICENSEE 2018-08-14

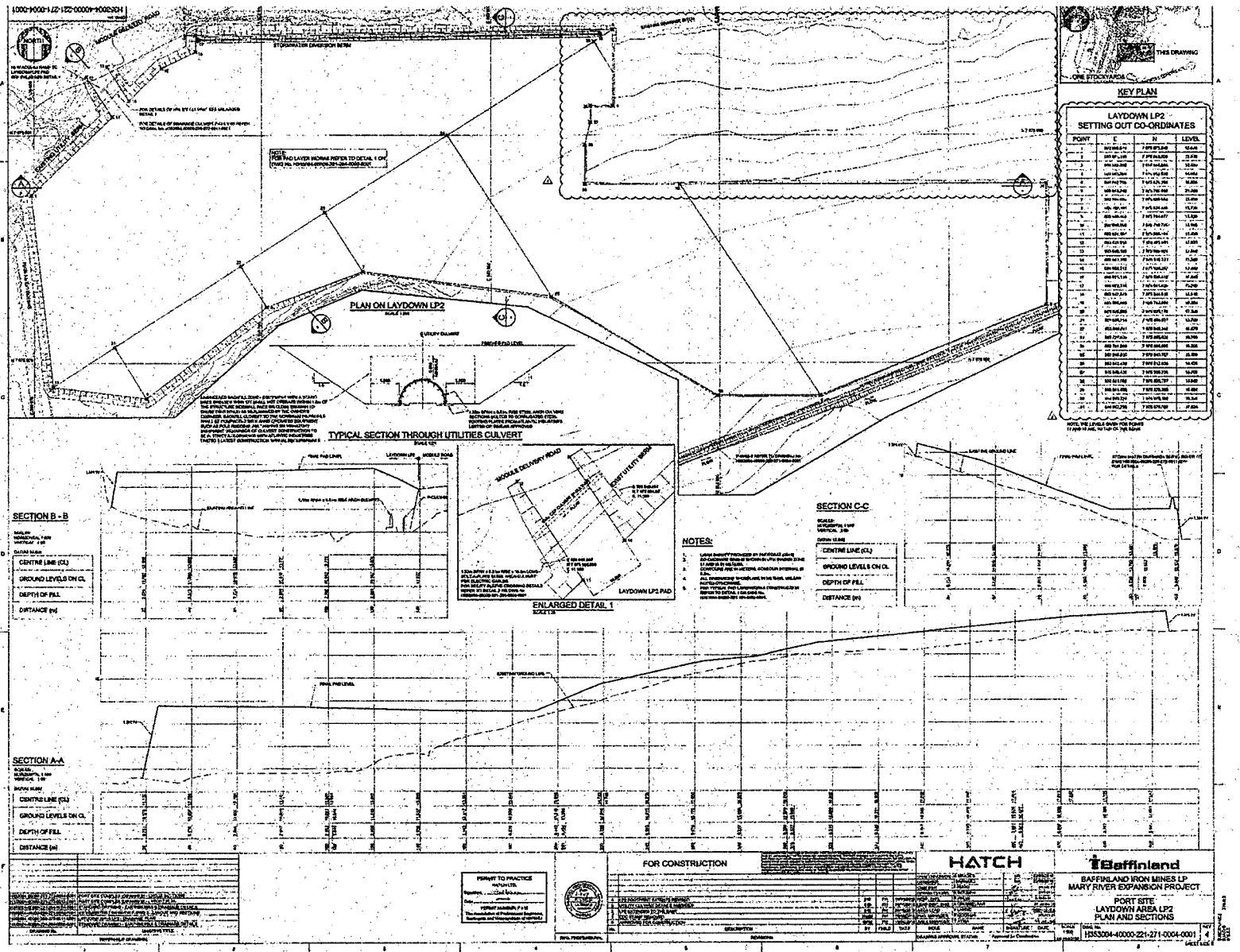
Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

SITE WIDE
STANDARD DRAWING
EARTHWORKS & DRAINAGE DETAILS

DRAWING No.: H353004-00000-221-294-0002-0001
REV: 1
SCALE: NTS OR AS NOTED
SHEET SIZE: D

REFERENCE DRAWINGS | DRAWING TITLE | REG. PROFESSIONAL | REVISIONS


PLAN ON LAYDOWN LP2
TYPICAL SECTION THROUGH UTILITIES CULVERT
ENLARGED DETAIL 1
SECTION B - B
SECTION C-C
SECTION A-A
KEY PLAN
LAYDOWN LP2
SETTING OUT CO-ORDINATES
NOTES:
FOR CONSTRUCTION
HATCH
Baffinland
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT
PORT SITE
LAYDOWN AREA LP2
PLAN AND SECTIONS
H353004-40000-221-271-0004-0001

Bradford Watkin

From: Bader, Roy <roy.bader@hatch.com>
Sent: Thursday, May 23, 2019 10:33 AM
To: Darko Filipic
Cc: Ryan Dicker; Scott Mackenzie; Ken Humby; Coakley, Marlon; Gionet, Stephane; Bradford Watkin; Ken Humby; Scott Mackenzie; Stephen Nugent; Chris Petrovic; Milne Port Survey; Noori, Farrokh; H353004_Doc_Control; Darko Filipic; Bader, Roy; Peace, Glen; Client - Baffinland - Dabor, Leonel
Subject: RE: RFI-0041 LP2 Laydown Minimum Fill

Hello Darko,

As discussed yesterday,

We need to follow the design. (cut areas shall be followed)

Best regards,

Roy

From: Darko Filipic <DarkoF@nunalogistics.com>
Sent: Tuesday, May 21, 2019 6:03 AM
To: Mills, Nick <nick.mills@hatch.com>
Cc: Ryan Dicker <RyanD@nunalogistics.com>; Scott Mackenzie <ScottMackenzie@nunalogistics.com>; Ken Humby <kenh@nunalogistics.com>; Coakley, Marlon <marlon.coakley@hatch.com>; Gionet, Stephane <stephane.gionet@hatch.com>; Bradford Watkin <bradfordw@nunalogistics.com>; Ken Humby <kenh@nunalogistics.com>; Scott Mackenzie <ScottMackenzie@nunalogistics.com>; Stephen Nugent <stephenn@nunalogistics.com>; Chris Petrovic <ChrisP@nunalogistics.com>; Milne Port Survey <MilnePortSurvey@nunalogistics.com>; Noori, Farrokh <farrokh.noori@hatch.com>; H353004_Doc_Control <H353004_Doc_Control@hatch.com>; Darko Filipic <DarkoF@nunalogistics.com>; Bader, Roy <roy.bader@hatch.com>; Peace, Glen <glen.peace@hatch.com>; Client - Baffinland - Dabor, Leonel <leonel.dabor@baffinland.com>
Subject: RE: RFI-0041 LP2 Laydown Minimum Fill

Nick,

Your response to this RFI brings up a few further questions;

1) What do you mean by "follow the design"? Isn't the IFC drawing the design?

2) If we just put a 500mm layer of ROQ and 100mm of 32mm and follow the contours of the land, that will mess up the entire drainage of the laydown and will likely lead to a bunch of ponding and water flowing to the NW, rather than the NE. Plus the 32mm will eventually all migrate down into the ROQ and the pad will end up looking like the 380-man cam pad. It needs a transition layer of type 8 if the finished grade is going to hold up over the long term.

3) If the plan all along was to only put fill in as per your direction, then why did the new BOQ account for the actual design quantities. Sure, last year we talked about only doing the minimal lift in LP2, but that was when LP2 was

lumped into that vague "Laydown Areas" WBS. Now it is broken out as a separate laydown, and it is planned to be the new Warehouse laydown. They are going to need a well graded laydown, I presume.

4) As for the east end where the PSC expansion is going, that was broken out on a separate IFC drawing, so it no longer has anything to do with LP2, except for the fact that the drainage plans for each pad tie into each other.

These are just some additional points to consider before responding to the RFI that was submitted.

Regards,

Darko Filipic
Project Coordinator
E darkof@nunalogistics.com
T +14163648820;ext=4120
C +14039295397

NUNA EAST LTD.
PO Box 370
Pond Inlet, Nunavut, Canada, X0A 0X0
nunalogistics.com

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From: Mills, Nick [mailto:nick.mills@hatch.com]
Sent: Tuesday, May 21, 2019 5:03 AM
To: Peace, Glen <glen.peace@hatch.com>; Client - Baffinland - Dabor, Leonel <leonel.dabor@baffinland.com>
Cc: Coakley, Marlon <marlon.coakley@hatch.com>; Gionet, Stephane <stephane.gionet@hatch.com>; Bradford Watkin <bradfordw@nunalogistics.com>; Ken Humby <kenh@nunalogistics.com>; Scott Mackenzie <ScottMackenzie@nunalogistics.com>; Stephen Nugent <stephenn@nunalogistics.com>; Chris Petrovic <ChrisP@nunalogistics.com>; Milne Port Survey <MilnePortSurvey@nunalogistics.com>; Noori, Farrokh <farrokh.noori@hatch.com>; H353004_Doc_Control <H353004_Doc_Control@hatch.com>; Darko Filipic <DarkoF@nunalogistics.com>; Bader, Roy <roy.bader@hatch.com>
Subject: RE: RFI-0041 LP2 Laydown Minimum Fill

Glen

We always stated that the fill would be maximum 500 MM of ROQ and then 100 mm of 32 mm minus . this should be the norm . . The only exception is the East end that is for the PSC . We need to follow the design . We have discussed this many times on site with Nuna and all going back last year .

Nick

From: Peace, Glen
Sent: Friday, May 17, 2019 9:51 AM
To: Mills, Nick <nick.mills@hatch.com>
Subject: FW: RFI-0041 LP2 Laydown Minimum Fill

Nick

Comments?

Glen

From: Peace, Glen
Sent: Thursday, May 16, 2019 9:13 AM
To: Shaver, Vern <vern.shaver@hatch.com>
Subject: FW: RFI-0041 LP2 Laydown Minimum Fill

Please discuss with Nick

From: Ryan Dicker <RyanD@nunalogistics.com>
Sent: Thursday, May 16, 2019 8:51 AM
To: Peace, Glen <glen.peace@hatch.com>; Mills, Nick <nick.mills@hatch.com>; Client - Baffinland - Dabor, Leonel <leonel.dabor@baffinland.com>
Cc: Coakley, Marlon <marlon.coakley@hatch.com>; Gionet, Stephane <stephane.gionet@hatch.com>; Bradford Watkin <bradfordw@nunalogistics.com>; Ken Humby <kenh@nunalogistics.com>; Scott Mackenzie <ScottMackenzie@nunalogistics.com>; Stephen Nugent <stephenn@nunalogistics.com>; Chris Petrovic <ChrisP@nunalogistics.com>; Milne Port Survey <MilnePortSurvey@nunalogistics.com>; Noori, Farrokh <farrokh.noori@hatch.com>; H353004_Doc_Control <H353004_Doc_Control@hatch.com>; Darko Filipic <DarkoF@nunalogistics.com>; Bader, Roy <roy.bader@hatch.com>
Subject: RFI-0041 LP2 Laydown Minimum Fill

Afternoon,

Please see the attached RFI-041 regarding the LP2 Laydown.

The word document of this RFI is attached to the PDF.

A copy of this RFI will be submitted to iPas.

Regards,

Ryan Dicker
Project Coordinator
E ryand@nunalogistics.com
T +14163648820;ext=6116
C +16132277926

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Pond Inlet, Nunavut, Canada, X0A 0X0
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Bradford Watkin

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Sent: Tuesday, May 21, 2019 5:03 AM
To: Peace, Glen; Client - Baffinland - Dabor, Leonel
Cc: Coakley, Marlon; Gionet, Stephane; Bradford Watkin; Ken Humby; Scott Mackenzie; Stephen Nugent; Chris Petrovic; Milne Port Survey; Noori, Farrokh; H353004 _Doc_Control; Darko Filipic; Bader, Roy
Subject: RE: RFI-0041 LP2 Laydown Minimum Fill
Attachments: CC006-0041-RFI 2019-05-16 - LP2 Laydown Fill.pdf

Glen

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Nick

From: Peace, Glen
Sent: Friday, May 17, 2019 9:51 AM
To: Mills, Nick <nick.mills@hatch.com>
Subject: FW: RFI-0041 LP2 Laydown Minimum Fill

Nick
Comments?

Glen

From: Peace, Glen
Sent: Thursday, May 16, 2019 9:13 AM
To: Shaver, Vern <vern.shaver@hatch.com>
Subject: FW: RFI-0041 LP2 Laydown Minimum Fill

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From: Ryan Dicker <RyanD@nunalogistics.com>
Sent: Thursday, May 16, 2019 8:51 AM
To: Peace, Glen <glen.peace@hatch.com>; Mills, Nick <nick.mills@hatch.com>; Client - Baffinland - Dabor, Leonel <leonel.dabor@baffinland.com>
Cc: Coakley, Marlon <marlon.coakley@hatch.com>; Gionet, Stephane <stephane.gionet@hatch.com>; Bradford Watkin <bradfordw@nunalogistics.com>; Ken Humby <kenh@nunalogistics.com>; Scott Mackenzie <ScottMackenzie@nunalogistics.com>; Stephen Nugent <stephenn@nunalogistics.com>; Chris Petrovic <ChrisP@nunalogistics.com>; Milne Port Survey <MilnePortSurvey@nunalogistics.com>; Noori, Farrokh <farrokh.noori@hatch.com>; H353004_Doc_Control <H353004_Doc_Control@hatch.com>; Darko Filipic <DarkoF@nunalogistics.com>; Bader, Roy <roy.bader@hatch.com>
Subject: RFI-0041 LP2 Laydown Minimum Fill

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The word document of this RFI is attached to the PDF.

A copy of this RFI will be submitted to iPas.

Regards,

Ryan Dicker
Project Coordinator
E ryand@nunalogistics.com
T +14163648820,ext=6116
C +16132277926

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Bradford Watkin

From: Bader, Roy <roy.bader@hatch.com>
Sent: Sunday, June 30, 2019 11:03 AM
To: Stephen Nugent
Cc: Ryan Dicker; Darko Filipic; Ken Humby; Scott Mackenzie; Coakley, Marlon; Hamad, Mazen; Kennedy, Robert; Client - Baffinland - Dabor, Leonel; Peace, Glen
Subject: Schedule and work fronts - CC006

Good day Stephen,

As discussed, please proceed with the activities below , and please highlight for which of the below items you require a site instruction:

- Laydown # 2, finish the toping with suitable overburden stockpiled right now on LP6. (consider this e-mail as an approval of replacing type 5 with overburden).
- R2 laydown, finish the toping with suitable overburden stockpiled right now on LP6. (consider this e-mail as an approval of replacing type 5 with overburden) – Tretan equipment's to move in order to give you the space required.
- W1 laydown (Km 4) finish the toping with suitable overburden stockpiled right now on LP6 , to accommodate for the batch plant installation. (consider this e-mail as an approval of replacing type 5 with overburden).
- LP7 south corner: remove oversized armor stone and place them around the area in front of the crusher laydown to work as a berm(right where you are currently stockpiling type B). and prep the are for stockpiling purposes for SANA
- LP2 push ROQ to the edge
- LP5 north upper section, build up benches for material placement.
- Haul 2 loads of sand from the ship loader to the MOD cable crossing and steel plates for coverage.

Please note that all those activities not to affect the following priorities :

- MOD road
- Freight dock
- Screening and crushing building to be completed prior to the 18th of July.
- TYPE 5 topping on the MOD road, Freight dock, LP3 and LP2 (the flat section)

Regards,

Roy Bader Ing. , M.ing
Construction Superintendent
Mary River Expansion Project – Nunavut
Roy.bader@hatch.com

HATCH

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Bradford Watkin

From: Mills, Nick <nick.mills@hatch.com>
Sent: Tuesday, May 21, 2019 5:03 AM
To: Peace, Glen; Client - Baffinland - Dabor, Leonel
Cc: Coakley, Marlon; Gionet, Stephane; Bradford Watkin; Ken Humby; Scott Mackenzie; Stephen Nugent; Chris Petrovic; Milne Port Survey; Noori, Farrokh; H353004 _Doc_Control; Darko Filipic; Bader, Roy
Subject: RE: RFI-0041 LP2 Laydown Minimum Fill
Attachments: CC006-0041-RFI 2019-05-16 - LP2 Laydown Fill.pdf

Glen

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From: Peace, Glen
Sent: Friday, May 17, 2019 9:51 AM
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Subject: FW: RFI-0041 LP2 Laydown Minimum Fill

Nick
Comments?

Glen

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Subject: RFI-0041 LP2 Laydown Minimum Fill

Afternoon,

Please see the attached RFI-041 regarding the LP2 Laydown.

The word document of this RFI is attached to the PDF.

A copy of this RFI will be submitted to iPas.

Regards,

Ryan Dicker
Project Coordinator
E ryand@nunalogistics.com
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Project Name:	**Mary River Expansion Stage 3**	**Project Number:**	**H353004**
CWP No: LP2 Laydown		**RFI No: 0045**	
Contractor: Nuna East Ltd.		**Contract No: CC006**	
Initiated By: Ryan Dicker		**Cost impact?**	**Y☒ / N☐**
Date of Submittal: 2019-06-03		**Schedule Impact?**	**Y☒ / N☐**

Information Requested:
Nuna is in the process of completing the LP2 Laydown at Milne Port. Due to the proximity of the laydown to the Weatherhaven and PSC camps, the allowable time for vibratory compaction activities has been limited to 4:00-8:00 in the mornings and the evenings. Due to shift changes occurring during these time allotments, only 6 hours total of compaction time are available each day.

It has been suggested by Hatch through onsite and email discussions that compaction efforts can be limited to only static rolling going forward to complete the material placement. Please confirm that this method will be acceptable for all materials types to be placed on LP2 Laydown (ROQ, Type 8, Type 5).

Reference Document No.	Revision	Title/Description

RFI Classification:

Design	☐	Construction	☒	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☐	Other	☐

Project Response: [attach sufficient detail as required]

LP2 area can be compacted using Static rolling and haul traffic . this area is for laydown .
The exception ois the eastern end that requires specific compaction .

RFI Follow-up Requirements:

Contract Order Issued	Yes ☐/No ☐ ([insert associated tracking #])	Back-Charge Required	(Yes ☐/No ☐)
As-Built Required	Yes ☐/No ☐	Materials Required	(Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	N Mills	N Mills	June 4 / 19
Hatch Engineering Home Office ☐ Site ☐			

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Hatch Project Management			
Client (as required):			

Request for Information

Note: The response to this RFI is NOT an authorization to perform a change to the Contract. Work may proceed in accordance with the response only if such work involves NO change in cost or schedule. In the case where the response may involve change in cost or schedule, a Contractual instrument must be issued by Hatch and received by the Contractor before the response can be executed. Where no Contractual instrument is indicated, action must be taken in accordance with (reference appropriate Contract Sections that authorize execution of any change in schedule and cost).

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Request for Information

Project Name:	**Mary River Expansion Stage 3**	**Project Number:**	**H353004**
Area: Laydown 2		**RFI No: 0048**	
Contractor: Nuna East Ltd.		**Contract No: CC006**	
Initiated By: Ryan Dicker		**Cost impact?**	**Y☒ / N☐**
Date of Submittal: 2019-06-08		**Schedule Impact?**	**Y☒ / N☐**

Information Requested:
Nuna has completed placement of the ROQ layer of fill has been completed at Laydown 2. The surfacing of the laydown is designed to be 200mm of Type 5 (32mm minus). Through discussions onsite, it has been suggested that the surfacing be changed to 150mm of Type 8 material and 50mm of Type 5 for capping.

Please confirm this will be the surfacing for completion of Laydown 2.

Reference Document No.	Revision	Title/Description

RFI Classification:

Design	☐	Construction	☒	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☐	Other	☐

Project Response: [attach sufficient detail as required]

Laydown #2 is intended as a temporary laydown as such the 150mm layer of Type 8 fill is not required. Surfacing of laydown #2 can be done using suitable gravely (overburden) material from excavation if Type 5 (32mm Minus) is unavailable.

RFI Follow-up Requirements:

Contract Order Issued	Yes ☐/No ☐ (Insert associated tracking #)	Back-Charge Required	(Yes ☐/No ☐)
As-Built Required	Yes ☐/No ☐	Materials Required	(Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	N Mills		July 12 / 19
Hatch Engineering Home Office ☐ Site ☐			
Hatch Project Management			
Client (as required):	L Dabor	L.O.Dabor	2019/07/12

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Project Name:	Mary River Expansion Stage 3	**Project Number:**	H353004
CWP: LP2 Laydown		**RFI:** 0073	
Contractor: Nuna East Ltd.		**Contract No: CC006**	
Initiated By: Darko Filipic		**Cost impact?**	Y☐ / N☒
Date of Submittal: 2019-07-21		**Schedule Impact?**	Y☐ / N☒

Information Requested:

Nuna is requesting direction as to the fill requirements for the Eastern section of the LP2 Laydown.

Background info:

May 15th - RFI-041 submitted regarding depth of fill in saturated areas in LP2. Informal response from Hatch Representative, Nick Mills, stating that the fill would be a maximum 500mm of ROQ and then 100mm of 32mm minus.

June 10th - RFI-049 submitted proposing thicker lifts for Type 8 and Type 5 in areas of saturated tundra in LP3 and LP2. Response was to follow the direction of the Hatch Superintendent in the field for LP3 and delay the completion of LP2 until November 2019.

June 30th - Nuna was directed by Hatch Field Superintendent to place a lift of ROQ over the tundra of significant thickness to prevent significant loss into the tundra on the East side of LP2 laydown. The ROQ that was placed at that time failed proof-rolling and experienced excessive rutting and punch-outs, due to the saturated condition of the underlying ground.

July 15th - Nuna was instructed by Hatch Field Superintendent to place additional fill over the previously placed ROQ, however the fill depth parameters for this placement is unclear. Please confirm the required lifts of fill in this area.

Reference Document No.	Revision	Title/Description
CC006-0041-RFI 2019-05-16 E353004-CC006-400-465-0049 Re: RFI-0041 LP2 Laydown Minimum Fill.msg	0 0	RFI-0041 LP2 Laydown Fill Response to RFI-0049 LP2 & LP3 Fill Email from N Mills re: RFI-0041

RFI Classification:

Design	☒	Construction	☐	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☒	Other	☐

Project Response: [attach sufficient detail as required]

See below for response. As-built and redline drawing to provided in accordance with RFI response and for turnover documentation.

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RFI Follow-up Requirements:

Contract Order Issued Yes ☐/No ☐ (Insert associated tracking #) Back-Charge Required (Yes ☐/No ☐)

As-Built Required Yes ☐/No ☐ Materials Required (Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	marlon.coakley@hatch.com	Digitally signed by marlon.coakley@hatch.com DN: cn=marlon.coakley@hatch.com Date: 2019.08.10 13:48:57 -04'00'	
Hatch Engineering Home Office ☐ Site ☐			
Hatch Project Management			
Client (as required):	L. Dabor	L.O.Dabor	2019-08-10

Request for Information

Note: The response to this RFI is NOT an authorization to perform a change to the Contract. Work may proceed in accordance with the response only if such work involves NO change in cost or schedule. In the case where the response may involve change in cost or schedule, a Contractual instrument must be issued by Hatch and received by the Contractor before the response can be executed. Where no Contractual instrument is indicated, action must be taken in accordance with (reference appropriate Contract Sections that authorize execution of any change in schedule and cost).

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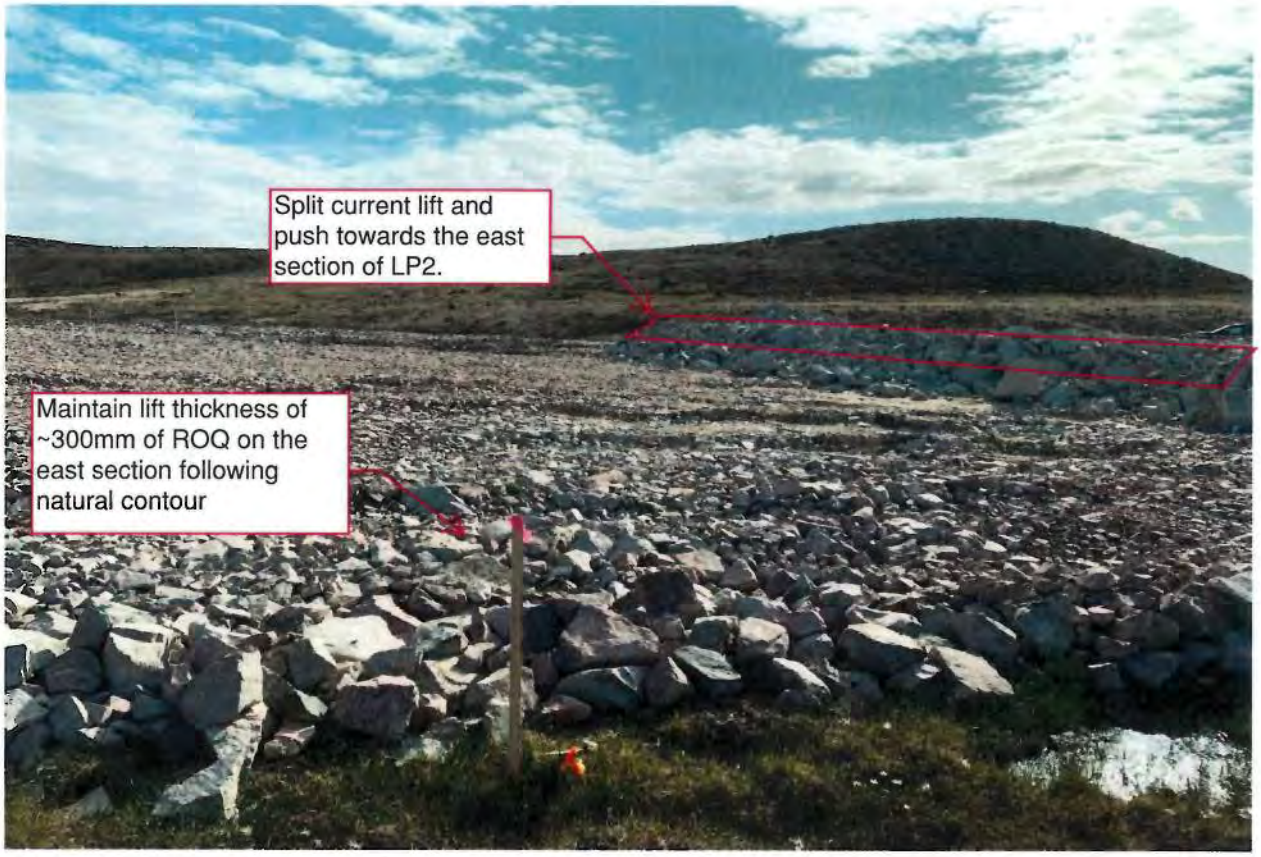
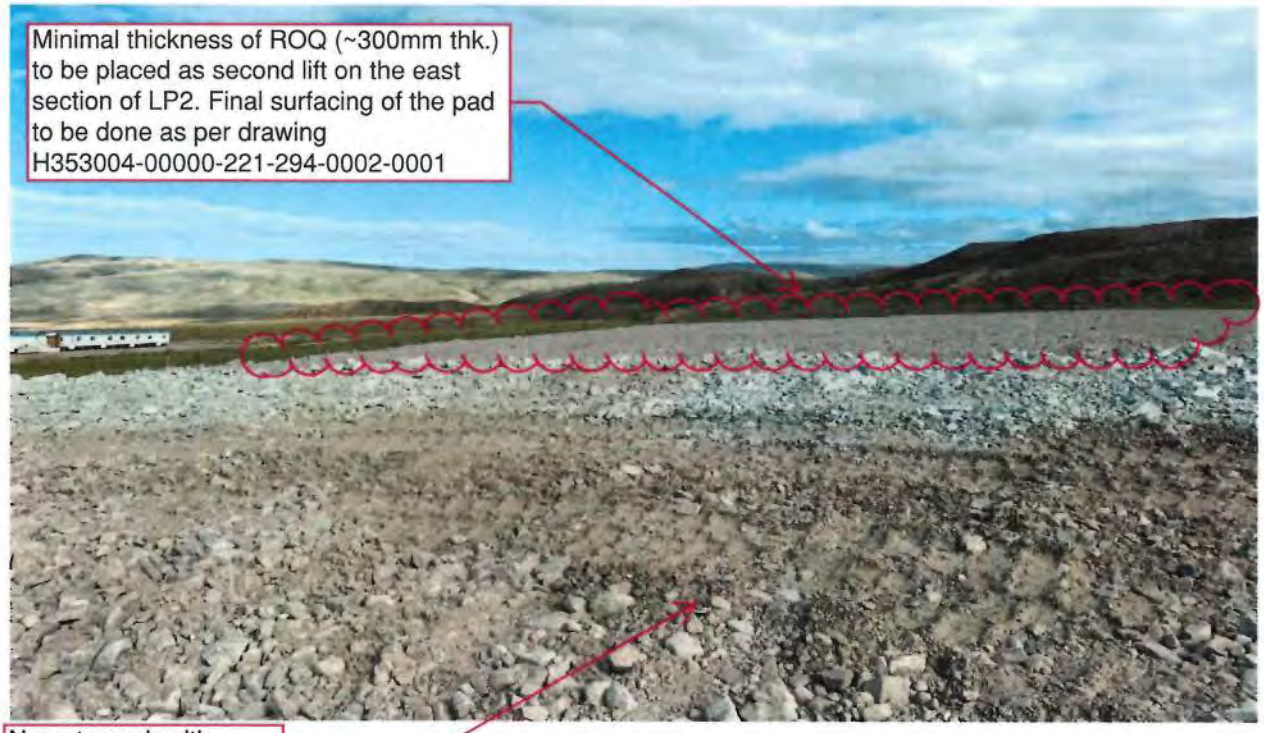

Split current lift and push towards the east section of LP2.
Maintain lift thickness of ~300mm of ROQ on the east section following natural contour


Minimal thickness of ROQ (~300mm thk.) to be placed as second lift on the east section of LP2. Final surfacing of the pad to be done as per drawing H353004-00000-221-294-0002-0001
Nuna to work with Hatch Field Superintendent and survey to determine break point of 1m layer to the west of LP2

NUNA

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(Section 7)

Non-Conformance Reports (NCRs)

NON-CONFORMANCE REPORT LOG

Project: CC006 **Date:** 9-25-19

Area: Mary River Expansion - Milne Port **Contract/Work Pkg. No.:** CC006-0001A LP2

CWP#: N/A **Originator:** Bradford Watkin

NCR No.	Description	Disposition	Date.	Rectified	Date
	No NCR's generated for this work package				

NUNA

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(Section 8)

Communications:

Engineering Change Notices (ECNs), Site Instructions (SIs), Contract Variation Request (CVRs), E-mails

Contract Variation Request

Contract No.:	H353004-CC006	**Date:**	2019-06-12
Contractor:	Nuna East Ltd.	**CCR No.:**	H353004-CC006-0049 CVR R0
Contract Title:	Mary River Expansion Stage 3 Site Services	**Reference SI/RFI No.:**	

Current Condition and Mitigation Steps:
Nuna is constructing Laydown 2 at KM 6.5 along the tote road. To date the ROQ layer has been placed on the full area of the laydown. The costs that have been billed against the ROQ placement line item have exceeded the total costs for the complete laydown 2 construction. There is still a surfacing layer that will need to be placed in order to complete the laydown.

Proposed Change:
Additional budget is required to complete the laydown construction. An analysis of the budget and the estimated additional funds required is attached to this document. A summary of delays incurred against the Laydown 2 ROQ installation is also attached.

Justification:
Due to strict enforcement from Baffinland, spill rock must be all but eliminated which results in lower load factors in the rock trucks than was initially anticipated. The tailgates have been removed from the trucks as a corrective action, however this is now lowering the total production of the trucking fleet. Nuna is estimating that the impact of removing the tailgates has reduced the effective load per truck by $2m^3$. This would equate to a total production loss of $3,626m^3$, adding an additional 15% required effort to complete the ROQ placement.

In the area where Laydown 2 is being constructed, the tundra is saturated in some locations, ROQ material is being pushed into the tundra below the original ground elevation which is not accounted for in the total survey pickup of the material. The total laydown area is $55,646m^2$. A loss of just 150mm into tundra would result in an additional $8,347m^3$ of ROQ needing to be hauled to the location, a 35% increase in the design quantity.

Site delays which are out of Nuna's control are also impacting productivities. A separate CVR has been submitted to create a new line item to account for delays, however for the present time, costs associated with delays are billed against the work scope that they are affecting. In the case of Laydown 2 ROQ placement, a total of 218.5 man hours of delays have been incurred to date. This represents 10% of the total billing against this line item to date

The cumulative effect of the above impacts has resulted in higher than anticipated costs against this item.

Impact on Cost and Schedule:
If the change is accepted, the cost of the contract will increase by , and the impact on the schedule will be 4 days. The requested method of payment is **Time and Material**.

☒ Additional information detailing the change in cost is attached:
- Cost Estimate
- Laydown 2 Delay Summary

Notes:
1. Any variation to the Contract arising from this request will be managed in accordance with the terms and conditions of the Contract.
2. Contractor is not to proceed with any work until authorized to do so.
3. The response to this request will be returned by Hatch to the Contractor via the Contractor portal

Action Record	Name and Position	Signature	Date

Contractor: Initiated by:	**Chris Petrovic Project Manager**	Chris Petrovic Digitally signed by Chris Petrovic DN: dc=muna, dc=edmonton, ou=Nuna, ou=Edmonton, ou=Operations, cn=Chris Petrovic, email=ChrisP@nunalogistics.com Date: 2019.06.12 08:35:43 -06'00'	
Hatch: Received by:			

☐	The requested change is not accepted as a change to the Contract.
☐	The requested change is valid. A Site Instruction or Contract Variation with the agreed impact on cost and schedule will be issued to the Contractor.

Hatch: Verified By:			

NUNA

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(Section 9)

Land Disturbance Forms

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.		**Department:**	Projects
Date:	1/5/18	**Name/Position:**	**Brandon Urquhart /Project Coordinator**
Project location:	Port Site		Laydown LP2
Project Duration:	Start 1/6/19	Finish	1/13/19

Project Details

GPS Coordinates: Lat: N+7975900 Long: E+503800 (NAD 83)

Land disturbance area: 40300 m2

Type of disturbance (Drilling, Excavation, Rutting due to site access, etc.)

Material placement over tundra, ice removal if present

Detailed description of planned work.

Construction of permanent laydown
- ROQ fill with at least 300mm of Type 8 fill; 100mm thick topping of Type 5 crushed gravel.
- Area to be graded for free draining
- Utility crossing and culvert at Laydown entrance
- Ditching around Laydown as per Port water management plan.

Check List

1	**Has the Environmental Concerns in section 2.3.1. of the Environmental Protection plan been reviewed?** - If No, please review the list of concerns on page 4 of this form.	Yes
	Will work be completed within 31m of the High Water Mark of any stream or water body?. - If Yes, please contact the Environment Department.	No
3	**Is there a stream or waterbody >31m of the work site?.** - If Yes, Include a detailed description of the Sediment and Erosion Control Measures on Page 3.	No
4	**Has the area been cleared by Archaeology?.** - If No or Unknown, Please contact the Environment Department.	Yes
5	**Will the land disturbance occur between May 31 and August 31?.** - If Yes, An Active Migration Bird Survey is required prior to start.	No

Approval

Approved by: William Bowden Position: Environmental Superintendent

Approved on: Feb 3 2019

Valid Unit:

Comments and recommendations by the Environment Department:

Land Distrubance for the LP2 laydown is approved as agreed upon following confirmation of the field fit mitigation measures which include; removal of ice as required, grading the historical ditch on the north side of the laydown to flow East bound, and rip rap and line P-SWD-3

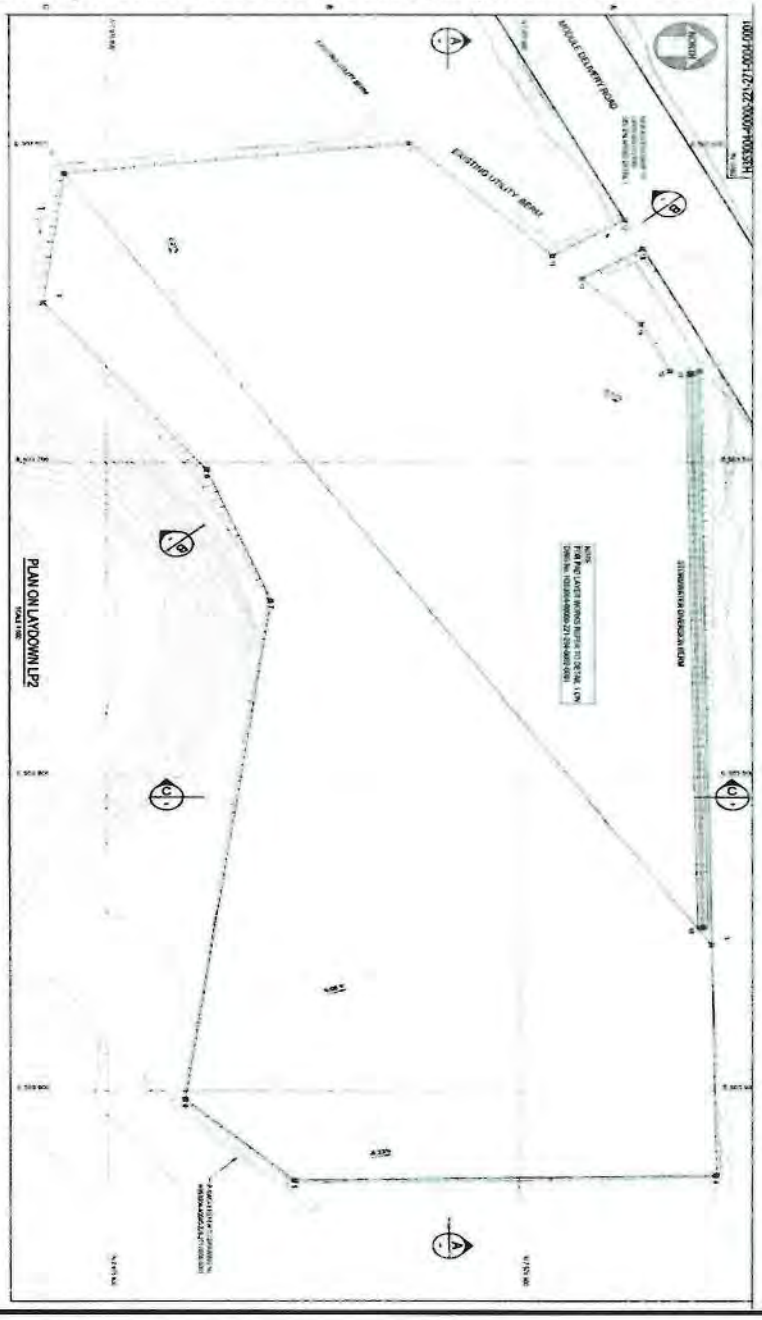
LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects	**Form N**
Date:	1/5/18			**Date:**
Project location:	Port Site			**Project**

Design/Engineering Drawing

See drawing H353004-40000-221-271-0004-0001, H353004-00000-221-294-0002-0001



Please give
Include all

- Laydown

lo.	0	Department:	Projects	Form No.	
	1/5/18			Date:	
t location:	Port Site			Project location:	

Sediment and Erosion Control Measures

a detailed description of the run-off control measure which will be put in place.
water bodies and streams, slope direction and materials to be used.

will be graded to be free draining

2.3.1 ENVIRONMENT
The Arctic is a fragile
shall be minimized to
permafrost features,
permits, licences and
necessary protection

The following measu
- Equipment and pe
- Approval for new

- Rutting (furrow cr
suspended when ru

- All camps shall be
- No materials shall
- No material shall b
- Greywater sumps
water body

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

0	**Department:**	Projects
1/5/18		
Port Site		

2.3.1 ENVIRONMENTAL CONCERN

AL CONCERN

environment where the recovery of vegetation within this region is slow. Ground disturbance protect archaeological resources, wildlife habitats, sensitive landforms, such as ice-rich and prevent erosion and the movement of sediment into watercourses and water bodies. Various approvals issued to Baffinland are specific in regards to ground disturbances and outline the measures that need to be taken to minimize this aspect of the Project.

es are to be implemented to minimize ground disturbance:

rsonnel must stay on existing roads and trails

areas of disturbance must be approved by the Operations Manager

eation) shall be avoided on ground surfaces; overland travel of equipment or vehicle will be tting occurs

located on gravel, sand or other durable land

stored on the surface ice of streams

moved from below the ordinary high water mark of any stream

must be located a distance of at least thirty (30) metres above the ordinary high water mark of any

Bradford Watkin

From: Ken Humby
Sent: Thursday, April 11, 2019 7:13 AM
To: Bradford Watkin
Subject: FW: [External]RE: [External]RE: [External]FW: [External]Milne Port Laydown Land Disturbance Forms
Attachments: Land Disturbance Form Laydown LP2 (00000002).xlsx; Land Disturbance Form_LP3 Laydown Dewatering_.xlsx; Land Disturbance Form Laydown LP3 (2).xlsx; Land Disturbance Form Laydown LP5 (2).xlsx

Ken Humby
Project Superintendent
E kenh@nunalogistics.com

NUNA EAST LTD.
PO Box 370
Pond Inlet, Nunavut, Canada, X0A 0X0
nunalogistics.com

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From: William Bowden <William.Bowden@baffinland.com>
Sent: Sunday, February 3, 2019 2:31 PM
To: Gionet, Stephane <stephane.gionet@hatch.com>
Cc: Mills, Nick <nick.mills@hatch.com>; Ken Humby <kenh@nunalogistics.com>; Brandon Urquhart <brandonu@nunalogistics.com>; Marlon Coakley <marlon.coakley@hatch.com>; Sten Sundin <Sten.Sundin@baffinland.com>; Connor Devereaux <Connor.Devereaux@baffinland.com>; Dominic Ritgen <Dominic.Ritgen@baffinland.com>; Timothy Ray Sewell <Timothy.Sewell@baffinland.com>
Subject: RE: [External]RE: [External]RE: [External]FW: [External]Milne Port Laydown Land Disturbance Forms

Hello Stephane,

As requested please see the attached approved land disturbance forms for LP2, LP3 and LP5.

Thank you to yourself and Nick(Feb 1st email) for answering our enquiries on these designs and associated concerns. Please ensure Projects commitments and responses in the series of emails below are completed for construction prior freshet. Melt can occur as early as beginning of May.

Cheers,

Bill

William Bowden | Environmental Superintendent
Mary River Mine Site
T: +1 647 253 0596 x6016

C: +1 647 580 7699

Baffinland

275 Upper Middle Road East, Suite 300, Oakville, Ontario, Canada, L6H 0C3
www.baffinland.com

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From: Gionet, Stephane [mailto:stephane.gionet@hatch.com]
Sent: February 3, 2019 12:55 PM
To: William Bowden
Cc: Mills, Nick; Ken Humby; Brandon Urquhart; Marlon Coakley; Sten Sundin
Subject: [External]RE: [External]RE: [External]FW: [External]Milne Port Laydown Land Disturbance Forms

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Hi William

Hope this answer most of you questions. I was hoping to meet up with you and your group today to get the disturbance permit sign. I have a team at site ready to start the work up on the approval of the permit.

Thanks in advance

Regards,

Stephane Gionet
Civil Supervisor
Baffinland Project

HATCH

stephane.gionet@hatch.com

LP2

- No indication of ice removal on the west side of the pad near the matrix prior to constructing the pad yes ice will be removed, however as the drawings include the ditch that runs from the NW to the NE of the pad and it will be properly graded, yes this is correct this should eliminate environmental flooding issues in the area. However It will be key to ensure the non graded ditch is properly. It will be graded properly There is still a potential for slumping however, if construction of the pad occurs directly on top of the ice, this is an operational issue as it looks like they are planning to build buildings on the specific area. Ice will be removed prior to materiel placement

LP5

- If culverts at the tote road leading to LP5 are to be covered with HDPE liner, I would recommend the culverts be removed or blocked/buried as well so that there is no risk water getting through rips in the liner from regular ditch maintenance with heavy equipment THE CULVERT WILL NOT BE REMOVED, THE PLAN IS TO PLUG WITH IMPERMEABLE MATERIAL. WE WILL DEVELOP A DETAIL WITH AN HDPE LINER OVER THE CULVERT ENTRANCE.
- CULVERT END WILL BE FOLDED OVER PRIOR TO PLACING THE HDPE LINER.
-

LP3

- The below is not shown on the engineered drawings and Nuna does not have this on their scope of work. It should be determined if this geomembrane installation was removed from construction plans and what is going to be used in its place or if they are going to fill in the entire pond to prevent standing water from entering the base of the laydown pad. Projects engineering will develop a suitable solution

-

- LP3 dewatering- proposed ice storage area

Legend
Green – Ice Dump Area
Brown line – Berm
Red line – Silt Fence

ideal location for dumping the ice from LP3 and LP5.
However a key requirement prior to freshet would be Projects constructing check dams to help pool water and settle out silt as we have a sample site approximately 100m directly downstream. Prior to freshet silt fences will also need to be installed . yes it's in the plan to construct check dam prior to freshet

From: Mills, Nick
Sent: Sunday, February 03, 2019 6:01 AM
To: William Bowden <William.Bowden@baffinland.com>
Cc: Gionet, Stephane <stephane.gionet@hatch.com>; Connor Devereaux <Connor.Devereaux@baffinland.com>; Coakley, Marlon <marlon.coakley@hatch.com>; Client - Baffinland - Boucher, Patrick <patrick.boucher@baffinland.com>; Ken Humby <kenh@nunalogistics.com>; Darko Filipic <DarkoF@nunalogistics.com>; Christopher Murray <christopher.murray@baffinland.com>; Client - Baffinland - Borcsok, Steve <steve.borcsok@baffinland.com>; Timothy Ray Sewell <Timothy.Sewell@baffinland.com>; Sten Sundin <Sten.Sundin@baffinland.com>; Dominic Ritgen <Dominic.Ritgen@baffinland.com>; Peace, Glen <glen.peace@hatch.com>; Perry, Steven <steven.perry@hatch.com>; Campbell, Kevin <kevin.campbell@hatch.com>; Gionet, Stephane <stephane.gionet@hatch.com>; Andrew Vermeer <andrew.vermeer@baffinland.com>
Subject: RE: [External]RE: [External]FW: [External]Milne Port Laydown Land Disturbance Forms

Stephane / Chris / Ken

Lets review these items and discuss so we fully understand them .

Thanks
Nick

From: William Bowden <William.Bowden@baffinland.com>
Sent: Saturday, February 2, 2019 7:33 PM
To: Mills, Nick <nick.mills@hatch.com>
Cc: Gionet, Stephane <stephane.gionet@hatch.com>; Connor Devereaux <Connor.Devereaux@baffinland.com>; Coakley, Marlon <marlon.coakley@hatch.com>; Client - Baffinland - Boucher, Patrick <patrick.boucher@baffinland.com>; Ken Humby <kenh@nunalogistics.com>; Darko Filipic <DarkoF@nunalogistics.com>; Christopher Murray <christopher.murray@baffinland.com>; Client - Baffinland - Borcsok, Steve <steve.borcsok@baffinland.com>; Timothy Ray Sewell <Timothy.Sewell@baffinland.com>; Sten Sundin <Sten.Sundin@baffinland.com>; Dominic Ritgen <Dominic.Ritgen@baffinland.com>; Peace, Glen <glen.peace@hatch.com>; Perry, Steven <steven.perry@hatch.com>; Campbell, Kevin <kevin.campbell@hatch.com>; Gionet, Stephane <stephane.gionet@hatch.com>; Andrew Vermeer <andrew.vermeer@baffinland.com>
Subject: RE: [External]RE: [External]FW: [External]Milne Port Laydown Land Disturbance Forms

Hi Nick,

Thanks for the reply.

Some particular points for further discussion:

LP2

- No indication of ice removal on the west side of the pad near the matrix prior to constructing the pad, however as the drawings include the ditch that runs from the NW to the NE of the pad and it will be properly graded, this should eliminate environmental flooding issues in the area. However It will be key to ensure the non graded ditch is properly. There is still a potential for slumping however, if construction of the pad occurs directly on top of the ice, this is an operational issue as it looks like they are planning to build buildings on the specific area.

LP5

- If culverts at the tote road leading to LP5 are to be covered with HDPE liner, I would recommend the culverts be removed or blocked/buried aswell so that there is no risk water getting through rips in the liner from regular ditch maintenance with heavy equipment

LP3

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- LP3 dewatering- proposed ice storage area

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Ideal location for dumping the ice from LP3 and LP5.

However a key requirement prior to freshet would be Projects constructing check dams to help pool water and settle out silt as we have a sample site approximately 100m directly downstream. Prior to freshet silt fences will also need to be installed .

Bill

William Bowden | Environmental Superintendent
Mary River Mine Site
T: +1 647 253 0596 x6016
C: +1 647 580 7699

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www.baffinland.com

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From: Mills, Nick [mailto:nick.mills@hatch.com]
Sent: February 2, 2019 5:07 AM
To: William Bowden
Cc: Gionet, Stephane; Connor Devereaux; Marlon Coakley; Patrick Boucher; Ken Humby; Darko Filipic; Christopher Murray; Connor Devereaux; Steve Borcsok; Timothy Ray Sewell; Sten Sundin; Dominic Ritgen; Peace, Glen; Perry, Steven; kevin campbell; Gionet, Stephane
Subject: [External]RE: [External]FW: [External]Milne Port Laydown Land Disturbance Forms

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Bill

As mentioned find attached drawings noted below . Any questions please advise .

Thanks
'Nick

From: Mills, Nick
Sent: Friday, February 1, 2019 5:26 PM
To: 'William Bowden' <William.Bowden@baffinland.com>
Cc: Gionet, Stephane <stephane.gionet@hatch.com>; Connor Devereaux <Connor.Devereaux@baffinland.com>; Coakley, Marlon <marlon.coakley@hatch.com>; Client - Baffinland - Boucher, Patrick <patrick.boucher@baffinland.com>; 'Ken Humby' <kenh@nunalogistics.com>; 'Darko Filipic' <DarkoF@nunalogistics.com>; 'Christopher Murray' <christopher.murray@baffinland.com>; 'Connor Devereaux' <Connor.Devereaux@baffinland.com>; Client - Baffinland - Borcsok, Steve <steve.borcsok@baffinland.com>; 'Timothy Ray Sewell' <Timothy.Sewell@baffinland.com>; 'Sten Sundin' <Sten.Sundin@baffinland.com>; 'Dominic Ritgen' <Dominic.Ritgen@baffinland.com>; Peace, Glen <glen.peace@hatch.com>; Perry, Steven <steven.perry@hatch.com>; Campbell, Kevin <kevin.campbell@hatch.com>; Gionet, Stephane <stephane.gionet@hatch.com>
Subject: FW: [External]FW: [External]Milne Port Laydown Land Disturbance Forms

Bill

See my comments below in yellow . I have a bunch of drawings noted below showing details I will forward separately . We have reviewed this previously with Connor and received the go ahead see attached . I believe all your concerns are addressed below . I am in tomorrow any concerns please contact myself or Stephane .

Thanks
Nick

From: William Bowden <William.Bowden@baffinland.com>
Sent: Friday, February 1, 2019 2:58 PM
To: Mills, Nick <nick.mills@hatch.com>; Brandon Urquhart <brandonu@nunalogistics.com>; Coakley, Marlon <marlon.coakley@hatch.com>
Cc: Client - Baffinland - Boucher, Patrick <patrick.boucher@baffinland.com>; Ken Humby <kenh@nunalogistics.com>; Darko Filipic <DarkoF@nunalogistics.com>; Christopher Murray <christopher.murray@baffinland.com>; Connor Devereaux <Connor.Devereaux@baffinland.com>; Client - Baffinland - Borcsok, Steve <steve.borcsok@baffinland.com>; Timothy Ray Sewell <Timothy.Sewell@baffinland.com>; Sten Sundin <Sten.Sundin@baffinland.com>; Dominic Ritgen <Dominic.Ritgen@baffinland.com>; Peace, Glen <glen.peace@hatch.com>; Perry, Steven <steven.perry@hatch.com>; Campbell, Kevin <kevin.campbell@hatch.com>; Gionet, Stephane <stephane.gionet@hatch.com>
Subject: RE: [External]FW: [External]Milne Port Laydown Land Disturbance Forms

Hello Nick and Marlon

As per the below correspondence and concerns please provide Projects strategy to mitigate and manage potential drainage issues as a result of the new construction on site this year with laydowns.

Prior to sign off of the land disturbance forms I would like to see at least a path forward from Projects on the below issues for drainage. If you can not address an identified drainage issue currently a plan / schedule for water management work is created so that the below issues do not fall off the radar for freshet.

Bill

William Bowden | Environmental Superintendent
Mary River Mine Site
T: +1 647 253 0596 x6016
C: +1 647 580 7699

Baffinland

2275 Upper Middle Road East, Suite 300, Oakville, Ontario, Canada, L6H 0C3
www.baffinland.com

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From: Mills, Nick [mailto:nick.mills@hatch.com]
Sent: January 9, 2019 4:09 AM
To: William Bowden
Cc: Marlon Coakley; Mills, Nick; Patrick Boucher; Ken Humby; Brandon Urquhart; Darko Filipic; Christopher Murray; Connor Devereaux; Steve Borcsok; Timothy Ray Sewell; Sten Sundin; Dominic Ritgen; Peace, Glen; Perry, Steven; kevin campbell
Subject: [External]FW: [External]Milne Port Laydown Land Disturbance Forms

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Bill

Thanks for this . I will arrange a meeting to review the comments and explain the execution plan and ensure all concerns are addressed . The meeting will be held next week will send the invite . I will have all IFC drawings for all areas sent to you today for your info .

Any questions please advise .

Thanks
Nick

From: William Bowden <William.Bowden@baffinland.com>
Sent: Tuesday, January 8, 2019 11:42 PM
To: Coakley, Marlon <marlon.coakley@hatch.com>; Mills, Nick <nick.mills@hatch.com>; Client - Baffinland - Boucher, Patrick <patrick.boucher@baffinland.com>; Ken Humby <kenh@nunalogistics.com>
Cc: Brandon Urquhart <brandonu@nunalogistics.com>; Darko Filipic <DarkoF@nunalogistics.com>; Christopher Murray <christopher.murray@baffinland.com>; Connor Devereaux <Connor.Devereaux@baffinland.com>; Client - Baffinland - Borcsok, Steve <steve.borcsok@baffinland.com>; Timothy Ray Sewell <Timothy.Sewell@baffinland.com>; Sten Sundin <Sten.Sundin@baffinland.com>; Dominic Ritgen <Dominic.Ritgen@baffinland.com>
Subject: FW: [External]Milne Port Laydown Land Disturbance Forms

Hello,

We have received the following Land disturbance forms for LP2, LP3, LP5, LP3 dewatering, Milne Port Q1 hill road widening and Milne Port ditching . The below outlines specific details that I would appreciate further information on. Milne Hill expansion is approved to start and has securities posted.

LP2 See attached the latest LP2 drawings
Concerns:

- Is the ditch that runs E->W on the South side of the PSC/incinerator going to be dug to depth and be properly graded? YES I do not see it on the drawing and I understand it is not in Nuna's scope of work. It is part of scope of LP2 to be done by Nuna When LP 2 is constructed, this ditch graded to the flowing to the East is going to be important for freshet to prevent water from diverting towards the Ore Pad. (ditch inbetween North side of LP2 and Milne Port pad). Yes See attached Drawing
- There is a significant amount of water/ice left in on the West side closest to the Matrix building, the ice will most likely need to be excavated to prevent slumping of the pad in spring. Also where will the remainder of the pooled water drain following the pad construction when melt occurs off of the north side of Milne Hill that is not caught by the PSWD-3 ditch? This is not included in description of planned work. Based on the attached drawing all water coming of the Southside of LP2 will be directed East
- The pad is being built over a unofficial drainage ditch that was existing (however was not properly graded).
- Will the diversion ditching system to east of the LP2 by geotextiled and riprapped? Yes it will

LP5
Concerns:

- The Laydown runs over top of the ephemeral stream that runs across the tote road towards the New Camp Pad Ditch that Projects received a non-compliance for previously. It is paramount that this stream catchment area is

completely redirected down the tote road as per documented water diversion measures. To ensure water does not cross the Tote Road at the existing culvert that allowed water to pass to the LP5 area, will the culvert be removed entirely? No the plan is to plug with impermeable material . We will develop a detail with an HDPE liner over the culvert entrance

- Says "to be graded to be free draining". We have had consistent issues with pads on site draining poorly causing pooling water which CIRNAC identifies as contrary to designs. Is Projects confident that grade can be achieved as designed? Yes with the survey control and our quality control we are confident we can achieve this . It is check as you go and not wait until the end , Are there swales planned for the pad to assist drainage? There none planned as they interfere with conveyor foundation in future
- It appears that LP5 drains directly into and under LP3. Was LP3 designed to be permeable to allow water passage through? Yes Are specific mitigation measures planned to ensure stability or slumping of LP3 does not occur due LP5 water drainage? Yes the interface between LP3 and LP5 is critical to final construction and operation and inspections and construction methods will be monitored to ensure no slumping will occur.
- Says "Ditching around laydown as per Port Water management plan", on what side of this laydown is there going to be any ditching and to where? There is ditching around the whole LP3 Stockpile 2 area that will done when project certificate received in 2020 . see attached final layout of ditches etc . for this area .

Additional work – Fix the New Camp Pad Ditch at the same time which was damaged in 2018 Yes this will be done .

LP3

Concerns:

- No information on how installation of the impermeable barrier on the South West Side of the Pad. How deep it will go? Will drilling be required and how is it being secured? Is the permafrost zone expected to be disturbed? See attached details of how this will be constructed including the final drawings . There will be excavation required we are evaluating whether it has to be drilled and blasted or can be ripped
- Says "to be graded to be free draining" We have had consistent issues with pads on site draining poorly causing pooling water with CIRNAC identifies as contrary to designs. Is Projects confident that grade can be achieved as designed? Is the grade designed to the west, away from the Ore Pad?
- There appears to be three culverts that are present, however they do not span the entirety of LP3. Is this intended? Yes they are to allow us to cross this area with module road and then a swale is constructed to direct the water to the West .
- How will water sourcing from LP5 and directly adjacent to the east side of the Accommodation Map Pad pass LP3? See attached drawings showing the planned ditch and flow .
- Do IFCs exist for the proposed culverts? Yes see attached standard culvert details .

LP3 Dewatering Yes the DFO guidelines will be followed . Can you please sit with Stephane Gionet and Nuna to review so we are 100% clear on requirements. The final location for ice and snow will be agreed between Projects and Environment. Once agreed and after Ice and snow piles the area will have silt curtains surround it with check dams and directed drainage

Concerns:

- Dewatering process must follow DFO guidelines provided on the DFO website Http:??//dfo-mpo.gc.ca/pnw-ppe/measures/index-eng.html
- Storage locations utilised (ie. Chosen snow stockpile) must have check dams and sedimentation structures implemented below to mitigate drainage to Philips creek prior to freshet. Are there other particular sedimentation mitigation measures planned for the removed ice which will certainly tear up the tundra surface (area is swampy)? Recommend storage of dirty ice/snow in one location so that check dams and sedimentation measures can be concentrated.
- Runoff from the deposition of this material will be very important to mitigate in the spring

Milne Hill and Quarry Access Road This will be a field built road there are no drawings

- I understand this widening was submitted with the June 2018 work plan addendum and is approved. The construction can go ahead.

- Do you have a more detailed drawing of the design and widening? We will need area of disturbance for reporting purposes.
- Ditch design not submitted to regulators.

Tote Road Ditching and drainage redirection from laydowns

Concerns:

- Will ditching on the West Side of the Tote Road which is intended to redirect water away from the Accommodations and laydowns be geotexitled and rip rapped? Yes
- Will this entail blasting (beside the Tote Road) as stated in the Milne Port ditching form? We are evaluating we hope to avoid this is possible by using ripper
- Where will the check dams be situated on the Tote Road ditching system. This is an excellent initiative and certainly will assist with reducing sedimentation downstream. After construction of ditch and it is built the location of check dams can be confirmed
- There are new culverts planned for this drainage system. Are there IFCs for these culverts or at least general specifcations for installion, inlay and diameter? See attached standard culvert details

These questions are intended to help define how baffinland is going to manage water and sedimentation risks come spring and avoid regulatory implications of failing to do so. I propose that a comprehensive meeting with all be set up to discuss these challenging details.

If you already have detailed plans that cover these potentail conerns please incude us so that we can assist and plan for spring monitoring.

Bill

William Bowden | Environmental Superintendent
Mary River Mine Site
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C: +1 647 580 7699

Baffinland

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From: Brandon Urquhart [mailto:brandonu@nunalogistics.com]
Sent: January 5, 2019 11:53 AM
To: Dominic Ritgen <Dominic.Ritgen@baffinland.com>
Cc: Marlon Coakley <marlon.coakley@hatch.com>; Shain, William <william.shain@hatch.com>; Ken Humby <kenh@nunalogistics.com>; Darko Filipic <DarkoF@nunalogistics.com>; Connor Devereaux <Connor.Devereaux@baffinland.com>; Kendra Button <Kendra.Button@baffinland.com>; Sten Sundin <Sten.Sundin@baffinland.com>
Subject: [External]Milne Port Laydown Land Disturbance Forms

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Hello,

'lease see the attached Land Disturbance Forms for LP2, LP3, and LP5.

Thank you,

Brandon Urquhart, E.I.T.
Project Coordinator
Cell:(587)-337-4062
Office: (416)-364-8820 ext. 4120

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(Section 10)

Quality Control Reports

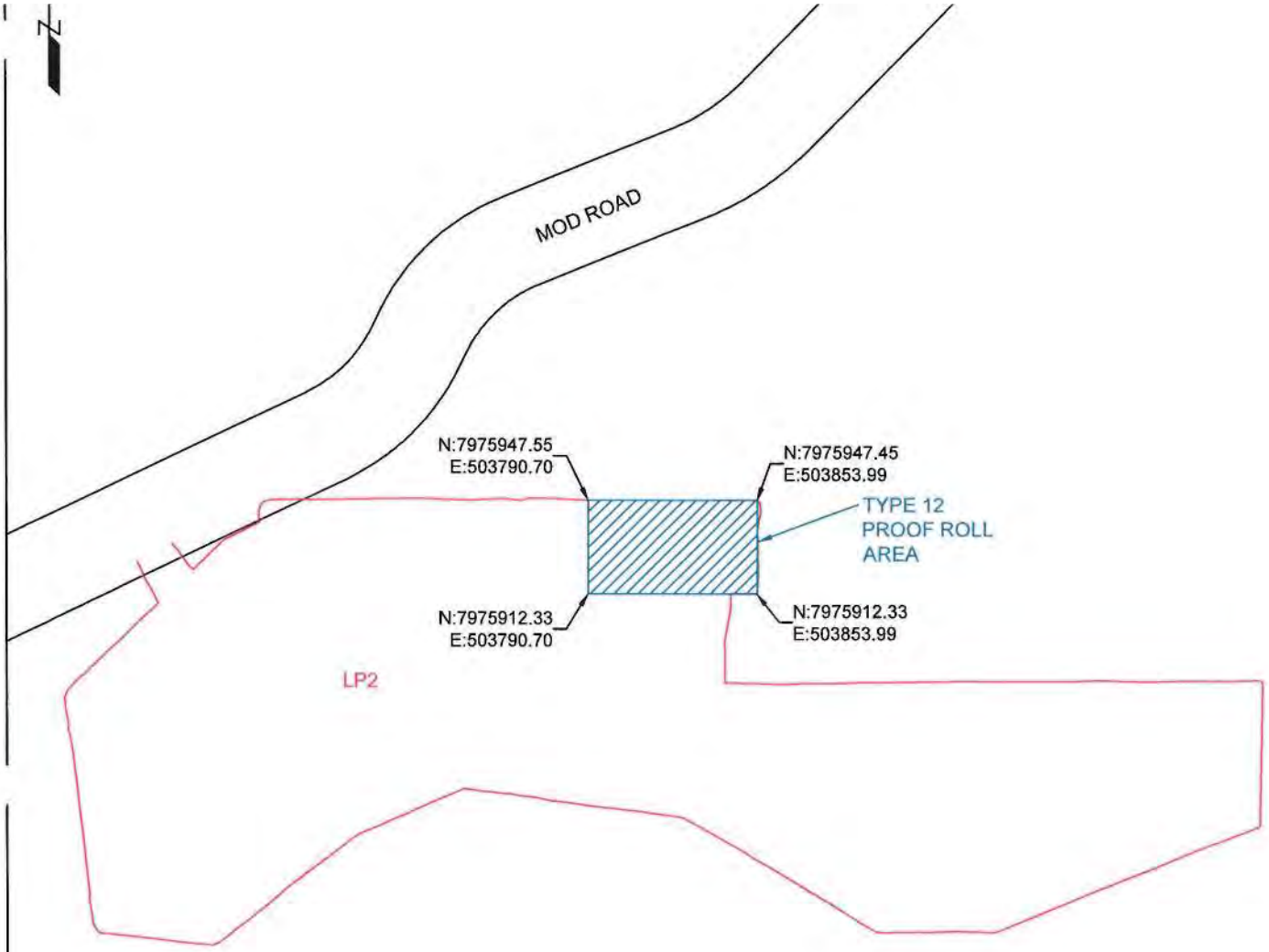
Project: Mary River Expansion Project	**ITP #:** CC006-0001A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP2	**Area Description:** LP2 NW Corner	
Drawing No.: H353004-40000-221-271-0004-0001		**Rev.:** 5

Area / Stations Inspected: See Survey
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		**Verified (Initial)**
Visible Deflections	☐ YES ☑ NO ☐ N/A	JG
Rebound of Surface	☐ YES ☑ NO ☐ N/A	JG
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	JG
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	JG
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	JG
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	JG
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	JG
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	JG

Comments:
ROQ Type B final lift

Grant LaPointe / [signature]	Supervisor	Aug 19/19
Construction Designate – Print/Sign	Title	Date
John Guan / [signature]	QC coordinator	Aug 19, 2019
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken / [signature]	Hatch QA	Sept 28-2019



Notes:	PREPARED BY: NUNA EAST LTD.		DRAWING TITLE: LP2

Project: Mary River Expansion Project	**ITP #:** CC006-0001A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LA2	**Area Description:** LP2	
Drawing No.: H353004-40000-221-271-0004-0001		**Rev.:** 5

Area / Stations Inspected: See Survey, 2 x areas
Proof Rolled With: A loaded 745 Articulated Haul Truck

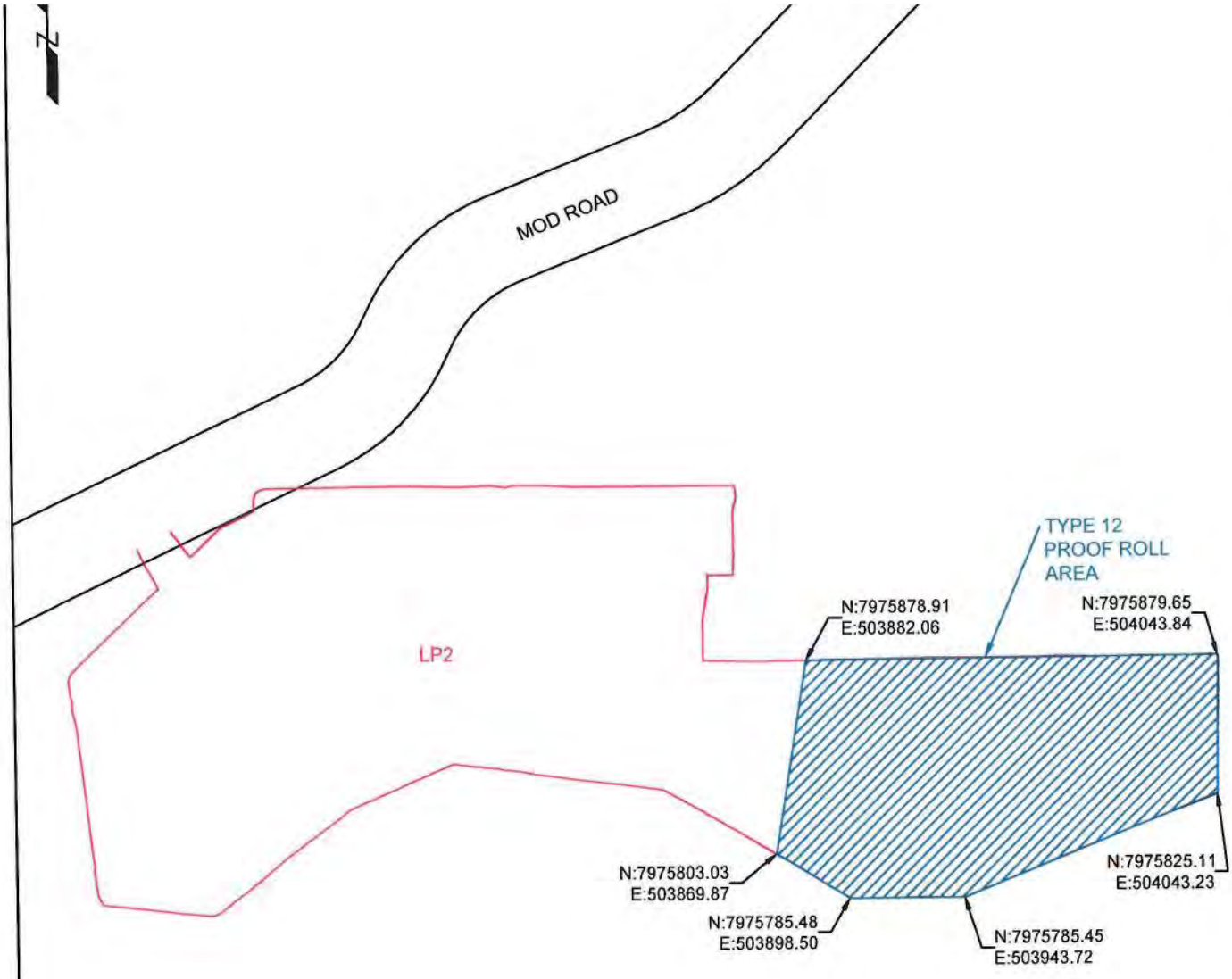
INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections Minor	☑ YES ☐ NO ☐ N/A	JL
Rebound of Surface	☑ YES ☐ NO ☐ N/A	JL
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	JL
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	JL
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	JL
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	JL
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	JL
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	JL

Comments:

Some deflection in final ~30m of lift (east boundary) due to OG. Minor.

ROQ Type 12

Grant LaPointe /		Supervisor	Aug 19, 19
Construction Designate – Print/Sign		Title	Date
John Gunn /		QC Coordinator	Aug 19/19
Contractor QC Designate – Print/Sign		Title	Date
Ronny Franklin /		Manager QA	Sept 28-2019



Notes:

PREPARED BY:
NUNA EAST LTD.
PO Box 370

DRAWING TITLE:
LP2
TYPE 12 PROOF ROLL

NUNA EAST LTD

COMPACTION REPORT

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F
P:

: Mary River Expansion Project	ITP #: CC006-0001A	QA Refer. Report No.:
ctor: Nuna East Ltd.	Contract No.: CC006	CWP: N/A
on: Milne Port	Elevation: N/A	Sub-System: N/A
LAYDOWN AREA LP2	Area Description: NORTH CENTRAL SECTION	
g No.: 1353004-400000-221-0004-0001		REV.: 5

Stations Inspected: See Survey Data and attached drawing.

ction Equipment Used: Cat 10 Ton CS56B Compactor	Number of Passes Completed: 5+

FILL DATA

f Subgrade:	Condition:	
d rock er (Specify): TUNDRA (EG)	☑ Rough ☐ Smooth ☑ Wet ☐ Dry ☐ Frozen	☐ Loose ☐ Hard ☑ Rutted ☐ Other (Specify): _____

kness: < 1m	Compaction % required: 100%	Water used on Fill: Yes ☐ No ☑	Vibration on Compactor: Yes ☑ No ☐

f fill:	Method of compaction used:	
d n er (Specify): TYPE 12 (ROCK)	☐ Vibration Plate ☐ Pneumatic Tamper ☐ Steel Wheel ☑ Vibrating Steel Wheel	☐ Rubber Tire ☐ Vibrating Pneumatic ☐ Gas Powered Tamper ☐ Other (Specify): _____

ethod: Sand Cone Method ☐ Driven Tube Method ☐ Nuclear Method ☐ Proctor Test ☐ Visual Inspection ☑

TEST DATA

O.	TIME	LOCATION	ELEVATION	DENSITY		MOISTURE		COMPACTION		ACCEPTI (Initial for
				MAX	FIELD	OPTIMUM	FIELD	SPEC	FIELD	
	16:00	NORTH CENTAL LP2	SEE SURVEY DATA	N/A	N/A	N/A	N/A	100%	100%	

NUNA EAST LTD

COMPACTION REPORT

Ex[illegible]t

I

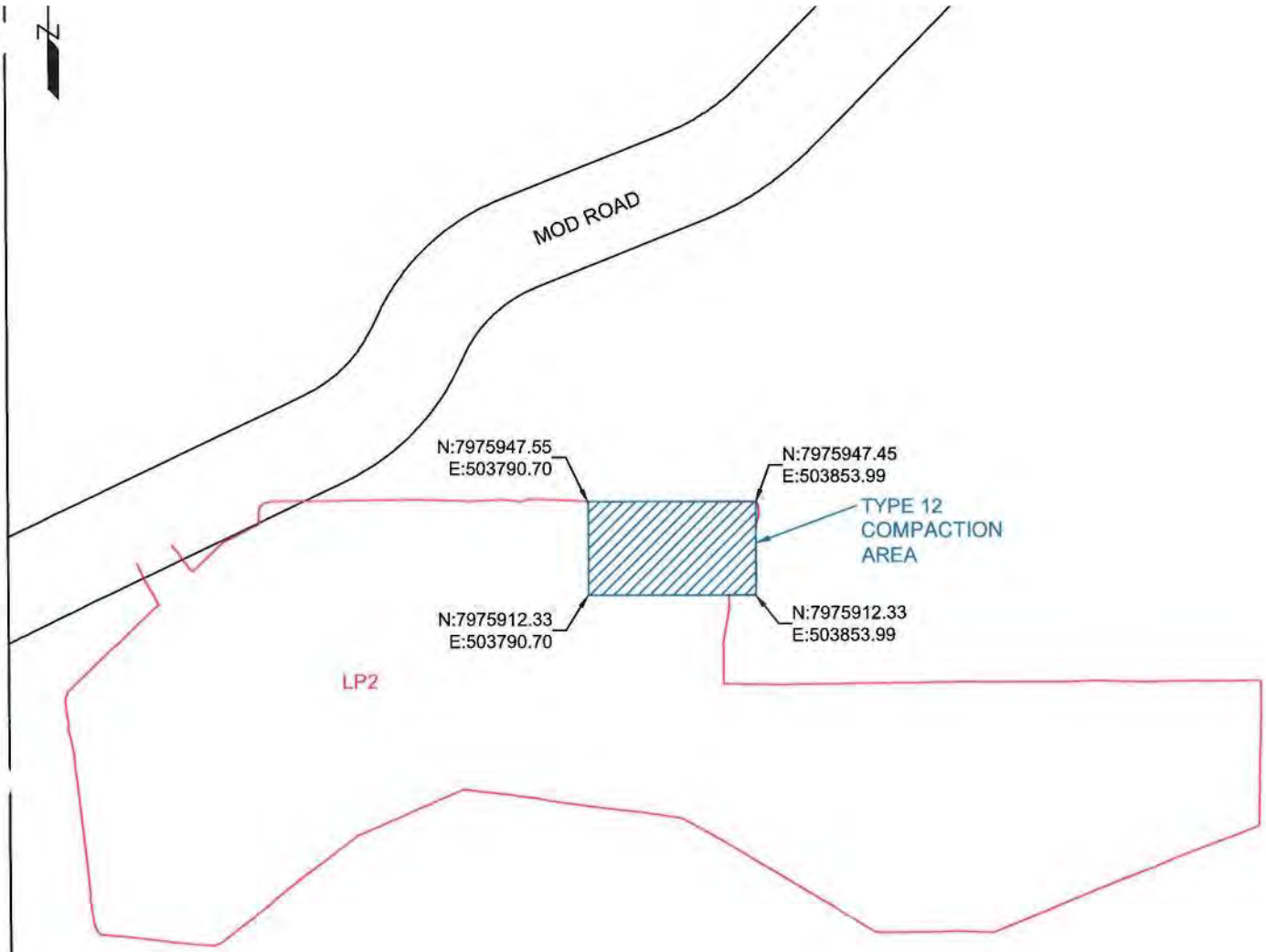
P

COMMENTS

No Densometer available for project, compaction to be competed per specification H353004-00000-221-078-0001 Rev 1 and E353004-CC006-400-465-0019 0 V2.(Visual witnessing of compaction)

ses with 10 ton compactor @ 1200-1500 vpm & speed of 3.2km/h (2 mph)).

ruction Designate – Print/Sign	/	Title	Date
TORA WATKIN	/	QC COORDINATOR	8/12/19
actor QC Designate – Print/Sign	/	Title	Date
y Franken.	/	Hatch QA	Sept 28. 20
QA Designate – Print/Sign		Title	Date



Notes:	PREPARED BY:		DRAWING TITLE:
	NUNA EAST LTD.		LP2

NUNA EAST LTD

COMPACTION REPORT

Ex

P

t: Mary River Expansion Project	ITP #: CC006-0001A	QA Refer. Report No.:
ctor: Nuna East Ltd.	Contract No.: CC006	CWP: N/A
on: Milne Port	Elevation: N/A	Sub-System: N/A
LAYDOWN AREA LP2	Area Description: FAR EAST END OF LP2	
g No.: 1353604-40000-221-0004-0001		REV.: 5

Stations Inspected: See Survey Data and attached drawing.

ction Equipment Used: Cat 10 Ton CS56B Compactor | **Number of Passes Completed:** 5+

FILL DATA

f Subgrade:

d
/
rock
er (Specify): TUNDRA(OG)

Condition:

- ☑ Rough
- ☐ Smooth
- ☑ Wet
- ☐ Dry
- ☐ Frozen

- ☑ Loose
- ☐ Hard
- ☐ Rutted
- ☐ Other (Specify): _____

ckness: 1M | **Compaction % required:** 100% | **Water used on Fill:** Yes ☐ No ☑ | **Vibration on Compactor:** Yes ☑ No ☐

f fill:

d
/
m
er (Specify): INFILL(ROCK)

Method of compaction used:

- ☐ Vibration Plate
- ☐ Pneumatic Tamper
- ☐ Steel Wheel
- ☑ Vibrating Steel Wheel

- ☐ Rubber Tire
- ☐ Vibrating Pneumatic
- ☐ Gas Powered Tamper
- ☐ Other (Specify): _____

ethod: Sand Cone Method ☐ Driven Tube Method ☐ Nuclear Method ☐ Proctor Test ☐ Visual Inspection ☑

TEST DATA

IO.	TIME	LOCATION	ELEVATION	DENSITY		MOISTURE		COMPACTION		ACCEPT (Initial for
				MAX	FIELD	OPTIMUM	FIELD	SPEC	FIELD	
1	0001	EAST END LP2	SEE SURVEY DATA	N/A	N/A	N/A	N/A	100%	100%	[illegible]

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COMPACTION REPORT

Ex

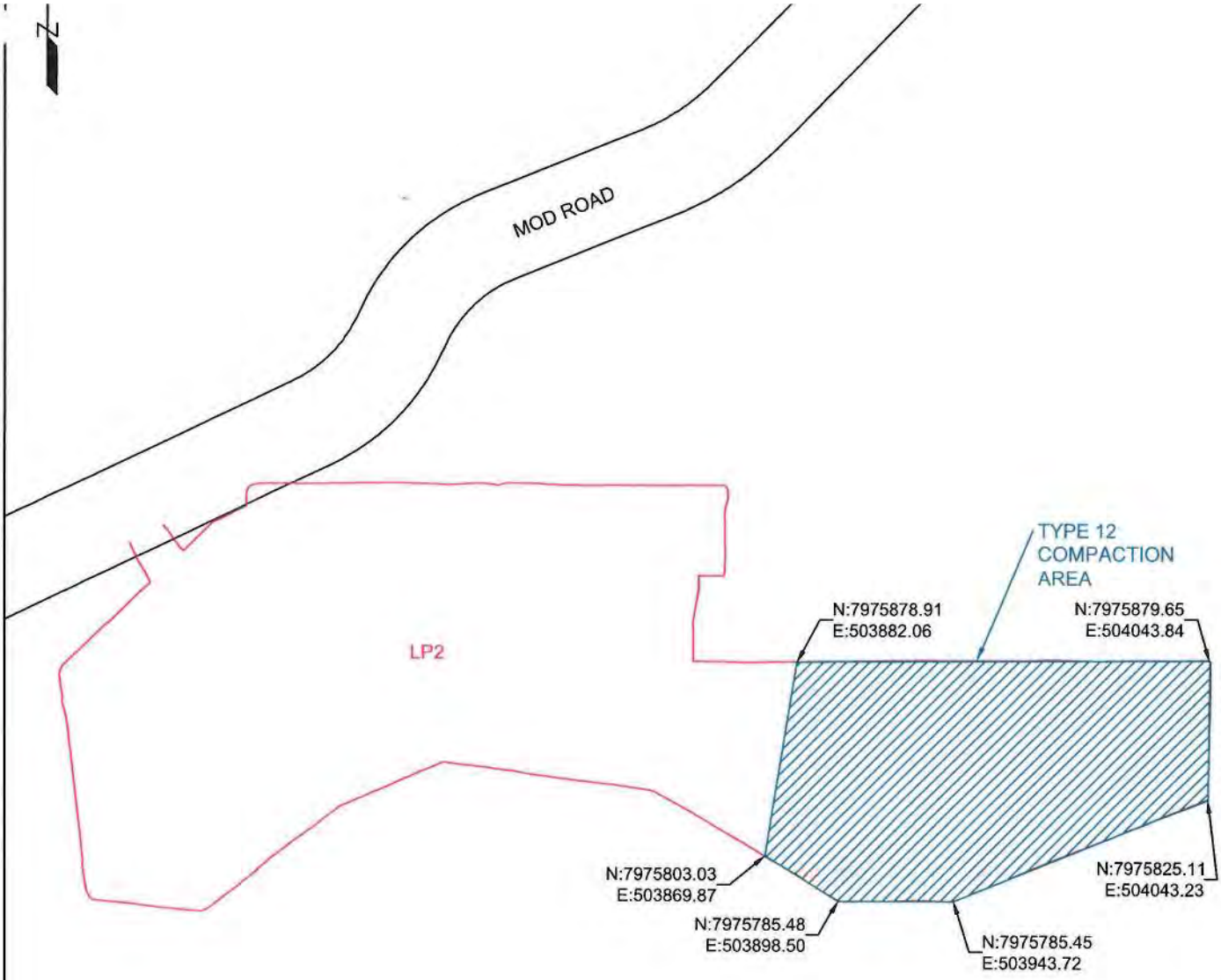
P

COMMENTS

No Densometer available for project, compaction to be competed per specification H353004-00000-221-078-0001 Rev 1 and E353004-CC006-400-465-0019 0 V2.(Visual witnessing of compaction)

ses with 10 ton compactor @ 1200-1500 vpm & speed of 3.2km/h (2 mph)).

ruction Designate – Print/Sign		Title	Date
[illegible] /		QC COORDINATOR	8/19/1
actor QC Designate – Print/Sign		Title	Date
[illegible] Franken /		Hatch QA	Sept 28-2
QA Designate – Print/Sign		Title	Date



Notes:	PREPARED BY:		DRAWING TITLE:
	NUNA EAST LTD.		LP2

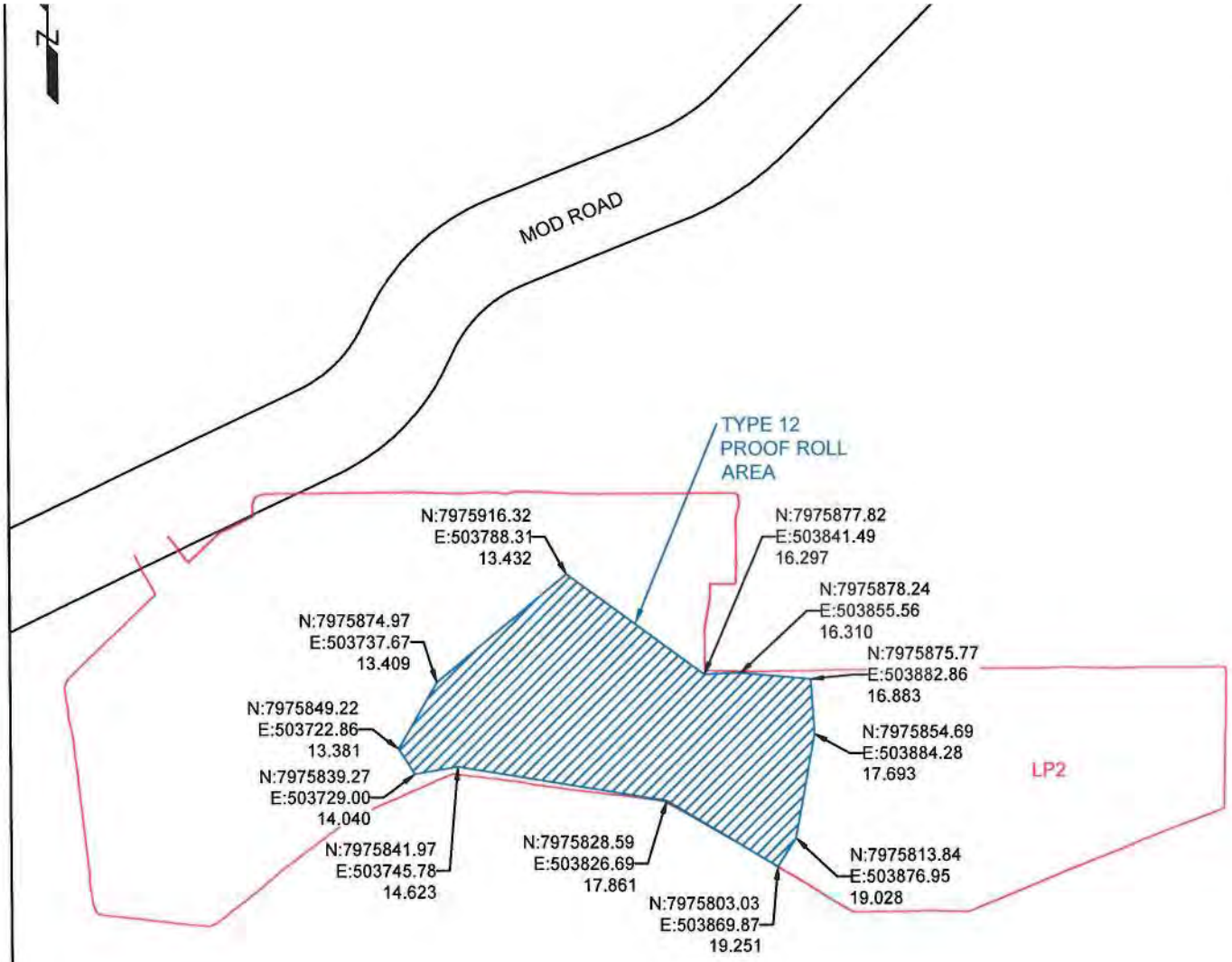
Project: Mary River Expansion Project	**ITP #:** ~~CC006~~ CC006-001A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP2 J.G.	**Area Description:** LP2 ~~Ramp East of Mod Road~~ PAD	J.G.
Drawing No.: H353004-40000-221-271-0004-0001		**Rev.:** 5

Area / Stations Inspected: See survey attached.
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections Minor	☑ YES ☐ NO ☐ N/A	J6
Rebound of Surface	☑ YES ☐ NO ☐ N/A	J6
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	J6
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	J6
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	J6
Surface Uniform and Level (ROQ on OG)	☑ YES ☐ NO ☐ N/A	J6
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	J6
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	J6

Comments: Some deflected observed due to no grubbing subgrade in area.

Grant LaPointe /	Supervisor	Aug 16/19	
Construction Designate – Print/Sign	Title	Date	
John Gwan /	QC Coordinator	Aug 16/19 ~~Aug 15/19~~	JG
Contractor QC Designate – Print/Sign	Title	Date	
Rob Chasse /	Materials Lead	Aug 16/19	
Client QA Designate – Print/Sign	Title	Date	



Notes:

PREPARED BY:

NUNA EAST LTD.
PO Box 370

DRAWING TITLE:

LP2
TYPE 12 PROOF ROLL

NUNA EAST LTD

COMPACTION REPORT

Ex
P
P

: Mary River Expansion Project	ITP #: CC006-0001A	QA Refer. Report No.:
ctor: Nuna East Ltd.	Contract No.: CC006	CWP: N/A
on: Milne Port	Elevation: N/A	Sub-System: N/A
LAYDOWN AREA LP2	Area Description: SOUTH CENTRAL SECTION	
g No.: 1353004-40CC6-221-0004-0001		REV.: 5

Stations Inspected: See Survey Data and attached drawing.

ction Equipment Used: Cat 10 Ton CS56B Compactor	Number of Passes Completed: 5+

FILL DATA

f Subgrade:	Condition:	
d / rock er (Specify): TUNDRA	☑ Rough ☐ Smooth ☑ Wet ☐ Dry ☐ Frozen	☑ Loose ☐ Hard ☑ Rutted ☐ Other (Specify): _____

ckness: < 1m	Compaction % required: 100%	Water used on Fill: Yes ☐ No ☑	Vibration on Compactor: Yes ☑ No ☐

f fill:	Method of compaction used:	
d / m er (Specify): TYPE 12 (ROCK)	☐ Vibration Plate ☐ Pneumatic Tamper ☑ Steel Wheel ☑ Vibrating Steel Wheel	☐ Rubber Tire ☐ Vibrating Pneumatic ☐ Gas Powered Tamper ☐ Other (Specify): _____

lethod: Sand Cone Method ☐ Driven Tube Method ☐ Nuclear Method ☐ Proctor Test ☐ Visual Inspection ☑

TEST DATA

IO.	TIME	LOCATION	ELEVATION	DENSITY		MOISTURE		COMPACTION		ACCEPT (Initial for
				MAX	FIELD	OPTIMUM	FIELD	SPEC	FIELD	
1	16:00	SOUTH CENTAL LP2	SEE SURVEY DATA	N/A	N/A	N/A	N/A	100%	100%	

NUNA EAST LTD

COMPACTION REPORT

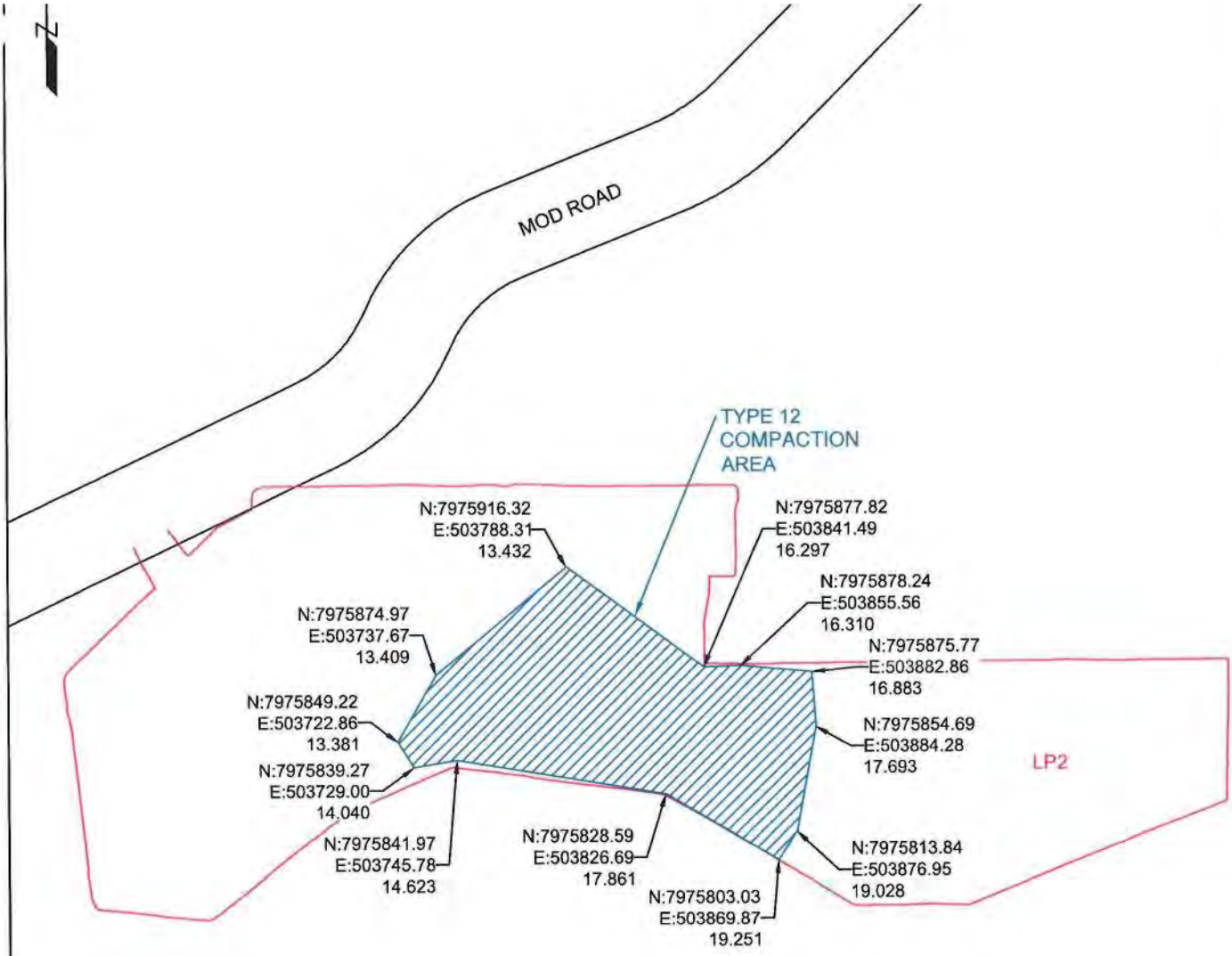
Ex
F
Pa

COMMENTS

lo Densometer available for project, compaction to be competed per specification H353004-00000-221-078-0001 Rev 1 and E353004-CC006-400-465-0019 0 V2.(Visual witnessing of compaction)

es with 10 ton compactor @ 1200-1500 vpm & speed of 3.2km/h (2 mph)).

	/		
uction Designate – Print/Sign		Title	Date
FORD WARD	/	QC COORDINATOR	8/16/1
ctor QC Designate – Print/Sign		Title	Date
Franken	/	Hatch QA	Sept 28-201
QA Designate – Print/Sign		Title	Date



Notes:	PREPARED BY: NUNA EAST LTD.		DRAWING TITLE: LP2

Project: Mary River Expansion Project	**ITP#:** CC006-0001A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Sub-System:** N/A
Area: LAYDOWN LP2	**Area Description:** EAST SIDE OF LP2	
Compaction Required Yes ☑ No ☐	**Excavation Permit No.:** N/A	
Drawing No.: 1353004-40000-221-271-0004-0001		**Rev.:** 5

PRE-BACK FILL INSPECTION

INSPECTION DESCRIPTION:		Verified (Initial)
1. Area cleared of frozen material, foreign objects and debris.	☑ YES ☐ NO ☐ N/A	
2. Water seepage or ponded water present in excavation.	☑ YES ☐ NO ☐ N/A	
3. Organic and loose soil present.	☑ YES ☐ NO ☐ N/A	
4. All installations in the excavation are complete.	☐ YES ☐ NO ☑ N/A	
5. Concrete substructures complete.	☐ YES ☐ NO ☑ N/A	
6. Electrical installation(s) complete.	☐ YES ☐ NO ☑ N/A	
7. Piping installation(s) complete.	☐ YES ☐ NO ☑ N/A	
8. Sewer vents and manhole installation complete.	☐ YES ☐ NO ☑ N/A	
9. Frost blocks installed as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	
10. Geotextile fabric installation(s) as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	
11. Insulation installed per IFC drawings.	☐ YES ☐ NO ☑ N/A	
12. Culverts installation(s) as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	
13. Redline / As-Builts completed.	☑ YES ☐ NO ☐ N/A	
14. Overall condition of base is suitable for backfilling and compaction. ** SEE COMMENTS	☑ YES ☐ NO ☐ N/A	

APPROVAL TO PROCEED WITH BACKFILL

Contractor QC Designate		Client Designate	
BRADFORD WHITKID			
Name (print)	Signature	Name (print)	Signature

SPECIFIED DETAILS

Subgrade Material	TUNDRA	Backfill Max. Lifts	TYPE 12 < 1m / TYPE 5 < 2000mm
Subgrade/Bedding Material	SOME TYPE 12 PLACED	Frequency of Compaction Test	EACH MATERIAL LAYER
Hunching Material	N/A	Density	N/A
Backfill Material	TYPE 12	Moisture Level	N/A
Cover Material	TYPE 5	Other	—

IN PROCESS INSPECTION

INSPECTION DESCRIPTION:		Verified (Initial)
1. Fill material is free of foreign material and conforms to specification.	☑ YES ☐ NO ☐ N/A	
2. Survey check of Location, dimensions and shape of excavation or base.	☑ YES ☐ NO ☐ N/A	
3. Lift thickness confirmed, and compaction testing performed in accordance with specification.	☑ YES ☐ NO ☐ N/A	
4. Warning tape(s) installed, depth and type from final grade: (_____),(_____).	☐ YES ☐ NO ☑ N/A	
5. Red concrete installed over utilities.	☐ YES ☐ NO ☑ N/A	
6. Soil density test performed as per specification and test reports completed.	☐ YES ☐ NO ☑ N/A	
7. Moisture levels acceptable.	☐ YES ☐ NO ☑ N/A	
8. Final elevation of area is in accordance to IFC drawings.	☑ YES ☐ NO ☐ N/A	

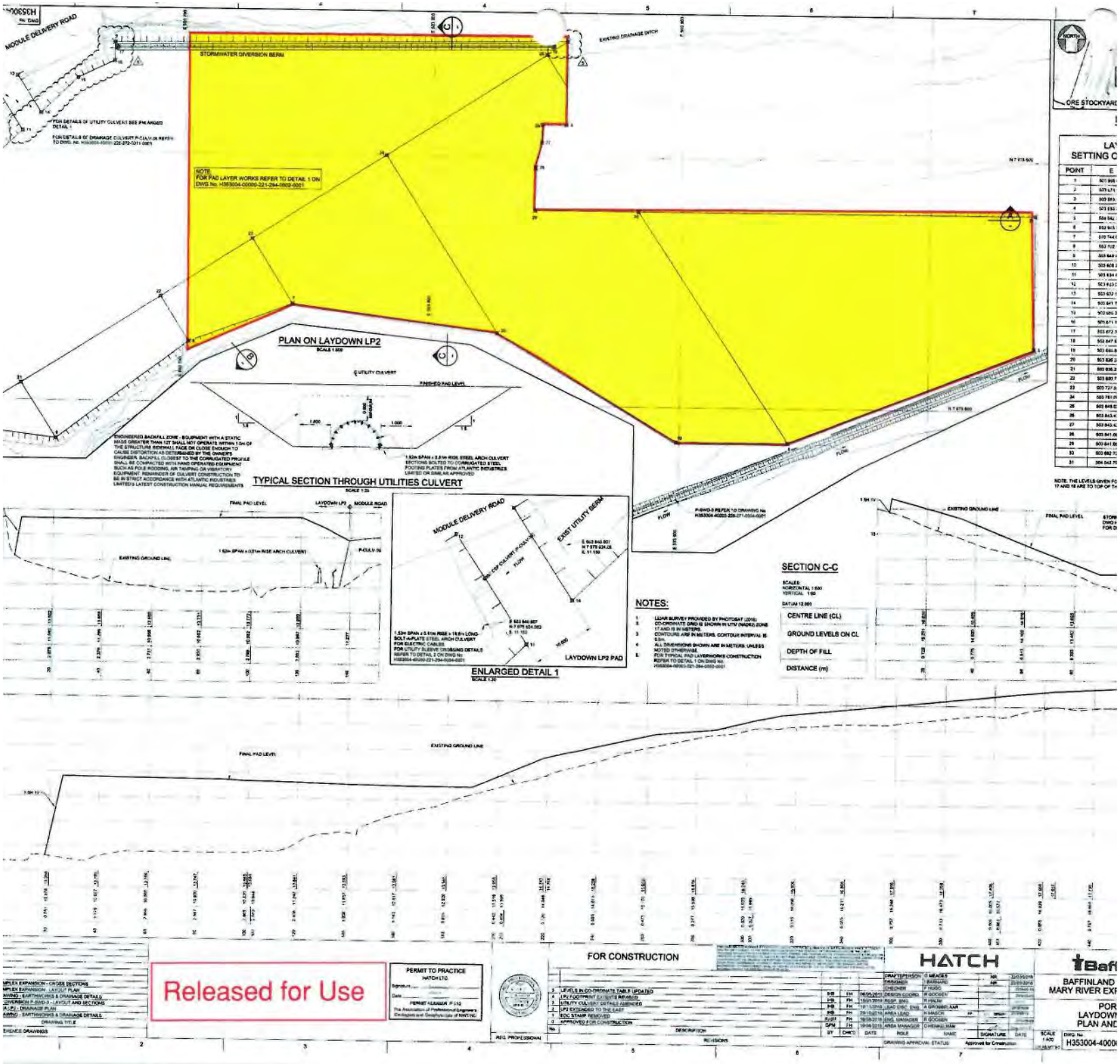
Test Instruments

Manufacturer	Description	Range	I.D. No.:	Calibration Due Date
	N/A			

Comments: **PLACEMENT LAYERS AS PER JOB FILE RFI's.

Attach additional supporting documents, data, or test results to this Report as required

/			
Construction Designate – Print/Sign		Title	Date
BRANFORD WATKIN /		QC COORDINATOR	8/13/19
Contractor QC Designate – Print/Sign		Title	Date
Ronny Franken /		Hatch QA	Sept 28-2019
Client QA Designate – Print/Sign		Title	Date



MODULE DELIVERY ROAD
STORMWATER DIVERSION BERM
EXISTING DRAINAGE DITCH
ORE STOCKYARD
NOTE:
FOR PAD LAYER WORKS REFER TO DETAIL 1 ON DWG No. H353004-00000-221-294-0002-0001
PLAN ON LAYDOWN LP2
UTILITY CULVERT
FINISHED PAD LEVEL
TYPICAL SECTION THROUGH UTILITIES CULVERT
FINAL PAD LEVEL
LAYDOWN LP2
MODULE ROAD
EXISTING GROUND LINE
MODULE DELIVERY ROAD
EXIST UTILITY BERM
LAYDOWN LP2 PAD
ENLARGED DETAIL 1
NOTES:
SECTION C-C
CENTRE LINE (CL)
GROUND LEVELS ON CL
DEPTH OF FILL
DISTANCE (m)
FOR CONSTRUCTION
HATCH
BAFFINLAND
MARY RIVER EXP
POR
LAYDOWN
PLAN AND
H353004-4000
Released for Use
PERMIT TO PRACTICE
HATCH LTD.

Project: Mary River Expansion Project	**ITP #:** CC006-0001A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LPZ	**Area Description:** North East LPZ	
Drawing No.: A353004-40003-221-271-0004-0001	**Rev.:** 5	

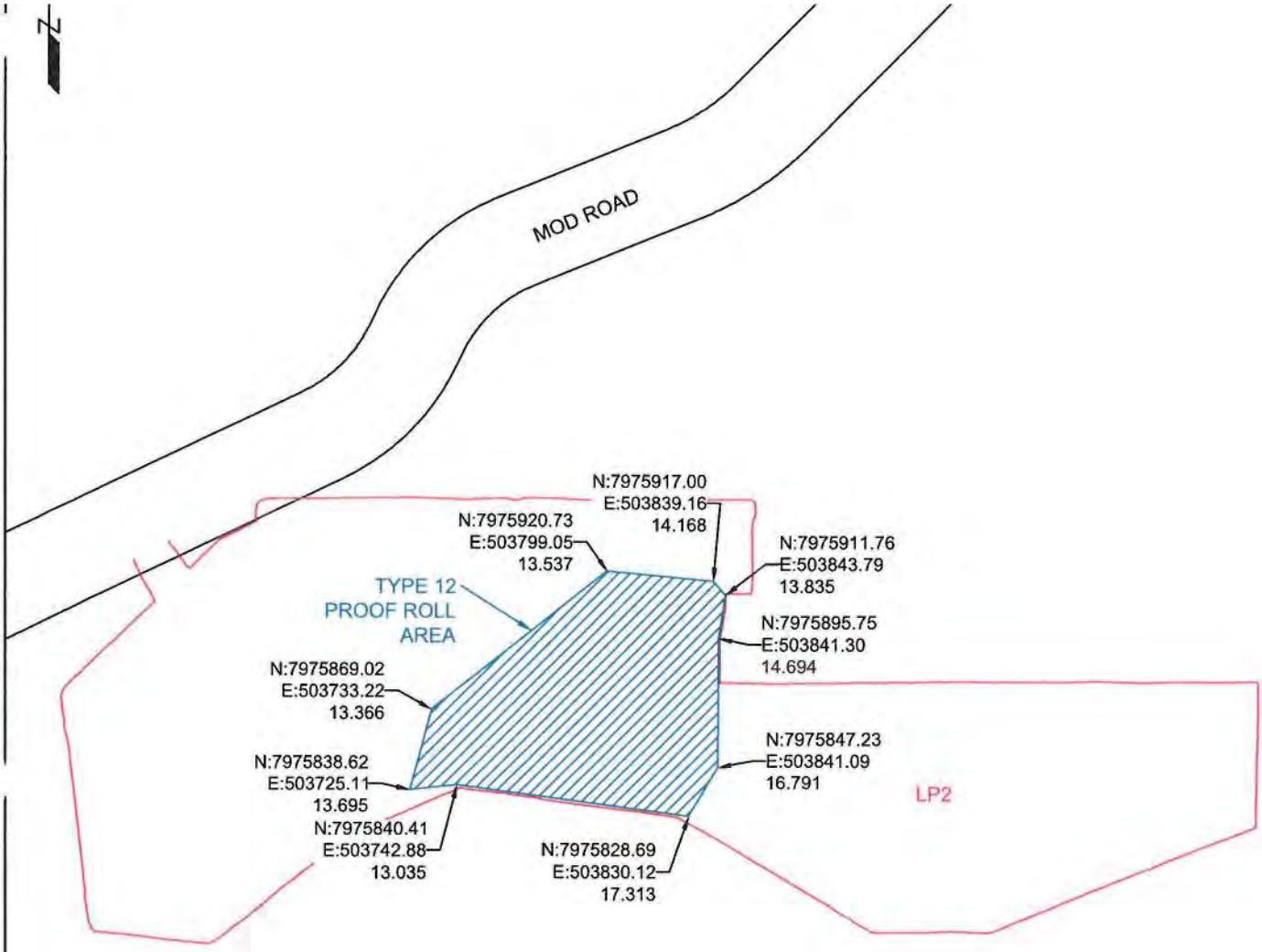
Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	
Rebound of Surface	☐ YES ☑ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	

Comments:

- Pictures SEND to QC NUNA
- TYPE 12 (ROC) PLACEMENT

Olivier Sanier /	Supervisor	07/22/19
Construction Designate – Print/Sign	Title	Date
BRADFORD WATTIGN /	QC COORDINATOR	7/22/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 28-2019
Client QA Designate – Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD.		DRAWING TITLE: LP2

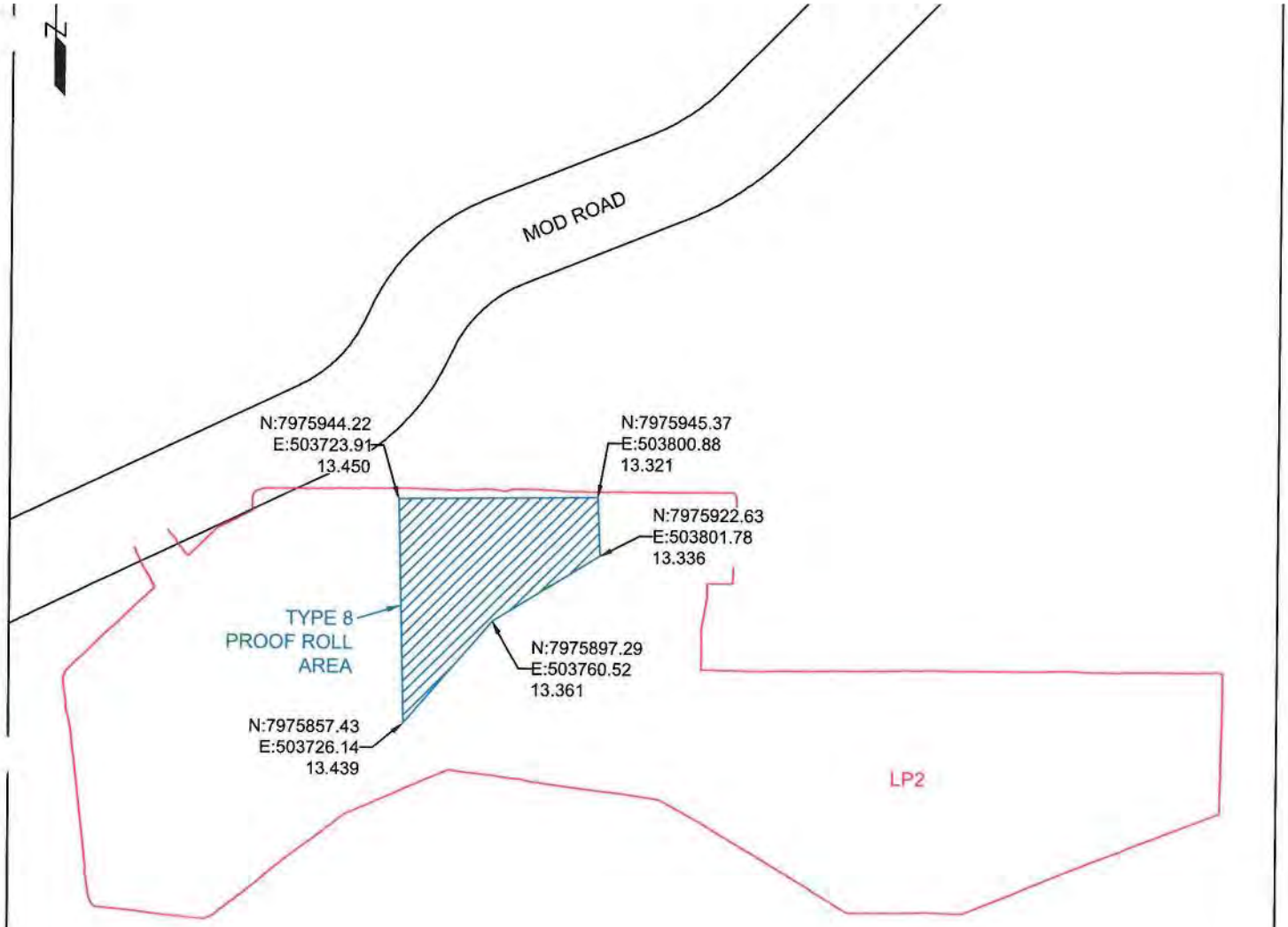
		Date: 7/21/19
Project: Mary River Expansion Project	**ITP #:** CC006-0001A	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Material Type:**
Site Area: LAYDOWN LP2	**Area Description:** WEST END LP2	
Drawing No.: H353004-40000-221-271-0004-0001		**Rev.:** 5

Area / Stations Inspected: See Survey Data Report	**Type of Proof Role:** ☐ Subgrade ☑ Material
Proof Rolled With: A loaded CAT 745 Articulated Haul Truck	**Number of Passes Completed:** 6

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections (Pumping)	☑ YES ☐ NO ☐ N/A	[initials]
Rebound of Surface	☑ YES ☐ NO ☐ N/A	[initials]
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	[initials]
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	[initials]
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	[initials]
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	[initials]
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	[initials]
Location Record (Survey)	☑ YES ☐ NO ☐ N/A	[initials]

Comments: MINOR DEFLECTIONS IN SOME AREAS.

Construction Designate	Print/Sign	Title	Date
BRADFORD WATKIN	/ [signature]	QC COORDINATOR	7/21/19
Contractor QC Designate	Print/Sign	Title	Date
Ronny Franklin	/ [signature]	Match QA	Sept 28-2019
Client QA Designate	Print/Sign	Title	Date



Notes:

PREPARED BY:
NUNA EAST LTD.

DRAWING TITLE:
LP2

NUNA EAST LTD

COMPACTION REPORT

Ex[illegible]t

P

t: Mary River Expansion Project	ITP #: CC006-0001A	QA Refer. Report No.:
ctor: Nuna East Ltd.	Contract No.: CC006	CWP: N/A
on: Milne Port	Elevation: N/A	Sub-System: N/A
LAYDOWN AREA LP2	Area Description: LP2 NORTH WEST CENTRAL	
g No.: H353004-40000-221-271-0004-0001		REV.: 5

Stations Inspected: See Survey Data and attached drawing.

action Equipment Used: Cat 10 Ton CS56B Compactor	Number of Passes Completed: 6+

FILL DATA

f Subgrade:	Condition:	
d / rock er (Specify): TYPE 8	☑ Rough ☐ Smooth ☐ Wet ☐ Dry ☐ Frozen	☑ Loose ☐ Hard ☐ Rutted ☐ Other (Specify): _____

ckness: 0.4m	Compaction % required: 100%	Water used on Fill: Yes ☑ No ☐	Vibration on Compactor: Yes ☑ No ☐

f fill:	Method of compaction used:	
d / m er (Specify): TYPE 8	☐ Vibration Plate ☐ Pneumatic Tamper ☐ Steel Wheel ☑ Vibrating Steel Wheel	☐ Rubber Tire ☐ Vibrating Pneumatic ☐ Gas Powered Tamper ☐ Other (Specify): _____

ethod: Sand Cone Method ☐ Driven Tube Method ☐ Nuclear Method ☐ Proctor Test ☐ Visual Inspection ☑

TEST DATA

IO.	TIME	LOCATION	ELEVATION	DENSITY		MOISTURE		COMPACTION		ACCEPT (Initial for
				MAX	FIELD	OPTIMUM	FIELD	SPEC	FIELD	
1	13.00	NWC LP2	SEE SURVEY DATA	N/A	N/A	N/A	N/A	100%	100%	Ben

NUNA EAST LTD

COMPACTION REPORT

Ex[illegible]t

F

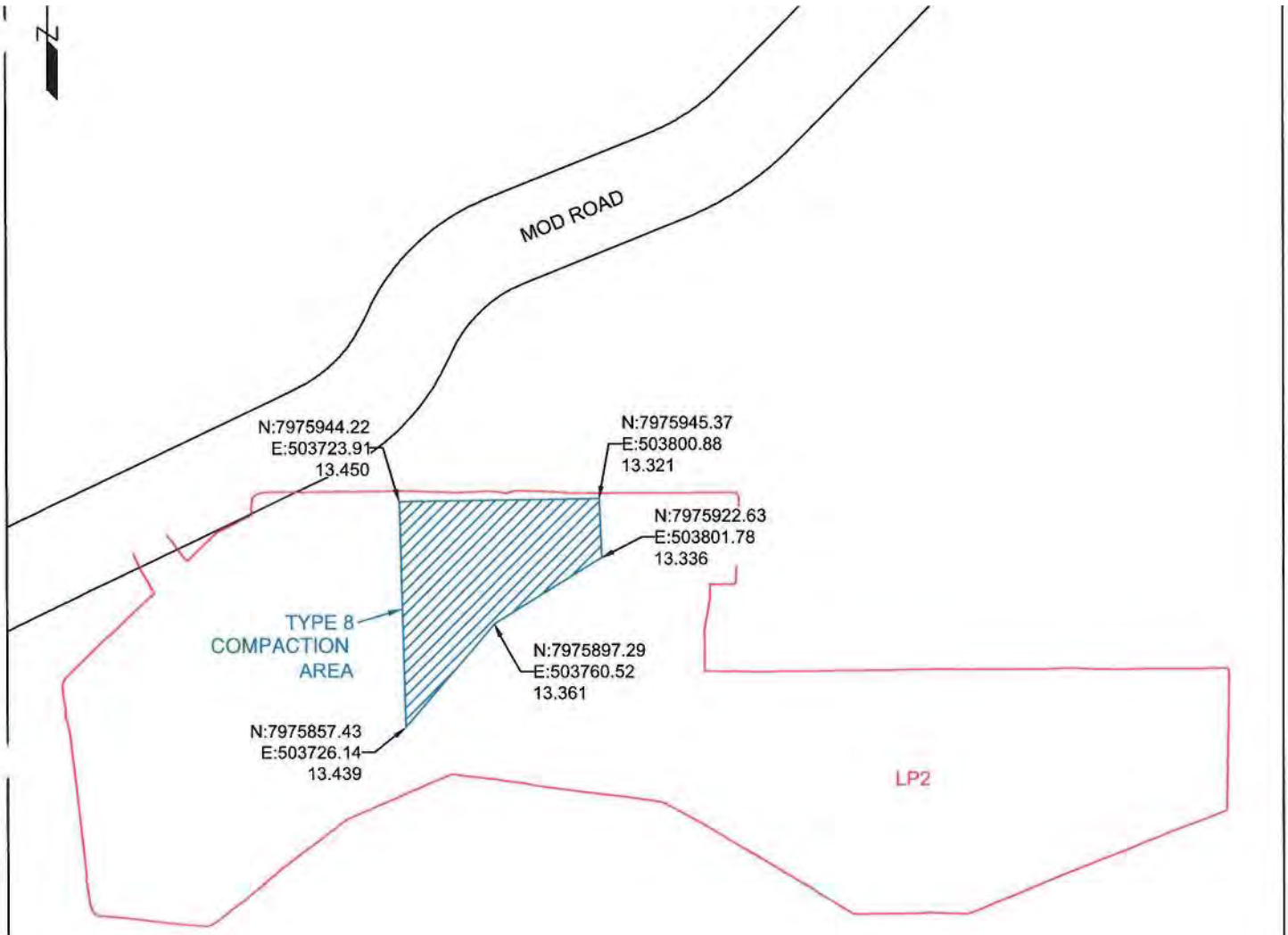
P[illegible]

COMMENTS

No Densometer available for project, compaction to be competed per specification H353004-00000-221-078-0001 Rev 1 and E353004-CC006-400-465-0019 0 V2.(Visual witnessing of compaction)

es with 10 ton compactor @ 1200-1500 vpm & speed of 3.2km/h (2 mph)).

uction Designate – Print/Sign		Title	Date
[illegible]	/	QC COORDINATOR	7/21/19
ctor QC Designate – Print/Sign		Title	Date
Franken	/	Hatch QA	Sept 28-2019
QA Designate – Print/Sign		Title	Date



Notes:	PREPARED BY: NUNA EAST LTD.		DRAWING TITLE: LP2

Date: July 20, 2019	**Project:** Mary River Expansion Stage 3	**ITP#:** CC006-0001A	**Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A	
Location: Milne Port	**Elevation:** N/A	**Sub-System:** N/A	
Area: LP2	**Area Description:** Port Site Laydown 2		
Compaction Required Yes ☑ No ☐	**Excavation Permit No.:** N/A		
Drawing No.(s): 1353004-40000-221-271-0004-0001			**Rev.:** 5

PRE-BACK FILL INSPECTION

INSPECTION DESCRIPTION:		Verified (Initial)
1. Excavation cleared of frozen material, foreign objects and debris.	☑ YES ☐ NO ☐ N/A	
2. No water seepage or ponded water present in excavation.	☑ YES ☐ NO ☐ N/A	
3. No organic and loose soil present.	☑ YES ☐ NO ☐ N/A	
4. All installations in the excavation are complete.	☐ YES ☐ NO ☑ N/A	
5. Concrete substructures complete. (TEMPORARY UTILITIES CULVERT)	☑ YES ☐ NO ☐ N/A	
6. Electrical installation(s) complete. (LINES RUNNING THROUGH CULVERT)	☑ YES ☐ NO ☐ N/A	
7. Piping installation(s) complete. (PIPE SLEEVES IN CULVERT)	☑ YES ☐ NO ☐ N/A	
8. Sewer vents and manhole installation complete.	☐ YES ☐ NO ☐ N/A	
9. Frost blocks installed as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	
10. Geotextile fabric installation(s) as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	
11. Insulation installed per IFC drawings.	☐ YES ☐ NO ☑ N/A	
12. Culverts installation(s) as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	
13. Redline / As-Builts completed.	☑ YES ☐ NO ☐ N/A	
14. Overall condition of base is suitable for backfilling and compaction.	☑ YES ☐ NO ☐ N/A	

APPROVAL TO PROCEED WITH BACKFILL

Contractor QC Designate		Client Designate	
BRADFORD WATKIN			
Name (print)	Signature	Name (print)	Signature

IN PROCESS INSPECTION

INSPECTION DESCRIPTION:		Verified (Initial)
1. Backfill material is free of foreign material and conforms to specification.	☑ YES ☐ NO ☐ N/A	
2. Survey check of Location, dimensions and shape of excavation or base.	☑ YES ☐ NO ☐ N/A	
3. Lift thickness confirmed, and compaction testing performed in accordance with specification.	☑ YES ☐ NO ☐ N/A	
4. Warning tape(s) installed, depth and type from final grade: (_____),(_____).	☐ YES ☐ NO ☑ N/A	
5. Red concrete installed over utilities.	☐ YES ☐ NO ☑ N/A	
6. Soil density test performed as per specification and test reports completed.	☐ YES ☐ NO ☑ N/A	
7. Moisture levels acceptable.	☐ YES ☐ NO ☑ N/A	
8. Final elevation of [illegible]		

Test Instruments

Manufacturer	Description	Range	I.D. No.:	Calibration Due Date
	N/A			

Comments: Placement acceptable for intended use. See attached Survey Data report and area IFC drawing.

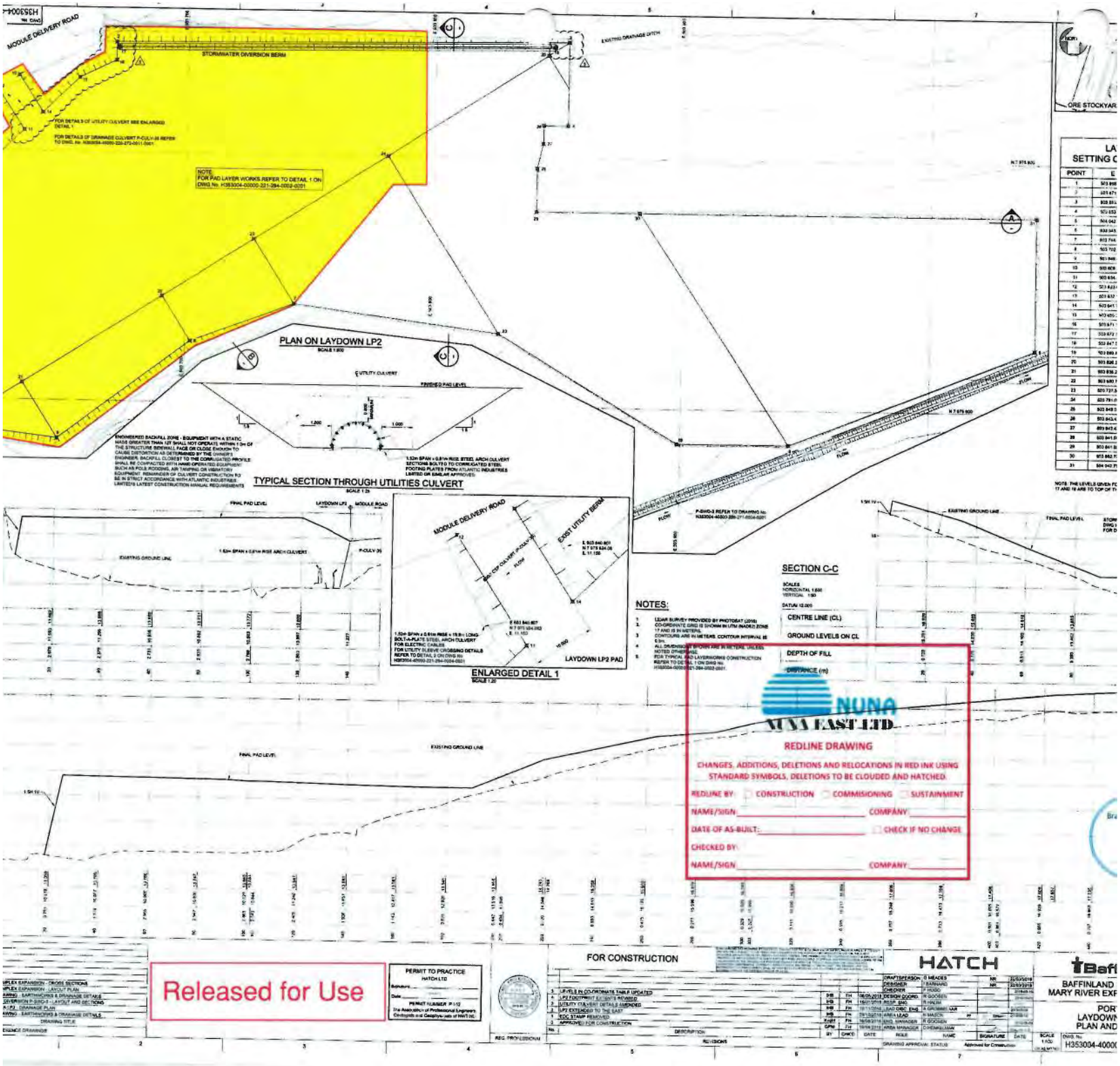
(TYPE 8) + RAMP, TEMP CONVERT, SLEEVES, & ELECTRICAL CABLE

Attach additional supporting documents, data, or test results to this Report as required

Ken Humby /	Ken Humby	Supt	7/20/19
Construction Designate – Print/Sign		Title	Date
BRADFORD WATKIN /	Brad	QC COORDINATOR	7/20/19
Contractor QC Designate – Print/Sign		Title	Date
Karen Hamad /		Construction	20-7-2019
Client QA Designate – Print/Sign		Title	Date

Elevations Table					
Number	Minimum Elevation	Maximum Elevation	Area	Color	
1	-2.81	-1.00	77.93		Cut
2	-1.00	-0.50	227.23		
3	-0.50	-0.30	898.95		
4	-0.30	-0.10	8065.79		
5	-0.10	-0.03	4067.21		
6	-0.03	0.03	7690.49		Tolerance
7	0.03	0.10	15896.70		Fill
8	0.10	0.20	5131.03		
9	0.20	0.30	2830.45		
10	0.30	0.50	2592.42		
11	0.50	1.00	549.40		
12	1.00	2.39	422.28		

CLIENT: BAFFINLAND IRON MINES LP	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: LP2 TYPE 8 CUT/FILL SURVEYED UP TO JU
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 20, 2019	DRAWING NAME (YYMMDD): 190720 LP2 TYPE 8 AB.dwg


MODULE DELIVERY ROAD
STORMWATER DIVERSION BERM
EXISTING DRAINAGE DITCH
ORE STOCKYARD
NOTE
FOR PAD LAYER WORKS REFER TO DETAIL 1 ON DWG No. H353004-03000-221-284-0002-0001
PLAN ON LAYDOWN LP2
SCALE 1:600
UTILITY CULVERT
FINISHED PAD LEVEL
TYPICAL SECTION THROUGH UTILITIES CULVERT
SCALE 1:25
MODULE DELIVERY ROAD
EXIST UTILITY BERM
LAYDOWN LP2 PAD
ENLARGED DETAIL 1
SCALE 1:20
SECTION C-C
SCALES
HORIZONTAL 1:500
VERTICAL 1:50
DATUM 12.000
CENTRE LINE (CL)
GROUND LEVELS ON CL
DEPTH OF FILL
DISTANCE (m)
NOTES:
EXISTING GROUND LINE
FINAL PAD LEVEL
NUNA NUNA EAST LTD.
REDLINE DRAWING
CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.
REDLINE BY: CONSTRUCTION COMMISIONING SUSTAINMENT
NAME/SIGN: COMPANY:
DATE OF AS-BUILT: CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:
Released for Use
PERMIT TO PRACTICE
FOR CONSTRUCTION
HATCH
BAFFINLAND
MARY RIVER EXP
LAYDOWN
PLAN AND
H353004-4000

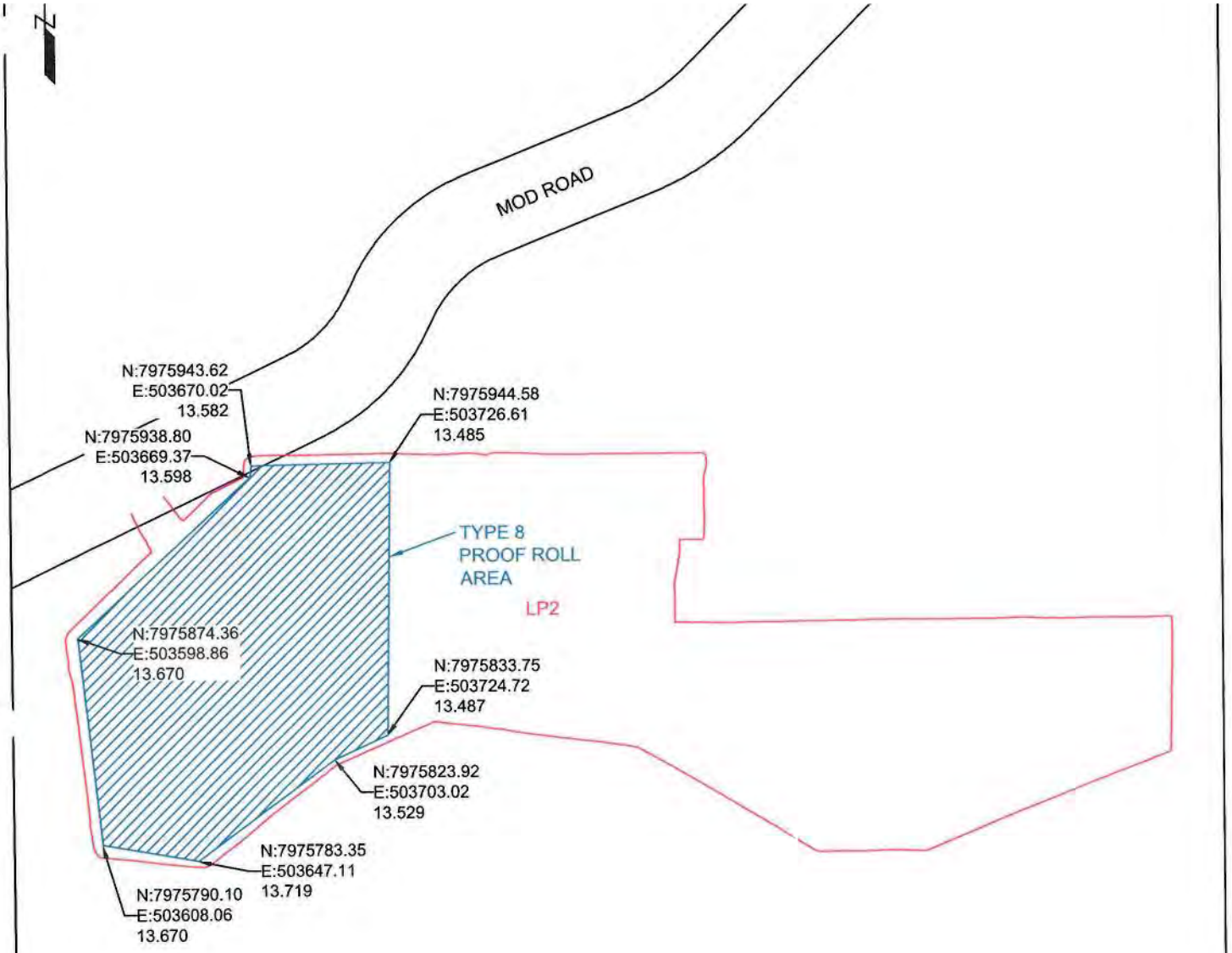
Project: Mary River Expansion Project	**ITP #:** CC006-0001A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP2	**Area Description:** LP2 Lower Flat area	
Drawing No.: A353004-40000-221-271-0004-0001	**Rev.:** 5	

Area / Stations Inspected: SEE SURVEY REPORT
Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	DW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	DW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	DW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	DW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	DW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	DW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	DW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	DW

Comments: - SEE ALLNORTH REPORT 224
- TYPE 8 MATERIAL

Donald Wilson / [signature]	Foreman	July 19 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN / [signature]	QC COORDINATOR	7/19/19
Contractor QC Designate – Print/Sign	Title	Date
Mike Hynes / [signature]	Materials Lead	July 19, 2019
Client QA Designate – Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

Notes:

PREPARED BY:
NUNA EAST LTD.
PO Box 370

DRAWING TITLE:
LP2
PROOF ROLL REPORT

NUNA EAST LTD

COMPACTION REPORT

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Pa

: Mary River Expansion Project	ITP #: CC006 - 3001 A	QA Refer. Report No.:
ctor: Nuna East Ltd.	Contract No.: CC006	CWP: N/A
n: Milne Port	Elevation: N/A	Sub-System: N/A
LAYDOWN AREA LP2	Area Description: WEST END OF LP2	
g No.: H353004-40000-221-271-0004-0001		REV.: 5

tations Inspected: See Survey Data and attached drawing.

ction Equipment Used: Cat 10 Ton CS56B Compactor | Number of Passes Completed: 5+

FILL DATA

Subgrade:	Condition:	
ock r (Specify): TYPE 8	☐ Rough ☐ Smooth ☐ Wet ☐ Dry ☐ Frozen	☐ Loose ☐ Hard ☐ Rutted ☐ Other (Specify):

kness: < .4m | Compaction % required: 100% | Water used on Fill: Yes ☑ No ☐ | Vibration on Compactor: Yes ☑ No ☐

fill:	Method of compaction used:	
r (Specify): TYPE 8	☐ Vibration Plate ☐ Pneumatic Tamper ☐ Steel Wheel ☑ Vibrating Steel Wheel	☐ Rubber Tire ☐ Vibrating Pneumatic ☐ Gas Powered Tamper ☐ Other (Specify):

thod: Sand Cone Method ☐ Driven Tube Method ☐ Nuclear Method ☐ Proctor Test ☐ Visual Inspection ☑

TEST DATA

TIME	LOCATION	ELEVATION	DENSITY		MOISTURE		COMPACTION		ACCEPTE (Initial for Y
			MAX	FIELD	OPTIMUM	FIELD	SPEC	FIELD	
14:00	WEST END LP2	SEE SURVEY DATA	d/A	d/A	d/A	N/A	100%	100%	

NUNA EAST LTD

COMPACTION REPORT

Ex t

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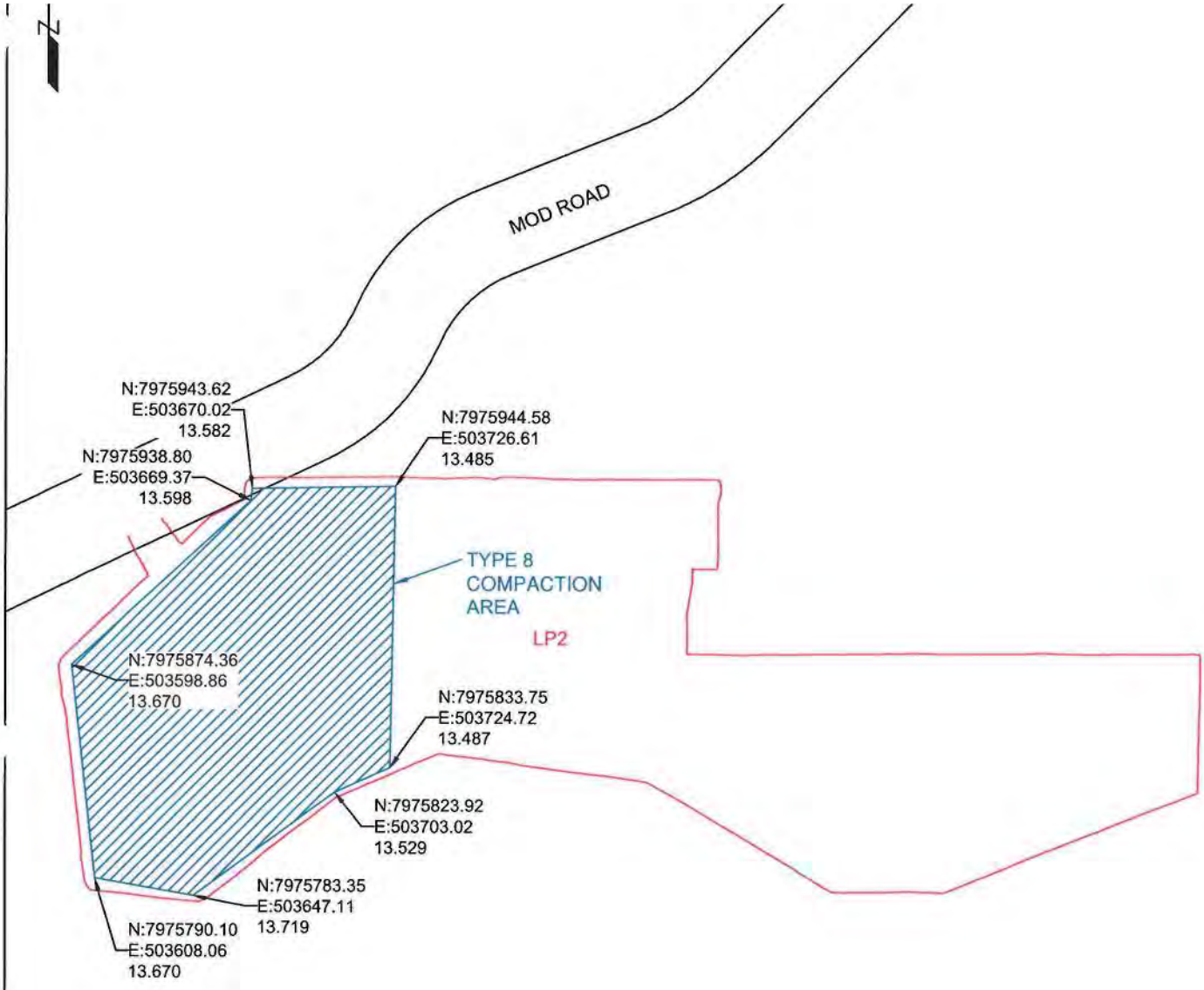
COMMENTS

No Densometer available for project, compaction to be competed per specification H353004-00000-221-078-0001 Rev 1 and E353004-CC006-400-465-0019 0 V2.(Visual witnessing of compaction)

es with 10 ton compactor @ 1200-1500 vpm & speed of 3.2km/h (2 mph)).

uction Designate – Print/Sign		Title	Date
STORDS WATKIN /		QC COORDINATOR	7/19/19
ctor QC Designate – Print/Sign		Title	Date
Franken /		Hatch QA	Sept 28-20
QA Designate – Print/Sign		Title	Date



Notes:	PREPARED BY: NUNA EAST LTD.		DRAWING TITLE: LP2

Baffinland – Milne Port Earthworks H353004-CC006

~~Quality Surveillance Report~~ VISUAL INSPECTION REPORT

Surface / Sub-grade Approval

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0001A BIM WBS: 6180
Description of Area Inspected:	*Surface/Sub-grade Preparation Approval* ***Work Scope Location:*** *NE of PCS Camp* ***Location Section:*** *Laydown Section LP-2*
Date of Inspection:	*May 12, 2019*
Parties Present at Inspection	*Bradford Watkin (Representing Nuna), Marlon Coakley (Representing Hatch)*

Comments:

A visual inspection of Laydown LP2 surface/sub-grade was completed prior to placement of fill Material.

Sub-grade: Was found to be free of Ice and snow, the surface/subgrade was found to be acceptable at time of inspection for placement of aggregate (Including placement of aggregate directly in ponding water bodies).

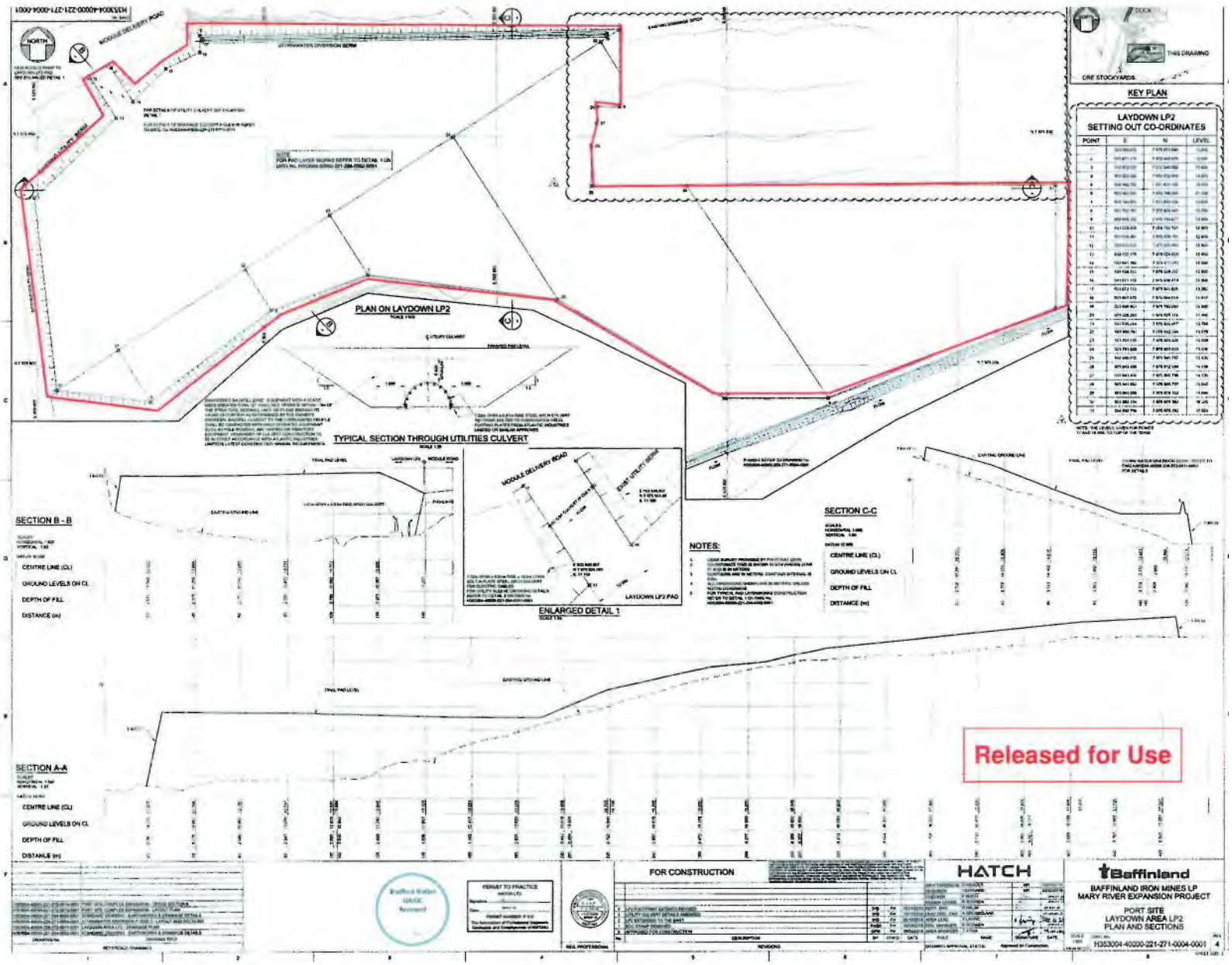
The outlined area is approved for placement of material (See attached Drawings).

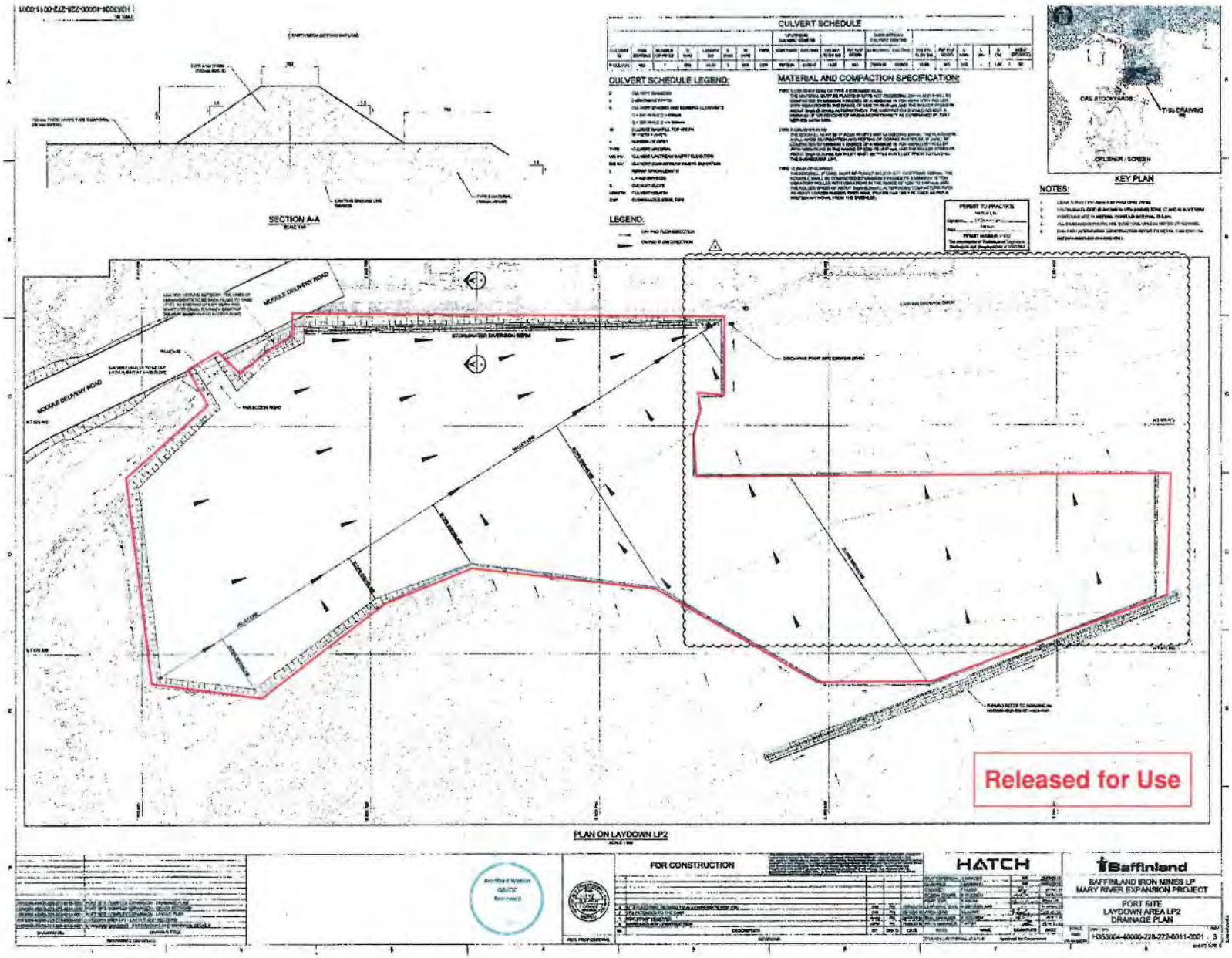
H353004-40000-221-271-0004-0001_4_V8 - LP2 Plan and Section
H353004-40000-228-272-0011-0001_3_V7 LP2 Drainage Plan

Acceptance:

These works have been built in accordance with the Project Technical Specifications and Construction Drawings provided by the Engineer. The contractor may proceed with construction.

	Name	Signature	Date
Nuna Representative:	BRADFORD WATKIN		MAY 12, 2019
Hatch	Marlon Coakley	Marlon Coakley	May 12/2019


PLAN ON LAYDOWN LP2
TYPICAL SECTION THROUGH UTILITIES CULVERT
ENLARGED DETAIL 1
SECTION B - B
SECTION C-C
SECTION A-A
NOTES:
KEY PLAN
LAYDOWN LP2
SETTING OUT CO-ORDINATES
Released for Use
FOR CONSTRUCTION
HATCH
Baffinland
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT
PORT SITE
LAYDOWN AREA LP2
PLAN AND SECTIONS


CULVERT SCHEDULE
CULVERT SCHEDULE LEGEND:
MATERIAL AND COMPACTION SPECIFICATION:
SECTION A-A
LEGEND:
KEY PLAN
ORE STOCKYARDS
TRU DRAWING
CRUSHER / SCREEN
NOTES:
PERMIT TO PRACTICE
MODULE DELIVERY ROAD
MODULE DELIVERY ROAD
PAD ACCESS ROAD
Released for Use
PLAN ON LAYDOWN LP2
FOR CONSTRUCTION
HATCH
Baffinland
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT
PORT SITE
LAYDOWN AREA LP2
DRAINAGE PLAN
H353004-40000-228-272-0011-0001

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(Section 11)

Signature Log

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

CC006

	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			Code:	N/A
or:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs		
tem/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs		

pany	Job Title	Name (Print)	Initials	Signature
EAST	QA/QC COORDINATOR	BRADFORD WATKIN		
EAST	PROJECT COORDINATOR	DARKO FILIPIC		
th	Materials technician	Kenny MacRae		
	Hatch Civil	Stephane Grant	SG	
T	Project Coordinator	Brandon Urquhart		
EAST	PROJECT COORDINATOR	[illegible]		
H	FIELD ENG. MANAGER	GLEN PEACE		
EAST	SITE SUPERINTENDENT	ANTHONY STEWART		
EAST	SITE SUPERINTENDENT	HARVEY BLOVIN		
	Hatch Super	Roger Landry		
East	Project Manager	Stephen Nugent		
CH	CONSTRUCTION SUPERINTENDENT	ROY BAUER	RB	
/	Project Engineer	David Garcia	D.G	
	QA Manager	Ronny Franken	R.F.	

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

CC006

	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)	Code:	N/A
tor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs
stem/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs

pany	Job Title	Name (Print)	Initials	Signature
- EAST	QA/QC COORDINATOR	BRADFORD WATKIN	[illegible]	[illegible]
EAST	PROJECT COORDINATOR	DARKO FILIPIC	[illegible]	[illegible]
lth	Materials technician	Kenny MacRae	[illegible]	[illegible]
	Hatch Civil	Stephane Gianet	SG	[illegible]
AST	PROJECT COORDINATOR	BRANDON URQUHART	[illegible]	[illegible]
EAST	PROJECT COORDINATOR	RYAN [illegible]	[illegible]	[illegible]
H	FIELD ENG. MANAGER	GLEN PEACE	SOP	[illegible]
h	Construction Super	Dean Moffett	D.M.	D. Moffett
h	Construction Super	Roger Landry	R.L	[illegible]

NUNA

NUNA EAST LTD

(Section 12)

Walkdown

WALKDOWN ATTENDEES LIST	(Page 1 of 1)

Project Name: Mary River Expansion	Contractor's Name: Nuna East Ltd.	Job File No.: CC006-0001A
System CWP Description: LP2 Laydown	Location: Milne Port Site	Plant No.: N/A

This record indicates that this system was formally walked down and inspected in the field by the undersigned on the date as indicated below

Name	Company Name	Role	Signature	Date (mm/dd/yy)
BRADFORD WELKI	NUNA EAST	QC COORDINATOR		8/30/19
ROY BAKER	HATCH	SUP/CONTROL		8/30/19

NUNA

NUNA EAST LTD

(Section 13)

Deficiency/Punchlist Report

DEFICIENCY / PUNCH ITEMS RECORD

ıme: Expansion	**Walkdown Date (mm/dd/yy):** 8-30-19	**Area Number:** N/A
e or Area Description: ırea LP2	**Job Number:** CC006-0001A	**Plant Number:** N/A

1. For modules and vendor packages, open punch items are listed at release for shipment.
2. As part of a final walkdown package, this form lists the Contactor's open punch items that are transferred into the Nuna Turnover data
3. This form is used to capture Punch Items during Final Walkdown

	Description of Deficiency / Punch Item	Cat.	Discipline	Originator	Responsible for resolution	Vendor Y/N	Remarks
	Utility Arch Culvert	B	Earthworks	B.Watkin	S. Nugent / M. Price	N	Material to arrive fall 2019 Sealift. To be received an installed at a later date, to determined by Hatch.
	Drainage Culvert P-CULV-36	B	Earthworks	B.Watkin	S. Nugent / M. Price	N	Material to arrive fall 2019 Sealift. To be received an installed at a later date, to determined by Hatch.

ategories captured during Final Walkdown: A, B or C. A- To be rectified before final acceptance. B- To be addressed at a later time. C- Acceptable to be As

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(Section 14)

Acceptance of Completion of Construction Declaration

ACCEPTANCE OF COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the acceptance of the Quality Control Turnover documentation for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Ore Mines
2. **Contractor:** Nuna East Limited
3. **Construction:** Laydown Pad
4. **Location:** Mary River Milne Port Site
5. **Description:** Laydown Area LP2 – Project Number: CC006

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turnover documentation has been forwarded to and accepted by the owner.

Nuna Representative:

Signature	Print Name	Title	Date
	BRADFORD WATKINS	QC COORDINATOR	9/25/19

Client Representative:

Signature	Print Name	Title	Date

NUNA

NUNA EAST LTD

(Section 15)

Construction Photographs

Baffinland – Milne Port Earthworks H353004-CC006

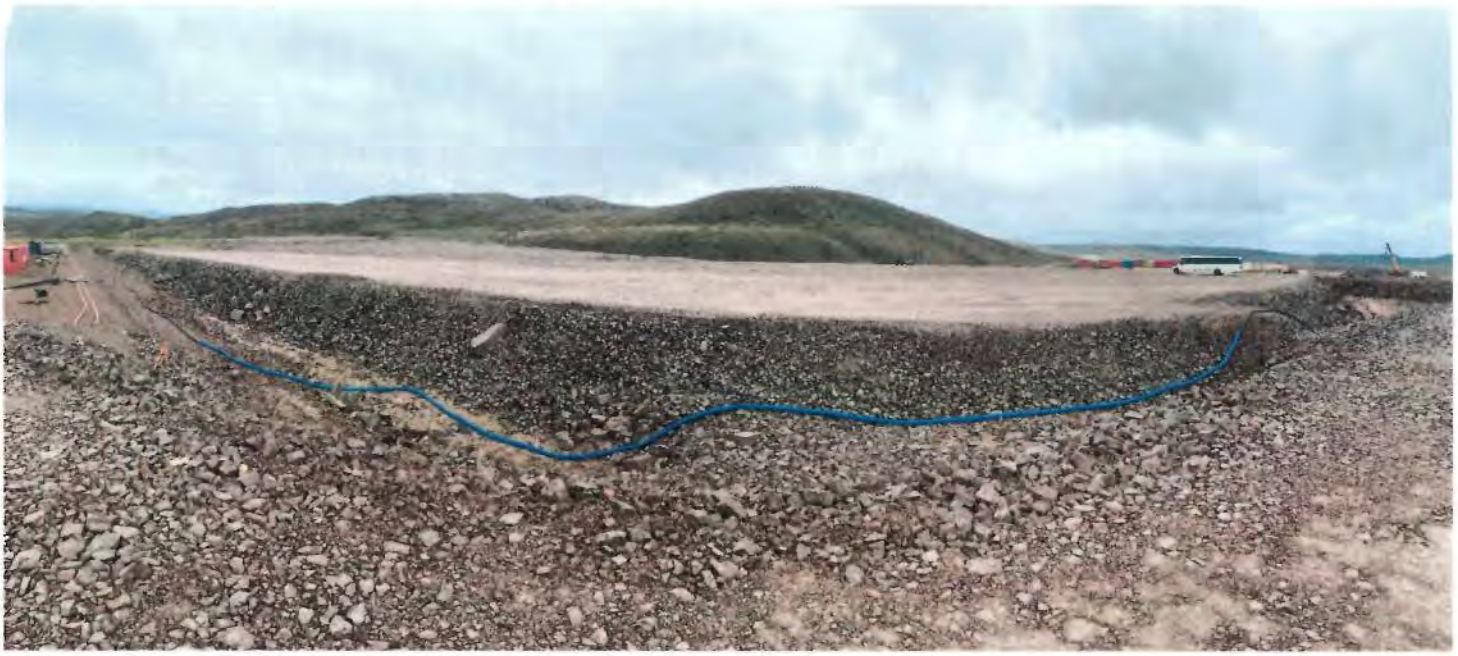
Job File Construction Photographs

Laydown LP2

Baffinland – Milne Port Earthworks H353004-CC006

Baffinland – Milne Port Earthworks H353004-CC006

Baffinland – Milne Port Earthworks H353004-CC006



QA/QC Documentation Turnover Review and Release

Contractor: Nuna East Limited	Contract No.: CC006	CWP.: N/A
Project: Mary River Expansion Project	Location: Mary River Milne Port Site	Sub-System: N/A
Area: Milne Port Site	Area Description: Port Site Laydown Area LP2	
System/Subsystem No.: N/A	System/Subsystem Description: N/A	
Inspection Test Plan No.: CC006-0001A	Rev: 1	Issue Date: 5/31/2019

ITP Section for Review

ITP Activity No.	ITP Activity Description
	For this portion of the Inspection Test Plan (ITP) and scope of work as per contract details outlined above. The following have been verified the ensure compliance with the Project Completion Requirements. • All work has been completed in accordance IFC drawings, project specifications, codes, and national regulations. • All Testing has been completed as per Inspection Test Plan (ITP). • All Master Punch List items are completed, verified and signed off. • All Non-Conformances and Site Quality Surveillances are closed. • All Bolt Ups, Loop Checks, and Pre-Commissioning are completed.

The undersigned verifies the contractor has completed the points above in their entirety

Contractor QC Designate	Bradford Watkin /	Sept 28,2019
Title	Name (Print/Sign)	Date

Client QA Turnover Review

☒ Approved	☐ Not Approved (See Comments Below)	Review No.: 1

ITP Activity No.	ITP Activity Description

Contractor QC Designate	/	
Title	Name (Print/Sign)	Date
Hatch QA Designate	Ronny Franken /	Sept 28-2019
Title	Name (Print/Sign)	Date
Hatch Commissioning Designate	/	
Title	Name (Print/Sign)	Date

HATCH **Vendor/Contractor Document Review**

Doc Number	E353004-CC006-130-124-0013	**SUB**	01
Date Received			

Review Grade	**Next Submittal Status**
☐ **C1** - Proceed to next submission & status ☐ **C2** - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ **C3** - Do not proceed. Revise as noted & resubmit	☐ Internal Review
Next Submittal Date:	☐ Certified/☐ As-Built
☒ **C4** - No further submission required - Complete (select status below) ☐ Certified Final ☒ Final ☐ Cancelled ☐ Superseded	
Package Engineer: Name, signature and date	

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibilty for correct design, details & dimensions shall remain with the party submitting the drawing/document.

NUNA EAST LTD

Job # CC006-0001B

Laydown Area LP7

Mine Port
CC006

NUNA

NUNA EAST LTD

Section 1
Completion of Construction Declaration

Section 2
Inspection & Test Plan
(ITP)

Section 3
Redline Drawings

Section 4
Survey Data Data

Section 5
Sieves / Statements of Compliance

Section 6
Request for Information Documents
(RFIs)

Section 7
Non-Conformance Reports
(NCRs)

Section 8
Deficiency/Punchlist

Section 9
Acceptance of Completion of Construction Declaration

Job #:

CC006-0001B

Laydown Area

LP7

Mary River Expansion Project

H353004

Port Site Civil Works

NUNA

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(Section 1)

Completion of Construction Declaration

COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Mines Corporation
2. **Contractor:** Nuna East Limited
3. **Construction:** Laydown Pad
4. **Location:** Mary River Milne Port Site
5. **Description:** Laydown Area LP7 – Project Number: CC006

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turn over documentation has been forwarded to the owner.

	Bradford Watkin	QC Coordinator	10/1/19
(Signature)	(Print Name)	(Title)	(Date)
Nuna East Ltd.	14, 6194 – 50 Street NW Edmonton, AB, CA		T6B 2N7
(Company)	(Address)		(City, Postal Code)

NUNA

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(Section 2)

Inspection & Test Plan (ITP)

NUNA EAST LTD

QUALITY MANAGEMENT SYSTEM
INSPECTION &TEST PLAN
(Civil / Structural Installations)

CLIENT: Hatch	**ITEM / DESCRIPTION / SCOPE:** LP7 / Laydown / Earthworks material production, Excavation, Haulage, Placement & compaction.	**NUNA ITP NO.:** CC006-0001B	**REVISION NO.:** 2
CONTRACTOR: Nuna East Ltd.		**AFFILIATED SUB-CONTRACTOR(S):** N/A	
CONTACT PERSON: Bradford Watkin	**CONTACT INFORMATION:** bradfordw@nunalogistics.com	**DATE:** May 13, 2019	
CONTRACT No.: H353004-CC006	**HATCH PROJECT NUMBER:** H353004-CC006	**HATCH DOCUMENT TITLE:** Mary River Expansion Project-Remaining Early Earthworks	
NUNA JOB No.: CC006-0001B	**PURCHASE ORDER No.:** N/A	**PROJECT MANAGER:** Chris Petrovic	
LOCATION(S): Milne Port Site		**LEGEND:** **H:** A mandatory hold on manufacturer until release by inspector or official waiver from client. **M:** Inspection stage by inspector on a spot basis, but not a mandatory hold point. **HR:** A mandatory hold / review & acceptance / approval of the specified documentation. **W:** To be informed and invited to inspect. Construction to continue if inspector does not attend. **R:** Review of report / certifications. **A:** Audit (Review at Random).	
CWP No.: N/A			

Approved For Construction

Stephen Nugent		May 13, 2019
Nuna Project Manager / Engineer (Print)	Signature	Date
Bradford Watkin		May 13, 2019
Nuna Quality Representative (Print)	Signature	Date
Hatch Representative (Print)	Signature	Date

HATCH Vendor/Contractor Document Review

Doc Number	E353004-CC006-130-051-0014	SUB	02
Date Received			

Review Grade	Next Submittal Status
☐ C1 - Proceed to next submission & status ☐ C2 - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ C3 - Do not proceed. Revise as noted & resubmit	☐ Internal Review ☐ Certified/☐ As-Built
Next Submittal Date:	
☐ C4 - No further submission required - Complete (select status below) ☐ Certified Final ☐ Final ☐ Cancelled ☐ Superseded	

Package Engineer: Name, signature and date farrokh.noon@hatch.com

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibility for correct design, details & dimensions shall remain with the party submitting the drawing/document.

Hatch Stamp

Final Review

BRADFORD WATKIN			9/30/19
Nuna Quality Representative	(Print)	Signature	Date
Hatch Quality Representative	(Print)	Signature	Date

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	*Description of Activities* (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	*Functional Responsibility*	*Quality Control Activity*	*Verification Frequency*	*Reference Document(s)/ Controlling Procedure*	*Acceptance Criteria*	*Verification Document(s) (Reporting)*	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	*Comments*
1.	Contract Review / Approval	NUNA	Review / Verify Document	Prior to project start	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract				R	BW	5/13/19	R	P.F.	10/2/19	

ACTIVITY DATA							VERIFICATION DATA											
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
2.	Approval of ITP	NUNA / HATCH Representatives	Review	Prior to start	NUNA Quality System Manual	Signed ITP by Client representative, NUNA Quality System Manual	Signed acceptance of document (Exhibit 1.0)				HR	BW	5/14/19	R	B.F	10/2/19	
3.	Scope and Associated Documents	NUNA	Review For Errors	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R	BW	5/17/19	A		10/2/19	
4.	Signature Log	NUNA	Review, obtain signatures	Ongoing	NUNA Quality System Manual	NUNA Quality System Manual	NUNA Signature Log				R	N/A		R		10/2/19	
5.	Initial Survey Layout	NUNA / ALL NORTH	Cross Check of IFC Layout	Ongoing	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				HR	BW	5/13/19	A		10/2/19	NOTE THIS WAS COMP. IN 2018. SEE COMMENTS BW
6.	Work Method of Statement	NUNA / HATCH	Review	Prior to Start	IFC Drawings, NUNA Quality System Manual Hatch Spec. 221-078-0001 Rev 0	IFC Drawings, NUNA Quality System Manual, Hatch Spec. 221-078-0001 Rev 0	Nuna Operational Work Plan				R	N/A		R			Also referred to as a Nuna Operation Work Plan.
7.	Materials verification	NUNA	Review	As required	IFC Drawings, Hatch Spec. 280-078-0002 Rev 0, ASTM C-136	IFC Drawings, Hatch Spec.280-078-0002 Rev 0, ASTM C-136	Sieve Test Reports, QSRs				HR	N/A		HR			• Type 5 • Type 8 • Type 12 • Type 19 • Type 22
8.	RFI	NUNA	Resolution of RFIs	As required	NUNA Quality System Manual	Disposition, Approved, closed and log updated	RFIs				HR	BW	5/27/19	A		10/2/17	
9.	Clearing of works location Completed	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W	N/A		W			• Snow / Ice removal / Water / Disposal

ACTIVITY DATA							VERIFICATION DATA											
								Subcontractor			Nuna			Hatch			Comments
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	
10.	Excavate OG to subgrade elevation	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				**HR** **W**	J	N/A	**HR**			
11.	Subgrade foundation preparation completed • Compaction • Proof rolling	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				**HR** **W**	J	N/A	**W**			
Type 5 32 minus																		
12.	Type 5 32 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				**W**	J	N/A	**W**			
13.	Compaction of Type 5 32 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				**W**	J	N/A	**W**			
14.	Survey of Type 5 32 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				**HR** **W**	J	N/A	**HR**			
ROQ (Type 12)																		
15.	ROQ (Type 12) Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				**W**	J	N/A	**W**			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
16.	Compaction of ROQ (Type 12) Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	J/A		W			
17.	Survey of ROQ Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR	BW	7/3/19	HR	R.F	10/2/19	
18.	As built Survey	NUNA	Review	Continuous During Operations	IFC Drawings	IFC Drawings, Hatch Specifications	As built Drawings & Data				HR	BW	7/13/19	W		10/2/19	
19.	Final Walk down	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Contract Requirements	Final Walkdown Attendees' Report				W	J/A		HR			
20.	Deficiency List / Punch list generated	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per contract Requirements	Item form punch list items resolved				HR	BW	9/30/19	HR		10/2/19	
21.	NCR's closed.	NUNA / HATCH	Review of NCRs, Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Requirements	NCR log cleared				HR	BW	9/30/19	W		10/2/19	
22.	As-built / Redline drawings completed.	NUNA	Review / Verify	Post Final Walk down	IFC Drawings, Contract	As-builts / Redlines to Reflect All Field Changes	As-builts / Redlines				HR	BW	7/19	HR		10/2/17	
23.	Final Acceptance and ITP Sign off	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP (Exhibit 1.0)				HR	BW	9/30/19	HR		10/2/19	
24.	Inspection Acceptance and Sign-Off Form signed by Engineer of record.	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP, Acceptance of Completion of Construction Form				HR			A			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
25.	Turnover package completed and sent to client.	NUNA	Review / Verify	Post project completion	NUNA Quality System Manual, IFC Drawings, Contract	Contract, Code & applicable specifications.	Quality Management System Quality Control Turnover package.				HR			A			

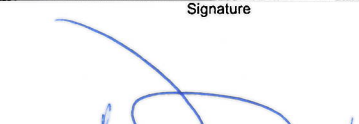
Note: Nuna ITP Sign-Offs based on supporting documentation.

Comments:	NOTE THIS WORK ORIGINALLY TOOK PLACE IN 2018. NUNA COMPLETED SOME RESURFACING THIS SEASON. SURVEY WAS DONE BY ALLNORTH ORGINALLY WITH NUNA PICKING UP THE 2019 SURFACE.

ITP ISSUE APPROVALS

Stephen Nugent Nuna Contractor Project Manager / Engineer (Print)	Site Project Manager Title	 Signature	May 13, 2019 Date (mm/dd/yy)
Bradford Watkin Nuna Contractor Quality Manager / Representative (Print)	QC Coordinator Title	 Signature	May 13, 2019 Date (mm/dd/yy)
HATCH Quality Manager / Representative (Print)	Title	Signature	Date (mm/dd/yy)

ITP CLOSEOUT AND WORK ACCEPTANCE APPROVALS

BRADFORD WATKIN Nuna Contractor Quality Manager / Representative (Print)	QC COORDINATOR Title	 Signature	9/30/19 Date (mm/dd/yy)
Ronny Fraser HATCH Quality Manager / Representative (Print)	Title	Signature	10/02/19 Date (mm/dd/yy)

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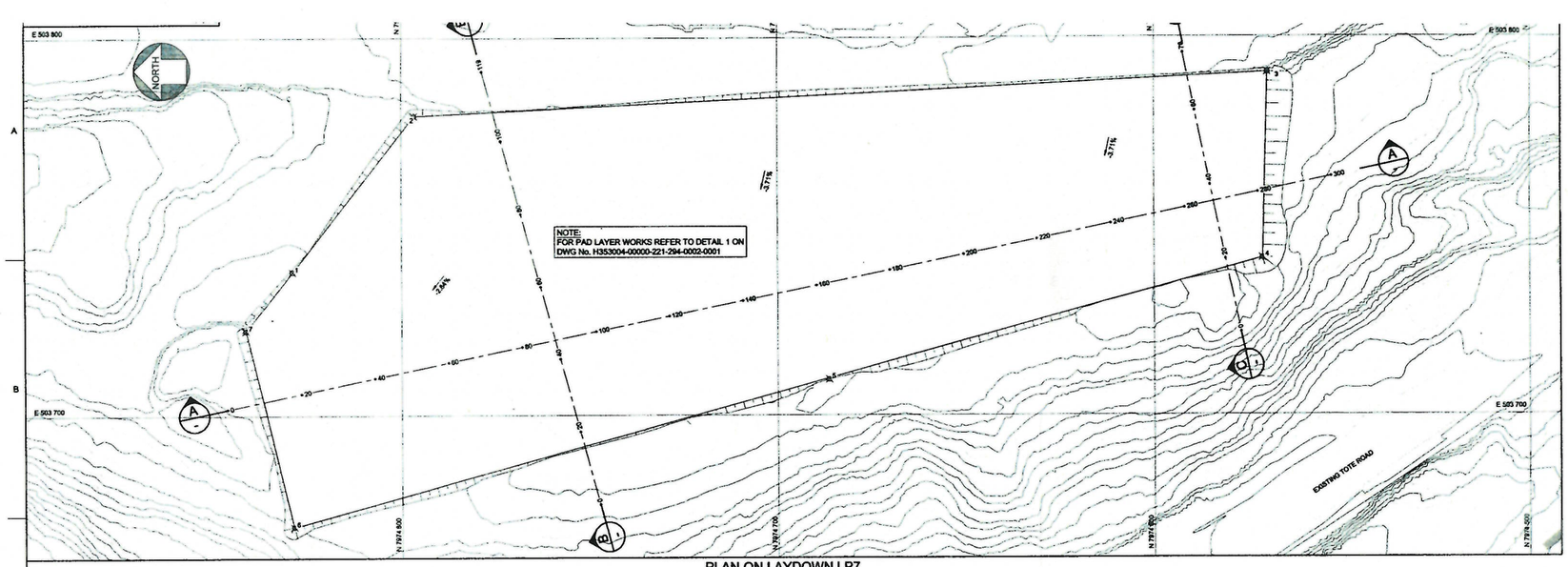
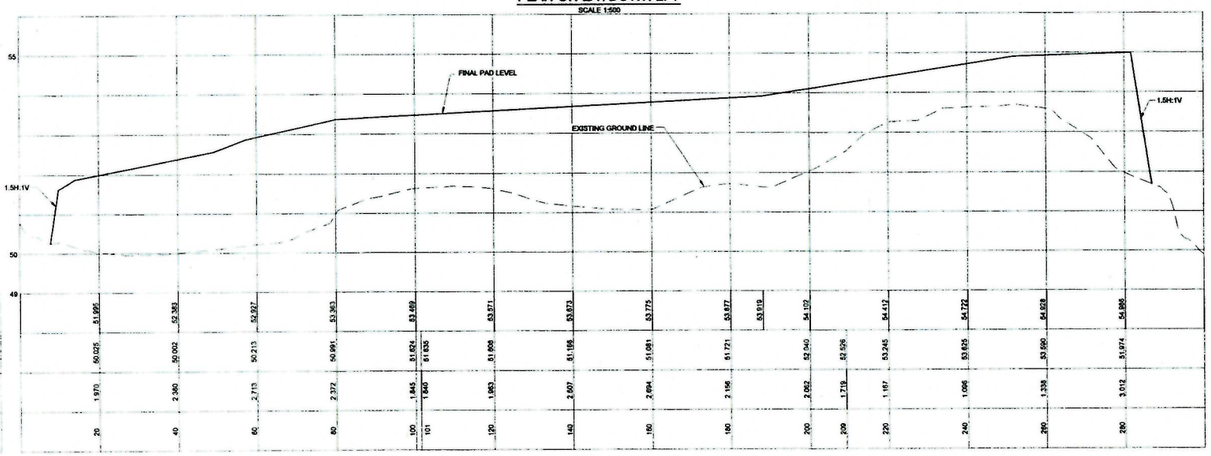
(Section 3)

Redline Drawings



PLAN ON LAYDOWN LP7

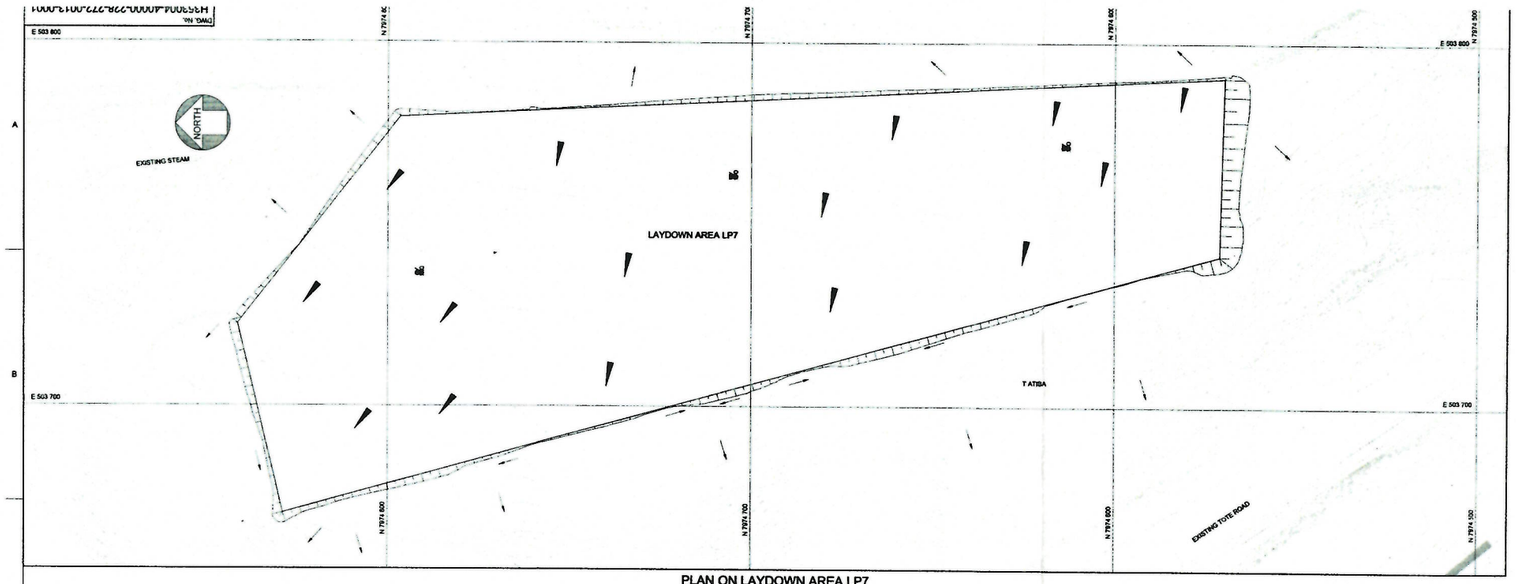
SCALE 1:500



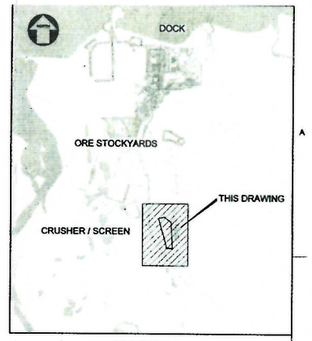
SCALES:
HORIZONTAL 1:500
VERTICAL 1:50

DATUM 49.000

| | | |



PLAN ON LAYDOWN AREA LP7
SCALE 1:500



KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS, CONTOUR INTERVAL IS 0.5m
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.

LEGEND:

- OFF PAD FLOW DIRECTION
- ON PAD FLOW DIRECTION

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REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: Bradford Watkin COMPANY: Nuna East

DATE OF AS-BUILT: April 7, 2019 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: _____ COMPANY: _____

PERMIT TO PRACTICE
HATCH LTD.
Signature _____
Date _____
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

H353004-00000-221-294-0002-0001	STANDARD DRAWING - EARTHWORKS AND DRAINAGE DETAILS
H353004-40000-221-271-0005-0001	LAYDOWN AREA LP7 - LAYOUT AND SECTIONS
DRAWING No.	DRAWING TITLE

REFERENCE DRAWINGS

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	EDC STAMP REMOVED	KeiM	FH	20/08/2018
0	APPROVED FOR CONSTRUCTION	GPM	FH	05/04/2018

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	G MEADES		NR 22/03/2018
DESIGNER	I BARNARD		NR 22/03/2018
CHECKER	F HUGO		2018-03-14
DESIGN COORD.	R GOOSEN		2018-03-14
RESP. ENG.	R HALIM		2018-09-14
LEAD DISC. ENG.	A GROBBELAAR		2018-09-12
AREA LEAD	V LAVRIC		2018-07-5
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		18.04.05
DRAWING APPROVAL STATUS:	Approved for Construction		

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP7
DRAINAGE PLAN

SCALE 1:500 (IN A1 SHEET)
DWG. No. H353004-40000-228-272-0013-0001
REV 1
SHEET SIZE: E

1 2 3 4 5 6 7 8
A B C D E F

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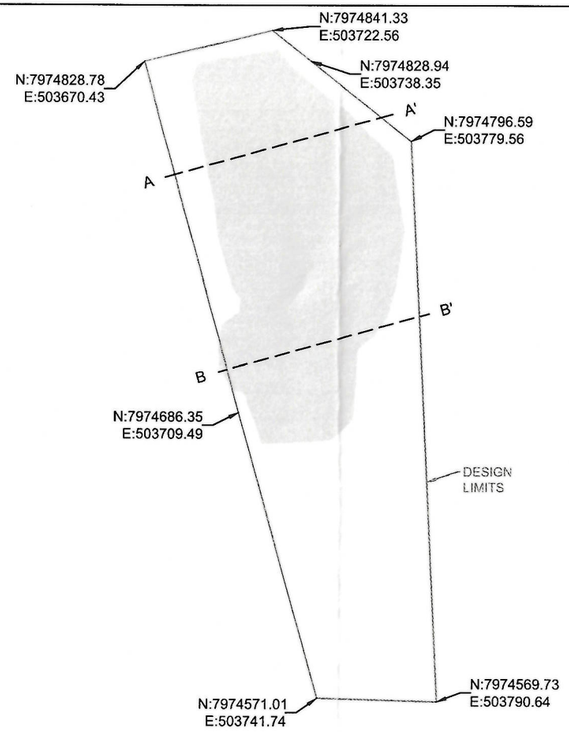
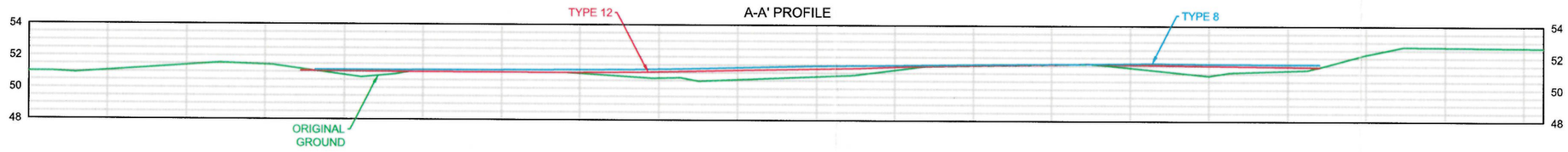
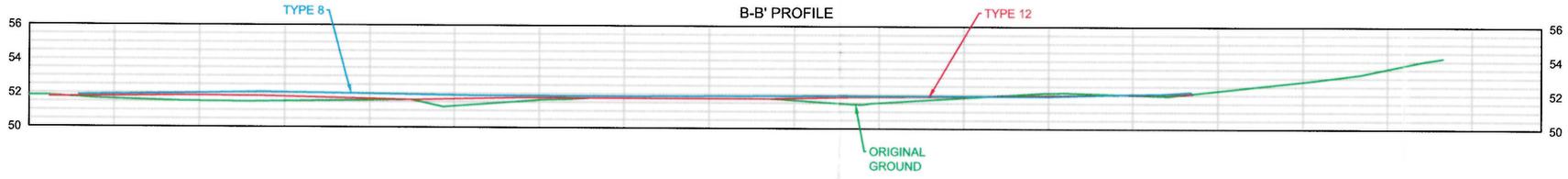
(Section 4)

Survey Data







LEGEND:
LP7 DESIGN
AS-BUILT AREA

OWNER:
BAFFINLAND IRON MINES LP

PROJECT:
MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

SCALE: AS SHOWN

DATE: Sept. 14, 2019

LAYDOWN AREA LP7

DRAWING TITLE:
AS-BUILT SURVEY
SURVEYED UP TO JULY 18, 2018

DRAWING NAME (YYMMDD):
190914 LAYDOWN AREA LP7 AS-BUILT.dwg

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(Section 4)

Survey Data
Original Ground
(OG)

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0001B
Laydown Area LP7
Original Ground (OG)

Laydown Area LP7 Original Ground (OG) Survey Data

Point Number	Northing	Easting	Elevation	Description
1	7974564.64	503798.816	56.089	EDGE RD
2	7974581.424	503791.555	56.056	EDGE RD
3	7974607.077	503782.47	55.708	EDGE RD
4	7974629.08	503779.393	55.359	EDGE RD
5	7974663.704	503777.083	54.559	EDGE RD
6	7974691.274	503777.398	54.056	EDGE RD
7	7974719.714	503779.471	53.963	EDGE RD
8	7974739.558	503783.177	54.268	EDGE RD
9	7974757.814	503785.075	54.36	EDGE RD
10	7974774.993	503786.442	54.456	EDGE RD
11	7974797.156	503788.466	54.123	EDGE RD
12	7974817.195	503790.114	53.742	EDGE RD
13	7974818.563	503783.598	52.629	SPOT
14	7974799.783	503781.008	52.945	SPOT
15	7974778.203	503779.405	54.511	SPOT
16	7974786.454	503774.797	53.693	SPOT
17	7974801.732	503766.156	52.665	SPOT
18	7974815.437	503755.537	52.889	SPOT
19	7974825.531	503743.71	53.249	SPOT
20	7974835.013	503732.557	53.236	SPOT
21	7974840.004	503726.458	53.184	SPOT
22	7974851.225	503726.726	53.556	SPOT
23	7974851.312	503726.755	53.515	SPOT
24	7974863.29	503723.002	52.96	SPOT
25	7974869.708	503705.424	52.849	SPOT
26	7974863.638	503700.22	52.329	SPOT
27	7974856.013	503698.862	52.727	SPOT
28	7974847.401	503690.444	52.199	SPOT
29	7974829.61	503677.02	51.101	SPOT
30	7974826.265	503676.096	51.188	SPOT
31	7974831.976	503671.463	49.82	SPOT
32	7974834.944	503669.58	49.246	SPOT
33	7974835.703	503670.25	49.267	SPOT
34	7974824.606	503658.258	48.774	SPOT
35	7974809.957	503651.117	48.938	SPOT
36	7974802.654	503658.278	49.204	SPOT
37	7974795.555	503665.629	50.309	SPOT
38	7974785.617	503672.209	51.148	SPOT
39	7974777.511	503673.92	51.236	SPOT

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0001B
Laydown Area LP7
Original Ground (OG)

40	7974757.774	503677.699	51.753	SPOT
41	7974742.031	503681.683	52.239	SPOT
42	7974728.862	503684.835	52.32	SPOT
43	7974713.062	503690.749	52.34	SPOT
44	7974693.464	503696.736	52.284	SPOT
45	7974680.263	503703.092	52.745	SPOT
46	7974662.408	503704.841	52.294	SPOT
47	7974648.655	503706.133	52.952	SPOT
48	7974626.263	503715.865	52.276	SPOT
49	7974608.201	503721.323	52.89	SPOT
50	7974591.412	503726.756	52.911	SPOT
51	7974583.84	503729.71	53.052	SPOT
52	7974571.082	503733.649	51.752	SPOT
53	7974559.552	503741.219	49.846	SPOT
54	7974559.384	503744.529	49.441	SPOT
55	7974557.584	503761.467	50.451	SPOT
56	7974558.008	503772.883	51.294	SPOT
57	7974560.11	503783.159	51.329	SPOT
58	7974560.66	503790.332	51.88	SPOT
59	7974572.826	503784.029	52.601	SPOT
60	7974589.882	503780.518	55.063	SPOT
61	7974620.581	503773.289	54.567	SPOT
62	7974642.848	503767.071	53.285	SPOT
63	7974658.449	503764.731	52.126	SPOT
64	7974672.861	503767.118	52.127	SPOT
65	7974696.363	503768.484	52.24	SPOT
66	7974703.46	503761.03	51.748	SPOT
67	7974712.474	503760.2	51.924	SPOT
68	7974724.024	503766.917	51.813	SPOT
69	7974729.721	503772.396	52.13	SPOT
70	7974750.556	503772.189	51.734	SPOT
71	7974768.868	503766.41	51.702	SPOT
72	7974785.719	503767.846	51.355	SPOT
73	7974798.457	503761.471	51	SPOT
74	7974806.943	503749.741	50.852	SPOT
75	7974822.044	503733.738	50.488	SPOT
76	7974832.684	503725.081	50.593	SPOT
77	7974839.62	503719.467	50.637	SPOT
78	7974856.763	503717.329	50.592	SPOT
79	7974862.011	503709.029	50.146	SPOT
80	7974847.646	503702.997	50.752	SPOT
81	7974836.165	503691.477	50.788	SPOT

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0001B
Laydown Area LP7
Original Ground (OG)

82	7974828.526	503678.759	50.866	SPOT
83	7974819.925	503678.913	51.25	SPOT
84	7974816.254	503677.38	51.311	SPOT
85	7974814.002	503676.74	51.604	SPOT
86	7974800.944	503677.834	51.738	SPOT
87	7974791.634	503679.223	51.965	SPOT
88	7974783.64	503680.129	50.862	SPOT
89	7974772.559	503684.574	51.942	SPOT
90	7974758.798	503686.677	52.334	SPOT
91	7974745.214	503688.845	52.365	SPOT
92	7974732.182	503692.429	52.87	SPOT
93	7974719.002	503696.468	52.856	SPOT
94	7974710.215	503700.103	52.117	SPOT
95	7974696.476	503705.833	52.219	SPOT
96	7974687.485	503710.123	52.641	SPOT
97	7974689.314	503717.532	51.323	SPOT
98	7974702.734	503713.4	51.353	SPOT
99	7974721.586	503706.81	51.684	SPOT
100	7974735.094	503702.016	51.55	SPOT
101	7974747.08	503701.705	51.548	SPOT
102	7974760.069	503698.46	51.397	SPOT
103	7974773.665	503697.515	50.501	SPOT
104	7974778.651	503691.003	51.164	SPOT
105	7974791.249	503690.825	51.871	SPOT
106	7974805.129	503688.997	51.953	SPOT
107	7974819.309	503683.286	51.687	SPOT
108	7974834.178	503691.705	50.702	SPOT
109	7974820.676	503696.835	50.315	SPOT
110	7974806.72	503697.533	50.508	SPOT
111	7974788.425	503700.018	50.586	SPOT
112	7974772.322	503707.268	50.6	SPOT
113	7974750.893	503713.113	51.565	SPOT
114	7974733.174	503716.484	51.649	SPOT
115	7974709.217	503724.62	51.206	SPOT
116	7974695.947	503731.075	50.899	SPOT
117	7974698.829	503741.3	51.106	SPOT
118	7974722.256	503734.278	51.264	SPOT
119	7974747.862	503725.947	51.552	SPOT
120	7974769.601	503721.488	50.766	SPOT
121	7974790.938	503718.534	50.573	SPOT
122	7974811.747	503711.131	50.373	SPOT
123	7974825.645	503706.211	50.387	SPOT

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0001B
Laydown Area LP7
Original Ground (OG)

124	7974832.466	503705.317	52.074	SPOT
125	7974845.651	503701.897	50.742	SPOT
126	7974850.374	503713.979	50.908	SPOT
127	7974832.178	503720.467	50.147	SPOT
128	7974820.963	503715.621	50.188	SPOT
129	7974799.449	503724.687	50.129	SPOT
130	7974781.145	503731.626	50.672	SPOT
131	7974754.167	503738.284	50.69	SPOT
132	7974735.056	503744.266	51.044	SPOT
133	7974716.465	503748.093	51.421	SPOT
134	7974704.913	503753.477	51.573	SPOT
135	7974719.237	503759.128	52.139	SPOT
136	7974737.143	503757.99	50.835	SPOT
137	7974757.108	503750.024	50.669	SPOT
138	7974771.081	503744.475	50.798	SPOT
139	7974789.895	503741.341	50.613	SPOT
140	7974802.726	503734.732	51.458	SPOT
141	7974819.404	503730.654	50.209	SPOT
142	7974799.205	503752.487	50.885	SPOT
143	7974755.999	503755.031	50.812	SPOT
144	7974694.279	503758.623	51.7	SPOT
145	7974675.685	503761.988	51.832	SPOT
146	7974701.45	503744.714	51.293	SPOT
147	7974689.413	503748.942	51.629	SPOT
148	7974675.704	503752.498	51.712	SPOT
149	7974663.186	503758.553	51.73	SPOT
150	7974646.452	503759.556	52.366	SPOT
151	7974627.275	503763.327	53.663	SPOT
152	7974611.406	503770.104	54.603	SPOT
153	7974597.338	503776.482	55.22	SPOT
154	7974571.902	503766.632	52.167	SPOT
155	7974591.269	503761.545	53.368	SPOT
156	7974613.282	503756.63	53.623	SPOT
157	7974625.7	503751.694	53.145	SPOT
158	7974642.565	503745.045	52.407	SPOT
159	7974663.353	503742.669	51.599	SPOT
160	7974676.318	503741.689	51.121	SPOT
161	7974684.932	503734.242	50.761	SPOT
162	7974697.383	503730.891	50.982	SPOT
163	7974691.356	503718.853	51.082	SPOT
164	7974671.501	503723.263	51.341	SPOT
165	7974652.733	503727.298	51.93	SPOT

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0001B
Laydown Area LP7
Original Ground (OG)

166	7974637.967	503737.176	52.873	SPOT
167	7974617.915	503737.938	53.084	SPOT
168	7974605.212	503746.981	53.159	SPOT
169	7974592.124	503749.752	53.366	SPOT
170	7974577.706	503753.045	52.486	SPOT
171	7974562.301	503757.423	51.491	SPOT
172	7974565.644	503744.192	50.379	SPOT
173	7974586.143	503736.322	52.789	SPOT
174	7974601.599	503733.656	53.28	SPOT
175	7974626.128	503726.735	53.049	SPOT
176	7974650.485	503719.301	52.341	SPOT
177	7974669.574	503714.712	51.853	SPOT
178	7974679.806	503714.694	51.981	SPOT

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(Section 4)

Survey Data
Type 12
(ROQ)

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0001B
Laydown Area LP7
Type 12 Placement (ROQ)

Laydown Area LP7 Type 12 (ROQ) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
1	7974764.45	503776.148	51.783	ROQ
2	7974790.882	503771.916	51.92	ROQ
3	7974798.995	503762.89	51.347	ROQ
4	7974808.871	503753.44	51.533	ROQ
5	7974816.508	503742.656	51.399	ROQ
6	7974827.043	503730.138	51.087	ROQ
7	7974833.648	503724.62	50.732	ROQ
8	7974831.232	503711.556	50.686	ROQ
9	7974830.296	503701.623	50.576	ROQ
10	7974828.001	503692.11	50.827	ROQ
11	7974820.663	503689.596	50.696	ROQ
12	7974809.987	503691.705	51.127	ROQ
13	7974797.188	503693.901	51.025	ROQ
14	7974782.085	503696.688	51.072	ROQ
15	7974771.554	503699.082	51.226	ROQ
16	7974760.098	503700.119	51.588	ROQ
17	7974746.939	503703.727	51.797	ROQ
18	7974736.495	503706.81	51.724	ROQ
19	7974732.423	503709.902	52.062	ROQ
20	7974727.113	503709.527	51.925	ROQ
21	7974721.966	503702.329	51.823	ROQ
22	7974711.215	503701.025	51.924	ROQ
23	7974704.214	503701.616	51.776	ROQ
24	7974695.395	503706.799	51.846	ROQ
25	7974694.329	503711.458	51.99	ROQ
26	7974679.267	503717.139	52.012	ROQ
27	7974673.678	503718.718	52.102	ROQ
28	7974673.931	503731.134	51.705	ROQ
29	7974675.385	503747.461	51.974	ROQ
30	7974683.461	503756.123	52.28	ROQ
31	7974698.337	503757.314	52.231	ROQ
32	7974711.953	503757.95	51.868	ROQ
33	7974717.847	503764.895	52.076	ROQ
34	7974725.243	503770.064	52.109	ROQ
35	7974736.556	503773.476	51.842	ROQ
36	7974749.31	503775.351	51.756	ROQ
37	7974760.193	503776.967	51.969	ROQ
38	7974787.769	503758.256	51.578	ROQ
39	7974778.853	503758.654	51.864	ROQ

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0001B
Laydown Area LP7
Type 12 Placement (ROQ)

40	7974766.971	503760.293	51.834	ROQ
41	7974757.558	503761.133	51.858	ROQ
42	7974745.862	503762.685	51.619	ROQ
43	7974730.929	503762.232	51.915	ROQ
44	7974712.771	503754.825	52.01	ROQ
45	7974723.947	503752.274	51.778	ROQ
46	7974733.324	503750.886	51.75	ROQ
47	7974743.874	503749.624	51.742	ROQ
48	7974752.648	503748.888	51.781	ROQ
49	7974763.087	503748.154	51.843	ROQ
50	7974776.61	503746.724	51.778	ROQ
51	7974787.089	503744.74	51.714	ROQ
52	7974800.168	503744.078	51.632	ROQ
53	7974809.214	503743.78	51.428	ROQ
54	7974818.861	503731.116	51.124	ROQ
55	7974807.628	503732.47	51.469	ROQ
56	7974793.121	503733.716	51.435	ROQ
57	7974776.952	503736.25	51.622	ROQ
58	7974762.36	503737.906	51.646	ROQ
59	7974745.118	503740.081	51.852	ROQ
60	7974729.843	503741.068	51.979	ROQ
61	7974717.878	503742.691	51.778	ROQ
62	7974703.262	503744.176	51.655	ROQ
63	7974695.02	503744.563	51.682	ROQ
64	7974682.412	503744.661	51.861	ROQ
65	7974680.757	503732.096	51.647	ROQ
66	7974693.62	503730.769	51.752	ROQ
67	7974713.64	503730.087	51.776	ROQ
68	7974728.446	503729.15	52.038	ROQ
69	7974746.34	503726.285	51.857	ROQ
70	7974763.89	503725.483	51.634	ROQ
71	7974782.871	503723.675	51.298	ROQ
72	7974802.287	503721.809	51.052	ROQ
73	7974819.999	503720.267	50.98	ROQ
74	7974820.414	503709.635	50.962	ROQ
75	7974801.441	503710.665	50.966	ROQ
76	7974785.555	503712.86	50.979	ROQ
77	7974767.44	503714.371	51.459	ROQ
78	7974751.788	503717.163	51.799	ROQ
79	7974737.617	503719.067	51.883	ROQ
80	7974723.808	503720.722	51.85	ROQ
81	7974708.641	503722.876	51.627	ROQ

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0001B
Laydown Area LP7
Type 12 Placement (ROQ)

82	7974697.163	503724.241	51.742	ROQ
83	7974686.74	503724.835	51.626	ROQ
84	7974678.863	503724.724	51.853	ROQ
85	7974693.096	503717.129	51.719	ROQ
86	7974702.137	503714.321	51.83	ROQ
87	7974717.049	503713.898	51.904	ROQ
88	7974740.037	503711.772	51.884	ROQ
89	7974753.317	503708.548	51.767	ROQ
90	7974766.461	503707.022	51.428	ROQ
91	7974780.995	503706.012	51.171	ROQ
92	7974787.945	503702.568	51.009	ROQ
93	7974799.815	503700.771	50.947	ROQ
94	7974808.175	503699.03	51.095	ROQ
95	7974818.12	503696.813	50.818	ROQ

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(Section 4)

Survey Data
Type 8
(150mm minus)

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0001B
Laydown Area LP7
Type 8 (150mm minus) Placement

Laydown Area LP7 Type 8 (150mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
1	7974676.202	503718.527	51.967	6inch
2	7974681.942	503716.847	51.894	6inch
3	7974689.275	503714.385	51.847	6inch
4	7974693.39	503708.413	51.937	6inch
5	7974699.403	503705.239	51.843	6inch
6	7974707.503	503702.734	51.893	6inch
7	7974713.872	503701.47	51.983	6inch
8	7974718.585	503701.714	51.827	6inch
9	7974723.862	503705.343	51.895	6inch
10	7974725.689	503709.035	51.948	6inch
11	7974733.139	503710.77	51.927	6inch
12	7974740.149	503707.374	51.769	6inch
13	7974747.203	503703.797	51.8	6inch
14	7974755.063	503701.928	51.641	6inch
15	7974762.51	503700.691	51.516	6inch
16	7974771.237	503699.236	51.161	6inch
17	7974777.24	503697.876	51.027	6inch
18	7974785.638	503696.941	51.116	6inch
19	7974794.512	503696.152	51.09	6inch
20	7974802.792	503694.179	51.112	6inch
21	7974810.743	503692.933	51.123	6inch
22	7974816.557	503691.965	50.86	6inch
23	7974820.033	503693.619	50.835	6inch
24	7974825.046	503695.017	50.69	6inch
25	7974827.288	503702.895	50.904	6inch
26	7974829.15	503710.25	50.956	6inch
27	7974831.258	503717.739	50.997	6inch
28	7974831.945	503724.772	50.922	6inch
29	7974827.987	503729.281	51.142	6inch
30	7974823.629	503735.254	51.334	6inch
31	7974819.165	503740.487	51.363	6inch
32	7974814.311	503747.727	51.593	6inch
33	7974807.509	503755.427	51.58	6inch
34	7974800.622	503762.886	51.653	6inch
35	7974795.658	503767.073	51.737	6inch
36	7974791.898	503771.46	52.009	6inch
37	7974788.498	503772.085	52.215	6inch
38	7974785.998	503772.077	52.815	6inch
39	7974774.494	503774.658	53.082	6inch

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0001B
Laydown Area LP7
Type 8 (150mm minus) Placement

40	7974767.508	503776.694	52.224	6inch
41	7974762.842	503777.942	52.199	6inch
42	7974759.138	503777.061	52.075	6inch
43	7974752.118	503775.919	51.999	6inch
44	7974743.827	503774.604	51.943	6inch
45	7974735.232	503773.264	51.975	6inch
46	7974726.295	503772.256	51.973	6inch
47	7974724.506	503769.364	52.191	6inch
48	7974726.316	503765.895	51.957	6inch
49	7974721.188	503764.666	52.085	6inch
50	7974715.093	503759.896	51.891	6inch
51	7974710.504	503757.099	52.02	6inch
52	7974701.467	503754.18	52.065	6inch
53	7974693.602	503751.193	51.872	6inch
54	7974688.7	503741.577	51.69	6inch
55	7974686.083	503737.77	51.73	6inch
56	7974680.014	503734.108	51.71	6inch
57	7974677.894	503725.65	51.837	6inch
58	7974687.263	503719.976	51.874	6inch
59	7974699.487	503716.414	52.023	6inch
60	7974710.922	503712.979	52.082	6inch
61	7974719.733	503710.373	52.088	6inch
62	7974691.903	503730.462	51.79	6inch
63	7974703.444	503728.11	51.85	6inch
64	7974715.327	503725.013	51.912	6inch
65	7974726.836	503722.313	51.946	6inch
66	7974738.624	503719.182	51.947	6inch
67	7974749.663	503716.434	51.85	6inch
68	7974761.113	503713.719	51.76	6inch
69	7974771.705	503711.377	51.502	6inch
70	7974782.878	503708.524	51.182	6inch
71	7974794.049	503705.522	51.087	6inch
72	7974803.773	503702.998	51.048	6inch
73	7974814.123	503700.467	51.182	6inch
74	7974814.817	503711.029	51.119	6inch
75	7974804.593	503714.245	51.109	6inch
76	7974793.372	503717.057	51.182	6inch
77	7974782.004	503719.579	51.453	6inch
78	7974771.66	503721.816	51.42	6inch
79	7974759.185	503725.051	51.79	6inch
80	7974748.704	503728.338	51.965	6inch
81	7974738.249	503731.469	52.104	6inch

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0001B
Laydown Area LP7
Type 8 (150mm minus) Placement

82	7974726.578	503734.563	52.043	6inch
83	7974715.374	503737.387	51.875	6inch
84	7974703.392	503740.353	51.92	6inch
85	7974705.568	503748.835	51.92	6inch
86	7974715.722	503746.623	51.929	6inch
87	7974727.022	503743.921	52.023	6inch
88	7974737.824	503741.261	52.014	6inch
89	7974748.506	503738.688	51.934	6inch
90	7974759.931	503736.118	51.801	6inch
91	7974770.275	503733.756	51.671	6inch
92	7974779.717	503731.319	51.495	6inch
93	7974790.738	503728.495	51.493	6inch
94	7974801.39	503726.079	51.359	6inch
95	7974812.319	503722.926	51.205	6inch
96	7974821.274	503722.515	51.197	6inch
97	7974820.372	503729.268	51.315	6inch
98	7974814.636	503734.161	51.436	6inch
99	7974804.136	503737.153	51.484	6inch
100	7974792.872	503740.277	51.65	6inch
101	7974781.921	503742.9	51.808	6inch
102	7974770.338	503745.97	51.829	6inch
103	7974758.485	503749.297	51.888	6inch
104	7974747.243	503751.993	51.879	6inch
105	7974737.188	503754.129	51.716	6inch
106	7974725.368	503757.379	51.987	6inch
107	7974729.144	503766.772	52.017	6inch
108	7974739.176	503765.18	51.971	6inch
109	7974749.555	503762.472	51.912	6inch
110	7974761.809	503759.376	51.982	6inch
111	7974771.663	503756.318	51.871	6inch
112	7974781.961	503753.075	51.939	6inch
113	7974793.132	503749.729	51.786	6inch
114	7974804.114	503747.134	51.615	6inch
115	7974807.78	503743.497	51.522	6inch
116	7974798.868	503757.886	51.684	6inch
117	7974790.793	503759.465	51.909	6inch
118	7974782.785	503761.148	52.1	6inch
119	7974771.929	503763.566	52.159	6inch
120	7974760.909	503765.236	51.997	6inch
121	7974751.162	503766.079	51.974	6inch
122	7974740.717	503766.401	51.995	6inch
123	7974731.322	503767.725	52.067	6inch

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(Section 4)

Survey Data
Allnorth Supplied Data

Date: 2018/07/18 10:09 AM | User: Stephen Rafuse | File: C:\Jobs\18SJ\0001-Local Content\1000-Drawings\1018-Survey\01-Production\Port Site\Laydowns\LP7\180718-LP7 6 INCH | Layout: 'B' Portrait (Horizontal Title) | Paper Size: 431.8mm x 558.8mm

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REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
-	-	-	-	-

CLIENT: Baffinland

HATCH

Allnorth

TITLE: LP7 6 INCH MINUS TOPO

CLIENT NO:	-	DRWN:	SMR	DATE:	18/07/18
PROJECT NO:	-	DSGN:	-	DATE:	-
DRAWING SIZE:	ANSI "B"	CHKD:	-	DATE:	-
SCALE:	1:1000	APVD:	-	DATE:	-

PROJECT: BAFFINLAND IRON MINES LP MARRY RIVER EXPANSION PROJECT

DWG NO: ACL 180718-LP7 6 INCH

REV: -

Cut/Fill Report

Generated: 2018-07-18 09:16:08

By user: srafuse

Drawing: C:\Jobs\18SJ0001-Local Content\1000-Drawings\1018-Survey\01-Production\Port Site\Laydowns\LP7\C:\Jobs\18SJ0001-Local Content\1000-Drawings\1018-Survey\01-Production\Port Site\Laydowns\LP7\180703-LP7 ROQ.dwg

Volume Summary

Name	Type	Cut Factor	Fill Factor	2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
6 INCH (1)	full	1.000	1.000	9087.14	28.34	1122.85	1094.51<Fill>

Totals

	2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
Total	9087.14	28.34	1122.85	1094.51<Fill>

* Value adjusted by cut or fill factor other than 1.0

Cut/Fill Report

Generated: 2018-07-03 14:56:23

By user: srafuse

Drawing: C:\Jobs\18SJ0001-Local Content\1000-Drawings\1018-Survey\01-Production\Port Site\Laydowns\LP7\C:\Jobs\18SJ0001-Local Content\1000-Drawings\1018-Survey\01-Production\Port Site\Laydowns\LP7\LP7 Laydown OG 180525.dwg

Volume Summary

Name	Type	Cut Factor	Fill Factor	2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
ROQ LP7	full	1.000	1.000	10026.38	100.07	1806.07	1706.00<Fill>

Totals

	2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
Total	10026.38	100.07	1806.07	1706.00<Fill>

* Value adjusted by cut or fill factor other than 1.0

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(Section 5)

Sieves / Aggregate Statements of Compliance

NUNA

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(Section 5)

No Sieves / Aggregate Statements of Compliance available

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(Section 6)

Request for Information (RFIs)

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REQUEST FOR INFORMATION

Request	
Contractor RFI #: 0008	**EPCM RFI #:** Click here to enter text.
Subject: Expansion Stage 3 Remaining Early Earthworks – Temp Laydown Surfacing	**Project Area:** Temporary Laydown Areas LP7, R1, et. al.
Contractor: Nuna East Limited	**Name:** Darko Filipic
Contract #: H353004-CC006	**Date:** June 28, 2018

Type of Request:

☒ Information only ☒ Engineering Change Request (for changes to Issued for Construction drawings)

Related Drawings:
H353004-00000-221-294-0002-0001 REV 0
E353004-CC006-400-465-0004, NM May 31 (RFI-004 Response)

Description of Request:
Nuna East has completed placing ROQ fill in Laydowns LP7 and R1. As these are currently built as temporary laydowns, the direction Nuna was given was to place a minimal lift of ROQ with a granular topping 100mm thick of 32mm minus. (See RFI-004 response).
It is Nuna's opinion that placing 32mm minus granular on top of the ROQ fill that has been placed will result in a significant loss of material and will require more than 100mm average thickness to create a suitable running surface on these laydowns, due to the uneven and boney nature of the ROQ.
Nuna is requesting approval to place and compact a minimal lift of Type 8 (jaw run) material over the ROQ to get the surface to a suitable condition for running equipment on.
Additionally, it is our understanding that Laydown LP7 may be used as the storage laydown for the rail ties and will require a good level and compacted surface to rest on, in order to eliminate the risk of warping the rails. As such, Nuna requests approval to top the ROQ in laydown LP7 with a 300mm lift of Type 8 followed by a 100mm lift of Type 5, as per the typical detail 1 on DWG H353004-00000-221-294-0002-0001.
There is currently no budget line item for LHP Type 8 material for these Laydown Areas, so this may necessitate a CVR for the change.

Field Change Requests only: ☒ Potential Cost Impact ☒ Potential Schedule Impact

Response

Do not proceed as noted for LP7 . We stay as per plan with Quarry run and a layer if 32 mm topping 100 mm thick ,.

Response by: **Nick Mills** *Nick Mills* **June 29 / 18**

Name Signature Date

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(Section 7)

Non-Conformance Reports (NCRs)

NON-CONFORMANCE REPORT LOG

Project: CC006 **Date:** 9-30-19

Area: Mary River Expansion - Milne Port **Contract/Work Pkg. No.:** CC006-0001B LP7

CWP#: N/A **Originator:** Bradford Watkin

NCR No.	Description	Disposition	Date.	Rectified	Date
	No NCR's generated for this work package				

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(Section 8)

Deficiency/Punchlist Record

DEFICIENCY / PUNCH ITEMS RECORD

Project Name: Mary River Expansion	**Walkdown Date (mm/dd/yy):** N/A	**Area Number:** N/A
Area Name or Area Description: Laydown Area LP7	**Job Number:** CC006-0001B	**Plant Number:** N/A

PURPOSE:

1. **For modules and vendor packages, open punch items are listed at release for shipment.**
2. **As part of a final walkdown package, this form lists the Contactor's open punch items that are transferred into the Nuna Turnover database**
3. **This form is used to capture Punch Items during Final Walkdown**

Tag Number	Description of Deficiency / Punch Item	Cat.	Discipline	Originator	Responsible for resolution	Vendor Y/N	Remarks
	No deficiencies						

Punch Item Categories captured during Final Walkdown: A, B or C. A- To be rectified before final acceptance. B- To be addressed at a later time. C- Acceptable to be As-Built

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(Section 9)

Acceptance of Completion of Construction

ACCEPTANCE OF COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the acceptance of the Quality Control Turnover documentation for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Ore Mines
2. **Contractor:** Nuna East Limited
3. **Construction:** Laydown Pad
4. **Location:** Mary River Milne Port Site
5. **Description:** Laydown Area LP7 – Project Number: CC006

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turnover documentation has been forwarded to and accepted by the owner.

Nuna Representative:

Signature	Print Name	Title	Date
	BRADFORD WATKIN	QC COORDINATOR	9/30/19

Client Representative:

Signature	Print Name	Title	Date

QA/QC Documentation Turnover Review and Release

Contractor: Nuna East Limited.	Contract No.: CC006	CWP.: N/A
Project: Mary River Expansion Project.	Location: Milne Port	Sub-System: N/A
Area: Laydown Area LP7	Area Description: Storage Laydown LP7	
System/Subsystem No.: N/A	System/Subsystem Description: N/A	
Inspection Test Plan No.: CC006-0001B	Rev: 0	Issue Date: May 14, 2019

ITP Section for Review

ITP Activity No.	ITP Activity Description
	For this portion of the Inspection Test Plan (ITP) and scope of work as per contract details outlined above. The following have been verified the ensure compliance with the Project Completion Requirements. • All work has been completed in accordance IFC drawings, project specifications, codes, and national regulations. • All Testing has been completed as per Inspection Test Plan (ITP). • All Master Punch List items are completed, verified and signed off. • All Non-Conformances and Site Quality Surveillances are closed. • All Bolt Ups, Loop Checks, and Pre-Commissioning are completed.

The undersigned verifies the contractor has completed the points above in their entirety

Contractor QC Designate	/	
Title	Name (Print/Sign)	Date

Client QA Turnover Review

☒ Approved	☐ Not Approved (See Comments Below)	Review No.:	/

ITP Activity No.	ITP Activity Description

Contractor QC Designate	/	
Title	Name (Print/Sign)	Date

Hatch QA Designate	Ronny Franks /	10/02/2019
Title	Name (Print/Sign)	Date

Hatch Commissioning Designate	/	
Title	Name (Print/Sign)	Date

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HATCH **Vendor/Contractor Document Review**

Doc Number	E353004-CC006-130-124-0014	**SUB**	01
Date Received			

Review Grade	**Next Submittal Status**
☐ **C1** - Proceed to next submission & status	☐ Certified
☐ **C2** - Proceed with exceptions as noted to next submission & status	☐ As-Built
☐ **C3** - Do not proceed. Revise as noted & resubmit	☐ Internal Review
Next Submittal Date:	☐ Certified/☐ As-Built

☒ **C4** - No further submission required - Complete (select status below)

☐ Certified Final ☒ Final ☐ Cancelled ☐ Superseded

Package Engineer: Name, signature and date

Franken, Ronny

Digitally signed by Franken, Ronny
DN: cn=Franken, Ronny, email=ronny.franken@hatch.com
Date: 2019.11.27 15:39:25 -05'00'

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibility for correct design, details & dimensions shall remain with the party submitting the drawing/document.

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(Section 1)

Completion of Construction Declaration / Transfer of Care, Control & Custody (TCCC) Forms

COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Mines Corporation
2. **Contractor:** Nuna East Limited
3. **Construction:** Laydown Pad
4. **Location:** Mary River Milne Port Site
5. **Description:** Laydown Area LP3 – Project Number: CC006

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turn over documentation has been forwarded to the owner.

	Bradford Watkin	QC Coordinator	9/29/19
(Signature)	(Print Name)	(Title)	(Date)
Nuna East Ltd.	14, 6194 – 50 Street NW Edmonton, AB, CA		T6B 2N7
(Company)	(Address)		(City, Postal Code)

Transfer of Care, Custody and Control

FROM GROUP "A"	Nuna East Ltd.	**Job File No.:**	CC006-0003A
To Group "B"	Hatch Engineering	**WBS No.:**	4810
Location:	Milne Port Site	**Date:**	9/3/19

Originating job file no. details:	Construct a Laydown Pad to IFC Engineered Design: • Earthworks Excavation, Aggregate haulage, placement & compaction.
Comments:	• This TCCC covers the East side area of LP3 from the Module road east to the LP3 limits. • Standard design laydown for storage of Seacans, components and materials.

THIS IS NOTICE TO GROUP "B" Hatch Engineering THAT THE FOLLOWING WORK/MATERIAL AS PER P.O./CONTRACT IS/ARE BEING TRANSFERRED BY GROUP "A" Nuna East Ltd. AND IS/ARE BEING FULLY ACCEPTED BY GROUP "B" Hatch Engineering FROM GROUP "A" Nuna East Ltd.
WITH EXCEPTIONS AS LISTED BELOW (IF ANY).

Description:	**Reference Drawing(s):** • H353004-40000-221-271-0005-0001 Rev 2 Laydown area LP3 Plan & Profiles; • H353004-40000-228-272-0012-0001 Rev 1 Laydown area LP3 Drainage Plan.

Exceptions:	**Date Corrected:**	**Signed Off:**
1. NO EXCEPTIONS		
2.		

NUNA EAST LTD	TCCC	Exhibit: 1-12 QDG Revision 1 Page 1 of 1

"Exceptions Accepted and released"

From Group "A": Nuna East Ltd.

Date: 9/3/19

Print Name: BRADFORD WATKIN Signature: B. W

To Group "B": Hatch Engineering.

Date: 9/3/19

Print Name: ROY BAGGA Signature: R A

I confirm the conditions listed below have been met (with or without noted exceptions or deficiencies) and transfer of care, custody and control of the item(s) listed above are acceptable to the recipient.

☑ All Inspections are complete, and all technical issues are resolved.

☑ All deficiencies have been noted.

☑ All Redlines / As-Builts have been reviewed.

N/A

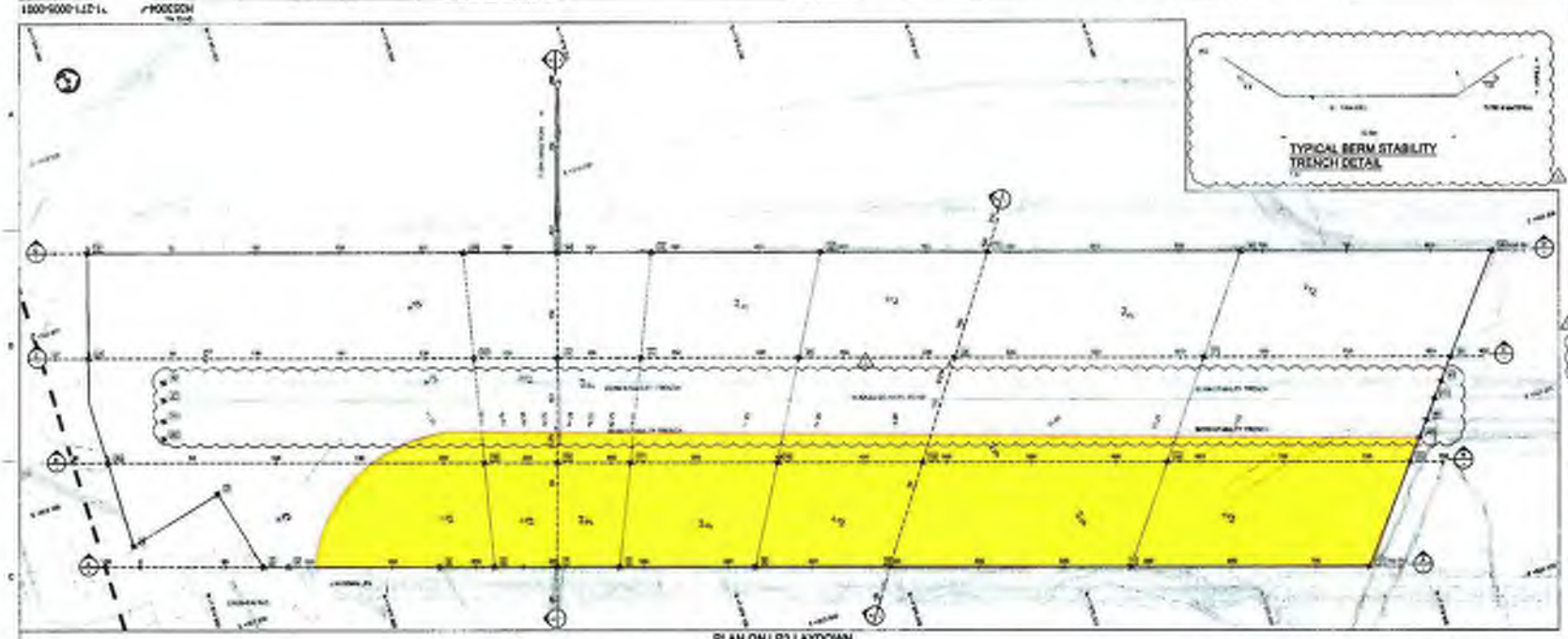
☒ All relevant manuals and vendor data have been received.

Recipient

Client representative:

Name: ROY BAGGA Signature: R A

Date: 9/3/19



GENERAL NOTES:

BERM STABILITY TRENCH NOTES:

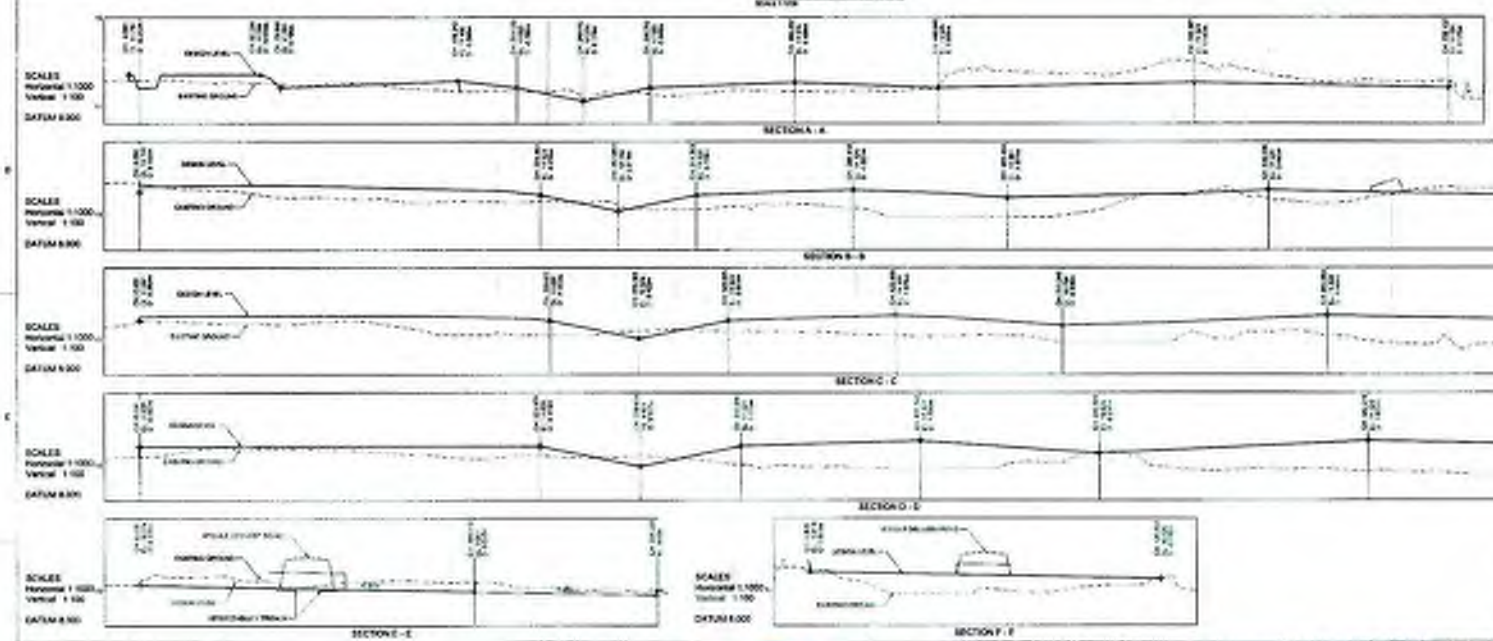
LEGEND:

LAYDOWN LP3 SETTING OUT COORDINATES

POINT	E	N	LEVEL

BERM STABILITY TRENCH SETTING OUT COORDINATES

POINT	E	N



Released for Use

Bradford Watson
QA/QC
Reviewed

FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
PLAN AND PROFILES

1053004-40000-221-271-0005-0001 2

Transfer of Care, Custody and Control

FROM GROUP "A"	Nuna East Ltd.	**Job File No.:**	CC006-0003A
To Group "B"	Hatch Engineering	**WBS No.:**	4810
Location:	Milne Port Site	**Date:**	AUGUST 30, 2019

Originating job file no. details:	Construct a Laydown Pad to IFC Engineered Design: • Earthworks Excavation, Aggregate haulage, placement & compaction.
Comments:	• This TCCC covers the West side area of LP3 from the Module road west to the LP3 limits. • Standard design laydown for storage of Seacans, components and materials.

THIS IS NOTICE TO GROUP "B" Hatch Engineering THAT THE FOLLOWING WORK/MATERIAL AS PER P.O./CONTRACT IS/ARE BEING TRANSFERRED BY GROUP "A" Nuna East Ltd. AND IS/ARE BEING FULLY ACCEPTED BY GROUP "B" Hatch Engineering FROM GROUP "A" Nuna East Ltd.
WITH EXCEPTIONS AS LISTED BELOW (IF ANY).

Description:	**Reference Drawing(s):**
	• H353004-40000-221-271-0005-0001 Rev 2 Laydown area LP3 Plan & Profiles; • H353004-40000-228-272-0012-0001 Rev 1 Laydown area LP3 Drainage Plan.

Exceptions:	**Date Corrected:**	**Signed Off:**
1. NO EXCEPTIONS		
2.		

NUNA EAST LTD	TCCC	Exhibit: 1-12 QDG Revision 1 Page 1 of 1

"Exceptions Accepted and released"

From Group "A": Nuna East Ltd.

Date: AUG 30, 2019

Print Name: BRADFORD WATKIN Signature:

To Group "B": Hatch Engineering.

Date: 30-AUG 2019

Print Name: ROY BANERA Signature:

I confirm the conditions listed below have been met (with or without noted exceptions or deficiencies) and transfer of care, custody and control of the item(s) listed above are acceptable to the recipient.

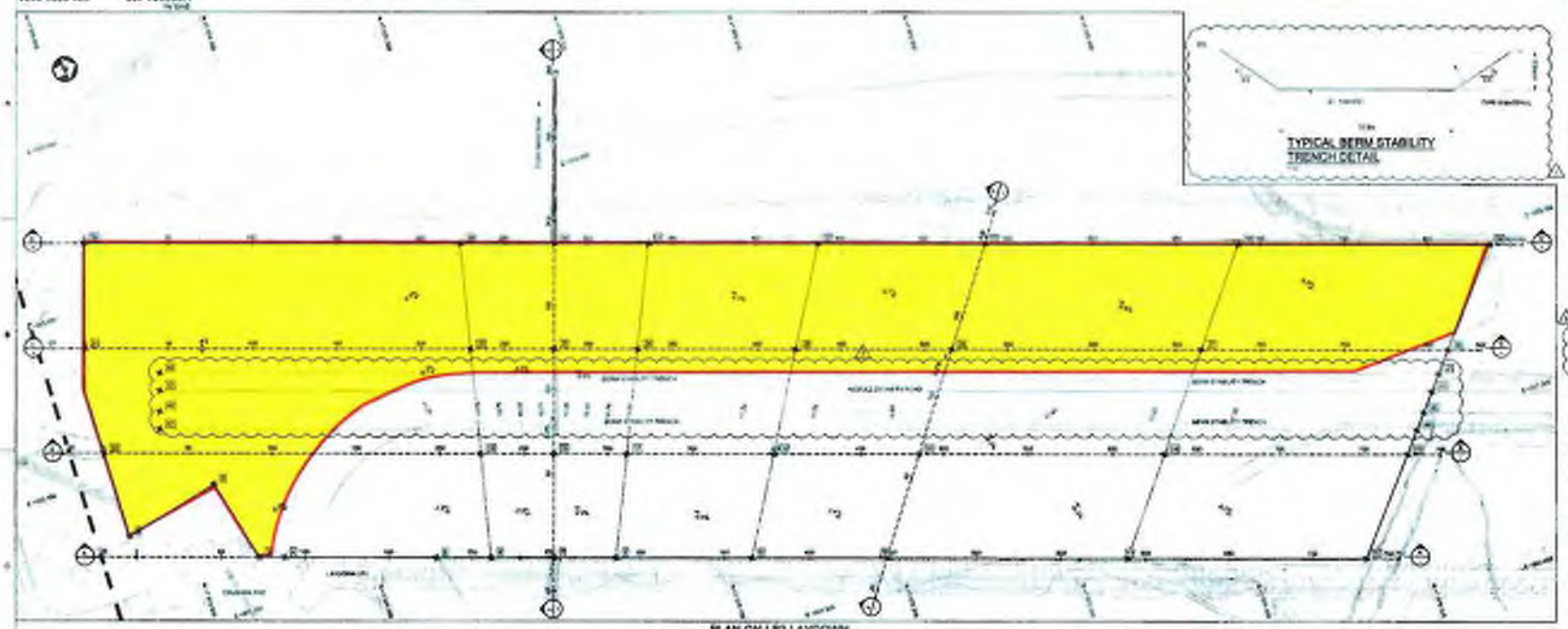
- [x] All Inspections are complete, and all technical issues are resolved.
- [x] All deficiencies have been noted.
- [x] All Redlines / As-Builts have been reviewed.
- [x] All relevant manuals and vendor data have been received.

Recipient

Client representative:

Name: ROY BANERA Signature:

Date: 30-AUG-2019



PLAN ON LP3 LAYDOWN

SECTION A - A

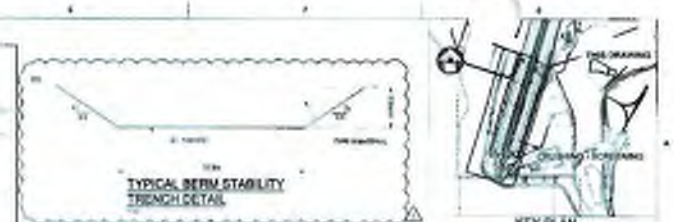
SECTION B - B

SECTION C - C

SECTION D - D

SECTION E - E

SECTION F - F



KEY PLAN

TYPICAL BERM STABILITY TRENCH DETAIL

GENERAL NOTES:

BERM STABILITY TRENCH NOTES:

LEGEND

LAYDOWN LP3 SETTING OUT COORDINATES

POINT	E	N	LEVEL
1			
2			
3			
4			
5			
6			

NUNA

NUNA EAST LTD

(Section 2)

Inspection & Test Plan (ITP)

NUNA
NUNA EAST LTD

QUALITY MANAGEMENT SYSTEM
INSPECTION &TEST PLAN
(Civil / Structural Installations)

CLIENT: Hatch	**ITEM / DESCRIPTION / SCOPE:** LP3 / Laydown / Earthworks material production, Excavation, Haulage, Placement & compaction.	**NUNA ITP NO.:** CC006-0003A	**REVISION NO.:** 2
CONTRACTOR: Nuna East Ltd.		**AFFILIATED SUB-CONTRACTOR(S):** N/A	
CONTACT PERSON: Bradford Watkin	**CONTACT INFORMATION:** bradfordw@nunalogistics.com	**DATE:** May 13, 2019	
CONTRACT No.: H353004-CC006	**HATCH PROJECT NUMBER:** H353004-CC006	**HATCH DOCUMENT TITLE:** Mary River Expansion Project-Remaining Early Earthworks	
NUNA JOB No.: CC006-0003A	**PURCHASE ORDER No.:** N/A	**PROJECT MANAGER:** Chris Petrovic	
LOCATION(S): Milne Port Site		**LEGEND:** **H:** A mandatory hold on manufacturer until release by inspector or official waiver from client. **N:** Inspection stage by inspector on a spot basis, but not a mandatory hold point. **HR:** A mandatory hold / review & acceptance / approval of the specified documentation. **W:** To be informed and invited to inspect. Construction to continue if inspector does not attend. **R:** Review of report / certifications. **A:** Audit (Review at Random).	
CWP No.: N/A			

Approved For Construction

Stephen Nugent — May 13, 2019
Nuna Project Manager / Engineer (Print) — Signature — Date

Bradford Watkin — May 13, 2019
Nuna Quality Representative (Print) — Signature — Date

Hatch Representative (Print) — Signature — Date

Hatch Stamp

HATCH Vendor/Contractor Document Review

Doc Number	E353004-CC006-130-001-0005	SUB	03
Date Received			

Review Grade	Next Submittal Status
☐ C1 - Proceed to next submission & status ☐ C2 - Proceed with exceptions as noted in next submission & status	☐ Certified ☐ As-Built
☐ C3 - Do not proceed. Revise as noted & resubmit	☐ Internal Review ☐ Certified ☐ As-Built
Next Submittal Date	

☐ C4 - No further submission required - Complete (select status below)
☐ Certified Final ☒ Final ☐ Cancelled ☐ Superseded

Package Engineer: Name, signature and date

Final Review

BRADFORD WATKIN — 9/29/19
Nuna Quality Representative (Print) — Signature — Date

Hatch Quality Representative (Print) — Signature — Date

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
1.	Contract Review / Approval	NUNA	Review / Verify Document	Prior to project start	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract				R		5/14/19	R		9/29/19	

ACTIVITY DATA							VERIFICATION DATA											
								Subcontractor			Nuna			Hatch			Comments
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	
2.	Approval of ITP	NUNA / HATCH Representatives	Review	Prior to start	NUNA Quality System Manual	Signed ITP by Client representative, NUNA Quality System Manual	Signed acceptance of document (Exhibit 1.0)				HR	[illegible]	5/14/19	HR	R.F.	9/29/19	
3.	Scope and Associated Documents	NUNA	Review For Errors	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R	[illegible]	5/14/19	R	R.F.	9/29/19	
4.	Signature Log	NUNA	Review, obtain signatures	Ongoing	NUNA Quality System Manual	NUNA Quality System Manual	NUNA Signature Log				R	[illegible]	5/16/19	R	R.F.	9/29/19	
5.	Initial Survey Layout	NUNA / ALL NORTH	Cross Check of IFC Layout	Ongoing	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				HR	[illegible]	5/21/19	HR	R.F.	9/29/19	
6.	Work Method of Statement	NUNA / HATCH	Review	Prior to Start	IFC Drawings, NUNA Quality System Manual, Hatch Spec. 221-078-0001 Rev 0	IFC Drawings, NUNA Quality System Manual, Hatch Spec. 221-078-0001 Rev 0	Nuna Operational Work Plan				R	N/A		R	R.F.	9/29/19	Also referred to as a Nuna Operation Work Plan
7.	Materials verification	NUNA	Review	As required	IFC Drawings, Hatch Spec. 280-078-0002 Rev 0, ASTM C-136	IFC Drawings, Hatch Spec 280-078-0002 Rev 0, ASTM C-136	Sieve Test Reports, QSRs				HR	[illegible]	5/29/19	HR	R.F.	9/29/19	• Type 5 • Type 8 • Type 12 • Type 19 • Type 22
8.	RFI	NUNA	Resolution of RFIs	As required	NUNA Quality System Manual	Disposition, Approved, closed and log updated	RFIs				HR	[illegible]	5/29/19	HR	R.F.	9/29/19	
9.	Clearing of works location Completed	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W	[illegible]	5/24/19 INITIAL 5/27/19	W	R.F.	9/29/19	• Snow / Ice removal / Water / Disposal CLEARING WAS CHECKED OFF BY ZONE.

ACTIVITY DATA							VERIFICATION DATA											
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
10.	Excavate OG to subgrade elevation	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W		8/27/19	W	R.F.	8/29/19	
11.	Subgrade foundation preparation completed • Compaction • Proof rolling	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W		8/30/19	HR	R.F.	8/29/19	
Type 5 32 minus																		
12.	Type 5 32 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W		8/30/19	W	R.F.	8/29/19	
13.	Compaction of Type 5 32 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W		8/30/19	W	R.F.	8/29/19	
14.	Survey of Type 5 32 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR W		8/30/19	W	R.F.	8/29/19	
Type 8 Jaw Run 150 minus																		
15.	Type 8 Jaw Run 150 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W		8/30/19	W	R.F.	8/29/19	

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
16.	Compaction of Type 8 Jaw Run 150 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	DW	9/27/19	W	9/27/19	R.F.	
17.	Survey of Type 8 Jaw Run 150 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR	DW	9/27/19	W	9/27/19	R.F.	
ROQ (Type 12)																	
18.	ROQ (Type 12) Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	DW	9/27/19	W	9/27/19	R.F.	
19.	Compaction of ROQ (Type 12) Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	DW	9/27/19	W	9/27/19	R.F.	
20.	Survey of ROQ Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR	DW	9/27/19	HR	9/27/19	R.F.	
Type 19 150 Clear																	
21.	Type 19 150 Clear Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	N/A		W	9/27/19	R.F.	

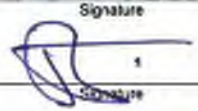
ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
22.	Compaction of Type 19 150 Clear Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	N/A		W			
23.	Survey of Type 19 150 Clear Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR	N/A		HR			
Type 22 600 minus select																	
24.	Type 22 600 minus Select Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	N/A		W			
25.	Compaction of Type 22 600 minus Select Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	N/A		W			
26.	Survey of Type 22 600 minus Select Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR	N/A		HR			
27.	As built Survey	NUNA	Review	Continuous During Operations	IFC Drawings	IFC Drawings, Hatch Specifications	As built Drawings & Data				HR		9/27/19	HR	R.F.	9/27/19	

ACTIVITY DATA							VERIFICATION DATA											
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
28.	Final Walk down	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Contract Requirements	Final Walkdown Attendees' Report				W		9/3/19	W	R.F.	9/29/19	
29.	Deficiency List / Punch list generated	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per contract Requirements	Item form punch list items resolved				HR		9/3/19	HR	R.F.	9/29/19	
30.	NCR's closed.	NUNA / HATCH	Review of NCRs, Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Requirements	NCR log cleared				HR		9/3/19	HR	R.F.	9/29/19	
31.	As-built / Redline drawings completed.	NUNA	Review / Verify	Post Final Walk down	IFC Drawings, Contract	As-builts / Redlines to Reflect All Field Changes	As-builts / Redlines				HR		9/26/19	HR	R.F.	9/29/19	
32.	Final Acceptance and ITP Sign off	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP (Exhibit 1.0)				HR		9/29/19				
33.	Inspection Acceptance and Sign-Off Form signed by Engineer of record.	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP, Acceptance of Completion of Construction Form				HR		9/29/19				
34.	Turnover package completed and sent to client.	NUNA	Review / Verify	Post project completion	NUNA Quality System Manual, IFC Drawings, Contract	Contract, Code & applicable specifications.	Quality Management System Quality Control Turnover package.				HR		9/29/19				

Note: Nuna ITP Sign-Offs based on supporting documentation.

Comments:

ITP ISSUE APPROVALS

Stephen Nugent Nuna Contractor Project Manager / Engineer (Print)	Site Project Manager Title	 Signature	May 13, 2019 Date (mm/dd/yy)
Bradford Watkin Nuna Contractor Quality Manager / Representative (Print)	QC Coordinator Title	 Signature	May 13, 2019 Date (mm/dd/yy)
Ronny Franken HATCH Quality Manager / Representative (Print)	Quality Assurance Manager Title	 Signature	Sept 29 - 2019 Date (mm/dd/yy)

ITP CLOSEOUT AND WORK ACCEPTANCE APPROVALS

Nuna Contractor Quality Manager / Representative (Print)	Title	Signature	Date (mm/dd/yy)
HATCH Quality Manager / Representative (Print)	Title	Signature	Date (mm/dd/yy)

NUNA

NUNA EAST LTD

(Section 3)

Redline Drawings

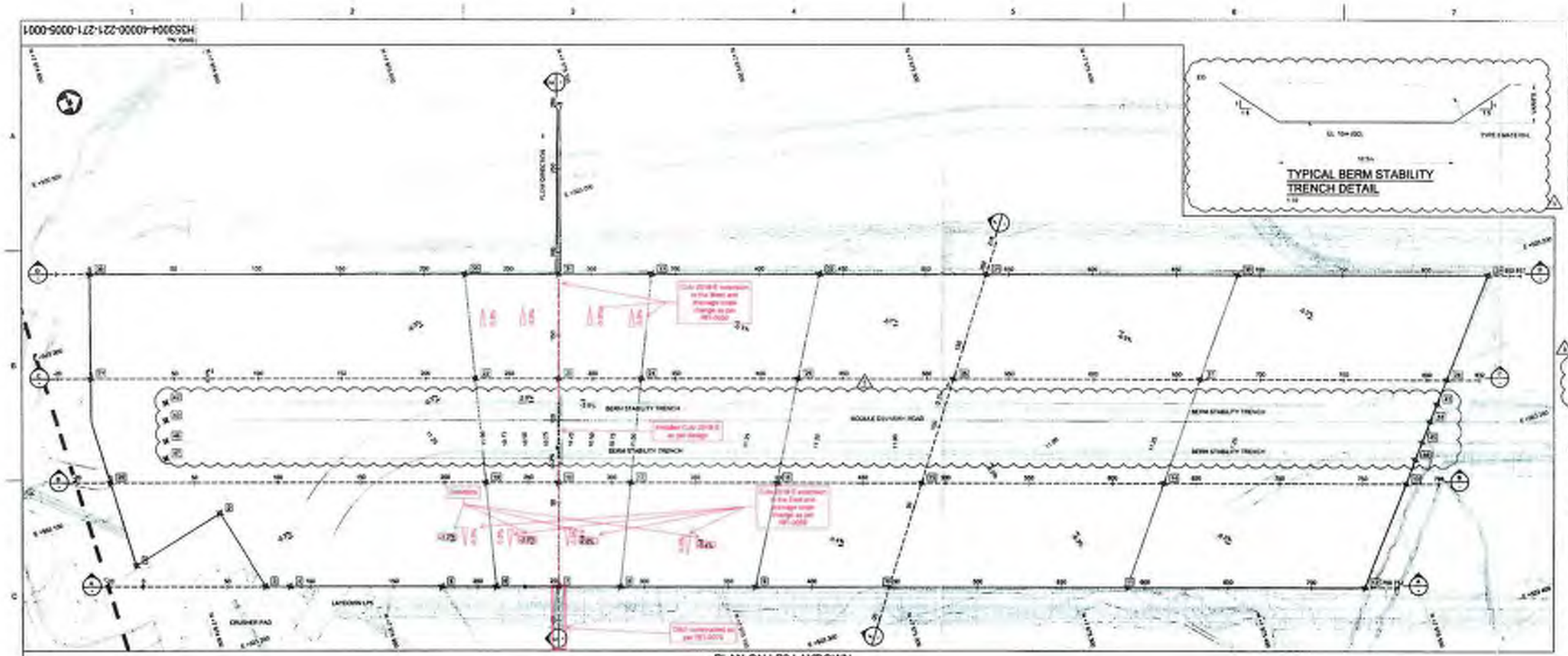
NUNA

NUNA EAST LTD

(Section 4)

Survey Data

H553004-40000-221-271-0005-0001



PLAN ON LP3 LAYDOWN
SCALE 1:1000

KEY PLAN

GENERAL NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2019).
2. COORDINATES GRID IS NAD83(CSRS)/UTM ZONE 17 (EPSG 2958) IN METERS.
3. EXISTING CONTOURS AND ELEVATIONS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. LAYDOWN CONTOURS AND ELEVATIONS ARE IN METERS CONTOUR INTERVAL IS 0.25m.
5. ALL DIMENSIONS ARE IN MILLIMETER UNLESS NOTED OTHERWISE.
6. FOR TYPICAL LAYDOWN/PAD FINISHED GRADING, REFER TO DETAIL 1 ON DWG No. H553004-00000-221-264-0002-0001.
7. FOR ROAD LAYERWORKS REFER TO TYPICAL DETAILS SHOWN ON DWG. No. H553004-40000-221-272-0001-0001.

BERM STABILITY TRENCH NOTES:

1. FOR THE INDICATED AREA, OVER EXCAVATION TO BE AT ELEVATION OF 10m CD AND BACKFILLED WITH TYPE A MATERIAL PRIOR TO CONSTRUCTION OF LAYDOWN AREA.

LEGEND:

- (10.0) CONTOUR ELEVATION
- 1 SETTING OUT POINT NUMBER
- EG EXISTING GROUND
- CH CHAINAGE
- EL ELEVATION
- D DEPTH

LAYDOWN LP3 SETTING OUT COORDINATES

POINT	E	N	LEVEL
1	622 532.705	7070 760.796	11.702
2	622 417.744	7070 826.446	11.652
3	622 647.524	7070 619.534	11.655
4	622 771.886	7070 853.726	11.615
5	622 639.365	7070 944.255	11.350
6	622 508.716	7070 971.332	11.525
7	622 516.828	7070 926.949	10.274
8	622 536.941	7070 842.344	11.520
9	622 574.821	7071 018.338	11.320
10	622 578.297	7070 996.172	11.520
11	622 621.478	7070 822.431	11.320
12	622 563.977	7070 668.849	11.525
13	622 512.940	7070 812.375	11.525
14	622 556.759	7070 671.738	11.520
15	622 625.418	7070 652.101	10.987
16	622 599.542	7070 752.019	11.520
17	622 713.905	7070 756.938	11.525
18	622 561.643	7070 605.424	10.150
19	622 647.868	7070 660.915	11.525
20	622 666.611	7070 799.702	11.516
21	622 618.211	7070 877.226	11.250
22	622 668.654	7070 896.405	11.520
23	622 691.462	7070 843.960	10.625
24	622 716.270	7070 891.532	11.520
25	622 641.163	7070 960.660	11.320
26	622 670.384	7070 976.022	10.765
27	622 716.378	7070 911.845	11.320
28	622 685.163	7070 852.662	11.520
29	622 677.466	7070 899.296	11.520
30	622 662.334	7070 952.670	11.320
31	622 617.838	7070 927.443	10.520
32	622 686.263	7070 911.745	11.320
33	622 696.178	7070 718.040	11.520
34	622 661.458	7070 883.620	9.261
35	622 624.513	7070 888.151	11.520
36	622 636.362	7070 792.420	11.520
37	622 648.801	7070 892.345	9.755
38	622 649.303	7070 881.180	9.755
39	622 654.245	7070 868.024	9.885
40	622 661.802	7070 881.124	9.885

BERM STABILITY TRENCH SETTING OUT COORDINATES

POINT	E	N
41	622 272.472	7070 843.271
42	622 316.261	7070 915.824
43	622 353.296	7070 913.402
44	622 282.958	7070 835.214
45	622 291.311	7070 827.345
46	622 307.325	7070 809.757
47	622 317.148	7070 829.628
48	622 300.267	7070 819.992

SECTION A - A
SCALES: Horizontal 1:1000, Vertical 1:100
DATUM 9.000

SECTION B - B
SCALES: Horizontal 1:1000, Vertical 1:100
DATUM 8.000

SECTION C - C
SCALES: Horizontal 1:1000, Vertical 1:100
DATUM 8.000

SECTION D - D
SCALES: Horizontal 1:1000, Vertical 1:100
DATUM 8.000

SECTION E - E
SCALES: Horizontal 1:1000, Vertical 1:100
DATUM 8.000

SECTION F - F
SCALES: Horizontal 1:1000, Vertical 1:100
DATUM 8.000

NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ✓ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: [illegible] COMPANY: NUNA

DATE OF AS-BUILT: 9/26/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY: Hatch

Released for Use

FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
PLAN AND PROFILES

Orig. No. H553004-40000-221-271-0005-0001 REV 2

DRAWING No.	DRAWING TITLE
H553004-30000-221-264-0002-0001	EARTHWORKS AND DRAINAGE DETAILS
H553004-40000-233-271-0007-0001	MODULE DELIVERY ROAD PLAN AND PROFILE SHEET 3 OF 4
H553004-40000-233-271-0007-0004	MODULE DELIVERY ROAD PLAN AND PROFILE SHEET 4 OF 4
H553004-30000-221-264-0001-0001	STANDARD DRAWING - TYPICAL CUT/FILL SECTION
H553004-40000-233-272-0001-0001	DRAINAGE PLAN
H553004-30000-221-264-0005-0001	STANDARD DRAWINGS - TYPICAL END DITCH AND BERM SECTIONS
H553004-40000-221-272-0001-0001	MAIN, PRIMARY AND SECONDARY ROADS - TYPICAL CROSS SECTIONS
H553004-30000-221-272-0001-0001	PORT SITE - BLOCK PLAN

REFERENCE DRAWINGS

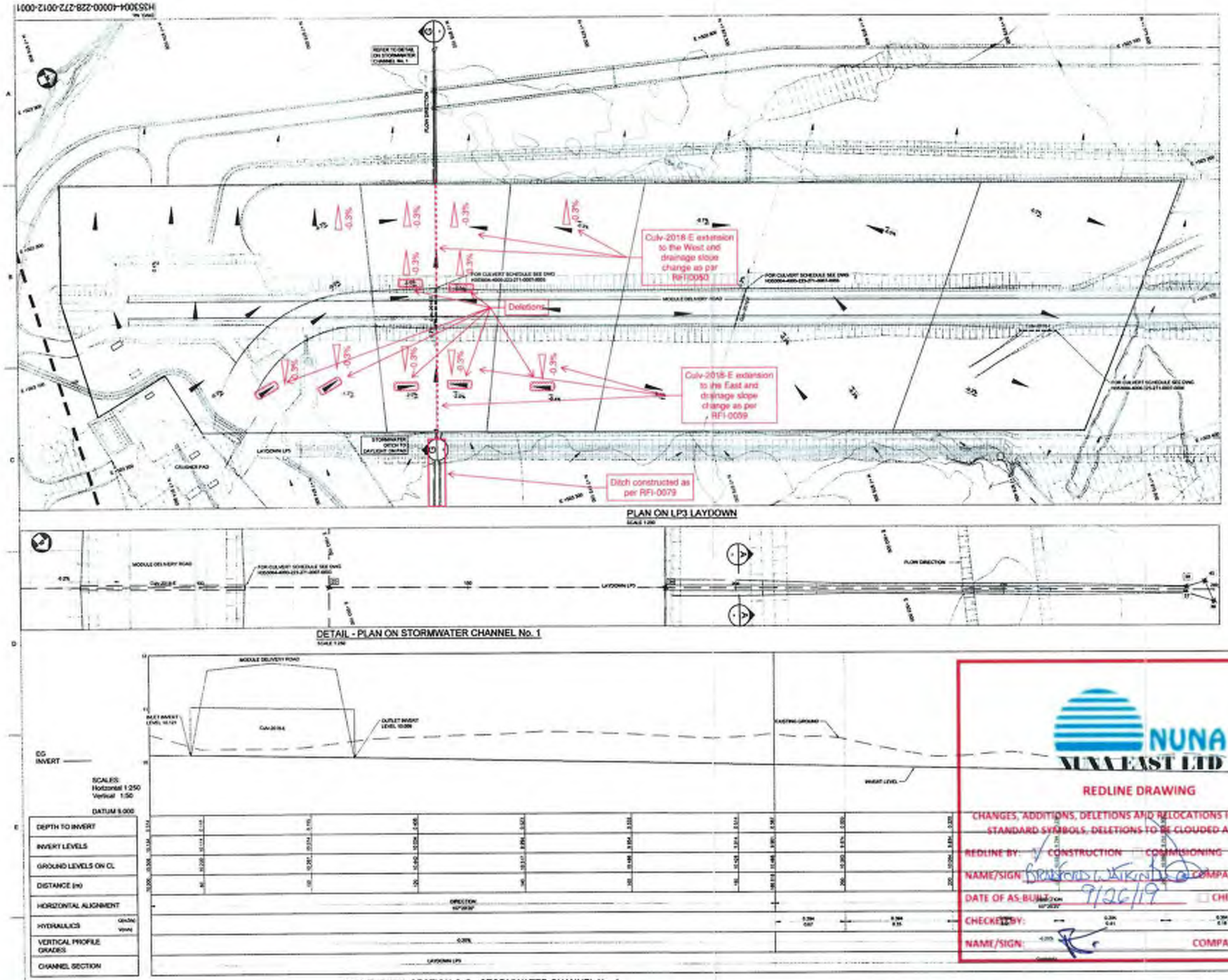
No.	DESCRIPTION	BY	CHKD	DATE
1	BERM STABILITY TRENCH	AM	FH	11/05/2019
2	EXC STAKE REVISED	KAW	FH	19/06/2019
3	IFFR - ISSD FOR CONSTRUCTION	MA	FH	19/06/2019

REVISIONS

	NAME	SIGNATURE	DATE
DRAFTSPERSON	M HEINRICH		
DESIGNER	M HEINRICH		
CHECKED	F HAGG		
DESIGN EXPRD	N COOPER		
RESP. ENG.	N HAGG		
LEAD DISC. ENG.	A GROBELAAR		
DISCIPLINE AREA LEAD	F LEBRO		
DISCIPLINE ENG. MANAGER	A GOLDEN		
PROJECT AREA MANAGER	J ATIA		

DRAWING APPROVAL STATUS: Approved for Construction

SCALE 1:1000 (ON A1 SHEET) — SHEET SIZE: E



PLAN ON LP3 LAYDOWN

DETAIL - PLAN ON STORMWATER CHANNEL No. 1

LONGITUDINAL SECTION G-G - STORMWATER CHANNEL No. 1

KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTSAT (2014)
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. EG CONTOURS AND ELEVATIONS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. LAYDOWN CONTOURS AND ELEVATIONS ARE IN METERS. CONTOUR INTERVAL IS 0.25m.
5. ALL DIMENSIONS ARE IN MILLIMETER UNLESS NOTED OTHERWISE.
6. FOR TYPICAL LAYERWORKS FOR FINISHED GRADING, REFER TO DETAIL 1 ON DWG No. H353004-40000-221-284-0002-0001
7. FOR ROAD LAYERWORKS REFER TO TYPICAL DETAILS SHOWN ON DWG. No. H353004-40000-221-273-0001-0001

LEGEND:

- 10.00 CONTOUR ELEVATION
- 42 SETTING OUT POINT NUMBER
- EG EXISTING GROUND
- CH CHAINAGE
- EL ELEVATION
- OFF PAD FLOW DIRECTION
- ON PAD FLOW DIRECTION

LAYDOWN LP3
SETTING OUT COORDINATES

POINT	E	N	LEVEL
34	500041.406	7975092.626	9.901
37	502944.601	7975092.145	9.705
38	502944.305	7975091.190	9.705
39	502944.325	7975095.234	9.695
40	502944.002	7975091.124	9.699

SECTION A-A - CHANNEL

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REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ✓ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: Bradford Watkins COMPANY: NUNA

DATE OF AS-BUILT: 9/26/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY: Hatch

Released for Use

Bradford Watkins GA/QC Reviewed

FOR CONSTRUCTION

HATCH

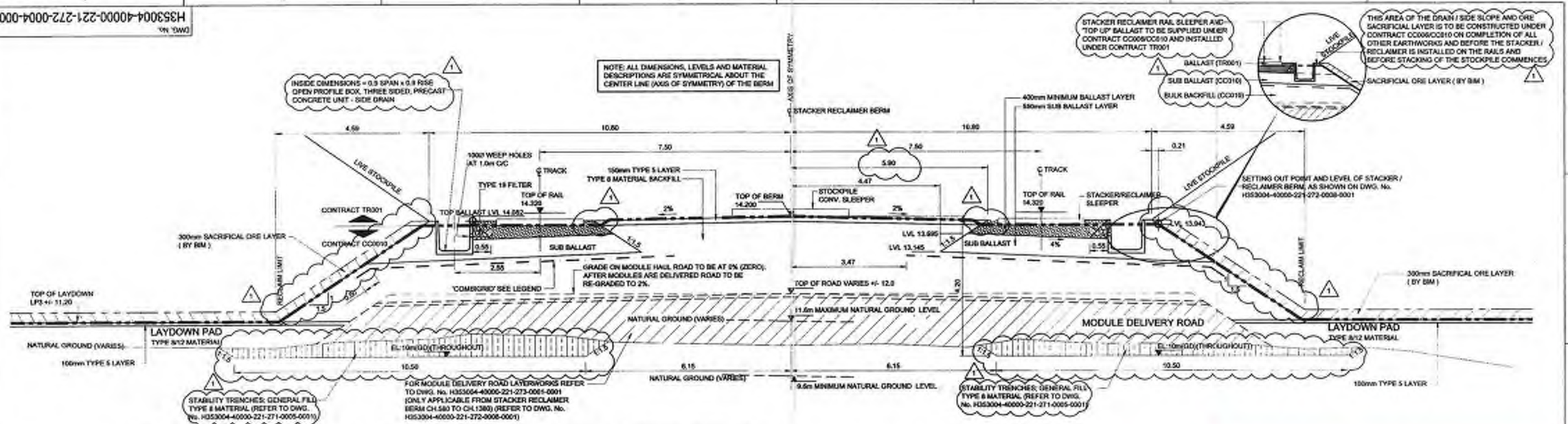
Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
DRAINAGE PLAN

H353004-40000-228-272-0012-0001 REV 1

DWG. No. H353004-40000-221-272-0004-0001



BALLAST AND SUB BALLAST MATERIALS SPECIFICATION:

CRUSHED GRAVEL BALLAST:

GRADATIONS TO BE WITHIN LIMITS SPECIFIED. APPROVAL TO BE PROVIDED BY GEOTECHNICAL ENGINEER FOR ALL GRADATIONS.

SIEVE SIZE	PERCENT PASSING
45.3mm (1 - 3/4")	100
32.0mm (1 - 1/4")	70 - 95
25.4mm (1")	50 - 80
19.0mm (3/4")	30 - 60
12.7mm (1/2")	10 - 30
4.75mm (No. 4)	0 - 3
75 micron (No. 200)	0 - 1

PERCENTAGE OF CRUSHED PARTICLES IN SIZE RANGE SHALL NOT BE LESS THAN 70% BY WEIGHT OF ALL PARTICLES IN THAT SIZE RANGE. PARTICLES HAVING ONE OR MORE FRACTURED FACES WILL BE USED IN CALCULATING THIS PERCENTAGE.

MATERIAL IN SAMPLE FINER THAN No. 4 (4.76 MICRON) SIEVE WILL NOT BE CONSIDERED IN DETERMINING THE PERCENTAGE OF FRACTURED FACES.

GRADING OF CRUSHED GRAVEL BALLAST SHALL BE DETERMINED BY ASTM C316, LATEST EDITION.

AMOUNT OF MATERIAL FINER THAN No. 200 (74 MICRON) SHALL BE DETERMINED BY ASTM C117, LATEST EDITION.

SUB BALLAST:

COMPACT TO 98% OF STANDARD PROCTOR MAXIMUM DENSITY.

MATERIAL TO BE CRUSHED OR SCREENED PIT RUN GRAVEL, CONTAINING NO MORE THAN THREE PERCENT (3%) ORGANICS BY WEIGHT AS DETERMINED BY ASTM C123.

MATERIAL GREATER THAN 5mm TO CONTAIN A MINIMUM OF FIFTY PERCENT (50%) BY WEIGHT FRACTURED MATERIAL [TWO (2) FRACTURED FACES]

SIEVE SIZE	PERCENT PASSING
75mm (3")	100
25mm (1")	60 - 90
4.75mm (No. 4)	35 - 60
425 micron (No. 40)	10 - 40
75 micron (No. 200)	0 - 5

NOTES ON OPERATION OF STACKING AND RECLAIMING:

THE FOLLOWING IS RECOMMENDED TO BE CONSIDERED FOR THE OPERATION OF STACKING AND RECLAIMING:

- INSPECT THE BERM EVERY SEASON DURING EVERY THAW, PARTICULARLY IN THE FIRST TWO SEASONS, FOR SETTLEMENT AND SIDE SLOPE SLUMPING.
- MAINTAIN SYMMETRY OF THE TWO LUMP ORE STOCKPILES TO THE BERM DURING OPERATION, TO MINIMIZE THE POTENTIAL DIFFERENTIAL SETTLEMENT IN THE CROSS SECTIONAL PLANE.
- TOP OF STABILITY LAYER TO BE CLEANED BEFORE FRESHET AND RAINY SEASON, ANY PONDING WATER ON THE BERM TO BE PUMPED OUT.
- SNOW TO BE REMOVED TO AVOID ACCUMULATION.
- SIDE DRAIN TO BE KEPT CLEAN OF IRON ORE AND OTHER DEBRIS, PARTICULARLY BEFORE FRESHET AND RAINY SEASON.

NOTES ON BERM STABILITY TRENCH:

- OVER EXCAVATION TO BE AT ELEVATION OF 10m GD AND BACKFILLED WITH TYPE 8 MATERIAL PRIOR TO CONSTRUCTION OF LP3 LAYDOWN AREA.

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.

NOTES ON LAYERWORKS:

1. THE PROPERTIES OF ALL FILL MATERIALS TO SATISFY THE REQUIREMENTS IN THE HATCH SPECIFICATION H353004-00000-200-078-0002 UNLESS OTHERWISE NOTED.
2. ALL MATERIALS TO BE PLACED AND COMPACTED IN STRICT ACCORDANCE WITH HATCH SPECIFICATION H353004-00000-221-078-0001 AND THE GEOTECHNICAL RECOMMENDATIONS IN DOCUMENT H353004-00000-229-230-0004.
3. EXISTING GROUND BENEATH THE BERM TO BE SHAPED TO ENSURE A MINIMUM DEPTH OF 2.5m OF ROCKFILL IS ACHIEVED PLUS 1.5m OF STABILITY TRENCH AS INDICATED ON THE SECTION.
4. SUB BALLAST LAYER = 0.55m.
5. BALLAST LAYER = 0.40m MINIMUM.
6. ROADWAY = MINIMUM 0.40m .

CONSTRUCTION SEQUENCE:

1. FOUNDATION PREPARATION TO BE DONE IN ACCORDANCE WITH HATCH SPECIFICATIONS H353004-00000-221-028-0001 AND H353004-00000-200-078-0002.
2. CONSTRUCT STABILITY TRENCHES,
3. CONSTRUCT MODULE ROAD WITH TYPE 8 AND TYPE 5 MATERIAL,
4. CONSTRUCT LAYDOWN PADS,
5. PLACE AND COMPACT TYPE 8 FILL UP TO BOTTOM OF SUB BALLAST LEVEL, 4% CROSS SLOPE,
6. INSTALL 'COMBIGRID' TYPE 40/40 Q1 151 GRID OR SIMILAR APPROVED BELOW SUB BALLAST,
7. PLACE AND COMPACT SUB BALLAST,
8. PLACE AND COMPACT 0.55m INFILL BETWEEN SUB BALLAST LAYERS AT BERM CENTRE,
9. PLACE BALLAST,
10. PLACE AND COMPACT BERM MATERIAL IN CENTRE TO LEVEL 13.65 AT CENTRELINE,
11. INSTALL RAIL TIES,
12. ADD FINAL BALLAST,
13. COMPLETE TOP OF BERM, 2% CROSS SLOPE.

LEGEND:

— — — - 'COMBIGRID' TYPE 40/40 Q1 151 GRID OR SIMILAR APPROVED

CONTRACT TR001

CONTRACT CC009/CC010 - BATTERY LIMIT

GD - GEODETIC DATUM

NUNA
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REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ✓ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: BRADY GOODWATER & COMPANY: NUNA

DATE OF AS-BUILT: 9/26/19 ✓ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: _____ COMPANY: _____

Released for Use

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER: P 913
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

DRAWING No.	DRAWING TITLE
H353004-40000-221-271-0005-0001	LAYDOWN AREA LP3 - PLAN AND PROFILES
H353004-00000-200-078-0002	QUARRIED FILL MATERIALS REQUIREMENTS
H353004-00000-221-078-0001	PLACEMENT OF FILL
H353004-40000-221-272-0008-0001	STOCKPILE 2 STACKER RECLAIMER BERM - SECTIONS
4500001469-867-0001-001	KRUPP / KLOHN CRIMPEN BERGER - BALLAST AND SUB BALLAST DETAILS
H353004-00000-229-230-0004	GEOTECHNICAL RECOMMENDATIONS FOR STACKER RECLAIMER BERM
H353004-40000-223-271-0007-0004	MODULE DELIVERY ROAD - PLAN AND PROFILE SHEET 4 OF 4
H353004-40000-223-271-0007-0003	MODULE DELIVERY ROAD - PLAN AND PROFILE SHEET 3 OF 4
H353004-40000-223-271-0007-0002	MODULE DELIVERY ROAD - PLAN AND PROFILE SHEET 2 OF 4
H353004-40000-223-271-0007-0001	MODULE DELIVERY ROAD - PLAN AND PROFILE SHEET 1 OF 4
H353004-40000-221-273-0001-0001	MODULE, PRIMARY AND SECONDARY ROADS - TYPICAL CROSS SECTIONS

REFERENCE DRAWINGS

REG. PROFESSIONAL

No.	DESCRIPTION	BY	CHK'D	DATE
1	STABILITY TRENCH ADDED AND GEOMETRY UPDATED	JM	FH	25/02/2019
0	APPROVED FOR CONSTRUCTION	IHB	FH	28/06/2018

REVISIONS

FOR CONSTRUCTION

IT IS EXPRESSLY AGREED AND UNDERSTOOD BY AND BETWEEN THE RECEIVING PARTY AND THE DISCLOSING PARTY THAT ANY AND ALL INFORMATION EMBODIED IN THIS DRAWING IS AND SHALL BE AND REMAIN THE EXCLUSIVE PROPERTY OF HATCH SUBJECT TO CLIENT'S ROYALTY-FREE, IRREVOCABLE, PERPETUAL AND NON-EXCLUSIVE LICENCE TO USE AND REPRODUCE THE DRAWING FOR PURPOSES CONNECTED WITH THE PROJECT, INCLUDING THE CONSTRUCTION, COMPLETION, MAINTENANCE, EXTENSION, REINSTATEMENT AND REPAIR OF THE PROJECT. THIS DRAWING, AND THE INFORMATION CONTAINED HEREIN, SHALL BE TREATED AS CONFIDENTIAL FOR ALL OTHER PURPOSES AND SHALL NOT BE DISCLOSED WITHOUT THE WRITTEN CONSENT OF HATCH.

HATCH

	ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	I BARNARD	NR		07/06/2018
DESIGNER	I BARNARD	NR		07/06/2018
CHECKER	F HUGO			2019-02-25
DESIGN COORD.	R GOOSSEN			2019-02-26
RESP. ENG.	R HALIM			2019-02-27
LEAD DISC. ENG.	A GROBBELAAR			2019-02-28
AREA LEAD	V LAVRIC			2019-02-28
ENG. MANAGER	R GOOSSEN			2019-02-28
AREA MANAGER	T ATIENA			2019-03-04

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
STACKER RECLAIMER BERM
TYPICAL SECTION

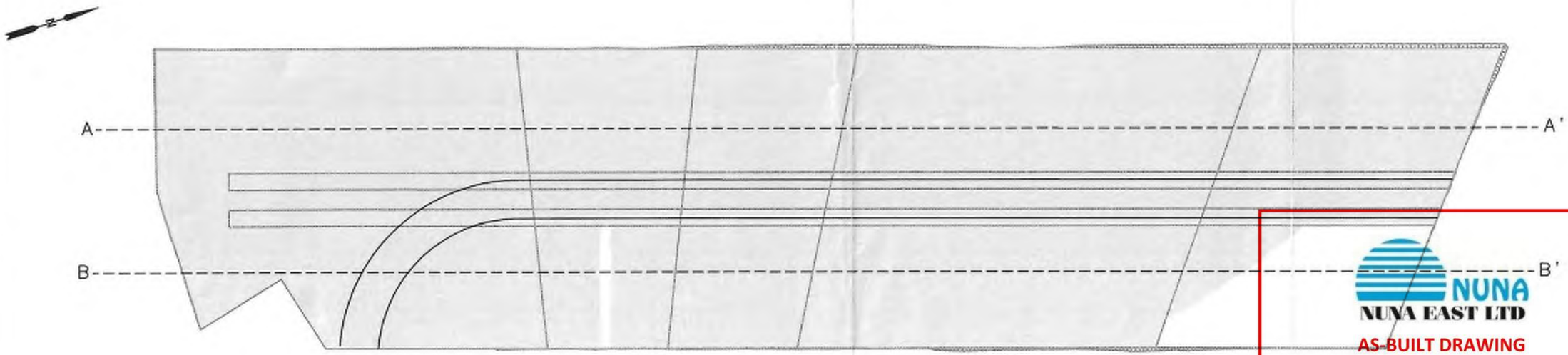
SCALE: NTS OR AS NOTED

DWG. No.: H353004-40000-221-272-0004-0001

REV: 1

SHEET SIZE: D

R:\SURNAME\DATES\FILES



NUNA

NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

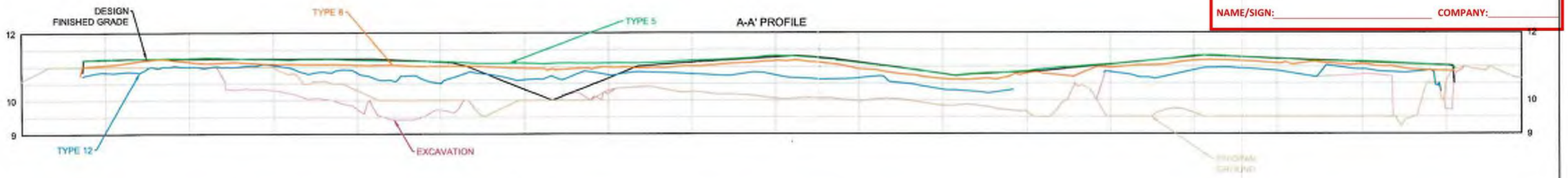
AS-BUILT BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

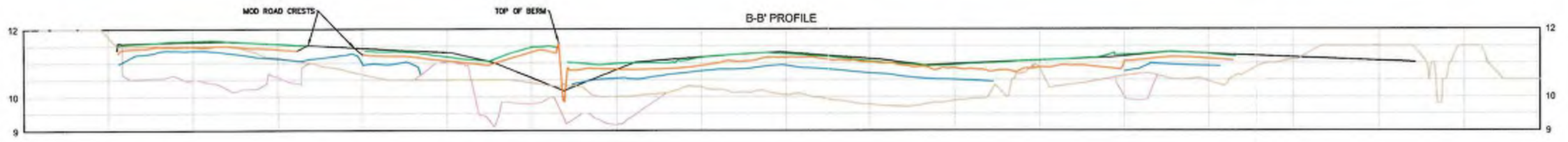
NAME/SIGN: Bradford Watkin COMPANY: Nuna

DATE OF AS-BUILT: 9/29/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:





LEGEND:
LP3 PAD DESIGN
AS-BUILT AREA

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

NUNA

DRAWN BY: M. WALSH

SCALE: AS SHOWN

DATE: Sept. 27, 2019

LAYDOWN LP3

DRAWING TITLE:
AS-BUILT SURVEY
SURVEYED UP TO SEPTEMBER 27, 2019

DRAWING NAME (YYMMDD): 190927 LP3 PAD AS-BUILT.dwg

NUNA

NUNA EAST LTD

(Section 4)

Survey Data
(Excavation to Subgrade)

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0003A
Laydown Area LP3
Excavation to Subgrade

Laydown Area LP3 Excavation to Subgrade Survey Data

Point Number	Northing	Easting	Elevation	Description
999	7976255.837	503529.972	17.258	ROOF ADJ
40000	7974889.186	502993.379	10.114	EXC
40001	7974887.662	503008.298	10.164	EXC
40002	7974886.072	503019.017	10.132	EXC
40003	7974884.545	503030.983	10.306	EXC
40004	7974881.697	503044.707	10.367	EXC
40005	7974879.309	503054.797	10.328	EXC
40006	7974877.753	503061.534	10.196	EXC
40007	7974874.76	503062.595	10.138	EXC
40008	7974865.109	503059.757	10.149	EXC
40009	7974857.263	503056.018	10.217	EXC
40010	7974858.244	503046.972	10.308	EXC
40011	7974860.669	503034.358	10.288	EXC
40012	7974863.072	503024.237	10.445	EXC
40013	7974864.762	503013.598	10.541	EXC
40014	7974867.125	503004.532	10.41	EXC
40015	7974869.529	502995.196	10.392	EXC
40016	7974872.017	502990.285	10.211	EXC
40017	7974879.003	502997.082	10.264	EXC
40018	7974878.075	503007.101	10.23	EXC
40019	7974877.22	503018.221	10.274	EXC
40020	7974875.819	503029.307	10.368	EXC
40021	7974873.156	503039.032	10.338	EXC
40022	7974872.282	503049.221	10.451	EXC
40023	7974872.178	503055.674	10.226	EXC
40024	7974886.014	503060.5	10.329	EXC
40025	7974888.923	503050.514	10.329	EXC
40026	7974890.378	503039.127	10.286	EXC
40027	7974892.709	503029.265	10.301	EXC
40028	7974894.623	503018.708	10.052	EXC
40029	7974897.25	503007.851	10.124	EXC
40030	7974901.033	502996.128	10.187	EXC
40031	7974910.961	502994.961	10.06	EXC TOE
40032	7974899.463	502991.566	10.201	EXC TOE
40033	7974890.138	502988.882	10.184	EXC TOE
40034	7974878.681	502985.242	10.267	EXC TOE
40035	7974868.67	502981.897	10.344	EXC TOE
40036	7974869.95	502980.66	10.868	EXC CREST
40037	7974878.123	502983.427	10.831	EXC CREST

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0003A
Laydown Area LP3
Excavation to Subgrade

40038	7974887.864	502987.319	10.811	EXC CREST
40039	7974897.522	502989.975	10.836	EXC CREST
40040	7974907.295	502993.241	10.703	EXC CREST
40041	7974911.16	502994.219	10.706	EXC CREST
40042	7974910.834	502995.262	10.066	EXC
40043	7974907.356	503007.243	10.201	EXC
40044	7974906.185	503016.688	10.136	EXC
40045	7974903.712	503028.017	10.227	EXC
40046	7974902.347	503039.358	10.116	EXC
40047	7974900.873	503051.421	10.279	EXC
40048	7974899.378	503063.466	10.288	EXC
40049	7974899.242	503068.865	10.293	EXC TOE
40050	7974894.463	503067.486	10.435	EXC TOE
40051	7974888.187	503065.135	10.291	EXC TOE
40052	7974886.383	503064.476	10.305	EXC TOE
40053	7974886.429	503064.994	10.573	T8 TOE
40054	7974895.236	503068.224	10.558	T8 TOE
40055	7974904.545	503071.316	10.702	T8 TOE
40056	7976276.949	503524.665	10.753	T8 TOE

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0003A
Laydown Area LP3
Excavation to Subgrade

Laydown Area LP3 Excavation to Subgrade Survey Data

Point Number	Northing	Easting	Elevation	Description
40060	7974906.569	503050.386	10.164	EXC
40062	7974909.622	503041.172	9.952	EXC
40063	7974903.493	503037.893	9.945	EXC
40064	7974905.45	503032.395	9.953	EXC
40065	7974915.201	503034.519	9.977	EXC
40066	7974907.888	503022.891	9.954	EXC
40067	7974917.412	503024.181	10.078	EXC
40068	7974909.856	503013.858	10.169	EXC
40069	7974911.279	503007.458	10.124	EXC
40070	7974919.293	503015.347	10.11	EXC
40071	7974923.709	502999.997	10.247	EXC
40072	7974915.832	502997.88	10.083	EXC
40073	7974932.173	503001.999	10.4	EXC
40074	7974931.91	503002.757	10.231	EXC
40075	7974929.309	503011.674	10.254	EXC
40076	7974933.219	503018.169	10.114	EXC
40077	7974926.393	503024.493	10.001	EXC
40078	7974930.102	503028.222	9.932	EXC
40079	7974923.13	503036.28	9.856	EXC
40080	7974921.998	503043.71	9.951	EXC
40081	7974925.497	503044.898	9.918	EXC
40082	7974916.687	503064.589	10.199	EXC
40083	7974913.042	503072.98	10.292	EXC
40084	7974920.407	503076.086	10.222	EXC
40085	7974923.853	503071.505	10.119	EXC
40086	7974929.333	503078.161	10.069	EXC
40087	7974932.367	503070.402	9.897	EXC
40088	7974927.383	503061.915	10.029	EXC
40089	7974933.085	503055.326	9.824	EXC
40090	7974928.967	503050.734	9.884	EXC
40091	7974935.319	503047.994	9.889	EXC
40092	7974935.774	503044.138	9.915	EXC
40093	7974935.768	503044.152	9.918	EXC
40094	7974931.431	503038.619	9.917	EXC
40095	7974939.414	503032.272	9.894	EXC
40096	7974936.892	503025.483	9.938	EXC
40097	7974941.365	503022.198	10.011	EXC
40100	7974938.133	503003.385	10.544	EXC
40101	7974937.902	503004.357	10.205	EXC

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0003A
Laydown Area LP3
Excavation to Subgrade

40102	7974939.622	503013.319	10.295	EXC
40098	7974945.45	503006.208	10.315	EXC
40099	7974945.375	503005.921	10.494	EXC
40061	7974901.424	503049.322	10.189	EXC
40059	7974902.038	503054.497	10.209	EXC
40058	7974901.419	503069.7	10.251	EXC

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0003A
Laydown Area LP3
Excavation to Subgrade

Laydown Area LP3 Excavation to Subgrade Survey Data

Point Number	Northing	Easting	Elevation	Description
40000	7974945.49	503082.162	9.887	EXC
40001	7974945.567	503074.64	9.443	EXC
40002	7974946.853	503063.394	9.54	EXC
40003	7974947.2	503061.592	9.594	EXC
40004	7974949.715	503052.369	9.51	EXC
40005	7974951.16	503046.658	9.448	EXC
40006	7974953.564	503031.821	9.845	EXC
40007	7974954.919	503024.477	9.708	EXC
40008	7974957.309	503014.525	9.816	EXC
40009	7974961.02	503010.444	10.146	EXC
40010	7974961.367	503011.789	9.933	EXC
40011	7974969.146	503013.42	9.9	EXC
40012	7974972.479	503014.572	9.99	EXC
40013	7974977.239	503016.062	9.7	EXC
40014	7974972.284	503032.633	9.807	EXC
40015	7974970.46	503047.414	9.936	EXC
40016	7974970.472	503047.411	9.93	EXC
40017	7974965.611	503045.3	10.001	EXC
40018	7974964.835	503036.536	9.974	EXC
40019	7974967.226	503026.585	9.815	EXC
40020	7974969.05	503056.194	9.638	EXC
40021	7974968.419	503063.087	9.43	EXC
40022	7974966.681	503071.307	9.345	EXC
40023	7974964.942	503079.808	9.371	EXC
40024	7974964.614	503081.7	9.456	EXC
40025	7974963.11	503089.746	9.92	EXC
40026	7974975.12	503093.2	9.788	EXC
40027	7974979.911	503086.749	9.348	EXC
40028	7974981.826	503077.926	9.399	EXC
40029	7974982.733	503067.155	9.763	EXC
40030	7974984.279	503057.812	9.837	EXC
40031	7974985.395	503049.707	9.761	EXC
40032	7974986.26	503042.9	9.816	EXC
40033	7974987.916	503033.736	9.889	EXC
40034	7974991.956	503021.223	10.009	EXC
40035	7974992.07	503020.81	10.06	EXC
40036	7974984.623	503018.333	9.718	EXC
40037	7974984.875	503017.96	10.077	EXC
40038	7974994.193	503021.276	10.049	EXC

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40039	7974994.509	503020.633	10.313	EXC
40040	7974981.518	503030.229	9.945	EXC
40041	7974979.941	503040.408	9.878	EXC
40042	7974977.634	503054.575	9.721	EXC
40043	7974973.54	503071.708	9.406	EXC
40044	7974971.626	503082.075	9.301	EXC
40045	7974970.094	503088.277	9.615	EXC
40046	7974969.701	503090.435	9.952	EXC
40047	7974952.809	503086.226	10.012	EXC
40048	7974953.394	503082.15	9.505	EXC
40049	7974953.62	503072.865	9.469	EXC
40050	7974955.812	503058.498	9.431	EXC
40051	7974957.746	503042.632	9.634	EXC
40052	7974959.852	503031.989	10.04	EXC
40053	7974962.477	503019.663	9.817	EXC
40054	7974963.459	503012.603	9.865	EXC
40055	7974963.385	503010.766	10.343	EXC
40056	7974952.351	503008.313	10.344	EXC
40057	7974952.242	503008.884	10.15	EXC
40058	7974949.52	503018.953	9.922	EXC
40059	7974947.41	503029.18	9.71	EXC
40060	7974944.786	503040.239	9.475	EXC
40061	7974941.517	503051.674	9.636	EXC
40062	7974939.601	503059.726	9.554	EXC
40063	7974938.024	503066.517	9.649	EXC
40064	7974939.936	503066.256	9.917	EXC
40065	7974944.202	503061.692	9.99	EXC
40066	7974941.251	503058.846	9.875	EXC
40067	7974942.929	503054.32	9.931	EXC
40068	7974943.828	503054.447	9.989	EXC
40069	7975001.26	503022.954	10.217	EXC
40070	7975001.347	503023.937	9.957	EXC
40071	7974995.713	503046.93	9.717	EXC
40072	7974995.705	503046.928	9.723	EXC
40073	7974995.705	503046.922	9.716	EXC
40074	7974993.669	503061.493	9.771	EXC
40075	7974991.132	503072.668	9.602	EXC
40076	7974988.149	503083.527	9.325	EXC
40077	7974985.774	503093.767	9.335	EXC

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Point Number	Northing	Easting	Elevation	Description
400000	7974981.386	503096.512	9.475	EXC
400001	7974981.367	503096.52	9.473	EXC
400002	7974984.194	503088.373	9.215	EXC
400003	7974986.55	503078.578	9.452	EXC
400004	7974989.777	503065.682	9.815	EXC
400005	7974992.67	503055.229	9.756	EXC
400006	7974995.33	503043.21	9.555	EXC
400007	7974996.959	503034.62	9.757	EXC
400008	7974998.525	503026.667	9.889	EXC
400009	7974999.448	503023.345	9.926	EXC
400010	7974999.77	503022.435	10.254	EXC
400011	7975009.228	503025.186	10.284	EXC
400012	7975009.037	503026.457	9.903	EXC
400013	7975007.437	503037.083	9.664	EXC
400014	7975005.152	503049.494	9.343	EXC
400015	7975003.594	503059.514	9.535	EXC
400016	7975001.012	503069.654	9.491	EXC
400017	7974999.36	503079.303	9.348	EXC
400018	7974996.502	503089.607	9.27	EXC
400019	7974993.062	503100.245	9.423	EXC
400020	7975002.281	503102.983	9.397	EXC
400021	7975004.31	503094.056	9.248	EXC
400022	7975006.078	503083.43	9.352	EXC
400023	7975008.094	503071.263	9.247	EXC
400024	7975010.126	503058.568	9.364	EXC
400025	7975013.059	503047.066	9.366	EXC
400026	7975015.157	503035.585	9.683	EXC
400027	7975015.977	503028.6	9.818	EXC
400028	7975016.238	503027.856	10.277	EXC
400029	7975025.822	503030.502	10.333	EXC
400030	7975025.604	503031.483	9.806	EXC
400031	7975023.922	503041.026	9.679	EXC
400032	7975021.629	503056.927	9.253	EXC
400033	7975019.048	503066.288	9.219	EXC
400034	7975017.983	503074.716	9.272	EXC
400035	7975015.314	503085.11	9.249	EXC
400036	7975012.814	503096.303	9.273	EXC
400037	7975010.809	503105.605	9.2	EXC
400038	7975020.703	503108.313	9.025	EXC

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400039	7975022.894	503097.228	9.344	EXC
400040	7975024.674	503085.82	9.249	EXC
400041	7975026.109	503073.174	9.242	EXC
400042	7975028.065	503062.293	9.197	EXC
400043	7975029.317	503050.376	9.316	EXC
400044	7975030.914	503039.591	9.722	EXC
400045	7975031.771	503033.587	9.827	EXC
400046	7975031.868	503032.699	10.251	EXC
400047	7974992.423	503020.257	10.356	EXC
400048	7974991.023	503030.426	9.82	EXC
400049	7974987.147	503049.175	9.776	EXC
400050	7974985.333	503059.858	9.889	EXC
400051	7974983.224	503073.229	9.609	EXC
400052	7974980.676	503086.429	9.349	EXC
400053	7974978.847	503095.683	9.528	EXC
40000	7975791.577	503471.146	10.309	EXC

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Point Number	Northing	Easting	Elevation	Description
999	7976255.837	503529.972	17.258	ROOF ADJ
500	7974981.79	503159.234	9.132	PROOF
501	7974971.409	503159.298	9.56	PROOF
502	7974960.873	503159.335	9.583	PROOF
503	7974950.591	503158.339	9.729	PROOF
504	7974943.831	503158.904	10.037	PROOF
505	7974938.093	503163.545	10.001	PROOF
506	7974924.541	503164.021	10.217	PROOF
507	7974926.062	503166.285	9.879	PROOF
508	7974930.106	503170.652	10.106	PROOF
509	7974936.101	503170.347	10.31	PROOF
510	7974946.73	503169.462	9.951	PROOF
511	7974957.604	503167.87	9.822	PROOF
512	7974966.648	503165.759	9.675	PROOF
513	7974975.51	503164.298	9.364	PROOF
514	7974982.017	503164.151	9.216	PROOF
515	7974981.637	503161.498	9.102	PROOF
516	7974975.587	503161.332	9.533	PROOF
517	7974965.045	503162.117	9.502	PROOF
518	7974954.062	503163.085	9.633	PROOF
519	7974945.999	503164.327	9.814	PROOF
520	7974937.97	503166.509	10.087	PROOF
521	7974930.068	503166.023	9.804	PROOF
600	7974982.344	503156.839	10.803	CREST
601	7974972.935	503157.148	10.829	CREST
602	7974964.147	503157.622	10.991	CREST
603	7974954.476	503156.877	11.121	CREST
604	7974945.018	503157.046	11.131	CREST
605	7974942.211	503159.505	10.924	CREST
606	7974938.879	503162.284	10.9	CREST
607	7974929.475	503161.918	11.093	CREST
608	7974922.828	503162.871	11.011	CREST
609	7974923.639	503165.137	10.558	CREST
610	7974924.596	503168.42	10.603	CREST
611	7974932.114	503170.673	11.046	CREST
612	7974942.532	503170.436	11.027	CREST
613	7974953.259	503169.409	10.992	CREST
614	7974962.738	503167.946	10.973	CREST
615	7974972.284	503166.507	10.753	CREST

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616	7974981.988	503166.827	10.557	CREST

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Point Number	Northing	Easting	Elevation	Description
100	7974852.661	503221.876	10.651	TOE SUBGRADE
101	7974848.274	503224.093	10.634	TOE SUBGRADE
102	7974842.935	503226.168	10.648	TOE SUBGRADE
103	7974843.518	503227.957	10.716	TOE SUBGRADE
104	7974849.612	503228.759	10.717	TOE SUBGRADE
105	7974855.712	503229.098	10.934	TOE SUBGRADE
106	7974855.052	503225.846	10.718	TOE SUBGRADE
107	7974852.152	503226.149	10.668	SUBGRADE-
108	7974846.98	503226.751	10.643	SUBGRADE-
109	7974843.369	503228.453	11.215	CREST
110	7974842.139	503226.133	11.223	CREST
111	7974847.036	503223.574	11.287	CREST
112	7974852.738	503221.009	11.213	CREST
113	7974855.351	503224.749	11.232	CREST

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Point Number	Northing	Easting	Elevation	Description
5000	7975556.583	503251.403	9.795	BASE
5001	7975555.797	503240.55	9.661	BASE
5002	7975557.542	503231.299	9.573	BASE
5003	7975567.321	503230.708	9.621	BASE
5004	7975573.975	503231.373	9.565	BASE
5005	7975572.6	503236.047	9.485	BASE
5006	7975565.67	503242.959	9.555	BASE
5007	7975559.249	503250.386	9.741	BASE
5008	7975560.101	503244.346	9.622	BASE
5009	7975564.63	503236.784	9.569	BASE
5500	7975557.713	503229.001	10.35	CREST
5501	7975567.185	503229.454	10.36	CREST
5502	7975575.661	503230.967	10.096	CREST
5503	7975575.041	503235.981	10.234	CREST
5504	7975567.005	503243.336	10.363	CREST
5505	7975560.577	503250.09	10.438	CREST
5506	7975559.302	503252.998	10.749	CREST
5507	7975556.958	503253.629	11.048	CREST

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Laydown Area LP3 Excavation to Subgrade Survey Data

Point Number	Northing	Easting	Elevation	Description
0723SM001	7975238.856	503290.964	9.846	SUBCUT
0723SM002	7975243.091	503292.928	9.899	SUBCUT
0723SM003	7975247.638	503294.083	10.001	SUBCUT
0723SM004	7975248.378	503289.917	9.938	SUBCUT
0723SM005	7975244.14	503288.817	9.959	SUBCUT
0723SM006	7975240.327	503287.111	9.924	SUBCUT
0723SM007	7975243.142	503282.456	9.876	SUBCUT
0723SM008	7975248.197	503284.477	9.838	SUBCUT
0723SM009	7975238.325	503279.68	9.732	SUBCUT
0723SM010	7975237.734	503286.449	9.849	SUBCUT
0723SM011	7975236.16	503290.974	9.896	SUBCUT
0723SM012	7975229.205	503288.963	9.819	SUBCUT
0723SM013	7975232.234	503282.49	9.881	SUBCUT
0723SM014	7975234.335	503278.265	9.82	SUBCUT
0723SM015	7975226.585	503274.473	9.782	SUBCUT
0723SM016	7975224.391	503278.669	9.83	SUBCUT
0723SM017	7975221.52	503284.792	9.677	SUBCUT
0723SM018	7975224.964	503273.434	9.703	SUBCUT
0723SM019	7975223.116	503285.82	9.737	SUBCUT
0723SM020	7975216.481	503284.161	9.859	SUBCUT
0723SM021	7975218.155	503277.902	9.765	SUBCUT
0723SM022	7975220.433	503272.266	9.671	SUBCUT
0723SM023	7975207.971	503281.43	9.703	SUBCUT
0723SM024	7975213.642	503271.157	9.714	SUBCUT
0723SM025	7975203.34	503281.019	9.76	SUBCUT
0723SM026	7975193.263	503277.218	9.854	SUBCUT
0723SM027	7975193.515	503270.75	10.001	SUBCUT
0723SM028	7975190.278	503267.954	9.748	SUBCUT
0723SM029	7975196.924	503263.424	9.92	SUBCUT
0723SM030	7975192.394	503262.028	9.905	SUBCUT
0723SM031	7975193.098	503261.742	9.927	SUBCUT
0723SM032	7975192.913	503269.086	9.944	SUBCUT
0723SM033	7975192.693	503275.308	10.082	SUBCUT
0723SM034	7975189.936	503277.052	9.992	SUBCUT
0723SM035	7975175.276	503272.328	9.919	SUBCUT
0723SM036	7975176.606	503267.416	10.01	SUBCUT
0723SM037	7975179.946	503259.188	9.897	SUBCUT
0723SM038	7975168.295	503254.798	10.145	SUBCUT
0723SM039	7975166.221	503261.361	10.114	SUBCUT

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0723SM040	7975162.625	503267.254	10.019	SUBCUT
0723SM041	7975158.898	503266.177	10.278	SUBCUT
0723SM042	7975159.867	503260.237	10.283	SUBCUT
0723SM043	7975163.986	503253.899	10.219	SUBCUT

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Point Number	Northing	Easting	Elevation	Description
1000	7974772.153	503073.621	11.38	PR LIM
1001	7974802.391	503079.001	11.429	PR LIM
1002	7974854.025	503093.352	11.415	PR LIM
1003	7974903.163	503107.756	11.312	PR LIM
1004	7974853.12	503154.085	11.431	PR LIM
1005	7974842.744	503156.366	11.55	PR LIM
1006	7974827.836	503122.408	11.522	PR LIM
1007	7974791.572	503127.058	11.592	PR LIM
1008	7974773.82	503118.87	11.637	PR LIM

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Point Number	Northing	Easting	Elevation	Description
20000	7975341.136	503268.986	9.841	EXC
20001	7975338.188	503273.116	9.92	EXC
20002	7975334.156	503284.062	10.042	EXC
20003	7975331.321	503292.726	10.057	EXC
20004	7975328.589	503299.909	10.196	EXC
20005	7975325.844	503305.066	10.173	EXC
20006	7975326.814	503306.028	10.24	EXC
20007	7975323.623	503309.681	10.391	EXC
20008	7975322.402	503309.421	10.314	EXC
20009	7975319.765	503310.536	10.216	EXC
20010	7975320.521	503311.131	10.2	EXC
20011	7975321.592	503310.984	10.696	EXC
20012	7975323.278	503310.699	10.891	EXC
20013	7975327.53	503307.2	10.871	EXC
20014	7975328.028	503306.442	10.792	EXC
20015	7975330.679	503307.369	10.689	EXC
20016	7975328.459	503310.347	10.666	EXC
20017	7975335.76	503308.897	10.428	EXC
20018	7975341.693	503306.911	10.138	EXC
20019	7975348.219	503304.257	10.061	EXC
20020	7975347.513	503298.538	9.97	EXC
20021	7975347.393	503289.791	9.96	EXC
20022	7975349.849	503276.758	9.91	EXC
20023	7975354.814	503265.156	9.682	EXC
20024	7975354.791	503265.159	9.68	EXC
20025	7975353.851	503264.093	9.745	EXC
20026	7975346.093	503273.889	9.869	EXC
20027	7975344.259	503280.561	9.962	EXC
20028	7975341.607	503288.68	10.093	EXC
20029	7975339.435	503294.66	10.11	EXC
20030	7975336.768	503299.291	10.146	EXC
20031	7975331.856	503301.546	10.355	EXC

NUNA

NUNA EAST LTD

(Section 4)

Survey Data
(Type 12 ROQ)

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Laydown Area LP3
Type 12 (ROQ) Placement

Laydown Area LP3 Type 12 (ROQ) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
20415	7975516.178	503256.221	10.799	LIMIT T12 ASB
20416	7975531.206	503256.698	10.888	LIMIT T12 ASB
20417	7975544.417	503254.236	10.865	LIMIT T12 ASB
20418	7975551.478	503253.175	10.798	LIMIT T12 ASB
20419	7975550.531	503250.397	10.744	CREST T12 ASB
20420	7975549.591	503241.255	10.906	CREST T12 ASB
20421	7975551.67	503230.841	10.751	CREST T12 ASB
20422	7975552.546	503221.244	10.644	CREST T12 ASB
20423	7975551.63	503211.94	10.453	CREST T12 ASB
20424	7975550.333	503195.545	10.679	CREST T12 ASB
20425	7975547.527	503194.023	10.673	CREST T12 ASB
20426	7975533.823	503192.37	10.761	CREST T12 ASB
20427	7975525.131	503189.37	10.953	CREST T12 ASB
20428	7975520.13	503191.079	10.998	SS T12 ASB
20429	7975518.785	503200.54	10.981	SS T12 ASB
20430	7975518.83	503211.925	10.949	SS T12 ASB
20431	7975519.61	503224.826	10.783	SS T12 ASB
20432	7975519.746	503236.113	10.842	SS T12 ASB
20433	7975522.172	503244.518	10.797	SS T12 ASB
20434	7975518.781	503252.46	10.74	SS T12 ASB
20435	7975534.838	503250.943	10.778	SS T12 ASB
20436	7975534.585	503239.67	10.815	SS T12 ASB
20437	7975534.273	503228.072	10.859	SS T12 ASB
20438	7975532.905	503214.052	10.769	SS T12 ASB
20439	7975533.723	503203.346	10.74	SS T12 ASB
20440	7975534.266	503196.02	10.835	SS T12 ASB
20441	7975530.765	503189.356	9.676	TOE T12 ASB
20442	7975540.449	503191.009	9.552	TOE T12 ASB
20443	7975545.771	503192.155	9.583	TOE T12 ASB
20444	7975554.066	503192.984	9.363	TOE T12 ASB
20445	7975555.348	503194.545	9.536	TOE T12 ASB
20446	7975555.114	503207.877	9.599	TOE T12 ASB
20447	7975554.879	503218.395	9.664	TOE T12 ASB
20448	7975554.87	503229.711	9.758	TOE T12 ASB
20449	7975553.436	503236.377	9.802	TOE T12 ASB
20450	7975553.518	503236.86	9.653	TOE T12 ASB
20451	7975552.523	503237.91	9.552	TOE T12 ASB
20452	7975552.92	503240.013	9.462	TOE T12 ASB
20453	7975552.634	503242.112	9.707	TOE T12 ASB

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20454	7975553.027	503245.228	10.55	TOE T12 ASB
20455	7975551.712	503247.882	10.265	TOE T12 ASB
20456	7975552.205	503250.919	10.292	TOE T12 ASB
20457	7975555.3	503237.163	9.707	TOE T12 ASB
20458	7975555.577	503227.128	9.75	TOE T12 ASB
20459	7975555.827	503213.118	9.717	TOE T12 ASB
20460	7975555.89	503207.11	9.646	TOE T12 ASB
20461	7975556.3	503199.445	9.511	TOE T12 ASB
20462	7975559.456	503196.074	9.343	TOE T12 ASB
20463	7975580.564	503202.723	9.195	TOE T12 ASB
20464	7975591.74	503210.585	9.287	TOE T12 ASB
20465	7975606.376	503221.851	9.342	TOE T12 ASB
20466	7975606.673	503224.805	9.911	TOE T12 ASB
20467	7975605.7	503225.135	10.299	LIMIT T12 ASB
20468	7975587.767	503226.906	10.293	LIMIT T12 ASB
20469	7975576.496	503229.701	10.368	LIMIT T12 ASB
20470	7975566.721	503230.706	10.286	LIMIT T12 ASB
20471	7975559.958	503231.004	10.251	LIMIT T12 ASB
20472	7975558.2	503230.199	10.505	CREST T12 ASB
20473	7975558.408	503223.963	10.597	CREST T12 ASB
20474	7975558.15	503211.504	10.345	CREST T12 ASB
20475	7975559.179	503202.179	10.477	CREST T12 ASB
20476	7975560.11	503199.607	10.328	CREST T12 ASB
20477	7975567.248	503200.56	10.311	CREST T12 ASB
20478	7975576.709	503202.505	10.318	CREST T12 ASB
20479	7975583.242	503208.393	10.21	CREST T12 ASB
20480	7975592.487	503213.529	10.34	CREST T12 ASB
20481	7975599.299	503218.723	10.409	CREST T12 ASB
20482	7975604.082	503222.427	10.424	CREST T12 ASB
20483	7975598.772	503223.211	10.457	SS T12 ASB
20484	7975585.635	503220.25	10.32	SS T12 ASB
20485	7975574.975	503218.981	10.464	SS T12 ASB
20486	7975566.153	503217.992	10.467	SS T12 ASB
20487	7975562.254	503210.246	10.529	SS T12 ASB

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Point Number	Northing	Easting	Elevation	Description
999	7976255.837	503529.972	17.258	ROOF ADJ
40000	7974895.012	503066.594	11.152	T12 CREST
40001	7974897.734	503053.595	11.139	T12 CREST
40002	7974899.775	503040.928	10.983	T12 CREST
40003	7974901.505	503027.107	10.793	T12 CREST
40004	7974903.442	503015.292	10.862	T12 CREST
40005	7974909.289	503001.815	11.167	T12 CREST
40006	7974911.156	502996.256	11.039	T12 CREST
40007	7974909.112	502993.849	10.89	T12 CREST
40008	7974900.994	502991.169	11.016	T12 CREST
40009	7974888.562	502986.71	10.993	T12 CREST
40010	7974871.136	502981.7	11.014	T12 CREST
40011	7974851.068	502977.384	10.817	T12 LIMIT
40012	7974836	502971.487	10.704	T12 CREST
40013	7974830.288	502983.441	11.041	T12 CREST
40014	7974823.626	502991.71	11.033	T12 CREST
40015	7974819.258	503011.769	11.143	T12 CREST
40016	7974814.811	503029.703	11.071	T12 CREST
40017	7974812.521	503044.078	11.181	T12 CREST
40018	7974811.015	503044.846	10.324	T12 TOE
40019	7974812.856	503033.841	10.222	T12 TOE
40020	7974814.95	503019.368	10.228	T12 TOE
40021	7974817.999	503008.083	10.14	T12 TOE
40022	7974819.433	502997.007	10.137	T12 TOE
40023	7974827.968	502984.068	10.033	T12 TOE
40024	7974833.277	502971.781	9.918	T12 TOE
40025	7974873.886	502982.085	10.845	T12 TOE
40026	7974888.46	502986.215	10.827	T12 TOE
40027	7974897.741	502989.649	10.849	T12 TOE
40028	7974909.372	502993.458	10.733	T12 TOE
40029	7974912.394	502996.809	10.098	T12 TOE
40030	7974907.31	503008.484	10.21	T12 TOE
40031	7974904.062	503027.177	10.024	T12 TOE
40032	7974900.857	503042.124	10.187	T12 TOE
40033	7974899.536	503054.052	10.358	T12 TOE
40034	7974899.452	503068.663	10.299	T12 TOE
40035	7974825.377	503087.461	11.297	T12 CREST
40036	7974825.37	503104.789	11.38	T12 CREST
40037	7974826.651	503117.06	11.343	T12 CREST

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40038	7974828.381	503125.614	11.351	T12 CREST
40039	7974853.153	503129.696	11.137	T12 CREST
40040	7974866.612	503136.698	11.003	T12 CREST
40041	7974862.205	503145.736	11.307	T12 CREST
40042	7974860.905	503156.077	11.673	T12 CREST
40043	7974880.339	503158.756	11.464	T12 CREST
40044	7974880.355	503158.867	11.455	T12 CREST
40045	7974894.692	503160.423	11.252	T12 CREST
40046	7974899.617	503141.593	11.255	T12 CREST
40047	7974912.073	503133.093	11.142	T12 CREST
40048	7974925.122	503129.199	11.211	T12 CREST
40049	7974946.27	503122.268	11.22	T12 CREST
40050	7974943.081	503120.917	11.307	T12 LIMIT
40051	7974925.326	503114.993	11.272	T12 LIMIT
40052	7974908.206	503108.796	11.19	T12 LIMIT
40053	7974868.136	503096.709	11.161	T12 LIMIT
40054	7974847.29	503091.448	11.061	T12 LIMIT
40055	7974828.442	503084.958	11.307	T12 LIMIT
40056	7974817.083	503045.888	11.144	T12 LIMIT
40057	7974835.246	503051.089	11.131	T12 LIMIT
40058	7974853.261	503056.065	10.924	T12 LIMIT
40059	7974873.362	503060.384	10.899	T12 LIMIT
40060	7974894.098	503067.382	11.249	T12 LIMIT
40061	7974887.336	503059.761	11.095	T12
40062	7974877.715	503055.944	10.993	T12
40063	7974867.818	503053.387	10.973	T12
40064	7974857.895	503050.858	10.998	T12
40065	7974848.353	503047.78	11.111	T12
40066	7974838.55	503044.187	11.143	T12
40067	7974830.004	503038.895	11.076	T12
40068	7974826.912	503029.025	11.084	T12
40069	7974829.401	503019.052	10.969	T12
40070	7974833.459	503009.537	10.955	T12
40071	7974838.62	503000.928	10.987	T12
40072	7974845.789	502993.483	10.906	T12
40073	7974855.829	502991.703	10.948	T12
40074	7974865.787	502993.746	10.893	T12
40075	7974875.689	502996.819	11.054	T12
40076	7974885.452	503000.246	10.959	T12
40077	7974894.49	503004.87	10.978	T12
40078	7974897.972	503014.707	10.802	T12
40079	7974896.826	503025.026	10.769	T12

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40080	7974894.368	503035.381	10.911	T12
40081	7974890.672	503045.322	11.061	T12
40082	7974882.648	503051.811	10.994	T12
40083	7974872.504	503048.668	11.061	T12
40084	7974863.038	503044.319	11.043	T12
40085	7974853.494	503040.916	11.061	T12
40086	7974844.184	503036.577	11.058	T12
40087	7974836.589	503029.911	11.061	T12
40088	7974838.767	503019.942	10.982	T12
40089	7974848.981	503020.148	10.883	T12
40090	7974859.055	503023.412	10.961	T12
40091	7974868.903	503025.76	11.007	T12
40092	7974879.093	503027.496	10.935	T12
40093	7974888.847	503025.246	10.874	T12
40094	7974890.809	503015.253	10.864	T12
40095	7974881.428	503010.639	10.957	T12
40096	7974871.43	503009.99	11.02	T12
40097	7974861.039	503009.756	11.009	T12
40098	7974851.107	503007.783	10.986	T12
40099	7974847.679	502998.092	10.916	T12
40100	7974857.289	502995.004	10.87	T12
40101	7974867.048	502998.453	10.955	T12
40102	7974876.381	503002.283	11.069	T12
40103	7974885.883	503006.53	10.947	T12
40104	7974892.27	503014.317	10.877	T12
40105	7974892.471	503024.566	10.841	T12
40106	7974890.533	503034.866	10.987	T12
40107	7974885.822	503043.704	11.077	T12
40108	7974876.332	503047.875	11.086	T12
40109	7974866.771	503043.899	11.063	T12
40110	7974858.338	503037.505	11.058	T12
40111	7974848.896	503033.724	11.002	T12
40112	7974844.218	503024.643	11.042	T12
40113	7974850.383	503016.376	10.927	T12
40114	7974860.569	503016.371	11.052	T12
40115	7974870.627	503017.81	11.03	T12
40116	7974880.555	503020.039	10.83	T12
40117	7974904.481	503111.886	11.108	T12
40118	7974914.421	503114.826	11.223	T12
40119	7974919.979	503123.387	11.201	T12
40120	7974911.659	503129.781	11.145	T12
40121	7974902.646	503134.953	11.281	T12

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40122	7974896.367	503143.053	11.253	T12
40123	7974887.514	503148.418	11.276	T12
40124	7974877.952	503145.354	11.142	T12
40125	7974872.085	503136.58	11.101	T12
40126	7974864.97	503129.328	11.141	T12
40127	7974855.092	503125.751	11.188	T12
40128	7974844.919	503124.2	11.272	T12
40129	7974836.905	503118.12	11.301	T12
40130	7974833.518	503108.269	11.305	T12
40131	7974835.622	503098.371	11.216	T12
40132	7974845.193	503094.74	11.011	T12
40133	7974855.074	503098.405	11.059	T12
40134	7974864.533	503102.116	11.235	T12
40135	7974874.167	503106.292	11.24	T12
40136	7974883.642	503109.997	11.132	T12
40137	7974892.874	503114.845	11.081	T12
40138	7974893.273	503125.276	11.052	T12
40139	7974882.895	503124.896	11.118	T12
40140	7974873.74	503119.611	11.207	T12
40141	7974863.477	503117.079	11.103	T12
40142	7974853.338	503115.88	11.127	T12
40143	7974843.406	503114.637	11.14	T12
40144	7974835.352	503108.584	11.254	T12
40145	7974842.856	503101.72	11.166	T12
40146	7974852.225	503106.08	11.105	T12
40147	7974871.611	503116.071	11.178	T12
40148	7974881.366	503119.399	11.183	T12
40149	7974890.593	503123.682	11.12	T12
40150	7974896.991	503131.715	11.212	T12

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Point Number	Northing	Easting	Elevation	Description
1906301	7974814.919	503039.865	11.038	ROQ
1906302	7974815.72	503034.794	11.07	ROQ
1906303	7974817.008	503029.918	11.055	ROQ
1906304	7974818.59	503024.81	11.013	ROQ
1906305	7974820.362	503019.909	11.012	ROQ
1906306	7974821.986	503014.796	10.943	ROQ
1906307	7974823.485	503009.793	10.875	ROQ
1906308	7974825.147	503004.732	10.879	ROQ
1906309	7974826.897	503000.011	10.904	ROQ
1906310	7974829.117	502995.175	10.924	ROQ
1906311	7974831.695	502990.864	10.904	ROQ
1906312	7974835.281	502986.992	10.908	ROQ
1906313	7974839.994	502985.113	10.898	ROQ
1906314	7974845.417	502984.993	10.814	ROQ
1906315	7974850.494	502985.07	10.775	ROQ
1906316	7974855.599	502985.878	10.87	ROQ
1906317	7974860.5	502987.195	10.87	ROQ
1906318	7974865.601	502988.721	10.876	ROQ
1906319	7974870.763	502990.508	11.006	ROQ
1906320	7974875.56	502992.264	11.031	ROQ
1906321	7974880.48	502994.023	11.039	ROQ
1906322	7974885.545	502995.912	11	ROQ
1906323	7974890.583	502997.75	10.923	ROQ
1906324	7974895.334	502999.651	10.938	ROQ
1906325	7974900.454	503001.24	11.061	ROQ
1906326	7974905.573	503001.703	11.023	ROQ
1906327	7974911.036	503002.343	10.909	ROQ
1906328	7974916.264	503003.617	10.895	ROQ
1906329	7974921.496	503004.85	10.829	ROQ
1906330	7974926.541	503006.357	10.845	ROQ
1906331	7974931.489	503007.951	10.907	ROQ
1906332	7974936.729	503009.5	10.883	ROQ
1906333	7974942.07	503010.917	10.812	ROQ
1906334	7974946.926	503012.248	10.785	ROQ
1906335	7974951.868	503014.164	10.686	ROQ
1906336	7974956.965	503015.634	10.69	ROQ
1906337	7974961.964	503017.214	10.761	ROQ
1906338	7974966.731	503018.897	10.746	ROQ
1906339	7974971.732	503020.638	10.738	ROQ

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1906340	7974976.454	503023.322	10.723	ROQ
1906341	7974979.418	503027.436	10.717	ROQ
1906342	7974980.542	503032.708	10.789	ROQ
1906343	7974980.558	503037.978	10.781	ROQ
1906344	7974980.437	503042.989	10.784	ROQ
1906345	7974979.939	503048.228	10.819	ROQ
1906346	7974978.327	503053.239	10.834	ROQ
1906347	7974976.08	503058.138	10.763	ROQ
1906348	7974973.904	503062.92	10.674	ROQ
1906349	7974971.928	503067.621	10.636	ROQ
1906350	7974969.946	503072.333	10.712	ROQ
1906351	7974967.983	503077.403	10.728	ROQ
1906352	7974966.246	503082.303	10.788	ROQ
1906353	7974963.504	503086.616	10.843	ROQ
1906354	7974958.457	503088.663	10.709	ROQ
1906355	7974953.195	503087.574	10.772	ROQ
1906356	7974948.214	503085.401	10.783	ROQ
1906357	7974943.56	503082.997	10.843	ROQ
1906358	7974938.494	503080.992	10.885	ROQ
1906359	7974933.45	503079.34	10.958	ROQ
1906360	7974928.65	503077.929	11.006	ROQ
1906361	7974923.428	503076.211	11.059	ROQ
1906362	7974918.268	503074.542	11.029	ROQ
1906363	7974913.463	503072.864	10.958	ROQ
1906364	7974908.23	503070.936	10.974	ROQ
1906365	7974903.319	503068.743	11.058	ROQ
1906366	7974898.481	503067.056	11.126	ROQ
1906367	7974893.677	503065.581	11.208	ROQ
1906368	7974888.466	503064.08	11.187	ROQ
1906369	7974883.327	503063.022	11.033	ROQ
1906370	7974878.131	503061.917	10.984	ROQ
1906371	7974873.016	503060.618	10.944	ROQ
1906372	7974867.928	503059.156	10.886	ROQ
1906373	7974862.787	503057.936	10.869	ROQ
1906374	7974857.708	503056.435	10.885	ROQ
1906375	7974852.787	503054.94	10.931	ROQ
1906376	7974847.742	503053.227	11.029	ROQ
1906377	7974842.679	503051.627	11.077	ROQ
1906378	7974837.648	503049.844	11.099	ROQ
1906379	7974832.902	503048.115	11.124	ROQ
1906380	7974827.848	503046.108	11.146	ROQ
1906381	7974823.313	503043.874	11.133	ROQ

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1906382	7974819.941	503039.774	11.132	ROQ
1906383	7974819.639	503034.408	11.036	ROQ
1906384	7974821.048	503029.342	11.063	ROQ
1906385	7974822.494	503024.182	11.027	ROQ
1906386	7974823.895	503019.094	10.957	ROQ
1906387	7974825.392	503014.258	10.974	ROQ
1906388	7974827.116	503009.141	10.904	ROQ
1906389	7974828.964	503004.197	10.919	ROQ
1906390	7974830.73	502999.045	10.94	ROQ
1906391	7974832.736	502994.355	10.949	ROQ
1906392	7974835.126	502989.758	10.883	ROQ
1906393	7974838.981	502986.57	10.914	ROQ
1906394	7974843.915	502985.589	10.777	ROQ
1906395	7974848.938	502986.405	10.795	ROQ
1906396	7974854.15	502987.816	10.819	ROQ
1906397	7974859.208	502989.321	10.855	ROQ
1906398	7974864.047	502990.709	10.875	ROQ
1906399	7974869.218	502992.384	10.968	ROQ
1906400	7974874.332	502994.123	11.068	ROQ
1906401	7974879.268	502995.778	11.04	ROQ
1906402	7974884.38	502997.711	11.036	ROQ
1906403	7974889.641	502999.636	10.962	ROQ
1906404	7974894.886	503001.529	10.982	ROQ
1906405	7974899.947	503003.249	11.074	ROQ
1906406	7974904.784	503004.694	10.964	ROQ
1906407	7974909.871	503006.361	10.883	ROQ
1906408	7974915.023	503008.004	10.873	ROQ
1906409	7974920.049	503009.559	10.877	ROQ
1906410	7974924.974	503010.456	10.842	ROQ
1906411	7974929.957	503011.454	10.877	ROQ
1906412	7974935.047	503012.746	10.877	ROQ
1906413	7974939.95	503014.182	10.871	ROQ
1906414	7974944.91	503015.7	10.793	ROQ
1906415	7974950.12	503017.164	10.647	ROQ
1906416	7974955.054	503018.63	10.605	ROQ
1906417	7974960.112	503020.359	10.702	ROQ
1906418	7974965.259	503022.038	10.755	ROQ
1906419	7974969.703	503024.573	10.771	ROQ
1906420	7974972.961	503028.882	10.798	ROQ
1906421	7974974.243	503033.945	10.726	ROQ
1906422	7974973.575	503039.203	10.884	ROQ
1906423	7974972.909	503044.431	10.808	ROQ

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1906424	7974972.381	503049.657	10.832	ROQ
1906425	7974971.809	503054.931	10.796	ROQ
1906426	7974970.946	503060.169	10.75	ROQ
1906427	7974969.898	503065.056	10.744	ROQ
1906428	7974968.665	503070.171	10.675	ROQ
1906429	7974967.667	503075.265	10.685	ROQ
1906430	7974965.702	503080.296	10.728	ROQ
1906431	7974960.975	503082.845	10.742	ROQ
1906432	7974955.828	503081.859	10.708	ROQ
1906433	7974950.918	503079.584	10.696	ROQ
1906434	7974946.286	503077.675	10.706	ROQ
1906435	7974941.103	503075.861	10.751	ROQ
1906436	7974936.116	503074.173	10.826	ROQ
1906437	7974931.114	503072.742	10.967	ROQ
1906438	7974926.252	503071.566	10.953	ROQ
1906439	7974921.321	503069.958	10.975	ROQ
1906440	7974916.353	503068.298	10.998	ROQ
1906441	7974911.21	503066.958	10.996	ROQ
1906442	7974906.036	503065.621	11.029	ROQ
1906443	7974901.129	503064.141	11.124	ROQ
1906444	7974896.13	503062.725	11.169	ROQ
1906445	7974891.217	503061.468	11.111	ROQ
1906446	7974886.178	503060	11.057	ROQ
1906447	7974881.112	503058.565	10.973	ROQ
1906448	7974876.195	503057.25	10.962	ROQ
1906449	7974871.173	503055.834	10.962	ROQ
1906450	7974865.964	503054.426	10.933	ROQ
1906451	7974860.997	503052.898	10.946	ROQ
1906452	7974856.135	503051.2	11.001	ROQ
1906453	7974851.114	503049.472	11.067	ROQ
1906454	7974846.193	503047.67	11.094	ROQ
1906455	7974841.277	503045.875	11.032	ROQ
1906456	7974836.561	503044.149	11.106	ROQ
1906457	7974831.402	503042.321	11.106	ROQ
1906458	7974826.683	503040.357	11.1	ROQ
1906459	7974823.972	503036.154	11.064	ROQ
1906460	7974823.546	503031.057	11.043	ROQ
1906461	7974824.225	503025.717	11.02	ROQ
1906462	7974825.292	503020.605	11.003	ROQ
1906463	7974826.481	503015.35	10.991	ROQ
1906464	7974827.545	503010.121	10.895	ROQ
1906465	7974828.686	503004.92	10.886	ROQ

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1906466	7974829.814	502999.857	10.916	ROQ
1906467	7974830.751	502994.933	10.916	ROQ
1906468	7974832.742	502990.113	10.852	ROQ
1906469	7974837.111	502986.993	10.929	ROQ
1906470	7974842.268	502986.698	10.853	ROQ
1906471	7974847.172	502988.074	10.882	ROQ
1906472	7974852.11	502989.823	10.889	ROQ
1906473	7974856.971	502991.514	10.915	ROQ
1906474	7974862.128	502992.819	10.893	ROQ
1906475	7974867.217	502994.339	10.96	ROQ
1906476	7974872.246	502995.996	10.999	ROQ
1906477	7974877.139	502997.681	11.093	ROQ
1906478	7974882.044	502999.373	11.035	ROQ
1906479	7974886.897	503001.078	10.999	ROQ
1906480	7974891.634	503002.72	10.957	ROQ
1906481	7974896.359	503004.483	11.044	ROQ
1906482	7974901.174	503006.164	11.045	ROQ
1906483	7974906.401	503007.822	10.873	ROQ
1906484	7974911.485	503009.746	10.842	ROQ
1906485	7974916.593	503011.65	10.806	ROQ
1906486	7974921.18	503013.963	10.837	ROQ
1906487	7974926.178	503015.629	10.791	ROQ
1906488	7974931.315	503017.368	10.826	ROQ
1906489	7974935.705	503020.28	10.833	ROQ
1906490	7974940.711	503021.83	10.872	ROQ
1906491	7974945.701	503022.519	10.821	ROQ
1906492	7974950.705	503023.033	10.726	ROQ
1906493	7974955.8	503024.336	10.716	ROQ
1906494	7974960.652	503025.894	10.712	ROQ
1906495	7974965.001	503028.687	10.737	ROQ
1906496	7974966.914	503033.318	10.774	ROQ
1906497	7974966.4	503038.526	10.909	ROQ
1906498	7974965.424	503043.49	10.9	ROQ
1906499	7974964.092	503048.416	10.865	ROQ
1906500	7974962.823	503053.267	10.823	ROQ
1906501	7974961.681	503058.142	10.687	ROQ
1906502	7974960.749	503063.398	10.71	ROQ
1906503	7974959.903	503068.504	10.727	ROQ
1906504	7974958.355	503073.55	10.624	ROQ
1906505	7974954.941	503077.492	10.681	ROQ
1906506	7974949.957	503078.525	10.728	ROQ
1906507	7974944.934	503077.465	10.695	ROQ

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1906508	7974940.188	503075.764	10.777	ROQ
1906509	7974935.469	503073.874	10.903	ROQ
1906510	7974930.553	503072.047	10.948	ROQ
1906511	7974925.686	503069.611	10.909	ROQ
1906512	7974920.978	503067.404	10.954	ROQ
1906513	7974915.851	503065.423	10.933	ROQ
1906514	7974910.841	503063.575	10.962	ROQ
1906515	7974905.668	503061.767	10.991	ROQ
1906516	7974900.886	503060.124	11.034	ROQ
1906517	7974895.722	503058.498	11.057	ROQ
1906518	7974890.616	503056.652	11.066	ROQ
1906519	7974885.743	503055.114	11.047	ROQ
1906520	7974880.754	503053.509	11.023	ROQ
1906521	7974875.787	503052.041	11.04	ROQ
1906522	7974870.661	503050.639	11.065	ROQ
1906523	7974865.799	503049.053	11.082	ROQ
1906524	7974860.67	503047.572	11.087	ROQ
1906525	7974855.393	503045.992	11.07	ROQ
1906526	7974850.444	503044.571	11.075	ROQ
1906527	7974845.133	503042.979	11.073	ROQ
1906528	7974840.075	503041.338	11.088	ROQ
1906529	7974835.419	503039.515	11.089	ROQ
1906530	7974830.484	503037.725	11.006	ROQ
1906531	7974825.407	503035.805	11.06	ROQ
1906532	7974820.887	503033.406	10.989	ROQ
1906533	7974819.564	503028.52	10.968	ROQ
1906534	7974820.852	503023.664	10.984	ROQ
1906535	7974822.938	503018.676	10.959	ROQ
1906536	7974824.512	503013.664	10.922	ROQ
1906537	7974826.477	503008.807	10.948	ROQ
1906538	7974828.403	503003.708	10.889	ROQ
1906539	7974829.953	502998.871	10.946	ROQ
1906540	7974831.732	502994.094	10.933	ROQ
1906541	7974834.865	502990.162	10.9	ROQ
1906542	7974839.354	502987.459	10.863	ROQ
1906543	7974844.683	502987.314	10.878	ROQ
1906544	7974849.887	502988.683	10.857	ROQ
1906545	7974854.732	502991.198	10.88	ROQ
1906546	7974859.02	502993.961	10.903	ROQ
1906547	7974864.001	502996.1	10.94	ROQ
1906548	7974868.795	502997.564	10.957	ROQ
1906549	7974873.692	502999.011	11.038	ROQ

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1906550	7974878.839	503000.715	11.092	ROQ
1906551	7974883.671	503002.98	11.013	ROQ
1906552	7974888.226	503005.119	10.972	ROQ
1906553	7974893.277	503007.17	10.94	ROQ
1906554	7974898.102	503009.061	10.895	ROQ
1906555	7974902.967	503010.864	10.911	ROQ
1906556	7974908.098	503012.769	10.853	ROQ
1906557	7974913.354	503014.567	10.725	ROQ
1906558	7974918.601	503016.402	10.815	ROQ
1906559	7974923.8	503018.172	10.809	ROQ
1906560	7974929.056	503019.815	10.819	ROQ
1906561	7974934.062	503021.381	10.813	ROQ
1906562	7974939.2	503023.113	10.833	ROQ
1906563	7974944.102	503024.729	10.779	ROQ
1906564	7974949.342	503026.554	10.736	ROQ
1906565	7974954.115	503028.319	10.81	ROQ
1906566	7974959.183	503030.109	10.756	ROQ
1906567	7974964.029	503031.999	10.744	ROQ
1906568	7974967.842	503035.9	10.849	ROQ
1906569	7974968.6	503040.874	10.893	ROQ
1906570	7974967.663	503046.137	10.871	ROQ
1906571	7974965.771	503051.293	10.92	ROQ
1906572	7974964.02	503056.111	10.75	ROQ
1906573	7974962.135	503060.993	10.728	ROQ
1906574	7974959.727	503065.671	10.718	ROQ
1906575	7974955.853	503069.069	10.658	ROQ
1906576	7974950.717	503070.462	10.729	ROQ
1906577	7974945.43	503070.906	10.726	ROQ
1906578	7974940.314	503070.447	10.771	ROQ
1906579	7974935.416	503069.362	10.866	ROQ
1906580	7974930.459	503067.818	10.95	ROQ
1906581	7974925.427	503066.29	10.95	ROQ
1906582	7974920.487	503064.574	10.974	ROQ
1906583	7974915.752	503062.711	10.953	ROQ
1906584	7974910.885	503060.758	10.961	ROQ
1906585	7974905.892	503058.662	11.001	ROQ
1906586	7974901.268	503056.589	10.973	ROQ
1906587	7974896.497	503054.816	11.035	ROQ
1906588	7974891.701	503053.324	11.08	ROQ
1906589	7974886.812	503051.81	11.097	ROQ
1906590	7974881.675	503050.108	11.119	ROQ
1906591	7974876.644	503048.648	11.067	ROQ

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1906592	7974871.797	503047.087	11.137	ROQ
1906593	7974866.727	503045.542	11.071	ROQ
1906594	7974861.714	503043.932	11.091	ROQ
1906595	7974856.888	503042.495	11.052	ROQ
1906596	7974851.938	503040.935	11.024	ROQ
1906597	7974846.859	503039.338	11.034	ROQ
1906598	7974842.036	503037.668	11.064	ROQ
1906599	7974837.229	503036.067	11.102	ROQ
1906600	7974832.195	503034.641	11.043	ROQ
1906601	7974826.946	503033.505	10.995	ROQ
1906602	7974822.463	503031.079	11.013	ROQ
1906603	7974820.021	503026.567	10.977	ROQ
1906604	7974820.609	503021.325	10.959	ROQ
1906605	7974822.726	503016.541	10.996	ROQ
1906606	7974824.668	503011.85	10.902	ROQ
1906607	7974826.639	503007.223	10.908	ROQ
1906608	7974828.281	503002.304	10.972	ROQ
1906609	7974829.808	502997.19	10.898	ROQ
1906610	7974831.509	502992.358	10.865	ROQ
1906611	7974835.064	502988.384	10.891	ROQ
1906612	7974840.304	502988.279	10.82	ROQ
1906613	7974845.098	502990.761	10.929	ROQ
1906614	7974849.889	502993.236	10.873	ROQ
1906615	7974854.963	502995.02	10.883	ROQ
1906616	7974859.793	502996.413	10.901	ROQ
1906617	7974864.718	502997.973	10.894	ROQ
1906618	7974869.76	502999.68	11.003	ROQ
1906619	7974874.85	503001.166	11.089	ROQ
1906620	7974879.464	503003.132	11.061	ROQ
1906621	7974884.062	503005.226	10.975	ROQ
1906622	7974888.854	503007.307	10.933	ROQ
1906623	7974893.8	503009.109	10.924	ROQ
1906624	7974898.711	503010.854	10.918	ROQ
1906625	7974903.891	503012.534	10.876	ROQ
1906626	7974908.82	503014.057	10.804	ROQ
1906627	7974913.758	503015.555	10.763	ROQ
1906628	7974918.82	503017.055	10.768	ROQ
1906629	7974923.856	503018.529	10.813	ROQ
1906630	7974928.859	503020.236	10.854	ROQ
1906631	7974933.716	503022.254	10.879	ROQ
1906632	7974938.612	503024.102	10.849	ROQ
1906633	7974943.524	503026.089	10.812	ROQ

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1906634	7974948.682	503027.99	10.787	ROQ
1906635	7974953.509	503029.727	10.812	ROQ
1906636	7974958.323	503031.279	10.819	ROQ
1906637	7974963.485	503033.196	10.803	ROQ
1906638	7974967.36	503036.408	10.882	ROQ
1906639	7974968.635	503041.443	10.892	ROQ
1906640	7974967.949	503046.62	10.854	ROQ
1906641	7974965.86	503051.35	10.827	ROQ
1906642	7974963.316	503055.965	10.731	ROQ
1906643	7974959.806	503059.916	10.573	ROQ
1906644	7974956.078	503063.697	10.539	ROQ
1906645	7974951.269	503065.997	10.671	ROQ
1906646	7974945.963	503066.519	10.702	ROQ
1906647	7974940.873	503065.62	10.798	ROQ
1906648	7974935.505	503064.356	10.876	ROQ
1906649	7974930.343	503063.022	10.874	ROQ
1906650	7974925.445	503061.546	10.927	ROQ
1906651	7974920.572	503059.903	10.893	ROQ
1906652	7974915.343	503058.046	10.906	ROQ
1906653	7974910.209	503056.392	10.895	ROQ
1906654	7974905.161	503054.56	10.893	ROQ
1906655	7974900.138	503052.333	10.9	ROQ
1906656	7974895.283	503050.467	11.023	ROQ
1906657	7974890.511	503048.687	11.085	ROQ
1906658	7974885.486	503046.85	11.119	ROQ
1906659	7974880.643	503045.158	11.054	ROQ
1906660	7974875.84	503043.522	11.083	ROQ
1906661	7974870.917	503042.09	11.079	ROQ
1906662	7974865.795	503040.524	11.046	ROQ
1906663	7974860.575	503038.875	11.043	ROQ
1906664	7974855.668	503037.341	11.05	ROQ
1906665	7974850.467	503035.789	11.029	ROQ
1906666	7974845.217	503034.278	11.009	ROQ
1906667	7974840.195	503032.764	11.04	ROQ
1906668	7974834.993	503031.326	11.107	ROQ
1906669	7974829.992	503030.38	11.052	ROQ
1906670	7974824.842	503028.937	11.059	ROQ
1906671	7974820.501	503026.265	11.011	ROQ
1906672	7974818.279	503021.373	10.964	ROQ
1906673	7974819.513	503016.41	10.982	ROQ
1906674	7974822.772	503011.939	10.876	ROQ
1906675	7974826.437	503007.981	10.843	ROQ

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1906676	7974829.798	503004.055	10.889	ROQ
1906677	7974832.992	503000.19	10.94	ROQ
1906678	7974837.197	502996.835	10.878	ROQ
1906679	7974841.869	502994.428	10.931	ROQ
1906680	7974846.914	502994.543	10.86	ROQ
1906681	7974851.571	502997.082	10.929	ROQ
1906682	7974856	502999.546	10.869	ROQ
1906683	7974860.822	503001.479	10.932	ROQ
1906684	7974865.958	503003.5	10.97	ROQ
1906685	7974870.714	503005.16	11.044	ROQ
1906686	7974875.712	503006.839	11.061	ROQ
1906687	7974880.665	503008.528	10.947	ROQ
1906688	7974885.531	503010.208	10.925	ROQ
1906689	7974890.444	503011.813	10.919	ROQ
1906690	7974895.215	503013.436	10.908	ROQ
1906691	7974899.972	503015.166	10.878	ROQ
1906692	7974905.108	503016.965	10.824	ROQ
1906693	7974910.116	503018.69	10.761	ROQ
1906694	7974915.137	503020.385	10.776	ROQ
1906695	7974920.135	503022.092	10.812	ROQ
1906696	7974925.215	503023.806	10.865	ROQ
1906697	7974930.069	503025.398	10.842	ROQ
1906698	7974934.982	503027.229	10.878	ROQ
1906699	7974939.705	503029.359	10.848	ROQ
1906700	7974944.371	503031.561	10.814	ROQ
1906701	7974949.118	503034.109	10.779	ROQ
1906702	7974953.718	503036.567	10.781	ROQ
1906703	7974958.233	503039.406	10.747	ROQ
1906704	7974961.179	503043.523	10.774	ROQ
1906705	7974961.312	503048.77	10.836	ROQ
1906706	7974959.898	503053.836	10.727	ROQ
1906707	7974956.94	503058.368	10.629	ROQ
1906708	7974952.54	503061.447	10.597	ROQ
1906709	7974947.506	503062.64	10.689	ROQ
1906710	7974942.39	503062.552	10.783	ROQ
1906711	7974937.145	503061.623	10.851	ROQ
1906712	7974932.021	503060.396	10.916	ROQ
1906713	7974926.992	503058.821	10.977	ROQ
1906714	7974922.173	503057.276	10.946	ROQ
1906715	7974917.388	503055.668	10.934	ROQ
1906716	7974912.503	503054.228	10.86	ROQ
1906717	7974907.251	503052.689	10.889	ROQ

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1906718	7974902.174	503051.368	10.958	ROQ
1906719	7974897.334	503050.092	10.961	ROQ
1906720	7974892.421	503048.666	11.086	ROQ
1906721	7974887.299	503047.124	11.088	ROQ
1906722	7974882.426	503045.334	11.121	ROQ
1906723	7974877.593	503043.191	11.063	ROQ
1906724	7974872.422	503041.306	11.054	ROQ
1906725	7974867.685	503039.582	11.02	ROQ
1906726	7974862.809	503037.329	11.047	ROQ
1906727	7974858.212	503035.316	11.048	ROQ
1906728	7974853.112	503033.229	11.055	ROQ
1906729	7974847.935	503031.413	11.029	ROQ
1906730	7974842.827	503029.684	11.023	ROQ
1906731	7974837.866	503028.188	11.009	ROQ
1906732	7974833.002	503026.568	11.104	ROQ
1906733	7974828.101	503025.028	11.047	ROQ
1906734	7974823.374	503022.997	11.022	ROQ
1906735	7974818.736	503020.231	11.028	ROQ
1906736	7974816.26	503015.463	10.944	ROQ
1906737	7974817.17	503010.171	10.803	ROQ
1906738	7974820.166	503006.122	10.805	ROQ
1906739	7974824.056	503002.576	10.856	ROQ
1906740	7974827.867	502998.973	10.9	ROQ
1906741	7974832.982	502997.295	10.916	ROQ
1906742	7974838.182	502998.056	10.917	ROQ
1906743	7974842.955	502999.769	10.952	ROQ
1906744	7974847.971	503001.425	10.919	ROQ
1906745	7974853.087	503003.132	11.012	ROQ
1906746	7974858.021	503004.663	10.95	ROQ
1906747	7974862.863	503006.274	10.983	ROQ
1906748	7974867.721	503007.986	11.049	ROQ
1906749	7974872.524	503009.8	11.072	ROQ
1906750	7974877.434	503011.766	11.011	ROQ
1906751	7974882.2	503013.567	10.895	ROQ
1906752	7974887.171	503015.36	10.805	ROQ
1906753	7974892.366	503017.084	10.771	ROQ
1906754	7974897.148	503019.3	10.767	ROQ
1906755	7974902.08	503021.714	10.74	ROQ
1906756	7974906.77	503024.072	10.762	ROQ
1906757	7974911.682	503026.343	10.768	ROQ
1906758	7974916.794	503027.951	10.735	ROQ
1906759	7974921.725	503029.882	10.834	ROQ

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1906760	7974926.721	503031.426	10.81	ROQ
1906761	7974931.9	503032.319	10.815	ROQ
1906762	7974937.04	503033.628	10.769	ROQ
1906763	7974941.792	503035.441	10.735	ROQ
1906764	7974946.257	503037.842	10.686	ROQ
1906765	7974949.473	503042.167	10.616	ROQ
1906766	7974949.58	503047.454	10.649	ROQ
1906767	7974947.249	503052.302	10.699	ROQ
1906768	7974944.003	503056.178	10.711	ROQ
1906769	7974938.894	503057.43	10.815	ROQ
1906770	7974933.611	503056.535	10.926	ROQ
1906771	7974928.46	503055.399	10.959	ROQ
1906772	7974923.551	503054.368	10.968	ROQ
1906773	7974918.254	503052.852	10.843	ROQ
1906774	7974913.31	503051.21	10.879	ROQ
1906775	7974908.263	503049.832	10.851	ROQ
1906776	7974903.064	503048.346	10.938	ROQ
1906777	7974897.971	503046.778	10.978	ROQ
1906778	7974893.19	503045.026	11.079	ROQ
1906779	7974888.425	503043.016	11.099	ROQ
1906780	7974883.824	503040.994	11.102	ROQ
1906781	7974878.827	503038.738	11.093	ROQ
1906782	7974873.724	503036.996	11.053	ROQ
1906783	7974868.698	503035.611	11.016	ROQ
1906784	7974863.783	503034.227	10.984	ROQ
1906785	7974858.781	503032.772	10.993	ROQ
1906786	7974853.727	503031.152	11.047	ROQ
1906787	7974848.451	503029.566	10.997	ROQ
1906788	7974843.445	503028.131	11.025	ROQ
1906789	7974838.553	503026.483	11.026	ROQ
1906790	7974833.48	503024.685	11.064	ROQ
1906791	7974828.336	503023.013	10.995	ROQ
1906792	7974823.703	503020.214	11.011	ROQ
1906793	7974821.371	503015.744	10.954	ROQ
1906794	7974821.564	503010.664	10.901	ROQ
1906795	7974823.03	503005.497	10.779	ROQ
1906796	7974825.413	503000.869	10.88	ROQ
1906797	7974828.762	502996.902	10.898	ROQ
1906798	7974833.692	502995.383	10.924	ROQ
1906799	7974838.063	502998.517	10.947	ROQ
1906800	7974840.327	503003.243	10.999	ROQ
1906801	7974843.201	503007.4	10.976	ROQ

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1906802	7974847.764	503010.23	10.999	ROQ
1906803	7974852.839	503010.95	11.062	ROQ
1906804	7974857.946	503011.35	10.966	ROQ
1906805	7974863.264	503012.398	11.009	ROQ
1906806	7974868.462	503013.626	10.953	ROQ
1906807	7974873.466	503015.329	11.046	ROQ
1906808	7974878.567	503017.205	10.854	ROQ
1906809	7974883.332	503019.06	10.784	ROQ
1906810	7974888.104	503021.111	10.823	ROQ
1906811	7974892.886	503022.886	10.792	ROQ
1906812	7974897.743	503024.688	10.752	ROQ
1906813	7974902.464	503026.534	10.74	ROQ
1906814	7974907.527	503028.64	10.7	ROQ
1906815	7974912.304	503031.259	10.76	ROQ
1906816	7974917.057	503033.017	10.784	ROQ
1906817	7974921.973	503034.782	10.747	ROQ
1906818	7974926.972	503036.495	10.841	ROQ
1906819	7974932.148	503037.945	10.827	ROQ
1906820	7974937.447	503039.326	10.748	ROQ
1906821	7974942.633	503040.778	10.791	ROQ
1906822	7974947.449	503042.271	10.675	ROQ
1906823	7974952.12	503044.48	10.637	ROQ
1906824	7974954.846	503048.941	10.722	ROQ
1906825	7974953.134	503053.646	10.604	ROQ
1906826	7974948.644	503056.383	10.601	ROQ
1906827	7974943.575	503056.49	10.723	ROQ
1906828	7974938.65	503054.354	10.755	ROQ
1906829	7974934.051	503051.986	10.892	ROQ
1906830	7974929.321	503049.976	10.886	ROQ
1906831	7974924.368	503048.02	10.826	ROQ
1906832	7974919.324	503046.129	10.837	ROQ
1906833	7974914.512	503044.741	10.81	ROQ
1906834	7974909.357	503043.342	10.749	ROQ
1906835	7974904.307	503042.163	10.815	ROQ
1906836	7974899.085	503041.586	10.953	ROQ
1906837	7974894.025	503040.885	11.004	ROQ
1906838	7974888.984	503039.716	11.056	ROQ
1906839	7974883.691	503038.225	11.093	ROQ
1906840	7974879.053	503036.069	11.032	ROQ
1906841	7974874.483	503033.991	11.032	ROQ
1906842	7974869.965	503031.851	10.999	ROQ
1906843	7974865.16	503029.75	10.989	ROQ

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1906844	7974860.553	503027.739	10.982	ROQ
1906845	7974855.418	503025.815	10.966	ROQ
1906846	7974850.396	503024.277	10.921	ROQ
1906847	7974845.224	503022.775	10.98	ROQ
1906848	7974840.329	503021.495	10.975	ROQ
1906849	7974835.352	503019.933	10.971	ROQ
1906850	7974830.741	503017.702	10.999	ROQ
1906851	7974827.295	503013.595	10.897	ROQ
1906852	7974827.541	503008.571	10.863	ROQ
1906853	7974830.292	503004.104	10.926	ROQ
1906854	7974835.393	503003.064	11.037	ROQ
1906855	7974839.87	503006.171	11.021	ROQ
1906856	7974844.378	503009.299	10.981	ROQ
1906857	7974848.58	503012.439	10.954	ROQ
1906858	7974852.76	503015.884	10.997	ROQ
1906859	7974856.964	503018.608	11.034	ROQ
1906860	7974861.835	503020.726	11.049	ROQ
1906861	7974866.797	503021.688	10.992	ROQ
1906862	7974872.085	503022.722	11.011	ROQ
1906863	7974877.205	503024.186	10.909	ROQ
1906864	7974882.46	503025.737	10.886	ROQ
1906865	7974887.355	503027.246	10.824	ROQ
1906866	7974892.465	503028.989	10.869	ROQ
1906867	7974897.552	503030.58	10.803	ROQ
1906868	7974902.529	503031.978	10.727	ROQ
1906869	7974907.335	503033.438	10.757	ROQ
1906870	7974912.408	503034.71	10.747	ROQ
1906871	7974917.67	503036.226	10.793	ROQ
1906872	7974922.633	503037.48	10.753	ROQ
1906873	7974926.738	503040.914	10.833	ROQ
1906874	7974926.501	503046.367	10.842	ROQ
1906875	7974922.383	503049.55	10.82	ROQ
1906876	7974926.891	503047.335	10.87	ROQ
1906877	7974931.932	503048.473	10.922	ROQ
1906878	7974936.85	503050.409	10.855	ROQ
1906879	7974941.564	503052.742	10.734	ROQ
1906880	7974939.502	503047.859	10.85	ROQ
1906881	7974935.142	503044.939	10.865	ROQ
1906882	7974930.345	503042.827	10.876	ROQ
1906883	7974925.263	503041.19	10.828	ROQ
1906884	7974920.385	503039.81	10.781	ROQ
1906885	7974915.336	503038.492	10.795	ROQ

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1906886	7974910.093	503037.51	10.748	ROQ
1906887	7974904.746	503036.566	10.755	ROQ
1906888	7974899.559	503035.782	10.877	ROQ
1906889	7974894.435	503034.533	10.963	ROQ
1906890	7974889.238	503032.948	10.96	ROQ
1906891	7974884.425	503031.356	10.97	ROQ
1906892	7974879.124	503029.817	10.959	ROQ
1906893	7974874.339	503028.322	11.029	ROQ
1906894	7974869.483	503026.714	10.993	ROQ
1906895	7974864.579	503025.078	11.011	ROQ
1906896	7974859.623	503023.724	10.925	ROQ
1906897	7974854.694	503022.133	10.899	ROQ
1906898	7974850.037	503019.764	10.931	ROQ
1906899	7974845.729	503016.954	10.986	ROQ
1906900	7974841.544	503013.643	10.928	ROQ
1906901	7974837.627	503010.354	10.962	ROQ
1906902	7974834.054	503006.759	10.971	ROQ
1906903	7974832	503002.056	10.981	ROQ

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Point Number	Northing	Easting	Elevation	Description
1000	7975003.646	503107.213	10.99	ROQ
1001	7975006.925	503096.105	10.821	ROQ
1002	7975010.302	503084.15	10.742	ROQ
1003	7975014.378	503070.999	10.799	ROQ
1004	7975018.192	503058.599	10.819	ROQ
1005	7975022.615	503044.59	10.712	ROQ
1006	7975026.08	503031.948	10.582	ROQ
1007	7975037.923	503036.076	10.501	ROQ
1008	7975035.472	503050.488	10.561	ROQ
1009	7975032.312	503063.104	10.674	ROQ
1010	7975029.156	503075.425	10.605	ROQ
1011	7975026.06	503088.131	10.596	ROQ
1012	7975022.914	503099.861	10.581	ROQ
1013	7975020.195	503111.688	10.642	ROQ
1014	7975031.92	503116.018	10.573	ROQ
1015	7975036.993	503102.994	10.451	ROQ
1016	7975041.831	503089.784	10.652	ROQ
1017	7975044.727	503077.123	10.549	ROQ
1018	7975049.541	503062.89	10.602	ROQ
1019	7975053.222	503050.364	10.59	ROQ
1020	7975056.695	503039.752	10.477	ROQ
1021	7975069.289	503043.659	10.534	ROQ
1022	7975065.36	503056.145	10.657	ROQ
1023	7975061.008	503068.31	10.7	ROQ
1024	7975057.115	503081.548	10.835	ROQ
1025	7975055.301	503087.101	10.858	ROQ
1026	7975054.014	503090.325	10.615	ROQ
1027	7975051.001	503100.013	10.546	ROQ
1028	7975047.45	503110.134	10.649	ROQ
1029	7975042.588	503119.059	10.808	ROQ
1030	7975055.543	503122.559	10.908	ROQ
1031	7975059.652	503110.989	10.787	ROQ
1032	7975063.608	503101.822	10.873	ROQ
1033	7975068.177	503088.798	10.877	ROQ
1034	7975072.426	503074.813	10.757	ROQ
1035	7975076.594	503061.19	10.684	ROQ
1036	7975081.181	503048.54	10.544	ROQ
1037	7975094.673	503053.675	10.664	ROQ
1038	7975091.102	503066.448	10.631	ROQ

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1039	7975087.873	503079.575	10.595	ROQ
1040	7975084.486	503090.693	10.705	ROQ
1041	7975079.833	503102.838	10.759	ROQ
1042	7975074.72	503117.326	10.924	ROQ
1043	7975070.486	503127.623	10.913	ROQ
1044	7975086.068	503132.306	10.912	ROQ
1045	7975088.761	503125.085	10.786	ROQ
1046	7975092.962	503112.102	10.809	ROQ
1047	7975097.691	503100.882	10.863	ROQ
1048	7975102.675	503089.255	10.889	ROQ
1049	7975106.614	503078.565	10.814	ROQ
1050	7975111.714	503067.469	10.875	ROQ
1051	7975115.695	503060.014	10.691	ROQ
1052	7975116.248	503059.131	10.589	ROQ CREST
1053	7975117.12	503057.802	9.757	ROQ TOE
1054	7975104.614	503052.928	9.656	ROQ TOE
1055	7975103.663	503054.637	10.593	ROQ CREST
1056	7975090.846	503050.049	10.578	ROQ CREST
1057	7975091.488	503048.904	10.076	ROQ TOE
1058	7975079.213	503044.253	9.973	ROQ TOE
1059	7975078.448	503045.765	10.745	ROQ CREST
1060	7975068.859	503043.559	10.547	ROQ CREST
1061	7975069.725	503041.471	9.875	ROQ TOE
1062	7975057.679	503037.284	10.388	ROQ CREST
1063	7975057.227	503035.882	9.852	ROQ TOE
1064	7975044.192	503035.187	10.39	ROQ TOE
1065	7975044.029	503035.985	10.602	ROQ CREST
1066	7975030.762	503032.121	10.345	ROQ TOE
1067	7975030.451	503033.055	10.52	ROQ CREST
1068	7975017.073	503027.939	10.283	ROQ TOE
1069	7975016.614	503028.91	10.701	ROQ CREST
1070	7975005.352	503023.35	10.299	ROQ TOE
1071	7975005.044	503024.069	10.595	ROQ CREST
1072	7974994.567	503019.242	10.378	ROQ TOE
1073	7974994.048	503020.34	10.689	ROQ CREST
1074	7974993.179	503022.928	10.555	ROQ
1075	7974990.834	503035.454	10.627	ROQ
1076	7974989.737	503047.999	10.68	ROQ
1077	7974987.926	503061.771	10.621	ROQ
1078	7974984.492	503076.268	10.582	ROQ
1079	7974981.496	503088.356	10.778	ROQ
1080	7974978.601	503098.677	10.721	ROQ

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1081	7974990.342	503102.543	10.767	ROQ
1082	7974993.909	503091.652	10.874	ROQ
1083	7974998.729	503082.566	10.848	ROQ
1084	7975002.131	503069.428	10.849	ROQ
1085	7975005.444	503057.427	10.812	ROQ
1086	7975009.007	503045.943	10.793	ROQ
1087	7975012.012	503034.553	10.803	ROQ

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Laydown Area LP3 Type 12 (ROQ) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
1000	7974976.843	503097.293	10.646	ROQ
1001	7974981.089	503081.577	10.607	ROQ
1002	7974984.651	503066.423	10.475	ROQ
1003	7974987.523	503057.6	10.506	ROQ
1004	7974988.939	503044.75	10.787	ROQ
1005	7974991.683	503033.322	10.672	ROQ
1006	7974994.545	503024.189	10.664	ROQ
1007	7974995.767	503021.258	10.747	ROQ
1008	7974996.12	503020.009	10.371	ROQ
1009	7974982.21	503014.372	10.387	ROQ
1010	7974981.751	503015.236	10.724	ROQ
1011	7974969.438	503011.35	10.648	ROQ
1012	7974969.001	503011.989	10.84	ROQ
1013	7974956.344	503007.038	10.459	ROQ
1014	7974955.803	503008.018	10.766	ROQ
1015	7974942.163	503003.138	10.66	ROQ
1016	7974942.056	503003.662	10.867	ROQ
1017	7974929.248	502998.599	10.619	ROQ
1018	7974929.104	502999.313	10.885	ROQ
1019	7974915.025	502994.89	10.882	ROQ
1020	7974905.019	502990.744	10.903	ROQ
1021	7974892.873	502987.976	10.969	ROQ
1022	7974879.959	502983.901	10.936	ROQ
1023	7974864.446	502979.883	10.958	ROQ

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Laydown Area LP3 Type 12 (ROQ) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
1000	7974901.633	503107.928	11.023	ROQ
1001	7974893.35	503104.546	11.078	ROQ
1002	7974888.076	503102.155	11.067	ROQ
1003	7974886.873	503108.536	11.166	ROQ
1004	7974885.241	503119.832	11.146	ROQ
1005	7974877.101	503125.791	11.089	ROQ
1006	7974876.592	503118.788	11.179	ROQ
1007	7974878.404	503107.171	11.175	ROQ
1008	7974879.896	503101.092	11.093	ROQ
1009	7974878.83	503099.397	11.151	ROQ
1010	7974877.556	503107.427	11.179	ROQ
1011	7974875.502	503116.926	11.115	ROQ
1012	7974873.444	503128.395	11.056	ROQ
1013	7974868.494	503133.639	11.064	ROQ
1014	7974859.825	503131.83	11.174	ROQ
1015	7974861.352	503122.379	11.113	ROQ
1016	7974862.429	503113.557	11.122	ROQ
1017	7974863.709	503105.229	11.131	ROQ
1018	7974865.358	503096.305	11.069	ROQ
1019	7974854.697	503093.961	11.028	ROQ
1020	7974851.559	503104.661	11.049	ROQ
1021	7974848.187	503116.064	11.164	ROQ
1022	7974845.887	503127.441	11.182	ROQ
1023	7974833.753	503126.149	11.276	ROQ
1024	7974835.22	503113.384	11.264	ROQ
1025	7974836.886	503102.798	11.313	ROQ
1026	7974838.432	503096.102	11.187	ROQ
1027	7974840.468	503088.551	10.974	ROQ
1028	7974826.03	503083.647	11.166	ROQ
1029	7974822.954	503094.834	11.375	ROQ
1030	7974819.906	503104.107	11.27	ROQ
1031	7974817.955	503112.964	11.383	ROQ
1032	7974817.124	503116.988	11.343	ROQ
1033	7974807.527	503117.757	11.207	ROQ
1034	7974808.223	503107.386	11.352	ROQ
1035	7974810.222	503097.858	11.439	ROQ
1036	7974812.24	503087.618	11.331	ROQ
1037	7974813.682	503081.046	11.258	ROQ
1038	7974802.913	503076.922	11.136	ROQ

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1039	7974800.602	503088.054	11.398	ROQ
1040	7974798.703	503098.118	11.408	ROQ
1041	7974796.386	503111.165	11.325	ROQ
1042	7974794.741	503121.645	11.312	ROQ
1043	7974786.995	503121.961	11.273	ROQ
1044	7974788.225	503108.511	11.293	ROQ
1045	7974790.72	503096.284	11.271	ROQ
1046	7974792.658	503085.636	11.349	ROQ
1047	7974794.776	503077.282	11.264	ROQ
1048	7974801.018	503076.075	11.188	ROQ
1049	7974803.287	503066.586	11.21	ROQ
1050	7974795.244	503064.984	11.113	ROQ
1051	7974796.846	503055.524	11.017	ROQ
1052	7974807.133	503059.061	11.092	ROQ
1053	7974810.581	503047.273	11.074	ROQ
1054	7974801.617	503045.198	10.874	ROQ
1055	7974792.869	503043.373	10.972	ROQ
1056	7974783.608	503041.955	10.986	ROQ
1057	7974774.987	503040.637	10.776	ROQ
1058	7974769.942	503039.216	10.882	ROQ
1059	7974769.975	503048.738	11.021	ROQ
1060	7974778.728	503050.866	11.069	ROQ
1061	7974786.511	503052.914	11.118	ROQ
1062	7974796.003	503056.146	11.037	ROQ
1063	7974793.65	503067.595	11.196	ROQ
1064	7974781.647	503067.072	11.255	ROQ
1065	7974780.874	503080.537	11.413	ROQ
1066	7974779.915	503093.823	11.224	ROQ
1067	7974779.195	503107.058	11.234	ROQ
1068	7974777.15	503121.819	11.316	ROQ
1069	7974769.559	503120.463	11.301	ROQ
1070	7974770.012	503107.523	11.097	ROQ
1071	7974770.333	503096.326	10.964	ROQ
1072	7974770.332	503088.665	11.315	ROQ
1073	7974770.562	503076.511	11.196	ROQ
1074	7974770.197	503065.737	11.16	ROQ
1075	7974770.246	503055.381	10.977	ROQ
1076	7974769.745	503045.057	10.831	ROQ
1077	7974772.074	503033.999	10.654	ROQ
1078	7974774.475	503023.399	10.811	ROQ
1079	7974776.963	503018.247	10.812	ROQ
1080	7974785.765	502988.262	10.656	ROQ

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1081	7974787.44	502979.976	10.479	ROQ
1082	7974790.067	502969.6	10.424	ROQ
1083	7974792.787	502960.516	10.492	ROQ
1084	7974793.594	502958.277	10.281	ROQ
1085	7974804.391	502959.705	10.233	ROQ
1086	7974812.8	502963.008	10.539	ROQ
1087	7974822.495	502966.786	10.742	ROQ
1088	7974831.713	502970.028	10.661	ROQ
1089	7974826.207	502975.358	10.727	ROQ
1090	7974814.393	502972.992	10.638	ROQ
1091	7974803.523	502970.152	10.531	ROQ
1092	7974797.042	502968.711	10.531	ROQ
1093	7974794.815	502976.104	10.634	ROQ
1094	7974805.309	502979.764	10.612	ROQ
1095	7974814.616	502982.143	10.718	ROQ
1096	7974821.225	502984.192	10.778	ROQ
1097	7974818.694	502988.694	10.817	ROQ
1098	7974813.96	502992.312	10.775	ROQ
1099	7974803.804	502990.963	10.826	ROQ
1100	7974794.549	502989.497	10.716	ROQ
1101	7974787.675	502988.031	10.666	ROQ
1102	7974784.998	502994.458	10.705	ROQ
1103	7974782.623	502994.865	10.769	ROQ
1104	7974781.221	503001.935	10.714	ROQ
1105	7974784.954	503012.118	10.833	ROQ
1106	7974795.202	503015.805	10.803	ROQ
1107	7974807.009	503019.199	10.862	ROQ
1108	7974815.471	503022.425	10.735	ROQ
1109	7974820.683	503010.19	10.772	ROQ
1110	7974802.661	503002.65	10.843	ROQ
1111	7974798.385	503023.496	10.923	ROQ

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Laydown Area LP3 Type 12 (ROQ) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
0722SM058	7975274.767	503294.225	10.583	ROQ
0722SM059	7975266.725	503296.195	10.621	ROQ
0722SM060	7975265.206	503301.528	10.64	ROQ
0722SM061	7975266.832	503298.284	10.67	ROQ
0722SM062	7975272.866	503304.335	10.658	ROQ
0722SM063	7975273.647	503300.514	10.643	ROQ
0722SM064	7975275.241	503296.334	10.589	ROQ
0722SM065	7975285.62	503296.246	10.658	ROQ
0722SM066	7975284.418	503301.66	10.688	ROQ
0722SM067	7975283.262	503306.072	10.738	ROQ
0722SM068	7975294.376	503309.684	10.826	ROQ
0722SM069	7975295.611	503305.048	10.865	ROQ
0722SM070	7975297.268	503296.451	10.695	ROQ
0722SM071	7975311.199	503295.539	10.649	ROQ
0722SM072	7975310.727	503303.899	10.686	ROQ
0722SM073	7975309.649	503313.655	10.757	ROQ
0722SM074	7975318.839	503309.805	10.674	ROQ
0722SM075	7975320.143	503304.922	10.634	ROQ
0722SM076	7975321.158	503300.274	10.65	ROQ
0722SM077	7975322.796	503295.085	10.446	ROQ
0722SM078	7975327.051	503298.251	10.511	ROQ
0722SM079	7975324.48	503304.461	10.764	ROQ
0722SM080	7975321.946	503308.179	10.676	ROQ
0722SM081	7975315.756	503312.545	10.672	ROQ

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Laydown Area LP3 Type 12 (ROQ) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
0722SM001	7975260.187	503292.073	9.667	ROQ
0722SM002	7975258.416	503294.187	9.748	ROQ
0722SM003	7975256.975	503297.423	10.101	ROQ
0722SM004	7975261.694	503299.131	9.852	ROQ
0722SM005	7975262.933	503295.722	9.892	ROQ
0722SM006	7975264.433	503291.599	9.872	ROQ
0722SM007	7975274.305	503295.31	9.846	ROQ
0722SM008	7975272.666	503299.504	9.848	ROQ
0722SM009	7975271.014	503303.351	9.919	ROQ
0722SM010	7975279.949	503304.589	9.961	ROQ
0722SM011	7975280.964	503300.693	9.896	ROQ
0722SM012	7975282.235	503297.021	9.979	ROQ
0722SM013	7975291.636	503298.869	10.011	ROQ
0722SM014	7975290.778	503303.968	9.98	ROQ
0722SM015	7975289.702	503307.812	10.218	ROQ
0722SM016	7975298.168	503309.628	10.073	ROQ
0722SM017	7975298.578	503303.073	10.18	ROQ
0722SM018	7975299.694	503297.34	10.075	ROQ
0722SM019	7975308.633	503296.809	10.044	ROQ
0722SM020	7975308.455	503303.073	10.192	ROQ
0722SM021	7975307.643	503309.176	10.167	ROQ
0722SM022	7975306.735	503312.677	10.057	ROQ
0722SM023	7975314.463	503312.537	10.136	ROQ
0722SM024	7975313.401	503306.587	10.225	ROQ
0722SM025	7975313.134	503300.035	10.038	ROQ
0722SM026	7975313.821	503295.388	10.074	ROQ
0722SM027	7975324.223	503297.116	10.036	ROQ
0722SM028	7975324.515	503302.121	10.056	ROQ
0722SM029	7975321.973	503306.864	10.067	ROQ

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Laydown Area LP3 Type 12 (ROQ) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
20000	7975330.118	503292.687	10.781	T12
20001	7975326.713	503301.154	10.815	T12
20002	7975318.284	503312.295	10.832	T12
20003	7975330.582	503309.88	10.751	T12
20004	7975340.444	503307.567	10.859	T12
20005	7975348.14	503304.727	10.817	T12
20006	7975348.049	503297.594	10.846	T12
20007	7975349.118	503287.357	10.784	T12
20008	7975350.817	503277.226	10.94	T12
20009	7975354.694	503267.454	10.734	T12
20010	7975354.746	503263.18	10.708	T12
20011	7975342.977	503267.723	10.891	T12
20012	7975337.809	503272.581	10.744	T12
20013	7975334.023	503282.403	10.829	T12
20014	7975329.339	503295.033	10.841	T12
20015	7975333.503	503301.824	10.841	T12
20016	7975336.231	503290.297	10.741	T12
20017	7975340.564	503279.567	10.835	T12
20018	7975343.56	503272.652	10.783	T12
20019	7975346.731	503278.381	10.825	T12
20020	7975343.017	503294.052	10.835	T12
20021	7975342.221	503301.05	10.839	T12

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Laydown Area LP3 Type 12 (ROQ) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
500028	7975868.56	503884.596	17.247	T12 FINAL
500029	7975854.708	503884.294	17.698	T12 FINAL
500030	7975854.69	503884.284	17.693	T12 FINAL
500031	7975840.818	503882.728	18.197	T12 FINAL
500032	7975825.649	503879.551	18.627	T12 FINAL
500033	7975813.837	503876.947	19.028	T12 FINAL
500034	7975803.027	503869.871	19.251	CREST T12 FINAL
500035	7975811.606	503856.85	18.765	CREST T12 FINAL
500036	7975816.782	503847.002	18.379	CREST T12 FINAL
500037	7975826.555	503830.46	17.997	CREST T12 FINAL
500038	7975828.586	503826.693	17.861	CREST T12 FINAL
500039	7975834.196	503816.547	17.473	CREST T12 FINAL
500040	7975835.919	503800.104	16.523	CREST T12 FINAL
500041	7975834.945	503787.382	16.239	CREST T12 FINAL
500042	7975837.062	503772.984	15.893	CREST T12 FINAL
500043	7975840.073	503758.918	15.292	CREST T12 FINAL
500044	7975841.97	503745.778	14.623	CREST T12 FINAL
500045	7975840.592	503733.827	14.402	CREST T12 FINAL
500046	7975839.273	503729.005	14.04	CREST T12 FINAL
500047	7975849.221	503722.859	13.381	T12 FINAL
500048	7975849.506	503734.851	14.189	T12 FINAL
500049	7975849.68	503748.964	14.646	T12 FINAL
500050	7975848.895	503762.797	14.986	T12 FINAL
500051	7975847.364	503778.554	15.814	T12 FINAL
500052	7975846.462	503792.479	16.12	T12 FINAL
500053	7975845.735	503804.58	16.611	T12 FINAL
500054	7975844.347	503818.941	17.155	T12 FINAL
500055	7975841.408	503828.526	17.689	T12 FINAL
500056	7975841.564	503842.172	17.816	T12 FINAL
500057	7975838.719	503856.074	17.943	T12 FINAL
500058	7975837.213	503867.278	18.142	T12 FINAL
500059	7975834.153	503877.648	18.409	T12 FINAL
500060	7975823.613	503875.438	18.725	T12 FINAL
500061	7975826.467	503861.412	18.441	T12 FINAL
500062	7975830.075	503850.158	18.163	T12 FINAL
500063	7975830.649	503839.693	17.85	T12 FINAL
500064	7975822.212	503845.513	18.13	T12 FINAL
500065	7975816.584	503857.277	18.67	T12 FINAL
500066	7975811.502	503866.751	18.811	T12 FINAL

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500067	7975799.648	503868.986	18.628	TOE T12 FINAL
500068	7975805.921	503860.652	18.339	TOE T12 FINAL
500069	7975811.139	503849.943	17.839	TOE T12 FINAL
500070	7975814.399	503844.032	17.66	TOE T12 FINAL
500071	7975821.652	503831.611	17.087	TOE T12 FINAL
500072	7975827.987	503824.042	16.558	TOE T12 FINAL
500073	7975830.751	503811.056	15.82	TOE T12 FINAL
500074	7975832.286	503801.403	15.321	TOE T12 FINAL
500075	7975832.809	503788.974	14.634	TOE T12 FINAL
500076	7975834.557	503777.535	14.512	TOE T12 FINAL
500077	7975838.591	503760.61	14.157	TOE T12 FINAL
500078	7975838.881	503753.368	13.832	TOE T12 FINAL
500079	7975838.474	503746.246	12.931	TOE T12 FINAL
500080	7975839.967	503741.313	12.725	TOE T12 FINAL
500081	7975836.183	503728.929	12.265	TOE T12 FINAL
500082	7975857.57	503726.926	13.324	T12 FINAL
500083	7975862.722	503729.486	13.31	T12 FINAL
500084	7975861.604	503737.237	13.946	T12 FINAL
500085	7975860.466	503750.642	14.609	T12 FINAL
500086	7975859.568	503761.304	14.818	T12 FINAL
500087	7975858.98	503767.62	14.833	T12 FINAL
500088	7975858.239	503778.893	15.536	T12 FINAL
500089	7975856.561	503791.666	15.913	T12 FINAL
500090	7975854.719	503806.175	16.424	T12 FINAL
500091	7975853.573	503817.257	16.85	T12 FINAL
500092	7975852.857	503830.163	17.207	T12 FINAL
500093	7975850.105	503842.545	17.465	T12 FINAL
500094	7975849.044	503856.185	17.55	T12 FINAL
500095	7975846.715	503868.448	17.778	T12 FINAL
500096	7975846.577	503877.276	17.913	T12 FINAL
500097	7975856.047	503877.883	17.565	T12 FINAL
500098	7975857.247	503868.378	17.357	T12 FINAL
500099	7975859.624	503856.25	17.123	T12 FINAL
500100	7975862.041	503844.684	16.876	T12 FINAL
500101	7975864.681	503832.698	16.853	T12 FINAL
500102	7975865.49	503818.455	16.369	T12 FINAL
500103	7975866.034	503805.287	16.096	T12 FINAL
500104	7975867.401	503794.296	15.798	T12 FINAL
500105	7975869.083	503783.069	15.304	T12 FINAL
500106	7975868.738	503772.059	14.961	T12 FINAL
500107	7975869.916	503760.081	14.596	T12 FINAL
500108	7975872.233	503747.833	14.076	T12 FINAL

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500109	7975874.97	503737.672	13.409	T12 FINAL
500110	7975882.356	503747.897	13.505	T12 FINAL
500111	7975878.633	503757.839	14.211	T12 FINAL
500112	7975880.831	503771.463	14.586	T12 FINAL
500113	7975880.089	503782.509	15.046	T12 FINAL
500114	7975877.157	503795.727	15.572	T12 FINAL
500115	7975874.673	503810.077	15.842	T12 FINAL
500116	7975873.646	503824.677	16.115	T12 FINAL
500117	7975873.507	503831.253	16.232	T12 FINAL
500118	7975884.307	503832.747	15.797	T12 FINAL
500119	7975885.809	503818.416	15.546	T12 FINAL
500120	7975887.452	503805.467	15.365	T12 FINAL
500121	7975888.258	503789.912	14.979	T12 FINAL
500122	7975889.535	503776.41	14.394	T12 FINAL
500123	7975892.573	503765.054	13.812	T12 FINAL
500124	7975895.095	503760.374	13.416	T12 FINAL
500125	7975903.496	503770.294	13.387	T12 FINAL
500126	7975899.37	503783.487	14.276	T12 FINAL
500127	7975894.584	503795.222	14.95	T12 FINAL
500128	7975892.744	503808.979	15.231	T12 FINAL
500129	7975900.239	503797.229	14.805	T12 FINAL
500130	7975907.975	503787.577	13.966	T12 FINAL
500131	7975912.988	503783.202	13.416	T12 FINAL
500132	7975916.321	503788.307	13.432	T12 FINAL
500133	7975908.017	503797.915	14.435	T12 FINAL
500134	7975899.437	503808.174	15.088	T12 FINAL
500135	7975891.239	503818.831	15.396	T12 FINAL
500136	7975884.43	503828.942	15.852	T12 FINAL
500137	7975875.72	503837.735	16.341	T12 FINAL
500138	7975869.465	503849.584	16.677	T12 FINAL
500139	7975867.639	503857.575	16.702	T12 FINAL
500140	7975865.799	503868.637	17.133	T12 FINAL
500141	7975865.738	503879.256	17.207	T12 FINAL
500142	7975875.773	503882.865	16.883	CREST T12 FINAL
500143	7975877.346	503865.66	16.373	CREST T12 FINAL
500144	7975878.239	503855.561	16.31	CREST T12 FINAL
500145	7975877.821	503841.486	16.297	CREST T12 FINAL
500146	7975879.97	503842.517	15.034	TOE T12 FINAL
500147	7975880.063	503853.886	15.329	TOE T12 FINAL
500148	7975878.97	503867.269	15.49	TOE T12 FINAL
500149	7975878.488	503881.898	15.598	TOE T12 FINAL

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Type 12 (ROQ) Placement

Laydown Area LP3 Type 12 (ROQ) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
10000	7975019.685	503202.516	10.494	T12 FINAL
10001	7975017.404	503213.631	10.472	T12 FINAL
10002	7975018.384	503222.435	10.481	T12 FINAL
10003	7975027.394	503223.824	10.529	T12 FINAL
10004	7975029.913	503210.405	10.477	T12 FINAL
10005	7975036.663	503193.592	10.5	T12 FINAL
10006	7975036.957	503183.124	10.514	T12 FINAL
10007	7975041.669	503168.104	10.435	T12 FINAL
10008	7975044.67	503156.812	10.451	T12 FINAL
10009	7975046.029	503153.739	10.484	T12 FINAL
10010	7975059.998	503158.595	10.579	T12 FINAL
10011	7975057.233	503172.436	10.538	T12 FINAL
10012	7975053.779	503191.217	10.569	T12 FINAL
10013	7975050.634	503202.869	10.579	T12 FINAL
10014	7975045.887	503217.808	10.515	T12 FINAL
10015	7975043.151	503231.573	10.549	T12 FINAL
10016	7975050.272	503233.147	10.402	T12 FINAL
10017	7975058.945	503234.692	10.563	T12 FINAL
10018	7975059.046	503234.64	10.568	T12 FINAL
10019	7975062.351	503235.044	10.568	T12 FINAL
10020	7975056.788	503225.603	10.496	T12 FINAL
10021	7975055.132	503216.811	10.313	T12 FINAL
10022	7975055.128	503216.829	10.309	T12 FINAL
10023	7975056.412	503203.001	10.342	T12 FINAL
10024	7975056.401	503203.022	10.352	T12 FINAL
10025	7975023.673	503186.504	10.421	T12 FINAL
10026	7975026.155	503173.798	10.362	T12 FINAL
10027	7975029.221	503163.684	10.397	T12 FINAL
10028	7975031.705	503156.175	10.49	T12 FINAL
10029	7975033.271	503150.151	10.342	T12 FINAL
10030	7975072.315	503162.003	10.503	T12 FINAL
10031	7975079.756	503176.78	10.54	T12 FINAL
10032	7975078.486	503190.541	10.642	T12 FINAL
10033	7975063.89	503189.461	10.533	T12 FINAL
10034	7975062.321	503180.881	10.488	T12 FINAL
10035	7975067.304	503180.044	10.521	T12 FINAL
10036	7975067.266	503168.945	10.469	T12 FINAL

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NUNA EAST LTD

(Section 4)

Survey Data
(Type 8 150mm minus)

Mary River Expansion Project
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Laydown Area LP3
Type 8 (150mm minus) Placement

Laydown Area LP3 Type 8 (150mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
20000	7975425.514	503207.154	11.266	T8 ASB
20032	7975505.834	503256.374	10.887	T8 ASB
20001	7975505.833	503256.374	10.887	T8 ASB
20002	7975495.569	503254.342	10.933	T8 ASB
20003	7975485.626	503251.914	10.954	T8 ASB
20004	7975475.793	503248.812	10.993	T8 ASB
20005	7975466.133	503245.885	10.987	T8 ASB
20006	7975456.46	503242.758	11.062	T8 ASB
20007	7975446.873	503239.431	11.041	T8 ASB
20008	7975437.12	503235.852	11.128	T8 ASB
20009	7975426.588	503233.522	11.105	T8 ASB
20010	7975416.566	503230.86	11.125	T8 ASB
20011	7975407.13	503227.554	11.141	T8 ASB
20012	7975399.376	503220.546	11.183	T8 ASB
20013	7975389.576	503216.987	11.178	T8 ASB
20014	7975379.671	503215.493	11.155	T8 ASB
20015	7975369.883	503212.762	11.148	T8 ASB
20016	7975359.709	503211.599	11.102	T8 ASB
20017	7975349.302	503211.898	11.073	T8 ASB
20018	7975339.032	503210.188	11.007	T8 ASB
20019	7975329.249	503207.481	10.965	T8 ASB
20020	7975319.504	503204.643	10.912	T8 ASB
20021	7975309.395	503201.285	10.882	T8 ASB
20022	7975299.257	503198.072	10.8	T8 ASB
20023	7975289.361	503195.001	10.688	T8 ASB
20024	7975279.378	503191.637	10.615	T8 ASB
20025	7975269.766	503188.177	10.671	T8 ASB
20026	7975260.036	503184.729	10.627	T8 ASB
20027	7975250.031	503181.668	10.749	T8 ASB
20028	7975240.256	503178.676	10.77	T8 ASB
20029	7975230.068	503175.707	10.81	T8 ASB
20030	7975220.092	503172.557	10.925	T8 ASB
20031	7975210.072	503169.244	11.025	T8 ASB
20033	7975200.156	503165.978	11.141	T8 ASB
20034	7975190.45	503163.33	11.143	T8 ASB
20035	7975180.059	503160.11	11.179	T8 ASB
20036	7975169.993	503157.299	11.097	T8 ASB
20037	7975160.139	503154.313	11.032	T8 ASB
20038	7975149.752	503151.204	11.058	T8 ASB

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20039	7975139.914	503148.23	11.045	T8 ASB
20040	7975130.305	503145.239	10.986	T8 ASB
20041	7975120.302	503141.589	11.031	T8 ASB
20042	7975110.684	503138.538	11.057	T8 ASB
20043	7975100.795	503134.856	10.938	T8 ASB
20044	7975091.196	503131.097	10.844	T8 ASB
20045	7975083.252	503124.944	10.843	T8 ASB
20046	7975082.179	503114.91	10.709	T8 ASB
20047	7975086.181	503105.65	10.844	T8 ASB
20048	7975089.692	503096.151	10.848	T8 ASB
20049	7975093.627	503086.562	10.742	T8 ASB
20050	7975097.332	503076.993	10.796	T8 ASB
20051	7975101.957	503067.981	10.826	T8 ASB
20052	7975110.1	503061.962	10.815	T8 ASB
20053	7975120.098	503064.331	10.829	T8 ASB
20054	7975130.105	503067.468	10.876	T8 ASB
20055	7975140.444	503070.137	10.897	T8 ASB
20056	7975150.116	503073.338	10.883	T8 ASB
20057	7975159.964	503076.579	10.911	T8 ASB
20058	7975170.055	503079.526	10.993	T8 ASB
20059	7975180.299	503082.661	10.939	T8 ASB
20060	7975190.012	503085.505	10.926	T8 ASB
20061	7975199.603	503088.817	10.97	T8 ASB
20062	7975209.104	503091.943	11.018	T8 ASB
20063	7975218.62	503095.096	10.97	T8 ASB
20064	7975228.748	503098.432	10.966	T8 ASB
20065	7975239.054	503101.356	10.879	T8 ASB
20066	7975248.957	503104.306	10.795	T8 ASB
20067	7975259.006	503107.304	10.72	T8 ASB
20068	7975268.629	503110.379	10.805	T8 ASB
20069	7975278.13	503113.528	10.733	T8 ASB
20070	7975287.972	503116.619	10.607	T8 ASB
20071	7975297.426	503120.048	10.468	T8 ASB
20072	7975305.929	503126.06	10.467	T8 ASB
20073	7975313.175	503132.999	10.551	T8 ASB
20074	7975321.126	503139.815	10.666	T8 ASB
20075	7975328.431	503147.461	10.657	T8 ASB
20076	7975334.798	503156.139	10.697	T8 ASB
20077	7975339.346	503165.246	10.678	T8 ASB
20078	7975343.24	503175.014	10.623	T8 ASB
20079	7975346.232	503185.319	10.735	T8 ASB
20080	7975343.477	503195.358	10.955	T8 ASB

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20081	7975333.531	503199.028	11.025	T8 ASB
20082	7975323.827	503196.558	10.939	T8 ASB
20083	7975314.129	503193.652	10.821	T8 ASB
20084	7975304.192	503190.611	10.773	T8 ASB
20085	7975293.942	503187.492	10.731	T8 ASB
20086	7975283.67	503184.407	10.65	T8 ASB
20087	7975273.156	503181.365	10.642	T8 ASB
20088	7975263.503	503178.578	10.71	T8 ASB
20089	7975253.931	503175.654	10.766	T8 ASB
20090	7975244.242	503172.625	10.846	T8 ASB
20091	7975234.401	503169.396	10.859	T8 ASB
20092	7975224.762	503166.206	10.933	T8 ASB
20093	7975214.564	503163.116	10.983	T8 ASB
20094	7975204.545	503159.579	11.032	T8 ASB
20095	7975194.9	503156.146	11.149	T8 ASB
20096	7975184.881	503152.795	11.146	T8 ASB
20097	7975174.827	503149.277	11.238	T8 ASB
20098	7975164.786	503145.744	11.191	T8 ASB
20099	7975155.361	503142.186	11.143	T8 ASB
20100	7975145.572	503138.331	11.129	T8 ASB
20101	7975135.752	503134.425	11.055	T8 ASB
20102	7975125.727	503130.418	10.892	T8 ASB
20103	7975116.328	503126.919	11.051	T8 ASB
20104	7975106.688	503124.234	10.862	T8 ASB
20105	7975098.397	503117.745	10.885	T8 ASB
20106	7975098.337	503107.163	10.86	T8 ASB
20107	7975101.784	503097.596	10.981	T8 ASB
20108	7975104.839	503087.962	10.878	T8 ASB
20109	7975107.933	503077.904	10.892	T8 ASB
20110	7975115.714	503071.244	10.981	T8 ASB
20111	7975125.781	503072.765	10.966	T8 ASB
20112	7975135.231	503076.61	10.997	T8 ASB
20113	7975144.858	503080.248	10.993	T8 ASB
20114	7975155.245	503083.919	11.062	T8 ASB
20115	7975164.784	503087.133	11.033	T8 ASB
20116	7975174.539	503090.188	11.071	T8 ASB
20117	7975184.386	503093.383	11.102	T8 ASB
20118	7975194.075	503097.031	11.105	T8 ASB
20119	7975204.572	503100.657	11.138	T8 ASB
20120	7975214.807	503104.143	11.009	T8 ASB
20121	7975224.391	503107.762	11.09	T8 ASB
20122	7975234.187	503111.013	11.037	T8 ASB

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20123	7975244.536	503114.409	10.852	T8 ASB
20124	7975255.014	503117.94	10.838	T8 ASB
20125	7975265.587	503121.295	10.759	T8 ASB
20126	7975275.697	503124.508	10.796	T8 ASB
20127	7975285.358	503128.39	10.748	T8 ASB
20128	7975294.641	503134.326	10.618	T8 ASB
20129	7975301.881	503141.52	10.662	T8 ASB
20130	7975307.413	503149.993	10.618	T8 ASB
20131	7975312.833	503159.059	10.811	T8 ASB
20132	7975317.594	503167.865	10.901	T8 ASB
20133	7975322.46	503176.788	10.855	T8 ASB
20134	7975314.642	503183.686	10.889	T8 ASB
20135	7975304.726	503181.993	10.73	T8 ASB
20136	7975294.994	503179.174	10.645	T8 ASB
20137	7975285.216	503175.914	10.586	T8 ASB
20138	7975275.194	503172.584	10.633	T8 ASB
20139	7975265.364	503169.185	10.741	T8 ASB
20140	7975255.805	503166.124	10.773	T8 ASB
20141	7975246.216	503163.174	10.798	T8 ASB
20142	7975236.564	503159.658	10.887	T8 ASB
20143	7975227.387	503155.487	10.921	T8 ASB
20144	7975217.523	503151.046	11.042	T8 ASB
20145	7975208.174	503146.95	11.046	T8 ASB
20146	7975198.698	503143.121	11.147	T8 ASB
20147	7975189.08	503139.502	11.197	T8 ASB
20148	7975178.899	503135.947	11.19	T8 ASB
20149	7975168.384	503132.507	11.206	T8 ASB
20150	7975158.827	503129.052	11.154	T8 ASB
20151	7975149.119	503125.568	11.11	T8 ASB
20152	7975138.795	503122.12	11.054	T8 ASB
20153	7975128.507	503118.645	10.977	T8 ASB
20154	7975119.029	503114.85	10.949	T8 ASB
20155	7975110.841	503108.022	10.907	T8 ASB
20156	7975111.251	503097.883	10.856	T8 ASB
20157	7975118.338	503090.667	10.904	T8 ASB
20158	7975128.951	503088.876	10.853	T8 ASB
20159	7975139.061	503090.529	10.946	T8 ASB
20160	7975149.639	503092.738	10.974	T8 ASB
20161	7975159.489	503095.859	11.091	T8 ASB
20162	7975169.077	503099.011	11.072	T8 ASB
20163	7975178.824	503102.071	11.14	T8 ASB
20164	7975188.691	503105.331	11.084	T8 ASB

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20165	7975198.374	503108.566	11.142	T8 ASB
20166	7975208.3	503112.017	11.027	T8 ASB
20167	7975218.405	503115.967	11.118	T8 ASB
20168	7975228.231	503119.986	11.104	T8 ASB
20169	7975237.545	503124.039	10.866	T8 ASB
20170	7975246.796	503128.203	10.811	T8 ASB
20171	7975256.255	503131.943	10.741	T8 ASB
20172	7975265.981	503135.667	10.715	T8 ASB
20173	7975275.711	503139.7	10.682	T8 ASB
20174	7975284.653	503144.711	10.638	T8 ASB
20175	7975292.415	503151.996	10.652	T8 ASB
20176	7975295.414	503162.093	10.586	T8 ASB
20177	7975288.076	503168.927	10.551	T8 ASB
20178	7975279.274	503163.273	10.623	T8 ASB
20179	7975270.031	503158.206	10.697	T8 ASB
20180	7975261.062	503153.583	10.739	T8 ASB
20181	7975251.358	503149.031	10.765	T8 ASB
20182	7975241.959	503145.599	10.91	T8 ASB
20183	7975232.407	503142.557	10.931	T8 ASB
20184	7975222.359	503139.323	10.91	T8 ASB
20185	7975212.47	503137.149	11.013	T8 ASB
20186	7975202.091	503134.4	11.14	T8 ASB
20187	7975191.987	503130.983	11.164	T8 ASB
20188	7975182.374	503126.757	11.149	T8 ASB
20189	7975173.246	503122.158	11.137	T8 ASB
20190	7975163.661	503117.07	11.158	T8 ASB
20191	7975153.969	503111.79	11.14	T8 ASB
20192	7975144.555	503107.708	11.013	T8 ASB
20193	7975134.357	503104.269	10.942	T8 ASB
20194	7975123.706	503103.121	10.867	T8 ASB
20195	7975117.555	503095.152	10.889	T8 ASB
20196	7975125.677	503088.752	10.841	T8 ASB
20197	7975135.434	503091.444	10.985	T8 ASB
20198	7975144.672	503095.831	11.039	T8 ASB
20199	7975154.513	503100.528	11.129	T8 ASB
20200	7975163.903	503104.71	11.183	T8 ASB
20201	7975173.497	503108.921	11.146	T8 ASB
20202	7975183.176	503113.354	11.161	T8 ASB
20203	7975192.825	503117.741	11.154	T8 ASB
20204	7975202.332	503121.847	11.113	T8 ASB
20205	7975211.818	503125.505	11.127	T8 ASB
20206	7975221.756	503129.586	11.039	T8 ASB

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20207	7975231.177	503133.261	10.891	T8 ASB
20208	7975240.725	503137.459	10.811	T8 ASB
20209	7975250.008	503141.502	10.777	T8 ASB
20210	7975259.974	503145.728	10.76	T8 ASB
20211	7975269.561	503149.65	10.758	T8 ASB
20212	7975278.954	503153.646	10.753	T8 ASB
20213	7975288.403	503157.98	10.667	T8 ASB
20214	7975345.616	503142.398	10.656	T8 ASB
20215	7975355.801	503145.158	10.746	T8 ASB
20216	7975365.971	503147.882	10.776	T8 ASB
20217	7975376.069	503151.47	10.767	T8 ASB
20218	7975385.96	503155.237	10.886	T8 ASB
20219	7975396.359	503158.792	10.95	T8 ASB
20220	7975406.219	503161.999	11.049	T8 ASB
20221	7975416.278	503165.358	11.023	T8 ASB
20222	7975426.184	503168.316	11.105	T8 ASB
20223	7975436.214	503171.829	11.099	T8 ASB
20224	7975445.984	503174.557	11.117	T8 ASB
20225	7975455.84	503177.628	11.129	T8 ASB
20226	7975465.494	503180.33	11.134	T8 ASB
20227	7975475.403	503183.143	11.134	T8 ASB
20228	7975485.881	503185.9	11.119	T8 ASB
20229	7975496.327	503188.458	11.152	T8 ASB
20230	7975506.391	503191.395	11.153	T8 ASB
20231	7975513.695	503198.265	11.123	T8 ASB
20232	7975513.725	503208.747	11.071	T8 ASB
20233	7975512.996	503218.885	11.051	T8 ASB
20234	7975511.48	503229.296	10.987	T8 ASB
20235	7975508.389	503239.388	10.91	T8 ASB
20236	7975502.289	503247.647	10.993	T8 ASB
20237	7975492.185	503248.379	10.997	T8 ASB
20238	7975482.09	503244.462	10.972	T8 ASB
20239	7975472.065	503240.248	11.019	T8 ASB
20240	7975462.623	503236.732	11.102	T8 ASB
20241	7975452.977	503233.07	11.137	T8 ASB
20242	7975443.157	503229.848	11.209	T8 ASB
20243	7975433.018	503226.733	11.159	T8 ASB
20244	7975423.114	503223.504	11.204	T8 ASB
20245	7975413.339	503220.007	11.172	T8 ASB
20246	7975403.746	503216.523	11.219	T8 ASB
20247	7975393.407	503212.569	11.132	T8 ASB
20248	7975383.508	503208.604	11.135	T8 ASB

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20249	7975373.384	503205.212	11.062	T8 ASB
20250	7975363.956	503200.214	11.002	T8 ASB
20251	7975359.206	503191.323	10.988	T8 ASB
20252	7975357.963	503180.757	10.974	T8 ASB
20253	7975356.543	503170.244	10.893	T8 ASB
20254	7975355.449	503160.26	10.896	T8 ASB
20255	7975362.941	503153.156	10.802	T8 ASB
20256	7975372.835	503155.662	10.818	T8 ASB
20257	7975382.163	503159.423	10.873	T8 ASB
20258	7975391.963	503162.652	10.913	T8 ASB
20259	7975402.023	503165.934	10.958	T8 ASB
20260	7975412.051	503169.286	11.026	T8 ASB
20261	7975422.275	503172.671	11.092	T8 ASB
20262	7975432.007	503175.822	11.125	T8 ASB
20263	7975442.345	503179.081	11.112	T8 ASB
20264	7975451.951	503182.219	11.072	T8 ASB
20265	7975461.9	503185.533	11.115	T8 ASB
20266	7975472.559	503188.342	11.136	T8 ASB
20267	7975483.106	503190.938	11.142	T8 ASB
20268	7975492.97	503193.436	11.135	T8 ASB
20269	7975502.925	503197.167	11.138	T8 ASB
20270	7975509.699	503205.449	11.014	T8 ASB
20271	7975509.397	503215.949	11.039	T8 ASB
20272	7975508.004	503226.411	10.973	T8 ASB
20273	7975503.143	503235.186	10.955	T8 ASB
20274	7975493.662	503239.665	10.918	T8 ASB
20275	7975483.32	503238.325	10.935	T8 ASB
20276	7975473.378	503234.723	10.974	T8 ASB
20277	7975463.708	503231.217	11.076	T8 ASB
20278	7975453.926	503227.948	11.127	T8 ASB
20279	7975443.803	503224.485	11.098	T8 ASB
20280	7975434.315	503220.921	11.204	T8 ASB
20281	7975424.642	503217.581	11.243	T8 ASB
20282	7975414.645	503213.988	11.242	T8 ASB
20283	7975404.649	503210.433	11.124	T8 ASB
20284	7975394.84	503207.221	11.113	T8 ASB
20285	7975384.952	503204.321	11.121	T8 ASB
20286	7975375.184	503200.225	11.031	T8 ASB
20287	7975367.241	503193.161	10.93	T8 ASB
20288	7975363.619	503182.836	10.932	T8 ASB
20289	7975364.565	503172.719	10.877	T8 ASB
20290	7975371.835	503165.15	10.865	T8 ASB

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20291	7975381.881	503168.515	10.924	T8 ASB
20292	7975391.667	503171.93	10.971	T8 ASB
20293	7975401.268	503174.972	10.988	T8 ASB
20294	7975411.152	503177.801	11.041	T8 ASB
20295	7975420.946	503180.631	11.054	T8 ASB
20296	7975430.614	503183.456	11.113	T8 ASB
20297	7975440.887	503186.587	11.135	T8 ASB
20298	7975450.727	503189.133	11.18	T8 ASB
20299	7975461.295	503191.671	11.147	T8 ASB
20300	7975471.047	503194.274	11.165	T8 ASB
20301	7975481.592	503197.457	11.134	T8 ASB
20302	7975491.437	503200.548	11.106	T8 ASB
20303	7975500.295	503205.201	11.121	T8 ASB
20304	7975504.753	503214.826	11.127	T8 ASB
20305	7975502.503	503224.904	11.009	T8 ASB
20306	7975494.285	503230.66	10.974	T8 ASB
20307	7975483.412	503231.26	10.974	T8 ASB
20308	7975473.261	503227.624	11.092	T8 ASB
20309	7975463.194	503223.271	11.146	T8 ASB
20310	7975453.796	503219.47	11.143	T8 ASB
20311	7975444.316	503215.864	11.224	T8 ASB
20312	7975434.005	503212.146	11.264	T8 ASB
20313	7975423.603	503208.686	11.205	T8 ASB
20314	7975413.479	503205.422	11.203	T8 ASB
20315	7975403.424	503202.481	11.124	T8 ASB
20316	7975393.576	503199.793	11.031	T8 ASB
20317	7975383.556	503196.748	11	T8 ASB
20318	7975373.925	503192.944	10.989	T8 ASB
20319	7975369.626	503183.627	10.949	T8 ASB
20320	7975374.598	503174.268	10.876	T8 ASB
20321	7975384.553	503173.187	10.923	T8 ASB
20322	7975393.991	503177.751	10.976	T8 ASB
20323	7975402.911	503183.728	11.104	T8 ASB
20324	7975412.802	503188.488	11.108	T8 ASB
20325	7975422.298	503191.838	11.027	T8 ASB
20326	7975432.676	503193.752	11.148	T8 ASB
20327	7975442.899	503195.201	11.139	T8 ASB
20328	7975452.807	503197.339	11.154	T8 ASB
20329	7975462.345	503201.03	11.073	T8 ASB
20330	7975472.114	503204.211	11.138	T8 ASB
20331	7975481.958	503206.907	11.157	T8 ASB
20332	7975491.699	503209.564	11.143	T8 ASB

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20333	7975501.776	503212.521	11.123	T8 ASB
20334	7975510.008	503218.691	11.03	T8 ASB
20335	7975503.717	503226.61	11.003	T8 ASB
20336	7975494.32	503223.034	11.066	T8 ASB
20337	7975484.72	503218.926	11.051	T8 ASB
20338	7975474.56	503215.025	11.155	T8 ASB
20339	7975465.027	503211.555	11.164	T8 ASB
20340	7975455.274	503208.197	11.113	T8 ASB
20341	7975445.425	503205.177	11.145	T8 ASB
20342	7975435.556	503202.176	11.157	T8 ASB
20343	7975425.628	503199.207	11.129	T8 ASB
20344	7975415.527	503196.5	11.088	T8 ASB
20345	7975405.476	503193.696	11.047	T8 ASB
20346	7975394.973	503190.287	10.989	T8 ASB
20347	7975384.678	503186.779	10.997	T8 ASB
20348	7975375.341	503181.66	10.921	T8 ASB
20349	7975372.039	503171.521	10.883	T8 ASB
20350	7975378.251	503163.534	10.836	T8 ASB
20351	7975388.367	503163.571	10.878	T8 ASB
20352	7975519.469	503187.103	11.223	CREST T8 ASB
20353	7975502.01	503182.009	11.021	CREST T8 ASB
20354	7975486.025	503177.293	11.053	CREST T8 ASB
20355	7975467.337	503172.096	11.185	CREST T8 ASB
20356	7975453.523	503168.366	11.194	CREST T8 ASB
20357	7975436.274	503162.946	11.131	CREST T8 ASB
20358	7975420.159	503156.527	11.125	CREST T8 ASB
20359	7975402.662	503150.402	10.889	CREST T8 ASB
20360	7975386.09	503145.537	10.752	CREST T8 ASB
20361	7975366.029	503138.408	10.774	CREST T8 ASB
20362	7975346.662	503131.887	10.693	CREST T8 ASB
20363	7975327.931	503126.03	10.678	CREST T8 ASB
20364	7975294.631	503115.759	10.628	CREST T8 ASB
20365	7975281.56	503111.875	10.703	CREST T8 ASB
20366	7975269.366	503107.713	10.761	CREST T8 ASB
20367	7975258.063	503102.823	10.713	CREST T8 ASB
20368	7975248.654	503100.731	10.812	CREST T8 ASB
20369	7975233.19	503097.551	11.028	CREST T8 ASB
20370	7975221.354	503092.895	11.053	CREST T8 ASB
20371	7975207.936	503089.534	11.049	CREST T8 ASB
20372	7975199.73	503085.497	11.098	CREST T8 ASB
20373	7975186.426	503081.784	10.959	CREST T8 ASB
20374	7975173.801	503077.587	10.982	CREST T8 ASB

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20375	7975162.86	503073.501	10.874	CREST T8 ASB
20376	7975149.644	503070.42	10.912	CREST T8 ASB
20377	7975137.311	503066.657	10.834	CREST T8 ASB
20378	7975121.947	503061.921	10.83	CREST T8 ASB
20379	7975109.309	503056.38	10.755	CREST T8 ASB
20380	7975101.98	503054.958	10.846	CREST T8 ASB
20381	7975097.47	503069.958	10.819	CREST T8 ASB
20382	7975091.069	503089.024	10.865	CREST T8 ASB
20383	7975084.6	503101.601	10.88	CREST T8 ASB
20384	7975081.43	503112.255	10.727	CREST T8 ASB
20385	7975080.786	503122.749	10.723	CREST T8 ASB
20386	7975078.743	503130.099	10.839	MOD TOE T8 ASB
20387	7975089.616	503133.542	10.921	MOD TOE T8 ASB
20388	7975104.37	503138.707	11	MOD TOE T8 ASB
20389	7975117.547	503142.884	10.994	MOD TOE T8 ASB
20390	7975128.962	503146.654	11.033	MOD TOE T8 ASB
20391	7975147.468	503152.081	11.172	MOD TOE T8 ASB
20392	7975164.27	503157.559	11.169	MOD TOE T8 ASB
20393	7975176.398	503160.548	11.304	MOD TOE T8 ASB
20394	7975190.873	503164.965	11.178	MOD TOE T8 ASB
20395	7975203.924	503169.219	11.13	MOD TOE T8 ASB
20396	7975217.286	503173.92	11.001	MOD TOE T8 ASB
20397	7975229.23	503177.589	10.877	MOD TOE T8 ASB
20398	7975240.874	503181.376	10.84	MOD TOE T8 ASB
20399	7975251.324	503184.106	10.801	MOD TOE T8 ASB
20400	7975262.861	503187.627	10.718	MOD TOE T8 ASB
20401	7975274.5	503191.452	10.663	MOD TOE T8 ASB
20402	7975284.503	503195.163	10.648	MOD TOE T8 ASB
20403	7975298.339	503198.979	10.81	MOD TOE T8 ASB
20404	7975307.893	503202.205	10.836	MOD TOE T8 ASB
20405	7975325.613	503207.755	10.962	MOD TOE T8 ASB
20406	7975342.401	503212.874	11.089	MOD TOE T8 ASB
20407	7975393.487	503225.662	11.167	MOD TOE T8 ASB
20408	7975406.057	503229.68	11.146	MOD TOE T8 ASB
20409	7975419.274	503234.049	11.198	MOD TOE T8 ASB
20410	7975435.485	503239.444	11.098	MOD TOE T8 ASB
20411	7975448.539	503244.008	11.101	MOD TOE T8 ASB
20412	7975459.873	503247.305	11.037	MOD TOE T8 ASB
20413	7975473.976	503252.133	10.998	MOD TOE T8 ASB
20414	7975483.032	503254.657	11.072	MOD TOE T8 ASB
20415	7975516.178	503256.221	10.799	LIMIT T12 ASB
20416	7975531.206	503256.698	10.888	LIMIT T12 ASB

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20417	7975544.417	503254.236	10.865	LIMIT T12 ASB
20418	7975551.478	503253.175	10.798	LIMIT T12 ASB
20419	7975550.531	503250.397	10.744	CREST T12 ASB
20420	7975549.591	503241.255	10.906	CREST T12 ASB
20421	7975551.67	503230.841	10.751	CREST T12 ASB
20422	7975552.546	503221.244	10.644	CREST T12 ASB
20423	7975551.63	503211.94	10.453	CREST T12 ASB
20424	7975550.333	503195.545	10.679	CREST T12 ASB
20425	7975547.527	503194.023	10.673	CREST T12 ASB
20426	7975533.823	503192.37	10.761	CREST T12 ASB
20427	7975525.131	503189.37	10.953	CREST T12 ASB
20428	7975520.13	503191.079	10.998	SS T12 ASB
20429	7975518.785	503200.54	10.981	SS T12 ASB
20430	7975518.83	503211.925	10.949	SS T12 ASB
20431	7975519.61	503224.826	10.783	SS T12 ASB
20432	7975519.746	503236.113	10.842	SS T12 ASB
20433	7975522.172	503244.518	10.797	SS T12 ASB
20434	7975518.781	503252.46	10.74	SS T12 ASB
20435	7975534.838	503250.943	10.778	SS T12 ASB
20436	7975534.585	503239.67	10.815	SS T12 ASB
20437	7975534.273	503228.072	10.859	SS T12 ASB
20438	7975532.905	503214.052	10.769	SS T12 ASB
20439	7975533.723	503203.346	10.74	SS T12 ASB
20440	7975534.266	503196.02	10.835	SS T12 ASB
20441	7975530.765	503189.356	9.676	TOE T12 ASB
20442	7975540.449	503191.009	9.552	TOE T12 ASB
20443	7975545.771	503192.155	9.583	TOE T12 ASB
20444	7975554.066	503192.984	9.363	TOE T12 ASB
20445	7975555.348	503194.545	9.536	TOE T12 ASB
20446	7975555.114	503207.877	9.599	TOE T12 ASB
20447	7975554.879	503218.395	9.664	TOE T12 ASB
20448	7975554.87	503229.711	9.758	TOE T12 ASB
20449	7975553.436	503236.377	9.802	TOE T12 ASB
20450	7975553.518	503236.86	9.653	TOE T12 ASB
20451	7975552.523	503237.91	9.552	TOE T12 ASB
20452	7975552.92	503240.013	9.462	TOE T12 ASB
20453	7975552.634	503242.112	9.707	TOE T12 ASB
20454	7975553.027	503245.228	10.55	TOE T12 ASB
20455	7975551.712	503247.882	10.265	TOE T12 ASB
20456	7975552.205	503250.919	10.292	TOE T12 ASB
20457	7975555.3	503237.163	9.707	TOE T12 ASB
20458	7975555.577	503227.128	9.75	TOE T12 ASB

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20459	7975555.827	503213.118	9.717	TOE T12 ASB
20460	7975555.89	503207.11	9.646	TOE T12 ASB
20461	7975556.3	503199.445	9.511	TOE T12 ASB
20462	7975559.456	503196.074	9.343	TOE T12 ASB
20463	7975580.564	503202.723	9.195	TOE T12 ASB
20464	7975591.74	503210.585	9.287	TOE T12 ASB
20465	7975606.376	503221.851	9.342	TOE T12 ASB
20466	7975606.673	503224.805	9.911	TOE T12 ASB
20467	7975605.7	503225.135	10.299	LIMIT T12 ASB
20468	7975587.767	503226.906	10.293	LIMIT T12 ASB
20469	7975576.496	503229.701	10.368	LIMIT T12 ASB
20470	7975566.721	503230.706	10.286	LIMIT T12 ASB
20471	7975559.958	503231.004	10.251	LIMIT T12 ASB
20472	7975558.2	503230.199	10.505	CREST T12 ASB
20473	7975558.408	503223.963	10.597	CREST T12 ASB
20474	7975558.15	503211.504	10.345	CREST T12 ASB
20475	7975559.179	503202.179	10.477	CREST T12 ASB
20476	7975560.11	503199.607	10.328	CREST T12 ASB
20477	7975567.248	503200.56	10.311	CREST T12 ASB
20478	7975576.709	503202.505	10.318	CREST T12 ASB
20479	7975583.242	503208.393	10.21	CREST T12 ASB
20480	7975592.487	503213.529	10.34	CREST T12 ASB
20481	7975599.299	503218.723	10.409	CREST T12 ASB
20482	7975604.082	503222.427	10.424	CREST T12 ASB
20483	7975598.772	503223.211	10.457	SS T12 ASB
20484	7975585.635	503220.25	10.32	SS T12 ASB
20485	7975574.975	503218.981	10.464	SS T12 ASB
20486	7975566.153	503217.992	10.467	SS T12 ASB
20487	7975562.254	503210.246	10.529	SS T12 ASB

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Point Number	Northing	Easting	Elevation	Description
999	7976255.837	503529.972	17.258	ROOF ADJ
125	7974772.572	503122.919	11.065	TOE
126	7974773.115	503121.48	11.505	CREST T8
127	7974773.11	503121.504	11.508	CREST TYPE8
128	7974770.996	503103.604	11.509	CREST TYPE8
129	7974769.398	503103.856	11.212	TOE
130	7974770.481	503085.74	11.368	TOE
131	7974772.206	503085.652	11.449	CREST TYPE8
132	7974771.306	503067.741	11.336	CREST TYPE8
133	7974770.312	503067.952	11.386	CREST TYPE8
134	7974769.826	503048.924	11.104	TOE
135	7974770.883	503048.916	11.21	CREST TYPE8
136	7974773.575	503030.732	11.102	CREST TYPE8
137	7974772.411	503031.113	10.692	TOE
138	7974775.52	503011.841	10.704	TOE
139	7974777.456	503012.153	10.989	CREST TYPE8
140	7974783.355	502995.954	10.801	TOE
141	7974784.683	502996.307	11.027	CREST TYPE8
142	7974790.182	502979.658	10.582	TOE
143	7974791.279	502979.745	10.985	CREST TYPE8
144	7974795.851	502960.547	10.733	CREST TYPE8
145	7974795.062	502959.754	10.373	TOE
146	7974812.958	502963.117	10.755	TOE
147	7974813.186	502964.194	10.939	CREST TYPE8
148	7974808.912	502983.99	10.978	TYPE8
149	7974801.603	503000.669	11.013	TYPE8
150	7974796.991	503017.726	11.115	TYPE8
151	7974792.316	503034.663	11.202	TYPE8
152	7974789.712	503052.887	11.289	TYPE8
153	7974787.992	503070.548	11.351	TYPE8
154	7974787.9	503087.807	11.401	TYPE8
155	7974789.391	503104.962	11.495	TYPE8
156	7974792.125	503123.44	11.505	CREST TYPE8
157	7974792.403	503125.527	10.845	TOE
158	7974811.238	503124.955	10.884	TOE
159	7974810.934	503122.819	11.52	CREST TYPE8
160	7974810.936	503104.59	11.483	CREST TYPE8
161	7974810.933	503104.575	11.489	TYPE8
162	7974811.093	503085.403	11.467	TYPE8

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163	7974814.075	503067.279	11.538	TYPE8
164	7974818.958	503048.496	11.098	TYPE8
165	7974822.468	503031.191	11.242	TYPE8
166	7974826.758	503014.066	11.234	TYPE8
167	7974832.479	502996.838	10.993	TYPE8
168	7974836.523	502978.575	10.932	TYPE8
169	7974838.434	502970.789	10.932	CREST TYPE8
170	7974838.892	502969.379	10.719	TOE
171	7974856.899	502974.899	10.889	TOE
172	7974856.743	502976.806	10.919	CREST TYPE8
173	7974854.514	502994.879	10.974	TYPE8
174	7974852.621	503011.753	11.099	TYPE8
175	7974846.321	503029.064	11.109	TYPE8
176	7974841.24	503045.569	11.266	TYPE8
177	7974839.459	503053.566	11.207	TYPE8
178	7974857.113	503059.002	11.154	TYPE8
179	7974862.611	503041.051	11.193	TYPE8
180	7974870.402	503024.582	11.093	TYPE8
181	7974876.862	503007.716	10.995	TYPE8
182	7974879.179	502988.878	10.93	TYPE8
183	7974880.74	502983.622	10.894	CREST TYPE8
184	7974880.974	502982.515	10.845	TOE
185	7974900.101	502989.033	10.858	TOE
186	7974899.711	502990.125	10.975	CREST TYPE8
187	7974896.57	503008.575	11.016	TYPE8
188	7974894.312	503028.471	11.058	TYPE8
189	7974890.785	503045.863	11.089	TYPE8
190	7974887.054	503062.663	11.178	TYPE8
191	7974885.456	503067.931	11.175	TYPE8
192	7974902.68	503073.834	11.259	TYPE8
193	7974906.851	503057.011	11.074	TYPE8
194	7974911.361	503038.75	11.074	TYPE8
195	7974916.346	503021.558	10.999	TYPE8
196	7974922.091	503004.787	10.947	TYPE8
197	7974923.958	502998.693	10.928	CREST TYPE8
198	7974923.761	502997.36	10.667	TOE
199	7974941.553	503002.536	10.565	TOE
200	7974941.304	503003.931	10.925	CREST TYPE8
201	7974937.849	503021.695	11.02	TYPE8
202	7974932.122	503038.675	11.037	TYPE8
203	7974928.536	503056.158	11.076	TYPE8
204	7974925.227	503073.772	11.146	TYPE8

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205	7974923.53	503079.492	11.187	TYPE8
206	7974941.677	503086.987	11.198	TYPE8
207	7974950.048	503070.921	11.169	TYPE8
208	7974960.101	503055.492	10.999	TYPE8
209	7974963.95	503038.503	11.015	TYPE8
210	7974971.399	503021.906	10.937	TYPE8
211	7974974.889	503013.596	10.869	CREST TYPE8
212	7974975.182	503012.125	10.268	TOE
213	7974992.792	503017.889	10.507	TOE
214	7974992.603	503018.64	10.815	CREST TYPE8
215	7974990.115	503036.974	10.95	TYPE8
216	7974985.003	503054.819	11.006	TYPE8
217	7974981.307	503073.629	11.013	TYPE8
218	7974978.036	503091.961	11.122	TYPE8
219	7974976.076	503098.797	11.084	TYPE8
220	7974991.719	503103.586	11.007	TYPE8
221	7974999.827	503087.547	11.023	TYPE8
222	7975003.346	503070.308	11.015	TYPE8
223	7975007.882	503051.919	11.004	TYPE8
224	7975016.665	503031.651	10.838	TYPE8
225	7975018.116	503027.373	10.771	CREST TYPE8
226	7975018.585	503026.652	10.373	TOE
227	7975036.915	503033.375	10.192	TOE
228	7975036.607	503034.585	10.812	CREST TYPE8
229	7975033.193	503052.139	10.867	TYPE8
230	7975029.546	503069.659	10.974	TYPE8
231	7975024.308	503087.216	10.961	TYPE8
232	7975018.169	503102.614	11.028	TYPE8
233	7975015.213	503111.197	11.067	TYPE8
234	7975031.739	503116.697	10.892	TYPE8
235	7975038.742	503101.81	10.99	TYPE8
236	7975043.257	503085.453	10.942	TYPE8
237	7975048.204	503068.587	10.853	TYPE8
238	7975054.804	503053.12	10.818	TYPE8
239	7975058.478	503040.398	10.866	CREST TYPE8
240	7975059.159	503036.898	10.198	TOE
241	7975052.708	503036.86	10.172	TOE
242	7975052.998	503039.485	10.754	CREST TYPE8
243	7975066.136	503042.363	10.78	CREST TYPE8
244	7975066.281	503040.779	10.087	TOE
245	7975075.912	503043.359	9.96	TOE
246	7975075.456	503045.465	10.676	CREST TYPE8

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247	7975072.834	503064.032	10.88	TYPE8
248	7975071.764	503081.926	10.963	TYPE8
249	7975064.889	503098.811	11.015	TYPE8
250	7975061.099	503115.437	11.048	TYPE8
251	7975058.914	503123.455	10.916	TYPE8

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Type 8 (150mm minus) Placement

Laydown Area LP3 Type 8 (150mm minus) Placment Survey Data

Point Number	Northing	Easting	Elevation	Description
190716 14	7975305.286	503199.792	10.717	
1	7975279.781	503111.57	10.708	LIMIT
2	7974795.015	502958.253	10.802	LIMIT
3	7974771.504	503034.019	11.312	limit

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Point Number	Northing	Easting	Elevation	Description
40000	7975074.335	503046.749	10.783	T8
40001	7975079.195	503048.091	10.8	T8
40002	7975084.303	503049.796	10.792	T8
40003	7975089.457	503051.37	10.778	T8
40004	7975094.646	503052.977	10.814	T8
40005	7975099.792	503054.809	10.835	T8
40006	7975104.712	503056.636	10.792	T8
40007	7975109.353	503058.584	10.814	T8
40008	7975114.268	503060.677	10.814	T8
40009	7975119.267	503062.585	10.839	T8
40010	7975124.414	503064.331	10.866	T8
40011	7975129.222	503065.972	10.931	T8
40012	7975134.239	503067.512	10.933	T8
40013	7975139.269	503068.786	10.922	T8
40014	7975144.136	503069.96	10.956	T8
40015	7975149.036	503071.333	10.992	T8
40016	7975154.172	503072.824	11.056	T8
40017	7975158.97	503074.309	11.01	T8
40018	7975163.842	503075.859	10.997	T8
40019	7975169.187	503077.69	11.011	T8
40020	7975174.304	503079.488	11.046	T8
40021	7975179.259	503080.875	10.942	T8
40022	7975184.059	503082.452	10.891	T8
40023	7975189.141	503083.992	10.894	T8
40024	7975194.325	503085.647	10.965	T8
40025	7975199.297	503087.35	11.008	T8
40026	7975204.36	503088.985	11.002	T8
40027	7975209.554	503090.824	10.997	T8
40028	7975214.466	503092.544	10.962	T8
40029	7975219.731	503094.232	10.986	T8
40030	7975225.079	503096.04	10.932	T8
40031	7975230.362	503097.799	10.942	T8
40032	7975235.144	503099.264	10.893	T8
40033	7975240.392	503100.798	10.885	T8
40034	7975245.255	503102.144	10.827	T8
40035	7975250.364	503103.232	10.793	T8
40036	7975255.422	503104.673	10.737	T8
40037	7975260.239	503106.339	10.789	T8
40038	7975265.265	503107.908	10.753	T8

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40039	7975270.037	503109.525	10.701	T8
40040	7975274.89	503111.151	10.654	T8
40041	7975280.106	503112.966	10.653	T8
40042	7975285.221	503114.546	10.569	T8
40043	7975290.254	503116.076	10.511	T8
40044	7975295.345	503117.998	10.444	T8
40045	7975299.729	503121.115	10.396	T8
40046	7975303.226	503125.242	10.426	T8
40047	7975306.2	503129.676	10.425	T8
40048	7975309.075	503133.989	10.577	T8
40049	7975312.194	503138.208	10.664	T8
40050	7975315.688	503142.286	10.647	T8
40051	7975319.117	503146.343	10.658	T8
40052	7975322.371	503150.866	10.707	T8
40053	7975324.345	503155.883	10.765	T8
40054	7975324.005	503161.399	10.732	T8
40055	7975321.587	503165.804	10.744	T8
40056	7975317.247	503169.256	10.751	T8
40057	7975312.528	503172.017	10.805	T8
40058	7975308.805	503175.575	10.747	T8
40059	7975305.583	503179.918	10.733	T8
40060	7975302.912	503184.521	10.783	T8
40061	7975300.394	503189.191	10.756	T8
40062	7975296.298	503192.816	10.793	T8
40063	7975290.921	503193.712	10.717	T8
40064	7975286.001	503192.814	10.663	T8
40065	7975280.776	503191.283	10.715	T8
40066	7975275.875	503189.559	10.662	T8
40067	7975270.952	503187.493	10.648	T8
40068	7975265.662	503185.877	10.688	T8
40069	7975260.307	503184.733	10.649	T8
40070	7975254.952	503183.401	10.726	T8
40071	7975249.682	503182.235	10.7	T8
40072	7975244.582	503180.7	10.738	T8
40073	7975239.614	503179.123	10.799	T8
40074	7975234.771	503177.779	10.839	T8
40075	7975229.641	503176.069	10.852	T8
40076	7975225.391	503172.966	10.881	T8
40077	7975224.168	503168.081	10.87	T8
40078	7975224.225	503163.079	10.975	T8
40079	7975221.285	503158.678	10.905	T8
40080	7975216.366	503156.73	11.014	T8

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40081	7975211.263	503155.486	10.967	T8
40082	7975205.957	503155.237	11.106	T8
40083	7975201.771	503157.971	11.122	T8
40084	7975198.235	503162.037	11.121	T8
40085	7975193.036	503163.44	11.1	T8
40086	7975187.614	503162.387	11.14	T8
40087	7975182.456	503160.946	11.166	T8
40088	7975177.059	503159.547	11.123	T8
40089	7975171.657	503157.887	11.139	T8
40090	7975166.238	503156.301	11.127	T8
40091	7975160.701	503154.74	11.146	T8
40092	7975155.125	503153.257	11.143	T8
40093	7975149.722	503151.604	11.153	T8
40094	7975144.909	503150.13	11.105	T8
40095	7975140.048	503148.609	11.126	T8
40096	7975135.174	503147.34	11.146	T8
40097	7975130.224	503146.001	11.041	T8
40098	7975124.797	503144.262	11.013	T8
40099	7975119.648	503142.557	11.063	T8
40100	7975114.548	503141.119	11.037	T8
40101	7975109.456	503139.415	11.057	T8
40102	7975104.236	503137.62	11.054	T8
40103	7975099.034	503135.912	11.013	T8
40104	7975093.96	503134.291	10.991	T8
40105	7975088.842	503132.564	10.989	T8
40106	7975083.788	503130.762	11.038	T8
40107	7975078.695	503129.052	11.051	T8
40108	7975073.59	503127.38	11.045	T8
40109	7975068.336	503125.848	11.002	T8
40110	7975062.992	503124.359	10.904	T8
40111	7975057.899	503122.7	10.973	T8
40112	7975052.974	503121.205	10.952	T8
40113	7975047.842	503118.912	10.992	T8
40114	7975044.243	503115.31	10.998	T8
40115	7975042.8	503110.101	10.95	T8
40116	7975043.909	503104.738	10.956	T8
40117	7975045.703	503099.931	10.971	T8
40118	7975047.357	503095.009	10.909	T8
40119	7975049.022	503090.034	10.909	T8
40120	7975050.689	503084.884	10.907	T8
40121	7975052.321	503079.601	10.885	T8
40122	7975053.812	503074.339	10.89	T8

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40123	7975055.036	503069.245	10.883	T8
40124	7975056.454	503063.811	10.839	T8
40125	7975058	503059.007	10.862	T8
40126	7975060.727	503054.649	10.814	T8
40127	7975065.748	503052.546	10.825	T8
40128	7975071.208	503053.616	10.811	T8
40129	7975076.066	503055.269	10.826	T8
40130	7975080.937	503056.86	10.799	T8
40131	7975086.187	503058.836	10.867	T8
40132	7975091.52	503060.821	10.829	T8
40133	7975096.874	503062.796	10.871	T8
40134	7975102.212	503064.654	10.879	T8
40135	7975107.563	503066.481	10.876	T8
40136	7975112.803	503068.2	10.898	T8
40137	7975118.064	503070.01	10.895	T8
40138	7975123.531	503071.811	10.92	T8
40139	7975128.323	503073.418	10.957	T8
40140	7975133.164	503075.059	10.935	T8
40141	7975138.052	503076.736	10.978	T8
40142	7975143.094	503078.467	10.982	T8
40143	7975148.299	503080.277	10.977	T8
40144	7975153.64	503082.235	11.058	T8
40145	7975159.108	503084.21	11.027	T8
40146	7975164.593	503086.085	11.028	T8
40147	7975169.902	503087.785	11.044	T8
40148	7975174.987	503089.474	11.065	T8
40149	7975179.933	503091.046	11.025	T8
40150	7975184.954	503092.662	11.048	T8
40151	7975189.996	503094.234	11.076	T8
40152	7975194.793	503095.721	11.054	T8
40153	7975200.045	503097.46	11.082	T8
40154	7975205.136	503099.074	11.087	T8
40155	7975210.307	503100.774	11.069	T8
40156	7975215.751	503102.52	10.976	T8
40157	7975220.975	503104.158	11.042	T8
40158	7975226.26	503105.975	11.038	T8
40159	7975231.777	503107.76	10.991	T8
40160	7975236.591	503109.242	10.919	T8
40161	7975241.587	503110.779	10.862	T8
40162	7975246.651	503112.279	10.836	T8
40163	7975251.701	503113.785	10.784	T8
40164	7975256.667	503115.345	10.774	T8

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40165	7975262.046	503117.069	10.759	T8
40166	7975267.422	503118.695	10.686	T8
40167	7975272.699	503120.26	10.612	T8
40168	7975277.938	503121.953	10.645	T8
40169	7975282.922	503123.612	10.669	T8
40170	7975287.964	503125.169	10.583	T8
40171	7975292.678	503127.722	10.507	T8
40172	7975296.698	503131.447	10.483	T8
40173	7975300.29	503135.513	10.406	T8
40174	7975303.242	503139.841	10.515	T8
40175	7975305.594	503144.492	10.553	T8
40176	7975307.399	503149.181	10.483	T8
40177	7975306.759	503154.535	10.551	T8
40178	7975304.807	503159.386	10.692	T8
40179	7975303.305	503164.202	10.684	T8
40180	7975301.863	503169.481	10.615	T8
40181	7975300.428	503174.508	10.699	T8
40182	7975299.091	503179.406	10.68	T8
40183	7975296.565	503184.108	10.72	T8
40184	7975291.665	503186.71	10.73	T8
40185	7975286.243	503185.642	10.721	T8
40186	7975281.796	503183.245	10.697	T8
40187	7975276.898	503181.149	10.67	T8
40188	7975272.144	503179.392	10.66	T8
40189	7975267.273	503177.62	10.705	T8
40190	7975262.28	503175.915	10.681	T8
40191	7975257.107	503174.117	10.734	T8
40192	7975251.724	503172.328	10.734	T8
40193	7975246.407	503170.473	10.782	T8
40194	7975241.069	503168.423	10.822	T8
40195	7975235.76	503166.28	10.829	T8
40196	7975230.641	503164.146	10.923	T8
40197	7975225.573	503162.199	10.891	T8
40198	7975220.646	503160.231	10.986	T8
40199	7975215.841	503158.528	10.979	T8
40200	7975211.137	503156.746	11.031	T8
40201	7975205.867	503155.065	11.095	T8
40202	7975200.668	503154.34	11.077	T8
40203	7975195.624	503153.808	11.091	T8
40204	7975190.614	503153.033	11.145	T8
40205	7975185.575	503152.029	11.141	T8
40206	7975180.413	503150.746	11.208	T8

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40207	7975175.159	503149.246	11.183	T8
40208	7975170.013	503147.629	11.184	T8
40209	7975164.785	503145.924	11.186	T8
40210	7975159.374	503144.148	11.167	T8
40211	7975153.679	503142.277	11.137	T8
40212	7975148.838	503140.711	11.129	T8
40213	7975143.991	503139.267	11.108	T8
40214	7975139.172	503137.768	11.106	T8
40215	7975134.325	503136.347	11.096	T8
40216	7975128.615	503134.657	11.086	T8
40217	7975123.023	503132.788	11.067	T8
40218	7975117.493	503131.19	10.96	T8
40219	7975112.252	503129.438	10.986	T8
40220	7975107.255	503127.952	10.986	T8
40221	7975102.293	503126.485	11.02	T8
40222	7975097.033	503124.993	11.022	T8
40223	7975091.422	503123.362	11.003	T8
40224	7975085.732	503121.652	11.007	T8
40225	7975080.351	503119.971	11.013	T8
40226	7975075.232	503118.41	11.014	T8
40227	7975070.415	503116.707	11.037	T8
40228	7975065.361	503113.852	10.981	T8
40229	7975061.342	503109.9	10.957	T8
40230	7975059.048	503104.987	10.921	T8
40231	7975058.58	503099.718	10.916	T8
40232	7975059.227	503094.695	10.947	T8
40233	7975060.384	503089.316	10.94	T8
40234	7975061.723	503084.454	10.929	T8
40235	7975063.335	503079.615	10.895	T8
40236	7975065.259	503074.661	10.932	T8
40237	7975067.431	503069.952	10.866	T8
40238	7975070.924	503065.96	10.875	T8
40239	7975076.045	503064.493	10.847	T8
40240	7975081.074	503066.179	10.862	T8
40241	7975085.767	503067.997	10.891	T8
40242	7975090.842	503069.713	10.87	T8
40243	7975096.082	503071.402	10.874	T8
40244	7975100.923	503072.917	10.871	T8
40245	7975105.722	503074.392	10.883	T8
40246	7975110.651	503075.948	10.875	T8
40247	7975115.517	503077.602	10.944	T8
40248	7975120.391	503079.21	10.941	T8

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40249	7975125.495	503080.909	10.962	T8
40250	7975130.811	503082.736	10.964	T8
40251	7975136.173	503084.474	11.004	T8
40252	7975141.342	503086.106	11.009	T8
40253	7975146.344	503087.582	11.023	T8
40254	7975151.445	503089.113	11.033	T8
40255	7975156.313	503090.759	11.055	T8
40256	7975161.13	503092.178	11.04	T8
40257	7975165.921	503093.616	11.03	T8
40258	7975170.853	503095.357	11.083	T8
40259	7975175.94	503097.241	11.102	T8
40260	7975181.022	503099.067	11.08	T8
40261	7975186.262	503100.979	11.103	T8
40262	7975191.068	503102.624	11.145	T8
40263	7975196.308	503104.288	11.115	T8
40264	7975201.231	503105.904	11.171	T8
40265	7975206.467	503107.659	11.137	T8
40266	7975211.911	503109.549	11.079	T8
40267	7975217.391	503111.336	11.074	T8
40268	7975222.691	503112.984	11.063	T8
40269	7975227.676	503114.688	11.091	T8
40270	7975233.083	503116.41	11.005	T8
40271	7975237.869	503117.968	10.957	T8
40272	7975242.86	503119.845	10.903	T8
40273	7975247.805	503121.534	10.839	T8
40274	7975252.798	503123.109	10.796	T8
40275	7975257.891	503124.764	10.718	T8
40276	7975262.841	503126.175	10.679	T8
40277	7975268.156	503127.811	10.71	T8
40278	7975273.344	503129.425	10.73	T8
40279	7975278.106	503131.027	10.706	T8
40280	7975283.027	503132.791	10.686	T8
40281	7975288.176	503134.508	10.645	T8
40282	7975293.06	503136.314	10.548	T8
40283	7975297.706	503138.196	10.452	T8
40284	7975302.307	503141.146	10.521	T8
40285	7975305.591	503145.335	10.544	T8
40286	7975307.313	503150.122	10.466	T8
40287	7975307.052	503155.454	10.578	T8
40288	7975305.285	503160.15	10.699	T8
40289	7975302.555	503164.824	10.646	T8
40290	7975300.022	503169.416	10.617	T8

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40291	7975296.833	503173.952	10.606	T8
40292	7975292.385	503176.565	10.633	T8
40293	7975287.298	503176.383	10.656	T8
40294	7975282.443	503174.356	10.664	T8
40295	7975277.154	503172.406	10.634	T8
40296	7975271.943	503170.751	10.66	T8
40297	7975266.757	503169.202	10.695	T8
40298	7975261.544	503167.647	10.687	T8
40299	7975256.281	503166.18	10.671	T8
40300	7975251.02	503164.607	10.717	T8
40301	7975245.695	503163.009	10.769	T8
40302	7975240.633	503161.477	10.823	T8
40303	7975235.732	503159.808	10.847	T8
40304	7975230.761	503158.157	10.856	T8
40305	7975225.83	503156.431	10.866	T8
40306	7975220.966	503154.943	10.829	T8
40307	7975216.085	503153.283	10.924	T8
40308	7975211.061	503151.781	10.97	T8
40309	7975205.972	503150.126	11.031	T8
40310	7975200.682	503148.453	11.093	T8
40311	7975195.162	503146.819	11.137	T8
40312	7975190.259	503145.325	11.167	T8
40313	7975185.234	503143.776	11.214	T8
40314	7975180.043	503142.16	11.186	T8
40315	7975174.663	503140.547	11.181	T8
40316	7975169.278	503138.86	11.175	T8
40317	7975164.044	503137.199	11.179	T8
40318	7975158.784	503135.527	11.112	T8
40319	7975153.31	503133.72	11.123	T8
40320	7975147.802	503131.853	11.091	T8
40321	7975142.248	503129.942	11.075	T8
40322	7975136.734	503128.029	11.08	T8
40323	7975131.387	503126.173	11.033	T8
40324	7975126.302	503124.27	11.051	T8
40325	7975121.102	503122.427	11.006	T8
40326	7975115.729	503120.589	10.962	T8
40327	7975110.444	503118.758	10.988	T8
40328	7975105.39	503117.037	11.019	T8
40329	7975100.486	503115.324	11.025	T8
40330	7975095.659	503113.753	10.974	T8
40331	7975090.774	503112.081	10.979	T8
40332	7975085.73	503110.431	10.992	T8

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40333	7975080.669	503108.765	11.02	T8
40334	7975075.734	503106.735	10.997	T8
40335	7975071.893	503103.371	10.95	T8
40336	7975070.068	503097.914	10.919	T8
40337	7975070.426	503092.365	10.952	T8
40338	7975071.53	503087.154	10.966	T8
40339	7975073.276	503081.991	10.89	T8
40340	7975075.466	503077.364	10.926	T8
40341	7975079.777	503074.332	10.855	T8
40342	7975084.967	503075.735	10.876	T8
40343	7975089.906	503077.665	10.907	T8
40344	7975094.643	503079.306	10.958	T8
40345	7975099.609	503080.955	10.938	T8
40346	7975104.808	503082.905	10.93	T8
40347	7975110.298	503084.815	10.914	T8
40348	7975115.159	503086.311	10.915	T8
40349	7975120.065	503087.774	10.936	T8
40350	7975125.063	503089.261	10.952	T8
40351	7975130.03	503090.863	10.988	T8
40352	7975134.853	503092.366	11.035	T8
40353	7975139.661	503093.938	11.043	T8
40354	7975144.649	503095.475	11.059	T8
40355	7975149.877	503097.028	11.037	T8
40356	7975155.22	503098.746	11.089	T8
40357	7975160.548	503100.459	11.097	T8
40358	7975165.779	503102.044	11.123	T8
40359	7975170.895	503103.596	11.111	T8
40360	7975175.837	503105.137	11.136	T8
40361	7975180.792	503106.668	11.154	T8
40362	7975185.699	503108.058	11.157	T8
40363	7975191.12	503109.653	11.168	T8
40364	7975196.393	503111.087	11.101	T8
40365	7975201.608	503112.852	11.115	T8
40366	7975206.942	503114.586	11.104	T8
40367	7975212.233	503116.406	11.074	T8
40368	7975217.345	503118.288	11.097	T8
40369	7975222.683	503119.919	11.018	T8
40370	7975228.157	503121.614	11.028	T8
40371	7975233.513	503123.126	10.913	T8
40372	7975238.71	503124.575	10.875	T8
40373	7975243.953	503125.867	10.82	T8
40374	7975249.059	503127.06	10.748	T8

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40375	7975254.22	503128.405	10.716	T8
40376	7975259.455	503129.733	10.626	T8
40377	7975264.86	503131.172	10.665	T8
40378	7975270.311	503132.908	10.673	T8
40379	7975275.025	503134.578	10.653	T8
40380	7975280.24	503136.687	10.643	T8
40381	7975285.435	503138.777	10.526	T8
40382	7975290.769	503140.945	10.496	T8
40383	7975295.943	503143.161	10.497	T8
40384	7975301.161	503144.94	10.48	T8
40385	7975306.29	503146.451	10.529	T8
40386	7975311.009	503148.12	10.628	T8
40387	7975315.742	503150.274	10.632	T8
40388	7975319.581	503154.104	10.68	T8
40389	7975320.859	503159.151	10.645	T8
40390	7975317.91	503163.399	10.789	T8
40391	7975312.992	503164.927	10.796	T8
40392	7975307.977	503166.421	10.712	T8
40393	7975303.211	503168.432	10.65	T8
40394	7975298.398	503170.468	10.619	T8
40395	7975293.368	503171.863	10.655	T8
40396	7975287.966	503172.261	10.622	T8
40397	7975282.51	503171.429	10.668	T8
40398	7975277.41	503170.11	10.636	T8
40399	7975272.314	503168.425	10.653	T8
40400	7975267.111	503166.585	10.652	T8
40401	7975261.841	503164.49	10.63	T8
40402	7975256.66	503161.967	10.721	T8
40403	7975251.514	503159.505	10.729	T8
40404	7975246.365	503157.485	10.793	T8
40405	7975241.281	503155.406	10.83	T8
40406	7975236.096	503153.174	10.86	T8
40407	7975230.77	503150.978	10.879	T8
40408	7975225.494	503148.822	10.923	T8
40409	7975220.268	503146.842	10.953	T8
40410	7975214.951	503144.621	10.989	T8
40411	7975210.289	503142.725	11.016	T8
40412	7975205.57	503140.776	11.09	T8
40413	7975200.74	503138.74	11.11	T8
40414	7975195.827	503136.608	11.139	T8
40415	7975190.805	503134.812	11.161	T8
40416	7975185.836	503133.199	11.188	T8

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40417	7975180.258	503131.861	11.16	T8
40418	7975174.856	503130.491	11.178	T8
40419	7975169.326	503129.181	11.164	T8
40420	7975164.379	503128.158	11.143	T8
40421	7975159.385	503126.984	11.114	T8
40422	7975154.417	503125.653	11.114	T8
40423	7975149.54	503124.23	11.097	T8
40424	7975144.595	503122.691	11.076	T8
40425	7975139.585	503120.862	11.059	T8
40426	7975134.728	503119.227	11.058	T8
40427	7975129.257	503117.545	11.025	T8
40428	7975123.816	503115.857	11.044	T8
40429	7975118.973	503114.304	11.015	T8
40430	7975114.049	503112.74	10.989	T8
40431	7975109.15	503111.208	10.977	T8
40432	7975103.709	503109.26	10.989	T8
40433	7975098.647	503107.535	10.976	T8
40434	7975093.67	503105.869	10.981	T8
40435	7975088.455	503104.239	11.001	T8
40436	7975083.055	503102.557	10.988	T8
40437	7975077.579	503100.831	11.008	T8
40438	7975072.789	503099.343	10.984	T8
40439	7975067.879	503097.816	10.963	T8
40440	7975063.084	503096.214	10.962	T8
40441	7975057.544	503094.308	10.941	T8
40442	7975052.636	503092.47	10.927	T8
40443	7975047.906	503089.691	10.95	T8
40444	7975044.514	503085.244	10.888	T8
40445	7975043.907	503080.165	10.914	T8
40446	7975045.849	503075.074	10.942	T8
40447	7975049.674	503071.038	10.903	T8
40448	7975054.652	503069.641	10.837	T8
40449	7975059.809	503070.918	10.889	T8
40450	7975064.535	503073.336	10.887	T8
40451	7975069.239	503076.269	10.899	T8
40452	7975073.643	503079.361	10.884	T8
40453	7975078.288	503081.507	10.852	T8
40454	7975083.416	503083.306	10.934	T8
40455	7975088.376	503084.647	10.962	T8
40456	7975093.189	503086.055	10.938	T8
40457	7975098.275	503087.766	10.954	T8
40458	7975103.794	503089.566	10.941	T8

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40459	7975108.674	503091.216	10.951	T8
40460	7975113.562	503092.68	10.953	T8
40461	7975119.162	503094.233	10.943	T8
40462	7975124.585	503095.877	10.954	T8
40463	7975129.869	503097.52	10.998	T8
40464	7975135.196	503099.191	11.029	T8
40465	7975140.535	503100.973	11.066	T8
40466	7975145.946	503102.714	11.026	T8
40467	7975151.333	503104.466	11.069	T8
40468	7975156.81	503106.049	11.08	T8
40469	7975161.676	503107.427	11.098	T8
40470	7975166.657	503109.003	11.102	T8
40471	7975171.508	503110.706	11.117	T8
40472	7975176.286	503112.418	11.138	T8
40473	7975181.042	503114.066	11.133	T8
40474	7975186.619	503115.761	11.175	T8
40475	7975191.446	503117.195	11.157	T8
40476	7975196.91	503118.911	11.164	T8
40477	7975202.23	503120.703	11.135	T8
40478	7975207.649	503122.554	11.098	T8
40479	7975212.906	503124.475	11.074	T8
40480	7975218.161	503126.231	11.054	T8
40481	7975223.64	503128.057	10.999	T8
40482	7975228.495	503129.675	10.939	T8
40483	7975233.988	503131.604	10.892	T8
40484	7975239.436	503133.472	10.856	T8
40485	7975244.863	503135.229	10.816	T8
40486	7975250.188	503137.041	10.764	T8
40487	7975255.424	503138.773	10.738	T8
40488	7975260.731	503140.361	10.722	T8
40489	7975266.126	503141.956	10.673	T8
40490	7975271.413	503143.593	10.675	T8
40491	7975276.526	503145.113	10.665	T8
40492	7975281.638	503146.502	10.62	T8
40493	7975287.016	503148.033	10.543	T8
40494	7975291.834	503149.569	10.535	T8
40495	7975297.355	503151.34	10.544	T8
40496	7975302.391	503153.124	10.576	T8
40497	7975307.733	503154.907	10.641	T8
40498	7975312.595	503157.504	10.66	T8
40499	7975314.613	503162.223	10.715	T8
40500	7975312.095	503166.819	10.719	T8

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40501	7975307.244	503168.21	10.664	T8
40502	7975302.52	503165.955	10.631	T8
40503	7975297.984	503163.735	10.64	T8
40504	7975293.238	503162.154	10.633	T8
40505	7975288.262	503161.631	10.625	T8
40506	7975283.156	503162.76	10.609	T8
40507	7975277.89	503163.562	10.63	T8
40508	7975273.041	503161.551	10.627	T8
40509	7975268.113	503159.348	10.642	T8
40510	7975262.841	503157.347	10.668	T8
40511	7975258.137	503155.524	10.704	T8
40512	7975253.402	503153.713	10.75	T8
40513	7975248.511	503152.069	10.764	T8
40514	7975243.333	503150.352	10.799	T8
40515	7975237.88	503148.499	10.838	T8
40516	7975232.411	503146.566	10.9	T8
40517	7975227.175	503144.468	10.912	T8
40518	7975222.238	503142.577	10.93	T8
40519	7975217.178	503140.736	10.996	T8
40520	7975211.927	503138.983	11.06	T8
40521	7975206.682	503136.79	11.086	T8
40522	7975201.578	503134.37	11.128	T8
40523	7975196.633	503131.784	11.116	T8
40524	7975191.563	503129.37	11.179	T8
40525	7975186.823	503127.399	11.179	T8
40526	7975181.755	503125.651	11.176	T8
40527	7975176.635	503123.932	11.171	T8
40528	7975171.639	503122.599	11.13	T8
40529	7975166.819	503121.066	11.132	T8
40530	7975161.64	503119.47	11.11	T8
40531	7975156.816	503117.827	11.113	T8
40532	7975151.835	503116.173	11.103	T8
40533	7975146.648	503114.654	11.078	T8
40534	7975141.238	503113.066	11.046	T8
40535	7975135.702	503111.411	11.009	T8
40536	7975130.294	503109.526	11.017	T8
40537	7975124.871	503107.743	11.01	T8
40538	7975119.351	503105.95	10.989	T8
40539	7975114.569	503104.46	10.946	T8
40540	7975109.192	503102.8	10.962	T8
40541	7975104.007	503101.107	10.942	T8
40542	7975098.789	503099.697	10.947	T8

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40543	7975093.414	503098.166	10.977	T8
40544	7975087.843	503096.59	10.968	T8
40545	7975083.075	503095.072	10.96	T8
40546	7975077.575	503093.221	10.973	T8
40547	7975072.102	503091.459	10.942	T8
40548	7975066.79	503089.622	10.945	T8
40549	7975061.567	503087.946	10.938	T8
40550	7975056.517	503086.373	10.917	T8
40551	7975051.304	503084.648	10.917	T8
40552	7975047.193	503081.514	10.896	T8
40553	7975046.514	503076.162	10.922	T8
40554	7975049.96	503072.387	10.856	T8
40555	7975054.958	503072.348	10.876	T8
40556	7975059.071	503075.474	10.915	T8
40557	7975063.514	503078.216	10.92	T8
40558	7975068.499	503079.933	10.903	T8
40559	7975073.709	503081.441	10.872	T8
40560	7975078.048	503084.448	10.917	T8
40561	7975082.392	503087.711	10.919	T8
40562	7975086.987	503090.247	10.967	T8
40563	7975092.099	503091.831	10.946	T8
40564	7975097.049	503093.197	10.941	T8
40565	7975101.99	503094.653	10.952	T8
40566	7975106.811	503096.092	10.933	T8
40567	7975112.292	503097.753	10.95	T8
40568	7975117.14	503099.484	10.96	T8
40569	7975122.337	503101.22	10.988	T8
40570	7975127.065	503102.86	10.995	T8
40571	7975131.96	503104.505	10.999	T8
40572	7975136.801	503106.255	10.976	T8
40573	7975141.628	503107.951	10.988	T8
40574	7975146.5	503109.657	11.001	T8
40575	7975151.881	503111.672	11.089	T8
40576	7975157.246	503113.507	11.062	T8
40577	7975162.776	503115.336	11.112	T8
40578	7975167.604	503117.076	11.143	T8
40579	7975172.588	503118.776	11.13	T8
40580	7975177.636	503120.026	11.157	T8
40581	7975182.565	503121.014	11.129	T8
40582	7975187.955	503122.332	11.154	T8
40583	7975193.148	503123.437	11.117	T8
40584	7975198.226	503124.793	11.112	T8

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40585	7975203.145	503126.413	11.12	T8
40586	7975207.956	503128.042	11.117	T8
40587	7975212.791	503129.702	11.068	T8
40588	7975217.819	503131.337	11.02	T8
40589	7975222.968	503132.918	10.969	T8
40590	7975228.125	503134.6	10.949	T8
40591	7975233.297	503136.436	10.933	T8
40592	7975238.731	503138.093	10.856	T8
40593	7975244.153	503139.792	10.793	T8
40594	7975249.309	503141.685	10.808	T8
40595	7975254.21	503143.962	10.748	T8
40596	7975259.125	503146.162	10.758	T8
40597	7975264.153	503148.109	10.713	T8
40598	7975269.283	503149.994	10.656	T8
40599	7975274.59	503151.644	10.61	T8
40600	7975279.835	503153.309	10.576	T8
40601	7975285.161	503155.045	10.618	T8
40602	7975290.628	503156.559	10.582	T8
40603	7975296.041	503157.86	10.588	T8
40604	7975301.052	503158.989	10.579	T8
40605	7975306.516	503159.867	10.713	T8
40606	7975312.142	503160.685	10.729	T8
40607	7975317.269	503161.282	10.726	T8
40608	7975322.31	503160.471	10.755	T8
40609	7975325.935	503156.8	10.824	T8
40610	7975326.111	503151.404	10.795	T8
40611	7975323.471	503146.774	10.747	T8
40612	7975320.806	503142.15	10.762	T8
40613	7975319.818	503136.85	10.713	T8
40614	7975322.669	503132.135	10.693	T8
40615	7975327.424	503129.948	10.602	T8
40616	7975332.593	503129.782	10.513	T8
40617	7975337.677	503130.733	10.533	T8
40618	7975343.541	503132.352	10.613	T8
40619	7975349.648	503134.079	10.534	T8
40620	7975355.873	503136.168	10.593	T8
40621	7975360.731	503137.736	10.634	T8
40622	7975367.094	503139.955	10.688	T8
40623	7975371.996	503141.646	10.605	T8
40624	7975377.313	503143.663	10.688	T8
40625	7975382.334	503145.253	10.684	T8
40626	7975387.638	503146.866	10.772	T8

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40627	7975393.488	503148.555	10.804	T8
40628	7975398.799	503150.302	10.853	T8
40629	7975403.876	503152.007	10.915	T8
40630	7975408.909	503153.64	10.966	T8
40631	7975413.756	503155.295	10.982	T8
40632	7975419.075	503157.437	11.019	T8
40633	7975424.648	503159.464	11.066	T8
40634	7975430.883	503161.678	11.031	T8
40635	7975437.764	503164.195	11.038	T8
40636	7975444.515	503166.213	10.991	T8
40637	7975450.386	503168.109	11.064	T8
40638	7975455.524	503169.873	11.088	T8
40639	7975461.805	503171.794	11.04	T8
40640	7975468.913	503173.728	11.1	T8
40641	7975476.489	503175.646	11.061	T8
40642	7975483.839	503177.658	11.068	T8
40643	7975490.502	503179.838	11.063	T8
40644	7975495.311	503181.378	11.073	T8
40645	7975500.986	503183.484	11.132	T8
40646	7975505.688	503185.214	11.118	T8
40647	7975511.227	503187.31	11.193	T8
40648	7975515.918	503192.921	11.116	T8
40649	7975515.544	503198.449	11.089	T8
40650	7975514.923	503203.457	11.099	T8
40651	7975514.975	503208.761	11.048	T8
40652	7975514.872	503215.065	11.053	T8
40653	7975514.181	503221.859	10.963	T8
40654	7975513.024	503228.8	10.95	T8
40655	7975512.081	503235.874	10.879	T8
40656	7975511.248	503242.639	10.903	T8
40657	7975509.687	503248.373	10.89	T8
40658	7975503.772	503252.837	10.888	T8
40659	7975498.461	503253.397	10.908	T8
40660	7975492.908	503253.375	10.915	T8
40661	7975486.821	503253.08	10.918	T8
40662	7975480.252	503252.221	10.939	T8
40663	7975473.374	503250.913	10.921	T8
40664	7975466.559	503248.774	10.953	T8
40665	7975460.042	503246.543	11.016	T8
40666	7975453.044	503244.467	10.924	T8
40667	7975446.353	503242.622	10.992	T8
40668	7975440.528	503240.978	11.042	T8

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40669	7975435.082	503239.352	11.021	T8
40670	7975429.772	503237.665	11.077	T8
40671	7975424.082	503235.886	11.105	T8
40672	7975417.828	503234.169	11.067	T8
40673	7975412.079	503232.299	11.028	T8
40674	7975406.708	503230.483	11.133	T8
40675	7975401.005	503228.825	11.132	T8
40676	7975394.993	503227.291	11.117	T8
40677	7975388.796	503225.713	11.17	T8
40678	7975382.171	503223.746	11.212	T8
40679	7975375.849	503221.373	11.112	T8
40680	7975371.125	503217.072	11.126	T8
40681	7975369.482	503210.869	11.071	T8
40682	7975368.933	503204.189	11.074	T8
40683	7975368.001	503197.046	11.008	T8
40684	7975366.375	503189.728	11.019	T8
40685	7975363.581	503182.789	10.932	T8
40686	7975360.004	503176.376	10.939	T8
40687	7975357.441	503171.821	10.89	T8
40688	7975348.848	503156.845	10.772	T8
40689	7975346.99	503152.14	10.743	T8
40690	7975344.28	503147.611	10.711	T8
40691	7975341.675	503143.224	10.559	T8
40692	7975338.534	503139.077	10.596	T8
40693	7975335.123	503135.263	10.558	T8
40694	7975331.446	503131.591	10.495	T8
40695	7975335.256	503135.212	10.575	T8
40696	7975338.805	503138.804	10.6	T8
40697	7975343.835	503138.122	10.599	T8
40698	7975348.855	503139.911	10.633	T8
40699	7975353.449	503142.443	10.669	T8
40700	7975358.502	503144.192	10.69	T8
40701	7975363.672	503145.74	10.683	T8
40702	7975368.538	503147.283	10.742	T8
40703	7975373.541	503148.958	10.796	T8
40704	7975378.983	503150.785	10.788	T8
40705	7975383.903	503152.632	10.849	T8
40706	7975388.975	503154.387	10.884	T8
40707	7975394.217	503156.132	10.954	T8
40708	7975399.753	503157.869	10.982	T8
40709	7975404.648	503159.333	11.007	T8
40710	7975409.682	503160.877	11.026	T8

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40711	7975414.622	503162.52	11.051	T8
40712	7975419.365	503164.234	11.058	T8
40713	7975424.596	503165.965	11.077	T8
40714	7975429.837	503167.781	11.071	T8
40715	7975435.109	503169.61	11.098	T8
40716	7975440.397	503171.592	11.077	T8
40717	7975445.713	503173.529	11.109	T8
40718	7975451.006	503175.315	11.058	T8
40719	7975456.262	503177.153	11.07	T8
40720	7975461.274	503179.016	11.087	T8
40721	7975466.168	503180.822	11.096	T8
40722	7975471.082	503182.576	11.137	T8
40723	7975476.224	503184.264	11.088	T8
40724	7975481.583	503186.146	11.099	T8
40725	7975487.017	503188.135	11.106	T8
40726	7975492.317	503190.43	11.178	T8
40727	7975497.343	503193.069	11.189	T8
40728	7975501.146	503197.108	11.228	T8
40729	7975503.165	503201.781	11.113	T8
40730	7975504.036	503207.391	11.139	T8
40731	7975504.579	503212.565	11.133	T8
40732	7975504.772	503217.731	11.085	T8
40733	7975504.811	503223.249	11.065	T8
40734	7975504.607	503228.746	10.965	T8
40735	7975503.995	503234.41	10.909	T8
40736	7975502.829	503239.47	10.937	T8
40737	7975500.304	503243.831	10.928	T8
40738	7975495.339	503246.604	10.977	T8
40739	7975490.257	503246.93	10.909	T8
40740	7975485.05	503246.096	10.925	T8
40741	7975479.562	503244.791	10.98	T8
40742	7975474.588	503243.43	10.965	T8
40743	7975469.66	503241.907	10.98	T8
40744	7975464.736	503240.346	10.991	T8
40745	7975459.909	503238.945	11.067	T8
40746	7975454.523	503237.543	11.082	T8
40747	7975449.302	503236.081	11.057	T8
40748	7975444.041	503234.384	11.039	T8
40749	7975438.739	503232.622	11.055	T8
40750	7975433.467	503230.857	11.091	T8
40751	7975428.316	503229.027	11.149	T8
40752	7975423.402	503227.381	11.224	T8

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40753	7975417.99	503225.686	11.193	T8
40754	7975412.693	503224.085	11.221	T8
40755	7975407.453	503222.599	11.215	T8
40756	7975402.608	503221.291	11.222	T8
40757	7975397.358	503219.932	11.134	T8
40758	7975392.009	503218.175	11.172	T8
40759	7975386.905	503215.436	11.13	T8
40760	7975383.288	503211.971	11.068	T8
40761	7975380.334	503206.98	11.071	T8
40762	7975378.697	503201.717	11.113	T8
40763	7975376.996	503196.778	11.05	T8
40764	7975375.158	503191.895	11.026	T8
40765	7975373.124	503187.202	10.994	T8
40766	7975370.854	503182.66	10.98	T8
40767	7975368.42	503178.044	10.939	T8
40768	7975365.991	503173.469	10.914	T8
40769	7975363.352	503168.476	10.886	T8
40770	7975361.687	503163.21	10.905	T8
40771	7975363.704	503158.054	10.843	T8
40772	7975368.826	503156.661	10.836	T8
40773	7975373.524	503158.93	10.859	T8
40774	7975378.431	503160.946	10.876	T8
40775	7975383.738	503162.323	10.866	T8
40776	7975388.665	503163.24	10.885	T8
40777	7975393.53	503164.85	10.957	T8
40778	7975398.926	503166.592	10.931	T8
40779	7975404.265	503168.48	10.996	T8
40780	7975409.107	503169.768	11.075	T8
40781	7975414.008	503170.923	11.06	T8
40782	7975418.985	503172.199	11.087	T8
40783	7975423.893	503173.674	11.112	T8
40784	7975428.742	503175.342	11.123	T8
40785	7975433.81	503176.927	11.099	T8
40786	7975438.756	503178.548	11.123	T8
40787	7975443.703	503180.256	11.112	T8
40788	7975449.061	503181.945	11.103	T8
40789	7975454.062	503183.389	11.135	T8
40790	7975459.147	503184.846	11.116	T8
40791	7975464.474	503186.407	11.159	T8
40792	7975469.871	503188.226	11.154	T8
40793	7975475.13	503190.222	11.183	T8
40794	7975480.376	503192.059	11.151	T8

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40795	7975485.716	503193.951	11.169	T8
40796	7975490.464	503195.576	11.115	T8
40797	7975495.796	503197.608	11.149	T8
40798	7975500.826	503199.584	11.186	T8
40799	7975505.671	503200.891	11.139	T8
40800	7975510.901	503202.763	11.114	T8
40801	7975514.876	503205.793	11.051	T8
40802	7975516.99	503210.526	11.013	T8
40803	7975516.377	503215.903	10.985	T8
40804	7975513.754	503220.563	10.961	T8
40805	7975510.075	503224.004	10.988	T8
40806	7975505.179	503226.23	11.019	T8
40807	7975500.036	503226.941	11.006	T8
40808	7975501.336	503232.048	10.945	T8
40809	7975497.89	503236.115	10.953	T8
40810	7975492.707	503237.349	10.942	T8
40811	7975487.691	503236.712	10.95	T8
40812	7975482.502	503235.445	10.958	T8
40813	7975477.096	503233.926	10.975	T8
40814	7975472.252	503232.289	11.07	T8
40815	7975467.167	503230.807	11.054	T8
40816	7975461.946	503229.265	11.099	T8
40817	7975456.86	503227.711	11.116	T8
40818	7975451.893	503226.189	11.125	T8
40819	7975446.877	503224.763	11.105	T8
40820	7975441.706	503223.27	11.133	T8
40821	7975436.45	503221.876	11.196	T8
40822	7975431.174	503220.505	11.206	T8
40823	7975425.928	503219.004	11.213	T8
40824	7975420.648	503217.275	11.199	T8
40825	7975415.367	503215.758	11.205	T8
40826	7975410.019	503214.339	11.175	T8
40827	7975404.657	503212.84	11.138	T8
40828	7975399.468	503211.321	11.173	T8
40829	7975394.448	503209.885	11.121	T8
40830	7975389.486	503208.372	11.127	T8
40831	7975384.448	503206.722	11.089	T8
40832	7975379.693	503204.263	11.093	T8
40833	7975375.638	503200.814	11.055	T8
40834	7975372.7	503196.626	11.012	T8
40835	7975370.272	503191.806	11.002	T8
40836	7975368.242	503186.563	10.954	T8

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40837	7975366.065	503181.818	10.945	T8
40838	7975363.841	503176.537	10.934	T8
40839	7975362.517	503171.563	10.853	T8
40840	7975362.443	503166.191	10.866	T8
40841	7975366.137	503162.176	10.869	T8
40842	7975371.495	503162.046	10.838	T8
40843	7975376.638	503164.12	10.856	T8
40844	7975381.561	503166.143	10.92	T8
40845	7975386.268	503167.998	10.924	T8
40846	7975391.153	503169.75	10.94	T8
40847	7975395.947	503171.26	10.942	T8
40848	7975401.352	503173.041	10.981	T8
40849	7975406.693	503174.858	11.012	T8
40850	7975412.062	503176.658	11.059	T8
40851	7975416.824	503178.246	11.092	T8
40852	7975421.856	503179.699	11.075	T8
40853	7975426.955	503180.962	11.107	T8
40854	7975431.965	503182.289	11.103	T8
40855	7975437.532	503183.593	11.158	T8
40856	7975442.687	503184.869	11.109	T8
40857	7975448.076	503186.208	11.153	T8
40858	7975453.519	503187.762	11.152	T8
40859	7975458.826	503189.358	11.189	T8
40860	7975464.21	503191.003	11.146	T8
40861	7975469.506	503192.541	11.143	T8
40862	7975474.585	503194.027	11.192	T8
40863	7975479.57	503195.705	11.154	T8
40864	7975484.713	503197.37	11.148	T8
40865	7975489.859	503199.052	11.135	T8
40866	7975494.817	503200.603	11.123	T8
40867	7975499.695	503202.172	11.124	T8
40868	7975504.236	503204.96	11.149	T8
40869	7975507.51	503209.324	11.071	T8
40870	7975509.065	503214.435	11.084	T8
40871	7975509.191	503219.575	11.015	T8
40872	7975507.165	503224.828	11.016	T8
40873	7975502.915	503228.171	10.988	T8
40874	7975497.919	503229.027	10.963	T8
40875	7975492.828	503228.075	10.995	T8
40876	7975487.602	503226.317	10.968	T8
40877	7975482.49	503223.812	11.061	T8
40878	7975477.868	503221.872	11.083	T8

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40879	7975472.897	503219.996	11.126	T8
40880	7975467.966	503218.204	11.162	T8
40881	7975462.487	503216.486	11.141	T8
40882	7975457.382	503215.214	11.167	T8
40883	7975451.84	503214.23	11.134	T8
40884	7975446.377	503213.332	11.2	T8
40885	7975441.427	503212.587	11.189	T8
40886	7975436.395	503211.326	11.205	T8
40887	7975431.344	503209.855	11.215	T8
40888	7975426.255	503208.419	11.233	T8
40889	7975420.985	503206.959	11.159	T8
40890	7975415.603	503205.456	11.119	T8
40891	7975410.238	503203.909	11.133	T8
40892	7975404.981	503202.492	11.121	T8
40893	7975399.909	503201.099	11.108	T8
40894	7975394.947	503199.704	11.093	T8
40895	7975390.027	503198.379	11.006	T8
40896	7975384.638	503196.811	11.05	T8
40897	7975379.939	503195.006	11.015	T8
40898	7975375.38	503192.706	11.001	T8
40899	7975371.51	503189.505	10.973	T8
40900	7975368.702	503184.658	10.944	T8
40901	7975368.423	503179.109	10.945	T8
40902	7975370.317	503174.319	10.925	T8
40903	7975373.96	503170.563	10.904	T8
40904	7975378.586	503168.473	10.879	T8
40905	7975383.931	503169.517	10.897	T8
40906	7975387.968	503173.011	10.964	T8
40907	7975392.53	503175.451	10.975	T8
40908	7975397.378	503177.013	11.027	T8
40909	7975402.609	503178.303	11.028	T8
40910	7975407.886	503179.893	11.076	T8
40911	7975413.191	503181.679	11.096	T8
40912	7975418.697	503183.114	11.09	T8
40913	7975424.079	503184.458	11.113	T8
40914	7975429.396	503185.668	11.062	T8
40915	7975434.706	503187.21	11.101	T8
40916	7975440.109	503189.055	11.119	T8
40917	7975444.92	503190.575	11.157	T8
40918	7975449.775	503192.151	11.22	T8
40919	7975454.826	503193.585	11.168	T8
40920	7975460.022	503195.129	11.174	T8

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40921	7975465.157	503196.49	11.115	T8
40922	7975470.068	503197.935	11.155	T8
40923	7975475.094	503199.31	11.164	T8
40924	7975480.336	503200.788	11.182	T8
40925	7975485.711	503202.15	11.117	T8
40926	7975491.14	503203.57	11.121	T8
40927	7975496.322	503204.87	11.132	T8
40928	7975501.324	503206.343	11.12	T8
40929	7975506.331	503208.738	11.085	T8
40930	7975508.913	503213.198	11.046	T8
40931	7975507.114	503218.173	11.066	T8
40932	7975502.246	503220.341	11.024	T8
40933	7975497.228	503219.389	11.05	T8
40934	7975492.11	503217.675	11.076	T8
40935	7975487.422	503215.681	11.087	T8
40936	7975482.703	503213.618	11.111	T8
40937	7975477.991	503211.667	11.125	T8
40938	7975473.169	503209.771	11.123	T8
40939	7975468.291	503208.061	11.115	T8
40940	7975463.391	503206.189	11.114	T8
40941	7975458.352	503204.529	11.092	T8
40942	7975453.212	503202.902	11.093	T8
40943	7975448.102	503201.138	11.119	T8
40944	7975443.104	503199.181	11.151	T8
40945	7975438.037	503197.529	11.166	T8
40946	7975432.869	503196.1	11.112	T8
40947	7975427.66	503194.537	11.112	T8
40948	7975422.375	503192.902	11.046	T8
40949	7975417.184	503191.363	11.068	T8
40950	7975412.152	503189.762	11.116	T8
40951	7975407.162	503188.238	11.098	T8
40952	7975401.956	503186.827	11.038	T8
40953	7975396.664	503185.573	11.011	T8
40954	7975391.32	503184.624	10.981	T8
40955	7975385.986	503183.783	10.976	T8
40956	7975380.368	503183.913	10.976	T8
40957	7975376.187	503186.913	11.012	T8
40958	7975375.218	503191.921	11.034	T8
40959	7975377.448	503196.642	11.033	T8
40960	7975380.84	503200.84	11.074	T8
40961	7975385.426	503202.892	11.08	T8
40962	7975390.947	503203.95	11.089	T8

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40963	7975396.075	503204.686	11.089	T8
40964	7975401.172	503205.616	11.131	T8
40965	7975406.275	503206.5	11.148	T8
40966	7975411.7	503207.505	11.15	T8
40967	7975417.37	503208.726	11.105	T8
40968	7975422.826	503210.05	11.154	T8
40969	7975428.151	503211.518	11.189	T8
40970	7975433.313	503213.439	11.241	T8
40971	7975438.452	503215.213	11.153	T8
40972	7975443.5	503217.042	11.169	T8
40973	7975448.567	503218.761	11.148	T8
40974	7975453.725	503219.848	11.129	T8
40975	7975458.985	503220.649	11.102	T8
40976	7975464.29	503221.689	11.062	T8
40977	7975469.601	503222.752	11.109	T8
40978	7975475.077	503224.031	11.06	T8
40979	7975480.602	503225.374	11.027	T8
40980	7975485.909	503226.865	10.966	T8
40981	7975491.09	503228.283	10.954	T8
40982	7975496.176	503229.686	10.905	T8
40983	7975501.343	503230.513	10.957	T8
40984	7975506.123	503228.81	10.977	T8
40985	7975508.184	503223.961	11.055	T8
40986	7975505.262	503219.635	11.057	T8
40987	7975501.109	503216.39	11.118	T8
40988	7975496.407	503213.825	11.125	T8
40989	7975491.168	503211.968	11.106	T8
40990	7975486.122	503210.47	11.121	T8
40991	7975480.98	503208.793	11.148	T8
40992	7975476.225	503207.25	11.114	T8
40993	7975471.512	503205.559	11.122	T8
40994	7975466.244	503203.727	11.094	T8
40995	7975461.197	503201.772	11.085	T8
40996	7975455.936	503199.854	11.127	T8
40997	7975450.651	503198.153	11.131	T8
40998	7975445.312	503196.304	11.134	T8
40999	7975440.387	503194.452	11.123	T8
41000	7975435.399	503192.531	11.165	T8
41001	7975430.272	503190.784	11.092	T8
41002	7975425.339	503188.783	11.051	T8
41003	7975420.408	503187.002	11.035	T8
41004	7975415.544	503185.354	11.096	T8

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41005	7975410.325	503184.164	11.065	T8
41006	7975404.887	503182.893	11.045	T8
41007	7975399.54	503181.712	11.029	T8
41008	7975394.603	503180.588	10.988	T8
41009	7975389.175	503179.301	10.932	T8
41010	7975383.989	503178.019	10.904	T8
41011	7975378.73	503176.49	10.94	T8
41012	7975373.565	503175.829	10.944	T8
41013	7975370.227	503179.7	10.943	T8
41014	7975371.846	503184.473	10.959	T8
41015	7975376.397	503187.237	10.981	T8
41016	7975381.653	503188.707	11.015	T8
41017	7975387.023	503189.74	10.962	T8
41018	7975392	503190.722	10.985	T8
41019	7975397.193	503191.946	11.035	T8
41020	7975402.13	503193.33	11.093	T8
41021	7975407.349	503194.828	11.073	T8
41022	7975412.242	503196.284	11.098	T8
41023	7975417.376	503197.625	11.097	T8
41024	7975422.493	503198.892	11.126	T8
41025	7975427.342	503200.24	11.15	T8
41026	7975432.231	503201.795	11.194	T8
41027	7975437.494	503203.394	11.168	T8
41028	7975442.842	503205.308	11.183	T8
41029	7975448.007	503207.168	11.163	T8
41030	7975453.369	503208.827	11.13	T8
41031	7975458.439	503210.078	11.082	T8
41032	7975463.614	503211.216	11.142	T8
41033	7975468.721	503212.28	11.173	T8
41034	7975473.578	503213.513	11.102	T8
41035	7975478.394	503214.866	11.107	T8
41036	7975483.349	503216.371	11.063	T8
41037	7975488.229	503217.777	11.038	T8
41038	7975493.508	503219.349	11.039	T8
41039	7975498.82	503220.853	11.039	T8
41040	7975504.022	503222.215	11.007	T8
41041	7975508.891	503224.232	10.975	T8
41042	7975512.628	503228.334	10.917	T8
41043	7975512.668	503233.64	10.9	T8
41044	7975509.084	503237.84	10.857	T8
41045	7975504.067	503238.7	10.882	T8
41046	7975016.334	503142.31	11.028	T8

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41047	7975019.241	503146.454	11.163	T8
41048	7975020.601	503151.354	11.185	T8
41049	7975020.708	503156.81	11.083	T8
41050	7975020.213	503161.986	11.055	T8
41051	7975019.287	503167.104	11.086	T8
41052	7975018.119	503172.22	11.002	T8
41053	7975016.855	503177.33	10.876	T8
41054	7975015.272	503182.131	10.815	T8
41055	7975013.596	503186.861	10.858	T8
41056	7975011.956	503191.828	10.819	T8
41057	7975010.617	503196.899	10.875	T8
41058	7975009.353	503202.221	10.754	T8
41059	7975007.736	503207.057	10.819	T8
41060	7975005.953	503211.75	10.828	T8
41061	7975001.594	503214.594	10.873	T8
41062	7974996.365	503214.235	10.952	T8
41063	7974991.514	503212.655	10.924	T8
41064	7974986.601	503211.254	10.868	T8
41065	7974981.807	503209.467	10.857	T8
41066	7974977.036	503207.892	10.903	T8
41067	7974972.191	503206.657	10.87	T8
41068	7974966.969	503205.479	10.97	T8
41069	7974961.988	503204.32	10.998	T8
41070	7974956.787	503203.043	10.984	T8
41071	7974951.657	503201.887	11.018	T8
41072	7974946.467	503200.727	11.067	T8
41073	7974941.308	503199.715	11.127	T8
41074	7974936.237	503198.087	11.183	T8
41075	7974931.382	503196.652	11.199	T8
41076	7974926.612	503195.004	11.204	T8
41077	7974921.663	503192.916	11.222	T8
41078	7974916.855	503191.476	11.274	T8
41079	7974911.816	503189.542	11.276	T8
41080	7974906.872	503187.936	11.242	T8
41081	7974901.821	503186.307	11.277	T8
41082	7974897.124	503184.525	11.349	T8
41083	7974892.009	503182.766	11.352	T8
41084	7974887.074	503181.086	11.31	T8
41085	7974882.522	503178.979	11.35	T8
41086	7974877.685	503177.008	11.462	T8
41087	7974872.594	503175.863	11.434	T8
41088	7974867.248	503174.978	11.414	T8

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41089	7974862.265	503174.002	11.475	T8
41090	7974857.347	503176.449	11.481	T8
41091	7974852.397	503177.855	11.475	T8
41092	7974847.406	503175.553	11.459	T8
41093	7974844.735	503171.138	11.513	T8
41094	7974842.83	503166.168	11.479	T8
41095	7974841.027	503161.182	11.434	T8
41096	7974839.336	503156.163	11.416	T8
41097	7974837.885	503151.206	11.394	T8
41098	7974836.572	503145.972	11.473	T8
41099	7974835.112	503140.981	11.43	T8
41100	7974833.482	503135.742	11.451	T8
41101	7974832.015	503130.614	11.469	T8
41102	7974830.782	503125.488	11.486	T8
41103	7974829.597	503120.559	11.521	T8
41104	7974826.561	503116.442	11.477	T8
41105	7974821.428	503116.784	11.474	T8
41106	7974816.317	503118.315	11.473	T8
41107	7974811.076	503119.655	11.502	T8
41108	7974806.161	503120.986	11.415	T8
41109	7974800.977	503122.231	11.444	T8
41110	7974795.559	503123.25	11.563	T8
41111	7974790.43	503124.646	11.507	T8
41112	7974785.417	503125.549	11.462	T8
41113	7974780.272	503125.206	11.546	T8
41114	7974775.685	503122.968	11.532	T8
41115	7974772.909	503118.743	11.516	T8
41116	7974772.17	503113.483	11.497	T8
41117	7974771.634	503108.392	11.487	T8
41118	7974771.313	503103.225	11.426	T8
41119	7974771.159	503097.643	11.4	T8
41120	7974771.285	503092.362	11.313	T8
41121	7974771.441	503087.245	11.342	T8
41122	7974772.62	503082.387	11.296	T8
41123	7974775.881	503078.569	11.363	T8
41124	7974780.429	503076.476	11.372	T8
41125	7974785.831	503075.871	11.376	T8
41126	7974790.898	503076.155	11.343	T8
41127	7974796.268	503076.691	11.379	T8
41128	7974801.751	503077.237	11.39	T8
41129	7974806.827	503078.329	11.373	T8
41130	7974812.15	503079.762	11.327	T8

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41131	7974817.56	503081.085	11.311	T8
41132	7974822.959	503082.591	11.304	T8
41133	7974828.167	503084.007	11.297	T8
41134	7974833.167	503085.306	11.232	T8
41135	7974838.004	503086.776	11.274	T8
41136	7974843.001	503088.446	11.317	T8
41137	7974848.223	503089.7	11.215	T8
41138	7974853.526	503091.202	11.261	T8
41139	7974858.862	503092.736	11.215	T8
41140	7974864.077	503094.35	11.278	T8
41141	7974869.335	503095.991	11.252	T8
41142	7974874.681	503097.479	11.175	T8
41143	7974880.048	503098.954	11.205	T8
41144	7974890.59	503102.681	11.263	T8
41145	7974895.591	503105.26	11.238	T8
41146	7974899.375	503108.856	11.221	T8
41147	7974902.46	503115.635	11.432	T8
41148	7974903.283	503120.772	11.411	T8
41149	7974903.702	503126.75	11.445	T8
41150	7974905.01	503131.81	11.494	T8
41151	7974908.803	503135.381	11.34	T8
41152	7974914.166	503134.779	11.27	T8
41153	7974918.88	503132.653	11.214	T8
41154	7974923.85	503130.764	11.213	T8
41155	7974928.977	503129.26	11.176	T8
41156	7974933.958	503128.045	11.078	T8
41157	7974939.215	503126.966	11.126	T8
41158	7974944.368	503126.314	11.052	T8
41159	7974949.655	503126.253	11.078	T8
41160	7974954.784	503126.411	11.132	T8
41161	7974960.035	503126.696	11.063	T8
41162	7974965.103	503127.091	11.02	T8
41163	7974970.482	503128.025	10.99	T8
41164	7974975.355	503129.186	10.984	T8
41165	7974980.553	503130.514	10.872	T8
41166	7974985.847	503132.149	10.864	T8
41167	7974991.269	503133.75	10.789	T8
41168	7974996.481	503135.107	10.884	T8
41169	7975001.434	503136.399	10.91	T8
41170	7975006.635	503138.472	10.993	T8
41171	7975010.146	503142.037	10.997	T8
41172	7975011.39	503147.265	11.04	T8

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41173	7975010.087	503152.104	11.009	T8
41174	7975007.741	503156.835	10.97	T8
41175	7975005.32	503161.571	10.95	T8
41176	7975002.937	503166.629	10.831	T8
41177	7975000.369	503171.511	10.877	T8
41178	7974998.477	503176.54	10.855	T8
41179	7974999.399	503181.659	10.856	T8
41180	7975001.882	503186.175	10.944	T8
41181	7975003.072	503191.435	10.927	T8
41182	7975002.649	503196.599	10.953	T8
41183	7975000.441	503201.49	10.951	T8
41184	7974996.404	503205.16	10.942	T8
41185	7974991.152	503206.641	10.872	T8
41186	7974985.675	503205.886	10.773	T8
41187	7974980.49	503204.238	10.887	T8
41188	7974975.317	503202.764	10.926	T8
41189	7974970.023	503201.311	10.969	T8
41190	7974964.581	503200.039	10.984	T8
41191	7974959.675	503198.761	11.011	T8
41192	7974954.616	503197.348	11.092	T8
41193	7974949.543	503195.82	11.081	T8
41194	7974944.532	503194.3	11.095	T8
41195	7974939.563	503192.851	11.151	T8
41196	7974934.488	503191.354	11.148	T8
41197	7974929.291	503189.69	11.175	T8
41198	7974924.085	503187.745	11.222	T8
41199	7974918.635	503185.884	11.303	T8
41200	7974913.914	503184.218	11.277	T8
41201	7974909.187	503182.58	11.311	T8
41202	7974904.46	503180.932	11.322	T8
41203	7974899.631	503179.281	11.331	T8
41204	7974894.73	503177.657	11.328	T8
41205	7974889.772	503176.101	11.351	T8
41206	7974880.133	503173.172	11.557	T8
41207	7974874.496	503171.95	11.488	T8
41208	7974868.799	503171.027	11.519	T8
41209	7974863.183	503170.253	11.529	T8
41210	7974857.592	503169.343	11.51	T8
41211	7974852.667	503167.679	11.573	T8
41212	7974848.429	503164.996	11.506	T8
41213	7974845.031	503160.84	11.458	T8
41214	7974843.099	503156.102	11.478	T8

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41215	7974841.378	503151.221	11.53	T8
41216	7974839.689	503145.751	11.532	T8
41217	7974838.515	503140.667	11.46	T8
41218	7974837.471	503135.334	11.534	T8
41219	7974836.128	503129.967	11.512	T8
41220	7974834.593	503124.728	11.497	T8
41221	7974832.756	503119.749	11.492	T8
41222	7974830.646	503115.13	11.505	T8
41223	7974826.536	503111.319	11.511	T8
41224	7974821.742	503109.905	11.455	T8
41225	7974816.518	503110.118	11.453	T8
41226	7974811.217	503111.017	11.456	T8
41227	7974805.934	503111.574	11.492	T8
41228	7974800.708	503111.661	11.526	T8
41229	7974795.279	503112.096	11.517	T8
41230	7974790.069	503113.141	11.535	T8
41231	7974784.713	503111.959	11.49	T8
41232	7974781.187	503108.275	11.452	T8
41233	7974779.579	503103.121	11.437	T8
41234	7974779.835	503097.57	11.408	T8
41235	7974781.735	503092.252	11.392	T8
41236	7974785.14	503087.666	11.415	T8
41237	7974789.455	503083.959	11.419	T8
41238	7974794.846	503082.124	11.379	T8
41239	7974800.571	503082.65	11.344	T8
41240	7974805.849	503084.525	11.434	T8
41241	7974811.24	503086.221	11.437	T8
41242	7974816.909	503087.664	11.427	T8
41243	7974821.895	503088.809	11.389	T8
41244	7974826.884	503090.168	11.386	T8
41245	7974831.878	503091.466	11.364	T8
41246	7974836.85	503092.919	11.356	T8
41247	7974841.768	503094.334	11.349	T8
41248	7974847.369	503095.897	11.348	T8
41249	7974852.872	503097.489	11.385	T8
41250	7974857.71	503098.888	11.377	T8
41251	7974862.707	503100.328	11.399	T8
41252	7974867.905	503101.83	11.337	T8
41253	7974873.361	503103.268	11.372	T8
41254	7974878.787	503104.787	11.366	T8
41255	7974884.088	503106.435	11.368	T8
41256	7974889.273	503108.137	11.318	T8

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41257	7974894.047	503110.441	11.291	T8
41258	7974900.207	503118.724	11.391	T8
41259	7974901.088	503124.042	11.401	T8
41260	7974901.144	503129.105	11.445	T8
41261	7974900.998	503134.545	11.413	T8
41262	7974903.003	503139.287	11.363	T8
41263	7974908.052	503141.566	11.294	T8
41264	7974913.302	503141.24	11.242	T8
41265	7974918.435	503140.131	11.161	T8
41266	7974923.643	503138.484	11.201	T8
41267	7974928.69	503136.169	11.196	T8
41268	7974933.672	503134.202	11.128	T8
41269	7974938.666	503132.969	11.11	T8
41270	7974944.046	503132.423	11.106	T8
41271	7974949.531	503132.663	11.139	T8
41272	7974955.054	503133.315	11.012	T8
41273	7974960.686	503134.587	11.029	T8
41274	7974966.185	503135.855	11.031	T8
41275	7974971.555	503136.885	10.976	T8
41276	7974977.092	503138.17	10.974	T8
41277	7974981.911	503139.506	10.875	T8
41278	7974987.281	503141.781	10.802	T8
41279	7974991.654	503145.363	10.842	T8
41280	7974994.753	503150.592	10.901	T8
41281	7974995.455	503156.139	10.931	T8
41282	7974995.225	503161.366	10.933	T8
41283	7974994.666	503166.739	10.879	T8
41284	7974993.72	503172.025	10.81	T8
41285	7974992.581	503177.256	10.794	T8
41286	7974991.264	503182.285	10.843	T8
41287	7974989.682	503187.039	10.858	T8
41288	7974986.056	503191.147	10.887	T8
41289	7974980.988	503191.56	10.865	T8
41290	7974976.1	503190.143	10.895	T8
41291	7974971.268	503188.624	10.921	T8
41292	7974965.82	503187.878	10.962	T8
41293	7974960.84	503187.309	10.97	T8
41294	7974955.705	503186.062	10.997	T8
41295	7974950.291	503185.143	11.066	T8
41296	7974945.05	503184.405	11.08	T8
41297	7974940.087	503182.993	11.131	T8
41298	7974934.339	503181.171	11.173	T8

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41299	7974929.048	503179.897	11.187	T8
41300	7974923.77	503178.149	11.203	T8
41301	7974918.158	503176.664	11.246	T8
41302	7974913.26	503175.451	11.249	T8
41303	7974905.302	503173.312	11.291	T8
41304	7974900.317	503172.104	11.269	T8
41305	7974895.278	503170.752	11.294	T8
41306	7974890.199	503169.327	11.325	T8
41307	7974877.173	503165.407	11.499	T8
41308	7974871.963	503163.951	11.492	T8
41309	7974866.523	503162.502	11.444	T8
41310	7974861.689	503160.71	11.403	T8
41311	7974856.803	503158.031	11.359	T8
41312	7974852.578	503154.311	11.411	T8
41313	7974849.097	503150.409	11.475	T8
41314	7974846.225	503145.645	11.447	T8
41315	7974844.315	503140.73	11.467	T8
41316	7974842.586	503135.558	11.449	T8
41317	7974840.935	503130.258	11.476	T8
41318	7974839.144	503125.074	11.457	T8
41319	7974837.211	503120.062	11.464	T8
41320	7974835.091	503115.094	11.468	T8
41321	7974832.352	503110.394	11.436	T8
41322	7974828.628	503106.934	11.472	T8
41323	7974823.4	503105.279	11.462	T8
41324	7974817.858	503105.335	11.487	T8
41325	7974812.9	503106.021	11.507	T8
41326	7974807.849	503106.943	11.476	T8
41327	7974802.646	503107.804	11.46	T8
41328	7974797.653	503108.655	11.492	T8
41329	7974792.453	503109.496	11.506	T8
41330	7974787.118	503108.237	11.421	T8
41331	7974783.902	503103.766	11.417	T8
41332	7974782.867	503098.776	11.429	T8
41333	7974783.166	503093.349	11.404	T8
41334	7974785.006	503087.167	11.413	T8
41335	7974789.334	503084.487	11.403	T8
41336	7974794.895	503085.441	11.419	T8
41337	7974799.549	503087.4	11.414	T8
41338	7974804.417	503089.376	11.432	T8
41339	7974809.525	503091.036	11.434	T8
41340	7974814.782	503092.32	11.437	T8

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41341	7974820.146	503093.528	11.419	T8
41342	7974825.46	503094.62	11.387	T8
41343	7974831.312	503095.84	11.387	T8
41344	7974836.42	503096.892	11.382	T8
41345	7974845.538	503098.753	11.36	T8
41346	7974850.738	503102.284	11.338	T8
41347	7974850.918	503107.343	11.338	T8
41348	7974847.105	503110.95	11.4	T8
41349	7974842.051	503110.492	11.445	T8
41350	7974836.771	503108.862	11.425	T8
41351	7974831.504	503108.08	11.432	T8
41352	7974826.093	503107.142	11.494	T8
41353	7974821.104	503105.591	11.473	T8
41354	7974816.206	503104.185	11.474	T8
41355	7974811.079	503103.211	11.488	T8
41356	7974805.855	503102.29	11.486	T8
41357	7974800.858	503101.856	11.453	T8
41358	7974795.564	503100.894	11.457	T8
41359	7974790.494	503100.002	11.471	T8
41360	7974785.458	503098.359	11.419	T8
41361	7974781.429	503094.92	11.425	T8
41362	7974778.609	503090.453	11.364	T8
41363	7974777.578	503085.058	11.408	T8
41364	7974779.8	503080.256	11.388	T8
41365	7974784.719	503078.873	11.413	T8
41366	7974789.13	503081.682	11.413	T8
41367	7974790.876	503086.921	11.434	T8
41368	7974792.999	503091.619	11.444	T8
41369	7974796.458	503095.301	11.474	T8
41370	7974801.33	503096.506	11.544	T8
41371	7974806.345	503095.992	11.488	T8
41372	7974811.773	503095.34	11.439	T8
41373	7974817.341	503094.799	11.409	T8
41374	7974822.728	503094.96	11.432	T8
41375	7974827.92	503096.126	11.395	T8
41376	7974832.66	503098.986	11.403	T8
41377	7974836.722	503102.073	11.388	T8
41378	7974840.863	503104.941	11.362	T8
41379	7974845.525	503107.104	11.369	T8
41380	7974850.857	503108.983	11.394	T8
41381	7974855.67	503110.784	11.351	T8
41382	7974860.261	503113.677	11.394	T8

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41383	7974864.966	503115.695	11.408	T8
41384	7974870.114	503117.372	11.365	T8
41385	7974874.998	503120.165	11.35	T8
41386	7974878.9	503124.189	11.363	T8
41387	7974882.351	503128.191	11.438	T8
41388	7974886.195	503131.516	11.409	T8
41389	7974890.796	503134.222	11.415	T8
41390	7974895.876	503135.98	11.438	T8
41391	7974901.417	503136.722	11.44	T8
41392	7974906.9	503136.668	11.274	T8
41393	7974912.254	503136.554	11.229	T8
41394	7974917.745	503136.711	11.19	T8
41395	7974923.048	503137.448	11.173	T8
41396	7974928.04	503138.085	11.139	T8
41397	7974933.458	503138.742	11.136	T8
41398	7974938.671	503139.554	11.098	T8
41399	7974944.115	503140.443	11.064	T8
41400	7974952.584	503141.829	11.035	T8
41401	7974957.789	503142.635	11.045	T8
41402	7974962.986	503143.361	10.995	T8
41403	7974971.069	503144.657	10.91	T8
41404	7974978.3	503146.032	10.903	T8
41405	7974985.623	503147.515	10.904	T8
41406	7974990.052	503150.246	10.912	T8
41407	7974992.84	503154.487	10.911	T8
41408	7974994.125	503159.74	10.923	T8
41409	7974993.592	503164.734	10.834	T8
41410	7974992.641	503169.868	10.878	T8
41411	7974992.174	503175.125	10.786	T8
41412	7974991.318	503180.14	10.874	T8
41413	7974990.029	503185.398	10.892	T8
41414	7974985.375	503190.886	10.893	T8
41415	7974980.178	503192.766	10.835	T8
41416	7974975.303	503190.667	10.906	T8
41417	7974971.771	503186.848	10.897	T8
41418	7974967.155	503184.336	10.956	T8
41419	7974962.303	503182.657	11.03	T8
41420	7974957.071	503181.034	11.068	T8
41421	7974951.795	503179.943	11.037	T8
41422	7974946.308	503179.147	11.12	T8
41423	7974940.792	503178.315	11.15	T8
41424	7974935.469	503177.202	11.166	T8

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41425	7974930.319	503176.122	11.181	T8
41426	7974925.107	503175.057	11.177	T8
41427	7974919.978	503173.803	11.216	T8
41428	7974914.957	503172.636	11.271	T8
41429	7974909.661	503171.707	11.275	T8
41430	7974904.32	503170.99	11.295	T8
41431	7974899.027	503170.225	11.299	T8
41432	7974893.969	503169.38	11.345	T8
41433	7974888.845	503168.832	11.36	T8
41434	7974883.495	503168.031	11.446	T8
41435	7974878.285	503166.705	11.486	T8
41436	7974873.045	503165.21	11.456	T8
41437	7974868.227	503163.653	11.447	T8
41438	7974863.363	503161.845	11.444	T8
41439	7974855.758	503158.685	11.402	T8
41440	7974849.521	503155.467	11.458	T8
41441	7974846.005	503150.965	11.43	T8
41442	7974844.568	503146.08	11.444	T8
41443	7974843.728	503140.447	11.463	T8
41444	7974842.963	503135.474	11.455	T8
41445	7974842.383	503130.467	11.437	T8
41446	7974842.405	503125.459	11.421	T8
41447	7974843.677	503120.598	11.439	T8
41448	7974847.133	503116.109	11.412	T8
41449	7974852.058	503113.576	11.379	T8
41450	7974857.29	503113.535	11.391	T8
41451	7974861.976	503115.745	11.392	T8
41452	7974865.511	503119.607	11.406	T8
41453	7974871.598	503126.745	11.36	T8
41454	7974875.703	503130.456	11.341	T8
41455	7974880.294	503133.314	11.361	T8
41456	7974885.344	503135.437	11.359	T8
41457	7974890.458	503136.816	11.409	T8
41458	7974895.498	503138.036	11.421	T8
41459	7974905.44	503140.715	11.295	T8
41460	7974910.871	503142.055	11.232	T8
41461	7974916.286	503143.175	11.202	T8
41462	7974921.373	503144.124	11.168	T8
41463	7974931.529	503147.69	11.179	T8
41464	7974936.928	503149.124	11.142	T8
41465	7974942.083	503150.099	11.096	T8
41466	7974947.595	503150.57	11.063	T8

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41467	7974954.856	503151.147	11.051	T8
41468	7974959.925	503152.121	11.02	T8
41469	7974965.728	503153.389	10.969	T8
41470	7974970.781	503154.71	10.926	T8
41471	7974979.993	503157.842	10.844	T8
41472	7974984.288	503160.895	10.845	T8
41473	7974988.798	503164.605	10.874	T8
41474	7974991.69	503169.024	10.819	T8
41475	7974992.593	503174.862	10.798	T8
41476	7974990.679	503179.859	10.867	T8
41477	7974986.68	503183.035	10.884	T8
41478	7974981.458	503183.839	10.875	T8
41479	7974976.19	503182.457	10.839	T8
41480	7974971.602	503179.727	10.885	T8
41481	7974967.025	503177.335	10.945	T8
41482	7974962.25	503175.367	10.977	T8
41483	7974957.125	503173.574	11.002	T8
41484	7974951.774	503171.834	11.011	T8
41485	7974946.469	503170.843	11.098	T8
41486	7974940.995	503169.566	11.064	T8
41487	7974932.796	503167.263	11.112	T8
41488	7974927.473	503166.145	11.131	T8
41489	7974921.923	503165.731	11.185	T8
41490	7974916.71	503165.24	11.227	T8
41491	7974907.744	503163.97	11.248	T8
41492	7974900.74	503162.43	11.267	T8
41493	7974895.622	503161.245	11.269	T8
41494	7974890.387	503160.124	11.252	T8
41495	7974885.31	503159.028	11.333	T8
41496	7974878.993	503158.18	11.401	T8
41497	7974872.002	503157.486	11.424	T8
41498	7974866.907	503156.949	11.399	T8
41499	7974861.685	503156.49	11.364	T8
41500	7974853.813	503154.483	11.398	T8
41501	7974850.083	503150.839	11.464	T8
41502	7974847.776	503145.16	11.463	T8
41503	7974847.707	503139.613	11.404	T8
41504	7974851.904	503135.123	11.427	T8
41505	7974857.228	503134.895	11.364	T8
41506	7974862.199	503135.578	11.394	T8
41507	7974867.698	503136.477	11.358	T8
41508	7974872.991	503138.034	11.395	T8

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41509	7974878.218	503139.535	11.375	T8
41510	7974883.712	503141.016	11.35	T8
41511	7974888.611	503142.385	11.389	T8
41512	7974897.407	503144.858	11.255	T8
41513	7974904.674	503146.784	11.29	T8
41514	7974909.735	503148.188	11.149	T8
41515	7974914.646	503149.442	11.167	T8
41516	7974920.116	503150.834	11.104	T8
41517	7974925.342	503152.198	11.178	T8
41518	7974931.902	503154.032	11.131	T8
41519	7974936.749	503155.39	11.116	T8
41520	7974942.43	503157.035	11.055	T8
41521	7974947.413	503158.375	11.084	T8
41522	7974957.033	503160.972	10.994	T8
41523	7974962.215	503162.65	10.975	T8
41524	7974967.364	503164.181	10.938	T8
41525	7974972.379	503165.583	10.928	T8
41526	7974977.304	503166.769	10.88	T8
41527	7974985.221	503168.976	10.82	T8
41528	7974988.554	503172.706	10.822	T8
41529	7974989.773	503177.592	10.9	T8
41530	7974988.029	503182.316	10.893	T8
41531	7974983.195	503180.561	10.867	T8
41532	7974977.959	503179.326	10.822	T8
41533	7974972.99	503177.346	10.905	T8
41534	7974968.443	503175.263	10.916	T8
41535	7974964.165	503172.466	10.98	T8
41536	7974959.756	503169.27	11.014	T8
41537	7974954.726	503167.038	11.032	T8
41538	7974949.369	503165.668	11.027	T8
41539	7974944.268	503164.576	11.04	T8
41540	7974939.273	503163.578	11.069	T8
41541	7974933.995	503162.425	11.133	T8
41542	7974928.879	503161.599	11.113	T8
41543	7974923.732	503160.762	11.168	T8
41544	7974918.368	503160.072	11.186	T8
41545	7974913.276	503159.305	11.247	T8
41546	7974908.005	503158.582	11.253	T8
41547	7974902.72	503157.613	11.243	T8
41548	7974897.605	503156.201	11.255	T8
41549	7974892.588	503156.467	11.334	T8
41550	7974887.568	503157.651	11.317	T8

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41551	7974882.223	503157.87	11.358	T8
41552	7974877.246	503157.297	11.448	T8
41553	7974872.248	503155.858	11.41	T8
41554	7974868.399	503152.255	11.331	T8
41555	7974867.487	503147.02	11.321	T8
41556	7974867.992	503141.565	11.355	T8
41557	7974867.238	503136.43	11.386	T8
41558	7974865.485	503131.479	11.409	T8
41559	7974864.697	503126.052	11.382	T8
41560	7974864.643	503120.654	11.382	T8
41561	7974865.249	503115.105	11.38	T8
41562	7974865.953	503109.658	11.374	T8
41563	7974867.159	503104.416	11.357	T8
41564	7974871.039	503100.413	11.326	T8
41565	7974876.354	503100.178	11.277	T8
41566	7974880.73	503103.432	11.294	T8
41567	7974882.37	503108.595	11.341	T8
41568	7974882.011	503114.026	11.333	T8
41569	7974880.884	503119.268	11.373	T8
41570	7974879.849	503124.669	11.388	T8
41571	7974879.241	503129.705	11.4	T8
41572	7974878.762	503135.202	11.386	T8
41573	7974878.326	503140.711	11.357	T8
41574	7974877.916	503145.803	11.385	T8
41575	7974877.556	503150.981	11.363	T8
41576	7974877.24	503156.093	11.416	T8
41577	7974876.773	503161.524	11.474	T8
41578	7974876.277	503167.086	11.475	T8
41579	7974875.228	503172.517	11.434	T8
41580	7974872.476	503177.315	11.455	T8
41581	7974867.787	503180.445	11.479	T8
41582	7974862.563	503180.405	11.494	T8
41583	7974858.145	503177.591	11.499	T8
41584	7974855.964	503172.823	11.465	T8
41585	7974856.241	503167.298	11.523	T8
41586	7974856.671	503162.151	11.412	T8
41587	7974857.396	503157.011	11.338	T8
41588	7974857.624	503151.877	11.387	T8
41589	7974857.987	503146.51	11.362	T8
41590	7974858.031	503141.194	11.402	T8
41591	7974857.906	503135.69	11.382	T8
41592	7974857.586	503130.192	11.388	T8

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41593	7974857.046	503124.605	11.42	T8
41594	7974856.537	503119.613	11.423	T8
41595	7974856.03	503114.198	11.428	T8
41596	7974855.841	503109.169	11.372	T8
41597	7974856	503103.945	11.367	T8
41598	7974856.524	503098.915	11.391	T8
41599	7974858.497	503093.924	11.288	T8
41600	7974862.771	503090.461	11.379	T8
41601	7974868.239	503090.002	11.368	T8
41602	7974872.387	503093.534	11.362	T8
41603	7974875.995	503097.712	11.319	T8
41604	7974880.339	503101.018	11.303	T8
41605	7974884.848	503103.381	11.319	T8
41606	7974889.574	503105.428	11.342	T8
41607	7974894.35	503108.28	11.304	T8
41608	7974897.221	503112.389	11.334	T8
41609	7974897.619	503117.673	11.43	T8
41610	7974895.427	503122.175	11.427	T8
41611	7974892.047	503125.968	11.407	T8
41612	7974888.837	503130.216	11.43	T8
41613	7974886.585	503134.93	11.397	T8
41614	7974885.328	503140.317	11.37	T8
41615	7974885.069	503145.375	11.392	T8
41616	7974885.41	503150.507	11.406	T8
41617	7974886.047	503155.988	11.382	T8
41618	7974888.443	503160.811	11.38	T8
41619	7974892.279	503164.353	11.379	T8
41620	7974896.825	503166.553	11.323	T8
41621	7974902.239	503167.627	11.305	T8
41622	7974907.234	503168.561	11.279	T8
41623	7974912.2	503169.337	11.261	T8
41624	7974917.207	503170.427	11.248	T8
41625	7974922.092	503172.035	11.251	T8
41626	7974926.801	503173.986	11.156	T8
41627	7974931.733	503176.882	11.17	T8
41628	7974935.665	503180.69	11.15	T8
41629	7974938.339	503186.181	11.099	T8
41630	7974939.413	503192.774	11.137	T8
41631	7974940.532	503197.837	11.13	T8

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Laydown Area LP3 Type 8 (150mm minus) Placment Survey Data

Point Number	Northing	Easting	Elevation	Description
806001	7974877.103	503177.236	11.412	TYPE8
806002	7974880.067	503169.576	11.357	TYPE8
806003	7974883.549	503160.899	11.334	TYPE8
806004	7974889.638	503152.229	11.304	TYPE8
806005	7974895.714	503145.174	11.312	TYPE8
806006	7974893.08	503155.462	11.31	TYPE8
806007	7974890.209	503166.141	11.287	TYPE8
806008	7974887.021	503177.553	11.337	TYPE8
806009	7974896.815	503183.162	11.321	TYPE8
806010	7974899.89	503173.332	11.305	TYPE8
806011	7974903.144	503164.466	11.296	TYPE8
806012	7974908.11	503153.46	11.224	TYPE8
806013	7974912.914	503144.028	11.229	TYPE8
806014	7974917.469	503133.464	11.201	TYPE8
806015	7974928.726	503127.021	11.205	TYPE8
806016	7974925.123	503139.004	11.181	TYPE8
806017	7974922.057	503150.404	11.242	TYPE8
806018	7974918.764	503160.642	11.23	TYPE8
806019	7974914.222	503170.086	11.321	TYPE8
806020	7974911.925	503176.09	11.246	TYPE8
806021	7974907.079	503187.358	11.26	TYPE8
806022	7974919.356	503190.925	11.223	TYPE8
806023	7974922.738	503180.121	11.189	TYPE8
806024	7974925.79	503169.954	11.186	TYPE8
806025	7974929.279	503159.081	11.192	TYPE8
806026	7974932.527	503148.29	11.209	TYPE8
806027	7974936.178	503137.63	11.14	TYPE8
806028	7974940.035	503124.752	11.16	TYPE8
806029	7974952.061	503123.437	11.116	TYPE8
806030	7974949.653	503135.647	11.058	TYPE8
806031	7974947.206	503147.685	11.094	TYPE8
806032	7974943.779	503159.878	11.141	TYPE8
806033	7974940.485	503171.951	11.16	TYPE8
806034	7974936.417	503183.741	11.115	TYPE8
806035	7974932.005	503194.495	11.179	TYPE8
806036	7974946.02	503200.665	11.071	TYPE8
806037	7974945.615	503202.318	11.097	TYPE8
806038	7974948.472	503189.74	11.121	TYPE8
806039	7974951.745	503178.124	11.046	TYPE8

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806040	7974955.374	503167.946	11.063	TYPE8
806041	7974959.648	503157.462	11.037	TYPE8
806042	7974963.853	503146.14	11.015	TYPE8
806043	7974968.664	503134.319	10.981	TYPE8
806044	7974971.678	503127.167	11.021	TYPE8
806045	7974983.365	503130.183	10.986	TYPE8
806046	7974980.513	503144.233	10.947	TYPE8
806047	7974979.018	503156.06	10.937	TYPE8
806048	7974977.584	503166.982	10.92	TYPE8
806049	7974976.245	503178.54	10.935	TYPE8
806050	7974974.306	503189.607	10.904	TYPE8
806051	7974972.698	503200.321	10.918	TYPE8
806052	7974971.523	503207.338	10.902	TYPE8

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Laydown Area LP3
Type 8 (150mm minus) Placement

Laydown Area LP3 Type 8 (150mm minus) Placment Survey Data

Point Number	Northing	Easting	Elevation	Description
814001	7974993.179	503136.819	11.137	TYPE 8 PR
814002	7974994.603	503133.328	10.998	TYPE 8 PR
814003	7975005.975	503136.421	11.076	TYPE 8 PR
814004	7975003.799	503141.535	11.12	TYPE 8 PR
814005	7975014.415	503147.074	11.285	TYPE 8 PR
814006	7975017.752	503140.46	11.125	TYPE 8 PR
814007	7975026.742	503144.443	11.223	TYPE 8 PR
814008	7975023.428	503152.912	11.31	TYPE 8 PR
814009	7975018.138	503150.996	11.325	TYPE 8 PR
814010	7975014.649	503158.745	11.36	TYPE 8 PR
814011	7975010.481	503159.254	11.309	TYPE 8 PR
814012	7975008.948	503166.407	11.431	TYPE 8 PR
814013	7975017.855	503169.279	11.301	TYPE 8 PR
814014	7975014.47	503180.508	11.263	TYPE 8 PR
814015	7975003.582	503177.336	11.311	TYPE 8 PR
814016	7975000.58	503188.685	11.346	TYPE 8 PR
814017	7975010.54	503192.446	11.259	TYPE 8 PR
814018	7975007.044	503205.257	11.259	TYPE 8 PR
814019	7974995.078	503202.475	11.286	TYPE 8 PR
814020	7974991.805	503213.313	11.108	TYPE 8 PR
814021	7975003.904	503216.57	11.189	TYPE 8 PR

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Laydown Area LP3
Type 8 (150mm minus) Placement

Laydown Area LP3 Type 8 (150mm minus) Placment Survey Data

Point Number	Northing	Easting	Elevation	Description
10039	7975177.598	503210.766	11.091	T8 FINAL
10040	7975181.037	503202.702	11.116	T8 FINAL
10041	7975185.27	503192.606	11.105	T8 FINAL
10042	7975173.323	503189	11.126	T8 FINAL
10043	7975170.248	503197.361	11.114	T8 FINAL
10044	7975166.398	503206.954	11.144	T8 FINAL
10045	7975154.712	503202.24	11.203	T8 FINAL
10046	7975157.134	503194.476	11.169	T8 FINAL
10047	7975160.823	503184.853	11.165	T8 FINAL
10048	7975164.709	503185.403	11.214	T8 FINAL
10049	7975161.938	503195.299	11.156	T8 FINAL
10050	7975159.058	503202.745	11.193	T8 FINAL
10051	7975146.887	503199.329	11.176	T8 FINAL
10052	7975149.731	503188.774	11.199	T8 FINAL
10053	7975151.961	503181.447	11.166	T8 FINAL
10054	7975140.666	503178.336	11.164	T8 FINAL
10055	7975138.984	503187.931	11.167	T8 FINAL
10056	7975136.671	503196.044	11.156	T8 FINAL
10057	7975126.326	503192.224	11.093	T8 FINAL
10058	7975128.845	503183.966	11.16	T8 FINAL
10059	7975131.615	503175.649	11.133	T8 FINAL
10060	7975122.222	503172.401	11.106	T8 FINAL
10061	7975118.691	503184.831	11.103	T8 FINAL
10062	7975117.205	503189.57	11.105	T8 FINAL
10063	7975106.054	503187.187	11.065	T8 FINAL
10064	7975108.893	503176.881	11.059	T8 FINAL
10065	7975111.3	503169.298	11.108	T8 FINAL
10066	7975099.3	503165.312	11.033	T8 FINAL
10067	7975095.931	503174.979	11.001	T8 FINAL
10068	7975093.239	503183.542	11.02	T8 FINAL

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Laydown Area LP3
Type 8 (150mm minus) Placement

Laydown Area LP3 Type 8 (150mm minus) Placment Survey Data

Point Number	Northing	Easting	Elevation	Description
906001	7975592.44	503207.899	10.83	TYPE8
906002	7975584.401	503204.09	10.79	TYPE8
906003	7975575.49	503201.117	10.797	TYPE8
906004	7975565.079	503198.451	10.921	TYPE8
906005	7975559.698	503197.308	10.819	TYPE8
906006	7975558.355	503207.363	10.855	TYPE8
906007	7975567.412	503209.427	10.81	TYPE8
906008	7975575.647	503211.224	10.824	TYPE8
906009	7975583.131	503213.092	10.841	TYPE8
906010	7975589.365	503214.615	10.959	TYPE8
906011	7975581.324	503224.305	10.847	TYPE8
906012	7975572.655	503222.435	10.85	TYPE8
906013	7975565.446	503221.059	10.891	TYPE8
906014	7975558.351	503219.457	10.925	TYPE8
906015	7975557.873	503229.317	10.978	TYPE8
906016	7975566.703	503231.03	10.841	TYPE8
906017	7975575.291	503232.816	10.857	TYPE8
906018	7975568.237	503241.168	10.844	TYPE8
906019	7975557.416	503239.016	10.908	TYPE8
906020	7975558.081	503247.245	10.868	TYPE8
906021	7975563.036	503247.998	10.827	TYPE8
906022	7975558.416	503252.966	10.899	TYPE8

NUNA

NUNA EAST LTD

(Section 4)

Survey Data
(Type 5 32mm minus)

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Laydown Area LP3
Type 5 (32mm minus) Placement

Laydown Area LP3 Type 5 (32mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
1000	7975221.549	503164.639	11.104	T5 FINAL
1001	7975224.939	503153.002	11.056	T5 FINAL
1002	7975227.938	503143.066	11.083	T5 FINAL
1003	7975230.865	503133.201	11.087	T5 FINAL
1004	7975234.226	503122.892	11.076	T5 FINAL
1005	7975237.646	503112.747	11.078	T5 FINAL
1006	7975240.985	503102.811	11.096	T5 FINAL
1007	7975242.686	503097.402	11.068	T5 FINAL
1008	7975252.839	503100.52	11.012	T5 FINAL
1009	7975249.413	503111.694	10.998	T5 FINAL
1010	7975246.152	503121.974	10.987	T5 FINAL
1011	7975243.32	503131.633	10.992	T5 FINAL
1012	7975240.305	503142.275	11.022	T5 FINAL
1013	7975237.164	503152.466	10.999	T5 FINAL
1014	7975233.849	503161.717	11.047	T5 FINAL
1015	7975229.895	503171.597	11.043	T5 FINAL
1016	7975227.812	503176.912	11.007	T5 FINAL
1017	7975238.305	503180.264	10.978	T5 FINAL
1018	7975241.191	503170.811	10.963	T5 FINAL
1019	7975243.932	503160.729	10.93	T5 FINAL
1020	7975246.495	503150.871	10.945	T5 FINAL
1021	7975249.727	503140.211	10.953	T5 FINAL
1022	7975253.094	503129.084	10.933	T5 FINAL
1023	7975256.401	503119.453	10.938	T5 FINAL
1024	7975259.89	503109.168	10.965	T5 FINAL
1025	7975261.836	503103.288	10.941	T5 FINAL
1026	7975271.039	503106.156	10.895	T5 FINAL
1027	7975267.677	503115.657	10.899	T5 FINAL
1028	7975264.547	503125.079	10.862	T5 FINAL
1029	7975261.206	503134.747	10.874	T5 FINAL
1030	7975257.995	503144.667	10.889	T5 FINAL
1031	7975255.225	503154.851	10.91	T5 FINAL
1032	7975252.065	503165.177	10.904	T5 FINAL
1033	7975248.668	503175.506	10.884	T5 FINAL
1034	7975246.454	503182.132	10.904	T5 FINAL
1035	7975256.581	503184.906	10.764	T5 FINAL
1036	7975260.486	503174.456	10.85	T5 FINAL
1037	7975263.754	503165.134	10.824	T5 FINAL
1038	7975267.13	503155.236	10.798	T5 FINAL

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Laydown Area LP3
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1039	7975270.637	503145.598	10.808	T5 FINAL
1040	7975273.168	503135.884	10.775	T5 FINAL
1041	7975275.418	503127.179	10.778	T5 FINAL
1042	7975278.927	503117.999	10.833	T5 FINAL
1043	7975281.188	503109.566	10.805	T5 FINAL
1044	7975291.141	503112.516	10.692	T5 FINAL
1045	7975287.808	503121.931	10.766	T5 FINAL
1046	7975284.265	503131.359	10.741	T5 FINAL
1047	7975281.107	503141.982	10.713	T5 FINAL
1048	7975277.421	503154.663	10.703	T5 FINAL
1049	7975274.382	503165.22	10.764	T5 FINAL
1050	7975271.755	503174.616	10.786	T5 FINAL
1051	7975268.983	503184.325	10.802	T5 FINAL
1052	7975267.621	503188.321	10.799	T5 FINAL
1053	7975276.401	503191.345	10.916	T5 FINAL
1054	7975279.004	503182.555	10.818	T5 FINAL
1055	7975282.763	503169.869	10.796	T5 FINAL
1056	7975290.201	503150.178	10.723	T5 FINAL
1057	7975292.803	503139.498	10.655	T5 FINAL
1058	7975294.561	503126.997	10.664	T5 FINAL
1059	7975298.622	503115.259	10.689	T5 FINAL
1060	7975310.698	503118.609	10.736	T5 FINAL
1061	7975308.337	503127.827	10.646	T5 FINAL
1062	7975306.714	503136.554	10.696	T5 FINAL
1063	7975304.544	503146.432	10.741	T5 FINAL
1064	7975301.199	503156.816	10.748	T5 FINAL
1065	7975297.169	503166.378	10.806	T5 FINAL
1066	7975293.886	503175.012	10.828	T5 FINAL
1067	7975290.908	503184.531	10.866	T5 FINAL
1068	7975287.6	503194.944	10.936	T5 FINAL
1069	7975297.353	503198.12	10.952	T5 FINAL
1070	7975300.259	503189.49	10.924	T5 FINAL
1071	7975303.246	503179.876	10.869	T5 FINAL
1072	7975306.042	503170.957	10.822	T5 FINAL
1073	7975309.144	503162.18	10.777	T5 FINAL
1074	7975312.338	503153.369	10.799	T5 FINAL
1075	7975316.779	503142.489	10.782	T5 FINAL
1076	7975319.823	503132.956	10.713	T5 FINAL
1077	7975324.131	503123.27	10.728	T5 FINAL
1078	7975334.634	503126.466	10.777	T5 FINAL
1079	7975331.827	503136.233	10.773	T5 FINAL
1080	7975324.507	503160.743	10.81	T5 FINAL

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Laydown Area LP3
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1081	7975321.021	503169.883	10.848	T5 FINAL
1082	7975317.253	503182.188	10.912	T5 FINAL
1083	7975314.472	503191.951	10.99	T5 FINAL
1084	7975310.749	503201.797	10.965	T5 FINAL
1085	7975321.705	503205.672	11.018	T5 FINAL
1086	7975324.994	503196.008	10.963	T5 FINAL
1087	7975327.609	503186.431	11.015	T5 FINAL
1088	7975341.898	503178.57	10.963	T5 FINAL
1089	7975339.408	503189.772	10.999	T5 FINAL
1090	7975335.863	503201.586	11.02	T5 FINAL
1091	7975333.147	503209.091	11.087	T5 FINAL
1092	7975343.872	503211.698	11.092	T5 FINAL
1093	7975347.021	503203.692	11.075	T5 FINAL
1094	7975370.153	503219.92	11.225	T5 FINAL
1095	7975371.84	503210.379	11.191	T5 FINAL
1096	7975373.744	503200.08	11.137	T5 FINAL
1097	7975375.467	503190.239	11.094	T5 FINAL
1098	7975377.372	503180.553	11.081	T5 FINAL
1099	7975378.972	503170.338	11.018	T5 FINAL
1100	7975382.773	503159.41	11.024	T5 FINAL
1101	7975386.352	503148.805	10.996	T5 FINAL
1102	7975388.525	503142.881	10.963	T5 FINAL
1103	7975380.018	503140.354	10.94	T5 FINAL
1104	7975376.598	503150.041	11.029	T5 FINAL
1105	7975372.417	503159.51	10.991	T5 FINAL
1106	7975368.093	503168.851	11.008	T5 FINAL
1107	7975364.817	503181.128	11.065	T5 FINAL
1108	7975361.622	503191.064	11.054	T5 FINAL
1109	7975354.859	503188.889	11.033	T5 FINAL
1110	7975356.287	503178.93	11.017	T5 FINAL
1111	7975396.733	503145.426	10.991	T5 FINAL
1112	7975394.151	503153.758	11.054	T5 FINAL
1113	7975390.186	503165.951	11.081	T5 FINAL
1114	7975386.727	503177.398	11.093	T5 FINAL
1115	7975382.726	503189.39	11.106	T5 FINAL
1116	7975379.525	503199.919	11.167	T5 FINAL
1117	7975375.826	503211.474	11.173	T5 FINAL
1118	7975382.684	503224.894	11.292	T5 FINAL
1119	7975385.725	503216.155	11.247	T5 FINAL
1120	7975388.662	503204.183	11.222	T5 FINAL
1121	7975392.115	503192.435	11.162	T5 FINAL
1122	7975395.569	503181.02	11.154	T5 FINAL

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Type 5 (32mm minus) Placement

1123	7975398.862	503170.623	11.134	T5 FINAL
1124	7975403.314	503159.583	11.117	T5 FINAL
1125	7975406.933	503148.927	11.09	T5 FINAL
1126	7975418.555	503152.341	11.127	T5 FINAL
1127	7975414.679	503164.533	11.188	T5 FINAL
1128	7975410.457	503176.495	11.191	T5 FINAL
1129	7975406.158	503187.246	11.206	T5 FINAL
1130	7975402.336	503199.651	11.241	T5 FINAL
1131	7975398.659	503211.265	11.269	T5 FINAL
1132	7975395.4	503222.292	11.282	T5 FINAL
1133	7975393.593	503227.836	11.299	T5 FINAL
1134	7975405.944	503231.422	11.307	T5 FINAL
1135	7975408.963	503221.925	11.314	T5 FINAL
1136	7975411.773	503210.739	11.33	T5 FINAL
1137	7975415.857	503196.992	11.301	T5 FINAL
1138	7975420.924	503184.213	11.278	T5 FINAL
1139	7975424.963	503173.314	11.26	T5 FINAL
1140	7975428.964	503162.367	11.244	T5 FINAL
1141	7975430.838	503156.515	11.22	T5 FINAL
1142	7975441.301	503159.672	11.18	T5 FINAL
1143	7975437.761	503169.553	11.252	T5 FINAL
1144	7975433.754	503182.26	11.312	T5 FINAL
1145	7975430.782	503193.615	11.3	T5 FINAL
1146	7975427.642	503204.706	11.323	T5 FINAL
1147	7975423.978	503216.039	11.31	T5 FINAL
1148	7975419.899	503229.347	11.285	T5 FINAL
1149	7975417.997	503235.083	11.261	T5 FINAL
1150	7975428.792	503238.342	11.242	T5 FINAL
1151	7975432.688	503227.084	11.254	T5 FINAL
1152	7975436.227	503217.227	11.265	T5 FINAL
1153	7975439.337	503207.684	11.278	T5 FINAL
1154	7975442.329	503196.606	11.29	T5 FINAL
1155	7975445.377	503185.573	11.314	T5 FINAL
1156	7975447.91	503175.672	11.311	T5 FINAL
1157	7975451.447	503162.629	11.231	T5 FINAL
1158	7975461.869	503165.858	11.295	T5 FINAL
1159	7975458.563	503176.068	11.278	T5 FINAL
1160	7975455.315	503186.937	11.305	T5 FINAL
1161	7975452.692	503196.397	11.257	T5 FINAL
1162	7975450.002	503205.889	11.259	T5 FINAL
1163	7975446.913	503216.42	11.253	T5 FINAL
1164	7975443.079	503227.959	11.249	T5 FINAL

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1165	7975438.738	503241.877	11.227	T5 FINAL
1166	7975448.105	503244.526	11.209	T5 FINAL
1167	7975451.877	503233.278	11.211	T5 FINAL
1168	7975455.89	503223.643	11.216	T5 FINAL
1169	7975459.112	503214.091	11.225	T5 FINAL
1170	7975462.306	503203.574	11.243	T5 FINAL
1171	7975465.425	503193.198	11.245	T5 FINAL
1172	7975468.899	503182.353	11.288	T5 FINAL
1173	7975472.714	503169.133	11.289	T5 FINAL
1174	7975481.871	503172.209	11.226	T5 FINAL
1175	7975479.536	503180.497	11.258	T5 FINAL
1176	7975476.991	503189.335	11.234	T5 FINAL
1177	7975474.006	503201.234	11.246	T5 FINAL
1178	7975470.441	503212.463	11.211	T5 FINAL
1179	7975466.598	503224.012	11.214	T5 FINAL
1180	7975462.529	503236.421	11.193	T5 FINAL
1181	7975458.908	503247.674	11.201	T5 FINAL
1182	7975471.185	503250.583	11.202	T5 FINAL
1183	7975475.12	503238.065	11.154	T5 FINAL
1184	7975478.123	503227.216	11.162	T5 FINAL
1185	7975481.649	503214.472	11.192	T5 FINAL
1186	7975483.952	503203.501	11.184	T5 FINAL
1187	7975487.315	503190.458	11.197	T5 FINAL
1188	7975492.416	503175.507	11.21	T5 FINAL
1189	7975505.361	503179.471	11.14	T5 FINAL
1190	7975502.357	503189.906	11.245	T5 FINAL
1191	7975498.851	503202.185	11.197	T5 FINAL
1192	7975495.935	503214.886	11.101	T5 FINAL
1193	7975493.015	503225.19	11.159	T5 FINAL
1194	7975488.473	503238.756	11.116	T5 FINAL
1195	7975484.334	503252.791	11.116	T5 FINAL
1196	7975499.048	503254.221	11.138	T5 FINAL
1197	7975501.399	503244.128	11.13	T5 FINAL
1198	7975505.414	503231.624	11.145	T5 FINAL
1199	7975508.657	503220.513	11.166	T5 FINAL
1200	7975511.258	503209.818	11.169	T5 FINAL
1201	7975511.475	503198.565	11.146	T5 FINAL
1202	7975517.648	503182.804	11.243	T5 FINAL
1203	7975528.838	503186.553	11.145	T5 FINAL
1204	7975525.848	503197.634	11.183	T5 FINAL
1205	7975523.041	503209.967	11.135	T5 FINAL
1206	7975519.179	503222.646	11.131	T5 FINAL

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1207	7975516.007	503235.487	11.127	T5 FINAL
1208	7975513.719	503249.863	11.047	T5 FINAL
1209	7975512.729	503254.983	11.096	T5 FINAL
1210	7975524.147	503255.333	11.101	T5 FINAL
1211	7975527.697	503242.677	11.093	T5 FINAL
1212	7975531.151	503230.355	11.11	T5 FINAL
1213	7975535.311	503216.935	11.12	T5 FINAL
1214	7975538.452	503207.395	11.133	T5 FINAL
1215	7975543.521	503190.763	11.116	T5 FINAL
1216	7975550.668	503193.695	11.108	T5 FINAL
1217	7975549.43	503202.454	11.111	T5 FINAL
1218	7975548.274	503213.822	11.084	T5 FINAL
1219	7975546.993	503226.972	11.079	T5 FINAL
1220	7975544.898	503239.158	11.065	T5 FINAL
1221	7975543.6	503252.5	11.043	T5 FINAL

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Point Number	Northing	Easting	Elevation	Description
806001	7975223.46	503166.176	11.062	TYPE 5
806002	7975198.437	503165.886	11.135	TYPE 5
806003	7975203.102	503156.983	11.184	TYPE 5
806004	7975205.865	503146.902	11.198	TYPE 5
806005	7975208.846	503136.398	11.21	TYPE 5
806006	7975211.886	503125.008	11.201	TYPE 5
806007	7975215.319	503114.892	11.192	TYPE 5
806008	7975219.045	503104.264	11.212	TYPE 5
806009	7975223.74	503091.868	11.205	TYPE 5
806010	7975223.986	503091.393	11.172	TYPE 5
806011	7975212.544	503087.905	11.24	TYPE 5
806012	7975211.899	503089.483	11.299	TYPE 5
806013	7975210.805	503092.188	11.274	TYPE 5
806014	7975206.686	503103.571	11.29	TYPE 5
806015	7975202.897	503114.325	11.259	TYPE 5
806016	7975199.046	503126.543	11.308	TYPE 5
806017	7975195.45	503138.795	11.254	TYPE 5
806018	7975192.469	503149.494	11.241	TYPE 5
806019	7975189.571	503158.476	11.203	TYPE 5
806020	7975187.482	503164.287	11.235	TYPE 5
806021	7975174.954	503160.525	11.278	TYPE 5
806022	7975177.002	503154.122	11.333	TYPE 5
806023	7975179.864	503143.033	11.347	TYPE 5
806024	7975183.368	503131.028	11.313	TYPE 5
806025	7975186.866	503120.746	11.331	TYPE 5
806026	7975191.339	503109.283	11.26	TYPE 5
806027	7975194.435	503099.041	11.281	TYPE 5
806028	7975197.759	503088.643	11.252	TYPE 5
806029	7975199.101	503084.116	11.226	TYPE 5
806030	7975187.638	503080.497	11.22	TYPE 5
806031	7975184.126	503089.567	11.185	TYPE 5
806032	7975181.023	503098.712	11.217	TYPE 5
806033	7975177.019	503110.886	11.217	TYPE 5
806034	7975174.312	503120.138	11.304	TYPE 5
806035	7975170.961	503131.816	11.324	TYPE 5
806036	7975168.32	503142.033	11.305	TYPE 5
806037	7975164.877	503151.916	11.32	TYPE 5
806038	7975162.857	503157.184	11.302	TYPE 5
806039	7975150.339	503153.065	11.312	TYPE 5

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806040	7975154.452	503140.089	11.288	TYPE 5
806041	7975158.052	503127.044	11.253	TYPE 5
806042	7975161.485	503114.624	11.258	TYPE 5
806043	7975164.555	503103.148	11.197	TYPE 5
806044	7975168.755	503090.949	11.184	TYPE 5
806045	7975172.044	503081.387	11.197	TYPE 5
806046	7975173.659	503076.339	11.206	TYPE 5
806047	7975173.93	503075.926	11.22	TYPE 5
806048	7975161.829	503072.263	11.161	TYPE 5
806049	7975158.311	503082.532	11.169	TYPE 5
806050	7975154.699	503092.419	11.201	TYPE 5
806051	7975150.841	503103.616	11.208	TYPE 5
806052	7975148.012	503113.886	11.224	TYPE 5
806053	7975145.18	503123.513	11.217	TYPE 5
806054	7975142.039	503134.784	11.254	TYPE 5
806055	7975139.025	503142.573	11.261	TYPE 5
806056	7975136.418	503149.016	11.276	TYPE 5
806057	7975124.233	503145.073	11.183	TYPE 5
806058	7975127.637	503134.869	11.221	TYPE 5
806059	7975131.272	503122.818	11.203	TYPE 5
806060	7975134.985	503110.059	11.191	TYPE 5
806061	7975138.182	503098.6	11.173	TYPE 5
806062	7975142.136	503087.055	11.126	TYPE 5
806063	7975145.65	503076.072	11.104	TYPE 5
806064	7975148.206	503068.675	11.082	TYPE 5
806065	7975148.458	503067.834	11.038	TYPE 5
806066	7975135.42	503063.851	11.077	TYPE 5
806067	7975135.264	503064.413	11.072	TYPE 5
806068	7975130.73	503076.9	11.094	TYPE 5
806069	7975126.618	503088.783	11.119	TYPE 5
806070	7975122.281	503102.003	11.14	TYPE 5
806071	7975119.227	503112.582	11.163	TYPE 5
806072	7975115.762	503124.009	11.166	TYPE 5
806073	7975112.6	503134.073	11.181	TYPE 5
806074	7975110.352	503140.842	11.187	TYPE 5
806075	7975097.012	503136.288	11.214	TYPE 5
806076	7975099.752	503127.315	11.168	TYPE 5
806077	7975102.886	503116.495	11.157	TYPE 5
806078	7975106.308	503104.281	11.106	TYPE 5
806079	7975109.717	503092.179	11.128	TYPE 5
806080	7975113.982	503081.248	11.059	TYPE 5
806081	7975116.928	503071.702	11.045	TYPE 5

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806082	7975120.965	503059.982	11.039	TYPE 5
806083	7975111.208	503056.895	11.035	TYPE 5
806084	7975107.607	503067.902	11.028	TYPE 5
806085	7975104.134	503079.838	11.076	TYPE 5
806086	7975100.585	503091.498	11.086	TYPE 5
806087	7975096.796	503104.24	11.108	TYPE 5
806088	7975092.857	503115.756	11.167	TYPE 5
806089	7975089.224	503126.41	11.159	TYPE 5
806090	7975086.583	503133.089	11.198	TYPE 5
806091	7975073.745	503129.144	11.169	TYPE 5
806092	7975077.023	503118.863	11.151	TYPE 5
806093	7975080.47	503108.076	11.128	TYPE 5
806094	7975083.687	503097.338	11.109	TYPE 5
806095	7975086.671	503085.741	11.085	TYPE 5
806096	7975090.571	503074.447	11.034	TYPE 5
806097	7975094.885	503062.063	11.017	TYPE 5
806098	7975098.133	503052.677	10.971	TYPE 5
806099	7975086.829	503049.125	10.987	TYPE 5
806100	7975083.248	503061.008	10.991	TYPE 5
806101	7975079.753	503070.968	11.013	TYPE 5
806102	7975075.594	503081.652	11.043	TYPE 5
806103	7975071.653	503092.899	11.1	TYPE 5
806104	7975068.408	503103.683	11.103	TYPE 5
806105	7975065.3	503113.303	11.166	TYPE 5
806106	7975062.833	503121.569	11.138	TYPE 5
806107	7975061.1	503125.22	11.105	TYPE 5
806108	7975048.23	503121.352	11.123	TYPE 5
806109	7975051.501	503110.858	11.136	TYPE 5
806110	7975054.617	503099.183	11.107	TYPE 5
806111	7975056.755	503088.179	11.107	TYPE 5
806112	7975060.34	503078.113	11.052	TYPE 5
806113	7975063.957	503067.364	11.009	TYPE 5
806114	7975067.717	503056.12	10.994	TYPE 5
806115	7975070.915	503046.627	10.965	TYPE 5
806116	7975072.087	503044.307	10.948	TYPE 5
806117	7975059.797	503040.928	10.935	TYPE 5
806118	7975060.056	503040.084	10.959	TYPE 5
806119	7975055.942	503052.262	10.972	TYPE 5
806120	7975052.541	503062.341	11.023	TYPE 5
806121	7975048.653	503072.732	11.043	TYPE 5
806122	7975045.487	503082.553	11.074	TYPE 5
806123	7975041.828	503093.556	11.105	TYPE 5

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806124	7975038.811	503103.645	11.135	TYPE 5
806125	7975035.145	503115.895	11.093	TYPE 5
806126	7975034.688	503116.688	10.966	TYPE 5
806127	7975032.512	503116.458	11.099	TYPE 5
806128	7975021.645	503113.073	11.116	TYPE 5
806129	7975024.915	503102.162	11.145	TYPE 5
806130	7975027.775	503090.105	11.13	TYPE 5
806131	7975031.055	503079.246	11.098	TYPE 5
806132	7975034.435	503067.977	11.085	TYPE 5
806133	7975037.981	503056.805	11.034	TYPE 5
806134	7975041.658	503045.891	11.002	TYPE 5
806135	7975045.335	503036.143	10.972	TYPE 5
806136	7975033.299	503032.697	10.991	TYPE 5
806137	7975029.502	503043.878	11.023	TYPE 5
806138	7975026.456	503053.166	11.063	TYPE 5
806139	7975023.403	503062.256	11.065	TYPE 5
806140	7975020.24	503072.737	11.078	TYPE 5
806141	7975016.843	503083.189	11.11	TYPE 5
806142	7975013.234	503093.882	11.133	TYPE 5
806143	7975010.892	503101.017	11.139	TYPE 5
806144	7975008.501	503107.832	11.183	TYPE 5
806145	7975008.202	503108.622	11.092	TYPE 5
806146	7974997.443	503105.79	11.146	TYPE 5
806147	7975000.224	503094.759	11.17	TYPE 5
806148	7975003.453	503082.725	11.126	TYPE 5
806149	7975006.809	503072	11.083	TYPE 5
806150	7975010.65	503061.073	11.087	TYPE 5
806151	7975014.201	503050.31	11.076	TYPE 5
806152	7975017.704	503040.173	11.029	TYPE 5
806153	7975021.209	503029.875	11.019	TYPE 5
806154	7975021.638	503028.471	10.987	TYPE 5
806155	7975010.379	503024.724	11.025	TYPE 5
806156	7975007.693	503032.801	11.055	TYPE 5
806157	7975003.982	503042.426	11.071	TYPE 5
806158	7975000.167	503052.994	11.115	TYPE 5
806159	7974996.703	503062.75	11.104	TYPE 5
806160	7974992.908	503074.124	11.14	TYPE 5
806161	7974989.425	503085.211	11.157	TYPE 5
806162	7974986.445	503096.045	11.196	TYPE 5
806163	7974984.295	503101.728	11.226	TYPE 5
806164	7974973.437	503097.695	11.249	TYPE 5
806165	7974975.614	503087.847	11.212	TYPE 5

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806166	7974977.921	503077.129	11.173	TYPE 5
806167	7974980.151	503066.495	11.15	TYPE 5
806168	7974983.1	503055.305	11.135	TYPE 5
806169	7974986.301	503043.763	11.098	TYPE 5
806170	7974988.946	503034.407	11.072	TYPE 5
806171	7974992.183	503024.128	11.044	TYPE 5
806172	7974993.932	503019.299	11.041	TYPE 5
806173	7974981.539	503015.74	11.022	TYPE 5
806174	7974978.384	503025.67	11.05	TYPE 5
806175	7974975.002	503036.271	11.058	TYPE 5
806176	7974971.193	503047.075	11.115	TYPE 5
806177	7974967.806	503057.967	11.149	TYPE 5
806178	7974964.32	503068.521	11.183	TYPE 5
806179	7974961.391	503079.119	11.21	TYPE 5
806180	7974958.169	503089.168	11.231	TYPE 5
806181	7974944.207	503084.845	11.347	TYPE 5
806182	7974947.613	503074	11.205	TYPE 5
806183	7974950.452	503063.49	11.2	TYPE 5
806184	7974953.491	503052.905	11.163	TYPE 5
806185	7974957.009	503041.832	11.117	TYPE 5
806186	7974960.403	503031.266	11.103	TYPE 5
806187	7974963.961	503020.984	11.067	TYPE 5
806188	7974966.613	503011.672	11.052	TYPE 5
806189	7974955.123	503007.918	11.037	TYPE 5
806190	7974950.908	503018.612	11.036	TYPE 5
806191	7974946.829	503030.777	11.075	TYPE 5
806192	7974943.348	503041.037	11.131	TYPE 5
806193	7974939.857	503052.098	11.172	TYPE 5
806194	7974936.388	503062.133	11.243	TYPE 5
806195	7974933.78	503071.829	11.255	TYPE 5
806196	7974931.239	503080.516	11.244	TYPE 5
806197	7974919.591	503076.76	11.255	TYPE 5
806198	7974922.546	503063.78	11.244	TYPE 5
806199	7974924.827	503052.523	11.233	TYPE 5
806200	7974927.68	503042.561	11.172	TYPE 5
806201	7974930.507	503032.949	11.132	TYPE 5
806202	7974933.877	503022.588	11.123	TYPE 5
806203	7974937.207	503013.076	11.076	TYPE 5
806204	7974940.693	503002.875	11.047	TYPE 5
806205	7974928.693	502999.33	11.025	TYPE 5
806206	7974924.821	503009.639	11.045	TYPE 5
806207	7974920.999	503020.676	11.075	TYPE 5

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806208	7974917.338	503031.303	11.145	TYPE 5
806209	7974913.974	503041.542	11.224	TYPE 5
806210	7974910.137	503053.123	11.222	TYPE 5
806211	7974907.182	503064.066	11.288	TYPE 5
806212	7974903.945	503071.138	11.255	TYPE 5
806213	7974891.796	503068.292	11.293	TYPE 5
806214	7974894.708	503057.456	11.252	TYPE 5
806215	7974897.207	503046.135	11.22	TYPE 5
806216	7974900.161	503035.278	11.174	TYPE 5
806217	7974903.338	503025.52	11.141	TYPE 5
806218	7974906.716	503015.152	11.11	TYPE 5
806219	7974910.073	503004.452	11.084	TYPE 5
806220	7974913.258	502994.937	11.026	TYPE 5
806221	7974902.359	502990.958	11.009	TYPE 5
806222	7974898.177	503002.329	11.065	TYPE 5
806223	7974894.509	503012.903	11.142	TYPE 5
806224	7974890.691	503024.367	11.167	TYPE 5
806225	7974887.516	503035.541	11.214	TYPE 5
806226	7974883.99	503047.198	11.254	TYPE 5
806227	7974881.304	503057.091	11.314	TYPE 5
806228	7974878.709	503064.156	11.313	TYPE 5
806229	7974868.748	503061.151	11.354	TYPE 5
806230	7974871.563	503050.168	11.303	TYPE 5
806231	7974874.499	503038.699	11.247	TYPE 5
806232	7974877.886	503028.293	11.191	TYPE 5
806233	7974880.681	503018.475	11.149	TYPE 5
806234	7974884.036	503009.2	11.126	TYPE 5
806235	7974887.399	502999.402	11.094	TYPE 5
806236	7974890.584	502991.26	11.053	TYPE 5
806237	7974892.228	502987.59	11.036	TYPE 5
806238	7974881.78	502985.136	11.05	TYPE 5
806239	7974882.196	502983.836	11.086	TYPE 5
806240	7974877.944	502995.267	11.087	TYPE 5
806241	7974874.871	503004.292	11.134	TYPE 5
806242	7974871.517	503014.51	11.165	TYPE 5
806243	7974867.816	503024.821	11.221	TYPE 5
806244	7974864.181	503035.036	11.269	TYPE 5
806245	7974861.503	503044.507	11.301	TYPE 5
806246	7974858.382	503053.135	11.318	TYPE 5
806247	7974857.112	503057.939	11.294	TYPE 5
806248	7974851.101	503041.915	11.349	TYPE 5
806249	7974856.345	503028.569	11.267	TYPE 5

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Type 5 (32mm minus) Placement

806250	7974858.77	503018.8	11.203	TYPE 5
806251	7974861.651	503008.052	11.178	TYPE 5
806252	7974864.986	502998.017	11.051	TYPE 5
806253	7974867.804	502989.571	11.058	TYPE 5
806254	7974870.812	502981.72	11.002	TYPE 5
806255	7974871.285	502980.24	11.024	TYPE 5
806256	7974859.378	502976.953	11.037	TYPE 5
806257	7974858.989	502977.958	11.018	TYPE 5
806258	7974855.26	502989.447	11.047	TYPE 5
806259	7974851.572	502999.66	11.135	TYPE 5
806260	7974848.072	503010.118	11.162	TYPE 5
806261	7974844.927	503020.289	11.223	TYPE 5
806262	7974841.575	503029.467	11.27	TYPE 5
806263	7974839.105	503037.321	11.334	TYPE 5

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Laydown Area LP3 Type 5 (32mm minus) Placment Survey Data

Point Number	Northing	Easting	Elevation	Description
816001	7974946.603	503123.735	11.175	TYPE5
500150	7974946.254	503133.237	11.243	TYPE5
500151	7974946.024	503140.392	11.255	TYPE5
500152	7974945.627	503151.192	11.262	TYPE5
500153	7974944.908	503164.101	11.236	TYPE5
500154	7974944.983	503180.119	11.218	TYPE5
500155	7974945.054	503192.569	11.222	TYPE5
500156	7974944.733	503201.454	11.238	TYPE5
500157	7974955.59	503203.609	11.106	TYPE5
500158	7974955.134	503194.549	11.151	TYPE5
500159	7974954.525	503183.557	11.176	TYPE5
500160	7974954.182	503172.112	11.16	TYPE5
500161	7974954.415	503162.437	11.176	TYPE5
500162	7974954.893	503149.736	11.167	TYPE5
500163	7974954.662	503138.147	11.195	TYPE5
500164	7974954.804	503123.934	11.268	TYPE5
500165	7974966.304	503126.054	11.192	TYPE5
500166	7974965.532	503135.994	11.132	TYPE5
500167	7974964.73	503148.692	11.117	TYPE5
500168	7974964.7	503159.092	11.102	TYPE5
500169	7974964.88	503170.317	11.091	TYPE5
500170	7974964.434	503180.731	11.084	TYPE5
500171	7974963.898	503191.41	11.103	TYPE5
500172	7974963.278	503205.855	11.084	TYPE5
500173	7974974.915	503209.256	11.157	TYPE5
500174	7974976.286	503197.208	11.043	TYPE5
500175	7974977.567	503185.658	11.106	TYPE5
500176	7974977.89	503172.795	11.059	TYPE5
500177	7974978.385	503162.821	11.041	TYPE5
500178	7974979.161	503151.156	11.085	TYPE5
500179	7974979.188	503140.173	11.084	TYPE5
500180	7974979.936	503129.015	11.126	TYPE5
500181	7974992.367	503132.327	11.157	TYPE5
500182	7974992.512	503142.536	11.219	TYPE5
500183	7974991.752	503154.422	11.265	TYPE5
500184	7974990.972	503166.57	11.296	TYPE5
500185	7974990.564	503180.889	11.355	TYPE5
500186	7974988.699	503193.645	11.269	TYPE5
500187	7974988.506	503207.509	11.322	TYPE5

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500188	7974987.866	503213.006	11.325	TYPE5
500189	7974997.415	503216.267	11.358	TYPE5
500190	7974999.28	503203.737	11.437	TYPE5
500191	7975001.07	503190.51	11.512	TYPE5
500192	7975002.042	503177.353	11.501	TYPE5
500193	7975003.313	503165.659	11.456	TYPE5
500194	7975003.678	503153.292	11.389	TYPE5
500195	7975005.151	503142.776	11.332	TYPE5
500196	7975006.062	503136.354	11.182	TYPE5
500197	7975016.874	503139.804	11.275	TYPE5
500198	7975015.455	503151.959	11.446	TYPE5
500199	7975014.166	503165.991	11.501	TYPE5
500200	7975012.585	503177.683	11.494	TYPE5
500201	7975003.46	503218.149	11.32	TYPE5
500202	7975007.168	503206.715	11.445	TYPE5
500203	7975010.245	503195.719	11.472	TYPE5
500204	7975013.565	503184.357	11.403	TYPE5
500205	7975017.156	503171.958	11.454	TYPE5
500206	7975020.921	503159.177	11.479	TYPE5
500207	7975027.38	503145.097	11.301	TYPE5

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Laydown Area LP3
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Laydown Area LP3 Type 5 (32mm minus) Placment Survey Data

Point Number	Northing	Easting	Elevation	Description
816001	7974946.603	503123.735	11.175	TYPE5
500150	7974946.254	503133.237	11.243	TYPE5
500151	7974946.024	503140.392	11.255	TYPE5
500152	7974945.627	503151.192	11.262	TYPE5
500153	7974944.908	503164.101	11.236	TYPE5
500154	7974944.983	503180.119	11.218	TYPE5
500155	7974945.054	503192.569	11.222	TYPE5
500156	7974944.733	503201.454	11.238	TYPE5
500157	7974955.59	503203.609	11.106	TYPE5
500158	7974955.134	503194.549	11.151	TYPE5
500159	7974954.525	503183.557	11.176	TYPE5
500160	7974954.182	503172.112	11.16	TYPE5
500161	7974954.415	503162.437	11.176	TYPE5
500162	7974954.893	503149.736	11.167	TYPE5
500163	7974954.662	503138.147	11.195	TYPE5
500164	7974954.804	503123.934	11.268	TYPE5
500165	7974966.304	503126.054	11.192	TYPE5
500166	7974965.532	503135.994	11.132	TYPE5
500167	7974964.73	503148.692	11.117	TYPE5
500168	7974964.7	503159.092	11.102	TYPE5
500169	7974964.88	503170.317	11.091	TYPE5
500170	7974964.434	503180.731	11.084	TYPE5
500171	7974963.898	503191.41	11.103	TYPE5
500172	7974963.278	503205.855	11.084	TYPE5
500173	7974974.915	503209.256	11.157	TYPE5
500174	7974976.286	503197.208	11.043	TYPE5
500175	7974977.567	503185.658	11.106	TYPE5
500176	7974977.89	503172.795	11.059	TYPE5
500177	7974978.385	503162.821	11.041	TYPE5
500178	7974979.161	503151.156	11.085	TYPE5
500179	7974979.188	503140.173	11.084	TYPE5
500180	7974979.936	503129.015	11.126	TYPE5
500181	7974992.367	503132.327	11.157	TYPE5
500182	7974992.512	503142.536	11.219	TYPE5
500183	7974991.752	503154.422	11.265	TYPE5
500184	7974990.972	503166.57	11.296	TYPE5
500185	7974990.564	503180.889	11.355	TYPE5
500186	7974988.699	503193.645	11.269	TYPE5
500187	7974988.506	503207.509	11.322	TYPE5

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500188	7974987.866	503213.006	11.325	TYPE5
500189	7974997.415	503216.267	11.358	TYPE5
500190	7974999.28	503203.737	11.437	TYPE5
500191	7975001.07	503190.51	11.512	TYPE5
500192	7975002.042	503177.353	11.501	TYPE5
500193	7975003.313	503165.659	11.456	TYPE5
500194	7975003.678	503153.292	11.389	TYPE5
500195	7975005.151	503142.776	11.332	TYPE5
500196	7975006.062	503136.354	11.182	TYPE5
500197	7975016.874	503139.804	11.275	TYPE5
500198	7975015.455	503151.959	11.446	TYPE5
500199	7975014.166	503165.991	11.501	TYPE5
500200	7975012.585	503177.683	11.494	TYPE5
500201	7975003.46	503218.149	11.32	TYPE5
500202	7975007.168	503206.715	11.445	TYPE5
500203	7975010.245	503195.719	11.472	TYPE5
500204	7975013.565	503184.357	11.403	TYPE5
500205	7975017.156	503171.958	11.454	TYPE5
500206	7975020.921	503159.177	11.479	TYPE5
500207	7975027.38	503145.097	11.301	TYPE5

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Point Number	Northing	Easting	Elevation	Description
500150	7975225.292	503162.547	11.051	RAMP
500151	7975239.999	503182.529	11.999	RAMP
500152	7975200.683	503169.81	11.907	RAMP
500153	7975187.215	503151.439	11.244	RAMP
500154	7974943.788	503200.059	11.253	FGCREST 13693
817001	7974936.982	503198.002	11.368	TYPE5
817002	7974926.514	503194.681	11.387	FGCREST 13693
817003	7974915.541	503191.275	11.41	FGCREST 13693
817004	7974903.848	503187.618	11.439	FGCREST 13693
817005	7974892.297	503184.068	11.454	FGCREST 13693
817006	7974878.613	503179.726	11.481	FGCREST 13693
817007	7974867.112	503176.137	11.593	FGCREST 13693
817008	7974855.189	503172.365	11.61	FGCREST 13693
817009	7974843.65	503168.716	11.68	FGCREST 13693
817010	7974877.384	503178.286	11.48	TYPE5
817011	7974879.303	503169.347	11.473	TYPE5
817012	7974888.055	503171.119	11.432	TYPE5
817013	7974897.391	503173.662	11.416	TYPE5
817014	7974906.04	503176.959	11.399	TYPE5
817015	7974915.57	503180.216	11.358	TYPE5
817016	7974924.741	503182.03	11.294	TYPE5
817017	7974935.158	503185.659	11.244	TYPE5
817018	7974945.514	503188.78	11.221	TYPE5
817019	7974947.994	503177.295	11.209	TYPE5
817020	7974939.148	503175.378	11.253	TYPE5
817021	7974930.299	503173.396	11.296	TYPE5
817022	7974918.732	503169.586	11.343	TYPE5
817023	7974909.326	503165.872	11.374	TYPE5
817024	7974899.188	503162.98	11.34	TYPE5
817025	7974888.334	503159.01	11.429	TYPE5
817026	7974892.58	503147.297	11.422	TYPE5
817027	7974902.096	503150.303	11.368	TYPE5
817028	7974911.575	503153.427	11.369	TYPE5
817029	7974922.797	503157.319	11.307	TYPE5
817030	7974933.865	503162.123	11.283	TYPE5
817031	7974942.985	503165.012	11.252	TYPE5
817032	7974952.17	503167.521	11.192	TYPE5
817033	7974954.152	503157.884	11.179	TYPE5
817034	7974946.583	503156.16	11.223	TYPE5

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817035	7974936.993	503153.84	11.303	TYPE5
817036	7974926.618	503149.995	11.329	TYPE5
817037	7974916.392	503145.895	11.319	TYPE5
817038	7974907.496	503141.458	11.352	TYPE5
817039	7974914.679	503132.697	11.359	TYPE5
817040	7974924.854	503135.679	11.346	TYPE5
817041	7974936.331	503140.379	11.309	TYPE5
817042	7974948.779	503144.377	11.232	TYPE5
817043	7974958.298	503147.77	11.17	TYPE5
817044	7974960.328	503138.615	11.156	TYPE5
817045	7974962.705	503129.629	11.179	TYPE5
817046	7974963.801	503125.573	11.219	TYPE5
817047	7974952.364	503123.681	11.233	TYPE5
817048	7974951.17	503135.121	11.21	TYPE5
817049	7974940.615	503131.571	11.267	TYPE5
817050	7974941.825	503124.112	11.257	TYPE5
817051	7974931.552	503125.872	11.308	TYPE5
817052	7974943.942	503091.271	11.562	TYPE5
817053	7974933.279	503088.313	11.586	TYPE5
817054	7974921.028	503084.296	11.533	TYPE5
817055	7974909.56	503080.252	11.506	TYPE5
817056	7974898.321	503077.058	11.51	TYPE5
817057	7974886.516	503073.694	11.51	TYPE5
817058	7974874.669	503070.8	11.49	TYPE5
817059	7974864.399	503067.504	11.489	TYPE5
817060	7974853.545	503063.914	11.499	TYPE5
817061	7974843.545	503060.837	11.504	TYPE5
817062	7974832.221	503057.286	11.517	TYPE5
817063	7974821.69	503053.825	11.514	TYPE5
817064	7974810.242	503049.132	11.45	TYPE5
817065	7974798.513	503044.633	11.327	TYPE5
817066	7974787.801	503040.785	11.336	TYPE5
817067	7974778.043	503038.079	11.332	TYPE5
817068	7974771.556	503036.501	11.352	TYPE5
817069	7974775.332	503024.248	11.294	TYPE5
817070	7974785.891	503026.978	11.267	TYPE5
817071	7974795.537	503029.508	11.297	TYPE5
817072	7974806.759	503032.575	11.297	TYPE5
817073	7974818.694	503036.841	11.312	TYPE5
817074	7974827.91	503039.719	11.325	TYPE5
817075	7974838.935	503043.195	11.346	TYPE5
817076	7974848.678	503046.814	11.332	TYPE5

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817077	7974838.266	503032.153	11.282	TYPE5
817078	7974828.88	503029.182	11.286	TYPE5
817079	7974818.727	503025.807	11.267	TYPE5
817080	7974808.828	503022.371	11.263	TYPE5
817081	7974797.08	503018.565	11.231	TYPE5
817082	7974786.233	503014.726	11.238	TYPE5
817083	7974778.105	503011.674	11.216	TYPE5
817084	7974782.413	502999.8	11.178	TYPE5
817085	7974792.854	503003.134	11.225	TYPE5
817086	7974804.131	503006.63	11.207	TYPE5
817087	7974815.277	503010.072	11.222	TYPE5
817088	7974826.942	503013.773	11.228	TYPE5
817089	7974837.682	503017.261	11.227	TYPE5
817090	7974847.449	503020.066	11.245	TYPE5
817091	7974851.17	503007.972	11.144	TYPE5
817092	7974838.806	503004.078	11.174	TYPE5
817093	7974829.633	503001.159	11.164	TYPE5
817094	7974817.968	502997.398	11.185	TYPE5
817095	7974807.563	502994.18	11.155	TYPE5
817096	7974797.624	502990.799	11.134	TYPE5
817097	7974786.67	502986.754	11.163	TYPE5
817098	7974788.985	502978.146	11.076	TYPE5
817099	7974791.499	502968.2	11.047	TYPE5
817100	7974794.344	502958.518	10.975	TYPE5
817101	7974794.336	502958.53	10.973	TYPE5
817102	7974802.371	502960.685	11.03	TYPE5
817103	7974811.61	502963.063	10.993	TYPE5
817104	7974806.031	502983.751	11.146	TYPE5
817105	7974817.119	502987.03	11.141	TYPE5
817106	7974828.25	502990.63	11.069	TYPE5
817107	7974836.606	502993.243	11.088	TYPE5
817108	7974846.547	502996.317	11.138	TYPE5
817109	7974855.963	502999.612	11.135	TYPE5
817110	7974859.951	502987.313	11.073	TYPE5
817111	7974847.803	502983.418	11.065	TYPE5
817112	7974836.678	502979.763	11.043	TYPE5
817113	7974826.145	502975.907	11.067	TYPE5
817114	7974816.673	502972.805	11.056	TYPE5
817115	7974809.462	502970.487	11.046	TYPE5
817116	7974821.163	502965.039	11.023	TYPE5
817117	7974831.377	502968.476	11.002	TYPE5
817118	7974841.919	502971.487	11.022	TYPE5

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817119	7974851.296	502974.716	11.012	TYPE5
817120	7974862.462	502977.918	11.059	TYPE5
817121	7974822.407	503046.464	11.362	TYPE5
817122	7974834.112	503049.958	11.428	TYPE5
817123	7974834.147	503049.875	11.364	TYPE5
817124	7974847.846	503053.968	11.421	TYPE5
817125	7974847.892	503053.876	11.35	TYPE5
817126	7974859.103	503057.407	11.319	TYPE5
817127	7974859.051	503057.544	11.407	TYPE5
817128	7974853.58	503074.593	11.516	TYPE5
817129	7974844.187	503071.424	11.525	TYPE5
817130	7974834.883	503068.42	11.535	TYPE5
817131	7974825.476	503065.585	11.545	TYPE5
817132	7974814.35	503062.804	11.556	TYPE5
817133	7974806.303	503059.195	11.482	TYPE5
817134	7974795.901	503055.543	11.423	TYPE5
817135	7974786.454	503052.698	11.401	TYPE5
817136	7974777.411	503050.352	11.361	TYPE5
817137	7974771.047	503048.284	11.34	TYPE5
817138	7974771.12	503039.977	11.32	TYPE5
817139	7974770.882	503058.889	11.354	TYPE5
817140	7974780.757	503061.441	11.444	TYPE5
817141	7974791.239	503064.548	11.45	TYPE5
817142	7974802.848	503068.079	11.486	TYPE5
817143	7974813.86	503071.812	11.494	TYPE5
817144	7974824.885	503075.555	11.507	TYPE5
817145	7974836.275	503079.118	11.514	TYPE5
817146	7974846.405	503082.863	11.518	TYPE5
817147	7974855.411	503085.617	11.539	TYPE5
817148	7974864.063	503088.384	11.524	TYPE5
817149	7974874.396	503091.698	11.52	TYPE5
817150	7974884.937	503094.928	11.527	TYPE5
817151	7974896.101	503097.922	11.509	TYPE5
817152	7974905.452	503100.944	11.542	TYPE5
817153	7974914.379	503103.806	11.556	TYPE5
817154	7974911.154	503115.869	11.552	TYPE5
817155	7974900.413	503113.302	11.576	TYPE5
817156	7974889.656	503110.411	11.487	TYPE5
817157	7974877.985	503106.933	11.516	TYPE5
817158	7974867.261	503103.72	11.514	TYPE5
817159	7974855.934	503100.84	11.533	TYPE5
817160	7974844.449	503097.967	11.563	TYPE5

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817161	7974834.262	503094.683	11.569	TYPE5
817162	7974823.234	503091.954	11.552	TYPE5
817163	7974812.111	503089.567	11.544	TYPE5
817164	7974802.735	503086.594	11.541	TYPE5
817165	7974793.366	503084.112	11.53	TYPE5
817166	7974784.308	503081.257	11.516	TYPE5
817167	7974771.334	503077.582	11.419	TYPE5
817168	7974770.445	503088.219	11.492	TYPE5
817169	7974769.654	503098.338	11.546	TYPE5
817170	7974769.713	503108.667	11.593	TYPE5
817171	7974769.957	503115.973	11.474	TYPE5
817172	7974770.047	503126.655	11.418	TYPE5
817173	7974770.107	503133.109	11.432	TYPE5
817174	7974780.127	503128.884	11.409	TYPE5
817175	7974779.941	503124.233	11.497	TYPE5
817176	7974779.841	503122.555	11.642	TYPE5
817177	7974780.762	503111.573	11.616	TYPE5
817178	7974781.262	503100.249	11.571	TYPE5
817179	7974781.078	503089.451	11.541	TYPE5
817180	7974791.487	503090.352	11.535	TYPE5
817181	7974790.943	503100.39	11.586	TYPE5
817182	7974790.4	503111.288	11.643	TYPE5
817183	7974789.531	503120.888	11.684	TYPE5
817184	7974789.141	503129.184	11.669	TYPE5
817185	7974781.453	503129.075	11.603	TYPE5
817186	7974780.783	503123.99	11.497	TYPE5
817187	7974781.594	503122.868	11.646	TYPE5
817188	7974799.36	503128.07	11.692	TYPE5
817189	7974799.031	503118.456	11.708	TYPE5
817190	7974799.423	503108.871	11.639	TYPE5
817191	7974799.515	503099.923	11.623	TYPE5
817192	7974799.907	503090.951	11.559	TYPE5
817193	7974812.393	503094.539	11.571	TYPE5
817194	7974811.708	503103.123	11.621	TYPE5
817195	7974811.776	503113.041	11.666	TYPE5
817196	7974811.93	503122.072	11.716	TYPE5
817197	7974821.793	503123.383	11.714	TYPE5
817198	7974821.928	503115.873	11.694	TYPE5
817199	7974822.031	503107.125	11.631	TYPE5
817200	7974823.013	503098.62	11.59	TYPE5
817201	7974834.535	503100.834	11.563	TYPE5
817202	7974833.829	503110.273	11.607	TYPE5

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817203	7974833.924	503120.497	11.626	TYPE5
817204	7974834.241	503129.136	11.641	TYPE5
817205	7974834.366	503140.486	11.71	TYPE5
817206	7974834.848	503147.587	11.727	TYPE5
817207	7974837.715	503158.91	11.698	TYPE5
817208	7974846.639	503160.12	11.609	TYPE5
817209	7974847.099	503149.883	11.626	TYPE5
817210	7974846.339	503139.025	11.623	TYPE5
817211	7974846.429	503127.213	11.582	TYPE5
817212	7974846.284	503115.85	11.594	TYPE5
817213	7974845.981	503105.171	11.55	TYPE5
817214	7974858.896	503108.574	11.547	TYPE5
817215	7974858.747	503118.975	11.565	TYPE5
817216	7974858.426	503128.957	11.568	TYPE5
817217	7974858.389	503138.967	11.563	TYPE5
817218	7974858.471	503148.385	11.498	TYPE5
817219	7974858.804	503154.31	11.458	TYPE5
817220	7974870.243	503156.212	11.459	TYPE5
817221	7974870.892	503146.123	11.484	TYPE5
817222	7974869.99	503135.247	11.515	TYPE5
817223	7974869.8	503124.939	11.534	TYPE5
817224	7974870.044	503113.21	11.545	TYPE5
817225	7974879.927	503115.834	11.542	TYPE5
817226	7974888.249	503119.312	11.538	TYPE5
817227	7974865.743	503077.907	11.512	TYPE5
817228	7974874.69	503080.688	11.537	TYPE5
817229	7974885.598	503084.168	11.517	TYPE5
817230	7974897.004	503087.573	11.521	TYPE5
817231	7974907.6	503090.521	11.555	TYPE5
817232	7974919.214	503093.504	11.589	TYPE5
817233	7974928.963	503096.88	11.611	TYPE5
817234	7974936.319	503099.708	11.587	TYPE5

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Point Number	Northing	Easting	Elevation	Description
820001	7975336.058	503240.85	11.11	TYPE5 TOE
820002	7975327.579	503244.003	11.097	TYPE5 TOE
820003	7975313.871	503248.877	11.088	TYPE5 TOE
820004	7975330.591	503271.878	11.226	TYPE5 TOE
820005	7975340.912	503267.73	11.221	TYPE5 TOE
820006	7975351.312	503263.761	11.235	TYPE5 TOE
820007	7975362.553	503259.699	11.311	TYPE5 TOE
820008	7975374.505	503255.422	11.327	TYPE5 TOE
820009	7975378.661	503253.771	11.316	TYPE5 TOE
820010	7975340.778	503240.106	11.826	TYPE5 CREST
820011	7975330.801	503243.497	11.493	TYPE5 CREST
820012	7975321.672	503247.204	11.256	TYPE5 CREST
820013	7975332.627	503270.838	11.32	TYPE5 CREST
820014	7975340.013	503267.377	11.535	TYPE5 CREST
820015	7975349.832	503263.599	11.655	TYPE5 CREST
820016	7975359.732	503259.912	11.749	TYPE5 CREST
820017	7975370.033	503256.035	11.894	TYPE5 CREST
820018	7975379.094	503252.036	11.887	TYPE5 CREST
820019	7975332.687	503272.492	11.236	TYPE5
820020	7975331.707	503281.619	11.241	TYPE5
820021	7975329.987	503291.9	11.263	TYPE5
820022	7975328.934	503302.299	11.269	TYPE5
820023	7975327.522	503310.778	11.274	TYPE5
820024	7975337.993	503308.645	11.318	TYPE5
820025	7975339.493	503299.788	11.299	TYPE5
820026	7975341.242	503290.699	11.284	TYPE5
820027	7975342.879	503281.452	11.264	TYPE5
820028	7975345.084	503271.886	11.241	TYPE5
820029	7975355.516	503267.369	11.253	TYPE5
820030	7975353.251	503276.031	11.282	TYPE5
820031	7975351.066	503285.28	11.291	TYPE5
820032	7975348.896	503294.652	11.325	TYPE5
820033	7975346.835	503305.669	11.295	TYPE5
820034	7975358.307	503304.198	11.267	TYPE5
820035	7975359.621	503294.995	11.308	TYPE5
820036	7975361.319	503284.169	11.337	TYPE5
820037	7975363.081	503273.82	11.315	TYPE5
820038	7975364.125	503263.979	11.279	TYPE5
820039	7975374.58	503259.601	11.317	TYPE5

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820040	7975373.525	503268.693	11.32	TYPE5
820041	7975372.848	503277.887	11.317	TYPE5
820042	7975372.566	503285.278	11.292	TYPE5
820043	7975373.154	503293.148	11.286	TYPE5
820044	7975372.914	503300.098	11.244	TYPE5
820045	7975386.323	503296.06	11.198	TYPE5
820046	7975387.558	503285.692	11.266	TYPE5
820047	7975388.368	503275.205	11.285	TYPE5
820048	7975388.869	503266.32	11.306	TYPE5
820049	7975389.783	503258.019	11.284	TYPE5
820050	7975401.009	503261.741	11.293	TYPE5
820051	7975398.328	503272.358	11.265	TYPE5
820052	7975398.258	503281.787	11.247	TYPE5
820053	7975398.93	503288.768	11.236	TYPE5
820054	7975398.743	503292.873	11.187	TYPE5
820055	7975409.544	503290.134	11.131	TYPE5
820056	7975410.293	503281.329	11.234	TYPE5
820057	7975412.945	503270.862	11.276	TYPE5
820058	7975414.051	503265.945	11.246	TYPE5
820059	7975424.647	503269.15	11.197	TYPE5
820060	7975421.871	503277.177	11.243	TYPE5
820061	7975420.237	503284.668	11.174	TYPE5
820062	7975429.567	503281.969	11.199	TYPE5
820063	7975430.966	503276.273	11.214	TYPE5
820064	7975432.622	503272.078	11.239	TYPE5
820065	7975441.626	503274.887	11.201	TYPE5
820066	7975441.159	503278.476	11.186	TYPE5
820067	7975368.879	503247.647	11.843	TYPE5
820068	7975359.527	503250.915	11.79	TYPE5
820069	7975349.14	503254.903	11.74	TYPE5
820070	7975338.865	503259.245	11.597	TYPE5
820071	7975327.205	503265.202	11.239	TYPE5
820072	7975320.825	503268.879	11.134	TYPE5
820073	7975318.267	503259.141	11.138	TYPE5
820074	7975327.155	503255.519	11.356	TYPE5
820075	7975336.174	503252.032	11.627	TYPE5
820076	7975345.725	503247.383	11.774	TYPE5
820077	7975351.599	503243.073	11.838	TYPE5

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0003A
Laydown Area LP3
Type 5 (32mm minus) Placement

Laydown Area LP3 Type 5 (32mm minus) Placment Survey Data

Point Number	Northing	Easting	Elevation	Description
10069	7975181.456	503190.618	11.22	T5 FINAL
10070	7975177.474	503201.625	11.184	T5 FINAL
10071	7975173.873	503211.315	11.192	T5 FINAL
10072	7975161.658	503206.56	11.243	T5 FINAL
10073	7975164.879	503197.275	11.259	T5 FINAL
10074	7975168.482	503186.763	11.209	T5 FINAL
10075	7975155.812	503182.629	11.296	T5 FINAL
10076	7975152.296	503192.082	11.306	T5 FINAL
10077	7975148.47	503201.883	11.284	T5 FINAL
10078	7975136.967	503198.251	11.276	T5 FINAL
10079	7975140.322	503188.099	11.263	T5 FINAL
10080	7975143.564	503178.996	11.248	T5 FINAL
10081	7975131.711	503175.199	11.217	T5 FINAL
10082	7975128.319	503185.109	11.235	T5 FINAL
10083	7975125.309	503194.924	11.226	T5 FINAL
10084	7975111.956	503191.314	11.157	T5 FINAL
10085	7975115.915	503179.63	11.213	T5 FINAL
10086	7975118.594	503171.111	11.19	T5 FINAL
10087	7975108.21	503168.101	11.119	T5 FINAL
10088	7975104.257	503178.303	11.126	T5 FINAL
10089	7975100.754	503188.441	11.066	T5 FINAL
10090	7975090.133	503185.98	11.007	T5 FINAL
10091	7975093.769	503173.113	11.032	T5 FINAL
10092	7975096.372	503164.712	11.051	T5 FINAL
10093	7975088.746	503162.384	10.991	T5 FINAL
10094	7975085.403	503172.577	10.986	T5 FINAL
10095	7975081.932	503184.562	10.999	T5 FINAL

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0003A
Laydown Area LP3
Type 5 (32mm minus) Placement

Laydown Area LP3 Type 5 (32mm minus) Placment Survey Data

Point Number	Northing	Easting	Elevation	Description
911001	7975592.42	503208.403	10.992	TYPE5
911002	7975585.302	503204.71	11.001	TYPE5
911003	7975576.055	503201.646	11.029	TYPE5
911004	7975566.973	503198.917	11.019	TYPE5
911005	7975559.952	503197.323	10.984	TYPE5
911006	7975558.582	503206.263	11.003	TYPE5
911007	7975566.072	503209.004	11.03	TYPE5
911008	7975574.965	503212.47	10.964	TYPE5
911009	7975582.286	503214.952	11	TYPE5
911010	7975586.892	503216.816	11.015	TYPE5
911011	7975580.645	503224.696	11.005	TYPE5
911012	7975574.663	503221.557	11.005	TYPE5
911013	7975566.305	503218.53	11.015	TYPE5
911014	7975558.727	503215.319	11.037	TYPE5
911015	7975558.366	503226.055	11.032	TYPE5
911016	7975566.209	503227.878	10.995	TYPE5
911017	7975576.284	503230.677	11	TYPE5
911018	7975569.285	503239.666	10.969	TYPE5
911019	7975562.441	503237.148	10.992	TYPE5
911020	7975557.847	503235.566	11.05	TYPE5
911021	7975557.964	503244.49	11.016	TYPE5
911022	7975563.686	503246.962	10.939	TYPE5
911023	7975560.289	503252.622	10.932	TYPE5
911024	7975558.204	503252.348	11.026	TYPE5

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0003A
Laydown Area LP3
Type 5 (32mm minus) Placement

Laydown Area LP3 Type 5 (32mm minus) Placment Survey Data

Point Number	Northing	Easting	Elevation	Description
1000	7975044.058	503232.644	11.101	T5 FINAL
1001	7975047.303	503222.393	11.024	T5 FINAL
1002	7975050.769	503212.981	10.969	T5 FINAL
1003	7975054.195	503201.571	11.004	T5 FINAL
1004	7975057.038	503190.322	11.013	T5 FINAL
1005	7975060.351	503177.861	10.972	T5 FINAL
1006	7975063.649	503165.314	10.986	T5 FINAL
1007	7975066.437	503155.63	11.02	T5 FINAL
1008	7975088.358	503162.579	11.015	T5 FINAL
1009	7975085.577	503172.904	10.992	T5 FINAL
1010	7975082.982	503183.764	10.964	T5 FINAL
1011	7975076.596	503198.165	11.025	T5 FINAL
1012	7975072.78	503212.017	11.049	T5 FINAL
1013	7975068.604	503226.126	11.049	T5 FINAL
1014	7975065.125	503238.817	11.092	T5 FINAL
1015	7975082.369	503243.018	10.963	T5 FINAL
1016	7975086.795	503233.805	11.115	T5 FINAL
1017	7975029.539	503227.914	11.014	T5 FINAL
1018	7975009.858	503221.643	10.978	T5 FINAL
1019	7975009.317	503218.183	11.012	T5 FINAL
1020	7975014.276	503203.389	10.903	T5 FINAL
1021	7975018.144	503191.039	11.004	T5 FINAL
1022	7975022.826	503176.798	11.021	T5 FINAL
1023	7975025.946	503166.611	11.006	T5 FINAL
1024	7975028.537	503156.16	10.986	T5 FINAL
1025	7975032.504	503145.53	11.069	T5 FINAL
1026	7975048.934	503150.787	10.89	T5 FINAL
1027	7975046.506	503163.575	10.951	T5 FINAL
1028	7975042.048	503176.876	10.93	T5 FINAL
1029	7975038.078	503189.591	10.954	T5 FINAL
1030	7975034.391	503208.668	10.93	T5 FINAL

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(Section 5)

Sieves / Aggregate Statements of Compliance

Oikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190086
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-29

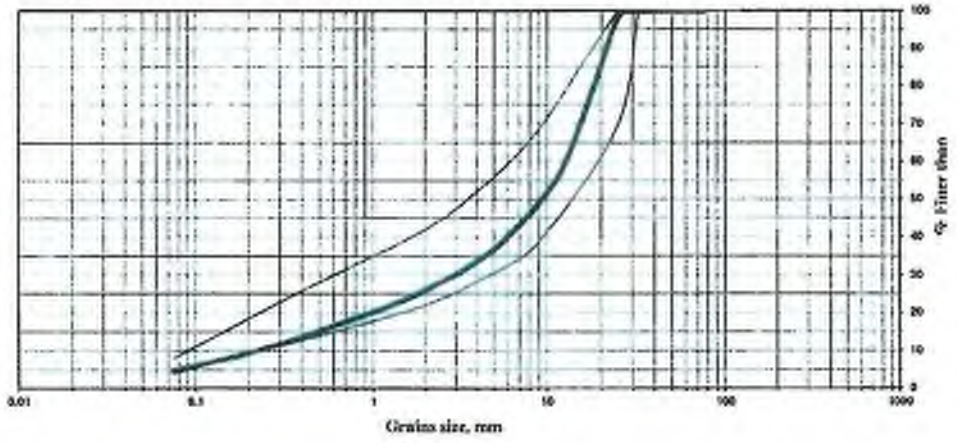
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-29_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côte
Type of Use:		**Sampling Date:**	2019-08-29

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	82	62	50	36	26	21	17	12	8	4.9
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	64.0%	Cu = 57	D_{60} = 19.8	D_{15} = 0.5
Sand %	31.1%	Cc = 3	D_{30} = 12.5	D_{10} = 0.2
Silt/Clay %	4.9%		D_{50} = 9.3	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Alexandre Beaumont

Signature: [signature]

Date: 2019/08/30

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC004A
PROJECT:	Expansion Project - Site Crushing Services	Contractor Project #:	11-837
		SAMPLE number:	MP-190083
SITE:	Baffinland, Mine Port	DATE:	2019-08-28

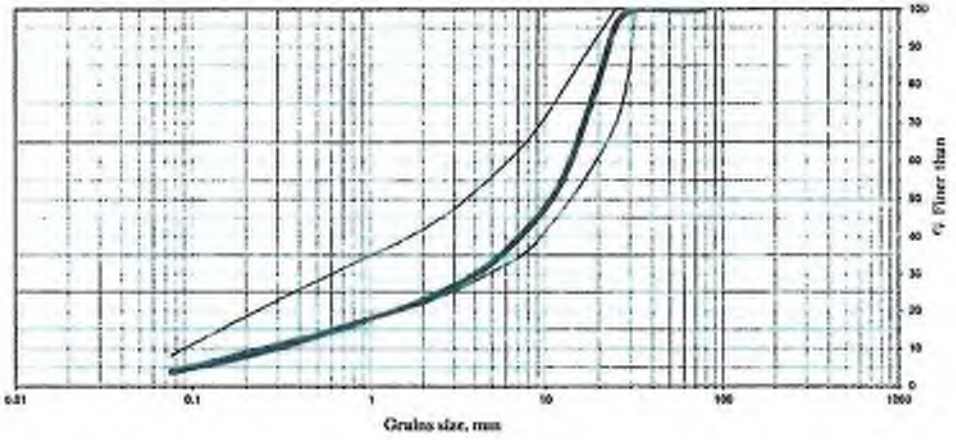
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile, C.S. O1
Comments:	32mm Minus		Production 2019-08-28_D
Stone source:	Quarry 1, Mine Port	Sampled By:	Maxime Côté
Type of Use:		Sampling Date:	2019-08-28

Gradation (% Finer than) (ASTM C136-06)

Sieve				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulative Results				100	100	100	96	79	58	47	32	23	19	15	11	7	4.2
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	67.5%	Cu = 50	D_{60} = 20.9	D_{15} = 0.6
Sand %	28.3%	Cc = 4	D_{30} = 13.7	D_{10} = 0.3
Silt/Clay %	4.2%		D_{50} = 10.5	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Olivier Jacques

Signature:

Date: 2019-08-29

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC004A
PROJECT:	Expansion Project - Site Crushing Services	Contractor Project #:	11-837
		SAMPLE number:	MP-190081
SITE:	Baffinland, Milne Port	DATE:	2019-08-27

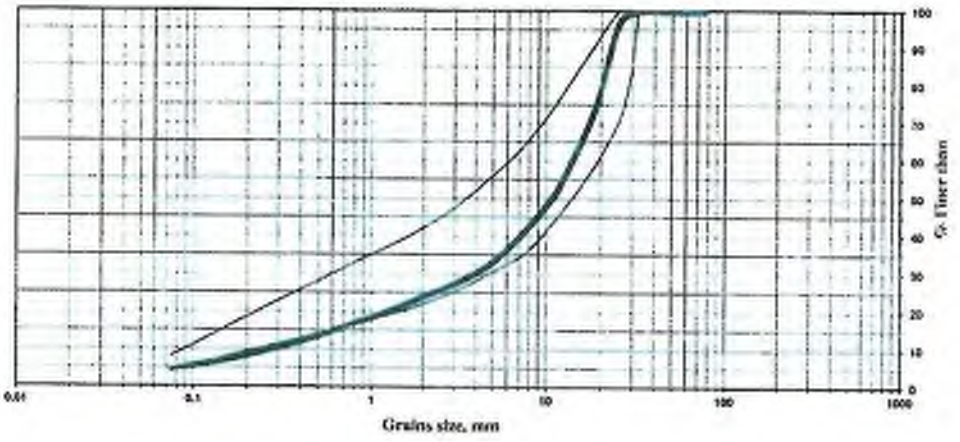
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-27 :D
Stone source:	Quarry 1, Milne Port	Sampled By:	Maxime Côté
Type of Use:		Sampling Date:	2019-08-27

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	97	78	58	47	33	24	20	15	11	7	4.5
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	67.5%	Cu = 50	D_{60} = 21.4	D_{10} = 0.6
Sand %	28.0%	Cc = 4	D_{30} = 13.8	D_{15} = 0.3
Silt/Clay %	4.5%		D_{50} = 10.4	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Olivier Jacques

Signature:

Date: 2019-08-29

Groupe SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190077
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-26

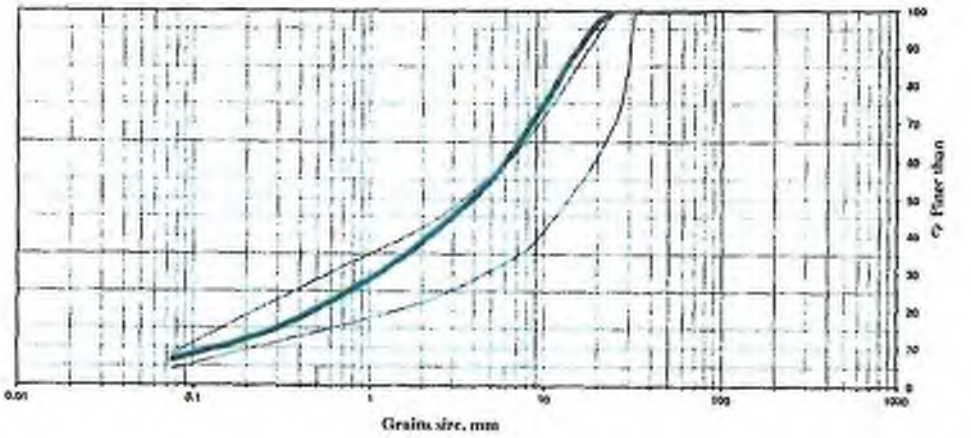
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile. C.S. O1
Comments:	32mm Minus		Production 2019-08-25_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Hugo Perron
Type of Use:		**Sampling Date:**	2019-08-26

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	100	96	85		54	39	31	23	16	11	6.8
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	45.9%	Cu = 43	D_{60} = 13.3	D_{30} = 0.3
Sand %	47.3%	Cc = 2	D_{50} = 5.8	D_{10} = 0.1
Silt/Clay %	6.8%		D_{40} = 3.8	

Notes: Gap for the following sieves: 9.5 mm

Prepared By: Hugo Perron

Verified By: Maxime Côté

Signature: _____ **Date:** 19-08-27

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC004A
PROJECT:	Expansion Project - Site Crushing Services	Contractor Project #:	11-837
		SAMPLE number:	MP-190080
SITE:	Baffinland, Milne Port	DATE:	2019-08-26

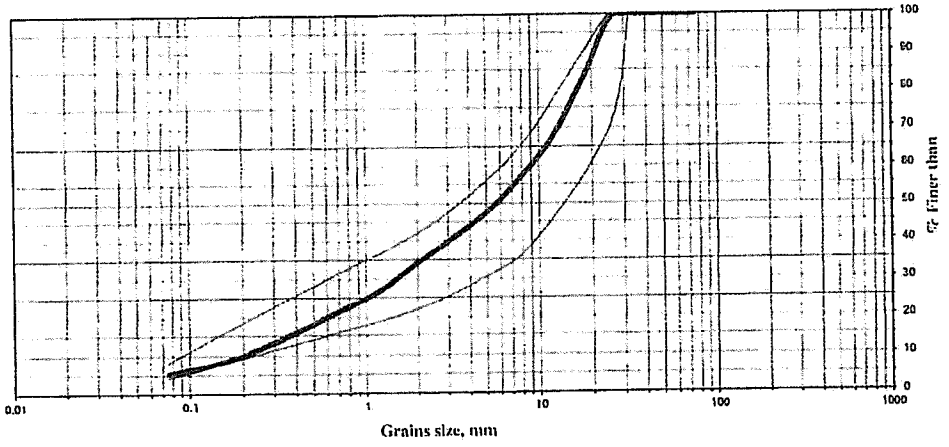
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-26_D
Stone source:	Quarry 1, Milne Port	Sampled By:	Hugo Perron
Type of Use:		Sampling Date:	2019-08-26

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	86	71	61	47	34	27	20	14	9	5.4
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	53.3%	Cu = 46	D_{85} = 18.6	D_{15} = 0.4
Sand %	41.3%	Cc = 1	D_{60} = 8.9	D_{10} = 0.2
Silt/Clay %	5.4%		D_{50} = 5.6	

Notes: Aggregate compliant with specs

Prepared By: Hugo Perron

Verified By: Maxime Côté

Signature:

Date: 19-08-27

Qualitative SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190070
SITE:	Ballinland, Milne Port	**DATE:**	2019-08-13

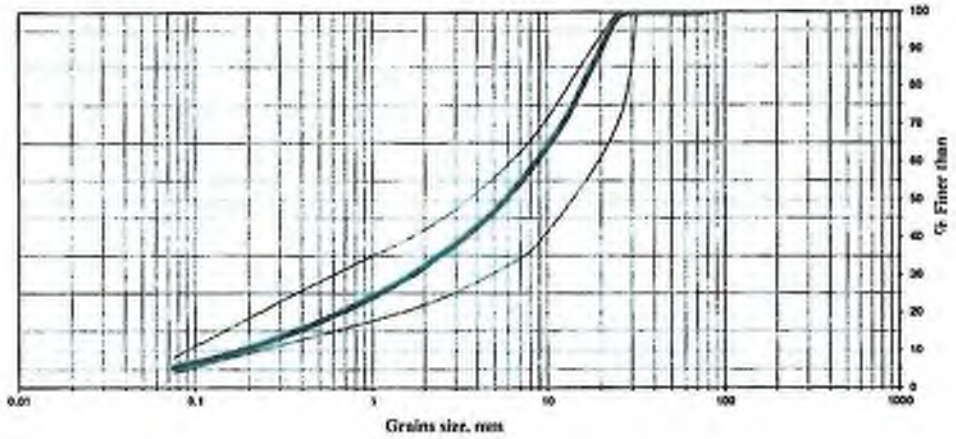
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-13_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Hugo Perron
Type of Use:		**Sampling Date:**	2019-08-13

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	88	73	63	46	33	26	19	14	9	5.8
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	53.8%	Cu = 48	D_{60} = 17.8	D_{10} = 0.4
Sand %	40.4%	Cc = 2	D_{30} = 8.4	D_{10} = 0.2
Silt/Clay %	5.8%		D_{50} = 5.6	

Notes: Aggregate compliant with specs

Prepared By: Hugo Perron

Verified By: Philippe Desgagné

Signature: [signature] **Date:** 2019/08/14

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190069
SITE:	Baffinland, Mine Port	**DATE:**	2019-08-12

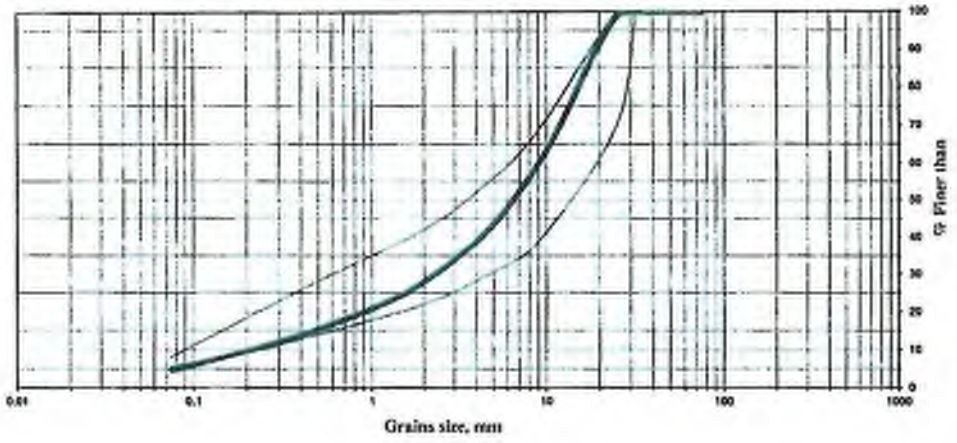
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-12_D
Stone source:	Quarry 1, Mine Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-12

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	90	74	62	42	28	22	17	12	8	5.1
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	57.6%	Cu = 43	D_{60} = 17.0	D_{30} = 0.5
Sand %	37.3%	Cc = 3	D_{50} = 8.9	D_{10} = 0.2
Silt/Clay %	5.1%		D_{10} = 6.2	

Notes: Aggregate compliant with specs

Prepared By: Hugo Perron

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/14

SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190068
SITE:	Baffinland, Mine Port	**DATE:**	2019-08-12

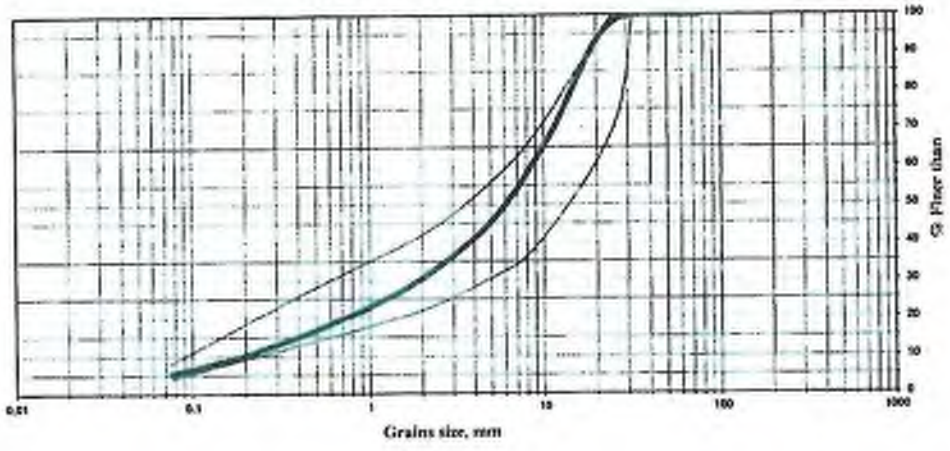
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08 11_N
Stone source:	Quarry 1, Mine Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-12

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	98	92	76	64	44	31	25	18	14	9	5.5
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	55.6%	Cu = 45	D_{60} = 16.2	D_{15} = 0.4
Sand %	38.9%	Cc = 2	D_{30} = 8.3	D_{10} = 0.2
Silt/Clay %	5.5%		D_{50} = 5.8	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/12

LC informatique
DH: 5 cm

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190067
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-11

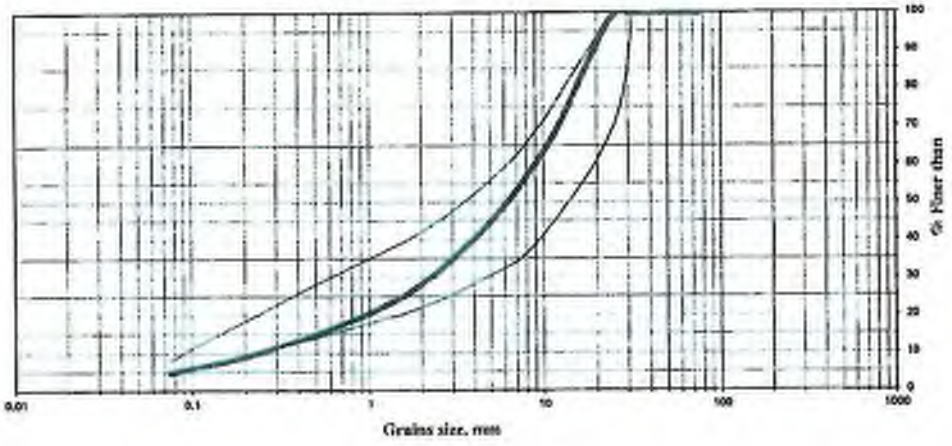
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-11_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-11

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	100	90	74	62	44	28	22	16	12	8	4.9
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	56.3%	Cu = 38	D_{60} = 17.1	D_{10} = 0.5
Sand %	38.8%	Cc = 2	D_{30} = 8.8	D_{15} = 0.2
Silt/Clay %	4.9%		D_{50} = 6.0	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/12

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190066
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-11

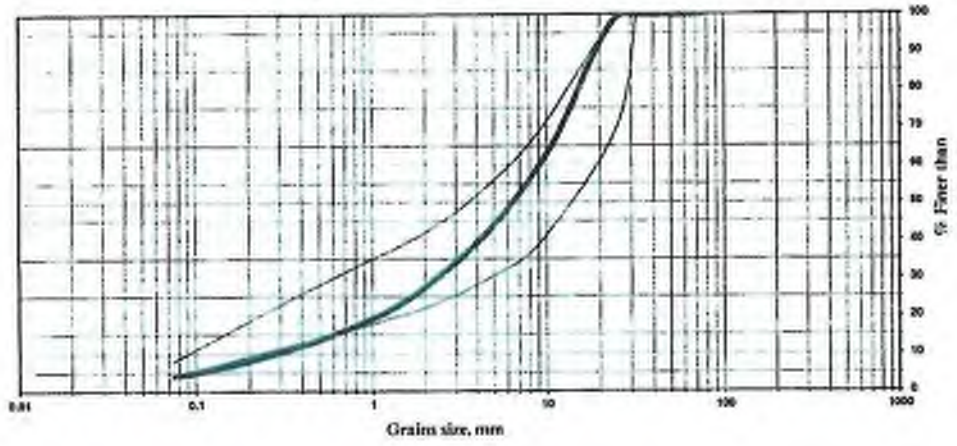
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-10_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-11

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	91	74	61	43	28	21	15	11	7	4.2
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	57.0%	Cu = 33	D_{60} = 16.9	D_{15} = 0.6
Sand %	38.8%	Cc = 2	D_{30} = 9.0	D_{10} = 0.3
Silt/Clay %	4.2%		D_{50} = 6.2	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/12

Qiniqsaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190065
SITE:	Baffinland, Mine Port	**DATE:**	2019-08-10

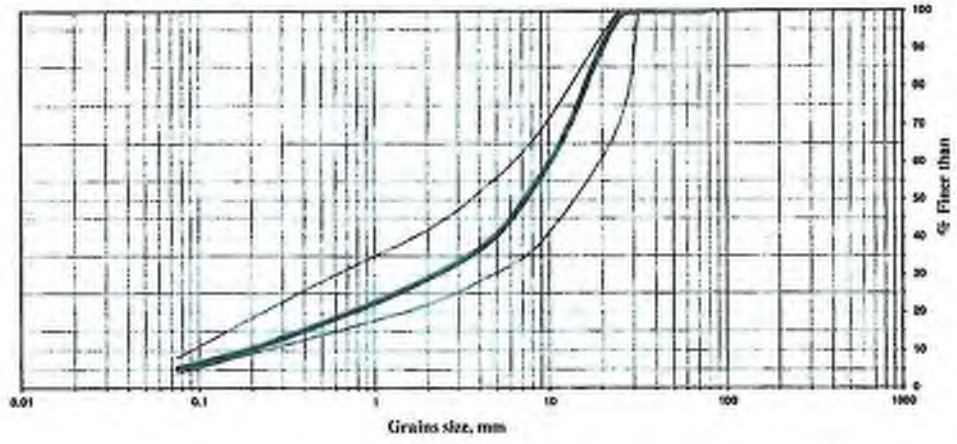
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-10_D
Stone source:	Quarry 1, Mine Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-10

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	88	71	58	40	29	24	19	14	9	5.4
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	60.2%	Cu = 54	D_{60} = 17.7	D_{10} = 0.4
Sand %	34.4%	Cc = 3	D_{30} = 9.9	D_{50} = 0.2
Silt/Clay %	5.4%		D_{90} = 6.9	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/12

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190064
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-09

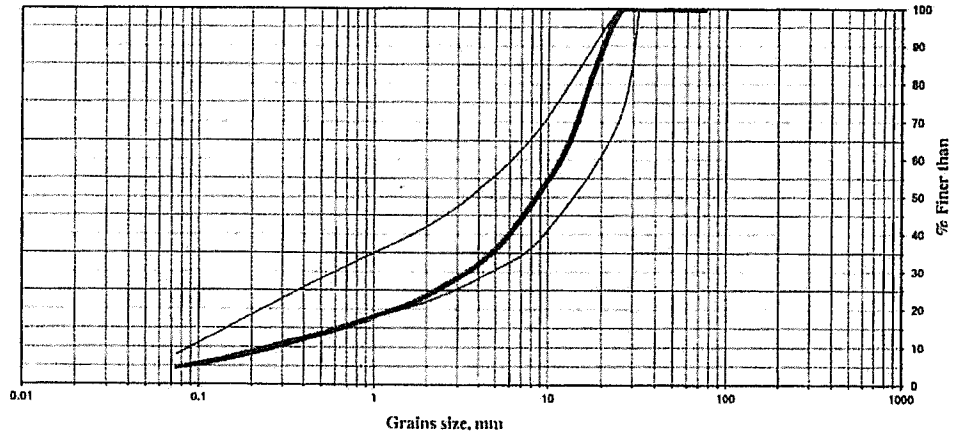
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-09_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-09

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	87	65	53	35	24	19	15	11	7	4.5
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	64.8%	Cu = 43	D_{85} = 18.5	D_{15} = 0.6
Sand %	30.8%	Cc = 3	D_{60} = 11.4	D_{10} = 0.3
Silt/Clay %	4.5%		D_{50} = 8.3	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/10

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190063
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-09

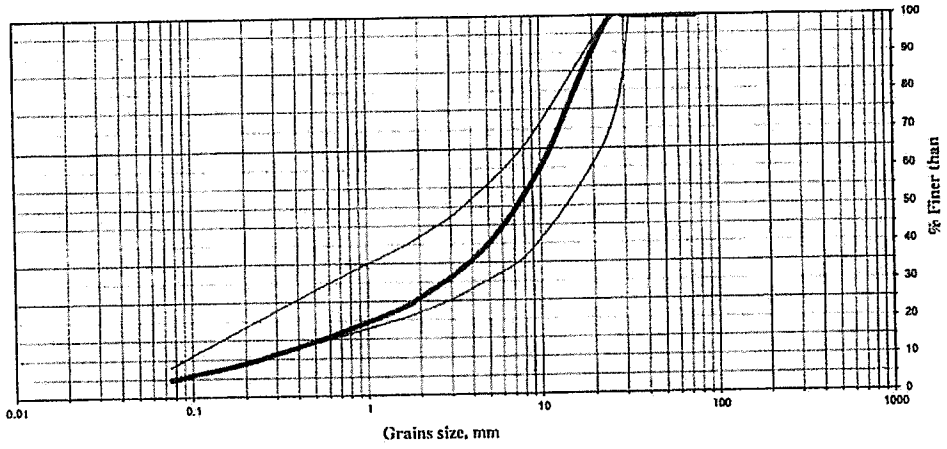
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-09_D
Stone source:	Quarry 1. Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-09

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	100	89	72	59	39	26	21	16	12	8	4.9
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve

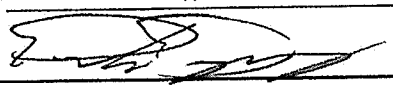


Gravel/Stone%	60.9%	Cu = 42	D_{85} = 17.4	D_{15} = 0.5
Sand %	34.2%	Cc = 3	D_{60} = 9.9	D_{10} = 0.2
Silt/Clay %	4.9%		D_{50} = 7.0	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature: 

Date: 2019/08/10

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190062
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-09

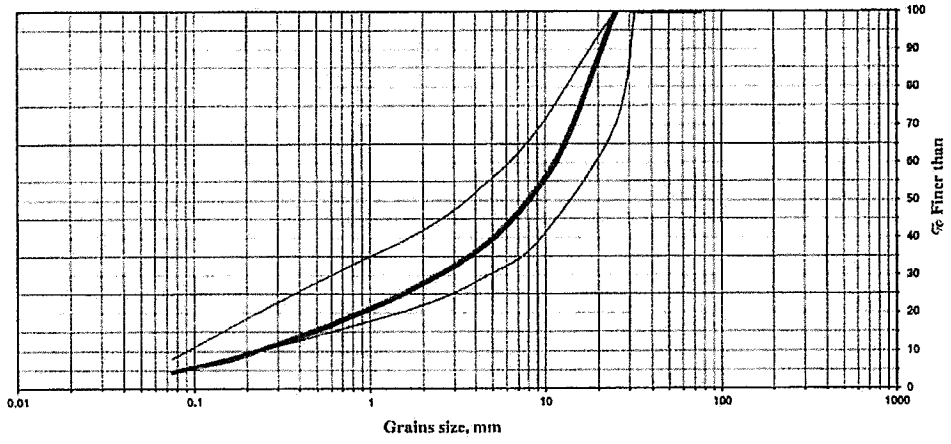
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-08_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-09

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	100	85	66	55	39	28	23	17	12	8	4.6
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	61.0%	Cu = 50	D_{85} = 19.0	D_{15} = 0.5
Sand %	34.4%	Cc = 2	D_{60} = 11.0	D_{10} = 0.2
Silt/Clay %	4.6%		D_{50} = 7.7	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/10

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190061
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-08

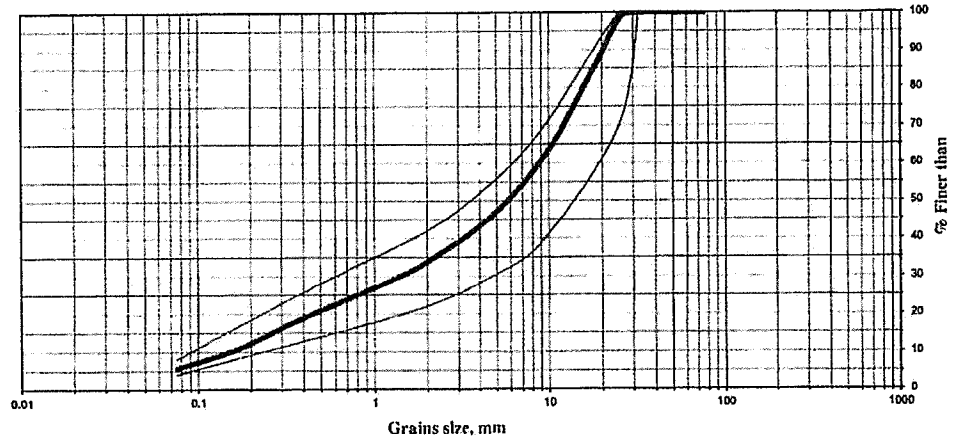
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-08_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-08

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	**100**	99	88	74	62	46	34	29	23	17	10	5.8
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	53.8%	Cu = 58	D_{85} = 17.8	D_{15} = 0.3
Sand %	40.5%	Cc = 1	D_{60} = 8.6	D_{10} = 0.1
Silt/Clay %	5.8%		D_{50} = 5.6	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/16

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190060
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-08

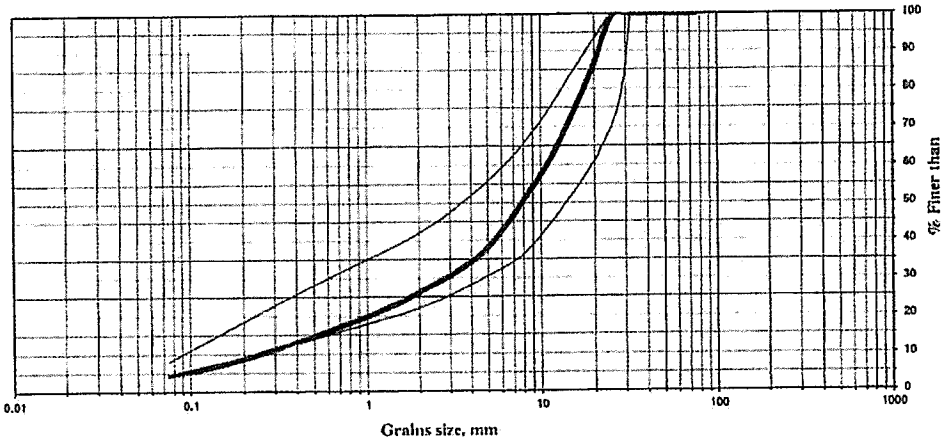
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2D19-08-07_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-08

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	84	68	56	37	26	21	16	12	8	4.4
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	62.7%	Cu = 44	D_{85} = 19.2	D_{15} = 0.5
Sand %	32.9%	Cc = 3	D_{60} = 10.6	D_{10} = 0.2
Silt/Clay %	4.4%		D_{50} = 7.6	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/16

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190059
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-07

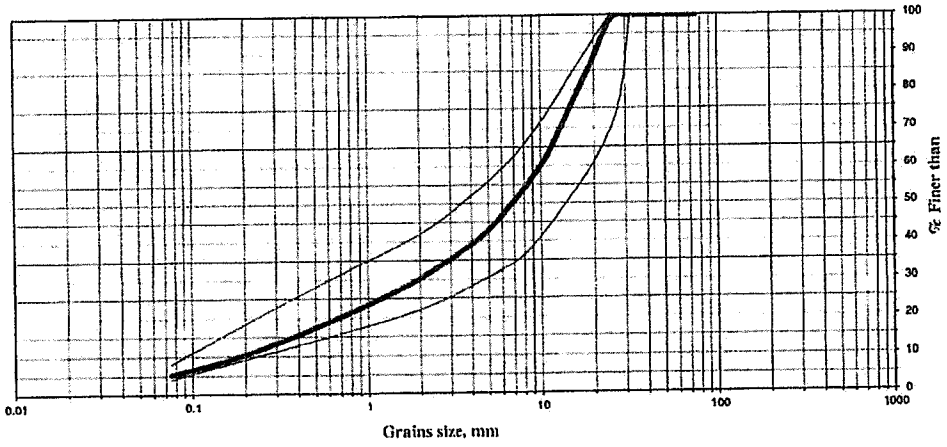
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-07_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-07

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	87	71	59	42	31	25	19	14	9	5.3
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	57.8%	Cu = 54	D_{85} = 18.2	D_{15} = 0.4
Sand %	36.8%	Cc = 2	D_{60} = 9.8	D_{10} = 0.2
Sill/Clay %	5.3%		D_{50} = 6.6	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/10

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190053
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-04

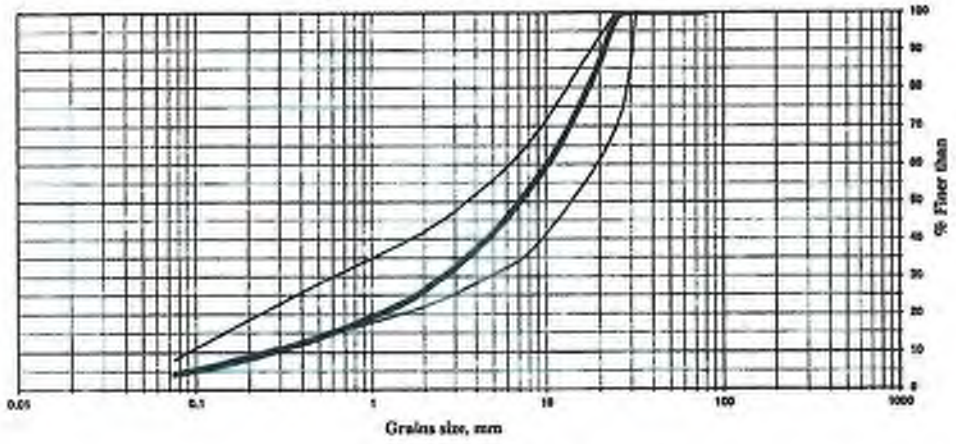
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-03_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-04

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	84	69	58	41	25	21	15	11	7	4.3
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	59.4%	Cu = 39	D_{60} = 19.3	D_{15} = 0.6
Sand %	36.4%	Cc = 2	D_{30} = 10.1	D_{10} = 0.3
Silt/Clay %	4.3%		D_{50} = 5.9	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: Alex Vézina **Date:** 2019-08-04

LC: Informatique
DH: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190052
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-04

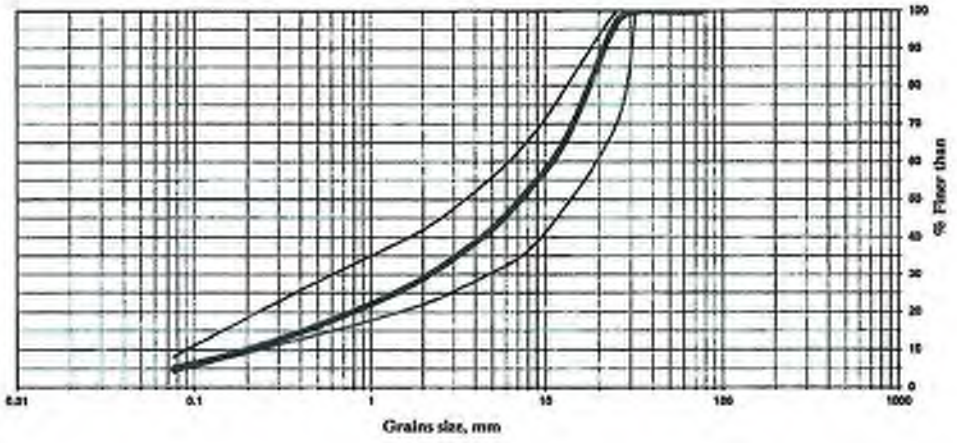
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-03_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-03

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	97	84	67	57	41	29	24	18	13	9	5.1
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	58.6%	Cu = 54	D_{60} = 19.4	D_{15} = 0.4
Sand %	36.3%	Cc = 2	D_{30} = 10.6	D_{10} = 0.2
Silt/Clay %	5.1%		D_{50} = 7.0	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: A. Vézina **Date:** 2019-08-04

LC Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC0004
		Contractor Project #:	11 837
PROJECT:	Expansion Project - Site Crushing Services	SAMPLE number:	MP-190031
SITE:	Bathurst, Mine Port	DATE:	2019-08-03

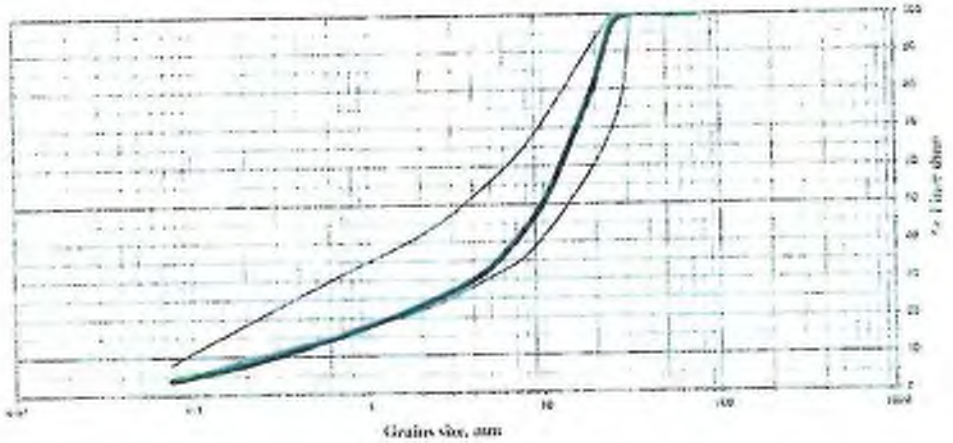
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile, C & Cr
Comments:	32mm Minus		Production 2019-08-02, C
Stone source:	Quarry 1, Mine Port	Sampled By:	Maxime Côté
Type of Use:		Sampling Date:	2019-08-02

Gradation (% finer than) (ASTM C136-06)

Sieves				25 mm	50 mm	11.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Gradation of Sample				100	100	100	97	80	63	49	32	23	19	14	10	7	3.8
Specification Values																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	67.7%	C_u = 43	D_{60} = 20.6	D_{10} = 0.6
Sand %	28.4%	C_c = 4	D_{30} = 12.4	D_{15} = 0.5
Silt/Clay %	3.9%		D_{15} = 5.6	

Notes: Gap for the following sieves: 0.6, 0.075 mm

Prepared By: Maxime Côté

Verified By: Alexandre Vezina

Signature: Alex Vezina

Date: 2019-08-03

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH - BIM	Client Project #:	CC004A
PROJECT:	Expansion Project - Site Crushing Services	Contractor Project #:	11-857
		SAMPLE number:	MP 190/60
SITE:	Baffinland, Mine Pad	DATE:	2019-08-02

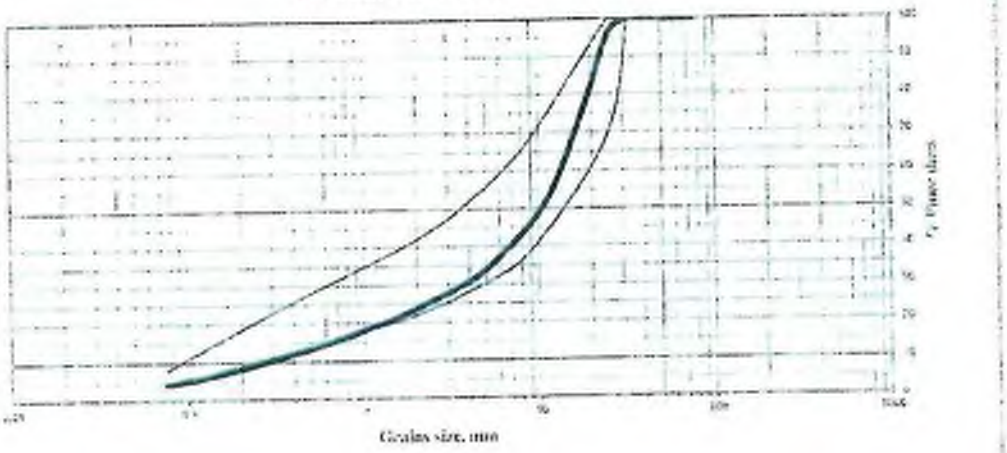
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile C.S. 01
Contractor:	Strait Minerals		Production 2019-08-02 0
Stone source:	Quarry 1, Mine Pad	Sampled By:	Maxime Côté
Type of Use:		Sampling Date:	2019-08-02

Gradation (% Finer than) (ASTM C136-06)

Sieve			75 mm	50 mm	37.5 mm	25 mm	19 mm	12.5 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Acceptance Results			100	100	102	96	76	60	48	33	24	18	35	11	7	4.5
Gradation Band																
Spec	max					100	76			60	39	32		16		4.0
	min					100	100			70	55	42		30		8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Crush/Stone%	66.6%	C_U = 69	C_C = 2.0	D_{10} = 0.5
Sand %	29.0%	D_{30} = 3	D_{60} = 15.5	D_{50} = 5
Silt/Clay %	4.3%		D_{90} = 19.2	

Notes: Aggregate compliant with specs.

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: Alex Vézina Date: 2019-08-03

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CCGMA
PROJECT:	Expansion Project - Site Crushing Services	Contractor Project #:	11-337
		SAMPLE number:	MP 190049
SITE:	Baffinland, Mine Port	DATE:	2019-08-02

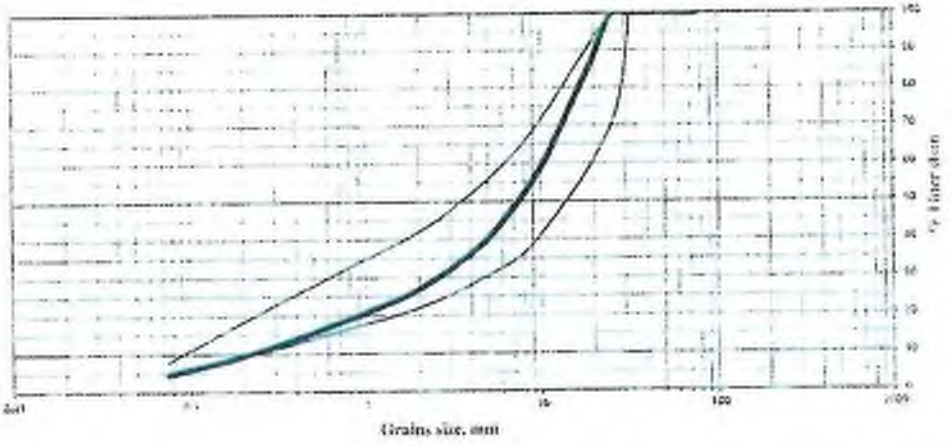
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile C.S. Q1
Description:	32mm Minus		Production 2019-08-01_1
Stock source:	Quarry 1, Mine Port	Sampled By:	Maxime Côté
Type of Test:		Sampling Date:	2019-08-02

Gradation (% Finer than) (ASTM C136-06)

Sieves			35 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.36 mm	1.18 mm	0.6 mm	0.3 mm	0.15 mm	0.075 mm
Cumulative Results			100	100	100	100	86	71	57	39	27	22	17	12	8	4.8
Individual Specs																
Specs	min.					100	70			40	30	22		15			5.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel-Stone%	60.7%	Cu = 47	D_{10} = 1.64	D_{30} = 20
Sand %	34.5%	Cc = 3	D_{60} = 76.7	D_{50} = 49
Silt/Clay %	4.8%		D_{15} = 7.1	

Notes: Aggregate conforming with specs

Prepared By: Maxime Côté

Verified By: Alexandre Villeneuve

Signature: Alex Villeneuve Date: 2019-08-03

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC0KHA
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	SAMPLE number:	MP-100048
SITE:	Baffinland, Mine Port	DATE:	2019-08-02

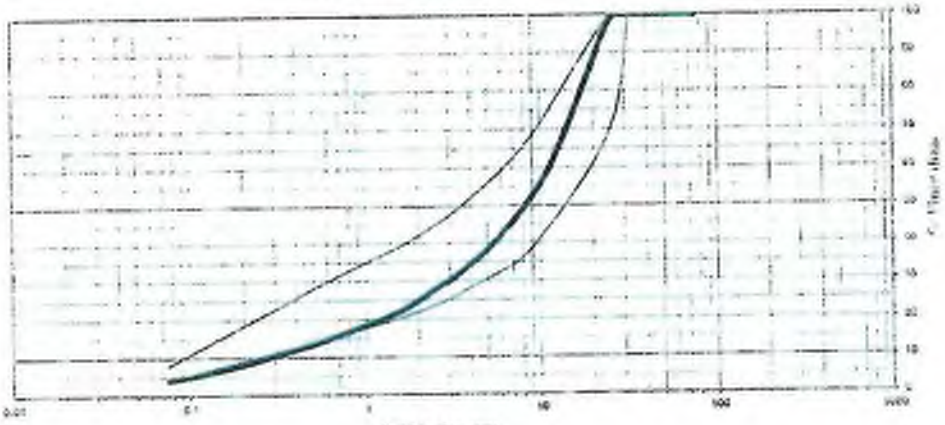
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile, C.S. C1
Comments:	32mm Minus		Production 2019-08-01 D
Stock source:	Quarry 1, Mine Port	Sampled By:	Maxime Côté
Type of Use:		Sampling Date:	2019-08-01

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	12.5 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulative Results				100	100	100	99	85	67	54	37	25	20	15	11	7	4.0
Individual Results																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material: Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	62.7%	C_u = 40	D_{10} = 19.3	D_{15} = 0.4
Sand %	33.3%	C_c = 3	D_{30} = 11.6	D_{60} = 0.4
Silt/Clay %	4.0%		D_{60} = 8.6	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: Alex Vézina

Date: 2019-08-03

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	25-Jul-19	Report Number:	18SJ0001	
File Number:		Inspector:	B. Mullins	
Client:	Hatch	Sampled By:	B. Mullins	
Project:	Baffinland	Sample Date:	25-Jul-19	1:30
Location:	Crusher Pad	Copy To:		
Contractor:	Nuna			

TEST RESULTS

SIEVE SIZE (mm)				32	25	19	13.2	9.5	4.75	2.00	1.18	0.600	0.315	0.160	0.075
MAX % PASS SPEC				100.0	100.0			70.0	55.0	42.0		30.0			8.0
MIN % PASS SPEC				100.0	70.0			40.0	30.0	22.0		15.0			4.0
% PASS RESULTS				100.0	97.6	79.1	64.8	54.8	39.8	28.3	22.6	16.7	11.7	7.5	4.2

MATERIAL TYPE

Type 5

SIEVE METHOD

Washed

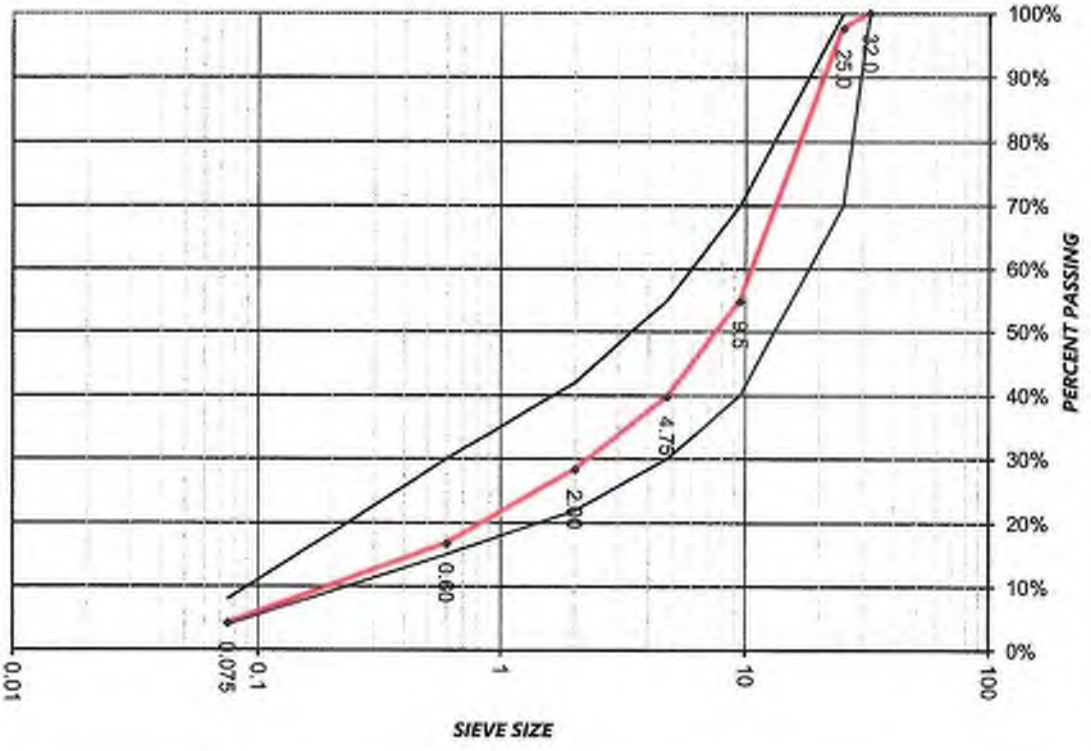
% FRACTURE

% MOISTURE

1.3%

GRADATIONS

GRAVEL	60.2%
SAND	35.6%
SILT/CLAY	4.2%



COMMENTS

Material meets specifications for the project.	**Reviewed By:**
	Matt Tabor, Materials Lead

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

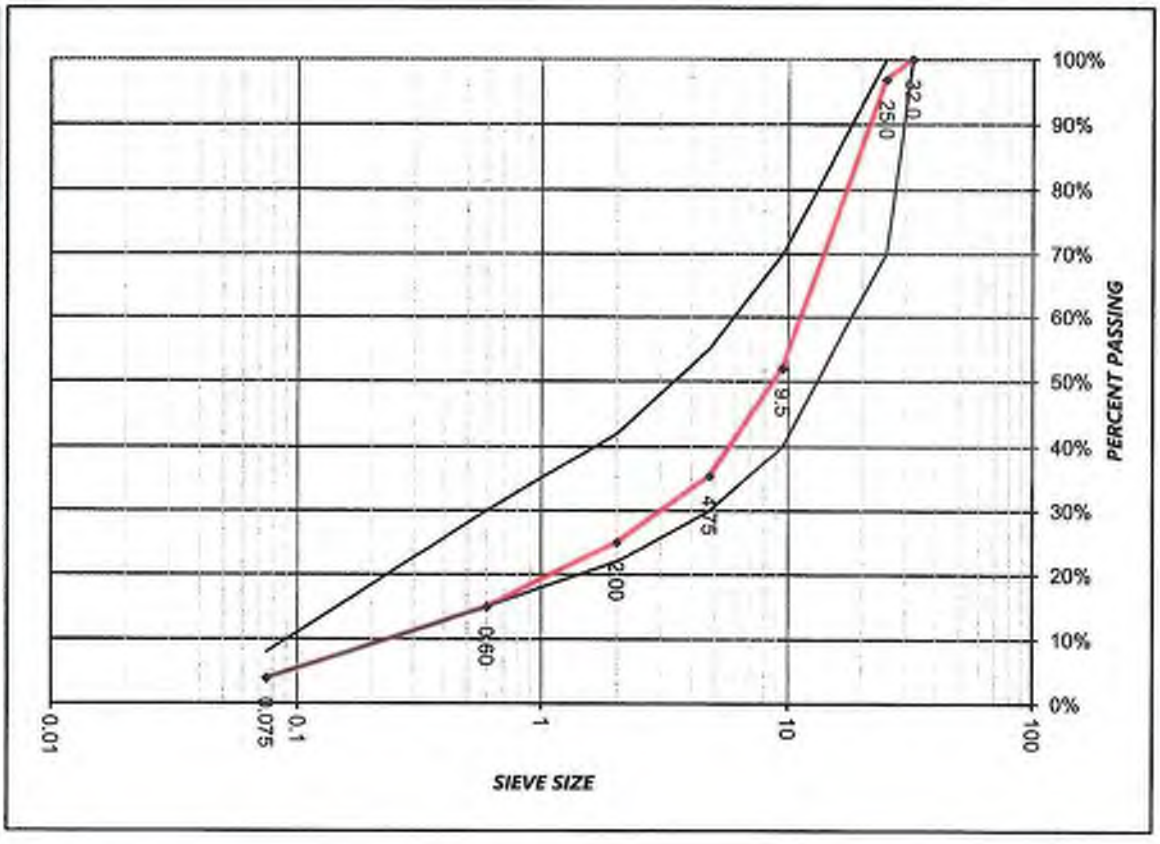
Test Date:	24-Jul-19	Report Number:	18SJ0001	
File Number:		Inspector:	B. Mullins	
Client:	Hatch	Sampled By:	B. Mullins	
Project:	Baffinland	Sample Date:	24-Jul-19	20:40
Location:	MOD Road STA: 0+465	Copy To:		
Contractor:	Nuna			

TEST RESULTS

SIEVE SIZE (mm)				32	25	19	13.2	9.5	4.75	2.00	1.18	0.600	0.315	0.160	0.075
MAX % PASS SPEC				100.0	100.0			70.0	55.0	42.0		30.0			8.0
MIN % PASS SPEC				100.0	70.0			40.0	30.0	22.0		15.0			4.0
% PASS RESULTS				100.0	96.8	81.0	63.7	52.0	35.4	25.0	20.1	15.0	10.7	6.8	3.9

MATERIAL TYPE
Type 5
SIEVE METHOD
Washed
% FRACTURE
% MOISTURE
0.9%
GRADATIONS

GRAVEL	64.6%
SAND	31.5%
SILT/CLAY	3.9%



COMMENTS

Material slight outside specification on 0.075	**Reviewed By:**
	Matthew Tabor, Materials Lead

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190037
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-21

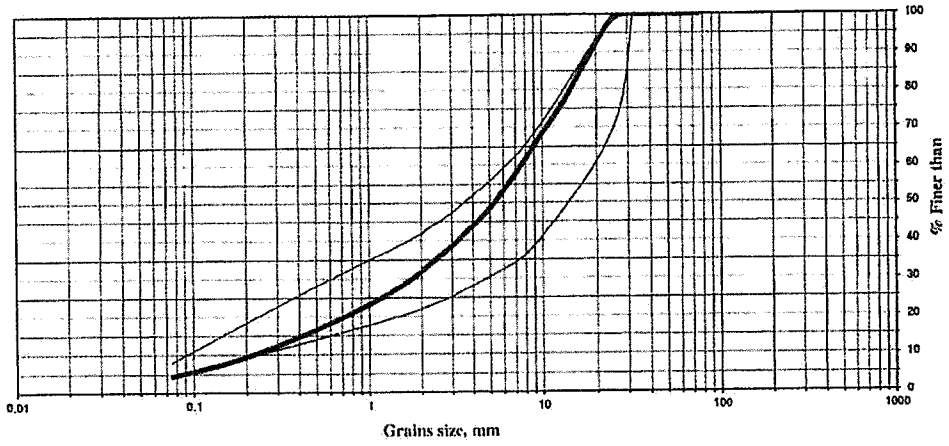
Type of Material:	Type 5 Fill	**Sampling location:**	Twin screen Conveyor, C.S, Q1
Comments:	32mm Minus		Production 2019-07-20_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-21

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	91	77	67	47	32	25	18	13	8	4.3
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	52.5%	Cu = 34	D_{85} = 16.3	D_{15} = 0.4
Sand %	43.2%	Cc = 2	D_{60} = 7.4	D_{10} = 0.2
Silt/Clay %	4.3%		D_{50} = 5.2	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By:

Signature: **Date:** 2019/07/21

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190035
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-20

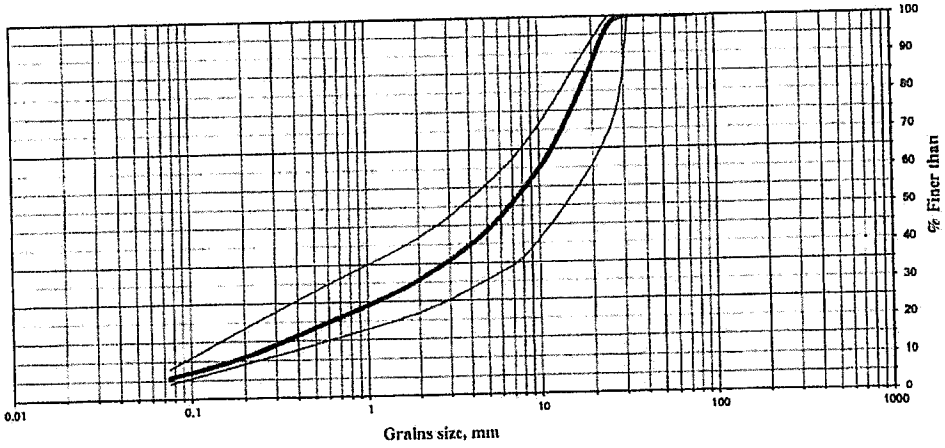
Type of Material:	Type 5 Fill	**Sampling location:**	Scalpe Conveyor, C.S, Q1
Comments:	32mm Minus		Production 2019-07-19_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-20

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	98	85	69	59	43	31	26	20	14	10	5.7
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	57.4%	Cu = 58	D_{85} = 19.0	D_{15} = 0.3
Sand %	36.9%	Cc = 2	D_{60} = 9.9	D_{10} = 0.2
Silt/Clay %	5.7%		D_{50} = 6.5	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/07/20

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190036
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-20

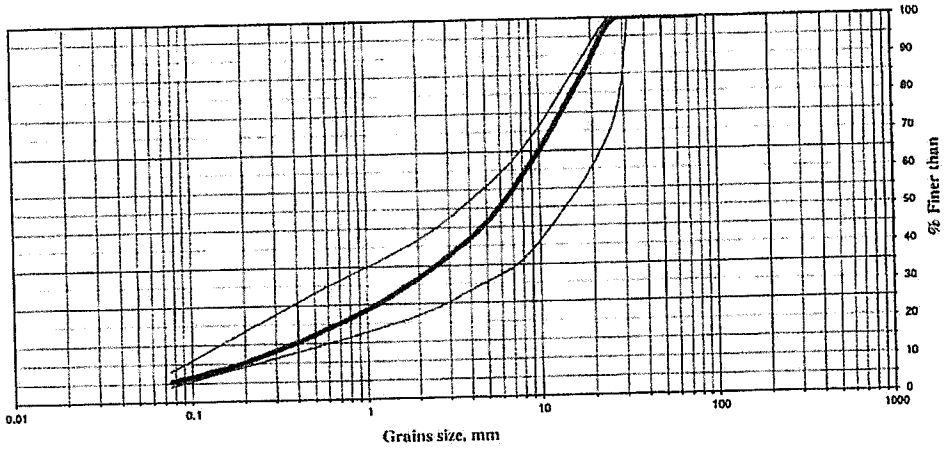
Type of Material:	Type 5 Fill	**Sampling location:**	Twin screen Conveyor, C.S, Q1
Comments:	32mm Minus		Production 2019-07-20_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-20

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	98	88	75	64	45	32	25	19	14	9	5.3
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	54.7%	Cu = 44	D_{85} = 17.6	D_{15} = 0.4
Sand %	40.0%	Cc = 2	D_{60} = 8.2	D_{10} = 0.2
Silt/Clay %	5.3%		D_{50} = 5.7	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By:

Signature: [signature]

Date: 2019/07/21

Q-SANA

Soil & Aggregates Analysis

CLIENT:	HATCH / BIM	**HATCH Project # :**	11-837
PROJET:	Expansion Project - Site Crushing Services	**Q-SANA Project # :**	CC004A
		SAMPLE Number:	MP190012
SITE:	Baffinland, Milne Port	**DATE:**	2019-06-02

Type of Material	Type 5 Fill	**Sampling location:**	Type 5 Stockpile
Comments	32mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-02

Gradation (% Finer than) (ASTM C136-06)

Seives				75 mm	50 mm	32 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.50 mm	1.25 mm	0.63 mm	0.315 mm	0.16 mm	0.08 mm
Cumulatives Results				100	100	100	94	77	58	47	33	25	19	15	11	7	4.5
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

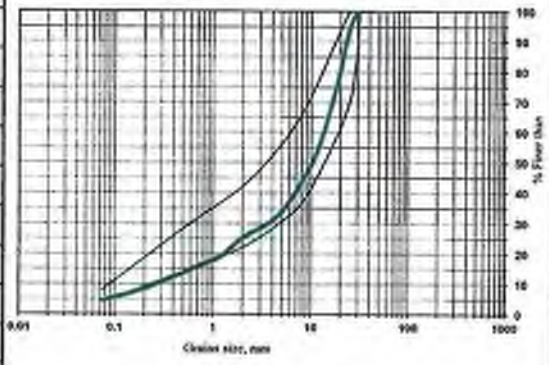
Other Standard Tests	Results	Specifications min.	Specifications max.

Proctor Essay (NQ 2501-255)	Résultats
Maximum Dry Density	(kg/m³)
Optimal Moisture countain	(%)

Proctor at 0% of stone : kg/m3
Correction Factor:

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel %	67.2%	Cu = 50	D_{60} = 21.7	D_{15} = 0.6
Sand %	28.3%	Cc = 3	D_{30} = 13.6	D_{10} = 0.3
Silt/Clay %	4.5%		D_{50} = 10.3	

Notes:	Material within specifications		
Prepared By:	Hugo Perron, Tech	Verified By:	Christopher Gilbert, P. Eng.

Qikiqtaaluk SANA

Soil & Aggregates Analysis

CLIENT:	HATCH / BIM	**HATCH Project # :**	11-837
PROJET:	Expansion Project - Site Crushing Services	**Q-SANA Project # :**	CC004A
		SAMPLE Number:	MP190008
SITE:	Baffinland, Mine Port	**DATE:**	2019-06-01

Type of Material	Type 5 Fill	**Sampling location:**	Type 5 Stockpile
Comments	32mm Minus		
Stone source	Quarry 1, Mine Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-05-31

Gradation (% Finer than) (ASTM C136-06)

Seives				75 mm	50 mm	32 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.50 mm	1.25 mm	0.63 mm	0.315 mm	0.16 mm	0.08 mm
Cumulatives Results				100	100	100	96	81	64	52	36	27	20	15	11	8	4.7
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

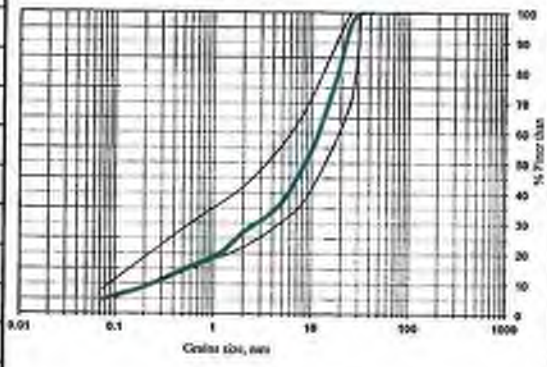
Other Standard Tests	Results	Specifications min.	Specifications max.

Proctor Essay (NQ 2501-255)	Résultats
Maximum Dry Density	(kg/m³)
Optimal Moisture content	(%)

Proctor at 0% of stone : kg/m3
Correction Factor:

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel %	63.9%	Cu = 48	D_{95} = 20.6	D_{15} = 0.6
Sand %	31.4%	Cc = 3	D_{60} = 11.7	D_{10} = 0.2
Silt/Clay %	4.7%		D_{50} = 8.6	

Notes: Material within specifications

Prepared By: Hugo Perron, Tech

Verified By: Christopher Gilbert, P. Eng.

Qikiqtaaluk SANA

Soil & Aggregates Analysis

CLIENT:	HATCH / BIM	**HATCH Project # :**	11-837
PROJET:	Expansion Project - Site Crushing Services	**Q-SANA Project # :**	CC004A
		SAMPLE Number:	MP190003
SITE:	Baffinland, Milne Port	**DATE:**	2019-05-30

Type of Material	Type 5 Fill	**Sampling location:**	Type 5 Stockpile
Comments	32mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-05-30

Gradation (% Finer than) (ASTM C136-06)

Seives				75 mm	50 mm	31,5 mm	28 mm	20 mm	14 mm	10 mm	5 mm	2,50 mm	1,25 mm	0,63 mm	0,315 mm	0,16 mm	0,08 mm
Cumulatives Results				100	100	100	100	80	65	55	41	31	24	18	13	9	5,4
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4,0
	max.					100	100			70	55	42		30			8,0

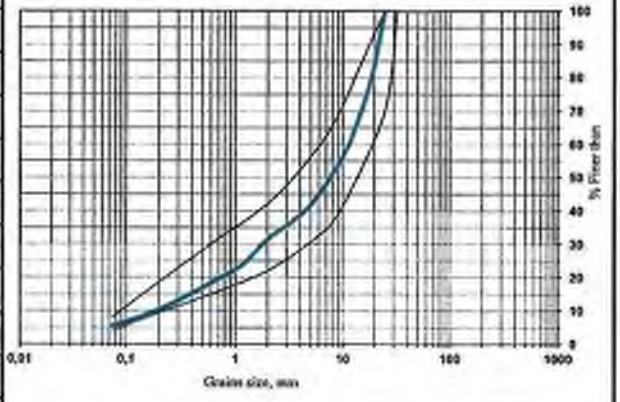
Other Standard Tests	Results	Specifications min.	Specifications max.

Proctor Essay (NQ 2501-255)	Résultats
Maximum Dry Density	(kg/m³)
Optimal Moisture countain	(%)

Proctor at 0% of stone : kg/m3
Correction Factor:

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel %	59,3%	Cu = 59	D_{85} = 20,3	D_{15} = 0,4
Sand %	35,2%	Cc = 2	D_{60} = 11,3	D_{10} = 0,2
Silt/Clay %	5,4%		D_{50} = 7,5	

Notes: Material within specifications

Prepared By: Hugo Perron, Tech

Verified By: Christopher Gilbert, P. Eng.

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP190027
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-14

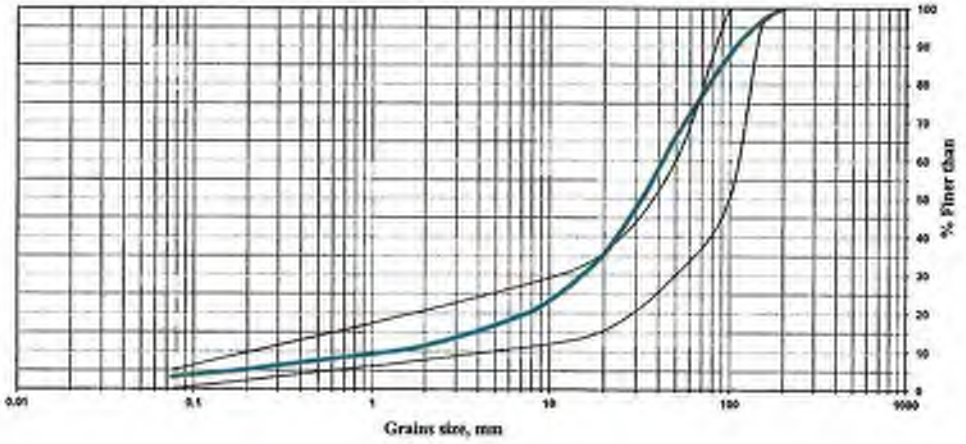
Type of Material:	Type 8 Fill	**Sampling location:**	Conveyor C.S, Q1
Comments:	Jaw Run - 150mm Minus		Stockpile Type C.S
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-13

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	96	88	66	49	34	22	16	11	10	8	6	5	3.2
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	83.6%	Cu = 33	D_{60} = 91.6	D_{10} = 2.7
Sand %	13.2%	Cc = 4	D_{30} = 42.6	D_{50} = 1.3
Silt/Clay %	3.2%		D_{10} = 32.5	

Notes: Gap for the following sieves: 50 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N. Côté **Date:** 2019-07-15

LC: Informatique
DV: 5 ans

Oikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190026
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-12

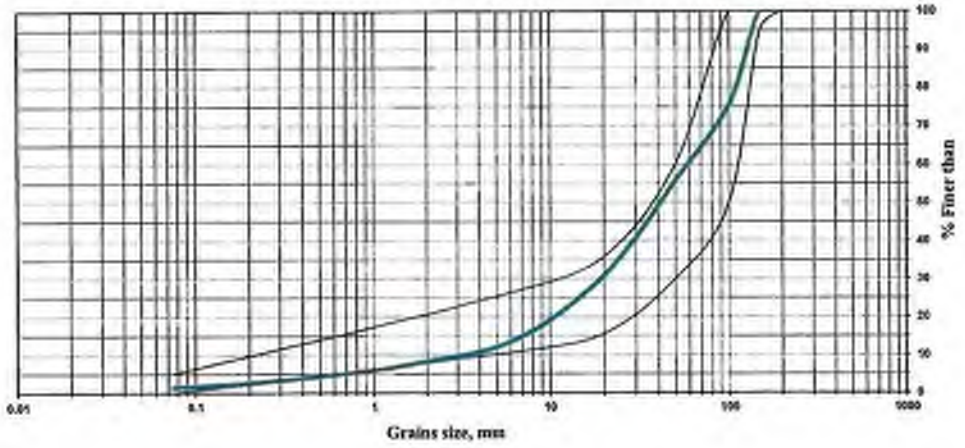
Type of Material:	Type 8 Fill	**Sampling location:**	Conveyor F.T. Q1
Comments:	Jaw Run - 150mm Minus		Stockpile Type 8 #3
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-12

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	75	56	42	30	18	12	8	6	5	3	2	1.4
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	88.4%	Cu = 18	D_{85} = #DIV/0!	D_{15} = 6.8
Sand %	10.2%	Cc = 2	D_{60} = 58.5	D_{10} = 3.2
Silt/Clay %	1.4%		D_{50} = 41.4	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N. Côté **Date:** 2019-07-15

(C) Informatique
DVI: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190025
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-10

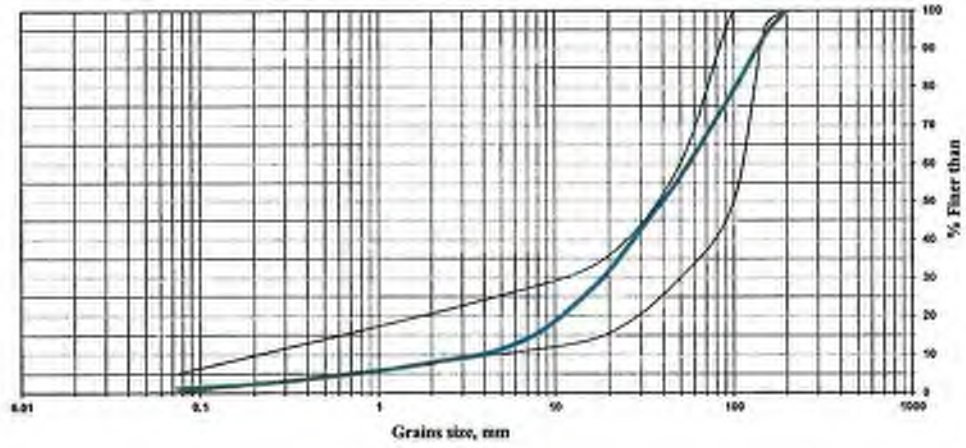
Type of Material:	Type 8 Fill	**Sampling location:**	CS Type 8 Stokpile
Comments:	Jaw Run - 150mm Minus		
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-09

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	93	79	56	44	30	18	11	8	6	5	3	2	1.2
Individual Result																	
Spec.	min.			100	95	80	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	89.0%	Ce = 15	D_{60} = #DIV/0!	D_{15} = 7.2
Sand %	9.8%	Cc = 2	D_{30} = 55.9	D_{10} = 3.6
Silt/Clay %	1.2%		D_{50} = 39.5	

Notes: Gap for the following sieves: 150 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N. Côté **Date:** 2019-07-15

LC Informatique
DV) 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190024
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-09

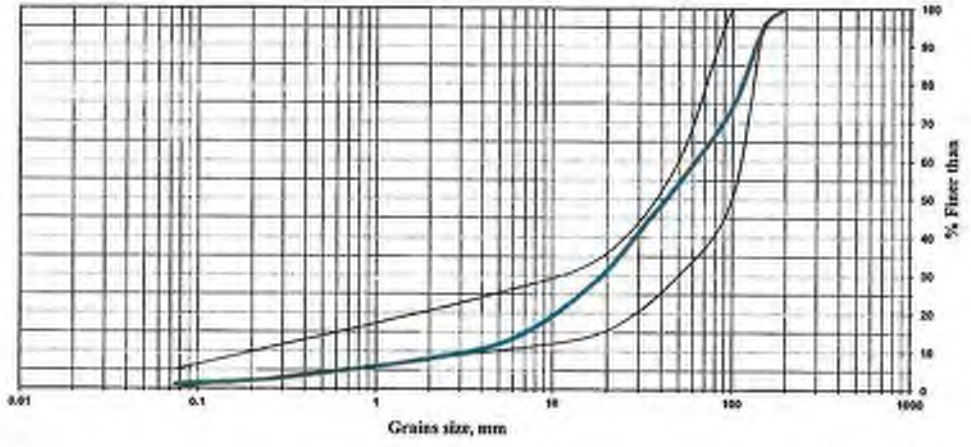
Type of Material:	Type 8 Fill	**Sampling location:**	FT Type 8 Stokcpile
Comments:	Jaw Run - 150mm Minus		
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-08

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	88	74	54	43	30	18	11	8	6	5	3	2	1.2
Individual Result																	
Spec.	min.			100	95	80	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	88.6%	Cu = 18	D_{85} = #DIV/0!	D_{15} = 6.8
Sand %	10.2%	Cc = 2	D_{50} = 61.8	D_{10} = 3.4
Silt/Clay %	1.2%		D_{30} = 42.7	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Nicolas Tremlay

Signature: N. Côté **Date:** 2019-07-15

Groupe Conseil SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190021
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-05

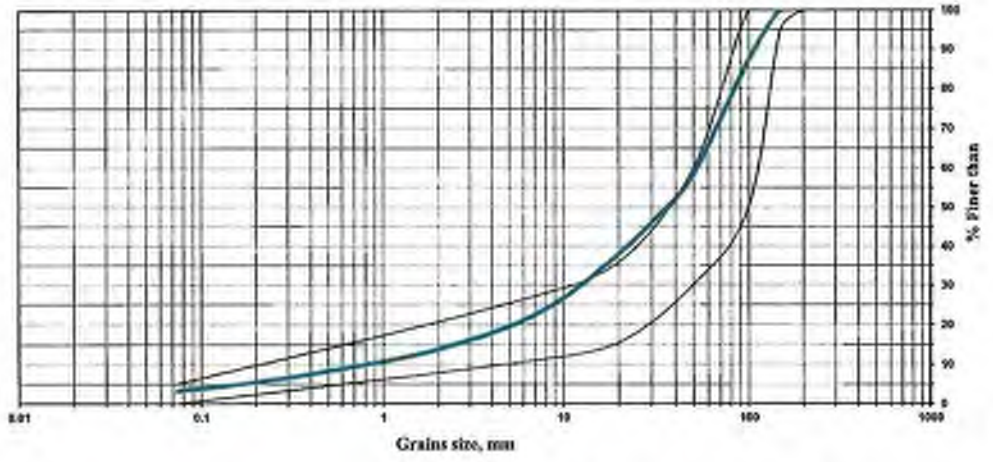
Type of Material	Type 8 Fill	**Sampling location:**	F.T Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Maxime Côté
Type of Use		**Sampling Date**	2019-07-04

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	87	58	47	37	26	19	14	11	9	7	5	3.2
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	81.0%	Cu = 62	D_{60} = 95.4	D_{10} = 2.5
Sand %	15.8%	Cc = 3	D_{30} = 52.2	D_{50} = 0.8
Silt/Clay %	3.2%		D_{50} = 35.7	

Notes: Gap for the following sieves: 19 mm

Prepared By: Maxime Côté
Verified By: Nicolas Tremblay
Signature: N Côté **Date:** 2019-07-15

LC : Intensadque
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
		Q-Sana Project #:	11-837
PROJET:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190019
SITE:	Baffinland, Milne Port	**DATE:**	19-06-29

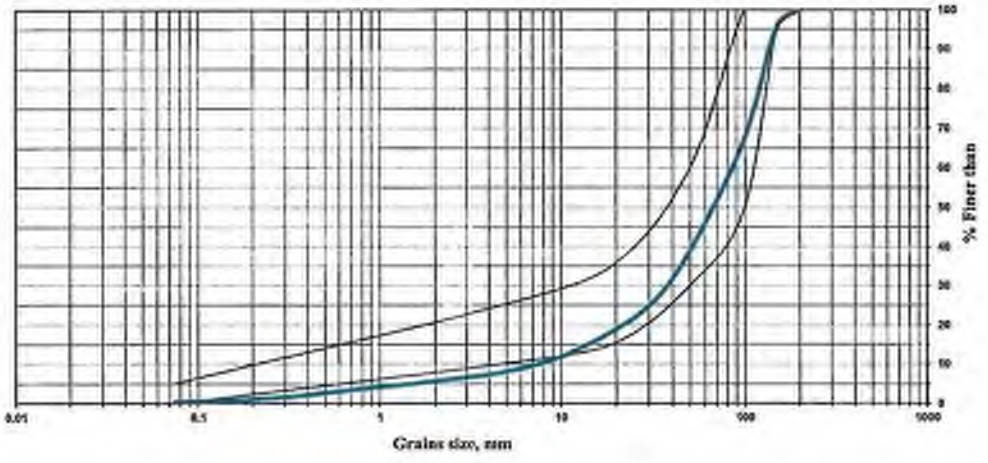
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 C.S. Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-29

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	96	67	39	26	18	11	[illegible]	6	4	3	2	1	0.4
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	92.2%	Cu = 11	D_{60} = #DIV/0!	D_{15} = 13.8
Sand %	7.4%	Cc = 2	D_{50} = 83.6	D_{10} = 7.4
Silt/Clay %	0.4%		D_{30} = 65.7	

Notes: Gap for the following sieves: 4.75 mm

Prepared By: Hugo Perron, tech

Verified By: Maxime Côté

Signature: [signature]

Date: 2019-07-15

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190014
SITE:	Baffinland, Milne Port	**DATE:**	19-06-27

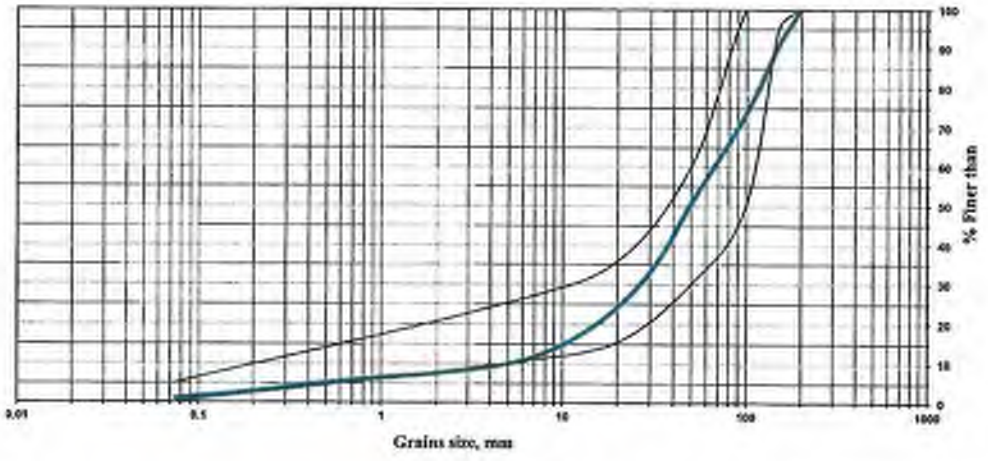
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 F.T. Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-27

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	91	73	50	35	23	14	10	7	7	5	4	2	1.0
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	90.4%	Cu = 13	D_{85} = #DIV/0!	D_{15} = 10.2
Sand %	8.6%	Cc = 2	D_{60} = 67.0	D_{10} = 5.0
Silt/Clay %	1.0%		D_{50} = 49.6	

Notes: Gap for the following sieves: 150 mm

Prepared By: Hugo Perron, tech

Verified By: Maxime Côté

Signature:

Date: 2019-07-02

Qaqqasiuk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	INT-190017
SITE:	Baffinland, Milne Port	**DATE:**	19-06-25

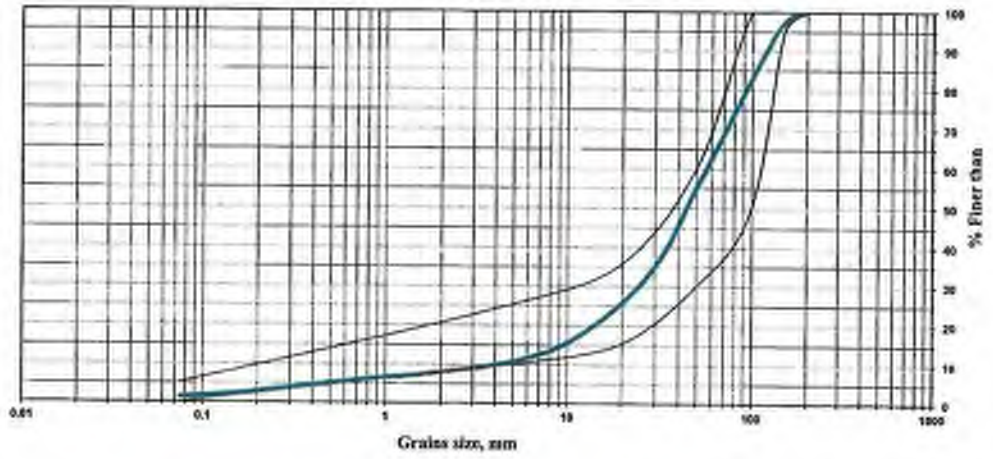
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 C.S. Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-25

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	97	83	55	37	25	15	11	8	7	5	4	2	1.3
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	89.4%	Cu = 15	D_{60} = #DIV/0!	D_{10} = 9.6
Sand %	9.2%	Cc = 3	D_{30} = 57.1	D_{50} = 3.9
Silt/Clay %	1.3%		D_{90} = 44.5	

Notes: Aggregate compliant with specs

Prepared By: Hugo Perron, tech

Verified By: Hugo Perron, tech

Signature:

Date: 2019-06-26

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190016
SITE:	Baffinland, Milne Port	**DATE:**	19-06-22

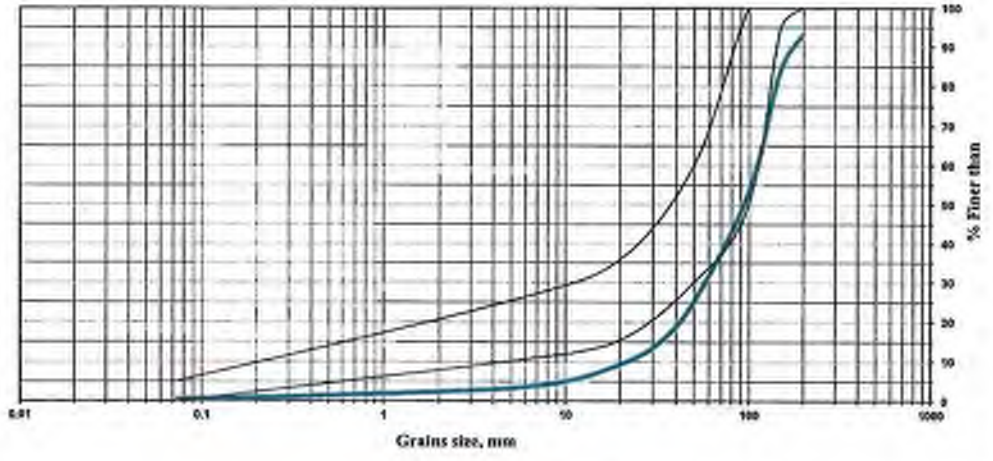
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-22

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				93	84	53	26	14	8	5	3	2	2	1	1	1	0.5
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	96.9%	Cu =	#DIV/0!	D_{60} = #DIV/0!	D_{15} = 32.9
Sand %	2.6%	Cc =	#DIV/0!	D_{30} = #DIV/0!	D_{10} = 21.4
Silt/Clay %	0.5%			D_{50} = 93.1	

Notes: Gap for the following sieves: 200, 150, 50, 19, 4.75 mm

Prepared By: Hugo Perron

Verified By: Maxime Côté

Signature:

Date: 2019-07-15

Qualigroupe SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190015
SITE:	Baffinland, Milne Port	**DATE:**	19-06-19

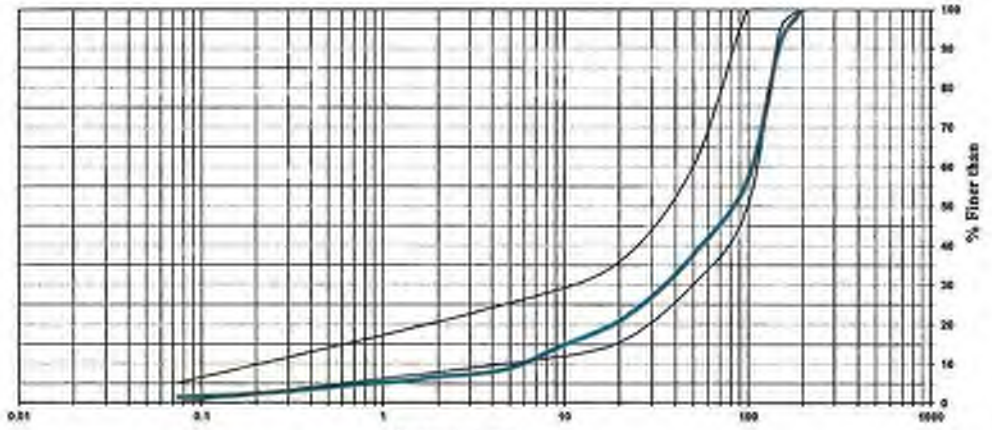
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-19

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100		56	38	28	20	14		7	5	4	3	2	1.4
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	91.6%	Cu = #DIV/0!	D_{85} = #DIV/0!	D_{15} = 10.4
Sand %	7.0%	Cc = #DIV/0!	D_{60} = #DIV/0!	D_{10} = 5.7
Silt/Clay %	1.4%		D_{50} = 79.0	

Notes: Gap for the following sieves: 150, 4.75 mm

Prepared By: Hugo Perron

Verified By: Maxime Côté

Signature:

Date: 2019-07-15

Qualiquantum SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
		Q-Sana Project #:	11-837
PROJET:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190014
SITE:	Baffinland, Milne Port	**DATE:**	19-06-08

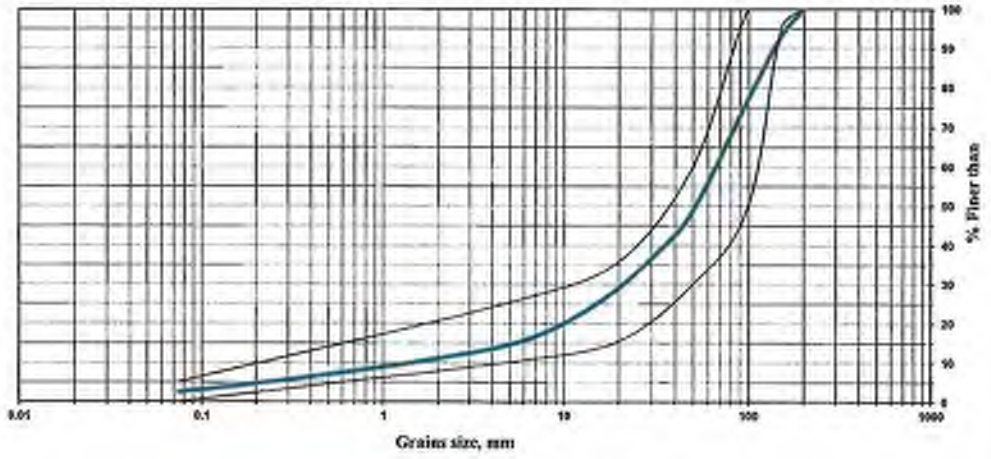
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Maxime Côté
Type of Use		**Sampling Date**	2019-06-07

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	93	77	49	38	28	19	14	11	9	7	6	4	2.5
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	85.8%	Cu = 45	D_{60} = #DIV/0!	D_{15} = 5.3
Sand %	11.7%	Cc = 4	D_{50} = 66.1	D_{10} = 1.5
Silt/Clay %	2.5%		D_{50} = 51.7	

Notes:	Gap for the following sieves: 150 mm
Prepared By:	Maxime Côté
Verified By:	Nicolas Tremblay
Signature:	N. Côté
Date:	2019-07-15

Qiltigrassiak SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
		Q-Sana Project #:	11-837
PROJET:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190013
SITE:	Baffinland, Milne Port	**DATE:**	19-06-06

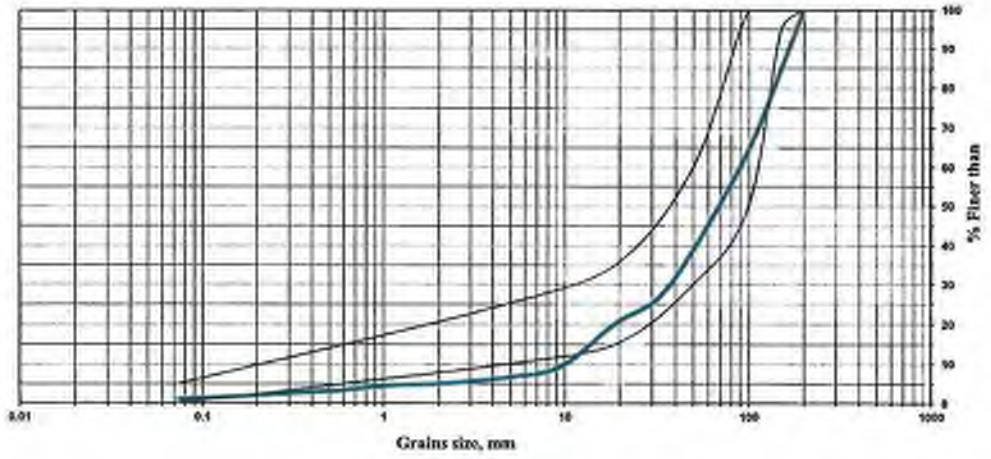
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Maxime Côté
Type of Use		**Sampling Date**	2019-06-06

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	[illegible]	64	39	26	20	9	[illegible]	5	5	3	2	2	1.0
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	93.5%	Cu = 9	D_{95} = #DIV/0!	D_{15} = 13.7
Sand %	5.5%	Cc = 2	D_{60} = 89.2	D_{10} = 10.0
Silt/Clay %	1.0%		D_{50} = 68.0	

Notes: Gap for the following sieves: 150, 4.75 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N Côté

Date: 2019-07-15

(C) Informatique
DIV 5 ans

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	27-May-19	Report Number:	18SJ0001
File Number:	T08P003	Inspector:	R.chaisson
Client:	Hatch	Sampled By:	R.Chaisson
Project:	Baffinland	Sample Date:	27-May-19
Location:	Port Site	Copy To:	
Contractor:	Nuna		

TEST RESULTS

SIEVE SIZE (mm)			200	150	100	56	50	19	4.75	2.50	1.25	0.630	0.315	0.160	0.080
MAX % PASS SPEC			100.0	100.0	100.0		60.0	35.0	25.0						5.0
MIN % PASS SPEC			100.0	95.0	50.0		30.0	15.0	10.0						0.0
% PASS RESULTS			100.0	100.0	90.3	52.4		22.1	11.1	7.5	5.8	4.7	3.5	2.4	1.5

MATERIAL TYPE

Type 8

SIEVE METHOD

Washed

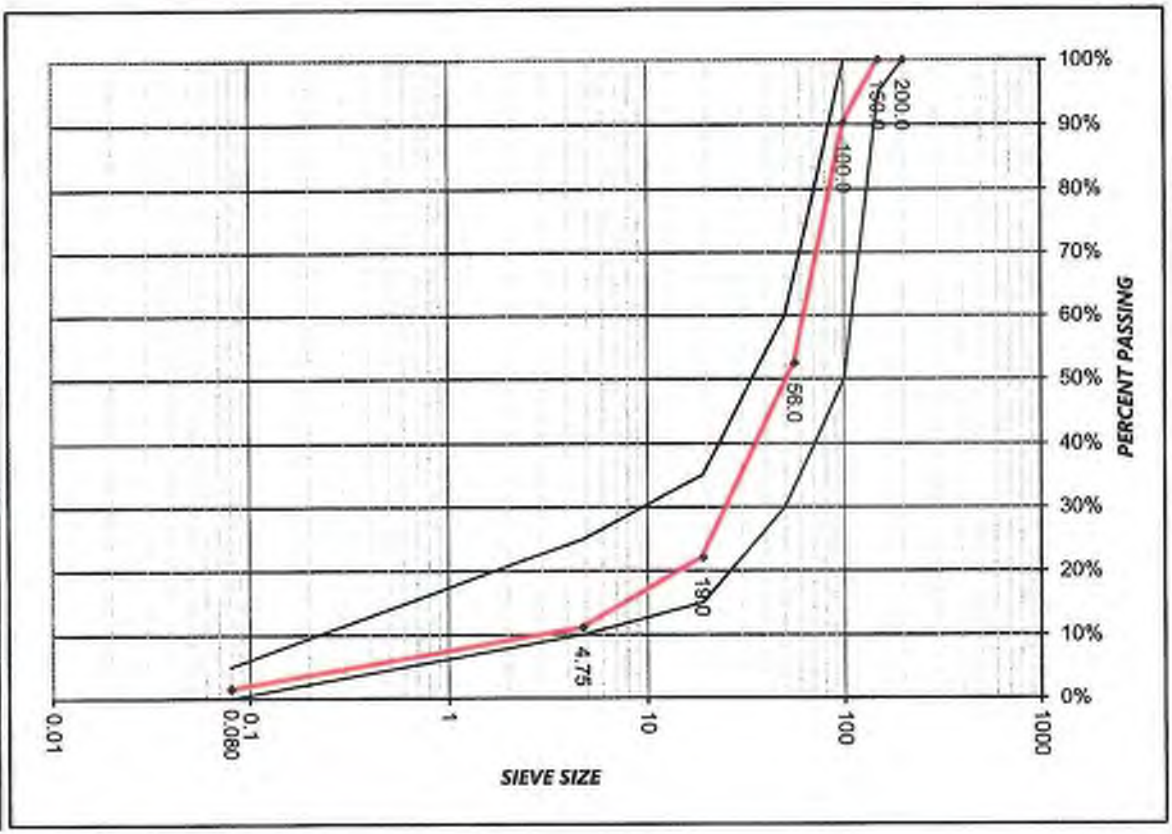
% FRACTURE

% MOISTURE

1.3%

GRADATIONS

GRAVEL	88.9%
SAND	9.6%
SILT/CLAY	1.5%



COMMENTS

Sample meets all project specifications for site.

Used 56mm sieve due to availability.

Reviewed By:

M Kirkbride P.Eng.

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	25-May-19	Report Number:	18SJ0001
File Number:	T08P002	Inspector:	R.chaisson
Client:	Hatch	Sampled By:	R.Chaisson
Project:	Baffinland	Sample Date:	25-May-19
Location:	Port Site	Copy To:	
Contractor:	Nuna		

TEST RESULTS

SIEVE SIZE (mm)			200	150	100	56	50	19	4.75	2.50	1.25	0.630	0.315	0.160	0.080
MAX % PASS SPEC			100.0	100.0	100.0		60.0	35.0	25.0						5.0
MIN % PASS SPEC			100.0	95.0	50.0		30.0	15.0	10.0						0.0
% PASS RESULTS			100.0	100.0	87.2	57.1		22.8	11.0	7.6	6.1	5.1	3.9	2.8	1.9

MATERIAL TYPE

Type 8

SIEVE METHOD

Washed

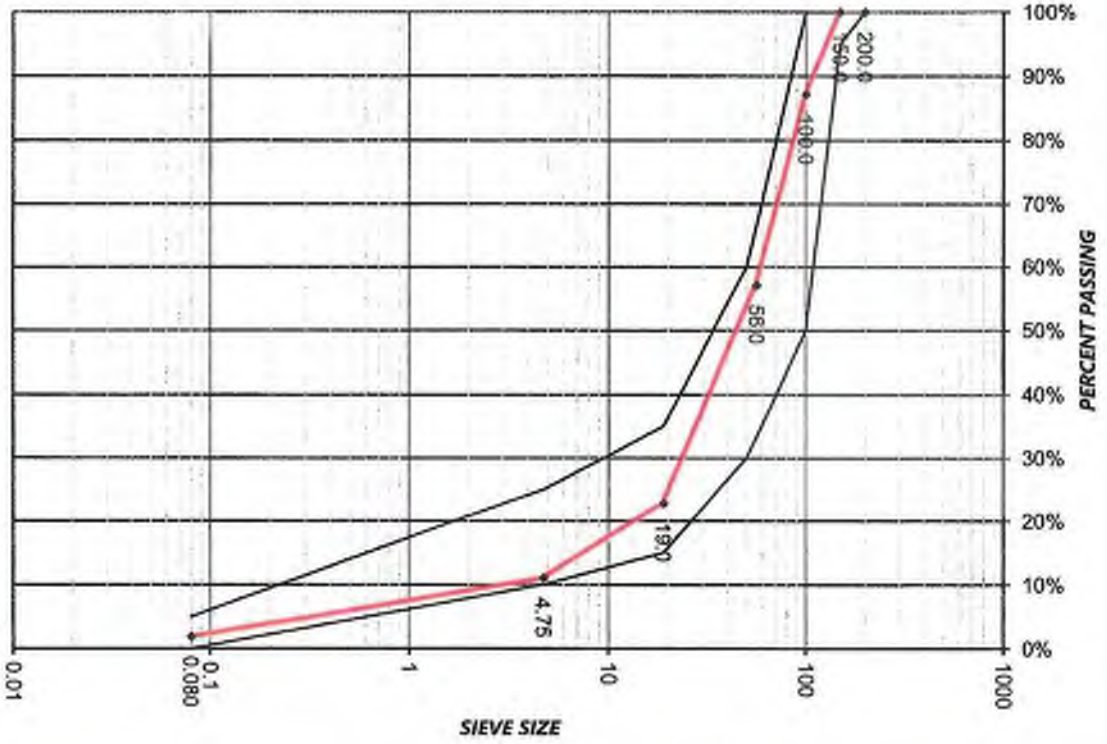
% FRACTURE

% MOISTURE

3.7%

GRADATIONS

GRAVEL	89.0%
SAND	9.2%
SILT/CLAY	1.9%



COMMENTS

Sample meets all project specifications for site.

Used 56mm sieve due to availability.

Reviewed By:

M Kirkbride P.Eng.

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	10-May-19	Report Number:	18SJ0001
File Number:	T08P001	Inspector:	R.chaisson
Client:	Hatch	Sampled By:	R.Chaisson
Project:	Baffinland	Sample Date:	8-May-19
Location:	Port Site	Copy To:	
Contractor:	Nuna		

TEST RESULTS

SIEVE SIZE (mm)			200	150	100	56	50	19	4.75	2.50	1.25	0.630	0.315	0.160	0.080
MAX % PASS SPEC			100.0	100.0	100.0		60.0	35.0	25.0						5.0
MIN % PASS SPEC			100.0	95.0	50.0		30.0	15.0	10.0						0.0
% PASS RESULTS			100.0	100.0	88.0	45.3		39.7	15.8	13.1	9.8	6.6	3.6	2.0	1.1

MATERIAL TYPE

Type 8

SIEVE METHOD

Washed

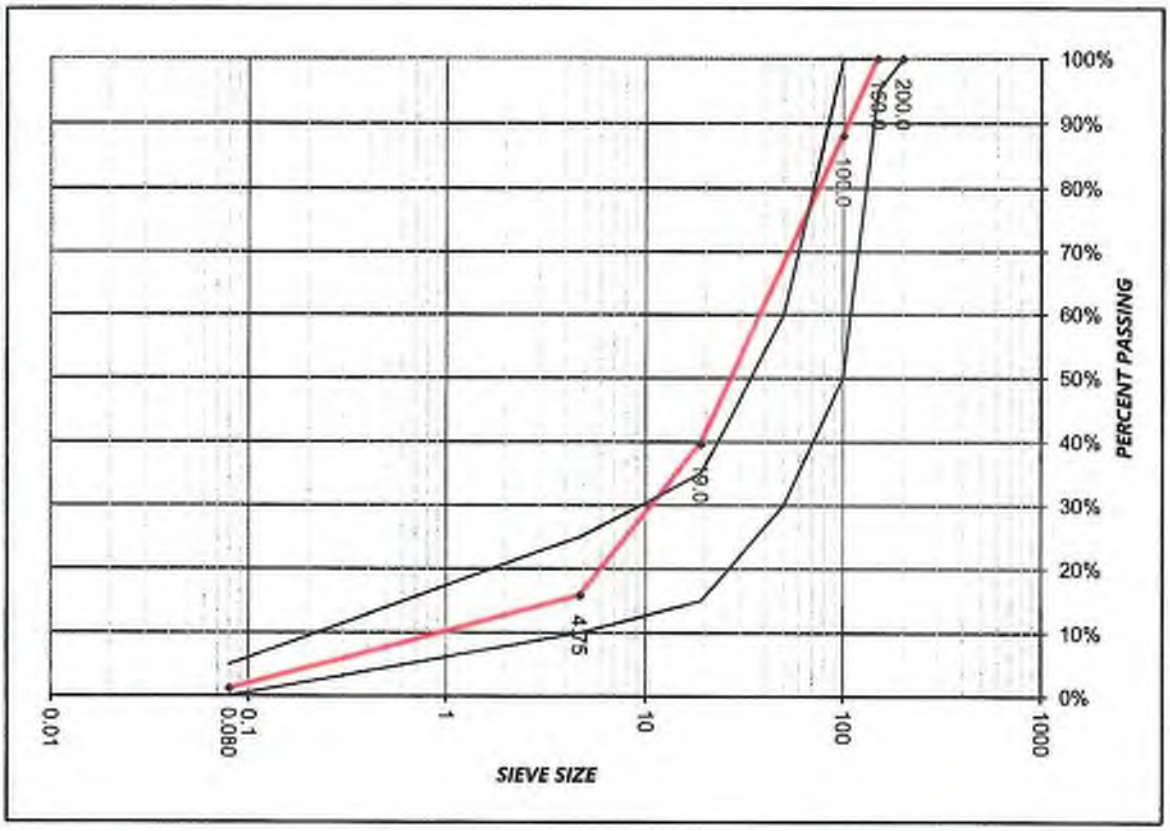
% FRACTURE

% MOISTURE

7.1%

GRADATIONS

GRAVEL	84.2%
SAND	14.6%
SILT/CLAY	1.1%



COMMENTS

Sample is fine on the 19mm (39.7% passing). All other sizes are within specification

Used 56mm sieve due to availability.

Reviewed By:

M Kirkbride P.Eng.

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-023

Inspection date 2019-07-01
Shift Day

Crucher type Primary F.T.
Jaw opening 4" 1/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	234		
2	Yes	Yes	No	1156		
3	Yes	Yes	No	2034		
4	Yes	Yes	No	3090		
5	Yes	Yes	No	3387		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-07-01

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-022

Inspection date 2019-06-30
Shift Day

Crucher type Primary F.T.
Jaw opening 4" 1/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	183		
2	Yes	Yes	No	926		
3	Yes	Yes	No	2023		
4	Yes	Yes	No	3076		
5	Yes	Yes	No	4083		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-30

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-021

Inspection date 2019-06-29 **Crucher type** Primary F.T.
Shift Day **Jaw opening** 4" 1/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	1065		
2	N/A	No	Yes	1634		
3	N/A	No	Yes	2570		
4	Yes	Yes	No	3482		
5	Yes	Yes	No	5007		
6						
7						
8						
9						
10						

Comments: Material is pretty much coarsy during the morning. Needs more fine material.
No particule retained over 200mm after jaw ajustment at 12h

Representatives Pictures

Biggest particule retained over 200mm

QC Name: Hugo Perron

QC Signature: HP **Date:** 2019-06-29

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-020

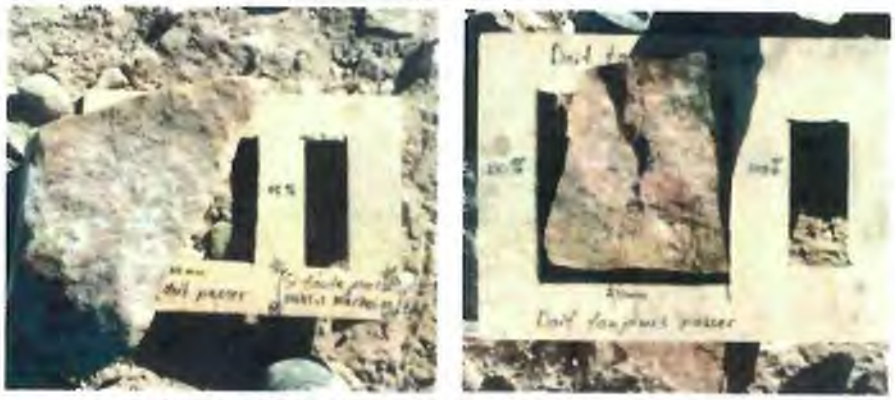
Inspection date 2019-06-29
Shift Day

Crucher type Primary C.S
Jaw opening 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	315		
2	Yes	Yes	No	1224		
3	Yes	Yes	No	1997		
4	Yes	Yes	No	2644		
5	Yes	Yes	No	4502		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures



Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-29

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-019

Inspection date 2019-06-28 **Crucher type** Primary F.T.
Shift Day **Jaw opening** 4" 1/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	293		
2	Yes	Yes	No	1400		
3	Yes	Yes	No	1880		
4	Yes	Yes	No	2764		
5	Yes	Yes	No	4567		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP **Date:** 2019-06-28

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-018

Inspection date 2019-06-28
Shift Day

Crucher type Primary C.S
Jaw opening 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	143		
2	N/A	No	Yes	1417		
3	Yes	Yes	No	2264		
4	Yes	Yes	No	2920		
5	Yes	Yes	No	4120		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
One aggregate bigger than 200mm has been found.
Conform sieves analysis done.

Representatives Pictures

Biggest particule retained over 200mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-28

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-017

Inspection date 2019-06-27
Shift Day
Crucher type Primary C.S.
Jaw opening 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	145		
2	Yes	Yes	No	1310		
3	N/A	No	Yes	2348		
4	Yes	Yes	No	3248		
5	Yes	Yes	No	3996		
6						
7						
8						
9						
10						

Comments: Material is pretty much coarsy. Needs more fine material.
One aggregate bigger than 200mm has been found.

Representatives Pictures

Biggest particule retained over 200mm

QC Name: Hugo Perron

QC Signature:

Date: 2019-06-27

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

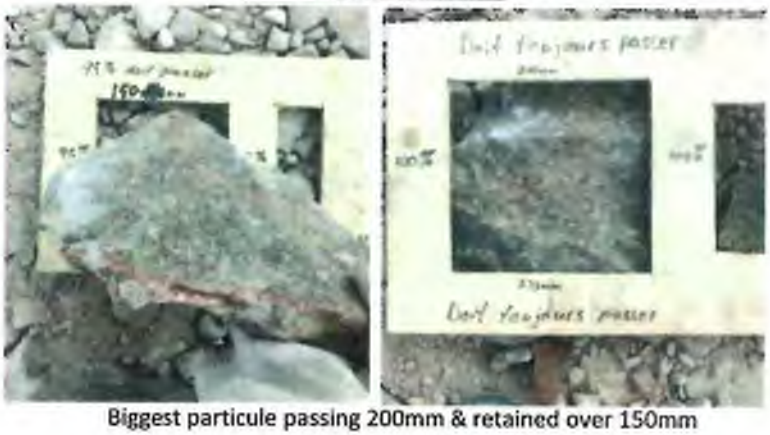
Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-014

Inspection date 2019-06-26 **Crucher type** Primary C.S
Shift Day **Jaw opening** 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	157		
2	Yes	Yes	No	1189		
3	Yes	Yes	No	2129		
4	Yes	Yes	No	2804		
5	Yes	Yes	No	4512		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures



Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP **Date:** 2019-06-26

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-013

Inspection date 2019-06-25
Shift Day

Crucher type Primary C.S
Jaw opening 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	610		
2	Yes	Yes	No	1685		
3	Yes	Yes	No	2453		
4	Yes	Yes	No	2831		
5	Yes	Yes	No	3750		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-25

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-012

Inspection date 2019-06-24
Shift Day

Crucher type Primary C.S
Jaw opening 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	336		
2	Yes	Yes	No	885		
3	Yes	Yes	No	1565		
4	Yes	Yes	No	2277		
5	Yes	Yes	No	2731		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-24

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-011

Inspection date 2019-06-23
Shift Day
Crucher type Primary C.S
Jaw opening 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	152		
2	Yes	Yes	No	724		
3						
4						
5						
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm sieve
Only 2 inspections because downtime

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HPR **Date:** 2019-06-23

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-010

Inspection date 2019-06-22
Shift Day

Crucher type Primary C.S
Jaw opening 4" 3/8

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	Yes	286		
2	Yes	Yes	No	724		
3	Yes	Yes	No	1466		
4	Yes	Yes	No	2578		
5	Yes	Yes	No	3087		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm sieve after the jaw adjustment.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-22

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-11 **Crucher type** Primary C.S

Shift Day **Jaw opening** 4" 3/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	135		
2	Yes	Yes	No	486		
3	Yes	Yes	No	1282		
4	Yes	Yes	No	1417		
5	Yes	Yes	No	2513		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule reatained over 200mm sieve.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

Brasford Watson
QA/QC
Registered

QC Name:	Maxime Côté		
QC Signature:		**Date:**	2019-06-11

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-10 **Crucher type** Primary C.S
Shift Day **Jaw opening** 4" 3/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	372		
2	Yes	Yes	No	858		
3	Yes	Yes	No	1932		
4	Yes	Yes	No	2815		
5						
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule reatained over 200mm sieve.
Only 4 tests due to downtime.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Maxime Côté

QC Signature: **Date:** 2019-06-10

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-09
Shift Day

Crucher type Primary C.S
Jaw opening 4" 3/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	867		
2	Yes	Yes	No	1820		
3	Yes	Yes	No	2911		
4	Yes	Yes	No	3946		
5	Yes	Yes	No	4856		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule reatained over 200mm sieve.
No production on 2019-06-08 Day shift

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Maxime Côté

QC Signature:

Date: 2019-06-09

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-07
Shift Day

Crucher type Primary C.S
Jaw opening 4" 3/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	603		
2	Yes	Yes	No	1264		
3	Yes	Yes	No	2134		
4	Yes	Yes	No	2878		
5	Yes	Yes	No	3684		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule reatained over 200mm sieve.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Maxime Côté

QC Signature:

Date: 2019-06-07

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-06 **Crucher type** Primary C.S

Shift Day **Jaw opening** 5"

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	690		
2	Yes	Yes	No	1607		
3	Yes	Yes	No	2137		
4	Yes	Yes	No	2866		
5	Yes	Yes	No	3832		
6						
7						
8						
9						
10						

Comments: Material is pretty much coarsy. Needs more fine material.
No particule reatained over 200mm sieve.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Maxime Côté

QC Signature: **Date:** 2019-06-06

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-05 **Crucher type** Primary C.S
Shift Day **Jaw opening** 5"

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	70		
2	Yes	Yes	No	460		
3	Yes	Yes	No	1303		
4	Yes	Yes	No	2191		
5	N/A	No	Yes	2431		
6						
7						
8						
9						
10						

Comments: Material is pretty much coarsy. Needs more fine material.
One particule bigger than 200mm have been found.

Representatives Pictures

Particule retained over 200mm

QC Name: Maxime Côté

QC Signature: **Date:** 2019-06-05

Material Inspection Report

Baffin Island Material Testing			
Date:	May 12th/2019	Project Number:	18SJ0001
Project Name:	Baffinland	Report Number:	
Location/ Area:	Port Site	Allnorth Site Representative:	R. Chaisson
Client Site Representative:	Marlon Coakley	Copy to:	

Visual Inspection Report

Material: Type 12

Based on visual inspections of Type 12 material stockpiled in the quarry, during placement and after compaction:

The Type 12 appears to visually meet gradation specification of coarse material with sufficient fines; no oversize present during placement, operators in quarry pick out all oversize material before loading trucks.
After compacting with 10T vibrating roller making 5+ passes, the Type 12 is well compacted with no deflection occurring when driven on by rock trucks and heavy equipment.

Based on visual observations this material meets the required specifications from document **"H353004-00000-280-078-002 – Quarried Fill materials".**

Allnorth Designate- Signature		Title:	Materials Technician	Date: 05/12/2019

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	June 9 2019	Report Number:	18SJ0001
File Number:	T05P003	Inspector:	M.Tabor
Client:	Hatch	Sampled By:	M.Tabor
Project:	Baffinland	Sample Date:	June 5 2019
Location:	Port Site	Copy To:	
Contractor:	Nuna		

TEST RESULTS

SIEVE SIZE (mm)					32	25	13.2	9.5	4.75	2.00	1.18	0.600	0.315	0.160	0.075
MAX % PASS SPEC					100.0	100.0		70.0	55.0	42.0		30.0			8.0
MIN % PASS SPEC					100.0	70.0		40.0	30.0	22.0		15.0			4.0
% PASS RESULTS					100.0	96.9	74.4	65.4	51.3	35.6	29.0	22.1	16.1	10.6	6.4

MATERIAL TYPE

Type 5

SIEVE METHOD

Washed

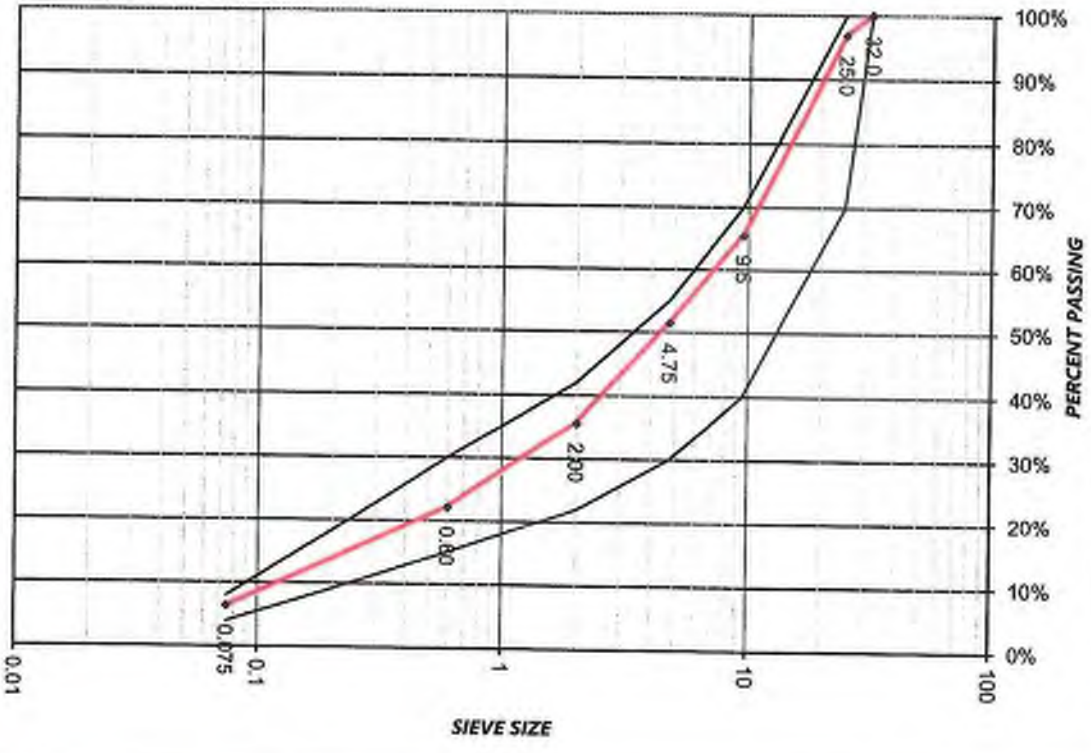
% FRACTURE

% MOISTURE

1.9%

GRADATIONS

GRAVEL	48.7%
SAND	45.0%
SILT/CLAY	6.4%



COMMENTS

Sample meets all project specifications for site.

Reviewed By:

M. Tabor

NUNA

NUNA EAST LTD

(Section 6)

Request for Information (RFIs)

Project Name:	Mary River Expansion Stage 3	Project Number:	H353004
CWP No:		RFI No:0022	
Contractor: Nuna East Ltd.		Contract No: CC006	
Initiated By: Darko Filipic		Cost impact?	Y☒ / N☐
Date of Submittal: 2019-02-24		Schedule Impact?	Y☒ / N☐

Information Requested:

On Rev 2 of the Laydown LP3 Plan and Profile drawing (H353004-40000-221-271-0005-0001) new stability trench details were added.

Nuna requests clarification on the design of these trenches based on the following details:

A) The typical detail shows that the depth of excavation varies and it appears that the fill depth of Type 8 material across the width and length of the trench also varies. Given that the stability trenches cover an area of approx. 18,000m2, the depth of fill for the Type 8 will have an impact on cost and schedule, as well as material supply prioritization.

B) The bottom elevation of the stability trench is show as 10m (GD), however the natural ground elevation varies between 9.6m and 11.6m.

C) Above the stability trench Nuna is building the Laydown Pad and the Module Haul Road, which will both be built with Type 12 ROQ fill and topped with 300mm of Type 8 and 100mm of Type 5.

D) These trenches are to be built upon a natural drainage basin and the natural ground is quite soft when thawed. Furthermore, the soil may become more unstable when disturbed through excavation. Proof-rolling the subgrade may not be possible.

Given the above details, Nuna has the following questions:

1) Is there a minimum depth of Type 8 fill required in the stability trench before placing ROQ fill for the Module Haul Road or Laydown Pad?
2) In areas where the natural ground elevation is below 10m (GD), what material is to be used to bring the grade up to 10m?
3) If the stability trenches are excavated when the ground is thawed, are there any specific subgrade preparations that will be required in lieu of proof-rolling? Will a qualified geotechnical engineer be available to inspect and approve the subgrade as required.

Reference Document No.	Revision	Title/Description
H353004-40000-221-271-0005-0001	2	Port Site Laydown Area LP3 Plan and Profiles
H353004-40000-221-272-0004-0001	1	Port Site Stacker Reclaim Berm Typical Section
H353004-00000-221-078-0001	0	Site Specification – Placement of Fill

RFI Classification:

Design	☐	Construction	☐	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☒	Other	☐

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Baffinland

HATCH

Baffinland Iron Mines LP
Mary River Expansion Stage 3
H353004

Construction Management Form
Site Contracts Administration
Request for Information

Project Response: [check as appropriate or required]

See Attached

RFI Follow-up Requirements:

Contract Order Issued Yes ☐/No ☐ (insert associated tracking #) Back-Charge Required (Yes ☐/No ☐)

As-Built Required Yes ☐/No ☐ Materials Required (Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	N Mills		March 6 / 19
Hatch Engineering Home Office ☐ Site ☑	G. PEACO		2019-03-6
Hatch Project Management			
Client (as required):			

Request for Information

Note: The response to this RFI is NOT an authorization to perform a change to the Contract. Work may proceed in accordance with the response only if such work involves NO change in cost or schedule. In the case where the response may involve change in cost or schedule, a Contractual instrument must be issued by Hatch and received by the Contractor before the response can be executed. Where no Contractual instrument is indicated, action must be taken in accordance with (reference appropriate Contract Sections that authorize execution of any change in schedule and cost).

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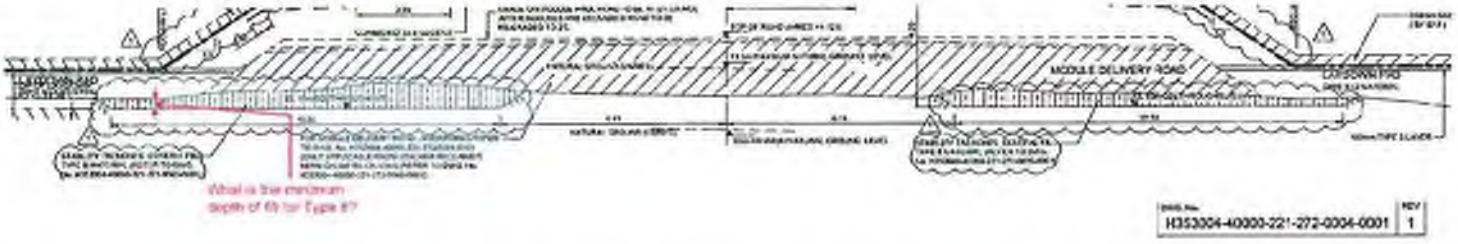

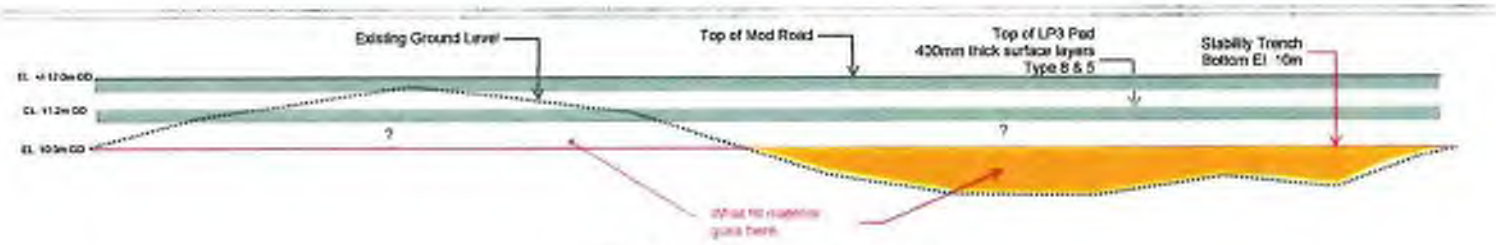

TYPICAL PROFILE SECTION ALONG LENGTH OF TRENCH

The entire footprint of the stacker reclaimer berm must be built up with Type 8 material with Type 5 as required.
The LP3 area and Module Road that is not part of the Stacker Reclaimer Berm can be constructed with Type 12/Type 8/Type 5.

Answers as follows:

1. Is there a minimum depth of Type 8 fill required in the stability trench before placing ROQ fill for the Module Haul Road or Laydown Pad?

   Answer: The trenches by themselves must be 1.5m of Type 8. If the 10m (GD) for the bottom of the trenches is achieved and then backfilled to the final top of berm level 14.2m it will have the minimum fill depth required for the stacker reclaimer berm. The Top of Rail elevation 14.32m (GD) for the final Stacker Reclaimer Berm is the critical dimension.

2. In areas where the natural ground elevation is below 10m (GD), what material is to be used to bring the grade up to 10m?

   Answer: In these areas (if part of the Stacker Reclaimer Berm) Type 8 fill material is to be used to reach 10m (GD) and then continue as per item 1

3. If the stability trenches are excavated when the ground is thawed, are there any specific subgrade preparations that will be required in lieu of proof-rolling? Will a qualified geotechnical engineer be available to inspect and approve the subgrade as required.

   Answer: At this time there will be none of the stability trenches constructed in the warmer season. There are special conditions if constructed in the thaw season and they are as follows: For construction in thawed season, we would require that the subgrade is inspected and approved prior to proof rolling, and the subgrade does not contain soft spots, and will be relatively dry. Provision of drainage by sumping and pumping of water must be made to ensure that the subgrade is dry, free from excess water and soft soils. Field inspection shall be carried out by CM team.

Baffinland Iron Mines LP
Mary River Expansion Stage 3
H353004

Construction Management Form
Site Contracts Administration
Request for Information

Project Name:	**Mary River Expansion Stage 3**	**Project Number:**	**H353004**
Area: Laydown 3		**RFI No: 0049**	
Contractor: Nuna East Ltd.		**Contract No: CC006**	
Initiated By: Bradford Watkin		**Cost impact?**	Y☒ / N☐
Date of Submittal: 2019-06-10		**Schedule Impact?**	Y☒ / N☐

Information Requested:

Nuna has observed that going forward from ~ 0+250 on LP3 and from ~ E 503 800 on LP2 the terrain is saturated Tundra. The minimum amount of material in the design lift thickness will not achieve a competent working surface.

To achieve competent working surface on both Laydown Pads (LP3 & LP2).

Nuna proposes:

1. **Placing ROQ instead of Type 8 at a thicker lift thickness and cap with Type 5 also at a thicker lift thickness.**

Please advise on thickness' and a path forward for both pads.

Reference Document No.	Revision	Title/Description
[attach list separately as required]		

RFI Classification:

Design	☐	Construction	☒	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☐	Other	☐

Project Response [illegible]

LP3 needs to be resolved with Hatch Field Superintendent . LP2 delay completion to November 2019

Contract Order Issued	Yes ☐/No ☐	([insert associated tracking #])	Back-Charge Required	(Yes ☐/No ☐)
As-Built Required	Yes ☐/No ☐		Materials Required	(Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	N Mills	[signature]	June 10 / 19

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Hatch Engineering Home Office ☐ Site ☑	G. PENCO		2019-06-10
Hatch Project Management			
Client (as required):			

Request for Information

Note: The response to this RFI is NOT an authorization to perform a change to the Contract. Work may proceed in accordance with the response only if such work involves NO change in cost or schedule. In the case where the response may involve change in cost or schedule, a Contractual instrument must be issued by Hatch and received by the Contractor before the response can be executed. Where no Contractual instrument is indicated, action must be taken in accordance with (reference appropriate Contract Sections that authorize execution of any change in schedule and cost)

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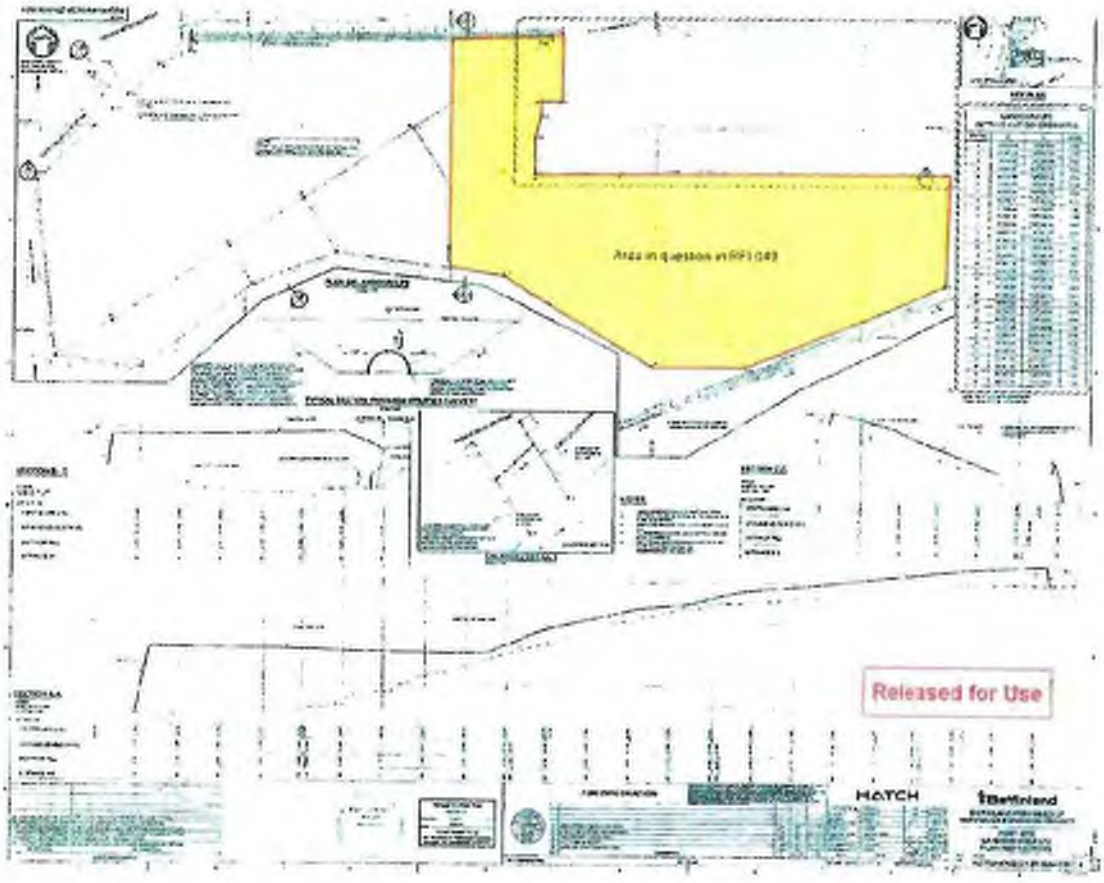
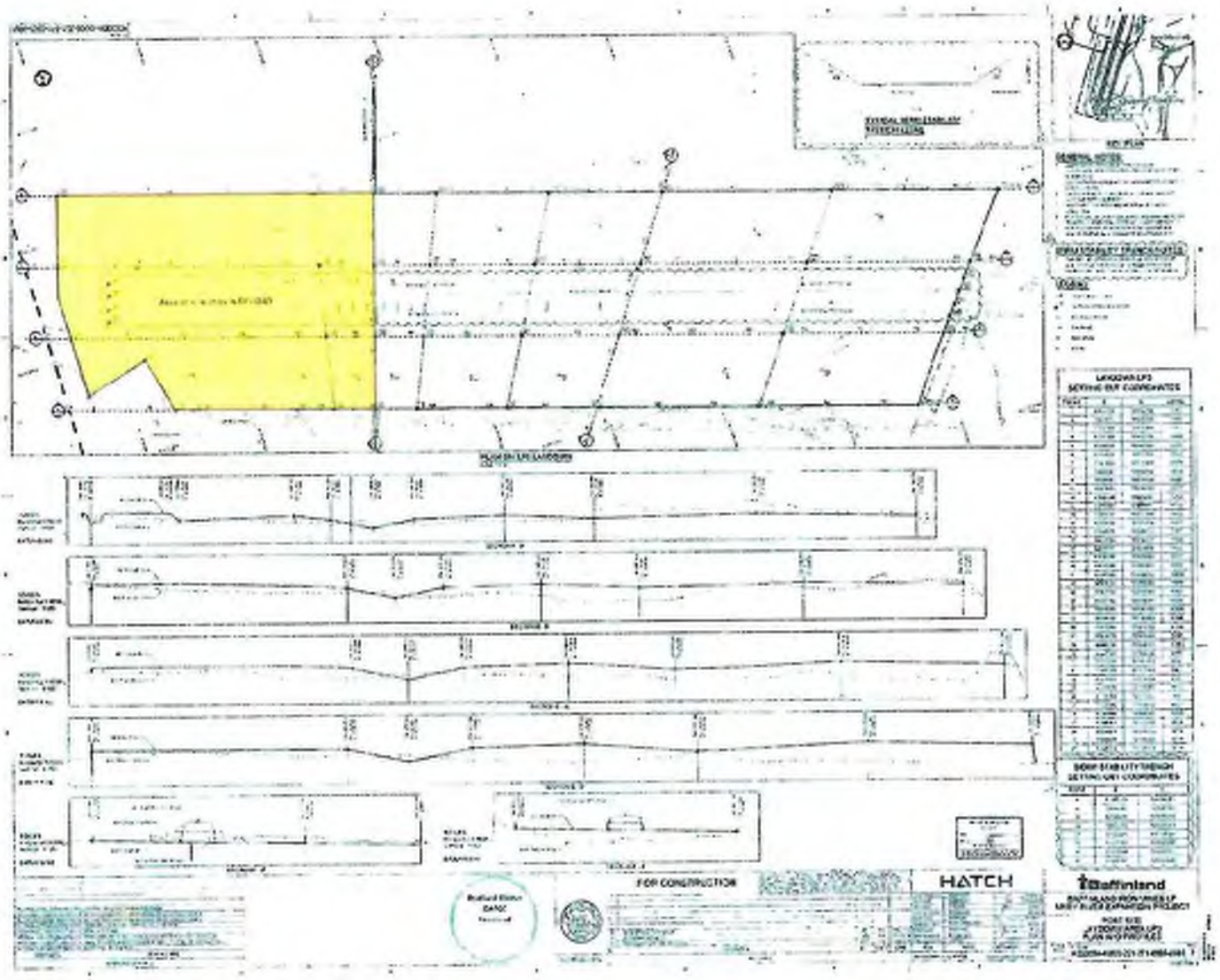

Area in question in RFI 049
Released for Use
HATCH
Bethland


FOR CONSTRUCTION
HATCH
Raffinland

E353004-CC006-400-465-0050

Baffinland Iron Mines LP
Mary River Expansion Stage 3
H353004

Construction Management Form
Site Contracts Administration
Request for Information

Project Name:	Mary River Expansion Stage 3	**Project Number:**	H353004 / CC006
Area: Laydown 3		**RFI No:** 0050	
Contractor: Nuna East Ltd.		**Contract No:** CC006	
Initiated By: Bradford Watkin		**Cost Impact?**	Y☒ / N☐
Date of Submittal: 2019-06-11		**Schedule Impact?**	Y☒ / N☐

Information Requested:

Due to the water flow on LP3 Nuna requests that Culvert (Culv-2018-E) be extended from under the Module Delivery Road Starting @ (N 7975030.090 E 503145.690) to the west limit of LP3 along cross section "G" @ ~ chainage 1625 and re-sloping the west side of LP3 from the Module Road toe to the west limit to a -0.3% slope toward the west limit.

See attached drawings.

Reference Document No.	Revision	Title/Description
H353004-40000-228-272-0012-0001	1	Port Site Laydown Area LP3 Drainage Plan
H353004-40000-221-271-0005-0001	2	Port Site Laydown Area LP3 Plan and Profiles
H353004-40000-223-271-0007-0003	0	Port Site Module Delivery Road Plan & Profile Sht 3 of 4

RFI Classification:

Design	☐	Construction	☒	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☐	Other	☐

Proceed as noted .

RFI Follow-up Requirements:

Contract Order Issued	Yes ☐/No ☐ (insert associated tracking #)	Back-Charge Required	(Yes ☐/No ☐)
As-Built Required	Yes ☐/No ☐	Materials Required	(Yes ☐/No ☐)

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RFI Receipts and Approvals			
Stakeholder	**Name**	**Signature**	**Date** <YYYY-MM-DD>
Hatch Construction Management	N Mills		June 12 / 19
Hatch Engineering Home Office ☐ Site ☑	G. PEACE		2019-06-12
Hatch Project Management			
Client (as required)			

Request for Information

Note: The response to this RFI is NOT an authorization to perform a change to the Contract. Work may proceed in accordance with the response only if such work involves NO change in cost or schedule. In the case where the response may involve change in cost or schedule, a Contractual Instrument must be issued by Hatch and received by the Contractor before the response can be executed. Where no Contractual Instrument is indicated, action must be taken in accordance with (reference appropriate Contract Sections that authorize execution of any change in schedule and cost).

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Project Name:	Mary River Expansion Stage 3	**Project Number:**	H353004 / CC006
Area: Laydown LP3		**RFI No:** 0059	
Contractor: Nuna East Ltd.		**Contract No:** CC006	
Initiated By: Ryan Dicker		**Cost impact?**	Y☒ / N☐
Date of Submittal: 2019-07-04		**Schedule Impact?**	Y☒ / N☐

Information Requested:

Nuna previously submitted and had approved RFI-050 indicating the need to extend the CULV-2018-E that crosses the MOF road portion of LP3 to improve the drainage of the pad. This extended the culvert outlet to the far west side of the LP3 pad to tie into the existing swale.

Nuna is now further proposing to extend the CULV-2018-E culvert to the far east limit of the LP3 pad to tie into the existing drainage ditch to promote the water flow through this area. The surface of the LP3 pad would have the grade adjusted to drain the water to the east rather than into the swale across the pad. See below sketch and photos of the area referenced.

Please advise if this is acceptable.

Reference Document No.	Revision	Title/Description
H353004-40000-228-272-0012-0001	1	Port Site Laydown Area LP3 Drainage Plan

RFI Classification:

Design	☐	Construction	☒	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☐	Other	☐

Project Response: (attach additional detail as required)

Proceed as noted as this is only tempoary and will be removed in final construction in April of 2020

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RFI Follow-up Requirements:

Contract Order Issued Yes ☐/No ☐ (insert associated tracking #) Back-Charge Required (Yes ☐/No ☐)

As-Built Required Yes ☐/No ☐ Materials Required (Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	N Mills		July 4 / 19
Hatch Engineering Home Office ☐ Site ☐			
Hatch Project Management			
Client (as required):	Leonel Dabor	L.O.Dabor	2017-07-05

Request for Information

Note: The response to this RFI is NOT an authorization to perform a change to the Contract. Work may proceed in accordance with the response only if such work involves NO change in cost or schedule. In the case where the response may involve change in cost or schedule, a Contractual instrument must be issued by Hatch and received by the Contractor before the response can be executed. Where no Contractual Instrument is indicated, action must be taken in accordance with (reference appropriate Contract Sections that authorize execution of any change in schedule and cost).

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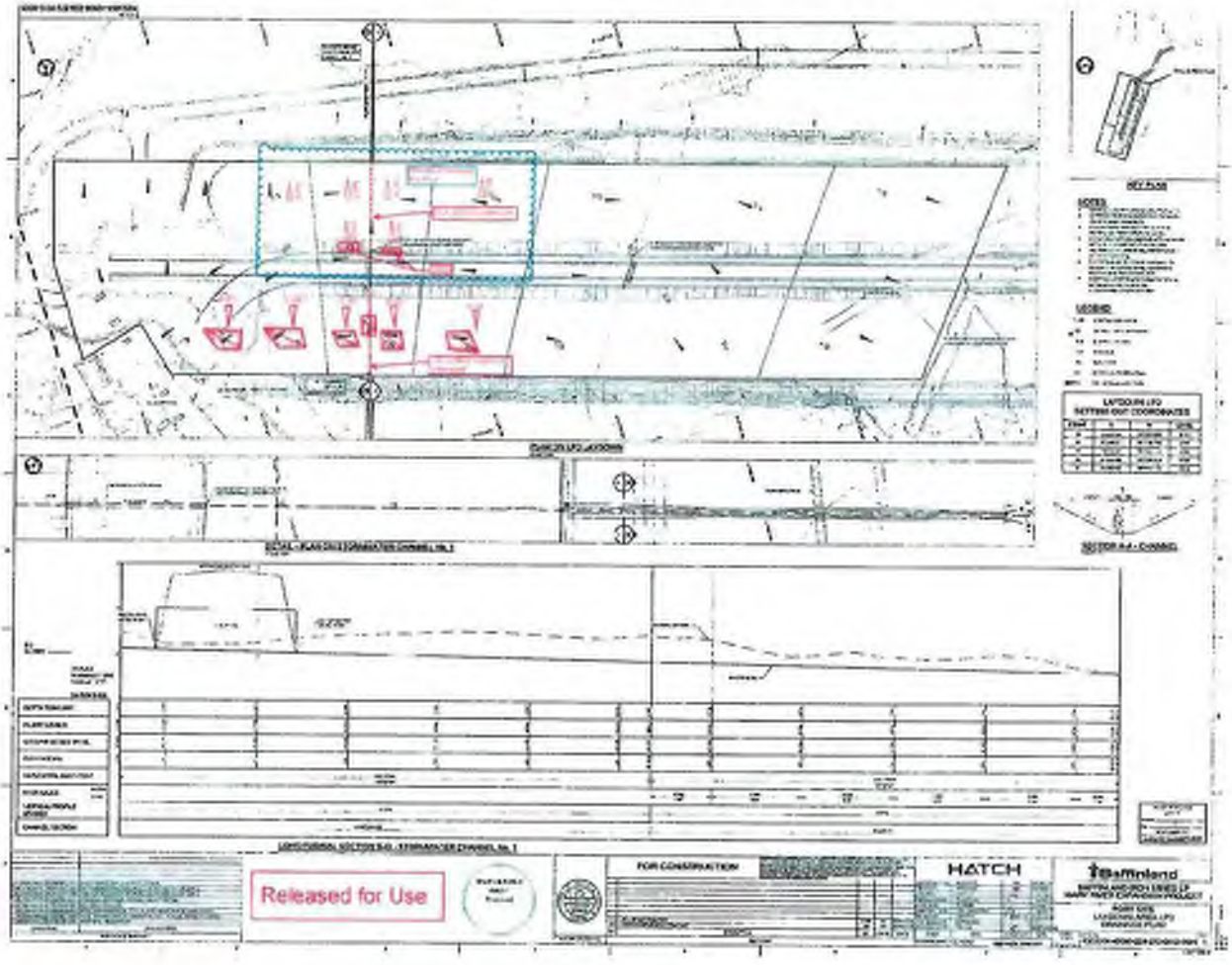
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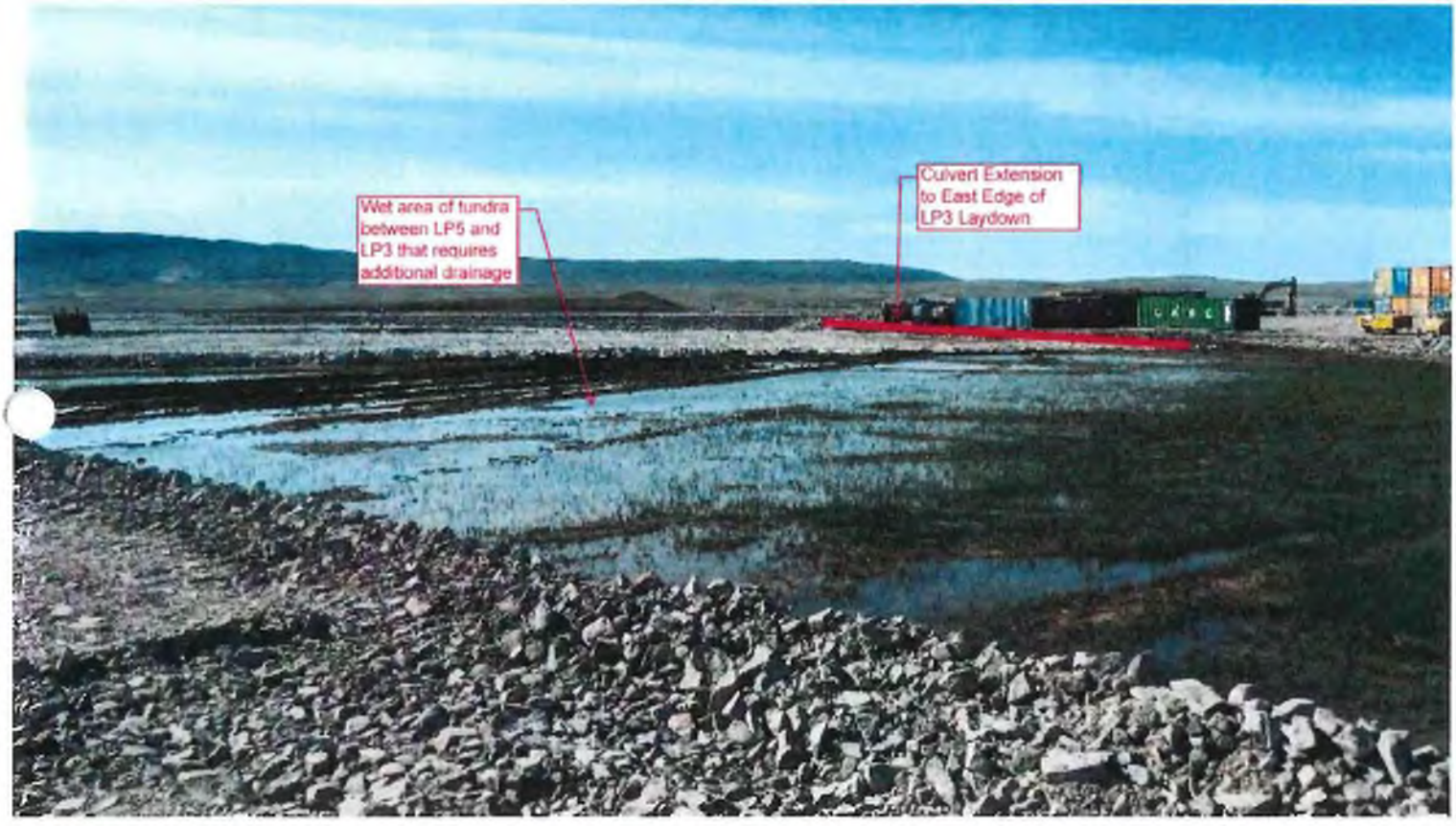

Wet area of tundra between LP5 and LP3 that requires additional drainage
Culvert Extension to East Edge of LP3 Laydown

Culvert Extension

Extend Culvert to East Limit of LP3 to collect flow from existing drainage ditch

Project Name:	Mary River Expansion Stage 3	**Project Number:**	H353004
CWP: GE Generator Pad Material Change Type 9		**RFI:** 0079	
Contractor: Nuna East Ltd.		**Contract No: CC006**	
Initiated By: Darko Filipic		**Cost impact?**	Y☒ / N☐
Date of Submittal: 2019-08-15		**Schedule Impact?**	Y☒ / N☐

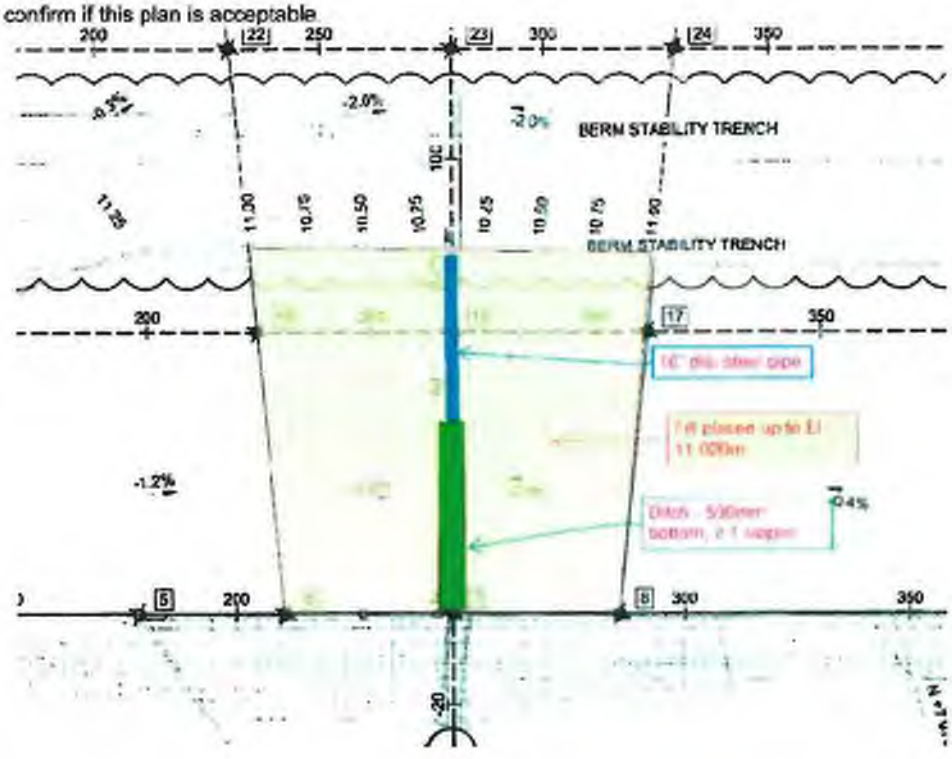
Information Requested:

Based on consultations with Hatch field representatives, a plan has been proposed to place a 16" steel pile pipe sleeve in the swale connecting to CULV-2018-E to span the East side of LP3. This pipe and the previously placed fill would then be covered with spec. fill and the FG will be levelled off at EL:11.02m across the swale section. The steel pipe is to be provided by Hatch.

If the pipe is not long enough to extend to the boundary of LP3 a ditch will be constructed to the boundary with a 0.5m bottom and 2:1 slopes up to El. 11.020.

The purpose of this proposal is to increase the depth of rock fill over this section of LP3 which has experienced significant rutting and thawing since the existing material was placed during the winter and is not deep enough to provide sufficient thermal cover.

Please confirm if this plan is acceptable



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Reference Document No.	Revision	Title/Description
H353004-40000-221-271-0005-C001	2	Port Site Laydown Area LP3 Plan and Profiles

RFI Classification:

Design	☒	Construction	☒	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☐	Other	☐

Project Response: [attach sufficient detail as required]

This proposal unacceptable due to the unavailability of the proposed 16" steel pipe. A ditch lined with rip-rap should be constructed to the far east of LP3 pad to promote water flow through this area. The surface of the pad should be graded accordingly.

Red line drawing to be provided.

RFI Follow-up Requirements:

Contract Order Issued Yes ☐/No ☐ (Insert automated tracking #) Back-Charge Required (Yes ☐/No ☐)

As-Built Required Yes ☐/No ☐ Materials Required (Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management			
Hatch Engineering Home Office ☐ Site ☐	Glen Peace		2019-08-18
Hatch Project Management			
Client (as required):	L Dabor	L.O.Dabor	2019-08-18

Request for Information

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NUNA

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(Section 7)

Non-Conformance Reports (NCRs)

NON-CONFORMANCE REPORT LOG

Project: CC006 **Date:** 9-26-19

Area: Mary River Expansion - Milne Port **Contract/Work Pkg. No.:** CC006-0001A LP3

CWP#: N/A **Originator:** Bradford Watkin

NCR No.	Description	Disposition	Date.	Rectified	Date
	No NCR's generated for this work package				

NUNA

NUNA EAST LTD

(Section 8)

Communications:

Engineering Change Notices (ECNs), Site Instructions (SIs), Contract Variation Request (CVRs), E-mails

Contract Variation Request

Contract No.:	H353004-CC006	**Date:**	2019-09-16
Contractor:	Nuna East Ltd.	**CVR No.:**	H353004-CC006-0054-CVR R1
Contract Title:	Mary River Expansion Stage 3 – Port Earthworks	**Reference SI/RFI No.:**	

Current Condition and Mitigation Steps:
Nuna has been constructing the LP3 Laydown since January 21, 2019. Numerous challenges have been faced during the laydown construction to date. Lack of equipment, the need for snow removal, bed space shortages, winter excavations (much of which required drilling and ripping), additional excavation due to unsuitable ground conditions, weather delays, and blasting delays as examples have resulted in additional hours being charged to the construction of LP3 Laydown than had originally been estimated.

As of July 25, the budget for this laydown had been expended beyond 100%. Total delays and impacts accounted for by Nuna total

Rev 1: As of September 14th, Nuna has completed all the scope within LP3 Laydown that is available to be completed. Certain areas within the laydown are obstructed by staged materials and equipment and could not be completed. Nuna expects to turnover the laydown as is and close out this budget line item. Outstanding scope within LP3 will be carried over to a future SOW contract.

Proposed Change:
Provide additional budget to cover the cost overrun to complete the Laydown LP3. A summary of the delays to date and actual cost incurred for the additional work is attached.

Justification:
Winter excavation effort, site delays and additional work required to complete the laydown that was not accounted for in the original estimate have resulted in the budget being overrun for the construction of the LP3 Laydown.

Additional delays that are less tangible and not included in the attached cost analysis also need to be considered. Limited bed space and equipment in the first few months of the project resulted in lower than expected productivities.

Impact on Cost and Schedule:
If the change is accepted, the cost of the contract will increase by and the impact on the schedule will be **6 days**. The requested method of payment is **Time and Material**.

☒ Additional information detailing the change in cost is attached:

- Cost Estimate / Delay Summary

Notes:

1. Any variation to the Contract arising from this request will be managed in accordance with the terms and conditions of the Contract.
2. Contractor is not to proceed with any work until authorized to do so.
3. The response to this request will be returned by Hatch to the Contractor via the Contractor portal

Action Record	Name and Position	Signature	Date
Contractor: Initiated by:	**Chris Petrovic** **Project Manager**	Chris Petrovic	
Hatch: Received by:			

☐	The requested change is not accepted as a change to the Contract.
☐	The requested change is valid. A Site Instruction or Contract Variation with the agreed impact on cost and schedule will be issued to the Contractor.

Hatch: Verified By:			

NUNA

NUNA EAST LTD

(Section 9)

Land Disturbance Forms

Baffinland

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.		**Department:**	Projects
Date:	1/5/18	**Name/Position:**	**Brandon Urquhart /Project Coordinator**
Project location:	Port Site		Laydown LP3
Project Duration:	Start 1/17/19	Finish	3/12/19

Project Details

GPS Coordinates: Lat: N+7975200 Long: E+504200 (NAD 83)

Land disturbance area: 145000 m2

Type of disturbance (Drilling, Excavation, Rutting due to site access, etc.)

Material placement over tundra, ice removal if present

Detailed description of planned work.

Construction of permanent laydown
- ROQ fill with at least 300mm of Type 8 fill; 100mm thick topping of Type 5 crushed gravel.
- Area to be graded for free draining
- Ditching around Laydown as per Port water management plan.

Check List

-	**Has the Environmental Concerns in section 2.3.1. of the Environmental Protection plan been reviewed?** - If No, please review the list of concerns on page 4 of this form.	Yes
2	**Will work be completed within 31m of the High Water Mark of any stream or water body?.** - If Yes, please contact the Environment Department.	No
3	**Is there a stream or waterbody >31m of the work site?.** - If Yes, Include a detailed description of the Sediment and Erosion Control Measures on Page 3.	No
4	**Has the area been cleared by Archaeology?.** - If No or Unknown, Please contact the Environment Department.	Yes
5	**Will the land disturbance occur between May 31 and August 31?.** - If Yes, An Active Migration Bird Survey is required prior to start.	No

Approval

Approved by: William Bowden Position: Environmental Superintendent

Approved on: Feb 3 2019

Valid Unit:

Comments and recommendations by the Environment Department:

Land Disturbance for the LP3 laydown is approved as agreed upon following confirmation of the field fit mitigation measures discussed through emails with Hatch.

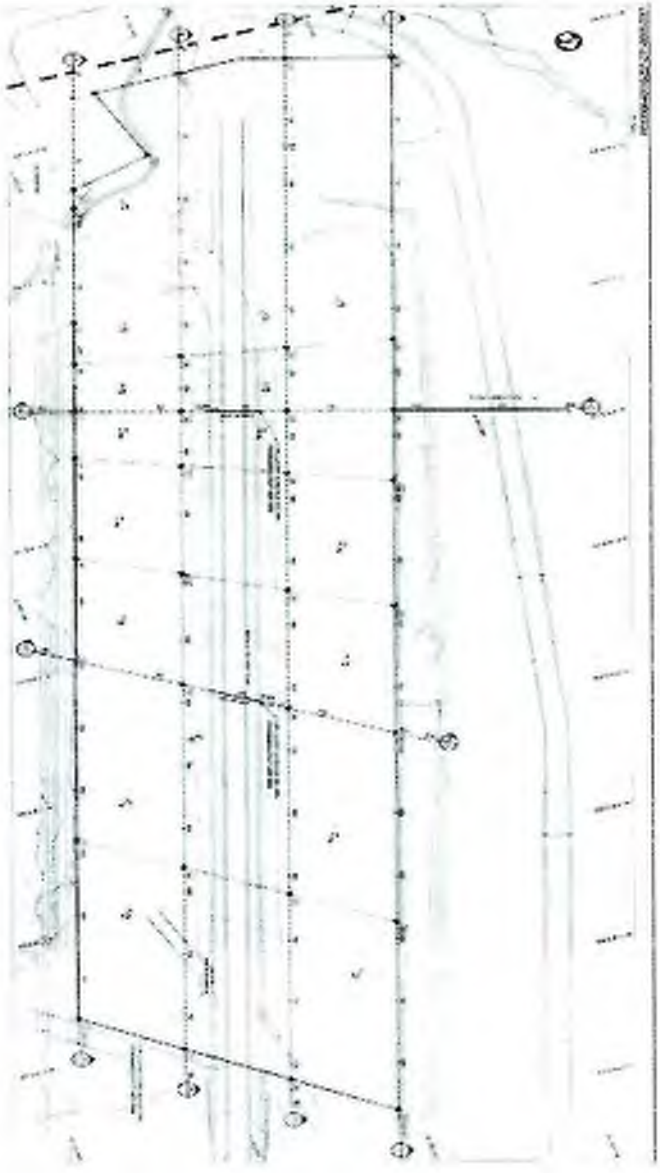
LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	1/5/18		
Project location:	Port Site		

Design/Engineering Drawing

See drawing H353004-40000-221-271-0005-0001, H353004-00000-221-294-0002-0001



LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	1/5/18		
Project location:	Port Site		

Sediment and Erosion Control Measures

Please give a detailed description of the run-off control measure which will be put in place.
Include all water bodies and streams, slope direction and materials to be used.

- Laydown will be graded to be free draining

Baffinland

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	1/5/18		
Project location:	Port Site		

2.3.1 ENVIRONMENTAL CONCERN

2.3.1 ENVIRONMENTAL CONCERN

The Arctic is a fragile environment where the recovery of vegetation within this region is slow. Ground disturbance shall be minimized to protect archaeological resources, wildlife habitats, sensitive landforms, such as ice-rich permafrost features, and prevent erosion and the movement of sediment into watercourses and water bodies. Various permits, licences and approvals issued to Baffinland are specific in regards to ground disturbances and outline the necessary protection measures that need to be taken to minimize this aspect of the Project.

The following measures are to be implemented to minimize ground disturbance:

- Equipment and personnel must stay on existing roads and trails
- Approval for new areas of disturbance must be approved by the Operations Manager
- Rutting (furrow creation) shall be avoided on ground surfaces; overland travel of equipment or vehicle will be suspended when rutting occurs
- All camps shall be located on gravel, sand or other durable land
- No materials shall be stored on the surface ice of streams
- No material shall be removed from below the ordinary high water mark of any stream
- Greywater sumps must be located a distance of at least thirty (30) metres above the ordinary high water mark of any water body

Baffinland

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.		**Department:**	Projects
Date:	1/5/18	**Name/Position:**	**Brandon Urquhart/Project Coordinator**
Project location:	Port Site		Laydown LP3
Project Duration:	Start 1/17/19	Finish	3/12/19

Project Details

GPS Coordinates: Lat: N+7975200 Long: E+504200 (NAD 83)

Land disturbance area: 145000 m2

Type of disturbance (Drilling, Excavation, Rutting due to site access, etc.)

Dewatering by pumping water from existing ponds within laydown area

Detailed description of planned work.

-Excavation of ice from water bodies within footprint of laydown

Check List

1	**Has the Environmental Concerns in section 2.3.1. of the Environmental Protection plan been reviewed?** - If No, please review the list of concerns on page 4 of this form.	Yes
2	**Will work be completed within 31m of the High Water Mark of any stream or water body?.** - If Yes, please contact the Environment Department.	Yes
3	**Is there a stream or waterbody >31m of the work site?.** - If Yes, Include a detailed description of the Sediment and Erosion Control Measures on Page 3.	Yes
4	**Has the area been cleared by Archaeology?.** - If No or Unknown, Please contact the Environment Department.	Yes
5	**Will the land disturbance occur between May 31 and August 31?.** - If Yes, An Active Migration Bird Survey is required prior to start.	No

Approval

Approved by: Position:

Approved on:

Valid Unit:

Comments and recommendations by the Environment Department:

Baffinland

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	1/5/18		
Project location:	Port Site		

Design/Engineering Drawing

Baffinland

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	1/5/18		
Project location:	Port Site		

Sediment and Erosion Control Measures

Please give a detailed discription of the run-off control measure which will be put in place.
Include all water bodies and streams, slope direction and materials to be used.

- Clean ice will be hauled to approved dumping location
- Contaminated ice will be hauled to approved location

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	1/5/18		
Project location:	Port Site		

2.3.1 ENVIRONMENTAL CONCERN

2.3.1 ENVIRONMENTAL CONCERN

The Arctic is a fragile environment where the recovery of vegetation within this region is slow. Ground disturbance shall be minimized to protect archaeological resources, wildlife habitats, sensitive landforms, such as ice-rich permafrost features, and prevent erosion and the movement of sediment into watercourses and water bodies. Various permits, licences and approvals issued to Baffinland are specific in regards to ground disturbances and outline the necessary protection measures that need to be taken to minimize this aspect of the Project.

The following measures are to be implemented to minimize ground disturbance:

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- All camps shall be located on gravel, sand or other durable land
- No materials shall be stored on the surface ice of streams
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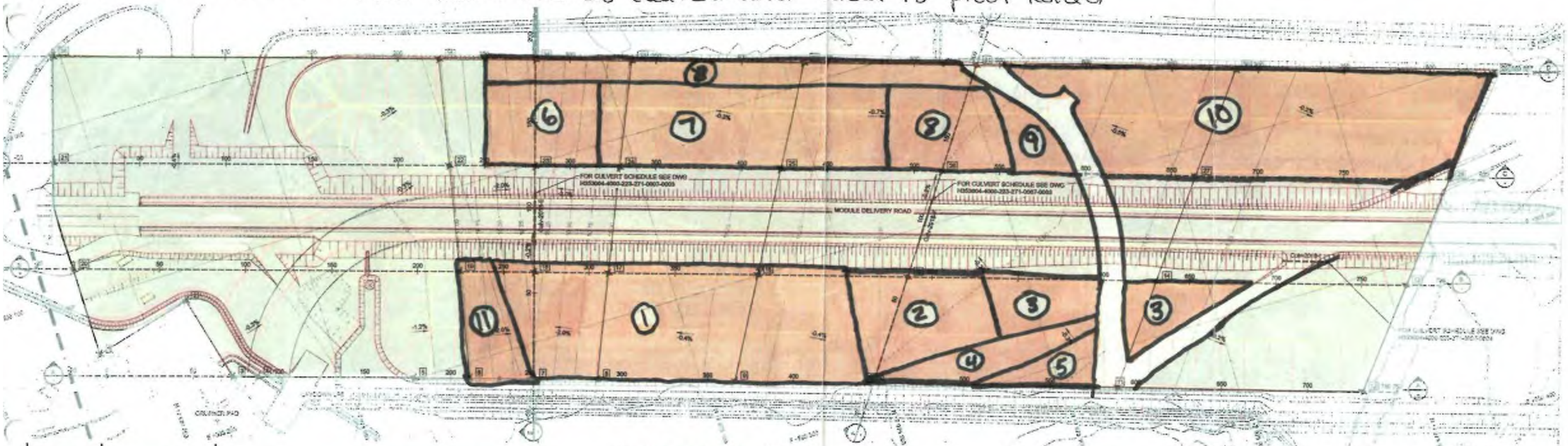
LAYDOWN LP3 - MATERIAL PLACEMENT APPROVAL TRACKING

SUB-GRADE APPROVAL

After Snow & Ice IS cleared and area is proof Rolled



No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
1	Feb 22/19		S/6 Approved		KMR
2	Feb 23/19		S/6 Approved		KMR
3	Feb 24/19		S/6 Approved		KMR
4	Feb 25/19		S/6 Approved		KMR
5			S/6 Approved		KMR
6	Mar 2/19		S/6 Approved		KMR
7	Mar 3/19		S/6 Approved		KMR
8	Mar 4/19		S/6 Approved		KMR
9	Mar 8/19		S/6 Approved	BL	KMR
10	Mar 9/19		S/6 Approved	BL	KMR

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
11	March 16/19		S/6 Approved		

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department
QCD-004 Material Lift Approval
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval for placement of* ROQ *layer.* *Material Type:* 12 *Work Scope Location:* +LP3 west side *Location Section:* +365-+475
Date of Inspection:	March 11/19
Parties Present at Inspection	Kenny MacRae HATCH

Comments:

An Inspection of the Type 12 *layer was conducted prior to placement of the next lift.*

The compaction was found to have been completed to the specifications provided.

The section is approved for placement of the next lift

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Joe Barron		March 15/19
HATCH Representative:	Kenny MacRae		March 15/2019

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department
QCD-004 Material Lift Approval
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval for placement of* N8 8 *layer.* *Material Type:* 8 *Work Scope Location:* LP3 *Location Section:* +360 + 590 KMR West of Mat road (Eastern half)
Date of Inspection:	
Parties Present at Inspection	Joe Barron Nuna Kenny MacRae ALLNORTH

Comments:

An inspection of the Type 8 *layer was conducted prior to placement of the next lift.* (32mm)

The compaction was found to have been completed to the specifications provided.

The section is approved for placement of the next lift

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Joe Barron	[signature]	March 11/19
HATCH Representative:	Kenny MacRae	[signature]	March 11/19

NUNA
NUNA EAST LTD

Baffinland
HATCH

Nuna East Limited Quality Department
QCD-001 Sub-Grade Approval
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval* *Work Scope Location:* area #10 *Location Section:* LP3
Date of Inspection:	March 9/19
Parties Present at Inspection	Joe Barron Nuna Kenny MacRae ALC North

Comments:

A visual inspection of the LP3 *surface/sub-grade was conducted prior to placement of fill Material.*

Sub-grade:

area #10

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Joe Barron		March 10/19
HATCH Representative:	Kenny MacRae		Mar 10/19

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department
QCD-004 Material Lift Approval
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval for placement of* RQQ Layer *layer.* *Material Type:* RQQ *Work Scope Location:* LP3 *Location Section:* +360 + 510 western Half LR3 westside map #17
Date of Inspection:	March 9/19
Parties Present at Inspection	Joe Barron NUNA Kenny MacRae ALNorth

Comments:

An inspection of the RQQ *layer was conducted prior to placement of the next lift.*

The compaction was found to have been completed to the specifications provided.

The section is approved for placement of the next lift

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Joe Barron		March 10/19
HATCH Representative:	Kenny MacRae		Mar 10/19

Fill Placement

Feb 27th

Set back to start towards placed RCC Type 12 with Type 8

Type 8

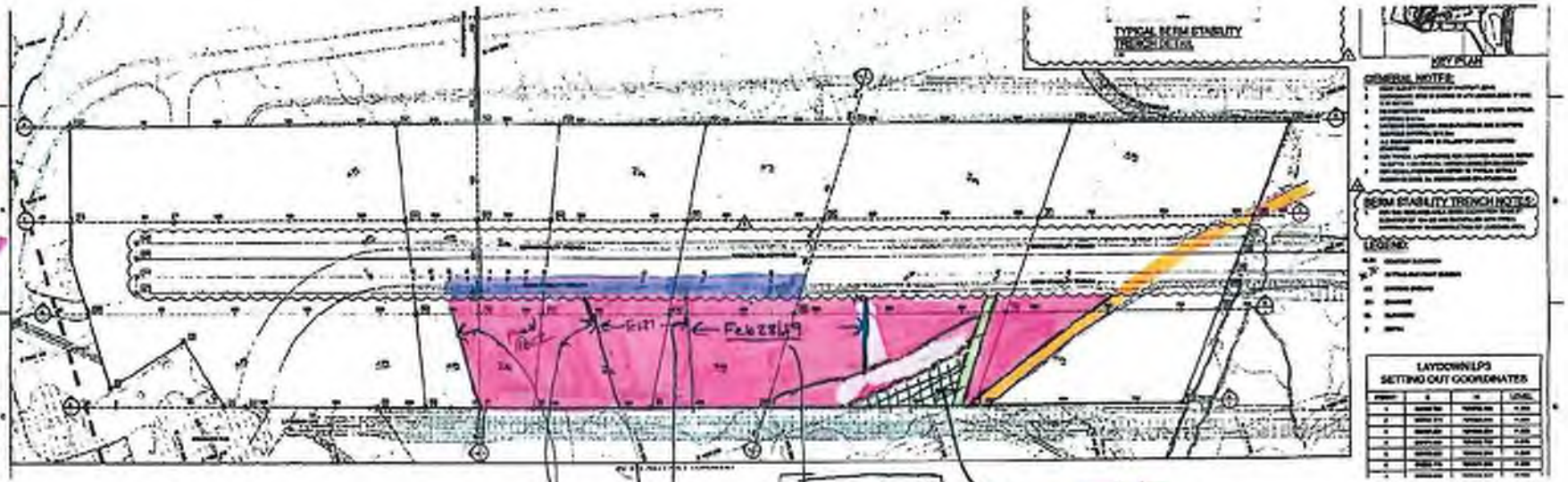
Type 12

Haul Pad Access Rd

ore pile Access Rd

6+ pass's highlighting along stability trench ERR

Reference line only to track completion completed



Area already to Top of Type 8 grade Feb 22/19 completed 6+ pass's Feb 22/19

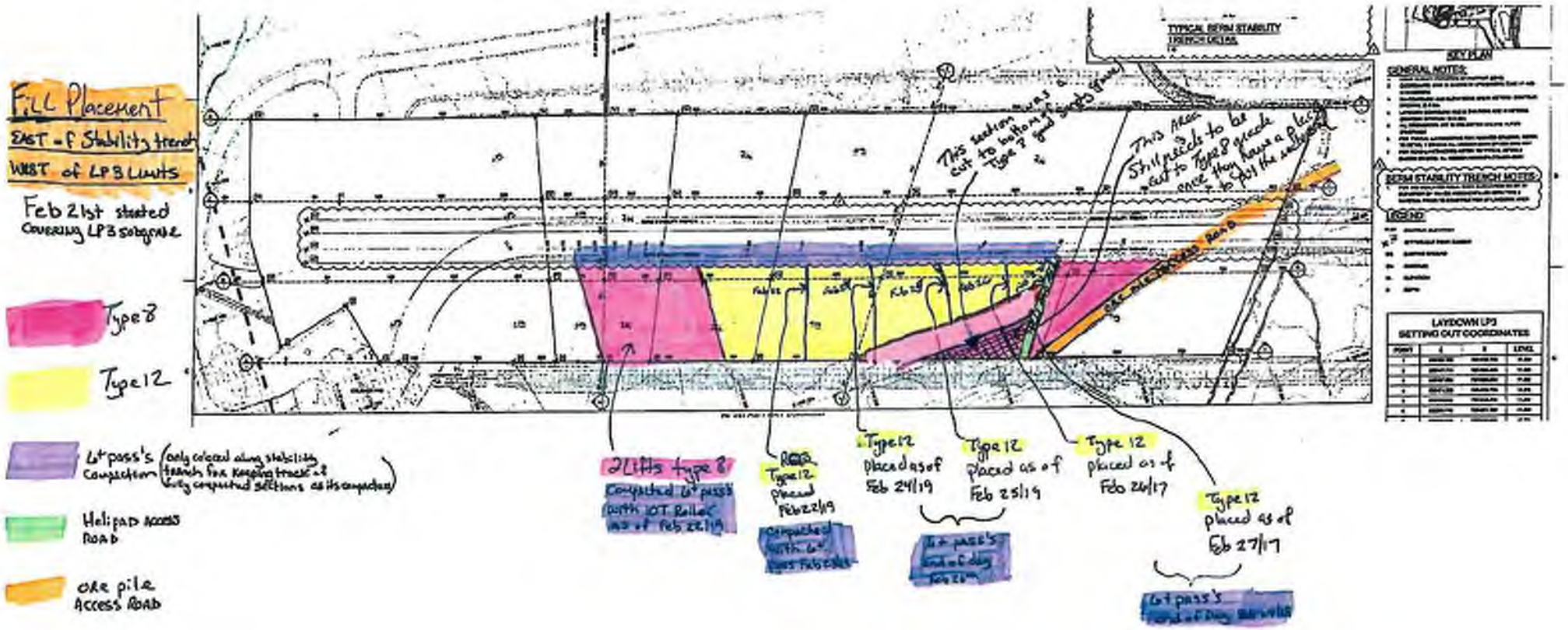
Type 8 placed as of Feb 27/19 over Type 12 Completed Feb 27/19 6+ passes

Type 8 placed Feb 28/19 STILL REQUIRES 4 pass's for completion of completion

Still needs to be cut to type 8 grades once they have a place for excavated material

MARCH 1/19 Shift to Compact Type 8 placed Feb 28/19

Page 2 fill Placement LP3



Page 1 fill placement LP3

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material Type 8 Layer* *Type: Type 8* *Location: Laydown LP3 Area 1*
Date of Inspection:	*February 22, 2019*
Parties Present at Inspection	Nuna, Aluarth

Comments:

*An inspection of the **Type 8** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019

Hatch Stephane Giard 03/08/2019

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material Type 8 Layer* *Type: Type 8* *Location: Laydown LP3 Area 2*
Date of Inspection:	*February 27, 2019*
Parties Present at Inspection	NUNA, ALLNORTH

Comments:

*An inspection of the **Type 8** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019
Hatch	Stephane Giguet		03/08/2019

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material Type 8 Layer* *Type: Type 8* *Location: Laydown LP3 Area 3*
Date of Inspection:	*February 28, 2019*
Parties Present at Inspection	Nuna, Hatch

Comments:

*An inspection of the **Type 8** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019
Hatch:	Stephane Gouet		03/08/2019

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material Type 8 Layer* *Type: Type 8* *Location: Laydown LP3 Area 4*
Date of Inspection:	*February 28, 2019*
Parties Present at Inspection	Nunt, Hatch

Comments:

*An inspection of the **Type 8** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019

Hatch: Stephane Giard 03/08/2019

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material Type 8 Layer* *Type: Type 8* *Location: Laydown LP3 Area 5*
Date of Inspection:	*March 1, 2019*
Parties Present at Inspection	NUNA, HATCH

Comments:

*An inspection of the **Type 8** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019

Hatch: Stephane Ginet 03/08/2019

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material Type 8 Layer* *Type: Type 8* *Location: Laydown LP3 Area 6*
Date of Inspection:	*March 1, 2019*
Parties Present at Inspection	Nuna, Allnorth

Comments:

*An inspection of the **Type 8** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019

Hatch: Stephane Giard 03/08/2019

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material Type 8 Layer* *Type: Type 8* *Location: Laydown LP3 Area 7*
Date of Inspection:	*March 9, 2019*
Parties Present at Inspection	NUNA, AUNORTH

Comments:

*An inspection of the **Type 8** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/09/2019
HATCH Representative:	Ken MacRae		03/09/2019

Hatch: Stephane Gionet 03/09/2019

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material Type 8 Layer* *Type: Type 8* *Location: Laydown LP3 Area 8*
Date of Inspection:	*March 10, 2019*
Parties Present at Inspection	Nuna, Allnorth

Comments:

*An inspection of the **Type 8** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/10/2019
HATCH Representative:	Ken MacRae		03/10/2019
Hatch:	Stephane Giguet		03/10/2019

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material Type 8 Layer* *Type: Type 8* *Location: Laydown LP3 Area 9*
Date of Inspection:	*March 12, 2019*
Parties Present at Inspection	Nuna, Hatch

Comments:

*An inspection of the **Type 8** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/12/2019
HATCH Representative:	Ken MacRae		03/12/2019

Hatch: Stephane Gienet 03/12/2019

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material Type 8 Layer* *Type: Type 8* *Location: Laydown LP3 Area 10*
Date of Inspection:	*March 15, 2019*
Parties Present at Inspection	Nuna, Hatch

Comments:

*An inspection of the **Type 8** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/15/2019
HATCH Representative:	Ken MacRae		03/15/2019

Hatch: Stephanie Grant 03/15/2019

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material Type 8 Layer* *Type: Type 8* *Location: Laydown LP3 Area 11*
Date of Inspection:	*March 17, 2019*
Parties Present at Inspection	Nuna, Hatch

Comments:

*An inspection of the **Type 8** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

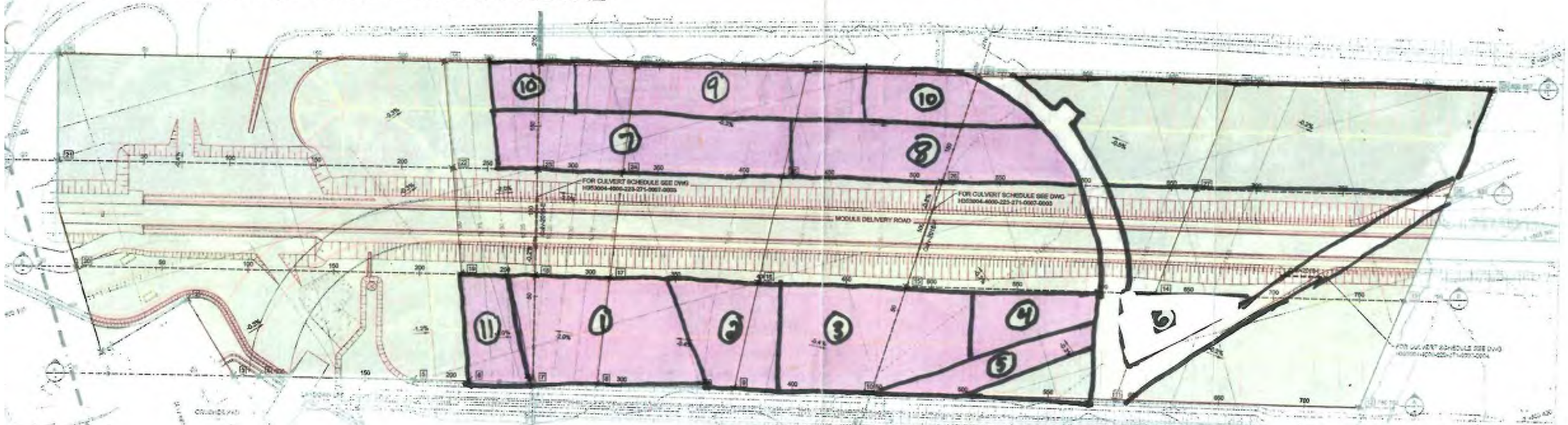
The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/17/2019
HATCH Representative:	Ken MacRae		03/17/2019

Hatch: Stephane Gignet 03/17/2019

LAYDOWN LP3 - MATERIAL PLACEMENT APPROVAL TRACKING

TYPE 8 (150mm minus) PLACEMENT APPROVAL



No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY	
				NUNA	HATCH
1	Feb 22/19		Completed as Part of ROQ Placement 2Lifts		KMR
2	Feb 27/19		Compacted Feb 27/19		KMR
3	Feb 28/19		Compacted Mar 1/19		KMR
4	Feb 28/19		Compacted Mar 1/19		KMR
5	Mar 1/19		Compacted Mar 1/19		MK
6	Mar 1/19		Compacted MAR		MK
7	Mar 9/19		Compacted MAR 10/19	BK	KMR
8	Mar 10/19		Compacted Mar 11/19	BK	KMR
7	Mar 12/19		Placed Mar 11/19 Night shift compacted Mar 12/19		KMR
0	MAR 15/19		Placed Mar 14-15/19 compacted March 15-16/19		KMR

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY	
				NUNA	HATCH
11	March 17/19		Placed and compacted March 17/19		

NUNA

NUNA EAST LTD

(Section 10)

Quality Control Reports

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 2 Page 1 of 1

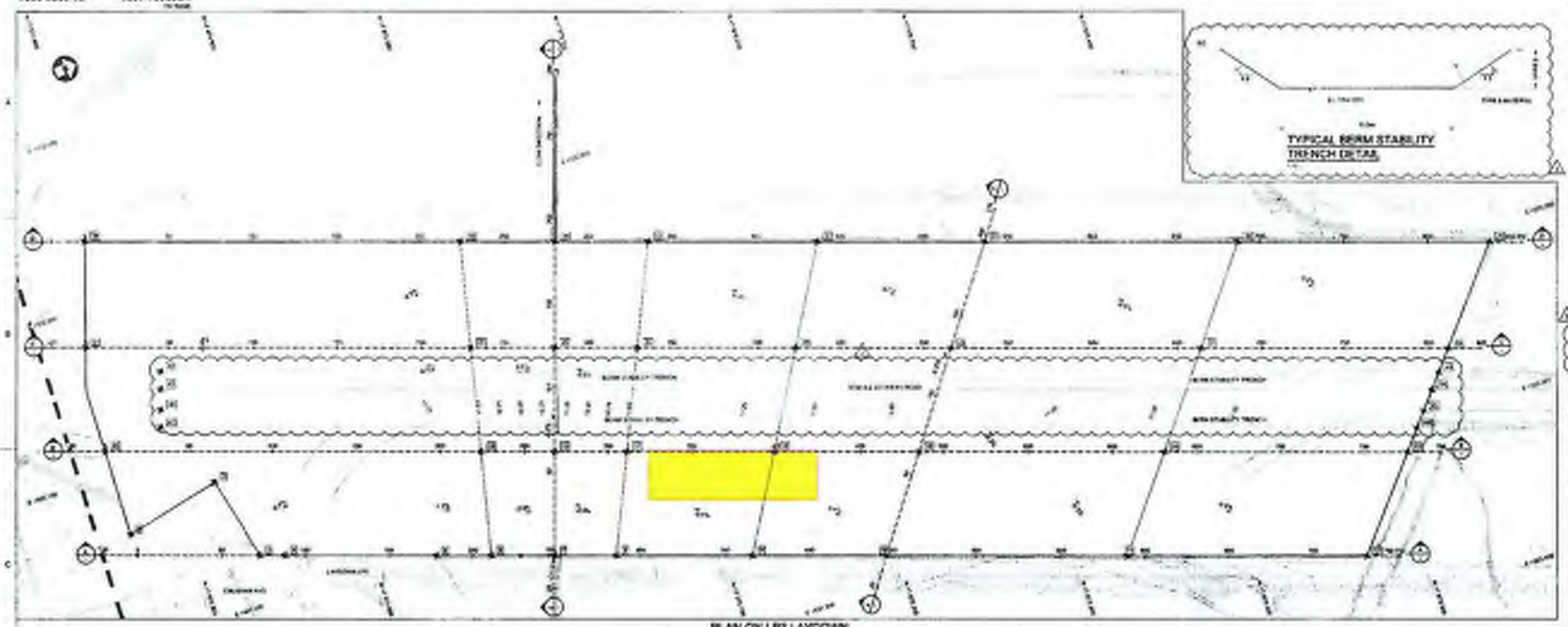
		Date: 8/30/19
Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Material Type:** TYPE 8
Site Area: LAYDOWN 3	**Area Description:** BESIDE MOD ROAD ON EASTSIDE MIDWAY OF LP3	
Drawing No.: H353004-40000-221-271-0005-0001		**Rev.:** 2

Area / Stations Inspected: See Survey Data Report & Drwg	**Type of Proof Role:** ☐ Subgrade ☑ Material
Proof Rolled With: A loaded 745 Articulated Haul Truck	**Number of Passes Completed:** 1

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections (Pumping)	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Location Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments:

[illegible]	/	DZ	Foreman	03/09/19
Construction Designate		Print/Sign	Title	Date
BRADFORD WATKIN	/		QC COORDINATOR	8/30/19
Contractor QC Designate		Print/Sign	Title	Date
Ronny Franklin	/		Match QA	Sept 29-2019
Client QA Designate		Print/Sign	Title	Date



PLAN ON LP3 LAYDOWN

SECTION A - A

SECTION B - B

SECTION C - C

SECTION D - D

SECTION E - E

SECTION F - F

KEY PLAN

TYPICAL BERM STABILITY TRENCH DETAIL

GENERAL NOTES

BERM STABILITY TRENCH NOTES

LEGEND

LAYDOWN LP3
SETTING OUT COORDINATES

POINT	E	N	LEVEL
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BERM STABILITY TRENCH
SETTING OUT COORDINATES

POINT	E	N

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 1 Page 1 of 1

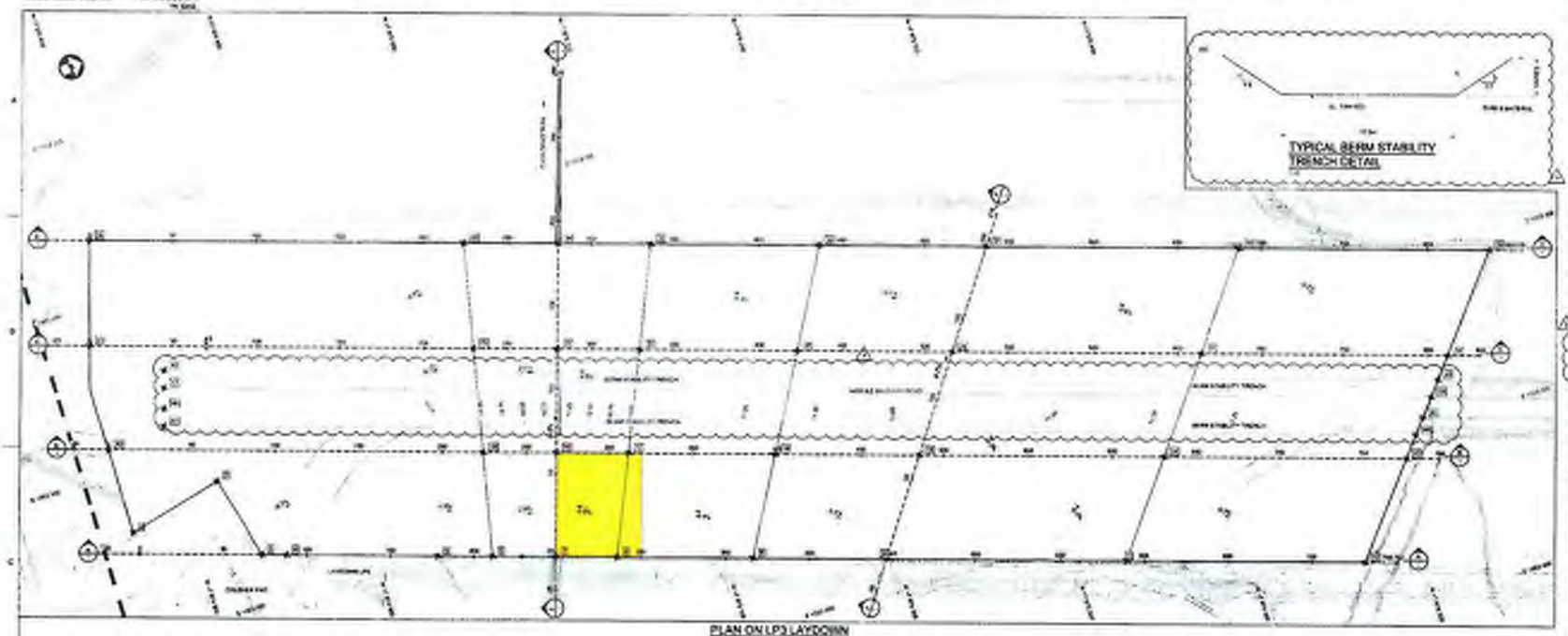
		Date: AUGUST 29, 2019
Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LAYDOWN B LP3	**Area Description:** SE SECTION ALONG DITCH ON LP3	
Drawing No.: 1435E04-40000-221-271-0005-0001		**Rev.:** 2

Area / Stations Inspected: SEE SURVEY DATA + DWG.
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☑ YES ☐ NO ☐ N/A	
Rebound of Surface	☑ YES ☐ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☑ YES ☐ NO ☐ N/A	
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	

Comments: MINOR DEFLECTIONS ADDITIONAL PACKING REQ'D.
BEFORE NEXT LIFT. (TYPE 12)

DAVID THOMPSON / DT	FOREMAN	09/09/19
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKINS / BW	QC COORDINATOR	9/29/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franke /	Hatch QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date



GENERAL NOTES

BERM STABILITY TRENCH NOTES

LEGEND

LAYDOWN LP3
SETTING OUT COORDINATES

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BERM STABILITY TRENCH
SETTING OUT COORDINATES

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Released for Use

FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
PLAN AND PROFILES

H353004-40000-221-271-0005-0001 2

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 1 Page 1 of 1

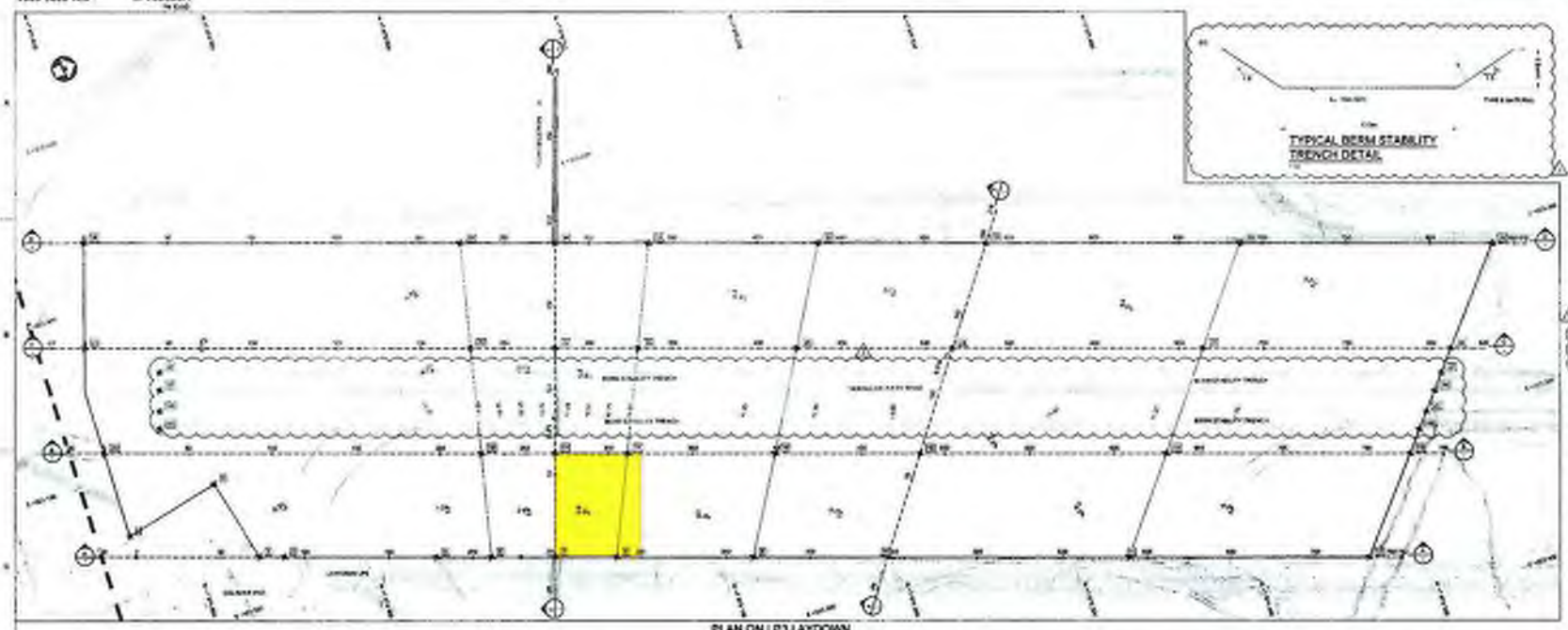
		Date: 8/27/19
Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LAYDOWN LP3	**Area Description:** SE SECTION ALONG DITCH ON LP3	
Drawing No.: 1353004-40000-221-271-0005-0001		**Rev.:** 2

Area / Stations Inspected: SEE SURVEY DATA + DWG
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	DW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	DW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	DW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	DW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	DW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	DW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	DW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	DW

Comments: FINAL TYPE 5.

David Thompson / DT	FOREMAN	03/09/19
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKINS	QC COORDINATOR	8/29/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Match QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date



PLAN ON LP3 LAYDOWN

TYPICAL BERM STABILITY TRENCH DETAIL

KEY PLAN

GENERAL NOTES:

BERM STABILITY TRENCH NOTES:

LEGEND:

LAYDOWN LP3
SETTING OUT COORDINATES

POINT	E	N	LEVEL
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NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 1 Page 1 of 1

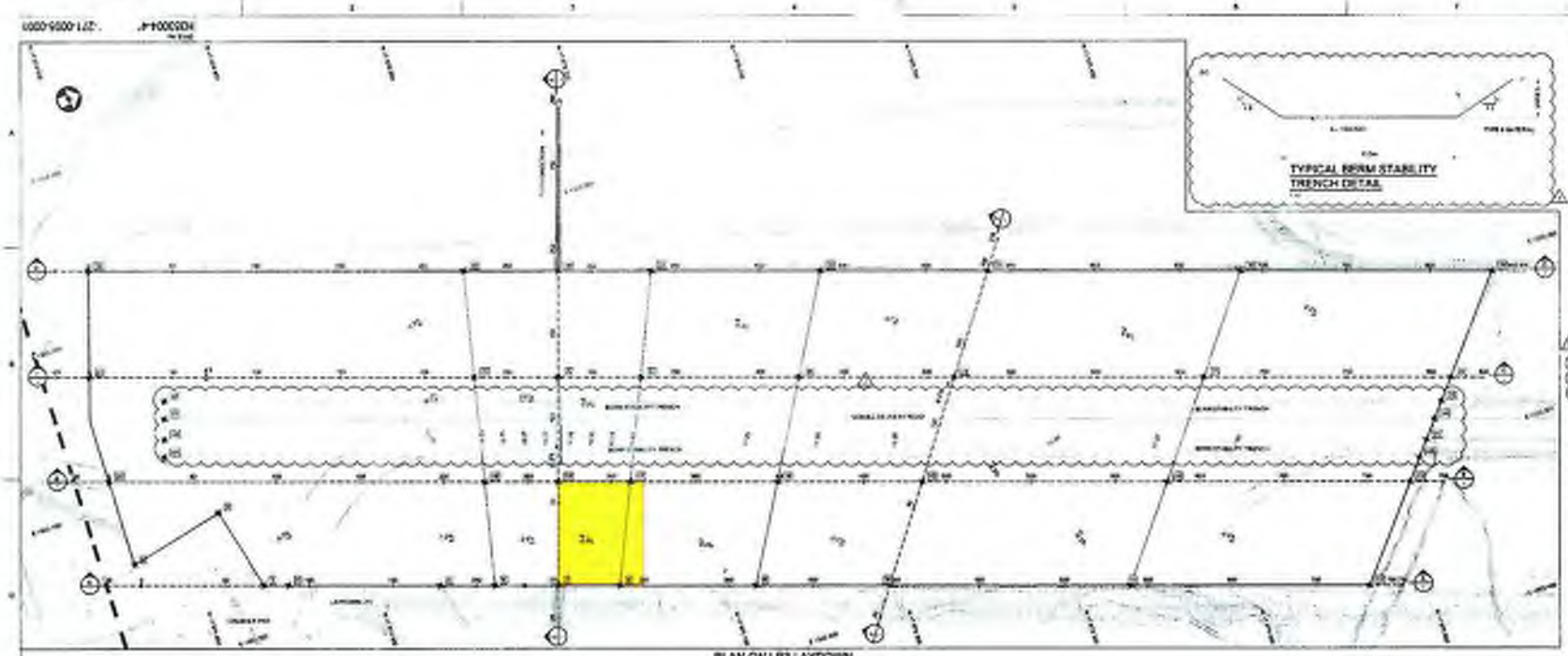
		Date: 8/29/19
Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LAYDOWN 3	**Area Description:** SE SECTION ALONG DITCH ON LP3	
Drawing No.: 4353004-40000-221-271-0005-0001		**Rev.:** 2

Area / Stations Inspected: SEE SURVEY DATA + DWG.
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	
Rebound of Surface	☐ YES ☑ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	

Comments: TYPE 8 PLACEMENT.

[illegible] /	[illegible]	09/09/2019
Construction Designate – Print/Sign	Title	Date
BRANDON WATKINS /	QC COORDINATOR	8/29/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date



TYPICAL BERM STABILITY TRENCH DETAIL

KEY PLAN

GENERAL NOTES:

BERM STABILITY TRENCH NOTES:

LEGEND:

PLAN ON LP3 LAYDOWN

SECTION A - A

SECTION B - B

SECTION C - C

SECTION D - D

SECTION E - E

SECTION F - F

LAYDOWN LP3
SETTING OUT COORDINATES

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BERM STABILITY TRENCH
SETTING OUT COORDINATES

POINT	E	N
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NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 1 Page 1 of 1

		Date: AUG 29, 2019
Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LAYDOWN LP3	**Area Description:** SE SECTION ALONG DITCH of LP3	
Drawing No.: 1435300A-40000-221-271-0005-0001		**Rev.:** 2

Area / Stations Inspected: SEE SURVEY DATA DOC
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments: 2ND PROOF ROLL OF SAME AREA (FINAL TYPE 12)
APPROVED. TYPE 8 PLACEMENT RELEASED.

DAVID THOMPSON / DT	[illegible]	02/09/2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKINS / BW	QC COORDINATOR	8/29/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken / RF	Hatch QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date

TYPICAL BERM STABILITY TRENCH DETAIL

KEY PLAN

GENERAL NOTES:

BERM STABILITY TRENCH NOTES:

LEGEND

PLAN ON LP3 LAYDOWN

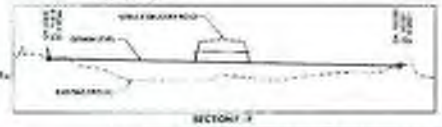
SECTION A - A

SECTION B - B

SECTION C - C

SECTION D - D

SECTION E - E



SECTION F

LAYDOWN LP3
SETTING OUT COORDINATES

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BERM STABILITY TRENCH
SETTING OUT COORDINATES

POINT	E	N

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

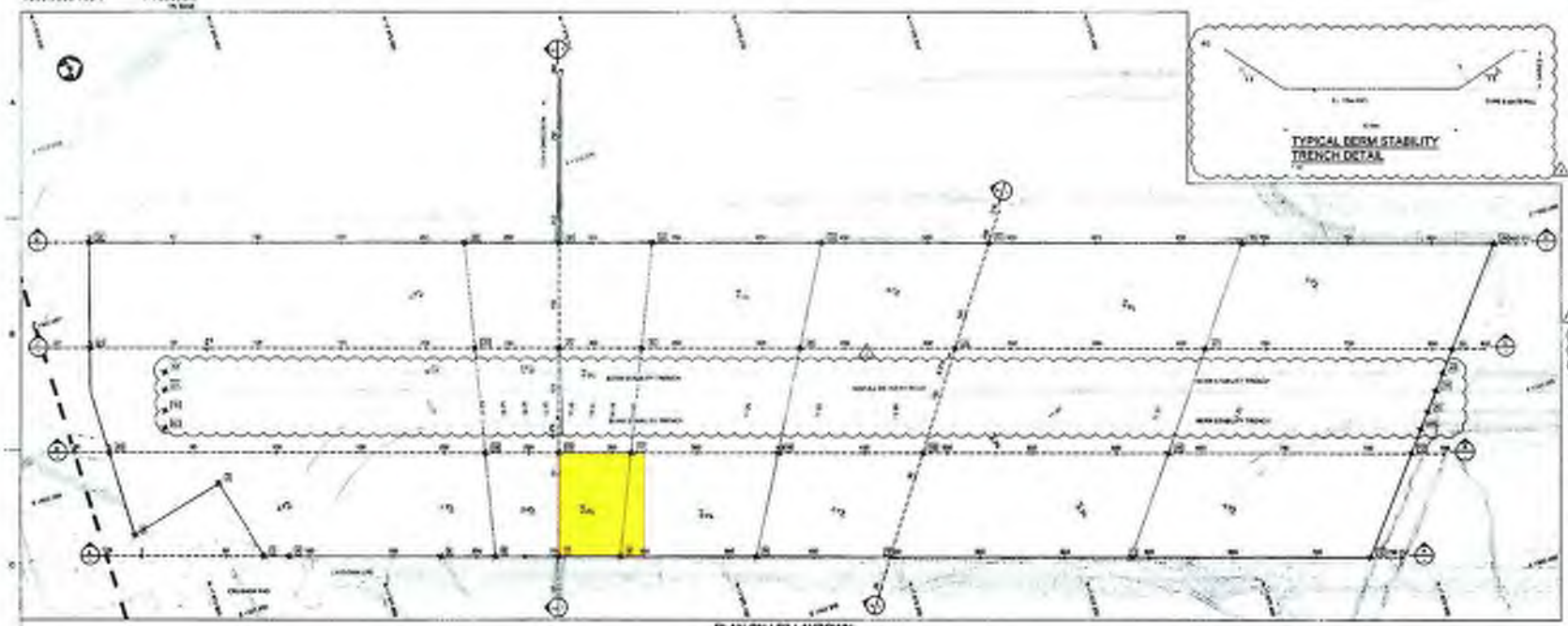
Project: Mary River Expansion Project	**ITP #:** CC006-00053A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** LAYDOWN PAD LP3 SE	
Drawing No.: M253004-40000-221-271-0005-0001	**Rev.:** 2	

Area / Stations Inspected: SEE SURVEY DATA & DIDC
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	RA
Rebound of Surface	☐ YES ☑ NO ☐ N/A	RA
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	RA
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	RA
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	RA
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	RA
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	RA
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	RA

Comments: Last Lift of ROQ
Witness by All North.

Robert Albert / Robert Albert	Supervisor	Aug 28, 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN /	QC COORDINATOR	8/28/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Match QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date



KEY PLAN

TYPICAL BERM STABILITY TRENCH DETAIL

GENERAL NOTES:

BERM STABILITY TRENCH NOTES:

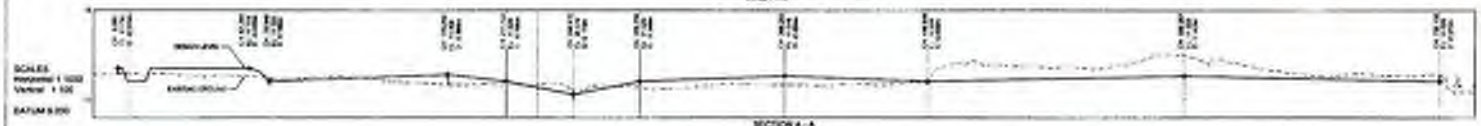
LEGEND

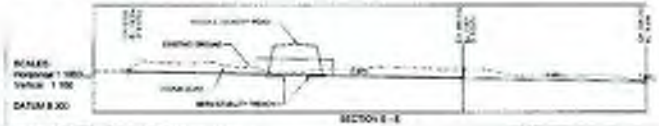
LAYDOWN LP3
SETTING OUT COORDINATES

POINT	E	N	LEVEL

BERM STABILITY TRENCH
SETTING OUT COORDINATES

POINT	E	N





Released for Use

FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
PLAN AND PROFILES

1435004-40000-221-271-0005-0001 2

NUNA EAST LTD	SUBGRADE APPROVAL REPORT	Exhibit 1-8b QDE Revision 0 Page 1 of 1

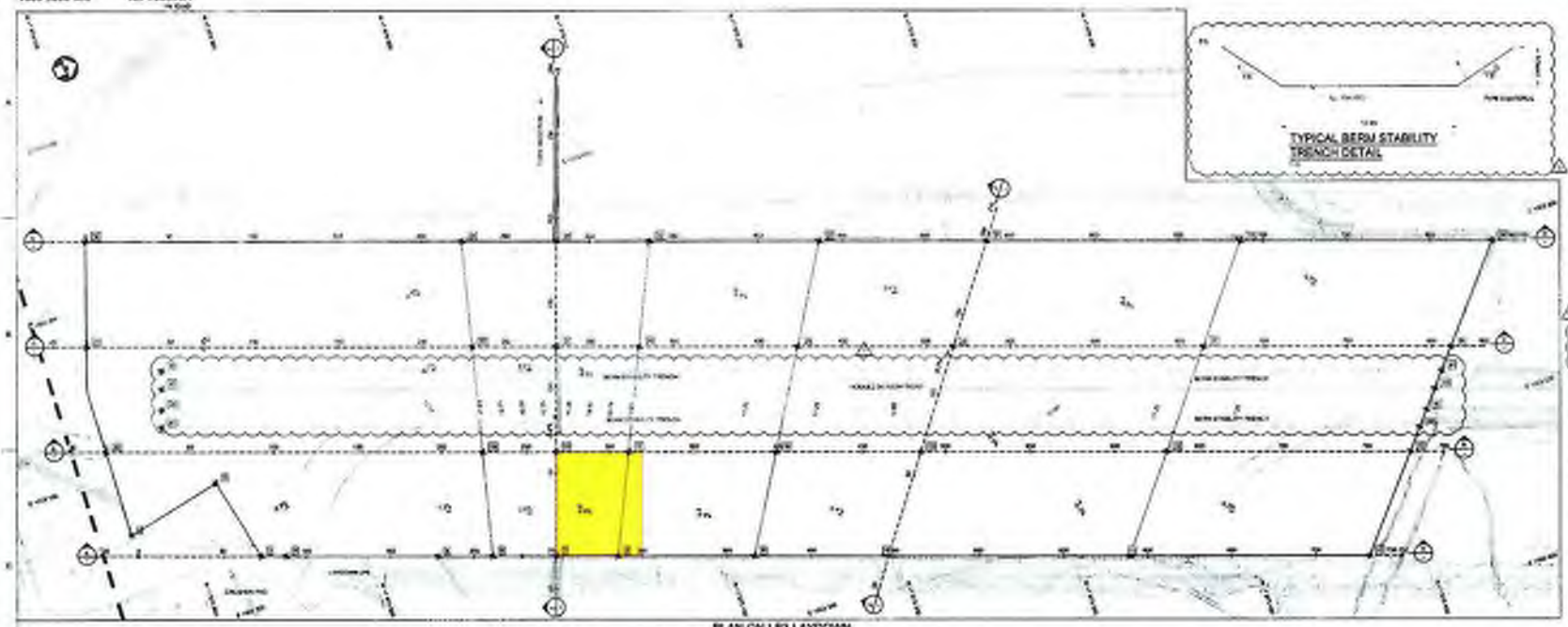
Project: Mary River Expansion Project	**ITP#:** CC006-00003A	**Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** LAYDOWN PAD LP3 SE	
Drawing No.: 1353004-40000-221-271-0005-0001		**Rev.:** 2

Area / Stations Inspected: SEE SURVEY DATA + DWG

INSPECTION DESCRIPTION		Verified (Initial)
Organic Soil Present.	☐ YES ☑ NO ☐ N/A	RA
Snow or Ice Present.	☐ YES ☑ NO ☐ N/A	RA
Ponded Water Present.	☐ YES ☑ NO ☐ N/A	RA
Water Seepage.	☐ YES ☑ NO ☐ N/A	RA
Frozen Soil Present.	☑ YES ☐ NO ☐ N/A	RA
Excavation Cleared of Foreign and Loose Soil Material.	☑ YES ☐ NO ☐ N/A	RA
Excavation Matches Design and IFC drawings.	☑ YES ☐ NO ☐ N/A	RA
Was Over Excavation Required. Depth: (_____)	☐ YES ☐ NO ☑ N/A	RA
Excavation Satisfactory and Accepted.	☑ YES ☐ NO ☐ N/A	RA

Comments: Excavate To perma Frost, No access For Truck. Test bottom of excavation with Exc. bucket. witness by All North

Robert Albert / Robert Albert	supervisor	Aug 28, 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN /	QC COORDINATOR	8/28/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date



GENERAL NOTES

BERM STABILITY TRENCH NOTES

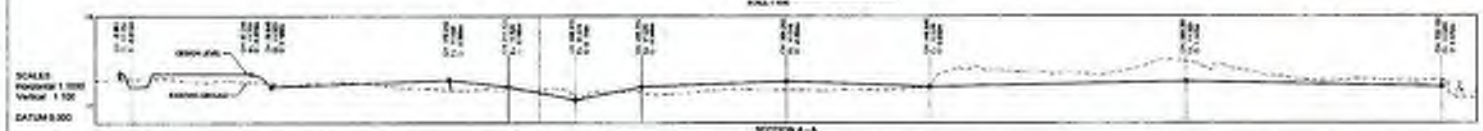
LEGEND

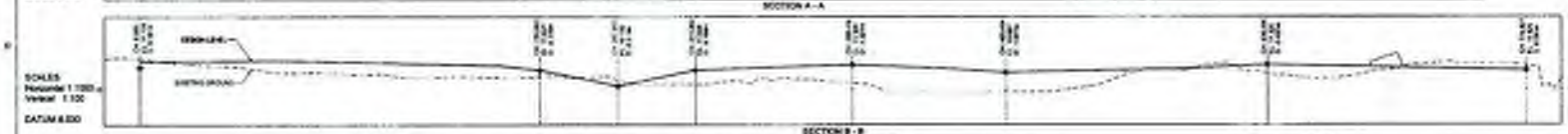
LAYDOWN LP3
SETTING OUT COORDINATES

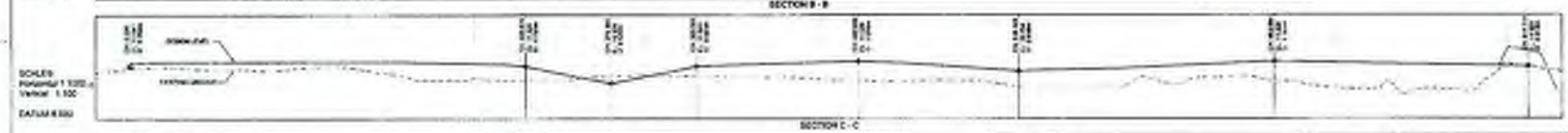
POINT	E	N	LEVEL

BERM STABILITY TRENCH
SETTING OUT COORDINATES

POINT	E	N







FOR CONSTRUCTION

Released for Use

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
PLAN AND PROFILES

H353004-40000-221-271-0005-0001 2

NUNA EAST LTD	SUBGRADE APPROVAL REPORT	Exhibit 1-8b QDE Revision 0 Page 1 of 1

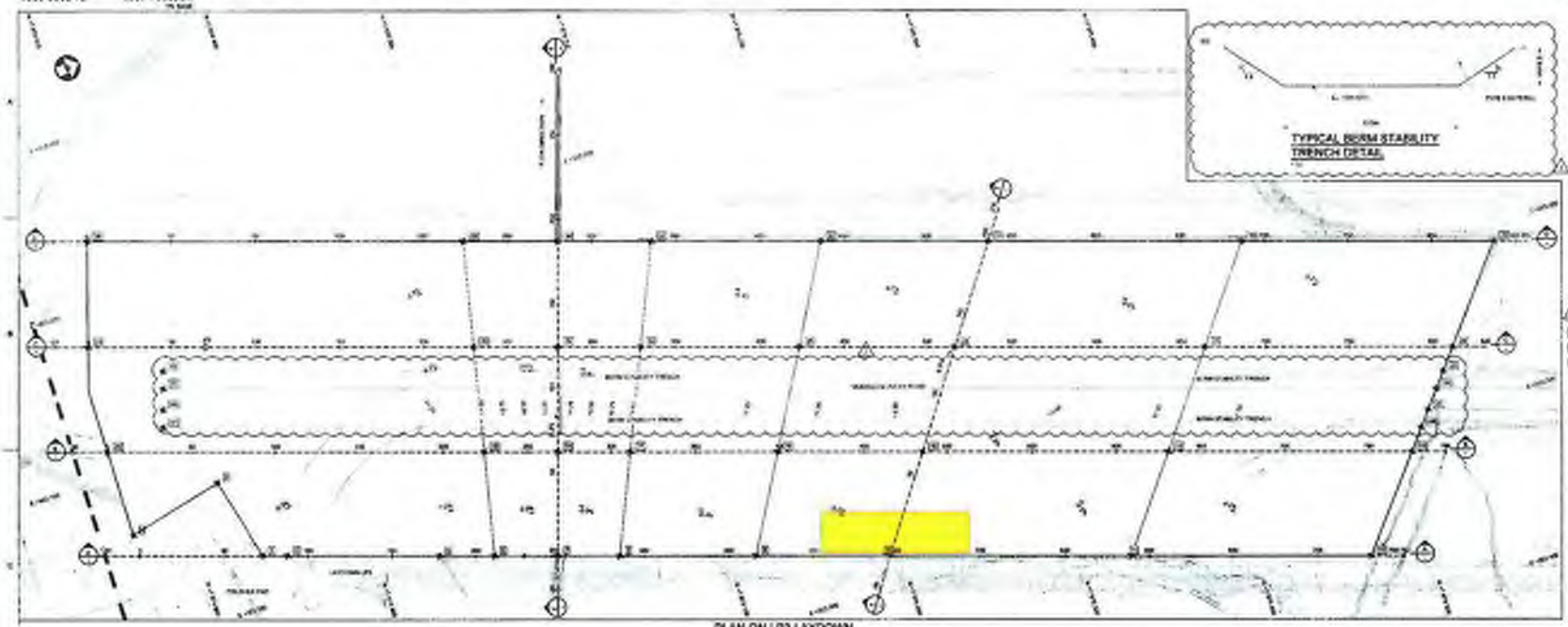
Project: Mary River Expansion Project	**ITP#:** CC006-0003A	**Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP 3	**Area Description:** LP3 behind 380 Camp	
Drawing No.: A353004-40000-228-272-0017-0001		**Rev.:** 1

Area / Stations Inspected: SEE SURVEY DATA + DWG.

INSPECTION DESCRIPTION		Verified (Initial)
Organic Soil Present.	☐ YES ☑ NO ☐ N/A	RA
Snow or Ice Present.	☐ YES ☑ NO ☐ N/A	RA
Ponded Water Present.	☐ YES ☑ NO ☐ N/A	RA
Water Seepage.	☑ YES ☐ NO ☐ N/A	RA
Frozen Soil Present.	☑ YES ☐ NO ☐ N/A	RA
Excavation Cleared of Foreign and Loose Soil Material.	☑ YES ☐ NO ☐ N/A	RA
Excavation Matches Design and IFC drawings.	☑ YES ☐ NO ☐ N/A	RA
Was Over Excavation Required. Depth: (_____)	☐ YES ☐ NO ☑ N/A	RA
Excavation Satisfactory and Accepted.	☑ YES ☐ NO ☐ N/A	RA

Comments: Excavated To Perma Frost, Test bottom with Excavator bucket, No access for Truck All North present To inspect

Robert Albert / Robert Albert	Supervisor	Aug 27, 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKINS /	QC COORDINATOR	8/27/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Aug 29-2019
Client QA Designate – Print/Sign	Title	Date



TYPICAL BERM STABILITY TRENCH DETAIL

KEY PLAN

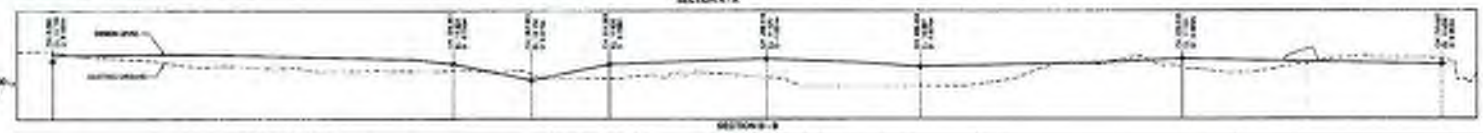
GENERAL NOTES:

BERM STABILITY TRENCH NOTES:

LEGEND

PLAN ON LP3 LAYDOWN

SECTION A - A



SECTION B - B

SECTION C - C

SECTION D - D

SECTION E - E

SECTION F - F

LAYDOWN LP3
SETTING OUT COORDINATES

POINT	E	N	LEVEL
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BERM STABILITY TRENCH
SETTING OUT COORDINATES

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Released for Use

FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
PLAN AND PROFILES

1055004-40000-221-271-0005-0001 2

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

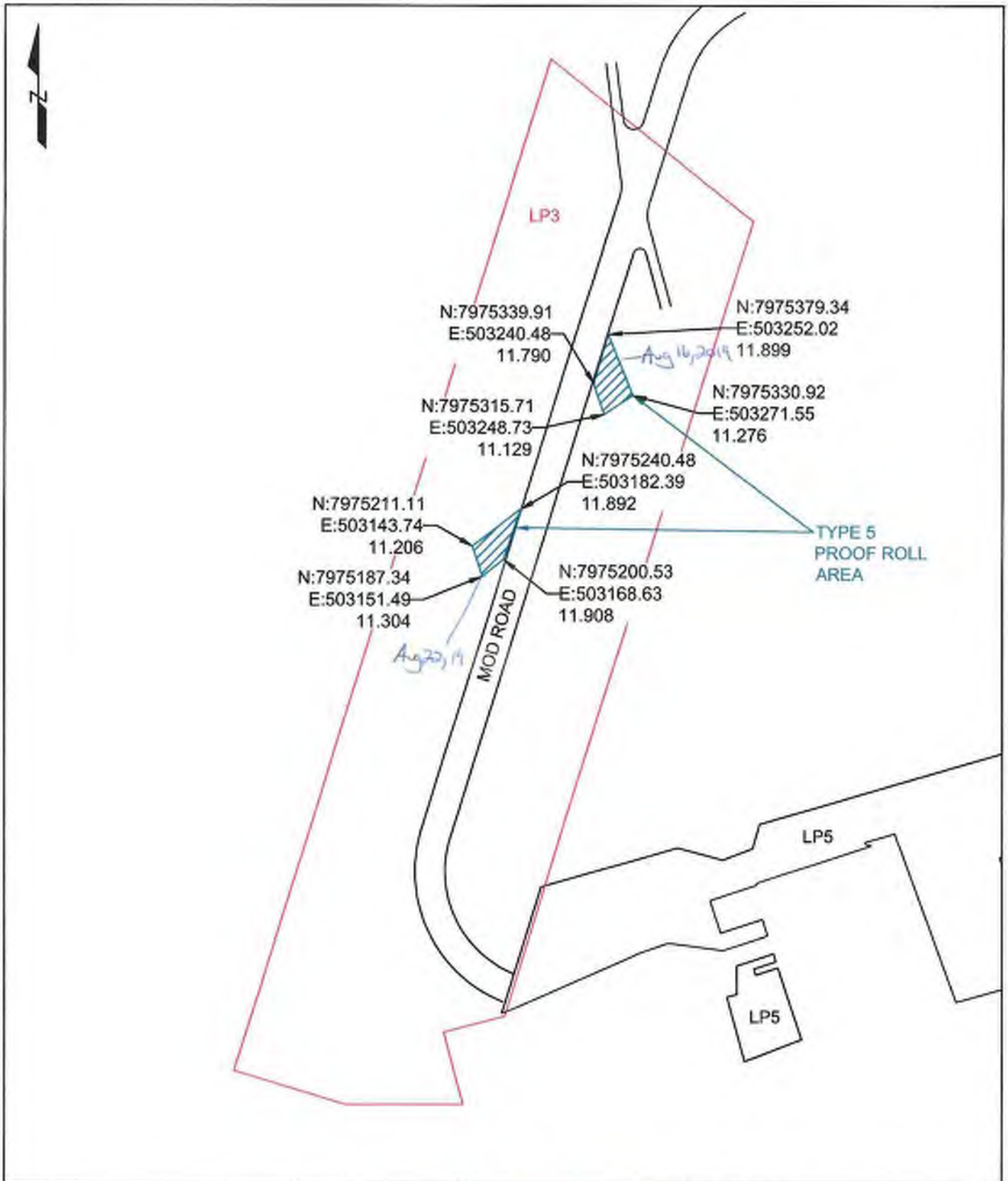
Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** LP3 / MOD Road Ramp W	
Drawing No.: H353004-40000-221-271-0005-0001		**Rev.:** 2

Area / Stations Inspected: See Survey DATA
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	JL
Rebound of Surface	☐ YES ☑ NO ☐ N/A	JL
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	JL
Ridging Between Wheel Ridges minor due to turn	☑ YES ☐ NO ☐ N/A	JL
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	JL
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	JL
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	JL
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	JL

Comments:
Finished Type 5 surface

Grant LaPointe /	Supervisor	Aug 22/19
Construction Designate – Print/Sign	Title	Date
John Gun /	QC coordinator	Aug 22/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP3 - MOD ROAD RAMPS TYPE 5 PROOF ROLL SURVEYED AUGUST 22, 2019.**
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: Aug. 23, 2019	DRAWING NAME (YYMMDD): 190822 LP3 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

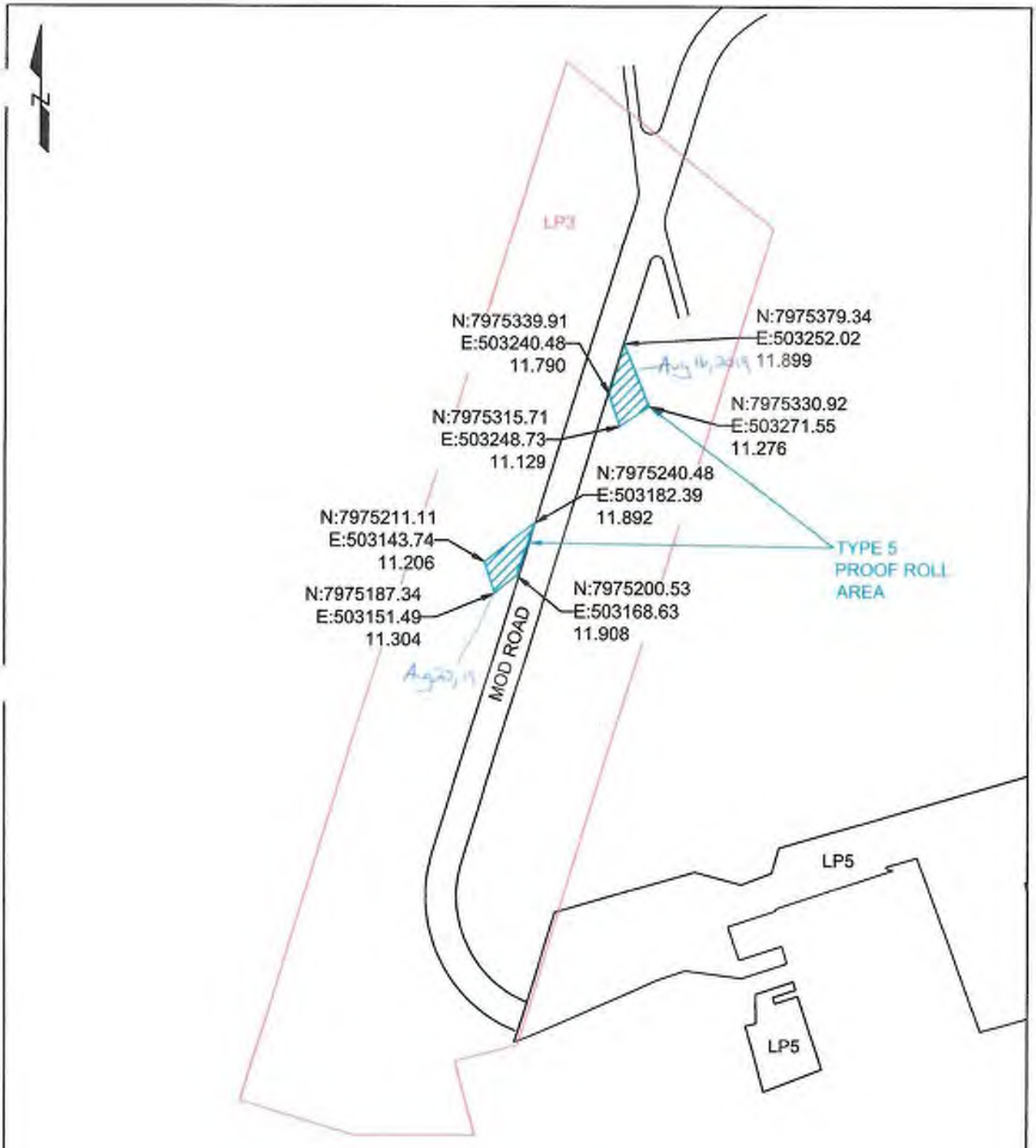
Project: Mary River Expansion Project	**ITP #:** CC006-00034	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** Ramp LP3 to Mod Road	
Drawing No.: 4353004-40000-221-271-0005-0001	**Rev.:** 2	

Area / Stations Inspected: See Survey DATA
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	JG
Rebound of Surface	☐ YES ☒ NO ☐ N/A	JG
Formation of Cracks Patterns	☐ YES ☒ NO ☐ N/A	JG
Ridging Between Wheel Ridges	☐ YES ☒ NO ☐ N/A	JG
Inconsistency Compaction Between Areas	☐ YES ☒ NO ☐ N/A	JG
Surface Uniform and Level	☒ YES ☐ NO ☐ N/A	JG
Proof Roll Test Satisfactory and Accepted	☒ YES ☐ NO ☐ N/A	JG
Elevation Record (Survey)	☒ YES ☐ NO ☐ N/A	JG

Comments: Type 5

Grant LaPointe /	Supervisor	Aug 16, 19
Construction Designate – Print/Sign	Title	Date
John Gray /	QC Coordinator	Aug 16/19
Contractor QC Designate – Print/Sign	Title	Date
Rob Chisholm /	Materials Lead	Aug 16/19
Client QA Designate – Print/Sign	Title	Date



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP3 - MOD ROAD RAMPS TYPE 5 PROOF ROLL** SURVEYED AUGUST 22, 2019.
OWNER: BAFFINLAND IRON MINES LP				
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: Aug. 23, 2019	DRAWING NAME (YYMMDD): 190822 LP3 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** LP3 Final Type 8	
Drawing No.: H353004-40000-221-271-0005-0001	**Rev.:** 2	

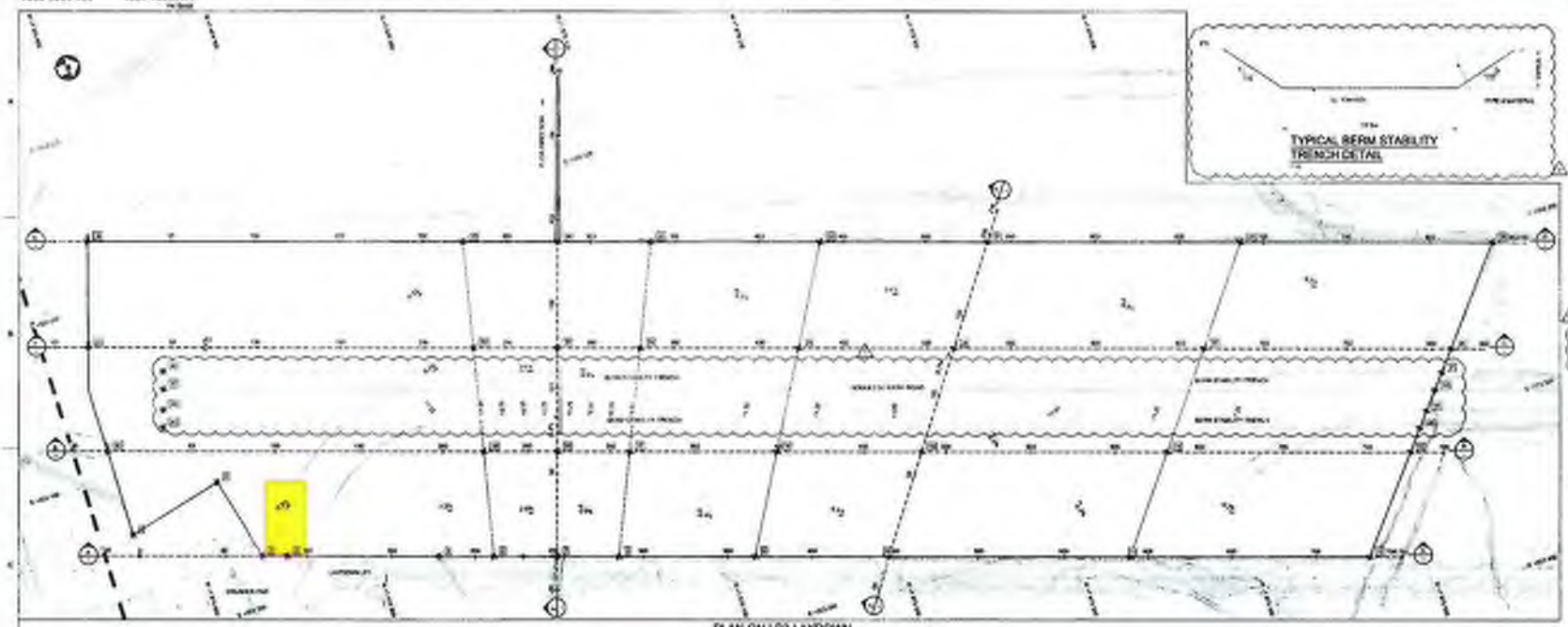
Area / Stations Inspected: SEE SURVEY DATA + DWG.

Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	DW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	DW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	DW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	DW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	DW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	DW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	DW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	[illegible]

Comments:

DON Wilson / [signature]	Foreman	Aug 14 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN / [signature]	QC COORDINATOR	8/14/19
Contractor QC Designate – Print/Sign	Title	Date
Mike Hynes / [signature]	Material Lead	Aug 15/2019
Client QA Designate – Print/Sign	Title	Date



GENERAL NOTES

BERM STABILITY TRENCH NOTES

LEGEND

LAYDOWN LP3
SETTING OUT COORDINATES

POINT	E	N	LEVEL
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BERM STABILITY TRENCH
SETTING OUT COORDINATES

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Released for Use

FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
PLAN AND PROFILES

H353004-40000-221-271-0005-0001 | 2

NUNA EAST LTD	SUBGRADE APPROVAL REPORT	Exhibit 1-8b QDE Revision 0 Page 1 of 1

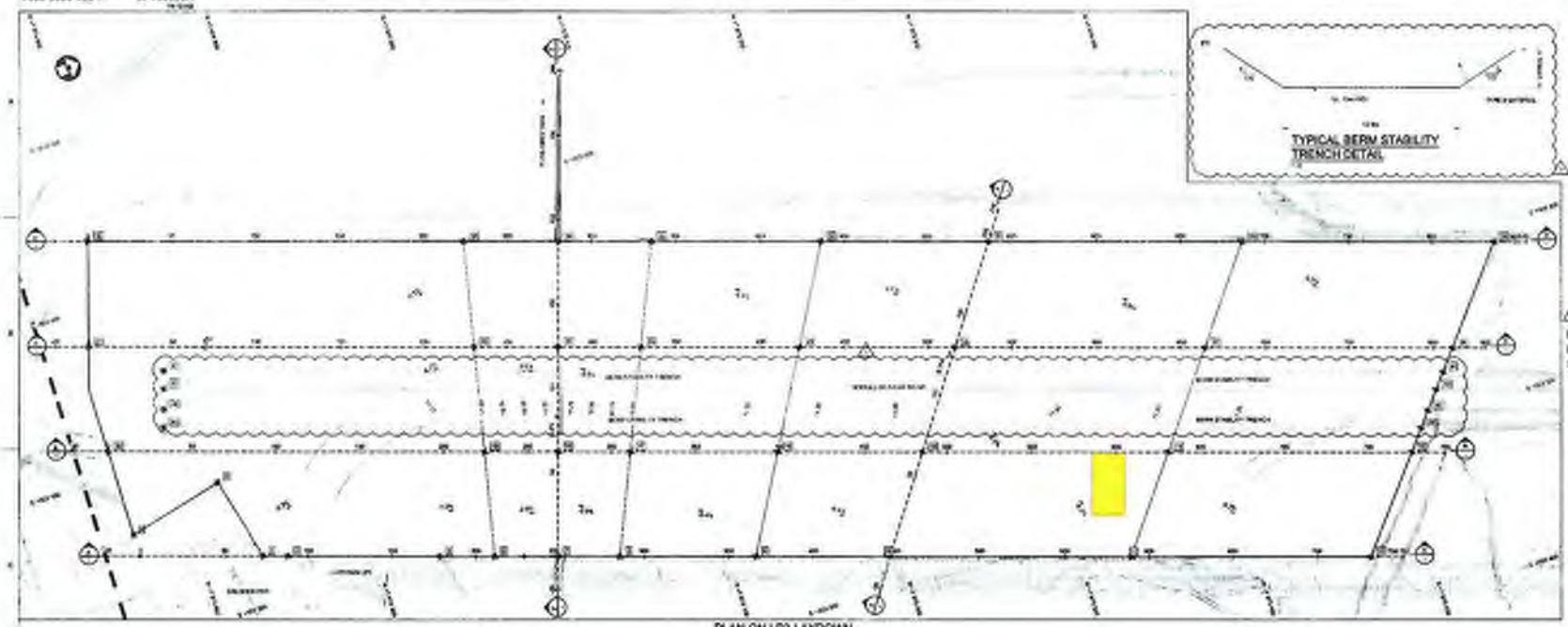
Project: Mary River Expansion Project	**ITP#:** CC006-0003A	**QA Ref. Rpt. No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** n/A	**Subsystem:** N/A
Area: LP3	**Area Description:** Heli road	
Drawing No.: 1455300-40000-221-271-0005-0001		**Rev.:** 2

Area / Stations Inspected: See Survey attached + DXF.

INSPECTION DESCRIPTION		Verified (Initial)
Organic Soil Present.	☐ YES ☑ NO ☐ N/A	JG
Snow or Ice Present.	☐ YES ☑ NO ☐ N/A	JG
Ponded Water Present. Minor, OK	☑ YES ☐ NO ☐ N/A	JG
Water Seepage.	☐ YES ☑ NO ☐ N/A	JG
Frozen Soil Present.	☑ YES ☐ NO ☐ N/A	JG
Excavation Cleared of Foreign and Loose Soil Material.	☑ YES ☐ NO ☐ N/A	JG
Excavation Matches Design and IFC drawings.	☑ YES ☐ NO ☐ N/A	JG
Was Over Excavation Required. Depth: (to competent)	☐ YES ☐ NO ☑ N/A	JG
Excavation Satisfactory and Accepted.	☑ YES ☐ NO ☐ N/A	JG

Comments: Excavated on Night shift

/		
Construction Designate – Print/Sign	Title	Date
John Guan /	QC Coordinator	Aug 15/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Match QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date



GENERAL NOTES:

BERM STABILITY TRENCH NOTES:

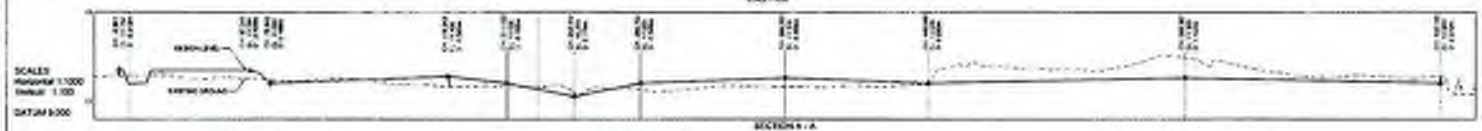
LEGEND:

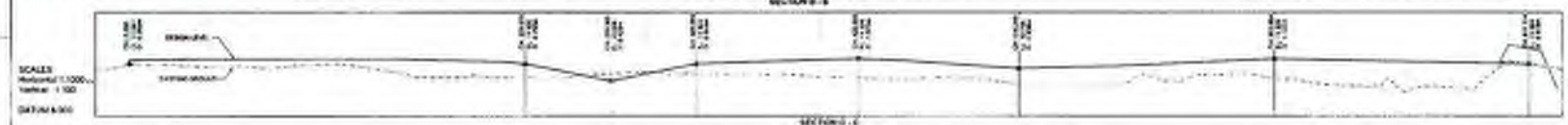
LAYDOWN LP3
SETTING OUT COORDINATES

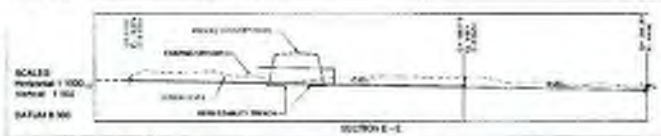
POINT	E	N	LEVEL

BERM STABILITY TRENCH
SETTING OUT COORDINATES

POINT	E	N







Released for Use

FOR CONSTRUCTION

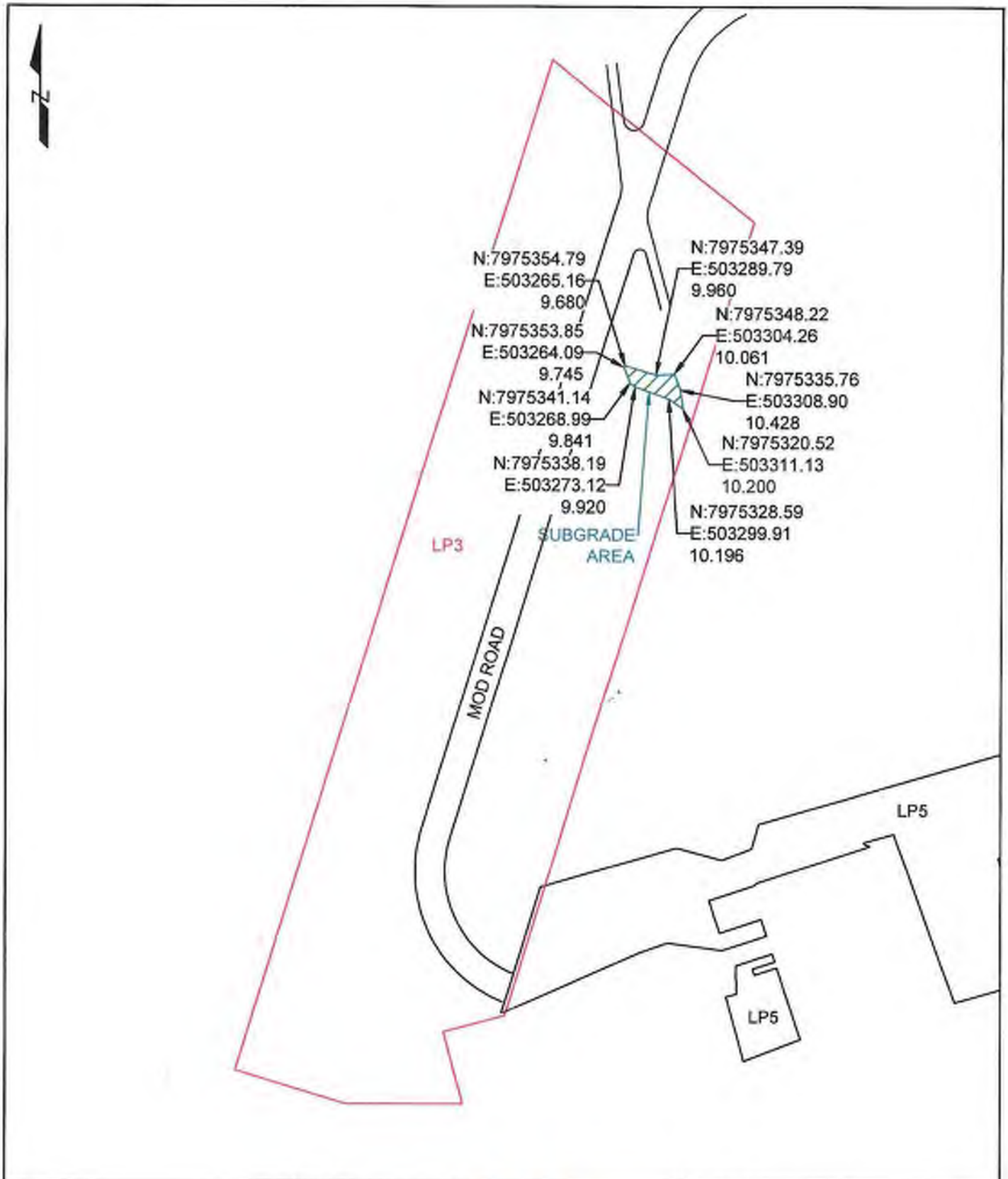
HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
PLAN AND PROFILES

H353004-40000-221-271-0005-0001 2



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: LP3 SUBGRADE REPORT SURVEYED AUGUST 14, 2019.
OWNER: BAFFINLAND IRON MINES LP				
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: Aug. 15, 2019	DRAWING NAME (YYMMDD): 190814 LP3 SG REPORT.dwg

NUNA
NUNA EAST LTD

AUTHORIZATION FOR BACKFILL

Exhibit :1-3a QDE
Revision 0

Project: Mary River Expansion Project	**ITP#:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Sub-System:** N/A
Area: LP3	**Area Description:** Heli road	
Compaction Required Yes ☑ No ☒		**Excavation Permit No.:** N/A
Drawing No.:		**Rev.:** 1

PRE-BACK FILL INSPECTION

INSPECTION DESCRIPTION:		Verified (Initial)
1. Excavation cleared of frozen material, foreign objects and debris.	☑ YES ☐ NO ☐ N/A	JG
2. No water seepage or ponded water present in excavation. V Minor	☐ YES ☑ NO ☐ N/A	JG
3. No organic and loose soil present.	☑ YES ☐ NO ☐ N/A	JG
4. All installations in the excavation are complete.	☐ YES ☐ NO ☑ N/A	JG
5. Concrete substructures complete.	☐ YES ☐ NO ☑ N/A	JG
6. Electrical installation(s) complete.	☐ YES ☐ NO ☑ N/A	JG
7. Piping installation(s) complete.	☐ YES ☐ NO ☑ N/A	JG
8. Sewer vents and manhole installation complete.	☐ YES ☐ NO ☑ N/A	JG
9. Frost blocks installed as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	JG
10. Geotextile fabric installation(s) as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	JG
11. Insulation installed per IFC drawings.	☐ YES ☐ NO ☑ N/A	JG
12. Culverts installation(s) as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	JG
13. Redline / As-Builts completed.	☑ YES ☐ NO ☐ N/A	JG
14. Overall condition of base is suitable for backfilling and compaction.	☑ YES ☐ NO ☐ N/A	JG

APPROVAL TO PROCEED WITH BACKFILL

Contractor QC Designate		Client Designate	
John Guan			
Name (print)	Signature	Name (print)	Signature

IN PROCESS INSPECTION

INSPECTION DESCRIPTION:		Verified (Initial)
1. Backfill material is free of foreign material and conforms to specification.	☑ YES ☐ NO ☐ N/A	JG
2. Survey check of Location, dimensions and shape of excavation or base.	☑ YES ☐ NO ☐ N/A	JG
3. Lift thickness confirmed, and compaction testing performed in accordance with specification.	☑ YES ☐ NO ☐ N/A	JG
4. Warning tape(s) installed, depth and type from final grade: (_____),(_____).	☐ YES ☐ NO ☑ N/A	JG
5. Red concrete installed over utilities.	☐ YES ☐ NO ☑ N/A	JG
6. Soil density test performed as per specification and test reports completed.	☐ YES ☐ NO ☑ N/A	JG
7. Moisture levels acceptable.	☑ YES ☐ NO ☐ N/A	JG
8. Final elevation of area is in accordance to IFC drawings.	☑ YES ☐ NO ☐ N/A	JG

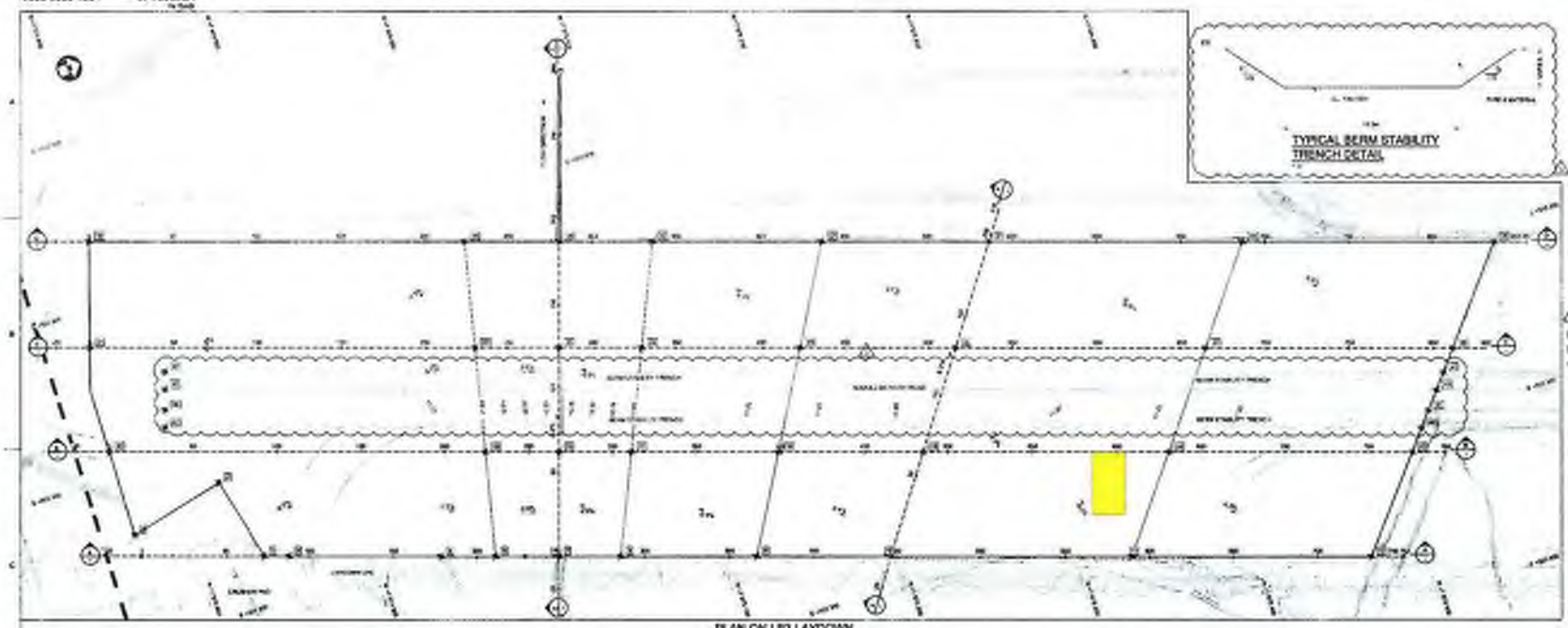
Test Instruments

Manufacturer	Description	Range	I.D. No.:	Calibration Due Date
	N/A			

Comments:
Backfill in AM

Attach additional supporting documents, data, or test results to this Report as required

/		
Construction Designate – Print/Sign	Title	Date
John Guan /	QC COORDINATOR	Aug 15, 19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date



KEY PLAN

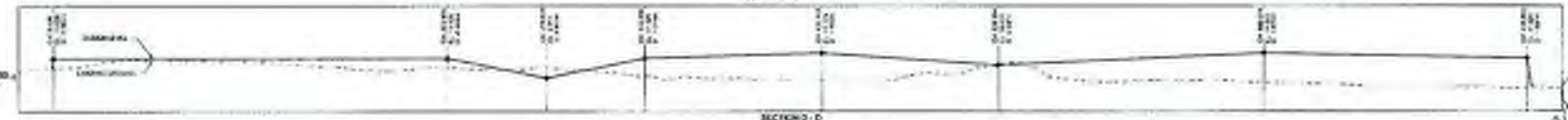
GENERAL NOTES

BERM STABILITY TRENCH NOTES

LEGEND

LAYDOWN LP3
SETTING OUT COORDINATES

POINT	E	N	LEVEL



BERM STABILITY TRENCH
SETTING OUT COORDINATES

POINT	E	N

Released for Use

FOR CONSTRUCTION

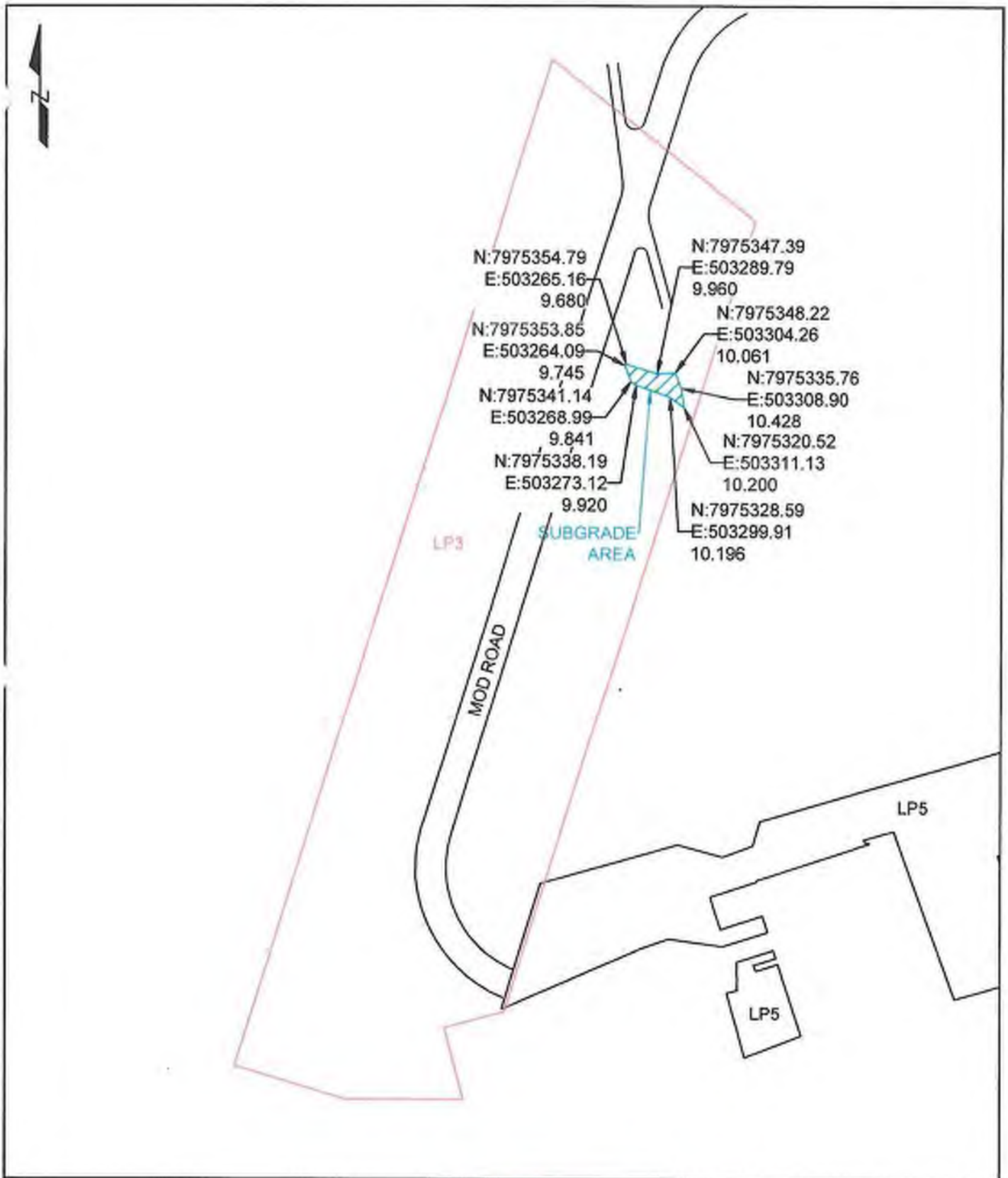
HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
PLAN AND PROFILES

H353004-40000-221-271-0005-0001 2



NOTES:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: LP3 SUBGRADE REPORT SURVEYED AUGUST 14, 2019.
OWNER: BAFFINLAND IRON MINES LP				
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: Aug. 15, 2019	DRAWING NAME (YYMMDD): 190814 LP3 SG REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

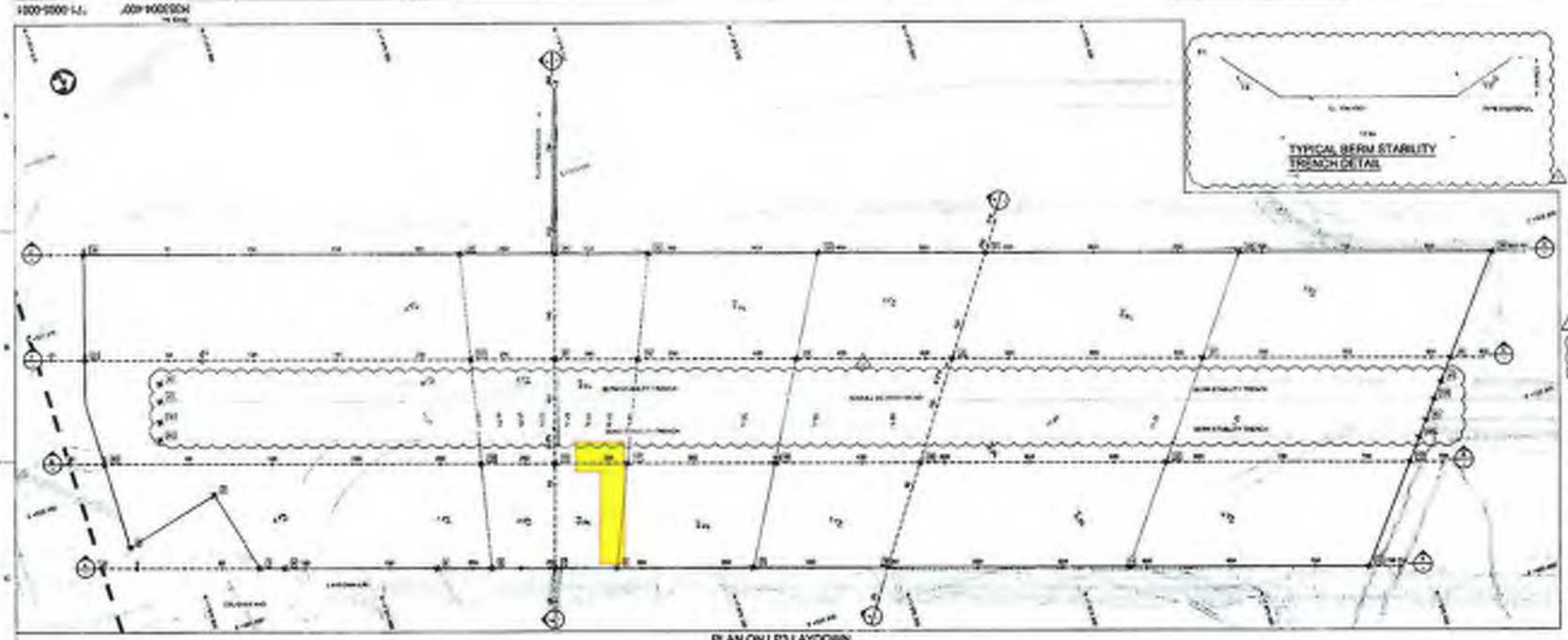
Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** South East of Mod Rd	
Drawing No.: 4353004-40000-221-271-0005-0001	**Rev.:** 2	

Area / Stations Inspected: See Survey attached + DWG
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☒ NO ☐ N/A	JG
Rebound of Surface	☐ YES ☒ NO ☐ N/A	JG
Formation of Cracks Patterns	☐ YES ☒ NO ☐ N/A	JG
Ridging Between Wheel Ridges	☐ YES ☒ NO ☐ N/A	JG
Inconsistency Compaction Between Areas	☐ YES ☒ NO ☐ N/A	JG
Surface Uniform and Level	☒ YES ☐ NO ☐ N/A	JG
Proof Roll Test Satisfactory and Accepted	☒ YES ☐ NO ☐ N/A	JG
Elevation Record (Survey) in AM	☒ YES ☐ NO ☐ N/A	JG

Comments:
Type 8 East side of Mod road Nightshift

Construction Designate – Print/Sign	Title	Date
John Guan /	QC coordinator	Aug 15/19
Contractor QC Designate – Print/Sign	Title	Date
Kenny Franken /	Hatch QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date



TYPICAL BERM STABILITY TRENCH DETAIL

KEY PLAN

GENERAL NOTES

BERM STABILITY TRENCH NOTES

LEGEND

PLAN ON LP3 LAYDOWN

LAYDOWN LP3 SETTING OUT COORDINATES

POINT	E	N	LEVEL

SECTION A - A

SECTION B - B

SECTION C - C

SECTION D - D

SECTION E - E

SECTION F - F

BERM STABILITY TRENCH SETTING OUT COORDINATES

POINT	E	N

Released for Use

FOR CONSTRUCTION

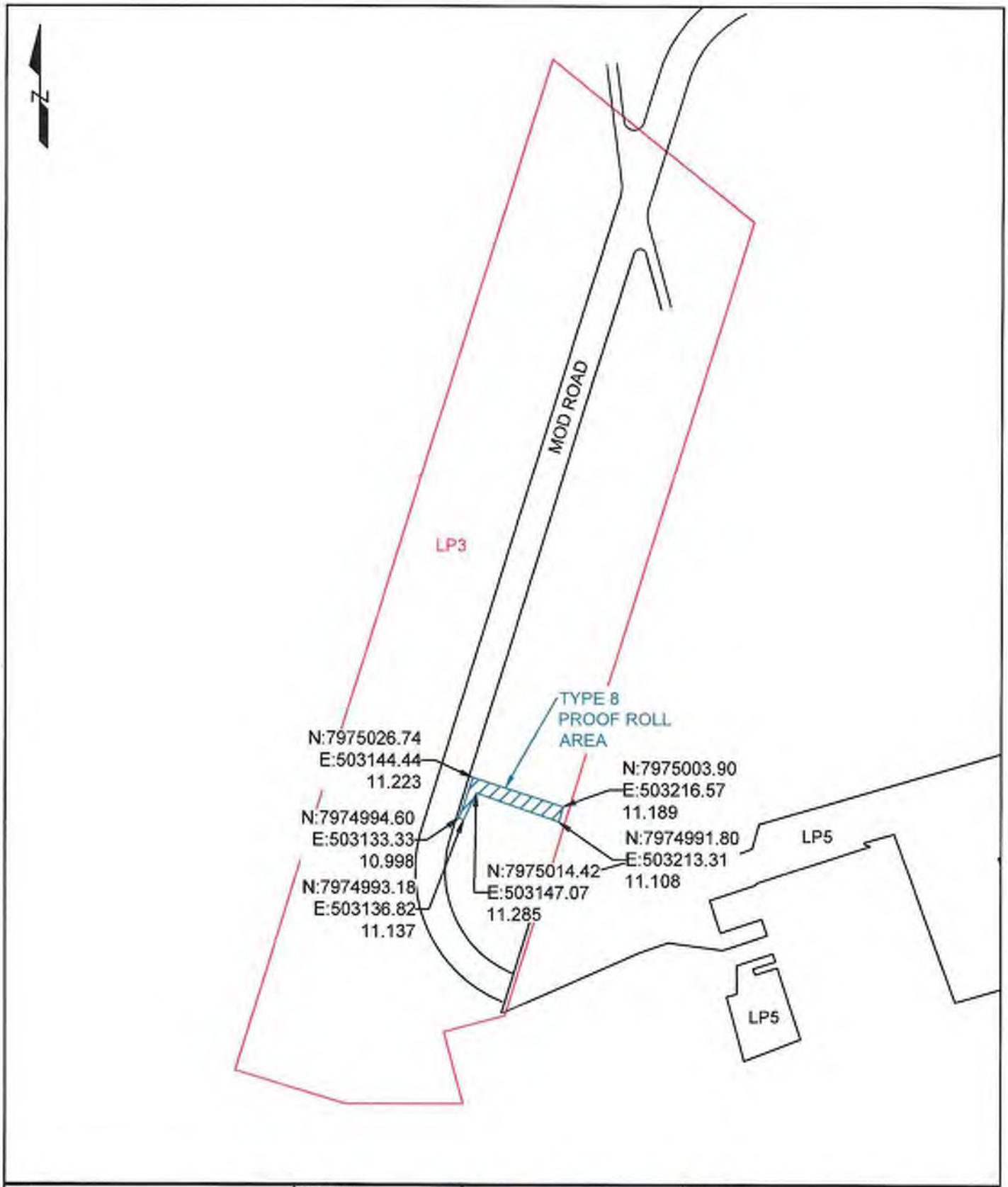
HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
PLAN AND PROFILES

H353004-40000-221-271-0005-0001 | 2



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA			DRAWING TITLE: LP3 TYPE 8 PROOF ROLL SURVEYED AUGUST 14, 2019.
OWNER: BAFFINLAND IRON MINES LP					
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: Aug. 15, 2019		DRAWING NAME (YYMMDD): 190814 LP3 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

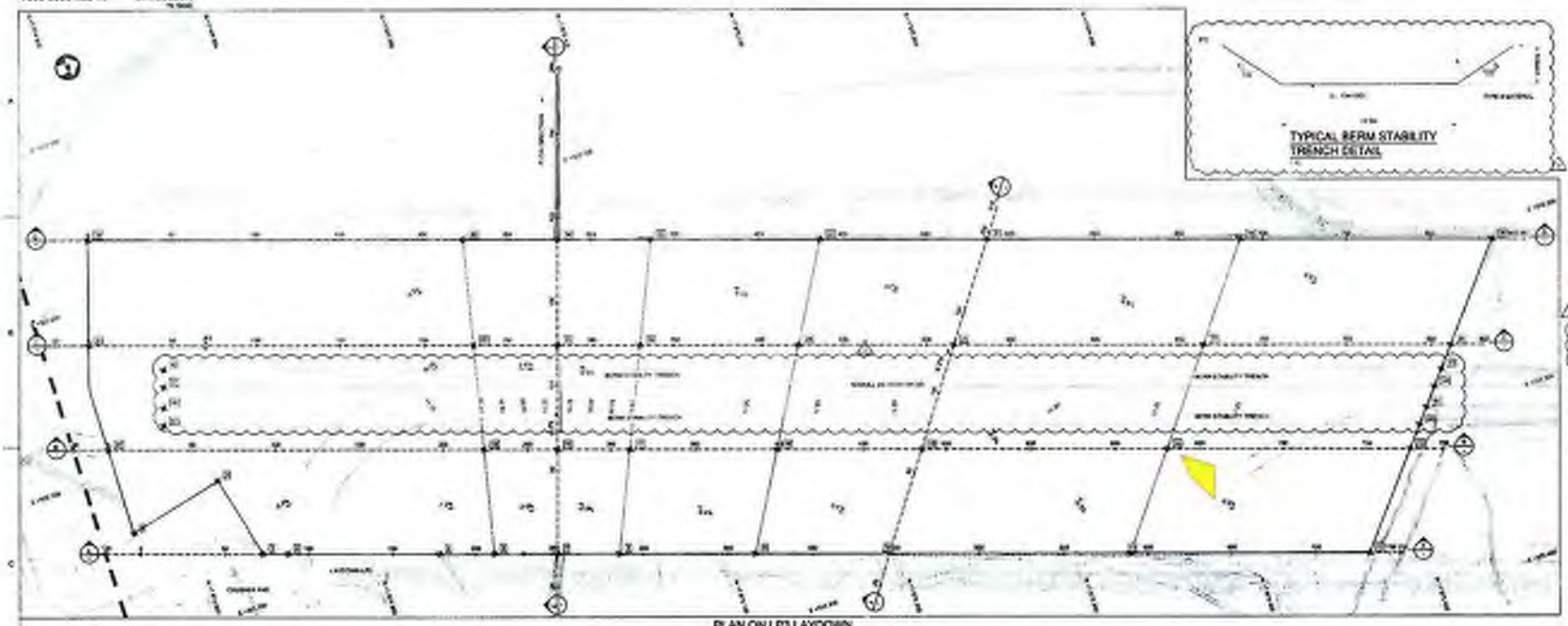
Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** North corner mod / Access road	
Drawing No.: A353004-40000-221-271-0005-0001		**Rev.:** Q

Area / Stations Inspected: See Survey report + DWG
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	
Rebound of Surface	☐ YES ☑ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	

Comments:
RDQ / type 12

Grant LaPointe /	Supervisor	Aug 14, 2019
Construction Designate – Print/Sign	Title	Date
John Gwan /	QC	Aug 14/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date



GENERAL NOTES:

BERM STABILITY TRENCH NOTES:

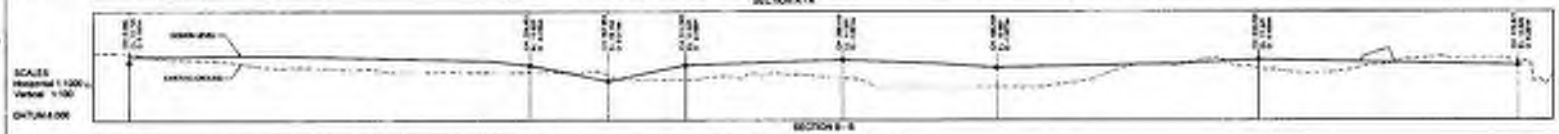
LEGEND:

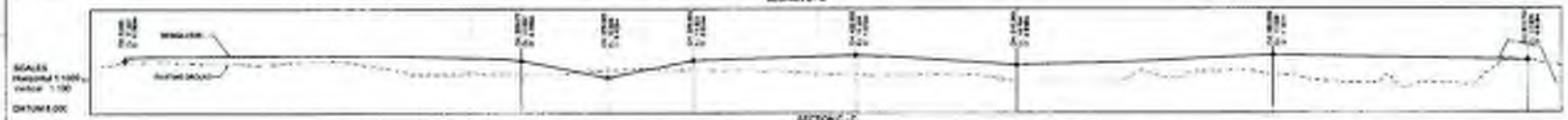
LAYDOWN LP3
SETTING OUT COORDINATES

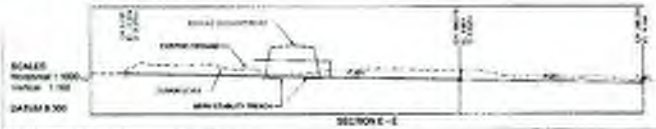
POINT	E	N	LEVEL

BERM STABILITY TRENCH
SETTING OUT COORDINATES

POINT	E	N







Released for Use

FOR CONSTRUCTION

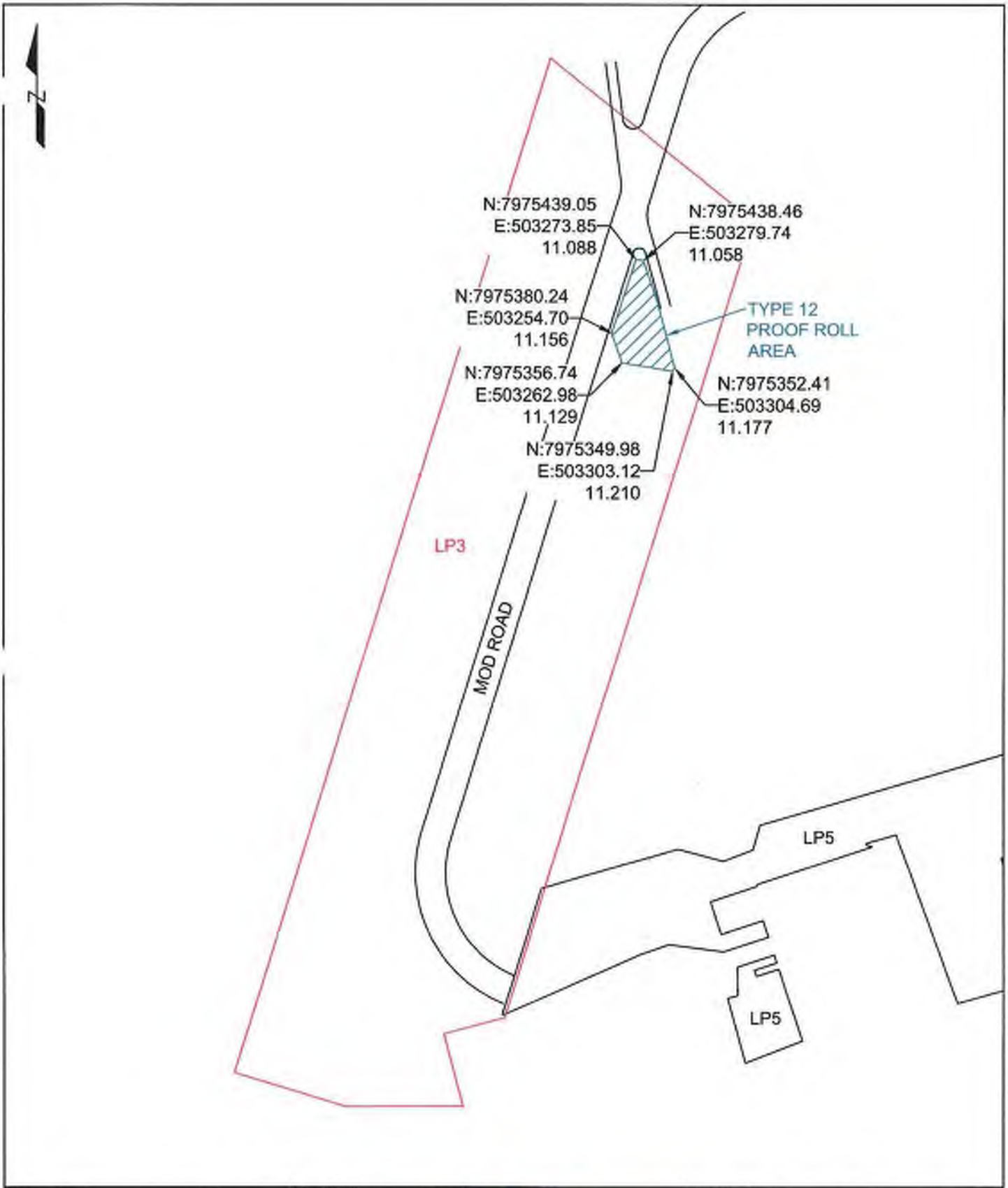
HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
PLAN AND PROFILES

H353004-40000-221-271-0005-0001 2



NAME:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA			DRAWING TITLE: **LP3 TYPE12 PROOF ROLL SURVEYED AUGUST 14, 2019.**
OWNER: BAFFINLAND IRON MINES LP					
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: Aug. 15, 2019		DRAWING NAME (YYMMDD): 190814 (1) LP3 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

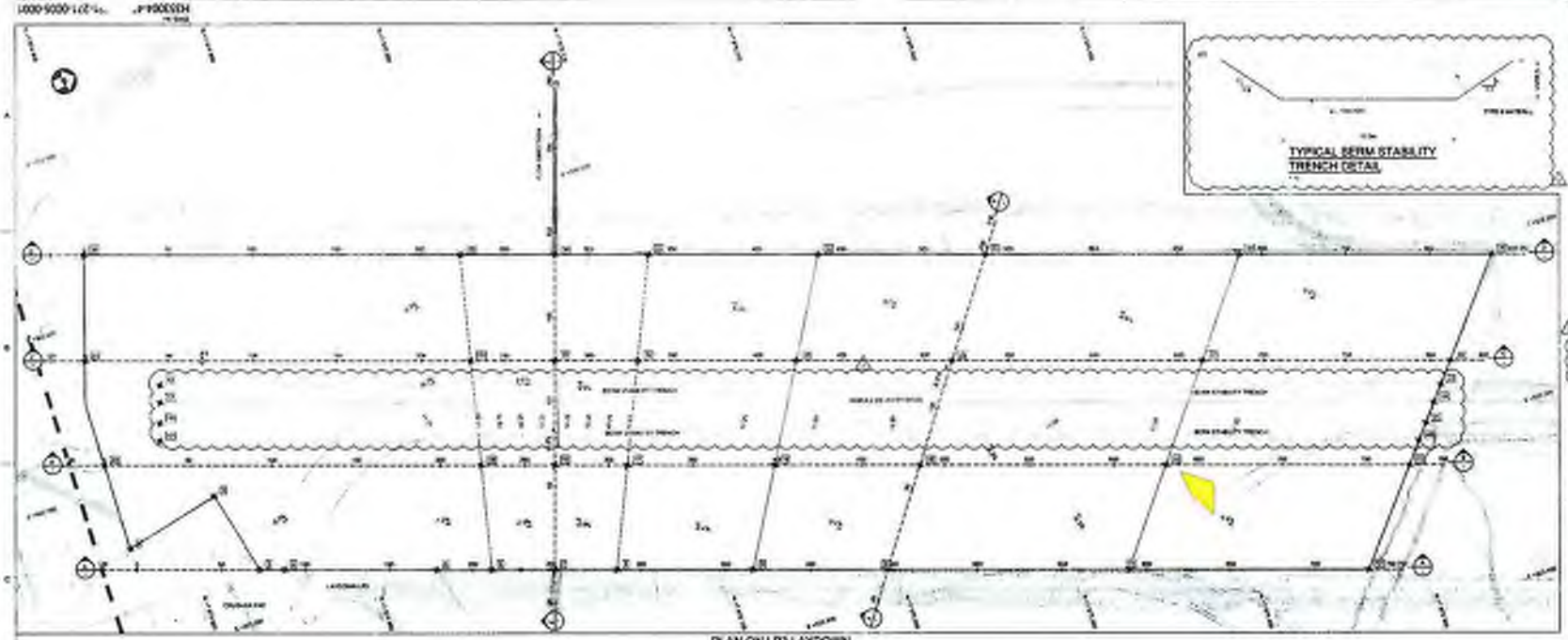
Project: Mary River Expansion Project	**ITP #:** CC006-00038	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** LP3 North	
Drawing No.: 1435300-40000-221-271-0005-0001		**Rev.:** 2

Area / Stations Inspected: See attached survey + DWG.
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☒ NO ☐ N/A	
Rebound of Surface	☐ YES ☒ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☒ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☒ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☒ NO ☐ N/A	
Surface Uniform and Level	☒ YES ☐ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☒ YES ☐ NO ☐ N/A	
Elevation Record (Survey)	☒ YES ☐ NO ☐ N/A	

Comments: Type 12

Grant LaPointe /		Supervisor	Aug 15/2019
Construction Designate – Print/Sign		Title	Date
John Green /		QC Coordinator	Aug 15/2019
Contractor QC Designate – Print/Sign		Title	Date
/ Rob Christian		Materials Lead	Aug 15/2019
Client QA Designate – Print/Sign		Title	Date



GENERAL NOTES

BERM STABILITY TRENCH NOTES

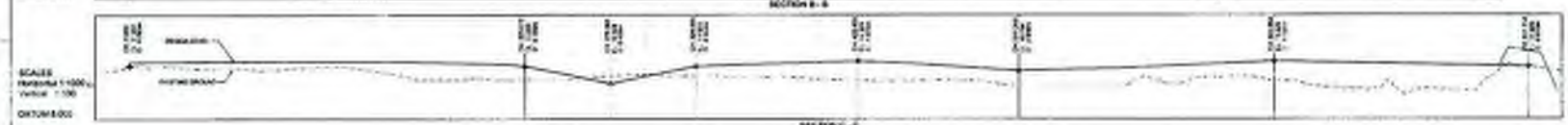
LEGEND

LAYDOWN LP3
SETTING OUT COORDINATES

POINT	E	N	LEVEL

BERM STABILITY TRENCH
SETTING OUT COORDINATES

POINT	E	N



Released for Use

FOR CONSTRUCTION

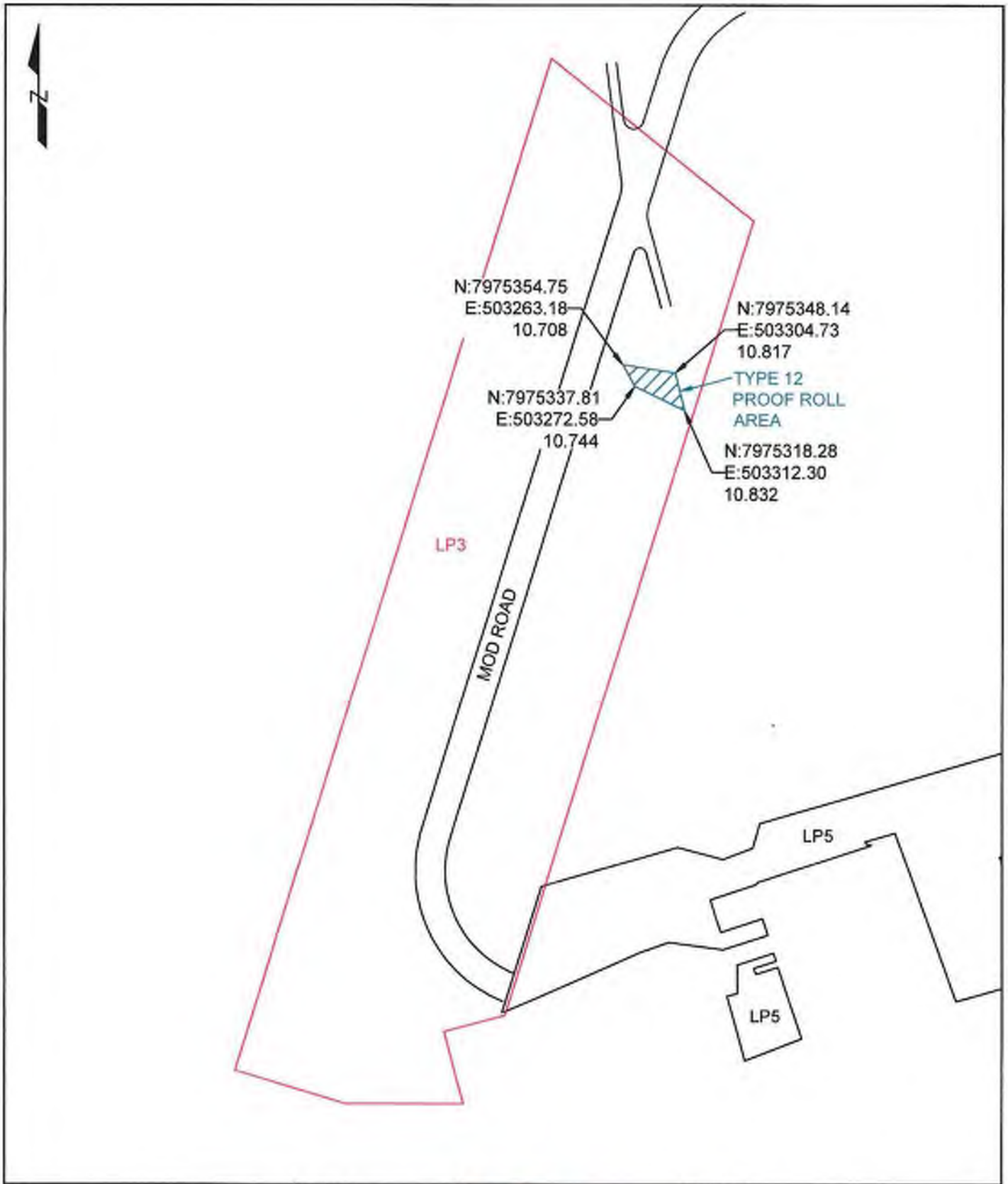
HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
PLAN AND PROFILES

1053004-40000-221-2T1-0005-0001 2



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: LP3 TYPE 12 PROOF ROLL SURVEYED AUGUST 15, 2019.
OWNER: BAFFINLAND IRON MINES LP				
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: Aug. 16, 2019	DRAWING NAME (YYMMDD): 190815 LP3 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

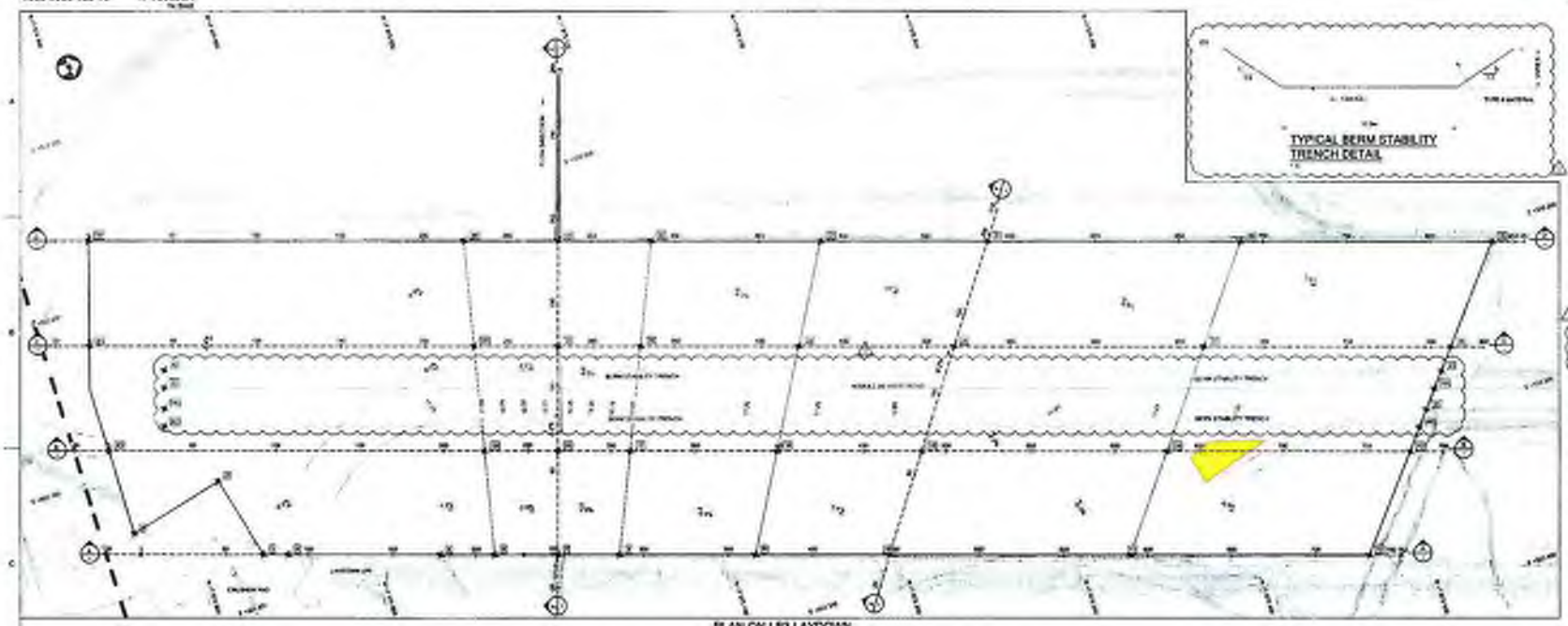
Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** LP3 North	
Drawing No.: 1355004-40000-221-271-0005-0001		**Rev.:** 2

Area / Stations Inspected: See Survey & Dwgs
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☒ NO ☐ N/A	JG
Rebound of Surface	☐ YES ☒ NO ☐ N/A	JG
Formation of Cracks Patterns	☐ YES ☒ NO ☐ N/A	JG
Ridging Between Wheel Ridges	☐ YES ☒ NO ☐ N/A	JG
Inconsistency Compaction Between Areas	☐ YES ☒ NO ☐ N/A	JG
Surface Uniform and Level	☒ YES ☐ NO ☐ N/A	JG
Proof Roll Test Satisfactory and Accepted	☒ YES ☐ NO ☐ N/A	JG
Elevation Record (Survey)	☒ YES ☐ NO ☐ N/A	JG

Comments: Type 8

Grant LaPointe /	Supervisor	Aug 15/2019
Construction Designate – Print/Sign	Title	Date
John Gunn /	QC Coordinator	Aug 15/2019
Contractor QC Designate – Print/Sign	Title	Date
Rob Chaisson /	Materials Lead	Aug 15/2019
Client QA Designate – Print/Sign	Title	Date



PLAN ON LP3 LAYDOWN

KEY PLAN

TYPICAL BERM STABILITY TRENCH DETAIL

GENERAL NOTES

BERM STABILITY TRENCH NOTES

LEGEND

LAYDOWN LP3
SETTING OUT COORDINATES

POINT	E	N	LEVEL

BERM STABILITY TRENCH
SETTING OUT COORDINATES

POINT	E	N

SECTION A - A

SECTION B - B

SECTION C - C

SECTION D - D

SECTION E - E

SECTION F - F

Released for Use

FOR CONSTRUCTION

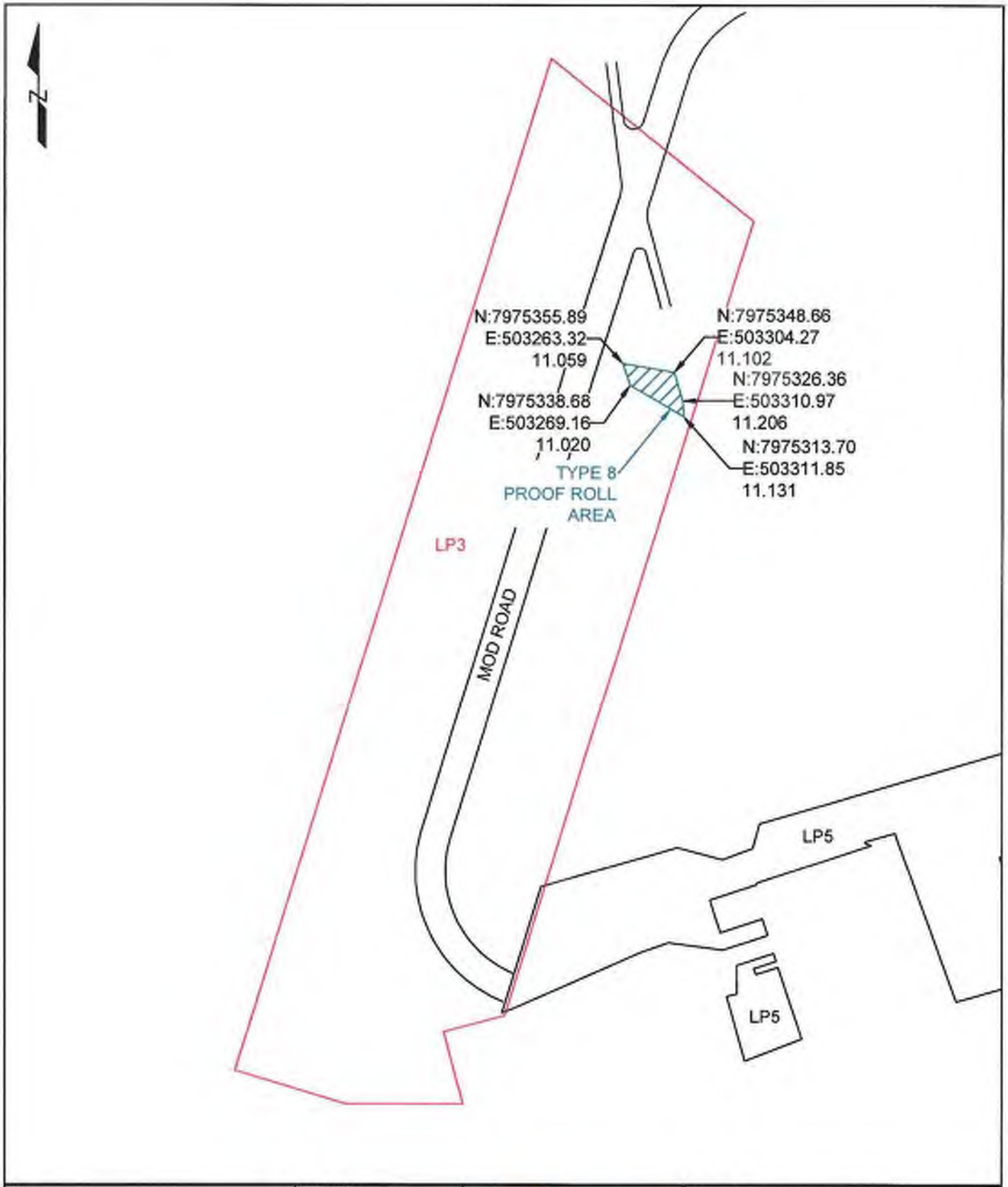
HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
PLAN AND PROFILES

1053004-40000-221-271-0005-0001



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP3 TYPE 8 PROOF ROLL SURVEYED AUGUST 15, 2019.**
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: Aug. 16, 2019	DRAWING NAME (YYMMDD): 190815 (1) LP3 PR REPORT.dwg

NUNA
NUNA EAST LTD

PROOF ROLL COMPACTION VERIFICATION REPORT

Exhibit 1-5 QDE
Revision 0

Project: Mary River Expansion Project	**ITP #:** CC006-00303A	**QA Refer. Report No.:** MT-PR-37
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: ~~LP5~~ LP3	**Area Description:** Type 8 Final Lift North	
Drawing No.: ~~H353004-40000-221-272-0003-0001~~ H353004-40000-221-271-0005-0001 Rev 2	**Rev.:** 0	

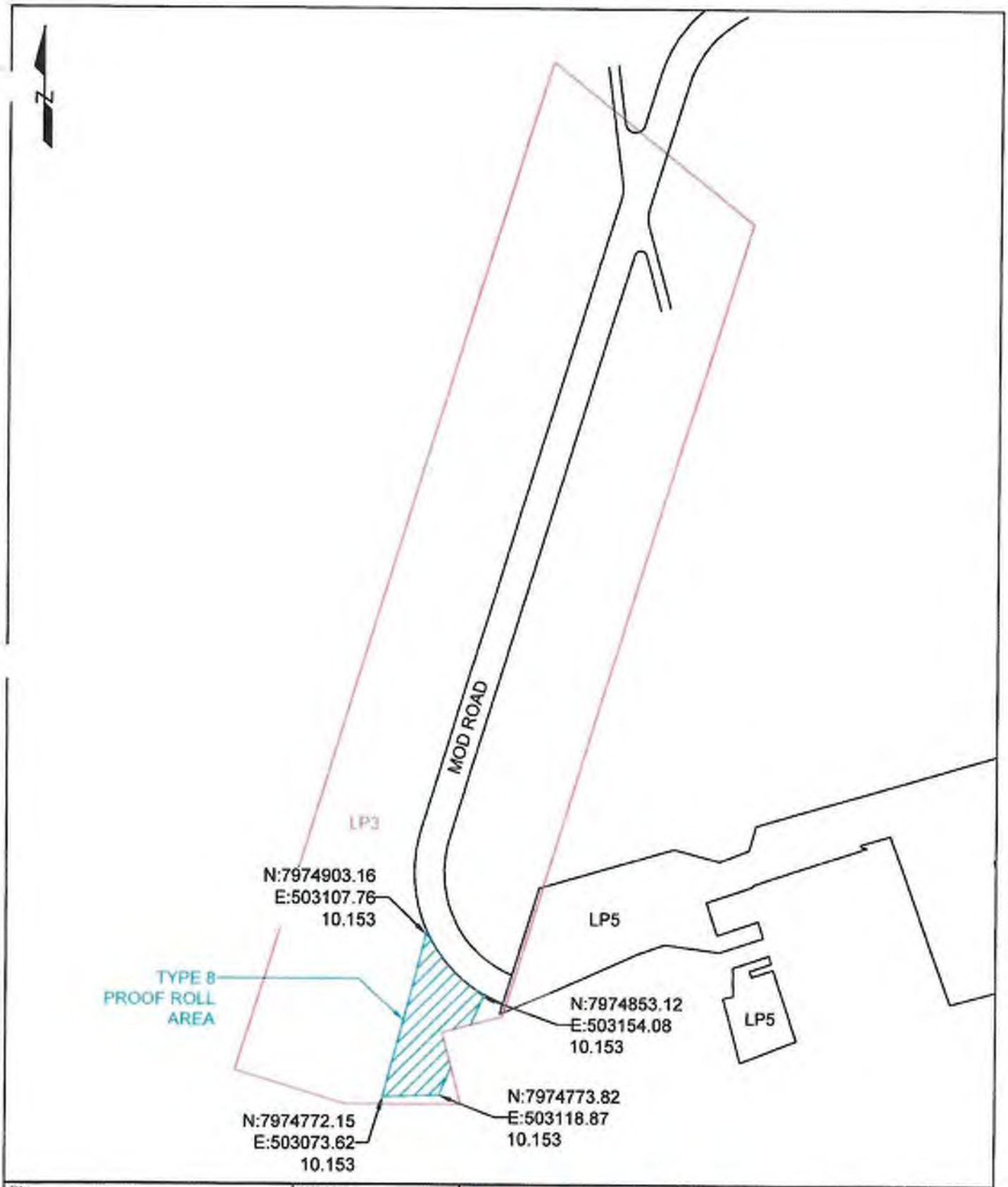
Area / Stations Inspected: See Survey report attached.
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	BM
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BM
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BM
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BM
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BM
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BM
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BM
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	BM

Comments: One minor area of segregation, but well compacted

Type 8

Joe Barron /	Foreman	Aug 2/19
Construction Designate – Print/Sign	Title	Date
Brian Mullins /	Materials Lead	Aug 2nd/19
Contractor QC Designate – Print/Sign	Title	Date
John Cavey /	QC coordinator	Aug 15, 19
Client QA Designate – Print/Sign	Title	Date



Notes	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	DRAWING TITLE: LP3 TYPE 8 PROOF ROLL SURVEYED AUG 2, 2019.	
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: AUG 2, 2019	DRAWING NAME (YYMMDD): 190801 LP3 PR REPORT.dwg

PROOF ROLL COMPACTION REPORT

Allnorth
2 Hunt's Lane
St Johns, NL A1B 2L3
Main: +1 709-579-1492
Fax: +1 888-839-3114

PROJECT: Mary River Expansion Project		REPORT NO.: MT-PR-0037
CONTRACTOR: Nuna East	CONTRACT NO.: CC005	SURVEY REF. NO.: See Nuna Report
LOCATION: Milne Port	ELEVATION: N/A	CWP: N/A
AREA: LP3	AREA DISCRIPTION: Type 8 Final Lift	
DRAWING NO.: H353004-40000-221-272-0005-0001		REV.: 2

Area / Stations Inspected: See attached	Type of Proof Role: ☐ Subgrade ☑ Material
Proof Rolled With: Loaded 745C	Number of Passes: Not observed

PRE-PROOF ROLL INSPECTION		ALLNORTH REP (Initial or N/A)
Is the Finished Grade/Lift Surface Generally Flat and Graded to Specifications?	☑ YES ☐ NO	BM
Has the Lift Been Constructed Out to Toe/Slope Stakes?	☐ YES ☐ NO	NA
Has the Design Fill Slope Been Achieved/Maintained with The Lift Placement?	☐ YES ☐ NO	NA
Is the Fill/Lift Keyed into The Existing Embankment Where Required?	☐ YES ☐ NO	NA
Has the Material Been Placed In A Uniform Lift Without Segregation?	☑ YES ☐ NO	BM

COMMENTS: Minor areas of Segregation

DURING PROOF ROLL INSPECTION		ALLNORTH REP (Initial or N/A)
Was the Entire Grade Surface Covered During The Proof Roll	☑ YES ☐ NO	BM
Did Any Substantial Surface Rutting Occur (Location)	☐ YES ☑ NO	BM
Was Any Deflection and/or Displacement Visible (Location)	☐ YES ☑ NO	BM

COMMENTS:

POST PROOF ROLL INSPECTION		ALLNORTH REP (Initial or N/A)
Was Any Additional Compaction Effort Required or Completed	☐ YES ☑ NO	BM
Are Any Locations Requiring Excavation and/or Replacement	☐ YES ☑ NO	BM
Has the Grade Surface/Lift Placement Compaction Been Approved	☑ YES ☐ NO	BM
Has Survey of Inspection Area Been Completed	☑ YES ☐ NO	BM

COMMENTS: To be picked up by Survey prior to placement of Type 5

Brian Mullins /	Materials Lead	Aug 2nd/19
ALLNORTH DESIGNATE – Print/Sign	TITLE	DATE
Ronny Krauken /	Hatch QA	Aug 3 - 2019
CLIENT QA DESIGNATE – Print/Sign	TITLE	DATE

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:** MT-PR-0043
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** SOUTH EAST Corner BETWEEN MOD ROAD CAMP	
Drawing No.: H353004-40000-221-271-0005-0001	**Rev.:** 2	

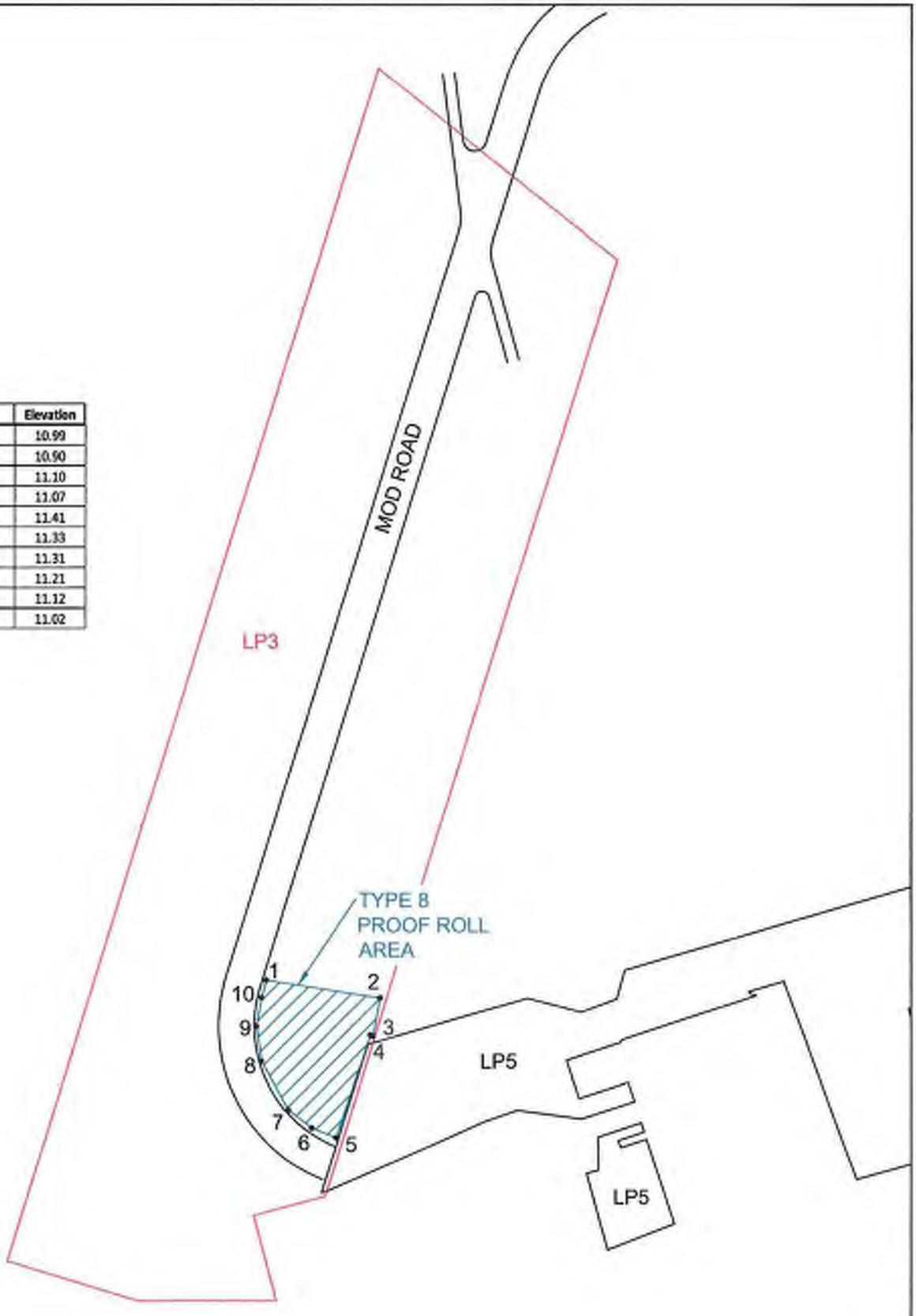
Area / Stations Inspected: SEE SURVEY DATA ATTACHED
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	
Rebound of Surface	☐ YES ☑ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	
Surface Uniform and Level	☑ YES ☑ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	

Comments: LOOKS OK

Joe Barron Construction Designate – Print/Sign	Foreman Title	Aug 6/19 Date
John Gunn Contractor QC Designate – Print/Sign	QC COORDINATOR Title	Aug 13/19 Date
MATT TABOR Client QA Designate – Print/Sign	MATERIALS LEAD Title	Aug 6/19 Date

Point #	Northing	Easting	Elevation
1	7974983.365	503130.183	10.99
2	7974971.523	503207.338	10.90
3	7974945.615	503202.318	11.10
4	7974946.020	503200.665	11.07
5	7974877.103	503177.236	11.41
6	7974883.549	503160.899	11.33
7	7974895.714	503145.174	11.31
8	7974928.726	503127.021	11.21
9	7974952.061	503123.437	11.12
10	7974971.678	503127.167	11.02



OWNER:
BAFFINLAND IRON MINES LP

PROJECT:
MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

SCALE: AS SHOWN

DATE: Aug. 9, 2019

DRAWING TITLE:
LP3
TYPE 8 PROOF ROLL
SURVEYED AUGUST 6, 2019.

DRAWING NAME (YYMMDD): 190806 LP3 PR REPORT.dwg

PROOF ROLL COMPACTION REPORT

Allnorth
2 Hunt's Lane
St Johns, NL A1B 2L3
Main: +1 709-579-1492
Fax: +1 888-839-3114

PROJECT: Mary River Expansion Project		REPORT NO.: MT - PR - 0043
CONTRACTOR: Nuna East	CONTRACT NO.: CC006	SURVEY REF. NO.: N/A
LOCATION: Milne Port	ELEVATION: N/A	CWP: N/A
AREA: LD3	AREA DISCRIPTION: South East Side Between Mud Road and 380	
DRAWING NO.: H353004-40000-221-278-0005-001		REV.: 2

Area / Stations Inspected: N/A Type 8	Type of Proof Role: ☐ Subgrade ☑ Material
Proof Rolled With: LOADED 745c	Number of Passes: ONE

PRE-PROOF ROLL INSPECTION		ALLNORTH REP (Initial or N/A)
Is the Finished Grade/Lift Surface Generally Flat and Graded to Specifications?	☑ YES ☐ NO	MT
Has the Lift Been Constructed Out to Toe/Slope Stakes?	☐ YES ☐ NO	N/A
Has the Design Fill Slope Been Achieved/Maintained with The Lift Placement?	☐ YES ☐ NO	N/A
Is the Fill/Lift Keyed into The Existing Embankment Where Required?	☐ YES ☐ NO	N/A
Has the Material Been Placed In A Uniform Lift Without Segregation?	☑ YES ☐ NO	MT

COMMENTS: Some segregation, South West corner. No concerns

DURING PROOF ROLL INSPECTION		ALLNORTH REP (Initial or N/A)
Was the Entire Grade Surface Covered During The Proof Roll	☑ YES ☐ NO	MT
Did Any Substantial Surface Rutting Occur (Location)	☐ YES ☑ NO	NA
Was Any Deflection and/or Displacement Visible (Location)	☐ YES ☑ NO	NA

COMMENTS:

POST PROOF ROLL INSPECTION		ALLNORTH REP (Initial or N/A)
Was Any Additional Compaction Effort Required or Completed	☐ YES ☑ NO	MT
Are Any Locations Requiring Excavation and/or Replacement	☐ YES ☑ NO	MT
Has the Grade Surface/Lift Placement Compaction Been Approved	☑ YES ☐ NO	MT
Has Survey of Inspection Area Been Completed	☐ YES ☑ NO	MT

COMMENTS:

MATT TABOR / ALLNORTH DESIGNATE – Print/Sign	MATERIALS LEAD TITLE	Aug 6/2019 DATE
Ronny Franke / CLIENT QA DESIGNATE – Print/Sign	Hatch QA TITLE	Aug 9-2019 DATE

Form # MT-002R0

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

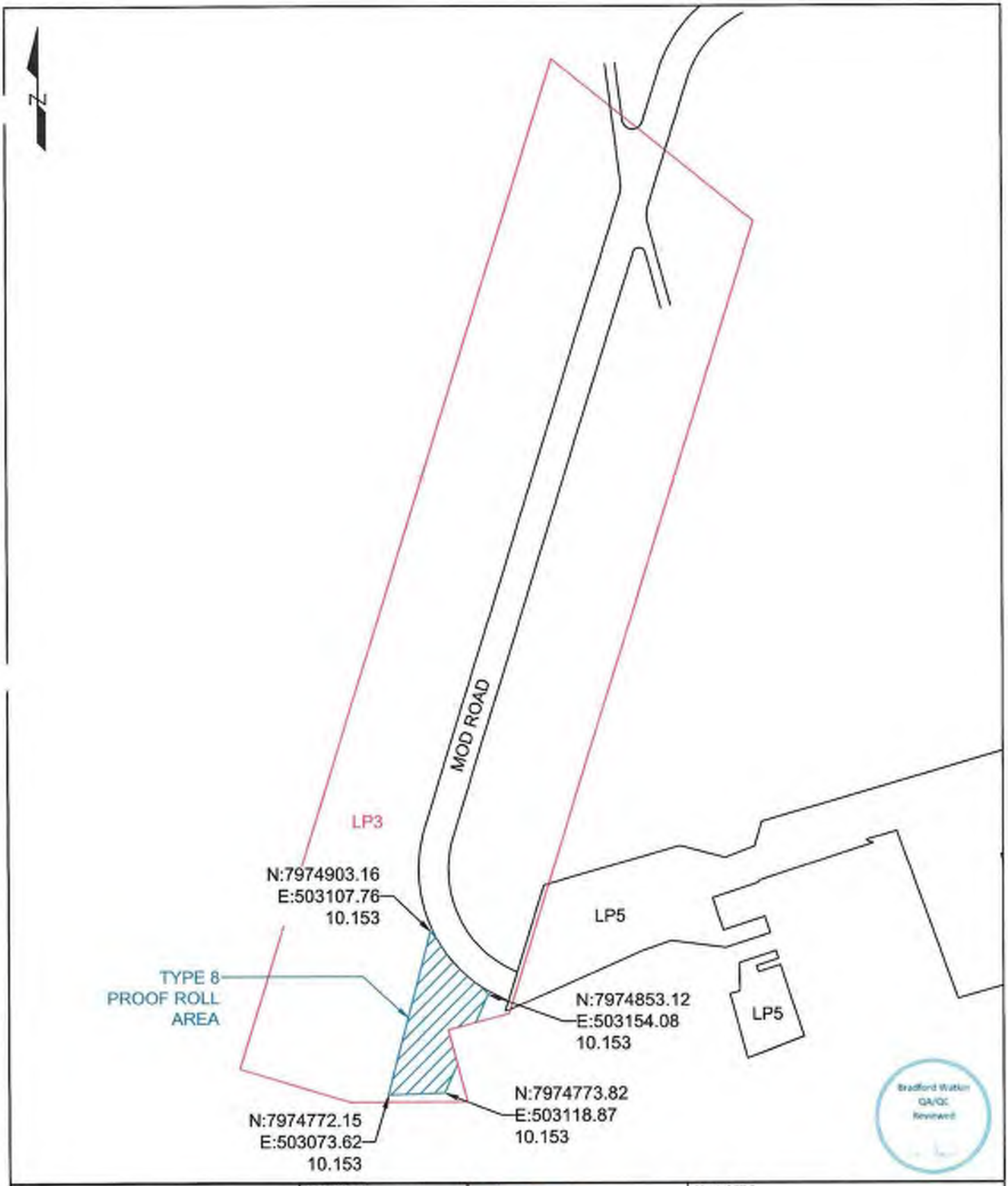
Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** LAYDOWN LP3	
Drawing No.: A353004-40000-221-271-0005-0001	**Rev.:** 2	

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments: - TYPE 8 PLACEMENT PROOF ROLL

JOE BARRY /	FOREMAN 4	8/1/19
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN /	QC COORDINATOR	8/1/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA			DRAWING TITLE: **LP3 TYPE 8 PROOF ROLL SURVEYED AUG 2, 2019.**
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: AUG 2, 2019	DRAWING NAME (YYMMDD): 190801 LP3 PR REPORT.dwg	

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

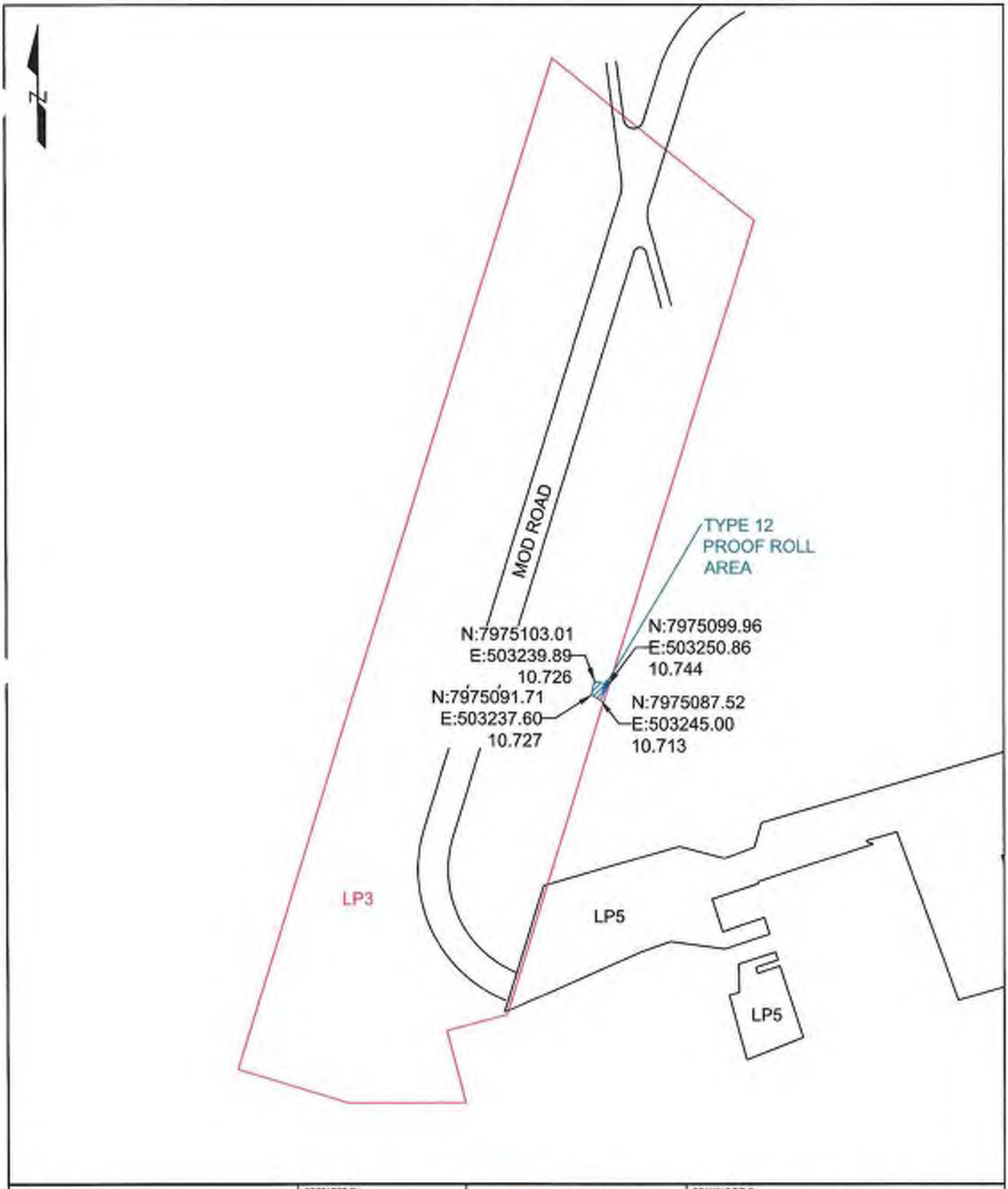
Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:** MT-PR-0032
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: MILNE PORT LP3	**Area Description:** LP3 SE, SMALL EXCAVATION	
Drawing No.: A358004-10000-221-371-0005-0001	**Rev.:** 2	

Area / Stations Inspected: SEE SURVEY REPORT
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments:

Construction Designate – Print/Sign	Title	Date
BRADFORD WATKINS / BW	QC COORDINATOR	7/27/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Match QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP3 TYPE 12 PROOF ROLL SURVEYED JULY 27, 2019.**
OWNER: BAFFINLAND IRON MINES LP				
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: July 28, 2019	DRAWING NAME (YYMMDD): 190727 LP3 PR REPORT.dwg

Allnorth

PROOF ROLL COMPACTION REPORT

2 Hunt's Lane
St Johns, NL A1B 2L3
Main +1 709-579-1492
Fax +1 888-839-3114

PROJECT: Mary River Expansion Project		REPORT NO.: MT-PR-0032
CONTRACTOR: Nuna East	CONTRACT NO.: CC006	SURVEY REF. NO.: See Nuna Report
LOCATION: Milne Port	ELEVATION: N/A	CWP: N/A
AREA: LP3	AREA DISCRIPTION: South East Side, Small excavated area	
DRAWING NO.: H353004-40000-221-271-0005-0001		REV.: 1

Area / Stations Inspected: Final Lift Type 12	Type of Proof Role: ☐ Subgrade ☑ Material
Proof Rolled With: Loaded 745C	Number of Passes: Not observed

PRE-PROOF ROLL INSPECTION		ALLNORTH REP (Initial or N/A)
Is the Finished Grade/Lift Surface Generally Flat and Graded to Specifications?	☑ YES ☐ NO	BM
Has the Lift Been Constructed Out to Toe/Slope Stakes?	☐ YES ☐ NO	NA
Has the Design Fill Slope Been Achieved/Maintained with The Lift Placement?	☐ YES ☐ NO	NA
Is the Fill/Lift Keyed into The Existing Embankment Where Required?	☐ YES ☐ NO	NA
Has the Material Been Placed In A Uniform Lift Without Segregation?	☑ YES ☐ NO	BM

COMMENTS: Material appeared to be on the finer side.

DURING PROOF ROLL INSPECTION		ALLNORTH REP (Initial or N/A)
Was the Entire Grade Surface Covered During The Proof Roll	☑ YES ☐ NO	BM
Did Any Substantial Surface Rutting Occur (Location)	☐ YES ☑ NO	BM
Was Any Deflection and/or Displacement Visible (Location)	☐ YES ☑ NO	BM

COMMENTS:

POST PROOF ROLL INSPECTION		ALLNORTH REP (Initial or N/A)
Was Any Additional Compaction Effort Required or Completed	☐ YES ☑ NO	BM
Are Any Locations Requiring Excavation and/or Replacement	☐ YES ☑ NO	BM
Has the Grade Surface/Lift Placement Compaction Been Approved	☑ YES ☐ NO	BM
Has Survey of Inspection Area Been Completed	☑ YES ☑ NO	BM

COMMENTS: To be Surveyed on dayshift prior to placement of Type 8.

Brian Mullins / [signature]	Materials Lead	July 27th/19
ALLNORTH DESIGNATE – Print/Sign	TITLE	DATE
/		
CLIENT QA DESIGNATE – Print/Sign	TITLE	DATE

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** LP3 South EAST	
Drawing No.: K353004-40000-228-271-0005-0001	**Rev.:** 2	

Area / Stations Inspected: ~~SEE SURVEY DATA~~ LP3 South EAST Parking 380 CAMP. ROQ

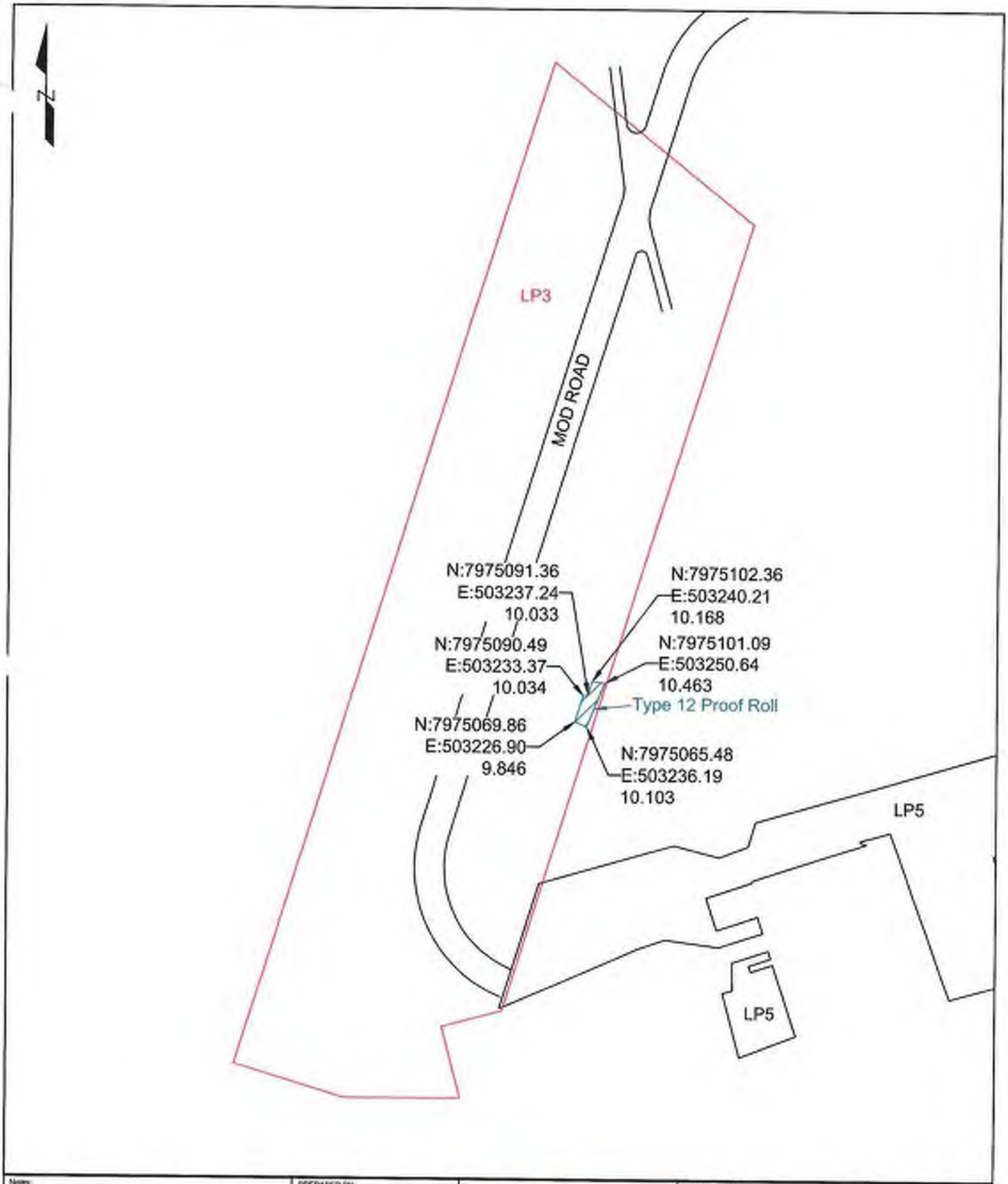
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	
Rebound of Surface	☐ YES ☑ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☑ YES ☑ NO ☐ N/A	
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	

Comments:

Proof ROLL ROQ PASS

Olivier Sonier /		Supervisor	07/27/19
Construction Designate – Print/Sign		Title	Date
BRADFORD WATKINS /		QC COORDINATOR	7/27/19
Contractor QC Designate – Print/Sign		Title	Date
Ronny Franken /		Hatch QA	Sept 29-2019
Client QA Designate – Print/Sign		Title	Date



Notes:

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0

DRAWN BY: M. GOREHAM

SCALE: AS SHOWN

DATE: Aug. 1, 2019

DRAWING TITLE:

LP3
12 PROOF ROLL
SURVEYED JULY 27, 2019.

DRAWING NAME (YYMMDD): 190727 LP3 SG REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

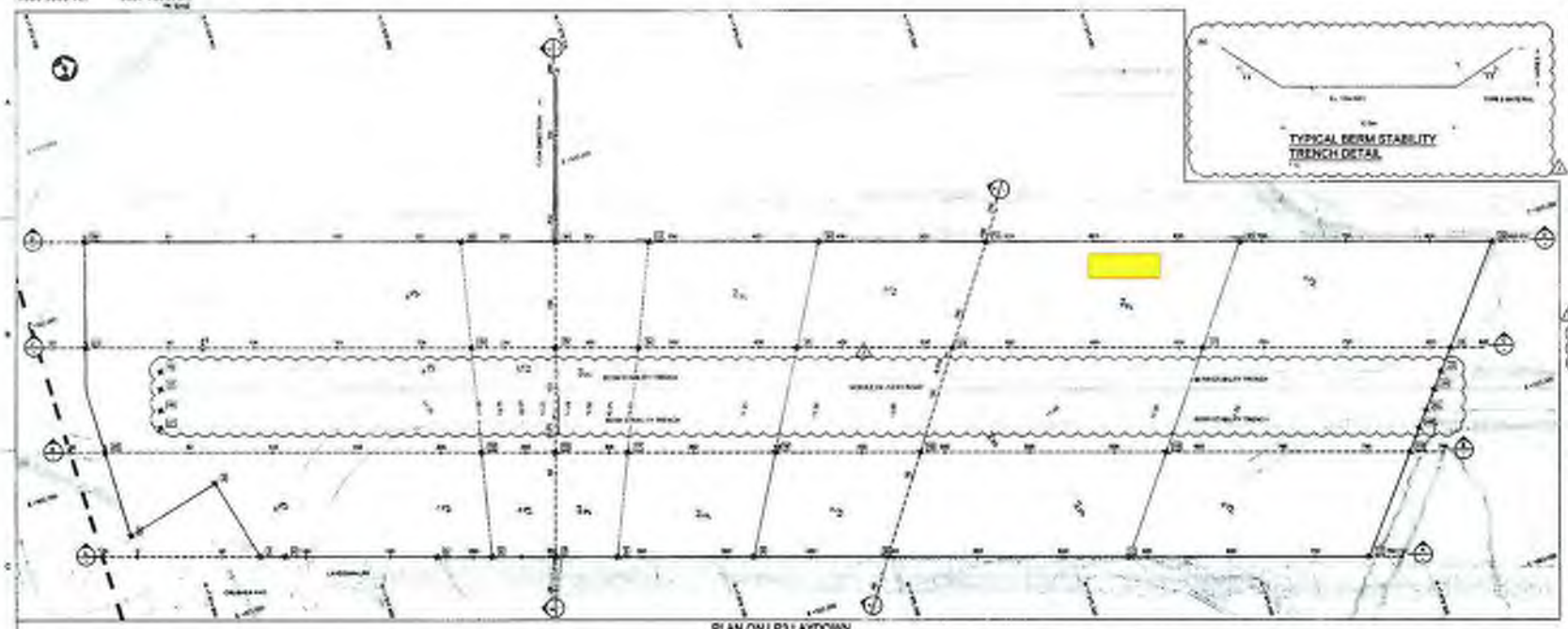
Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** West Shoulder, South of Helipad	
Drawing No.: H353004-40000-223-271-0005-0001	**Rev.:** 2	

Area / Stations Inspected: Type 8 Final Lift, SEE SURVEY DATA Dwgs
Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	BM
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BM
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BM
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BM
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BM
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BM
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BM
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	BM

Comments:
1. To be Surveyed on Dayshift prior placement of Type 5

[illegible] /		NUNA Supervisor	July 27/19
Construction Designate – Print/Sign		Title	Date
Brian Mullins /		Materials Lead	July 27/19
Contractor QC Designate – Print/Sign		Title	Date
BRANFORD WHITE /		QC COORDINATOR	7/27/19
Client QA Designate – Print/Sign		Title	Date



GENERAL NOTES:

BERM STABILITY TRENCH NOTES:

LEGEND

LAYDOWN LP3
SETTING OUT COORDINATES

POINT	E	N	LEVEL

BERM STABILITY TRENCH
SETTING OUT COORDINATES

POINT	E	N

Released for Use

FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
PLAN AND PROFILES

1053004-40000-221-271-0005-0001

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

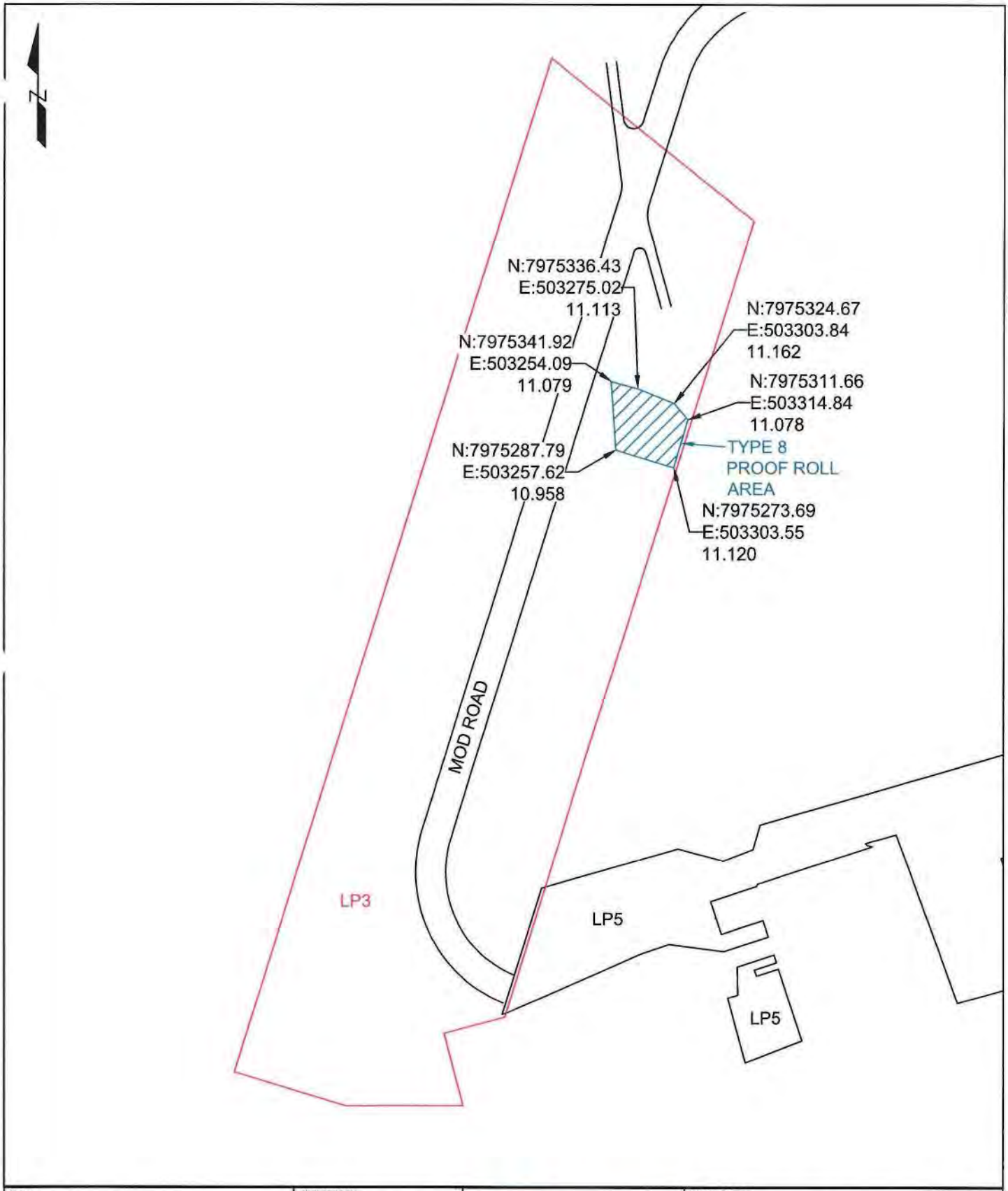
Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** LP3 East	
Drawing No.: H353004-40000-221-271-0005-0001	**Rev.:** 2	

Area / Stations Inspected: LP3 East, SEE SURVEY DATA	
Proof Rolled With: A loaded 745C Articulated Haul Truck	

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	[signature]
Rebound of Surface	☐ YES ☑ NO ☐ N/A	[signature]
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	[signature]
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	[signature]
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	[signature]
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	[signature]
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	[signature]
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	[signature]

Comments: - SEE ALL NORTH REPORT 23 & 6

Olivier Sonier / [signature]	Supervisor	07/26/19
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN / [signature]	QC COORDINATOR	7/26/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken / [signature]	Match QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP3 TYPE 8 PROOF ROLL SURVEYED JULY 25, 2019.**
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: Aug. 1, 2019	DRAWING NAME (YYMMDD): 190725 LP3 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** S Heli Road	
Drawing No.: ~~H353000~~ H353004, 40000-223-271-0005-0001	**Rev.:** 2	

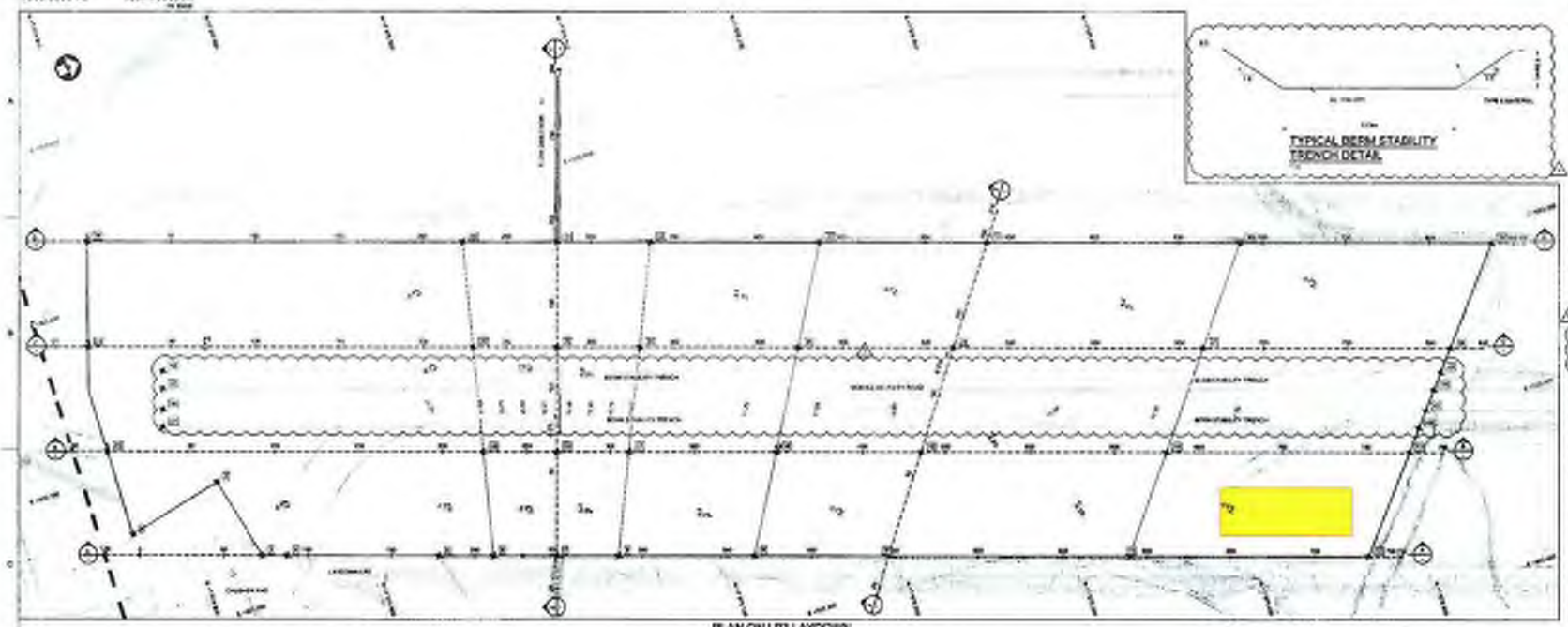
Area / Stations Inspected: SEE SURVEY DATA + [illegible]

Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	DW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	DW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	DW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	DW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	DW
Surface Uniform and Level	☑ YES ☑ NO ☐ N/A	DW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	DW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	DW

Comments: - AREA ON LP3, JUST SOUTH OF HELIPAD ENTRANCE
- SEE ALL NORTH RPT 235.

Donald Dobson / [signature]	Foreman	July 25 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN / [signature]	QC COORDINATOR	7/25/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franke / [signature]	Match QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date



TYPICAL BERM STABILITY TRENCH DETAIL

KEY PLAN

GENERAL NOTES:

BERM STABILITY TRENCH NOTES:

LEGEND

PLAN ON LP3 LAYDOWN

SECTION A - A

SECTION B - B

SECTION C - C

SECTION D - D

SECTION E - E

SECTION F - F

LAYDOWN LP3
SETTING OUT COORDINATES

POINT	E	N	LEVEL
1			
2			
3			
4			
5			
6			

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

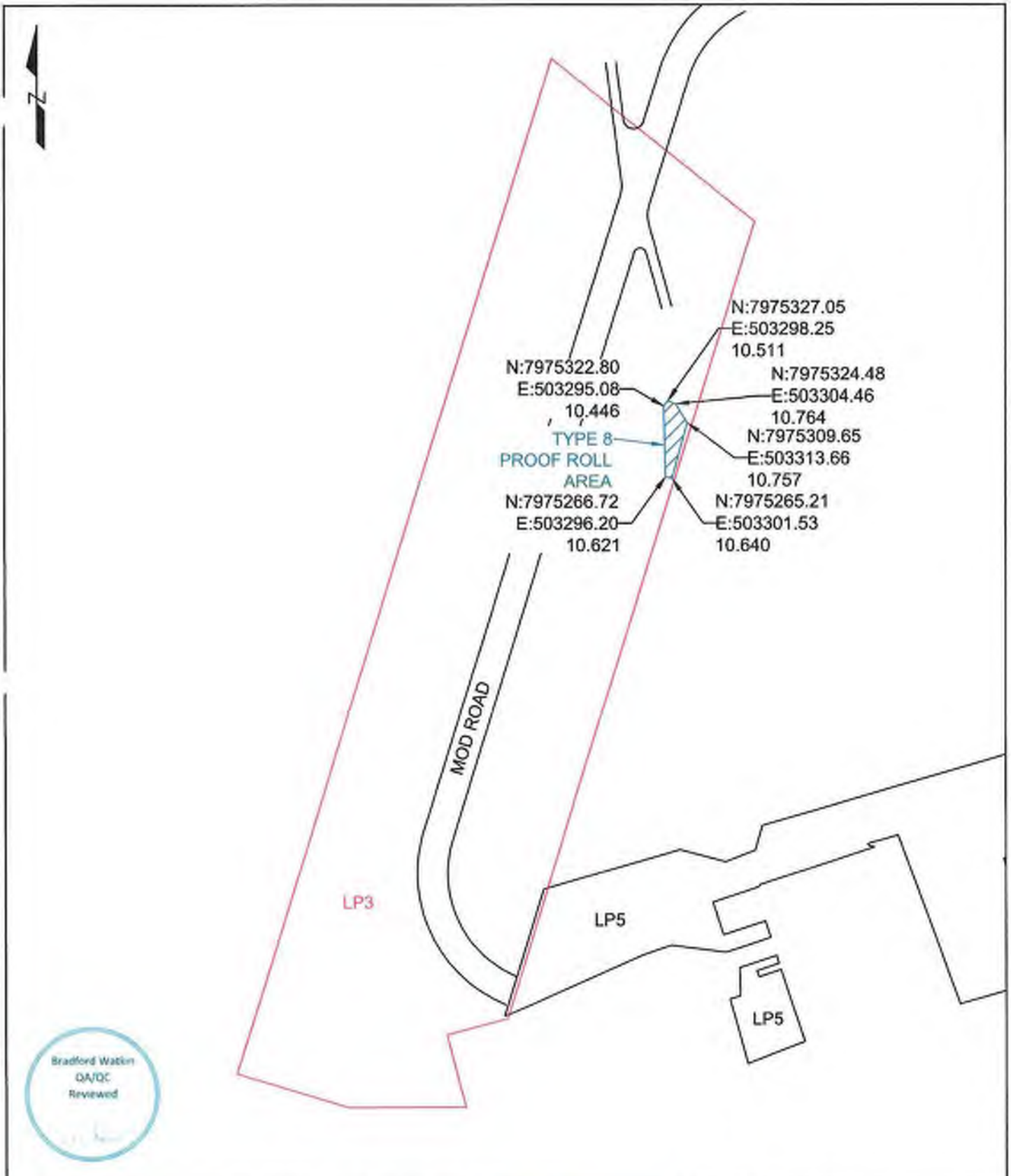
Project: Mary River Expansion Project	**ITP #:** C-006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** North East & West LP3	
Drawing No.: H353001-40000-221-271-0005-0001	**Rev.:** 2	

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	
Rebound of Surface	☐ YES ☑ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	

Comments: Proof Roll on Type 8 Material for Type 5 Placement SEE ALL NORTH REPORT 229

Olivier Sonier /	Supervisor	07/22/19
Construction Designate – Print/Sign	Title	Date
Bradford Watkin /	QC Coordinator	7/22/19
Contractor QC Designate – Print/Sign	Title	Date
Kenny Franken /	North QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: LP3 TYPE 8 PROOF ROLL SURVEYED JULY 22, 2019.
OWNER: BAFFINLAND IRON MINES LP				
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 23, 2019	DRAWING NAME (YYMMDD): 190722 (4) LP3 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

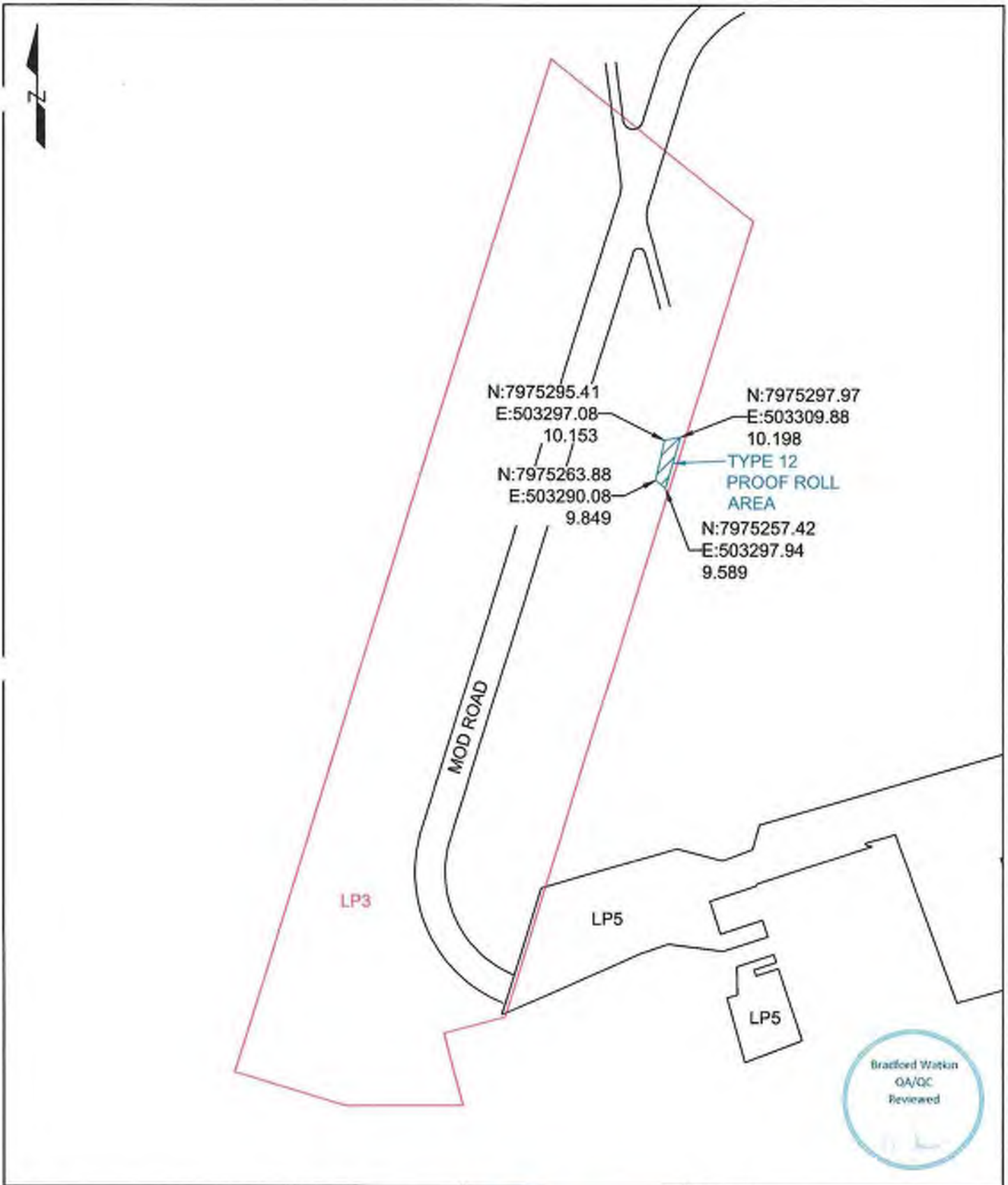
Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: North East LP3	**Area Description:** North East LP3	
Drawing No.: H353004-40000-221-271-0005-0001	**Rev.:** 2	

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745C Articulated Haul Truck

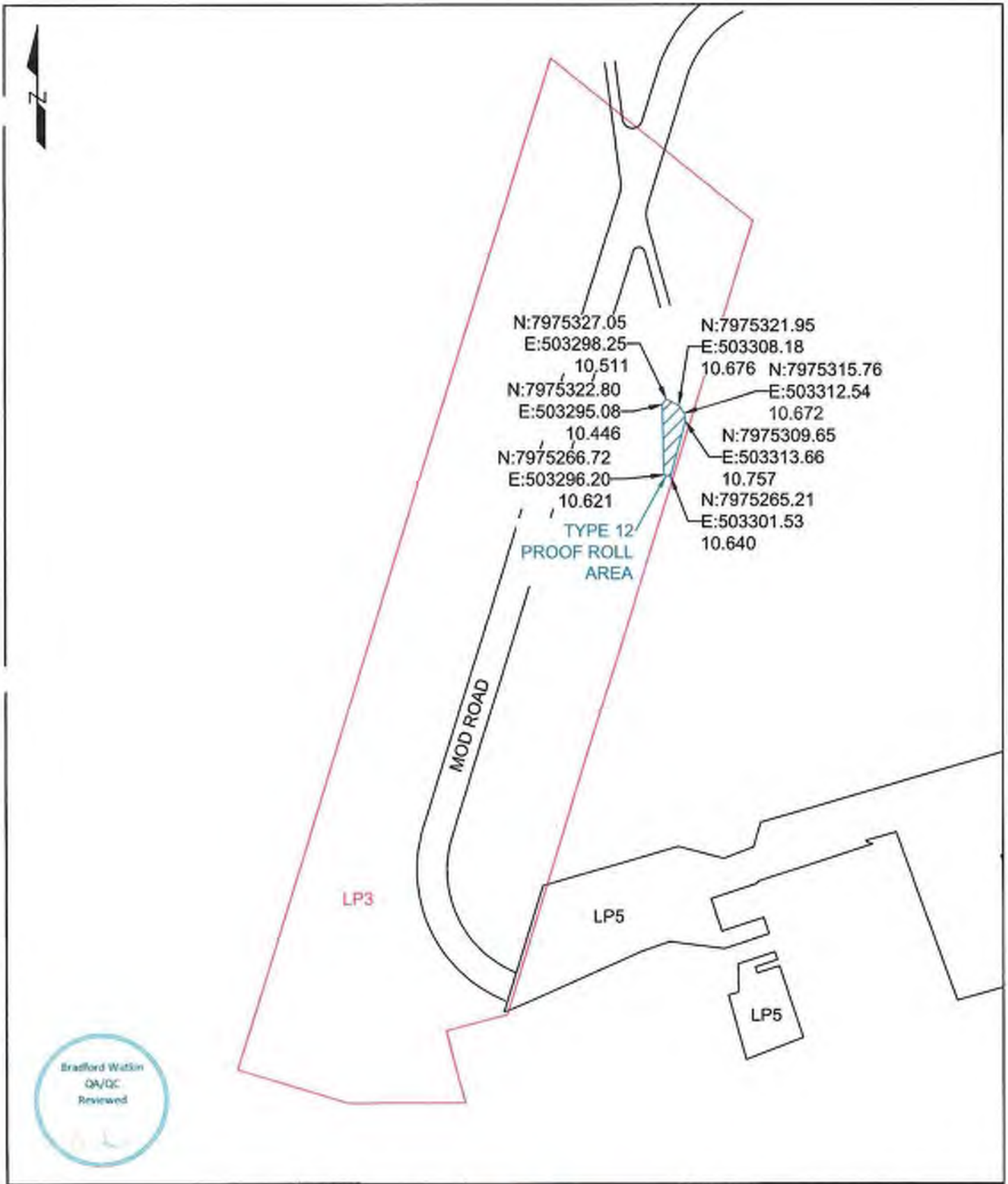
INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	
Rebound of Surface	☐ YES ☑ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	

Comments:
- 1st & 2nd LAYER OF ROQ (TYPE 12)
- SEE ALL NORTH REPORTS 228 & 229

Olivier Sonier /	Supervisor	07/22/19
Construction Designate – Print/Sign	Title	Date
BRANFORD WATKIN /	QC COORDINATOR	7/22/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP3 TYPE 12 PROOF ROLL SURVEYED JULY 22, 2019.**
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 23, 2019	DRAWING NAME (YYMMDD): 190722 LP3 PR REPORT.dwg



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA			DRAWING TITLE: LP3 TYPE 12 PROOF ROLL SURVEYED JULY 22, 2019.
OWNER: BAFFINLAND IRON MINES LP					
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 23, 2019		DRAWING NAME (YYMMDD): 190722 (2) LP3 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** EAST SIDE Nuna hel. road	
Drawing No.: H353004-40000-221-271-0005-0001	**Rev.:** 2	

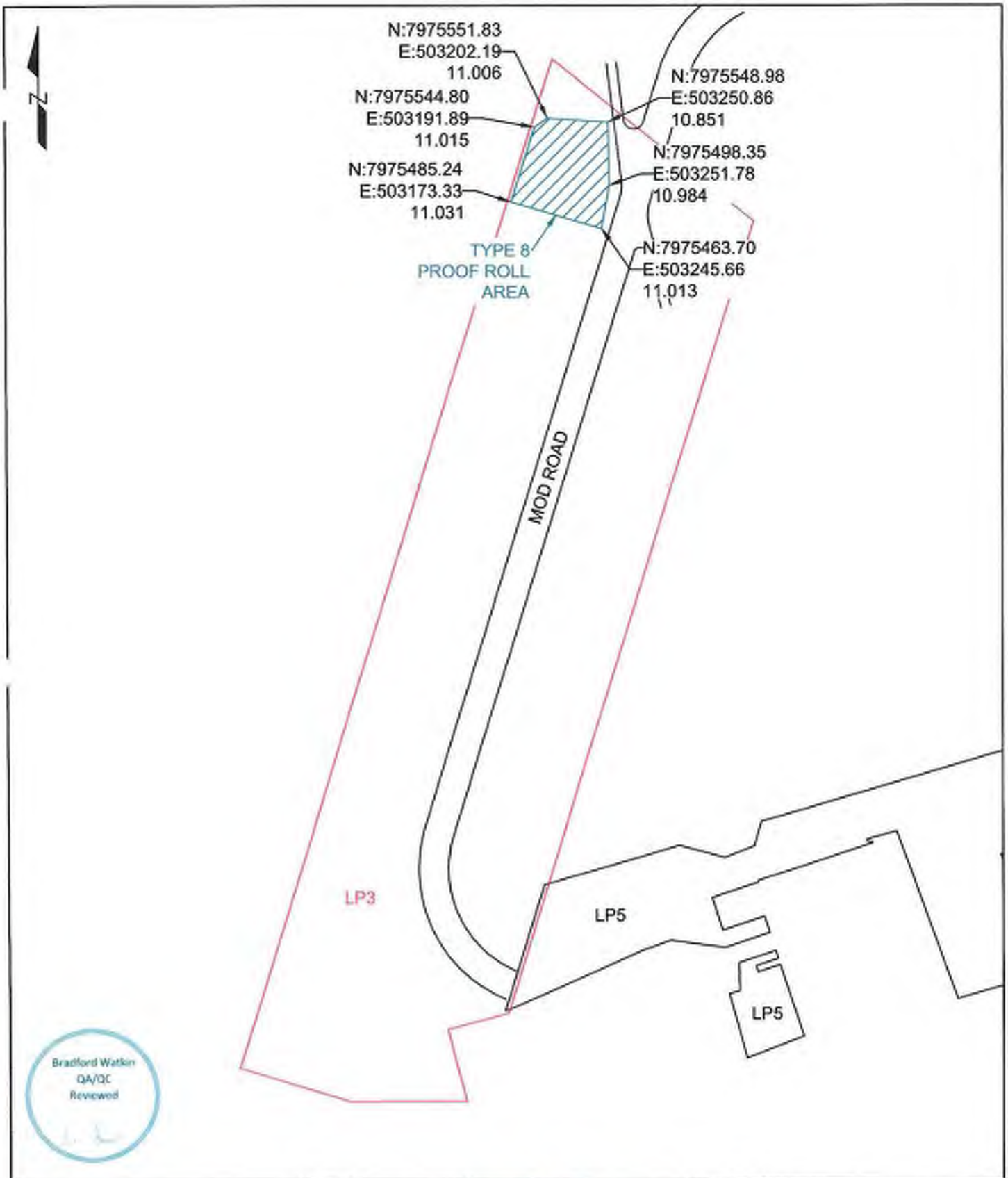
Area / Stations Inspected: SEE SURVEY DATA

Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☑ YES ☐ NO ☐ N/A	DW
Rebound of Surface	☑ YES ☐ NO ☐ N/A	DW
Formation of Cracks Patterns	☐ YES ☐ NO ☑ N/A	DW
Ridging Between Wheel Ridges	☐ YES ☐ NO ☑ N/A	DW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	DW
Surface Uniform and Level	☐ YES ☑ NO ☐ N/A	DW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	DW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	DW

Comments: - AFTER TEST DOING MORE COMPACTION
- SEE ALLNORTH REPORT 229

DONALD Weber / [signature]	Foreman	July 22 2019
Construction Designate – Print/Sign	Title	Date
RANFORD WATKIN / [signature]	QC COORDINATOR	7/22/19
Contractor QC Designate – Print/Sign	Title	Date
Mike Hynes / [signature]	Materials lead	July 22/2019
Client QA Designate – Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: LP3 TYPE 8 PROOF ROLL SURVEYED JULY 22, 2019.
OWNER: BAFFINLAND IRON MINES LP				
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 23, 2019	DRAWING NAME (YYMMDD): 190722 (3) LP3 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

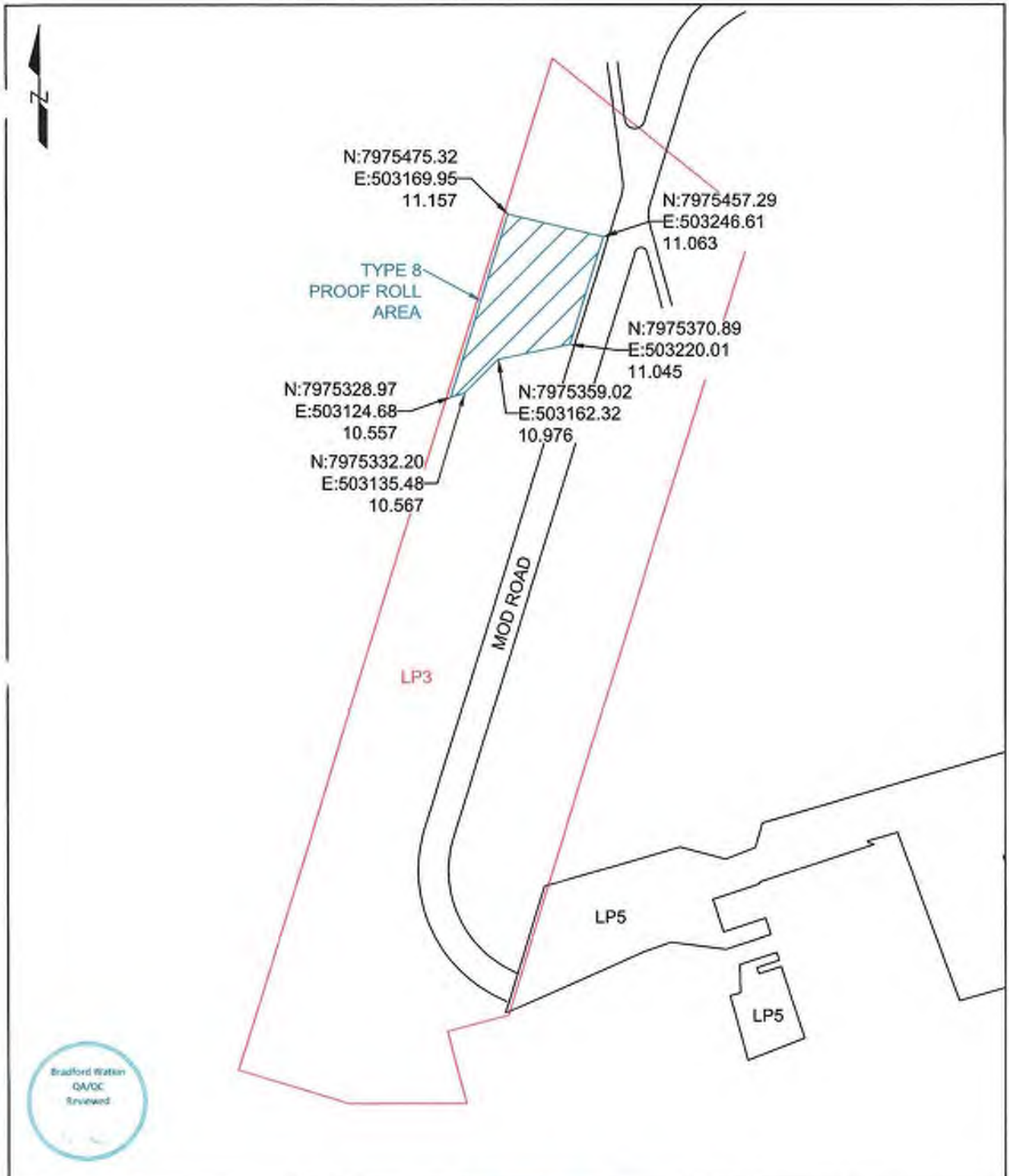
Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** H-1, ROAD NORTH	
Drawing No.: 1135304-40000-221-271-0005-0001	**Rev.:** 2	

Area / Stations Inspected: SEE SURVEY REPORT
Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	DW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	DW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	DW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	DW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	DW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	DW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	DW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	DW

Comments: - SEE ALLNORTH RPT 226
- TYPE B

DON Weber / Don Weber	Foreman	July 21 2019
Construction Designate – Print/Sign	Title	Date
BRANDON WATKIN /	QC COORDINATOR	7/21/19
Contractor QC Designate – Print/Sign	Title	Date
Mike Hynes /	Materials Lead	July 21/2019
Client QA Designate – Print/Sign	Title	Date



Notes:

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

SCALE: AS SHOWN

DATE: July 21, 2019

DRAWING TITLE:
LP3
TYPE 8 PROOF ROLL
SURVEYED JULY 20, 2019.

DRAWING NAME (YYMMDD): 190720 LP3 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

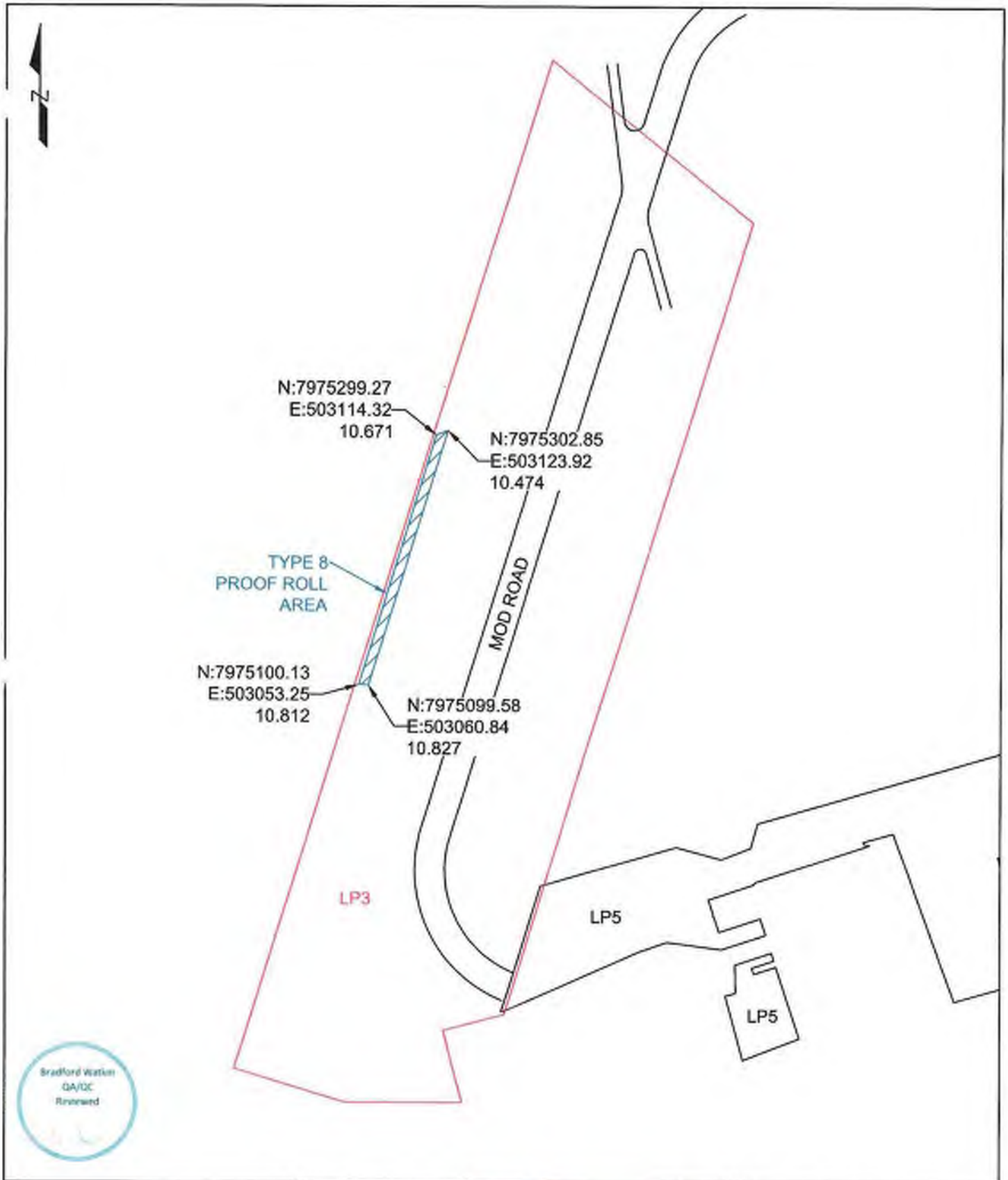
Project: Mary River Expansion Project	**ITP #:** CC006-ITP-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3 S Haul Rd	**Area Description:** West side LP3 S Haul Rd	
Drawing No.: H353004-40000-221-271-0005-001	**Rev.:** 1	

Area / Stations Inspected: SEE SURVEY REPORT
Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	
Rebound of Surface	☐ YES ☑ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	

Comments: - SEE ALLNORTH RPT 226
- TYPE B

Construction Designate – Print/Sign		Title	Date
Contractor QC Designate – Print/Sign		Title	Date
Client QA Designate – Print/Sign		Title	Date



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP3 TYPE 8 PROOF ROLL SURVEYED JULY 21, 2019.**
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 21, 2019	DRAWING NAME (YYMMDD): 190721 LP3 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

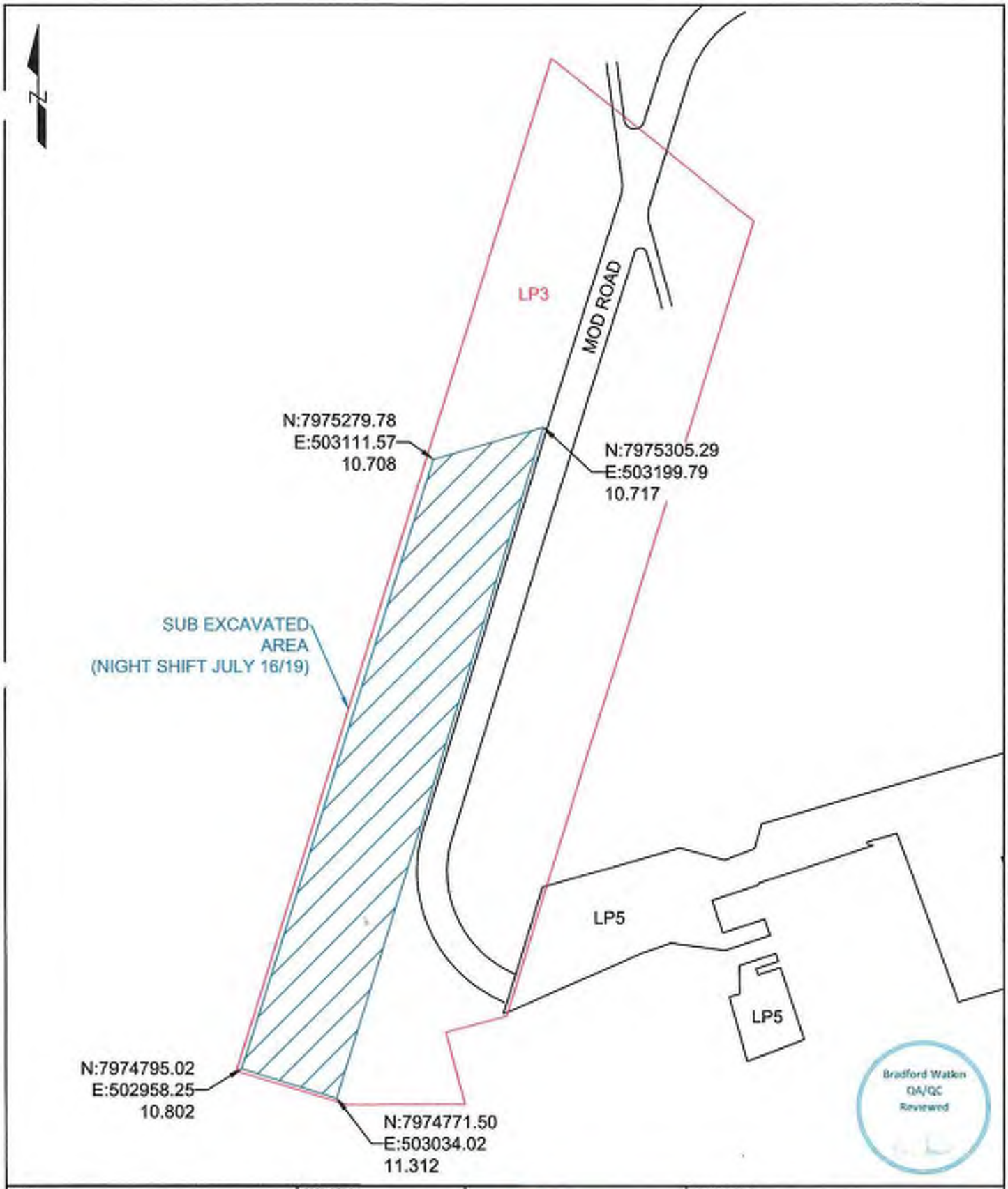
Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** South Face to hall ROAD	
Drawing No.: H353004-40000-221-271-0005-0001	**Rev.:** 2	

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	DW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	DW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	DW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	DW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	DW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	DW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	DW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	DW

Comments: Type 8 layer

DONALD Weber / [signature]	Foreman	July 17 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN / [signature]	QC COORDINATOR	7/17/19
Contractor QC Designate – Print/Sign	Title	Date
Mike Hynes / [signature]	Material Lead	July 17 2019
Client QA Designate – Print/Sign	Title	Date



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	DRAWING TITLE: **LP3 TYPE 8 PROOF ROLL SURVEYED JULY 17, 2019.**	
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 17, 2019	DRAWING NAME (YYMMDD): 190717 LP3 PR REPORT.dwg

NUNA
NUNA EAST LTD

SUBBASE APPROVAL REPORT

SUBGRADE

Exhibit 1-8a QDE
Revision 0

Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:**	**Subsystem:** N/A
Area: North end of LP3	**Area Description:** LAYDOWN LP3	
Drawing No.: A353004-10000-221-271-0005-0001		**Rev.:** 2

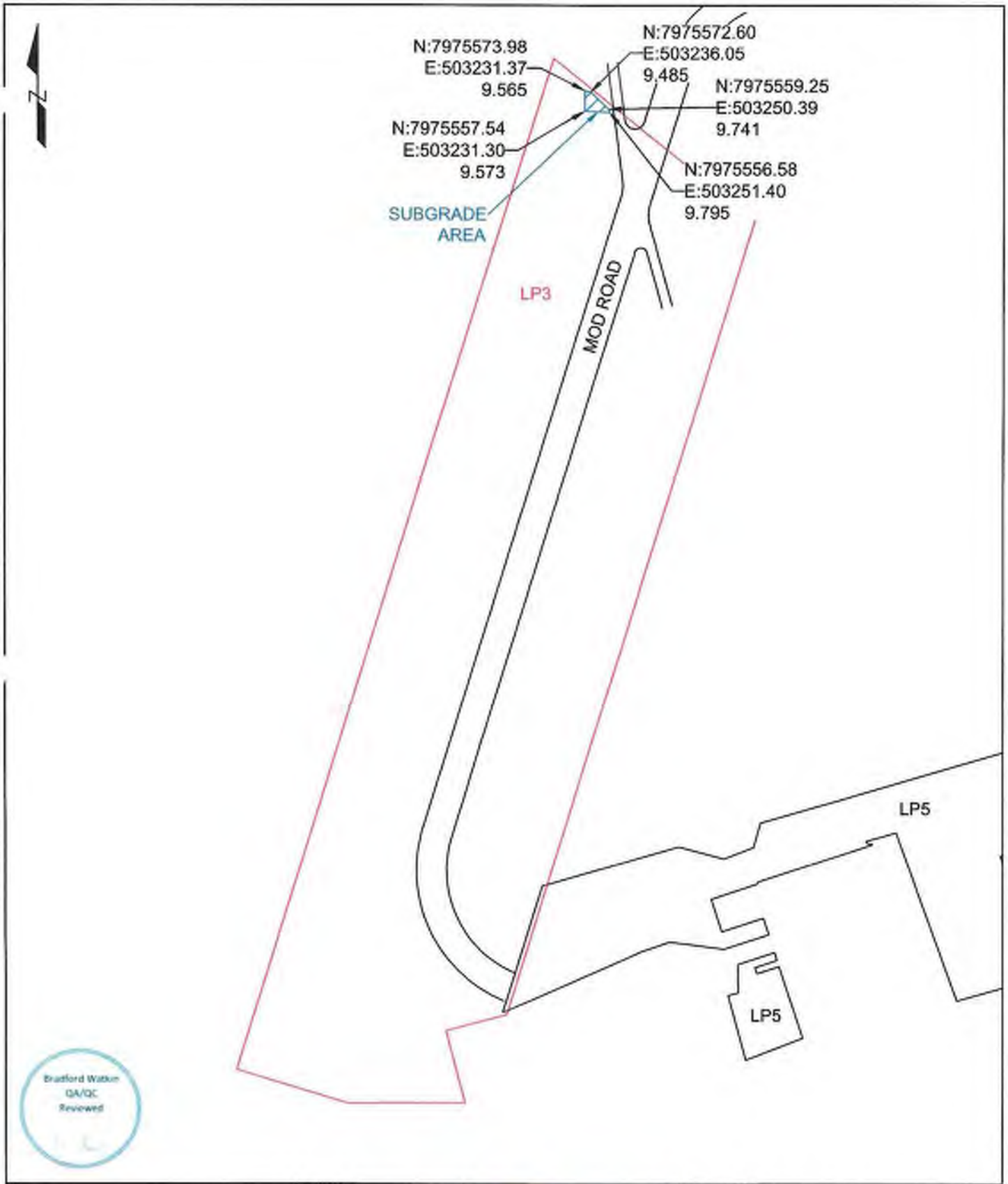
Area / Section Inspected: North end of LP3 laydown - SEE SURVEY DATA

INSPECTION DESCRIPTION		Verified (Initial)
Organic Soil Present.	☐ YES ☑ NO ☐ N/A	GL
Snow or Ice Present.	☐ YES ☑ NO ☐ N/A	GL
Ponded Water Present.	☐ YES ☑ NO ☐ N/A	GL
Water Seepage.	☐ YES ☑ NO ☐ N/A	GL
Frozen Soil Present.	☑ YES ☐ NO ☐ N/A	GL
Excavation Cleared of Foreign and Loose Soil Material.	☑ YES ☑ NO ☐ N/A	GL
Excavation Matches Design and IFC drawings.	☐ YES ☑ NO ☐ N/A	GL
Was Over Excavation Required. Depth: (1m)	☑ YES ☐ NO ☐ N/A	GL
Excavation Satisfactory and Accepted.	☑ YES ☐ NO ☐ N/A	GL

Comments: Area was sub cut 1m to remove loose sand. excavated to frozen ground. Proof roll was done with loaded 745 with no visibile deflections
- SUBGRADE

Grant LaPointe /	July 14, 2019	Foreman	
Construction Designate – Print/Sign	Title		Date
BRADFORD WHITKIN /	QC COORDINATOR		7/14/19
Contractor QC Designate – Print/Sign	Title		Date
Penny Franken /	Hatch QA		Sept 27-2019
Client QA Designate – Print/Sign	Title		Date

LP3 SUBBASE APPROVAL - Surveyed July 14, 2019		
Northing	**Easting**	**Elevation**
7975556.583	503251.403	9.795
7975555.797	503240.550	9.661
7975557.542	503231.299	9.573
7975567.321	503230.708	9.621
7975573.975	503231.373	9.565
7975572.600	503236.047	9.485
7975565.670	503242.959	9.555
7975559.249	503250.386	9.741



Bradford Watkin
QA/QC
Reviewed

Notes:

OWNER:
BAFFINLAND IRON MINES LP

PROJECT:
MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY:
M. GOREHAM

SCALE:
AS SHOWN

DATE:
July 18, 2019

DRAWING TITLE:
LP3
SUBGRADE REPORT
SURVEYED JULY 14, 2019.

DRAWING NAME (YYMMDD):
190714 LP3 SG REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

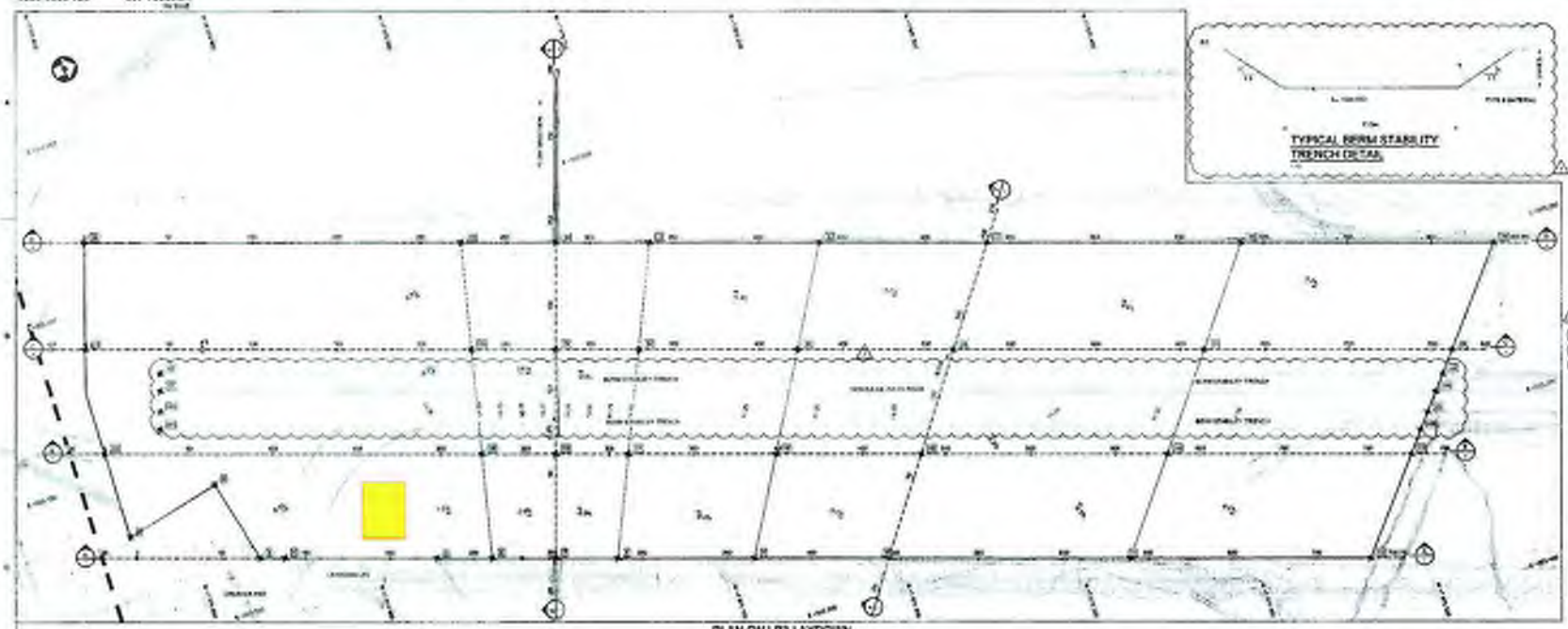
Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LAYDOWN LP3	**Area Description:** PORT LAYDOWN LP3	
Drawing No.: 453004-40000-221-271-0005-0001	**Rev.:** 2	

Area / Stations Inspected: SEE SURVEY REPORT
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☑ YES ☐ NO ☐ N/A	BW
Rebound of Surface	☑ YES ☐ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☑ YES ☐ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments: SEE ALL-NORTH DAILY REPORT # 196.
-15m x 40m STRETCH

Construction Designate – Print/Sign		Title	Date
BRADFORD WATKIN / BW		QC COORDINATOR	6/30/19
Contractor QC Designate – Print/Sign		Title	Date
Ronny Franken /		Hatch QA	Sept 29-2019
Client QA Designate – Print/Sign		Title	Date



TYPICAL BERM STABILITY TRENCH DETAIL

KEY PLAN

GENERAL NOTES

BERM STABILITY TRENCH NOTES

LEGEND

PLAN ON LP3 LAYDOWN

LAYDOWN LP3
SETTING OUT COORDINATES

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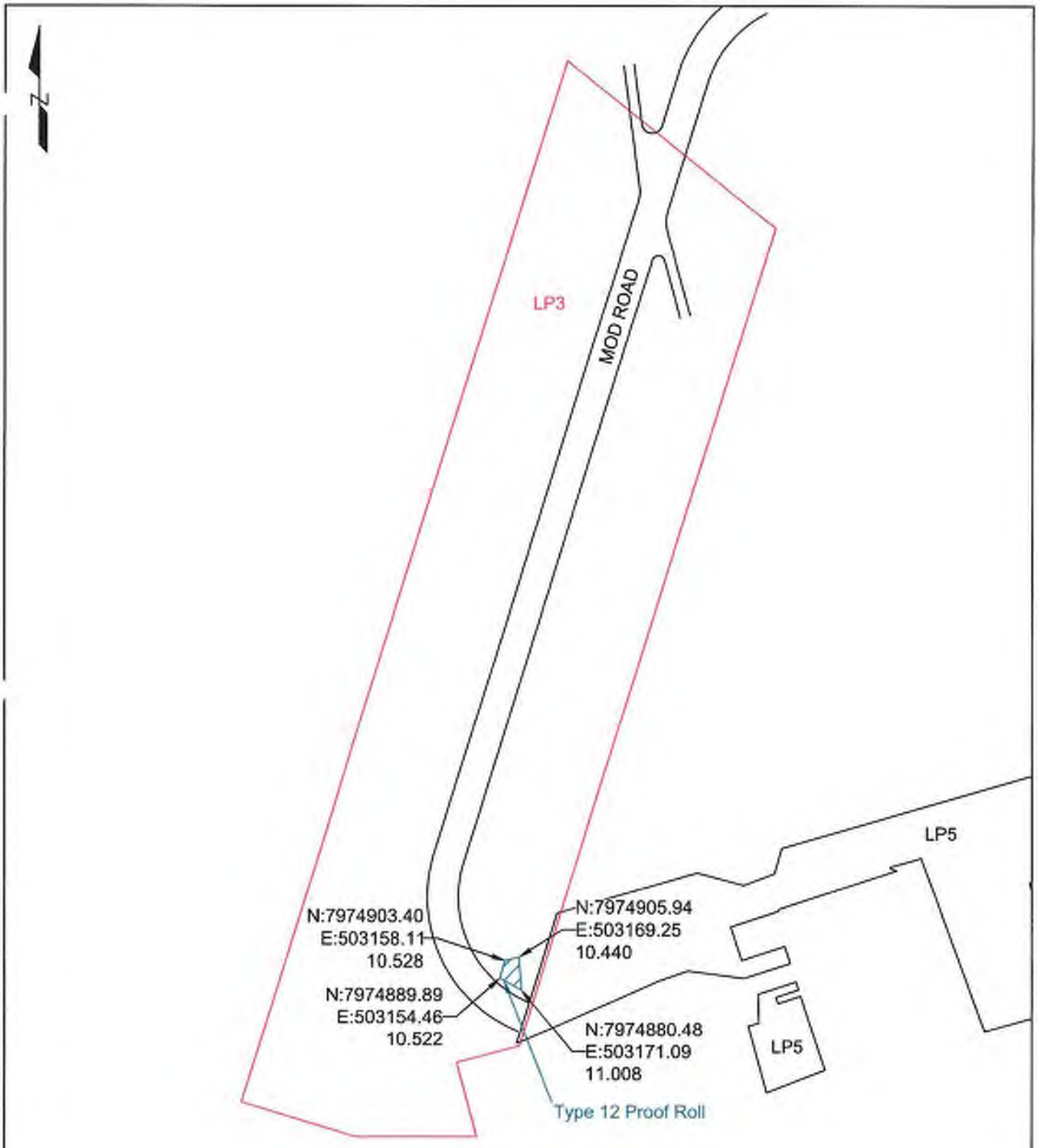
BERM STABILITY TRENCH
SETTING OUT COORDINATES

POINT	E	N



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP3 12 PROOF ROLL SURVEYED JUNE 29, 2019.**
OWNER: BAFFINLAND IRON MINES LP				
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 18, 2019	DRAWING NAME (YYMMDD): 190629 LP3 SG REPORT.dwg

NUNA EAST LTD	SUBGRADE APPROVAL REPORT	Exhibit 1-8b QDE Revision 1 Page 1 of 1

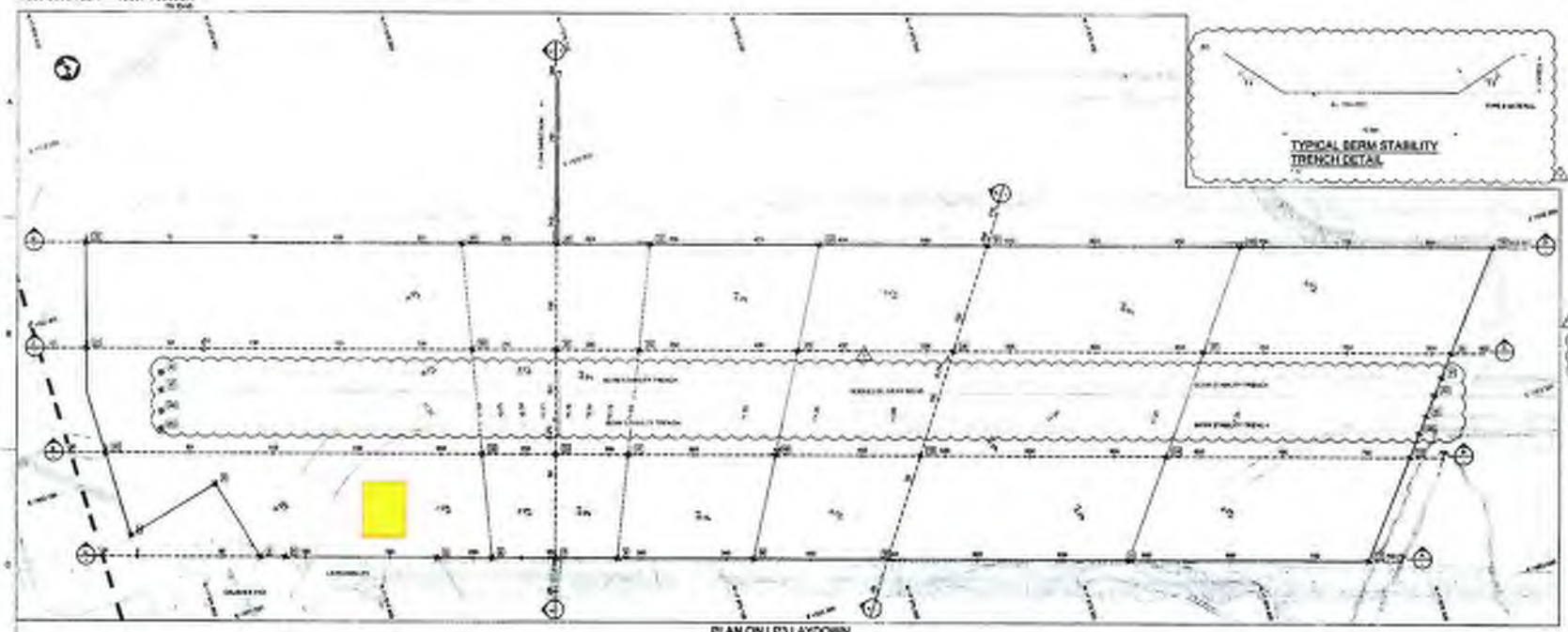
		Date: 6/30/19
Project: Mary River Expansion Project	**ITP#:** CC006-0003A	**QA Ref. Rpt. No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: Laydown LP3	**Area Description:** PORT LAYDOWN AREA LP3	
Drawing No.: 1435004-40000-221-271-0005-0001		**Rev.:** 2

Area / Stations Inspected: SEE SURVEY DATA - BACK.

INSPECTION DESCRIPTION		Verified (Initial)
Organic Soil Present.	☐ YES ☑ NO ☐ N/A	
Snow or Ice Present.	☑ YES ☐ NO ☐ N/A	
Ponded Water Present.	☑ YES ☐ NO ☐ N/A	
Water Seepage.	☑ YES ☐ NO ☐ N/A	
Frozen Soil Present.	☐ YES ☑ NO ☐ N/A	
Excavation Cleared of Foreign and Loose Soil Material.	☑ YES ☐ NO ☐ N/A	
Excavation Matches Design and IFC drawings.	☑ YES ☐ NO ☐ N/A	
Was Over Excavation Required. Depth: (_____)	☐ YES ☐ NO ☑ N/A	
Excavation Satisfactory and Accepted.	☑ YES ☐ NO ☐ N/A	

Comments:

Construction Designate – Print/Sign	Title	Date
MADISON WILLIAMS /	QC COORDINATOR	6/30/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 27 - 2019
Client QA Designate – Print/Sign	Title	Date



TYPICAL BERM STABILITY TRENCH DETAIL

KEY PLAN

GENERAL NOTES

BERM STABILITY TRENCH NOTES

LEGEND

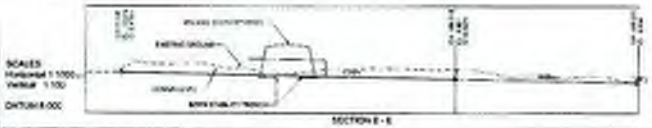
PLAN ON LP3 LAYDOWN

SECTION A - A

SECTION B - B

SECTION C - C

SECTION D - D



SECTION E - E

SECTION F - F

LAYDOWN LP3
SETTING OUT COORDINATES

POINT	E	N	LEVEL
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BERM STABILITY TRENCH
SETTING OUT COORDINATES

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Released for Use

FOR CONSTRUCTION

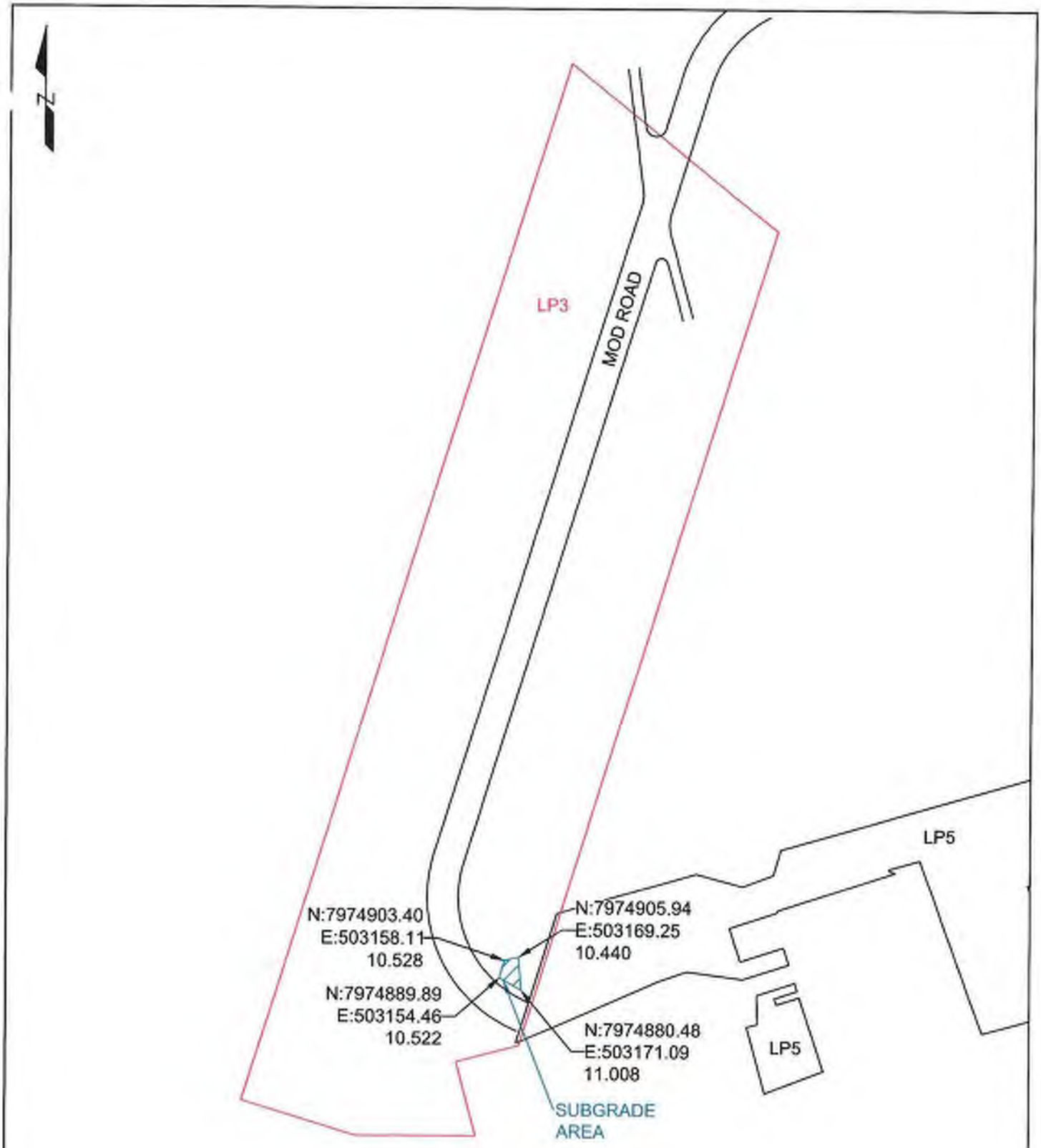
HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
PLAN AND PROFILES

H353004-40000-221-271-0005-0001



Notes:

OWNER:
BAFFINLAND IRON MINES LP

PROJECT:
MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY:
M. GOREHAM

SCALE:
AS SHOWN

DATE:
July 18, 2019

DRAWING TITLE:
LP3
SUBGRADE REPORT
SURVEYED JUNE 29, 2019.

DRAWING NAME (YYMMDD):
190629 LP3 SG REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-0003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** PORT LAYDOWN LP3	
Drawing No.: H353004-40000-221-271-0005-0001	**Rev.:** 2	

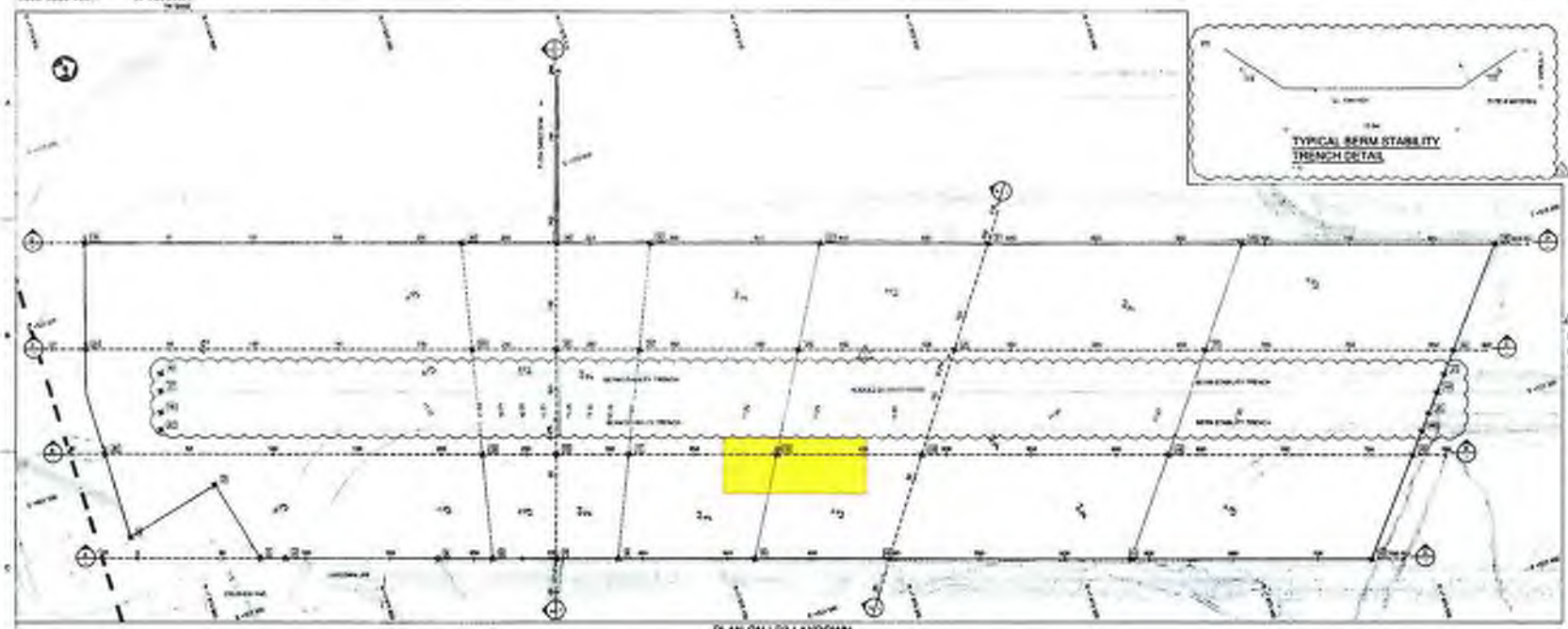
Area / Stations Inspected: SEE SURVEY REPORT w DWG.

Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments: ~ 50m x 80m section. SEE ALL NORTH REPORT 188.

Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN / [signature]	QC COORDINATOR	6/26/19
Contractor QC Designate – Print/Sign	**Title**	**Date**
Ronny Franku / [signature]	Hatch QA	Sept 29-2019
Client QA Designate – Print/Sign	**Title**	**Date**



GENERAL NOTES

BERM STABILITY TRENCH NOTES

LEGEND

LAYDOWN LP3
SETTING OUT COORDINATES

POINT	E	N	LEVEL
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BERM STABILITY TRENCH
SETTING OUT COORDINATES

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Released for Use

FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP3
PLAN AND PROFILES

H053004-40000-221-271-0005-0001 2

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** ~~CC006-000324~~ CC006-0004A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** LP3 / STABILTY TRENCH / HOD ROAD	
Drawing No.: H353004-40000-221-276-0005-0001	**Rev.:** 2	

Area / Stations Inspected: SEE SURVEY REPORT
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments: WEST SIDE, SEE ALIGNMENT REPORT 186.

/		
Construction Designate – Print/Sign	Title	Date
BRADFORD WATSON / BW	QC COORDINATOR	6/25/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-0004A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** LAYDOWN LP3/STABILITY TRENCH/MIDDLE ROAD	
Drawing No.: 1853004-40000-221-271-0005-0001	**Rev.:** 2	

Area / Stations Inspected: SEE SURVEY REPORT
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	
Rebound of Surface	☐ YES ☑ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	

Comments: PART of LP3 & STABILITY TRENCH WORK INCLUDING A PORTION OF THE MIDDLE ROAD. SEE ALLNORTH REPORT 187. "EAST SIDE"

Construction Designate – Print/Sign	Title	Date
BRADFORD WATKINS /	QC COORDINATOR	6/25/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Nath QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-20003A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: MP3	**Area Description:** MP3	
Drawing No.: A353004-40000-221-271-0005-0001	**Rev.:** 1	

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments: NEAR END OF SOUTH LIMITS, SEE ALLNORTH REPORT 182.

Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN / BW	QC COORDINATOR	6/23/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hotch QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** ~~CC006-000?A~~ CC006-0004A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** LP3, MOD ROAD + STABILITY TRENCH	
Drawing No.: H353004-40000-221-271-0005-0001	**Rev.:** 2	

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments: SOUTH END OF LP3 WEST SIDE @ ~ 50M x 80M EXCAVATION.
SEE ALLNORTH RPT. 180.

Construction Designate – Print/Sign	Title	Date
BRANFORD WATKIN /	QC COORDINATOR	6/20/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-0003A1 CC006-0004A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** LP3, MCD ROAD, STABILITY TRENCH	
Drawing No.: MB53004-4000-221-271-0005-0001	**Rev.:** 2	

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments:- ∧ AREA 80m x 20m, EXCAVATED DOWN ∧ 10m.
- SEE ALLNORTH DAILY RPT. 180
- EAST SIDE

Construction Designate – Print/Sign	Title	Date
BRADFORD WATRUS / BW	QC COORDINATOR	C/22/19
Contractor QC Designate – Print/Sign	**Title**	**Date**
Ronny Franken /	Hatch QA	Sept 29-2019
Client QA Designate – Print/Sign	**Title**	**Date**

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-0003A + CC006-0004A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** LP3, MOD ROAD + STABILITY TRENCH	
Drawing No.: H353004-40000-221-271-0005-0001	**Rev.:** 2	

Area / Stations Inspected: SEE SURVEY DATA

Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments: ~ WEST SIDE AREA 80m x 20m x 10m
SEE ALL NORTH REPORT 180.

Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN / [signature]	QC COORDINATOR	6/22/19
Contractor QC Designate – Print/Sign	**Title**	**Date**
Ronny Franken / [signature]	Match QA	Sept 29-2019
Client QA Designate – Print/Sign	**Title**	**Date**

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

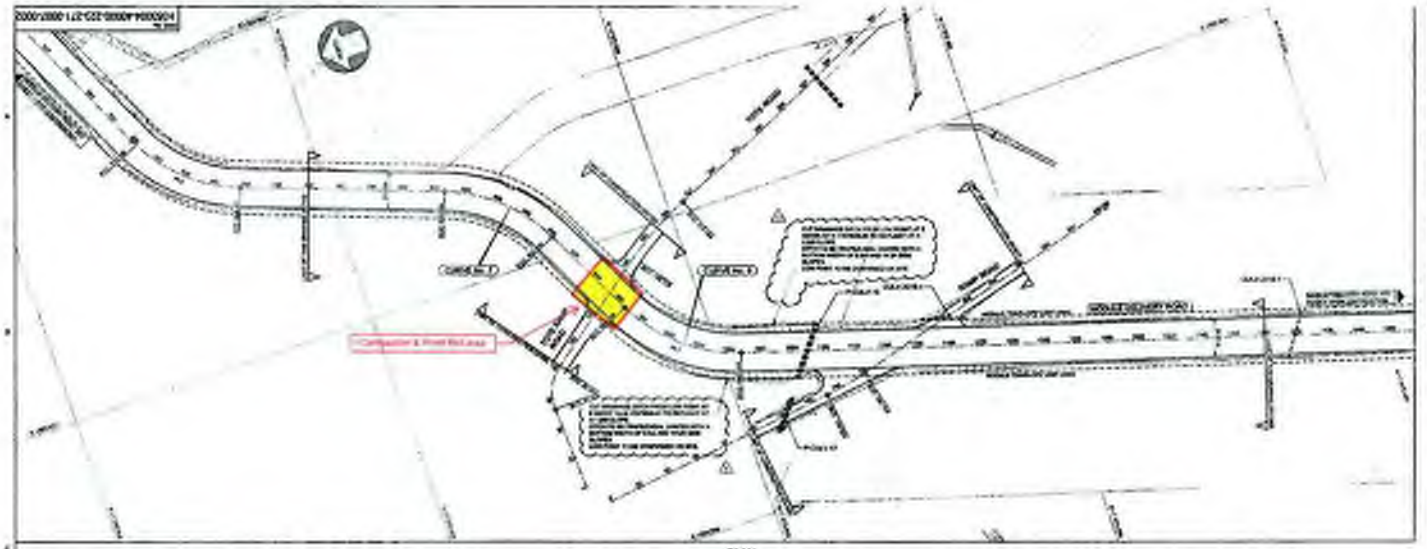
Project: Mary River Expansion Project	**ITP #:** CC006-000BA	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP3	**Area Description:** ON LP3 & MOD ROAD	
Drawing No.: H353004-40000-223-J71-0007-0002	**Rev.:** 1	

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745 Articulated Haul Truck

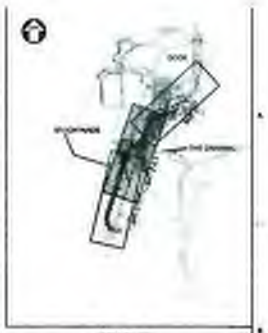
INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	
Rebound of Surface	☐ YES ☑ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	
Surface Uniform and Level	☐ YES ☑ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☐ YES ☑ NO ☐ N/A	
Elevation Record (Survey)	☐ YES ☑ NO ☐ N/A	

Comments: - MOD ROAD ONE PAD CROSSING, A SQUARE @ INTERSECTION.
- 6" TYPE 3 PROOF ROLL.
- SEE ALLNORTH REPORT 180

Grant LaPointe /	Supervisor	6/22/19
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN /	QC COORDINATOR	6/22/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 29-2019
Client QA Designate – Print/Sign	Title	Date



PLAN



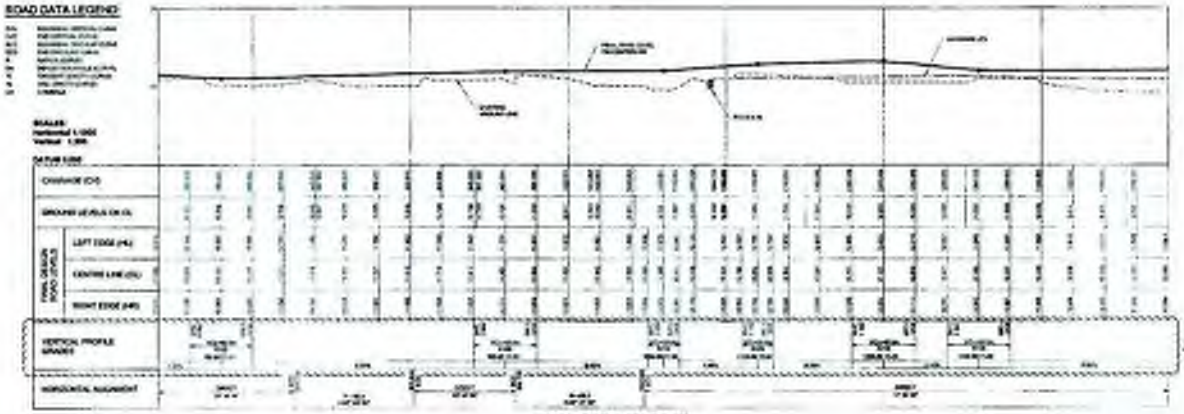
KEY PLAN

NOTES:

CULVERT SCHEDULE LEGEND:

CULVERT SCHEDULE

ROAD DATA LEGEND



MODULE DELIVERY ROUTE
FROM CH.740.000 TO CH.1380.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 2 OF 4

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH

Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

Sub-grade Approval

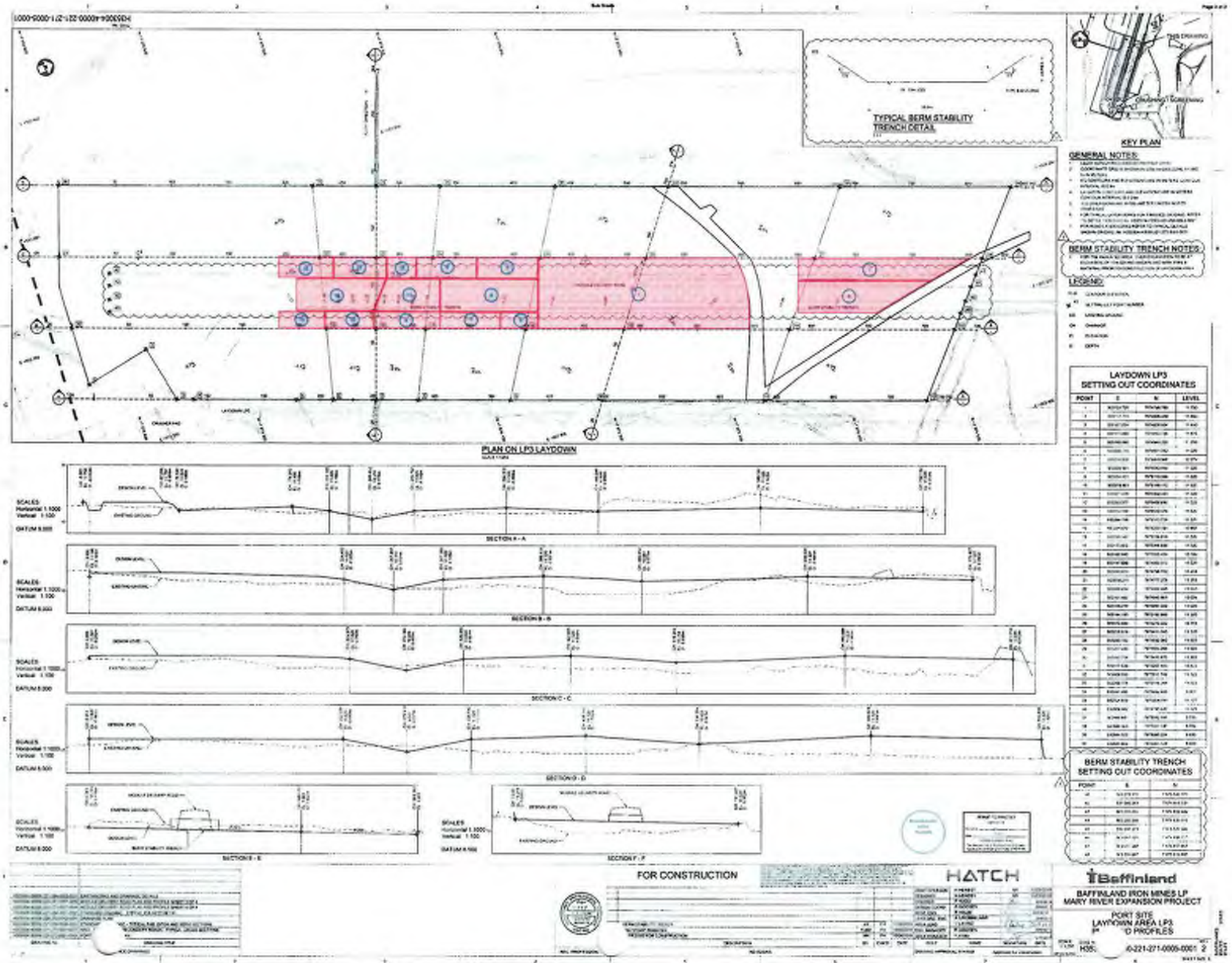
Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0003A BIM WBS: 4810
Description of Area Inspected:	*Surface/Sub-grade Preparation Approval* ***Work Scope Location:*** *Port Site Laydown Area LP3* ***Location Section:*** *See attached Mapping*
Parties Present at Inspection	*Bradford Watkin, Darko Filipic (Representing Nuna), Robert Chaisson , Ken MacRae (Allnorth representing Hatch)*

Comments:

A visual inspection of the Laydown Pad surface/sub-grade including a proof roll was completed prior to placement of fill Material. Sub-grade: Was found to be free of Ice and snow, the proof roll indicated that the subgrade was acceptable at time of inspection.

The outlined areas are approved for placement of material (See attached Drawing).

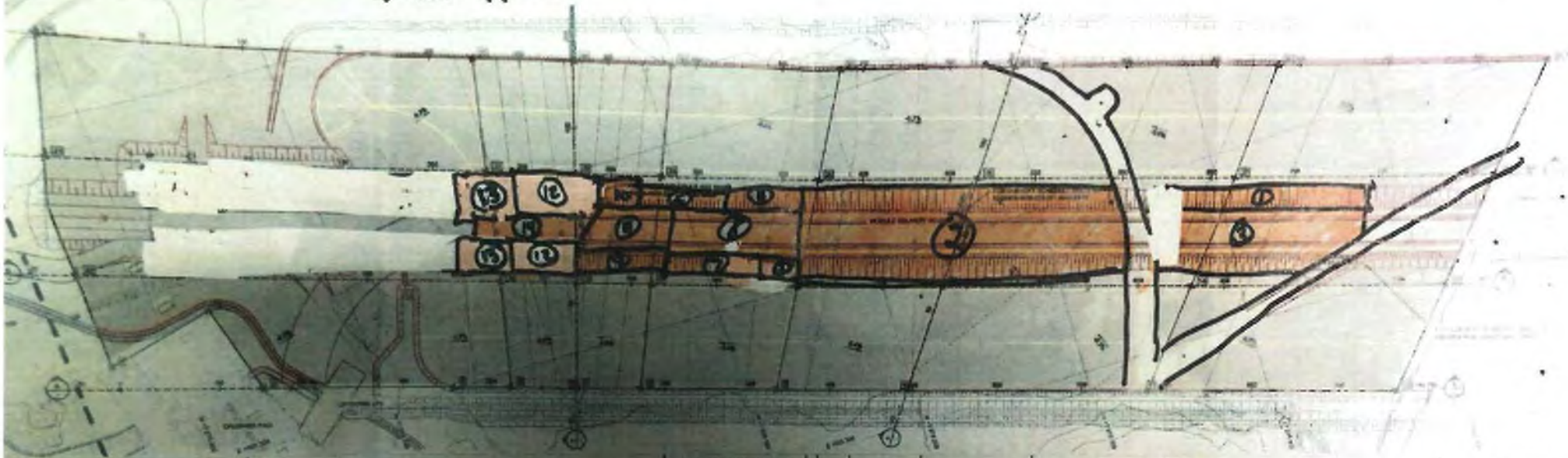
Area number:	Date:	Description of Work	Nuna Representative	Hatch Representative
1.	3/23/19	Subgrade approval	BW	RC
2.	3/25/19	Subgrade approval	BW	RC
3.	3/26/19	Subgrade approval	BW	RC
4.	3/27/19	Subgrade approval	BW	RC
5.	3/27/19	Subgrade approval	BW	RC
6.	3/30/19	Subgrade approval	BW	RC
7.	3/30/19	Subgrade approval	BW	RC
8.	3/30/19	Subgrade approval	BW	RC
9.	4/9/19	Subgrade approval	BW	RC
10.	4/9/19	Subgrade approval	BW	RC
11.	4/9/19	Subgrade approval	BW	RC
12.	4/12/19	Subgrade approval	BW	KMR
13.	4/14/19	Subgrade approval	BW	KMR
14.	4/14/19	Subgrade approval	BW	KMR



TYPICAL BERM STABILITY TRENCH DETAIL
KEY PLAN
GENERAL NOTES:
BERM STABILITY TRENCH NOTES:
LEGEND:
LAYDOWN LP3 SETTING OUT COORDINATES
POINT
E
N
LEVEL
PLAN ON LP3 LAYDOWN
SECTION A - A
SECTION B - B
SECTION C - C
SECTION D - D
SECTION E - E
SECTION F - F
BERM STABILITY TRENCH SETTING OUT COORDINATES
FOR CONSTRUCTION
HATCH
Baffinland
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT
PORT SITE
LAYDOWN AREA LP3

B-GRADE APPROVAL - Mod Road

LAYDOWN LP8 - MATERIAL PLACEMENT APPROVAL TRACKING



No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
1	Mar 25/19		S/G Approved		RC
2	Mar 25/19		S/G Approved		RC
3	Mar 26/19		S/G Approved		RC
4	Mar 27/19		S/G Approved		RC
5	Mar 27/19		S/G Approved		RC
6	Mar 30 2019		S/G Approved		RC
7	Mar 30 2019		S/G Approved		RC
8	Mar 30 2019		S/G Approved		RC
9	APR 1 2019		S/G Approved		RC
10	APR 1 9 2019		S/G Approved		RC

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
11	APR 17 2019		Subgrade approved		RC
12	APRIL 12/19		S/G Approved both sides of trenching trench's		RC
13	APRIL 14/19		S/G Approved Both sides of Trench's		RC
14	APRIL 14/19		S/G Approved Between trenches		RC

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH

Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

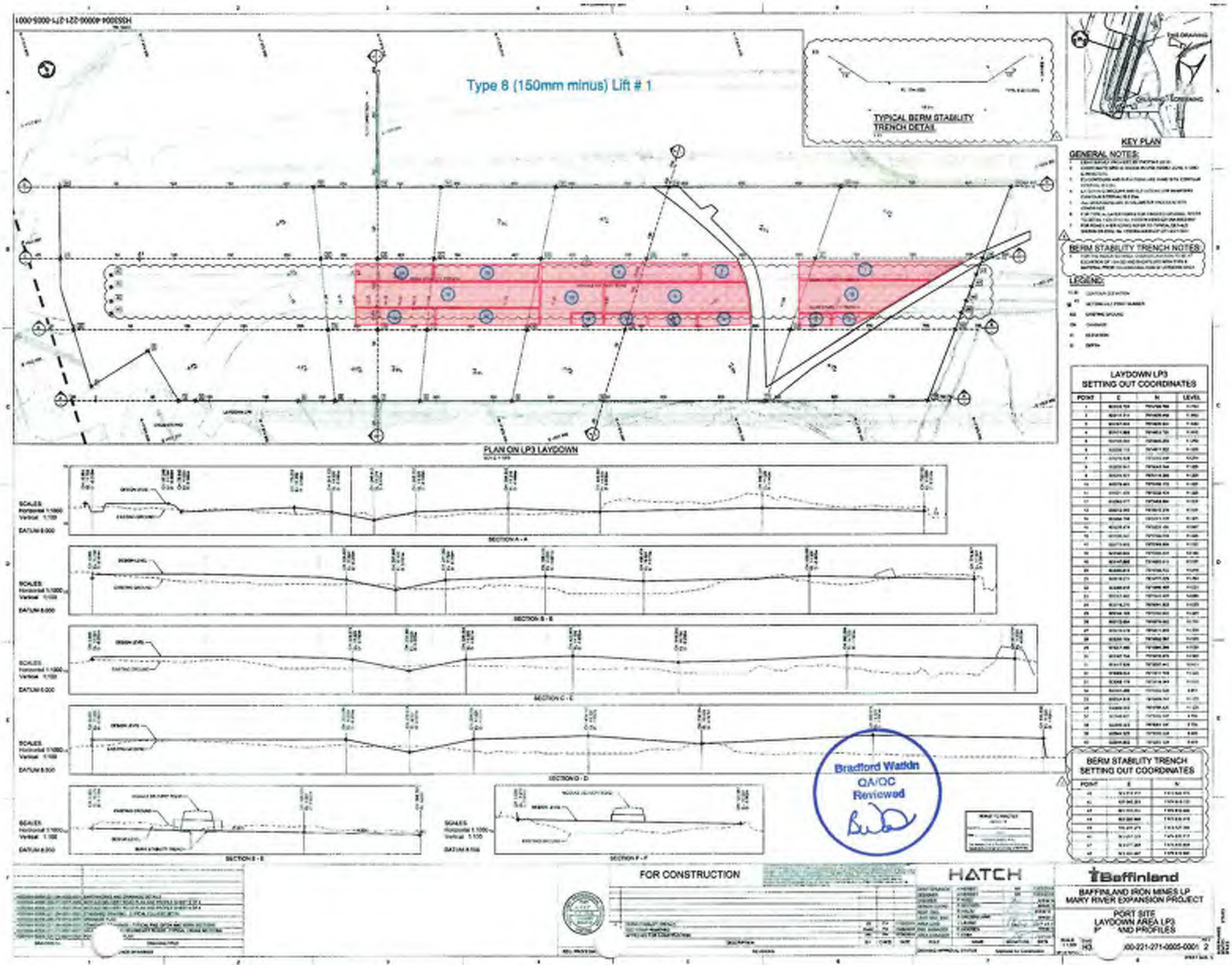
Type 8 (150mm minus) Approval

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0003A BIM WBS: 4810
Description of Area Inspected:	*Type 8 lift 1 Approval* ***Work Scope Location:*** *Port Site Laydown Area LP3* ***Location Section:*** *See attached Mapping*
Parties Present at Inspection	*Bradford Watkin, Darko Filipic (Representing Nuna), Robert Chaisson , Ken MacRae (Allnorth representing Hatch)*

Comments:

A visual inspection of the Laydown Pad Type 8 Lift 1 placement including a proof roll was completed prior to placement of next lift of fill Material.
The proof roll indicated that the lift was acceptable at time of inspection.
The outlined areas are approved for Type 8 material (See attached Drawing).

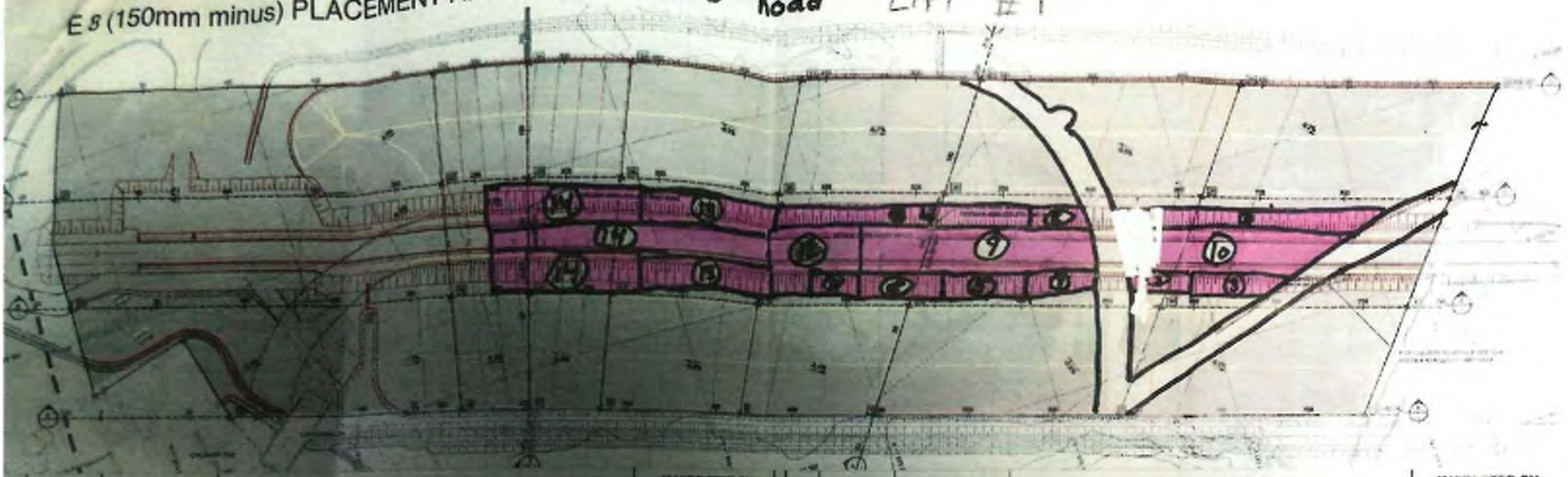
Area number:	Date:	Description of Work	Nuna Representative	Hatch Representative
1.	3/24-25/19	Type 8 Lift 1 placed and compacted in stability trench	BW	RC
2.	3/24-25/19	Type 8 Lift 1 placed and compacted in stability trench	BW	RC
3.	3/25-26/19	Type 8 Lift 1 placed and compacted in stability trench	BW	RC
4.	3/25-26/19	Type 8 Lift 1 placed and compacted in stability trench	BW	RC
5.	3/25-26/19	Type 8 Lift 1 placed and compacted in stability trench	BW	RC
6.	3/27/19	Type 8 Lift 1 placed and compacted in stability trench	BW	RC
7.	3/27/19	Type 8 Lift 1 placed and compacted in stability trench	BW	RC
8.	3/27/19	Type 8 Lift 1 placed and compacted in stability trench	BW	RC
9.	3/27/19	Type 8 Lift 1 placed and compacted in centre of road	BW	RC
10.	3/27/19	Type 8 Lift 1 placed and compacted in centre of road	BW	RC
11.	4/12/19	Type 8 Lift 1 placed and compacted in stability trench	BW	RC
12.	4/12/19	Type 8 Lift 1 placed and compacted between stability trenches	BW	KMR
13.	4/13/19	Type 8 Lift 1 placed and compacted in stability trench	BW	KMR
14.	4/14/19	Type 8 Lift 1 placed and compacted in stability trench	BW	KMR



Type 8 (150mm minus) Lift # 1
TYPICAL BERM STABILITY TRENCH DETAIL
KEY PLAN
GENERAL NOTES:
BERM STABILITY TRENCH NOTES:
LEGEND:
LAYDOWN LP3 SETTING OUT COORDINATES
PLAN ON LP3 LAYDOWN
SECTION A - A
SECTION B - B
SECTION C - C
SECTION D - D
SECTION E - E
SECTION F - F
BERM STABILITY TRENCH SETTING OUT COORDINATES
Bradford Watkin
QA/QC
Reviewed
FOR CONSTRUCTION
HATCH
Baffinland
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT
PORT SITE
LAYDOWN AREA LP3

LAYDOWN LP3 - MATERIAL PLACEMENT APPROVAL TRACKING

E S (150mm minus) PLACEMENT APPROVAL Mod Road Lift #1



No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
	Mar 22/19		Type 8 Placed and Compacted in Stability Trench		RC
	Mar 22/19		Type 8 Placed and Compacted - Stability Trench		RC
	Mar 25/19		Type 8 Placed and compacted in Stability Trench		RC
	Mar 25/19		Type 8 Placed and compacted in Stability Trench		RC
	Mar 26/19		Type 8 Placed and compacted in Stability Trench		RC
	Mar 27/19		Type 8 Placed and Compacted in Stability Trench		RC
	Mar 27/19		Type 8 Placed and compacted in Stability Trench		RC
	Mar 27/19	6	Type 8 placed and compacted in Stability Trench		RC
	Mar 27/19	5	Type 8 Placed and compacted in center of Modular road		RC
	Mar 27/19 Night		Type 8 Placed in Mod Road completed		RC

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
11	Apr 10 2019		Placed and compacted April		
12	~~April 12/19~~ April 13/19		placed April 12 night shift Between trenches		
13	April 13/19		Placed & compacted April 13/19		
14	April 14/19		Placed & compacted April 14/19		

Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

Type 8 (150mm minus) Approval

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0003A BIM WBS: 4810
Description of Area Inspected:	*Type 8 lift 2 Approval* ***Work Scope Location:*** *Port Site Laydown Area LP3* ***Location Section:*** *See attached Mapping*
Parties Present at Inspection	*Bradford Watkin, Darko Filipic (Representing Nuna), Robert Chaisson , Ken MacRae (Allnorth representing Hatch)*

Comments:

A visual inspection of the Laydown Pad Type 8 Lift 2 placement including a proof roll was completed prior to placement of next lift of fill Material.
The proof roll indicated that the lift was acceptable at time of inspection.
The outlined areas are approved for Type 8 material (See attached Drawing).

Area number:	Date:	Description of Work	Nuna Representative	Hatch Representative
1.	3/29/19	Type 8 Lift 2 placed and compacted in stability trench	BW	RC
2.	3/29/19	Type 8 Lift 2 placed and compacted in stability trench	BW	RC
3.	3/27/19	Type 8 Lift 2 placed and compacted in stability trench	BW	RC
4.	4/12/19	Type 8 Lift 2 placed and compacted in stability trench	BW	KMR
5.	4/14/19	Type 8 Lift 2 placed and compacted in stability trench	BW	KMR
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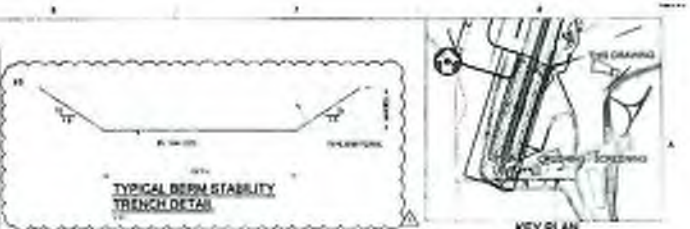
Type 8 (150 minus) Lift # 2



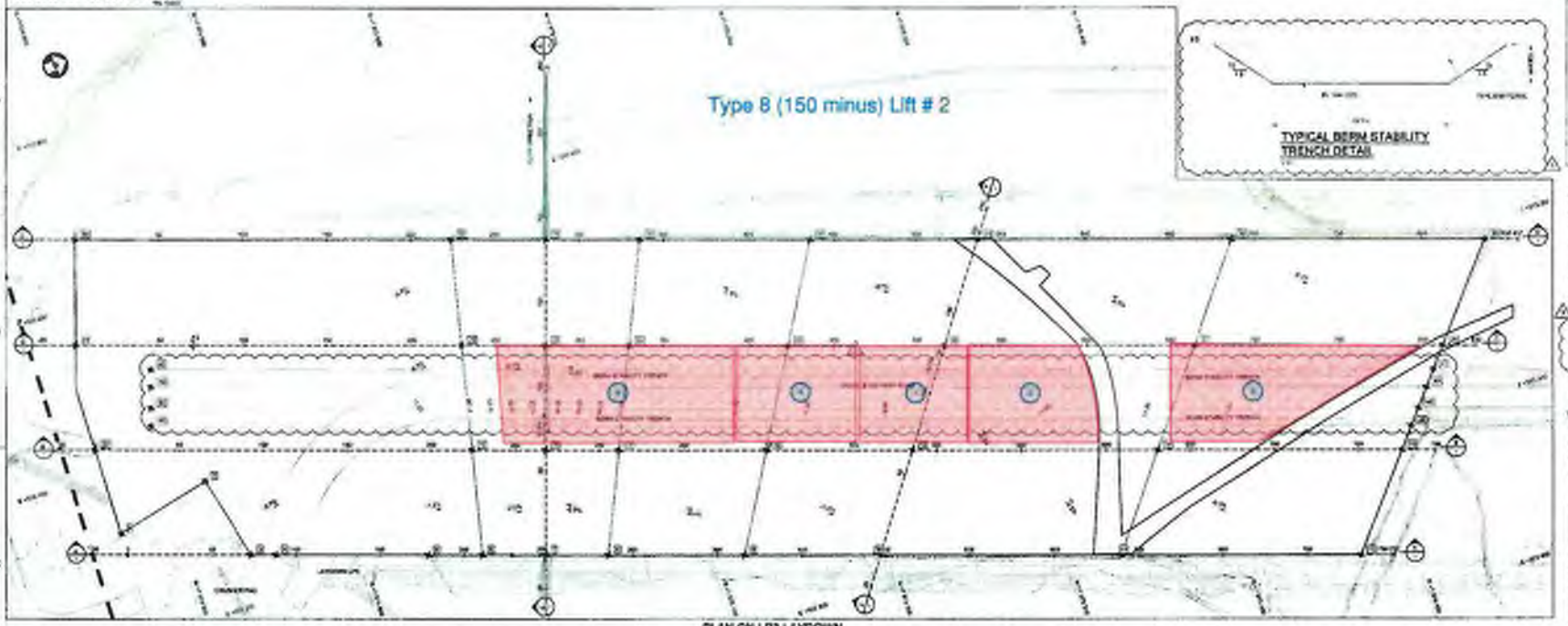
KEY PLAN

TYPICAL BERM STABILITY TRENCH DETAIL

GENERAL NOTES:

BERM STABILITY TRENCH NOTES:

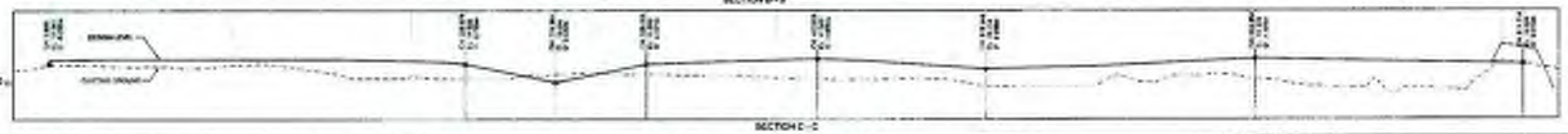
LEGEND:



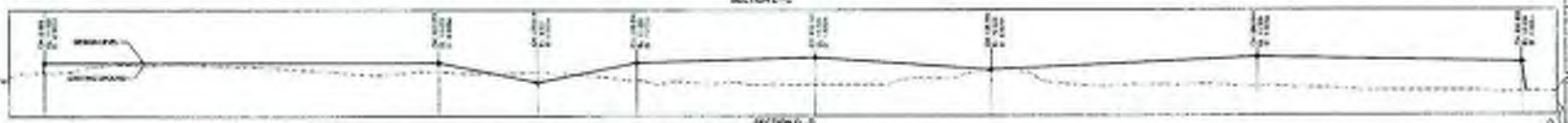
PLAN ON LP3 LAYDOWN

SECTION A - A

SECTION B - B

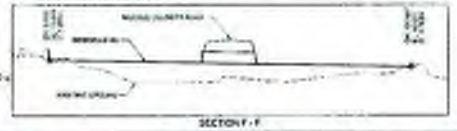


SECTION C - C



SECTION D - D

SECTION E - E



SECTION F - F

LAYDOWN LP3
SETTING OUT COORDINATES

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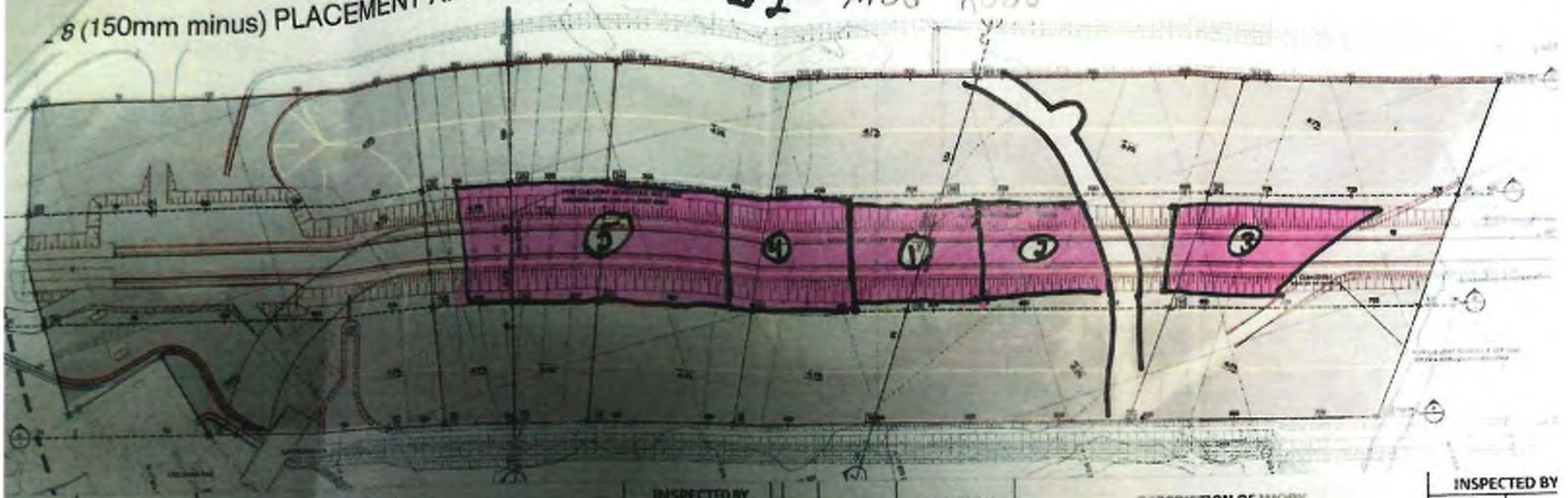
BERM STABILITY TRENCH
SETTING OUT COORDINATES

POINT	E	N

LAYDOWN LP3 - MATERIAL PLACEMENT APPROVAL TRACKING

8 (150mm minus) PLACEMENT APPROVAL — Lift #2 Mod Road



DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
March 27/19		2nd Lift of Type 8 Placed in Mod Road * Completed mar 30		RC
March 27/19		2nd Lift of Type 8 placed in mod Road due to nightshift * completed mar 30		RC
Mar 27 20 19		2N Lift Placed of Type 8 in mod Road due to nightshift * completed mar 28		RC
April 12/19		2nd Lift placed + completed April 12-13/19		Kwk
April 14/19		2ND Lift placed on night shift and completed Approved OT to stay from 8pm-10pm to witness completion to start 3rd Lift		KMP

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH

Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

Type 8 (150mm minus) Approval

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0003A BIM WBS: 4810
Description of Area Inspected:	*Type 8 lift 3 Approval* ***Work Scope Location:*** *Port Site Laydown Area LP3* ***Location Section:*** *See attached Mapping*
Parties Present at Inspection	*Bradford Watkin, Darko Filipic (Representing Nuna), Robert Chaisson , Ken MacRae (Allnorth representing Hatch)*

Comments:

A visual inspection of the Laydown Pad Type 8 Lift 3 placement including a proof roll was completed prior to placement of next lift of fill Material.
The proof roll indicated that the lift was acceptable at time of inspection.
The outlined areas are approved for Type 8 material (See attached Drawing).

Area number:	Date:	Description of Work	Nuna Representative	Hatch Representative
1.	4/2/19	Type 8 Lift 3 placed and compacted in stability trench	BW	RC
2.	4/4/19	Type 8 Lift 3 placed and compacted in stability trench	BW	RC
3.	4/14-15/19	Type 8 Lift 3 placed and compacted in stability trench	BW	KMR
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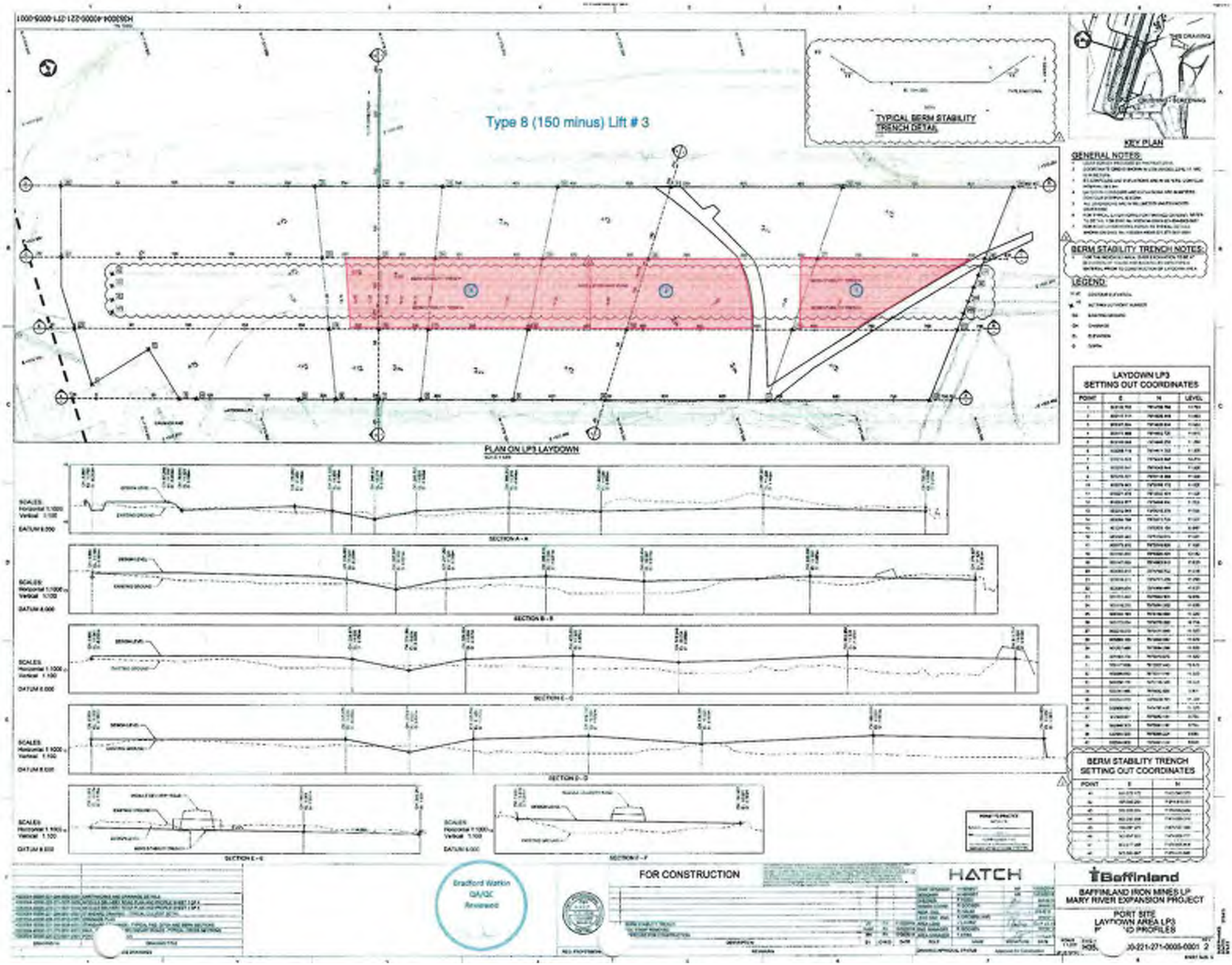
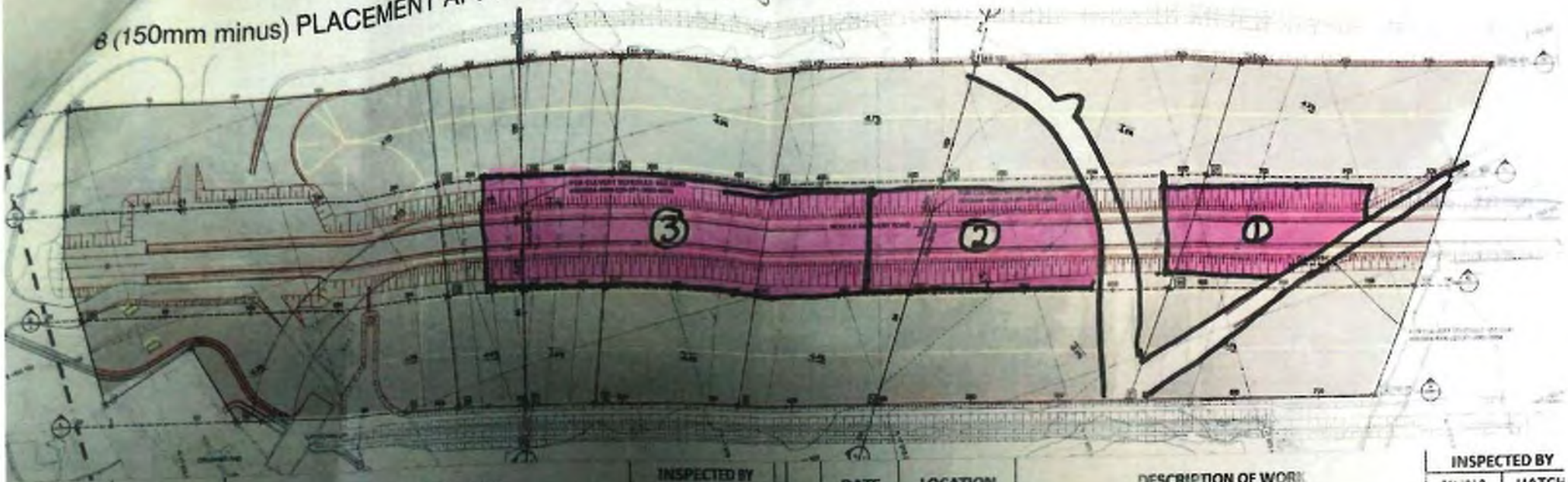


Type 8 (150 minus) Lift # 3
TYPICAL BERM STABILITY TRENCH DETAIL
KEY PLAN
GENERAL NOTES:
BERM STABILITY TRENCH NOTES:
LEGEND:
LAYDOWN LP3 SETTING OUT COORDINATES
POINT
E
N
LEVEL
PLAN ON LP3 LAYDOWN
SECTION A - A
SECTION B - B
SECTION C - C
SECTION D - D
SECTION E - E
SECTION F - F
BERM STABILITY TRENCH SETTING OUT COORDINATES
POINT
E
N
Bradford Watkin
QA/QC
Reviewed
FOR CONSTRUCTION
HATCH
Baffinland
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT
PORT SITE
LAYDOWN AREA LP3

LAYDOWN LP3 - MATERIAL PLACEMENT APPROVAL TRACKING

8 (150mm minus) PLACEMENT APPROVAL LIFT #3 Mod Road



No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
1	APR. 12 2019		compacted APR. 2nd		RC
2	APR. 2019		compacted APRIL 4th		RC
3	April 15 2019		placed April 14/15 night shift placed April 15th night shift compacted April 15/19		KMR

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH

Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

Type 8 (150mm minus) Approval

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0003A BIM WBS: 4810
Description of Area Inspected:	*Type 8 lift 4 Approval* ***Work Scope Location:*** *Port Site Laydown Area LP3* ***Location Section:*** *See attached Mapping*
Parties Present at Inspection	*Bradford Watkin, Darko Filipic (Representing Nuna), Robert Chaisson , Ken MacRae (Allnorth representing Hatch)*

Comments:

A visual inspection of the Laydown Pad Type 8 Lift 4 placement including a proof roll was completed.
The proof roll indicated that the lift was acceptable at time of inspection.
The outlined areas are approved for Type 8 material (See attached Drawing).

Area number:	Date:	Description of Work	Nuna Representative	Hatch Representative
1.	4/5/19	Type 8 Lift 4 placed and compacted in stability trench	BW	KMR
2.	4/8/19	Type 8 Lift 4 placed and compacted in stability trench	BW	KMR
3.	4/12/19	Type 8 Lift 4 placed and compacted in stability trench	BW	KMR
4.	4/20/19	Type 8 Lift 4 placed and compacted in stability trench	BW	KMR
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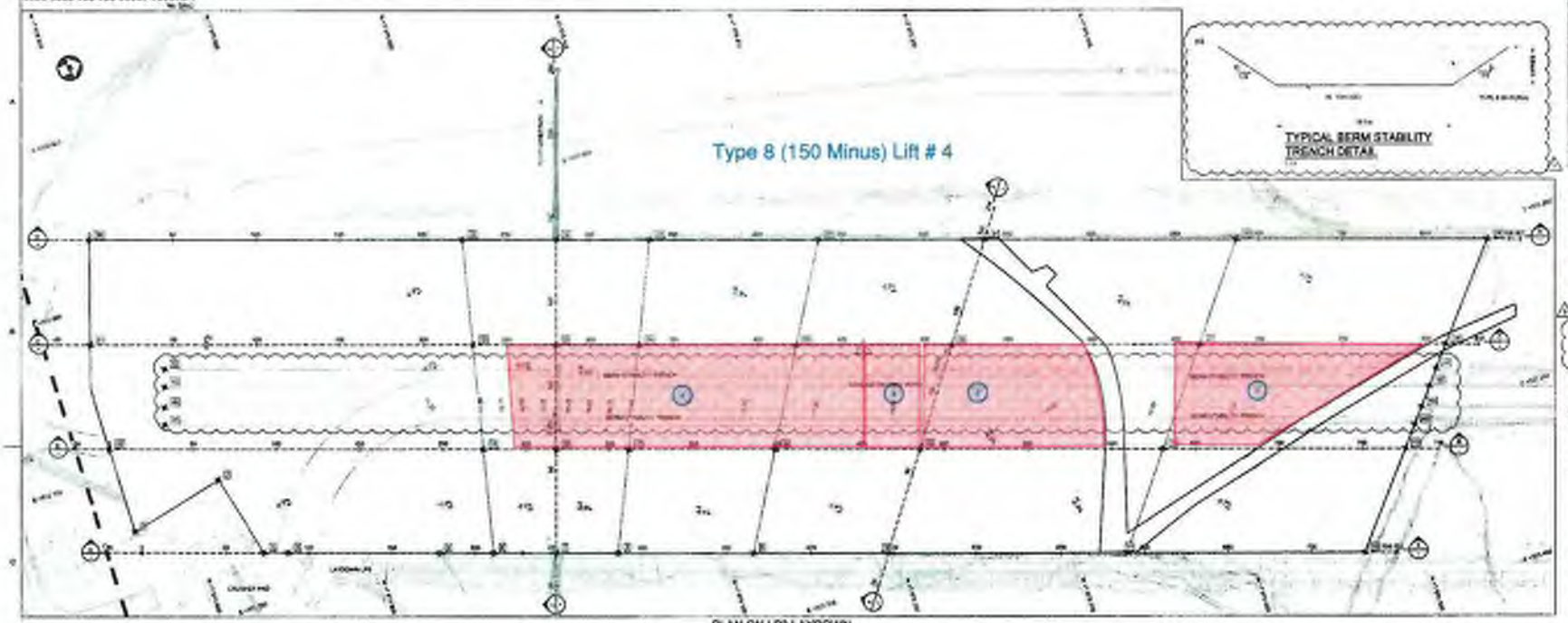

PLAN ON LP3 LAYDOWN

KEY PLAN

TYPICAL BERM STABILITY TRENCH DETAIL

GENERAL NOTES:

BERM STABILITY TRENCH NOTES:

LEGEND

LAYDOWN LP3
SETTING OUT COORDINATES

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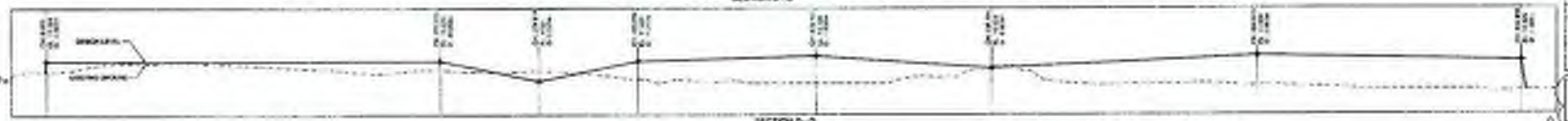
SECTION A - A

SECTION B - B

SECTION C - C



SECTION D - D

SECTION E - E

SECTION F - F

BERM STABILITY TRENCH
SETTING OUT COORDINATES

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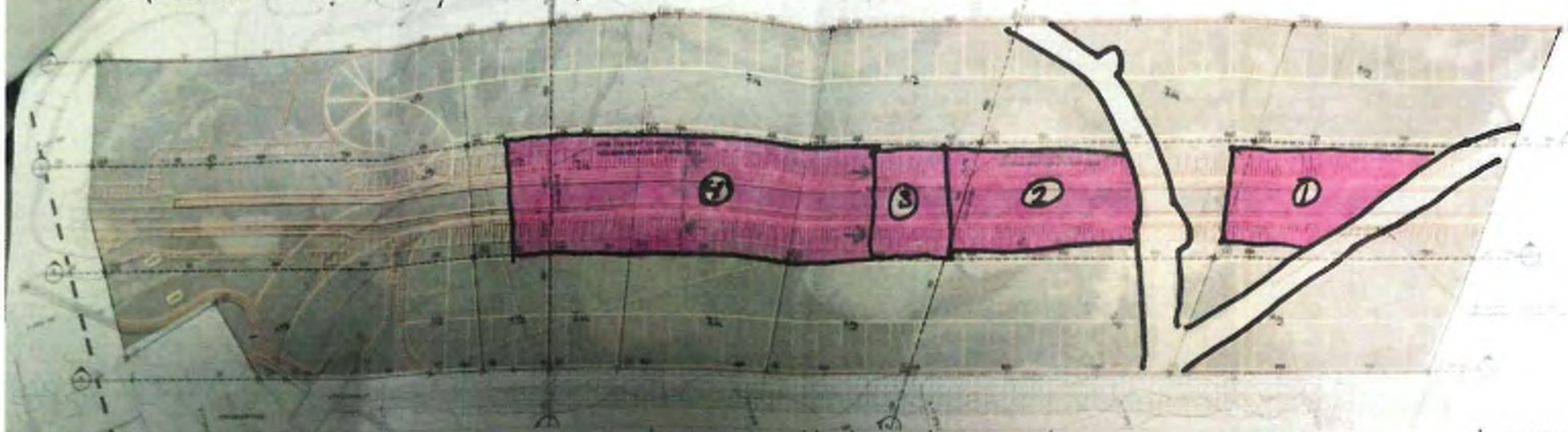
LAYDOWN LP3 - MATERIAL PLACEMENT APPROVAL TRACKING

Lift #4

8 (150mm minus) PLACEMENT APPROVAL



No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
1	APRIL 15/19		Lift Placed on [illegible] April 5/19 Lift Compacted		
2	April 8/19		Lift Placed April 8th/19 Lift Compacted APRIL 12/19		
3	April 12/19		Lift placed April 11 [illegible] Suff Compacted APRIL 12/19		
4	April 15/19		Lift placed April 15/19 Compacted 3 pass's up to arrow in pink Material placed to +250 but no compaction as of April 16/19		
4	April 20/19		Finished all pass's for Lift 4 section 4 to +250		

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH

NUNA
NUNA EAST LTD

Baffinland
HATCH

Nuna East Limited Quality Department
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval -* Lay down LP3 west of stability trench sta 550 to 600 (heli pad road) - fill areas
Date of Inspection:	Feb 24, 2019
Parties Present at Inspection	Darko Filipic Kenny MacRae

Comments:

A visual inspection of the Lay down LP3 *surface/sub-grade was conducted prior to placement of fill Material.*

Sub-grade: Cleared of snow and ice. Frozen ground proof rolled.

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Darko Filipic		2/24/19
HATCH Representative:	Mike Kirkbride		3/3/19

NUNA
NUNA EAST LTD

Baffinland
HATCH

Nuna East Limited Quality Department
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval -* Laydown LP3 Cut area strip from sta 450 to helipad road
Date of Inspection:	Feb 27 2019
Parties Present at Inspection	Darko Filipic Kenny MacRae

Comments:

A visual inspection of the Lay down LP3 *surface/sub-grade was conducted prior to placement of fill Material.*

Sub-grade: Cut to Type 8 grade. Rolled w/ 10Ton packer
SEE ATTACHED SHEET FEB 25, 2019.

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Darko Filipic		2/27/19
HATCH Representative:	MIKE KIRKSIDE		3/3/19

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Nuna East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval -* Laydown LP3 west of stability trench between Heli pad road and ore pad access road.
Date of Inspection:	Feb 27 2019
Parties Present at Inspection	Darko Filipic Kenny MacRae

Comments:

A visual inspection of the laydown LP3 *surface/sub-grade was conducted prior to placement of fill Material.*

Sub-grade: Cleared of snow and ice. Frozen ground.

SHEET FEB 27, 2019.

The outlined area is approved for placement of material.

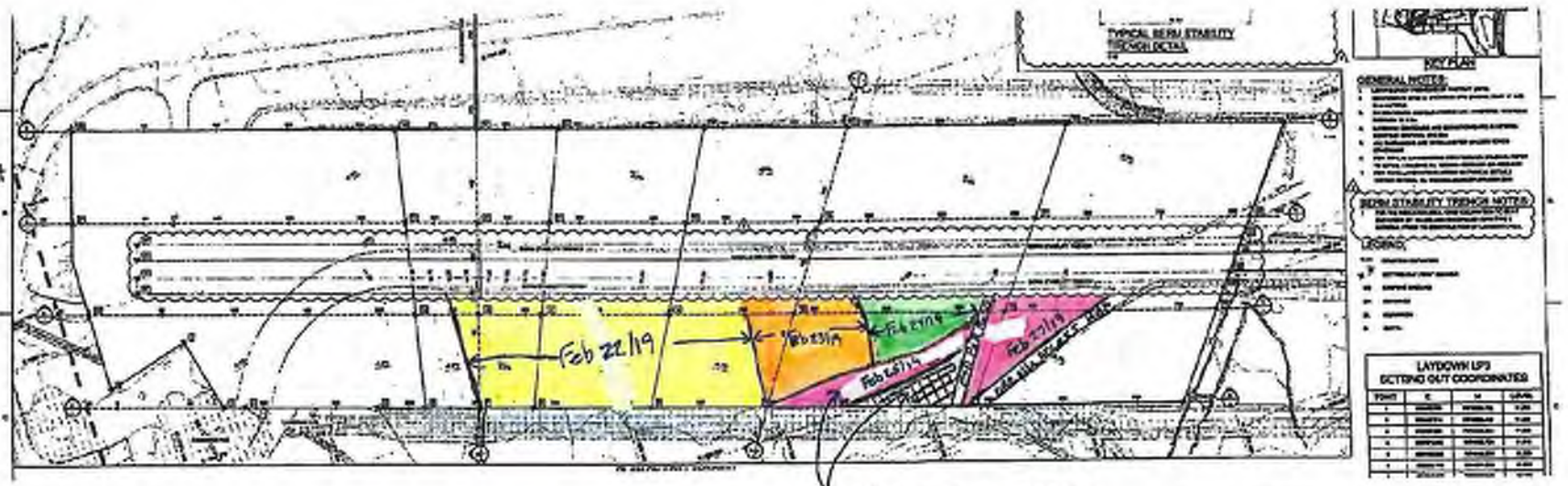
Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Darko Filipic		2/27/19
HATCH Representative:	Michael Kirkbride		3/3/19

Subgrade
Approval

NOTE
his is slightly different
en previous copy.
ue confusion with
eli pad road and ore
ile access Road
is copy is more
accurate to tickets
in the field



cut to Type 8 grade Feb 25/19
Rolled/Approved S/C Feb 27/19

Still needs to be cut to
Type 8 grades and approved *

Page 1 S/C approvals LP3

SEE SIGN OFF
FEB 24
FEB 27
FEB 27
3/3/19

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Nuna East Limited Quality Department
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval -* Laydown LP3
Date of Inspection:	Feb 22, 2019
Parties Present at Inspection	Darko Filipic

Comments:

A visual inspection of the Laydown LP3 *surface/sub-grade was conducted prior to placement of fill Material.*

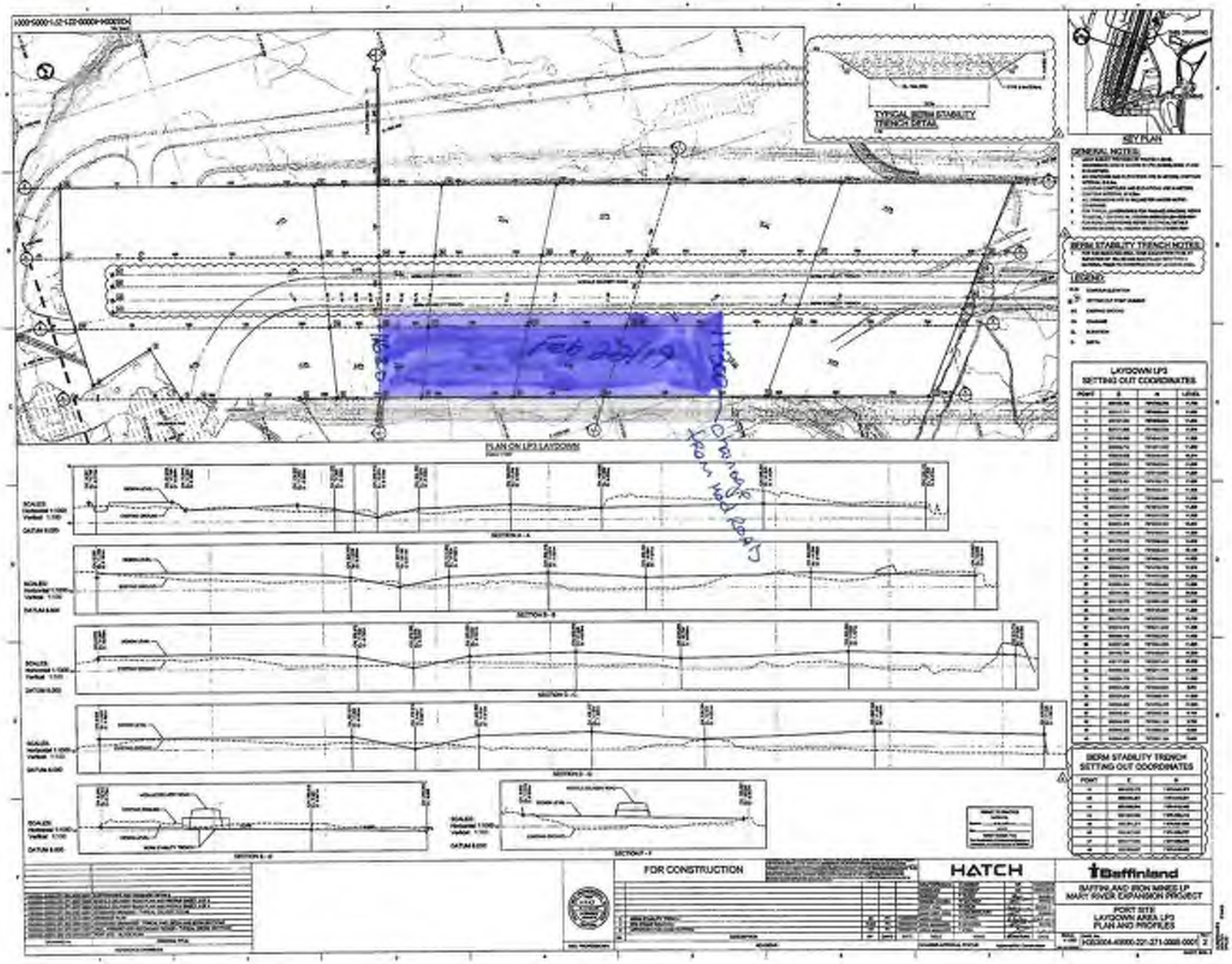
Sub-grade: cleared of snow and ice from ponds to the extent possible.
Area approved extends from sta +250 to sta + 550 along the East side of the laydown to the edge of the stability trench.

The outlined area is approved for placement of material. see attached drawing.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Darko Filipic		2/22/2019
HATCH Representative:	Kenny MacRae		2/24/2019


TYPICAL BERM STABILITY TRENCH DETAIL
KEY PLAN
GENERAL NOTES:
BERM STABILITY TRENCH NOTES:
LEGEND:
LAYDOWN LP3
SETTING OUT COORDINATES
PLAN ON LP3 LAYDOWN
SECTION A - A
SECTION B - B
SECTION C - C
SECTION D - D
SECTION E - E
SECTION F - F
BERM STABILITY TRENCH
SETTING OUT COORDINATES
FOR CONSTRUCTION
HATCH
Baffinland
BAFFIN AND IRON MINES LP
MARY RIVER EXPANSION PROJECT
PORT SITE
LAYDOWN AREA LP3
PLAN AND PROFILES

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QCD-001 Sub-Grade Approval
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval* *Work Scope Location: Laydown LP3* *Location Section: 1*
Date of Inspection:	*February 22, 2019*
Parties Present at Inspection	*Nuna, Allnorth*

Comments:

A visual inspection of the ___subgrade_____ surface/sub-grade was conducted prior to placement of fill Material.

Sub-grade: Clear of ice and snow, roll tested in pond areas

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019
Hatch	Stephane Ciouet		03/08/2019

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QCD-001 Sub-Grade Approval
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval* *Work Scope Location: Laydown LP3* *Location Section: 2*
Date of Inspection:	*February 23, 2019*
Parties Present at Inspection	*Nuna, Allnorth*

Comments:

A visual inspection of the ___subgrade___ surface/sub-grade was conducted prior to placement of fill Material.

Sub-grade: Clear of ice and snow, roll tested in pond areas

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

NUNA Representative:	Brandon Urquhart		03/08/2019
	Name	Signature	Date
HATCH Representative:	Ken MacRae		03/08/2019
	Name	Signature	Date

Hatch Stephane Giguet 03/08/2019

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QCD-001 Sub-Grade Approval
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval* *Work Scope Location: Laydown LP3* *Location Section: 3*
Date of Inspection:	*February 24, 2019*
Parties Present at Inspection	*Nuna, Allnorth*

Comments:

A visual inspection of the subgrade surface/sub-grade was conducted prior to placement of fill Material.

Sub-grade: Clear of ice and snow, roll tested in pond areas

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019
Hatch	Stephane Gionet		03/04/2019

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QCD-001 Sub-Grade Approval
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval* *Work Scope Location: Laydown LP3* *Location Section: 4*
Date of Inspection:	*February 25, 2019*
Parties Present at Inspection	*Nuna, Allnorth*

Comments:

A visual inspection of the subgrade surface/sub-grade was conducted prior to placement of fill Material.

Sub-grade: Clear of ice and snow, roll tested in pond areas

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019

Hatch: Stephane Giard 03/08/2019

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QCD-001 Sub-Grade Approval
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval* *Work Scope Location: Laydown LP3* *Location Section: 6*
Date of Inspection:	*March 2, 2019*
Parties Present at Inspection	*Nuna, Allnorth*

Comments:

A visual inspection of the ___subgrade___ surface/sub-grade was conducted prior to placement of fill Material.

Sub-grade: Clear of ice and snow, roll tested in pond areas

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019

Hatch: Stephanie Giroux 03/08/2019

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QCD-001 Sub-Grade Approval
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval* *Work Scope Location: Laydown LP3* *Location Section: 7*
Date of Inspection:	*March 3, 2019*
Parties Present at Inspection	*Nuna, Allnorth*

Comments:

A visual inspection of the ___subgrade___ surface/sub-grade was conducted prior to placement of fill Material.

Sub-grade: Clear of ice and snow, roll tested in pond areas

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019
Hatch:	Stephane Gionet		03/08/2019

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QCD-001 Sub-Grade Approval
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval* *Work Scope Location: Laydown LP3* *Location Section: 8*
Date of Inspection:	*March 4, 2019*
Parties Present at Inspection	*Nuna, Allnorth*

Comments:

A visual inspection of the ___subgrade___ surface/sub-grade was conducted prior to placement of fill Material.

Sub-grade: Clear of ice and snow, roll tested in pond areas

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019

Hatch: Stephane Giguet 03/08/2019

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Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval* *Work Scope Location: Laydown LP3* *Location Section: 9*
Date of Inspection:	*March 8, 2019*
Parties Present at Inspection	

Comments:

A visual inspection of the Area 9 surface/sub-grade was conducted prior to placement of fill Material.

Sub-grade: To grade, roll tested, no ice or snow

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/8/2019
HATCH Representative:	Ken MacRae		03/8/2019

Hatch: Stephane Giroux 03/08/2019

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QCD-001 Sub-Grade Approval
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval* *Work Scope Location: Laydown LP3* *Location Section: 10*
Date of Inspection:	*March 9, 2019*
Parties Present at Inspection	

Comments:

A visual inspection of the Area 10 surface/sub-grade was conducted prior to placement of fill Material.

Sub-grade: To grade, roll tested, no ice or snow

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/9/2019
HATCH Representative:	Ken MacRae		03/9/2019

Hatch: Stephane Cierzt 03/09/2019

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QCD-001 Sub-Grade Approval
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval* *Work Scope Location: Laydown LP3* *Location Section: 11*
Date of Inspection:	*March 16, 2019*
Parties Present at Inspection	

Comments:

A visual inspection of the Area 11 surface/sub-grade was conducted prior to placement of fill Material.

Sub-grade: To grade, roll tested, no ice or snow

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/11/2019
HATCH Representative:	Ken MacRae		03/11/2019

Hatch: Stephane Giroux 03/11/2019

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Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 1*
Date of Inspection:	*February 22, 2019*
Parties Present at Inspection	NUNA, ALLNORTH

Comments:

*An inspection of the **Type 8** material placement was conducted.*

Type 8 was used in place of ROQ due to fill depth

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019
Hatch	Stephane Giard		03/08/2019

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Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 3*
Date of Inspection:	*February 24, 2019*
Parties Present at Inspection	Nuna, Aurora

Comments:

*An inspection of the **ROQ** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019
Hatch	Stephane Ginet		03/08/2019

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Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 2*
Date of Inspection:	*February 22, 2019*
Parties Present at Inspection	NUNA, AHNORTH

Comments:

*An inspection of the **ROQ** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019
Hatch	Stephane Ciaret		03/08/2019

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Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 4*
Date of Inspection:	*February 25, 2019*
Parties Present at Inspection	NUNA, ALLNORTH

Comments:

*An inspection of the **ROQ** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019
Hatch	Stephane Giguet		03/08/2019

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Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 5*
Date of Inspection:	*February 26, 2019*
Parties Present at Inspection	NUNA, ALLNORTH

Comments:

*An inspection of the **ROQ** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019
Hatch	Stephane Gonet		03/08/2019

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NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 6*
Date of Inspection:	*February 27, 2019*
Parties Present at Inspection	Nuna, Allnorth

Comments:

*An inspection of the **ROQ** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019

Hatch Stephanie Grenot 03/08/2019

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NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 7*
Date of Inspection:	*March 1, 2019*
Parties Present at Inspection	Nuna, Allnorth

Comments:

*An inspection of the **ROQ** material placement was conducted.*

Type 8 placed instead of ROQ

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

NUNA Representative:	Brandon Urquhart		03/08/2019
	Name	Signature	Date
HATCH Representative:	Ken MacRae		03/08/2019
	Name	Signature	Date

Hatch Stephane Gionet 08/08/2019

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Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 8*
Date of Inspection:	*March 1, 2019*
Parties Present at Inspection	Nuna, Aunorth

Comments:

*An inspection of the **ROQ** material placement was conducted.*

Type 8 placed in southern chunk of area 8, ROQ in northern chunk

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

NUNA Representative:	Brandon Urquhart		03/08/2019
	Name	Signature	Date
HATCH Representative:	Ken MacRae		03/08/2019
	Name	Signature	Date

Hatch Stephane Gionet 03/08/2019

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Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 9*
Date of Inspection:	*March 2, 2019*
Parties Present at Inspection	Nuna, Allnorth

Comments:

*An inspection of the **ROQ** material placement was conducted.*

Type 8 placed instead of ROQ

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

NUNA Representative:	Brandon Urquhart		03/08/2019
	Name	Signature	Date
HATCH Representative:	Ken MacRae		03/08/2019
	Name	Signature	Date

Hatch Stephane Giroux 03/08/2019

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Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 10*
Date of Inspection:	*March 3, 2019*
Parties Present at Inspection	Nuna, Allnurth

Comments:

*An inspection of the **ROQ** material placement was conducted.*

Type 8 placed instead of ROQ

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart	[signature]	03/08/2019
HATCH Representative:	Ken MacRae	[signature]	03/08/2019

Hatch Stephane Giant [signature] 03/08/2019

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Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 11*
Date of Inspection:	*March 3, 2019*
Parties Present at Inspection	NUNA, ALLNORTH

Comments:

*An inspection of the **ROQ** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019

Hatch Stephane Ginet 03/08/2019

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Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 12*
Date of Inspection:	*March 4, 2019*
Parties Present at Inspection	NUNA, ALLNORTH

Comments:

*An inspection of the **ROQ** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019
Hatch	Stephane Giguet		03/08/2019

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Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 13*
Date of Inspection:	*March 5, 2019*
Parties Present at Inspection	NUNA, ALLNORTH

Comments:

*An inspection of the **ROQ** material placement was conducted.*

Type 8 placed instead of ROQ

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019
Hatch	Stephane Giard		03/08/2019

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Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 14*
Date of Inspection:	*March 5, 2019*
Parties Present at Inspection	NUNA, AECOM

Comments:

*An inspection of the **ROQ** material placement was conducted.*

Type 8 placed instead of ROQ

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019
Hatch	Stephane Gignac		03/08/2019

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Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 15*
Date of Inspection:	*March 6, 2019*
Parties Present at Inspection	Nunt, Allnorth

Comments:

*An inspection of the **ROQ** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019

Hatch Stephane Giguet 03/08/2019

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Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 16*
Date of Inspection:	*March 7, 2019*
Parties Present at Inspection	Nuna, Allnorth

Comments:

*An inspection of the **ROQ** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart	[signature]	03/08/2019
HATCH Representative:	Ken MacRae	[signature]	03/08/2019

Hatch Stephane Gionet [signature] 03/08/2019

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 17*
Date of Inspection:	*March 8, 2019*
Parties Present at Inspection	Nuna, Allnorth

Comments:

*An inspection of the **ROQ** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019
Hatch	Stephane Sinet		03/08/2019

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 18*
Date of Inspection:	*March 8, 2019*
Parties Present at Inspection	Nuna, Ailsworth

Comments:

*An inspection of the **ROQ** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/08/2019
HATCH Representative:	Ken MacRae		03/08/2019

Hatch Stephanie Sicret 03/08/2019

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 19*
Date of Inspection:	*March 9, 2019*
Parties Present at Inspection	Nuna, Allnorth

Comments:

*An inspection of the **ROQ** material placement was conducted.*

Type 8 placed instead of ROQ

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/09/2019
HATCH Representative:	Ken MacRae		03/09/2019
Hatch	Stephane Giard		03/09/2019

NUNA
NUNA EAST LTD

Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Approval of placement of material ROQ Layer* *Type: ROQ* *Location: Laydown LP3 Area 20*
Date of Inspection:	*March 11, 2019*
Parties Present at Inspection	NUNA, AURORA

Comments:

*An inspection of the **ROQ** material placement was conducted.*

The grade, elevation and compaction were found to be acceptable.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		03/11/2019
HATCH Representative:	Ken MacRae		03/11/2019
Hatch	Stephane Giard		03/11/2019

NUNA

NUNA EAST LTD

(Section 11)

Signature Log

NUNA	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN	BW	
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC	DF	
ALLNORTH	Materials technician	Kenny MacRae	KMR	
Hatch	Hatch Civil	Stephane Grant	SG	
NUNA EAST	PROJECT COORDINATOR	BRANDON URQUHART	BU	
NUNA EAST	PROJECT COORDINATOR	[illegible]	[illegible]	
HATCH	FIELD ENG. MANAGER	GLEN PEACE	GDP	
NUNA EAST	SITE SUPERINTENDENT	ANTHONY STEWART	AMS	
NUNA EAST	SITE SUPERINTENDENT	HARVEY BLOVIN	HB	
Hatch	Hatch Super	Roger Landry	RL	
Nuna East	Project Manager	Stephen Nugent	SN	
HATCH	CONSTRUCTION SUPERINTENDENT	RON BAUER	RB	
BVTV	Project Engineer	David Garcia	DG	
Hatch	QA Manager	Ronny Franken	RF	

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)		Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs	
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs	

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN		
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC		
ALLNORTH	Materials technician	Kenny MacRae		
Hatch	Hatch Civil	Stephane Grant		
NUNA EAST	PROJECT COORDINATOR	BRANDON UNGUHART		
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]STER		
HATCH	FIELD ENG. MANAGER	GLEN PEACE		
Hatch	Construction Super	Dean Moffett		
Hatch	Construction Super	Roger Landry		

NUNA

NUNA EAST LTD

(Section 12)

Walkdown

NUNA EAST LTD	WALKDOWN REPORT	Exhibit 1-10 QDG Revision 0

WALKDOWN ATTENDEES LIST	(Page 1 of 1)

Project Name: Mary River Expansion	**Contractor's Name:** Nuna East Ltd.	**Job File No.:** CC006-0003A
System CWP Description: LP3 Laydown East side of Modular Road	**Location:** Milne Port Site	**Plant No.:** N/A

This record indicates that this system was formally walked down and inspected in the field by the undersigned on the date as indicated below

Name	Company Name	Role	Signature	Date *(mm/dd/yy)*
BRADFORD WATKINS	NUNA EAST	QC COORDINATOR		9/3/19
RUSS ADGER	HATCH	CONSTRUCTION SUPERINTENDENT		9/3/19

NUNA EAST LTD	WALKDOWN REPORT	Exhibit 1-10 QDG Revision 0

WALKDOWN ATTENDEES LIST	(Page 1 of 1)

Project Name: Mary River Expansion	Contractor's Name: Nuna East Ltd.	Job File No.: CC006-0003A
System CWP Description: LP3 Laydown	Location: Milne Port Site	Plant No.: N/A

This record indicates that this system was formally walked down and inspected in the field by the undersigned on the date as indicated below

Name	Company Name	Role	Signature	Date *(mm/dd/yy)*
BRADFORD WHITE	NUNA EAST	QC CONSTRUCTION		8/30/19
RUSBAKER	WATCH	SUP/CONSTRUCTION		8/30/19

NUNA

NUNA EAST LTD

(Section 13)

Deficiency/Punchlist

DEFICIENCY / PUNCH ITEMS RECORD

Project Name: Mary River Expansion	**Walkdown Date (mm/dd/yy):** 09/03/19	**Area Number:** N/A
Area Name or Area Description: LP3 Laydown	**Job Number:** CC006-0003A	**Plant Number:** N/A

PURPOSE:

1. **For modules and vendor packages, open punch items are listed at release for shipment.**
2. **As part of a final walkdown package, this form lists the Contactor's open punch items that are transferred into the Nuna Turnover database**
3. **This form is used to capture Punch Items during Final Walkdown**

Tag Number	Description of Deficiency / Punch Item	Cat.				Vendor Y/N	Remarks
			Discipline	Originator	Responsible for resolution		
	No Deficiencies						

Punch Item Categories captured during Final Walkdown: A, B or C. A- To be rectified before final acceptance. B- To be addressed at a later time. C- Acceptable to be As-Built

NUNA

NUNA EAST LTD

(Section 14)

Inspection Acceptance and Final Sigh-off Form

ACCEPTANCE OF COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the acceptance of the Quality Control Turnover documentation for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Ore Mines
2. **Contractor:** Nuna East Limited
3. **Construction:** Aggregate Pad
4. **Location:** Mary River Milne Port Site
5. **Description:** Port Site Laydown Pad LP3 – Project Number: CC006

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turnover documentation has been forwarded to and accepted by the owner.

Nuna Representative:

Signature	Print Name	Title	Date
	Bradford Watkin	QC Coordinator	9/29/19

Client Representative:

Signature	Print Name	Title	Date

QA/QC Documentation Turnover Review and Release

Contractor: Nuna East Limited.	Contract No.: CC006	CWP.: N/A
Project: Mary River Expansion Project.	Location: Milne Port	Sub-System: N/A
Area: Laydown Area LP3	Area Description: Storage Laydown LP3	
System/Subsystem No.: N/A	System/Subsystem Description: N/A	
Inspection Test Plan No.: CC006-0003A	Rev: 2	Issue Date: May 14, 2019

ITP Section for Review

ITP Activity No.	ITP Activity Description
	For this portion of the Inspection Test Plan (ITP) and scope of work as per contract details outlined above. The following have been verified the ensure compliance with the Project Completion Requirements. • All work has been completed in accordance IFC drawings, project specifications, codes, and national regulations. • All Testing has been completed as per Inspection Test Plan (ITP). • All Master Punch List items are completed, verified and signed off. • All Non-Conformances and Site Quality Surveillances are closed. • All Bolt Ups, Loop Checks, and Pre-Commissioning are completed.

The undersigned verifies the contractor has completed the points above in their entirety

Contractor QC Designate	Bradford Watkin /	9/29/19
Title	Name (Print/Sign)	Date

Client QA Turnover Review

☒ Approved	☐ Not Approved (See Comments Below)	Review No.: 1

ITP Activity No.	ITP Activity Description

Contractor QC Designate	Bradford Watkin /	9/29/19
Title	Name (Print/Sign)	Date
Hatch QA Designate	Ronny Franks /	Sept 29 - 2019
Title	Name (Print/Sign)	Date
Hatch Commissioning Designate	/	
Title	Name (Print/Sign)	Date

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HATCH **Vendor/Contractor Document Review**

Doc Number	E353004-CC006-130-124-0015	**SUB**	01
Date Received			

Review Grade	**Next Submittal Status**
☐ **C1** - Proceed to next submission & status ☐ **C2** - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ **C3** - Do not proceed. Revise as noted & resubmit	☐ Internal Review
Next Submittal Date:	☐ Certified/ ☐ As-Built
■ **C4** - No further submission required - Complete (select status below) ☐ Certified Final ■ Final ☐ Cancelled ☐ Superseded	

Package Engineer: Name, signature and date

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibilty for correct design, details & dimensions shall remain with the party submitting the drawing/document.

NUNA EAST LTD

NUNA

NUNA EAST LTD

Job #:

CC006-0005A

Laydown Area

LP5

Mary River Expansion Project

H353004

Port Site Civil Works

Section 1
Completion of Construction Declaration / Transfer of Care, Control & Custody

Section 2
Inspection & Test Plan (ITP)

Section 3
Redline / As-Built Drawings

Section 4
Survey Data Documentation

Section 5
Sieves / Statements of Compliance

Section 6
Request for Information Documents (RFIs)

Section 7
Non-Conformance Reports (NCRs)

Section 8
Land Disturbance Form

Section 9
Quality Control Documents

Section 10
Signature Log

Section 11
Walkdown

Section 12
Deficiency/Punchlist

Section 13
Acceptance of Completion of Construction Declaration

Section 14
Construction Photographs

NUNA

NUNA EAST LTD

(Section 1)

Completion of Construction Declaration / Transfer of Care, Control & Custody (TCCC) Forms

COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Mines Corporation
2. **Contractor:** Nuna East Limited
3. **Construction:** Laydown Pad
4. **Location:** Mary River Milne Port Site
5. **Description:** Laydown Area LP5 – Project Number: CC006

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turn over documentation has been forwarded to the owner.

(Signature)	Bradford Watkin (Print Name)	QC Coordinator (Title)	7/28/19 (Date)
Nuna East Ltd. (Company)	14, 6194 – 50 Street NW Edmonton, AB, CA (Address)		T6B 2N7 (City, Postal Code)

Transfer of Care, Custody and Control

FROM GROUP "A"	Nuna East Ltd.	**Job File No.:**	CC006-0005A
To Group "B"	Hatch Engineering	**WBS No.:**	4810
Location:	Milne Port Site	**Date:**	9/4/19

Originating job file no. details:	Construct a Laydown Pad to IFC Engineered Design: • Earthworks Excavation, Aggregate haulage, placement & compaction.
Comments:	• This TCCC covers the area as highlighted on the attached IFC drawing.

THIS IS NOTICE TO GROUP "B" Hatch Engineering THAT THE FOLLOWING WORK/MATERIAL AS PER P.O./CONTRACT IS/ARE BEING TRANSFERRED BY GROUP "A" Nuna East Ltd. AND IS/ARE BEING FULLY ACCEPTED BY GROUP "B" Hatch Engineering FROM GROUP "A" Nuna East Ltd.
WITH EXCEPTIONS AS LISTED BELOW (IF ANY).

Description:	**Reference Drawing(s):** • H353004-40000-221-271-0010-0001_1_V5 LP5 Laydown Plan • H353004-40000-221-271-0010-0002_1_V5 - LP5 Laydown Profiles • H353004-40000-228-272-0017-0001_1_V5 LP5 Drainage Plan

NUNA EAST LTD	TCCC	Exhibit: 1-12 QDG Revision 1 Page 1 of 1

Exceptions:	Date Corrected:	Signed Off:
1. NO EXCEPTIONS		
2.		

"Exceptions Accepted and released"

From Group "A": Nuna East Ltd.

Date: 9/4/19

Print Name: BRADFORD WATKINS Signature:

To Group "B": Hatch Engineering.

Date: 9/4/19

Print Name: ROY BADGER Signature:

I confirm the conditions listed below have been met (with or without noted exceptions or deficiencies) and transfer of care, custody and control of the item(s) listed above are acceptable to the recipient.

☑ All Inspections are complete, and all technical issues are resolved.

☑ All deficiencies have been noted.

☑ All Redlines / As-Builts have been reviewed.

N/A

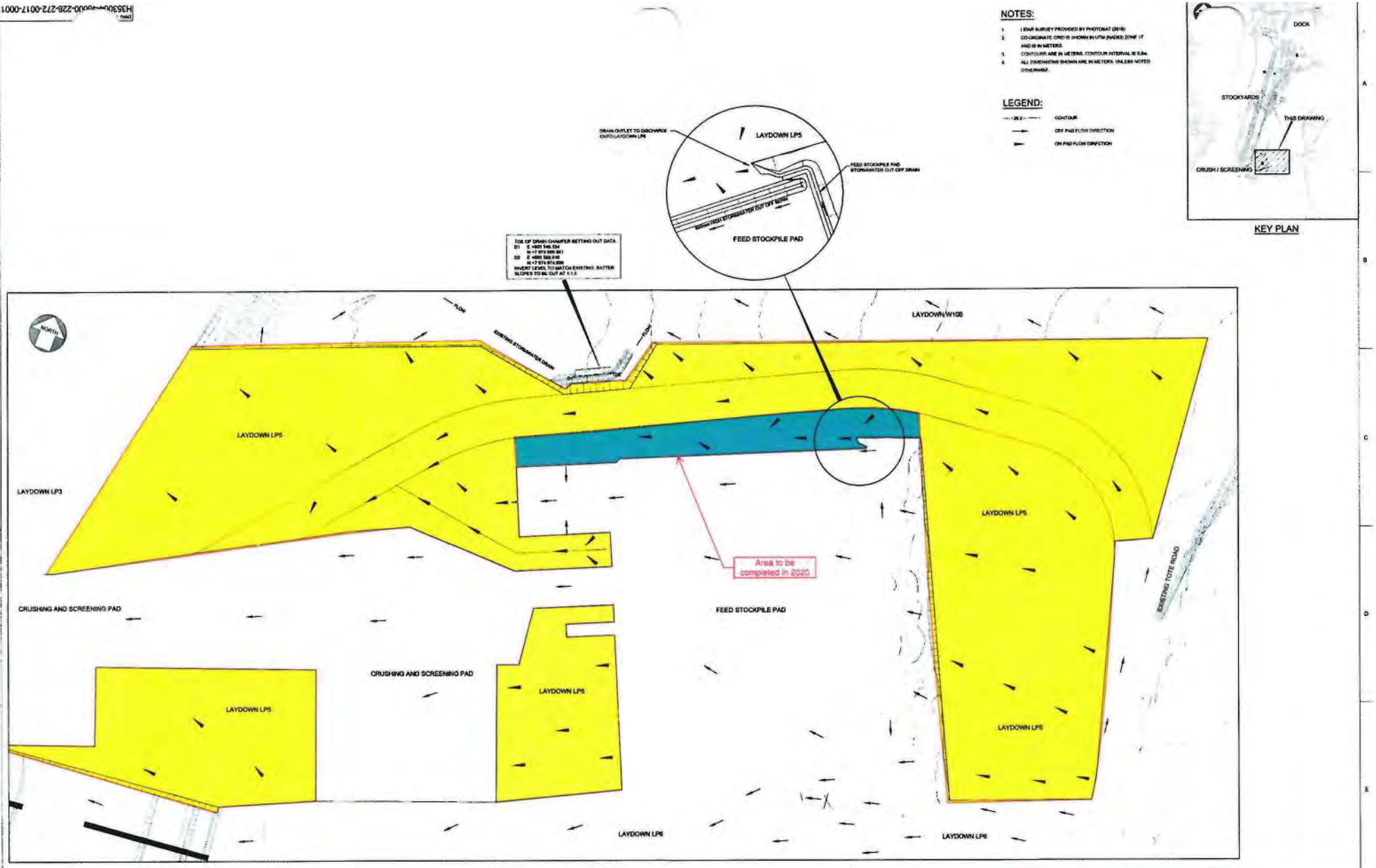
☒ All relevant manuals and vendor data have been received.

Recipient

Client representative:

Name: ROY BADGER Signature:

Date: 9/4/19.



Released for Use

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

Bradford Watson
QA/QC
Reviewed

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	EDC STAMP REMOVED	KWM	FH	20/06/2018
2	FOR CONSTRUCTION	BB	FH	16/04/2018

REVISIONS

HATCH

DRAFTSPERSON	I BARNARD	NR	16/04/2018
DESIGNER	F HUGO	NR	16/04/2018
CHECKER	H HERBST		
DESIGN COORD	R GOOSEN		
RESP. ENG	R HALIM		
LEAD DISC. ENG	A GROSSELAAR		
AREA LEAD	V LAVRIC		
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		
ROLE	NAME	SIGNATURE	DATE

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP5
DRAINAGE PLAN

SCALE 1:500 DRAWING No. H353004-40000-228-272-0017-0001 REV 1

SHEET SIZE E

H353004-40000-228-272-0017-0001

DRAWING No. | DRAWING TITLE
H353004-40000-221-271-0009-0001 | LAYDOWN AREA LP5 - LAYOUT AND PROFILES
REFERENCE DRAWINGS

Transfer of Care, Custody and Control

FROM GROUP "A"	Nuna East Ltd.	**Job File No.:**	CC006-0005A
To Group "B"	Hatch Engineering	**WBS No.:**	4810
Location:	Milne Port Site	**Date:**	Aug 18, 2019

Originating job file no. details:	Construct a Laydown Pad to IFC Engineered Design: • Earthworks Excavation, Aggregate haulage, placement & compaction.
Comments:	• This TCCC covers the area as highlighted on the attached IFC drawing.

THIS IS NOTICE TO GROUP "B" Hatch Engineering THAT THE FOLLOWING WORK/MATERIAL AS PER P.O./CONTRACT IS/ARE BEING TRANSFERRED BY GROUP "A" Nuna East Ltd. AND IS/ARE BEING FULLY ACCEPTED BY GROUP "B" Hatch Engineering FROM GROUP "A" Nuna East Ltd.
WITH EXCEPTIONS AS LISTED BELOW (IF ANY).

Description:	**Reference Drawing(s):** • H353004-40000-221-271-0010-0001_1_V5 LP5 Laydown Plan • H353004-40000-221-271-0010-0002_1_V5 - LP5 Laydown Profiles • H353004-40000-228-272-0017-0001_1_V5 LP5 Drainage Plan QC Reviewed

Exceptions:	**Date Corrected:**	**Signed Off:**
1.		
2.		

NUNA EAST LTD	TCCC	Exhibit: 1-12 QDG Revision 1 Page 1 of 1

"Exceptions Accepted and released"

From Group "A": Nuna East Ltd.

Date: 8 Aug 18, 2019

Print Name: John Guan Signature:

To Group "B": Hatch Engineering.

Date:

Print Name: Signature:

I confirm the conditions listed below have been met (with or without noted exceptions or deficiencies) and transfer of care, custody and control of the item(s) listed above are acceptable to the recipient.

☒ All Inspections are complete, and all technical issues are resolved. WEST PORTION OF LPS TRANSFER OF CUSTODY

☒ All deficiencies have been noted.

☒ All Redlines / As-Builts have been reviewed.

☒ All relevant manuals and vendor data have been received.

Recipient

Client representative:

Name: Ronny Franklin Signature:

Date: Sept 30-2019

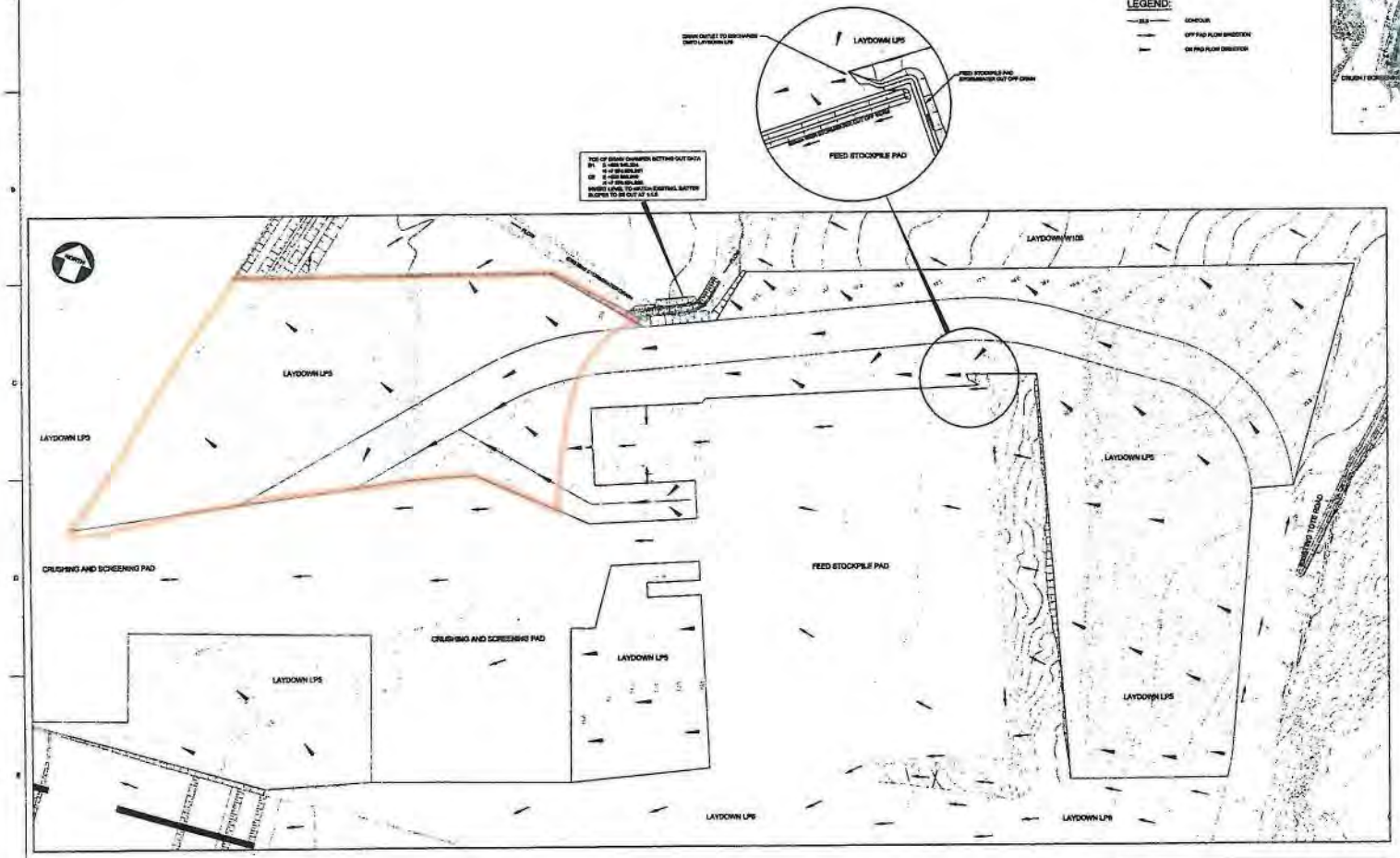
NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2018)
2. CO-ORDINATE GRID IS SHOWN IN UTM ZONE/DATUM 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.

LEGEND:

- 23.5 — CONTOUR
- OFF PAD FLOW DIRECTION
- ON PAD FLOW DIRECTION

KEY PLAN



Released for Use

PERMIT TO PRACTICE
WITHHELD

FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP5
DRAINAGE PLAN

SCALE 1:400
DWG. No. H353004-40000-228-272-0017-0001
REV 1

NUNA

NUNA EAST LTD

(Section 2)

Inspection & Test Plan (ITP)

NUNA EAST LTD

QUALITY MANAGEMENT SYSTEM
INSPECTION &TEST PLAN
(Civil / Structural Installations)

CLIENT: Hatch	**ITEM / DESCRIPTION / SCOPE:** LP5 / Laydown / Earthworks material production, Excavation, Haulage, Placement & compaction.	**NUNA ITP NO.:** CC006-0005A	**REVISION NO.: 0**
CONTRACTOR: Nuna East Ltd.		**AFFILIATED SUB-CONTRACTOR(S):** N/A	
CONTACT PERSON: Bradford Watkin	**CONTACT INFORMATION:** bradfordw@nunalogistics.com	**DATE:** May 15, 2019	
CONTRACT No.: H353004-CC006	**HATCH PROJECT NUMBER:** H353004-CC006	**HATCH DOCUMENT TITLE:** Mary River Expansion Project-Remaining Early Earthworks	
NUNA JOB No.: CC006-0005A	**PURCHASE ORDER No.:** N/A	**PROJECT MANAGER9s):** Chris Petrovic, Stephen Nugent	
LOCATION(S): Milne Port Site		**LEGEND:** **H:** A mandatory hold on manufacturer until release by inspector or official waiver from client. **M:** Inspection stage by inspector on a spot basis, but not a mandatory hold point. **HR:** A mandatory hold / review & acceptance / approval of the specified documentation. **W:** To be informed and invited to inspect. Construction to continue if inspector does not attend. **R:** Review of report / certifications. **A:** Audit (Review at Random).	
CWP No.: N/A			

Approved For Construction

Stephen Nugent — May 15, 2019
Nuna Project Manager / Engineer (Print) — Signature — Date

Bradford Watkin — May 15, 2019
Nuna Quality Representative (Print) — Signature — Date

Hatch Representative (Print) — Signature — Date

HATCH Vendor/Contractor Document Review

Doc Number	E353004-CC006-130-051-0020	SUB	01
Date Received			

Review Grade	Next Submittal Status
☐ C1 - Proceed to next submission & status	☐ Certified
☐ C2 - Proceed with exceptions as noted to next submission & status	☐ As Built
☐ C3 - Do not proceed. Revise as noted & resubmit	☐ Internal Review
Next Submittal Date:	☐ Certified ☐ As-Built
☑ C4 - No further submission required - Complete (select status below)	☐ Certified Final ☑ Final ☐ Cancelled ☐ Superseded

Package Engineer: Name, signature and date farokh.noor@hatch.com

Hatch Stamp

Final Review

BRADFORD J WATKIN — 9/30/19
Nuna Quality Representative (Print) — Signature — Date

Hatch Quality Representative (Print) — Signature — Date

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	*Description of Activities* (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	*Functional Responsibility*	*Quality Control Activity*	*Verification Frequency*	*Reference Document(s)/ Controlling Procedure*	*Acceptance Criteria*	*Verification Document(s) (Reporting)*	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	*Comments*
1.	Contract Review / Approval	NUNA	Review / Verify Document	Prior to project start	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract				R		5/15/19	R		9/30/17	

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
2.	Approval of ITP	NUNA / HATCH Representatives	Review	Prior to start	NUNA Quality System Manual	Signed ITP by Client representative, NUNA Quality System Manual	Signed acceptance of document (Exhibit 1.0)				HR		5/20/19	R	R.F.	9/30/19	
3.	Scope and Associated Documents	NUNA	Review For Errors	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R		5/15/19	A	R.F.	9/30/19	
4.	Signature Log	NUNA	Review, obtain signatures	Ongoing	NUNA Quality System Manual	NUNA Quality System Manual	NUNA Signature Log				R		5/16/19	R	R.F.	9/12/30	
5.	Initial Survey Layout	NUNA / ALL NORTH	Cross Check of IFC Layout	Ongoing	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				HR		7/12/19	A	R.F.	9/12/30	
6.	Work Method of Statement	NUNA / HATCH	Review	Prior to Start	IFC Drawings, NUNA Quality System Manual Hatch Spec. 221-078-0001 Rev 0	IFC Drawings, NUNA Quality System Manual, Hatch Spec. 221-078-0001 Rev 0	Nuna Operational Work Plan				R		N/A	R	R.F.	9/12/30	Also referred to as a Nuna Operation Work Plan.
7.	Materials verification	NUNA	Review	As required	IFC Drawings, Hatch Spec. 280-078-0002 Rev 0, ASTM C-136	IFC Drawings, Hatch Spec.280-078-0002 Rev 0, ASTM C-136	Sieve Test Reports, QSRs				HR		7/30/19	HR	R.F.	9/12/30	• Type 5 • Type 8 • Type 12 ONGOING PROCESS FROM JOB START
8.	RFI	NUNA	Resolution of RFIs	As required	NUNA Quality System Manual	Disposition, Approved, closed and log updated	RFIs				HR		7/30/19	A	R.F.	9/12/30	NO RFIS GENERATED.
9.	Clearing of works location Completed	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W		7/12/19	W	R.F.	9/12/30	• Snow removal • Ice removal • Water removal • Disposal ONGOING PROCESS AS AREAS ARE OPENED UP

ACTIVITY DATA							VERIFICATION DATA											
								Subcontractor			Nuna			Hatch			
Activity Number	**Description of Activities** (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	**Functional Responsibility**	**Quality Control Activity**	**Verification Frequency**	**Reference Document(s)/ Controlling Procedure**	**Acceptance Criteria**	**Verification Document(s) (Reporting)**	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	**Comments**
10.	Excavate OG to subgrade elevation	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W	BW	9/30/19	HR	R.F.	9/30/19	ONGOING PROCESS FROM START TO FINISH AS AREAS ARE OPENED UP.
11.	Subgrade foundation preparation completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W	BW	9/30/19	W	R.F.	9/30/19	• Compaction • Proof rolling ON GOING PROCESS AS AREAS ARE OPENED UP.
Type 5 32 minus																		
12.	Type 5 32 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	BW	9/1/19	W	R.F.	9/30/19	"
13.	Compaction of Type 5 32 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	BW	9/1/19	W	R.F.	9/30/19	"
14.	Survey of Type 5 32 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR W	BW	9/1/19	HR	R.F.	9/30/19	"
Type 8 Jaw Run 150mm minus																		
15.	Type 8 Jaw Run 150mm minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	BW	9/1/19	W	R.F.	9/30/19	

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
16.	Compaction of Type 8 Jaw Run 150mm minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W		9/1/19	W	R.F.	9/30/19	
17.	Survey of Type 8 Jaw Run 150mm minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR W		9/1/19	HR	R.F.	9/30/19	
ROQ (Type 12)																	
18.	ROQ (Type 12) Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W		9/1/19	W	R.F.	9/30/19	
19.	Compaction of ROQ (Type 12) Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W		9/1/19	W	R.F.	9/30/19	
20.	Survey of ROQ Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR		9/1/19	HR	R.F.	9/30/19	
21.	As built Survey	NUNA	Review	Continuous During Operations	IFC Drawings	IFC Drawings, Hatch Specifications	As built Drawings & Data				HR		9/27/19	W	R.F.	9/30/19	
22.	Final Walk down	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Contract Requirements	Final Walkdown Attendees' Report				W		9/4/19	HR	R.F.	9/30/19	
23.	Deficiency List / Punch list generated	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per contract Requirements	Item form punch list items resolved				HR		9/4/19	HR	R.F.	9/30/19	

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
24.	NCR's closed.	NUNA / HATCH	Review of NCRs, Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Requirements	NCR log cleared				HR		9/30/19	W	R.F.	9/30/19	
25.	As-built / Redline drawings completed.	NUNA	Review / Verify	Post Final Walk down	IFC Drawings, Contract	As-builts / Redlines to Reflect All Field Changes	As-builts / Redlines				HR		9/27/19	HR	R.F.	9/30/19	
26.	Final Acceptance and ITP Sign off	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP (Exhibit 1.0)				HR		9/30/19	HR	R.F.	9/30/19	
27.	Inspection Acceptance and Sign-Off Form signed by Engineer of record.	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP, Acceptance of Completion of Construction Form				HR		9/30/19	W			
28.	Turnover package completed and sent to client.	NUNA	Review / Verify	Post project completion	NUNA Quality System Manual, IFC Drawings, Contract	Contract, Code & applicable specifications.	Quality Management System Quality Control Turnover package.				HR		9/30/19	W			

Note: Nuna ITP Sign-Offs based on supporting documentation.

Comments:

ITP ISSUE APPROVALS

Stephen Nugent Nuna Contractor Project Manager / Engineer (Print)	Site Project Manager Title	 Signature	May 15, 2019 Date (mm/dd/yy)
Bradford Watkin Nuna Contractor Quality Manager / Representative (Print)	QC Coordinator Title	 Signature	May 15, 2019 Date (mm/dd/yy)
HATCH Quality Manager / Representative (Print)	Title	Signature	Date (mm/dd/yy)

ITP CLOSEOUT AND WORK ACCEPTANCE APPROVALS

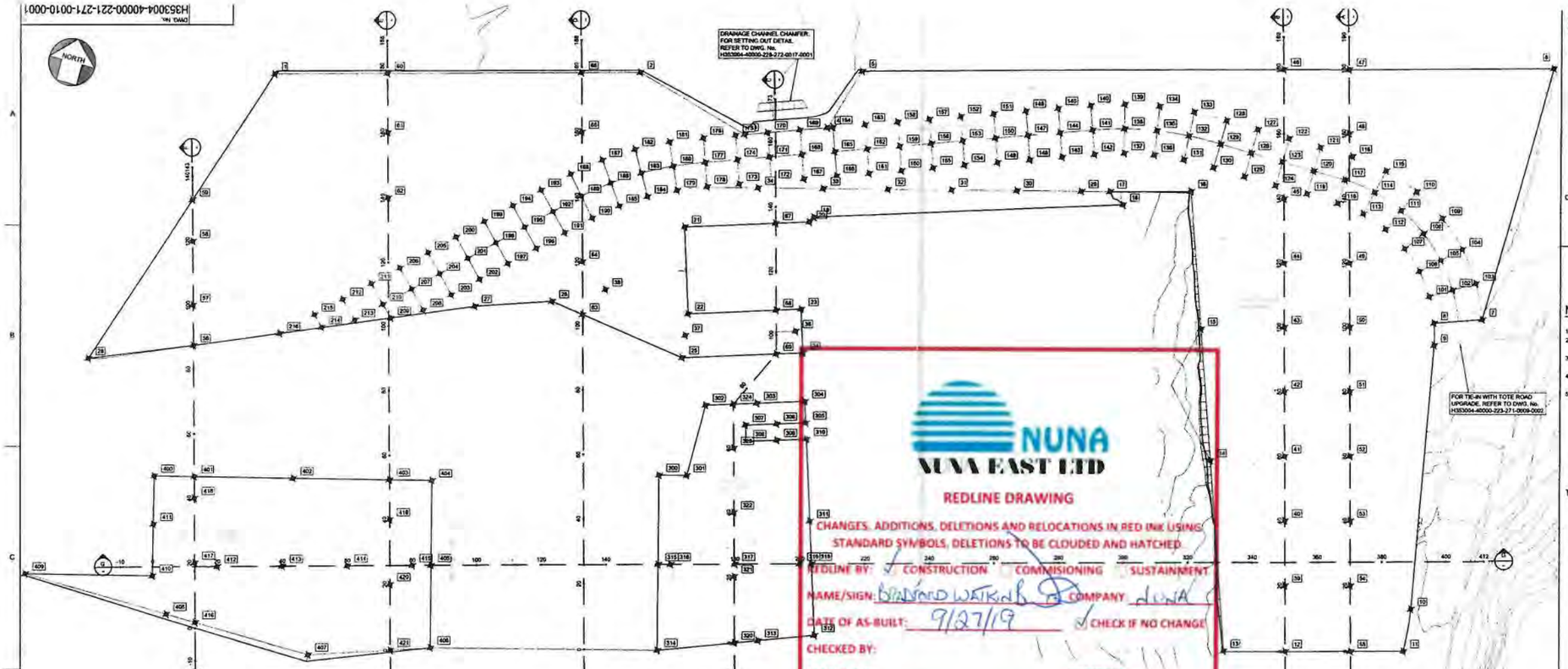
Bradford Watkin Nuna Contractor Quality Manager / Representative (Print)	QC Lead Title	 Signature	9/30/19 Date (mm/dd/yy)
Ronny Franken HATCH Quality Manager / Representative (Print)	Quality Assurance Manager Title	 Signature	Sept 30-2019 Date (mm/dd/yy)

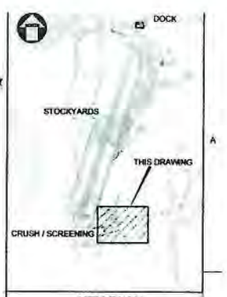
NUNA

NUNA EAST LTD

(Section 3)

Redline Drawings





KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2018)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. REFER TO DETAIL 1 ON DRAWING No: H353004-40000-221-294-0002-0001 FOR TYPICAL LAYER WORKS DETAILS.

LEGEND:

10.20 CONTOUR ELEVATION

43 SETTING OUT POINT NUMBER

NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ✓ CONSTRUCTION COMMISIONING SUSTAINMENT

NAME/SIGN: DIANNA WATKINS COMPANY: NUNA

DATE OF AS-BUILT: 9/27/19 ✓ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: _____ COMPANY: _____

PLAN

SCALE 1:500

LAYDOWN LP5 SUB-AREA 1 SETTING OUT COORDINATES

POINT	E	N	LEVEL
1	503188.917	7974939.968	11.400
2	503307.432	7974971.318	11.500
3	503343.613	7974961.806	13.174
4	503387.430	7974970.758	14.235
5	503373.040	7974990.273	13.900
6	503578.537	7975049.845	22.382
7	503578.747	7974909.068	24.351
8	503564.623	7974963.895	24.350
9	503668.522	7974967.210	24.758
10	503581.879	7974878.988	29.400
11	503583.182	7974884.011	30.000
12	503648.134	7974854.000	24.905
13	503529.784	7974846.053	23.490
14	503508.687	7974904.090	21.056
15	503495.686	7974942.410	20.493
16	503480.944	7974962.743	18.000
17	503458.956	7974975.764	16.723
18	503461.923	7974973.915	16.306
19	505371.033	7974943.215	14.464
20	503370.101	7974941.368	13.500
21	503333.473	7974929.382	13.500
22	503341.844	7974903.541	13.500
23	503375.210	7974914.558	13.500
24	503379.465	7974901.529	15.075
25	503343.849	7974889.884	13.250
26	503300.304	7974895.783	13.250
27	503277.858	7974887.800	12.300
28	503187.524	7974839.634	11.650
29	503448.380	7974973.451	15.500
30	503429.111	7974968.204	15.000
31	503439.851	7974962.956	14.500
32	503360.812	7974957.708	14.000
33	503371.343	7974952.461	13.500
34	503352.113	7974947.213	13.000

LAYDOWN LP5 SUB-AREA 1 SETTING OUT COORDINATES

POINT	E	N	LEVEL
36	503375.438	7974907.426	13.500
37	503342.885	7974896.752	12.795
38	503315.247	7974903.880	12.500
39	503542.585	7974873.213	24.165
40	503637.026	7974892.426	24.004
41	503531.472	7974911.640	23.767
42	503525.823	7974930.856	23.644
43	503520.373	7974950.069	23.209
44	503514.823	7974969.284	21.809
45	503509.273	7974988.498	20.520
46	503498.306	7975026.483	19.056
47	503517.520	7975032.015	19.855
48	503522.958	7975013.194	21.017
49	503514.081	7974974.766	22.705
50	503539.612	7974955.552	23.778
51	503545.163	7974936.337	24.739
52	503560.715	7974917.123	25.302
53	503558.266	7974897.909	25.761
54	503581.817	7974878.695	26.541
55	503567.368	7974859.482	27.702
56	503197.784	7974852.372	11.811
57	503194.277	7974864.510	11.724
58	503188.725	7974883.724	11.587
59	503185.169	7974898.027	11.509
60	503232.161	7974949.571	13.461
61	503237.198	7974932.137	11.800
62	503242.750	7974917.923	11.937
63	503310.558	7974894.374	13.250
64	503305.964	7974910.279	12.607
65	503294.864	7974948.708	11.988
66	503289.821	7974966.230	11.566
67	503360.336	7974938.187	13.500
68	503367.884	7974912.125	13.500
69	503371.661	7974898.961	14.675

LAYDOWN LP5 SUB-AREA 1 THROUGH ROAD SETTING OUT COORDINATES

POINT	E	N	LEVEL
101	503580.912	7974871.516	23.847
102	503567.320	7974875.451	23.808
103	503573.728	7974879.385	23.870
104	503586.758	7974888.507	23.388
105	503591.273	7974893.392	23.375
106	503605.788	7974978.277	23.359
107	503649.372	7974983.826	22.885
108	503563.743	7974989.945	22.804
109	503568.100	7974998.573	22.982
110	503548.141	7975001.751	22.365
111	503545.081	7974991.364	22.371
112	503542.005	7974986.022	22.364
113	503533.951	7974990.870	21.859
114	503538.598	7974998.026	21.808
115	503537.252	7975005.345	21.853
116	503525.837	7975008.790	21.370
117	503525.884	7974999.182	21.368
118	503525.531	7974991.685	21.371
119	503515.873	7974991.927	20.900
120	503515.868	7974999.204	20.900
121	503516.683	7975006.704	20.900
122	503505.898	7975006.897	20.432
123	503505.791	7974999.197	20.432
124	503505.673	7974991.697	20.431
125	503495.873	7974991.690	19.961
126	503495.897	7974999.190	19.961
127	503495.882	7975006.690	19.961
128	503485.695	7975006.708	19.493
129	503485.844	7974999.183	19.500
130	503485.873	7974991.683	19.492

LAYDOWN LP5 SUB-AREA 1 THROUGH ROAD SETTING OUT COORDINATES

POINT	E	N	LEVEL
131	503476.188	7974991.461	19.028
132	503475.888	7974998.944	19.028
133	503475.181	7975006.428	19.028
134	503464.516	7975005.185	18.550
135	503468.765	7974997.709	18.529
136	503467.008	7974990.384	18.552
137	503457.902	7974988.319	18.094
138	503458.008	7974995.616	18.079
139	503454.031	7975002.826	18.034
140	503443.801	7974999.480	17.843
141	503445.529	7974992.488	17.843
142	503449.167	7974985.447	17.843
143	503439.788	7974981.882	17.217
144	503437.138	7974988.936	17.224
145	503434.530	7974995.971	17.228
146	503425.169	7974992.453	16.809
147	503427.791	7974985.427	16.808
148	503430.427	7974978.384	16.800
149	503421.089	7974974.845	16.383
150	503418.415	7974981.903	16.380
151	503415.809	7974988.936	16.381
152	503408.447	7974985.418	15.974
153	503409.085	7974978.397	15.974
154	503411.692	7974971.365	15.973
155	503402.323	7974967.868	15.558
156	503399.883	7974974.868	15.558
157	503397.086	7974981.800	15.557
158	503387.725	7974978.383	15.140
159	503389.364	7974971.362	15.140
160	503392.970	7974964.329	15.138

LAYDOWN LP5 SUB-AREA 1 THROUGH ROAD SETTING OUT COORDINATES

POINT	E	N	LEVEL
161	503343.823	7974980.776	14.714
162	503380.894	7974987.829	14.722
163	503378.348	7974974.858	14.722
164	503388.884	7974971.047	14.306
165	503371.829	7974964.321	14.306
166	503374.349	7974957.294	14.304
167	503384.881	7974953.740	13.880
168	503382.272	7974960.786	13.888
169	503369.827	7974957.823	13.888
170	503360.282	7974944.312	13.471
171	503362.830	7974957.291	13.471
172	503355.527	7974950.259	13.470
173	503346.158	7974946.792	13.053
174	503343.550	7974953.758	13.053
175	503340.921	7974960.794	13.054
176	503331.580	7974957.276	12.637
177	503334.198	7974950.258	12.637
178	503338.837	7974943.235	12.637
179	503328.143	7974939.803	12.511
180	503324.945	7974946.429	12.509
181	503321.838	7974953.256	12.508
182	503312.293	7974949.163	12.438
183	503316.137	7974941.706	12.453
184	503318.870	7974936.282	12.455
185	503312.313	7974950.103	12.396
186	503307.854	7974936.143	12.394
187	503303.355	7974942.183	12.358
188	503296.089	7974935.342	12.322
189	503300.128	7974929.779	12.343
190	503305.187	7974924.217	12.343

LAYDOWN LP5 SUB-AREA 2 SETTING OUT COORDINATES

POINT	E	N	LEVEL
300	503347.006	7974852.800	13.250
301	503356.215	7974858.121	13.250
302	503354.827	7974877.710	13.697
303	503370.043	7974882.965	14.570
304	503364.121	7974887.241	16.382
305	503386.179	7974886.977	15.587
306	503377.885	7974878.168	15.642
307	503368.481	7974875.179	15.493
308	503370.040	7974870.420	15.522
309	503379.061	7974873.354	16.650
310	503387.746	7974876.178	15.587
311	503385.683	7974881.950	15.587
312	503405.617	7974818.807	15.587
313	503393.378	7974812.305	14.560
314	503361.178	7974800.875	12.712
315	503364.375	7974826.292	12.974
316	503357.942	7974827.321	12.975
317	503377.158	7974832.873	14.140
318	503395.797	7974838.414	15.587
319	503396.370	7974838.424	15.365
320	503383.565	7974809.982	14.129
321	503377.958	7974829.120	14.125
322	503372.480	7974848.010	14.136
323	503366.907	7974867.303	15.044
324	503363.123	7974880.392	14.170

LAYDOWN LP5 SUB-AREA 3 SETTING OUT COORDINATES

POINT	E	N	LEVEL
400	503167.029	7974810.118	11.750
401	503209.074	7974813.304	11.830
402	503238.422	7974821.071	12.025
403	503267.095	7974828.680	12.215
404	503279.816	7974832.027	12.300
405	503286.719	7974806.744	12.562
406	503293.351	7974782.458	12.814
407	503257.807	7974773.181	12.814
408	503212.251	7974770.170	12.382
409	503166.886	7974770.150	11.750
410	503264.939	7974780.227	11.750
411	503200.855	7974795.550	11.750
412	503223.443	7974768.482	12.190
413	503242.557	7974764.614	12.386
414	503261.671	7974759.585	12.508
415	503281.085	7974605.118	12.569
416	503221.536	7974770.172	12.391
417	503216.486	7974787.655	12.037
418	503210.934	7974806.663	11.924
419	503276.506	7974816.852	12.388
420	503276.058	7974797.638	12.814
421	503281.609	7974778.424	12.814

PERMIT TO PRACTICE
HATCH LTD
Signature: _____
Date: _____
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

REFERENCE DRAWINGS	
H353004-40000-221-273-0003-0001	CRUSHING AND SCREENING PAD CROSS SECTIONS
H353004-40000-221-273-0002-0001	CRUSHING FEED STOCKPILE PAD CROSS SECTIONS
H353004-40000-223-271-0009-0002	TOTE ROAD UPGRADE PLAN AND PROFILE SHEET 2 OF 3
H353004-40000-228-272-0017-0001	LAYDOWN LP 5 - DRAINAGE PLAN
H353004-40000-221-271-0010-0002	LAYDOWN LP 5 - PROFILES
H353004-40000-221-271-0005-0001	LAYDOWN AREA LP3
H353004-40000-221-271-0008-0001	LAYDOWN AREA W10B
H353004-40000-221-271-0006-0001	LAYDOWN AREA LP6 - LAYOUT AND PROFILES
DRAWING No.	DRAWING TITLE

Released for Use

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHKD	DATE
1	EDC STAMP AND DUMPER MODULE STORAGE PAD REMOVED	KwM	FH	17/08/2018
0	FOR CONSTRUCTION	HH	IS	16/04/2018

REVISIONS

DRAFTSPERSON	H HERBST	MR	16/04/2018	
DESIGNER	F HUGO	HR	16/04/2018	
CHECKER	I BARNARD		2018-05-14	
DESIGN COORD	R GOOSEN		2018-05-14	
RESP. ENG.	R HAUM		2018-05-14	
LEAD DISC. ENG	A GROBBELAAR		2018-05-14	
AREA LEAD	V LAVRIC		2018-05-14	
ENG. MANAGER	D STANGER		2018-05-14	
AREA MANAGER	T ATIBA		17-05-18	
DRAWING APPROVAL STATUS	Approved for Construction			

HATCH

Baffinland

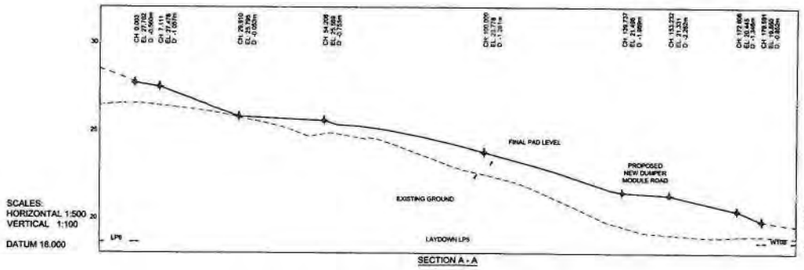
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP5
LAYOUT PLAN

SCALE	DWG No	REV
1:500 OR AS NOTED	H353004-40000-221-271-0010-0001	1

SHEET SIZE: ANSI D

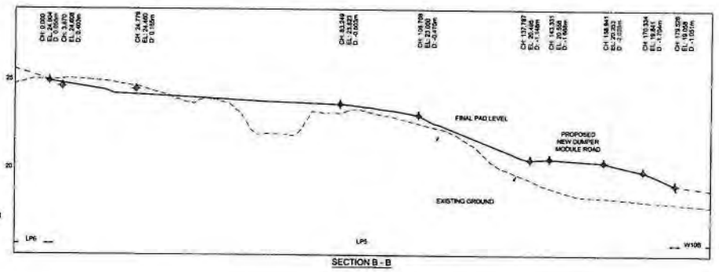
BASEMARKS: STAKES & LICES



SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 18.000

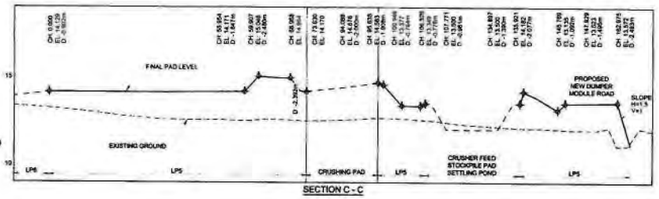
SECTION A - A



SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 15.000

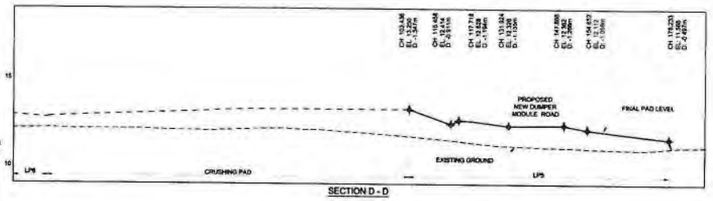
SECTION B - B



SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 9.000

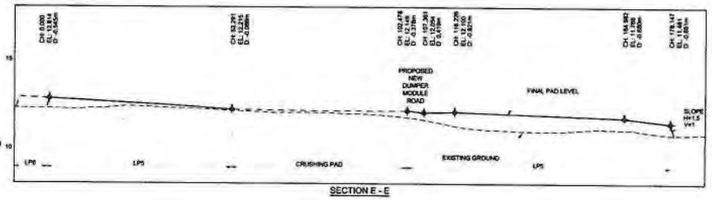
SECTION C - C



SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 9.000

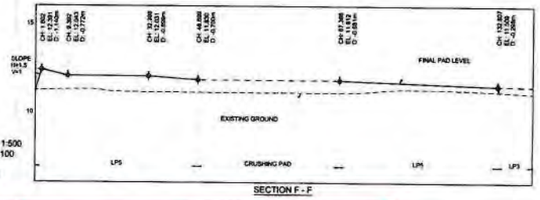
SECTION D - D



SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 8.000

SECTION E - E

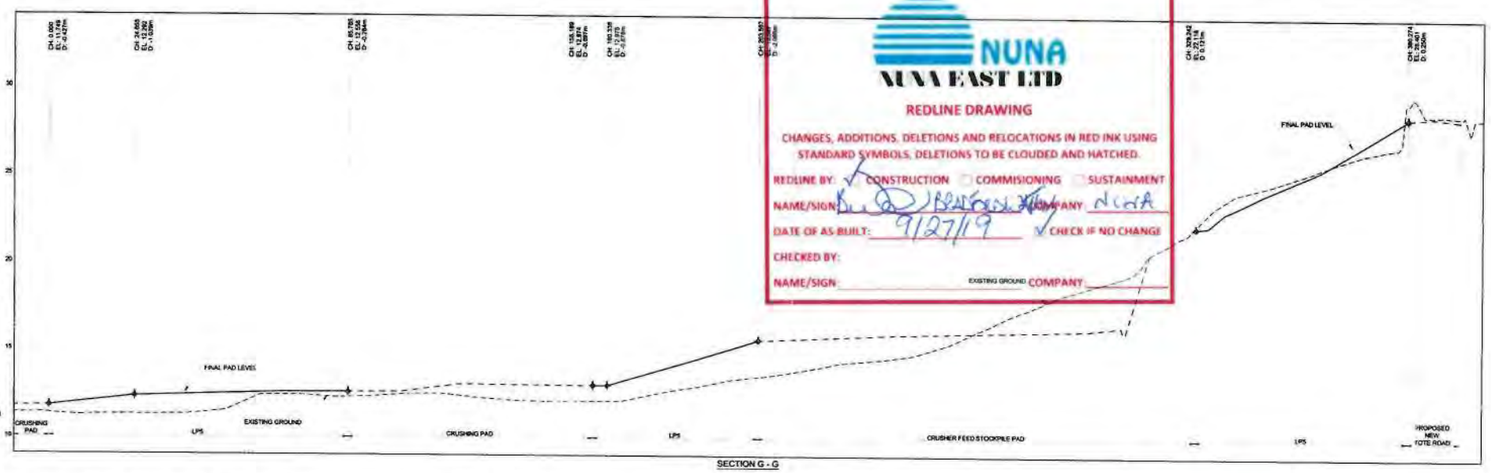


SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 8.000

SECTION F - F

LEGEND:
CH = CHAINAGE
EL = ELEVATION
D = DEPTH



SCALES:
HORIZONTAL 1:500
VERTICAL 1:100

DATUM 9.000

SECTION G - G

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ✓ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: [illegible] COMPANY: NUNA

DATE OF AS-BUILT: 9/27/19 ✓ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

PERMIT TO PRACTICE
HATCH LTD.
Signature:
Date: 2019-10-11
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

DRAWING No.	DRAWING TITLE
H353004-40000-221-273-0002-0001	CRUSHING FEED STOCKPILE PAD CROSS SECTIONS
H353004-40000-22	272-0002-0001, CRUSHING FEED STOCKPILE PAD LAYOUT PLAN
H353004-40000-221-271-0010-0001	LAYDOWN AREA LP5 - LAYOUT
H353004-40000-221-271-0005-0001	LAYDOWN AREA LP3
H353004-40000-221-271-0006-0001	LAYDOWN AREA W100
H353004-40000-221-271-0009-0001	LAYDOWN AREA LP8 - LAYOUT AND SECTIONS

REFERENCE DRAWINGS

Released for Use

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	EDC STAMP REMOVED	RvdM	FH	17/05/2018
2	FOR CONSTRUCTION	NH	FH	16/04/2018

REVISIONS

REG. PROFESSIONAL

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	H HERBST	NR	16/04/2018
DESIGNER	F DAVID	NR	16/04/2018
CHECKER	T BARNARD		
DESIGN COORD.	R GOOSEN		2019-09-13
RESP. ENG.	R VALM		
LEAD DISC. ENG.	A GROBBELAAR		
AREA LEAD	V LAVRIC		
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP5
LONGITUDINAL PROFILES

SCALE: 1:500
DWG No: H353004-40000-221-271-0010-0002
REV: 1
SHEET SIZE: E

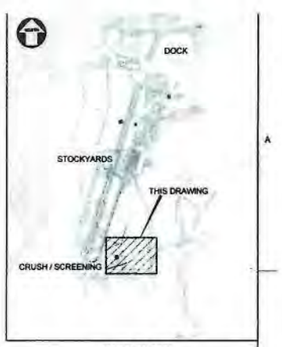
H353004-40000-228-272-0017-0001
DWG. No.

NOTES:

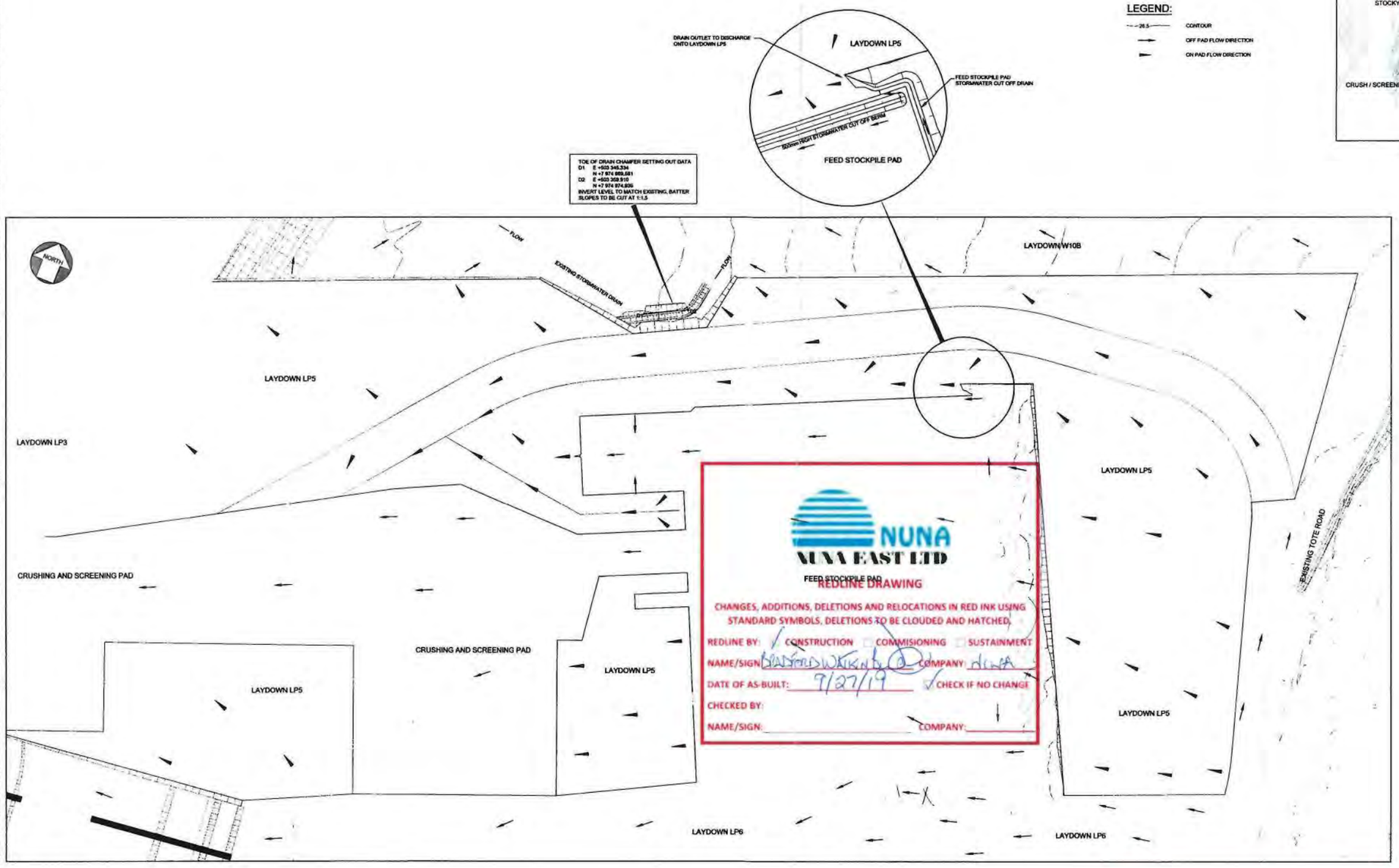
1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.

LEGEND:

- 26.5 — CONTOUR
- OFF PAD FLOW DIRECTION
- ON PAD FLOW DIRECTION



KEY PLAN



NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ✓ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT
NAME/SIGN: [illegible] COMPANY: NUNA
DATE OF AS-BUILT: 9/27/19 ✓ CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: _____ COMPANY: _____

Released for Use

PERMIT TO PRACTICE
HATCH LTD.
Signature _____
Date _____
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

H353004-40000-221-271-0009-0001	LAYDOWN AREA LP5 - LAYOUT AND PROFILES						
DRAWING No.	DRAWING TITLE						
REFERENCE DRAWINGS							

REG. PROFESSIONAL

FOR CONSTRUCTION

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No.	DESCRIPTION	BY	CHK'D	DATE
1	EDC STAMP REMOVED	KwM	FH	20/06/2018
0	FOR CONSTRUCTION	SID	FH	15/04/2018

REVISIONS

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	I BARNARD	NR	15/04/2018
DESIGNER	F HUGO	NR	15/04/2018
CHECKER	N HERBST		2018-09-14
DESIGN COORD.	R GOOSEN		2018-09-14
RESP. ENG.	R HALIM		2018-09-14
LEAD DISC. ENG.	A GROSSELAAR		2018-09-13
AREA LEAD	V LAWRIC		
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		15/4/18

DRAWING APPROVAL STATUS: Approved for Construction

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP5
DRAINAGE PLAN

SCALE 1:500 OR AS NOTED | DWG. No. H353004-40000-228-272-0017-0001 | REV 1

SHEET SIZE: E

1 2 3 4 5 6 7 8

(Section 4)

Survey Data

N

NUNA
NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

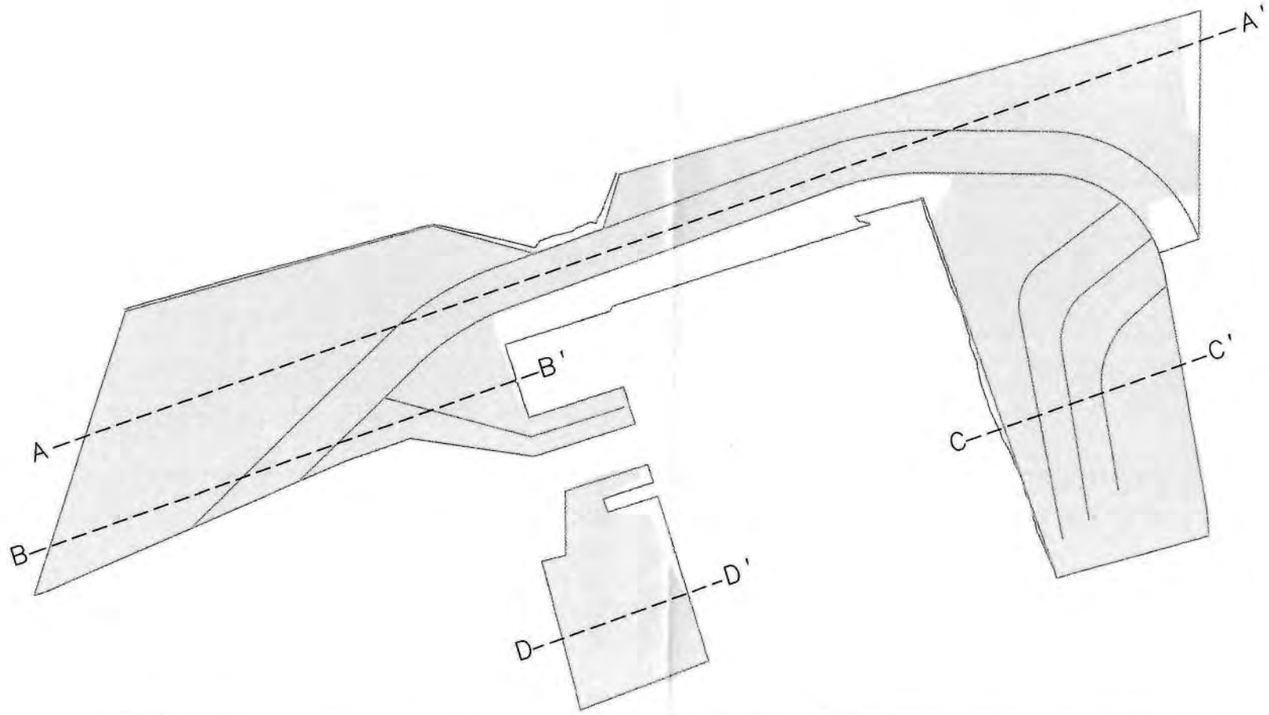
AS-BUILT BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

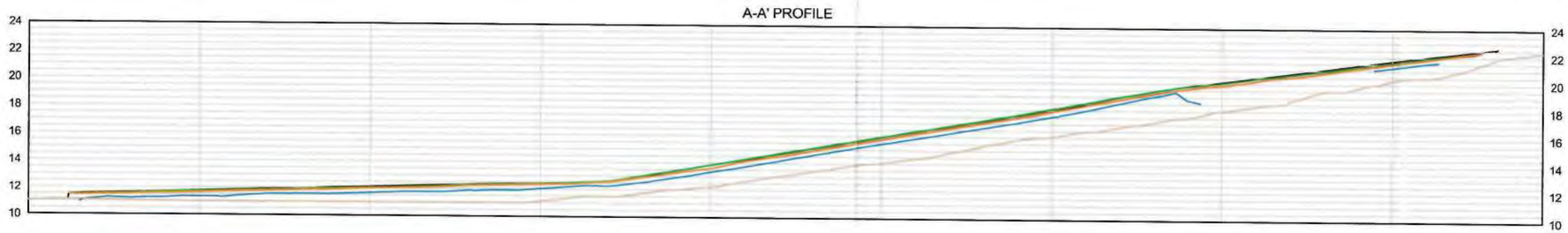
NAME/SIGN: Bradford Watkin COMPANY: Nuna

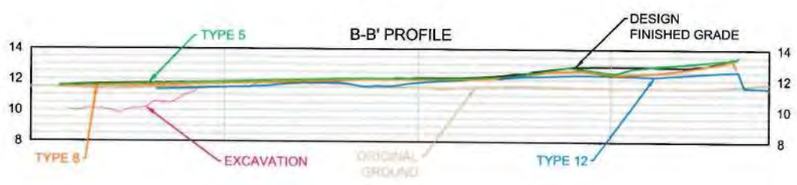
DATE OF AS-BUILT: 9/29/19 ☐ CHECK IF NO CHANGE

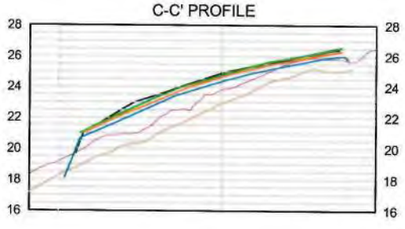
CHECKED BY:

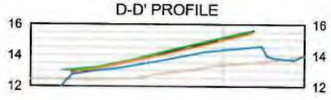
NAME/SIGN: COMPANY:





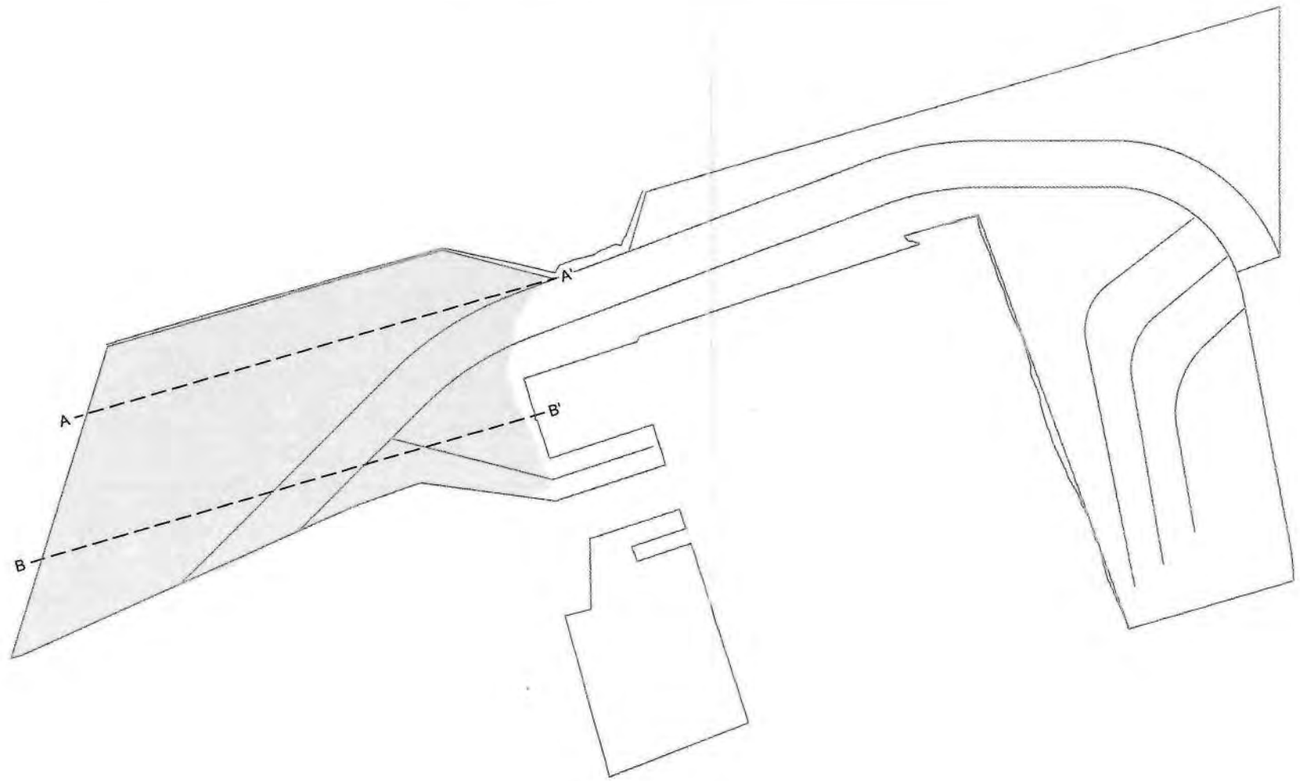






LEGEND:
LP5 PAD DESIGN
AS-BUILT AREA

OWNER: BAFFINLAND IRON MINES LP	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		LAYDOWN LP5
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: Sept. 29, 2019	DRAWING TITLE: AS-BUILT SURVEY SURVEYED UP TO SEPTEMBER 29, 2019
				DRAWING NAME (YYMMDD): 190929 LP5 PAD AS-BUILT.dwg



NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

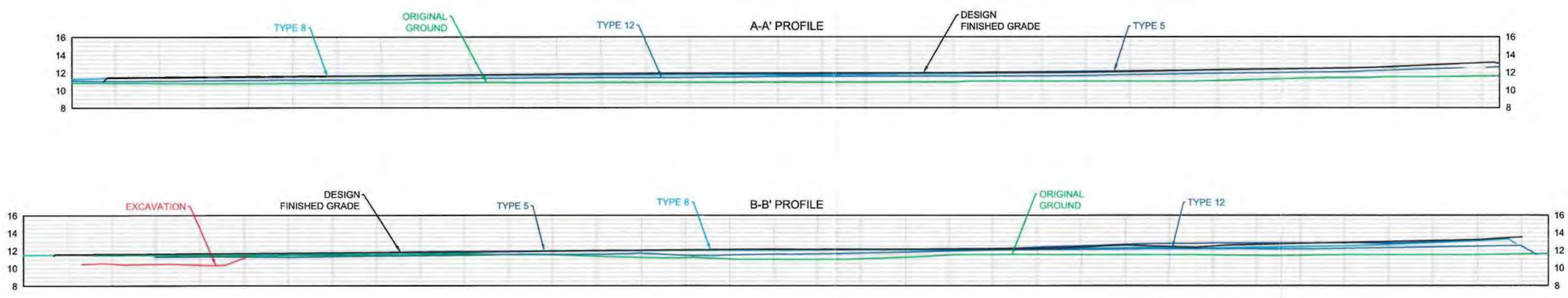
AS-BUILT BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: Bradford Watkin COMPANY: Nuna

DATE OF AS-BUILT: 9/29/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:



LEGEND:
LP5 DESIGN
AS-BUILT AREA

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

SCALE: AS SHOWN

DATE: Aug. 19, 2019

LAYDOWN AREA LP5

DRAWING TITLE:
AS-BUILT SURVEY
SURVEYED UP TO AUGUST 17, 2019

DRAWING NAME (YYMMDD):
190819 LAYDOWN AREA LP5 AS-BUILT.dwg

NUNA

NUNA EAST LTD

(Section 4)

Survey Data
Excavation to Subgrade

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0005A
Laydown Area LP5
Excavation to Subgrade

Laydown Area LP5 Excavation to Subgrade Survey Data

Point Number	Northing	Easting	Elevation	Description
190716 1	7974930.086	503575.072	24.819	LIMIT
190716 2	7974909.81	503575.999	26.986	LIMIT
190716 3	7974879.412	503578.68	27.474	LIMIT
190716 4	7974862.915	503579.381	27.588	LIMIT
190716 5	7974858.578	503563.526	26.245	LIMIT
190716 6	7974846.663	503517.053	22.308	LIMIT
190716 7	7974876.797	503516.052	21.102	LIMIT
190716 8	7974904.853	503506.438	19.279	LIMIT
190716 9	7974950.067	503494.125	18.886	LIMIT
190716 10	7974978.32	503486.265	17.472	LIMIT
190716 11	7974982.334	503501.401	19.475	LIMIT
190716 12	7974947.723	503527.968	22.975	LIMIT
190716 13	7974930.859	503551.709	24.547	LIMIT

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0005A
Laydown Area LP5
Excavation to Subgrade

Laydown Area LP5 Excavation to Subgrade Survey Data

Point Number	Northing	Easting	Elevation	Description
1000	7974980.763	503484.28	17.685	EXC EG
1001	7974971.061	503482.388	17.633	EXC EG
1002	7974961.331	503484.724	17.978	EXC EG
1003	7974952.521	503486.593	18.326	EXC EG
1004	7974942.826	503493.709	18.939	EXC EG
1005	7974937.005	503501.061	19.704	EXC EG
1006	7974932.535	503503.784	19.67	EXC EG
1007	7974938.559	503501.582	19.707	EXC EG
1008	7974948	503499.475	19.6	EXC EG
1009	7974957.346	503497.822	19.606	EXC EG
1010	7974966.578	503497.868	19.344	EXC EG
1011	7974977.784	503498.6	18.691	EXC EG
1012	7974980.66	503499.025	18.526	EXC EG
1013	7974976.834	503507.009	19.315	EXC EG
1014	7974971.966	503506.894	19.731	EXC EG
1015	7974967.239	503507.067	20.238	EXC EG
1016	7974959.868	503507.549	20.7	EXC EG
1017	7974953.359	503507.856	21	EXC EG
1018	7974947.861	503508.502	20.888	EXC EG
1019	7974942.831	503509.127	20.53	EXC EG
1020	7974934.235	503509.322	20.248	EXC EG
1021	7974936.517	503516.912	21.324	EXC EG
1022	7974944.934	503515.865	21.561	EXC EG
1023	7974952.501	503515.373	21.407	EXC EG
1024	7974960.236	503515.177	21.152	EXC EG
1025	7974969.571	503516.86	20.547	EXC EG
1026	7974960.233	503521.286	21.119	EXC EG
1027	7974950.436	503520.896	21.699	EXC EG
1028	7974943.194	503520.724	21.903	EXC EG
1029	7974938.296	503520.792	21.884	EXC EG
1030	7974937.794	503526.152	22.482	EXC EG
1031	7974947.295	503528.379	21.991	EXC EG
1032	7974951.015	503529.32	22.025	EXC EG
1033	7974943.142	503535.936	22.518	EXC EG
1034	7974942.659	503535.915	22.493	EXC EG
1035	7974938.466	503533.115	22.595	EXC EG
1036	7974934.749	503530.107	22.782	EXC EG
1037	7974929.088	503537.267	22.905	EXC EG
1038	7974933.127	503539.943	23.024	EXC EG

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0005A
Laydown Area LP5
Excavation to Subgrade

1039	7974936.493	503542.659	22.925	EXC EG
1040	7974931.724	503548.674	23.556	EXC EG
1041	7974925.967	503547.047	23.499	EXC EG
1042	7974919.661	503543.846	22.536	EXC EG
1043	7974909.506	503542.661	22.998	EXC EG
1044	7974898.365	503542.901	23.663	EXC EG
1045	7974895.938	503551.282	24.075	EXC EG
1046	7974904.782	503550.812	23.579	EXC EG
1047	7974915.453	503551.083	23.674	EXC EG
1048	7974923.483	503552.725	23.975	EXC EG
1049	7974928.444	503554.296	24.066	EXC EG
1050	7974915.913	503569.166	25.817	EXC EG
1051	7974924.969	503570.958	24.814	EXC EG
1052	7974931.387	503574.137	24.752	EXC EG
1053	7974930.632	503577.113	25.07	EXC EG
1054	7974923.48	503575.666	25.281	EXC EG
1055	7974917.294	503575.169	26.028	EXC EG
1056	7974927.123	503563.437	24.669	EXC EG
1057	7974897.419	503555.659	24.427	EXC EG
1058	7974898.039	503571.437	25.321	EXC EG
1059	7974904.634	503574.841	25.644	EXC EG
1060	7974905.754	503561.264	24.888	EXC EG
1061	7974912.349	503558.577	24.67	EXC EG
1062	7974912.323	503558.606	24.671	EXC EG

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0005A
Laydown Area LP5
Excavation to Subgrade

Laydown Area LP5 Excavation to Subgrade Survey Data

Point Number	Northing	Easting	Elevation	Description
190718 01	7974957.264	503537.305	21.794	SUB EXC TOE
190718 02	7974953.377	503535.115	22.036	SUB EXC TOE
190718 03	7974950.107	503533.616	22.181	SUB EXC TOE
190718 04	7974952.557	503527.282	21.769	SUB EXC TOE
190718 05	7974959.658	503524.364	21.503	SUB EXC TOE
190718 06	7974965.737	503524.149	20.882	SUB EXC TOE
190718 07	7974968.909	503526.304	20.798	SUB EXC TOE
190718 08	7974968.466	503530.193	20.938	SUB EXC TOE
190718 09	7974964.79	503534.754	21.248	SUB EXC TOE
190718 10	7974960.009	503536.539	21.606	SUB EXC TOE
190718 11	7974956.381	503533.239	21.921	SUB EXC
190718 12	7974961.451	503529.647	21.56	SUB EXC
190718 13	7974965.728	503528.19	21.1	SUB EXC
190718 14	7974910.786	503539.828	22.317	SUB EXC
190718 15	7974915.791	503537.074	22.205	SUB EXC
190718 16	7974922.12	503533.452	21.21	SUB EXC
190718 17	7974925.622	503533.44	22.123	SUB EXC
190718 18	7974925.913	503527.124	21.914	SUB EXC
190718 19	7974924.262	503526.993	21.583	SUB EXC
190718 20	7974921.975	503526.918	20.539	SUB EXC
190718 21	7974916.905	503527.714	20.962	SUB EXC
190718 22	7974910.1	503530.143	21.105	SUB EXC
190718 23	7974909.62	503525.484	20.257	SUB EXC
190718 24	7974904.488	503520.862	20.257	SUB EXC
190718 25	7974910.639	503519.834	19.648	SUB EXC
190718 26	7974912.022	503519.748	19.972	SUB EXC
190718 27	7974916.423	503519.864	20.248	SUB EXC
190718 28	7974919.743	503519.885	19.725	SUB EXC
190718 29	7974924.702	503521.021	21.136	SUB EXC
190718 30	7974924.163	503514.837	20.24	SUB EXC
190718 31	7974920.857	503514.238	19.393	SUB EXC
190718 32	7974916.675	503513.326	19.485	SUB EXC
190718 33	7974913.344	503512.67	19.291	SUB EXC
190718 34	7974911.995	503512.751	18.844	SUB EXC
190718 35	7974905.5	503512.292	19.352	SUB EXC
190718 36	7974904.12	503504.288	18.305	SUB EXC
190718 37	7974911.527	503504.625	18.167	SUB EXC
190718 38	7974913.677	503504.817	18.612	SUB EXC
190718 39	7974917.504	503505.051	18.895	SUB EXC

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0005A
Laydown Area LP5
Excavation to Subgrade

190718 40	7974921.411	503505.927	18.763	SUB EXC
190718 41	7974924.304	503506.699	19.211	SUB EXC
190718 42	7974928.956	503506.855	19.611	SUB EXC

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0005A
Laydown Area LP5
Excavation to Subgrade

Laydown Area LP5 Excavation to Subgrade Survey Data

Point Number	Northing	Easting	Elevation	Description
1000	7974896.581	503552.828	24.123	SUB EXC
1001	7974893.865	503552.327	24.082	SUB EXC
1002	7974894.45	503545.833	23.459	SUB EXC
1003	7974898.554	503546.609	23.444	SUB EXC
1004	7974901.717	503538.479	22.736	SUB EXC
1005	7974893.954	503537.852	22.86	SUB EXC
1006	7974902.325	503533.178	21.942	SUB EXC
1007	7974898.752	503532.254	21.855	SUB EXC
1008	7974894.485	503530.996	21.699	SUB EXC
1009	7974894.507	503523.442	21.023	SUB EXC
1010	7974898.477	503523.903	20.877	SUB EXC
1011	7974902.855	503525.053	20.649	SUB EXC
1012	7974903.984	503518.072	19.824	SUB EXC
1013	7974898.986	503517.792	20.101	SUB EXC
1014	7974894.855	503517.113	20.113	SUB EXC
1015	7974895.092	503510.547	19.215	SUB EXC
1016	7974899.633	503510.654	19.05	SUB EXC
1017	7974904.779	503511.736	19.149	SUB EXC
1018	7974904.75	503504.938	18.223	SUB EXC
1019	7974899.548	503505.258	18.403	SUB EXC
1020	7974895.207	503505.152	18.341	SUB EXC
1021	7974892.781	503496.053	17.008	SUB EXC
1022	7974897.695	503495.097	16.876	SUB EXC
1023	7974902.285	503494.889	16.931	SUB EXC

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Laydown Area LP5
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Laydown Area LP5 Excavation to Subgrade Survey Data

Point Number	Northing	Easting	Elevation	Description
809001	7974816.151	503285.115	11.124	SUB EXC
809002	7974807.856	503287.182	11.435	SUB EXC
809003	7974795.311	503286.582	11.785	SUB EXC
809004	7974797.534	503298.292	11.878	SUB EXC
809005	7974797.896	503303.524	12.055	SUB EXC
809006	7974797.796	503313.349	11.86	SUB EXC
809007	7974798.855	503321.547	11.729	SUB EXC
809008	7974799.528	503329.32	11.628	SUB EXC
809009	7974800.156	503338.493	11.574	SUB EXC
809010	7974802.161	503347.393	11.478	SUB EXC
809011	7974803.667	503354.153	11.375	SUB EXC
809012	7974811.561	503355.001	11.353	SUB EXC
809013	7974820.06	503354.065	11.434	SUB EXC
809014	7974824.28	503352.703	11.416	SUB EXC
809015	7974831.394	503350.843	11.332	SUB EXC
809016	7974836.628	503348.961	11.202	SUB EXC
809017	7974844.057	503347.811	11.218	SUB EXC
809018	7974843.221	503349.177	11.206	SUB EXC
809019	7974836.419	503351.185	11.499	SUB EXC
809020	7974833.342	503352.171	11.424	SUB EXC
809021	7974836.022	503348.716	10.934	SUB EXC TOE
809022	7974831.911	503350.018	10.79	SUB EXC TOE
809023	7974825.169	503351.377	10.88	SUB EXC TOE
809024	7974823.7	503345.655	10.931	SUB EXC TOE
809025	7974832.775	503343.296	10.685	SUB EXC TOE
809026	7974842.768	503342.056	10.339	SUB EXC TOE
809027	7974843.282	503340.991	11.045	SUB EXC
809028	7974836.232	503341.944	11.056	SUB EXC
809029	7974828.847	503343.711	11.154	SUB EXC
809030	7974822.823	503345.163	11.258	SUB EXC
809031	7974813.995	503346.21	11.301	SUB EXC
809032	7974808.168	503345.962	11.437	SUB EXC
809033	7974806.705	503334.377	11.372	SUB EXC
809034	7974817.65	503332.857	11.382	SUB EXC
809035	7974828.661	503331.399	11.209	SUB EXC
809036	7974839.842	503329.608	11.022	SUB EXC
809037	7974837.076	503318.794	11.138	SUB EXC
809038	7974828.619	503320.118	11.314	SUB EXC
809039	7974818.16	503322.127	11.361	SUB EXC

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809040	7974805.844	503321.576	11.493	SUB EXC
809041	7974804.732	503312.098	11.733	SUB EXC
809042	7974814.608	503311.789	11.597	SUB EXC
809043	7974812.285	503300.395	11.652	SUB EXC
809044	7974805.093	503299.879	11.815	SUB EXC
809045	7974804.952	503292.55	11.679	SUB EXC
809046	7974812.364	503291.459	11.448	SUB EXC

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Excavation to Subgrade

Laydown Area LP5 Excavation to Subgrade Survey Data

Point Number	Northing	Easting	Elevation	Description
81001	7974817.347	503319.485	10.884	SUBEXC TOE
81002	7974819.612	503329.806	10.622	SUBEXC TOE
81003	7974821.598	503342.852	10.706	SUBEXC TOE
81004	7974827.888	503338.349	10.551	SUBEXC TOE
81005	7974831.687	503334.815	10.395	SUBEXC TOE
81006	7974842.271	503336.008	10.445	SUBEXC TOE
81007	7974840.304	503331.359	10.593	SUBEXC TOE
81008	7974838.195	503325.91	10.558	SUBEXC TOE
81009	7974830.371	503326.177	10.626	SUB EXC
81010	7974838.142	503315.937	10.676	SUBEXC TOE
81011	7974827.191	503311.839	10.952	SUB EXC
81012	7974826.561	503303.609	11.032	SUB EXC
81013	7974818.728	503303.894	10.959	SUBEXC TOE
81014	7974834.702	503300.376	10.879	SUBEXC TOE
81015	7974833.282	503290.223	10.808	SUBEXC TOE
81016	7974824.809	503293.604	10.879	SUBEXC TOE
81017	7974815.587	503294.71	10.95	SUBEXC TOE

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Laydown Area LP5
Excavation to Subgrade

Laydown Area LP5 Excavation to Subgrade Survey Data

Point Number	Northing	Easting	Elevation	Description
820001	7974891.754	503551.223	23.619	SUB EXC
820002	7974894.329	503552.584	23.539	SUB EXC
820003	7974893.127	503558.602	23.792	SUB EXC
820004	7974895.89	503558.752	23.775	SUB EXC
820005	7974902.367	503562.384	24.285	SUB EXC
820006	7974896.188	503562.659	23.957	SUB EXC
820007	7974892.762	503562.029	23.95	SUB EXC
820008	7974890.59	503568.878	24.889	SUB EXC
820009	7974894.113	503568.672	24.208	SUB EXC
820010	7974900.126	503568.064	24.502	SUB EXC
820011	7974904.035	503568.172	24.665	SUB EXC
820012	7974900.231	503574.014	24.995	SUB EXC
820013	7974896.33	503573.396	24.636	SUB EXC
820014	7974892.86	503571.569	24.639	SUB EXC
820015	7974894.286	503530.824	21.13	SUB EXC
820016	7974891.618	503531.507	21.714	SUB EXC
820017	7974891.411	503540.685	22.897	SUB EXC
820018	7974895.496	503540.883	22.264	SUB EXC
820019	7974895.634	503546.816	22.895	SUB EXC
820020	7974891.099	503545.892	23.253	SUB EXC

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Laydown Area LP5
Excavation to Subgrade

Laydown Area LP5 Excavation to Subgrade Survey Data

Point Number	Northing	Easting	Elevation	Description
19082301	7974941.857	503507.763	19.725	RE EXC
19082302	7974938.272	503508.582	19.773	RE EXC
19082303	7974934.737	503508.117	19.442	RE EXC
19082304	7974936.117	503502.472	19.062	RE EXC
19082305	7974940.928	503500.412	19.109	RE EXC
19082306	7974942.035	503504.715	19.497	RE EXC
19082307	7974952.908	503501.707	19.523	RE EXC
19082308	7974952.176	503497.099	18.928	RE EXC
19082309	7974957.225	503496.989	18.942	RE EXC
19082310	7974960.844	503497.484	18.889	RE EXC
19082311	7974962.013	503499.163	19.05	RE EXC
19082312	7974962.53	503503.683	19.535	RE EXC
19082313	7974959.937	503505.349	19.646	RE EXC
19082314	7974954.826	503506.398	19.828	RE EXC

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Excavation to Subgrade

Laydown Area LP5 Excavation to Subgrade Survey Data

Point Number	Northing	Easting	Elevation	Description
10000	7975033.416	503531.105	19.926	SG PR
10001	7975025.76	503529.985	20.16	SG PR
10002	7975016.887	503530.198	20.661	SG PR
10003	7975007.932	503530.296	21.015	SG PR
10004	7975007.815	503520.628	20.665	SG PR
10005	7975017.373	503520.354	20.222	SG PR
10006	7975026.308	503520.164	19.802	SG PR
10007	7975033.98	503520.576	19.567	SG PR
10008	7975030.276	503509.406	19.174	SG PR
10009	7975022.362	503510.112	19.502	SG PR
10010	7975014.793	503510.969	19.918	SG PR
10011	7975007.459	503510.751	20.217	SG PR
10012	7975008.063	503502.037	19.9	SG PR
10013	7975014.865	503501.758	19.444	SG PR
10014	7975022.677	503500.981	18.988	SG PR
10015	7975027.395	503500.051	18.732	SG PR
10016	7975025.249	503491.881	18.409	SG PR
10017	7975017.613	503492.755	18.818	SG PR
10018	7975008.443	503493.581	19.436	SG PR
10019	7975007.913	503484.586	18.981	SG PR
10020	7975014.282	503483.926	18.607	SG PR
10021	7975007.868	503478.725	18.69	SG PR
10022	7975013.731	503479.14	18.345	SG PR
10023	7975018.197	503478.707	18.049	SG PR
10024	7975021.169	503478.291	17.825	SG PR
10025	7975018.97	503471.249	17.567	SG PR
10026	7975013.216	503472.12	18.036	SG PR
10027	7975007.838	503472.357	18.431	SG PR
10028	7975006.414	503463.148	17.993	SG PR
10029	7975011.624	503462.225	17.54	SG PR
10030	7975015.897	503460.91	17.135	SG PR
10031	7975013.344	503451.947	16.758	SG PR
10032	7975008.415	503452.872	17.203	SG PR
10033	7975004.438	503453.508	17.493	SG PR
10034	7975002.096	503445.031	17.139	SG PR
10035	7975006.866	503443.983	16.744	SG PR
10036	7975010.889	503442.477	16.296	SG PR
10037	7975008.553	503432.479	15.9	SG PR
10038	7975003.311	503433.9	16.359	SG PR

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10039	7974998.637	503435.464	16.639	SG PR
10040	7974995.329	503428.539	16.521	SG PR
10041	7975001.236	503426.01	15.982	SG PR
10042	7975006.43	503424.889	15.562	SG PR
10043	7975003.186	503414.981	15.173	SG PR
10044	7974997.571	503415.852	15.546	SG PR
10045	7974991.178	503417.553	15.905	SG PR
10046	7974988.518	503409.43	15.588	SG PR
10047	7974995.512	503407.738	15.154	SG PR
10048	7975000.799	503406.756	14.851	SG PR
10049	7974998.937	503400.716	14.544	SG PR
10050	7974993.84	503402.767	14.874	SG PR
10051	7974987.146	503404.94	15.426	SG PR
10052	7974984.841	503399.238	15.158	SG PR
10053	7974990.314	503397.973	14.641	SG PR
10054	7974996.906	503396.812	14.54	SG PR
10055	7974989.744	503396.471	13.862	SUB EX BTM
10056	7974993.003	503396.195	13.571	SUB EX BTM
10057	7974997.553	503397.723	13.533	SUB EX BTM
10058	7974999.304	503401.824	13.677	SUB EX BTM
10059	7974995.348	503402.77	13.705	SUB EX BTM
10060	7974992.06	503403.456	13.848	SUB EX BTM
10061	7974993.591	503407.771	13.978	SUB EX BTM
10062	7974998.695	503406.33	13.886	SUB EX BTM
10063	7975000.649	503406.049	13.987	SUB EX BTM
10064	7975001.604	503410.805	14.076	SUB EX BTM
10065	7974998.782	503411.731	14.234	SUB EX BTM
10066	7974996.453	503412.57	14.516	SUB EX BTM
10067	7974998.906	503415.339	14.817	SUB EX BTM
10068	7975001.324	503416.737	14.863	SUB EX BTM
10069	7975003.477	503415.37	14.566	SUB EX BTM
10070	7975004.478	503415.73	15.325	SUB EX CR
10071	7975003.458	503412.281	15.024	SUB EX CR
10072	7975001.891	503406.961	14.881	SUB EX CR
10073	7975000.831	503403.01	14.686	SUB EX CR
10074	7974997.773	503396.71	14.272	SUB EX CR
10075	7974995.412	503395.244	14.269	SUB EX CR
10076	7974989.102	503395.882	14.709	SUB EX CR
10077	7974990.62	503402.026	15.048	SUB EX CR
10078	7974992.648	503407.293	15.18	SUB EX CR
10079	7974993.967	503412.88	15.483	SUB EX CR
10080	7974997.611	503416.365	15.606	SUB EX CR

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Laydown Area LP5
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10081	7975001.06	503418.495	15.507	SUB EX CR

NUNA

NUNA EAST LTD

(Section 4)

Survey Data
Type 12
(ROQ)

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Laydown Area LP5
Type 12 (ROQ) Placement

Laydown Area LP5 Type 12 (ROQ) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
20000	7974846.433	503578.506	28.465	LIMIT
20001	7974845.878	503568.228	26.906	LIMIT
20002	7974837.463	503562.593	25.565	LIMIT
20003	7974827.417	503565.357	25.512	LIMIT
20004	7974817.337	503565.539	25.323	LIMIT
20005	7974807.008	503565.556	25.015	LIMIT
20006	7974796.746	503566.028	24.81	LIMIT
20007	7974786.221	503565.026	24.292	LIMIT
20008	7974777.265	503559.925	23.402	LIMIT
20009	7974773.928	503550.34	22.387	LIMIT
20010	7974773.256	503540.086	21.676	LIMIT
20011	7974772.83	503529.87	21.049	LIMIT
20012	7974772.62	503519.55	20.306	LIMIT
20013	7974772.374	503509.436	19.479	LIMIT
20014	7974772.469	503499.037	18.674	LIMIT
20015	7974772.545	503488.811	17.855	LIMIT
20016	7974772.48	503479.238	17.094	LIMIT
20017	7974772.442	503468.78	16.529	LIMIT
20018	7974772.087	503458.508	15.919	LIMIT
20019	7974772.361	503448.092	15.573	LIMIT
20020	7974772.336	503437.916	15.1	LIMIT
20021	7974772.744	503427.536	14.822	LIMIT
20022	7974772.145	503417.174	14.423	LIMIT
20023	7974771.893	503406.784	14.021	LIMIT
20024	7974771.548	503396.454	13.782	LIMIT
20025	7974771.649	503386.053	13.438	LIMIT
20026	7974775.155	503376.408	13.123	LIMIT
20027	7974785.145	503373.369	13.135	LIMIT
20028	7974840.834	503395.585	14.434	LIMIT
20029	7974841.124	503405.588	14.573	LIMIT
20030	7974845.272	503415.251	14.823	LIMIT
20031	7974850.191	503424.428	14.945	LIMIT
20032	7974855.862	503433.139	14.944	LIMIT
20033	7974859.412	503442.55	15.069	LIMIT
20034	7974821.24	503441.695	16.023	LIMIT
20035	7974823.048	503452.026	16.566	LIMIT
20036	7974826.087	503461.878	16.994	LIMIT
20037	7974829.146	503471.801	17.593	LIMIT
20038	7974831.812	503481.695	18.356	LIMIT

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Type 12 (ROQ) Placement

20039	7974834.707	503491.731	19.291	LIMIT
20040	7974837.76	503501.579	20.419	LIMIT
20041	7974840.669	503511.223	21.646	LIMIT
20042	7974844.142	503521.014	22.681	LIMIT
20043	7974847.647	503530.825	23.553	LIMIT
20044	7974849.966	503541.164	24.362	LIMIT
20045	7974839.16	503556.534	25.175	SS
20046	7974834.742	503547.094	24.126	SS
20047	7974834.564	503537.008	23.468	SS
20048	7974833.136	503526.91	22.64	SS
20049	7974830.952	503516.062	21.658	SS
20050	7974828.287	503505.821	20.54	SS
20051	7974825.422	503495	19.424	SS
20052	7974822.843	503485.118	18.6	SS
20053	7974820.532	503474.841	17.911	SS
20054	7974818.391	503464.548	17.271	SS
20055	7974816.402	503454.2	16.749	SS
20056	7974815.261	503443.656	16.305	SS
20057	7974818.66	503434.129	15.764	SS
20058	7974827.582	503428.675	15.362	SS
20059	7974837.806	503430.33	15.246	SS
20060	7974843.64	503438.949	15.317	SS
20061	7974847.281	503429.607	15.097	SS
20062	7974840.435	503421.681	15.012	SS
20063	7974836.098	503412.49	14.636	SS
20064	7974834.005	503402.191	14.352	SS
20065	7974838.088	503392.707	14.388	SS
20066	7974847.174	503387.411	14.19	SS
20067	7974857.04	503384.997	14.032	SS
20068	7974865.46	503379.349	13.895	SS
20069	7974863.929	503368.975	13.529	SS
20070	7974855.061	503363.543	13.248	SS
20071	7974844.956	503363.61	13.269	SS
20072	7974835.099	503365.602	13.13	SS
20073	7974825.151	503367.091	13.225	SS
20074	7974816.191	503371.703	13.371	SS
20075	7974807.595	503377.649	13.54	SS
20076	7974798.374	503382.039	13.626	SS
20077	7974787.914	503381.877	13.542	SS
20078	7974781.184	503389.817	13.726	SS
20079	7974779.225	503400.039	14.112	SS
20080	7974778.575	503410.915	14.467	SS

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Type 12 (ROQ) Placement

20081	7974779.223	503421.741	14.814	SS
20082	7974780.868	503431.958	15.245	SS
20083	7974782.396	503442.742	15.717	SS
20084	7974782.612	503453.262	16.094	SS
20085	7974783.173	503463.636	16.536	SS
20086	7974783.148	503474.217	17.089	SS
20087	7974782.909	503484.627	17.762	SS
20088	7974783.23	503495.121	18.591	SS
20089	7974783.211	503505.246	19.361	SS
20090	7974783.701	503515.576	19.971	SS
20091	7974784.399	503525.677	20.746	SS
20092	7974786.18	503535.846	21.586	SS
20093	7974788.206	503545.756	22.479	SS
20094	7974794.523	503553.764	23.456	SS
20095	7974801.913	503546.511	23.002	SS
20096	7974801.332	503536.319	22.003	SS
20097	7974800.05	503525.982	21.167	SS
20098	7974798.447	503515.724	20.515	SS
20099	7974797.388	503505.622	19.95	SS
20100	7974794.908	503495.473	19.069	SS
20101	7974793.9	503485.097	18.14	SS
20102	7974794.413	503474.935	17.371	SS
20103	7974794.984	503464.49	16.949	SS
20104	7974794.835	503453.977	16.453	SS
20105	7974794.991	503443.795	16.131	SS
20106	7974794.692	503433.403	15.702	SS
20107	7974794.341	503423.138	15.293	SS
20108	7974794.112	503412.695	14.91	SS
20109	7974793.254	503402.678	14.523	SS
20110	7974792.681	503392.333	14.105	SS
20111	7974796.451	503383.044	13.669	SS
20112	7974804.979	503377.775	13.465	SS
20113	7974814.913	503374.373	13.478	SS
20114	7974824.798	503372.518	13.502	SS
20115	7974834.516	503370.175	13.346	SS
20116	7974844.521	503367.14	13.336	SS
20117	7974854.585	503368.99	13.502	SS
20118	7974851.405	503378.898	13.878	SS
20119	7974842.968	503384.867	14.082	SS
20120	7974833.698	503389.431	14.351	SS
20121	7974824.403	503393.821	14.392	SS
20122	7974815.491	503398.51	14.649	SS

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20123	7974807.509	503404.621	14.749	SS
20124	7974802.398	503413.844	15.047	SS
20125	7974800.324	503424.34	15.435	SS
20126	7974799.843	503435.117	15.881	SS
20127	7974800.975	503445.184	16.261	SS
20128	7974802.357	503455.751	16.706	SS
20129	7974803.592	503466.547	17.208	SS
20130	7974804.67	503476.522	17.725	SS
20131	7974805.921	503487.206	18.554	SS
20132	7974807.574	503497.076	19.464	SS
20133	7974809.257	503507.545	20.248	SS
20134	7974814.032	503535.695	22.425	SS
20135	7974816.313	503545.536	23.439	SS
20136	7974820.74	503554.792	24.378	SS
20137	7974831.163	503554.792	24.699	SS
20138	7974835.413	503545.648	24.083	SS
20139	7974835.05	503535.557	23.4	SS
20140	7974833.293	503525.128	22.473	SS
20141	7974831.268	503515.034	21.549	SS
20142	7974829.079	503504.581	20.441	SS
20143	7974826.888	503494.624	19.394	SS
20144	7974824.694	503484.784	18.581	SS
20145	7974821.3	503474.333	17.821	SS
20146	7974818.752	503463.907	17.237	SS
20147	7974817.07	503454.017	16.714	SS
20148	7974814.641	503444.06	16.291	SS
20149	7974811.98	503434.099	15.958	SS
20150	7974809.957	503424.191	15.511	SS
20151	7974811.354	503414.098	15.106	SS
20152	7974814.2	503404.484	14.804	SS
20153	7974816.304	503394.648	14.513	SS
20154	7974817.781	503384.543	14.056	SS
20155	7974824.572	503377.183	13.715	SS
20156	7974834.638	503379.197	13.8	SS
20160	7974800.772	503365.753	12.904	CREST
20162	7974802.383	503359.289	12.738	CREST
20163	7974808.474	503356.965	12.691	CREST
20164	7974821.06	503355.104	12.724	CREST
20165	7974834.813	503353.789	12.751	CREST
20166	7974846.961	503350.554	12.773	CREST
20167	7974852.909	503349.085	12.866	CREST
20168	7974855.269	503354.801	13.002	CREST

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20169	7974860.834	503356.681	13.18	CREST
20170	7974867.904	503357.781	13.266	CREST
20171	7974873.763	503355.323	13.394	CREST
20172	7974877.703	503355.497	13.354	CREST
20173	7974880.566	503365.267	13.739	CREST
20174	7974883.219	503372.971	13.82	CREST
20175	7974885.557	503380.857	14.073	CREST
20176	7974886.212	503383.189	14.129	CREST
20177	7974882.93	503384.671	14.351	CREST
20178	7974880.73	503384.219	14.01	CREST
20179	7974877.135	503373.903	13.856	CREST
20180	7974874.191	503368.795	13.664	CREST
20181	7974871.194	503370.59	13.778	CREST
20182	7974874.13	503387.447	14.266	CREST
20183	7974859.948	503391.487	14.312	CREST
20184	7974846.623	503397.246	14.463	CREST
20185	7974842.218	503401.451	14.626	CREST
20186	7974843.691	503407.468	14.762	CREST
20187	7974851.15	503422.036	14.997	CREST
20188	7974858.227	503433.364	15.047	CREST
20189	7974861.026	503439.555	14.924	CREST
20190	7974862.836	503448.188	15.387	CREST
20191	7974861.079	503451.765	15.537	CREST
20192	7974854.284	503455.714	15.799	CREST
20193	7974849.467	503456.326	15.87	CREST
20194	7974845.121	503452.977	15.75	CREST
20195	7974840.386	503443.802	15.46	CREST
20196	7974835.163	503437.971	15.537	CREST
20197	7974823.606	503440.328	15.849	CREST
20198	7974824.592	503441.445	15.534	TOE
20199	7974835.853	503438.597	15.423	TOE
20200	7974843.308	503450.574	15.367	TOE
20201	7974847.844	503456.588	15.569	TOE
20202	7974857.589	503454.507	15.434	TOE
20203	7974862.986	503451.053	15.335	TOE
20204	7974864.11	503446.003	14.961	TOE
20205	7974862.164	503437.696	14.453	TOE
20206	7974856.499	503428.293	13.986	TOE
20207	7974850.99	503419.3	13.884	TOE
20208	7974845.681	503408.561	13.68	TOE
20209	7974844.189	503402.81	13.442	TOE
20210	7974853.35	503395.62	13.115	TOE

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20211	7974863.584	503391.966	13.117	TOE
20212	7974874.944	503389.75	13.013	TOE
20213	7974876.501	503387.81	12.972	TOE
20214	7974874.997	503382.256	13.001	TOE
20215	7974873.078	503375.789	12.797	TOE
20216	7974872.672	503372.858	12.731	TOE
20217	7974873.072	503371.562	12.749	TOE
20218	7974873.957	503370.874	12.694	TOE
20219	7974877.428	503377.939	12.887	TOE
20220	7974878.932	503385.599	12.885	TOE
20221	7974882.941	503387.235	12.796	TOE
20222	7974887.306	503385.295	12.873	TOE
20223	7974888.2	503382.9	12.849	TOE
20224	7974887.352	503379.739	12.714	TOE
20225	7974883.63	503369.232	12.547	TOE
20226	7974882.344	503361.107	12.283	TOE
20227	7974879.241	503353.827	11.901	TOE
20228	7974873.31	503352.944	11.893	TOE
20229	7974868.531	503355.613	12.137	TOE
20230	7974861.613	503354.916	11.889	TOE
20231	7974857.703	503352.29	11.818	TOE
20232	7974854.476	503347.497	11.754	TOE
20233	7974853.045	503346.999	11.741	TOE
20234	7974844.693	503349.09	11.774	TOE
20235	7974831.014	503350.662	11.874	TOE
20236	7974820.958	503353.12	12.092	TOE
20237	7974812.981	503354.056	12.011	TOE
20238	7974806.701	503355.161	11.981	TOE
20239	7974800.668	503356.506	12.074	TOE

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Point Number	Northing	Easting	Elevation	Description
1000	7974898.938	503187.129	10.924	12 toe
1097	7974934.725	503197.238	11.019	12
1098	7974925.896	503194.428	10.973	12
1099	7974918.157	503192.103	11.028	12
1100	7974906.212	503188.035	11.066	12
1137	7974946.435	503221.437	11	12 crest
1138	7974943.431	503211.686	11.033	12 crest
1139	7974940.915	503203.558	11.007	12 crest
1140	7974932.381	503206.441	11.078	12
1141	7974934.63	503214.068	11.103	12
1142	7974935.564	503221.386	11.145	12
1143	7974924.91	503221.002	11.21	12
1144	7974923.894	503210.775	11.181	12
1145	7974923.005	503199.641	11.056	12
1146	7974912.769	503198.71	11.042	12
1147	7974912.839	503208.352	11.186	12
1148	7974915.152	503216.624	11.201	12
1149	7974916.518	503224.52	11.264	12
1150	7974907.021	503225.648	11.354	12
1151	7974906.871	503217.23	11.337	12
1152	7974906.829	503209.235	11.245	12
1153	7974906.541	503197.406	11.132	12
1154	7974895.926	503194.626	11.282	12
1155	7974887.59	503196.986	11.246	12
1156	7974890.764	503205.998	11.328	12
1157	7974899.792	503204.279	11.218	12
1158	7974900.643	503214.462	11.251	12
1159	7974892.306	503217.137	11.344	12
1160	7974895.593	503224.891	11.41	12
1161	7974903.594	503224.668	11.391	12
1162	7974893.787	503229.439	11.453	12 crest
1163	7974890.111	503221.554	11.362	12 crest
1164	7974886.968	503212.272	11.294	12 crest
1165	7974885.225	503204.253	11.241	12 crest
1166	7974883.159	503196.858	11.23	12 crest
1167	7974884.061	503194.963	11.261	12 crest
1168	7974891.647	503191.494	11.248	12 crest
1169	7974899.802	503187.908	10.985	12 crest
1170	7974900.133	503186.11	10.873	12 toe

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1171	7974891.867	503189.939	11.024	12 toe
1172	7974882.886	503194.524	11.133	12 toe
1173	7974882.06	503197.525	11.094	12 toe
1174	7974884.437	503206.449	10.962	12 toe
1175	7974884.689	503212.411	10.923	12 toe
1176	7974887.226	503221.176	10.977	12 toe
1177	7974891.491	503228.571	10.902	12 toe

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Point Number	Northing	Easting	Elevation	Description
2161017	7975009.593	503520.907	20.303	ASB ROQ
2161018	7975004.003	503520.85	20.448	ASB ROQ
2161019	7974996.403	503519.888	20.671	ASB ROQ
2161020	7974990.597	503518.206	20.524	ASB ROQ
2161021	7974986.99	503517.099	20.768	ASB ROQ
2161022	7974986.27	503525.378	21.066	ASB ROQ
2161023	7974992.88	503526.7	21.15	ASB ROQ
2161024	7974998.03	503527.195	21.06	ASB ROQ
2161025	7975003.285	503527.441	20.844	ASB ROQ
2161026	7975009.599	503527.921	20.733	ASB ROQ
2161027	7975008.946	503537.906	21.124	ASB ROQ
2161028	7975001.507	503536.613	21.483	ASB ROQ
2161029	7974996.678	503535.188	21.435	ASB ROQ
2161030	7974990.679	503532.73	21.456	ASB ROQ
2161031	7974988.517	503531.999	21.342	ASB ROQ
2161032	7974985.005	503540.093	21.757	ASB ROQ
2161033	7974990.695	503542.195	21.925	ASB ROQ
2161034	7974995.833	503543.729	21.85	ASB ROQ
2161035	7975002.754	503545.665	21.82	ASB ROQ
2161036	7975006.168	503546.796	21.637	ASB ROQ
2161037	7975001.243	503556.199	22.224	ASB ROQ
2161038	7974994.563	503553.785	22.293	ASB ROQ
2161039	7974988.922	503551.16	22.339	ASB ROQ
2161040	7974982.892	503548.008	22.307	ASB ROQ
2161041	7974979.181	503545.946	22.366	ASB ROQ
2161042	7974973.31	503554.124	22.966	ASB ROQ
2161043	7974976.282	503557.841	23.062	ASB ROQ
2161044	7974981.812	503562.25	23.089	ASB ROQ
2161045	7974987.366	503566.515	23.043	ASB ROQ
2161046	7974990.565	503569.827	22.884	ASB ROQ
2161047	7974982.626	503576.953	23.299	ASB ROQ
2161048	7974977.049	503571.922	23.464	ASB ROQ
2161049	7974971.719	503567.278	23.716	ASB ROQ
2161050	7974966.704	503562.51	23.642	ASB ROQ
2161051	7974962.743	503559.771	23.756	ASB ROQ
2161052	7974956.752	503566.308	24.153	ASB ROQ
2161053	7974962.925	503572.413	23.99	ASB ROQ
2161054	7974969.058	503578.634	23.792	ASB ROQ
2161055	7974969.607	503580.358	23.759	ASB ROQ

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2161056	7974958.414	503579.501	24.23	ASB ROQ
2161057	7974951.008	503578.574	24.639	ASB ROQ
2161058	7974950.266	503572.166	24.516	ASB ROQ

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Point Number	Northing	Easting	Elevation	Description
2164024	7974900.253	503255.366	11.433	ROQ
2164025	7974896.423	503245.555	11.356	ROQ
2164026	7974893.035	503234.144	11.38	ROQ
2164027	7974889.568	503222.898	11.353	ROQ
2164028	7974887.045	503213.038	11.295	ROQ
2164029	7974883.346	503203.802	11.189	ROQ
2164030	7974879.749	503195.04	11.274	ROQ
2164031	7974875.523	503187.345	11.243	ROQ
2164032	7974869.376	503193.06	11.352	ROQ
2164033	7974872.118	503201.994	11.307	ROQ
2164034	7974875.545	503211.682	11.421	ROQ
2164035	7974878.056	503221.737	11.515	ROQ
2164036	7974880.98	503230.361	11.726	ROQ
2164037	7974884.123	503239.918	11.782	ROQ
2164038	7974886.678	503245.856	11.505	ROQ
2164039	7974889.776	503251.427	11.433	ROQ
2164040	7974893.408	503257.69	11.602	ROQ
2164041	7974885.971	503263.604	12.032	ROQ
2164042	7974880.211	503255.977	11.831	ROQ
2164043	7974874.43	503249.187	11.653	ROQ
2164044	7974869.738	503241.136	11.834	ROQ
2164045	7974867.146	503237.475	12.13	ROQ
2164046	7974867.378	503232.002	11.751	ROQ
2164047	7974866.586	503226.78	11.784	ROQ
2164048	7974866.389	503220.399	11.799	ROQ
2164049	7974868.149	503216.886	11.573	ROQ
2164050	7974866.542	503209.306	11.485	ROQ
2164051	7974864.153	503200.866	11.403	ROQ
2164052	7974863.106	503198.179	11.156	ROQ
2164053	7974865.176	503196.475	11.36	ROQ

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Point Number	Northing	Easting	Elevation	Description
999	7976255.837	503529.972	17.258	ROOF ADJ
20000	7974974.526	503575.678	23.764	T12 CREST
20001	7974987.021	503567.991	23.241	T12 CREST
20002	7974997.729	503557.926	22.345	T12 CREST
20003	7975005.053	503541.165	21.693	T12 CREST
20004	7975008.254	503522.036	20.659	T12 CREST
20005	7975008.228	503504.289	20.091	T12 CREST
20006	7975006.439	503487.17	19.211	T12 CREST
20007	7975006.287	503474.301	18.568	T12 CREST
20008	7975002.471	503460.374	17.734	T12 CREST
20009	7975000.739	503450.497	17.377	T12 CREST
20010	7974995.157	503431.293	16.715	T12 CREST
20011	7974978.452	503387.866	14.809	T12 CREST
20012	7974971.343	503372.35	14.115	T12 CREST
20013	7974968.011	503363.236	13.57	T12 CREST
20014	7974964.246	503348.942	12.943	T12 CREST
20015	7974962.873	503341.793	12.566	T12 CREST
20016	7974945.817	503350.323	12.779	T12 CREST
20017	7974954.276	503368.788	13.556	T12 CREST
20018	7974962.002	503386.412	14.423	T12 CREST
20019	7974968.04	503403.315	15.251	T12 CREST
20020	7974974.432	503421.469	15.992	T12 CREST
20021	7974979.592	503435.949	16.657	T12 CREST
20022	7974985.416	503453.656	17.41	T12 CREST
20023	7974990.259	503465.748	17.98	T12 CREST
20024	7974990.963	503478.581	18.716	T12 CREST
20025	7974991.38	503493.611	19.571	T12 CREST
20026	7974984.58	503511.347	20.511	T12 CREST
20027	7974980.784	503521.943	21.199	T12 CREST
20028	7974978.629	503527.66	21.521	T12 CREST
20029	7974969.038	503543.097	22.881	T12 CREST
20030	7974951.381	503553.484	23.972	T12 CREST
20031	7974939.723	503562.853	24.838	T12 CREST
20032	7974933.43	503571.184	25.415	T12 CREST
20033	7974946.677	503576.611	24.782	T12 CREST
20034	7974944.958	503578.139	24.333	T12 TOE
20035	7974933.953	503573.58	24.764	T12 TOE
20036	7974931.956	503568.865	24.614	T12 TOE
20037	7974938.092	503560.939	24.059	T12 TOE

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20038	7974944.589	503555.26	22.913	T12 TOE
20039	7974951.32	503542.918	22.479	T12 TOE
20040	7974961.1	503542.058	21.947	T12 TOE
20041	7974969.439	503540.645	21.534	T12 TOE
20042	7974975.206	503529.076	20.782	T12 TOE
20043	7974981.232	503519.44	20.348	T12 TOE
20044	7974982.849	503511.482	19.947	T12 TOE
20045	7974987.92	503506.513	19.542	T12 TOE
20046	7974989.111	503495.18	18.951	T12 TOE
20047	7974989.684	503484.949	18.117	T12 TOE
20048	7974987.529	503472.583	16.791	T12 TOE
20049	7974985.357	503469.454	16.54	T12 TOE
20050	7974985.43	503467.139	17.38	T12 TOE
20051	7974987.114	503460.735	17.199	T12 TOE
20052	7974982.063	503449.425	16.102	T12 TOE
20053	7974976.989	503436.129	15.278	T12 TOE
20054	7974971.349	503423.37	14.885	T12 TOE
20055	7974967.19	503410.505	14.68	T12 TOE
20056	7974964.412	503397.968	14.266	T12 TOE
20057	7974960.137	503384.277	14.045	T12 TOE
20058	7974956.369	503374.965	13.761	T12 TOE
20059	7974966.474	503343.255	10.98	T12 TOE
20060	7974968.627	503351.548	11.191	T12 TOE
20061	7974971.199	503361.596	11.482	T12 TOE
20062	7974971.121	503365.227	12.35	T12 TOE
20063	7974972.245	503369.292	12.623	T12 TOE
20064	7974972.029	503371.361	13.732	T12 TOE
20065	7974972.763	503373.646	13.807	T12 TOE
20066	7974979.255	503387.677	14.516	T12 TOE
20067	7974983.381	503398.8	15.058	T12 TOE
20068	7974988.818	503413.665	15.672	T12 TOE
20069	7974992.724	503422.574	15.977	T12 TOE
20070	7975002.376	503448.364	16.848	T12 TOE
20071	7975007.215	503462.137	17.21	T12 TOE
20072	7975007.609	503476.585	18.024	T12 TOE
20073	7975008.066	503492.002	18.433	T12 TOE
20074	7975010.1	503500.597	18.719	T12 TOE
20075	7975010.559	503515.934	19.332	T12 TOE
20076	7975008.558	503529.772	19.948	T12 TOE
20077	7975006.471	503542.949	20.34	T12 TOE
20078	7975002.362	503552.601	20.854	T12 TOE
20079	7974995.728	503563.812	21.753	T12 TOE

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20080	7974988.505	503568.536	22.405	T12 TOE
20081	7974976.534	503575.541	23.464	T12 TOE
20082	7974975.546	503577.688	23.295	T12 TOE
20083	7974955.988	503570.053	24.353	T12
20084	7974967.463	503560.978	23.639	T12
20085	7974976.347	503555.04	22.914	T12
20086	7974982.859	503545.78	22.183	T12
20087	7974985.277	503535.692	21.632	T12
20088	7974988.574	503524.534	21.006	T12
20089	7974990.465	503516.207	20.541	T12
20090	7974994.456	503520.655	20.666	T12
20091	7974992.537	503529.723	21.297	T12
20092	7974989.85	503542.816	21.953	T12
20093	7974986.944	503551.345	22.429	T12
20094	7974978.793	503561.237	23.207	T12
20095	7974972.348	503569.316	23.752	T12
20096	7974969.675	503573.459	23.861	T12
20097	7974974.313	503579.53	23.644	T12
20098	7974966.633	503579.833	23.868	T12
20099	7974957.343	503579.041	24.268	T12
20100	7974951.2	503578.597	24.596	T12
20101	7974981.684	503563.49	23.117	T12
20102	7974983.879	503557.677	22.808	T12
20103	7974989.174	503546.953	22.064	T12
20104	7974993.659	503536.172	21.551	T12
20105	7974995.914	503528.512	21.012	T12
20106	7974997.992	503518.229	20.442	T12
20107	7974998.578	503510.169	20.071	T12
20108	7974998.763	503492.035	19.397	T12
20109	7974998.772	503478.105	18.718	T12
20110	7974997.462	503464.482	17.944	T12
20111	7974991.294	503443.127	16.958	T12
20112	7974983.198	503421.058	15.986	T12
20113	7974973.625	503396.479	14.931	T12
20114	7974961.415	503365.518	13.494	T12
20115	7974958.06	503354.944	13.031	T12
20116	7974958.418	503312.068	11.649	T12
20117	7974956.371	503300.124	11.526	T12
20118	7974950.2	503293.451	11.491	T12
20119	7974945.297	503289.601	11.631	T12
20120	7974936.756	503285.377	11.713	T12
20121	7974928.502	503284.131	11.81	T12

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20122	7974925.746	503284.077	11.794	T12
20123	7974920.487	503276.412	11.806	T12
20124	7974930.742	503274.461	11.854	T12
20125	7974941.12	503275.187	11.784	T12
20126	7974948.435	503276.175	11.526	T12
20127	7974954.522	503282.641	11.438	T12
20128	7974959.114	503292.492	11.429	T12
20129	7974964.97	503307.467	11.525	T12
20130	7974965.218	503314.716	11.584	T12
20131	7974968.376	503316.819	11.545	T12 CREST
20132	7974971.483	503306.17	11.419	T12 CREST
20133	7974966.638	503290.614	11.314	T12 CREST
20134	7974961.904	503274.992	11.367	T12 CREST
20135	7974958.685	503260.814	11.24	T12 CREST
20136	7974948.624	503261.903	11.484	T12 CREST
20137	7974937.196	503260.376	11.705	T12 CREST
20138	7974926.041	503263.472	11.895	T12 CREST
20139	7974915.849	503268.586	11.964	T12 CREST
20140	7974915.256	503267.892	11.509	T12 TOE
20141	7974927.738	503263.014	11.273	T12 TOE
20142	7974943.11	503262.514	11.099	T12 TOE
20143	7974953.457	503261.4	11.143	T12 TOE
20144	7974960.823	503264.148	10.721	T12 TOE
20145	7974963.587	503278.073	10.725	T12 TOE
20146	7974968.54	503293.42	10.793	T12 TOE
20147	7974972.609	503305.35	11.055	T12 TOE
20148	7974970.79	503311.064	10.855	T12 TOE
20149	7974902.08	503214.745	11.3	T8 TOE
20150	7974899.716	503204.707	11.215	T8 TOE
20151	7974904.611	503199.657	11.245	T8 TOE
20152	7974905.314	503183.535	11.178	T8 TOE
20153	7974904.877	503178.525	11.108	T8 TOE
20154	7974903.929	503177.463	10.743	T8 TOE
20155	7974899.716	503174.557	11.018	T8 TOE
20156	7974891.217	503174.996	10.892	T8 TOE
20157	7974884.396	503175.936	11.207	T8 TOE
20158	7974875.778	503178.593	11.152	T8 TOE
20159	7974876.603	503182.508	11.184	T8 TOE
20160	7974881.225	503193.59	11.145	T8 TOE
20161	7974883.398	503197.01	11.391	T8 TOE
20162	7974885.857	503205.91	11.309	T8 TOE
20163	7974889.94	503213.904	11.478	T8 TOE

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20164	7974892.313	503218.798	11.361	T8 TOE
20165	7974892.772	503218.34	11.674	T8 CREST
20166	7974887.086	503203.796	11.678	T8 CREST
20167	7974882.417	503193.099	11.851	T8 CREST
20168	7974877.728	503183.393	11.625	T8 CREST
20169	7974876.479	503179.697	11.552	T8 CREST
20170	7974888.916	503176.476	11.588	T8 CREST
20171	7974899.376	503175.944	11.397	T8 CREST
20172	7974903.23	503183.428	11.806	T8 CREST
20173	7974898.934	503192.343	11.64	T8 CREST
20174	7974902.973	503200.42	11.544	T8 CREST
20175	7974898.864	503204.607	11.726	T8 CREST
20176	7974901.196	503214.268	11.761	T8 CREST
20177	7974897.615	503213.983	11.782	T8
20178	7974894.423	503202.574	11.772	T8
20179	7974892.209	503191.306	11.712	T8
20180	7974891.029	503185.529	11.774	T8

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Laydown Area LP5 Type 12 (ROQ) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
3163000	7974963.234	503337.742	12.455	LP5 ROQ
3163001	7974960.872	503336.882	12.399	LP5 ROQ
3163002	7974956.999	503327.047	12.075	LP5 ROQ
3163003	7974965.784	503328.487	12.035	LP5 ROQ
3163004	7974969.038	503315.992	11.502	LP5 ROQ
3163005	7974959.738	503313.437	11.726	LP5 ROQ
3163006	7974948.265	503311.761	12.009	LP5 ROQ
3163007	7974938.407	503298.698	11.932	LP5 ROQ
3163008	7974950.258	503298.636	11.624	LP5 ROQ
3163009	7974961.683	503299.815	11.434	LP5 ROQ
3163010	7974969.288	503299.743	11.361	LP5 ROQ
3163011	7974971.371	503307.192	11.2	LP5 ROQ
3163012	7974965.471	503287.317	11.171	LP5 ROQ
3163013	7974953.232	503287.147	11.435	LP5 ROQ
3163014	7974944.054	503287.222	11.608	LP5 ROQ
3163015	7974929.235	503287.972	11.794	LP5 ROQ
3163016	7974921.24	503279.085	11.826	LP5 ROQ
3163017	7974933.721	503277.171	11.704	LP5 ROQ
3163018	7974946.911	503277.055	11.533	LP5 ROQ
3163019	7974962.36	503276.579	11.117	LP5 ROQ
3163020	7974957.913	503260.448	11.145	LP5 ROQ
3163021	7974947.302	503263.809	11.358	LP5 ROQ
3163022	7974937.404	503266.475	11.595	LP5 ROQ
3163023	7974924.525	503269.336	11.687	LP5 ROQ
3163024	7974913.593	503271.152	11.664	LP5 ROQ
3163025	7974905.363	503260.363	11.441	LP5 ROQ
3163026	7974921.23	503256.111	11.565	LP5 ROQ
3163027	7974934.847	503253.825	11.431	LP5 ROQ
3163028	7974946.997	503252.364	11.187	LP5 ROQ
3163029	7974955.135	503251.042	11.039	LP5 ROQ
3163030	7974950.65	503236.166	11.127	LP5 ROQ
3163031	7974934.382	503238.814	11.368	LP5 ROQ
3163032	7974916.465	503239.975	11.55	LP5 ROQ
3163033	7974905.413	503241.221	11.583	LP5 ROQ
3163034	7974895.826	503242.413	11.599	LP5 ROQ
3163035	7974895.608	503239.133	11.422	LP5 ROQ
3163036	7974907.151	503235.071	11.437	LP5 ROQ
3163037	7974919.564	503229.979	11.393	LP5 ROQ
3163038	7974930.614	503224.598	11.246	LP5 ROQ

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3163039	7974946.307	503220.634	11.027	LP5 ROQ

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Laydown Area LP5
Type 12 (ROQ) Placement

Laydown Area LP5 Type 12 (ROQ) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
820184	7974952.693	503503.926	20.528	PR ROQ
820185	7974948.086	503512.841	21.291	PR ROQ
820186	7974954.935	503516.053	21.359	PR ROQ
820187	7974957.426	503511.613	21.014	PR ROQ
820188	7974960.203	503506.957	20.659	PR ROQ
820189	7974970.284	503511.074	20.35	PR ROQ
820190	7974974.846	503518.105	20.85	PR ROQ
820191	7974971.163	503522.246	21.15	PR ROQ
820192	7974962.856	503520.984	21.414	PR ROQ
820193	7974955.781	503519.239	21.404	PR ROQ
820194	7974949.848	503527.789	22.312	PR ROQ
820195	7974955.644	503533.945	22.287	PR ROQ
820196	7974944.54	503544.711	23.333	PR ROQ
820197	7974936.487	503539.385	23.357	PR ROQ
820198	7974930.451	503546.83	23.816	PR ROQ
820199	7974924.75	503545.486	23.702	PR ROQ
820200	7974935.071	503549.65	23.841	PR ROQ
820201	7974940.435	503553.308	23.793	PR ROQ
820202	7974936.377	503563.047	24.442	PR ROQ
820203	7974927.21	503556.893	24.631	PR ROQ
820204	7974921.86	503551.165	24.301	PR ROQ
820205	7974912.404	503559.099	24.86	PR ROQ
820206	7974922.737	503560.935	25.086	PR ROQ
820207	7974936.253	503563.098	24.444	PR ROQ
820208	7974933.115	503570.638	24.664	PR ROQ
820209	7974920.177	503572.729	25.533	PR ROQ
820210	7974911.844	503574.375	26.07	PR ROQ

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Type 12 (ROQ) Placement

Laydown Area LP5 Type 12 (ROQ) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
10000	7974989.158	503396.249	14.58	ROQ TOP
10001	7974996.237	503395.969	14.305	ROQ TOP
10002	7974999.631	503400.94	14.477	ROQ TOP
10003	7974991.217	503403.772	15.022	ROQ TOP
10004	7974993.164	503409.478	15.337	ROQ TOP
10005	7975001.872	503407.028	14.822	ROQ TOP
10006	7974994.484	503413.048	15.501	ROQ TOP
10007	7975003.105	503411.645	15.088	ROQ TOP
10008	7975004.182	503416.452	15.245	ROQ TOP
10009	7975002.783	503416.935	15.327	ROQ TOP
10010	7974997.455	503416.348	15.581	ROQ TOP
10011	7975185.78	503192.724	11.139	T8 PR
10012	7975178.961	503211.799	11.155	T8 PR
10013	7975134.035	503195.087	11.154	T8 PR
10014	7975137.639	503177.504	11.083	T8 PR
10015	7975089.299	503162.428	10.966	T8 PR
10016	7975085.984	503182.831	10.961	T8 PR

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Type 12 (ROQ) Placement

Laydown Area LP5 Type 12 (ROQ) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
1000	7974990.684	503374.649	13.53	ROQ FINAL
1001	7974990.979	503374.509	13.551	ROQ FINAL
1002	7974985.272	503374.965	13.727	ROQ FINAL
1003	7974985.92	503379.953	14.05	ROQ FINAL
1004	7974977.809	503382.302	14.449	ROQ FINAL
1005	7974980.506	503387.57	14.716	ROQ FINAL
1006	7974982.868	503393.142	14.882	ROQ FINAL
1007	7974989.945	503391.343	14.328	ROQ FINAL
1008	7974995.569	503390.227	14.153	ROQ FINAL
1009	7974993.06	503382.671	13.911	ROQ FINAL
1010	7974997.258	503394.743	14.34	ROQ FINAL
1011	7974991.182	503397.463	14.741	ROQ FINAL
1012	7974985.12	503399.829	15.308	ROQ FINAL

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Type 12 (ROQ) Placement

Laydown Area LP5 Type 12 (ROQ) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
10069	7975035.706	503534.173	20.328	ROQ FINAL
10070	7975036.991	503540.854	20.494	ROQ FINAL
10071	7975039.244	503546.862	20.789	ROQ FINAL
10072	7975040.159	503546.549	20.451	ROQ FINAL
10073	7975043.459	503551.491	20.552	ROQ FINAL
10074	7975042.586	503551.882	20.912	ROQ FINAL
10075	7975043.261	503555.453	21.017	ROQ FINAL
10076	7975043.926	503555.857	20.796	ROQ FINAL
10077	7975036.879	503560.189	21.439	ROQ FINAL
10078	7975030.673	503563.726	21.784	ROQ FINAL
10079	7975023.68	503566.933	22.072	ROQ FINAL
10080	7975023.448	503558.445	21.747	ROQ FINAL
10081	7975024.336	503553.941	21.529	ROQ FINAL
10082	7975034.545	503551.918	21.18	ROQ FINAL
10083	7975032.798	503543.437	20.812	ROQ FINAL
10084	7975026.929	503543.089	21.009	ROQ FINAL
10085	7975025.406	503536.262	20.758	ROQ FINAL

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Laydown Area LP5
Type 12 (ROQ) Placement

Laydown Area LP5 Type 12 (ROQ) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
20033	7974993.207	503383.884	13.993	T12
20034	7974990.8	503372.275	13.594	T12
20035	7974979.423	503369.079	13.558	T12
20036	7974972.141	503367.535	13.742	T12
20037	7974975.081	503374.62	14.099	T12
20038	7974977.391	503379.714	14.178	T12
20039	7974983.957	503380.765	14.138	T12

NUNA

NUNA EAST LTD

(Section 4)

Survey Data
Type 8
(150mm minus)

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Laydown Area LP5
Type 8 (150mm minus) Placement

Laydown Area LP5 Type 8 (150mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
1	7974966.657	503320.927	12.031	TYPE8
2	7974966.663	503320.901	12.019	TYPE8
3	7974960.692	503321.481	12.14	TYPE8
4	7974953.546	503323.166	12.503	TYPE8
5	7974948.607	503325.1	12.444	TYPE8
6	7974942.681	503327.335	12.447	TYPE8
7	7974938.487	503328.432	12.354	TYPE8
8	7974932.563	503330.291	12.57	TYPE8
9	7974929.198	503331.973	12.618	TYPE8
10	7974924.717	503334.054	12.742	TYPE8
11	7974920.635	503335.704	12.688	TYPE8
12	7974912.967	503338.108	12.923	TYPE8
13	7974908.267	503339.715	12.834	TYPE8
14	7974903.65	503341.854	12.805	TYPE8
15	7974901.996	503342.75	12.478	TYPE8
16	7974898.844	503344.494	12.566	TYPE8
17	7974896.006	503336.731	12.504	TYPE8
18	7974901.677	503333.934	12.437	TYPE8
19	7974903.544	503332.977	12.686	TYPE8
20	7974911.04	503329.584	12.59	TYPE8
21	7974917.293	503327.216	12.498	TYPE8
22	7974924.782	503324.125	12.402	TYPE8
23	7974929.562	503322.291	12.309	TYPE8
24	7974935.644	503320.225	12.417	TYPE8
25	7974940.28	503318.778	12.589	TYPE8
26	7974944.086	503317.796	12.412	TYPE8
27	7974952.279	503316.545	12.318	TYPE8
28	7974958.099	503315.776	12.145	TYPE8
29	7974967.238	503315.259	11.854	TYPE8
30	7974970.967	503306.174	11.403	TYPE8
31	7974968.466	503305.688	11.63	TYPE8
32	7974959.313	503306.988	11.896	TYPE8
33	7974948.147	503308.287	12.249	TYPE8
34	7974938.629	503310.405	12.391	TYPE8
35	7974928.484	503313.288	12.309	TYPE8
36	7974918.533	503316.674	12.372	TYPE8
37	7974910.274	503319.452	12.416	TYPE8
38	7974902.921	503322.324	12.469	TYPE8
39	7974895.266	503325.122	12.454	TYPE8

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Laydown Area LP5
Type 8 (150mm minus) Placement

41	7974897.916	503312.559	12.472	TYPE8
42	7974906.887	503309.949	12.37	TYPE8
43	7974917.289	503307.304	12.431	TYPE8
44	7974926.59	503305.559	12.254	TYPE8
45	7974932.923	503304.288	12.253	TYPE8
46	7974940.375	503303.05	12.209	TYPE8
47	7974949.51	503301.639	12.156	TYPE8
48	7974956.565	503300.191	11.765	TYPE8
49	7974962.275	503299.208	11.68	TYPE8
50	7974968.13	503298.435	11.49	TYPE8
51	7974964.057	503285.456	11.564	TYPE8
52	7974955.396	503287.991	11.826	TYPE8
53	7974944.181	503292.033	11.97	TYPE8
54	7974935.537	503295.04	12.239	TYPE8
55	7974926.013	503298.838	12.249	TYPE8
56	7974916.568	503300.985	12.262	TYPE8
57	7974906.912	503303.135	12.346	TYPE8
58	7974899.701	503305.115	12.548	TYPE8
59	7974894.955	503306.469	12.57	TYPE8
153	7974864.658	503224.133	11.882	TYPE8
154	7974862.238	503215.036	11.804	TYPE8
155	7974859.847	503204.076	11.702	TYPE8
156	7974857.264	503194.366	11.664	TYPE8
157	7974854.799	503184.84	11.656	TYPE8
158	7974852.311	503175.375	11.609	TYPE8
159	7974851.041	503168.299	11.575	TYPE8
160	7974863.761	503166.723	11.525	TYPE8
161	7974867.097	503176.12	11.598	TYPE8
162	7974869.906	503183.616	11.647	TYPE8
163	7974873.704	503193.138	11.557	TYPE8
164	7974877.262	503202.865	11.669	TYPE8
165	7974882.843	503216.542	11.792	TYPE8
166	7974888.651	503229.15	11.882	TYPE8
167	7974893.226	503239.536	11.89	TYPE8
168	7974897.876	503250.186	11.934	TYPE8
169	7974876.465	503224.883	11.805	TYPE8
170	7974878.459	503236.231	11.955	TYPE8
171	7974881.835	503249.291	11.929	TYPE8
172	7974884.191	503259.856	12.005	TYPE8
173	7974887.598	503273.268	12.105	TYPE8
174	7974889.506	503281.285	12.145	TYPE8
178	7974897.067	503304.883	12.397	TYPE8

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179	7974897.768	503306.347	12.645	TYPE8
180	7974896.257	503300.676	12.481	TYPE8
182	7974893.431	503292.036	12.709	TYPE8
183	7974892.172	503286.393	12.581	TYPE8
184	7974891.594	503283.633	12.28	TYPE8
185	7974905.782	503297.184	12.29	TYPE8
186	7974901.611	503283.925	12.077	TYPE8
187	7974898.779	503274.718	12.099	TYPE8
188	7974895.021	503264.555	11.993	TYPE8
189	7974892.225	503255.966	12.013	TYPE8
190	7974872.049	503210.026	11.707	TYPE8
191	7974881.757	503172.219	11.501	TYPE8
192	7974883.599	503183.119	11.388	TYPE8
193	7974886.148	503196.002	11.507	TYPE8
194	7974889.582	503207.809	11.63	TYPE8
195	7974893.746	503223.914	11.736	TYPE8
196	7974897.832	503237.897	11.824	TYPE8
197	7974902.437	503252.342	11.928	TYPE8
198	7974906.937	503267.191	12.04	TYPE8
199	7974911.774	503282.598	12.113	TYPE8
200	7974915.726	503294.254	12.184	TYPE8
201	7974927.172	503290.992	12.208	TYPE8
202	7974922.86	503279.946	12.121	TYPE8
203	7974918.452	503266.73	12.024	TYPE8
204	7974914.834	503253.919	11.906	TYPE8
205	7974911.307	503241.396	11.799	TYPE8
206	7974906.304	503224.119	11.636	TYPE8
207	7974903.194	503210.026	11.559	TYPE8
208	7974899.126	503196.372	11.463	TYPE8
209	7974894.871	503180.803	11.356	TYPE8
210	7974911.6	503183.997	11.269	TYPE8
211	7974913.828	503197.44	11.408	TYPE8
212	7974917.3	503210.512	11.533	TYPE8
213	7974921.048	503224.461	11.559	TYPE8
214	7974924.579	503237.427	11.715	TYPE8
215	7974929.015	503253.245	11.75	TYPE8
216	7974932.758	503266.047	11.873	TYPE8
217	7974936.322	503278.699	11.989	TYPE8
218	7974939.176	503288.97	12.089	TYPE8
219	7974949.93	503286.316	11.896	TYPE8
220	7974947.042	503274.497	11.706	TYPE8
221	7974943.561	503262.595	11.653	TYPE8

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222	7974939.982	503250.977	11.665	TYPE8
223	7974936.77	503238.898	11.667	TYPE8
224	7974933.615	503224.703	11.466	TYPE8
225	7974930.901	503213.051	11.417	TYPE8
226	7974929.327	503201.273	11.352	TYPE8
227	7974928.448	503191.302	11.194	TYPE8
228	7974943.079	503205.398	11.34	TYPE8
229	7974944.988	503214.345	11.29	TYPE8
230	7974947.598	503223.246	11.366	TYPE8
231	7974950.415	503232.375	11.379	TYPE8
232	7974952.997	503242.37	11.298	TYPE8
233	7974955.596	503251.189	11.25	TYPE8
234	7974958.353	503260.85	11.412	TYPE8
235	7974960.78	503270.635	11.487	TYPE8
236	7974962.368	503279.976	11.537	TYPE8
237	7974965.133	503288.594	11.391	TYPE8
241	7974891.85	503340.386	12.409	TYPE8 TOE
271	7974840.451	503171.069	11.515	TYPE8 CREST

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Laydown Area LP5
Type 8 (150mm minus) Placement

Laydown Area LP5 Type 8 (150mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
1000	7974890.505	503184.843	11.463	T8 FINAL
1001	7974898.675	503185.832	11.43	T8 FINAL
1002	7974913.938	503190.503	11.388	T8 FINAL
1003	7974930.868	503195.672	11.32	T8 FINAL
1004	7974940.156	503199.732	11.29	T8 FINAL
1005	7974943.81	503210.444	11.366	T8 FINAL
1006	7974947.902	503223.224	11.354	T8 FINAL
1007	7974952.41	503239.418	11.399	T8 FINAL
1008	7974956.973	503255.893	11.373	T8 FINAL
1009	7974961.429	503272.009	11.423	T8 FINAL
1010	7974965.339	503286.293	11.455	T8 FINAL
1011	7974968.468	503297.654	11.559	T8 FINAL
1012	7974971.522	503306.568	11.52	T8 FINAL
1013	7974967.937	503320.208	12.099	T8 FINAL
1014	7974965.652	503332.786	12.62	T8 FINAL
1015	7974957.84	503332.829	12.636	T8 FINAL
1016	7974953.611	503322.445	12.434	T8 FINAL
1017	7974946.665	503309.735	12.362	T8 FINAL
1018	7974938.552	503298.652	12.25	T8 FINAL
1019	7974931.276	503290.825	12.217	T8 FINAL
1020	7974923.039	503282.405	12.209	T8 FINAL
1021	7974913.587	503272.71	12.134	T8 FINAL
1022	7974904.232	503263.362	12.036	T8 FINAL
1023	7974895.137	503254.369	11.99	T8 FINAL
1024	7974885.824	503244.961	11.995	T8 FINAL
1025	7974876.475	503235.6	11.922	T8 FINAL
1026	7974863.375	503222.524	11.875	T8 FINAL
1027	7974858.515	503213.143	11.837	T8 FINAL
1028	7974853.226	503199.97	11.732	T8 FINAL
1029	7974846.921	503185.812	11.623	T8 FINAL
1030	7974839.823	503167.265	11.572	T8 FINAL
1031	7974855.671	503172.707	11.556	T8 FINAL
1032	7974871.832	503177.137	11.467	T8 FINAL
1033	7974859.399	503181.707	11.591	T8 FINAL
1034	7974865.167	503194.556	11.616	T8 FINAL
1035	7974877.808	503190.071	11.529	T8 FINAL
1036	7974898.019	503197.57	11.494	T8 FINAL
1037	7974885.274	503201.339	11.574	T8 FINAL
1038	7974870.461	503205.46	11.686	T8 FINAL

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1039	7974876.795	503218.687	11.765	T8 FINAL
1040	7974891.305	503216.585	11.696	T8 FINAL
1041	7974903.337	503213.124	11.595	T8 FINAL
1042	7974914.64	503209.66	11.55	T8 FINAL
1043	7974927.867	503205.687	11.416	T8 FINAL
1044	7974935.56	503217.786	11.485	T8 FINAL
1045	7974925.063	503222.683	11.596	T8 FINAL
1046	7974912.131	503227.349	11.691	T8 FINAL
1047	7974900.651	503231.23	11.809	T8 FINAL
1048	7974889.041	503234.149	11.896	T8 FINAL
1049	7974897.184	503247.566	11.964	T8 FINAL
1050	7974911.007	503244.039	11.85	T8 FINAL
1051	7974923.976	503239.825	11.78	T8 FINAL
1052	7974936.71	503233.79	11.62	T8 FINAL
1053	7974943.816	503246.305	11.559	T8 FINAL
1054	7974930.858	503251.294	11.765	T8 FINAL
1055	7974917.26	503256.58	11.932	T8 FINAL
1056	7974924.542	503268.181	12.03	T8 FINAL
1057	7974935.838	503264.852	11.752	T8 FINAL
1058	7974948.771	503259.102	11.621	T8 FINAL
1059	7974955.49	503274.65	11.584	T8 FINAL
1060	7974940.49	503280.575	11.907	T8 FINAL
1061	7974946.352	503295.494	12.002	T8 FINAL
1062	7974955.598	503290.571	11.727	T8 FINAL
1063	7974963.795	503301.896	11.659	T8 FINAL
1064	7974951.962	503304.515	12.069	T8 FINAL
1065	7974957.309	503312.652	12.115	T8 FINAL
1066	7974964.69	503312.758	11.845	T8 FINAL
1067	7974943.839	503338.349	12.624	T8 FINAL
1068	7974939.395	503327.262	12.41	T8 FINAL
1069	7974932.999	503316.667	12.35	T8 FINAL
1070	7974927.217	503308.557	12.271	T8 FINAL
1071	7974918.259	503298.457	12.182	T8 FINAL
1072	7974909.548	503290.469	12.145	T8 FINAL
1073	7974902.101	503282.835	12.095	T8 FINAL
1074	7974893.439	503273.842	12.044	T8 FINAL
1075	7974884.798	503265.299	12.05	T8 FINAL
1076	7974880.023	503260.339	12.077	T8 FINAL
1077	7974872.216	503242.338	11.987	T8 FINAL

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Laydown Area LP5 Type 8 (150mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
1000	7974934.34	503330.119	12.864	T8 FINAL
1001	7974930.582	503331.334	13.212	T8 FINAL
1002	7974928.47	503324.108	12.829	T8 FINAL
1003	7974919.343	503326.422	12.838	T8 FINAL
1004	7974921.895	503334.467	13.295	T8 FINAL
1005	7974912.481	503337.409	13.275	T8 FINAL
1006	7974910.178	503328.597	12.877	T8 FINAL
1007	7974899.816	503332.234	12.616	T8 FINAL
1008	7974902.263	503341.949	13.243	T8 FINAL
1009	7974897.287	503343.516	12.742	T8 FINAL
1010	7974891.102	503347.14	13.307	T8 FINAL
1011	7974889.818	503344.016	13.142	T8 FINAL
1012	7974890.935	503335.233	13.126	T8 FINAL
1013	7974892.453	503324.322	13.119	T8 FINAL
1014	7974901.533	503321.769	12.542	T8 FINAL
1015	7974911.217	503318.752	12.509	T8 FINAL
1016	7974922.342	503316.451	12.423	T8 FINAL
1017	7974928.401	503315.365	12.414	T8 FINAL
1018	7974922.441	503307.375	12.316	T8 FINAL
1019	7974914.038	503309.693	12.373	T8 FINAL
1020	7974904.502	503312.899	12.406	T8 FINAL
1021	7974893.517	503316.759	13.119	T8 FINAL
1022	7974894.614	503306.392	13.082	T8 FINAL
1023	7974895.748	503300.306	13.138	T8 FINAL
1024	7974908.568	503297.621	12.201	T8 FINAL
1025	7974901.552	503287.602	12.297	T8 FINAL
1026	7974892.387	503290.316	12.724	T8 FINAL
1027	7974886.637	503275.904	12.169	T8 FINAL
1028	7974891.735	503274.001	12.07	T8 FINAL
1029	7974895.768	503361.117	14.037	T8 FINAL
1030	7974901.914	503358.351	13.069	T8 FINAL
1031	7974907.56	503355.914	13.308	T8 FINAL
1032	7974911.092	503366.203	13.375	T8 FINAL
1033	7974906.014	503368.311	13.262	T8 FINAL
1034	7974899.339	503369.911	14.336	T8 FINAL

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Laydown Area LP5 Type 8 (150mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
808001	7974985.231	503480.024	18.167	TYPE8
808002	7974991.765	503480.037	19.007	TYPE8
808003	7974993.352	503480.047	19.069	TYPE8
808004	7974996.753	503479.737	18.99	TYPE8
808005	7974999.838	503479.467	18.915	TYPE8
808006	7975004.922	503478.978	18.791	TYPE8
808007	7975006.985	503478.957	18.749	TYPE8
808008	7975005.848	503468.63	18.338	TYPE8
808009	7975000.004	503469.198	18.444	TYPE8
808010	7974992.179	503470.585	18.39	TYPE8
808011	7974988.23	503470.462	17.935	TYPE8
808012	7974987.725	503460.635	17.63	TYPE8
808013	7974991.377	503459.62	17.818	TYPE8
808014	7974999.43	503457.981	17.869	TYPE8
808015	7975003.725	503457.215	17.761	TYPE8
808016	7975001.131	503446.319	17.249	TYPE8
808017	7974998.725	503446.906	17.399	TYPE8
808018	7974990.729	503448.754	17.446	TYPE8
808019	7974987.003	503449.886	17.431	TYPE8
808020	7974985.433	503450.191	17.27	TYPE8
808021	7974981.93	503439.645	16.947	TYPE8
808022	7974986.394	503438.22	17.069	TYPE8
808023	7974993.877	503436.016	17.011	TYPE8
808024	7974996.18	503435.108	16.899	TYPE8
808025	7974991.355	503423	16.227	TYPE8
808026	7974988.4	503423.559	16.346	TYPE8
808027	7974981.547	503425.991	16.53	TYPE8
808028	7974979.654	503426.715	16.471	TYPE8
808029	7974977.303	503427.709	16.323	TYPE8
808030	7974972.751	503416.051	15.921	TYPE8
808031	7974980.117	503413.429	15.852	TYPE8
808032	7974985.808	503411.044	15.822	TYPE8
808033	7974987.453	503410.59	15.641	TYPE8
808034	7974983.3	503398.041	15.22	TYPE8
808035	7974980.956	503398.284	15.337	TYPE8
808036	7974974.136	503400.577	15.338	TYPE8
808037	7974967.962	503403.223	15.352	TYPE8
808038	7974964.548	503391.99	14.773	TYPE8
808039	7974969.05	503390.357	14.856	TYPE8

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808040	7974976.227	503387.434	14.822	TYPE8
808041	7974978.697	503386.834	14.638	TYPE8
808042	7974974.559	503375.826	14.133	TYPE8
808043	7974972.478	503376.661	14.341	TYPE8
808044	7974966.571	503379.136	14.348	TYPE8
808045	7974961.46	503381.139	14.332	TYPE8
808046	7974959.018	503381.66	13.83	TYPE8
808047	7974952.814	503372.64	13.294	TYPE8
808048	7974956.597	503371.475	13.984	TYPE8
808049	7974962.587	503369.557	13.98	TYPE8
808050	7974968.517	503367.881	13.796	TYPE8
808051	7974967.4	503358.07	13.354	TYPE8
808052	7974964.302	503358.155	13.397	TYPE8
808053	7974958.528	503361.822	13.631	TYPE8
808054	7974953.271	503363.804	13.549	TYPE8
808055	7974990.693	503497.408	19.808	TYPE8
808056	7974994.427	503497.579	19.975	TYPE8
808057	7975000.757	503497.318	19.945	TYPE8
808058	7975006.328	503497.052	19.714	TYPE8
808059	7975008.184	503508.474	20.058	TYPE8
808060	7975004.89	503508.671	20.316	TYPE8
808061	7974999.255	503509.017	20.438	TYPE8
808062	7974993.439	503508.91	20.459	TYPE8
808063	7974990.7	503508.61	20.111	TYPE8
808064	7974990.333	503520.598	20.631	TYPE8
808065	7974992.603	503520.783	20.986	TYPE8
808066	7974997.065	503521.319	21.058	TYPE8
808067	7975003.717	503521.383	20.976	TYPE8
808068	7975006.074	503521.899	20.877	TYPE8
808069	7975008.123	503522.322	20.435	TYPE8
808070	7975007.419	503532.599	20.915	TYPE8
808071	7975005.332	503532.748	21.419	TYPE8
808072	7974999.221	503532.847	21.624	TYPE8
808073	7974990.878	503532.222	21.599	TYPE8
808074	7974988.687	503531.874	21.238	TYPE8
808075	7974987.7	503539.412	21.771	TYPE8
808076	7974989.701	503539.92	22.137	TYPE8
808077	7974994.455	503540.242	22.161	TYPE8
808078	7975001.141	503541.06	22.015	TYPE8
808079	7975004.796	503541.744	21.73	TYPE8
808080	7975006.557	503542.086	21.379	TYPE8
808081	7975006.996	503550.987	21.832	TYPE8

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808082	7975005.087	503550.885	22.256	TYPE8
808083	7974999.162	503550.315	22.403	TYPE8
808084	7974993.318	503549.374	22.609	TYPE8
808085	7974987.233	503547.928	22.651	TYPE8
808086	7974985.969	503547.4	22.667	TYPE8
808087	7974984.561	503546.244	22.126	TYPE8
808088	7974980.521	503550.676	22.551	TYPE8
808089	7974981.807	503552.011	22.962	TYPE8
808090	7974986.617	503553.641	23.016	TYPE8
808091	7974991.649	503556.746	22.9	TYPE8
808092	7974999.525	503559.868	22.721	TYPE8
808093	7975006.094	503561.691	22.421	TYPE8
808094	7975006.868	503561.873	22.213	TYPE8
808095	7975007.371	503571.013	22.543	TYPE8
808096	7975005.089	503570.899	22.721	TYPE8
808097	7974996.464	503569.386	23.003	TYPE8
808098	7974990.065	503567.394	23.22	TYPE8
808099	7974983.879	503564.753	23.428	TYPE8
808100	7974978.423	503561.289	23.536	TYPE8
808101	7974975.382	503558.252	23.445	TYPE8
808102	7974974.593	503557.057	23.225	TYPE8
808103	7974972.962	503555.173	23.093	TYPE8

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Laydown Area LP5 Type 8 (150mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
815001	7975006.875	503492.061	19.612	TYPE8
815002	7974999.375	503491.531	19.647	TYPE8
815003	7974990.448	503491.397	19.547	TYPE8
815004	7974990.762	503482.894	19.223	TYPE8
815005	7975000.109	503482.783	19.211	TYPE8
815006	7975007.166	503483.262	19.204	TYPE8
815007	7975006.315	503502.711	19.931	TYPE8
815008	7975002.134	503502.367	20.146	TYPE8
815009	7974996.387	503501.796	20.135	TYPE8
815010	7974990.683	503501.605	20.094	TYPE8
815011	7974991.096	503515.388	20.737	TYPE8
815012	7974998.707	503515.597	20.805	TYPE8
815013	7975006.934	503516.268	20.628	TYPE8
815014	7975006.885	503525.436	21.156	TYPE8
815015	7974991.351	503524.64	21.151	TYPE8
815016	7974990.411	503535.744	21.776	TYPE8
815017	7974992.059	503536.21	21.863	TYPE8
815018	7975005.471	503538.894	21.734	TYPE8
815019	7975003.684	503548.92	22.191	TYPE8
815020	7974989.405	503541.163	22.217	TYPE8
815021	7974985.128	503549.666	22.789	TYPE8
815022	7974994.074	503550.767	22.602	TYPE8
815023	7975002.105	503552.087	22.366	TYPE8
815024	7975007.228	503474.166	18.787	TYPE8
815025	7974999.026	503474.185	18.787	TYPE8
815026	7974990.678	503474.486	18.762	TYPE8
815027	7974988.777	503462.567	18.15	TYPE8
815028	7974997.208	503461.003	18.181	TYPE8
815029	7975004.913	503459.704	18.136	TYPE8
815030	7975001.869	503447.373	17.677	TYPE8
815031	7974993.65	503450.222	17.634	TYPE8
815032	7974985.938	503452.075	17.607	TYPE8
815033	7974982.139	503439.718	17.056	TYPE8
815034	7974989.032	503436.969	17.07	TYPE8
815035	7974996.907	503434.838	17.07	TYPE8
815036	7974992.289	503423.996	16.529	TYPE8
815037	7974984.598	503425.711	16.568	TYPE8
815038	7974977.228	503427.852	16.539	TYPE8
815039	7974972.189	503416.393	15.97	TYPE8

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Laydown Area LP5
Type 8 (150mm minus) Placement

815040	7974981.023	503414.097	16.05	TYPE8
815041	7974988.34	503412.01	16.01	TYPE8
815042	7974984.137	503400.816	15.57	TYPE8
815043	7974976.684	503403.467	15.571	TYPE8
815044	7974968.56	503405.185	15.498	TYPE8
815045	7974964.414	503394.47	14.969	TYPE8
815046	7974971.952	503391.148	15.02	TYPE8
815047	7974979.19	503388.452	14.95	TYPE8
815048	7974974.897	503377.845	14.487	TYPE8
815049	7974965.618	503381.105	14.507	TYPE8
815050	7974960.055	503382.909	14.414	TYPE8
815051	7974956.137	503372.789	14.039	TYPE8
815052	7974962.41	503369.922	14.088	TYPE8
815053	7974970.605	503367.341	14.006	TYPE8
815054	7974970.575	503365.438	13.593	TYPE8 TOE
815055	7974974.378	503374.685	14.061	TYPE8 TOE
815056	7974977.441	503382.471	14.403	TYPE8 TOE
815057	7974981.174	503391.641	14.806	TYPE8 TOE
815058	7974984.717	503400.091	15.258	TYPE8 TOE
815059	7974988.075	503409.302	15.663	TYPE8 TOE
815060	7974991.292	503418.491	15.898	TYPE8 TOE
815061	7974994.254	503426.423	16.41	TYPE8 TOE
815062	7974998.422	503436.529	16.92	TYPE8 TOE
815063	7975002.139	503445.204	17.182	TYPE8 TOE
815064	7975004.532	503454.819	17.644	TYPE8 TOE
815065	7975006.828	503464.249	17.962	TYPE8 TOE
815066	7975007.692	503472.45	18.463	TYPE8 TOE
815067	7975007.907	503482.957	18.845	TYPE8 TOE
815068	7975007.182	503495.1	19.591	TYPE8 TOE
815069	7975007.081	503512.255	20.286	TYPE8 TOE
815070	7975007.605	503512.501	20.291	TYPE8 TOE
815071	7975008.452	503520.311	20.314	TYPE8 TOE
815072	7975007.826	503530.952	20.83	TYPE8 TOE
815073	7975006.839	503539.199	21.221	TYPE8 TOE
815074	7975007.242	503545.439	21.517	TYPE8 TOE
815075	7975007.275	503552.03	21.834	TYPE8 TOE

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Laydown Area LP5
Type 8 (150mm minus) Placement

Laydown Area LP5 Type 8 (150mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
815001	7974964.06	503564.63	23.921	TYPE8
815002	7974966.288	503571.359	23.774	TYPE8
815003	7974968.542	503577.15	23.726	TYPE8
815004	7974977.855	503574.693	23.408	TYPE8
815005	7974975.204	503568.608	23.824	TYPE8
815006	7974971.347	503561.043	23.617	TYPE8
815007	7974977.448	503556.447	23.269	TYPE8
815008	7974982.638	503563.472	23.432	TYPE8
815009	7974986.154	503568.998	23.255	TYPE8
815010	7974992.092	503563.01	23.026	TYPE8
815011	7974988.729	503558.333	23.019	TYPE8
815012	7974984.674	503553.105	23.034	TYPE8
815013	7974982.551	503551.065	22.842	TYPE8
815014	7974986.436	503545.358	22.37	TYPE8
815015	7974990.963	503548.307	22.605	TYPE8
815016	7974999.546	503553.829	22.539	TYPE8
815017	7975003.065	503544.902	22.011	TYPE8
815018	7974995.486	503542.188	22.245	TYPE8
815019	7974989.715	503540.48	22.191	TYPE8
815020	7974988.743	503540.026	22.051	TYPE8
815021	7974991.255	503530.613	21.498	TYPE8
815022	7974998.591	503531.882	21.574	TYPE8
815023	7975006.34	503532.916	21.25	TYPE8
815024	7975006.744	503522.163	20.729	TYPE8
815025	7975004.168	503521.934	20.901	TYPE8
815026	7974994.582	503521.193	21.068	TYPE8
815027	7974991.502	503520.755	20.845	TYPE8
815028	7974991.502	503511.15	20.365	TYPE8
815029	7974994.071	503510.897	20.548	TYPE8
815030	7975000.136	503511.093	20.57	TYPE8
815031	7975006.847	503511.134	20.311	TYPE8
815032	7975006.803	503498.559	19.773	TYPE8
815033	7974999.541	503499.21	20.041	TYPE8
815034	7974991.638	503498.915	19.898	TYPE8
815035	7974991.726	503486.937	19.349	TYPE8
815036	7974998.623	503486.803	19.346	TYPE8
815037	7975006.767	503486.636	19.108	TYPE8
815038	7975006.599	503473.863	18.514	TYPE8
815039	7974998.777	503474.622	18.689	TYPE8

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815040	7974991.464	503475.279	18.611	TYPE8
815041	7974989.736	503464.334	18.015	TYPE8
815042	7974997.162	503462.816	18.115	TYPE8
815043	7975002.076	503462.79	18.172	TYPE8
815044	7975004.866	503462.135	17.899	TYPE8
815045	7975002.313	503452.016	17.515	TYPE8
815046	7974994.609	503453.105	17.641	TYPE8
815047	7974987.308	503454.478	17.493	TYPE8
815048	7974983.529	503444.336	17.137	TYPE8
815049	7974991.007	503442.727	17.171	TYPE8
815050	7974998.334	503440.656	17.127	TYPE8
815051	7974994.443	503429.287	16.539	TYPE8
815052	7974986.974	503431.481	16.775	TYPE8
815053	7974979.548	503433.185	16.733	TYPE8
815054	7974974.605	503421.076	16.152	TYPE8
815055	7974982.124	503418.853	16.077	TYPE8
815056	7974989.354	503416.668	15.959	TYPE8
815057	7974985.53	503405.396	15.443	TYPE8
815058	7974977.751	503407.185	15.613	TYPE8
815059	7974970.156	503409.649	15.544	TYPE8
815060	7974966.118	503397.618	15.04	TYPE8
815061	7974973.259	503395.406	15.106	TYPE8
815062	7974978.731	503394.154	15.127	TYPE8
815063	7974981.2	503393.207	14.926	TYPE8
815064	7974976.995	503382.782	14.46	TYPE8
815065	7974969.562	503385.734	14.69	TYPE8
815066	7974963.331	503387.522	14.591	TYPE8
815067	7974962.441	503387.939	14.334	TYPE8
815068	7974957.986	503377.157	13.836	TYPE8
815069	7974959.546	503376.61	14.148	TYPE8
815070	7974965.321	503374.077	14.134	TYPE8
815071	7974972.631	503371.786	13.963	TYPE8
815072	7974979.604	503575.453	23.327	TYPE8
815073	7974979.357	503581.786	23.114	TYPE8
815074	7974989.127	503581.655	22.903	TYPE8
815075	7974989.135	503573.084	23.168	TYPE8
815076	7974997.292	503571.793	22.892	TYPE8
815077	7974996.787	503580.431	22.754	TYPE8
815078	7975005.635	503580.084	22.501	TYPE8
815079	7975004.198	503569.402	22.715	TYPE8
815080	7975003.753	503558.97	22.52	TYPE8

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Laydown Area LP5 Type 8 (150mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
1000	7974803.272	503360.649	12.656	T8 FINAL
1001	7974805.283	503370.786	13.201	T8 FINAL
1002	7974808.925	503381.251	13.861	T8 FINAL
1003	7974812.303	503390.344	14.465	T8 FINAL
1004	7974816.398	503400.871	15.018	T8 FINAL
1005	7974825.07	503403.536	15.402	T8 FINAL
1006	7974822.925	503394.503	14.871	T8 FINAL
1007	7974820.942	503385.401	14.317	T8 FINAL
1008	7974818.41	503375.606	13.734	T8 FINAL
1009	7974815.887	503366.037	13.17	T8 FINAL
1010	7974813.242	503357.888	12.788	T8 FINAL
1011	7974822.741	503355.25	12.824	T8 FINAL
1012	7974825.149	503364.675	13.232	T8 FINAL
1013	7974827.198	503375.309	13.841	T8 FINAL
1014	7974831.286	503383.989	14.4	T8 FINAL
1015	7974835.634	503393.476	15.041	T8 FINAL
1016	7974838.579	503400.072	15.461	T8 FINAL
1017	7974847.492	503395.608	15.399	T8 FINAL
1018	7974845.318	503387.846	14.864	T8 FINAL
1019	7974843.126	503379.378	14.371	T8 FINAL
1020	7974841.508	503370.774	13.857	T8 FINAL
1021	7974837.984	503362.304	13.44	T8 FINAL
1022	7974836.624	503352.591	13.015	T8 FINAL
1023	7974845.87	503349.554	13.125	T8 FINAL
1024	7974852.746	503347.63	13.188	T8 FINAL
1025	7974855.177	503355.157	13.204	T8 FINAL
1026	7974856.917	503363.725	13.935	T8 FINAL
1027	7974858.543	503369.242	14.52	T8 FINAL
1028	7974860.277	503375.561	14.783	T8 FINAL
1029	7974864.204	503387.693	15.314	T8 FINAL
1030	7974868.783	503384.474	15.467	T8 FINAL
1031	7974869.984	503379.94	15.461	T8 FINAL

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Laydown Area LP5
Type 8 (150mm minus) Placement

Laydown Area LP5 Type 8 (150mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
10000	7975033.697	503529.242	20.214	T8 FINAL
10001	7975036.295	503532.946	20.323	T8 FINAL
10002	7975027.369	503532.137	20.648	T8 FINAL
10003	7975016.519	503530.6	21.014	T8 FINAL
10004	7975007.499	503530.585	21.359	T8 FINAL
10005	7975007.461	503517.469	20.768	T8 FINAL
10006	7975015.559	503515.902	20.416	T8 FINAL
10007	7975024.512	503514.456	19.889	T8 FINAL
10008	7975030.814	503513.746	19.519	T8 FINAL
10009	7975025.277	503504.439	19.306	T8 FINAL
10010	7975016.306	503506.264	19.864	T8 FINAL
10011	7975007.794	503506.325	20.263	T8 FINAL
10012	7975008.118	503496.6	19.794	T8 FINAL
10013	7975015.87	503495.654	19.361	T8 FINAL
10014	7975023.722	503494.56	18.822	T8 FINAL
10015	7975021.393	503484.202	18.421	T8 FINAL
10016	7975013.078	503485.38	18.999	T8 FINAL
10017	7975007.898	503485.639	19.262	T8 FINAL
10018	7975008.926	503475.202	18.751	T8 FINAL
10019	7975015.085	503474.314	18.305	T8 FINAL
10020	7975018.898	503473.684	17.944	T8 FINAL
10021	7975015.386	503464.201	17.661	T8 FINAL
10022	7975011.824	503465.023	17.994	T8 FINAL
10023	7975006.519	503465.907	18.428	T8 FINAL
10024	7975004.791	503457.484	18.042	T8 FINAL
10025	7975009.741	503456.176	17.585	T8 FINAL
10026	7975013.539	503455.269	17.173	T8 FINAL
10027	7975010.622	503447.076	16.933	T8 FINAL
10028	7975003.52	503448.69	17.568	T8 FINAL
10029	7975000.764	503440.688	17.21	T8 FINAL
10030	7975008.179	503439.081	16.591	T8 FINAL
10031	7975004.46	503430.31	16.271	T8 FINAL
10032	7974996.87	503432.251	16.875	T8 FINAL
10033	7974993.107	503423.761	16.587	T8 FINAL
10034	7975000.38	503421.932	16.073	T8 FINAL
10035	7974997.785	503412.227	15.609	T8 FINAL
10036	7974990.484	503415.024	16.121	T8 FINAL
10037	7974987.331	503405.181	15.698	T8 FINAL
10038	7974994.954	503404.019	15.288	T8 FINAL

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10039	7975001.382	503402.464	14.869	T8 FINAL
10040	7975003.599	503411.061	15.231	T8 FINAL
10041	7975006.221	503419.341	15.501	T8 FINAL
10042	7975007.953	503427.511	15.975	T8 FINAL
10043	7975010.69	503439.511	16.434	T8 FINAL
10044	7975012.957	503448.655	16.943	T8 FINAL
10045	7975015.825	503458.943	17.335	T8 FINAL
10046	7975018.373	503468.005	17.638	T8 FINAL
10047	7975021.182	503477.339	18.049	T8 FINAL
10048	7975023.422	503486.109	18.26	T8 FINAL

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Laydown Area LP5
Type 8 (150mm minus) Placement

Laydown Area LP5 Type 8 (150mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
911055	7974897.968	503365.529	14.155	TYPE8
911056	7974903.448	503363.723	13.262	TYPE8
911057	7974906.524	503362.543	13.248	TYPE8
911058	7974909.464	503361.42	13.287	TYPE8
911059	7974912.262	503368.768	13.252	TYPE8
911060	7974908.868	503370.284	13.295	TYPE8
911061	7974906.349	503370.888	13.341	TYPE8
911062	7974901.025	503372.667	14.385	TYPE8
911063	7974902.727	503378.232	14.236	TYPE8
911064	7974905.842	503377.696	13.952	TYPE8
911065	7974907.778	503377.04	13.629	TYPE8
911066	7974909.4	503376.783	13.365	TYPE8
911067	7974915.507	503374.584	13.438	TYPE8

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Laydown Area LP5
Type 8 (150mm minus) Placement

Laydown Area LP5 Type 8 (150mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
2000	7975042.383	503555.537	21.291	T8
2001	7975047.863	503573.591	21.995	T8
2002	7975035.198	503574.074	22.405	T8
2003	7975021.314	503575.146	22.819	T8
2004	7975010.202	503575.999	23.044	T8
2005	7975011.351	503571.816	22.93	T8
2006	7975021.725	503567.561	22.535	T8
2007	7975035.568	503559.82	21.748	T8

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Laydown Area LP5
Type 8 (150mm minus) Placement

Laydown Area LP5 Type 8 (150mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
20033	7974993.504	503383.379	14.253	T8
20034	7974993.497	503383.384	14.264	T8
20035	7974972.027	503367.718	14.064	T5
20036	7974976.279	503368.656	14.056	T5
20037	7974983.476	503371.131	13.909	T5
20038	7974992.819	503374.968	13.887	T5
20039	7974979.734	503384.038	14.713	T5
20040	7974975.759	503377.915	14.474	T5
20041	7974985.318	503377.397	14.208	T5

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(Section 4)

Survey Data
Type 5
(32mm minus)

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Laydown Area LP5
Type 5 (32mm minus) Placement

Laydown Area LP5 Type 5 (32mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
817001	7974941.127	503335.415	12.625	TYPE5
817002	7974950.232	503334.927	12.658	TYPE5
817003	7974958.58	503334.166	12.758	TYPE5
817004	7974964.057	503335.044	12.727	TYPE5
817005	7974963.53	503343.83	13.192	TYPE5
817006	7974954.998	503345.637	13.172	TYPE5
817007	7974946.967	503347.696	13.102	TYPE5
817008	7974951.167	503358.092	13.598	TYPE5
817009	7974958.76	503355.844	13.587	TYPE5
817010	7974965.535	503354.702	13.613	TYPE5
817011	7974970.188	503366.963	14.225	TYPE5
817012	7974963.545	503369.514	14.228	TYPE5
817013	7974956.654	503371.647	14.161	TYPE5
817014	7974960.458	503382.213	14.692	TYPE5
817015	7974967.502	503380.483	14.731	TYPE5
817016	7974974.964	503378.142	14.708	TYPE5
817017	7974979.443	503390.069	15.267	TYPE5
817018	7974972.481	503393.261	15.295	TYPE5
817019	7974965.658	503395.621	15.286	TYPE5
817020	7974969.306	503406.055	15.737	TYPE5
817021	7974976.371	503403.903	15.768	TYPE5
817022	7974984.083	503401.608	15.758	TYPE5
817023	7974988.596	503413.752	16.31	TYPE5
817024	7974981.827	503416.688	16.35	TYPE5
817025	7974974.202	503419.201	16.327	TYPE5
817026	7974978.74	503431.257	16.85	TYPE5
817027	7974986.36	503429.028	16.914	TYPE5
817028	7974993.504	503426.983	16.892	TYPE5
817029	7974998.192	503438.206	17.411	TYPE5
817030	7974990.851	503441.37	17.459	TYPE5
817031	7974983.63	503443.539	17.429	TYPE5
817032	7974986.93	503453.04	17.886	TYPE5
817033	7974994.374	503451.367	17.897	TYPE5
817034	7975001.918	503449.795	17.929	TYPE5
817035	7975004.278	503459.609	18.356	TYPE5
817036	7974997.144	503460.929	18.341	TYPE5
817037	7974989.521	503462.111	18.347	TYPE5
817038	7974991.045	503473.042	18.867	TYPE5
817039	7974998.772	503472.725	18.914	TYPE5

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Laydown Area LP5
Type 5 (32mm minus) Placement

817040	7975006.468	503472.401	18.954	TYPE5
817041	7975006.821	503484.85	19.468	TYPE5
817042	7974999.22	503485.393	19.503	TYPE5
817043	7974990.863	503485.002	19.46	TYPE5
817044	7974990.836	503497.348	20.033	TYPE5
817045	7974999.36	503497.286	20.049	TYPE5
817046	7975006.914	503497.746	20.018	TYPE5
817047	7975006.37	503509.663	20.505	TYPE5
817048	7975002.214	503509.415	20.595	TYPE5
817049	7974996.067	503509.555	20.614	TYPE5
817050	7974991.402	503509.563	20.611	TYPE5
817051	7974991.521	503520.669	21.114	TYPE5
817052	7974999.024	503521.541	21.188	TYPE5
817053	7975006.712	503522.334	21.236	TYPE5
817054	7975006.262	503532.174	21.636	TYPE5
817055	7974998.924	503531.39	21.642	TYPE5
817056	7974990.972	503530.533	21.667	TYPE5
817057	7974989.83	503540.249	22.178	TYPE5
817058	7974997.018	503541.945	22.184	TYPE5
817059	7975004.899	503543.349	22.084	TYPE5
817060	7975004.41	503552.628	22.354	TYPE5
817061	7974999.277	503552.384	22.595	TYPE5
817062	7974992.529	503551.704	22.797	TYPE5
817063	7974984.69	503550.825	22.93	TYPE5
817064	7974980.749	503560.217	23.419	TYPE5
817065	7974989.507	503560.885	23.141	TYPE5
817066	7974997.572	503561.74	22.882	TYPE5
817067	7975004.925	503562.114	22.597	TYPE5
817068	7975005.459	503570.289	22.681	TYPE5
817069	7974997.242	503570.487	22.946	TYPE5
817070	7974989.784	503570.48	23.249	TYPE5
817071	7974984.612	503570.151	23.325	TYPE5
817072	7974984.008	503579.122	23.094	TYPE5
817073	7974991.564	503579.156	22.935	TYPE5
817074	7975000.385	503578.944	22.71	TYPE5
817075	7975005.804	503579.002	22.528	TYPE5

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
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Laydown Area LP5
Type 5 (32mm minus) Placement

Laydown Area LP5 Type 5 (32mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
10000	7974863.67	503583.088	29.904	T5 FINAL
10001	7974861.487	503575.146	28.756	T5 FINAL
10002	7974859.072	503566.226	27.452	T5 FINAL
10003	7974855.67	503554.104	25.822	T5 FINAL
10004	7974853.18	503546.26	24.517	T5 FINAL
10005	7974850.291	503535.256	23.463	T5 FINAL
10006	7974859.824	503532.112	23.445	T5 FINAL
10007	7974862.832	503542.374	24.306	T5 FINAL
10008	7974865.423	503551.49	25.338	T5 FINAL
10009	7974867.528	503562.772	26.857	T5 FINAL
10010	7974868.912	503572.616	28.25	T5 FINAL
10011	7974870.698	503582.414	29.552	T5 FINAL
10012	7974879.424	503581.473	29.094	T5 FINAL
10013	7974878.266	503571.839	27.896	T5 FINAL
10014	7974875.663	503561.23	26.546	T5 FINAL
10015	7974872.508	503549.615	25.069	T5 FINAL
10016	7974870.377	503539.662	23.996	T5 FINAL
10017	7974867.558	503529.058	23.084	T5 FINAL
10018	7974877.949	503525.271	22.635	T5 FINAL
10019	7974881.839	503537.594	23.887	T5 FINAL
10020	7974883.901	503547.351	24.92	T5 FINAL
10021	7974885.902	503558.174	26.051	T5 FINAL
10022	7974887.741	503570.498	27.443	T5 FINAL
10023	7974890.429	503580.97	28.43	T5 FINAL
10024	7974900.069	503577.709	27.737	T5 FINAL
10025	7974898.405	503566.475	26.744	T5 FINAL
10026	7974895.568	503553.695	25.504	T5 FINAL
10027	7974893.364	503543.012	24.552	T5 FINAL
10028	7974890.832	503531.713	23.381	T5 FINAL
10029	7974887.847	503520.974	22.096	T5 FINAL
10030	7974899.538	503516.335	21.74	T5 FINAL
10031	7974903.419	503526.888	23.073	T5 FINAL
10032	7974905.773	503538.346	24.294	T5 FINAL
10033	7974908.402	503550.139	25.235	T5 FINAL
10034	7974911.363	503562.8	26.183	T5 FINAL
10035	7974913.628	503575.022	27.006	T5 FINAL
10036	7974926.31	503573.01	26.474	T5 FINAL
10037	7974924.542	503562.061	25.809	T5 FINAL
10038	7974922.365	503549.515	25.185	T5 FINAL

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
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Laydown Area LP5
Type 5 (32mm minus) Placement

10039	7974920.412	503539.784	24.433	T5 FINAL
10040	7974918.457	503529.267	23.69	T5 FINAL
10041	7974915.512	503519.212	22.488	T5 FINAL
10042	7974913.61	503511.521	21.534	T5 FINAL
10043	7974926.204	503506.998	21.379	T5 FINAL
10044	7974928.655	503517.732	22.651	T5 FINAL
10045	7974931.043	503525.708	23.614	T5 FINAL
10046	7974934.202	503537.007	24.259	T5 FINAL
10047	7974935.658	503545.262	24.786	T5 FINAL
10048	7974937.212	503558.394	25.268	T5 FINAL
10049	7974939.159	503570.656	25.717	T5 FINAL
10050	7974949.237	503568.162	25.2	T5 FINAL
10051	7974947.194	503556.714	24.791	T5 FINAL
10052	7974945.294	503542.102	24.298	T5 FINAL
10053	7974943.329	503530.911	23.775	T5 FINAL
10054	7974940.859	503522.993	23.435	T5 FINAL
10055	7974938.862	503512.239	22.243	T5 FINAL
10056	7974936.514	503503.527	21.28	T5 FINAL
10057	7974945.812	503499.92	20.994	T5 FINAL
10058	7974947.621	503511.629	22.26	T5 FINAL
10059	7974950.922	503519.994	23.156	T5 FINAL
10060	7974953.837	503531.257	23.547	T5 FINAL
10061	7974956.356	503539.201	23.758	T5 FINAL
10062	7974957.326	503552.321	24.202	T5 FINAL
10063	7974959.137	503566.122	24.644	T5 FINAL
10064	7974967.467	503562.589	24.124	T5 FINAL
10065	7974976.543	503553.796	23.387	T5 FINAL
10066	7974983.27	503543.981	22.693	T5 FINAL
10067	7974988.294	503533.798	21.999	T5 FINAL
10068	7974989.476	503522.986	21.381	T5 FINAL
10069	7974988.022	503511.808	20.789	T5 FINAL
10070	7974988.162	503501.035	20.231	T5 FINAL
10071	7974984.732	503489.897	19.513	T5 FINAL
10072	7974976.377	503490.9	19.625	T5 FINAL
10073	7974977.539	503500.772	20.371	T5 FINAL
10074	7974977.606	503513.004	21.273	T5 FINAL
10075	7974978.148	503526.696	22.104	T5 FINAL
10076	7974977.464	503540.825	22.853	T5 FINAL
10077	7974966.946	503547.583	23.588	T5 FINAL
10078	7974967.516	503535.822	23.1	T5 FINAL
10079	7974968.012	503526.951	22.579	T5 FINAL
10080	7974967.592	503515.2	21.934	T5 FINAL

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
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Laydown Area LP5
Type 5 (32mm minus) Placement

10081	7974963.113	503504.173	21.104	T5 FINAL
10082	7974961.147	503495.331	20.36	T5 FINAL
10083	7974976.674	503483.791	19.115	T5 FINAL
10084	7974961.449	503489.025	19.794	T5 FINAL
10085	7974944.14	503494.889	20.489	T5 FINAL
10086	7974935.517	503497.966	20.64	T5 FINAL
10087	7974924.328	503501.377	20.627	T5 FINAL
10088	7974912.687	503505.818	20.847	T5 FINAL
10089	7974897.199	503511.29	21.063	T5 FINAL
10090	7974885.679	503516.631	21.556	T5 FINAL
10091	7974874.984	503521.008	22.215	T5 FINAL
10092	7974865.726	503524.237	22.652	T5 FINAL
10093	7974856.841	503526.841	23.073	T5 FINAL
10094	7974849.03	503529.685	23.446	T5 FINAL
10095	7975019.708	503474.974	18.163	T5 FINAL
10096	7975012.424	503475.721	18.666	T5 FINAL
10097	7975010.316	503466.062	18.31	T5 FINAL
10098	7975016.807	503464.212	17.662	T5 FINAL
10099	7975014.279	503453.366	17.187	T5 FINAL
10100	7975006.619	503454.762	17.877	T5 FINAL
10101	7975003.946	503445.394	17.433	T5 FINAL
10102	7975011.657	503443.27	16.789	T5 FINAL
10103	7975009.511	503432.907	16.302	T5 FINAL
10104	7975007.563	503433.137	16.414	T5 FINAL
10105	7975001.036	503434.722	16.938	T5 FINAL
10106	7974997.343	503425.782	16.59	T5 FINAL
10107	7975004.844	503423.97	16.011	T5 FINAL
10108	7975008.829	503423.369	16.004	T5 FINAL
10109	7975007.346	503412.559	15.715	T5 FINAL
10110	7975001.652	503413.66	15.611	T5 FINAL
10111	7974992.958	503415.567	16.184	T5 FINAL
10112	7974989.819	503406.87	15.809	T5 FINAL
10113	7974999.422	503404.125	15.197	T5 FINAL
10114	7975004.646	503403.275	15.338	T5 FINAL
10115	7975002.258	503395.542	15.008	T5 FINAL
10116	7974997.126	503395.673	14.838	T5 FINAL
10117	7974994.657	503387.206	14.471	T5 FINAL
10118	7974984.107	503387.314	14.923	T5 FINAL
10119	7974987.488	503398.591	15.449	T5 FINAL
10120	7975009.997	503486.182	19.366	T5 FINAL
10121	7975015.302	503486.319	19.05	T5 FINAL
10122	7975025.46	503484.848	18.292	T5 FINAL

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
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Laydown Area LP5
Type 5 (32mm minus) Placement

10123	7975027.152	503495.131	18.822	T5 FINAL
10124	7975024.105	503496.31	19.128	T5 FINAL
10125	7975013.111	503498.765	19.833	T5 FINAL
10126	7975030.648	503505.607	19.219	T5 FINAL
10127	7975027.866	503506.176	19.419	T5 FINAL
10128	7975014.948	503509.078	20.242	T5 FINAL
10129	7975012.374	503521.532	20.962	T5 FINAL
10130	7975022.434	503520.556	20.441	T5 FINAL
10131	7975034.375	503517.338	19.772	T5 FINAL
10132	7975031.604	503517.956	19.923	T5 FINAL
10133	7975034.268	503530.917	20.483	T5 FINAL
10134	7975034.642	503538.652	20.886	T5 FINAL
10135	7975034.509	503549.592	21.408	T5 FINAL
10136	7975033.497	503558.57	21.918	T5 FINAL
10137	7975023.966	503564.307	22.468	T5 FINAL
10138	7975014.517	503568.652	22.823	T5 FINAL
10139	7975007.034	503571.681	23.138	T5 FINAL
10140	7975003.158	503562.061	22.84	T5 FINAL
10141	7975007.522	503553.308	22.46	T5 FINAL
10142	7975008.368	503544.943	22.059	T5 FINAL
10143	7975011.016	503532.846	21.468	T5 FINAL
10144	7975021.821	503532.7	21.086	T5 FINAL
10145	7975021.773	503544.478	21.587	T5 FINAL
10146	7975019.251	503556.194	22.221	T5 FINAL
10147	7975012.488	503561.735	22.627	T5 FINAL

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
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Laydown Area LP5
Type 5 (32mm minus) Placement

Laydown Area LP5 Type 5 (32mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
911001	7974801.212	503361.017	12.657	TYPE5
911002	7974804.2	503369.632	13.087	TYPE5
911003	7974808.384	503381.817	13.996	TYPE5
911004	7974811.132	503392.113	14.646	TYPE5
911005	7974815.864	503400.286	15.144	TYPE5
911006	7974818.694	503406.177	15.488	TYPE5
911007	7974826.64	503404.803	15.574	TYPE5
911008	7974824.539	503397.042	15.238	TYPE5
911009	7974821.813	503387.09	14.562	TYPE5
911010	7974819.033	503377.254	13.954	TYPE5
911011	7974816.463	503368.024	13.41	TYPE5
911012	7974814.029	503359.257	12.99	TYPE5
911013	7974813.216	503355.362	12.91	TYPE5
911014	7974824.457	503352.594	12.998	TYPE5
911015	7974827.19	503360.974	13.207	TYPE5
911016	7974830.019	503369.741	13.695	TYPE5
911017	7974832.904	503379.076	14.322	TYPE5
911018	7974835.979	503389.231	14.957	TYPE5
911019	7974839.413	503399.154	15.563	TYPE5
911020	7974850.522	503393.436	15.429	TYPE5
911021	7974847.682	503384.077	14.837	TYPE5
911022	7974845.149	503374.329	14.238	TYPE5
911023	7974842.424	503364.035	13.702	TYPE5
911024	7974839.903	503353.483	13.226	TYPE5
911025	7974838.794	503348.072	13.2	TYPE5
911026	7974849.094	503347.048	13.24	TYPE5
911027	7974851.352	503353.964	13.516	TYPE5
911028	7974853.774	503360.97	13.665	TYPE5
911029	7974856.38	503367.449	14.378	TYPE5
911030	7974859.408	503374.818	14.889	TYPE5
911031	7974862.05	503381.969	15.197	TYPE5
911032	7974864.106	503387.705	15.393	TYPE5
911033	7974869.101	503384.932	15.422	TYPE5
911034	7974869.556	503380.507	15.638	TYPE5
911035	7974868.881	503372.785	15.375	TYPE5
911036	7974867.691	503367.808	15.194	TYPE5
911037	7974865.199	503361.003	14.237	TYPE5
911038	7974863.381	503355.088	13.451	TYPE5
911039	7974862.338	503351.413	13.289	TYPE5

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
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Laydown Area LP5
Type 5 (32mm minus) Placement

911040	7974868.891	503350.109	13.324	TYPE5
911041	7974870.147	503353.593	13.497	TYPE5
911042	7974871.878	503357.134	13.843	TYPE5
911043	7974874.602	503364.576	14.597	TYPE5
911044	7974876.047	503368.657	15.407	TYPE5
911045	7974880.054	503376.807	15.266	TYPE5
911046	7974882.255	503382.027	15.282	TYPE5
911047	7974886.024	503381.095	15.283	TYPE5
911048	7974885.234	503373.656	15.028	TYPE5
911049	7974883.341	503366.864	14.55	TYPE5
911050	7974880.629	503359.323	14.033	TYPE5
911051	7974877.809	503352.456	13.576	TYPE5
911052	7974876.636	503364.332	14.475	TYPE5
911053	7974880.251	503365.931	14.459	TYPE5
911054	7974881.324	503369.136	14.686	TYPE5

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0005A
Laydown Area LP5
Type 5 (32mm minus) Placement

Laydown Area LP5 Type 5 (32mm minus) Placement Survey Data

Point Number	Northing	Easting	Elevation	Description
1000	7974995.874	503393.611	14.984	T5 FINAL
1001	7974993.448	503385.992	14.542	T5 FINAL
1002	7974992.182	503378.719	14.178	T5 FINAL
1003	7974991.637	503374.283	14.104	T5 FINAL
1004	7974983.792	503372.444	14.147	T5 FINAL
1005	7974973.753	503368.154	14.263	T5 FINAL
1006	7974971.427	503367.385	14.203	T5 FINAL
1007	7974974.319	503376.13	14.625	T5 FINAL
1008	7974978.178	503385.696	15	T5 FINAL
1009	7974981.565	503394.628	15.343	T5 FINAL
1010	7974988.614	503394.383	15.154	T5 FINAL
1011	7974987.288	503382.864	14.552	T5 FINAL
1012	7975005.593	503575.342	22.982	T5 FINAL
1013	7975014.888	503573.075	22.848	T5 FINAL
1014	7975025.073	503573.03	22.634	T5 FINAL
1015	7975035.242	503572.632	22.32	T5 FINAL
1016	7975048.254	503571.371	21.737	T5 FINAL
1017	7975045.394	503558.489	21.308	T5 FINAL
1018	7975033.943	503559.206	21.864	T5 FINAL
1019	7975023.34	503559.851	22.281	T5 FINAL
1020	7975011.704	503561.157	22.593	T5 FINAL
1021	7975001.01	503561.874	22.839	T5 FINAL
1022	7975004.824	503547.292	22.239	T5 FINAL
1023	7975017.321	503546.578	21.831	T5 FINAL
1024	7975030.467	503545.272	21.271	T5 FINAL
1025	7975041.027	503543.114	20.692	T5 FINAL
1026	7975036.659	503529.956	20.328	T5 FINAL
1027	7975023.318	503533.437	21.006	T5 FINAL
1028	7975010.242	503535.598	21.608	T5 FINAL
1029	7975009.319	503523.471	21.161	T5 FINAL
1030	7975021.751	503520.716	20.491	T5 FINAL
1031	7975032.488	503517.628	20.001	T5 FINAL

NUNA

NUNA EAST LTD

(Section 5)

Sieves / Aggregate Statements of Compliance

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190091
SITE:	Baffinland, Milne Port	**DATE:**	2019-09-01

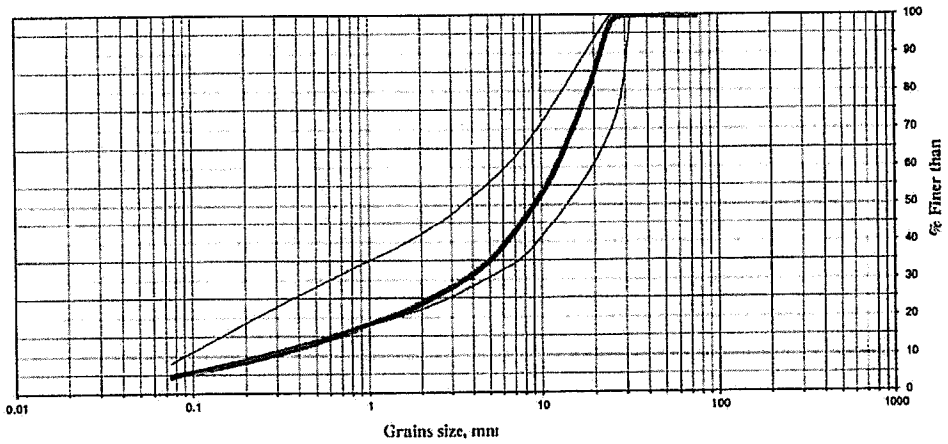
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-09-01_J
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-09-01

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	98	82	64	51	34	24	19	15	11	8	4.8
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	65.8%	Cu = 46	D_{85} = 20.0	D_{15} = 0.6
Sand %	29.4%	Cc = 4	D_{60} = 11.9	D_{10} = 0.3
Silt/Clay %	4.8%		D_{50} = 9.0	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Olivier Jacques

Signature:

Date: 2019-09-02

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190088
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-31

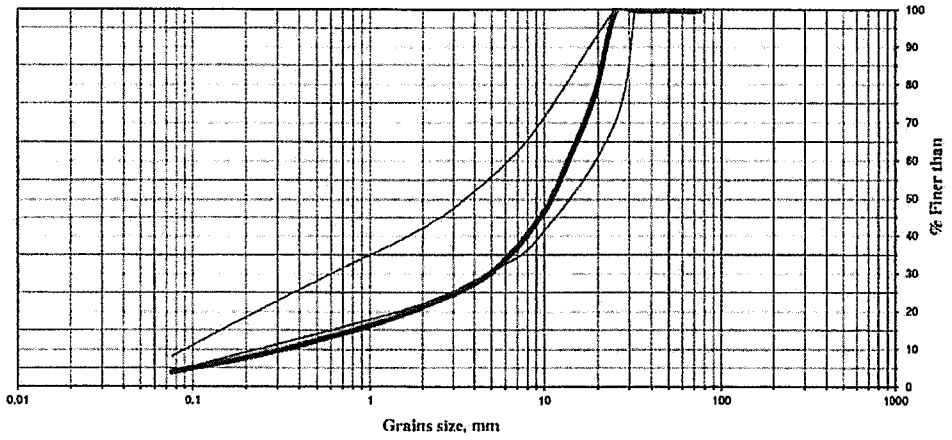
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-30_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-31

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	100	77	59	45	30	21	17	14	10	7	4.1
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	70.3%	Cu = 43	D_{65} = 20.9	D_{15} = 0.8
Sand %	25.6%	Cc = 5	D_{60} = 13.4	D_{10} = 0.3
Silt/Clay %	4.1%		D_{50} = 10.6	

Notes: Gap for the following sieves: 2, 0.6 mm

Prepared By: Maxime Côté

Verified By: Olivier Jacques

Signature:

Date: 2019-09-02

IC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190089
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-31

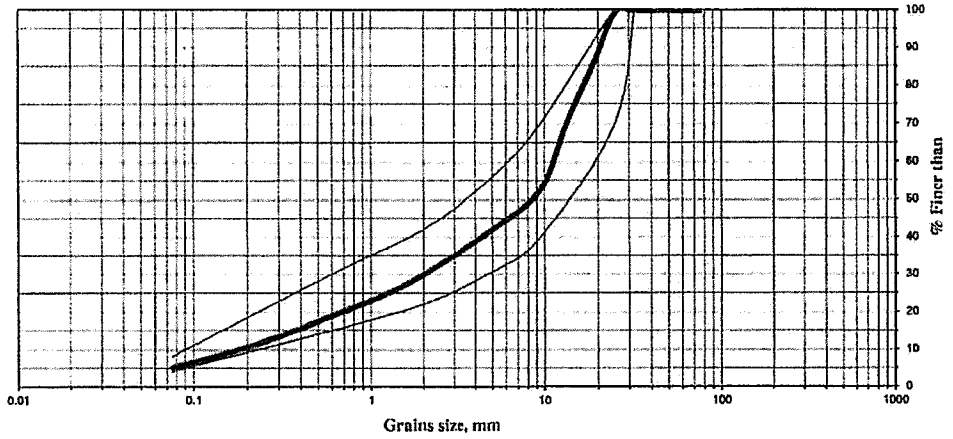
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-31_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-31

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	**100**	100	86	70	53	41	30	25	19	14	9	5.4
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	58.6%	Cu = 63	D_{85} = 18.4	D_{15} = 0.4
Sand %	36.0%	Cc = 2	D_{60} = 10.9	D_{10} = 0.2
Silt/Clay %	5.4%		D_{50} = 8.0	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Olivier Jacques

Signature:

Date: 2019-09-02

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190086
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-29

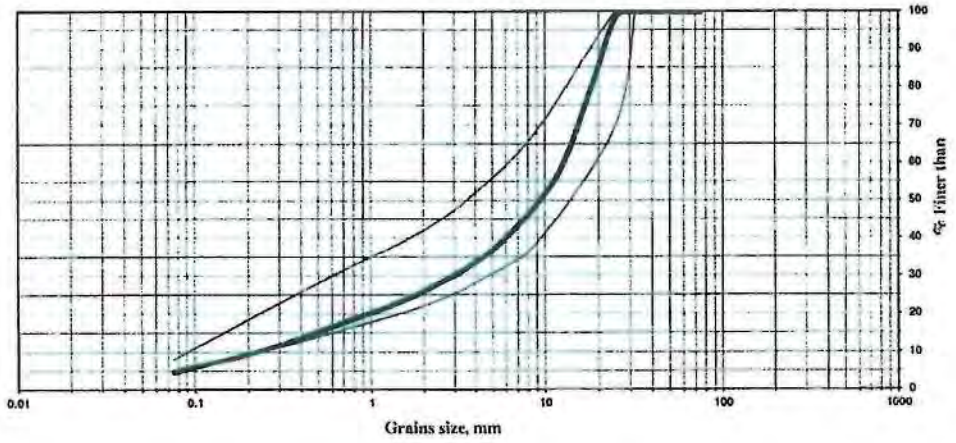
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-29_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-29

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	82	62	50	36	26	21	17	12	8	4.9
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	64.0%	Cu = 57	D_{85} = 19.8	D_{15} = 0.5
Sand %	31.1%	Cc = 3	D_{60} = 12.5	D_{10} = 0.2
Silt/Clay %	4.9%		D_{50} = 9.3	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Alexandre Beaumont

Signature:

Date: 2019/08/30

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC004A
PROJECT:	Expansion Project - Site Crushing Services	Contractor Project #:	11-837
		SAMPLE number:	MP-190083
SITE:	Baffinland, Milne Port	DATE:	2019-08-28

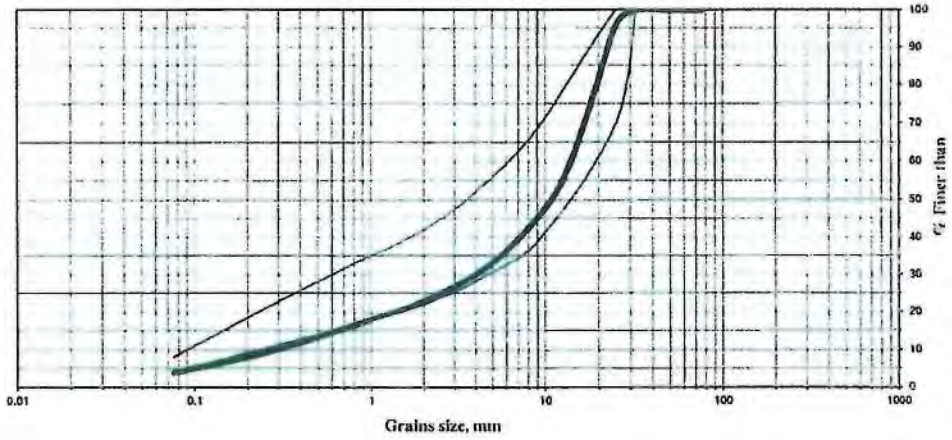
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-28_D
Stone source:	Quarry 1, Milne Port	Sampled By:	Maxime Côté
Type of Use:		Sampling Date:	2019-08-28

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	96	79	58	47	32	23	19	[illegible]	11	7	4.2
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	67.5%	Cu = 50	D_{85} = 20.9	D_{15} = 0.6
Sand %	28.3%	Cc = 4	D_{60} = 13.7	D_{10} = 0.3
Silt/Clay %	4.2%		D_{50} = 10.5	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Olivier Jacques

Signature:

Date: 2019-08-29

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190081
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-27

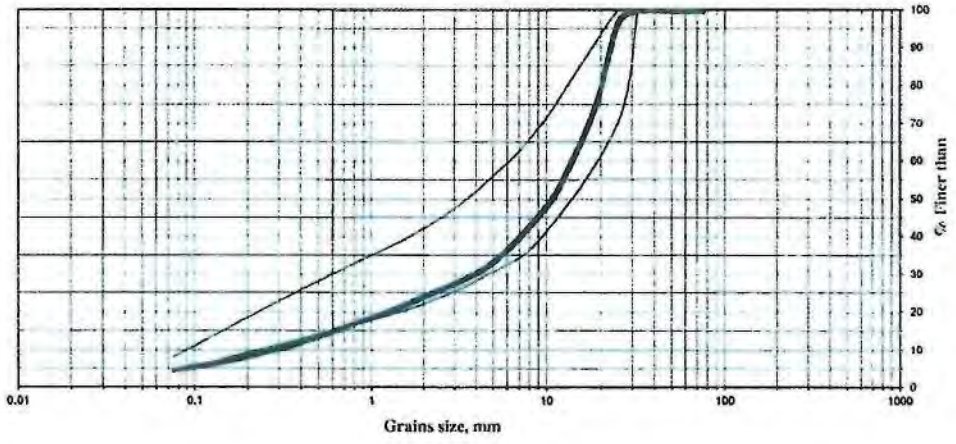
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-27_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-27

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	**100**	97	76	58	47	33	24	20	13	11	7	4.5
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	67.5%	Cu = 50	D_{85} = 21.4	D_{15} = 0.6
Sand %	28.0%	Cc = 4	D_{60} = 13.8	D_{10} = 0.3
Silt/Clay %	4.5%		D_{50} = 10.4	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Olivier Jacques

Signature: [signature]

Date: 2019-08-29

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190077
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-26

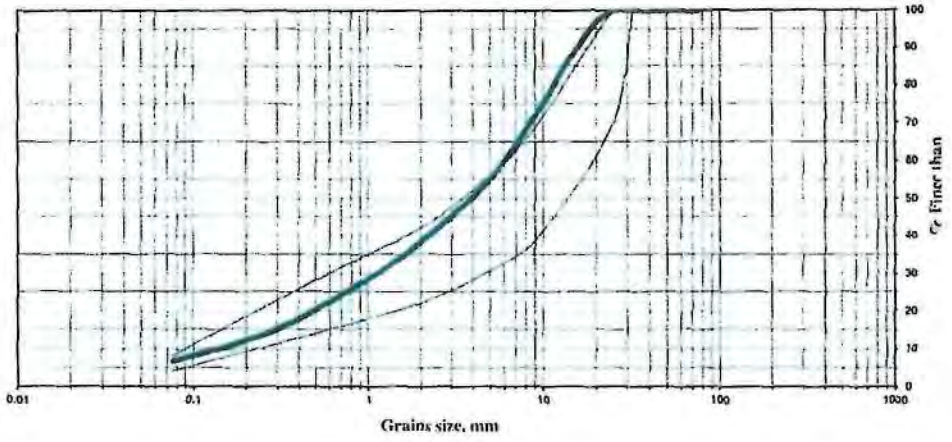
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-25_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Hugo Perron
Type of Use:		**Sampling Date:**	2019-08-26

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	100	96	85	71	54	39	31	23	16	11	6.8
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	45.9%	Cu = 43	D_{60} = 13.3	D_{15} = 0.3
Sand %	47.3%	Cc = 2	D_{30} = 5.8	D_{10} = 0.1
Silt/Clay %	6.8%		D_{50} = 3.8	

Notes: Gap for the following sieves: 9.5 mm

Prepared By: Hugo Perron

Verified By: Maxime Côté

Signature: [signature] **Date:** 19-08-27

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190080
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-26

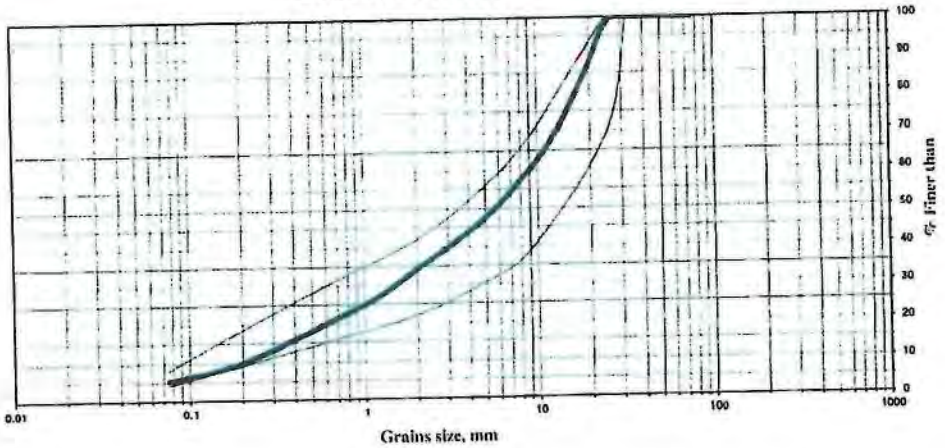
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-26_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Hugo Perron
Type of Use:		**Sampling Date:**	2019-08-26

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	86	71	61	47	34	27	20	14	9	5.4
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	53.3%	Cu = 46	D_{85} = 18.6	D_{15} = 0.4
Sand %	41.3%	Cc = 1	D_{60} = 8.9	D_{10} = 0.2
Silt/Clay %	5.4%		D_{50} = 5.6	

Notes: Aggregate compliant with specs

Prepared By: Hugo Perron

Verified By: Maxime Côté

Signature: [signature]

Date: 19-08-27

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190070
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-13

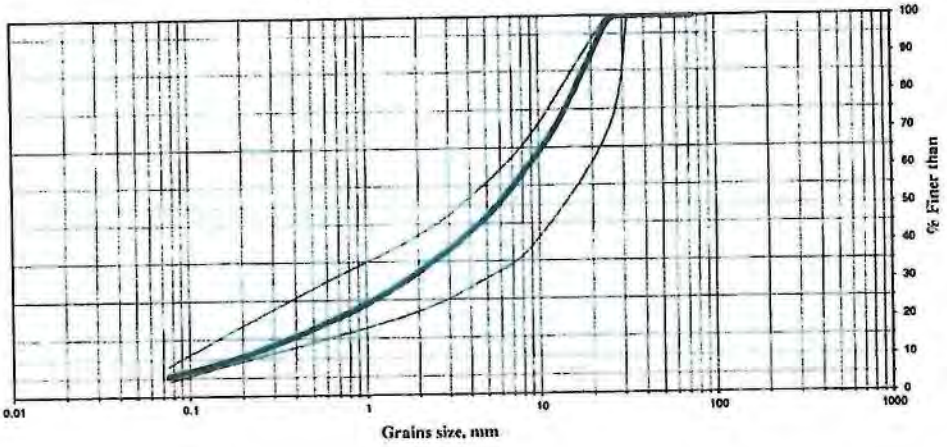
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-13_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Hugo Perron
Type of Use:		**Sampling Date:**	2019-08-13

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	88	73	63	46	33	26	19	14	9	5.8
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	53.8%	Cu = 48	D_{85} = 17.8	D_{15} = 0.4
Sand %	40.4%	Cc = 2	D_{60} = 8.4	D_{10} = 0.2
Silt/Clay %	5.8%		D_{50} = 5.6	

Notes: Aggregate compliant with specs

Prepared By: Hugo Perron

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/14

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190069
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-12

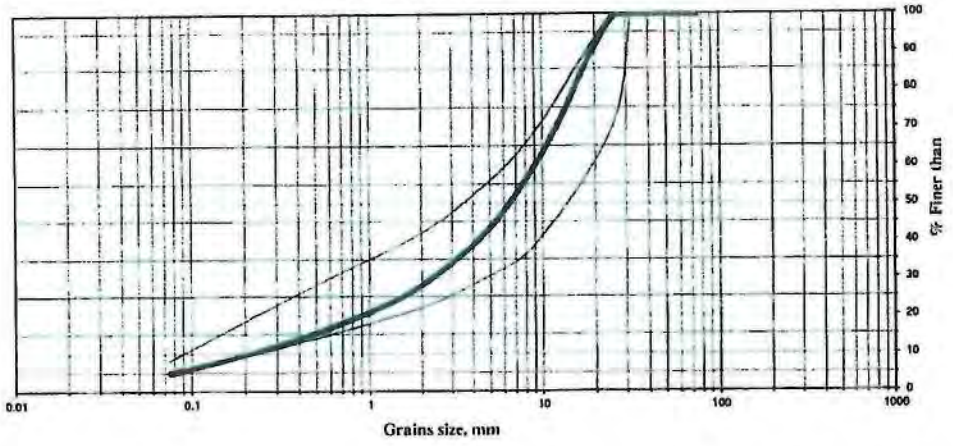
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-12_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-12

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	**100**	99	90	74	62	42	28	22	17	12	8	5.1
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	57.6%	Cu = 43	D_{85} = 17.0	D_{15} = 0.5
Sand %	37.3%	Cc = 3	D_{60} = 8.9	D_{10} = 0.2
Silt/Clay %	5.1%		D_{50} = 6.2	

Notes: Aggregate compliant with specs

Prepared By: Hugo Perron

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/14

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190068
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-12

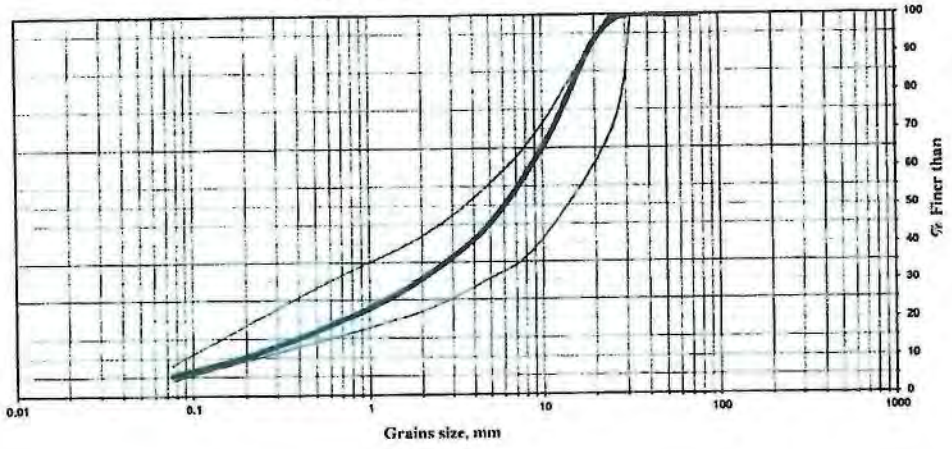
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-11_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-12

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	98	92	76	64	44	31	25	19	14	9	5.5
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	55.6%	Cu = 45	D_{85} = 16.2	D_{15} = 0.4
Sand %	38.9%	Cc = 2	D_{60} = 8.3	D_{10} = 0.2
Silt/Clay %	5.5%		D_{50} = 5.8	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature: [signature]

Date: 2019/08/12

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190067
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-11

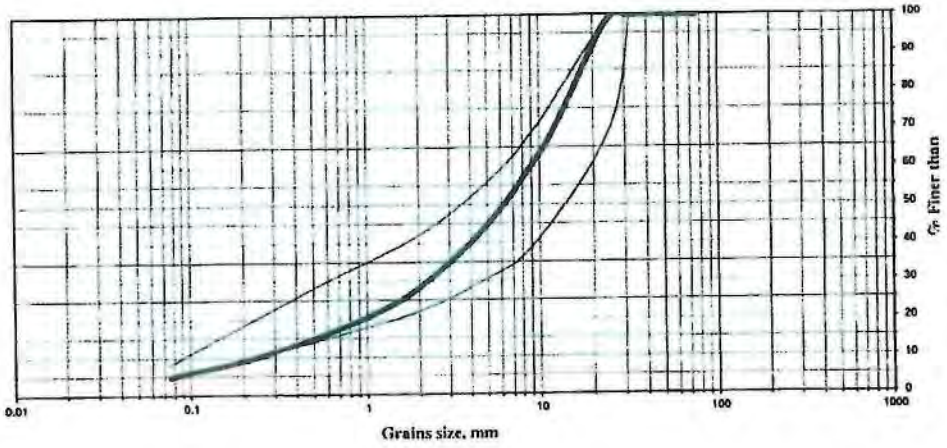
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-11_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-11

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	100	90	74	62	44	28	22	16	12	8	4.9
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	56.3%	Cu = 38	D_{85} = 17.1	D_{15} = 0.5
Sand %	38.8%	Cc = 2	D_{60} = 8.8	D_{10} = 0.2
Silt/Clay %	4.9%		D_{50} = 6.0	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/19

LC Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190066
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-11

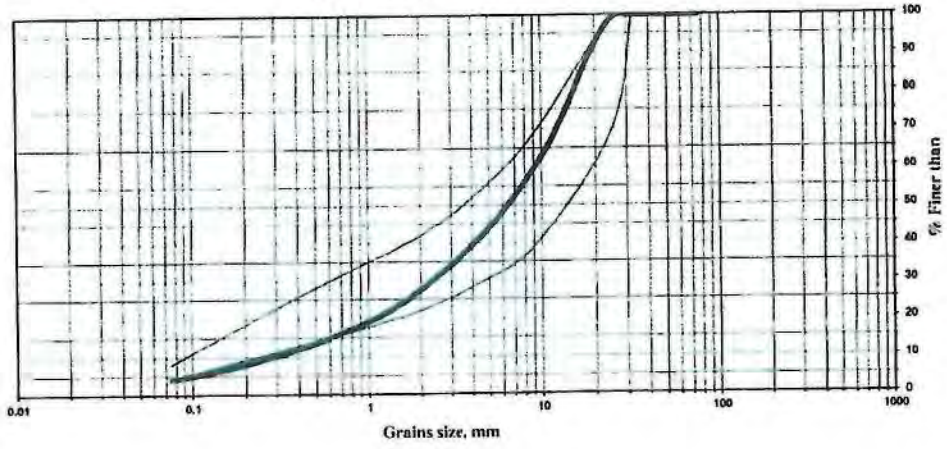
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-10 N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-11

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	91	74	61	43	28	21	15	11	7	4.2
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	57.0%	Cu = 33	D_{85} = 16.9	D_{15} = 0.6
Sand %	38.8%	Cc = 2	D_{60} = 9.0	D_{10} = 0.3
Silt/Clay %	4.2%		D_{50} = 6.2	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/12

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190065
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-10

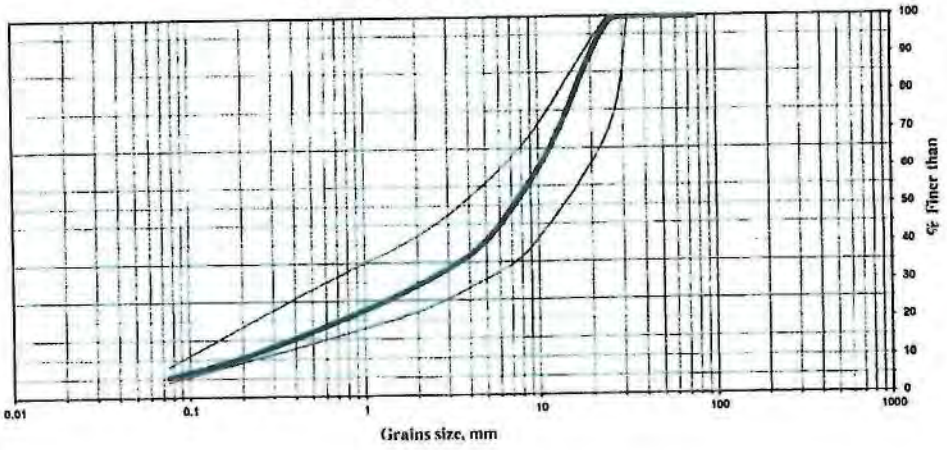
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-10_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-10

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	88	71	58	40	29	24	19	14	9	5.4
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	60.2%	Cu = 54	D_{85} = 17.7	D_{15} = 0.4
Sand %	34.4%	Cc = 3	D_{60} = 9.9	D_{10} = 0.2
Silt/Clay %	5.4%		D_{50} = 6.9	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/12

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190064
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-09

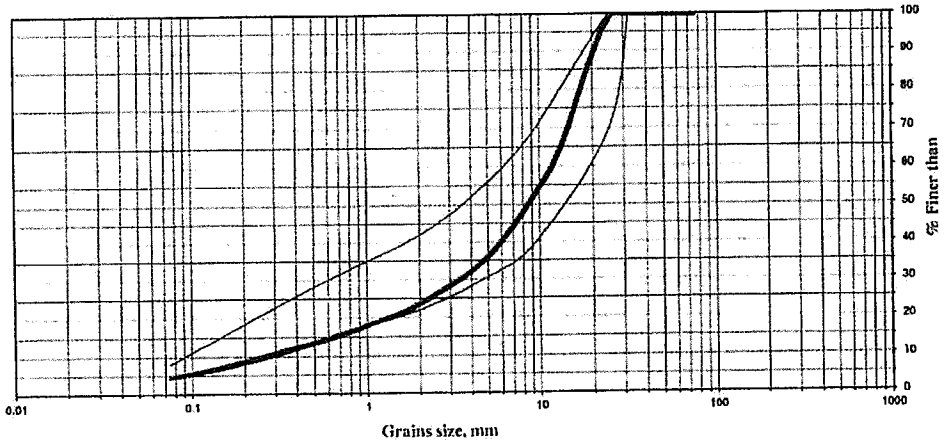
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-09_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-09

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	87	65	53	35	24	19	15	11	7	4.5
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	64.8%	Cu = 43	D_{85} = 18.5	D_{15} = 0.6
Sand %	30.8%	Cc = 3	D_{60} = 11.4	D_{10} = 0.3
Silt/Clay %	4.5%		D_{50} = 8.3	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/10

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190063
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-09

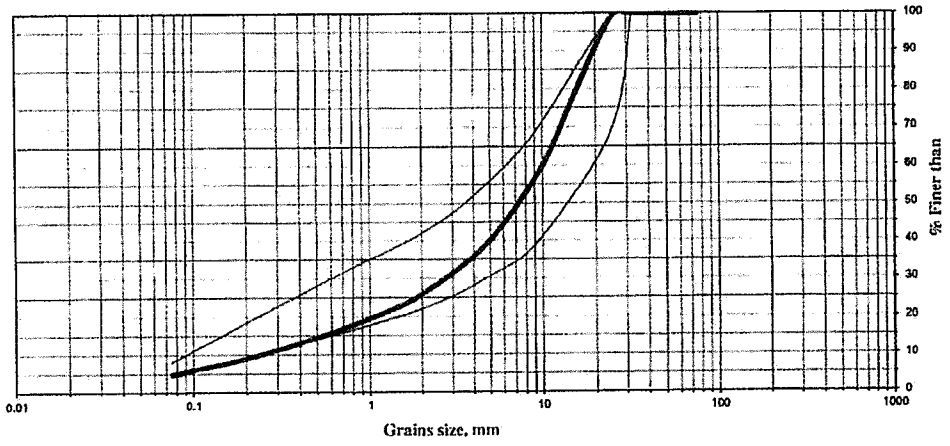
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-09_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-09

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	100	89	72	59	39	26	21	16	12	8	4.9
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve

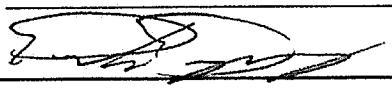


Gravel/Stone%	60.9%	Cu = 42	D_{85} = 17.4	D_{15} = 0.5
Sand %	34.2%	Cc = 3	D_{60} = 9.9	D_{10} = 0.2
Silt/Clay %	4.9%		D_{50} = 7.0	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature: 

Date: 2019/08/10

LC: Informatique
DV: 5 ans

Qikiqtaaluk
SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190062
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-09

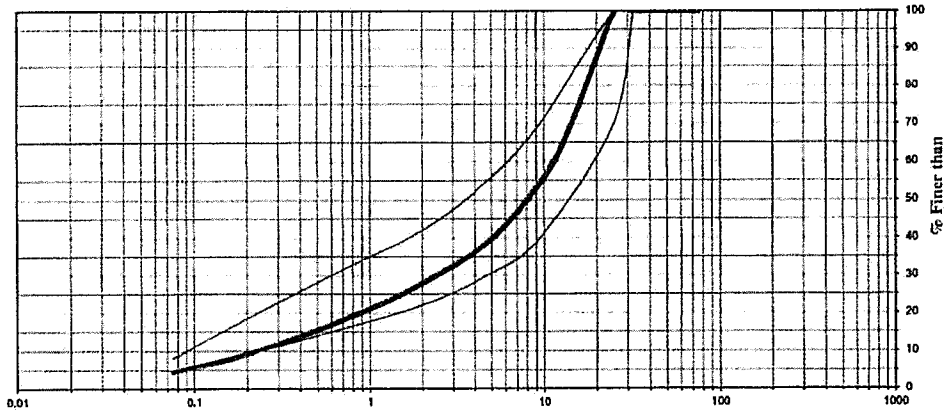
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-08_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-09

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	100	85	66	55	39	28	23	17	12	8	4.6
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	61.0%	Cu = 50	D_{85} = 19.0	D_{15} = 0.5
Sand %	34.4%	Cc = 2	D_{60} = 11.0	D_{10} = 0.2
Silt/Clay %	4.6%		D_{50} = 7.7	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/10

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190061
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-08

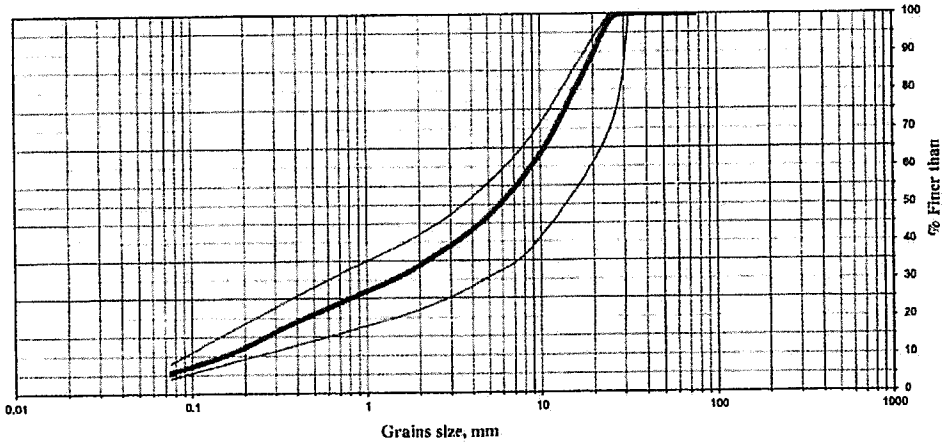
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-08_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-08

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	88	74	62	46	34	29	23	17	10	5.8
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	53.8%	Cu = 58	D_{85} = 17.8	D_{15} = 0.3
Sand %	40.5%	Cc = 1	D_{60} = 8.6	D_{10} = 0.1
Silt/Clay %	5.8%		D_{50} = 5.6	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/16

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190060
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-08

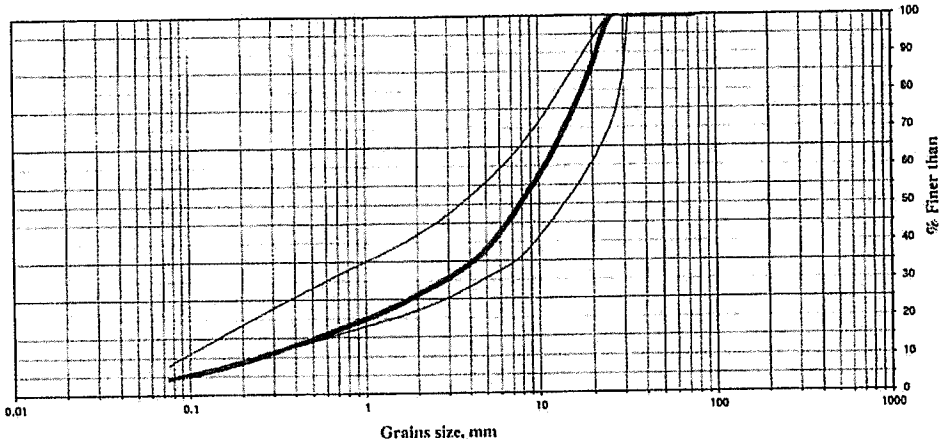
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-07_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-08

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	**100**	99	84	68	56	37	26	21	16	12	8	4.4
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	62.7%	Cu = 44	D_{85} = 19.2	D_{15} = 0.5
Sand %	32.9%	Cc = 3	D_{60} = 10.6	D_{10} = 0.2
Silt/Clay %	4.4%		D_{50} = 7.6	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/16

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190059
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-07

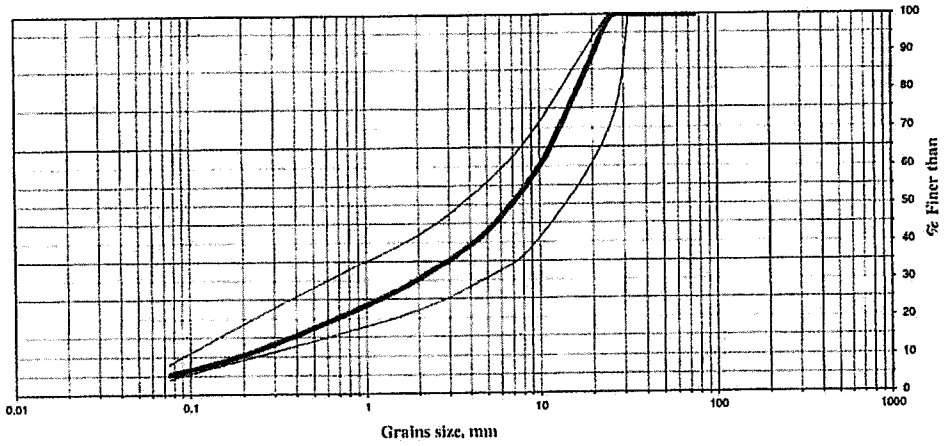
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-07_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-07

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	87	71	59	42	31	25	19	14	9	5.3
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	57.8%	Cu = 54	D_{85} = 18.2	D_{15} = 0.4
Sand %	36.8%	Cc = 2	D_{60} = 9.8	D_{10} = 0.2
Silt/Clay %	5.3%		D_{50} = 6.6	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/10

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190053
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-04

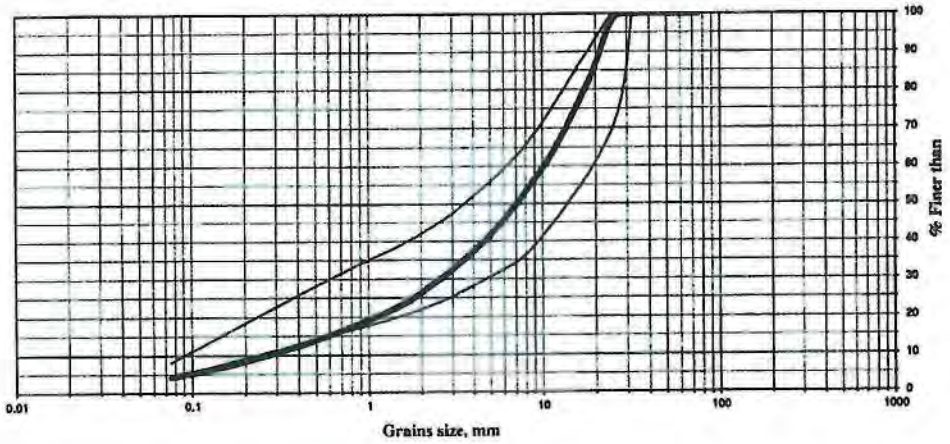
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-03_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-04

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	84	69	58	41	26	21	15	11	7	4.3
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	59.4%	Cu = 39	D_{85} = 19.3	D_{15} = 0.6
Sand %	36.4%	Cc = 2	D_{60} = 10.1	D_{10} = 0.3
Silt/Clay %	4.3%		D_{50} = 6.9	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: Alex Vézina **Date:** 2019-08-04

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190052
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-04

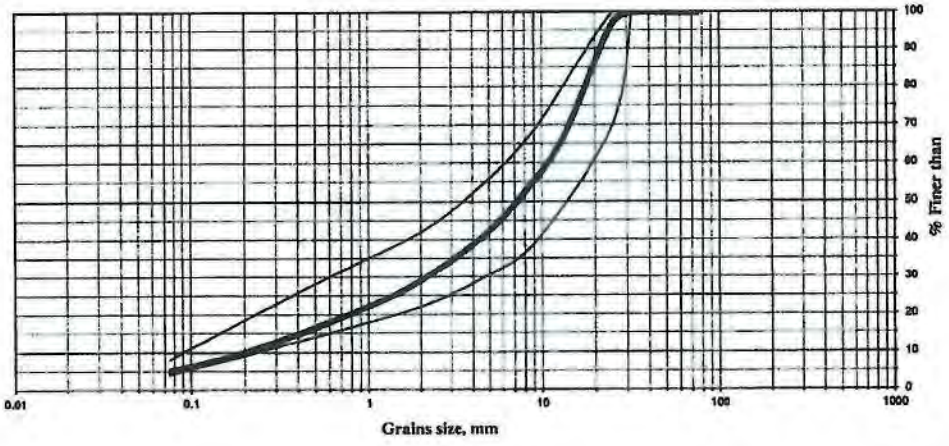
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-03_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-03

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	97	84	67	57	41	29	24	18	13	9	5.1
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	58.6%	Cu = 54	D_{65} = 19.4	D_{15} = 0.4
Sand %	36.3%	Cc = 2	D_{60} = 10.6	D_{10} = 0.2
Silt/Clay %	5.1%		D_{50} = 7.0	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: [signature] **Date:** 2019-08-04

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC004A
		Contractor Project #:	11 837
PROJECT:	Expansion Project - Site Crushing Services	SAMPLE number:	MP-190051
SITE:	Bethland, Milne Port	DATE:	2019-08-03

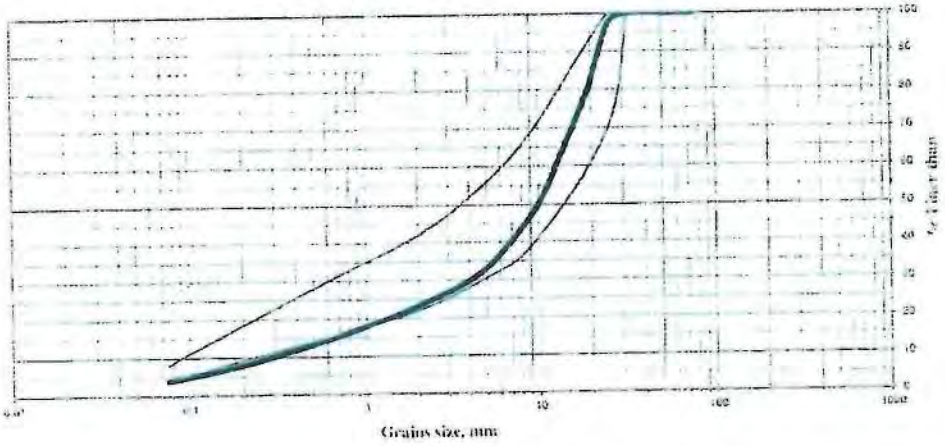
Type of Material:	Type 5 Fill	Sampling location:	Type 5 [illegible], C.S. [illegible]
Comments:	32mm Minus		Production 2019-08-02 [illegible]
Stone source:	Quarry 1, Milne Port	Sampled By:	Maxime Côté
Type of Use:		Sampling Date:	2019-08-02

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31,5 mm	25 mm	19 mm	13,2 mm	9,5 mm	4,75 mm	2,00 mm	1,18 mm	0,6 mm	0,315 mm	0,16 mm	0,075 mm
Cumulative Results				100	100	100	97	80	63	49	32	23	18	[illegible]	10	7	[illegible]
Individual Results																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	67.7%	C_u = 43	D_{60} = 20.6	D_{10} = 0.8
Sand %	28.4%	C_c = 4	D_{30} = 12.4	D_{15} = 0.3
Silt/Clay %	3.9%		D_{15} = 9.6	

Notes: Gap for the following sieves: 0.6, 0.075 mm

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: Alex Vézina

Date: 2019-08-03

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC004A
PROJECT:	Expansion Project - Site Crushing Services	Contractor Project #:	11-837
SITE:	Berkeland, Mine Port	SAMPLE number:	MP 190050
		DATE:	2019-08-02

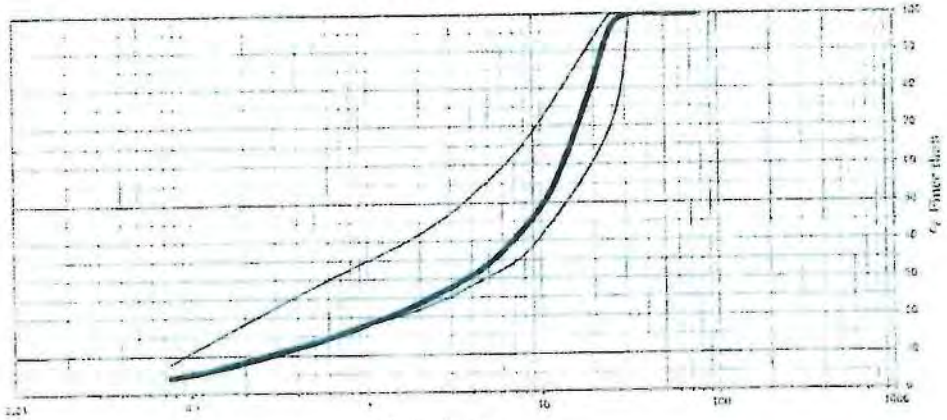
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile C 5 C1
Comments:	32mm Minus		Production 2019-08-02 D
Stone source:	Quarry 1, Mine Port	Sampled By:	Maxime Côté
Type of Use:		Sampling Date:	2019-08-02

Gradation (% Finer than) (ASTM C136-06)

Sieve				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.80 mm	1.18 mm	0.6 mm	0.315 mm	0.160 mm	0.075 mm
Cumulative Results				100	100	100	96	79	60	48	33	24	19	13	11	7	4.3
Individual Sieve																	
Spec	mm					100	70			40	30	22		15			4.0
	max					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	66.8%	C_c = 49	D_{60} = 20.6	D_{10} = 0.5
Sand %	29.0%	C_u = 3	D_{30} = 15.3	D_{15} = 0.8
Silt/Clay %	4.3%		D_{50} = 16.2	

Notes: Aggregate compliant with specs.

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: Alex Vézina Date: 20A-08-03

Qikiqtaaluk SANA

Soil & Aggregates Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC5004
		Contractor Project #:	11 837
PROJECT:	Expansion Project - Site Crushing Services	SAMPLE number:	MP 190049
SITE:	Baffinland, Mine Port	DATE:	2019-08-02

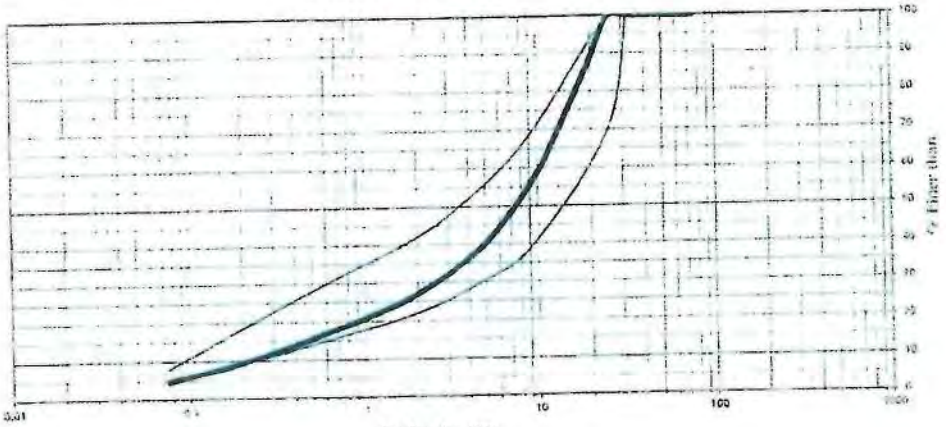
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile C.S. C1
Comments:	32mm Minus		Production 2019-08-01_1
Stone source:	Quarry 1 Mine Port	Sampled By:	Maxime Côté
Type of Use:		Sampling Date:	2019-08-02

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.3 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	100	86	71	57	39	27	22	17	12	8	4.3
Individual Results																	
Specs	min.					100	70			40	30	22		15			1.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	60.7%	Cu = 47	D_{60} = 18.4	D_{30} = 0.5
Sand %	34.5%	Cc = 3	D_{50} = 13.1	D_{10} = 0.2
Silt/Clay %	4.8%		D_{10} = 7.1	

Notes: Aggregate conforms with specs

Prepared By: Maxime Côté

Verified By: Alexandre Verma

Signature: Date: 2019-08-03

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC004A
PROJECT:	Expansion Project - Site Crushing Services	Contractor Project #:	11-637
		SAMPLE number:	MP-190048
SITE:	Baffinland, Mine Port	DATE:	2019-08-02

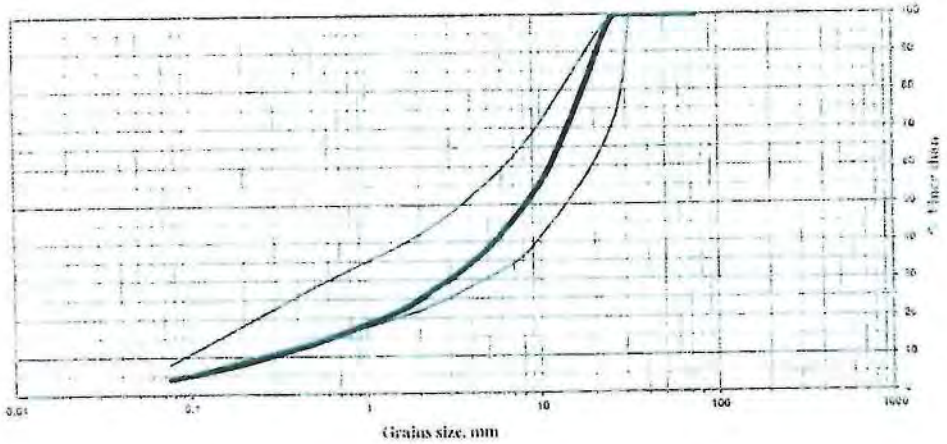
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile C,S, G1
Comments:	32mm Minus		Production 2019-08-01_0
Stone source:	Quarry 1, Mine Port	Sampled By:	Maxime Coté
Type of Use:		Sampling Date:	2019-08-01

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	37.5 mm	25 mm	19 mm	12.5 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.077 mm
Cumulative Results				100	100	100	95	85	67	54	37	25	20	15	11	7	4.0
Individual Retain																	
Specs	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material: Type 5 Fill: 32mm Minus

Gradation Curve



Gravel Stone%	62.7%	C_U = 40	D_{60} = 19.3	D_{30} = 3.4
Sand %	33.3%	C_C = 3	D_{10} = 11.6	D_{15} = 0.4
Silt/Clay %	4.0%		D_{15} = 8.6	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: Alex Vézina Date: 2019-08-03

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	25-Jul-19	Report Number:	18SJ0001	
File Number:		Inspector:	B. Mullins	
Client:	Hatch	Sampled By:	B. Mullins	
Project:	Baffinland	Sample Date:	25-Jul-19	1:30
Location:	Crusher Pad	Copy To:		
Contractor:	Nuna			

TEST RESULTS

SIEVE SIZE (mm)				32	25	19	13.2	9.5	4.75	2.00	1.18	0.600	0.315	0.160	0.075
MAX % PASS SPEC				100.0	100.0			70.0	55.0	42.0		30.0			8.0
MIN % PASS SPEC				100.0	70.0			40.0	30.0	22.0		15.0			4.0
% PASS RESULTS				100.0	97.6	79.1	64.8	54.8	39.8	28.3	22.6	16.7	11.7	7.5	4.2

MATERIAL TYPE

Type 5

SIEVE METHOD

Washed

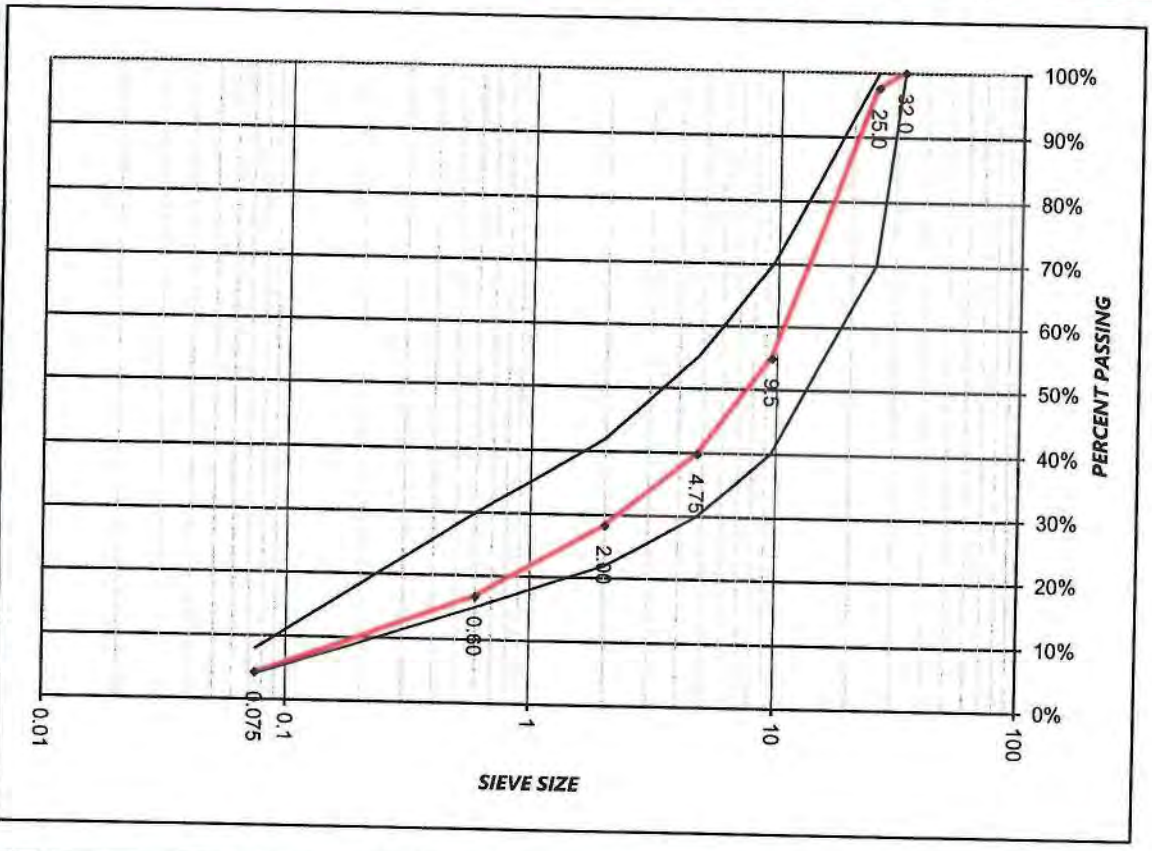
% FRACTURE

% MOISTURE

1.3%

GRADATIONS

GRAVEL	60.2%
SAND	35.6%
SILT/CLAY	4.2%



COMMENTS

Material meets specifications for the project.

Reviewed By:

Matt Tabor, Materials Lead

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	24-Jul-19	Report Number:	18SJ0001	
File Number:		Inspector:	B. Mullins	
Client:	Hatch	Sampled By:	B. Mullins	
Project:	Baffinland	Sample Date:	24-Jul-19	20:40
Location:	MOD Road STA: 0+465	Copy To:		
Contractor:	Nuna			

TEST RESULTS

SIEVE SIZE (mm)				32	25	19	13.2	9.5	4.75	2.00	1.18	0.600	0.315	0.160	0.075
MAX % PASS SPEC				100.0	100.0			70.0	55.0	42.0		30.0			8.0
MIN % PASS SPEC				100.0	70.0			40.0	30.0	22.0		15.0			4.0
% PASS RESULTS				100.0	96.8	81.0	63.7	52.0	35.4	25.0	20.1	15.0	10.7	6.8	3.9

MATERIAL TYPE

Type 5

SIEVE METHOD

Washed

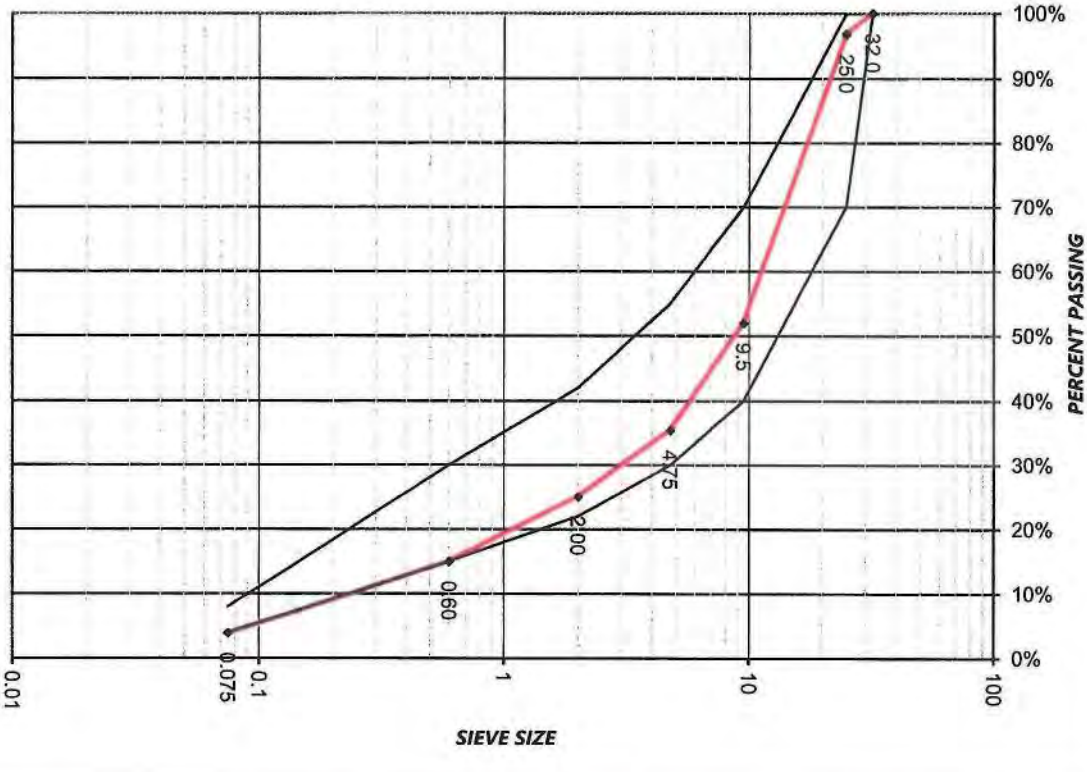
% FRACTURE

% MOISTURE

0.9%

GRADATIONS

GRAVEL	64.6%
SAND	31.5%
SILT/CLAY	3.9%



COMMENTS

Material slight outside specification on 0.075

Reviewed By:

Matthew Tabor, Materials Lead

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190037
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-21

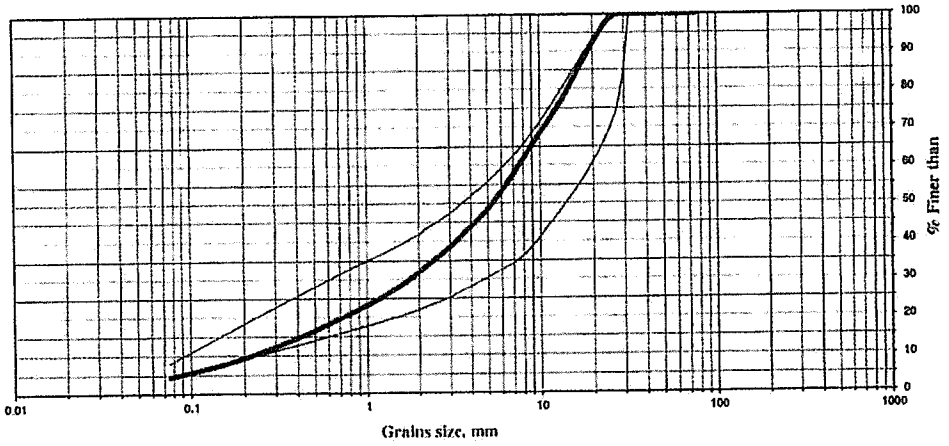
Type of Material:	Type 5 Fill	**Sampling location:**	Twin screen Conveyor, C.S, Q1
Comments:	32mm Minus		Production 2019-07-20_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-21

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	91	77	67	47	32	25	18	13	8	4.3
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve

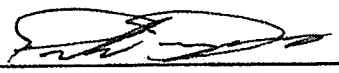


Gravel/Stone%	52.5%	Cu = 34	D_{85} = 16.3	D_{15} = 0.4
Sand %	43.2%	Cc = 2	D_{60} = 7.4	D_{10} = 0.2
Silt/Clay %	4.3%		D_{50} = 5.2	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By:

Signature: 

Date: 2019/07/21

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190035
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-20

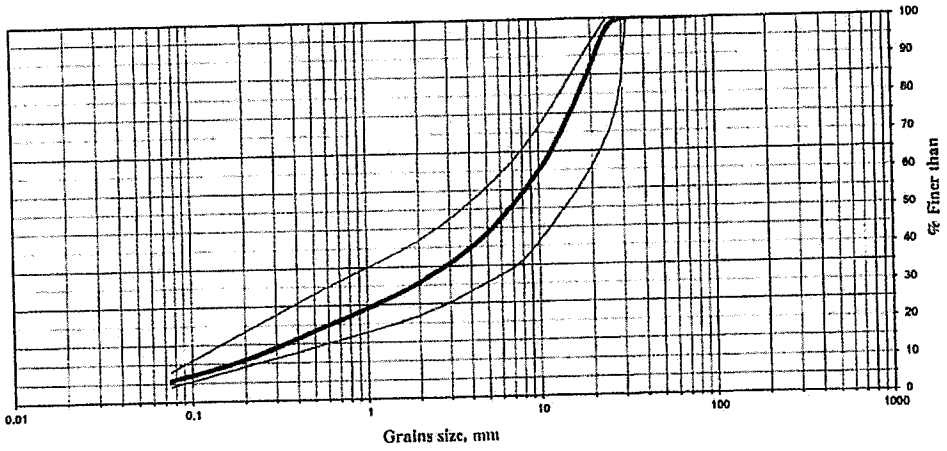
Type of Material:	Type 5 Fill	**Sampling location:**	Scalpe Conveyor, C.S, Q1
Comments:	32mm Minus		Production 2019-07-19_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-20

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	98	85	69	59	43	31	26	20	14	10	5.7
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	57.4%	Cu = 58	D_{85} = 19.0	D_{15} = 0.3
Sand %	36.9%	Cc = 2	D_{60} = 9.9	D_{10} = 0.2
Silt/Clay %	5.7%		D_{50} = 6.5	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/07/20

LC: Informatique
DV: Sans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190036
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-20

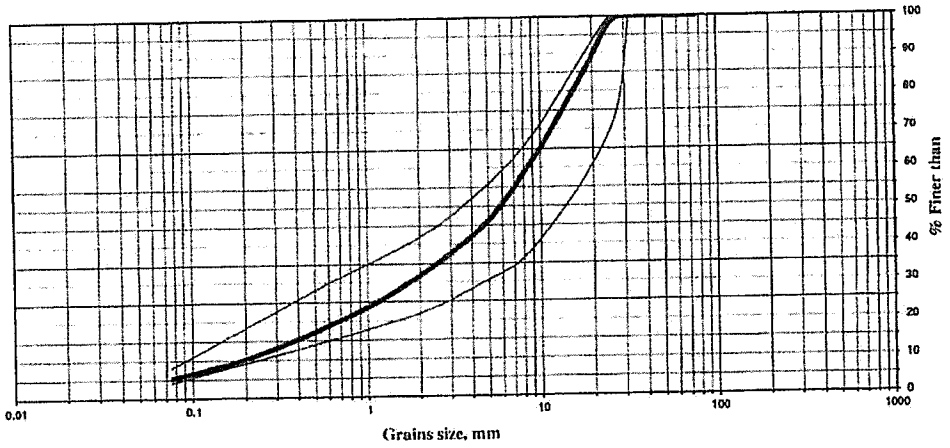
Type of Material:	Type 5 Fill	**Sampling location:**	Twin screen Conveyor, C.S. Q1
Comments:	32mm Minus		Production 2019-07-20_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-20

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	98	88	75	64	45	32	25	19	14	9	5.3
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	54.7%	Cu = 44	D_{85} = 17.6	D_{15} = 0.4
Sand %	40.0%	Cc = 2	D_{60} = 8.2	D_{10} = 0.2
Silt/Clay %	5.3%		D_{50} = 5.7	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By:

Signature: [signature]

Date: 2019/07/21

LC: Informatique
OV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates Analysis

CLIENT:	HATCH / BIM	**HATCH Project # :**	11-837
PROJET:	Expansion Project - Site Crushing Services	**Q-SANA Project # :**	CC004A
		SAMPLE Number:	MP190012
SITE:	Baffinland, Milne Port	**DATE:**	2019-06-02

Type of Material	Type 5 Fill	**Sampling location:**	Type 5 Stockpile
Comments	32mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-02

Gradation (% Finer than) (ASTM C136-06)

Seives				75 mm	50 mm	32 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.50 mm	1.25 mm	0.63 mm	0.315 mm	0.16 mm	0.08 mm
Cumulatives Results				100	100	100	94	77	58	47	33	25	19	15	11	7	4.5
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Other Standard Tests	Results	Specifications min.	Specifications max.

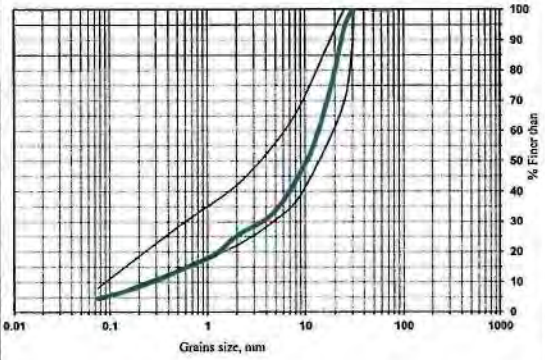
Proctor Essay (NQ 2501-255) — Résultats

Maximum Dry Density	(kg/m^3)
Optimal Moisture countain	(%)

Proctor at 0% of stone : kg/m3
Correction Factor:

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel %	67.2%	Cu = 50	D_{85} = 21.7	D_{15} = 0.6
Sand %	28.3%	Cc = 3	D_{60} = 13.6	D_{10} = 0.3
Silt/Clay %	4.5%		D_{50} = 10.3	

Notes:	Material within specifications		
Prepared By:	Hugo Perron, Tech	Verified By:	Christopher Gilbert, P. Eng.

Qikiqtaaluk SANA

Soil & Aggregates Analysis

CLIENT:	HATCH / BIM	**HATCH Project # :**	11-837
PROJET:	Expansion Project - Site Crushing Services	**Q-SANA Project # :**	CC004A
		SAMPLE Number:	MP190008
SITE:	Baffinland, Milne Port	**DATE:**	2019-06-01

Type of Material	Type 5 Fill	**Sampling location:**	Type 5 Stockpile
Comments	32mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-05-31

Gradation (% Finer than) (ASTM C136-06)

Seives				75 mm	50 mm	32 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.50 mm	1.25 mm	0.63 mm	0.315 mm	0.16 mm	0.08 mm
Cumulatives Results				100	100	100	96	81	64	52	36	27	20	15	11	8	4.7
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

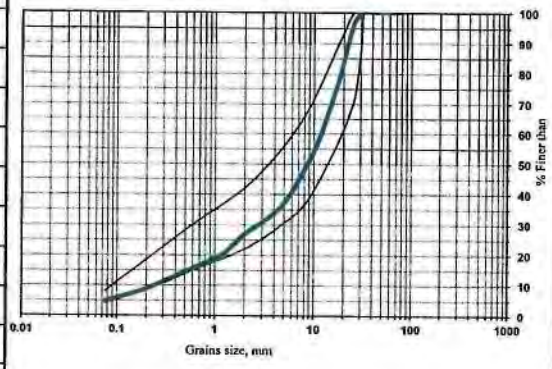
Other Standard Tests	Results	Specifications min.	Specifications max.

Proctor Essay (NQ 2501-255)	Résultats
Maximum Dry Density	(kg/m^3)
Optimal Moisture countain	(%)

Proctor at 0% of stone : kg/m3
Correction Factor:

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel %	63.9%	Cu = 48	D_{85} = 20.6	D_{15} = 0.6
Sand %	31.4%	Cc = 3	D_{60} = 11.7	D_{10} = 0.2
Silt/Clay %	4.7%		D_{50} = 8.6	

Notes: Material within specifications

Prepared By: Hugo Perron, Tech

Verified By: Christopher Gilbert, P. Eng.

Qikiqtaaluk SANA

Soil & Aggregates Analysis

CLIENT:	HATCH / BIM	**HATCH Project # :**	11-837
PROJET:	Expansion Project - Site Crushing Services	**Q-SANA Project # :**	CC004A
		SAMPLE Number:	MP190003
SITE:	Baffinland, Milne Port	**DATE:**	2019-05-30

Type of Material	Type 5 Fill	**Sampling location:**	Type 5 Stockpile
Comments	32mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-05-30

Gradation (% Finer than) (ASTM C136-06)

Seives				75 mm	50 mm	31,5 mm	28 mm	20 mm	14 mm	10 mm	5 mm	2,50 mm	1,25 mm	0,63 mm	0,315 mm	0,16 mm	0,08 mm
Cumulatives Results				100	100	100	100	80	65	55	41	31	24	18	13	9	5,4
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4,0
	max.					100	100			70	55	42		30			8,0

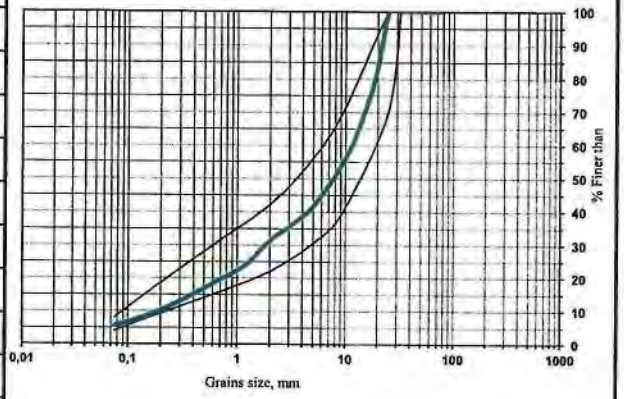
Other Standard Tests	Results	Specifications min.	Specifications max.

Proctor Essay (NQ 2501-255)	Résultats
Maximum Dry Density	(kg/m³)
Optimal Moisture countain	(%)

Proctor at 0% of stone : kg/m3
Correction Factor:

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel %	59,3%	Cu = 59	D_{85} = 20,3	D_{15} = 0,4
Sand %	35,2%	Cc = 2	D_{60} = 11,3	D_{10} = 0,2
Silt/Clay %	5,4%		D_{50} = 7,5	

Notes: Material within specifications

Prepared By: Hugo Perron, Tech

Verified By: Christopher Gilbert, P. Eng.

Laboratoire SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP190093
SITE:	Baffinland, Milne Port	**DATE:**	2019-09-01

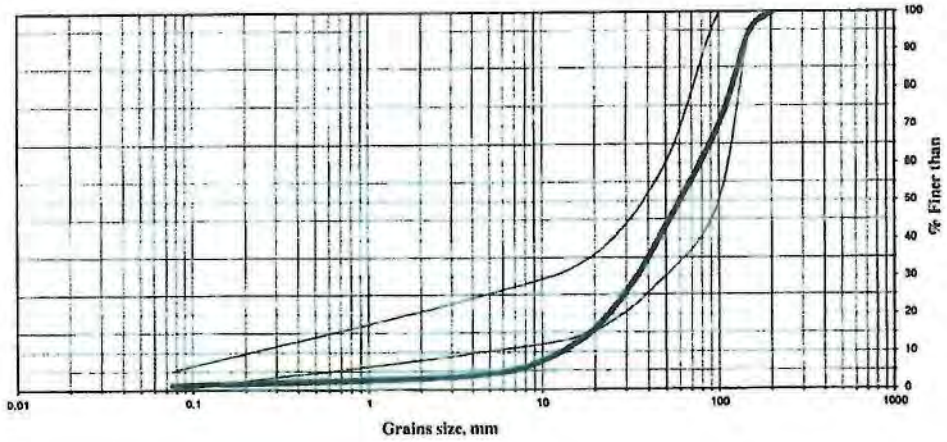
Type of Material:	Type 8 Fill	**Sampling location:**	Convayor F.T, Q1
Comments:	Jaw Run - 150mm Minus		Stockpile Type F.T
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-09-01

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	95	70	44	28	15	7		3	3	2	2	2	1.5
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	95.9%	Cu = 6	D_{85} = #DIV/0!	D_{15} = 18.6
Sand %	2.5%	Cc = 1	D_{60} = 76.4	D_{10} = 12.0
Silt/Clay %	1.5%		D_{50} = 58.9	

Notes: Gap for the following sieves: 4.75 mm

Prepared By: Maxime Côté

Verified By: Olivier Jacques

Signature: [signature] **Date:** 2019-09-03

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP190027
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-14

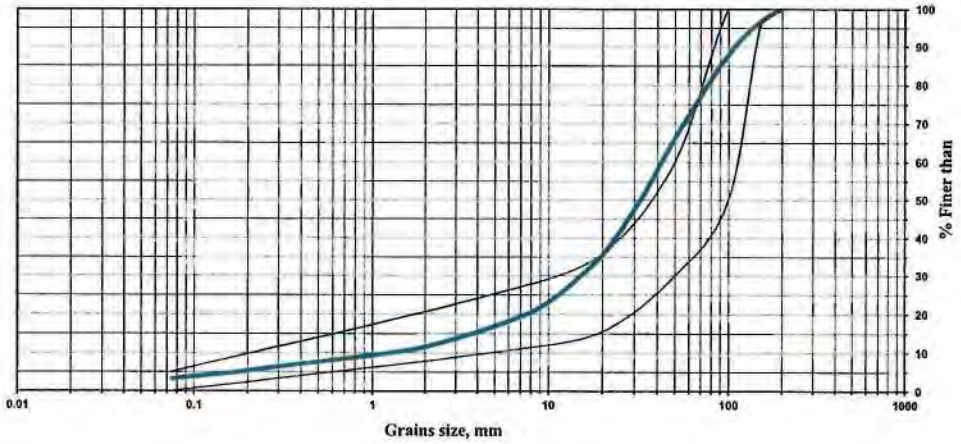
Type of Material:	Type 8 Fill	**Sampling location:**	Convayor C.S, Q1
Comments:	Jaw Run - 150mm Minus		Stockpile Type C.S
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-13

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	96	88		49	34	22	16	11	10	8	6	5	3.2
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	83.6%	Cu = 33	D_{85} = 91.6	D_{15} = 3.7
Sand %	13.2%	Cc = 4	D_{60} = 42.6	D_{10} = 1.3
Silt/Clay %	3.2%		D_{50} = 32.5	

Notes: Gap for the following sieves: 50 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N-L-t-y **Date:** 2019-07-15

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190026
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-12

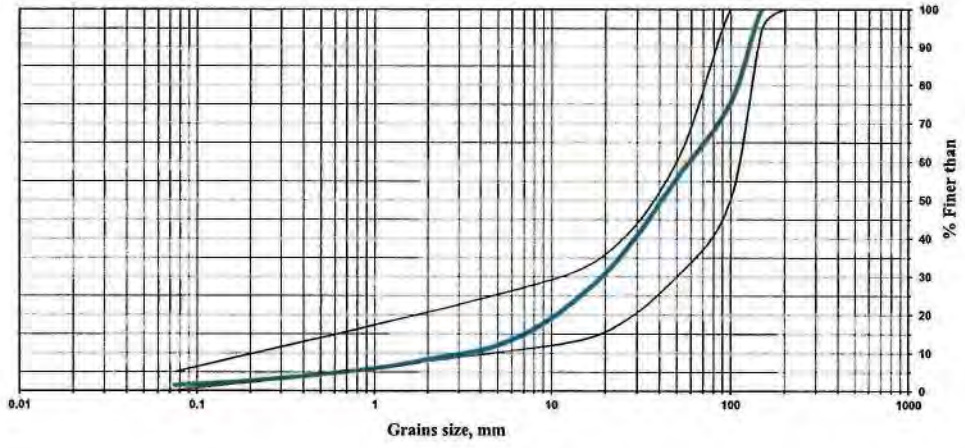
Type of Material:	Type 8 Fill	**Sampling location:**	Convayor F.T, Q1
Comments:	Jaw Run - 150mm Minus		Stockpile Type 8 #3
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-12

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	75	56	42	30	18	12	8	6	5	3	2	1.4
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	88.4%	Cu = 18	D_{85} = #DIV/0!	D_{15} = 6.8
Sand %	10.2%	Cc = 2	D_{60} = 58.5	D_{10} = 3.2
Silt/Clay %	1.4%		D_{50} = 41.4	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N-C-T-U **Date:** 2019-07-15

Oikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190025
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-10

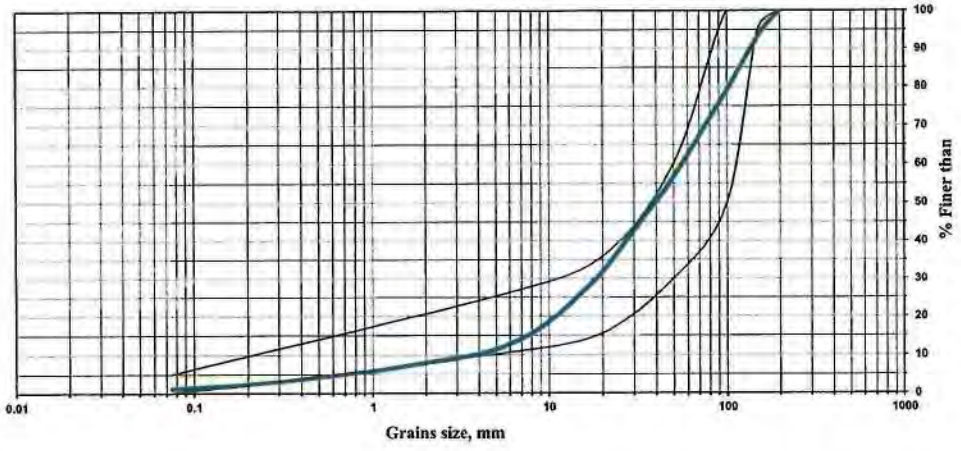
Type of Material:	Type 8 Fill	**Sampling location:**	CS Type 8 Stokcpile
Comments:	Jaw Run - 150mm Minus		
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-09

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	93	79	56	44	30	18	11	8	6	5	3	2	1.2
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	89.0%	Cu = 15	D_{85} = #DIV/0!	D_{15} = 7.2
Sand %	9.8%	Cc = 2	D_{60} = 55.9	D_{10} = 3.6
Silt/Clay %	1.2%		D_{50} = 39.5	

Notes: Gap for the following sieves: 150 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N. Côté **Date:** 2019-07-15

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190024
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-09

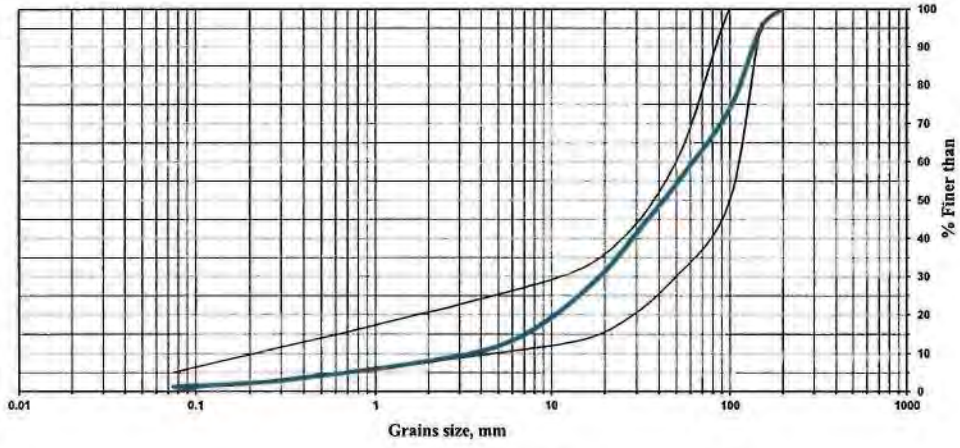
Type of Material:	Type 8 Fill	**Sampling location:**	FT Type 8 Stokcpile
Comments:	Jaw Run - 150mm Minus		
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-08

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	85	74	54	43	30	18	11	8	6	5	3	2	1.2
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	88.6%	Cu = 18	D_{85} = #DIV/0!	D_{15} = 6.8
Sand %	10.2%	Cc = 2	D_{60} = 61.8	D_{10} = 3.4
Silt/Clay %	1.2%		D_{50} = 42.7	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Nicolas Tremlay

Signature: N. Tremlay **Date:** 2019-07-15

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190021
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-05

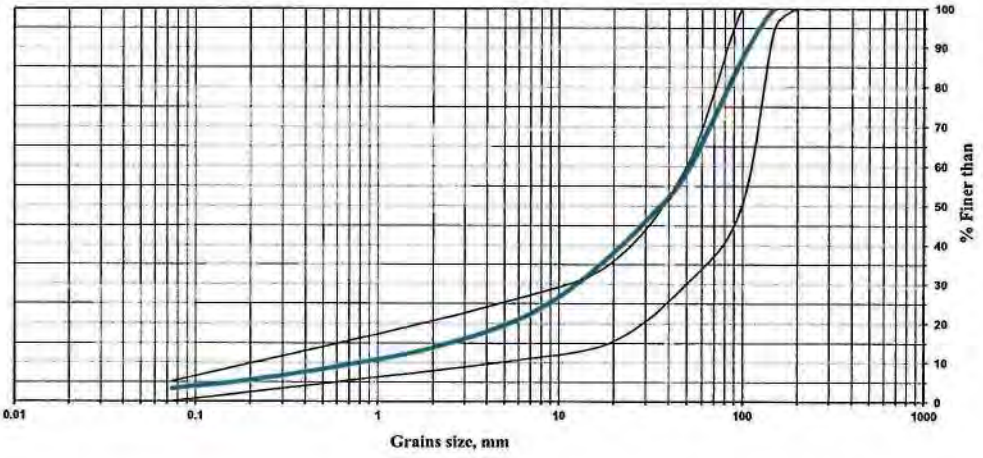
Type of Material	Type 8 Fill	**Sampling location:**	F.T Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Maxime Côté
Type of Use		**Sampling Date**	2019-07-04

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	87	58	47	37	26	19	14	11	9	7	5	3.2
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	81.0%	Cu = 62	D_{85} = 95.4	D_{15} = 2.5
Sand %	15.8%	Cc = 3	D_{60} = 52.2	D_{10} = 0.8
Silt/Clay %	3.2%		D_{50} = 35.7	

Notes: Gap for the following sieves: 19 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N Côté **Date:** 2019-07-15

LC : Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
		Q-Sana Project #:	11-837
PROJET:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190020
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-03

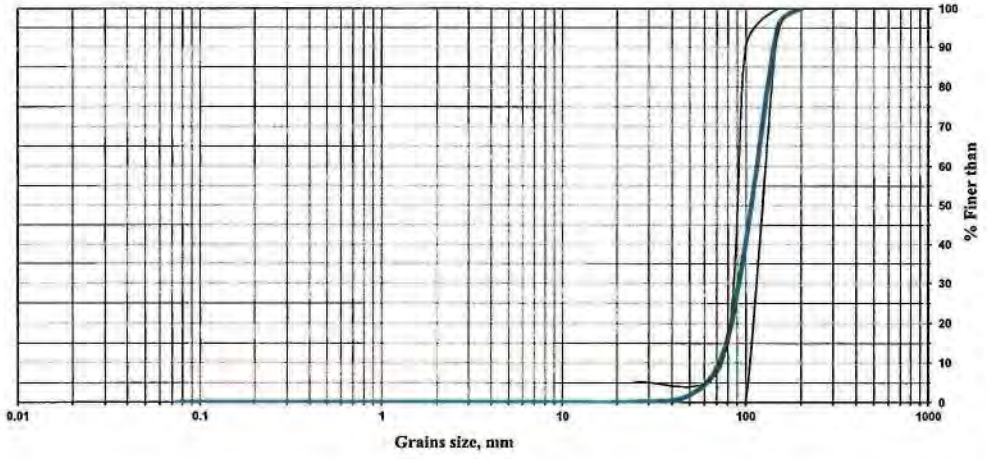
Type of Material	Type 19 Fill	**Sampling location:**	MP, Q1
Comments	150mm Clear		type 19* stockpile
Stone source	Quarry 1, Milne Port	**Sampled By**	Maxime Côté
Type of Use		**Sampling Date**	2019-07-03

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	75 mm	50 mm	25 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	95	40	12	2	0	0	0	0	0	0	0	0	0.0
Individual Result																	
Spec.	min.			100	95	0	0		0								
	max.			100	100	90	10		5								

Type of material : Type 19 Fill: 150mm Clear

Gradation Curve



Gravel/Stone%	100.0%	Cu = #DIV/0!	D_{85} = #DIV/0!	D_{15} = 77.6
Sand %	0.0%	Cc = #DIV/0!	D_{60} = #DIV/0!	D_{10} = 70.1
Silt/Clay %	0.0%		D_{50} = #DIV/0!	

Notes: Gap for the following sieves: 75 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N Lt

Date: 2019-07-15

LC: Informatique
DV: 5 ans

Qiriqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
		Q-Sana Project #:	11-837
PROJET:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190019
SITE:	Baffinland, Milne Port	**DATE:**	19-06-29

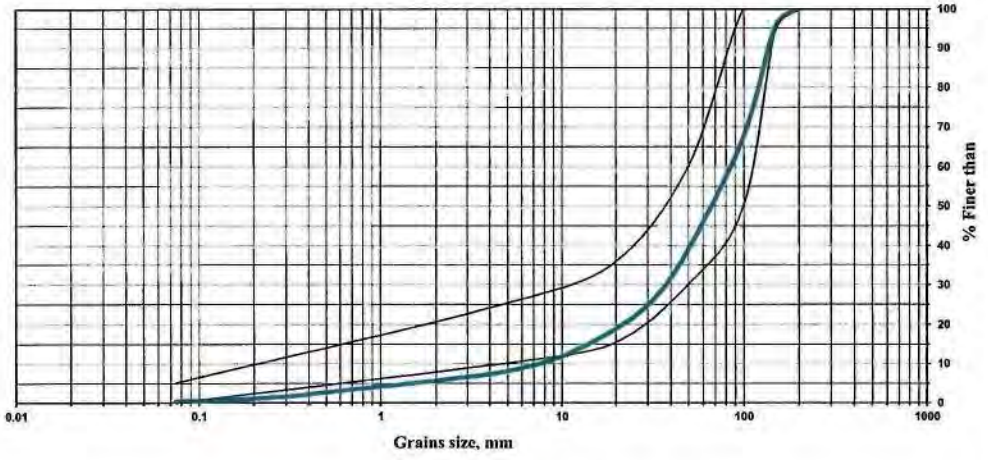
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 C.S. Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-29

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	96	67	39	26	18	11	[illegible]	6	4	3	2	1	0.4
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	92.2%	Cu = 11	D_{65} = #DIV/0!	D_{15} = 13.8
Sand %	7.4%	Cc = 2	D_{60} = 83.6	D_{10} = 7.4
Silt/Clay %	0.4%		D_{50} = 65.7	

Notes: Gap for the following sieves: 4.75 mm

Prepared By: Hugo Perron, tech

Verified By: Maxime Côté

Signature: [signature] **Date:** 2019-07-15

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
		Q-Sana Project #:	11-837
PROJET:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190014
SITE:	Baffinland, Milne Port	**DATE:**	19-06-27

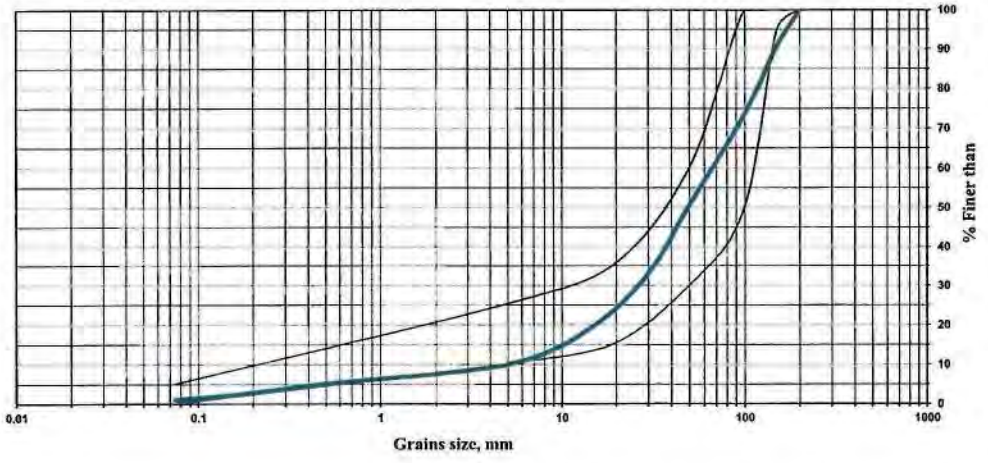
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 F.T. Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-27

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	85	73	50	35	23	14	10	7	7	5	4	2	1.0
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	90.4%	Cu = 13	D_{85} = #DIV/0!	D_{15} = 10.2
Sand %	8.6%	Cc = 2	D_{60} = 67.0	D_{10} = 5.0
Silt/Clay %	1.0%		D_{50} = 49.6	

Notes: Gap for the following sieves: 150 mm

Prepared By: Hugo Perron, tech

Verified By: Maxime Côté

Signature:

Date: 2019-07-02

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
		Q-Sana Project #:	11-837
PROJET:	Expansion Project - Site Crushing Services	**SAMPLE number:**	INT-190017
SITE:	Baffinland, Milne Port	**DATE:**	19-06-25

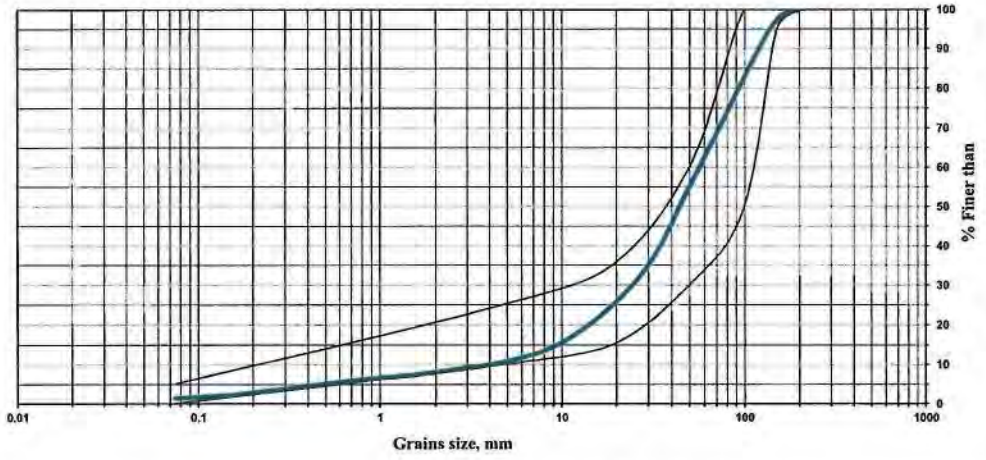
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 C.S. Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-25

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	97	83	55	37	25	15	11	8	7	5	4	2	1.3
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	89.4%	Cu = 15	D_{85} = #DIV/0!	D_{15} = 9.6
Sand %	9.2%	Cc = 3	D_{60} = 57.1	D_{10} = 3.9
Silt/Clay %	1.3%		D_{50} = 44.5	

Notes: Aggregate compliant with specs

Prepared By: Hugo Perron, tech

Verified By: Hugo Perron, tech

Signature:

Date: 2019-06-26

Oriqtaatuit SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
		Q-Sana Project #:	11-837
PROJET:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190016
SITE:	Baffinland, Milne Port	**DATE:**	19-06-22

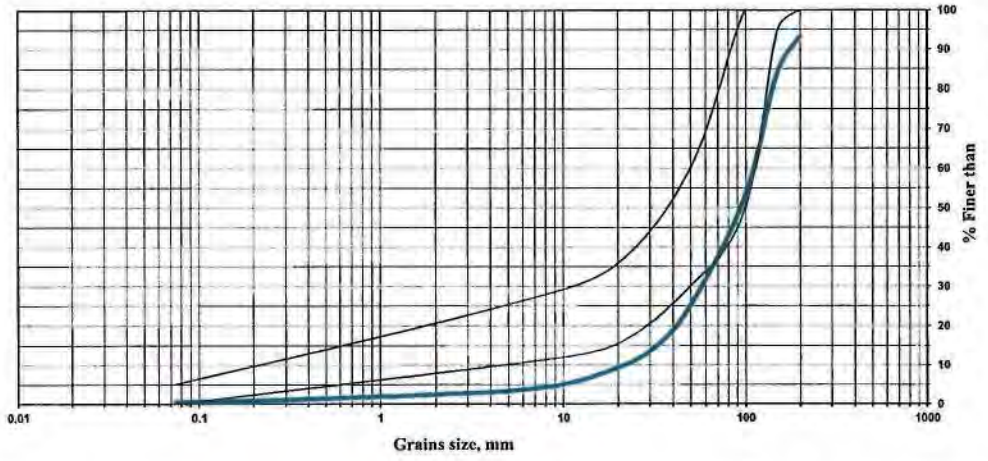
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-22

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				93	84	53	25	14	9	5	3	2	2	1	1	1	0.5
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	96.9%	Cu = #DIV/0!	D_{85} = #DIV/0!	D_{15} = 32.9
Sand %	2.6%	Cc = #DIV/0!	D_{60} = #DIV/0!	D_{10} = 21.4
Silt/Clay %	0.5%		D_{50} = 93.1	

Notes: Gap for the following sieves: 200, 150, 50, 19, 4.75 mm

Prepared By: Hugo Perron

Verified By: Maxime Côté

Signature: [signature] **Date:** 2019-07-15

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190015
SITE:	Baffinland, Milne Port	**DATE:**	19-06-19

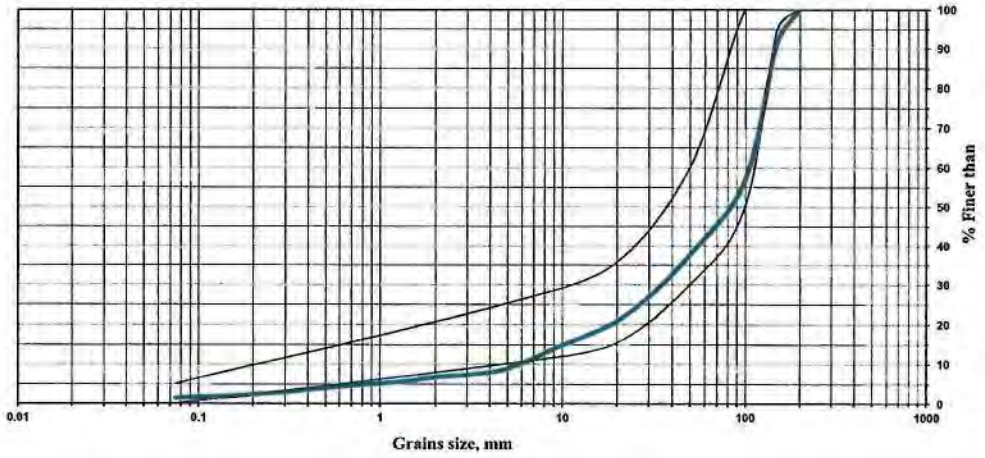
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-19

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	[illegible]	56	38	28	20	14	[illegible]	7	5	4	3	2	1.4
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	91.6%	Cu = #DIV/0!	D_{85} = #DIV/0!	D_{15} = 10.4
Sand %	7.0%	Cc = #DIV/0!	D_{60} = #DIV/0!	D_{10} = 5.7
Silt/Clay %	1.4%		D_{50} = 79.0	

Notes: Gap for the following sieves: 150, 4.75 mm

Prepared By: Hugo Perron

Verified By: Maxime Côté

Signature: [signature]

Date: 2019-07-15

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190014
SITE:	Baffinland, Milne Port	**DATE:**	19-06-08

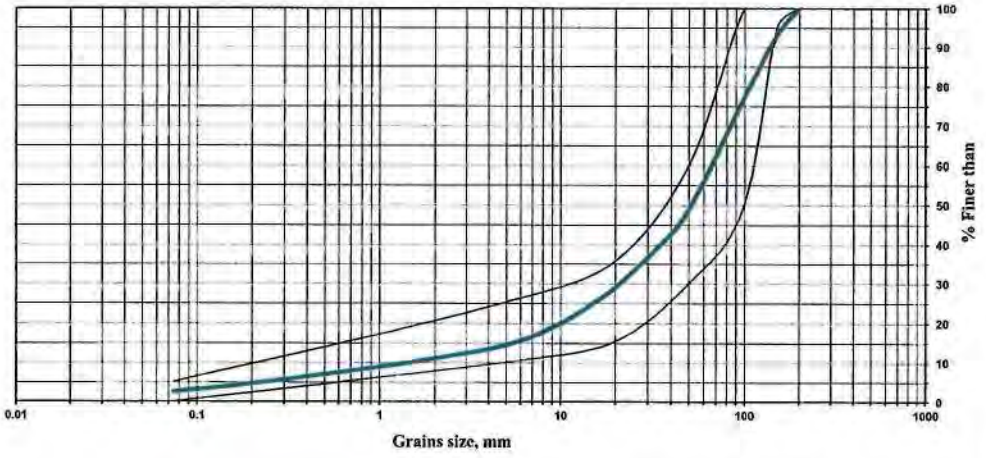
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Maxime Côté
Type of Use		**Sampling Date**	2019-06-07

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	[illegible]	77	49	38	28	19	14	11	9	7	6	4	2.5
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	85.8%	Cu = 45	D_{85} = #DIV/0!	D_{15} = 5.3
Sand %	11.7%	Cc = 4	D_{60} = 66.1	D_{10} = 1.5
Silt/Clay %	2.5%		D_{50} = 51.7	

Notes: Gap for the following sieves: 150 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N. Lt

Date: 2019-07-15

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190013
SITE:	Baffinland, Milne Port	**DATE:**	19-06-06

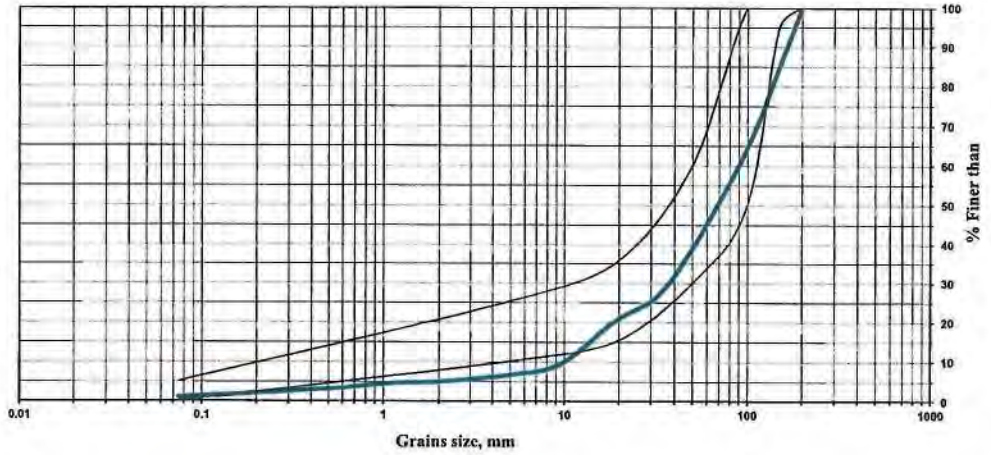
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Maxime Côté
Type of Use		**Sampling Date**	2019-06-06

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	85	64	39	26	20	9	6	5	5	3	2	2	1.0
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	93.5%	Cu = 9	D_{85} = #DIV/0!	D_{15} = 13.7
Sand %	5.5%	Cc = 2	D_{60} = 89.2	D_{10} = 10.0
Silt/Clay %	1.0%		D_{50} = 68.0	

Notes: Gap for the following sieves: 150, 4.75 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N L T U **Date:** 2019-07-15

I.C: Informatique
DV: 5 ans

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	27-May-19	Report Number:	18SJ0001
File Number:	T08P003	Inspector:	R.chaisson
Client:	Hatch	Sampled By:	R.Chaisson
Project:	Baffinland	Sample Date:	27-May-19
Location:	Port Site	Copy To:	
Contractor:	Nuna		

TEST RESULTS

SIEVE SIZE (mm)			200	150	100	56	50	19	4.75	2.50	1.25	0.630	0.315	0.160	0.080
MAX % PASS SPEC			100.0	100.0	100.0		60.0	35.0	25.0						5.0
MIN % PASS SPEC			100.0	95.0	50.0		30.0	15.0	10.0						0.0
% PASS RESULTS			100.0	100.0	90.3	52.4		22.1	11.1	7.5	5.8	4.7	3.5	2.4	1.5

MATERIAL TYPE

Type 8

SIEVE METHOD

Washed

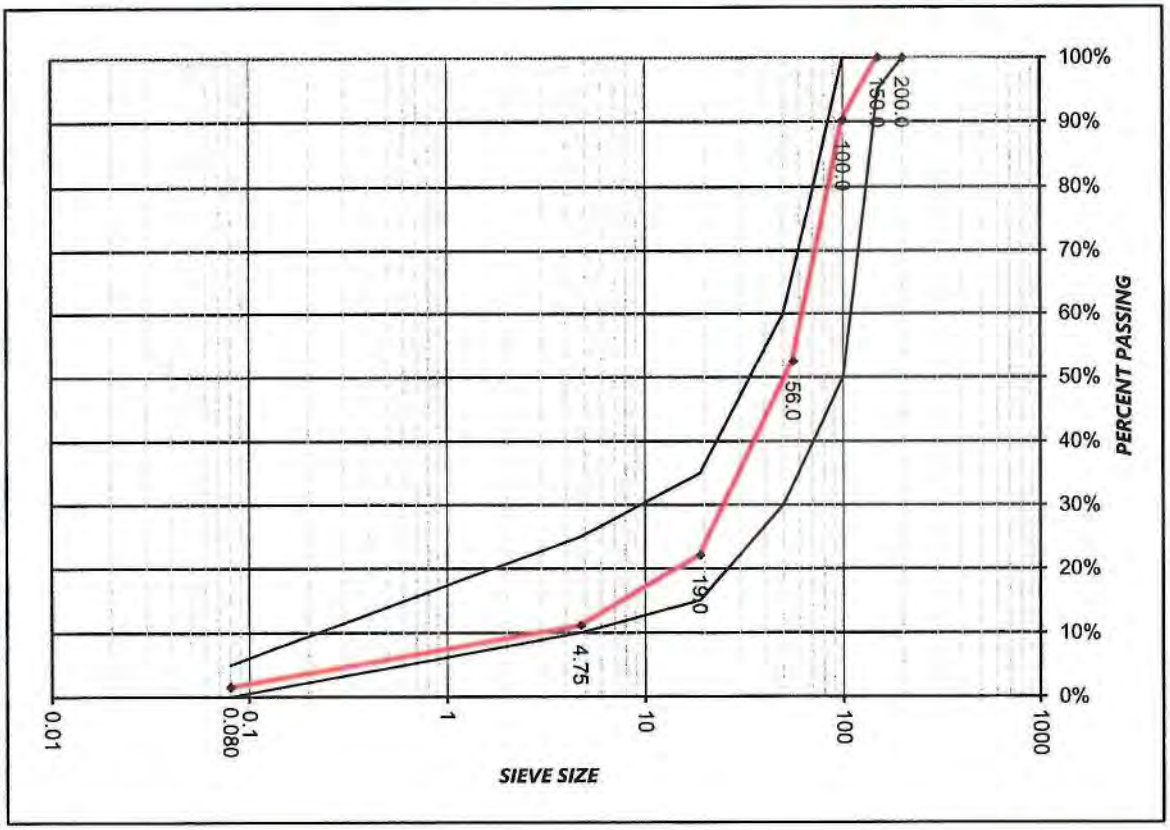
% FRACTURE

% MOISTURE

1.3%

GRADATIONS

GRAVEL	88.9%
SAND	9.6%
SILT/CLAY	1.5%



COMMENTS

Sample meets all project specifications for site.

Used 56mm sieve due to availability.

Reviewed By:

M Kirkbride P.Eng.

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	25-May-19	Report Number:	18SJ0001
File Number:	T08P002	Inspector:	R.chaisson
Client:	Hatch	Sampled By:	R.Chaisson
Project:	Baffinland	Sample Date:	25-May-19
Location:	Port Site	Copy To:	
Contractor:	Nuna		

TEST RESULTS

SIEVE SIZE (mm)			200	150	100	56	50	19	4.75	2.50	1.25	0.630	0.315	0.160	0.080
MAX % PASS SPEC			100.0	100.0	100.0		60.0	35.0	25.0						5.0
MIN % PASS SPEC			100.0	95.0	50.0		30.0	15.0	10.0						0.0
% PASS RESULTS			100.0	100.0	87.2	57.1		22.8	11.0	7.6	6.1	5.1	3.9	2.8	1.9

MATERIAL TYPE

Type 8

SIEVE METHOD

Washed

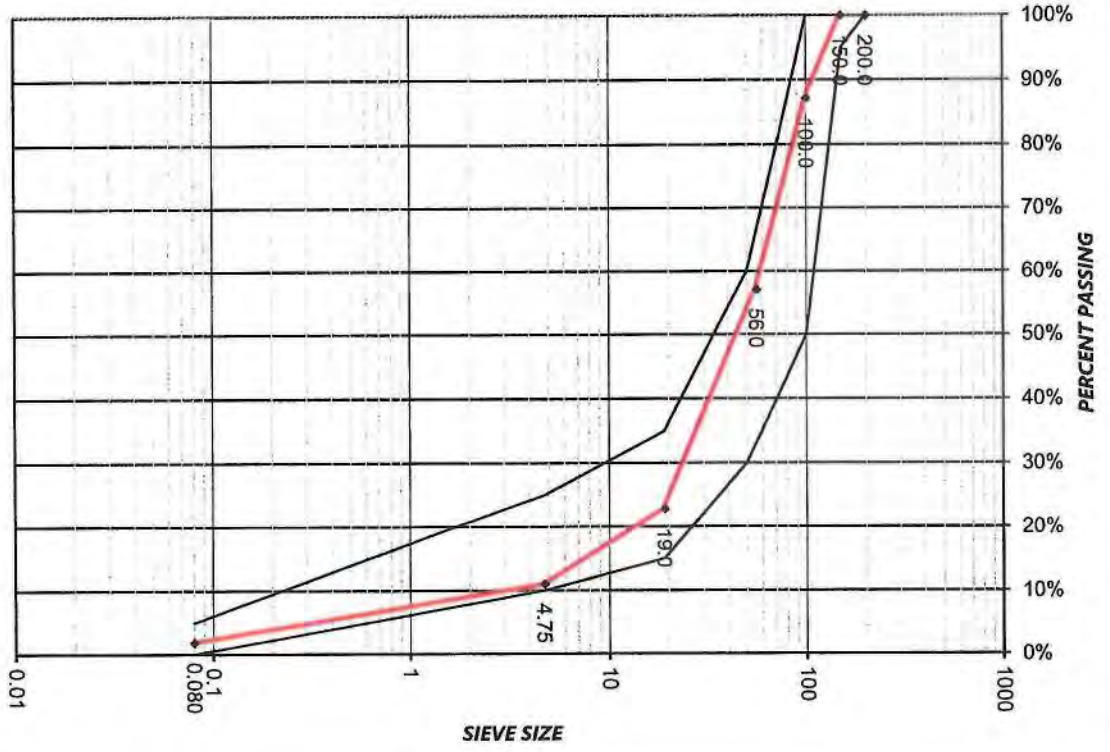
% FRACTURE

% MOISTURE

3.7%

GRADATIONS

GRAVEL	89.0%
SAND	9.2%
SILT/CLAY	1.9%



COMMENTS

Sample meets all project specifications for site.

Used 56mm sieve due to availability.

Reviewed By:

M Kirkbride P.Eng.

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	10-May-19	Report Number:	18SJ0001
File Number:	T08P001	Inspector:	R.chaisson
Client:	Hatch	Sampled By:	R.Chaisson
Project:	Baffinland	Sample Date:	8-May-19
Location:	Port Site	Copy To:	
Contractor:	Nuna		

TEST RESULTS

SIEVE SIZE (mm)			200	150	100	56	50	19	4.75	2.50	1.25	0.630	0.315	0.160	0.080
MAX % PASS SPEC			100.0	100.0	100.0		60.0	35.0	25.0						5.0
MIN % PASS SPEC			100.0	95.0	50.0		30.0	15.0	10.0						0.0
% PASS RESULTS			100.0	100.0	88.0	45.3		39.7	15.8	13.1	9.8	6.6	3.6	2.0	1.1

MATERIAL TYPE

Type 8

SIEVE METHOD

Washed

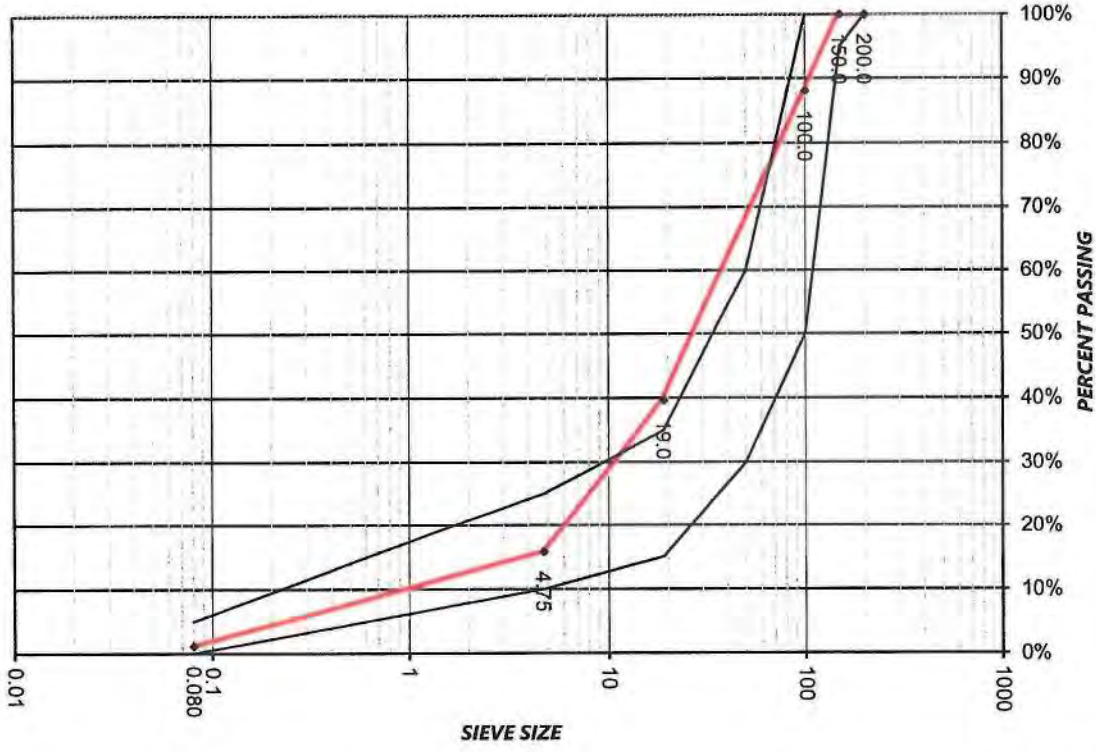
% FRACTURE

% MOISTURE

7.1%

GRADATIONS

GRAVEL	84.2%
SAND	14.6%
SILT/CLAY	1.1%



COMMENTS

Sample is fine on the 19mm (39.7% passing). All other sizes are within specification

Used 56mm sieve due to availability.

Reviewed By:

M Kirkbride P.Eng.

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-023

Inspection date 2019-07-01
Shift Day
Crucher type Primary F.T.
Jaw opening 4" 1/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	234		
2	Yes	Yes	No	1156		
3	Yes	Yes	No	2034		
4	Yes	Yes	No	3090		
5	Yes	Yes	No	3387		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-07-01

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-022

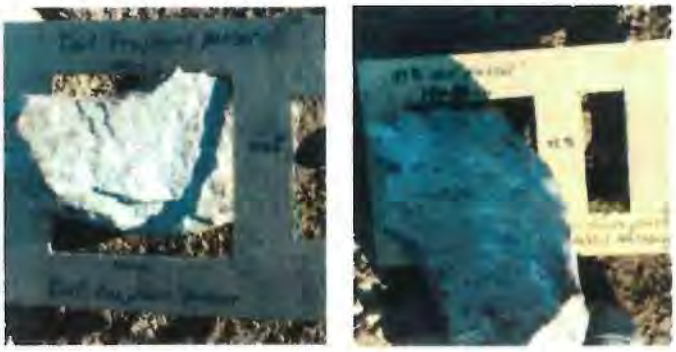
Inspection date 2019-06-30
Shift Day

Crucher type Primary F.T.
Jaw opening 4" 1/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	183		
2	Yes	Yes	No	926		
3	Yes	Yes	No	2023		
4	Yes	Yes	No	3076		
5	Yes	Yes	No	4083		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures



Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HPR

Date: 2019-06-30

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-021

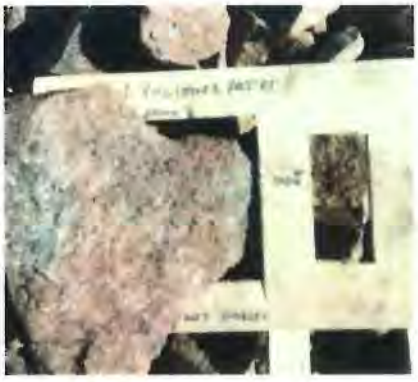
Inspection date 2019-06-29
Shift Day

Crucher type Primary F.T.
Jaw opening 4" 1/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	1065		
2	N/A	No	Yes	1634		
3	N/A	No	Yes	2570		
4	Yes	Yes	No	3482		
5	Yes	Yes	No	5007		
6						
7						
8						
9						
10						

Comments: Material is pretty much coarsy during the morning. Needs more fine material.
No particule retained over 200mm after jaw ajustment at 12h

Representatives Pictures



Biggest particule retained over 200mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-29

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-020

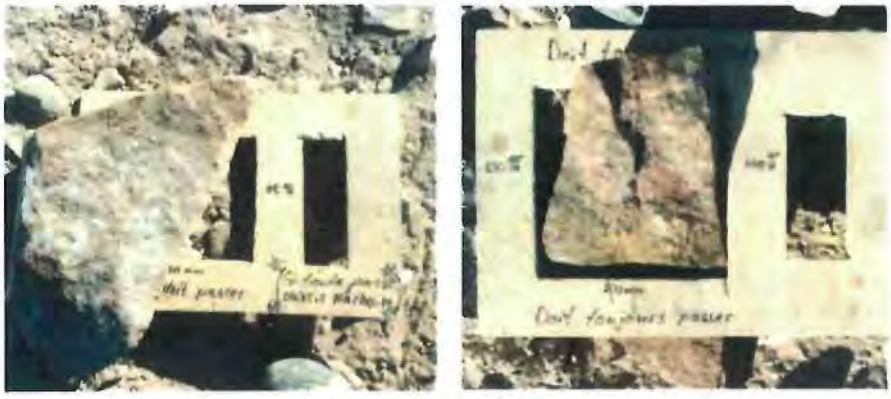
Inspection date 2019-06-29
Shift Day

Crucher type Primary C.S
Jaw opening 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	315		
2	Yes	Yes	No	1224		
3	Yes	Yes	No	1997		
4	Yes	Yes	No	2644		
5	Yes	Yes	No	4502		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures



Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-29

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-019

Inspection date 2019-06-28
Shift Day

Crucher type Primary F.T.
Jaw opening 4" 1/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	293		
2	Yes	Yes	No	1400		
3	Yes	Yes	No	1880		
4	Yes	Yes	No	2764		
5	Yes	Yes	No	4567		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HPR **Date:** 2019-06-28

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-018

Inspection date 2019-06-28
Shift Day

Crucher type Primary C.S
Jaw opening 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	143		
2	N/A	No	Yes	1417		
3	Yes	Yes	No	2264		
4	Yes	Yes	No	2920		
5	Yes	Yes	No	4120		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
One aggregate bigger than 200mm has been found.
Conform sieves analysis done.

Representatives Pictures

Biggest particule retained over 200mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-28

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-017

Inspection date 2019-06-27 **Crucher type** Primary C.S.
Shift Day **Jaw opening** 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	145		
2	Yes	Yes	No	1310		
3	N/A	No	Yes	2348		
4	Yes	Yes	No	3248		
5	Yes	Yes	No	3996		
6						
7						
8						
9						
10						

Comments: Material is pretty much coarsy. Needs more fine material.
One aggregate bigger than 200mm has been found.

Representatives Pictures

Biggest particule retained over 200mm

QC Name: Hugo Perron

QC Signature: HP **Date:** 2019-06-27

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

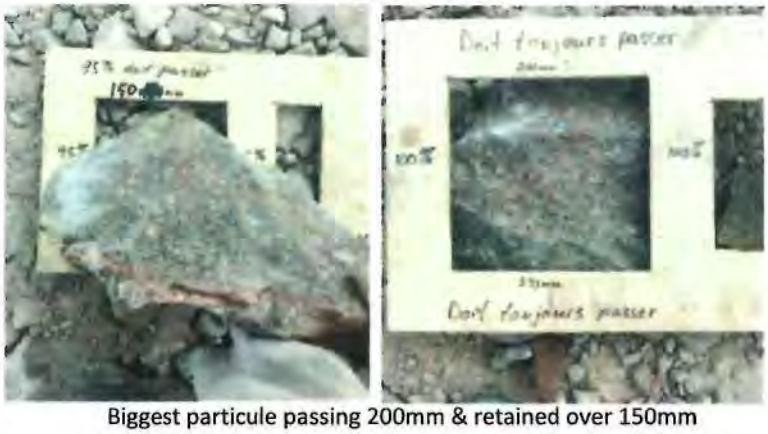
Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-014

Inspection date 2019-06-26 **Crucher type** Primary C.S
Shift Day **Jaw opening** 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	157		
2	Yes	Yes	No	1189		
3	Yes	Yes	No	2129		
4	Yes	Yes	No	2804		
5	Yes	Yes	No	4512		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures



Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HPL **Date:** 2019-06-26

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-013

Inspection date 2019-06-25 **Crucher type** Primary C.S
Shift Day **Jaw opening** 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	610		
2	Yes	Yes	No	1685		
3	Yes	Yes	No	2453		
4	Yes	Yes	No	2831		
5	Yes	Yes	No	3750		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP **Date:** 2019-06-25

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-012

Inspection date 2019-06-24
Shift Day
Crucher type Primary C.S
Jaw opening 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	336		
2	Yes	Yes	No	885		
3	Yes	Yes	No	1565		
4	Yes	Yes	No	2277		
5	Yes	Yes	No	2731		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-24

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-011

Inspection date 2019-06-23 **Crucher type** Primary C.S

Shift Day **Jaw opening** 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	152		
2	Yes	Yes	No	724		
3						
4						
5						
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm sieve
Only 2 inspections because downtime

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP **Date:** 2019-06-23

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-010

Inspection date 2019-06-22
Shift Day

Crucher type Primary C.S
Jaw opening 4" 3/8

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	Yes	286		
2	Yes	Yes	No	724		
3	Yes	Yes	No	1466		
4	Yes	Yes	No	2578		
5	Yes	Yes	No	3087		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm sieve after the jaw adjustment.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-22

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-11 **Crucher type** Primary C.S

Shift Day **Jaw opening** 4" 3/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	135		
2	Yes	Yes	No	486		
3	Yes	Yes	No	1282		
4	Yes	Yes	No	1417		
5	Yes	Yes	No	2513		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule reatained over 200mm sieve.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

Bradford Watson
QA/QC
Reviewed

QC Name: Maxime Côté

QC Signature: **Date:** 2019-06-11

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-10
Shift Day

Crucher type Primary C.S
Jaw opening 4" 3/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	372		
2	Yes	Yes	No	858		
3	Yes	Yes	No	1932		
4	Yes	Yes	No	2815		
5						
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule reatained over 200mm sieve.
Only 4 tests due to downtime.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Maxime Côté

QC Signature:

Date: 2019-06-10

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-09
Shift Day

Crucher type Primary C.S
Jaw opening 4" 3/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	867		
2	Yes	Yes	No	1820		
3	Yes	Yes	No	2911		
4	Yes	Yes	No	3946		
5	Yes	Yes	No	4856		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule reatained over 200mm sieve.
No production on 2019-06-08 Day shift

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Maxime Côté

QC Signature:

Date: 2019-06-09

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-07 **Crucher type** Primary C.S
Shift Day **Jaw opening** 4" 3/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	603		
2	Yes	Yes	No	1264		
3	Yes	Yes	No	2134		
4	Yes	Yes	No	2878		
5	Yes	Yes	No	3684		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule reatained over 200mm sieve.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Maxime Côté

QC Signature: **Date:** 2019-06-07

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-06 **Crucher type** Primary C.S
Shift Day **Jaw opening** 5"

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	690		
2	Yes	Yes	No	1607		
3	Yes	Yes	No	2137		
4	Yes	Yes	No	2866		
5	Yes	Yes	No	3832		
6						
7						
8						
9						
10						

Comments: Material is pretty much coarsy. Needs more fine material.
No particule reatained over 200mm sieve.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Maxime Côté

QC Signature: **Date:** 2019-06-06

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-05 **Crucher type** Primary C.S
Shift Day **Jaw opening** 5"

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	70		
2	Yes	Yes	No	460		
3	Yes	Yes	No	1303		
4	Yes	Yes	No	2191		
5	N/A	No	Yes	2431		
6						
7						
8						
9						
10						

Comments: Material is pretty much coarsy. Needs more fine material.
One particule bigger than 200mm have been found.

Representatives Pictures

Particule retained over 200mm

QC Name: Maxime Côté

QC Signature: **Date:** 2019-06-05

Material Inspection Report

Baffin Island Material Testing

Date:	May 12th/2019	Project Number:	18SJ0001
Project Name:	Baffinland	Report Number:	
Location/ Area:	Port Site	Allnorth Site Representative:	R. Chaisson
Client Site Representative:	Marlon Coakley	Copy to:	

Visual Inspection Report

Material: Type 12

Based on visual inspections of Type 12 material stockpiled in the quarry, during placement and after compaction:

The Type 12 appears to visually meet gradation specification of coarse material with sufficient fines; no oversize present during placement, operators in quarry pick out all oversize material before loading trucks.
After compacting with 10T vibrating roller making 5+ passes, the Type 12 is well compacted with no deflection occurring when driven on by rock trucks and heavy equipment.

Based on visual observations this material meets the required specifications from document **"H353004-00000-280-078-002 – Quarried Fill materials".**

Allnorth Designate-Signature		Title:	Materials Technician	Date: 05/12/2019

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	June 9 2019	Report Number:	18SJ0001
File Number:	T05P003	Inspector:	M.Tabor
Client:	Hatch	Sampled By:	M.Tabor
Project:	Baffinland	Sample Date:	June 5 2019
Location:	Port Site	Copy To:	
Contractor:	Nuna		

TEST RESULTS

SIEVE SIZE (mm)					32	25	13.2	9.5	4.75	2.00	1.18	0.600	0.315	0.160	0.075
MAX % PASS SPEC					100.0	100.0		70.0	55.0	42.0		30.0			8.0
MIN % PASS SPEC					100.0	70.0		40.0	30.0	22.0		15.0			4.0
% PASS RESULTS					100.0	96.9	74.4	65.4	51.3	35.6	29.0	22.1	16.1	10.6	6.4

MATERIAL TYPE

Type 5

SIEVE METHOD

Washed

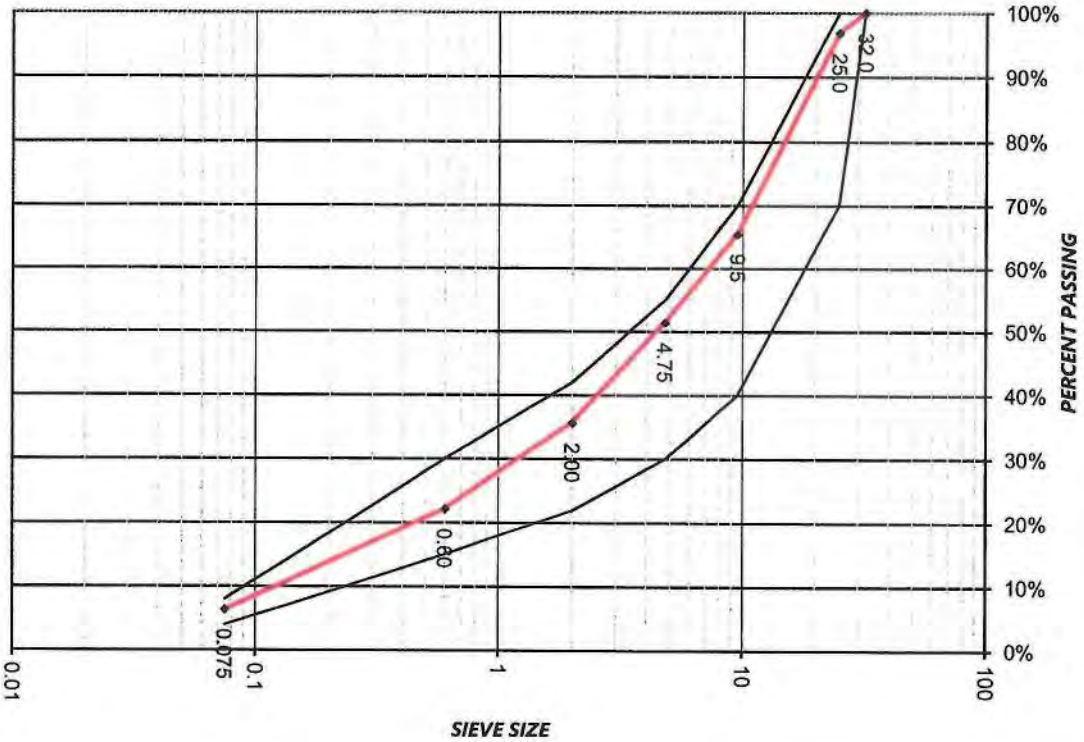
% FRACTURE

% MOISTURE

1.9%

GRADATIONS

GRAVEL	48.7%
SAND	45.0%
SILT/CLAY	6.4%



COMMENTS

Sample meets all project specifications for site.	**Reviewed By:**
	M. Tabor

NUNA

NUNA EAST LTD

(Section 6)

No Request for Information (RFIs) issued for this Job File

NUNA

NUNA EAST LTD

(Section 7)

Non-Conformance Reports (NCRs)

NON-CONFORMANCE REPORT LOG

Project: CC006 **Date:** 9-27-19

Area: Mary River Expansion - Milne Port **Contract/Work Pkg. No.:** CC006-0001A LP5

CWP#: N/A **Originator:** Bradford Watkin

NCR No.	Description	Disposition	Date.	Rectified	Date
	No NCR's generated for this work package				

NUNA

NUNA EAST LTD

(Section 8)

Land Disturbance Forms

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.		**Department:**	Projects
Date:	1/5/18	**Name/Position:**	**Brandon Urquhart /Project Coordinator**
Project location:	Port Site		Laydown LP5
Project Duration:	Start 1/6/19	Finish	2/2/19

Project Details

GPS Coordinates: Lat: N+7974900 Long: E+503400 (NAD 83)

Land disturbance area: 74380 m2

Type of disturbance (Drilling, Excavation, Rutting due to site access, etc.)

Material placement over tundra, ice removal if present

Detailed description of planned work.

Construction of permanent laydown
- ROQ fill with at least 300mm of Type 8 fill; 100mm thick topping of Type 5 crushed gravel.
- Area to be graded for free draining
- Ditching around Laydown as per Port water management plan.

Check List

1	**Has the Environmental Concerns in section 2.3.1. of the Environmental Protection plan been reviewed?** - If No, please review the list of concerns on page 4 of this form.	Yes
-	**Will work be completed within 31m of the High Water Mark of any stream or water body?.** - If Yes, please contact the Environment Department.	No
3	**Is there a stream or waterbody >31m of the work site?.** - If Yes, Include a detailed description of the Sediment and Erosion Control Measures on Page 3.	No
4	**Has the area been cleared by Archaeology?.** - If No or Unknown, Please contact the Environment Department.	Yes
5	**Will the land disturbance occur between May 31 and August 31?.** - If Yes, An Active Migration Bird Survey is required prior to start.	No

Approval

Approved by: William Bowden Position: Envrionmental Superintendent

Approved on: Feb 3 2019

Valid Unit:

Comments and recommendations by the Environment Department:

Land Disturbance for the LP5 laydown is approved as agreed upon following confirmation of the mitigation measures to completed as discussed in emails prior to freshet.

Baffinland

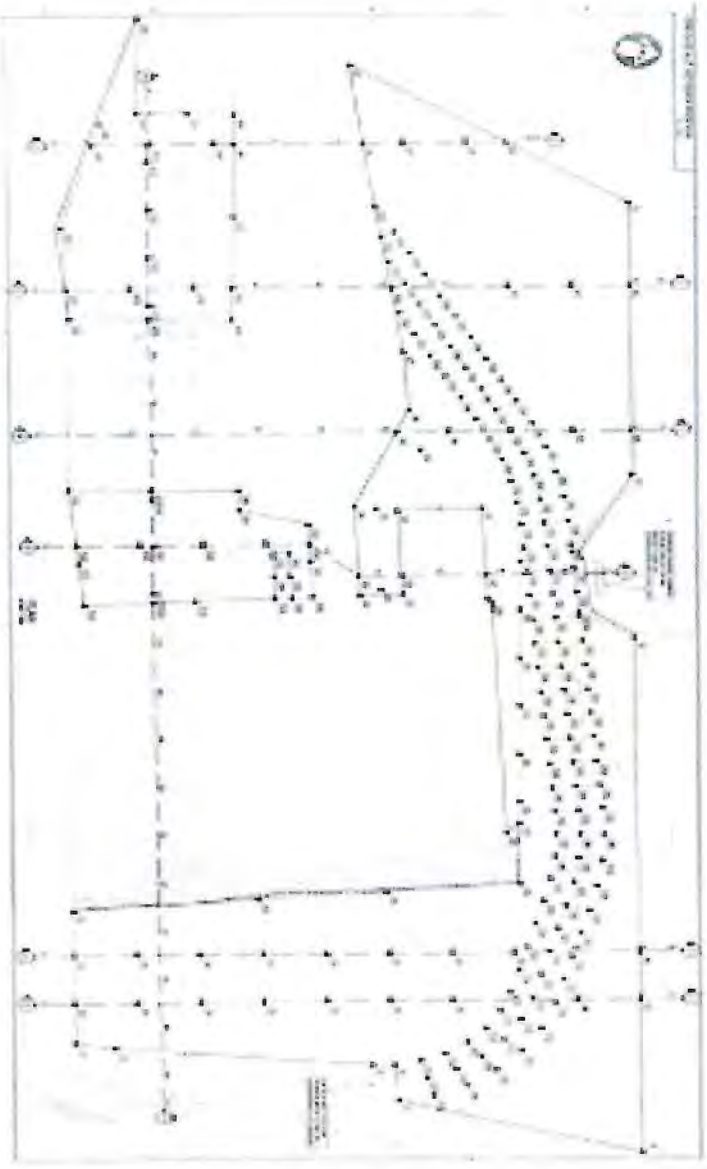
LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	1/5/18		
Project location:	Port Site		

Design/Engineering Drawing

See drawing H353004-40000-221-271-0005-0010, H353004-00000-221-294-0002-0001



Baffinland

LAND DISTRURBANCE FORM

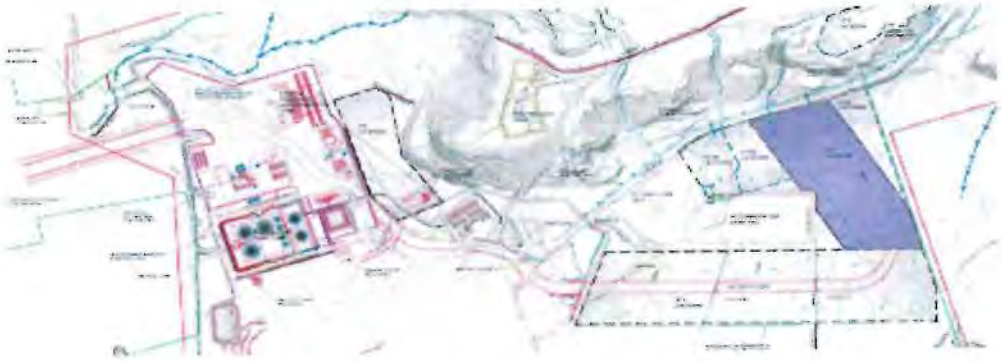
Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	1/5/18		
Project location:	Port Site		

Sediment and Erosion Control Measures

Please give a detailed description of the run-off control measure which will be put in place. Include all water bodies and streams, slope direction and materials to be used.

- Laydown will be graded to be free draining



Baffinland

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	1/5/18		
Project location:	Port Site		

2.3.1 ENVIRONMENTAL CONCERN

2.3.1 ENVIRONMENTAL CONCERN

The Arctic is a fragile environment where the recovery of vegetation within this region is slow. Ground disturbance shall be minimized to protect archaeological resources, wildlife habitats, sensitive landforms, such as ice-rich permafrost features, and prevent erosion and the movement of sediment into watercourses and water bodies. Various permits, licences and approvals issued to Baffinland are specific in regards to ground disturbances and outline the necessary protection measures that need to be taken to minimize this aspect of the Project.

The following measures are to be implemented to minimize ground disturbance:

- Equipment and personnel must stay on existing roads and trails
- Approval for new areas of disturbance must be approved by the Operations Manager
- Rutting (furrow creation) shall be avoided on ground surfaces; overland travel of equipment or vehicle will be suspended when rutting occurs
- All camps shall be located on gravel, sand or other durable land
- No materials shall be stored on the surface ice of streams
- No material shall be removed from below the ordinary high water mark of any stream
- Greywater sumps must be located a distance of at least thirty (30) metres above the ordinary high water mark of any water body

Bradford Watkin

From: Ken Humby
Sent: Thursday, April 11, 2019 7:13 AM
To: Bradford Watkin
Subject: FW: [External]RE: [External]RE: [External]FW: [External]Milne Port Laydown Land Disturbance Forms
Attachments: Land Disturbance Form Laydown LP2 (00000002).xlsx; Land Disturbance Form_LP3 Laydown Dewatering_.xlsx; Land Disturbance Form Laydown LP3 (2).xlsx; Land Disturbance Form Laydown LP5 (2).xlsx

Ken Humby
Project Superintendent
E kenh@nunalogistics.com

NUNA EAST LTD.
PO Box 370
Pond Inlet, Nunavut, Canada, X0A 0X0
nunalogistics.com

You may withdraw consent for email communications from the Nuna Group of Companies by responding to the email with "Unsubscribe" in the subject line.

From: William Bowden <William.Bowden@baffinland.com>
Sent: Sunday, February 3, 2019 2:31 PM
To: Gionet, Stephane <stephane.gionet@hatch.com>
Cc: Mills, Nick <nick.mills@hatch.com>; Ken Humby <kenh@nunalogistics.com>; Brandon Urquhart <brandonu@nunalogistics.com>; Marlon Coakley <marlon.coakley@hatch.com>; Sten Sundin <Sten.Sundin@baffinland.com>; Connor Devereaux <Connor.Devereaux@baffinland.com>; Dominic Ritgen <Dominic.Ritgen@baffinland.com>; Timothy Ray Sewell <Timothy.Sewell@baffinland.com>
Subject: RE: [External]RE: [External]RE: [External]FW: [External]Milne Port Laydown Land Disturbance Forms

Hello Stephane,

As requested please see the attached approved land disturbance forms for LP2, LP3 and LP5.

Thank you to yourself and Nick(Feb 1st email) for answering our enquiries on these designs and associated concerns. Please ensure Projects commitments and responses in the series of emails below are completed for construction prior freshet. Melt can occur as early as beginning of May.

Cheers,

Bill

William Bowden | Environmental Superintendent
Mary River Mine Site
T: +1 647 253 0596 x6016

NUNA

NUNA EAST LTD

(Section 9)

Quality Control Reports

NUNA NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 2 Page 1 of 1

		Date: 9/1/19
Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Material Type:** 5
Site Area: LAYDOWN 5	**Area Description:** AREA STRADLING LP5/W10B	
Drawing No.: H353004-40000-228-271-0007-0001		**Rev.:** 1

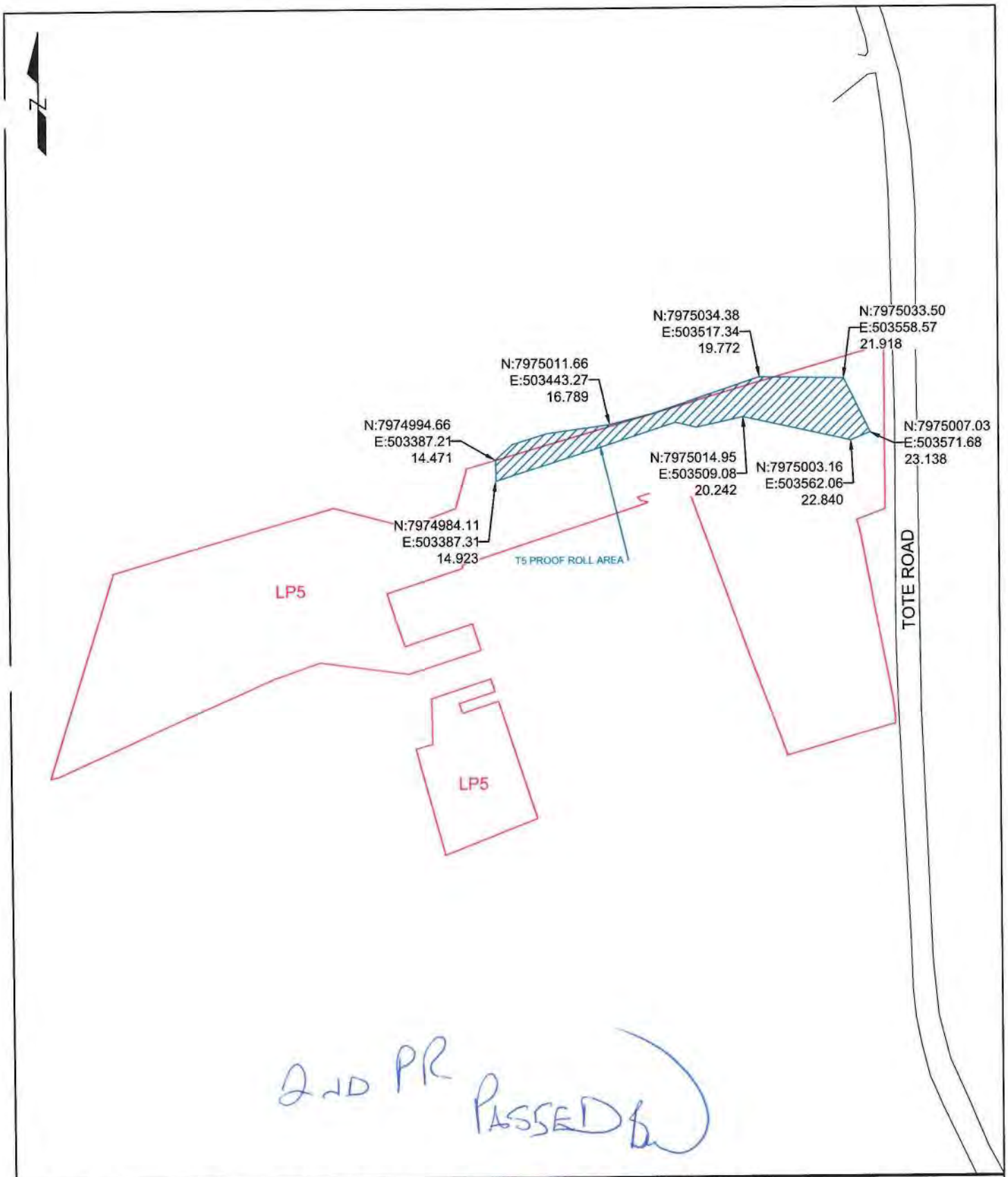
Area / Stations Inspected: See Survey Data Report	**Type of Proof Role:** ☐ Subgrade ☑ Material
Proof Rolled With: A loaded 745 Articulated Haul Truck	**Number of Passes Completed:** 2

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections (Pumping)	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Location Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments:

2ND PR PASSED WITH NEW MATERIAL.

[signature]	/ [signature]	Foreman	02/09/19
Construction Designate	Print/Sign	Title	Date
BRADFORD WATKIN	/ [signature]	QC COORDINATOR	9/1/19
Contractor QC Designate	Print/Sign	Title	Date
Ronny Franke	/ [signature]	Hatch QA	Sept 30-2019
Client QA Designate	Print/Sign	Title	Date



2ND PR PASSED

Notes:

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. WALSH

SCALE: AS SHOWN

DATE: SEPT 3, 2019

DRAWING TITLE:
LP5
T5 PROOF ROLL REPORT
SURVEYED SEPT 1, 2019.

DRAWING NAME (YYMMDD): 190901 LP5 T5 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 2 Page 1 of 1

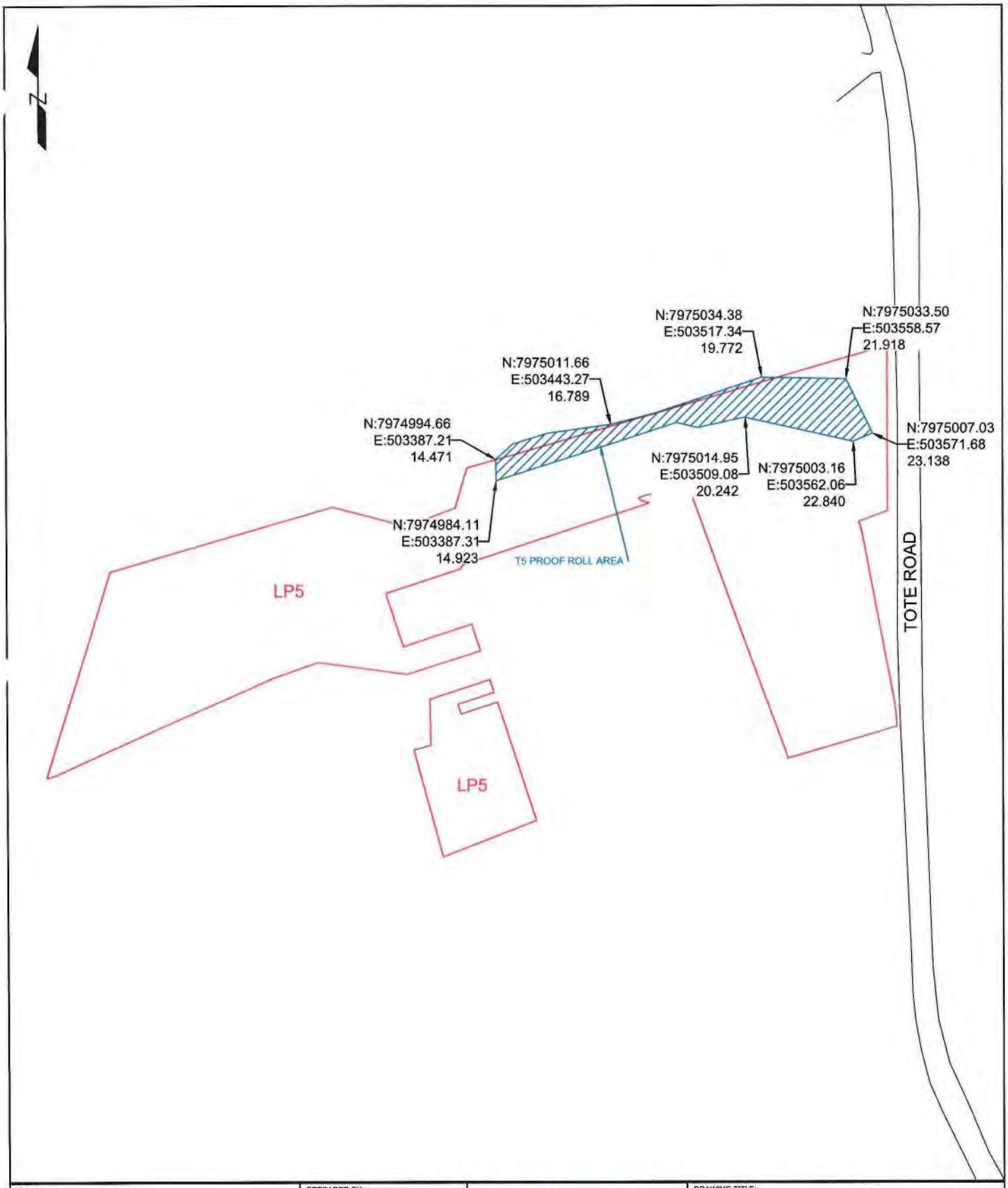
		Date: 9/1/19
Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Material Type:** 5
Site Area: LAYDOWN 5	**Area Description:** AREA ALONG ACCESS ROAD OF LP5	
Drawing No.: A353004-40000-228-272-0017-0001		**Rev.:** 1

Area / Stations Inspected: See Survey Data Report	**Type of Proof Role:** ☐ Subgrade ☑ Material
Proof Rolled With: A loaded 745 Articulated Haul Truck	**Number of Passes Completed:** 2

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections (Pumping)	☑ YES ☐ NO ☐ N/A	BW
Rebound of Surface	☑ YES ☐ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Location Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments: FAIL, EXCAVATE, PLACE NEW AGGREGATE, PACK, AND PROOF ROLL AGAIN.

DAVID THOMPSON	/		FOREMAN	02/09/19
Construction Designate	Print/Sign		Title	Date
BRADFORD WATKINS	/	BW	QC COORDINATOR	9/1/19
Contractor QC Designate	Print/Sign		Title	Date
Ronny Franken	/		Hatch QA	Sept 30-2019
Client QA Designate	Print/Sign		Title	Date



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP5 T5 PROOF ROLL REPORT SURVEYED SEPT 1, 2019.**	
OWNER: BAFFINLAND IRON MINES LP					
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: SEPT 3, 2019	DRAWING NAME (YYMMDD): 190901 LP5 T5 PR REPORT.dwg	

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006 - 00005A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP5	**Area Description:** North of LP5	
Drawing No.: H353004-40000-228-271-0001	**Rev.:** 1	

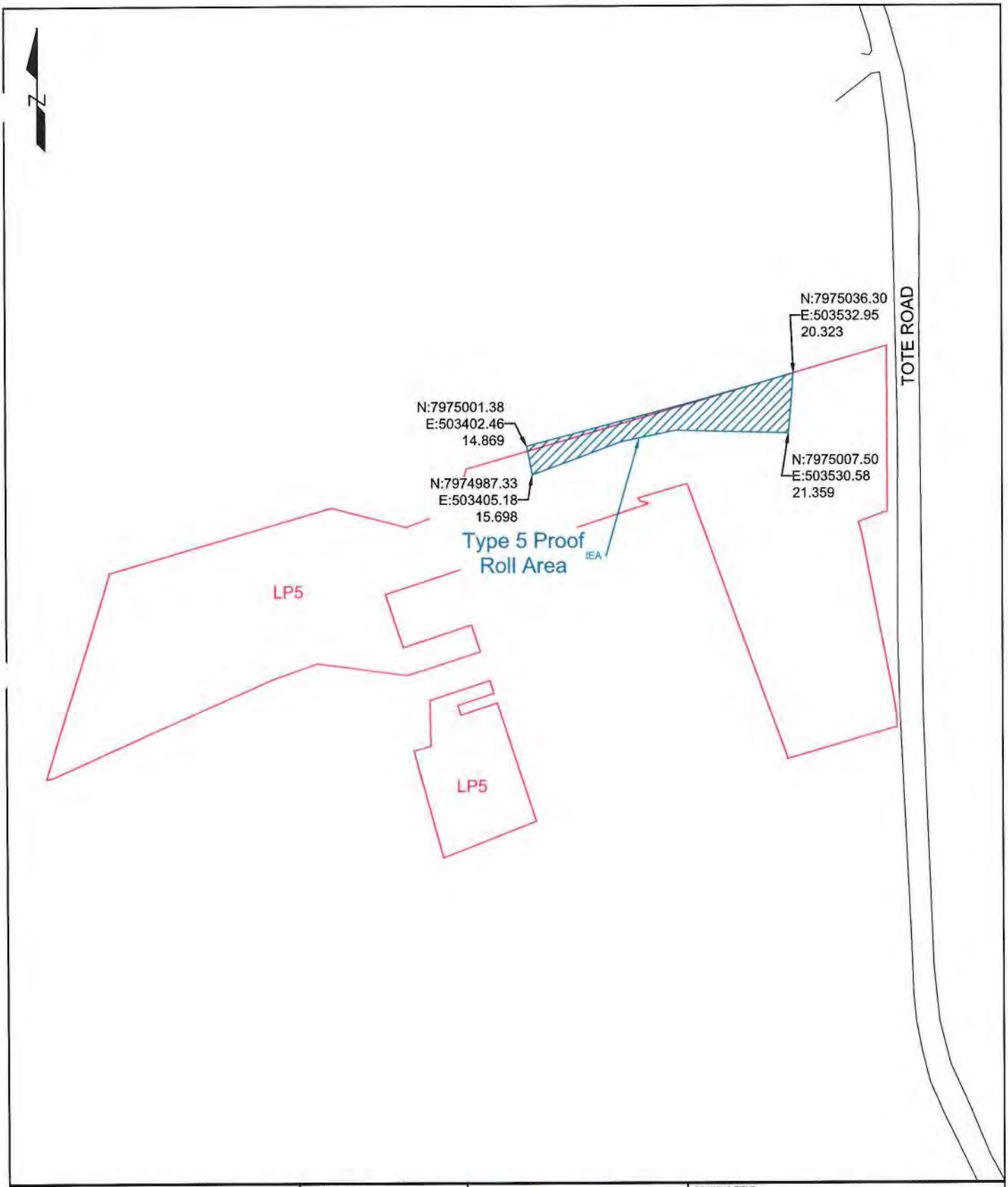
Area / Stations Inspected: LP5 North of Existing Road SEE SURVEY DATA

Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	RA
Rebound of Surface	☐ YES ☑ NO ☐ N/A	RA
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	RA
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	RA
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	RA
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	RA
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	RA
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	RA

Comments: Proof Roll on Top layer of ROG TYPE 5

Robert Albert / Robert Albert	Supervisor	Aug 31, 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN /	QC COORDINATOR	8/31/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 30-2019
Client QA Designate – Print/Sign	Title	Date



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP5 T 5 PROOF ROLL REPORT SURVEYED AUGUST 31, 2019.**
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: SEPT 3, 2019	DRAWING NAME (YYMMDD): 190831 LP5 T5 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP5	**Area Description:** North of LP5	
Drawing No.: 1425304-40000-228-271-0017-000	**Rev.:** 1	

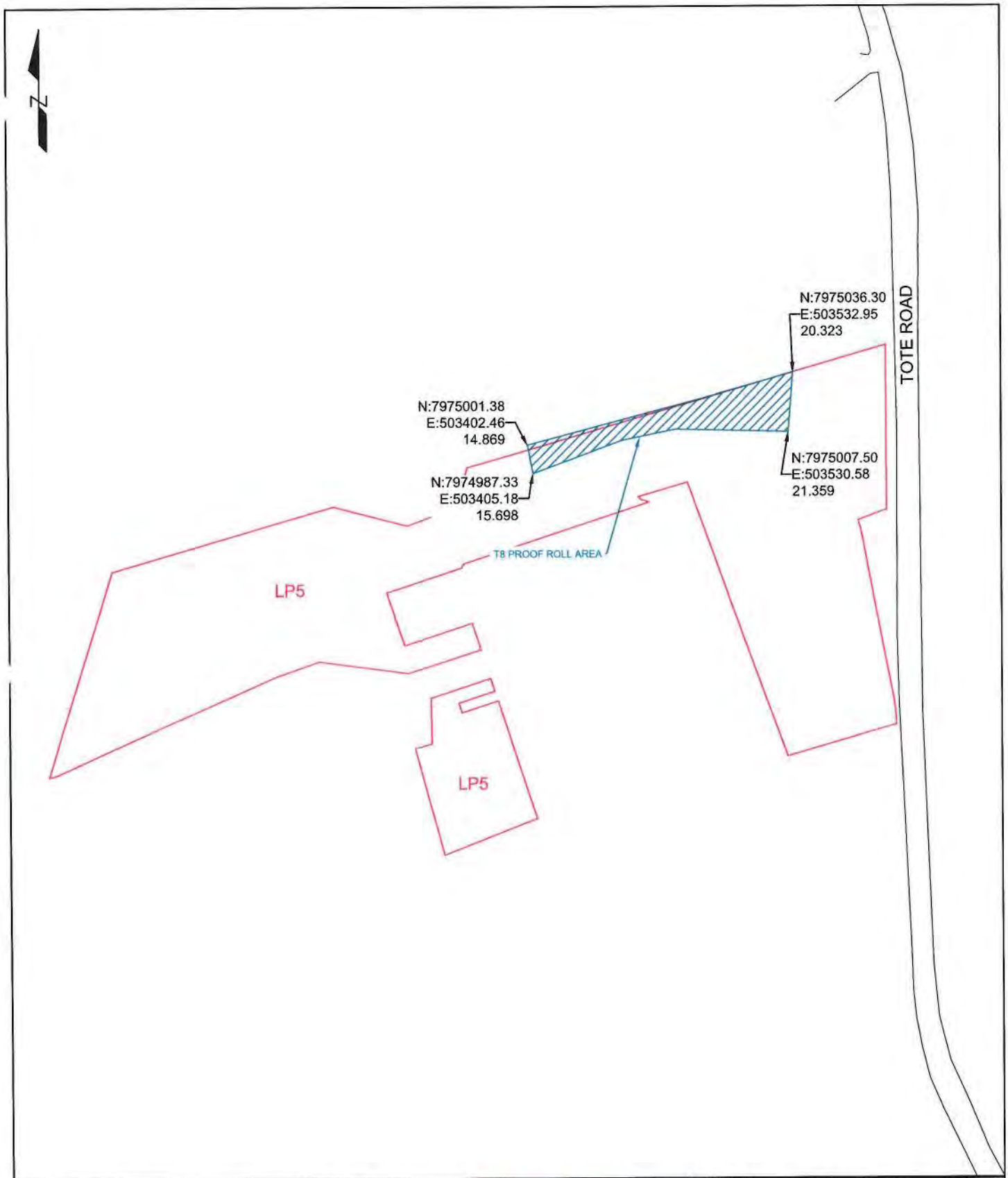
Area / Stations Inspected: LP5 SEE SURVEY ~~DATA~~ North of Existing Road

Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	RA
Rebound of Surface	☐ YES ☑ NO ☐ N/A	RA
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	RA
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	RA
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	RA
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	RA
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	RA
Elevation Record (Survey)	☐ YES ☑ NO ☐ N/A	RA

Comments: Proof Roll on Type 8

Robert Albert / Robert Albert Construction Designate – Print/Sign	Supervisor Title	Aug 31, 2019 Date
BRADFORD WILKIN / [signature] Contractor QC Designate – Print/Sign	QC COORDINATOR Title	8/31/19 Date
Ronny Franken / [signature] Client QA Designate – Print/Sign	Hold QA Title	Sept 30-2019 Date



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP5 T8 PROOF ROLL REPORT SURVEYED AUGUST 31, 2019.**	
OWNER: BAFFINLAND IRON MINES LP					
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: SEPT 3, 2019	DRAWING NAME (YYMMDD): 190831 LP5 T8 PR REPORT.dwg	

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 2 Page 1 of 1

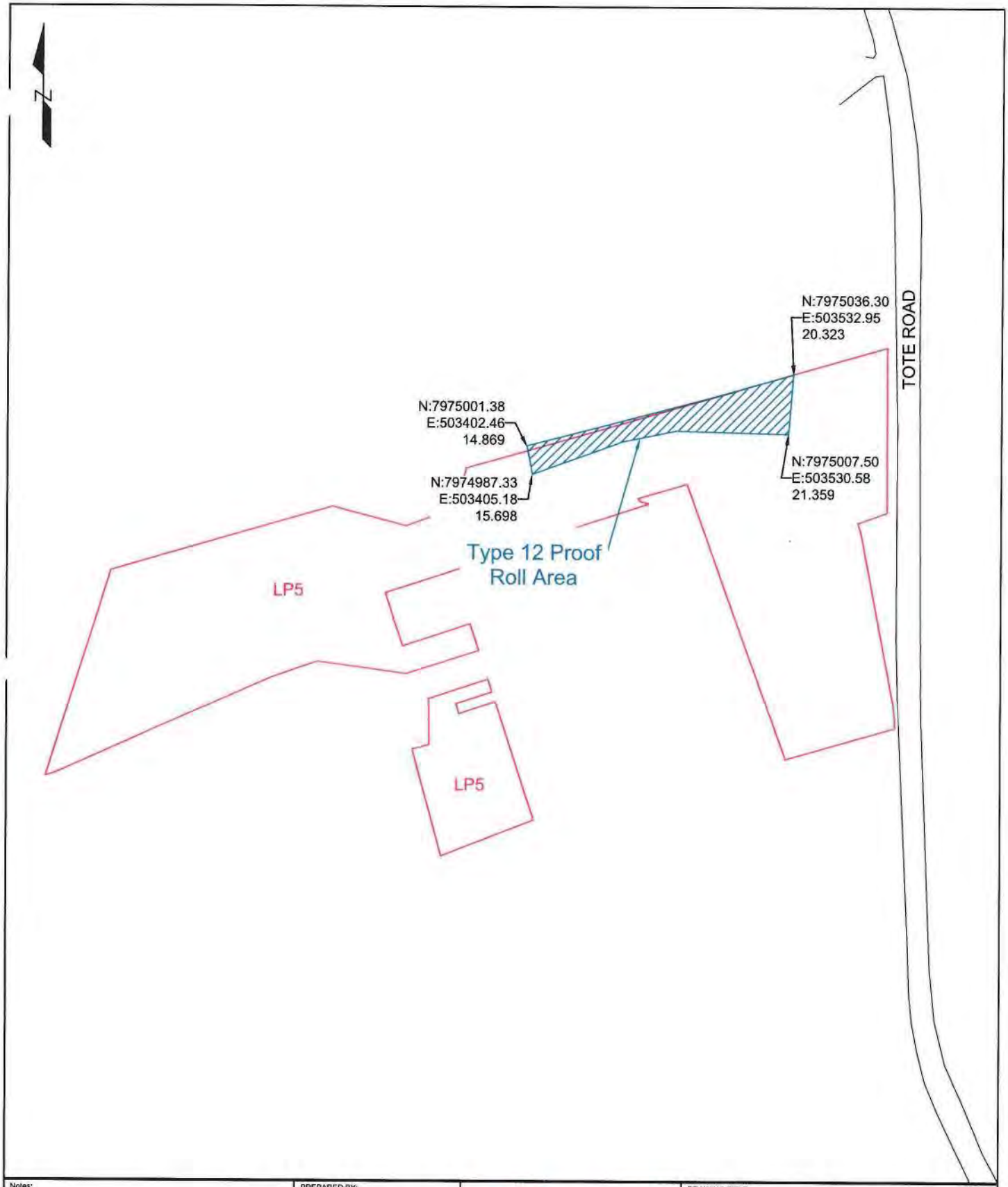
		Date: 8/31/19
Project: Mary River Expansion Project	**ITP #:** CC006-QP05A	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Material Type:** 12
Site Area: LAYDOWN 5	**Area Description:** AREA STRADDLING LP5/WIOB	
Drawing No.: H353004-400000-228-271-0017-0001		**Rev.:** 1

Area / Stations Inspected: See Survey Data Report	**Type of Proof Role:** ☐ Subgrade ☑ Material
Proof Rolled With: A loaded 745 Articulated Haul Truck	**Number of Passes Completed:** 1

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections (Pumping)	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Location Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments:

David Thompson	/ DT			09/09/19
Construction Designate	Print/Sign		Title	Date
BRADFORD WATKIN	/ BW		QC COORDINATOR	8/31/19
Contractor QC Designate	Print/Sign		Title	Date
Ronny Franken	/ RF		Match QA	Sept 30-2019
Client QA Designate	Print/Sign		Title	Date



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP5 T 12 PROOF ROLL REPORT SURVEYED AUGUST 31, 2019.**
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: SEPT 3, 2019	DRAWING NAME (YYMMDD): 190831 LP5 T8 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 2 Page 1 of 1

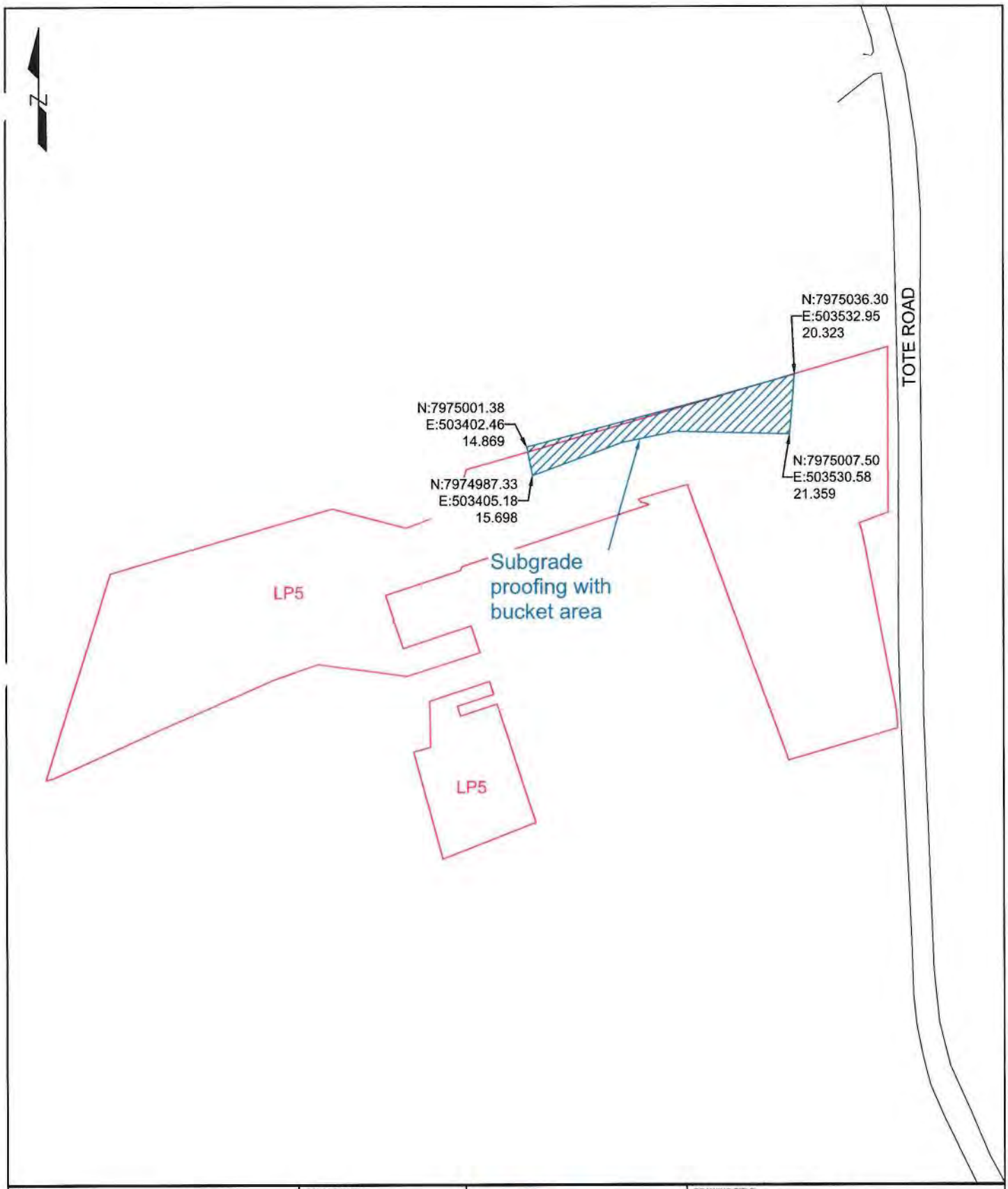
		Date: 8/31/19
Project: Mary River Expansion Project	**ITP #:**	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Material Type:**
Site Area: LAYDOWN 5	**Area Description:** AREA STRATTLING LP5/W10B	
Drawing No.: H353004-40000-228-271-0017-0001		**Rev.:** 1

Area / Stations Inspected: See Survey Data Report	**Type of Proof Role:** ☑ Subgrade ☐ Material
Proof Rolled With: A loaded 745 Articulated Haul Truck	**Number of Passes Completed:** 1

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections (Pumping)	☐ YES ☐ NO ☐ N/A	
Rebound of Surface	☐ YES ☐ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☐ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☐ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☐ NO ☐ N/A	
Surface Uniform and Level	☐ YES ☐ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☐ YES ☐ NO ☐ N/A	
Location Record (Survey)	☐ YES ☐ NO ☐ N/A	

Comments: NOTE NO ACCESS FOR TRUCK, USED EXCAVATOR SHOVEL TO VERIFY SUBGRADE SURFACE.

[signature]	/ [signature]	Foreman	02/09/19
Construction Designate	Print/Sign	Title	Date
BRADFORD WATKIN	/ [signature]	QC COORDINATOR	8/31/19
Contractor QC Designate	Print/Sign	Title	Date
Ronny Franken	/ [signature]	Hatch QA	Sept 30-2019
Client QA Designate	Print/Sign	Title	Date



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP5 Compaction Proofing Area SURVEYED AUGUST 31, 2019.**	
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: SEPT 3, 2019	DRAWING NAME (YYMMDD): 190831 LP5 T8 PR REPORT.dwg	

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 2 Page 1 of 1

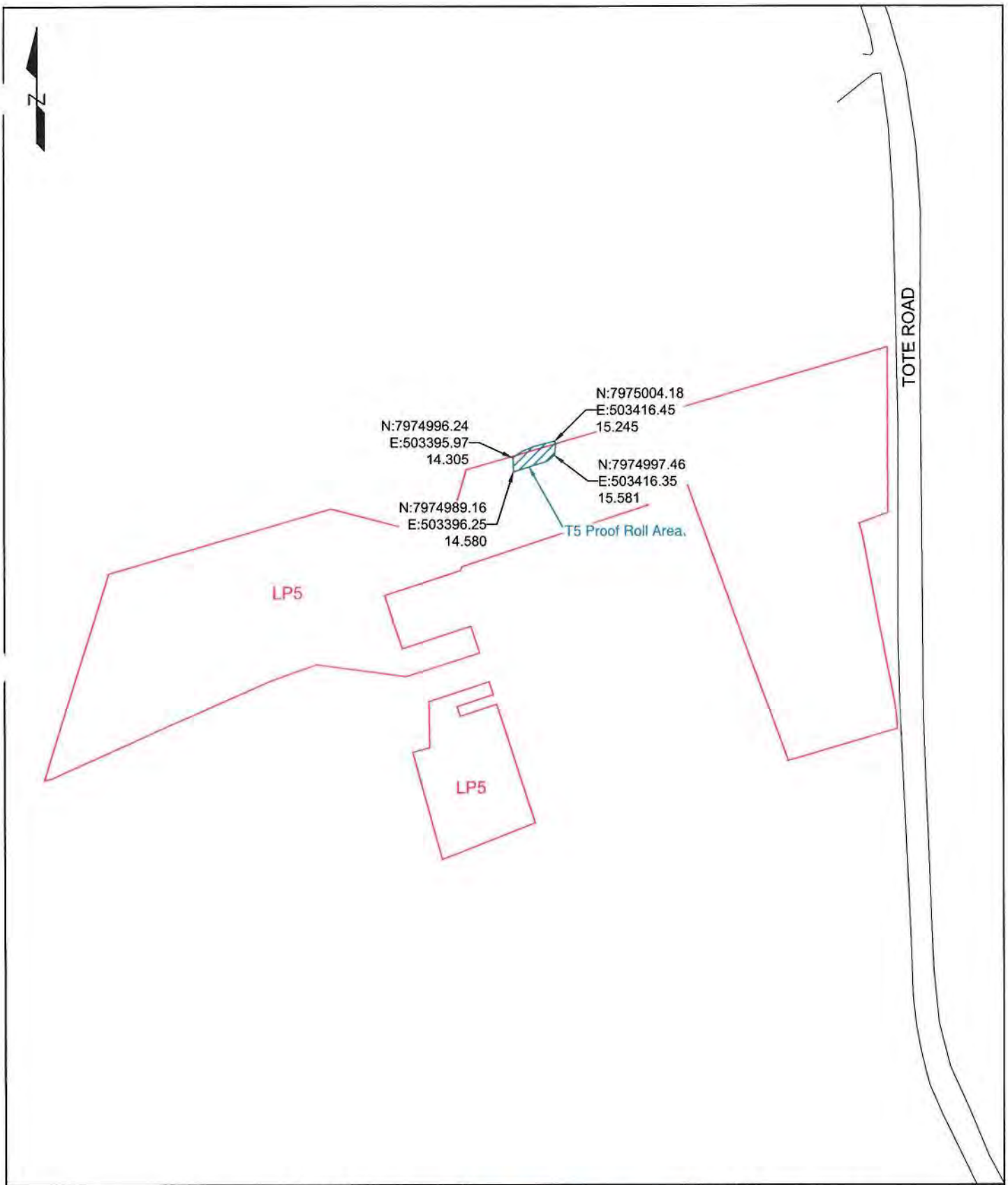
		Date: 8/30/19
Project: Mary River Expansion Project	**ITP #:**	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Material Type:** 5
Site Area: LAYDOWN AREA LP5	**Area Description:** LP5 MAIN ACCESS ROAD	
Drawing No.: H353004-40000-228-272-0017-0001		**Rev.:** 1

Area / Stations Inspected: See Survey Data Report	**Type of Proof Role:** ☐ Subgrade ☑ Material
Proof Rolled With: A loaded CAT 745 Articulated Haul Truck	**Number of Passes Completed:** 1

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections (Pumping)	☐ YES ☑ NO ☐ N/A	
Rebound of Surface	☐ YES ☑ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	
Location Record (Survey)	☑ YES ☐ NO ☐ N/A	

Comments:

	/			
Construction Designate	Print/Sign		Title	Date
[illegible]	/		QC COORDINATOR	8/30/19
Contractor QC Designate	Print/Sign		Title	Date
Ronny Franken	/		Match QA	Sept 30-2019
Client QA Designate	Print/Sign		Title	Date



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA			DRAWING TITLE: **LP5 T5 PROOF ROLL REPORT SURVEYED AUGUST 30, 2019.**
OWNER: BAFFINLAND IRON MINES LP					
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: SEPT 3, 2019		DRAWING NAME (YYMMDD): 190830 LP5T12 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 2 Page 1 of 1

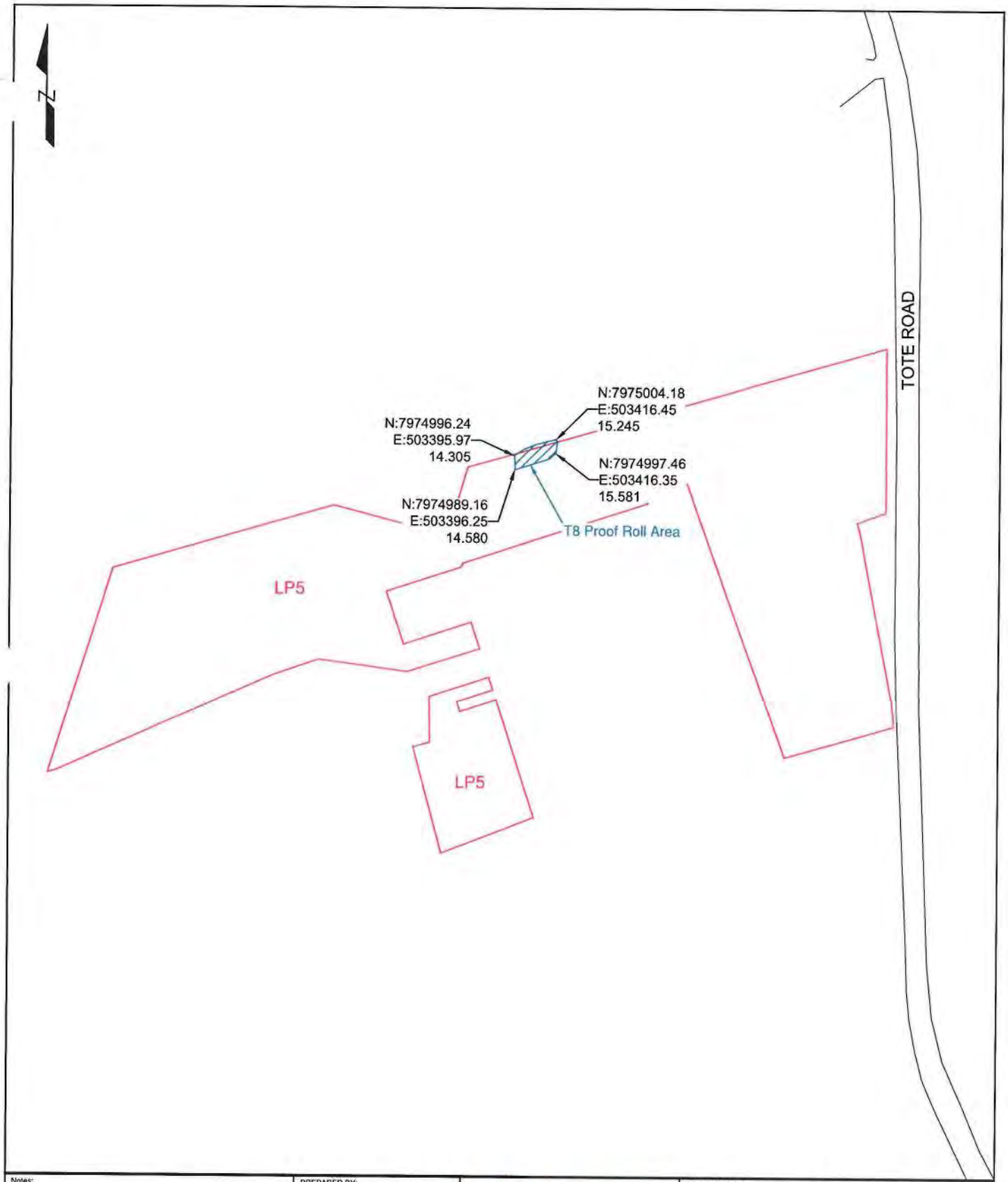
		Date: 8/30/19
Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Material Type:** 8
Site Area: LAYDOWN 5	**Area Description:** AREA ALONG ACCESS ROAD OF LP5	
Drawing No.: 1353004-40000-228-272-0017-0001		**Rev.:** 1

Area / Stations Inspected: See Survey Data Report	**Type of Proof Role:** ☐ Subgrade ☑ Material
Proof Rolled With: A loaded 745 Articulated Haul Truck	**Number of Passes Completed:** 2

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections (Pumping)	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Location Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments:

DAVID THOMPSON	/ DT	FOREMAN	09/09/19	
Construction Designate	Print/Sign	Title	Date	
BRANFORD WATKIN	/	QC COORDINATOR	8/30/19	
Contractor QC Designate	Print/Sign	Title	Date	
Ronny Franken	/	Hatch QA	Sept 30-2019	
Client QA Designate	Print/Sign	Title	Date	



Notes:

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. WALSH

SCALE: AS SHOWN

DATE: SEPT 3, 2019

DRAWING TITLE:
LP5
T8 PROOF ROLL REPORT
SURVEYED AUGUST 30, 2019.

DRAWING NAME (YYMMDD): 190830 LP5 T8 PR REPORT.dwg

NUNA
NUNA EAST LTD

PROOF ROLL COMPACTION VERIFICATION REPORT

Exhibit 1-5 QDE
Revision 2

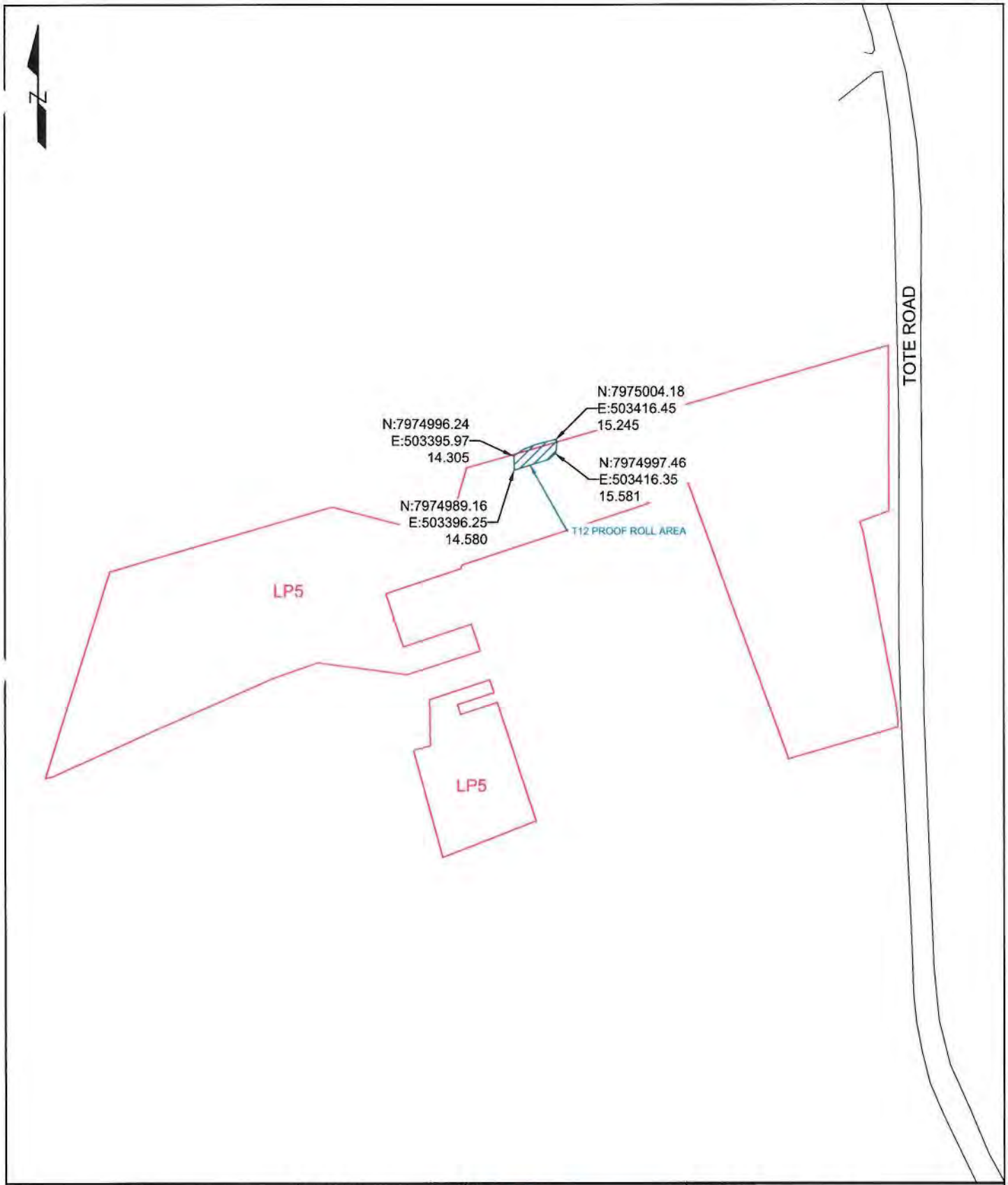
		Date: 8/30/19
Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Material Type:** 12
Site Area: LAYDOWN 5	**Area Description:** LP5 AREA ALONG ACCESS ROAD	
Drawing No.: 1135004-40000-228-272-0017-0001		**Rev.:** 1

Area / Stations Inspected: See Survey Data Report	**Type of Proof Role:** ☐ Subgrade ☑ Material
Proof Rolled With: A loaded 745 Articulated Haul Truck	**Number of Passes Completed:** 1

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections (Pumping)	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Location Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments:

David Thompson	/ DT	Foreman	02/09/19
Construction Designate	Print/Sign	Title	Date
BRADFORD WATKIN	/ BW	QC COORDINATOR	8/30/19
Contractor QC Designate	Print/Sign	Title	Date
Ronny Franken	/	Hatch QA	Sept 30-2019
Client QA Designate	Print/Sign	Title	Date



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP5 T12 PROOF ROLL REPORT SURVEYED AUGUST 30, 2019.**
OWNER: BAFFINLAND IRON MINES LP				
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: SEPT 3, 2019	DRAWING NAME (YYMMDD): 190830 LP5T12 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 2 Page 1 of 1

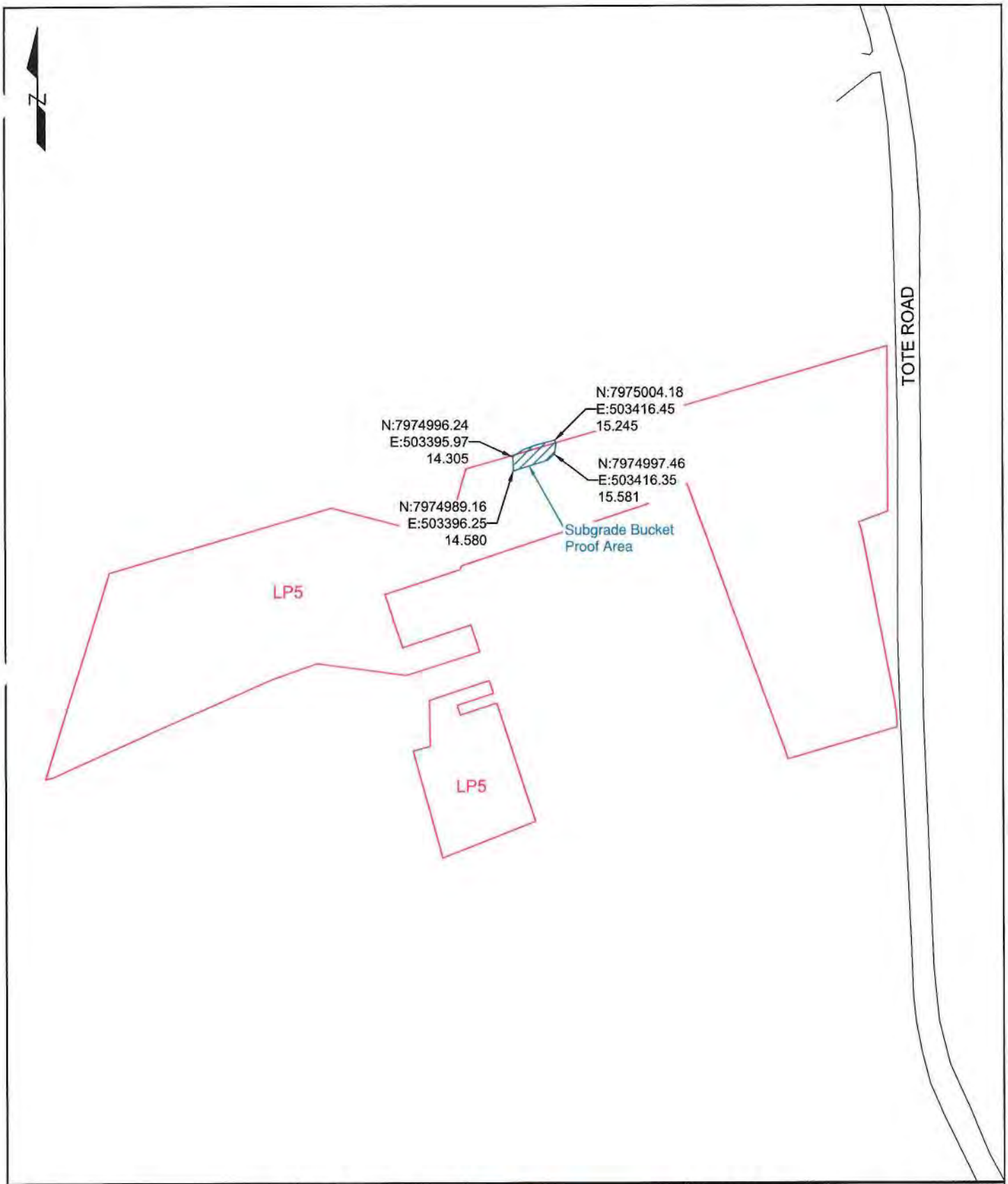
		Date: 8/30/19
Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Material Type:** SUBGRADE EXC
Site Area: LAY DOWN 5	**Area Description:** LP5 AREA ALOAC-ACCESS ROAD	
Drawing No.: 1435004-40000-228-272-0017-0001		**Rev.:** 1

Area / Stations Inspected: See Survey Data Report	**Type of Proof Role:** ☑ Subgrade ☐ Material
Proof Rolled With: A loaded 745 Articulated Haul Truck	**Number of Passes Completed:** 1

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections (Pumping)	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Location Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments:

Matt Thompson	/ DT		Foreman	09/09/19
Construction Designate		Print/Sign	Title	Date
BRADFORD WATKIN	/ BW		QC COORDINATOR	8/30/19
Contractor QC Designate		Print/Sign	Title	Date
Ronny Franken	/		Hatch QA	Sept 30-2019
Client QA Designate		Print/Sign	Title	Date



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP5 Subgrade Proofing Area SURVEYED AUGUST 30, 2019.**	
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: SEPT 3, 2019	DRAWING NAME (YYMMDD): 190830 LP5T12 PR REPORT.dwg	

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-00059	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP5	**Area Description:** LP5 East adjacent tote Rd	
Drawing No.: H353004-40000-221-271-0010-001		**Rev.:** 1

Area / Stations Inspected: See Survey
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	JG
Rebound of Surface	☐ YES ☑ NO ☐ N/A	JG
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	JG
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	JG
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	JG
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	JG
Proof Roll Test Satisfactory and Accepted Bucket Temp	☑ YES ☐ NO ☐ N/A	JG
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	JG

Comments:
Test frozen Subgrade with EX350 Bucket, No truck access

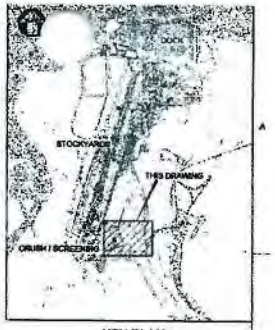
Robert Albert / [signature]	Supervisor	Aug 26, 19
Construction Designate – Print/Sign	Title	Date
John Gavin / [signature]	QC coordinator	Aug 26/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken / [signature]	Mntch QA	Sept 30-2019
Client QA Designate – Print/Sign	Title	Date

NOTES:

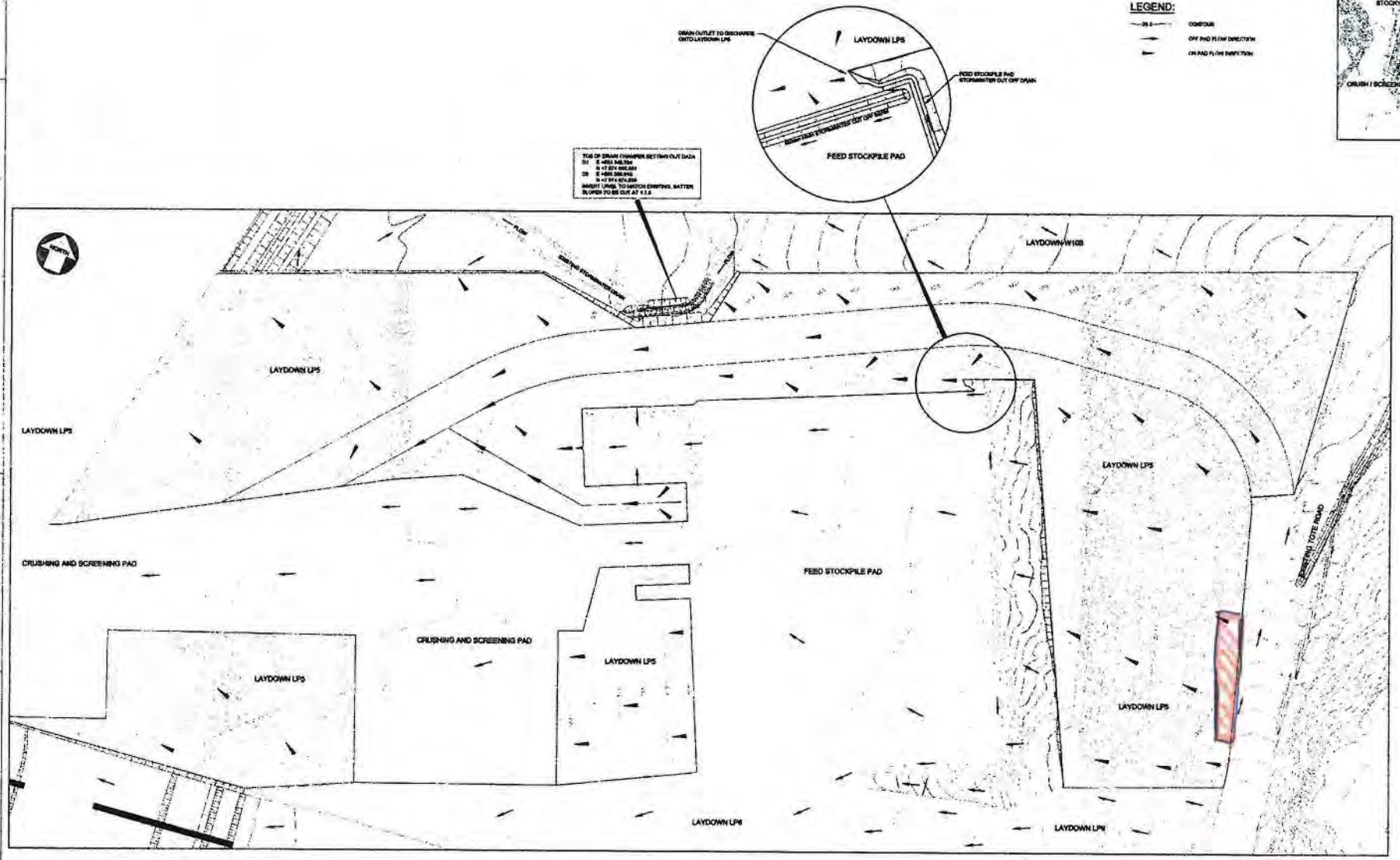
1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2018)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.

LEGEND:

- 25.0 — CONTOUR
- OFF PAD FLOW DIRECTION
- ON PAD FLOW DIRECTION



KEY PLAN



Released for Use

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER: P 012
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

Bradford Watkin
QA/QC
Reviewed

FOR CONSTRUCTION

NO.	DESCRIPTION	BY	CHKD	DATE
1	ISSUE STAMP REMOVED	RVB	TH	19/06/2019
0	FOR CONSTRUCTION	RVB	TH	19/06/2019

REVISIONS

ORIG	LAYDOWN	I. BARNARD	
DRAWN		F. HUGO	
CHECK		R. PEDRET	
RESP ENGR		R. DOWDEN	
APPR		R. HALM	
LEAD DISC ENG		A. DRUMMOND	
AREA LEAD		V. CHONG	
RESP ENGINEER		D. STANGER	
AREA MANAGER		T. ATIMA	
ROLE	NAME	SIGNATURE	DATE

DRAWING APPROVAL STATUS: Approved for Construction

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP5
DRAINAGE PLAN

SCALE: 1:500 (ON 36 METRES)
DWG No. H353004-40000-228-272-0017-0001
REV 1

DRAWING No.
H353004-40000-228-272-0017-0001

DRAWING TITLE

REFERENCE DRAWINGS

SHEET 1 OF 1

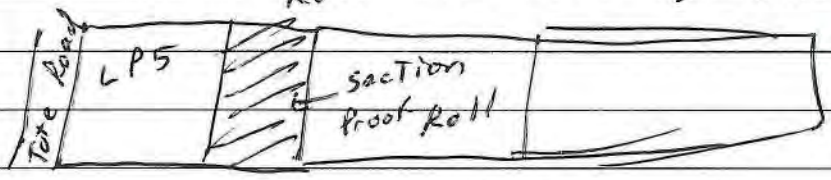
NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC00G-0035A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP 5	**Area Description:** Lower section of top part of LP5	
Drawing No.: 1353004-40000-228-272-0017-0001	**Rev.:** 1	

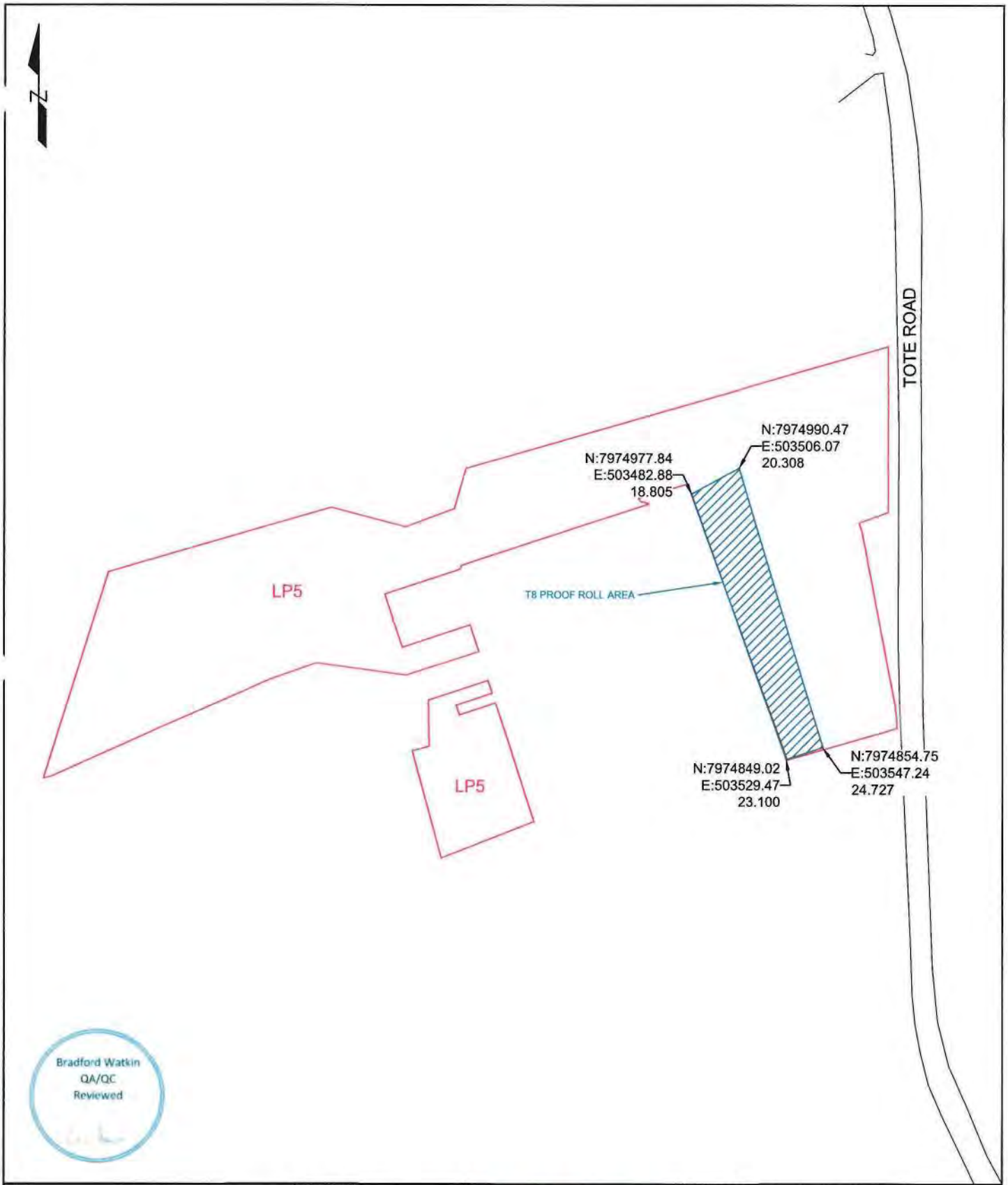
Area / Stations Inspected: LP5
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	RA
Rebound of Surface	☐ YES ☑ NO ☐ N/A	RA
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	RA
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	RA
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	RA
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	RA
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	RA
Elevation Record (Survey)	☐ YES ☑ NO ☐ N/A	RA

Comments: Proof Roll witness by All North Mike Hynes



Robert Albert / Robert Al	Supervisor	Aug 26, 2019
Construction Designate – Print/Sign	Title	Date
BRANFORD WATKIN /	QC COORDINATOR	8/26/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 30-2019
Client QA Designate – Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	DRAWING TITLE: **LP5 T8 PROOF ROLL REPORT SURVEYED AUGUST 26, 2019.**	
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: Aug. 26, 2019	DRAWING NAME (YYMMDD): 190826 LP5 T8 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

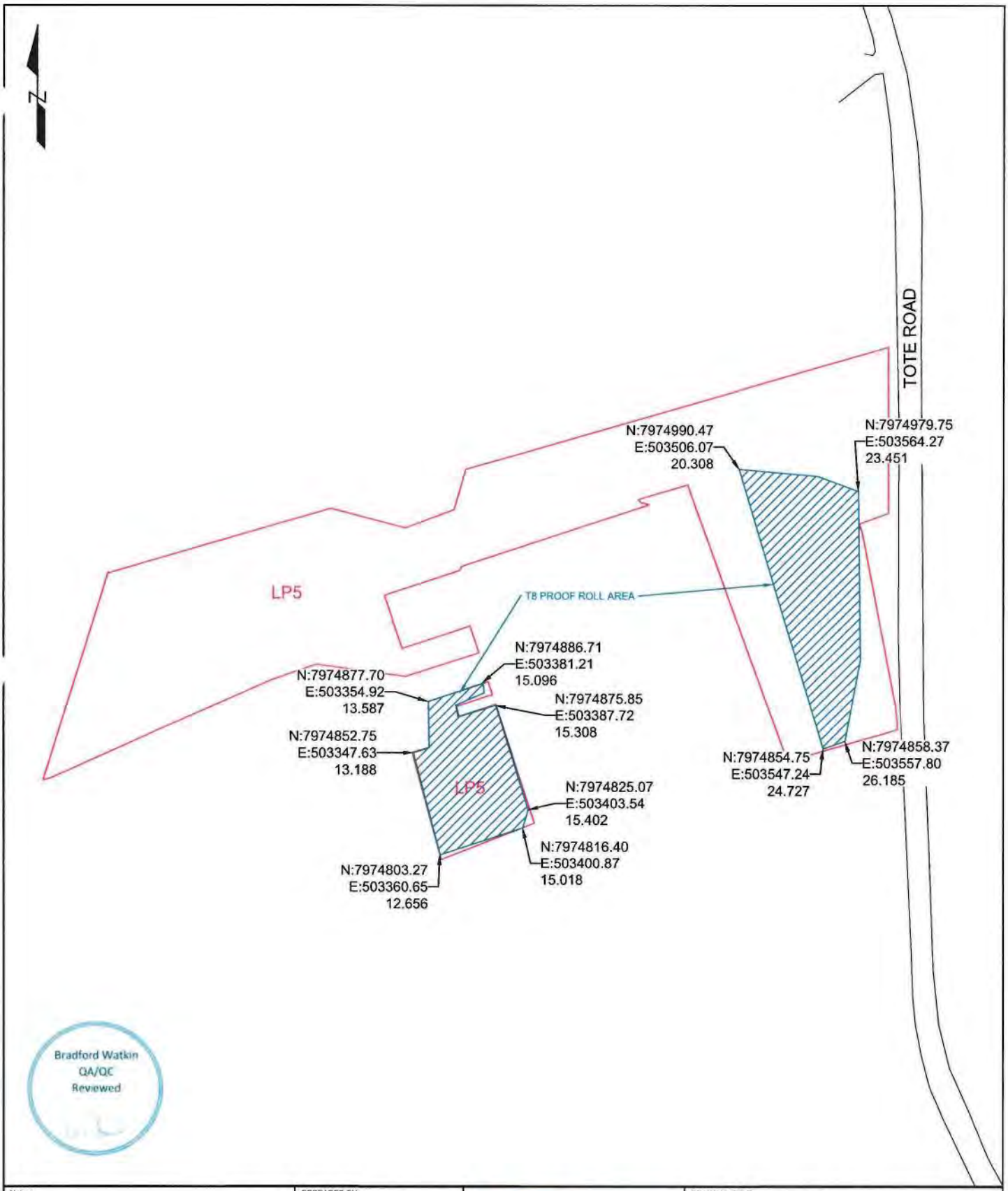
Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LAYDOWN 5	**Area Description:** AREA EAST OF FEED STOCKPILE PAD	
Drawing No.: 1353004-40000-228-272-0017-0001		**Rev.:** 1

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	
Rebound of Surface	☐ YES ☑ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	
Surface Uniform and Level	☐ YES ☑ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	

Comments: PR OF TYPE 8, APPROVED FOR TYPE 5 PLACEMENT ON L/S.

DAVID Thompson /	Foreman	26/08/19
Construction Designate – Print/Sign	Title	Date
BRADFORD WANKID /	QC COORDINATOR	8/25/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Frunken /	Hatch QA	Sept 30-2019
Client QA Designate – Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP5 T8 PROOF ROLL REPORT SURVEYED AUGUST 25, 2019.**
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: Aug. 25, 2019	DRAWING NAME (YYMMDD): 190825 LP5 T8 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

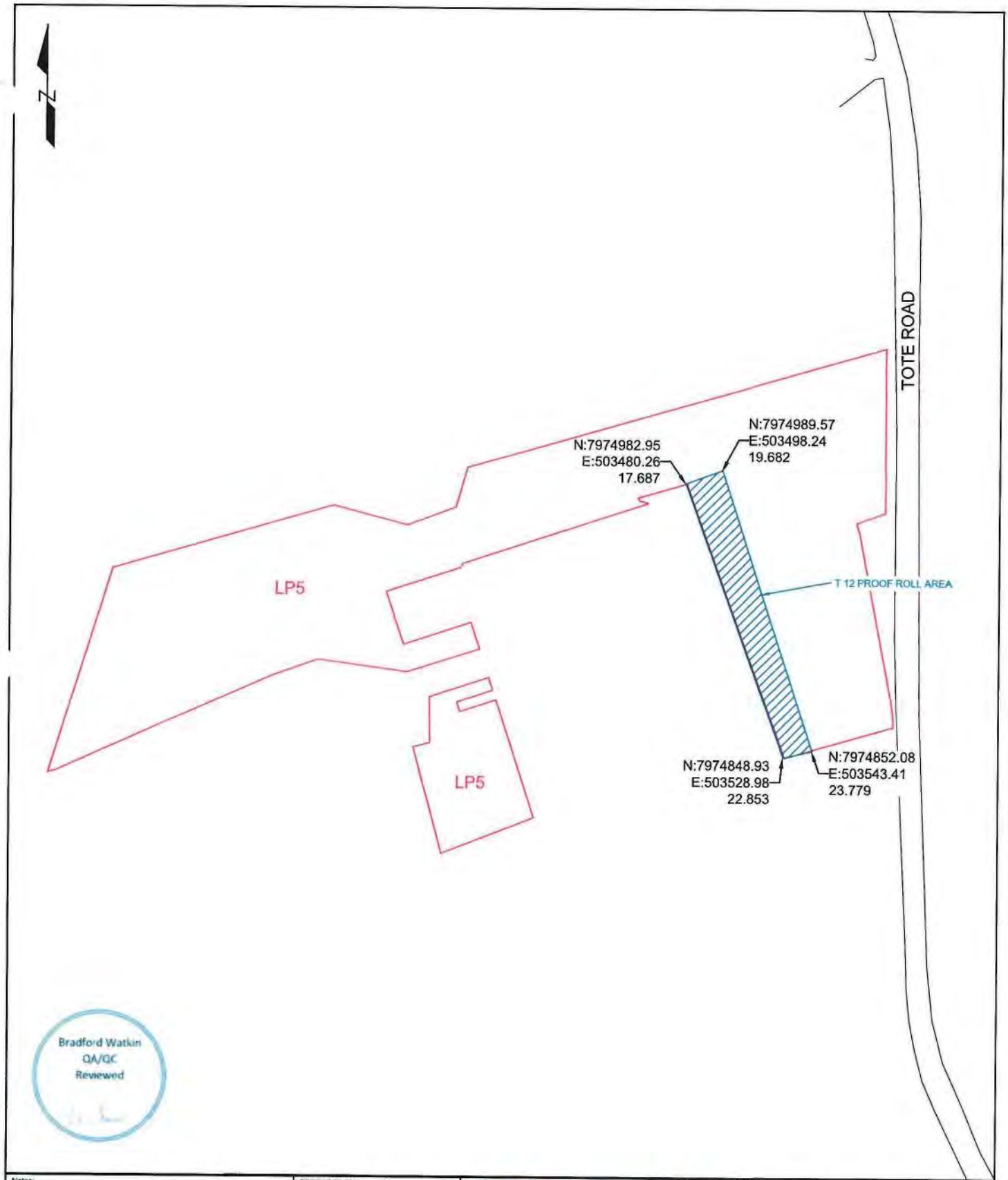
Project: Mary River Expansion Project	**ITP #:** CCCC-0005A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LAYDOWN 5	**Area Description:** AREA EAST OF FEED STOCKPILE PAD	
Drawing No.: H353004-40CCO-228-272-0017-0001		**Rev.:** 1

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☑ YES ☐ NO ☐ N/A	
Rebound of Surface	☑ YES ☐ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	

Comments: - MINOR DEFLECTIONS IN AREAS ADDITIONAL COMPACTION REQUESTED & COMPLETED AREA ACCEPTED.
- AREA WAS TYPE 12 PLACEMENT

[signature] / [signature]	Foreman	25/08/2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN / [signature]	QC COORDINATOR	8/25/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken / [signature]	Hatch QA	Sept 30-2019
Client QA Designate – Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	DRAWING TITLE: **LP5 T12 PROOF ROLL REPORT SURVEYED AUGUST 25, 2019.**	
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: Aug. 25, 2019	DRAWING NAME (YYMMDD): 190825 LP5 T12 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

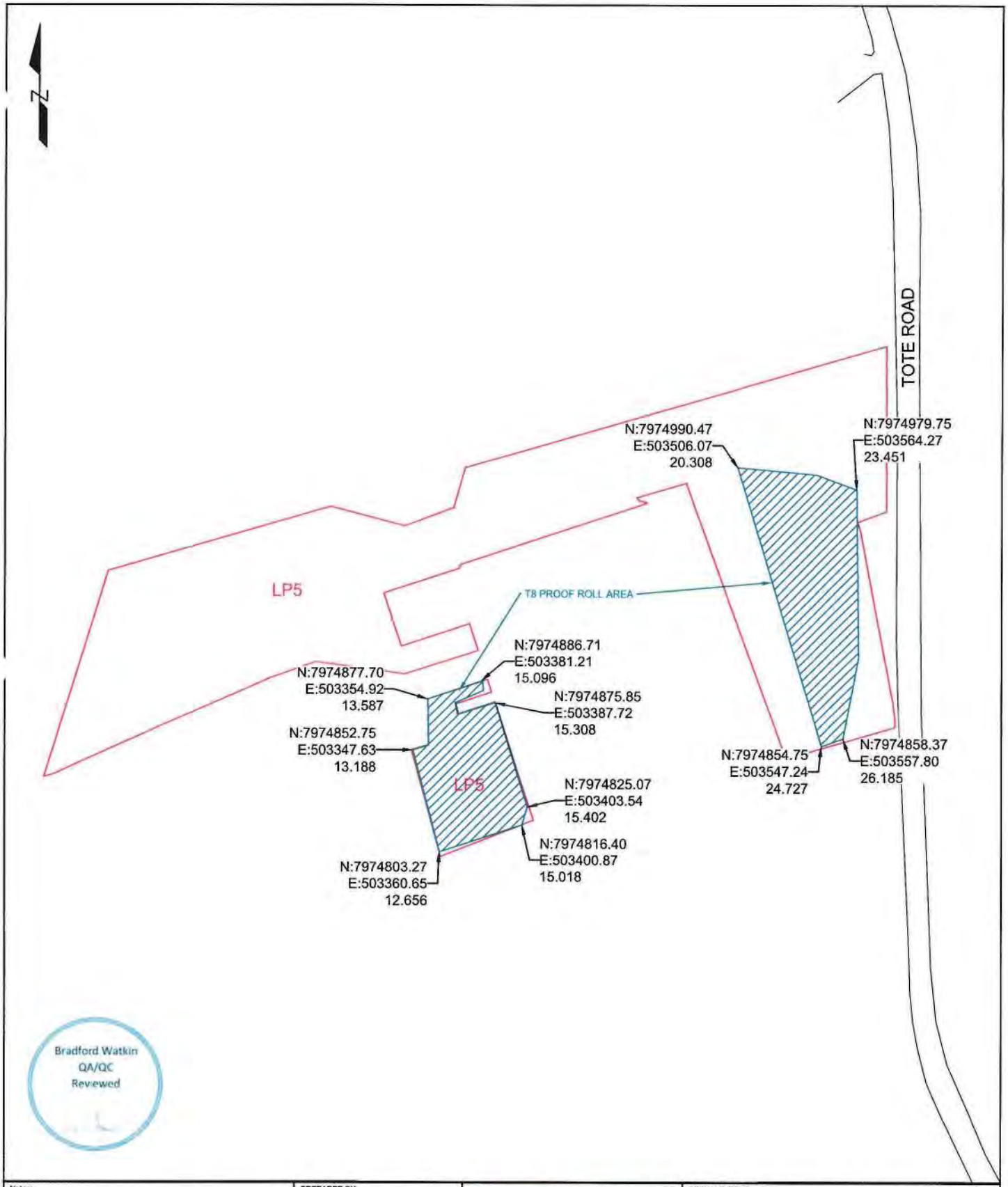
Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LAYDOWN 5	**Area Description:** AREA EAST OF CRUSHER PAD	
Drawing No.: H353004-40000-228-272-0017-0001		**Rev.:** 1

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments: AREA WAS TYPE 8, RELEASED FOR TYPE 5 PLACEMENT.

DAVID THOMPSON / DT	FOREMAN	25/08/2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN / BW	QC COORDINATOR	8/25/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 30 - 2019
Client QA Designate – Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP5 T8 PROOF ROLL REPORT SURVEYED AUGUST 25, 2019.**
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: Aug. 25, 2019	DRAWING NAME (YYMMDD): 190825 LP5 T8 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

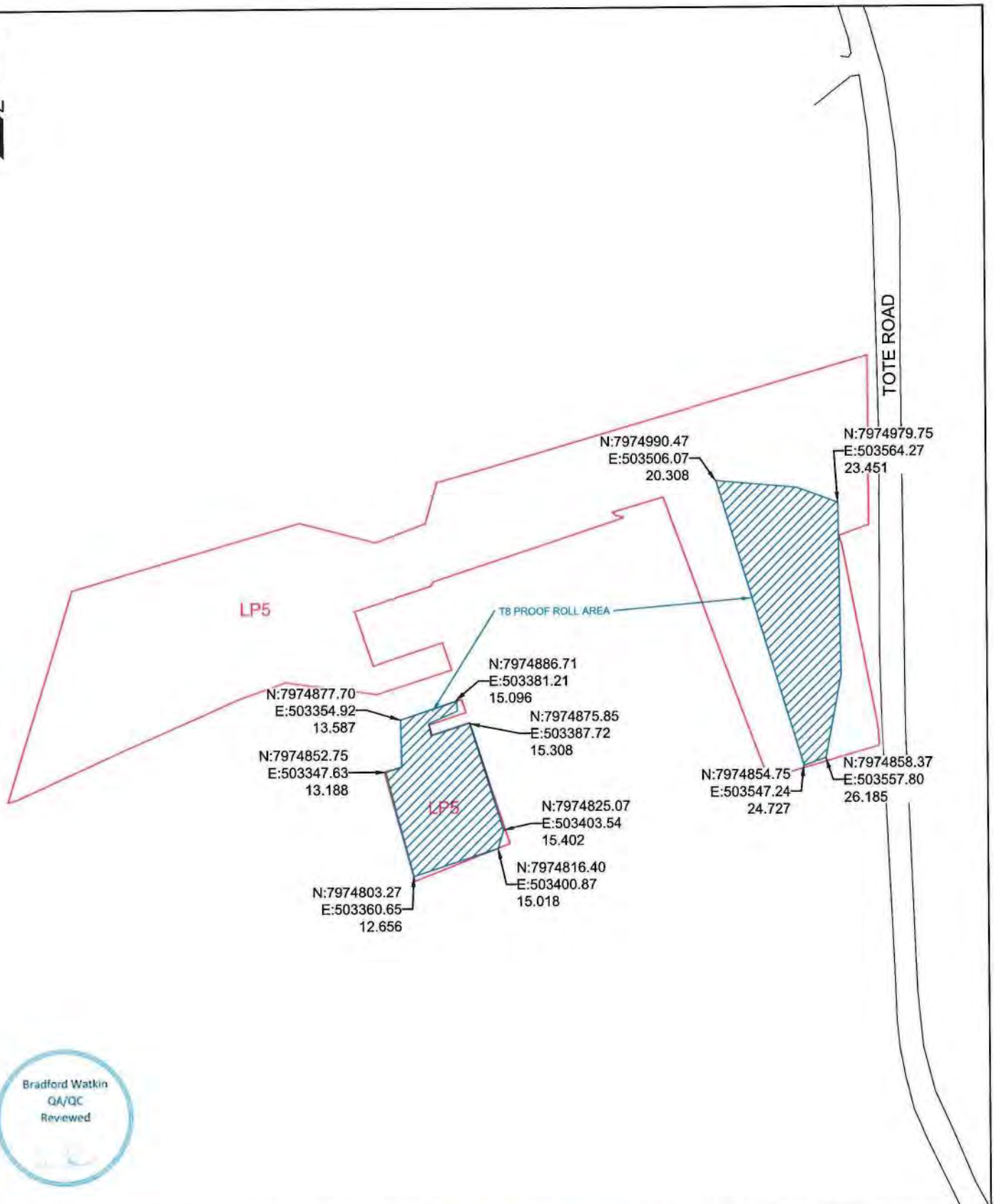
Project: Mary River Expansion Project	**ITP #:**	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LAYDOWN 5	**Area Description:** AREA EAST OF CRUSHER + SCREENER PAD	
Drawing No.: H353004-40000-228-272-0017-0001		**Rev.:** 1

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments: - AREA WAS TYPE 5, RELEASED FOR TYPE 5 PLACEMENT.
- 2ND PR FOR REST OF AREA.

DAVID HOWE / DH	FOREMAN	25/08/2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKINS / BW	QC COORDINATOR	8/25/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franden / RF	Hatch QA	Sept 30-2019
Client QA Designate – Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP5 T8 PROOF ROLL REPORT SURVEYED AUGUST 25, 2019.**
OWNER: BAFFINLAND IRON MINES LP				
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: Aug. 25, 2019	DRAWING NAME (YYMMDD): 190825 LP5 T8 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 1 Page 1 of 1

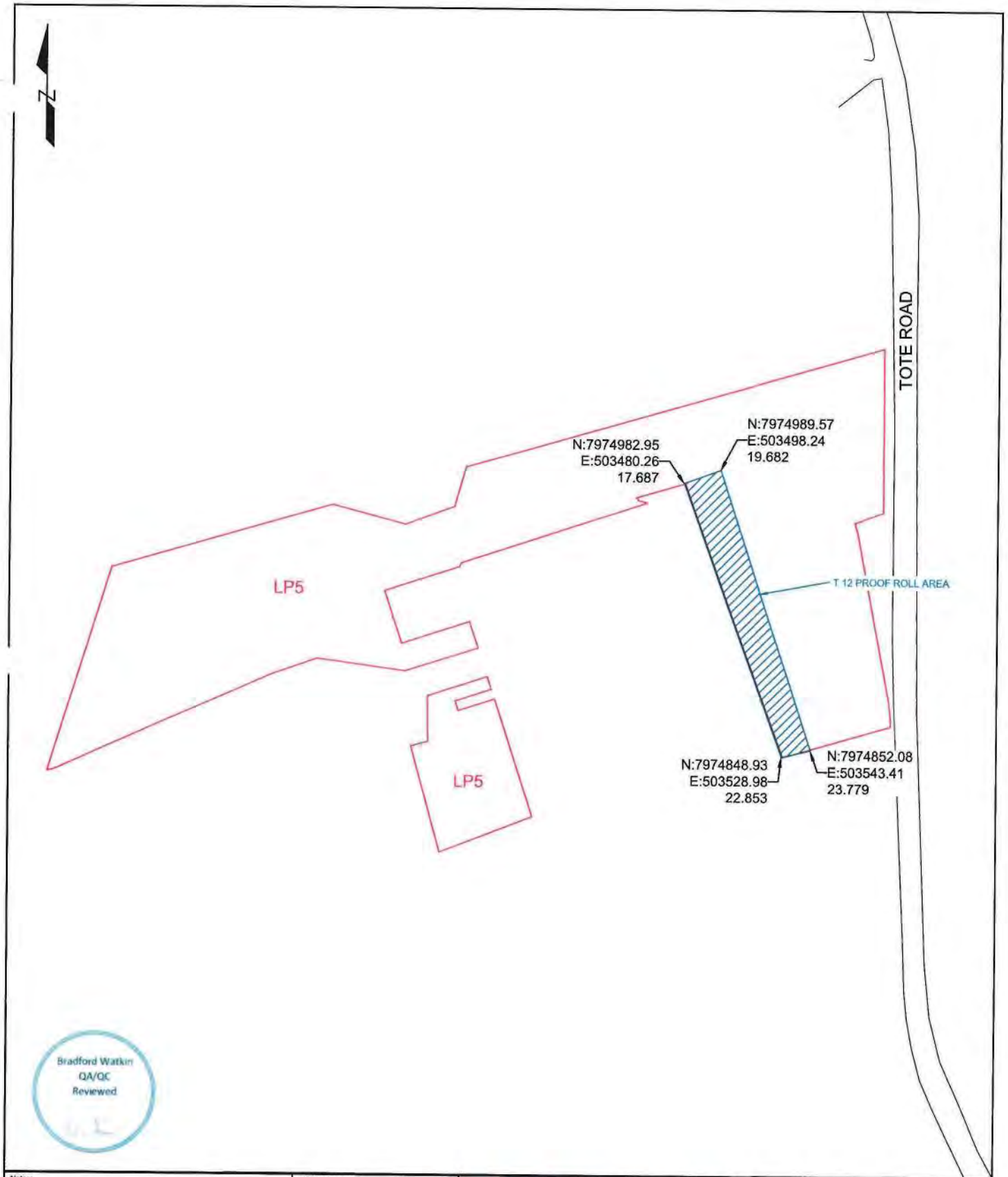
		Date: Aug 24, 2019
Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LAYDOWN 5	**Area Description:** LP5 AREA EAST of FEED STOCKPILE PAD	
Drawing No.: A353004-40000-228-272-0017-0001		**Rev.:** 1

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	
Rebound of Surface	☐ YES ☑ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	

Comments:

Robert Albert /	Supervisor	8/24/19
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN /	QC COORDINATOR	8/24/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 30-2019
Client QA Designate – Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	DRAWING TITLE: **LP5 T12 PROOF ROLL REPORT SURVEYED AUGUST 25, 2019.**	
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: Aug. 25, 2019	DRAWING NAME (YYMMDD): 190825 LP5 T12 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

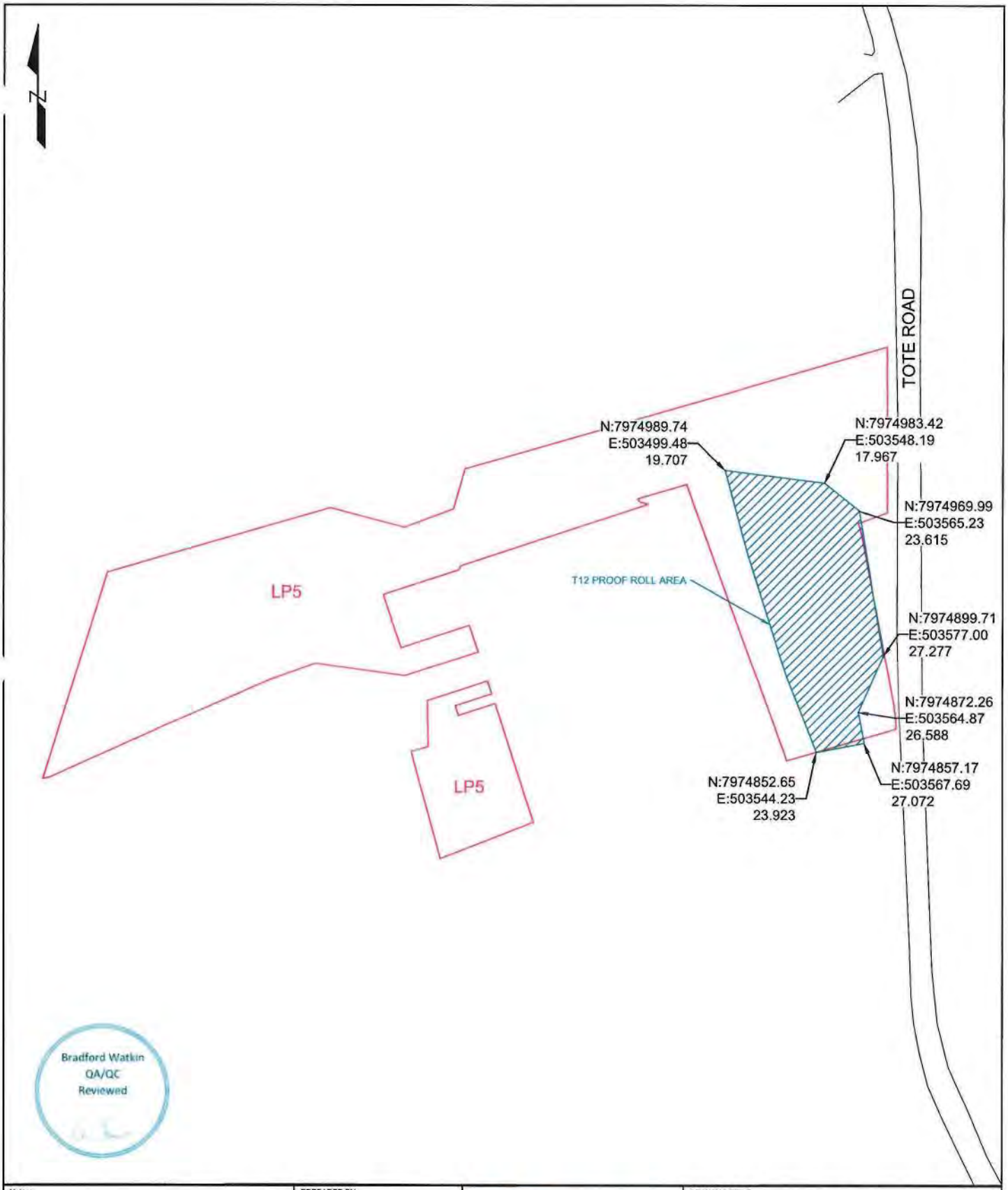
Project: Mary River Expansion Project	**ITP #:** CC006-C005A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LPS	**Area Description:** LPS East of FEED STOCK FILE PAD	
Drawing No.: H353004-A0000-228-272-0017-0001		**Rev.:** 1

Area / Stations Inspected: See Survey DATA
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☒ NO ☐ N/A	JL
Rebound of Surface	☐ YES ☒ NO ☐ N/A	JL
Formation of Cracks Patterns	☐ YES ☒ NO ☐ N/A	JL
Ridging Between Wheel Ridges	☐ YES ☒ NO ☐ N/A	JL
Inconsistency Compaction Between Areas	☐ YES ☒ NO ☐ N/A	JL
Surface Uniform and Level	☒ YES ☐ NO ☐ N/A	JL
Proof Roll Test Satisfactory and Accepted	☒ YES ☐ NO ☐ N/A	JL
Elevation Record (Survey)	☒ YES ☐ NO ☐ N/A	JL

Comments:
Top of ROQ - East bound

/		
Construction Designate – Print/Sign	Title	Date
John Gunn /	QC COORDINATOR	August 19
Contractor QC Designate – Print/Sign	Title	Date
Penny Franken /	Hatch QA	Sept 20 - 2019
Client QA Designate – Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	DRAWING TITLE: **LP5 T12 PROOF ROLL REPORT SURVEYED AUGUST 24, 2019.**	
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: Aug. 25, 2019	DRAWING NAME (YYMMDD): 190824 LP5 T12 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-00053A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP5	**Area Description:** LP5 EAST	
Drawing No.: 1353004-40000-228-0017-0001		**Rev.:** 1

Area / Stations Inspected: SEE SURVEY
Proof Rolled With: A loaded 745 Articulated Haul Truck

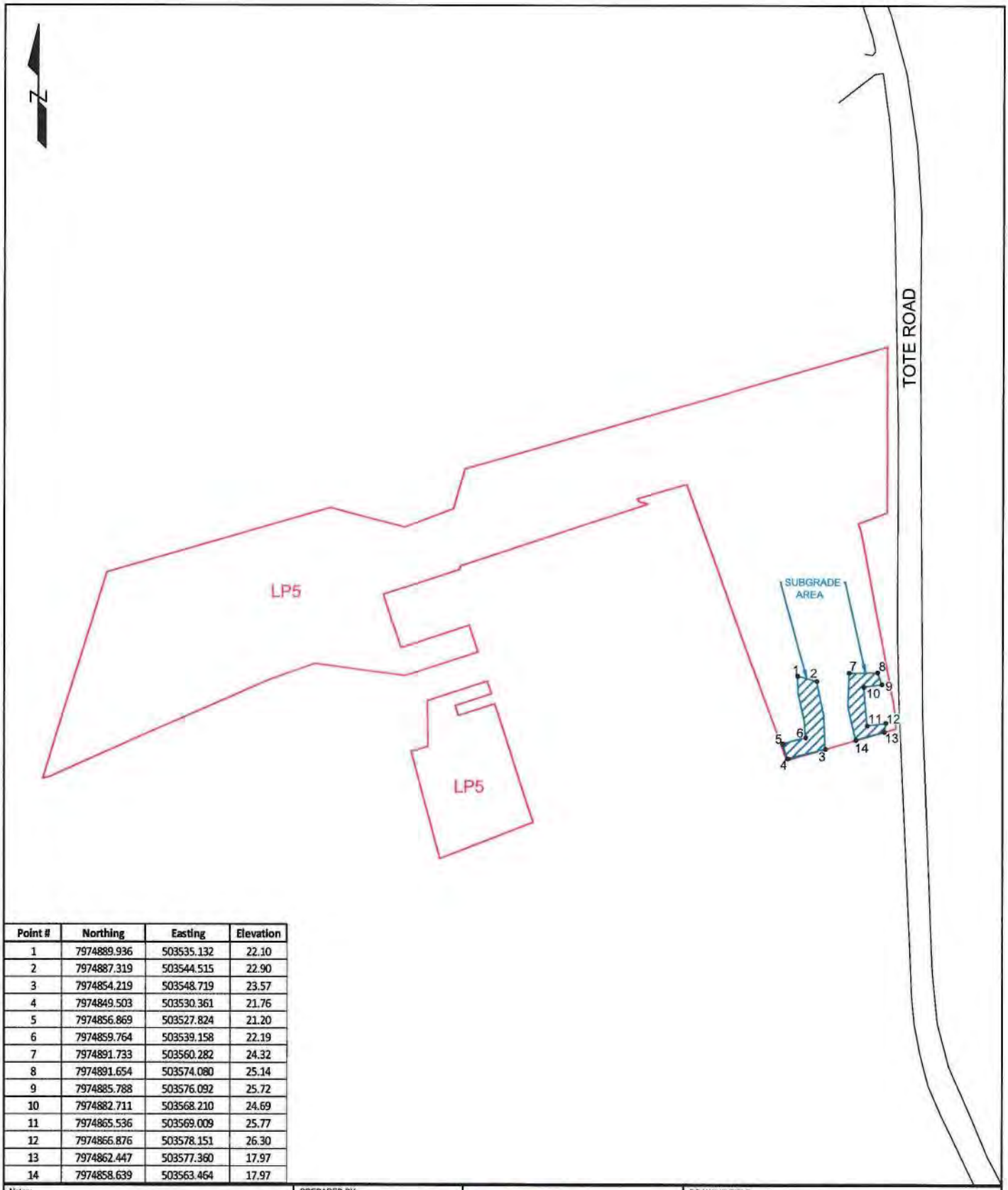
INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	✓
Rebound of Surface	☐ YES ☑ NO ☐ N/A	✓
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	✓
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	✓
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	✓
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	✓
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	✓
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	✓

Comments:

No Truck access, test w/ 350EX Bucket

Subgrade

Grant LaPointe /	Supervisor	Aug 22/19
Construction Designate – Print/Sign	Title	Date
John Bran /	QC Coordinator	Aug 22, 19
Contractor QC Designate – Print/Sign	Title	Date
Rob Chrisman /	Materials Lead	Aug 22, 2019
Client QA Designate – Print/Sign	Title	Date



Point #	Northing	Easting	Elevation
1	7974889.936	503535.132	22.10
2	7974887.319	503544.515	22.90
3	7974854.219	503548.719	23.57
4	7974849.503	503530.361	21.76
5	7974856.869	503527.824	21.20
6	7974859.764	503539.158	22.19
7	7974891.733	503560.282	24.32
8	7974891.654	503574.080	25.14
9	7974885.788	503576.092	25.72
10	7974882.711	503568.210	24.69
11	7974865.536	503569.009	25.77
12	7974866.876	503578.151	26.30
13	7974862.447	503577.360	17.97
14	7974858.639	503563.464	17.97

Notes:

OWNER:
BAFFINLAND IRON MINES LP

PROJECT:
MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY:
M. WALSH

SCALE:
AS SHOWN

DATE:
Aug. 24, 2019

DRAWING TITLE:
LP5
SUBGRADE REPORT
SURVEYED AUGUST 22, 2019.

DRAWING NAME (YYMMDD):
190822 LP5 SG REPORT.dwg

NUNA EAST LTD	SUBGRADE APPROVAL REPORT	Exhibit 1-8b QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP#:** CC006-0005A	**Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:**	**Subsystem:** N/A
Area: LP5	**Area Description:** LP5 East	
Drawing No.: H353004-40000-228-0017-0001		**Rev.:** 1

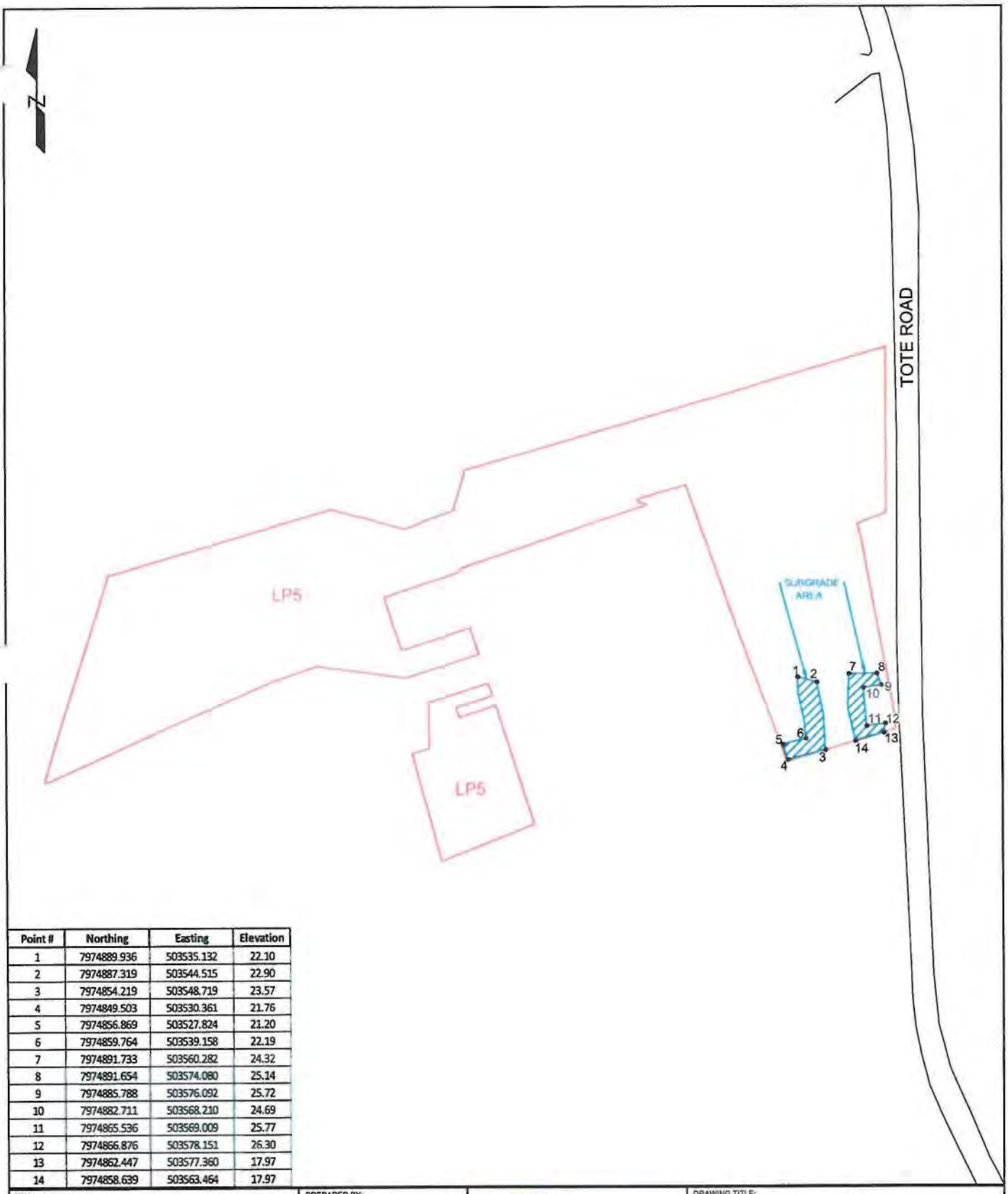
Area / Stations Inspected: SEE SURVEY

INSPECTION DESCRIPTION		Verified (Initial)
Organic Soil Present.	☐ YES ☑ NO ☐ N/A	✓
Snow or Ice Present.	☐ YES ☑ NO ☐ N/A	✓
Ponded Water Present.	☐ YES ☑ NO ☐ N/A	✓
Water Seepage.	☐ YES ☑ NO ☐ N/A	✓
Frozen Soil Present.	☑ YES ☐ NO ☐ N/A	✓
Excavation Cleared of Foreign and Loose Soil Material.	☑ YES ☐ NO ☐ N/A	✓
Excavation Matches Design and IFC drawings.	☑ YES ☐ NO ☐ N/A	✓
Was Over Excavation Required. Depth: (_____)	☐ YES ☐ NO ☑ N/A	✓
Excavation Satisfactory and Accepted.	☑ YES ☐ NO ☐ N/A	✓

Comments:

Test w/ 350EX Bucket, Subgrade dug to frozen competant Ground

Grant LaPointe / [signature]	Supervisor	Aug 22/19
Construction Designate – Print/Sign	Title	Date
John Gwen / [signature]	QC	Aug 22, 19
Contractor QC Designate – Print/Sign	Title	Date
Rob Charlton / [signature]	Materials Lead	Aug 22, 2019
Client QA Designate – Print/Sign	Title	Date



Point #	Northing	Easting	Elevation
1	7974889.936	503535.132	22.10
2	7974887.319	503544.515	22.90
3	7974854.219	503548.719	23.57
4	7974849.503	503530.361	21.76
5	7974856.869	503527.824	21.20
6	7974859.764	503539.158	22.19
7	7974891.733	503560.282	24.32
8	7974891.654	503574.080	25.14
9	7974885.788	503576.092	25.72
10	7974882.711	503568.210	24.69
11	7974865.536	503569.009	25.77
12	7974866.876	503578.151	26.30
13	7974862.447	503577.360	17.97
14	7974858.639	503563.464	17.97

Notes:

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. WALSH

SCALE: AS SHOWN

DATE: Aug. 24, 2019

DRAWING TITLE:
LP5
SUBGRADE REPORT
SURVEYED AUGUST 22, 2019.

DRAWING NAME (YYMMDD): 190822 LP5 SG REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

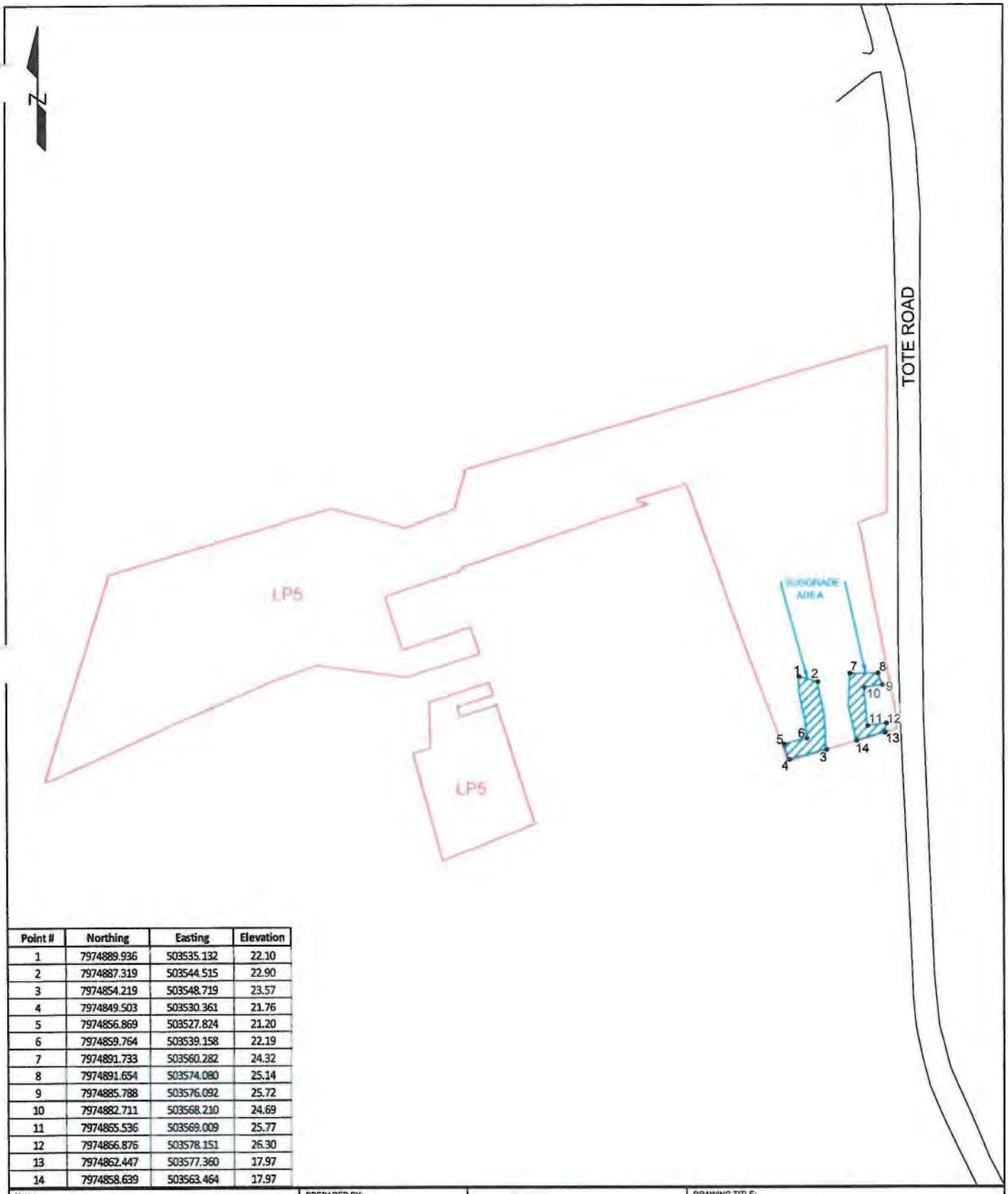
Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LPS	**Area Description:** East LPS	
Drawing No.: H353004-40000-228-271-0017-0001		**Rev.:** 1

Area / Stations Inspected: See survey
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☒ NO ☐ N/A	JG
Rebound of Surface	☐ YES ☒ NO ☐ N/A	JG
Formation of Cracks Patterns	☐ YES ☒ NO ☐ N/A	JG
Ridging Between Wheel Ridges	☐ YES ☒ NO ☐ N/A	JG
Inconsistency Compaction Between Areas	☐ YES ☒ NO ☐ N/A	JG
Surface Uniform and Level	☒ YES ☐ NO ☐ N/A	JG
Proof Roll Test Satisfactory and Accepted	☒ YES ☐ NO ☐ N/A	JG
Elevation Record (Survey)	☒ YES ☐ NO ☐ N/A	JG

Comments:
No truck access, test with 350 excavator bucket/usual.
Competant Frozen ground / sub grade
No seepage or groundwater.

Grant LaPointe /	Supervisor	Aug 22/19
Construction Designate – Print/Sign	Title	Date
John Guan /	QC Coordinator	Aug 22/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 30-2019
Client QA Designate – Print/Sign	Title	Date



Point #	Northing	Easting	Elevation
1	7974889.936	503535.132	22.10
2	7974887.319	503544.515	22.90
3	7974854.219	503548.719	23.57
4	7974849.503	503530.361	21.76
5	7974856.869	503527.824	21.20
6	7974859.764	503539.158	22.19
7	7974891.733	503560.282	24.32
8	7974891.654	503574.080	25.14
9	7974885.788	503576.092	25.72
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11	7974865.536	503569.009	25.77
12	7974866.876	503578.151	26.30
13	7974862.447	503577.360	17.97
14	7974858.639	503563.464	17.97

Notes:

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. WALSH

SCALE: AS SHOWN

DATE: Aug. 24, 2019

DRAWING TITLE:
LP5
SUBGRADE REPORT
SURVEYED AUGUST 22, 2019.

DRAWING NAME (YYMMDD): 190822 LP5 SG REPORT.dwg

NUNA EAST LTD	SUBGRADE APPROVAL REPORT	Exhibit 1-8b QDE Revision 1 Page 1 of 1

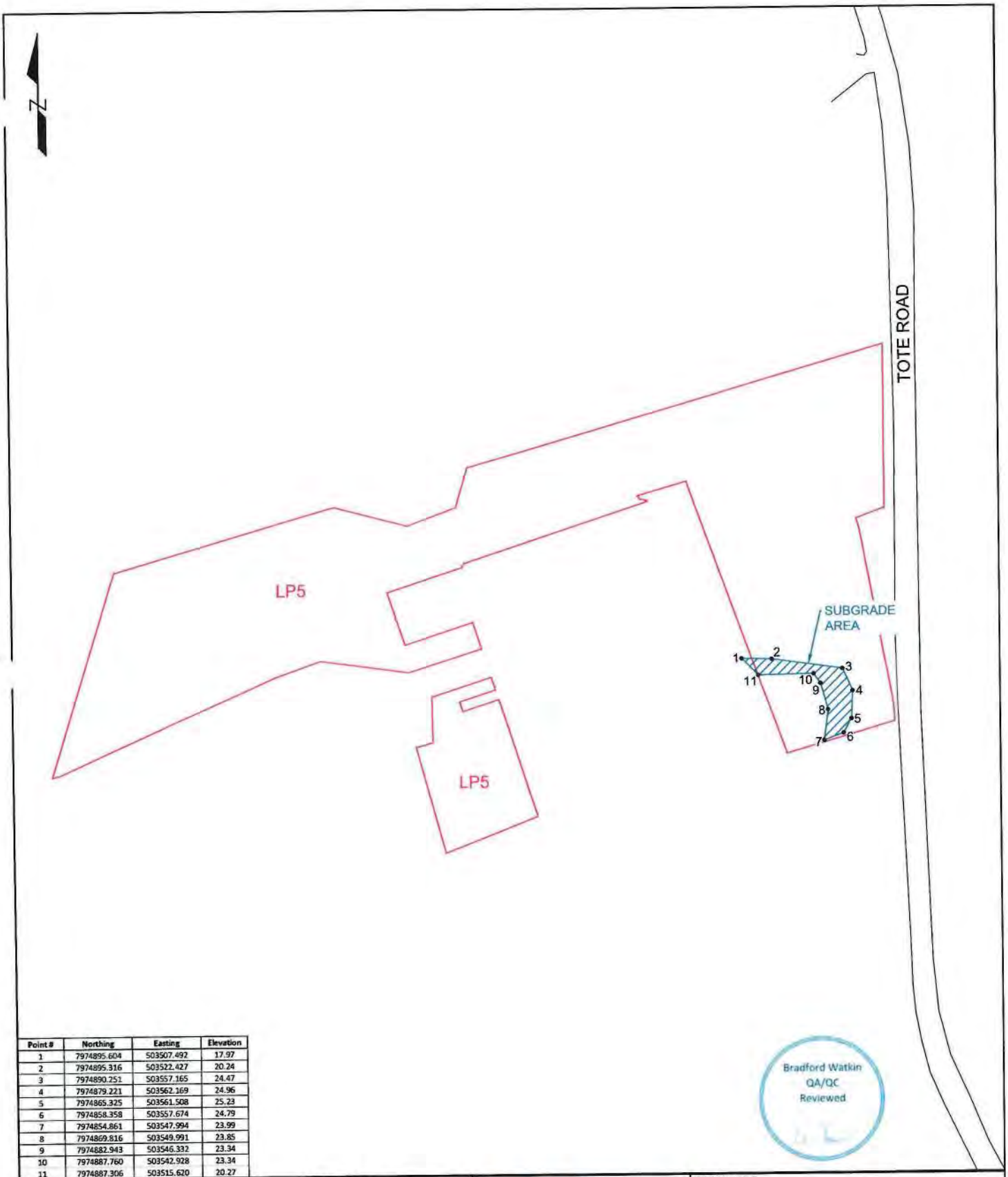
		Date: 8/21/19
Project: Mary River Expansion Project	**ITP#:** CC006-0035A	**QA Ref. Rpt. No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:**	**Subsystem:** N/A
Area: LAYDOWN 5	**Area Description:** AREA EAST OF FEED STOCKPILE PAD	
Drawing No.: 1235C004-40000-228-27L-0317-0001		**Rev.:** 1

Area / Stations Inspected: SEE SURVEY DATA

INSPECTION DESCRIPTION		Verified (Initial)
Organic Soil Present.	☑ YES ☐ NO ☐ N/A	BW
Snow or Ice Present.	☑ YES ☐ NO ☐ N/A	BW
Ponded Water Present.	☐ YES ☑ NO ☐ N/A	BW
Water Seepage.	☐ YES ☑ NO ☐ N/A	BW
Frozen Soil Present.	☑ YES ☐ NO ☐ N/A	BW
Excavation Cleared of Foreign and Loose Soil Material.	☑ YES ☐ NO ☐ N/A	BW
Excavation Matches Design and IFC drawings.	☑ YES ☐ NO ☐ N/A	BW
Was Over Excavation Required. Depth: (_____)	☐ YES ☑ NO ☐ N/A	BW
Excavation Satisfactory and Accepted.	☑ YES ☐ NO ☐ N/A	BW

Comments: EXCAVATED TO PERMAFROST.

Robert Albert / Robert Albert	Supervisor	8/21/19
Construction Designate – Print/Sign	Title	Date
BRANFORD WATKIN / BW	QC COORDINATOR	8/21/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franken /	Hatch QA	Sept 30-2019
Client QA Designate – Print/Sign	Title	Date



Point #	Northing	Easting	Elevation
1	7974895.604	503507.492	17.97
2	7974895.316	503522.427	20.24
3	7974890.251	503557.165	24.47
4	7974879.221	503562.169	24.96
5	7974865.325	503561.508	25.23
6	7974858.358	503557.674	24.79
7	7974854.861	503547.994	23.99
8	7974869.816	503549.991	23.85
9	7974882.943	503546.332	23.34
10	7974887.760	503542.928	23.34
11	7974887.306	503515.620	20.27

Bradford Watkin
QA/QC
Reviewed

Notes:

OWNER:
BAFFINLAND IRON MINES LP

PROJECT:
MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY:
M. GOREHAM

SCALE:
AS SHOWN

DATE:
Aug. 21, 2019

DRAWING TITLE:
LP5
SUBGRADE REPORT
SURVEYED AUGUST 21, 2019.

DRAWING NAME (YYMMDD):
190821 LP5 SG REPORT.dwg

NUNA EAST LTD	AUTHORIZATION FOR BACKFILL	Exhibit :1-3a QDE Revision 0 Page 1 of 2

Project: Mary River Expansion Project	**ITP#:** CC006-0005A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Sub-System:** N/A
Area: LPS	**Area Description:** NE Corner adjacent tote road (Existing)	
Compaction Required Yes ☐ No ☒	**Excavation Permit No.:** N/A	
Drawing No.: A353004-40000-228-271-0017-0001		**Rev.:** 1

PRE-BACK FILL INSPECTION

INSPECTION DESCRIPTION:		Verified (Initial)
1. Excavation cleared of frozen material, foreign objects and debris.	☑ YES ☐ NO ☐ N/A	JG
2. No water seepage or ponded water present in excavation.	☑ YES ☐ NO ☐ N/A	JG
3. No organic and loose soil present.	☑ YES ☐ NO ☐ N/A	JG
4. All installations in the excavation are complete.	☐ YES ☐ NO ☑ N/A	JG
5. Concrete substructures complete.	☐ YES ☐ NO ☑ N/A	JG
6. Electrical installation(s) complete.	☐ YES ☐ NO ☑ N/A	JG
7. Piping installation(s) complete.	☐ YES ☐ NO ☑ N/A	JG
8. Sewer vents and manhole installation complete.	☐ YES ☐ NO ☑ N/A	JG
9. Frost blocks installed as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	JG
10. Geotextile fabric installation(s) as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	JG
11. Insulation installed per IFC drawings.	☐ YES ☐ NO ☑ N/A	JG
12. Culverts installation(s) as per specification and IFC drawings.	☐ YES ☐ NO ☐ N/A	JG
13. Redline / As-Builts completed.	☐ YES ☐ NO ☐ N/A	JG
14. Overall condition of base is suitable for backfilling and compaction.	☐ YES ☐ NO ☐ N/A	JG

APPROVAL TO PROCEED WITH BACKFILL

Contractor QC Designate		Client Designate	
Name (print)	Signature	Name (print)	Signature
Josh Gwyn			

IN PROCESS INSPECTION

INSPECTION DESCRIPTION:		Verified (Initial)
1. Backfill material is free of foreign material and conforms to specification.	☑ YES ☐ NO ☐ N/A	JG
2. Survey check of Location, dimensions and shape of excavation or base.	☐ YES ☐ NO ☐ N/A	JG
3. Lift thickness confirmed, and compaction testing performed in accordance with specification.	☑ YES ☐ NO ☐ N/A	JG
4. Warning tape(s) installed, depth and type from final grade: (_____),(_____).	☐ YES ☐ NO ☑ N/A	JG
5. Red concrete installed over utilities.	☐ YES ☐ NO ☑ N/A	JG
6. Soil density test performed as per specification and test reports completed.	☐ YES ☐ NO ☑ N/A	JG
7. Moisture levels acceptable.	☑ YES ☐ NO ☐ N/A	JG
8. Final elevation of area is in accordance to IFC drawings.	☑ YES ☐ NO ☐ N/A	JG

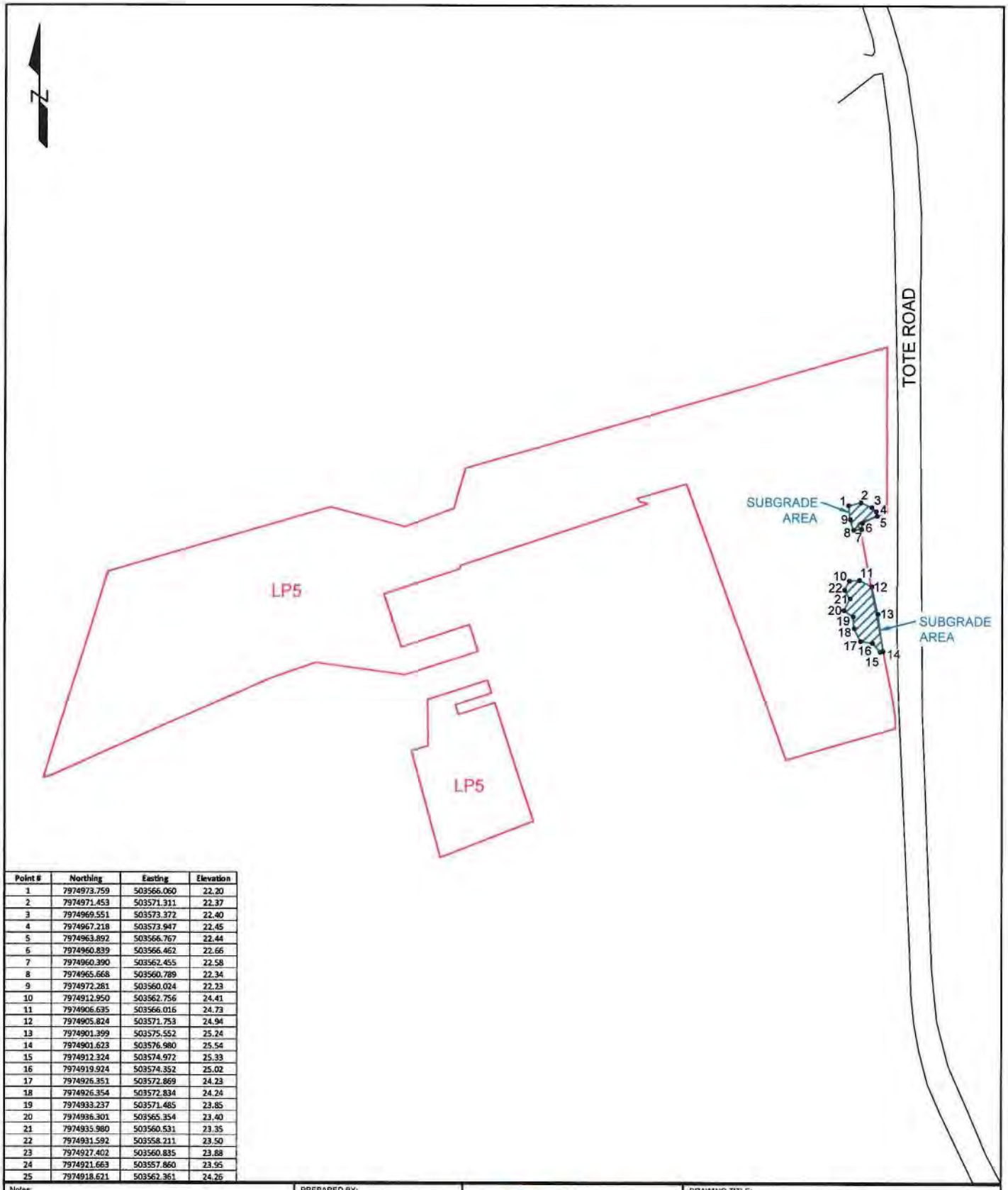
Test Instruments

Manufacturer	Description	Range	I.D. No.:	Calibration Due Date
	N/A			

Comments:
Excavated to competent frozen ground. No seepage observed

Attach additional supporting documents, data, or test results to this Report as required

/			
Construction Designate – Print/Sign		Title	Date
John Gunn /		QC Coordinator	Aug 20/19
Contractor QC Designate – Print/Sign		Title	Date
Ronny Franke /		Hatch QA	Sept 30-2019
Client QA Designate – Print/Sign		Title	Date



Point #	Northing	Easting	Elevation
1	7974973.759	503566.060	22.20
2	7974971.453	503571.311	22.37
3	7974969.551	503573.372	22.40
4	7974967.218	503573.947	22.45
5	7974963.892	503566.767	22.44
6	7974960.839	503566.462	22.66
7	7974960.390	503562.455	22.58
8	7974965.668	503560.789	22.34
9	7974972.281	503560.024	22.23
10	7974912.950	503562.756	24.41
11	7974906.635	503566.016	24.73
12	7974905.824	503571.753	24.94
13	7974901.399	503575.552	25.24
14	7974901.623	503576.980	25.54
15	7974912.324	503574.972	25.33
16	7974919.924	503574.352	25.02
17	7974926.351	503572.869	24.23
18	7974926.354	503572.834	24.24
19	7974933.237	503571.485	23.85
20	7974936.301	503565.354	23.40
21	7974935.980	503560.531	23.35
22	7974931.592	503558.211	23.50
23	7974927.402	503560.835	23.88
24	7974921.663	503557.860	23.95
25	7974918.621	503562.361	24.26

Notes:

OWNER:
BAFFINLAND IRON MINES LP

PROJECT:
MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY:
M. GOREHAM

SCALE:
AS SHOWN

DATE:
Aug. 20, 2019

DRAWING TITLE:
LP5
SUBGRADE REPORT
SURVEYED AUGUST 20, 2019.

DRAWING NAME (YYMMDD):
190820 LP5 SG REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LPS	**Area Description:** East adjacent to Tote Road (1)	
Drawing No.: H353004-40000-221-271-0004-0001 17 BW		**Rev.:** ~~8~~ 1 BW

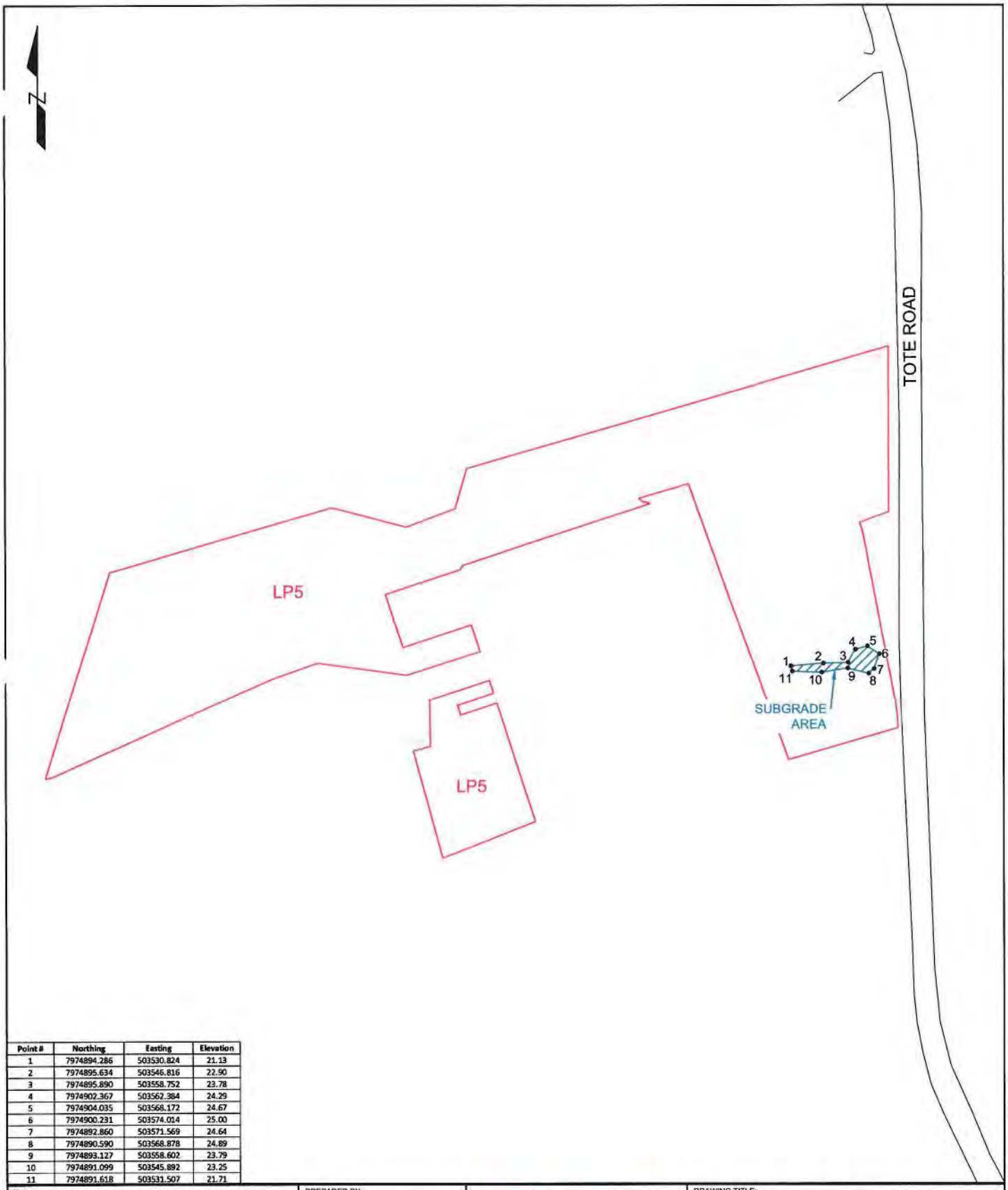
Area / Stations Inspected: See Survey
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☒ NO ☐ N/A	JG
Rebound of Surface	☐ YES ☒ NO ☐ N/A	JG
Formation of Cracks Patterns	☐ YES ☒ NO ☐ N/A	JG
Ridging Between Wheel Ridges	☐ YES ☒ NO ☐ N/A	JG
Inconsistency Compaction Between Areas	☐ YES ☒ NO ☐ N/A	JG
Surface Uniform and Level	☒ YES ☐ NO ☐ N/A	JG
Proof Roll Test Satisfactory and Accepted	☒ YES ☐ NO ☐ N/A	JG
Elevation Record (Survey)	☒ YES ☐ NO ☐ N/A	JG

Comments:

Subgrade / frozen ground

Grant LaPointe / [signature]	Supervisor	Aug 20/19
Construction Designate – Print/Sign	Title	Date
John Guan / [signature]	QC Coordinator	Aug 20/19
Contractor QC Designate – Print/Sign	Title	Date
Rob Chaisson / [signature]	Materials Lead	Aug 20/19
Client QA Designate – Print/Sign	Title	Date



Point #	Northing	Easting	Elevation
1	7974894.286	503530.824	21.13
2	7974895.634	503546.816	22.90
3	7974895.890	503558.752	23.78
4	7974902.367	503562.384	24.29
5	7974904.035	503568.172	24.67
6	7974900.231	503574.014	25.00
7	7974892.860	503571.569	24.64
8	7974890.590	503568.878	24.89
9	7974893.127	503558.602	23.79
10	7974891.099	503545.892	23.25
11	7974891.618	503531.507	21.71

Notes:

OWNER:
BAFFINLAND IRON MINES LP

PROJECT:
MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY:
M. GOREHAM

SCALE:
AS SHOWN

DATE:
Aug. 21, 2019

DRAWING TITLE:
LP5
SUBGRADE REPORT
SURVEYED AUGUST 20, 2019.

DRAWING NAME (YYMMDD):
190820 (1) LP5 SG REPORT.dwg

NUNA EAST LTD	SUBGRADE APPROVAL REPORT	Exhibit 1-8b QDE Revision 0 Page 1 of 1

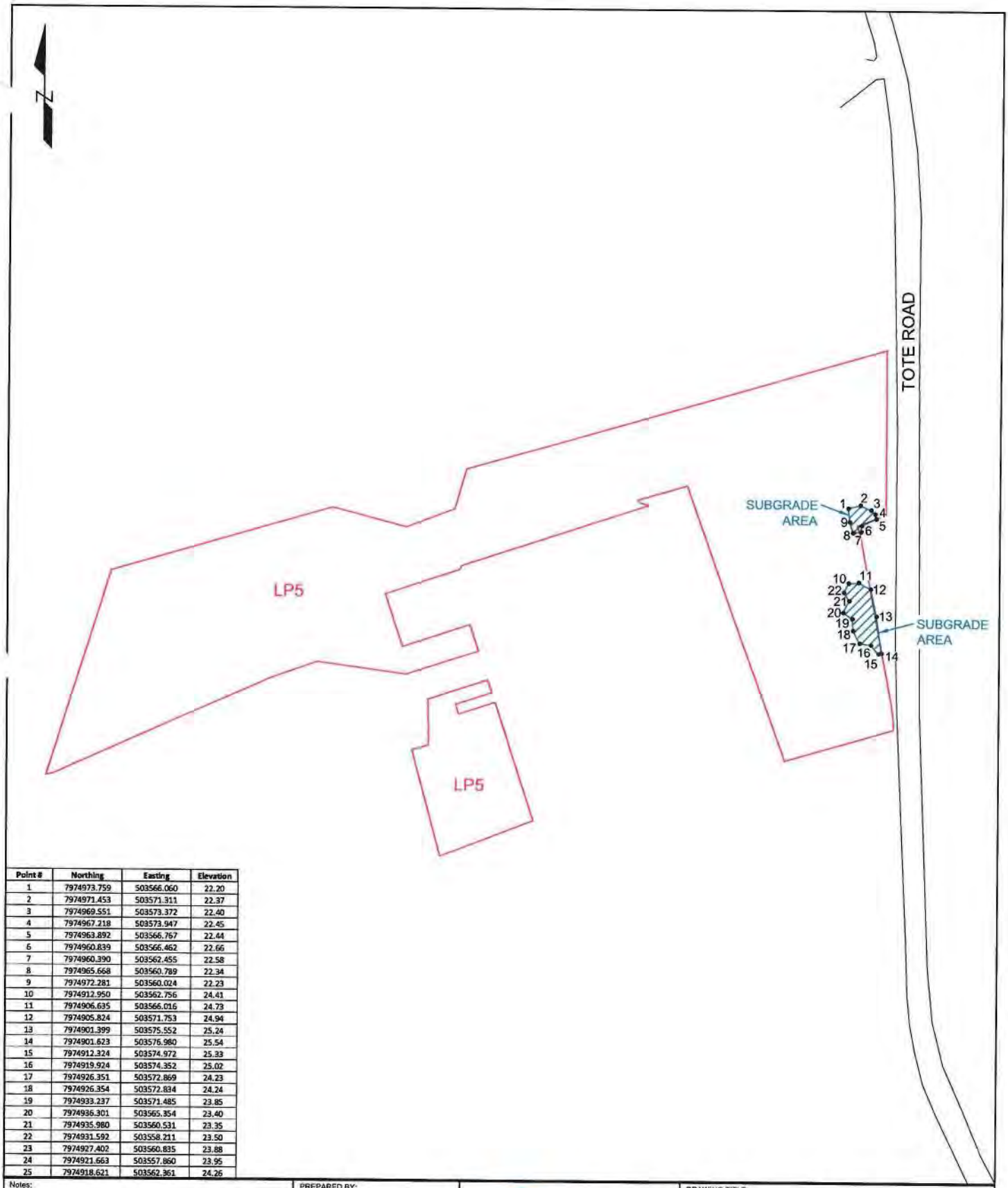
Project: Mary River Expansion Project	**ITP#:** CC006-0005A	**QA Ref. Rpt. No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:**	**Subsystem:** N/A
Area: LPS	**Area Description:** LPS East adjacent tote road	
Drawing No.: A353004-40000-221-271-0007-0001		**Rev.:** 1

Area / Stations Inspected: See Survey

INSPECTION DESCRIPTION		Verified (Initial)
Organic Soil Present.	☐ YES ☒ NO ☐ N/A	JG
Snow or Ice Present.	☐ YES ☒ NO ☐ N/A	JG
Ponded Water Present.	☐ YES ☒ NO ☐ N/A	JG
Water Seepage.	☐ YES ☒ NO ☐ N/A	JG
Frozen Soil Present.	☒ YES ☐ NO ☐ N/A	JG
Excavation Cleared of Foreign and Loose Soil Material.	☒ YES ☐ NO ☐ N/A	JG
Excavation Matches Design and IFC drawings.	☒ YES ☐ NO ☐ N/A	JG
Was Over Excavation Required. Depth: (_____)	☐ YES ☐ NO ☒ N/A	JG
Excavation Satisfactory and Accepted.	☒ YES ☐ NO ☐ N/A	JG

Comments:
excavated to competent ground, no water seepage

/		
Construction Designate – Print/Sign	Title	Date
John Gunn /	QC coordinator	Aug 20, 19
Contractor QC Designate – Print/Sign	Title	Date
Rob Cronin /	materials Lead	Aug 20/19
Client QA Designate – Print/Sign	Title	Date



Point #	Northing	Easting	Elevation
1	7974973.759	503566.060	22.20
2	7974971.453	503571.311	22.37
3	7974969.551	503573.372	22.40
4	7974967.218	503573.947	22.45
5	7974963.892	503566.767	22.44
6	7974960.839	503566.462	22.66
7	7974960.390	503562.455	22.58
8	7974965.668	503560.789	22.34
9	7974972.281	503560.024	22.23
10	7974912.950	503562.756	24.41
11	7974906.635	503566.016	24.73
12	7974905.824	503571.753	24.94
13	7974901.399	503575.552	25.24
14	7974901.623	503576.980	25.54
15	7974912.324	503574.972	25.33
16	7974919.924	503574.352	25.02
17	7974926.351	503572.869	24.23
18	7974926.354	503572.834	24.24
19	7974933.237	503571.485	23.85
20	7974936.301	503565.354	23.40
21	7974935.980	503560.531	23.35
22	7974931.592	503558.211	23.50
23	7974927.402	503560.835	23.88
24	7974921.663	503557.860	23.95
25	7974918.621	503562.361	24.26

Notes:

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

SCALE: AS SHOWN

DATE: Aug. 20, 2019

DRAWING TITLE:
LP5
SUBGRADE REPORT
SURVEYED AUGUST 20, 2019.

DRAWING NAME (YYMMDD): 190820 LP5 SG REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

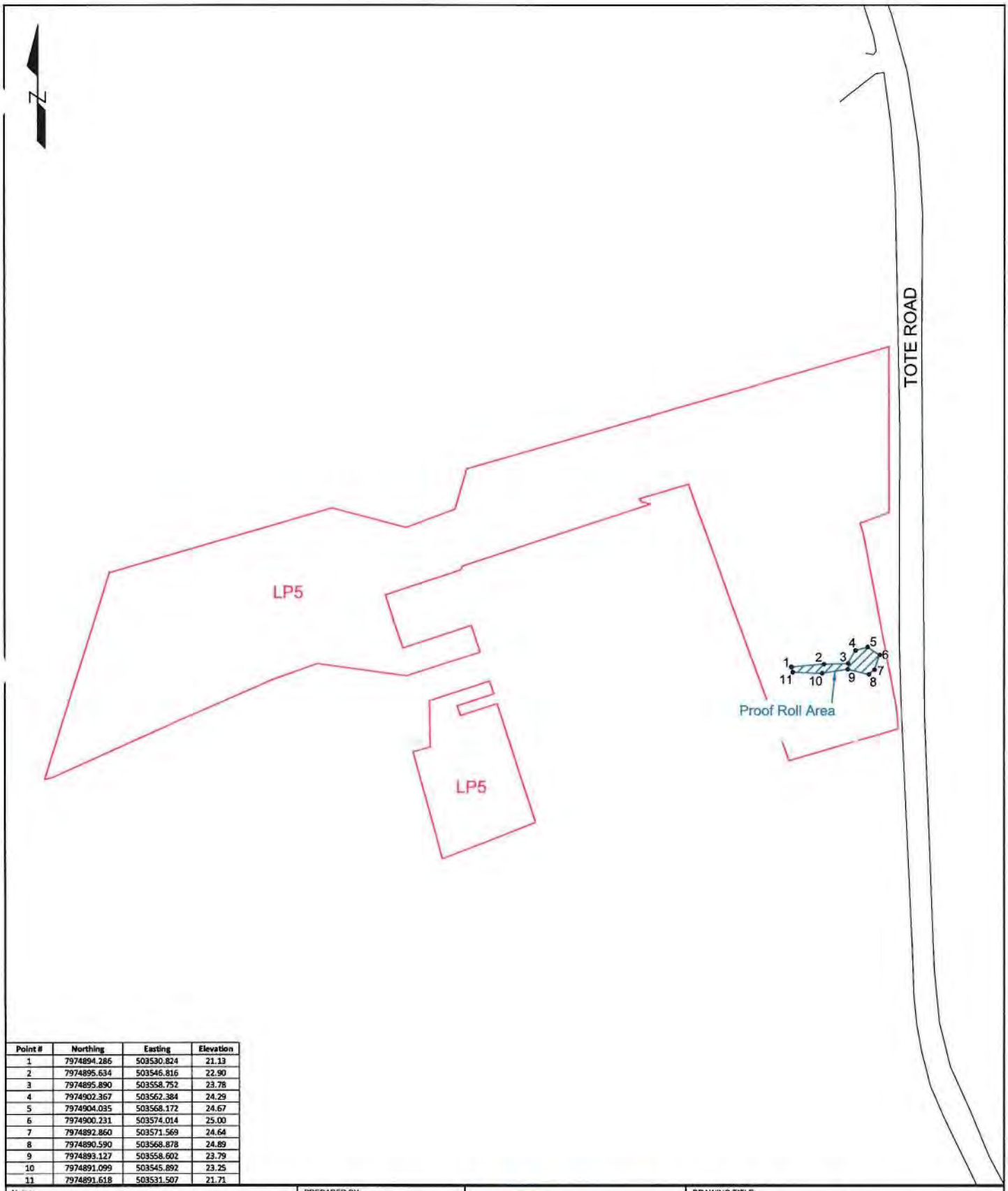
Project: Mary River Expansion Project	**ITP #:** CC006-000.5A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LPS	**Area Description:** LPS East	
Drawing No.: H353004-40000-221-271-0001		**Rev.:** 1

Area / Stations Inspected: See Survey
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	JG
Rebound of Surface	☐ YES ☑ NO ☐ N/A	JG
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	JG
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	JG
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	JG
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	JG
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	JG
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	JG

Comments: JG
~~Type 1a~~ Subgrade proofroll after removing ROQ and excavating soft areas. Nightshift

/		
Construction Designate – Print/Sign	Title	Date
John Gunn /	QC coordinator	Aug 20/19
Contractor QC Designate – Print/Sign	Title	Date
Ronny Franke	Hatch QA	Sept 30-2019
Client QA Designate – Print/Sign	Title	Date



Point #	Northing	Easting	Elevation
1	7974894.286	503530.824	21.13
2	7974895.634	503546.816	22.90
3	7974895.890	503558.752	23.78
4	7974902.367	503562.384	24.29
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6	7974900.231	503574.014	25.00
7	7974892.860	503571.569	24.64
8	7974890.590	503568.878	24.89
9	7974893.127	503558.602	23.79
10	7974891.099	503545.892	23.25
11	7974891.618	503531.507	21.71

Notes:

OWNER:
BAFFINLAND IRON MINES LP

PROJECT:
MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY:
M. GOREHAM

SCALE:
AS SHOWN

DATE:
Aug. 21, 2019

DRAWING TITLE:
LP5
PROOF ROLL REPORT
SURVEYED AUGUST 20, 2019.

DRAWING NAME (YYMMDD):
190820 (1) LP5 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP5	**Area Description:** East	
Drawing No.: H353004-40000-221-271-0004-0001		**Rev.:** 5

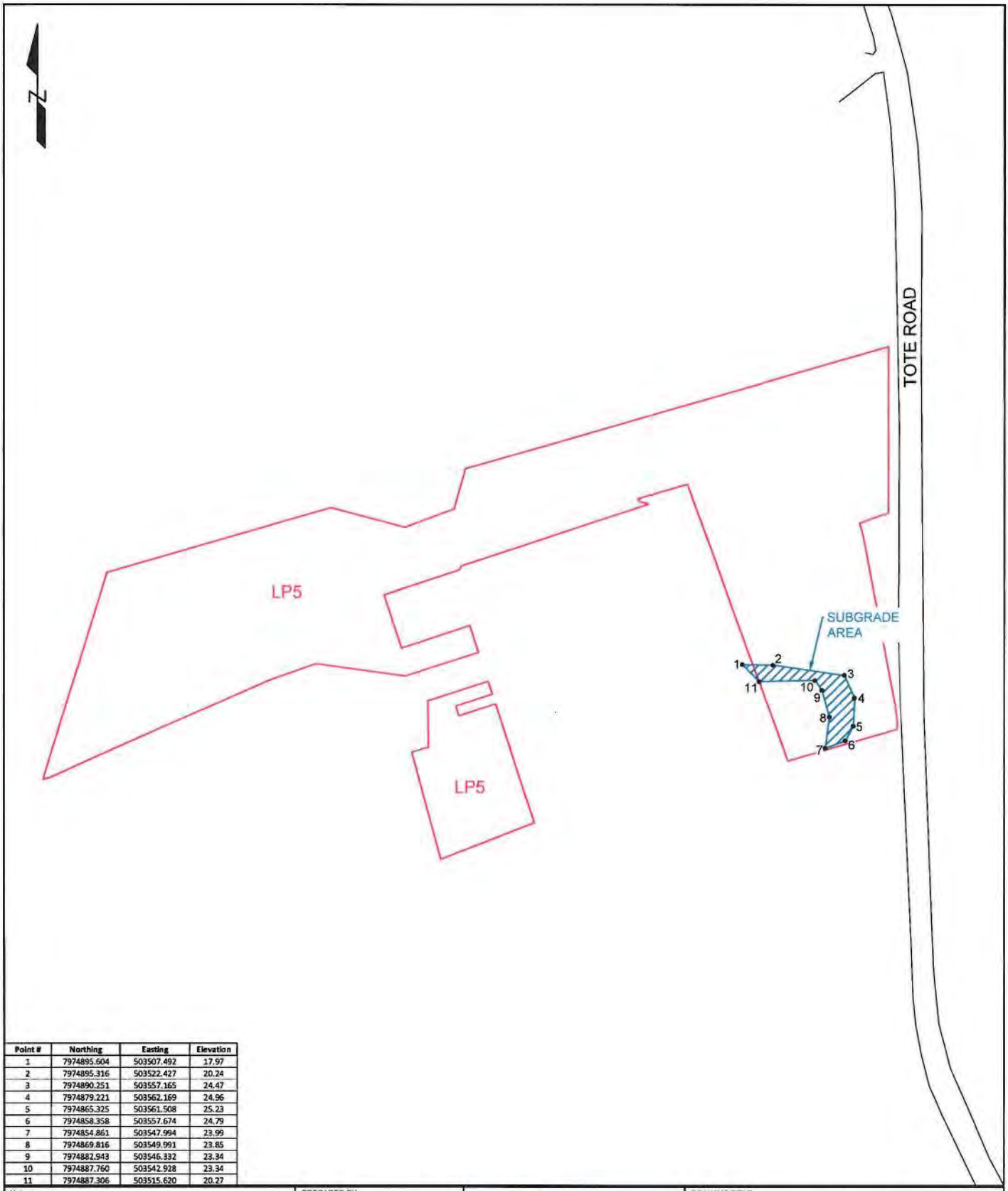
Area / Stations Inspected: See Survey
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	JG
Rebound of Surface	☐ YES ☑ NO ☐ N/A	JG
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	JG
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	JG
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	JG
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	JG
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	JG
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	JG

Comments:

Frozen Competent subgrade - no groundwater/seepage
Could not access w/ truck due to slope Test with
350 excavator bucket

Construction Designate – Print/Sign		Title	Date
John Gunn /		QC coordinator	Aug 21/19
Contractor QC Designate – Print/Sign		Title	Date
Rob Chisholm /		Materials Lead	Aug 21/19
Client QA Designate – Print/Sign		Title	Date



Point #	Northing	Easting	Elevation
1	7974895.604	503507.492	17.97
2	7974895.316	503522.427	20.24
3	7974890.251	503557.165	24.47
4	7974879.221	503562.169	24.96
5	7974865.325	503561.508	25.23
6	7974858.358	503557.674	24.79
7	7974854.861	503547.994	23.99
8	7974869.816	503549.991	23.85
9	7974882.943	503546.332	23.34
10	7974887.760	503542.928	23.34
11	7974887.306	503515.620	20.27

Notes:

OWNER:
BAFFINLAND IRON MINES LP

PROJECT:
MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY:
M. GOREHAM

SCALE:
AS SHOWN

DATE:
Aug. 21, 2019

DRAWING TITLE:
LP5
SUBGRADE REPORT
SURVEYED AUGUST 21, 2019.

DRAWING NAME (YYMMDD):
190821 LP5 SG REPORT.dwg

NUNA EAST LTD	AUTHORIZATION FOR BACKFILL	Exhibit :1-3a QDE Revision 0 Page 1 of 2

Project: Mary River Expansion Project	**ITP#:** CC006-000SA	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Sub-System:** N/A
Area: LPS	**Area Description:** Adjacent to tote road (2)	
Compaction Required Yes ☐ No ☒	**Excavation Permit No.:** N/A	
Drawing No.: ~~Survey attached~~ DW 4353004-40000-221-271-0017-0001		**Rev.:** 1

PRE-BACK FILL INSPECTION

INSPECTION DESCRIPTION:		Verified (Initial)
1. Excavation cleared of frozen material, foreign objects and debris.	☑ YES ☐ NO ☐ N/A	JG
2. No water seepage or ponded water present in excavation.	☑ YES ☐ NO ☐ N/A	JG
3. No organic and loose soil present.	☑ YES ☐ NO ☐ N/A	JG
4. All installations in the excavation are complete.	☐ YES ☐ NO ☑ N/A	JG
5. Concrete substructures complete.	☐ YES ☐ NO ☑ N/A	JG
6. Electrical installation(s) complete.	☐ YES ☐ NO ☑ N/A	JG
7. Piping installation(s) complete.	☐ YES ☐ NO ☑ N/A	JG
8. Sewer vents and manhole installation complete.	☐ YES ☐ NO ☑ N/A	JG
9. Frost blocks installed as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	JG
10. Geotextile fabric installation(s) as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	JG
11. Insulation installed per IFC drawings.	☐ YES ☐ NO ☑ N/A	JG
12. Culverts installation(s) as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	JG
13. Redline / As-Builts completed.	☐ YES ☒ NO ☐ N/A	JG
14. Overall condition of base is suitable for backfilling and compaction.	☑ YES ☐ NO ☐ N/A	JG

APPROVAL TO PROCEED WITH BACKFILL

Contractor QC Designate		Client Designate	
John Guan		Rob [illegible]	[signature]
Name (print)	Signature	Name (print)	Signature

IN PROCESS INSPECTION

INSPECTION DESCRIPTION:		Verified (Initial)
1. Backfill material is free of foreign material and conforms to specification.	☑ YES ☐ NO ☐ N/A	JG
2. Survey check of Location, dimensions and shape of excavation or base.	☑ YES ☐ NO ☐ N/A	JG
3. Lift thickness confirmed, and compaction testing performed in accordance with specification.	☑ YES ☐ NO ☐ N/A	JG
4. Warning tape(s) installed, depth and type from final grade: (_____),(_____).	☐ YES ☐ NO ☑ N/A	JG
5. Red concrete installed over utilities.	☐ YES ☐ NO ☑ N/A	JG
6. Soil density test performed as per specification and test reports completed.	☐ YES ☐ NO ☑ N/A	(Proof roll) JG
7. Moisture levels acceptable.	☑ YES ☐ NO ☐ N/A	JG
8. Final elevation of area is in accordance to IFC drawings.	☐ YES ☐ NO ☑ N/A	JG

NUNA
NUNA EAST LTD

AUTHORIZATION FOR BACKFILL

Exhibit :1-3a QDE
Revision 0
Page 2 of 2

Test Instruments

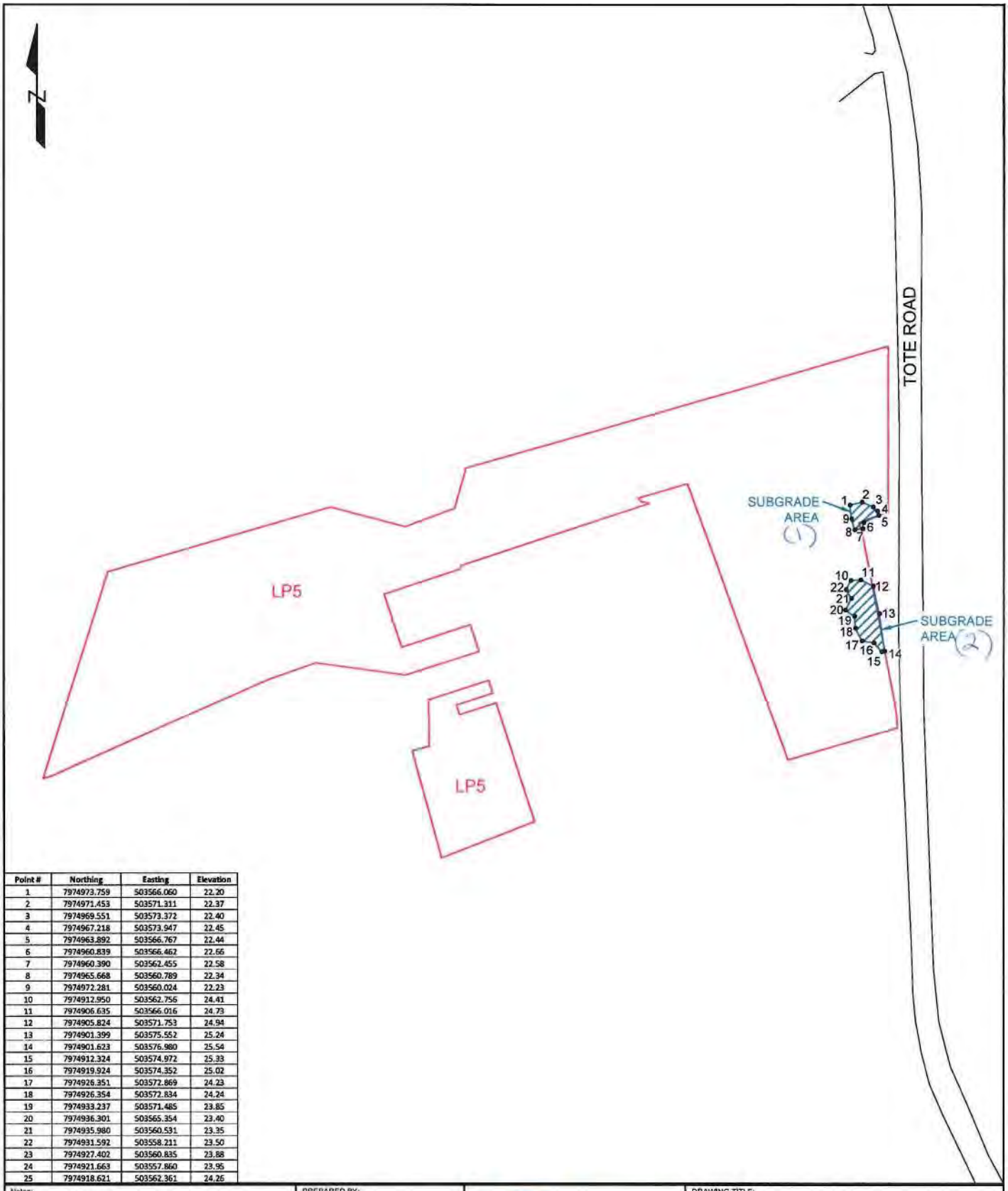
Manufacturer	Description	Range	I.D. No.:	Calibration Due Date
	N/A			

Comments:

see proof roll & sub base approval
No seepage or ground water, backfill on frozen ground
Aug 20, 2019 ~~14~~ 16:45
26

Attach additional supporting documents, data, or test results to this Report as required

/		
Construction Designate – Print/Sign	Title	Date
John Gunn / [signature]	QC Coordinator	Aug 20/14
Contractor QC Designate – Print/Sign	Title	Date
Rob Cranssen / [signature]	Materials Lean	Aug 20/19
Client QA Designate – Print/Sign	Title	Date



Point #	Northing	Easting	Elevation
1	7974973.759	503566.060	22.20
2	7974971.453	503571.311	22.37
3	7974969.551	503573.372	22.40
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5	7974963.892	503566.767	22.44
6	7974960.839	503566.462	22.66
7	7974960.390	503562.455	22.58
8	7974965.668	503560.789	22.34
9	7974972.281	503560.024	22.23
10	7974912.950	503562.756	24.41
11	7974906.635	503566.016	24.73
12	7974905.824	503571.753	24.94
13	7974901.399	503575.552	25.24
14	7974901.623	503576.980	25.54
15	7974912.324	503574.972	25.33
16	7974919.924	503574.352	25.02
17	7974926.351	503572.869	24.23
18	7974926.354	503572.834	24.24
19	7974933.237	503571.485	23.85
20	7974936.301	503565.354	23.40
21	7974935.980	503560.531	23.35
22	7974931.592	503558.211	23.50
23	7974927.402	503560.835	23.88
24	7974921.663	503557.860	23.95
25	7974918.621	503562.361	24.26

Notes:

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

SCALE: AS SHOWN

DATE: Aug. 20, 2019

DRAWING TITLE:
LP5
SUBGRADE REPORT
SURVEYED AUGUST 20, 2019.

DRAWING NAME (YYMMDD): 190820 LP5 SG REPORT.dwg

NUNA NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

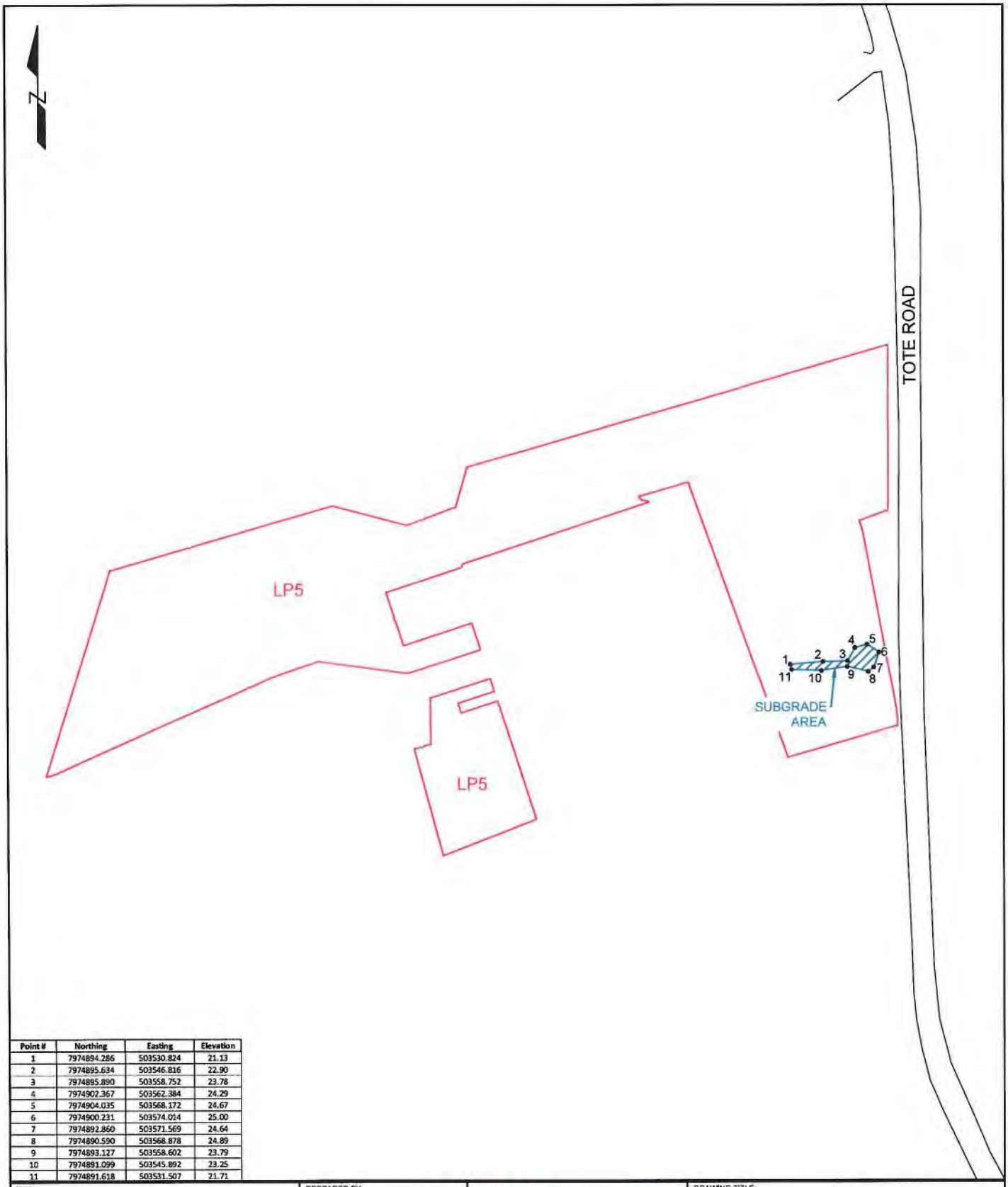
Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP5	**Area Description:** East	
Drawing No.: ~~See Survey~~ H353004-4000-221-271-0001-001 (17 Rev)		**Rev.:** 1

Area / Stations Inspected: See Survey
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☑ YES ☐ NO ☐ N/A	JC
Rebound of Surface	☑ YES ☐ NO ☐ N/A	JC
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	JC
Ridging Between Wheel Ridges	☑ YES ☐ NO ☐ N/A	JC
Inconsistency Compaction Between Areas	☑ YES ☐ NO ☐ N/A	JC
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	JC
Proof Roll Test Satisfactory and Accepted	☐ YES ☑ NO ☐ N/A	JC
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	JC

Comments:
Proof roll of ROQ failed, localized soft spots identified and marked for sub-out (Area previously passed) Dayshift

/			
Construction Designate – Print/Sign		Title	Date
John Gan /		QC coordinator	Aug 20/19
Contractor QC Designate – Print/Sign		Title	Date
Ronny Franken /		Mdch QA	Sept 30-2019
Client QA Designate – Print/Sign		Title	Date



Point #	Northing	Easting	Elevation
1	7974894.286	503530.824	21.13
2	7974895.634	503546.816	22.90
3	7974895.890	503558.752	23.78
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9	7974893.127	503558.602	23.79
10	7974891.099	503545.892	23.25
11	7974891.618	503531.507	21.71

Notes:

OWNER:
BAFFINLAND IRON MINES LP

PROJECT:
MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY:
M. GOREHAM

SCALE:
AS SHOWN

DATE:
Aug. 21, 2019

DRAWING TITLE:
LP5
SUBGRADE REPORT
SURVEYED AUGUST 20, 2019.

DRAWING NAME (YYMMDD):
190820 (1) LP5 SG REPORT.dwg

NUNA EAST LTD	SUBBASE APPROVAL REPORT	Exhibit 1-8a QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:**	**Subsystem:** N/A
Area: CPS	**Area Description:** Adjacent tote road East (2)	
Drawing No.: A353004-40000-221-271-0017-0001		**Rev.:** 1

Area / Section Inspected: Survey attached

INSPECTION DESCRIPTION		Verified (Initial)
Organic Soil Present.	☐ YES ☑ NO ☐ N/A	JG
Snow or Ice Present.	☐ YES ☑ NO ☐ N/A	JG
Ponded Water Present.	☐ YES ☑ NO ☐ N/A	JG
Water Seepage.	☐ YES ☑ NO ☐ N/A	JG
Frozen Soil Present.	☑ YES ☐ NO ☐ N/A	JG
Excavation Cleared of Foreign and Loose Soil Material.	☑ YES ☐ NO ☐ N/A	JG
Excavation Matches Design and IFC drawings.	☐ YES ☐ NO ☑ N/A	JG
Was Over Excavation Required. Depth: (Frozen)	☐ YES ☐ NO ☑ N/A	JG
Excavation Satisfactory and Accepted.	☑ YES ☐ NO ☐ N/A	JG

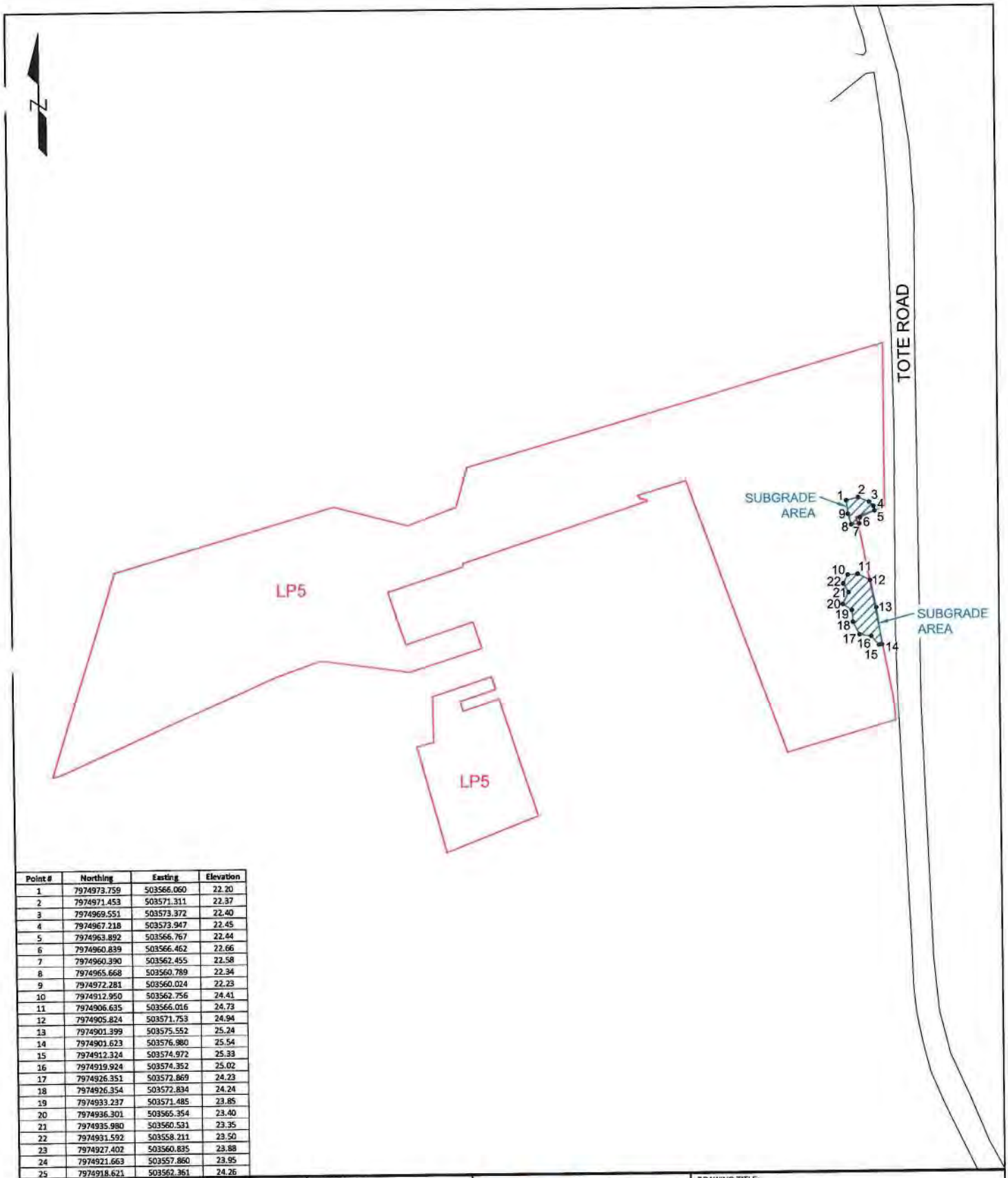
Comments:

No ponded water or seepage

Excavated to frozen competant ground

16:45

Construction Designate – Print/Sign	Title	Date
John Gwen /	QC Coordinator	Aug 20/19
Contractor QC Designate – Print/Sign	Title	Date
Rob Chalmers /	Materials Lead	Aug 20/19
Client QA Designate – Print/Sign	Title	Date



Point #	Northing	Easting	Elevation
1	7974973.759	503566.060	22.20
2	7974971.453	503571.311	22.37
3	7974969.551	503573.372	22.40
4	7974967.218	503573.947	22.45
5	7974963.892	503566.767	22.44
6	7974960.839	503566.462	22.66
7	7974960.390	503562.455	22.58
8	7974965.668	503560.789	22.34
9	7974972.281	503560.024	22.23
10	7974912.950	503562.756	24.41
11	7974906.635	503566.016	24.73
12	7974905.824	503571.753	24.94
13	7974901.399	503575.552	25.24
14	7974901.623	503576.980	25.54
15	7974912.324	503574.972	25.33
16	7974919.924	503574.352	25.02
17	7974926.351	503572.869	24.23
18	7974926.354	503572.834	24.24
19	7974933.237	503571.485	23.85
20	7974936.301	503565.354	23.40
21	7974935.980	503560.531	23.35
22	7974931.592	503558.211	23.50
23	7974927.402	503560.835	23.88
24	7974921.663	503557.860	23.95
25	7974918.621	503562.361	24.26

Notes:

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

SCALE: AS SHOWN

DATE: Aug. 20, 2019

DRAWING TITLE:
LP5
SUBGRADE REPORT
SURVEYED AUGUST 20, 2019.

DRAWING NAME (YYMMDD): 190820 LP5 SG REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC06-0005A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP5	**Area Description:** Adjacent tote road East (2)	
Drawing No.: 1353004-40000-27L-271-0017-0001		**Rev.:** 1

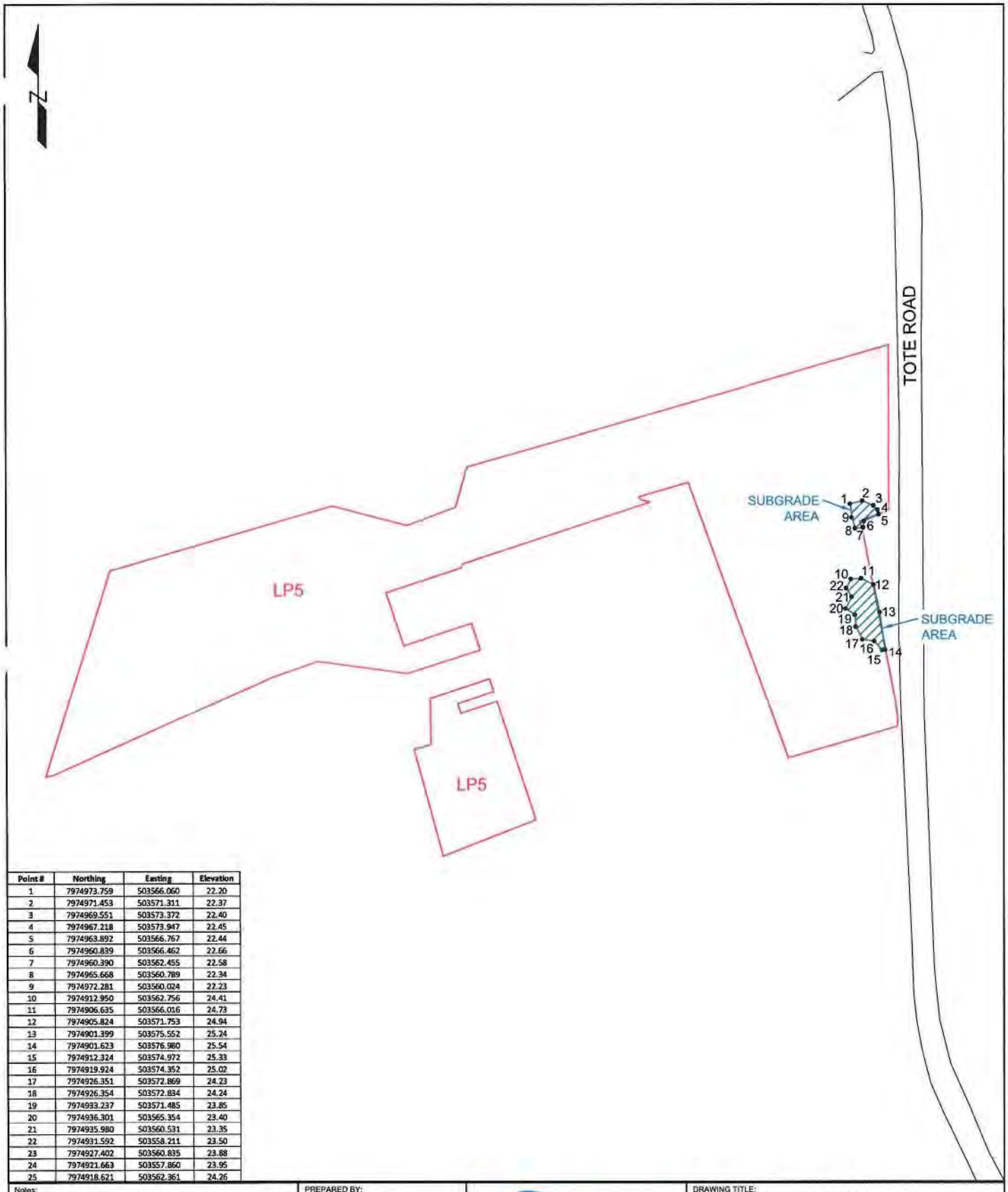
Area / Stations Inspected: See survey attached
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☒ NO ☐ N/A	JG
Rebound of Surface	☐ YES ☒ NO ☐ N/A	JG
Formation of Cracks Patterns	☐ YES ☒ NO ☐ N/A	JG
Ridging Between Wheel Ridges	☒ YES ☐ NO ☐ N/A	JG
Inconsistency Compaction Between Areas	☐ YES ☒ NO ☐ N/A	JG
Surface Uniform and Level	☒ YES ☐ NO ☐ N/A	JG
Proof Roll Test Satisfactory and Accepted	☒ YES ☐ NO ☐ N/A	JG
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	JG

Comments:

No seepage or groundwater, excavated to frozen ground.
16:45

Construction Designate – Print/Sign	Title	Date
John Gwan /	QC Coordinator	Aug 20/19
Contractor QC Designate – Print/Sign	Title	Date
Rob Chaisson /	Materials Lead	Aug 20/19
Client QA Designate – Print/Sign	Title	Date



Point #	Northing	Easting	Elevation
1	7974973.759	503566.060	22.20
2	7974971.453	503571.311	22.37
3	7974969.551	503573.372	22.40
4	7974967.218	503573.947	22.45
5	7974963.892	503566.767	22.44
6	7974960.839	503566.462	22.66
7	7974960.390	503562.455	22.58
8	7974965.668	503560.789	22.34
9	7974972.281	503560.024	22.23
10	7974912.950	503562.756	24.41
11	7974906.635	503566.016	24.73
12	7974905.824	503571.753	24.94
13	7974901.399	503575.552	25.24
14	7974901.623	503576.980	25.54
15	7974912.324	503574.972	25.33
16	7974919.924	503574.352	25.02
17	7974926.351	503572.869	24.23
18	7974926.354	503572.834	24.24
19	7974933.237	503571.485	23.85
20	7974936.301	503565.354	23.40
21	7974935.980	503560.531	23.35
22	7974931.592	503558.211	23.50
23	7974927.402	503560.835	23.88
24	7974921.663	503557.860	23.95
25	7974918.621	503562.361	24.26

Notes:

OWNER:
BAFFINLAND IRON MINES LP

PROJECT:
MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY:
M. GOREHAM

SCALE:
AS SHOWN

DATE:
Aug. 20, 2019

DRAWING TITLE:
LP5
SUBGRADE REPORT
SURVEYED AUGUST 20, 2019.

DRAWING NAME (YYMMDD):
190820 LP5 SG REPORT.dwg

NUNA EAST LTD

PROOF ROLL COMPACTION VERIFICATION REPORT

Exhibit 1-5 QDE

Revision 0

Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LPS	**Area Description:** LPS	
Drawing No.: H353004-40000-221-271-0004-0001 i7 Dwg		**Rev.:** 5 Dwg

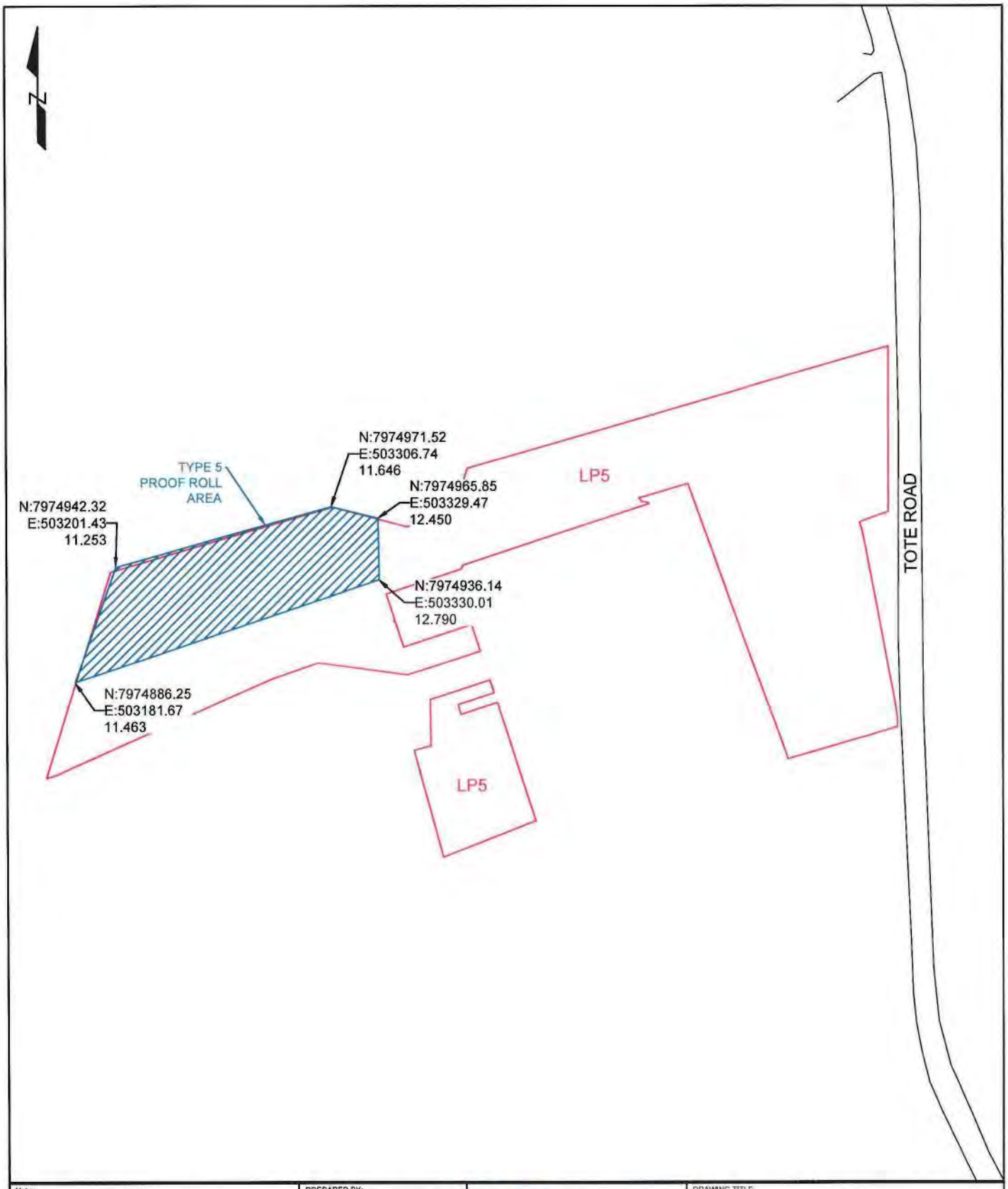
Area / Stations Inspected: SEE Survey
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☒ NO ☐ N/A	JC
Rebound of Surface	☐ YES ☒ NO ☐ N/A	JC
Formation of Cracks Patterns	☐ YES ☒ NO ☐ N/A	JC
Ridging Between Wheel Ridges	☐ YES ☒ NO ☐ N/A	JC
Inconsistency Compaction Between Areas	☐ YES ☒ NO ☐ N/A	JC
Surface Uniform and Level	☒ YES ☐ NO ☐ N/A	JC
Proof Roll Test Satisfactory and Accepted	☒ YES ☐ NO ☐ N/A	JC
Elevation Record (Survey)	☒ YES ☐ NO ☐ N/A	JC

Comments:

Additional watering Req'd on N edge - completed @ 14:30
Final surface Type 5, 2x 60T smooth drum packers

Grant LaPointe /	Supervisor	Aug 18/19
Construction Designate – Print/Sign	Title	Date
John Gunn /	QC Coordinator	Aug 18/19
Contractor QC Designate – Print/Sign	Title	Date
Rob Chaisson /	Approvals Lead	Aug 18/19
Client QA Designate – Print/Sign	Title	Date



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: LP5 TYPE 5 PROOF ROLL SURVEYED AUGUST 18, 2019.
OWNER: BAFFINLAND IRON MINES LP				
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: Aug. 19, 2019	DRAWING NAME (YYMMDD): 190818 LP5 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

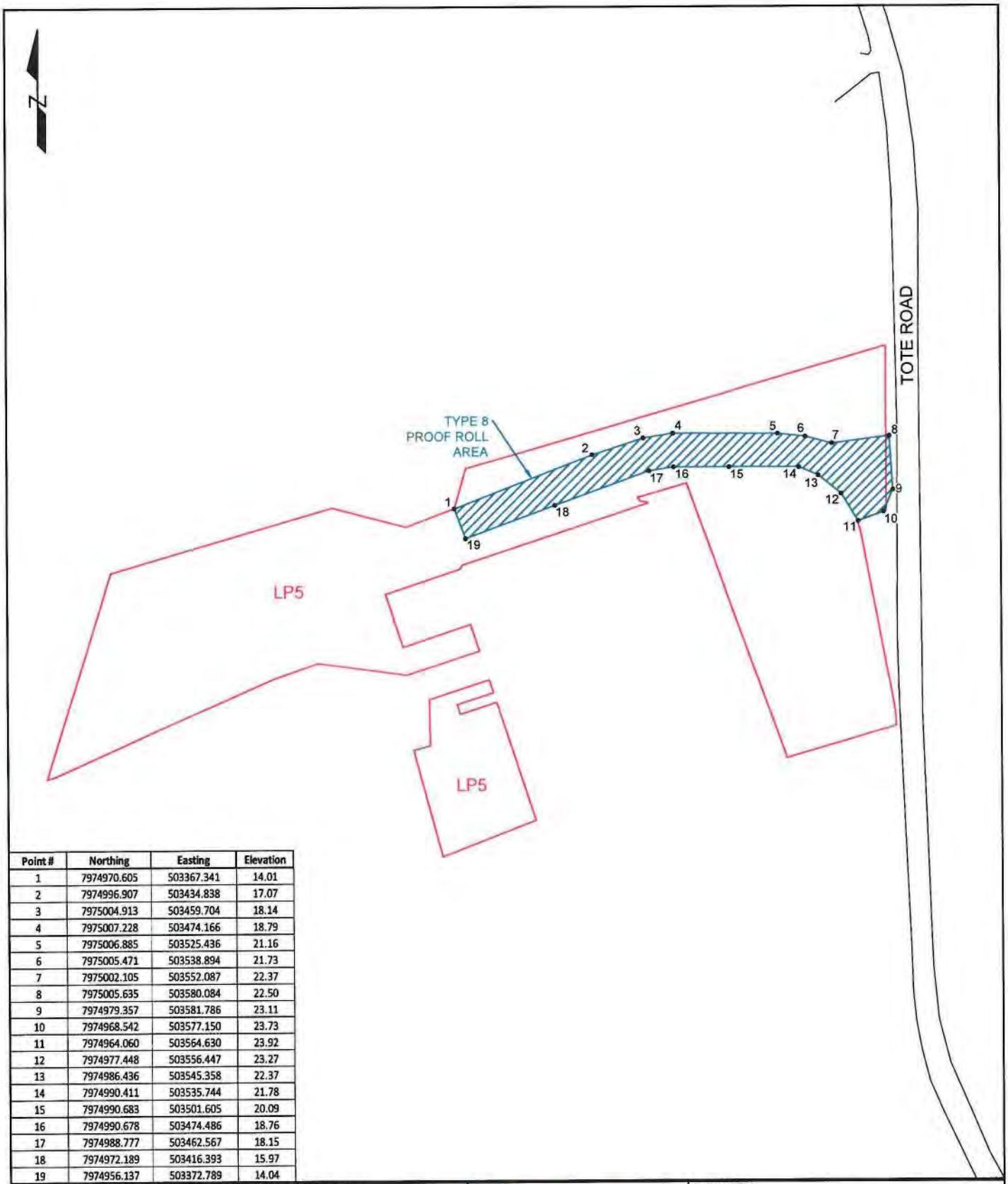
Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LPS	**Area Description:** LPS ~~proper~~ Access ramp / tote Rd	
Drawing No.: H353004-40000-221-271-0016-0001 17		**Rev.:** 1

Area / Stations Inspected: See Survey
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	JC
Rebound of Surface	☐ YES ☑ NO ☐ N/A	JC
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	JC
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	JC
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	JC
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	JC
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	JC
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	JC

Comments:
Type 8 → Road on north side LPS (East)

Grant LaPointe /	Supervisor	Aug 15/19
Construction Designate – Print/Sign	Title	Date
John Gan /	QC Coordinator	Aug 15/2019
Contractor QC Designate – Print/Sign	Title	Date
Rob Chrissan /	Materials Lead	Aug 15/2019
Client QA Designate – Print/Sign	Title	Date



Point #	Northing	Easting	Elevation
1	7974970.605	503367.341	14.01
2	7974996.907	503434.838	17.07
3	7975004.913	503459.704	18.14
4	7975007.228	503474.166	18.79
5	7975006.885	503525.436	21.16
6	7975005.471	503538.894	21.73
7	7975002.105	503552.087	22.37
8	7975005.635	503580.084	22.50
9	7974979.357	503581.786	23.11
10	7974968.542	503577.150	23.73
11	7974964.060	503564.630	23.92
12	7974977.448	503556.447	23.27
13	7974986.436	503545.358	22.37
14	7974990.411	503535.744	21.78
15	7974990.683	503501.605	20.09
16	7974990.678	503474.486	18.76
17	7974988.777	503462.567	18.15
18	7974972.189	503416.393	15.97
19	7974956.137	503372.789	14.04

Notes:

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

SCALE: AS SHOWN

DATE: Aug. 16, 2019

DRAWING TITLE:
LP5
TYPE 8 PROOF ROLL
SURVEYED AUGUST 15, 2019.

DRAWING NAME (YYMMDD): 190815 LP5 PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

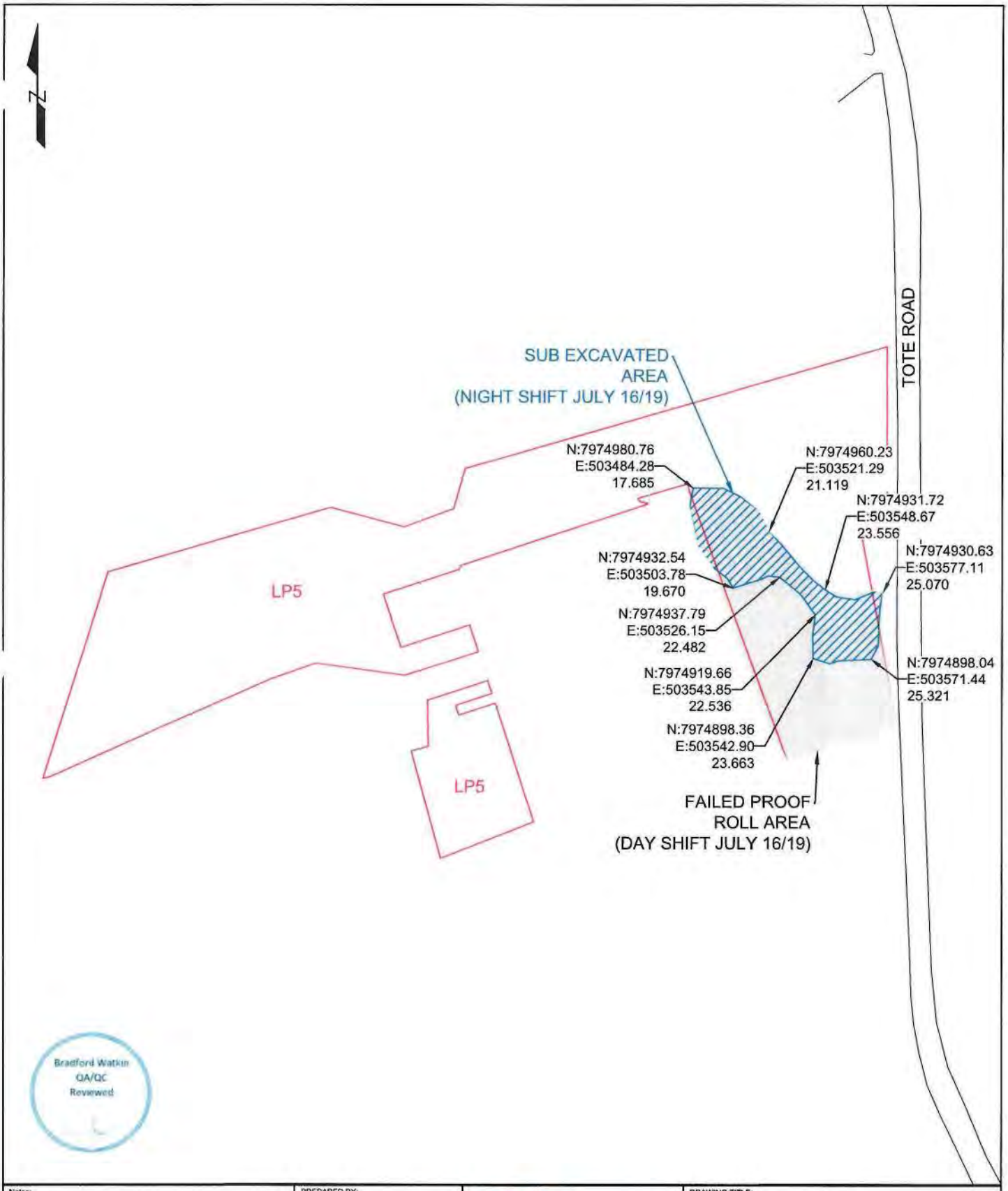
Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP5	**Area Description:** By Tote road	
Drawing No.: A353004-40000-221-0010-0002	**Rev.:** 2	

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☑ YES ☐ NO ☐ N/A	
Rebound of Surface	☑ YES ☐ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	

Comments:
MINOR DEFLECTION Approx ½ inch 4 meter ± 4 m near bottom - SUBGRADE Proof Roll

D Weber / D Weber	Foreman	July 18 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN /	QC COORDINATOR	7/18/19
Contractor QC Designate – Print/Sign	Title	Date
Mike Hynes /	Materials Lead	July 18/2019
Client QA Designate – Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	DRAWING TITLE: **LP5 SUBGRADE REPORT SURVEYED JULY 16, 2019.**	
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 17, 2019	DRAWING NAME (YYMMDD): 190717 LP5 SG REPORT.dwg

NUNA EAST LTD	SUBGRADE APPROVAL REPORT	Exhibit 1-8b QDE Revision 0 Page 1 of 1

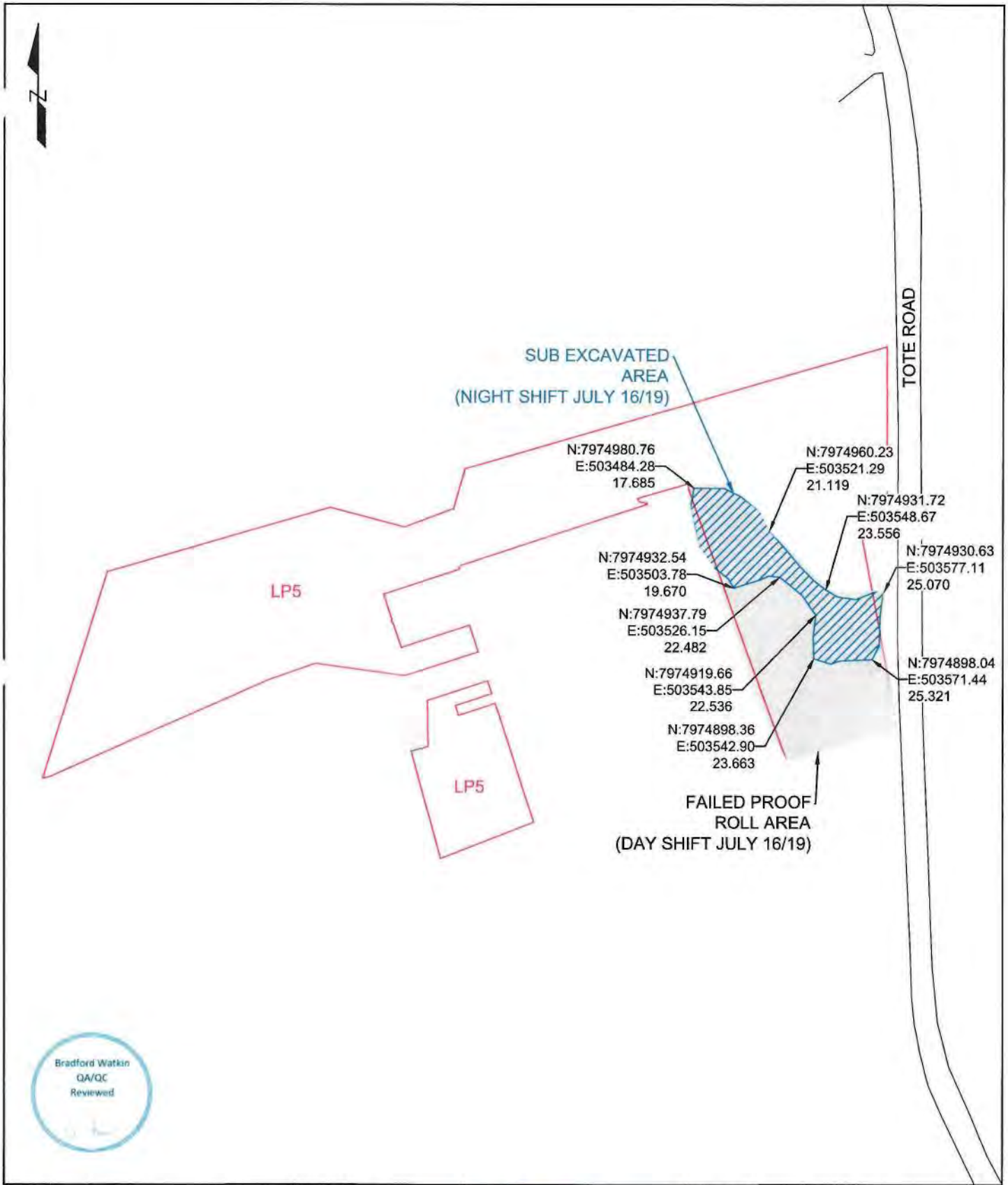
Project: Mary River Expansion Project	**ITP#:** CC006-0005A	**Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LP5	**Area Description:** BY TOTE ROAD	
Drawing No.: H353004-40000-221-271-0006-0001 17 DW		**Rev.:** 1

Area / Stations Inspected: SEE SURVEY DATA

INSPECTION DESCRIPTION		Verified (Initial)
Organic Soil Present.	☐ YES ☑ NO ☐ N/A	DW
Snow or Ice Present.	☐ YES ☑ NO ☐ N/A	DW
Ponded Water Present.	☑ YES ☐ NO ☐ N/A	DW
Water Seepage.	☑ YES ☐ NO ☐ N/A	DW
Frozen Soil Present.	☑ YES ☐ NO ☐ N/A	DW
Excavation Cleared of Foreign and Loose Soil Material.	☑ YES ☐ NO ☐ N/A	DW
Excavation Matches Design and IFC drawings. Deeper than design	☑ YES ☐ NO ☐ N/A	DW
Was Over Excavation Required. Depth: (TO FROST)	☑ YES ☐ NO ☐ N/A	DW
Excavation Satisfactory and Accepted.	☐ YES ☐ NO ☒ N/A	DW
Soft Spots expected		

Comments: Needs to be checked and approved before any permanent structures are placed MH material placed during nightshift, continued today, scrape and cover. as of 14:00hr MH - NO PROOF ROLL.

DWebber / DW	Foreman	July 17 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WHITKID /	QC COORDINATOR	7/17/19
Contractor QC Designate – Print/Sign	Title	Date
Mike Hynes /	Materials Lead	July 17/2019
Client QA Designate – Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **LP5 SUBGRADE REPORT SURVEYED JULY 16, 2019.**
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 17, 2019	DRAWING NAME (YYMMDD): 190717 LP5 SG REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-0005A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: LAYDOWN 5	**Area Description:** ~~SOFT SPOT~~ LP5 WEST END DW	
Drawing No.: H353004-221-271-0016-0001 17 DW	**Rev.:** 1	

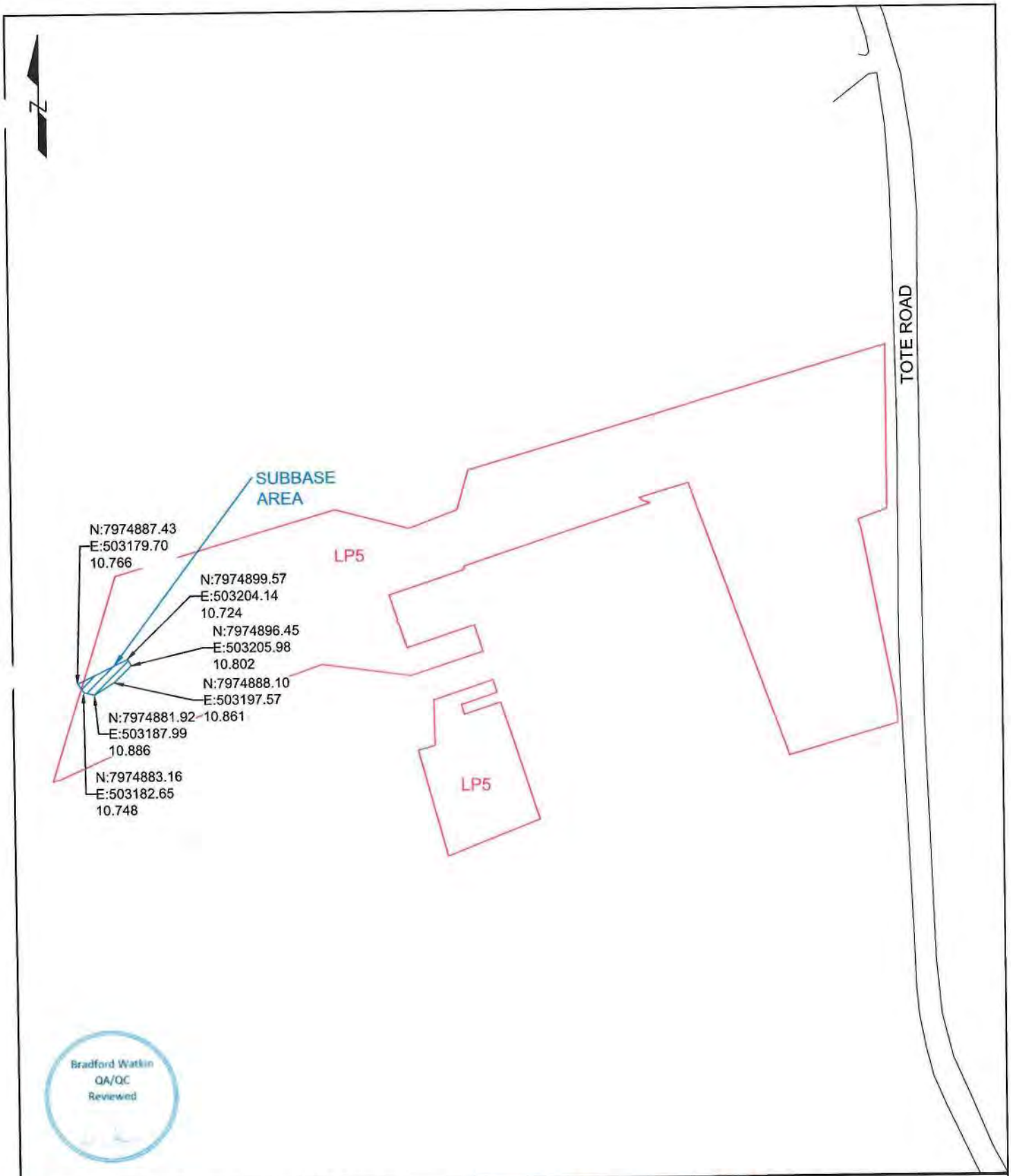
Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745C Articulated Haul Truck Visual inspection to Frozen material

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	DW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	DW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	DW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A DW	DW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A DW	DW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A DW	DW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A DW	DW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	DW

Comments:
INSPECTED VISUALLY TO FROZEN MATERIAL
- SUBGRADE (PERMAFROST)
- LIGHT SHIFT (EARLY MORNING)

D Weber / DW	FOREMAN	7/5/19
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN / BW	QC COORDINATOR	7/5/19
Contractor QC Designate – Print/Sign	Title	Date
Mike Hynes / MikeHynes	Materials Lead	July 5/2019
Client QA Designate – Print/Sign	Title	Date

LP5 SOFT SPOT FILL REMOVAL - Surveyed July 15, 2019		
NORTHNG	EASTING	ELEVATION
7974888.992	503182.272	10.839
7974892.752	503189.566	10.855
7974896.456	503196.718	10.842
7974898.812	503201.393	10.774
7974899.573	503204.143	10.724
7974896.446	503205.978	10.802
7974891.988	503202.348	10.864
7974888.104	503197.570	10.861
7974883.554	503190.724	10.871
7974881.915	503187.991	10.886
7974883.155	503182.652	10.748
7974887.430	503179.699	10.766
7974891.557	503187.007	10.825



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	DRAWING TITLE: **LP5 SUBBASE REPORT SURVEYED JULY 15, 2019.**	
OWNER: BAFFINLAND IRON MINES LP				
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 18, 2019	DRAWING NAME (YYMMDD): 190715 LP5 SB REPORT.dwg

NUNA
NUNA EAST LTD

Baffinland
HATCH

Nuna East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval -* laydown LP5
Date of Inspection:	Feb 12 - 13 2019
Parties Present at Inspection	Kenny MacRae Darko Filipic

Comments:

A visual inspection of the Laydown LP5 *surface/sub-grade was conducted prior to placement of fill Material.*

Sub-grade: Along LP5 tote road and laydown areas from edge of camp pad to the tote road

see drawing attached

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Darko Filipic		2/14/19
HATCH Representative:			

NUNA
NUNA EAST LTD

Baffinland
HATCH

Nuna East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval -* Laydown LP5 LP5 road
Date of Inspection:	Feb 17 2019
Parties Present at Inspection	Kenny MacRae Darko Filipic

Comments:

A visual inspection of the Laydown LP5 *surface/sub-grade was conducted prior to placement of fill Material.*

Sub-grade: snow and ice removed / proof rolled.
ground is frozen.
See drawing attached

The outlined area is approved for placement of material.

Permission to Proceed:

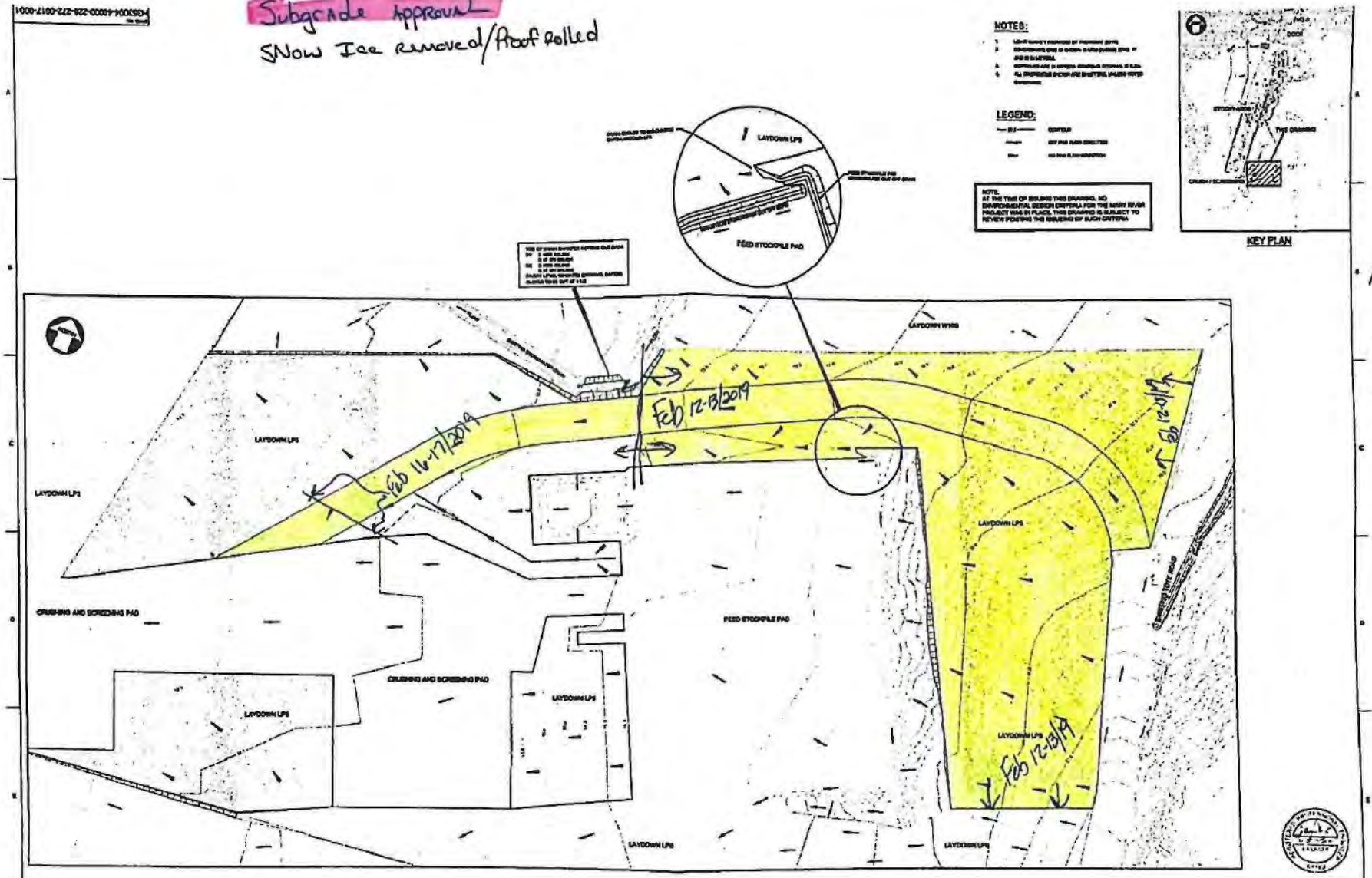
The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Darko Filipic		2/18/19
HATCH Representative:			

LPS

Subgrade Approval

Snow Ice Removed/Proof Rolled



Kenny MacKay

Subgrade cleared of snow/Approved Feb 12.-13/2019 for material placement

FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP5
DRAINAGE PLAN

H353004-40000-228-272-0017-0001 | 0

NUNA
NUNA EAST LTD

Baffinland
HATCH

Nuna East Limited Quality Department
QCD-001 Sub-Grade Approval
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval* *Work Scope Location:* Laydown LP5 *Location Section:* Laydown LP5 Road · Survey Points 101 – 216
Date of Inspection:	February 13, 2019
Parties Present at Inspection	Allnorth Survey, Allnorth QA, Dave Burry

Comments:

A visual inspection of the LP5 Road *surface/sub-grade was conducted prior to placement of fill Material.*

Sub-grade:

Clear of snow, fill area identified

The outlined area is approved for placement of material.

Permission to Proceed:

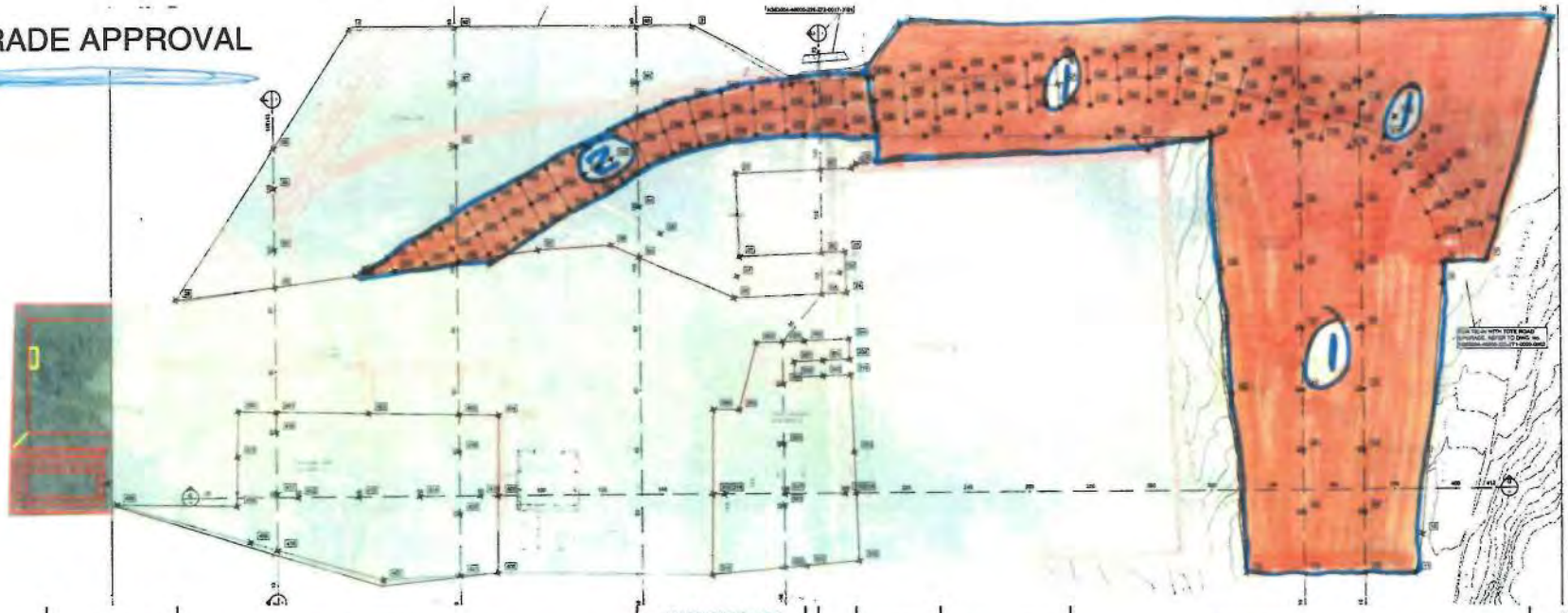
The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	Brandon Urquhart		02/13/2019
HATCH Representative:	Dave Burry		02/13/19

* ALLNORTH CHECK SHEET

LAYDOWN LP5 - MATERIAL PLACEMENT APPROVAL TRACKING

SUBGRADE APPROVAL



No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
1	Feb 12-13/19		Subgrade Approved		
2	Feb 16/17/19		Subgrade Approved		

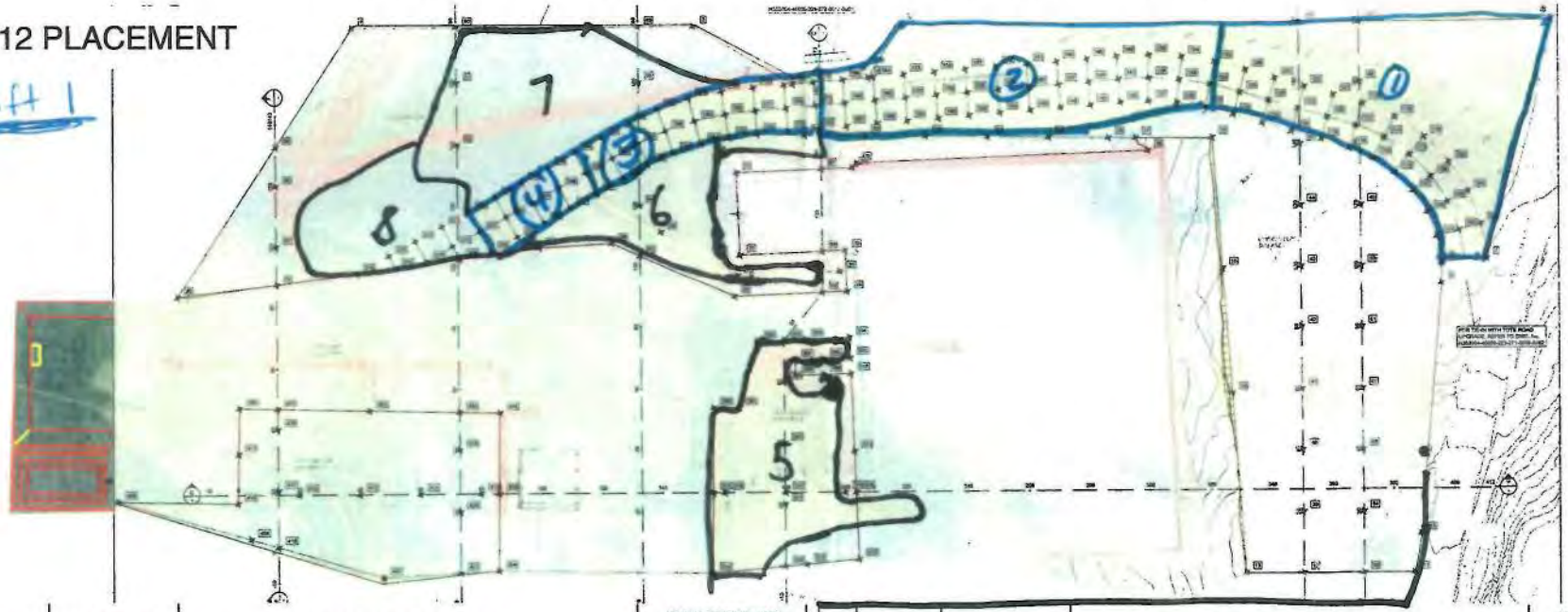
No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH

ALL NORTH CHECK SHEET

LAYDOWN LP5 - MATERIAL PLACEMENT APPROVAL TRACKING

TYPE 12 PLACEMENT

Lift 1



No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
1	Feb 18/19		RCQ Placed & compacted Feb 18/19		
2	Feb 21/19		RCQ Placed & compacted Feb 21ST/19		
3	Feb 23/19		RCQ Placed & compacted Feb 23/19		
4	Feb 24/19		RCQ Placed & compacted Feb 24/19		
5	MAY 16		Type 12 placed and compacted MAY 16		
6	MAY 21ST		Type Type Placed and compacted MAY 21ST		
7	MAY 23		Type 12 Placed MAY 21ST Type 12 compacted		
8	MAY 27		Type 12 Placed MAY 26/27 Type 12 compacted MAY		

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH

NUNA

NUNA EAST LTD

(Section 10)

Signature Log

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN	BW	
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC	DF	
ALLNORTH	Materials technician	Kenny MacRae	KM	
Hatch	Hatch Civil	Stephane Grenier	SG	
NUNA EAST	PROJECT COORDINATOR	BRANDON UNGALAQ	BU	
NUNA EAST	PROJECT COORDINATOR	[illegible]	[illegible]	
HATCH	FIELD ENG. MANAGER	GLEN PEACE	GDP	
NUNA EAST	SITE SUPERINTENDENT	ANTHONY STEWART	AMS	
NUNA EAST	SITE SUPERINTENDENT	HARVEY BLOVIN	HB	
Hatch	Hatch Super	Roger Landry	RL	
Nuna East	Project Manager	Stephen Nugent	SN	
HATCH	CONSTRUCTION SUPERINTENDENT	ROB BADER	RB	
BVTV	Project Engineer	David Garcia	D.G	
Hatch	QA Manager	Ronny Franken	R.F.	

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Mine Port)			**Code:**	N/A
Contractor:	Nuna East Ltd.	**Contract/Job No.:**	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	**ITP No.:**	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN		
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC		
ALLNORTH	Materials technician	Kenny MacRae		
Hatch	Hatch Civil	Stephane Giard		
NUNA EAST	PROJECT COORDINATOR	BRANDON URQUHART		
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]STER		
HATCH	FIELD ENG. MANAGER	GLEN PEACE		
Hatch	Construction Super	Dean Moffett		
Hatch	Construction Super	Roger Landry		

NUNA

NUNA EAST LTD

(Section 11)

Walkdown

NUNA EAST LTD	WALKDOWN REPORT	Exhibit 1-10 QDG Revision 0

WALKDOWN ATTENDEES LIST	(Page 1 of 1)

Project Name: Mary River Expansion	Contractor's Name: Nuna East Ltd.	Job File No.: CC006-~~0022A~~ 0005A
System CWP Description: ~~Crusher and Screener Pad Proper~~ (MP5)	Location: Milne Port Site	Plant No.: N/A

This record indicates that this system was formally walked down and inspected in the field by the undersigned on the date as indicated below

Name	Company Name	Role	Signature	Date (mm/dd/yy)
BRADFORD WATKIN	NUNA EAST	QC COORDINATOR		9/4/19
ROY BAKER	HATCH	CONSTRUCTION SUPERINTENDENT		9/4/19

NUNA EAST LTD	WALKDOWN REPORT	Exhibit 1-10 QDG Revision 0

WALKDOWN ATTENDEES LIST	(Page 1 of 1)

Project Name: Mary River Expansion	Contractor's Name: Nuna East Ltd.	Job File No.: CC006-0005A
System CWP Description: LP5 Laydown	Location: Milne Port Site	Plant No.: N/A

This record indicates that this system was formally walked down and inspected in the field by the undersigned on the date as indicated below

Name	Company Name	Role	Signature	Date *(mm/dd/yy)*
John Gwan	Nuna	QC		08/18/19
Ken Humby	NUNA	Supt		08/18/19.

NUNA

NUNA EAST LTD

(Section 12)

Deficiency/Punchlist

DEFICIENCY / PUNCH ITEMS RECORD

Project Name: Mary River Expansion	**Walkdown Date (mm/dd/yy):** 9/4/19	**Area Number:** N/A
Area Name or Area Description: Laydown Area LP5	**Job Number:** CC006-0005A	**Plant Number:** N/A

PURPOSE:

1. **For modules and vendor packages, open punch items are listed at release for shipment.**
2. **As part of a final walkdown package, this form lists the Contactor's open punch items that are transferred into the Nuna Turnover database**
3. **This form is used to capture Punch Items during Final Walkdown**

Tag Number	Description of Deficiency / Punch Item	Cat.	Discipline	Originator	Responsible for resolution	Vendor Y/N	Remarks
	No deficiencies found						

Punch Item Categories captured during Final Walkdown: A, B or C. A- To be rectified before final acceptance. B- To be addressed at a later time. C- Acceptable to be As-Built

NUNA

NUNA EAST LTD

(Section 13)

Acceptance of Completion of Construction

ACCEPTANCE OF COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the acceptance of the Quality Control Turnover documentation for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Ore Mines
2. **Contractor:** Nuna East Limited
3. **Construction:** Laydown Pad
4. **Location:** Mary River Milne Port Site
5. **Description:** Laydown Area LP5 – Project Number: CC006

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turnover documentation has been forwarded to and accepted by the owner.

Nuna Representative:

Signature	Print Name	Title	Date
	BRADFORD WIKKI	QC COORDINATOR	9/28/19

Client Representative:

Signature	Print Name	Title	Date

NUNA

NUNA EAST LTD

(Section 14)

Construction Photographs

NUNA EAST LTD

Baffinland Iron Mines Corporation

HATCH™

Baffinland – Milne Port Earthworks H353004-CC006

Job File Construction Photographs

Laydown Area LP5

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH™

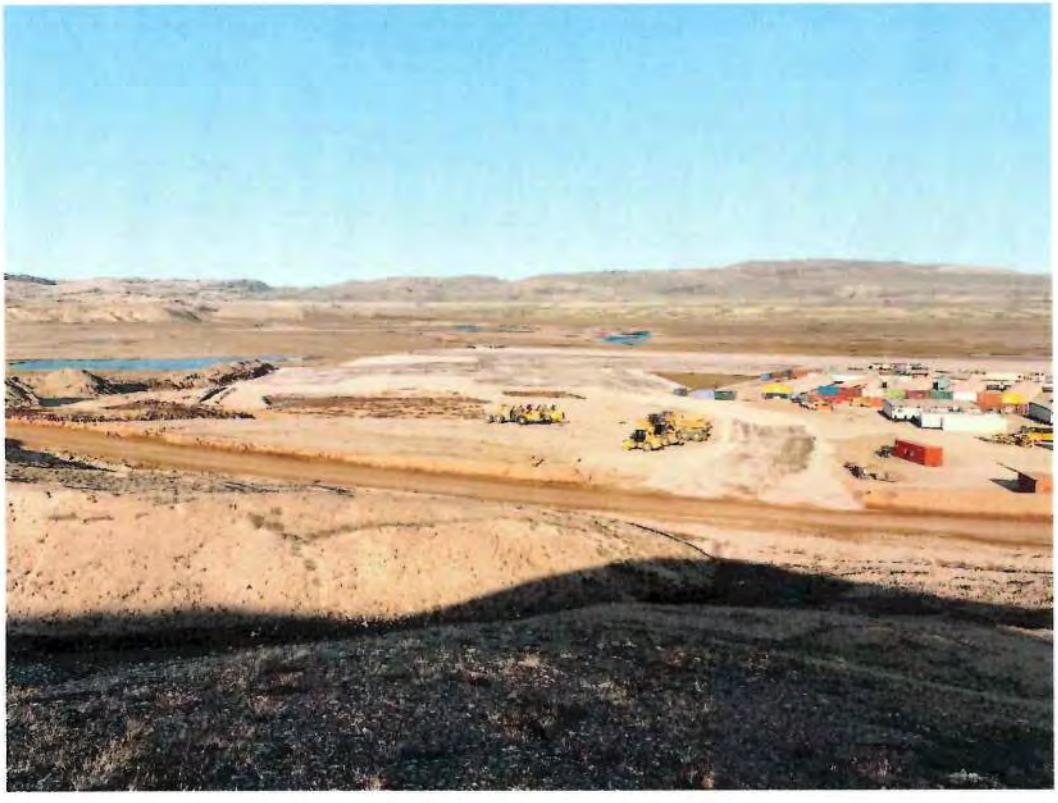
Baffinland – Milne Port Earthworks H353004-CC006

NUNA EAST LTD

Baffinland Iron Mines Corporation

HATCH™

Baffinland – Milne Port Earthworks H353004-CC006



QA/QC Documentation Turnover Review and Release

Contractor: Nuna East Limited.	Contract No.: CC006	CWP.: N/A
Project: Mary River Expansion Project.	Location: Milne Port	Sub-System: N/A
Area: Laydown Area LP5	Area Description: Storage Laydown LP5	
System/Subsystem No.: N/A	System/Subsystem Description: N/A	
Inspection Test Plan No.: CC006-0005A	Rev: 0	Issue Date: May 28, 2019

ITP Section for Review

ITP Activity No.	ITP Activity Description
	For this portion of the Inspection Test Plan (ITP) and scope of work as per contract details outlined above. The following have been verified the ensure compliance with the Project Completion Requirements. • All work has been completed in accordance IFC drawings, project specifications, codes, and national regulations. • All Testing has been completed as per Inspection Test Plan (ITP). • All Master Punch List items are completed, verified and signed off. • All Non-Conformances and Site Quality Surveillances are closed. • All Bolt Ups, Loop Checks, and Pre-Commissioning are completed.

The undersigned verifies the contractor has completed the points above in their entirety

Contractor QC Designate	BRADFORD WATKIN /	9/29/19
Title	Name (Print/Sign)	Date

Client QA Turnover Review

☒ Approved	☐ Not Approved (See Comments Below)	Review No.: 1

ITP Activity No.	ITP Activity Description

Contractor QC Designate	Bradford Watkin /	9/30/19
Title	Name (Print/Sign)	Date

Hatch QA Designate	Penny Franken /	Sept30-2019
Title	Name (Print/Sign)	Date

Hatch Commissioning Designate	/	
Title	Name (Print/Sign)	Date

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HATCH **Vendor/Contractor Document Review**

Doc Number	E353004-CC006-130-124-0016	**SUB**	01
Date Received			

Review Grade	**Next Submittal Status**
☐ **C1** - Proceed to next submission & status ☐ **C2** - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ **C3** - Do not proceed. Revise as noted & resubmit	☐ Internal Review
Next Submittal Date:	☐ Certified/ ☐ As-Built
☒ **C4** - No further submission required - Complete (select status below) ☐ Certified Final ☒ Final ☐ Cancelled ☐ Superseded	

Package Engineer: Name, signature and date

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibilty for correct design, details & dimensions shall remain with the party submitting the drawing/document.

NUNA EAST LTD

Job # CC006-0006A

Laydown Area LP6

Milne Port
CC006

NUNA

NUNA EAST LTD

Job #:

CC006-0006A

Laydown Area

LP6

Mary River Expansion Project

H353004

Port Site Civil Works

Section 1
Completion of Construction Declaration

Section 2
Inspection & Test Plan
(ITP)

Section 3
Redline Drawings

Section 4
Survey Data Documentation

Section 5
Sieves / Statements of Compliance

Section 6
Request for Information Documents
(RFIs)

Section 7
Non-Conformance Reports
(NCRs)

Section 8
Communications:
Engineering Change Notices (ECNs), Site instructions (Sis), Contract Variation Request (CVRs), Emails.

Section 9
Land Disturbance Form

Section 10
Quality Control Documents

Section 11
Signature Log

Section 12
Deficiency/Punchlist

Section 13
Acceptance of Completion of Construction Declaration

(Section 1)

Completion of Construction Declaration

COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Mines Corporation
2. **Contractor:** Nuna East Limited
3. **Construction:** Laydown Pad
4. **Location:** Mary River Milne Port Site
5. **Description:** Laydown Area LP6 – Project Number: CC006

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turn over documentation has been forwarded to the owner.

(Signature)	Bradford Watkin (Print Name)	QC Coordinator (Title)	10/1/19 (Date)
Nuna East Ltd. (Company)	14, 6194 – 50 Street NW Edmonton, AB, CA (Address)		T6B 2N7 (City, Postal Code)

NUNA

NUNA EAST LTD

(Section 2)

Inspection & Test Plan (ITP)

NUNA
NUNA EAST LTD

QUALITY MANAGEMENT SYSTEM
INSPECTION &TEST PLAN
(Civil / Structural Installations)

CLIENT: Hatch	**ITEM / DESCRIPTION / SCOPE:** Stormwater Diversion Ditch **P-SWD-6** / Water Diversion Ditch / Earthworks material production, Haulage, Placement, & Compaction.	**NUNA ITP NO.:** CC006-0009A	**REVISION NO.:** 2
CONTRACTOR: Nuna East Ltd.		**AFFILIATED SUB-CONTRACTOR(S):** N/A	
CONTACT PERSON: Bradford Watkin	**CONTACT INFORMATION:** bradfordw@nunalogistics.com	**DATE:** April 17, 2019	
CONTRACT No.: H353004-CC006	**HATCH PROJECT NUMBER:** H353004-CC006	**HATCH DOCUMENT TITLE:** Mary River Expansion Project-Remaining Early Earthworks	
NUNA JOB No.: CC006-0009A	**PURCHASE ORDER No.:** N/A	**PROJECT MANAGER:** Chris Petrovic	
LOCATION(S): Milne Port Site		**LEGEND:** **H:** A mandatory hold on manufacturer until release by inspector or official waiver from client. **M:** Inspection stage by inspector on a spot basis, but not a mandatory hold point. **HR:** A mandatory hold / review & acceptance / approval of the specified documentation. **W:** To be informed and invited to inspect. Construction to continue if inspector does not attend. **R:** Review of report / certifications. **A:** Audit (Review at Random).	
CWP No.: N/A			

Approved For Construction

Stephen Nugent		April 17, 2019
Nuna Project Manager / Engineer (Print)	Signature	Date
Bradford Watkin		April 17, 2019
Nuna Quality Representative (Print)	Signature	Date
Hatch Representative (Print)	Signature	Date

HATCH Vendor/Contractor Document Review

Doc Number	E353004-CC006-130-051-0008	SUB	03
Date Received	2019-04-18		
Review Grade		Next Submittal Status	
☐ C1 - Proceed to next submission & status ☐ C2 - Proceed with exceptions as noted to next submission & status		☐ Certified ☐ As-Built	
☐ C3 - Do not proceed. Revise as noted & resubmit		☐ Internal Review ☐ Certified/☐ As-Built	
Next Submittal Date:			
☐ ~~C4~~ - No further submission required - Complete (select status below) ☐ Certified Final ☐ ~~Final~~ ☐ Cancelled ☐ Superseded			
Package Engineer: Name, signature and date farrokh.noon@hatch.com			

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibility for correct design, details & dimensions shall remain with the party submitting the drawing/document.

Hatch Stamp

Final Review

BRADFORD WATKIN			10/4/19
Nuna Quality Representative	(Print)	Signature	Date
Hatch Quality Representative	(Print)	Signature	Date

ACTIVITY DATA							VERIFICATION DATA									
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
1.	Contract Review / Approval	NUNA	Review / Verify Document	Prior to project start	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract				R		4/17/19	R		10/2/19	

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
2.	Approval of ITP	NUNA / HATCH Representatives	Review	Prior to start	NUNA Quality System Manual	Signed ITP by Client representative, NUNA Quality System Manual	Signed acceptance of document (Exhibit 1.0)				HR		5/31/19	HR	R.F.	10/2/19	
3.	Scope and Associated Documents	NUNA	Review For Errors	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R		7/17/19	A	R.F.	10/2/19	
4.	Land Disturbance Approval obtained	NUNA	Review	Prior to start	BIM Environmental Protection Plan	IFC Drawings & Client contract scope, BIM Environmental Protection Plan	Land Disturbance Form BAF-PH1-830-P16-0008				HR		10/29/18	R	R.F.	10/2/19	
5.	Work Method of Statement	NUNA / HATCH	Review	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R		N/A	A	R.F.	10/2/19	
6.	Signature Log	NUNA	Review, obtain signatures	Ongoing	NUNA Quality System Manual	NUNA Quality System Manual	NUNA Signature Log				R		10/4/19	R	R.F.	10/2/19	
7.	Initial Survey Layout	NUNA / ALL NORTH	Cross Check of IFC Layout	Ongoing	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				HR		5/31/19	R	R.F.	10/2/19	
8.	Materials verification	NUNA	Review	As required	IFC Drawings, Hatch Spec. 280-078-0002 Rev 0, ASTM C-136	IFC Drawings, Hatch Spec.280-078-0002 Rev 0, ASTM C-136	Sieve Test Reports, QSRs				HR		10/4/19	HR	R.F.	10/2/19	• Type 8 • Type 19 * NO SIEVES COMPLETED
9.	RFI	NUNA	Resolution of RFIs	As required	NUNA Quality System Manual	Disposition, Approved, closed and log updated	RFIs				HR		10/4/19	R	R.F.	10/2/19	
10.	Clearing of works location completed • Snow / Ice removal / Disposal	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W		10/30/18	R	R.F.	10/2/19	

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
11.	Subgrade foundation preparation completed • Compaction	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W		10/30/18	HR	R.F.	10/2/19	
12.	Placement of Geotextile cloth (Layfield LP7 or equivalent) completed	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	N/A		W			
Type 8 Jaw Run 150 minus																	
13.	Type 8 Jaw Run 150 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W	N/A		M			
14.	Compaction of Type 8 Jaw Run 150 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W	N/A		M			
15.	Survey of Type 8 Jaw Run 150 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR	N/A		R			
16.	As built Survey	NUNA	Review	Continuous During Operations	IFC Drawings	IFC Drawings, Hatch Specifications	As built Drawings & Data				HR		5/24/19	R	R.F.	10/2/19	

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	Type	Initials	Date *(mm/dd/yy)*	Type	Initials	Date *(mm/dd/yy)*	Type	Initials	Date *(mm/dd/yy)*	***Comments***
17.	Final Walk down	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Contract Requirements	Final Walkdown Attendees' Report				**W**	N/A		**HR**			
18.	Deficiency List / Punch list generated	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per contract Requirements	Item form punch list items resolved				**HR**		10/1/19	**HR**	R.F.	10/2/19	
19.	NCR's closed.	NUNA / HATCH	Review of NCRs, Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Requirements	NCR log cleared				**HR**		10/1/19	**A**		10/2/19	
20.	As-built / Redline drawings completed.	NUNA	Review / Verify	Post Final Walk down	IFC Drawings, Contract	As-builts / Redlines to Reflect All Field Changes	As-builts / Redlines				**HR**		10/1/19	**A**		10/2/19	
21.	Final Acceptance and ITP Sign off	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP (Exhibit 1.0)				**HR**		10/1/19	**HR**		10/2/19	
22.	Inspection Acceptance and Sign-Off Form signed by Engineer of record.	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP, Acceptance of Completion of Construction Form				**HR**		10/01/19	**HR**			
23.	Turnover package completed and sent to client.	NUNA	Review / Verify	Post project completion	NUNA Quality System Manual, IFC Drawings, Contract	Contract, Code & applicable specifications.	Quality Management System Quality Control Turnover package.				**HR**		10/01/19	**A**			

Note: Nuna ITP Sign-Offs based on supporting documentation.

Comments:

ITP ISSUE APPROVALS

Stephen Nugent Nuna Contractor Project Manager / Engineer *(Print)*	Site Project Manager Title	 Signature	April 17, 2019 Date *(mm/dd/yy)*
Bradford Watkin Nuna Contractor Quality Manager / Representative *(Print)*	QC Coordinator Title	 Signature	April 17, 2019 Date *(mm/dd/yy)*
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

ITP CLOSEOUT AND WORK ACCEPTANCE APPROVALS

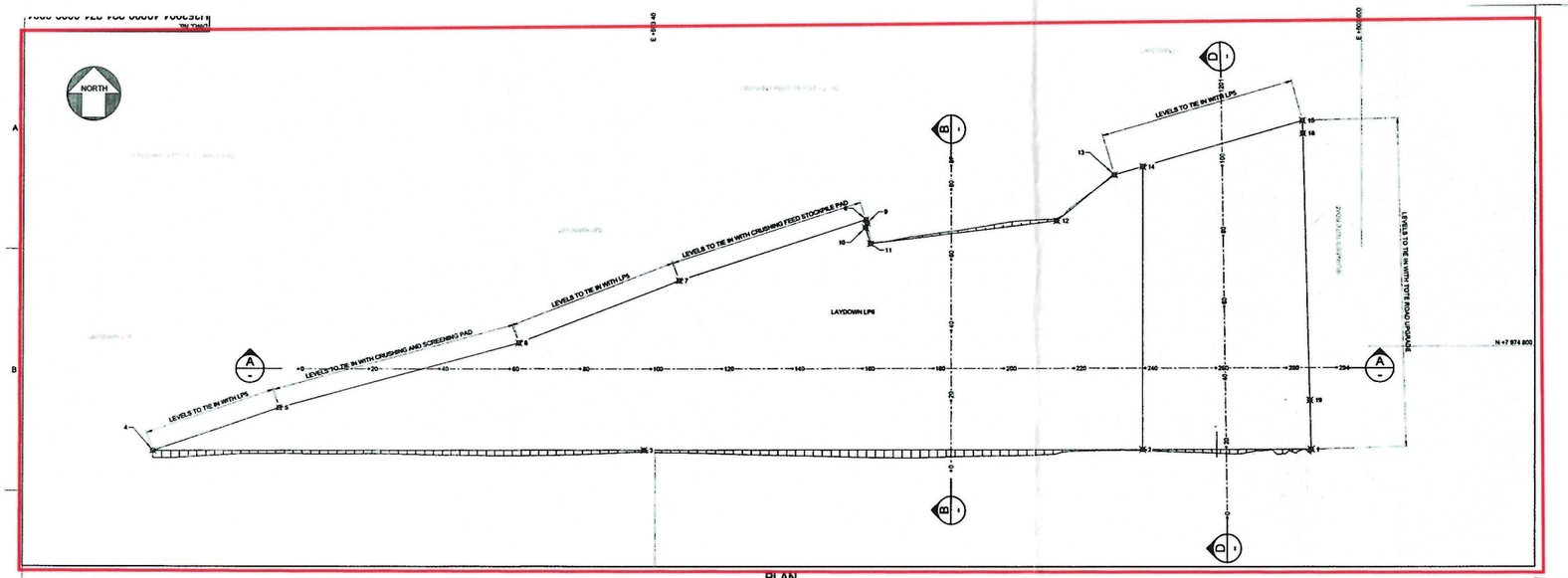
BRADFORD WATKIN Nuna Contractor Quality Manager / Representative *(Print)*	QC COORDINATOR Title	 Signature	10/1/19 Date *(mm/dd/yy)*
Ronny Frank HATCH Quality Manager / Representative *(Print)*	Hatch QA Title	 Signature	10/2/19 Date *(mm/dd/yy)*

NUNA

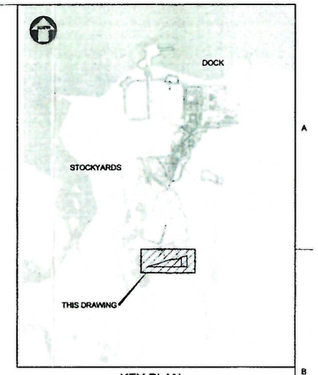
NUNA EAST LTD

(Section 3)

Redline Drawings



PLAN
SCALE 1:500



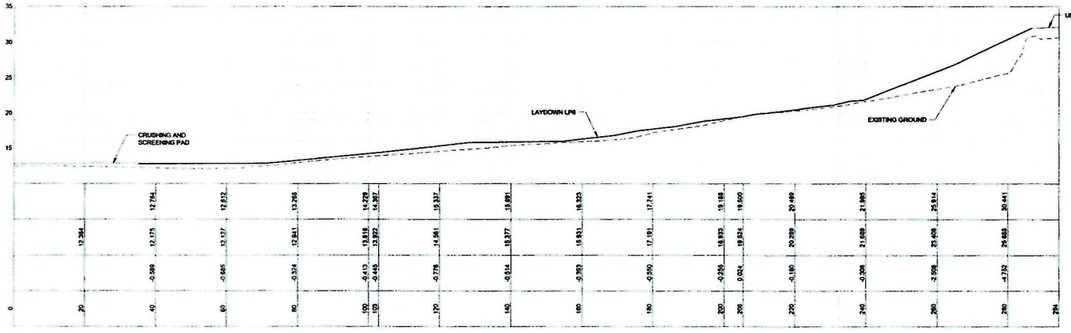
KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016)
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. REFER TO DETAIL 1 ON DRAWING No. H353004-00000-221-294-0002-0001 FOR TYPICAL LAYER WORKS DETAILS.

LEGEND:

	CONTOUR
19	SETTING OUT POINT
	EXISTING GROUND

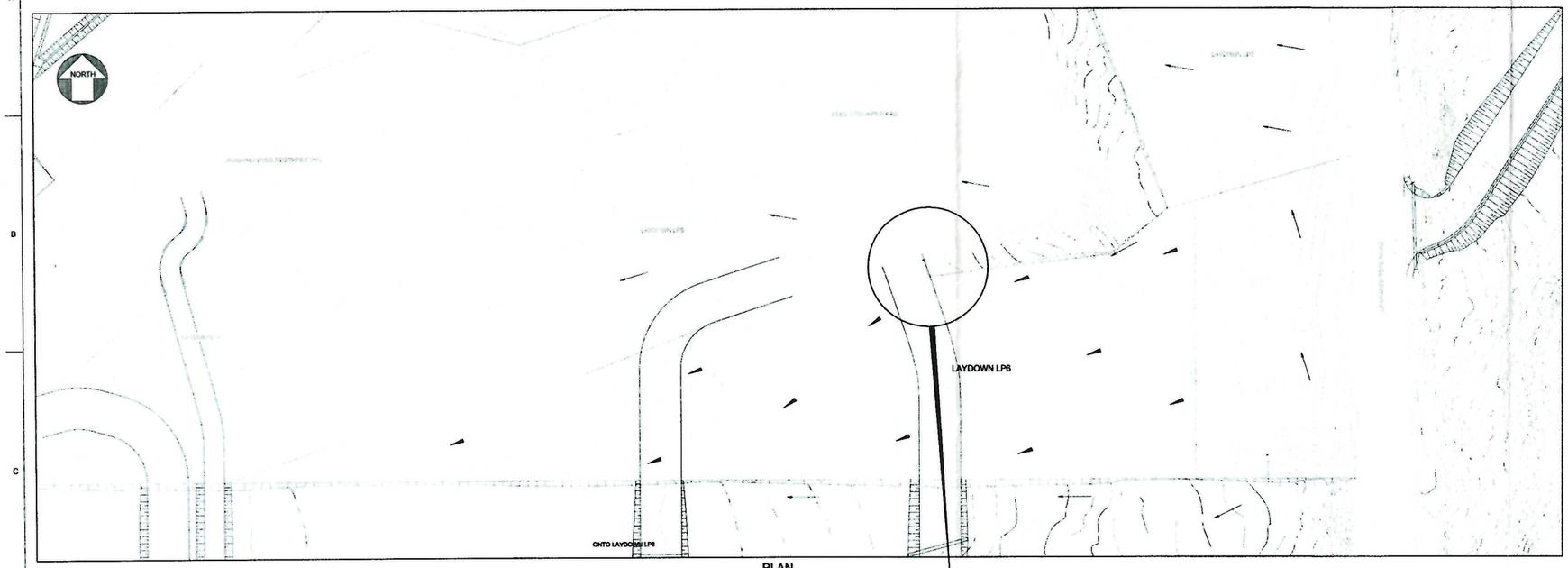


SCALES:
HORIZONTAL 1:500
VERTICAL 1:250

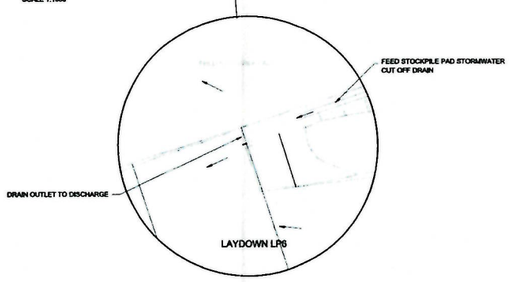
DATUM 10.000

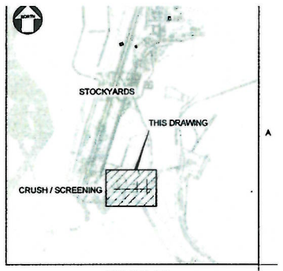
| | | |

DWG. No. H353004-40000-228-272-0016-0001



PLAN
SCALE 1:1000





KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.

LEGEND:

26.5	CONTOUR
	OFF PAD FLOW DIRECTION
	ON PAD FLOW DIRECTION

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: BRADFORD WATKIN COMPANY: NUNA

DATE OF AS-BUILT: 10/1/19 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

DRAWING No.	DRAWING TITLE
H353004-40000-221-271-0009-0001	LAYDOWN AREA LP6 - LAYOUT AND PROFILES

REFERENCE DRAWINGS

Released for Use

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	EDC STAMP REMOVED, DUMPER AND INDEXER STORAGE PAD REMOVED	KvdM	FH	20/08/2018
0	APPROVED FOR CONSTRUCTION	IHB	FH	18/04/2018

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	I BARNARD	NR	16/04/2018
DESIGNER	I BARNARD	NR	16/04/2018
CHECKER	F HUGO		2018-09-14
DESIGN COORD.	R GOOSEN		2018-09-13
RESP. ENG.	R HALIM		2018-09-14
LEAD DISC. ENG.	A GROBBELAAR		2018-09-13
AREA LEAD	V LAVRIC		2018-09-13
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		18-9-17

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA LP6
DRAINAGE PLAN

SCALE 1:1,000 OR AS NOTED | DWG. No. H353004-40000-228-272-0016-0001 | REV 1

SHEET SIZE: E

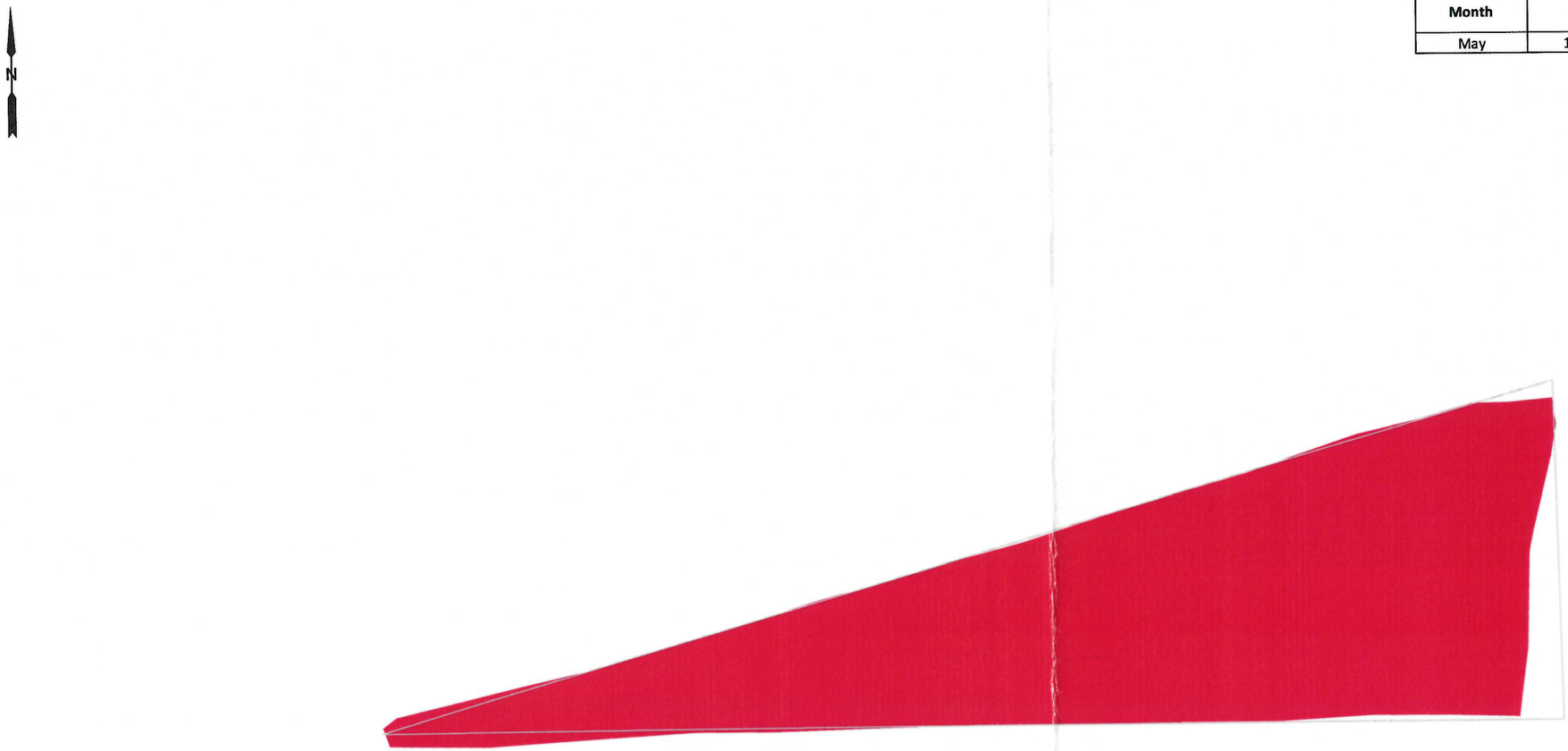
NUNA

NUNA EAST LTD

(Section 4)

Survey Data

Volume Summary			
Month	Date	Weekly Fill (m³)	Project Total Fill (m³)
May	190524 PLACED ROQ	9,614	9,614



NUNA
NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS-BUILT BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: BRADFORD WATKIN COMPANY: NUNA

DATE OF AS-BUILT: 10/1/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

LEGEND:
DESIGN LINES
PLACED ROQ

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY: NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

NUNA

SCALE: N.T.S.

DATE: May 26, 2019

LP6

DRAWING TITLE: WEEKLY VOLUME REPORT
PLACED ROQ
SURVEYED UP TO MAY 24, 2019
END OF N/S

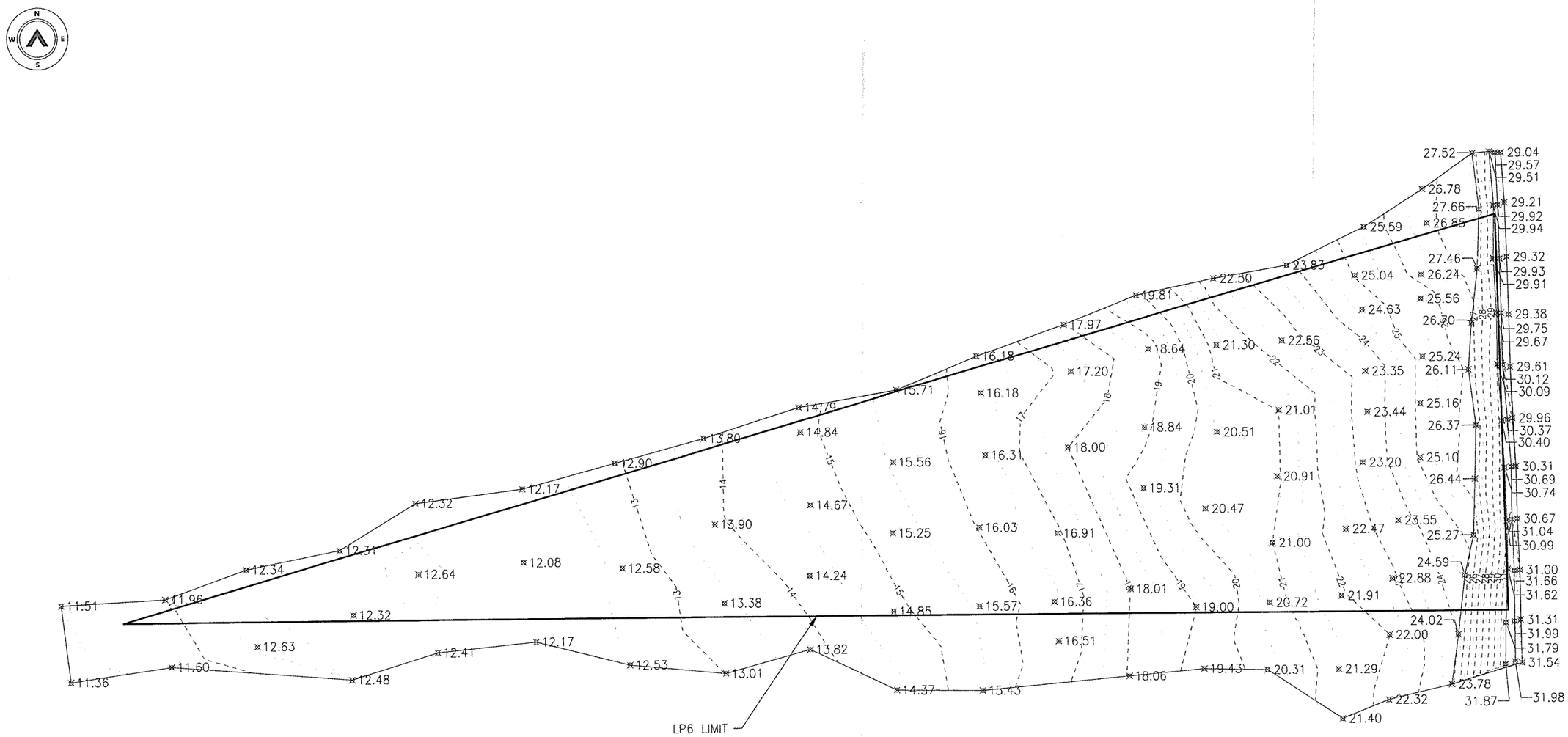
DRAWING NAME (YYMMDD): 190524 LP6 ROQ WEEKLY VOL REPORT.dwg

NUNA

NUNA EAST LTD

(Section 4)

Survey Data
Allnorth Supplied Data



REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

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REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
0	18/10/27	ISSUED FOR INFORMATION	AJB	-

CLIENT:

Allnorth

TITLE: **LP6 OG SURFACE**

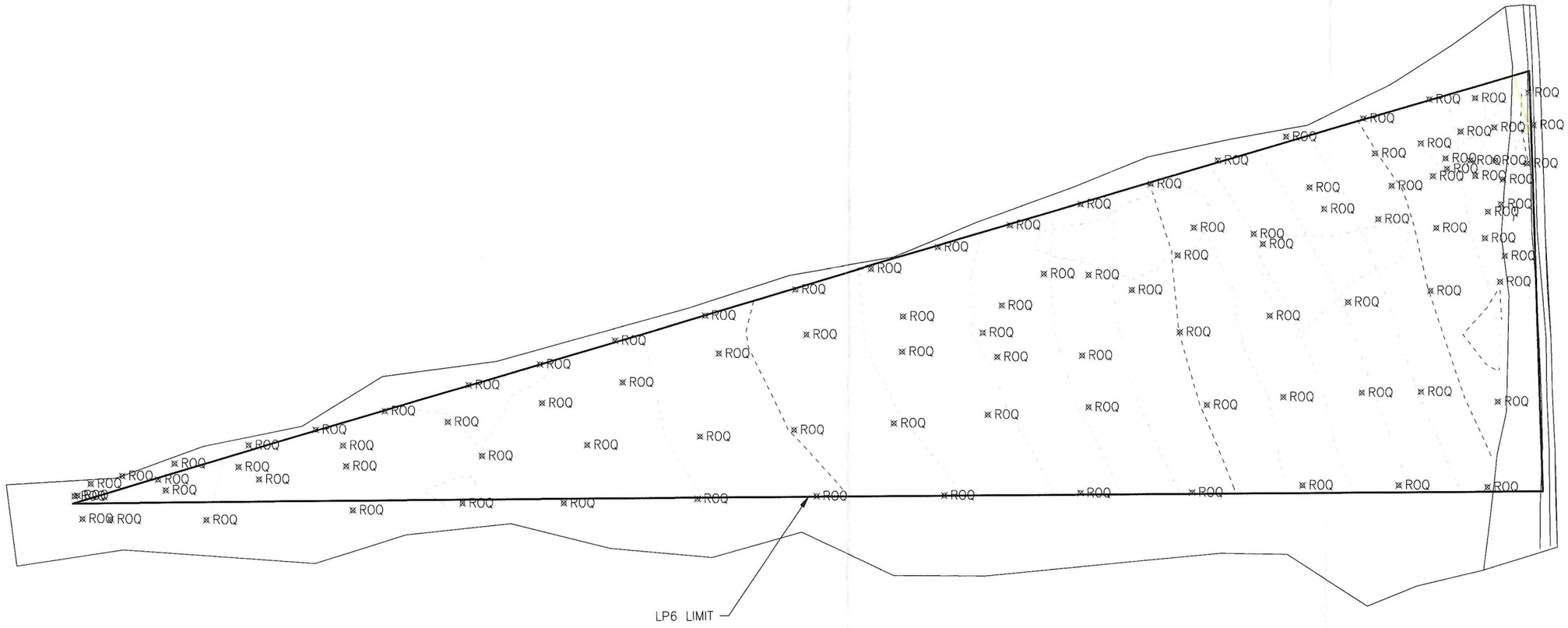
CLIENT NO:	-	DRWN:	AJB	DATE:	18/10/27
PROJECT NO:	-	DSGN:	-	DATE:	-
DRAWING SIZE.	ANSI "B"	CHKD:	-	DATE:	-
SCALE:	1:1000	APVD:	-	DATE:	-

PROJECT: **18SJ0001-BAFFINLAND**

DWG NO: **181027-AJB-001** REV: **0**

Date: 2018/10/27 | User: Alex Beaucage | File: C:\18SJ0001 Baffinland\Drawings\181026 LP6 OG Topo | Layout: 'B' Landscape (Horizontal Title) | Paper Size: 558.8mm x 431.8mm

Date: 2018/11/12 | User: Stephen Rafuse | File: C:\Jobs\18S\0001-Local Content\1000-Drawings\1018-Survey\01-Production\Port Site\Laydowns\LP6\181112-LP6 ROQ Topo-ACL-SMR | Layout: 'B' Landscape (Horizontal Title) | Paper Size: 558.8mm x 431.8mm



REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

Baffinland

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REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
0	18/11/12	ISSUED FOR INFORMATION	AJB	-

CLIENT: HATCH NUNA

Allnorth

TITLE: **LP6 ROQ SURFACE**

CLIENT NO:	-	DRWN:	SMR	DATE:	18/11/12
PROJECT NO:	-	DSGN:	-	DATE:	-
DRAWING SIZE:	ANSI "B"	CHKD:	-	DATE:	-
SCALE:		APVD:	-	DATE:	-

PROJECT: **Baffinland Iron Mines LP**
Mary River Expansion Project

DWG NO: **181112-LP6 ROQ Topo-ACL-SMR**

REV: **0**

Cut/Fill Report

Generated: 2018-11-12 15:44:49

By user: srafuse

Drawing: C:\Jobs\18SJ0001-Local Content\1000-Drawings\1018-Survey\01-Production\Port Site\Laydowns\LP6\C:\Jobs\18SJ0001-Local Content\1000-Drawings\1018-Survey\01-Production\Port Site\Laydowns\LP6\181112-LP6 ROQ Topo-ACL-SMR.dwg

Volume Summary

Name	Type	Cut Factor	Fill Factor	2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
ROQ (2)	full	1.000	1.000	14983.63	21.22	9593.85	9572.64<Fill>

Totals

	2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
Total	14983.63	21.22	9593.85	9572.64<Fill>

* Value adjusted by cut or fill factor other than 1.0

1	7974758	503588.9	31.542 ER
2	7974758	503587.3	31.983 TB
3	7974758	503585.1	31.873 TB
4	7974768	503585.2	31.793 TB
5	7974768	503587.2	31.993 TB
6	7974768	503588.6	31.306 ER
7	7974780	503588.5	30.998 ER
8	7974780	503587.2	31.657 TB
9	7974780	503585.7	31.618 TB
10	7974792	503585.5	30.99 TB
11	7974792	503586.7	31.044 TB
12	7974792	503588	30.667 ER
13	7974805	503587.7	30.313 ER
14	7974804	503586.6	30.691 TB
15	7974804	503585.1	30.738 TB
16	7974815	503584.5	30.396 TB
17	7974815	503585.8	30.369 TB
18	7974816	503587	29.957 ER
19	7974828	503586.5	29.61 ER
20	7974828	503584.8	30.117 TB
21	7974828	503583.6	30.09 TB
22	7974840	503583.4	29.669 TB
23	7974840	503584.5	29.752 TB
24	7974840	503586.2	29.383 ER
25	7974854	503585.9	29.318 ER
26	7974853	503584.1	29.933 TB
27	7974853	503582.7	29.911 TB
28	7974866	503582.8	29.941 TB
29	7974866	503583.8	29.922 TB
30	7974867	503585.4	29.213 ER
31	7974879	503584.6	29.041 ER
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33	7974879	503581.9	29.509 TB
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39	7974814	503578.4	26.37 BS
40	7974802	503578.1	26.442 BS
41	7974788	503577.7	25.267 BS
42	7974779	503575.6	24.593 BS
43	7974765	503574	24.019 BS
44	7974753	503572.4	23.777 BS
45	7974750	503557.5	22.316 SE
46	7974765	503557.8	21.997 SE
47	7974778	503558.5	22.877 SE

48	7974792	503560	23.55 SE
49	7974807	503565.2	25.099 SE
50	7974819	503565.3	25.16 SE
51	7974830	503565.9	25.24 SE
52	7974844	503565.6	25.556 SE
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61	7974806	503551.7	23.195 SE
62	7974790	503547.6	22.471 SE
63	7974774	503546.5	21.909 SE
64	7974757	503545.8	21.287 SE
65	7974745	503546.6	21.396 SE
66	7974757	503528.7	20.313 SE
67	7974773	503529.3	20.716 SE
68	7974787	503530	20.999 SE
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70	7974818	503531.8	21.006 SE
71	7974834	503532.5	22.56 SE
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76	7974795	503514.3	20.468 SE
77	7974772	503511.9	18.995 SE
78	7974757	503513.7	19.429 SE
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87	7974810	503481.6	17.997 SE
88	7974789	503479.1	16.914 SE
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92	7974772	503460.6	15.57 SE
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17	7974793	503558.7	24.08	ROQ
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112	7975035	503436.3	16.145	ROQ
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146	7975092	503411.3	14.916 ROQ
147	7975093	503404.5	14.827 ROQ
148	7975114	503410.6	14.771 ROQ
149	7975129	503414.9	14.788 ROQ
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151	7975115	503432.5	15.511 ROQ
152	7975114	503452.3	16.077 ROQ
153	7975126	503452.2	15.883 ROQ
154	7975122	503472.5	16.743 ROQ
155	7975111	503472.9	17.009 ROQ
156	7975117	503490.1	17.294 ROQ
157	7975121	503512	17.571 ROQ
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160	7975130	503576.1	19.339 ROQ
161	7975112	503577.1	20.023 ROQ
162	7975091	503577.5	20.387 ROQ
163	7975075	503577.8	20.746 ROQ
164	7975057	503578.4	21.487 ROQ
165	7975056	503559.8	20.627 ROQ
166	7975039	503560.6	20.884 ROQ
167	7975038	503578.7	22.057 ROQ

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(Section 5)

No Sieves /
Aggregate Statements of
Compliance available.

NUNA

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(Section 6)

No Request for Information (RFIs) Generated

NUNA

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(Section 7)

Non-Conformance Reports (NCRs)

NON-CONFORMANCE REPORT LOG

Project: CC006 **Date:** 10-1-19

Area: Mary River Expansion - Milne Port **Contract/Work Pkg. No.:** CC006-0006A LP6

CWP#: N/A **Originator:** Bradford Watkin

NCR No.	Description	Disposition	Date.	Rectified	Date
	No NCR's generated for this work package				

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(Section 8)

Communications:

Engineering Change Notices (ECNs), Site Instructions (SIs), Contract Variation Request (CVRs), E-mails

Darko Filipic

From: Ken Humby
Sent: Tuesday, October 30, 2018 9:08 AM
To: Darko Filipic
Subject: FW: CC006 Construction Notes
Attachments: Construction Notes.pdf

From: Mills, Nick <nick.mills@hatch.com>
Sent: Sunday, October 21, 2018 5:58 AM
To: Pietrasz, Jared <jared.pietrasz@hatch.com>; Coakley, Marlon <marlon.coakley@hatch.com>; Blachut, Dominik <dominik.blachut@hatch.com>; Moffett, Dean <dean.moffett@hatch.com>; Ryan Dicker <RyanD@nunalogistics.com>; Ken Humby <kenh@nunalogistics.com>; Stephen Rafuse <srafuse@allnorth.com>; Patrick Nickerson <pnickerson@allnorth.com>
Cc: Perry, Steven <steven.perry@hatch.com>
Subject: CC006 Construction Notes

All

Just to refresh all the following and attached explains what the execution plan was for CC006 construction laydowns .

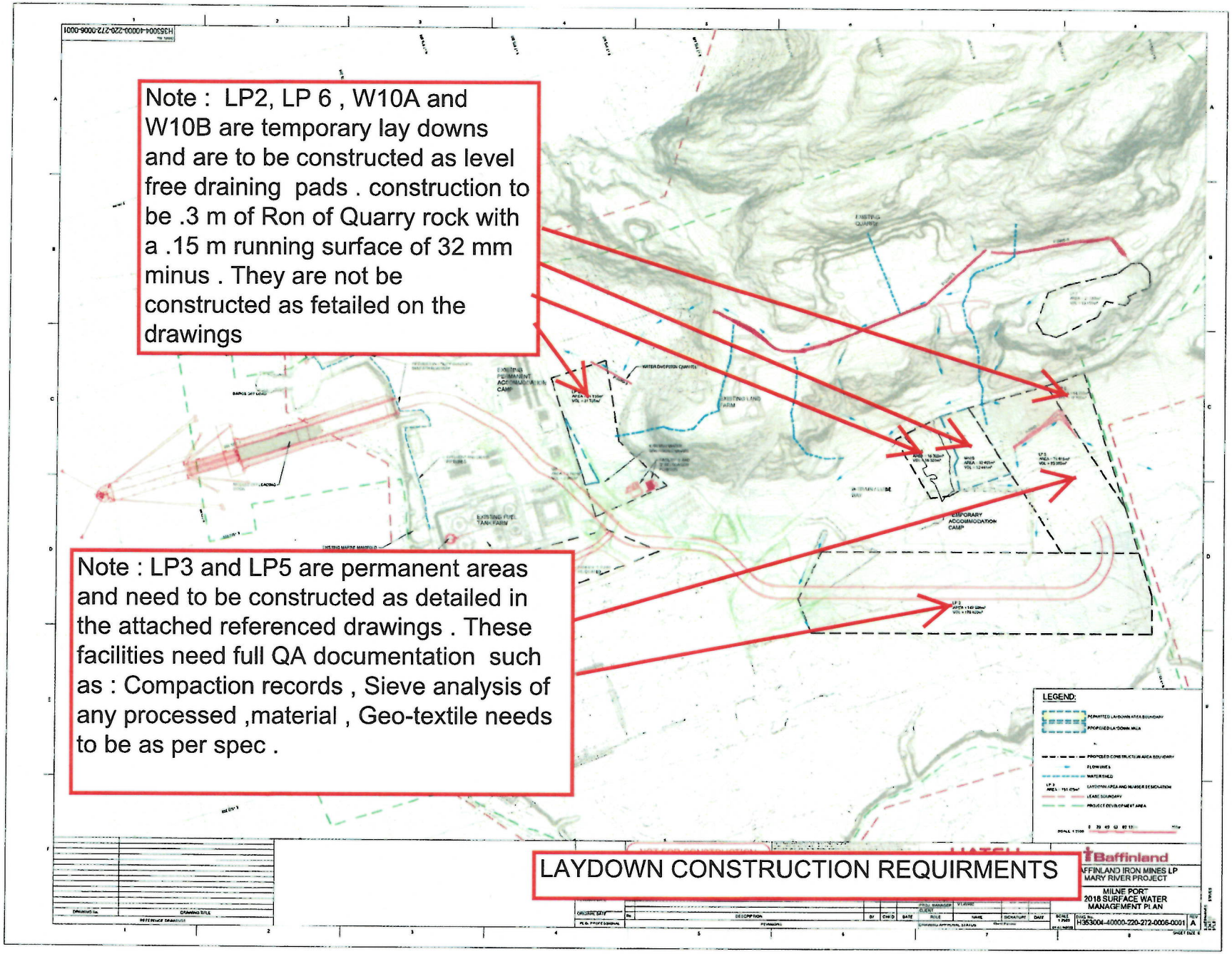
- LP2 , LP6 , W10A and W10B are temporary laydowns and are to be constructed using .3 m minimum of Run of Quarry rock fill and a running surface made up of 32 mm minus . 15 m thick .
- The laydowns are not be built to a specific grade they are to be free draining surfaces with no dips or hollows .

This has always been the plan . this is to be followed and not as detailed on the IFC drawings for these areas ,

Any questions please advise .

Thanks
Nick

N O T I C E - This message from Hatch is intended only for the use of the individual or entity to which it is addressed and may contain information which is privileged, confidential or proprietary. Internet communications cannot be guaranteed to be secure or error-free as information could be intercepted, corrupted, lost, arrive late or contain viruses. By communicating with us via e-mail, you accept such risks. When addressed to our clients, any information, drawings, opinions or advice (collectively, "information") contained in this e-mail is subject to the terms and conditions expressed in the governing agreements. Where no such agreement exists, the recipient shall neither rely upon nor disclose to others, such information without our written consent. Unless otherwise agreed, we do not assume any liability with respect to the accuracy or completeness of the information set out in this e-mail. If you have received this message in error, please notify us immediately by return e-mail and destroy and delete the message from your computer.


Note : LP2, LP 6 , W10A and W10B are temporary lay downs and are to be constructed as level free draining pads . construction to be .3 m of Ron of Quarry rock with a .15 m running surface of 32 mm minus . They are not be constructed as fetailed on the drawings
Note : LP3 and LP5 are permanent areas and need to be constructed as detailed in the attached referenced drawings . These facilities need full QA documentation such as : Compaction records , Sieve analysis of any processed ,material , Geo-textile needs to be as per spec .
LEGEND:
LAYDOWN CONSTRUCTION REQUIRMENTS
Baffinland
MILNE PORT
2018 SURFACE WATER MANAGEMENT PLAN

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(Section 9)

Land Disturbance Forms

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.		**Department:**	Projects
Date:	2018-10-25	**Name/Position:**	**Brandon Urquhart /Project Coordinator**
Project location:	Port Site		Laydown LP6
Project Duration:	Start 2018-10-28	Finish	2018-11-11

Project Details

GPS Coordinates: Lat: N+7974770 Long: E+503538 (NAD 83)

Land disturbance area: 16000 m2

Type of disturbance (Drilling, Excavation, Rutting due to site access, etc.)

Material placement over tundra

Detailed description of planned work.

Construction of temporary laydown

- ROQ fill with minimum depth of 300mm; 150mm thick topping of 32mm minus crushed gravel.
- Area to be graded for free draining

NOTE: Location of access road to the laydown area has been changed - See drawing on Page 2

Check List

1	**Has the Environmental Concerns in section 2.3.1. of the Environmental Protection plan been reviewed?** - If No, please review the list of concerns on page 4 of this form.	Yes
2	**Will work be completed within 31m of the High Water Mark of any stream or water body?.** - If Yes, please contact the Environment Department.	No
3	**Is there a stream or waterbody >31m of the work site?.** - If Yes, Include a detailed description of the Sediment and Erosion Control Measures on Page 3.	No
4	**Has the area been cleared by Archaeology?.** - If No or Unknown, Please contact the Environment Department.	Yes
5	**Will the land disturbance occur between May 31 and August 31?.** - If Yes, An Active Migration Bird Survey is required prior to start.	No

Approval

Approved by: Dominic Ritgen Position Environmental Coordinator

Approved on: Oct 28 2018

Valid Unit: Dec 31 2018

Comments and recommendations by the Environment Department:

Ensure that grading allows for proper laydown run off and drains towards the west outflow.

If grubbing is to occur, no material is to be stockpiled on the tundra surrounding the laydown boundaries.

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	2018-10-25		
Project location:	Port Site		

Design/Engineering Drawing

See drawing H353004-40000-221-271-0009-0001, H353004-40000-228-272-0016-001 R1

LAND DISTRURBANCE FORM

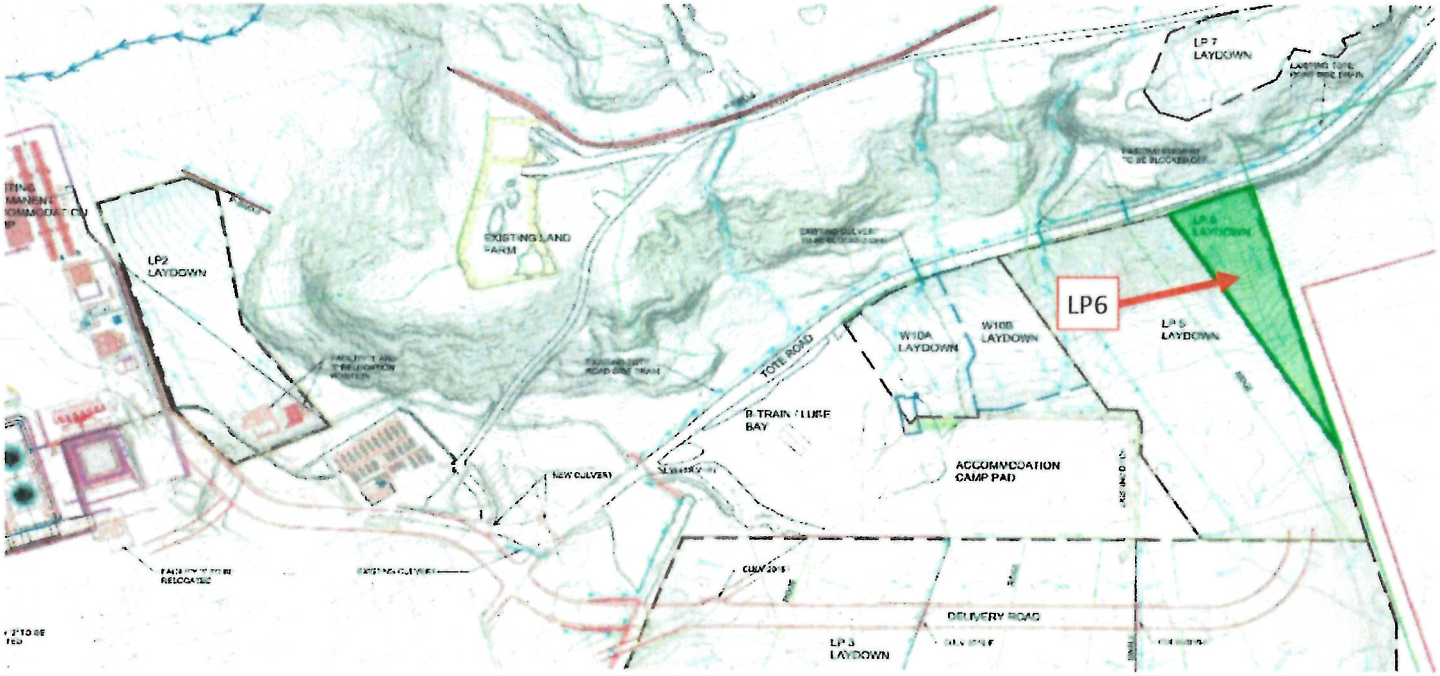
Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	2018-10-25		
Project location:	Port Site		

Sediment and Erosion Control Measures

Please give a detailed description of the run-off control measure which will be put in place.
Include all water bodies and streams, slope direction and materials to be used.

- Laydown will be graded to be free draining



Baffinland

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	2018-10-25		
Project location:	Port Site		

2.3.1 ENVIRONMENTAL CONCERN

2.3.1 ENVIRONMENTAL CONCERN

The Arctic is a fragile environment where the recovery of vegetation within this region is slow. Ground disturbance shall be minimized to protect archaeological resources, wildlife habitats, sensitive landforms, such as ice-rich permafrost features, and prevent erosion and the movement of sediment into watercourses and water bodies. Various permits, licences and approvals issued to Baffinland are specific in regards to ground disturbances and outline the necessary protection measures that need to be taken to minimize this aspect of the Project.

The following measures are to be implemented to minimize ground disturbance:

- Equipment and personnel must stay on existing roads and trails
- Approval for new areas of disturbance must be approved by the Operations Manager
- Rutting (furrow creation) shall be avoided on ground surfaces; overland travel of equipment or vehicle will be suspended when rutting occurs
- All camps shall be located on gravel, sand or other durable land
- No materials shall be stored on the surface ice of streams
- No material shall be removed from below the ordinary high water mark of any stream
- Greywater sumps must be located a distance of at least thirty (30) metres above the ordinary high water mark of any water body

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(Section 10)

Quality Control Reports

NUNA
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Baffinland
HATCH

NUNA East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Mary River Expansion Stage 3 Early Earthworks Project
Description of Item/Area Inspected:	LAYDOWN LP6 ROCK PLACEMENT
Date of Inspection:	NOVEMBER 12, 2018
Parties Present at Inspection	ALLNORTH SURVEY

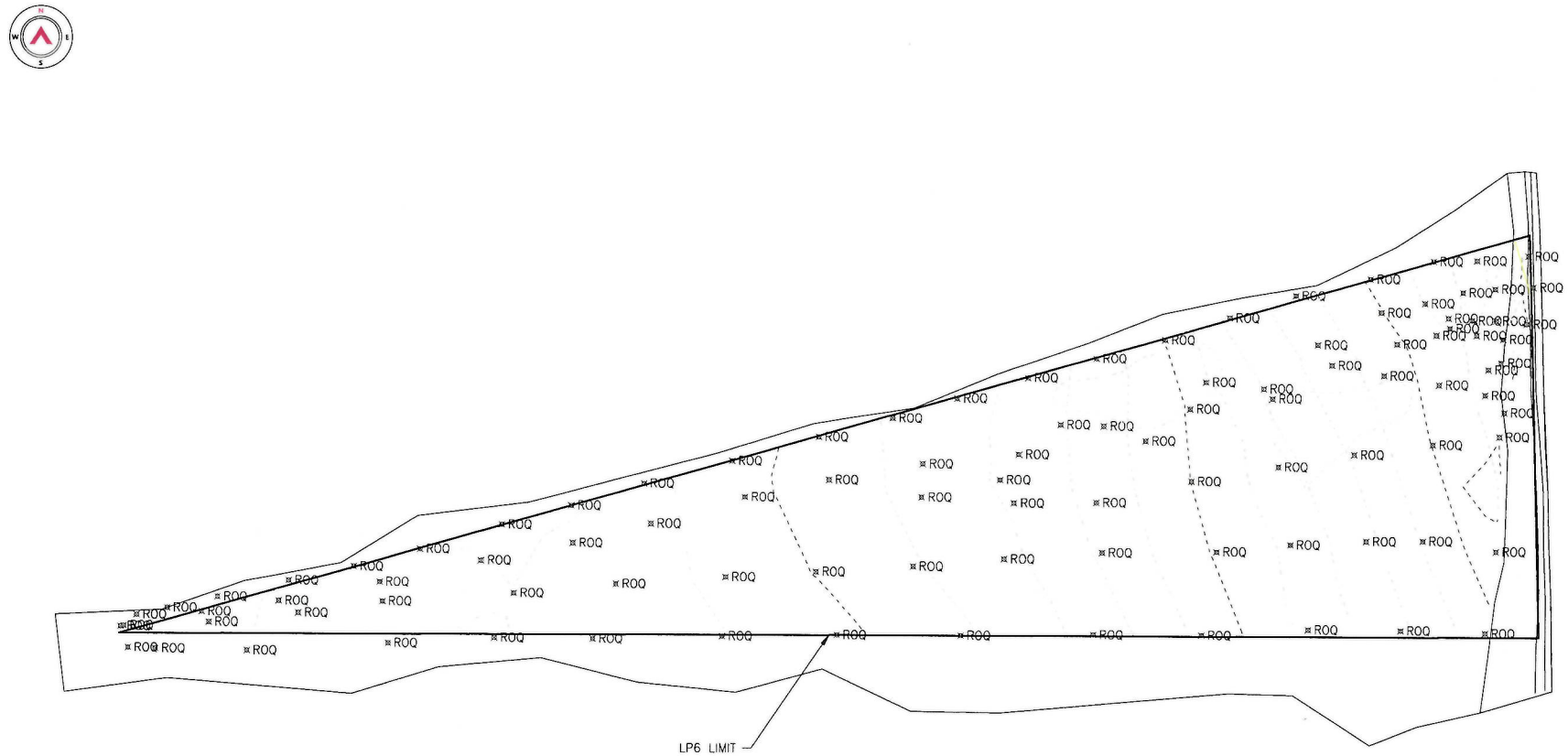
Comments:

ROCK FILL REFLECTED IN SURVEY AS-BUILT.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NEL Representative:	BRANDON URQUHART		NOVEMBER 12, 2018
HATCH Representative:	KEVIN Amphlett		NOV 12/18



REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

Baffinland

REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
0	18/11/12	ISSUED FOR INFORMATION	AJB	-

CLIENT: HATCH NUNA

Allnorth

TITLE: **LP6 ROQ SURFACE**

CLIENT NO	-	DRWN	SMR	DATE	18/11/12
PROJECT NO	-	DSGN	-	DATE	-
DRAWING SIZE	ANSI "B"	CHKD	-	DATE	-
SCALE		APVD	-	DATE	-

PROJECT: **Baffinland Iron Mines LP**
Mary River Expansion Project

DWG NO: **181112-LP6 ROQ Topo-ACL-SMR** REV: **0**

Date 2018/11/12 | User Stephen Rafuse | File C:\Jobs\18500001-Local Content\1000-Drawings\1018-Survey\01-Production\Port Site\Laydowns\LP6\181112-LP6 ROQ Topo-ACL-SMR | Layout 'B' Landscape (Horizontal Title) | Paper Size 558.8mm x 431.8mm

Cut/Fill Report

Generated: 2018-11-12 15:44:49

By user: srafuse

Drawing: C:\Jobs\18SJ0001-Local Content\1000-Drawings\1018-Survey\01-Production\Port Site\Laydowns\LP6\C:\Jobs\18SJ0001-Local Content\1000-Drawings\1018-Survey\01-Production\Port Site\Laydowns\LP6\181112-LP6 ROQ Topo-ACL-SMR.dwg

Volume Summary

Name	Type	Cut Factor	Fill Factor	2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
ROQ (2)	full	1.000	1.000	14983.63	21.22	9593.85	9572.64<Fill>

Totals

	2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
Total	14983.63	21.22	9593.85	9572.64<Fill>

* Value adjusted by cut or fill factor other than 1.0

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Baffinland
HATCH

Nuna East Limited Quality Department

Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Early Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval – Laydown LP6*
Date of Inspection:	*October 30, 2018*
Parties Present at Inspection	Darko Filipic Jared Pietrasz

Comments:

A visual inspection of the Milne Port Laydown LP6 surface/sub-grade was conducted prior to placement of fill Material.

Sub-grade: The snow and ice in the area was cleared as described and according to the employer satisfaction.

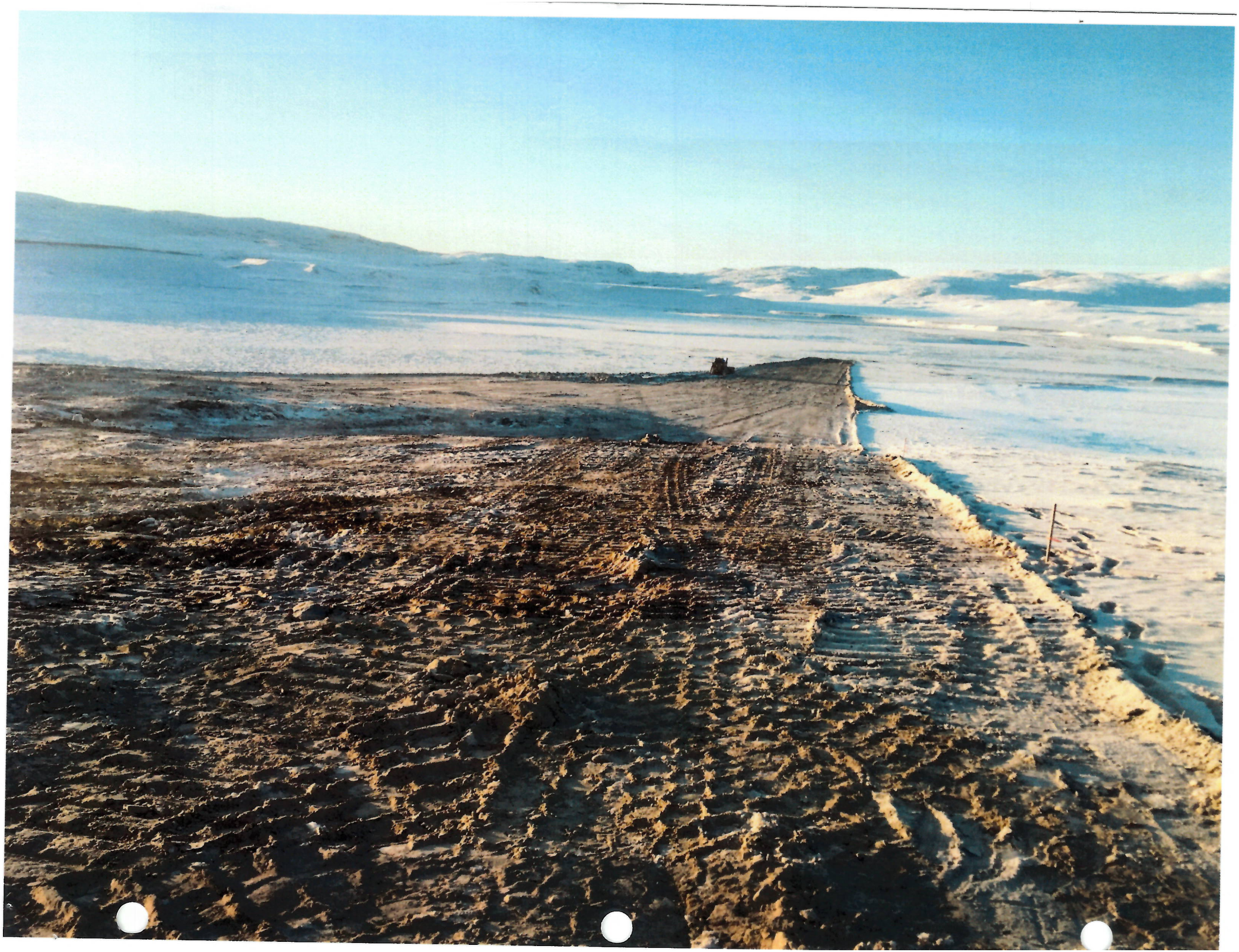
As per direction from Nick Mills (email attached), LP6 is to be built as a temporary laydown and does not need to meet the design parameters shown on the IFC drawings.

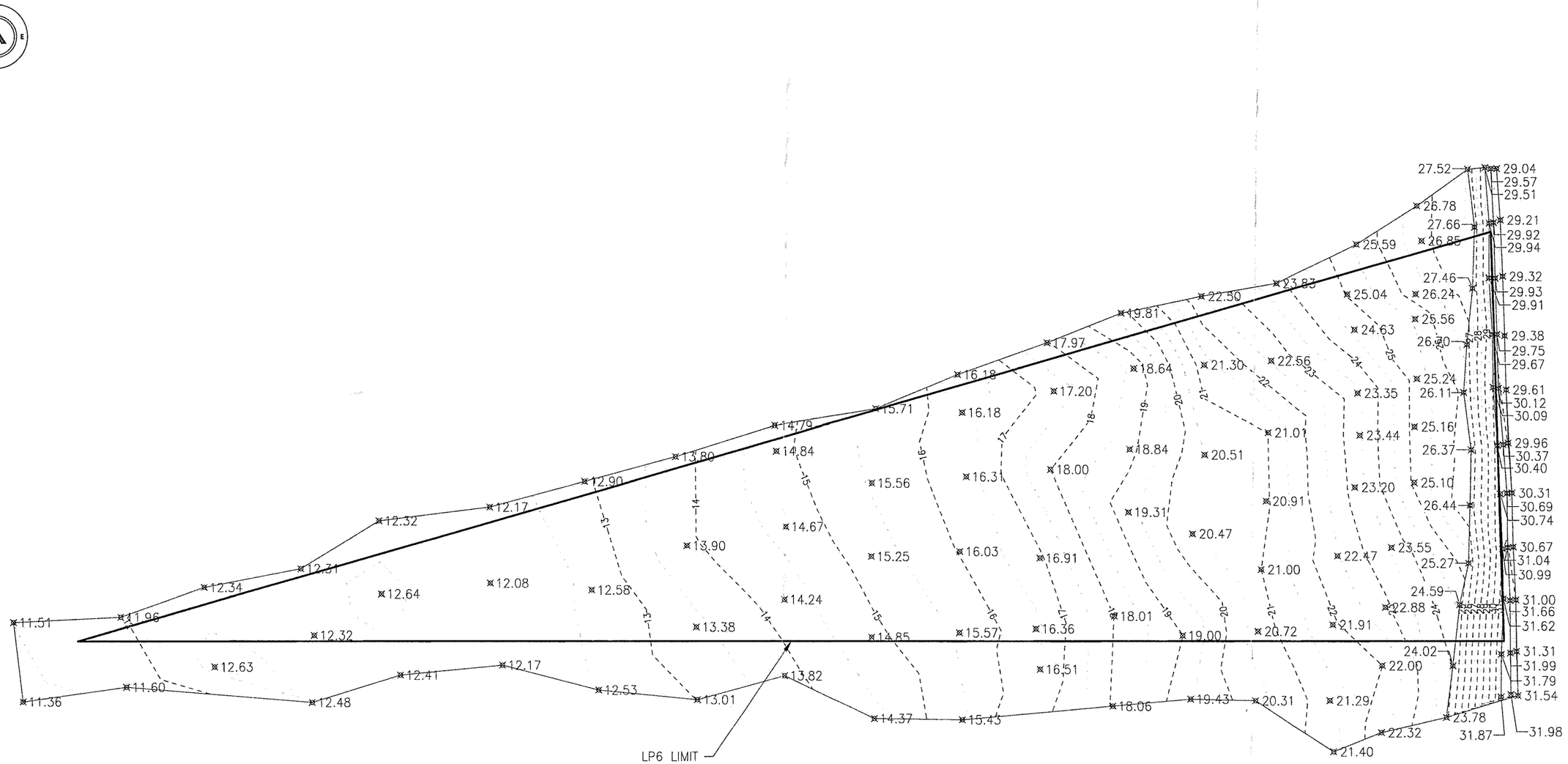
The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NEL Representative:	Darko Filipic		OCT 30/18
HATCH Representative:	JARED PIETRASZ		OCT 31/18





REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

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REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
0	18/10/27	ISSUED FOR INFORMATION	AJB	-

CLIENT:

REVIEWED BY:
J PIETRASZ.

Allnorth

TITLE:

LP6 OG SURFACE

PROJECT:

18SJ0001-BAFFINLAND

CLIENT NO:	-	DRWN:	AJB	DATE:	18/10/27
PROJECT NO:	-	DSGN:	-	DATE:	-
DRAWING SIZE:	ANSI "B"	CHKD:	-	DATE:	-
SCALE:	1:1000	APVD:	-	DATE:	-

DWG NO: **181027-AJB-001**

REV: **0**

Date: 2018/10/27 | User: Alex Beaucage | File: C:\18SJ0001 Baffinland\Drawings\181026 LP6 OG Topo | Layout: 'B' Landscape (Horizontal Title) | Paper Size: 558.8mm x 431.8mm

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(Section 11)

Signature Log

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN		
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC		
ALLNORTH	Materials technician	Kenny MacRae		
Hatch	Hatch Civil	Stephane Grenier		
NUNA EAST	PROJECT COORDINATOR	BRANDON UDELHART		
NUNA EAST	PROJECT COORDINATOR	[illegible]		
HATCH	FIELD ENG. MANAGER	GLEN PEACE		
NUNA EAST	SITE SUPERINTENDENT	ANTHONY STEWART		
NUNA EAST	SITE SUPERINTENDENT	HARVEY BLOVIN		
Hatch	Hatch Super	Roger Landry		
Nuna East	Project Manager	Stephen Nugent		
HATCH	CONSTRUCTION SUPERINTENDENT	ROY BAUER		
BVTV	Project Engineer	David Garcia		
Hatch	QA Manager	Ronny Franken		

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN		
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC		
ALLNORTH	Materials technician	Kenny MacRae		
Hatch	Hatch Civil	Stephane Grant		
NUNA EAST	PROJECT COORDINATOR	BRANDON URQUHART		
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]STER		
HATCH	FIELD ENG. MANAGER	GLEN PEACE		
Hatch	Construction Super	Dean Moffett		
Hatch	Construction Super	Roger Landry		

(Section 12)

Deficiency/Punchlist

DEFICIENCY / PUNCH ITEMS RECORD

Project Name: Mary River Expansion	**Walkdown Date (mm/dd/yy):** N/A	**Area Number:** N/A
Area Name or Area Description: Laydown Area LP6	**Job Number:** CC006-0006A	**Plant Number:** N/A

PURPOSE:

1. **For modules and vendor packages, open punch items are listed at release for shipment.**
2. **As part of a final walkdown package, this form lists the Contactor's open punch items that are transferred into the Nuna Turnover database**
3. **This form is used to capture Punch Items during Final Walkdown**

Tag Number	Description of Deficiency / Punch Item	Cat.	Discipline	Originator	Responsible for resolution	Vendor Y/N	Remarks
	No deficiencies						

Punch Item Categories captured during Final Walkdown: A, B or C. A- To be rectified before final acceptance. B- To be addressed at a later time. C- Acceptable to be As-Built

(Section 13)

Acceptance of Completion of Construction

ACCEPTANCE OF COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the acceptance of the Quality Control Turnover documentation for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Ore Mines
2. **Contractor:** Nuna East Limited
3. **Construction:** Laydown Pad
4. **Location:** Mary River Milne Port Site
5. **Description:** Laydown Area LP6 – Project Number: CC006

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turnover documentation has been forwarded to and accepted by the owner.

Nuna Representative:

Signature	Print Name	Title	Date
	BRADFORD WATKIN	QC COORDINATOR	10/1/19

Client Representative:

Signature	Print Name	Title	Date

QA/QC Documentation Turnover Review and Release

Contractor: Nuna East Limited.	Contract No.: CC006	CWP.: N/A
Project: Mary River Expansion Project.	Location: Milne Port	Sub-System: N/A
Area: Laydown Area LP6	Area Description: Storage Laydown LP6	
System/Subsystem No.: N/A	System/Subsystem Description: N/A	
Inspection Test Plan No.: CC006-0006A	Rev: 0	Issue Date: May 28, 2019

ITP Section for Review

ITP Activity No.	ITP Activity Description
	For this portion of the Inspection Test Plan (ITP) and scope of work as per contract details outlined above. The following have been verified the ensure compliance with the Project Completion Requirements. • All work has been completed in accordance IFC drawings, project specifications, codes, and national regulations. • All Testing has been completed as per Inspection Test Plan (ITP). • All Master Punch List items are completed, verified and signed off. • All Non-Conformances and Site Quality Surveillances are closed. • All Bolt Ups, Loop Checks, and Pre-Commissioning are completed.

The undersigned verifies the contractor has completed the points above in their entirety

Contractor QC Designate	BRADFORD WATKIN /	10/1/19
Title	Name (Print/Sign)	Date

Client QA Turnover Review

☒ Approved	☐ Not Approved (See Comments Below)	Review No.:	1

ITP Activity No.	ITP Activity Description

Contractor QC Designate	Bradford Watkin /	10/01/19
Title	Name (Print/Sign)	Date

Hatch QA Designate	Ronny Franken /	10/2/19
Title	Name (Print/Sign)	Date

Hatch Commissioning Designate	/	
Title	Name (Print/Sign)	Date

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HATCH **Vendor/Contractor Document Review**

Doc Number	E353004-CC006-130-124-0017	**SUB**	01
Date Received			

Review Grade	**Next Submittal Status**
☐ **C1** - Proceed to next submission & status ☐ **C2** - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ **C3** - Do not proceed. Revise as noted & resubmit	☐ Internal Review
Next Submittal Date:	☐ Certified/☐ As-Built
■ **C4** - No further submission required - Complete (select status below) ☐ Certified Final ■ Final ☐ Cancelled ☐ Superseded	

Package Engineer: Name, signature and date

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibilty for correct design, details & dimensions shall remain with the party submitting the drawing/document.

NUNA

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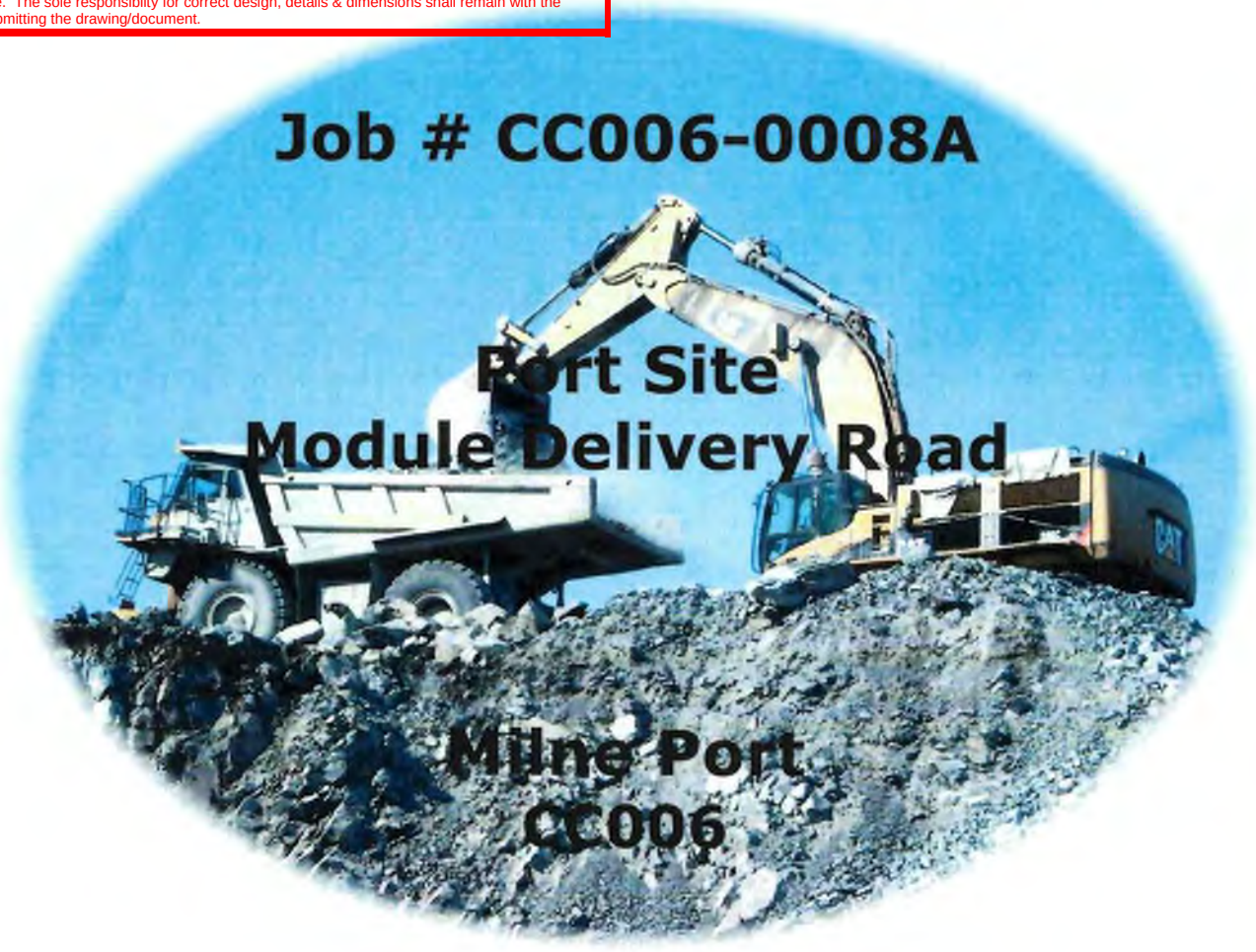
Job # CC006-0008A



NUNA

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Job #:

CC006-00008C

Port Site
Module Delivery Road

Mary River Expansion Project

H353004

Port Site Civil Works

Section 1
Completion of Construction Declaration / Transfer of Care, Control & Custody

Section 2
Inspection & Test Plan (ITP)

Section 3
Redline Drawings

Section 4
Survey Data Documentation

Section 5
Sieves / Statements of Compliance

Section 6
Request for Information Documents (RFIs)

Section 7
Non-Conformance Reports (NCRs)

Section 8
Communications – Engineering Change Notices (ECNs), Site Instructions (Sis), Contract Variations (CVRs), Emails

Section 9
Land Disturbance Forms (LDFs)

Section 10
Quality Control Documents

Section 11
Signature Log

Section 12
Walkdown Report

Section 13
Deficiency/Punchlist

Section 14
Construction Photographs

Section 15
Acceptance of Completion of Construction Declaration

NUNA

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(Section 1)

Completion of Construction Declaration / Transfer of Care, Control & Custody (TCCC) Forms

COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Mines Corporation
2. **Contractor:** Nuna East Limited
3. **Construction:** Aggregate Road
4. **Location:** Mary River Milne Port Site
5. **Description:** Port Site Module Delivery Road – Project Number: CC006

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turn over documentation has been forwarded to the owner.

	Bradford Watkin	QC Coordinator	10/19/19
(Signature)	(Print Name)	(Title)	(Date)
Nuna East Ltd.	14, 6194 – 50 Street NW Edmonton, AB, CA		T6B 2N7
(Company)	(Address)		(City, Postal Code)

Transfer of Care, Custody and Control

FROM GROUP "A"	Nuna East Ltd.	**Job File No.:**	CC006-0008A
To Group "B"	Hatch Engineering	**WBS No.:**	6141
Location:	Milne Port Site	**Date:**	July 25, 2019

Originating job file no. details:	Construct the Module Delivery Road: • Road from Freight Dock @ Chainage 0.000 to the LP5 Laydown @ Chainage 1902.092. • Earthworks haulage, placement & compaction.
Comments:	To be used for Sealift delivery of components and materials.

THIS IS NOTICE TO GROUP "B" Hatch Engineering THAT THE FOLLOWING WORK/MATERIAL AS PER P.O./CONTRACT IS/ARE BEING TRANSFERRED BY GROUP "A" Nuna East Ltd. AND IS/ARE BEING FULLY ACCEPTED BY GROUP "B" Hatch Engineering FROM GROUP "A" Nuna East Ltd.
WITH EXCEPTIONS AS LISTED BELOW (IF ANY).

Description:	**Reference Drawing(s):** • H353004-40000-223-271-0007-0001_1 - Module Delivery Road 1 of 4; • H353004-40000-223-271-0007-0002_1_V5 – Module Delivery Road 2 of 4; • H353004-40000-223-271-0007-0003 - Module Delivery Road 3 of 4; • H353004-40000-223-271-0007-0004 - Module Delivery Road 4 of 4; • H353004-40000-228-271-0005-0001_1_V5 Module Road and Tote Road Drainage Details; • H353004-40000-221-273-0001-0001 Rev 0 Typical Road Cross Sections; • H353004-00000-221-294-0001-0001 Rev 0 Typical Culvert Details; • H353004-00000-221-294-0004-0001 Rev 1 Standard Dwg Earthworks & Drainage Details; • H353004-00000-221-294-0003-0001 Rev 1 Standard Dwg Earthworks & Drainage Details; • H353004-00000-221-294-0004-0001 Rev 1 Standard Dwg Earthworks & Drainage Details; • H353004-40000-221-272-0004-0001 Rev 1 Stacker Reclaimer Berm Typical Section; • H353004-40000-221-271-0005-0001 Rev 2 Laydown area LP3 Plan & Profiles; • H353004-40000-228-272-0012-0001 Rev 1 Laydown area LP3 Drainage Plan.

NUNA EAST LTD	TCCC	Exhibit: 1-12 QDG Revision 1 Page 1 of 1

Exceptions:	Date Corrected:	Signed Off:
1. 345 TO ZERO TO FILL PUTHOLES And GRADE SURFACE (TYPES)	8/2/19	
2.		

"Exceptions Accepted and released"

From Group "A": Nuna East Ltd.

Date: JULY 26, 2019

Print Name: BRADFORD WATRIN Signature:

To Group "B": Hatch Engineering.

Date: JULY 26-2019

Print Name: ROY BADER Signature:

I confirm the conditions listed below have been met (with or without noted exceptions or deficiencies) and transfer of care, custody and control of the item(s) listed above are acceptable to the recipient.

- [x] All Inspections are complete, and all technical issues are resolved.
- [x] All deficiencies have been noted.
- [x] All Redlines / As-Builts have been reviewed.
- [x] All relevant manuals and vendor data have been received.

Recipient

Client representative:

Name: ROY BADER Signature:

Date: 26 JULY-2019

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(Section 2)

Inspection & Test Plan (ITP)

NUNA
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QUALITY MANAGEMENT SYSTEM
INSPECTION &TEST PLAN
(Civil / Structural Installations)

CLIENT: Hatch	**ITEM / DESCRIPTION / SCOPE:** MOF Road / Road from Freight Dock to LP5 Laydown. / Earthworks material production, Haulage, Placement & compaction.	**NUNA ITP NO.:** CC006-0008A	**REVISION NO.:** 0
CONTRACTOR: Nuna East Ltd.		**AFFILIATED SUB-CONTRACTOR(S):** N/A	
CONTACT PERSON: Bradford Watkin	**CONTACT INFORMATION:** bradfordw@nunalogistics.com	**DATE:** June 4, 2019	
CONTRACT No.: H353004-CC006	**HATCH PROJECT NUMBER:** H353004-CC006	**HATCH DOCUMENT TITLE:** Mary River Expansion Project-Remaining Early Earthworks	
NUNA JOB No.: CC006-0008A	**PURCHASE ORDER No.:** N/A	**PROJECT MANAGER9s):** Chris Petrovic, Stephen Nugent	
LOCATION(S): Milne Port Site		**LEGEND:** **H:** A mandatory hold on manufacturer until release by inspector or official waiver from client. **M:** Inspection stage by inspector on a spot basis, but not a mandatory hold point. **HR:** A mandatory hold / review & acceptance / approval of the specified documentation. **W:** To be informed and invited to inspect. Construction to continue if inspector does not attend. **R:** Review of report / certifications. **A:** Audit (Review at Random).	
CWP No.: N/A			

Approved For Construction

Stephen Nugent — June 4, 2019
Nuna Project Manager / Engineer (Print) — Signature — Date

Bradford Watkin — June 4, 2019
Nuna Quality Representative (Print) — Signature — Date

Hatch Representative (Print) — Signature — Date

Hatch Stamp

HATCH Vendor/Contractor Document Review

Doc Number	E353304-CC006-130-051-0020	SUB	01
Date Received			
Review Grade		Next Submittal Status	
☐ C1 - Proceed to next submission & status ☐ C2 - Proceed with exceptions as noted to next submission & status		☐ Certified ☐ As-Built	
☐ C3 - Do not proceed. Revise as noted & resubmit		☐ Internal Review ☐ Certified ☐ As-Built	
Next Submittal Date			
☑ C4 - No further submission required - Complete (select status below) ☐ Certified Final ☒ Final ☐ Cancelled ☐ Superseded			
Package Engineer: Name, signature and date			

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibility for correct design, details & dimensions shall remain with the party submitting the drawing/document.

Final Review

BRADFORD WATKIN — 10/21/19
Nuna Quality Representative (Print) — Signature — Date

Derek Padlewski — 10/21/19
Hatch Quality Representative (Print) — Signature — Date

ACTIVITY DATA							VERIFICATION DATA									
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
1.	Contract Review / Approval	NUNA	Review / Verify Document	Prior to project start	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract				R		10/21/19	R		10/21/19	

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
2.	Approval of ITP	NUNA / HATCH Representatives	Review	Prior to start	NUNA Quality System Manual	Signed ITP by Client representative, NUNA Quality System Manual	Signed acceptance of document (Exhibit 1.0)				HR	BW	6/6/19	R	DB	10/21/19	
3.	Scope and Associated Documents	NUNA	Review For Errors	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R	BW	6/4/19	A	DB	10/21/19	
4.	Signature Log	NUNA	Review, obtain signatures	Ongoing	NUNA Quality System Manual	NUNA Quality System Manual	NUNA Signature Log				R	BW	6/4/19	R	DB	10/21/19	
5.	Initial Survey Layout	NUNA / ALL NORTH	Cross Check of IFC Layout	Ongoing	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				HR	BW	6/4/19	A	DB	10/21/19	*CONFORMING
6.	Work Method of Statement	NUNA / HATCH	Review	Prior to Start	IFC Drawings, NUNA Quality System Manual, Hatch Spec. 221-078-0001 Rev 0	IFC Drawings, NUNA Quality System Manual, Hatch Spec. 221-078-0001 Rev 0	Nuna Operational Work Plan				R	N/A		R	DB	10/21/19	Also referred to as a Nuna Operation Work Plan.
7.	Materials verification	NUNA	Review	As required	IFC Drawings, Hatch Spec. 280-078-0002 Rev 0, ASTM C-136	IFC Drawings, Hatch Spec.280-078-0002 Rev 0, ASTM C-136	Sieve Test Reports, QSRs				HR	BW	10/21/19	HR	DB	10/21/19	• Type 5 • Type 8 • Type 12 • Geotextile (LP7 or equivalent) • Culvert size & Type CSP
8.	RFI	NUNA	Resolution of RFIs	As required	NUNA Quality System Manual	Disposition, Approved, closed and log updated	RFIs				HR	BW	6/21/19	A	DB	10/21/19	
9.	Clearing of works location Completed	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				HR W	BW	6/17/19	W	DB	10/21/19	• Snow removal • Ice removal • Water removal • Disposal

ACTIVITY DATA							VERIFICATION DATA											
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
10.	Excavate OG to subgrade elevation (As required)	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W		7/24/19	HR		6/21/19	• Some areas no excavation required.
11.	Subgrade foundation preparation completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP, Survey Report				HR W		7/24/19	W		6/21/19	• Compaction (As required) • Proof rolling (As required)
Type 5 32 minus																		
12.	Type 5 32 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W		7/24/19	W		6/21/19	• Lifts not to exceed 200mm.
13.	Compaction of Type 5 32 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W		7/24/19	W		6/21/19	• Minimum 5 passes with 15 ton Vibratory Roller with vibrations in the range of 1200 to 1500 vpm and roller speed of ~ 3km/h
14.	Survey of Type 5 32 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR W		7/25/19	HR		6/21/19	
Type 8 Jaw Run 150mm minus																		
15.	Type 8 Jaw Run 150mm minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W		7/25/19	W		6/21/19	• Lifts not to exceed 500mm.

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
16.	Compaction of Type 8 Jaw Run 150mm minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W		10/25/19	W		10/21/19	• Minimum 5 passes with 15 tom Vibratory Roller with vibrations in the range of 1200 to 1500 vpm and roller speed of ~ 3km/h • Each lift must be "Proof Rolled" prior to placing subsequent lift.
17.	Survey of Type 8 Jaw Run 150mm minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR W		10/25/19	HR		10/21/19	
ROQ (Type 12)																	
18.	ROQ (Type 12) Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W		10/25/19	W		10/21/19	• Lifts not to exceed 1000mm.
19.	Compaction of ROQ (Type 12) Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W		10/25/19	W		10/21/19	• Minimum 5 passes with 15 tom Vibratory Roller with vibrations in the range of 1200 to 1500 vpm and roller speed of ~ 3km/h
20.	Survey of ROQ Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR		10/25/19	HR		10/21/19	
Culvert Installations																	
21.	Locate and mark any underground obstructions / utilities	NUNA / ALL NORTH	Verify	Prior to start	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				H		10/19/19	R		10/21/19	• If required.

ACTIVITY DATA							VERIFICATION DATA											
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
22.	Excavation of works location completed	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP, Survey Report				HR W		7/3/19	W		10/21/19	• Snow / Ice removal • No water seepage • Foreign objects • Debris
23.	Subgrade Culvert foundation preparation completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HW W		7/3/19	W		10/21/19	
24.	Culvert Installation completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP, Survey Report				HW W		7/3/19	W		10/21/19	• Culvert bedding placed; • Culvert placed; • Culvert bedding envelop completed (Type 5 Material all around) minimum cover 300mm.
25.	Culvert Backfill Completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP, Survey Report				HW W		7/3/19	W		10/21/19	• Type 8 or suitable cut/excavated material or ROQ. • Road topping Type 5 Minimum cover 600mm (includes road pavement).
26.	Culvert Upstream and Downstream washout areas completed	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP, Survey Report				HW W		7/3/19	W		10/21/19	• Geotextile placed. • RipRap placed on top of Geotextile. • Type 19 placed on top of RipRap minimum 300mm overall thickness. • Survey to pick up inverts to confirm slope.
27.	As built Survey	NUNA	Review	Continuous During Operations	IFC Drawings	IFC Drawings, Hatch Specifications	As built Drawings & Data				HR		7/25/19	W		10/21/19	
28.	Final Walk down	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Contract Requirements	Final Walkdown Attendees' Report				W		7/26/19	HR		10/21/19	
29.	Deficiency List / Punch list generated	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per contract Requirements	Item form punch list items resolved				HR		10/31/19	HR		10/21/19	

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	Description of Activities (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	Functional Responsibility	Quality Control Activity	Verification Frequency	Reference Document(s)/ Controlling Procedure	Acceptance Criteria	Verification Document(s) (Reporting)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Comments
30.	NCR's closed.	NUNA / HATCH	Review of NCRs, Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Requirements	NCR log cleared				HR	BL	10/21/19	W	DP	10/21/19	10 NCRs
31.	As-built / Redline drawings completed.	NUNA	Review / Verify	Post Final Walk down	IFC Drawings, Contract	As-builts / Redlines to Reflect All Field Changes	As-builts / Redlines				HR	BL	10/21/19	HR	DP	10/21/19	
32.	Final Acceptance and ITP Sign off	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP (Exhibit 1.0)				HR	BL	10/21/19	HR	DP	10/21/19	
33.	Inspection Acceptance and Sign-Off Form signed by Engineer of record.	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP, Acceptance of Completion of Construction Form				HR	BL	10/21/19	A	DP	10/21/19	
34.	Turnover package completed and sent to client.	NUNA	Review / Verify	Post project completion	NUNA Quality System Manual, IFC Drawings, Contract	Contract, Code & applicable specifications.	Quality Management System Quality Control Turnover package.				HR	BL	10/21/19	A	DP	10/21/19	

Note: Nuna ITP Sign-Offs based on supporting documentation.

Comments:

ITP ISSUE APPROVALS

Stephen Nugent Nuna Contractor Project Manager / Engineer (Print)	Site Project Manager Title	 Signature	June 4, 2019 Date (mm/dd/yy)
Bradford Watkin Nuna Contractor Quality Manager / Representative (Print)	QC Coordinator Title	 Signature	June 4, 2019 Date (mm/dd/yy)
HATCH Quality Manager / Representative (Print)	Title	Signature	Date (mm/dd/yy)

ITP CLOSEOUT AND WORK ACCEPTANCE APPROVALS

BRANFORD WATKIN Nuna Contractor Quality Manager / Representative (Print)	QC COORDINATOR Title	 Signature	10/21/19 Date (mm/dd/yy)
Derek Radzewski HATCH Quality Manager / Representative (Print)	QA Manager Title	 Signature	10/21/19 Date (mm/dd/yy)

NUNA

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(Section 3)

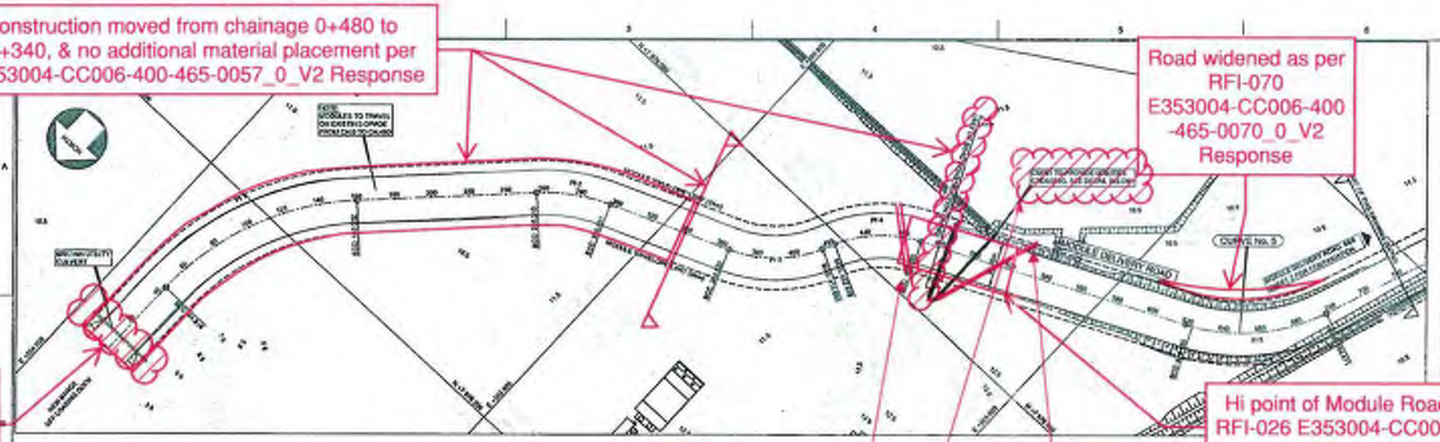
Redline Drawings

Limit of construction moved from chainage 0+480 to chainage 0+340, & no additional material placement per RFI-057 E353004-CC006-400-465-0057_0_V2 Response

Road widened as per RFI-070 E353004-CC006-400-465-0070_0_V2 Response

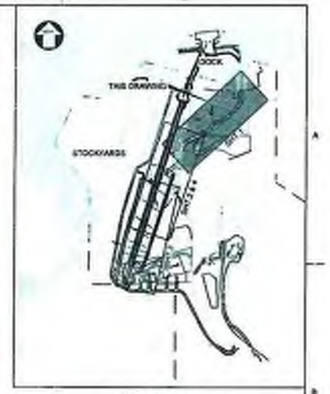
Deleted from scope per RFI-069 E353004-CC006-400-465-0069_0_V2 Response

Hi point of Module Road raised by ~1.4m per RFI-026 E353004-CC006-400-465-0026_0_V2 Response



SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
SCC1 PI ECC1	44.916 165.253	559912.229 559971.870 559934.816	7 976 450.817 7 976 294.509 7 976 161.373	R 150.000m DELTA 94°00' TL 183.724m AL 170.226m
SCC2 PI ECC2	299.340 296.801	559985.429 559947.899 559942.988	7 976 033.244 7 975 978.456 7 975 971.081	R 150.000m DELTA 2°00' TL 262.874m AL 479.680m
SCC3 PI ECC3	545.521 479.649	560.000.000 560.040.406 560.033.329	7 975 541.163 7 975 729.209 7 975 773.554	R 150.000m DELTA 181°00' TL 28.767m AL 51.162m
SCC4 PI ECC4	450.649 499.840	559.974.096 559.974.802 559.982.570	7 975 694.614 7 975 743.526 7 975 813.263	R 150.000m DELTA 90°00' TL 24.145m AL 47.124m
SCC5 PI ECC5	619.930 644.431	559.937.304 559.921.274 559.900.998	7 975 907.204 7 975 895.990 7 975 893.534	R 150.000m DELTA 47°00' TL 45.915m AL 49.371m
SCC7 PI ECC7	808.004	559.846.980 559.846.980	7 976 236.556 7 976 333.241 7 976 573.476	R 150.000m DELTA 71°00' TL 39.744m AL 75.741m
SCC8 PI ECC8	968.729	559.904.894 559.918.758	7 976 498.836 7 976 427.651 7 976 384.699	R 150.000m DELTA 90°00' TL 42.016m AL 47.124m



KEY PLAN

NOTES:
1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2018)
2. COORDINATE GRID IS NAD83 MTM ZONE 5 (NAD83(CSRS) 1997.0 EPOCH 2010.0)
3. ELEVATIONS ARE IN METERS, DERIVED FROM CGVD28 (HT2.0)
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR TYPICAL CROSS SECTION OF MODULE ROAD REFER TO DRAWING H353004-40000-221-271-0000-0001.
6. FOR TYPICAL DETAILS OF SLEEVE CROSSINGS UNDER ROAD REFER TO DRAWING H353004-89000-221-291-0000-0001 AND H353004-00000-221-294-0000-0001

ROAD DATA LEGEND:

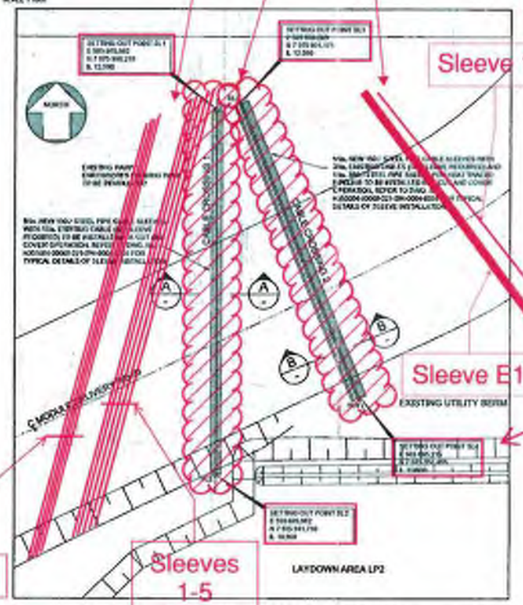
SCALES:
Horizontal 1:1000
Vertical 1:200

DATUM 0.000

CHAINAGE (CH)	
GROUND LEVELS ON CL	
FINAL DESIGN ROAD LEVELS — LEFT EDGE (RE)	
FINAL DESIGN ROAD LEVELS — CENTRE LINE (CL)	
FINAL DESIGN ROAD LEVELS — RIGHT EDGE (RE)	
VERTICAL PROFILE GRADES	
HORIZONTAL ALIGNMENT	

MODULE DELIVERY ROUTE
FROM CH.480.000 TO CH.740.000

PLAN



DETAIL - UTILITY SLEEVE CROSSING

Sleeve 10

CENTRE LINE (CL)	
GROUND LEVELS ON CL	
CUT / FILL	
DISTANCE (m)	

CABLE CROSSING 1 - LONGITUDINAL SECTION

Sleeve E1

CENTRE LINE (CL)	
GROUND LEVELS ON CL	
CUT / FILL	
DISTANCE (m)	

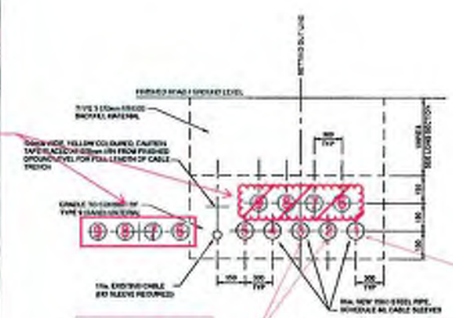
CABLE CROSSING 2 - LONGITUDINAL SECTION

Utility Sleeve crossings settling out points vary as per field conditions, see Survey As-Built drawings and data

Sleeves 6-9

Sleeves 1-5

Sleeves 6-9 deleted from this location & placed @ this location per RFI-097 E353004-CC006-400-465-0097_0_V2 Response



SECTION A - A
NOT TO SCALE

5kV Cable

Fiber Optic

SECTION B - B
NOT TO SCALE

Not installed Yet, see punchlist in turnover package & RFI-097 E353004-CC006-400-465-0097_0_V2 Response

NUNA
NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: [signature] COMPANY: NUNA

DATE OF AS-BUILT: 10/20/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: _____ COMPANY: _____

REFERENCE DRAWINGS

DRAWING No.	DRAWING TITLE
H353004-40000-221-271-0000-0001	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 1 OF 4
H353004-40000-221-271-0000-0002	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 2 OF 4
H353004-40000-221-271-0000-0003	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 3 OF 4
H353004-40000-221-271-0000-0004	MODULE PRIMARY SECONDARY ROADS TYPICAL CROSS SECTIONS

FOR CONSTRUCTION

NO.	DESCRIPTION	BY	CHKD	DATE
1	DETAILS OF UTILITY SLEEVE CROSSING AT CHAINAGE	DB	DH	06/10/2019
0	FOR CONSTRUCTION	RVDV	DH	05/06/2019

REVISIONS

DESIGNED	
DRAWN	
CHECKED	
DESIGN CHKD	
REVIEWED	
LEAD DISC. ENG.	
AREA LEAD	
ENG. DISC. ENG.	DAVID HUTCHINSON
ENGINEER	ANNA FAUGNON
DRAWER	D FRASER

DRAWING APPROVAL STATUS: Approved for Construction

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 1 OF 4

SCALE 1:1000 (ORIGINAL SHEET SIZE: ISO A1)
DWG No. H353004-40000-223-271-0007-0001
REV 1

Addition of new Culvert to scope per RFI-046 E353004-CC006-400-465-0046_0 _V2 Response

Deleted from scope per RFI-0082 E353004-CC006-400-465-0082_0 _V2 Response

Deleted from scope per RFI-053 E353004-CC006-400-465-0053_0 _V2 Response

NUNA

NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ✓ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: BRADFORD WATKIN COMPANY: NUNA

DATE OF AS-BUILT: 10/20/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

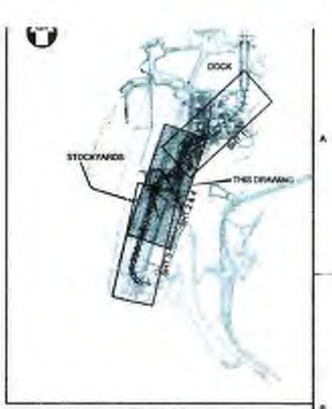
PLAN
SCALE 1:1000

CULVERT SCHEDULE

(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-00000-221-274-0001-0001-TYPICAL CULVERT DETAILS)

CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	CULVERT AT UPSTREAM NORTHING	EASTING	INS INV. ELEV.(m)	RIP RAP REQ'D	CULVERT AT DOWNSTREAM NORTHING	EASTING	INS INV. ELEV.(m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)
P-CULV-16	N	2	1200	36.900	0	3600	CSP	7976606.240	503305.45	9.754	N	7975558.404	503276.731	9.816	N	300	4.6	0.4	31
CULV-20184	N	2	600	27.500	0	600	CSP	7976464.920	503278.910	11.178	N	7976420.989	503286.143	11.00	N	300	2.4	0.2	47

KEY PLAN



NOTES:

1. LIDAR SURVEY PROVIDED BY FUGRO (2016).
2. CO-ORDINATE GRID IS SHOWN IN UTM ZONE 17 AND ID IN METERS.
3. CONTOURS ARE IN METERS, CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR TYPICAL CROSS-SECTION OF MODULE ROAD REFER TO DRAWING No.H353004-40000-221-272-0004-0001

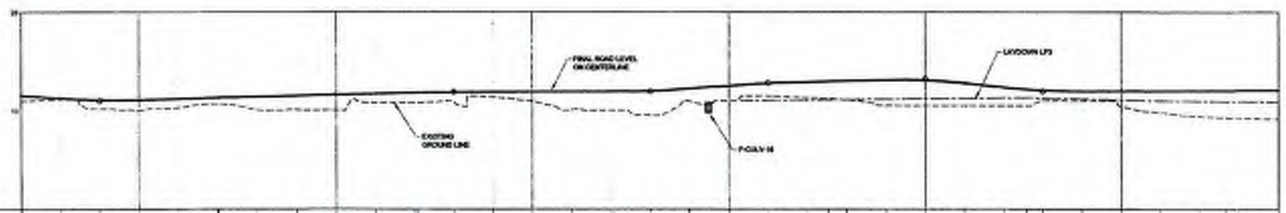
⚠ 4 FOR TYPICAL CROSS-SECTION FROM CH.580 REFER TO DRAWING No.H353004-40000-221-272-0004-0001

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
C	CULVERT SPACING AND BEDDING CLEARANCE C = 600 WHILE D < 900mm C = 900 WHILE D = > 900mm
W	CULVERT BACKFILL TOP WIDTH W = 3(TD) + (k+1)TC
	k = No. OF PIPE CULVERT
TYPE	CULVERT MATERIAL
UIS INV.	CULVERT UPSTREAM INVERT ELEVATION
DS INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	RIPRAP APRON LENGTH L = 4xD (APPROX)
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

ROAD DATA LEGEND:

BVC	BEGINNING VERTICAL CURVE
EVC	END VERTICAL CURVE
BCC	BEGINNING CIRCULAR CURVE
ECC	END CIRCULAR CURVE
R	RADIUS (CURVE)
DA	DEFLECTION ANGLE (CURVE)
TL	TANGENT LENGTH (CURVE)
AL	ARC LENGTH (CURVE)
CH	CHAINAGE



SCALES:
Horizontal 1:1000
Vertical 1:200

DATUM 0.000

CHAINAGE (CH)	
GROUND LEVELS ON CL	
FINAL DESIGN ROAD LEVELS — LEFT EDGE (HL)	
FINAL DESIGN ROAD LEVELS — CENTRE LINE (CL)	
FINAL DESIGN ROAD LEVELS — RIGHT EDGE (HR)	
VERTICAL PROFILE GRADES	
HORIZONTAL ALIGNMENT	

MODULE DELIVERY ROUTE
FROM CH.740.000 TO CH.1380.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
START	0.000	503012.739	7 976 110.099	L 640.8 Hm
BCC1 PI ECC1	44.816 160.252	503072.295 503081.971 503029.799	7 976 154.374 7 976 254.338 7 976 161.573	R 150.000m DA 64°04'56" TL 93.113m AL 115.356m
BCC2 PI ECC2	205.310 296.661	503081.439 503047.000 503017.996	7 976 262.810 7 976 378.416 7 976 370.684	R 150.000m DA 27°12'52" TL 39.527m AL 69.611m
BCC3 PI ECC3	364.520 415.595	503105.257 503140.455 503070.720	7 976 340.168 7 976 335.609 7 976 310.089	R 75.000m DA 41°33'25" TL 25.757m AL 51.167m
BCC4 PI ECC4	430.936 469.896	503705.542 503744.552 503662.112	7 976 304.556 7 976 342.526 7 976 373.004	R 70.500m DA 38°31'51" TL 24.331m AL 47.150m
BCC5 PI ECC5	819.196 898.471	504061.958 504021.214 504061.958	7 975 967.954 7 975 896.458 7 975 852.234	R 150.000m DA 44°16'30" TL 40.905m AL 77.271m
BCC7 PI ECC7	826.504 952.294	504461.901 504448.173 504412.002	7 975 770.446 7 975 642.041 7 975 675.430	R 185.000m DA 47°32'07" TL 39.791m AL 76.674m
BCC8 PI ECC8	966.729 1047.644	504324.864 504316.804 504340.647	7 975 644.918 7 975 521.883 7 975 567.459	R 125.000m DA 46°13'46" TL 40.518m AL 84.015m
BCC9 PI ECC9	1051.256 1098.199	503714.715 503699.812 503727.643	7 976 952.336 7 976 906.629 7 976 934.361	R 150.000m DA 15°21'14" TL 18.123m AL 216.828m
END	1552.000	503727.643	7 976 427.982	L 1,259.9m

MODULE DELIVERY ROUTE
FROM CH.740.000 TO CH.1380.000

PERMIT TO PRACTICE

H353004-40000-223-271-0007-0001	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 1 OF 7						
H353004-40000-223-271-0007-0002	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 2 OF 7						
H353004-40000-223-271-0007-0003	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 3 OF 7						
H353004-40000-223-271-0007-0004	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 4 OF 7						
H353004-40000-223-271-0007-0005	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 5 OF 7						
H353004-40000-223-271-0007-0006	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 6 OF 7						
H353004-40000-223-271-0007-0007	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 7 OF 7						
H353004-40000-221-271-0001-0001	MODULE, PRIMARY, SECONDARY ROADS TYPICAL CROSS SECTIONS						
H353004-00000-221-274-0001-0001	TYPICAL CULVERT DETAILS						
DRAWING No.	DRAWING TITLE						
REFERENCE DRAWINGS							

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	VERTICAL ALIGNMENT MOVED AND DRAINAGE DITCHES INDICATED - NOTE 4 ADDED	NH	TH	15/09/2019
0	FOR CONSTRUCTION	KDH	TH	29/08/2019

REVISIONS

HATCH

DRAFTS/PERSON	K. OSHODI-MOSES	NR	29/08/2019
DESIGNED	E. BALDWARE	NR	29/08/2019
CHECKED	T. HUGO		29/08/2019
DESIGN COORD.	R. GOODISH		29/08/2019
RESP. ENG.	N. HAUM		
LEAD DISC. ENG.	A. GAVENKLAR		
AREA LEAD	V. LAVRIC		
ENG. MANAGER	R. GOODISH		
AREA MANAGER	T. ATIMA		
ROLE	NAME	SIGNATURE	DATE

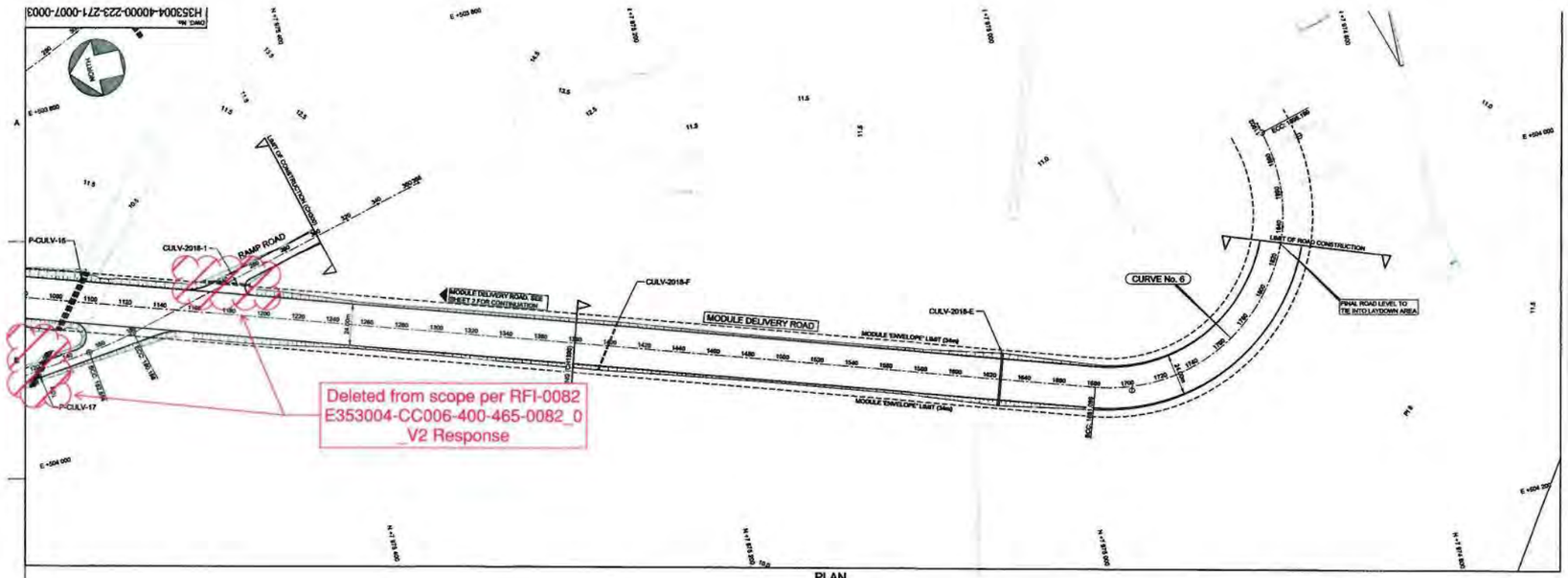
DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

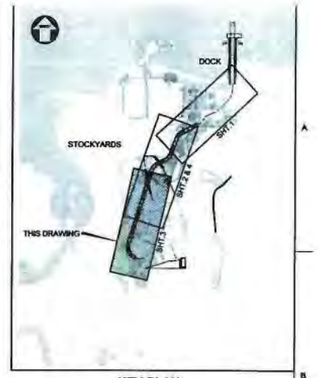
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 2 OF 4

SCALE	DWG. No.	REV.
1:1,000	H353004-40000-223-271-0007-0002	1



PLAN
SCALE 1:1000



KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2018)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS, CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR TYPICAL CROSS SECTION OF MODULE ROAD REFER TO DRAWING No.H353004-40000-221-273-0001-0001

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
C	CULVERT SPACING AND BEDDING CLEARANCE C = 500 WHILE D = 900mm C = 300 WHILE D = < 900mm
W	CULVERT BACKFILL TOP WIDTH W = (n*D) + (n-1)*C n = No. OF PIPE/CULVERT
TYPE	CULVERT MATERIAL
U/S INV.	CULVERT UPSTREAM INVERT ELEVATION
D/S INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	RIPRAP APRON LENGTH L = 4xD (APPROX)
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

CULVERT SCHEDULE

(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-00000-221-294-0001-0001-TYPICAL CULVERT DETAILS

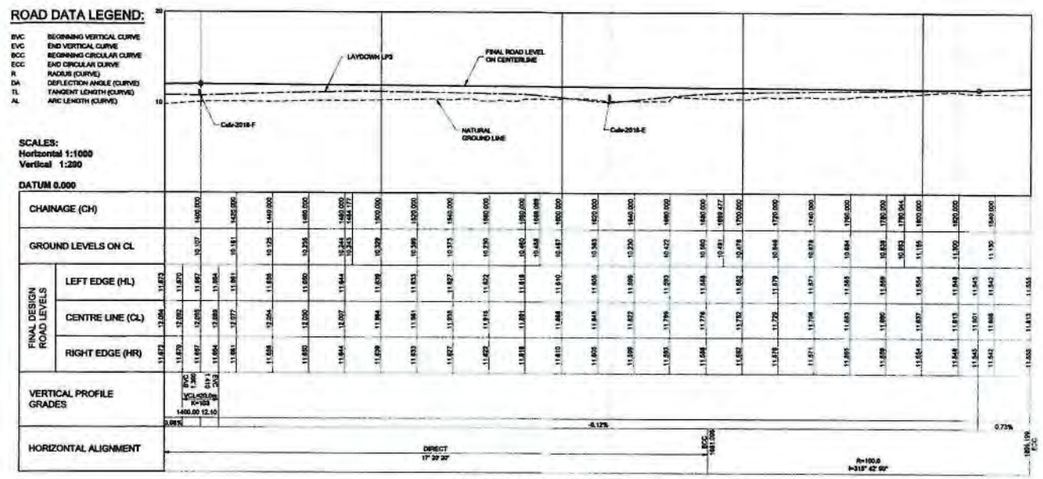
									CULVERT AT UPSTREAM				CULVERT AT DOWNSTREAM		NOTE: FINAL U/S INVERT AND D/S INVERT LEVELS ARE TO BE CONFIRMED ON SITE					
CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	NORTHING	EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	NORTHING	EASTING	D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)
CULV-2018-F	N	1	600	29.980	0	600	CSP	7975343.040	503211.090	10.852	N	7975280.091	503188.431	10.790	N	300	2.4	0.2	17
CULV-2018-E	N	1	600	30.685	0	600	CSP	7975030.080	503145.890	10.121	Y	7975039.235	503118.401	10.059	Y	300	2.4	0.2	60

ROAD DATA LEGEND:

BVC	BEGINNING VERTICAL CURVE
EVC	END VERTICAL CURVE
BCC	BEGINNING CIRCULAR CURVE
ECC	END CIRCULAR CURVE
R	RADIUS (CURVE)
DA	DEFLECTION ANGLE (CURVE)
TL	TANGENT LENGTH (CURVE)
AL	ARC LENGTH (CURVE)

SCALES:
Horizontal 1:1000
Vertical 1:200

DATUM 0.000



MODULE DELIVERY ROUTE
FROM CH.1380.000 TO CH.1860.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
START	0.000	503972.709	7 978 310.089	L 44.816m
SCC1 PI1 ECC1	44.816 149.292	503972.298 503971.875 503929.956	7 978 265.272 7 978 304.588 7 978 161.373	R 150.000m DA 44°04'30" TL 66.717m AL 115.389m
BCC2 PI2 ECC2	256.210 299.801	503951.439 503947.010 503927.996	7 978 053.019 7 978 076.418 7 978 070.881	R 100.000m DA 25°12'00" TL 20.527m AL 43.491m
SCC3 PI3 ECC3	384.325 415.890	503785.257 503745.455 503738.730	7 978 045.180 7 978 055.060 7 978 010.094	R 70.000m DA 41°32'59" TL 26.787m AL 51.167m
SCC4 PI4 ECC4	422.839 488.865	503725.588 503714.333 503692.712	7 978 004.509 7 975 982.525 7 975 972.003	R 70.000m DA 38°35'02" TL 24.612m AL 47.165m
SCC5 PI5 ECC5	519.195 558.471	503557.909 503521.214 503507.288	7 975 957.954 7 975 885.450 7 975 852.334	R 100.000m DA 44°18'30" TL 40.667m AL 77.277m
SCC7 PI7 ECC7	628.504 692.244	503481.991 503446.175 503412.593	7 975 730.390 7 975 693.081 7 975 675.430	R 100.000m DA 43°23'30" TL 39.791m AL 75.741m
SCC8 PI8 ECC8	694.729 1047.644	503354.894 503318.308 503303.547	7 975 644.806 7 975 627.863 7 975 887.009	R 100.000m DA 64°21'40" TL 62.819m AL 80.915m
SCC6 PI6 ECC6	1081.098 1098.198	503114.776 503098.812 503257.643	7 974 982.338 7 974 805.629 7 974 958.387	R 100.000m DA 123°14'07" TL 185.120m AL 215.103m
END	1902.092	503237.643	7 974 857.982	L 5.863m

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER P 012
The Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGA)

H353004-40000-223-271-0007-0004	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 4 OF 4
H353004-40000-223-271-0007-0002	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 2 OF 4
H353004-40000-223-271-0007-0001	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 1 OF 4
H353004-40000-221-273-0001-0001	MODULE, PRIMARY, SECONDARY ROADS TYPICAL CROSS SECTIONS
H353004-00000-221-294-0001-0001	TYPICAL CULVERT DETAILS
DRAWING No.	DRAWING TITLE

REFERENCE DRAWINGS

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
0	FOR CONSTRUCTION	KVDM	FH	04/05/2018

REVISIONS

HATCH

DRAFTSPERSON	K VAN DER MERWE	HR	04/05/2018
DESIGNER	E BALFOUR	HR	04/05/2018
CHECKER	F HUDD		2018-04-05
DESIGN COORD.	R GOOSEN		2018-04-05
RESP. ENG.	R HALM		2018-04-05
LEAD DISC. ENG.	A GROBELAAR		2018-04-05
AREA LEAD	V LAWRIC		2018-04-05
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		04-05-18

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 3 OF 4

SCALE	OWG. No.	REV
1:1,000 (OR AS NOTED)	H353004-40000-223-271-0007-0003	0

SHEET SIZE: E

NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: BRADFORD STAKING COMPANY: NUNA

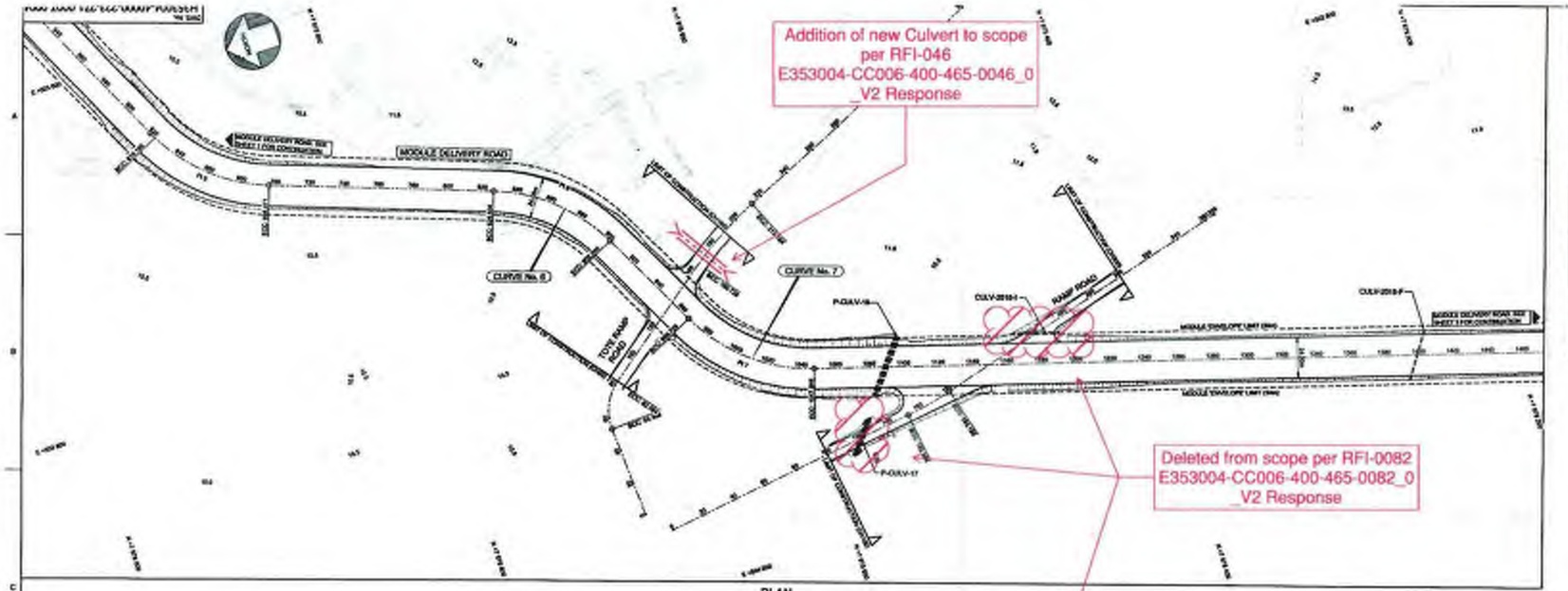
DATE OF AS-BUILT: 10/20/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

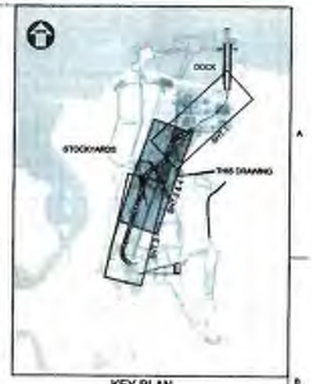
NAME/SIGN: _____ COMPANY: _____

Addition of new Culvert to scope per RFI-046 E353004-CC006-400-465-0046_0 _V2 Response

Deleted from scope per RFI-0082 E353004-CC006-400-465-0082_0 _V2 Response



PLAN



KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR TYPICAL CROSS SECTION OF MODULE ROAD REFER TO DRAWING No.H353004-40000-221-274-0001-0001

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
C	CULVERT SPACING AND BARRING CLEARANCE C = 300 WHEN D < = 900mm C = 600 WHEN D > = 900mm
W	CULVERT BACKFILL TOP WIDTH W = (n*D) + (n-1)*C n = No. OF PARALLEL CULVERT
TYPE	CULVERT MATERIAL
U/S INV.	CULVERT UPSTREAM INVERT ELEVATION
D/S INV.	CULVERT DOWNSTREAM INVERT ELEVATION
I	SLOPE ACROSS CULVERT I = U/S ELEVATION
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

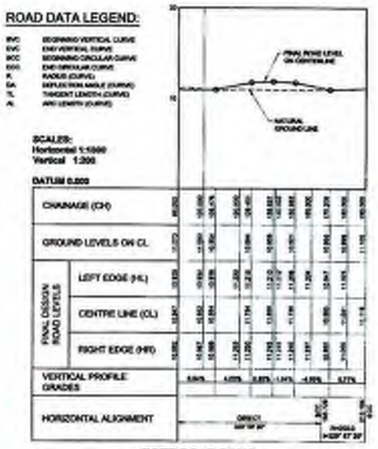
CULVERT SCHEDULE

(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-40000-221-254-0001-0001-TYPICAL CULVERT DETAILS

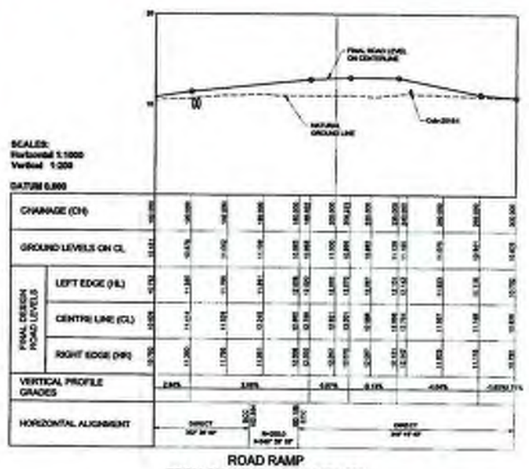
CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	CULVERT AT UPSTREAM NORTHING	CULVERT AT UPSTREAM EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	CULVERT AT DOWNSTREAM NORTHING	CULVERT AT DOWNSTREAM EASTING	NOTE: FINAL U/S INVERT AND D/S INVERT LEVELS ARE TO BE CONFIRMED ON SITE D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)
P-CULV-16	N	1	1200	36.500	0	1200	CSP	7975835.240	603305.45	9.764	Y	7975808.404	603278.721	9.616	Y	600	6.0	3.4	45
P-CULV-17	N	1	1200	22.248	0	1200	CSP	7975808.310	603284.49	9.804	Y	7975795.574	603284.504	9.491	Y	600	6.0	3.4	90
CULV-20054	N	1	900	27.300	0	900	CSP	7975444.824	603213.910	11.179	N	7975421.880	603286.140	11.130	N	300	2.4	0.2	47

ROAD DATA LEGEND:

BVC	BEGINNING VERTICAL CURVE
EVC	END VERTICAL CURVE
BCC	BEGINNING CIRCULAR CURVE
ECC	END CIRCULAR CURVE
R	RADIUS (CURVE)
DA	DEFLECTION ANGLE (CURVE)
TL	TANGENT LENGTH (CURVE)
AL	ARC LENGTH (CURVE)



TOTE ROAD RAMP
FROM 86.000 TO 190.000



ROAD RAMP
FROM CH.100.000 TO CH.300.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
START	0.000	603873.709	7 976 910.696	L 44.216m
BCC1 PI1 ECC1	44.216 144.216 188.252	603871.264 603871.678 603858.856	7 976 260.213 7 976 204.333 7 976 161.573	R 100.000m DA 44°56'50" TL 80.210m AL 116.036m
BCC2 PI2 ECC2	358.310 394.251 394.573	603861.438 603847.910 603827.884	7 975 963.216 7 975 926.418 7 975 879.481	R 100.000m DA 23°27'05" TL 35.553m AL 46.481m
BCC3 PI3 ECC3	394.573 418.886	603769.267 603748.456 603734.709	7 975 845.393 7 975 835.082 7 975 819.096	R 75.000m DA 41°52'02" TL 28.727m AL 51.397m
BCC4 PI4 ECC4	422.806 466.845	603725.249 603714.909 603692.712	7 975 824.209 7 975 802.503 7 975 813.164	R 75.000m DA 38°34'53" TL 24.512m AL 47.109m
BCC5 PI5 ECC5	478.789 538.471	603637.858 603601.214 603581.988	7 975 807.884 7 975 856.486 7 975 858.764	R 100.000m DA 34°16'02" TL 30.881m AL 59.731m
BCC7 PI7 ECC7	609.604 665.344	603480.981 603446.126 603443.283	7 975 750.385 7 975 695.981 7 975 674.434	R 100.000m DA 33°23'02" TL 29.974m AL 58.716m
BCC8 PI8 ECC8	668.726 694.644 1047.844	603364.894 603343.369 603305.047	7 975 649.208 7 975 627.464 7 975 587.324	R 100.000m DA 42°21'48" TL 38.577m AL 82.618m
BCC9 PI9 ECC9	1051.000 1089.618 1090.158	603314.779 603308.812 603257.943	7 975 582.339 7 975 544.409 7 975 536.367	R 100.000m DA 123°19'40" TL 146.105m AL 215.103m
END	1302.943	603257.943	7 975 357.262	L 3.000m

H353004-40000-223-271-0007-0003	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 3 OF 4
H353004-40000-223-271-0007-0002	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 2 OF 4
H353004-40000-223-271-0007-0001	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 1 OF 4
H353004-40000-221-276-0001-0001	MODULE PRIMARY SECONDARY ROADS TYPICAL CROSS SECTIONS
H353004-40000-221-254-0001-0001	TYPICAL CULVERT DETAILS
DRAWING No.	DRAWING TITLE
REFERENCE DRAWINGS	

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED

REDLINE BY: ✓ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: [signature] COMPANY: NUNA

DATE OF AS-BUILT: 10/20/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: _____ COMPANY: _____

NUNA
NUNAEAST LTD

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
0	FOR CONSTRUCTION			

REVISIONS

DRAWING APPROVAL STATUS: Approved for Construction

ROLE	NAME	SIGNATURE	DATE
DESIGNER			
CHECKER			
DESIGN COORD.			
RESP. ENG.			
LEAD DISC. ENG.			
AREA LEAD			
ENG. MANAGER			
AREA MANAGER			

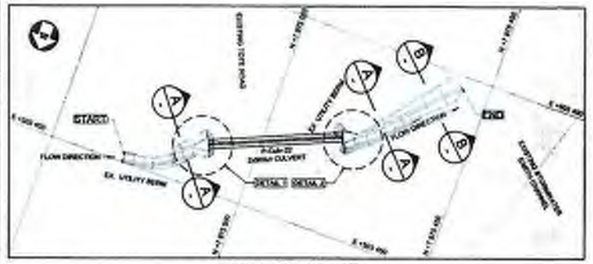
HATCH

Baffinland

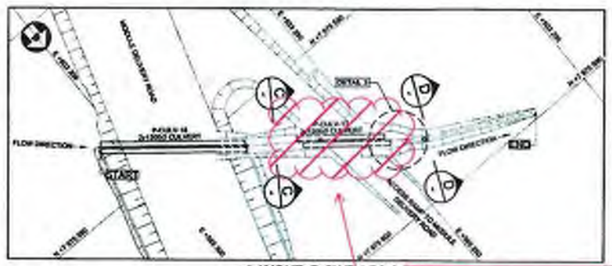
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 4 OF 4

SCALE 1:1000 (24 IN HORIZ.)
DWG No. H353004-40000-223-271-0007-0004
REV 0
SHEET SIZE: D



LAYOUT: P-SWD-LP3-1
SCALE 1:500



LAYOUT: P-SWD-LP3-2
SCALE 1:500

Deleted from scope per RFI-0082
E353004-CC006-400-465-0082_0
V2 Response

SETTING OUT DATA-P-SWD-LP3-1

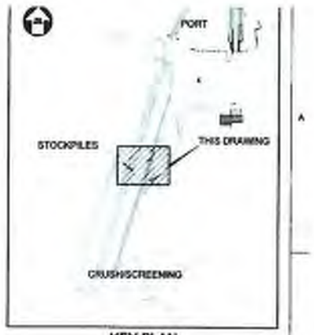
NAME	CH	E	N	DETAILS
START	0.000	6634491.257	7975491.573	L 4.159m
BCC1 PI1 ECC1	4.159 11.432	6634477.130 6634473.521 6634470.849	7975486.748 7975486.629 7975485.857	R 14.000m DA 35°39'05" T 4.591m AL 7.243m
BCC2 PI2 ECC2	16.075 21.368	6634466.826 6634464.488 6634461.648	7975481.974 7975480.946 7975480.199	R 20.000m DA 15°18'18" T 2.956m AL 5.293m
BCC3 PI3 ECC3	58.501 64.675	6634429.042 6634426.136 6634423.321	7975474.826 7975472.852 7975469.845	R 20.000m DA 23°18'29" T 4.119m AL 8.134m
END	80.012	6634406.477	7975461.509	L 23.337m

SETTING OUT DATA-P-SWD-LP3-2

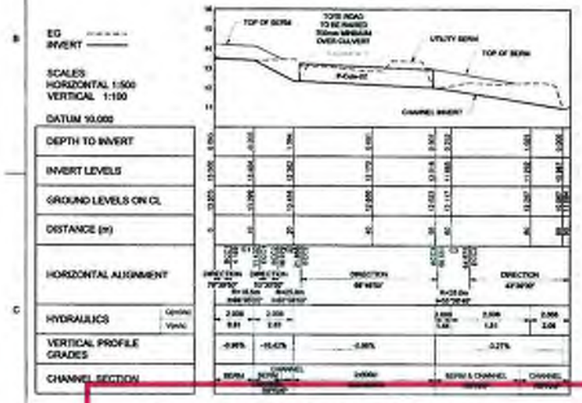
NAME	CH	E	N	DETAILS
START	0.000	6633306.826	7975552.648	L 38.809m
PI1	38.809	6633276.711	7975554.494	L 38.822m
PI2	64.641	6633251.128	7975556.453	L 19.121m
PI3	84.321	6633240.726	7975556.929	L 25.276m
END	109.599	6633214.918	7975556.051	L 23.040m

EG	EXISTING GROUND
CH	CHAINAGE
L	LENGTH
R	RADIUS
DA	DEFLECTION ANGLE
TL	TANGENT LENGTH
AL	ARC LENGTH
BCC	BEGINNING OF CURVE
ECC	END OF CURVE
PI	POINT OF INTERSECTION
HWL	HIGH WATER LEVEL
FB	FREE BOARD
	FLOW DIRECTION
	DIVERSION CENTER LINE
	RIPRAP

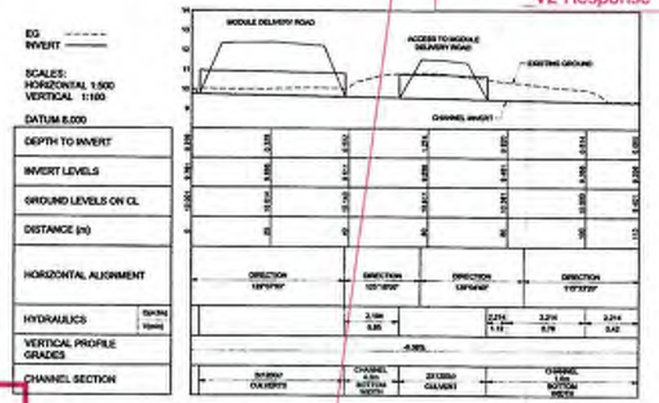
NOTES:
1. LIDAR SURVEY PROVIDED BY PROTSAT (2018).
2. COORDINATE GRID IS SHOWN IS UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS AND ELEVATIONS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS ARE IN MILLIMETER UNLESS NOTED OTHERWISE.
5. FINAL CULVERT POSITIONS TO BE CONFIRMED ON SITE.



KEY PLAN



P-SWD-LP3-1 DIVERSION LONGITUDINAL SECTION



P-SWD-LP3-2 DIVERSION LONGITUDINAL SECTION

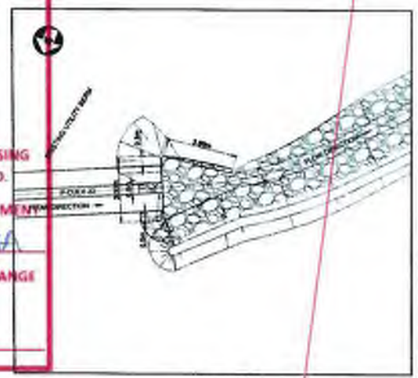
SECTION A-A
TYPICAL DETAIL - UPSTREAM AND DOWNSTREAM OF THE CULVERT
SCALE 1:50

SECTION B-B
CHANNEL DETAIL
SCALE 1:50

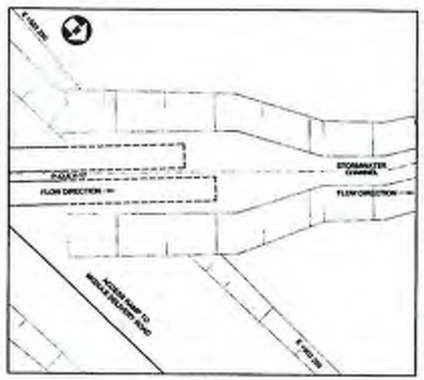
SECTION C-C
CHANNEL DETAIL
SCALE 1:50

SECTION D-D
CHANNEL DETAIL
SCALE 1:50

NUNA
NUNA EAST LTD
REDLINE DRAWING
CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. CAUTIONS TO BE CLOUDED AND HATCHED.
REDLINE BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT
NAME/SIGN: [signature] COMPANY: NUNA
DATE OF AS-BUILT: 10/20/19 ☐ CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:

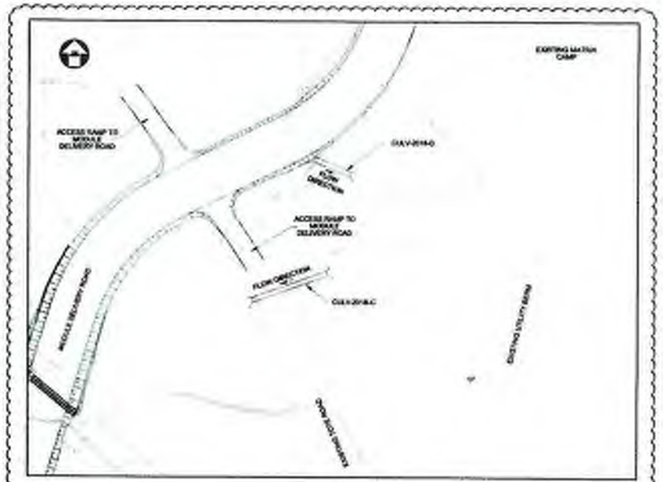


DETAIL 1
CULVERT INLET
SCALE 1:100



DETAIL 2
CULVERT OUTLET
SCALE 1:100

DETAIL 3
CULVERT OUTLET
SCALE 1:100



DETAIL 4
CULV-2018-C AND D
SCALE 1:1000

CULVERT SCHEDULE
(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-40000-E21-284-0001-0001-TYPICAL CULVERT DETAILS)

CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	CULVERT AT UPSTREAM: NORTHING	EASTING	INS INV. ELEV (m)	RIP RAP REQ'D	CULVERT AT DOWNSTREAM: NORTHING	EASTING	DS INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SNOW DESIGNED
P-Culv-01	N	2	1200	37.000	0	2400	CSP	7975496.311	6633264.485	8.000	Y	7975461.509	6633240.726	5.000	Y	600	4.0	6.000	90
P-Culv-02	N	2	1200	37.000	0	2400	CSP	7975496.311	6633264.485	8.000	Y	7975461.509	6633240.726	5.000	Y	600	4.0	6.000	90
CULV-2018-C	N	1	800	43.125	0	900	CSP	7975497.334	6633252.957	10.845	N	7975500.000	6633204.846	10.500	N	500	-	2.000	45
CULV-2018-D	N	1	800	20.835	0	900	CSP	7975497.097	6633444.886	10.206	N	7975500.000	6633425.374	10.000	N	500	-	0.960	30

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
C	CULVERT SPACING AND MISSING CLEARANCE C = 500 WHEN D = 900mm C = 900 WHEN D = 1 x 900mm
W	CULVERT BACKFILL TOP WIDTH W = [ATE + 2x TA] n = No. OF PIPES / CULVERTS
TYPE	CULVERT MATERIAL
DS INV.	CULVERT UPSTREAM INVERT ELEVATION
DS INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	RIPRAP APRON LENGTH L = 4xD (APPROX)
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

PERMIT TO PRACTICE
Signature
Date
Permit Number: P 012
The Association of Professional Engineers and Geoscientists of Alberta

SCALE 1:500 IN METRES

DRAWING No.	DRAWING TITLE
H353004-40000-22-284-0001-0001	STANDARD DRAWING – LAYOUT, ROAD AND DRAINAGE
H353004-40000-E21-284-0001-0001	STANDARD DRAWING – TYPICAL CULVERT DETAIL
H353004-40000-228-270-0001-0001	PORT SITE – BLOCK PLAN

REFERENCE DRAWINGS

REG PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	ENGR	CHKD	DATE
1	ADD STAMP REMARKS, DETAIL 4 ADDED AND CULVERT SCHEDULE UPDATED	EM	TH	2020-03-06
0	FOR CONSTRUCTION	EM	TH	2020-02-28

REVISIONS

HATCH

DRAFTING/DESIGN	H HERBST	MB	2020-02-28
DESIGNER	H HERBST	MB	2020-02-28
CHECKED	F HUGO		2020-02-28
DESIGN LEAD	R GOOSEN		2020-02-28
RESP. ENG.	R WALSH		2020-02-28
LEAD DISC. ENG.	A CROSSLEIGH		2020-02-28
AREA LEAD	V DAVIS		2020-02-28
PROJECT ENG. MANAGER	D STANGER		2020-02-28
AREA MANAGER			
ROLE	NAME	SIGNATURE	DATE

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

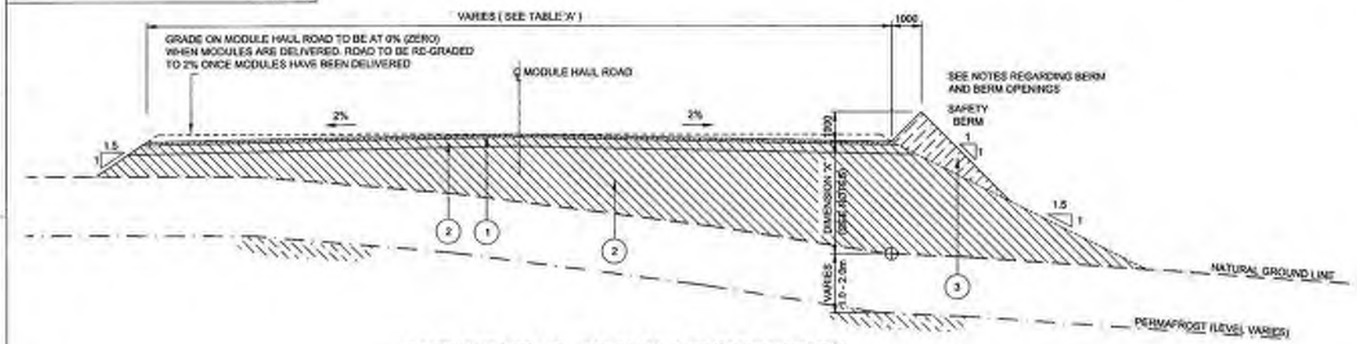
BAFFINLAND IRON MINES LP
MARY RIVER PROJECT

PORT SITE
MODULE ROAD AND TOTE ROAD
DRAINAGE DETAILS

SCALE	DWG. No.	REV
1:500	H353004-40000-228-271-0005-0001	1

SIZE A1 (841 x 594)

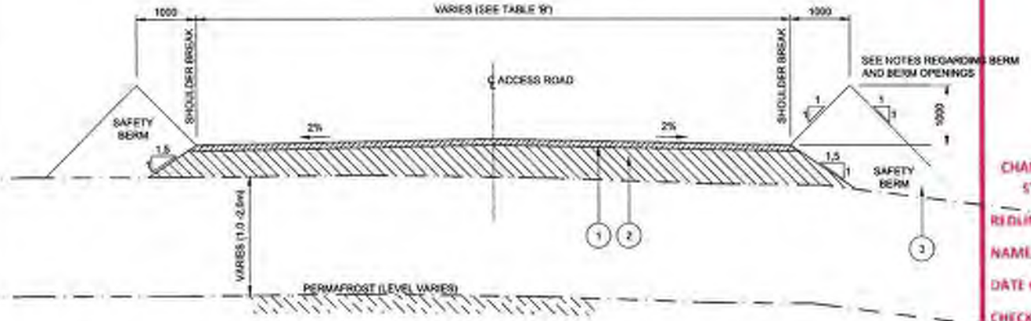
DWG. No. H353004-40000-221-273-0001-0001



MODULE ROAD - TYPICAL CROSS SECTION

SCALE 1:100

TABLE 'A'		
MODULE	ROAD WIDTH	APPLICABLE DRAWING NUMBER
RAIL CAR DUMPER / INDEXER	15.000m (STRAIGHTS)	H353004-40000-223-271-0007-0001 TO 0004
RAIL CAR DUMPER / INDEXER	17.000m (CURVES)	H353004-40000-223-271-0007-0001 TO 0004
STOCKPILE APRON FEEDER	15.000m	H353004-40000-223-271-0007-0001 TO 0004
SCREENING BUILDING	24.000m	H353004-40000-223-271-0007-0001 TO 0004
CRUSHING BUILDING	24.000m	H353004-40000-223-271-0007-0001 TO 0004
STACKER RECLAIMER AND TRIPPER CAR	24.000m	H353004-40000-223-271-0007-0001 TO 0004
STOCKYARD CONVEYOR AND CONVEYOR SECTIONS	24.000m	H353004-40000-223-271-0007-0001 TO 0004



PRIMARY ROAD - TYPICAL CROSS SECTION

SCALE 1:50

TABLE 'B'		
ROAD	ROAD WIDTH	APPLICABLE DRAWING NUMBER
DRIVE STATION ACCESS	20.000m	H353004-40000-221-272-0005-0001
SOUTHERN BYPASS	12.000m	H353004-40000-223-271-0006-0001 TO 0004
DUMPER TUNNEL ACCESS	10.000m	H353004-40000-221-272-0005-0001

MATERIAL AND COMPACTION SPECIFICATION:

TYPE 5 (CRUSHER RUN 32mm MINUS MATERIAL) OR TYPE 3 (CRUSHER RUN 50mm MINUS):
THE MATERIAL MUST BE PLACED IN LIFTS NOT EXCEEDING 200mm AND SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVELY, THE COMPACTION SHOULD ACHIEVE A MINIMUM OF 100 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY TEST METHOD ASTM D698.

TYPE 8 (CRUSHER RUN 150mm MINUS):
THE ROCKFILL MUST BE PLACED IN LIFTS NOT EXCEEDING 500mm. THE PLACEMENT SHALL AVOID SEGREGATIONAND NESTING OF COARSE PARTICLES. IT SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). EACH LIFT MUST BE "PROOF-ROLLED" PRIOR TO PLACING THE SUBSEQUENT LIFT.

TYPE 12 (RUN OF MINE, TYPICALLY 600mm MINUS):
THE ROCKFILL, IF USED, MUST BE PLACED IN LIFTS NOT EXCEEDING 1000mm. THE ROCKFILL SHALL BE COMPACTED BY MINIMUM 5 PASSES OF A MINIMUM 15 TON VIBRATORY ROLLER WITH VIBRATIONS IN THE RANGE OF 1200 TO 1500 vpm AND THE ROLLER SPEED OF ABOUT 2mph (3.2km/h). ALTERNATIVE COMPACTORS SUCH AS HEAVY LOADED RUBBER TIRED HAUL TRUCKS CAN ONLY BE USED AS PER A WRITTEN APPROVAL FROM THE ENGINEER.

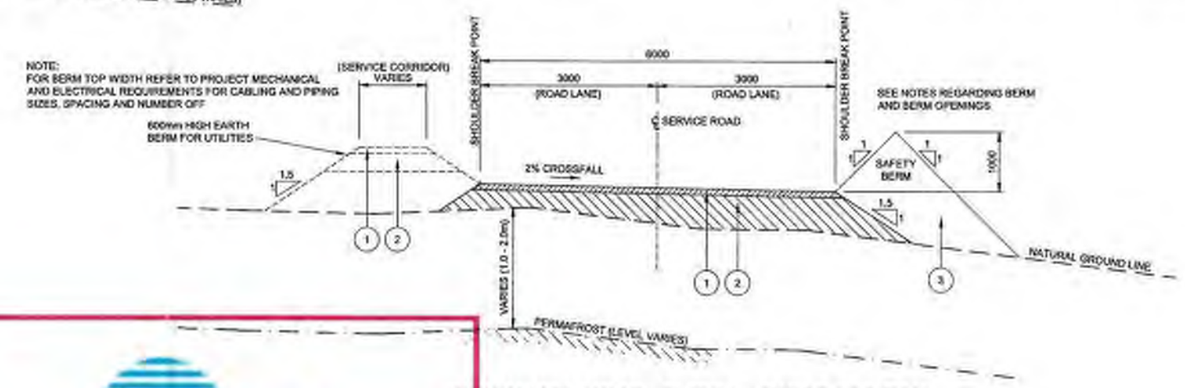
ROAD MATERIAL IDENTIFICATION:

1. 100mm WEARING COURSE / BASE LAYER, TYPE 5 (-32mm) MATERIAL
2. 300mm ROCK SUBBASE LAYER, TYPE 8 (-150mm) MATERIAL WHERE FILL IS LESS THAN 600mm THICK.
   OR,
   TYPE 12 (-600mm) MATERIAL WHERE FILL IS GREATER THAN 600mm
3. GENERAL FILL TYPE 12 (-600mm) MATERIAL

GENERAL NOTES:

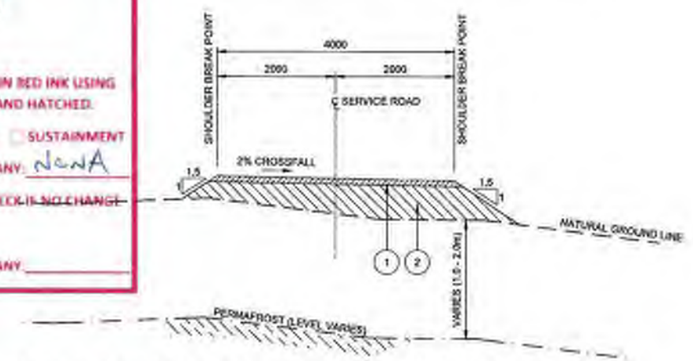
1. SAFETY BARRIERS FOR ALL ROADS SHALL BE PROVIDED BASED ON THE NUNAVUT MINE HEALTH AND SAFETY ACT.
1.1 THIS BARRIER SHALL BE PROVIDED WHERE THE ELEVATION DIFFERENCE IS GREATER THAN 3.0m (DIMENSION 'X'), MEASURED AT THE ROAD SHOULDER BREAK POINT, SEE TYPICAL SECTIONS FOR LOCATION. BERMS TO BE CONSTRUCTED AS PRESCRIBED BY THE ENGINEER ON SITE.
2. 1.0m WIDE OPENINGS ARE TO BE PROVIDED IN THE BERMS AT 25.0m C/C FOR WATER RUN OFF AND SNOW CLEARANCE DURING MAINTENANCE.
3. THICKNESS FOR ROAD FILL MATERIALS ARE MINIMUM, AND ARE TO BE ADJUSTED IN THE FIELD DEPENDING ON SITE AND LOCAL CONDITIONS.

NOTE:
FOR BERM TOP WIDTH REFER TO PROJECT MECHANICAL AND ELECTRICAL REQUIREMENTS FOR CABLING AND PIPING SIZES, SPACING AND NUMBER OFF



SECONDARY ROAD - TYPICAL CROSS SECTION

SCALE 1:50



TERTIARY AND TEMPORARY ROAD - TYPICAL CROSS SECTION

SCALE 1:50

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REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☐ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT
NAME/SIGN: BRADFORD WATKINS COMPANY: NUNA
DATE OF AS-BUILT: 12/20/19 ✓ CHECK IS NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date 2018-04-05
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

FOR CONSTRUCTION

THIS DRAWING HAS BEEN PREPARED BY HATCH LTD. (HATCH) FOR THE EXCLUSIVE USE OF BAFFINLAND IRON MINES CORP. (THE CLIENT) AND IT'S USE IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN HATCH AND THE THE CLIENT. INCLUDING ANY LIMITATIONS ON USES BY OTHERS EXPRESS. THIS DRAWING AND ITS CONTENTS REMAIN THE INTELLECTUAL PROPERTY OF HATCH SUBJECT TO CLIENT'S NON-EXCLUSIVE, IRREVOCABLE, PERPETUAL AND NON-EXCLUSIVE LICENSE TO USE AND REPRODUCE THE DRAWING FOR PURPOSES CONNECTED WITH THE PROJECT, INCLUDING THE CONSTRUCTION, COMPLETION, MAINTENANCE, EXTENSION, REINSTATEMENT AND REPAIR OF THE PROJECT. THIS DRAWING AND THE INFORMATION CONTAINED HEREIN, SHALL BE TREATED AS CONFIDENTIAL FOR ALL OTHER PURPOSES AND SHALL NOT BE MODIFIED WITHOUT THE WRITTEN CONSENT OF HATCH.

No.	DESCRIPTION	BY	CHK'D	DATE
0	APPROVED FOR CONSTRUCTION	BIB	FH	20/03/2018

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	I BARNARD	NR	
DESIGNER	I BARNARD	NR	
CHECKER	F HUGO		2018-03-20
DESIGN COORD.	R GOOSEN		2018-03-20
RESP. ENG.	R HAUM		2018-04-05
LEAD DISC. ENG.	A GROBBELAAR		2018-03-20
AREA LEAD			2018-04-05
ENG. MANAGER	D STANGER		
AREA MANAGER			

DRAWING APPROVAL STATUS: Approved for Construction

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE, PRIMARY, SECONDARY ROADS
TYPICAL CROSS SECTIONS

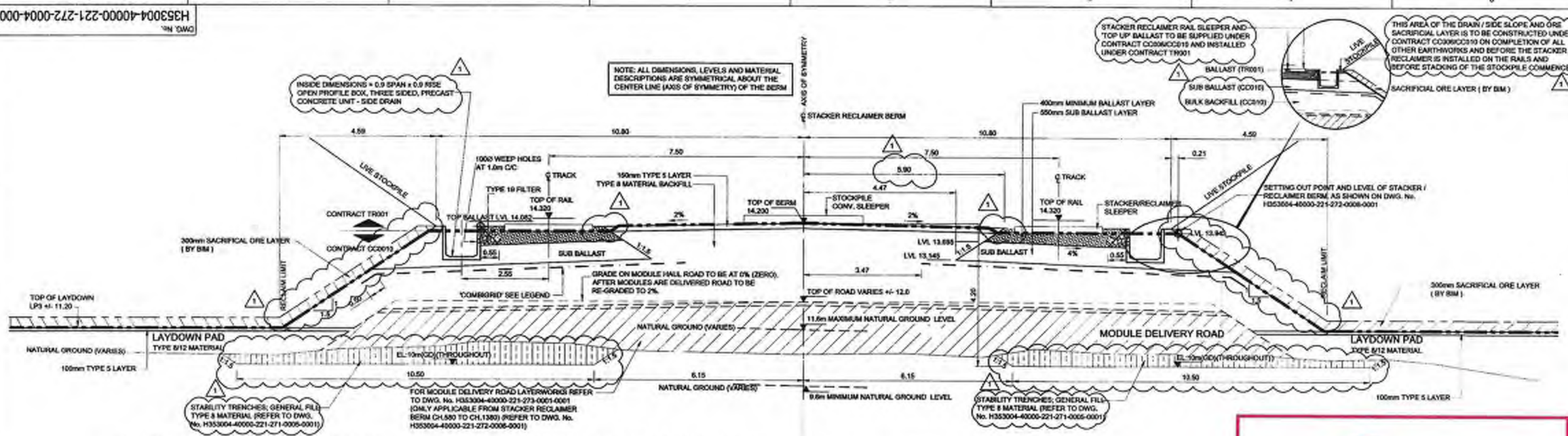
SCALE	DWG. No.	REV
1:100 OR AS NOTED	H353004-40000-221-273-0001-0001	0

SUSTENANCE STAMPS

SHEET SIZE: D

DRAWING No. | DRAWING TITLE | REFERENCE DRAWINGS | REG. PROFESSIONAL

DWG. No. H353004-40000-221-272-0004-0001



BALLAST AND SUB BALLAST MATERIALS SPECIFICATION:

CRUSHED GRAVEL BALLAST:

GRADATIONS TO BE WITHIN LIMITS SPECIFIED. APPROVAL TO BE PROVIDED BY GEOTECHNICAL ENGINEER FOR ALL GRADATIONS.

SIEVE SIZE	PERCENT PASSING
45.3mm (1 - 3/4")	100
32.0mm (1 - 1/4")	70 - 95
25.4mm (1")	50 - 80
19.0mm (3/4")	30 - 60
12.7mm (1/2")	10 - 30
4.75mm (No. 4)	0 - 3
75 micron (No. 200)	0 - 1

PERCENTAGE OF CRUSHED PARTICLES IN SIZE RANGE SHALL NOT BE LESS THAN 70% BY WEIGHT OF ALL PARTICLES IN THAT SIZE RANGE. PARTICLES HAVING ONE OR MORE FRACTURED FACES WILL BE USED IN CALCULATING THIS PERCENTAGE.

MATERIAL IN SAMPLE FINER THAN No. 4 (4.76 MICRON) SIEVE WILL NOT BE CONSIDERED IN DETERMINING THE PERCENTAGE OF FRACTURED FACES.

GRADING OF CRUSHED GRAVEL BALLAST SHALL BE DETERMINED BY ASTM C316, LATEST EDITION.

AMOUNT OF MATERIAL FINER THAN No. 200 (74 MICRON) SHALL BE DETERMINED BY ASTM C117, LATEST EDITION.

SUB BALLAST:

COMPACT TO 98% OF STANDARD PROCTOR MAXIMUM DENSITY.

MATERIAL TO BE CRUSHED OR SCREENED PIT RUN GRAVEL, CONTAINING NO MORE THAN THREE PERCENT (3%) ORGANICS BY WEIGHT AS DETERMINED BY ASTM C123.

MATERIAL GREATER THAN 5mm TO CONTAIN A MINIMUM OF FIFTY PERCENT (50%) BY WEIGHT FRACTURED MATERIAL (TWO (2) FRACTURED FACES)

SIEVE SIZE	PERCENT PASSING
75mm (3")	100
25mm (1")	60 - 90
4.75mm (No. 4)	35 - 60
425 micron (No. 40)	10 - 40
75 micron (No. 200)	0 - 5

NOTES ON OPERATION OF STACKING AND RECLAIMING:

THE FOLLOWING IS RECOMMENDED TO BE CONSIDERED FOR THE OPERATION OF STACKING AND RECLAIMING:

- INSPECT THE BERM EVERY SEASON DURING EVERY THAW, PARTICULARLY IN THE FIRST TWO SEASONS, FOR SETTLEMENT AND SIDE SLOPE SLUMPING.
- MAINTAIN SYMMETRY OF THE TWO LUMP ORE STOCKPILES TO THE BERM DURING OPERATION, TO MINIMIZE THE POTENTIAL DIFFERENTIAL SETTLEMENT IN THE CROSS SECTIONAL PLANE.
- TOP OF STABILITY LAYER TO BE CLEANED BEFORE FRESHET AND RAINY SEASON, ANY PONDING WATER ON THE BERM TO BE PUMPED OUT.
- SNOW TO BE REMOVED TO AVOID ACCUMULATION.
- SIDE DRAIN TO BE KEPT CLEAN OF IRON ORE AND OTHER DEBRIS, PARTICULARLY BEFORE FRESHET AND RAINY SEASON.

NOTES ON BERM STABILITY TRENCH:

- OVER EXCAVATION TO BE AT ELEVATION OF 10m GD AND BACKFILLED WITH TYPE 8 MATERIAL PRIOR TO CONSTRUCTION OF LP3 LAYDOWN AREA.

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.

NOTES ON LAYERWORKS:

1. THE PROPERTIES OF ALL FILL MATERIALS TO SATISFY THE REQUIREMENTS IN THE HATCH SPECIFICATION H353004-00000-280-078-0002 UNLESS OTHERWISE NOTED.
2. ALL MATERIALS TO BE PLACED AND COMPACTED IN STRICT ACCORDANCE WITH HATCH SPECIFICATION H353004-00000-221-078-0001 AND THE GEOTECHNICAL RECOMMENDATIONS IN DOCUMENT H353004-00000-229-230-0004.
3. EXISTING GROUND BENEATH THE BERM TO BE SHAPED TO ENSURE A MINIMUM DEPTH OF 2.85m OF ROCKFILL IS ACHIEVED PLUS 1.5m OF STABILITY TRENCH AS INDICATED ON THE SECTION.
4. SUB BALLAST LAYER = 0.55m,
5. BALLAST LAYER = 0.40m MINIMUM,
6. ROADWAY = MINIMUM 0.40m.

CONSTRUCTION SEQUENCE:

1. FOUNDATION PREPARATION TO BE DONE IN ACCORDANCE WITH HATCH SPECIFICATIONS H353004-00000-221-028-0001 AND H353004-00000-280-078-0002.
2. CONSTRUCT STABILITY TRENCHES,
3. CONSTRUCT MODULE ROAD WITH TYPE 8 AND TYPE 5 MATERIAL,
4. CONSTRUCT LAYDOWN PADS,
5. PLACE AND COMPACT TYPE 8 FILL UP TO BOTTOM OF SUB BALLAST LEVEL, 4% CROSS SLOPE,
6. INSTALL 'COMBIGRID' TYPE 40/40 Q1 151 GR/G3 OR SIMILAR APPROVED BELOW SUB BALLAST,
7. PLACE AND COMPACT SUB BALLAST,
8. PLACE AND COMPACT 0.55m INFILL BETWEEN SUB BALLAST LAYERS AT BERM CENTRE,
9. PLACE BALLAST,
10. PLACE AND COMPACT BERM MATERIAL IN CENTRE TO LEVEL 13.65 AT CENTRELINE,
11. INSTALL RAIL, TIES,
12. ADD FINAL BALLAST,
13. COMPLETE TOP OF BERM, 2% CROSS SLOPE.

LEGEND:

— — — - 'COMBIGRID' TYPE 40/40 Q1 151 GR/G3 OR SIMILAR APPROVED

CONTRACT TR001

1 CONTRACT CC006/CC010 - BATTERY LIMIT
GD - GEODETIC DATUM

NUNA MINE EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS. DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ✓ CONSTRUCTION COMMISSIONING SUSTAINMENT

NAME/SIGN: BARRON WILKINSON COMPANY: NUNA

DATE OF AS-BUILT: 10/20/19 ✓ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

PERMIT TO PRACTICE HATCH LTD. Signature Date PERMIT NUMBER: P 512 The Association of Professional Engineers, Geologists and Geophysicists of (NWT/NU)

REFERENCE DRAWINGS	
DRAWING No.	DRAWING TITLE
H353004-40000-221-271-0005-0001	LAYDOWN AREA LP3 - PLAN AND PROFILES
H353004-00000-280-078-0002	QUARRIED FILL MATERIALS REQUIREMENTS
H353004-00000-221-078-0001	PLACEMENT OF FILL
H353004-40000-221-272-0008-0001	STOCKPILE 2 STACKER RECLAIMER BERM - SECTIONS
4500001466-807-0001-001	KRUPP / KLOHN-ZIPPEN BERGER - BALLAST AND SUB BALLAST DETAILS
H353004-00000-229-230-0004	GEOTECHNICAL RECOMMENDATIONS FOR STACKER RECLAIMER BERM
H353004-40000-223-271-0007-0004	MODULE DELIVERY ROAD - PLAN AND PROFILE SHEET 4 OF 4
H353004-40000-223-271-0007-0003	MODULE DELIVERY ROAD - PLAN AND PROFILE SHEET 3 OF 4
H353004-40000-223-271-0007-0002	MODULE DELIVERY ROAD - PLAN AND PROFILE SHEET 2 OF 4
H353004-40000-223-271-0007-0001	MODULE DELIVERY ROAD - PLAN AND PROFILE SHEET 1 OF 4
H353004-40000-321-273-0001-0001	MODULE, PRIMARY AND SECONDARY ROADS - TYPICAL CROSS SECTIONS

REG. PROFESSIONAL

FOR CONSTRUCTION

THIS DRAWING WAS PREPARED BY HATCH LTD. FROM FOR THE EXCLUSIVE USE OF BAFFINLAND IRON MINES LP (CLIENT) AND ITS USE IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BY WHICH IT WAS MADE THAT THE CLIENT, INCLUDING ANY LIMITATION ON LIABILITY CONTAINED THEREIN, THE DRAWING AND ITS CONTENTS REMAIN THE INTELLECTUAL PROPERTY OF HATCH (SUBJECT TO CLIENT'S RIGHTS TO USE, REPRODUCE, PERFORM, AND HOW-CLAIMS LICENSE TO USE AND REPRODUCE THE DRAWING FOR PURPOSES CONNECTED WITH THE PROJECT, INCLUDING THE CONSTRUCTION, COMPLETION, MAINTENANCE, EXTENSION, REINSTATEMENT AND REPAIR OF THE PROJECT. THIS DRAWING, AND THE INFORMATION CONTAINED HEREIN, SHALL BE TREATED AS CONFIDENTIAL FOR ALL OTHER PURPOSES AND SHALL NOT BE LOANED WITHOUT THE WRITTEN CONSENT OF HATCH.

No.	DESCRIPTION	BY	CHK'D	DATE
1	STABILITY TRENCH ADDED AND GEOMETRY UPDATED	JM	FH	25/07/2019
0	APPROVED FOR CONSTRUCTION	BIB	FH	25/06/2018

REVISIONS

DRAFTSPERSON	I BARNARD	NR	07/06/2018
DESIGNER	I BARNARD	NR	07/06/2018
CHECKER	F HUGO		2019-07-25
DESIGN COORD.	R GOOSEN		2019-07-26
RESP. ENG.	R HALIM		2019-07-31
LEAD DISC. ENG.	A GROBBELAAR		2019/07/26
AREA LEAD	V LAVRIC		2019-07-26
ENG. MANAGER	R GOOSEN		2019-07-31
AREA MANAGER	T ATIBA		2019-07-31

DRAWING APPROVAL STATUS: Approved for Construction

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
STACKER RECLAIMER BERM
TYPICAL SECTION

SCALE NTS OR AS NOTED

DWG. No. H353004-40000-221-272-0004-0001

REV 1

SHEET SIZE: D

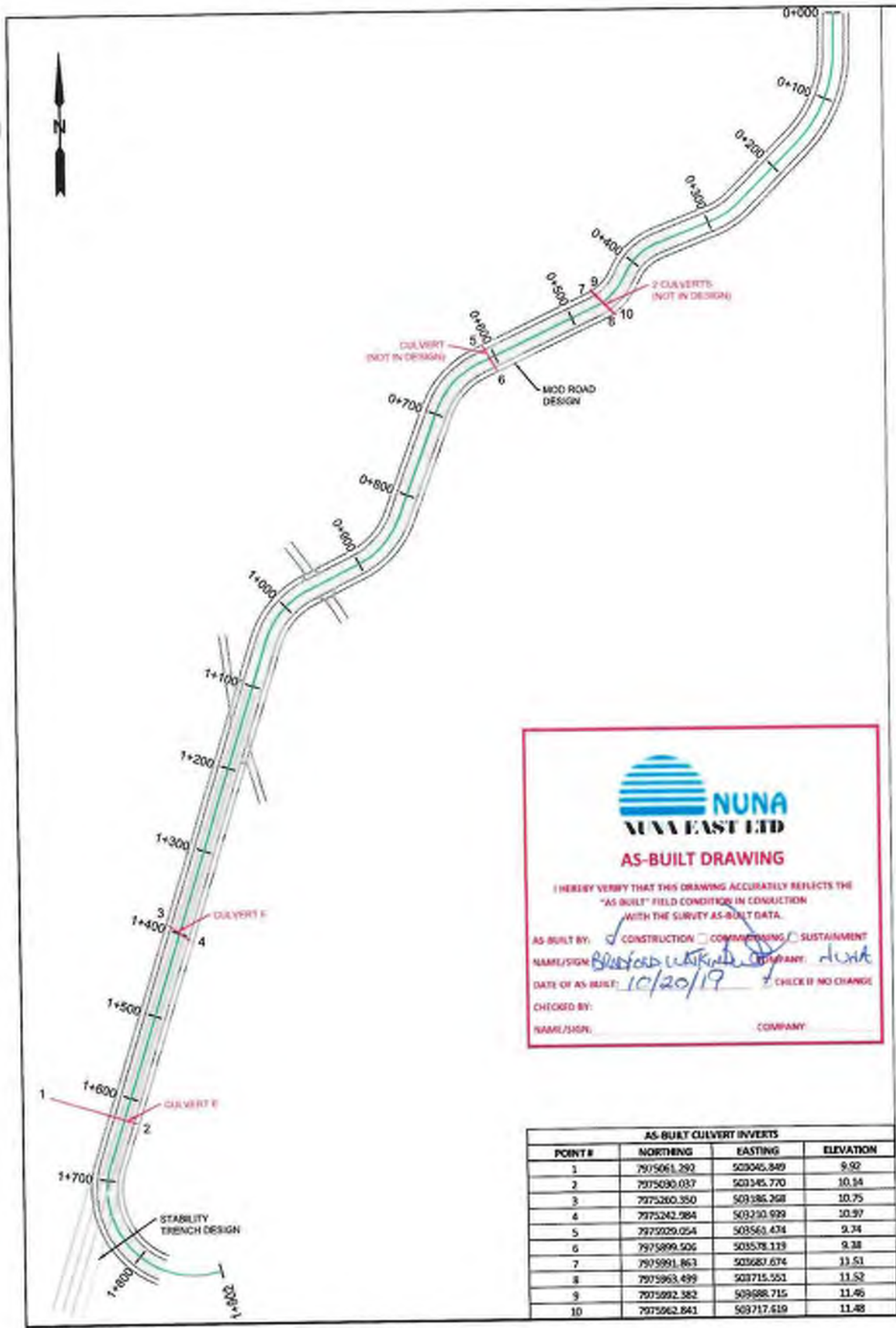
$USERNAME $TIMES $DATE

NUNA

NUNA EAST LTD

(Section 4)

Survey Data



NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS-BUILT BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: Blanford Watkins COMPANY: NUNA

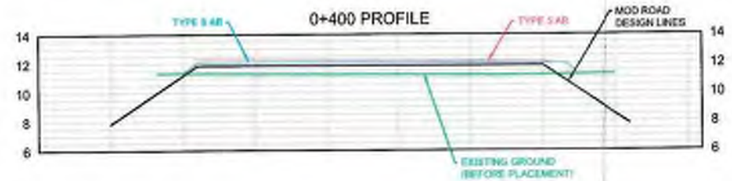
DATE OF AS-BUILT: 10/20/19 ☐ CHECK IF NO CHANGE

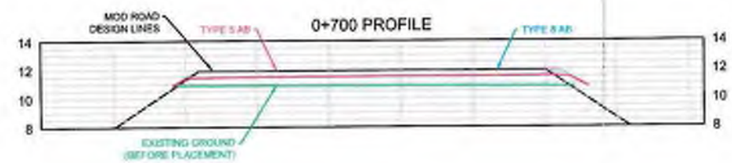
CHECKED BY:

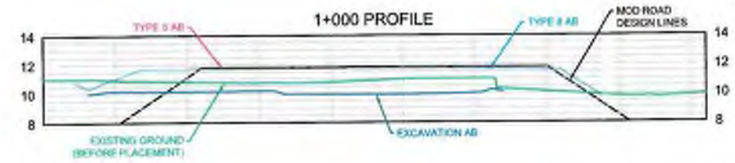
NAME/SIGN: COMPANY:

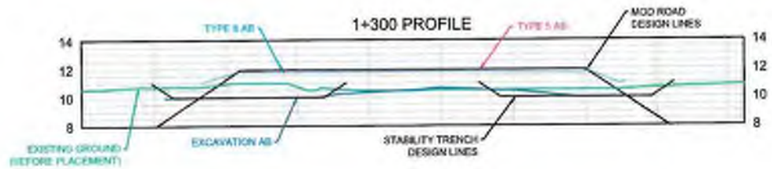
AS-BUILT CULVERT INVERTS

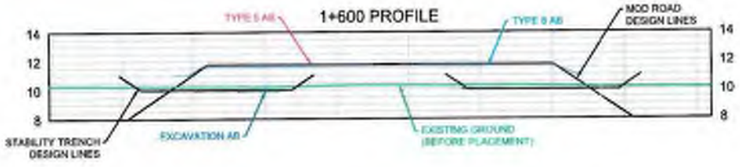
POINT #	NORTHING	EASTING	ELEVATION
1	7975061.292	503045.849	9.92
2	7975090.037	503145.770	10.14
3	7975260.350	503186.368	10.75
4	7975242.984	503210.939	10.97
5	7975029.054	503561.474	9.74
6	7975899.506	503578.119	9.38
7	7975991.863	503687.674	11.51
8	7975963.499	503715.551	11.52
9	7975992.382	503688.715	11.46
10	7975962.841	503717.619	11.48





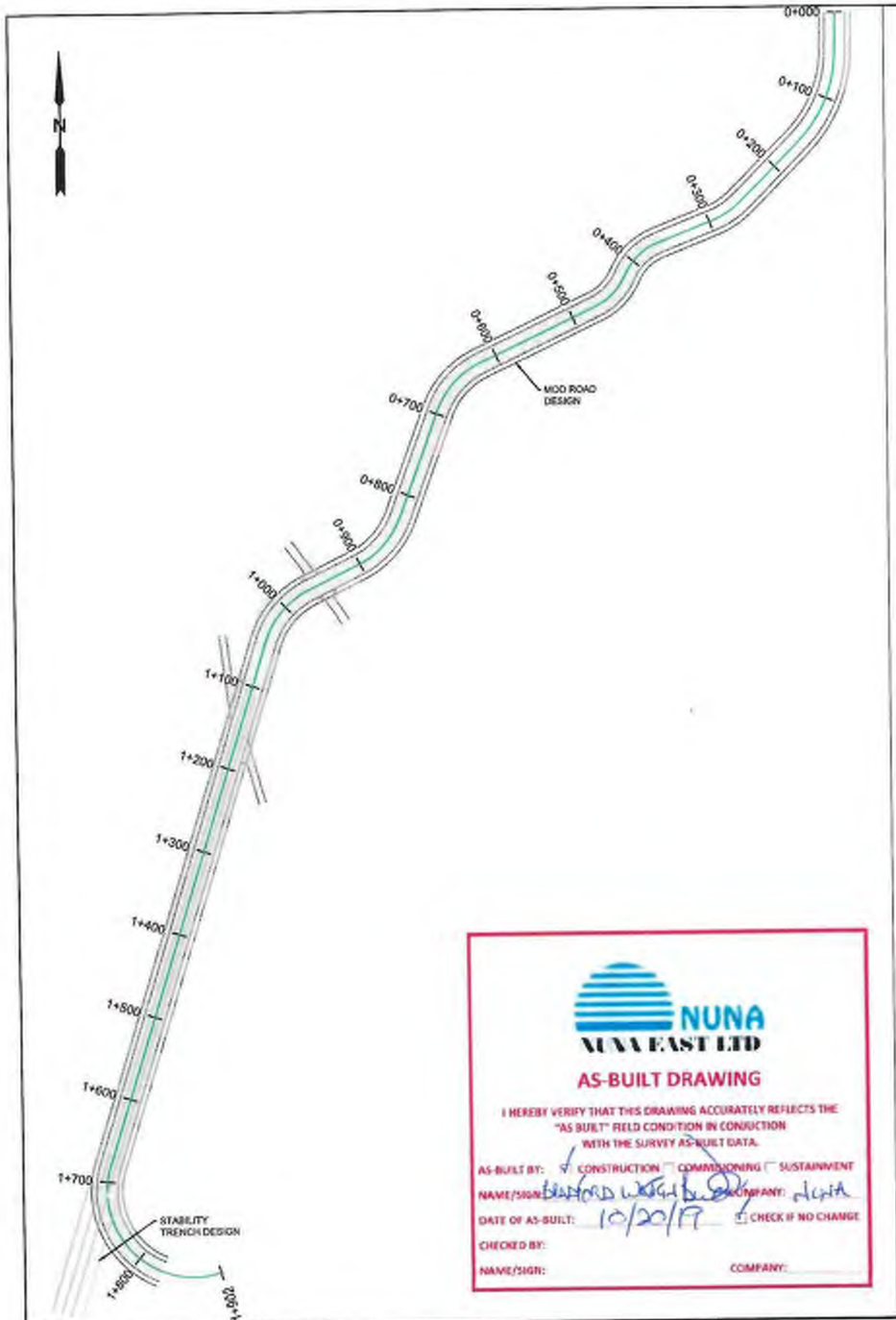






LEGEND:
MOD ROAD DESIGN
STABILITY TRENCH DESIGN
AS-BUILT AREA

OWNER: BAFFINLAND IRON MINES LP	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	MOD ROAD
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: Sept. 14, 2019
			DRAWING TITLE: AS-BUILT SURVEY SURVEYED UP TO AUGUST 25, 2019
			DRAWING NAME (YYMMDD): 190914 MOD ROAD AS-BUILT.dwg



NUNA

NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

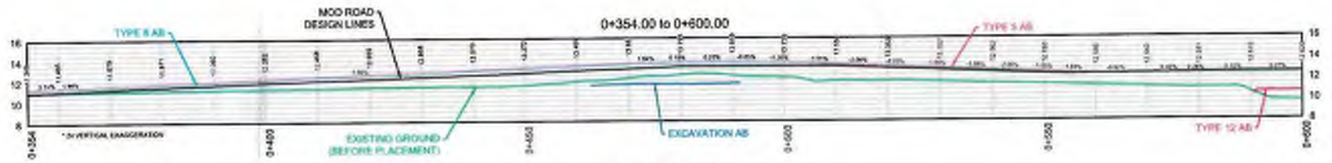
AS-BUILT BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

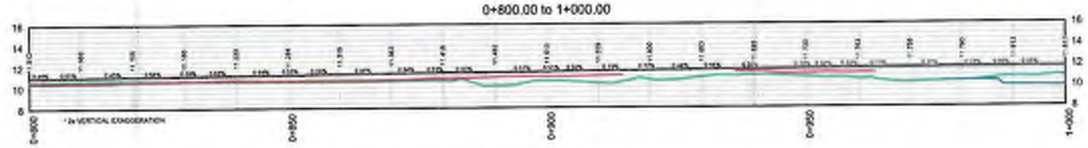
NAME/SIGN: BRADFORD WRIGHT COMPANY: NUNA

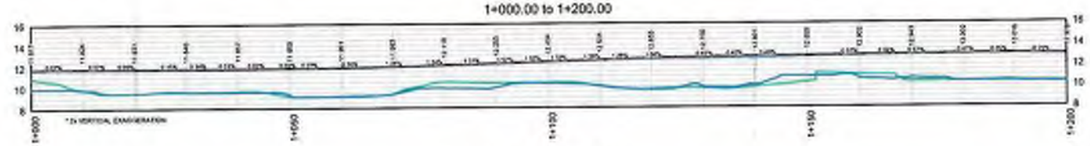
DATE OF AS-BUILT: 10/20/19 ☐ CHECK IF NO CHANGE

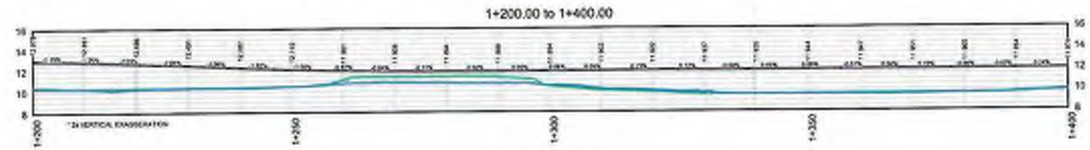
CHECKED BY:

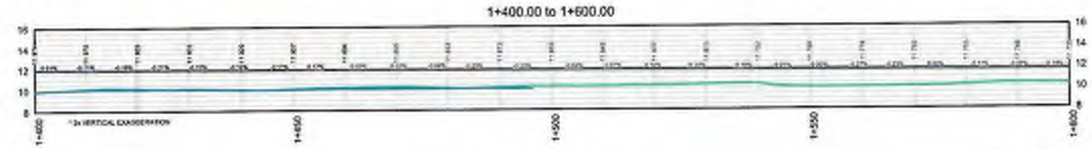
NAME/SIGN: COMPANY:

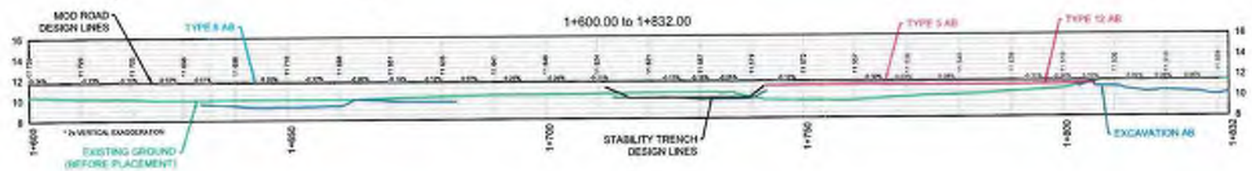








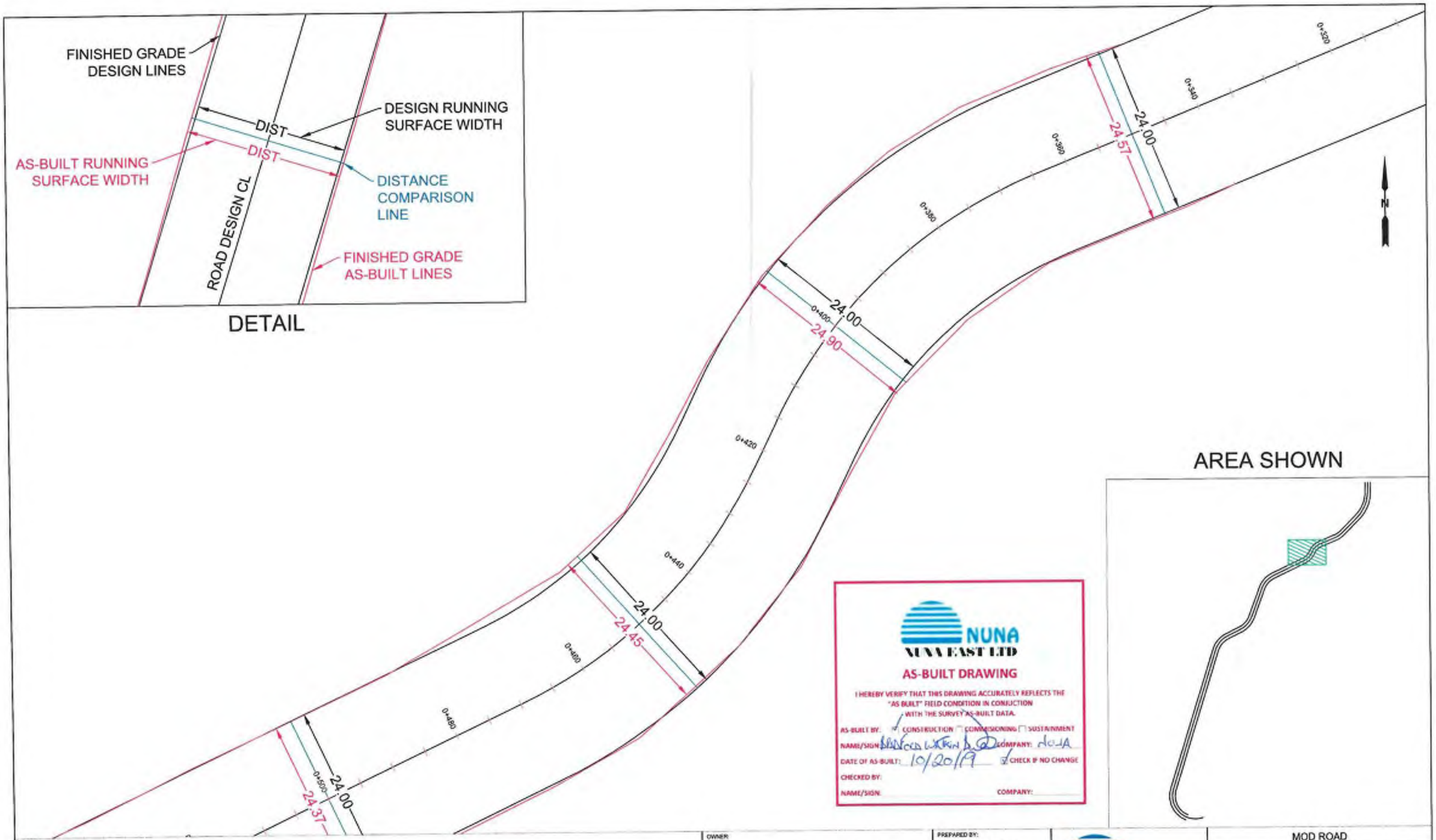




LEGEND:
- MOD ROAD DESIGN
- STABILITY TRENCH DESIGN
- AS-BUILT AREA

OWNER: BAFFINLAND IRON MINES LP	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	MOD ROAD
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: Sept. 14, 2019
		DRAWING TITLE: CENTERLINE PROFILE SURVEYED UP TO AUGUST 25, 2019	DRAWING NAME (YYMMDD): 190914 MOD ROAD CL PROFILE.dwg

DETAIL



AREA SHOWN

NUNA

NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS-BUILT BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: [signature] COMPANY: NUNA

DATE OF AS-BUILT: 10/20/19 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

LEGEND:
FINISHED GRADE DESIGN LINES
FINISHED GRADE AS-BUILT LINES

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

SCALE: 1:500

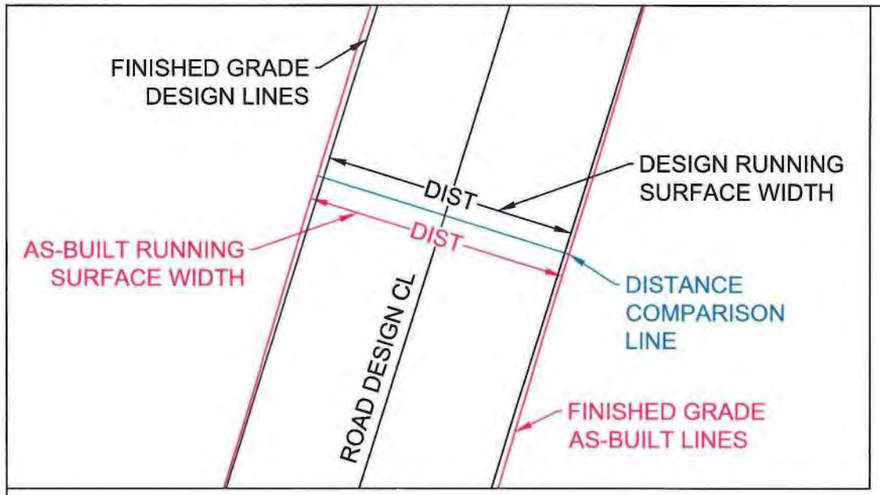
DATE: Sept. 14, 2019

NUNA

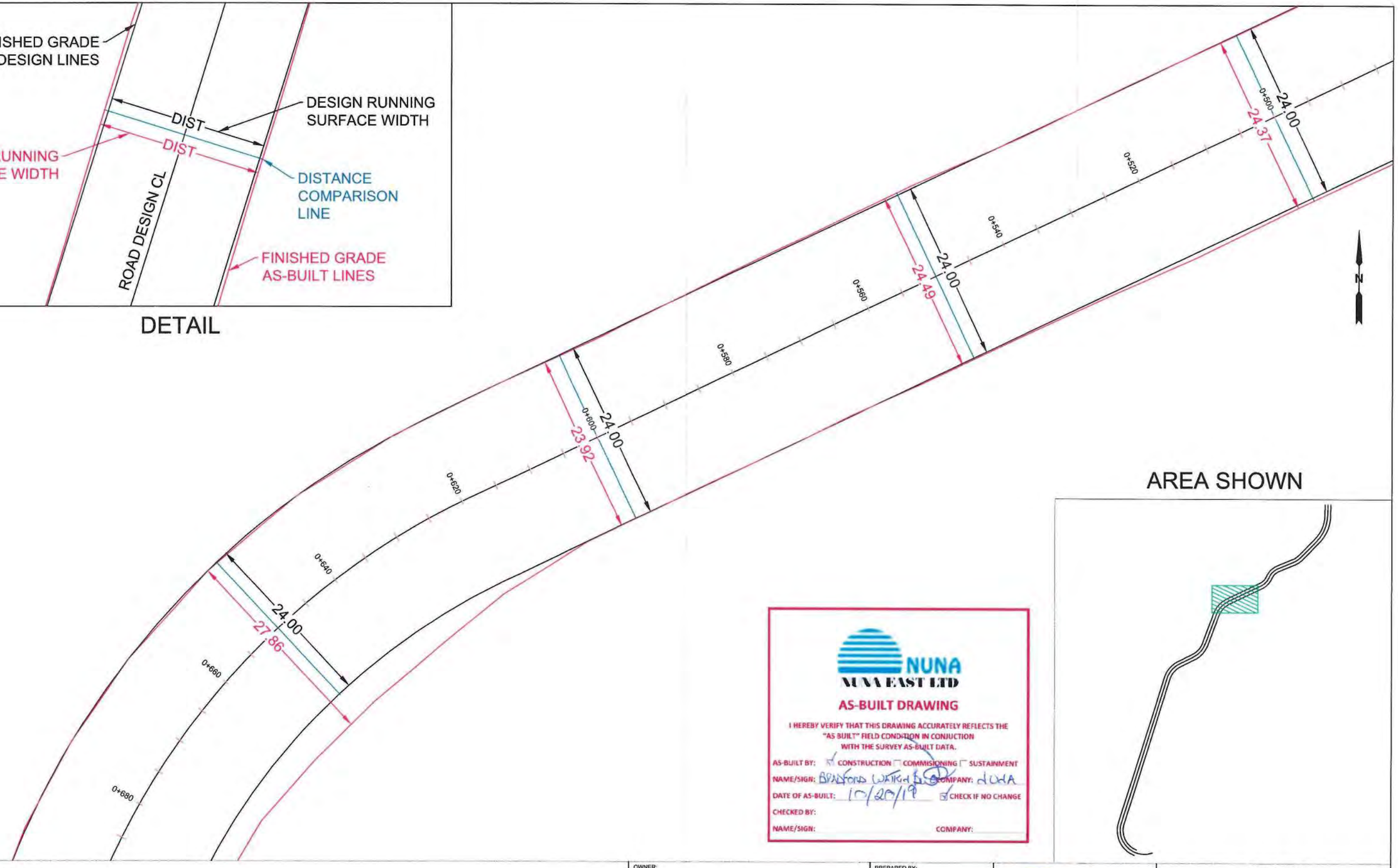
MOD ROAD

DRAWING TITLE:
FINISHED GRADE RUNNING SURFACE
SURVEYED UP TO AUGUST 25, 2019

DRAWING NAME (YYMMDD): 190914 MOD ROAD FG AS-BUILT.dwg



DETAIL



AREA SHOWN

NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS-BUILT BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: BRADFORD WATTS COMPANY: NUNA

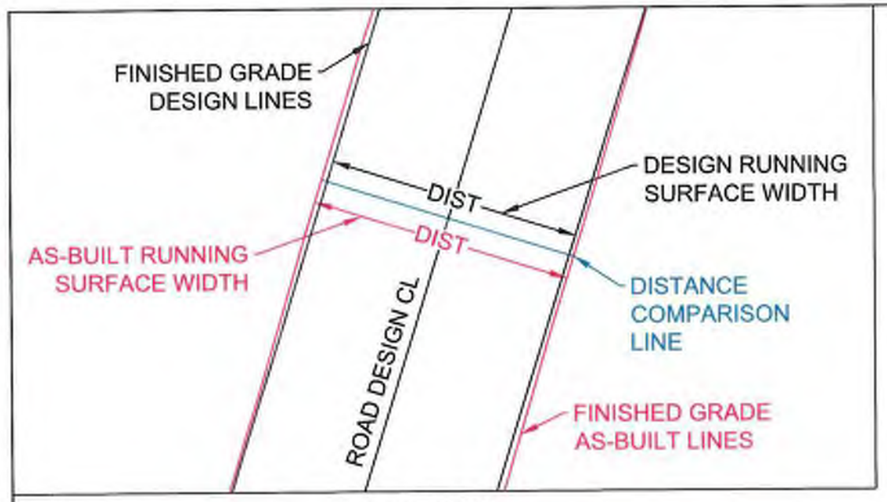
DATE OF AS-BUILT: 10/20/19 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

LEGEND:
FINISHED GRADE DESIGN LINES
FINISHED GRADE AS-BUILT LINES

OWNER: BAFFINLAND IRON MINES LP	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		MOD ROAD
PROJECT: MARY RIVER EXPANSION PROJECT				DRAWING TITLE: FINISHED GRADE RUNNING SURFACE SURVEYED UP TO AUGUST 25, 2019
	DRAWN BY: M. GOREHAM	SCALE: 1:500	DATE: Sept. 14, 2019	DRAWING NAME (YYMMDD): 190914 MOD ROAD FG AS-BUILT.dwg



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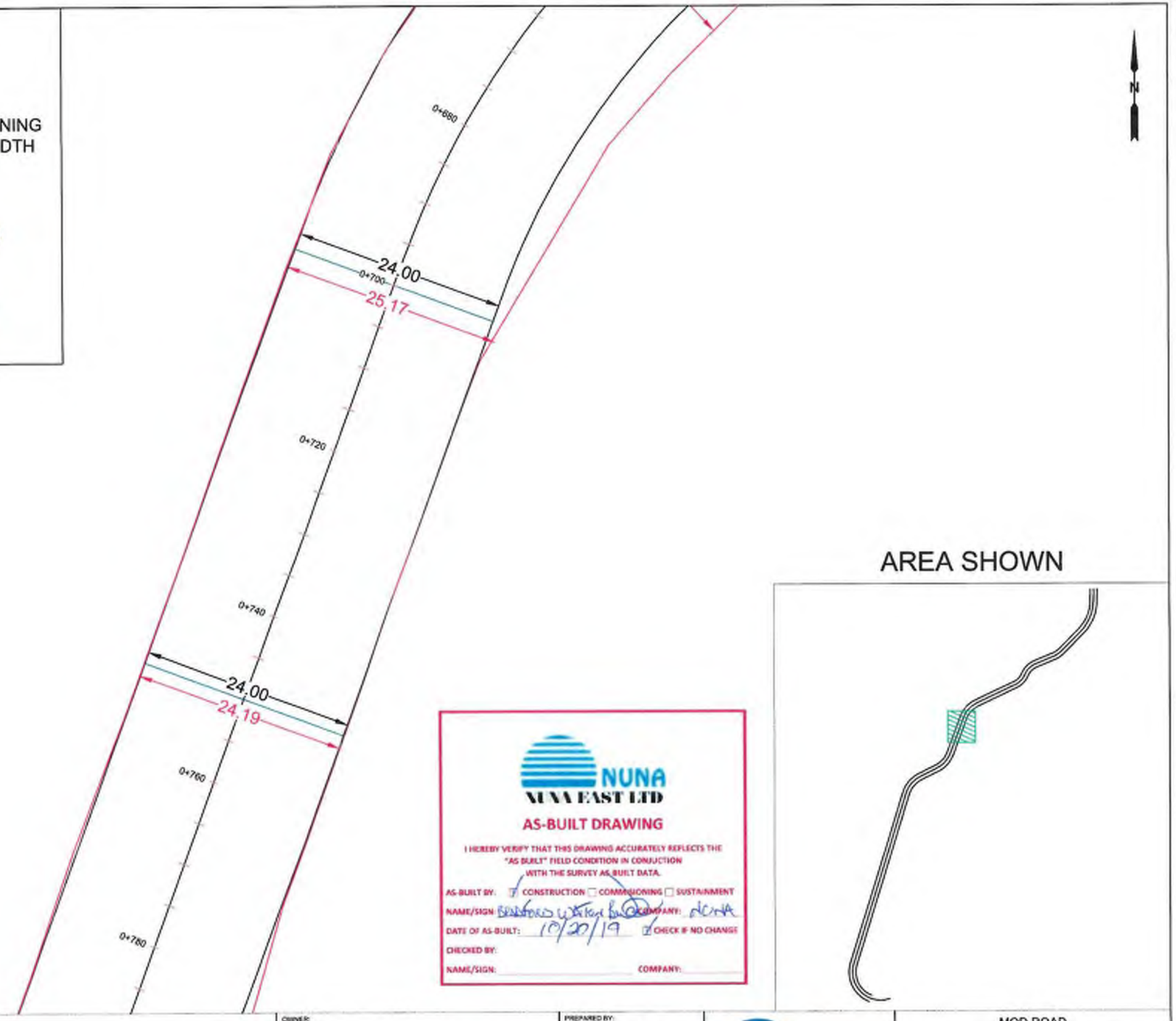


AREA SHOWN

NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS BUILT DATA.

AS-BUILT BY: ☒ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: [signature] COMPANY: NUNA

DATE OF AS-BUILT: 10/20/19 ☒ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: _____ COMPANY: _____

LEGEND:
FINISHED GRADE DESIGN LINES
FINISHED GRADE AS-BUILT LINES

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY: NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

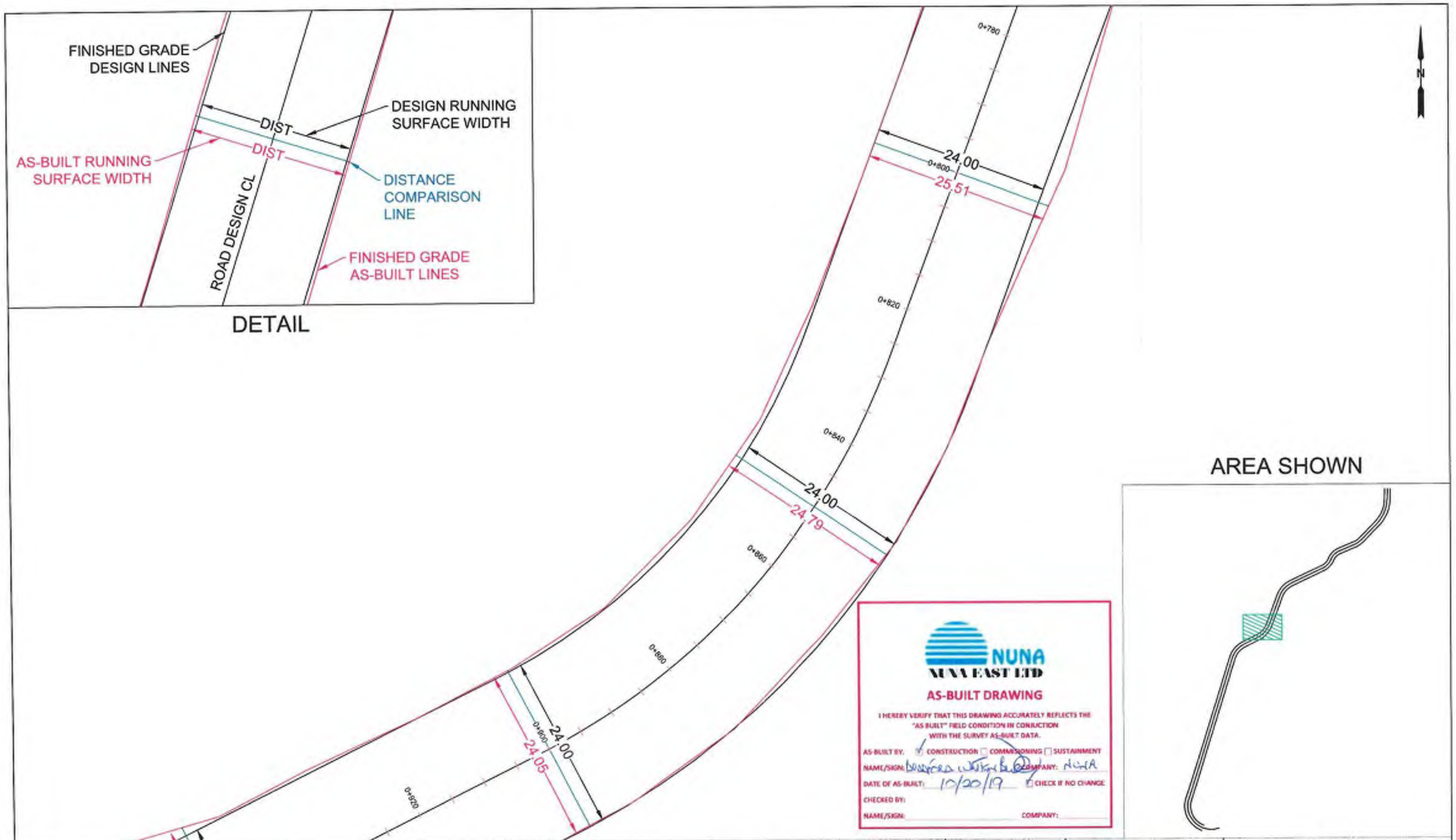
SCALE: 1:500

DATE: Sept. 14, 2019

MOD ROAD

DRAWING TITLE: FINISHED GRADE RUNNING SURFACE SURVEYED UP TO AUGUST 25, 2019

DRAWING NAME (YYMMDD): 190914 MOD ROAD FG AS-BUILT.dwg



NUNA
NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS-BUILT BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: [illegible] COMPANY: NUNA

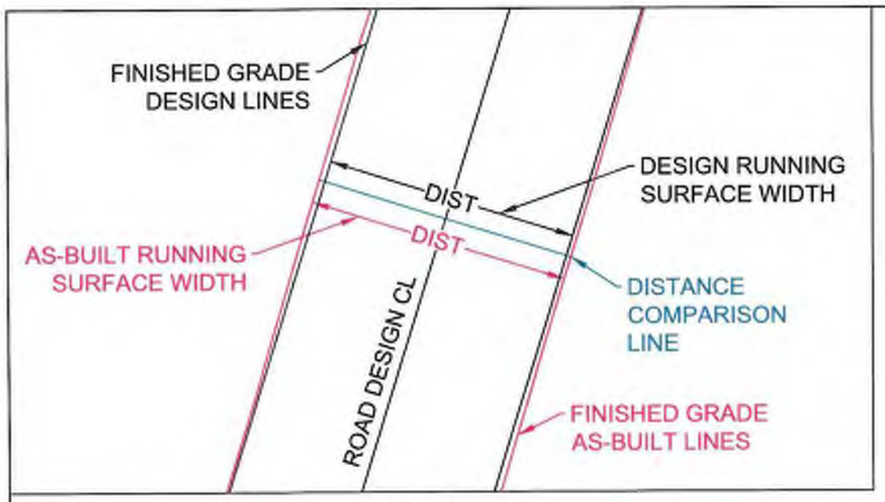
DATE OF AS-BUILT: 10/20/19 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

LEGEND:
FINISHED GRADE DESIGN LINES
FINISHED GRADE AS-BUILT LINES

OWNER: BAFFINLAND IRON MINES LP	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		MOD ROAD
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: 1:500	DATE: Sept. 14, 2019	DRAWING TITLE: FINISHED GRADE RUNNING SURFACE SURVEYED UP TO AUGUST 25, 2019
				DRAWING NAME (YYMMDD): 190914 MOD ROAD FG AS-BUILT.dwg



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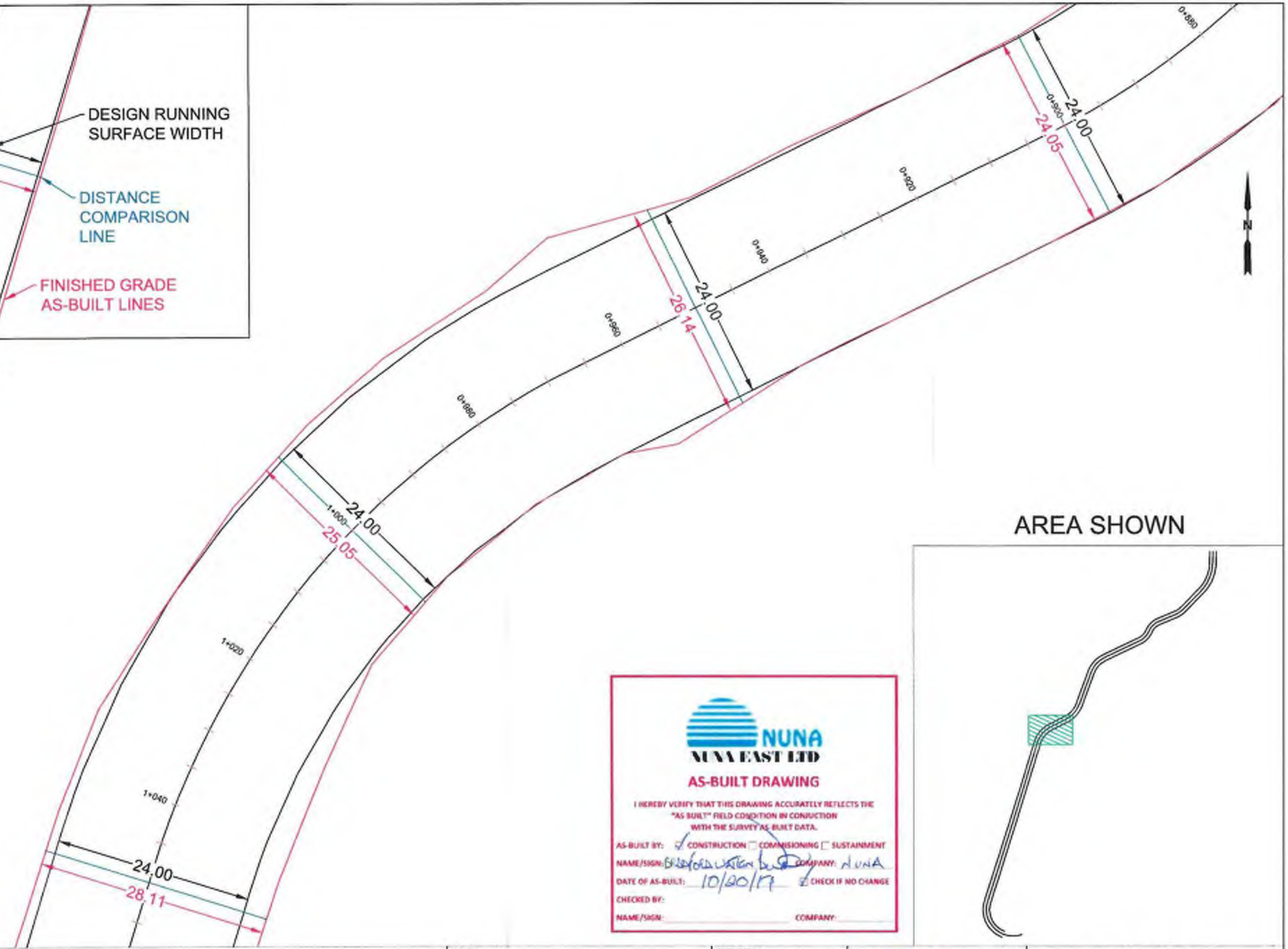


AREA SHOWN

NUNA

NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS-BUILT BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: Bradford Watson COMPANY: NUNA

DATE OF AS-BUILT: 10/20/19 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

LEGEND:
FINISHED GRADE DESIGN LINES
FINISHED GRADE AS-BUILT LINES

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0

DRAWN BY: M. GOREHAM

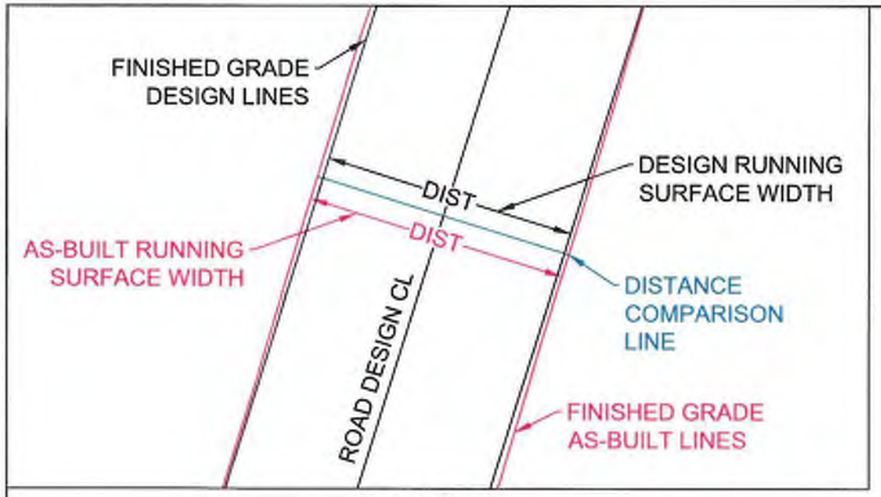
SCALE: 1:500

DATE: Sept. 14, 2019

MOD ROAD

DRAWING TITLE: FINISHED GRADE RUNNING SURFACE SURVEYED UP TO AUGUST 25, 2019

DRAWING NAME (YYMMDD): 190914 MOD ROAD FG AS-BUILT.dwg



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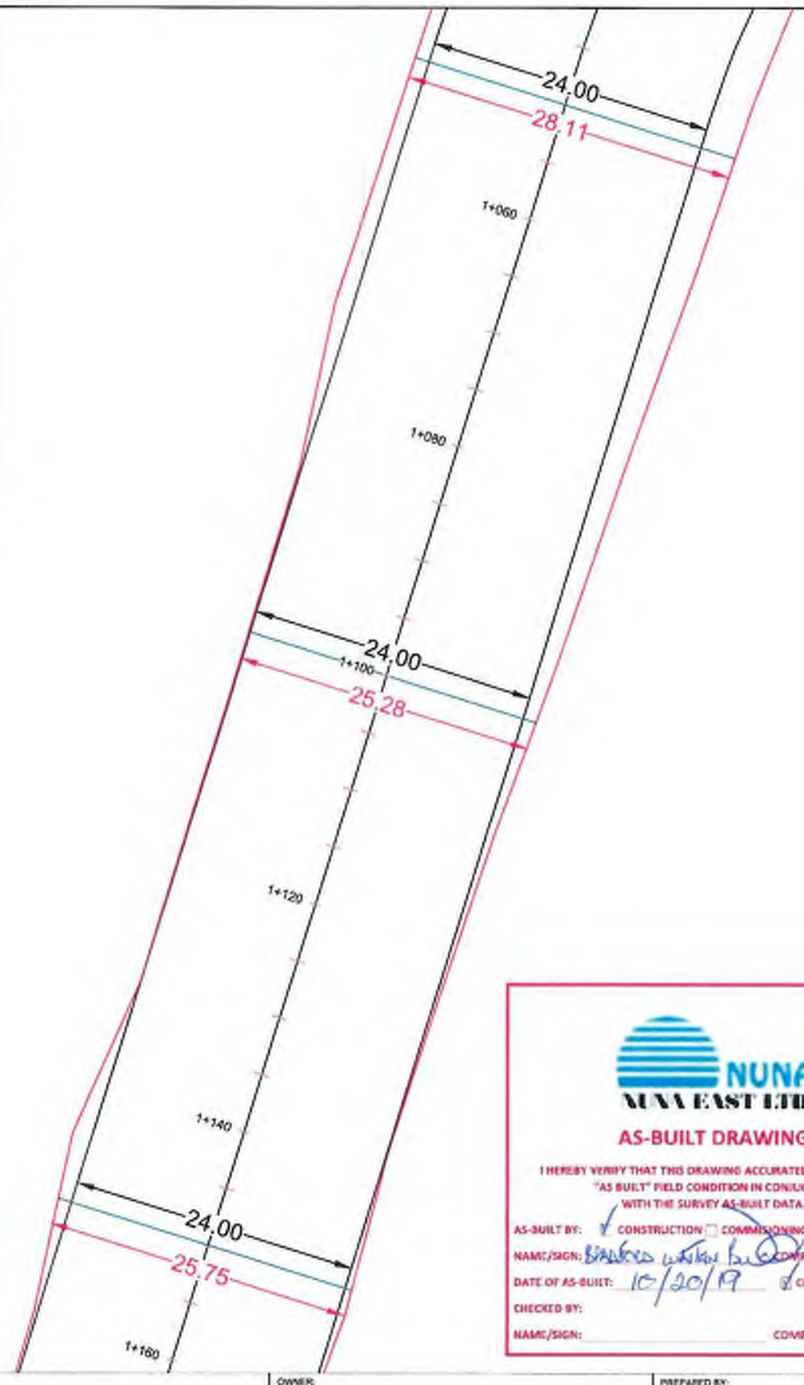

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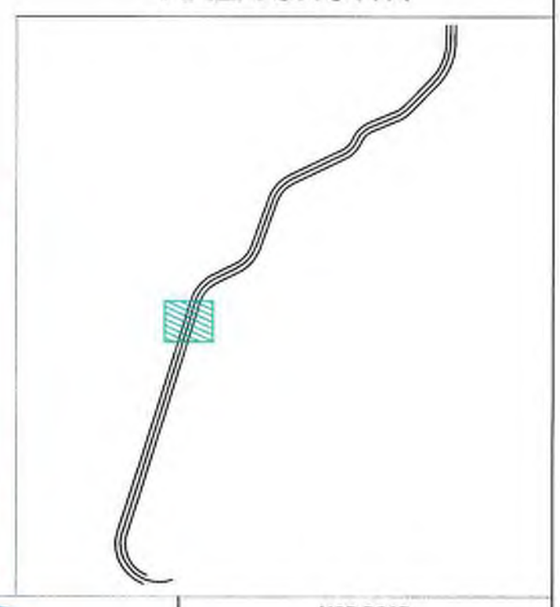


NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS-BUILT BY: ✓ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: [signature] COMPANY: NUNA

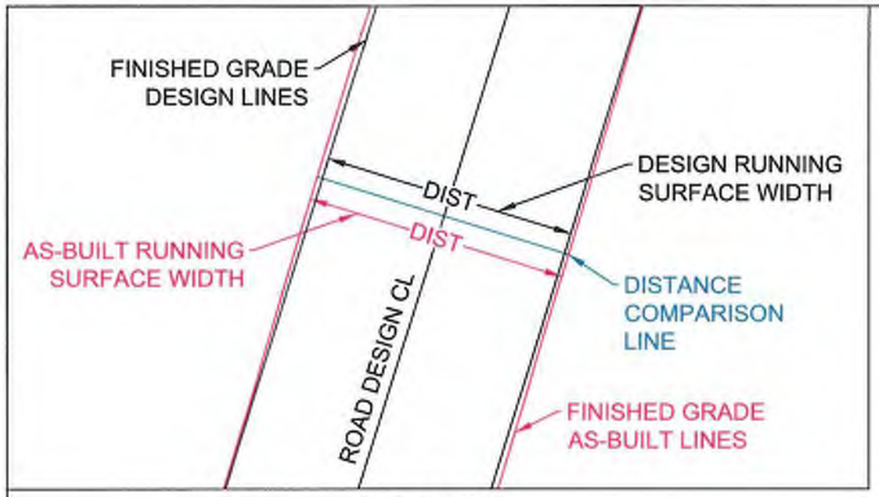
DATE OF AS-BUILT: 10/20/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

LEGEND:
FINISHED GRADE DESIGN LINES
FINISHED GRADE AS-BUILT LINES

OWNER: BAFFINLAND IRON MINES LP	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0			MOD ROAD
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: 1:500	DATE: Sept. 14, 2019	DRAWING TITLE: FINISHED GRADE RUNNING SURFACE SURVEYED UP TO AUGUST 25, 2019
				DRAWING NAME (YYMMDD): 190914 MOD ROAD FG AS-BUILT.dwg



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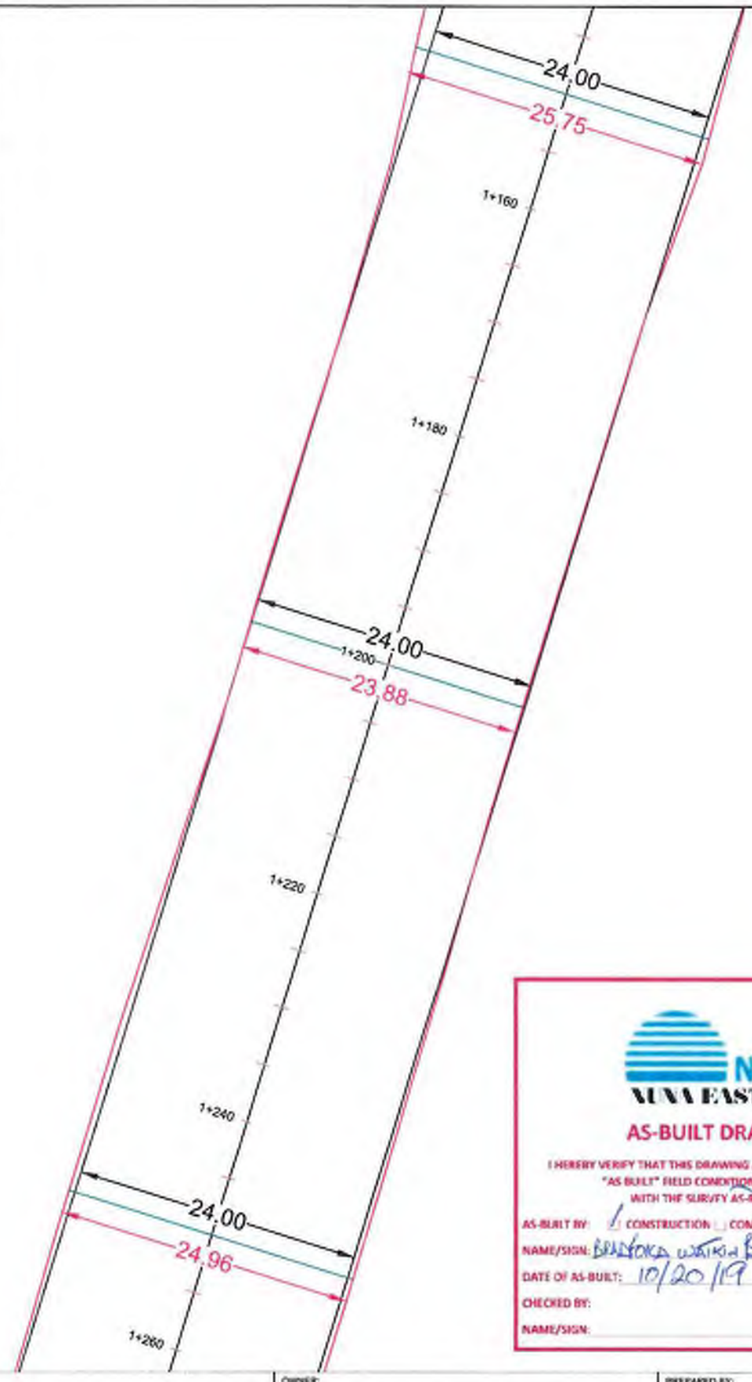

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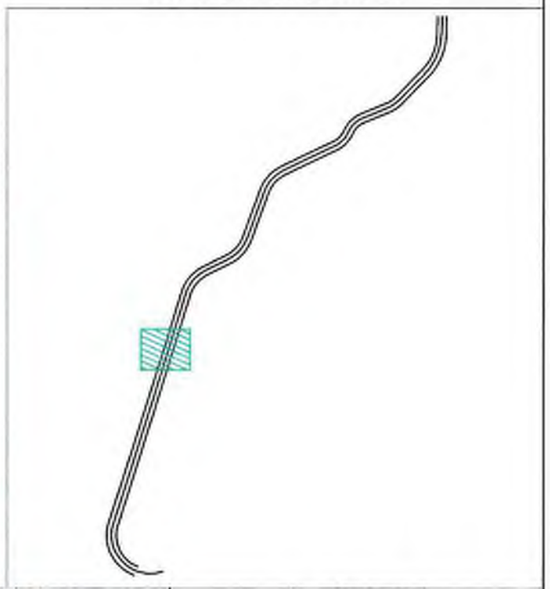
AREA SHOWN



NUNA
NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA

AS-BUILT BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: BRADFORD WATKINS COMPANY: NUNA

DATE OF AS-BUILT: 10/20/19 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

LEGEND:
FINISHED GRADE DESIGN LINES
FINISHED GRADE AS-BUILT LINES

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

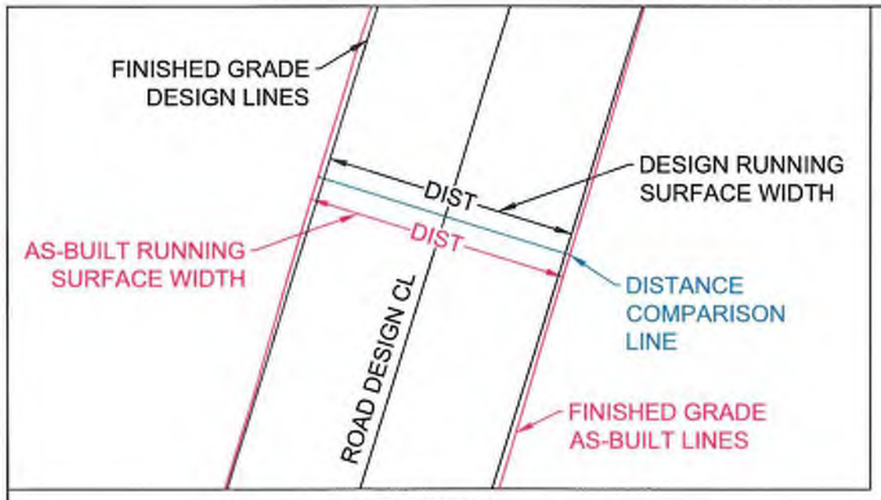
SCALE: 1:500

DATE: Sept. 14, 2019

MOD ROAD

DRAWING TITLE:
FINISHED GRADE RUNNING SURFACE
SURVEYED UP TO AUGUST 25, 2019

DRAWING NAME (YYMMDD):
190914 MOD ROAD FG AS-BUILT.dwg



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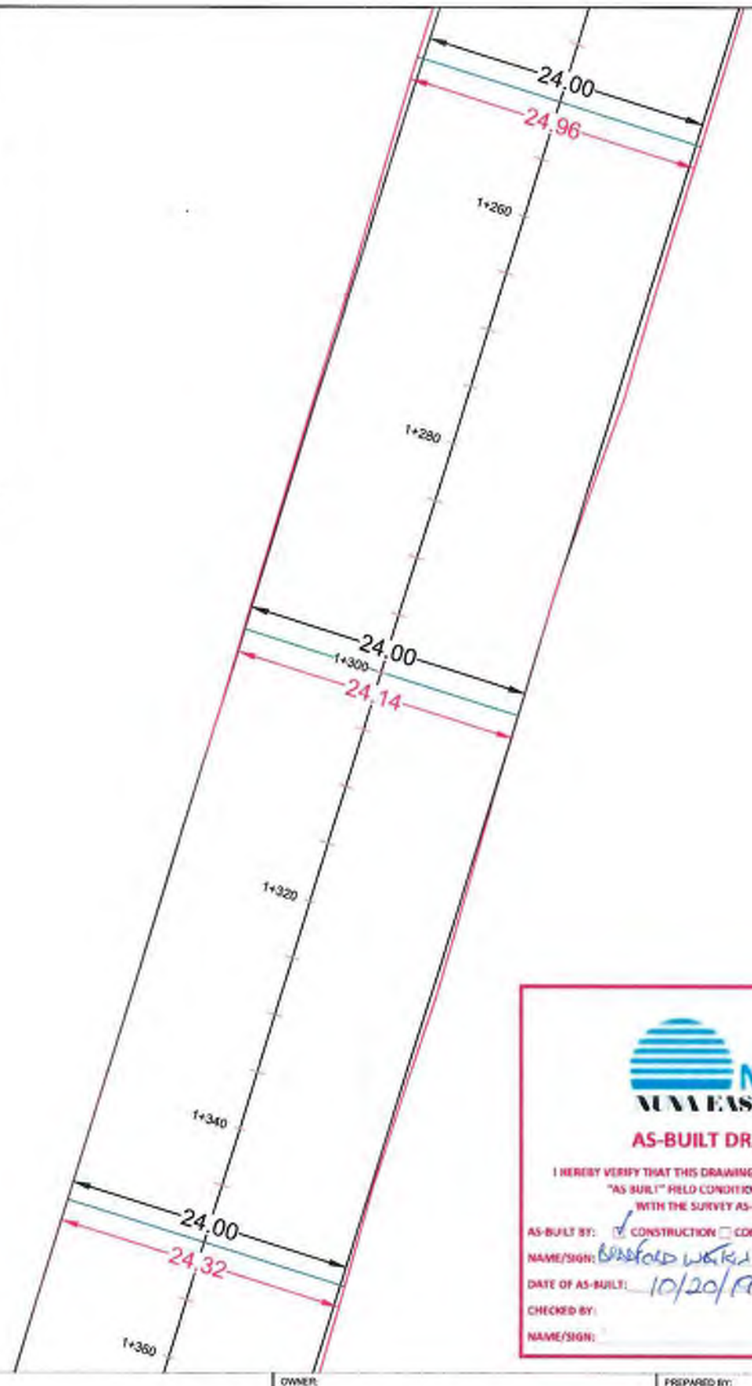

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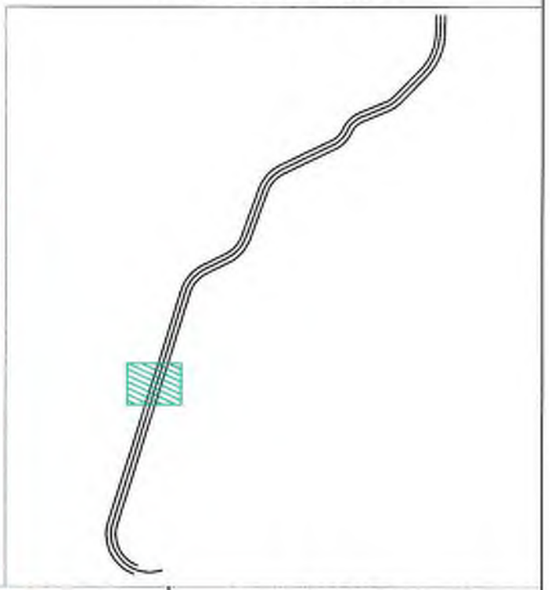


NUNA
NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS-BUILT BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: BRADFORD WORKS COMPANY: AUA

DATE OF AS-BUILT: 10/20/19 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

LEGEND:
FINISHED GRADE DESIGN LINES
FINISHED GRADE AS-BUILT LINES

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

SCALE: 1:500

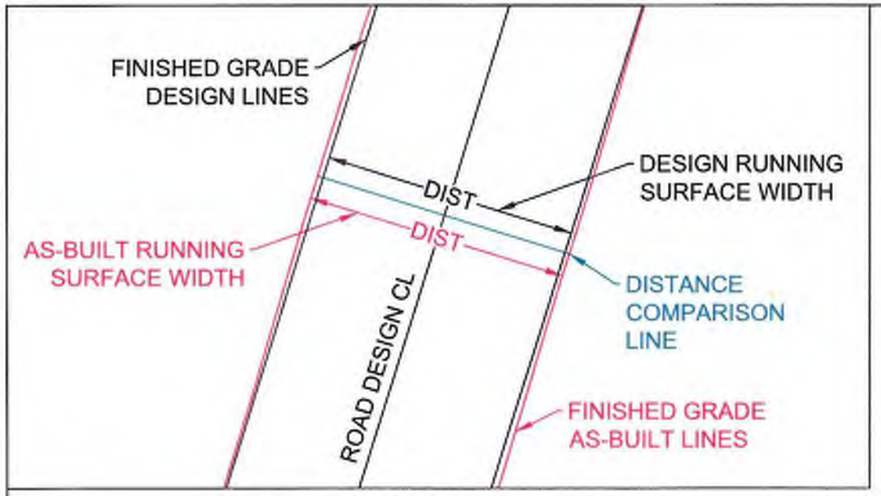
DATE: Sept. 14, 2019

NUNA

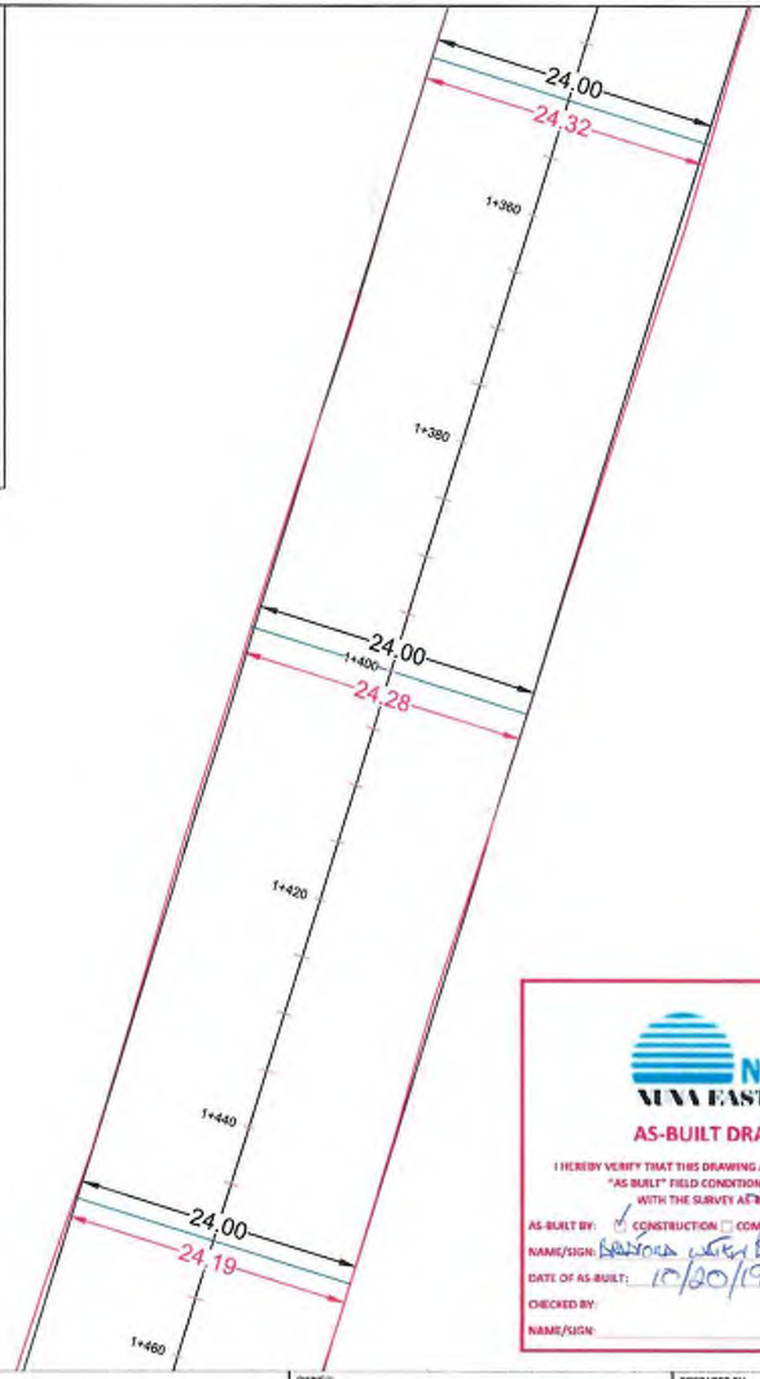
DRAWING TITLE: MOD ROAD

FINISHED GRADE RUNNING SURFACE
SURVEYED UP TO AUGUST 25, 2019

DRAWING NAME (YYMMDD): 190914 MOD ROAD FG AS-BUILT.dwg



DETAIL



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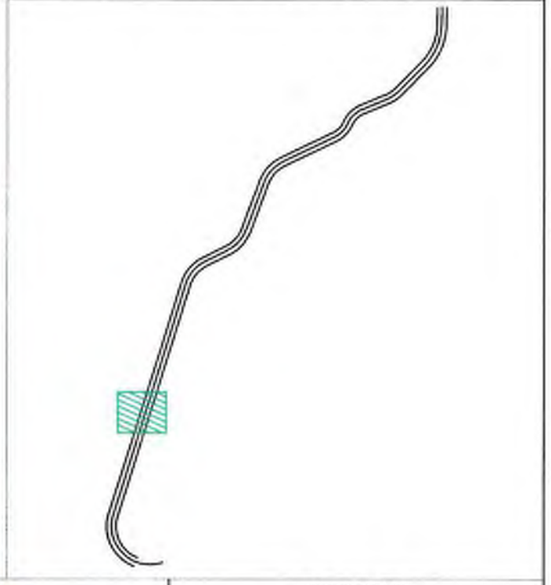


NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS-BUILT BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: [signature] COMPANY: NUNA

DATE OF AS-BUILT: 10/20/19 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

LEGEND:
FINISHED GRADE DESIGN LINES
FINISHED GRADE AS-BUILT LINES

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

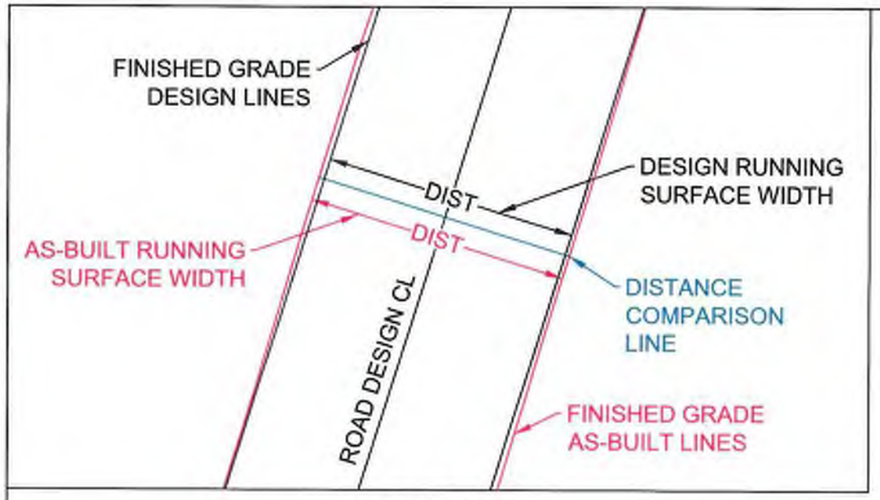
SCALE: 1:500

DATE: Sept. 14, 2019

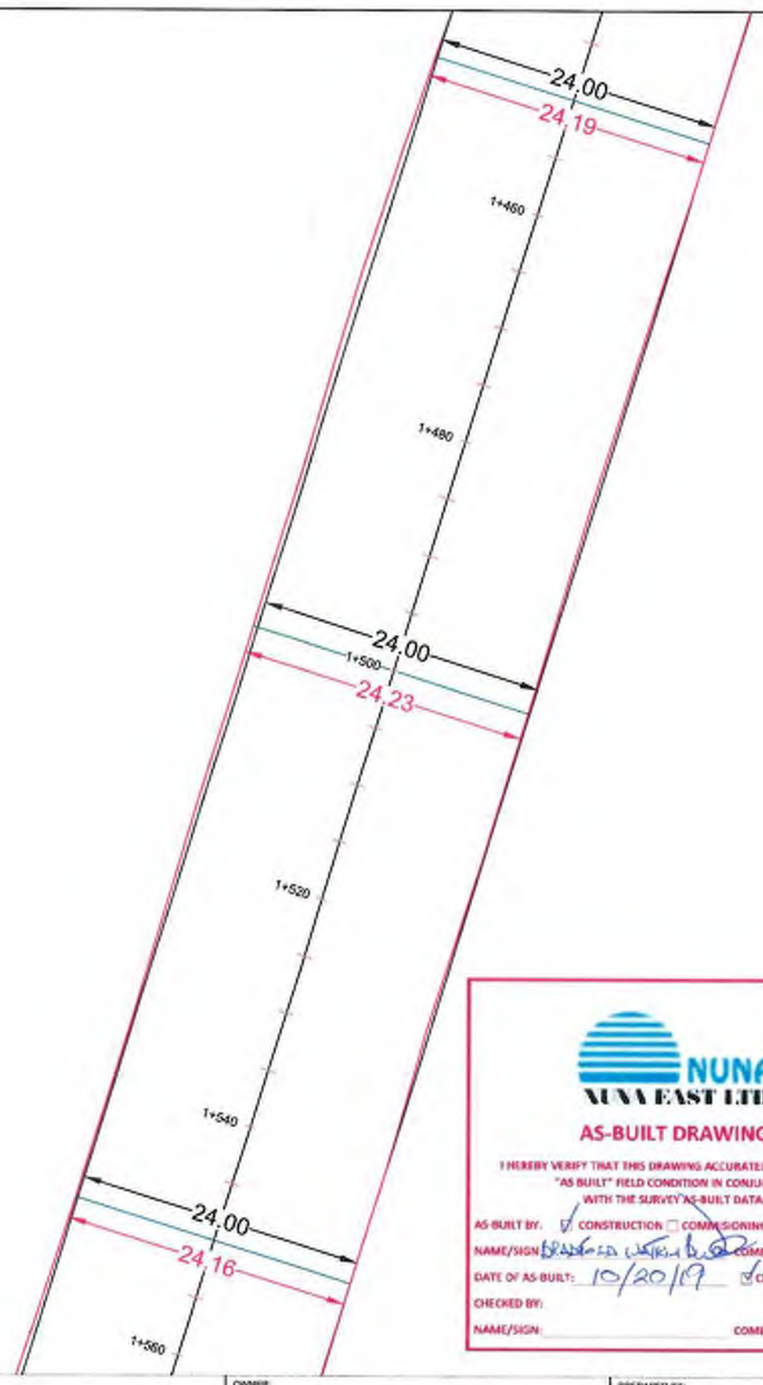
MOD ROAD

DRAWING TITLE:
FINISHED GRADE RUNNING SURFACE
SURVEYED UP TO AUGUST 25, 2019

DRAWING NAME (YYMMDD): 190914 MOD ROAD FG AS-BUILT.dwg



DETAIL



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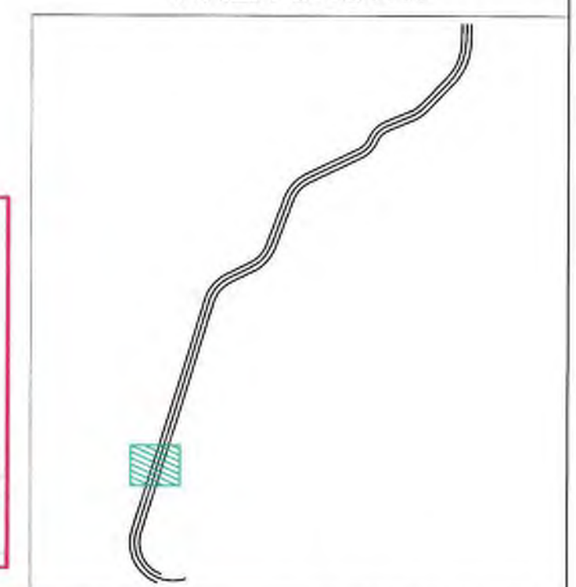

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NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS-BUILT BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: [illegible] COMPANY: NUNA

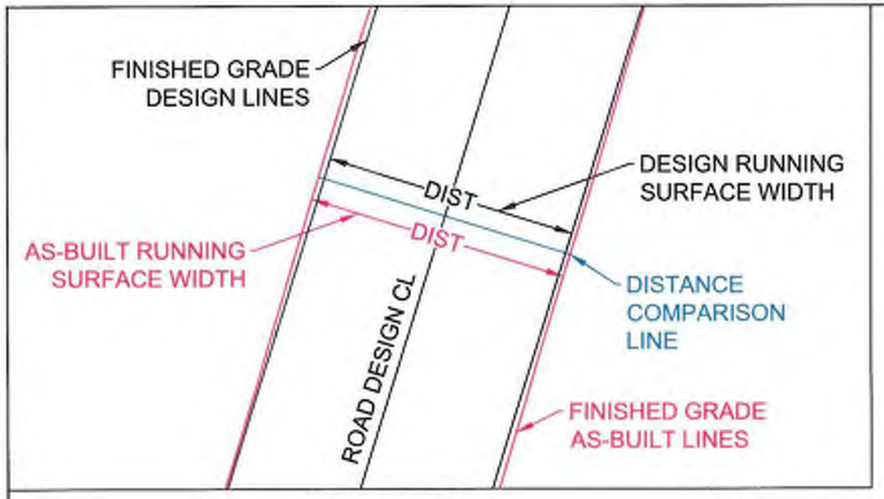
DATE OF AS-BUILT: 10/20/19 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

LEGEND:
FINISHED GRADE DESIGN LINES
FINISHED GRADE AS-BUILT LINES

OWNER: BAFFINLAND IRON MINES LP	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	MOD ROAD
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: 1:500 / DATE: Sept. 14, 2019	DRAWING TITLE: FINISHED GRADE RUNNING SURFACE SURVEYED UP TO AUGUST 25, 2019
			DRAWING NAME (YYMMDD): 190914 MOD ROAD FG AS-BUILT.dwg



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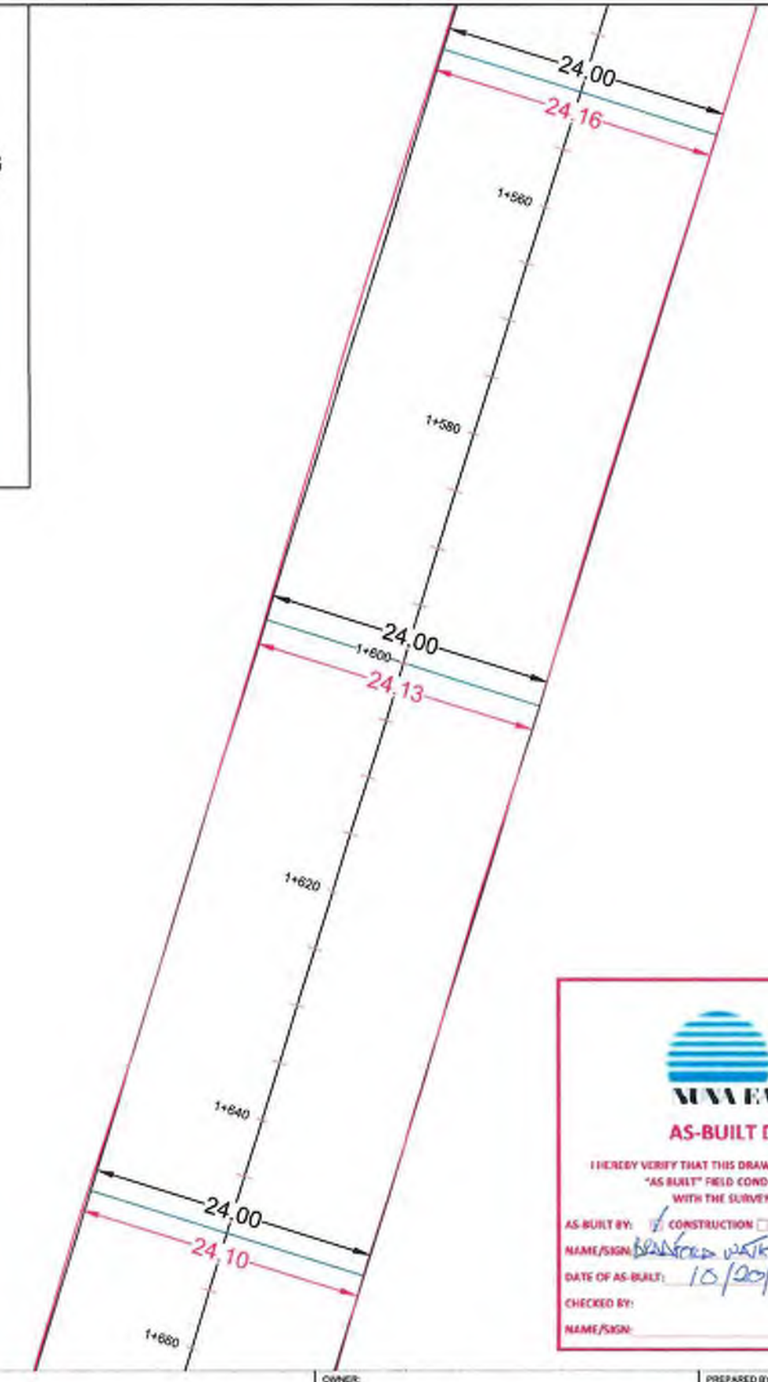

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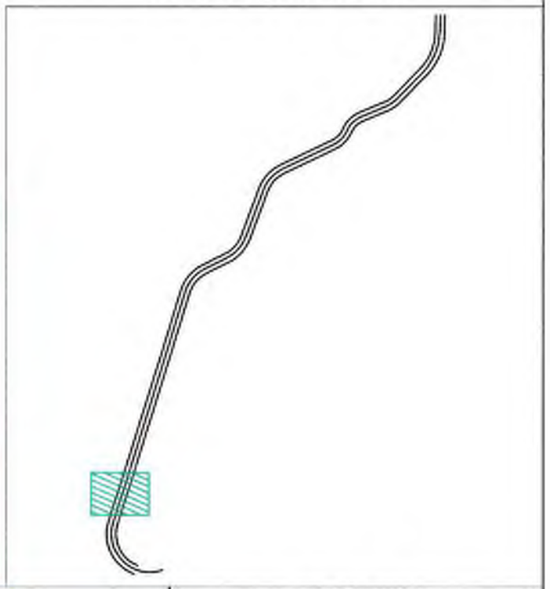


NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS-BUILT BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: BRADFORD WATKIN COMPANY: NUNA

DATE OF AS-BUILT: 10/20/19 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

LEGEND:
FINISHED GRADE DESIGN LINES
FINISHED GRADE AS-BUILT LINES

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

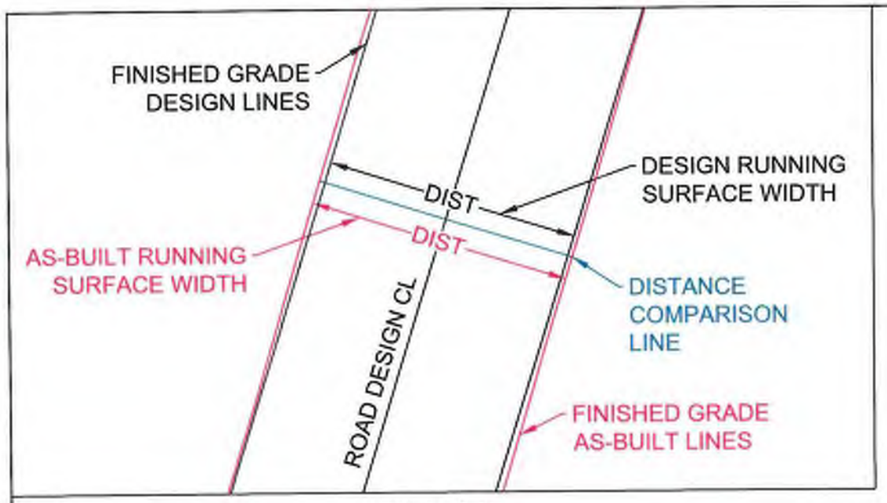
SCALE: 1:500

DATE: Sept. 14, 2019

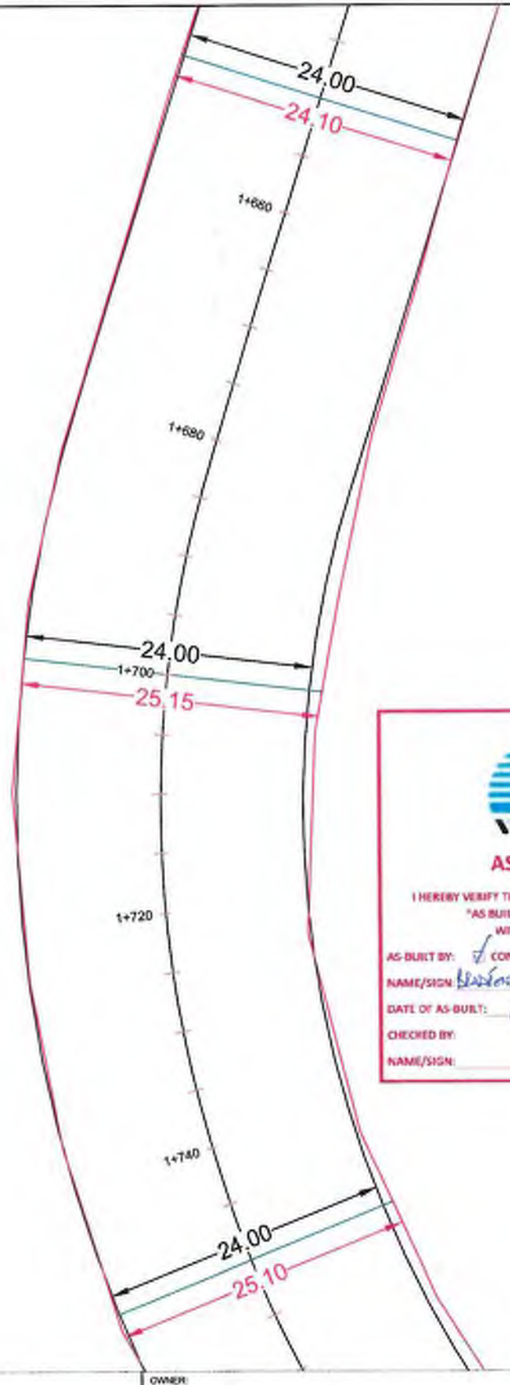
MOD ROAD

DRAWING TITLE:
FINISHED GRADE RUNNING SURFACE
SURVEYED UP TO AUGUST 25, 2019

DRAWING NAME (YYMMDD):
190914 MOD ROAD FG AS-BUILT.dwg



DETAIL



N

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NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS-BUILT BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

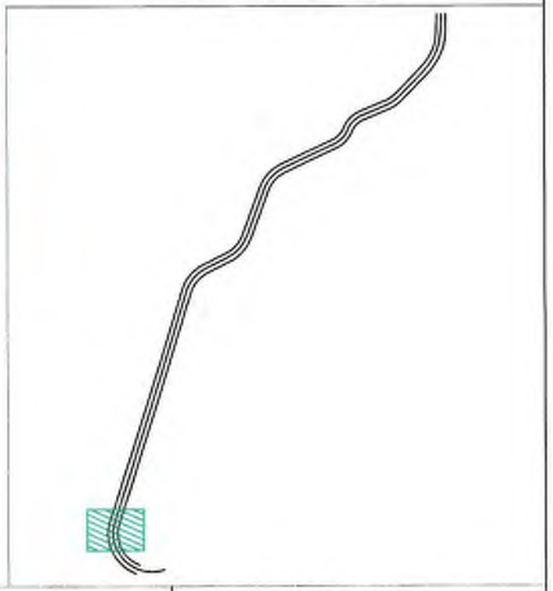
NAME/SIGN: [illegible] COMPANY: DHA

DATE OF AS-BUILT: 10/20/19 ☑ CHECK IF NO CHANGE

CHECKED BY:

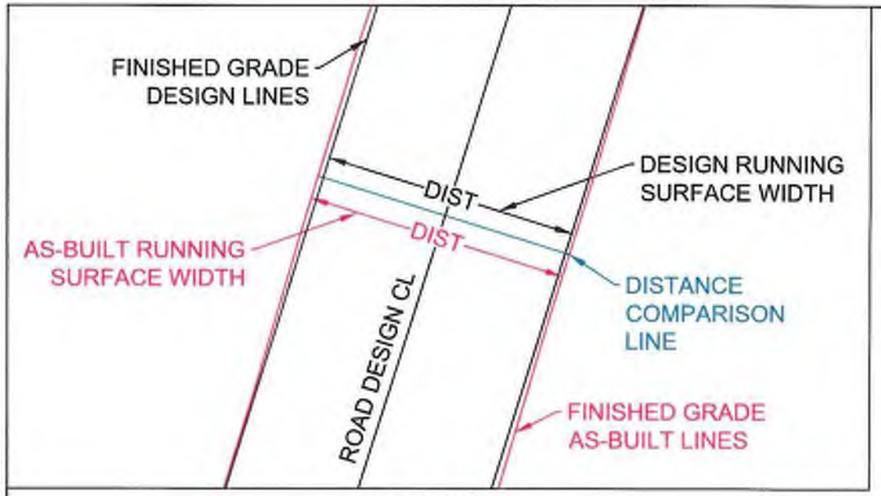
NAME/SIGN: COMPANY:

AREA SHOWN

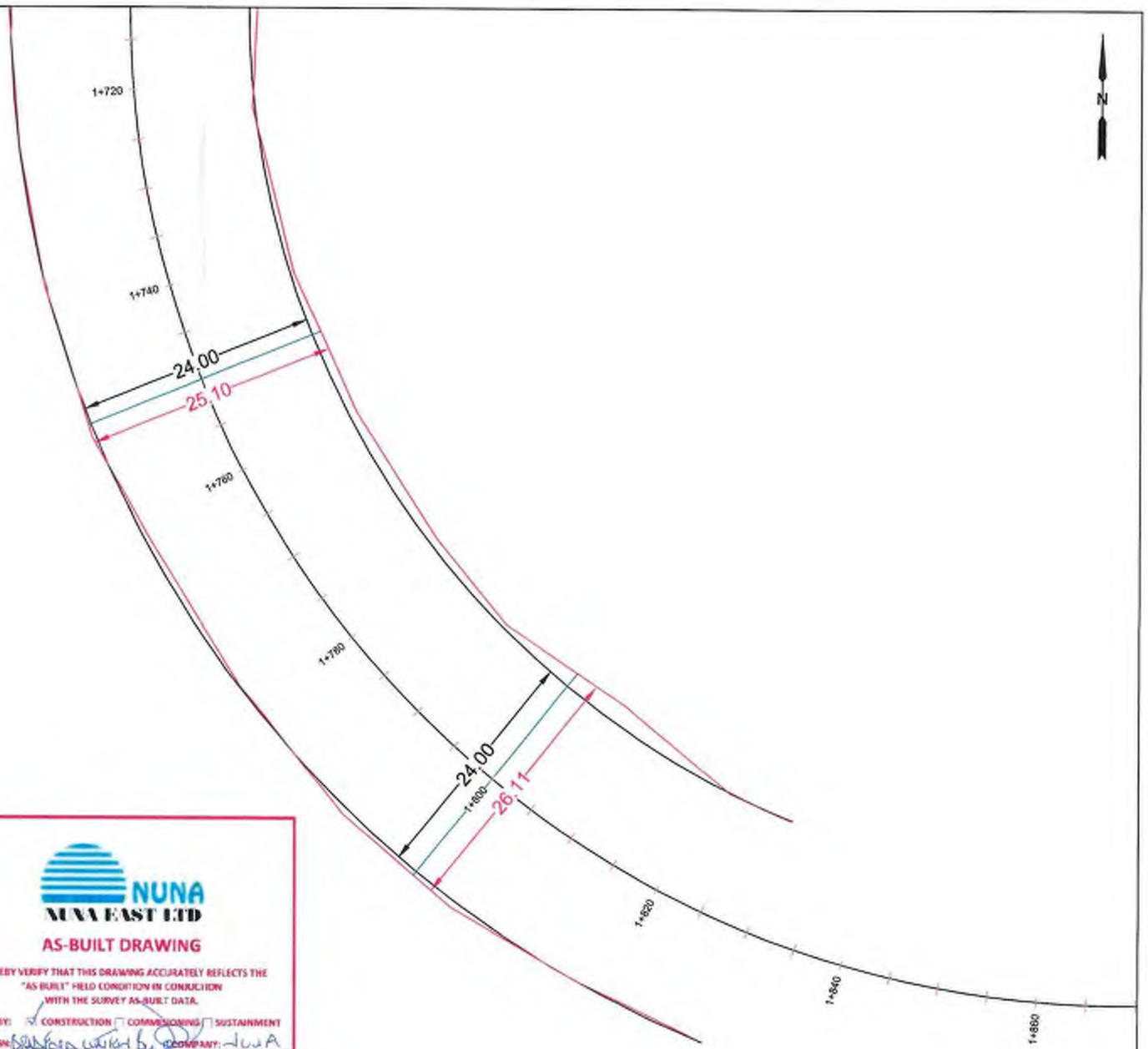


LEGEND:
FINISHED GRADE DESIGN LINES
FINISHED GRADE AS-BUILT LINES

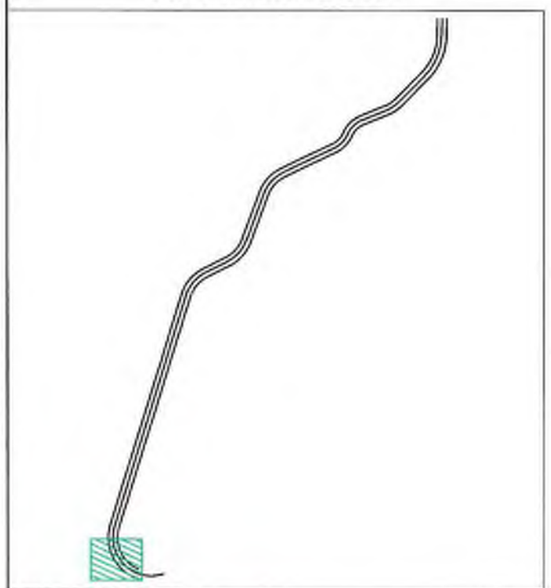
OWNER: BAFFINLAND IRON MINES LP	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		MOD ROAD
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: 1:500	DATE: Sept. 14, 2019	DRAWING TITLE: FINISHED GRADE RUNNING SURFACE SURVEYED UP TO AUGUST 25, 2019
				DRAWING NAME (YYMMDD): 190914 MOD ROAD FG AS-BUILT.dwg



DETAIL



AREA SHOWN



NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS BUILT BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: [signature] COMPANY: NUNA

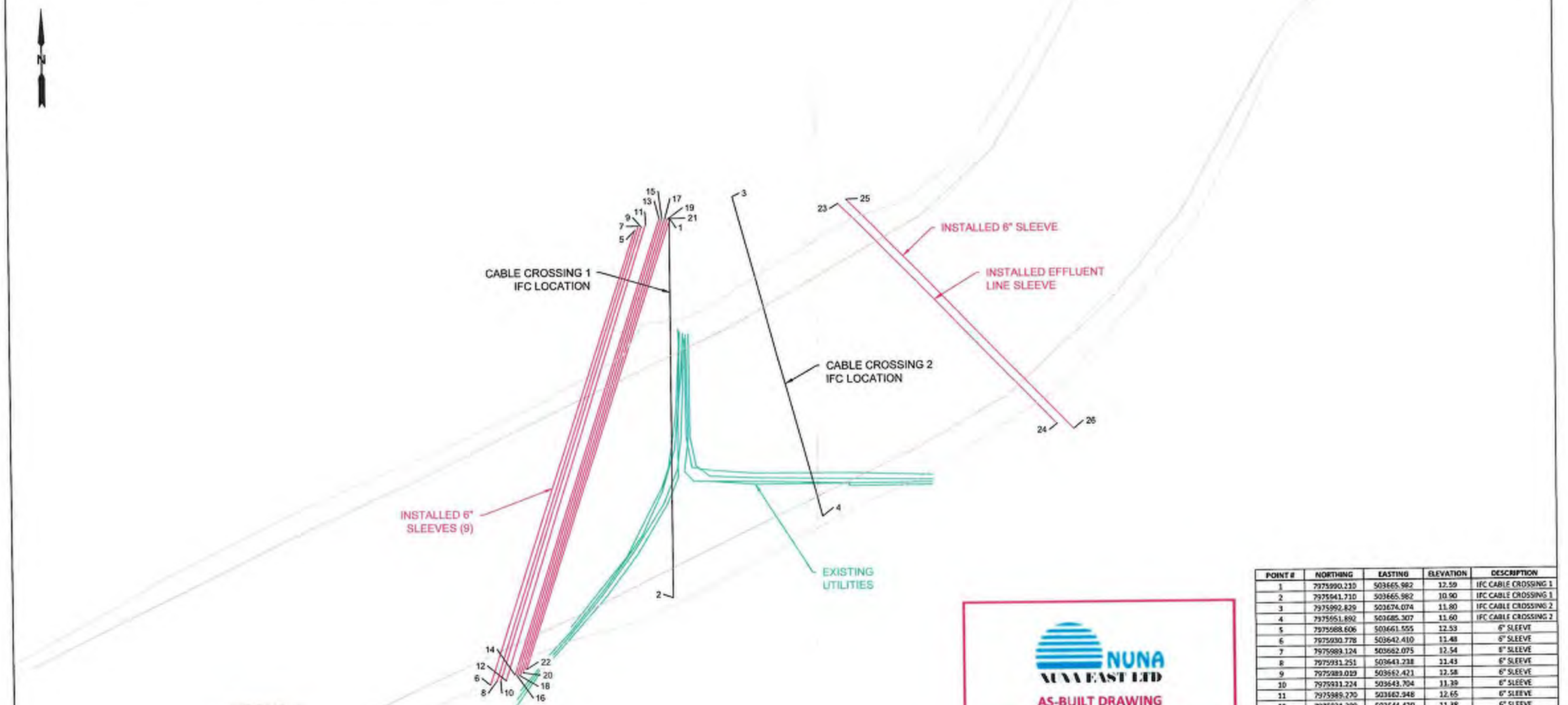
DATE OF AS BUILT: 10/20/19 ☐ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

LEGEND:
FINISHED GRADE DESIGN LINES
FINISHED GRADE AS-BUILT LINES

OWNER: BAFFINLAND IRON MINES LP	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		MOD ROAD
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: 1:500	DATE: Sept. 14, 2019	DRAWING TITLE: FINISHED GRADE RUNNING SURFACE SURVEYED UP TO AUGUST 25, 2019
				DRAWING NAME (YYMMDD): 190914 MOD ROAD FG AS-BUILT.dwg



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NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS-BUILT BY: ✓ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT

NAME/SIGN: [signature] COMPANY: NUNA

DATE OF AS-BUILT: 10/20/19 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: COMPANY:

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	7975990.210	503665.982	12.59	IFC CABLE CROSSING 1
2	7975941.710	503665.982	10.90	IFC CABLE CROSSING 1
3	7975992.829	503674.074	11.80	IFC CABLE CROSSING 2
4	7975951.892	503685.307	11.60	IFC CABLE CROSSING 2
5	7975988.606	503661.555	12.53	6" SLEEVE
6	7975930.778	503642.410	11.48	6" SLEEVE
7	7975989.124	503662.075	12.54	6" SLEEVE
8	7975931.251	503643.238	11.43	6" SLEEVE
9	7975989.019	503662.421	12.58	6" SLEEVE
10	7975931.224	503643.704	11.39	6" SLEEVE
11	7975989.270	503662.948	12.65	6" SLEEVE
12	7975931.299	503644.420	11.38	6" SLEEVE
13	7975990.039	503664.715	12.73	6" SLEEVE
14	7975932.014	503645.577	11.43	6" SLEEVE
15	7975990.047	503665.049	12.77	6" SLEEVE
16	7975931.916	503645.862	11.41	6" SLEEVE
17	7975990.035	503665.427	12.75	6" SLEEVE
18	7975931.934	503646.202	11.42	6" SLEEVE
19	7975989.986	503665.746	12.76	6" SLEEVE
20	7975932.281	503646.624	11.41	6" SLEEVE
21	7975990.088	503666.131	12.78	6" SLEEVE
22	7975932.727	503647.066	11.29	6" SLEEVE
23	7975991.825	503687.720	12.11	EFFLUENT LINE SLEEVE
24	7975963.553	503715.536	12.09	EFFLUENT LINE SLEEVE
25	7975992.349	503688.738	11.64	6" SLEEVE
26	7975962.884	503717.691	11.65	6" SLEEVE

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0

DRAWN BY: M. GOREHAM

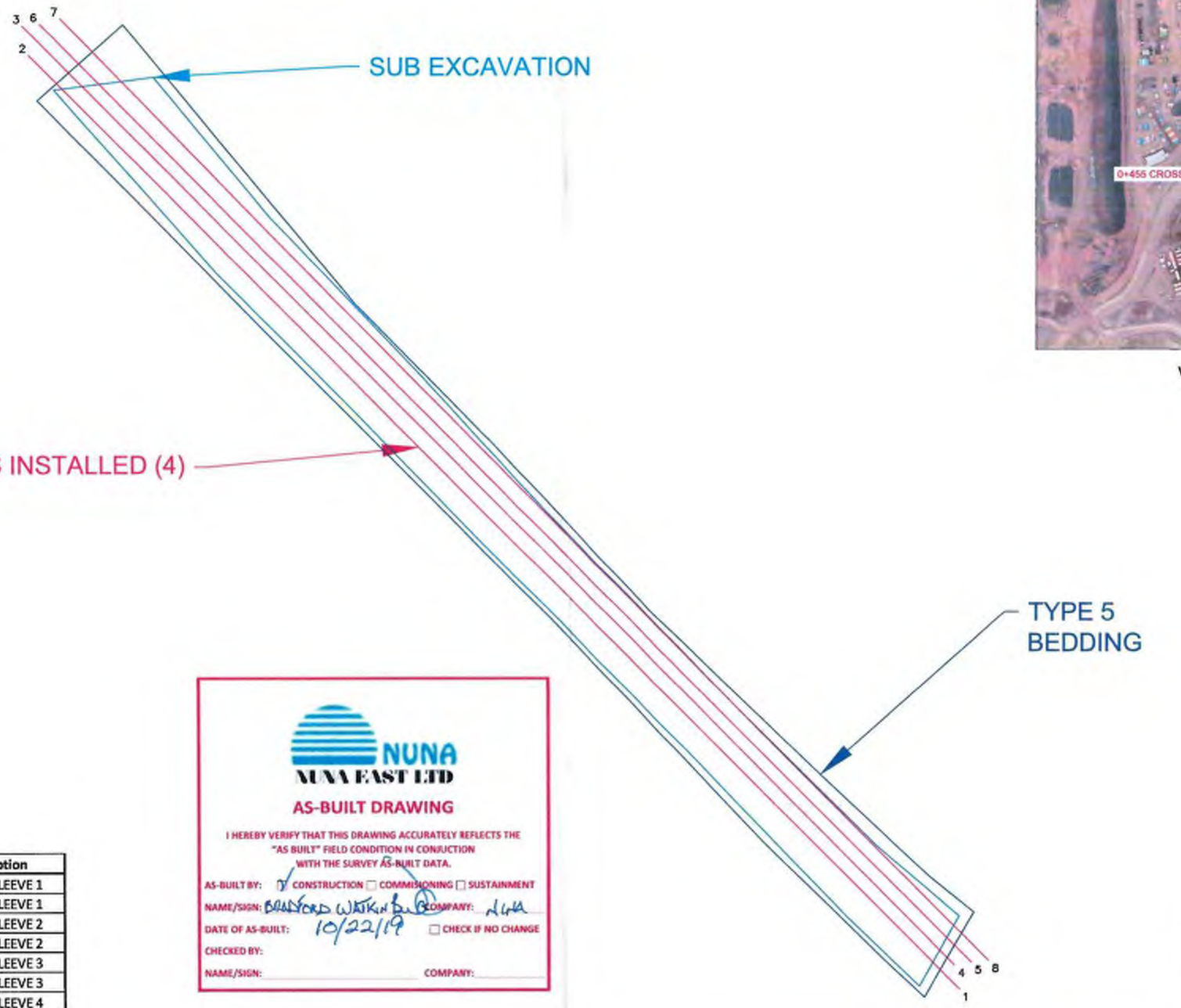
SCALE: 1:500

DATE: Oct. 14, 2019

MOD ROAD

DRAWING TITLE: AS-BUILT SURVEY SURVEYED UP TO OCTOBER 10, 2019

DRAWING NAME (YYMMDD): 191014 MOD RD UTIL CROSSING AB.dwg



VICINITY MAP

Point	Northing	Easting	Elevation	Description
1	7975966.036	503716.030	11.810	TOP OF SLEEVE 1
2	7975991.815	503690.328	11.752	TOP OF SLEEVE 1
3	7975992.616	503690.158	11.769	TOP OF SLEEVE 2
4	7975966.700	503715.887	11.772	TOP OF SLEEVE 2
5	7975966.779	503716.350	11.772	TOP OF SLEEVE 3
6	7975992.661	503690.639	11.816	TOP OF SLEEVE 3
7	7975992.816	503691.197	11.830	TOP OF SLEEVE 4
8	7975966.822	503716.826	11.781	TOP OF SLEEVE 4

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NUNA EAST LTD

AS-BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS-BUILT BY: ☑ CONSTRUCTION ☐ COMMISSIONING ☐ SUSTAINMENT
NAME/SIGN: BRADFORD WATKINS COMPANY: NUNA
DATE OF AS-BUILT: 10/22/19 ☐ CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:

Pipe Dimensions		
Code	Length	Diameter
SLEEVE 1	36.5m	150mm
SLEEVE 2	36.5m	150mm
SLEEVE 3	36.5m	150mm
SLEEVE 4	36.5m	150mm

LEGEND:
SLEEVES INSTALLED
EXCAVATION LIMITS
TYPE 5 BACKFILL FINAL LIFT

OWNER: BAFFINLAND IRON MINES LP
PROJECT: MARY RIVER EXPANSION PROJECT
PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0
DRAWN BY: M. Walsh
SCALE: NTS
DATE: Oct. 22, 2019
MOF 0+455 PIPE CROSSING
DRAWING TITLE: AS-BUILT SURVEY SURVEYED UP TO OCTOBER 20, 2019
DRAWING NAME (YYMMDD): 191022 MOF 0+455 XING ASB.dwg

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0008A
Port Site Module Delivery Road
Utility Pipe Sleeve Crossing Survey Data
10-20-19

Utility Pipe Sleeve Crossing Survey Data As-Built

Point Number	Northing	Easting	Elevation	Description
1	7975968.036	503712.905	11.411	SG
2	7975969.99	503713.751	11.342	SG
3	7975972.18	503708.907	11.42	SG
4	7975973.79	503709.889	11.335	SG
5	7975979.255	503704.546	11.169	SG
6	7975977.892	503703.284	11.315	SG
7	7975981.967	503699.303	11.29	SG
8	7975983.116	503700.996	11.226	SG
9	7975987.3	503697.009	11.236	SG
10	7975985.849	503695.437	11.342	SG
11	7975987.744	503694.353	11.302	SG
12	7975990.852	503691.024	11.342	SG
13	7975991.199	503693.764	11.407	SG
14	7975968.043	503716.032	11.311	SG
15	7975966.11	503714.933	11.324	SG
16	7975966.036	503716.03	11.81	PIPE1 TOP
17	7975972.323	503709.738	11.639	PIPE1 TOP
18	7975980.975	503701.091	11.51	PIPE1 TOP
19	7975991.815	503690.328	11.752	PIPE1 TOP
20	7975992.616	503690.158	11.769	PIPE2 TOP
21	7975983.461	503699.23	11.488	PIPE2 TOP
22	7975974.95	503707.698	11.583	PIPE2 TOP
23	7975966.7	503715.887	11.772	PIPE2 TOP
24	7975966.779	503716.35	11.772	PIPE3 TOP
25	7975974.244	503708.872	11.575	PIPE3 TOP
26	7975984.293	503698.903	11.5	PIPE3 TOP
27	7975992.661	503690.639	11.816	PIPE3 TOP
28	7975992.816	503691.197	11.83	PIPE4 TOP
29	7975985.069	503698.74	11.517	PIPE4 TOP
30	7975972.808	503710.856	11.668	PIPE4 TOP
31	7975966.822	503716.826	11.781	PIPE4 TOP
47	7975969.151	503715.191	11.844	T5 TOP
48	7975966.877	503713.909	11.791	T5 TOP
49	7975970.045	503710.652	11.866	T5 TOP
50	7975971.958	503712.182	11.8	T5 TOP
51	7975975.129	503705.806	11.792	T5 TOP
52	7975976.466	503707.46	11.774	T5 TOP
53	7975979.245	503701.772	11.75	T5 TOP
54	7975981.127	503703.075	11.754	T5 TOP

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0008A
Port Site Module Delivery Road
Utility Pipe Sleeve Crossing Survey Data
10-20-19

55	7975984.939	503699.329	11.79	T5 TOP
56	7975983.706	503697.293	11.82	T5 TOP
57	7975990.565	503690.569	11.935	T5 TOP
58	7975992.461	503692.359	11.878	T5 TOP

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(Section 4)

Survey Data
(Type 5 32mm minus As-Built)

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0008A
Port Site Module Delivery Road
Type 5 (32mm minus) Survey Data
8-25-19

Type 5 (32mm minus) Survey Data

Point Number	Northing	Easting	Elevation	Description
1908241	7975841.916	503515.989	11.957	RD SHD
1908242	7975847.563	503519.026	12.077	RD SHD
1908243	7975854.345	503522.947	12.142	RD SHD
1908244	7975862.829	503527.781	12.286	RD SHD
1908245	7975867.476	503530.986	12.348	RD SHD
1908246	7975871.408	503534.936	12.388	RD SHD
1908247	7975882.63	503545.813	12.549	RD SHD
1908248	7975888.436	503552.542	12.608	RD SHD
1908249	7975893.327	503558.99	12.634	RD SHD
1908250	7975899.316	503567.698	12.624	RD SHD
1908251	7975904.318	503577.886	12.624	RD SHD
1908252	7975906.559	503583.067	12.637	RD SHD
1908253	7975879.007	503542.265	12.475	RD SHD
1908254	7975902.163	503573.917	12.606	T5 CHEST
1908255	7975895.289	503562.848	12.644	T5 CREST
1908256	7975888.273	503554.244	12.629	T5 CREST
1908257	7975880.978	503545.541	12.518	T5 CREST
1908258	7975874.186	503536.386	12.421	RD SHD
1908259	7975873.101	503537.563	12.353	T5 CREST
1908260	7975864.941	503530.348	12.315	T5 CREST
1908261	7975851.51	503522.371	12.167	T5 CREST
1908262	7975840.274	503515.603	11.916	T5 CREST
1908263	7975841.286	503510.292	11.869	T5 FINAL
1908264	7975853.101	503514.426	12.074	T5 FINAL
1908265	7975861.828	503519.709	12.223	T5 FINAL
1908266	7975870.061	503524.924	12.325	T5 FINAL
1908267	7975871.982	503526.197	12.351	T5 FINAL
1908268	7975878.601	503532.128	12.434	T5 FINAL
1908269	7975885.524	503539.874	12.511	T5 FINAL
1908270	7975891.967	503548.053	12.551	T5 FINAL
1908271	7975898.362	503555.135	12.63	T5 FINAL
1908272	7975903.043	503561.986	12.653	T5 FINAL
1908273	7975907.36	503570.082	12.633	T5 FINAL
1908274	7975911.296	503577.443	12.643	T5 FINAL
1908275	7975915.741	503573.841	12.621	T5 FINAL
1908276	7975910.811	503563.624	12.646	T5 FINAL
1908277	7975906.134	503554.49	12.615	T5 FINAL
1908278	7975896.828	503539.95	12.55	T5 FINAL
1908279	7975887.665	503529.276	12.475	T5 FINAL

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1908280	7975880.199	503522.765	12.377	T5 FINAL
1908281	7975869.239	503515.121	12.238	T5 FINAL
1908282	7975858.523	503509.652	12.087	T5 FINAL

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Point Number	Northing	Easting	Elevation	Description
814001	7975540.999	503274.819	12.416	TYPE 5
814002	7975540.301	503272.775	12.412	TYPE 5
814003	7975541.014	503270.75	12.495	TYPE 5
814004	7975542.064	503268.947	12.363	TYPE 5
814005	7975545.981	503267.592	12.052	TYPE 5
814006	7975556.605	503265.471	11.535	TYPE 5
814007	7975565.378	503263.338	11.345	TYPE 5
814008	7975575.711	503260.793	11.175	TYPE 5
814009	7975580.446	503260.652	11.047	TYPE 5
814010	7975591.544	503258.607	10.869	TYPE 5
814011	7975595.41	503257.813	10.635	TYPE 5
814012	7975594.745	503254.072	10.689	TYPE 5
814013	7975594.316	503250.066	10.608	TYPE 5
814014	7975582.991	503251.23	10.891	TYPE 5
814015	7975583.461	503255.228	11.052	TYPE 5
814016	7975570.005	503257.375	11.259	TYPE 5
814017	7975569.2	503253.269	11.24	TYPE 5
814018	7975557.144	503255.795	11.491	TYPE 5
814019	7975557.73	503260.879	11.512	TYPE 5
814020	7975545.763	503262.489	12.046	TYPE 5
814021	7975544.181	503258.448	12.019	TYPE 5
814022	7975533.373	503259.5	12.523	TYPE 5
814023	7975537.099	503265.02	12.47	TYPE 5
814024	7975531.703	503268.583	12.63	TYPE 5
814025	7975529.938	503259.703	12.607	TYPE 5
814026	7975519.6	503260.742	12.555	TYPE 5
814027	7975520.291	503267.448	12.692	TYPE 5
814028	7975509.801	503265.235	12.693	TYPE 5
814029	7975509.745	503261.07	12.554	TYPE 5
814030	7975471.2	503281.308	12.905	TYPE 5
814031	7975463.586	503278.402	12.974	TYPE 5
814032	7975456.503	503276.282	13.007	TYPE 5
814033	7975452.646	503275.218	13	TYPE 5
814034	7975447.434	503277.77	12.899	TYPE 5
814035	7975453.32	503281.229	12.902	TYPE 5
814036	7975459.072	503284.368	12.941	TYPE 5
814037	7975448.773	503287.685	12.754	TYPE 5
814038	7975445.516	503283.452	12.712	TYPE 5
814039	7975442.068	503280.371	12.678	TYPE 5

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814040	7975432.427	503283.222	12.192	TYPE 5
814041	7975436.562	503287.052	12.36	TYPE 5
814042	7975440.665	503290.561	12.49	TYPE 5
814043	7975429.075	503293.508	11.995	TYPE 5
814044	7975425.84	503288.047	11.877	TYPE 5
814045	7975424.053	503285.146	11.853	TYPE 5
814046	7975411.715	503297.579	10.953	TYPE 5
814047	7975410.644	503293.471	11.074	TYPE 5
814048	7975409.97	503290.019	11.003	TYPE 5
814049	7975418.94	503286.605	11.531	TYPE 5
814050	7975420.53	503291.253	11.618	TYPE 5
814051	7975421.56	503295.451	11.608	TYPE 5
814052	7975638.354	503364.762	11.736	TYPE 5
814053	7975641.085	503371.621	11.609	TYPE 5
814054	7975644.666	503379.62	11.587	TYPE 5
814055	7975648.058	503386.937	11.54	TYPE 5
814056	7975641.305	503389.916	11.426	TYPE 5
814057	7975637.987	503383.867	11.396	TYPE 5
814058	7975633.001	503375.791	11.407	TYPE 5
814059	7975625.085	503382.809	10.999	TYPE 5
814060	7975628.016	503388.648	11.041	TYPE 5
814061	7975630.532	503393.371	11.08	TYPE 5
814062	7975631.898	503396.24	11.003	TYPE 5
814068	7975664.216	503351.846	11.537	TYPE 5
814069	7975668.23	503358.572	11.676	TYPE 5
814070	7975672.443	503366.032	11.693	TYPE 5
814071	7975675.262	503370.666	11.574	TYPE 5
814072	7975682.964	503364.256	11.56	TYPE 5
814073	7975679.568	503358.909	11.657	TYPE 5
814074	7975675.556	503352.287	11.617	TYPE 5
814075	7975672.43	503346.991	11.516	TYPE 5
814076	7975681.049	503341.522	11.521	TYPE 5
814077	7975685.951	503348.645	11.556	TYPE 5
814078	7975689.433	503353.897	11.512	TYPE 5
814079	7975691.996	503357.788	11.46	TYPE 5

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Point Number	Northing	Easting	Elevation	Description
20000	7975448.688	503272.799	12.972	T5 CREST
20001	7975439.031	503269.749	12.987	T5 CREST
20002	7975426.508	503265.971	12.838	T5 CREST
20003	7975411.073	503261.462	12.511	T5 CREST
20004	7975397.295	503257.345	12.218	T5 CREST
20005	7975383.739	503253.171	11.986	T5 CREST
20006	7975368.886	503248.734	11.878	T5 CREST
20007	7975353.376	503243.157	11.845	T5 CREST
20008	7975339.067	503238.831	11.879	T5 CREST
20009	7975318.875	503232.892	11.927	T5 CREST
20010	7975302.978	503227.619	11.919	T5 CREST
20011	7975287.886	503223.266	11.934	T5 CREST
20012	7975273.613	503218.56	11.945	T5 CREST
20013	7975257.466	503213.387	11.952	T5 CREST
20014	7975238.124	503207.205	11.96	T5 CREST
20015	7975223.257	503202.234	11.964	T5 CREST
20016	7975211.393	503198.804	11.924	T5 CREST
20017	7975196.022	503194.069	11.888	T5 CREST
20018	7975183.377	503189.94	11.888	T5 CREST
20019	7975168.947	503185.342	11.853	T5 CREST
20020	7975153.353	503180.624	11.818	T5 CREST
20021	7975139.195	503176.258	11.845	T5 CREST
20022	7975124.88	503171.52	11.79	T5 CREST
20023	7975113.078	503168.184	11.812	T5 CREST
20024	7975099.121	503163.783	11.807	T5 CREST
20025	7975086.679	503159.854	11.777	T5 CREST
20026	7975070.438	503154.753	11.734	T5 CREST
20027	7975054.239	503149.849	11.733	T5 CREST
20028	7975039.961	503145.208	11.747	T5 CREST
20029	7975025.268	503140.811	11.708	T5 CREST
20030	7975009.833	503135.816	11.694	T5 CREST
20031	7974996.288	503131.963	11.648	T5 CREST
20032	7974983.84	503128.195	11.642	T5 CREST
20033	7974970.584	503125.449	11.631	T5 CREST
20034	7974959.071	503123.332	11.631	T5 CREST
20035	7974942.185	503122.633	11.61	T5 CREST
20036	7974925.644	503126.84	11.599	T5 CREST
20037	7974911.755	503133.185	11.58	T5 CREST
20038	7974899.084	503141.413	11.531	T5 CREST

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20039	7974890.522	503148.466	11.463	T5 CREST
20040	7974882.302	503160.558	11.452	T5 CREST
20041	7974873.597	503171.165	11.517	T5 CREST
20042	7974870.97	503177.003	11.476	T5 CREST
20043	7974848.97	503167.813	11.552	T5 CREST
20044	7974854.803	503155.581	11.478	T5 CREST
20045	7974862.183	503142.942	11.463	T5 CREST
20046	7974871.503	503131.955	11.516	T5 CREST
20047	7974884.229	503121.664	11.515	T5 CREST
20048	7974898.203	503112.947	11.54	T5 CREST
20049	7974909.092	503106.67	11.56	T5 CREST
20050	7974924.148	503101.862	11.564	T5 CREST
20051	7974938.268	503099.206	11.597	T5 CREST
20052	7974954.085	503097.913	11.631	T5 CREST
20053	7974969.908	503099.393	11.567	T5 CREST
20054	7974982.699	503102.222	11.572	T5 CREST
20055	7974998.007	503107.017	11.646	T5 CREST
20056	7975012.181	503111.288	11.669	T5 CREST
20057	7975027.63	503116.361	11.625	T5 CREST
20058	7975044.67	503121.708	11.676	T5 CREST
20059	7975062.482	503127.14	11.701	T5 CREST
20060	7975077.91	503131.709	11.738	T5 CREST
20061	7975094.655	503136.751	11.701	T5 CREST
20062	7975109.992	503141.882	11.773	T5 CREST
20063	7975126.036	503146.953	11.774	T5 CREST
20064	7975143.199	503152.104	11.857	T5 CREST
20065	7975157.957	503156.685	11.816	T5 CREST
20066	7975173.584	503161.503	11.879	T5 CREST
20067	7975188.457	503165.963	11.908	T5 CREST
20068	7975199.155	503169.404	11.931	T5 CREST
20069	7975210.246	503173.298	11.855	T5 CREST
20070	7975221.975	503176.885	11.912	T5 CREST
20071	7975235.654	503180.967	11.937	T5 CREST
20072	7975250.28	503185.591	11.955	T5 CREST
20073	7975265.435	503190.464	11.922	T5 CREST
20074	7975278.769	503194.957	11.903	T5 CREST
20075	7975293.726	503199.463	11.854	T5 CREST
20076	7975310.303	503204.613	11.888	T5 CREST
20077	7975328.11	503210.242	11.884	T5 CREST
20078	7975346.466	503215.847	11.85	T5 CREST
20079	7975362.422	503220.71	11.803	T5 CREST
20080	7975378.229	503225.577	11.907	T5 CREST

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20081	7975394.406	503230.349	12.027	T5 CREST
20082	7975411.468	503235.571	12.333	T5 CREST
20083	7975424.95	503240.103	12.645	T5 CREST
20084	7975439.522	503244.931	12.882	T5 CREST
20085	7975453.957	503249.342	12.982	T5 CREST
20086	7975467.691	503253.725	12.943	T5 CREST
20087	7975483.77	503258.445	12.851	T5 CREST
20088	7975498.752	503261.691	12.71	T5 CREST
20089	7975511.445	503267.36	12.711	T5 CREST
20090	7975525.539	503271.71	12.65	T5 CREST
20091	7975540.079	503276.229	12.429	T5 CREST
20092	7975554.547	503280.684	12.161	T5 CREST
20093	7975568.148	503283.546	12.013	T5 CREST
20094	7975579.763	503287.393	11.92	T5 CREST
20095	7975593.462	503291.85	11.731	T5 CREST
20096	7975605.772	503296.798	11.829	T5 CREST
20097	7975615.173	503302.899	11.896	T5 CREST
20098	7975630.296	503313.379	11.848	T5 CREST
20099	7975640.171	503322.493	11.825	T5 CREST
20100	7975648.114	503331.663	11.882	T5 CREST
20101	7975656.191	503343.954	11.779	T5 CREST
20102	7975662.746	503351.72	11.563	T5 CREST
20103	7975637.786	503367.593	11.644	T5 CREST
20104	7975636.635	503360.999	11.837	T5 CREST
20105	7975630.512	503350.174	11.818	T5 CREST
20106	7975621.69	503339.351	11.797	T5 CREST
20107	7975611.162	503330.162	11.892	T5 CREST
20108	7975598.682	503324.327	11.924	T5 CREST
20109	7975584.663	503318.576	11.854	T5 CREST
20110	7975570.545	503313.884	11.881	T5 CREST
20111	7975555.536	503308.446	12.108	T5 CREST
20112	7975539.065	503302.702	12.336	T5 CREST
20113	7975523.498	503297.023	12.508	T5 CREST
20114	7975510.396	503292.556	12.71	T5 CREST
20115	7975496.869	503288.105	12.823	T5 CREST
20116	7975483.573	503284.549	12.898	T5 CREST
20117	7975470.359	503279.701	12.926	T5 CREST
20118	7975465.933	503271.29	12.947	T5
20119	7975452.721	503266.282	13.027	T5
20120	7975439.979	503263.12	12.988	T5
20121	7975425.904	503259.103	12.806	T5
20122	7975412.199	503254.967	12.515	T5

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20123	7975398.824	503251.282	12.23	T5
20124	7975384.302	503246.579	11.992	T5
20125	7975370.642	503242.247	11.9	T5
20126	7975352.268	503236.852	11.889	T5
20127	7975339.759	503233.066	11.899	T5
20128	7975324.258	503228.317	11.913	T5
20129	7975306.891	503222.961	11.934	T5
20130	7975293.546	503218.887	11.946	T5
20131	7975279.496	503214.532	11.944	T5
20132	7975266.085	503210.146	11.971	T5
20133	7975253.86	503206.203	11.962	T5
20134	7975241.008	503202.17	11.963	T5
20135	7975227.981	503198.768	11.937	T5
20136	7975214.264	503193.573	11.916	T5
20137	7975200.933	503189.63	11.901	T5
20138	7975184.761	503185.324	11.872	T5
20139	7975170.438	503180.615	11.876	T5
20140	7975157.896	503176.957	11.845	T5
20141	7975144.55	503172.976	11.839	T5
20142	7975132.074	503168.036	11.838	T5
20143	7975116.944	503162.642	11.791	T5
20144	7975105.018	503159.288	11.792	T5
20145	7975092.173	503155.096	11.756	T5
20146	7975077.137	503151.087	11.76	T5
20147	7975064.56	503147.384	11.751	T5
20148	7975049.35	503142.335	11.729	T5
20149	7975033.895	503137.731	11.703	T5
20150	7975020.846	503133.394	11.702	T5
20151	7975006.721	503128.969	11.731	T5
20152	7974994.039	503125.214	11.652	T5
20153	7974979.88	503121.396	11.624	T5
20154	7974965.182	503118.758	11.662	T5
20155	7974950.987	503117.655	11.63	T5
20156	7974936.472	503118.987	11.61	T5
20157	7974923.807	503122.059	11.589	T5
20158	7974911.044	503127.656	11.576	T5
20159	7974898.752	503135.472	11.533	T5
20160	7974887.199	503144.456	11.544	T5
20161	7974878.774	503154.56	11.503	T5
20162	7974872.462	503164.511	11.515	T5
20163	7974866.452	503172.928	11.549	T5
20164	7974864.627	503175.548	11.582	T5

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20165	7974854.066	503169.624	11.556	T5
20166	7974851.695	503170.956	11.561	T5
20167	7974858.543	503157.543	11.483	T5
20168	7974867.141	503145.414	11.499	T5
20169	7974876.476	503134.946	11.535	T5
20170	7974888.276	503124.919	11.539	T5
20171	7974902.134	503116.681	11.543	T5
20172	7974916.619	503110.522	11.567	T5
20173	7974937.679	503104.769	11.577	T5
20174	7974953.219	503103.093	11.61	T5
20175	7974969.676	503104.507	11.653	T5
20176	7974984.341	503107.863	11.644	T5
20177	7974996.539	503111.675	11.659	T5
20178	7975016.595	503117.787	11.66	T5
20179	7975016.319	503120.39	11.694	T5
20180	7975028.055	503122.863	11.694	T5
20181	7975041.092	503125.656	11.696	T5
20182	7975054.051	503129.425	11.713	T5
20183	7975066.583	503132.123	11.732	T5
20184	7975084.058	503137.542	11.752	T5
20185	7975098.865	503143.369	11.787	T5
20186	7975114.116	503148.195	11.787	T5
20187	7975133.654	503153.997	11.824	T5
20188	7975150.793	503159.004	11.852	T5
20189	7975174.179	503168.409	11.906	T5
20190	7975188.092	503173.286	11.911	T5
20191	7975203.653	503178.239	11.911	T5
20192	7975220.186	503183.497	11.938	T5
20193	7975233.887	503187.778	11.968	T5
20194	7975249.015	503192.389	11.985	T5
20195	7975265.261	503196.581	11.945	T5
20196	7975280.796	503201.457	11.955	T5
20197	7975293.952	503205.616	11.949	T5
20198	7975310.661	503210.677	11.935	T5
20199	7975325.112	503215.825	11.941	T5
20200	7975343.636	503221.548	11.896	T5
20201	7975358.598	503226.085	11.887	T5
20202	7975377.51	503232.476	11.909	T5
20203	7975392.25	503235.438	12.041	T5
20204	7975409.958	503241.735	12.382	T5
20205	7975428.743	503248.233	12.792	T5
20206	7975446.149	503254.078	13.004	T5

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20207	7975464.917	503260.153	12.995	T5
20208	7975481.573	503264.473	12.899	T5
20209	7975507.894	503272.69	12.764	T5
20210	7975520.854	503276.941	12.645	T5
20211	7975537.93	503282.777	12.414	T5
20212	7975553.703	503288.544	12.159	T5
20213	7975567.498	503292.554	11.981	T5
20214	7975582.212	503297.961	11.861	T5
20215	7975597.44	503304.222	11.857	T5
20216	7975609.713	503310.842	11.836	T5
20217	7975625.881	503320.054	11.826	T5
20218	7975638.268	503332.438	11.819	T5
20219	7975646.672	503344.427	11.77	T5
20220	7975654.94	503358.175	11.795	T5
20221	7975644.565	503361.991	11.737	T5
20222	7975635.98	503348.214	11.798	T5
20223	7975627.302	503336.216	11.807	T5
20224	7975615.189	503326.805	11.817	T5
20225	7975603.838	503320.598	11.815	T5
20226	7975586.267	503313.168	11.855	T5
20227	7975570.868	503308.066	11.899	T5
20228	7975553.146	503301.876	12.138	T5
20229	7975539.675	503297.335	12.332	T5
20230	7975521.758	503291.48	12.581	T5
20231	7975504.101	503285.953	12.777	T5
20232	7975486.821	503280.832	12.85	T5
20233	7975468.974	503275.076	12.956	T5
20234	7975457.828	503271.1	12.998	T5
20235	7976063.085	503777.24	11.107	T5 CREST
20236	7976059.823	503767.381	11.423	T5 CREST
20237	7976054.496	503754.596	11.697	T5 CREST
20238	7976048.434	503744.731	11.899	T5 CREST
20239	7976041.043	503736.187	12.133	T5 CREST
20240	7976031.28	503726.964	12.378	T5 CREST
20241	7976019.433	503719.198	12.663	T5 CREST
20242	7976009.264	503713.68	12.914	T5 CREST
20243	7975998.676	503707.534	13.139	T5 CREST
20244	7975990.351	503698.348	13.396	T5 CREST
20245	7975982.543	503684.861	13.686	T5 CREST
20246	7975976.316	503673.936	13.822	T5 CREST
20247	7975969.815	503660.292	13.768	T5 CREST
20248	7975963.464	503646.602	13.42	T5 CREST

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20249	7975956.269	503631.831	13.125	T5 CREST
20250	7975949.599	503616.84	12.774	T5 CREST
20251	7975943.319	503603.996	12.522	T5 CREST
20252	7975940.023	503596.986	12.566	T5 CREST
20253	7975934.347	503585.496	12.632	T5 CREST
20254	7975928.966	503574.68	12.645	T5 CREST
20255	7975923.36	503562.42	12.635	T5 CREST
20256	7975916.409	503548.108	12.561	T5 CREST
20257	7975908.311	503535.166	12.519	T5 CREST
20258	7975898.289	503523.255	12.532	T5 CREST
20259	7975886.513	503512.603	12.37	T5 CREST
20260	7975875.644	503505.082	12.249	T5 CREST
20261	7975864.088	503498.762	12.061	T5 CREST
20262	7975850.43	503493.45	11.853	T5 CREST
20263	7975839.27	503489.331	11.737	T5 CREST
20264	7975803.784	503502.075	11.435	T5 CREST
20265	7975815.766	503506.363	11.631	T5 CREST
20266	7975829.071	503511.379	11.757	T5 CREST
20267	7975841.286	503515.94	11.884	T5 CREST
20268	7975854.439	503520.96	12.119	T5 CREST
20269	7975868.093	503528.781	12.345	T5 CREST
20270	7975880.816	503539.634	12.493	T5 CREST
20271	7975891.112	503552.504	12.512	T5 CREST
20272	7975898.665	503566.172	12.613	T5 CREST
20273	7975905.19	503579.975	12.64	T5 CREST
20274	7975911.616	503593.522	12.576	T5 CREST
20275	7975914.939	503600.722	12.546	T5 CREST
20276	7975919.18	503609.385	12.511	T5 CREST
20277	7975926.616	503608.639	12.521	T5
20278	7975921.935	503598.481	12.574	T5
20279	7975916.472	503587.099	12.61	T5
20280	7975910.299	503575.249	12.638	T5
20281	7975903.858	503562.971	12.626	T5
20282	7975896.67	503550.258	12.595	T5
20283	7975886.953	503538.237	12.516	T5
20284	7975874.191	503526.436	12.361	T5
20285	7975857.183	503515.62	12.119	T5
20286	7975844.848	503509.972	11.924	T5
20287	7975830.942	503504.463	11.725	T5
20288	7975820.578	503500.756	11.614	T5
20289	7975834.936	503496.173	11.739	T5
20290	7975852.72	503503.229	11.992	T5

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20291	7975864.269	503508.234	12.18	T5
20292	7975875.968	503514.788	12.317	T5
20293	7975885.815	503522.137	12.402	T5
20294	7975896.019	503532.112	12.497	T5
20295	7975905.331	503543.913	12.576	T5
20296	7975912.752	503556.358	12.622	T5
20297	7975919.131	503567.985	12.637	T5
20298	7975924.946	503580.226	12.617	T5
20299	7975931.325	503595.122	12.566	T5
20300	7975935.027	503602.315	12.529	T5
20302	7975923.63	503619.279	12.572	T5
20303	7975929.695	503632.069	12.865	T5
20304	7975934.886	503643.36	13.122	T5
20305	7975940.321	503655.539	13.381	T5
20306	7975946.793	503668.605	13.616	T5
20307	7975952.955	503681.65	13.761	T5
20308	7975960.522	503697.298	13.657	T5
20309	7975967.181	503709.222	13.412	T5
20310	7975979.902	503723.204	13.081	T5
20311	7975990.724	503731.905	12.723	T5
20312	7976003.687	503739.001	12.455	T5
20313	7976014.643	503745.301	12.175	T5
20314	7976024.934	503755.598	11.924	T5
20315	7976032.736	503766.988	11.64	T5
20316	7976037.846	503779.703	11.362	T5
20317	7976040.34	503786.036	11.118	T5
20318	7976043.48	503792.966	10.989	T5
20319	7976049.853	503792.455	10.968	T5 CREST
20320	7976046.127	503781.357	11.217	T5
20321	7976045.227	503779.443	11.289	T5
20322	7976041.319	503770.103	11.523	T5
20323	7976034.693	503758.416	11.782	T5
20324	7976026.834	503748.7	12.01	T5
20325	7976017.59	503740.864	12.251	T5
20326	7976007.756	503733.973	12.516	T5
20327	7975995.434	503725.77	12.828	T5
20328	7975985.304	503717.842	13.093	T5
20329	7975977.536	503709.41	13.325	T5
20330	7975969.81	503698.75	13.574	T5
20331	7975964.186	503688.426	13.789	T5
20332	7975958.118	503676.037	13.824	T5
20333	7975952.217	503663.752	13.661	T5

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20334	7975946.258	503651.71	13.384	T5
20335	7975938.802	503636.847	13.068	T5
20336	7975932.902	503624.876	12.793	T5
20337	7975928.479	503614.915	12.587	T5
20338	7975939.342	503611.628	12.623	T5
20339	7975945.132	503622.22	12.858	T5
20340	7975950.743	503633.392	13.105	T5
20341	7975957.264	503647.105	13.413	T5
20342	7975964.781	503662.158	13.735	T5
20343	7975970.203	503672.766	13.812	T5
20344	7975976.798	503684.154	13.789	T5
20345	7975984.844	503698.584	13.453	T5
20346	7975993.843	503709.254	13.165	T5
20347	7976004.806	503716.712	12.902	T5
20348	7976019.004	503725.936	12.545	T5
20349	7976028.6	503733.138	12.299	T5
20350	7976036.743	503742.861	12.031	T5
20351	7976044.701	503754.038	11.772	T5
20352	7976052.168	503768.413	11.457	T5
20353	7976056.273	503778.896	11.229	T5
20354	7976060.301	503788.413	11.053	T5
20355	7976062.67	503792.52	11.003	T5
20356	7975832.515	503486.872	11.607	T5 CREST
20357	7975832.525	503486.895	11.611	T5 CREST
20358	7975815.911	503480.805	11.432	T5 CREST
20359	7975799.819	503474.805	11.198	T5 CREST
20360	7975784.946	503469.014	11.002	T5 CREST
20361	7975770.062	503463.814	10.978	T5 CREST
20362	7975753.394	503457.7	11.037	T5 CREST
20363	7975737.14	503451.319	11.082	T5 CREST
20364	7975721.515	503443.957	11.282	T5 CREST
20365	7975707.889	503434.451	11.299	T5 CREST
20366	7975695.895	503422.334	11.373	T5 CREST
20367	7975687.525	503409.282	11.458	T5 CREST
20368	7975680.625	503395.906	11.555	T5 CREST
20369	7975673.856	503381.045	11.665	T5 CREST
20370	7975667.621	503368.983	11.782	T5 CREST
20371	7975664.066	503377.435	11.718	T5
20372	7975668.875	503386.812	11.659	T5
20373	7975674.423	503397.493	11.566	T5
20374	7975682.893	503415.361	11.469	T5
20375	7975692.825	503428.751	11.398	T5

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20376	7975703.082	503438.654	11.332	T5
20377	7975716.348	503448.423	11.243	T5
20378	7975732.038	503456.376	11.14	T5
20379	7975745.627	503461.641	11.061	T5
20380	7975758.774	503466.574	10.99	T5
20381	7975775.431	503472.541	11.016	T5
20382	7975788.519	503477.634	11.099	T5
20383	7975788.564	503477.659	11.092	T5
20384	7975801.084	503482.997	11.261	T5
20385	7975813.395	503487.827	11.414	T5
20386	7975810.537	503495.893	11.447	T5
20387	7975795.052	503490.871	11.247	T5
20388	7975779.411	503485.113	11.066	T5
20389	7975760.028	503477.872	10.994	T5
20390	7975744.618	503472.339	11.066	T5
20391	7975727.496	503465.298	11.149	T5
20392	7975708.965	503455.903	11.285	T5
20393	7975697.78	503447.792	11.318	T5
20394	7975682.632	503433.22	11.433	T5
20395	7975671.035	503415.672	11.546	T5
20396	7975663.955	503402.492	11.575	T5
20397	7975657.865	503389.625	11.639	T5
20398	7975652.854	503378.276	11.679	T5
20399	7975650.082	503387.993	11.661	T5 CREST
20400	7975647.315	503382.654	11.633	T5 CREST
20401	7975653.452	503395.201	11.587	T5 CREST
20402	7975661.75	503412.003	11.519	T5 CREST
20403	7975669.313	503426.266	11.448	T5 CREST
20404	7975679.043	503440.026	11.373	T5 CREST
20405	7975691.963	503452.331	11.428	T5 CREST
20406	7975704.758	503462.692	11.23	T5 CREST
20407	7975717.398	503469.586	11.176	T5 CREST
20408	7975732.131	503475.508	11.194	T5 CREST
20409	7975755.588	503486.1	11.068	T5 CREST
20410	7975778.64	503492.824	11.105	T5 CREST

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Point Number	Northing	Easting	Elevation	Description
1	7975930.341	503577.152	12.581	TYPE 5
2	7975923.177	503580.392	12.559	TYPE 5
3	7975914.828	503584.098	12.564	TYPE 5
4	7975908.3	503586.63	12.566	TYPE 5
5	7975904.202	503577.938	12.607	TYPE 5
6	7975911.604	503573.76	12.589	TYPE 5
7	7975918.984	503570.813	12.56	TYPE 5
8	7975926.066	503567.698	12.589	TYPE 5
9	7975920.484	503555.843	12.63	TYPE 5
10	7975912.945	503559.136	12.633	TYPE 5
11	7975906.102	503562.55	12.662	TYPE 5
12	7975898.466	503565.698	12.647	TYPE 5
13	7975892.444	503555.066	12.53	TYPE 5
14	7975899.285	503550.582	12.601	TYPE 5
15	7975906.726	503546.309	12.59	TYPE 5
16	7975913.396	503542.949	12.56	TYPE 5
17	7975905.45	503531.242	12.481	TYPE 5
18	7975899.258	503536.314	12.502	TYPE 5
19	7975893.196	503540.597	12.598	TYPE 5
20	7975885.669	503545.21	12.495	TYPE 5
21	7975880.132	503538.821	12.502	TYPE 5
22	7975886.261	503532.754	12.479	TYPE 5
23	7975892.42	503527.857	12.447	TYPE 5
24	7975897.889	503522.936	12.527	TYPE 5
25	7975889.514	503515.296	12.409	TYPE 5
26	7975883.454	503521.626	12.389	TYPE 5
27	7975878.251	503527.307	12.395	TYPE 5
28	7975873.138	503532.542	12.419	TYPE 5
29	7975863.263	503525.568	12.266	TYPE 5
30	7975867.816	503517.847	12.264	TYPE 5
31	7975873.011	503510.517	12.316	TYPE 5
32	7975876.464	503505.577	12.303	TYPE 5
33	7975866.031	503499.774	12.143	TYPE 5
34	7975862.391	503506.41	12.163	TYPE 5
35	7975858.033	503513.434	12.151	TYPE 5
36	7975854.238	503520.803	12.111	TYPE 5
37	7975849.681	503518.784	12.047	TYPE 5
38	7975847.202	503517.936	12.008	TYPE 5
39	7975850.429	503510.452	11.999	TYPE 5

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40	7975853.786	503503.254	12.038	TYPE 5
41	7975857.373	503496.225	12.002	TYPE 5
42	7975846.615	503492.065	11.858	TYPE 5
43	7975843.475	503498.535	11.895	TYPE 5
44	7975840.152	503506.369	11.874	TYPE 5
45	7975836.407	503514.053	11.822	TYPE 5
46	7975826.982	503510.454	11.776	TYPE 5
47	7975829.226	503503.135	11.693	TYPE 5
48	7975832.35	503494.985	11.704	TYPE 5
49	7975834.929	503487.634	11.685	TYPE 5
50	7975819.557	503481.846	11.505	TYPE 5
51	7975815.346	503488.339	11.458	TYPE 5
52	7975811.908	503495.796	11.473	TYPE 5
53	7975808.222	503503.637	11.546	TYPE 5
54	7975798.28	503500.223	11.258	TYPE 5
55	7975800.549	503493.189	11.316	TYPE 5
56	7975803.745	503485.799	11.336	TYPE 5
57	7975807.194	503477.581	11.31	TYPE 5
58	7975799.939	503474.753	11.207	TYPE 5
59	7975797.654	503481.235	11.216	TYPE 5
60	7975794.533	503488.847	11.245	TYPE 5
61	7975790.079	503497.025	11.202	TYPE 5
62	7975715.13	503439.86	11.309	TYPE 5
63	7975710.833	503446.01	11.278	TYPE 5
64	7975705.691	503453.271	11.264	TYPE 5
65	7975700.748	503459.699	11.291	TYPE 5
66	7975708.898	503465.51	11.218	TYPE 5
67	7975712.913	503459.119	11.242	TYPE 5
68	7975717.633	503452.299	11.259	TYPE 5
69	7975723.717	503444.857	11.196	TYPE 5
70	7975734.343	503450.144	11.126	TYPE 5
71	7975731.434	503456.006	11.122	TYPE 5
72	7975727.186	503463.551	11.149	TYPE 5
73	7975722.871	503471.89	11.145	TYPE 5
74	7975731.825	503476.007	11.176	TYPE 5
75	7975736.009	503469.583	11.092	TYPE 5
76	7975739.628	503463.419	11.068	TYPE 5
77	7975744.469	503454.431	11.1	TYPE 5
78	7975752.888	503457.554	11.058	TYPE 5
79	7975750.615	503464.589	11.026	TYPE 5
80	7975748.253	503469.267	11.002	TYPE 5
81	7975744.978	503475.959	11.117	TYPE 5

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82	7975742.175	503481.544	11.178	TYPE 5
83	7975751.852	503486.034	11.142	TYPE 5
84	7975755.805	503478.449	11.018	TYPE 5
85	7975759.724	503470.774	11.051	TYPE 5
86	7975763.718	503461.335	11.059	TYPE 5
87	7975772.644	503464.715	11.044	TYPE 5
88	7975770.376	503471.294	10.971	TYPE 5
89	7975767.881	503477.349	10.97	TYPE 5
90	7975764.32	503485.341	11.062	TYPE 5
91	7975763.816	503487.729	11.149	TYPE 5
92	7975775.122	503491.849	11.119	TYPE 5
93	7975777.137	503486.066	11.066	TYPE 5
94	7975780.907	503476.897	11.025	TYPE 5
95	7975784.509	503468.754	11.016	TYPE 5
96	7975793.585	503472.653	11.087	TYPE 5
97	7975790.572	503480.526	11.134	TYPE 5
98	7975786.712	503487.293	11.219	TYPE 5
99	7975783.176	503494.875	11.182	TYPE 5
100	7975705.075	503431.744	11.364	TYPE 5
101	7975699.22	503437.435	11.391	TYPE 5
102	7975692.866	503443.714	11.363	TYPE 5
103	7975688.104	503448.66	11.379	TYPE 5
104	7975678.807	503439.438	11.364	TYPE 5
105	7975686.279	503434.205	11.431	TYPE 5
106	7975693.084	503429.407	11.387	TYPE 5
107	7975698.404	503425.179	11.373	TYPE 5
108	7975692.224	503416.541	11.382	TYPE 5
109	7975685.101	503421.666	11.438	TYPE 5
110	7975678.861	503426.215	11.434	TYPE 5
111	7975671.783	503430.089	11.47	TYPE 5
112	7975666.065	503420.571	11.491	TYPE 5
113	7975673.649	503416.175	11.491	TYPE 5
114	7975680.923	503412.057	11.497	TYPE 5
115	7975687.305	503408.39	11.468	TYPE 5
116	7975682.444	503399.164	11.548	TYPE 5
117	7975674.118	503403.008	11.552	TYPE 5
118	7975666.421	503407.184	11.599	TYPE 5
119	7975660.399	503409.56	11.508	TYPE 5
120	7975655.584	503399.787	11.603	TYPE 5
121	7975662.852	503396.882	11.627	TYPE 5
122	7975669.806	503392.983	11.579	TYPE 5
123	7975677.3	503388.635	11.596	TYPE 5

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124	7975674.063	503381.512	11.69	TYPE 5
125	7975666.475	503384.095	11.668	TYPE 5
126	7975659.705	503387.25	11.672	TYPE 5
127	7975651.378	503391.524	11.672	TYPE 5
128	7975648.247	503387.045	11.639	TYPE 5 TOTERD
129	7975654.234	503382.999	11.719	TYPE 5 TOTERD
130	7975659.305	503380.414	11.711	TYPE 5 TOTERD
131	7975666.41	503377.466	11.733	TYPE 5 TOTERD
132	7975671.247	503375.998	11.692	TYPE 5 TOTERD
133	7975668.302	503367.341	11.771	TYPE 5 TOTERD
134	7975665.597	503358.825	11.751	TYPE 5 TOTERD
135	7975663.433	503352.703	11.554	TYPE 5 TOTERD
136	7975657.575	503357.195	11.884	TYPE 5 TOTERD
137	7975651.703	503361.317	11.848	TYPE 5 TOTERD
138	7975645.755	503365.181	11.752	TYPE 5 TOTERD
139	7975640.795	503368.209	11.734	TYPE 5 TOTERD
140	7975639.054	503368.813	11.591	TYPE 5 TOTERD
141	7975641.372	503374.15	11.56	TYPE 5 TOTERD
142	7975645.607	503381.542	11.619	TYPE 5 TOTERD
143	7975650.787	503377.281	11.677	TYPE 5 TOTERD
144	7975659.371	503370.924	11.797	TYPE 5 TOTERD
145	7975660.137	503349.171	11.658	TYPE 5
146	7975652.55	503354.191	11.78	TYPE 5
147	7975645.229	503358.472	11.773	TYPE 5
148	7975637.641	503362.585	11.8	TYPE 5
149	7975632.76	503353.524	11.847	TYPE 5
150	7975639.959	503348.075	11.812	TYPE 5
151	7975647.058	503342.293	11.786	TYPE 5
152	7975652.72	503338.789	11.887	TYPE 5
153	7975646.713	503330.173	11.913	TYPE 5
154	7975640.649	503334.605	11.81	TYPE 5
155	7975633.519	503340.721	11.824	TYPE 5
156	7975626.538	503345.161	11.879	TYPE 5
157	7975619.656	503337.381	11.774	TYPE 5
158	7975626.004	503330.524	11.838	TYPE 5
159	7975631.786	503325.16	11.838	TYPE 5
160	7975637.226	503319.376	11.852	TYPE 5
161	7975628.858	503312.292	11.89	TYPE 5
162	7975622.513	503319.039	11.844	TYPE 5
163	7975616.758	503325.605	11.867	TYPE 5
164	7975612.761	503330.884	11.868	TYPE 5
165	7975602.394	503325.345	11.96	TYPE 5

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166	7975606.752	503317.111	11.818	TYPE 5
167	7975612.499	503309.873	11.842	TYPE 5
168	7975616.828	503304.154	11.917	TYPE 5

NUNA

NUNA EAST LTD

(Section 4)

Survey Data
(Type 8 150mm minus As-Built)

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Port Site Module Delivery Road
Type 8 (150mm minus) Survey Data
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Type 8 (150mm minus) Survey Data

Point Number	Northing	Easting	Elevation	Description
1908293	7975842.395	503517.132	11.771	T8 CREST
1908294	7975853.956	503524.168	11.959	T8 CREST
1908295	7975864.323	503530.342	12.151	T8 CREST
1908296	7975874.249	503538.822	12.275	T8 CREST
1908297	7975882.328	503547.503	12.391	T8 CREST
1908298	7975889.583	503556.099	12.458	T8 CREST
1908299	7975899.18	503568.893	12.478	T8 CREST
1908300	7975898.783	503569.175	12.096	T12 CREST
1908301	7975892.341	503560.051	12.161	T12 CREST
1908302	7975885.147	503551.541	12.089	T12 CREST
1908303	7975877.439	503542.722	11.988	T12 CREST
1908304	7975868.332	503534.07	11.909	T12 CREST
1908305	7975856.772	503526.504	11.691	T12 CREST
1908306	7975841.458	503516.976	11.477	T12 CREST

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Port Site Module Delivery Road
Type 8 (150mm minus) Survey Data
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Type 8 (150mm minus) Survey Data

Point Number	Northing	Easting	Elevation	Description
879	7976028.497	503764.507	11.102	CREST T8
880	7976032.382	503771.148	11.12	CREST T8
881	7976036.698	503779.879	11.051	CREST T8
882	7976038.416	503784.533	11.046	CREST T8
883	7976060.535	503768.026	11.083	CREST T8
884	7976055.55	503755.91	11.163	CREST T8
885	7976051.24	503748.13	11.156	CREST T8
886	7976044.253	503738.08	11.209	CREST T8
887	7976038.102	503731.741	11.331	CREST T8
888	7976022.601	503718.927	11.404	CREST T8
889	7976014.473	503714.401	11.42	CREST T8
890	7976007.521	503710.274	11.442	CREST T8
891	7975998.221	503704.004	11.502	CREST T8
892	7975992.862	503697.273	11.529	CREST T8
893	7975991.775	503695.369	11.888	CREST T8
894	7975989.988	503689.534	12.213	CREST T8
20000	7975974.869	503669.399	13.648	CREST T8
20001	7975978.959	503678.599	13.598	CREST T8
20002	7975983.957	503689.55	13.429	CREST T8
20003	7975989.618	503697.698	13.262	CREST T8
20004	7975997.922	503706.894	12.991	CREST T8
20005	7976007.728	503712.638	12.754	CREST T8
20006	7976019.514	503719.015	12.398	CREST T8
20007	7976036.228	503731.115	12	CREST T8
20008	7976044.323	503740.207	11.799	CREST T8
20009	7976051.991	503750.427	11.554	CREST T8
20010	7976057.843	503761.85	11.371	CREST T8
20011	7976060.168	503768.364	11.183	CREST T8
20012	7976038.949	503785.085	11.125	CREST T8
20013	7976034.148	503773.266	11.361	CREST T8
20014	7976029.405	503764.013	11.54	CREST T8
20015	7976011.613	503742.826	12.105	CREST T8
20016	7975998.565	503736.788	12.32	CREST T8
20017	7975986.096	503729.132	12.624	CREST T8
20018	7975976.888	503719.933	12.916	CREST T8
20019	7975969.384	503713.316	13.201	CREST T8
20020	7975963.947	503703.936	13.398	CREST T8
20021	7975957.091	503690.563	13.609	CREST T8
20022	7975952.401	503680.736	13.585	CREST T8

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20023	7975970.108	503672.158	13.656	CREST T8
20024	7975975.273	503680.923	13.619	CREST T8
20025	7975975.283	503680.917	13.635	CREST T8
20026	7975982.382	503693.366	13.4	CREST T8
20027	7975990.143	503705.372	13.089	CREST T8
20028	7975995.967	503711.542	12.951	CREST T8
20029	7976004.623	503719.295	12.671	CREST T8
20030	7976015.884	503725.876	12.385	CREST T8
20031	7976026.082	503733.12	12.149	CREST T8
20032	7976031.655	503738.451	11.987	CREST T8
20033	7976041.474	503746.833	11.728	CREST T8
20034	7976050.147	503757.96	11.48	CREST T8
20035	7976055.593	503768.923	11.227	CREST T8
20036	7976041.922	503780.296	11.171	CREST T8
20037	7976036.689	503769.452	11.377	CREST T8
20038	7976029.785	503756.082	11.697	CREST T8
20039	7976021.979	503745.445	12.022	CREST T8
20040	7976013.564	503737.16	12.232	CREST T8
20041	7976005.395	503730.222	12.42	CREST T8
20042	7975997.461	503724.826	12.671	CREST T8
20043	7975989.722	503718.947	12.86	CREST T8
20044	7975983.962	503714.749	12.992	CREST T8
20045	7975974.447	503705.786	13.254	CREST T8
20046	7975969.591	503697.644	13.448	CREST T8
20047	7975964.17	503688.1	13.622	CREST T8
20048	7975960.22	503680.726	13.658	CREST T8
20049	7975958.29	503675.267	13.598	CREST T8
20051	7975947.661	503675.313	12.176	CREST T8
20052	7975951.588	503685.593	12.134	CREST T8
20053	7975952.847	503689.281	11.7	CREST T8
20054	7975955.22	503691.303	12.736	CREST T8
20055	7975957.322	503697.592	12.842	CREST T8
20056	7975959.254	503699.863	12.232	CREST T8
20057	7975963.219	503706.504	12.255	CREST T8
20058	7975967.356	503712.754	12.337	CREST T8
20059	7975967.613	503715.34	11.548	CREST T8
20060	7975974.099	503721.282	11.402	CREST T8
20061	7975980.059	503726.529	11.485	CREST T8
20062	7975988.527	503733.124	11.457	CREST T8
20063	7976000.251	503739.361	11.466	CREST T8
20064	7976005.704	503741.889	11.344	CREST T8
20065	7976013.141	503745.514	11.553	CREST T8

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Point Number	Northing	Easting	Elevation	Description
916	7975993.394	503726.637	12.714	TYPE8 PR3
917	7975993.315	503726.671	12.705	TYPE8 PR3
918	7975995.683	503724.099	12.719	TYPE8 PR3
919	7975998.083	503721.229	12.664	TYPE8 PR3
920	7976002.851	503724.899	12.584	TYPE8 PR3
921	7976000.415	503727.932	12.554	TYPE8 PR3
922	7975998.254	503730.756	12.585	TYPE8 PR3
923	7976003.737	503733.714	12.482	TYPE8 PR3
924	7976006.515	503730.727	12.474	TYPE8 PR3
925	7976008.237	503728.648	12.428	TYPE8 PR3
926	7976012.374	503732.531	12.344	TYPE8 PR3
927	7976010.568	503735.249	12.209	TYPE8 PR3
928	7976010.025	503737.698	12.259	TYPE8 PR3
929	7976012.783	503740.755	12.175	TYPE8 PR3
930	7976015.404	503737.706	12.227	TYPE8 PR3
931	7976016.494	503735.522	12.293	TYPE8 PR3

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Point Number	Northing	Easting	Elevation	Description
846	7975978.034	503676.577	13.542	T8 PR
847	7975972.369	503679.424	13.553	T8 PR
848	7975965.169	503682.936	13.634	T8 PR
849	7975957.581	503686.646	13.63	T8 PR
850	7975955.245	503687.354	13.532	T8 PR
851	7975959.913	503695.512	13.459	T8 PR
852	7975965.804	503692.699	13.501	T8 PR
853	7975973.034	503689.09	13.536	T8 PR
854	7975985.097	503690.648	13.274	T8 PR
855	7975982.26	503685.552	13.585	T8 PR
856	7975978.813	503694.701	13.329	T8 PR
857	7975972.943	503699.451	13.344	T8 PR
858	7975964.74	503704.548	13.315	T8 PR
859	7975969.787	503713.45	12.861	T8 PR
860	7975976.733	503709.278	12.753	T8 PR
861	7975983.716	503703.893	12.636	T8 PR
862	7975990.561	503699.296	12.579	T8 PR
863	7975996.102	503705.064	12.461	T8 PR
864	7975991.308	503710.962	12.524	T8 PR
865	7975986.222	503715.135	12.349	T8 PR
866	7975978.337	503721.96	12.25	T8 PR
867	7975986.15	503728.925	12.17	T8 PR
868	7975991.158	503723.992	12.259	T8 PR
869	7975996.918	503717.106	12.352	T8 PR
870	7976002.725	503710.464	12.49	T8 PR
871	7976013.637	503716.57	12.142	T8 PR
872	7976009.242	503723.543	12.03	T8 PR
873	7976003.307	503731.052	12.039	T8 PR
874	7975999.499	503736.68	11.95	T8 PR
875	7976008.117	503739.197	11.764	T8 PR
876	7976014.049	503733.475	11.828	T8 PR
877	7976019.42	503726.578	11.809	T8 PR
878	7976022.989	503722.36	11.803	T8 PR

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Point Number	Northing	Easting	Elevation	Description
20066	7975951.5	503679.5	13.632	CREST T8
20067	7975944.394	503664.446	13.466	CREST T8
20068	7975937.632	503650.078	13.14	CREST T8
20069	7975930.537	503634.681	12.817	CREST T8
20070	7975923.09	503618.646	12.409	CREST T8
20071	7975914.766	503600.823	12.355	CREST T8
20072	7975907.588	503585.624	12.428	CREST T8
20073	7975927.803	503571.387	12.419	CREST T8
20074	7975936.221	503588.462	12.421	CREST T8
20075	7975946.342	503608.917	12.479	CREST T8
20076	7975955.037	503628.327	12.886	CREST T8
20077	7975962.468	503643.624	13.256	CREST T8
20078	7975968.853	503656.863	13.554	CREST T8
20079	7975973.92	503667.954	13.63	CREST T8
20080	7975967.117	503671.163	13.61	T8
20081	7975959.86	503656.316	13.453	T8
20082	7975954.352	503643.548	13.166	T8
20083	7975954.349	503643.563	13.162	T8
20084	7975948.323	503631.119	12.907	T8
20085	7975941.26	503615.936	12.567	T8
20086	7975934.98	503604.34	12.369	T8
20087	7975927.345	503592.114	12.415	T8
20088	7975922.689	503584.112	12.38	T8
20089	7975917.688	503592.956	12.388	T8
20090	7975925.069	503608.278	12.364	T8
20091	7975929.439	503616.179	12.451	T8
20092	7975934.739	503626.733	12.717	T8
20093	7975941.657	503640.822	13.015	T8
20094	7975946.999	503652.891	13.251	T8
20095	7975950.14	503659.614	13.381	T8
20096	7975955.006	503670.64	13.56	T8
20097	7975957.241	503676.791	13.638	T8
20098	7975950.186	503680.697	12.36	T8 TOE
20099	7975946.68	503673.624	12.199	T8 TOE
20100	7975943.822	503668.844	12.879	T8 TOE
20101	7975940.548	503665.91	11.437	T8 TOE
20102	7975938.109	503659.906	11.321	T8 TOE
20103	7975936.325	503652.781	11.771	T8 TOE
20104	7975934.442	503647.953	11.85	T8 TOE

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20105	7975931.36	503642.937	11.22	T8 TOE
20106	7975926.475	503631.951	11.071	T8 TOE
20107	7975923.494	503624.849	11.186	T8 TOE
20108	7975930.989	503575.942	11.824	T8 TOE
20109	7975936.337	503585.639	11.702	T8 TOE
20110	7975942.201	503596.392	11.336	T8 TOE
20111	7975944.511	503600.426	11.345	T8 TOE
20112	7975953.898	503619.5	12.004	T8 TOE
20113	7975960.601	503635.79	12.098	T8 TOE
20114	7975966.493	503648.906	12.571	T8 TOE
20115	7975972.549	503659.911	12.845	T8 TOE
20116	7975976.639	503662.388	13.176	T8 TOE
20117	7975978.018	503674.374	13.095	T8 TOE

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Type 8 (150mm minus) Survey Data

Point Number	Northing	Easting	Elevation	Description
742	7975045.627	503120.716	10.999	T8 TOE
743	7975044.113	503121.132	11.512	T8 CREST
745	7975037.17	503144.38	11.665	T8 CREST
746	7975036.531	503146.172	10.902	T8 TOE
747	7975019.96	503140.232	11.093	T8 TOE
748	7975020.243	503139.064	11.628	T8 CREST
750	7975028.647	503116.731	11.545	T8 CREST
751	7975029.118	503115.494	11.013	T8 TOE
752	7975015.055	503111.247	11.064	T8 TOE
753	7975014.521	503112.245	11.561	T8 CREST
754	7975006.647	503134.798	11.62	T8 CREST
755	7975005.991	503136.331	10.969	T8 TOE
756	7974989.033	503131.596	10.787	T8 TOE
757	7974989.185	503129.331	11.544	T8 CREST
758	7974995.426	503106.194	11.513	T8 CREST
759	7974995.683	503105.011	10.961	T8 TOE
760	7974978.223	503099.603	11	T8 TOE
761	7974977.562	503100.973	11.451	T8 TOE
762	7974973.06	503125.902	11.572	T8 TOE
763	7974972.76	503126.935	11.13	T8 TOE
764	7974973.018	503125.855	11.575	T8 CREST
765	7974963.992	503123.233	11.607	T8 CREST
766	7974963.747	503125.096	11.171	T8 TOE
767	7974969.386	503099.16	11.466	T8 CREST
768	7974970.199	503097.392	11.17	T8 TOE
769	7974948.36	503122.473	11.439	T8 CREST
770	7974948.009	503123.493	11.047	T8 TOE
771	7974938.684	503124.295	11.185	T8 TOE
772	7974938.745	503123.321	11.484	T8 CREST
773	7974928.593	503125.563	11.449	T8 CREST
774	7974928.702	503126.436	11.173	T8 TOE
775	7974918.56	503129.135	11.45	T8 CREST
776	7974918.859	503130.4	11.196	T8 TOE
777	7974913.708	503135.335	11.189	T8 SPOT
778	7974913.705	503131.248	11.424	T8 CREST
779	7974905.43	503136.02	11.399	T8 CREST
780	7974906.267	503137.417	11.295	T8 SPOT
781	7974899.196	503140.066	11.395	T8 CREST
782	7974899.931	503141.893	11.311	T8 SPOT

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783	7974891.621	503148.53	11.297	T8 SPOT
784	7974890.017	503147.941	11.429	T8 CREST
785	7974884.836	503153.918	11.41	T8 CREST
786	7974886.464	503155.766	11.39	T8 SPOT
787	7974879.001	503161.876	11.444	T8 CREST
788	7974881.297	503163.659	11.386	T8 SPOT
789	7974874.176	503170.168	11.399	T8 CREST
790	7974876.507	503171.316	11.432	T8 SPOT
791	7974870.899	503177.021	11.382	T8 CREST
792	7974873.256	503179.733	11.507	T8 SPOT
793	7974849.083	503167.56	11.549	T8 CREST
794	7974846.522	503166.213	11.502	T8 SPOT
795	7974854.122	503156.957	11.405	T8 CREST
796	7974852.666	503155.962	11.442	T8 SPOT
797	7974860.863	503145.902	11.359	T8 SPOT
798	7974860.846	503145.91	11.357	T8 CREST
799	7974858.715	503143.725	11.361	T8 SPOT
829	7974868.813	503135.881	11.401	T8 CREST
830	7974867.58	503134.233	11.397	T8 SPOT
831	7974879.416	503125.371	11.417	T8 CREST
832	7974877.969	503123.545	11.336	T8 SPOT
833	7974888.673	503118.134	11.355	T8 CREST
834	7974888.183	503117.015	11.309	T8 SPOT
835	7974900.491	503111.148	11.344	T8 CREST
836	7974899.666	503109.238	11.242	T8 SPOT
837	7974910.641	503106.417	11.48	T8 CREST
838	7974910.348	503104.323	11.459	T8 SPOT
839	7974921.843	503102.597	11.477	T8 CREST
840	7974921.092	503099.937	11.473	T8 SPOT
841	7974934.498	503099.677	11.473	T8 CREST
842	7974934.168	503097.532	11.477	T8 SPOT
843	7974947.2	503098.339	11.488	T8 CREST
844	7974947.804	503095.563	11.495	T8 SPOT

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592	7975213.271	503199.565	11.828	T8 CREST
593	7975229.211	503204.525	11.837	T8 CREST
594	7975246.632	503210.007	11.894	T8 CREST
595	7975262.289	503214.93	11.867	T8 CREST
596	7975278.93	503220.456	11.783	T8 CREST
597	7975293.281	503225.035	11.796	T8 CREST
598	7975305.961	503228.539	11.82	T8 CREST
599	7975321.091	503233.242	11.75	T8 CREST
617	7975334.966	503237.81	11.788	T8 CREST
618	7975347.63	503241.572	11.799	T8 CREST
619	7975361.04	503245.969	11.73	T8 CREST
620	7975380.254	503251.746	11.785	T8 CREST
621	7975396.201	503256.752	12.072	T8 CREST
622	7975413.696	503261.934	12.429	T8 CREST
623	7975428.82	503266.933	12.765	T8 CREST
624	7975449.793	503273.43	12.845	T8 CREST
625	7975444.509	503276.38	11.385	T8 TOE
626	7975423.95	503269.685	10.916	T8 TOE
627	7975401.065	503262.829	10.892	T8 TOE
629	7975390.905	503259.12	11.037	T8 TOE
630	7975382.134	503256.638	10.939	T8 TOE
631	7975371.348	503253.664	11.02	T8 TOE
632	7975360.526	503250.997	10.847	T8 TOE
633	7975358.792	503250.184	10.981	T8 TOE
634	7975344.408	503242.949	10.918	T8 TOE
635	7975332.061	503239.154	10.764	T8 TOE
636	7975320.301	503235.418	10.801	T8 TOE
637	7975310.287	503232.445	10.81	T8 TOE
638	7975294.567	503227.399	10.844	T8 TOE
639	7975266.72	503218.384	10.786	T8 TOE
640	7975256.632	503215.176	10.859	T8 TOE
641	7975246.927	503212.4	10.882	T8 TOE
642	7975239.362	503209.524	10.894	T8 TOE
643	7975228.807	503206.113	10.897	T8 TOE
644	7975218.532	503202.86	10.992	T8 TOE
645	7975210.917	503199.976	11.131	T8 TOE
646	7975218.694	503175.846	11.793	T8 CREST
647	7975234.827	503180.801	11.829	T8 CREST
648	7975250.524	503185.664	11.833	T8 CREST

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649	7975270.166	503191.496	11.803	T8 CREST
650	7975288.083	503197.531	11.794	T8 CREST
651	7975302.689	503202.084	11.81	T8 CREST
652	7975317.294	503206.577	11.778	T8 CREST
653	7975331.715	503211.071	11.777	T8 CREST
654	7975345.74	503215.519	11.802	T8 CREST
655	7975364.374	503221.308	11.701	T8 CREST
656	7975374.329	503224.372	11.785	T8 CREST
657	7975393.822	503230.397	11.949	T8 CREST
658	7975406.977	503234.347	12.14	T8 CREST
659	7975422.529	503239.094	12.512	T8 CREST
660	7975437.889	503244.347	12.803	T8 CREST
661	7975454.56	503249.561	12.895	T8 CREST
662	7975467.447	503253.542	12.839	T8 CREST
663	7975482.608	503257.8	12.798	T8 CREST
664	7975493.523	503257.802	12.744	T8 CREST
665	7975491.357	503254.292	10.92	T8 TOE
666	7975476.422	503252.593	10.991	T8 TOE
667	7975455.026	503246.28	11.052	T8 TOE
668	7975435.313	503240.235	11.026	T8 TOE
669	7975419.962	503235.485	11.053	T8 TOE
670	7975401.463	503230.025	11.166	T8 TOE
671	7975385.818	503225.463	11.138	T8 TOE
672	7975372.615	503221.528	11.087	T8 TOE
673	7975368.743	503220.147	11.15	T8 TOE
674	7975346.937	503213.227	11.045	T8 TOE
675	7975331.561	503208.46	10.948	T8 TOE
676	7975320.135	503205.172	10.892	T8 TOE
677	7975309.006	503201.229	10.832	T8 TOE
678	7975297.033	503197.357	10.755	T8 TOE
679	7975284.703	503193.779	10.719	T8 TOE
680	7975272.447	503189.504	10.672	T8 TOE
681	7975257.848	503185.492	10.67	T8 TOE
682	7975240.92	503180.719	10.871	T8 TOE
683	7975218.982	503174.522	10.991	T8 TOE
684	7975199.184	503169.576	11.776	T8 CREST
685	7975186.674	503165.51	11.81	T8 CREST
686	7975173.843	503161.585	11.78	T8 CREST
687	7975163.016	503158.38	11.711	T8 CREST
688	7975150.181	503154.245	11.756	T8 CREST
689	7975136.161	503149.92	11.695	T8 CREST
690	7975122.352	503145.404	11.655	T8 CREST

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691	7975108.471	503141.298	11.658	T8 CREST
692	7975095.642	503137.072	11.663	T8 CREST
693	7975081.088	503132.521	11.611	T8 CREST
694	7975073.169	503155.864	11.617	T8 CREST
695	7975089.037	503160.529	11.683	T8 CREST
696	7975102.32	503165.048	11.652	T8 CREST
697	7975116.273	503169.391	11.685	T8 CREST
698	7975131.638	503173.99	11.724	T8 CREST
699	7975148.638	503179.251	11.714	T8 CREST
717	7975163.986	503184.115	11.753	T8 CREST
718	7975187.678	503191.712	11.769	T8 CREST
719	7975193.517	503193.575	11.778	T8 CREST
720	7975184.938	503192.129	11.118	T8 TOE
721	7975172.585	503188.211	11.217	T8 TOE
722	7975159.841	503184.562	11.145	T8 TOE
723	7975146.71	503180.362	11.134	T8 TOE
724	7975136.022	503177.324	11.036	T8 TOE
725	7975124.89	503173.647	10.93	T8 TOE
726	7975116.529	503171.175	10.88	T8 TOE
727	7975108.215	503168.922	10.88	T8 TOE
728	7975098.07	503165.489	10.864	T8 TOE
729	7975085.234	503161.119	10.87	T8 TOE
730	7975066.651	503155.607	10.951	T8 TOE
731	7975075.966	503129.863	11.031	T8 TOE
732	7975087.047	503133.052	10.96	T8 TOE
733	7975099.789	503137.265	11.012	T8 TOE
734	7975111.345	503141.108	11.021	T8 TOE
735	7975123.121	503144.636	11.075	T8 TOE
736	7975135.079	503148.233	11.104	T8 TOE
737	7975147.475	503152.205	11.153	T8 TOE
738	7975159.872	503156.239	11.205	T8 TOE
739	7975172.242	503159.722	11.154	T8 TOE
740	7975185.437	503163.763	11.133	T8 TOE
741	7975198.295	503167.863	11.02	T8 TOE

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71	7975641.876	503317.694	10.361	T8 TOE
72	7975640.002	503306.294	10.588	T8 TOE
73	7975637.74	503299.43	10.327	T8 TOE
74	7975634.97	503297.175	9.876	T8 TOE
75	7975591.861	503283.77	9.787	T8 TOE
76	7975585.651	503283.783	10.454	T8 TOE
77	7975574.759	503280.559	10.673	T8 TOE
78	7975564.434	503276.479	10.744	T8 TOE
79	7975555.116	503273.181	10.337	T8 TOE
80	7975553.014	503274.402	10.78	T8 TOE
81	7975545.737	503273.794	10.551	T8 TOE
82	7975907.157	503594.506	10.186	T8 TOE1
83	7975901.412	503581.918	10.366	T8 TOE1
84	7975898.481	503574.319	10.321	T8 TOE1
85	7975891.481	503559.913	10.617	T8 TOE1
86	7975891.47	503559.883	10.628	T8 TOE1
87	7975878.909	503541.351	10.926	T8 TOE1
88	7975867.54	503531.466	10.719	T8 TOE1
89	7975856.535	503524.128	10.906	T8 TOE1
90	7975841.986	503518.258	10.784	T8 TOE1
91	7975830.282	503512.932	11.025	T8 TOE1
92	7975817.532	503508.49	10.777	T8 TOE1
93	7975800.675	503502.35	10.493	T8 TOE1
94	7975790.111	503498.246	10.411	T8 TOE1
95	7975785.179	503495.979	10.718	T8 TOE1
96	7975702.24	503463.0834	10.791	T8 TOE1
97	7975690.223	503452.042	10.731	T8 TOE1
98	7975681.193	503443.905	10.762	T8 TOE1
99	7975672.014	503432.763	10.59	T8 TOE1
459	7975544.365	503276.949	12.137	T8 CREST
460	7975551.508	503277.683	11.915	T8 CREST
461	7975558.547	503276.731	11.708	T8 CREST
462	7975558.557	503276.554	11.703	T8 CREST
463	7975566.277	503281.642	11.972	T8 CREST
464	7975577.62	503285.854	11.871	T8 CREST
465	7975585.45	503287.531	11.802	T8 CREST
466	7975601.57	503292.033	11.713	T8 CREST
467	7975616.902	503297.363	11.562	T8 CREST
468	7975629.447	503300.219	11.317	T8 CREST

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469	7975637.293	503302.192	11.283	T8 CREST
470	7975638.67	503314.709	11.687	T8 CREST
471	7975639.582	503319.786	11.607	T8 CREST
472	7975646.631	503329.054	11.674	T8 CREST
473	7975655.235	503340.575	11.629	T8 CREST
474	7975660.627	503350.321	11.54	T8 CREST
475	7975675.957	503384.469	11.467	T8 CREST
476	7975681.216	503396.664	11.401	T8 CREST
477	7975688.545	503410.205	11.341	T8 CREST
478	7975695.865	503422.201	11.186	T8 CREST
479	7975705.061	503431.749	11.149	T8 CREST
480	7975716.003	503440.362	11.104	T8 CREST
481	7975728.031	503447.243	10.943	T8 CREST
482	7975743.8	503454.408	10.926	T8 CREST
483	7975756.016	503458.629	10.8	T8 CREST
484	7975765.922	503461.896	10.798	T8 CREST
485	7975781.597	503467.553	10.83	T8 CREST
486	7975793.791	503471.901	10.88	T8 CREST
487	7975809.683	503478.294	11.135	T8 CREST
488	7975836.119	503487.687	11.439	T8 CREST
489	7975851.783	503493.83	11.81	T8 CREST
490	7975864.452	503498.823	11.977	T8 CREST
491	7975879.075	503506.984	12.158	T8 CREST
492	7975891.829	503516.707	12.224	T8 CREST
493	7975904.711	503530.19	12.399	T8 CREST
494	7975914.227	503543.715	12.382	T8 CREST
495	7975921.892	503558.562	12.452	T8 CREST
496	7975927.856	503571.634	12.45	T8 CREST
497	7975937.558	503591.048	12.404	T8 CREST
498	7975942.488	503600.476	12.293	T8 CREST
499	7975944.596	503600.451	11.377	T8 TOE
520	7975937.741	503588.809	11.631	T8 TOE
521	7975931.024	503575.325	11.758	T8 TOE
522	7975930.918	503572.364	10.98	T8 TOE
523	7975929.781	503564.146	10.18	T8 TOE
524	7975923.618	503551.213	9.873	T8 TOE
525	7975917.626	503541.809	10.04	T8 TOE
526	7975916.296	503541.057	10.687	T8 TOE
527	7975910.282	503532.438	10.561	T8 TOE
528	7975900.518	503521.995	10.809	T8 TOE
529	7975890.803	503512.931	10.74	T8 TOE
530	7975879.69	503504.911	10.885	T8 TOE

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531	7975867.191	503498.281	11.02	T8 TOE
532	7975853.347	503493.015	10.944	T8 TOE
533	7975838.795	503487.791	10.806	T8 TOE
534	7975814.41	503478.926	10.698	T8 TOE
535	7975797.315	503472.377	10.303	T8 TOE
536	7975782.849	503467.26	10.463	T8 TOE
537	7975763.074	503460.236	10.412	T8 TOE
538	7975749.972	503455.773	10.512	T8 TOE
539	7975734.612	503448.824	10.364	T8 TOE
540	7975721.701	503442.052	10.427	T8 TOE
541	7975708.671	503432.381	10.256	T8 TOE
542	7975698.063	503422.904	10.559	T8 TOE
543	7975690.254	503410.556	10.662	T8 TOE
544	7975683.256	503398.339	10.683	T8 TOE
545	7975678.699	503387.363	10.73	T8 TOE
546	7975660.59	503345.924	10.468	T8 TOE
547	7975653.038	503333.831	10.463	T8 TOE
548	7975643.564	503321.701	10.223	T8 TOE
549	7975663.234	503418.377	10.717	T8 TOE1
550	7975657.007	503406.095	10.704	T8 TOE1
551	7975650.483	503393.126	10.675	T8 TOE1
552	7975649.544	503391.619	10.73	T8 TOE1
553	7975635.18	503364.16	10.429	T8 TOE1
554	7975627.3	503351.101	10.372	T8 TOE1
555	7975620.401	503343.006	10.329	T8 TOE1
556	7975617.848	503340.003	9.78	T8 TOE1
557	7975601.654	503330.504	9.524	T8 TOE1
558	7975582.271	503322.085	9.701	T8 TOE1
559	7975571.168	503319.279	9.791	T8 TOE1
560	7975551.585	503311.877	10.417	T8 TOE1
561	7975538.376	503306.958	10.636	T8 TOE1
562	7975540.854	503303.483	12.136	T8 CREST1
563	7975558.806	503310.252	11.939	T8 CREST1
564	7975581.068	503317.862	11.737	T8 CREST1
565	7975597.167	503323.67	11.775	T8 CREST1
566	7975612.259	503331.037	11.644	T8 CREST1
567	7975623.912	503342.22	11.646	T8 CREST1
568	7975632.418	503353.908	11.638	T8 CREST1
569	7975637.797	503363.844	11.688	T8 CREST1
570	7975652.055	503392.959	11.491	T8 CREST1
571	7975658.219	503405.477	11.406	T8 CREST1
572	7975665.545	503420.202	11.314	T8 CREST1

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573	7975673.604	503432.816	11.258	T8 CREST1
574	7975681.951	503443.331	11.222	T8 CREST1
575	7975697.036	503457.443	11.134	T8 CREST1
576	7975704.597	503465.188	11.101	T8 CREST1
577	7975713.607	503469.82	10.997	T8 LIMIT
578	7975728.678	503477.377	11.035	T8 LIMIT
579	7975738.648	503481.177	11.032	T8 LIMIT
580	7975756.408	503486.109	10.963	T8 LIMIT
581	7975785.172	503495.386	11.042	T8 CREST1
582	7975810.566	503504.515	11.392	T8 CREST1
583	7975829.301	503511.164	11.649	T8 CREST1
584	7975844.177	503517.021	11.813	T8 CREST1
585	7975856.198	503521.927	11.956	T8 CREST1
586	7975871.933	503531.979	12.173	T8 CREST1
587	7975883.806	503543.338	12.328	T8 CREST1
588	7975893.046	503556.289	12.39	T8 CREST1
589	7975900.26	503570.321	12.414	T8 CREST1
590	7975905.514	503581.212	12.427	T8 CREST1
591	7975911.957	503594.419	12.413	T8 CREST1

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Point Number	Northing	Easting	Elevation	Description
157	7975024.051	503140.242	11.543	CREST TYPE8
158	7975026.711	503129.712	11.623	TYPE8
159	7975030.291	503117.752	11.609	CREST TYPE8
160	7975030.473	503116.447	11.032	TOE
161	7975044.578	503120.475	11.094	TOE
162	7975044.234	503121.818	11.528	CREST TYPE8
163	7975041.544	503131.424	11.623	TYPE8
194	7974925.991	503126.941	11.222	TOE
195	7974925.871	503126.215	11.453	CREST TYPE8
196	7974923.896	503115.242	11.451	TYPE8
197	7974921.133	503103.17	11.465	CREST TYPE8
198	7974920.365	503101.65	11.456	TOE
199	7974936.73	503096.705	11.483	TOE
200	7974937.596	503098.591	11.455	CREST TYPE8
201	7974939.09	503107.066	11.497	TYPE8
202	7974941.818	503122.776	11.438	CREST TYPE8
203	7974942.639	503124.197	10.986	TOE
204	7974955.152	503123.993	11.218	TOE
205	7974955.813	503121.906	11.439	CREST TYPE8
206	7974957.586	503109.646	11.535	TYPE8
207	7974959.311	503095.297	11.493	CREST TYPE8
208	7974959.564	503093.595	11.182	TOE
209	7974975.964	503098.986	10.996	TOE
210	7974975.888	503100.585	11.409	CREST TYPE8
211	7974975.121	503111.621	11.519	TYPE8
212	7974973.519	503125.448	11.509	CREST TYPE8
213	7974973.812	503127.003	11.128	TOE
214	7974987.552	503130.966	10.887	TOE
215	7974988.857	503128.913	11.589	CREST TYPE8
216	7974992.188	503118.239	11.564	TYPE8
217	7974995.768	503106.743	11.531	CREST TYPE8
218	7974996.302	503105.697	11.114	TOE
219	7975010.459	503110.189	11.155	TOE
220	7975010.154	503111.248	11.549	CREST TYPE8
221	7975008.306	503121.613	11.53	TYPE8
222	7975006.002	503134.088	11.697	CREST TYPE8
223	7975005.685	503135.995	11.035	TOE
224	7975023.483	503140.011	11.577	TOE
225	7975023.12	503141.436	10.863	TOE

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226	7975037.867	503144.167	11.697	CREST TYPE8
227	7975037.186	503146.022	10.915	TOE
228	7975049.311	503150.144	10.787	TOE
229	7975050.171	503147.209	11.648	CREST TYPE8
230	7975052.266	503136.921	11.622	TYPE8
231	7975056.004	503125.147	11.589	CREST TYPE8
232	7975056.736	503123.323	11.024	TOE
233	7975070.51	503127.224	11.05	TOE
234	7975069.977	503130.258	11.595	CREST TYPE8
235	7975066.944	503139.611	11.612	TYPE8
236	7975062.952	503151.66	11.601	CREST TYPE8
237	7975062.217	503153.889	10.942	TOE
238	7975075.885	503158.082	10.878	TOE
239	7975077.271	503156.697	11.523	CREST TYPE8
240	7975080.516	503144.372	11.628	TYPE8
241	7975083.823	503134.611	11.605	CREST TYPE8
242	7975084.285	503131.709	10.949	TOE
243	7975097.287	503135.225	10.943	TOE
244	7975096.172	503138.117	11.571	CREST TYPE8
245	7975093.608	503147.998	11.651	TYPE8
246	7975089.306	503160.389	11.64	CREST TYPE8
247	7975089.206	503163.063	10.926	TOE
248	7975102.157	503167.169	10.831	TOE
249	7975103.409	503164.545	11.719	CREST TYPE8
250	7975106.273	503152.562	11.649	TYPE8
251	7975109.856	503140.36	11.012	CREST TYPE8
252	7975109.829	503140.41	11.007	TOE
253	7975123.56	503144.36	11.055	TOE
254	7975123.546	503146.912	11.602	CREST TYPE8
255	7975121.144	503156.288	11.685	TYPE8
256	7975117.991	503169.293	11.683	CREST TYPE8
257	7975117.761	503171.301	10.892	TOE
258	7975131.279	503175.871	11.03	TOE
259	7975132.103	503173.427	11.679	CREST TYPE8
260	7975135.799	503162.713	11.714	TYPE8
261	7975139.233	503151.49	11.745	CREST TYPE8
262	7975139.296	503149.44	11.142	TOE
263	7975152.368	503153.109	11.089	TOE
264	7975151.798	503155.839	11.702	CREST TYPE8
265	7975150.227	503166.734	11.732	TYPE8
266	7975146.758	503177.936	11.673	CREST TYPE8
267	7975146.491	503180.149	10.976	TOE

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268	7975159.349	503184.575	11.043	TOE
269	7975159.794	503182.248	11.708	CREST TYPE8
270	7975164.429	503171.145	11.706	TYPE8
271	7975167.964	503160.809	11.748	CREST TYPE8
272	7975168.465	503158.096	11.114	TOE
273	7975181.579	503161.865	11.115	TOE
274	7975180.804	503164.059	11.796	CREST TYPE8
275	7975177.637	503174.856	11.751	TYPE8
276	7975172.854	503185.868	11.727	CREST TYPE8
277	7975172.737	503188.006	11.206	TOE
278	7975185.905	503192.444	11.084	TOE
279	7975186.968	503190.388	11.746	CREST TYPE8
280	7975190.293	503181.203	11.784	TYPE8
281	7975194.642	503168.437	11.729	CREST TYPE8
282	7975195.254	503166.343	11.133	TOE
283	7975207.034	503172.863	11.765	CREST TYPE8
284	7975207.858	503170.741	11.625	TOE
285	7975203.441	503183.157	11.821	TYPE8
286	7975199.164	503194.324	11.676	CREST TYPE8
287	7975198.109	503196.4	11.629	TOE
288	7975210.598	503200.138	11.187	TOE
289	7975211.088	503198.006	11.765	CREST TYPE8
290	7975213.004	503189.583	11.786	TYPE8
291	7975217.588	503176.649	11.734	CREST TYPE8
292	7975219.142	503173.974	11.037	TOE
293	7975221.915	503203.665	10.99	TOE
294	7975222.3	503201.555	11.69	CREST TYPE8
295	7975226.768	503191.847	11.806	TYPE8
296	7975231.464	503180.81	11.808	TOE
297	7975231.287	503180.296	11.752	CREST TYPE8
298	7975231.817	503177.829	10.899	TOE
299	7975244.333	503181.279	10.674	TOE
300	7975244.555	503185.914	11.848	CREST TYPE8
301	7975242.137	503193.501	11.796	TYPE8
302	7975237.914	503206.468	11.739	CREST TYPE8
303	7975236.768	503209.005	10.855	TOE
304	7975249.192	503213.09	10.856	TOE
305	7975249.18	503213.102	10.854	TOE
306	7975250.149	503210.605	11.862	CREST TYPE8
307	7975254.357	503200.186	11.863	TYPE8
308	7975256.682	503188.507	11.807	CREST TYPE8
309	7975257.232	503185.559	10.645	TOE

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310	7975272.357	503190.258	10.686	TOE
311	7975273.192	503194.022	11.744	CREST TYPE8
312	7975269.985	503203.621	11.8	TYPE8
313	7975266.233	503215.8	11.77	CREST TYPE8
314	7975265.548	503217.54	10.814	TOE
315	7975281.154	503222.351	11.082	TOE
316	7975282.255	503220.19	11.787	CREST TYPE8
317	7975284.946	503210.451	11.78	TYPE8
318	7975288.277	503199.41	11.81	CREST TYPE8
319	7975289.861	503196.157	10.652	TOE
320	7975302.188	503198.965	10.747	TOE
321	7975301.968	503203.384	11.838	CREST TYPE8
322	7975299.337	503213.025	11.798	TYPE8
323	7975296.064	503225.156	11.805	CREST TYPE8
324	7975295.591	503227.433	10.822	TOE
325	7975307.258	503230.991	10.796	TOE
326	7975307.663	503228.205	11.761	CREST TYPE8
327	7975312.236	503218.388	11.746	TYPE8
328	7975316.522	503207.586	11.752	CREST TYPE8
329	7975317.32	503204.747	10.965	TOE
330	7975328.935	503208.041	10.946	TOE
331	7975328.716	503211.717	11.754	CREST TYPE8
332	7975326.547	503221.723	11.818	TYPE8
333	7975323.034	503232.509	11.675	CREST TYPE8
334	7975322.618	503236.085	10.712	TOE
335	7975335.12	503239.944	10.805	TOE
336	7975336.24	503237.095	11.652	CREST TYPE8
337	7975340.477	503225.671	11.784	TYPE8
338	7975344.133	503215.199	11.756	CREST TYPE8
339	7975344.92	503213.291	11.082	TOE
340	7975352.755	503246.578	11.645	TOE
341	7975353.349	503243.122	11.692	CREST TYPE8
342	7975355.988	503233.193	11.721	TYPE8
343	7975359.776	503221.114	11.734	CREST TYPE8
344	7975360.709	503217.923	11.499	TOE
345	7975373.333	503222.394	11.152	TOE
346	7975372.466	503225.266	11.729	CREST TYPE8
347	7975371.499	503234.747	11.777	TYPE8
348	7975367.759	503247.594	11.729	CREST TYPE8
349	7975366.256	503252.306	10.988	TOE
350	7975380.091	503256.315	10.9	TOE
351	7975381.79	503251.683	11.931	CREST TYPE8

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352	7975385.537	503242.479	11.871	TYPE8
353	7975389.884	503229.388	11.853	CREST TYPE8
354	7975390.906	503227.075	11.296	TOE
355	7975405.466	503230.579	11.237	TOE
356	7975404.857	503234.279	12.072	CREST TYPE8
357	7975401.165	503244.24	12.103	TYPE8
358	7975398.375	503257.088	12.059	CREST TYPE8
359	7975397.219	503261.339	10.918	TOE
360	7975411.788	503266.269	10.87	TOE
361	7975414.366	503261.322	12.484	CREST TYPE8
362	7975417.625	503252.749	12.533	TYPE8
363	7975421.809	503240.056	12.451	CREST TYPE8
364	7975423.875	503235.317	11.066	TOE
365	7975439.335	503240.616	11.048	TOE
366	7975438.193	503245.544	12.692	TYPE8
367	7975438.188	503245.533	12.686	CREST TYPE8
368	7975434.378	503255.159	12.748	TYPE8
369	7975431.725	503267.169	12.774	CREST TYPE8
370	7975431.598	503272.287	10.979	TOE
371	7975444.5	503276.342	11.364	TOE
372	7975446.36	503271.28	12.699	CREST TYPE8
373	7975450.226	503261.774	12.926	TYPE8
374	7975456.077	503250.967	12.92	TOE
375	7975456.107	503250.969	12.917	TOE
376	7975457.394	503246.447	11.01	TOE
377	7975478.63	503252.371	10.931	TOE
378	7975478.796	503257.395	12.766	CREST TYPE8
379	7975490.579	503258.15	12.578	CREST TYPE8
380	7975475.029	503267.576	12.83	TYPE8

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Point Number	Northing	Easting	Elevation	Description
381	7975840.679	503488.521	10.724	TOE
382	7975850.693	503492.041	10.953	TOE
383	7975860.722	503495.472	10.935	TOE
384	7975869.987	503499.747	10.939	TOE
385	7975879.753	503505.673	10.837	TOE
386	7975888.424	503511.387	10.77	TOE
387	7975897.208	503518.852	10.791	TOE
388	7975905.067	503526.363	10.534	TOE
389	7975911.783	503534.129	10.635	TOE
390	7975915.169	503541.359	10.738	TOE
391	7975916.974	503542.474	9.844	TOE
392	7975921.698	503550.294	9.833	TOE
393	7975926.006	503556.536	9.869	TOE
394	7975930.282	503571.488	11.085	TOE
395	7975931.326	503577.014	11.83	TOE
396	7975936.884	503586.963	11.597	TOE
397	7975943.525	503598.669	11.342	TOE
398	7975942.165	503601.582	12.322	CREST
399	7975936.696	503590.759	12.442	CREST
400	7975931.266	503579.893	12.499	CREST
401	7975926.368	503568.918	12.571	CREST
402	7975921.511	503558.306	12.448	CREST
403	7975915.622	503547.01	12.414	CREST
404	7975909.564	503536.794	12.387	CREST
405	7975901.752	503527.022	12.354	CREST
406	7975894.051	503518.848	12.226	CREST
407	7975884.969	503511.455	12.171	CREST
408	7975873.998	503504.433	12.062	CREST
409	7975863.664	503499.127	11.986	CREST
410	7975852.354	503494.319	11.825	CREST
411	7975840.36	503490.056	11.625	CREST
412	7975835.84	503488.2	11.471	T8
413	7975826.153	503490.926	11.476	T8
414	7975815.523	503493.674	11.341	T8
415	7975803.974	503494.664	11.188	T8
416	7975794.121	503495.298	11.082	T8
417	7975787.656	503495.855	11.016	T8
418	7975827.168	503498.588	11.523	T8
419	7975838.332	503501.849	11.667	T8

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420	7975849.912	503506.197	11.884	T8
421	7975861.584	503511.044	12.021	T8
422	7975871.658	503517.386	12.086	T8
423	7975881.921	503524.116	12.274	T8
424	7975890.323	503531.165	12.366	T8
425	7975897.092	503539.203	12.382	T8
426	7975903.391	503548.837	12.453	T8
427	7975909.191	503559.167	12.458	T8
428	7975913.94	503569.405	12.491	T8
429	7975918.949	503579.491	12.483	T8
430	7975923.749	503590.091	12.457	T8
431	7975928.882	503599.905	12.445	T8
432	7975933.299	503608.214	12.369	T8
433	7975920.534	503612.799	12.329	CREST
434	7975916.646	503603.276	12.347	CREST
435	7975911.331	503593.112	12.446	CREST
436	7975906.469	503582.974	12.421	CREST
437	7975901.937	503572.215	12.443	CREST
438	7975896.731	503562.097	12.425	CREST
439	7975891.501	503552.721	12.481	CREST
440	7975884.891	503544.225	12.337	CREST
441	7975876.763	503535.727	12.288	CREST
442	7975868.225	503528.828	12.163	CREST
443	7975858.215	503522.856	11.99	CREST
444	7975849.528	503518.572	11.896	CREST
445	7975839.218	503515.031	11.762	CREST
446	7975827.77	503510.823	11.522	CREST
447	7975817.462	503506.891	11.479	CREST
448	7975806.45	503502.891	11.257	CREST
449	7975795.311	503498.709	11.099	CREST
450	7975693.373	503454.727	10.734	TOE
451	7975684.837	503446.797	10.755	TOE
452	7975677.183	503439.236	10.789	TOE
453	7975670.808	503430.892	10.673	TOE
454	7975665.698	503422.862	10.557	TOE
455	7975661.311	503413.704	10.71	TOE
456	7975656.459	503404.634	10.655	TOE
457	7975650.645	503395.272	10.689	TOE
458	7975648.727	503390.475	10.626	TOE
500	7975790.724	503499.418	10.43	TOE
501	7975801.868	503503.201	10.646	TOE
502	7975812.239	503506.557	10.837	TOE

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503	7975820.921	503509.857	10.879	TOE
504	7975832.199	503513.481	10.95	TOE
505	7975841.769	503517.777	10.768	TOE
506	7975851.595	503521.794	10.721	TOE
507	7975860.684	503526.582	10.799	TOE
508	7975869.217	503532.808	10.648	TOE
509	7975877.822	503540.217	10.767	TOE
510	7975883.919	503547.819	10.782	TOE
511	7975889.563	503555.444	10.72	TOE
512	7975894.634	503564.366	10.571	TOE
513	7975898.954	503573.701	10.613	TOE
514	7975901.178	503580.707	10.293	TOE
515	7975901.669	503586.54	10.113	TOE
516	7975908.123	503595.683	10.317	TOE
517	7975914.374	503602.178	11.582	TOE
518	7975918.017	503609.045	12.06	TOE
519	7975922.523	503621.086	11.859	TOE
600	7975817.232	503480.729	10.756	TOE
601	7975806.869	503476.065	10.622	TOE
602	7975793.996	503471.401	10.313	TOE
603	7975782.818	503467.338	10.455	TOE
604	7975771.819	503463.582	10.418	TOE
605	7975760.302	503459.516	10.349	TOE
606	7975749.45	503455.808	10.493	TOE
607	7975738.37	503450.948	10.399	TOE
608	7975728.153	503446.466	10.496	TOE
609	7975718.227	503441.107	10.637	TOE
610	7975708.715	503434.33	10.615	TOE
611	7975700.29	503426.889	10.801	TOE
612	7975694.545	503418.065	10.594	TOE
613	7975688.489	503408.226	10.74	TOE
614	7975683.031	503398.4	10.633	TOE
615	7975679.182	503388.771	10.767	TOE
616	7975676.146	503381.903	11.095	TOE
700	7975674.794	503383.919	11.435	CREST
701	7975678.927	503392.564	11.458	CREST
702	7975684.013	503402.622	11.371	CREST
703	7975690.013	503414.029	11.287	CREST
704	7975696.024	503423.312	11.231	CREST
705	7975704.298	503431.735	11.181	CREST
706	7975713.266	503439.2	11.114	CREST
707	7975722.501	503445.046	11.024	CREST

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708	7975732.841	503449.964	10.976	CREST
709	7975742.748	503453.827	10.875	CREST
710	7975753.628	503458	10.849	CREST
711	7975764.544	503461.725	10.831	CREST
712	7975774.964	503465.621	10.772	CREST
713	7975784.76	503469.273	10.834	CREST
714	7975795.064	503473.064	10.815	CREST
715	7975805.596	503476.888	11.055	CREST
716	7975814.654	503480.339	11.302	CREST
800	7975810.227	503482.414	11.238	T8
801	7975799.747	503482.995	11.148	T8
802	7975788.709	503483.157	11.013	T8
803	7975778.721	503483.736	10.926	T8
804	7975768.06	503483.773	10.862	T8
805	7975757.154	503482.318	10.917	T8
806	7975746.744	503480.368	10.912	T8
807	7975737.778	503477.379	10.94	T8
808	7975726.916	503473.418	11.089	T8
809	7975716.335	503468.92	11.011	T8
810	7975706.819	503463.771	11.095	T8
811	7975650.099	503386	11.573	T8
812	7975658.453	503382.319	11.576	T8
813	7975666.778	503378.86	11.601	T8
814	7975664.528	503390.549	11.499	T8
815	7975669.381	503400.855	11.465	T8
816	7975674.706	503410.256	11.424	T8
817	7975680.326	503419.874	11.327	T8
818	7975686.97	503428.623	11.304	T8
819	7975693.335	503437.567	11.261	T8
820	7975701.829	503444.867	11.19	T8
821	7975711.721	503451.247	11.127	T8
822	7975721.099	503456.911	11.075	T8
823	7975731.371	503461.863	10.985	T8
824	7975742.138	503466.289	10.931	T8
825	7975753.612	503469.806	10.897	T8
826	7975764.558	503472.19	10.868	T8
827	7975775.34	503475.476	10.881	T8
828	7975786.611	503477.415	10.964	T8
900	7975698.514	503458.205	11.125	CREST
901	7975690.276	503450.483	11.218	CREST
902	7975682.213	503443.381	11.217	CREST
903	7975674.722	503434.395	11.257	CREST

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904	7975668.683	503425.273	11.268	CREST
905	7975663.412	503415.35	11.339	CREST
906	7975658.264	503404.559	11.457	CREST
907	7975653.424	503394.828	11.513	CREST
908	7975650.456	503388.926	11.564	CREST
1000	7975702.28	503462.363	10.805	TOE
1100	7975660.956	503346.346	10.407	TOE
1101	7975655.868	503337.328	10.446	TOE
1102	7975649.497	503328.486	10.362	TOE
1103	7975642.877	503320.968	10.183	TOE
1104	7975641.726	503315.444	10.262	TOE
1105	7975640.304	503307.096	10.514	TOE
1106	7975638.266	503300.124	10.074	TOE
1107	7975636.657	503298.831	10.164	TOE
1108	7975634.276	503297.088	9.796	TOE
1109	7975627.637	503296.261	9.552	TOE
1110	7975618.331	503293.675	9.692	TOE
1111	7975608.511	503289.73	9.717	TOE
1112	7975599.804	503286.444	9.694	TOE
1113	7975591.832	503283.697	9.716	TOE
1114	7975586.12	503283.458	10.396	TOE
1115	7975576.426	503281.015	10.627	TOE
1116	7975567.99	503278.023	10.685	TOE
1117	7975561.888	503275.324	10.646	TOE
1118	7975555.896	503273.687	10.561	TOE
1119	7975549.976	503274.281	10.564	TOE
1120	7975548.436	503273.082	10.46	TOE
1121	7975546.67	503272.066	10.372	TOE
1200	7975540.834	503271.584	12.584	CREST
1201	7975542.035	503275.493	12.357	CREST
1202	7975545.67	503277.96	12.168	CREST
1203	7975554.634	503276.661	11.832	CREST
1204	7975558.435	503276.602	11.719	CREST
1205	7975564.495	503280.631	11.965	CREST
1206	7975574.247	503284.543	11.967	CREST
1207	7975584.556	503287.626	11.824	CREST
1208	7975594.351	503290.198	11.757	CREST
1209	7975603.472	503292.704	11.74	CREST
1210	7975613.185	503296.515	11.67	CREST
1211	7975621.774	503299.182	11.495	CREST
1212	7975630.772	503300.356	11.228	CREST
1213	7975635.109	503300.687	11.329	CREST

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1214	7975637.023	503302.263	11.37	CREST
1215	7975637.593	503305.369	11.427	CREST
1216	7975638.675	503314.019	11.685	CREST
1217	7975639.138	503319.738	11.686	CREST
1218	7975640.863	503322.393	11.673	CREST
1219	7975645.227	503329.791	11.674	CREST
1220	7975650.979	503337.767	11.685	CREST
1221	7975655.458	503345.221	11.67	CREST
1300	7975660.206	503351.713	11.564	T8
1301	7975652.349	503357.712	11.589	T8
1302	7975644.477	503363	11.636	T8
1303	7975640.011	503367.207	11.587	T8
1304	7975488.94	503277.866	12.703	T8
1305	7975499.54	503276.43	12.651	T8
1306	7975509.424	503275.392	12.528	T8
1307	7975520.114	503274.248	12.547	T8
1308	7975528.98	503272.51	12.46	T8
1309	7975529.011	503272.497	12.444	T8
1310	7975536.717	503271.704	12.414	T8
1311	7975501.341	503280.749	12.716	T8
1312	7975511.364	503281.849	12.612	T8
1313	7975522.214	503284.67	12.507	T8
1314	7975531.838	503290.073	12.345	T8
1315	7975538.56	503281.822	12.324	T8
1316	7975549.54	503283.262	12.117	T8
1317	7975547.2	503294.626	12.125	T8
1318	7975557.244	503298.967	11.978	T8
1319	7975560.733	503289.048	12.003	T8
1320	7975572.099	503291.487	11.832	T8
1321	7975569.257	503302.281	11.81	T8
1322	7975579.089	503307.443	11.725	T8
1323	7975582.797	503297.074	11.79	T8
1324	7975594.127	503298.484	11.719	T8
1325	7975590.569	503309.494	11.712	T8
1326	7975601.227	503313.47	11.713	T8
1327	7975606.425	503303.722	11.739	T8
1328	7975616.838	503306.583	11.711	T8
1329	7975611.536	503317.018	11.717	T8
1330	7975617.51	503324.308	11.711	T8
1331	7975624.103	503315.485	11.735	T8
1332	7975631.147	503307.114	11.498	T8
1333	7975634.345	503303.996	11.303	T8

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1334	7975634.753	503318.389	11.697	T8
1335	7975628.152	503326.482	11.736	T8
1336	7975622.502	503332.631	11.672	T8
1337	7975630.318	503340.988	11.654	T8
1338	7975638.759	503333.514	11.725	T8
1339	7975647.029	503340.744	11.688	T8
1340	7975639.23	503349.263	11.672	T8
1341	7975643.14	503357.613	11.647	T8
1342	7975650.558	503350.508	11.605	T8
1400	7975636.781	503369.251	11.476	CREST
1401	7975637.893	503365.661	11.653	CREST
1402	7975637.703	503362.6	11.725	CREST
1403	7975632.29	503353.192	11.624	CREST
1404	7975626.725	503345.068	11.655	CREST
1405	7975620.199	503337.625	11.568	CREST
1406	7975613.962	503331.849	11.662	CREST
1407	7975606.141	503325.738	11.723	CREST
1408	7975596.482	503323.255	11.761	CREST
1409	7975587.181	503320.001	11.709	CREST
1410	7975577.14	503316.401	11.82	CREST
1411	7975567.272	503312.848	11.902	CREST
1412	7975556.622	503309.363	12.002	CREST
1413	7975546.659	503305.792	12.142	CREST
1414	7975536.709	503302.007	12.145	CREST
1415	7975527.544	503297.465	12.341	CREST
1416	7975517.315	503294.004	12.581	CREST
1417	7975507.022	503291.063	12.67	CREST
1418	7975496.435	503287.645	12.67	CREST
1419	7975486.004	503284.682	12.726	CREST
1420	7975479.388	503282.362	12.836	CREST
1500	7975632.761	503372.601	10.276	TOE
1501	7975634.773	503367.825	10.531	TOE
1502	7975635.386	503365.017	10.444	TOE
1503	7975633.415	503360.924	10.371	TOE
1504	7975627.428	503350.984	10.433	TOE
1505	7975620.484	503343.152	10.371	TOE
1506	7975617.99	503340.29	9.797	TOE
1507	7975611.558	503335.025	9.748	TOE
1508	7975602.847	503330.398	9.791	TOE
1509	7975592.514	503326.175	9.816	TOE
1510	7975584.398	503322.754	9.911	TOE
1511	7975574.23	503320.098	9.77	TOE

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1512	7975564.619	503316.338	10.327	TOE
1513	7975554.457	503313.277	10.366	TOE
1514	7975544.374	503309.936	10.479	TOE
1515	7975537.206	503307.48	10.279	TOE
1516	7975532.502	503304.835	10.711	TOE
1600	7975510.353	503295.414	11.106	TOE
1601	7975499.531	503292.274	11.174	TOE
1602	7975488.456	503289.407	11.343	TOE
1603	7975479.237	503286.918	11.397	TOE
1604	7975469.136	503286.254	11.342	TOE

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Point Number	Northing	Easting	Elevation	Description
164	7975040.382	503121.013	11.57	T8 CREST1
165	7975020.42	503113.74	11.477	T8 CREST1
166	7975003.602	503108.529	11.517	T8 CREST1
167	7974985.716	503102.781	11.552	T8 CREST1
168	7974966.645	503097.352	11.597	T8 CREST1
169	7974966.057	503098.839	11.611	T8 CREST1
170	7974950.916	503097.762	11.516	T8 CREST1
171	7974942.297	503098.458	11.472	T8 CREST1
172	7974931.758	503100.039	11.483	T8 CREST1
173	7974919.317	503103.078	11.472	T8 CREST1
174	7974909.929	503106.388	11.529	T8 CREST1
175	7974906.04	503107.987	11.491	T8 CREST1
176	7974958.118	503122.699	11.501	T8 CREST2
177	7974963.081	503123.139	11.511	T8 CREST2
178	7974972.216	503124.66	11.66	T8 CREST2
179	7974985.051	503128.325	11.63	T8 CREST2
180	7974995.847	503131.834	11.653	T8 CREST2
181	7975011.857	503136.924	11.584	T8 CREST2
182	7975035.517	503143.998	11.628	T8 CREST2
183	7975041.327	503119.633	10.693	T8 TOE1
184	7975020.806	503112.479	10.705	T8 TOE1
185	7975003.939	503107.635	10.912	T8 TOE1
186	7974986.292	503101.821	10.817	T8 TOE1
187	7974967.37	503095.919	10.784	T8 TOE1
188	7974957.954	503123.683	11.283	T8 TOE2
189	7974971.505	503126.448	11.121	T8 TOE2
190	7974984.643	503129.534	10.885	T8 TOE2
191	7974995.215	503132.981	10.899	T8 TOE2
192	7975011.488	503137.856	10.856	T8 TOE2
193	7975034.963	503145.25	10.814	T8 TOE2

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Point Number	Northing	Easting	Elevation	Description
190701001	7975675.824	503384.584	11.513	CREST
190701002	7975681.012	503396.576	11.494	CREST
190701003	7975687.882	503408.834	11.317	CREST
190701004	7975695.099	503420.758	11.21	CREST
190701005	7975706.347	503433.352	11.12	CREST
190701006	7975717.932	503441.618	11.059	CREST
190701007	7975730.159	503448.209	10.899	CREST
190701008	7975747.82	503455.738	10.934	CREST
190701009	7975762.67	503461.131	10.942	CREST
190701010	7975777.431	503465.997	10.898	CREST
190701011	7975791.504	503471.489	10.93	CREST
190701012	7975803.81	503476.417	11.165	CREST
190701013	7975813.424	503479.502	11.388	CREST
190701014	7975798.141	503482.431	11.102	T8
190701015	7975782.696	503477.348	10.903	T8
190701016	7975769.546	503473.15	10.853	T8
190701017	7975755.766	503468.062	10.895	T8
190701018	7975742.716	503462.64	10.938	T8
190701019	7975727.902	503454.788	10.999	T8
190701020	7975713.965	503447.644	11.121	T8
190701021	7975702.079	503438.764	11.198	T8
190701022	7975691.842	503427.982	11.292	T8
190701023	7975683.43	503416.67	11.319	T8
190701024	7975676.258	503406.01	11.391	T8
190701025	7975669.552	503394.724	11.498	T8
190701026	7975664.365	503383.981	11.531	T8
190701027	7975650.556	503390.845	11.594	CREST1
190701028	7975656.101	503401.815	11.46	CREST1
190701029	7975662.044	503413.129	11.356	CREST1
190701030	7975669.403	503427.857	11.103	CREST1
190701031	7975678.676	503439.652	11.166	CREST1
190701032	7975689.736	503450.212	11.112	CREST1
190701033	7975700.675	503460.117	11.097	CREST1
190701034	7975710.811	503466.203	11.037	CREST1
190701035	7975726.316	503474.252	10.879	CREST1
190701036	7975740.218	503480.029	10.902	CREST1
190701037	7975755.801	503485.071	10.948	CREST1
190701038	7975773.653	503482.814	10.815	T8
190701039	7975752.855	503474.85	10.885	T8

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190701040	7975736.399	503468.075	10.896	T8
190701041	7975722.523	503460.149	11.007	T8
190701042	7975710.345	503452.632	11.07	T8
190701043	7975697.576	503442.778	11.214	T8
190701044	7975685.229	503431.772	11.231	T8
190701045	7975677.311	503420.836	11.308	T8
190701046	7975669.547	503408.987	11.418	T8
190701047	7975661.431	503394.524	11.505	T8
190701048	7975657.833	503388.233	11.516	T8
190701049	7975670.106	503429.862	10.685	TOE1
190701050	7975679.766	503442.275	10.768	TOE1
190701051	7975688.932	503450.642	10.727	TOE1
190701052	7975699.115	503459.716	10.785	TOE1
190701053	7975708.695	503465.537	10.846	TOE1
190701054	7975714.876	503468.744	10.652	TOE1
190701055	7975723.798	503473.279	10.704	TOE1
190701056	7975817.36	503480.186	10.723	TOE2
190701057	7975799.726	503473.699	10.397	TOE2
190701058	7975790.216	503469.881	10.394	TOE2
190701059	7975777.443	503465.338	10.381	TOE2
190701060	7975764.332	503460.789	10.486	TOE2
190701061	7975750.279	503456.188	10.485	TOE2
190701062	7975737.716	503450.61	10.324	TOE2
190701063	7975729.656	503447.414	10.54	TOE2
190701064	7975717.501	503440.832	10.777	TOE2
190701065	7975707.026	503433.316	10.749	TOE2

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Point Number	Northing	Easting	Elevation	Description
66191	7975540.957	503275.221	12.219	CREST1
66192	7975540.667	503271.981	12.538	CREST1
66193	7975542.753	503269.675	12.423	CREST1
66194	7975552.907	503267.833	11.561	CREST1
66195	7975562.667	503266.06	11.385	CREST1
66196	7975573.458	503263.647	11.064	CREST1
66197	7975583.816	503261.759	11.058	CREST1
66198	7975592.97	503258.822	10.692	CREST1
66199	7975599.491	503257.266	10.339	TOE1
66200	7975595.657	503248.886	10.529	CREST2
66201	7975590.226	503248.698	10.678	CREST2
66202	7975581.955	503250.297	10.914	CREST2
66203	7975571.311	503251.771	11.073	CREST2
66204	7975561.559	503253.634	11.408	CREST2
66205	7975554.266	503255.242	11.396	CREST2
66206	7975544.701	503256.845	11.802	CREST2
66207	7975536.243	503258.078	12.352	CREST2
66208	7975528.445	503258.265	12.488	CREST2
66209	7975530.122	503255.19	11.094	TOE1
66210	7975538.478	503253.658	10.726	TOE1
66211	7975546.422	503252.175	10.743	TOE1
66212	7975553.344	503252.773	10.594	TOE1
66213	7975555.597	503251.83	9.392	TOE1
66214	7975557.331	503252.41	10.343	TOE1
66215	7975562.025	503251.634	10.69	TOE1
66216	7975573.346	503250.258	10.472	TOE1
66217	7975583.48	503249.29	10.395	TOE1
66218	7975594.343	503248.506	10.3	TOE1
66219	7975597.382	503248.853	10.299	TOE1
66220	7975598.69	503253.27	10.419	TOE1
66221	7975596.762	503258.798	10.334	TOE2
66222	7975588.234	503261.511	10.5	TOE2
66223	7975578.943	503263.889	10.57	TOE2
66224	7975569.818	503265.957	10.572	TOE2
66225	7975559.587	503268.487	10.853	TOE2
66226	7975556.695	503270.116	9.67	TOE2
66227	7975553.813	503269.738	10.463	TOE2
66228	7975548.127	503270.739	10.371	TOE2
66229	7975546.417	503272.549	10.34	TOE2

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66230	7975549.776	503274.569	10.594	TOE2
66231	7975449.376	503273.369	12.81	CREST3
66232	7975448.35	503277.198	12.771	CREST3
66233	7975448.381	503277.176	12.76	CREST3
66234	7975440.069	503281.104	12.434	CREST3
66235	7975426.271	503284.349	11.893	CREST3
66236	7975416.972	503285.989	11.332	CREST3
66237	7975412.313	503286.857	11.148	CREST3
66238	7975408.629	503288.628	10.835	CREST3
66239	7975408.719	503288.058	10.681	TOE3
66240	7975416.464	503285.055	10.924	TOE3
66241	7975428.639	503282.109	10.882	TOE3
66242	7975437.593	503279.789	11.044	TOE3
66243	7975443.495	503277.287	11.408	TOE3
66244	7975446.998	503274.915	11.322	TOE3
66245	7975445.911	503274.048	11.562	TOE3
66246	7975476.997	503286.055	11.381	TOE4
66247	7975467.683	503286.192	11.387	TOE4
66248	7975466.687	503287.361	10.847	TOE4
66249	7975457.351	503289.289	10.485	TOE4
66250	7975448.535	503291.716	10.577	TOE4
66251	7975441.91	503293.272	10.608	TOE4
66252	7975440.287	503292.968	11.067	TOE4
66253	7975431.86	503295.336	10.926	TOE4
66254	7975420.867	503297.785	10.764	TOE4
66255	7975412.34	503298.89	10.77	TOE4
66256	7975412.926	503297.952	10.969	CREST4
66257	7975419.769	503296.754	11.362	CREST4
66258	7975426.625	503294.653	11.846	CREST4
66259	7975441.464	503290.659	12.459	CREST4
66260	7975454.029	503286.683	12.749	CREST4
66261	7975467.482	503283.176	12.787	CREST4
66262	7975473.065	503282.547	12.894	CREST4
66263	7975478.941	503283.686	12.769	CREST4

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Type 8 (150mm minus) Survey Data

Point Number	Northing	Easting	Elevation	Description
400054	7974985.896	503135.539	10.358	T8 TOE
400055	7975003.971	503139.945	9.94	T8 TOE
400056	7975011.667	503142.037	9.742	T8 TOE
400057	7975020.703	503142.803	9.56	T8 TOE
400058	7975025.695	503144.32	9.318	T8 TOE
400059	7975020.077	503141.718	10.259	T8 CREST
400060	7974995.604	503136.683	10.389	T8 CREST
400061	7974986.469	503135.066	10.551	T8 CREST
400063	7974966.971	503128.081	10.59	T8 TOE
400064	7974976.814	503130.356	10.667	T8 TOE
400065	7974987.457	503132.886	10.517	T8 TOE
400066	7974998.972	503135.893	10.502	T8 TOE
400067	7975008.17	503138.358	10.412	T8 TOE
400068	7975019.802	503140.948	10.34	T8 TOE

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Point Number	Northing	Easting	Elevation	Description
145	7975029.255	503112.13	9.133	T8 TOE
146	7975017.745	503108.285	9.317	T8 TOE
147	7975007.443	503104.734	9.306	T8 TOE
148	7974998.188	503102.232	9.535	T8 TOE
149	7974989.703	503099.385	9.521	T8 TOE
150	7974976.789	503095.171	9.545	T8 TOE
151	7974962.821	503091.177	9.622	T8 TOE
152	7974953.602	503088.729	9.711	T8 TOE
153	7974945.183	503086.196	10.089	T8 TOE
154	7974941.857	503082.916	10.176	T8 TOE
155	7974927.935	503078.788	10.18	T8 TOE
156	7974916.882	503075.645	10.546	T8 TOE

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Type 8 (150mm minus) Survey Data

Point Number	Northing	Easting	Elevation	Description
100	7975784.247	503468.452	10.805	T8 CREST
101	7975770.693	503464.297	10.957	T8 CREST
102	7975755.75	503458.95	10.938	T8 CREST
103	7975741.135	503453.25	10.957	T8 CREST
104	7975731.017	503448.868	10.891	T8 CREST
105	7975715.582	503440.435	11.088	T8 CREST
106	7975704.449	503431.764	11.125	T8 CREST
107	7975694.715	503419.87	11.192	T8 CREST
108	7975684.751	503404.5	11.327	T8 CREST
109	7975684.566	503403.749	11.309	T8 CREST
110	7975678.797	503392.029	11.477	T8 CREST
111	7975675.244	503382.023	11.464	T8 CREST
112	7975649.356	503389.267	11.554	T8 CREST
113	7975656.858	503403.307	11.5	T8 CREST
114	7975665.166	503418.924	11.266	T8 CREST
115	7975671.499	503429.763	11.203	T8 CREST
116	7975686.902	503441.413	11.332	T8 CREST
117	7975704.685	503450.7	11.178	T8 CREST
118	7975722.499	503460.378	11.125	T8 CREST
119	7975738.34	503468.568	10.946	T8 CREST
120	7975750.833	503474.71	10.905	T8 CREST
121	7975769.493	503481.442	10.909	T8 CREST
122	7975774.637	503483.077	10.703	T8 CREST
123	7975773.321	503483.374	10.455	T8 TOE
124	7975758.898	503478.859	10.545	T8 TOE
125	7975741.486	503470.559	10.591	T8 TOE
126	7975718.169	503458.578	10.696	T8 TOE
127	7975700.97	503449.862	10.614	T8 TOE
128	7975692.465	503444.728	10.711	T8 TOE
129	7975677.72	503436.414	10.731	T8 TOE
130	7975671.083	503430.901	10.606	T8 TOE
131	7975732.116	503448.201	10.392	T8 TOE
132	7975745.713	503454.173	10.441	T8 TOE
133	7975762.051	503460.131	10.414	T8 TOE
134	7975777.332	503465.325	10.376	T8 TOE
135	7975785.555	503467.827	10.436	T8 TOE
136	7975683.455	503397.726	10.506	T8 TOE
137	7975680.263	503389.643	10.605	T8 TOE
138	7975678.403	503385.684	10.601	T8 TOE

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139	7975656.252	503404.592	10.641	T8 TOE
140	7975652.317	503397.92	10.685	T8 TOE
141	7975648.834	503390.393	10.624	T8 TOE
142	7975670.638	503377.078	11.589	T8 BLK
143	7975675.617	503381.51	11.197	T8 BLK
144	7975677.837	503385.19	10.808	T8 BLK

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Point Number	Northing	Easting	Elevation	Description
20	7974858.562	503056.696	10.126	T8 TOE
21	7974846.724	503053.283	10.436	T8 TOE
22	7974839.769	503051.132	10.319	T8 TOE
23	7974828.421	503047.107	10.504	T8 TOE
24	7974819.86	503045.426	10.459	T8 TOE
25	7974814.033	503045.298	10.228	T8 TOE
26	7974809.782	503046.519	10.442	T8 TOE
27	7974807.961	503049.724	10.361	T8 TOE
28	7974806.026	503059.237	10.647	T8 TOE
29	7974804.239	503067.697	10.876	T8 TOE
30	7974803.322	503075.508	10.978	T8 TOE
31	7974807.586	503079.075	10.891	T8 TOE
32	7974814.36	503081.523	10.845	T8 TOE
33	7974821.096	503083.603	10.735	T8 TOE
34	7974825.927	503084.785	10.619	T8 TOE
35	7974975.201	503117.105	11.294	T8 CREST
36	7974971.737	503126.57	11.459	T8 CREST
37	7974949.744	503121.901	11.568	T8 CREST
38	7974934.76	503116.48	11.478	T8 CREST
39	7974922.182	503112.248	11.573	T8 CREST
40	7974901.472	503105.011	11.473	T8 CREST
41	7974887.182	503100.463	11.284	T8 CREST
40015	7974833.428	503087.636	10.412	T8 TOE
40016	7974842.886	503090.032	10.719	T8 TOE
40017	7974851.78	503093.839	10.63	T8 TOE
40018	7974857.461	503095.087	10.561	T8 TOE
40019	7974867.223	503097.618	10.498	T8 TOE
40020	7974870.217	503098.417	10.661	T8 TOE
40021	7974883.382	503100.061	11.129	T8 TOE
40022	7974895.495	503104.369	11.16	T8 TOE
40023	7974902.267	503106.73	11.226	T8 TOE
40024	7974912.65	503110.334	11.237	T8 TOE
40025	7974918.759	503111.936	11.319	T8 TOE
40026	7974926.672	503115.269	11.204	T8 TOE
40027	7974934.587	503117.588	11.303	T8 TOE
40028	7974946.092	503122.091	11.401	T8 TOE
40029	7974947.761	503123.758	10.817	T8 TOE
40030	7974952.123	503124.709	10.871	T8 TOE
40031	7974966.31	503128.292	10.758	T8 TOE

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40032	7974972.032	503129.395	10.195	T8 TOE
40047	7974913.531	503074.202	10.492	T8 TOE
40048	7974907.978	503072.618	10.299	T8 TOE
40049	7974899.26	503069.55	10.726	T8 TOE
40050	7974893.622	503069.265	11.403	T8 CREST
40051	7974903.389	503073.158	11.51	T8 CREST
40052	7974915.841	503077.282	11.467	T8 CREST
40053	7974929.895	503082.062	11.454	T8 CREST
40054	7974940	503084.13	11.337	T8 CREST
40055	7974941.601	503086.439	11.381	T8 CREST
40056	7974940.835	503099.969	11.523	T8 CREST
40057	7974952.01	503103.622	11.507	T8 CREST
40058	7974964.053	503106.886	11.411	T8 CREST
40059	7974966.771	503110.761	11.507	T8 CREST

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Point Number	Northing	Easting	Elevation	Description
30238	7975464.861	503269.166	12.767	T8
30239	7975459.904	503267.623	12.835	T8
30240	7975454.926	503265.851	12.884	T8
30241	7975449.806	503264.166	12.931	T8
30242	7975444.453	503262.38	12.894	T8
30243	7975439.465	503260.724	12.806	T8
30244	7975434.027	503258.965	12.772	T8
30245	7975428.573	503257.199	12.692	T8
30246	7975423.068	503255.42	12.665	T8
30247	7975417.608	503253.748	12.543	T8
30248	7975412.323	503252.125	12.445	T8
30249	7975407.043	503250.56	12.336	T8
30250	7975401.563	503248.989	12.147	T8
30251	7975396.092	503247.483	12.052	T8
30252	7975390.846	503246.033	11.978	T8
30253	7975385.691	503244.763	11.887	T8
30254	7975380.426	503243.444	11.822	T8
30255	7975375.158	503242.003	11.761	T8
30256	7975370.061	503240.504	11.823	T8
30257	7975364.997	503239.148	11.736	T8
30258	7975360.041	503237.793	11.738	T8
30259	7975355.116	503236.402	11.739	T8
30260	7975350.367	503234.819	11.773	T8
30261	7975345.589	503232.933	11.759	T8
30262	7975340.283	503231.047	11.726	T8
30263	7975335.381	503229.419	11.772	T8
30264	7975330.394	503227.852	11.811	T8
30265	7975325.298	503226.282	11.814	T8
30266	7975319.947	503224.675	11.748	T8
30267	7975314.308	503223.05	11.774	T8
30268	7975309.516	503221.49	11.769	T8
30269	7975303.842	503219.797	11.813	T8
30270	7975298.534	503218.173	11.848	T8
30271	7975293.61	503216.735	11.831	T8
30272	7975288.453	503214.952	11.852	T8
30273	7975283.479	503213.1	11.832	T8
30274	7975278.442	503211.493	11.885	T8
30275	7975273.003	503209.783	11.871	T8
30276	7975267.915	503207.98	11.683	T8

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30277	7975263.184	503205.901	11.452	T8
30278	7975258.425	503203.538	11.37	T8
30279	7975253.698	503200.951	11.406	T8
30280	7975249.053	503199.046	11.67	T8
30281	7975243.737	503197.575	11.693	T8
30282	7975238.766	503196.326	11.755	T8
30283	7975233.403	503194.983	11.69	T8
30284	7975227.98	503193.212	11.755	T8
30285	7975222.287	503191.649	11.771	T8
30286	7975217.396	503190.376	11.793	T8
30287	7975212.266	503188.944	11.759	T8
30288	7975206.973	503187.748	11.784	T8
30289	7975201.705	503186.492	11.839	T8
30290	7975196.485	503185.327	11.811	T8
30291	7975191.236	503184.098	11.784	T8
30292	7975185.997	503182.802	11.847	T8
30293	7975180.856	503181.485	11.834	T8
30294	7975175.806	503180.115	11.844	T8
30295	7975170.847	503178.864	11.752	T8
30296	7975165.894	503177.482	11.796	T8
30297	7975160.868	503176.208	11.803	T8
30298	7975155.785	503174.92	11.775	T8
30299	7975150.683	503173.495	11.736	T8
30300	7975145.594	503172.038	11.76	T8
30301	7975140.597	503170.444	11.785	T8
30302	7975135.48	503168.938	11.69	T8
30303	7975130.449	503167.367	11.679	T8
30304	7975124.903	503165.697	11.643	T8
30305	7975120.095	503164.142	11.692	T8
30306	7975114.851	503162.678	11.699	T8
30307	7975110.016	503161.414	11.712	T8
30308	7975105.04	503159.977	11.703	T8
30309	7975099.81	503158.695	11.683	T8
30310	7975094.873	503157.459	11.729	T8
30311	7975089.985	503156.277	11.662	T8
30312	7975085.003	503154.872	11.675	T8
30313	7975079.804	503153.137	11.639	T8
30314	7975074.852	503150.735	11.683	T8
30315	7975070.107	503148.825	11.657	T8
30316	7975066.006	503145.113	11.605	T8
30317	7975066.482	503139.588	11.613	T8
30318	7975071.057	503136.574	11.599	T8

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30319	7975076.129	503137.19	11.603	T8
30320	7975080.918	503138.931	11.625	T8
30321	7975085.658	503140.785	11.602	T8
30322	7975091.055	503142.539	11.64	T8
30323	7975096.451	503143.862	11.703	T8
30324	7975101.731	503145.311	11.654	T8
30325	7975106.705	503146.789	11.653	T8
30326	7975111.862	503148.325	11.683	T8
30327	7975117.23	503150.043	11.644	T8
30328	7975122.591	503151.868	11.67	T8
30329	7975128.184	503153.779	11.675	T8
30330	7975133.079	503155.307	11.687	T8
30331	7975137.946	503156.866	11.691	T8
30332	7975142.706	503158.4	11.698	T8
30333	7975148.319	503160.164	11.692	T8
30334	7975153.626	503161.981	11.725	T8
30335	7975159.07	503163.784	11.71	T8
30336	7975164.716	503165.722	11.658	T8
30337	7975169.555	503167.222	11.678	T8
30338	7975174.415	503168.703	11.733	T8
30339	7975179.278	503170.098	11.806	T8
30340	7975185.027	503171.669	11.797	T8
30341	7975189.839	503173.172	11.831	T8
30342	7975194.806	503174.754	11.815	T8
30343	7975199.833	503176.413	11.774	T8
30344	7975204.915	503178.039	11.764	T8
30345	7975210.099	503179.847	11.83	T8
30346	7975215.431	503181.673	11.815	T8
30347	7975220.924	503183.52	11.7	T8
30348	7975226.3	503185.355	11.704	T8
30349	7975231.283	503186.871	11.704	T8
30350	7975236.026	503188.513	11.676	T8
30351	7975241.145	503190.242	11.696	T8
30352	7975246.528	503192.163	11.698	T8
30353	7975251.814	503194.22	11.728	T8
30354	7975256.879	503196.021	11.512	T8
30355	7975262.312	503197.706	11.335	T8
30356	7975267.034	503199.366	11.54	T8
30357	7975271.972	503201.109	11.713	T8
30358	7975277.266	503202.785	11.855	T8
30359	7975282.281	503204.381	11.817	T8
30360	7975287.075	503205.984	11.793	T8

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30361	7975292.069	503207.539	11.745	T8
30362	7975297.044	503209.204	11.812	T8
30363	7975302.119	503210.72	11.752	T8
30364	7975307.172	503212.268	11.784	T8
30365	7975312.394	503213.74	11.785	T8
30366	7975317.702	503215.226	11.753	T8
30367	7975323.021	503216.779	11.75	T8
30368	7975328.068	503218.244	11.768	T8
30369	7975333.741	503219.895	11.715	T8
30370	7975339.165	503221.484	11.718	T8
30371	7975344.491	503223.207	11.716	T8
30372	7975349.671	503224.908	11.765	T8
30373	7975355.134	503226.737	11.761	T8
30374	7975360.029	503228.359	11.748	T8
30375	7975365.199	503230.063	11.758	T8
30376	7975370.673	503231.647	11.761	T8
30377	7975376.345	503233.404	11.754	T8
30378	7975382.203	503235.255	11.774	T8
30379	7975387.078	503236.784	11.847	T8
30380	7975391.981	503238.275	11.894	T8
30381	7975396.902	503239.867	12.043	T8
30382	7975401.931	503241.513	12.111	T8
30383	7975407.063	503243.212	12.222	T8
30384	7975412.237	503244.863	12.348	T8
30385	7975417.346	503246.579	12.478	T8
30386	7975422.459	503248.226	12.566	T8
30387	7975427.553	503249.918	12.615	T8
30388	7975432.636	503251.563	12.65	T8
30389	7975437.681	503253.15	12.693	T8
30390	7975442.597	503254.716	12.801	T8
30391	7975448.269	503256.478	12.798	T8
30392	7975453.033	503258.027	12.934	T8
30393	7975458.008	503259.739	12.978	T8
30394	7975463.137	503261.332	12.848	T8
30395	7975468.111	503262.98	12.849	T8
40000	7975639.006	503365.195	11.598	T8 CREST
40001	7975643.788	503374.512	11.563	T8 CREST
40002	7975649.305	503386.244	11.519	T8 CREST
40003	7975670.424	503375.315	11.543	T8 CREST
40004	7975665.023	503364.41	11.607	T8 CREST
40005	7975661.565	503357.155	11.591	T8 CREST
40006	7975654.2	503342.869	11.625	T8 CREST

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40007	7975649.651	503347.693	11.595	T8
40008	7975656.209	503359.159	11.639	T8
40009	7975660.821	503371.867	11.59	T8
40010	7975662.711	503379.08	11.611	T8
40011	7975656.971	503382.539	11.589	T8
40012	7975650.634	503373.834	11.615	T8
40013	7975644.301	503365.581	11.667	T8
40014	7975641.454	503360.854	11.672	T8
40073	7975481.641	503257.996	12.815	T8 CREST
40074	7975461.469	503251.807	12.935	T8 CREST
40075	7975441.147	503246.304	12.752	T8 CREST
40076	7975424.85	503240.28	12.436	T8 CREST
40077	7975424.836	503240.302	12.441	T8 CREST
40078	7975404.94	503234.011	12.128	T8 CREST
40079	7975387.09	503228.279	11.835	T8 CREST
40080	7975371.224	503223.856	11.705	T8 CREST
40081	7975355.42	503218.671	11.703	T8 CREST
40082	7975336.973	503212.695	11.789	T8 CREST
40083	7975316.638	503207.001	11.713	T8 CREST
40084	7975301.395	503201.838	11.756	T8 CREST
40085	7975286.498	503197.487	11.764	T8 CREST
40086	7975270.674	503192.172	11.668	T8 CREST
40087	7975256.553	503187.612	11.725	T8 CREST
40088	7975233.486	503180.606	11.728	T8 CREST
40089	7975215.902	503174.584	11.813	T8 CREST
40090	7975199.239	503168.946	11.824	T8 CREST
40091	7975181.141	503163.428	11.741	T8 CREST
40092	7975166.666	503159.404	11.666	T8 CREST
40093	7975152.725	503155.242	11.71	T8 CREST
40094	7975134.824	503149.571	11.757	T8 CREST
40095	7975117.505	503144.221	11.639	T8 CREST
40096	7975093.362	503136.323	11.628	T8 CREST
40097	7975074.316	503130.798	11.552	T8 CREST
40098	7975056.506	503124.806	11.594	T8 CREST
40099	7975050.967	503123.33	11.648	T8 CREST
40100	7975042.607	503146.095	11.597	T8 CREST
40101	7975062.911	503152.437	11.684	T8 CREST
40102	7975074.883	503155.651	11.525	T8 CREST
40103	7975089.712	503160.22	11.781	T8 CREST
40104	7975105.383	503165.504	11.72	T8 CREST
40105	7975122.899	503171.102	11.606	T8 CREST
40106	7975141.738	503177.229	11.771	T8 CREST

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40107	7975160.9	503183.261	11.788	T8 CREST
40108	7975177.842	503188.697	11.8	T8 CREST
40109	7975193.789	503193.07	11.726	T8 CREST
40110	7975209.253	503198.025	11.846	T8 CREST
40111	7975227.614	503204.288	11.711	T8 CREST
40112	7975242.181	503208.551	11.775	T8 CREST
40113	7975253.293	503211.231	11.351	T8 CREST
40114	7975265.112	503215.688	11.438	T8 CREST
40115	7975274.716	503218.455	11.86	T8 CREST
40116	7975294.419	503224.769	11.845	T8 CREST
40117	7975310.63	503229.421	11.73	T8 CREST
40118	7975327.557	503234.395	11.693	T8 CREST
40119	7975341.606	503239.553	11.701	T8 CREST
40120	7975360.596	503245.41	11.782	T8 CREST
40121	7975381.414	503252.129	11.859	T8 CREST
40122	7975397.236	503256.955	12.118	T8 CREST
40123	7975417.201	503262.906	12.588	T8 CREST
40124	7975440.056	503269.514	12.84	T8 CREST
40125	7975448.229	503272.284	12.785	T8 CREST
40126	7975444.878	503274.34	11.538	T8 TOE
40127	7975432.321	503272.971	10.967	T8 TOE
40128	7975424.636	503268.424	11.086	T8 TOE
40129	7975412.529	503265.384	10.94	T8 TOE
40130	7975401.142	503260.398	11.088	T8 TOE
40131	7975385.114	503256.13	11.072	T8 TOE
40132	7975370.488	503250.896	11.219	T8 TOE
40133	7975359.409	503246.516	11.322	T8 TOE
40134	7975343.646	503242.293	11.038	T8 TOE
40135	7975331.042	503236.959	10.915	T8 TOE
40136	7975318.372	503233.807	10.907	T8 TOE
40137	7975302.311	503229.078	10.83	T8 TOE
40138	7975293.679	503226.632	10.853	T8 TOE
40139	7975277.185	503220.667	10.818	T8 TOE
40140	7975267.39	503217.992	10.706	T8 TOE
40141	7975256.634	503214.714	10.804	T8 TOE
40142	7975246.662	503211.797	10.857	T8 TOE
40143	7975232.995	503207.081	11.038	T8 TOE
40144	7975219.818	503203.078	10.919	T8 TOE
40145	7975202.671	503197.755	11.043	T8 TOE
40146	7975186.55	503192.638	11.042	T8 TOE
40147	7975164.362	503185.657	11.13	T8 TOE
40148	7975145.479	503179.847	11.112	T8 TOE

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40149	7975125.154	503173.64	10.95	T8 TOE
40150	7975100.961	503166.188	10.919	T8 TOE
40151	7975081.54	503160.682	10.769	T8 TOE
40152	7975064.194	503155.032	10.905	T8 TOE
40153	7975045.017	503148.895	10.82	T8 TOE
40154	7975037.326	503146.681	10.797	T8 TOE
40155	7975048.783	503120.029	10.697	T8 TOE
40156	7975059.133	503123.788	10.928	T8 TOE
40157	7975074.178	503128.496	10.845	T8 TOE
40158	7975095.091	503134.984	10.919	T8 TOE
40159	7975114.657	503141.625	10.997	T8 TOE
40160	7975131.972	503147.474	11.066	T8 TOE
40161	7975151.317	503153.122	11.132	T8 TOE
40162	7975169.138	503158.338	11.126	T8 TOE
40163	7975184.507	503163.525	11.245	T8 TOE
40164	7975199.578	503167.786	11.164	T8 TOE
40165	7975215.987	503173.286	10.988	T8 TOE
40166	7975232.158	503178.26	10.851	T8 TOE
40167	7975244.689	503182.101	10.833	T8 TOE
40168	7975264.804	503188.198	10.765	T8 TOE
40169	7975286.364	503195.483	10.645	T8 TOE
40170	7975299.168	503198.999	10.834	T8 TOE
40171	7975310.391	503203.096	10.897	T8 TOE
40172	7975326.968	503207.719	10.998	T8 TOE
40173	7975342.62	503212.604	11.046	T8 TOE
40174	7975355.588	503217.085	11.105	T8 TOE
40175	7975369.52	503221.536	11.145	T8 TOE
40176	7975386.966	503225.808	11.187	T8 TOE
40177	7975406.064	503230.004	11.212	T8 TOE
40178	7975424.463	503235.568	11.094	T8 TOE
40179	7975438.793	503241.028	11.121	T8 TOE
40180	7975453.047	503245.472	11.113	T8 TOE
40181	7975468.047	503249.851	11.012	T8 TOE
40182	7975480.148	503254.117	11.036	T8 TOE

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Point Number	Northing	Easting	Elevation	Description
1001	7975942.47	503629.179	11.192	T8TOP
1002	7975933.484	503626.656	11.294	T8TOP
1003	7975931.788	503626.172	11.287	T8TOP
1004	7975926.236	503625.176	11.338	T8TOP
1005	7975925.698	503625.991	11.45	T8TOP
1006	7975926.572	503632.164	11.237	T8TOP
1007	7975928.705	503638.557	11.174	T8TOP
1008	7975931.856	503642.952	11.216	T8TOP
1009	7975939.473	503646.396	11.392	T8TOP
1010	7975947.155	503649.144	11.388	T8TOP
1011	7975948.142	503648.723	11.397	T8TOP
1012	7975948.968	503641.8	11.38	T8TOP
1013	7975949.87	503639.583	11.43	T8TOP
1014	7975949.971	503632.256	11.399	T8TOP
1015	7975948.23	503630.019	11.442	T8TOP
1016	7975944.346	503629.532	11.219	T8TOP
1017	7975941.959	503633.121	11.215	T8SPT
1018	7975942.273	503639.049	11.318	T8SPT
1019	7975945.62	503643.001	11.442	T8SPT
1020	7975938.8	503642.307	11.289	T8SPT
1021	7975933.176	503638.973	11.259	T8SPT
1022	7975930.477	503628.975	11.199	T8SPT
1023	7975936.573	503632.096	11.225	T8SPT
1024	7975941.31	503634.604	11.115	T8SPT
1025	7975925.286	503624.972	11.142	T8TOE
1026	7975925.002	503626.787	10.994	T8TOE
1027	7975925.806	503628.055	10.899	T8TOE
1028	7975926.19	503633.204	10.83	T8TOE
1029	7975928.287	503638.391	10.861	T8TOE

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Point Number	Northing	Easting	Elevation	Description
1	7975473.471	503282.435	12.988	TYPE 8
2	7975481.683	503284.073	12.758	TYPE 8
3	7975483.391	503278.714	12.728	TYPE 8
4	7975493.289	503277.094	12.679	TYPE 8
5	7975503.307	503275.654	12.588	TYPE 8
6	7975512.255	503274.095	12.498	TYPE 8
7	7975521.967	503273.553	12.323	TYPE 8
8	7975531.333	503271.944	12.516	TYPE 8
9	7975541.451	503270.059	12.543	TYPE 8
10	7975539.22	503275.292	12.514	TYPE 8
11	7975537.794	503283.558	12.223	TYPE 8
12	7975533.974	503290.174	12.3	TYPE 8
13	7975530.309	503298.123	12.425	TYPE 8
14	7975521.726	503295.693	12.5	TYPE 8
15	7975513.706	503293.391	12.552	TYPE 8
16	7975504.571	503290.771	12.587	TYPE 8
17	7975492.397	503287.433	12.846	TYPE 8
18	7975467.761	503285.625	11.287	TOE
19	7975478.055	503286.227	11.41	TOE
42	7975488.711	503289.266	11.497	TOE
43	7975498.917	503291.712	11.25	TOE
44	7975511.379	503295.3	11.096	TOE
45	7975521.002	503298.112	11.091	TOE
46	7975528.21	503302.575	11.143	TOE
47	7975524.335	503305.17	11.009	TYPE 8
48	7975517.141	503301.439	10.902	TYPE 8
49	7975505.645	503297.214	11.085	TYPE 8
50	7975496.339	503294.022	11.145	TYPE 8
51	7975486.442	503290.946	11.149	TYPE 8
52	7975478.723	503288.03	11.471	TYPE 8
53	7975497.293	503281.384	12.642	TYPE 8
54	7975508.269	503283.966	12.588	TYPE 8
55	7975522.974	503286.999	12.402	TYPE 8
56	7975527.663	503278.341	12.334	TYPE 8
57	7975515.856	503258.442	12.606	TYPE 8
58	7975503.467	503258.312	12.631	TYPE 8
59	7975490.555	503257.935	12.808	TYPE 8
60	7975478.619	503256.966	12.837	TYPE 8
61	7975472.704	503262.181	12.864	TYPE 8

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62	7975461.746	503266.528	12.859	TYPE 8
63	7975455.109	503270.484	12.83	TYPE 8
64	7975449.014	503272.984	12.807	TYPE 8
65	7975448.901	503276.689	12.784	TYPE 8
66	7975455.567	503273.49	12.837	TYPE 8
67	7975465.209	503270.938	12.835	TYPE 8
68	7975476.411	503267.634	12.793	TYPE 8
69	7975487.19	503264.841	12.768	TYPE 8
70	7975494.574	503263.668	12.693	TYPE 8

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Point Number	Northing	Easting	Elevation	Description
50000	7975549.255	503275.727	10.715	12
50001	7975560.015	503278.447	10.808	12
50002	7975570.916	503282.764	11.202	12
50003	7975584.189	503288.364	11.794	12
50004	7975599.551	503293.341	11.69	12
50005	7975609.793	503296.733	11.643	12
50006	7975619.214	503299.397	11.514	12
50007	7975628.014	503300.148	11.337	12
50008	7975633.515	503301.972	11.277	12
50009	7975637.624	503308.71	11.295	12
50010	7975637.897	503322.94	11.512	12
50011	7975642.326	503327.709	11.514	12
50012	7975649.174	503335.797	11.446	12
50013	7975653.398	503343.42	11.346	12
50014	7975660.555	503351.139	10.972	12
50015	7975643.711	503364.693	11.071	12
50016	7975637.24	503356.966	11.443	12
50017	7975629.621	503347.363	11.629	12
50018	7975621.92	503337.788	11.679	12
50019	7975611.086	503328.87	11.771	12
50020	7975600.462	503323.712	11.747	12
50021	7975586.015	503318.501	11.743	12
50022	7975571.124	503314.133	11.848	12
50023	7975559.982	503310.624	11.942	12
50024	7975550.756	503308.207	11.912	12
50025	7975561.149	503299.171	11.995	12
50026	7975577.891	503306.999	11.87	12
50027	7975589.272	503311.459	11.848	12
50028	7975606.628	503318.838	11.766	12
50029	7975615.955	503324.293	11.543	12
50030	7975626.978	503334.457	11.624	12
50031	7975636.72	503345.859	11.481	12
50032	7975644.894	503355.92	11.283	12
50033	7975649.788	503362.578	10.889	12
50034	7975658.839	503358.108	10.763	12
50035	7975651.087	503349.943	11.27	12
50036	7975642.753	503337.762	11.457	12
50037	7975632.895	503323.311	11.484	12
50038	7975632.228	503311.145	11.365	12

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50039	7975621.773	503314.297	11.45	12
50040	7975609.96	503307.079	11.744	12
50041	7975596.557	503300.28	11.744	12
50042	7975581.731	503294.965	11.864	12
50043	7975570.555	503289.375	11.372	12
50044	7975556.858	503283.977	10.832	12
50045	7975575.369	503292.438	11.818	12
50046	7975570.636	503291.674	12.027	12
50047	7975563	503289.47	11.95	12
50048	7975558.602	503287.774	11.74	12
50049	7975554.775	503289.979	11.637	12
50050	7975548.526	503298.26	11.717	12
50051	7975543.957	503302.994	11.461	12
50052	7975544.48	503308.038	11.376	12
50053	7975550.991	503283.25	10.825	12
50054	7975546.202	503285.623	11.024	12
50055	7975540.177	503294.626	11.15	12
50056	7975533.578	503302.346	11.253	12
50057	7975527.338	503302.819	11.158	12
50058	7975516.471	503300.183	10.781	12
50059	7975505.19	503296.693	11.016	12
50060	7975494.762	503292.893	10.993	12
50061	7975485.115	503290.46	11.001	12
50062	7975481.857	503289.161	10.427	12
50063	7975473.521	503287.481	10.701	12
50064	7975472.793	503284.385	10.839	12
50065	7975479.123	503285.967	10.588	12
50066	7975481.29	503281.112	10.911	12
50067	7975487.117	503284.891	11.138	12
50068	7975495.829	503276.976	11.023	12
50069	7975499.488	503285.911	11.026	12
50070	7975509.442	503291.083	10.959	12
50071	7975511.883	503282.149	10.981	12
50072	7975512.853	503274.999	10.736	12
50073	7975524.618	503273.545	10.522	12
50074	7975525.327	503282.886	10.763	12
50075	7975523.601	503292.229	10.882	12
50076	7975532.067	503295.092	11.137	12
50077	7975537.598	503286.004	11.082	12
50078	7975540.187	503277.583	10.651	12
50079	7975536.874	503270.434	10.612	12
50080	7975337.177	503235.314	11.492	12

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50081	7975322.809	503232.214	11.706	12
50082	7975309.549	503228.538	11.743	12
50083	7975293.036	503223.856	11.765	12
50084	7975277.976	503218.689	11.797	12
50085	7975260.418	503213.214	11.477	12
50086	7975252.093	503211.018	10.971	12
50087	7975240.17	503207.159	10.944	12
50088	7975227.493	503202.926	11.79	12
50089	7975211.476	503198.078	11.854	12
50090	7975192.844	503192.436	11.731	12
50091	7975176.793	503187.388	11.819	12
50092	7975159.753	503182.145	11.732	12
50093	7975144.054	503177.419	11.708	12
50094	7975127.03	503171.878	11.668	12
50095	7975105.09	503165.215	11.66	12
50096	7975088.779	503159.789	11.669	12
50097	7975070.069	503154.102	11.6	12
50098	7975054.763	503148.409	11.626	12
50099	7975042.856	503146.108	11.599	12
50100	7975038.612	503138.68	11.461	12
50101	7975039.77	503130.502	11.501	12
50102	7975040.687	503124.274	11.434	12
50103	7975048.113	503124.445	11.544	12
50104	7975062.066	503127.152	11.482	12
50105	7975079.782	503132.51	11.577	12
50106	7975093.787	503137.018	11.561	12
50107	7975115.208	503144.11	11.649	12
50108	7975133.173	503150.245	11.745	12
50109	7975159.393	503157.346	11.579	12
50110	7975182.994	503164.59	11.725	12
50111	7975204.68	503171.319	11.803	12
50112	7975220.706	503176.764	11.603	12
50113	7975237.24	503182.651	11.632	12
50114	7975250.796	503186.594	11.151	12
50115	7975260.557	503189.108	10.835	12
50116	7975272.632	503193.584	11.638	12
50117	7975288.619	503198.715	11.688	12
50118	7975302.69	503203.273	11.739	12
50119	7975316.852	503207.689	11.684	12
50120	7975334.103	503212.54	11.593	12
50121	7975342.906	503215.781	11.125	12
50122	7975342.537	503226.112	11.098	12

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50123	7975331.283	503222.558	11.719	12
50124	7975316.084	503218.085	11.711	12
50125	7975298.741	503212.77	11.816	12
50126	7975282.023	503206.673	11.849	12
50127	7975269.949	503203.075	11.703	12
50128	7975257.355	503198.36	10.918	12
50129	7975243.412	503194.415	11.211	12
50130	7975232.315	503192.733	11.724	12
50131	7975216.551	503187.822	11.766	12
50132	7975201.634	503183.299	11.877	12
50133	7975178.916	503176.45	11.812	12
50134	7975158.643	503168.922	11.78	12
50135	7975141.946	503163.149	11.748	12
50136	7975124.492	503157.982	11.655	12
50137	7975108.916	503152.964	11.721	12
50138	7975091.323	503146.773	11.737	12
50139	7975075.04	503141.308	11.689	12
50140	7975058.058	503138.185	11.523	12
50141	7975046.722	503135.597	11.526	12
50142	7975400.691	503235.211	12.463	12
50143	7975411.575	503237.016	12.456	12
50144	7975425.628	503240.448	12.499	12
50145	7975438.39	503245.359	12.526	12
50146	7975449.546	503249.045	12.575	12
50147	7975462.141	503252.632	12.672	12
50148	7975461.933	503262.659	12.655	12
50149	7975452.219	503266.996	12.764	12
50150	7975446.553	503268.852	12.771	12
50151	7975437.199	503267.994	12.793	12
50152	7975422.778	503264.056	12.628	12
50153	7975408.847	503259.087	12.722	12
50154	7975398.467	503255.532	12.575	12
50155	7975392.037	503254.167	12.552	12
50156	7975388.667	503246.56	12.403	12
50157	7975389.696	503241.05	12.413	12
50158	7975390.988	503235.836	12.295	12
50159	7975458.662	503258.689	12.6	12
50160	7975447.873	503257.302	12.596	12
50161	7975432.531	503254.58	12.533	12
50162	7975417.591	503250.722	12.568	12
50163	7975404.529	503246.444	12.488	12
50164	7975395.682	503244.022	12.48	12

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50165	7975398.011	503233.915	12.315	12
50166	7975482.143	503262.089	11.499	12
50167	7975475.032	503261.961	12.094	12
50168	7975469.386	503262.516	12.544	12
50169	7975468.664	503258.514	12.516	12
50170	7975469.88	503253.913	12.527	12
50171	7975474.961	503254.729	11.938	12
50172	7975480.561	503256.83	11.595	12
50173	7975483.794	503258.323	11.648	12

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2132357	7975528.19	503304.481	10.401	TOE
2132358	7975527.45	503303.773	11.078	CREST
2132359	7975529.147	503302.965	11.301	CREST
2132360	7975532.136	503303.688	11.253	CREST
2132361	7975540.058	503294.75	11.192	CREST
2132362	7975544.787	503288.171	11.144	CREST
2132363	7975547.175	503285.127	11.021	CREST
2132364	7975551.062	503283.775	10.736	CREST
2132365	7975552.45	503279.033	10.638	EG
2132366	7975555.464	503274.298	10.305	CREST
2132367	7975547.134	503273.114	10.49	CREST
2132368	7975544.726	503276.034	10.79	EG
2132369	7975538.903	503282.773	10.904	EG
2132370	7975533.979	503289.432	11.06	EG
2132371	7975527.412	503296.845	10.961	EG
2132372	7975520.927	503303.39	10.896	CREST
2132373	7975508.557	503298.345	10.939	CREST
2132374	7975511.252	503289.126	11.024	EG
2132375	7975512.1	503281.511	10.971	EG
2132376	7975513.235	503274.758	10.772	CREST
2132377	7975527.796	503273.151	10.501	CREST
2132378	7975526.746	503283.604	10.744	EG
2132379	7975518.839	503292.897	10.991	EG

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Type 8 (150mm minus) Survey Data

Point Number	Northing	Easting	Elevation	Description
2132237	7975663.967	503350.037	10.476	TOE
2132238	7975663.051	503350.891	11.189	CREST
2132239	7975654.838	503357.315	10.925	EG
2132240	7975647.249	503363.464	10.924	EG
2132241	7975642.162	503367.051	11.12	CREST
2132242	7975640.402	503367.911	10.63	TOE
2132243	7975633.217	503359.169	10.46	TOE
2132244	7975634.586	503357.612	11.562	CREST
2132245	7975641.579	503351.347	11.461	EG
2132246	7975648.151	503345.469	11.397	EG
2132247	7975655.147	503339.25	11.375	CREST
2132248	7975656.93	503338.116	10.522	TOE
2132249	7975647.719	503325.694	10.514	TOE
2132250	7975645.703	503327.033	11.613	CREST
2132251	7975637.701	503333.396	11.611	EG
2132252	7975630.525	503338.668	11.601	EG
2132253	7975624.545	503342.804	11.648	CREST
2132254	7975621.805	503344.578	10.414	TOE
2132255	7975619.962	503341.236	10.31	TOE
2132256	7975618.309	503339.29	9.837	TOE
2132257	7975623.518	503341.601	11.703	CREST
2132258	7975620.821	503337.953	11.778	CREST
2132259	7975617.043	503334.482	11.694	CREST
2132260	7975613.035	503330.819	11.755	CREST
2132261	7975609.323	503330.083	11.87	CREST
2132262	7975621.591	503334.304	11.586	EG
2132263	7975628.315	503327.736	11.477	EG
2132264	7975635.032	503322.196	11.436	EG
2132265	7975639.779	503319.466	11.582	CREST
2132266	7975640.397	503322.953	11.554	CREST
2132267	7975642.51	503321.4	10.161	TOE
2132268	7975642.277	503318.678	10.276	TOE
2132269	7975642.62	503316.365	10.591	TOE
2132270	7975642.089	503312.631	10.83	TOE
2132271	7975641.208	503312.536	11.296	CREST
2132272	7975635.315	503315.204	11.443	EG
2132273	7975627.605	503320.866	11.447	EG
2132274	7975619.739	503326.934	11.527	EG

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2132275	7975611.75	503334.649	9.658	TOE
2132276	7975604.614	503332.192	9.583	TOE
2132277	7975605.814	503328.469	11.807	CREST
2132278	7975611.411	503320.218	11.671	EG
2132279	7975618.172	503311.588	11.601	EG
2132280	7975624.682	503303.768	11.405	EG
2132281	7975628.72	503299.197	11.294	CREST
2132282	7975635.269	503298.89	11.282	CREST
2132283	7975638.144	503302.093	11.276	CREST
2132284	7975639.259	503308.633	11.43	CREST
2132285	7975640.767	503307.728	10.7	TOE
2132286	7975639.308	503302.169	10.84	TOE
2132287	7975635.745	503297.8	10.687	TOE
2132288	7975634.352	503295.963	9.846	TOE
2132289	7975629.815	503296.163	9.961	TOE
2132290	7975619.496	503294.517	9.947	TOE
2132291	7975618.366	503296.833	11.548	CREST
2132292	7975614.759	503304.357	11.679	EG
2132293	7975608.644	503313.349	11.754	EG
2132294	7975604.422	503319.913	11.839	EG
2132295	7975600.879	503326.236	11.771	CREST
2132296	7975599.331	503329.353	9.685	TOE
2132297	7975590.57	503324.751	9.654	TOE
2132298	7975591.703	503321.794	11.871	CREST
2132299	7975594.966	503311.524	11.873	EG
2132300	7975598.594	503302.226	11.78	EG
2132301	7975602.045	503292.116	11.749	CREST
2132302	7975604.152	503287.509	9.664	TOE
2132303	7975593.163	503284.401	9.714	TOE
2132304	7975592.046	503288.794	11.778	CREST
2132305	7975588.955	503297.478	11.82	EG
2132306	7975586.199	503307.766	11.822	EG
2132307	7975582.463	503318.498	11.823	CREST
2132308	7975581.673	503321.657	9.731	TOE
2132309	7975572.808	503319.156	10	TOE
2132310	7975573.977	503316.51	11.845	CREST
2132311	7975575.468	503306.797	11.845	EG
2132312	7975577.816	503297.38	11.888	EG
2132313	7975580.989	503286.498	11.834	CREST
2132314	7975582.895	503282.5	10.457	TOE
2132315	7975574.503	503280.691	10.57	TOE

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2132316	7975563.556	503276.539	10.384	TOE
2132317	7975557.811	503284.435	10.307	TOE
2132318	7975565.304	503286.69	11.253	TOE
2132319	7975566.713	503287.67	11.591	TOE
2132320	7975567.013	503278.724	10.835	CREST
2132321	7975572.01	503281.945	11.423	CREST
2132322	7975574.377	503289.149	11.878	EG
2132323	7975567.462	503284.425	11.433	EG
2132324	7975559.829	503280.972	10.215	EG
2132325	7975566.508	503288.443	11.902	CREST
2132326	7975559.097	503287.159	11.684	CREST
2132327	7975555.821	503288.805	11.64	CREST
2132328	7975550.211	503295.741	11.519	CREST
2132329	7975544.076	503303.5	11.643	CREST
2132330	7975544.983	503307.264	11.705	CREST
2132331	7975555.358	503309.875	12.149	CREST
2132332	7975565.479	503313.637	12.027	CREST
2132333	7975563.936	503316.62	10.301	TOE
2132334	7975554.22	503313.209	10.293	TOE
2132335	7975547.371	503311.575	9.979	TOE
2132336	7975543.099	503309.67	10.37	TOE
2132337	7975536.992	503307.415	10.41	TOE
2132338	7975538.635	503304.896	9.971	TOE
2132339	7975541.258	503301.884	9.946	TOE
2132340	7975546.453	503295.758	9.929	TOE
2132341	7975551.534	503289.894	9.938	TOE
2132342	7975555.121	503285.213	10.1	TOE
2132343	7975555.14	503300.941	11.971	EG
2132344	7975563.875	503302.933	11.958	EG
2132345	7975574.793	503306.047	11.863	EG
2132346	7975578.744	503299.238	11.846	EG
2132347	7975568.955	503297.18	11.96	EG
2132348	7975560.539	503295.284	11.984	EG
2132349	7975558.177	503275.281	9.899	TOE
2132350	7975555.535	503282.828	10.159	TOE
2132351	7975553.024	503285.293	10.155	TOE
2132352	7975546.806	503289.701	10.17	TOE
2132353	7975541.43	503296.099	10.173	TOE
2132354	7975537.166	503301.766	9.995	TOE
2132355	7975534.009	503305.292	10.009	TOE
2132356	7975532.814	503305.845	10.424	TOE

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(Section 4)

Survey Data
(Run of Quarry As-Built)

Mary River Expansion Project
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Port Site Module Delivery Road
Run of Quarry (ROQ) Survey Data
8-25-19

Run of Quarry (ROQ) Survey Data

Point Number	Northing	Easting	Elevation	Description
1908283	7975844.917	503520.813	10.821	TOE
1908284	7975843.501	503519.719	10.822	TOE T8
1908285	7975853.083	503526.099	10.749	TOE T8
1908286	7975862.255	503531.478	10.849	TOE T8
1908287	7975868.605	503536.516	10.781	TOE T8
1908288	7975875.975	503543.927	10.808	TOE T8
1908289	7975882.464	503551.557	10.726	TOE T8
1908290	7975887.647	503557.782	10.511	TOE T8
1908291	7975893.145	503565.337	10.438	TOE T8
1908292	7975897.233	503571.367	10.424	TOE T8
1908300	7975898.783	503569.175	12.096	T12 CREST
1908301	7975892.341	503560.051	12.161	T12 CREST
1908302	7975885.147	503551.541	12.089	T12 CREST
1908303	7975877.439	503542.722	11.988	T12 CREST
1908304	7975868.332	503534.07	11.909	T12 CREST
1908305	7975856.772	503526.504	11.691	T12 CREST
1908306	7975841.458	503516.976	11.477	T12 CREST

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6-30-19

Run of Quarry (ROQ) Survey Data

Point Number	Northing	Easting	Elevation	Description
19	7974865.652	503138.208	11.132	ROQ FINAL
20	7974873.712	503143.729	11.149	ROQ FINAL
77	7974904.802	503108.781	11.036	ROQ FINAL
78	7974913.743	503112.055	11.215	ROQ FINAL
79	7974921.824	503115.128	11.147	ROQ FINAL
80	7974931.213	503117.853	11.185	ROQ FINAL
81	7974944.613	503122.841	11.247	ROQ FINAL
82	7974931.588	503126.331	11.23	ROQ FINAL
83	7974921.445	503123.294	11.189	ROQ FINAL
84	7974911.878	503120.916	11.192	ROQ FINAL
85	7974902.585	503118.885	11.218	ROQ FINAL
86	7974891.702	503115.527	11.079	ROQ FINAL
87	7974881.187	503122.645	11.142	ROQ FINAL
88	7974888.752	503127.385	11.117	ROQ FINAL
89	7974897.923	503131.727	11.153	ROQ FINAL
90	7974907.44	503137.279	11.129	ROQ FINAL
91	7974898.9	503143.944	11.261	ROQ FINAL
92	7974890.05	503140.352	11.19	ROQ FINAL
93	7974881.446	503135.809	11.117	ROQ FINAL
94	7974872.744	503130.664	11.062	ROQ FINAL
95	7974881.752	503148.908	11.238	ROQ FINAL
96	7974888.684	503154.708	11.295	ROQ FINAL
97	7974883.905	503160.92	11.369	ROQ FINAL
98	7974875.877	503155.685	11.272	ROQ FINAL
99	7974867.897	503149.51	11.203	ROQ FINAL
100	7974860.129	503143.994	11.182	ROQ FINAL

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Run of Quarry (ROQ) Survey Data

Point Number	Northing	Easting	Elevation	Description
50000	7975787.528	503497.143	10.299	T12
50001	7975787.927	503499.661	10.154	T12
50002	7975790.177	503500.856	10.213	T12
50003	7975796.851	503502.369	10.203	T12
50004	7975800.227	503501.95	10.225	T12
50005	7975799.841	503497.307	10.313	T12
50006	7975793.107	503497.08	10.299	T12
50007	7975813.049	503505.127	11.114	T12
50008	7975831.984	503512.909	11.341	T12 CREST
50009	7975831.984	503512.914	11.344	T12 CREST
50010	7975817.619	503507.612	11.126	T12 CREST
50011	7975810.135	503504.588	10.995	T12 CREST
50012	7975833.78	503486.779	11.084	T12 CREST
50013	7975844.493	503490.952	11.177	T12 CREST
50014	7975845.213	503490.062	10.822	T12 TOE
50015	7975835.503	503485.419	10.735	T12 TOE
50016	7975811.468	503505.45	10.849	T12 TOE
50017	7975811.583	503505.441	10.86	T12 TOE
50018	7975821.484	503510.325	10.884	T12 TOE
50020	7975828.829	503507.69	11.294	T12
50021	7975835.678	503496.028	11.271	T12
50022	7975835.505	503490.12	11.105	T12
50023	7975828.364	503489.644	10.962	T12
50024	7975821.382	503491.052	10.877	T12
50025	7975811.19	503495.971	10.87	T12
50026	7975816.211	503500.107	11.09	T12

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Run of Quarry (ROQ) Survey Data

Point Number	Northing	Easting	Elevation	Description
29	7975667.15	503426.46	10.554	T12 TOE
30	7975662.018	503415.052	10.659	T12 TOE
63	7975656.783	503405.807	10.661	T12 TOE
64	7975685.285	503402.097	10.572	T12 TOE
65	7975691.369	503412.786	10.521	T12 TOE
66	7975697.496	503422.141	10.558	T12 TOE
67	7975708.739	503432.871	10.378	T12 TOE
70	7975692.704	503360.975	10.969	T12 TOE
71	7975685.851	503366.851	10.725	T12 TOE
72	7975684.003	503368.711	10.775	T12 TOE
73	7975682.506	503369.127	11.068	T12 BLK
74	7975678.509	503368.195	11.401	T12 BLK
40006	7975648.338	503390.358	10.641	T12 TOE
40007	7975637.63	503396.615	10.68	T12 TOE
40008	7975633.521	503398.786	10.735	T12 TOE
40009	7975623.074	503383.527	10.755	T12 TOE
40010	7975635.699	503368.697	10.834	T12 TOE
40011	7975632.711	503374.178	10.848	T12 TOE
40012	7975664.743	503347.505	10.548	T12 TOE
40013	7975680.018	503341.346	11.246	T12 TOE
40014	7975698.101	503354.17	11.182	T12 TOE

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6-23-19

Run of Quarry (ROQ) Survey Data

Point Number	Northing	Easting	Elevation	Description
31	7975834.819	503485.349	10.756	T12 TOE
32	7975819.767	503490.709	10.868	T12 TOE
33	7975814.739	503492.371	10.806	T12 TOE
34	7975808.858	503497.002	10.819	T12 TOE
35	7975812.283	503505.749	10.879	T12 TOE
36	7975814.401	503507.232	10.82	T12 TOE
37	7975824.98	503510.38	10.951	T12 TOE
38	7975835.252	503515.509	10.846	T12 TOE
39	7975843.637	503518.87	10.815	T12 TOE
40	7975851.707	503522.012	10.668	T12 TOE
41	7975860.146	503526.792	10.875	T12 TOE
42	7975869.08	503531.886	10.741	T12 TOE
43	7975877.79	503539.919	10.847	T12 TOE
44	7975884.483	503547.951	10.793	T12 TOE
45	7975891.564	503558.173	10.636	T12 TOE
46	7975896.035	503567.323	10.71	T12 TOE
47	7975900.162	503572.208	9.864	T12 TOE
48	7975908.009	503574.933	9.965	T12 TOE
49	7975912.88	503572.389	9.78	T12 TOE
50	7975918.324	503558.186	9.773	T12 TOE
51	7975921.565	503549.977	9.869	T12 TOE
52	7975918.452	503544.227	9.776	T12 TOE
53	7975917.089	503542.61	9.739	T12 TOE
54	7975915.077	503541.531	10.841	T12 TOE
55	7975911.004	503533.177	10.621	T12 TOE
56	7975903.393	503524.734	10.634	T12 TOE
57	7975896.446	503517.318	10.904	T12 TOE
58	7975885.902	503509.72	10.793	T12 TOE
59	7975871.629	503500.469	10.905	T12 TOE
60	7975857.142	503494.173	10.913	T12 TOE
61	7975846.638	503490.224	10.922	T12 TOE
62	7975835.88	503485.753	10.769	T12 TOE

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6-22-19

Run of Quarry (ROQ) Survey Data

Point Number	Northing	Easting	Elevation	Description
5	7975661.25	503409.745	11.133	T12
6	7975659.098	503405.481	11.062	T12
7	7975666.409	503402.856	11.177	T12
8	7975669.213	503406.432	11.076	T12
9	7975672.002	503412.432	11.031	T12
10	7975679.051	503420.103	11.039	T12
11	7975688.252	503426.916	10.905	T12
12	7975696.43	503433.198	10.7	T12
13	7975710.858	503442.034	10.757	T12
14	7975713.981	503444.082	10.639	T12
15	7975725.092	503450.498	10.64	T12
16	7975732.657	503453.915	10.4	T12
17	7975743.279	503458.215	10.417	T12
18	7975758.182	503463.606	10.416	T12
40015	7975637.731	503368.042	11.387	T12 CREST
40016	7975633.243	503375.154	11.306	T12 CREST
40017	7975624.789	503382.81	10.925	T12 CREST
40018	7975633.387	503396.12	11.015	T12 CREST
40019	7975642.582	503389.912	11.362	T12 CREST
40020	7975646.654	503387.545	11.473	T12 CREST
40021	7975670.213	503375.382	11.567	T12 CREST
40022	7975681.234	503365.599	11.602	T12 CREST
40023	7975690.6	503359.491	11.445	T12 CREST
40024	7975695.172	503355.364	11.434	T12 CREST
40025	7975684.968	503338.405	11.355	T12 CREST
40026	7975674.329	503345.344	11.456	T12 CREST
40027	7975664.348	503348.974	11.428	T12 CREST
40028	7975662.739	503348.794	11.467	T12 CREST
40029	7975687.032	503347.746	11.388	T12
40030	7975676.308	503355.121	11.5	T12
40031	7975669.773	503360.846	11.573	T12
40032	7975643.717	503379.747	11.456	T12
40033	7975638.482	503383.472	11.368	T12
40034	7975628.513	503391.056	10.905	T12
40035	7975785.964	503479.913	10.542	T12
40036	7975774.322	503481.352	10.409	T12
40037	7975763.146	503476.205	10.482	T12
40038	7975753.89	503472.861	10.534	T12
40039	7975743.697	503468.812	10.499	T12

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40040	7975729.082	503461.967	10.585	T12
40041	7975720.687	503458.203	10.76	T12
40042	7975710.757	503452.736	10.693	T12
40043	7975700.829	503447.682	10.717	T12
40044	7975690.094	503441.861	10.792	T12
40045	7975678.584	503434.888	10.707	T12
40046	7975669.184	503426.31	10.708	T12
40047	7975666.064	503419.725	11.069	T12
40062	7975772.899	503468.837	10.553	T12
40063	7975784.31	503472.848	10.491	T12
40064	7975788.456	503473.278	10.481	T12
40065	7975787.264	503469.227	10.477	T12
40066	7975773.98	503465.159	10.451	T12
40067	7975762.196	503460.953	10.468	T12
40068	7975751.025	503456.906	10.531	T12
40069	7975740.104	503451.741	10.406	T12
40070	7975731.516	503447.744	10.479	T12
40183	7975679.02	503397.687	11.109	T12
40184	7975682.514	503400.58	11.074	T12
40185	7975685.323	503403.887	10.767	T12
40186	7975687.7	503407.072	10.966	T12
40187	7975690.047	503412.464	10.935	T12
40188	7975694.841	503421.202	10.861	T12
40189	7975702.04	503428.184	10.803	T12
40190	7975708.454	503433.417	10.699	T12
40191	7975716.615	503439.386	10.633	T12
40192	7975722.688	503442.159	10.554	T12

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Run of Quarry (ROQ) Survey Data

Point Number	Northing	Easting	Elevation	Description
1	7975638.547	503362.801	11.341	TYPE 12
2	7975647.713	503358.986	11.315	TYPE 12
3	7975657.105	503354.27	11.294	TYPE 12
4	7975660.822	503352.031	11.33	TYPE 12
21	7975665.125	503360.536	11.216	TYPE 12
22	7975657.296	503365.306	11.279	TYPE 12
23	7975649.641	503371.017	11.37	TYPE 12
24	7975644.54	503375.452	11.24	TYPE 12
25	7975649.218	503386.784	11.259	TYPE 12
26	7975659.038	503382.156	11.124	TYPE 12
27	7975667.938	503378.509	11.305	TYPE 12
28	7975672.447	503376.329	11.21	TYPE 12

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Run of Quarry (ROQ) Survey Data

Point Number	Northing	Easting	Elevation	Description
40048	7975649.415	503386.802	11.268	T12 CREST
40049	7975644.434	503375.525	11.285	T12 CREST
40050	7975638.765	503362.641	11.329	T12 CREST
40051	7975659.31	503352.166	11.214	T12 CREST
40052	7975663.113	503360.594	11.283	T12 CREST
40053	7975667.588	503369.526	11.206	T12 CREST
40054	7975671.169	503376.901	11.253	T12 CREST
40055	7975663.607	503380.039	11.246	T12
40056	7975659.397	503373.017	11.291	T12
40057	7975654.789	503363.826	11.341	T12
40058	7975649.958	503356.773	11.187	T12
40059	7975642.868	503363.003	11.35	T12
40060	7975649.032	503372.038	11.345	T12
40061	7975655.098	503383.775	11.225	T12

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Run of Quarry (ROQ) Survey Data

Point Number	Northing	Easting	Elevation	Description
20146	7975851.411	503492.861	11.456	T12 CREST
20147	7975863.078	503497.829	11.502	T12 CREST
20148	7975874.038	503503.43	11.635	T12 CREST
20149	7975888.338	503513.287	11.798	T12 CREST
20150	7975899.36	503523.141	11.921	T12 CREST
20151	7975908.411	503534.382	12.026	T12 CREST
20152	7975912.856	503540.923	12.064	T12 CREST
20153	7975891.7	503554.917	12.06	T12 CREST
20154	7975883.848	503543.821	12.037	T12 CREST
20155	7975874.733	503534.555	11.975	T12 CREST
20156	7975864.172	503526.942	11.758	T12 CREST
20157	7975849.942	503519.676	11.634	T12 CREST
20158	7975836.396	503514.635	11.485	T12 CREST
20159	7975835.524	503509.83	11.498	ROQ
20160	7975841.819	503501.823	11.52	ROQ
20161	7975845.312	503497.669	11.474	ROQ
20162	7975854.303	503502.519	11.553	ROQ
20163	7975851.633	503510.839	11.548	ROQ
20164	7975860.006	503515.34	11.625	ROQ
20165	7975864.299	503506.772	11.65	ROQ
20166	7975876.331	503514.155	11.71	ROQ
20167	7975871.766	503522.262	11.8	ROQ
20168	7975879.696	503531.037	11.957	ROQ
20169	7975889.725	503525.398	11.975	ROQ
20170	7975900.964	503535.884	12.055	ROQ
20171	7975893.53	503542.374	12.018	ROQ

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Run of Quarry (ROQ) Survey Data

Point Number	Northing	Easting	Elevation	Description
1030	7975916.064	503598.517	11.426	T12TOP1
1031	7975914.06	503599.774	11.43	T12TOP1
1032	7975911.016	503597.326	11.007	T12TOP1
1033	7975908.534	503594.885	10.493	T12TOP1
1034	7975909.02	503591.566	10.03	T12TOP1
1035	7975913.077	503589.102	10.154	T12TOP1
1036	7975914.807	503588.733	10.189	T12TOP1
1037	7975915.714	503590.382	10.591	T12TOP1
1038	7975917.521	503594.451	11.133	T12TOP1
1039	7975916.773	503596.72	11.359	T12TOP1
1040	7975915.256	503598.807	11.48	T12TOP1
1041	7975913.755	503597.669	11.374	T12SPT
1042	7975915.6	503595.736	11.268	T12SPT
1043	7975914.778	503592.907	10.847	T12SPT
1044	7975912.238	503594.07	10.835	T12SPT
1045	7975910.262	503594.749	10.609	T12SPT
1046	7975909.452	503592.898	10.327	T12SPT
1047	7975912.02	503590.899	10.346	T12SPT
1048	7975912.973	503590.374	10.309	T12SPT
1049	7975914.655	503589.134	10.293	T12SPT
1050	7975907.907	503594.549	10.162	T12TOE2
1051	7975909.131	503596.51	10.422	T12TOE2
1052	7975911.686	503598.897	11.017	T12TOE2
1053	7975912.865	503599.592	11.277	T12TOE2
1054	7975921.44	503583.098	10.54	T12TOE3
1055	7975918.837	503584.471	10.241	T12TOE3
1056	7975914.084	503583.739	9.918	T12TOE3
1057	7975912.322	503579.483	9.93	T12TOE3
1058	7975912.858	503578.015	9.742	T12TOE3
1059	7975916.521	503572.129	9.794	T12TOE3
1060	7975918.635	503563.91	9.733	T12TOE3
1061	7975921.715	503555.743	9.82	T12TOE3
1062	7975922.892	503553.311	9.796	T12TOE3
1063	7975924.495	503553.084	9.726	T12TOE3
1064	7975928.041	503560.475	10.09	T12TOE3
1065	7975929.027	503564.757	10.25	T12TOE3
1066	7975928.964	503567.52	10.64	T12TOE3
1067	7975928.495	503567.614	10.78	T12TOP3
1068	7975928.381	503567.622	10.76	T12TOP3

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1069	7975927.553	503571.672	10.944	T12TOP3
1070	7975923.848	503578.976	10.813	T12TOP3
1071	7975920.846	503582.905	10.71	T12TOP3
1072	7975918.486	503583.692	10.727	T12TOP3
1073	7975914.365	503582.102	10.642	T12TOP3
1074	7975913.391	503579.072	10.578	T12TOP3
1075	7975916.787	503574.904	10.759	T12TOP3
1076	7975919.578	503568.285	10.873	T12TOP3
1077	7975921.312	503561.866	10.786	T12TOP3
1078	7975923.18	503555.579	10.473	T12TOP3
1079	7975923.691	503554.334	10.436	T12TOP3
1080	7975923.959	503554.325	10.501	T12TOP3
1081	7975926.345	503558.772	10.632	T12TOP3
1082	7975928.323	503566.455	10.763	T12TOP3
1083	7975928.098	503568.747	10.821	T12TOP3
1084	7975927.475	503571.577	10.925	T12TOP3
1085	7975924.935	503569.453	10.782	T12SPT
1086	7975925.26	503561.885	10.795	T12SPT
1087	7975923.864	503557.399	10.616	T12SPT
1088	7975922.206	503566.977	10.787	T12SPT
1089	7975922.268	503566.928	10.789	T12SPT
1090	7975919.609	503574.614	10.745	T12SPT
1091	7975921.685	503578.575	10.784	T12SPT
1092	7975918.14	503581.577	10.702	T12SPT
1093	7975915.316	503579.08	10.617	T12SPT
1094	7975892.476	503568.306	10.106	T12TOE4
1095	7975894.504	503570.972	10.118	T12TOE4
1096	7975897.399	503571.588	10.097	T12TOE4
1097	7975904.296	503573.377	9.957	T12TOE4
1098	7975908.916	503574.724	9.97	T12TOE4
1099	7975913.045	503572.442	9.705	T12TOE4
1100	7975915.588	503565.444	9.909	T12TOE4
1101	7975918.128	503558.044	9.944	T12TOE4
1102	7975920.934	503552.278	9.962	T12TOE4
1103	7975921.718	503550.325	9.811	T12TOE4
1104	7975918.694	503545.216	9.828	T12TOE4
1105	7975916.87	503542.981	9.828	T12TOE4
1106	7975915.784	503543.68	10.502	T12TOP5
1107	7975919.653	503548.474	10.501	T12TOP5
1108	7975920.674	503550.357	10.517	T12TOP5
1109	7975920.024	503551.974	10.527	T12TOP5
1110	7975916.669	503557.323	10.629	T12TOP5

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1111	7975914.156	503565.94	10.633	T12TOP5
1112	7975911.619	503571.563	10.609	T12TOP5
1113	7975908.028	503572.995	10.461	T12TOP5
1114	7975904.781	503571.621	10.516	T12TOP5
1115	7975899.837	503569.372	10.623	T12TOP5
1116	7975896.098	503569.704	10.838	T12TOP5
1117	7975894.07	503568.018	10.853	T12TOP5
1118	7975894.581	503567.026	10.74	T12TOP5
1119	7975901.221	503559.361	10.633	T12TOP5
1120	7975907.084	503552.4	10.511	T12TOP5
1121	7975912.562	503546.576	10.444	T12TOP5
1122	7975915.31	503543.858	10.494	T12TOP5
1123	7975915.002	503547.812	10.556	T12SPT
1124	7975917.385	503550.885	10.533	T12SPT
1125	7975913.616	503557.411	10.592	T12SPT
1126	7975911.011	503564.194	10.611	T12SPT
1127	7975908.66	503569.46	10.624	T12SPT
1128	7975904.646	503567.919	10.648	T12SPT
1129	7975898.58	503566.716	10.727	T12SPT
1130	7975896.339	503565.938	10.757	T12SPT
1131	7975902.23	503563.84	10.753	T12SPT
1132	7975908.315	503559.055	10.633	T12SPT
1133	7975911.937	503552.115	10.603	T12SPT
1134	7975915.562	503547.028	10.534	T12SPT
1135	7975912.661	503553.484	10.606	T12SPT
1136	7975907.635	503562.425	10.647	T12SPT
1137	7975904.349	503567.95	10.643	T12SPT

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(Section 4)

Survey Data
(Stability Trench As-Built)

Mary River Expansion Project
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Port Site Module Delivery Road
Stability Trench Survey Data
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Stability Trench Survey Data As-Built

Point Number	Northing	Easting	Elevation	Description
40000	7974948.617	503089.724	9.7	EXC
40001	7974950.802	503087.051	10.023	EXC
40002	7974947.651	503089.375	9.723	EXC
40003	7974947.577	503096.645	9.837	EXC
40004	7974947.639	503099.186	9.914	EXC
40005	7974954.044	503095.771	9.713	EXC
40006	7974952.329	503100.246	9.729	EXC
40007	7974951.985	503100.599	9.773	EXC
40008	7974955.265	503089.251	9.565	EXC
40009	7974964.997	503091.24	9.46	EXC
40010	7974965.256	503090.058	10.069	EXC
40011	7974963.527	503096.523	9.458	EXC
40012	7974962.181	503101.98	9.387	EXC
40013	7974961.871	503103.534	9.526	EXC
40014	7974972.884	503106.239	9.59	EXC
40015	7974974.72	503099.952	9.448	EXC
40016	7974975.586	503095.124	9.462	EXC
40017	7974976.044	503093.012	9.797	EXC
40018	7974984.649	503096.108	9.751	EXC
40019	7974984.488	503096.796	9.443	EXC
40020	7974983.191	503104.089	9.739	EXC
40021	7974980.97	503113.168	9.752	EXC
40024	7974990.283	503121.935	9.777	EXC
40025	7974992.555	503112.908	9.751	EXC
40026	7974994.954	503104.501	9.359	EXC
40027	7974995.655	503101.847	9.355	EXC
40028	7974996.125	503100.361	9.868	EXC
40029	7975003.907	503102.091	9.384	EXC
40030	7975003.854	503104.099	9.27	EXC
40031	7975001.805	503110.716	9.372	EXC
40032	7975001.09	503113.416	9.591	EXC
40033	7974999.76	503119.334	9.986	EXC
40034	7974998.721	503123.841	9.885	EXC
40038	7975001.611	503122.616	9.351	EXC
40039	7975006.653	503121.93	9.318	EXC
40040	7975007.973	503117.304	9.371	EXC
40041	7975003.11	503114.269	9.447	EXC
40042	7975011.001	503110.082	9.233	EXC
40043	7975011.786	503107.612	9.176	EXC

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40044	7975012.036	503105.717	9.272	EXC
40045	7975022.004	503108.733	9.272	EXC
40046	7975021.801	503110.011	9.129	EXC
40047	7975021.714	503114.27	9.255	EXC
40048	7975019.314	503124.93	9.275	EXC
40050	7975027.313	503132.118	9.719	EXC
40051	7975029.576	503122.953	9.423	EXC
40052	7975032.384	503114.262	9.223	EXC
40053	7975034.21	503112.33	9.226	EXC
40054	7975029.594	503110.215	9.378	EXC
40055	7975022.748	503108.625	9.236	EXC
40056	7975010.08	503105.632	9.279	EXC
40057	7974985.788	503098.384	9.571	EXC

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Stability Trench Survey Data As-Built

Point Number	Northing	Easting	Elevation	Description
835	7974977.47	503130.813	9.717	SG
836	7974979.862	503126.497	9.467	SG
837	7974978.924	503120.16	9.682	SG
838	7974991.827	503124.27	9.481	SG
839	7974991.092	503129.392	9.313	SG
840	7974990.262	503135.039	9.564	SG
841	7974999.368	503137.578	9.321	SG
842	7975000.407	503132.7	8.964	SG
843	7975004.821	503128.07	9.435	SG
844	7975015.87	503131.3	9.309	SG
845	7975012.594	503135.552	9.235	SG
846	7975010.957	503141.261	9.404	SG
847	7975017.513	503138.971	9.324	SG
848	7975018.325	503144.181	9.486	SG
849	7975024.454	503145.44	9.407	SG
850	7975025.129	503139.611	9.419	SG
851	7975025.952	503134.852	9.412	SG

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Stability Trench Survey Data As-Built

Point Number	Northing	Easting	Elevation	Description
1	7974812.107	503055.528	10.035	SG
2	7974813.136	503050.706	9.954	SG
368	7974813.743	503047.67	9.903	SG
369	7974815.179	503045.139	10.078	SG
370	7974822.357	503047.139	9.949	SG
371	7974821.256	503051.508	9.909	SG
372	7974819.566	503055.421	9.843	SG
373	7974819.418	503058.424	9.955	SG
374	7974825.826	503060.146	9.947	SG
375	7974827.146	503056.842	9.848	SG
376	7974828.465	503053.02	9.791	SG
377	7974829.787	503049.6	9.843	SG
378	7974835.249	503051.398	9.994	SG
379	7974834.193	503054.693	9.853	SG
380	7974832.987	503058.995	9.938	SG
381	7974832.164	503061.787	9.989	SG
382	7974837.65	503063.853	10.026	SG
383	7974838.053	503060.429	9.938	SG
384	7974837.783	503055.92	9.751	SG
385	7974838.543	503052.422	10.033	SG
386	7974844.767	503054.353	9.98	SG
387	7974844.486	503055.71	9.553	SG
388	7974843.522	503058.539	9.619	SG
389	7974842.619	503061.982	9.685	SG
390	7974841.599	503064.621	9.615	SG
391	7974846.972	503066.1	9.527	SG
392	7974848.103	503063.08	9.517	SG
393	7974848.868	503059.413	9.485	SG
394	7974849.406	503057.131	9.524	SG
395	7974849.87	503056.008	9.938	SG
396	7974856.443	503057.936	9.983	SG
397	7974856.17	503059.398	9.524	SG
398	7974855.478	503062.676	9.593	SG
399	7974854.95	503065.84	9.727	SG
400	7974854.374	503068.475	9.921	SG
401	7974860.816	503070.553	9.953	SG
402	7974861.977	503067.098	9.718	SG
403	7974863.126	503063.691	9.618	SG
404	7974864.881	503061.289	9.694	SG

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405	7974865.578	503060.718	9.891	SG
406	7974873.665	503063.32	9.89	SG
407	7974872.159	503066.816	9.673	SG
408	7974870.946	503071.104	9.829	SG
409	7974869.893	503073.599	9.95	SG
410	7974874.266	503074.764	10.03	SG
411	7974875.856	503072.105	9.768	SG
412	7974877.396	503067.745	9.746	SG
413	7974877.258	503064.506	10.045	SG

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Stability Trench Survey Data As-Built

Point Number	Northing	Easting	Elevation	Description
2166033	7974874.225	503087.338	9.75	STAB TRENCH TOE
2166034	7974871.585	503097.614	9.937	STAB TRENCH TOE
2166035	7974881.171	503100.476	9.902	STAB TRENCH TOE
2166036	7974883.776	503090.383	9.843	STAB TRENCH TOE
2166037	7974896.926	503094.547	9.712	STAB TRENCH TOE
2166038	7974891.67	503104.051	9.714	STAB TRENCH TOE
2166041	7974944.649	503096.316	9.987	STABTRENCH TOE
2166042	7974947.797	503086.471	10.031	STABTRENCH TOE
2166043	7974935.178	503082.656	9.775	STABTRENCH TOE
2166044	7974930.697	503092.238	9.774	STABTRENCH TOE
2166045	7974919.756	503088.714	9.811	STABTRENCH TOE
2166046	7974913.256	503075.757	9.789	STABTRENCH TOE
2166047	7974909.172	503085.571	9.948	STABTRENCH TOE
2166048	7974893.795	503080.652	9.982	STABTRENCH TOE
2166049	7974889.861	503068.359	10.011	STABTRENCH TOE
2166050	7974880.279	503076.546	9.981	STABTRENCH TOE
2166051	7974883.445	503066.529	9.99	STABTRENCH TOE
2166052	7974883.528	503065.545	10.634	STABTRENCH CRST
2166053	7974892.089	503067.464	10.616	STABTRENCH CRST
2166054	7974899.512	503070.378	10.711	STABTRENCH CRST
2166055	7974906.224	503072.336	10.662	STABTRENCH CRST
2166056	7974914.344	503075.062	10.632	STABTRENCH CRST
2166057	7974923.288	503077.489	10.355	STABTRENCH CRST
2166058	7974934.078	503080.953	10.238	STABTRENCH CRST
2166059	7974937.502	503082.783	10.283	STABTRENCH CRST
2166060	7974945.143	503085.318	10.224	STABTRENCH CRST
2166061	7974942.925	503098.385	10.751	STABTRENCH CRST
2166062	7974931.606	503095.103	10.85	STABTRENCH CRST
2166063	7974919.783	503090.561	10.509	STABTRENCH CRST
2166064	7974911.143	503087.35	10.489	STABTRENCH CRST
2166065	7974900.52	503084.313	10.456	STABTRENCH CRST
2166066	7974892.001	503081.728	10.535	STABTRENCH CRST
2166067	7974881.065	503078.913	10.638	STABTRENCH CRST

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Point Number	Northing	Easting	Elevation	Description
2164003	7974934.071	503117.129	9.797	STAB TRENCH TOE
2164004	7974923.682	503114.002	9.852	STAB TRENCH TOE
2164005	7974913.858	503110.787	9.924	STAB TRENCH TOE
2164006	7974904.785	503107.939	9.835	STAB TRENCH TOE
2164007	7974895.884	503105.541	9.933	STAB TRENCH TOE
2164008	7974900.909	503095.746	9.785	STAB TRENCH TOE
2164009	7974909.146	503098.352	9.849	STAB TRENCH TOE
2164010	7974919.548	503101.644	9.85	STAB TRENCH TOE
2164011	7974932.856	503105.828	9.763	STAB TRENCH TOE
2164012	7974936.257	503105.785	10.407	STAB TRENCH CRT
2164013	7974927.094	503102.518	10.281	STAB TRENCH CRT
2164014	7974917.023	503098.302	10.809	STAB TRENCH CRT
2164015	7974907.626	503095.611	10.754	STAB TRENCH CRT
2164016	7974899.437	503094.256	10.509	STAB TRENCH CRT
2164017	7974892.864	503105.973	10.374	STAB TRENCH CRT
2164018	7974901.614	503108.508	10.367	STAB TRENCH CRT
2164019	7974910.727	503110.494	10.45	STAB TRENCH CRT
2164020	7974918.348	503113.082	10.537	STAB TRENCH CRT
2164021	7974923.295	503116.172	10.586	STAB TRENCH CRT
2164022	7974929.839	503118.795	10.639	STAB TRENCH CRT

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Point Number	Northing	Easting	Elevation	Description
2164172	7974937.204	503118.171	9.992	STAB TRENCH TOE
2164173	7974947.686	503121.477	10.024	STAB TRENCH TOE
2164174	7974958.595	503124.54	10.095	STAB TRENCH TOE
2164175	7974971.297	503128.741	9.964	STAB TRENCH TOE
2164176	7974974.444	503118.968	9.834	STAB TRENCH TOE
2164177	7974964.45	503115.734	9.902	STAB TRENCH TOE
2164178	7974953.802	503112.388	9.956	STAB TRENCH TOE
2164179	7974939.474	503107.737	10.014	STAB TRENCH TOE
2164180	7974937.255	503105.008	10.176	STAB TRENCH CRT
2164181	7974946.624	503108.721	10.098	STAB TRENCH CRT
2164182	7974957.117	503112.678	10.008	STAB TRENCH CRT
2164183	7974961.296	503113.999	10.294	STAB TRENCH CRT
2164184	7974963.635	503114.847	10.337	STAB TRENCH CRT
2164185	7974967.512	503116.562	10.431	STAB TRENCH CRT
2164186	7974975.548	503118.74	10.422	STAB TRENCH CRT
2164187	7974973.179	503129.995	10.505	STAB TRENCH CRT
2164188	7974966.398	503127.96	10.568	STAB TRENCH CRT
2164189	7974958.45	503125.546	10.716	STAB TRENCH CRT
2164190	7974951.765	503124.359	10.651	STAB TRENCH CRT
2164191	7974947.357	503124.236	10.413	STAB TRENCH CRT
2164192	7974943.347	503124.193	10.305	STAB TRENCH CRT
2164193	7974935.742	503124.625	10.302	STAB TRENCH CRT

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Point Number	Northing	Easting	Elevation	Description
2163044	7975530.876	503267.095	10.001	STABTRENCH TOE
2163045	7975518.834	503263.457	10.059	STABTRENCH TOE
2163046	7975508.208	503259.91	9.726	STABTRENCH TOE
2163047	7975501.335	503258.084	9.654	STABTRENCH TOE
2163048	7975492.589	503261.642	9.913	STABTRENCH TOE
2163049	7975485.278	503265.52	9.986	STABTRENCH TOE
2163050	7975493.237	503268.531	9.952	STABTRENCH TOE
2163051	7975503.375	503272.217	9.787	STABTRENCH TOE
2163052	7975509.135	503274.138	9.925	STABTRENCH TOE
2163053	7975514.74	503272.218	9.76	STABTRENCH TOE
2163054	7975524.694	503272.097	9.911	STABTRENCH TOE
2163055	7975528.158	503271.984	9.919	STABTRENCH TOE
2163056	7975535.714	503268.061	10.941	STABTRENCH CREST
2163057	7975525.867	503264.03	10.884	STABTRENCH CREST
2163058	7975514.974	503260.897	10.771	STABTRENCH CREST
2163059	7975506.975	503258.185	11.033	STABTRENCH CREST
2163060	7975500.389	503256.738	11.011	STABTRENCH CREST
2163061	7975490.75	503261.073	10.94	STABTRENCH CREST
2163062	7975483.865	503263.58	11.264	STABTRENCH CREST
2163063	7975483.038	503265.27	11.153	STABTRENCH CREST
2163064	7975486.634	503267.049	10.861	STABTRENCH CREST
2163065	7975496.828	503270.981	11.138	STABTRENCH CREST
2163066	7975506.476	503274.634	10.841	STABTRENCH CREST
2163067	7975510.566	503275.648	10.781	STABTRENCH CREST
2163068	7975513.886	503276.539	10.95	STABTRENCH CREST
2163069	7975520.901	503275.44	10.578	STABTRENCH CREST
2163070	7975528.838	503273.318	10.357	STABTRENCH CREST

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Point Number	Northing	Easting	Elevation	Description
3161000	7975446.997	503279.015	10.976	STAB TRENCH CREST
3161001	7975452.591	503281.558	10.975	STAB TRENCH CREST
3161002	7975458.704	503283.881	10.975	STAB TRENCH CREST
3161003	7975462.833	503285.497	11.005	STAB TRENCH CREST
3161004	7975466.458	503286.715	10.483	STAB TRENCH CREST
3161005	7975471.197	503287.665	10.555	STAB TRENCH CREST
3161006	7975471.463	503286.795	10.062	STAB TRENCH TOE
3161007	7975468.177	503286.232	10.088	STAB TRENCH TOE
3161008	7975465.041	503284.951	10.028	STAB TRENCH TOE
3161009	7975462.877	503284.034	10.019	STAB TRENCH TOE
3161010	7975455.513	503280.957	9.89	STAB TRENCH TOE
3161011	7975450.903	503279.34	9.82	STAB TRENCH TOE
3161012	7975447.704	503278.284	9.971	STAB TRENCH TOE
3161013	7975466.302	503270.002	9.753	STAB TRENCH TOE
3161014	7975473.466	503272.378	9.898	STAB TRENCH TOE
3161015	7975480.346	503274.401	9.828	STAB TRENCH TOE
3161016	7975485.184	503276.179	9.774	STAB TRENCH TOE
3161017	7975489.612	503277.536	9.859	STAB TRENCH TOE
3161018	7975491.14	503276.762	10.878	STAB TRENCH CREST
3161019	7975485.911	503275.301	10.953	STAB TRENCH CREST
3161020	7975479.775	503273.458	10.965	STAB TRENCH CREST
3161021	7975473.485	503271.536	10.91	STAB TRENCH CREST
3161022	7975466.184	503268.868	11.192	STAB TRENCH CREST
3161023	7975450.949	503276.085	9.884	STAB TRENCH BASE
3161024	7975458.405	503273.886	9.764	STAB TRENCH BASE
3161025	7975456.938	503278.869	9.862	STAB TRENCH BASE
3161026	7975462.95	503280.739	9.894	STAB TRENCH BASE
3161027	7975464.589	503275.716	9.849	STAB TRENCH BASE
3161028	7975466.028	503272.182	9.757	STAB TRENCH BASE
3161029	7975473.296	503274.385	9.92	STAB TRENCH BASE
3161030	7975471.651	503279.765	9.98	STAB TRENCH BASE
3161031	7975471.578	503284.241	10.011	STAB TRENCH BASE
3161032	7975477.895	503281.38	10.012	STAB TRENCH BASE
3161033	7975479.889	503276.74	9.895	STAB TRENCH BASE
3161034	7975485.575	503279.366	9.866	STAB TRENCH BASE

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Point Number	Northing	Easting	Elevation	Description
2160001	7975379.172	503250.902	10.043	STAB BASE
2160002	7975380.77	503245.746	10.105	STAB BASE
2160003	7975371.338	503248.901	10.037	STAB BASE
2160004	7975370.876	503242.677	9.998	STAB BASE
2160005	7975363.931	503246.295	10.019	STAB BASE
2160006	7975361.937	503239.762	10.052	STAB BASE
2160007	7975351.274	503236.525	9.931	STAB BASE
2160008	7975347.09	503242.445	9.928	STAB BASE
2160009	7975346.275	503246.114	10.001	STAB BASE
2160010	7975355.779	503248.704	9.938	STAB BASE
2160011	7975365.45	503251.781	10.052	STAB BASE
2160012	7975379.345	503255.934	9.979	STAB BASE
2160013	7975382.487	503244.663	11.275	STAB BASE
2160014	7975382.482	503244.695	11.26	STAB CRST
2160015	7975373.944	503242.288	11.422	STAB CRST
2160016	7975363.617	503238.957	11.328	STAB CRST
2160017	7975349.77	503234.529	11.25	STAB CRST
2160018	7975379.576	503257.479	11.519	STAB CRST
2160019	7975368.899	503254.394	11.414	STAB CRST
2160020	7975357.874	503250.997	11.354	STAB CRST
2160021	7975347.898	503248.046	11.292	STAB CRST

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Point Number	Northing	Easting	Elevation	Description
11410	7975362.527	503222.887	10.056	ASB STAB TRNCH
11411	7975371.059	503225.031	9.932	ASB STAB TRNCH
11412	7975378.309	503226.416	10.035	ASB STAB TRNCH
11413	7975387.052	503228.678	10.127	ASB STAB TRNCH
11414	7975387.75	503223.33	10.031	ASB STAB TRNCH
11415	7975378.655	503221.013	9.985	ASB STAB TRNCH
11416	7975370.832	503218.714	9.978	ASB STAB TRNCH
11417	7975364.005	503216.404	9.907	ASB STAB TRNCH
11418	7975384.458	503233.56	10.08	ASB STAB TRNCH
11419	7975361.846	503226.809	10.028	ASB STAB TRNCH
11420	7975366.627	503228.297	10.077	ASB STAB TRNCH
11421	7975351.273	503223.372	10.055	ASB STAB TRNCH
11422	7975352.757	503219.029	10.046	ASB STAB TRNCH
11423	7975354.789	503213.528	10.023	ASB STAB TRNCH

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Point Number	Northing	Easting	Elevation	Description
768	7975530.86	503276.189	10.148	TOE
769	7975528.115	503273.838	10.054	TOE
770	7975522.766	503273.367	9.985	TOE
771	7975518.773	503274.074	10.037	TOE
772	7975514.637	503275.15	9.521	TOE
773	7975507.889	503276.383	9.948	TOE
774	7975498.289	503277.636	9.78	TOE
775	7975489.407	503279.643	9.79	TOE
776	7975483.272	503281.19	9.86	TOE
777	7975475.828	503283.431	9.948	TOE
778	7975472.529	503284.33	9.871	TOE
779	7975471.064	503284.515	10.077	TOE
780	7975471.211	503286.277	9.996	TOE
781	7975475.454	503287.606	9.784	TOE
782	7975481.042	503288.707	9.895	TOE
783	7975487.627	503290.54	9.916	TOE
784	7975496.109	503293.008	9.959	TOE
785	7975504.88	503295.877	9.941	TOE
786	7975511.729	503298.409	9.963	TOE
787	7975517.196	503299.897	9.97	TOE
788	7975515.854	503302.565	11.998	CREST
789	7975510.812	503300.608	11.964	CREST
790	7975505.114	503298.515	11.813	CREST
791	7975500.817	503296.877	11.897	CREST
792	7975493.039	503294.463	11.884	CREST
793	7975485.852	503291.617	11.588	CREST
794	7975478.573	503290.428	11.825	CREST
795	7975472.662	503288.555	11.416	CREST
806	7975513.307	503273.895	11.124	CREST
807	7975515.985	503273.448	11.117	CREST
808	7975522.994	503272.03	10.966	CREST
809	7975526.983	503271.369	10.926	CREST
812	7975532.859	503277.857	10.049	OG
813	7975534.489	503275.7	10.291	OG
814	7975528.074	503281.204	10.063	OG
815	7975525.04	503285.201	9.851	OG
816	7975521.769	503292.552	9.729	OG
817	7975517.458	503295.412	9.772	OG
818	7975509.958	503292.721	9.982	OG

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819	7975498.549	503289.671	9.927	OG
820	7975489.554	503287.76	9.815	OG
821	7975481.557	503286.608	9.805	OG
822	7975474.028	503285.679	9.773	OG
823	7975480.928	503283.961	9.844	OG
824	7975490.091	503283.397	9.899	OG
825	7975499.142	503282.292	9.826	OG
826	7975508.59	503281.083	9.848	OG
827	7975517.243	503280.321	9.637	OG
828	7975523.84	503279.643	9.664	OG
829	7975526.917	503278.864	9.935	OG
830	7975519.923	503275.931	9.847	OG
831	7975518.269	503286.474	9.862	OG
832	7975509.13	503286.156	9.954	OG
833	7975498.865	503285.626	9.849	OG
834	7975489.95	503285.457	9.877	OG

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Point Number	Northing	Easting	Elevation	Description
729	7975645.468	503328.644	9.885	SUB
730	7975650.637	503330.945	9.967	SUB
731	7975656.387	503333.231	9.946	SUB
732	7975657.45	503337.964	9.985	SUB
733	7975652.397	503335.982	9.988	SUB
734	7975647.384	503333.697	9.916	SUB
735	7975646.117	503337.06	9.938	SUB
736	7975651.456	503339.234	9.991	SUB
737	7975659.205	503341.966	9.939	SUB
738	7975663.546	503345.095	9.933	TOE
739	7975662.388	503342.385	10.045	TOE
740	7975660.29	503336.526	10.046	TOE
741	7975658.69	503331.94	9.96	TOE
742	7975655.536	503330.767	9.974	TOE
743	7975643.13	503326.862	9.98	TOE
744	7975645.595	503339.945	9.993	TOE
745	7975651.895	503342.277	9.991	TOE
746	7975659.243	503344.578	10.028	TOE
747	7975658.967	503345.61	10.373	CREST
748	7975663.28	503346.735	10.43	CREST
749	7975664.363	503344.222	10.422	CREST
750	7975662.719	503341.895	10.434	CREST
751	7975660.287	503334.977	10.512	CREST
752	7975658.874	503330.8	10.428	CREST
753	7975655.97	503330.003	10.417	CREST
754	7975650.431	503328.519	10.239	CREST
755	7975644.498	503326.683	10.387	CREST
756	7975642.354	503324.038	10.225	OG
757	7975646.929	503324.648	10.212	OG
758	7975654.413	503327.33	10.297	OG
759	7975658.608	503330.005	10.453	OG
760	7975662.102	503336.727	10.498	OG
761	7975667.144	503343.238	10.434	OG
762	7975663.864	503349.568	10.417	OG
763	7975656.316	503347.627	10.311	OG
764	7975647.459	503344.953	10.443	OG
765	7975641.871	503343.219	10.471	OG
766	7975644.614	503337.603	9.935	SUB
767	7975642.818	503331.166	9.973	SUB

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Point Number	Northing	Easting	Elevation	Description
3	7975523.632	503302.444	10.436	CREST
4	7975528.969	503303.42	10.405	CREST
5	7975537.179	503306.083	10.444	CREST
6	7975543.559	503308.334	10.254	CREST
7	7975554.217	503314.004	10.569	CREST
8	7975564.605	503317.195	10.538	CREST
9	7975565.187	503315.355	10.065	TOE
10	7975557.283	503312.988	9.934	TOE
11	7975544.849	503308.331	9.938	TOE
12	7975533.26	503304.307	9.763	TOE
13	7975523.82	503300.987	10.091	TOE
14	7975524.697	503300.101	10.101	SUB
15	7975530.05	503301.822	9.805	SUB
16	7975540.157	503304.347	9.809	SUB
17	7975550.54	503308.118	9.931	SUB
18	7975561.552	503311.324	9.933	SUB
19	7975567.182	503312.932	9.352	SUB
20	7975564.881	503305.412	9.581	SUB
21	7975552.985	503301.678	9.771	SUB
22	7975541.125	503298.228	9.791	SUB
23	7975529.012	503294.62	9.905	SUB
24	7975521.791	503292.757	9.727	SUB
25	7975526.888	503290.622	9.945	SUB
26	7975538.526	503294.088	9.858	SUB
27	7975547.318	503296.458	9.818	SUB
28	7975555.757	503298.938	9.978	SUB
29	7975564.267	503301.537	9.53	SUB
30	7975546.088	503284.251	9.847	TOE
31	7975542.148	503283.086	9.922	TOE
32	7975536.524	503281.712	9.938	TOE
33	7975531.542	503280.15	9.972	TOE
34	7975531.312	503280.627	10.233	CREST
35	7975536.321	503282.126	10.345	CREST
36	7975542.556	503283.858	10.289	CREST
37	7975543.174	503289.151	10.363	CREST
38	7975539.95	503290.493	10.359	CREST
39	7975536.085	503290.793	10.328	CREST
40	7975532.314	503291.724	10.35	CREST
41	7975528.397	503290.371	10.241	CREST

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42	7975532.401	503278.252	9.88	SUB
43	7975540.876	503280.158	9.881	SUB
44	7975549.132	503282.895	9.83	SUB
45	7975556.618	503285.926	9.879	SUB
46	7975562.766	503288.239	9.92	SUB
47	7975566.475	503290.192	9.246	SUB
48	7975572.241	503287.561	9.257	SUB
49	7975569.227	503285.854	9.831	SUB
50	7975563.703	503282.249	9.968	SUB
51	7975556.307	503278.801	9.775	SUB
52	7975546.04	503275.492	9.875	SUB
53	7975538.134	503273.4	9.862	SUB
54	7975533.428	503273.082	9.971	TOE
55	7975537.728	503271.354	9.945	TOE
56	7975541.169	503271.045	9.887	TOE
57	7975546.078	503272.6	9.897	TOE
58	7975557.644	503276.028	9.815	TOE
59	7975564.661	503278.62	9.879	TOE
60	7975572.448	503281.161	9.969	TOE
61	7975576.755	503281.861	10.07	TOE
62	7975577.11	503281.15	10.375	CREST
63	7975572.931	503280.48	10.477	CREST
64	7975566.283	503278.843	10.408	CREST
65	7975557.496	503275.188	10.067	CREST
66	7975553.187	503274.058	10.572	CREST
67	7975546.03	503272.22	10.396	CREST
68	7975540.94	503270.521	10.433	CREST
69	7975577.75	503287.219	9.251	SUB
70	7975581.954	503288.008	9.309	SUB
71	7975583.212	503294.523	9.276	SUB
72	7975583.947	503299.232	9.216	SUB
73	7975586.99	503285.33	9.82	SUB
74	7975594.117	503287.097	9.583	SUB
75	7975602.417	503289.641	9.537	SUB
76	7975612.101	503292.466	9.516	SUB
77	7975618.325	503294.714	9.563	SUB
78	7975616.569	503301.316	9.565	SUB
79	7975609.916	503299.321	9.552	SUB
80	7975599.673	503296.682	9.536	SUB
81	7975590.642	503294.797	9.73	SUB
82	7975585.703	503293.862	9.659	SUB
83	7975585.757	503300.876	9.62	SUB

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84	7975593.493	503303.354	9.611	SUB
85	7975601.796	503305.723	9.538	SUB
86	7975608.273	503307.609	9.598	SUB
87	7975615.313	503309.035	9.397	SUB
88	7975618.979	503309.563	9.177	SUB
89	7975618.149	503314.952	9.283	SUB
90	7975613.54	503314.359	9.453	SUB
91	7975615.215	503319.346	9.51	SUB
92	7975612.918	503324.396	9.52	SUB
93	7975611.356	503331.963	9.317	SUB
94	7975606.091	503330.41	9.305	SUB
95	7975598.58	503327.984	9.602	SUB
96	7975590.103	503324.239	9.521	SUB
97	7975582.27	503321.188	9.468	SUB
98	7975575.478	503319.56	9.8	SUB
99	7975569.682	503316.789	9.451	SUB
100	7975570.296	503313.009	9.194	SUB
101	7975579.972	503315.179	9.211	SUB
102	7975588.758	503317.9	9.484	SUB
103	7975598.419	503320.923	9.559	SUB
104	7975607.469	503323.391	9.684	SUB
105	7975597.147	503318.871	9.656	SUB
106	7975602.518	503317.697	9.763	SUB
107	7975598.813	503316.254	9.767	SUB
108	7975593.393	503317.101	9.538	SUB
109	7975585.286	503314.491	9.507	SUB
110	7975587.754	503307.18	9.567	SUB
111	7975592.527	503308.542	9.6	SUB
112	7975589.587	503307.804	9.529	SUB
113	7975616.035	503317.037	9.388	SUB
114	7975620.994	503316.136	9.218	SUB
115	7975623.651	503311.002	9.226	SUB
116	7975622.545	503306.001	9.003	SUB
117	7975622.973	503302.187	9.035	SUB
118	7975624.882	503297.249	8.934	SUB
119	7975621.91	503296.14	9.52	SUB
120	7975629.05	503305.692	9.727	SUB
121	7975627.051	503309.738	9.861	SUB
122	7975614.19	503309.727	9.405	SUB
123	7975601.661	503308.741	9.573	SUB
124	7975590.685	503305.547	9.578	SUB
125	7975584.578	503306.371	9.139	SUB

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126	7975583.569	503300.354	9.123	SUB
127	7975578.561	503299.986	9.124	SUB
128	7975575.781	503294.649	9.226	SUB
129	7975571.561	503292.975	9.192	SUB
130	7975566.039	503297.523	9.264	SUB
131	7975566.982	503299.921	9.224	SUB
132	7975568.121	503303.701	9.167	SUB
133	7975574.164	503304.765	9.121	SUB
134	7975580.753	503307.004	9.131	SUB
135	7975577.944	503313.579	9.161	SUB
136	7975567.402	503312.157	9.24	SUB
137	7975564.656	503316.356	10.264	SUB
138	7975562.752	503314.495	10.006	SUB
139	7975557.499	503313.096	9.954	SUB
140	7975559.617	503307.833	9.832	SUB
141	7975559.572	503304.775	9.801	SUB
142	7975558.441	503300.67	9.893	SUB
143	7975554.191	503299.305	9.94	SUB
144	7975554.18	503301.534	9.657	SUB
145	7975557.676	503302.665	9.34	SUB
146	7975558.049	503306.038	9.389	SUB
147	7975554.644	503304.784	9.711	SUB
148	7975551.408	503302.068	9.587	SUB
149	7975548.35	503292.872	9.798	SUB
150	7975551.624	503292.267	9.869	SUB
151	7975557.793	503292.888	9.911	SUB
152	7975561.559	503294.518	9.878	SUB
153	7975565.037	503296.502	9.398	SUB
154	7975565.134	503292.562	9.271	SUB
155	7975631.015	503297.163	9.905	SUB
156	7975634.722	503297.985	9.894	SUB
157	7975636.382	503299.467	9.958	SUB
158	7975631.915	503301.155	9.816	SUB
159	7975636.46	503302.359	9.928	SUB
160	7975638.311	503304.886	9.949	SUB
161	7975638.902	503306.123	9.966	SUB
162	7975639.795	503310.293	9.947	SUB
163	7975640.686	503312.363	9.962	SUB
164	7975637.816	503312.368	9.927	SUB
165	7975637.171	503308.296	9.971	SUB
166	7975634.997	503307.544	9.93	SUB
167	7975633.766	503304.194	9.939	SUB

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168	7975631.43	503307.502	9.924	SUB
169	7975629.214	503305.617	9.676	SUB
170	7975627.51	503307.581	9.675	SUB
171	7975629.943	503310.532	9.951	TOE
172	7975632.431	503311.478	9.97	TOE
173	7975636.08	503312.642	9.966	TOE
174	7975639.974	503313.923	10.026	TOE
175	7975640.145	503314.457	10.194	CREST
176	7975637.984	503313.611	10.21	CREST
177	7975634.7	503312.742	10.122	CREST
178	7975631.165	503311.377	10.089	CREST
179	7975627.936	503310.893	10.086	SUB
180	7975625.537	503316.2	10.02	SUB
181	7975621.627	503318.091	9.82	SUB
182	7975624.048	503313.672	9.759	SUB
183	7975629.323	503314.164	10.081	SUB
184	7975635.405	503316.16	10.178	SUB
185	7975640.871	503317.786	10.175	SUB
186	7975644.257	503318.608	10.096	SUB
187	7975644.528	503322.788	10.181	SUB
188	7975639.372	503321.805	10.145	SUB
189	7975633.058	503320.085	10.179	SUB
190	7975627.404	503318.672	10.109	SUB
191	7975621.464	503321.932	9.939	SUB
192	7975619.185	503324.704	9.63	SUB
193	7975619.454	503328.193	9.634	SUB
194	7975619.602	503332.764	9.696	SUB
195	7975622.199	503331.126	9.976	SUB
196	7975626.245	503330.392	9.925	SUB
197	7975633.726	503332.765	9.987	SUB
198	7975640.319	503335.118	9.968	SUB
199	7975645.926	503336.987	10.043	SUB
200	7975644.527	503329.668	10.046	SUB
201	7975648.02	503328.394	10.017	SUB
202	7975640.879	503327.736	9.967	SUB
203	7975636.522	503328.391	9.997	SUB
204	7975630.328	503326.859	9.952	SUB
205	7975623.933	503325.373	9.933	SUB
206	7975622.216	503320.318	9.952	TOE
207	7975626.579	503321.936	9.984	TOE
208	7975633.21	503323.739	9.988	TOE
209	7975639.278	503325.991	9.947	TOE

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210	7975644.206	503327.087	10.002	TOE
211	7975643.741	503326.451	10.312	CREST
212	7975640.043	503325.659	10.25	CREST
213	7975634.263	503323.449	10.206	CREST
214	7975628.813	503322.061	10.168	CREST
215	7975623.636	503320.579	10.15	CREST
216	7975621.975	503333.731	10.293	CREST
217	7975627.711	503335.558	10.397	CREST
218	7975635.385	503337.353	10.465	CREST
219	7975642.337	503339.469	10.476	CREST
220	7975645.696	503340.388	10.495	CREST
221	7975645.024	503339.556	10.035	TOE
222	7975641.746	503338.458	9.974	TOE
223	7975635.406	503336.599	9.999	TOE
224	7975629.19	503335.289	10.017	TOE
225	7975625.646	503334.187	9.973	TOE
226	7975621.829	503333.106	10.049	TOE
227	7975621.762	503334.651	10.265	SUB
228	7975627.017	503337.324	10.387	SUB
229	7975633.227	503339.359	10.436	SUB
230	7975639.269	503341.392	10.468	SUB
231	7975644.939	503342.853	10.46	SUB
232	7975647.509	503343.629	10.452	SUB
233	7975643.465	503346.37	10.422	SUB
234	7975635.475	503345.237	10.444	SUB
235	7975628.247	503343.487	10.328	SUB
236	7975623.005	503342.136	10.286	SUB
237	7975645.741	503339.089	10.081	TOE
238	7975646.372	503336.911	10.13	TOE
239	7975645.482	503332.777	10.076	TOE
240	7975646.612	503332.87	10.496	CREST
241	7975647.509	503335.564	10.576	CREST
242	7975647.16	503339.137	10.626	CREST
270	7975650.696	503354.688	10.574	TOE
271	7975655.44	503351.495	10.347	TOE
272	7975659.706	503349.382	10.402	TOE
273	7975662.905	503348.981	10.426	TOE
274	7975662.645	503351.025	10.951	CREST
275	7975659.592	503352.337	10.964	CREST
276	7975655.219	503353.709	10.953	CREST
277	7975651.914	503355.782	10.909	CREST
288	7975645.468	503328.644	9.885	SUB

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289	7975650.637	503330.945	9.967	SUB
290	7975656.387	503333.231	9.946	SUB
291	7975657.45	503337.964	9.985	SUB
292	7975652.397	503335.982	9.988	SUB
293	7975647.384	503333.697	9.916	SUB
294	7975646.117	503337.06	9.938	SUB
295	7975651.456	503339.234	9.991	SUB
296	7975659.205	503341.966	9.939	SUB
297	7975663.546	503345.095	9.933	TOE
298	7975662.388	503342.385	10.045	TOE
299	7975660.29	503336.526	10.046	TOE
300	7975658.69	503331.94	9.96	TOE
301	7975655.536	503330.767	9.974	TOE
302	7975643.13	503326.862	9.98	TOE
303	7975645.595	503339.945	9.993	TOE
304	7975651.895	503342.277	9.991	TOE
305	7975659.243	503344.578	10.028	TOE
306	7975658.967	503345.61	10.373	CREST
307	7975663.28	503346.735	10.43	CREST
308	7975664.363	503344.222	10.422	CREST
309	7975662.719	503341.895	10.434	CREST
310	7975660.287	503334.977	10.512	CREST
311	7975658.874	503330.8	10.428	CREST
312	7975655.97	503330.003	10.417	CREST
313	7975650.431	503328.519	10.239	CREST
314	7975644.498	503326.683	10.387	CREST
325	7975644.614	503337.603	9.935	SUB
326	7975642.818	503331.166	9.973	SUB

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Point Number	Northing	Easting	Elevation	Description
708	7975029.405	503147.026	9.889	SG
709	7975030.955	503137.751	9.94	SG
710	7975095.917	503133.645	10.006	SG
711	7975094.448	503139.238	9.998	SG
712	7975093.248	503142.447	9.986	SG
713	7975084.922	503139.515	9.993	SG
714	7975085.339	503131.672	10.008	SG
715	7975076.263	503128.074	10.031	SG
716	7975074.321	503131.832	9.994	SG
717	7975072.674	503135.845	10.008	SG
718	7975063.489	503132.828	9.926	SG
719	7975064.922	503124.321	10.016	SG
720	7975056.59	503121.835	9.851	SG
721	7975055.483	503126.324	9.97	SG
722	7975054.257	503129.745	9.93	SG
723	7975046.144	503126.801	9.938	SG
724	7975048.379	503119.046	9.992	SG
725	7975039.763	503116.41	10.018	SG
726	7975037.255	503124.41	9.955	SG
727	7975032.261	503121.71	9.902	SG
728	7975034.118	503114.533	9.933	SG

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Point Number	Northing	Easting	Elevation	Description
1093021	7975034.225	503137.287	9.907	EXC TOE
1093022	7975043.395	503140.655	10.014	EXC TOE
1093023	7975043.45	503140.285	9.999	EXC TOE
1093024	7975052.681	503143.173	9.998	EXC TOE
1093025	7975063.581	503145.784	10.064	EXC TOE
1093033	7975060.773	503156.957	9.984	EXC TOE
1093034	7975050.962	503153.679	9.997	EXC TOE
1093035	7975041.217	503150.948	9.879	EXC TOE
1093036	7975031.465	503147.478	9.919	EXC TOE
1093037	7975032.847	503142.707	9.897	EXC
1093038	7975041.779	503145.786	9.986	EXC
1093039	7975051.694	503148.952	9.988	EXC
1093040	7975061.802	503151.601	9.998	EXC

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Point Number	Northing	Easting	Elevation	Description
1092056	7975117.945	503174.093	9.924	EXC TOE
1092057	7975109.156	503171.914	10.026	EXC TOE
1092058	7975099.428	503168.744	9.965	EXC TOE
1092059	7975090.174	503165.728	9.983	EXC TOE
1092060	7975079.5	503162.252	10.002	EXC TOE
1092061	7975069.456	503159.48	10.031	EXC TOE
1092062	7975062.222	503157.154	9.99	EXC TOE
1092063	7975066.563	503147.032	10.008	EXC TOE
1092064	7975075.824	503149.997	9.942	EXC TOE
1092065	7975085.62	503152.694	10.02	EXC TOE
1092066	7975097.631	503156.251	10.037	EXC TOE
1092067	7975106.228	503159.319	10.02	EXC TOE
1092068	7975115.021	503161.81	10.015	EXC TOE
1092069	7975122.663	503164.236	10.038	EXC TOE
1092070	7975122.141	503170.263	9.996	EXC
1092071	7975112.739	503166.68	9.976	EXC
1092072	7975102.942	503163.483	9.99	EXC
1092073	7975093.038	503160.31	9.998	EXC
1092074	7975083.802	503157.078	10.013	EXC
1092075	7975074.367	503154.587	9.974	EXC
1092076	7975066.151	503151.505	10.029	EXC
1092100	7975126.693	503177.119	9.997	EXC TOE

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Point Number	Northing	Easting	Elevation	Description
1091100	7975130.812	503178.551	10.057	EXC TOE
1091101	7975140.318	503181.654	10.012	EXC TOE
1091102	7975149.879	503184.881	9.981	EXC TOE
1091103	7975156.828	503187.483	10.005	EXC TOE
1091104	7975160.219	503176.716	10.027	EXC TOE
1091105	7975149.118	503173.327	10.015	EXC TOE
1091106	7975140.04	503170.499	10.006	EXC TOE
1091107	7975134.339	503168.524	10.002	EXC TOE
1091108	7975132.499	503172.963	10.003	EXC
1091109	7975142.116	503176.904	9.95	EXC
1091110	7975150.957	503179.619	9.987	EXC
1091111	7975159.979	503182.491	10.017	EXC

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Point Number	Northing	Easting	Elevation	Description
575	7975102.745	503134.961	10.014	
576	7975101.308	503139.474	9.988	
577	7975099.592	503144.704	9.996	
578	7975108.999	503147.677	9.996	
579	7975112.14	503143.282	10.024	
580	7975115.41	503138.999	10.034	
581	7975124.675	503142.906	10.019	
582	7975125.162	503141.887	10.015	
583	7975124.162	503147.62	9.983	
584	7975123.166	503152.445	9.966	
585	7975134.388	503155.779	9.985	
586	7975135.012	503150.765	9.987	
587	7975137.106	503145.682	10.005	
588	7975341.324	503233.401	10.028	
589	7975339.329	503237.27	10.01	
590	7975337.703	503243.06	9.96	
591	7975330.054	503240.331	10.034	
592	7975330.918	503236.002	9.987	
593	7975332.836	503230.848	10.039	
594	7975324.572	503228.044	9.964	
595	7975322.842	503233.299	9.972	
596	7975320.733	503238.307	10.006	
597	7975319.232	503231.226	9.963	
598	7975321.38	503227.127	9.948	
599	7975326.403	503228.204	10.099	
600	7975333.303	503230.34	10.233	
601	7975338.846	503231.899	10.494	
602	7975344.909	503234.35	10.55	
603	7975344.992	503229.574	10.582	
604	7975344.544	503223.777	10.424	
605	7975339.233	503227.376	10.385	
606	7975333.976	503226.615	10.185	
607	7975334.805	503222.185	10.037	
608	7975327.57	503220.022	9.975	
609	7975168.65	503168.435	10.066	
610	7975167.557	503173.701	10.113	
611	7975166.567	503179.149	10.032	
612	7975164.697	503184.737	10.021	
613	7975163.076	503188.741	10.001	

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614	7975174.619	503192.561	9.969
615	7975177.247	503187.792	10.016
616	7975178.439	503181.829	10.001
617	7975179.337	503177.587	10.04
618	7975181.283	503171.669	10.025
619	7975194.9	503177.867	10.101
620	7975191.617	503185.295	10.055
621	7975191.465	503186.556	9.98
622	7975190.252	503192.409	9.992
623	7975188.406	503197.045	9.992
624	7975200.441	503200.4	9.848
625	7975202.846	503192.721	10.004
626	7975205.841	503186.977	9.983
627	7975207.98	503182.273	9.975
628	7975221.816	503187.103	9.939
629	7975220.804	503189.722	10.12
630	7975219.931	503193.072	9.941
631	7975218.978	503195.129	9.947
632	7975217.46	503200.808	9.856
633	7975216.018	503205.214	9.769
634	7975228.85	503209.444	9.721
635	7975230.052	503204.552	9.722
636	7975231.777	503199.116	10.029
637	7975232.74	503194.933	10.105
638	7975233.613	503191.5	10.034
639	7975242.486	503194.257	10.093
640	7975241.38	503198.102	9.997
641	7975240.471	503201.812	9.975
642	7975240.297	503202.442	9.776
643	7975238.896	503206.761	9.666
644	7975237.399	503212.061	9.585
645	7975244.291	503214.182	9.661
646	7975245.747	503209.602	9.601
647	7975248.157	503202.18	9.716
648	7975248.238	503198.43	9.965

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Point Number	Northing	Easting	Elevation	Description
649	7975096.734	503133.033	10.053	
650	7975095.078	503138.842	10.047	
651	7975093.842	503143.255	10.018	
652	7975086.284	503140.832	10.04	
653	7975130.134	503154.622	9.996	
654	7975131.109	503149.834	9.971	
655	7975131.61	503144.305	10.014	
656	7975122.304	503141.094	10.033	
657	7975121.251	503146.413	10.001	
658	7975120.11	503151.18	9.972	
659	7975105.479	503146.706	10.011	
660	7975106.722	503141.381	10.025	
661	7975108.455	503136.877	10.042	

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Stability Trench Survey Data As-Built

Point Number	Northing	Easting	Elevation	Description
503	7975228.562	503174.507	10.001	
504	7975226.69	503180.247	9.969	
505	7975225.599	503184.404	9.975	
506	7975210.623	503179.757	9.974	
507	7975211.932	503174.56	9.995	
508	7975209.722	503168.494	10.028	
509	7975200.914	503165.958	10.01	
510	7975198.887	503170.606	9.983	
511	7975196.779	503175.269	10.009	
512	7975193.169	503173.791	10.023	
513	7975193.165	503173.744	10.023	
514	7975178.568	503169.651	10.016	
515	7975179.223	503163.577	9.976	
516	7975180.927	503158.361	10.014	
517	7975161.837	503154.232	10.032	
518	7975160.083	503158.519	10.001	
519	7975157.368	503162.816	9.975	
520	7975340.546	503207.199	9.823	
521	7975341.772	503212.873	9.823	
522	7975343.296	503220.088	9.989	
523	7975337.654	503222.875	10.003	
524	7975330.756	503218.393	9.985	
525	7975331.221	503213.516	9.984	
526	7975332.784	503204.797	10.005	
527	7975310.466	503233.895	9.865	
528	7975311.386	503230.612	9.836	
529	7975312.922	503224.422	9.629	
530	7975314.9	503216.436	9.598	
531	7975317.04	503209.984	9.578	
532	7975318.303	503201.628	9.526	
533	7975300.31	503196.116	9.596	
534	7975297.961	503205.431	9.58	
535	7975295.955	503216.88	9.585	
536	7975293.997	503224.018	9.581	
537	7975291.903	503229.302	9.603	
538	7975275.651	503224.168	9.581	
539	7975277.143	503216.087	9.556	
540	7975277.368	503210.943	9.453	
541	7975279.005	503203.296	9.598	

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542	7975281.714	503191.438	9.555
543	7975267.695	503186.906	9.7
544	7975264.555	503196.315	9.663
545	7975261.618	503205.652	9.63
546	7975257.78	503218.877	9.622
547	7975246.844	503215.167	9.663
548	7975249.598	503206.724	9.613
549	7975250.087	503204.572	9.648
550	7975252.705	503192.973	9.999
551	7975253.723	503188.477	9.89
552	7975254.772	503184.284	9.806
553	7975243.933	503179.911	9.904
554	7975242.186	503184.906	9.9
555	7975240.283	503189.19	9.919
556	7975136.172	503145.327	9.985
557	7975135.133	503149.91	9.993
558	7975133.783	503155.658	10.003
559	7975144.895	503159.059	9.983
560	7975146.124	503154.044	9.988
561	7975148.706	503149.131	10.026
562	7975158.249	503154.657	9.97
563	7975157.719	503158.421	9.971
564	7975156.94	503162.802	9.971
565	7975305.333	503233.202	9.741
566	7975308.988	503231.738	9.866
567	7975313.828	503229.294	9.978
568	7975315.804	503222.871	9.938
569	7975317.502	503220.201	9.918
570	7975317.921	503219.206	9.645
571	7975315.588	503221.553	9.685
572	7975313.553	503227.454	9.653
573	7975310.63	503229.916	9.682
574	7975320.241	503237.652	10.01

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Point Number	Northing	Easting	Elevation	Description
490	7975425.539	503259.909	9.893	
491	7975424.36	503264.916	9.639	
492	7975420.616	503269.335	9.741	
493	7975428.909	503272.14	10.007	
494	7975430.191	503266.403	9.989	
495	7975439.249	503269.061	9.974	
496	7975436.173	503274.387	10.06	
497	7975445.685	503276.249	10.025	
498	7975446.276	503271.435	9.861	
499	7975454.943	503272.84	9.845	
500	7975455.564	503268.441	9.917	
501	7975446.73	503264.984	9.875	
502	7975434.978	503262.045	9.996	

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Point Number	Northing	Easting	Elevation	Description
414	7975406.278	503240.031	9.825	
415	7975408.332	503235.552	9.787	
416	7975410.504	503230.907	9.746	
417	7975419.794	503234.037	9.951	
418	7975419.26	503238.828	9.877	
419	7975417.927	503244.289	9.903	
420	7975427.124	503246.662	9.919	
421	7975429.421	503242.331	9.817	
422	7975430.037	503237.48	9.872	
423	7975438.464	503241.649	9.878	
424	7975437.025	503246.497	9.822	
425	7975437.04	503249.925	9.819	
426	7975444.731	503252.042	9.802	
427	7975445.689	503247.864	9.853	
428	7975445.815	503243.423	9.839	
429	7975454.738	503245.883	9.861	
430	7975454.172	503249.716	9.8	
431	7975453.093	503254.405	9.887	
432	7975463.487	503257.771	9.85	
433	7975464.646	503253.308	9.909	
434	7975465.947	503248.735	9.862	
435	7975476.523	503252.757	9.936	
436	7975476.009	503256.434	9.887	
437	7975474.747	503260.991	9.956	
438	7975480.052	503263.037	9.992	
439	7975482.072	503259.806	9.909	
440	7975481.635	503253.402	9.884	
441	7975389.99	503234.816	10.029	
442	7975390.705	503229.892	9.944	
443	7975393.035	503224.988	9.938	
444	7975399.474	503227.279	9.906	
445	7975398.335	503232.026	9.965	
446	7975397.351	503237.031	9.961	
447	7975406.319	503240.2	9.83	
448	7975407.635	503235.246	9.826	
449	7975409.13	503230.323	9.842	
450	7975387.54	503246.687	10.475	
451	7975392.415	503241.854	10.478	
452	7975391.111	503235.966	10.516	

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453	7975402.863	503239.599	10.386
454	7975402.005	503245.903	10.351
455	7975400.94	503251.369	10.372
456	7975412.523	503255.013	10.28
457	7975415.759	503248.746	10.314
458	7975416.839	503244.943	10.354
459	7975428.407	503247.678	10.131
460	7975427.084	503253.328	10.159
461	7975425.32	503259.055	10.314
462	7975438.319	503262.787	10.407
463	7975439.569	503256.608	10.399
464	7975441.413	503251.809	10.222
465	7975454.505	503255.098	10.408
466	7975453.008	503260.851	10.492
467	7975451.639	503266.73	10.502
468	7975459.122	503269.062	10.402
469	7975466.651	503269.169	10.41
470	7975473.558	503266.515	10.395
471	7975480.056	503264.1	10.311
472	7975472.36	503261.381	10.33
473	7975463.624	503258.204	10.294
474	7975462.755	503263.164	10.403
475	7975423.402	503259.702	9.717
476	7975422.411	503264.142	9.653
477	7975420.727	503269.333	9.75
478	7975411.664	503267.336	9.798
479	7975412.667	503261.742	9.645
480	7975414.445	503256.234	9.653
481	7975403.619	503252.664	9.769
482	7975401.727	503258.304	9.773
483	7975400.303	503263.866	9.832
484	7975391.435	503260.774	9.93
485	7975382.723	503257.664	9.997
486	7975384.836	503252.229	9.895
487	7975391.369	503253.835	9.963
488	7975392.594	503248.944	9.928
489	7975386.223	503247.269	9.955

NUNA

NUNA EAST LTD

(Section 4)

Survey Data
(Excavation As-Built)

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Excavation Survey Data Points

Point Number	Northing	Easting	Elevation	Description
93	7976005.411	503731.459	11.356	SUBCUT
94	7976002.143	503728.767	11.346	SUBCUT
95	7975999.582	503726.753	11.398	SUBCUT
96	7976000.404	503724.996	11.425	SUBCUT
97	7976003.874	503727.343	11.424	SUBCUT
98	7976006.586	503729.321	11.355	SUBCUT

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Excavation Survey Data Points

Point Number	Northing	Easting	Elevation	Description
20066	7976034.18	503763.901	11.145	EXC CREST
20067	7976029.554	503765.794	11.068	EXC CREST
20068	7976026.051	503761.372	11.132	EXC CREST
20069	7976030.599	503758.757	11.132	EXC CREST
20070	7976031.04	503760.778	10.013	EXC TOE
20071	7976032.135	503762.119	10.081	EXC TOE
20072	7976029.608	503763.898	9.99	EXC TOE
20073	7976028.834	503762.497	9.991	EXC TOE

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Excavation Survey Data Points

Point Number	Northing	Easting	Elevation	Description
1	7975962.941	503672.367	11.709	SG
2	7975967.688	503671.385	11.568	SG
76	7975972.992	503671.161	11.635	SG
77	7975975.351	503670.945	12.013	SG
78	7975975.617	503682.181	11.704	SG
79	7975968.618	503682.645	11.632	SG
80	7975961.396	503682.14	11.579	SG
81	7975961.694	503693.001	11.583	SG
82	7975967.308	503692.756	11.676	SG
83	7975974.46	503690.426	11.647	SG
84	7975975.595	503700.813	11.497	SG
85	7975967.313	503702.584	11.514	SG
86	7975969.165	503708.632	11.542	SG
87	7975961.892	503715.851	11.472	SG
88	7975961.71	503706.791	11.296	SG

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Excavation Survey Data Points

Point Number	Northing	Easting	Elevation	Description
1004	7974881.829	503167.327	10.084	TOE SUBGRADE
1005	7974874.547	503165.497	10.138	TOE SUBGRADE
1006	7974869.975	503163.948	10.057	TOE SUBGRADE
1007	7974863.103	503161.723	10.522	TOE SUBGRADE
1008	7974859.968	503163.603	10.721	TOE SUBGRADE
1009	7974858.594	503165.355	10.494	TOE SUBGRADE
1010	7974854.441	503165.323	10.22	TOE SUBGRADE
1011	7974849.906	503166.975	10.119	TOE SUBGRADE
1029	7974875.537	503178.069	9.903	TOE SUBGRADE
1040	7974876.961	503168.993	9.966	SUB_GRADE
1041	7974872.35	503167.637	10.132	SUB_GRADE
1042	7974876.291	503171.638	9.949	SUB_GRADE
1043	7974877.539	503173.377	9.84	SUB_GRADE
1044	7974874.477	503173.956	9.921	SUB_GRADE
1045	7974874.971	503175.796	9.311	SUB_GRADE
1046	7974878.304	503175.926	9.759	SUB_GRADE
1048	7974878.165	503174.961	9.372	SUB_GRADE
1049	7974877.71	503173.29	9.828	SUB_GRADE
1050	7974877.583	503171.676	9.908	SUB_GRADE
1052	7974870.816	503169.543	10.146	SUB_GRADE
1053	7974867.435	503168.396	10.216	SUB_GRADE
1054	7974865.631	503169.79	10.357	SUB_GRADE
1055	7974866.909	503175.715	10.04	SUB_GRADE
1056	7974867.783	503178.892	9.787	SUB_GRADE
1057	7974867.76	503178.879	9.766	SUB_GRADE
1071	7974865.864	503170.8	10.216	ICE
1072	7974867.64	503168.527	10.147	ICE
1073	7974866.091	503165.86	10.405	ICE
1074	7974863.649	503162.223	10.533	ICE
1075	7974861.284	503163.61	10.583	ICE
1076	7974862.595	503166.357	10.394	ICE
1077	7974864.172	503168.96	10.323	ICE
1078	7974865.504	503170.384	10.28	ICE
1079	7974866.589	503169.639	10.26	ICE
1080	7974863.162	503171.275	10.34	SUB_GRADE
1081	7974863.19	503175.429	10.505	SUB_GRADE
1082	7974863.53	503176.982	9.941	SUB_GRADE
1083	7974865.747	503177.411	9.871	SUB_GRADE

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1088	7974855.228	503173.777	10.068	SUB_GRADE
1089	7974854.934	503172.31	9.926	SUB_GRADE
1090	7974857.874	503171.688	9.867	SUB_GRADE
1091	7974856.494	503169.182	10.059	SUB_GRADE
1092	7974859.966	503168.209	10.317	SUB_GRADE
1138	7974848.581	503166.899	11.096	CREST
1139	7974849.916	503166.061	11.1	CREST
1140	7974849.286	503173.486	10.995	CREST
1170	7974876.171	503180.118	11.141	CREST
1171	7974877.144	503179.036	11.08	CREST
1185	7974882.8	503157.048	10.719	TOE SUBGRADE
1186	7974875.995	503155.837	10.849	TOE SUBGRADE
1187	7974871.072	503151.9	10.88	TOE SUBGRADE
1188	7974865.306	503149.176	10.826	TOE SUBGRADE
1189	7974862.105	503156.689	10.605	TOE SUBGRADE
1190	7974858.341	503159.509	10.774	TOE SUBGRADE
1191	7974858.153	503164.651	10.418	TOE SUBGRADE
1192	7974851.25	503166.125	10.154	TOE SUBGRADE
1193	7974852.131	503168.697	10.006	SUBGRADE-
1194	7974856.678	503167.958	10.16	SUBGRADE-
1195	7974860.886	503165.294	10.525	SUBGRADE-
1196	7974863.357	503161.891	10.546	SUBGRADE-
1197	7974865.115	503156.798	10.452	SUBGRADE-
1198	7974865.689	503155.225	10.826	SUBGRADE-
1199	7974870.437	503156.434	10.853	SUBGRADE-
1200	7974874.35	503158.081	10.89	SUBGRADE-
1201	7974878.929	503160.079	10.817	SUBGRADE-
1202	7974883.425	503161.522	10.75	SUBGRADE-
1204	7974880.489	503166.993	9.999	SUBGRADE-
1205	7974875.68	503165.786	10.03	SUBGRADE-
1206	7974873.706	503163.795	10.193	SUBGRADE-
1207	7974873.882	503159.18	10.429	SUBGRADE-
1208	7974875.466	503159.474	10.742	ICE
1209	7974875.944	503164.305	10.581	ICE
1210	7974881.164	503165.287	10.607	ICE
1211	7974881.988	503161.309	10.81	ICE
1212	7974875.125	503159.32	10.702	ICE
1213	7974857.662	503158.735	10.991	CREST
1214	7974862.299	503154.302	11.17	CREST
1215	7974863.302	503149.476	11.301	CREST
1216	7974865.974	503147.948	11.458	CREST

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1217	7974875.347	503153.995	11.461	CREST
1218	7974879.047	503154.632	11.631	CREST

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Excavation Survey Data Points

Point Number	Northing	Easting	Elevation	Description
700	7975907.057	503576.134	9.511	PROOF ROLL
701	7975901.433	503581.251	9.187	PROOF ROLL
702	7975905.36	503589.615	9.39	PROOF ROLL
703	7975906.632	503583.91	9.409	PROOF ROLL
704	7975915.252	503583.947	9.642	PROOF ROLL
800	7975917.343	503582.862	10.594	CREST
801	7975911.002	503577.318	10.313	CREST
802	7975908.018	503574.704	10.375	CREST
803	7975904.818	503575.425	10.173	CREST
804	7975900.925	503578.313	9.953	CREST
805	7975900.865	503578.452	9.911	CREST
806	7975900.163	503583.618	10.203	CREST
807	7975902.166	503587.159	10.104	CREST
808	7975904.907	503590.757	10.05	CREST

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Excavation Survey Data Points

Point Number	Northing	Easting	Elevation	Description
2005	7974880.48	503171.09	11.008	
2006	7974872.642	503173.977	11.03	
2007	7974868.472	503175.504	10.569	
2008	7974861.795	503173.521	10.611	
2009	7974850.91	503171.484	10.491	
2010	7974850.501	503164.938	10.598	
2011	7974853.985	503159.236	11.028	
2012	7974858.165	503152.81	10.974	
2013	7974861.908	503145.701	10.57	
2014	7974870.953	503148.953	10.882	
2015	7974880.291	503151.66	10.75	
2016	7974880.288	503151.655	10.742	
2017	7974889.889	503154.456	10.522	
2021	7974878.943	503161.236	11.104	
2022	7974871.615	503171.925	11.109	
2023	7974867.79	503166.065	11.121	
2024	7974863.313	503159.278	11.035	
2025	7974859.315	503158.139	11.097	
2026	7974854.32	503161.993	10.908	
2027	7974853.243	503165.16	10.46	
2028	7974858.635	503162.447	10.875	
2029	7974860.967	503160.149	10.638	
2030	7974864.055	503163.626	10.674	
2031	7974867.978	503169.151	10.558	
2032	7974869.57	503172.87	10.525	
2033	7974860.763	503168.303	10.628	
2034	7974864.124	503154.64	11.025	
2035	7974873.507	503157.253	11.02	

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Excavation Survey Data Points

Point Number	Northing	Easting	Elevation	Description
3	7975791.577	503471.146	10.309	EXC
4	7975788.486	503483.82	10.65	EXC
5	7975788.494	503483.821	10.632	EXC
6	7975783.945	503483.732	10.52	EXC
7	7975775.19	503483.715	10.357	EXC
8	7975766.731	503481.193	10.352	EXC
9	7975754.62	503476.468	10.499	EXC
10	7975742.91	503471.274	10.509	EXC
11	7975732.385	503466.262	10.502	EXC
12	7975722.697	503461.382	10.558	EXC
13	7975714.204	503457.203	10.606	EXC
14	7975702.764	503451.208	10.586	EXC
15	7975706.354	503463.903	10.751	TOE EXC
16	7975719.126	503470.307	10.533	TOE EXC
17	7975730.845	503475.233	10.619	TOE EXC
18	7975747.104	503481.951	10.547	TOE EXC
19	7975756.445	503485.621	10.507	TOE EXC
20	7975767.417	503489.723	10.49	TOE EXC
21	7975776.542	503493.343	10.375	TOE EXC
22	7975797.632	503495.906	10.707	CREST EXC
23	7975786.391	503495.871	10.553	CREST EXC
24	7975783.909	503496.959	11.131	CREST EXC
25	7975778.376	503499.755	11.124	CREST EXC
26	7975775.322	503498.287	11.115	CREST EXC
27	7975775.862	503494.108	11.173	CREST EXC
28	7975775.849	503494.093	11.168	CREST EXC
29	7975765.274	503490.589	11.124	CREST EXC
30	7975750.666	503484.583	11.057	CREST EXC
31	7975740.375	503480.563	11.009	CREST EXC
32	7975740.374	503480.569	11.017	CREST EXC
33	7975729.622	503475.784	10.952	CREST EXC
34	7975717.746	503470.603	10.882	CREST EXC
35	7975707.65	503464.957	10.84	CREST EXC
36	7975704.601	503463.572	10.836	EG
37	7975695.323	503458.226	10.767	EG
38	7975686.968	503452.325	10.738	EG
39	7975679.638	503445.156	10.776	EG
40	7975672.104	503437.399	10.797	EG
41	7975668.934	503432.684	10.704	EG

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42	7975676.23	503437.502	10.75	EG
43	7975686.37	503442.878	10.687	EG
44	7975695.49	503447.567	10.614	EG
45	7975702.643	503452.22	10.621	EG
46	7975705.746	503458.055	10.676	EXC
47	7975725.146	503467.875	10.614	EXC
48	7975739.022	503473.696	10.617	EXC
49	7975754.715	503479.968	10.563	EXC
50	7975770.163	503485.641	10.399	EXC
51	7975770.148	503485.646	10.394	EXC
52	7975780.193	503487.037	10.483	EXC
53	7975789.707	503487.357	10.723	EXC
54	7975802.621	503485.694	10.842	EXC
55	7975811.294	503484.639	10.814	EXC
56	7975814.481	503492.519	10.776	EXC
57	7975788.005	503499.661	9.907	EXC
58	7975789.312	503500.081	9.848	EXC
59	7975789.449	503498.585	9.766	EXC
60	7975791.494	503501.796	9.853	EXC
61	7975793.803	503502.093	9.85	EXC
62	7975798.799	503502.074	10.102	EXC
63	7975802.515	503502.158	10.276	EXC
64	7975801.093	503497.024	10.36	EXC
65	7975795.715	503497.417	10.012	EXC
66	7975835.578	503484.147	10.736	EG
67	7975823.681	503480.415	10.717	EG
68	7975820.907	503483.618	10.771	EG
69	7975812.908	503481.248	10.75	EG
70	7975812.624	503475.089	10.589	EG
71	7975805.804	503477.932	10.713	EG
72	7975804.898	503473.062	10.448	EG
73	7975796.339	503471.069	10.309	EG
74	7975795.817	503475.279	10.523	EG

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Excavation Survey Data Points

Point Number	Northing	Easting	Elevation	Description
40000	7974948.617	503089.724	9.7	EXC
40001	7974950.802	503087.051	10.023	EXC
40002	7974947.651	503089.375	9.723	EXC
40003	7974947.577	503096.645	9.837	EXC
40004	7974947.639	503099.186	9.914	EXC
40005	7974954.044	503095.771	9.713	EXC
40006	7974952.329	503100.246	9.729	EXC
40007	7974951.985	503100.599	9.773	EXC
40008	7974955.265	503089.251	9.565	EXC
40009	7974964.997	503091.24	9.46	EXC
40010	7974965.256	503090.058	10.069	EXC
40011	7974963.527	503096.523	9.458	EXC
40012	7974962.181	503101.98	9.387	EXC
40013	7974961.871	503103.534	9.526	EXC
40014	7974972.884	503106.239	9.59	EXC
40015	7974974.72	503099.952	9.448	EXC
40016	7974975.586	503095.124	9.462	EXC
40017	7974976.044	503093.012	9.797	EXC
40018	7974984.649	503096.108	9.751	EXC
40019	7974984.488	503096.796	9.443	EXC
40020	7974983.191	503104.089	9.739	EXC
40021	7974980.97	503113.168	9.752	EXC
40022	7974979.857	503121.428	9.705	EXC
40023	7974989.296	503124.592	9.578	EXC
40024	7974990.283	503121.935	9.777	EXC
40025	7974992.555	503112.908	9.751	EXC
40026	7974994.954	503104.501	9.359	EXC
40027	7974995.655	503101.847	9.355	EXC
40028	7974996.125	503100.361	9.868	EXC
40029	7975003.907	503102.091	9.384	EXC
40030	7975003.854	503104.099	9.27	EXC
40031	7975001.805	503110.716	9.372	EXC
40032	7975001.09	503113.416	9.591	EXC
40033	7974999.76	503119.334	9.986	EXC
40034	7974998.721	503123.841	9.885	EXC
40035	7974998.581	503125.995	9.279	EXC
40036	7974998.487	503127.52	9.162	EXC
40037	7975006.459	503128.058	9.205	EXC
40038	7975001.611	503122.616	9.351	EXC

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40039	7975006.653	503121.93	9.318	EXC
40040	7975007.973	503117.304	9.371	EXC
40041	7975003.11	503114.269	9.447	EXC
40042	7975011.001	503110.082	9.233	EXC
40043	7975011.786	503107.612	9.176	EXC
40044	7975012.036	503105.717	9.272	EXC
40045	7975022.004	503108.733	9.272	EXC
40046	7975021.801	503110.011	9.129	EXC
40047	7975021.714	503114.27	9.255	EXC
40048	7975019.314	503124.93	9.275	EXC
40049	7975018.314	503130.626	9.303	EXC
40050	7975027.313	503132.118	9.719	EXC
40051	7975029.576	503122.953	9.423	EXC
40052	7975032.384	503114.262	9.223	EXC
40053	7975034.21	503112.33	9.226	EXC
40054	7975029.594	503110.215	9.378	EXC
40055	7975022.748	503108.625	9.236	EXC
40056	7975010.08	503105.632	9.279	EXC
40057	7974985.788	503098.384	9.571	EXC

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Excavation Survey Data Points

Point Number	Northing	Easting	Elevation	Description
20125	7975740.855	503453.264	10.383	EXC
20126	7975751.098	503454.901	10.447	EXC
20127	7975764.031	503459.175	10.345	EXC
20128	7975777.327	503464.208	10.413	EXC
20129	7975777.314	503464.187	10.413	EXC
20130	7975788.333	503468.346	10.415	EXC
20131	7975798.735	503471.645	10.237	EXC
20132	7975804.015	503475.386	10.572	EXC
20133	7975804.038	503475.389	10.564	EXC
20134	7975793.356	503475.04	10.48	EXC
20135	7975785.42	503480.469	10.584	EXC
20136	7975776.083	503481.317	10.204	EXC
20137	7975766.962	503478.49	10.307	EXC
20138	7975757.309	503474.353	10.504	EXC
20139	7975748.998	503471.345	10.468	EXC
20140	7975739.973	503467.025	10.463	EXC
20141	7975743.809	503460.15	10.384	EXC
20142	7975756.088	503464.834	10.361	EXC
20143	7975769.151	503468.515	10.329	EXC
20144	7975778.944	503472.293	10.32	EXC
20145	7975784.556	503474.198	10.38	EXC

NUNA

NUNA EAST LTD

(Section 4)

Survey Data
(Original Ground As-Built)

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Point Number	Northing	Easting	Elevation	Description
457	7976143.103	503885.212	10.451	EG
458	7976147.307	503888.071	10.534	EG
459	7976151.609	503891.07	10.533	EG
460	7976156.019	503894.245	10.522	EG
461	7976160.163	503897.294	10.519	EG
462	7976164.331	503900.303	10.5	EG
463	7976168.583	503903.377	10.458	EG
464	7976172.58	503907.09	10.414	EG
465	7976176.316	503910.837	10.375	EG
466	7976179.831	503914.513	10.351	EG
467	7976183.255	503918.181	10.359	EG
468	7976187.027	503922.07	10.367	EG
469	7976190.964	503925.85	10.307	EG
470	7976194.632	503929.269	10.293	EG
471	7976198.592	503932.819	10.294	EG
472	7976202.438	503936.322	10.31	EG
473	7976206.456	503939.828	10.334	EG
474	7976210.593	503943.267	10.314	EG
475	7976214.814	503946.005	10.312	EG
476	7976219.999	503948.142	10.259	EG
477	7976224.828	503949.633	10.237	EG
478	7976229.729	503950.972	10.212	EG
479	7976234.819	503952.214	10.173	EG
480	7976240.102	503953.363	10.152	EG
481	7976245.301	503954.326	10.1	EG
482	7976250.37	503955.259	10.045	EG
483	7976255.431	503956.158	10.016	EG
484	7976260.572	503957.159	9.945	EG
485	7976265.627	503958.263	9.906	EG
486	7976270.536	503959.395	9.857	EG
487	7976275.957	503960.361	9.821	EG
488	7976281.28	503961.179	9.85	EG
489	7976286.617	503962.005	9.838	EG
490	7976291.918	503962.83	9.877	EG
491	7976297.082	503964.834	9.726	EG
492	7976300.349	503969.493	9.613	EG
493	7976301.129	503974.483	9.563	EG
494	7976299.795	503979.684	9.735	EG
495	7976296.45	503983.788	9.903	EG

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496	7976291.771	503986.222	9.944	EG
497	7976286.428	503986.78	10.009	EG
498	7976281.207	503986.74	10.077	EG
499	7976275.724	503986.421	10.175	EG
500	7976270.028	503986.024	10.224	EG
501	7976264.354	503985.548	10.27	EG
502	7976259.276	503985.066	10.3	EG
503	7976253.852	503984.489	10.323	EG
504	7976248.227	503983.837	10.328	EG
505	7976242.471	503983.191	10.367	EG
506	7976237.488	503982.557	10.441	EG
507	7976231.74	503981.75	10.537	EG
508	7976226.04	503980.701	10.573	EG
509	7976078.258	503805.868	10.942	EG
510	7976083.172	503814.421	10.882	EG
511	7976089.743	503826.482	10.787	EG
512	7976092.943	503835.106	10.847	EG
513	7976097.776	503841.518	10.755	EG
514	7976103.2	503849.359	10.656	EG
515	7976106.693	503854.145	10.59	EG
516	7976111.485	503895.573	10.711	EG
517	7976112.765	503904.213	10.645	EG
518	7976107.197	503901.418	10.818	EG
519	7976102.209	503895.015	10.9	EG
520	7976093.341	503886.362	10.869	EG
521	7976084.99	503878.312	10.94	EG
522	7976077.931	503870.284	11.037	EG
523	7976075.247	503866.285	10.967	EG
40002	7976078.991	503803.198	10.955	EG
40003	7976079.85	503808.15	10.931	EG
40004	7976080.39	503813.382	10.915	EG
40005	7976081.132	503818.795	10.87	EG
40006	7976081.885	503823.935	10.853	EG
40007	7976082.79	503828.956	10.843	EG
40008	7976083.985	503834.199	10.806	EG
40009	7976086.834	503838.586	10.801	EG
40010	7976091.169	503841.818	10.785	EG
40011	7976094.68	503845.611	10.806	EG
40012	7976098.039	503849.596	10.77	EG
40013	7976101.685	503853.151	10.745	EG
40014	7976105.733	503856.359	10.658	EG
40015	7976109.651	503859.488	10.641	EG

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40016	7976113.973	503862.991	10.664	EG
40017	7976117.878	503866.184	10.677	EG
40018	7976122.089	503869.682	10.659	EG
40019	7976126.296	503873.23	10.653	EG
40020	7976130.28	503876.359	10.631	EG
40021	7976134.486	503879.458	10.562	EG
40022	7976138.777	503882.392	10.459	EG
40075	7976220.467	503979.465	10.637	EG
40076	7976215.335	503978.163	10.669	EG
40077	7976210.472	503976.866	10.741	EG
40078	7976205.387	503975.437	10.721	EG
40079	7976200.16	503973.832	10.758	EG
40080	7976194.858	503971.878	10.802	EG
40081	7976189.665	503969.689	10.842	EG
40082	7976184.785	503967.499	10.858	EG
40083	7976180.121	503965.684	10.901	EG
40084	7976174.945	503963.897	10.932	EG
40085	7976169.855	503961.929	10.975	EG
40086	7976165.254	503959.646	11.054	EG
40087	7976163.653	503957.216	10.971	EG
40088	7976158.498	503955.808	10.927	EG
40089	7976154.235	503952.811	10.839	EG
40090	7976150.413	503948.803	10.781	EG
40091	7976147.115	503944.754	10.69	EG
40092	7976143.84	503940.581	10.688	EG
40093	7976140.362	503936.324	10.656	EG
40094	7976136.902	503931.904	10.686	EG
40095	7976133.571	503927.423	10.686	EG
40096	7976130.478	503923.113	10.653	EG
40097	7976127.369	503918.506	10.637	EG
40098	7976124.442	503913.748	10.629	EG
40099	7976121.71	503908.945	10.663	EG
40100	7976119.359	503904.392	10.649	EG
40101	7976116.977	503899.756	10.678	EG
40102	7976114.734	503895.277	10.673	EG
40103	7976112.175	503890.713	10.709	EG
40104	7976108.391	503887.277	10.737	EG
40105	7976103.612	503885.525	10.837	EG
40106	7976098.606	503883.574	10.883	EG
40107	7976094.133	503881.093	10.9	EG
40108	7976089.761	503877.876	10.911	EG
40109	7976085.887	503874.345	10.929	EG

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40110	7976082.055	503870.912	10.965	EG
40111	7976077.597	503867.763	10.994	EG
40112	7976073.775	503864.43	10.901	EG
40113	7976070.364	503860.655	10.911	EG
40114	7976067.305	503856.377	10.86	EG
40115	7976064.431	503851.649	10.901	EG
40116	7976061.675	503847.206	10.851	EG
40117	7976058.914	503842.739	10.893	EG
40118	7976056.117	503838.003	10.885	EG
40119	7976053.894	503832.823	10.866	EG
40120	7976052.795	503827.54	10.897	EG
40121	7976052.567	503822.411	10.92	EG
40122	7976054.117	503817.655	10.907	EG
40123	7976057.743	503814.054	10.886	EG
40124	7976062.664	503811.968	10.87	EG
40125	7976067.834	503811.798	10.879	EG
40126	7976072.793	503814.296	10.862	EG
40127	7976075.613	503818.969	10.811	EG
40128	7976077.296	503823.997	10.805	EG
40129	7976079.099	503828.823	10.794	EG
40130	7976081.107	503833.909	10.792	EG
40131	7976083.343	503838.41	10.763	EG
40132	7976086.021	503842.9	10.764	EG
40133	7976089.186	503847.192	10.776	EG
40134	7976092.797	503851.266	10.76	EG
40135	7976096.681	503855.23	10.729	EG
40136	7976100.762	503859.01	10.702	EG
40137	7976104.957	503862.642	10.7	EG
40138	7976109.31	503866.187	10.679	EG
40139	7976113.714	503869.687	10.634	EG
40140	7976118.035	503873.096	10.588	EG
40141	7976122.273	503876.51	10.607	EG
40142	7976126.457	503879.883	10.625	EG
40143	7976130.618	503883.371	10.531	EG
40144	7976134.57	503887.215	10.466	EG
40145	7976138.382	503891.139	10.502	EG
40146	7976142.309	503894.982	10.552	EG
40147	7976146.184	503898.857	10.598	EG
40148	7976150.173	503902.476	10.537	EG
40149	7976154.211	503906.216	10.536	EG
40150	7976158.391	503909.876	10.487	EG
40151	7976162.558	503913.602	10.496	EG

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40152	7976166.853	503917.26	10.479	EG
40153	7976171.141	503920.973	10.479	EG
40154	7976175.307	503924.636	10.476	EG
40155	7976179.437	503928.194	10.49	EG
40156	7976183.475	503931.636	10.515	EG
40157	7976187.625	503934.874	10.485	EG
40158	7976191.951	503937.981	10.439	EG
40159	7976196.42	503941.042	10.438	EG
40160	7976201.172	503943.97	10.39	EG
40161	7976206.192	503946.801	10.369	EG
40162	7976210.701	503949.052	10.336	EG
40163	7976215.34	503951.078	10.315	EG
40164	7976220.159	503952.93	10.26	EG
40165	7976225.086	503954.679	10.222	EG
40166	7976230.147	503956.374	10.197	EG
40167	7976235.299	503957.921	10.173	EG
40168	7976240.419	503959.331	10.169	EG
40169	7976245.548	503960.589	10.16	EG
40170	7976250.655	503961.75	10.105	EG
40171	7976255.677	503962.738	10.073	EG
40172	7976260.812	503963.65	10.013	EG
40173	7976266.064	503964.45	9.895	EG
40174	7976271.234	503965.03	9.817	EG
40175	7976276.934	503965.348	9.747	EG
40176	7976282.095	503965.51	9.793	EG
40177	7976287.194	503965.653	9.794	EG
40178	7976292.08	503966.987	9.723	EG
40179	7976295.71	503971.14	9.697	EG
40180	7976295.77	503976.246	9.741	EG
40181	7976292.528	503980.325	9.844	EG
40182	7976287.345	503981.964	9.894	EG
40183	7976281.986	503981.911	9.932	EG
40184	7976276.891	503981.713	9.998	EG
40185	7976271.822	503981.367	10.048	EG
40186	7976266.48	503980.891	10.116	EG
40187	7976261.154	503980.37	10.221	EG
40188	7976255.771	503979.771	10.279	EG
40189	7976250.691	503979.087	10.29	EG
40190	7976245.223	503978.353	10.303	EG
40191	7976239.812	503977.607	10.343	EG
40192	7976234.823	503976.963	10.395	EG
40193	7976229.669	503976.229	10.442	EG

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40194	7976224.453	503975.356	10.509	EG
40195	7976219.252	503974.284	10.554	EG
40196	7976214.074	503973.012	10.587	EG
40197	7976209.04	503971.564	10.579	EG
40198	7976203.622	503969.809	10.582	EG
40199	7976198.887	503967.972	10.627	EG
40200	7976194.275	503966.009	10.643	EG
40201	7976189.536	503963.648	10.689	EG
40202	7976184.979	503961.263	10.712	EG
40203	7976180.329	503958.499	10.736	EG
40204	7976176	503955.583	10.783	EG
40205	7976171.706	503952.143	10.837	EG
40206	7976167.908	503948.57	10.813	EG
40207	7976164.294	503944.737	10.724	EG
40208	7976160.723	503940.633	10.643	EG
40209	7976156.88	503936.554	10.605	EG
40210	7976153.126	503932.707	10.61	EG
40211	7976149.069	503928.855	10.596	EG
40212	7976144.993	503924.927	10.62	EG
40213	7976140.909	503921.038	10.628	EG
40214	7976136.829	503917.14	10.627	EG
40215	7976132.872	503913.434	10.659	EG
40216	7976129.167	503909.957	10.662	EG
40217	7976125.592	503906.316	10.631	EG
40218	7976122.141	503902.411	10.589	EG
40219	7976118.874	503898.263	10.63	EG
40220	7976115.63	503894.074	10.686	EG
40221	7976111.988	503890.099	10.694	EG
40222	7976107.751	503886.658	10.731	EG
40223	7976103.267	503883.48	10.816	EG
40224	7976098.786	503880.156	10.861	EG
40225	7976094.455	503876.618	10.862	EG
40226	7976090.305	503872.945	10.866	EG
40227	7976086.275	503869.194	10.872	EG
40228	7976082.576	503865.584	10.906	EG
40229	7976079.104	503861.632	10.9	EG
40230	7976075.839	503857.237	10.774	EG
40231	7976072.78	503852.813	10.73	EG
40232	7976070.032	503848.587	10.809	EG
40233	7976067.181	503844.075	10.834	EG
40234	7976064.667	503839.748	10.826	EG
40235	7976062.335	503834.964	10.833	EG

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40236	7976060.274	503829.826	10.874	EG
40237	7976059.156	503824.284	10.847	EG
40238	7976060.369	503819.19	10.878	EG
40239	7976064.015	503815.49	10.867	EG
40240	7976069.064	503814.475	10.865	EG
40241	7976073.419	503816.938	10.848	EG
40242	7976075.249	503822.051	10.818	EG
40243	7976075.096	503827.519	10.841	EG
40244	7976075.743	503833.013	10.796	EG
40245	7976077.4	503838.067	10.802	EG
40246	7976079.947	503842.843	10.829	EG
40247	7976083.073	503847.173	10.807	EG
40248	7976086.461	503850.965	10.778	EG
40249	7976090.035	503854.539	10.787	EG
40250	7976093.701	503858.076	10.761	EG
40251	7976097.571	503861.804	10.744	EG
40252	7976101.603	503865.571	10.74	EG
40253	7976105.75	503869.232	10.723	EG
40254	7976109.853	503872.784	10.65	EG
40255	7976113.894	503876.151	10.614	EG
40256	7976118.049	503879.572	10.572	EG
40257	7976122.12	503882.967	10.581	EG
40258	7976126.022	503886.24	10.583	EG
40259	7976129.988	503889.596	10.564	EG
40260	7976133.902	503893.041	10.513	EG
40261	7976137.752	503896.583	10.537	EG
40262	7976141.637	503900.147	10.55	EG
40263	7976145.564	503903.75	10.551	EG
40264	7976149.495	503907.377	10.566	EG
40265	7976153.432	503911.031	10.573	EG
40266	7976157.398	503914.658	10.556	EG
40267	7976161.346	503918.332	10.562	EG
40268	7976165.3	503921.967	10.568	EG
40269	7976169.297	503925.439	10.571	EG
40270	7976173.328	503928.819	10.551	EG
40271	7976177.444	503932.112	10.552	EG
40272	7976181.623	503935.398	10.52	EG
40273	7976185.656	503938.491	10.488	EG
40274	7976190.042	503941.694	10.44	EG
40275	7976194.187	503944.623	10.426	EG
40276	7976198.758	503947.325	10.413	EG
40277	7976203.68	503950.134	10.395	EG

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40278	7976208.154	503952.605	10.385	EG
40279	7976213.288	503955.057	10.371	EG
40280	7976217.924	503956.947	10.335	EG
40281	7976222.65	503958.65	10.3	EG
40282	7976227.495	503960.264	10.261	EG
40283	7976232.337	503961.766	10.226	EG
40284	7976237.781	503963.189	10.226	EG
40285	7976243.22	503964.439	10.213	EG
40286	7976248.617	503965.499	10.175	EG
40287	7976253.873	503966.452	10.146	EG
40288	7976259.2	503967.39	10.083	EG
40289	7976264.796	503968.276	9.973	EG
40290	7976270.493	503968.982	9.871	EG
40291	7976276.112	503969.516	9.826	EG
40292	7976281.611	503969.933	9.768	EG
40293	7976287.247	503969.529	9.779	EG
40294	7976292.463	503967.849	9.721	EG
40295	7976297.924	503968.036	9.64	EG
40296	7976301.434	503971.868	9.529	EG
40297	7976300.708	503977.008	9.57	EG
40298	7976296.419	503979.74	9.784	EG
40299	7976291.384	503978.998	9.833	EG
40300	7976286.318	503977.398	9.865	EG
40301	7976281.375	503976.361	9.852	EG
40302	7976275.99	503975.642	9.877	EG
40303	7976270.681	503974.997	9.925	EG
40304	7976265.3	503974.175	10.034	EG
40305	7976259.996	503973.21	10.165	EG
40306	7976254.634	503972.024	10.21	EG
40307	7976249.681	503970.764	10.219	EG
40308	7976244.727	503969.39	10.223	EG
40309	7976239.768	503967.809	10.244	EG
40310	7976234.858	503966.003	10.248	EG
40311	7976229.626	503963.87	10.277	EG
40312	7976224.564	503961.624	10.322	EG
40313	7976219.871	503958.96	10.349	EG
40314	7976215.456	503956.458	10.389	EG
40315	7976210.325	503956.627	10.41	EG
40316	7976205.158	503956.174	10.444	EG
40317	7976200.181	503954.992	10.475	EG
40318	7976195.248	503953.161	10.502	EG
40319	7976190.403	503950.714	10.544	EG

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40320	7976185.94	503948.214	10.587	EG
40321	7976181.515	503945.592	10.656	EG
40322	7976177.723	503941.896	10.692	EG
40323	7976174.104	503938.04	10.662	EG
40324	7976170.532	503934.314	10.643	EG
40325	7976166.387	503930.554	10.618	EG
40326	7976162.446	503927.026	10.589	EG
40327	7976158.514	503923.483	10.582	EG
40328	7976154.585	503919.788	10.594	EG
40329	7976150.819	503916.339	10.574	EG
40330	7976146.844	503912.672	10.59	EG
40331	7976142.782	503909.296	10.617	EG
40332	7976138.78	503906.085	10.6	EG
40333	7976134.707	503902.787	10.579	EG
40334	7976130.836	503899.561	10.575	EG
40335	7976126.953	503896.339	10.564	EG
40336	7976123.008	503893.008	10.597	EG
40337	7976118.836	503889.442	10.653	EG
40338	7976114.895	503886.118	10.65	EG
40339	7976110.659	503882.711	10.666	EG
40340	7976106.063	503879.694	10.741	EG
40341	7976101.668	503876.783	10.819	EG
40342	7976097.321	503873.567	10.818	EG
40343	7976093.122	503870.17	10.829	EG
40344	7976089.071	503866.663	10.86	EG
40345	7976085.306	503862.651	10.843	EG
40346	7976082.105	503858.363	10.823	EG
40347	7976078.959	503853.685	10.782	EG
40348	7976075.817	503848.959	10.802	EG
40349	7976073.077	503844.393	10.818	EG
40350	7976070.54	503839.834	10.835	EG
40351	7976068.186	503835.4	10.876	EG
40352	7976065.876	503830.677	10.888	EG
40353	7976064.7	503825.535	10.841	EG
40354	7976067.017	503820.701	10.844	EG
40355	7976071.889	503819.312	10.833	EG
40356	7976076.238	503822.012	10.831	EG
40357	7976077.518	503827.287	10.773	EG
40358	7976077.503	503832.874	10.817	EG
40359	7976078.488	503838.043	10.826	EG
40360	7976081.025	503843.124	10.824	EG
40361	7976084.088	503847.102	10.816	EG

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40362	7976087.855	503850.985	10.808	EG
40363	7976091.744	503854.689	10.776	EG
40364	7976095.527	503858.153	10.756	EG
40365	7976099.514	503861.801	10.728	EG
40366	7976103.417	503865.18	10.722	EG
40367	7976107.343	503868.569	10.7	EG
40368	7976111.421	503872.143	10.645	EG
40369	7976115.48	503875.541	10.588	EG
40370	7976119.72	503879.142	10.6	EG
40371	7976123.59	503882.465	10.608	EG
40372	7976127.435	503885.741	10.566	EG
40373	7976131.309	503889.119	10.542	EG
40374	7976135.099	503892.878	10.538	EG
40375	7976137.964	503897.145	10.553	EG
40376	7976141.321	503901.359	10.551	EG
40377	7976144.956	503905.161	10.576	EG
40378	7976148.923	503908.702	10.579	EG
40379	7976153.16	503912.446	10.592	EG
40380	7976157.239	503916.246	10.585	EG
40381	7976161.503	503920.037	10.596	EG
40382	7976165.48	503923.345	10.595	EG
40383	7976169.783	503926.925	10.597	EG
40384	7976174.04	503930.372	10.58	EG
40385	7976178.353	503933.942	10.583	EG
40386	7976182.465	503937.246	10.544	EG
40387	7976186.837	503940.664	10.503	EG
40388	7976191.075	503944.197	10.469	EG
40389	7976195.05	503947.294	10.453	EG
40390	7976199.361	503950.291	10.431	EG
40391	7976204.168	503953.075	10.425	EG
40392	7976209.103	503955.446	10.41	EG
40393	7976213.82	503957.515	10.413	EG
40394	7976224.719	503961.84	10.322	EG
40395	7976230.079	503963.644	10.263	EG
40396	7976234.803	503965.28	10.244	EG
40397	7976239.635	503966.763	10.237	EG
40398	7976244.973	503968.245	10.244	EG
40399	7976249.912	503969.332	10.233	EG
40400	7976255.575	503969.442	10.191	EG
40401	7976260.9	503968.177	10.066	EG
40402	7976266.344	503966.418	9.876	EG
40403	7976271.489	503966.119	9.787	EG

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40404	7976276.445	503968.267	9.76	EG
40405	7976278.588	503973.054	9.832	EG
40406	7976276.48	503977.72	9.909	EG
40407	7976271.592	503979.53	10.008	EG
40408	7976266.258	503979.183	10.092	EG
40409	7976261.315	503978.354	10.192	EG
40410	7976256.256	503977.445	10.258	EG
40411	7976251.391	503976.002	10.262	EG
40412	7976246.292	503973.973	10.267	EG
40413	7976241.226	503972.147	10.286	EG
40414	7976236.183	503970.628	10.296	EG
40415	7976231.081	503968.829	10.326	EG
40416	7976226.166	503966.885	10.379	EG
40417	7976221.542	503964.863	10.395	EG
40418	7976216.901	503962.733	10.417	EG
40419	7976212.004	503960.387	10.45	EG
40420	7976207.353	503958.035	10.428	EG
40421	7976202.585	503955.497	10.444	EG
40422	7976197.501	503953.956	10.475	EG
40423	7976192.323	503952.927	10.517	EG
40424	7976187.361	503951.716	10.608	EG
40425	7976182.309	503950.236	10.677	EG
40426	7976177.551	503948.342	10.735	EG
40427	7976172.868	503945.708	10.748	EG
40428	7976168.788	503942.519	10.748	EG
40429	7976164.982	503938.753	10.716	EG
40430	7976161.029	503934.951	10.659	EG
40431	7976157.353	503931.306	10.584	EG
40432	7976153.516	503927.421	10.598	EG
40433	7976149.83	503923.723	10.575	EG
40434	7976146.156	503920.181	10.615	EG
40435	7976142.382	503916.284	10.611	EG
40436	7976138.649	503912.749	10.635	EG
40437	7976135.038	503909.134	10.684	EG
40438	7976131.212	503905.383	10.64	EG
40439	7976127.25	503901.517	10.618	EG
40440	7976123.438	503897.74	10.624	EG
40441	7976119.743	503894.099	10.666	EG
40442	7976115.748	503890.358	10.687	EG
40443	7976112.073	503886.925	10.713	EG
40444	7976108.287	503883.447	10.735	EG
40445	7976270.394	503978.668	10.026	EG

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40446	7976264.913	503979.113	10.136	EG
40447	7976259.798	503979.54	10.24	EG
40448	7976254.398	503979.772	10.272	EG
40449	7976249.199	503979.42	10.269	EG
40450	7976244.303	503978.317	10.286	EG
40451	7976239.31	503976.672	10.323	EG
40452	7976234.704	503974.178	10.362	EG
40453	7976229.965	503971.258	10.385	EG
40454	7976225.425	503968.418	10.402	EG
40455	7976220.844	503965.693	10.412	EG
40456	7976215.981	503962.78	10.423	EG
40457	7976211.44	503959.985	10.424	EG
40458	7976206.557	503957.6	10.43	EG
40459	7976201.247	503956.017	10.468	EG
40460	7976195.951	503955.903	10.521	EG
40461	7976193.725	503960.476	10.615	EG
40462	7976196.593	503964.769	10.611	EG
40463	7976201.77	503966.306	10.565	EG
40464	7976206.858	503965.532	10.503	EG
40465	7976212.309	503965.201	10.484	EG
40466	7976217.721	503965.536	10.426	EG
40467	7976223.011	503966.309	10.383	EG
40468	7976228.24	503967.318	10.354	EG
40469	7976233.477	503968.445	10.288	EG

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Point Number	Northing	Easting	Elevation	Description
40023	7975686.214	503392.453	10.565	SS
40024	7975683.352	503386.732	10.668	SS
40025	7975677.059	503378.768	11.328	SS
40026	7975673.392	503375.192	11.528	SS
40027	7975676.577	503370.835	11.473	SS
40028	7975687.32	503378.784	10.866	SS
40029	7975691.813	503382.013	10.735	SS
40030	7975683.256	503393.851	10.476	EG
40031	7975690.516	503408.656	10.611	EG
40032	7975701.623	503423.683	10.48	EG
40033	7975715.225	503436.407	10.379	EG
40034	7975734.354	503447.967	10.356	EG
40035	7975757.984	503458.499	10.325	EG
40036	7975771.969	503462.956	10.425	EG
40037	7975789.323	503468.06	10.377	EG
40038	7975800.927	503472.624	10.365	EG
40039	7975813.762	503476.623	10.64	EG
40040	7975824.084	503480.424	10.745	EG
40041	7975833.779	503484.548	10.759	EG
40042	7975823.78	503488.853	10.794	EG
40043	7975813.64	503483.973	10.766	EG
40044	7975803.148	503479.312	10.794	EG
40045	7975792.367	503475.769	10.536	EG
40046	7975788.493	503476.418	10.419	EG
40047	7975807.175	503485.294	10.839	EG
40048	7975812.827	503493.257	10.738	EG
40049	7975799.51	503495.718	11.037	EG
40050	7975801.469	503496.142	10.56	EG
40051	7975802.49	503503.048	10.575	EG
40052	7975795.43	503501.745	10.235	EG
40053	7975795.108	503497.326	10.389	EG
40054	7975789.952	503497.546	10.246	EG
40055	7975789.72	503498.786	10.113	EG
40056	7975786.768	503498.054	10.166	EG
40057	7975786.53	503495.896	10.962	EG
40058	7975790.328	503496.174	10.975	EG
40059	7975776.065	503494.185	11.187	EG
40060	7975764.086	503490.922	11.122	EG
40061	7975748.301	503484.876	11.053	EG

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40062	7975733.968	503479.383	11.022	EG
40063	7975720.959	503473.163	10.913	EG
40064	7975707.575	503466.205	10.88	EG
40065	7975691.651	503457.298	10.78	EG
40066	7975680.946	503449.838	10.762	EG
40067	7975672.339	503435.427	10.719	EG
40068	7975683.844	503440.89	10.76	EG
40069	7975696.887	503448.075	10.596	EG
40070	7975715.121	503457.684	10.63	EG
40071	7975723.534	503462.04	10.718	EG
40072	7975743.775	503472.263	10.785	EG
40073	7975757.356	503478.575	10.687	EG
40074	7975778.652	503484.935	10.787	EG

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Original Ground (OG) Survey Data

Point Number	Northing	Easting	Elevation	Description
432	7975997.006	503699.379	11.498	EG
433	7975992.167	503707.036	11.474	EG
434	7975986.84	503711.393	11.436	EG
435	7975973.861	503721.612	11.378	EG
436	7975983.177	503728.616	11.289	EG
437	7975994.422	503719.63	11.444	EG
438	7976000.991	503712.572	11.455	EG
439	7976006.72	503708.835	11.477	EG
440	7976015.768	503715.594	11.414	EG
441	7976008.504	503722.405	11.387	EG
442	7975999.908	503729.978	11.347	EG
443	7975993.099	503735.842	11.31	EG
444	7976002.45	503743.086	11.342	EG
445	7976010.692	503735.896	11.285	EG
446	7976020.728	503725.167	11.29	EG
447	7976025.349	503719.777	11.36	EG
448	7976034.588	503726.428	11.347	EG
449	7976026.165	503736.778	11.247	EG
450	7976018.844	503744.635	11.188	EG
451	7976013.486	503750.031	11.25	EG
452	7976020.317	503761.962	11.269	EG
453	7976025.434	503760.092	11.129	EG
454	7976030.631	503755.944	11.057	EG
455	7976037.418	503749.85	11.181	EG
456	7976045.401	503742.931	11.134	EG
20025	7976050.425	503739.286	11.292	EG
20026	7976056.922	503749.077	11.219	EG
20027	7976050.295	503754.039	11.119	EG
20028	7976042.007	503760.445	11.085	EG
20029	7976033.522	503765.728	11.164	EG
20030	7976027.297	503768.573	11.2	EG
20031	7976029.896	503777.664	11.132	EG
20032	7976038.57	503773.775	10.982	EG
20033	7976047.937	503768.622	11.016	EG
20034	7976057.085	503763.616	11.161	EG
20035	7976061.139	503762.587	11.113	EG
20036	7976065.124	503770.913	11.074	EG
20037	7976055.802	503774.809	11.056	EG
20038	7976046.669	503779.137	10.958	EG

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20039	7976038.099	503782.69	11.034	EG
20040	7976033.376	503784.36	11.115	EG
20041	7976036.28	503791.551	11.002	EG
20042	7976046.67	503787.07	10.947	EG
20043	7976055.772	503782.11	11.045	EG
20044	7976065.226	503776.58	11.018	EG
20045	7976070.879	503774.277	11.058	EG
20046	7976073.05	503784.794	10.986	EG
20047	7976062.701	503788.04	10.994	EG
20048	7976051.826	503790.233	11.019	EG
20049	7976041.649	503792.775	10.931	EG
20050	7976036.477	503794.275	11.031	EG
20051	7976039.966	503802.836	11.059	EG
20052	7976050.516	503799.276	10.938	EG
20053	7976062.717	503793.559	10.983	EG
20054	7976071.96	503789.588	10.906	EG
20055	7976074.485	503798.779	10.965	EG
20056	7976075.883	503798.69	11.01	EG
20057	7976065.334	503801.102	10.947	EG
20058	7976054.799	503804.443	10.924	EG
20059	7976044.947	503806.164	11.037	EG
20060	7976042.776	503806.538	11.031	EG
20061	7976046.657	503811.338	10.922	EG
20062	7976055.731	503809.887	10.935	EG
20063	7976065.85	503808.183	10.892	EG
20064	7976075.129	503805.979	10.902	EG
20065	7976077.043	503805.634	10.912	EG

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Point Number	Northing	Easting	Elevation	Description
1	7974873.975	503075.154	10.049	OG
2	7974872.971	503078.223	10.076	OG
3	7974871.511	503084.02	9.912	OG
4	7974861.451	503081.747	9.779	OG
5	7974862.257	503077.014	10.278	OG
6	7974863.522	503072.154	10.213	OG
7	7974854.848	503069.39	10.082	OG
8	7974854.939	503075.669	10.184	OG
9	7974852.355	503079.738	9.991	OG
10	7974841.183	503076.241	9.757	OG
11	7974842.698	503071.084	10.04	OG
12	7974836.435	503065.471	10.136	OG
13	7974836.914	503071.681	9.792	OG
14	7974826.284	503072.135	9.989	OG
15	7974822.985	503064.746	10.203	OG
16	7974817.473	503060.573	10.205	OG
17	7974814.618	503065.94	10.474	OG
18	7974810.277	503062.278	10.322	OG

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Original Ground (OG) Survey Data

Point Number	Northing	Easting	Elevation	Description
402	7974915.76	503131.064	9.749	SG
403	7974910.395	503134.364	10.13	SG
404	7974902.868	503140.81	10.023	SG
405	7974896.062	503144.654	10.296	SG
406	7974891.167	503146.844	10.664	SG
407	7974881.303	503147.869	10.633	SG
408	7974873.431	503147.14	10.77	SG
409	7974860.381	503145.758	10.897	SG
410	7974864.779	503137.715	10.531	SG
411	7974867.665	503134.774	10.505	SG
412	7974873.153	503128.303	10.472	SG
413	7974878.484	503123.907	10.462	SG
414	7974882.865	503129.65	10.278	SG
415	7974887.326	503138.037	10.228	SG
416	7974898.017	503135.327	10.156	SG
417	7974895.055	503129.393	10.082	SG
418	7974893.053	503122.329	10.114	SG
419	7974891.28	503114.917	9.907	SG
420	7974896.739	503110.672	9.773	SG
421	7974898.839	503107.898	9.821	SG
422	7974907.061	503110.337	9.71	SG
423	7974901.912	503120.242	9.672	SG
424	7974913.01	503124.646	9.675	SG
425	7974928.768	503126.632	9.745	SG
426	7974933.192	503123.21	10.065	SG
427	7974933.957	503119.46	10.208	SG
428	7974928.389	503117.239	9.891	SG
429	7974921.247	503114.815	9.74	SG
430	7974915.604	503113.073	9.731	SG

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Point Number	Northing	Easting	Elevation	Description
2161003	7975389.417	503223.095	11.2	MOD RD BASE
2161004	7975386.17	503231.854	11.204	MOD RD BASE
2161005	7975382.561	503241.251	11.353	MOD RD BASE
2161006	7975381.041	503244.914	11.41	MOD RD BASE
2161007	7975368.19	503241.186	11.428	MOD RD BASE
2161008	7975371.295	503231.76	11.292	MOD RD BASE
2161009	7975374.537	503222.601	11.205	MOD RD BASE
2161010	7975362.086	503217.864	11.164	MOD RD BASE
2161011	7975358.961	503226.184	11.289	MOD RD BASE
2161012	7975358.055	503228.295	11.395	MOD RD BASE
2161013	7975354.513	503235.973	11.279	MOD RD BASE
2161014	7975348.307	503233.448	11.057	MOD RD BASE
2161015	7975350.224	503225.695	11.201	MOD RD BASE
2161016	7975352.407	503216.459	11.167	MOD RD BASE

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Original Ground (OG) Survey Data

Point Number	Northing	Easting	Elevation	Description
20000	7975927.656	503635.913	10.535	EG
20001	7975927.911	503638.539	10.501	EG
20002	7975931.927	503642.843	10.537	EG
20003	7975937.087	503643.473	10.557	EG
20004	7975941.87	503645.392	10.443	EG
20005	7975946.204	503645.695	10.549	EG
20006	7975947.644	503641.299	10.759	EG
20007	7975948.974	503636.824	10.862	EG
20008	7975947.703	503633.192	10.842	EG
20009	7975944.215	503631.299	10.81	EG
20010	7975938.383	503631.504	10.621	EG
20011	7975932.437	503630.144	10.658	EG
20012	7975930.951	503630.847	10.575	EG
20013	7975933.12	503635.624	10.443	EG
20014	7975934.927	503642.36	10.554	EG
20015	7975935.688	503642.087	10.35	EG
20016	7975935	503635.996	10.309	EG
20017	7975933.971	503630.925	10.644	EG
20018	7975936.159	503632.801	10.458	EG
20019	7975936.788	503635.856	10.396	EG
20020	7975937.89	503640.179	10.475	EG
20021	7975939.707	503643.414	10.581	EG
20022	7975942.969	503643.706	10.475	EG
20023	7975943.064	503640.609	10.524	EG
20024	7975942.018	503635.442	10.469	EG

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Point Number	Northing	Easting	Elevation	Description
2130107	7975975.763	503662.087	12.093	EG TOE
2130108	7975981.157	503663.387	12.226	EG TOE
2130109	7975987.81	503665.708	12.333	EG TOE
2130110	7975985.898	503661.938	12.336	EG TOE
2130111	7975983.62	503661.685	12.188	EG TOE
2130112	7975976.126	503659.132	12.153	EG TOE
2130113	7975976.131	503644.893	12.321	EG CREST
2130114	7975976.799	503652.658	12.655	EG CREST
2130115	7975977.736	503658.863	12.957	EG CREST
2130116	7975982.198	503660.497	13.047	EG CREST
2130117	7975985.707	503661.204	13.157	EG CREST
2130118	7975986.335	503665.942	13.236	EG CREST
2130119	7975981.443	503664.711	13.205	EG CREST
2130120	7975977.77	503663.499	13.093	EG CREST
2130121	7975975.901	503662.8	12.556	EG CREST
2130122	7975975.028	503663.417	12.539	EG CREST
2130123	7975967.582	503662.936	12.243	EG CREST
2130124	7975963.265	503662.702	12.257	EG CREST
2130125	7975956.646	503663.364	12.171	EG CREST
2130126	7975956.436	503661.598	11.608	EG TOE
2130127	7975962.006	503661.967	11.853	EG TOE
2130128	7975969.671	503662.142	11.971	EG TOE
2130129	7975974.959	503662.085	12.115	EG TOE
2130130	7975975.895	503658.351	12.047	EG TOE
2130131	7975975.716	503652.538	12.073	EG TOE
2130132	7975975.266	503645.465	12.141	EG TOE
2130133	7975973.994	503644.337	11.981	EG TOE
2130134	7975969.927	503644.233	11.908	EG TOE
2130135	7975965.461	503644.147	11.871	EG TOE
2130136	7975963.691	503646.758	11.827	EG TOE
2130137	7975961.28	503650.96	11.704	EG TOE
2130138	7975957.722	503654.017	11.548	EG TOE
2130139	7975957.327	503656.892	11.604	EG TOE
2130140	7975958.371	503659.775	11.74	EG
2130141	7975959.542	503653.89	11.861	EG CREST
2130142	7975961.213	503652.275	11.82	EG CREST
2130143	7975962.485	503651.056	11.767	EG CREST
2130144	7975964.065	503649.454	12.008	EG CREST
2130145	7975966.216	503646.251	12.07	EG CREST

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2130146	7975971.154	503645.556	12.181	EG CREST
2130147	7975971.308	503650.074	12.16	EG
2130148	7975967.177	503650.128	12.058	EG
2130149	7975963.102	503656.014	11.907	EG
2130150	7975969.148	503656.911	11.991	EG
2130151	7975973.67	503656.679	12.053	EG
2130152	7975972.834	503660.274	11.987	EG

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Point Number	Northing	Easting	Elevation	Description
3129200	7975529.783	503274.986	10.008	EG 190509
3129201	7975528.512	503279.358	10.059	EG 190509
3129202	7975527.94	503281.831	10.054	EG 190509
3129203	7975526.247	503285.262	10.044	EG 190509
3129204	7975523.659	503291.619	9.913	EG 190509
3129205	7975521.884	503296.574	9.843	EG 190509
3129206	7975520.776	503296.456	9.68	EG 190509
3129207	7975522.276	503289.876	9.879	EG 190509
3129208	7975523.708	503284.295	9.808	EG 190509
3129209	7975524.302	503279.48	9.705	EG 190509
3129210	7975519.575	503276.754	9.542	EG 190509
3129211	7975516.975	503275.294	9.592	EG 190509
3129212	7975518.352	503274.585	9.998	EG 190509
3129213	7975522.311	503276.379	9.909	EG 190509
3129214	7975526.56	503278.623	9.926	EG 190509
3129215	7975527.448	503273.919	9.995	EG 190509
3129216	7975524.398	503272.865	9.929	EG 190509
3129217	7975520.809	503279.093	9.614	EG 190509
3129218	7975519.383	503284.507	9.736	EG 190509
3129219	7975518.286	503289.083	9.851	EG 190509
3129220	7975517.023	503291.045	10.016	EG 190509
3129221	7975515.365	503295.088	9.893	EG 190509
3129222	7975508.411	503292.614	9.929	EG 190509
3129223	7975508.953	503287.771	9.987	EG 190509
3129224	7975510.361	503281.938	9.934	EG 190509
3129225	7975511.523	503275.895	9.709	EG 190509
3129226	7975504.616	503276.98	9.725	EG 190509
3129227	7975504.149	503280.27	9.654	EG 190509
3129228	7975503.243	503285.538	9.979	EG 190509
3129229	7975501.063	503290.775	9.937	EG 190509
3129230	7975494.792	503288.298	10	EG 190509
3129231	7975495.246	503282.407	9.839	EG 190509
3129232	7975496.414	503277.975	9.827	EG 190509
3129233	7975488.959	503279.483	9.83	EG 190509
3129234	7975488.222	503284.732	9.905	EG 190509
3129235	7975487.659	503286.593	9.835	EG 190509
3129236	7975481.6	503286.152	9.921	EG 190509
3129237	7975481.896	503281.965	9.89	EG 190509

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Point Number	Northing	Easting	Elevation	Description
2129001	7975612.583	503339.262	9.488	MOD RD EG
2129002	7975614.476	503344.452	10.011	MOD RD EG
2129003	7975614.515	503344.459	10.004	MOD RD EG
2129004	7975614.9	503345.508	10.373	MOD RD EG
2129005	7975634.741	503339.734	10.487	MOD RD EG
2129006	7975642.468	503343.372	10.467	MOD RD EG
2129007	7975651.672	503347.106	10.396	MOD RD EG
2129008	7975658.132	503349.902	10.347	MOD RD EG
2129009	7975660.953	503351.605	10.941	MOD RD EG
2129010	7975666.821	503355.333	10.784	MOD RD EG
2129011	7975660.216	503361.665	10.76	MOD RD EG
2129012	7975653.779	503358.809	10.81	MOD RD EG
2129013	7975650.58	503356.722	10.89	MOD RD EG
2129014	7975649.012	503355.609	10.488	MOD RD EG
2129015	7975642.797	503351.992	10.298	MOD RD EG
2129016	7975637.473	503348.796	10.295	MOD RD EG
2129017	7975630.336	503344.679	10.327	MOD RD EG
2129018	7975624.54	503340.562	10.298	MOD RD EG
2129019	7975621.878	503338.547	10.337	MOD RD EG
2129020	7975616.935	503344.661	10.363	MOD RD EG
2129021	7975623.018	503350.121	10.399	MOD RD EG
2129022	7975630.321	503355.311	10.385	MOD RD EG
2129023	7975636.456	503359.724	10.382	MOD RD EG
2129024	7975641.922	503363.916	10.449	MOD RD EG
2129025	7975644.64	503366.051	10.752	MOD RD EG
2129026	7975647.774	503369.885	10.8	MOD RD EG
2129027	7975642.4	503374.862	10.811	MOD RD EG
2129028	7975640.153	503371.842	10.921	MOD RD EG
2129029	7975639.655	503371.364	10.599	MOD RD EG
2129030	7975634.664	503366.216	10.455	MOD RD EG
2129031	7975626.112	503359.478	10.49	MOD RD EG
2129032	7975620.356	503354.005	10.427	MOD RD EG
2129033	7975612.341	503346.641	10.389	MOD RD EG
2129034	7975611.511	503345.385	10.018	MOD RD EG
2129035	7975602.805	503346.305	9.81	MOD RD EG
2129036	7975603.765	503349.376	10.264	MOD RD EG
2129037	7975604.365	503350.199	10.316	MOD RD EG
2129038	7975611.681	503357.524	10.311	MOD RD EG
2129039	7975618.279	503363.999	10.288	MOD RD EG

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2129040	7975624.46	503369.777	10.198	MOD RD EG
2129041	7975627.857	503374.204	10.442	MOD RD EG
2129042	7975630.758	503377.75	11.061	MOD RD EG
2129043	7975632.563	503379.871	10.919	MOD RD EG

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Point Number	Northing	Easting	Elevation	Description
357	7975634.525	503369.647	10.552	OG
358	7975630.366	503364.598	10.399	OG
359	7975624.827	503357.305	10.439	OG
360	7975622.253	503353.35	10.416	OG
361	7975617.777	503346.022	10.393	OG
362	7975620.385	503340.206	10.233	OG
363	7975613.489	503339.724	9.605	OG
364	7975623.35	503337.287	10.321	OG
365	7975624.318	503342.313	10.383	OG
366	7975627.479	503348.562	10.407	OG
367	7975631.833	503354.641	10.391	OG
368	7975635.152	503360.427	10.418	OG
369	7975639.417	503367.059	10.516	OG
370	7975643.939	503361.981	10.446	OG
371	7975639.652	503354.494	10.35	OG
372	7975635.649	503347.274	10.307	OG
373	7975631.843	503340.562	10.429	OG
374	7975627.421	503338.656	10.399	OG
375	7975634.942	503342.932	10.449	OG
376	7975641.039	503346.096	10.413	OG
377	7975646.368	503352.565	10.297	OG
378	7975648.374	503352.569	10.341	OG
379	7975653.543	503350.418	10.336	OG
380	7975658.079	503348.458	10.323	OG
381	7975661.434	503347.227	10.41	OG
382	7975659.642	503346.777	10.4	OG
383	7975654.382	503346.017	10.367	OG
384	7975650.696	503354.688	10.574	TOE
385	7975655.44	503351.495	10.347	TOE
386	7975659.706	503349.382	10.402	TOE
387	7975662.905	503348.981	10.426	TOE
388	7975662.645	503351.025	10.951	CREST
389	7975659.592	503352.337	10.964	CREST
390	7975655.219	503353.709	10.953	CREST
391	7975651.914	503355.782	10.909	CREST
392	7975653.74	503359.751	10.833	OG
393	7975658.209	503357.485	10.757	OG
394	7975665.419	503353.18	10.891	OG
395	7975669.29	503350.916	10.896	OG

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396	7975665.266	503355.755	10.804	OG
397	7975656.719	503361.288	10.814	OG
398	7975649.362	503365.962	10.814	OG
399	7975644.567	503370.122	10.832	OG
400	7975639.005	503371.531	10.608	OG
401	7975635.932	503369.808	10.651	OG

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Point Number	Northing	Easting	Elevation	Description
3123001	7975447.83	503400.806	11.379	DITCH CREST
3123002	7975453.714	503395.359	10.575	DITCH CREST
3123003	7975459.277	503388.945	10.483	DITCH CREST
3123004	7975464.889	503381.811	10.575	DITCH CREST
3123005	7975470.279	503375.244	10.55	DITCH CREST
3123006	7975475.257	503370.257	10.47	DITCH CREST
3123007	7975481.352	503363.826	10.252	DITCH CREST
3123008	7975485.132	503359.09	10.331	DITCH CREST
3123009	7975485.877	503357.282	10.775	DITCH CREST
3123010	7975490.689	503351.937	10.758	DITCH CREST
3123011	7975495.692	503347.433	10.235	DITCH CREST
3123012	7975500.174	503342.236	10.261	DITCH CREST
3123013	7975504.594	503337.872	10.227	DITCH CREST
3123014	7975506.342	503339.764	10.283	DITCH CREST
3123015	7975502.126	503344.291	10.167	DITCH CREST
3123016	7975497.673	503349.349	10.141	DITCH CREST
3123017	7975493.184	503354.546	10.104	DITCH CREST
3123018	7975488.762	503359.458	10.209	DITCH CREST
3123019	7975487.743	503360.54	10.225	DITCH CREST
3123020	7975483.388	503365.774	10.187	DITCH CREST
3123021	7975478.119	503371.257	10.217	DITCH CREST
3123022	7975473.349	503377.205	10.612	DITCH CREST
3123023	7975467.533	503383.149	10.374	DITCH CREST
3123024	7975461.767	503389.499	10.428	DITCH CREST
3123025	7975455.361	503397.044	10.64	DITCH CREST
3123026	7975450.223	503402.655	11.009	DITCH CREST
3123027	7975449.649	503401.933	10.4	DITCH TOE
3123028	7975449.335	503401.423	10.38	DITCH TOE
3123029	7975454.546	503395.864	10.012	DITCH TOE
3123030	7975454.869	503396.17	10.002	DITCH TOE
3123031	7975460.935	503389.057	9.729	DITCH TOE
3123032	7975460.589	503388.853	9.74	DITCH TOE
3123033	7975466.121	503381.869	9.94	DITCH TOE
3123034	7975466.846	503382.616	9.83	DITCH TOE
3123035	7975472.594	503376.018	9.852	DITCH TOE
3123036	7975471.841	503375.665	9.926	DITCH TOE
3123037	7975476.619	503370.295	9.847	DITCH TOE
3123038	7975477.353	503371.009	9.796	DITCH TOE
3123039	7975483.171	503364.997	9.818	DITCH TOE

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3123040	7975482.339	503364.233	9.815	DITCH TOE
3123041	7975486.17	503359.166	9.832	DITCH TOE
3123042	7975487.248	503360.149	9.786	DITCH TOE
3123043	7975492.906	503353.872	9.744	DITCH TOE
3123044	7975491.91	503353.169	9.766	DITCH TOE
3123045	7975496.497	503347.937	9.786	DITCH TOE
3123046	7975497.324	503348.601	9.702	DITCH TOE

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Point Number	Northing	Easting	Elevation	Description
41240127	7975499.819	503342.524	10.249	EG CREST
41240128	7975500.306	503342.806	9.87	EG BREAK
41240129	7975501.57	503343.975	9.789	EG BREAK
41240130	7975501.848	503344.497	10.133	CREST
41240131	7975507.128	503333.946	10.218	CREST
41240132	7975509.836	503335.895	10.119	CREST
41240133	7975509.276	503335.267	9.782	BREAK
41240134	7975507.941	503334.173	9.795	BREAK
41240135	7975514.382	503326.569	9.817	BREAK
41240136	7975516.135	503327.995	9.816	BREAK
41240137	7975516.477	503328.27	10.087	CREST
41240138	7975514.282	503326.196	10.013	CREST
41240139	7975522.953	503316.857	10.224	CREST
41240140	7975525.291	503318.502	10.313	CREST
41240141	7975524.793	503318.362	9.805	BREAK
41240142	7975523.364	503317.204	9.785	BREAK
41240143	7975535.08	503304.545	9.847	BREAK
41240144	7975535.917	503305.448	9.807	BREAK
41240145	7975536.329	503305.872	10.403	CREST
41240146	7975534.345	503304.028	10.41	CREST

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Point Number	Northing	Easting	Elevation	Description
228	7975906.609	503593.699	10.089	SPOT
229	7975903.954	503589.772	9.953	SPOT
230	7975901.978	503586.609	10.015	SPOT
231	7975901.268	503584.575	10.114	SPOT
232	7975901.307	503582.16	10.116	SPOT
233	7975901.708	503579.073	9.948	SPOT
234	7975902.822	503583.372	9.844	CREST
235	7975904.069	503581.364	9.804	CREST
236	7975906.964	503578.797	9.765	CREST
237	7975909.03	503576.721	9.896	CREST
238	7975911.116	503574.358	9.836	CREST
239	7975912.646	503571.75	9.901	CREST
240	7975914.376	503569.451	9.919	CREST
241	7975915.092	503567.298	9.885	CREST
242	7975915.567	503563.859	9.727	CREST
243	7975916.13	503560.874	9.654	CREST
244	7975916.578	503557.765	9.626	CREST
245	7975920.181	503559.026	9.697	CREST
246	7975920.04	503561.863	9.862	CREST
247	7975919.559	503565.165	9.718	CREST
248	7975919.248	503568.547	9.702	CREST
249	7975917.566	503572.504	9.786	CREST
250	7975915.469	503575.433	9.791	CREST
251	7975913.831	503577.609	9.891	CREST
252	7975911.355	503580.003	9.924	CREST
253	7975907.621	503582.976	9.828	CREST
254	7975907.267	503583.671	9.769	CREST
255	7975907.379	503585.633	9.793	CREST
256	7975906.222	503587.111	9.779	CREST
257	7975904.261	503586.987	9.716	CREST
258	7975902.93	503585.982	9.87	CREST
259	7975903.827	503585.168	9.234	TOE
260	7975904.183	503583.448	9.227	TOE
261	7975904.995	503581.704	9.273	TOE
262	7975908.021	503579.326	9.31	TOE
263	7975910.95	503576.579	9.307	TOE
264	7975913.802	503573.402	9.245	TOE
265	7975915.662	503570.585	9.29	TOE

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266	7975916.242	503568.922	9.312	TOE
267	7975916.214	503563.984	9.353	TOE
268	7975917.136	503560.703	9.381	TOE
269	7975917.412	503558.11	9.477	TOE
270	7975919.527	503558.967	9.528	TOE
271	7975919.32	503561.713	9.429	TOE
272	7975918.872	503564.293	9.284	TOE
273	7975918.199	503566.72	9.328	TOE
274	7975918.117	503569.051	9.329	TOE
275	7975917.053	503570.557	9.325	TOE
276	7975915.678	503573.379	9.311	TOE
277	7975913.982	503576.39	9.283	TOE
278	7975912.047	503577.904	9.304	TOE
279	7975910.498	503579.501	9.263	TOE
280	7975906.844	503582.025	9.248	TOE
281	7975906.475	503582.911	9.255	TOE
282	7975906.44	503584.371	9.23	TOE
283	7975905.789	503585.724	9.216	TOE
284	7975904.966	503586.03	9.19	TOE
285	7975904.086	503585.703	9.27	TOE
286	7975908.528	503590.875	9.923	OG
287	7975912.377	503588.473	9.996	OG
288	7975914.041	503584.005	9.932	OG
289	7975916.62	503579.416	9.849	OG
290	7975922.224	503569.543	9.742	OG
291	7975923.541	503562.766	9.791	OG
292	7975925.419	503556.738	9.855	OG
293	7975927.922	503550.093	9.779	OG
294	7975923.934	503547.791	9.592	OG
295	7975920.317	503545.532	9.588	OG
296	7975917.689	503550.236	9.636	OG
297	7975918.11	503553.546	9.617	OG
298	7975913.364	503555.902	9.727	OG
299	7975910.51	503560.855	9.818	OG
300	7975909.336	503565.036	10.229	SPOT
301	7975908.096	503568.321	10.116	SPOT
302	7975904.993	503573.105	10.009	SPOT
303	7975900.97	503577.021	10.011	SPOT
304	7975898.173	503579.255	10.227	OG
305	7975895.337	503575.211	10.219	OG
306	7975894.536	503570.617	10.143	OG

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307	7975900.098	503573.582	9.951	SPOT
308	7975903.411	503567.847	9.779	OG
309	7975906.352	503561.876	9.776	OG
310	7975892.29	503568.017	10.257	TOE
311	7975894.398	503568.578	10.146	TOE
312	7975895.645	503567.838	9.959	TOE
313	7975898.491	503563.847	9.855	TOE
314	7975902.311	503559.571	9.782	TOE
315	7975907.42	503553.726	9.762	TOE
316	7975912.508	503547.916	9.723	TOE
317	7975916.34	503544.214	9.695	TOE
318	7975917.459	503542.815	9.716	TOE
319	7975928.838	503552.242	9.802	OG
320	7975929.594	503556.194	9.813	OG
321	7975931.104	503560.162	10.189	OG
322	7975930.964	503564.581	10.459	OG
323	7975931.3	503566.783	10.668	OG
324	7975930.048	503569.714	10.928	OG
325	7975930.196	503573.151	11.37	OG
326	7975928.663	503577.206	11.704	OG
327	7975926.193	503584.126	11.529	OG
328	7975923.295	503590.64	11.281	OG
329	7975917.733	503593.713	10.991	OG
330	7975914.877	503600.037	11.422	OG
331	7975912.18	503599.512	11.145	CREST
332	7975917.57	503592.231	10.917	CREST
333	7975920.865	503587.246	11.005	CREST
334	7975924.23	503583.279	11.302	CREST
335	7975926.121	503579.219	11.416	CREST
336	7975928.525	503573.749	11.402	CREST
337	7975928.689	503568.556	10.7	CREST
338	7975928.671	503565.843	10.473	CREST
339	7975926.396	503562.826	9.788	TOE
340	7975926.508	503566.309	9.775	TOE
341	7975925.518	503569.814	9.806	TOE
342	7975923.998	503573.289	9.76	TOE
343	7975920.469	503578.301	9.785	TOE
344	7975917.334	503582.958	9.787	TOE
345	7975915.24	503586.69	9.994	TOE
346	7975907.671	503594.036	10.032	TOE
347	7975892.503	503566.611	10.985	CREST

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348	7975892.826	503566.923	10.904	CREST
349	7975893.884	503565.211	10.73	CREST
350	7975895.878	503564.327	11	CREST
351	7975898.778	503560.89	11.078	CREST
352	7975901.362	503557.395	11.067	CREST
353	7975904.692	503552.897	11.163	CREST
354	7975908.014	503549.675	10.984	CREST
355	7975910.246	503547.042	11.122	CREST
356	7975915.176	503541.815	11.065	CREST

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Point Number	Northing	Easting	Elevation	Description
1122001	7975537.35	503270.502	10.39	EG
1122002	7975534.461	503276.316	10.348	EG
1122003	7975533.096	503284.669	10.399	EG
1122004	7975532.463	503292.952	10.447	EG
1122005	7975530.749	503300.118	10.413	EG
1122006	7975529.57	503301.975	10.407	EG
1122007	7975530.445	503302.933	10.455	EG
1122008	7975535.655	503302.778	10.436	EG
1122009	7975540.141	503297.269	10.309	EG
1122010	7975544.413	503291.89	10.361	EG
1122011	7975543.702	503284.371	10.406	EG
1122012	7975543.946	503276.322	10.392	EG
1122013	7975544.054	503269.988	10.4	EG
1122014	7975553.682	503269.935	10.51	EG
1122015	7975555.129	503276.465	10.404	EG
1122016	7975558.275	503279.23	10.373	EG
1122017	7975553.221	503285.996	10.477	EG
1122018	7975548.442	503292.684	10.393	EG
1122019	7975543.937	503299.242	10.316	EG
1122020	7975540.69	503305.892	10.432	EG
1122021	7975538.2	503312.068	10.483	EG
1122022	7975543.998	503312.38	10.421	EG
1122023	7975547.521	503306.489	10.338	EG
1122024	7975552.405	503298.288	10.154	EG
1122025	7975555.95	503295.755	10.492	EG
1122026	7975559.768	503291.767	10.451	EG
1122027	7975561.962	503287.275	10.285	EG
1122028	7975565.503	503283.663	10.453	EG
1122029	7975567.472	503278.657	10.416	EG
1122030	7975560.681	503275.502	10.33	EG
1122031	7975562.581	503270.667	10.472	EG
1122200	7975573.309	503280.482	10.519	EG CREST
1122201	7975577.664	503280.044	10.659	EG CREST
1122202	7975581.692	503281.138	10.543	EG CREST
1122203	7975583.433	503284.7	10.406	EG CREST
1122204	7975586.621	503282.089	10.421	EG CREST
1122205	7975591.468	503282.094	10.158	EG CREST
1122206	7975590.892	503284.496	9.771	EG TOE

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1122207	7975587.5	503284.837	9.793	EG TOE
1122208	7975583.721	503287.679	9.668	EG TOE
1122209	7975581.383	503288.569	9.239	EG TOE
1122210	7975575.798	503287.542	9.213	EG TOE
1122211	7975569.713	503288.594	9.229	EG TOE
1122212	7975565.472	503291.291	9.244	EG TOE
1122213	7975565.661	503296.411	9.306	EG TOE
1122214	7975567.393	503302.126	9.236	EG TOE
1122215	7975567.391	503306.09	9.182	EG TOE
1122216	7975567.104	503310.04	9.224	EG TOE
1122217	7975569.738	503314.002	9.24	EG TOE
1122218	7975574.514	503316.646	9.23	EG TOE
1122219	7975582.958	503307.161	9.09	EG TOE
1122220	7975584.971	503304.739	9.118	EG TOE
1122221	7975583.091	503299.051	9.137	EG TOE
1122222	7975582.447	503293.061	9.219	EG TOE
1122223	7975582.065	503289.394	9.282	EG TOE
1122224	7975578.829	503293.393	9.205	EG
1122225	7975570.376	503293.802	9.17	EG
1122226	7975571.228	503302.031	9.126	EG
1122227	7975578.312	503302.989	9.083	EG
1122228	7975577.262	503310.309	9.203	EG
1122229	7975570.219	503310.806	9.17	EG
1122230	7975566.593	503313.452	9.663	EG CREST
1122231	7975564.807	503309.938	10.005	EG CREST
1122232	7975562.75	503305.4	9.97	EG CREST
1122233	7975565.754	503303.762	9.621	EG CREST
1122234	7975564.591	503297.469	9.616	EG CREST
1122235	7975560.787	503299.846	9.707	EG
1122236	7975559.461	503304.451	9.928	EG
1122237	7975561.129	503308.83	10.192	EG
1122238	7975561.04	503311.07	10.701	EG
1122239	7975564.627	503312.709	10.041	EG
1122240	7975564.476	503314.237	10.593	EG CREST
1122241	7975567.19	503317.607	10.478	EG CREST
1122242	7975570.914	503320.032	10.159	EG CREST
1122243	7975578.627	503319.519	9.936	EG CREST
1122244	7975577.213	503319.967	9.901	EG
1122245	7975580.121	503313.063	9.265	EG
1122246	7975581.309	503317.322	9.283	EG
1122247	7975582.029	503318.731	9.533	EG

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1122248	7975584.739	503323.294	9.5	EG
1122249	7975587.173	503316.615	9.479	EG
1122250	7975588.821	503309.447	9.55	EG
1122251	7975589.87	503301.122	9.658	EG
1122252	7975589.751	503294.925	9.8	EG
1122253	7975589.654	503286.169	9.727	EG
1122254	7975590.933	503284.463	9.763	EG
1122255	7975596.198	503286.223	9.534	EG
1122256	7975595.727	503291.945	9.52	EG
1122257	7975596.697	503300.566	9.537	EG
1122258	7975594.785	503308.923	9.697	EG
1122259	7975592.874	503317.006	9.532	EG
1122260	7975592.302	503325.306	9.538	EG
1122261	7975598.887	503329.222	9.59	EG
1122262	7975601.192	503322.224	9.628	EG
1122263	7975602.974	503315.68	9.716	EG
1122264	7975603.971	503307.192	9.524	EG
1122265	7975605.332	503299.118	9.525	EG
1122266	7975606.766	503290.65	9.535	EG
1122267	7975614.735	503292.741	9.459	EG
1122268	7975613.503	503301.132	9.593	EG
1122269	7975612.148	503308.674	9.457	EG
1122270	7975610.727	503316.918	9.535	EG
1122271	7975606.554	503324.011	9.632	EG
1122272	7975602.874	503329.405	9.563	EG
1122273	7975600.527	503330.932	9.61	EG
1122274	7975605.832	503329.467	9.225	EG
1122275	7975604.795	503333.696	9.432	EG
1122276	7975608.978	503328.719	9.421	EG
1122277	7975610.455	503325.375	9.615	EG
1122278	7975615.233	503320.879	9.64	EG
1122279	7975618.416	503315.271	9.296	EG
1122280	7975618.918	503310.557	9.239	EG CREST
1122281	7975619.296	503303.608	9.298	EG CREST
1122282	7975619.722	503296.839	9.482	EG CREST
1122283	7975619.717	503296.843	9.474	EG CREST
1122284	7975627.417	503303.103	9.331	EG CREST
1122285	7975623.114	503307.002	9.228	EG CREST
1122286	7975621.068	503312.982	9.178	EG CREST
1122287	7975630.033	503306.004	9.906	EG CREST
1122288	7975625.942	503311.984	10.05	EG CREST

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1122289	7975622.133	503318.134	10.061	EG CREST
1122290	7975621.238	503327.172	10.048	EG CREST
1122291	7975621.438	503333.705	10.328	EG CREST
1122292	7975619.274	503341.099	10.302	EG CREST
1122293	7975619.212	503341.103	10.275	EG CREST
1122294	7975614.936	503345.459	10.401	EG CREST
1122295	7975611.17	503338.482	9.386	EG TOE
1122296	7975614.496	503337.175	9.486	EG TOE
1122297	7975614.466	503337.193	9.485	EG TOE
1122298	7975617.372	503334.465	9.445	EG TOE
1122299	7975618.204	503326.544	9.456	EG TOE
1122300	7975620.324	503317.18	9.209	EG TOE 2
1122301	7975623.949	503310.987	9.265	EG TOE 2
1122302	7975629.291	503302.648	9.439	EG TOE 2
1122303	7975626.798	503301.458	9.013	EG TOE 2
1122304	7975622.355	503306.853	9.018	EG TOE 2
1122305	7975620.215	503301.902	9.019	EG TOE 2
1122306	7975619.525	503308.179	8.974	EG TOE 2

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Point Number	Northing	Easting	Elevation	Description
4121000	7975914.453	503600.329	11.433	EG CREST M RD
4121001	7975918.388	503592.06	10.992	EG CREST M RD
4121002	7975922.159	503585.653	11.134	EG CREST M RD
4121003	7975925.003	503582.15	11.424	EG CREST M RD
4121004	7975928.362	503574.026	11.412	EG CREST M RD
4121005	7975929.848	503569.039	10.866	EG CREST M RD
4121006	7975930.834	503564.268	10.406	EG CREST M RD
4121007	7975921.761	503555.414	9.706	EG CREST M RD
4121008	7975920.002	503561.742	9.865	EG CREST M RD
4121009	7975919.033	503567.136	9.709	EG CREST M RD
4121010	7975916.661	503573.85	9.711	EG CREST M RD
4121011	7975912.718	503578.441	9.918	EG CREST M RD
4121012	7975907.531	503583.01	9.805	EG CREST M RD
4121013	7975906.329	503587.171	9.788	EG CREST M RD
4121014	7975903.031	503585.693	9.759	EG CREST M RD
4121015	7975903.713	503581.408	9.918	EG CREST M RD
4121016	7975907.721	503578.235	9.775	EG CREST M RD
4121017	7975911.954	503573.523	9.849	EG CREST M RD
4121018	7975914.553	503568.53	9.996	EG CREST M RD
4121019	7975915.626	503563.842	9.746	EG CREST M RD
4121020	7975916.241	503558.139	9.741	EG CREST M RD
4121021	7975916.261	503540.878	10.803	EG CREST M RD
4121022	7975911.126	503546.055	11.092	EG CREST M RD
4121023	7975904.377	503553.571	11.147	EG CREST M RD
4121024	7975900.169	503559.439	11.033	EG CREST M RD
4121025	7975895.98	503564.404	10.937	EG CREST M RD
4121026	7975894.372	503568.216	10.529	EG CREST M RD
4121027	7975894.389	503569.016	10.069	EG TOE M RD
4121028	7975900.022	503562.942	9.827	EG TOE M RD
4121029	7975904.67	503557.054	9.743	EG TOE M RD
4121030	7975910.031	503550.598	9.753	EG TOE M RD
4121031	7975914.19	503546.323	9.756	EG TOE M RD
4121032	7975917.535	503542.919	9.726	EG TOE M RD
4121033	7975918.869	503556.823	9.469	EG TOE M RD
4121034	7975916.316	503564.16	9.402	EG TOE M RD
4121035	7975916.093	503569.68	9.336	EG TOE M RD
4121036	7975911.533	503576.176	9.354	EG TOE M RD
4121037	7975907.212	503580.234	9.309	EG TOE M RD
4121038	7975904.163	503583.112	9.34	EG TOE M RD

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4121039	7975903.98	503585.213	9.242	EG TOE M RD
4121040	7975905.716	503585.698	9.219	EG TOE M RD
4121041	7975906.438	503582.661	9.259	EG TOE M RD
4121042	7975911.284	503578.617	9.318	EG TOE M RD
4121043	7975915.601	503573.961	9.317	EG TOE M RD
4121044	7975918.16	503568.713	9.329	EG TOE M RD
4121045	7975918.975	503564.22	9.302	EG TOE M RD
4121046	7975919.241	503558.423	9.607	EG TOE M RD
4121047	7975920.101	503556.499	9.508	EG TOE M RD
4121048	7975926.6	503559.554	9.826	EG TOE M RD
4121049	7975926.778	503565.45	9.791	EG TOE M RD
4121050	7975925.495	503570.772	9.793	EG TOE M RD
4121051	7975920.726	503578.121	9.781	EG TOE M RD
4121052	7975916.799	503584.22	9.903	EG TOE M RD
4121053	7975912.518	503588.481	10.001	EG TOE M RD
4121054	7975907.298	503592.637	9.999	EG TOE M RD
4121055	7975901.953	503578.564	9.963	EG M RD
4121056	7975906.131	503573.594	9.981	EG M RD
4121057	7975909.918	503568.795	10.19	EG M RD
4121058	7975910.979	503565.467	10.101	EG M RD
4121059	7975908.28	503564.334	10.217	EG M RD
4121060	7975905.77	503566.881	9.922	EG M RD
4121061	7975897.125	503571.271	10.12	EG M RD
4121062	7975898.086	503570.026	9.914	EG M RD
4121063	7975900.993	503567.134	9.808	EG M RD
4121064	7975905.25	503562.123	9.775	EG M RD
4121065	7975909.65	503557.164	9.768	EG M RD
4121066	7975914.566	503553.304	9.734	EG M RD
4121067	7975919.082	503548.558	9.641	EG M RD
4121068	7975921.739	503545.702	9.612	EG M RD
4121069	7975914.552	503549.753	9.707	EG M RD
4121070	7975907.812	503558.015	9.823	EG M RD
4121071	7975901.393	503568.5	9.824	EG M RD

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Point Number	Northing	Easting	Elevation	Description
197	7976022.555	503756.465	11.266	OG
198	7976008.737	503742.504	11.38	OG
199	7976004.539	503743.782	11.431	OG
200	7975990.254	503733.606	11.533	OG
201	7975976.755	503724.528	11.53	OG
202	7975970.997	503712.477	11.56	OG
203	7975962.785	503714.021	11.502	OG
204	7975956.537	503712.047	12.214	TOP BERM
205	7975956.077	503693.116	12.271	TOP BERM
206	7975956.424	503680.149	12.301	TOP BERM
207	7975956.365	503668.372	12.258	TOP BERM
208	7975966.137	503667.309	12.348	TOP BERM
209	7975975.116	503667.451	12.504	TOP BERM
210	7975979.657	503672.766	13.177	OG
211	7975984.654	503686.006	12.502	OG
212	7975986.513	503684.954	12.524	OG
213	7975984.292	503698.856	11.831	OG
214	7975995.06	503699.55	11.575	OG
215	7976004	503707.978	11.509	OG
216	7976016.874	503717.401	11.458	OG
217	7976029.371	503726.503	11.387	OG
218	7976046.704	503739.122	11.274	OG
219	7976060.544	503760.318	11.235	OG
220	7976069.876	503787.147	11.053	OG
221	7976075.496	503804.518	11.018	OG
222	7976082.418	503818.992	10.941	OG
223	7976056.25	503834.648	11.057	OG
224	7976048.902	503818.904	11.045	OG
225	7976041.879	503807.364	11.086	OG
226	7976038.521	503791.23	11.026	OG
227	7976025.623	503764.445	11.381	OG

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Point Number	Northing	Easting	Elevation	Description
19	7975794.716	503480.657	11.031	E ROAD
20	7975787.658	503482.543	11.151	E ROAD
21	7975779.459	503484.161	11.173	E ROAD
22	7975770.961	503483.939	11.062	E ROAD
23	7975760.632	503480.339	11.064	E ROAD
24	7975749.566	503475.327	10.949	E ROAD
25	7975739.605	503470.561	10.903	E ROAD
26	7975727.392	503464.683	10.844	E ROAD
27	7975710.865	503456.355	10.732	E ROAD
28	7975701.729	503451.632	10.693	E ROAD
29	7975690.967	503446.105	10.758	E ROAD
30	7975678.403	503439.484	10.82	E ROAD
31	7975665.875	503432.893	10.838	E ROAD
32	7975655.937	503427.797	10.909	E ROAD
33	7975648.06	503423.253	10.951	E ROAD
34	7975643.649	503418.88	10.877	E ROAD
35	7975641.137	503413.138	10.793	E ROAD
36	7975641.833	503405.961	10.828	E ROAD
37	7975646.579	503398.494	10.758	E ROAD
38	7975651.462	503366.326	10.849	E ROAD
39	7975645.031	503371.025	10.894	E ROAD
40	7975636.775	503377.451	10.949	E ROAD
41	7975627.404	503384.506	10.958	E ROAD
42	7975617.47	503391.214	10.994	E ROAD
43	7975607.523	503396.683	11.15	E ROAD
44	7975599.062	503400.734	11.223	E ROAD
45	7975579.495	503407.149	11.542	E ROAD
46	7975566.151	503411.905	11.721	E ROAD
47	7975559.357	503414.437	11.83	E ROAD
48	7975552.522	503417	11.964	E ROAD
49	7975540.828	503421.603	12.116	E ROAD
50	7975532.419	503424.18	12.171	E ROAD
51	7975536.238	503436.34	12.084	E ROAD
52	7975545.1	503431.613	12.064	E ROAD
53	7975554.079	503428.107	11.96	E ROAD
54	7975565.146	503424.828	11.85	E ROAD
55	7975576.781	503422.575	11.644	E ROAD
56	7975587.456	503421.448	11.405	E ROAD

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57	7975596.151	503421.201	11.343	E ROAD
58	7975606.088	503423.645	11.195	E ROAD
59	7975614.659	503429.539	11.137	E ROAD
60	7975619.752	503438.293	11.329	E ROAD
61	7975624.006	503449.062	11.586	E ROAD
62	7975626.55	503458.212	11.936	E ROAD
63	7975640.432	503458.839	11.957	E ROAD
64	7975638.929	503450.246	11.558	E ROAD
65	7975639.045	503442.667	11.224	E ROAD
66	7975646.657	503435.687	11.066	E ROAD
67	7975655.93	503438.699	10.951	E ROAD
68	7975667.092	503443.489	10.903	E ROAD
69	7975676.518	503447.983	10.908	E ROAD
70	7975685.528	503452.774	10.921	E ROAD
71	7975691.163	503455.866	10.906	E ROAD
72	7975694.06	503462.049	10.945	E ROAD
73	7975694.665	503467.41	11.169	E ROAD
74	7975694.253	503473.833	11.759	E ROAD
75	7975699.671	503470.388	11.405	E ROAD
76	7975700.122	503466.555	11.178	E ROAD
77	7975702.204	503464.71	10.97	E ROAD
78	7975709.931	503466.87	10.935	E ROAD
79	7975719.271	503471.028	10.979	E ROAD
80	7975727.577	503475.478	11.05	E ROAD
81	7975737.69	503480.731	11.122	E ROAD
82	7975745.561	503484.783	11.122	E ROAD
83	7975749.216	503486.718	11.172	E ROAD
84	7975748.569	503489.937	11.28	E ROAD
85	7975744.697	503491.353	11.37	E ROAD
86	7975746.932	503499.89	11.284	E ROAD
87	7975756.397	503497.004	11.185	E ROAD
88	7975767.419	503494.507	11.264	E ROAD
89	7975776.422	503494.785	11.293	E ROAD
90	7975787.407	503494.16	11.32	E ROAD
91	7975796.917	503493.247	11.159	E ROAD
92	7975789.532	503478.23	10.802	CREST
93	7975788.943	503476.379	10.614	CREST
94	7975779.107	503474.316	10.576	CREST
95	7975769.193	503472.974	10.543	CREST
96	7975759.654	503468.143	10.774	CREST
97	7975753.948	503465.376	11.057	CREST

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98	7975748.532	503462.748	10.418	CREST
99	7975739.857	503459.553	10.47	CREST
100	7975732.748	503456.99	10.46	CREST
101	7975723.009	503451.251	10.437	CREST
102	7975714.788	503446.215	10.481	CREST
103	7975706.631	503441.734	10.482	CREST
104	7975699.405	503437.112	10.509	CREST
105	7975691.312	503431.411	10.579	CREST
106	7975683.052	503425.97	10.726	CREST
107	7975672.275	503419.38	10.604	CREST
108	7975647.968	503404.833	11.319	CREST
109	7975646.336	503408.514	11.112	CREST
110	7975645.885	503413.173	11.114	CREST
111	7975648.879	503419.694	11.091	CREST
112	7975654.599	503422.284	10.874	CREST
113	7975662.077	503426.533	11.031	CREST
114	7975672.188	503432.088	11.04	CREST
115	7975679.247	503436.245	11.155	CREST
116	7975697.831	503446.167	10.437	CREST
117	7975708.793	503451.997	10.862	CREST
118	7975719.146	503457.834	10.998	CREST
119	7975725.19	503460.784	10.965	CREST
120	7975735.722	503465.691	10.847	CREST
121	7975744.476	503470.612	11.161	CREST
122	7975755.583	503474.799	11.271	CREST
123	7975764.364	503479.47	11.354	CREST
124	7975773.085	503481.545	11.033	CREST
125	7975779.436	503482.029	10.883	CREST
126	7975786.385	503480.755	11.104	CREST
127	7975788.938	503479.752	11.023	CREST
128	7975786.152	503478.346	9.949	DITCH
129	7975779.798	503477.97	9.896	DITCH
130	7975771.106	503476.206	9.945	DITCH
131	7975761.44	503472.687	9.894	DITCH
132	7975753.634	503469.498	9.891	DITCH
133	7975744.612	503465.061	9.918	DITCH
134	7975735.788	503461.028	9.935	DITCH
135	7975727.038	503456.959	9.965	DITCH
136	7975717.592	503451.615	10.029	DITCH
137	7975711.49	503448.074	10.041	DITCH
138	7975701.451	503441.962	9.975	DITCH

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139	7975693.571	503437.383	9.963	DITCH
140	7975686.816	503433.761	9.927	DITCH
141	7975680.85	503430.127	9.975	DITCH
142	7975672.787	503425.964	9.96	DITCH
143	7975663.71	503420.652	9.967	DITCH
144	7975654.66	503415.267	9.972	DITCH
145	7975649.393	503411.979	9.924	DITCH
146	7975644.811	503364.219	10.63	SPOT
147	7975636.781	503368.138	10.378	SPOT
148	7975628.371	503372.346	10.443	SPOT
149	7975618.125	503378.505	10.191	SPOT
150	7975609.703	503383.683	9.916	SPOT
151	7975601.484	503386.299	9.919	SPOT
152	7975594.605	503390.185	9.858	SPOT
153	7975586.503	503394.38	9.864	SPOT
154	7975577.271	503398.244	9.978	SPOT
155	7975569.045	503402.876	10.124	SPOT
156	7975560.325	503406.448	10.577	SPOT
157	7975550.438	503409.995	10.979	SPOT
158	7975542.244	503413.936	11.149	SPOT
159	7975539.679	503403.669	10.49	SPOT
160	7975548.792	503399.439	9.981	SPOT
161	7975557.192	503395.707	9.897	SPOT
162	7975565.632	503392.291	9.954	SPOT
163	7975575.304	503387.927	10.123	SPOT
164	7975586.56	503384.082	9.875	SPOT
165	7975594.543	503380.352	9.884	SPOT
166	7975603.531	503376.081	9.864	SPOT
167	7975612.606	503371.739	10.247	SPOT
168	7975620.523	503366.606	10.231	SPOT
169	7975630.211	503359.977	10.431	SPOT
170	7975638.109	503354.541	10.374	SPOT
171	7975634.632	503344.563	10.457	SPOT
172	7975624.849	503348.38	10.432	SPOT
173	7975615.332	503352.577	10.393	SPOT
174	7975604.325	503358.8	10.174	SPOT
175	7975596.797	503363.722	9.969	SPOT
176	7975585.922	503369.81	9.893	SPOT
177	7975577.685	503373.986	9.858	SPOT
178	7975569.075	503378.553	9.922	SPOT
179	7975559.974	503382.755	9.912	SPOT

Mary River Expansion Project
Baffinland - Milne Port Earthworks H353004-CC006
Job File CC006-0008A
Port Site Module Delivery Road
Original Ground (OG) Survey Data
3-16-19

180	7975550.494	503386.855	9.945	SPOT
181	7975541.638	503387.721	9.999	SPOT
182	7975536.835	503439.469	12.222	SPOT
183	7975540.791	503449.857	12.471	SPOT
184	7975549.121	503443.469	12.086	SPOT
185	7975556.026	503437.277	11.954	SPOT
186	7975565.257	503434.275	11.562	SPOT
187	7975573.534	503432.363	11.459	SPOT
188	7975583.433	503430.375	11.165	SPOT
189	7975591.128	503429.088	10.935	SPOT
190	7975600.102	503436.524	10.669	SPOT
191	7975591.63	503438.493	11.098	SPOT
192	7975582.905	503441.075	11.38	SPOT
193	7975573.945	503444.026	11.667	SPOT
194	7975565.055	503448.118	11.925	SPOT
195	7975555.182	503450.146	12.113	SPOT
196	7975547.716	503455.5	12.53	SPOT

NUNA

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(Section 5)

Sieves / Aggregate Statements of Compliance

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	SAMPLE number:	MP-190070
SITE:	Baffinland, Milne Port	DATE:	2019-08-13

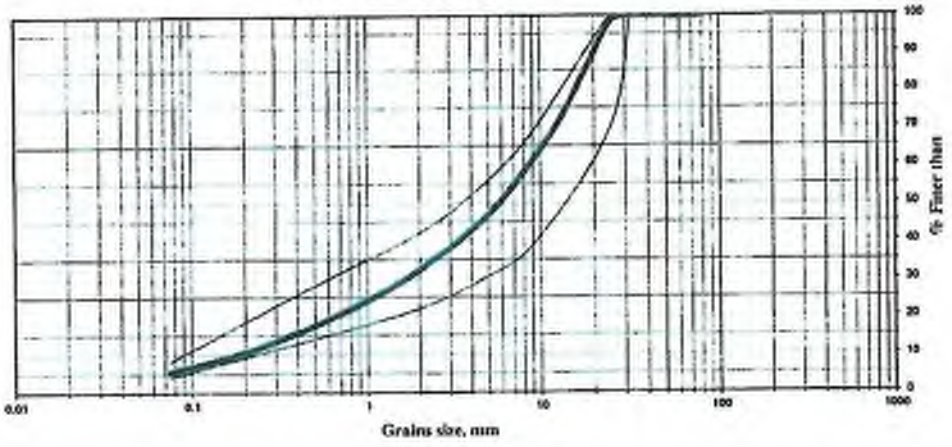
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-13_D
Stone source:	Quarry 1, Milne Port	Sampled By:	Hugo Perron
Type of Use:		Sampling Date:	2019-08-13

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	88	73	63	46	33	26	19	14	9	5.8
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	53.8%	Cu = 48	D_{60} = 17.8	D_{10} = 0.4
Sand %	40.4%	Cc = 2	D_{50} = 8.4	D_{30} = 0.2
Silt/Clay %	5.8%		D_{40} = 5.6	

Notes: Aggregate compliant with specs

Prepared By: Hugo Perron

Verified By: Philippe Desgagné

Signature: [signature]

Date: 2019/08/14

Qikiqtaaluk SANA

Soil & Aggregates Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190069
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-12

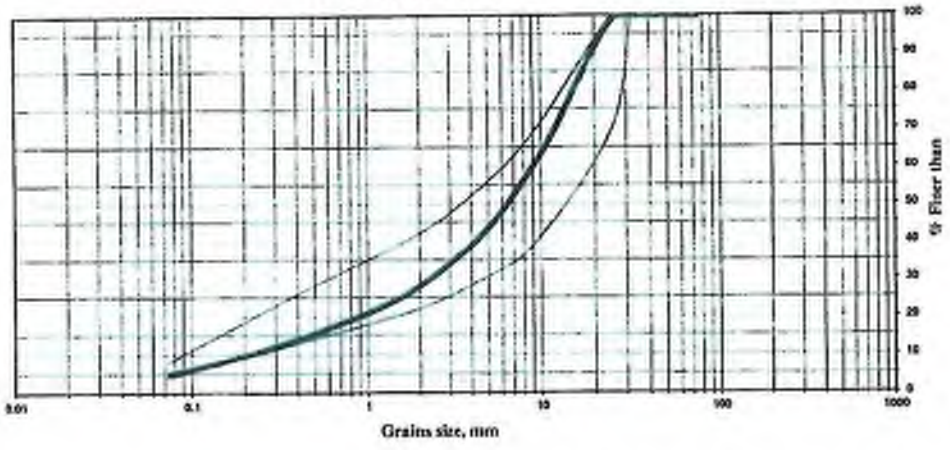
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-12_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-12

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	89	90	74	62	42	28	22	17	12	8	5.1
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	57.6%	C_U = 43	D_{60} = 17.0	D_{15} = 0.5
Sand %	37.3%	C_C = 3	D_{30} = 8.9	D_{10} = 0.2
Silt/Clay %	5.1%		D_{50} = 6.2	

Notes: Aggregate compliant with specs

Prepared By: Hugo Perron

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/14

LC : Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190068
SITE:	Baffinland, Mine Port	**DATE:**	2019-08-12

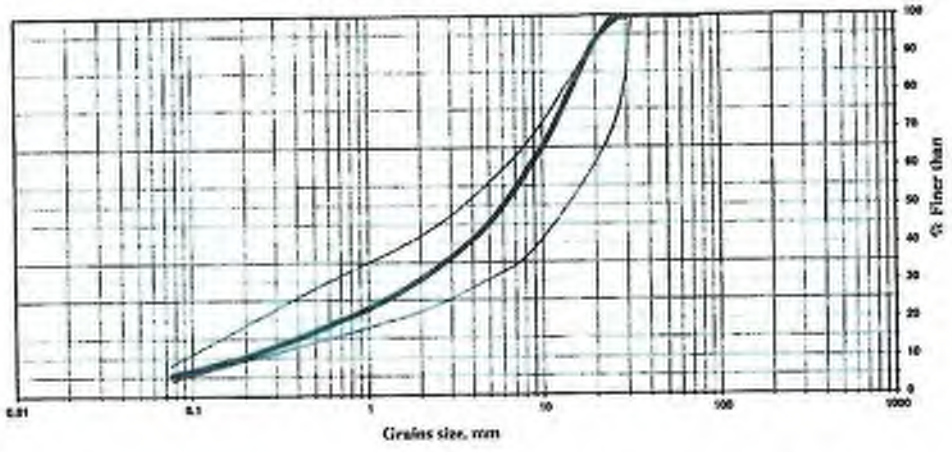
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, O1
Comments:	32mm Minus		Production 2019-08 11_N
Stone source:	Quarry 1, Mine Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-12

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	98	92	76	64	44	31	25	19	14	9	5.5
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	55.6%	Cu = 45	D_{60} = 16.2	D_{15} = 0.4
Sand %	38.9%	Cc = 2	D_{30} = 8.3	D_{10} = 0.2
Silt/Clay %	5.5%		D_{50} = 5.8	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/12

LC: laboratoire
D10: 5 mm

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190067
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-11

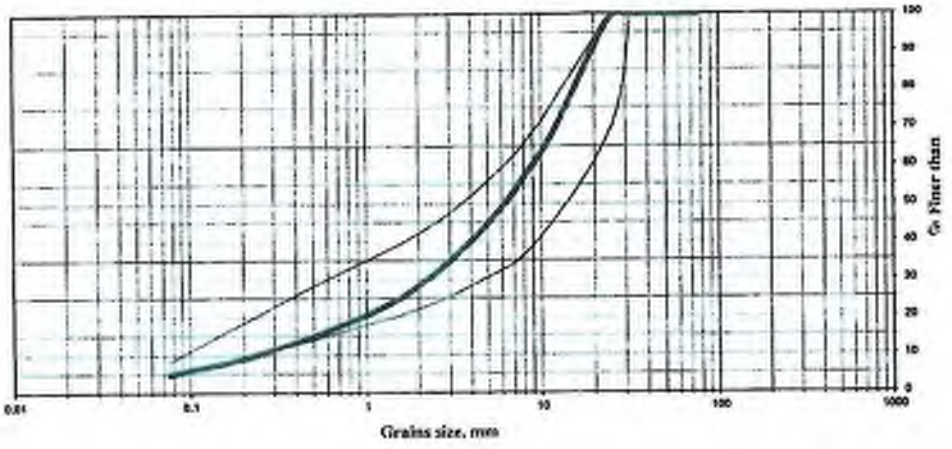
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-11_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-11

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	100	90	74	62	44	28	22	16	12	8	4.9
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	56.3%	C_U = 38	D_{60} = 17.1	D_{15} = 0.5
Sand %	38.8%	C_C = 2	D_{30} = 8.8	D_{10} = 0.2
Silt/Clay %	4.9%		D_{50} = 6.9	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/15

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190066
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-11

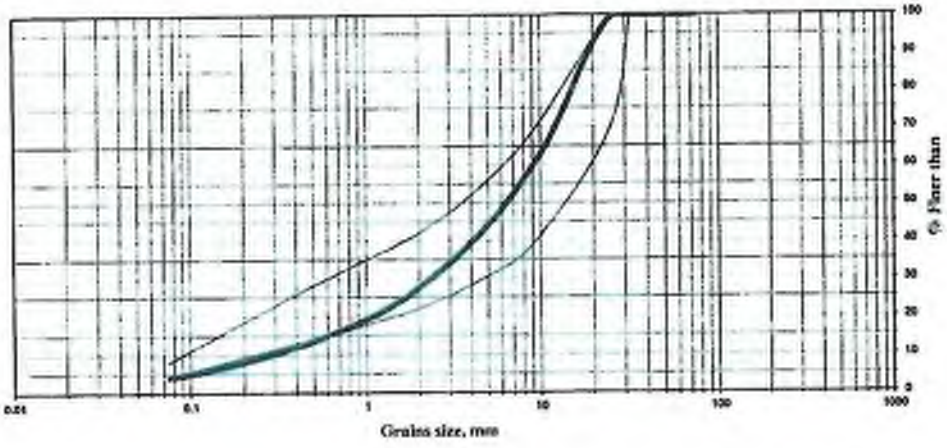
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-10 N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-11

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	91	74	61	43	28	21	15	11	7	4.2
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	57.0%	Cu = 33	D_{60} = 16.9	D_{10} = 0.6
Sand %	38.8%	Cc = 2	D_{30} = 9.0	D_{50} = 0.3
Silt/Clay %	4.2%		D_{85} = 6.2	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/12

CC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190065
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-10

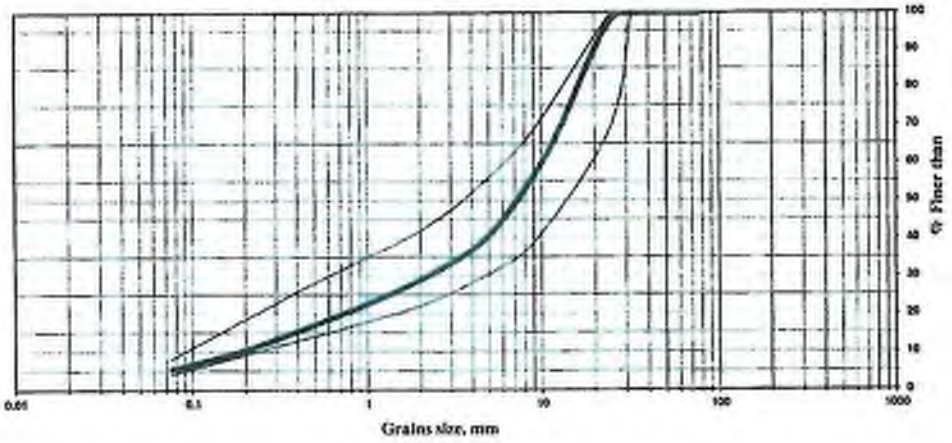
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S. Q1
Comments:	32mm Minus		Production 2019-08-10_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-10

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	88	71	58	40	29	24	19	14	9	5.4
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	60.2%	Cu = 54	D_{95} = 17.7	D_{15} = 0.4
Sand %	34.4%	Cc = 3	D_{50} = 9.9	D_{10} = 0.2
Silt/Clay %	5.4%		D_{50} = 6.9	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature: [signature]

Date: 2019/08/12

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190064
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-09

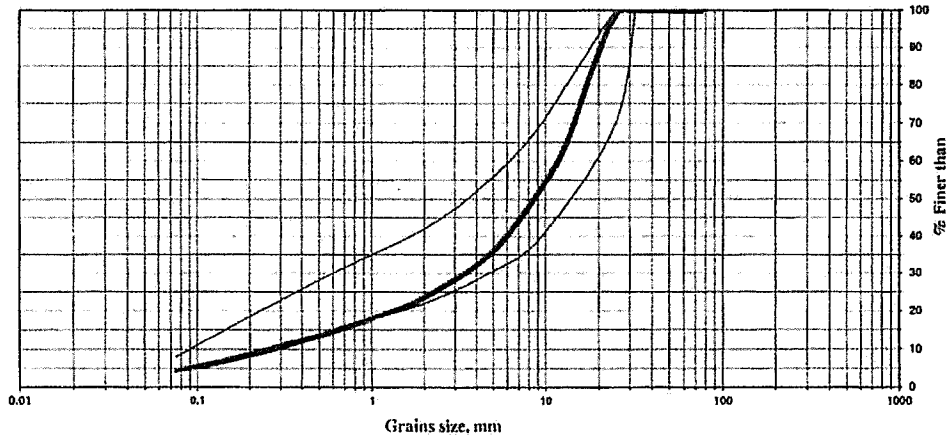
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-09_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-09

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	87	65	53	35	24	19	15	11	7	4.5
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	64.8%	Cu = 43	D_{85} = 18.5	D_{15} = 0.6
Sand %	30.8%	Cc = 3	D_{60} = 11.4	D_{10} = 0.3
Silt/Clay %	4.5%		D_{50} = 8.3	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/10

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190063
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-09

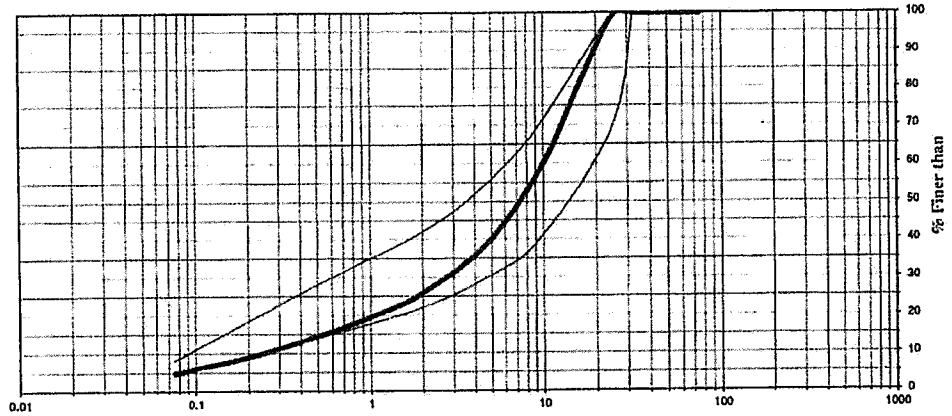
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-09_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-09

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	100	89	72	59	39	26	21	16	12	8	4.9
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	60.9%	Cu = 42	D_{85} = 17.4	D_{15} = 0.5
Sand %	34.2%	Cc = 3	D_{60} = 9.9	D_{10} = 0.2
Silt/Clay %	4.9%		D_{50} = 7.0	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/10

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190062
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-09

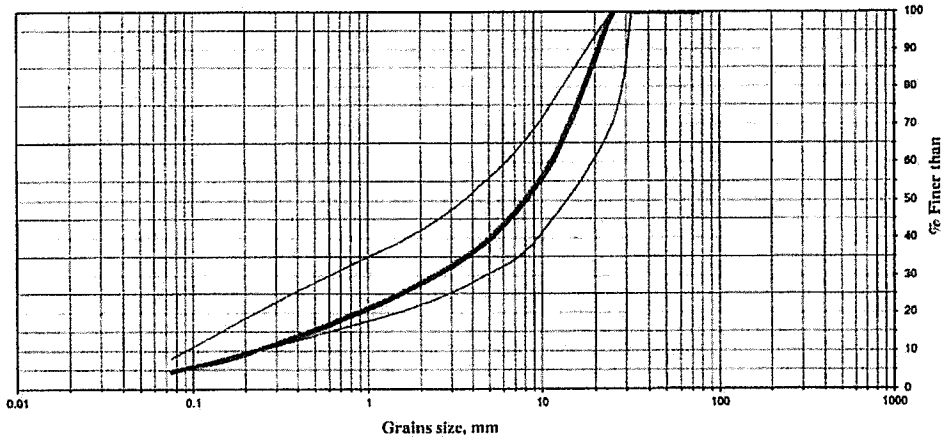
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-08_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-09

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	100	85	66	55	39	28	23	17	12	8	4.6
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	61.0%	Cu = 50	D_{85} = 19.0	D_{15} = 0.5
Sand %	34.4%	Cc = 2	D_{60} = 11.0	D_{10} = 0.2
Silt/Clay %	4.6%		D_{50} = 7.7	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/10

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190061
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-08

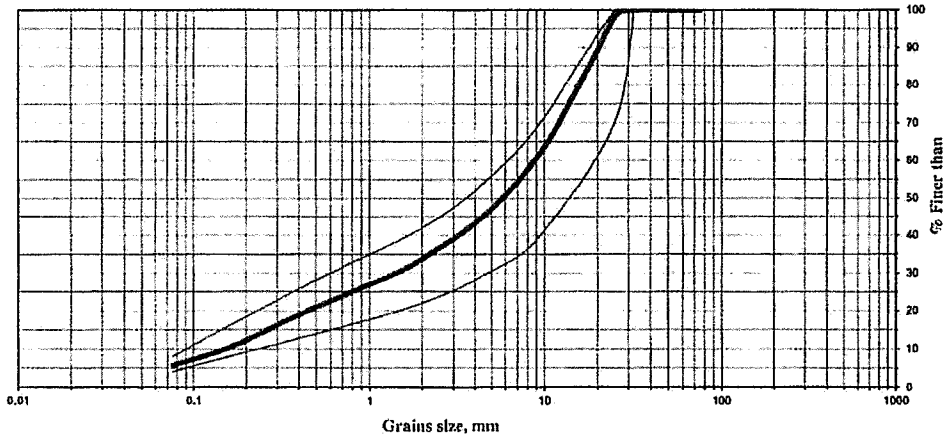
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-08_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-08

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	**100**	99	88	74	62	46	34	29	23	17	10	5.8
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	53.8%	Cu = 58	D_{85} = 17.8	D_{15} = 0.3
Sand %	40.5%	Cc = 1	D_{60} = 8.6	D_{10} = 0.1
Silt/Clay %	5.8%		D_{50} = 5.6	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/16

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190060
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-08

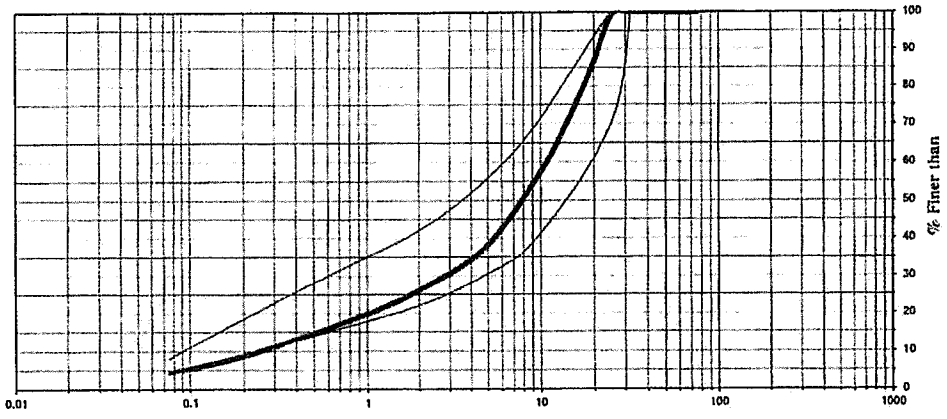
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-07_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-08

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	84	68	56	37	26	21	16	12	8	4.4
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	62.7%	Cu = 44	D_{85} = 19.2	D_{15} = 0.5
Sand %	32.9%	Cc = 3	D_{60} = 10.6	D_{10} = 0.2
Silt/Clay %	4.4%		D_{50} = 7.6	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/16

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190059
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-07

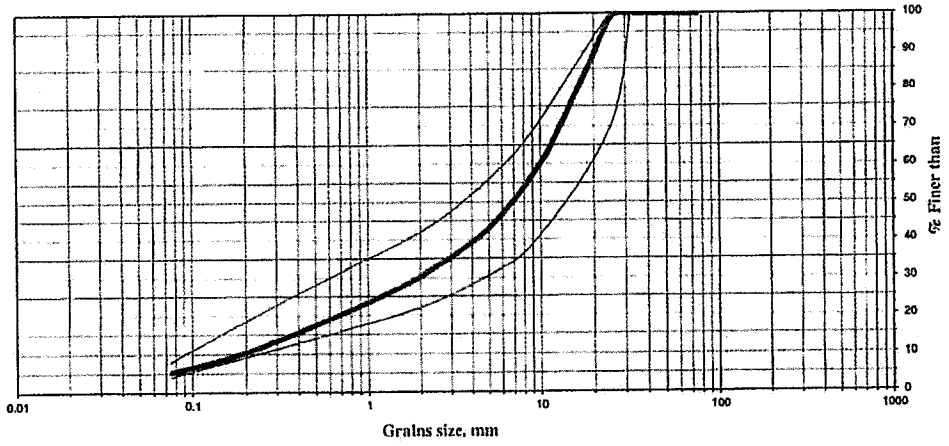
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-07_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-07

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	87	71	59	42	31	25	19	14	9	5.3
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	57.8%	Cu = 54	D_{85} = 18.2	D_{15} = 0.4
Sand %	36.8%	Cc = 2	D_{60} = 9.8	D_{10} = 0.2
Silt/Clay %	5.3%		D_{50} = 6.6	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/08/10

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190053
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-04

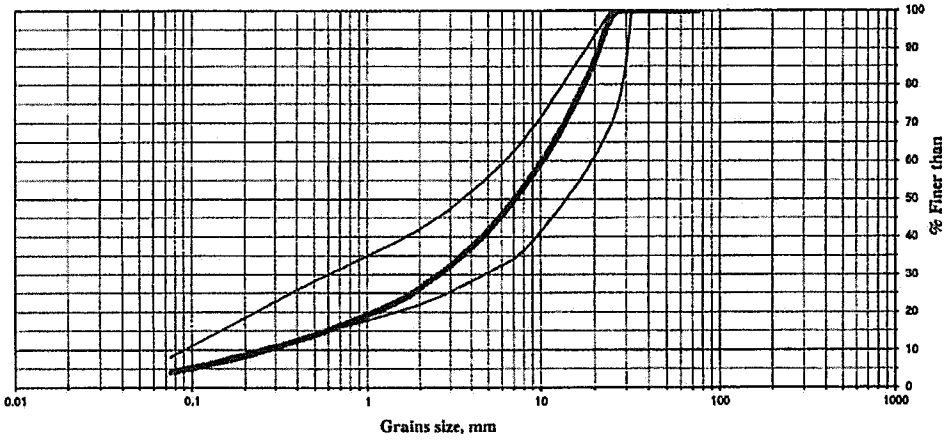
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-03_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxima Côté
Type of Use:		**Sampling Date:**	2019-08-04

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	84	69	58	41	26	21	15	11	7	4.3
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	59.4%	Cu = 39	D_{85} = 19.3	D_{15} = 0.6
Sand %	36.4%	Cc = 2	D_{60} = 10.1	D_{10} = 0.3
Silt/Clay %	4.3%		D_{50} = 6.9	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: Alex Vézina **Date:** 20A-08-04

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190052
SITE:	Baffinland, Milne Port	**DATE:**	2019-08-04

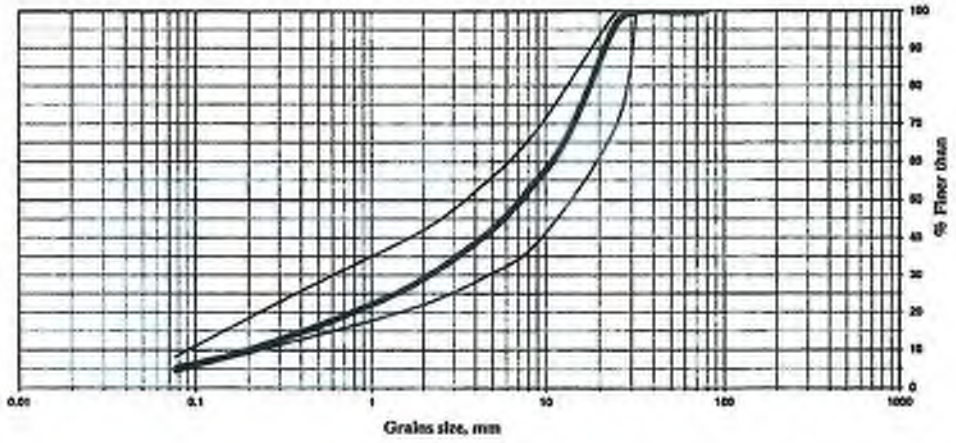
Type of Material:	Type 5 Fill	**Sampling location:**	Type 5 stockpile, C.S, Q1
Comments:	32mm Minus		Production 2019-08-03_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-08-03

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	97	84	67	57	41	29	24	18	13	9	5.1
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	58.6%	Cu = 54	D_{85} = 19.4	D_{15} = 0.4
Sand %	36.3%	Cc = 2	D_{50} = 10.6	D_{10} = 0.2
Silt/Clay %	5.1%		D_{30} = 7.0	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: [signature]

Date: 2019-08-04

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / SIM	Client Project #:	CC004A
		Contractor Project #:	11 837
PROJECT:	Expansion Project - Site Crushing Services	SAMPLE number:	MP-190051
SITE:	Bellinland, Milne Port	DATE:	2019-08-03

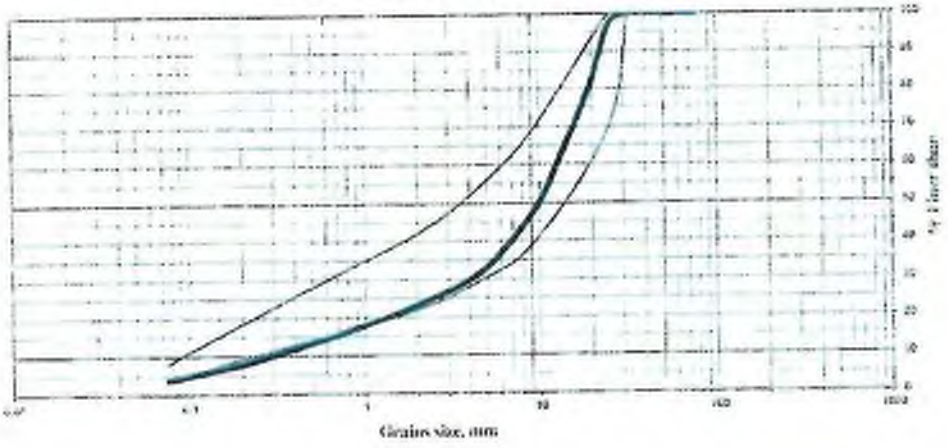
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile, C.B. C1
Comments:	32mm Minus		Production: 2019-08-03_C
Stone source:	Quarry 1, Milne Port	Sampled By:	Maxime Côté
Type of Use:		Sampling Date:	2019-08-02

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	11.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulative Results				100	100	100	97	80	63	49	32	23	16	14	10	7	6.9
Individual Results																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	67.7%	C_u = 43	D_{60} = 20.6	D_{30} = 0.8
Sand %	28.4%	C_c = 4	D_{10} = 12.4	D_{15} = 0.3
Silt/Clay %	3.9%		D_{15} = 5.8	

Notes: Gap for the following sieves: 0.6, 0.075 mm

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: Alex Vézina

Date: 2019-08-03

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

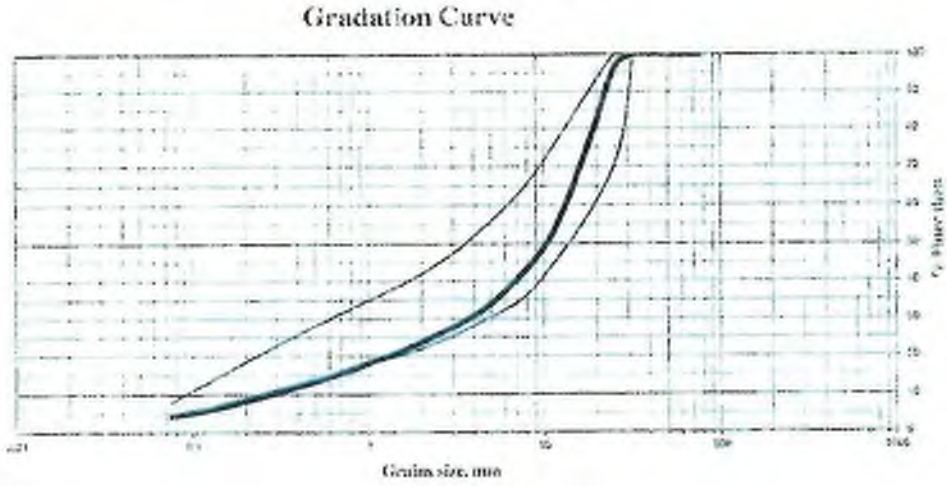
CLIENT:	HATCH / BIM	Client Project #:	CC004A
		Contractor Project #:	11-337
PROJECT:	Expansion Project - Site Crushing Services	SAMPLE number:	MP 190050
SITE:	Baffinland, Mine Port	DATE:	2019-08-02

Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile C 5, C1
Comments:	32mm Minus		Production 2019-08-02, C
Stone source:	Quarry 1, Mine Port	Sampled By:	Maxime Côté
Type of Use:		Sampling Date:	2019-08-02

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	91 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulative Results				100	100	100	96	79	60	48	33	24	19	15	11	7	4.3
Individual Result																	
Spc	min					100	70			40	30	22		15			4.0
	max					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus



Gravel/Stone%	66.8%	C_u = 49	D_{60} = 20.4	D_{10} = 0.5
Sand %	29.0%	C_c = 3	D_{30} = 12.3	D_{15} = 0.5
Silt/Clay %	4.3%		D_{10} = 10.2	

Notes: Aggregate composite with specs

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: Alex Vézina

Date: 20A-08-03

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC004A
PROJECT:	Expansion Project - Site Crushing Services	Contractor Project #:	11-637
		SAMPLE number:	MP 190040
SITE:	Baffinland, Mine Port	DATE:	2019-08-02

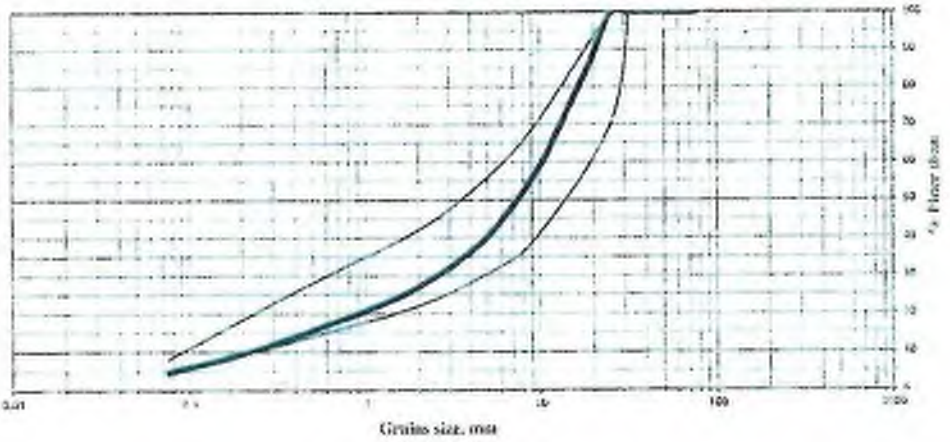
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile C.S. C1
Comments:	50mm Minus		Production 2019 (5.0 C_1)
Stone source:	Quarry 1 Mine Port	Sampled By:	Maxime Cote
Type of Use:		Sampling Date:	2019-08-02

Gradation (% Finer than) (ASTM C136-06)

Sieve				75 mm	50 mm	37.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.425 mm	0.15 mm	0.075 mm
Cumulative Results				100	100	100	100	86	71	57	39	27	22	17	12	8	4.8
Individual Limits																	
Spec.	min.					100	70			40	30	22		15			3.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel-Stone%	60.7%	Cu = 47	D_{60} = 18.4	D_{30} = 0.5
Sand %	34.5%	Cc = 3	D_{10} = 0.4	D_{15} = 0.2
Silt/Clay %	4.8%		D_{15} = 0.1	

Notes: Acceptable compliance with specs

Prepared By: Maxime Cote

Verified By: Alexandre Vitrina

Signature: Alex Vitrina Date: 2019-08-03

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	Client Project #:	CC004A
		Contractor Project #:	11-537
PROJECT:	Expansion Project - Site Crushing Services	SAMPLE number:	MP-100048
SITE:	Baffinland, Mine Port	DATE:	2019-08-02

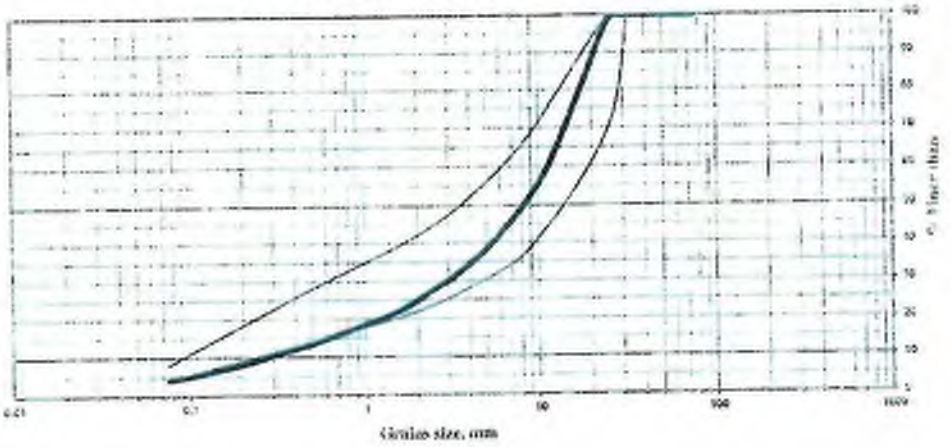
Type of Material:	Type 5 Fill	Sampling location:	Type 5 stockpile, C.S. C1
Comments:	32mm Minus		Production 2019-08-01, D
Stone source:	Quarry 1, Mine Port	Sampled By:	Maxime Côté
Type of Use:		Sampling Date:	2019-08-01

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulative Results				100	100	100	96	86	67	54	37	25	20	15	11	7	4.0
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	62.7%	C_u = 40	D_{60} = 19.0	D_{30} = 0.6
Sand %	33.3%	C_c = 3	D_{50} = 11.6	D_{10} = 0.3
Silt/Clay %	4.0%		D_{15} = 8.0	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Alexandre Vézina

Signature: Alex Vézina

Date: 2019-08-03

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	25-Jul-19	Report Number:	18SJ0001	
File Number:		Inspector:	B. Mullins	
Client:	Hatch	Sampled By:	B. Mullins	
Project:	Baffinland	Sample Date:	25-Jul-19	1:30
Location:	Crusher Pad	Copy To:		
Contractor:	Nuna			

TEST RESULTS

SIEVE SIZE (mm)				32	25	19	13.2	9.5	4.75	2.00	1.18	0.600	0.315	0.160	0.075
MAX % PASS SPEC				100.0	100.0			70.0	55.0	42.0		30.0			8.0
MIN % PASS SPEC				100.0	70.0			40.0	30.0	22.0		15.0			4.0
% PASS RESULTS				100.0	97.6	79.1	64.8	54.8	39.8	28.3	22.6	16.7	11.7	7.5	4.2

MATERIAL TYPE

Type 5

SIEVE METHOD

Washed

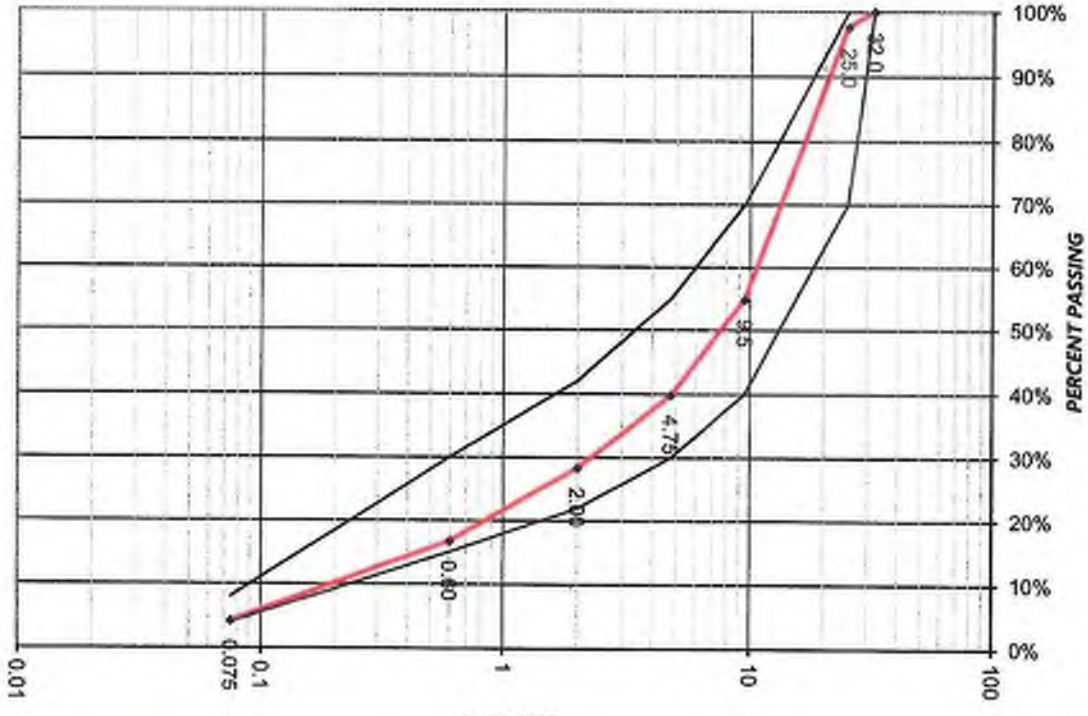
% FRACTURE

% MOISTURE

1.3%

GRADATIONS

GRAVEL	60.2%
SAND	35.6%
SILT/CLAY	4.2%



COMMENTS

Material meets specifications for the project.

Reviewed By:

Matt Tabor, Materials Lead

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	24-Jul-19	Report Number:	18SJ0001	
File Number:		Inspector:	B. Mullins	
Client:	Hatch	Sampled By:	B. Mullins	
Project:	Baffinland	Sample Date:	24-Jul-19	20:40
Location:	MOD Road STA: 0+465	Copy To:		
Contractor:	Nuna			

TEST RESULTS

SIEVE SIZE (mm)				32	25	19	13.2	9.5	4.75	2.00	1.18	0.600	0.315	0.160	0.075
MAX % PASS SPEC				100.0	100.0			70.0	55.0	42.0		30.0			8.0
MIN % PASS SPEC				100.0	70.0			40.0	30.0	22.0		15.0			4.0
% PASS RESULTS				100.0	96.8	81.0	63.7	52.0	35.4	25.0	20.1	15.0	10.7	6.8	3.9

MATERIAL TYPE

Type 5

SIEVE METHOD

Washed

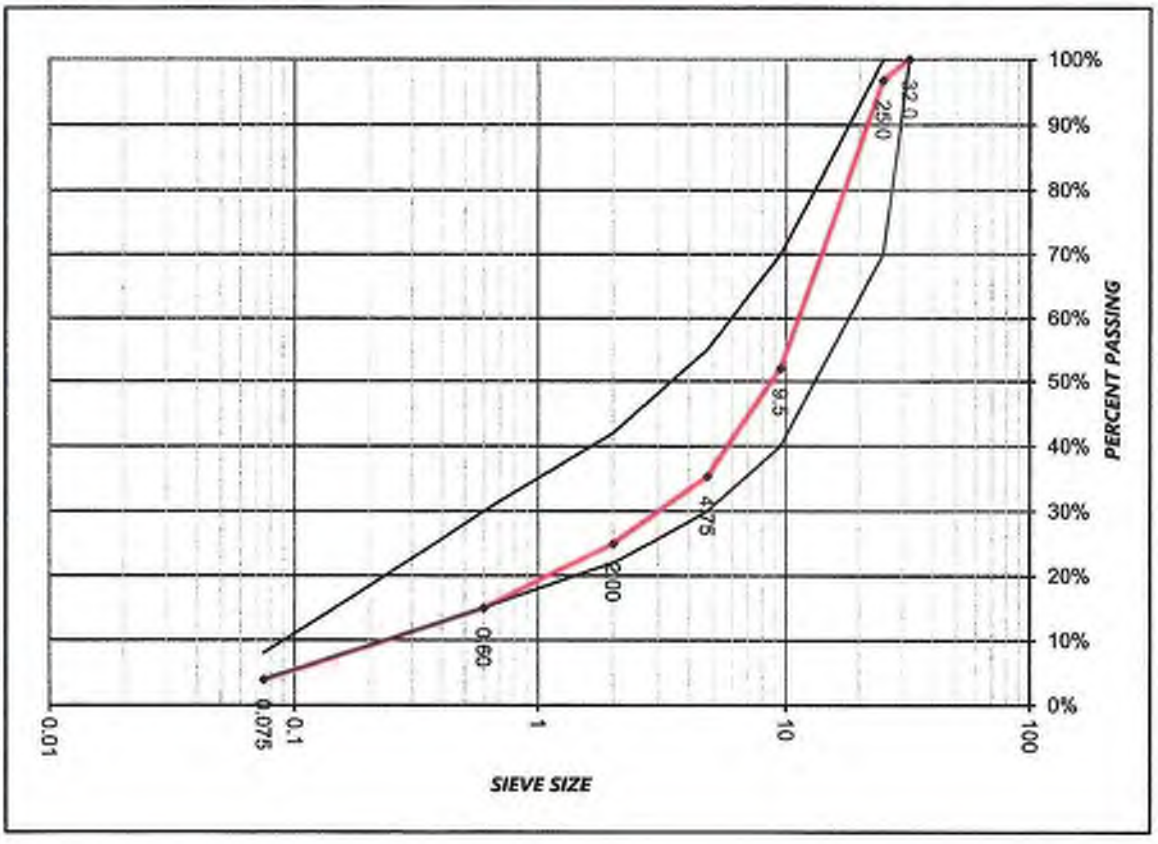
% FRACTURE

% MOISTURE

0.9%

GRADATIONS

GRAVEL	64.6%
SAND	31.5%
SILT/CLAY	3.9%



COMMENTS

Material slight outside specification on 0.075

Reviewed By:

Matthew Tabor, Materials Lead

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190037
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-21

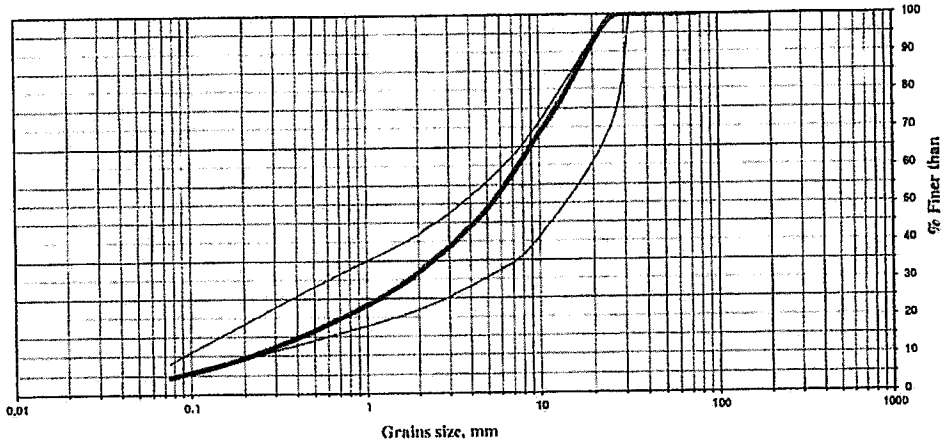
Type of Material:	Type 5 Fill	**Sampling location:**	Twin screen Conveyor, C.S, Q1
Comments:	32mm Minus		Production 2019-07-20_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-21

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	99	91	77	67	47	32	25	18	13	8	4.3
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve

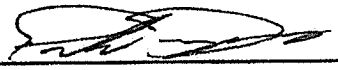


Gravel/Stone%	52.5%	Cu = 34	D_{85} = 16.3	D_{15} = 0.4
Sand %	43.2%	Cc = 2	D_{60} = 7.4	D_{10} = 0.2
Silt/Clay %	4.3%		D_{50} = 5.2	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By:

Signature: 

Date: 2019/07/21

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190035
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-20

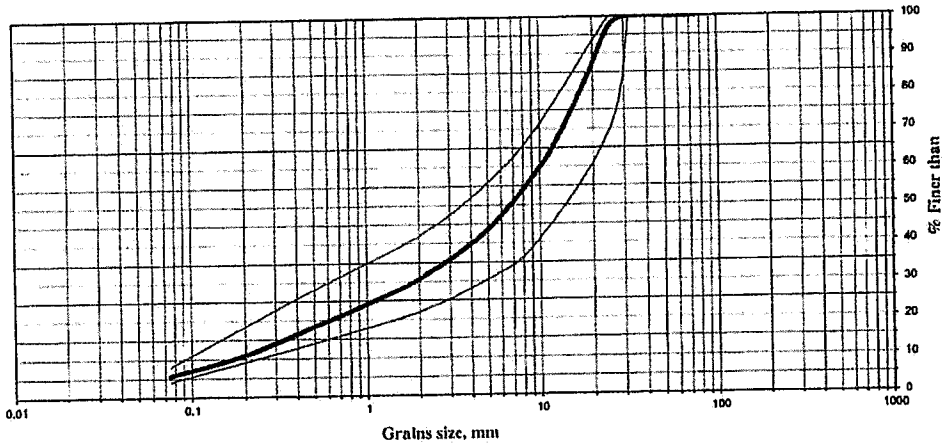
Type of Material:	Type 5 Fill	**Sampling location:**	Scalpe Conveyor, C.S, Q1
Comments:	32mm Minus		Production 2019-07-19_N
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-20

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	98	85	69	59	43	31	26	20	14	10	5.7
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	57.4%	Cu = 58	D_{85} = 19.0	D_{15} = 0.3
Sand %	36.9%	Cc = 2	D_{60} = 9.9	D_{10} = 0.2
Silt/Clay %	5.7%		D_{50} = 6.5	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Philippe Desgagné

Signature:

Date: 2019/07/20

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190036
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-20

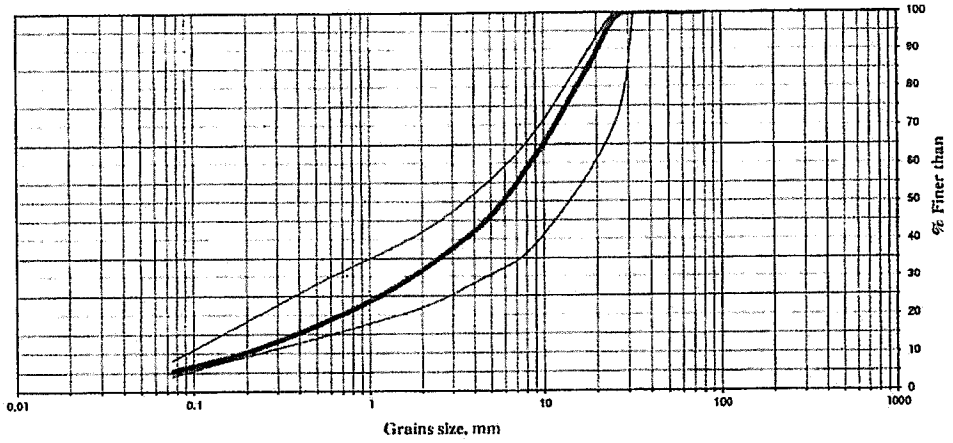
Type of Material:	Type 5 Fill	**Sampling location:**	Twin screen Conveyor, C.S, Q1
Comments:	32mm Minus		Production 2019-07-20_D
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-20

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	31.5 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0,6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	100	98	88	75	64	45	32	25	19	14	9	5.3
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel/Stone%	54.7%	Cu = 44	D_{65} = 17.6	D_{15} = 0.4
Sand %	40.0%	Cc = 2	D_{60} = 8.2	D_{10} = 0.2
Silt/Clay %	5.3%		D_{50} = 5.7	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By:

Signature:

Date: 2019/07/21

LC: Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates Analysis

CLIENT:	HATCH / BIM	**HATCH Project # :**	11-837
PROJET:	Expansion Project - Site Crushing Services	**Q-SANA Project # :**	CC004A
		SAMPLE Number:	MP190012
SITE:	Baffinland, Milne Port	**DATE:**	2019-06-02

Type of Material	Type 5 Fill	**Sampling location:**	Type 5 Stockpile
Comments	32mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-02

Gradation (% Finer than) (ASTM C136-06)

Seives				75 mm	50 mm	32 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.50 mm	1.25 mm	0.63 mm	0.315 mm	0.16 mm	0.08 mm
Cumulatives Results				100	100	100	94	77	58	47	33	25	19	15	11	7	4.5
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

Other Standard Tests	Results	Specifications min.	Specifications max.

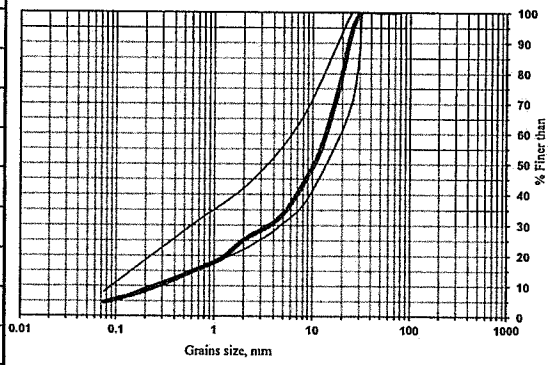
Bradford Watkin QA/QC Reviewed

Proctor Essay (NQ 2501-255)	Résultats
Maximum Dry Density	(kg/m^3)
Optimal Moisture countain	(%)

Proctor at 0% of stone : kg/m3
Correction Factor:

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel %	67.2%	Cu = 50	D_{85} = 21.7	D_{15} = 0.6
Sand %	28.3%	Cc = 3	D_{60} = 13.6	D_{10} = 0.3
Silt/Clay %	4.5%		D_{50} = 10.3	

Notes: Material within specifications

Prepared By: Hugo Perron, Tech

Verified By: Christopher Gilbert, P. Eng.

Qikiqtaaluk SANA

Soil & Aggregates Analysis

CLIENT:	HATCH / BIM	**HATCH Project # :**	11-837
PROJET:	Expension Project - Site Crushing Services	**Q-SANA Project # :**	CC004A
		SAMPLE Number:	MP190008
SITE:	Baffinland, Milne Port	**DATE:**	2019-06-01

Type of Material	Type 5 Fill	**Sampling location:**	Type 5 Stockpile
Comments	32mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-05-31

Gradation (% Finer than) (ASTM C136-06)

Sieves				75 mm	50 mm	32 mm	25 mm	19 mm	13.2 mm	9.5 mm	4.75 mm	2.50 mm	1.25 mm	0.63 mm	0.315 mm	0.16 mm	0.08 mm
Cumulatives Results				100	100	100	96	81	64	52	36	27	20	15	11	8	4.7
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4.0
	max.					100	100			70	55	42		30			8.0

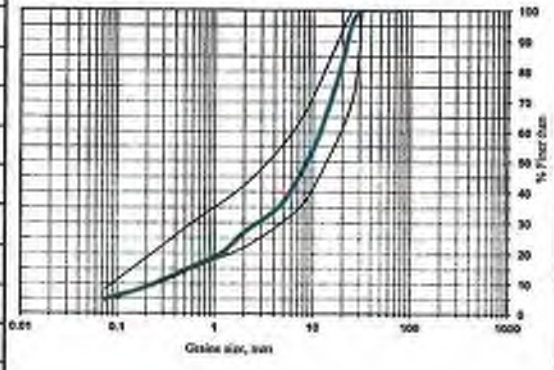
Other Standard Tests	Results	Specifications min.	Specifications max.

Proctor Essay (NQ 2501-255)	Résultats
Maximum Dry Density	(kg/m³)
Optimal Moisture contain	(%)

Proctor at 0% of stone : kg/m3
Correction Factor:

Type of material : Type 5 Fill: 32mm Minus

Gradation Curve



Gravel %	63.9%	Cu = 48	D_{85} = 20.6	D_{15} = 0.6
Sand %	31.4%	Cc = 3	D_{60} = 11.7	D_{10} = 0.2
Silt/Clay %	4.7%		D_{50} = 8.6	

Notes: Material within specifications

Prepared By: Hugo Perron, Tech

Verified By: Christopher Gilbert, P. Eng.

Qikiqtaaluk SANA

Soil & Aggregates Analysis

CLIENT:	HATCH / BIM	**HATCH Project # :**	11-837
PROJET:	Expansion Project - Site Crushing Services	**Q-SANA Project # :**	CC004A
		SAMPLE Number:	MP190003
SITE:	Baffinland, Milne Port	**DATE:**	2019-05-30

Type of Material	Type 5 Fil	**Sampling location:**	Type 5 Stockpile
Comments	32mm Minus		
Stone source	Quarry 1, Mine Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-05-30

Gradation (% Finer than) (ASTM C136-06)

Seives				75 mm	50 mm	31,5 mm	28 mm	20 mm	14 mm	10 mm	5 mm	2,50 mm	1,25 mm	0,63 mm	0,315 mm	0,16 mm	0,08 mm
Cumulatives Results				100	100	100	100	80	65	55	41	31	24	18	13	9	5,4
Individual Result																	
Spec.	min.					100	70			40	30	22		15			4,0
	max.					100	100			70	55	42		30			8,0

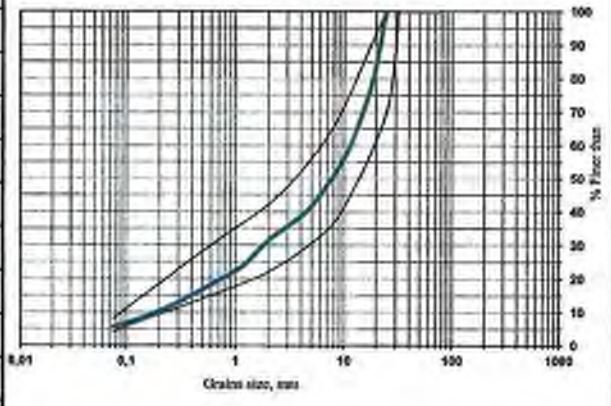
Other Standard Tests	Results	Specifications min.	Specifications max.

Proctor Essay (NQ 2501-255)	Résultats
Maximum Dry Density	(kg/m³)
Optimal Moisture countain	(%)

Proctor at 0% of stone : kg/m3
Correction Factor:

Type of material : Type 5 Fil: 32mm Minus

Gradation Curve



Gravel %	59,3%	Cu = 59	D_{85} = 20,3	D_{15} = 0,4
Sand %	35,2%	Cc = 2	D_{60} = 11,3	D_{10} = 0,2
Silt/Clay %	5,4%		D_{50} = 7,5	

Notes: Material within specifications

Prepared By: Hugo Perron, Tech

Verified By: Christopher Gilbert, P. Eng.

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP190027
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-14

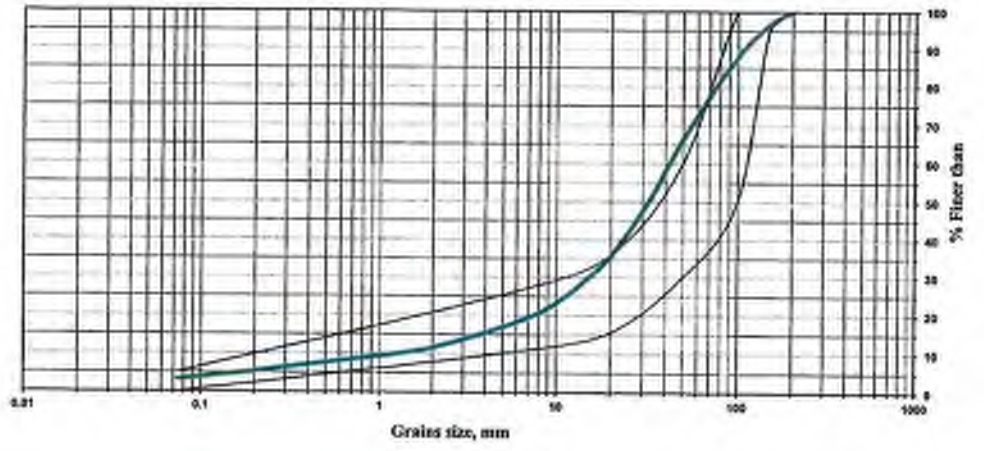
Type of Material:	Type 8 Fill	**Sampling location:**	Convayor C.S, Q1
Comments:	Jaw Run - 150mm Minus		Stockpile Type C.S
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-13

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	96	88	68	49	34	22	16	11	10	8	6	5	3.2
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	83.6%	Cu = 33	D_{60} = 91.6	D_{10} = 3.7
Sand %	13.2%	Cc = 4	D_{30} = 42.6	D_{15} = 1.3
Silt/Clay %	3.2%		D_{50} = 32.5	

Notes: Gap for the following sieves: 50 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N-C-t-u **Date:** 2019-07-15

LC: Informatique
DM: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190026
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-12

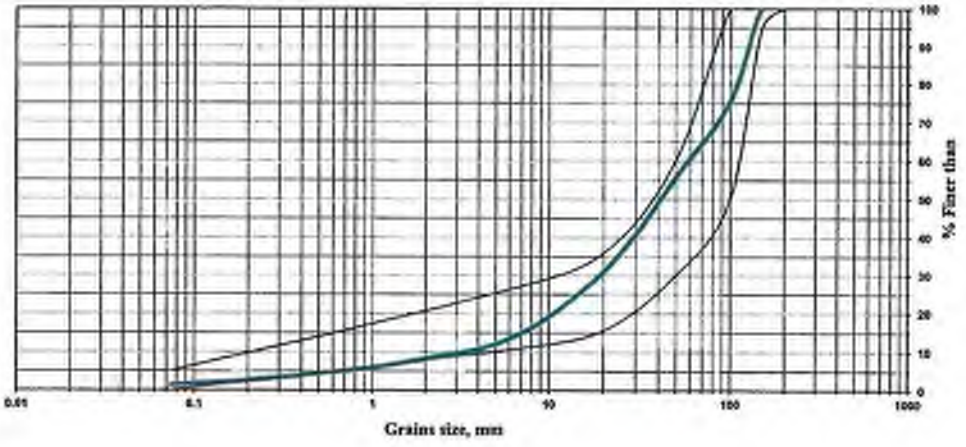
Type of Material:	Type 8 Fill	**Sampling location:**	Conveyor F.T, Q1
Comments:	Jaw Run - 150mm Minus		Stockpile Type 8 #3
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-12

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	75	56	42	30	18	12	8	6	5	3	2	1.4
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	88.4%	Cu = 18	D_{60} = #DIV/0!	D_{15} = 6.8
Sand %	10.2%	Cc = 2	D_{30} = 58.5	D_{10} = 3.2
Silt/Clay %	1.4%		D_{50} = 41.4	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N. C-L

Date: 2019-07-15

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
PROJECT:	Expansion Project - Site Crushing Services	**Contractor Project #:**	11-837
		SAMPLE number:	MP-190025
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-10

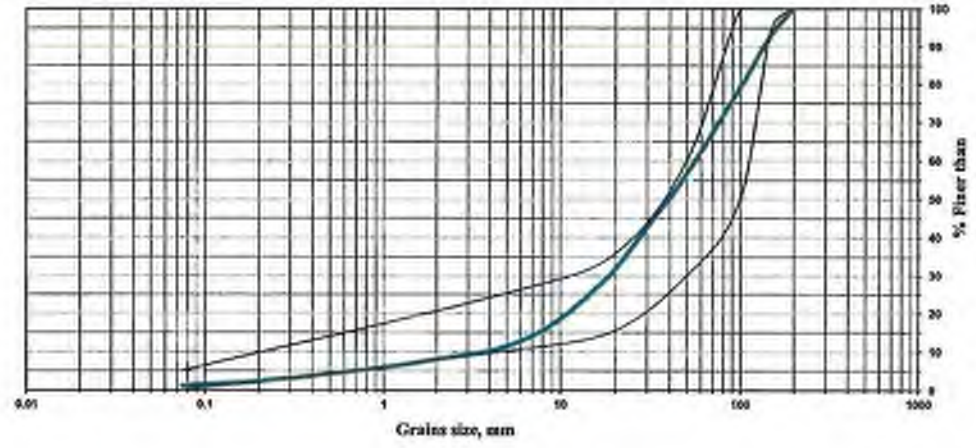
Type of Material:	Type 8 Fill	**Sampling location:**	CS Type 8 Stokcpile
Comments:	Jaw Run - 150mm Minus		
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-09

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	93	79	56	44	30	18	11	8	6	5	3	2	1.2
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	89.0%	Cu = 15	D_{60} = #DIV/0!	D_{10} = 7.2
Sand %	9.8%	Cc = 2	D_{30} = 55.9	D_{50} = 3.8
Silt/Clay %	1.2%		D_{50} = 39.5	

Notes: Gap for the following sieves: 150 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N-Côté **Date:** 2019-07-15

LC: Informatique
DV: 5 cm

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**Client Project #:**	CC004A
		Contractor Project #:	11-837
PROJECT:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190024
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-09

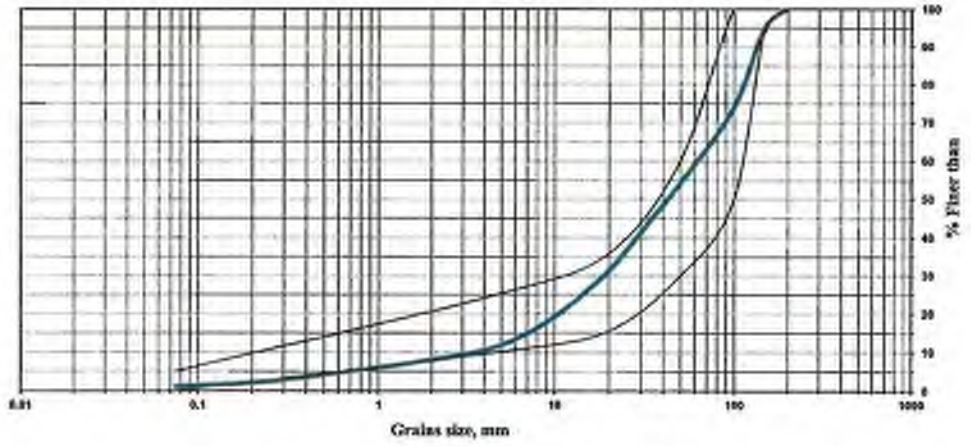
Type of Material:	Type 8 Fill	**Sampling location:**	FT Type 8 Stokcpile
Comments:	Jaw Run - 150mm Minus		
Stone source:	Quarry 1, Milne Port	**Sampled By:**	Maxime Côté
Type of Use:		**Sampling Date:**	2019-07-08

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	95	74	54	43	30	18	11	8	6	5	3	2	1.2
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	88.6%	Cu = 18	D_{85} = #DIV/0!	D_{15} = 6.8
Sand %	10.2%	Cc = 2	D_{60} = 61.8	D_{10} = 3.4
Silt/Clay %	1.2%		D_{50} = 42.7	

Notes: Aggregate compliant with specs

Prepared By: Maxime Côté

Verified By: Nicolas Tremlay

Signature: N. Côté

Date: 2019-07-15

Qiniqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190021
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-05

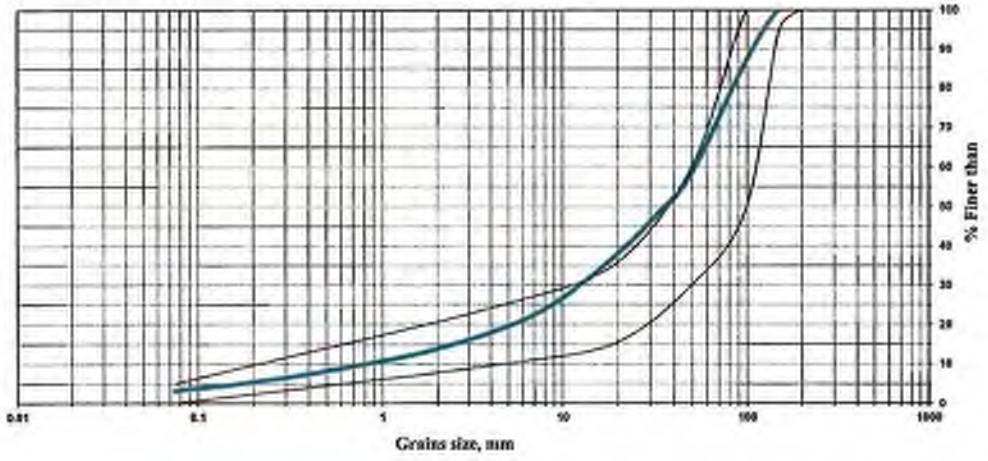
Type of Material	Type 8 Fill	**Sampling location:**	F.T Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Maxime Côté
Type of Use		**Sampling Date**	2019-07-04

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	100	87	58	47	37	26	19	14	11	9	7	5	3.2
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	81.0%	C_U = 62	D_{60} = 65.4	D_{15} = 2.5
Sand %	15.8%	C_C = 3	D_{30} = 52.2	D_{10} = 0.8
Silt/Clay %	3.2%		D_{50} = 35.7	

Notes: Gap for the following sieves: 19 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N Ltr

Date: 2019-07-15

LC : Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
		Q-Sana Project #:	11-837
PROJET:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190020
SITE:	Baffinland, Milne Port	**DATE:**	2019-07-03

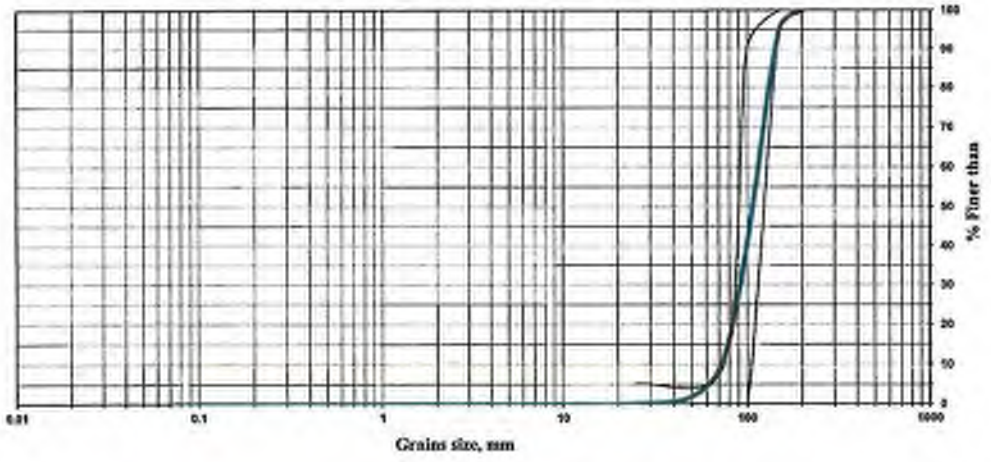
Type of Material	Type 19 Fill	**Sampling location:**	MP, Q1
Comments	150mm Clear		type 19* stockpile
Stone source	Quarry 1, Milne Port	**Sampled By**	Maxime Côté
Type of Use		**Sampling Date**	2019-07-03

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	75 mm	50 mm	25 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	95	40	12	2	0	0	0	0	0	0	0	0	0.0
Individual Result																	
Spec.	min.			100	95	0	0		0								
	max.			100	100	90	10		5								

Type of material : Type 19 Fill: 150mm Clear

Gradation Curve



Gravel/Stone%	100.0%	Cu = #DIV/0!	D_{85} = #DIV/0!	D_{15} = 77.6
Sand %	0.0%	Cc = #DIV/0!	D_{60} = #DIV/0!	D_{10} = 70.1
Silt/Clay %	0.0%		D_{50} = #DIV/0!	

Notes: Gap for the following sieves: 75 mm

Prepared By: Maxime Côté

Verified By: Nicolas Tremblay

Signature: N Côté

Date: 2019-07-15

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190019
SITE:	Baffinland, Milne Port	**DATE:**	19-06-29

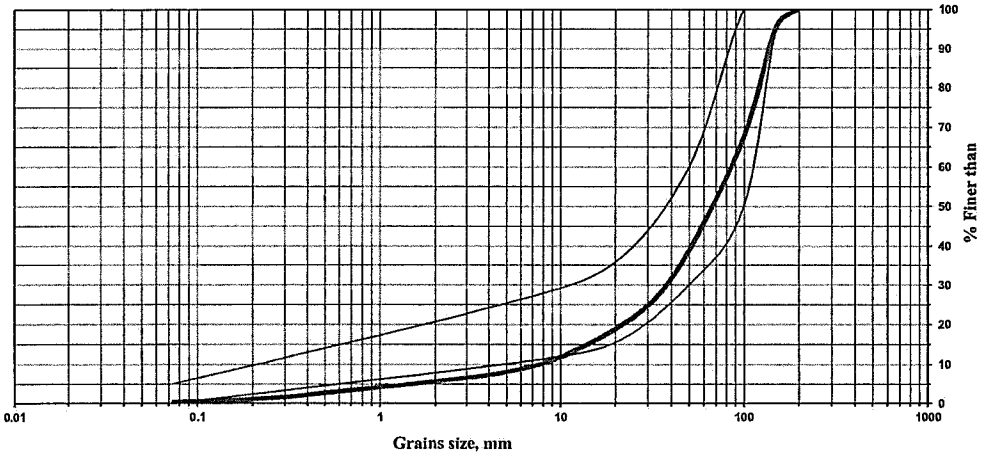
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 C.S. Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-29

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	96	67	39	26	18	11	8	6	4	3	2	1	0.4
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve

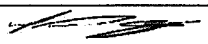


Gravel/Stone%	92.2%	Cu = 11	D_{85} = #DIV/0!	D_{15} = 13.8
Sand %	7.4%	Cc = 2	D_{60} = 83.6	D_{10} = 7.4
Silt/Clay %	0.4%		D_{50} = 65.7	

Notes: Gap for the following sieves: 4.75 mm

Prepared By: Hugo Perron, tech

Verified By: Maxime Côté

Signature: 

Date: 2019-07-15

LC : Informatique
DV: 5 ans

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190014
SITE:	Baffinland, Milne Port	**DATE:**	19-06-27

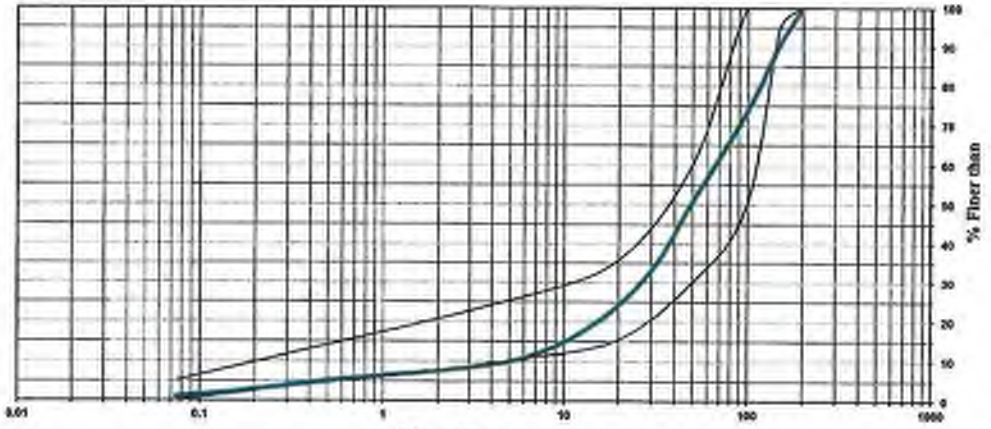
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 F.T. Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-27

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	91	73	50	35	23	14	10	7	7	5	4	2	1.0
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	90.4%	Cu = 13	D_{60} = #DIV/0!	D_{15} = 10.2
Sand %	8.6%	Cc = 2	D_{30} = 67.0	D_{10} = 5.0
Silt/Clay %	1.0%		D_{50} = 49.6	

Notes: Gap for the following sieves: 150 mm

Prepared By: Hugo Perron, tech

Verified By: Maxime Côté

Signature:

Date: 2019-07-02

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	INT-190017
SITE:	Baffinland, Milne Port	**DATE:**	19-06-25

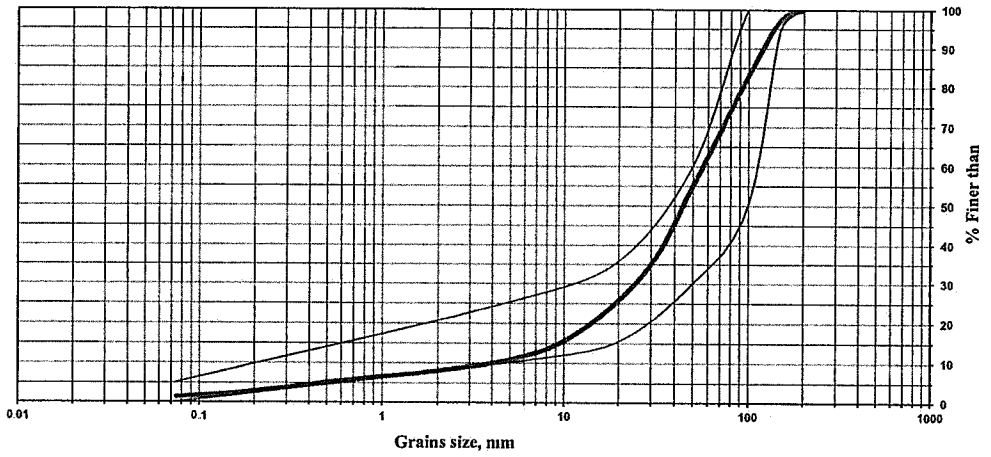
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 C.S. Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-25

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	97	83	55	37	25	15	11	8	7	5	4	2	1.3
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	89.4%	Cu = 15	D_{85} = #DIV/0!	D_{15} = 9.6
Sand %	9.2%	Cc = 3	D_{60} = 57.1	D_{10} = 3.9
Silt/Clay %	1.3%		D_{50} = 44.5	

Notes: Aggregate compliant with specs

Prepared By: Hugo Perron, tech

Verified By: Hugo Perron, tech

Signature:

Date: 2019-06-26

Groupe SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190016
SITE:	Baffinland, Mine Port	**DATE:**	19-06-22

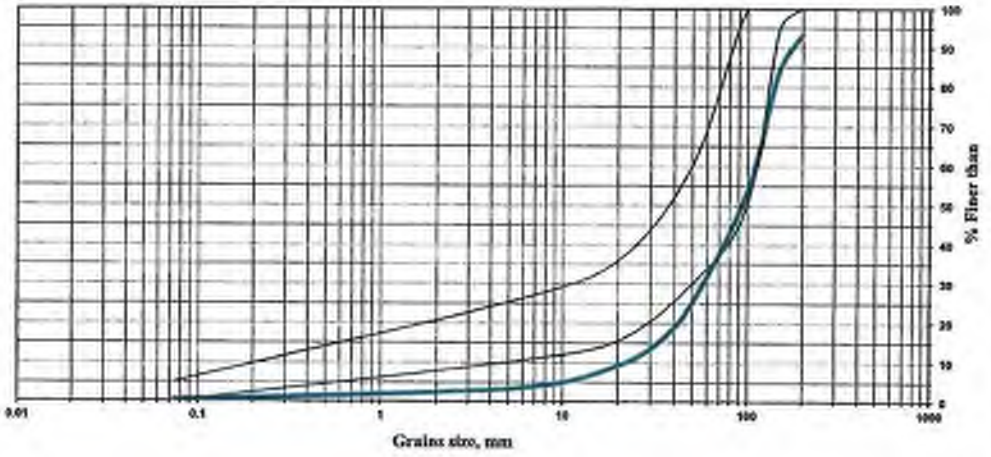
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Mine Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-22

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				93	84	53	25	14	9	5	3	2	2	1	1	1	0.5
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	98.9%	Cu = #DIV/0!	D_{60} = #DIV/0!	D_{15} = 32.9
Sand %	2.6%	Cc = #DIV/0!	D_{30} = #DIV/0!	D_{10} = 21.4
Silt/Clay %	0.5%		D_{50} = 93.1	

Notes: Gap for the following sieves: 200, 150, 50, 19, 4.75 mm

Prepared By: Hugo Perron

Verified By: Maxime Côté

Signature:

Date: 2019-07-15

cc: Informatique
DV: 3 exs

Groupe SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190015
SITE:	Baffinland, Milne Port	**DATE:**	19-06-19

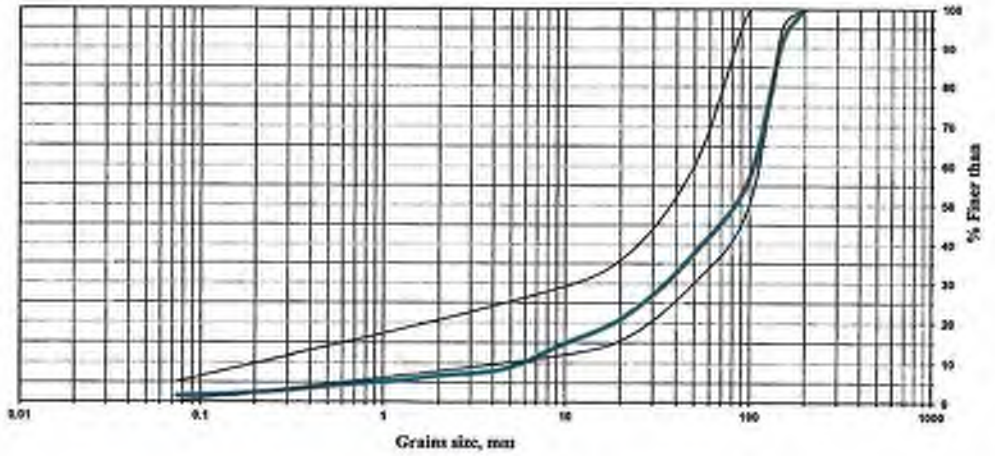
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Hugo Perron
Type of Use		**Sampling Date**	2019-06-19

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	91	56	38	28	20	14	8	7	5	4	3	2	1.4
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	91.6%	Cu = #DIV/0!	D_{60} = #DIV/0!	D_{15} = 10.4
Sand %	7.0%	Cc = #DIV/0!	D_{30} = #DIV/0!	D_{10} = 5.7
Silt/Clay %	1.4%		D_{85} = 79.0	

Notes: Gap for the following sieves: 150, 4.75 mm

Prepared By: Hugo Perron
Verified By: Maxime Côté
Signature:
Date: 2019-07-15

Qüisqueïnh SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
		Q-Sana Project #:	11-837
PROJET:	Expansion Project - Site Crushing Services	**SAMPLE number:**	MP-190014
SITE:	Baffinland, Milne Port	**DATE:**	19-06-08

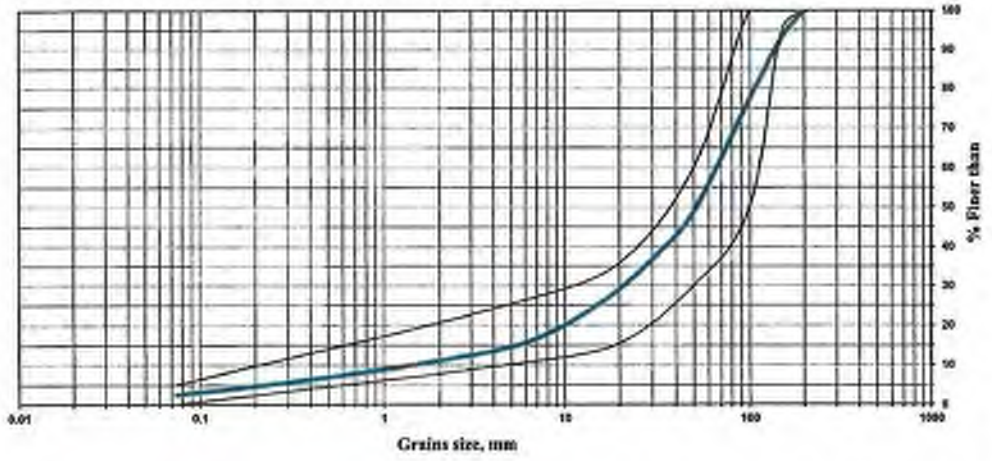
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Maxime Côté
Type of Use		**Sampling Date**	2019-06-07

Gradation (% Finer than) (ASTM C136-06)

Seives				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	93	77	49	38	28	19	14	11	9	7	6	4	2.5
Individual Result																	
Spec.	min.			100	95	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	85.8%	Cu = 45	D_{95} = #DIV/0!	D_{15} = 5.3
Sand %	11.7%	Cc = 4	D_{60} = 66.1	D_{10} = 1.5
Silt/Clay %	2.5%		D_{50} = 51.7	

Notes:	Gap for the following sieves: 150 mm
Prepared By:	Maxime Côté
Verified By:	Nicolas Tremblay
Signature:	N. Côté
Date:	2019-07-15

Qikiqtaaluk SANA

Soil & Aggregates
Sieve Analysis

CLIENT:	HATCH / BIM	**HATCH Project #:**	CC004A
PROJET:	Expansion Project - Site Crushing Services	**Q-Sana Project #:**	11-837
		SAMPLE number:	MP-190013
SITE:	Baffinland, Milne Port	**DATE:**	19-06-06

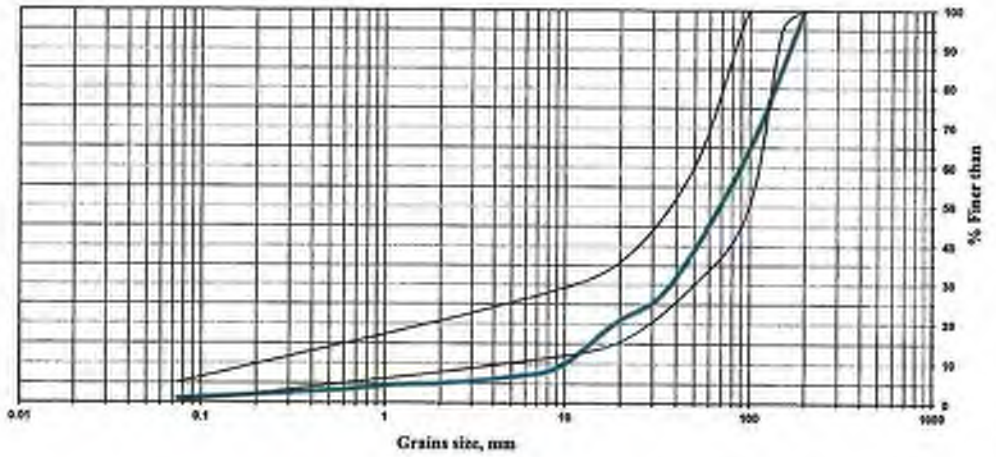
Type of Material	Type 8 Fill	**Sampling location:**	Type 8 Stockpile
Comments	Jaw Run - 150mm Minus		
Stone source	Quarry 1, Milne Port	**Sampled By**	Maxime Côté
Type of Use		**Sampling Date**	2019-06-06

Gradation (% Finer than) (ASTM C136-06)

Sieves				200 mm	150 mm	100 mm	50 mm	31.5 mm	19 mm	9.5 mm	4.75 mm	2.00 mm	1.18 mm	0.6 mm	0.315 mm	0.16 mm	0.075 mm
Cumulatives Results				100	85	64	39	28	20	9	5	5	5	3	2	2	1.0
Individual Result																	
Spec.	min.			100	85	50	30		15		10						0.0
	max.			100	100	100	60		35		25						5.0

Type of material : Type 8 Fill: Jaw Run - 150mm Minus

Gradation Curve



Gravel/Stone%	93.5%	Cu = 9	D_{85} = #DIV/0!	D_{15} = 13.7
Sand %	5.5%	Cc = 2	D_{60} = 89.2	D_{10} = 10.0
Silt/Clay %	1.0%		D_{50} = 68.0	

Notes: Gap for the following sieves: 150, 4.75 mm

Prepared By: Maxime Côté
Verified By: Nicolas Tremblay
Signature: N Côté **Date:** 2019-07-15

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	27-May-19	Report Number:	18SJ0001
File Number:	T08P003	Inspector:	R.chaisson
Client:	Hatch	Sampled By:	R.Chaisson
Project:	Baffinland	Sample Date:	27-May-19
Location:	Port Site	Copy To:	
Contractor:	Nuna		

TEST RESULTS

SIEVE SIZE (mm)			200	150	100	56	50	19	4.75	2.50	1.25	0.630	0.315	0.160	0.080
MAX % PASS SPEC			100.0	100.0	100.0		60.0	35.0	25.0						5.0
MIN % PASS SPEC			100.0	95.0	50.0		30.0	15.0	10.0						0.0
% PASS RESULTS			100.0	100.0	90.3	52.4		22.1	11.1	7.5	5.8	4.7	3.5	2.4	1.5

MATERIAL TYPE

Type 8

SIEVE METHOD

Washed

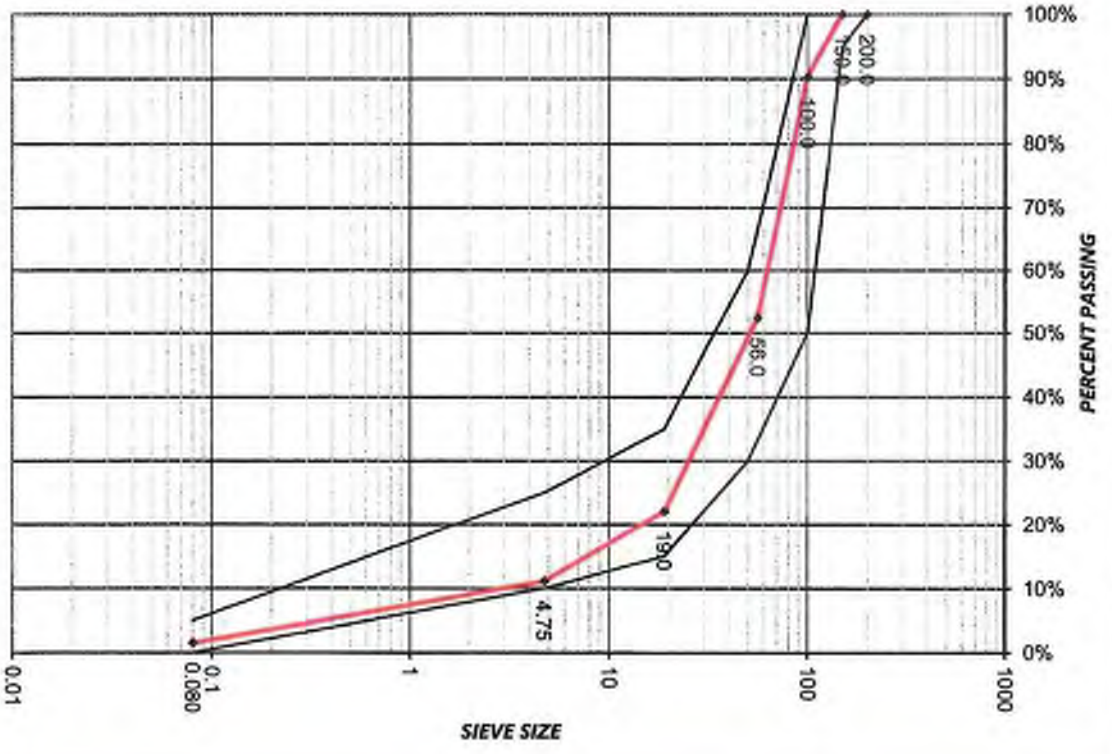
% FRACTURE

% MOISTURE

1.3%

GRADATIONS

GRAVEL	88.9%
SAND	9.6%
SILT/CLAY	1.5%



COMMENTS

Sample meets all project specifications for site.

Used 56mm sieve due to availability.

Reviewed By:

M Kirkbride P.Eng.

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	25-May-19	Report Number:	18SJ0001
File Number:	T08P002	Inspector:	R.chaisson
Client:	Hatch	Sampled By:	R.Chaisson
Project:	Baffinland	Sample Date:	25-May-19
Location:	Port Site	Copy To:	
Contractor:	Nuna		

TEST RESULTS

SIEVE SIZE (mm)			200	150	100	56	50	19	4.75	2.50	1.25	0.630	0.315	0.160	0.080
MAX % PASS SPEC			100.0	100.0	100.0		60.0	35.0	25.0						5.0
MIN % PASS SPEC			100.0	95.0	50.0		30.0	15.0	10.0						0.0
% PASS RESULTS			100.0	100.0	87.2	57.1		22.8	11.0	7.6	6.1	5.1	3.9	2.8	1.9

MATERIAL TYPE

Type 8

SIEVE METHOD

Washed

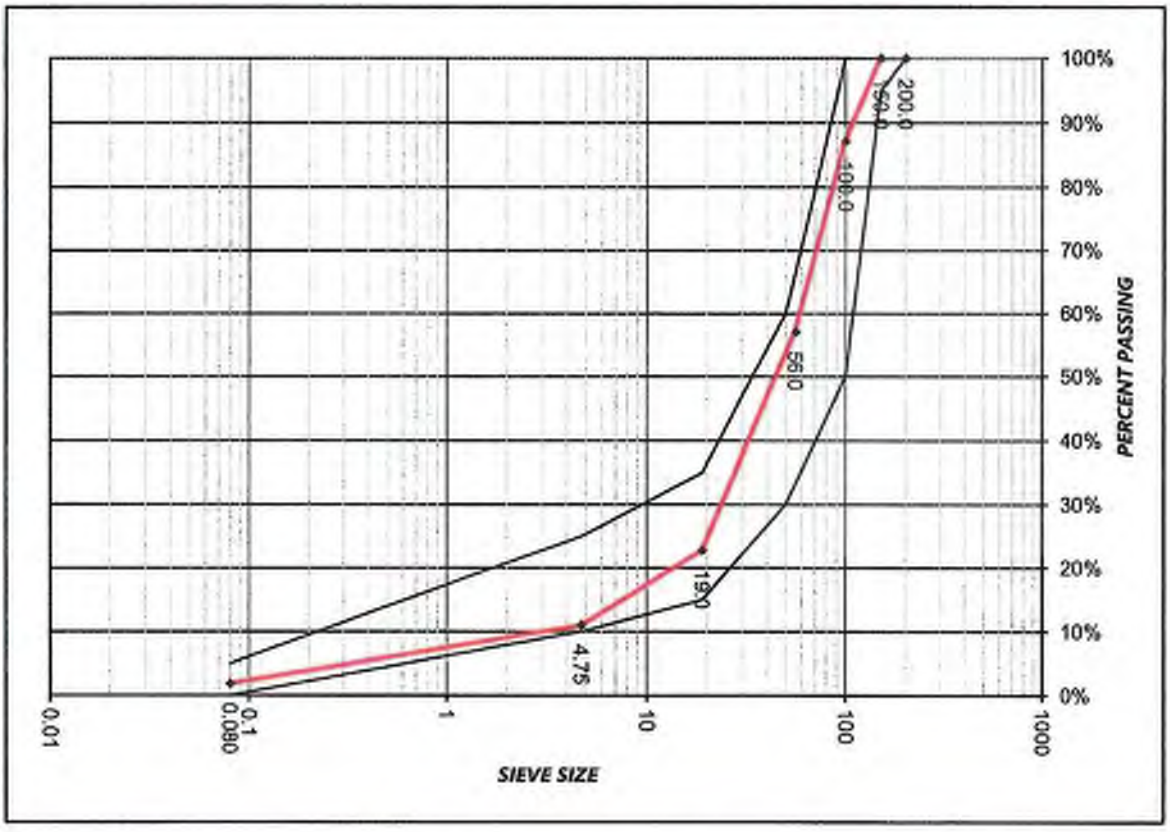
% FRACTURE

% MOISTURE

3.7%

GRADATIONS

GRAVEL	89.0%
SAND	9.2%
SILT/CLAY	1.9%



COMMENTS

Sample meets all project specifications for site.

Used 56mm sieve due to availability.

Reviewed By:

M Kirkbride P.Eng.

Allnorth

Split Sieve Analysis Report (Fines Wash)

2 Hunt's Lane, St. John's, NL A1B 2L3 Phone: 709-579-1492

ASTM C-117; C-136 CAN/CGSB-8.2M

Test Date:	10-May-19	Report Number:	18SJ0001
File Number:	T08P001	Inspector:	R.chaisson
Client:	Hatch	Sampled By:	R.Chaisson
Project:	Baffinland	Sample Date:	8-May-19
Location:	Port Site	Copy To:	
Contractor:	Nuna		

TEST RESULTS

SIEVE SIZE (mm)			200	150	100	56	50	19	4.75	2.50	1.25	0.630	0.315	0.160	0.080
MAX % PASS SPEC			100.0	100.0	100.0		60.0	35.0	25.0						5.0
MIN % PASS SPEC			100.0	95.0	50.0		30.0	15.0	10.0						0.0
% PASS RESULTS			100.0	100.0	88.0	45.3		39.7	15.8	13.1	9.8	6.6	3.6	2.0	1.1

MATERIAL TYPE

Type 8

SIEVE METHOD

Washed

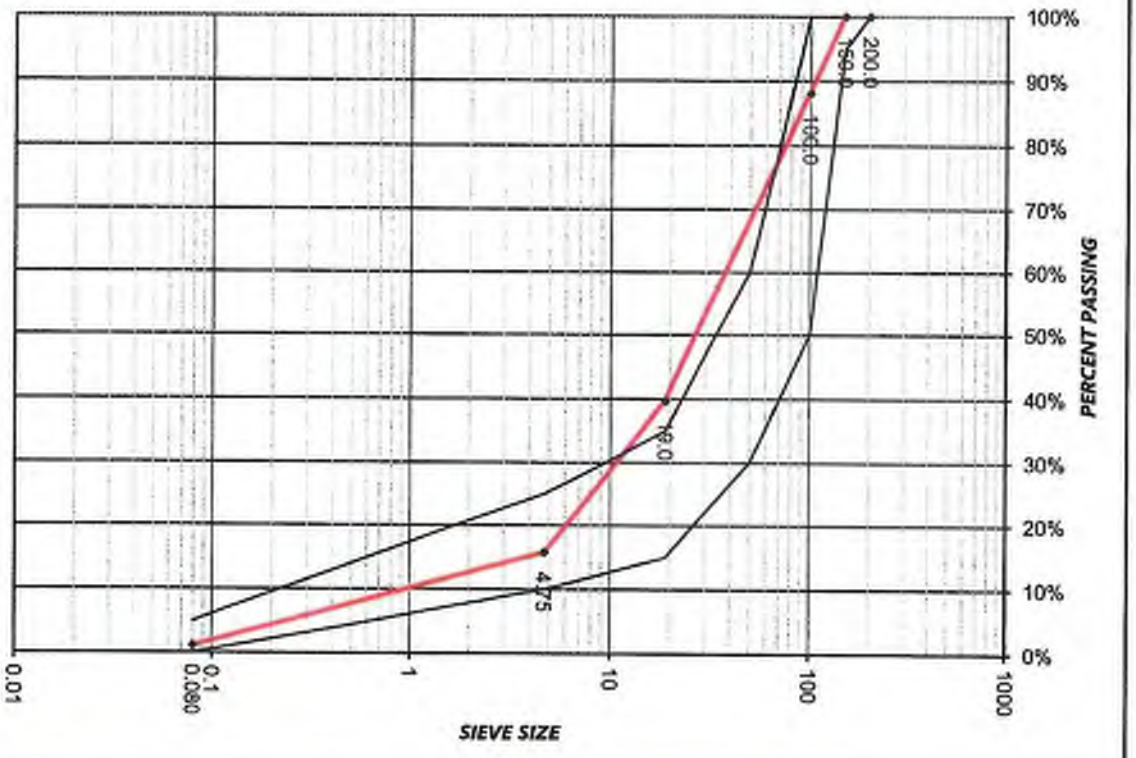
% FRACTURE

% MOISTURE

7.1%

GRADATIONS

GRAVEL	84.2%
SAND	14.6%
SILT/CLAY	1.1%



COMMENTS

Sample is fine on the 19mm (39.7% passing). All other sizes are within specification

Used 56mm sieve due to availability.

Reviewed By:

M Kirkbride P.Eng.

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-023

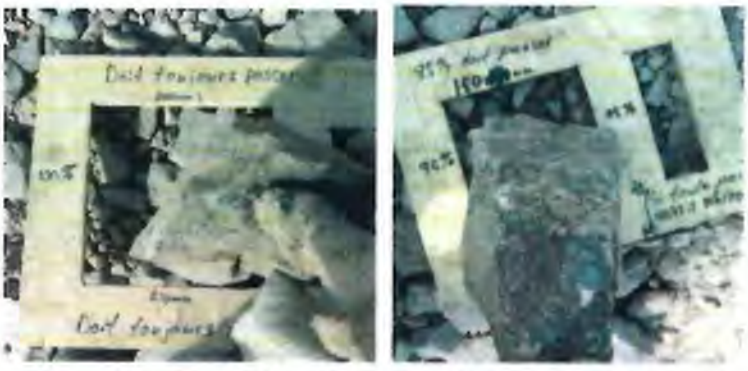
Inspection date 2019-07-01
Shift Day

Crucher type Primary F.T.
Jaw opening 4" 1/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	234		
2	Yes	Yes	No	1156		
3	Yes	Yes	No	2034		
4	Yes	Yes	No	3090		
5	Yes	Yes	No	3387		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures



Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature:

Date: 2019-07-01

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-022

Inspection date 2019-06-30
Shift Day

Crucher type Primary F.T.
Jaw opening 4" 1/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	183		
2	Yes	Yes	No	926		
3	Yes	Yes	No	2023		
4	Yes	Yes	No	3076		
5	Yes	Yes	No	4083		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-30

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-021

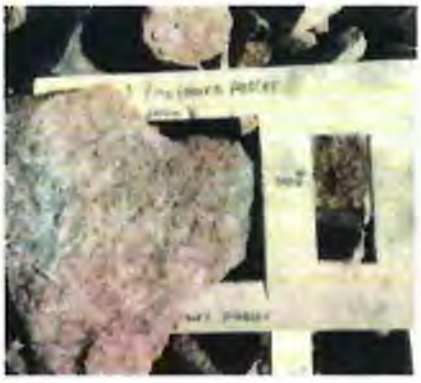
Inspection date 2019-06-29
Shift Day

Crucher type Primary F.T.
Jaw opening 4" 1/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	1065		
2	N/A	No	Yes	1634		
3	N/A	No	Yes	2570		
4	Yes	Yes	No	3482		
5	Yes	Yes	No	5007		
6						
7						
8						
9						
10						

Comments: Material is pretty much coarsy during the morning. Needs more fine material.
No particule retained over 200mm after jaw ajustment at 12h

Representatives Pictures



Biggest particule retained over 200mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-29

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-020

Inspection date 2019-06-29
Shift Day

Crucher type Primary C.S
Jaw opening 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	315		
2	Yes	Yes	No	1224		
3	Yes	Yes	No	1997		
4	Yes	Yes	No	2644		
5	Yes	Yes	No	4502		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-29

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-019

Inspection date 2019-06-28
Shift Day

Crucher type Primary F.T.
Jaw opening 4" 1/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	293		
2	Yes	Yes	No	1400		
3	Yes	Yes	No	1880		
4	Yes	Yes	No	2764		
5	Yes	Yes	No	4567		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-28

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-018

Inspection date 2019-06-28 **Crucher type** Primary C.S
Shift Day **Jaw opening** 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	143		
2	N/A	No	Yes	1417		
3	Yes	Yes	No	2264		
4	Yes	Yes	No	2920		
5	Yes	Yes	No	4120		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
One aggregate bigger than 200mm has been found.
Conform sieves analysis done.

Representatives Pictures

Biggest particule retained over 200mm

QC Name: Hugo Perron

QC Signature: HPA **Date:** 2019-06-28

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-017

Inspection date 2019-06-27 **Crucher type** Primary C.S.
Shift Day **Jaw opening** 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	145		
2	Yes	Yes	No	1310		
3	N/A	No	Yes	2348		
4	Yes	Yes	No	3248		
5	Yes	Yes	No	3996		
6						
7						
8						
9						
10						

Comments: Material is pretty much coarsy. Needs more fine material.
One aggregate bigger than 200mm has been found.

Representatives Pictures

Biggest particule retained over 200mm

QC Name: Hugo Perron

QC Signature: **Date:** 2019-06-27

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

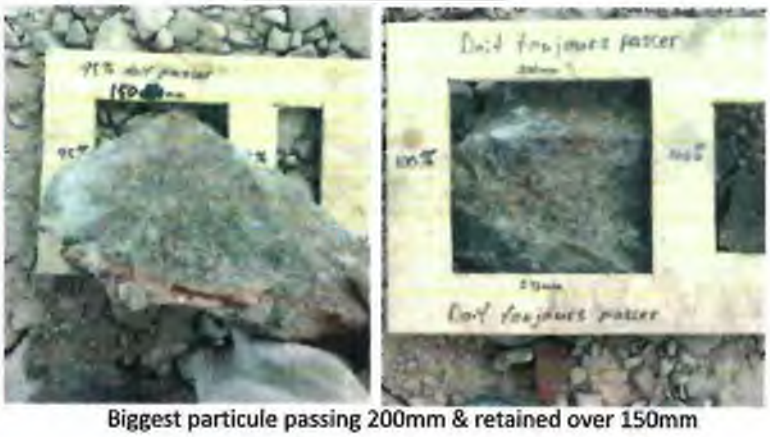
Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-014

Inspection date 2019-06-26 **Crucher type** Primary C.S
Shift Day **Jaw opening** 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	157		
2	Yes	Yes	No	1189		
3	Yes	Yes	No	2129		
4	Yes	Yes	No	2804		
5	Yes	Yes	No	4512		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures



Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP **Date:** 2019-06-26

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

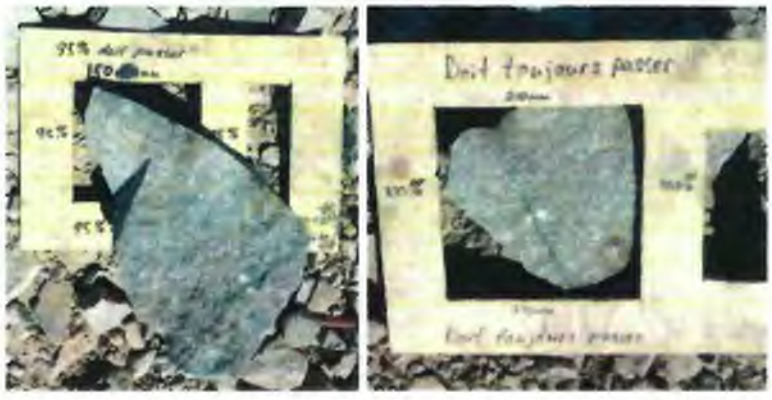
Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-013

Inspection date 2019-06-25 **Crucher type** Primary C.S
Shift Day **Jaw opening** 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	610		
2	Yes	Yes	No	1685		
3	Yes	Yes	No	2453		
4	Yes	Yes	No	2831		
5	Yes	Yes	No	3750		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures



Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP **Date:** 2019-06-25

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-012

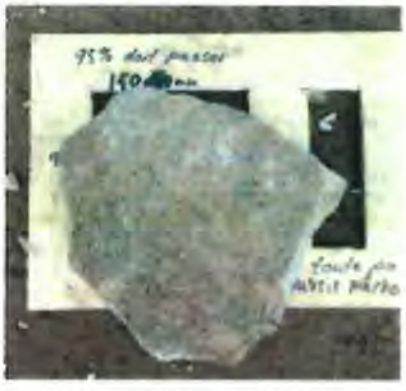
Inspection date 2019-06-24 **Crucher type** Primary C.S

Shift Day **Jaw opening** 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	336		
2	Yes	Yes	No	885		
3	Yes	Yes	No	1565		
4	Yes	Yes	No	2277		
5	Yes	Yes	No	2731		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm

Representatives Pictures



Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP **Date:** 2019-06-24

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-011

Inspection date 2019-06-23
Shift Day

Crucher type Primary C.S
Jaw opening 4" 1/2

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	152		
2	Yes	Yes	No	724		
3						
4						
5						
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm sieve
Only 2 inspections because downtime

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-23

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port	**Report Number**	CON-BVI-010

Inspection date 2019-06-22
Shift Day

Crucher type Primary C.S
Jaw opening 4" 3/8

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	Yes	286		
2	Yes	Yes	No	724		
3	Yes	Yes	No	1466		
4	Yes	Yes	No	2578		
5	Yes	Yes	No	3087		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule retained over 200mm sieve after the jaw adjustment.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Hugo Perron

QC Signature: HP

Date: 2019-06-22

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

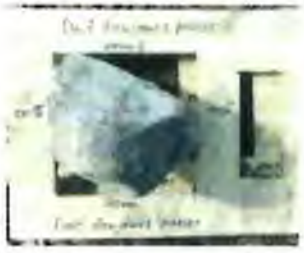
Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-11 **Crucher type** Primary C.S
Shift Day **Jaw opening** 4" 3/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	135		
2	Yes	Yes	No	486		
3	Yes	Yes	No	1282		
4	Yes	Yes	No	1417		
5	Yes	Yes	No	2513		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule reatained over 200mm sieve.

Representatives Pictures



Biggest particule passing 200mm & retained over 150mm

Bradford Watkin
QA/QC
Reviewed

QC Name: Maxime Côté

QC Signature: **Date:** 2019-06-11

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-10 **Crucher type** Primary C.S
Shift Day **Jaw opening** 4" 3/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	372		
2	Yes	Yes	No	858		
3	Yes	Yes	No	1932		
4	Yes	Yes	No	2815		
5						
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule reatained over 200mm sieve.
Only 4 tests due to downtime.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Maxime Côté

QC Signature: **Date:** 2019-06-10

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-09
Shift Day

Crucher type Primary C.S
Jaw opening 4" 3/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	867		
2	Yes	Yes	No	1820		
3	Yes	Yes	No	2911		
4	Yes	Yes	No	3946		
5	Yes	Yes	No	4856		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule reatained over 200mm sieve.
No production on 2019-06-08 Day shift

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Maxime Côté

QC Signature:

Date: 2019-06-09

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-07 **Crucher type** Primary C.S

Shift Day **Jaw opening** 4" 3/4

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	603		
2	Yes	Yes	No	1264		
3	Yes	Yes	No	2134		
4	Yes	Yes	No	2878		
5	Yes	Yes	No	3684		
6						
7						
8						
9						
10						

Comments: Coarse & Fine ratio is good.
No particule reatained over 200mm sieve.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Maxime Côté

QC Signature: **Date:** 2019-06-07

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-06
Shift Day

Crucher type Primary C.S
Jaw opening 5"

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	690		
2	Yes	Yes	No	1607		
3	Yes	Yes	No	2137		
4	Yes	Yes	No	2866		
5	Yes	Yes	No	3832		
6						
7						
8						
9						
10						

Comments: Material is pretty much coarsy. Needs more fine material.
No particule reatained over 200mm sieve.

Representatives Pictures

Biggest particule passing 200mm & retained over 150mm

QC Name: Maxime Côté

QC Signature:

Date: 2019-06-06

Qikiqtaaluk SANA

Type 8 Fill - Jaw Run - 150mm Minus
Benchmark & Visual Inspection

Client	HATCH/BIM	**HATCH Project Number**	CC004A
Project	Expantion Project - Sit Crushing Services	**Q-Sana Project Number**	11-837
Site	Baffinland, Milne Port		

Inspection date 2019-06-05 **Crucher type** Primary C.S
Shift Day **Jaw opening** 5"

Inspection #	Biggest particule found			Cumulative Tonnage	Stockpile Number	Bench Number
	Retained 150mm	Passing 200mm	Retained 200mm			
1	Yes	Yes	No	70		
2	Yes	Yes	No	460		
3	Yes	Yes	No	1303		
4	Yes	Yes	No	2191		
5	N/A	No	Yes	2431		
6						
7						
8						
9						
10						

Comments: Material is pretty much coarsy. Needs more fine material.
One particule bigger than 200mm have been found.

Representatives Pictures

Particule retained over 200mm

QC Name: Maxime Côté

QC Signature: **Date:** 2019-06-05

Material Inspection Report

Baffin Island Material Testing			
Date:	May 12th/2019	Project Number:	18SJ0001
Project Name:	Baffinland	Report Number:	
Location/ Area:	Port Site	Allnorth Site Representative:	R. Chaisson
Client Site Representative:	Marlon Coakley	Copy to:	

Visual Inspection Report

Material: Type 12

Based on visual inspections of Type 12 material stockpiled in the quarry, during placement and after compaction:

The Type 12 appears to visually meet gradation specification of coarse material with sufficient fines; no oversize present during placement, operators in quarry pick out all oversize material before loading trucks.
After compacting with 10T vibrating roller making 5+ passes, the Type 12 is well compacted with no deflection occurring when driven on by rock trucks and heavy equipment.

Based on visual observations this material meets the required specifications from document **"H353004-00000-280-078-002 – Quarried Fill materials".**

Allnorth Designate-Signature		Title:	Materials Technician	Date: 05/12/2019

NUNA

NUNA EAST LTD

(Section 6)

Request for Information (RFIs)

Baffinland

HATCH

Baffinland Iron Mines LP
Mary River Expansion Stage 3
H353004

Construction Management Form
Site Contracts Administration
Request for Information

Project Name:	Mary River Expansion Stage 3	Project Number:	H353004
CWP No:		RFI No:0026	
Contractor: Nuna East Ltd.		Contract No: CC006	
Initiated By: Brandon Urquhart		Cost impact?	Y☒ / N☐
Date of Submittal: 2019-03-11		Schedule Impact?	Y☒ / N☐

Information Requested:

Survey has determined that the elevation of the cables within the footprint of the module road are 0.8m above the final elevation of the road. Nuna requires instruction on how to proceed.

Reference Document No.	Revision	Title/Description
	0 0	

RFI Classification:

Design ☐ Construction ☐ Fabricator/Vendor ☐

Routine Request ☐ Clarification ☒ Other ☐

Project Response (attach additional data as required)

The cables need to be covered a minimum of .2m of sand a .25 m of 150 minus and .15 m 32 mm minus . The cables to have planking and warning tape above them

From the high point the road is to be graded at 2% slope maximum to East and West of the cable crossing .

At the high point the module road will raise by 1.4 m .

RFI Follow-up Requirements:

Contract Order Issued Yes ☐/No ☐ (Insert associated tracking #) Back-Charge Required (Yes ☐/No ☐)

As-Built Required Yes ☐/No ☐ Materials Required (Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	N Mills		March 21
Hatch Engineering Home Office ☒ Site ☐	F. Nooi		

E353004-CC006-400-465-0026

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Hatch Project Management			
Client (as required):			

Request for Information

Note: The response to this RFI is NOT an authorization to perform a change to the Contract. Work may proceed in accordance with the response only if such work involves NO change in cost or schedule. In the case where the response may involve change in cost or schedule, a Contractual Instrument must be issued by Hatch and received by the Contractor before the response can be executed. Where no Contractual Instrument is indicated, action must be taken in accordance with (reference appropriate Contract Sections that authorize execution of any change in schedule and cost).

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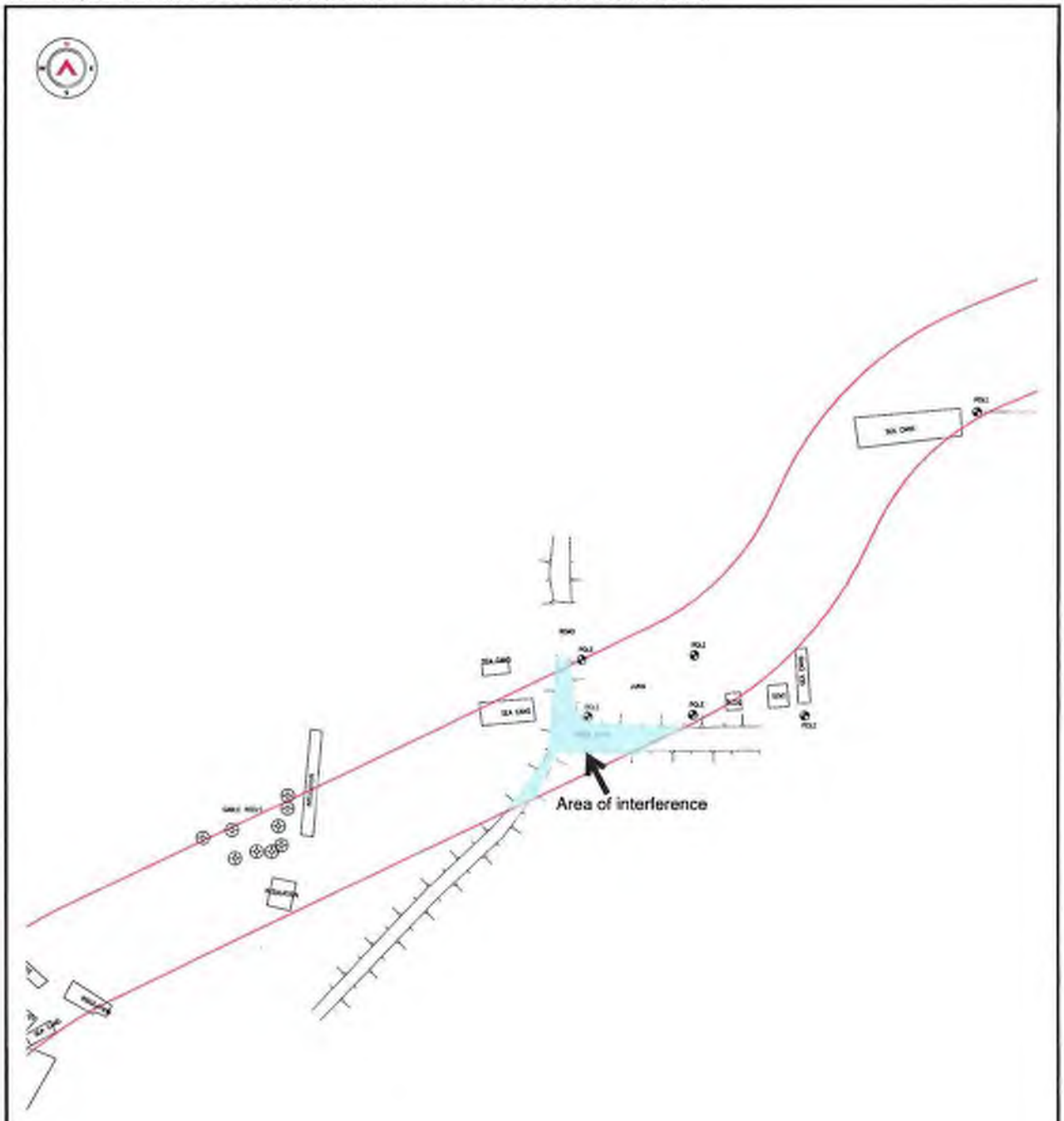

CLIENT: Baffinland	HATCH / Allnorth	TITLE: Modular Road Survey	PROJECT: Baffinland Iron Mines LP Mary River Expansion Project		
			DRG NO: 181117-MOD ROAD-ACL-SMR	REV: -	

Project Name:	Mary River Expansion Stage 3	Project Number:	H353004
CWP No: MOF Road		RFI No: 0038	
Contractor: Nuna East Ltd.		Contract No: CC006	
Initiated By: Ryan Dicker		Cost impact?	Y☐ / N☒
Date of Submittal: 2019-05-04		Schedule Impact?	Y☐ / N☒

Information Requested:
Nuna requires clarification regarding a discrepancy within the IFC drawings and the CAD files for the MOF Road

.

- The side slopes of the road embankment as shown on the IFC drawing typical sections (H353004-40000-221-273-0001-0001) is 1.5:1. The model provided shows a 2:1 slope.

Please clarify which slope is to be used for construction.

Reference Document No.	Revision	Title/Description
H353004-40000-221-273-0001-0001	0	PORT SITE MODULE, PRIMARY, SECONDARY ROADS TYPICAL CROSS SECTIONS

RFI Classification:

Design	☒	Construction	☐	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☒	Other	☐

Project Response: [attach sufficient detail as required]

The IFC drawings are correct. The model has been updated to reflect the 1:1.5 slopes. The long sections indicating the road detail levels remains the same.

RFI Follow-up Requirements:

Contract Order Issued Yes ☐/No ☐ (insert associated tracking #) Back-Charge Required (Yes ☐/No ☐)

As-Built Required Yes ☐/No ☐ Materials Required (Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	Vern Shaver	Roger Landry FOR V.S.	2019-05-09
Hatch Engineering Home Office ☐ Site ☐	Glen Peace	Glen Peace	2019-05-09
Hatch Project Management			

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Client (as required):			

Request for Information

Note: The response to this RFI is NOT an authorization to perform a change to the Contract. Work may proceed in accordance with the response only if such work involves NO change in cost or schedule. In the case where the response may involve change in cost or schedule, a Contractual instrument must be issued by Hatch and received by the Contractor before the response can be executed. Where no Contractual instrument is indicated, action must be taken in accordance with (reference appropriate Contract Sections that authorize execution of any change in schedule and cost).

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Project Name:	Mary River Expansion Stage 3	Project Number:	H353004
CWP No: MOF Road		RFI No: 0046	
Contractor: Nuna East Ltd.		Contract No: CC006	
Initiated By: Ryan Dicker		Cost impact?	Y☒ / N☐
Date of Submittal: 2019-06-03		Schedule Impact?	Y☒ / N☐

Information Requested:

Nuna is constructing the MOF road between LP3 and the PSC parking area. A portion of this road passes to the west of the Weatherhaven camp. In this area, a portion of the MOF road will cover a twin culvert that passes through the existing road (see sketch and photo below). The outlet of the culvert would be under the MOF road and will need to be removed prior to construction of that portion of the road. Please confirm that this twin culvert needs to be removed for the MOF construction. Advise if any additional water control structures are required in this area.

Additionally, there is a culvert at the north end of the same pond that likely needs to be to removed as well. See below sketch and photo. Please confirm this culvert is to be removed and if there are additional water control measures required.

The MOF road is constructed over top of some fill recently placed by BIM Operations (see photos below). The area that this material is placed in was previously a small pond (a portion of which is still existing). Please advise if this material is acceptable for placement of material for the MOF road. Alternatively, if it is not an acceptable base material, please indicate the required sub-excavation required.

Reference Document No.	Revision	Title/Description
H353004-40000-223-271-0007-0002	0	Module Delivery Road Plan and Profile 2 of 4

RFI Classification:

Design	☐	Construction	☒	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☐	Other	☐

Confirmed the twin and single culvert draining to the west can be removed. A new culvert south of the existing twin culvert location will be required. A water management plan need to be in place until the new culvert is installed, sketch below.

If the material meets the fill material spec and can be compacted as per the placement of fill material specification it may be used. A proof-roll test of the existing fill material shall be conducted using a loaded CAT 745 haul truck and report prepared by QA. Fill material for the MOF road can be placed on the existing area if no visible deflections are observed during the test. The area will be sub-excavated if deflections are observed. QA shall be present during the excavation to determine if the sub-excavated base is suitable for fill placement.

RFI Follow-up Requirements:

Contract Order Issued	Yes ☐/No ☐ ([insert associated tracking #])	Back-Charge Required	(Yes ☐/No ☐)
As-Built Required	Yes ☐/No ☐	Materials Required	(Yes ☐/No ☐)

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RFI Receipts and Approvals			
Stakeholder	**Name**	**Signature**	**Date <YYYY-MM-DD>**
Hatch Construction Management	marlon.coakley@hatch.com	Digitally signed by marlon.coakley@hatch.com DN: cn=marlon.coakley@hatch.com Date: 2019.06.27 05:25:29 -04'00'	
Hatch Engineering Home Office ☐ Site ☐			
Hatch Project Management			
Client (as required):	Leonel Dabor	L.O.Dabor	2019-06-04

Request for Information

Note: The response to this RFI is NOT an authorization to perform a change to the Contract. Work may proceed in accordance with the response only if such work involves NO change in cost or schedule. In the case where the response may involve change in cost or schedule, a Contractual instrument must be issued by Hatch and received by the Contractor before the response can be executed. Where no Contractual instrument is indicated, action must be taken in accordance with (reference appropriate Contract Sections that authorize execution of any change in schedule and cost).

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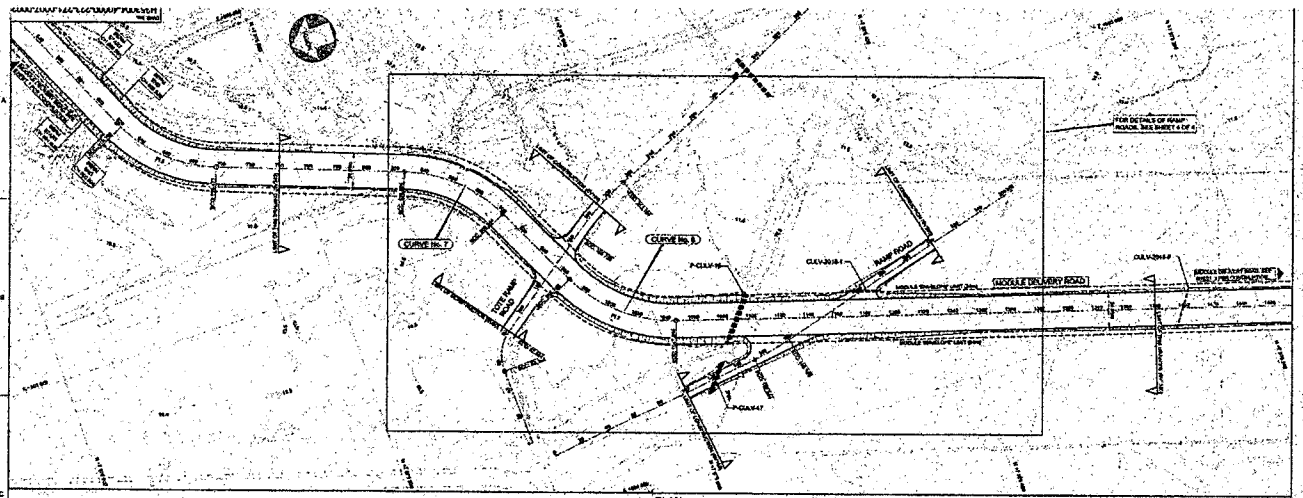
Single Culvert
draining to the west
Twin Culverts
draining to the west
Single Culvert
draining to the west

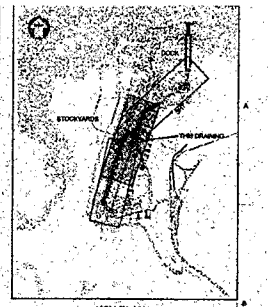
Single Culvert at North end of Pond next to Weatherhaven

Twin Culverts West
of Weatherhaven

Area of Previously Placed Fill Within MOF Footprint



PLAN
SCALE 1:1000



KEY PLAN

NOTES:

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]

CULVERT SCHEDULE LEGEND:

W	WIDTH OF CULVERT
H	HEIGHT OF CULVERT
S	SLOPE OF CULVERT
	C = END WALL & S = WINGS
	CW = END WALL & S = WINGS
H	CULVERT (ELLIPSE), TOP (RISE)
	H = 0.78 x (RISE)
	W = 0.78 x (SPAN)
TYPE	TYPE OF CULVERT
INS INV.	CULVERT UPSTREAM INVERT ELEVATION
OUT INV.	PIPE INVERT DOWNSTREAM INVERT ELEVATION
L	LENGTH OF PIPE
	L = AS APPROX
	CULVERT IN LITE
LENGTH	LENGTH OF CULVERT
CMP	CORRUGATED METAL PIPE

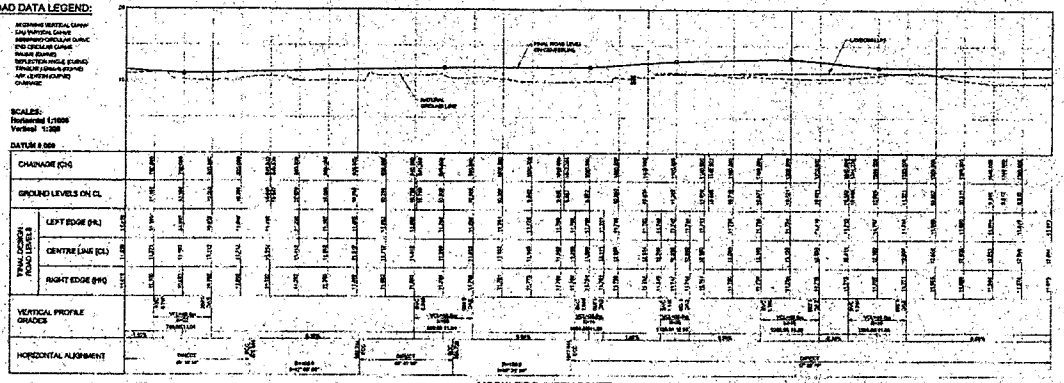
CULVERT SCHEDULE
(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DWG. No. [illegible])

CULVERT ID	TYPE DRAWING	NUMBER OF PIPES	H (mm)	LENGTH (m)	S (mm)	W (mm)	TYPE	CULVERT AT UPSTREAM NORTHING	CULVERT AT UPSTREAM EASTING	INS INV. ELEV (m)	INV SLP RATIO	CULVERT AT DOWNSTREAM NORTHING	CULVERT AT DOWNSTREAM EASTING	OUS INV. ELEV (m)	INV SLP RATIO	C (mm)	L (m)	H (m)	SKEW (DEGREES)
P-CULV-16	H	2	1200	30.300	0	3600	CMP	7976295.348	659292.43	6.704	H	7976344.664	659214.731	6.696	H	600	4.5	6.4	21
CULV-2018-1	H	2	600	27.300	0	900	CMP	7976444.609	659279.919	11.179	H	7976476.569	659286.143	11.135	H	300	3.2	6.3	47

ROAD DATA LEGEND:

VPI	ASCENDING VERTICAL CURVE
VPC	SAG PARABOLIC CURVE
BCC	ASCENDING CIRCULAR CURVE
ECC	END CIRCULAR CURVE
R	RADIUS (CURVE)
DB	DEFLECTION ANGLE (CURVE)
T	TANGENT (CURVE & STCHD)
A	ARC LENGTH (CURVE)
CH	CHAINAGE

SCALES:
Horizontal 1:1000
Vertical 1:200
DATUM 0.000



MODULE DELIVERY ROUTE
FROM CH.740.000 TO CH.1380.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
PVI	0.000	659972.299	7 974 709.000	1.414 Hz
BCC	14.142	659957.299	7 974 695.000	R 100.000m
ECC	145.042	659961.299	7 974 567.000	DB 82.7°CW
PVI	289.919	659944.424	7 974 423.000	R 300.000m
BCC	304.061	659947.218	7 974 409.000	DB 27.0°CW
ECC	334.061	659941.218	7 974 379.000	DB 27.0°CW
PVI	354.884	659937.218	7 974 358.000	R 70.000m
BCC	369.884	659934.218	7 974 343.000	DB 12.2°CW
ECC	439.884	659920.218	7 974 273.000	DB 12.2°CW
PVI	514.148	659907.218	7 974 199.000	R 100.000m
BCC	529.148	659904.218	7 974 184.000	DB 8.6°CW
ECC	559.148	659898.218	7 974 154.000	DB 8.6°CW
PVI	584.444	659893.218	7 974 129.000	R 100.000m
BCC	599.444	659890.218	7 974 114.000	DB 8.6°CW
ECC	629.444	659884.218	7 974 084.000	DB 8.6°CW
PVI	654.740	659879.218	7 974 059.000	R 100.000m
BCC	669.740	659876.218	7 974 044.000	DB 8.6°CW
ECC	699.740	659870.218	7 974 014.000	DB 8.6°CW
PVI	724.036	659865.218	7 973 989.000	R 100.000m
BCC	739.036	659862.218	7 973 974.000	DB 8.6°CW
ECC	769.036	659856.218	7 973 944.000	DB 8.6°CW
PVI	794.332	659851.218	7 973 919.000	R 100.000m
BCC	809.332	659848.218	7 973 904.000	DB 8.6°CW
ECC	839.332	659842.218	7 973 874.000	DB 8.6°CW
PVI	864.628	659837.218	7 973 849.000	R 100.000m
BCC	879.628	659834.218	7 973 834.000	DB 8.6°CW
ECC	909.628	659828.218	7 973 804.000	DB 8.6°CW
PVI	934.924	659823.218	7 973 779.000	R 100.000m
BCC	949.924	659820.218	7 973 764.000	DB 8.6°CW
ECC	979.924	659814.218	7 973 734.000	DB 8.6°CW
PVI	1005.220	659809.218	7 973 709.000	R 100.000m
BCC	1020.220	659806.218	7 973 694.000	DB 8.6°CW
ECC	1050.220	659800.218	7 973 664.000	DB 8.6°CW
PVI	1075.516	659795.218	7 973 639.000	R 100.000m
BCC	1090.516	659792.218	7 973 624.000	DB 8.6°CW
ECC	1120.516	659786.218	7 973 594.000	DB 8.6°CW
PVI	1145.812	659781.218	7 973 569.000	R 100.000m
BCC	1160.812	659778.218	7 973 554.000	DB 8.6°CW
ECC	1190.812	659772.218	7 973 524.000	DB 8.6°CW
PVI	1216.108	659767.218	7 973 499.000	R 100.000m
BCC	1231.108	659764.218	7 973 484.000	DB 8.6°CW
ECC	1261.108	659758.218	7 973 454.000	DB 8.6°CW
PVI	1286.404	659753.218	7 973 429.000	R 100.000m
BCC	1301.404	659750.218	7 973 414.000	DB 8.6°CW
ECC	1331.404	659744.218	7 973 384.000	DB 8.6°CW
PVI	1356.700	659739.218	7 973 359.000	R 100.000m
BCC	1371.700	659736.218	7 973 344.000	DB 8.6°CW
ECC	1401.700	659730.218	7 973 314.000	DB 8.6°CW
PVI	1426.996	659725.218	7 973 289.000	R 100.000m
BCC	1441.996	659722.218	7 973 274.000	DB 8.6°CW
ECC	1471.996	659716.218	7 973 244.000	DB 8.6°CW
PVI	1497.292	659711.218	7 973 219.000	R 100.000m
BCC	1512.292	659708.218	7 973 204.000	DB 8.6°CW
ECC	1542.292	659702.218	7 973 174.000	DB 8.6°CW
PVI	1567.588	659697.218	7 973 149.000	R 100.000m
BCC	1582.588	659694.218	7 973 134.000	DB 8.6°CW
ECC	1612.588	659688.218	7 973 104.000	DB 8.6°CW
PVI	1637.884	659683.218	7 973 079.000	R 100.000m
BCC	1652.884	659680.218	7 973 064.000	DB 8.6°CW
ECC	1682.884	659674.218	7 973 034.000	DB 8.6°CW
PVI	1708.180	659669.218	7 973 009.000	R 100.000m
BCC	1723.180	659666.218	7 972 994.000	DB 8.6°CW
ECC	1753.180	659660.218	7 972 964.000	DB 8.6°CW
PVI	1778.476	659655.218	7 972 939.000	R 100.000m
BCC	1793.476	659652.218	7 972 924.000	DB 8.6°CW
ECC	1823.476	659646.218	7 972 894.000	DB 8.6°CW
PVI	1848.772	659641.218	7 972 869.000	R 100.000m
BCC	1863.772	659638.218	7 972 854.000	DB 8.6°CW
ECC	1893.772	659632.218	7 972 824.000	DB 8.6°CW
PVI	1919.068	659627.218	7 972 799.000	R 100.000m
BCC	1934.068	659624.218	7 972 784.000	DB 8.6°CW
ECC	1964.068	659618.218	7 972 754.000	DB 8.6°CW
PVI	1989.364	659613.218	7 972 729.000	R 100.000m
BCC	2004.364	659610.218	7 972 714.000	DB 8.6°CW
ECC	2034.364	659604.218	7 972 684.000	DB 8.6°CW
PVI	2059.660	659599.218	7 972 659.000	R 100.000m
BCC	2074.660	659596.218	7 972 644.000	DB 8.6°CW
ECC	2104.660	659590.218	7 972 614.000	DB 8.6°CW
PVI	2129.956	659585.218	7 972 589.000	R 100.000m
BCC	2144.956	659582.218	7 972 574.000	DB 8.6°CW
ECC	2174.956	659576.218	7 972 544.000	DB 8.6°CW
PVI	2200.252	659571.218	7 972 519.000	R 100.000m
BCC	2215.252	659568.218	7 972 504.000	DB 8.6°CW
ECC	2245.252	659562.218	7 972 474.000	DB 8.6°CW
PVI	2270.548	659557.218	7 972 449.000	R 100.000m
BCC	2285.548	659554.218	7 972 434.000	DB 8.6°CW
ECC	2315.548	659548.218	7 972 404.000	DB 8.6°CW
PVI	2340.844	659543.218	7 972 379.000	R 100.000m
BCC	2355.844	659540.218	7 972 364.000	DB 8.6°CW
ECC	2385.844	659534.218	7 972 334.000	DB 8.6°CW
PVI	2411.140	659529.218	7 972 309.000	R 100.000m
BCC	2426.140	659526.218	7 972 294.000	DB 8.6°CW
ECC	2456.140	659520.218	7 972 264.000	DB 8.6°CW
PVI	2481.436	659515.218	7 972 239.000	R 100.000m
BCC	2496.436	659512.218	7 972 224.000	DB 8.6°CW
ECC	2526.436	659506.218	7 972 194.000	DB 8.6°CW
PVI	2551.732	659501.218	7 972 169.000	R 100.000m
BCC	2566.732	659498.218	7 972 154.000	DB 8.6°CW
ECC	2596.732	659492.218	7 972 124.000	DB 8.6°CW
PVI	2622.028	659487.218	7 972 099.000	R 100.000m
BCC	2637.028	659484.218	7 972 084.000	DB 8.6°CW
ECC	2667.028	659478.218	7 972 054.000	DB 8.6°CW
PVI	2692.324	659473.218	7 972 029.000	R 100.000m
BCC	2707.324	659470.218	7 972 014.000	DB 8.6°CW
ECC	2737.324	659464.218	7 971 984.000	DB 8.6°CW
PVI	2762.620	659459.218	7 971 959.000	R 100.000m
BCC	2777.620	659456.218	7 971 944.000	DB 8.6°CW
ECC	2807.620	659450.218	7 971 914.000	DB 8.6°CW
PVI	2832.916	659445.218	7 971 889.000	R 100.000m
BCC	2847.916	659442.218	7 971 874.000	DB 8.6°CW
ECC	2877.916	659436.218	7 971 844.000	DB 8.6°CW
PVI	2903.212	659431.218	7 971 819.000	R 100.000m
BCC	2918.212	659428.218	7 971 804.000	DB 8.6°CW
ECC	2948.212	659422.218	7 971 774.000	DB 8.6°CW
PVI	2973.508	659417.218	7 971 749.000	R 100.000m
BCC	2988.508	659414.218	7 971 734.000	DB 8.6°CW
ECC	3018.508	659408.218	7 971 704.000	DB 8.6°CW
PVI	3043.804	659403.218	7 971 679.000	R 100.000m
BCC	3058.804	659400.218	7 971 664.000	DB 8.6°CW
ECC	3088.804	659394.218	7 971 634.000	DB 8.6°CW
PVI	3114.100	659389.218	7 971 609.000	R 100.000m
BCC	3129.100	659386.218	7 971 594.000	DB 8.6°CW
ECC	3159.100	659380.218	7 971 564.000	DB 8.6°CW
PVI	3184.396	659375.218	7 971 539.000	R 100.000m
BCC	3199.396	659372.218	7 971 524.000	DB 8.6°CW
ECC	3229.396	659366.218	7 971 494.000	DB 8.6°CW
PVI	3254.692	659361.218	7 971 469.000	R 100.000m
BCC	3269.692	659358.218	7 971 454.000	DB 8.6°CW
ECC	3299.692	659352.218	7 971 424.000	DB 8.6°CW
PVI	3324.988	659347.218	7 971 399.000	R 100.000m
BCC	3339.988	659344.218	7 971 384.000	DB 8.6°CW
ECC	3369.988	659338.218	7 971 354.000	DB 8.6°CW
PVI	3395.284	659333.218	7 971 329.000	R 100.000m
BCC	3410.284	659330.218	7 971 314.000	DB 8.6°CW
ECC	3440.284	659324.218	7 971 284.000	DB 8.6°CW
PVI	3465.580	659319.218	7 971 259.000	R 100.000m
BCC	3480.580	659316.218	7 971 244.000	DB 8.6°CW
ECC	3510.580	659310.218	7 971 214.000	DB 8.6°CW
PVI	3535.876	659305.218	7 971 189.000	R 100.000m
BCC	3550.876	659302.218	7 971 174.000	DB 8.6°CW
ECC	3580.876	659296.218	7 971 144.000	DB 8.6°CW
PVI	3606.172	659291.218	7 971 119.000	R 100.000m
BCC	3621.172	659288.218	7 971 104.000	DB 8.6°CW
ECC	3651.172	659282.218	7 971 074.000	DB 8.6°CW
PVI	3676.468	659277.218	7 971 049.000	R 100.000m
BCC	3691.468	659274.218	7 971 034.000	DB 8.6°CW
ECC	3721.468	659268.218	7 971 004.000	DB 8.6°CW
PVI	3746.764	659263.218	7 970 979.000	R 100.000m
BCC	3761.764	659260.218	7 970 964.000	DB 8.6°CW
ECC	3791.764	659254.218	7 970 934.000	DB 8.6°CW
PVI	3817.060	659249.218	7 970 909.000	R 100.000m
BCC	3832.060	659246.218	7 970 894.000	DB 8.6°CW
ECC	3862.060	659240.218	7 970 864.000	DB 8.6°CW
PVI	3887.356	659235.218	7 970 839.000	R 100.000m
BCC	3902.356	659232.218	7 970 824.000	DB 8.6°CW
ECC	3932.356	659226.218	7 970 794.000	DB 8.6°CW
PVI	3957.652	659221.218	7 970 769.000	R 100.000m
BCC	3972.652	659218.218	7 970 754.000	DB 8.6°CW
ECC	4002.652	659212.218	7 970 724.000	DB 8.6°CW
PVI	4027.948	659207.218	7 970 699.000	R 100.000m
BCC	4042.948	659204.218	7 970 684.000	DB 8.6°CW
ECC	4072.948	659198.218	7 970 654.000	DB 8.6°CW
PVI	4098.244	659193.218	7 970 629.000	R 100.000m
BCC	4113.244	659190.218	7 970 614.000	DB 8.6°CW
ECC	4143.244	659184.218	7 970 584.000	DB 8.6°CW
PVI	4168.540	659179.218	7 970 559.000	R 100.000m
BCC	4183.540	659176.218	7 970 544.000	DB 8.6°CW
ECC	4213.540	659170.218	7 970 514.000	DB 8.6°CW
PVI	4238.836	659165.218	7 970 489.000	R 100.000m
BCC	4253.836	659162.218	7 970 474.000	DB 8.6°CW
ECC	4283.836	659156.218	7 970 444.000	DB 8.6°CW
PVI	4309.132	659151.218	7 970 419.000	R 100.000m
BCC	4324.132	659148.218	7 970 404.000	DB 8.6°CW
ECC	4354.132	659142.218	7 970 374.000	DB 8.6°CW
PVI	4379.428	659137.218	7 970 349.000	R 100.000m
BCC	4394.428	659134.218	7 970 334.000	DB 8.6°CW
ECC	4424.428	659128.218	7 970 304.000	DB 8.6°CW
PVI	4449.724	659123.218	7 970 279.000	R 100.000m
BCC	4464.724	659120.218	7 970 264.000	DB 8.6°CW
ECC	4494.724	659114.218	7 970 234.000	DB 8.6°CW
PVI	4520.020	659109.218	7 970 209.000	R 100.000m
BCC	4535.020	659106.218	7 970 194.000	DB 8.6°CW
ECC	4565.020	659100.218	7 970 164.000	DB 8.6°CW
PVI	4590.316	659095.218	7 970 139.000	R 100.000m
BCC	4605.316	659092.218	7 970 124.000	DB 8.6°CW
ECC	4635.316	659086.218	7 970 094.000	DB 8.6°CW
PVI	4660.612	659081.218	7 970 069.000	R 100.000m
BCC	4675.612	659078.218	7 970 054.000	DB 8.6°CW
ECC	4705.612	659072.218	7 970 024.000	DB 8.6°CW
PVI	4730.908	659067.218	7 969 999.000	R 100.000m
BCC	4745.908	659064.218	7 969 984.000	DB 8.6°CW
ECC	4775.908	659058.218	7 969 954.000	DB 8.6°CW
PVI	4801.204	659053.218	7 969 929.000	R 100.000m
BCC	4816.204	659050.218	7 969 914.000	DB 8.6°CW
ECC	4846.204	659044.218	7 969 884.000	DB 8.6°CW
PVI	4871.500	659039.218	7 969 859.000	R 100.000m
BCC	4886.500	659036.218	7 969 844.000	DB 8.6°CW
ECC	4916.500	659030.218	7 969 814.000	DB 8.6°CW
PVI	4941.796	659025.218	7 969 789.000	R 100.000m
BCC	4956.796	659022.218	7 969 774.000	DB 8.6°CW
ECC	4986.796	659016.218	7 969 744.000	DB 8.6°CW
PVI	5012.092	659011.218	7 969 719.000	R 100.000m
BCC	5027.092	659008.218	7 969 704.000	DB 8.6°CW
ECC	5057.092	659002.218	7 969 674.000	DB 8.6°CW
PVI	5082.388	658997.218	7 969 649.000	R 100.000m
BCC	5097.388	658994.218	7 969 634.000	DB 8.6°CW
ECC	5127.388	658988.218	7 969 604.000	DB 8.6°CW
PVI	5152.684	658983.218	7 969 579.000	R 100.000m
BCC	5167.684	658980.218	7 969 564.000	DB 8.6°CW
ECC	5197.684	658974.218	7 969 534.000	DB 8.6°CW
PVI	5222.980	658969.218	7 969 509.000	R 100.000m
BCC	5237.980	658966.218	7 969 494.000	DB 8.6°CW
ECC	5267.980	658960.218	7 969 464.000	DB 8.6°CW
PVI	5293.276	658955.218	7 969 439.000	R 100.000m
BCC	5308.276	658952.218	7 969 424.000	DB 8.6°CW
ECC	5338.276	658946.218	7 969 394.000	DB 8.6°CW
PVI	5363.572	658941.218	7 969 369.000	R 100.000m
BCC	5378.572	658938.218	7 969 354.000	DB 8.6°CW
ECC	5408.572	658932.218	7 969 324.000	DB 8.6°CW
PVI	5433.868	658927.218	7 969 299.000	R 100.000m
BCC	5448.868	658924.218	7 969 284.000	DB 8.6°CW
ECC	5478.868	658918.218	7 969 254.000	DB 8.6°CW
PVI	5504.164	658913.218	7 969 229.000	R 100.000m
BCC	5519.164	658910.218	7 969 214.000	DB 8.6°CW
ECC	5549.164	658904.218	7 969 184.000	DB 8.6°CW
PVI	5574.460	658899.218	7 969 159.000	R 100.000m
BCC	5589.460	658896.218	7 969 144.000	DB 8.6°CW
ECC	5619.460	658890.218	7 969 114.000	DB 8.6°CW
PVI	5644.756	658885.218	7 969 089.000	R 100.000m
BCC	5659.756	658882.218	7 969 074.000	DB 8.6°CW
ECC	5689.756	658876.218	7 969 044.000	DB 8.6°CW
PVI	5715.052	658871.218	7 969 019.000	R 100.000m
BCC	5730.052	658868.218	7 969 004.000	DB 8.6°CW
ECC	5760.052	658862.218	7 968 974.000	DB 8.6°CW
PVI	5785.348	658857.218	7 968 949.000	R 100.000m
BCC	5800.348	658854.218	7 968 934.000	DB 8.6°CW
ECC	5830.348	658848.218	7 968 904.000	DB 8.6°CW
PVI	5855.644	658843.218	7 968 879.000	R 100.000m
BCC	5870.644	658840.218	7 968 864.000	DB 8.6°CW
ECC	5900.644	658834.218	7 968 834.000	DB 8.6°CW
PVI	5925.940	658829.218	7 968 809.000	R 100.000m
BCC	5940.940	658826.218	7 968 794.000	DB 8.6°CW
ECC	5970.940	658820.218	7 968 764.000	DB 8.6°CW
PVI	5996.236	658815.218	7 968 739.000	R 100.000m
BCC	6011.236	658812.218	7 968 724.000	DB 8.6°CW
ECC	6041.236	658806.218	7 968 694.000	DB 8.6°CW
PVI	6066.532	658801.218	7 968 669.000	R 100.000m
BCC	6081.532	658798.218	7 968 654.000	DB 8.6°CW
ECC	6111.532	658792.218	7 968 624.000	DB 8.6°CW
PVI	6136.828	658787.218	7 968 599.000	R 100.000m
BCC	6151.828	658784.218	7 968 584.000	DB 8.6°CW
ECC	6181.828	658778.218	7 968 554.000	DB 8.6°CW
PVI	6207.124	658773.218	7 968 529.000	R 100.000m
BCC	6222.124	658770.218	7 968 514.000	DB 8.6°CW
ECC	6252.124	658764.218	7 968 484.000	DB 8.6°CW
PVI	6277.420	658759.218	7 968 459.000	R 100.000m
BCC	6292.420	658756.218	7 968 444.000	DB 8.6°CW
ECC	6322.420	658750.218	7 968 414.000	DB 8.6°CW
PVI	6347.716	658745.218	7 968 389.000	R 100.000m
BCC	6362.716	658742.218	7 968 374.000	DB 8.6°CW
ECC	6392.716	658736.218	7 968 344.000	DB 8.6°CW
PVI	6418.012	658731.218	7 968 319.000	R 100.000m
BCC	6433.012	658728.218	7 968 304.000	DB 8.6°CW
ECC	6463.012	658722.218	7 968 274.000	DB 8.6°CW
PVI	6488.308	658717.218	7 968 249.000	R 100.000m
BCC	6503.308	658714.218	7 968 234.000	DB 8.6°CW
ECC	6533.308	658708.218	7 968 204.000	DB 8.6°CW
PVI	6558.604	658703.218	7 968 179.000	R 100.000m
BCC	6573.604	658700.218	7 968 164.000	DB 8.6°CW
ECC	6603.604	658694.218	7 968 134.000	DB 8.6°CW
PVI	6628.900	658689.218	7 968 109.000	R 100.000m
BCC	6643.900	658686.218	7 968 094.000	DB 8.6°CW
ECC	6673.900	658680.218	7 968 064.000	DB 8.6°CW
PVI	6699.196	658675.218	7 968 039.000	R 100.000m
BCC	6714.196	658672.218	7 968 024.000	DB 8.6°CW
ECC	6744.196	658666.218	7 967 994.000	DB 8.6°CW
PVI	6769.492	658661.218	7 967 969.000	R 100.000m
BCC	6784.492	658658.218	7 967 954.000	DB 8.6°CW
ECC	6814.492	658652.218	7 967 924.000	DB 8.6°CW
PVI	6839.788	658647.218	7 967 899.000	R 100.000m
BCC	6854.788	658644.218	7 967 884.000	DB 8.6°CW
ECC	6884.788	658638.218	7 967 854.000	DB 8.6°CW
PVI	6910.084	658633.218	7 967 829.000	R 100.000m
BCC	6925.084	658630.218	7 967 814.000	DB 8.6°CW
ECC	6955.084	658624.218	7 967 784.000	DB 8.6°CW
PVI	6980.380	658619.218	7 967 759.000	R 100.000m
BCC	6995.380	658616.218	7 967 744.000	DB 8.6°CW
ECC	7025.380	658610.218	7 967 714.000	DB 8.6°CW
PVI	7050.676	658605.218	7 967 689.000	R 100.000m
BCC	7065.676	658602.218	7 967 674.000	DB 8.6°CW
ECC	7095.676	658596.218	7 967 644.000	DB 8.6°CW
PVI	7120.972	658591.218	7 967 619.000	R 100.000m
BCC	7135.972	658588.218	7 967 604.000	DB 8.6°CW
ECC	7165.972	658582.218	7 967 574.000	DB 8.6°CW
PVI	7191.268	658577.218	7 967 549.000	R 100.000m
BCC	7206.268	658574.218	7 967 534.000	DB 8.6°CW
ECC	7236.268	658568.218	7 967 504.000	DB 8.6°CW
PVI	7261.564	658563.218	7 967 479.000	R 100.000m
BCC	7276.564	658560.218	7 967 464.000	DB 8.6°CW
ECC	7306.564	658554.218	7 967 434.000	DB 8.6°CW
PVI	7331.860	658549.218	7 967 409.000	R 100.000m
BCC	7346.860	658546.218	7 967 394.000	DB 8.6°CW
ECC	7376.860	658540.218	7 967 364.000	DB 8.6°CW
PVI	7402.156	658535.218	7 967 339.000	R 100.000m
BCC	7417.156	658532.218	7 967 324.000	DB 8.6°CW
ECC	7447.156	658526.218	7 967 294.000	DB 8.6°CW
PVI	7472.452	658521.218	7 967 269.000	R 100.000m
BCC	7487.452	658518.218	7 967 254.000	DB 8.6°CW
ECC	7517.452	658512.218	7 967 224.000	DB 8.6°CW
PVI	7542.748	658507.218	7 967 199.000	R 100.000m
BCC	7557.748	658504.218	7 967 184.000	DB 8.6°CW
ECC	7587.748	658498.218	7 967 154.000	DB 8.6°CW
PVI	7613.044	658493.218	7 967 129.000	R 100.000m
BCC	7628.044	658490.218	7 967 114.000	DB 8.6°CW
ECC	7658.044	658484.218	7 967 084.000	DB 8.6°CW
PVI	7683.340	658479.218	7 967 059.000	R 100.000m
BCC	7698.340	658476.218	7 967 044.000	DB 8.6°CW
ECC	7728.340	658470.218	7 967 014.000	DB 8.6°CW
PVI	7753.636	658465.218	7 966 989.000	R 100.000m
BCC	7768.636	658462.218	7 966 974.000	DB 8.6°CW
ECC	7798.636	658456.218	7 966 944.000	DB 8.6°CW
PVI	7823.932	658451.218	7 966 919.000	R 100.000m
BCC	7838.932	658448.218	7 966 904.000	DB 8.6°CW
ECC	7868.932	658442.218	7 966 874.000	DB 8.6°CW
PVI	7894.228	658437.218	7 966 849.000	R 100.000m
BCC	7909.228	658434.218	7 966 834.000	DB 8.6°CW
ECC	7939.228	658428.218	7 966 804.000	DB 8.6°CW
PVI	7964.524	658423.218	7 966 779.000	R 100.000m
BCC	7979.524	658420.218	7 966 764.000	DB 8.6°CW
ECC	8009.524	658414.218	7 966 734.000	DB 8.6°CW
PVI	8034.820	658409.218	7 966 709.000	R 100.000m
BCC	8049.820	658406.218	7 966 694.000	DB 8.6°CW
ECC	8079.820	658400.218	7 966 664.000	DB 8.6°CW
PVI	8105.116	658395.218	7 966 639.000	R 100.000m
BCC	8120.116	658392.218	7 966 624.000	DB 8.6°CW
ECC	8150.116	658386.218	7 966 594.000	DB 8.6°CW
PVI	8175.412	658381.218	7 966 569.000	R 100.000m
BCC	8190.412	658378.218	7 966 554.000	DB 8.6°CW
ECC	8220.412	658372.218	7 966 524.000	DB 8.6°CW
PVI	8245.708	658367.218	7 966 499.000	R 100.000m
BCC	8260.708	658364.218	7 966 484.000	DB 8.6°CW
ECC	8290.708	658358.218	7 966 454.000	DB 8.6°CW
PVI	8316.004	658353.218	7 966 429.000	R 100.000m
BCC	8331.004	658350.218	7 966 414.000	DB 8.6°CW
ECC	8361.004	658344.218	7 966 384.000	DB 8.6°CW
PVI	8386.300	658339.218	7 966 359.000	R 100.000m
BCC	8401.300	658336.218	7 966 344.000	DB 8.6°CW
ECC	8431.300	658330.218	7 966 314.000	DB 8.6°CW
PVI	8456.596	658325.218	7 966 289.000	R 100.000m
BCC	8471.596	658322.218	7 966 274.000	DB 8.6°CW
ECC	8501.596	658316.218	7 966 244.000	DB 8.6°CW
PVI	8526.892	658311.218	7 966 219.000	R 100.000m
BCC	8541.892	658308.218	7 966 204.000	DB 8.6°CW
ECC	8571.892	658302.218	7 966 174.000	DB 8.6°CW
PVI	8597.188	658297.218	7 966 149.000	R 100.000m
BCC	8612.188	658294.218	7 966 134.000	DB 8.6°CW
ECC	8642.188	658288.218	7 966 104.000	DB 8.6°CW
PVI	8667.484	658283.218	7 966 079.000	R 100.000m
BCC	8682.484	658280.218	7 966 064.000	DB 8.6°CW
ECC	8712.484	658274.218	7 966 034.000	DB 8.6°CW
PVI	8737.780	658269.218	7 966 009.000	R 100.000m
BCC	8752.780	658266.218	7 965 994.000	DB 8.6°CW
ECC	8782.780	658260.218	7 965 964.000	DB 8.6°CW
PVI	8808.076	658255.218	7 965 939.000	R 100.000m
BCC	8823.076	658252.218	7 965 924.000	DB 8.6°CW
ECC	8853.076	658246.218	7 965 894.000	DB 8.6°CW
PVI	8878.372	658241.218	7 965 869.

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NUNA
NUNA EAST LTD

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Baffinland Iron Mines LP
Mary River Expansion Stage 3
H353004

Construction Management Form
Site Contracts Administration
Request for Information

Project Name:	Mary River Expansion Stage 3	**Project Number:**	H353004 / CC006
Area: Laydown 3		**RFI No:** 0050	
Contractor: Nuna East Ltd.		**Contract No:** CC006	
Initiated By: Bradford Watkin		**Cost Impact?**	Y☒ / N☐
Date of Submittal: 2019-06-11		**Schedule Impact?**	Y☒ / N☐

Information Requested:

Due to the water flow on LP3 Nuna requests that Culvert (Culv-2018-E) be extended from under the Module Delivery Road Starting @ (N 7975030.090 E 503145.690) to the west limit of LP3 along cross section "G" @ ~ chainage 1625 and re-sloping the west side of LP3 from the Module Road toe to the west limit to a -0.3% slope toward the west limit.

See attached drawings.

Reference Document No.	Revision	Title/Description
H353004-40000-228-272-0012-0001	1	Port Site Laydown Area LP3 Drainage Plan
H353004-40000-221-271-0005-0001	2	Port Site Laydown Area LP3 Plan and Profiles
H353004-40000-223-271-0007-0003	0	Port Site Module Delivery Road Plan & Profile Sht 3 of 4

RFI Classification:

Design	☐	Construction	☒	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☐	Other	☐

Proceed as noted .

RFI Follow-up Requirements:

Contract Order Issued	Yes ☐/No ☐	(insert associated tracking #)	Back-Charge Required (Yes ☐/No ☐)
As-Built Required	Yes ☐/No ☐		Materials Required (Yes ☐/No ☐)

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RFI Receipts and Approvals			
Stakeholder	**Name**	**Signature**	**Date** <YYYY-MM-DD>
Hatch Construction Management	N Mills		June 12 / 19
Hatch Engineering Home Office ☐ Site ☑	G. PEACO		2019-06-12
Hatch Project Management			
Client (as required):			

Request for Information

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Project Name:	**Mary River Expansion Stage 3**	**Project Number:**	**H353004**
CWP No: Freight Dock		**RFI No: 0052**	
Contractor: Nuna East Ltd.		**Contract No: CC006**	
Initiated By: Darko Filipic		**Cost Impact?**	**Y☐ / N☒**
Date of Submittal: 2019-06-15		**Schedule Impact?**	**Y☐ / N☒**

Information Requested:

In order to achieve an acceptable subbase for the MOF road in the section of the road that crosses the existing ditch between the Weatherhaven camp and the Ore Stockyard Pad, Nuna proposed the following method:

- Dewater the ditch to the extent possible
- Cleanup the ditch bottom with an excavator
- Place 300mm layer of 30-80mm scour protection material as a subbase (to be bucket packed)
- Place and compact ROQ / Type 8 / Type 5 fill to design grades as per specifications.

The reason for this proposed subbase preparation is due to the fact that proof-rolling will not be achievable within the narrow ditch bottom.

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Reference Document No.	Revision	Title/Description
H353004-00000-280-078-0002	0	Standard Specifications – Quarried Fill Materials Requirements

RFI Classification:

Design ☐ Construction ☒ Fabricator/Vendor ☐

Routine Request ☐ Clarification ☐ Other ☐

Project Response: [attach sufficient detail as required]

Proposal accepted, please proceed.

RFI Follow-up Requirements:

Contract Order Issued Yes ☐/No ☐ (insert associated tracking #) Back-Charge Required (Yes ☐/No ☐)

As-Built Required Yes ☐/No ☐ Materials Required (Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	Vern Shaver		2019-06-18
Hatch Engineering Home Office ☐ Site ☐	Glen Peace		2019-06-18
Hatch Project Management			
Client (as required):			

Request for Information

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Baffinland Iron Mines LP
Mary River Expansion Stage 3
H353004

Construction Management Form
Site Contracts Administration
Request for Information

Project Name:	**Mary River Expansion Stage 3**	**Project Number:**	**H353004**
CWP No: MOF Road		**RFI No: 0053**	
Contractor: Nuna East Ltd.		**Contract No: CC006**	
Initiated By: Darko Filipic		**Cost Impact?**	Y☒ / N☐
Date of Submittal: 2019-06-22		**Schedule Impact?**	Y☒ / N☐

Information Requested:
The IFC Drawings for the MOF Road include conflicting Culvert Schedules for the same culverts, P-CULV-16 & CULV-2018-I, on two separate drawings. Dwg. H353004-40000-223-271-0007-0002 shows 2 pipes for each of these culverts, whereas Dwg. H353004-40000-223-271-0007-0004 shows 1 pipe for each of them.

Dwg ...-0002 culvert schedule below:

CULVERT SCHEDULE
(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRS. No. H353004-40000-223-271-0007-0001-TYPICAL CULVERT DETAILS)

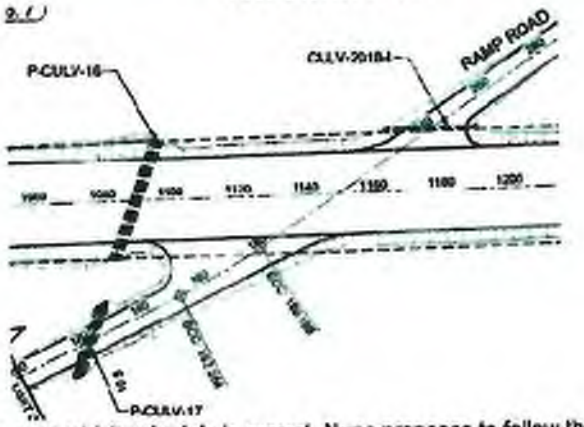
								CULVERT AT UPSTREAM				CULVERT AT DOWNSTREAM		NOTE: FINAL U/S INVERT AND D/S INVERT LEVELS ARE TO BE CONFIRMED ON SITE					
CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	NORTHING	EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	NORTHING	EASTING	D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	B (%)	SKEW (DEGREE)
P-CULV-16	N	2	1200	39.900	0	300	CSP	7975535.240	503305.45	9.794	N	7975558.404	503276.731	9.616	N	500	4.8	0.4	21
CULV-2018-I	N	2	600	27.300	0	400	CSP	7975444.500	503278.010	11.178	N	7975470.980	503286.143	11.120	N	300	2.4	0.2	47

Dwg...-0004 culvert schedule below:

CULVERT SCHEDULE
(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRS. No. H353004-40000-223-271-0007-0001-TYPICAL CULVERT DETAILS)

								CULVERT AT UPSTREAM				CULVERT AT DOWNSTREAM		NOTE: FINAL U/S INVERT AND D/S INVERT LEVELS ARE TO BE CONFIRMED ON SITE					
CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	NORTHING	EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	NORTHING	EASTING	D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	B (%)	SKEW (DEGREE)
P-CULV-16	N	1	1200	39.900	0	300	CSP	7975535.240	503305.45	9.794	Y	7975558.404	503276.731	9.616	Y	500	4.8	0.4	46
P-CULV-17	N	1	1200	22.245	0	300	CSP	7975535.210	503305.45	9.594	Y	7975560.075	503245.004	9.441	Y	500	5.0	0.4	19
CULV-2018-I	N	1	600	27.300	0	400	CSP	7975444.500	503278.010	11.178	N	7975470.980	503286.143	11.120	N	300	2.4	0.2	47

Area affected below:



Nuna requests clarification as to which schedule is correct. Nuna proposes to follow the schedule shown on Dwg. H353004-40000-223-271-0007-0004.

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Baffinland Iron Mines LP
Mary River Expansion Stage 3
H353004

Construction Management Form
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Request for Information

Reference Document No.	Revision	Title/Description
H353004-40000-223-271-0007-0002 H353004-40000-223-271-0007-0004	0 0	Module Delivery Road Plan & Profile, Sheet 2 of 4 Module Delivery Road Plan & Profile, Sheet 4 of 4

RFI Classification:

Design ☐ Construction ☐ Fabricator/Vendor ☐

Routine Request ☐ Clarification ☒ Other ☐

Project Response: [attach sufficient detail as required]

Drawing H353004-40000-223-271-0007-0004 is the correct drawing . Proceed based on this
Thanks
Nick

RFI Follow-up Requirements:

Contract Order Issued Yes ☐/No ☐ ( ) Back-Charge Required (Yes ☐/No ☐)

As-Built Required Yes ☐/No ☐ Materials Required (Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	N mills		June 24 / 19
Hatch Engineering Home Office ☐ Site ☒	GLEN PEACE		2019-06-24
Hatch Project Management			
Client (as required):			

Request for Information

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Project Name:	Mary River Expansion Stage 3	Project Number:	H353004
CWP No: Module Delivery Road		RFI No: 0057	
Contractor: Nuna East Ltd.		Contract No: CC006	
Initiated By: Darko Filipic		Cost Impact?	Y☒ / N☐
Date of Submittal: 2019-06-27		Schedule Impact?	Y☒ / N☐

Information Requested:

As was identified in RFI-0026 the Module Delivery Road elevation needed to be raised to provide cover over the existing utilities at approx. Sta. 0+500.

Nuna has made the suggested adjustments to the profile of the road and has determined that at a 2% slope the final grade of the Mod Road will meet the existing grade of the Port Laydown at approximately Sta. 0+340.

Whereas the IFC drawing shows the construction of the Mod Road starting at Sta. 0+480, the new alignment will require fill to be placed out to Sta. 0+340. This fill will also need to be blended into the existing grade of the Port laydown area so as not to disrupt the general Port Site traffic flow and allow Ore Haul trucks to turn around in front of the maintenance buildings. This will require additional Type 5 and ¾" material to be provided by Sana.

Nuna requests confirmation that this design change to the Mod Road is acceptable before proceeding with the work. Additionally, confirm that no Mod Road construction will be required between Sta. 0+000 and 0+340.

Reference Document No.	Revision	Title/Description
E353004-CC006-400-465-0026 H353004-40000-223-271-0007-0001 190627 Mod Road Utility Crossing	0 1 0	Response to RFI-0026 Module Delivery Road 1 of 4 Nuna Utility Crossing As-built and Proposed Moc Road Adjustment

RFI Classification:

Design	☒	Construction	☐	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☐	Other	☐

Project Response: (attach sufficient detail as required)

Paragraph 3 - Confirmed, Nuna can proceed with the construction of the Mod road as indicated. Additional Type 5 and ¾" material will be provided by Sana.

The remaining portion of the road (Sta. 0+000 to +0+340) shall be compacted using a vibratory roller. The area shall be regraded and compacted if excessive rutting is observed or sub-excavated in locations with visible deflections. This must be approved by the CMT/QA representative.

RFI Follow-up Requirements:

Contract Order Issued	Yes ☐/No ☐ (insert associated tracking #)	Back-Charge Required	(Yes ☐/No ☐)
As-Built Required	Yes ☐/No ☐	Materials Required	(Yes ☐/No ☐)

RFI Receipts and Approvals

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Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	Murlon Coutts		2019-07-03
Hatch Engineering Home Office ☐ Site ☑	GLEN PEACE		2019-06-27
Hatch Project Management			
Client (as required):	Leonel Dabor		2019-06-27

Request for Information

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Project Name:	Mary River Expansion Stage 3	**Project Number:**	H353004
CWP: GE Generator Pad		**RFI:** 0067 0069	
Contractor: Nuna East Ltd.		**Contract No: CC006**	
Initiated By: Darko Filipic		**Cost impact?**	Y☐ / N☒
Date of Submittal: 2019-07-19		**Schedule Impact?**	Y☐ / N☒

Information Requested:

Dwg No. H353004-40000-223-271-0007-0001 _rev1 shows a 600mm diameter utility culvert at approximately CH.0+09 (at the start of the Mod Road), however there is no culvert schedule on the drawings to show the design details, such as invert coordinates, length, elevations, slope, etc.

Additionally, this utility culvert is not captured on any BOQs provided to Nuna.

Nuna requests clarification as to whether this culvert is meant to be included in the CC006 scope of work for 2019.

Reference Document No.	Revision	Title/Description
H353004-40000-223-271-0007-0001	1	Module Delivery Road Plan & Profile Sheet 1 of 4

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Mary River Expansion Stage 3
H353004

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RFI Classification:

Design	☐	Construction	☐	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☒	Other	☐

Project Response: [attach sufficient detail as required]

Culvert not to be installed at this time

RFI Follow-up Requirements:

Contract Order Issued Yes ☐/No ☐ (insert associated tracking #) Back-Charge Required (Yes ☐/No ☐)

As-Built Required Yes ☐/No ☐ Materials Required (Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	Marlon Coakley	Marlon Coakley	2019-07-22
Hatch Engineering Home Office ☐ Site ☐	Glen Peace	Glen Peace	2019-07-22
Hatch Project Management			
Client (as required):			

Request for Information

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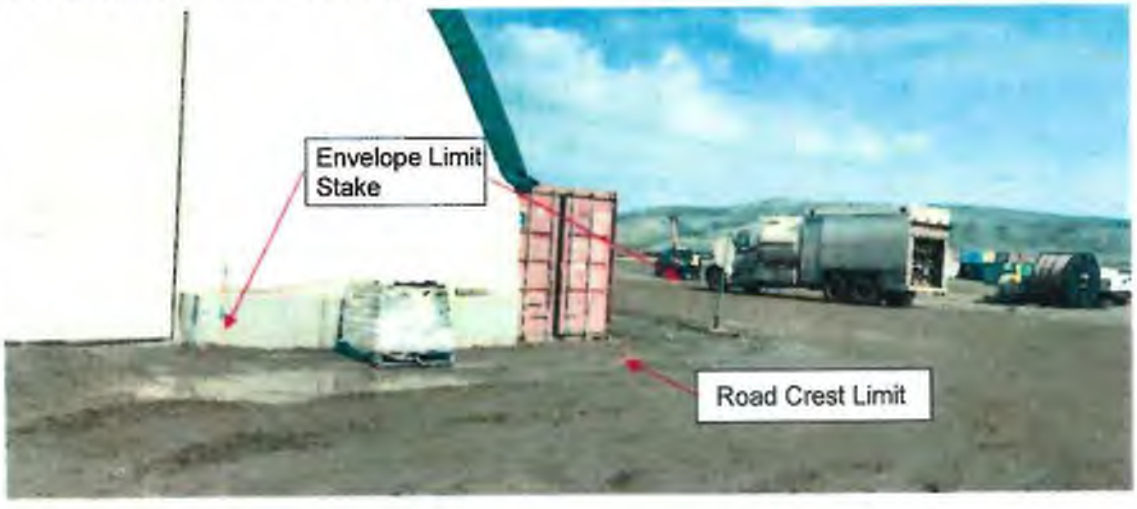
Project Name:	Mary River Expansion Stage 3	**Project Number:**	H353004
CWP: Module Delivery Road		**RFI:** 0070	
Contractor: Nuna East Ltd.		**Contract No:** CC006	
Initiated By: Darko Filipic		**Cost impact?**	Y☐ / N☒
Date of Submittal: 2019-07-21		**Schedule Impact?**	Y☒ / N☐

Information Requested:

Dwg No. H353004-40000-223-271-0007-0001 _rev1 shows a 34m wide Module Envelope Limit.

It has been identified and confirmed in the field that the existing Tretan shop is located within this envelope limit (see picture below and attached drawing).



Nuna requests clarification from Hatch as to how this encroachment will be addressed, prior to performing the proof-rolling, compaction and regrading of the road in this section.

Reference Document No.	Revision	Title/Description
H353004-40000-223-271-0007-0001	1	Module Delivery Road Plan & Profile Sheet 1 of 4

RFI Classification:

Design	☐	Construction	☐	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☒	Other	☐

Project Response: [attach sufficient detail as required]

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MOD road is to be widened as indicated on attached sketch. Red line to be provided.

RFI Follow-up Requirements:

Contract Order Issued Yes ☐/No ☐ (Insert associated tracking #) Back-Charge Required (Yes ☐/No ☐)

As-Built Required Yes ☐/No ☐ Materials Required (Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	Vern Shaver		2019-07-25
Hatch Engineering Home Office ☐ Site ☐	Glen Peace		2019-07-25
Hatch Project Management			
Client (as required):			

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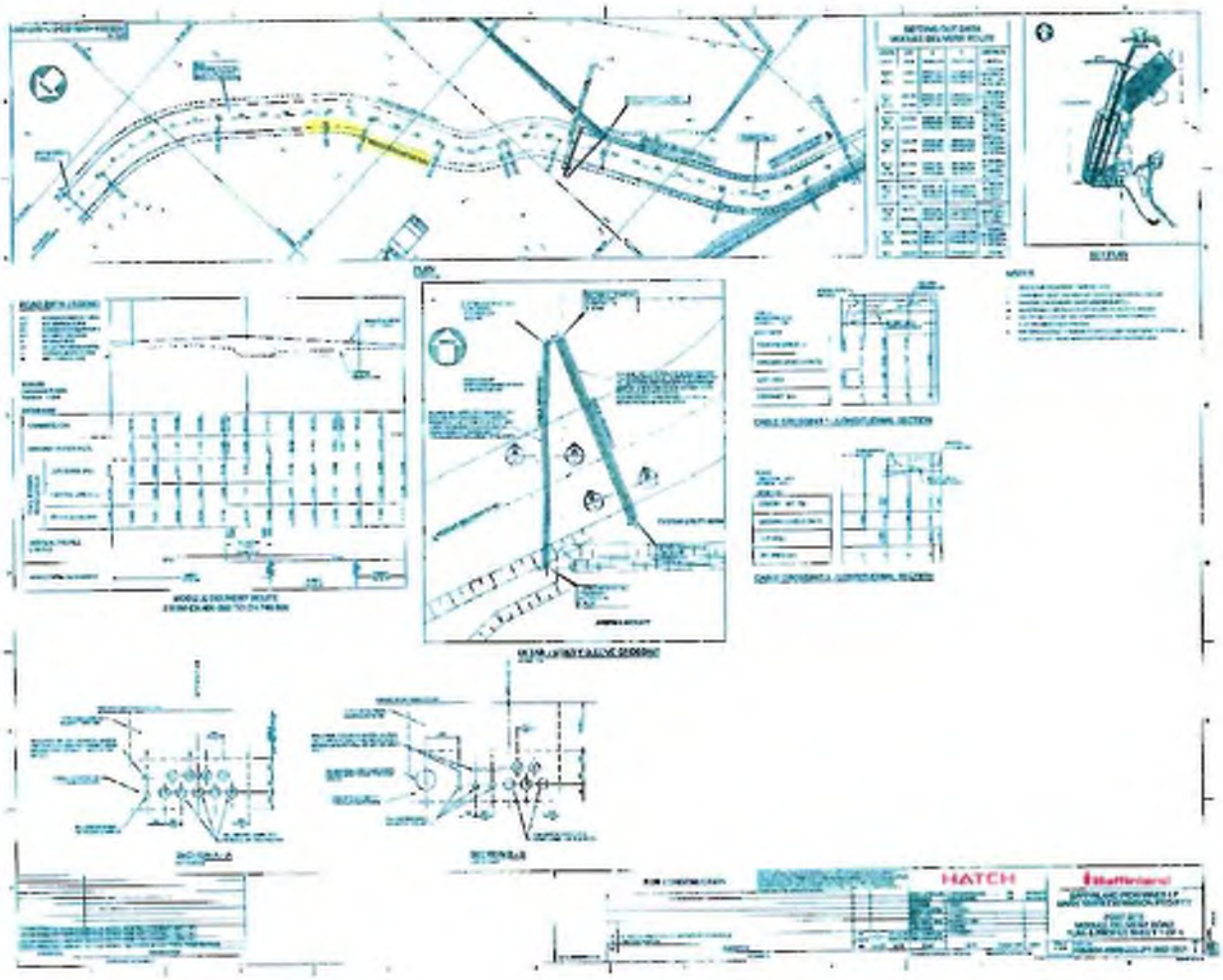
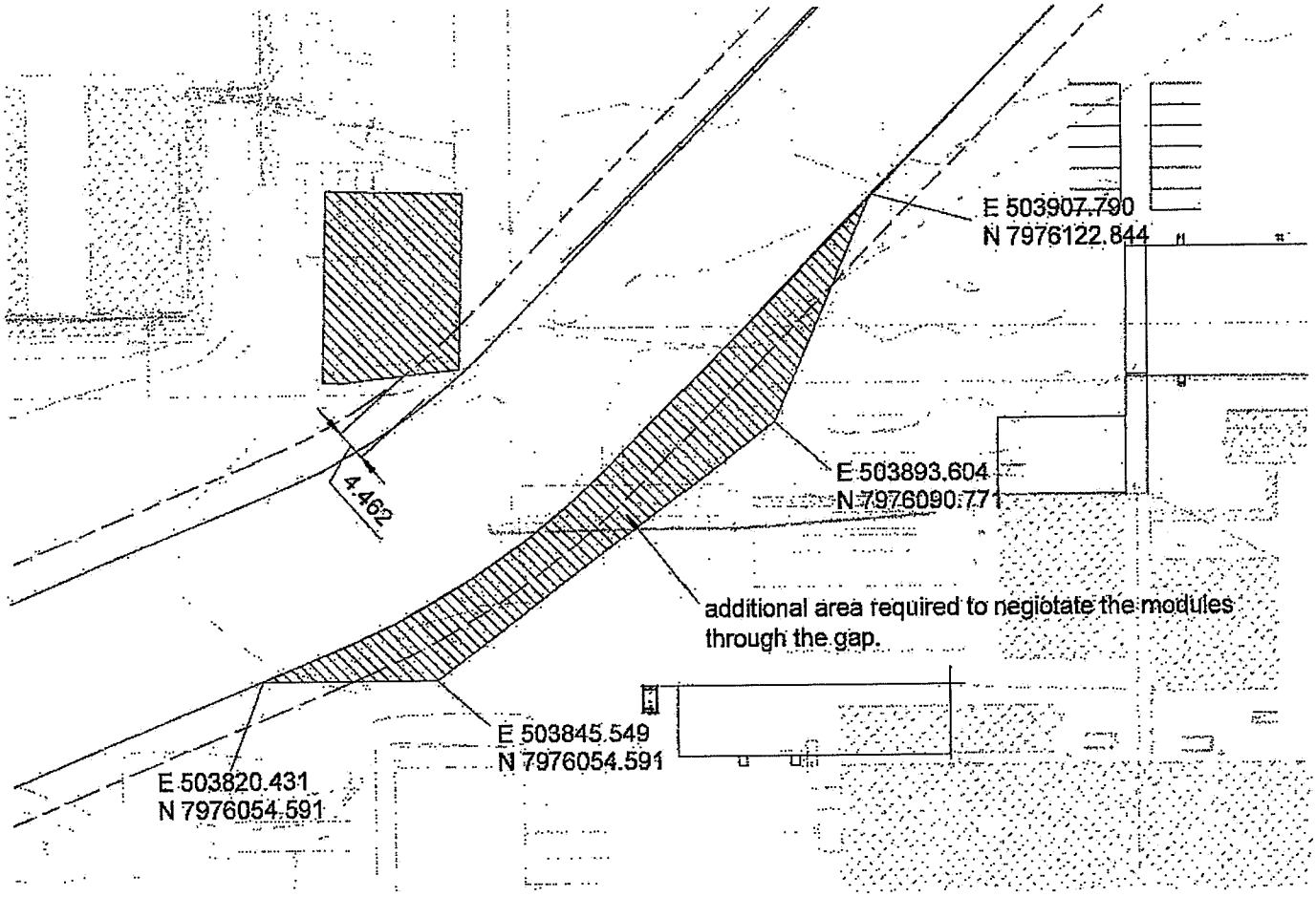
	BAFFINLAND IRON MINES LP	MLMA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	1600 ROAD
	MARY RIVER EXPANSION PROJECT	M. GOBEIL	AS SHOWN / July 31, 2019	DESIGN FOOTPRINT


HATCH


E 503907.790
N 7976122.844
4.462
E 503893.604
N 7976090.771
additional area required to negiotate the modules through the gap.
E 503845.549
N 7976054.591
E 503820.431
N 7976054.591

Project Name:	Mary River Expansion Stage 3	**Project Number:**	H353004
CWP: Module Delivery Road		**RFI:** 0082	
Contractor: Nuna East Ltd.		**Contract No: CC006**	
Initiated By: Ryan Dicker		**Cost impact?**	Y☐ / N☒
Date of Submittal: 2019-09-01		**Schedule Impact?**	Y☐ / N☒

Information Requested:

Nuna is proposing to remove the requirement of 2 culverts passing through the Fuel Module access road from the ore stockpiles where it intersects the Module Road.

- P-CULV-17 – Drainage culvert passing through the Fuel Module access road
  - An existing temporary culvert was installed across this road to drain water from culvert P-CULV-16 into a temporary swale constructed to the west across LP3. This culvert and swale was successful in transferring flows during the 2019 freshet and the installation of P-CULV-17 is likely not required. An additional ditch would need to be constructed to flow the water to the west of P-CULV-17 should it be installed.
  - Nuna is proposing that the existing culvert would stay in place and the swale left in LP3 as is currently constructed.
- CULV-2018-1 – Equalizing culvert passing through the Fuel Module access road
  - No water flows have been observed in this area that would necessitate a culvert.

Please see attached reference document with markups of the proposed culverts to be removed and the existing culvert and swale that are currently in place.

Reference Document No.	Revision	Title/Description
H353004-40000-223-271-0007-0002	1	MODULE DELIVERY RD. PLAN AND PROFILE SHEET 2 OF 4

RFI Classification:

Design	☐	Construction	☒	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☐	Other	☐

Project Response: [attach sufficient detail as required]

Nuna's proposal to not install culvert # P-CULV-17 and CULV-2018-1 is acceptable. The existing culvert and swale draining run-off water from P-CULV-16 can be left in place.

Provide as-built and red-line

RFI Follow-up Requirements:

Contract Order Issued	Yes ☐/No ☐	[insert associated tracking #]	Back-Charge Required (Yes ☐/No ☐)
As-Built Required	Yes ☒/No ☐		Materials Required (Yes ☐/No ☐)

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RFI Receipts and Approvals			
Stakeholder	**Name**	**Signature**	**Date** <YYYY-MM-DD>
Hatch Construction Management	Coakley, Marlon (Digitally signed by Coakley, Marlon DN: cn=Coakley, Marlon, email=marlon.coakley@hatch.com Date: 2019.09.08 17:08:34 -04'00')		
Hatch Engineering Home Office ☐ Site ☐			
Hatch Project Management			
Client (as required):	L.Dabor	L.O.Dabor	2019-09-08

Request for Information

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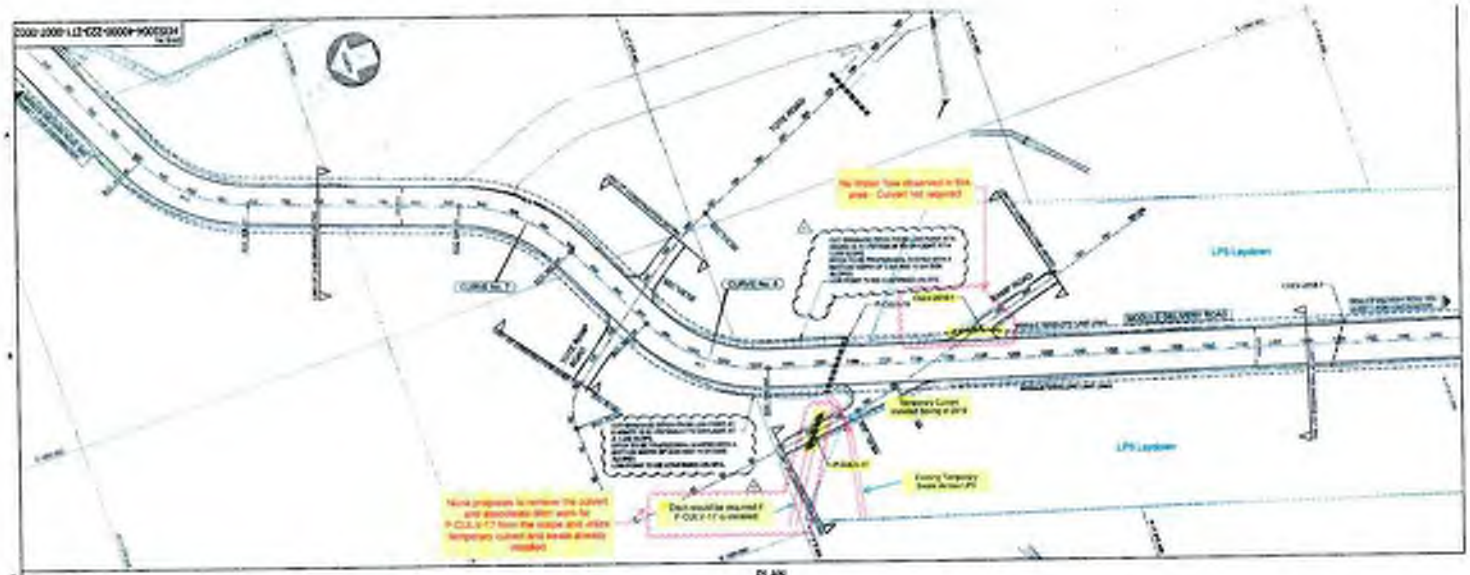

PLAN

KEY PLAN

NOTES:

CULVERT SCHEDULE LEGEND

CULVERT SCHEDULE

CULVERT ID	FINAL RECOMMEND	NUMBER OF PIPES	D (mm)	LENGTH (m)	S (mm)	W (mm)	TYPE	NORTHING	EASTING	INLET INVERT ELEV (m)	INLET SKEW (DEGS)	OUTLET INVERT NORTHING	OUTLET INVERT EASTING	OUTLET INVERT ELEV (m)	OUTLET INVERT SKEW (DEGS)	D (mm)	L (m)	S (%)	INVERT ADJUSTED
P-CULV-16	Y	1	1200	16.000	0	1600	CSP	7478536.249	502208.483	0.764	0	7478536.624	502219.747	0.000	0	1600	4.0	12.4	0.7
P-CULV-17	Y	1	900	21.000	0	1067	CSP	7478538.887	502278.442	11.178	0	7478538.888	502299.442	11.000	0	1067	2.5	8.3	0.7

ROAD DATA LEGEND:

SCALES:
Horizontal 1:1000
Vertical 1:200

DATUM ELEV.

CHAINAGE (CH)
GROUND LEVELS ON CL
FINAL DESIGN ELEVATIONS
LEFT EDGE (WL)
CENTRELINE (CL)
RIGHT EDGE (WR)
VERTICAL PROFILE GRADES
HORIZONTAL ALIGNMENT

MODULE DELIVERY ROUTE
FROM CH.740.000 TO CH.1360.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
START	740.000	502211.000	7478536.000	
PI-1	1.000	502207.000	7478536.000	R 1000.000
PI-2	100.000	502207.000	7478536.000	R 1000.000
PI-3	200.000	502207.000	7478536.000	R 1000.000
PI-4	300.000	502207.000	7478536.000	R 1000.000
PI-5	400.000	502207.000	7478536.000	R 1000.000
PI-6	500.000	502207.000	7478536.000	R 1000.000
PI-7	600.000	502207.000	7478536.000	R 1000.000
PI-8	700.000	502207.000	7478536.000	R 1000.000
PI-9	800.000	502207.000	7478536.000	R 1000.000
PI-10	900.000	502207.000	7478536.000	R 1000.000
PI-11	1000.000	502207.000	7478536.000	R 1000.000
PI-12	1100.000	502207.000	7478536.000	R 1000.000
PI-13	1200.000	502207.000	7478536.000	R 1000.000
PI-14	1300.000	502207.000	7478536.000	R 1000.000
END	1360.000	502207.000	7478536.000	

FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 2 OF 4

BIM No. P053064-40000-223-ST1-0007-0002 | 1

Project Name:	Mary River Expansion Stage 3	**Project Number:**	H353004
CWP: Module Delivery Road		**RFI:** 0097	
Contractor: Nuna East Ltd.		**Contract No:** CC006	
Initiated By: Darko Filipic		**Cost Impact?**	Y☐ / N☒
Date of Submittal: 2019-10-14		**Schedule Impact?**	Y☐ / N☒

Information Requested:

IFC Dwg. H353004-40000-223-271-0007-0001R1 shows an alignment and cross-section for the utility crossing sleeves that was determined at the time to be impractical to install as designed. Installing the sleeves as per the IFC would have required de-energizing all of the existing power cables running from the generators across the MOF Road alignment, which would have shut down the power to most of the Port Site camps and infrastructure.

Rather than interrupt the Port power, it was decided to install the pipe sleeves in a new alignment adjacent to the existing cables on the West side of the utility bridge (shown on the attached as-built drawing).

On May 19th, 5ea 6" pipe sleeves were installed across the MOF Road alignment to allow for 2ea 5kV cable runs plus one fiber optic run to be installed at that time. Due to a limited supply of Sch.80 pipe, that was all that was installed at the time. (see attached email correspondence)

On July 10th , Nuna installed the pipe sleeve for the Effluent line realignment (per SI-20) and 1ea 6" pipe sleeve on the East side of the utility bridge.

On July 17-20th, Nuna buried the existing live power and fiber optic cables, (per RFI-26 & 57).

On October 8th, Nuna installed 4 more 6" pipe sleeves on the West side of the utility bridge. (per CX001-SI-0069)

Currently there are 10 of 14ea 6" pipe sleeves and 1ea 450mm dia. sleeve installed. 2ea pipe sleeves have 5kV lines run through them and 1ea has a fiber optic line. 4 more 6" pipe sleeves are remaining to be installed on the East side of the utility bridge.

Nuna proposes to accept the currently installed pipe sleeves "as is" in their revised alignment.

Additionally, Nuna requests confirmation from Hatch as to whether the remaining 4 pipe sleeves are needed to be installed at this time and if so, where they should installed.

Reference Document No. (s):	Revision	Title/Description
H353004-40000-223-271-0007-0001	1	Module Delivery Road Plan and Profile Sheet 1 of 4
H353004-CC006-460-424-0020	0	Site Instruction 20 – Utility Crossing
H353004-CX001-460-424-0069	0	CX001 Site Instruction 69 – Fabricating Road Crossings
E353004-CC006-400-465-0026	0	Response to RFI 0026
E353004-CC006-400-465-0057		Response to RFI 0057
RFI-0097 Pictures		Pictures of the installed utility crossings
191014 MOD RD UTIL CROSSING AB.pdf		Mod Road Utility Crossing As-Built
Email: Cable crossing – Utility Berm LP2		Email May 16, 2019 from R. Bader, re: cable crossing

RFI Classification:

Design	☒	Construction	☒	Fabricator/Vendor	☐
Routine Request	☐	Clarification	☐	Other	☐

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Project Response: [attach sufficient detail as required]

- The installed pipe sleeves are acceptable "as is" in their current location and alignment

- The remaining 4 pipe sleeves are required for power supply to the PSC Camp expansion and are to be installed. Also, additional sleeves were included as a mitigation for the direct buried cables. If these cables have a fault in future a splice could be routed through a spare sleeve and allow for a quicker repair. The pipe sleeves should be installed in a location that avoids interruption of power supply to the Port Site following the cross-sections in H353004-40000-223-271-0007-0001. Provide final as-built.

RFI Follow-up Requirements:

Contract Order Issued Yes ☐/No ☐ ([insert associated tracking #]) Back-Charge Required (Yes ☐/No ☐)

As-Built Required Yes ☒/No ☐ Materials Required (Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management		Shaver, Vern Digitally signed by Shaver, Vern DN: cn=Shaver, Vern, email=vern.shaver@hatch.com Date: 2019.10.16 15:30:11 -04'00'	
Hatch Engineering Home Office ☐ Site ☐			
Hatch Project Management			
Client (as required):	Leonel Dabor	L.O.Dabor	2019-10-15

Request for Information

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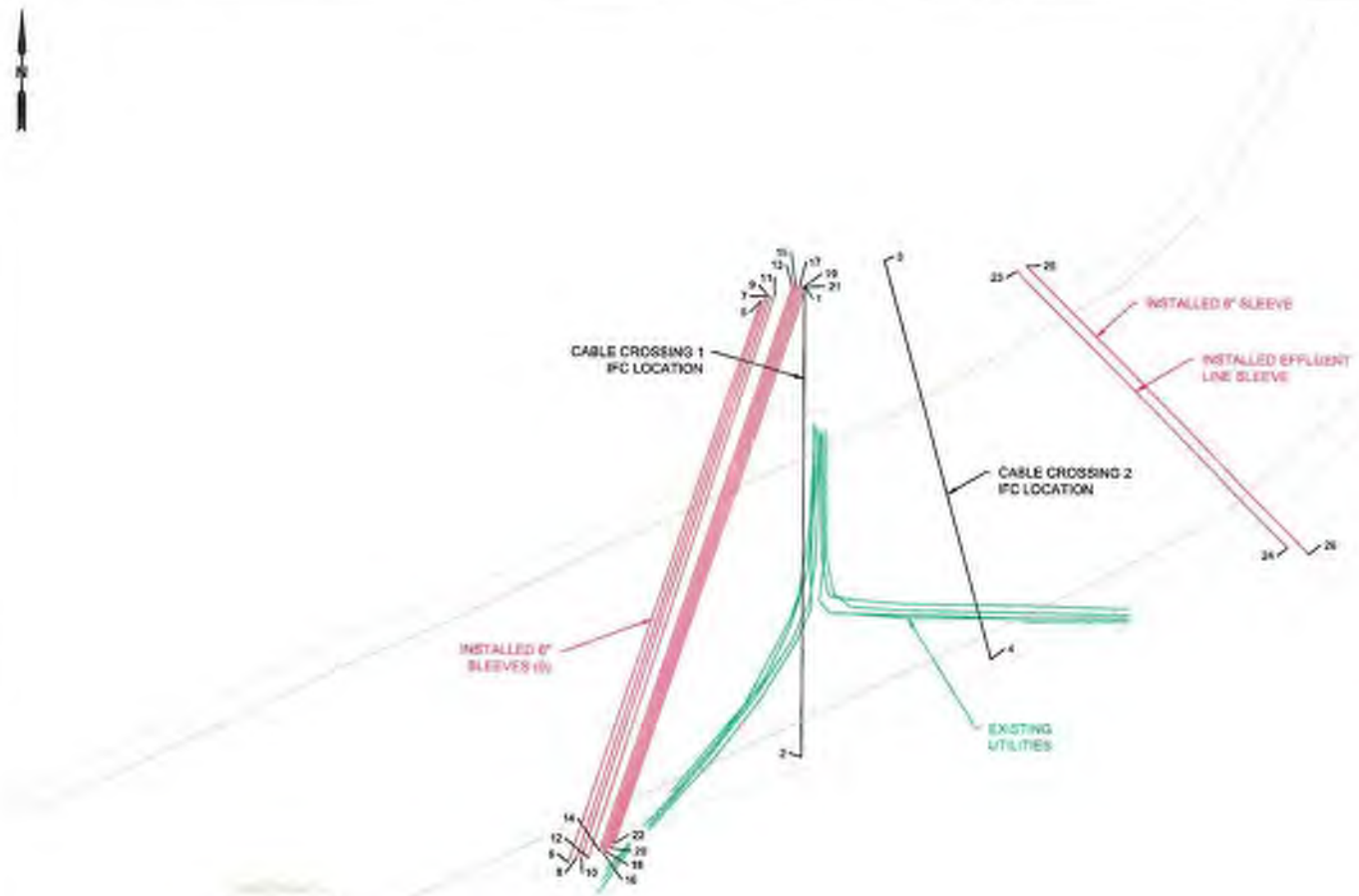


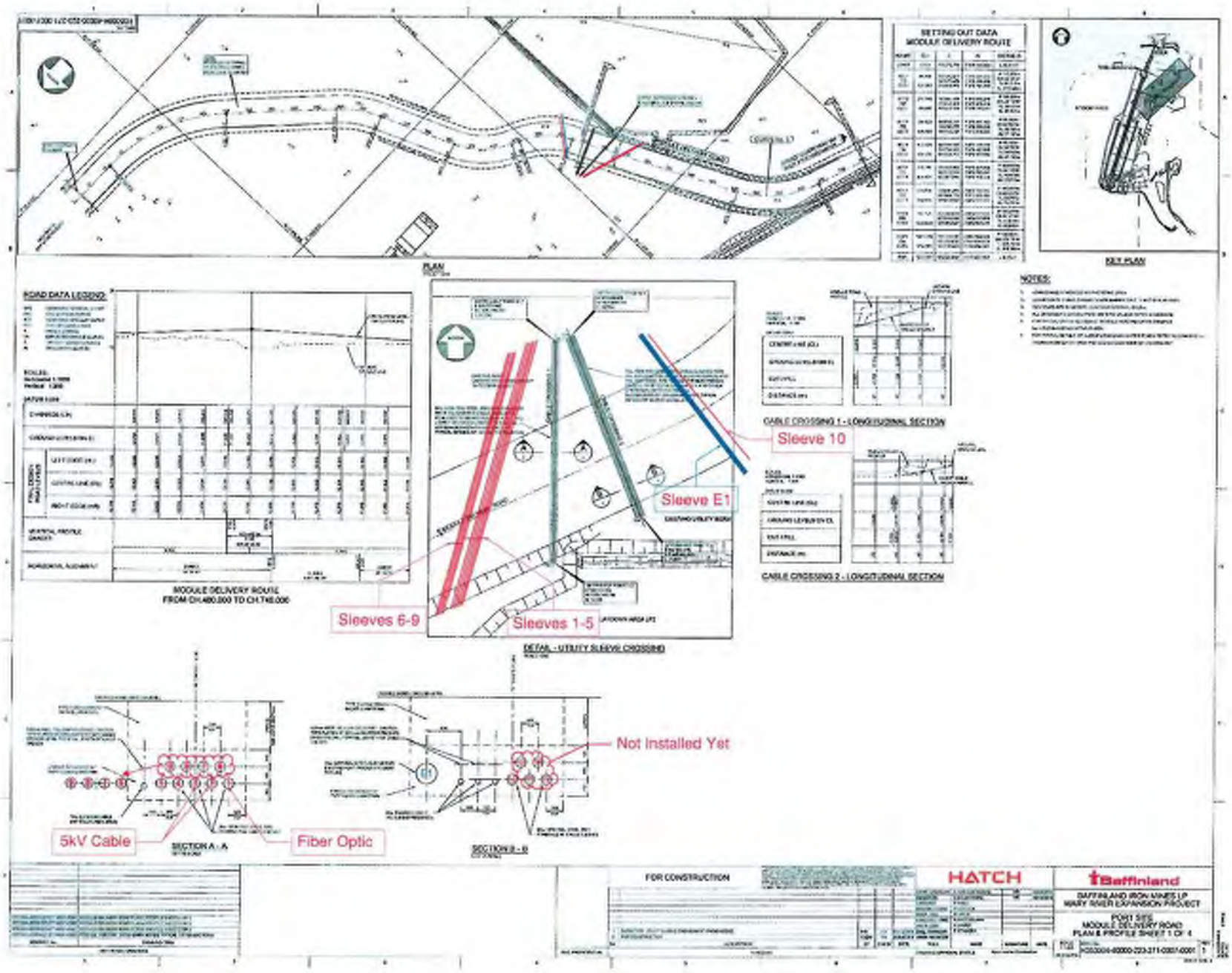
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	[illegible]	[illegible]	[illegible]	IFC CABLE CROSSING 1
2	[illegible]	[illegible]	[illegible]	IFC CABLE CROSSING 1
3	[illegible]	[illegible]	[illegible]	IFC CABLE CROSSING 2
4	[illegible]	[illegible]	[illegible]	IFC CABLE CROSSING 2
5	[illegible]	[illegible]	[illegible]	6" SLEEVE
6	[illegible]	[illegible]	[illegible]	6" SLEEVE
7	[illegible]	[illegible]	[illegible]	6" SLEEVE
8	[illegible]	[illegible]	[illegible]	6" SLEEVE
9	[illegible]	[illegible]	[illegible]	6" SLEEVE
10	[illegible]	[illegible]	[illegible]	6" SLEEVE
11	[illegible]	[illegible]	[illegible]	6" SLEEVE
12	[illegible]	[illegible]	[illegible]	6" SLEEVE
13	[illegible]	[illegible]	[illegible]	6" SLEEVE
14	[illegible]	[illegible]	[illegible]	6" SLEEVE
15	[illegible]	[illegible]	[illegible]	6" SLEEVE
16	[illegible]	[illegible]	[illegible]	6" SLEEVE
17	[illegible]	[illegible]	[illegible]	6" SLEEVE
18	[illegible]	[illegible]	[illegible]	6" SLEEVE
19	[illegible]	[illegible]	[illegible]	6" SLEEVE
20	[illegible]	[illegible]	[illegible]	6" SLEEVE
21	[illegible]	[illegible]	[illegible]	6" SLEEVE
22	[illegible]	[illegible]	[illegible]	6" SLEEVE
23	[illegible]	[illegible]	[illegible]	EFFLUENT LINE SLEEVE
24	[illegible]	[illegible]	[illegible]	EFFLUENT LINE SLEEVE
25	[illegible]	[illegible]	[illegible]	6" SLEEVE
26	[illegible]	[illegible]	[illegible]	6" SLEEVE

OWNER: BAFFINLAND IRON MINES LP	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	MOD ROAD
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: 1:500	DATE: Oct. 14, 2019

DRAWING TITLE: AS-BUILT SURVEY SURVEYED UP TO OCTOBER 10, 2019

DRAWING NAME (FILENAME): 191014 MOD RD UTIL CROSSING.AB.dwg

RFI-0097
Markup

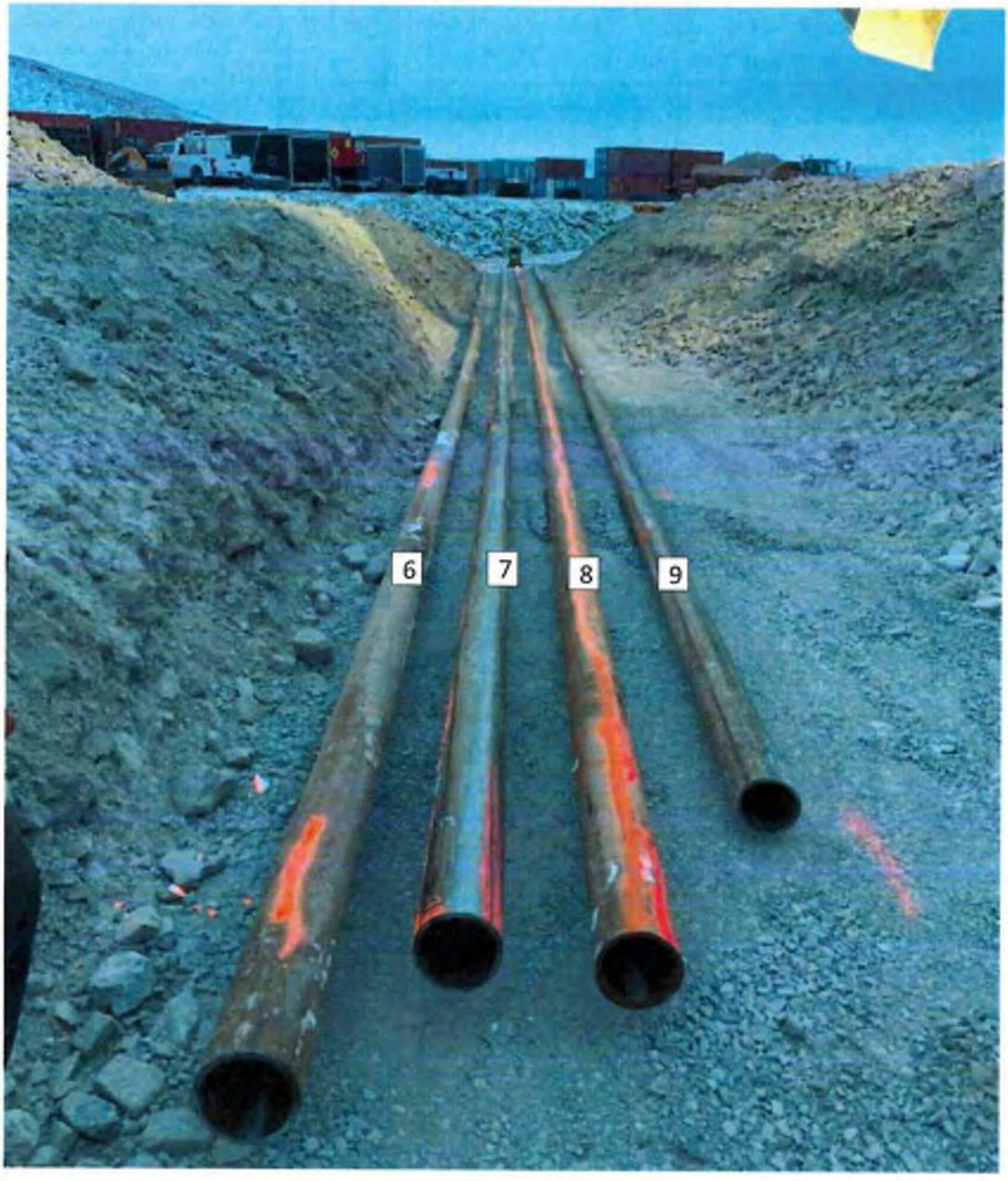


May 19th – Installed 5ea 6" pipe sleeves across MOD Road alignment

July 12 – Installed Effluent line Pipe Sleeve and 1ea 6" pipe sleeve.

Covering Existing Electrical Cables with sand, plywood and steel plate

October 8-10 – Installed 4ea 6" pipe sleeves on West side of utility bridge.



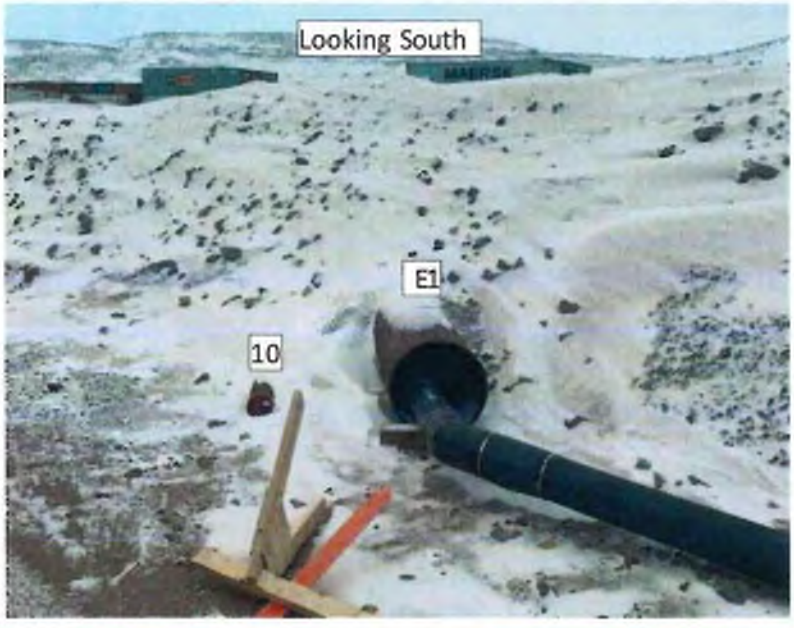
Currently installed Pipe Sleeves across MOF Road.

West Side

Looking South

Looking North

East Side



NUNA

NUNA EAST LTD

(Section 7)

Non-Conformance Reports (NCRs)

NON-CONFORMANCE REPORT LOG

Project: CC006 **Date:** 10-21-19

Area: Mary River Expansion - Milne Port **Contract/Work Pkg. No.:** CC006-0008A

CWP#: N/A **Originator:** Bradford Watkin

NCR No.	Description	Disposition	Date.	Rectified	Date
	No NCR's generated for this work package				

NUNA

NUNA EAST LTD

(Section 8)

Communications:

Engineering Change Notices (ECNs),
Site Instructions (SIs),
Contract Variation Request (CVRs),
E-mails

Engineering Change Notice

Engineering Change Notice			
Project No.:	H353004	**ECN No.:**	012
Package Number:	CC006	**Package Title:**	Port Site Early Earth Works
Vendor/Contractor:	Nuna Logistics	**Date:**	April 10, 2019

Requested Engineering Change

Module Delivery Road drawing update,

Affected Drawings/Deliverables	Drawing No.	Rev. No.
Port Site- Module Delivery Road- Plan and Profile- Sheet 2 of 4	H353004-40000-223-271-0007-0002	1

Special Instructions to Contractor

Recommended By		Reviewed By		Approved By	
farrokh.noori@hatch.com Digitally signed by farrokh.noori@hatch.com DN: cn=farrokh.noori@hatch.com Date: 2019.04.10 14:08:03 -04'00'				V. Lavric	
F. Noori		W. Shain		V. Lavric	Apr 10 2019
Package Coordinator	Date	Contracts Administrator	Date	Area Manager	Date

NOTE: No change to contract cost or schedule is authorized by this ECN. Any impacts to the contract must be identified by the Contractor and authorized in a separate Contract Change Order.

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Engineering Change Notice

Engineering Change Notice			
Project No.:	H353004	**ECN No.:**	013
Package Number:	CC006	**Package Title:**	Port Site Early Earth Works
Vendor/Contractor:	Nuna Logistics	**Date:**	April 11, 2019

Requested Engineering Change

Existing and New Utilities Layout, first submission.

Affected Drawings/Deliverables	Drawing No.	Rev. No.
Port Site- Existing and New Utilities- Layout Plan	H353004-40000-221-272-0026-0001	0

Special Instructions to Contractor

Recommended By		Reviewed By		Approved By	
farrokh.noori@hatch.com Digitally signed by farrokh.noori@hatch.com Date: 2019.04.11 13:15:52 -04'00'					
F. Noori		W. Shain		V. Lavric	Apr 11 2019
Package Coordinator	Date	Contracts Administrator	Date	Area Manager	Date

NOTE: No change to contract cost or schedule is authorized by this ECN. Any impacts to the contract must be identified by the Contractor and authorized in a separate Contract Change Order.

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Site Instruction

Contract No.:	H353004-CC006	**Date:**	2019-06-04
Contractor:	Nuna East Ltd.	**SI No.:**	H353004-CC006-460-424-0020
Contract Title:	Remaining Early Earthworks	**Reference No.:**	RFI E353004-CC006-400-465-0026, 5 sketches

Site instruction requirements (check one):

(A) ☐ Proceed with the urgent work and submit a Contract Change Request (if applicable).

(B) ☒ Submit a quotation by **10-June-19** for the work requested and await Hatch instruction to proceed.

(C) ☐ No cost or schedule impact. Proceed with the work.

(D) ☐ Proceed with the work with a maximum cost impact of $_____; schedule impact of _____ (days) and submit your quotation (if applicable)

Additional details: **Effluent Line Relocation and Direct Bury Plan**

Contractor is requested to relocate the existing effluent line and direct bury the existing utilities within the footprint of the MOF road. Details of the scope of Work are listed below and attached:

- Prefabricating (fusing, heating & insulation) of approx.80m of new line
- Cut & remove the existing line
- Fusing of the new line to the main line
- Heat trace and splicing of new line
- Installation of a new road crossing
- Back-up effluent trucking service during shut-down of main effluent line for the tie-in
- Take-off quantity and cost impact for raising the design of elevation of the MOF road to ensure sufficient cover over the existing utilities
- Survey as-built

A joint coordination effort between Hatch & Nuna shall be utilized for the effluent line shut-down. Sufficient notice is to be provided to BIM Ops in advance of conducting the work. JHA and traffic management plan are required to be submitted by Nuna for the Engineer's review and comments.

The Work will be performed on a time and material basis in accordance with the terms and conditions of the Contract.

Notes:
1. Any variation to the Contract arising from this instruction will be managed in accordance with the conditions of the Contract.
2. The response to this Site Instruction must be returned when and as required above to Hatch via the Contractor portal.

Action Record	Name and Position	Signature	Date
Initiated by:	**Bill Shain** **Senior Contract Administrator**	*William Shain*	05-June-2019
Authorized by:	**Vern Shaver** **Site Manager**	Shaver, Vern Digitally signed by Shaver, Vern DN: cn=Shaver, Vern, email=vern.shaver@hatch.com Date: 2019.06.05 14:27:24 -04'00'	05-June-2019

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Baffinland

HATCH

Baffinland Iron Mines LP
Mary River Expansion Stage 3
H353004

Construction Management Form
Site Contracts Administration
Request for Information

Project Name:	Mary River Expansion Stage 3	**Project Number:**	H353004
CWP No:		**RFI No:0026**	
Contractor: Nuna East Ltd.		**Contract No: CC006**	
Initiated By: Brandon Urquhart		**Cost Impact?**	Y☒ / N☐
Date of Submittal: 2019-03-11		**Schedule Impact?**	Y☒ / N☐

Information Requested:

Survey has determined that the elevation of the cables within the footprint of the module road are 0.8m above the final elevation of the road. Nuna requires instruction on how to proceed.

Reference Document No.	Revision	Title/Description
	0 0	

RFI Classification:

Design ☐ Construction ☐ Fabricator/Vendor ☐

Routine Request ☐ Clarification ☒ Other ☐

Project Response: (attach supporting details as required)

The cables need to be covered a minimum of .2m of sand a .25 m of 150 minus and .15 m 32 mm minus . The cables to have planking and warning tape above them

From the high point the road is to be graded at 2% slope maximum to East and West of the cable crossing .

At the high point the module road will raise by 1.4 m .

RFI Follow-up Requirements:

Contract Order Issued Yes ☐/No ☐ ([insert associated tracking #])

As-Built Required Yes ☐/No ☐

Back-Charge Required (Yes ☐/No ☐)

Materials Required (Yes ☐/No ☐)

RFI Receipts and Approvals

Stakeholder	Name	Signature	Date <YYYY-MM-DD>
Hatch Construction Management	N Mills		March 21
Hatch Engineering Home Office ☒ Site ☐	F. Noori		

E353004-CC006-400-465-0026

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Hatch Project Management			
Client (as required):			

Request for Information

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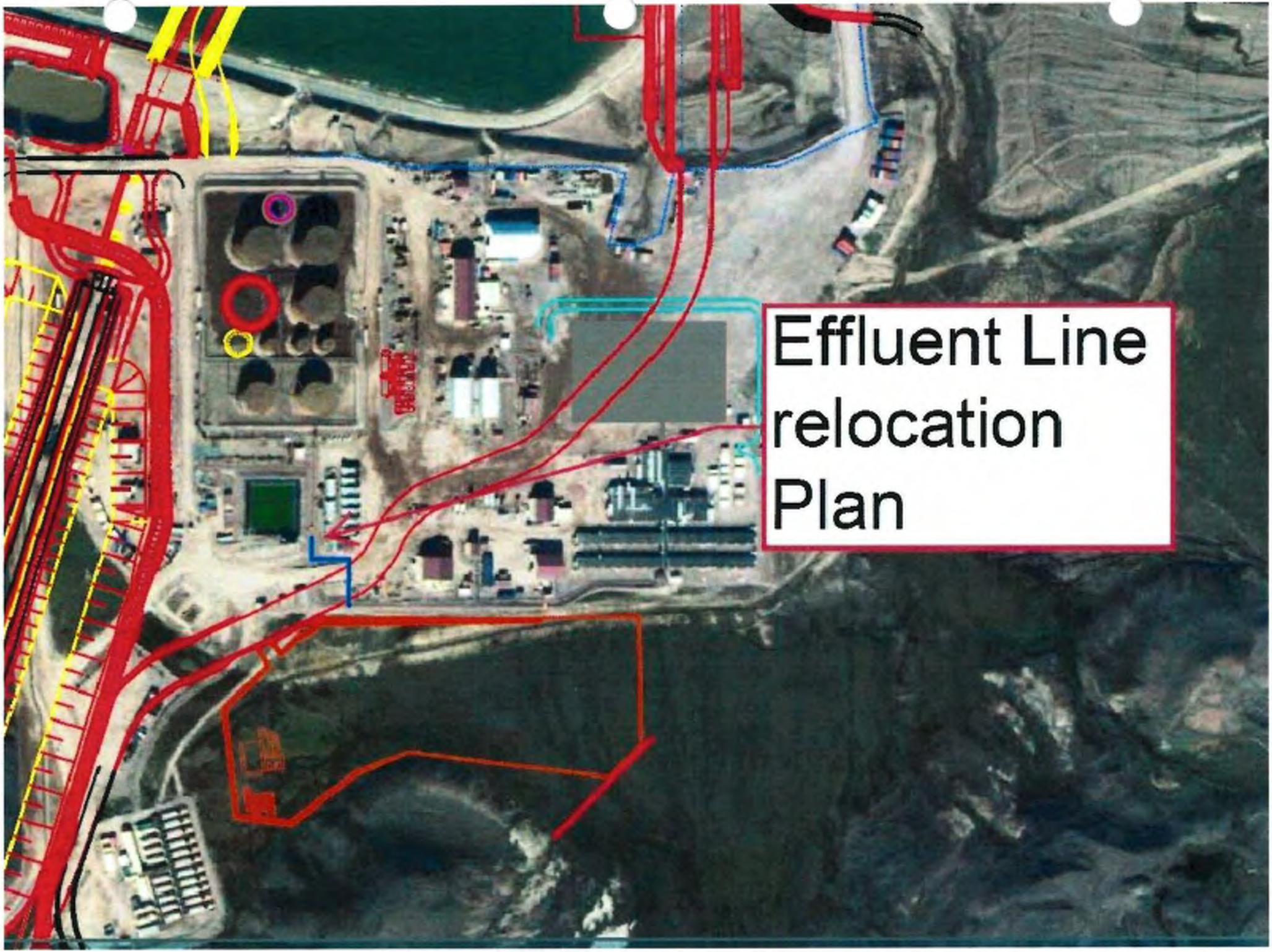
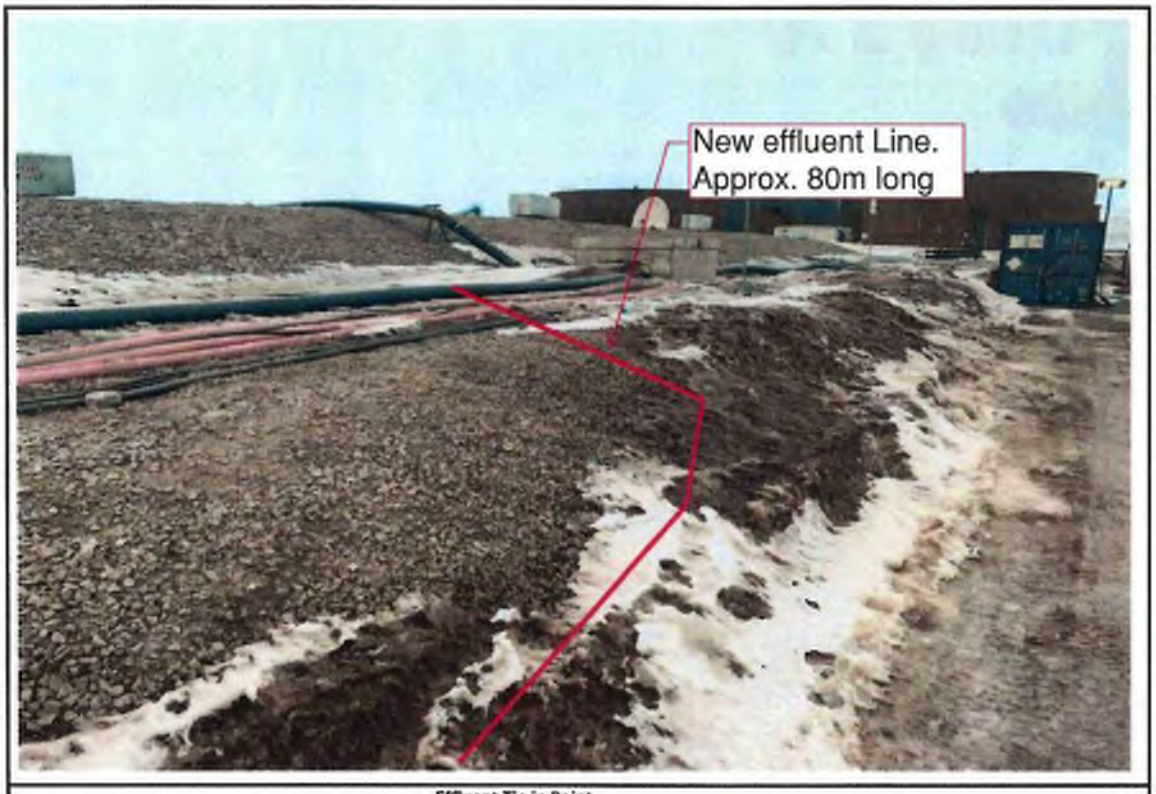
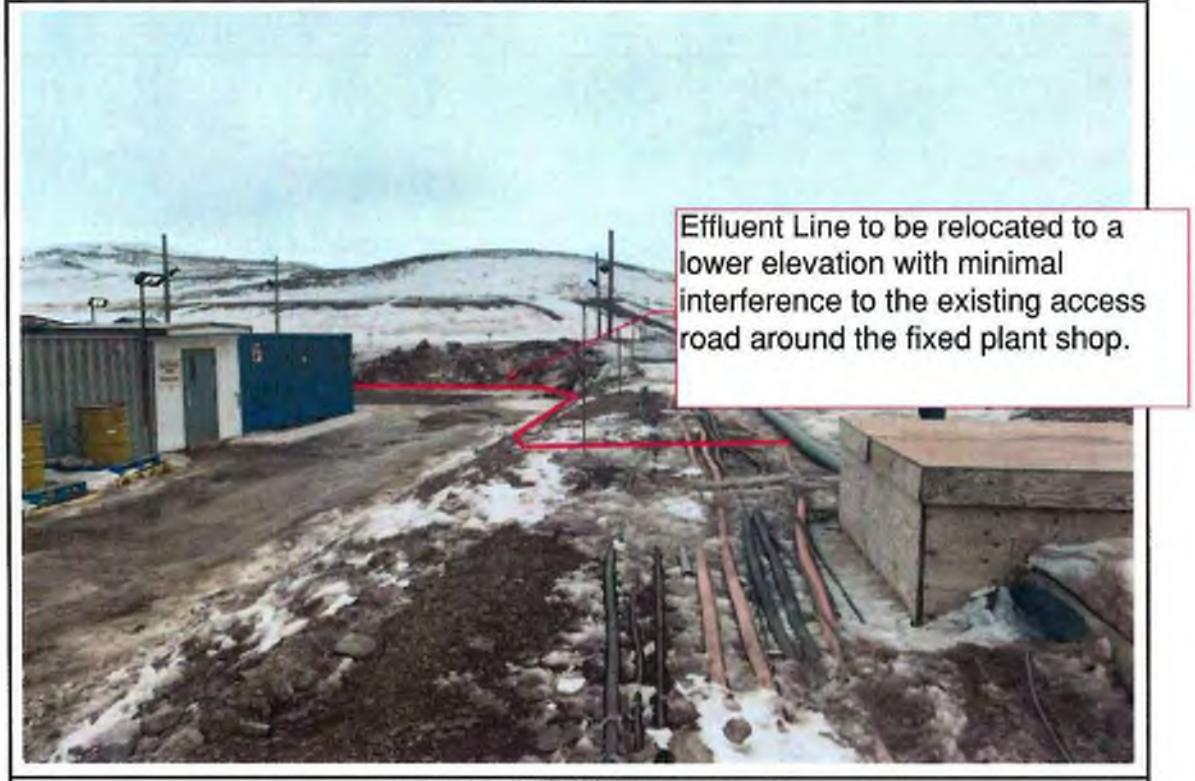

Effluent Line
relocation
Plan



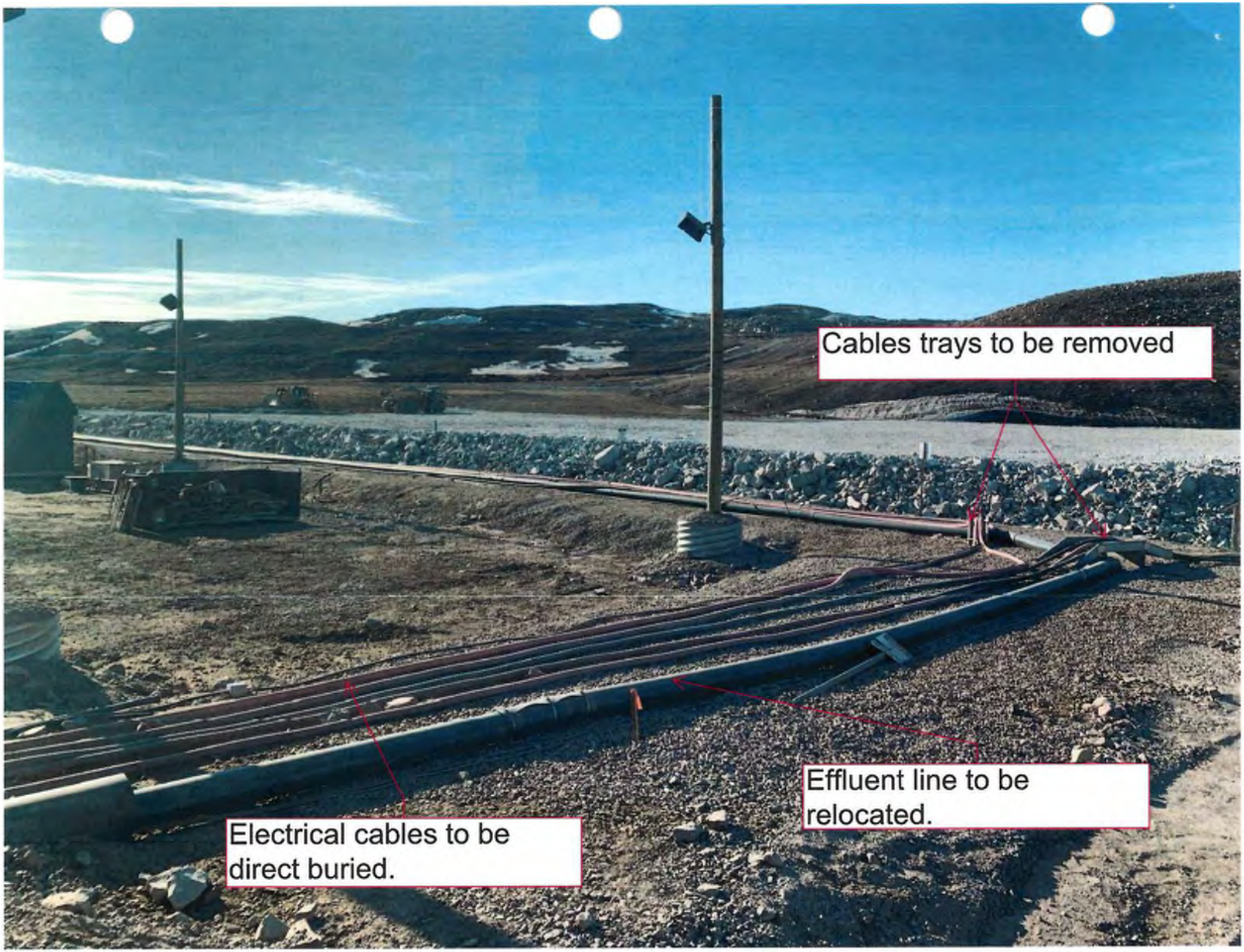
Effluent Tie in Point

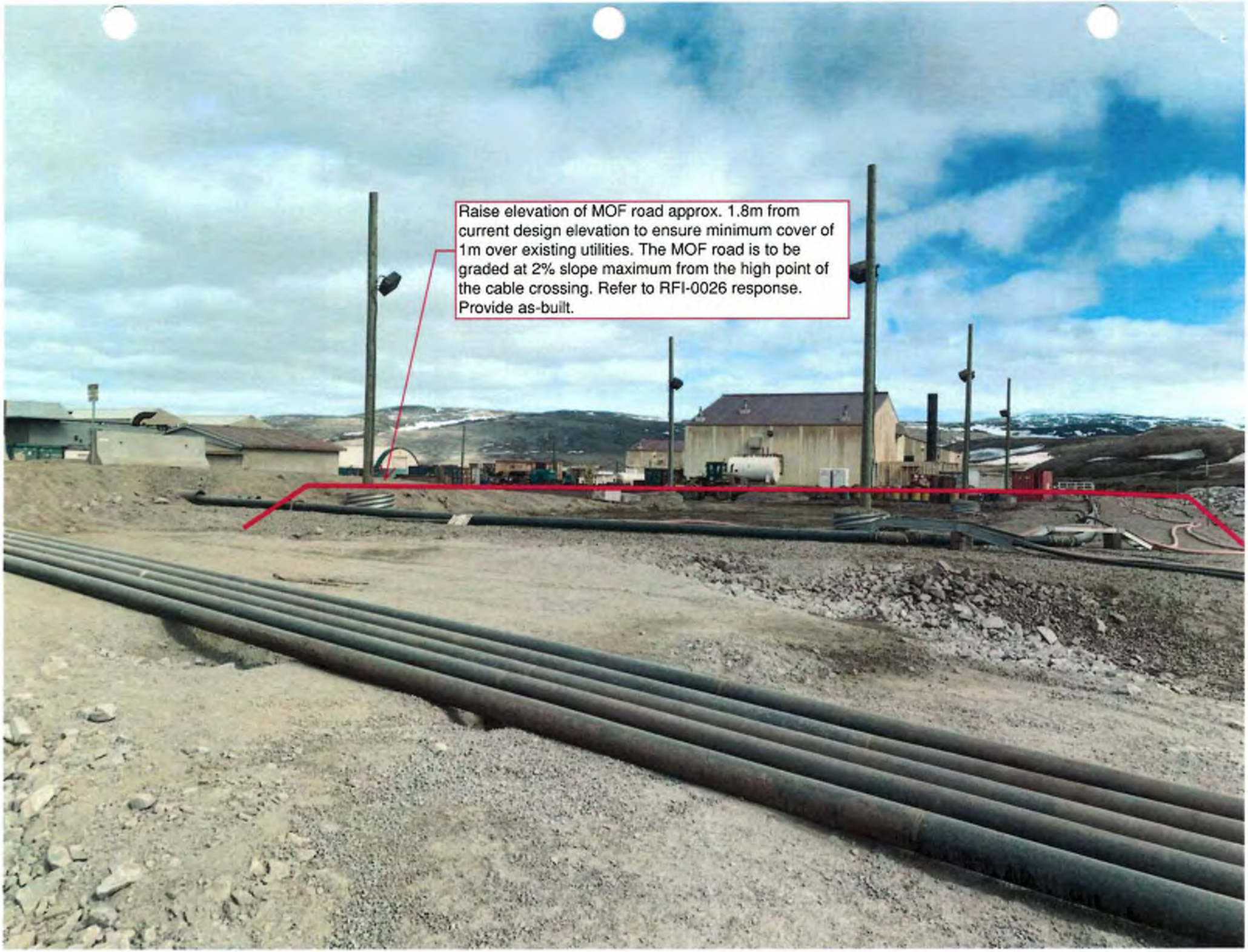


Area around the utility Berm used as an access road

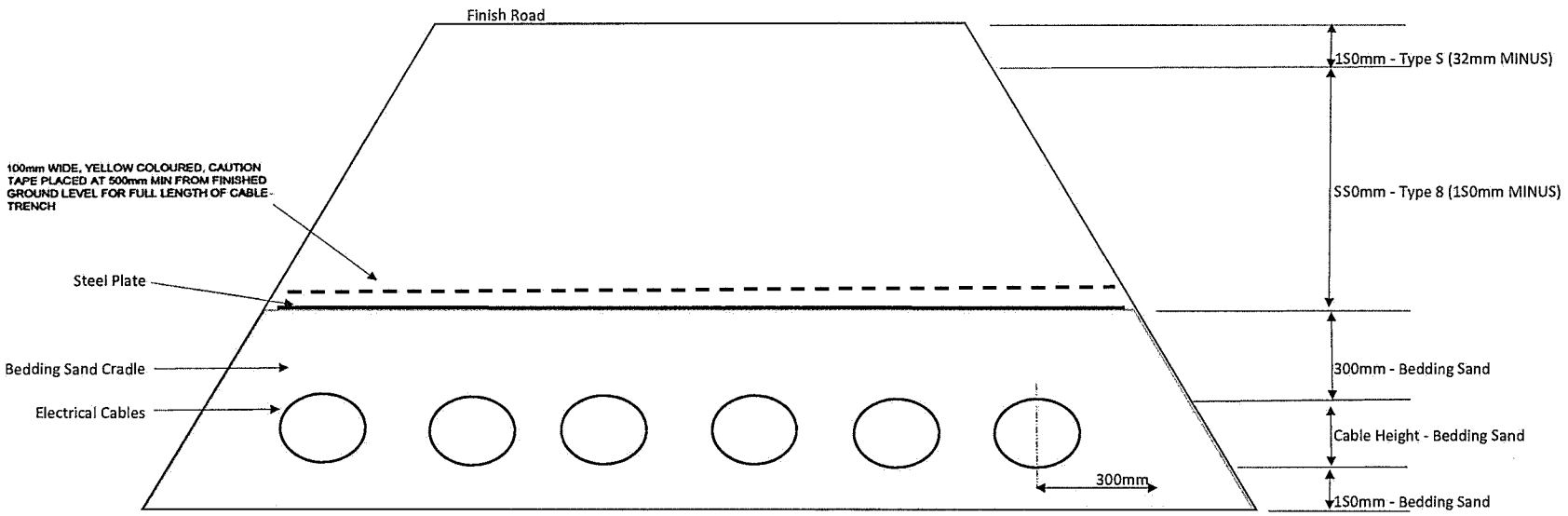
Area around the utility Berm used as an access road

Tie into Existing Line

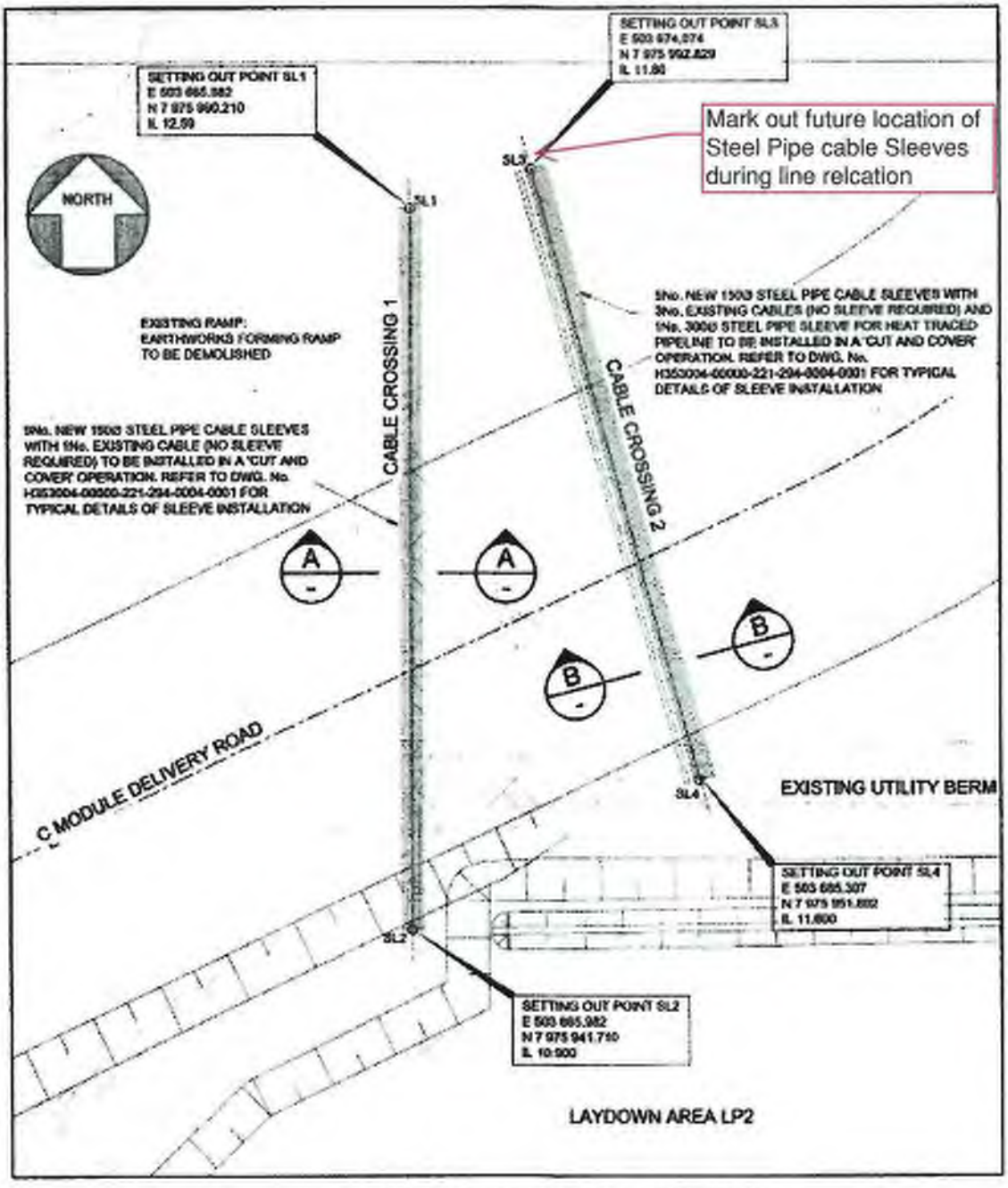

Cables trays to be removed
Effluent line to be relocated.
Electrical cables to be direct buried.


Raise elevation of MOF road approx. 1.8m from current design elevation to ensure minimum cover of 1m over existing utilities. The MOF road is to be graded at 2% slope maximum from the high point of the cable crossing. Refer to RFI-0026 response. Provide as-built.

Module Delivery Road



Cross Section for Direct Bury of Existing Utilities



DETAIL - UTILITY SLEEVE CROSSING

SCALE 1:250

Contract Variation Request

Contract No.:	H353004-CC006	**Date:**	2019-06-13
Contractor:	Nuna East Ltd.	**CCR No.:**	H353004-CC006-0050 CVR R1
Contract Title:	Mary River Expansion Stage 3 Site Services	**Reference SI/RFI No.:**	SI-020

Current Condition and Mitigation Steps:
The utility crossing to the south of power generation is within the footprint of the MOF road to be constructed prior to sealift. There are high voltage electrical cables, fiber optic cables, control cables, and a treated effluent pipe on this utility corridor. The current design of the MOF road has the final surface 0.8m below the existing utility corridor. Hatch has issued a site instruction detailing the steps necessary to move the effluent line and cover the existing power and data cables.

Proposed Change:
Nuna will fuse a new effluent line and place sand bedding and cover for the power cables in the area. The grade of the road will be raised by a total of 1.8m at the utility crossing location tapering off at a 2% slope in each direction. This will increase the total amount of fill required to complete the MOF road construction. A source for sand will need to be identified to cover the cables. Steel plate will need to be provided by the project to cover protect the steel cables per the site instruction. Additionally a steel sleeve or culvert will need to be provided for the effluent line to pass under the road.

A cost estimate for the work is attached.

Justification:
As requested in SI-020

Impact on Cost and Schedule:
If the change is accepted, the cost of the contract will increase by and the impact on the schedule will be **5 days.** The requested method of payment is **Time and Material.**

☒ Additional information detailing the change in cost is attached:
- Cost Estimate
- Site Instruction 20

Notes:
1. Any variation to the Contract arising from this request will be managed in accordance with the terms and conditions of the Contract.
2. Contractor is not to proceed with any work until authorized to do so.
3. The response to this request will be returned by Hatch to the Contractor via the Contractor portal

Action Record	Name and Position	Signature	Date
Contractor: Initiated by:	**Chris Petrovic** **Project Manager**	Chris Petrovic	
Hatch: Received by:			

☐	The requested change is not accepted as a change to the Contract.
☐	The requested change is valid. A Site Instruction or Contract Variation with the agreed impact on cost and schedule will be issued to the Contractor.

Hatch: Verified By:			

Bradford Watkin

From: Leonel Dabor <leonel.dabor@baffinland.com>
Sent: Tuesday, July 2, 2019 9:55 AM
To: Stephen Nugent; Bader, Roy; Peace, Glen; Mills, Nick; Robert Chaisson
Cc: Ryan Dicker; Darko Filipic; Ken Humby; Scott Mackenzie; Marlon Coakley; Hamad, Mazen; Robert Kennedy; Peace, Glen; Bradford Watkin
Subject: RE: Schedule and work fronts - CC006
Attachments: 18SJ0001-20190630-Shiploader-Sandnotscreened.pdf

Stephen,

I looked into it and the option of getting a load of sand from the Mine site is not viable. We'll use the pile of sand at pond 1A for the MOD crossing installation.

Per the sieve report, the sand meets spec on the fines but has some cobbles/oversize stones mixed in it. We'll use the sand with the following recommendation:

- Effort/selective loading to be applied to remove any visible oversize stone from the sand pile (within reason)
- The sand will be visually inspected by QA during placement. Hatch CMT to provide progressive sign-off as required

The sand screener is down mechanically and this is the only option. Also, this is the same pile of sand that was used for pond 1A construction so I don't see why we can't it use for the crossing.

Thanks,

Leonel

From: Stephen Nugent <stephenn@nunalogistics.com>
Sent: Monday, July 1, 2019 11:58 AM
To: Bader, Roy <roy.bader@hatch.com>
Cc: Ryan Dicker <RyanD@nunalogistics.com>; Darko Filipic <DarkoF@nunalogistics.com>; Ken Humby <kenh@nunalogistics.com>; Scott Mackenzie <ScottMackenzie@nunalogistics.com>; Marlon Coakley <marlon.coakley@hatch.com>; Hamad, Mazen <mazen.hamad@hatch.com>; Robert Kennedy <robert.kennedy@hatch.com>; Leonel Dabor <leonel.dabor@baffinland.com>; Peace, Glen <glen.peace@hatch.com>; Bradford Watkin <bradfordw@nunalogistics.com>
Subject: [EXTERNAL] RE: Schedule and work fronts - CC006

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Roy/ Mazen,

See below comments.

Stephen Nugent
Project Manager
E stephenn@nunalogistics.com
T +17804084527
C +15873353278

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Pond Inlet, Nunavut, Canada, X0A 0X0
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From: Bader, Roy <roy.bader@hatch.com>
Sent: Sunday, June 30, 2019 11:03 AM
To: Stephen Nugent <stephenn@nunalogistics.com>
Cc: Ryan Dicker <RyanD@nunalogistics.com>; Darko Filipic <DarkoF@nunalogistics.com>; Ken Humby <kenh@nunalogistics.com>; Scott Mackenzie <ScottMackenzie@nunalogistics.com>; Coakley, Marlon <marlon.coakley@hatch.com>; Hamad, Mazen <mazen.hamad@hatch.com>; Kennedy, Robert <robert.kennedy@hatch.com>; Client - Baffinland - Dabor, Leonel <leonel.dabor@baffinland.com>; Peace, Glen <glen.peace@hatch.com>
Subject: Schedule and work fronts - CC006

Good day Stephen,

As discussed, please proceed with the activities below , and please highlight for which of the below items you require a site instruction:

- Laydown # 2, finish the toping with suitable overburden stockpiled right now on LP6. (consider this e-mail as an approval of replacing type 5 with overburden). Work To commence in coming days. Nuna to send RFI for Turnover purposes. Costs to be captured under CCO6 BOQ. No SI required.
- R2 laydown, finish the toping with suitable overburden stockpiled right now on LP6. (consider this e-mail as an approval of replacing type 5 with overburden) – Tretan equipment's to move in order to give you the space required. Work commenced last night. Tretan to relocate equipment to upper deck in order for Nuna to finish. Nuna to send RFI for Turnover purposes. Costs to be captured under CCO6 BOQ. No SI required.
- W1 laydown 'Is this R1?' (Km 4) finish the toping with suitable overburden stockpiled right now on LP6 , to accommodate for the batch plant installation. (consider this e-mail as an approval of replacing type 5 with overburden). SI required or bill under current BOQ – Line Item 6180 Laydown Area.
- LP7 south corner: remove oversized armor stone and place them around the area in front of the crusher laydown to work as a berm(right where you are currently stockpiling type B). and prep the are for stockpiling purposes for SANA. Require SI required to remove oversized armor and install as a berm. Costs for any armour stone that meets the Freight Dock specifications to be billed under the current BOQ. Costs for LP7 laydown construction to be billed under current BOQ – Line Item 6180 Laydown Area.
- LP2 push ROQ to the edge.
- LP5 north upper section, build up benches for material placement. Nuna survey confirming remaining volumes in this area. Nuna to follow up with a response.
- Haul 2 loads of sand from the ship loader to the MOD cable crossing and steel plates for coverage. Leo just informed me that this is on hold until further notice. He is trying to get a load of sand from the Mine.

Please note that all those activities not to affect the following priorities :

- MOD road
- Freight dock
- Screening and crushing building to be completed prior to the 18th of July.
- TYPE 5 topping on the MOD road, Freight dock, LP3 and LP2 (the flat section).

Regards,

Roy Bader Ing. , M.Ing
Construction Superintendent
Mary River Expansion Project – Nunavut
Roy.bader@hatch.com

HATCH

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Bradford Watkin

From: Darko Filipic
Sent: Monday, October 14, 2019 2:21 PM
To: Leonel Dabor
Cc: Peace, Glen; Franken, Ronny; Bradford Watkin; Hatch - Derek Padlewski; Bader, Roy; Hamad, Mazen; Vern Shaver; Marlon Coakley; Mike Price; Stephen Nugent; Colin Burd; Ryan Dicker; Chris Petrovic; Ken Humby; Scott Mackenzie; Hatch Doc Control; Maggie Goreham; Matthew Walsh
Subject: CC006-RFI-0097 Utility Crossings at MOF Road
Attachments: CC006-RFI-0097 2019-10-14 - Utility Crossings at MOF Road.docx; H353004-40000-223-271-0007-0001_1 - Module Delivery Road 1 of 4_Markup.pdf; 191014 MOD RD UTIL CROSSING AB.PDF; RFI-0097 Pictures.pdf; Cable crossing - Utility Berm LP2

Follow Up Flag: Flag for follow up
Flag Status: Completed

Leonel,

Attached is CC006-RFI-0097 regarding the pipe sleeves that were installed across the MOF Road by the utility bridge. The sleeves were not installed in the location and configuration shown on the IFC drawing for a variety of reasons that were discussed and agreed to in the field at the time. Nuna is proposing to accept the installed sleeves as is, and are asking for clarification on the remaining 4 sleeves that have not yet been installed.

A copy of this RFI will be uploaded to iPas, with additional backup documents (SI's & RFIs) that weren't attached to this email due to size.

Regards,

Darko Filipic
Project Coordinator
E darkof@nunalogistics.com
T +14163648820;ext=4120
C +14039295397

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Pond Inlet, Nunavut, Canada, X0A 0X0
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Bradford Watkin

From: Darko Filipic
Sent: Sunday, October 13, 2019 6:53 AM
To: Bradford Watkin
Cc: Bradford Watkin
Subject: FW: LP2 and MOF Road Remaining Work

Keeping you in the loop

Darko Filipic
Project Coordinator
E darkof@nunalogistics.com
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C +14039295397

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From: Leonel Dabor [mailto:leonel.dabor@baffinland.com]
Sent: Saturday, October 12, 2019 4:59 PM
To: Darko Filipic <DarkoF@nunalogistics.com>; Mike Price <mikep@nunalogistics.com>; Colin Burd <ColinB@nunalogistics.com>; Franken, Ronny <ronny.franken@hatch.com>; Hatch - Derek Padlewski <derek.padlewski@hatch.com>
Cc: Bader, Roy <roy.bader@hatch.com>; Hatch - Tim Kane <tim.kane@hatch.com>; Peace, Glen <glen.peace@hatch.com>; Stephen Nugent <stephenn@nunalogistics.com>; Ryan Dicker <RyanD@nunalogistics.com>; Ken Humby <kenh@nunalogistics.com>; Scott Mackenzie <ScottMackenzie@nunalogistics.com>
Subject: RE: LP2 and MOF Road Remaining Work

Darko,

Submit a RFI to *"accept as is"* with the details below. Please include as-built and any back-up email correspondence or documentation you have instructing Nuna to install the additional 4 pipes in the current location. I am aware of the initial plan to install only the 5 bottom pipes as that was covered in Site Instruction #20. Please include the associated quality documentation for the installation.

The remaining 4 pipe sleeves needs to be planned for and installed. Please submit a RFI for approval if they cannot be installed in the design location. Tim and Roy are aware.

We'll advise on the arch culvert for LP2 shortly.

Thanks,

Leonel Dabor | Project Engineer
Oakville - 2265
T: +1 416 364 8820
C: +1 647 278 2384

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www.baffinland.com

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From: Darko Filipic <DarkoF@nunalogistics.com>
Sent: Saturday, October 12, 2019 11:20 AM
To: Leonel Dabor <leonel.dabor@baffinland.com>; Mike Price <mikep@nunalogistics.com>; Colin Burd <Colinb@nunalogistics.com>; Franken, Ronny <ronny.franken@hatch.com>; Hatch - Derek Padlewski <derek.padlewski@hatch.com>
Cc: Bader, Roy <roy.bader@hatch.com>; Hatch - Tim Kane <tim.kane@hatch.com>; Peace, Glen <glen.peace@hatch.com>; Stephen Nugent <stephenn@nunalogistics.com>; Ryan Dicker <RyanD@nunalogistics.com>; Ken Humby <kenh@nunalogistics.com>; Scott Mackenzie <ScottMackenzie@nunalogistics.com>
Subject: [EXTERNAL] RE: LP2 and MOF Road Remaining Work

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Leonel,

The 9ea pipe sleeves were not installed as per cross-section A-A below, because that alignment was directly on top of all the existing utilities at the crossing and would have required a complete jobsite power shutdown for days, so it was decided in the field to place them in a different alignment. This decision, however, was not documented in an RFI at the time.
Also, we initially installed the bottom 5 pipes, because that was all the pipe we had to work with (sealift hadn't started yet) and that was all that was needed for this season to get the camp power going. After we received more pipe we installed the remaining 4 pipes, but since there were already energized power lines in the previously placed pipe it was decided to install the pipe beside the previously placed pipe rather than above them. Again, this was not documented in an RFI prior to placement.

For the pipes in cross-section B-B below, we installed one effluent pipe sleeve and one 6" pipe sleeve in a different alignment than that shown on the IFC, for all the same reasons as explained above (lack of pipe, conflict with existing utilities). There are 4 more sleeves remaining to be installed as per the IFC, but we haven't been instructed to install them at this time since they are not required imminently, and the pipe that was shipped in this year is being utilized on a priority basis as directed by Hatch.

For the arch culvert, any information you can provide us to help with the creation of the plan would be appreciated. (Spec sheets, installation instructions, parts lists, etc.) And again, there is a budget issue – I will need to know where to code the cost.

Regards,

Darko Filipic
Project Coordinator

E darkof@nunalogistics.com
T +14163648820;ext=4120
C +14039295397

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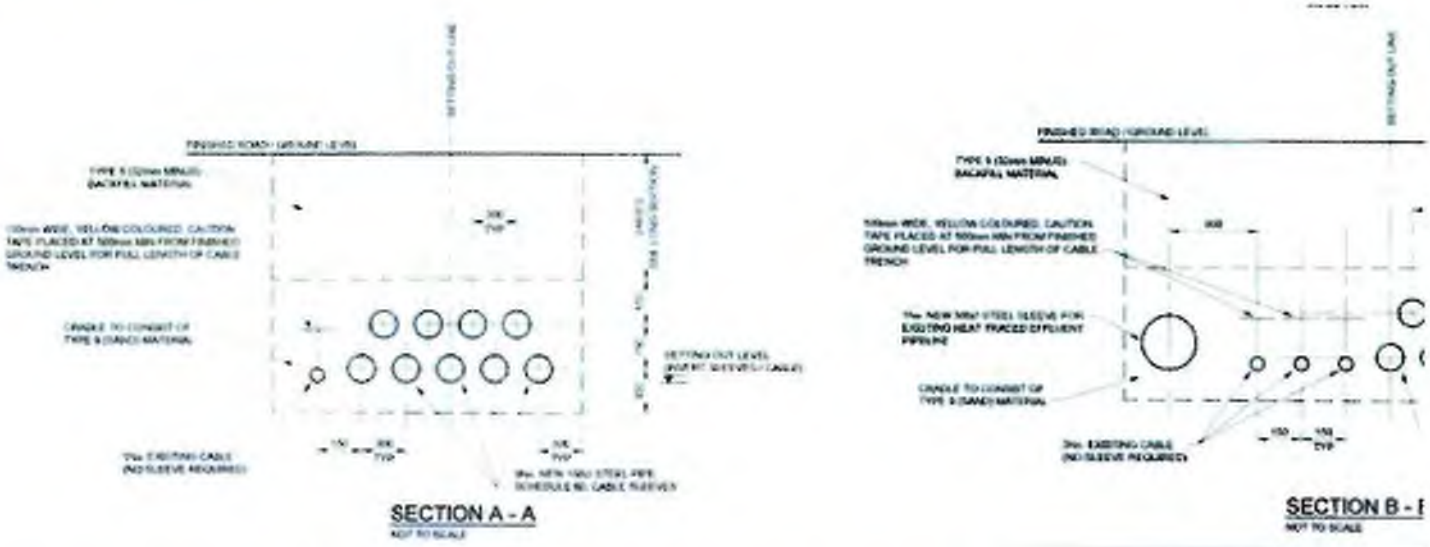
From: Leonel Dabor [mailto:leonel.dabor@baffinland.com]
Sent: Saturday, October 12, 2019 10:39 AM
To: Darko Filipic <DarkoF@nunalogistics.com>; Mike Price <mikep@nunalogistics.com>; Colin Burd <ColinB@nunalogistics.com>; Franken, Ronny <ronny.franken@hatch.com>; Hatch - Derek Padlewski <derek.padlewski@hatch.com>
Cc: Bader, Roy <roy.bader@hatch.com>; Hatch - Tim Kane <tim.kane@hatch.com>; Peace, Glen <glen.peace@hatch.com>; Stephen Nugent <stephenn@nunalogistics.com>; Ryan Dicker <RyanD@nunalogistics.com>; Ken Humby <kenh@nunalogistics.com>
Subject: RE: LP2 and MOF Road Remaining Work

Darko,

Were the 9ea pipe sleeves installed in the design location following the cross-section below? If not, was a RFI submitted and accepted for the current installation? Also, what is the plan for the installation of the remaining 5ea 6" pipe sleeves in the IFC drawing?



We are reviewing the manifest and we'll advise if the arch culvert was shipped to site. We need to plan to have the culvert installed if it was shipped to site or submit a RFI for an alternate plan.

Thanks,

Leonel

From: Darko Filipic <DarkoF@nunalogistics.com>
Sent: Saturday, October 12, 2019 9:32 AM
To: Leonel Dabor <leonel.dabor@baffinland.com>; Mike Price <mikep@nunalogistics.com>; Colin Burd

<Colinb@nunalogistics.com>
Cc: Bader, Roy <roy.bader@hatch.com>; Hatch - Tim Kane <tim.kane@hatch.com>; Peace, Glen <glen.peace@hatch.com>; Stephen Nugent <stephenn@nunalogistics.com>; Ryan Dicker <RyanD@nunalogistics.com>; Ken Humby <kenh@nunalogistics.com>
Subject: [EXTERNAL] RE: LP2 and MOF Road Remaining Work

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Leonel,

We have placed 9ea 6"dia. pipe sleeves on the west side of the utility hump and one on the east side, as well as one 300mm dia. pipe sleeve for the effluent line on the east side.

As for the arch culvert, we have no plans to install it at this time and there is no budget remaining in LP2 to do that work. Do you know if it was shipped to site this year?

Regards,

Darko Filipic
Project Coordinator
E darkof@nunalogistics.com
T +14163648820;ext=4120
C +14039295397

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From: Leonel Dabor [mailto:leonel.dabor@baffinland.com]
Sent: Saturday, October 12, 2019 8:43 AM
To: Mike Price <mikep@nunalogistics.com>; Darko Filipic <DarkoF@nunalogistics.com>; Colin Burd <ColinB@nunalogistics.com>
Cc: Bader, Roy <roy.bader@hatch.com>; Hatch - Tim Kane <tim.kane@hatch.com>; Peace, Glen <glen.peace@hatch.com>
Subject: FW: LP2 and MOF Road Remaining Work

Darko,

Were the 14 pipe sleeves for the MOF road installed as per the IFC drawing and is there a plan to install the arch culvert for LP2 access road?

Thanks,

Leonel Dabor | Project Engineer
Oakville - 2265

T: +1 416 364 8820
C: +1 647 278 2384

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www.baffinland.com

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From: Leonel Dabor
Sent: Friday, October 11, 2019 9:36 AM
To: Bader, Roy <roy.bader@hatch.com>
Subject: LP2 and MOF Road Remaining Work

Roy,

Please see attached. We need to ensure the pipe sleeves for MOF road and arch culvert for LP2 access road is installed as per the IFC drawing.

Thanks,

Leonel Dabor | Project Engineer
Oakville - 2265
T: +1 416 364 8820
C: +1 647 278 2384

Baffinland

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(Section 9)

Land Disturbance Forms (LDFs)

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.		**Department:**	Projects
Date:	2019-04-21	**Name/Position:**	**Darko Filipic /Project Coordinator**
Project location:	Port Site		MOF Road - Existing Stormwater runoff areas
Project Duration:	Start 2019-04-23	Finish	2019-05-07

Project Details

GPS Coordinates: Lat: N+797900 Long: E+503500 (NAD 83)

Land disturbance area: 27,500 m2

Type of disturbance (Drilling, Excavation, Rutting due to site access, etc.)

Snow and Ice removal, Placement of ROQ fill.

Detailed description of planned work.

Construction of Module Road:

- Ice and snow to be removed from footprint prior to construction
- ROQ fill when required fill is >600mm, Type 8 Fill of at least 300mm, Type 5 fill of 100mm

- This LDF is just to cover the areas within the MOF road footprint that usual fill with runoff water during freshet. This includes the area between the Tote Road and the Freight Dock, the ditch area between the ore pad and the site access road across from the Matrix camp, and the low area between the warehouse seacan laydown and the electrical laydown.

Check List

1	**Has the Environmental Concerns in section 2.3.1. of the Environmental Protection plan been reviewed?**	Yes
	- If No, please review the list of concerns on page 7 of this form.	
	Will work be completed within 31m of the High Water Mark of any stream or water body?.	No
	- If Yes, please contact the Environment Department.	
3	**Is there a stream or waterbody >31m of the work site?.**	No
	- If Yes, Include a detailed description of the Sediment and Erosion Control Measures on Page 3.	
4	**Has the area been cleared by Archaeology?.**	Yes
	- If No or Unknown, Please contact the Environment Department.	
5	**Will the land disturbance occur between May 31 and August 31?.**	No
	- If Yes, An Active Migration Bird Survey is required prior to start.	

Approval

Approved by: William Bowden Position: Environmental Superintendent

Approved on: 2019 04 30

Valid Unit:

Comments and recommendations by the Environment Department:

MOF road from LP3 to existing Tote Road must follow as previous conditions in LDF Road South Section

See page 8 and 9 of document for defined northern section from Ore Pad South Entrance to Freight Dock

Note approval was already given for the south section of the MOF road

Baffinland

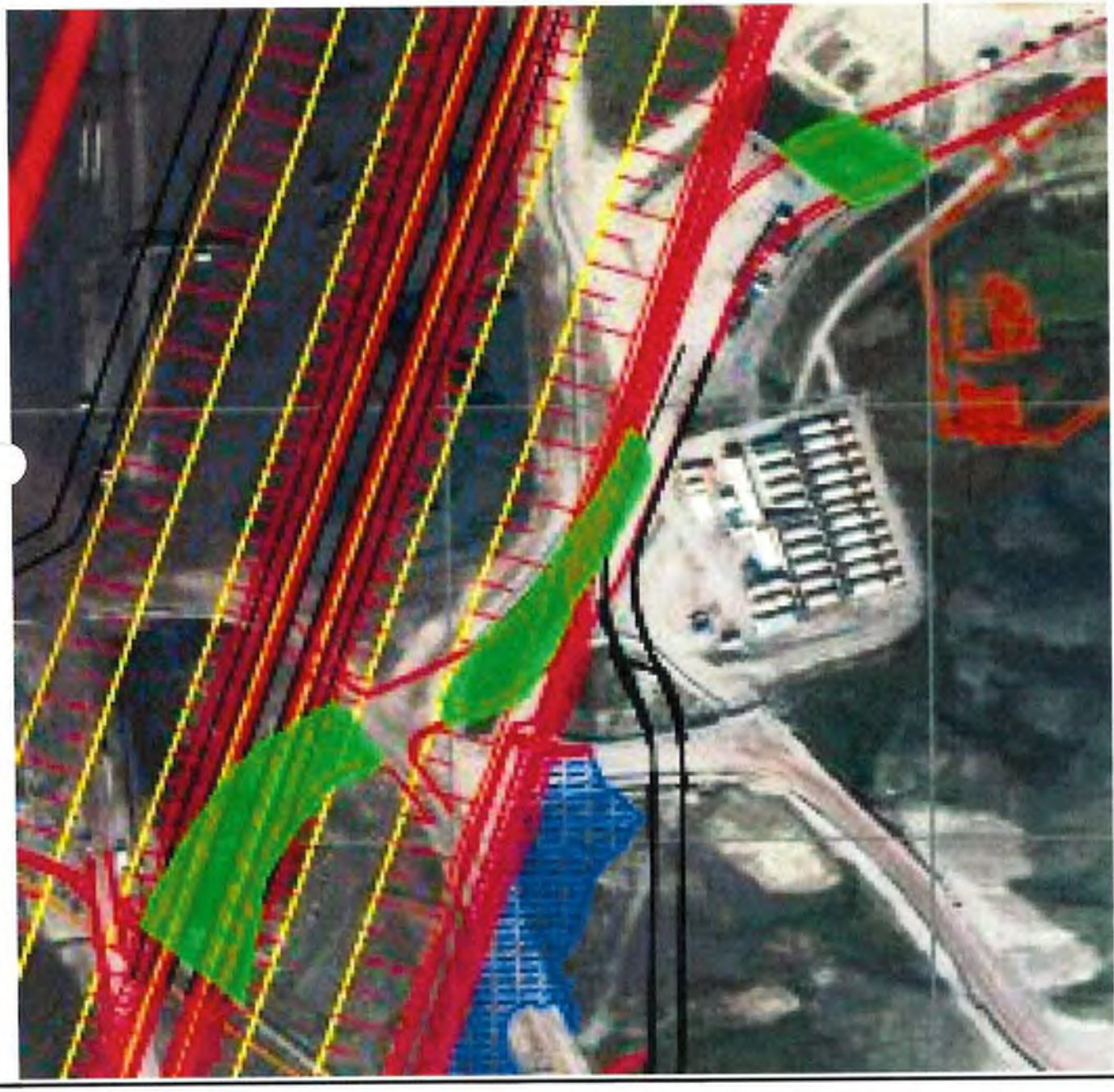
LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	2019-04-21		
Project location:	Port Site		

Design/Engineering Drawing

Affected areas highlighted green.



Baffinland

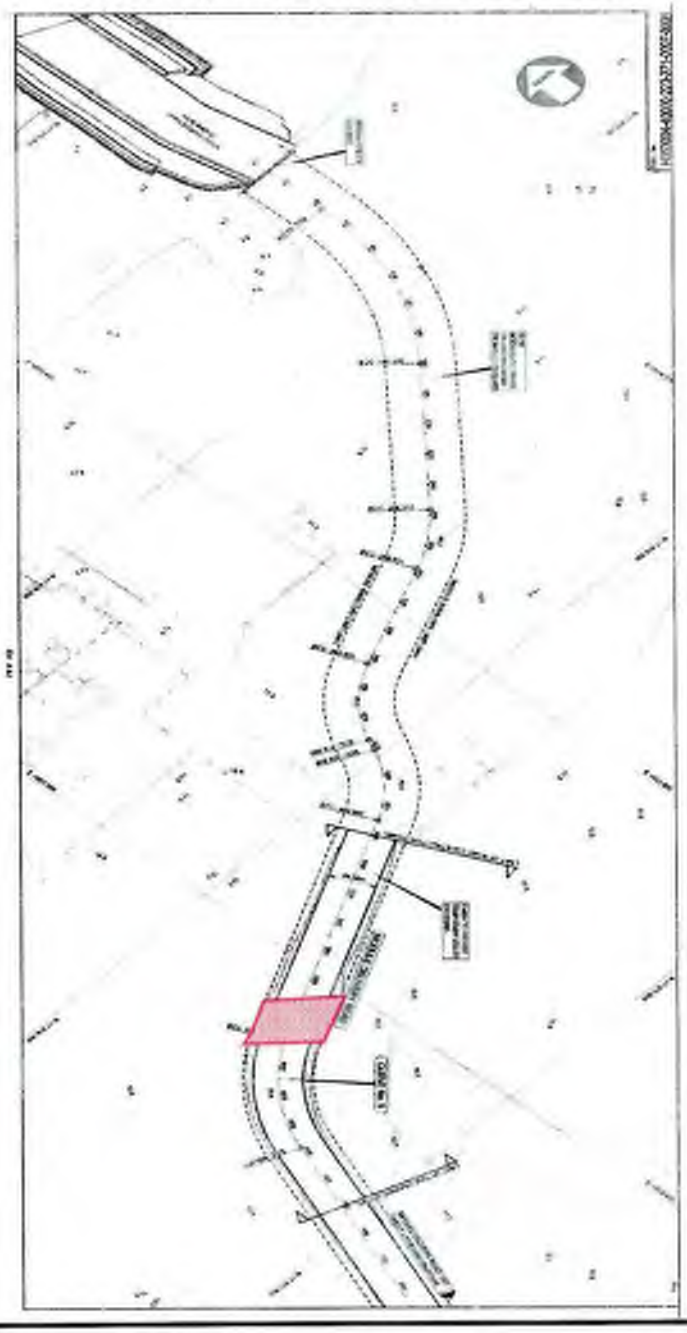
LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

. orm No.	0	**Department:**	Projects
Date:	2019-04-21		
Project location:	Port Site		

Design/Engineering Drawing

See drawing H353004-40000-223-271-0007-0001



Baffinland

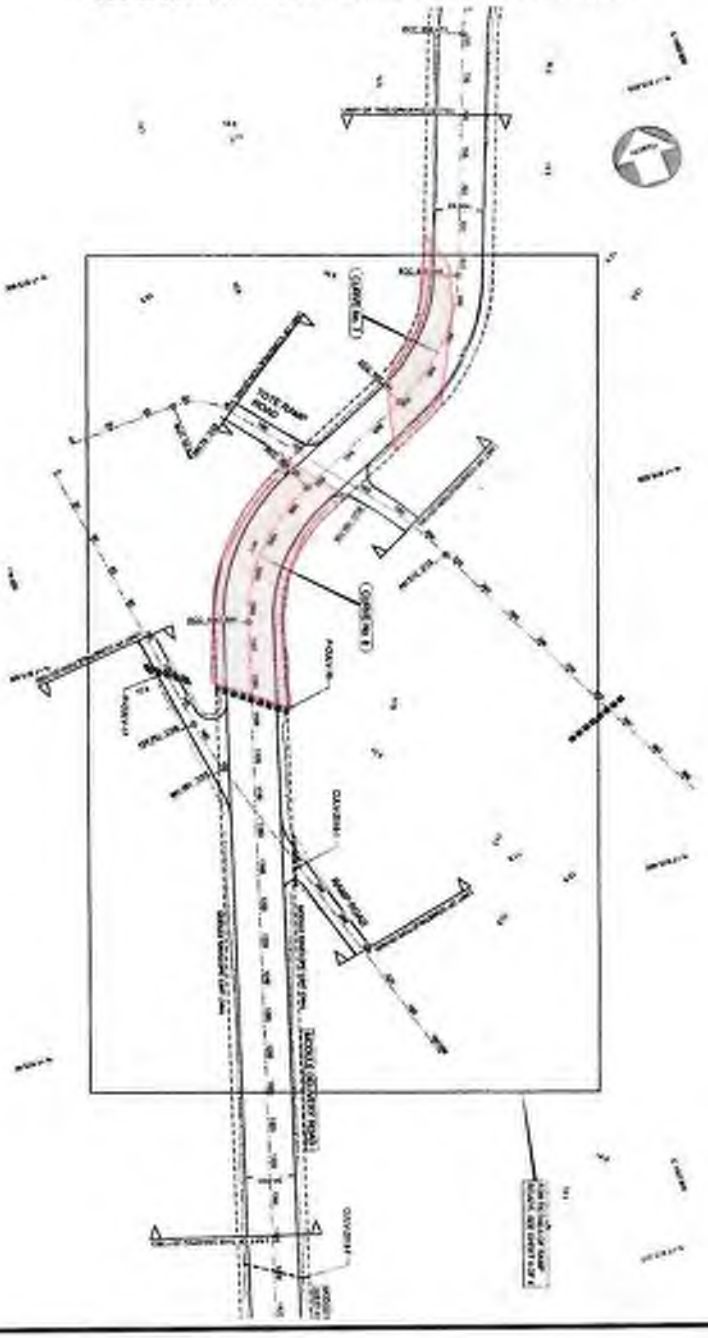
LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	2019-04-21		
Project location:	Port Site		

Design/Engineering Drawing

See drawing H353004-40000-223-271-0007-0002



LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	2019-04-21		
Project location:	Port Site		

2.3.1 ENVIRONMENTAL CONCERN

2.3.1 ENVIRONMENTAL CONCERN

The Arctic is a fragile environment where the recovery of vegetation within this region is slow. Ground disturbance shall be minimized to protect archaeological resources, wildlife habitats, sensitive landforms, such as ice-rich permafrost features, and prevent erosion and the movement of sediment into watercourses and water bodies. Various permits, licences and approvals issued to Baffinland are specific in regards to ground disturbances and outline the necessary protection measures that need to be taken to minimize this aspect of the Project.

The following measures are to be implemented to minimize ground disturbance:

- Equipment and personnel must stay on existing roads and trails
- Approval for new areas of disturbance must be approved by the Operations Manager
- Rutting (furrow creation) shall be avoided on ground surfaces; overland travel of equipment or vehicle will be suspended when rutting occurs
- No materials shall be stored on the surface ice of streams
- No material shall be removed from below the ordinary high water mark of any stream
- Greywater sumps must be located a distance of at least thirty (30) metres above the ordinary high water mark of any water body

Baffinland

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

rorm No.	0	**Department:**	Projects
Date:	2019-04-21		
Project location:	Port Site		

2.3.1 ENVIRONMENTAL CONCERN

2.3.1 ENVIRONMENTAL CONCERN

Box #1	A culvert will not be required to be constructed, however the slot must be left to allow water to flow SW until the initial freshet surface water flow has subsided as determined by Site Environment.
Box #2	The two culverts in this area must be blocked to prevent water from flowing West towards the Ore Pad and South towards the Matrix
Box #3	The two culverts in the area shown as A and B must remain free of constuction material and able to flow freely

Baffinland

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	2019-04-21		
Project location:	Port Site		

2.3.1 ENVIRONMENTAL CONCERN

2.3.1 ENVIRONMENTAL CONCERN

The ditch south of the PSC must be cleared of snow and ice* and graded to freeflow East around the PSC camp from the final discharge point of the pump, a dam is suggested due to minimal grade

The pump and line is required to be set up and prepared to begin pumping as soon as surface water begins to flow

*snow and ice from this ditch can be placed in the Snow Stockpile directly South of the PSC

LAND DISTRURBANCE FORM

Baffinland

Document # BAF-PH1-830-P16-

Form No.		**Department:**	Projects
Date:	2019-04-21	**Name/Position:**	**Darko Filipic /Project Coordinator**
Project location:	Port Site		MOF Road - Existing Stormwater runoff areas
Project Duration:	Start 2019-04-23	Finish	2019-05-07

Project Details

GPS Coordinates: Lat: N+797900 Long: E+503500 (NAD 83)

Land disturbance area: 27,500 m2

Type of disturbance (Drilling, Excavation, Rutting due to site access, etc.)

Snow and Ice removal, Placement of ROQ fill.

Detailed description of planned work.

Construction of Module Road:

- Ice and snow to be removed from footprint prior to construction
- ROQ fill when required fill is >600mm, Type 8 Fill of at least 300mm, Type 5 fill of 100mm

- This LDF is just to cover the areas within the MOF road footprint that usual fill with runoff water during freshet. This includes the area between LP3 and the Tote Road, the ditch area between the ore pad and the site access road across from the Matrix camp, and the low area between the warehouse seacan laydown and the electrical laydown.

Check List

1	**Has the Environmental Concerns in section 2.3.1. of the Environmental Protection plan been reviewed?**	Yes
	- If No, please review the list of concerns on page 7 of this form.	
	Will work be completed within 31m of the High Water Mark of any stream or water body?.	No
	- If Yes, please contact the Environment Department.	
3	**Is there a stream or waterbody >31m of the work site?.**	No
	- If Yes, Include a detailed description of the Sediment and Erosion Control Measures on Page 3.	
4	**Has the area been cleared by Archaeology?.**	Yes
	- If No or Unknown, Please contact the Environment Department.	
5	**Will the land disturbance occur between May 31 and August 31?.**	No
	- If Yes, An Active Migration Bird Survey is required prior to start.	

Approval

Approved by:	Connor Devereaux	Position:	Environmental Superintendent
Approved on:	2019 04 24		
Valid Unit:	2019 05 15		

Comments and recommendations by the Environment Department:

Approved is only the section south of the Tote Road crossing. (see Sediment and Erosion Control Measures) Work must commence prior to flowing water conditions.

LAND DISTRURBANCE FORM

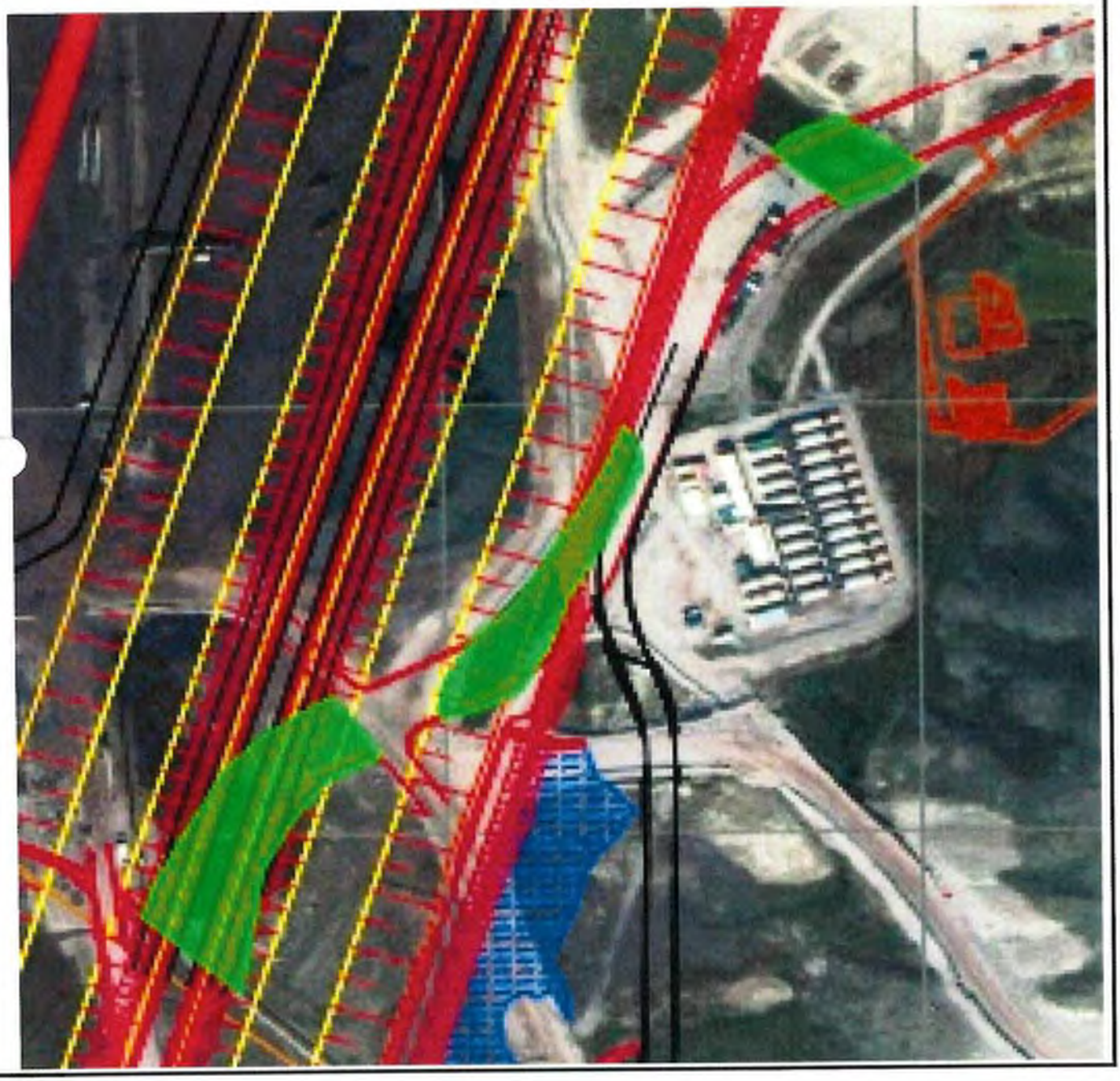
Baffinland

Document #

Form No.	0	**Department:**	Projects
Date:	2019-04-21		
Project location:	Port Site		

Design/Engineering Drawing

Affected areas highlighted green.



LAND DISTRURBANCE FORM

Baffinland

Document #

rorm No.	0	**Department:**	Projects
Date:	2019-04-21		
Project location:	Port Site		

Design/Engineering Drawing

See drawing H353004-40000-223-271-0007-0001

LAND DISTRURBANCE FORM

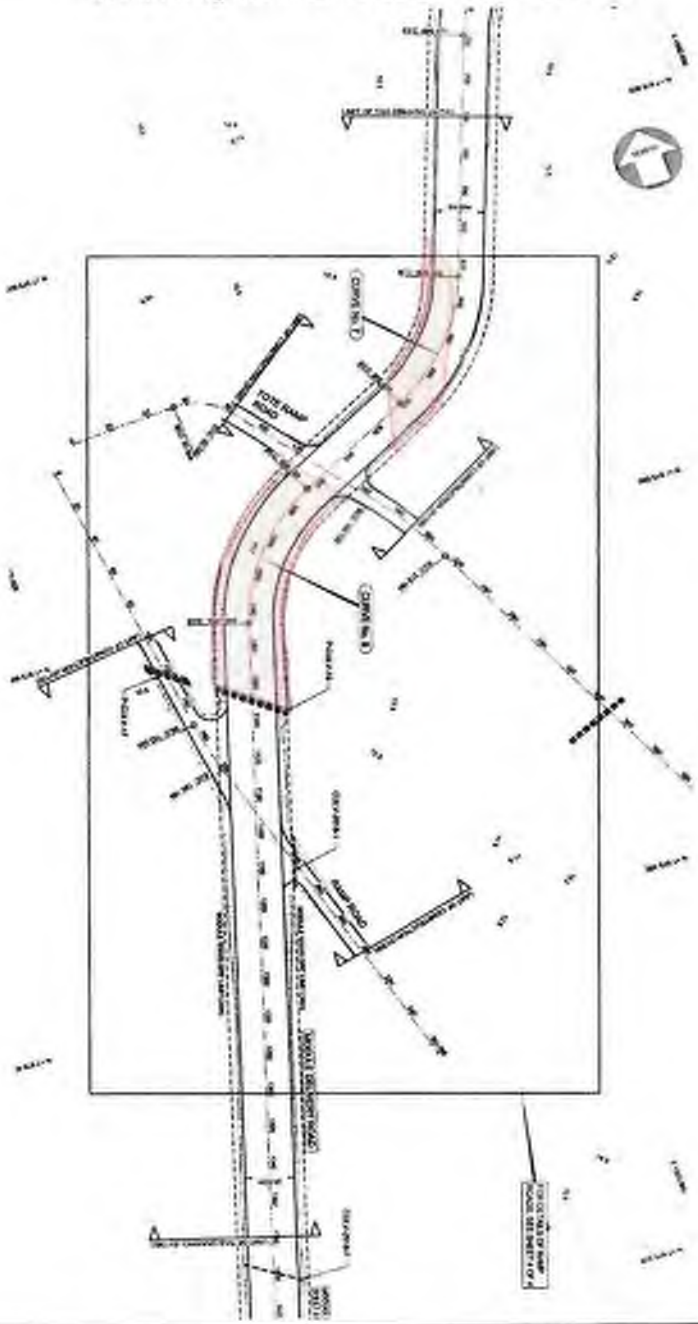
Baffinland

Document #

Form No.	0	Department:	Projects
Date:	2019-04-21		
Project location:	Port Site		

Design/Engineering Drawing

See drawing H353004-40000-223-271-0007-0002



LAND DISTRURBANCE FORM

Baffinland

Document

Form No.	0	**Department:**	Projects
Date:	2019-04-21		
Project location:	Port Site		

Sediment and Erosion Control Measures

Please give a detailed description of the run-off control measure which will be put in place.
Include all water bodies and streams, slope direction and materials to be used.
- Road to be built to design, in accordance with water management plan. Winter construction
- The culvert that currently runs from the ditch at the SE corner of the Ore Pad to the area between the Ore Pad access roads will be left unobstructed.
- The existing ditch at the North end of LP3 will be left open, until a new sampling site can be located. The planned double 1200mm dia. Culverts will be installed at a later date.

- Snow and Ice will he hauled to the designated snow and ice dump.

South of Tote road work drainage plan:
Approved is only south to the Tote Road. This section will be developed as outline:

Only the section between the Heli pad and Tote Road can be constructed at this time.

A gap will be left in the MOF road to allow for flow from the drainage ditch to the sample locations.

A gap will be left in the MOF road to allow flow from the pooling water to the Sample locations.

When future culvert is installed, all water must be diverted to the sample locations.

LAND DISTRURBANCE FORM

Baffinland

Document

Form No.	0	**Department:**	Projects
Date:	2019-04-21		
Project location:	Port Site		

2.3.1 ENVIRONMENTAL CONCERN

2.3.1 ENVIRONMENTAL CONCERN

The Arctic is a fragile environment where the recovery of vegetation within this region is slow. Ground disturbance shall be minimized to protect archaeological resources, wildlife habitats, sensitive landforms, such as ice-rich permafrost features, and prevent erosion and the movement of sediment into watercourses and water bodies. Various permits, licences and approvals issued to Baffinland are specific in regards to ground disturbances and outline the necessary protection measures that need to be taken to minimize this aspect of the Project.

The following measures are to be implemented to minimize ground disturbance:

- Equipment and personnel must stay on existing roads and trails
- Approval for new areas of disturbance must be approved by the Operations Manager
- Rutting (furrow creation) shall be avoided on ground surfaces; overland travel of equipment or vehicle will be suspended when rutting occurs
- No materials shall be stored on the surface ice of streams
- No material shall be removed from below the ordinary high water mark of any stream
- Greywater sumps must be located a distance of at least thirty (30) metres above the ordinary high water mark of any water body

(Section 10)

Quality Control Reports

NUNA EAST LTD	STRIPPING AND EXCAVATION INSPECTION REPORT	Exhibit 1-1 QDE Revision 2 Page 1 of 1

		Date: 10/20/19
Project: Mary River Expansion Project	**ITP#:** CC006-0008A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: MOD ROAD	**Area Description:** MODULE DELIVERY ROAD UTILITY CROSSING	
Drawing No.: 1353004-40000-223-271-0007-0001		**Rev.:** 1

Area / Stations Inspected: See Survey Data and/or attached drawing.

INSPECTION DESCRIPTION		Verified (Initial)
Environmental and regulatory permits in place.	☑ YES ☐ NO ☐ N/A	
Ground Disturbance permit completed and approved.	☑ YES ☐ NO ☐ N/A	
All underground utility location clearly marked on Redline Drawing.	☑ YES ☐ NO ☐ N/A	
Survey complete of area to be stripped or excavated.	☑ YES ☐ NO ☐ N/A	
Topsoil stripping depth verified and confirmed as complete. Release for subsoil stripping.	☐ YES ☐ NO ☑ N/A	
Subsoil stripping depth verified and confirmed as complete. Release for Cut/Fill.	☐ YES ☐ NO ☑ N/A	
Confirm all stripping is placed in correct storage areas.	☑ YES ☐ NO ☐ N/A	
Confirm all unsuitable materials are segregated into appropriate storage area	☑ YES ☐ NO ☐ N/A	
Confirm depth of excavation as per approved IFC drawings.	☑ YES ☐ NO ☐ N/A	
Slopes of excavations meet site specification and Safety regulations.	☑ YES ☐ NO ☐ N/A	
Spoil piles to be safe distance away from open excavation.	☑ YES ☐ NO ☐ N/A	
Release of stripping/excavation area.	☑ YES ☐ NO ☐ N/A	

Comments: COMPLETED PER PUNCH ITEM # 1

Grant LaPointe /	Supervisor	10/20/19
Construction Designate – Print/Sign	Title	Date
Bradford Watkin /	QC COORDINATOR	10/22/19
Nuna QC Designate – Print/Sign	Title	Date
Derek Pedrali /	QA Manager	10/22/19
Hatch QA Designate – Print/Sign	Title	Date

NUNA EAST LTD

SUBGRADE APPROVAL REPORT

		Date: 10/20/19
Project: Mary River Expansion Project	**ITP#:** CC006-00078A	**QA Ref. Rpt. No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: MOD ROAD	**Area Description:** MODULE DELIVERY ROAD UTILITY CROSSING	
Drawing No.: H353004-40000-223-271-0007-0001		**Rev.:** 1

Area / Stations Inspected: SEE SURVEY DATA &/OR ATTACHED DRAWING

INSPECTION DESCRIPTION		Verified (Initial)
Organic Soil Present.	☐ YES ☐ NO ☑ N/A	
Snow or Ice Present.	☐ YES ☑ NO ☐ N/A	
Ponded Water Present.	☐ YES ☑ NO ☐ N/A	
Water Seepage.	☐ YES ☑ NO ☐ N/A	
Frozen Soil Present.	☐ YES ☑ NO ☐ N/A	
Excavation Cleared of Foreign and Loose Soil Material.	☑ YES ☐ NO ☐ N/A	
Excavation Matches Design and IFC drawings.	☑ YES ☐ NO ☐ N/A	
Was Over Excavation Required. Depth: (_____)	☐ YES ☑ NO ☐ N/A	
Excavation Satisfactory and Accepted.	☑ YES ☐ NO ☐ N/A	

Comments: COMPLETED PER PUDOH ITEM #1

Grant C. Pink /	Supervisor	10/20/19
Construction Designate – Print/Sign	Title	Date
BRANFORD WATKIN /	QC COORDINATOR	10/22/19
Contractor QC Designate – Print/Sign	Title	Date
Derek Pidlaski /	QA Manager	10/22/19
Client QA Designate – Print/Sign	Title	Date

NUNA EAST LTD	SUBBASE APPROVAL REPORT	Exhibit 1-8a QDE Revision 1 Page 1 of 1

		Date: 10/20/19
Project: Mary River Expansion Project	ITP #: CC006-00058A	QA Refer. Report No.:
Contractor: Nuna East Ltd.	Contract No.: CC006	CWP: N/A
Location: Milne Port	Elevation: N/A	Subsystem: N/A
Area: MOD ROAD	Area Description: MODULE DELIVERY ROAD UTILITY CROSSING	
Drawing No.: H353004-40000-223-271-0007-0001		Rev.: 1

Area / Section Inspected: See Survey Data and/or attached Drawing.

INSPECTION DESCRIPTION		Verified (Initial)
Organic Material Present.	☐ YES ☑ NO ☐ N/A	
Snow or Ice Present.	☐ YES ☑ NO ☐ N/A	
Ponded Water Present.	☐ YES ☑ NO ☐ N/A	
Water Seepage.	☐ YES ☑ NO ☐ N/A	
Frozen Material Present.	☐ YES ☑ NO ☐ N/A	
Excavation Cleared of Foreign and Loose Material.	☑ YES ☐ NO ☐ N/A	
Excavation Matches Design and IFC drawings.	☑ YES ☐ NO ☐ N/A	
Was Over Excavation Required. Depth: (_____)	☐ YES ☑ NO ☐ N/A	
Excavation Satisfactory and Accepted.	☑ YES ☐ NO ☐ N/A	

Comments: * AREA UNDER UTILITY PIPE SLEEVE.
COMPLETED PER PUNCH ITEM #1

Grant LaPointe	Supervisor	10/20/19
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN	QC COORDINATOR	10/22/19
Nuna QC Designate – Print/Sign	Title	Date
Doyle Pedlewski	QA Manager	10/22/19
Hatch QA Designate – Print/Sign	Title	Date

NUNA EAST LTD	AUTHORIZATION FOR BACKFILL	Exhibit :1-3 QDE Revision 2 Page 1 of 2

		Date: 10/20/19
Project: Mary River Expansion Project	**ITP#:** CC006-0008A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Sub-System:** N/A
Area: MOD ROAD	**Area Description:** MODULE DELIVERY ROAD UTILITY CROSSING	
Compaction Required Yes ☐ No ☐	**Excavation Permit No.:** N/A	
Drawing No.: H353004-40000-223-271-0007-0001		**Rev.:** 1

Area / Stations Inspected: See Survey Data and/or attached drawing.

PRE-BACK FILL INSPECTION

INSPECTION DESCRIPTION:		Verified (Initial)
1. Area cleared of frozen material, foreign objects and debris.	☑ YES ☐ NO ☐ N/A	
2. Water seepage or ponded water present in excavation.	☐ YES ☑ NO ☐ N/A	
3. Organic and loose soil present.	☐ YES ☐ NO ☑ N/A	
4. All installations in the excavation are complete.	☑ YES ☐ NO ☐ N/A	
5. Concrete substructures complete.	☐ YES ☐ NO ☑ N/A	
6. Electrical installation(s) complete.	☐ YES ☐ NO ☑ N/A	
7. Piping installation(s) complete.	☐ YES ☐ NO ☑ N/A	
8. Sewer vents and manhole installation complete.	☐ YES ☐ NO ☑ N/A	
9. Frost blocks installed as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	
10. Geotextile fabric installation(s) as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	
11. Insulation installed per IFC drawings.	☐ YES ☐ NO ☑ N/A	
12. Culverts installation(s) as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	
13. Pipe Sleeve installation(s) as per specification and IFC drawings.	☑ YES ☐ NO ☐ N/A	
14. Redline / As-Builts completed.	☑ YES ☐ NO ☐ N/A	
15. Overall condition of base is suitable for backfilling and compaction.	☑ YES ☐ NO ☐ N/A	

APPROVAL TO PROCEED WITH BACKFILL

Contractor QC Designate		Client Designate	
BRADFORD WATKIN			
Name (print)	Signature	Name (print)	Signature

SPECIFIED DETAILS

Subgrade Material	TYPE 5	Backfill Max. Lifts	1.5m
Subgrade/Bedding Material	TYPE 5	Frequency of Compaction Test	PER LIFT
Hunching Material	TYPE 5	Density	100%
Backfill Material	TYPE 5	Moisture Level	N/A
Cover Material	TYPE 5	Other	—

IN PROCESS INSPECTION

	INSPECTION DESCRIPTION:		Verified (Initial)
1.	Fill material is free of foreign material and conforms to specification.	☑ YES ☐ NO ☐ N/A	
2.	Survey check of Location, dimensions and shape of excavation or base.	☑ YES ☐ NO ☐ N/A	
3.	Lift thickness confirmed, and compaction testing performed in accordance with specification.	☑ YES ☐ NO ☐ N/A	
4.	Warning tape(s) installed, depth and type from final grade: (_____),(_____).	☐ YES ☐ NO ☑ N/A	
5.	Red concrete installed over utilities.	☐ YES ☐ NO ☑ N/A	
6.	Soil density testing performed as per specification and test reports completed.	☐ YES ☐ NO ☑ N/A	
7.	Moisture levels acceptable.	☐ YES ☐ NO ☑ N/A	
8.	Final elevation of area is in accordance to IFC drawings.	☑ YES ☐ NO ☐ N/A	

Test Instruments

Manufacturer	Description	Range	I.D. No.:	Calibration Due Date
	N/A			

Comments: COMPLETED PER PUNCH ITEM #1

Attach additional supporting documents, data, or test results to this Report as required

Grant LaPointe /			10/20/18
Construction Designate – Print/Sign		Title	Date
BRADFORD WATKINS /		QC COORDINATOR	10/21/19
Nuna QC Designate – Print/Sign		Title	Date
David Pedersen /		QA Manager	10/22/19
Hatch QA Designate – Print/Sign		Title	Date

NUNA EAST LTD

COMPACTION REPORT

Exhi 1-6 QDE
Revision 3

Project: Mary River Expansion Project	**ITP #:** CC006-0008A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Sub-System:** N/A
Area: MOD ROAD	**Area Description:** MODULAR DELIVERY ROAD UTILITY CROSSING	
Drawing No.: H353004-40000-223-271-0007-0001		**REV.:** 1

Area / Stations Inspected: See Survey Data and attached drawing.

Compaction Equipment Used: Wacker Nueson BPU5545A 750lb Plate Compactor | **Number of Passes Completed:** 5+

FILL DATA

Type of Subgrade:	**Condition:**	
☐ Sand ☐ Clay ☐ Bedrock ☑ Other (Specify): TYPE 8	☑ Rough ☐ Smooth ☐ Wet ☐ Dry ☐ Frozen	☑ Loose ☐ Hard ☐ Rutted ☐ Other (Specify): _____

Fill thickness: N/A	**Compaction % required:** 100%	**Water used on Fill:** Yes ☐ No ☑	**Vibration on Compactor:** Yes ☑ No ☐

Type of fill:	**Method of compaction used:**	
☐ Sand ☐ Clay ☐ Loam ☐ Other (Specify): N/A	☑ Vibration Plate ☐ Pneumatic Tamper ☐ Steel Wheel ☐ Vibrating Steel Wheel	☐ Rubber Tire ☐ Vibrating Pneumatic ☐ Gas Powered Tamper ☐ Other (Specify): _____

Test Method: Sand Cone Method ☐ Driven Tube Method ☐ Nuclear Method ☐ Proctor Test ☐ Visual Inspection ☑

TEST DATA

TEST NO.	TIME	LOCATION	ELEVATION	DENSITY		MOISTURE		COMPACTION		ACCEPTED (Initial for Yes)
				MAX	FIELD	OPTIMUM	FIELD	SPEC	FIELD	
001	12:30	SEE SURVEY DATA	SEE SURVEY	N/A	N/A	N/A	N/A	100%	100%	

COMMENTS

Note: No Densometer available for project, compaction to be competed per specification H353004-00000-221-078-0001 Rev 1 and RFI-19 E353004-CC006-400-465-0019 0 V2.(Visual witnessing of compaction)
(5 passes with 10 ton compactor @ 1200-1500 vpm & speed of 3.2km/h (2 mph)).
COMPLETED PER PUNCH LIST ITEM #1

Grant LaPointe /	Supervisor	10/20/19
Construction Designate – Print/Sign	**Title**	**Date**
BRADFORD WATKIN /	QC COORDINATOR	10/22/19
Contractor QC Designate – Print/Sign	**Title**	**Date**
Derek Radlinski /	QA Manager	10/22/19
Client QA Designate – Print/Sign	**Title**	**Date**

NUNA EAST LTD

COMPACTION REPORT

Project: Mary River Expansion Project	**ITP #:** CC006-0008A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Sub-System:** N/A
Area: MOD ROAD	**Area Description:** MODULAR DELIVERY ROAD UTILITY CROSSING	
Drawing No.: H353004-40000-223-271-0007-0001		**REV.:** 1

Area / Stations Inspected: See Survey Data and attached drawing.

Compaction Equipment Used: Wacker Nueson BPU5545A 750lb Plate Compactor | **Number of Passes Completed:** 5+

FILL DATA

Type of Subgrade: SUBBASE

- ☐ Sand
- ☐ Clay
- ☐ Bedrock
- ☑ Other (Specify): TYPE 5

Condition:

- ☑ Rough
- ☐ Smooth
- ☐ Wet
- ☐ Dry
- ☐ Frozen

- ☑ Loose
- ☐ Hard
- ☐ Rutted
- ☐ Other (Specify): _____

Fill thickness: < .2m | **Compaction % required:** 100% | **Water used on Fill:** Yes ☐ No ☑ | **Vibration on Compactor:** Yes ☑ No ☐

Type of fill:

- ☐ Sand
- ☐ Clay
- ☐ Loam
- ☑ Other (Specify): TYPE 5

Method of compaction used:

- ☑ Vibration Plate
- ☐ Pneumatic Tamper
- ☐ Steel Wheel
- ☐ Vibrating Steel Wheel

- ☐ Rubber Tire
- ☐ Vibrating Pneumatic
- ☐ Gas Powered Tamper
- ☐ Other (Specify): _____

Test Method: Sand Cone Method ☐ Driven Tube Method ☐ Nuclear Method ☐ Proctor Test ☐ Visual Inspection ☑

TEST DATA

TEST NO.	TIME	LOCATION	ELEVATION	DENSITY		MOISTURE		COMPACTION		ACCEPTED (Initial for Yes)
				MAX	FIELD	OPTIMUM	FIELD	SPEC	FIELD	
002	14:30	SEE SURVEY DATA	SURVEY DATA	N/A	N/A	N/A	N/A	100%	100%	

COMMENTS

Note: No Densometer available for project, compaction to be competed per specification H353004-00000-221-078-0001 Rev 1 and RFI-19 E353004-CC006-400-465-0019 0 V2.(Visual witnessing of compaction)
(5 passes with 10 ton compactor @ 1200-1500 vpm & speed of 3.2km/h (2 mph)).
COMPLETED PER PUNCHLIST ITEM # 1

Grant LaPointe /		Supervisor	10/20/19
Construction Designate – Print/Sign		**Title**	**Date**
BRADFORD WATKIN /		QC. COORDINATOR	10/22/19
Contractor QC Designate – Print/Sign		**Title**	**Date**
Derek Pidlusk /		QA Manager	10/22/19
Client QA Designate – Print/Sign		**Title**	**Date**

NUNA EAST LTD

COMPACTION REPORT

Project: Mary River Expansion Project	**ITP #:** CC006-0008A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Sub-System:** N/A
Area: MOD ROAD	**Area Description:** MODULAR DELIVERY ROAD UTILITY CROSSING	
Drawing No.: 1353004-40000-223-271-0007-0001		**REV.:** 1

Area / Stations Inspected: See Survey Data and attached drawing.	
Compaction Equipment Used: Cat 10 Ton CS56B Compactor	**Number of Passes Completed:** 5+

FILL DATA

Type of Subgrade:	**Condition:**	
☐ Sand ☐ Clay ☐ Bedrock ☑ Other (Specify): TYPE 5	☐ Rough ☑ Smooth ☐ Wet ☐ Dry ☐ Frozen	☐ Loose ☐ Hard ☐ Rutted ☐ Other (Specify): _____

Fill thickness: 12"	**Compaction % required:** 100%	**Water used on Fill:** Yes ☐ No ☑	**Vibration on Compactor:** Yes ☑ No ☐
Type of fill:		**Method of compaction used:**	
☐ Sand ☐ Clay ☐ Loam ☑ Other (Specify): TYPE 5		☐ Vibration Plate ☐ Pneumatic Tamper ☐ Steel Wheel ☑ Vibrating Steel Wheel	☐ Rubber Tire ☐ Vibrating Pneumatic ☐ Gas Powered Tamper ☐ Other (Specify): _____

Test Method: Sand Cone Method ☐ Driven Tube Method ☐ Nuclear Method ☐ Proctor Test ☐ Visual Inspection ☑

TEST DATA

TEST NO.	TIME	LOCATION	ELEVATION	DENSITY		MOISTURE		COMPACTION		ACCEPTED (Initial for Yes)
				MAX	FIELD	OPTIMUM	FIELD	SPEC	FIELD	
003	03:30	SEE SURVEY DATA	SURVEY DATA	N/A	N/A	N/A	N/A	100%	100%	

COMMENTS

Note: No Densometer available for project, compaction to be competed per specification H353004-00000-221-078-0001 Rev 1 and RFI-19 E353004-CC006-400-465-0019 0 V2.(Visual witnessing of compaction)
(5 passes with 10 ton compactor @ 1200-1500 vpm & speed of 3.2km/h (2 mph)).
COMPLETED PER PUNCH LIST ITEM #1

Robert Albert / Robt Alb	Supervisor	10/22/19
Construction Designate – Print/Sign	**Title**	**Date**
BRADFORD WATKIN / B. [signature]	QC COORDINATOR	10/22/19
Contractor QC Designate – Print/Sign	**Title**	**Date**
Derek P. Slaughter / [signature]	QA Manager	10/22/19
Client QA Designate – Print/Sign	**Title**	**Date**

NUNA
NUNA EAST LTD

PROOF ROLL COMPACTION VERIFICATION REPORT

Revision 2

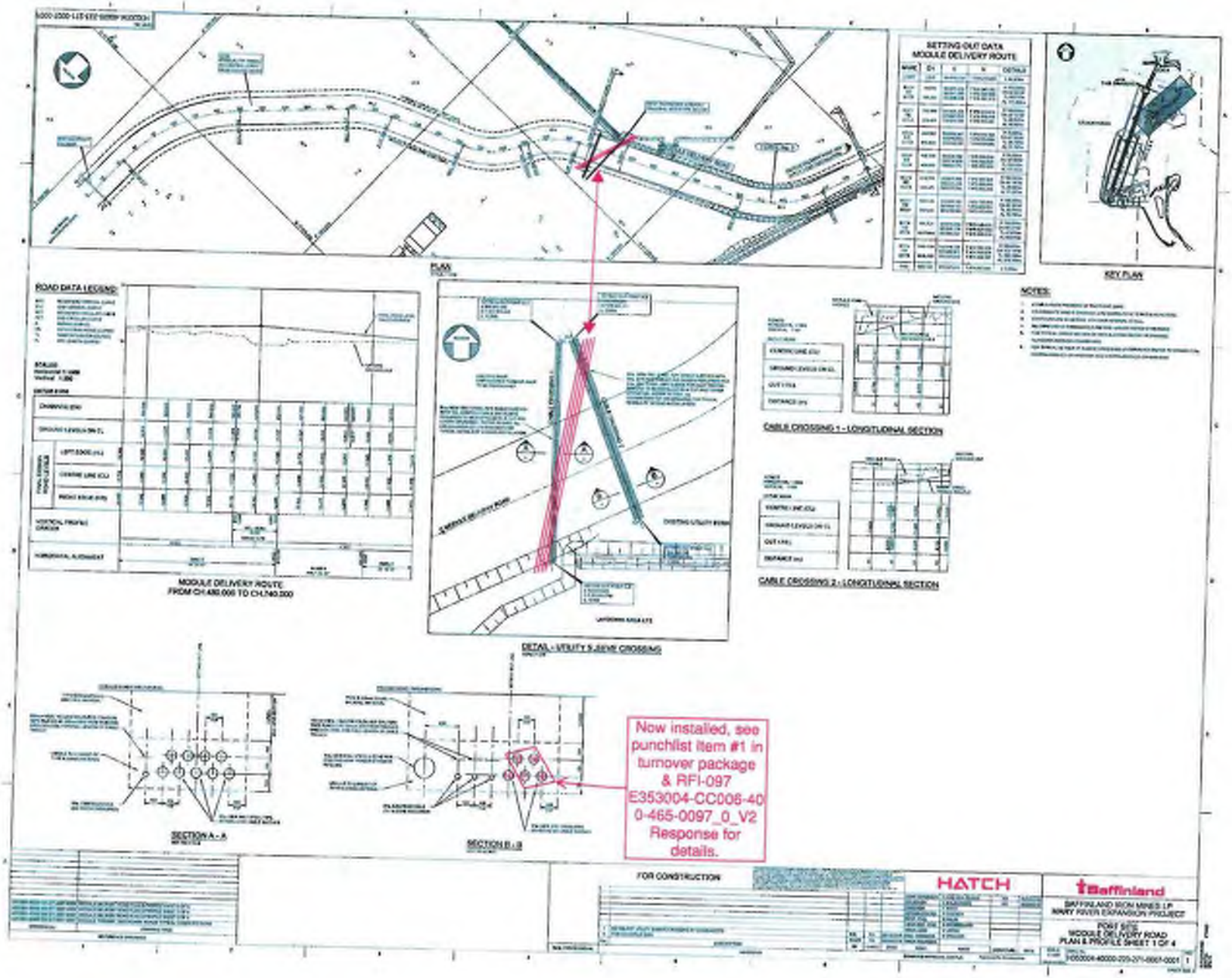
		Date:
Project: Mary River Expansion Project	**ITP #:** CC006-0008A	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Material Type:**
Site Area: MOD ROAD	**Area Description:** MODULAR DELIVERY ROAD UTILITY CROSSING	
Drawing No.: H353004-40000-223-271-0007-0001		**Rev.:** 1

Area / Stations Inspected: See Survey Data Report	**Type of Proof Role:** ☐ Subgrade ☑ Material
Proof Rolled With: A loaded 745 Articulated Haul Truck	**Number of Passes Completed:** ~~5~~ 2

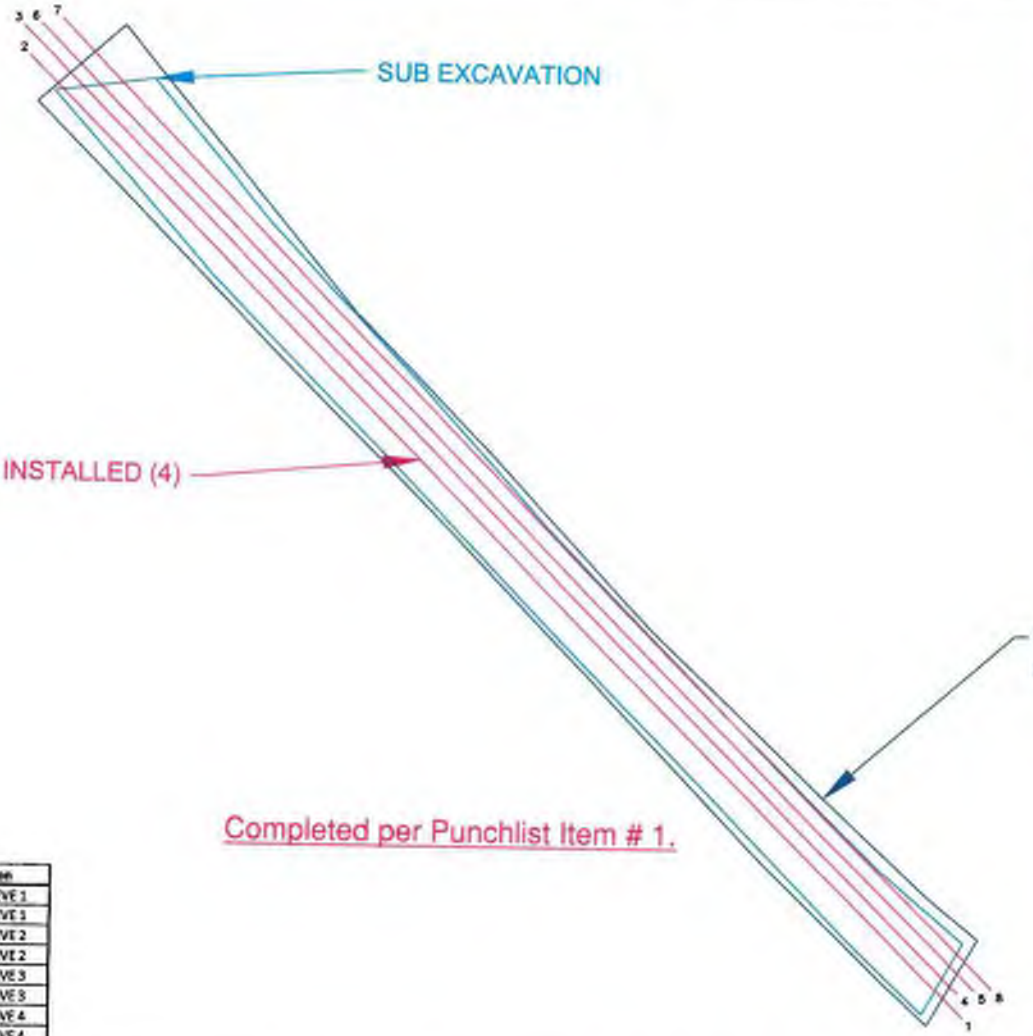
INSPECTION DESCRIPTION		**Verified (Initial)**
Visible Deflections (Pumping)	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Location Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments: COMPLETED PER PUNCHLIST ITEM # 1

Robert Albert	/	Robert Albert	Supervisor	10/22/2019
Construction Designate	Print/Sign		Title	Date
BRADFORD WATKIN	/		QC COORDINATOR	10/22/19
Contractor QC Designate	Print/Sign		Title	Date
Derek Pedlow	/		QA Manager	10/22/19
Client QA Designate	Print/Sign		Title	Date



PLAN
SETTING-OUT DATA
MODULE DELIVERY ROUTE
KEY PLAN
ROAD DATA LEGEND
MODULE DELIVERY ROUTE
FROM CH.480.000 TO CH.740.000
DETAIL - UTILITY 5 JEWE CROSSING
CABLE CROSSING 1 - LONGITUDINAL SECTION
CABLE CROSSING 2 - LONGITUDINAL SECTION
NOTES:
SECTION A - A
SECTION B - B
Now installed, see punchlist item #1 in turnover package & RFI-097 E353004-CC006-400-465-0097_0_V2 Response for details.
FOR CONSTRUCTION
HATCH
Baffinland
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT
POST SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 1 OF 4



VICINITY MAP

Completed per Punchlist Item # 1.

Point	Northing	Easting	Elevation	Description
1	7975966.036	503716.090	11.810	TOP OF SLEEVE 1
2	7975991.815	503690.328	11.752	TOP OF SLEEVE 1
3	7975992.616	503690.258	11.769	TOP OF SLEEVE 2
4	7975966.700	503715.887	11.772	TOP OF SLEEVE 2
5	7975966.779	503716.350	11.772	TOP OF SLEEVE 3
6	7975992.661	503690.639	11.816	TOP OF SLEEVE 3
7	7975992.816	503691.197	11.830	TOP OF SLEEVE 4
8	7975966.822	503716.826	11.781	TOP OF SLEEVE 4

Pipe Dimensions		
Code	Length	Diameter
SLEEVE 1	36.5m	150mm
SLEEVE 2	36.5m	150mm
SLEEVE 3	36.5m	150mm
SLEEVE 4	36.5m	150mm

LEGEND
SLEEVES INSTALLED
EXCAVATION LIMITS
TYPE 5 BACKFILL FINAL LIFT

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY: NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. Walsh

SCALE: NTS

DATE: Oct. 22, 2019

MOF 0+455 PIPE CROSSING

AS-BUILT SURVEY
SURVEYED UP TO OCTOBER 20, 2019

DRAWING NAME (FILENAME): 191022 MOF 0+455 XING ASB.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

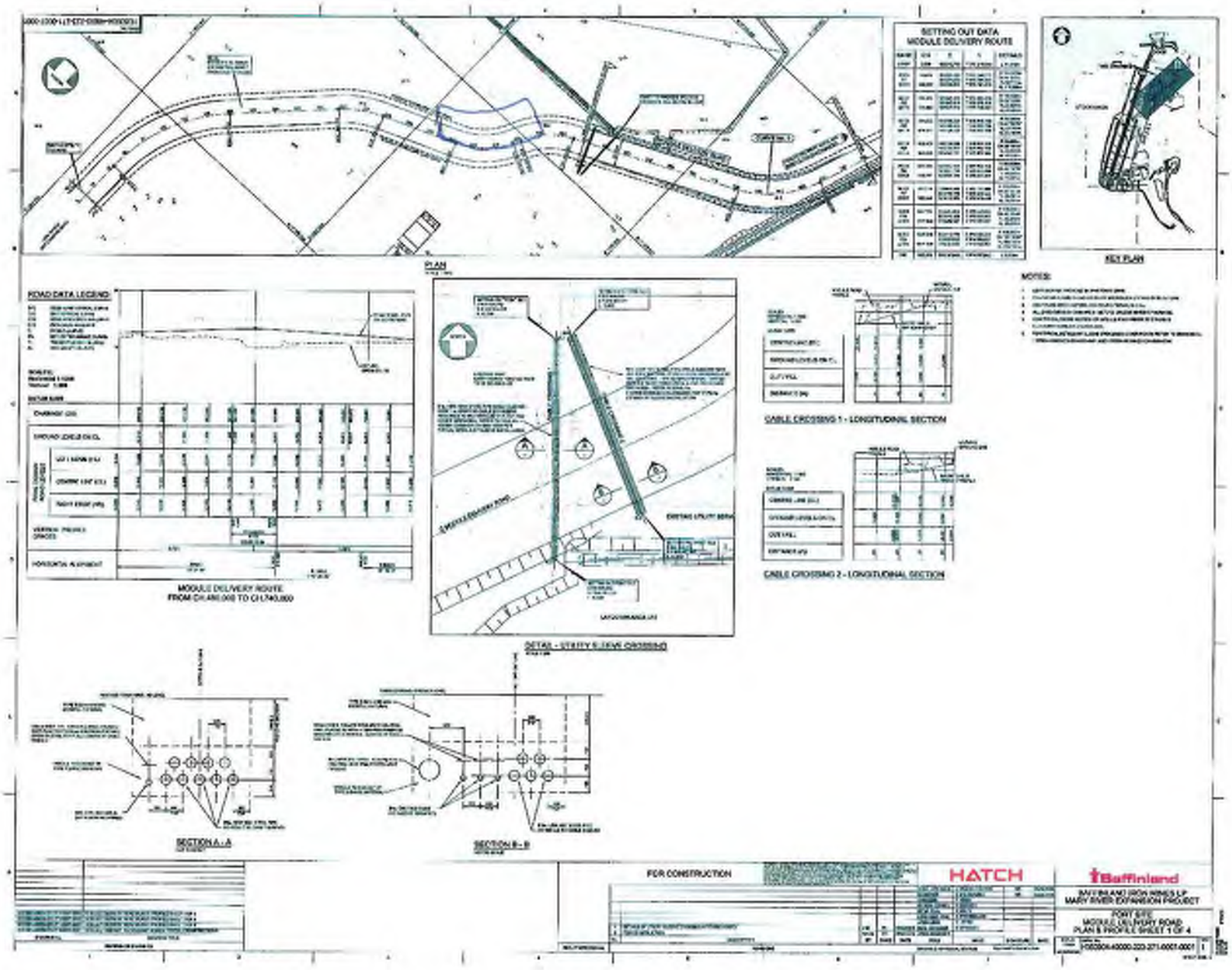
Project: Mary River Expansion Project	**ITP #:** CC006-0008A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: MOF Road	**Area Description:** MOF Road	
Drawing No.: H353004-40060-220-271-0007-0001	**Rev.:** 1	

Area / Stations Inspected:	SEE SURVEY DATA MOF Road North end south side.
Proof Rolled With: A loaded 745 Articulated Haul Truck	

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	RA
Rebound of Surface	☐ YES ☑ NO ☐ N/A	RA
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	RA
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	RA
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	RA
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	RA
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	RA
Elevation Record (Survey)	☐ YES ☑ NO ☐ N/A	RA

Comments: widening of curve.

Robert Albert / Robert Albert	Supervisor	Aug 31, 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN / [signature]	QC COORDINATOR	8/31/19
Contractor QC Designate – Print/Sign	Title	Date
Derek Pedlewski / [signature]	QA Manager	10/21/19
Client QA Designate – Print/Sign	Title	Date


PLAN
SETTING OUT DATA
MODULE DELIVERY ROUTE
KEY PLAN
NOTES:
ROAD DATA LEGEND
MODULE DELIVERY ROUTE
FROM CH.480,000 TO CH.740,000
DETAIL - UTILITY SLEEVE CROSSING
CABLE CROSSING 1 - LONGITUDINAL SECTION
CABLE CROSSING 2 - LONGITUDINAL SECTION
SECTION A - A
SECTION B - B
FOR CONSTRUCTION
HATCH
Baffinland
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT
PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 1 OF 4

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

CC006-0008A

Project: Mary River Expansion Project	**ITP #:** ~~CC008A~~ BW	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: MODULE ROAD	**Area Description:** MOF Road	
Drawing No.: DRW-AA419601-415	**Rev.:** 0	

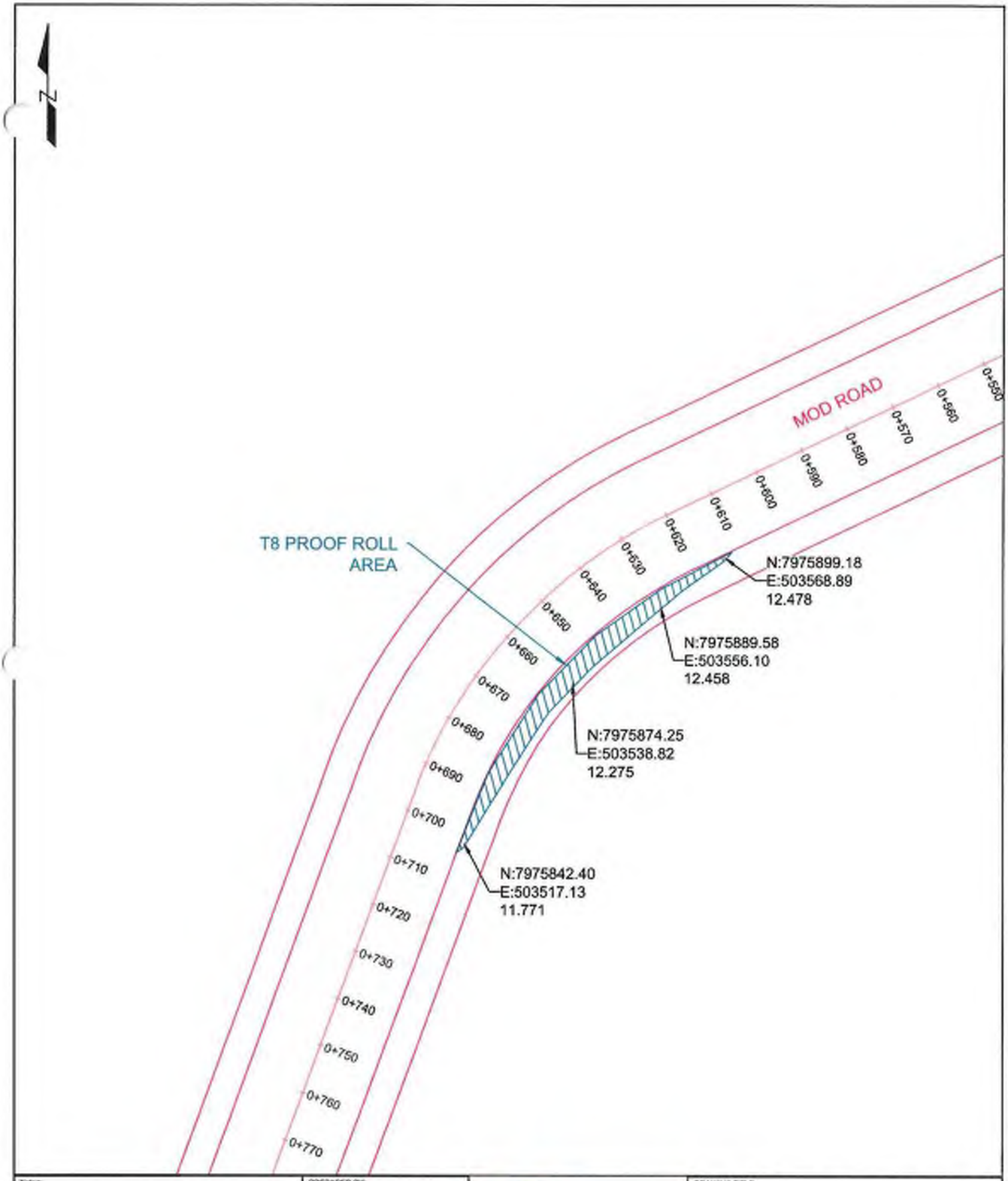
Area / Stations Inspected: SEE SURVEY DATA + ATTACHED DWG

Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	RA
Rebound of Surface	☐ YES ☑ NO ☐ N/A	RA
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	RA
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	RA
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	RA
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	RA
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	RA
Elevation Record (Survey)	☐ YES ☑ NO ☐ N/A	RA

Comments: - Witness : Mike Hynes All North.
Last Lift of Type 8
- ROAD WIDENING OF 2m @ ~ INSIDE CORNER ~~of~~
@ 660m

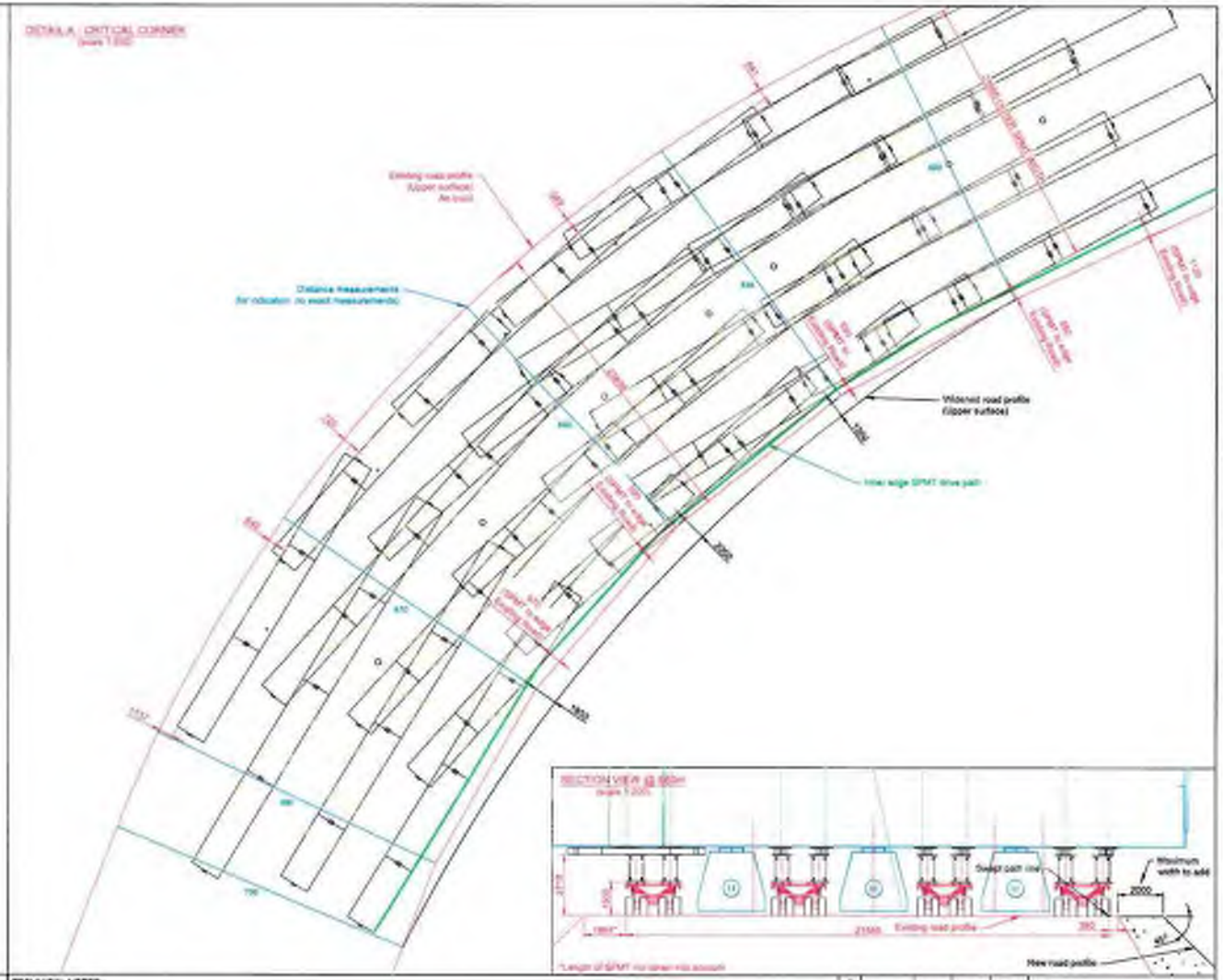
Robert Albert / Robert Alb	Supervisor	Aug 24, 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN / [signature]	QC COORDINATOR	8/26/19
Contractor QC Designate – Print/Sign	Title	Date
Derek Podlowski / [signature]	QA Manager	10/21/19
Client QA Designate – Print/Sign	Title	Date



OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	DRAWING TITLE: **MOD ROAD - WIDENING PROOF ROLL REPORT SURVEYED AUG 25, 2019.**	
	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: AUG 26, 2019	DRAWING NAME (YYMMDD): 190824 MOD RD T8 PR REPORT.dwg

PLAN VIEW MODULE ROAD
(scale 1:1000)

DETAIL A - CRITICAL CORNER
(scale 1:500)


Existing road profile
(Upper surface)
As built
Distance measurements
(for indication, no exact measurements)
Widened road profile
(Upper surface)
Inner edge SPMT drive path
1000
1000
1000

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

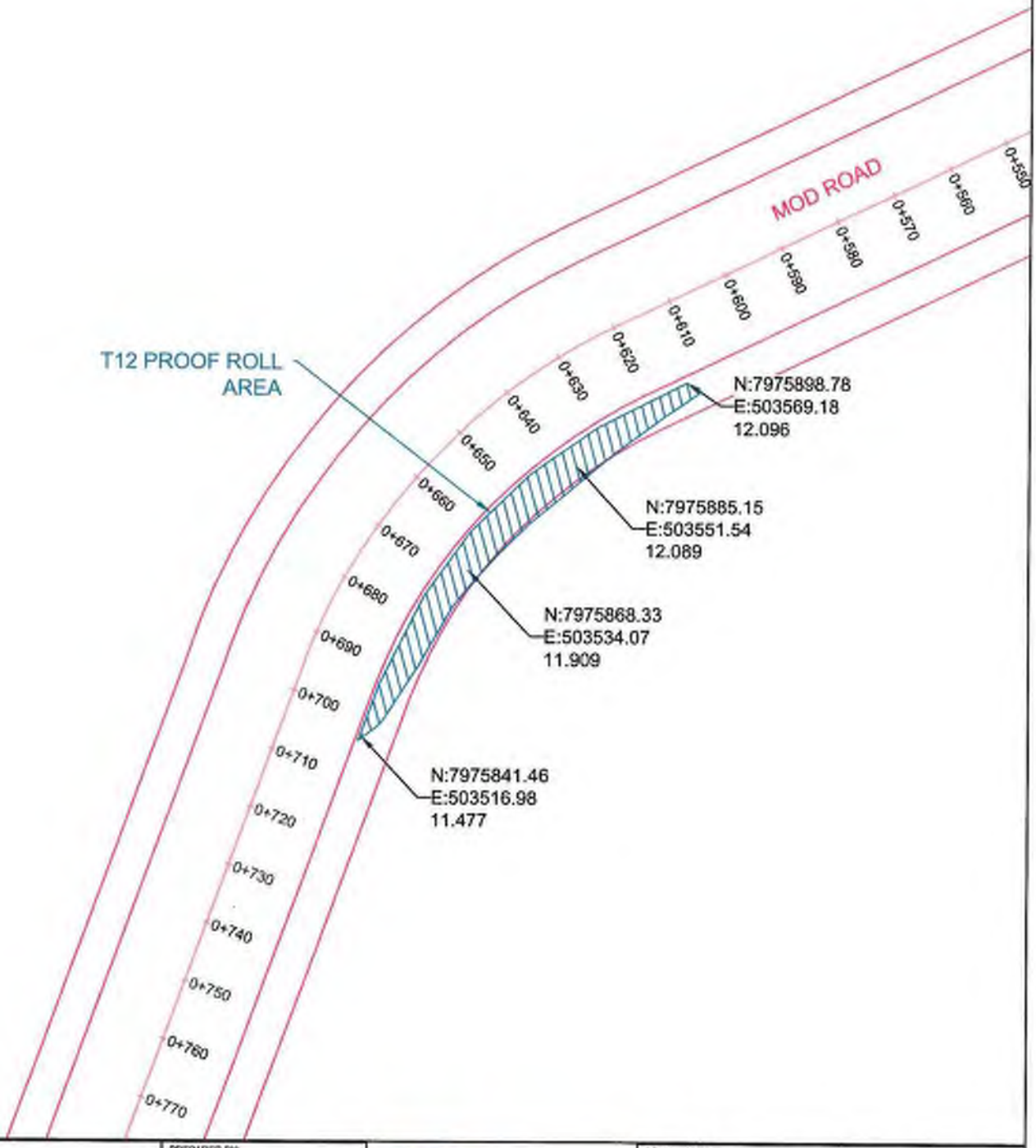
Project: Mary River Expansion Project	**ITP #:** CC006-0058A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: MODULE ROAD	**Area Description:** MOF Road	
Drawing No.: DRW-AA419601-415	**Rev.:** 0	

Area / Stations Inspected: SEE SURVEY DATA + ATTACHED DWG.
Proof Rolled With: A loaded 745 Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	RS
Rebound of Surface	☐ YES ☑ NO ☐ N/A	RS
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	RS
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	RS
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	RS
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	RS
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	RS
Elevation Record (Survey)	☐ YES ☑ NO ☐ N/A	RS

Comments: - WITNESS : MIKE HYNES ALL NORTH.
LAST LIFT OF ROAD
- ROAD WIDENING of 2m @ INSIDE CORNER @ ~ 660m

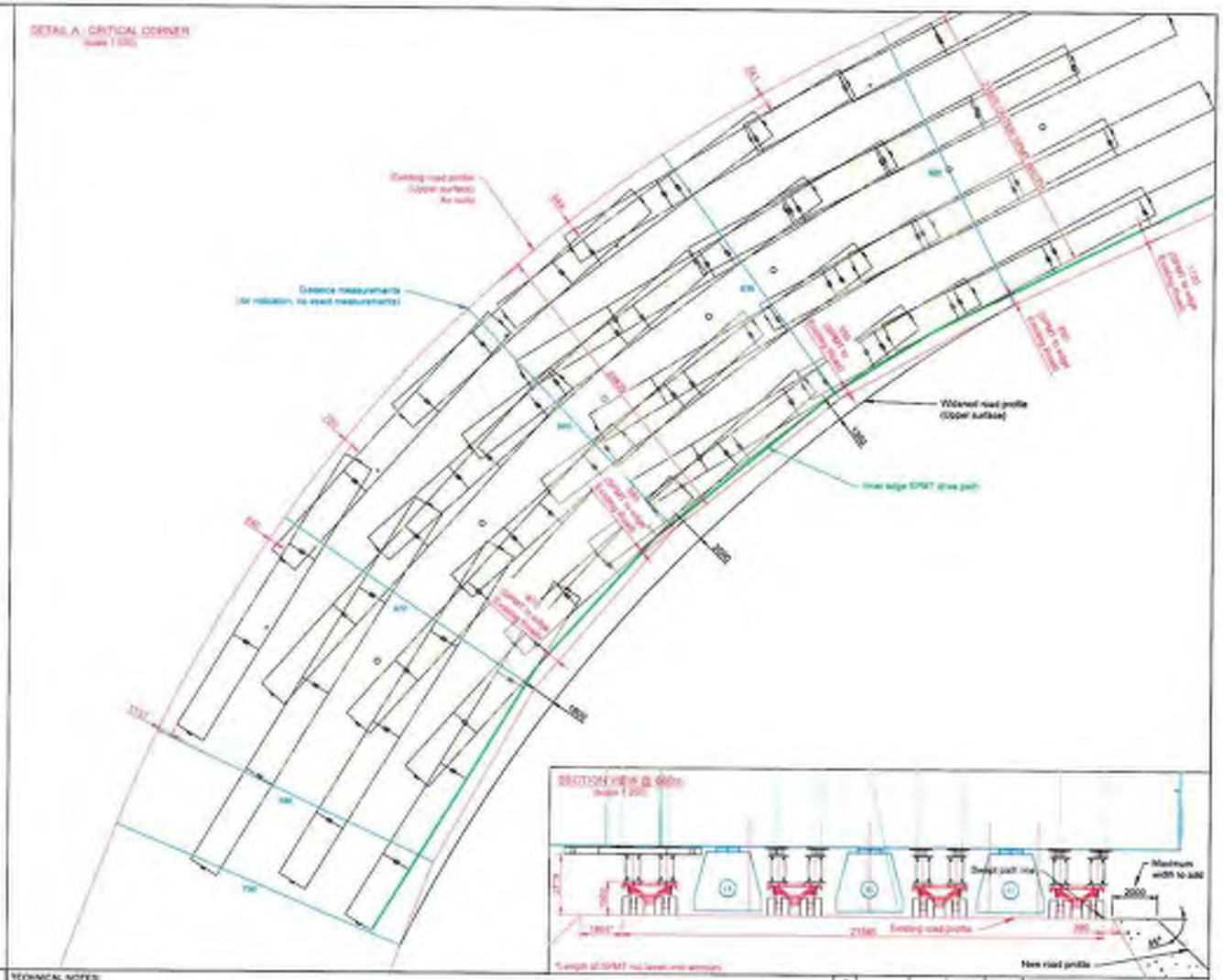
Robert Albert / Robert Albert	Supervisor	Aug 24, 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKINS / [signature]	QC COORDINATOR	8/26/19
Contractor QC Designate – Print/Sign	Title	Date
Derek Edwards / [signature]	QA Manager	10/21/19
Client QA Designate – Print/Sign	Title	Date



NOTES:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	DRAWING TITLE: **MOD ROAD - WIDENING PROOF ROLL REPORT SURVEYED AUG 25, 2019.**	
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. WALSH	SCALE: AS SHOWN	DATE: AUG 26, 2019	DRAWING NAME (YYMMDD): 190824 MOD RD T12 PR REPORT.dwg

PLAN VIEW MODULE ROAD
Scale 1:5000

DETAIL A : CRITICAL CORNER
Scale 1:500



DRAWING NOTES:

- ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
- ALL WEIGHTS ARE IN t (METRIC TONNES) UNLESS OTHERWISE STATED.
- ALL DETAILS ARE PROVISIONAL AND ARE SUBJECT TO CONFIRMATION.

FOR INDICATION ONLY

TECHNICAL NOTES:

- Road to be widened maximum 2m on inside of corner @ 660 m
- Road to be widened from 630m till 700m
- (New) Road to be suitable for 10 ton/m2
- Edges of complete road to be compacted
- Widest and longest transport configuration indicated (screening hunting) – 16 axle, 2x22 axle, 24 axle line
- Spreading of load under 45 degree angle from SPMT line to be taken into account

- REFERENCES
  - 150610 MOD ROAD FG AS-BUILT. Used for distance measurements.
  - MOD ROAD TYPE 5 FILL AB.dwt. Used for as built road profile (ACAD)

Existing road profile (as built)
Road widening profile (new)
SPMT (swept) path (inner curve)
Distance measurements (for indication)

Rev.	Date	DRAW	CHK	APP	Description
C					
B					
A					
0	21-09-2019	JvDH	NA	NA	First issue

ALE Heavylift B.V.
Breda, The Netherlands
Tel: +31 (0) 76 571 52 40
Web: www.ale-heavylift.com

Client: Daugro

Project Title: Baffinland Iron Mines
Mary River expansion project

Drawing Title: Module Road Adjustment
Widening critical corner @660m

Date	Drawn	Checked	Approved	Scale (A3)	Sheet
21-09-2019	JvdH	NA	NA	See views	1 of 1

Project No.: AA113601
Drawing No.: DRW-AA113601-A15
Rev.: 0

DO NOT SCALE | IF IN DOUBT ASK | The content of this drawing is confidential and must not be disclosed without the written permission of ALE.

File location: C:\Users\J.vandeMolengraf\Desktop\AA113601- Baffinland 2\Drawings Client\MOD ROAD TYPE 5 FILL AB-2.dwg

NUNA EAST LTD	SUBGRADE APPROVAL REPORT	Exhibit 1-8b QDE Revision 1 Page 1 of 1

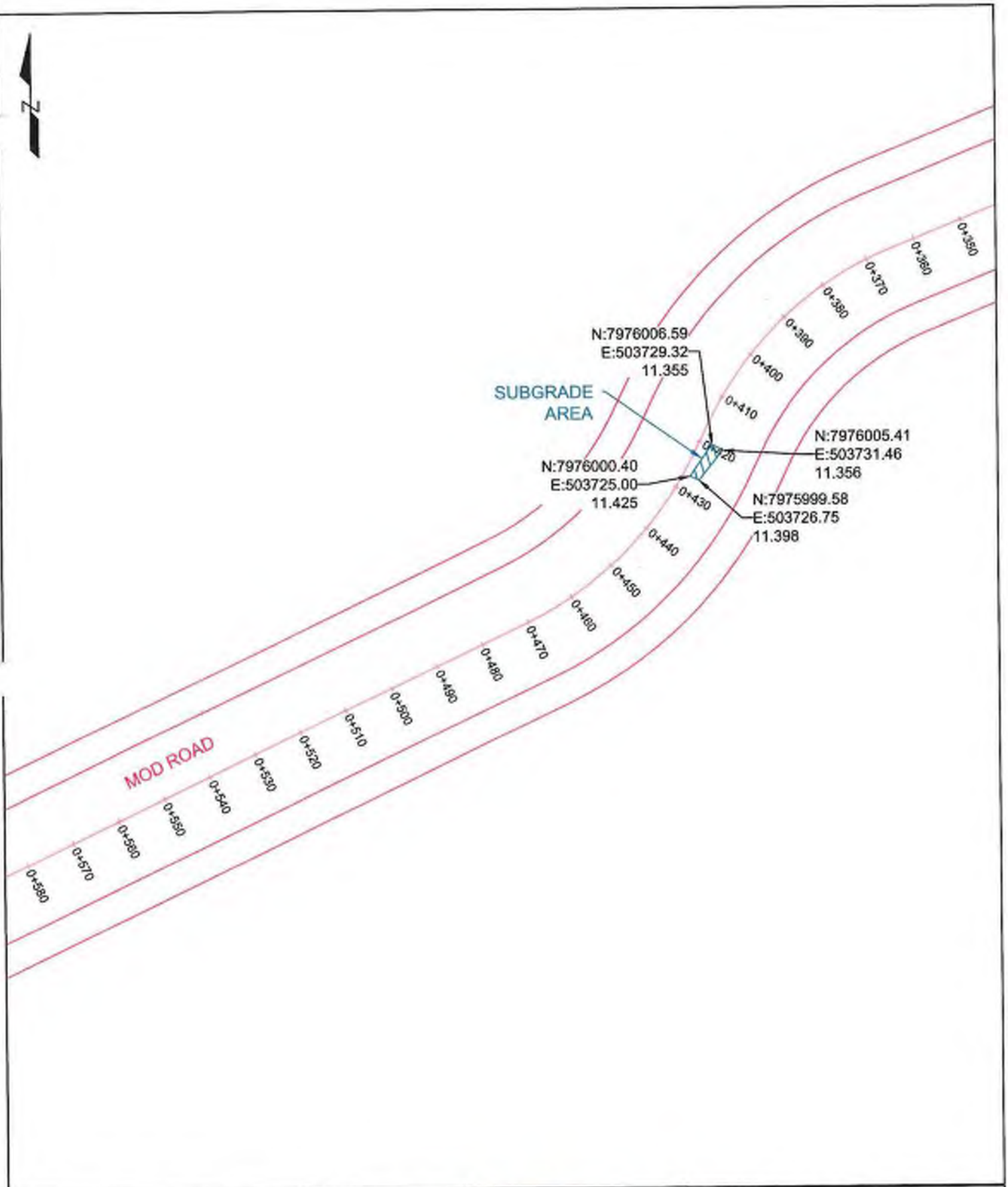
		Date: 7/24/19
Project: Mary River Expansion Project	**ITP#:** CC006-0008A	**QA Ref. Rpt. No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: NORTH MOD ROAD	**Area Description:** PORT SITE MORAINE DELIVERY ROAD	
Drawing No.: HS53004-40000-223-271-0007-0001		**Rev.:** 1

Area / Stations Inspected: See Survey Data Report & Drawing

INSPECTION DESCRIPTION		Verified (Initial)
Organic Soil Present.	☐ YES ☑ NO ☐ N/A	
Snow or Ice Present.	☐ YES ☑ NO ☐ N/A	
Ponded Water Present.	☐ YES ☑ NO ☐ N/A	
Water Seepage.	☐ YES ☑ NO ☐ N/A	
Frozen Soil Present.	☐ YES ☑ NO ☐ N/A	
Excavation Cleared of Foreign and Loose Soil Material.	☐ YES ☑ NO ☑ N/A	
Excavation Matches Design and IFC drawings.	☐ YES ☐ NO ☑ N/A	
Was Over Excavation Required. Depth: (_____)	☐ YES ☐ NO ☑ N/A	
Excavation Satisfactory and Accepted.	☑ YES ☐ NO ☐ N/A	

Comments: BOTTOM OF EXCAVATED AREA FOR RE-FILL & RE-COMP.

Construction Designate – Print/Sign	Title	Date
BRANDON WATKIN /	QC COORDINATOR	7/24/19
Contractor QC Designate – Print/Sign	**Title**	**Date**
/	QA Manager	10/21/19
Hatch QA Designate – Print/Sign	**Title**	**Date**



NAME:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	DRAWING TITLE: **MOD ROAD SUBGRADE REPORT SURVEYED JULY 24, 2019.**	
OWNER: BAFFINLAND IRON MINES LP				
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 25, 2019	DRAWING NAME (YYMMDD): 190724 MOD RD SG REPORT.dwg

NUNA NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 2 Page 1 of 1

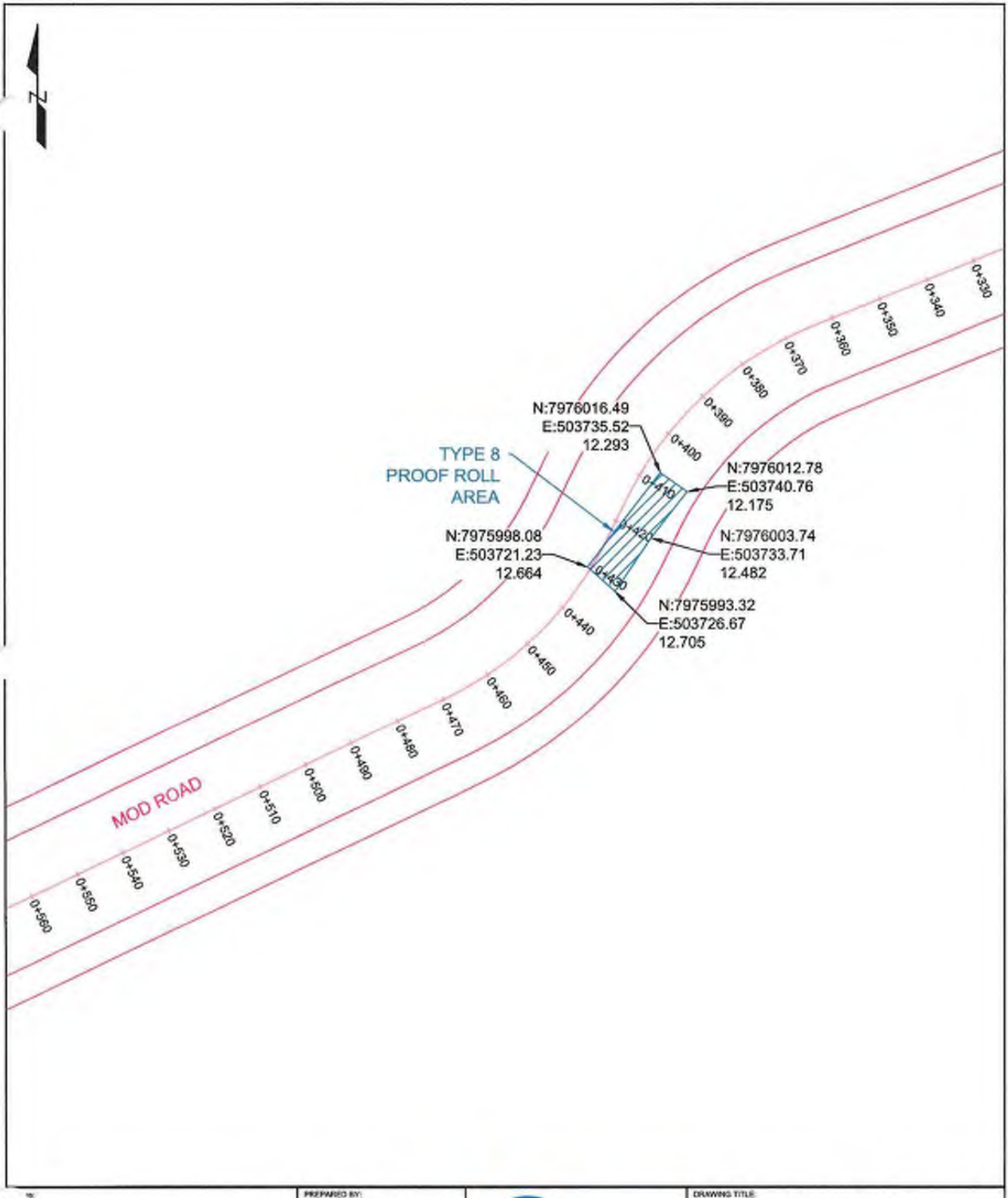
		Date: 7/24/19
Project: Mary River Expansion Project	**ITP #:** CC006-0008A	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Material Type:**
Site Area: MODULE ROAD	**Area Description:** SOFT SPOT ~ @ +420	
Drawing No.: H353404-40000-223-271-0007-0001		**Rev.:** 1

Area / Stations Inspected: See Survey Data Report	**Type of Proof Role:** ☐ Subgrade ☑ Material
Proof Rolled With: A loaded CAT 745 Articulated Haul Truck	**Number of Passes Completed:** 10

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections (Pumping)	☐ YES ☑ NO ☐ N/A	[initials]
Rebound of Surface	☐ YES ☑ NO ☐ N/A	[initials]
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	[initials]
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	[initials]
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	[initials]
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	[initials]
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	[initials]
Location Record (Survey)	☑ YES ☐ NO ☐ N/A	[initials]

Comments: LAST SOFT SPOT @ ~ 420 RE-PACKED ACCEPTABLE

Construction Designate	Print/Sign	Title	Date
DANFORD WATRIN	[signature]	QC COORDINATOR	7/24/19
Contractor QC Designate	**Print/Sign**	**Title**	**Date**
Derek Ridlewski	[signature]	QA Manager	10/21/19
Client QA Designate	**Print/Sign**	**Title**	**Date**



TO:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **MOD ROAD PROOF ROLL REPORT SURVEYED JULY 24, 2019.**
OWNER: BAFFINLAND IRON MINES LP				
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 25, 2019	DRAWING NAME (YYMMDD): 190724 (1) MOD RD PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

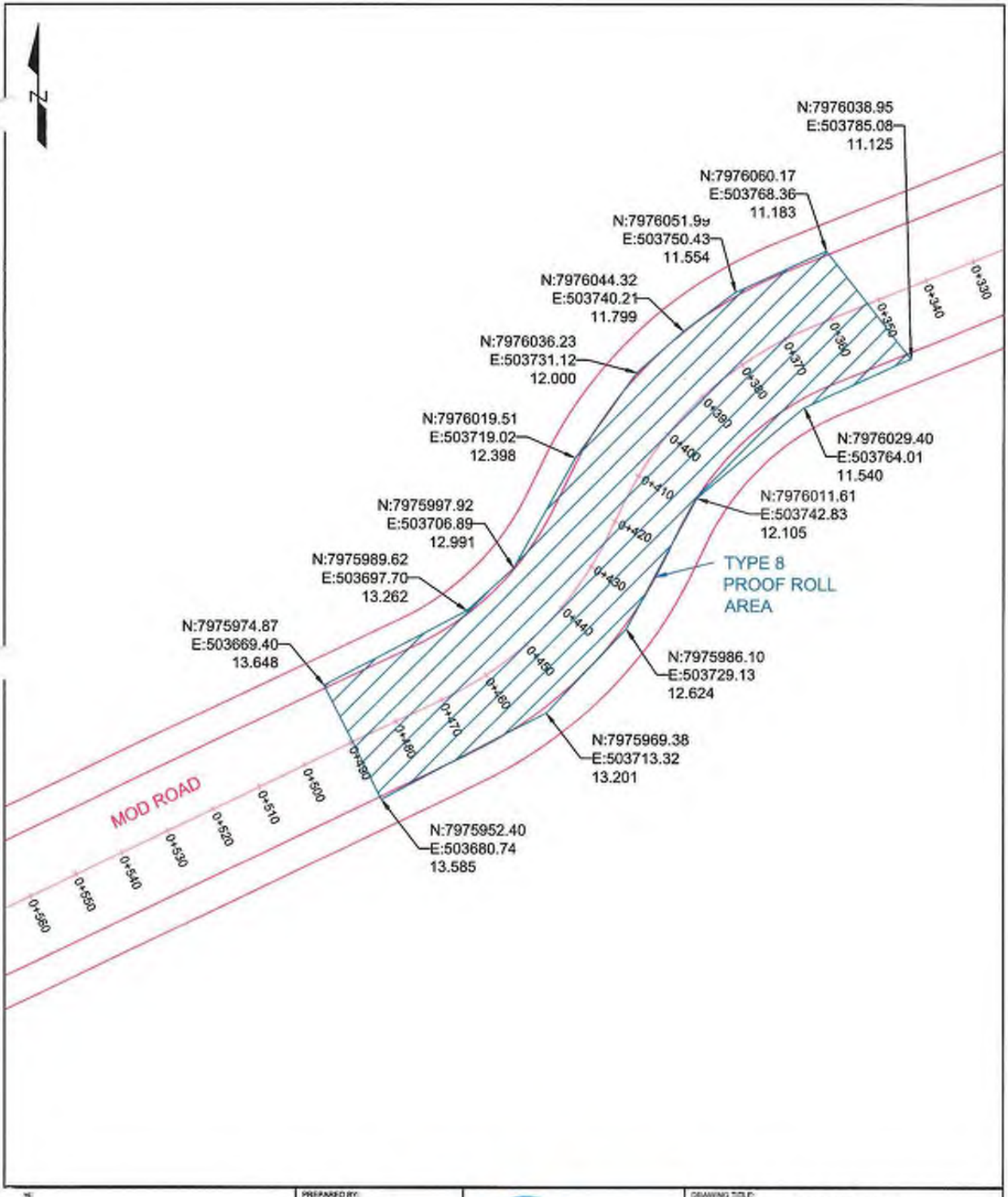
Project: Mary River Expansion Project	**ITP #:** CC006-00083A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: utilitie Crossing MOF	**Area Description:** MOF	
Drawing No.: 1435504-40000-223-271-0057-0001	**Rev.:** 1	

Area / Stations Inspected: SOFT AREA AT END OF MOF, SEE SURVEY DATA
Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	
Rebound of Surface	☐ YES ☑ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	

Comments:
- AREA EXCAVATE AND PROOF ROLL, TYPE 8 AREA Covered in 3 lift, Compact 10 Pass and Proof Roll
- @ ~ 0+330 TO 0+460, SEE ALLNORTH REPORT 232.

Olivier Sonier /	Supervisor	07/24/19
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN /	QC COORDINATOR	7/24/19
Contractor QC Designate – Print/Sign	Title	Date
Derek Redmond /	QA Manager	6/21/19
Client QA Designate – Print/Sign	Title	Date



OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	DRAWING TITLE: **MOD ROAD** **PROOF ROLL REPORT** **SURVEYED JULY 24, 2019.**	
	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 24, 2019	DRAWING NAME (YYMMDD): 190724 MOD RD PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

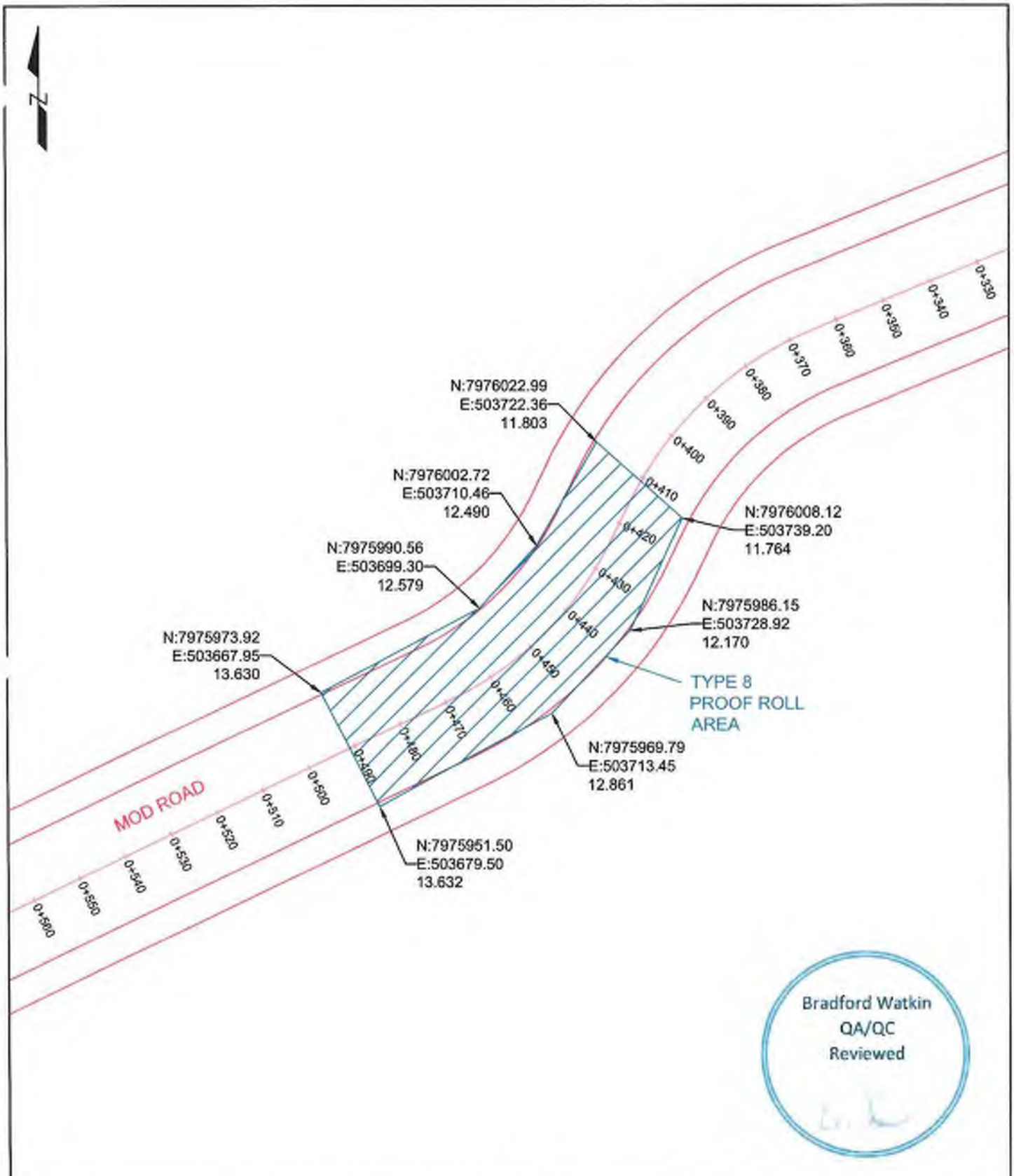
Project: Mary River Expansion Project	**ITP #:** CC006-008A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: MOF / MODULE ROAD	**Area Description:** UP TO ELECTRICAL HUMP	
Drawing No.: 1-1353004-40000-223-271-0007-0001	**Rev.:** 1	

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	DW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	DW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	DW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	DW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	DW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	DW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	DW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	[illegible]

Comments:

Aon W Weber / [signature]	Foreman	July 23 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN / [signature]	QC COORDINATOR	7/23/19
Contractor QC Designate – Print/Sign	Title	Date
Derek Paddewski / [signature]	QA Manager	10/21/19
Client QA Designate – Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **MOD ROAD PROOF ROLL REPORT SURVEYED JULY 23, 2019.**
OWNER: BAFFINLAND IRON MINES LP				
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 24, 2019	DRAWING NAME (YYMMDD): 190723 (1) MOD RD PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

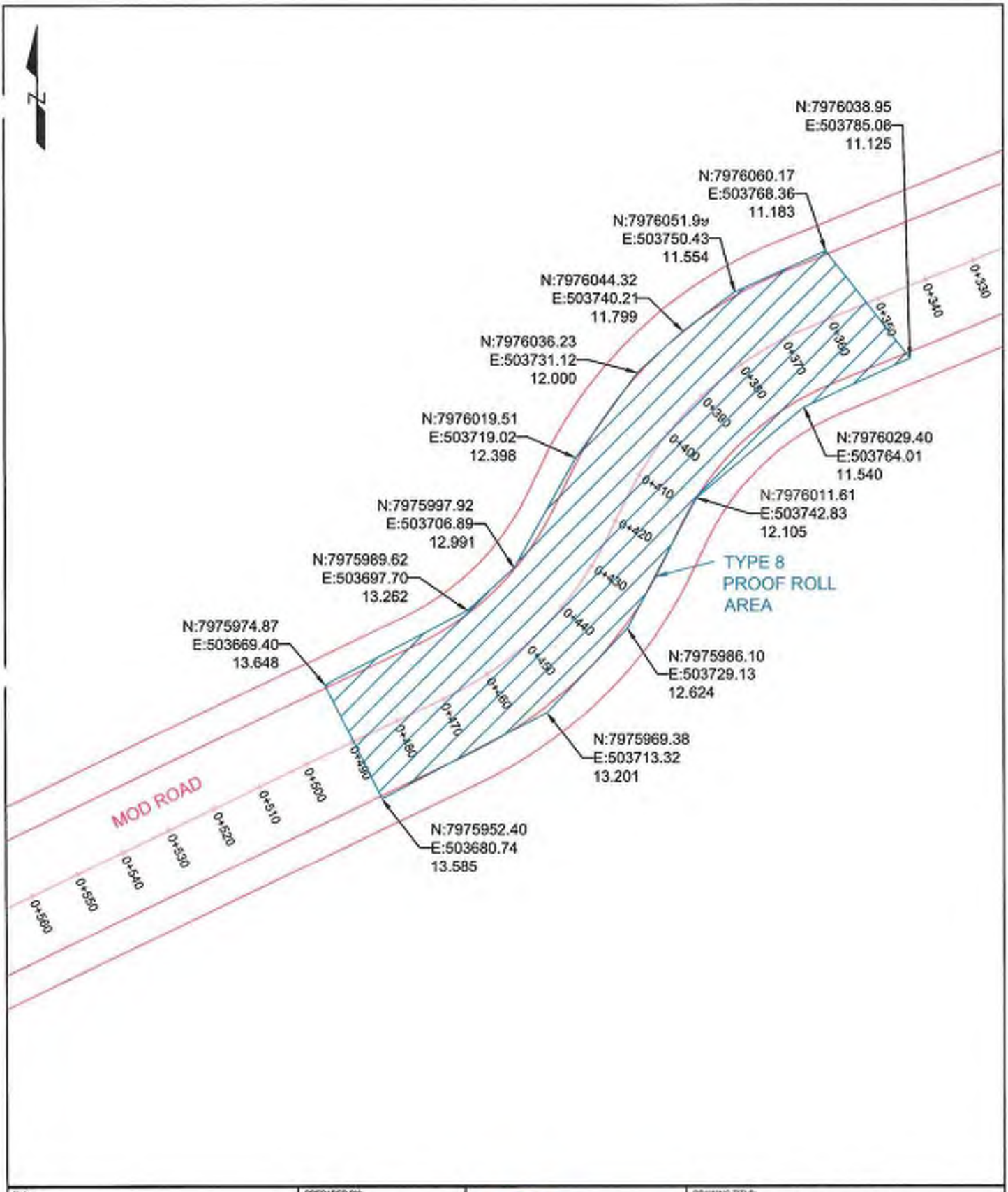
Project: Mary River Expansion Project	**ITP #:** C006-0008A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: MOF ROAD	**Area Description:** Utilitie Crossing	
Drawing No.: H353004-40000-223-271-0007-000	**Rev.:** 1	

Area / Stations Inspected:	MOF ROAD, SEE SURVEY DATA
Proof Rolled With:	A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	[initials]
Rebound of Surface	☐ YES ☑ NO ☐ N/A	[initials]
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	[initials]
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	[initials]
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	[initials]
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	[initials]
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	[initials]
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	[initials]

Comments: – 2 Layers Proof Roll and Pass, Area and station Pick up by survey
- TYPE 8 PLACEMENT.
- SEE ALLNORTH DAILY REPORT 230.

Olivier Sonier / [signature]	Supervisor	07/23/2019
Construction Designate – Print/Sign	Title	Date
Bradford Watkin / [signature]	QC COORDINATOR	7/23/19
Contractor QC Designate – Print/Sign	Title	Date
Derek Pidlewski / [signature]	QA Manager	10/2/19
Client QA Designate – Print/Sign	Title	Date



Notes:

OWNER:
BAFFINLAND IRON MINES LP

PROJECT:
MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY:
M. GOREHAM

SCALE:
AS SHOWN

DATE:
July 24, 2019

DRAWING TITLE:
MOD ROAD
PROOF ROLL REPORT
SURVEYED JULY 24, 2019.

DRAWING NAME (YYMMDD):
190724 MOD RD PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-0008A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: MOF	**Area Description:** END OF TYPE 5 over Hump	
Drawing No.: H353004-40000-223-271-0007-0001	**Rev.:** 1	

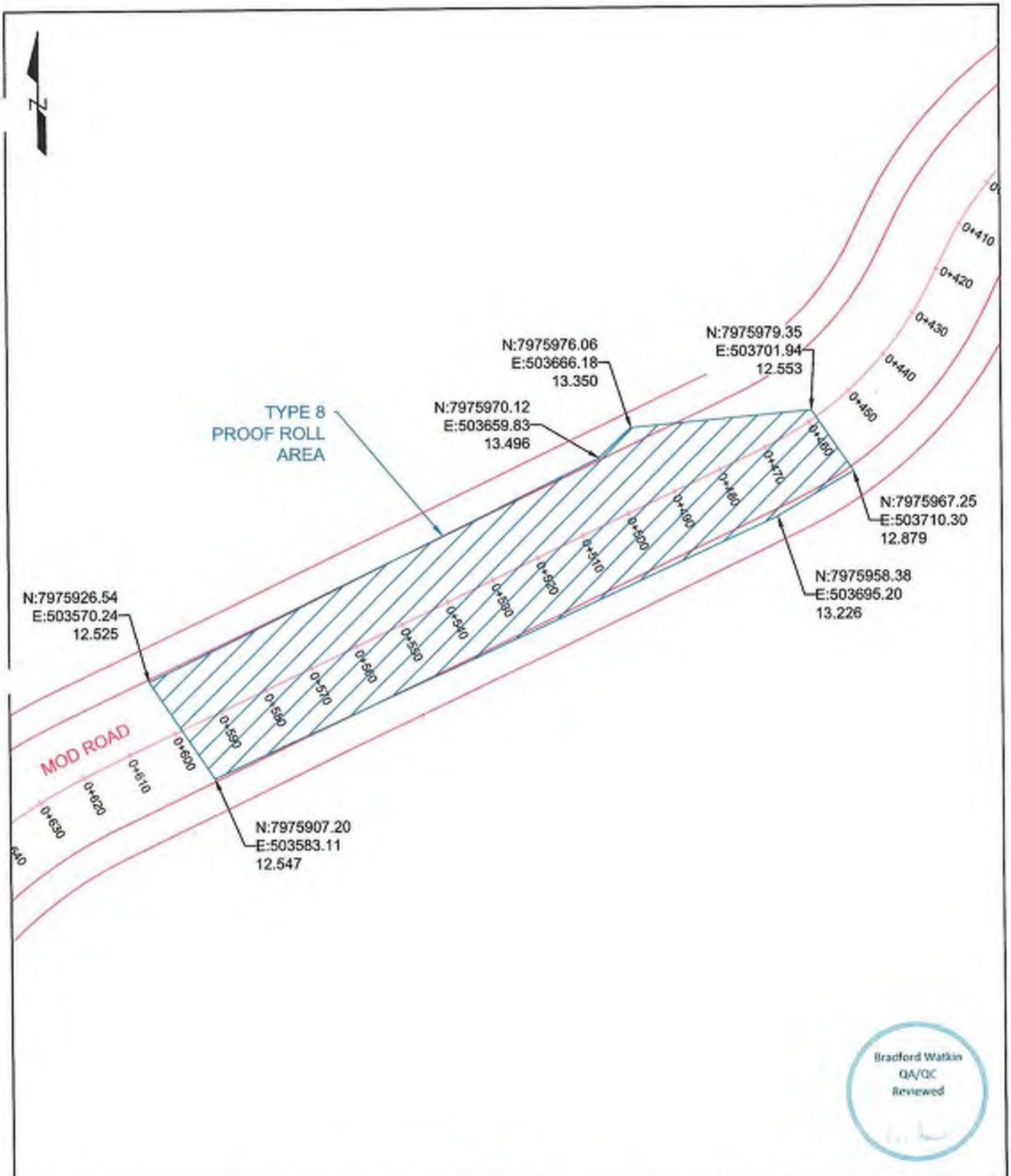
Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☑ YES ☐ NO ☐ N/A	DW
Rebound of Surface	☑ YES ☐ NO ☐ N/A	DW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	DW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	DW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	DW
Surface Uniform and Level	☐ YES ☐ NO ☑ N/A	DW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	DW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	DW

Comments: - Less than 2 cents deflection in area of utility crossing needs water no water available

- SEE ALLNORTH RPT. 228

Donald Wise / [signature]	Foreman	July 22 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN / [signature]	QC COORDINATOR	7/22/19
Contractor QC Designate – Print/Sign	Title	Date
Mike Hynes / [signature]	Materials Lead	July 22/2017
Client QA Designate – Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA			DRAWING TITLE: **MOD ROAD PROOF ROLL REPORT SURVEYED JULY 22, 2019.**
OWNER: BAFFINLAND IRON MINES LP					
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 22, 2019		DRAWING NAME (YYMMDD): 190722 MOD RD PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

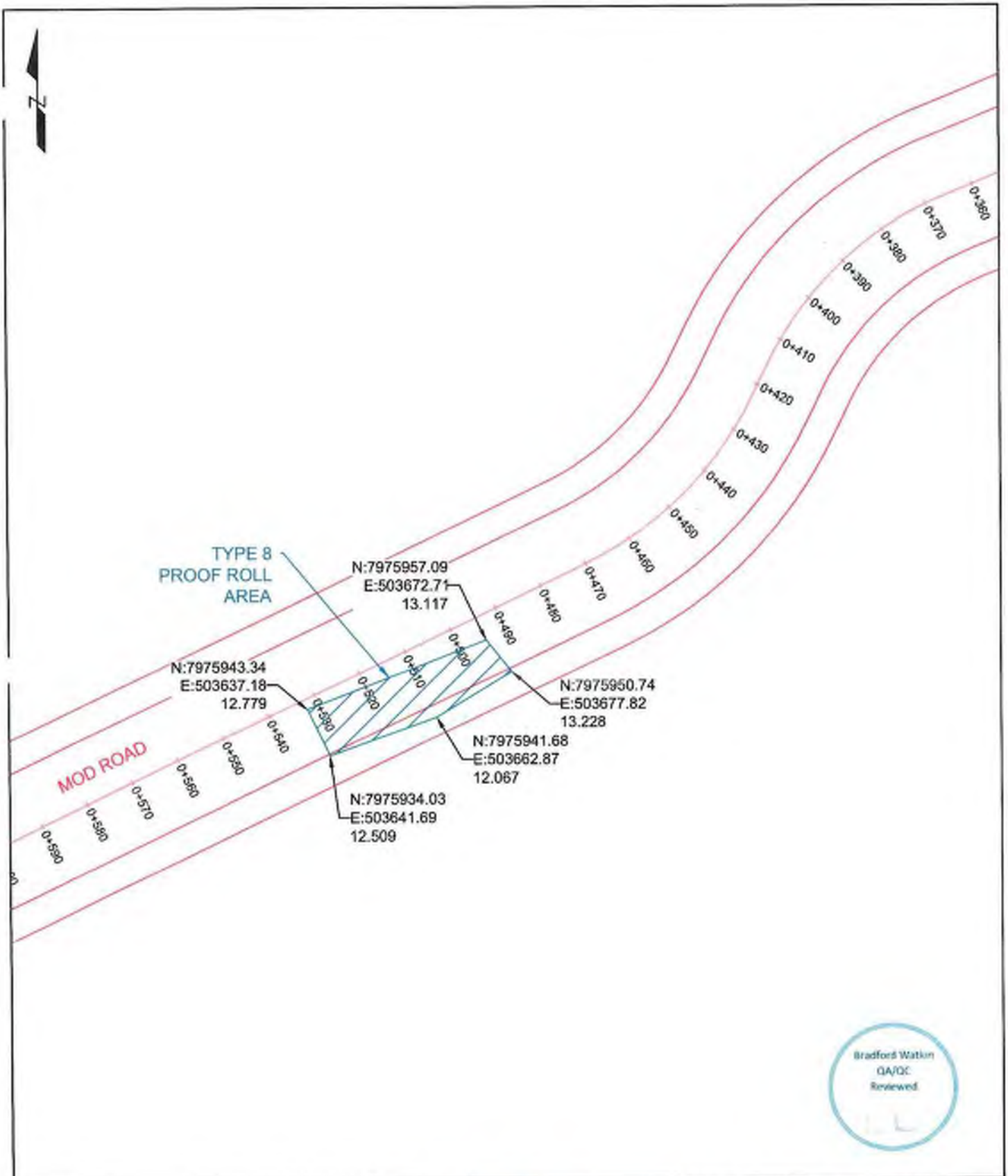
Project: Mary River Expansion Project	**ITP #:** CC006-0008A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: MOA (MOSQUITE ROAD)	**Area Description:** Small area by utility crossing	
Drawing No.: A353004-40000-223-J71-0007-0001	**Rev.:** 1	

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	DW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	DW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	DW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	DW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	DW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	DW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	DW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	DW

Comments: - SEE ALLNORTH REPORT 226
- 3 SEPARATE PROOF ROLLS CONDUCTED @ SAME COORDINATES
- TYPE 8 MATERIAL

Dan Weber /	FOREMAN	July 21 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN /	QC COORDINATOR	7/21/19
Contractor QC Designate – Print/Sign	Title	Date
Mike Hynes /	Materials Lead	July 21, 2019
Client QA Designate – Print/Sign	Title	Date



Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **MOD ROAD PROOF ROLL REPORT SURVEYED JULY 21, 2019.**	
OWNER: BAFFINLAND IRON MINES LP					
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 21, 2019	DRAWING NAME (YYMMDD): 190721 MOD RD PR REPORT.dwg	

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

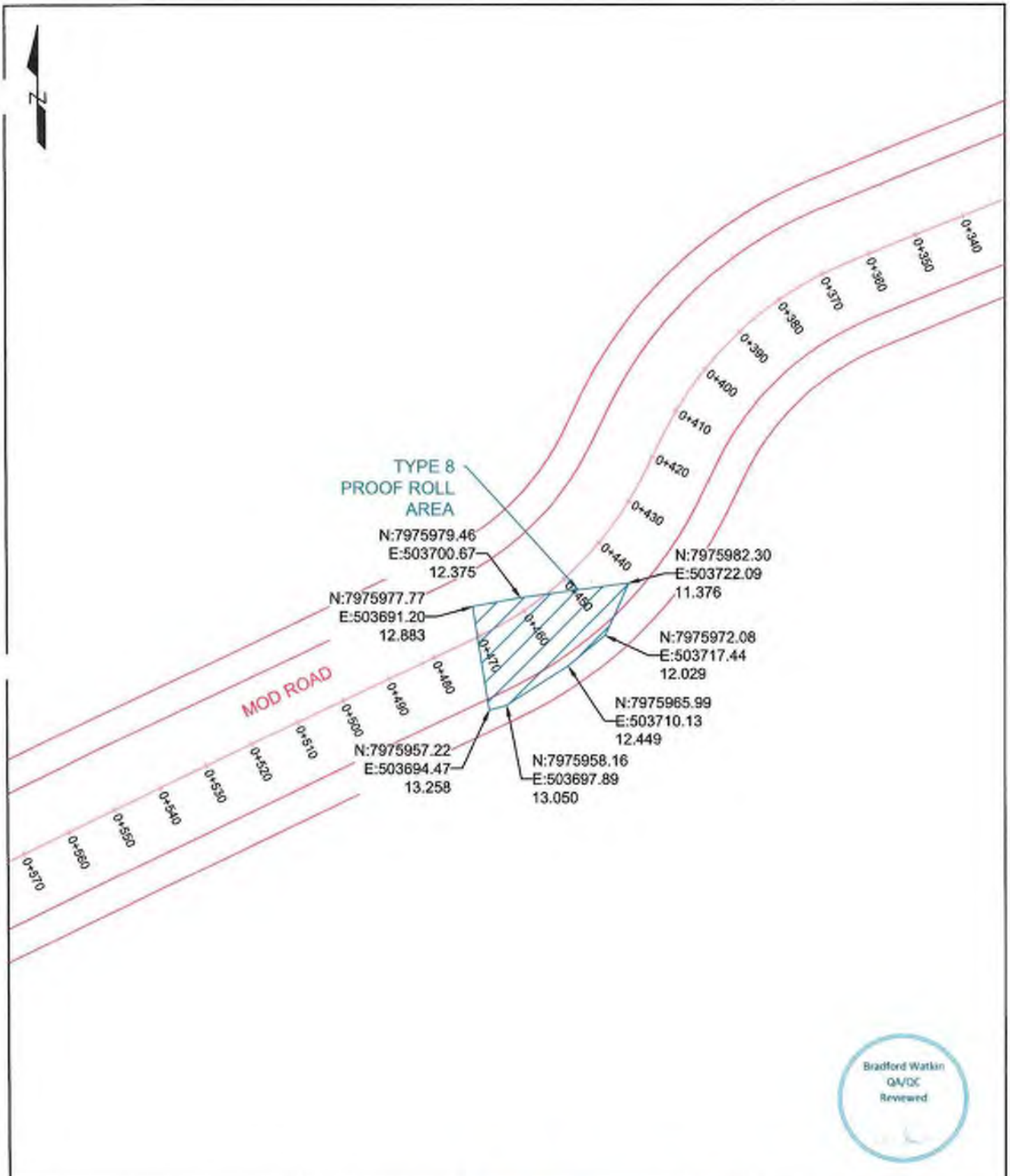
Project: Mary River Expansion Project	**ITP #:** CC006-0308A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: MOF/MODULE ROAD	**Area Description:** END OF WORK view east	
Drawing No.: A353004-40000-0007-0001 223-271	**Rev.:** 1	

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments: - SEE ALLNORTH RPT 226
- TYPE 8 PLACEMENT

Don Webber / Don Webber	Foreman	July 21 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN / Brad	QC COORDINATOR	7/21/19
Contractor QC Designate – Print/Sign	Title	Date
Mike Hynes / Mike Hynes	Materials Lead	July 21, 2019
Client QA Designate – Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

NAME:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **MOD ROAD PROOF ROLL REPORT SURVEYED JULY 21, 2019.**
OWNER: BAFFINLAND IRON MINES LP				
PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 22, 2019	DRAWING NAME (YYMMDD): 190721 (2) MOD RD PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

Project: Mary River Expansion Project	**ITP #:** CC006-0008A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: MDF/MOD ROAD	**Area Description:** @ UTILITY CROSSING	
Drawing No.: H353004-40000-223-271-0007-0001	**Rev.:** 1	

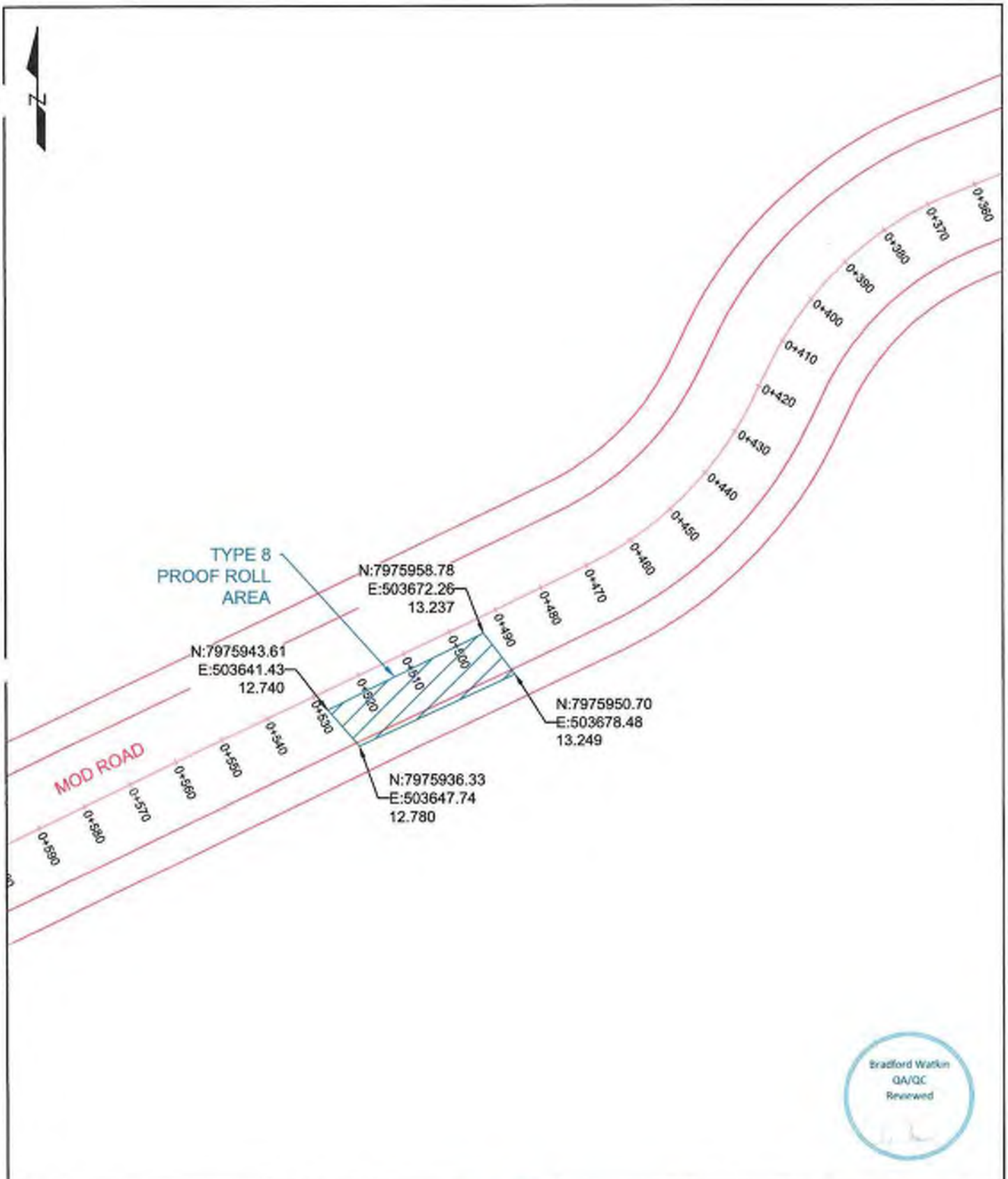
Area / Stations Inspected: SEE SURVEY DATA

Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	DW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	DW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	DW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	DW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	DW
Surface Uniform and Level	✓ ☑ YES ☐ NO ☑ N/A DW	DW
Proof Roll Test Satisfactory and Accepted	✓ ☑ YES ☐ NO ☐ N/A	DW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	DW

Comments: - SEE ALL NORTH REPORT 226
- TYPE 8 PLACEMENT

DOM Weber / [signature]	Foreman	July 21 2019
Construction Designate – Print/Sign	Title	Date
BRADFORD WATKIN / [signature]	QC COORDINATOR	7/21/19
Contractor QC Designate – Print/Sign	Title	Date
Mike Hynes / [signature]	Materials Lead	July 21, 2019
Client QA Designate – Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

Notes:	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **MOD ROAD PROOF ROLL REPORT SURVEYED JULY 21, 2019.**
OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 22, 2019	DRAWING NAME (YYMMDD): 190721 (1) MOD RD PR REPORT.dwg

NUNA
NUNA EAST LTD

AUTHORIZATION FOR BACKFILL

Exhibit :1-3a QDE
Revision 0

Date: July 20, 2019	**Project:** Mary River Expansion Stage 3	**ITP#:** CC006-0008A	**Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A	
Location: Milne Port	**Elevation:** N/A	**Sub-System:** N/A	
Area: As outlined on attached dwgs	**Area Description:** Port Site Modular Delivery Road		
Compaction Required Yes ☑ No ☐		**Excavation Permit No.:** N/A	
Drawing No.(s): 435300-40000-223-271-0007-0003			**Rev.:** 0

PRE-BACK FILL INSPECTION

INSPECTION DESCRIPTION:		Verified (Initial)
1. Excavation cleared of frozen material, foreign objects and debris.	☑ YES ☐ NO ☐ N/A	
2. No water seepage or ponded water present in excavation.	☑ YES ☐ NO ☐ N/A	
3. No organic and loose soil present.	☐ YES ☑ NO ☐ N/A	
4. All installations in the excavation are complete.	☐ YES ☐ NO ☑ N/A	
5. Concrete substructures complete.	☐ YES ☐ NO ☑ N/A	
6. Electrical installation(s) complete.	☐ YES ☐ NO ☑ N/A	
7. Piping installation(s) complete.	☐ YES ☐ NO ☑ N/A	
8. Sewer vents and manhole installation complete.	☐ YES ☐ NO ☑ N/A	
9. Frost blocks installed as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	
10. Geotextile fabric installation(s) as per specification and IFC drawings.	☐ YES ☐ NO ☑ N/A	
11. Insulation installed per IFC drawings.	☐ YES ☐ NO ☑ N/A	
12. Culverts installation(s) as per specification and IFC drawings.	☑ YES ☐ NO ☐ N/A	
13. Redline / As-Builts completed.	☑ YES ☐ NO ☐ N/A	
14. Overall condition of base is suitable for backfilling and compaction.	☑ YES ☐ NO ☐ N/A	

APPROVAL TO PROCEED WITH BACKFILL

Contractor QC Designate		Client Designate	
BRADFORD WATKIN			
Name (print)	Signature	Name (print)	Signature

IN PROCESS INSPECTION

INSPECTION DESCRIPTION:		Verified (Initial)
1. Backfill material is free of foreign material and conforms to specification.	☑ YES ☐ NO ☐ N/A	
2. Survey check of Location, dimensions and shape of excavation or base.	☑ YES ☐ NO ☐ N/A	
3. Lift thickness confirmed, and compaction testing performed in accordance with specification.	☑ YES ☐ NO ☐ N/A	
4. Warning tape(s) installed, depth and type from final grade: (_____).(_____).	☐ YES ☐ NO ☑ N/A	
5. Red concrete installed over utilities.	☐ YES ☐ NO ☑ N/A	
6. Soil density test performed as per specification and test reports completed.	☐ YES ☐ NO ☑ N/A	
7. Moisture levels acceptable.	☐ YES ☐ NO ☑ N/A	
8. Final elevation of area is in accordance to IFC drawings.	☑ YES ☐ NO ☐ N/A	

NUNA NUNA EAST LTD	AUTHORIZATION FOR BACKFILL	Exhibit :1-3a QDE Revision 0

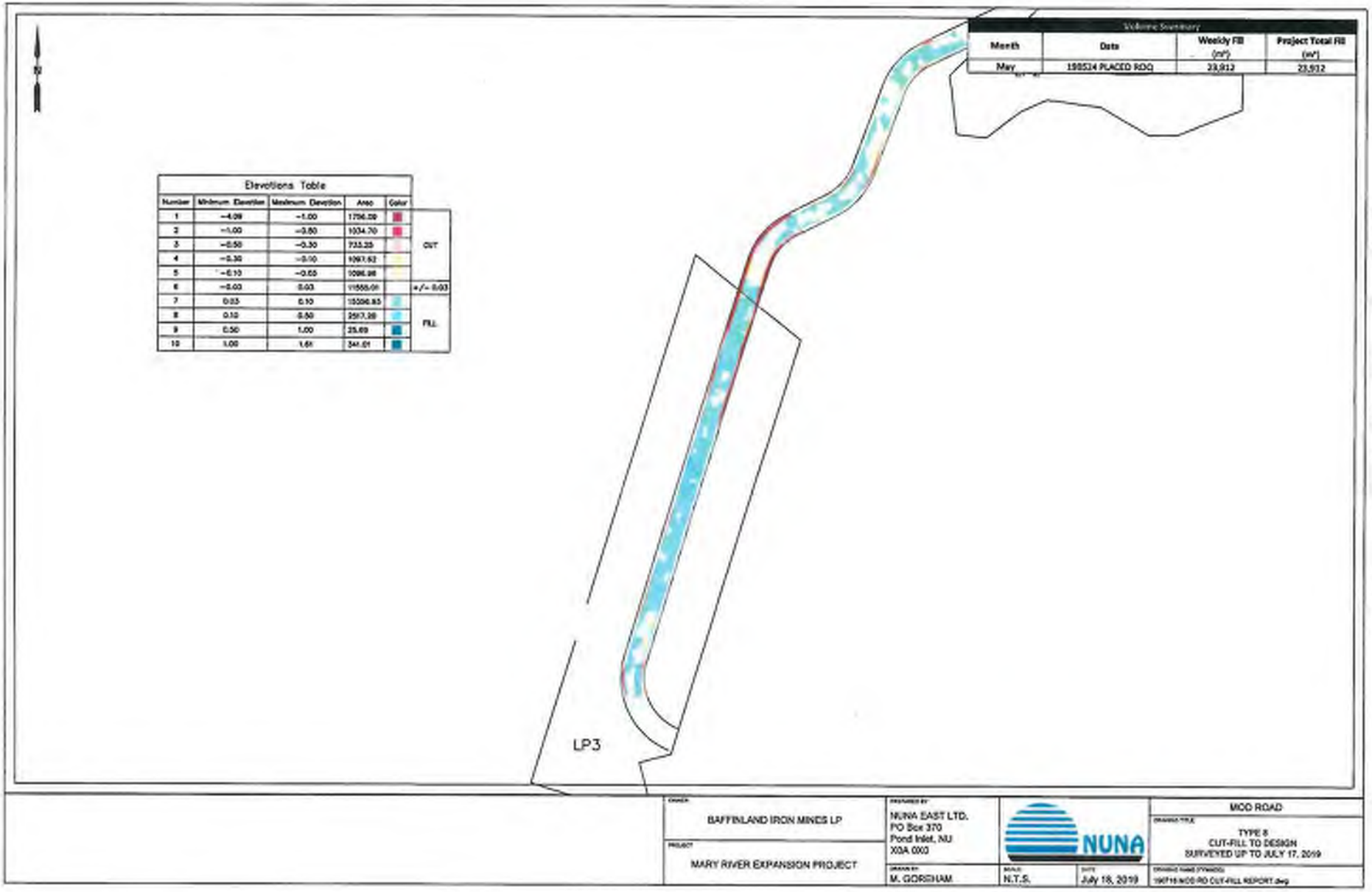
Test Instruments

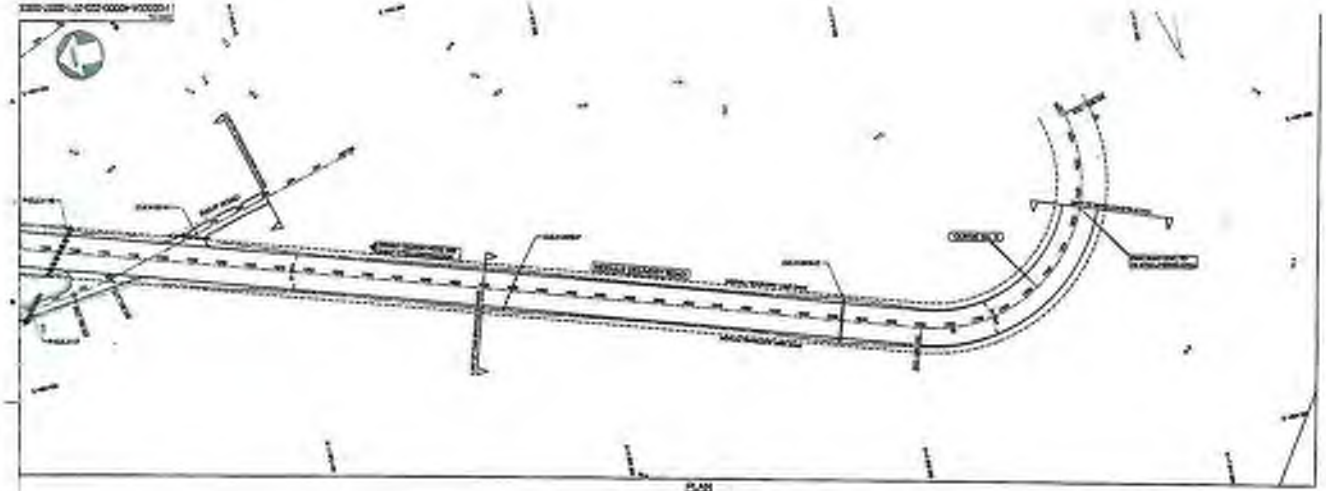
Manufacturer	Description	Range	I.D. No.:	Calibration Due Date
	N/A			

Comments: Placement acceptable for intended use. See attached Survey Data report and area IFC drawing.

Attach additional supporting documents, data, or test results to this Report as required

/			
Construction Designate – Print/Sign		Title	Date
BRADFORD WATKIN /		QC COORDINATOR	7/20/19
Contractor QC Designate – Print/Sign		Title	Date
/			
Client QA Designate – Print/Sign		Title	Date


N
Elevations Table
Number | Minimum Elevation | Maximum Elevation | Area | Color
1 | -4.09 | -1.00 | 1796.09
2 | -1.00 | -0.50 | 1034.70
3 | -0.50 | -0.30 | 733.33
4 | -0.30 | -0.10 | 1067.62
5 | -0.10 | -0.03 | 1096.98
CUT
6 | -0.03 | 0.03 | 11555.01 | +/- 0.03
7 | 0.03 | 0.10 | 15096.83
8 | 0.10 | 0.50 | 2517.39
9 | 0.50 | 1.00 | 25.69
10 | 1.00 | 1.61 | 241.01
FILL
Volume Summary
Month | Date | Weekly Fill (m³) | Project Total Fill (m³)
May | 190514 PLACED ROC | 23,912 | 23,912
LP3
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0
NUNA
M. GORSHAM
N.T.S.
July 18, 2019
MOD ROAD
TYPE 8
CUT-FILL TO DESIGN
SURVEYED UP TO JULY 17, 2019
190718 MOD RD CUT-FILL REPORT.dwg



PLAN

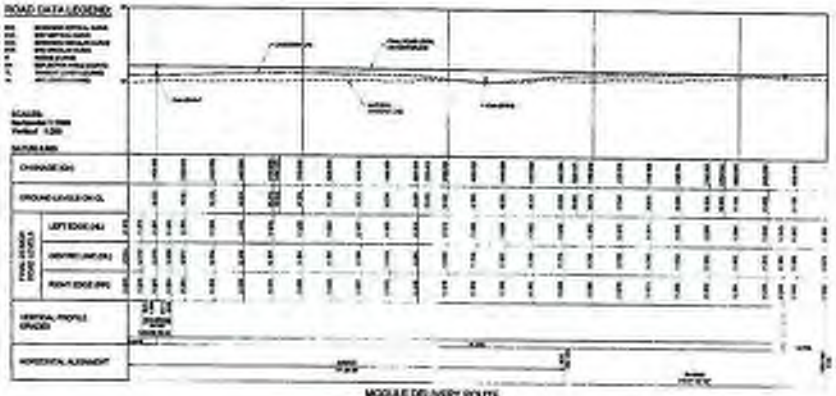
KEY PLAN

NOTES:

CULVERT SCHEDULE LEGEND:

CULVERT SCHEDULE

ROAD DATA LEGEND:



SETTING OUT DATA
MODULE DELIVERY ROUTE

POINT	CH	E	N	DETAILS

MODULE DELIVERY ROUTE
FROM CH.1350.000 TO CH.1650.000

FOR CONSTRUCTION

Released for Use

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 2 OF 4

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 2 Page 1 of 1

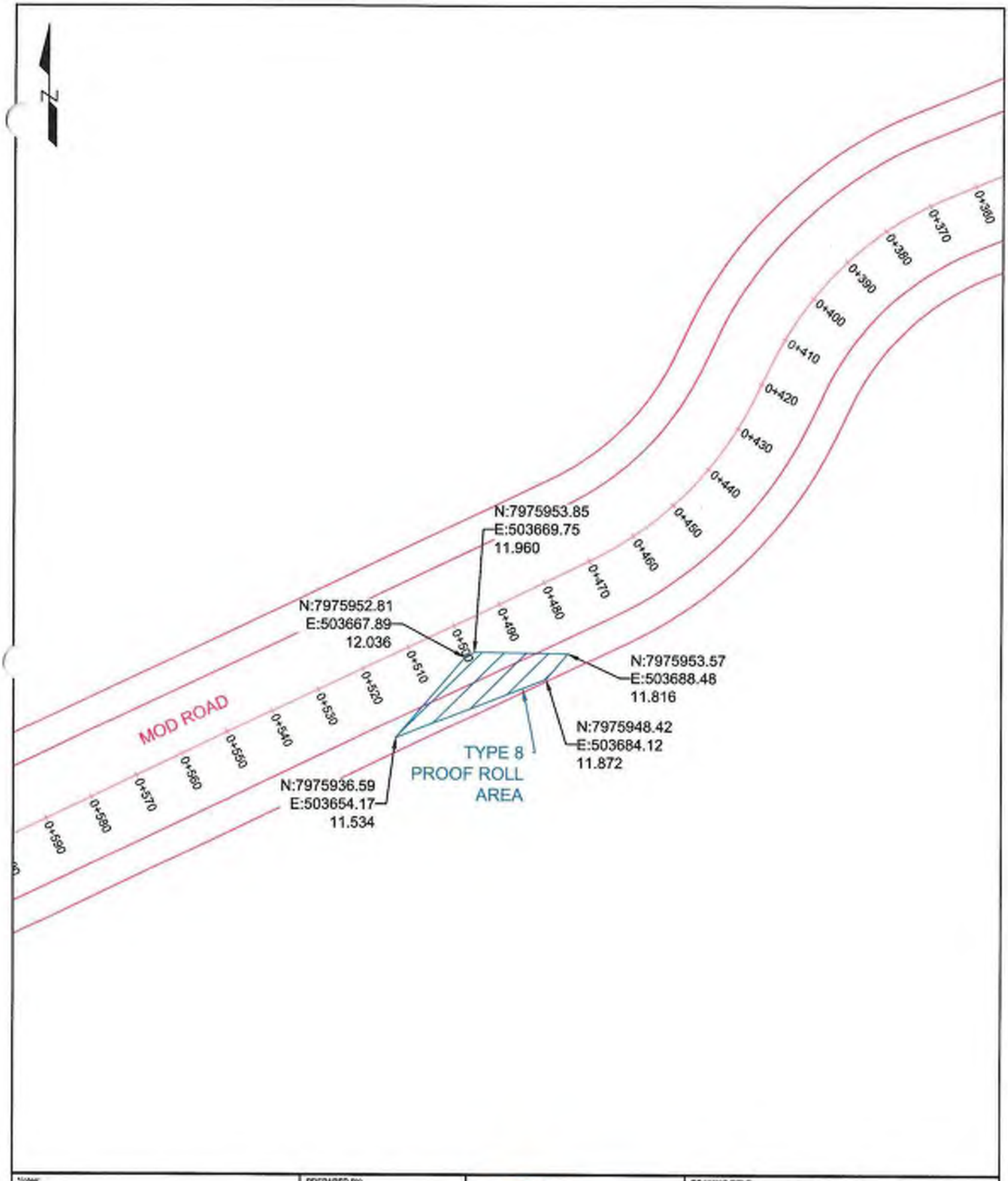
		Date: 7/18/19
Project: Mary River Expansion Project	**ITP #:** CC006-0008A	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Material Type:** 8
Site Area: MOD ROAD	**Area Description:** PORT SITE MODULAR DELIVERY ROAD	
Drawing No.: H353004-40000-223-271-0007-0001		**Rev.:** 1

Area / Stations Inspected: See Survey Data Report	**Type of Proof Role:** ☐ Subgrade ☑ Material
Proof Rolled With: A loaded CAT 745 Articulated Haul Truck	**Number of Passes Completed:** 5+

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections (Pumping)	☐ YES ☑ NO ☐ N/A	
Rebound of Surface	☐ YES ☑ NO ☐ N/A	
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	
Location Record (Survey)	☑ YES ☐ NO ☐ N/A	

Comments:

Construction Designate	Print/Sign		Title	Date
BRANFORD WATKIN	/		QC COORDINATOR	7/18/19
Contractor QC Designate	Print/Sign		Title	Date
Client QA Designate	Print/Sign		Title	Date



OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **MOD ROAD PROOF ROLL REPORT SURVEYED JULY 18, 2019.**
	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 19, 2019	DRAWING NAME (YYMMDD): 190718 MOD RD PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

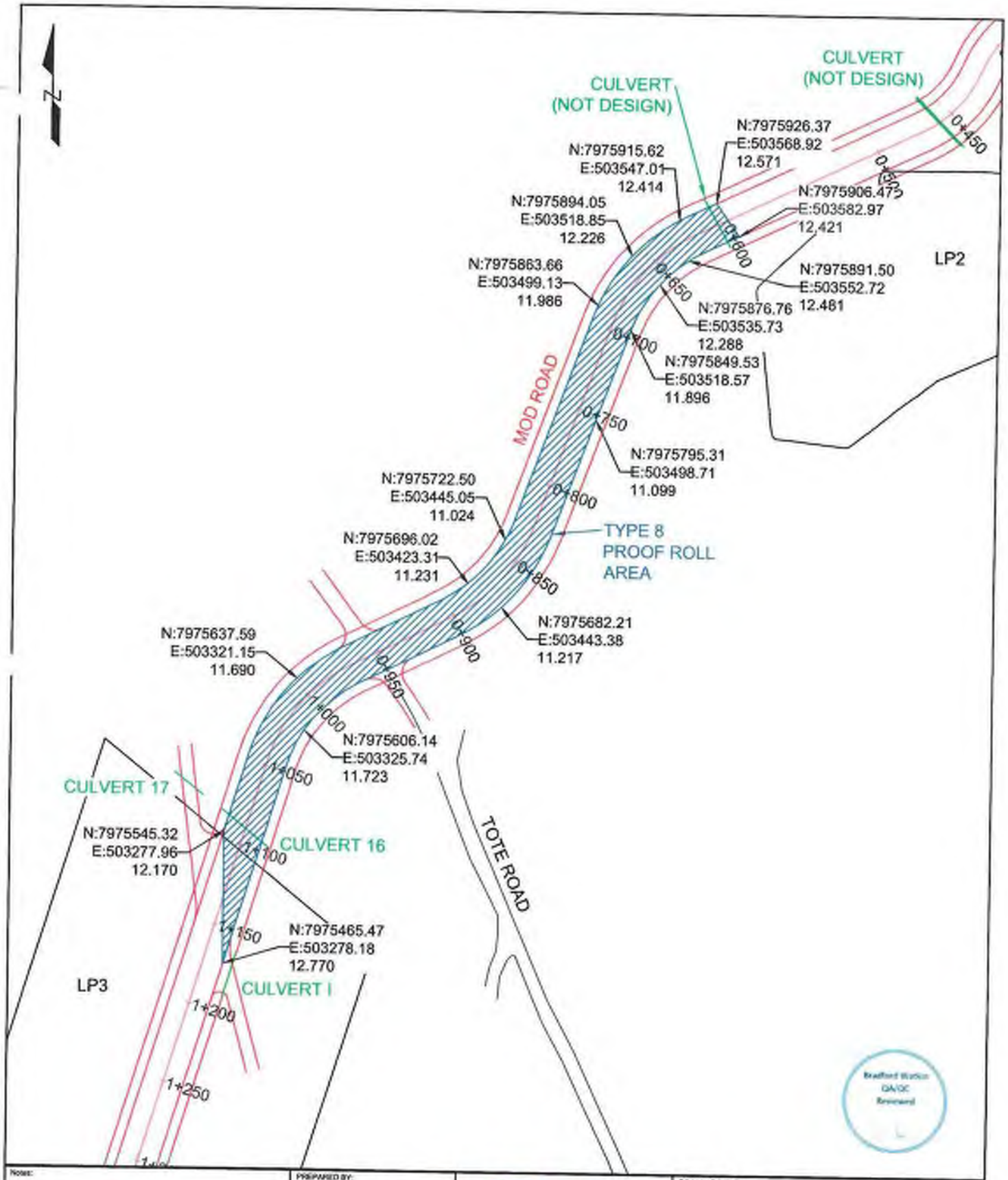
Project: Mary River Expansion Project	**ITP #:** CC006-0008A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: MOF ROAD	**Area Description:** OHT Fuel ROAD to LP2	
Drawing No.: H353004-40000-223-371-0001-0002	**Rev.:** 1	

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	DW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	DW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	DW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	DW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	DW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	DW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	DW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	DW

Comments:
- SOME SEGREGATION
- TYPE 3 PROOF ROLL

DONALD WEBER / Don Weber		FOREMAN	July 15 2019
Construction Designate – Print/Sign		Title	Date
BRADFORD WATKINS /		QC COORDINATOR	7/15/19
Contractor QC Designate – Print/Sign		Title	Date
MIKE HYNES / Mike Hynes		Materials Lead	July 15/2019
Client QA Designate – Print/Sign		Title	Date



Notes:

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

SCALE: AS SHOWN

DATE: July 19, 2019

DRAWING TITLE:

MOD ROAD
PROOF ROLL REPORT
SURVEYED JULY 16, 2019.

DRAWING NAME (YYMMDD): 190716 MOD RD PR REPORT.dwg

MOD ROAD TYPE 8 PROOF ROLL SURVEYED JULY 15, 2019		
NORTHING	**EASTING**	**ELEVATION**
7975464.956	503278.179	12.772
7975545.670	503277.960	12.168
7975639.138	503319.738	11.686
7975606.141	503325.738	11.723
7975682.213	503443.381	11.217
7975696.024	503423.312	11.231
7975722.501	503445.046	11.024
7975863.664	503499.127	11.986
7975894.051	503518.848	12.226
7975915.622	503547.010	12.414
7975926.368	503568.918	12.571
7975906.469	503582.974	12.421
7975891.501	503552.721	12.481
7975876.763	503535.727	12.288
7975849.528	503518.572	11.896
7975795.311	503498.709	11.099

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 2 Page 1 of 1

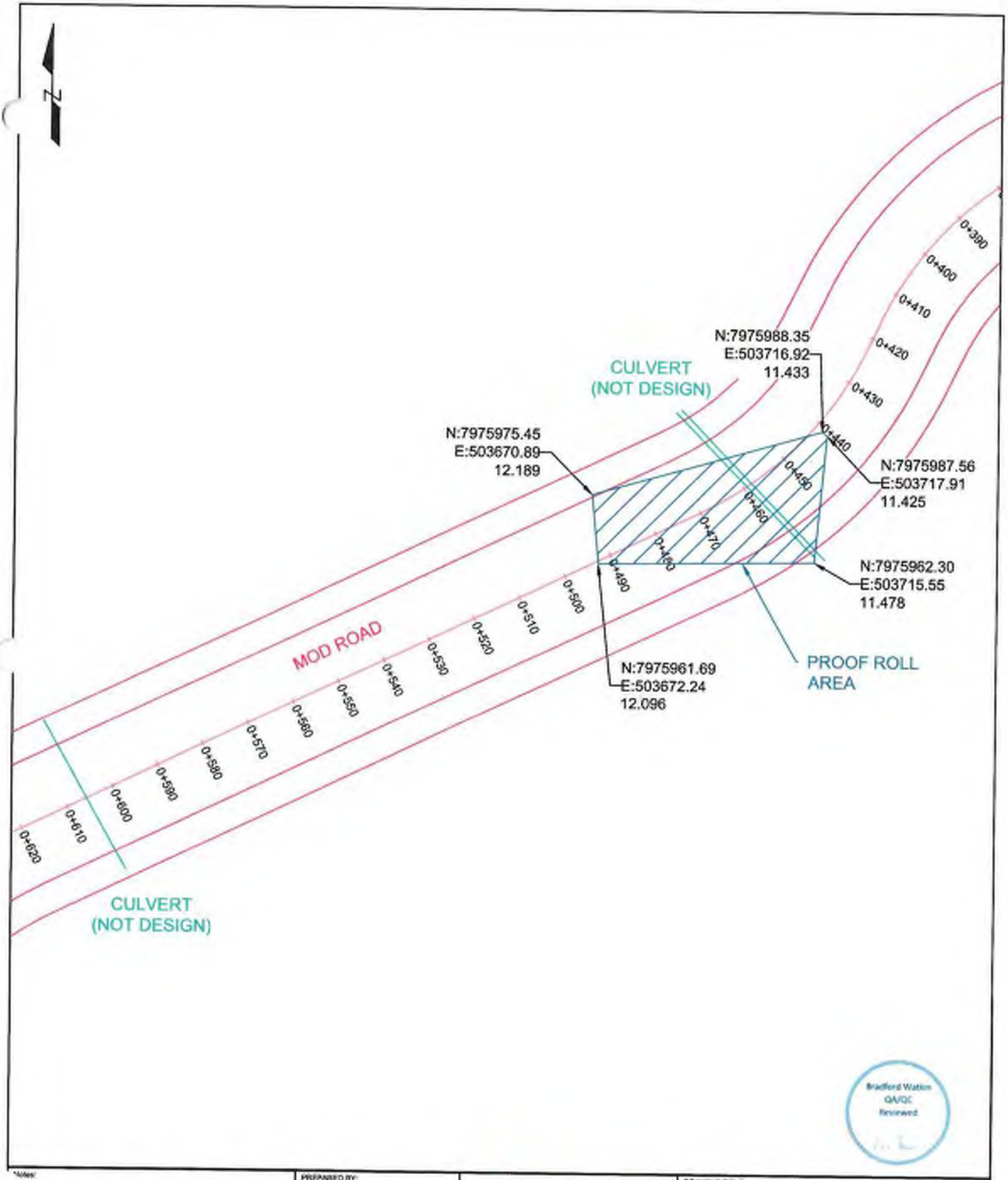
		Date: 7/15/19
Project: Mary River Expansion Project	ITP #: CC00C-0008A	QA Ref. Report No.:
Contractor: Nuna East Ltd.	Contract No.: CC006	CWP: N/A
Location: Milne Port	Elevation: N/A	Material Type: 8
Site Area: MRD ROAD	Area Description: PORT SITE MODULAR ROAD	
Drawing No.: 4353004-40000-223-271-0007-0001		Rev.: 1

Area / Stations Inspected: See Survey Data Report	Type of Proof Role: ☐ Subgrade ☑ Material
Proof Rolled With: A loaded CAT 745 Articulated Haul Truck	Number of Passes Completed: 5+

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections (Pumping)	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Location Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments:

Construction Designate	Print/Sign	Title	Date
BRADFORD WATKIN	BW	QC COORDINATOR	7/15/19
Contractor QC Designate	Print/Sign	Title	Date
Derek Radowski		QA Manager	16/21/9
Client QA Designate	Print/Sign	Title	Date



Bradford Watkin
QA/QC
Reviewed

*Notes: OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA		DRAWING TITLE: **MOD ROAD** **PROOF ROLL REPORT** **SURVEYED JULY 15, 2019.**
	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 19, 2019	DRAWING NAME (YYMMDD): 190715 MOD RD PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 1

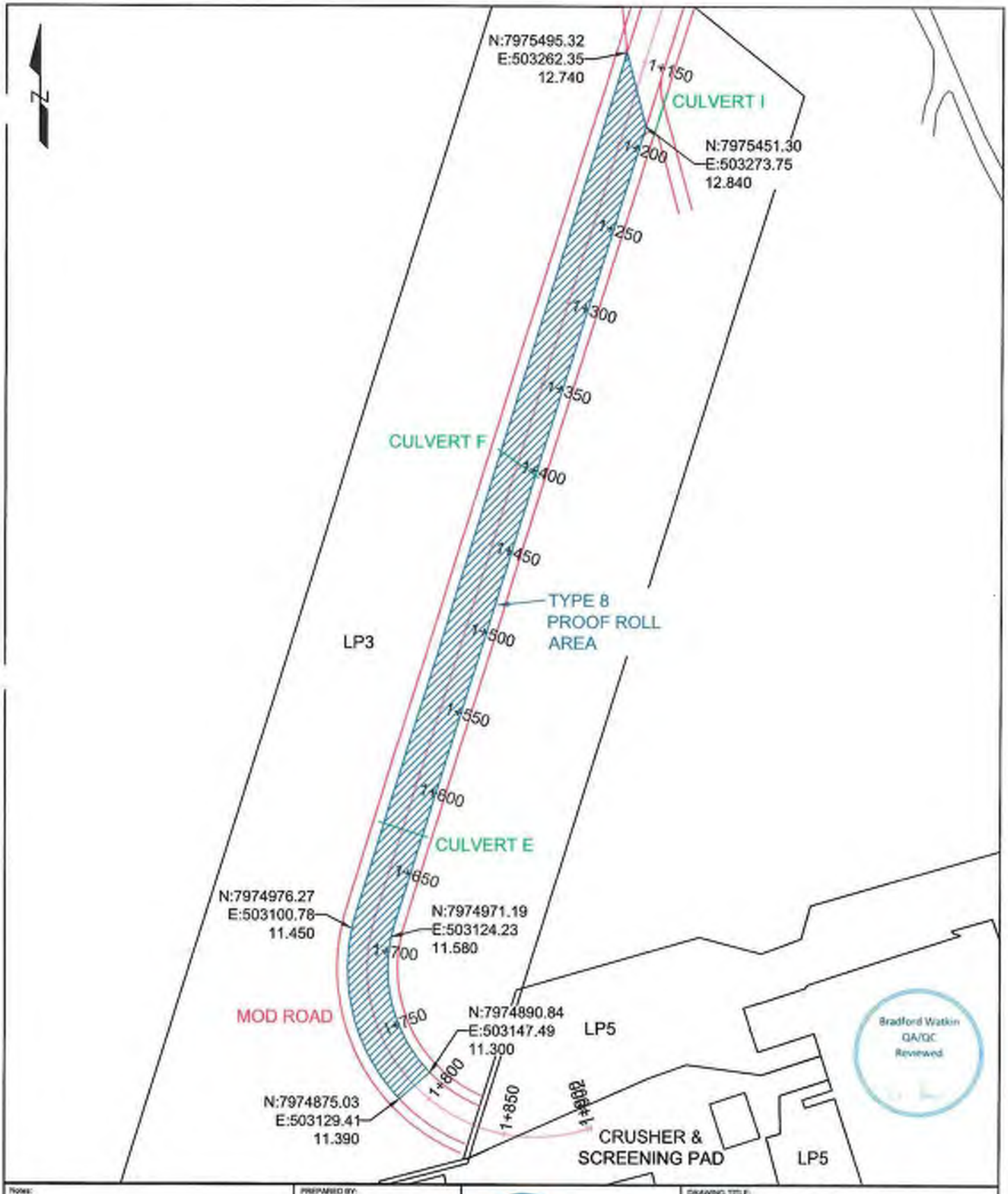
Project: Mary River Expansion Project	**ITP #:** CC006-00058 A	**QA Refer. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: MOF ROAD	**Area Description:** LAYDOWN 3 LP3	
Drawing No.: H353004-40000-223-271-0057-0003	**Rev.:** 0	

Area / Stations Inspected: SEE SURVEY DATA
Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections	☐ YES ☑ NO ☐ N/A	DW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	DW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	DW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	DW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	DW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	DW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	DW
Elevation Record (Survey)	☑ YES ☐ NO ☐ N/A	DW

Comments: - TYPE 8 MATERIAL

DONALD WIBER / DonWib	FOREMAN	07/14/19
Construction Designate – Print/Sign	Title	Date
Darko Filipic / DW	Proj. Coord.	07/14/19
Contractor QC Designate – Print/Sign	Title	Date
Mike Hynes / MikeHynes	Materials Lead	07/14/2019
Client QA Designate – Print/Sign	Title	Date



Notes:

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

SCALE: AS SHOWN

DATE: July 19, 2019

DRAWING TITLE:
MOD ROAD
PROOF ROLL REPORT
SURVEYED JULY 14, 2019.

DRAWING NAME (YYMMDD): 190714 MOD RD PR REPORT.dwg

NUNA EAST LTD	SUBGRADE APPROVAL REPORT	Exhibit 1-8b QDE Revision 1 Page 1 of 1

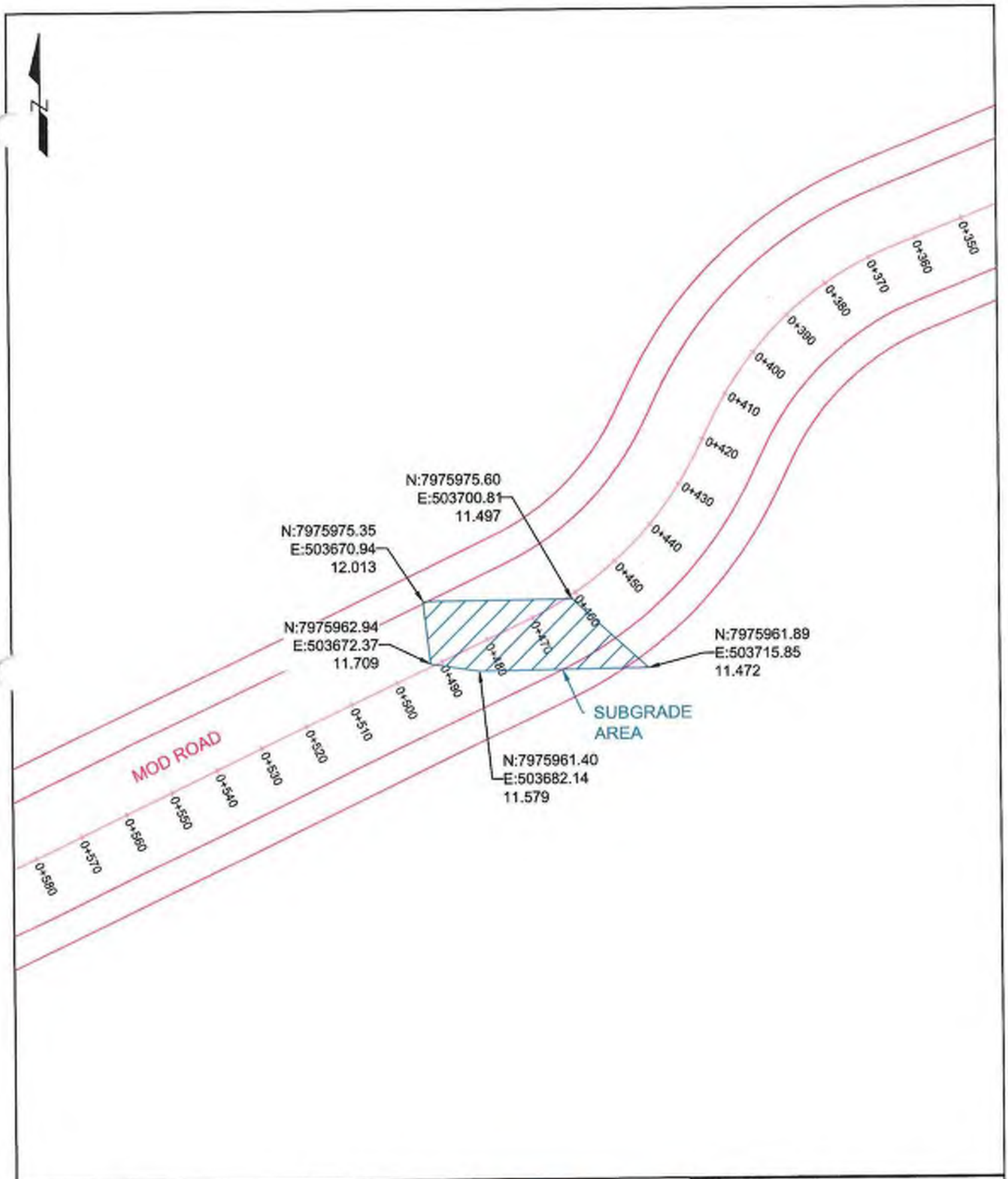
		Date: 7/11/19
Project: Mary River Expansion Project	**ITP#:** CC006-0008A	**QA Ref. Rpt. No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: HAUL ROAD	**Area Description:** PORT SITE MODULE DELIVERY ROAD	
Drawing No.: A353C04-40000-223-271-0007-0001		**Rev.:** 1

Area / Stations Inspected: See Survey Data Report & Drawing

INSPECTION DESCRIPTION		Verified (Initial)
Organic Soil Present.	☐ YES ☑ NO ☐ N/A	BW
Snow or Ice Present.	☐ YES ☑ NO ☐ N/A	BW
Ponded Water Present.	☐ YES ☑ NO ☐ N/A	BW
Water Seepage.	☐ YES ☑ NO ☐ N/A	BW
Frozen Soil Present.	☐ YES ☑ NO ☐ N/A	BW
Excavation Cleared of Foreign and Loose Soil Material.	☐ YES ☐ NO ☑ N/A	BW
Excavation Matches Design and IFC drawings.	☐ YES ☐ NO ☑ N/A	BW
Was Over Excavation Required. Depth: (_____)	☐ YES ☐ NO ☑ N/A	BW
Excavation Satisfactory and Accepted.	☑ YES ☐ NO ☐ N/A	BW

Comments:

Construction Designate – Print/Sign	Title	Date
BRADFORD WAYKID	QC COORDINATOR	7/11/19
Contractor QC Designate – Print/Sign	Title	Date
Doyle Pedlousk	QA Manager	10/21/19
Hatch QA Designate – Print/Sign	Title	Date



Notes:

OWNER: BAFFINLAND IRON MINES LP

PROJECT: MARY RIVER EXPANSION PROJECT

PREPARED BY:
NUNA EAST LTD.
PO Box 370
Pond Inlet, NU
X0A 0X0

DRAWN BY: M. GOREHAM

SCALE: AS SHOWN

DATE: July 19, 2019

DRAWING TITLE:
MOD ROAD SUBGRADE REPORT
SURVEYED JULY 11, 2019.

DRAWING NAME (YYMMDD): 190711 MOD RD SG REPORT.dwg

NUNA EAST LTD	SUBGRADE APPROVAL REPORT	Exhibit 1-8b QDE Revision 1 Page 1 of 1

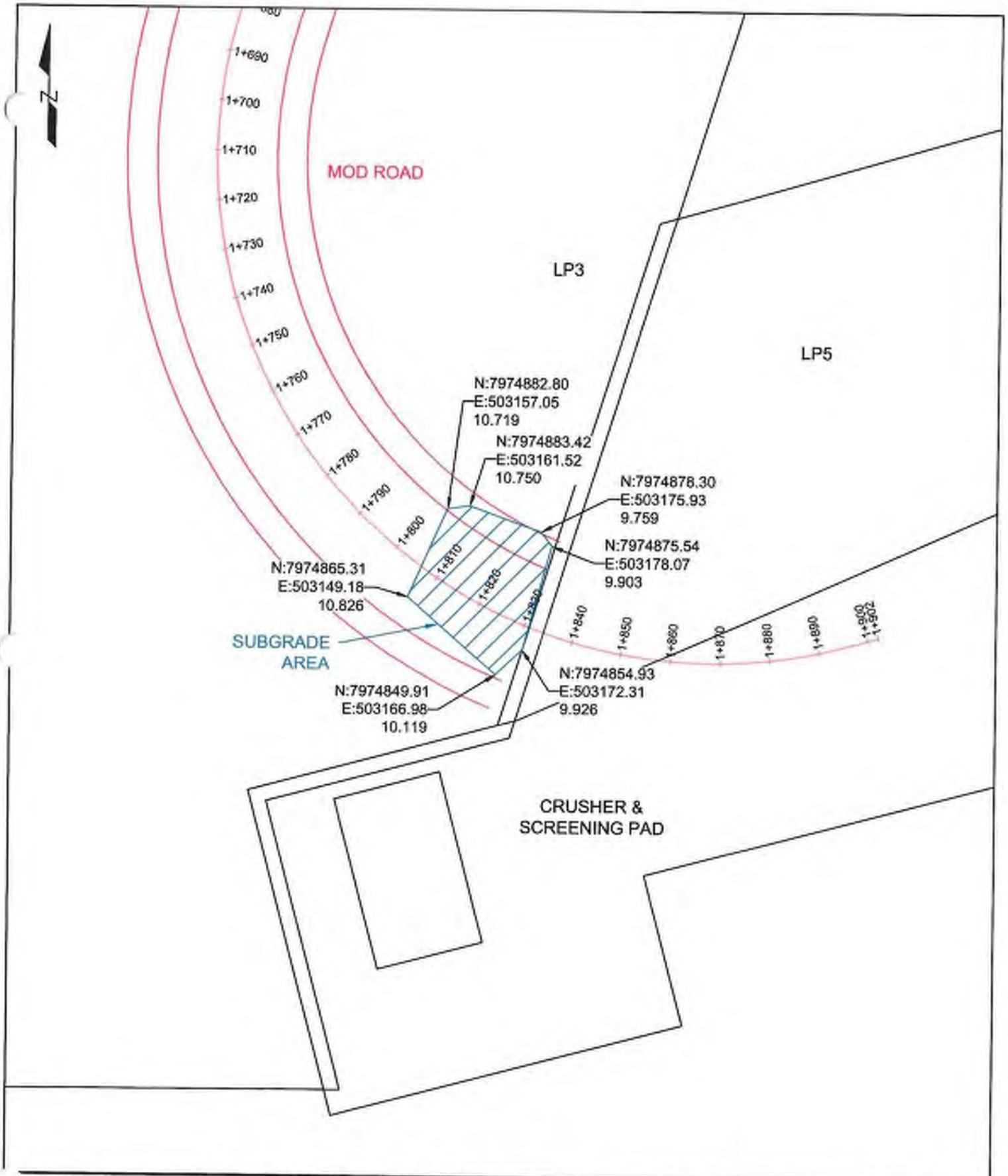
		Date: 7/6/19
Project: Mary River Expansion Project	**ITP#:** CC006-CC056A	**QA Ref. Rpt. No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: MOD ROAD	**Area Description:** MODULAR DELIVERY ROAD	
Drawing No.: H353004-40000-223-271-0007-0003		**Rev.:** 0

Area / Stations Inspected: See Survey Data Report & Drawing

INSPECTION DESCRIPTION		Verified (Initial)
Organic Soil Present.	☐ YES ☑ NO ☐ N/A	
Snow or Ice Present.	☐ YES ☑ NO ☐ N/A	
Ponded Water Present.	☐ YES ☑ NO ☐ N/A	
Water Seepage.	☐ YES ☑ NO ☐ N/A	
Frozen Soil Present.	☐ YES ☑ NO ☐ N/A	
Excavation Cleared of Foreign and Loose Soil Material.	☐ YES ☐ NO ☑ N/A	
Excavation Matches Design and IFC drawings.	☐ YES ☐ NO ☑ N/A	
Was Over Excavation Required. Depth: (_____)	☐ YES ☑ NO ☐ N/A	
Excavation Satisfactory and Accepted.	☑ YES ☐ NO ☐ N/A	

Comments:

Construction Designate – Print/Sign	Title	Date
REDFORD WATKIN	QC COORDINATOR	7/6/19
Contractor QC Designate – Print/Sign	Title	Date
Derek Redmond	QA Manager	10/21/19
Hatch QA Designate – Print/Sign	Title	Date



OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	DRAWING TITLE: **MOD ROAD SUBGRADE REPORT** **SURVEYED JULY 6, 2019.**	
	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 19, 2019	DRAWING NAME (YYMMDD): 190706 MOD RD SG REPORT.dwg

NUNA EAST LTD	SUBGRADE APPROVAL REPORT	Exhibit 1-8b QDE Revision 1 Page 1 of 1

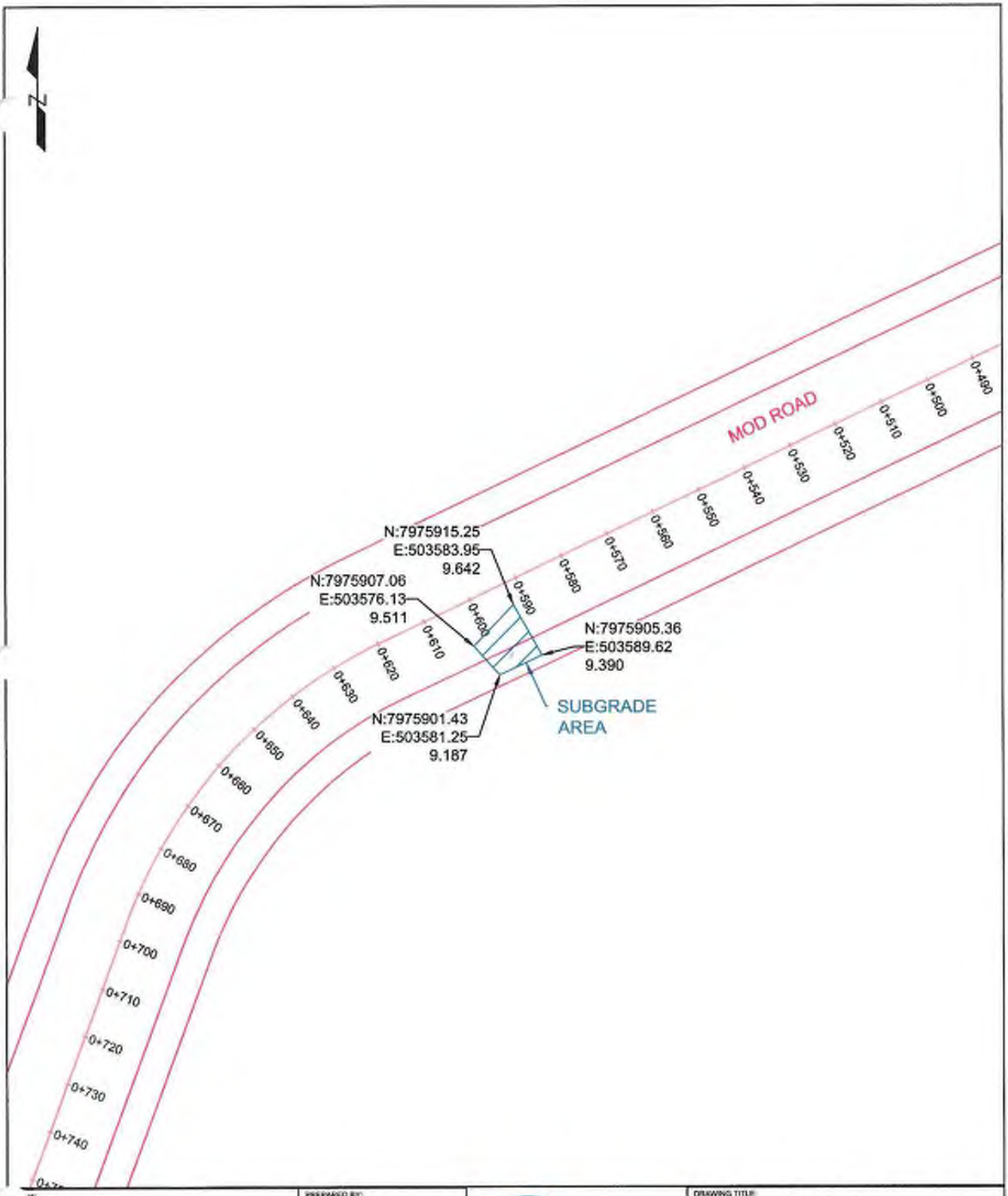
		Date: 7/6/19
Project: Mary River Expansion Project	**ITP#:** CC006-0008A	**QA Ref. Rpt. No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: MOD ROAD	**Area Description:** MODULAR DELIVERY ROAD	
Drawing No.: H353004-40000-223-271-0007-0001		**Rev.:** 1

Area / Stations Inspected: See Survey Data Report & Drawing

INSPECTION DESCRIPTION		Verified (Initial)
Organic Soil Present.	☐ YES ☑ NO ☐ N/A	
Snow or Ice Present.	☐ YES ☑ NO ☐ N/A	
Ponded Water Present.	☐ YES ☑ NO ☐ N/A	
Water Seepage.	☐ YES ☑ NO ☐ N/A	
Frozen Soil Present.	☐ YES ☑ NO ☐ N/A	
Excavation Cleared of Foreign and Loose Soil Material.	☐ YES ☐ NO ☑ N/A	
Excavation Matches Design and IFC drawings.	☐ YES ☐ NO ☑ N/A	
Was Over Excavation Required. Depth: (_____)	☐ YES ☑ NO ☐ N/A	
Excavation Satisfactory and Accepted.	☑ YES ☐ NO ☐ N/A	

Comments:

Construction Designate – Print/Sign	Title	Date
BRANFORD WATKIN /	QC COORDINATOR	7/6/19
Contractor QC Designate – Print/Sign	Title	Date
Derek Podhorski /	QA Manager	16/7/19
Hatch QA Designate – Print/Sign	Title	Date



OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	DRAWING TITLE: **MOD ROAD SUBGRADE REPORT** **SURVEYED JULY 6, 2019.**	
	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 19, 2019	DRAWING NAME (YYMMDD): 190706 (2) MOD RD SG REPORT.dwg

NUNA EAST LTD	PROOF ROLL COMPACTION VERIFICATION REPORT	Exhibit 1-5 QDE Revision 2 Page 1 of 1

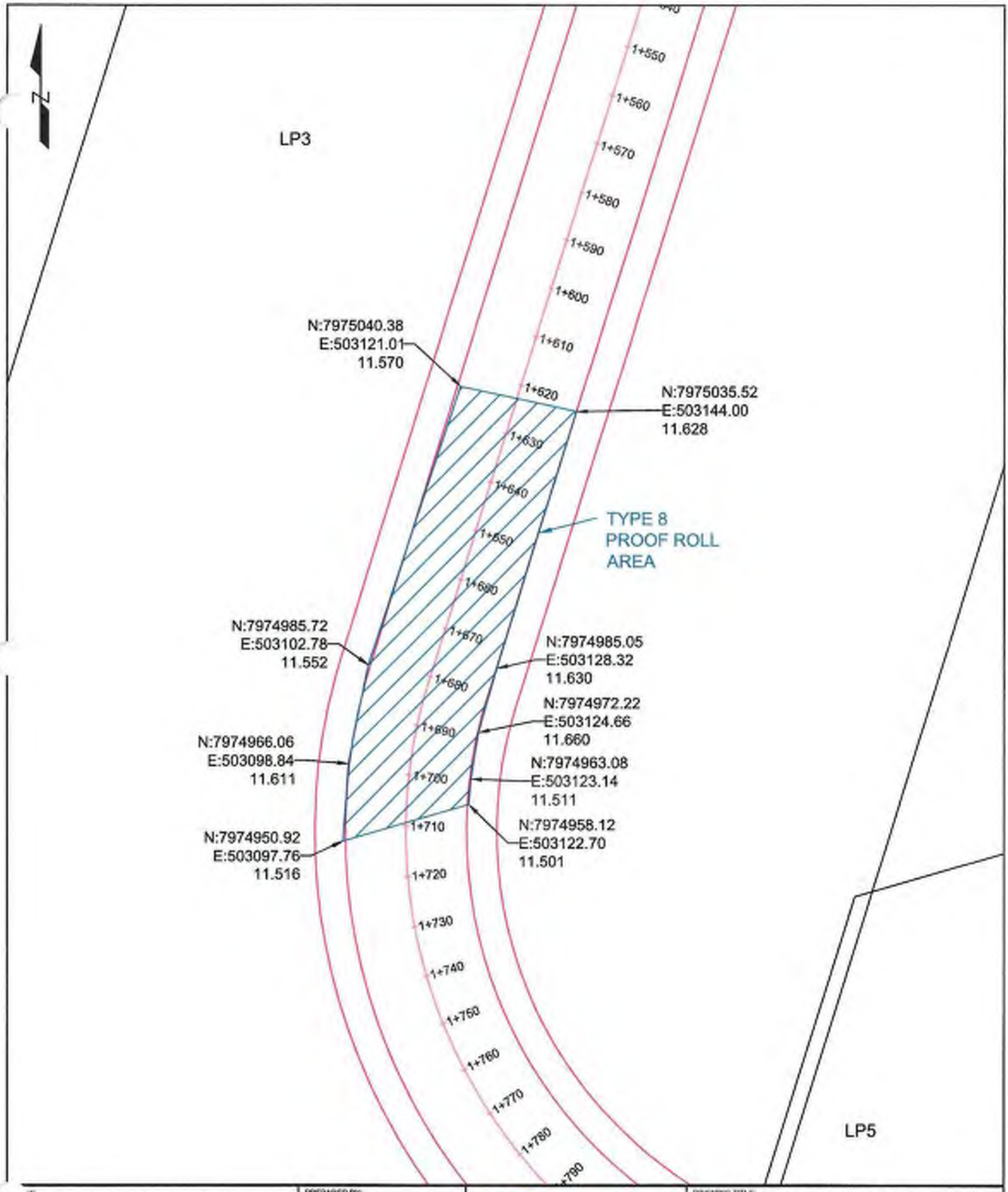
		Date: 7/3/19
Project: Mary River Expansion Project	**ITP #:** CC006-0008A	**QA Ref. Report No.:**
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Material Type:** 8
Site Area: MOD ROAD	**Area Description:** PORT SITE MODULAR DELIVERY ROAD	
Drawing No.: H353004-40000-223-271-0007-0001		**Rev.:** 1

Area / Stations Inspected: See Survey Data Report	**Type of Proof Role:** ☐ Subgrade ☑ Material
Proof Rolled With: A loaded CAT 745 Articulated Haul Truck	**Number of Passes Completed:** 5+

INSPECTION DESCRIPTION		Verified (Initial)
Visible Deflections (Pumping)	☐ YES ☑ NO ☐ N/A	BW
Rebound of Surface	☐ YES ☑ NO ☐ N/A	BW
Formation of Cracks Patterns	☐ YES ☑ NO ☐ N/A	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO ☐ N/A	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO ☐ N/A	BW
Surface Uniform and Level	☑ YES ☐ NO ☐ N/A	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO ☐ N/A	BW
Location Record (Survey)	☑ YES ☐ NO ☐ N/A	BW

Comments:

Construction Designate	Print/Sign	Title	Date
BRADFORD WATKIN	/ [signature]	QC COORDINATOR	7/3/19
Contractor QC Designate	**Print/Sign**	**Title**	**Date**
Derek Redlands	/ [signature]	QA Manager	16/21/19
Client QA Designate	**Print/Sign**	**Title**	**Date**



OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA			DRAWING TITLE: **MOD ROAD PROOF ROLL REPORT** **SURVEYED JULY 3, 2019.**
	DRAWN BY: M. GOREHAM	SCALE: AS SHOWN	DATE: July 19, 2019		DRAWING NAME (YYMMDD): 190703 MOD RD PR REPORT.dwg

NUNA EAST LTD	PROOF ROLL REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 2

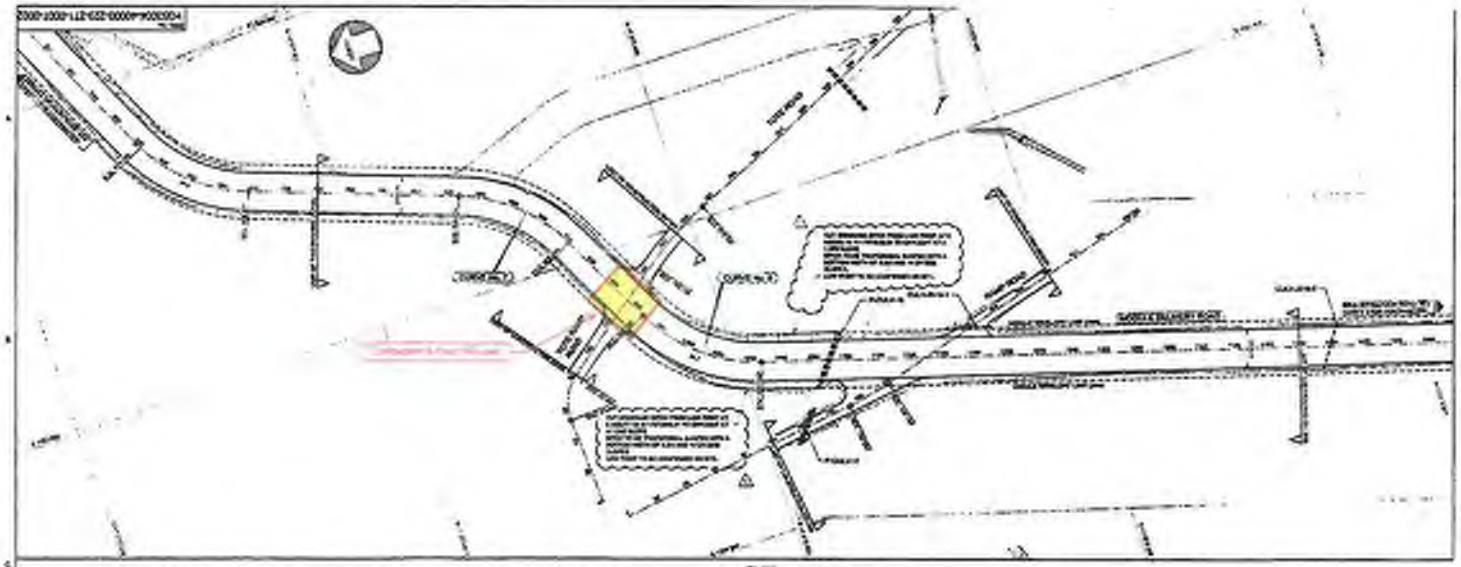
Contractor: Nuna East Ltd.	**Contract No.:** CC006 – CC006A	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: Modular Delivery Road	**Area Description:** Modular Road - Tote Road / Ore Pad entrances Square	
Drawing No.: H353004-40000-223-271-0007-0002		**Rev.:** 1

Area / Section Inspected: ~ stations 960 to 940
Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial or N/A)
Visible Deflections	☐ YES ☑ NO	
Rebound of Surface	☐ YES ☑ NO	
Formation of Cracks Patterns	☐ YES ☑ NO	
Ridging Between Wheel Ridges	☐ YES ☑ NO	
Inconsistency Compaction Between Areas	☐ YES ☑ NO	
Surface Uniform and Level	☑ YES ☐ NO	
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO	
Elevation Record (Survey)	☑ YES ☐ NO	

Comments: Refer to Allnorth daily report 178 and attached outlined drawing.

Construction Designate – Print/Sign BRADFORD WALKER	Title QC	Date 6/21/19
Contractor QC Designate – Print/Sign Derek Richards	Title QA Manager	Date 10/21/19
Client QA Designate – Print/Sign	Title	Date



PLAN

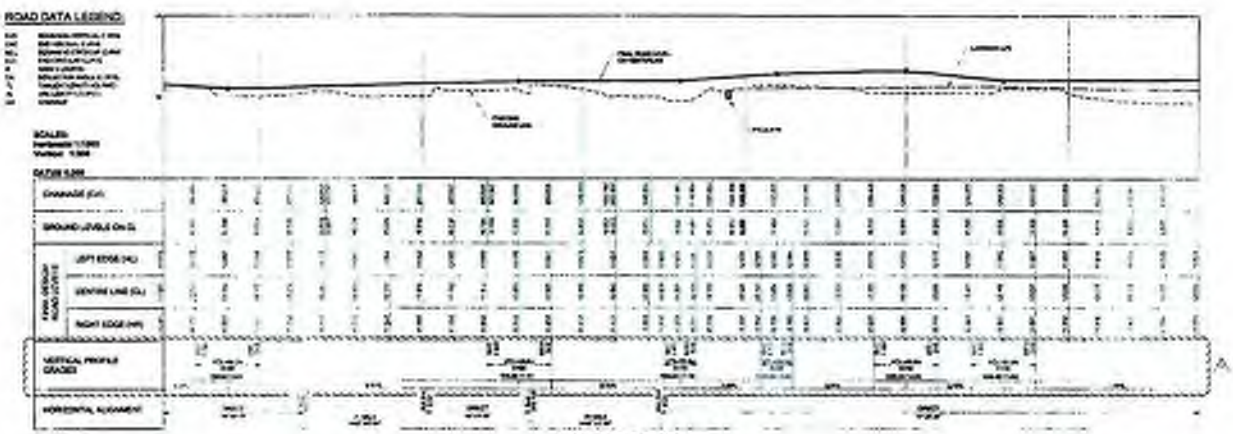
KEY PLAN

NOTES:

CULVERT SCHEDULE LEGEND

CULVERT SCHEDULE

ROAD DATA LEGEND



MODULE DELIVERY ROUTE
FROM CH.740.000 TO CH.1380.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 2 OF 4

NUNA
NUNA EAST LTD

COMPACTION REPORT

Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Tag No.: N/A	**Tag Description:** N/A	**Sub-System:** N/A
Area: Modular Delivery Road	**Area Description:** Modular Road - Tote Road / Ore Pad entrances Square	**Drawing No.:** H353004-40000-223-271-0007-0002 Rev 1

FILL DATA

Subgrade Type: Existing ground (old road / pad)	**Compactor Type:** CAT CS56B 10 Ton	**Vibration on Compactor:** Yes ☒ No ☐
Fill Lift Thickness: <1m	**Fill Type:** Type 12	**Water Used on Fill:** Yes ☐ No ☒
Test Method: Sand Cone Method ☐ Driven Tube Method ☐ Nuclear Method ☐ Proctor Test ☐ Visual Test ☒		

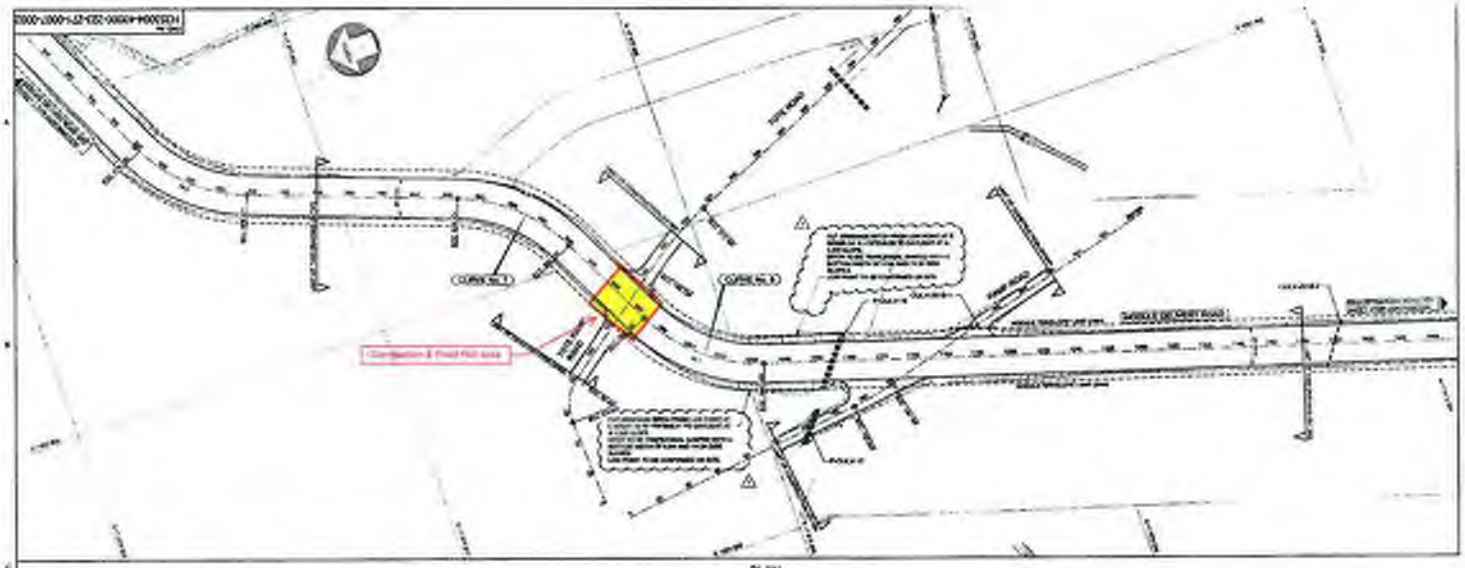
TEST DATA

TEST NO.	TIME	LOCATION	ELEVATION	DENSITY		MOISTURE		COMPACTION		ACCEPTED (Initial for Yes)
				MAX	FIELD	OPTIMUM	FIELD	SPEC	FIELD	
				N/A						

COMMENTS: No Densometer available for project, compaction to be competed per specification and RFI-19 E353004-CC006-400-465-0019 0 V2.

(5 passes with 10 ton compactor @ 1200-1500 vpm).

Construction Designate – Print/Sign BRADFORD WATKIN /		**Title** QC	**Date** 6/21/19
Contractor QC Designate – Print/Sign /		**Title**	**Date**
Client QA Designate – Print/Sign		**Title**	**Date**



PLAN

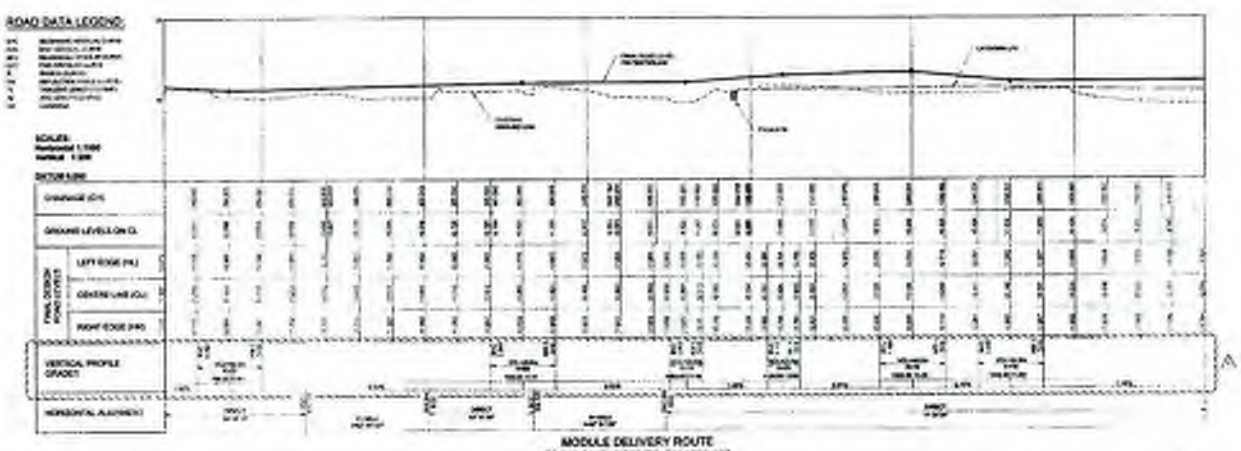
KEY PLAN

NOTES:

CULVERT SCHEDULE LEGEND:

CULVERT SCHEDULE

ROAD DATA LEGEND:



MODULE DELIVERY ROUTE
FROM CH.740.000 TO CH.1380.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 2 OF 4

H353004-40000-223-271-0007-0002

NUNA
NUNA EAST LTD

Baffinland
HATCH

Nuna East Limited Quality Department
QCD-001 Sub-Grade Approval
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval* *Work Scope Location:* PROOF ROLL BASE MOF ROAD *Location Section:* STATION 0+620 TO STATION 0+696
Date of Inspection:	JUNE 16 2019
Parties Present at Inspection	SCOTT MACKENZIE MATT TABOR

Comments:

A visual inspection of the EXISTING CONDITIONS *surface/sub-grade was conducted prior to placement of fill Material.*

Sub-grade:

PROOF ROLL PASSED 100%

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	SCOTT MACKENZIE		JUNE 16/19
HATCH Representative:	MATT TABOR		June 16/19

NUNA
NUNA EAST LTD

Baffinland
HATCH

Nuna East Limited Quality Department
QCD-001 Sub-Grade Approval
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval* *Work Scope Location:* PROOF ROLL BASE MOF ROAD *Location Section:* STATION 0+696 to 0+960 STATION 0+480 to 0+600
Date of Inspection:	JUNE 19 2019
Parties Present at Inspection	SCOTT MACKENZIE MATT TABOR

Comments:

A visual inspection of the EXISTING CONDITION *surface/sub-grade was conducted prior to placement of fill Material.*

Sub-grade: PROOF ROLL PASSED

The outlined area is approved for placement of material.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	SCOTT MACKENZIE		JUNE 19/19
HATCH Representative:	MATT TABOR		JUNE 19/19

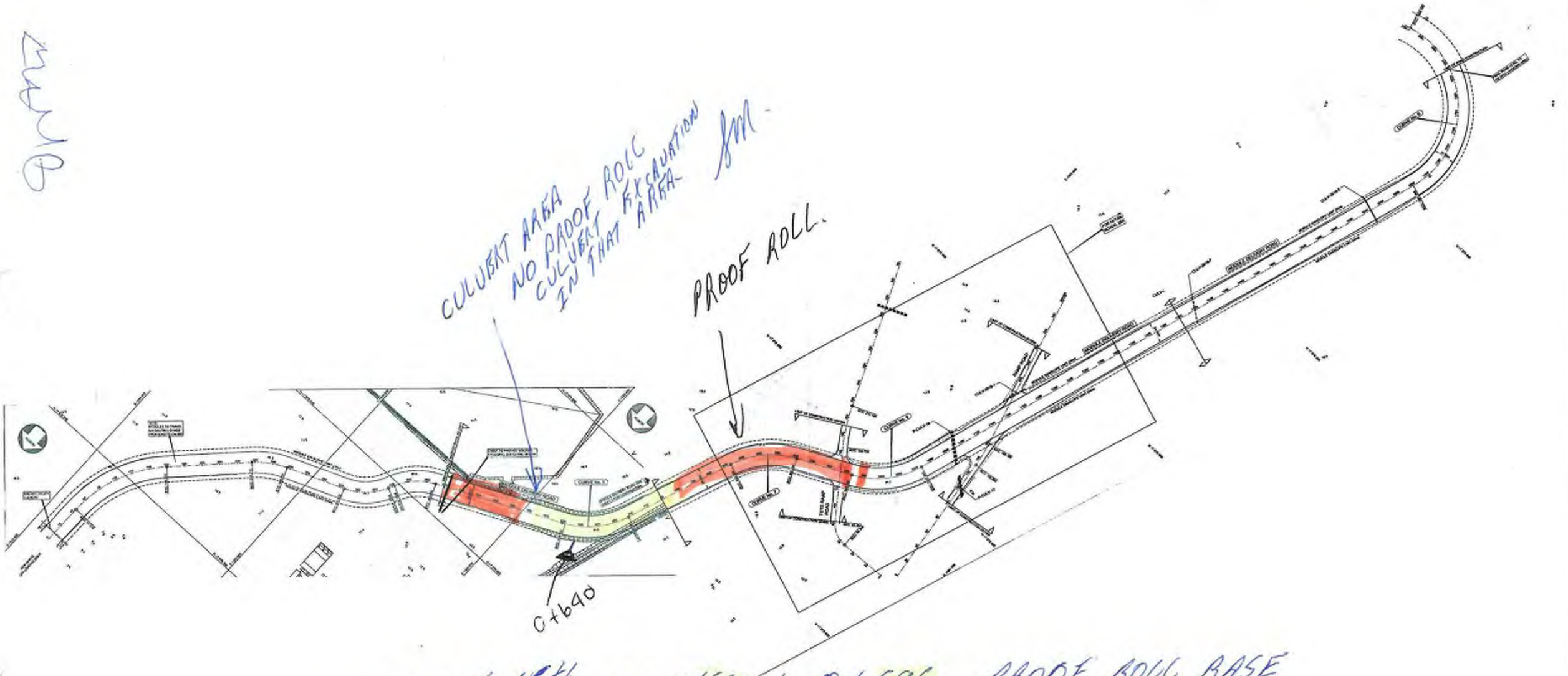
PROOF ROLL

JUNE 19/19 SMACKENTIE

" MATT TABOR

CULVERT AREA
NO PROOF ROLL
CULVERT EXCAVATION
IN THAT AREA

PROOF ROLL.



JUNE 18th. ST O+620 to O+696 PROOF ROLL BASE

JUNE 19th. ST O+696 to O+960 PROOF ROLL BASE.

JUNE 19 ST O+480 to O+600 PROOF ROLL BASE.

MOF ROAD - APPROVAL TRACKING

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY IIATCII
1	JUNE 16/19	ST 01620 ST 01682	PROOF ROLL BASE MOF ROAD		
2	JUNE 19/19	ST 01696 - 01480 01480 to 01160	STATION 01620 to STATION 01696 PROOF ROLL BASE MOF ROAD		

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY IIATCII

NUNA EAST LTD

COMPACTION REPORT

Exhibit 1-6 QDE
Revision 0

Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Tag No.: N/A	**Tag Description:** N/A	**Sub-System:** N/A
Area: Module Delivery Road	**Area Description:** Mod Road area & Ramps including areas above stability trench.	**Drawing No.:** H353004-40000-223-271-0007-0002 Rev 1

FILL DATA

Subgrade Type: Sand	**Compactor Type:** CAT CS56B 10 Ton	**Vibration on Compactor:** Yes ☒ No ☐
Fill Lift Thickness: <500mm	**Fill Type:** Type 8	**Water Used on Fill:** Yes ☐ No ☒
Test Method: Sand Cone Method ☐	Driven Tube Method ☐	Nuclear Method ☐ Proctor Test ☐ Visual Test ☒

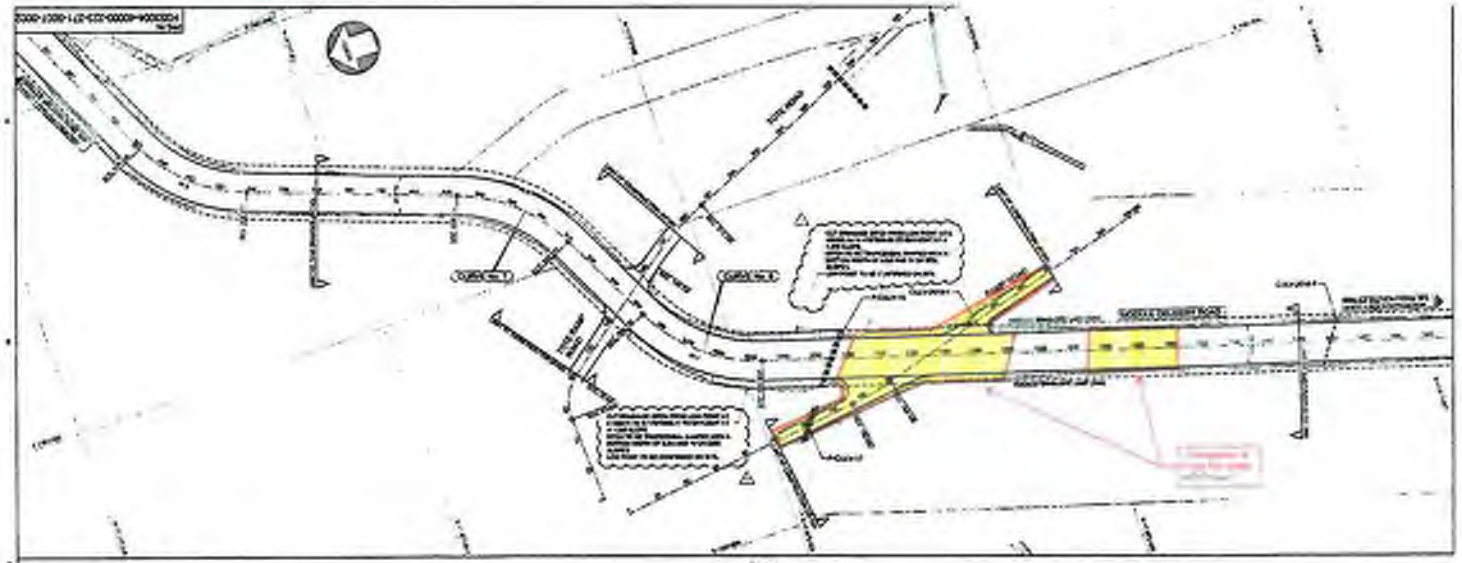
TEST DATA

TEST NO.	TIME	LOCATION	ELEVATION	DENSITY		MOISTURE		COMPACTION		ACCEPTED (Initial for Yes)
				MAX	FIELD	OPTIMUM	FIELD	SPEC	FIELD	
			N/A							

COMMENTS: No Densometer available for project, compaction to be competed per specification and RFI-19 E353004-CC006-400-465-0019 0 V2.

(5 passes with 10 ton compactor @ 1200-1500 vpm).

/			
Construction Designate – Print/Sign	**Title**	**Date**	
BRADFORD WATKINS /	QC	6/13/19	
Contractor QC Designate – Print/Sign	**Title**	**Date**	
/			
Client QA Designate – Print/Sign	**Title**	**Date**	



PLAN

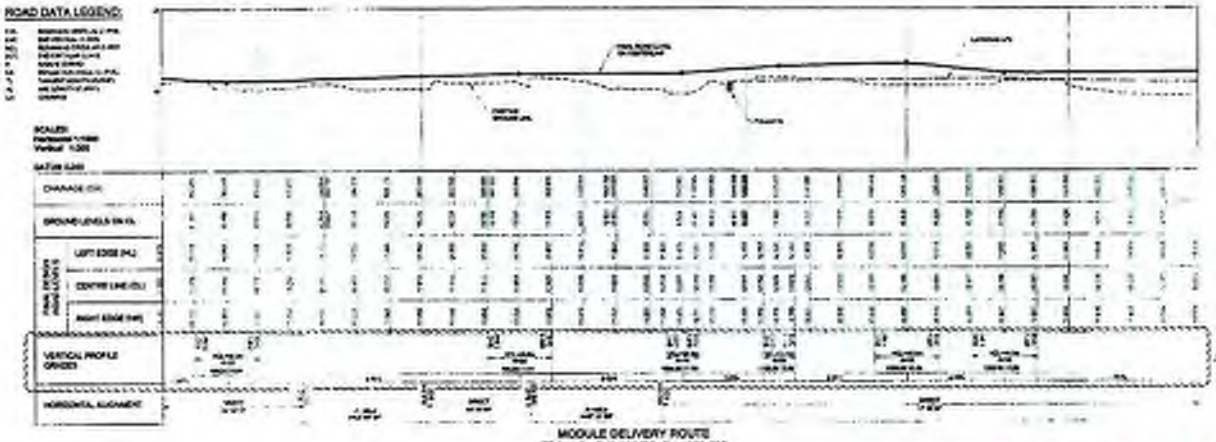
KEY PLAN

NOTES:

CULVERT SCHEDULE LEGEND:

CULVERT SCHEDULE

ROAD DATA LEGEND:



MODULE DELIVERY ROUTE
FROM CH.740.000 TO CH.1360.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS

FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 2 OF 4

CBS004-40000-223-271-0007-0002

NUNA EAST LTD	PROOF ROLL REPORT	Exhibit 1-5 QDE Revision 0 Page 1 of 2

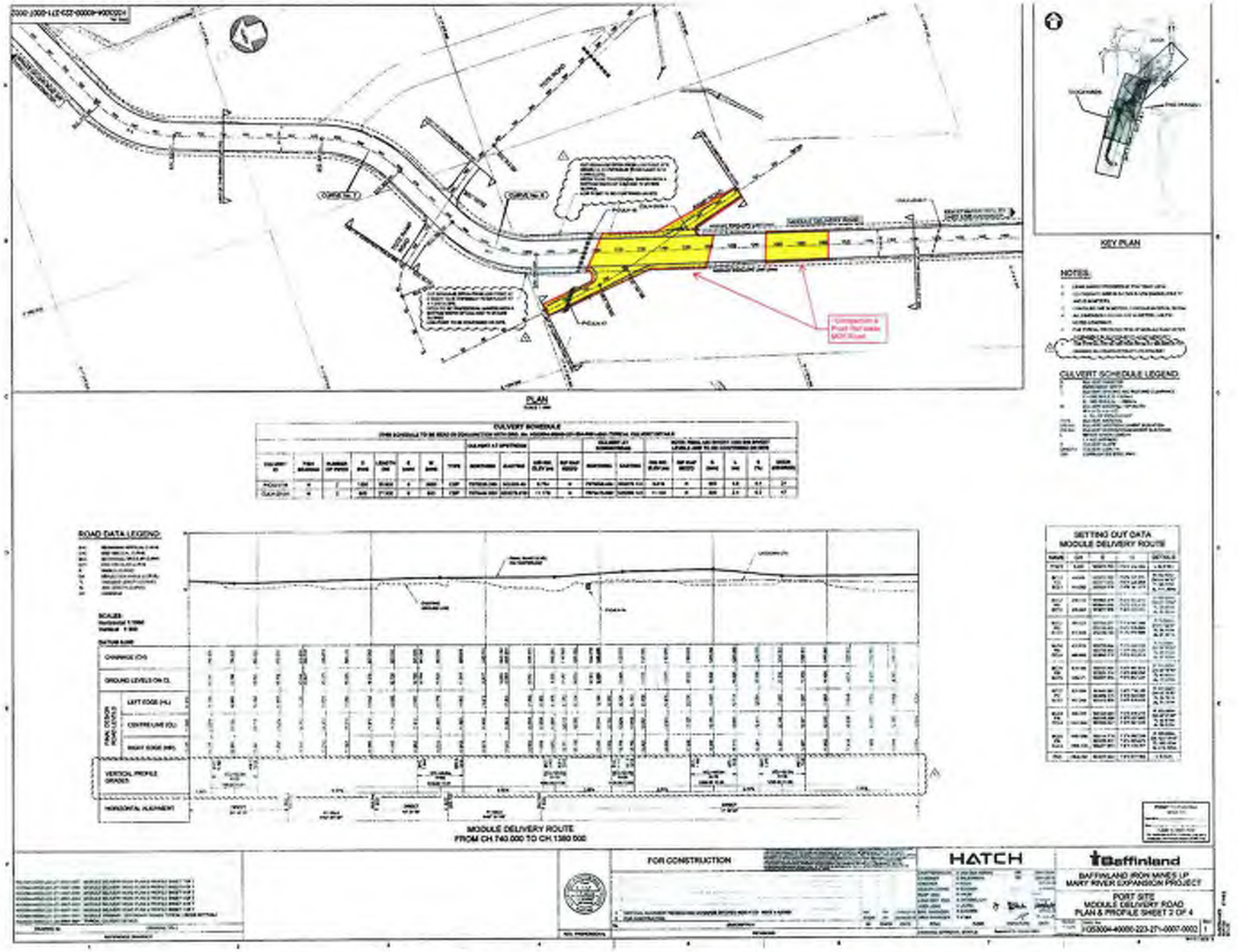
Contractor: Nuna East Ltd.	**Contract No.:** CC006	**CWP:** N/A
Location: Milne Port	**Elevation:** N/A	**Subsystem:** N/A
Area: Module Delivery Road	**Area Description:** Mod Road area & Ramps including areas above stability trench.	
Drawing No.: H353004-40000-223-271-0007-0002		**Rev.:** 1

Area / Section Inspected: ~ stations 1255 to 1305 & 1100 to 1200
Proof Rolled With: A loaded 745C Articulated Haul Truck

INSPECTION DESCRIPTION		Verified (Initial or N/A)
Visible Deflections	☐ YES ☑ NO	BW
Rebound of Surface	☐ YES ☑ NO	BW
Formation of Cracks Patterns	☐ YES ☑ NO	BW
Ridging Between Wheel Ridges	☐ YES ☑ NO	BW
Inconsistency Compaction Between Areas	☐ YES ☑ NO	BW
Surface Uniform and Level	☑ YES ☐ NO	BW
Proof Roll Test Satisfactory and Accepted	☑ YES ☐ NO	BW
Elevation Record (Survey)	☑ YES ☐ NO	BW

Comments: Refer to Allnorth daily report 160 and attached outlined drawing.

/		
Construction Designate – Print/Sign	Title	Date
BRADFORD WILKIN /	QC	6/13/19
Contractor QC Designate – Print/Sign	Title	Date
Derek Redmond /	QA Manager	10/21/19
Client QA Designate – Print/Sign	Title	Date


PLAN
KEY PLAN
NOTES:
CULVERT SCHEDULE LEGEND
CULVERT SCHEDULE
ROAD DATA LEGEND
SETTING OUT DATA
MODULE DELIVERY ROUTE
CHAINAGE (CH)
GROUND LEVELS ON CL
LEFT EDGE (HL)
CENTRELINE (CL)
RIGHT EDGE (HR)
VERTICAL PROFILE GRADES
HORIZONTAL ALIGNMENT
MODULE DELIVERY ROUTE
FROM CH 740.000 TO CH 1380.000
FOR CONSTRUCTION
HATCH
Baffinland
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT
PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 2 OF 4
1053004-40000-223-271-0007-0002

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH

Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

Type 8 Placement Approval

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0008A BIM WBS: 6141
Description of Area Inspected:	*Type 8 (Jaw Run 150 minus) Placement Approval* ***Work Scope Location:*** *Port Site Module Delivery Road (MOF Road)* ***Location Section:*** *See attached Mapping*
Parties Present at Inspection	*Bradford Watkin (Representing Nuna),* *Robert Chaisson , Ken MacRae, Matt Tabor (Allnorth representing Hatch)*

Comments:

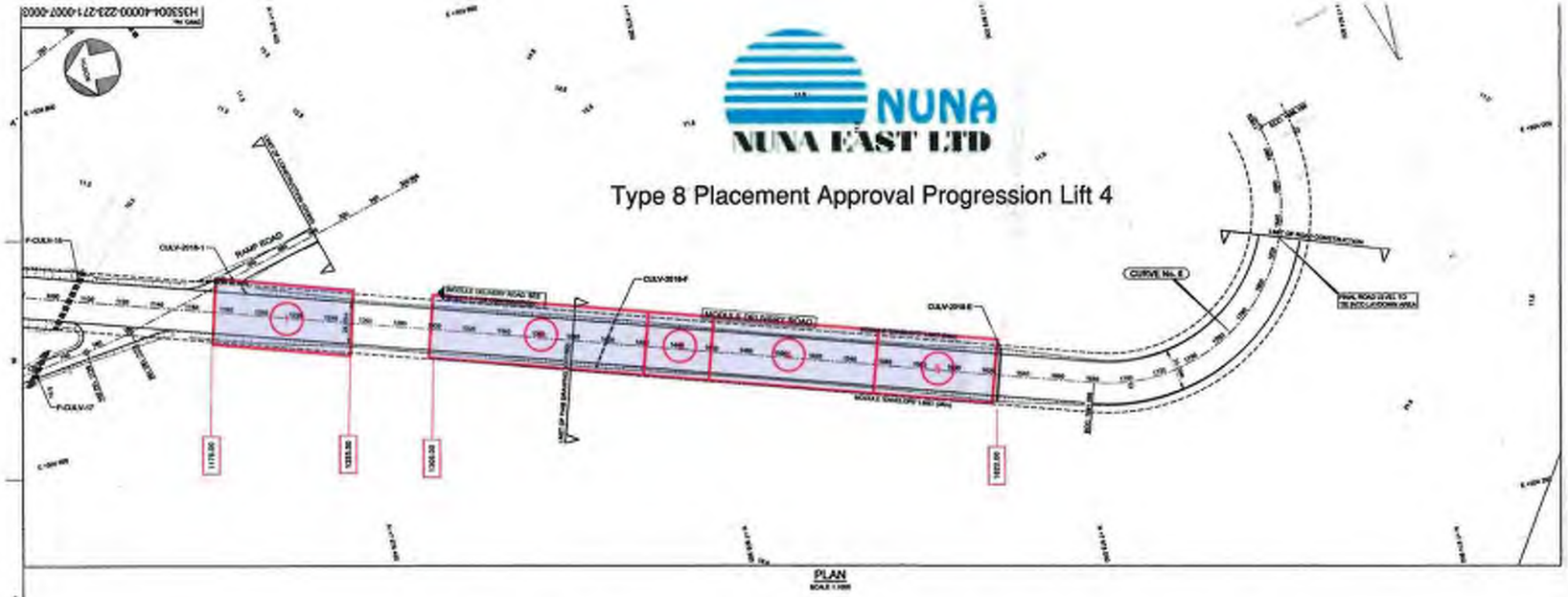
A visual inspection of the Module Delivery Road (MOF) Type 8 Lift # 4 placement including a proof roll was completed prior to the placement of a subsequent lift of Type 8 material.
Type 8 Lift # 4: *The Type 8 Lift # 4 was found to within the parameters of the specification. The proof roll showed no deflection, the lift was acceptable to specification at time of inspection.*
NOTE: *This approval mapping also covers LP3 areas and the Stability Trench fill. Also written initials are located upon the Allnorth mapping attachment.*

Area number:	Date:	Description of Work	Nuna Representative	Hatch Representative
1.	4/5/19	Type 8 placed and compacted Mod Road & Stability Trench	BW	RC
2.	4/8/19	Type 8 placed Mod Road & Stability Trench. Compaction completed on 4/12/19.	BW	RC
3.	4/12/19	Type 8 placed 4/11/19 night shift, Mod Road & Stability Trench. Compaction completed on day shift.	BW	KMR
4.	4/15/19	Type 8 placed Mod Road & Stability Trench. Compaction completed on 4/16/19.	BW	KMR
4	4/20/19	Type 8 placed and compacted Mod Road & Stability Trench	BW	KMR
5.	4/29/19	Type 8 placed and compacted Mod Road & Stability Trench	BW	KMR
6.	5/2/19	Type 8 placed and compacted Mod Road & Stability Trench	BW	KMR
7.				
8.				
9.				

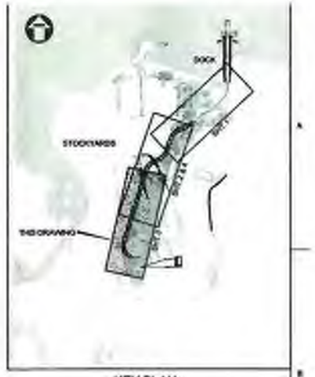
NUNA

NUNA EAST LTD

Type 8 Placement Approval Progression Lift 4



PLAN
SCALE 1:1000



KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR TYPICAL CROSS SECTION OF MODULE ROAD REFER TO DRAWING No.H353004-40000-221-272-0001-0001

CULVERT SCHEDULE

(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-00000-221-294-0001-0001-TYPICAL CULVERT DETAILS)

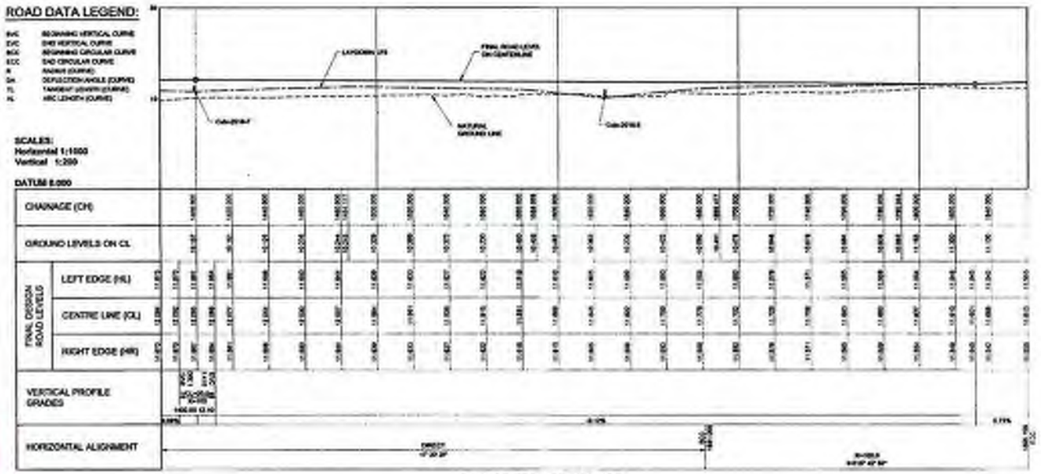
CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	CULVERT AT UPSTREAM NORTHING	CULVERT AT UPSTREAM EASTING	CULVERT AT UPSTREAM INV. ELEV (m)	CULVERT AT UPSTREAM RIP RAP REQ'D	CULVERT AT DOWNSTREAM NORTHING	CULVERT AT DOWNSTREAM EASTING	NOTE: FINAL INV. ELEV. ARE TO BE CONFIRMED ON SITE: DS INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREES)
CULV-2018-F	N	1	600	29.868	0	600	CSP	7975243.640	503211.556	10.852	N	7975260.851	503186.431	10.750	N	300	2.4	0.2	17
CULV-2018-E	N	1	600	30.805	0	600	CSP	7975309.690	503145.826	10.121	Y	7975329.298	503116.401	10.050	Y	300	2.4	0.2	66

ROAD DATA LEGEND:

BVC	BEGINNING VERTICAL CURVE
EVC	END VERTICAL CURVE
BCC	BEGINNING CIRCULAR CURVE
ECC	END CIRCULAR CURVE
R	RADIUS (CURVE)
DA	DEFLECTION ANGLE (CURVE)
TL	TANGENT LENGTH (CURVE)
AL	ARC LENGTH (CURVE)

SCALES:
Horizontal 1:1000
Vertical 1:200

DATUM 0.000



MODULE DELIVERY ROUTE
FROM CH.1380.000 TO CH.1660.000

SETTING OUT DATA MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
START	0.000	502972.754	7 975 312.656	L 64.914m
BCC1 PI PCC1	64.914 184.254	502972.298 502951.678 503025.508	7 975 256.372 7 975 154.009 7 975 161.370	R 100.000m DA 54°47'47" TL 56.747m AL 119.339m
BCC2 PI ECC2	303.310 368.891	503061.439 503041.510 503071.996	7 975 055.210 7 975 175.418 7 975 070.681	R 100.000m DA 37°56'07" TL 29.097m AL 65.991m
BCC3 PI ECC3	384.325 415.986	503156.287 503162.405 503154.701	7 975 041.166 7 975 025.090 7 975 015.646	R 70.000m DA 41°39'04" TL 26.764m AL 31.662m
BCC4 PI ECC4	430.909 496.041	503121.588 503114.662 503062.712	7 975 004.009 7 974 983.525 7 974 941.218	R 70.000m DA 58°30'02" TL 39.919m AL 67.558m
BCC5 PI ECC5	618.199 668.471	503057.906 503031.014 503007.995	7 974 807.994 7 974 865.402 7 974 852.334	R 100.000m DA 47°58'57" TL 45.000m AL 70.270m
BCC7 PI ECC7	928.204 992.244	503041.981 503044.175 503013.330	7 973 730.349 7 973 689.861 7 973 670.430	R 100.000m DA 36°40'55" TL 36.701m AL 70.741m
BCC8 PI ECC8	988.729 1047.844	503054.404 503058.226 503084.047	7 973 645.829 7 973 617.483 7 973 597.009	R 200.000m DA 16°57'11" TL 42.619m AL 83.511m
BCC9 PI ECC9	1061.558 1098.496	503114.779 503089.972 503057.943	7 973 582.556 7 973 565.525 7 973 550.167	R 100.000m DA 53°57'40" TL 52.120m AL 105.103m
END	1552.250	503224.940	7 973 057.260	L 0.000m

Released for Use

Bradford Watson QA/QC Reviewed

PERMIT TO PRACTICE

DRAWING No.	DRAWING TITLE
H353004-40000-221-271-0007-0002	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 2 OF 4
H353004-40000-221-271-0007-0003	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 3 OF 4
H353004-40000-221-271-0007-0004	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 4 OF 4
H353004-40000-221-272-0001-0001	MODULE PRIMARY SECONDARY ROAD TYPICAL CROSS SECTIONS
H353004-40000-221-294-0001-0001	TYPICAL CULVERT DETAILS

REFERENCE DRAWINGS

FOR CONSTRUCTION

No.	DESCRIPTION	ISSUED BY	CHK'D	DATE
0	FOR CONSTRUCTION	KWM	TC	2020-03-13

REVISIONS

HATCH

PROJECT MANAGER	K. VAN DER MERWE	DES.	MARKETED
DESIGNER	E. BAUTISTA-MAR	DES.	MARKETED
CHECKER	J. PUNAI		PTR FILED
DESIGN CHECK	R. GEORGE		APPROVED
RELIEF ENG.	P. PHILIP		MARKETED
LEAD DISC. ENG.	K. GRUNBERGER		PENDING
AREA LEAD	K. LAVAC		MARKETED
FINAL MARKUPS	R. THOMSEN		
DRAWING APPROVAL STATUS	Approved for Construction	ROLE	NAME	SIGNATURE	DATE

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 3 OF 4

SCALE 1:1000 (ON A1 SIZE)

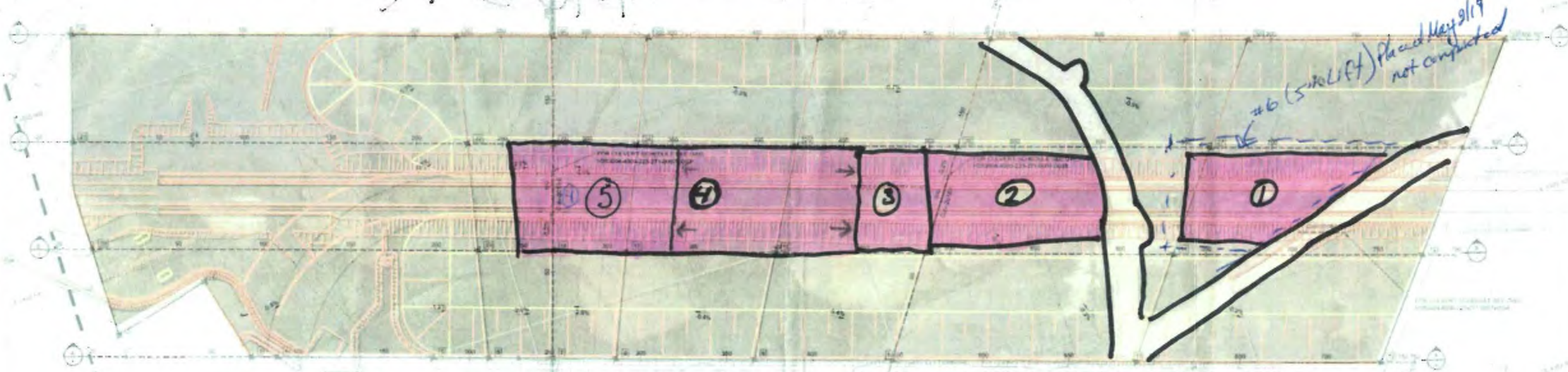
DWG No. H353004-40000-223-271-0007-0003

REV 0

SHEET SIZE A1

LAYDOWN LP3 - MATERIAL PLACEMENT APPROVAL TRACKING

TYPE 8 (150mm minus) PLACEMENT APPROVAL Lift #4



No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
1	~~April 5/19~~ April 5/19		Lift Place on mod road Apr 5/19 Lift Compacted	BM	
2	April 8/19		Lift Placed April 8th/19 Lift Compacted APRIL 12/19	BM	
3	April 12/19		Lift placed April 11 night shift Compacted APRIL 12/19	BM	KMP
4	April 15/19		Lift placed April 15/19 Compacted 3 pass's up to Arrows in pink Material placed to +250 but no compaction As of April 16/19	BM	KMP
4	April 20/19		Finished all pass's for Lift 4 section 4 to +250	BM	KMP
5	April 29/19		placed lift of type 8 over mod ROAD 5 pass's on night shift, Small Lift over 200 hub #4	BM	KMP
6	May 3/19		Placed Lift 5 over Mod ROAD needs compacting	BM	

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH

Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

Type 8 Placement Approval

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0008A BIM WBS: 6141
Description of Area Inspected:	*Type 8 (Jaw Run 150 minus) Placement Approval* ***Work Scope Location:*** *Port Site Module Delivery Road (MOF Road)* ***Location Section:*** *See attached Mapping*
Parties Present at Inspection	*Bradford Watkin (Representing Nuna),* *Robert Chaisson , Ken MacRae, Matt Tabor (Allnorth representing Hatch)*

Comments:

A visual inspection of the Module Delivery Road (MOF) Type 8 Lift # 3 placement including a proof roll was completed prior to the placement of a subsequent lift of Type 8 material.
Type 8 Lift # 3: *The Type 8 Lift # 3 was found to within the parameters of the specification. The proof roll showed no deflection, the lift was acceptable to specification at time of inspection.*
NOTE: *This approval mapping also covers LP3 areas and the Stability Trench fill. Also written initials are located upon the Allnorth mapping attachment.*

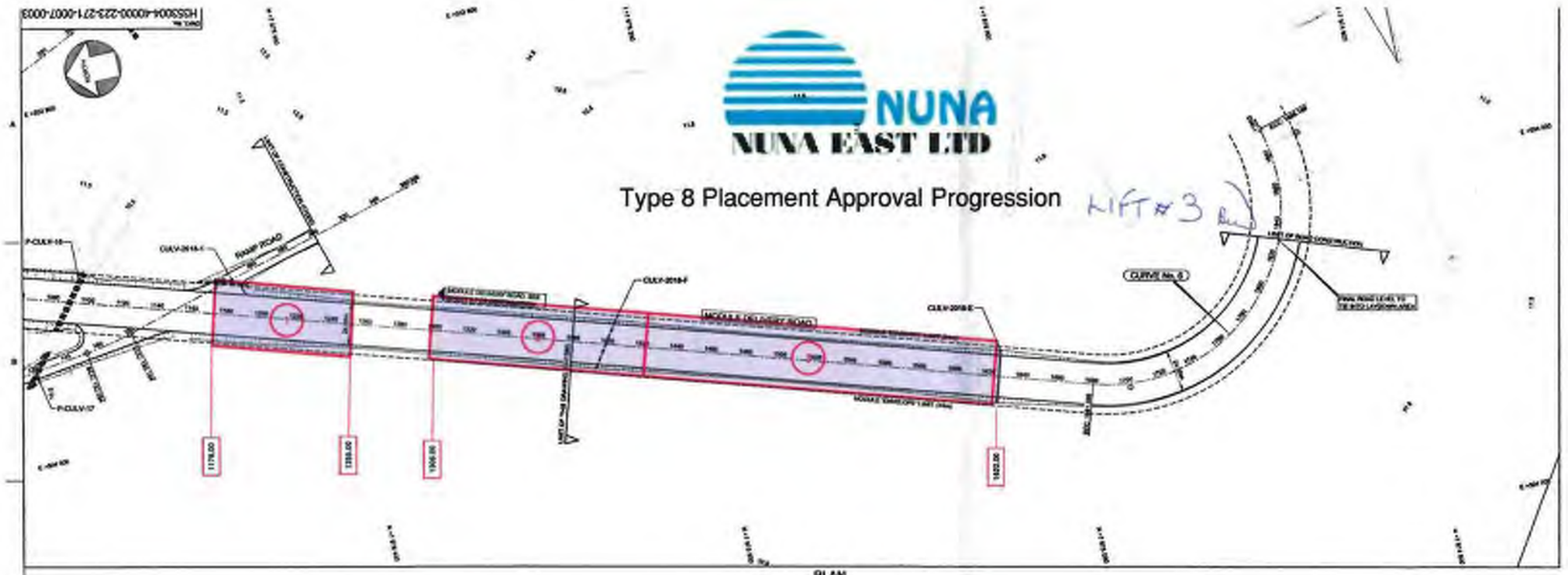
Area number:	Date:	Description of Work	Nuna Representative	Hatch Representative
1.	4/1/19	Type 8 placed and compacted Mod Road & Stability Trench	BW	RC
2.	4/2/19	Type 8 placed and compacted Mod Road & Stability Trench. Compaction completed on night shift.	BW	RC
3.	4/14-15/19	Type 8 placed and compacted Mod Road & Stability Trench. Compaction completed on night shift.	BW	KMR
4.				
5.				
6.				
7.				
8.				
9.				
10.				

NUNA

NUNA EAST LTD

Type 8 Placement Approval Progression

LIFT #3



PLAN

SCALE 1:1000

KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT 2016
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS, CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR TYPICAL CROSS SECTION OF MODULE ROAD REFER TO DRAWING No.H353004-40000-221-274-0001-0001

CULVERT SCHEDULE LEGEND:

H	CULVERT HEIGHT (m)
E	EMBEDMENT DEPTH
C	CULVERT SPACING AND SECOND CLEARANCE C = 500 WHILE D < 900mm C = 600 WHILE D = > 900mm
W	CULVERT BACKFILL TOP WIDTH W = (n*D) + (n-1)*C n = No. OF PIPE CULVERT
TYPE	CULVERT MATERIAL
U/S INV.	CULVERT UPSTREAM INVERT ELEVATION
D/S INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	REPRAP APRON LENGTH L = SAG (APPROX)
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

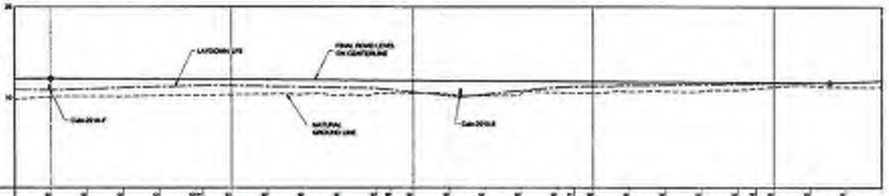
CULVERT SCHEDULE

(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-40000-221-274-0001-0001-TYPICAL CULVERT DETAILS)

									CULVERT AT UPSTREAM				CULVERT AT DOWNSTREAM		NOTE: Final U/S INVERT AND D/S INVERT LEVELS ARE TO BE CONFIRMED ON SITE				
CULVERT ID	PIER BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	NORTHING	EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	NORTHING	EASTING	D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)
CULV-2018-F	W	1	600	29.000	0	600	CSP	7975243.040	532211.000	10.662	N	7975263.661	532196.431	10.750	N	500	2.4	9.2	17
CULV-2018-E	W	1	600	30.695	0	600	CSP	7975306.000	532145.000	10.121	Y	7975319.206	532111.401	10.059	Y	500	2.4	8.2	90

ROAD DATA LEGEND:

BVC	BEGINNING VERTICAL CURVE
EVC	END VERTICAL CURVE
BCC	BEGINNING CIRCULAR CURVE
ECC	END CIRCULAR CURVE
R	RADIUS (CURVE)
DA	DEFLECTION ANGLE (CURVE)
TL	TANGENT LENGTH (CURVE)
AL	ARC LENGTH (CURVE)



SCALES:
Horizontal 1:1000
Vertical 1:200

DATUM 0.000

CHAINAGE (CH)		
GROUND LEVELS ON CL		
FINAL DESIGN ROAD LEVELS	LEFT EDGE (HL)	
	CENTRE LINE (CL)	
	RIGHT EDGE (HR)	
VERTICAL PROFILE GRADES		
HORIZONTAL ALIGNMENT		

MODULE DELIVERY ROUTE
FROM CH.1380.000 TO CH.1860.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
START	0.000	6978772.733	7 979 319.098	L 44.814m
BCC1 PI1 ECC1	44.814 191.223	6978812.209 6978871.670 6978928.899	7 979 293.272 7 979 304.508 7 979 181.373	R 150.000m DA 34°56'40" TL 66.711m AL 112.369m
BCC2 PI2 ECC2	356.510 356.631	6978941.438 6978917.918 6978727.856	7 979 259.213 7 979 276.418 7 979 075.662	R 100.000m DA 25°47'00" TL 24.527m AL 45.451m
BCC3 PI3 ECC3	444.523 -11.000	6978745.287 6978746.455 6978738.730	7 979 342.196 7 979 333.260 7 979 310.846	R 75.000m DA 34°56'40" TL 24.757m AL 51.181m
BCC4 PI4 ECC4	429.999 455.000 484.885	6978725.588 6978714.202 6978692.712	7 979 354.538 7 979 343.324 7 979 313.303	R 75.000m DA 34°56'40" TL 24.012m AL 47.155m
BCC5 PI5 ECC5	519.168 -11.000 508.471	6978707.956 6978711.216 6978697.388	7 979 407.954 7 979 395.466 7 979 402.564	R 100.000m DA 34°56'40" TL 43.660m AL 77.277m
BCC7 PI7 ECC7	626.554 655.000 692.244	6978681.561 6978649.178 6978612.555	7 979 756.066 7 979 685.091 7 979 675.470	R 100.000m DA 43°29'40" TL 39.781m AL 75.717m
BCC8 PI8 ECC8	966.219 -11.000 1047.444	6978554.889 6978516.333 6978555.947	7 979 645.848 7 979 627.561 7 979 567.909	R 150.000m DA 49°31'00" TL 42.814m AL 85.915m
BCC9 PI9 ECC9	1081.696 -11.000 1096.169	6978 44.176 6978 69.612 6978 57.643	7 974 562.338 7 974 553.629 7 974 557.341	R 100.000m DA 12°31'43" TL 180.120m AL 218.143m
END	1860.860	6978 57.643	7 974 357.364	L 5.000m

Bradford Watton
GA/QC
Reviewed

PERMIT TO PRACTICE
APEGNT
Signature
Date
PERMIT NUMBER P 012
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

Released for Use

DRAWING No.	DRAWING TITLE
H353004-40000-223-271-0007-0004	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 1 OF 4
H353004-40000-223-271-0007-0002	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 2 OF 4
H353004-40000-223-271-0007-0001	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 3 OF 4
H353004-40000-221-274-0001-0001	MODULE PERMAFROST MITIGATION ROADS TYPICAL CROSS SECTIONS
H353004-40000-221-274-0001-0001	TYPICAL CULVERT DETAILS

REFERENCE DRAWINGS

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	ROOM BY	CHKD	DATE
0	FOR CONSTRUCTION			

REVISIONS

HATCH

DRAFTER/DSGN	K VAN DER HEIDE		
CO-ORD'R	J. BALSDUNNE		
CHECKER	P. NIXON		
DESIGN COORD.	P. DODSON		
REP. ENG.	P. NIXON		
LEAD DISC. ENG.	A. CROSSLAND		
AREA LEAD	V.LAWRIE		
ENG. MANAGER	P. FRASER		
AREA MANAGER	T. HUSTON		

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

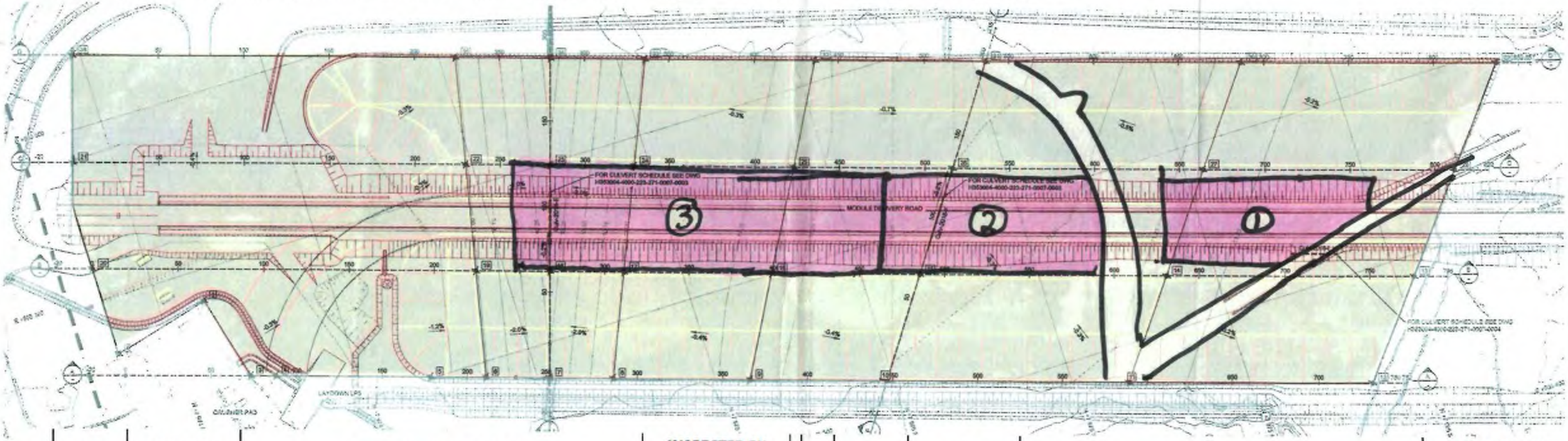
PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 3 OF 4

SCALE	Work No.	REV
1:1,000	H353004-40000-223-271-0007-0003	0

SHEET SIZE: E

LAYDOWN LP3 - MATERIAL PLACEMENT APPROVAL TRACKING

TYPE 8 (150mm minus) PLACEMENT APPROVAL LIFT # 3 Mod Roof



No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
1	APR. 1 2019		compacted APR. 2nd	BW	RC
2	APR. 1 2019		compacted APR. 4th	BW	RC
3	APRIL 15 2019		placed APRIL 14/15 nightshift placed April 14th nightshift Compacted APRIL 15/19	BW	KMR

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH

Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

Type 8 Placement Approval

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0008A BIM WBS: 6141
Description of Area Inspected:	*Type 8 (Jaw Run 150 minus) Placement Approval* ***Work Scope Location:*** *Port Site Module Delivery Road (MOF Road)* ***Location Section:*** *See attached Mapping*
Parties Present at Inspection	*Bradford Watkin (Representing Nuna),* *Robert Chaisson , Ken MacRae, Matt Tabor (Allnorth representing Hatch)*

Comments:

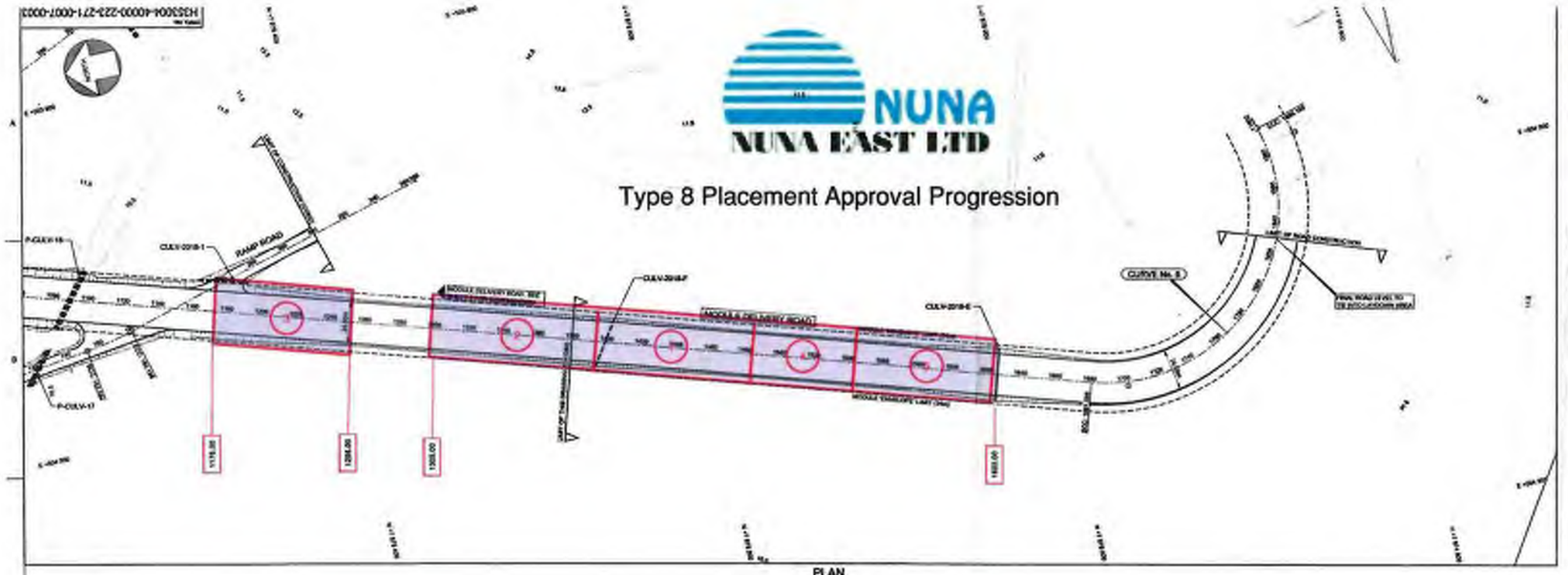
A visual inspection of the Module Delivery Road (MOF) Type 8 Lift # 2 placement including a proof roll was completed prior to the placement of a subsequent lift of Type 8 material.
Type 8 Lift # 2: *The Type 8 Lift # 2 was found to within the parameters of the specification. The proof roll showed no deflection, the lift was acceptable to specification at time of inspection.*
NOTE: *This approval mapping also covers LP3 areas and the Stability Trench fill. Also written initials are located upon the Allnorth mapping attachment.*

Area number:	Date:	Description of Work	Nuna Representative	Hatch Representative
1.	3/29/19	Type 8 placed and compacted Mod Road & Stability Trench	BW	RC
2.	3/29-30/19	Type 8 placed and compacted Mod Road & Stability Trench. Compaction completed on night shift.	BW	RC
3.	3/27-28/19	Type 8 placed and compacted Mod Road & Stability Trench. Compaction completed on night shift.	BW	RC
4.	4/12-13/19	Type 8 placed and compacted Mod Road & Stability Trench	BW	KMR
5.	4/14/19	Type 8 placed and compacted Mod Road & Stability Trench	BW	KMR
6.				
7.				
8.				
9.				
10.				

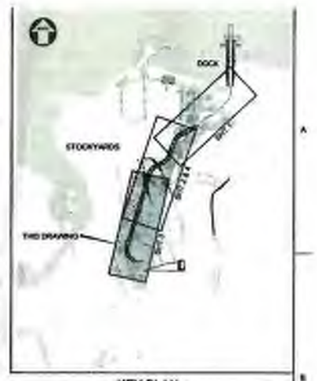
NUNA

NUNA EAST LTD

Type 8 Placement Approval Progression



PLAN



KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT 2016.
2. COORDINATE GRIDS SHOWN IN UTM (NAD83) ZONE 17 AND IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR TYPICAL CROSS SECTION OF MODULE ROAD REFER TO DRAWING No. H353004-40000-221-273-0001-0001

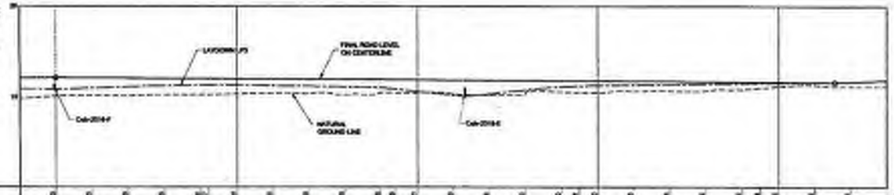
CULVERT SCHEDULE

(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-40000-211-264-0001-0001-TYPICAL CULVERT DETAILS)

CULVERT ID	PISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	Z (mm)	W (mm)	TYPE	CULVERT AT UPSTREAM NORTHING	CULVERT AT UPSTREAM EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	CULVERT AT DOWNSTREAM NORTHING	CULVERT AT DOWNSTREAM EASTING	NOTE: FINAL U/S INVERT AND D/S INVERT LEVELS ARE TO BE CONFIRMED ON SITE D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	AKEW (DEGREE)
CULV-2018-F	N	1	800	25.000	0	600	CSP	7975243.848	503211.090	10.852	N	7975235.001	503185.431	10.750	N	300	2.4	8.2	17
CULV-2018-E	N	1	800	30.085	0	600	CSP	7975209.898	503145.880	10.121	Y	7975199.316	503115.401	10.052	Y	300	2.4	8.2	90

ROAD DATA LEGEND:

BVC BEGINNING VERTICAL CURVE
EVC END VERTICAL CURVE
BCC BEGINNING CIRCULAR CURVE
ECC END CIRCULAR CURVE
R RADIUS (CURVE)
Δa DEFLECTION ANGLE (CURVE)
TL TANGENT LENGTH (CURVE)
AL ARC LENGTH (CURVE)



SCALES:
Horizontal 1:1000
Vertical 1:200

DATUM 0.000

CHAINAGE (CH)

GROUND LEVELS ON CL

FINAL DESIGN ROAD LEVELS: LEFT EDGE (HL) / CENTRE LINE (CL) / RIGHT EDGE (HR)

VERTICAL PROFILE GRADES

HORIZONTAL ALIGNMENT

MODULE DELIVERY ROUTE
FROM CH.1380.000 TO CH.1650.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
START	0.000	503972.739	7 976 312.639	L 44.818m
BCC1 PI ECC1	44.818 162.262	503981.299 503991.875 503926.896	7 976 263.272 7 976 354.009 7 976 351.370	R 100.000m Δa 44°54'59" TL 80.714m AL 117.444m
BCC2 PI ECC2	256.210 296.801	503961.438 503937.918 503921.998	7 976 050.410 7 976 078.418 7 976 070.561	R 100.000m Δa 23°23'50" TL 20.907m AL 40.591m
BCC3 PI ECC3	364.005 416.940	503934.287 503916.000 503724.706	7 975 992.385 7 976 055.000 7 976 013.046	R 70.000m Δa 43°16'50" TL 55.797m AL 52.987m
BCC4 PI ECC4	429.999 459.095	503715.588 503714.402 503662.712	7 976 004.109 7 976 000.526 7 975 973.320	R 70.000m Δa 24°00'00" TL 24.000m AL 47.000m
BCC5 PI ECC5	618.199 685.471	503622.956 503521.214 503507.209	7 975 903.954 7 975 999.000 7 975 952.304	R 100.000m Δa 44°48'49" TL 41.000m AL 77.371m
BCC7 PI ECC7	826.094 852.244	503481.951 503444.172 503413.355	7 975 756.986 7 975 800.081 7 975 875.429	R 100.000m Δa 44°48'49" TL 36.210m AL 75.741m
BCC8 PI ECC8	966.179 1047.344	503334.984 503314.324 503333.747	7 975 644.858 7 975 627.552 7 975 567.333	R 100.000m Δa 46°21'08" TL 42.818m AL 82.619m
BCC9 PI ECC9	1081.998 1096.109	503314.775 503320.613 503331.843	7 975 592.536 7 975 606.529 7 975 605.267	R 100.000m Δa 14°01'49" TL 12.000m AL 24.478m
END	1602.592	503727.848	7 974 957.980	L 1.800m

Released for Use

Bradford Watkin QA/QC Reviewed

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER: P 013
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

DRAWING No.	DRAWING TITLE
H353004-40000-223-271-0007-0004	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 4 OF 4
H353004-40000-223-271-0007-0003	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 3 OF 4
H353004-40000-223-271-0007-0001	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 1 OF 4
H353004-40000-221-273-0001-0001	MODULE R - PRIMARY / SECONDARY ROADS TYPICAL CROSS SECTIONS
H353004-40000-221-264-0001-0001	TYPICAL CULVERT DETAILS

REFERENCE DRAWINGS

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
0	FOR CONSTRUCTION			

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
ORIGINATOR	S. VAN DER VEERE		
DESIGNER	J. MALEVANNE		
DRAWER	P. HUNG		
DESIGN COORD	A.KOCHEN		
PROJ. ENG.	A.HUNG		
DISCIPL. ENG.	A. BROWELAND		
AREA LEAD	T.YUNG		
ENG. MANAGER	T. FRASER		
AREA MANAGER	T. [illegible]		

ORIGINATOR APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 3 OF 4

SCALE 1:1000 (AT A1 SIZE)

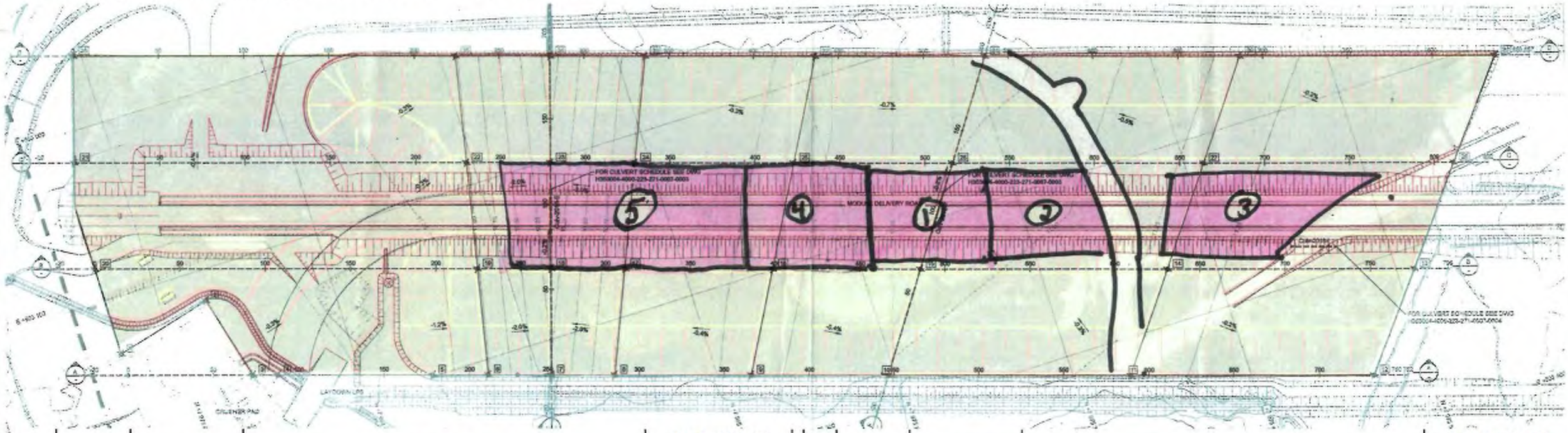
DWG No. H353004-40000-223-271-0007-0003

REV 0

SHEET SIZE A1

LAYDOWN LP3 - MATERIAL PLACEMENT APPROVAL TRACKING

TYPE 8 (150mm minus) PLACEMENT APPROVAL Lift #2 Mod Road



No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
1	March 29/2019		2nd Lift of Type 8 Placed in Mod Road & Compacted mar 27	BW	RC
2	March 28/19		2nd Lift of Type 8 placed in Mod Road during nightshift & compacted mar 28	BW	RC
3	mar 27 2019		2nd Lift Placed of Type 8 in Mod Road during nightshift * compacted mar 28	BW	RC
4	April 12/19		2nd Lift placed & compacted April 12 13/19	BW	KMR
5	April 14/19		2ND Lift placed on night shift and compacted Approved OT to stay from 8pm-10pm to witness completion to start 3rd Lift	BW	KMR

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH™

Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

Type 8 Placement Approval

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0008A BIM WBS: 6141
Description of Area Inspected:	*Type 8 (Jaw Run 150 minus) Placement Approval* ***Work Scope Location:*** *Port Site Module Delivery Road (MOF Road)* ***Location Section:*** *See attached Mapping*
Parties Present at Inspection	*Bradford Watkin (Representing Nuna),* *Robert Chaisson , Ken MacRae, Matt Tabor (Allnorth representing Hatch)*

Comments:

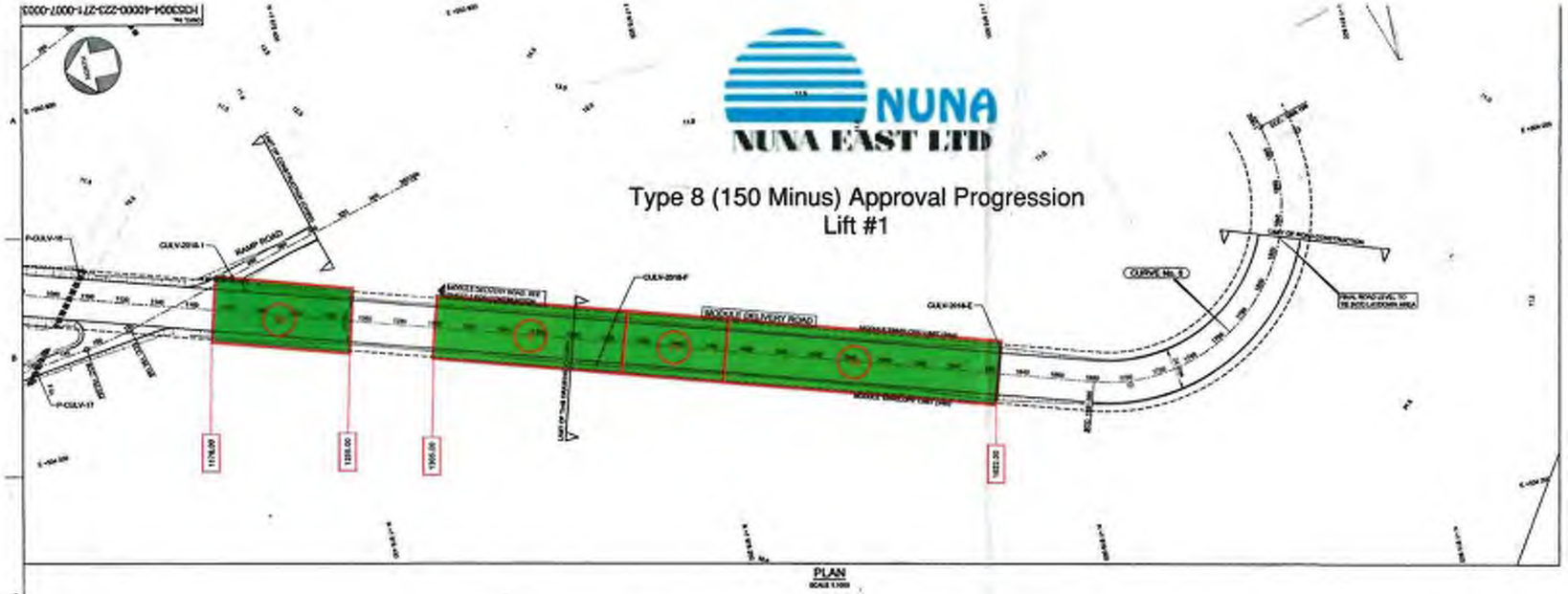
A visual inspection of the Module Delivery Road (MOF) Type 8 Lift # 1 placement including a proof roll was completed prior to the placement of a subsequent lift of Type 8 material.
Type 8 Lift # 1: *The Type 8 Lift # 1 was found to within the parameters of the specification. The proof roll showed no deflection, the lift was acceptable to specification at time of inspection.*
NOTE: *This approval mapping also covers LP3 areas and the Stability Trench fill. Also written initials are located upon the Allnorth mapping attachment.*

Area number:	Date:	Description of Work	Nuna Representative	Hatch Representative
1.	3/24-25/19	Type 8 placed and compacted in Stability Trench	BW	RC
2.	3/24-25/19	Type 8 placed and compacted in Stability Trench	BW	RC
3.	3/25-26/19	Type 8 placed and compacted in Stability Trench	BW	RC
4.	3/25-26/19	Type 8 placed and compacted in Stability Trench	BW	RC
5.	3/25-26/19	Type 8 placed and compacted in Stability Trench	BW	RC
6.	3/27/19	Type 8 placed and compacted in Stability Trench	BW	RC
7.	3/27/19	Type 8 placed and compacted in Stability Trench	BW	RC
8.	3/27/19	Type 8 placed and compacted in Stability Trench	BW	RC
9.	3/27/19	Type 8 placed and compacted in Module Road	BW	RC
10.	3/27/19	Type 8 placed and compacted in Module Road	BW	RC
11.	4/2/19	Type 8 placed and compacted in Module Road	BW	RC
12.	4/12/19	Type 8 placed and compacted in Module Road & Stability Trench.	BW	KMR
13.	4/13/19	Type 8 placed and compacted in Stability Trench	BW	KMR
14.	4/14/19	Type 8 placed and compacted in Module Road	BW	KMR

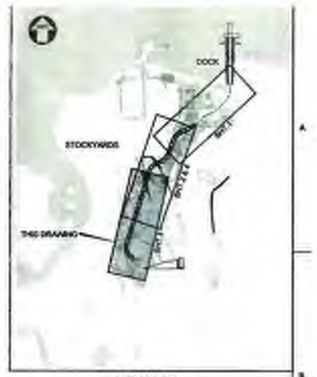
NUNA

NUNA EAST LTD

Type 8 (150 Minus) Approval Progression
Lift #1



PLAN
SCALE 1:000



KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2019)
2. CO-ORDINATE GRID IS SHOWN IN UTM ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR TYPICAL CROSS SECTION OF MODULE ROAD REFER TO DRAWING No.H353004-40000-221-270-0001-0001

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
S	CULVERT SPACING AND SECOND CLEARANCE L = 500 WHEN D ≤ 1.500m L = 600 WHEN D > 1.500m
W	CULVERT BACKFILL TOP WIDTH W = (n*D) + (n-1)*C n = No. OF PIPES/CULVERT
TYPE	CULVERT MATERIAL
US INV.	CULVERT UPSTREAM INVERT ELEVATION
DS INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	RIPRAP APRON LENGTH
S	L = 6xD (APPROX)
SLOPE	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

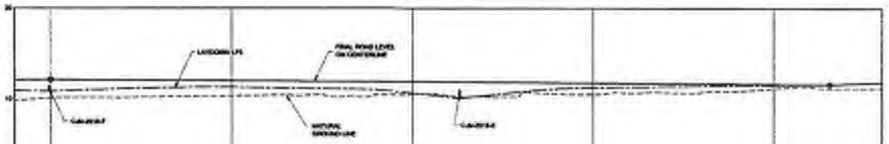
CULVERT SCHEDULE

(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-40000-221-224-0001-0001 (TYPICAL CULVERT DETAILS

								CULVERT AT UPSTREAM				CULVERT AT DOWNSTREAM		NOTE: FINAL U/S INVERT AND D/S INVERT LEVELS ARE TO BE CONFIRMED ON SITE					
CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	NORTHING	EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	NORTHING	EASTING	D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SIZE (DEGREE)
CULV-2018-F	N	1	600	29.882	0	600	CSP	7975743.040	503211.898	16.852	N	7975290.391	503185.421	16.790	N	300	2.4	0.2	17
CULV-2018-E	N	1	600	30.885	0	600	CSP	7975036.090	503145.898	15.121	Y	7975009.235	503116.401	15.059	Y	300	2.4	0.2	50

ROAD DATA LEGEND:

BVC	BEGINNING VERTICAL CURVE
EVC	END VERTICAL CURVE
BCC	BEGINNING CIRCULAR CURVE
ECC	END CIRCULAR CURVE
R	RADIUS (CURVE)
Δ	DEFLECTION ANGLE (CURVE)
TL	TANGENT LENGTH (CURVE)
AL	ARC LENGTH (CURVE)



SCALES:
Horizontal 1:1000
Vertical 1:200

DATUM 0.000

CHAINAGE (CH)		
GROUND LEVELS ON CL		
FINAL DESIGN ROAD LEVELS	LEFT EDGE (HL)	
	CENTRE LINE (CL)	
	RIGHT EDGE (HR)	
VERTICAL PROFILE GRADES		
HORIZONTAL ALIGNMENT		

MODULE DELIVERY ROUTE
FROM CH.1380.000 TO CH.1850.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
START	0.000	503672.758	7 975 315.099	L = 4.419 Hrs
BCC1	44.419	503672.268	7 975 264.273	R 150.000m
PSI	1000.000	503671.615	7 975 224.358	Δ= 44°34'00"
ECC1	1082.202	503609.376	7 975 181.370	TL 65.217m
				AL 116.394m
BCC2	2082.210	503681.438	7 974 553.618	R 100.000m
PSI	2094.417	503647.610	7 974 570.410	Δ= 22° 27'00"
ECC2	2194.611	503637.906	7 974 670.434	TL 20.327m
				AL 40.481m
BCC3	3061.523	503705.247	7 974 010.166	R 75.000m
PSI	3101.000	503745.439	7 974 031.956	Δ= 61°12'00"
ECC3	3176.004	503726.733	7 974 103.164	TL 28.275m
				AL 51.167m
BCC4	4222.839	503725.508	7 973 104.528	R 75.000m
PSI	4247.000	503754.609	7 973 152.123	Δ= 39°39'00"
ECC4	4297.845	503692.312	7 973 173.316	TL 24.210m
				AL 51.923m
BCC5	5191.105	503707.510	7 972 307.264	R 100.000m
PSI	5216.000	503727.214	7 972 352.480	Δ= 44°11'57"
ECC5	5316.471	503697.036	7 972 352.354	TL 41.889m
				AL 77.077m
BCC7	6291.504	503645.551	7 972 730.280	R 100.000m
PSI	6316.000	503648.175	7 972 855.252	Δ= 47°23'57"
ECC7	6362.244	503618.230	7 972 878.405	TL 39.751m
				AL 78.747m
BCC8	7445.729	503574.154	7 972 044.209	R 100.000m
PSI	7447.000	503618.158	7 971 927.661	Δ= 45°31'19"
ECC8	7547.844	503585.012	7 971 947.163	TL 43.819m
				AL 84.815m
BCC9	7591.036	503514.579	7 971 662.336	R 125.000m
PSI	7616.000	503558.012	7 971 656.829	Δ= 72°51'44"
ECC9	7666.109	503557.012	7 971 681.167	TL 89.123m
				AL 216.163m
END	7882.200	503537.643	7 971 877.843	L = 0.000m

Released for Use

Bradford Watson
QA/QC
Reviewed

PERMIT TO PRACTICE
NUNA EAST LTD.
Signature
Date
PERMIT NUMBER: P 7161
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

H353004-40000-223-271-0001-0001	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 1 OF 4	
H353004-40000-223-271-0002-0002	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 2 OF 4	
H353004-40000-223-271-0003-0003	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 3 OF 4	
H353004-40000-221-270-0001-0001	MODULE PRIMARY SECONDARY ROADS TYPICAL CROSS SECTIONS	
H353004-40000-221-224-0001-0001	TYPICAL CULVERT DETAILS	
DRAWING No.	DRAWING TITLE	
REFERENCE DRAWINGS		

REG. PROFESSIONAL

FOR CONSTRUCTION

NO.	DESCRIPTION	BY	CHK'D	DATE
0	FOR CONSTRUCTION	EVEN	TH	10/2021

REVISIONS

HATCH

ISSUE DISCIPLINE	K. VAN DER MERWE	SIGNATURE	DATE (MM/DD/YY)
DRAWN/CHK'D	S. BALEYAMPET		09/29/2021
CHECKED	P. HUGO		10/4/2021
DESIGN LEADER	M. DUNSON		10/4/2021
RESP. ENG.	K. HALIN		10/4/2021
LEAD DISC. ENG.	K. VAN DER MERWE		10/4/2021
AREA LEAD	P. HUGO		10/4/2021
ENG. MANAGER	D. ESSINGER		10/4/2021
AREA MANAGER	T. [illegible]		[illegible]
ROLE	NAME	SIGNATURE	DATE

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

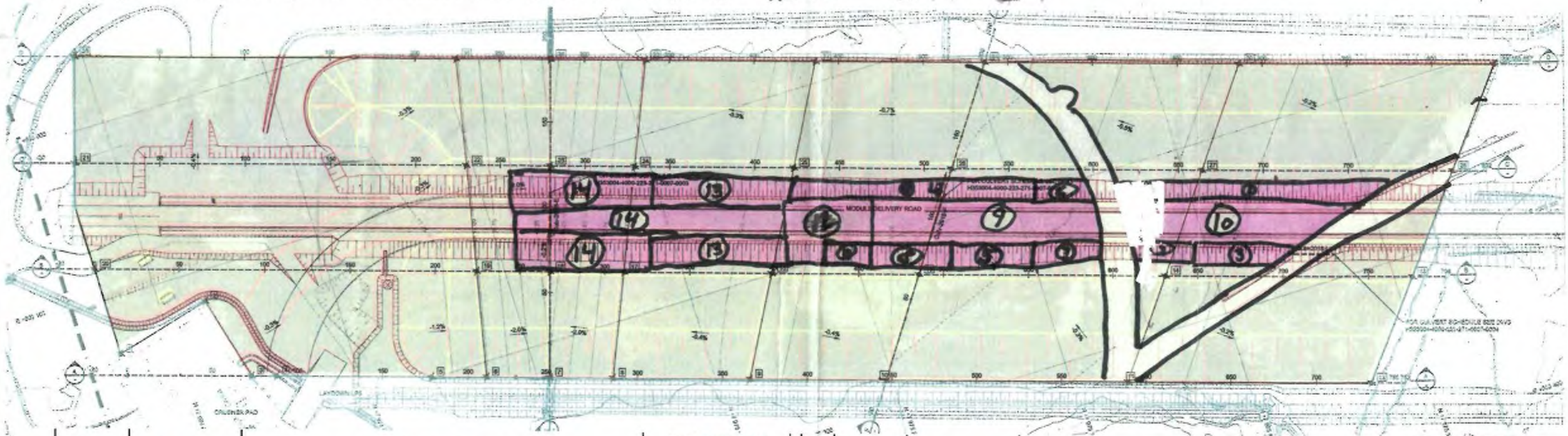
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 3 OF 4

SCALE 1:1,000 (AT 24 x 36 SHEET)
DWG. No. H353004-40000-223-271-0007-0003
REV 0
SHEET SIZE: D

LAYDOWN LP3 - MATERIAL PLACEMENT APPROVAL TRACKING

TYPE 8 (150mm minus) PLACEMENT APPROVAL MoD Road Lift #1



No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
1	March 25/19		Type 8 Placed and compacted in Stability Trench	BW	RC
2	March 25/19		Type 8 Placed and compacted - Stability Trench	BW	RC
3	March 25/19		Type 8 Placed and compacted in Stability Trench	BW	RC
4	March 25/19		Type 8 Placed and compacted in Stability Trench	BW	RC
5	March 25/19		Type 8 Placed and compacted in Stability Trench	BW	RC
6	March 27/19		Type 8 Placed and compacted in Stability Trench	BW	RC
7	March 27/19		Type 8 Placed and compacted in Stability Trench	BW	RC
8	March 27/19		Type 8 placed and compacted in Stability Trench	BW	RC
9	March 27/19		Type 8 placed and compacted in center of Module Road	BW	RC
10	March 27/19		Type 8 Placed in mod Road compacted		RC

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
11	April 12 2019		Placed and compacted April 12	BW	RC
12	~~April 12/19~~ April 13/19		Placed April 12 night shift Between trenches	BW	KMR
13	April 13/19		Placed & compacted April 13/19	BW	KMR
14	April 14/19		placed & compacted April 14/19	BW	KMR

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH

Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

Type 8 Placement Approval

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0008A BIM WBS: 6141
Description of Area Inspected:	*Type 8 (Jaw Run 150 minus) Placement Approval* ***Work Scope Location:*** *Port Site Module Delivery Road (MOF Road)* ***Location Section:*** *See attached Mapping*
Parties Present at Inspection	*Bradford Watkin (Representing Nuna), Robert Chaisson , Ken MacRae, Matt Tabor, Joseph Harvey (Allnorth representing Hatch)*

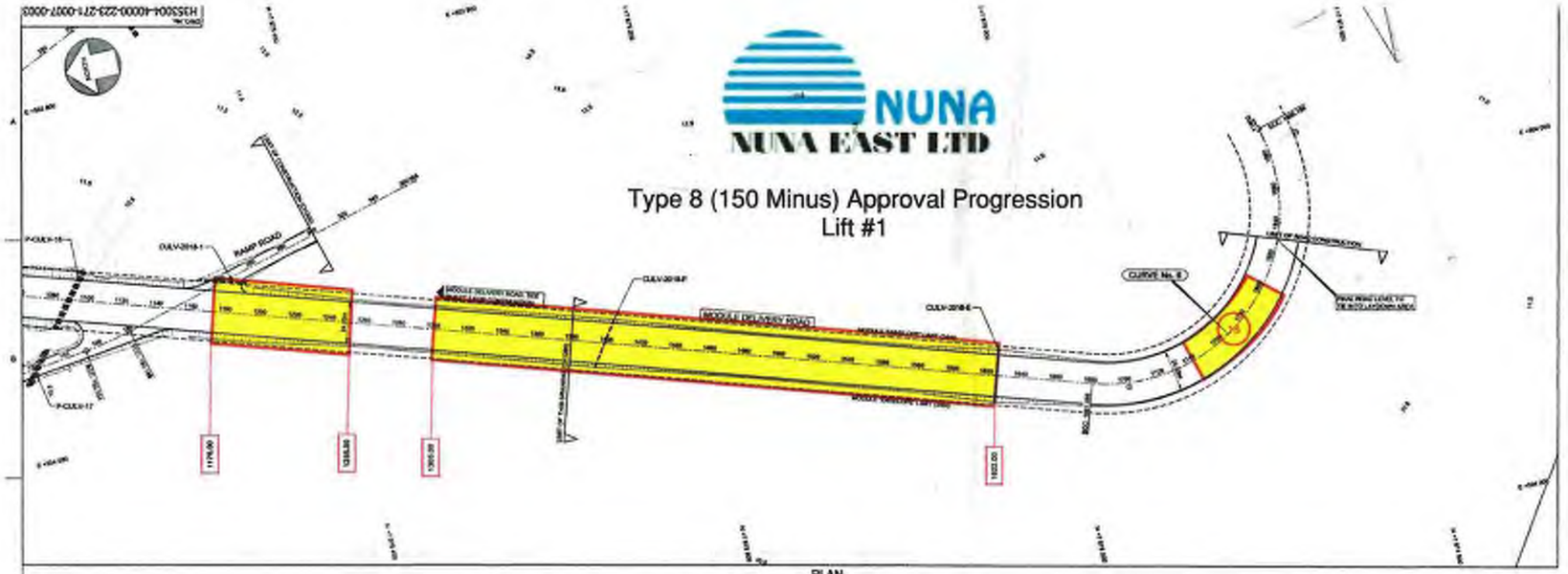
Comments:

A visual inspection of the Module Delivery Road (MOF) Type 8 Lift # 1 placement including a proof roll was completed prior to the placement of a subsequent lift of Type 8 material.
Type 8 Lift # 1: *The Type 8 Lift # 1 was found to within the parameters of the specification. The proof roll showed no deflection, the lift was acceptable to specification at time of inspection.*
NOTE: *This approval mapping also covers LP3 areas and the Stability Trench fill. Also written initials are located upon the Allnorth mapping attachment.*

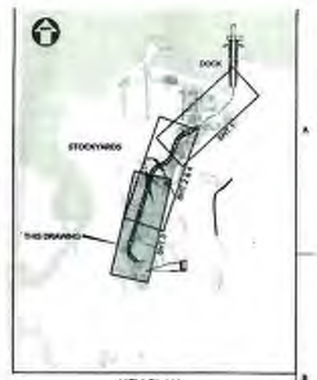
Area number:	Date:	Description of Work	Nuna Representative	Hatch Representative
18.	6/17/19	Placed, Compacted & Proof Rolled	BW	MT

NUNA EAST LTD

Type 8 (150 Minus) Approval Progression
Lift #1



PLAN



KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT 2018.
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS, CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR TYPICAL CROSS SECTION OF MODULE ROAD REFER TO DRAWING No.H353004-40000-221-270-0005-0001

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
C	EMBANKMENT DEPTH
C	CULVERT SPACING AND BEDDING CLEARANCE C = 300 WHEN D < 600mm C = 500 WHEN D < = 600mm
W	CULVERT BARREL TOP WIDTH W = (n*D) + (n-1)*C n = No. OF PIPES CULVERT
TYPE	CULVERT MATERIAL
U/S INV.	CULVERT UPSTREAM INVERT ELEVATION
D/S INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	RIPRAP APRON LENGTH L = 5 MD UNTRIM
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

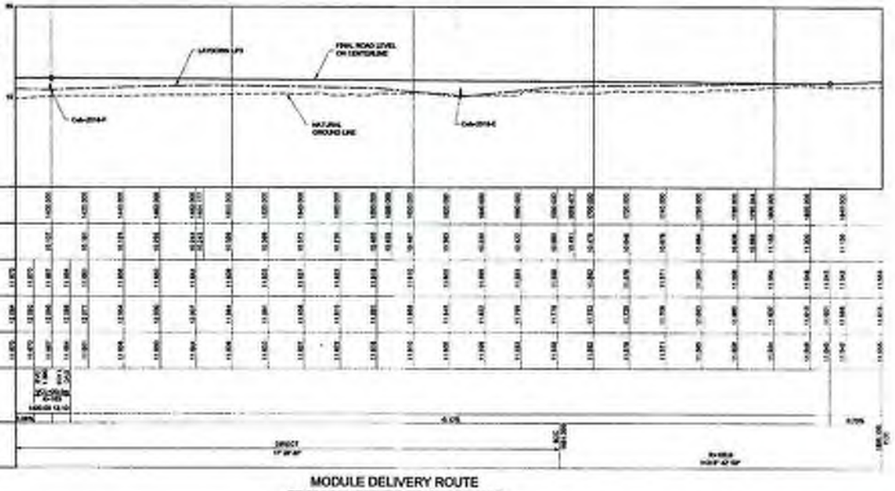
CULVERT SCHEDULE

(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-30000-201-244-0001-0001-TYPICAL CULVERT DETAILS

CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	S (mm)	W (mm)	TYPE	CULVERT AT UPSTREAM NORTHING	CULVERT AT UPSTREAM EASTING	U/S INV. ELEV (m)	RIP RAP REQ'D	CULVERT AT DOWNSTREAM NORTHING	CULVERT AT DOWNSTREAM EASTING	NOTE: FINAL U/S INVERT AND D/S INVERT LEVELS ARE TO BE CONFIRMED ON SITE D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREES)
CULV-2018-F	N	1	600	29.900	0	600	CSP	7975140.348	503211.090	10.852	N	7975200.201	503188.431	10.700	N	300	2.4	0.2	17
CULV-2018-E	N	1	600	30.800	0	600	CSP	7975200.288	503146.080	10.121	Y	7975239.236	503116.401	10.069	Y	300	2.4	0.2	90

ROAD DATA LEGEND:

BVC	BEGINNING VERTICAL CURVE
EVC	END VERTICAL CURVE
BCC	BEGINNING CIRCULAR CURVE
ECC	END CIRCULAR CURVE
R	RADIUS (CURVE)
DA	DEFLECTION ANGLE (CURVE)
TL	TANGENT LENGTH (CURVE)
AL	ARC LENGTH (CURVE)



MODULE DELIVERY ROUTE
FROM CH.1380.000 TO CH.1860.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
START	0.000	503972.709	7 975 315.000	L = 4.619m
BCC1 PI CCC1	44.619 151.222	503972.288 503975.678 503928.088	7 975 269.372 7 975 254.438 7 975 161.313	R 150.000m DA 84°56'59" TL 68.711m AL 110.396m
BCC2 PI ECC2	256.110 294.901	503881.438 503907.910 503927.166	7 975 254.219 7 975 208.218 7 975 172.541	R 100.000m DA 21°3'50" TL 26.527m AL 43.410m
BCC3 PI ECC3	344.523 413.895	503795.287 503780.428 503738.720	7 975 340.185 7 975 339.356 7 975 310.346	R 70.000m DA 41°5'59" TL 26.276m AL 51.187m
BCC4 PI ECC4	422.838 469.885	503747.088 503674.283 503662.712	7 975 304.438 7 975 302.335 7 975 472.301	R 70.000m DA 38°58'9" TL 24.614m AL 47.109m
BCC5 PI ECC5	618.195 656.471	503552.955 503521.218 503507.398	7 975 307.254 7 975 282.450 7 975 252.234	R 100.000m DA 44°18'50" TL 40.833m AL 77.277m
BCC7 PI ECC7	826.824 902.241	503400.381 503404.173 503412.223	7 975 744.948 7 975 824.041 7 975 875.430	R 100.000m DA 43°23'50" TL 39.701m AL 75.741m
BCC8 PI ECC8	966.729 1047.844	503354.804 503316.326 503309.547	7 975 948.896 7 976 021.883 7 975 997.099	R 100.000m DA 46°3'10" TL 42.918m AL 80.516m
BCC9 PI ECC9	1051.346 1098.191 1098.191	503314.776 503332.912 503291.643	7 976 082.436 7 976 085.629 7 976 068.397	R 100.000m DA 123° 16'49" TL 165.120m AL 215.155m
END	1622.000	503251.643	7 976 001.000	L = 0.000m

Released for Use

Bradford Watkin QA/QC Reviewed

PERMIT TO PRACTICE
NUNA EAST LTD
Signature
Date
PERMIT NUMBER # 0-2
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

DRAWING No.	DRAWING TITLE
H353004-40000-223-271-0007-0004	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 4 OF 4
H353004-40000-223-271-0007-0003	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 3 OF 4
H353004-40000-223-271-0007-0001	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 1 OF 4
H353004-40000-221-270-0001-0001	MODULE PRIMARY SECONDARY ROADS TYPICAL CROSS SECTIONS
H353004-30000-221-244-0001-0001	TYPICAL CULVERT DETAILS

REFERENCE DRAWINGS

REAL PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHKD	DATE
A	FOR CONSTRUCTION			

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON			
DESIGNER			
CHECKER			
DESIGN COORD.			
REQ'D. ENG.			
EXECUTIVE ENG.			
AREA LEAD			
ENG. MANAGER			
AREA MANAGER			

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 3 OF 4

SCALE 1:1000 (ANSI B)

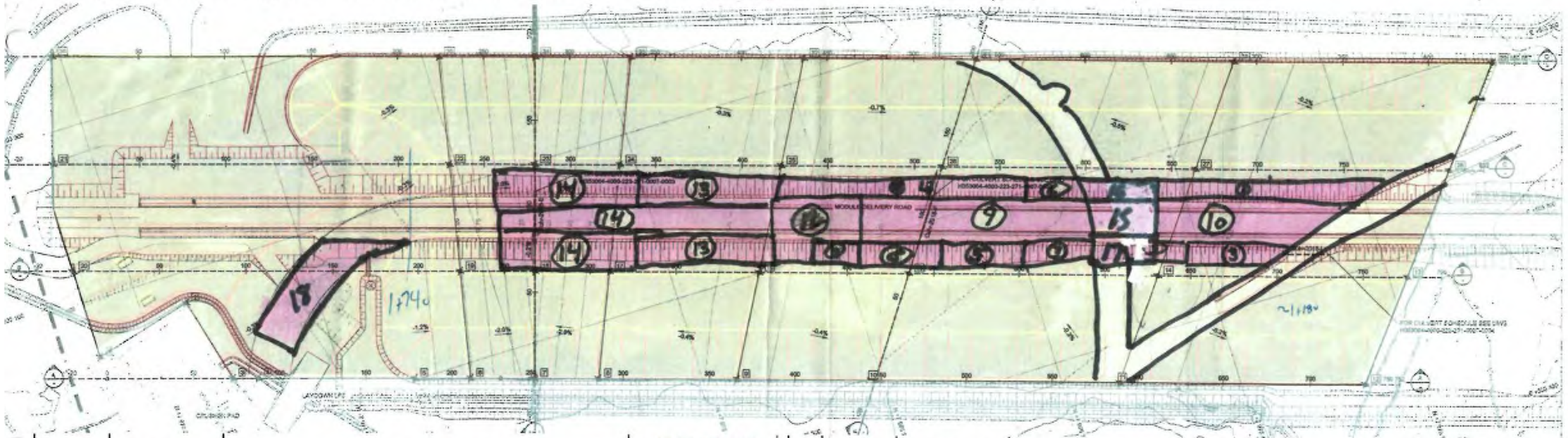
DWG No. H353004-40000-223-271-0007-0003

REV 0

SHEET SIZE: B

LAYDOWN LP3 - MATERIAL PLACEMENT APPROVAL TRACKING

TYPE 8 (150mm minus) PLACEMENT APPROVAL MoD Road Lift #1



No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
1	March 26/19		Type 8 placed and compacted in Stability Trench	BW	RC
2	March 26/19		Type 8 Placed and compacted - Stability Trench	BW	RC
3	March 26		Type 8 Placed and compacted in Stability Trench	BW	RC
4	March 26		Type 8 Placed and compacted in Stability Trench	BW	RC
5	March 26/19		Type 8 Placed and compacted in Stability Trench	BW	RC
6	March 27/19		Type 8 Placed and compacted in Stability Trench	BW	RC
7	March 27/19		Type 8 Placed and compacted in Stability Trench	BW	RC
8	March 27/19		Type 8 Placed and compacted in Stability Trench	BW	RC
9	March 27/19		Type 8 Placed and compacted in Level of Module Road	BW	RC
10	March 27/19		Type 8 Placed and compacted	BW	RC

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
11	April 9 2019		Placed and compacted April 9	BW	RC
12	~~April 12/19~~ April 13/19		Placed April 12 night shift Between trenches	BW	KMR
13	April 13/19		Placed & compacted April 13/19	BW	KMR
14	April 14/19		Placed & compacted April 14/19	BW	KMR
15	June 14		PLACED AND COMPACTED June 14	BW	MTP
16	June 8		PLACED & COMPACTED June 8	BW	MTP
17	June 9		PLACED & COMPACTED June 9	BW	MTP
18	June 11		1+740 - 1+660 Approx, June 11, 2019	BW	MTP

NUNA
NUNA EAST LTD

Baffinland
HATCH

Nuna East Limited Quality Department
QCD-001 ~~Sub-Grade~~ Approval ROQ
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Milne Port Expansion Stage 3 Remaining Earthworks Project
Description of Item/Area Inspected:	*Surface/Sub-grade Preparation Approval* *Work Scope Location:* PROOF ROLL ROQ FIRST LIFT *Location Section:* ST 0620 to 0+696
Date of Inspection:	JUNE 19/19
Parties Present at Inspection	SCOTT MACKENZIE MATT TABOR

Comments:

A visual inspection of the ROQ *surface/sub-grade was conducted prior to placement of fill Material.*

Sub-grade: PACKER COMPLETED 5 PASSES AT AT TRUCK PROOF ROLLED ROQ FIRST LIFT.

The outlined area is approved for placement of material.

Permission to Proceed:

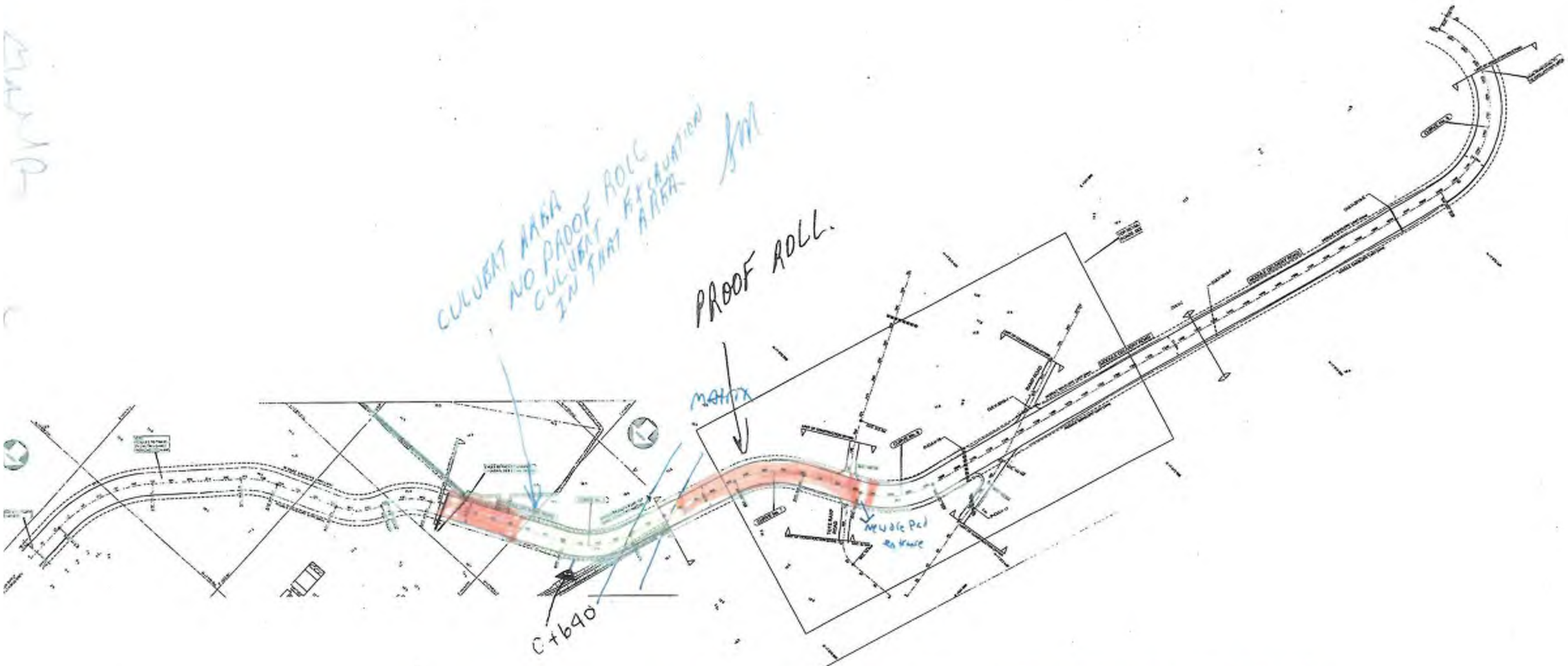
The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NUNA Representative:	S. MACKENZIE		JUNE 19/19.
HATCH Representative:	M. TABOR		June 19/19

PROOF ROLL

SMACKENZIE

M THBUR



JUNE 16th ST 0+620 to 0+696 PROOF ROLL BASE

JUNE 19th. ST 0+696 to 0+960 PROOF ROLL BASE.

JUNE 19 ST 0+480 to 0+600 PROOF ROLL BASE.

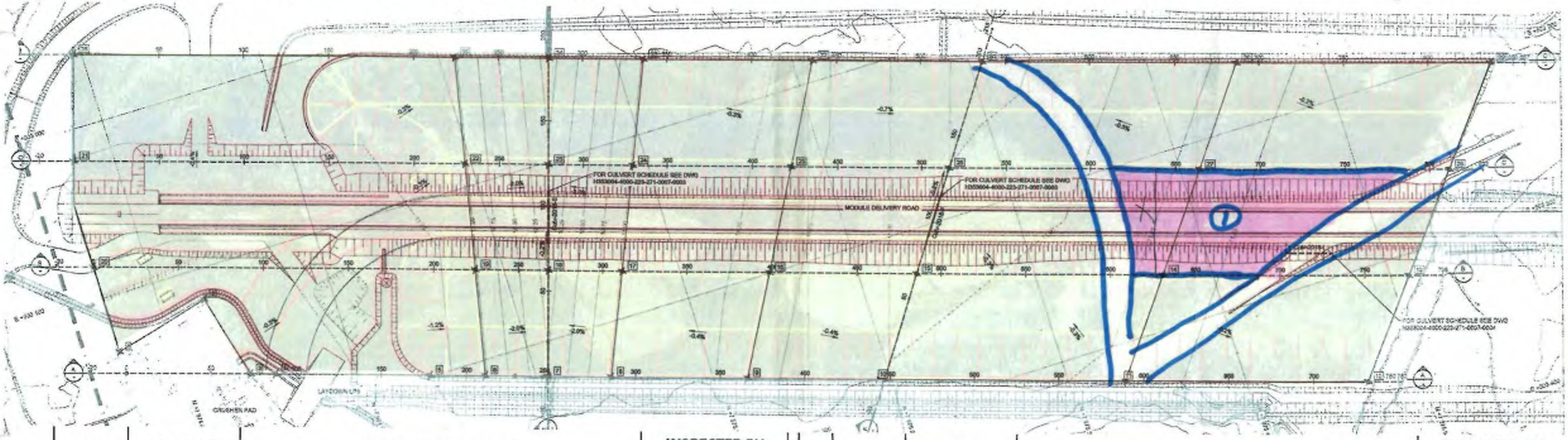
MOF ROAD - APPROVAL TRACKING

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY IIATCII	No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY IIATCII
	JUNE 19/19	ST 01696 TO 620	3 PASSES WITH SMOOTH DRUM. PROOF ROLLED WITH AT TRUCK.	JM.	MT						

Lift 5

LAYDOWN LP3 - MATERIAL PLACEMENT APPROVAL TRACKING

TYPE 8 (150mm minus) PLACEMENT APPROVAL



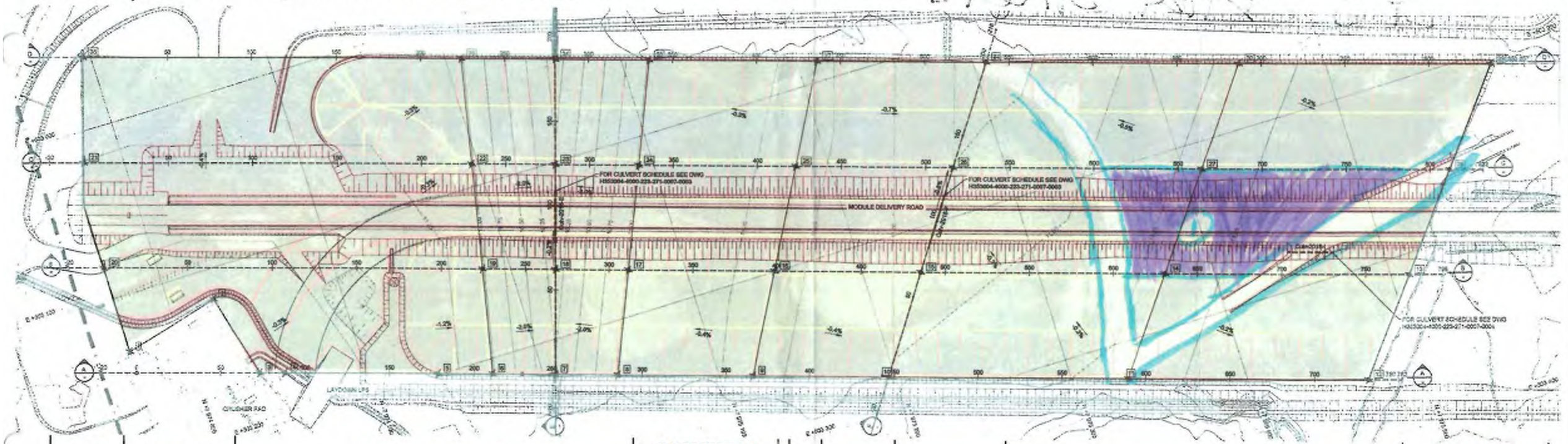
No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
1	May 2/19		Placed Lift 5 not yet compacted May 7	[signature]	[signature]
1					

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH

0 150 LIFT 6

LAYDOWN LP3 - MATERIAL PLACEMENT APPROVAL TRACKING

TYPE ~~B~~ (32mm minus) PLACEMENT APPROVAL



No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
1	May 7/19		PLACED & COMPACTED LIFT 6, MAY 7-NS		

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH

Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

Sub-Grade Approval

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0008A BIM WBS: 6141
Description of Area Inspected:	*Sub-Grade Approval* ***Work Scope Location:*** *Port Site Module Delivery Road (MOF Road)* ***Location Section:*** *See attached Mapping*
Parties Present at Inspection	*Bradford Watkin (Representing Nuna), Robert Chaisson , Ken MacRae, Matt Tabor, Joseph Harvey (Allnorth representing Hatch)*

Comments:

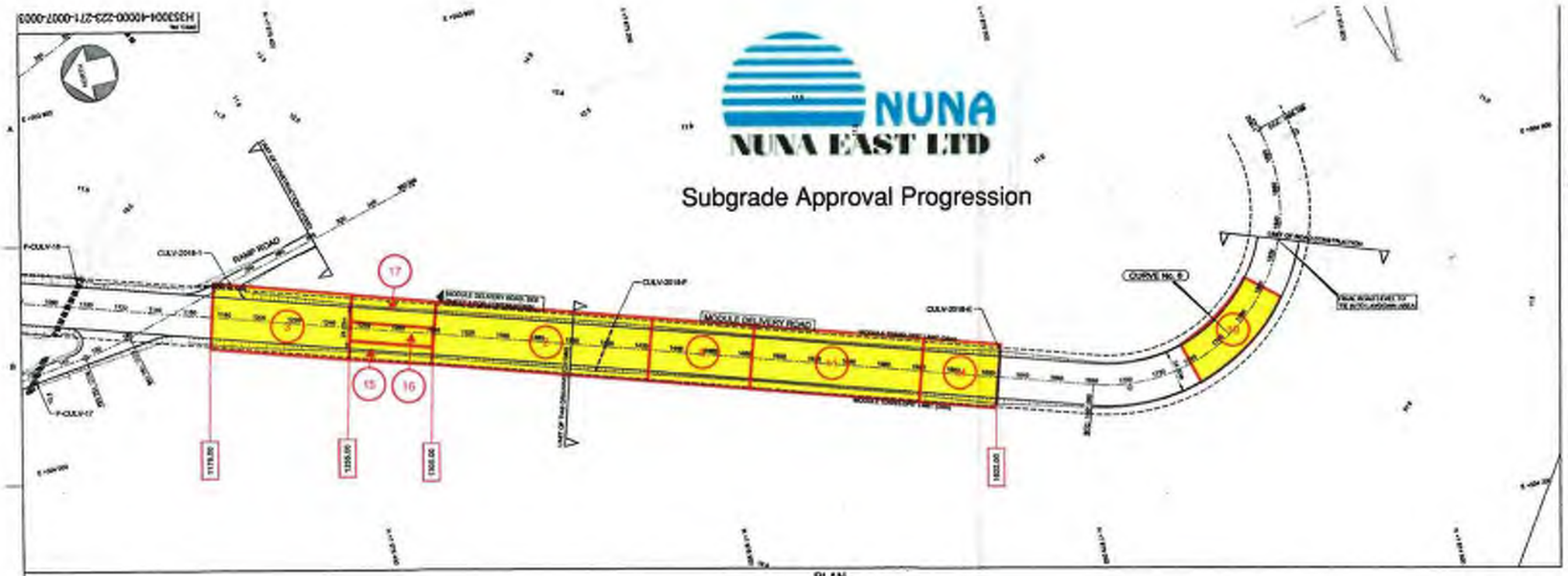
A visual inspection of the Module Delivery Road (MOF) surface/sub-grade including proof rolls was completed prior to placement of fill material.
Sub-grade: *The sub-grade surface was found to be free of ice, snow and debris. The proof roll indicated the sub-grade was acceptable to specification at time of inspection.*
NOTE: *This approval mapping also covers LP3 areas and the Stability Trench fill. Also written initials are located upon the Allnorth mapping attachment.*

Area number:	Date:	Description of Work	Nuna Representative	Hatch Representative
15.	6/8/19	Subgrade approved @ Heli Pad Road & 2 completed areas of Mod Road.	BW	MT
16.	6/8/19	Subgrade approved for Mod Road.	BW	MT
17.	6/8/19	Subgrade approved @ Heli Pad area.	BW	MT
19.	6/17/19	1+740 to 1+800 approved for placement.	BW	MT

NUNA

NUNA EAST LTD

Subgrade Approval Progression



PLAN
SCALE 1:1000

KEY PLAN

NOTES:

1. LIDAR SURVEY PRODUCED BY PHOTOSAT (2016)
2. CO-ORDINATE GRID IS SHOWN IN STEREOGRAD ZONE 17 AND IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR TYPICAL CROSS SECTION OF MODULE ROAD REFER TO DRAWING No.H353004-40000-221-273-0001-0001

CULVERT SCHEDULE

(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-40000-221-264-0001-0001-TYPICAL CULVERT DETAILS)

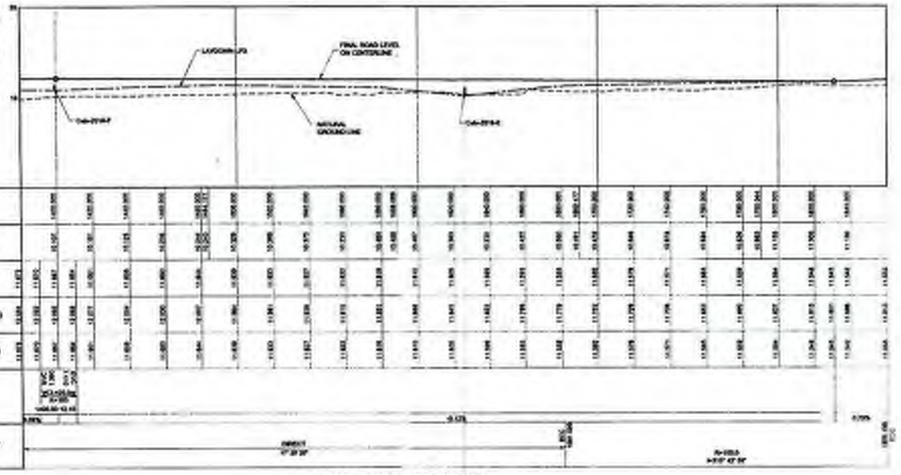
CULVERT ID	FLOW BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	CULVERT AT UPSTREAM NORTHING	CULVERT AT UPSTREAM EASTING	CULVERT AT UPSTREAM U/S INV. ELEV (m)	CULVERT AT UPSTREAM RIP RAP REQ'D	CULVERT AT DOWNSTREAM NORTHING	CULVERT AT DOWNSTREAM EASTING	NOTE: FINAL U/S INVERT AND D/S INVERT LEVELS ARE TO BE CONFIRMED ON SITE D/S INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SKEW (DEGREE)
CULV-2018-F	N	1	600	29.969	0	600	CSP	7875243.040	533211.000	10.852	N	7875200.001	533185.431	10.795	N	305	2.4	6.2	17
CULV-2018-E	N	1	600	30.585	0	600	CSP	7875030.300	523148.000	10.121	Y	7875038.336	523118.431	10.358	Y	305	2.4	6.2	90

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
L	CULVERT SPACING AND BEDDING CLEARANCE C = 300 SHIELD D +300mm C = 300 SHIELD D +1 x 600mm
W	CULVERT BACKFILL TOP WIDTH W = (n*D) + (n-1)*C
	n = No. OF PIPES/CULVERT
TYPE	CULVERT MATERIAL
U/S INV.	CULVERT UPSTREAM INVERT ELEVATION
D/S INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	REPEAT AT INCL LENGTH L = n(D) (APPROX)
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

ROAD DATA LEGEND:

BVC	BEGINNING VERTICAL CURVE
EVC	END VERTICAL CURVE
BCC	BEGINNING CIRCULAR CURVE
ECC	END CIRCULAR CURVE
R	RADIUS (CURVE)
DA	DEFLECTION ANGLE (CURVE)
T	TANGENT LENGTH (CURVE)
AL	ARC LENGTH (CURVE)



SCALES:
Horizontal 1:1000
Vertical 1:200

DATUM 0.000

MODULE DELIVERY ROUTE
FROM CH.1380.000 TO CH.1860.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
START	0.000	534972.705	7 876 510.886	L =2.814m
SCC1 PI1 ECC1	44.814 194.258	535071.299 535071.676 535229.956	7 876 555.272 7 876 704.629 7 876 841.570	R 150.000m DA 44°54'39" T1 59.117m AL 119.588m
SCC2 PI2 ECC2	256.210 294.401	535481.439 535497.616 535507.896	7 876 753.515 7 876 776.419 7 876 815.481	R 150.000m DA 21°12'00" T1 28.501m AL 55.511m
SCC3 PI3 ECC3	344.521 413.660	535580.247 535765.435 535836.748	7 876 843.186 7 876 935.306 7 876 918.686	R 70.000m DA 113°32'02" T1 82.757m AL 83.162m
SCC4 PI4 ECC4	422.809 488.899	535723.348 535742.660 535692.712	7 876 904.329 7 876 965.526 7 877 873.163	R 70.000m DA 56°39'55" T1 38.516m AL 67.109m
SCC5 PI5 ECC5	515.108 566.471	535837.905 535721.214 535631.085	7 876 903.854 7 876 985.484 7 876 952.354	R 150.000m DA 14°19'47" T1 46.888m AL 77.277m
SCC7 PI7 ECC7	624.354 658.214	535481.951 535446.125 535412.883	7 877 730.380 7 877 800.660 7 877 870.430	R 150.000m DA 47°37'59" T1 66.761m AL 70.741m
SCC8 PI8 ECC8	695.729 1047.444	535374.554 535310.329 535163.547	7 877 944.806 7 877 977.661 7 878 307.870	R 150.000m DA 48°21'44" T1 68.816m AL 82.513m
SCC9 PI9 ECC9	1081.256 1086.106	535134.778 535068.613 535057.643	7 878 082.206 7 878 099.629 7 878 606.367	R 105.000m DA 109°14'40" T1 188.123m AL 210.123m
END	1552.032	535257.643	7 878 451.902	L 5.000m

Released for Use

Bradford Station
GWSC
Reviewed

H353004-40000-223-271-0007-0001	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 1 OF 4
H353004-40000-223-271-0007-0002	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 2 OF 4
H353004-40000-223-271-0007-0003	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 3 OF 4
H353004-40000-223-271-0007-0004	MODULE, PRIMARY, SECONDARY ROADS TYPICAL CROSS SECTIONS
H353004-40000-221-264-0001-0001	TYPICAL CULVERT DETAILS
DRAWING No.	DRAWING TITLE
REFERENCE DRAWINGS	

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	ZONE	BY	CHK'D	DATE
0	FOR CONSTRUCTION				

REVISIONS

HATCH

PROJECT DIRECTOR	K VAN DER MEIDEN	MP	APPROVED
DESIGNED	C BALDOMARO	MP	SUBMITTED
CHECKED	J PEARC		
DESIGN CHKR'D	R BARRIEN		
RESP. ENG.	R HALES		
LEAD DISC. ENG.	A VANDERKLAAR		
AREA LEAD	T JORDE		
ENV. MANAGER	D STANDEN		
DRAFT MANAGER			

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 3 OF 4

SCALE 1:1000 (ON A1 METRIC)

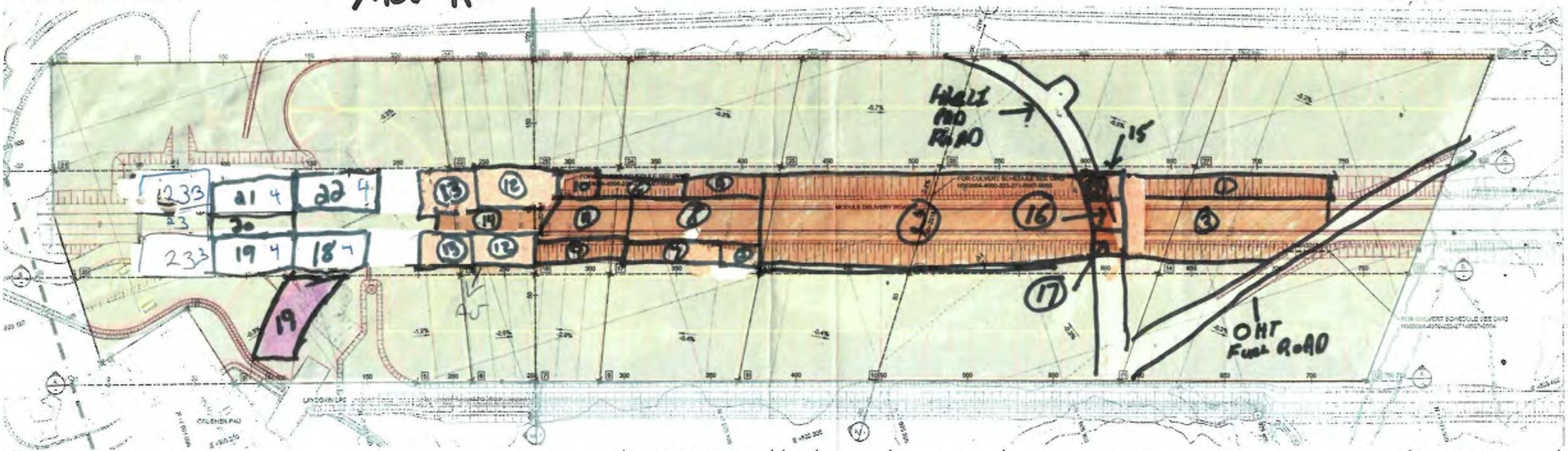
DWG. No. H353004-40000-223-271-0007-0003 REV 0

SHEET SIZE: A1

LAYDOWN LP3 - MATERIAL PLACEMENT APPROVAL TRACKING

MOD Road
Stab Trench

SUB-GRADE APPROVAL - Mod Road



No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
1	Mar 23/19	✓	S/G Approved	BW	RC
2	Mar 25/19	✓	S/G Approved	BW	RC
3	Mar 26/19	✓	S/G Approved	BW	RC
4	Mar 27/19	✓	S/G Approved	BW	RC
5	Mar 27/19	✓	S/G Approved	BW	RC
6	Mar 30 2019	✓	S/G Approved	BW	RC
7	Mar 30 2019	✓	S/G Approved	BW	RC
8	Mar 30 2019	✓	S/G Approved	BW	RC
9	Apr 19 2019	✓	S/G Approved	BW	RC
10	Apr 19 2019	✓	S/G Approved	BW	RC

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
11	Apr 19 2019	✓	Subgrade approved	BW	RC
12	April 12/19		S/G Approved both sides of stability trench's	BW	KWR
13	April 14/19	As one	S/G Approved Both sides of Stability Trench's	BW	KWR
14	April 14/19	on Report	S/G Approved Between trenches	BW	KWR
15	June 8/19		S/G Approved @ HELI PAD ROAD, Bettlecon 2 completed AREAS OF MUD ROAD	BW	MP
16	June 8/19		S/G Approved FOR MUD ROAD	BW	
17	June 8/19		S/G Approved @ HELIPAD ROAD AREA	BW	MP
			~~H740 - H800~~		
19	June 17		H740 - H800 Approved For placement	BW	MP
23	June 22		SG/Approved	BW	RC

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH

Baffinland – Milne Port Earthworks H353004-CC006

Quality Surveillance Report

Sub-Grade Approval

Project Name:	Mary River Expansion Project
Job File #(s):	Nuna: CC006-0008A BIM WBS: 6141
Description of Area Inspected:	*Sub-Grade Approval* ***Work Scope Location:*** *Port Site Module Delivery Road (MOF Road)* ***Location Section:*** *See attached Mapping*
Parties Present at Inspection	*Bradford Watkin (Representing Nuna),* *Robert Chaisson , Ken MacRae, Matt Tabor (Allnorth representing Hatch)*

Comments:

A visual inspection of the Module Delivery Road (MOF) surface/sub-grade including proof rolls was completed prior to placement of fill material.
Sub-grade: *The sub-grade surface was found to be free of ice, snow and debris. The proof roll indicated the sub-grade was acceptable to specification at time of inspection.*
NOTE: *This approval mapping also covers LP3 areas and the Stability Trench fill. Also written initials are located upon the Allnorth mapping attachment.*

Area number:	Date:	Description of Work	Nuna Representative	Hatch Representative
1.	3/23/19	Sub-grade approval	BW	RC
2.	3/25/19	Sub-grade approval	BW	RC
3.	3/26/19	Sub-grade approval	BW	RC
4.	3/27/19	Sub-grade approval	BW	RC
5.	3/27/19	Sub-grade approval	BW	RC
6.	3/30/19	Sub-grade approval	BW	RC
7.	3/30/19	Sub-grade approval	BW	RC
8.	3/30/19	Sub-grade approval	BW	RC
9.	4/9/19	Sub-grade approval	BW	RC
10.	4/9/19	Sub-grade approval	BW	RC
11.	4/9/19	Sub-grade approval	BW	RC
12.	4/12/19	Sub-grade approval – 5/6 both sides of the Stability Trench's	BW	KMR
13.	4/14/19	Sub-grade approval – 5/6 both sides of the Stability Trench's	BW	KMR
14.	4/14/19	Sub-grade approval – 5/6 both sides of the Stability Trench's	BW	KMR

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Subgrade Approval Progression

PLAN

KEY PLAN

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT 2016
2. CO-ORDINATE GRID IS SHOWN IN UTM [NAD83] ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. FOR TYPICAL CROSS SECTION OF MEDIUM ROAD REFER TO DRAWING No.

CULVERT SCHEDULE LEGEND:

D	CULVERT DIAMETER
E	EMBEDMENT DEPTH
C	CULVERT SPACING AND BEDDING CLEARANCE C = 600 WHEN D ≥ 900mm C = 300 WHEN D < 900mm
W	CULVERT BARREL TOP WIDTH W = 2(TC + D) + TC n = No. OF PIPES CULVERT
TYPE	CULVERT MATERIAL
US INV.	CULVERT UPSTREAM INVERT ELEVATION
DS INV.	CULVERT DOWNSTREAM INVERT ELEVATION
L	RIPRAP APRON LENGTH L = 4xD (TYPICAL)
S	CULVERT SLOPE
LENGTH	CULVERT LENGTH
CSP	CORRUGATED STEEL PIPE

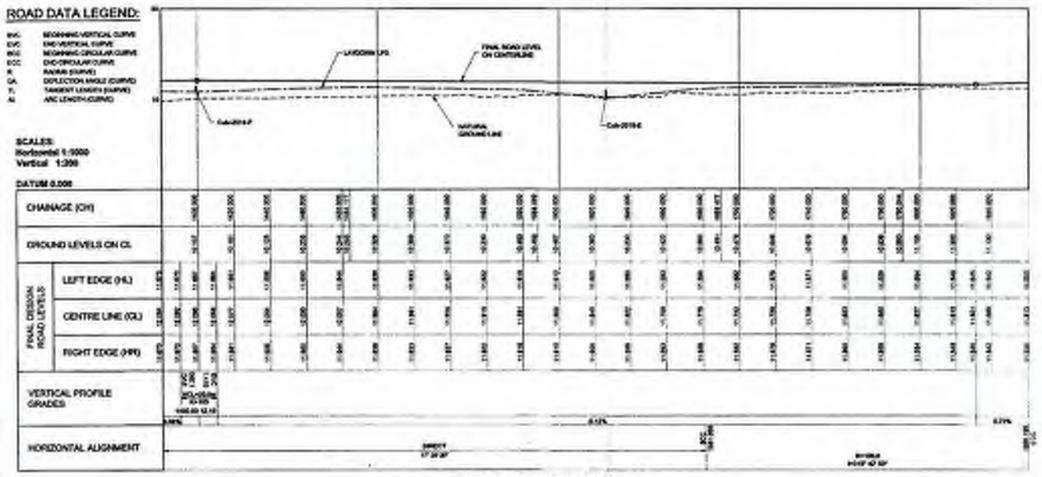
CULVERT SCHEDULE

(THIS SCHEDULE TO BE READ IN CONJUNCTION WITH DRG. No. H353004-40000-221-254-0001-0001-TYPICAL CULVERT DETAILS

CULVERT ID	FISH BEARING	NUMBER OF PIPES	D (mm)	LENGTH (m)	E (mm)	W (mm)	TYPE	CULVERT AT UPSTREAM NORTHING	CULVERT AT UPSTREAM EASTING	US INV. ELEV (m)	RIP RAP REQ'D	CULVERT AT DOWNSTREAM NORTHING	CULVERT AT DOWNSTREAM EASTING	DS INV. ELEV (m)	RIP RAP REQ'D	C (mm)	L (m)	S (%)	SIDE (DEGREES)
NOTE: FINAL US INVERT AND DS INVERT LEVELS ARE TO BE CONFIRMED ON SITE																			
CULV-2010-F	N	1	600	26.000	0	600	CSP	7677242.048	533211.000	10.852	N	7676385.681	533168.431	10.730	N	300	2.4	0.2	17
CULV-2010-E	N	1	600	30.695	0	600	CSP	7675530.395	533145.600	10.121	Y	7674938.236	533116.401	10.958	Y	300	2.4	0.2	90

ROAD DATA LEGEND:

BVC	BEGINNING VERTICAL CURVE
EVC	END VERTICAL CURVE
BCC	BEGINNING CIRCULAR CURVE
ECC	END CIRCULAR CURVE
R	RADIUS (CURVE)
DA	DEFLECTION ANGLE (CURVE)
T	TANGENT LENGTH (CURVE)
AL	ARC LENGTH (CURVE)



MODULE DELIVERY ROUTE
FROM CH.1380.000 TO CH.1860.000

SETTING OUT DATA
MODULE DELIVERY ROUTE

NAME	CH	E	N	DETAILS
START	0.000	534871.703	7 679 310.584	L =4.218m
BCC1 PI ECC1	44.218 100.000 155.782	534872.289 534871.675 534828.986	7 679 355.273 7 679 354.639 7 679 181.243	R 150.000m DA 44°54'00" TL 60.111m AL 1 55.564m
BCC2 PI ECC2	330.315 390.000 396.801	534861.438 534847.010 534827.956	7 679 283.210 7 679 223.439 7 679 225.681	R 150.000m DA 23°12'00" TL 59.747m AL 60.801m
BCC3 PI ECC3	394.523 450.000 x+5.454	534783.207 534741.441 534741.441	7 679 340.165 7 679 310.166 7 679 310.166	R 75.000m DA 41°53'00" TL 28.791m AL 31.182m
BCC4 PI ECC4	427.839 480.000 485.865	534715.286 534674.420 534662.712	7 679 364.536 7 679 331.529 7 679 313.304	R 75.000m DA 36°00'00" TL 24.516m AL 47.109m
BCC5 PI ECC5	516.155 570.000 604.411	534697.956 534681.214 534653.288	7 679 407.954 7 679 460.494 7 679 452.334	R 150.000m DA 34°48'00" TL 45.648m AL 91.237m
BCC7 PI ECC7	626.554 690.000 663.240	534641.561 534644.175 534 0.000	7 679 736.399 7 679 666.281 7 679 674.430	R 150.000m DA 48°39'00" TL 68.741m AL 72.741m
BCC8 PI ECC8	699.729 750.000 757.634	534724.004 534816.328 534824.647	7 679 837.828 7 679 837.882 7 679 837.201	R 150.000m DA 48°13'00" TL 42.476m AL 62.913m
BCC9 PI ECC9	760.208 810.000 868.196	534 0.178 534824.012 534837.840	7 679 892.556 7 679 844.629 7 679 836.367	R 150.000m DA 110°14'43" TL 166.124m AL 216.183m
END	976.392	534837.840	7 679 837.363	L 3.961m

Released for Use

Bedford Watson QA/QC Reviewed

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHKD	DATE
0	FOR CONSTRUCTION	EVDM	HH	04/05/2018

REVISIONS

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
MODULE DELIVERY ROAD
PLAN & PROFILE SHEET 3 OF 4

DWG No. H353004-40000-223-271-0007-0003 | REV 0

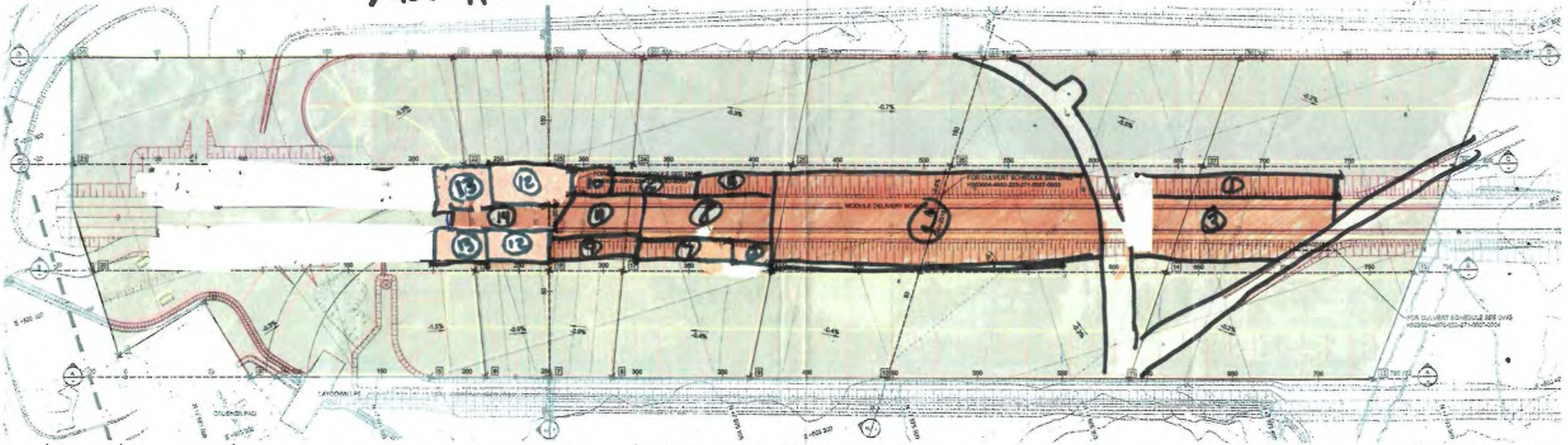
SCALE 1:1000 (AT A1 SIZE)

DRAWING No.	DRAWING TITLE
REFERENCE DRAWINGS	
H353004-40000-223-271-0007-0001	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 1 OF 4
H353004-40000-223-271-0007-0002	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 2 OF 4
H353004-40000-223-271-0007-0003	MODULE DELIVERY ROAD PLAN & PROFILE SHEET 3 OF 4
H353004-40000-221-271-0001-0001	MODULE PRIMARY SECONDARY ROADS TYPICAL CROSS SECTIONS
H353004-40000-221-254-0001-0001	TYPICAL CULVERT DETAILS

LAYDOWN LP3 - MATERIAL PLACEMENT APPROVAL TRACKING

SUB-GRADE APPROVAL – Mod Road

MOL Road
Stockpile



No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
1	Mar 23/19		S/G Approved	BW	RC
2	Mar 25/19		S/G Approved	BW	RC
3	Mar 26/19		S/G Approved	BW	RC
4	Mar 27/19		S/G Approved	BW	RC
5	Mar 27/19		S/G Approved	BW	RC
6	Mar 30 2019		S/G Approved	BW	RC
7	Mar 30 2019		S/G Approved	BW	RC
8	Mar 30 2019		S/G Approved	BW	RC
9	April 9 2019		S/G Approved	BW	RC
10	April 9 2019		S/G Approved	BW	RC

No.	DATE	LOCATION	DESCRIPTION OF WORK	INSPECTED BY NUNA	INSPECTED BY HATCH
11	April 9 2019		Subgrade approved	BW	RC
12	April 12/19		S/G Approved both sides of Stability trench's	BW	KMR
13	April 14/19		S/G Approved Both sides of Stability Trench's	BW	KMR
14	April 14/19		S/G Approved Between trenches	BW	KMR

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(Section 11)

Signature Log

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN	[illegible]	[illegible]
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC	[illegible]	[illegible]
ALLNORTH	Materials technician	Kenny MacRae	[illegible]	[illegible]
Hatch	Hatch Civil	Stephane Grant	SG	[illegible]
NUNA EAST	PROJECT COORDINATOR	BRANDON URQUHART	[illegible]	[illegible]
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]	[illegible]	[illegible]
HATCH	FIELD ENG. MANAGER	GLEN PEACE	[illegible]	[illegible]
NUNA EAST	SITE SUPERINTENDENT	ANTHONY STEWART	[illegible]	[illegible]
NUNA EAST	SITE SUPERINTENDENT	HARVEY BLOYIN	[illegible]	[illegible]
Hatch	Hatch Super	Roger Landry	[illegible]	[illegible]
Nuna East	Project Manager	Stephen Nugent	[illegible]	[illegible]
HATCH	CONSTRUCTION SUPERINTENDENT	ROY BADER	RB	[illegible]
BVJV	Project Engineer	David Garcia	D.G	[illegible]
Hatch	QA Manager	Ronny Franken	RF	[illegible]
Hatch	QA Manager	Derek Padlewski	[illegible]	[illegible]

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN	BW	
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC	DF	
ALLNORTH	Materials technician	Kenny MacRae	KMR	
Hatch	Hatch Civil	Stephane Grant	SG	
NUNA EAST	PROJECT COORDINATOR	BRANDON UNGUHART	BU	
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]STER	RT	
HATCH	FIELD ENG. MANAGER	GLEN PEACE	GP	
Hatch	Construction Super	Dean Moffett	D.M.	
Hatch	Construction Super	Roger Landry	R.L	

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(Section 12)

Walkdown Report

NUNA EAST LTD	WALKDOWN REPORT	Exhibit 1-10 QDG Revision 0

WALKDOWN ATTENDEES LIST	(Page 1 of 1)

Project Name: Mary River Expansion	Contractor's Name: Nuna East Ltd.	Job File No.: CC006-0008A
System CWP Description: Milne Port Site Modular Delivery Road	Location: Modular Delivery Road Chainage 0.000 to 1902.092	Plant No.: N/A

This record indicates that this system was formally walked down and inspected in the field by the undersigned on the date as indicated below

Name	Company Name	Role	Signature	Date (mm/dd/yy)
BRADFORD WATKIN	NUNA EAST	QC COORDINATOR		7/26/19
Bader, Roy	Digitally signed by Bader, Roy DN: cn=Bader, Roy, email=Roy.bader@hatch.com Date: 2019.10.21 14:11:19 -04'00'			

NUNA

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(Section 13)

Deficiency/Punchlist

DEFICIENCY / PUNCH ITEMS RECORD

Project Name: Mary River Expansion	**Walkdown Date (mm/dd/yy):** 07/26/19	**Area Number:** N/A
Area Name or Area Description: Port Site Modular Delivery Road	**Job Number:** CC006-0008A	**Plant Number:** N/A

PURPOSE:

1. **For modules and vendor packages, open punch items are listed at release for shipment.**
2. **As part of a final walkdown package, this form lists the Contactor's open punch items that are transferred into the Nuna Turnover database**
3. **This form is used to capture Punch Items during Final Walkdown**

Tag Number	Description of Deficiency / Punch Item	Cat.	Discipline	Originator	Responsible for resolution	Vendor Y/N	Remarks
5 Kv Cable sleeves	4 pipe sleeves not installed	B	Earthworks	B Watkin	Nuna East	Y	4 – 6" utility pipe sleeves to be installed at a later date, see RFI-097 and drawing H353004-40000-223-271-0007-0001 Rev 1

Punch Item Categories captured during Final Walkdown: A, B or C. A- To be rectified before final acceptance. B- To be addressed at a later time. C- Acceptable to be As-Built

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(Section 14)

Construction Photographs

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

HATCH™

Baffinland – Milne Port Earthworks H353004-CC006

Job File Construction Photographs

Port Site Modular Delivery Road

NUNA
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Baffinland
Iron Mines Corporation

HATCH™

Baffinland – Milne Port Earthworks H353004-CC006

NUNA
NUNA EAST LTD

Baffinland
Iron Mines Corporation

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Baffinland – Milne Port Earthworks H353004-CC006

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Baffinland – Milne Port Earthworks H353004-CC006

NUNA

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(Section 15)

Acceptance of Completion of Construction Declaration

ACCEPTANCE OF COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the acceptance of the Quality Control Turnover documentation for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Ore Mines
2. **Contractor:** Nuna East Limited
3. **Construction:** Aggregate Road
4. **Location:** Mary River Milne Port Site
5. **Description:** Port Site Modular Delivery Road – Project Number: CC006

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turnover documentation has been forwarded to and accepted by the owner.

Nuna Representative:

Signature	Print Name	Title	Date
	BRADFORD WALKER	QC COORDINATOR	10/21/19

Client Representative:

Signature	Print Name	Title	Date

QA/QC Documentation Turnover Review and Release

Contractor: Nuna East Limited.	Contract No.: CC006	CWP.: N/A
Project: Mary River Expansion Project.	Location: Milne Port	Sub-System: N/A
Area: Module Road	Area Description: Port Site Module Delivery Road	
System/Subsystem No.: N/A	System/Subsystem Description: N/A	
Inspection Test Plan No.: CC006-0008A	Rev: 0	Issue Date: June 4, 2019

ITP Section for Review

ITP Activity No.	ITP Activity Description
For this portion of the Inspection Test Plan (ITP) and scope of work as per contract details outlined above. The following have been verified the ensure compliance with the Project Completion Requirements. • All work has been completed in accordance IFC drawings, project specifications, codes, and national regulations. • All Testing has been completed as per Inspection Test Plan (ITP). • All Master Punch List items are completed, verified and signed off. • All Non-Conformances and Site Quality Surveillances are closed. • All Bolt Ups, Loop Checks, and Pre-Commissioning are completed.	

The undersigned verifies the contractor has completed the points above in their entirety

Contractor QC Designate	BRADFORD WATKINS /	10/21/19
Title	Name (Print/Sign)	Date

Client QA Turnover Review

☐ Approved	☐ Not Approved (See Comments Below)	Review No.:	

ITP Activity No.	ITP Activity Description

Contractor QC Designate	BRADFORD WATKINS /	10/21/19
Title	Name (Print/Sign)	Date
Hatch QA Designate	Derek Paddock /	10/22/19
Title	Name (Print/Sign)	Date
Hatch Commissioning Designate	/	
Title	Name (Print/Sign)	Date

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HATCH **Vendor/Contractor Document Review**

Doc Number	E353004-CC006-130-124-0019	SUB	01
Date Received			

Review Grade	Next Submittal Status
☐ **C1** - Proceed to next submission & status ☐ **C2** - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ **C3** - Do not proceed. Revise as noted & resubmit	☐ Internal Review
Next Submittal Date:	☐ Certified/ ☐ As-Built

☒ **C4** - No further submission required - Complete (select status below)

☐ Certified Final ☒ Final ☐ Cancelled ☐ Superseded

Package Engineer: Name, signature and date

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibilty for correct design, details & dimensions shall remain with the party submitting the drawing/document.

NUNA EAST LTD

CC006

NUNA

NUNA EAST LTD

Job #:

CC006-0016A

Laydown Area

W10B

Mary River Expansion Project

H353004

Port Site Civil Works

Section 1
Completion of Construction Declaration

Section 2
Inspection & Test Plan
(ITP)

Section 3
Redline Drawings

Section 4
Survey Data Documentation

Section 5
Sieves / Statements of Compliance

Section 6
Request for Information Documents
(RFIs)

Section 7
Non-Conformance Reports
(NCRs)

Section 8
Communications:
Engineering Change Notices (ECNs), Site instructions (Sis),
Contract Variation Request (CVRs), Emails.

Section 9
Land Disturbance Form

Section 10
Quality Control Documents

Section 11
Signature Log

Section 12
Deficiency/Punchlist

Section 13
Acceptance of Completion of Construction Declaration

NUNA

NUNA EAST LTD

(Section 1)

Completion of Construction Declaration

COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Mines Corporation
2. **Contractor:** Nuna East Limited
3. **Construction:** Laydown Pad
4. **Location:** Mary River Milne Port Site
5. **Description:** Laydown Area W10B – Project Number: CC006

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turn over documentation has been forwarded to the owner.

(Signature)	Bradford Watkin (Print Name)	QC Coordinator (Title)	10/1/19 (Date)
Nuna East Ltd. (Company)	14, 6194 – 50 Street NW Edmonton, AB, CA (Address)		T6B 2N7 (City, Postal Code)

NUNA

NUNA EAST LTD

(Section 2)

Inspection & Test Plan (ITP)

NUNA EAST LTD

QUALITY MANAGEMENT SYSTEM
INSPECTION &TEST PLAN
(Civil / Structural Installations)

CLIENT: Hatch	**ITEM / DESCRIPTION / SCOPE:** W10B / Laydown / Earthworks material production, Haulage, Placement & compaction.	**NUNA ITP NO.:** CC006-00016A	**REVISION NO.:** 2
CONTRACTOR: Nuna East Ltd.		**AFFILIATED SUB-CONTRACTOR(S):** N/A	
CONTACT PERSON: Bradford Watkin	**CONTACT INFORMATION:** bradfordw@nunalogistics.com	**DATE:** April 17, 2019	
CONTRACT No.: H353004-CC006	**HATCH PROJECT NUMBER:** H353004-CC006	**HATCH DOCUMENT TITLE:** Mary River Expansion Project-Remaining Early Earthworks	
NUNA JOB No.: CC006-00016A	**PURCHASE ORDER No.:** N/A	**PROJECT MANAGER:** Chris Petrovic	
LOCATION(S): Milne Port Site		**LEGEND:** **H:** A mandatory hold on manufacturer until release by inspector or official waiver from client. **M:** Inspection stage by inspector on a spot basis, but not a mandatory hold point. **HR:** A mandatory hold / review & acceptance / approval of the specified documentation. **W:** To be informed and invited to inspect. Construction to continue if inspector does not attend. **R:** Review of report / certifications. **A:** Audit (Review at Random).	
CWP No.: N/A			

Approved For Construction

Stephen Nugent — April 17, 2019
Nuna Project Manager / Engineer (Print) — Signature — Date

Bradford Watkin — April 17, 2019
Nuna Quality Representative (Print) — Signature — Date

Hatch Representative (Print) — Signature — Date

Hatch Stamp

HATCH Vendor/Contractor Document Review

Doc Number	E353004-CC006-130-051-0015	SUB	02
Date Received			

Review Grade	Next Submittal Status
☐ C1 - Proceed to next submission & status ☐ C2 - Proceed with exceptions as noted to next submission & status	☐ Certified ☐ As-Built
☐ C3 - Do not proceed. Revise as noted & resubmit	☐ Internal Review ☐ Certified/☐ As-Built
Next Submittal Date:	
☐ ~~C4~~ No further submission required - Complete (select status below) ☐ Certified Final ☐ Final ☐ Cancelled ☐ Superseded	

Package Engineer: Name, signature and date farrokh.nooroi@hatch.com

Reviewed only for general conformity with the specifications. Acceptance by the engineer does not warrant or represent that the information contained on this drawing/document is either accurate or complete. The sole responsibility for correct design, details & dimensions shall remain with the party submitting the drawing/document.

Final Review

BRADFORD WATKIN — 10/1/19
Nuna Quality Representative (Print) — Signature — Date

Hatch Quality Representative (Print) — Signature — Date

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	*Description of Activities* (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	*Functional Responsibility*	*Quality Control Activity*	*Verification Frequency*	*Reference Document(s)/ Controlling Procedure*	*Acceptance Criteria*	*Verification Document(s) (Reporting)*	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	*Comments*
1.	Contract Review / Approval	NUNA	Review / Verify Document	Prior to project start	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract, NUNA Quality System Manual	Signed Client Contract				R		7/9	A	R.F.	2/19/19	

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
2.	Approval of ITP	NUNA / HATCH Representatives	Review	Prior to start	NUNA Quality System Manual	Signed ITP by Client representative, NUNA Quality System Manual	Signed acceptance of document (Exhibit 1.0)				HR	BW	5/31/19	HR	R.F.	10/2/19	
3.	Scope and Associated Documents	NUNA	Review For Errors	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R	BW	7/1/19	A	R.F.	10/2/19	
4.	Land Disturbance Approval obtained	NUNA	Review	Prior to start	BIM Environmental Protection Plan	IFC Drawings & Client contract scope, BIM Environmental Protection Plan	Land Disturbance Form BAF-PH1-830-P16-0008				HR	BW	10/22/19	R	R.F.	10/2/19	
5.	Work Method of Statement	NUNA / HATCH	Review	Prior to Start	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope	IFC Drawings & Client contract scope				R		N/A	A	R.F.	10/2/19	
6.	Signature Log	NUNA	Review, obtain signatures	Ongoing	NUNA Quality System Manual	NUNA Quality System Manual	NUNA Signature Log				R	BW	10/1/19	R	R.F.	10/2/19	
7.	Initial Survey Layout	NUNA / ALL NORTH	Cross Check of IFC Layout	Ongoing	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	IFC Drawings & Hatch Spec. 221-078-0001 Rev 0	Survey Reports				HR		N/A	R	R.F.	10/2/19	
8.	Materials verification	NUNA	Review	As required	IFC Drawings, Hatch Spec. 280-078-0002 Rev 0, ASTM C-136	IFC Drawings, Hatch Spec.280-078-0002 Rev 0, ASTM C-136	Sieve Test Reports, QSRs				HR	BW	10/1/19	HR	R.F.	10/2/19	• Type 5 • Type 8 • Type 12 NO SIEVES COMPLETED.
9.	RFI	NUNA	Resolution of RFIs	As required	NUNA Quality System Manual	Disposition, Approved, closed and log updated	RFIs				HR	BW	10/1/19	R	R.F.	10/2/19	
10.	Clearing of works location completed • Snow / Ice / Water removal / Disposal	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				HR W	BW	10/1/19	R	R.F.	10/2/19	

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	***Description of Activities*** *(Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)*	***Functional Responsibility***	***Quality Control Activity***	***Verification Frequency***	***Reference Document(s)/ Controlling Procedure***	***Acceptance Criteria***	***Verification Document(s) (Reporting)***	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	**Type**	**Initials**	**Date** *(mm/dd/yy)*	***Comments***
11.	Excavate OG to subgrade elevation	NUNA	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				**HR** **W**	N/A		**HR**			
12.	Subgrade foundation preparation completed • Compaction • Proof rolling	NUNA / HATCH	Inspect	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR, Survey Report				**HR** **W**	N/A		**HR**			
Type 5 32 minus																	
13.	Type 5 32 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				**W**	N/A		**M**			
14.	Compaction of Type 5 32 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				**W**	N/A		**M**			
15.	Survey of Type 5 32 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				**HR** **W**	N/A		**R**			
Type 8 Jaw run 150 minus																	
16.	Type 8 150 minus Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				**W**	N/A		**M**			

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	*Description of Activities* (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	*Functional Responsibility*	*Quality Control Activity*	*Verification Frequency*	*Reference Document(s)/ Controlling Procedure*	*Acceptance Criteria*	*Verification Document(s) (Reporting)*	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	*Comments*
17.	Compaction of Type 8 150 minus Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W		N/A	M			
18.	Survey of Type 8 150 minus Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR W		N/A	R			
ROQ (Type 12)																	
19.	ROQ (Type 12) Placement completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Initialed ITP				W		11/12/18	M	R.F.	10/2/19	
20.	Compaction of ROQ (Type 12) Completed	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	QSR				W		11/12/18	M	R.F.	10/2/19	
21.	Survey of ROQ Placement	NUNA / HATCH	Inspect, Review	As Required	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	IFC Drawings, Hatch Spec. 221-078-0001 Rev 1	Survey Report				HR		11/15/18	R	R.F.	10/2/19	
22.	As built Survey	NUNA	Review	Continuous During Operations	IFC Drawings	IFC Drawings, Hatch Specifications	As built Drawings & Data				HR		11/15/18	HR	R.F.	10/2/19	
23.	Final Walk down	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Contract Requirements	Final Walkdown Attendees' Report				W		N/A	HR	R.F.	10/2/19	
24.	Deficiency List / Punch list generated	NUNA / HATCH	Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per contract Requirements	Item form punch list items resolved				HR		10/1/19	HR	R.F.	10/2/19	

ACTIVITY DATA							VERIFICATION DATA										
								Subcontractor			Nuna			Hatch			
Activity Number	*Description of Activities* (Describe in sequential order. Sequence must align with the execution sequence of the work to be performed.)	*Functional Responsibility*	*Quality Control Activity*	*Verification Frequency*	*Reference Document(s)/ Controlling Procedure*	*Acceptance Criteria*	*Verification Document(s) (Reporting)*	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	Type	Initials	Date (mm/dd/yy)	*Comments*
25.	NCR's closed.	NUNA / HATCH	Review of NCRs, Inspection of Work Area	Final Field Activity	IFC Drawings, Contract	As Per Requirements	NCR log cleared				HR		10/4/19	A	R.F.	10/2/19	Numbers GENERATED.
26.	As-built / Redline drawings completed.	NUNA	Review / Verify	Post Final Walk down	IFC Drawings, Contract	As-builts / Redlines to Reflect All Field Changes	As-builts / Redlines				HR		10/4/19	A	R.F.	10/2/19	
27.	Final Acceptance and ITP Sign off	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP (Exhibit 1.0)				HR		10/4/19	HR	R.F.	10/4/19	
28.	Inspection Acceptance and Sign-Off Form signed by Engineer of record.	NUNA / HATCH	Review / Verify	Post Final Walk down	IFC Drawings, Contract	NUNA QMS / PQP, code and client specifications	Initialed ITP, Acceptance of Completion of Construction Form				HR		10/01/19	HR			
29.	Turnover package completed and sent to client.	NUNA	Review / Verify	Post project completion	NUNA Quality System Manual, IFC Drawings, Contract	Contract, Code & applicable specifications.	Quality Management System Quality Control Turnover package.				HR		10/01/19	A			

Note: Nuna ITP Sign-Offs based on supporting documentation.

Comments:

ITP ISSUE APPROVALS

Stephen Nugent	Site Project Manager		April 17, 2019
Nuna Contractor Project Manager / Engineer *(Print)*	Title	Signature	Date *(mm/dd/yy)*
Bradford Watkin	QC Coordinator		April 17, 2019
Nuna Contractor Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

ITP CLOSEOUT AND WORK ACCEPTANCE APPROVALS

BRADFORD WATKIN	QC COORDINATOR		10/1/19
Nuna Contractor Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*
Ronny Franks	Hatch QA		10/2/19
HATCH Quality Manager / Representative *(Print)*	Title	Signature	Date *(mm/dd/yy)*

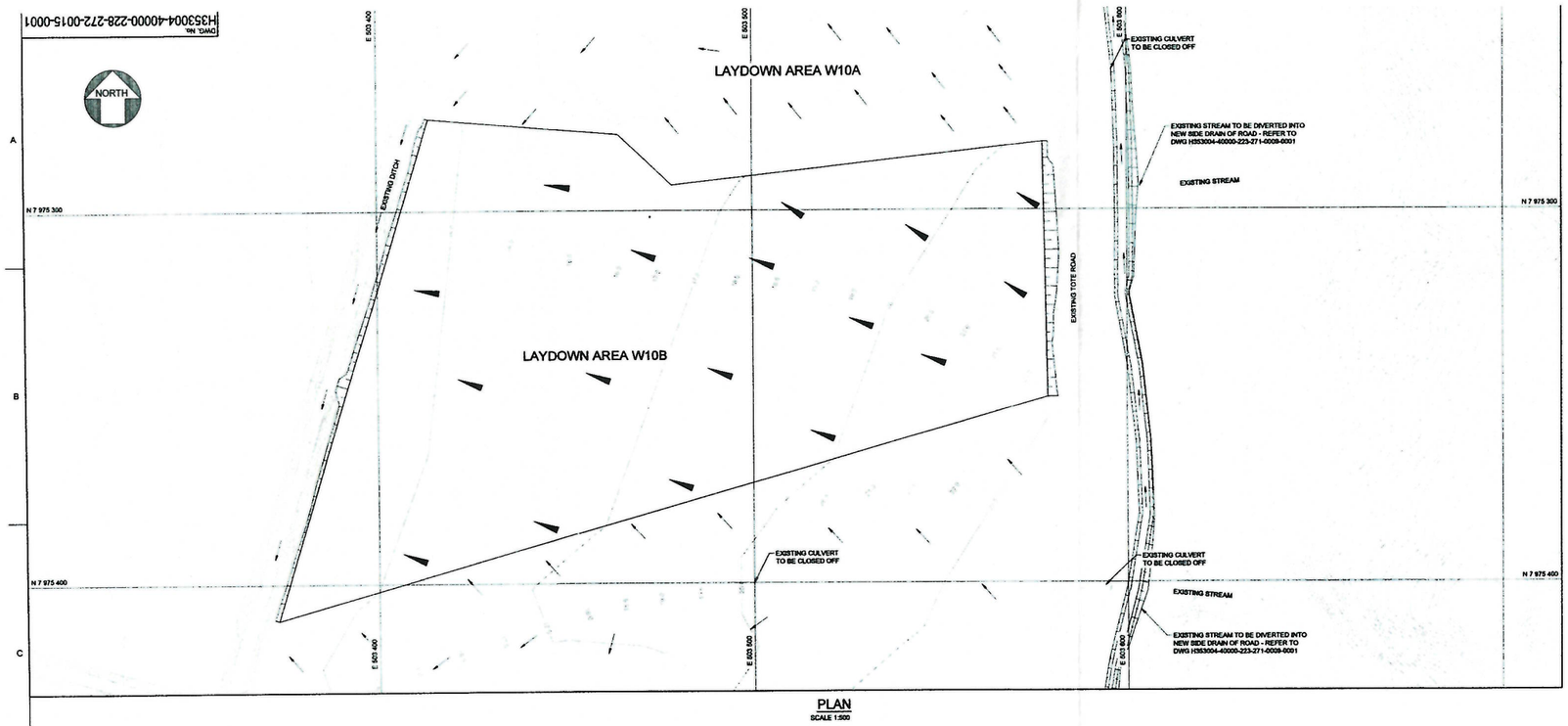
NUNA

NUNA EAST LTD

(Section 3)

Redline Drawings

DWG. No. H353004-40000-228-272-0015-0001



PLAN
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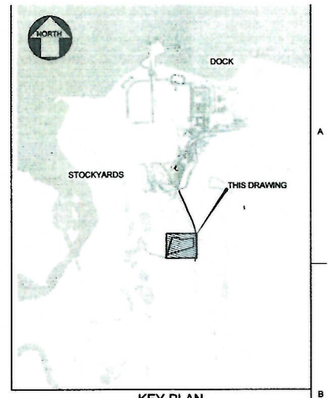


KEY PLAN
NTS

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.

LEGEND:

- OFF PAD FLOW DIRECTION
- ON PAD FLOW DIRECTION

NUNA EAST LTD

REDLINE DRAWING

CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.

REDLINE BY: ☑ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT

NAME/SIGN: BRADFORD WATSON COMPANY: NUNA

DATE OF AS-BUILT: 10/1/19 ☑ CHECK IF NO CHANGE

CHECKED BY:

NAME/SIGN: _____ COMPANY: _____

PERMIT TO PRACTICE
HATCH LTD.
Signature _____
Date 2018-09-14
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

DRAWING No.	DRAWING TITLE
H353004-40000-223-271-0009-0001	TOTE ROAD DRAINAGE UPGRADE
H353004-40000-221-271-0008-0001	LAYDOWN AREA W10B - LAYOUT AND SECTIONS
H353004-40000-221-294-0002-0001	STANDARD DRAWING - EARTHWORKS & DRAINAGE DETAILS

REFERENCE DRAWINGS

Released for Use

REG. PROFESSIONAL

FOR CONSTRUCTION

THIS DRAWING HAS BEEN PREPARED BY HATCH LTD. PURSUANT TO THE AGREEMENT BETWEEN HATCH AND ITS CLIENT AND IS SUBJECT TO THE TERMS AND CONDITIONS OF THAT AGREEMENT. NEITHER HATCH NOR THE CLIENT MAKES ANY WARRANTIES OR GUARANTEES OR ASSUMES ANY LIABILITIES IN RELATION TO ANY REUSE OF THIS DRAWING OR ITS CONTENTS OTHER THAN THE INTENDED PURPOSE STATED IN HATCH'S AGREEMENT WITH THE CLIENT. ANY REUSE OF THIS DRAWING OR ITS CONTENTS IS AT THE SOLE RISK OF THE USER. THE CONTENTS OF THIS DRAWING ARE THE PROPERTY OF HATCH AND/OR ITS CLIENTS AS INSTRUMENTS OF SERVICE. PERMISSION TO USE THIS DRAWING OR ITS CONTENTS SHALL BE RESTRICTED TO USE BY HATCH AND ITS CLIENTS IN CONNECTION WITH THE PROJECT AND SHALL NOT BE COPIED, REPRODUCED, PUBLISHED OR MADE AVAILABLE TO ANY THIRD PARTY FOR ANY PURPOSE WITHOUT THE EXPRESS WRITTEN PERMISSION OF HATCH. ANY UNAUTHORIZED USE, COPYING OR MODIFICATION OF THIS DRAWING, OR ANY PART OF IT, IS AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO HATCH. THE USER SHALL INDEMNIFY AND HOLD HARMLESS HATCH AND ITS AFFILIATES AGAINST ALL CLAIMS, COSTS, LOSSES, AND DAMAGES ARISING OUT OF OR IN CONNECTION WITH ANY UNAUTHORIZED REUSE OF THIS DRAWING OR ITS CONTENTS.

No.	DESCRIPTION	BY	CHK'D	DATE
1	EDC STAMP REMOVED	KvdM	FH	20/09/2018
0	APPROVED FOR CONSTRUCTION	GPM	FH	09/04/2018

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	GP Meades	NR	27/03/2018
DESIGNER	I BARNARD	NR	27/03/2018
CHECKER	F HUGO		2018-09-14
DESIGN COORD.	R GOOSEN		2018-09-13
RESP. ENG.	R HALIM		2018-09-14
LEAD DISC. ENG.	A GROBBELAAR		2018-09-13
AREA LEAD	V LAVRIC		2018-09-13
ENG. MANAGER	D STRANGER		
AREA MANAGER	T ATIBA		

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

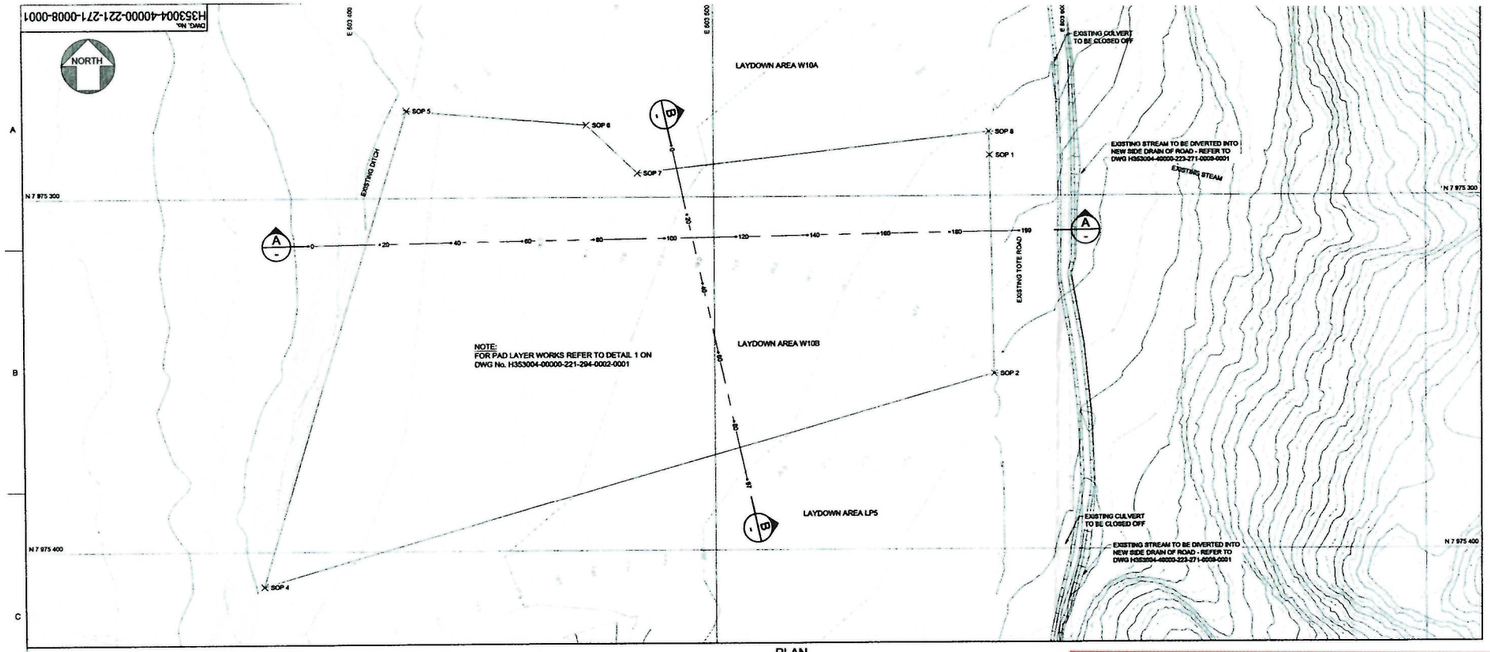
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
LAYDOWN AREA W10B
DRAINAGE PLAN

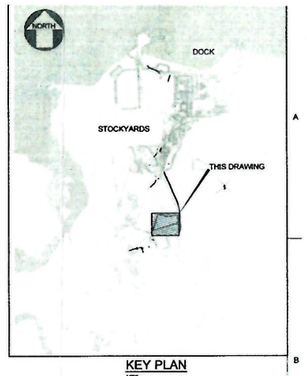
SCALE 1:500 OR AS NOTED
DWG. No. H353004-40000-228-272-0015-0001
REV 1
SHEET SIZE: E

$USERNAME$
$DATE$

DWG. No. H353004-40000-221-271-0008-0001



PLAN
SCALE 1:500



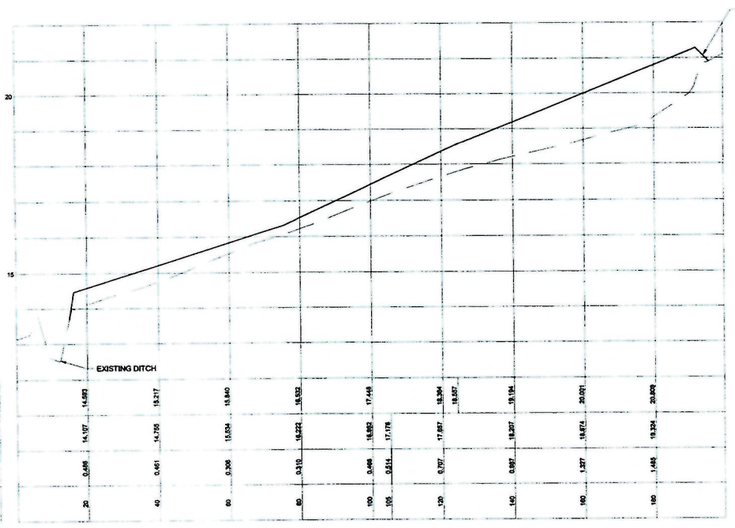
KEY PLAN
NTS

NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2018)
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
5. REFER TO DETAIL 1 ON DRAWING No. H353004-00000-221-294-0002-0001 FOR TYPICAL LAYER WORKS DETAILS.

LAYDOWN W10B SETTING OUT COORDINATES

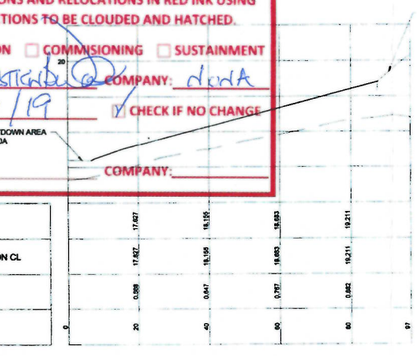
POINT	E	N	LEVEL
SOP 1	503 577.487	7 975 111.431	20.709
SOP 2	503 578.537	7 975 049.845	22.362
SOP 3	503 373.040	7 974 990.273	13.900
SOP 4	503 373.048	7 974 990.264	13.900
SOP 5	503 413.828	7 975 124.533	14.700
SOP 6	503 464.293	7 975 120.340	16.400
SOP 7	503 478.886	7 975 108.705	16.788
SOP 8	503 577.375	7 975 118.043	20.309



SCALES:
Horizontal 1:500
Vertical 1:50

DATUM 12.000											
CENTRE LINE (CL)	14.983	15.217	15.343	15.552	17.448	18.264	18.587	19.194	20.021	20.809	
GROUND LEVELS ON CL	14.187	14.755	15.034	15.242	16.950	17.178	17.897	18.307	18.674	19.324	
DEPTH OF FILL	0.496	0.461	0.309	0.310	0.498	0.814	0.707	0.887	1.347	1.485	
DISTANCE (m)	20	40	60	80	100	105	120	140	160	180	

SECTION A-A



DATUM 16.000						
CENTRE LINE (CL)	17.407	18.155	18.683	19.211		
GROUND LEVELS ON CL	17.407	18.155	18.683	19.211		
DEPTH OF FILL	0.000	0.047	0.797	0.882		
DISTANCE (m)	0	20	40	60	80	97

SECTION B-B

NUNA
NUNA EAST LTD
REDLINE DRAWING
CHANGES, ADDITIONS, DELETIONS AND RELOCATIONS IN RED INK USING STANDARD SYMBOLS, DELETIONS TO BE CLOUDED AND HATCHED.
REDLINE BY: ✓ CONSTRUCTION ☐ COMMISIONING ☐ SUSTAINMENT
NAME/SIGN: BRADFORD WORTHINGTON COMPANY: NUNA
DATE OF AS-BUILT: 10/1/19 ✓ CHECK IF NO CHANGE
CHECKED BY:
NAME/SIGN: COMPANY:

PERMIT TO PRACTICE
HATCH LTD.
Signature
Date
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

H353004-40000-223-271-0008-0001	TOTE ROAD DRAINAGE UPGRADE - PLAN AND PROFILE
H353004-40000-221-271-0010-0001	LAYDOWN AREA LP5 - LAYOUT AND SECTIONS
H353004-40000-221-271-0007-0001	LAYDOWN AREA 110A - LAYOUT AND SECTIONS
H353004-40000-228-272-0015-0001	LAYDOWN AREA W10B - DRAINAGE PLAN
H353004-40000-221-294-0002-0001	STANDARD DRAWING - EARTHWORKS & DRAINAGE DETAILS
DRAWING No.	DRAWING TITLE

REFERENCE DRAWINGS

Released for Use

REG. PROFESSIONAL

FOR CONSTRUCTION

No.	DESCRIPTION	BY	CHK'D	DATE
1	EDC STAMP REMARKED	KwSM	FH	16/08/2018
0	APPROVED FOR CONSTRUCTION	GPM	FH	09/04/2018

REVISIONS

HATCH

DRAFTSPERSON	GP MEADES	NR	27/03/2018
DESIGNER	I BARNARD	NR	27/03/2018
CHECKER	F HUGO		2018-09-20
DESIGN COORD.	R GOOSEN		2018-09-20
RESP. ENG.	R HALIM		2018-09-20
LEAD DISC. ENG.	A GROBBELAAR		20 September 2018
AREA LEAD	V LAVREC		2018-09-20
ENG. MANAGER	D STANGER		
AREA MANAGER	T ATIBA		20 Sept 2018
ROLE	NAME	SIGNATURE	DATE

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER PROJECT

PORT SITE
LAYDOWN AREA W10B
PLAN AND SECTIONS

SCALE 1:500 (25 x 45 NOTED)
DWG No. H353004-40000-221-271-0008-0001
REV 1
SHEET SIZE E

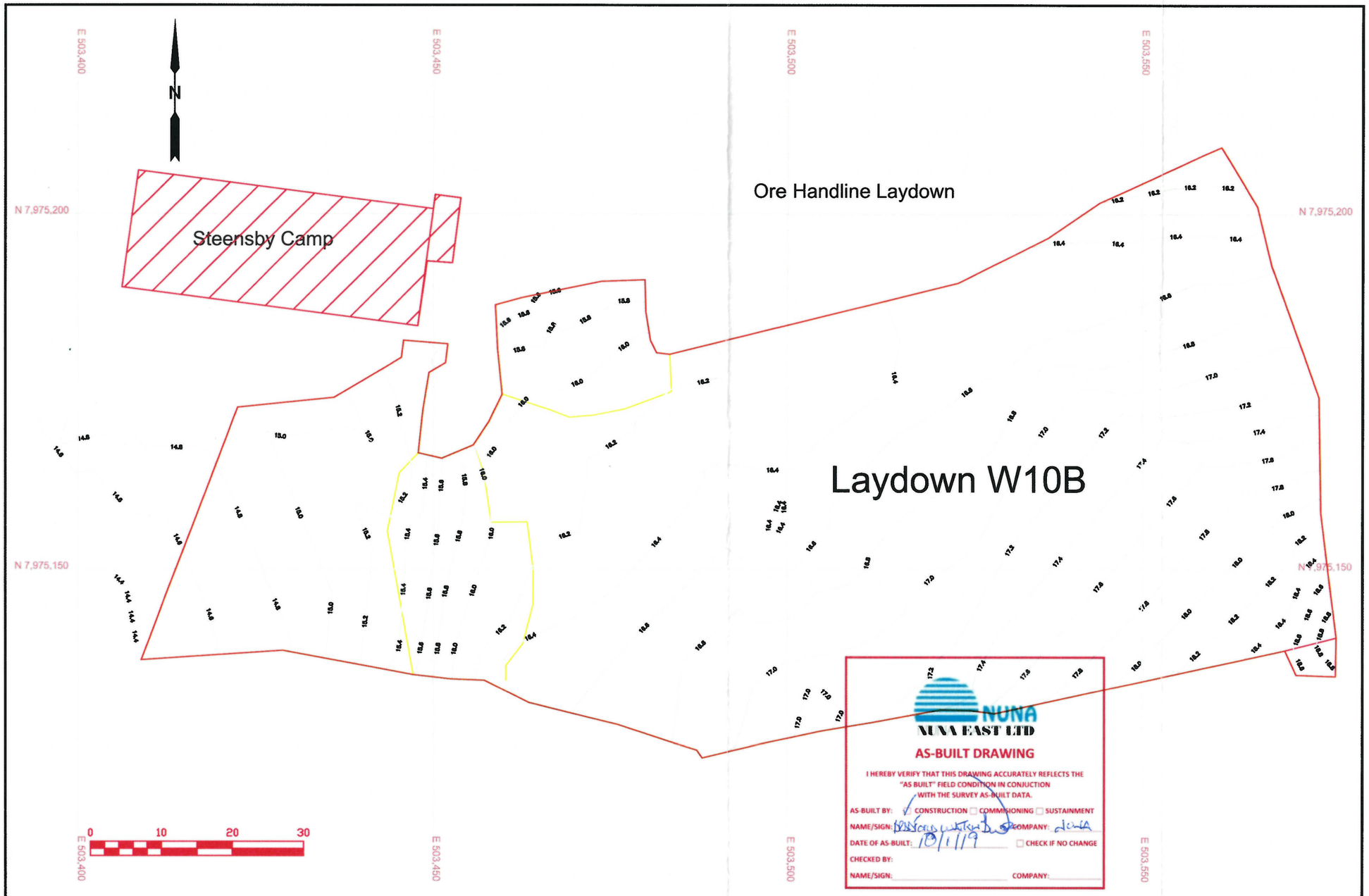
1 2 3 4 5 6 7 8

NUNA

NUNA EAST LTD

(Section 4)

Survey Data



NOTES:
Source: Q1 ROQ
Original ground not surveyed
Total disturbed area 8,705 Sq. meters
(previously reported as "New Laydown")

Survey shots limited due to snow &
Material storage, modules etc

CLIENT: Baffinland Iron Mines Corporation

PROJECT: Early Earthworks Project , Baffin Island, Nunavut

PREPARED BY:
Nuna East Ltd.
9839 - 31 Avenue
Edmonton, AB
T6N 1C5

DRAWN BY: mc

SCALE: barscale

DATE: Dec. 12, 2017

DRAWING TITLE:
Milne Port Laydown W10B Base Course Asbuilt Nov. 13, 2017

DRAWING NAME (YYMMDD): CC001-0006-QCD-MPLD W10B Base Course171113.dwg

Mary River Expansion Project
Baffin - Milne Port Earthworks H353004-CC006
Job File CC006-0016A
W10B Laydown

ROQ Base Course AS-Built

Point Number	Northing	Easting	Elevation	Description
KM02N	7975363.343	503767.344	52.573	Rebar KM02N Top of Quarry Road Hill
2317201	7975209.516	503561.199	16.024	ROQ
2317202	7975206.065	503555.979	16.127	ROQ
2317203	7975202.23	503557.235	16.255	ROQ
2317204	7975198.644	503547.594	16.336	ROQ
2317205	7975201.593	503544.068	16.198	ROQ
2317206	7975196.606	503536.8	16.378	ROQ
2317207	7975192.825	503537.266	16.491	ROQ
2317208	7975190.231	503524.144	16.486	ROQ
2317209	7975187.246	503523.838	16.509	ROQ
2317210	7975182.113	503533.248	16.524	ROQ
2317211	7975178.686	503524	16.493	ROQ
2317212	7975174.862	503511.958	16.364	ROQ
2317213	7975172.846	503505.348	16.29	ROQ
2317214	7975167.175	503505.327	16.449	ROQ
2317215	7975158.556	503506.097	16.602	ROQ
2317216	7975156.312	503505.531	16.591	ROQ
2317217	7975156.725	503492.779	16.596	ROQ
2317218	7975162.747	503491.137	16.44	ROQ
2317219	7975168.107	503488.66	16.34	ROQ
2317220	7975169.141	503484.91	16.3	ROQ
2317221	7975174.969	503483.642	16.204	ROQ
2317222	7975180.41	503481.524	16.105	ROQ
2317223	7975180.193	503483.424	16.147	ROQ
2317224	7975182.125	503480.665	16.051	ROQ
2317225	7975186.141	503479.995	15.862	ROQ
2317226	7975190.669	503479.876	15.66	ROQ
2317227	7975190.46	503473.747	15.678	ROQ
2317228	7975189.179	503468.016	15.743	ROQ
2317229	7975188.179	503462.634	15.508	ROQ
2317230	7975187.14	503458.857	15.387	ROQ
2317231	7975180.917	503459.161	15.778	TOE
2317232	7975180.032	503465.944	15.855	ROQ
2317233	7975172.399	503466.555	16.1	ROQ
2317234	7975166.433	503466.091	16.141	ROQ
2317235	7975174.568	503459.817	15.924	TOE BERM
2317236	7975170.79	503457.963	15.937	TOE BERM

Mary River Expansion Project
Baffin - Milne Port Earthworks H353004-CC006
Job File CC006-0016A
W10B Laydown

)4-CC006

2317237	7975167.474	503455.743	16	TOE BERM	17.051	ROQ
2317238	7975165.609	503451.292	15.59	TOE BERM	17.026	ROQ
2317239	7975166.364	503447.979	15.292	TOE BERM	16.965	ROQ
2317240	7975172.405	503448.637	15.349	TOE BERM	16.813	ROQ
2317241	7975177.613	503449.465	15.284	TOE BERM	16.612	ROQ
2317242	7975179.328	503447.228	15.325	ROQ	16.516	ROQ
2317243	7975170.361	503444.035	15.13	ROQ	16.324	ROQ
2317244	7975163.553	503445.224	15.041	ROQ	16.326	ROQ
2317245	7975158.438	503444.182	15.165	ROQ	16.181	ROQ
2317246	7975155.365	503443.56	15.271	ROQ	16.209	ROQ
2317247	7975155.99	503450.552	15.584	ROQ	16.237	ROQ
2317248	7975156.37	503456.145	15.928	ROQ	16.229	ROQ
2317249	7975156.672	503458.222	16.005	ROQ	16.378	ROQ
2317250	7975159.908	503457.746	15.992	ROQ	16.295	ROQ
2317251	7975163.681	503457.185	16.019	ROQ	16.185	ROQ
2317252	7975156.727	503463.312	16.084	ROQ	16.108	ROQ
2317253	7975150.025	503464.182	16.208	ROQ	16.133	ROQ
2317254	7975144.936	503464.135	16.263	ROQ	16.157	ROQ
2317255	7975139.522	503462.707	16.416	ROQ	16.332	ROQ
2317256	7975138.561	503459.801	16.36	ROQ	16.544	ROQ
2317257	7975138.532	503452.644	15.992	ROQ	16.376	ROQ
2317258	7975137.863	503446.735	15.47	ROQ	16.414	ROQ
2317259	7975135.197	503447.223	15.58	TOE BERM	16.454	ROQ
2317260	7975134.597	503452.515	15.982	TOE BERM	16.563	ROQ
2317261	7975134.415	503457.292	16.275	TOE BERM	16.588	ROQ
2317262	7975136.487	503460.308	16.431	TOE BERM	16.655	ROQ
2317263	7975131.283	503463.566	16.437	TOE BERM	16.831	ROQ
2317264	7975129.774	503469.631	16.609	TOE BERM	16.706	ROQ
2317265	7975128.211	503476.087	16.691	TOE BERM	16.703	ROQ
2317266	7975125.955	503483.031	16.783	TOE BERM	16.548	ROQ
2317267	7975124.643	503487.221	16.875	TOE BERM	16.575	ROQ
2317268	7975123.538	503487.992	16.933	TOE BERM	16.764	ROQ
2317269	7975125.523	503496.243	17.079	TOE BERM	16.738	ROQ
2317270	7975127.302	503504.604	16.94	TOE BERM	16.578	ROQ
2317271	7975128.607	503512.292	17.196	TOE BERM	16.782	ROQ
2317272	7975130.313	503521.687	17.384	TOE BERM	16.752	ROQ
2317273	7975130.214	503525.888	17.532	TOE BERM	16.568	ROQ
2317274	7975129.77	503529.242	17.658	TOE BERM	16.485	ROQ
2317275	7975132.239	503528.783	17.549	ROQ	16.281	ROQ
2317276	7975133.092	503524.747	17.292	ROQ		
2317277	7975135.624	503523.747	17.269	ROQ		
2317278	7975134.467	503515.844	17.103	ROQ		
2317279	7975134.456	503512.521	17.09	ROQ		

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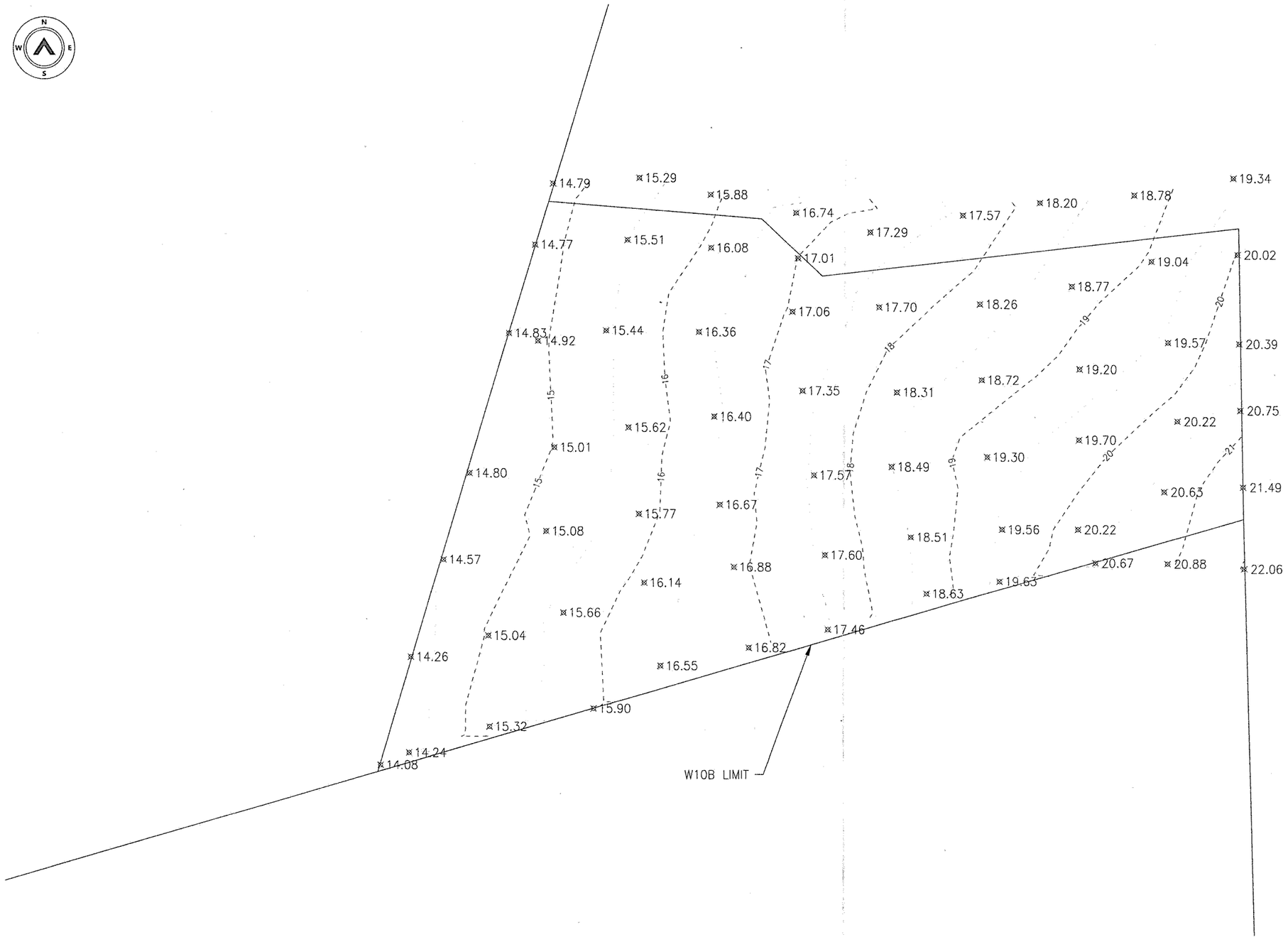
(Section 4)

Survey Data
Allnorth Supplied Data



Date: 2018/11/02 | User: Alex Beaucage | File: C:\18SJ0001 Baffinland\Drawings\181102 W10B ROQ ASBUILT | Layout: 'B' Landscape (Horizontal Title) | Paper Size: 558.8mm x 431.8mm

REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

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REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
0	18/11/02	ISSUED FOR INFORMATION	AJB	-

CLIENT:

Allnorth

TITLE: **W10B TOP OF ROQ ASBUILT**

PROJECT: **18SJ0001-BAFFINLAND**

CLIENT NO:	-	DRWN:	AJB	DATE:	18/11/02
PROJECT NO:	-	DSGN:	-	DATE:	-
DRAWING SIZE:	ANSI "B"	CHKD:	-	DATE:	-
SCALE:	1:1000	APVD:	-	DATE:	-

DWG NO: **181102-AJB-001**

REV: **0**

Cut/Fill Report

Generated: 2018-11-02 11:20:17

By user: abeaucage

Drawing: C:\18SJ0001 Baffinland\Drawings\C:\18SJ0001 Baffinland\Drawings\181102 W10B ROQ ASBUILT.dwg

Volume Summary

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W10B ROQ Volume.1	bounded	1.000	1.000	16933.24	166.68	8699.18	8532.50<Fill>

Totals

	2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
Total	16933.24	166.68	8699.18	8532.50<Fill>

* Value adjusted by cut or fill factor other than 1.0

(Section 5)

No Sieves / Aggregate Statements of Compliance Available

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(Section 6)

No Request for Information (RFIs) Generated

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(Section 7)

Non-Conformance Reports (NCRs)

NON-CONFORMANCE REPORT LOG

Project: CC006 **Date:** 10-1-19

Area: Mary River Expansion - Milne Port **Contract/Work Pkg. No.:** CC006-0016A W10B

CWP#: N/A **Originator:** Bradford Watkin

NCR No.	Description	Disposition	Date.	Rectified	Date
	No NCR's generated for this work package				

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(Section 8)

Communications:

Engineering Change Notices (ECNs), Site Instructions (SIs), Contract Variation Request (CVRs), E-mails

Contract Variation Request

Contract No.:	H353004-CC006	**Date:**	2018-09-19
Contractor:	Nuna East Ltd.	**CVR No.:**	H353004-CC006-0015-CVR R0
Contract Title:	Mary River Expansion Stage 3 Site Services	**Reference SI/RFI No.:**	

Current Condition and Mitigation Steps:
Nuna has been requested to provide pricing for the completion of the earthworks required to construct Laydown W10B.

Proposed Change:
Nuna is submitting pricing for the construction of the earthworks for Laydown W10B as per the provided drawing H353004-40000-221-273-0001-0001 - General Arrangement and H353004-40000-221-271-0008-0001 - W10B Laydown Plan. A cost estimate for the earthworks has been attached. Pricing for indirects is already included in the original scope of work.

Justification:
As a requested by Hatch

Impact on Cost and Schedule:
If the change is accepted, the cost of the contract will increase by and the impact on the schedule will be 0 **days**. The requested method of payment is **Time and Material**.

☒ Additional information detailing the change in cost is attached:

- Cost Estimate
- H353004-40000-221-271-0008-0001 - W10B Laydown Plan
- H353004-40000-221-273-0001-0001 - General Arrangement
- H353004-00000-221-294-0002-0001_0_V2 - Typical Earthworks Drainage

Notes:
1. Any variation to the Contract arising from this request will be managed in accordance with the terms and conditions of the Contract.
2. Contractor is not to proceed with any work until authorized to do so.
3. The response to this request will be returned by Hatch to the Contractor via the Contractor portal

Action Record	Name and Position	Signature	Date
Contractor: Initiated by:	**Chris Petrovic** **Project Manager**		
Hatch: Received by:			

☐	The requested change is not accepted as a change to the Contract.
☐	The requested change is valid. A Site Instruction or Contract Variation with the agreed impact on cost and schedule will be issued to the Contractor.

Hatch: Verified By:			

Site Instruction

Contract No.:	**H353004-CC006**	**Date:**	2018-09-18
Contractor:	Nuna East Ltd.	**SI No.:**	H353004-CC006-460-424-0011
Contract Title:	Remaining Early Earthworks	**Reference Doc No.:**	

Site instruction requirements (check one):

(A) ☒ Proceed with the urgent work and submit a Contract Variation Request (if applicable).

(B) ☐ Submit a quotation by _____ for the work requested and await Hatch instruction to proceed.

(C) ☐ No additional cost or schedule impact. Proceed with the work.

(D) ☐ Proceed with the work with a maximum cost impact of $ CAD; schedule impact of 0 (days) and submit your quotation (if applicable)

Additional details:

Nuna is instructed to proceed with mobilizing crews to complete the stormwater diversion ditches work as per the contract including drawings H353004-40000-228-271-0002-0001, H353004-40000-228-271-0003-0001, H353004-40000-228-271-0004-0001. Nuna is to provide a CVR for additional costs required to execute the work.

Nuna is also instructed to complete the construction of the earthworks for Laydown W10B as per drawing H353004-40000-221-273-0001-0001 - General Arrangement and H353004-40000-221-271-0008-0001 - W10B Laydown Plan. Nuna is to provide a CVR for the costs required to execute the work.

Notes:

1. Any variation to the Contract arising from this instruction will be managed in accordance with the conditions of the Contract.
2. The response to this Site Instruction must be returned when and as required above to Hatch via the Contractor portal.

Action Record	Name and Position	Signature	Date
Initiated by:	Fanus Van Biljon Area Manager		19/9/2018
Hatch/Client: Authorized by:	Fay Pitman Area Manager		19/09/2018
Hatch: Verified by:			

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(Section 9)

Land Disturbance Forms

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.		**Department:**	Projects
Date:	10/11/18	**Name/Position:**	**Darko Filipic/Project Coordinator**
Project location:	Port Site		Laydown W10A/W10B
Project Duration:	Start 10/19/18	Finish	11/2/18

Project Details

GPS Coordinates: Lat: N+7975100 Long: E+503500 (NAD 83)

Land disturbance area: 31432 m2

Type of disturbance (Leveling of esker, placement of fill, drainage ditching per design)

Detailed description of planned work.

Levelling of existing ground with dozer. Placement of ROQ and crushed fill. Grading for drainage as per design.

Check List

1	**Has the Environmental Concerns in section 2.3.1. of the Environmental Protection plan been reviewed** - If No, please review the list of concerns on page 4 of this form.	Yes
2	**Will work be completed within 31m of the High Water Mark of any stream or water body?.** - If Yes, please contact the Environment Department.	No
3	**Is there a stream or waterbody >31m of the work site?.** - If Yes, Include a detailed description of the Sediment and Erosion Control Measures on Page 3.	No
4	**Has the area been cleared by Archaeology?.** - If No or Unknown, Please contact the Environment Department.	Yes
5	**Will the land disturbance occur between May 31 and August 31?.** - If Yes, An Active Migration Bird Survey is required prior to start.	No

Approval

Approved by: Bill Bowden Position: Environment Superintendent

Approved on: 10/22/18

Valid Unit:

Comments and recommendations by the Environment Department:

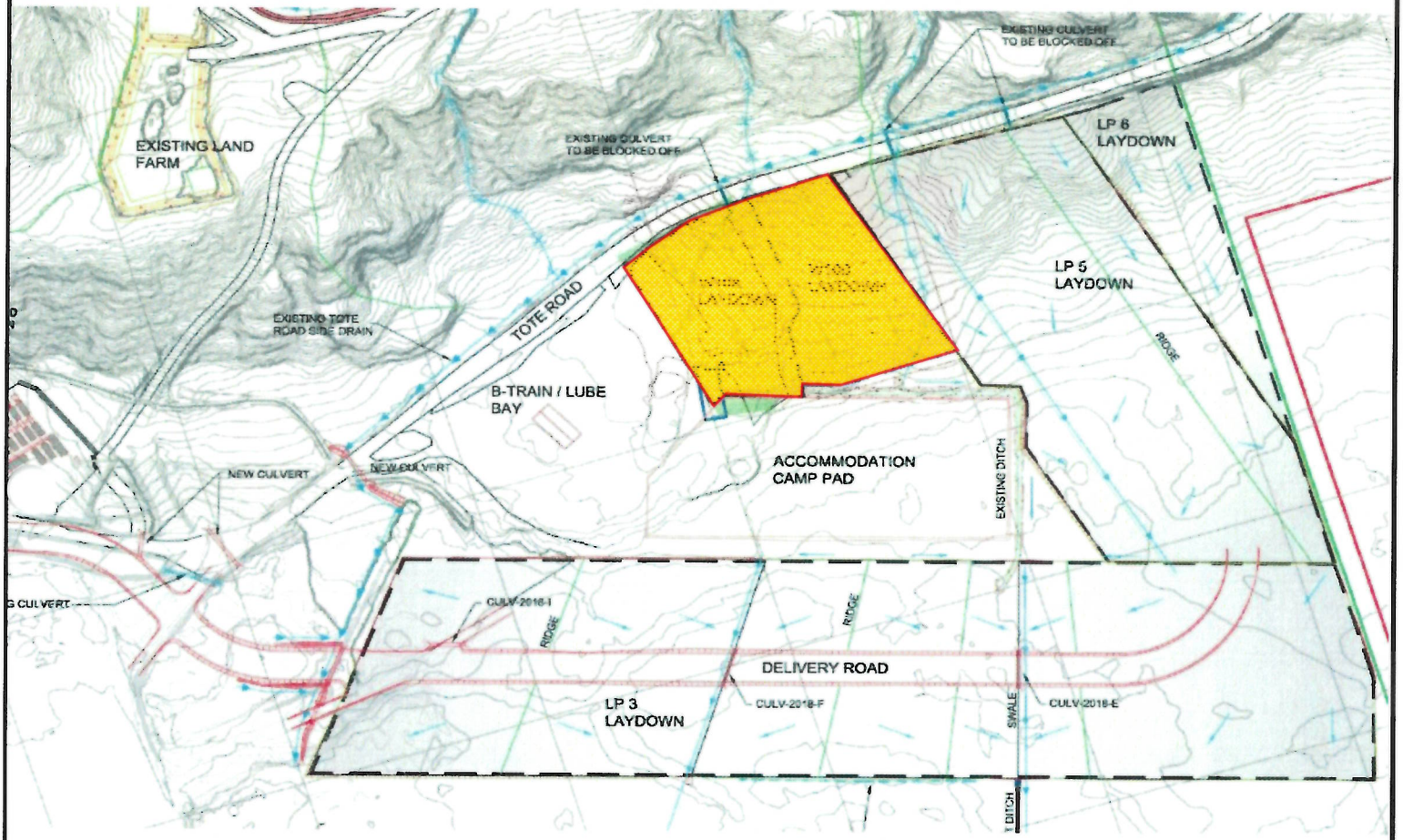
Ensure drainage systems above are diverted so that no water runs underneath the laydown come spring.
Remove loose sediments and soil prior to melt

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	10/11/18		
Project location:	Port Site		

Design/Engineering Drawing



See Dwg# H353004-40000-221-271-0007-0001 - W10A Laydown Plan
H353004-40000-221-271-0008-0001 - W10B Laydown Plan
H353004-40000-228-271-0014-0001 - Laydown W10A Drainage Plan
H353004-40000-228-271-0015-0001 - Laydown W10B Drainage Plan

Baffinland

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	10/11/18		
Project location:	Port Site		

Sediment and Erosion Control Measures

Please give a detailed discription of the run-off control measure which will be put in place.
Include all water bodies and streams, slope direction and materials to be used.

- Silt fence will be installed at the discharge location.
- Screens will be placed on the intake hoses
- Culvert at tote road will be blocked to divert flow away from area involved.
- If tote road ditch needs to be fixed up to help water flow, it will be done.
- There is an existing ditch that runs from the Tote Road, along the perimeter of the W10A Laydown and the 380-man Camp Pad. The drainage plan is designed to drain into this ditch.

Baffinland

LAND DISTRURBANCE FORM

Document # BAF-PH1-830-P16-0008, Section 2.3

Form No.	0	**Department:**	Projects
Date:	10/11/18		
Project location:	Port Site		

2.3.1 ENVIRONMENTAL CONCERN

2.3.1 ENVIRONMENTAL CONCERN

The Arctic is a fragile environment where the recovery of vegetation within this region is slow. Ground disturbance shall be minimized to protect archaeological resources, wildlife habitats, sensitive landforms, such as ice-rich permafrost features, and prevent erosion and the movement of sediment into watercourses and water bodies. Various permits, licences and approvals issued to Baffinland are specific in regards to ground disturbances and outline the necessary protection measures that need to be taken to minimize this aspect of the Project.

The following measures are to be implemented to minimize ground disturbance:

- Equipment and personnel must stay on existing roads and trails
- Approval for new areas of disturbance must be approved by the Operations Manager
- Rutting (furrow creation) shall be avoided on ground surfaces; overland travel of equipment or vehicle will be suspended when rutting occurs
- All camps shall be located on gravel, sand or other durable land
- No materials shall be stored on the surface ice of streams
- No material shall be removed from below the ordinary high water mark of any stream
- Greywater sumps must be located a distance of at least thirty (30) metres above the ordinary high water mark of any water body

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(Section 10)

Quality Control Reports

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Baffinland
HATCH

NUNA East Limited Quality Department
Quality Surveillance Inspection Acceptance and Sign-off Report

Project:	Mary River Expansion Stage 3 Early Earthworks Project
Description of Item/Area Inspected:	W10B ROCK PLACEMENT
Date of Inspection:	OCTOBER 31, 2018
Parties Present at Inspection	AINWORTH SURVEY

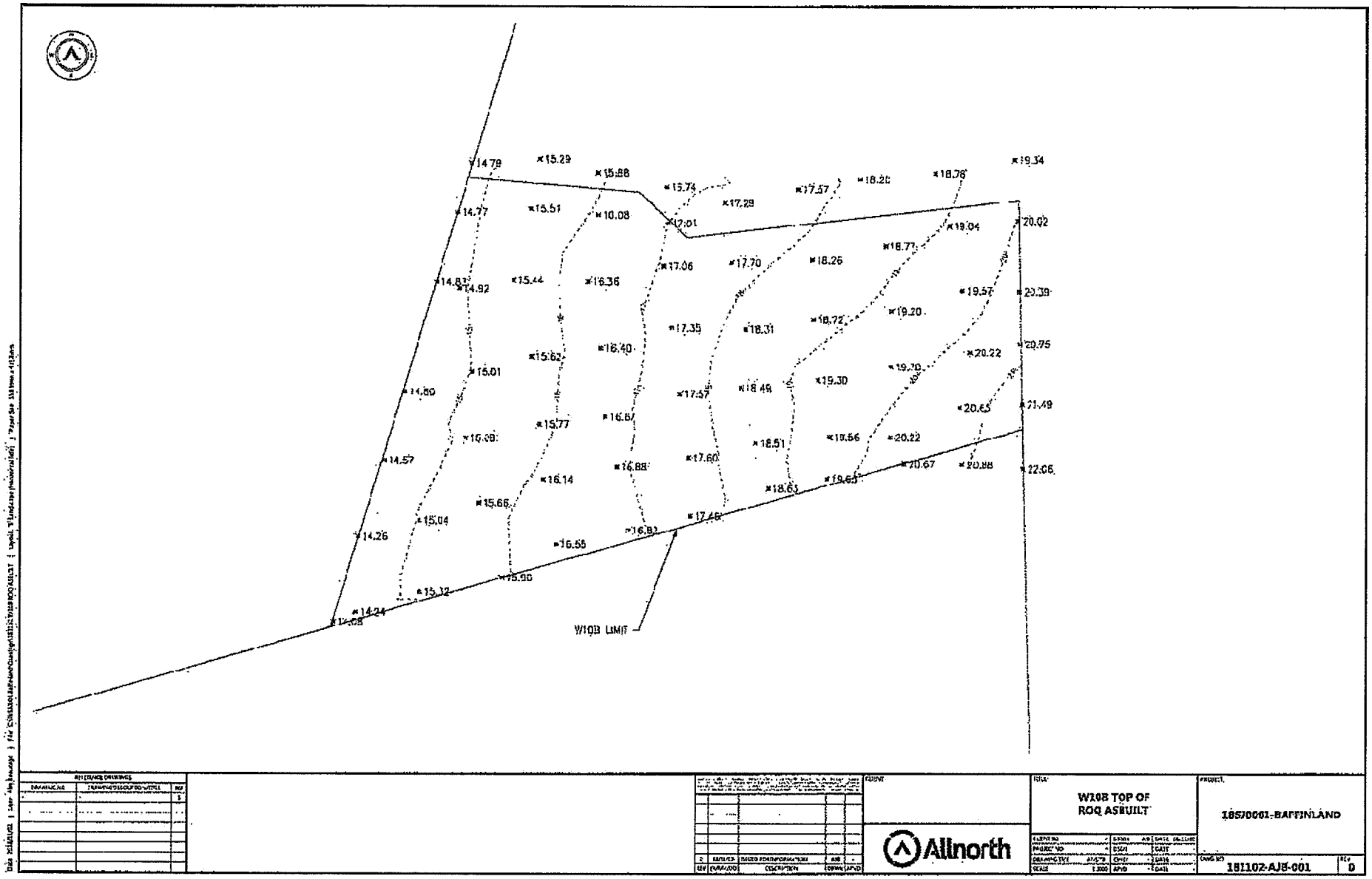
Comments:

ROCK FILL REFLECTED IN SURVEY AS-BUILT.

Permission to Proceed:

The area and instruction described above is acceptable, the contactor is released to proceed with construction.

	Name	Signature	Date
NEL Representative:	BRANDON VANHART		11/12/2018
HATCH Representative:	Kevin Campbell		Nov 12/18



REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION	REV
		5

REV	DATE/DD	DESCRIPTION	DRWN	APVD
2	18/11/03	ISSUED FOR INFORMATION	AJB	-

CLIENT

Allnorth

TITLE: W10B TOP OF ROQ ASBUILT

PROJECT: 18570001-BAFFINLAND

DWG NO: 181102-AJB-001 REV: 0

Cut/Fill Report

Generated: 2018-11-02 11:20:17

By user: abeaucage

Drawing: C:\18SJ0001 Baffinland\Drawings\C:\18SJ0001 Baffinland\Drawings\181102 W10B ROQ ASBUILT.dwg

Volume Summary

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W10B ROQ Volume.1	bounded	1.000	1.000	16933.24	166.68	8699.18	8532.50<Fill>

Totals

	2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
Total	16933.24	166.68	8699.18	8532.50<Fill>

* Value adjusted by cut or fill factor other than 1.0

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(Section 11)

Signature Log

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Mine Port)			Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN		
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC		
ALLNORTH	Materials technician	Kenny MacRae		
Hatch	Hatch Civil	Stephane Grenier		
NUNA EAST	PROJECT COORDINATOR	BRANDON UPGUMART		
NUNA EAST	PROJECT COORDINATOR	RYAN [illegible]		
HATCH	FIELD ENG. MANAGER	GLEN PEACE		
NUNA EAST	SITE SUPERINTENDENT	ANTHONY STEWART		
NUNA EAST	SITE SUPERINTENDENT	HARVEY BLOVIN		
Hatch	Hatch Super	Roger Landry		
Nuna East	Project Manager	Stephen Nugent		
HATCH	CONSTRUCTION SUPERINTENDENT	ROB BAKER		
BVJV	Project Engineer	David Garcia		
Hatch	QA Manager	Ronny Franken		

NUNA EAST LTD	SIGNATURE LOG	Exhibit 7.0 Revision 0 Page 1 of 1

Project No.: CC006

Project:	Mary River Expansion – Baffinland Iron Ore Mines (Milne Port)			Code:	N/A
Contractor:	Nuna East Ltd.	Contract/Job No.:	CC006 – All Contract Jobs		
Area/System/CWP No.:	All Areas/Systems/CWPs	ITP No.:	All ITPs		

Company	Job Title	Name (Print)	Initials	Signature
NUNA EAST	QA/QC COORDINATOR	BRADFORD WATKIN		
NUNA EAST	PROJECT COORDINATOR	DARKO FILIPIC		
ALLNORTH	Materials technician	Kenny MacRae		
Hatch	Hatch Civil	Stephane Grant		
NUNA EAST	PROJECT COORDINATOR	BRANDON UNGUHART		
NUNA EAST	PROJECT COORDINITOR	RYAN [illegible]STER		
HATCH	FIELD ENG. MANAGER	GLEN PEACE		
Hatch	Construction Super	Dean Moffett		
Hatch	Construction Super	Roger Landry	R.L	

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(Section 12)

Deficiency/Punchlist

DEFICIENCY / PUNCH ITEMS RECORD

Project Name: Mary River Expansion	**Walkdown Date (mm/dd/yy):** N/A	**Area Number:** N/A
Area Name or Area Description: Laydown Area W10B	**Job Number:** CC006-0016A	**Plant Number:** N/A

PURPOSE:

1. **For modules and vendor packages, open punch items are listed at release for shipment.**
2. **As part of a final walkdown package, this form lists the Contactor's open punch items that are transferred into the Nuna Turnover database**
3. **This form is used to capture Punch Items during Final Walkdown**

Tag Number	Description of Deficiency / Punch Item	Cat.	Discipline	Originator	Responsible for resolution	Vendor Y/N	Remarks
	No deficiencies						

Punch Item Categories captured during Final Walkdown: A, B or C. A- To be rectified before final acceptance. B- To be addressed at a later time. C- Acceptable to be As-Built

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(Section 13)

Acceptance of Completion of Construction Form

ACCEPTANCE OF COMPLETION OF CONSTRUCTION

DECLARATION

NOTE: This declaration shall be completed and signed by the person responsible, in whole or part, for the acceptance of the Quality Control Turnover documentation for the construction, installation, testing and inspection of the project indicated below.

1. **Owner of the facility:** Baffinland Iron Ore Mines
2. **Contractor:** Nuna East Limited
3. **Construction:** Laydown Pad
4. **Location:** Mary River Milne Port Site
5. **Description:** Laydown Area W10B – Project Number: CC006

STATEMENT OF COMPLIANCE

I, the undersigned, declare that the described project complies in all respects with the regulations and codes for construction, installation, testing and inspection of the above listed construction and all applicable turnover documentation has been forwarded to and accepted by the owner.

Nuna Representative:

Signature	Print Name	Title	Date
	BRADFORD WATKIN	QC COORDINATOR	10/1/19

Client Representative:

Signature	Print Name	Title	Date

QA/QC Documentation Turnover Review and Release

Contractor: Nuna East Limited.	Contract No.: CC006	CWP.: N/A
Project: Mary River Expansion Project.	Location: Milne Port	Sub-System: N/A
Area: Laydown Area W10B	Area Description: Storage Laydown W10B	
System/Subsystem No.: N/A	System/Subsystem Description: N/A	
Inspection Test Plan No.: CC006-0016A	Rev: 2	Issue Date: May 8, 2019

ITP Section for Review

ITP Activity No.	ITP Activity Description
	For this portion of the Inspection Test Plan (ITP) and scope of work as per contract details outlined above. The following have been verified the ensure compliance with the Project Completion Requirements. • All work has been completed in accordance IFC drawings, project specifications, codes, and national regulations. • All Testing has been completed as per Inspection Test Plan (ITP). • All Master Punch List items are completed, verified and signed off. • All Non-Conformances and Site Quality Surveillances are closed. • All Bolt Ups, Loop Checks, and Pre-Commissioning are completed.

The undersigned verifies the contractor has completed the points above in their entirety

Contractor QC Designate	BRADFORD WATKIN /	10/1/19
Title	Name (Print/Sign)	Date

Client QA Turnover Review

☒ Approved	☐ Not Approved (See Comments Below)	Review No.: /

ITP Activity No.	ITP Activity Description

Contractor QC Designate	BRADFORD WATKIN /	10/1/19
Title	Name (Print/Sign)	Date
Hatch QA Designate	Ronny Franklin /	10/2/19
Title	Name (Print/Sign)	Date
Hatch Commissioning Designate	/	
Title	Name (Print/Sign)	Date

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Appendix C

Environmental Incidents

INCIDENT REPORTING FORM

BASIC DETAILS

Incident Number:	INC105610	Client Incident Number:	
Incident Date/Time:	15/Feb/2019 15:56	Supervisor:	WEBER, Don, PER104241, Contractor, Nuna Logistics Limited
Reported Date/Time:	15/Feb/2019 22:00	Project Description:	
Reported By:	WEBER, Don, , PER104241, Contractor, Nuna Logistics Limited	Project Number:	H-353004 Mary River Expansion Stage
Contracting Firm:	Nuna	Exact Location:	Lay Down pad 3, Port site

INCIDENT DESCRIPTION

Summary: Minor leak on a push arm cylinder hose on a D8 dozer.

Incident Type: Chemical

Detailed Description:

Spill of 2 litres on ground from a leak on a cylinder hose for the blade on a D-8 Cat Dozer.

CONSEQUENCES

Please enter a rating (0-5) for all consequences

Category	Actual	Potential	Category	Actual	Potential
Injury / Illness:			Financial:		
Environment:	1	1	Outrage and Reputation:		
Plant and equipment damage:			Security:		
Motor vehicle accident:			Quality:		

IMMEDIATE CORRECTIVE ACTIONS

Operator stopped equipment and reported to his supervisor. Spill product was wiped up and all materials disposed of

INVESTIGATION DETAILS

Investigator: Brian Chaput Start Date: 16/Feb/2019 End Date: 16/Feb/2019

Investigation Team:

Brian Chaput

Detailed description of investigation:

Spill of 2 litres on ground from a leak on a cylinder hose for the blade on a D-8 Cat Dozer.

Witnesses to incident:	None
Supporting documentation location:	IPAS DM

ROOT CAUSE ANALYSIS

iPas SM Root Cause Analysis Categories:	Poor quality of the hardware because of local situation	

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Appendix D

Quarried Fill Material Requirements

Standard Specification

Quarried Fill Materials Requirements

2016-12-14	0	Approved for Use	B. Whitehead	A. Grobbelaar	N. Mason	
Date	**Rev.**	**Status**	**Prepared By**	**Checked By**	**Approved By**	**Approved By**
			HATCH			**Employer**

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1. General

1.1 Description of Work

1.2 Related Sections

1.2.1 H353004-00000-221-078-0001 – Placement of Fill.

1.3 Standards

1.3.1 Work shall be done in accordance with the standards of the following organizations:

- American Society for Testing and Materials International, (ASTM); ASTM C136 – 06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
- ASTM C88-05, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulphate or Magnesium Sulphate
- Canadian General Standards Board CAN/CGSB 8.1, Sieves, Testing, Woven Wire, Inch Series.

1.4 Definitions

1.4.1 Transport: all work necessary to haul materials from the, stockpiles, or quarries, to the required locations.

1.4.2 Testing organization: A qualified independent geotechnical testing contractor to perform field quality-control testing.

1.5 Inspection and Testing

1.5.1 Contractor shall provide a testing organization or service to test fill materials according to ASTM C 136 (Standard Test Method for Sieve Analysis of Fine and Course Aggregates).

1.5.2 Coordinate and cooperate with the Employer to sample processed quarry material for ARD testing by the Employer.

1.5.3 The Contractor is responsible for providing a system/method of performing quality control in terms adherence of the Work to the grain size distribution of fill materials. This quality control program shall be developed and confirmed with the Employer prior to commencement of the Work.

2. Products

2.1 General

2.1.1 The materials will consist of blasted, crushed and/or screened rock manufactured from designated sites, located at the Mary River mine site, the Milne Port site and along the Tote Road.

2.1.2 The material shall be free from excessive moisture, snow, ice debris, and other deleterious materials.

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2.1.3 The material shall consist of tough durable particles free from thin, flat and elongated pieces.

2.2 Grain Size Specifications

2.2.1 Type 3 Fill – 50mm Minus.

Nominal Sieve Size (mm)	Percentage Finer Than (By Weight)
50	100
32	65 - 100
25	50 - 100
4.75	20 - 55
2.00	10 - 45
0.600	8 - 25
0.075	0 - 10

2.2.2 Type 5 Fill – 32 mm Minus.

Nominal Sieve Size (mm)	Percentage Finer Than (By Weight)
32	100
25	70 - 100
9.5	40 - 70
4.75	30 - 55
2.0	22 - 42
0.60	15 - 30
0.075	4 - 8

2.2.3 Type 6 Fill – Concrete Fine Aggregate (CFA)/Sand.

Nominal Sieve Size (mm)	Percentage Finer Than (By Weight)
10	100
5	95 - 100
2.5	80 - 100
1.25	50 - 90
0.63	25 - 65
0.315	10 - 35
0.16	2 - 10
0.1	0 - 3

2.2.4 Type 7 Fill – 32 mm Clear.

Nominal Sieve Size (mm)	Percentage Finer Than (By Weight)
32	90 - 100
19	0 - 15
0.075	0 - 2

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Note: Type 7 Fill – 32 mm clear is Type 5 Fill -32 mm Minus screened at 19 mm.

2.2.5 Type 8 Fill – Jaw Run - 150 mm Minus.

Nominal Sieve Size (mm)	Percentage Finer Than (By Weight)
200	100
150	95 - 100
100	50 - 100
50	30 - 60
19	15 - 35
4.75	10 - 25
0.075	0 – 5

2.2.6 Type 9 Fill – Crusher Fines/Liner Bedding.

Nominal Sieve Size (mm)	Percentage Finer Than (By Weight)
9.5	100
4.75	95 - 100
2.0	75 - 95
0.6	20 - 60
0.075	0 - 5

2.2.7 Type 12 Fill – Run of Quarry.

Nominal Sieve Size (mm)	Percentage Finer Than (By Weight)
1000	100
600	95 - 100
300	50 - 100
150	0 - 80
19	0 - 30
4.75	0 - 10

2.2.8 Type 13 Fill – Concrete Coarse Aggregate (CCA)/19 mm Clear

Nominal Sieve Size (mm)	Percentage Finer Than (By Weight)
32	100
19	80 - 100
9.5	25 - 60
4.75	0 - 10
2.0	0 - 5

2.2.9 Type 19 Fill – 150 mm Clear.

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Sieve Size (mm)	Percentage Finer Than (By Weight)
200	100
150	95-100
100	0 - 90
75	0 - 10
25	0 - 5

2.2.10 Type 22 Fill – 600 mm Minus Select.

Sieve Size (mm)	Percentage Finer Than (By Weight)
600	100
300	65 – 90
150	45 – 65
50	5 – 20

2.2.11 Type 26 Fill – Sub-ballast

Sieve Size (mm)	Percentage Finer Than (By Weight)
50	100
13.2	60 – 80
4.75	20 – 45
1.18	0 – 15
0.075	0 - 5

2.2.12 Type 25 Fill – Rail Ballast

Sieve Size (mm)	Percentage Finer Than (By Weight)
75	100
50	95 - 100
37.5	35 - 70
25	0 – 15
12.5	0 - 5

2.2.13 Type A Stone (Main Armour Stone):

Mass (tonne)	Percentage passing (By Weight)	Characteristic diameter (m)
7.4	95 - 100	1.42
5.9	50	1.31
4.4	5-10	1.19

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- Median mass M50 = 5.9t (Median diameter D50 = 1.3m)
- Armour gradation of 4.4t to 7.4t, with 50% ≥ 5.9t
- All stones shall be angular, quarried rock with its greatest dimension not greater than two times its least dimension for armour/under layer and not greater than three times its least dimension for core.
- Rock material shall not contain any foreign or organic material or clay.
- A minimum rock density of 2.6t/m³ has been assumed for the armour stones.
- Armour stone: thickness of stone layer = 2.5m

2.2.14 Type B Stone (Toe stone and Scour protection stone):

Mass (tonne)	Percentage passing (By Weight)	Characteristic diameter (m)
2.0	95 - 100	0.92
1.5	50	0.82
1.0	5-10	0.73

- Median mass M50 = 1.5t (Median diameter D50 = 0.82m)
- Stone gradation of 1.0t to 2.0t, with 50% ≥ 1.5t
- All stones shall be angular, quarried rock with its greatest dimension not greater than two times its least dimension for armour/under layer and not greater than three times its least dimension for core.
- Rock material shall not contain any foreign or organic material or clay.
- A minimum rock density of 2.6t/m³ has been assumed for the armour stones.
- Toe stone: height of toe berm = 2.5m
- Scour protection stone: thickness of stone layer = 1.7m

2.2.15 Type C Stone (Filter stone, Sub-armour stone):

Mass (tonne)	Percentage passing (By Weight)	Characteristic diameter (m)
0.75	95 - 100	0.66
0.60	50	0.61
0.40	5-10	0.54

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- Median mass M50 = 0.6t (Median diameter D50 = 0.61m)
- Stone gradation of 0.4t to 0.75t, with 50% ≥ 0.6t
- All stones shall be angular, quarried rock with its greatest dimension not greater than two times its least dimension for armour/under layer and not greater than three times its least dimension for core.
- Rock material shall not contain any foreign or organic material or clay.
- A minimum rock density of 2.6t/m³ has been assumed for the armour stones.
- Filter stone: thickness of stone layer = 1.2m

2.3 Armour Stone

Armour Stone Type A, Type B and Type C shall be:

2.3.1 Hard, with relative density (formally specific gravity) not less than 2.65, durable quarry stone, free from seams, cracks or other structural defects, to meet following size distribution for use intended:

2.3.1.1 Type A Armour; Type B Toe Stone and Type C Filter (Sub Armour Stone): per section 2.2.10, 2.2.11 and 2.2.12 of this document.

2.4 Ballast Stone

2.4.1 Stone for ballast shall comply with the requirements specified hereinafter. Acceptance of the stone shall also depend on a full petrographic analysis to identify any micro-fissuring, weakness and/or the presence of undesirable minerals that could lead to early degradation.

Laboratory Test	Standard	Values
Los Angeles Abrasion Test (LAA)	ASTM C 535-69	< 35% weight loss
Mill Abrasion Test (MA)	Non-standard test	<5% weight loss
LLA + 5(MA)	–	<50%
Degraded Aggregate Cement Value (CV)	Non-standard test	<(1.0 +0.2xMA)
Bulk Specific Gravity	ASTM C127	>2.6
Magnesium soundness test	ASTM C88-76 x 5 cycles	≤8% weight loss
Water Absorption	-	≤1.5%

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2.4.2 Grading shall comply with the following:

Sieve Size (mm)	Percentage Finer Than (By Weight)
63	100
53	90 - 100
37.5	40 - 70
26.5	10 – 30
19	0 - 5
13.2	0-1

2.5 Tolerances

2.5.1 Completed component layers to be within following tolerances of lines and grades as indicated (to be confirmed by final design):

2.5.1.1 Type A (Armour Stone): plus or minus 300mm largest stone.

2.5.1.2 Types B and C (Toe and Sub Armour Stone): plus or minus 150mm largest stone.

END OF SECTION

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Appendix A:
Test for Soundness of stone (Sodium Sulphate Method)

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A1 Test solution

Prepare a saturated solution of anhydrous Na_2SO_4 or crystalline $Na_2SO_4.10H_2O$ is distilled or demineralised water between 33°C and 35°C. Use sufficient of the salt to give excess crystals after thorough stirring. Cool to between 22°C and 24°C and keep at this temperature for at least 16 h. Stir thoroughly before use.

A2 Preparation of test specimen

From a representative sample of stone take a random specimen of at least 500g passing a 19mm and retained on a 13.2mm sieve. Wash the specimen to remove all adhering material. Dry at 105°C in a well ventilated oven and determine the mass after cooling. Continue drying until the decrease in mass after each of 2 successive drying periods of 4 h does not exceed 0.1% of the total mass. Let this mass be M1.

A3 Procedure

A3.1 Place the specimen in a porcelain dish and cover fully with test solution between 20°C and 25°C for 7 h. Decant the solution taking care that no stone is lost.

A3.2 Dry the specimen for 15 h at 105°C. Allow the specimen to cool for 2 h. This completes one cycle of the soundness test.

A3.3 Repeat the cycle described in A3.1 and A3.2 as often as specified. After every fifth cycle, wash the specimen on a 1.70mm sieve with hot water until no crystalline sodium sulphate is visible and continue the test with material retained on a 1.70mm sieve.

A3.4 After completion of the final cycle, wash the specimen in hot water until the washings are free of sodium sulphate. Dry the specimen to constant mass and screen on a 1.70mm sieve. Let the mass retained on the sieve be M2.

A4 Loss

Calculate the percentage loss in mass from the formula..

$$\frac{(\boldsymbol{M1 - M2})\ \boldsymbol{x}\ \boldsymbol{100\%}}{\boldsymbol{M1}}$$

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Appendix B:
Durability test for Ballast stone

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B1 Preparation of test specimens

From a representative sample of ballast stone take at random 100 stones passing a 53.0mm and retained on a 26.5mm sieve. Wash the stones to remove all adhering material. Dry the stone at 105°C in a well ventilated oven and determine the mass after cooling. Continue drying until the decrease in mass after each of 2 successive drying periods of 4 h does not exceed 0.1% of the total mass.

B2 Procedure

Place the 100 stones in a suitable container and cover with ethylene glycol between 18°C and 25°C for 20 days. Determine the number of stones that have broken, or can be broken by hand.

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Appendix C:
Mill abrasion test

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C1 Test method

C1.1 Prepare a test sample of the ballast under test, consisting of 1.5kg each of the following two particle sizes:

<37.5mm > 26.5mm and <26.5 > 19mm

The particles shall be washed and oven-dried to a constant weight before it is weighed and tested.

(Wo = the total weight of sample)

C1.2 Place the sample in the porcelain mill pot and add 3 litres of distilled water. Ensure that the cork washer is correctly is position before tightening the lid securely.

C1.3 The mill pot is placed in a horizontal position on the two rollers of the test apparatus with the lid on the side of electric motor in order than the counter's sensor is activated with revolution of the mill pot.

C1.4 The mill pot shall be rotated at 33 rpm for a total of 10000 revolutions.

C1.5 The sample shall then be wash-sieved through a 9.5mm sieve placed on top of a 0.075mm sieve and then oven-dried to a constant weight.

C1.6 Record the dry mass of the material of the sieves:

W1 = mass of material on 9.5mm sieve.

W2 = mass of material on 0.075mm sieve.

C1 Evaluation method

C1.1 Calculate the following abrasion value:

$$\boldsymbol{MA = \frac{Wo - W1 - W2}{Wo} * 100 = Mill\ Abrasion\ value}$$

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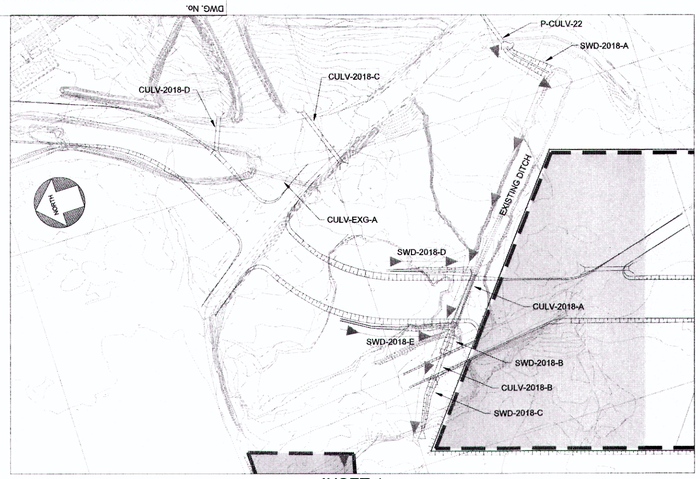
Appendix E

Drawing Illustrating Port Water Management Structures in Relation to Lease Boundaries

DWG. No. H353004-40000-220-272-0006-0001



INSET 1
NOT TO SCALE

EXISTING QUARRY
CULV-2018-H
NEW CULVERT
P-SWD-6
P-CULV-32
LP 7 LAYDOWN
EXISTING TOTE ROAD SIDE DRAIN
P-SWD-5
EXISTING CULVERT TO BE BLOCKED OFF
LP 6 LAYDOWN
EXISTING CULVERT TO BE BLOCKED OFF
W10A LAYDOWN
W10B LAYDOWN
LP 5 LAYDOWN
RIDGE
TOTE ROAD
EXISTING TOTE ROAD SIDE DRAIN
B-TRAIN / LUBE BAY
ACCOMMODATION CAMP PAD
EXISTING DITCH
SEE INSET 1
NEW CULVERT
NEW CULVERT
CULV-2018-I
RIDGE
RIDGE
DELIVERY ROAD
LP 3 LAYDOWN
CULV-2018-F
SWALE
CULV-2018-E
DAYLIGHT DITCH
IMPERMEABLE GEOMEMBRANE TO BE INSTALLED WHERE STANDING SURFACE WATER COMES INTO CONTACT WITH LAYDOWN AREA
EXISTING LAND FARM
EXISTING PERMANENT ACCOMMODATION CAMP
LP2 LAYDOWN
P-SWD-3
FACILITY '1' AND '2' RELOCATION POSITION
RELOCATED MARINE MANIFOLD
EFFLUENT DISCHARGE POINT
2No. UTILITY CONDUITS BENEATH ROADWAY FOR FUEL AND EFFLUENT PIPELINES
CULV-EXG-B
P-SWD-7
BARGE OFF LOADING DOCK
TEMPORARY OFFLOADING FLOATING DOCK
RELOCATED EFFLUENT AND FUEL PIPELINES
EXISTING FUEL TANK FARM
EXISTING MARINE MANIFOLD TO BE RELOCATED
3MI DIESEL TANK
FACILITY '1' TO BE RELOCATED
FACILITY '2' TO BE RELOCATED
EXISTING CULVERT
ORE DOCK No. 1
SETTLING POND No. 1A
EXISTING SETTLING POND No. 1
STOCKPILE No. 1 EXTENSION
P-SWD-4

LEGEND:
- PROPOSED LAYDOWN AREA
- DIVERTED WATER FLOW
- NATURAL WATER FLOW
- ABANDONED WATERCOURSE
- FLOW LINE
- NATURAL WATER SHED
- LP 3 LAYDOWN — LAYDOWN AREA AND NUMBER DESIGNATION
- LEASE BOUNDARY
- PROJECT DEVELOPMENT AREA
- EXISTING CULVERT
- NEW CULVERT

SCALE: 1:2500 0 20 40 60 80 100m 200m

PERMIT TO PRACTICE
HATCH LTD
Signature
Date 2018-06-01
PERMIT NUMBER P 512
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No.	DESCRIPTION	BY	CHK'D	DATE
C	STOCKPILE No. 1, SETTLING POND No. 1A ADDED - APPROVED FOR PERMITTING	IHB	FH	31/05/2018
B	APPROVED FOR PERMITTING	-	-	-
A	APPROVED FOR PERMITTING	IHB	FH	15/02/2018

REVISIONS

ROLE	NAME	SIGNATURE	DATE
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DESIGNER	I BARNARD	NR	
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DESIGN COORD.	R GOOSEN		2018-06-01
RESP. ENG.	R HALIM		2018-06-01
LEAD DISC. ENG.	A GROBBELAAR		2018-06-01
AREA LEAD	V LAVRIC		2018-06-01
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AREA MANAGER	T ATIBA		16/6/18

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MARY RIVER PROJECT

PORT SITE
2018 SURFACE WATER MANAGEMENT PLAN

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REV C

SHEET SIZE: E

BOSSERMAN STIMES

Appendix F

Contact Information as per Components 1 and 2 of the Commercial Lease Requirement

Company	Address	Contact Numbers
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Appendix G

Port Water Management Report
H353004-40000-220-230-0008

Baffinland Iron Mines LP
Mary River Expansion Project

Port Water Management Report

			A. Grobbelaar.	G. Peace	N. Mason	Denton Henkelman Digitally signed by Denton Henkelman Date: 2020.04.28 10:42:30 -04'00'
2020-04-22	0	Approved for Use	A. Grobbelaar	G. Peace	N. Mason	D. Henkelman
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Appendix A

Drawing H353004-40000-220-272-0006-0002 Current Surface Water Management Plan

1. Introduction

This document describes the various earthworks and infrastructure features that were constructed in 2019 and the impact these have on surface drainage. This document covers the design of all surface water infrastructure required to satisfy the latest Civil Design Philosophy for the Milne Port.

This stormwater management plan includes areas where new infrastructure and drainage were constructed as described in the 2018 workplan.

2. References

2.1 General

All applicable federal, territorial (Nunavut) and local laws and regulations:

- OHSA Occupational Health and Safety Act
- CSA Canadian Standards Association.
- MHSA Mine Health and Safety Act (Nunavut – S.N.W.T. 1994).
- OHSR Occupational Health and Safety Regulations.
- NBCC National Building Code of Canada (2010).
- ASTM American Society for Testing and Materials.
- ASCE American Society of Civil Engineers.
- NFPA National Fire Protection Association.
- NRC Natural Resources Canada – Explosives Safety and Security Branch.

2.2 Reference Documents

Reference will be made to, or contents have been used as general guidance from the following documents, articulated during the previous phases of the project.

- H353004-00000-200-210-0001: Civil Design Philosophy (Rev. 2).
- H337697-0000-10-122-0001: Stormwater Management and Drainage System Design.
- H337697-6170-10-122-0001: Milne Port Drainage System and Stormwater Management Ponds.
- H337697-6170-10-122-0002: Mine Site Drainage System, Stormwater and Sediment Management.
- Standard Specification S311213: Quarried Fill Materials.
- Standard Specification S003120: Site Conditions.

- NB 102-181/30-7: Baseline Hydrology Report, Knight Piesold, Jan 04, 2012.
- Updated Design Peak Flow Assessment. Knight Piesold, 2016.
- Final Environmental Impact Statement (FEIS), Mary River Project, February 2012.
- H353004-00000-228-066-0001: Mary River – Snowmelt and Rainfall Frequency Analysis.

3. Stormwater Management and Drainage Systems

Stormwater management and drainage systems have been applied in various locations across the site to ensure that surface water runoff will have limited interference with the proposed construction activities.

Care was taken to ensure that where possible, the existing watersheds and streams remained in their original state.

This was done through the use of berms, ditches, swales and culverts.

The overall layout can be seen in Appendix A.

3.1 Eastern Diversions

On the eastern side of the lease area in the vicinity of the existing Q1 quarry surface water runoff is diverted to the north (P-SWD-5) and the south (P-SWD-6) by two drainage ditches/berms. The reason for this is to redirect surface water flows away from project infrastructure. Refer to Figure 3-1. The sizing of the infrastructure is presented in Section 4.1.

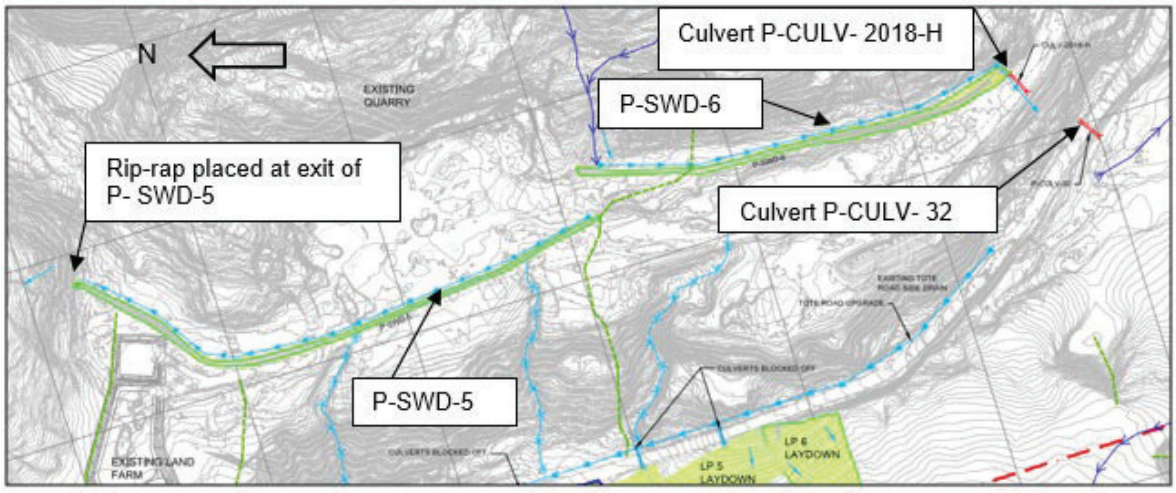


Figure 3-1: Eastern Diversion

P-SWD-6 also contains a culvert crossing (Culv-2018-H) that was constructed through an existing road. This culvert consists of 2 barrels 900mm diameter CSP pipes. From the exit of this culvert, the water flows downstream through P-Culv-32 (Consisting of two 900mm

diameter barrels) and from there into the environment The design of these culverts is discussed in Section 4.1.and 4.4.3

3.2 Laydown Areas

3.2.1 LP2 Laydown

Laydown LP2 was constructed South of the existing port infrastructure. This area will be used as a laydown area. The LP2 platform was constructed on two levels and areas to accommodate the steep slope of the surrounding ground. Refer to Figure 3-2.

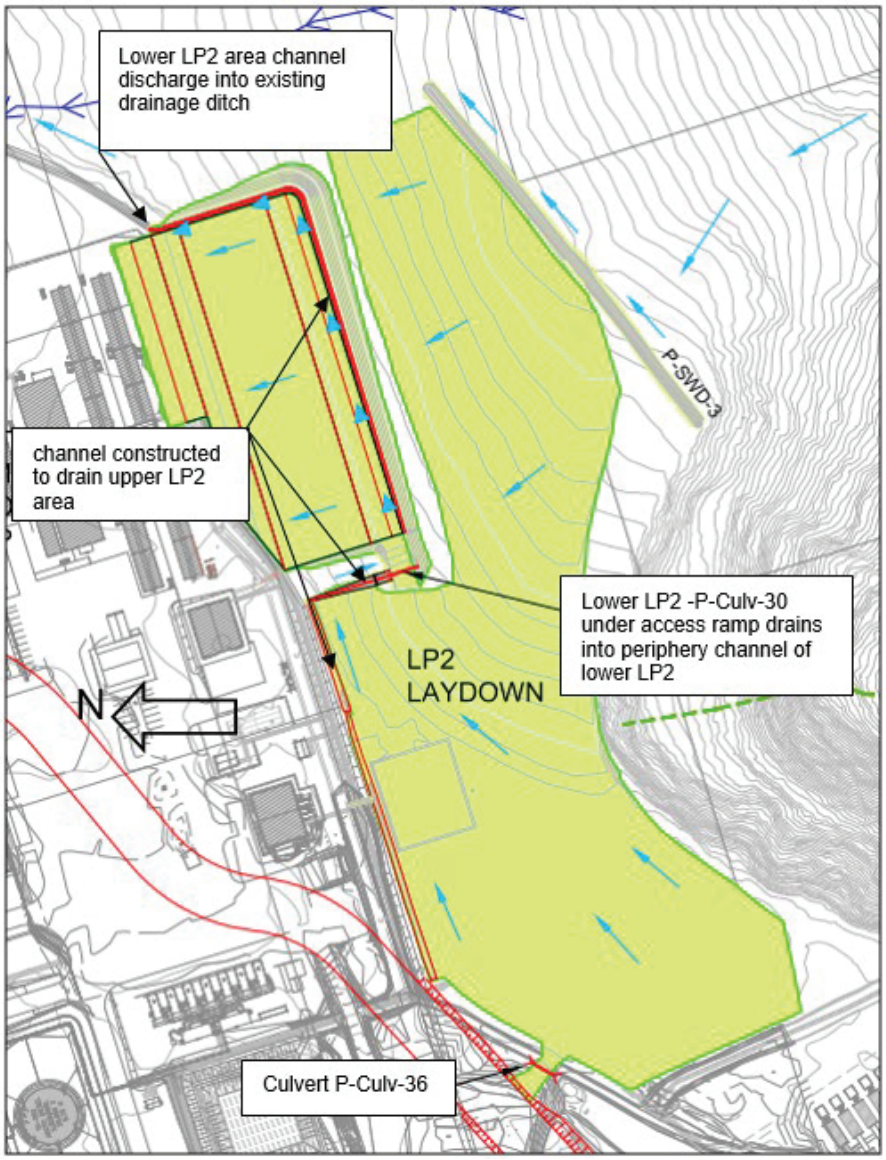


Figure 3-2: LP2 Laydown Area

The laydown LP2 was constructed with a slope towards the north and northeast. In the first section of the laydown area adjacent to the existing infrastructure terrace, the LP2 slopes to the north where it discharges any precipitation falling onto the laydown area into a constructed channel. This channel will continue to drain to the north east up to the boundary of the lower level LP2 platform. From this point it will turn 90 degrees and cross the onramp from the lower level LP2 laydown area via culvert P-Culv-30. The storm water will then continue to flow in a constructed channel around the periphery of the lower LP2 laydown area where it will discharge at a point North East into the existing drainage ditch. For the details on the channel, see Section 4.2 below.

The run-off from LP2 on the southern boundary of the lower level LP2 area, drains into the same channel created at the southern end of the platform and exits at the same point into the ditch described above.

The lower LP2 area is gently sloping towards the Port Site Complex platform. Any storm water runoff from this lower LP2 area drains onto the existing infrastructure terrace from where it drains as per the current drainage system for the terrace.

A stormwater diversion berm was constructed upstream of the laydown LP2 area to ensure water is adequately diverted away. This berm is referred to as P-SWD-3. The sizing of this berm is discussed in Section 4.2.1.

At the LP2 access ramp to the west of LP2, a 400mm diameter steel pipe was provided at the bottom of the ramp at a low point to prevent water accumulating on the upstream end of the ramp. The catchment area is very small and the pipe was placed for the purpose of accommodating local drainage and provide continuity. Although the original requirement was for a 600mm CSP (P-CULV-36) culvert, no culverts of that size were available on site. The replacement 400 mm diameter steel pipe was used instead. The affect of this reduction does not influence the hydraulic performance due to the small catchment (see also Section 4.2.2).

3.2.2 LP3 Laydown

Storm Water upstream of the pad

Upstream of LP3 laydown, the water will flow in an existing drainage ditch until the eastern end of the pad where it will flow into a constructed ditch lined with rip-rap. The water flows in this ditch until the delivery road. At this point it enters a constructed culvert CULV-2018-E. The water flows in the culvert and instead of exiting after the delivery road,(As per the previous submitted water management plan) it flows in the extended CULV-2018-E up till the end of the LP3 area. (The hydraulic calculations for the extended culver are discussed in Section 4.3.1). At this point the water flows into another drainage ditch and from there into the natural environment.

Storm water on the pad

The Laydown LP3 was constructed to allow its surface storm water to drain primarily towards the Western edge of the laydown area. It will allow for surface water from the east to run onto

the laydown area and then convey it to the West through swales and culverts where it crosses the delivery road. Figure 3-3 shows the drainage plan for the area.

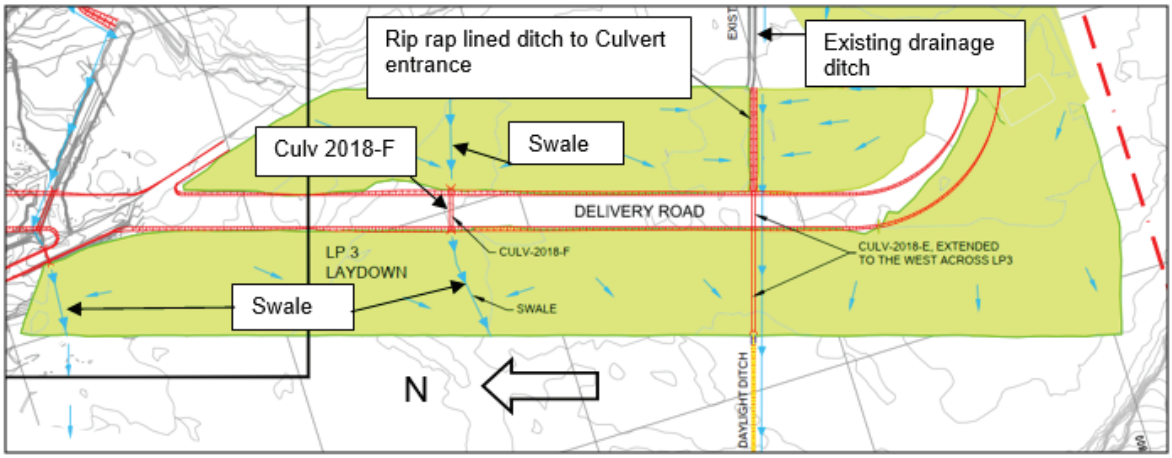


Figure 3-3: Laydown LP3 Drainage

Another culvert was placed on the final grade of the laydown area. The culvert is Culv-2018-F that crosses the delivery road running from East to West. The LP3 area on the East was graded on either side of the inlet to the culvert to form a swale draining towards the inlet. A similar swale was created on the outlet that conveys the water off the LP3 area via overland flow into the environment. The calculations for the above are discussed in Section 4.3.

3.2.3 *W10A Laydown*

Precipitation that falls onto laydown W10A is directed to the West by the constructed sloping pad. The slope ensures adequate flow to the west. No swales was constructed for the laydown area and all the runoff is considered as sheet flow. W10A is shown in Figure 3-4.

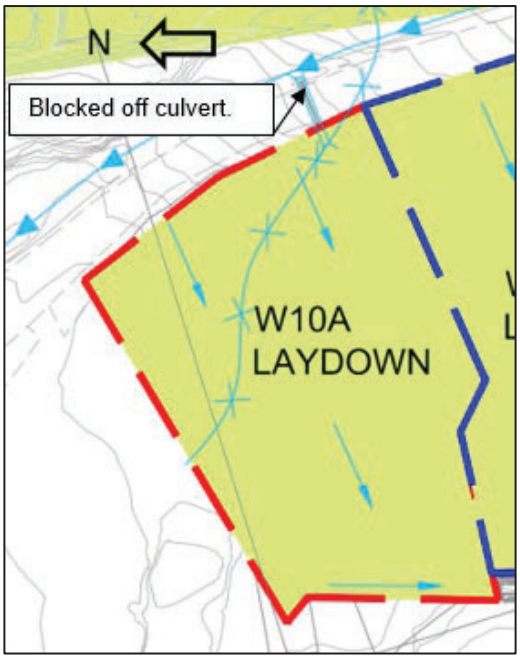


Figure 3-4: Laydown W10A

Runoff from the upstream area is not allowed to reach Laydown W10A since the culverts on the Tote Road are blocked off. The blocked culverts ensures water is diverted to the north in an existing ditch on the east side of the Tote Road. The details of the Tote Road drainage is discussed in Section 3.4. For blocked off culverts on the Tote Road, see Figure 3-8.

3.2.4 *W10B Laydown*

Laydown W10B is handled in a similar way as Laydown W10A. Runoff is dealt with as sheet flow by the slope of the laydown to the west which ensures adequate drainage. This laydown drains into the existing ditch on the Western side. Laydown W10B can be seen in Figure 3-5.

Figure 3-5: Laydown W10B

Runoff from the upstream area will not be allowed to reach Laydown W10B since the culverts on the Tote Road are blocked off to ensure water is diverted to the north where it ties into the existing drainage ditch on the eastern side of the Tote Road. The details of the Tote Road drainage is discussed in Section 3.4. For blocked culverts on the Tote Road, see Figure 3-8.

3.2.5 *Laydown LP5*

Laydown LP5 drains towards the West through sheet flow enabled by grading of the laydown pad -see Figure 3-6.

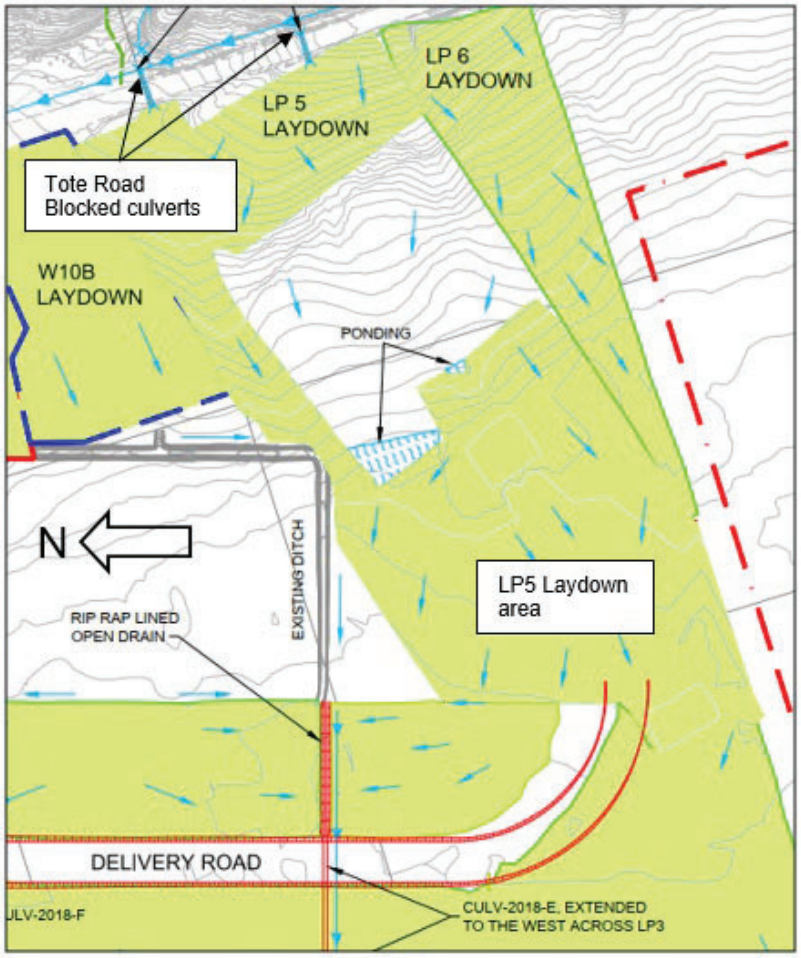


Figure 3-6: Laydown LP5

As per W10A and W10B, runoff from the east onto this Laydown LP5 is prevented through blocked culverts. The Tote Road ditch diverts runoff to the North (see Section 3.4).

During detailed design it was determined that the amount of laydown space as per 2019 work plan was in excess of requirements. Based on this the completed area of LP5 was reduced from 65,000 m^2 to 48,000 m^2. The uncompleted area was partially utilized for stockpiling material during construction of LP5.The uncompleted portion of LP5 drains to the Northwest. There will be a potential of ponding water on the Western edge of the central depression where the laydown was not constructed. During freshet this area will have to be monitored and if build up becomes excessive a pump will need to be installed to drain ponded water to the nearest drainage ditch.

The volume water expected to accumulate against the pad in the Northwest corner is estimated is 220m^3. The area must be actively managed to minimize or eliminate the ponding water against the pad.

3.3 LP6 Laydown

This laydown area drains towards the West as sheet flow. A small amount of water will drain onto the open area of LP5 (area not constructed) in the Northwest direction and will be managed in line with the LP5 water management philosophy (see Section 3.2.5). The overall gradient of the pad was constructed to slope to the west ensuring adequate drainage off the pad. The LP6 laydown area will discharge into the natural environment as can be seen in Figure 3-7.

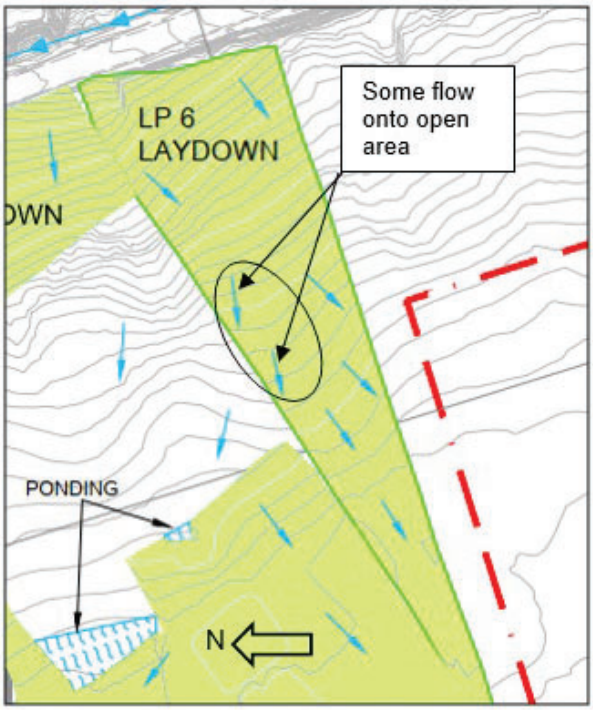


Figure 3-7: Laydown LP6

Water on the East of laydown LP6 will be diverted to the North by the Tote Road as discussed in Section 3.4.

3.4 Tote Road

The existing Tote Road is currently used to deliver iron ore from the mine to the stockpiles at the port. Three existing culverts are blocked off to ensure that no runoff interferes with the laydown areas W10A, W10B, LP5 and LP6 as depicted in Figure 3-8.

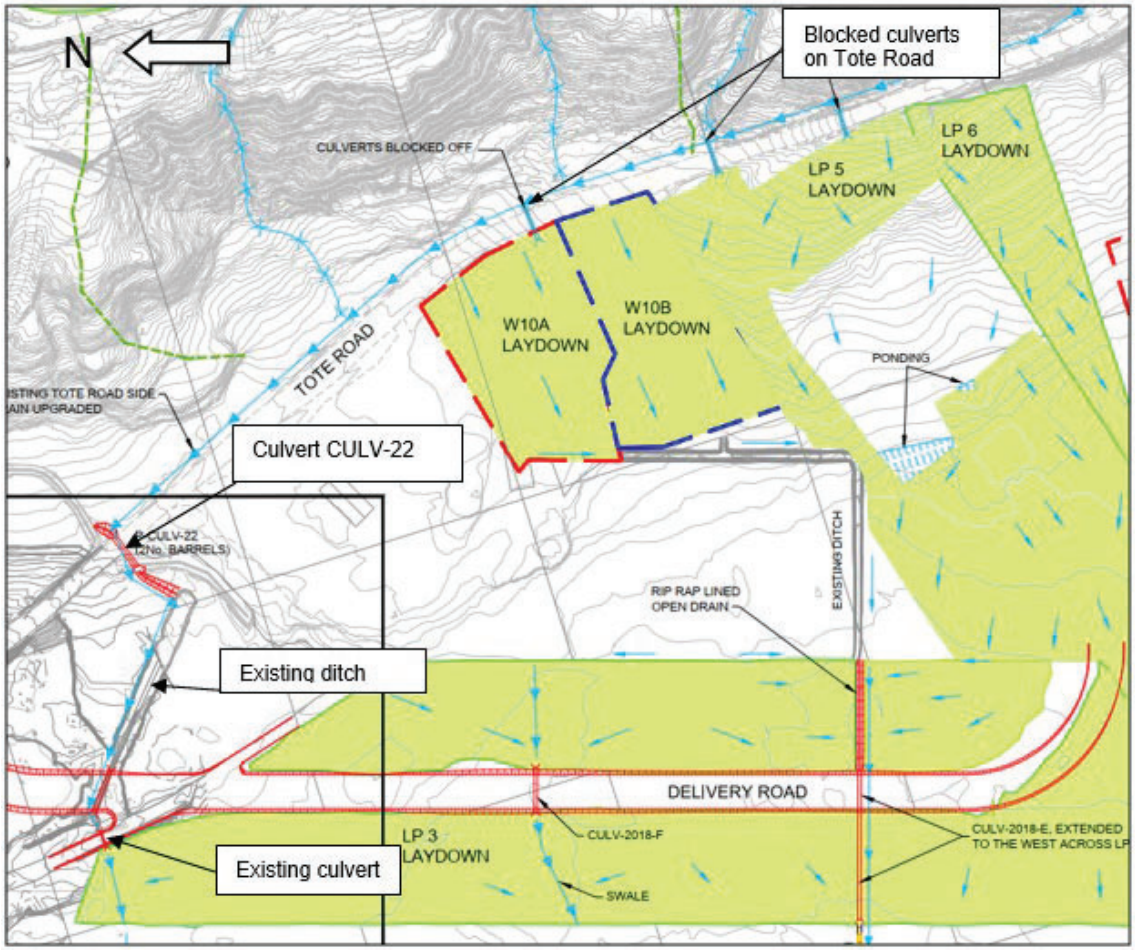


Figure 3-8: Tote Road

The water is diverted to the North along the existing roadside ditch towards culvert (P-Culv-22) that can also be seen in Figure 3-8. This 2 barrel culvert discharges water to the West. The sizing of the culvert and analysis of the existing ditch is discussed in Section 4.4. The infrastructure downstream of this culvert is discussed in Section 3.5.

Culvert Culv-2018-I was not installed. There wasn't any water in the area and based on site observations there is none anticipated.

3.5 Delivery Road

This section discusses all the drainage North of laydown LP3 that will come into contact with the delivery road.

Figure 3-9 shows the drainage for the area. It consists of existing ditches and culverts.

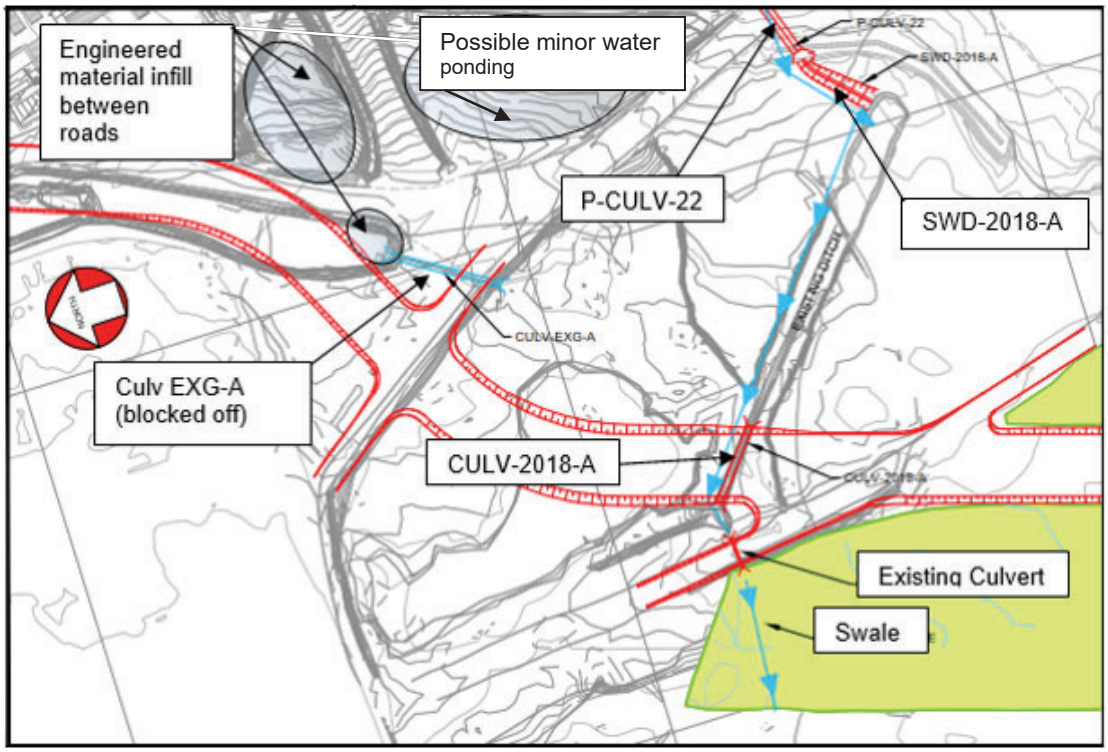


Figure 3-9: Delivery Road

As per Figure 3-9 it can be seen that water will cross the Tote Road through the culvert as described in Section 3.4. From the culvert it will enter SWD-2018-A which discharges into the existing ditch. From the existing ditch, water crosses the delivery road through culvert CULV-2018-A that discharges into the existing ditch and through an existing culvert onto the LP3 swale from where it follows the natural ground drainage into the environment.

The design and analyses of the culverts and ditches is discussed in Section 4.5.

The islands formed by the Tote road intersection with the other service roads to the existing facilities pad has been filled with engineered fill to allow for improved vehicle movement and safety. The rainfall on these filled in islands is drained as sheet flow across the various roads and into the environment (see also Section 3.4.) The larger intersection area was not filled and local ponding can occur at this location. This was the historic scenario as well and is dealt with through monitoring and if necessary, pumping out of the water.

Any culvert crossings beneath the road that occurs on laydown LP3 have already been covered in Section 3.2.1.

See Section 4 for list of culverts and SWDs not installed and explanation.

3.6 Freight Dock

At the freight dock, there is an existing culvert that is referred to as Culv-Exg-B. This culvert takes up runoff from the South and discharges to the West where water is directed via a berm (P-SWD-7) to discharge into the sea. Refer to Figure 3-10.

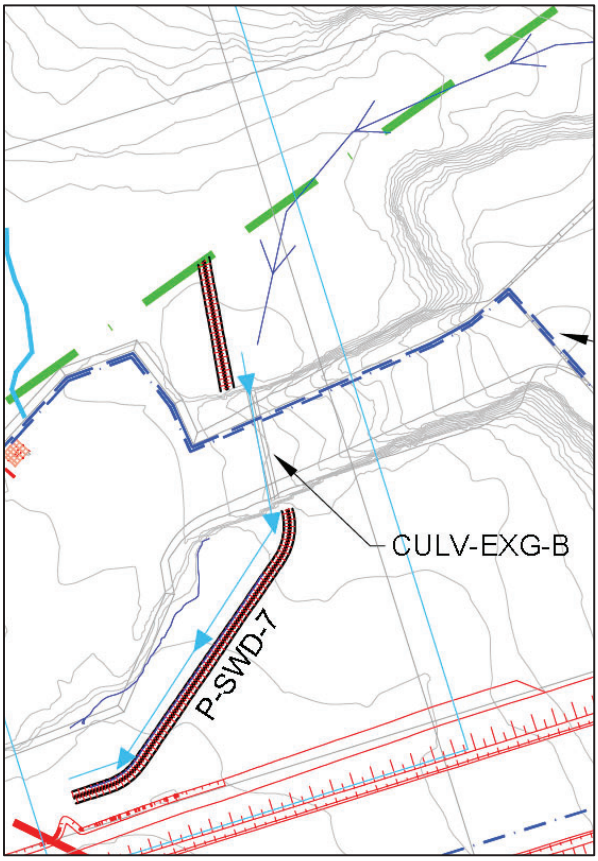


Figure 3-10: Freight Dock

The existing culvert remains as constructed. The berm was designed so that runoff will not interfere with the construction of the freight dock. The design calculation and results for the culvert modification as well as the proposed berm can be seen in Section 4.6.

4. Sizing of Drainage Ditches and Culverts

This section covers basic input and important results from the design and analysis of the surface water infrastructure. Where flow velocities are higher than 1.5 m/s, rip rap is placed as scour protection.

4.1 Eastern Diversions

4.1.1 P-SWD-5

The diversion was modelled and analyzed as a combination of berm and channel taking into account the surrounding existing ground and the results were as follows:

- Berm Height Required = 1 m.
- Channel bottom width = 0.5 m.
- Maximum Velocity = 1.40 m/s.

Based on the results no rip rap is required for P-SWD-5. Although rip rap is not required, extended rip rap was placed after consultation with the site team during construction and considering the local environmental conditions.

4.1.2 P-SWD-6

The diversion was modelled and analyzed as a combination of berm and channel taking into account the surrounding existing ground and the results were as follows:

- Berm Height Required = 1 m.
- Channel bottom width = 0.5 m.
- Maximum Velocity = 1.28 m/s.

Based on the results no rip rap is required for P-SWD-6.

The culvert **Culv-2018-H** was analyzed using Bentley Culvert Master and the analyses showed that 2 x 900 mm diameter CSP culverts are adequate. The velocity in the culvert is 1.97 m/s and therefore rip rap is required at the inlet and outlet to protect against erosion. The downstream **P-Culv-32** is addressed in Section 4.4.3.

4.2 Laydown LP2

4.2.1 P-SWD-3

The diversion was modelled and analyzed as a berm taking into account the surrounding existing ground and the results were as follows:

- Berm Height Required = 0.6 m.
- Maximum Velocity = 0.96 m/s.

The catchment of the SWD-3 has reduced slightly based on construction activities, the new velocity in the channel formed by the berm is below 1.5 m/s. Based on the results no rip rap is required for P-SWD-3.

4.2.2 P-CULV-36

The culvert catchment is very small and only accommodates 0.004 m^3/s. The velocity in the pipe is 0.54m/s

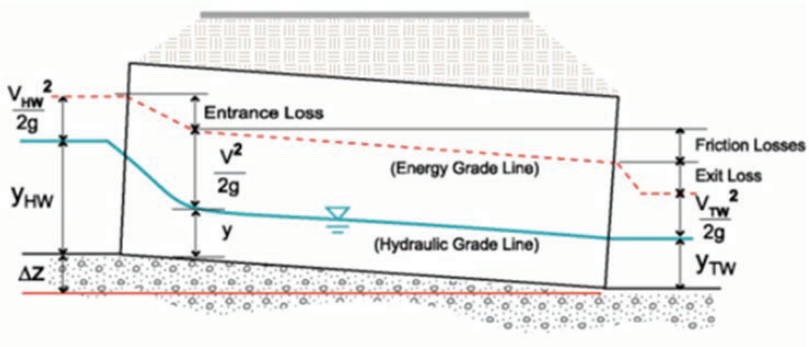
4.3 Laydown LP3

4.3.1 Culv-2018-E

The culvert was analyzed using Bentley Culvert Master and the analyses showed that the 1 x 900 mm diameter CSP installed is adequate and can cope with the estimated flows. During construction of LP3, the length of the culvert was extended to continue after the delivery road and into the existing ditch beyond the LPR area.

The culvert catchment area and flow rate remain the same as previously calculated. Even though a longer culvert than originally intended, the gradient of the culvert ensures the flow stays at normal flow depth in the culvert i.e. it equals the friction slope. The outlet velocity remains as originally calculated. The velocity in the culvert is 1.63 m/s and therefore rip rap was placed at both the inlet and outlet to prevent scouring. Details of the calculation are:

- The catchment area for the culvert remains the same. Hence the flow rate at the entrance to the culvert calculated for the 1:50 year return period (See design philosophy for diversion ditches) is 0.39 m^3/s.
- The initial shorter culvert (under the delivery road) had a flow velocity through the 900 CSP culvert of 1.68 m/s. The velocity is determined through the energy equation – the design principle reflected below.



$$y_{HW} + \frac{V_{HW}^2}{2g} + \Delta Z = y_{TW} + \frac{V_{TW}^2}{2g} + y_{Friction\ Loss} + y_{Entrance\ Loss} + y_{Exit\ Loss}$$

Where:

y = Depth (ft, m)
V = Velocity (ft/s, m/s)
ΔZ = Change in elevation (ft,m)
TW = Tailwater
HW = Headwater
g = Accceleration due to gravity (ft/s^2)

- The culvert was placed at the hydraulic grade line (see sketch above) i.e. at the same slope as the energy grade (red dotted line) i.e. Z = the Z of the energy grade.
- Based on the above, it does not matter how long the culvert is, as long as it is placed at the same slope as the hydraulic grade line, the velocity and flow in the culvert will remain the same. The friction losses in the culvert is (Yf) is equal to the energy gained through the elevation difference (energy slope).
- This is similar to a channel conveying water. The flow depth is determined by the slope of the canal for any given flow rate. As the water depth approaches normal flow depth of the channel (after entering the Channel), the flow properties in the channel will remain the same as long as the channel slope is constant (the water will not spill or change velocity).

4.3.2 *Daylight Ditch*

The flow calculated for Culv-2018-E also applies to the daylight ditch. The ditch was analyzed using Bentley Flow Master and some of the results from the analyses can be seen below:

- Bottom Width = 1 m.
- Side Slopes = 1V:2H.
- Normal Depth = 0.35 m.
- Manning N = 0.025.
- Slope = 0.2%.
- Discharge = 0.39 m^3/s.
- Velocity = 0.67 m/s.
- Froude No. = 0.42 (Sub-Critical Flow).

The channel is flared at the end where it daylights to ensure adequate energy dissipation is achieved and to minimize any potential erosion in the area.

4.3.3 *Culv-2018-F*

The culvert was analyzed using Bentley Culvert Master and the analyses showed that the 1 x 600 mm diameter CSP culvert is adequate. The velocity in the culvert is modelled as 1.48 m/s and no rip rap is required.

4.4 Tote Road

4.4.1 *Tote Road Side Drain*

The Tote Road has an existing side drain. This section covers the runoff determination and the sizing checking for the drain. The existing drain size was confirmed on site and deemed too be adequate.

The drain size was checked and analyzed using Bentley Flow Master and some of the results from the analyses can be seen below:

- Bottom Width = 2 m.
- Side Slopes = 1V:2H.
- Normal Depth = 0.18 m.
- Manning N = 0.025.
- Slope = 2.6% (average slope taken).
- Discharge = 0.87 m^3/s.
- Velocity = 1.82 m/s.
- Froude No. = 1.48 (Supercritical Flow).

Rip rap was provided to protect against erosion since the velocity is close to 1.5 m/s.

4.4.2 *P-Culv-22*

The Tote Road side drain discharges into Culv-2018-22 and therefore the flow calculated in Section 4.4.1 can be applied in the sizing of the culvert.

The culvert was analyzed using Bentley Culvert Master and the analyses showed that the 1 x 900 mm diameter CSP culvert is adequate. The velocity in the culvert is 2.8 m/s and required rip rap at the inlet and outlet to protect against erosion.

During construction and after discussion with the site representatives, the single barrel culvert was upgraded to 2 barrels of 900 mm diameter CSP culverts. The entrance and exit rip rap for erosion protection was still maintained. The velocity in the 2 x 900 mm barrels is 1.68 m/s, and rip rap was placed for erosion protection.

4.4.3 *P-Culv-32*

The culvert was analyzed using Bentley Culvert Master and the analyses showed that 2 x 900 mm diameter CSP culverts are adequate. The velocity in the culvert is 1.99 m/s and therefore rip rap was placed at the inlet and outlet to protect against erosion.

4.5 Delivery Road

4.5.1 SWD-2018-A

The diversion was modelled and analyzed as a trapezoidal channel taking into account the surrounding existing ground and the results were as follows:

- Bottom Width = 0.5 m.
- Side Slopes = 1V:2H.
- Normal Depth = 0.18 m.
- Manning N = 0.025.
- Slope = 0.83% (average slope taken).
- Discharge = 0.87 m^3/s.
- Velocity = 1.28 m/s.
- Froude No. = 0.86 (Subcritical Flow).

4.5.2 Culv-2018-A

The culvert was analyzed using Bentley Culvert Master and the analyses showed that the 1 x 1200 mm diameter CSP culvert is adequate. The velocity in the culvert is 2.09 m/s and rip rap was placed at the inlet and outlet to protect against erosion.

4.5.3 SWD-2018-B

SWD-2018-B was not installed as it was not required. The flow was directed to the existing rock lined swale and then into an existing culvert.

4.5.4 Culv-2018-B

This culvert was not installed as there was an existing culvert that was able to handle the freshet flow in 2019.

4.5.5 SWD-2018-D and SWD-2018-E

SWD-2018-D and E were not constructed. They were replaced by ditching on the east and west side of the module delivery road.

4.5.6 Culv-2018-C

Culv-2018-C was not installed at the area it was draining was filled in with the construction of the module delivery road and an additional intersection to Quarry1 access road.

4.5.7 Culv-2018-D

Culv-2018-D was not installed do to constraints in scheduling a shutdown of a critical access. This will result in any area of ponding that will need to be monitored during freshet.

4.5.8 *Culv-Exg-A*

The existing culvert is no longer in use. The culvert upstream catchment was filled with Engineered material to allow improved turning circle for vehicles. Drainage is naturally off the road intersection to the north and north east.

4.6 Freight Dock

4.6.1 *Culv-Exg-B*

The existing culvert has two barrels of 1200 mm diameter each. The tail water was determined from the high water elevation and the backwater effects that will occur due to the calculated flow. A Hec-RAS model was used to compute this and a profile of the analysis can be seen in Figure 4-1.

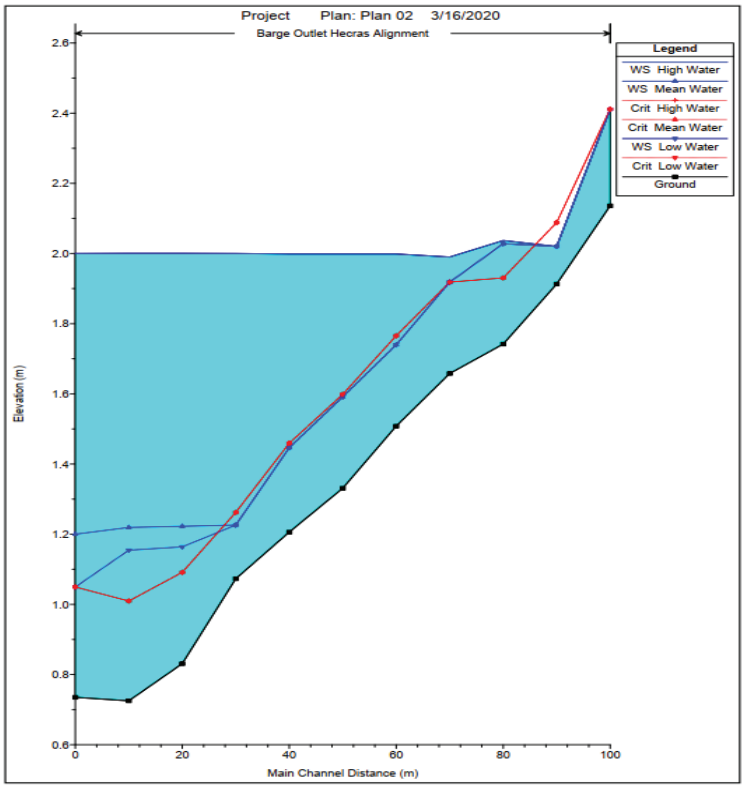


Figure 4-1: Downstream of Culv-Exg-B

The culvert was designed and analysed using Bentley Culvert Master software and the key output from the analysis can be seen below:

- Computed headwater elevation is equal to 4.32 m which is more than the requirement of 3.24 m (this was determined using the existing ground information obtained from Lidar survey data and calculated to be the maximum level water can rise before discharging to the North.

- Velocity is equal to 1.83 m/s and rip rap was placed at the inlet and outlet of the culvert to protect against erosion.

4.6.2 P-SWD-7

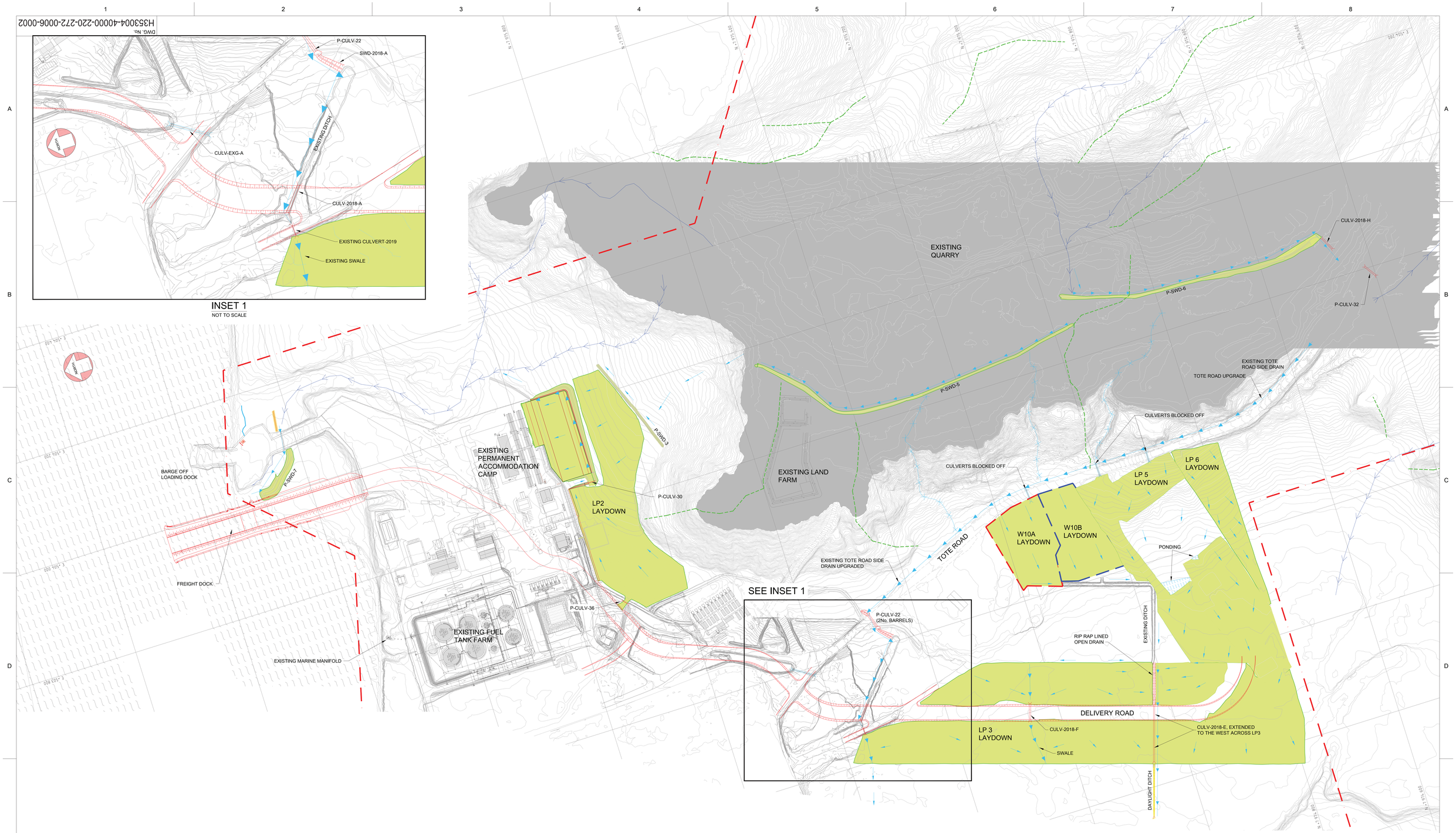
The diversion was modelled and analyzed as a berm taking into account the surrounding existing ground and the results were as follows:

- Berm Height Required = 1.2 m.
- Maximum Velocity = 1.53 m/s.

Based on the results adequate rip rap was provided to protect against erosion.

Appendix A

Drawing
H353004-40000-220-272-0006-0002
Current Surface Water Management Plan



LEGEND:

- LAYDOWN AREA
- DIVERTED WATER FLOW
- NATURAL WATER FLOW
- ABANDONED WATERCOURSE
- FLOW LINE
- NATURAL WATER SHED
- LP 3 LAYDOWN — LAYDOWN AREA AND NUMBER DESIGNATION
- LEASE BOUNDARY
- EXISTING CULVERT
- NEW CULVERT

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HATCH LTD.
Signature
Date 2020-04-17
PERMIT NUMBER: P 512
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DESIGN COORD.	R GOOSEN		2020/04/17
RESP. ENG.	R HALIM		2020-04-17
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AREA LEAD	N MASON		
ENG. MANAGER	N MASON		
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MARY RIVER PROJECT

PORT SITE
CURRENT SURFACE WATER MANAGEMENT PLAN

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REV 0
SHEET SIZE: E

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