Nunavut Water Board Submission

Amendment Request – Type B Water Licence
Licence No.: 8BC-ABH2125 (Updated to 8BC-ABH2529)

1.0 Applicant Information

Applicant: Fisheries and Oceans Canada – Small Craft Harbours (DFO-SCH)
Project Name: Arctic Bay Harbour Development
Location: Arctic Bay, Nunavut

Contact Information:
Eleanor McEwan – Senior Project Engineer, DFO-SCH
Eleanor.McEwan@dfo-mpo.gc.ca

Alternate Contact:
Chris McDermid – Environmental Advisor, DFO-SCH
Chris.McDermid@dfo-mpo.gc.ca

2.0 Purpose of Submission

This submission is provided in support of an application to amend the existing Type B Water Licence (8BC-ABH2125; updated to 8BC-ABH2529) issued by the Nunavut Water Board (NWB) for the Arctic Bay Harbour Development Project.

The purpose of the amendment is to:

- Incorporate detailed construction work plans; and
- Authorize water use (municipal and natural sources) and associated project activities not included in the original licence.

3.0 Project Background

On December 17, 2021, the Nunavut Planning Commission (NPC) completed its review of the Arctic Bay Harbour Development Project, and a Type B Water Licence (8BC-ABH2125) was subsequently issued to DFO-SCH.

Due to challenges in securing a contractor, the 2021 tender process was cancelled. In 2025, the tender was reissued, and a contractor was successfully retained.

On July 30, 2025, DFO-SCH submitted an administrative amendment request to the NWB to renew the licence, proposing a revised issuance date of December 2025 and an expiry date of December 2029.

In accordance with licence requirements, DFO-SCH is now submitting this amendment request and provide details on water use and construction work plans prior to commencing work in 2026.

4.0 Description of Proposed Amendments

DFO-SCH is requesting that the licence be amended to include:

- Authorization for water withdrawal from a municipal source.
- Authorization for water withdrawal from a natural source.
- Installation of culvert(s) not included in the original design.
- Inclusion of construction activities as described in newly developed work plans.

5.0 Project Location

The Arctic Bay Harbour Development Project is located near Arctic Bay, Nunavut. Approximate project coordinates are provided below.

Table 1. Project Feature Coordinates

Project Feature	**Latitude:**	**Longitude:**
Full Project Extents	**NW: 73° 2'31.97"N**	**85°13'46.46"W**
	NE: 73° 2'52.54"N	**85°12'41.60"W**
	SE: 73° 1'59.43"N	**85° 6'2.90"W**
	SW: 73° 1'50.97"N	**85°10'54.96"W**
Camp	**NW: 73° 2'3.05"N**	**85° 7'23.41"W**
	NE: 73° 2'0.30"N	**85° 7'11.90"W**
	SE: 73° 1'51.23"N	**85° 7'14.73"W**
	SW: 73° 2'1.63"N	**85° 7'26.11"W**
Maintenance Garage	**NW: 73° 1'54.64"N**	**85° 6'34.88"W**

	NE: 73° 1'54.79"N	**85° 6'28.61"W**
	SE: 73° 1'53.62"N	**85° 6'28.29"W**
	SW: 73° 1'53.19"N	**85° 6'34.09"W**
Quarry	**NW: 73° 2'26.96"N**	**85°12'48.36"W**
	NE: 73° 2'21.03"N	**85°12'1.35"W**
	SE: 73° 2'13.44"N	**85°12'4.70"W**
	SW: 73° 2'17.63"N	**85°12'33.86"W**
Natural Source water taking (Alternate Water Supply Lake)	**73° 2'39.70"N**	**85°13'12.88"W**
Approximate Quarry culvert	**73° 2'19.94"N**	**85°12'19.88"W**



Figure 1- Key Project locations map.

6.0 Description of Project Activities

Detailed construction activities are outlined in the submitted Construction Work Plans and include:

- Harbour development (previously approved).

- Camp development and operation.
- Quarry development (drilling, blasting, and material stockpiling).
- Waste management.
- Sediment and erosion control, including dust suppression.
- Traffic and road maintenance and management.
- Equipment maintenance.
- Installation of culverts to maintain natural drainage.

These activities were not fully described in the original licence application and are now being formally incorporated.

7.0 Water Use

7.1 Camp Water (Municipal Source)

Water for camp operations will be supplied by the Hamlet of Arctic Bay. Water will be delivered via truck under a service agreement between the contractor and the Hamlet.

- Estimated volume: **13 m^3/day**

7.2 Current Municipal Licence

The municipality of Arctic Bay has approval (NWB licence 3BM-ARC2530) to take up to 299 m^3/day or 75, 000 m^3/year. The source of this water is Marcil Lake which is beyond the physical limits of this project and is unlikely to be impacted from any project activities.

7.2 Construction Water (Natural Source)

Water for construction activities will be withdrawn from the **Alternate Water Supply Lake** using a truck-mounted pump.

- Pump intake will be equipped with a screened hose compliant with DFO's *End-of-Pipe Fish Protection Screen Code of Practice*
- Maximum pump capacity: **0.035 m^3/s**
- Typical operating capacity: **0.0166 m^3/s (264 GPM) (current truck mounted pump)**

Uses include:

- Dust suppression

- Soil compaction
- Equipment washing
- Other (concrete mix, etc.)
- Estimated volume: **up to 23 m^3/day (intermittent use)**

Actual Water Use

It is expected that water use will be similar to the DFO-SCH harbour project at Clyde River Harbour (NWB File 8BC-CLY2225) which suggest that actual usage is likely to remain low.

- ~150 **m^3/year (2024) for example**

7.3 Total Water Use Request

DFO-SCH is requesting authorization for combined water use (municipal and natural sources) of:

- **Up to 36 m^3/day**

8.0 Water Source Description and Potential Impacts

The Alternate Water Supply Lake has been identified as the preferred natural water source.

- Estimated surface area: ~9 ha.
- Assumed depth ~2 m.
- Estimated volume: ~180,000 m^3.

The lake is assumed to be freshwater and potentially fish-bearing. The quality is expected to be potable.

Given the relatively low withdrawal volumes, no significant impacts to water quantity, quality, or flow are anticipated.

Water applied to construction activities such as dust suppression and washing equipment, will not be large, concentrated volumes of water, meaning the water will be quickly absorbed into the ground or evaporate. Some may drain slowly toward natural drainage areas; however, risk of erosion is low.

9.0 Water Withdrawal Method

Water will be withdrawn using:

- A small truck-mounted pump.
- Screened intake hose compliant with DFO standards.
- Direct transfer into a water truck.

Water withdrawal will occur during the open water season (summer) and will cease during winter (typically November to June).

10.0 Culvert Installation

A new culvert is proposed along the quarry access road to maintain natural surface drainage.

- The affected drainage feature is not fish-bearing.
- Standard culvert design and installation practices will be followed.
- Supporting drawings are included in the submission.

11.0 Mitigation Measures

The following plans have been prepared and submitted to support the project:

- Contractor Construction Environmental Management Plan (CCEMP)
- Spill Prevention and Response Plan
- Sediment and Erosion Control Plan
- Traffic Management Plan
- Quarry Blasting and Management Plan

All water intakes will comply with applicable DFO Codes of Practice.

12.0 Existing Licence Conditions

The current licence restricts the following:

- No direct/consumptive water use.
- No waste disposal at site.
- No camp construction.
- No drilling activities.

13.0 Requested Licence Amendments

DFO-SCH respectfully requests that the NWB amend the current licence to permit:

13.1 Construction Activities

- Camp development and operation.
- Quarry development (including drilling and blasting)
- Material hauling and minor road modifications.
- Equipment maintenance
- Other activities identified in Construction Work Plans

13.2 Water Use

- Municipal water use: **13 m^3/day**
- Natural source withdrawal: **up to 23 m^3/day**

13.3 Infrastructure

- Installation of culverts to maintain drainage

13.4 Waste Management

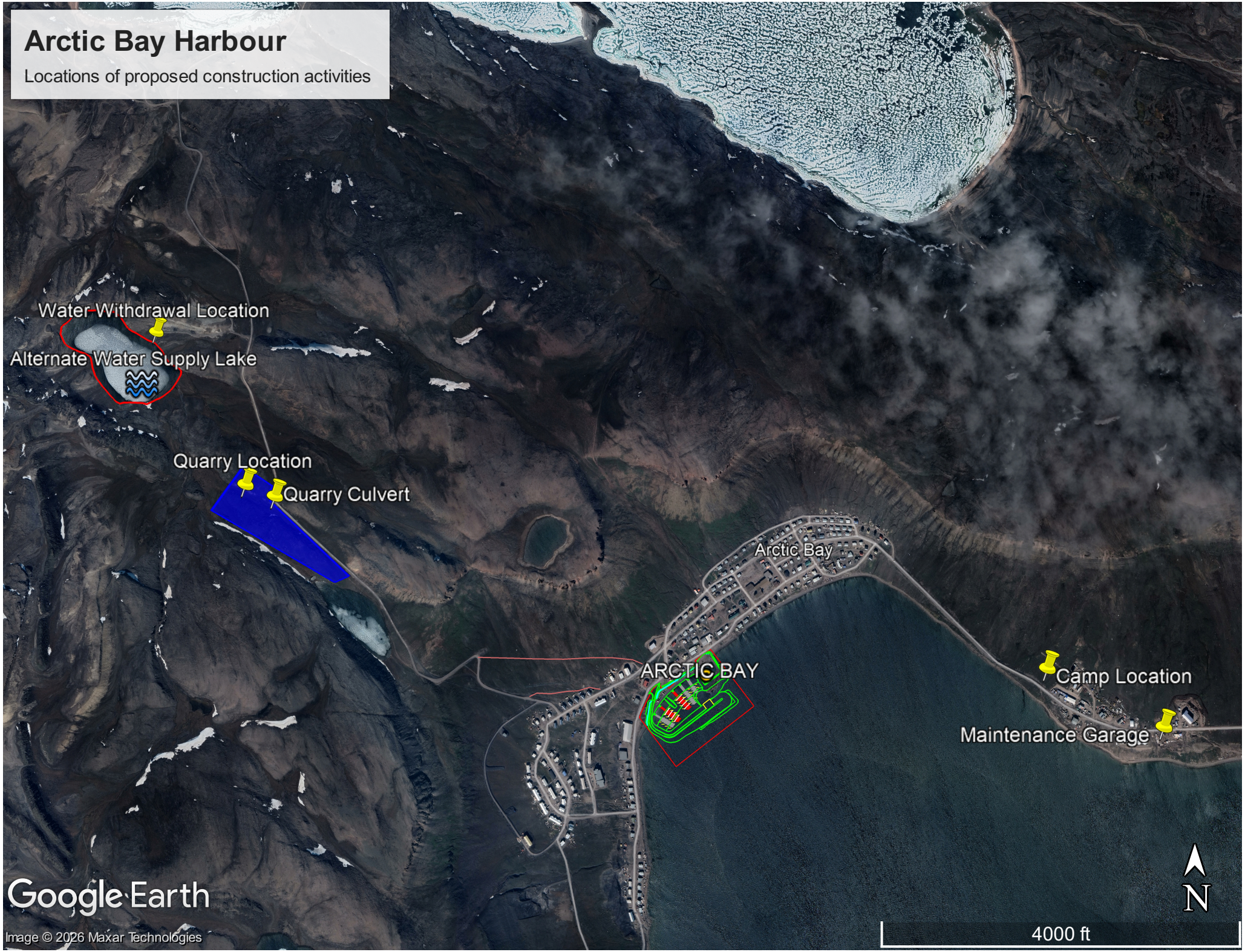
- Waste handling and disposal in accordance with the submitted Waste Management Plan

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14.0 Conclusion

This amendment request reflects updated project design, construction methods, and operational requirements. The proposed activities are supported by mitigation measures and are not anticipated to result in significant adverse environmental effects.

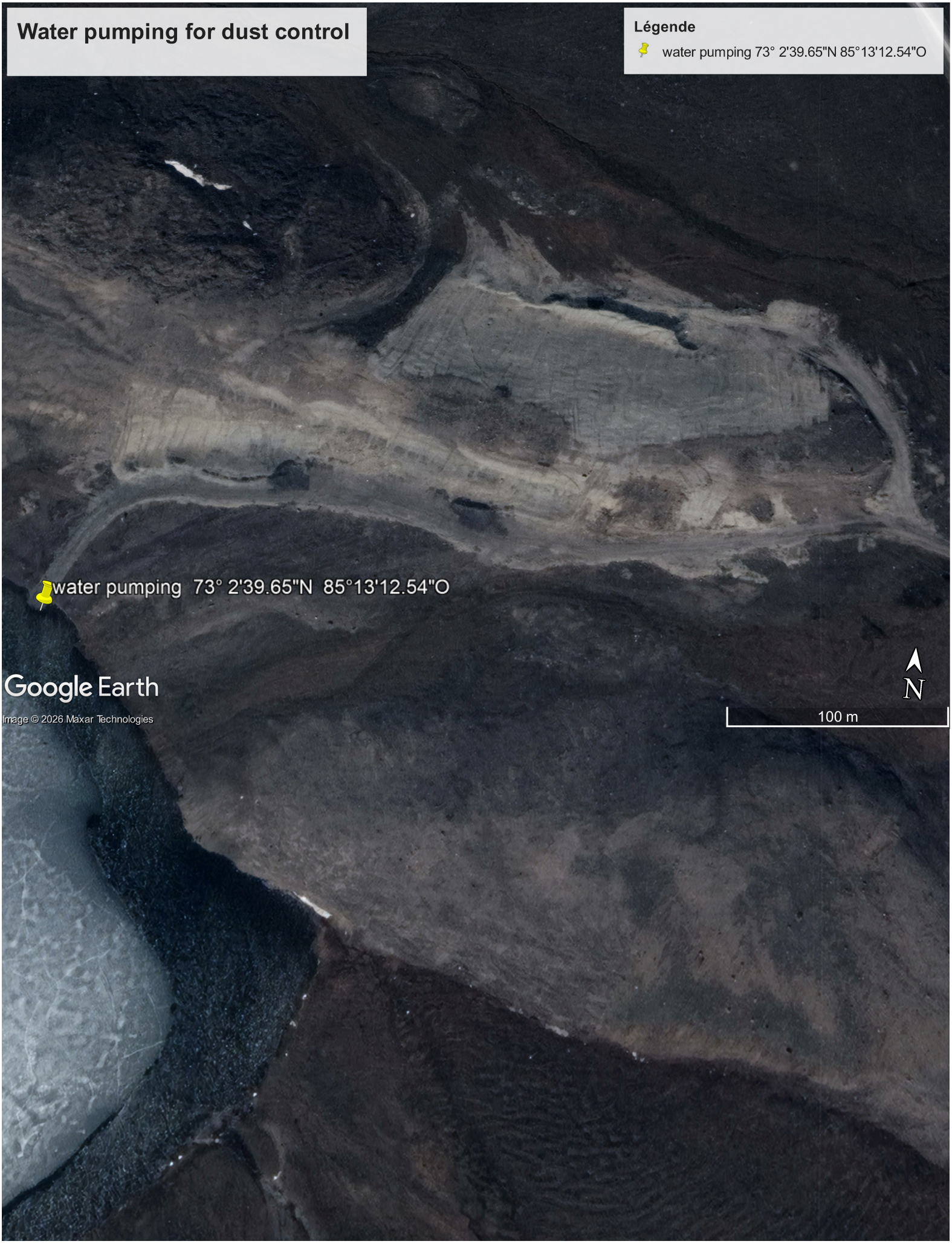
DFO-SCH respectfully requests NWB approval of this amendment to allow the project to proceed as planned in 2026.

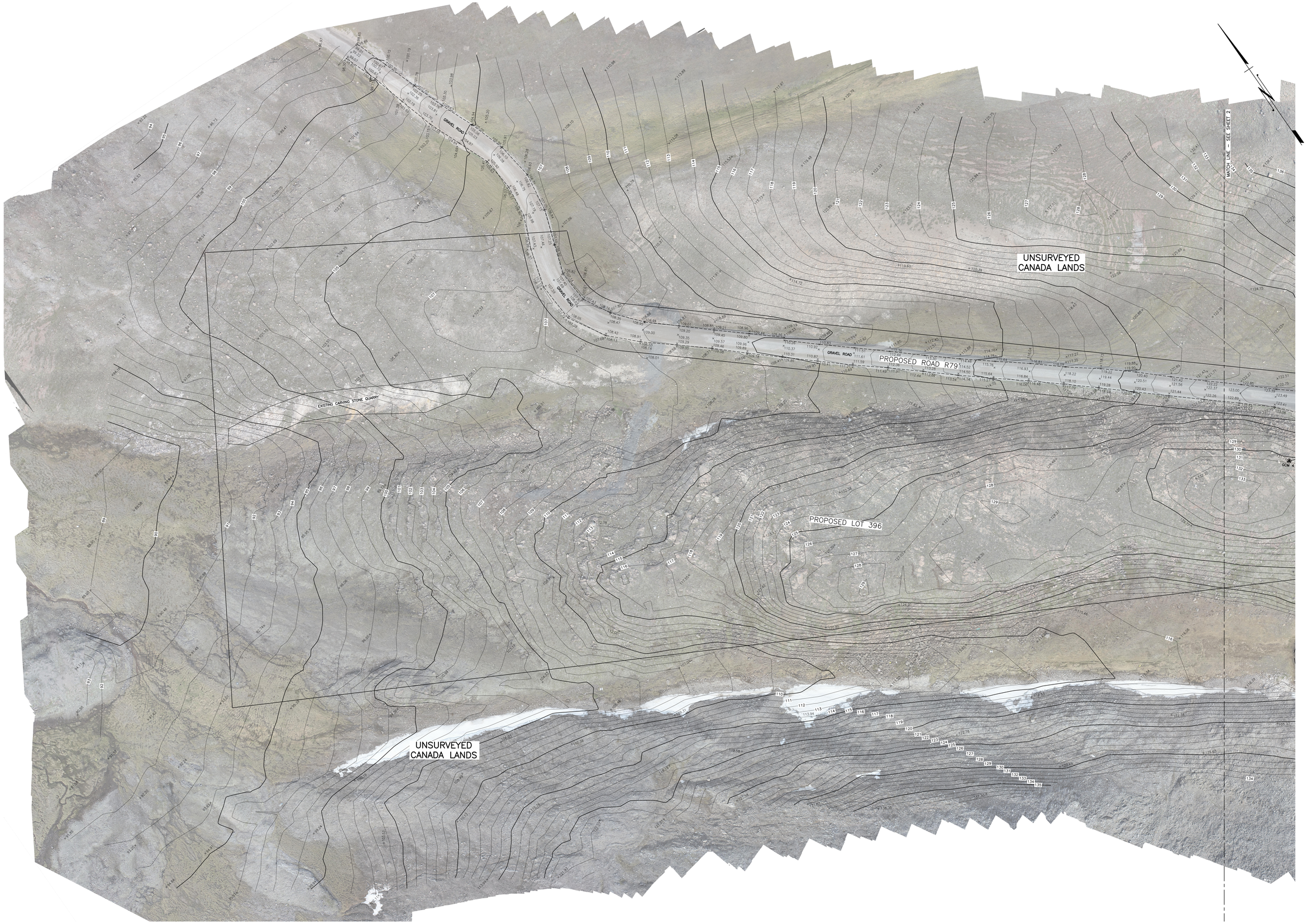

Arctic Bay Harbour
Locations of proposed construction activities
Water Withdrawal Location
Alternate Water Supply Lake
Quarry Location
Quarry Culvert
Arctic Bay
ARCTIC BAY
Camp Location
Maintenance Garage
N
4000 ft
Google Earth
Image © 2026 Maxar Technologies

Water pumping for dust control

Légende

water pumping 73° 2'39.65"N 85°13'12.54"O





LEGEND :

DENOTES GROUND CONTROL MONUMENT (GCM)
DENOTES APPROXIMATE PROPERTY LINES

NOTES:

THIS DRAWING IS IN ZONE 16N, NAD83(CSRS)2010 UTM MAP PROJECTION.
UTM POSITIONS ARE BASED ON STATIC GNSS OBSERVATIONS WHICH WERE PROCESSED USING NRCAN'S PRECISE POINT POSITIONING SERVICE.

TO CONVERT FROM UTM TO GROUND, DIVIDE NORTHING AND EASTING BY THE COMBINED SCALE FACTOR 0.999642735004 AT THE PROJECT ORIGIN (0,0)

DIMENSIONS SHOWN ON THE PLAN ARE HORIZONTAL GROUND DISTANCES IN METRES AND DECIMALS THEREOF.
ELEVATIONS ARE GEODETIC AND IN METRES, REFERENCING THE CGG2013A GEOID.

PROPERTY LINES ARE UNSURVEYED, BASED ON CLSR RECORDS.
BUILDINGS LOCATIONS ARE BASED ON ORTHOPHOTO DIGITIZATION.

CONTROL POINTS

STATION	NORTHING	EASTING	GEODETIC ELEVATION	ESTIMATED ABSOLUTE ACCURACY
GCM 4	8105506.344	558627.705	131.787	0.05
GCM 7038906	8105061.206	559732.714	14.739	0.05

ELEVATIONS SHOWN THUS : +0.00
INVERT OF CULVERT ELEVATIONS SHOWN THUS : +0.00(INV)

CONTOUR INTERVAL= 1.0m

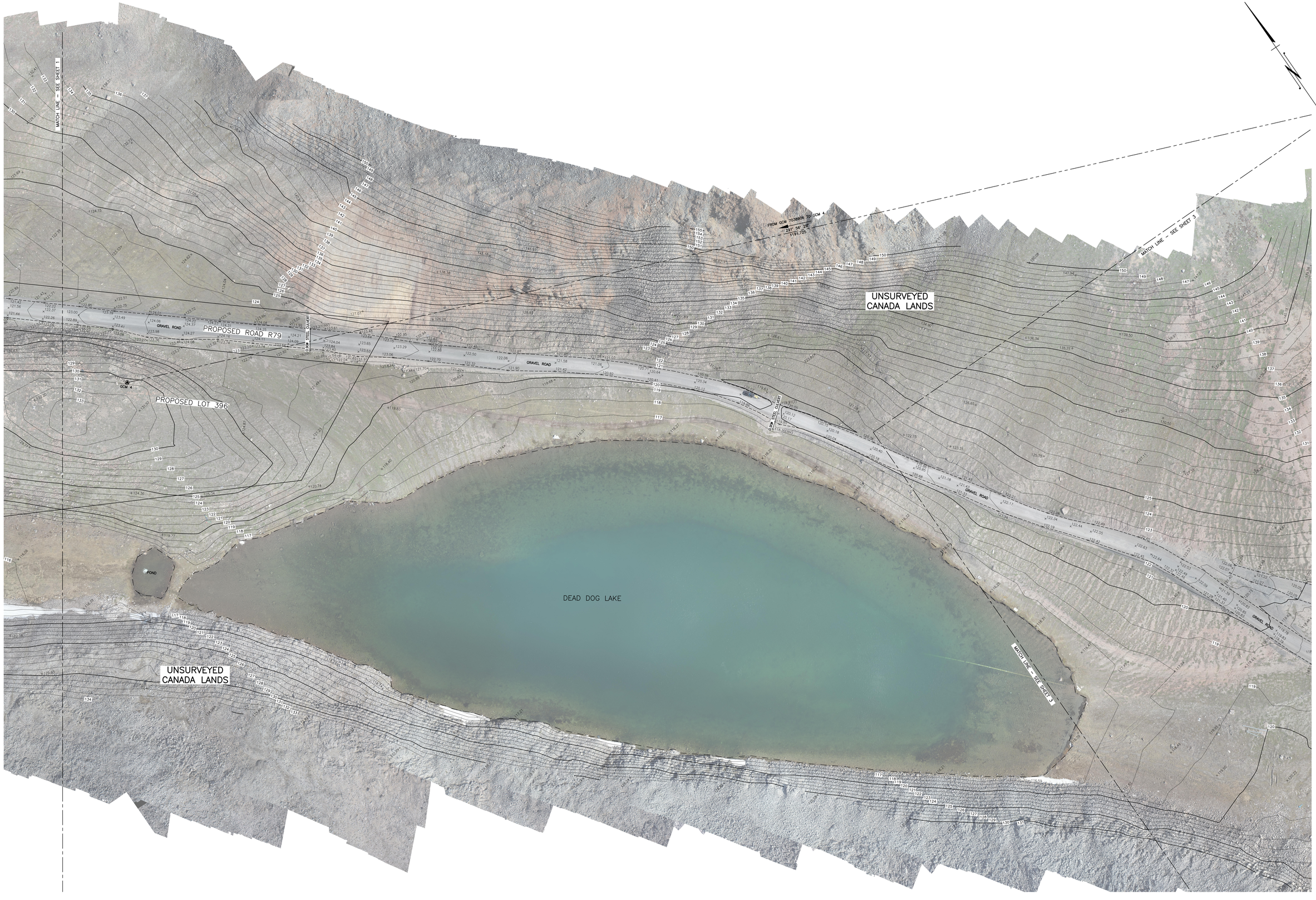
1:500
5m 0 25m

NO.	DD/MM/YY	REVISION	BY

UNDERHILL GEOMATICS LTD.
ENGINEERS & SURVEYORS
301, 8337 EASTLAKE DRIVE
BURNABY, B.C. V5A 4W2
TEL. (604) 732-3384 FAX (604) 732-4709

DRAWN BY	JOB NO.	TITLE	DRAWING NO.	REV.
AR/JD/JL	V21080	TOPOGRAPHIC SURVEY SHOWING THE PROPOSED ROCK QUARRY AND ROAD, ARCTIC BAY, NUNAVUT	L-402B	0
SCALE 1:500	DATE SEPT 13 ,21	CLIENT ADVISIAN	SHEET 1 OF 4	

FILE NO. V21080-TOP-Q-01-M-RO.DWG F.B. 1906 Pg. 59-75



LEGEND :

- ⏃ DENOTES GROUND CONTROL MONUMENT (GCM)
- — · — · — DENOTES WATER LINE
- — — — — DENOTES CONTROL LINE
- ——— DENOTES APPROXIMATE PROPERTY LINES

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GCM 7038906	8105061.206	559732.714	14.739	0.05

ELEVATIONS SHOWN THUS : +8.50
INVERT OF CULVERT ELEVATIONS SHOWN THUS : +6.00(INV)

CONTOUR INTERVAL= 1.0m

1:500
5m 0 25m

NO.	DD/MM/YY	REVISION	BY

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SCALE 1:500	DATE SEPT 13 ,21	CLIENT ADVISIAN	SHEET 2 OF 4	

FILE NO. V21080–TOP–Q–01–M–R0.DWG F.B. 1906 Pg. 59–75

MATCH LINE – SEE SHEET 2

MATCH LINE – SEE SHEET 4

MATCH LINE – SEE SHEET 2

FROM GCM 7038906 TO GCM 4
317° 56' 27"
11917.725

UNSURVEYED
CANADA LANDS

UNSURVEYED
CANADA LANDS

PERMAFROST MONITORING POINT

GRAVEL ROAD

CLSR STEEL CULVERT

96030 CLSR ROAD KM 5

CLSR 24

CLSR 48

96030 46

96030 20

96030 44

BUILDING

78009

78009 CLSR ROAD

LEGEND :

- DENOTES PERMAFROST MONITORING POINT
- GW DENOTES GUY WIRE
- PP DENOTES POWER POLE
- DENOTES CONTROL LINE
- OH DENOTES OVERHEAD WIRE
- DENOTES WATER LINE
- DENOTES APPROXIMATE PROPERTY LINES

NOTES:

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CONTOUR INTERVAL= 1.0m

5m 0 1:500 25m

NO.	DD/MM/YY	REVISION	BY

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TEL. (604) 732-3384 FAX (604) 732-4709

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AR/JD/JL	V21080
SCALE	DATE
1:500	SEPT 13 ,21

TITLE: TOPOGRAPHIC SURVEY SHOWING THE PROPOSED ROCK QUARRY AND ROAD, ARCTIC BAY, NUNAVUT

CLIENT: ADVISIAN

DRAWING NO. L–402B REV. 0

SHEET 3 OF 4

FILE NO. V21080–TOP–Q–01–M–RO.DWG F.B. 1906 Pg. 59–75

Pilitak Enterprises - GC
1519, Sivumugiaq Street
Iqaluit, Nunavut X0A3H0
P: 4187816114

Project: 2025393 Small Craft Harbour Construction
Arctic Bay, Nunavut X0A 0A0

Submittal #007.0 - Traffic Management Plan

Revision	0	**Submittal Manager**	François Bourassa
Status	Open	**Date Created**	May 5, 2026
Issue Date	May 5, 2026	**Spec Section**	
Responsible Contractor	PILITAK ENTERPRISES LTD	**Received From**	
Received Date		**Submit By**	
Final Due Date	May 25, 2026	**Lead Time**	
		Cost Code	
		Type	Shop drawing

Submittal Package

Approvers Andre Dratwa (WORLEY CANADA SERVICES LTD.), Chris Meisl (WORLEY CANADA SERVICES LTD.), Mitchell Partaker (PUBLIC WORKS AND GOVERNMENT SERVICES CANADA (WESTERN REGION))

Ball in Court François Bourassa

Distribution

Description

Submittal Workflow

Name	Sent Date	Due Date	Returned Date	Response	Attachments
General Information Attachments					Traffic Management Plan rev-00.pdf
François Bourassa		May 15, 2026		Pending	
Andre Dratwa		May 25, 2026		Pending	
Chris Meisl		May 25, 2026		Pending	
Mitchell Partaker		May 25, 2026		Pending	

TABLE 1

(REFERENCE CSPI HANDBOOK OF STEEL DRAINAGE & HIGHWAY CONSTRUCTION PRODUCTS - TABLE 2.7 & 2.8)

CORRUGATED STEEL PIPE (CSP) STANDARD SIZES

INSIDE DIAMETER (mm)	END AREA (m^2)	68 x 13 mm CORRUGATION PROFILE				125 x 25 mm CORRUGATION PROFILE			Minimum cover (mm)	
		THICKNESS (mm)				THICKNESS (mm)			CL-625	E-80
		1.6	2.0	2.8	3.5	2.0	2.8	3.5		
300	0.07	■	■						300	300
400	0.13	■	■						300	300
500	0.20	■	■	■					300	300
600	0.28	■	■	■					300	300
700	0.38	■	■	■					300	300
750	0.44	■	■	■					300	300
800	0.50	■	■	■					300	300
900	0.64	■	■	■	■				300	300
1000	0.79	■	■	■	■				300	300
1200	1.13	■	■	■	■				300	500
1400	1.54			■	■	■	■	■	300	500
1500	1.77			■	■	■	■	■	300	500
1600	2.01			■	■	■	■	■	300	500
1800	2.54				■		■	■	300	500
2000	3.14						■	■	300	500
2200	3.80						■	■	300	700
2400	4.52						■	■	300	700
2700	5.73							■	500	700
3000	7.07							■	500	1000
3300	8.55							■	500	1000
3600	10.18							■	500	1000

LEGEND	
■	AVAILABLE
	NOT AVAILABLE

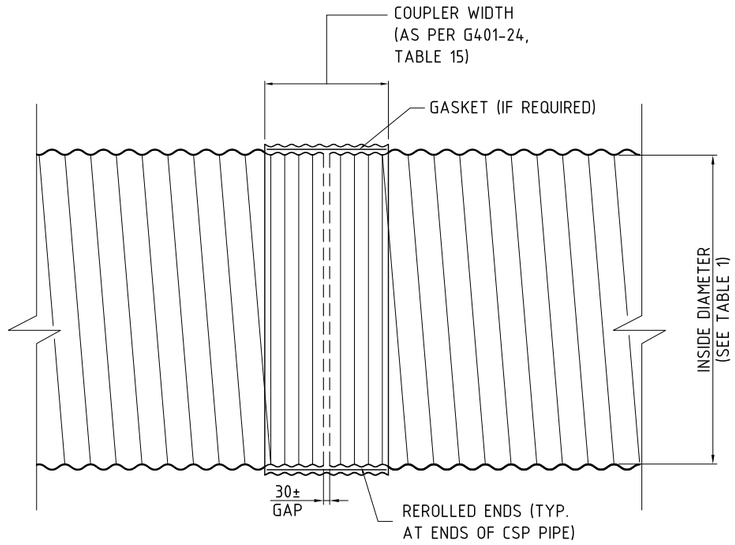
* STANDARD PIPE LENGTHS (NOMINAL): 6000 mm, 9000 mm (LENGTHS UP TO 15000mm AVAILABLE UPON REQUEST)

Culvert E1
- 600 mm diam corrugated steel pipe
- Section 9 m and 7.3 m + coupler
-Total length 16.3 m

TABLE 2

CORRUGATED STEEL PIPE (CSP) COATINGS

TYPE	SPECIFICATION
GALVANIZED	CSA G401-24
ALUMINIZED TYPE 2	CSA G401-24
POLYMER LAMINATED	CSA G401-24

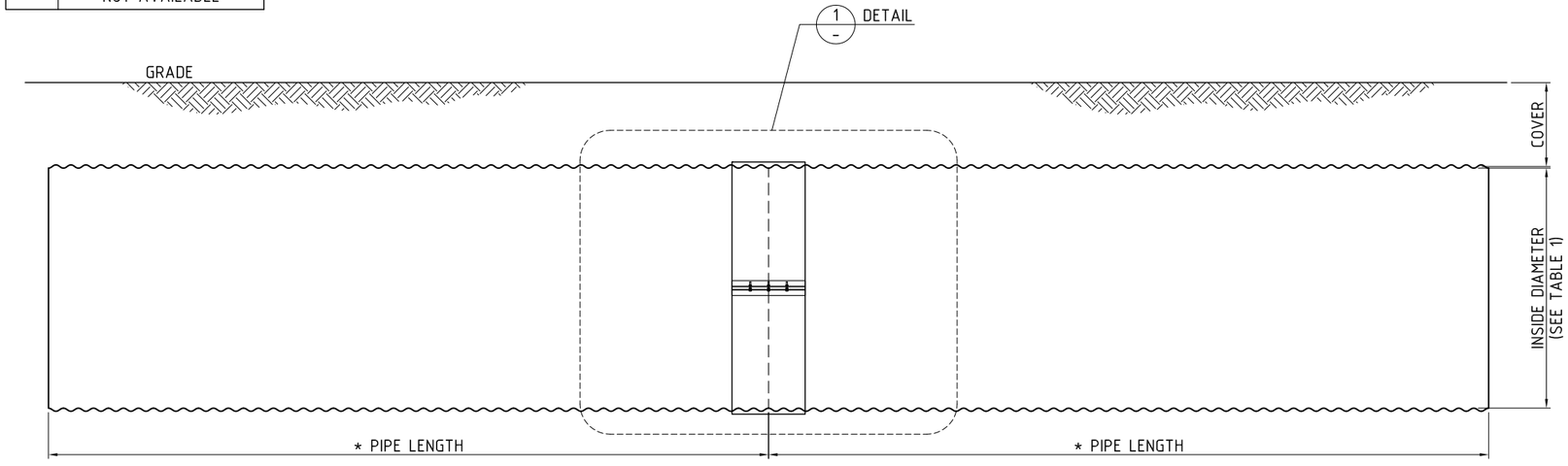


1 DETAIL- TYPICAL COUPLER CONNECTION DETAIL
SCALE: 1:30

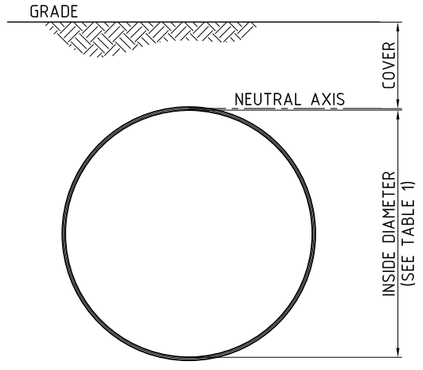
GENERAL NOTES

ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS NOTED OTHERWISE.
ALL DIMENSIONS ARE TO THE INSIDE CREST OF STEEL UNLESS NOTED OTHERWISE.

1. DESIGN STANDARDS, SPECIFICATIONS AND GUIDELINES
   1.1. DESIGN BY OTHERS.
2. STEEL CULVERT
   2.1. STEEL TO CONFORM TO CSA G401-24.
3. RECOMMENDED EXCAVATING AND BACKFILLING
   3.1. RECOMMENDED ENGINEERED BACKFILL LIMITS, MATERIAL, AND PROCEDURES ARE SUGGESTED STANDARDS BY ATLANTIC INDUSTRIES LIMITED. DESIGN OF THIS STRUCTURE IS BY OTHERS. SPECIFIC PROJECT TECHNICAL SPECIFICATIONS MAY OVER-RIDE THESE REQUIREMENTS, IF MORE STRINGENT.
   3.2. THE GRANULAR MATERIAL IN THE ENGINEERED BACKFILL ZONE SHOULD MEET THE REQUIREMENTS SPECIFIED BY ATLANTIC INDUSTRIES LIMITED (SEE ENGINEERED BACKFILL MATERIAL NOTES).
   3.3. PLACEMENT OF GRANULAR MATERIAL IN THE ENGINEERED BACKFILL ZONE AS PER ATLANTIC INDUSTRIES LIMITED (SEE BACKFILL PROCEDURE NOTES).
   3.4. WHEN REQUIRED, AS DETERMINED BY THE OWNER'S GEOTECHNICAL ENGINEER, A GEOTEXTILE OR GRADED SOIL FILTER SHALL BE USED BETWEEN THE ENGINEERED BACKFILL AND THE SOIL BEYOND TO PREVENT MIGRATION OF FINES AND POSSIBLE INTERNAL EROSION OF THE SOIL.
   3.5. INVERT ELEVATION MUST PROVIDE ADEQUATE FROST AND SCOUR PROTECTION AS DETERMINED BY OWNER'S GEOTECHNICAL ENGINEER.
   3.6. ANY UNSUITABLE FOUNDATION MATERIAL BELOW THE INVERT OR ENGINEERED BACKFILL OF THE STRUCTURE, AS DETERMINED BY THE OWNER'S GEOTECHNICAL ENGINEER, SHALL BE EXCAVATED AND REPLACED WITH SUITABLE MATERIAL AND COMPACTED AS DIRECTED BY SAME.
4. HYDRAULICS/SCOUR
   4.1. STRUCTURE MUST MEET HYDRAULIC REQUIREMENTS OF THE SITE AS DETERMINED BY THE OWNER'S HYDROTECHNICAL ENGINEER.
   4.2. PLACE RIP RAP PROTECTION AS DESIGNED AND SUPPLIED BY THE OWNER'S HYDROTECHNICAL ENGINEER. EXTENT AND SIZE SHALL BE DETERMINED BY THE OWNER'S HYDROTECHNICAL ENGINEER.
   4.3. GASKETS TO BE USED AS REQUIRED BY OWNER'S HYDROTECHNICAL ENGINEER. REFERENCE G401-24 FOR GASKET DETAILS.



LONGITUDENAL VIEW
SCALE 1:50



SECTIONAL VIEW
SCALE 1:50

December 8, 2025 3:20:46 PM

REV NO.	DATE	BY	DESCRIPTION
0	29 OCT 25	VO	INITIAL ISSUE

Atlantic Industries Limited
CALL TOLL FREE IN NORTH AMERICA 1-877-AIL-PIPE
www.ail.ca www.atlanticindustries.us

ATLANTIC INDUSTRIES LIMITED - BACKFILL CRITERIA
CORRUGATED STEEL PIPE (CSP)
GENERAL ARRANGEMENT, SIZE TABLE, NOTES

BRANCH P.O.	CUSTOMER REF.	TOTAL DWGS
-	-	2

PROJECT NUMBER	DWG NO.	REV.
SM-805-Qc	001	0

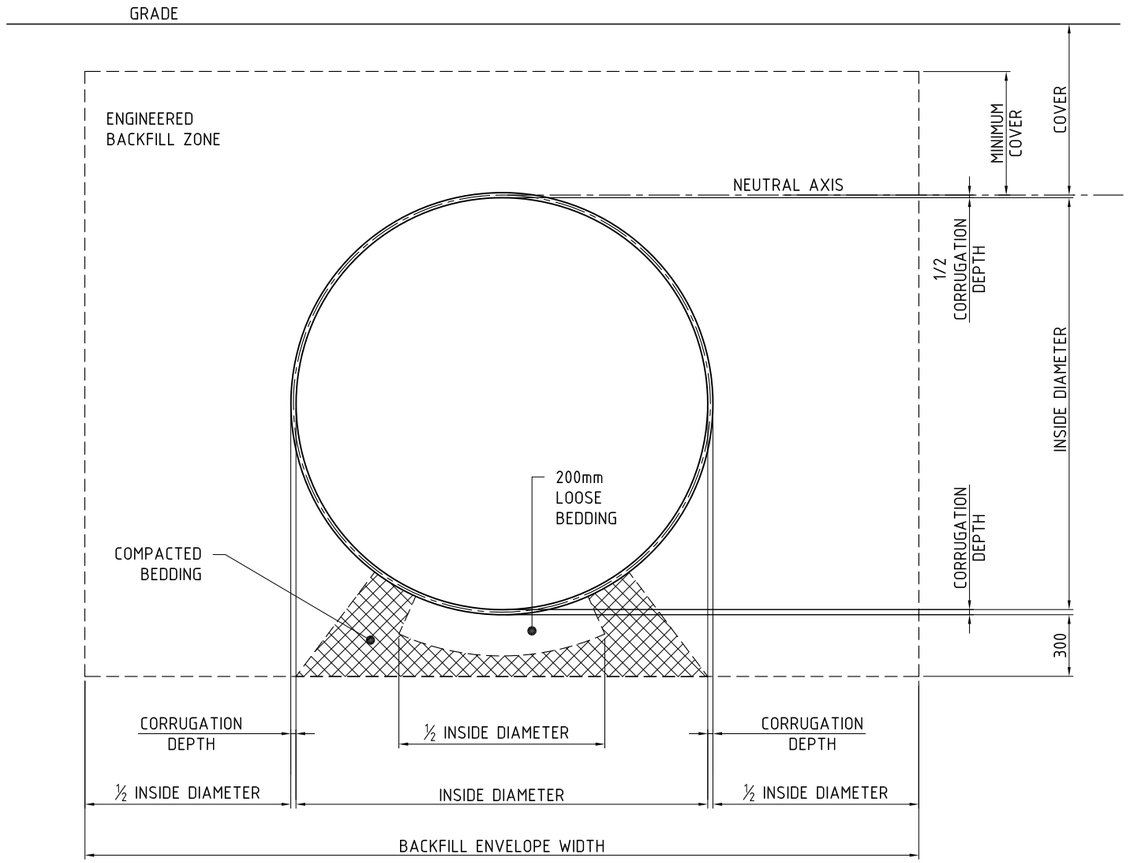
THIS DRAWING IS THE PROPERTY OF ATLANTIC INDUSTRIES LIMITED (AIL) AND MAY CONTAIN PROPRIETARY INFORMATION. WRITTEN APPROVAL MUST BE GIVEN BY AIL PRIOR TO ANY INFORMATION CONTAINED HEREIN BEING USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT WAS ISSUED. THIS DRAWING SHALL BE RETURNED TO AIL UPON REQUEST. © ATLANTIC INDUSTRIES LIMITED (2025)

RECOMMENDED ENGINEERED BACKFILL/BEDDING MATERIAL:

1. GENERAL REQUIREMENTS
   - 1.1. THE SOIL SHALL SATISFY STRENGTH AND COMPRESSIBILITY CRITERIA USED IN THE DESIGN OF THE SOIL-METAL STRUCTURE AND SHALL NOT BE ADVERSELY AFFECTED AFTER PLACEMENT BY WETTING, DRYING, SATURATION, FREEZING, THAWING, VIBRATIONS, OR BY FLOWING WATER.
2. BACKFILL SOIL GRADATION REQUIREMENTS
   - 2.1. MATERIAL WITHIN THE ENGINEERING BACKFILL ENVELOPE SHALL MEET THE REQUIREMENTS OF SOILS CLASSIFIED AS GW, GP, GM, GC, SW, SP AS PER ASTM D2487.
   - 2.2. MAXIMUM PARTICLE SIZE
     THE LARGEST PARTICLE SIZE OF THE SOIL USED WITHIN THE BEDDING IF REQUIRED SHALL NOT BE GREATER THAN 25 mm.
     THE LARGEST PARTICLE SIZE OF THE SOIL USED WITHIN THE ENGINEERED BACKFILL ZONE SHALL NOT BE GREATER THAN 76 mm.
   - 2.3. GRADATION
     MATERIAL SHALL SATISFY THE FOLLOWING GRADATION CRITERIA. GRADATION CRITERIA IS WAIVED IF GRAVEL CONTENT (> 4.75 mm) IS GREATER THAN 60%:
     $Cu \geq 3$ WHERE $Cu = (D60 / D10)$
     $1 < Cc < 3$ WHERE $Cc = [(D30)2 / (D60*D)]$
   - 2.4. FINES CONTENT
     THE FINES CONTENT SHALL NOT EXCEED 12% FOR THE BEDDING AND ENGINEERED BACKFILL ZONE SOIL.
   - 2.5. ENGINEERING BACKFILL IN DIRECT CONTACT WITH CSP SHALL MEET THE FOLLOWING ELECTROCHEMICAL LIMITS:
     * PH 5-10 AS PER AASHTO 289-91 OR EQUIVALENT;
     * RESISTIVITY >3000 OHM CM AS PER AASHTO T288-91 OR EQUIVALENT;
     * ORGANIC MATTER CONTENT 1% MAXIMUM AS PER AASHTO T267-86 OR EQUIVALENT
   - 2.6. PLASTICITY
     PLASTICITY OF THE SOIL USED FOR BEDDING SHALL SATISFY LL< 25% AND PI < 6%. SOIL USED WITHIN THE ENGINEERED BACKFILL ZONE SHALL SATISFY LL < 20% AND PI < 6%. LL AND PI AS PER ASTM D4318.
3. CHEMICAL AND ENVIRONMENTAL WATER REQUIREMENTS
   - 3.1. THE CHEMICAL AND ENVIRONMENTAL REQUIREMENTS OF THE WATER FLOWING INSIDE THE CULVERT, AS WELL AS THE LEVEL OF ABRASION, MUST COMPLY WITH THE GUIDELINES OF CSPI TECHNICAL BULLETIN #1, BASED ON THE PROTECTIVE COATING SELECTED FOR THE PROJECT. COMPLIANCE WITH THESE GUIDELINES IS ESSENTIAL TO ENSURE THE DURABILITY OF THE CULVERT.
4. DELETERIOUS MATERIALS
   - 4.1. MATERIAL SUSCEPTIBLE TO BREAKDOWN WHEN HANDLED, WETTED AND COMPACTED SUCH AS SHALES AND CLAYSTONES ARE CONSIDERED DELETERIOUS MATERIALS AND SHALL NOT BE ALLOWED IN THE ENGINEERED BACKFILL ZONE.
   - 4.2. FROZEN MATERIAL SHALL NOT BE ALLOWED IN THE ENGINEERED BACKFILL ZONE.
5. QUALITY ASSURANCE
   - 5.1. QUALITY CONTROL STATISTICAL PROCEDURES AND OR GUIDELINES PROVIED BY THE PROJECT OWNER OR AUTHORIZED REPRESENTATIVE SHALL BE ADOPTED IN RESPECT OF SOIL SAMPLING, LABORATORY AND IN SITU TESTING, AND CRITERIA FOR ACCEPTANCE OF THE SOIL COMPENENTS OF THE SOIL-METAL STRUCTURE.

RECOMMENDED BACKFILL PROCEDURE:

1. THE BEDDING AND BACKFILL MATERIAL SHALL BE PLACED AND COMPACTED TO 95% STANDARD POCTOR DRY DENSITY (ASTM D698). THE GRANULAR BACKFILL MATERIAL IN THE ENGINEERED BACKFILL ZONE SHALL BE PLACED UNIFORMLY ON BOTH SIDES OF THE STRUCTURE SIMULTANEOUSLY, IN LOOSE LIFTS OF 200 MM THICKNESS. THE DIFFERENCE IN LEVELS OF THE BACKFILL ON THE TWO SIDES AT ANY TRANSVERSE SECTION SHALL NOT EXCEED 200 MM.
2. FOR COMPACTION UNDER THE HAUNCHES A POLE OR 50X100 MM TIMBER IS GENERALLY NEEDED TO WORK IN THE SMALLER AREAS. HAND TAMPERS FOR COMPACTING HORIZONTAL LAYERS SHOULD HAVE A MASS NOT LESS THAN 9 KG AND HAVE A TAMPING FACE NOT LARGER THAN 150X150MM.
3. HEAVY VIBRATORY COMPACTION EQUIPMENT SHALL NOT BE ALLOWED CLOSER THAN 1000 MM OF THE STRUCTURE WALL OR SO CLOSE AS TO CAUSE DISTORTION. BACKFILL CLOSEST TO THE STRUCTURE SHALL BE COMPACTED USING LIGHT WEIGHT MANUALLY OPERATED VIBRATORY OR TAMPING EQUIPMENT RUNNING PARALLEL WITH THE LENGTH OF THE STRUCTURE AT ALL TIMES. SEE NOTE 6.0 FOR COMPACTING SOIL OVER THE TOP OF THE STRUCTURE.
4. AT NO TIME SHALL THE BACKFILL MATERIAL BE DUMPED NEXT TO THE STRUCTURE WALL SO AS TO CHANGE THE SHAPE OR ALIGNMENT. VEHICLES CAN UNLOAD IN ROUGH LAYERS NO CLOSER THAN 1500 MM FROM THE SIDEWALLS. HEAVY EQUIPMENT SHALL ALSO VEER AWAY FROM ENDS OF THE STRUCTURE BARREL.
5. THE STRUCTURE SHALL BE CHECKED PERIODICALLY DURING THE BACKFILLING PROCEDURE TO ENSURE THE SHAPE IS CONSISTENT WITH THE MANUFACTURER'S TOLERANCES.
6. PLACE AND COMPACT THE BACKFILL OVER THE TOP OF THE STRUCTURE (ABOVE 3/4 OF THE RISE) USING LIGHT EQUIPMENT PERPENDICULAR TO THE LONGITUDINAL AXIS OF THE STRUCTURE. THE MINIMUM REQUIRED COVER OVER THE STRUCTURE SHALL BE DETERMINED BY THE DESIGN ENGINEER FOR EACH TYPE OF EQUIPMENT. NO EQUIPMENT SHALL BE ALLOWED OVER THE STRUCTURE THAT WOULD EXCEED THE DESIGN LIVE LOAD AT THE FINAL MINIMUM DESIGN HEIGHT OF COVER.
7. THE CONTRACTOR OR CONTRACTOR'S DELEGATE SHALL BE REPONSIBLE FOR COMPACTION TESTING TO ENSURE COMPLIANCE WITH THE DESIGN AND SPECIFICATIONS.



BACKFILL ENVELOPE

SCALE 1:30

FIELD NOTES:

1. RECOMMENDED ENGINEERED BACKFILL LIMITS, MATERIAL, AND PROCEDURES AS SHOWN ARE SUGGESTED STANDARDS BY ATLANTIC INDUSTRIES LIMITED. SPECIFIC PROJECT TECHNICAL SPECIFICATIONS, IF MORE STRINGENT, MAY OVER-RIDE THESE REQUIREMENTS.
2. IF IN-SITU MATERIAL IS DEEMED EQUIVALENT OR BETTER THAN ENGINEERING BACKFILL, BACKFILL ZONE WIDTH MAY BE REDUCED TO THE MINIMUM WIDTH THAT ENSURES PROPER MATERIAL PLACEMENT/ COMPACTION. IF CLSM IS USED, TRENCH WIDTH ON EACH SIDE OF THE PIPE MAY BE REDUCED TO 150mm. REFERENCE AASHTO FOR FURTHER INFORMATION.
3. AMOUNT OF CAMBER TO BE DETERMINED BY THE OWNERS GEOTECHNICAL ENGINEER. CAMBER BEDDING MAY BE REQUIRED UNDER HIGH FILLS/ POOR FOUNDATION. MAXIMUM CAMBER GUIDELINES ARE PROVIDED IN CSPI GUIDELINE.

December 8, 2025 3:23:47 PM

REV NO.	DATE	BY	DESCRIPTION
0	29 OCT 25	VO	INITIAL ISSUE

Atlantic Industries Limited
CALL TOLL FREE IN NORTH AMERICA 1-877-AIL-PIPE
www.ail.ca www.atlanticindustries.us

ATLANTIC INDUSTRIES LIMITED - BACKFILL CRITERIA
CORRUGATED STEEL PIPE (CSP)
RECOMMENDED ENGINEERED BACKFILL INFORMATION

BRANCH P.O.	CUSTOMER REF.	TOTAL DWGS
-	-	2

PROJECT NUMBER	DWG NO.	REV.
SM-805-Qc	002	0

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PREMIUM TUBES
Fabricant de pieux et caissons
Pipe and Piling Manufact

77, rue Onésime-Lampron
Ste-Perpétue, Qc J0C 1RO
T. 819-870-4360
mium-tubes.com

Culvert W1
- 914 mm diam x 9.5mm steel pipe
- 2 x 40' sections to be welded at site
-Total length of 24.38m

CERTIFICAT DE CONF E
CONFORMITY CERTIFICATE METALLURGIC TEST

Vendu à / Sold to: Interpipe inc.
 # de commande/ order # 2510105
Date de commande / Order date 2025-12-08

Norme de soudage / CSA W47.1
Norme/ Norms: CSA
Spécifications/ Specifications: G40,21
Grade: 50W

Dimensions / Dimension **Tube en acier spiralé/** Spiral weld steel pipe	**Qté** Qty	**# Bobine** Coil #	**# Tube**/ pipe #	**# Coulée** Heat #
36" X ,375" X 40'	8	1275-1296	1	**230656**
		1296	2,3,4,5,6,7	
		1296-1297	8	

Analyse chimique (%)/ Chemical analysis (%)

Phosphore : .050 max.

# Coulée/ Heat #	**C**	**Mn**	**P**	**S**	**Si**	**Cu**	**Ni**	**Cr**	**Cb**	**Mo**	**Al**	**V**
230656	0,070	0,590	0,008	0,003	0,020	0,020	0,008	0,050	0,048	0,004	0,060	0,002
	Ti	**Ca**	**N**	**B**	**Sn**							
	0,002	0,0020	0,005	0,0001	0,002							

Résultats d'essais destructif (sur métal de base) / Mechanical test results (on base metal)

Limite élastique (lbs/po2) / Yield str.(PSI):	65 000	**% d'allongement en pouces** / Elongation % in inches	29,8
Résistance à la traction (lbs/po2)/ Tensile str.(PSI)	75 000		

Examen additionnel/ Additional exam

- Essais de pliage/ Bend test report
- Essais de macrographie/ Macrography test report
- Inspection visuel/ Visual exam
- Inspection dimensionnel/ Dimensional exam

Moulin / Producing mill **: PREMIUM TUBES INC.**

Autorisé par / Authorized by :

Christian Côté

Culvert E2
600 mm diam x 9.5mm
One section of 5.8m & 2 sections of 12m to be welded on site
Total length: 29.8 m

TATA STEEL

E DIVISION-MILL NO. 01
FICATE OF QUALITY

alapur, Near Khopoli Distt. : Raigad - 410203 (Maharashtra) INDIA

TSL/ERW/QC/F-23A REV. 07
DATE 13.11.2021

MATERIAL TEST CERTIFICATE (AS PER EN10204 TYPE 3.1)

MTC NO & DATE : TSL/MTC /2024/ASTM/00107 Date : 28.12.2024
CLIENT NAME : M/s INTERPIPE INC
INSPECTION AGENCY : M/s,----------
SALES ORDER NO. : 9518165533/2
PO NO. /LOA. : Sales Contract - TSVPIPE [KHP/_ 00712024 DATED 23.09.2024

PIPE SIZE : 610.00 MM OD X 9.53 MM WT .
SPECIFICATION & GRADE : ASTM A252 GR.3
TYPE OF PIPE : ERW/HFW
DELIVERY CONDITION : AS ROLLED
PACKING LIST NO. :----------

PO ITEM NO.	Heat No.	QTY. RELEASED		CUMM. QTY. RELEASED		Hydrostatic Test	Holding time	End Finish	UNIT OF CONVERSION
		No. of PCS	Qty (MTR)	No. of PCS	Qty (MTR)	pressure(Kg/cm2)	(Second)		
---	A182652	7	83.16			NA	NA	Bevel End	--
----	A282240	39	463.57			NA	NA	Bevel End	
---	A282461	14	166.32			NA	NA	Bevel End	
	TOTAL:	60	713.050	60	713.050				

SR. NO.	PIPE NO. COIL NO.	H/P	HEAT NO.	%Chemical Composition																								
				C	Mn	Si	S	P	Al	Al (sol)	Nb	V	Ti	Cr	Mo	Cu	Ni	N	B	Ca	Nb+V	Al/N	Cu+Ni	Nb+V+ Ti	Cr+Ni +Cu+ Mo+V	CE IIW	CE PCM	Result	Remarks
Specified Requirement			MIN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specified Requirement			MAX	-	-	-	-	0.0500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	TK24J4S013	H1	A182652	0.1354	1.2236	0.0148	0.0065	0.0168	0.0584	0.0553	0.0010	0.0012	0.0016	0.0204	0.0010	0.0128	0.0278	0.0034	0.0002	0.0023	0.0022	17.176	0.0406	0.0038	0.0504	0.3466	0.2004	OK	-
2	WO1180167	P1		0.1336	1.2235	0.0147	0.0069	0.0169	0.0600	0.0570	0.0012	0.0011	0.0010	0.0207	0.0012	0.0127	0.0275	0.0037	0.0001	0.0023	0.0023	16.216	0.0402	0.0033	0.0505	0.3448	0.1981	OK	-
3	WO1180161	P2		0.1333	1.2230	0.0145	0.0066	0.0167	0.0580	0.0550	0.0011	0.0010	0.0011	0.0205	0.0011	0.0126	0.0273	0.0036	0.0002	0.0024	0.0021	16.111	0.0399	0.0032	0.0499	0.3443	0.1982	OK	-
4	K407520250	H1	A282240	0.1423	0.9863	0.0622	0.0033	0.0205	0.0435	0.0415	0.0010	0.0010	0.0010	0.0232	0.0010	0.0072	0.0251	0.0032	0.0001	0.0025	0.0020	13.594	0.0323	0.0030	0.0503	0.3139	0.1963	OK	-
5	UO1161375	P1		0.1425	0.9870	0.0625	0.0035	0.0205	0.0455	0.0430	0.0011	0.0012	0.0011	0.0235	0.0012	0.0075	0.0253	0.0035	0.0002	0.0026	0.0023	13.000	0.0328	0.0034	0.0512	0.3144	0.1971	OK	-
6	UO1161389	P2		0.1423	0.9865	0.0623	0.0032	0.0203	0.0460	0.0436	0.0012	0.0011	0.0012	0.0232	0.0011	0.0072	0.0255	0.0035	0.0002	0.0025	0.0023	13.143	0.0327	0.0035	0.0509	0.3140	0.1968	OK	-
4	K407780290	H1	A282461	0.1421	0.8015	0.0103	0.0076	0.0179	0.0509	0.0461	0.0011	0.0012	0.0013	0.0248	0.0012	0.0094	0.0274	0.0034	0.0002	0.0025	0.0023	14.971	0.0368	0.0036	0.0546	0.2836	0.1859	OK	-
5	WO1180184	P1		0.1412	0.7959	0.0107	0.0079	0.0175	0.0510	0.0480	0.0012	0.0010	0.0011	0.0245	0.0012	0.0095	0.0276	0.0026	0.0001	0.0025	0.0022	19.615	0.0371	0.0033	0.0543	0.2817	0.1842	OK	-
6	WO1180173	P2		0.1410	0.7955	0.0105	0.0076	0.0172	0.0500	0.0470	0.0010	0.0011	0.0012	0.0243	0.0011	0.0092	0.0273	0.0027	0.0002	0.0024	0.0021	18.519	0.0365	0.0033	0.0538	0.2813	0.1844	OK	-

TATA STEEL LIMITED
REVIEWED BY

TATA STEEL LIMITED
APPROVED BY
NAME- AMIT SONVENE
AREA MANAGER

CLIENT/ TPIA

TATA STEEL

ERW PIPE DIVISION-MILL NO. 01
CERTIFICATE OF QUALITY

Village Nifan & Sarvoli, Kharpada Road Taluka-Khalapur, Near Khopoli Distt. : Raigad - 410203 (Maharashtra) INDIA

TSL/ERW/QC/F-23A REV. 07
DATE 13.11.2021

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MTC NO & DATE : TSL/MTC /2024/ASTM/00107 Date : 28.12.2024
CLIENT NAME : M/s INTERPIPE INC
INSPECTION AGENCY : M/s,----------
SALES ORDER NO. : 9518165533/2
PO NO. /LOA. : Sales Contract - TSVPIPE [KHP/_ 00712024 DATED 23.09.2024

PIPE SIZE : 610.00 MM OD X 9.53 MM WT .
SPECIFICATION & GRADE : ASTM A252 GR.3
TYPE OF PIPE : ERW/HFW
DELIVERY CONDITION : AS ROLLED
PACKING LIST NO. :----------

Mechanical Properties

Sr. NO.	PIPE NO./ COIL NO	M/P	HEAT NO.	TENSILE TEST (MPa) (Orientation -Transverse, Type-Strip)					Flattening Test		Reverse Bend Test	Micro Structure & grain size	DWTT % Shear Area	DWTT % Shear Area	DWTT % Shear Area	Hardness (HV10)		
				BASE METAL		WELD METAL	% EL.	YS/ UTS	0°	90°								
				YS	UTS	UTS							Individual	Individual	AVG.	Min	Max	Variance
Specified Requirement			MIN	310	455	-	20.0	-	-	-	-	-	-	-	-	-	-	-
			MAX	-	-	-		-	-	-	-	-	-	-	-	-	-	-
1	TK24J4S013	M1	A182652	477	588	-	29.4	-	-	-	-	-	-	-	-	-	-	-
2	WO1180161	P1		483	595	586	24.9	-	-	-	-	-	-	-	-	-	-	-
3	K407520250	M1	A282240	333	474	-	31.2	-	-	-	-	-	-	-	-	-	-	-
4	UO1161375	P1		359	487	490	29.1	-	-	-	-	-	-	-	-	-	-	-
3	K407780290	M1	A282461	315	459	-	33.4	-	-	-	-	-	-	-	-	-	-	-
4	WO1180173	P1		346	486	496	25.1	-	-	-	-	-	-	-	-	-	-	-

MATERIAL DESCRIPTION PRIME QUALITY CARBON STEEL ERW/HFW PIPES AS PER ASTM A252 GR 3 (LATEST EDITION)

We certify that the pipes have been manufactured as per Client Requirement & PER ASTM A252 GR 3 for the above mentioned order. The inspection and testing performed for this order as per approved QAP No - : TSL/QAP/ASTM/A252 REV 01, Date: 13.11.2021

1 PRIME QUALITY CARBON STEEL ERW/HFW PIPES AS PER ASTM A252 GR 3 (LATEST EDITION)
2 RAW MATERIAL (HR COIL) SUPPLIER IS TATA STEEL LIMITED, WORKS ADDRESS -NARENDRAPUR , KALINGANAGAR , ORISA INDIA .
3 REVIEW OF RMTC, VISUAL & DIMENSIONAL INSPECTION, CHEMICAL AND MECHANICAL TEST OF HR COIL PERFORMED AND THE RESULT FOUND WITHIN THE ACCEPTABLE LIMIT.
4 TENSILE TEST SPECIMEN LOCATION - PIPE BODY (180° OF WELD) AND PIPE WELD SEAM (0° OF WELD). ORIENTATION - TRANSVERSE, SAMPLE TYPE - STRIP, SIZE - WXT (38.1 MM MM X ACTUAL THICKNESS M
5 EACH PIPE BEVELLED AT AN ANGLE BETWEEN 30 - 35° WITH ROOT FACE OF 0.8 - 2.4 MM.
6 PIPE SURFACE CONDITION IS BARE
7 Visual Dimension ok & free from cracks, arc burns, lamination, dent & hard spots.
8 MARKING DONE ON INSIDE OF THE ONE END OF THE PIPE, MARKING SEQUENCE AS FOLLOWING ,

TATA
TATA STEEL

ERW - 610.00 -9.53 - WEIGHT PER UNIT LENGTH ASTM A252 GR 3
PIPE NO: XXXXX HEAT NO : XXXX LENGTH :XXXXX
Made In India

Legend: H- Heat Analysis, P- Product Analysis, M- Mill Control Test, B- Base,HAZ - Heat Affected Zone, W- Weld, AVG-Average ,

TATA STEEL LIMITED
REVIEWED BY

TATA STEEL LIMITED
APPROVED BY
NAME- AMIT SONVENE
AREA MANAGER

CLIENT/ TPIA