Construction Summary Report
IVR Diversion Channel

Agnico Eagle Mines Ltd

Report

6127-695-132-REP-012_R2

February 16, 2021

Prepared by:

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2021-02-16

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2021-02-16

Executive summary

SNC-Lavalin Stavibel Inc. was retained by Agnico Eagle Mines Limited to prepare a construction summary (as built) report for the IVR Diversion Channel project which will divert non-contact water away from the IVR Pit at the Whale Tail Gold Project Expansion, Nunavut.

SNC-Lavalin previously prepared a detailed engineering design report for the IVR Diversion Channel as requested by the amended Water Licence 2AM-WTP-1830 Part D Item 1, including construction drawing and technical specifications to support the construction activities.

SNC-Lavalin Stavibel Inc. wasn't involved in the construction of the IVR Diversion channel, the information presented in this report was provided in part by Agnico Eagle.

The construction of the IVR Diversion Channel was completed in October 2020. The construction monitoring and quality assurance was managed by Agnico Eagle.

This report summarizes the construction as-built information for the IVR Diversion Channel project.

Revision list

Revision			Pages revised	Comments
#	Par	Date		
0	IG/DB	December 2020	all	For internal review
1	IG/DB	January 2021	all	Comments for approval
2	IG/DB	February 2021	all	Final version

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Figures

Appendix

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1. Introduction

Agnico Eagle Mines Limited, Meadowbank Division (AEM) is developing the Whale Tail Project, a satellite deposit located on the Amaruq property (Kivalliq Region of Nunavut, Canada). As part of the expansion project, the surface water management and geotechnical infrastructure required for the Amaruq site include the IVR Diversion. This document presents the IVR Diversion Channel construction summary report required by the Water Licence 2 AM-WTP1830 Part D Item 16. As required by Water Licence Schedule D, this report contains the final design and construction drawings, a summary of construction activities including photographic records before, during and after construction. The as-built drawings, detailed explanation of field decision to reflect any deviations from the original construction drawings/plans and a discussion of the mitigation measures implemented during construction are also presented.

2. Project Description Summary

2.1 Site location plan

Agnico Eagle is developing the Whale Tail Project in the Kivalliq Region of Nunavut (65°24'25" N, 96°41'50" W). The 99,878-hectare Amaruq property is located on Inuit-owned and federal crown land, approximately 55 km north of the Meadowbank Mine.

The principal purpose of the IVR Diversion is to collect and divert the runoff (non-contact water) from the North East watershed into Nemo Lake. The watershed is located just north of the IVR WRSF and east of the IVR Pit, and it has an approximate area of 68.2 ha (with the IVR Diversion in place).

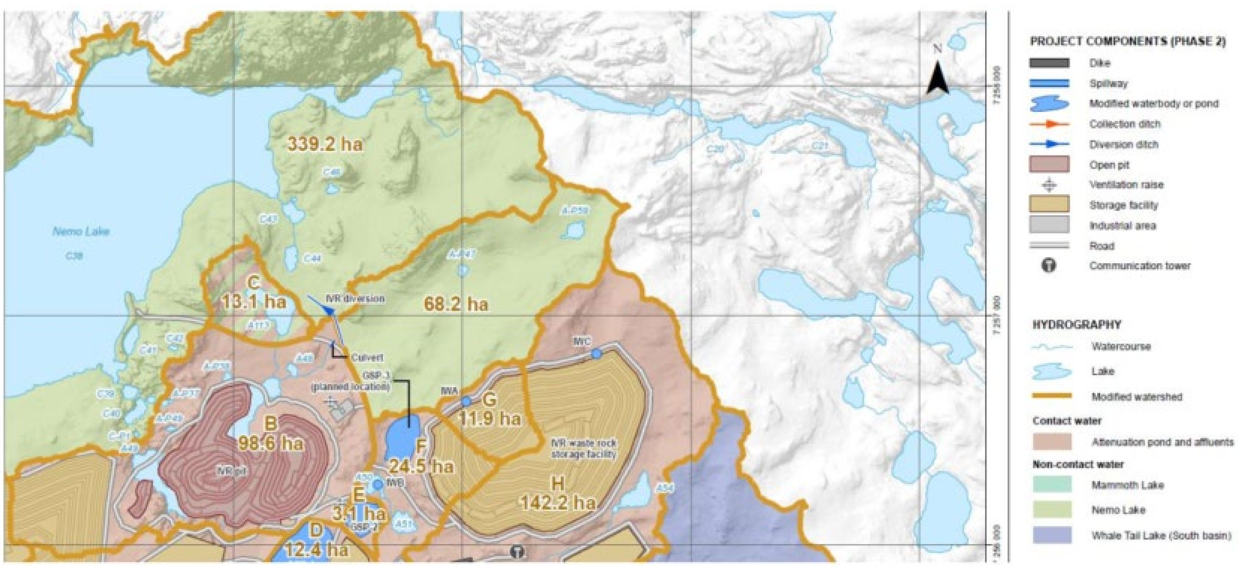

Figure 1 – IVR Diversion Location

2.2 IVR Diversion Channel design basis

The detailed Engineering of the channel was performed by SNC-Lavalin and is described in detail in the Design Report for IVR Diversion document (AEM Reference 6127-695-132-REP-004). The diversion system consists of a trapezoidal section channel in combination with a pervious perimeter berm that is delimiting the west boundary of the channel. The trapezoidal section consists of a layer of fine filter material placed on top of the excavated foundation followed by geotextile and overlain by riprap. The berm is part of the hydraulic section that provides the extra capacity for the system (IVR Diversion) to properly reroute the runoff volumes from the 68.2 ha-watershed during flood events (i.e. 1:100-Yr Flood). This berm is also used as an access road for inspection and maintenance of the infrastructure. The access road has a minimum height of 1.5 m as per the minimum requirement for access roads at the Amaruq site. The IVR Diversion is a temporary structure that is required for the duration of operations at the IVR pit, from 2021 to 2025. The Figure 2 shows a typical section of the IVR Diversion.

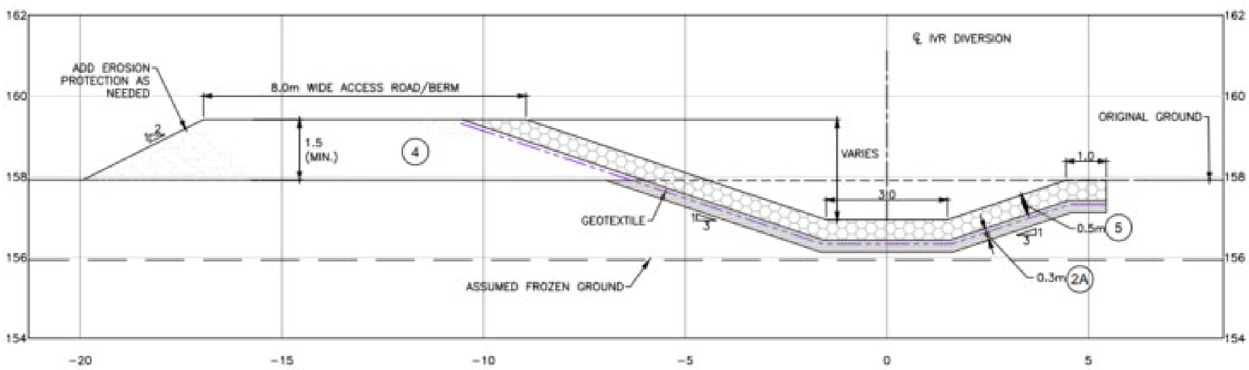

Figure 2– IVR Diversion - Typical Section

The IVR Diversion final length is 300 m with an average invert slope of approximately 0.36%, which is slightly steeper than the minimum slope established in Table 1. This is acceptable since the IVR Diversion is expected to have good hydraulic performance with this slightly steeper slope. The IVR Diversion invert profile is shown in Figure 3.

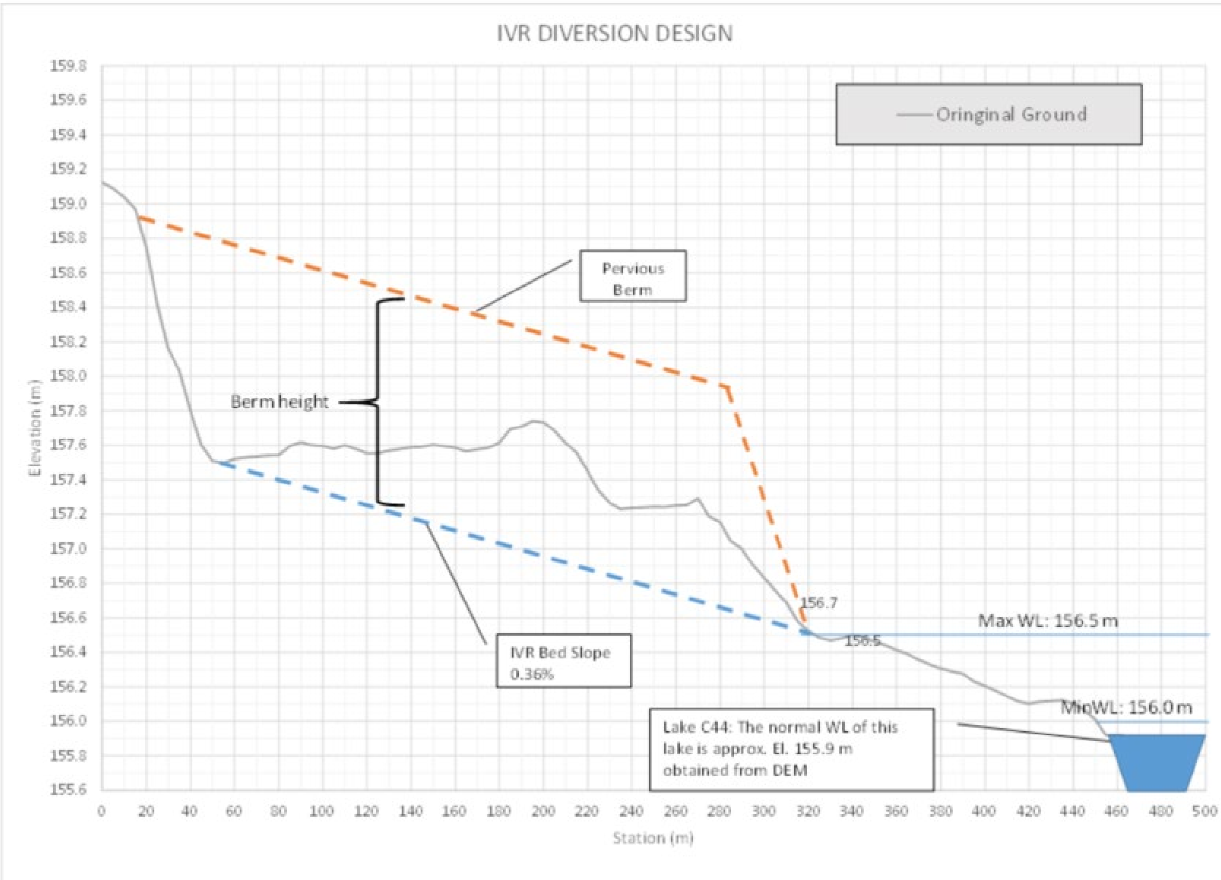

Figure 3 – IVR Diversion Design – Profile View

The Table 1 below presents the design basis related to hydraulic aspects of the IVR Diversion Channel.

Table 1 – Hydraulic Design Basis for IVR Diversion

Parameters	Values
Design Flood	
Design Flood Event	1:100 Storm Flood
Rain Data	From I-D-F Curves from Baker Lake A Station (Update version from the IDF-CC Tool)
Watershed's physical characteristics	Will be obtained from terrain model, DEM 1.0 m resolution
Runoff Coefficient "C" = 1.0	Assuming saturated conditions of the soil
Time of concentration	Bransby Williams for C>0.4, MTQ (2014)
Peak Inflow	Rational Method, MTQ (2014)
Diversion's physical characteristics	
Manning "n" roughness	Based on rip-rap revetment - Typical value "n"= 0.033 (Chow, 1959)
Freeboard	0.3 m
Side slope	Between 2H:1V to 3H:1V
Width of the base	3.0 m[1]
Bed slope	Minimum 0.3%[2]
Flow velocities	Based on hydraulics equations for trapezoidal section
Water levels	Based on hydraulics equations for trapezoidal section
Rip-Rap: Rip-rap size will be obtained following the recommendations in USACE (1994)	
D50	Based on Maximum Velocities in the diversion
Rip-Rap Layer thickness	USACE (1994) and MTQ (2014)
Rip-Rap Gradation	Typical

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2.3 Diversion Alignment

The location of the IVR Diversion was determined based on observations of the terrain, digital elevation model (DEM) and where the diversion will be able to intersect the runoff volumes from the 68.2 ha-watershed. Once that was determined, the alignment was optimized based on terrain elevations with the objective to minimize excavation.

The final construction drawings of the IVR Diversion can be found in Appendix A.

3. Construction Activities & Schedule Summary

3.1 Roles and Responsibilities

The engineering design and construction documents of the IVR Diversion Channel were developed by SNC-Lavalin. The owner, Agnico Eagle Mines Limited (AEM) was responsible for managing all the related construction activities .

Table 2 provides a summary of the general roles and responsibilities for each party involved during the channel construction activities.

Table 2 – Roles, responsibilities and key personnel

Company	Role	Responsibility	Key Personnel	Position
Agnico Eagle Ltd	Owner	› Responsible › Owner representative	› Patrice Gagnon › Laurier Collette	› Geotechnical Specialist › Geotechnical Engineer
Agnico Eagle Ltd	Owner	› Construction site supervision	› Jean-François Béland	› Site construction supervisor
Agnico Eagle Ltd	Owner	› Project Management	› Marc-André Beaudet	› Project Manager
Agnico Eagle Ltd	Owner	› QA Representative	› Patrice Gagnon › Laurier Collette	› Geotechnical Specialist › Geotechnical Engineer
WSP	QC Control	› QC Representative	› Mikaël Turcotte	› Resident Engineer
KCG	Contractor	› Carry out construction activity › Work supervision	› Manuel Bussières	› Contractor supervisor
SNC-Lavalin	Designer	› Provide engineering report & construction	› Anh-Long Nguyen	› Designer Project Manager

3.2 Overall Project Schedule

The construction activities of the IVR Diversion s were performed from September 19, 2020, until October 6, 2020, for a total of 18 days. The general schedule of activities for the construction of the IVR Diversion Channel was the following:

- Rock fill placement between September 19 and 22, 2020
- Excavation and foundation:
  - Invert and East Slope between September 22 and 30, 2020

  - West Slope between September 2 and October 4,2020
- Fine filter placement:
  - Invert and East Slope between September 24 and 30, 2020
  - West Slope between October 3 to 5, 2020
- Geotextile Placement:
  - Invert and East Slope installed between September 27 to 30, 2020
  - West Slope, Channel Outlet and Channel Inlet installed between October 3 and 5, 2020
- Riprap placement was performed between September 27 and 30, 2020

3.3 Construction steps

The following section summarizes the construction steps realized in order to accomplish the final IVR Diversion Channel implementation. More details are available in the QA Summary reports (Appendix B1) and the Construction Weekly Minutes of Meeting Reports (Appendix B6).

Rock fill placement

For the initial fine rockfill (September 19th to September 22, 2020), a rock type ultramafic, was placed with a dozer. The material was well graded with particle size approx. 0-600. Larger particles were put aside by operator.

The compaction achieved by trucks and dozer. Haul truck operators were instructed to vary the wheel passage to compact the entire platform. It worked well and eliminated the ruts.

No rockfill was placed between 0+011 and 0+026 intentionally to let water flow in a natural stream on the tundra. That way, unnecessary water management was avoided.

Once the construction of the invert and east side of the channel were completed, a second road lift (October 1st to October 2, 2020) of about 0.5 m was added to the access road to raise the platform and proceed to sloping of the west side of the channel. This lift has been added on the entire length of the road. Adequate Non-PAG material was used. The particles size generally varied between 0 mm and 500 mm. Larger boulders were put on the side while placing the material with a dozer and with the excavator at the time of sloping the west side of the channel. Proper compaction was achieved by loaded and unloaded 50t haul trucks, dozer, excavator rolling on the surface and light vehicle traffic.

Excavation and Foundation

The channel was constructed in 2 stages. First, the invert and the east slope of the channel were completed (September 22nd to September 30, 2020). Secondly, the west slope was completed (October 2nd to October 4, 2020) after the road was lifted.

All the excavated material was removed and disposed of in an appropriate area of the IVR WRSF.

Three foundation test pits were dug into the foundation of the channel to assess the water presence/material quality. No test pits were dug deeper than the channels' final depth. Material varied from cobbles and blocks to glacial till, damp to wet. Three (3) water content samples were collected by QC. Results are available in the Laboratory Results in Appendix B5.

A complete detailed description of the excavation work for each stage of the channel construction is available in the QA Summary report in Appendix B1.

Fine Filter Placement

A total of eight samples of fine filter (FF) material were taken from the stockpile at the beginning of the project to ensure compliance with the specifications. Sample FF-01 and FF-02 were slightly on the coarse side. Overall, the fine filter material is considered compliant. Complete lab results are available in Appendix B5.

a) Channel invert & East Slope Fine Filter (September 24 to September 30, 2020)

First loads of fine filter were a bit too coarse. The loader operator was instructed the proper loading method. Loads were compliant from that point onwards. A sample was taken to confirm compliance. The material was properly placed and compacted with the excavator bucket, according to QA and QC observations.

b) West Stope Fine Filter (October 3rd to October 5, 2020)

Visual inspection during fine filter material placement confirmed a proper gradation. The material was properly placed and compacted with the excavator bucket. Excessive compaction was avoided to minimize potential pore water movement in the surrounding high moisture content natural ground. The challenge of placing FF on the west slope was the limitation for the operator to handle material at the toe of the dike. Given that the channel was built in two steps, the FF, geotextile and riprap were already in place at the channel invert at the time of placing FF on the west slope. In prevision of that, the excavation and FF layer were extended as much as possible on the west side to allow more flexibility and the riprap layer was not fully completed on the west side of the invert. The geotextile rolls were left rolled at the end of the riprap and sometimes pulled up on top of it. All in all, the surveyor confirmed the toe of the slope before and after FF placement. The only potential limitation is that the material could not be compacted as much or sometimes at all, at the junction with the invert FF layer, to avoid damaging to the geotextile.

Geotextile placement

The geotextile placement was carried out in two stages. First, the geotextile was installed on the channel invert and on the eastern slope section (from September 27 to September 30, 2020). The Geotextile sheets were installed from downstream to upstream so that any upstream sheet was on top of the downstream one. Overlap was compliant. Two layers were installed as agreed with the designer since the product used has different properties than the design specifications. The second layer was placed on top of the first one with a 2.5m overlap. The product used was Novatex V from approximately 0+060 to 0+285 and Mirafi 1100N from -0+015 to approximately 0+060.

The second phase of the geotextile installation took place from October 3 to October 5, 2020 and included the following areas:

a) Geotextile unrolled up the west slope

After fine filter approval, geotextile rolls were unrolled all the way up the slope. The same sequence and overlap were used as in the channel (sheets installed from downstream to upstream so that any upstream sheet was on top of the downstream one). Overlap was compliant, always over 600 mm. Overlap was greater in the 0+140 area because of the change in channel orientation. Two layers were placed at all times, as per agreement with the designer (continuation of the rolls placed on the invert and east slope). At some locations, the geotextile was damaged during the slope excavation and fine filter placement. Sometimes, the textile was ripped between the riprap stones and the excavator bucket. At these locations, proper corrective measures were taken. Rip holes were located at the toe of the west slope. When unrolling the rolls, full width geotextile patches were added in a way that the patch covered a zone of 1-2 m around the damaged area when possible. When the damaged area was too close to the toe, the covering offset was less on the side of the channel invert because of the riprap already in place. On that side, the patch covered an area of about 0.3 m beyond the damaged zone. Riprap material was moved manually to allow such an overlap. Also, the damaged geotextile was folded over 1-2 m as an additional protection to ensure that the tear holes were properly patched.

b) Channel Outlet

Geotextile was put in place at the channel outlet beyond the energy dissipator. Only one layer was installed, with same overlap as anywhere in the channel.

c) Channel Upstream End (Inlet)

A geotextile was put in place at the upstream end of the channel in a way that it covered the natural ground slope. It was not possible to achieve any overlap with the geotextile of the channel, as it was already buried under riprap.

Riprap placement

Riprap placement on the invert and east slope was performed from September 27, 2020, until September 30, 2020. Riprap was placed to proper elevation. The material particles size utilized was conformed according to visual inspection, except some non-compliant loads. Some riprap loads dumped in the afternoon of 2020-09-30 were found to contain material finer than 100 mm (fine particles and gravel size particles). The stockpile was checked so the best material is loaded. Operators placing the material was notified and adapted their method. On the access road prior to placement in the channel, fines were segregated as much as possible using wind while dropping bucketloads from higher up. Also, while placing the material, the operator shook the bucket, which left the fine material in the bucket. The fine material was disposed of on the road rather than in the channel. The few spots that needed manual clean up to remove finer material (0+045, 0+078, 0+140, 0+196) were cleaned by hand on 2020-10-06 to QA satisfaction.

Riprap placement on the west slope, inlet and outlet was performed from October 3rd until October 6th. The material was placed with the proper gradation. No particles finer than 100 mm were present, despite stockpile depletion, except for normal amount of dust from crushing and handling. A layer of about 300-400 mm was placed at the outlet of the channel, beyond the energy dissipator, over and beyond the geotextile to properly merge with the natural ground and minimize the risks of erosion from water exiting the channel. At the upstream end of the channel, approximately 300 mm to 600 mm of riprap was placed over and beyond the underlying geotextile to reduce erosion from runoff.

3.4 QA/QC Program

As already mentioned in the previous section, during the construction period, AEM performed a full QA oversight of all construction activities, including:

- Participation to daily construction meetings;
- Periodic observation of construction activities at IVR DC work site and material stockpile areas and communication of these observations to stakeholders via a daily QA report;
- Approval (foundation, fill placement, geotextile placement);

- Provide guidance and instructions for field adjustment;
- Facilitate communication with the Designer for design changes;
- Request or proceed to sampling;
- Review laboratory test results completed by QC representative;
- Review QC activities and documentation.

The QA Summary Report monitoring all construction activities conducted during the completion of the IVR Diversion Channel project can be found in Appendix B1. The laboratory and tests results performed on the different types of materials can be found in Appendix B5.

During the construction period, QA representatives conducted daily site visits. Daily QA reports including pictures are available in Appendix B2.

QC activities were performed daily to ensure that construction conformed to the design and to correct any design variations. Daily QC field reports including pictures are available in Appendix B3.

Approval forms are available in Appendix B4.

Construction Weekly Minutes of Meeting reports are available in Appendix B6.

3.5 Design Changes

Design changes were required and agreed upon with the designer (SNC) during the construction of the channel. The designer provided approval either by email or verbally during a call or a meeting. All changes were tracked in AEM change log and a memo was also issued by SNC to summarize the design changes. These two documents can be found in Appendix C.

The following summarizes the design changes from the original design:

Access road material (Change 01)

It was agreed with the designer to build the access road with ultramafic soapstone rockfill material having a 0-600 mm granulometry instead of with esker material. Ultramafic rockfill material used for this road is very fine and easily degrade under compaction which make it a low permeability element. As a result, it is considered that this material substitution will not impact the performance of the channel.

Geotextile products (Change 02 & 06)

There had been delays for the product ordered (Mirafi 1600) to be delivered to site on time. Other available geotextile products were readily available on site but did not fully comply with the technical specifications. The products (Novatex V and Mirafi 1100N) are thinner and weaker than the required product. To ensure the project could be completed on schedule, it was agreed to use the Novatex V and Mirafi 1100N if two layers were installed instead of a single one, to increase the robustness of this element.

East crest (Change 03)

The design specifies a 1 m wide flat crest at the top of the east slope, all along the channel. However, there was some limitation to do so, between 0+143 and 0+281, because of the maximum excavator reach. It was agreed to continue the slope over 1 m wide (instead of a flat crest) so that the top of the Fine Filter layer merges with the top of natural saturated ground material. Riprap layer on top was to follow the resulting fine filter slope and to merge with the boulder field surface. The change was not executed since the operator was finally able to build the east side of the channel as per the initial design.

Ice-rich till foundation (Change 04)

From sta. 0+235 to 0+260, 0+125 to 0+90 and 0+70 to 0+29 ice rich material were encountered. To improve the performance of the structure this material was removed to a total depth of 1.8 m which is 1.2 m deeper than the design. The ice rich material was replaced by esker and compacted to the design elevation

Channel inlet (Change 05)

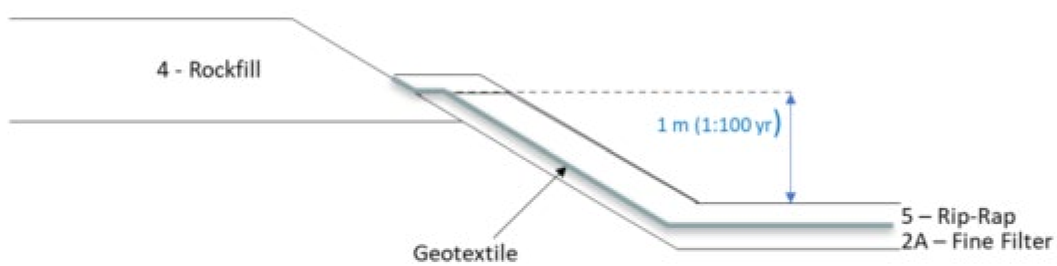
Field conditions at the start of the project, such as natural water ponds in the tundra, suggested benefits of extending the IVR diversion channel about 15 m further back. The channel was extended from 0+000 to -0+015 following the design parameters (0.3% slope, layer of fine filter, geotextile, riprap). The riprap layer thickness was kept to about 200-300 to properly merge with the natural ground surface. This Change will improve the performance of the channel.

Channel outlet (Change 07)

A temporary sump was placed at the downstream end of the structure, a few meters beyond the designed energy dissipator, for the early stages of construction. Once pumping was over, it was backfilled with the original ground material. On top, a thin layer of fine filter was placed to fill the local depressions between larger boulders. The final FF elevation corresponds to the natural ground elevation (156.0 m) at the exit of the energy dissipator. Geotextile (two layers of Mirafi 1100N) was put on top, with a final layer of riprap holding it in place and extending beyond the geotextile. As the sump was backfilled at the end of construction this change will not impact the performance of the channel

West slope cross-section update (Change 08)

It was decided and agreed to stop end the fine filter layer at the elevation corresponding to 1 m above the invert of the channel, so it contains the 1:100 yr flood water level. Geotextile and riprap were placed on top of the fine filter material and did not continue further up. Refer to the sketch below:



3.6 Field Decisions and Mitigation Measures

The following summarizes the field adjustments during construction of the IVR Diversion:

Water management sumps

A temporary sump was dug in the upstream area of the channel, on the east side, to intercept runoff and ponding water in the area before it reaches the excavation. Water was pumped to IVR Pit Water management infrastructure. as per agreement with Env. A temporary esker road was built to access the sump. At the end of the project the sump was backfilled with esker material and all the esker from the road was removed. A sump was dug at the downstream end of the channel, around STA 0+286. Pumped water was discharged to IVR Pit Water management infrastructure. The natural ground removed for the excavation of the sump was used to backfill it when the pump was removed. A bit of fine filter material was put on top of the till and handled organic matter to minimize TSS when water would flow there. The final backfilled surface was at natural ground elevation. It was covered with geotextile and riprap as detailed in the channel outlet section below. Other temporary sumps were dug in the channel during the excavation process. The sumps were properly backfilled with esker prior to placing the fine filter material.

Access roads

An access road was built from Nemo Road to where the channel changes orientation, at about 0+150. This access road is permanent.

Upstream end of the channel

The upstream end of the channel was improved to limit risks of erosion. The natural ground has been gently sloped with the back of the bucket (no material was removed) and a geotextile placed on top. It was not possible to have any kind of overlap with the channel geotextile because of the riprap already in place. For finishing, enough riprap has been placed to hold the geotextile in place and minimize potential superficial erosion in the area.

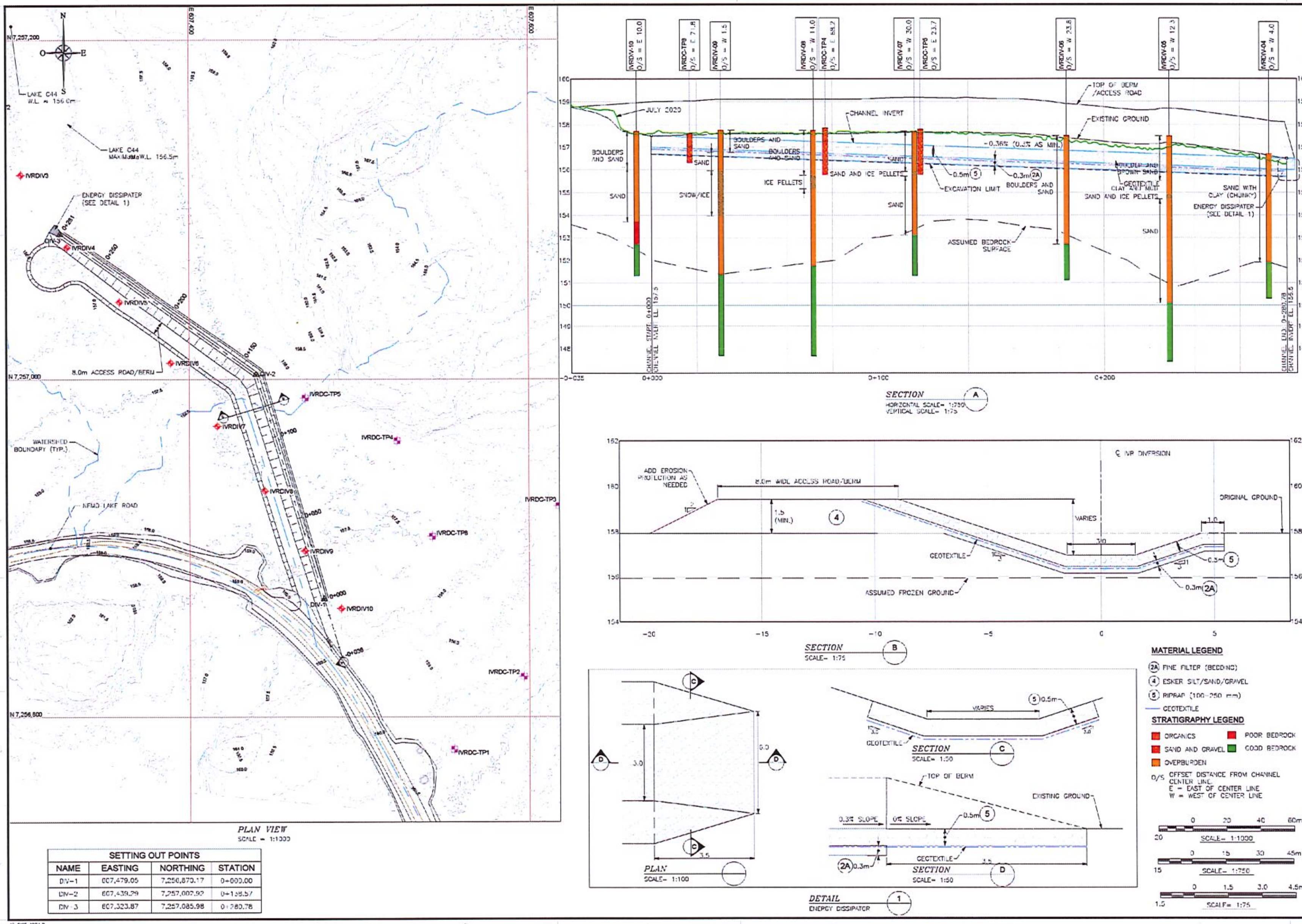
3.7 As-Built Drawings and photographs

The final as-built drawings including related pictures are available in Appendix D.

APPENDIX A

FINAL CONSTRUCTION DRAWING

NO. DESSIN DRAWING NO. 61-695-230-201



SETTING OUT POINTS

NAME	EASTING	NORTHING	STATION
DIV-1	607,479.05	7,256,870.17	0+000.00
DIV-2	607,439.29	7,257,002.92	0+138.57
DIV-3	607,323.87	7,257,085.98	0+280.78

MATERIAL LEGEND

- (2A) FINE FILTER (BEDDING)
- (4) ESKER SILT/SAND/GRAVEL
- (5) RIPRAP (100-250 mm)
- GEOTEXTILE

STRATIGRAPHY LEGEND

- ORGANICS
- SAND AND GRAVEL
- OVERBURDEN
- POOR BEDROCK
- GOOD BEDROCK

O/S OFFSET DISTANCE FROM CHANNEL CENTER LINE.
E - EAST OF CENTER LINE
W - WEST OF CENTER LINE

SCALE= 1:1000
SCALE= 1:750
SCALE= 1:75

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PROJECT No	SUBDIVISION	SUBJECT	SERIAL	REV.
668281	7000	4C , EC	0001	01

NOTES GÉNÉRALES / GENERAL NOTES

1. WORKS SHOWN ON THIS DRAWING SHALL BE EXECUTED IN ACCORDANCE WITH APPLICABLE TECHNICAL SPECIFICATIONS
2. ALL ELEVATIONS, DIMENSIONS AND COORDINATES ARE IN METERS UNLESS NOTED OTHERWISE.
3. GRID USED IS NAD83(CSRS) UTM ZONE 14.
4. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND CONDITIONS ON SITE BEFORE PROCEEDING WITH ANY PORTION OF THIS WORK. REPRODUCTION OF THIS DRAWING MAY HAVE BEEN REDUCED OR ENLARGED. REFER TO GRAPHIC SCALE; DO NOT SCALE DRAWINGS FOR CONSTRUCTION.
5. WHILE EXCAVATION IF MASSIVE ICE IS OBSERVED FURTHER ADVISE SHOULD BE SOUGHT FROM THE ENGINEER.
6. ALL DRAWINGS SHOULD BE READ IN CONJUNCTION WITH TECHNICAL SPECIFICATIONS DOC NO.6127-C-230-003-SPT-002

PERMIT TO PRACTICE
SNC-LAVALIN INC.
PERMIT NUMBER: P 260

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

AGNICO EAGLE

REVISIONS

TITRE / TITLE
AGNICO EAGLE - AMARUQ DIVISION
695 - WATER MANAGEMENT
230 - GENERAL EARTHWORKS
PLAN VIEW, PROFILE AND TYPICAL SECTION
AMARUQ PHASE 2
IVR DIVERSION

DRAWN BY	M. SYKES	2020-08-25
CHECKED BY	M. QUAN / H. BABA	2020-08-25
APPROVED BY	A. L. NGUYEN	2020-08-25
SCALE: AS SHOWN	DATE: 2020-08-25	
DRAWING NO.	61-695-230-201	
PROJECT NO. 6127	REVISION R1	SHEET 1/1

FILE NO. 61-695-230-201

APPENDIX B

QA/QC

APPENDIX B1

QA Summary Report IVR Diversion Channel Construction

QA SUMMARY REPORT	
Date	2020-10-10
Prepared by	Laurier Collette
Reviewed by	Patrice Gagnon
Client	Agnico Eagle Mines
Consultant	SNC-Lavalin
Contractor	KCG

AGNICO EAGLE
MEADOWBANK

Project:

IVR Diversion Channel Construction

SUMMARY OF QA ACTIVITIES

The activities of AEM QA representative during the 18-day construction of the IVR Diversion Channel (IVR DC) include the following:

- Participation to daily construction meetings
- Periodic observation of construction activities at IVR DC work site and material stockpile areas and communication of these observations to stakeholders via a daily QA report
- Approvals (foundation, fill placement, geotextile placement)
- Provide guidance and instructions for field adjustment
- Facilitate communication with the Designer for design changes
- Request or proceed to sampling
- Review laboratory test results completed by QC representative
- Review QC activities and documentation

Following is a list of the key personnel involved in the project.

- Responsible Person representatives (AEM): Patrice Gagnon and Laurier Collette
- Site supervisor (AEM Construction): Jean-François Béland
- Project Manager (AEM Construction): Marc-André Beaudet
- Designer project manager (SNC): Anh-Long Nguyen
- QA representative (AEM): Patrice Gagnon and Laurier Collette
- QC representative (WSP): Mikaël Turcotte
- Contractor representative (KCG): Manuel Bussières

The table below summarizes the construction and QA/QC activities during the project.

Table 1. Summary of QA inspection activities and approvals

		Observations & inspections							
Date	**Rock fill placement**	**Excavation & foundation**	**Esker placement**	**FF placement**	**Geotextile placement**	**Rip rap placement**	**Sampling**	**Approvals**	**Other**
2020-09-19	0+000 to 0+011 0+023 to 0+111								No backfill between 0+011 and 0+023 to let a natural water stream flow
2020-09-20	0+111 to 0+260						FF-01 to 08		
		Channel invert and east slope							
2020-09-21	0+250 to 0+260 (1st lift) 0+024 to 0+170 (2nd lift) Access 0+150 to Nemo road	0+232, 0+223, 0+115					0+232, 0+223, 0+115		
2020-09-22	0+170 to 0+260 (2nd lift)	0+223 to 0+260	0+000 to 0+100						
2020-09-23		0+143 to 0+243							
2020-09-24		0+035 to 0+139		0+147 to 0+205			EX-01 to 07 EX-03-01 to 03-04 FF-09	FDN-01	
2020-09-25	0+011 to 0+026	0+035 to 0+139	0+235 to 0+260	0+147 to 0+205			EX-08, 09, 10	FDN-02, FDN-03	Backfilling of the opening left for water stream in the tundra
2020-09-26		-0+015 to 0+024 0+029 to 0+070 0+090 to 0+125	0+235 to 0+260	0+235 to 0+281			ES-01	FDN-04, FDN-05	
2020-09-27		0+090 to 0+125 0+029 to 0+070	0+090 to 0+125	Energy dissipator (0+281 to 0+285)	0+152 to 0+285	0+152 to 0+285	EX-11 to 14	FDN-06, FF-01, GT-01	
2020-09-28		0+070 to 0+090 0+125 to 0+143	0+029 to 0+070 0+090 to 0+125	0+090 to 0+143	0+139 to 0+152	0+139 to 0+285	EX-15	FDN-07, FDN-08	
2020-09-29		-0+015 to 0+029	0+032 to 0+130	0+029 to 0+080	0+032 to 0+139	0+032 to 0+139	ES-02	FDN-09, FF-02, FF-03, GT-02	QA crew change day Geotextile material change from Novatex V to Mirafi 1100N
2020-09-30		-0+015 to 0+029	0+020 to 0+029 -0+015 to -0+013	-0+015 to 0+029	-0+015 to 0+032 Outlet	-0+015 to 0+032 Outlet	EX-16 EX-02	FDN-10, FF-04, GT-03, RR-01	
		West slope							
2020-10-01	0+047 to 0+110 0+162 to 0+285	0+162 to 0+190							
2020-10-02	0+000 to 0+047 0+110 to 0+162	0+190 to 0+280		0+155 to 0+220				FDN-11	
2020-10-03		-0+015 to 0+190		0+090 to 0+155 0+220 to 0+285	0+140 to 0+285	0+140 to 0+285	EX-17	FDN-12, FDN-13, FF-05, GT-04	
2020-10-04		-0+015 to 0+190		-0+015 to 0+190	-0+015 to 0+140	-0+015 to 0+140		FDN-14, FF-06, GT-05	
2020-10-05					-0+015 to 0+285 Inlet & outlet	-0+015 to 0+285 Inlet & outlet			
2020-10-06	Clean up of the road surface and sloping the east side					-0+015 to 0+285		RR-02	Backfilling of the main dewatering sump Removal of esker temporary dewatering road

FIELD ADJUSTMENTS & DESIGN CHANGES

FIELD ADJUSTMENTS

Water management sumps

A temporary sump was dug in the upstream area of the channel, on the east side, to intercept runoff and ponding water in the area before it reaches the excavation. Pumped water was discharged to A47 watershed with as per agreement with Env. A temporary esker road was built to access the sump. At the end of the project the sump was backfilled with esker material and all the esker from the road was removed.

A sump was dug at the downstream end of the channel, around STA 0+286. Pumped water was discharged to A47 watershed with a 3" hose, as per agreement with Env. The natural ground removed for the excavation of the sump was used to backfill it when the pump was removed. A bit of fine filter material was put on top of the till and handled organic matter to minimize TSS when water would flow there. Final backfill surface was at natural ground elevation. It has eventually been covered with geotextile and rip rap as detailed in the channel outlet section below.

Other temporary sumps were dug in the channel during the excavation process. That have all been properly backfilled with esker prior to placing the fine filter material.

Access roads

An access road was built from Nemo road to where the channel changes orientation, at about 0+150. This access road will remain permanent.

Upstream end of the channel

Upstream end of the channel has been improved to limit risks of erosion. The natural ground has been gently sloped with the back of the bucket (no material was removed) and a geotextile placed on top. It was not possible to have any kind of overlap with the channel geotextile because of the rip rap already in place. For finishing, enough rip rap has been placed to hold the geotextile in place and minimize potential superficial erosion in the area.

DESIGN CHANGES

Below are some details about the design changes that were agreed upon with the designer (SNC) during the construction of the channel. The designer provided approval either by email or verbally during a call or a meeting. All changes were tracked in AEM change log (document attached to this report). A memo was also issued by SNC to summarize the design changes.

Access road material (Change 01)

It has been agreed with the designer to build the access road with ultramafic soapstone rockfill material instead of with esker material. To ensure a proper thermal capping effect, the final road thickness should be minimum 2m since rockfill is used.

Geotextile products (Change 02 & 06)

There had been delays for the product ordered (Mirafi 1600) to be delivered to site on time. Other available geotextile products were readily available on site but did not fully comply to the technical specifications. The products (Novatex V and Mirafi 1100N) are thinner and weaker than the required product. To ensure the project could be completed on schedule, it was agreed to use the Novatex V and Mirafi 1100N if two layers were installed instead of a single one, to increase the robustness of this element.

East crest (Change 03)

The design specifies a 1m wide flat crest at the top of the east slope, all along the channel. However, there was some limitation to do so, between 0+143 and 0+281, because of the maximum excavator reach. It has been agreed to continue the slope over 1m wide (instead of a flat crest) so that the top of the Fine Filter layer merges with the top of natural saturated ground material. Rip rap layer on top was to follow the resulting fine filter slope and to merge with the boulder field surface. The change was not executed since the operator was finally able to build the east side of the channel as per the initial design.

Ice-rich till foundation (Change 04)

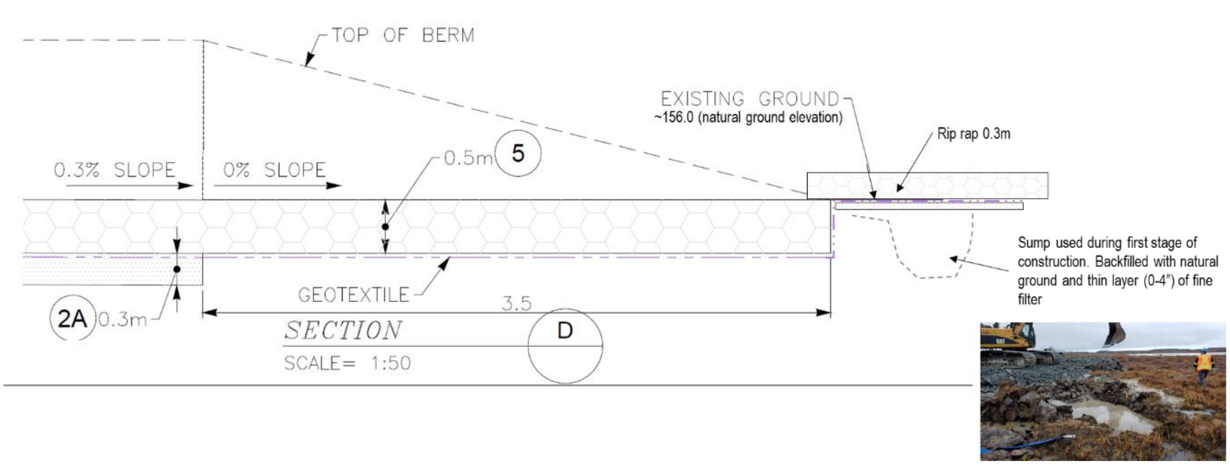
All ice-rich material encountered in the foundation shall be excavated and removed. All over-excavations shall be backfilled by compacted esker material. In the case where conditions are not improving beyond 1.2m below grade, the excavation shall stop and be backfilled. The resulting foundation improvement is expected to maintain year-round freezing conditions in the underlying material and thus minimize the risks of foundation degradation.

Channel inlet (Change 05)

Field conditions at the start of the project, such as natural water ponds in the tundra, suggested benefits of extending the IVR diversion channel about 15m further back. The channel was extended from 0+000 to -0+015 following the design parameters (0.3% slope, layer of fine filter, geotextile, rip rap). The rip rap layer thickness was kept to about 200-300 to properly merge with the natural ground surface.

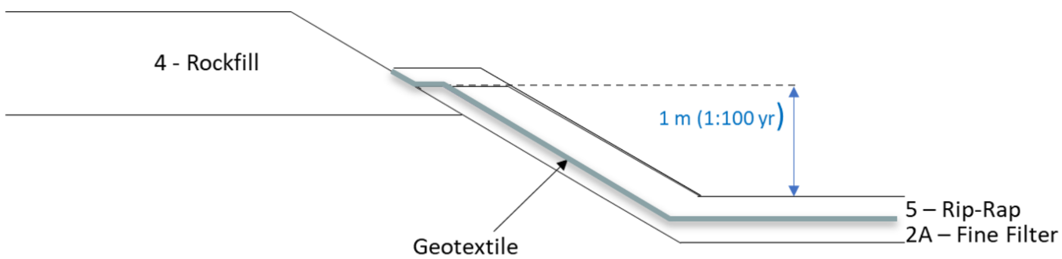
Channel outlet (Change 07)

A temporary sump was in place at the downstream end of the structure, a few meters beyond the designed energy dissipator, for the early stages of construction. Once pumping was over, it has been backfilled with the original ground material. On top, a thin layer of fine filter was placed to fill the local depressions between larger boulders. The final FF elevation corresponds to natural ground elevation (156.0) at the exit of the energy dissipator. Geotextile (two layers of Mirafi 1100N) has been put on top, with a final layer of rip rap holding it in place and extending beyond the geotextile. Refer to the sketch below.



West slope cross-section update (Change 08)

It has been decided and agreed to stop end the fine filter layer at the elevation corresponding to 1m above the invert of the channel, so it contains the 1:100 yr flood water level. Geotextile and rip rap were placed following on top of the fine filter material and did not continue further up. Refer to the sketch below.



ROCKFILL PLACEMENT

2020-09-19 to 2020-09-22

Initial road lift

Fine rockfill, rock type ultramafic, was placed with a dozer. The material was well graded with particle size approx. 0-600. Larger particles were put aside by operator. Compaction achieved by trucks and dozer. Haul truck operators were instructed to vary the wheel passage to compact the entire platform. It worked well and eliminated the ruts.

At several locations, the first lift of rockfill in the very soft swampy tundra required to be thick enough to prevent equipment from sinking into the softer material and getting caught. More material than expected was needed to reach the desired elevation and ensure a stable road.

No rockfill was placed between 0+011 and 0+026 intentionally to let water flow in a natural stream on the tundra. That way, unnecessary water management was avoided.

2020-09-25

Backfill stream

Rockfill placement to finish the part of the access road that was left open for water management, from about 0+011 to 0+026. Compliant soapstone material and compaction.

2020-10-01 to 2020-10-02:

Second road lift

Once the construction of the invert and east side of the channel were completed, a rockfill lift of about 0.5m was added to the access road to rise the platform and proceed to sloping of the west side of the channel. This lift has been added on the entire length of the road.

Adequate Non-PAG material was used. The particles size generally varied between 0 and 500mm. Larger boulders were put on the side while placing the material and with the excavator at the time of sloping the west side of the channel. Proper compaction was achieved by loaded and unloaded 50t haul trucks, dozer, excavator rolling on the surface and light vehicle traffic.

To be completed in winter:

Final lift (thermal capping completion)

Because the road was built in rockfill material rather than in esker, it has been previously discussed with the designer that an additional 0.5m lift of rockfill should be added to the road to ensure that the thermal capping effect of the road is effective. Upon completion, the road should be 2m thick, 2m above the initial natural ground elevation.

EXCAVATION & FOUNDATION PREPARATION

The channel was constructed in 2 stages First, the invert and the east slope of the channel have been completed while the excavator could reach that side. In a second time, the west slope was completed after the road was lifted. Such a sequence allowed all construction to be done from the west side of the channel, leaving the water collecting area free of material or any disturbance.

All the excavated material was removed and disposed of in an appropriate area of the IVR WRSF.

2020-09-21

TEST PITS

Three foundation test pits were dug into the foundation of the channel to assess the water presence/material quality. None were dug deeper than the channel final depth. Material varied from cobbles and blocks to glacial till, damp to soaked. 3 samples taken by QC for water content:

Table 2. Test pit sample results

Sample ID	fines	sand	gravel	Ice content (%)	Moisture content (%)	Compliance	Chainage	Elevation	Date sampled
IVR-EX-01	23	20	58	-	7.0		0+232		2020-09-21
IVR-EX-02	35	16	49		7.4		0+223		2020-09-21
IVR-EX-03-01	52	41	7	-	18.4		0+115		2020-09-21
IVR-EX-03-02	51	42	7	-	18.4		0+115		2020-09-21
IVR-EX-03-03	51	42	7	-	18.4		0+115		2020-09-21
IVR-EX-03-04	52	42	7	-	18.4		0+115		2020-09-21

2020-09-22 to 2020-09-30

CHANNEL INVERT AND EAST SLOPE FOUNDATION

At the time of year the construction happened is the period where the active layer is at his deepest, therefore all the surficial material found at the channel surface is thawed and saturated with water. 2 type of glacial deposits were encountered during the excavation; boulder fields and glacial till. The boulder field is composed of saturated sandy gravel with blocks and is entirely thawed from surface to the required excavation depth. 65% of the channel path crosses boulder fields saturated with water at surface. Areas of till are swampy and very soft at surface, thawed over 0.8 to 1m then frozen for the remainder of the excavation.

The works started at the North end of the channel by the excavation of a permanent sump to control water encountered in the channel. Due to the nature of the materials encountered at surface, the excavation started at the outlet going towards the south and was done in at least 2 steps; 1- a first layer of around 0.5m was removed to allow surficial drainage of the tundra, boulder fields and swamps, to flow towards the sump and 2- a second pass was necessary to reach the required excavation depth. With the temperature being above freezing point during the works, pumping was required until the area was covered with aggregates. More excavation was required in the frozen ice-rich till areas, as described below. Other water management temporary sumps were built at St.0+140, 0+073 and

0+030 to manage water from the bottom of the excavation. One major stream located at St.0+080 was bringing most of the water in the excavation.

A start of the excavation of the materials, the newly built downstream berm was still soft and compaction of the slope had not reached its optimal. Therefore, excavation of the plateau on the East slope could not be performed safely as excavator could not safely reach this far area. A request for a design change was asked to Designer in order to change the shape of the slope, which was agreed. Finally, a couple days later, natural drainage induced more consolidation of the downstream platform and the excavator could reach out farther and the plateau was built as intended on the construction drawings. In the ice-rich till areas, portions of the East slope plateau melted between the time plateau was created and when it was time to cover it with aggregates. Therefore, as replacement solution, a new plateau was created in these sections with compacted esker material and covered with aggregates.

When encountered during the excavation of the foundation, all deleterious materials were removed as needed such as large boulders, improper particles, and organic matter.

Ice-rich frozen till areas

Ice-rich frozen till was encountered in between Stations 0+235 and 0+260. The till was tested at surface (sample IVR-EX-04) and returned more than 92% of total moisture content, therefore classified as ice-rich. A field decision was therefore made to continue the excavation to remove the first 600mm of ice-rich till below the channel planned excavation then reassess the situation after the clean-up. Visually there was little to no changes, so QA asked that another 600mm was removed from the bottom of the excavation. Another visual assessment of the foundation revealed a slight improvement in the material. A sample was taken for analysis and turned out to be ice-rich also. In the meantime, it was decided to stop the excavation and backfill it for the following reasons:

- for safety reasons, the excavation was more than 2m high and the downstream berm could not be properly sloped to preserve excavator reach.
- A total of 1.8m to 2m of material will be sitting over the ice-rich till at the channel invert once channel will be completed. With 2 layers of finer grained esker, well compacted, the material should freeze over winter and degradation of the foundation is less likely.
- In section 0+235 to 0+0260, bedrock was encountered in about 10% of the surface excavated, so bedrock is believed to be somewhat close to the bottom of the excavation.

The same procedure was followed for other areas where ice-rich till was also encountered in the foundation (0+125 to 0+090, 0+070 to 0+029). For the complete procedure with photos, please refer to the QA Daily reports from Sept 25th to 27th.

Ice lenses were removed from the foundation in those areas during the excavation of the bottom of the channel. The largest was found at 0+247 and was removed up to the toe of the key trench downstream slope and replaced with esker material. Other lenses were left in place under the toe of the existing slope but were removed during the 3in1 sloping of the downstream of the key trench, as described in the next section.

Table 3. Channel invert foundation sample results

Sample ID	fines	sand	gravel	Ice content (%)	Moisture content (%)	Compliance	Chainage	Elevation	Date sampled
IVR-EX-04	-	-	-	-	92.2	Ice rich	0+240		2020-09-24
IVR-EX-05	43	33	24	-	13.9	Compliant	0+120		2020-09-24
IVR-EX-06	36	47	17	-	11.8	Compliant	0+100		2020-09-24
IVR-EX-07	15	30	55	-	9.5	Compliant	0+181		2020-09-24
IVR-EX-08	35	31	34	-	48.4	Ice rich	0+238		2020-09-25
IVR-EX-09	34	29	37	-	42.2	Ice rich	0+240 to 0+260		2020-09-25
IVR-EX-10	37	34	29	-	33.1	Ice rich	0+250		2020-09-25

IVR-EX-11	39	59	2	-	93.94	Ice rich	0+090 to 0+125	155.3	2020-09-27
IVR-EX-12	25	35	40	22.85	11.06	Ice rich	0+115	155.975	2020-09-27
IVR-EX-13	31	39	30	27.33	15.84	Ice rich	0+090 to 0+125	155.425	2020-09-27
IVR-EX-14	26	39	35	29.70	12.55	Ice rich	0+090 to 0+125	155.3	2020-09-27
IVR-EX-15	33	38	29	-	28.11	Compliant	0+050		2020-09-28
IVR-EX-16	36	33	31	-	15.82	Compliant	0+000 to 0+030	156.5	2020-09-30

Table 4. Foundation approvals for channel invert and east slope.

Approval doc number	Chainage	Location	Item approved	Date	Comments
20200924-FDN-01	0+149 to 0+205	Invert & East slope	Foundation	2020-09-24	
20200925-FDN-02	0+205 to 0+234	Invert & East slope	Foundation	2020-09-25	
20200925-FDN-03	0+235 to 0+262	Invert & East slope	Foundation	2020-09-25	
20200926-FDN-04	0+234 to 0+260	Invert & East slope	Foundation	2020-09-26	
20200926-FDN-05	0+260 to 0+285	Invert & East slope	Foundation	2020-09-26	
20200927-FDN-06	0+090 to 0+125	Invert & East slope	Foundation	2020-09-27	
20200928-FDN-07	0+090 to 0+149	Invert & East slope	Foundation	2020-09-28	
20200928-FDN-08	0+029 to 0+070	Invert & East slope	Foundation	2020-09-28	
20200929-FDN-09	0+029 to 0+090	Invert & East slope	Foundation	2020-09-29	
20200930-FDN-10	-0+015 to 0+029	Invert & East slope	Foundation	2020-09-30	Improper material removed to expose acceptable foundation

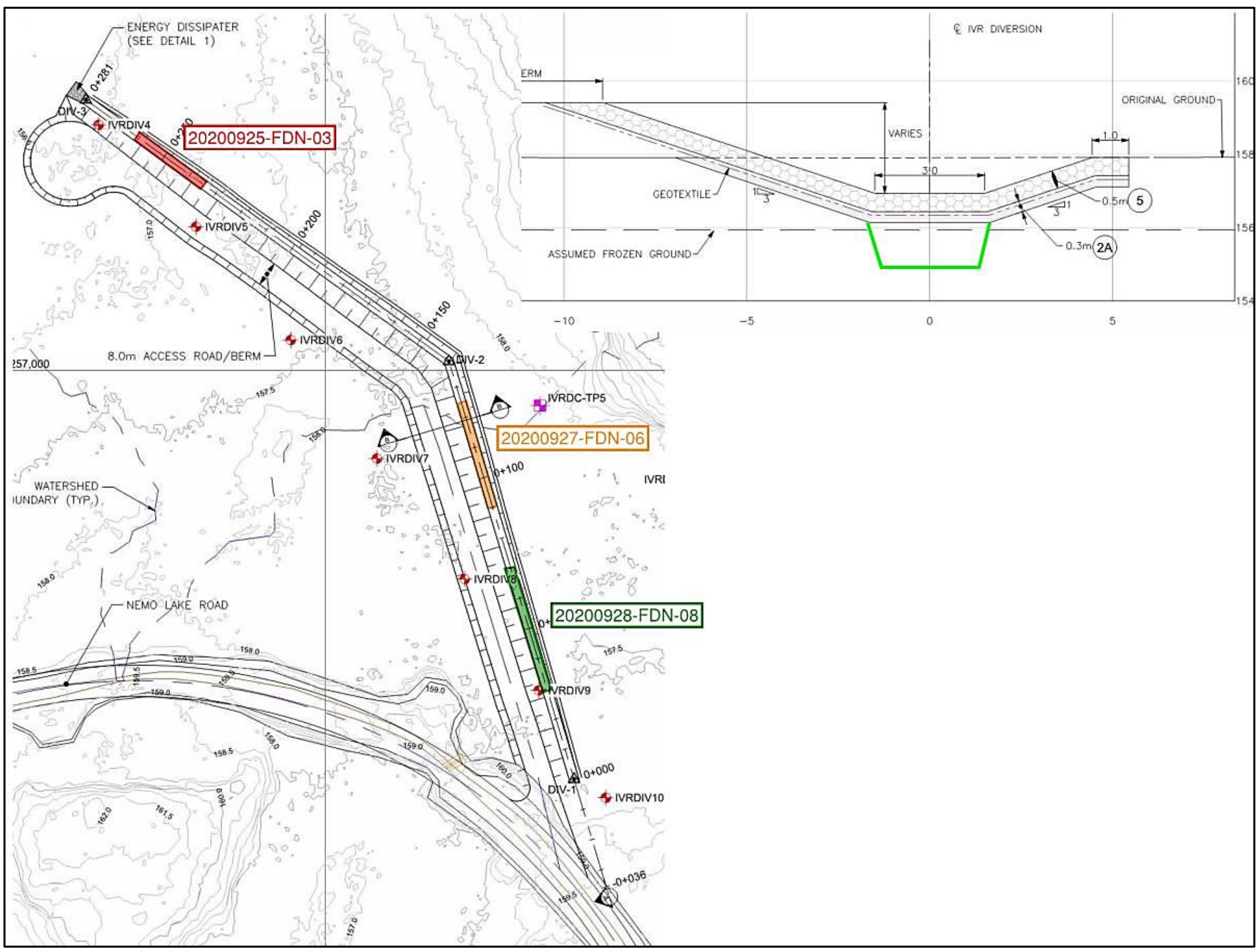


Figure 1. Plan view of the over-excavation resulting of ice & ice-rich material removal

2020-10-02 to 2020-10-04

WEST SLOPE FOUNDATION

The foundation preparation of the west slope took place in multiple steps as described below.

Initial sloping**:** the excessive rockfill material from the last road lift has been removed as well as the natural ground material.

Final sloping: proper sloping was executed with assistance of the surveyor.

Correction of adverse foundation conditions:

At several locations along the toe of the slope, pockets of soft and oversaturated material were observed. The size of these zones varied from 1 to 5m by 1m wide. All of them were properly marked with spray paint and then removed with the excavator until satisfactory foundation material was exposed (dryer and sufficiently competent material). Material exposed after digging was found to be more competent and to contain acceptable moisture content. The resulting over-excavations (depth varied between 0 and 1.2m) were then backfilled with fine filter material properly compacted (excavator bucket compaction). Affected zones: 0+130, 0+140, 0+150, 0+155, 0+166, 0+195, 0+205, 0+230, 0+240.

Some of the soft and over-saturated material zones were caused by localized water preferential flow path within the natural ground (at 0+145, 0+085, 0+154, 0+202, 0+198). Over-excavations at these corrected zones were surveyed and immediately filled with FF material, properly compacted with the excavator bucket.

Since the invert of the channel was over-excavated between 0+234 and 0+261 due to ice content, two spot checks (0+250, 0+260) were done at the toe of the slope to assess the material conditions 0.3m below grade. FF material was used to backfill these over-excavations

- 0+260: Mix of dryer and damper till. No ice lenses, ice nor oversaturated material.
- 0+250: No significant ice lenses. Fine material with some ice content was observed but not considered to be in excess from visual inspection (less than 10% visible ice). A sample was taken at that location to confirm ice content. The results summarized in the table below show that moisture content is slightly in excess with respect to the specification (over 30%). The amount of ice is higher than expected. No ice was present elsewhere on the foundation, but the results indicates that presence of ice-rich material is possible at depth. This area will have to be monitored.

Table 5. West slope foundation sample results

Sample ID	Fines-sand-gravel	Ice content	Moisture content	Compliance	Chainage	Location	Date sampled
IVR-EX-17	-	26.51%	30.38%	Ice rich	0+250	west slope toe	2020-10-03

Ice lenses were found at the toe between 0+230 and 0+240. Lenses were about 1-2cm thick only with a lateral extent of 0.1-0.5m. The soil also contained some ice pockets of a few centimeter wide (less than 10cm) and areas of ice-rich material. Non-compliant material containing ice was removed until acceptable ice-poor foundation was found. Enough material was removed until no more ice lenses or pocket were present in the soil. The over excavation ended up being about 0.2 to 1.2m deep.

When encountered on the foundation, other deleterious materials were removed as needed such as large boulders, improper particles, and organic matter. Excess of organic matter was found between 0+050 and 0+085.

Cleaning: Any pebbles or other materials that fell down to the toe of the slope during slope excavation was all removed by hand to leave the foundation free of debris and rocks prior to placing the fine filter material.

Water management: Some ponding water at the toe of the slope was observed on about 30% of the channel length. Ponding was a few centimeter-thick only. The water was properly pushed away while placing the fine filter material on the slope. Between 0+015 and 0+025, the amount of water was more significant, it has been pumped out before placing FF.

Table 6. West slope foundation approvals

Approval doc number	Chainage	Location	Item approved	Date	Comments
20201002-FDN-11	0+155 to 0+240	West slope	Foundation	2020-10-02	Improper material removed to expose acceptable foundation
20201003-FDN-12	0+240 to 0+285	West slope	Foundation	2020-10-03	Ice-rich frozen material at 0+250. Other Improper material removed to expose acceptable foundation
20201003-FDN-13	0+090 to 0+155	West slope	Foundation	2020-10-03	Improper material removed to expose acceptable foundation
20201004-FDN-14	-0+015 to 0+090	West slope	Foundation	2020-10-04	Improper material removed to expose acceptable foundation

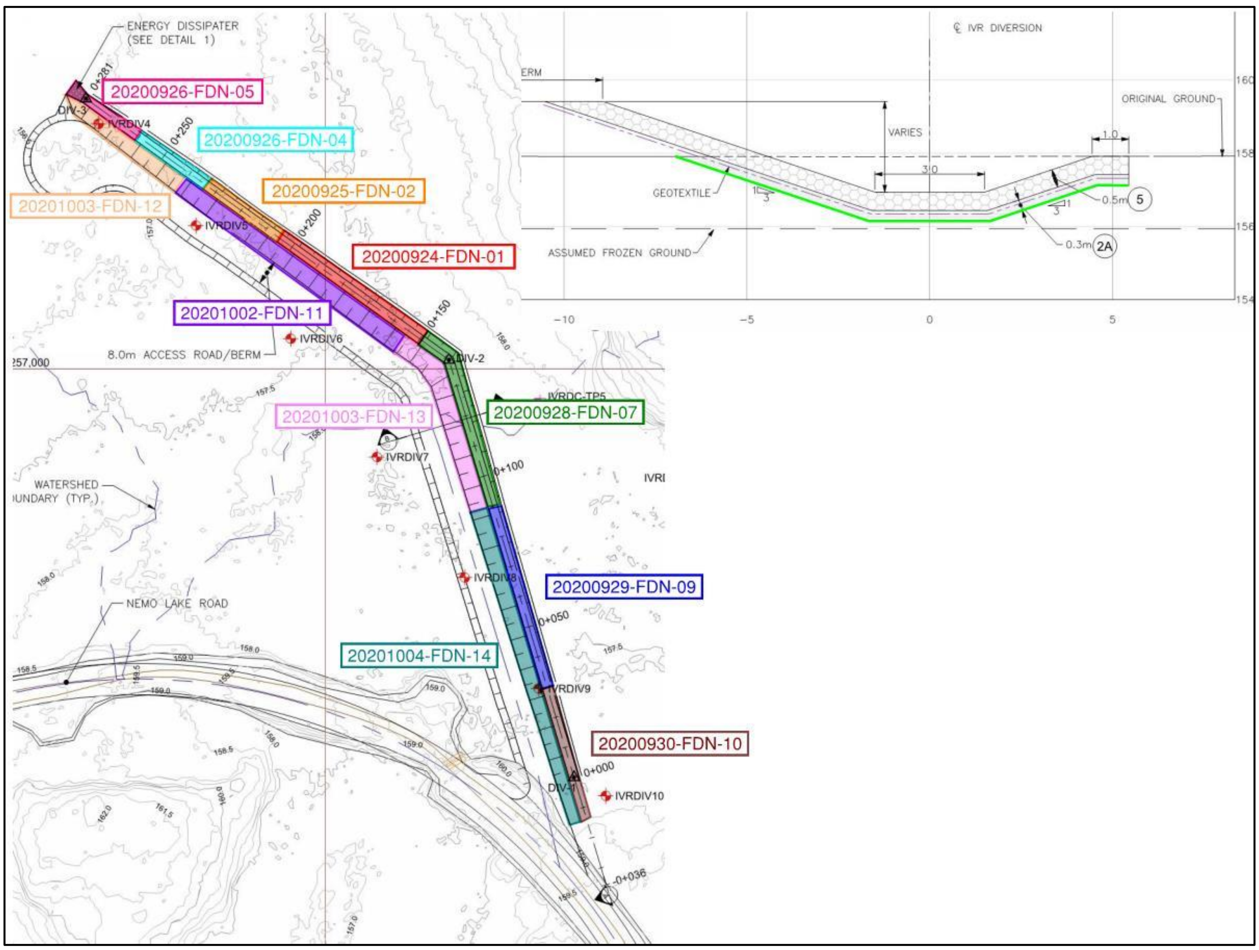


Figure 2. Plan view of all foundation approvals

FINE FILTER PLACEMENT

2020-09-20

STOCKPILE

A total of eight samples of FF material were taken at the beginning of the project to ensure compliance to the specifications. Sample FF-01 and FF-02 are just slightly on the coarse side. Overall, the fine filter material is considered compliant.

Table 7. Lab results for fine filter samples taken at the crusher stockpile.

Sample ID	fines	sand	gravel	Ice content	Moisture content	Compliance	Chainage	Location	Date sampled
IVR-FF-01	8	24	68	-	3.46 %	Partially compliant	-	Stockpile	2020-09-20
IVR-FF-02	6	18	76	-	3.78 %	Partially compliant	-	Stockpile	2020-09-20
IVR-FF-03	7	26	67	-	1.27 %	Compliant	-	Stockpile	2020-09-20
IVR-FF-04	8	42	50	-	1.01 %	Compliant	-	Stockpile	2020-09-20
IVR-FF-05	11	32	58	-	4.9 %	Compliant	-	Stockpile	2020-09-20
IVR-FF-06	9	24	67	-	4.7 %	Compliant	-	Stockpile	2020-09-20
IVR-FF-07	11	35	55	-	5.2 %	Compliant	-	Stockpile	2020-09-20
IVR-FF-08	10	39	51	-	2.7 %	Compliant	-	Stockpile	2020-09-20

2020-09-24 to 2020-09-30

CHANNEL INVERT & EAST SLOPE FINE FILTER

First loads of fine filter were a bit too coarse. The loader operator was instructed the proper loading method. Loads were compliant from that point onwards. A sample was taken to confirm compliance. The material was properly placed and compacted with the excavator bucket, according to QA and QC observations.

Table 8. Lab results for fine filter sample taking on site

Sample ID	fines	sand	gravel	Ice content	Moisture content	Compliance	Chainage	Location	Date sampled
IVR-FF-09	9	33	58	-	5.5 %	Compliant	0+147 to 0+205	Invert & east slope	2020-09-24

2020-10-03 to 2020-10-05

WEST SLOPE FINE FILTER

Visual inspection during fine filter material placement confirmed a proper gradation. The material was properly placed and compacted with the excavator bucket. Excessive compaction was avoided to minimize potential pore water movement in the surrounding high moisture content natural ground.

When water was present at the toe of the slope, it was properly pushed away as the fine filter material was slowly and directionally placed in the excavation. Otherwise, water was pumped out prior to FF placement (refer to previous section).

The challenge of placing FF on the west slope was the limitation for the operator to handle material at the toe of the dike. Given that the channel was built in two steps, the FF, geotextile and rip rap were already in place at the channel invert at the time of placing FF on the west slope. In prevision of that, the excavation and FF layer were extended as much as possible on the west side to allow more flexibility and the rip rap layer was not fully completed on the west side of the invert. The geotextile rolls were left rolled at the end of the rip rap and sometimes pulled up on top of it.

Some of them had to be warmed up, because frozen, before the laborer could move them to leave more room for FF placement.

All in all, the surveyor confirmed the toe of the slope before and after FF placement. The only potential limitation is that the material could not be compacted as much or sometimes at all, at the junction with the invert FF layer, to avoid damaging to the geotextile.

Table 9. Fine Filter approvals

Approval doc number	Chainage	Location	Item approved	Date	Comments
20200927-FF-01	0+149 to 0+285	Invert & East slope	Fine filter	2020-09-27	Compliant
20200929-FF-02	0+090 to 0+149	Invert & East slope	Fine filter	2020-09-29	Compliant. Inspection by QC only
20200929-FF-03	0+029 to 0+090	Invert & East slope	Fine filter	2020-09-29	Compliant. Inspection by QC only
20200930-FF-04	-0+015 to 0+029	Invert & East slope	Fine filter	2020-09-30	Compliant
20201003-FF-05	0+140 to 0+285	West slope	Fine filter	2020-10-03	Compliant
20201004-FF-06	-0+015 to 0+140	West slope	Fine filter	2020-10-04	Compliant

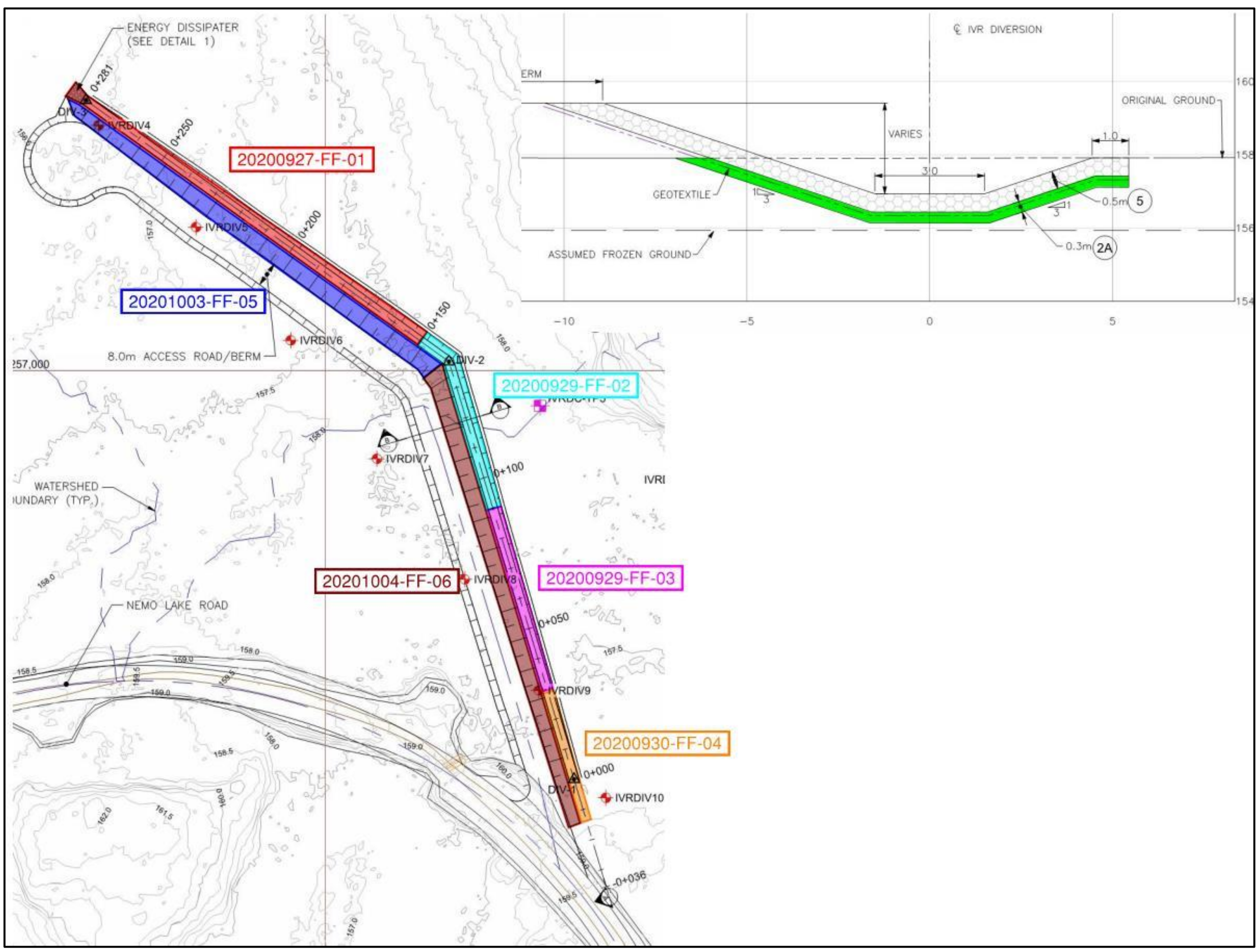


Figure 3. Plan view of the fine filter approvals

GEOTEXTILE PLACEMENT

2020-09-27 to 2020-09-30

CHANNEL INVERT & EAST SLOPE

Geotextile sheets installed from downstream to upstream so that any upstream sheet is on top of the downstream one. Overlap was compliant. Two layers were installed as agreed with designer since product used has different properties than design specifications. The second layer was placed on top of the first one but with a 2.5m overlap.

The product used was Novatex V from about 0+060 to 0+285 and Mirafi 1100N from -0+015 to about 0+060.

2020-10-03 to 2020-10-05

GEOTEXTILE UNROLLED UP THE WEST SLOPE

After Fine filter approval, geotextile rolls were unrolled all the way up the slope. The same sequence and overlap were used as in the channel (sheets installed from downstream to upstream so that any upstream sheet is on top of the downstream one). Overlap was compliant, always over 600mm. Overlap was greater in the 0+140 are because of the change in channel orientation. Two layers were placed at all times, as per agreement with the designer (continuation of the rolls placed on the invert and east slope).

At some locations, the geotextile has been damaged during the slope excavation and fine filter placement. Sometimes, the textile was ripped between the rip rap stones and the excavator bucket. At these locations, proper corrective measures were taken. Rip holes were located at the toe of the west slope. When unrolling the rolls, full width geotextile patches were added in a way that the patch covered a zone of 1-2m around the damaged area when possible. When the damaged area was too close to the toe, the covering offset was less on the side of the channel invert because of the rip rap already in place. On that side, the patch covered an area of about 0.3m beyond the damaged zone. Rip rap material was moved manually to allow such an overlap. Also, the damaged geotextile was folded over 1-2m as an additional protection to ensure that the tear holes were properly patched.

CHANNEL OUTLET

Geotextile was put in place at the channel outlet beyond the energy dissipator. Only one layer was installed, with same overlap as anywhere in the channel.

CHANNEL UPSTREAM END (INLET)

A geotextile was put in place at the upstream end of the channel in a way that it covered the natural ground slope. It was not possible to achieve any overlap with the geotextile of the channel, that was already buried under rip rap.

Table 10. Geotextile approvals

Approval doc number	Chainage	Location	Item approved	Date	Comments
20200927-GT-01	0+149 to 0+285	Invert & east slope	Geotextile	2020-09-27	Compliant
20200929-GT-02	0+032 to 0+149	Invert & east slope	Geotextile	2020-09-29	Compliant
20200930-GT-03	-0+015 to 0+032	Invert & east slope	Geotextile	2020-09-30	Compliant
20201003-GT-04	0+140 to 0+285	West slope	Geotextile	2020-10-03	Compliant Satisfactory corrective measure for damaged geotextile
20201004-GT-05	-0+015 to 0+140	West slope	Geotextile	2020-10-04	Compliant Satisfactory corrective measure for damaged geotextile

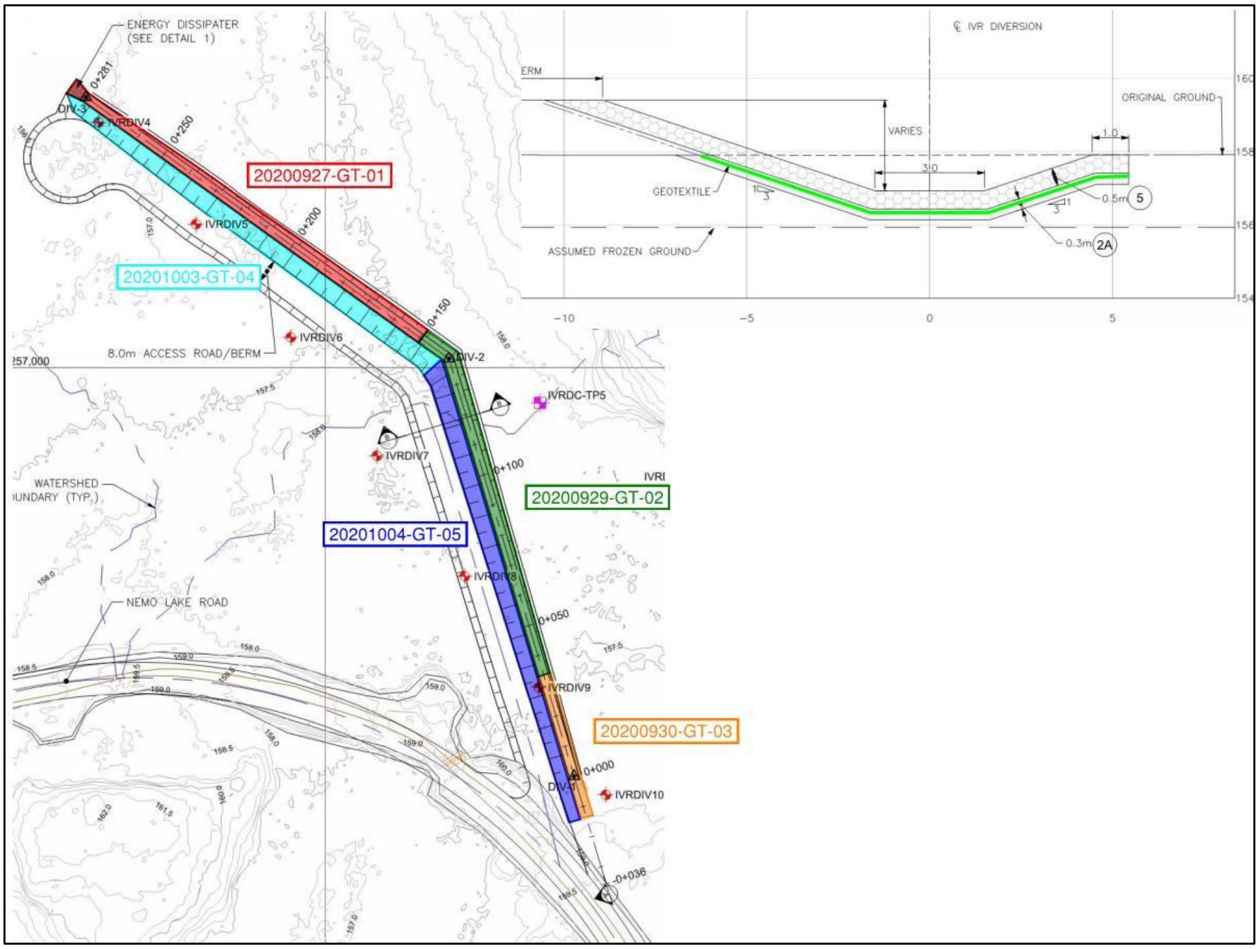


Figure 4. Plan view of Geotextile approvals

RIP RAP PLACEMENT

2020-09-27 to 2020-09-30

RIP RAP PLACEMENT ON THE INVERT & EAST SLOPE

Rip rap placement to proper elevation. Proper particle size from visual inspection except some non-compliant loads. Some rip rap loads dumped in the afternoon of 2020-09-30 were found to contain material finer than 100mm (fine particles and gravel size particles). The stockpile has been checked so the best material is loaded. Operators placing the material have been notified and adapted their method. On the access road prior to placement in the channel, fines were segregated as much as possible using wind while dropping bucket loads from higher up. Also, while placing the material, the operator shakes the bucket and leaves the finer material in the bucket. It is disposed of on the road rather than in the channel. The few spots that needed manual clean up to remove finer material (0+045, 0+078, 0+140, 0+196) were cleaned by hand on 2020-10-06 to QA satisfaction.

2020-10-03 to 2020-10-06

RIP RAP PLACEMENT ON WEST SLOPE, INLET AND OUTLET

Proper gradation. No particles finer than 100mm, despite stockpile depletion, except for normal amount of dust from crushing and handling. Most of the dust is blown away by the wind as the material is placed on the geotextile.

CHANNEL OUTLET

A layer of about 300-400mm was placed at the outlet of the channel, beyond the energy dissipator, over and beyond the geotextile to properly merge with the natural ground and minimize the risks of erosion from water exiting the channel.

CHANNEL INLET

At the upstream end of the channel, about 300 to 600mm of rip rap was placed over and beyond the underlying geotextile so that erosion from runoff water on the natural slope reporting to the channel is minimized.

Table 11. Rip rap approvals

Approval doc number	Chainage	Location	Item approved	Date	Comments
20200930-RR-01	-0+015 to 0+285	Invert & East slope	Rip Rap	2020-09-30	Compliant. Non-compliant material has been removed by hand
20201006-RR-02	-0+015 to 0+285	West slope	Rip Rap	2020-10-06	Compliant

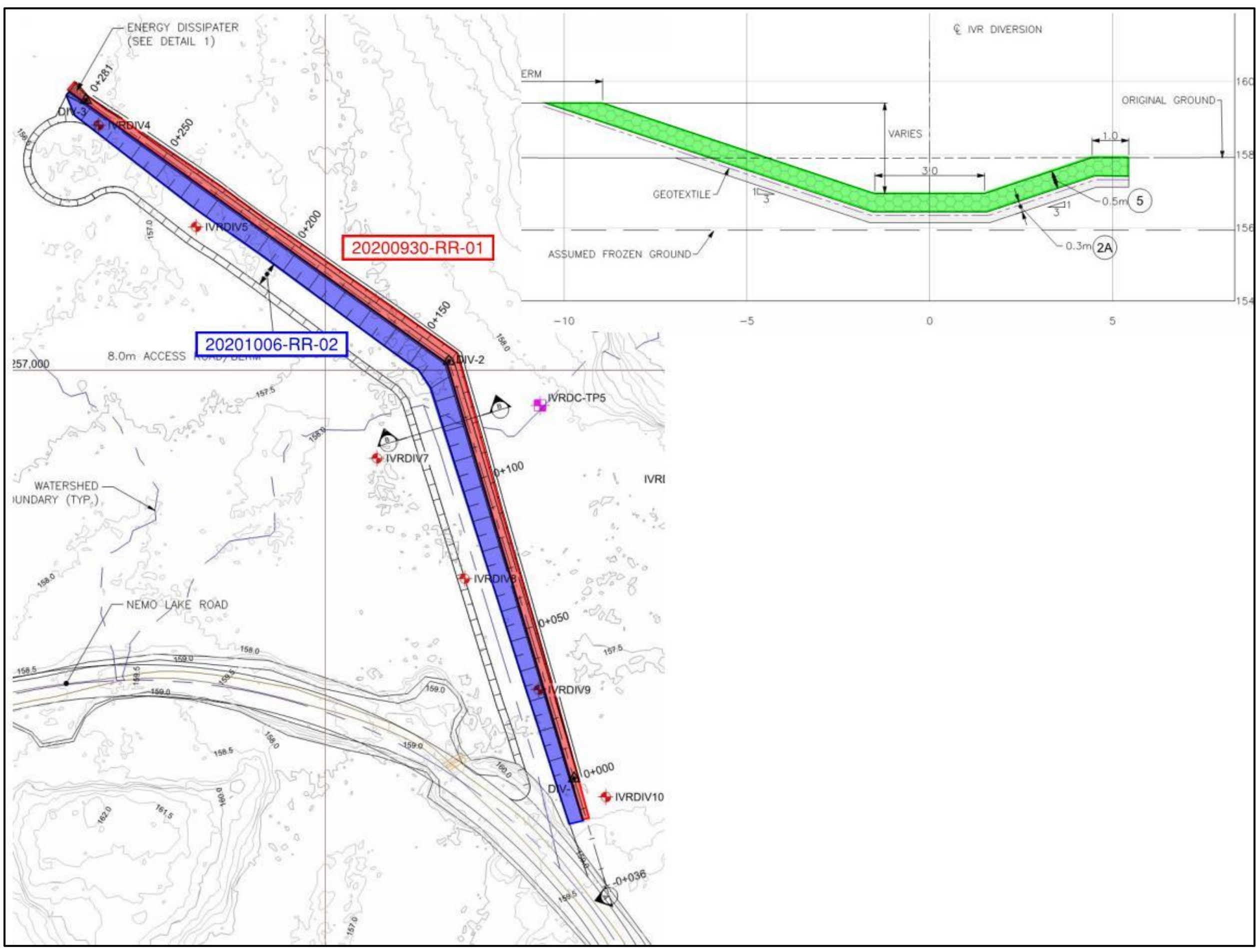


Figure 5.Plan view of rip rap approvals

APPENDIX B2

QA Daily Reports

SNC·LAVALIN AGNICO EAGLE

QA SITE REPORT
(Detailed)

20200919-DS
Document number (YYYYMMDD-DS-SR)

2020-09-19	6 :30 AM	6 :30 PM		Patrice Gagnon
Visit date	Time (Start/End)		Project No.	Prepared by

IVR Diversion Channel Construction	Agnico Eagle
Project	Client

SNC Lavalin (Designer); WSP (QC)		KCG
Consultants		Contractor

Weather: ☒Sunny ☐Cloudy ☐Rain ☐Storm ☐ Snow ☐Glaze

Wind: ☐None ☒Light ☐Moderate ☐ Strong, gusts Temperature: 6 °C

Comments

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Pictures in the folder ☒Yes ☐ No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		**Approximate location**	**Visual observation during field visit** [1]
Excavation	☐Yes ☒No		
Snow cleaning	☐Yes ☒No		
Esker placement	☐Yes ☒No		
Fine filter placement	☐Yes ☒No		
Coarse filter placement	☐Yes ☒No		
Geotextile and rip rap	☐Yes ☒No		

Rockfill placement	☒Yes ☐No	Between St. 0+000 to 0+011 & 0+023.6 to 0+111	Fine rockfill, rock type soapstone, placed with dozer, well graded, approx. 0-600, larger particles put aside by operator, compaction achieved by trucks and dozer.
Approval	☐Yes ☒No		
Sampling	☐Yes ☒No		
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

[1] Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos

ADDITIONNAL COMMENTS:

First lift of rockfill in the very soft swampy area will be thicker than the Specs for safety reason, to avoid equipment sinking into the softer material and getting caught.

The d/s platform was left intentionally open in order to let the water pass into its original stream between 0+011 and 0+023.6 to avoid blocking water flow and unnecessary water management. It will be completed later on, before the excavation of the channel then compacted accordingly.

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Rockfill	d/s platform-berm	ok

SAFE AND SAFETY REMARKS

Very soft foundation, tundra saturated, potential hazard for the heavy equipment travelling over it

Issued by : Signature — Date: 2020-09-20

Verified by : Signature — Date

PHOTOS/PICTURES

Photo 1: Close view of rockfill, at Station 0+005 to show grain size distribution of the material. Note: rockfill not compacted yet with haul trucks in this area as it is not connecting qith the main berm seen on top of the photo.

Photo 2: Construction of the d/s berm with rockfill, station 0+026. First lift slightly over the specified thickness as soft foundation encountered in the wet flat area between 0+000 and 0+125.

INFORMATION PROVIDED TO AEM

Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	No	Meeting not started yet
AEM QC Daily Report	Yes	
QC Sample Test Result	-	
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative : _______________ 2020-09-20

Signature Date

Reviewed by SNC-Lavalin (Designer) : _______________ _______________

Signature Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

QA SITE REPORT
(Detailed)

20200920-DS
Document number
(YYYYMMDD-DS-SR)

2020-09-19	6 :30 AM	6 :30 PM		Patrice Gagnon
Visit date	Time (Start/End)		Project No.	Prepared by

IVR Diversion Channel Construction	Agnico Eagle
Project	Client

SNC Lavalin (Designer); WSP (QC)		KCG
Consultants		Contractor

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐ Snow ☐Glaze

Wind: ☐None gusts ☒Light ☐Mod. ☐Strong, Temp: 4 °C

Comments Temperature above freezing all day, rain started at night and lasts until morning of 21st.

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Pictures in the folder ☒Yes ☐ No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		Approximate location	Visual observation during field visit [1]
Excavation	☐Yes ☒No		
Snow cleaning	☐Yes ☒No		
Esker placement	☐Yes ☒No		
Fine filter placement	☐Yes ☒No		
Coarse filter placement	☐Yes ☒No		

Geotextile and rip rap	☐Yes ☒No		
Rockfill placement	☒Yes ☐No	Between St. 0+111 to 0+260	Fine rockfill, rock type soapstone, placed with dozer, well graded, approx. 0-600, larger particles put aside by operator, compaction achieved by trucks and dozer.
Approval	☐Yes ☒No		
Sampling	☐Yes ☒No		
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

[1] Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos

ADDITIONNAL COMMENTS:

First lift of rockfill in another very soft saturated area, we tried to build a 500mm lift on that section (0+150 to 0+250) but material was sinking as foundation is too soft, came back from 0+150 then add another 500mm to have a more stable plateform.

Compaction achived by means of haul trucks trafficking, operators instructed to vary the wheel passage to compact the entire platform, worked well no more ruts.

Entire foundation still saturated, sumps will likely be required to try and remove some water before excavation.

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Rockfill	d/s plateform-berm	ok

SAFE AND SAFETY REMARKS

Very soft foundation, tundra saturated, potential hazard for the heavy equipment travelling over it

Issued by : Signature: [signature] Date: 2020-09-21

Verified by : Signature: Date:

PHOTOS/PICTURES

Photo 1: Close view of downstream plateform, 0+075 looking South, compaction of the entire width achieved by haul trucks.

Photo 2: Station 0+200 looking North. Softer material from foundation protruding through the rockfill layer that was too thin. Before it got out of control, QA asked to retreat 50m from there and restarted with another lift 500mm over the existing one. Material shown was on the downstream end of the platform and it was left in place and covered.

INFORMATION PROVIDED TO AEM

Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	Yes	
AEM QC Daily Report	Yes	
QC Sample Test Result	-	
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative :

Signature

2020-09-21
Date

Reviewed by SNC-Lavalin (Designer) :

Signature

Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

QA SITE REPORT
(Detailed)

SNC·LAVALIN AGNICO EAGLE

20200921-DS
Document number (YYYYMMDD-DS-SR)

2020-09-19	6 :30 AM	6 :30 PM		Patrice Gagnon
Visit date	Time (Start/End)		Project No.	Prepared by

IVR Diversion Channel Construction	Agnico Eagle
Project	Client

SNC Lavalin (Designer); WSP (QC)		KCG
Consultants		Contractor

Weather: ☐Sunny ☒Cloudy ☒Rain ☐Storm ☐ Snow ☐Glaze

Wind: ☐None gusts ☒Light ☐Mod. ☐Strong, Temp: 4 °C

Comments: Temperature above freezing all day, rain started stopped in morning.

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Pictures in the folder ☒Yes ☐ No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		Approximate location	Visual observation during field visit [1]
Excavation	☐Yes ☒No	0+232, 0+223 & 0+115	3 foundation test pits were dug into the foundation of the channel to assess the water presence/material quality. None were dug deeper than the channel final depth. Material varied from cobbles and blocks to glacial till, damp to soaked. 3 samples taken by QC for gradation.
Snow cleaning	☐Yes ☒No		
Esker placement	☐Yes ☒No		
Fine filter placement	☐Yes ☒No		

Coarse filter placement	☐Yes ☒No		
Geotextile and rip rap	☐Yes ☒No		
Rockfill placement	☒Yes ☐No	1st lift 0+250 to 0+260 2nd lift plateform between St. 0+024 to 0+170 D/s access road from Nemo road to platform at St. 0+150	Fine rockfill, rock type soapstone, placed with dozer, well graded, approx. 0-600, larger particles put aside by operator, compaction achieved by trucks and dozer.
Approval	☐Yes ☒No		
Sampling	☐Yes ☒No		
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

[1] Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos

ADDITIONNAL COMMENTS:

- 1 of the 3 pits will be turned into a sump, submersible pump installed into 0+223 to drain the surrounding boulder field. 3" pump is enough to empy the sump and manage the water arrival into the hole. Water redirected into the lake A47 waterdhed as per ENV. recommendations.
- 2nd lift of muck added to the downstream plateform between 0+026 to 0+170, proper muck size and compaction. Still more to add on the section 0+170 to 0+260.
- Second access road from the Nemo Road added downstream of the plateform to connect at station 0+150. This access will allow more flexibility to construction activities.
- A pumping station will be added upstream of the construction zone to rempve as much water from the foundation as possible for the section 0+100 to 0+000. ENV Dept gave approval for a temporary access road to this area. Road to be built with esker and remove at the end of works.

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Rockfill	d/s plateform-berm, d/s access road	Ok, meets Specs.

SAFE AND SAFETY REMARKS

Co-activity leading to construction site on Nemmo road – 150 T truck from Mine were using the same access to go to IVR Waste dump in the afternoon. KCG notified their operators.

Issued by : ____________________ 2020-09-22

Signature   Date

Verified by : ____________________ ____________

Signature   Date

PHOTOS/PICTURES

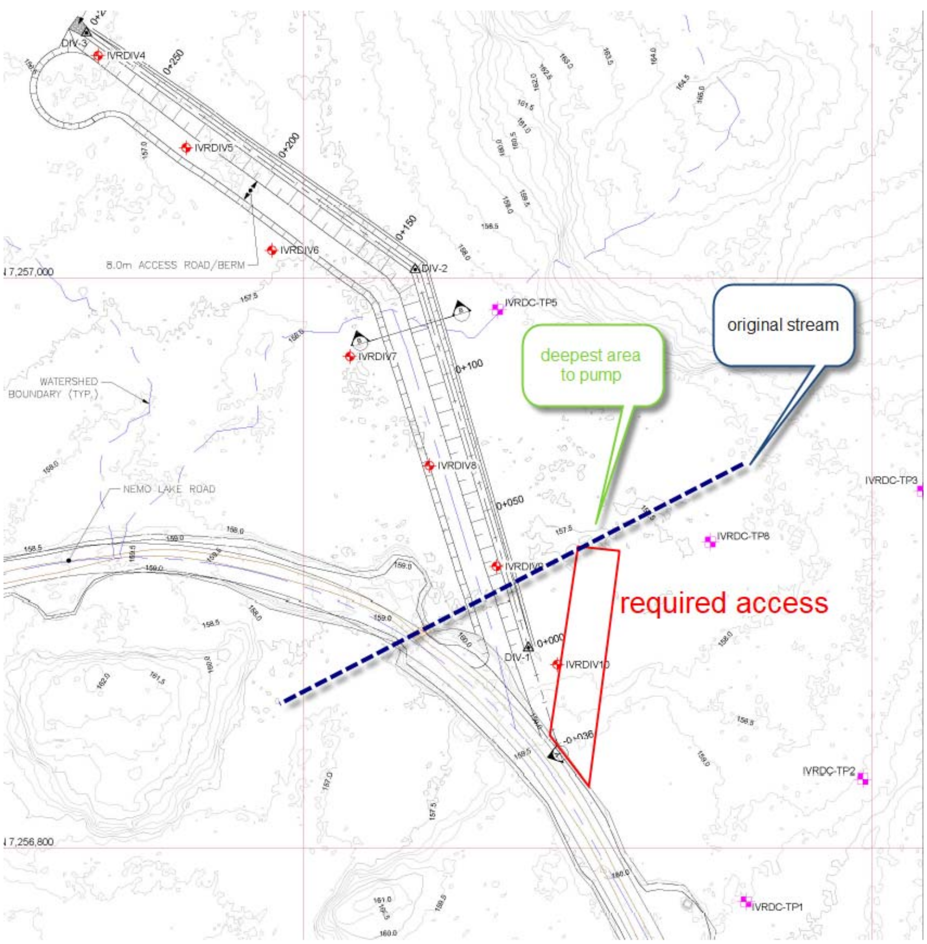


Photo 1: temporary access to new pumping station in upstream deepest spot to manage water between 0+100 and 0+000.

Photo 2: exemples of variety of material found in the excavation of the channel.
Left: St.0+115, silty brown material, almost dry overlying a damp grey till at the bottom
Right: soaked sand, gravel and blocks, depleted in fines from St.0+223. Visually a boulder field at surface.

Photo 3: water management in the foundation. To drain the water contained in the boulder field to allow for a proper excavation, a sump was dug into the channel footprint and water redirected downstream of the Construction site. Pumping was effective to drain most of the boulder field after one night of continuous dewatering.

INFORMATION PROVIDED TO AEM

Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	Yes	
AEM QC Daily Report	Yes	
QC Sample Test Result	-	
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative :

Signature

2020-09-22
Date

Reviewed by SNC-Lavalin (Designer) :

Signature

Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

QA SITE REPORT
(Detailed)

20200922-DS
Document number (YYYYMMDD-DS-SR)

2020-09-19	6 :30 AM	6 :30 PM		Patrice Gagnon
Visit date	Time (Start/End)		Project No.	Prepared by

IVR Diversion Channel Construction	Agnico Eagle
Project	Client

SNC Lavalin (Designer); WSP (QC)		KCG
Consultants		Contractor

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☒None ☐Light ☐Mod. ☐Strong, gust Temp: 2-3 °C

Comments: Overcast all day

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Pictures in the folder ☒Yes ☐No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		Approximate location	Visual observation during field visit [1]
Excavation	☐Yes ☒No	0+260 to 0+223	Started excavation at the end of channel. A sump was dug 10m outside the channel footprint to collect all the water from the channel's excavation. Ice rich material was encountered in the foundation from st.0+263 to 0+243 on the first pass to remove water from top surface.
Snow cleaning	☐Yes ☒No		
Esker placement	☒Yes ☐No	0+000 to 0+100	Building a dewatering road upstream of channel to manage water before the excavation later on during construction.
Fine filter placement	☐Yes ☒No		

Coarse filter placement	☐Yes ☒No		
Geotextile and rip rap	☐Yes ☒No		
Rockfill placement	☒Yes ☐No	2nd lift 0+170 to 0+260	Fine rockfill, rock type soapstone, placed with dozer, well graded, approx. 0-600, larger particles put aside by operator, compaction achieved by trucks and dozer. 3 soft pockets of overburden protruding through the rockfill. They were removed and replaced by good rockfill.
Approval	☐Yes ☒No		
Sampling	☐Yes ☒No		
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

[1] Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos

ADDITIONNAL COMMENTS:

- Started excavation to almost final elevation from 0+281 to 0+243, water management through the sump at 0+281 redirected to A47 watershed.
- Ice rich till encountered into the foundation between 0+243 and 0+263. First 50cm of surface material was scraped and left to thaw for the night.
-

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Rockfill	d/s plateform-berm St.0+200, soft belly in plateform	Not meeting Specs.
	Material was later excavated then replaced with muck	Ok

SAFE AND SAFETY REMARKS

Excavation started – All personnel should stay away from the reach of the excavator, even surveyor.

Issued by : Signature: [signature] Date: 2020-09-23

Verified by : Signature: Date:

PHOTOS/PICTURES

Photo 1: water management road built upstream of channel to control water contained within sector 0+000 to 0+100. Original stream was not blocked by this access.

Photo 2: first pass of the excavation of the channel to drain surface water, 0+250 looking north at the sump at the end of the channel. ± 0.5m of original tundra was removed on that picture.

Photo 3: 1 of the 3 soft spots in the plateform at St.0+225, overburden protruding through the rockfill. Soft materials were excavated and replaced with muck and compacted with the bucket of the excavator.

Photo 4: ice rich till in the foundation of the channel St. 0+245 looking North. Summary removal was completed without the presence of QA or QC. Ice situation will be reassessed tomorrow morning and complete removal will be performed if required, as per Specifications.

INFORMATION PROVIDED TO AEM

Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	Yes	
AEM QC Daily Report	Yes	
QC Sample Test Result	-	
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative :

Signature | 2020-09-23 Date

Reviewed by SNC-Lavalin (Designer) :

Signature | Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

QA SITE REPORT
(Detailed)

20200923-DS
Document number (YYYYMMDD-DS-SR)

2020-09-19	6 :30 AM 6 :30 PM		Patrice Gagnon
Visit date	Time (Start/End)	Project No.	Prepared by

IVR Diversion Channel Construction	Agnico Eagle
Project	Client
SNC Lavalin (Designer); WSP (QC)	KCG
Consultants	Contractor

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐ Snow ☐Glaze

Wind: ☒None ☐Light ☐Mod. ☐Strong, gust Temp: 2-3 °C

Comments: Overcast all day

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Pictures in the folder ☒Yes ☐ No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		Approximate location	Visual observation during field visit [1]
Excavation	☐Yes ☒No	0+243 to 0+0+143	Ice rich till from 0+235 to 0+260 within the foundation. Ice lens at 0+247.5 (1.2m long x 0,4m wide x 0,8m deep) was entirely removed from the base of the d/s 3/1 slope.
Snow cleaning	☐Yes ☒No		
Esker placement	☒Yes ☐No		
Fine filter placement	☐Yes ☒No		
Coarse filter placement	☐Yes ☒No		
Geotextile and rip rap	☐Yes ☒No		

Rockfill placement	☒Yes ☐No		
Approval	☐Yes ☒No		
Sampling	☐Yes ☒No		
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

[1] Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos

ADDITIONNAL COMMENTS:

Continued the excavation to almost final elevation from 0+243 to 0+143, water management through the sump at 0+281 redirected to A47 watershed.

- Ice rich till encountered into the foundation between 0+235 and 0+263. Excavated to almost grade with difficulty. Sample taken to evaluate ice content = 93%. Material will be removed until proper material found.
- Large ice lense removed from the base of the d/s slope. Entirely removed under QA supervision and replaced with proper muck.
- Started dewatering the section between 0+000 and 0+100. Pump installed on the temporary access and water directed towards A47.

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Rockfill/natural ground	Ice lens found in natural ground under the rockfill platform. All ice removed and replaced by muck.	Not meeting specs
Excavation/foundation	Ice rich till was found in foundation – Sample revealed 93% ice content. Material will be excavated until proper material met.	Not meeting Specs.

SAFE AND SAFETY REMARKS

Excavation started – All personnel should stay away from the reach of the excavator, even surveyor.

Issued by :	Signature	2020-09-24 Date
Verified by :	Signature	Date

PHOTOS/PICTURES

Photo 1: water management upstream of channel to control water contained within sector 0+000 to 0+100.

Photo 2: first pass of the excavation of the channel completed from 0+143 to +0281. Water from boulder fields along the channel and foundation still draining.

Photo 3: ice rich frozen till in the foundation of the channel between St. 0+235 and 0+260. Ice content sample revealed 93% water. Material to be excavated and replaced by esker in the next days.

Photo 4: ice crystals and inclusion in till, from foundation at St. 0+243.

Photo 5: partial view of the ice lens found under the rockfill at the base of the slope St. 0+243, original size 1.2m long x 0.9m deep x 0.6 m wide. Lens was entirely removed and replaced with rockfill.

INFORMATION PROVIDED TO AEM

Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	Yes	
AEM QC Daily Report	Yes	
QC Sample Test Result	yes	Ice content in frozen till – 93%
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative : 2020-09-24

Signature Date

Reviewed by SNC-Lavalin (Designer) :

Signature Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

SNC·LAVALIN AGNICO EAGLE

QA SITE REPORT
(Detailed)

20200924-DS
Document number
(YYYYMMDD-DS-SR)

2020-09-24	6 :30 AM 6 :30 PM		Patrice Gagnon
Visit date	Time (Start/End)	Project No.	Prepared by

IVR Diversion Channel Construction	Agnico Eagle
Project	Client
SNC Lavalin (Designer); WSP (QC)	KCG
Consultants	Contractor

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐ Snow ☐Glaze

Wind: ☒None ☐Light ☐Mod. ☐Strong, gust Temp: 2-3 °C

Comments Overcast all day

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Pictures in the folder ☒Yes ☐ No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		Approximate location	Visual observation during field visit [1]
Excavation	☒Yes ☐No	0+139 to 0+035	First pass of excavation ro temove soft material from surface and promote drainage of the surface and material
Snow cleaning	☐Yes ☒No		
Esker placement	☐Yes ☒No		
Fine filter placement	☒Yes ☐No	0+147 to 0+205	First loads of FF were a bit too coarse, loader operator was instructed the proper loading method, rest of the day was conform
Coarse filter placement	☐Yes ☒No		
Geotextile and rip rap	☐Yes ☒No		

Rockfill placement	☒Yes ☐No		
Approval	☐Yes ☒No		
Sampling	☐Yes ☒No		
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

[1] Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos

ADDITIONNAL COMMENTS:

- Foundation approval #1 from 0+147 to 0+205 (document to come). Foundation material was scraped until proper and dry foundation. Some area required water\mud to be pushed with the bucket of the excavator. It was completed by adding FF to the wet foundation then pushing the mixed material towards the slope of the channel with the side of the bucket.
- Fine filter placement in the approved foundation from 0+147 to 0+205.
- Excavation first pass between 0+035 and 0+139. Sump was dug at 0+139 for water management through the sump at 0+000. Material is a largely very soft yellow sand and gravel, saturated in water. Foundation sample taken, results to come.
-

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Rockfill/natural ground		Not meeting specs
Excavation/foundation		Not meeting Specs.

SAFE AND SAFETY REMARKS

Excavation started – All personnel should stay away from the reach of the excavator, even surveyor.

Issued by : Signature — Date: 2020-09-25

Verified by : Signature — Date

PHOTOS/PICTURES

Photo 1: Foundation approved for the station 0+143 to 0+181. A final clean-up is done with the lip of the bucket then material is covetred by 300mm of Fine Filter.

Photo 2: for the section where water keeps coming at the bottom of the excavation, mud and water is mixed with FF then material is pushed away by the side of the excavator bucket bucket.

Photo 3: Fine filter almost to final grade between Stations 0+147 and 0+181.

Photo 4: first pass of excavation for the South sector. St.0+139 looking towards 0+035. Lots of water draining from the tundra is managed through series of sumps.

INFORMATION PROVIDED TO AEM

Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	Yes	
AEM QC Daily Report	Yes	
QC Sample Test Result	yes	Ice content in frozen till – 93%
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative :

Signature

2020-09-25
Date

Reviewed by

SNC-Lavalin (Designer) :

Signature

Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

QA SITE REPORT
(Detailed)

20200925-DS
Document number (YYYYMMDD-DS-SR)

Visit date	Time (Start/End)		Project No.	Prepared by
2020-09-25	6 :30 AM	6 :30 PM		Patrice Gagnon

Project	Client
IVR Diversion Channel Construction	Agnico Eagle

Consultants		Contractor
SNC Lavalin (Designer); WSP (QC)		KCG

Weather: ☐Sunny ☒Cloudy ☒Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☒Light ☐Mod. ☐Strong, gust Temp: 2-3 °C

Comments: Overcast all day, rain at night of 24th to 25th

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Pictures in the folder ☒Yes ☐No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		Approximate location	Visual observation during field visit [1]
Excavation	☒Yes ☐No	0+139 to 0+035	Soft material removal continued as well as water management
Snow cleaning	☐Yes ☒No		
Esker placement	☒Yes ☐No	0+235-0+260	Esker comprise mostly of sand and little bit of gravel, presence of cobbles and boulders. Placed into the ice rich till excavation to backfill hole. Placed in 2 lifts of 600mm compacted with the bucket of the excavator.
Fine filter placement	☒Yes ☐No	0+147 to 0+205	First loads of FF were a bit too coarse, loader operator was instructed the proper loading method, rest of the day was conform
Coarse filter placement	☐Yes ☒No		

Geotextile and rip rap	☐Yes ☒No		
Rockfill placement	☒Yes ☐No	0+026 to 0+011	Finish the plateform that was left open for water management. Soapstone used, material and compaction according to Specs.
Approval	☒Yes ☐No	0+205 to 0+235	Foundation approval for FF placement
Sampling	☒Yes ☐No	0+240, 0+250, + 1 composite of all foundation	Taken in the ice rich till after excavation for moisture content.
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

[1] Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos

ADDITIONNAL COMMENTS:

- **<u>Note: water content stated since beginning of the project was not right as per definition, total moisture content was falsely reported as water content. Sorry for the confusion. From now on, water content from the foundation will be measured appriopriately to qualify material as ice rich or poor.</u>**
- Foundation approval #2 from 0+205 to 0+235 (documentation to come).
- Ice-rich till removal from 0+235 to 0+260. Removal was done in 2 passes of 600 mm with the help of a hydraulic hammer to remove as much ice rich material as possible. Bottom of excavation was 1200mm below the one of the planned excavation. Till found at the bottom of the excavation contains visually less ice than at surface but still ice lenses present (around 10-15% ice/snow at surface). Bedrock seems to have been encountered in around 10% of the excavated surface. Total moisture content of the 3 samples taken in the foundation are 48, 42 and 33%, from 93% at planned surface before removal. As per gradation, the 3 samples present clay and silt content between 15 to 50%, therefore falling into the ice-poor category. After consulting with the Engineer of Record, decision was taken to stop excavation there and backfill the area with dry esker material. Rationale behind that decision is three fold. 1) at that depth it is not safe to send surveyor or QC in the excavation while the d/s plateform is not properly sloped, 2) there will be 2m of material overlying the ice rich till at channel completion therefore less chances of foundation settlement caused by melting in the next years and 3) bedrock seems not too far away from the bottom of excavation as per field observations.
- Ice rich till section replaced by fine esker material (0-200) placed from the bottom of the excavation in 2 separate layers of 600mm thick, well compacted with the bucket of the excavator.
- Completed the rockfill plateform between 0+026 and 0+011. Material is conform with the rest of the plateform and compaction was achieved by the dozer and trucks trafficking over the area.
- Continued clean-up in section 0+139 to 0+024.

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Rockfill/natural ground	Plateform	Meets Specs
Excavation/foundation	Frozen ice-rich till removed	Gradation indicate good foundation material
Esker	Replacement of ice-rich till	Gradation ongoing

SAFE AND SAFETY REMARKS

Excavation started – All personnel should stay away from the reach of the excavator, even surveyor.

Issued by :	Signature	2020-09-26 Date
Verified by :	Signature	Date

PHOTOS/PICTURES

Photo 1:Ice rich till section between 0+235 and 0+260, after clean up and before hammering. Unsuitable foundation material visible ice greater than 10% of the surface, presence of ice lenses.

Photo 2: Ice lenses present after the first hammer pass at Station, Sta. 0+240 to 0+260.

Photo 3: 2nd pass of the removal of the ice rich till with hydraulic hammer, Sta. 0+260 looking South-East.

Photo 4: bedrock foud at St.0+255. Estimate that about 10% of the surface was on bedrock.

Photo 5: bottom of the ice rich section once all accessible till removed, St 0+255 looking S-E towards 0+235. Esker placement started by dropping loads of esker material with excavator and compacting it.

INFORMATION PROVIDED TO AEM

Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	Yes	
AEM QC Daily Report	Yes	
QC Sample Test Result	Yes	Moisture content of ice rich till – 48, 42 and 33%, clay and silt content - 35, 34 and 37%.
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative :	Signature	2020-09-26 Date
Reviewed by SNC-Lavalin (Designer) :	Signature	Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

QA SITE REPORT
(Detailed)

20200926-DS
Document number (YYYYMMDD-DS-SR)

Visit date	Time (Start/End)		Project No.	Prepared by
2020-09-26	6 :30 AM	6 :30 PM		Patrice Gagnon

Project	Client
IVR Diversion Channel Construction	Agnico Eagle

Consultants	Contractor
SNC Lavalin (Designer); WSP (QC)	KCG

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☒Light ☐Mod. ☐Strong, gust Temp: 2-3 °C

Comments: Overcast morning, sunny afternoon

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Pictures in the folder ☒Yes ☐No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		Approximate location	Visual observation during field visit [1]
Excavation	☒Yes ☐No	0-015 to 0+024 0+125 to 0+090 0+070 to 0+029	Soft material removal continued as well as water management Ice rich till excavation, first pass with hammer. Ice rich till sample at 0+120 yield 31% water. Excavation to continue.
Snow cleaning	☐Yes ☒No		
Esker placement	☒Yes ☐No	0+235-0+260	Finished 2nd lift, compacted and approved according to Specs.
Fine filter placement	☒Yes ☐No	0+235 to 0+281	Material and commpaction was conform as verified by QC
Coarse filter placement	☐Yes ☒No		

Geotextile and rip rap	☐Yes ☒No		
Rockfill placement	☐Yes ☒No		
Approval	☒Yes ☐No	0+205 to 0+235	Foundation approval for FF placement
Sampling	☒Yes ☐No	Esker ES-01, ice rich till at 0+120, first lift of hammering, EX-11	Taken in the ice rich till after excavation for water content.
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

[1] Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos

ADDITIONNAL COMMENTS:

- Foundation approval #3 from 0+235 to 0+260 and #4, 0+260 to 0+281 (documentation to come).
- Ice-rich till removal from 0+125 to 0+090 & 0+070 to 0+029. Removal was done in 1 pass of 500 mm with the help of a hydraulic hammer to remove as much ice rich material as possible. Till found at the bottom of the excavation contains visually less ice than at surface but still ice lenses present (visually around 40% ice for 0+125 to 0+090 and 90% ice in 0+070-0+029). Water content of the sample taken in the foundation at 0+120 yield 31% water by mass, granulometry results to come.
- Fine filter placed from 0+228 to 0+281, material placement and compaction conformity checked by QC.
- First excavation of the overburden between 0-015 and 0+024. The 15m section passed the beginning of the channel excavated to match natural topography.
- Continued clean-up in section

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Rockfill/natural ground	Plateform	Meets Specs
Excavation/foundation	Frozen ice-rich till removed	Gradation indicate good foundation material
Esker	Replacement of ice-rich till	Gradation ongoing

SAFE AND SAFETY REMARKS

Excavation started – All personnel should stay away from the reach of the excavator, even surveyor.

Issued by : [signature] 2020-09-27

Signature Date

Verified by :

Signature Date

PHOTOS/PICTURES

Photo 1:2nd lift of esker fine material in replacement of ice-rich till St. 0+235 looking North. Material placed in 600mm lifts compacted with the bucket of the excavator.

Photo 2: Fine filter placement on top of the esker, from St.0+200 looking North.

Photo 3: hammering of the frozen till to reach proper foundation grade in ice rich sector 0+125 to 0+090, taken from St.0+100 looking North.

Photo 4: hammering of the first 400mm of frozen till, St.0+125 looking South. Clean up and assessment needs to be done.

INFORMATION PROVIDED TO AEM

Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	Yes	
AEM QC Daily Report	Yes	
QC Sample Test Result	Yes	Moisture content of ice rich till – 48, 42 and 33%, clay and silt content - 35, 34 and 37%.
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative :

Signature — Date: 2020-09-27

Reviewed by SNC-Lavalin (Designer) :

Signature — Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

QA SITE REPORT
(Detailed)

20200927-DS
Document number
(YYYYMMDD-DS-SR)

2020-09-27	6 :30 AM 6 :30 PM		Patrice Gagnon
Visit date	Time (Start/End)	Project No.	Prepared by

IVR Diversion Channel Construction	Agnico Eagle
Project	Client

SNC Lavalin (Designer); WSP (QC)		KCG
Consultants		Contractor

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐ Snow ☐Glaze

Wind: ☐None ☒Light ☐Mod. ☐Strong, gust Temp: 5 °C

Comments Overcast entire day

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Pictures in the folder ☒Yes ☐ No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		Approximate location	Visual observation during field visit [1]
Excavation	☒Yes ☐No	0+125 to 0+090 0+070 to 0+029	Ice rich till excavation with hammer, reached 1200mm deep at 0+125 – 0+090. First 2 pass of hammer done from 0+070 to 0+029. Excavation to continue. Ice rich till sample taken in both sectors, results to come.
Snow cleaning	☐Yes ☒No		
Esker placement	☒Yes ☐No	0+125 to 0+090	2 lifts of 600mm compacted and approved according to Specs.
Fine filter placement	☒Yes ☐No	Energy dissipator	Material and compaction was conform as verified by QA
Rip rap placement	☒Yes ☐No	From energy disspipator to 0+152	First layer of about 200-300mm to hold the geotextile in place
Geotextile	☒Yes ☐No	From Energy dissipator to 0+152	Overlap conform, 2 layers added on top of another with a 2.5m overlap for the start of the second layer

Rockfill placement	☐Yes ☒No		
Approval	☒Yes ☐No	0+281 to energy dissipator	Foundation approval for FF placement
Sampling	☒Yes ☐No	Ex-11 to 14	Taken in the ice rich till top and after excavation for water content and gradation. Section 0+125 to 0+090.
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

[1] Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos

ADDITIONNAL COMMENTS:

- Energy dissipator excavated and backfilled with FF.
- Final approval for FF done from 0+149 to energy dissipator.
- Geotextile installed from 0+152 to end of channel at energy dissipator. Overlapping of 600mm conform, as verified by QC
- Excavation ice-rich till in section 0+125 to 0+090. Hydraulic hammer used to break the ice from the planned surface to 1200mm below. Material found at bottom of excavation is still ice-rich but was covered with 2 layers of fine esker material compacted, as specified in 20200926-DS.
- Excavation of almost pure ice mixed with silty sand at St.0+070 to 0+029. Hydraulic hammer removed first 600mm of icy material under lots of water. To be reassessed tomorrow after second step of clean up.

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Excavation/foundation	Frozen ice-rich till removed	Gradation ongoing
Esker	Replacement of ice-rich till	Gradation ongoing

SAFE AND SAFETY REMARKS

Excavation started – All personnel should stay away from the reach of the excavator, even surveyor.

Issued by : Signature: [signature] Date: 2020-09-28

Verified by : Signature: ______ Date: ______

PHOTOS/PICTURES

Photo 1:energy dissipator excavation. Line and grades checked by QA. St.0+281 looking North

Photo 2: energy dissipator covered with Fine filter adjusted to match actual topography and surrounding boulder fields.

Photo 3: hammering of the frozen till to reach proper material in ice-rich sector 0+125 to 0+090, taken from St.0+125 looking South. With depth the till had gotten more ice-rich than at surface, ice lenses appeared in foundation (right). Excavation was stopped as it had reached maximum depth allowed for safety and was covered by fine esker material. Results of the water content of 3 till samples taken from that section, 20 (planned elevation), 24 and 25% (bottom of excavation), gradation on materials ongoing.

Photo 4: fine filter placement completed on the upstream tablet, St.0+240 looking South. Tablet was built on the entire length between 0+281 to 0+139.

Photo 5: geotextile placement of 2 layers of Novatex V. Bottom layer overlap of 600mm respected, top layer overlapping the first layer by half a roll.

Photo 6: geotextile placement, exemple of a completed section St.0+150. Flow of the channel towards left of photo.

Photo 6: rip rap placement over the geotextile to hold it in place. Final riprap thickness to be adjusted and profiled, St.0+150 looking North.

INFORMATION PROVIDED TO AEM

Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	Yes	
AEM QC Daily Report	Yes	
QC Sample Test Result	No	
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative : ______________________ 2020-09-28

Signature Date

Reviewed by SNC-Lavalin (Designer) : ______________________ ______________

Signature Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

QA SITE REPORT
(Detailed)

20200928-DS
Document number
(YYYYMMDD-DS-SR)

Visit date	Time (Start/End)		Project No.	Prepared by
2020-09-28	6 :30 AM	6 :30 PM		Patrice Gagnon

Project	Client
IVR Diversion Channel Construction	Agnico Eagle

Consultants		Contractor
SNC Lavalin (Designer); WSP (QC)		KCG

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐ Snow ☐Glaze

Wind: ☐None ☒Light ☐Mod. ☐Strong, gust Temp: 5 °C

Comments: Overcast entire day

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Pictures in the folder ☒Yes ☐ No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		Approximate location	Visual observation during field visit [1]
Excavation	☒Yes ☐No	0+143 to 0+125 0+090 to 0+070	Final clean up done in foundation, sand and gravel, unfrozen
Snow cleaning	☐Yes ☒No		
Esker placement	☒Yes ☐No	0+125 to 0+090 0+070 to 0+029	Finalizing the last 600mm compacted and approved according to Specs. Built the upstream tablet
Fine filter placement	☒Yes ☐No	0+143 to 0+090	Material and compaction was conform as verified by QC
Rip rap placement	☒Yes ☐No	From energy disspipator to 0+139	Finalizing the layer already started to the proper 500mm thickness, sloped and placed.
Geotextile	☒Yes ☐No	From 0+139 to	Overlap conform, 2 layers added on top of another with a 2.5m overlap for the start for the second layer

Rockfill placement	☐Yes ☒No		
Approval	☒Yes ☐No	0+143 to 0+125 0+070 to 0+090	Foundation approval for FF placement.
Sampling	☒Yes ☐No	Ex-11 to 14	Taken in the ice rich till top and after excavation for water content and gradation. Section 0+125 to 0+090.
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

[1] Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos.

ADDITIONNAL COMMENTS:

- Final approval for excavation done from 0+149 to 0+090. Foundation on thawed sand and gravel material. St.0+070 to 0+090 approved on ice-poor till frozen foundation. Final approval in section 0+070 to 0+029 in iced sandy silt (sample Ex-15). Sample returned 40% water content, gradation ongoing.
- Backfilling in section 0+125 to 0+090 and 0+070 to 0+029 with fine esker material placement, compacted, as specified in previous reports.
- Fine filter placement 0+149 to 0+80

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Excavation/foundation	Frozen ice-rich material removed	Gradation ongoing
Esker	Replacement of ice-rich material excavated	Gradation ongoing

SAFE AND SAFETY REMARKS

Excavation started – All personnel should stay away from the reach of the excavator, even surveyor.

Issued by :	Signature	2020-09-28 Date
Verified by :	Signature	Date

PHOTOS/PICTURES

Photo 1:Frozen silty sand at the bottom of the excavation after material removal. Visually the material is ice-poor so it was accepted as is and covered with 2 layers of esker. Sample Ex-15 was taken for water content.

Photo 2: view of the bottom of the approved excavation at St.0+090 looking South.

Photo 3: view of the same area after till placement, final grading ongoing.

Photo 4: view of the esker placement completed & the upstream tablet built, St.0+090 looking North to 0+125.

Photo 5: view of the thawed sand and gravel foundation from St.0+125 looking North to 0+150.

Photo 6: rip rap placement over the geotextile, final thickness adjusted and profiled, St.0+150 looking North.

INFORMATION PROVIDED TO AEM		
Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	Yes	
AEM QC Daily Report	Yes	
QC Sample Test Result	No	
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative : Signature — Date: 2020-09-28

Reviewed by SNC-Lavalin (Designer) :

Signature

Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

SNC·LAVALIN AGNICO EAGLE

QA SITE REPORT
(Detailed)

20200929-DS
Document number (YYYYMMDD-DS-SR)

Visit date	Time (Start/End)		Project No.	Prepared by
2020-09-29	4:30 PM	6 :30 PM		Laurier Collette

Project	Client
IVR Diversion Channel Construction	Agnico Eagle

Consultants		Contractor
SNC Lavalin (Designer); WSP (QC)		KCG

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☒Light ☐Mod. ☐Strong, gust Temp: 0 °C

Comments **QA crew change day**

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Pictures in the folder ☒Yes ☐No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		Approximate location	Visual observation during field visit [1]
Excavation	☒Yes ☐No	-0+015 to 0+029	Initial clean up done in foundation, sand and gravel, unfrozen, ice poor material, water ponding from tundra runoff
Snow cleaning	☐Yes ☒No		
Esker placement	☒Yes ☐No	0+032 to ~0+130	Clean rocks overall despite some zones of material finer than 100mm (gravel & fines) observed in the load pile. Placed material is ok. Some dust, normal amount, is visible on the geotextile while rip rap material is placed. Two localized excess of finer material in the rip rap, will need to be cleaned.
Fine filter placement	☐Yes ☒No		
Rip rap placement	☐Yes ☒No		

Geotextile	☐Yes ☒No		
Rockfill placement	☐Yes ☒No		
Approval	☐Yes ☒No		
Sampling	☐Yes ☒No		
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

1 Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos.

ADDITIONNAL COMMENTS:

- Designer confirmation (over phone discussion, 2020-09-29, 4:38pm) that geotextile Tencate Mirafi 1100N can be used instead of Novatex V as long as same installation method is used (two geotextile layers)
- Work has been done to control localized runoff from the tundra around 0+100 prior to QA visit. Result is a upstream platform slightly bigger than 1m. Water flow seems to behave properly and seep in the rip rap towards the bottom of the channel.
- Water management at time of visit includes two water collection sumps with active pumping (0+028, -0+015)
- Localized excess of finer material in rip rap at 0+140 & 0+045 to be removed.

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Rip rap material	0+029 to 0+100	Only clean material should be used

SAFE AND SAFETY REMARKS

All personnel should stay away from the reach of the excavator, even surveyor.

Issued by : Signature — Date: 2020-09-29

Verified by : Signature — Date

PHOTOS/PICTURES

Photo 1: view of the bottom of the excavation, not final, at St.-0+015 looking North. Sump located at the upstream end of the channel at -0+015. Water in the excavation is coming from tundra runoff. Final excavation clean up to do prior to placing fine filter material.

Photo 2: view of the same area. Looking South from Sta 0+029 where second active sump is located.

Photo 3: Localized excess of finer material in rip rap at 0+140 & 0+045 to be removed.

Photo 4: rip rap placement over the geotextile, St.0+035 looking North.

Photo 5: rip rap load containing a localized amount of finer material. This amount is rejected and tossed away. Such finer material shall not be placed in the channel. If it is so, it will need to be cleaned manually, to minimize risks of damaging the geotextile liner.

Photo 6: Rip rap placement on geotextile. Sta 0+070 loking north west. Water ingress (tundra runoff) at around 0+100 is visible on the photo. Water is properly flowing within the rip rap material, over the geotextile.

INFORMATION PROVIDED TO AEM

Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	Yes	
AEM QC Daily Report	Yes	
QC Sample Test Result	No	
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative :

Signature

2020-10-01

Date

Reviewed by SNC-Lavalin (Designer) :

Signature

Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

QA SITE REPORT
(Detailed)

20200930-DS
Document number (YYYYMMDD-DS-SR)

2020-09-30	6 :30 AM / 6 :30 PM		Laurier Collette
Visit date	Time (Start/End)	Project No.	Prepared by

IVR Diversion Channel Construction	Agnico Eagle
Project	Client

SNC Lavalin (Designer); WSP (QC)	KCG
Consultants	Contractor

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☒Light ☐Mod. ☐Strong, gust Temp: 1-2 °C

Comments **All observations and approvals of this report refers to the channel invert and east slope**

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Pictures in the folder ☒Yes ☐No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		Approximate location	Visual observation during field visit [1]
Excavation	☒Yes ☐No	0+029 to -0+015	Final clean up done in foundation, ice poor till, sand and gravel. Sample EX-16 taken in section 0+000 to 0+029. Water and wet & unfrozen superficial material has been removed.
Snow cleaning	☐Yes ☒No		
Esker placement	☒Yes ☐No	0+029 to ~ 0+020 -0+013 to -0+015	About 200mm to 0 to backfill overexcavation in that area Backfill of sump at upstream end of channel.
Fine filter placement	☒Yes ☐No	0+029 to -0+015	Material and compaction was conform as verified by QC (bucket compaction). QA spot check confirmed proper compaction.
Rip rap placement	☒Yes ☐No	From 0+029 to -0+015 From 0-015 to energy dissipator	Rip rap placement to proper elevation. Finalizing the rip rap layer already started to the proper grade. Slope improved. Clean rocks overall but some loads (afternoon) contained material finer than 100mm (gravel & fines). Refer to additional comment below.

Geotextile	☒Yes ☐No	From 0+029 to -0+015 At outlet energy dissipator (0+284.5 to ~ 0+287)	Overlap conform, 2 layers added on top of another with a 2.5m overlap for the start for the second layer. Product used is Tencate Mirafi 1100N
Rockfill placement	☐Yes ☒No		
Approval	☒Yes ☐No	0+029 to -0+015 -0+015 to 0+281	Foundation approval for FF placement. FF placement approval Geotextile placement approval Rip rap placement approval (conditional to removing finer material at identified locations)
Sampling	☒Yes ☐No	EX-16 ES-02	Taken in the foundation material (ice poor till) for water content and gradation. Section 0+000 to 0+029 Esker sample
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

1 Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos.

ADDITIONNAL COMMENTS:

- Some rip rap loads dumped in the afternoon were found to contain material finer than 100mm (fine particles and gravel size particles). The stockpile has been checked so the best material is loaded. Operators placing the material have been notified and adapted their method. On the access road prior to placement in the channel, fines were segregated as much as possible using wind while dropping bucket loads from higher up. Also, while placing the material, the operator shakes the bucket and leaves the finer material in the bucket. It is disposed of on the road rather than in the channel. Few spots will need manual clean up to remove finer material: 0+045, 0+078, 0+140, 0+196.
- Final approval for excavation done from -0+015 to 0+029. Foundation on ice-poor till material. Sample taken in the 0+000 to 0+029 area (EX-16).
- No survey data received yet. Final approval documents will be issued out once survey data is received.
- Upstream end of the channel has been built following discussion with the designer in the morning: FF layer from 300mm at 0+000 to 150mm at 0-015 following the channel slope, a layer of geotextile and rip rap on top.
- Sumps at 0+028 and 0-015 were backfilled with esker material. Pump started in at the downstream end of the channel, 0+281.
- More work was performed at the downstream of the designed energy dissipator. Some 0-3/4” material was removed to keep the minimum amount and geotextile was placed on top of it. A partial single layer of rip rap was placed on top to ensure that the geotextile iremains in place. More work to be done there for completion including rip rap placement.

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Excavation/foundation	Water and wet material removed	Gradation ongoing
Fine filter placement	-0+015 to 0+032	Proper compaction
Geotextile placement	-0+015 to 0+032	Proper overlap
Rip rap placement	All long the channel	Only clean material should be used

SAFE AND SAFETY REMARKS

All personnel should stay away from the reach of the excavator, even surveyor.

Temperature oscillating around freezing point: extra caution for ice patches, proper footware.

Moving geotextile rolls partially soaked in water: workers to have proper footwatre (rubber boots)

PHOTOS/PICTURES

Photo 1. Bottom of the exvaction from -0+015 to 0+029 before final clean up. Looking north. Water in the excavation is coming from tundra runoff and has been removed, along with superficial thawed material, prior to approval.

Photo 2. Bottom of the excavation from -0+015 to 0+029 after final clean up, looking north. Superficial thawed soil and water removed prior to backfilling FF.

Photo 3. Close up view on foundation material in 0+000 to 0+029 area. Ice poor material, mix of sand, gravel and finer material. Superficial thawed soil and water removed prior to backfilling FF. Sample EX-15 taken in that area.

Photo 4. Completion of Fine filter material placement. Compaction with excavator bucket.

Photo 5.Geotextile installation on top of FF layer. Two layers of Tencate Mirafi 1100N with proper overlaps. Looking north from 0+020.

Photo 6. Rip rap placement, STA -0+015 to 0+032. Looking south

Photo 7. Rip rap placed to final grade on the invert and east slope, looking north from -0+015.

Photo 8. Final sloping, profiling and grading of the rip rap layer, invert and east slope. Photo taken around 0+160 looking north.

Photo 9. Non-compliant rip rap load, containing fines and gravel <100mm. Material on the photo has not been placed on the channel.

Photo 10. Non-compliant rip rap material containing fines and gravel <100mm. Excavator were told not to place any material of that kind. Manual cleaning will be required at some location along the channel where finer material was observed within the rip rap. Refer to comment section above.

Photo 11. Downstream area of the energy dissipator. Thin layer of fine filter material placed on top of backfilled downstream sump. Top of fine filter material is at natural ground elevation.

Photo 12. Two layers of geotextile placed on top of fine filter material (Photo 11). Rip rap placement ongoing on top of geotextile. Thin layer of rip rap will be placed to hold geotextile in place.

INFORMATION PROVIDED TO AEM

Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	Yes	
AEM QC Daily Report	Yes	
QC Sample Test Result	No	
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative : 2020-10-01

Signature Date

Reviewed by SNC-Lavalin (Designer) :

Signature Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

QA SITE REPORT
(Detailed)

20201001-DS
Document number (YYYYMMDD-DS-SR)

Visit date	Time (Start/End)		Project No.	Prepared by
2020-10-01	6 :30 AM	6 :30 PM		Laurier Collette

Project	Client
IVR Diversion Channel Construction	Agnico Eagle

Consultants		Contractor
SNC Lavalin (Designer); WSP (QC)		KCG

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐ Snow ☐Glaze

Wind: ☐None ☒Light ☐Mod. ☐Strong, gust Temp: 0-5 °C

Comments **Observations in this report refers to the access road and West slope of the channel**

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Pictures in the folder ☒Yes ☐ No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		Approximate location	Visual observation during field visit [1]
Excavation	☒Yes ☐No	From 0+162 to 0+188	Initial excavation of the west slope of the channel. The bottom half is in the natural ground, glacial till with some trace of orcanic matter at the top. The till is dryer in the upper portion. The upper half of the slope is in the initial road lift (soapstone rockfill).
Snow cleaning	☐Yes ☒No		
Esker placement	☐Yes ☒No		
Fine filter placement	☐Yes ☒No		
Rip rap placement	☐Yes ☒No		
Geotextile	☐Yes ☒No		

Rockfill placement	☒Yes ☐No	From 0+162 to 0+285 From 0+047 to 0+110	Access road was lifted to final elevation with Non-PAG soapstone type material. Material put in place by dozer. Particle size between 0 and 500 approximately. Larger boulders were put on the side and are moved away by the excavator at the time of digging the west slope of the channel. Compaction achieved by trucks, dozer and excavator moving on the surface.
Approval	☐Yes ☒No		
Sampling	☐Yes ☒No		
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

1 Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos.

ADDITIONNAL COMMENTS:

- Installation of frost-fighter and tarps to avoid freezing of the geotextile rolls that remain to be moved on top of the rip rap to allow more space for excavating the west slope
- Slope excavation: final survey check required to confirm grade. Assessement of foundation material to be done.
- Pebbles and material falling down the slope as excavation goes, close to the geotextile rolls. Final clean up will be required before unrolling the rolls.
- Small amount of water at the bottom of the exaction, ponding on the fine filter, will have to be managed when placing the fine filter layer in the slope.

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Rockfill	Access road – final lift	Proper placement, adequate rolling surface
Excavation	West slope of the channel 0+160 to 0+180	Proper sloping

SAFE AND SAFETY REMARKS

All personnel should stay away from the reach of the excavator, even surveyor.

Temperature oscillating around freezing point: extra caution for icy areas, proper footware & cleats

PHOTOS/PICTURES

Photo 1. Rockfill placement for final lift of the access road along the west side of the channel looking south from around 0+200

Photo 2. Final access road rockfill lift. Surface compaction with dozer and truck traffic. Adequate rolling surface. Looking North, STA 0+200

Photo 3. Excavation of the side of the road to prepare west slope of the channel, looking north STA 0+160. Some water ponding on top of the invert fine filter layer. Rolls of remaining geotextile moved on the rip rap to leave as much room as possible for the excavator to work the slope.

Photo 4. Ongoing slope excavation. Natural ground material. Till with gravel, sand, boulders and some organic matter in the upper portion. Material is dryer towards the top and more humid at the toe

Photo 5. Tarps and frost-fighter installed at the downstream end of the channel to keep water and geotextile rolls above the freezing point.

INFORMATION PROVIDED TO AEM

Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	Yes	
AEM QC Daily Report	Yes	
QC Sample Test Result	No	
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative : Signature 2020-10-01 Date

Reviewed by SNC-Lavalin (Designer) : Signature Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

QA SITE REPORT
(Detailed)

20201002-DS
Document number
(YYYYMMDD-DS-SR)

Visit date	Time (Start/End)		Project No.	Prepared by
2020-10-02	6 :30 AM	6 :30 PM		Laurier Collette

Project	Client
IVR Diversion Channel Construction	Agnico Eagle

Consultants		Contractor
SNC Lavalin (Designer); WSP (QC)		KCG

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☒Light ☐Mod. ☐Strong, gust Temp: 0 °C

Comments **Observations in this report refers to the access road and West slope of the channel**

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Pictures in the folder ☒Yes ☐No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		Approximate location	Visual observation during field visit [1]
Excavation	☒Yes ☐No	0+190 to 0+280	Continued excavation of the west slope of the channel. The bottom half is in the natural ground, glacial till with some trace of orcanic matter at the top. The till is dryer in the upper portion. The upper half of the slope is in the initial road lift (soapstone rockfill). Some areas at the of the slope were removed where the material was soft and oversaturated or contained ice.
Snow cleaning	☐Yes ☒No		
Esker placement	☐Yes ☒No		
Fine filter placement	☒Yes ☐No	0+155 to 220	Proper gradation from visual inspection. Proper compaction on the slope with the mean of the excavator bucket. Adequate & sufficient continuity of the FF lift with the one at channel invert.
Rip rap placement	☐Yes ☒No		

Geotextile	☐Yes ☒No		
Rockfill placement	☒Yes ☐No	From 0+000 to 0+047 From 0+110 to 0+162	Access road was lifted to final elevation with Non-PAG soapstone type material. Material put in place by dozer. Particle size between 0 and 500 approximately. Larger boulders were put on the side and are moved away by the excavator at the time of digging the west slope of the channel. Compaction achieved by trucks, dozer and excavator moving on the surface. Survey check required to ensure that the road is at proper final elevation.
Approval	☒Yes ☐No	0+155 to 0+240	Foundation approval. Overall conform foundation. Soft oversaturated material and ice lenses were found at some locations (details below). This material has been removed until foundation to QA satisfaction.
Sampling	☐Yes ☒No		
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

1 Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos.

ADDITIONNAL COMMENTS:

- The geotextile remaining to install has been damaged at some locations during slope excavation and FF placement. Corrective measure required when the remaining geotextile will be unrolled on the FF.
- Geotextile at the downstream end of the channel (0+235 to 0+285) sucessfuly warmed above freezing point with frost fighter set up so it was possible to move the rolls on top of the rip rap. This provided more room for the excavator for sloping.
- Water level in the energy dissipator drawn down to minimal level.
- Pebbles and material that fell down the slope close to the geotextile rolls during slope excavation: Pebbles and debris were removed manually prior to the FF material placement.
- The small amount of water ponding at the toe of the exaction was properly pushed away while placing the fine filter material on the slope. Refer to photos.
- West slope foundation: overall, the natural ground (sand, gravel & pebble till, some areas of finer material) with a naturally high moisture content.
- West slope foundation: zones of oversaturated material (only present at the toe of the slope at some specific locations) have been identified and removed. Depending on locations, from 0 to 0.5m thick material was removed to reach an acceptable foundation. Material exposed after digging was found to be more competent and to contain acceptable moisture content. Some of the soft and oversatured material zones were caused by localized water preferential flowpath within the natural ground (at 0+154, 0+202, 0+198). Over-excavations at these corrected zones were immediately filled with FF material, properly compacted with the excavator bucket.

- West slope foundation: ices lenses were found at the toe between 0+230 and 0+240. Lenses were about 1-2cm thick only with a lateral extent of 0.1-0.5m. The soil also contained some ice pockets of a few centimeter wide (less than 10cm) and areas of ice-rich material. A bucket with theet was used to dig deeper and remove non-compliant material containing ice. The hammer was not necessary for that. Enough material was removed until no more ice lense or pocket were present in the soil. The over excavation ended up being about 0.2 to 1.2m deep.

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Rockfill	Access road – final lift	compliant
Excavation	West slope of the channel 0+155 to 0+240	Proper sloping, acceptable foundation material
Fine filter	West slope of the channel 0+155 to 0+240	Compliant

SAFE AND SAFETY REMARKS

All personnel should stay away from the reach of the excavator, even surveyor.

Temperature oscillating around freezing point: extra caution for icy areas, proper footware & cleats

PHOTOS/PICTURES

Photo 1. Rockfill placement for final lift of the access road along the west side of the channel looking south from around 0+050

Photo 2. West slope at around 0+160. Zones with soft oversaturated material maked with spay paint, to be removed prior to FF placement

Photo 3. Soft oversaturated material starting to be removed by the excavator

Photo 4. Ongoing process of removal of soft oversaturated material at the toe of the slope. About 0.1 to 0.3m removed in the center of the photo. Exposed material is much dryer and competent. Marked material on the right hand side remains to be excavated.

A


B


Photo 5. Ice lenses (A), ice pockets and ice rich material (B) observed between 0+230 and 0+240. All this material has been removed.

Photo 6. Looking at foundation material once ice-rich material removed (0+230 to 0+240). There was no more ice in the material at the excavated level. White spots on the photos are broken rocks, not ice.

Photo 7. Fine filter placed in a way to push water further down the channel. Preliminary FF filling of the overexcavation where ice was found, STA 0+235

Photo 8. Fine filter placement, Looking north from around 0+225

INFORMATION PROVIDED TO AEM

Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	Yes	
AEM QC Daily Report	Yes	
QC Sample Test Result	No	
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative :

Signature

2020-10-03

Date

Reviewed by SNC-Lavalin (Designer) :

Signature

Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

SNC·LAVALIN AGNICO EAGLE

QA SITE REPORT
(Detailed)

20201003-DS
Document number (YYYYMMDD-DS-SR)

2020-10-03	6 :30 AM	6 :30 PM		Laurier Collette
Visit date	Time (Start/End)		Project No.	Prepared by

IVR Diversion Channel Construction	Agnico Eagle
Project	Client

SNC Lavalin (Designer); WSP (QC)		KCG
Consultants		Contractor

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☒Light ☐Mod. ☐Strong, gust Temp: -2 °C

Comments **Observations in this report refers to the access road and West slope of the channel**

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Pictures in the folder ☒Yes ☐No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		Approximate location	Visual observation during field visit [1]
Excavation	☒Yes ☐No	-0+015 to 0+190	Continued excavation of the west slope of the channel in the upstream part. More organic matter observed in the 0+050 to 0+085 section, at the rockfill-natural ground interface. The rockfill material exposed contains a greater amount of boulders than other parts of the slope.
Snow cleaning	☐Yes ☒No		
Esker placement	☐Yes ☒No		
Fine filter placement	☒Yes ☐No	0+220 to 0+285 0+090 to 0+155	Negligible amount of snow on foundation in areas cleaned the day before. Proper gradation from visual inspection. Proper compaction on the slope with the mean of the excavator bucket. Adequate & sufficient continuity of the FF lift with the one at channel invert.
Rip rap placement	☐Yes ☒No	0+140 to 0+285	Partial placement just to hold geotextile in place. Proper gradation. No particles finer than 100m except for dust

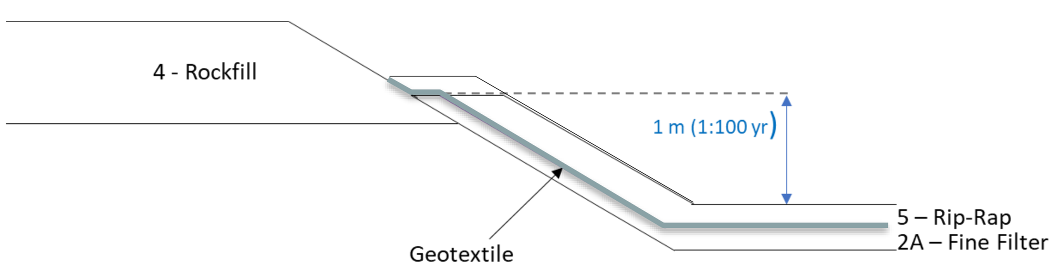
			from crushing and handling. Most of the dust is blown away by the wind as the material is placed on the geotextile.
Geotextile	☒Yes ☐No	0+140 to 0+285	Unrolling geotextile up the slope. Frozen rolls thawed out with warm air blow by frost-fighter. Compliant placement of the two layers and proper overlap. Some rip rap placed shortly after geotextile unrolled so it does not move away with the wind. Adequate corrective measure taken where geotextile was damaged (geotextile patch – refer to additional comments below).
Rockfill placement	☐Yes ☒No		
Approval	☒Yes ☐No	0+220 to 0+285 0+090 to 0+155 0+130 to 0+155	Foundation approval. Overall conform foundation. Soft oversaturated zones were removed until foundation to QA satisfaction. FF material used to backfill these overexcavations. Fine Filter approval.
Sampling	☐Yes ☒No		
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

1 Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos.

ADDITIONNAL COMMENTS:

- Agreement regarding the dispositions of layers (FF, geotextile and rip rap) at the top of the slope: The fine filter material placed on the est slope of the channel shall end at 1m above the elevation of the invert of the channel (top of rip rap layer on the invert). Geotextile is to be extended as shown on the skech below, and rip rap material to be placed to hold the geotextile.



- Since the invert of the channel was overexcavated between 0+234 and 0+261 due to ice content, two spot checks (0+250, 0+260) were done at the toe of the slope to assess the material conditions 0.3m below grade. FF material was used to backfill these overexcavations.
    - 0+260: Mix of dryer and damp till. No ice lense, ice or oversaturated material.

   - 0+250: No significant ice lense. Fine material with some ice content (ice poor). Sample taken at that location to confirm ice content.
- Adequate corrective measures were taken for the geotextile that has been damaged during FF placement. Tear holes were located at the toe of the west slope. When unrolling the rolls, full width geotextile patches were added in a way that the the patch covered a zone of 1-2m around the damaged area when possible. When the damaged area was too close to the toe, the covering offset was less on the side of the channel invert because of the rip rap already in place. On that side, the patch covered an area of about 0.3m beyond the damaged zone.
- Pebbles and material that fell down the slope close to the geotextile rolls during slope excavation: Pebbles and debris were removed manually prior to the FF material placement.
- Frost fighter and tarp setup used when needed to unfreeze the geotextile rolls.
- The small amount of water ponding at the toe of the exaction was properly pushed away while placing the fine filter material on the slope.
- West slope foundation: overall, the natural ground (sand, gravel & pebble till, some areas of finer material) with a naturally high moisture content.
- West slope foundation: zones of oversaturated material (only present at the toe of the slope at some specific locations) have been identified and removed. Depending on locations, from 0 to 0.5m thick material was removed to reach an acceptable foundation. Material exposed after digging was found to be more competent and to contain acceptable moisture content. Some of the soft and oversatured material zones were caused by localized water preferential flowpath within the natural ground (at 0+145, 0+085). Over-excavations at these corrected zones were surveyed and immediately filled with FF material, properly compacted with the excavator bucket.
-

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Foundation	West slope of the channel 0+220 to 0+285 & 0+090 to 0+155	Proper sloping, acceptable foundation material after correction
Fine filter	West slope of the channel 0+155 to 0+240	Compliant
Geotextile	West slope of the channel 0+140 to 0+285	Compliant after correction

SAFE AND SAFETY REMARKS

All personnel should stay away from the reach of the excavator, even surveyor.

Temperature oscillating around freezing point: extra caution for icy areas, proper footware & cleats

PHOTOS/PICTURES

Photo 1. Fine filter placement at the downstream end of the channel. STA 0+250 looking north. Excess of snow was removed.


A

B

Photo 2. Foundation spot check STA 0+260, about 0.3m below grade. Visible presence of ice. Some ice lenses at mm scale and an isolated 1cm thick one.


A

B

Photo 3. Foundation spot check STA 0+250, about 0.3m below grade. some ice visible at mm scale. Sample taken to confirm ice content.

Photo 4.Geotextile placement at 0+150. Roll on the photo was partially damp and frozen

Photo 5. Rip rap placed to hold the geotextile on the west slope before completion of rip rap final layer. Visible on the photo is a fold in the geotextile at the toe of the slope, where the water within the geotextile remain frozen, because the rolls were on the invert side during sloping. Fine filter material underneath is at grade. As rip rap is placed in this zone, the geotextile levels to the top of the fine filter layer.

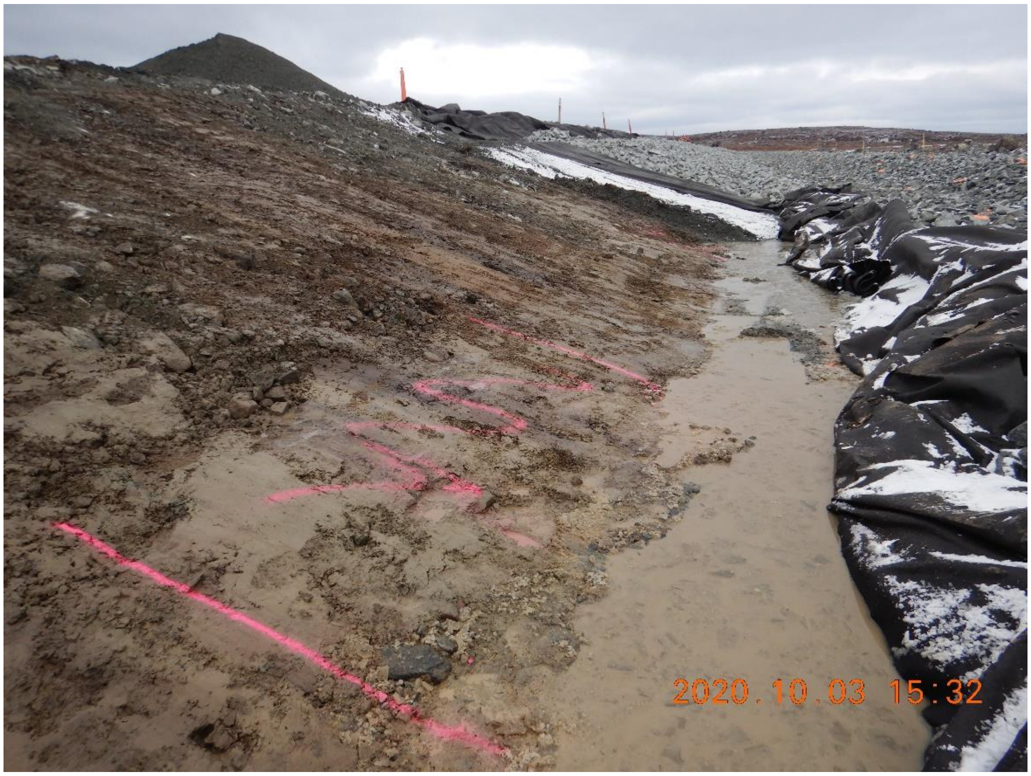


Photo 6. Paint marking a zone of soft and oversaturated material at 0+150. Material has been removed un

Photo 7. Fine filter layer at grade. From about 0+200, looking south

A 

B 

Photo 8. A) patch installed on the slope to cover the damaged geotextile. B) Close up on the damaged geotextile found the day before.

A

B

C

Photo 9. Photos showing correction at 0+145. A) clear inflow of water once soft and oversaturated material is removed. B) Foundation material after clean up with bucket, before water comes in. C) corrected foundations. 0+145 is where the workers are standing. FF material is not placed directly in the water, it is placed in such a way that water is pushed away while the material is placed (refer to photo 7 in report 20201002-DS, showing a snapshot of the maneuver). Photo C also shows the foundation of surface on the west slope of the channel, from 0+145 looking south

Photo 10. Remaining material from initial road lift being removed for the slope profiling. 0+070 looking south.

Photo 11. Geotextile being unrolled on the fine filter layer, 0+130 looking south

INFORMATION PROVIDED TO AEM

Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	Yes	
AEM QC Daily Report	Yes	
QC Sample Test Result	No	
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative :

Signature | 2020-10-04 Date

Reviewed by SNC-Lavalin (Designer) :

Signature | Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

QA SITE REPORT
(Detailed)

20201004-DS
Document number
(YYYYMMDD-DS-SR)

2020-10-04	6 :30 AM	6 :30 PM		Laurier Collette
Visit date	Time (Start/End)		Project No.	Prepared by

IVR Diversion Channel Construction	Agnico Eagle
Project	Client

SNC Lavalin (Designer); WSP (QC)	KCG
Consultants	Contractor

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☒Light ☐Mod. ☐Strong, gust Temp: -2 °C

Comments **Observations in this report refers to the West slope of the channel**

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Pictures in the folder ☒Yes ☐No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		Approximate location	Visual observation during field visit [1]
Excavation	☒Yes ☐No	-0+015 to 0+190	Finishing of the excavation of the west slope of the channel in the upstream part. Organic matter in excess (0+050 to 0+085) was removed prior to foundation approval. Resulting overexacation was backfilled with FF material. Boulders were also removed.
Snow cleaning	☐Yes ☒No		
Esker placement	☐Yes ☒No		
Fine filter placement	☒Yes ☐No	-0+015 to 0+090	Proper gradation from visual inspection. Proper compaction on the slope with the mean of the excavator bucket. Adequate & sufficient continuity of the FF lift with the one at channel invert.
Rip rap placement	☒Yes ☐No	-0+015 to 0+140	Partial placement just to hold geotextile in place. Proper gradation. No particles finer than 100m except for dust from crushing and handling. Most of the dust is blown away by the wind as the material is placed on the geotextile.

Geotextile	☒Yes ☐No	-0+015 to 0+140	Unrolling geotextile up the slope. Compliant placement of the two layers and proper overlap. Some rip rap placed shortly after geotextile unrolled so it does not move away with the wind. Adequate corrective measure taken where geotextile was damaged (geotextile patch – refer to additional comments below).
Rockfill placement	☐Yes ☒No		
Approval	☒Yes ☐No	-0+015 to 0+090 -0+015 to 0+140	Foundation approval. Overall conform foundation. Soft oversaturated zones, organic matter and boulders were removed until foundation to QA satisfaction. FF material used to backfill these overexcavations. Fine Filter approval.
Sampling	☐Yes ☒No		
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

1 Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos.

ADDITIONNAL COMMENTS:

- When required, small amount of water ponding at the toe of the exaction was properly pushed away while placing the fine filter material on the slope. At chainage 0+015 to 0+025, ponding water was pumped out of the toe of the slope with a 2" pump before placing the FF material.
- Adequate corrective measures were taken for the geotextile that has been damaged during FF placement. Tear holes were located at the toe of the west slope. When unrolling the rolls, full width geotextile patches were added in a way that the the patch covered a zone of 1-2m around the damaged area when possible. When the damaged area was too close to the toe, the covering offset was less on the side of the channel invert because of the rip rap already in place. On that side, the patch covered an area of about 0.3m beyond the damaged zone. Rip rap material was moved manually to allow such an overlap. Also, the damaged geotextile was folded over 1-2m as an adittional protection to ensure that the tear holes were properly patched.
- Pebbles and material that fell down the slope close to the geotextile rolls during slope excavation: Pebbles and debris were removed manually prior to the FF material placement.
- West slope foundation conditions: overall, the natural ground (sand, gravel & pebble till, some areas of finer material) with a naturally high moisture content. In the -0+015 to 0+090 sector, a the upper part of the foundation was mostly rockfill from the road access.
- West slope foundation: zones of oversaturated material (only present at the toe of the slope at some specific locations) have been identified and removed. Depending on locations, from 0 to 0.5m thick material was removed to reach an acceptable foundation. Material exposed after digging was found to be more competent and to contain acceptable moisture content. Some of the soft and oversatured material zones were caused by

localized water preferential flowpath within the natural ground (at 0+145, 0+085). Over-excavations at these corrected zones were surveyed and immediately filled with FF material, properly compacted with the excavator bucket.

- Some loads of FF contained chunks (likely material in the part of the stockpile exposed to rain, with slightly higher content, that froze overnight). The chunks were easily crushed with the bucket during compaction.
- Frost fighter and tarp setup used when needed to unfreeze the geotextile rolls.

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Foundation	West slope of the channel -0+015 to 0+090	Proper sloping, acceptable foundation material after corrections
Fine filter	West slope of the channel -0+015 to 0+140	Compliant
Geotextile	West slope of the channel -0+015 to 0+140	Compliant after corrections

HEALTH AND SAFETY REMARKS

All personnel should stay away from the reach of the excavator

Temperature oscillating around freezing point: extra caution for icy areas, proper footware & cleats

PHOTOS/PICTURES

Photo 1. West slope excavation on going. Organic matter and boulders being removed to expose adequate foundation. Looking west between 0+050 to 0+090.

Photo 2. Organic matter removed from the foundation (west slope between 0+000 to 0+090)

Photo 3. Foundation after corrections (boulder, soft pockets and organic matter removal), Sta 0+050 looking south

Photo 4. Water being pumped at slope toe prior to FF placement, STA 0+015 to 0+025

Photo 5. Fine filter with some chunks that were crushed during compaction.

Photo 6. Frost fighter and tarp setup used when needed to unfreeze the geotextile rolls.

Photo 7. Ongoing finishing of the FF at the toe of the slope to ensure adequate continuity with invert FF layer and to allow easier geotextile unrolling

Photo 8. Damaged geotextile. Rip rap material has been manually removed at the toe to allow proper overlap of the patch to be installed

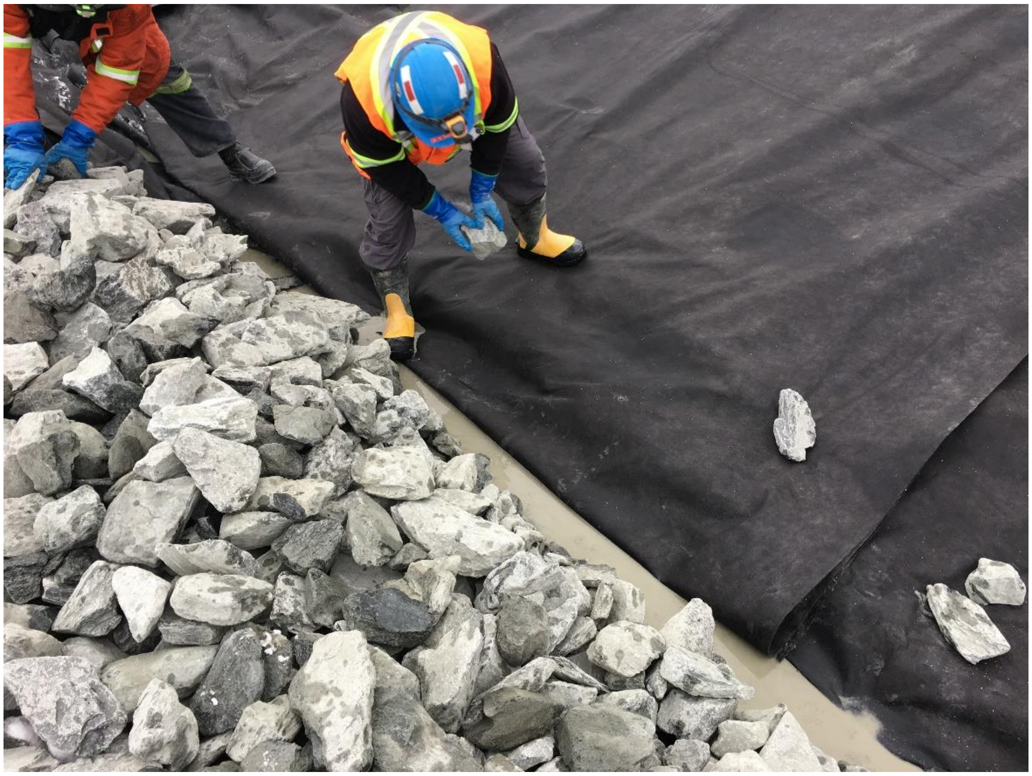


Photo 9. On going process of patching the damaged geotextile. The sheet has been folded on over a 1m to ensure proper overlap of the damaged area.

Photo 10. Upstream end of the channel. FF and Rip Rap placement. Sta -0+015 looking north

INFORMATION PROVIDED TO AEM

Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	Yes	
AEM QC Daily Report	Yes	
QC Sample Test Result	No	
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative :

Signature — Date: 2020-10-06

Reviewed by SNC-Lavalin (Designer) :

Signature — Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

QA SITE REPORT
(Detailed)

20201005-DS
Document number
(YYYYMMDD-DS-SR)

Visit date	Time (Start/End)		Project No.	Prepared by
2020-10-05	6 :30 AM	6 :30 PM		Laurier Collette

Project	Client
IVR Diversion Channel Construction	Agnico Eagle

Consultants		Contractor
SNC Lavalin (Designer); WSP (QC)		KCG

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☒Light ☐Mod. ☐Strong, gust Temp: -5 °C

Comments

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Pictures in the folder ☒Yes ☐No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		**Approximate location**	**Visual observation during field visit** [1]
Excavation	☐Yes ☒No		
Snow cleaning	☐Yes ☒No		
Esker placement	☐Yes ☒No		
Fine filter placement	☐Yes ☒No		
Rip rap placement	☒Yes ☐No	-0+015 to 0+285 Upstream end Downstream end	Proper gradation. No particles finer than 100mm, despite stockpile complete depletion, except for dust from crushing and handling. Most of the dust is blown away by the wind as the material is placed on the geotextile.
Geotextile	☒Yes ☐No	-0+015 to 0+285 Upstream end & Downstream end	Geotextile sheets extending beyond the rip rap were cut off. An aditionnal geotextile sheet has been installed at the outlet of the channel and another one at the upstream end, on the natural ground steep slope.

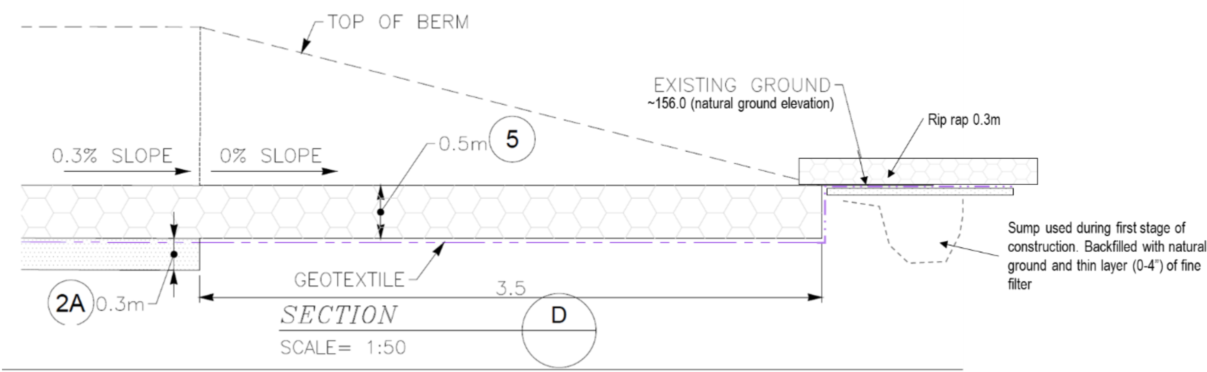
Rockfill placement	☐Yes ☒No		
Approval	☐Yes ☒No		
Sampling	☐Yes ☒No		
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

1 Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos.

ADDITIONNAL COMMENTS:

- Downstream end of the channel has been finished on the west side the same way it was done on the invert & east side: Exceeding material above natural ground was removed. A sheet of geotextile (Mirafi 1100N) was placed on top of the natural ground elevation (natural ground with some FF material), with sufficient overlap. A final rip rap layer was placed on top of the geotextile. The sketch below summarizes the job done.



- Upstream end of the channel has been improved to limit risks of erosion. The natural ground has been gently profiled with the back of the bucket (no material was removed) and a geotextile placed on top. It was not possible to have any kind of overlap with the channel geotextile because of the rip rap already in place. For finishing, enough rip rap has been placed to hold the geotextile in place and minimize potential superficial erosion in the area.
- Before final approval of the rip rap placement, finer material needs to be removed at specific locations.

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Geotextile & rip rap placement	Downstream end, upstream end	Adequate execution of field fit to QA satisfaction

HEALTH AND SAFETY REMARKS

PHOTOS/PICTURES

Photo 1. Preparing surface to lay geotextile on. Exceeding mterial removed to remain at natural ground elevation. There is a natural slope from west to east. Photo is looking at west side of the channel downstream end

Photo 2. Rip rap placement at downstream end of the channel. Geotextile laying at natural ground elevation. Looking South-East.

Photo 3. Finished downstream end of the channel, looking North-West

Photo 4. Exceeding geotextile removal,0+200 looking South.

Photo 5. Geotextile placed over the natural slope at the upstream end of the channel.

Photo 6. Finished upstream end of the channel with rip rap layer

Photo 7. Finished rip rap placement, STA -0+010 looking North

INFORMATION PROVIDED TO AEM

Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	Yes	
AEM QC Daily Report	Yes	
QC Sample Test Result	No	
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative : Signature 2020-10-06 Date

Reviewed by SNC-Lavalin (Designer) : Signature Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

QA SITE REPORT
(Detailed)

20201006-DS

Document number (YYYYMMDD-DS-SR)

2020-10-05	6 :30 AM	6 :30 PM		Laurier Collette
Visit date	Time (Start/End)		Project No.	Prepared by

IVR Diversion Channel Construction	Agnico Eagle
Project	Client

SNC Lavalin (Designer); WSP (QC)		KCG
Consultants		Contractor

Weather: ☐ Sunny ☒ Cloudy ☐ Rain ☐ Storm ☐ Snow ☐ Glaze

Wind: ☐ None ☒ Light ☐ Mod. ☐ Strong, gust Temp: -5 °C

Comments **Channel construction completed**

Appendix: ☐ Yes ☒ No Pictures ☐ Yes ☒ No Inspection report or other:

Pictures in the folder ☒ Yes ☐ No

ACTIVITIES PERFORMED BY AEM QA REPRESENTATIVE (indicate if test forms were used)

Activities		Approximate location	Visual observation during field visit [1]
Excavation	☐ Yes ☒ No		
Snow cleaning	☐ Yes ☒ No		
Esker placement	☐ Yes ☒ No		
Fine filter placement	☐ Yes ☒ No		
Rip rap placement	☒ Yes ☐ No	-0+015 to 0+285	Final touch up on the west slope. Cleaning of zones with finer particles.
Geotextile	☐ Yes ☒ No		
Rockfill placement	☐ Yes ☒ No		

Approval	☐Yes ☒No	-0+015 to 0+285	Rip rap layer compliant.
Sampling	☐Yes ☒No		
RFI completed	☐Yes ☒No		
Other	☐Yes ☒No		

1 Note: Visual observation during field visit may include a check

1. Segregation, compaction, presence of frozen material and etc for esker, fine and coarse filter placement;
2. Minimum overlap, geotextile damage, etc for geotextile;
3. Overall rock (100-300 mm), if the rocks are clean, etc for rip rap placement;
4. If there is too much fine content and presence of large rock size for rock placement; and
5. To support the observation with photos.

ADDITIONNAL COMMENTS:

- Temporary esker dewatering road was removed, sump at the end of the road was properly backfilled with esker.
- Leftover material has been placed on the road, and the west side of the road was cleaned and profiled.
- The construction of the IVR diversion channel is completed. Water is already flowing through the rip rap and discharging in the tundra at the outlet.
- One last thing remaining: a final 0.5m lift of the road is required because the road was made of rockfill rather than esker, to ensure proper thermal caping. This work will be done in the winter or early spring.
- Survey is catching up on the documentation backlog. All approval forms will be issued out shortly
- Last samples being processed at the lab
-

SPECIFIC ELEMENTS VERIFIED

Elements	Location	Scope and comments
Rip rap layer	All channel	Corrections completed
Material removal	Temporary esker road	No comment
sloping and material removal	Access road	No comment

HEALTH AND SAFETY REMARKS

PHOTOS/PICTURES

Figure 1. Temporary esker dewatering road removed

Figure 2. Main dewatering sump used during construction has been backfilled with esker material

Figure 3. Sloping west side of the access road, reusing leftover material including esker. Sta 0+250 looking South

A  B 

Figure 4. Zones in rip rap layer containing material finer than 100mm. (gravel, sand and finer material) that has been removed

Figure 5. Rip rap fine particle cleaning by hand. A few bucket full of fines were successfully removed. STA 0+050 looking North.

Figure 6. finished channel, 0+250 looking South

Figure 7. Downstream end of the channel. Water flowing through the rip rap layer and seeping out in the tundra at different locations (yellow arrows). Looking North.

INFORMATION PROVIDED TO AEM

Elements	Yes/No	Description/Comments
AEM Daily Meeting Report	Yes	
AEM QC Daily Report	Yes	
QC Sample Test Result	No	
Approval Form	-	
Photos	Yes	
As-built data (PDF)	-	
RFI	-	
Other document	-	

Issued by AEM QA Representative : 2020-10-07

Signature Date

Reviewed by SNC-Lavalin (Designer) :

Signature Date

SNC-LAVALIN (DESIGNER) DAILY NOTES ON REMOTE SUPPORT

APPENDIX B3

QA Daily QC Field Reports

wsp

AGNICO EAGLE

QC Daily Field Report

Client AEM	Inspection Date 2020-09-19 Day
Site Amaruq	☐ Drill and Blast ☐ Foundation Prep. ☒ Rock Fill Placement ☐ Sampling ☐ Compaction ☐ Gradations ☐ Other (specify):
Project IVR Diversion channel	☐ Expertise ☐ Vibration Monitoring ☐ Water Management ☐ Grout curtain ☐ Liner / Geotextile
Project Nº :	

I HAVE: ☒ my JSEAs ☒ my PPE ☒ Proper Training

I SEE: ☐ Unexpected Hazards **I NEED**: ☐ an S-RAF

7 ˚C

- The esker is replaced with rockfill (Approx. 0-600 gradation). This replacement is approved by SNC Lavalin (memo to follow).
- The rockfill is placed using a dozer. The target lift thickness is 0.5m, but some parts may require to be thicker for the first layer because of the soft sub-soil of the tundra. (Figure 1)
- No vibrating roller is used for compaction of the rockfill. The required compaction will be achieved with the heavy machinery circulation.
- The visual quality of the rockfill is good. The material is well mixed and placed. (Figure 2)
- The rockfill placement and compaction methods have been approved by the QA representative (Patrice Gagnon).
- The rockfill is placed from stations 0+00 to 0+11 and 0+23.6 to 0+111.

Corrective action to be taken:

- n/a

Follow up visit required: Yes ☒ No ☐

Site Representative : Patrice Gagnon

Inspector : Mikaël Turcotte

(Print Name)

From : AEM

Signature* : Mikaël Turcotte

Project Manager : Marc-André Beaudet

Time on site : 12h

* *By signing this form I acknowledge that I have consulted the appropriate documentation for the current project and I am in compliance with the procedures and work methods for this site at this time.*

Figure 1: The thickness of the rockfill road is uniform and conforms to the requirements

Figure 2: Visual gradation of the rockfill at the surface

AGNICO EAGLE

QC Daily Field Report

Client AEM	Inspection Date 2020-09-20 Day
Site Amaruq	☐ Drill and Blast ☐ Expertise
Project IVR Diversion channel	☐ Foundation Prep. ☐ Vibration Monitoring
	☒ Rock Fill Placement ☐ Water Management
	☒ Sampling ☐ Grout curtain
	☐ Compaction ☐ Liner / Geotextile
	☐ Gradations
Project Nº :	☐ Other (specify):

I HAVE: ☒ my JSEAs ☒ my PPE ☒ Proper Training

I SEE: ☐ Unexpected Hazards **I NEED**: ☐ an S-RAF

6 ˚C

- Rockfill placement continued. The material quality and visual gradation are good. The bigger rocks are put on the side of the access road. (Figure 1) The big rocks located upstream of the access road will be removed in the sloping process. The big rocks on the downstream side might stay, depending on if the access road is sloped or not on this side.
- Samples have been taken from the stockpile of fine filter material. (Figure 2 and 3)
- The first lift from station 0+024 to 0+140 is well compacted and stable. (Figure 4)
- The soil condition of the tundra from 0+140 ongoing towards the end of the access road was expected to be better than for the first part (0+024 to 0+140), so the thickness of the lift was decreased to obtain the optimal lift thickness (0.5m). However, the tundra soil was not as good as expected, and the lift ended up sinking partially. Because of the excessive movement of the soil, a pumping action occurred such that the rockfill became saturated and some organic material was observed at the surface. (Figure 5) The organic material has not been removed because the amount observed was small and it was mostly located on the downstream side of the access road. Rockfill was added over the first layer between stations 0+140 and 0+200 to stabilize the access road and stop the excessive settlement and pumping action.
- The remaining part of the access road (0+200 to 0+260) was continued with a higher thickness to account for settlement issues.
- The first lift of the access road was completed up to station 0+260 at the end of the day. (Figure 6)
- A pipe is laying on the ground at the end of the access road (station 0+280). The pipe is interfering with the location of the access road. (Figure 7)
- An important water accumulation has been observed at the end of the access road (between sta.0+260 and 0+280). (Figure 7 & 8)

Corrective action to be taken:

- Remove the pipe interfering with the access road.
- Wait until the water situation is properly managed before continuing work on the access road between 0+260 and 0+280.

Follow up visit required: Yes ☒ No ☐

Site Representative : Patrice Gagnon

Inspector : Mikaël Turcotte
(Print Name)

From : AEM

Signature* : Mikaël Turcotte

Project Manager : Marc-André Beaudet

Time on site : 12h

* *By signing this form I acknowledge that I have consulted the appropriate documentation for the current project and I am in compliance with the procedures and work methods for this site at this time.*

Figure 1: The larger boulders are discarded at each side of the access road

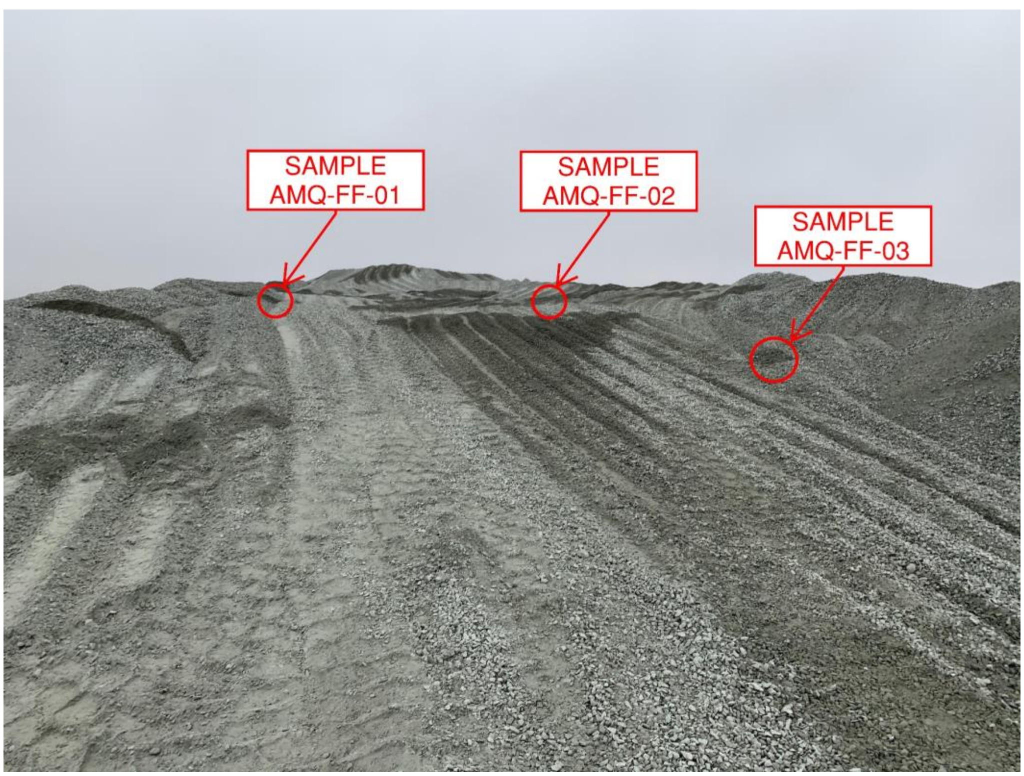


Figure 2: Location of the first three samples in the fine filter stockpile

Figure 3: Location of the fourth sample in the fine filter stockpile

Figure 4: The first part of the access road is well compacted and stable (0+024 to 0+111)

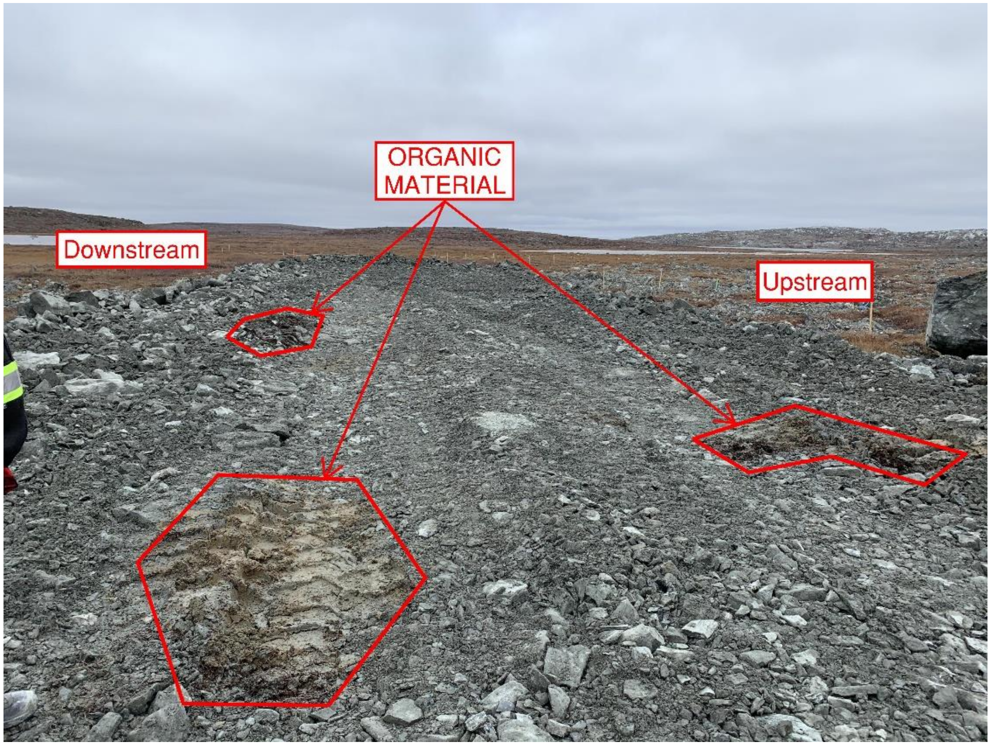


Figure 5: Organic material observed on the access road

Figure 6: The access road segment from sta. 0+140 to 0+260

Figure 7: The pipe at the end of the access road (water accumulation can also be seen)

Figure 8: Water accumulation at the end of the access road

AGNICO EAGLE

QC Daily Field Report

Client AEM	Inspection Date 2020-09-21 Day
Site Amaruq	☐ Drill and Blast ☐ Expertise
Project IVR Diversion channel	☐ Foundation Prep. ☐ Vibration Monitoring
	☒ Rock Fill Placement ☒ Water Management
	☒ Sampling ☐ Grout curtain
	☐ Compaction ☐ Liner / Geotextile
	☒ Gradations
Project Nº : 6127	☐ Other (specify):

I HAVE: ☒ my JSEAs ☒ my PPE ☒ Proper Training

I SEE: ☐ Unexpected Hazards **I NEED**: ☐ an S-RAF

4 °C

- A sump pump has been installed at station 0+223 to pump the water out of the downstream part of the channel. (Figure 1)
- The first lift of the access road is complete. Visual gradation is good. (Figure 2)
- The temporary access road is complete. (Figure 3)
- A second lift (thickness of approximately 0.5m) has started on the access road. The stability of the access road considerably increased. Visual gradation is good and the material is compacted uniformly. The second lift is complete from sta. 0+024 to 0+170. (Figure 4)
- Sampling of the tundra soil under the channel has been done at sta. 0+232, 0+223 and 0+115. (Figure 5)
- Four more samples have been taken with QA representative at fine filter stockpile (samples AMQ-FF-05 to AMQ-FF-08).
- Gradation of AMQ-FF-01, AMQ-FF-02 and AMQ-FF-03 is ongoing.
-

Corrective action to be taken:

- n/a
-

Follow up visit required: Yes ☒ No ☐

Site Representative : Patrice Gagnon

Inspector : Mikaël Turcotte
(Print Name)

From : AEM

Signature* : Mikaël Turcotte

Project Manager : Marc-André Beaudet

Time on site : 12h

* *By signing this form I acknowledge that I have consulted the appropriate documentation for the current project and I am in compliance with the procedures and work methods for this site at this time.*

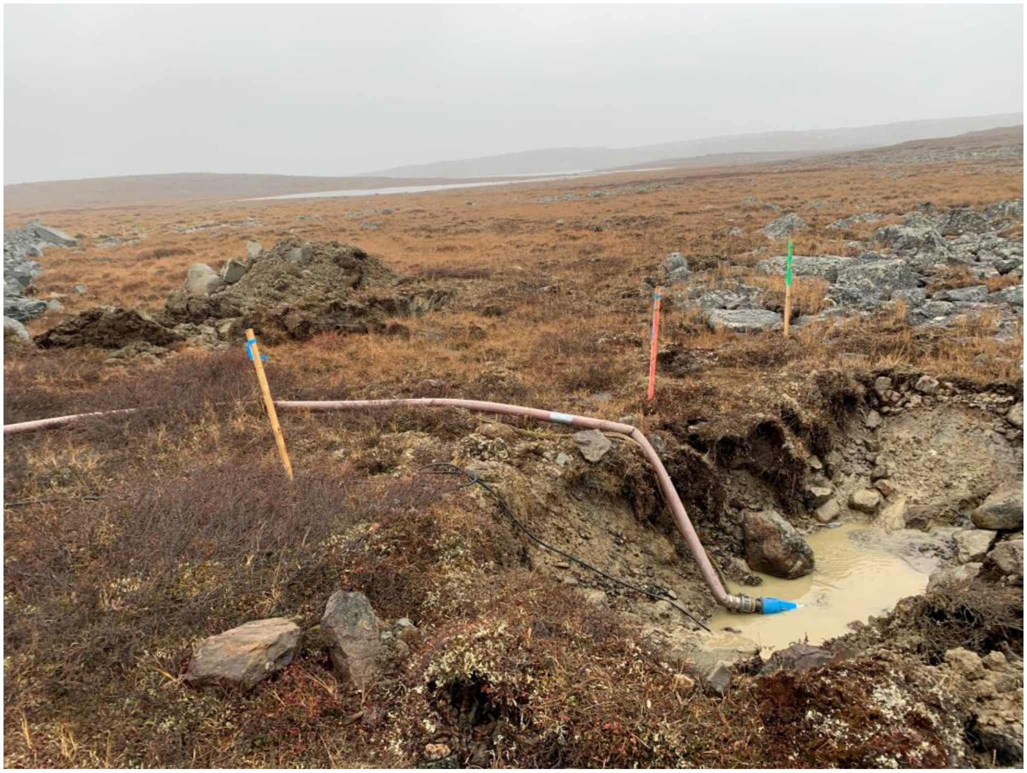


Figure 1: Sump pump at station 0+223

Figure 2: The first lift is done

Figure 3: The temporary access road

Figure 4: Visual gradation of the second lift

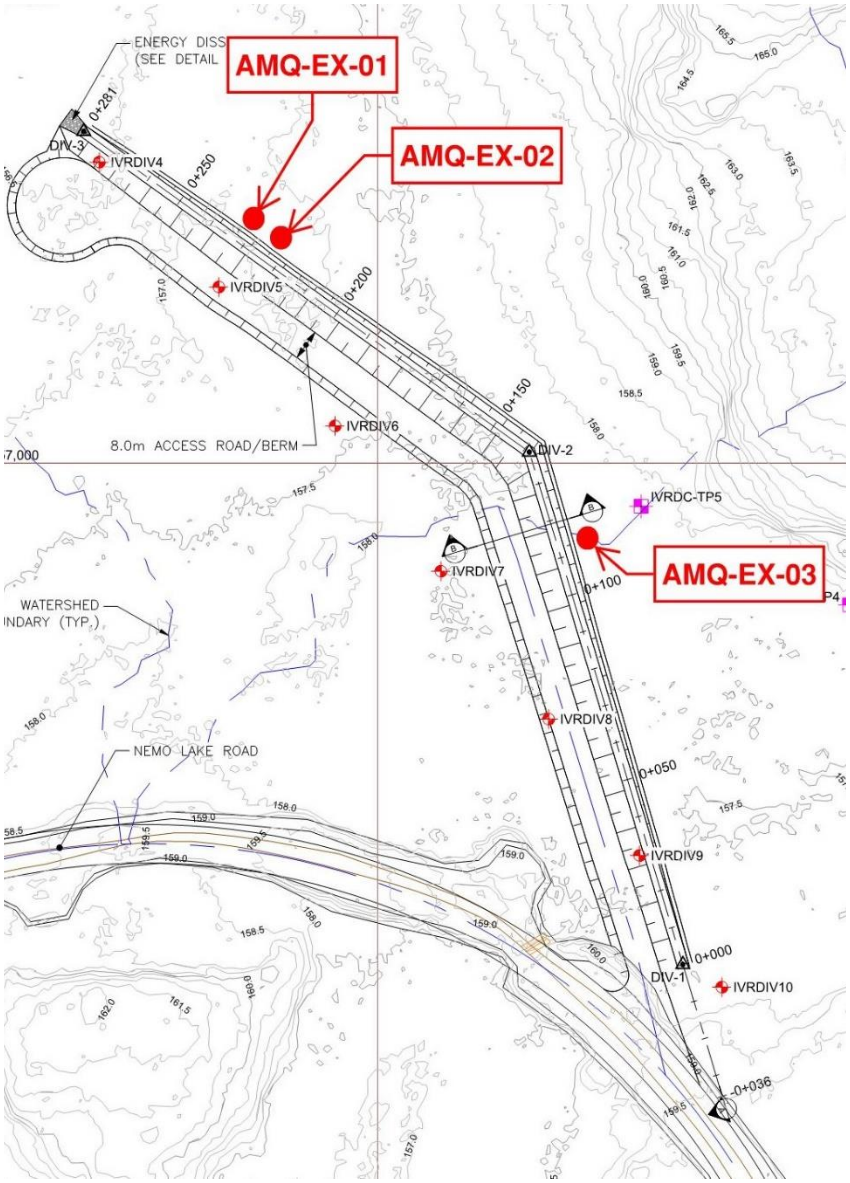


Figure 5: Test holes location

AGNICO EAGLE

QC Daily Field Report

Client	AEM	Inspection Date	2020-09-22 Day
Site	Amaruq	☐ Drill and Blast	☐ Expertise
Project	IVR Diversion channel	☒ Foundation Prep.	☐ Vibration Monitoring
		☒ Rock Fill Placement	☒ Water Management
		☐ Sampling	☐ Grout curtain
		☐ Compaction	☐ Liner / Geotextile
		☒ Gradations	
Project Nº :	6127	☐ Other (specify):	

I HAVE: ☒ my JSEAs ☒ my PPE ☒ Proper Training

I SEE: ☐ Unexpected Hazards **I NEED**: ☐ an S-RAF

5 °C

- A sump has been dug downstream of the channel to evacuate the water during the excavation. (Figure 1) The water management is effective. The foundation is expected to be dry tomorrow morning.
- The second lift from 0+170 to 0+281 is done. Visual gradation is good and the material is compacted uniformly. (Figure 2)
- Excavation of the channel has begun. (Figure 3) The first excavation is rough and its main purpose is to evacuate the water. Sloping of the sides of the channel and excavation to grade will be completed once the water is completely evacuated. The preliminary excavation is complete from 0+223 to 0+281.
- Gradation of finer filter samples from stockpile and test holes samples is ongoing.
- Ice has been observed at the end of the shift. A follow up is required tomorrow to better assess the visible quantity of ice at the bottom of the excavation.

Corrective action to be taken:

- n/a
-

Follow up visit required: Yes ☒ No ☐

Site Representative :	Patrice Gagnon	Inspector :	Mikaël Turcotte (Print Name)
From :	AEM	Signature* :	Mikaël Turcotte
Project Manager :	Marc-André Beaudet	Time on site :	12h

* *By signing this form I acknowledge that I have consulted the appropriate documentation for the current project and I am in compliance with the procedures and work methods for this site at this time.*

Figure 1: Sump downstream of the channel (approximately at station 0+290)

Figure 2: The second lift is complete

Figure 3: Excavation of the channel has begun

AGNICO EAGLE

QC Daily Field Report

Client AEM	Inspection Date 2020-09-23 Day
Site Amaruq	☐ Drill and Blast ☐ Expertise
Project IVR Diversion channel	☒ Foundation Prep. ☐ Vibration Monitoring
	☐ Rock Fill Placement ☒ Water Management
	☐ Sampling ☐ Grout curtain
	☐ Compaction ☐ Liner / Geotextile
	☒ Gradations
Project Nº : 6127	☐ Other (specify):

I HAVE: ☒ my JSEAs ☒ my PPE ☒ Proper Training

I SEE: ☐ Unexpected Hazards **I NEED**: ☐ an S-RAF

4 °C

- Channel excavation is ongoing. Preliminary excavation is complete from 0+284.5 to 0+145. (Figure 1)
- Gradation ongoing. The gradation results for the fine filter at stockpile are out. The material is conform.
- A pumping station has been installed at the upstream part of the channel approximately at 0+030. (Figure 2)
- Permafrost has been observed between 0+235 and 0+260 (ice-rich till). (Figure 3) This material is too hard to be removed by an excavator, so it will stay in place as approved by QA.
- A big ice lump has been removed under the access road and replaced by rockfill at station 0+243.(Figure 4)
- Water from the tundra is flowing in the channel at station 0+175 and 0+213. The situation will be closely monitored, and if necessary the water flow will be stoppered to let the bottom of the channel dry for foundation approval.
-

Corrective action to be taken:

- n/a
-

Follow up visit required: Yes ☒ No ☐

Site Representative : Patrice Gagnon

Inspector : Mikaël Turcotte

(Print Name)

From : AEM

Signature* : Mikaël Turcotte

Project Manager : Marc-André Beaudet

Time on site : 12h

* *By signing this form I acknowledge that I have consulted the appropriate documentation for the current project and I am in compliance with the procedures and work methods for this site at this time.*

Figure 1: The preliminary excavation is complete between station 0+145 and 0+284.5

Figure 2: Pumping station for the upstream part of the channel

Figure 3: Ice-rich material at the bottom of the excavation

Figure 4: A ice lump has been removed and replaced by rockfill

AGNICO EAGLE

QC Daily Field Report

Client AEM	Inspection Date 2020-09-24 Day
Site Amaruq	☐ Drill and Blast ☐ Expertise
Project IVR Diversion channel	☒ Foundation Prep. ☐ Vibration Monitoring
	☒ Rock Fill Placement ☒ Water Management
	☒ Sampling ☐ Grout curtain
	☐ Compaction ☐ Liner / Geotextile
	☒ Gradations
Project Nº : 6127	☐ Other (specify):

I HAVE: ☒ my JSEAs ☒ my PPE ☒ Proper Training

I SEE: ☐ Unexpected Hazards **I NEED**: ☐ an S-RAF

7 ˚C

- Channel excavation is ongoing. Preliminary excavation is in progress between 0+035 and 0+139. (Figure 1)
- Gradation of fine filter material sampled at the stockpile is completed. The material is acceptable. Gradation of foundation samples is ongoing. So far, the foundation is acceptable everywhere except between 0+235 and 0+260 (92.2% water content).
- Foundation approval between 0+149 and 0+205. (Figure 2 & 3)
- Fine filter fill placement between 0+149 and 0+205. The fine filter is not completely placed. Sloping of the access road is required. (Figure 4)
- Water from the tundra is flowing in the channel between 0+081 and 0+087. The situation will be monitored closely before the fine filter placement.
-

Corrective action to be taken:

- Remove the ice-rich material between 0+235 and 0+260 and replace it by esker.
-

Follow up visit required: Yes ☒ No ☐

Site Representative :	Patrice Gagnon	Inspector :	Mikaël Turcotte (Print Name)
From :	AEM	Signature* :	Mikaël Turcotte
Project Manager :	Marc-André Beaudet	Time on site :	12h

* *By signing this form I acknowledge that I have consulted the appropriate documentation for the current project and I am in compliance with the procedures and work methods for this site at this time.*

Figure 1: Preliminary excavation between 0+035 and 0+139

Figure 2: Foundation approval between 0+149 and 0+181

Figure 3: Foundation approval between 0+181 and 0+205

Figure 4: Fine filter fill between 0+149 and 0+205

AGNICO EAGLE

QC Daily Field Report

Client AEM	Inspection Date 2020-09-25 Day
Site Amaruq	☐ Drill and Blast ☒ Foundation Prep. ☒ Rock Fill Placement ☒ Sampling ☐ Compaction ☐ Gradations ☐ Other (specify):
Project IVR Diversion channel	☐ Expertise ☐ Vibration Monitoring ☒ Water Management ☐ Grout curtain ☐ Liner / Geotextile
Project Nº : 6127	

I HAVE: ☒ my JSEAs ☒ my PPE ☒ Proper Training

I SEE: ☐ Unexpected Hazards **I NEED**: ☐ an S-RAF

4 °C

- Foundation approval from 0+205 to 0+234. (Figure 1)
- Gradation results of foundation sample at 0+223 are available. The foundation material is conforming with a water content of 7.35% and a clay/silt content of 35%.
- Ice has been broken down and removed between 0+235 and 0+261. (Figure 2) The average thickness removed is 1.2m. The bottom of the excavation has been sampled. Esker placement began before the end of the day.
- Completion of access road rockfill between 0+011 and 0+024. (Figure 3)
- Water from the tundra is flowing in the channel at 0+067. (Figure 4) A pump will be installed at this location.
- Ice has been observed from 0+110 to +120.
- Preliminary excavation completed between 0+024 and 0+035. (Figure 5)

Corrective action to be taken:

- Remove the ice-rich material between 0+110 and 0+120.
-

Follow up visit required: Yes ☒ No ☐

Site Representative : Patrice Gagnon

Inspector : Mikaël Turcotte
(Print Name)

From : AEM

Signature* : Mikaël Turcotte

Project Manager : Marc-André Beaudet

Time on site : 12h

* *By signing this form I acknowledge that I have consulted the appropriate documentation for the current project and I am in compliance with the procedures and work methods for this site at this time.*

Figure 1: Foundation approval between 0+205 and 0+234

Figure 2: Ice removed between 0+235 and 0+261


Figure 3: Access road completed between 0+011 and 0+024


Figure 4: Water flowing in the channel at 0+067

Figure 5: Preliminary excavation completed between 0+024 and 0+035

AGNICO EAGLE

QC Daily Field Report

Client AEM	Inspection Date 2020-09-26 Day
Site Amaruq	☐ Drill and Blast ☐ Expertise
Project IVR Diversion channel	☒ Foundation Prep. ☐ Vibration Monitoring
	☒ Fill Placement ☒ Water Management
	☒ Sampling ☐ Grout curtain
	☐ Compaction ☐ Liner / Geotextile
	☒ Gradations
Project Nº : 6127	☐ Other (specify):

I HAVE: ☒ my JSEAs ☒ my PPE ☒ Proper Training

I SEE: ☐ Unexpected Hazards **I NEED**: ☐ an S-RAF

5 ˚C

- Ice has been replaced by esker. Foundation approval from 0+234 to 0+260. (Figure 1)
- Foundation approval from 0+260 to 0+281. (Figure 2)
- Preliminary channel excavation between 0+134 and 0+149. (Figure 3)
- Preliminary channel excavation between 0-015 and 0+024. The channel has been excavated beyond its planned length to efficiently drain the water out from the tundra. (Figure 4)
- Ice-rich material found at the bottom of excavation from 0+029 to 0+070 and from 0+090 to 0+125. Ice removal is ongoing. (Figure 5 & 6). A sample of ice-rich material of this section has been taken.
- Fine filter fill between 0+234 and 0+281. (Figure 7)
- Gradations of foundation and fine filter samples taken on site on 2020-09-24 and 2020-09-25 done by geotechnical technician. The results were sent directly to the QA representative.

Corrective action to be taken:

- n/a
-

Follow up visit required: Yes ☒ No ☐

Site Representative :	Patrice Gagnon	Inspector :	Mikaël Turcotte (Print Name)
From :	AEM	Signature* :	Mikaël Turcotte
Project Manager :	Marc-André Beaudet	Time on site :	12h

* *By signing this form I acknowledge that I have consulted the appropriate documentation for the current project and I am in compliance with the procedures and work methods for this site at this time.*

Figure 1: Foundation approval between 0+234 and 0+260

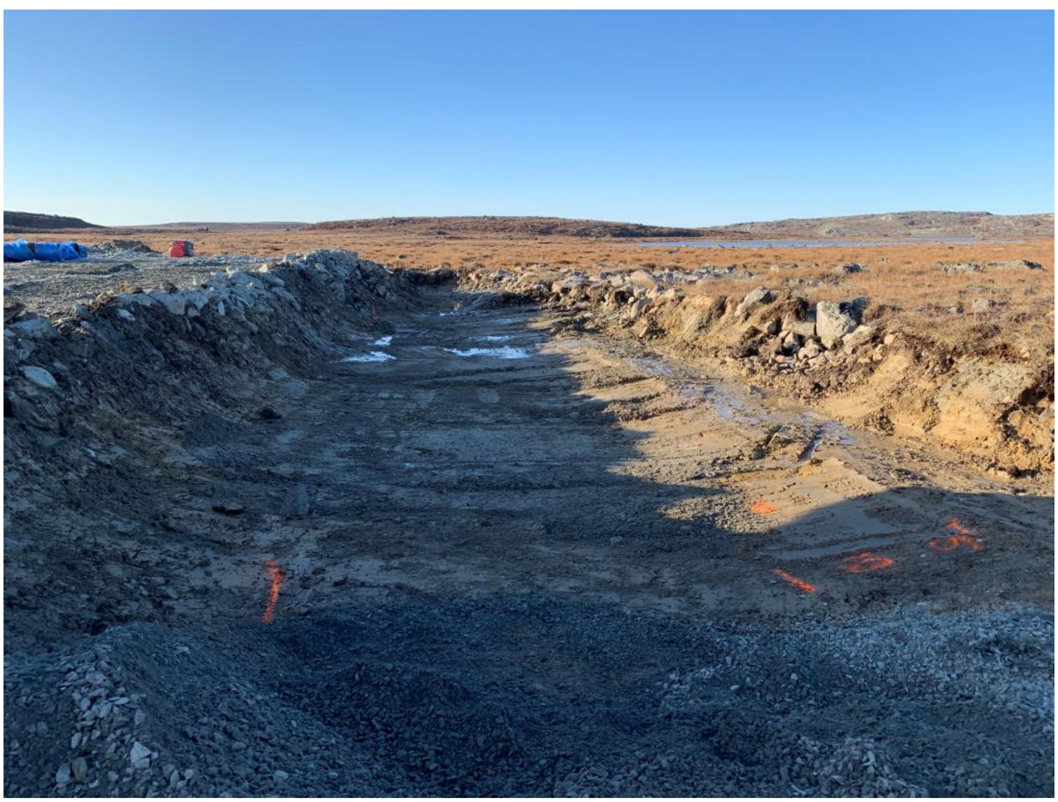


Figure 2: Foundation approval between 0+260 and 0+281

Figure 3: Preliminary excavation between 0+134 and 0+149

Figure 4: Preliminary excavation between 0-015 and 0+024

Figure 5: A layer of hammered ice-rich material between 0+090 and 0+125

Figure 6: A layer of hammered ice-rich material between 0+029 and 0+070

Figure 7: Fine filter fill between 0+234 and 0+281 (ongoing)

QC Daily Field Report

Client AEM	Inspection Date 2020-09-27 Day
Site Amaruq	☐ Drill and Blast ☐ Expertise
Project IVR Diversion channel	☒ Foundation Prep. ☐ Vibration Monitoring
	☒ Fill Placement ☒ Water Management
	☒ Sampling ☐ Grout curtain
	☐ Compaction ☒ Liner / Geotextile
	☒ Gradations
Project Nº : 6127	☐ Other (specify):

I HAVE: ☒ my JSEAs ☒ my PPE ☒ Proper Training

I SEE: ☐ Unexpected Hazards **I NEED**: ☐ an S-RAF

6 °C

- The energy dissipator has been dug between 0+281 and 0+284.5. (Figure 1)
- Geotextile placement from 0+284.5 to 0+152. (Figure 2) The geotextile used is the Novatex V because the Mirafi is not on site. The geotextile is placed from downstream to upstream with 2 layers overlapping at least 600mm at joints as per SNC's technical recommendations. (Figure 3)
- A layer of riprap has been added on top of the geotextile to hold it in place. Riprap placement to grade will be completed later. (Figure 4)
- Ice removal between 0+090 and 0+125 at an average depth of 1.1m below the bottom of excavation. (Figure 5) The ice removed was replaced by esker. (Figure 6)
- Sampling of the foundation at different depths between 0+090 and 0+125.
-
-
-

Corrective action to be taken:

- n/a
-

Follow up visit required: Yes ☒ No ☐

Site Representative : Patrice Gagnon

Inspector : Mikaël Turcotte

(Print Name)

From : AEM

Signature* : Mikaël Turcotte

Project Manager : Marc-André Beaudet

Time on site : 12h

* *By signing this form I acknowledge that I have consulted the appropriate documentation for the current project and I am in compliance with the procedures and work methods for this site at this time.*

Figure 1: Energy dissipator

Figure 2: Geotextile placement between 0+284.5 and 0+152

Figure 3: The geotextile overlaps were all above 600mm

Figure 4: Preliminary riprap placement over the geotextile to hold it in place

Figure 5: Ice removed (average thickness removed= 1.1m) between 0+090 and 0+125

Figure 6: Esker placement between 0+090 and 0+125

QC Daily Field Report

Client AEM	Inspection Date 2020-09-28 Day
Site Amaruq	☐ Drill and Blast ☐ Expertise
Project IVR Diversion channel	☒ Foundation Prep. ☐ Vibration Monitoring
	☒ Fill Placement ☒ Water Management
	☒ Sampling ☐ Grout curtain
	☐ Compaction ☐ Liner / Geotextile
	☐ Gradations
Project Nº : 6127	☒ Other (specify): Surveying

I HAVE: ☒ my JSEAs ☒ my PPE ☒ Proper Training
I SEE: ☐ Unexpected Hazards **I NEED**: ☐ an S-RAF

4 ˚C

- Riprap placement to grade between 0+155 and 0+284.5. (Figure 1) Small corrections will be done later for the placement approval.
- Ice removed and replaced by esker between 0+029 and 0+070. The average thickness removed is 1.2m. (Figure 2)
- Foundation approval between 0+090 and 0+149.(Figure 3)
- Fine filter fill between 0+090 and 0+149. (Figure 4)
- Sampling of ice-rich material at foundation at 0+050.
-
-

Corrective action to be taken:

- n/a
-

Follow up visit required: Yes ☒ No ☐

Site Representative : Patrice Gagnon

Inspector : Mikaël Turcotte
(Print Name)

From : AEM

Signature* : Mikaël Turcotte

Project Manager : Marc-André Beaudet

Time on site : 12h

* *By signing this form I acknowledge that I have consulted the appropriate documentation for the current project and I am in compliance with the procedures and work methods for this site at this time.*

Figure 1: Riprap placement to grade between 0+155 and 0+284.5

Figure 2: Ice removed between 0+029 and 0+070

Figure 3: Foundation approval between 0+090 and 0+149

Figure 4: Fine filter fill beween 0+090 and 0+149

QC Daily Field Report

AGNICO EAGLE

Client AEM	Inspection Date 2020-09-29 Day
Site Amaruq	☐ Drill and Blast ☐ Expertise
Project IVR Diversion channel	☒ Foundation Prep. ☐ Vibration Monitoring
	☒ Fill Placement ☒ Water Management
	☐ Sampling ☐ Grout curtain
	☐ Compaction ☒ Liner / Geotextile
	☐ Gradations
Project Nº : 6127	☐ Other (specify):

I HAVE: ☒ my JSEAs ☒ my PPE ☒ Proper Training

I SEE: ☐ Unexpected Hazards **I NEED**: ☐ an S-RAF

3 ˚C

- Foundation approval between 0+029 and 0+070. Minimal amount of snow was present on the foundation, so it was scrapped with the excavator bucket as needed. (Figure 1 & 2)
- Foundation approval between 0+070 and 0+090. (Figure 3) An important water entry from the tundra is present at this location. As approved by QA Patrice Gagnon before his fly out, a thicker layer of fine filter (about 150mm thicker than design requirements) was provided for this part. The channel (fine filter, geotextile and riprap) is also extended further in the tundra at this location to better collect the water. (Figure 4)
- Fine filter placement approval between 0+029 and 0+149. Fine filter between 0+029 and 0+080 placed during the day. (Figure 5, 6 and 7)
- Geotextile and preliminary riprap placement (to hold the geotextile in place) between 0+032 and 0+149. (Figure 8 & 9)
- Riprap with too much fines observed at 3 locations in the channel (the amount corresponds to 3 excavator buckets through the 250m length completed so far). (Figure 10) This situation is observable on a surface representing less than 1% of the portion completed so far. The overall quality of the riprap is thus acceptable overall and the amount of fines present in the riprap should have a negligible effect on quality of the water coming out of the channel. Nonetheless, a final inspection of the riprap will be done once it will be finalized and all the sections with too much fine material will be sorted by hand.
-
-

Corrective action to be taken:

- n/a
-

Follow up visit required: Yes ☒ No ☐

Site Representative :	Patrice Gagnon	Inspector :	Mikaël Turcotte (Print Name)
From :	AEM	Signature* :	Mikaël Turcotte
Project Manager :	Marc-André Beaudet	Time on site :	12h

* *By signing this form I acknowledge that I have consulted the appropriate documentation for the current project and I am in compliance with the procedures and work methods for this site at this time.*

Figure 1: Foundation approval between 0+029 and 0+070

Figure 2: Fill placement in progress between 0+029 and 0+070

Figure 3: Foundation approval between 0+070 and 0+090

Figure 4: Channel extending further in the tundra at station 0+073

Figure 5: Fine filter approval between 0+090 and 0+149

Figure 6: Fine filter approval between 0+070 and 0+090

Figure 7: Fine filter approval between 0+029 and 0+070

Figure 8: Geotextile between 0+029 and 0+070

Figure 9: Geotextile and preliminary riprap between 0+034

Figure 10: Riprap with too much fine material

AGNICO EAGLE

QC Daily Field Report

Client AEM	Inspection Date 2020-09-30 Day
Site Amaruq	☐ Drill and Blast ☐ Expertise
Project IVR Diversion channel	☒ Foundation Prep. ☐ Vibration Monitoring
	☒ Fill Placement ☒ Water Management
	☒ Sampling ☐ Grout curtain
	☐ Compaction ☒ Liner / Geotextile
	☒ Gradations
Project Nº : 6127	☒ Other (specify): Surveying

I HAVE: ☒ my JSEAs ☒ my PPE ☒ Proper Training

I SEE: ☐ Unexpected Hazards **I NEED**: ☐ an S-RAF

4 ˚C

- Foundation approval between 0-015 and 0+029. (Figure 1 & 2)
- Sampling of foundation and esker material
- Fine filter placement approval between 0-015 and 0+029. (Figure 3)
- Geotextile placement between 0-015 and 0+032. (Figure 4)
- Riprap finalized and approved for the entire length of the channel (between 0-015 and 0+284.5). The riprap is only finalized on the exterior slope (on the side of the tundra) and at the bottom of the channel. (Figure 5 & 6)
- The downstream end of the channel is completed (0+284.5 to 0+290). Two geotextile layers were added to avoid washing out the fines at the end of the channel. (Figure 7) Riprap was also added on top to hold the geotextile in place.
- Pumps haven been added at the bottom of the channel to pump the water out of it. (Figure 8) The 3-inch pump is pumping the water to lake A-53 while the 2-inch pump was only temporary to manage the water until the 3-inch pump was installed. The geotextiles are soaked, so they are hard to move away from the slope and removing the water accumulated at the bottom should help improving the situation.
- Riprap material coming on site was not acceptable at the end of the afternoon. Too much fines were present in it. (Figure 9). The loading method at the stockpile is acceptable, but the stockpile of riprap is next to a stockpile of 0-3/4" material, so there might be contamination of this material in the riprap. The excavator operators on site have a good method to scoop the riprap. They are not scraping the access road material and they leave a good floor of riprap. The excavator operators were asked to filter the riprap by dropping buckets of riprap on the ground to let the fines go at the bottom. The material placed from the non-conforming loads was appropriately sorted by the excavator operators, except for a few buckets that had too much fines in it. The sections with too much fine material will be corrected by hand to avoid ripping the geotextile.
- Gradations of foundation material and esker samples are ongoing.

Corrective action to be taken:

- n/a
-

Follow up visit required: Yes ☒ No ☐

Site Representative :	Patrice Gagnon	Inspector :	Mikaël Turcotte (Print Name)
From :	AEM	Signature* :	Mikaël Turcotte
Project Manager :	Marc-André Beaudet	Time on site :	12h

* *By signing this form I acknowledge that I have consulted the appropriate documentation for the current project and I am in compliance with the procedures and work methods for this site at this time.*

Figure 1: Foundation approval between 0-010 and 0+029

Figure 2: Foundation approval between 0-010 and 0-015

Figure 3: Fine filter fill approval between 0-015 and 0+029

Figure 4: Geotextile placement between 0-015 and 0+032

Figure 5: Riprap approval between 0-015 and 0+140

Figure 6: Riprap approval between 0+140 and 0+284.5

Figure 7: Geotextile placement at the downstream end between 0+284.5 and 0+290

Figure 8: Pumps added at the end of the channel (0+284.5)

Figure 9: Non-conforming load of riprap

QC Daily Field Report

Client AEM	Inspection Date 2020-10-01 Day
Site Amaruq	☐ Drill and Blast ☒ Foundation Prep. ☒ Fill Placement ☐ Sampling ☐ Compaction ☒ Gradations ☐ Other (specify):
Project IVR Diversion channel	☐ Expertise ☐ Vibration Monitoring ☒ Water Management ☐ Grout curtain ☐ Liner / Geotextile
Project Nº : 6127	

I HAVE: ☒ my JSEAs ☒ my PPE ☒ Proper Training
I SEE: ☐ Unexpected Hazards **I NEED**: ☐ an S-RAF

2 °C

- Gradations of foundation samples and esker are ongoing.
- Final road lift to grade done between 0+047 and 0+110 and between 0+162 and 0+284.5. (Figure 1)
- Sloping of the access road on the side of the channel between 0+162 and 0+188. (Figure 2)
- Heating provided to prevent the geotextiles from freezing overnight between 0+235 and 0+284.5. (Figure 3)

Corrective action to be taken:

- n/a

Follow up visit required: Yes ☒ No ☐

Site Representative :	Laurier Collette	Inspector :	Mikaël Turcotte (Print Name)
From :	AEM	Signature* :	Mikaël Turcotte
Project Manager :	Marc-André Beaudet	Time on site :	12h

* *By signing this form I acknowledge that I have consulted the appropriate documentation for the current project and I am in compliance with the procedures and work methods for this site at this time.*

Figure 1: Final access road lift between 0+162 and 0+284.5

Figure 2: Slope completed between 0+162 and 0+188

Figure 3: Heating provided between 0+235 and 0+284.5 to avoid freezing of wet geotextile

AGNICO EAGLE
QC Daily Field Report

Client AEM	Inspection Date 2020-10-02 Day
Site Amaruq	☐ Drill and Blast ☐ Expertise
Project IVR Diversion channel	☒ Foundation Prep. ☐ Vibration Monitoring
	☒ Fill Placement ☒ Water Management
	☐ Sampling ☐ Grout curtain
	☐ Compaction ☐ Liner / Geotextile
	☒ Gradations
Project Nº : 6127	☐ Other (specify):

I HAVE: ☒ my JSEAs ☒ my PPE ☒ Proper Training

I SEE: ☐ Unexpected Hazards **I NEED**: ☐ an S-RAF

2 °C

- Gradations of foundation samples and esker are ongoing.
- Final road lift of the entire access road is completed.
- Sloping of the access road on the side of the channel between 0+188 and 0+284.5. (Figure 1)
- Foundation approval between 0+162 and 0+250. The approval is ongoing with the fine filter placement progression. Non-conforming material is identified, removed and replaced continuously.
- Fine filter placement in the slope between 0+162 and 0+230. Visual gradation is good. (Figure 2)
- Soft spots of oversaturated material in the foundation are identified and removed before fine filter placement. (Figure 3 & 4) The material removed is replaced by well compacted fine filter. (Figure 5)
- Ice was found in the slope around station 0+230. The ice was removed and replaced by fine filter. (Figure 6)
- The arrangement of the fine filter/road interface has been modified. The plans provided are not practical in application as the fine filter in the road slope is supposed to be under the road. Therefore, the fine filter goes up to elevation 158, which creates a bump in the slope. (Figure 2) So far, the bump is constant at elevation 158, but this may change as the QA looked for the possibility of letting the bump follow the natural ground profile starting from 0+200.
- The possibility of not putting riprap all the way up to the road elevation is being considered by the engineering team on site. So far, the channel construction continues following the plans provided by SNC. The only modification thus far is the bump in the slope at elevation 158.

Corrective action to be taken:

- n/a

Follow up visit required: Yes ☒ No ☐

Site Representative :	Laurier Collette	Inspector :	Mikaël Turcotte (Print Name)
From :	AEM	Signature* :	Mikaël Turcotte
Project Manager :	Marc-André Beaudet	Time on site :	12h

* *By signing this form I acknowledge that I have consulted the appropriate documentation for the current project and I am in compliance with the procedures and work methods for this site at this time.*

Figure 1: Access road slope completed between 0+188 and 0+284.5

Figure 2: Fine filter placed between 0+162 and 0+230

Figure 3: Soft spot identified

Figure 4: Soft spot excavated

Figure 5: Excavated soft spot filled with well compacted fine filter

Figure 6: Ice excavated out of the foundation at 0+230

AGNICO EAGLE

QC Daily Field Report

Client AEM	Inspection Date 2020-10-03 Day
Site Amaruq	☐ Drill and Blast ☒ Foundation Prep. ☒ Fill Placement ☐ Sampling ☐ Compaction ☐ Gradations ☐ Other (specify):
Project IVR Diversion channel	☐ Expertise ☐ Vibration Monitoring ☒ Water Management ☐ Grout curtain ☒ Liner / Geotextile
Project Nº : 6127	

I HAVE: ☒ my JSEAs ☒ my PPE ☒ Proper Training

I SEE: ☐ Unexpected Hazards **I NEED**: ☐ an S-RAF

-1 ˚C

- Slope preparation from 0-015 to 0+160. (Figure 1 & 2)
- Foundation approval from 0+220 to 0+284.5 and from 0+090 to 0+155. Non-conforming material was appropriately identified, removed and replaced by fine filter following the same procedure illustrated in the report of 2020-10-02. (Figure 3 to 6)
- Sampling of ice-rich material in the slope (IVR-EX-17) at 0+250 to obtain ice and moisture content.
- Fine filter placement and approval from 0+220 to 0+284.5 and from 0+140 to 0+155. (Figure 7 to 9)
- Geotextile and preliminary riprap placement between 0+160 and 0+284.5. (Figure 10 & 11)
- The overlaps of the different geotextile layers are meeting the minimum acceptable overlap length. (Figure 12)
- Some geotextiles were damaged during the installation of the fine filter at the bottom. When holes are spotted in the geotextile, they are appropriately patched by putting a big piece of geotextile over the holes. (Figure 13) The holes are all less than 25mm in diameter, so the patches are more than sufficient to provide additional protection at the location of the holes.

Corrective action to be taken:

- n/a

Follow up visit required: Yes ☒ No ☐

Site Representative : Laurier Collette

Inspector : Mikaël Turcotte
(Print Name)

From : AEM

Signature* : Mikaël Turcotte

Project Manager : Marc-André Beaudet

Time on site : 12h

* *By signing this form I acknowledge that I have consulted the appropriate documentation for the current project and I am in compliance with the procedures and work methods for this site at this time.*

Figure 1: Slope preparation between 0-015 and 0+140

Figure 2: Slope preparation between 0+140 and 0+160

Figure 3: Foundation approval between 0+140 and 0+155

Figure 4: Foundation approval between 0+090 and 0+140

Figure 5: Foundation approval between 0+220 and 0+260

Figure 6: Foundation approval between 0+260 and 0+284.5

Figure 7: Fine filter approval between 0+140 and 0+155

Figure 8: Fine filter approval between 0+260 and 0+284.5

Figure 9: Fine filter approval between 0+160 and 0+220

Figure 10: Geotextile placement between 0+160 and 0+284.5

Figure 11: Geotextile and preliminary riprap between 0+160 and 0+284.5

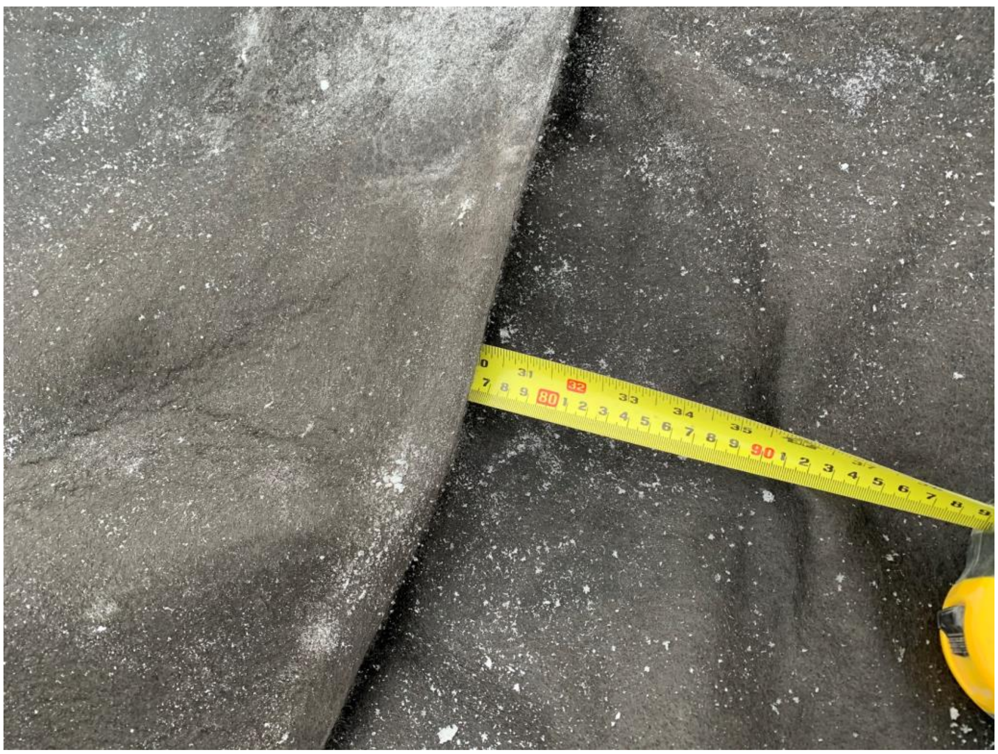


Figure 12: All the overlaps measured are conforming to minimum requirement of 600

Figure 13: Holes in the geotextile are appropriately patched

AGNICO EAGLE

QC Daily Field Report

Client AEM	Inspection Date 2020-10-05 Day	
Site Amaruq	☐ Drill and Blast	☐ Expertise
Project IVR Diversion channel	☐ Foundation Prep.	☐ Vibration Monitoring
	☒ Fill Placement	☒ Water Management
	☐ Sampling	☐ Grout curtain
	☐ Compaction	☐ Liner / Geotextile
	☐ Gradations	
Project Nº : 6127	☐ Other (specify):	

I HAVE: ☒ my JSEAs ☒ my PPE ☒ Proper Training

I SEE: ☐ Unexpected Hazards **I NEED**: ☐ an S-RAF

-2 ˚C

- Final riprap placement at the energy dissipator between 0+281 and 0+290. (Figure 1)
- Geotextile and riprap placement at the entrance of the channel (station 0-015). (Figure 2 & 3)
- Final riprap placement along the entire length of the channel. (Figure 4 & 5) Only small modifications remain before final approval.
- At the end of the day, the final loads of riprap were contaminated by 0-3/4 material because they were coming from the bottom of the stockpile. During transportation, all the fine material segregated at the bottom of the truck bed, so the operators were asked to dump their loads in two parts. The first half of the load was conforming riprap material without traces of contamination because it was coming from the top material in the truck bed. (Figure 6) The second half of the load was contaminated by the fine material. This dumping method saved considerable time for the operators who did not have to sort as much non-conforming material as if the load was dumped in one motion.
-

Corrective action to be taken:

- n/a
-

Follow up visit required: Yes ☒ No ☐

Site Representative :	Laurier Collette	Inspector :	Mikaël Turcotte (Print Name)
From :	AEM	Signature :	Mikaël Turcotte
Project Manager :	Marc-André Beaudet	Time on site :	12h

* *By signing this form I acknowledge that I have consulted the appropriate documentation for the current project and I am in compliance with the procedures and work methods for this site at this time.*

Figure 1: Final riprap placement at the energy dissipator (0+281 to 0+290)

Figure 2: Geotextile placement at the entrance of the channel (0-015)

Figure 3: Final riprap placement at the entrance of the channel (0-015)

Figure 4: Riprap to final grade between 0-015 and 0+140

Figure 5: Riprap to final grade between 0+140 and 0+290

Figure 6: Riprap from the first half dumping process

APPENDIX B4

Approval Forms

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-27
DOCUMENT #:	20200927-FF-01	**TIME:**	10:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Patrice Gagnon

APPROVAL FOR :

- ☐ Foundation approval (trench bottom and slopes)
- ☑ Fill placement approval: Fine Filter
- ☐ Other: ______

LOCATION		**PREVIOUS APPROVALS**	
Station	0+149 to 0+284.5	**Station:**	n/a
Inclination:		**Details:**	
ELEVATION :	☑ varies ______ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY: QA AEM Y	QA AEM N	QC AEM Y	QC AEM N	N/A
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)	✓		✓		
5. Placement (lift thickness, segregation, etc.)	✓		✓		
6. Compaction	✓		✓		
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					
12.					
13.					

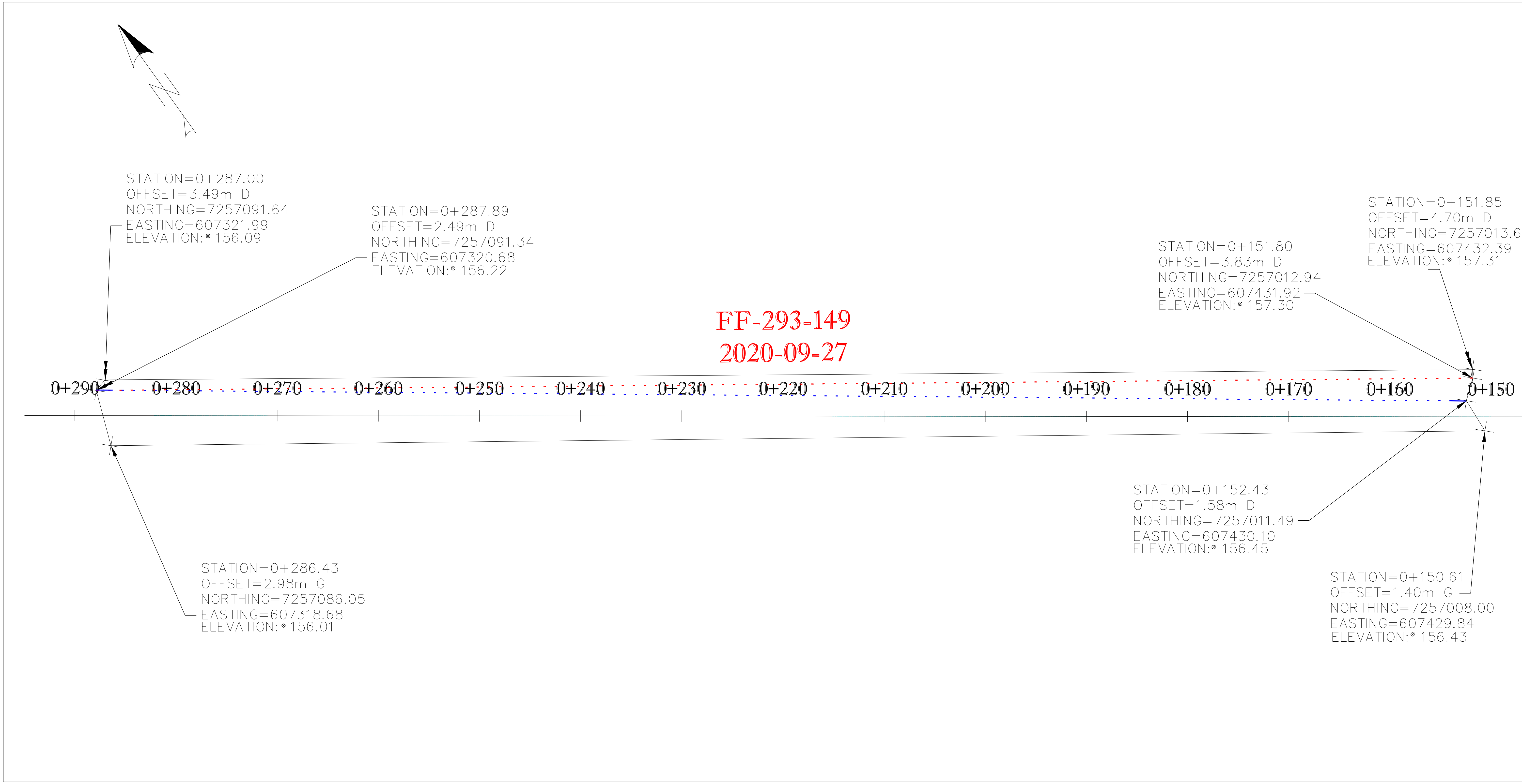
DETAILS (Refer to list above for item #)		**APPROVED BY:**			
		QA AEM		**QC AEM**	
ITEM		**Y**	**N**	**Y**	**N**
2	Presence of water at the bottom part of the fine filter. A small amount of fine filter was added on top of the material already in place to absorb part of the water and avoid disturbing the material already in place.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES		2020-09-27
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-09-27
AEM QA REPRESENTATIVE	PATRICE GAGNON		2020-09-27
OWNER'S REPRESENTATIVE	PATRICE GAGNON		

Figure 1: Approval between 0+149 and 0+260

Figure 2: Approval between 0+260 and 0+285

FINE FILTER APPROVAL - 0+293 @ 0+149
IVR DIVERSION CHANNEL
CONTRACT # 11-811



KIVALLIQ CONTRACTORS
GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 08-10-2020
CON-FD-359_REV1

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-29
DOCUMENT #:	20200929-FF-02	**TIME:**	8:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Laurier Collette

APPROVAL FOR :

- ❒ Foundation approval (trench bottom and slopes)
- ☑ Fill placement approval: Fine Filter
- ❒ Other:

LOCATION		**PREVIOUS APPROVALS**	
Station	0+090 to 0+149	**Station:**	0+149 to 0+284.5
Inclination:		**Details:**	20200927-FF-01
ELEVATION :	☑ varies ________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY:				
	QA AEM		**QC AEM**		**N/A**
	Y	**N**	**Y**	**N**	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water	✓		✓		
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)	✓		✓		
5. Placement (lift thickness, segregation, etc.)	✓		✓		
6. Compaction	✓		✓		
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					
12.					
13.					

DETAILS		APPROVED BY:			
(Refer to list above for item #)		QA AEM		QC AEM	
ITEM		Y	N	Y	N
2	Foundation has not water at this location because the section between 0+090 and 0+125 is composed of esker fill from ice removal and a pump was located at 0+149 to drain the water out of the channel.	✓		✓	

APPROVED BY:	NAME	SIGNATURE	DATE
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES	[signature]	2020-09-29
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-09-29
AEM QA REPRESENTATIVE	LAURIER COLLETTE		2020-09-29
OWNER'S REPRESENTATIVE	LAURIER COLLETTE		

AGNICO EAGLE

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-29
DOCUMENT #:	20200929-FF-03	**TIME:**	15:45
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Laurier Collette

APPROVAL FOR :

- ☐ Foundation approval (trench bottom and slopes)
- ☑ Fill placement approval: Fine Filter
- ☐ Other:

LOCATION		**PREVIOUS APPROVALS**	
Station	0+029 to 0+090	**Station:**	0+090 to 0+149
Inclination:		**Details:**	20200929-FF-02
ELEVATION :	☑ varies ________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY:				
	QA AEM		**QC AEM**		**N/A**
	Y	**N**	**Y**	**N**	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)	✓		✓		
5. Placement (lift thickness, segregation, etc.)	✓		✓		
6. Compaction	✓		✓		
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					
12.					
13.					

DETAILS

(Refer to list above for item #)

		APPROVED BY:			
		QA AEM		QC AEM	
ITEM		**Y**	**N**	**Y**	**N**
2	Water is present on the foundation. As usual, the water is pushed out of the way before fine filter placement. A important water entry is located at 0+073, so the pump at this location was removed at the last moment possible before fine filter placement.	✓		✓	

APPROVED BY:	NAME	SIGNATURE	DATE
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES		2020-09-29
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-09-29
AEM QA REPRESENTATIVE	LAURIER COLLETTE		2020-09-29
OWNER'S REPRESENTATIVE	LAURIER COLLETTE		

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-30
DOCUMENT #:	20200930-FF-04	**TIME:**	11:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Laurier Collette

APPROVAL FOR :

- ❒ Foundation approval (trench bottom and slopes)
- ☑ Fill placement approval: Fine Filter
- ❒ Other: ______

LOCATION		**PREVIOUS APPROVALS**	
Station	0-015 to 0+029	**Station:**	0+029 to 0+149
Inclination:		**Details:**	20200929-FF-02
ELEVATION :	☑ varies ________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

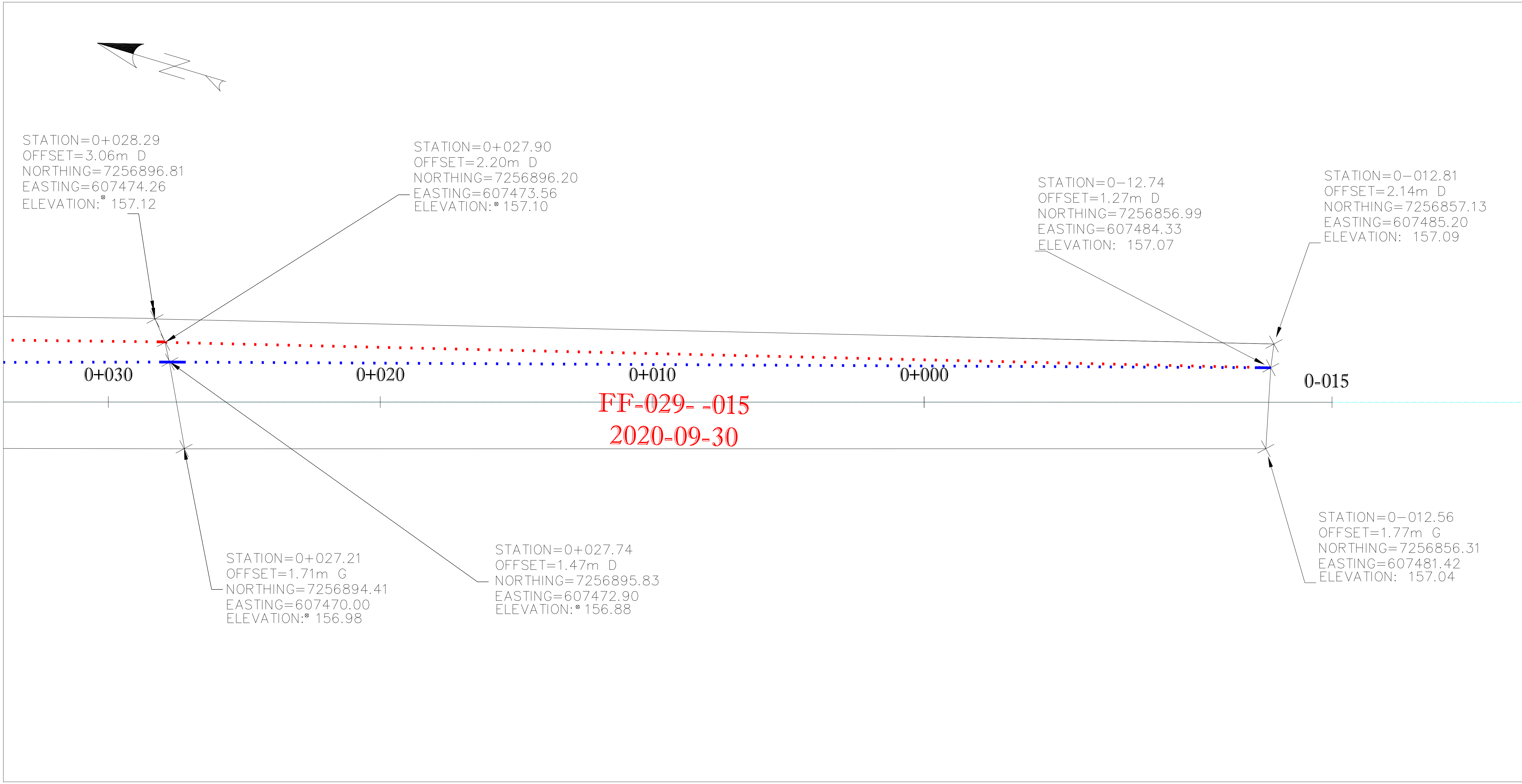
	VERIFICATIONS DONE BY:				
	QA AEM		**QC AEM**		**N/A**
	Y	**N**	**Y**	**N**	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)	✓		✓		
5. Placement (lift thickness, segregation, etc.)	✓		✓		
6. Compaction	✓		✓		
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					
12.					
13.					

DETAILS		**APPROVED BY:**			
(Refer to list above for item #)		**QA AEM**		**QC AEM**	
ITEM		**Y**	**N**	**Y**	**N**
2	Water on the foundation. All the water was pushed towards the pump at 0+029 and the mud created was removed and replaced by fine filter.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES		2020-09-30
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-09-30
AEM QA REPRESENTATIVE	LAURIER COLLETTE		2020-09-30
OWNER'S REPRESENTATIVE	LAURIER COLLETTE		

Figure 1: Approval between 0-015 and 0+029

FINE FILTER APPROVAL - 0+029 @ 0-015
IVR DIVERSION CHANNEL
CONTRACT # 11-811



KIVALLIQ CONTRACTORS GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 08-10-2020
CON-FD-362_REV1

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-10-03
DOCUMENT #:	20201003-FF-05	**TIME:**	17:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Laurier Collette

APPROVAL FOR :

- ☐ Foundation approval (trench bottom and slopes)
- ☑ Fill placement approval: Fine Filter
- ☐ Other:

LOCATION		**PREVIOUS APPROVALS**	
Station	0+140 to 0+284.5	**Station:**	Varies
Inclination:		**Details:**	20200927-FF-01 20200929-FF-02
ELEVATION :	☑ varies ________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY:				
	QA AEM		**QC AEM**		**N/A**
	Y	**N**	**Y**	**N**	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)	✓		✓		
5. Placement (lift thickness, segregation, etc.)	✓		✓		
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					

DETAILS (Refer to list above for item #)		**APPROVED BY:**			
		QA AEM		**QC AEM**	
ITEM		**Y**	**N**	**Y**	**N**
2	Water is present at the bottom of the slope. Material is placed such that the water is pushed away, and the fine filter can connect well with the other fine filter already placed at the bottom of the foundation. Water was coming through the fine filter at 0+145, but no other traces of water was observed on top of the fine filter. Small layer of snow over the fine filter, but the amount of snow observed is negligible.	✓		✓	
6	It was not always possible to place the fine filter all the way down to the bottom of the slope using the excavator bucket without damaging the geotextile. Final placement at the toe of the slope at these locations was done by hand with limited compaction, but the amount of material placed by hand is negligible and overall compaction is acceptable. This method has been used over a length of approximately 30m for this approval.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES	[signature]	2020-10-03
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-10-03
AEM QA REPRESENTATIVE	LAURIER COLLETTE		2020-10-03
OWNER'S REPRESENTATIVE	LAURIER COLLETTE		

Figure 1: Approval between 0+140 and 0+155

Figure 2: Approval between 0+155 and 0+180

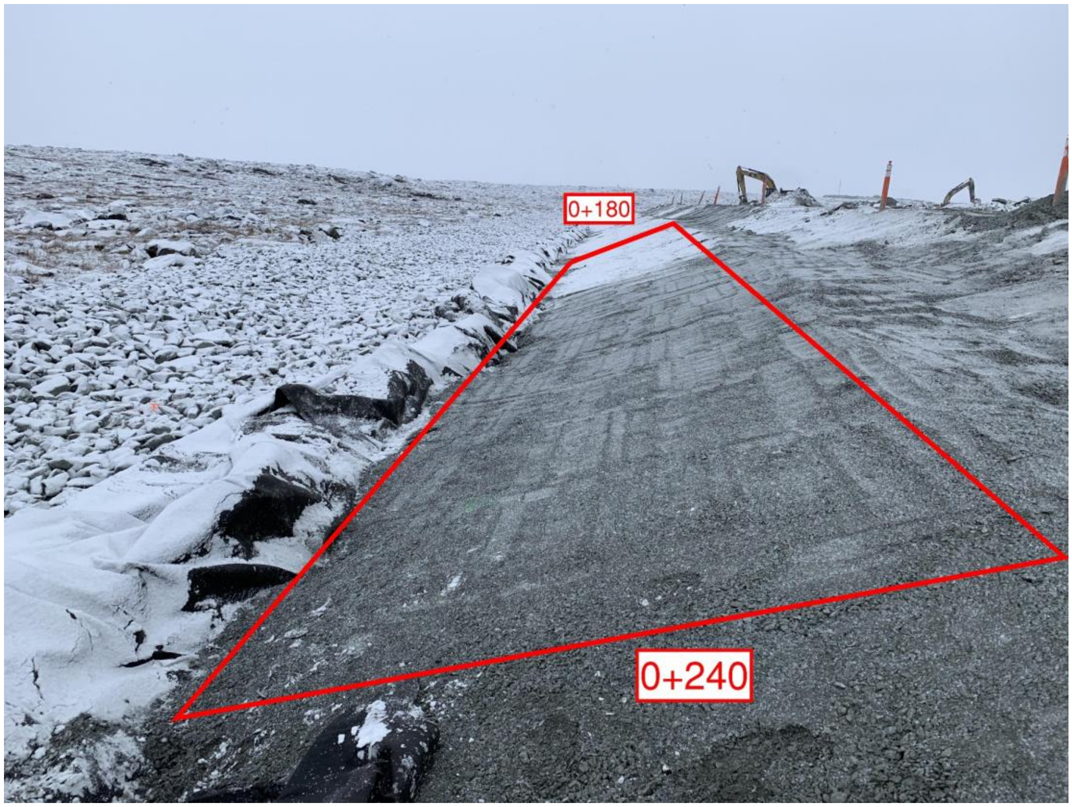
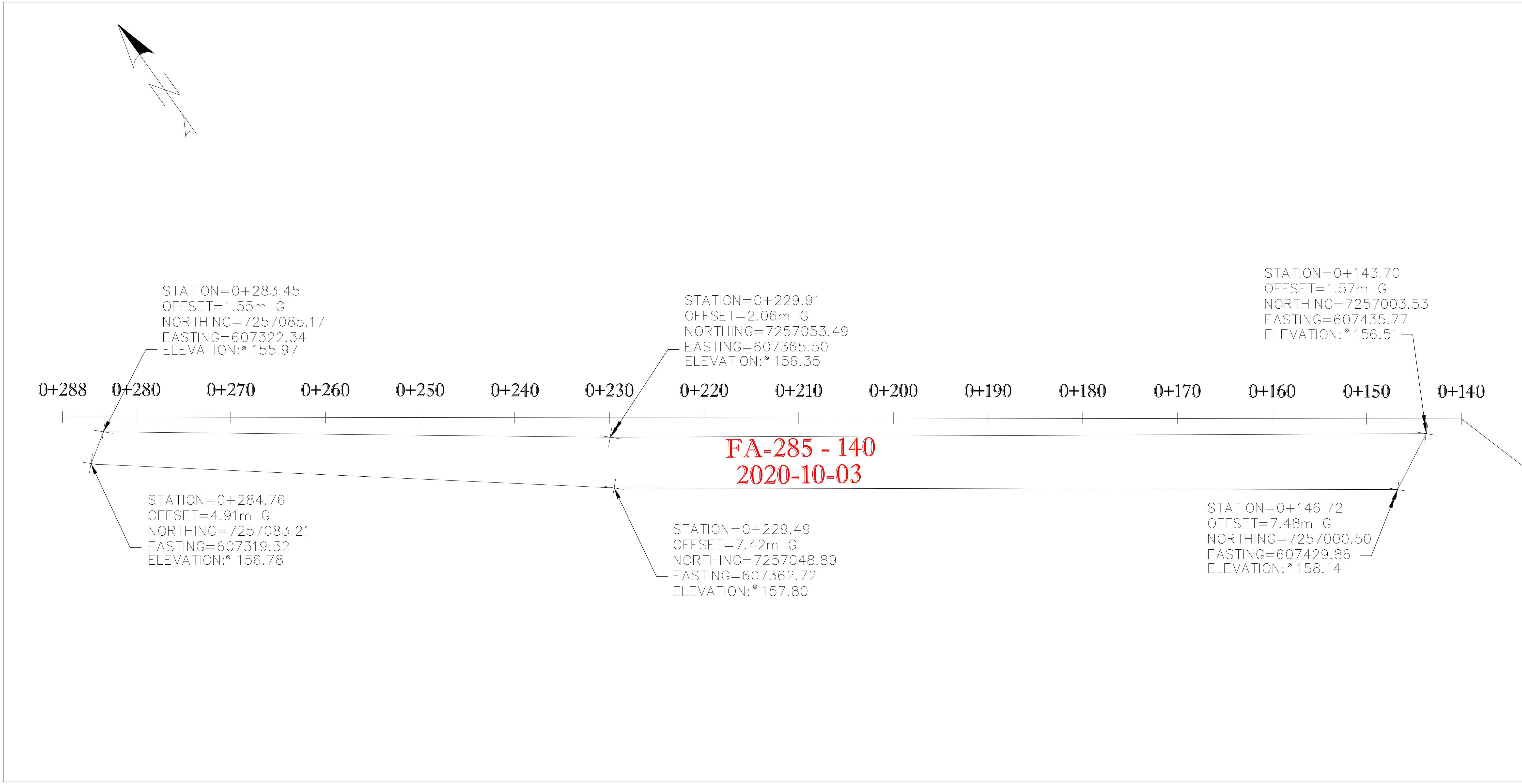


Figure 3: Approval between 0+180 and 0+240

Figure 4: Approval between 0+240 and 0+260

Figure 5: Approval between 0+260 and 0+285

SLOPE FINE FILTER APPROVAL - 0+285 @ 0+140
IVR DIVERSION CHANNEL
CONTRACT # 11-811



KIVALLIQ CONTRACTORS GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 07-10-2020
CON-FD-371

AGNICO EAGLE

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-10-04
DOCUMENT #:	20201004-FF-06	**TIME:**	17:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Laurier Collette

APPROVAL FOR :

- ☐ Foundation approval (trench bottom and slopes)
- ☑ Fill placement approval: Fine Filter
- ☐ Other:

LOCATION		**PREVIOUS APPROVALS**	
Station	0-015 to 0+140	**Station:**	Varies
Inclination:		**Details:**	20200929-FF-02 20200929-FF-03 20200930-FF-04
ELEVATION :	☑ varies ________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY:				
	QA AEM		**QC AEM**		**N/A**
	Y	**N**	**Y**	**N**	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)	✓		✓		
5. Placement (lift thickness, segregation, etc.)	✓		✓		
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					

DETAILS (Refer to list above for item #)		**APPROVED BY:** **QA AEM**		**QC AEM**	
ITEM		**Y**	**N**	**Y**	**N**
2	Water is present at the bottom of the slope. Material is placed such that the water is pushed away, and the fine filter can connect well with the other fine filter already placed at the bottom of the foundation. A pump was placed near station 0+010 to remove water accumulation between 0+000 and 0+020. No water coming through the fine filter material has been observed.	✓		✓	
6	It was not always possible to place the fine filter all the way down to the bottom of the slope using the excavator bucket without damaging the geotextile. Final placement at the toe of the slope at these locations was done by hand with limited compaction, but the amount of material placed by hand is negligible and overall compaction is acceptable. This method has been used over a length of approximately 20m for this approval.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES	[signature]	2020-10-04
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-10-04
AEM QA REPRESENTATIVE	LAURIER COLLETTE		2020-10-04
OWNER'S REPRESENTATIVE	LAURIER COLLETTE		

Figure 1: Approval between 0-015 and 0+020

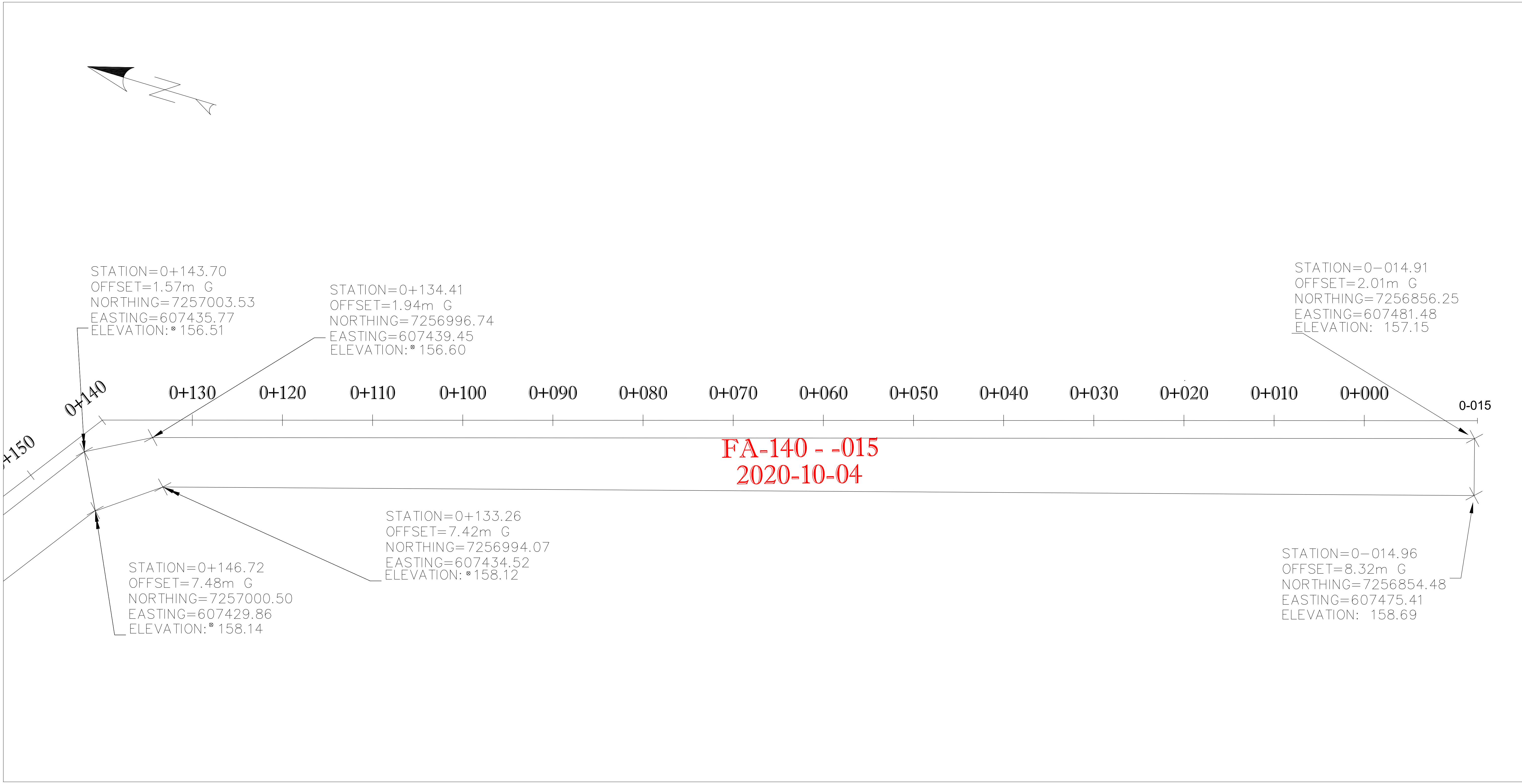
Figure 2: Approval between 0+020 and 0+060

Figure 3: Approval between 0+060 and 0+100

Figure 4: Approval between 0+100 and 0+120

Figure 5: Approval between 0+120 and 0+140

SLOPE FINE FILTER APPROVAL - 0+140 @ 0-015
IVR DIVERSION CHANNEL
CONTRACT # 11-811



KIVALLIQ CONTRACTORS
GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 07-10-2020
CON-FD-372

AGNICO EAGLE

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-24
DOCUMENT #:	20200924-FDN-01	**TIME:**	16:21
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Patrice Gagnon

APPROVAL FOR :

- ☑ Foundation approval (trench bottom and slopes)
- ☐ Fill placement approval: ______________________
- ☐ Other: ______________________

LOCATION		**PREVIOUS APPROVALS**	
Station	0+149 to 0+205	**Station:**	n/a
Inclination:		**Details:**	
ELEVATION :	☑ varies ________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY: QA AEM Y	QA AEM N	QC AEM Y	QC AEM N	N/A
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					
12.					
13.					

DETAILS

(Refer to list above for item #)

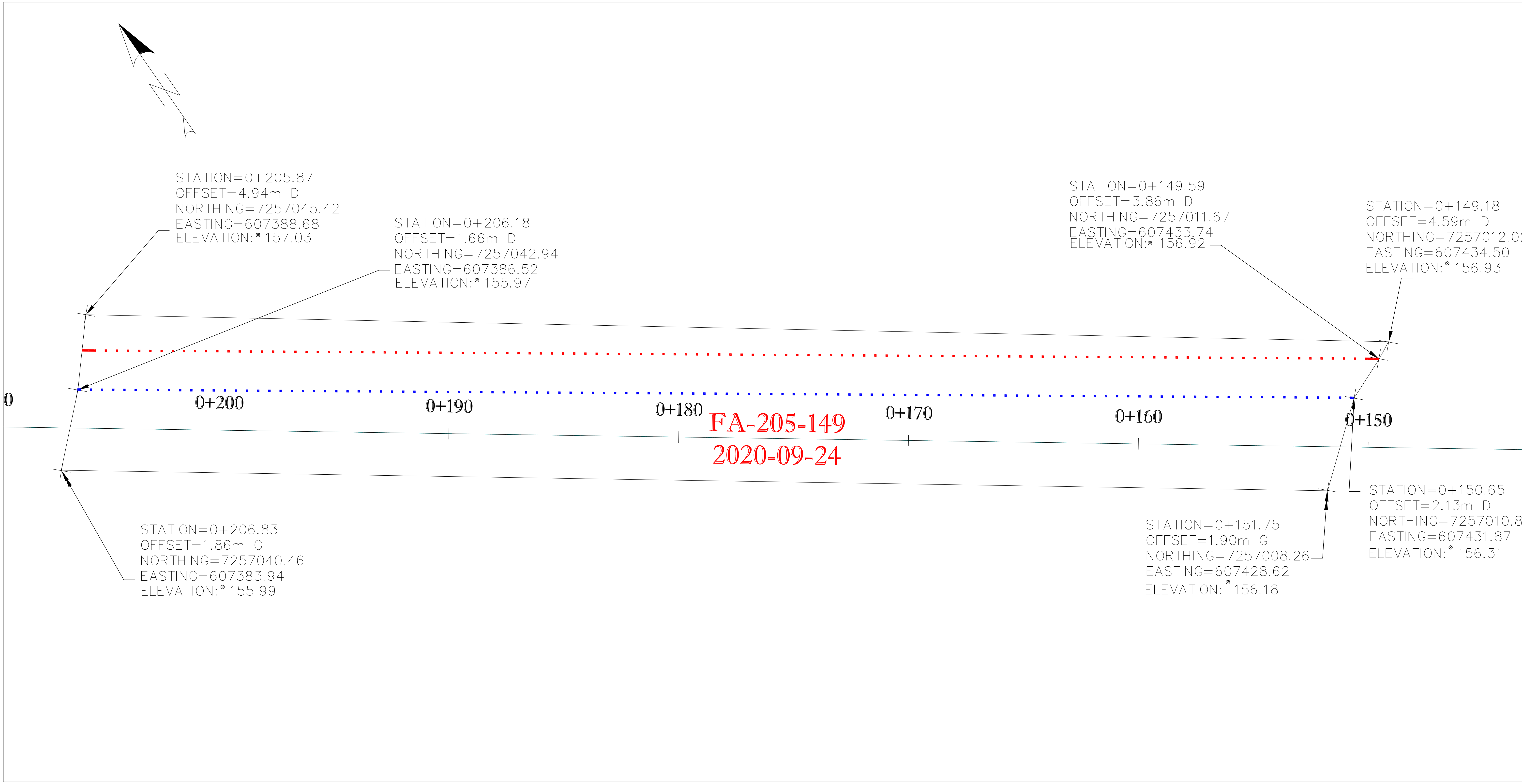
ITEM		QA AEM Y	QA AEM N	QC AEM Y	QC AEM N
2	Presence of water at the bottom of excavation. Fill placement from upstream to downstream to push the water out before placing the material. Remove and replace the fill by appropriate material when it becomes oversaturated with water/mud.	✓		✓	

APPROVED BY:	NAME	SIGNATURE	DATE
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES	[signature]	2020-09-24
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-09-24
AEM QA REPRESENTATIVE	PATRICE GAGNON	________	2020-09-24
OWNER'S REPRESENTATIVE	PATRICE GAGNON	________	________

Figure 1: Foundation approval between 0+149 and 0+181

Figure 2: Foundation approval between 0+181 and 0+205

FOUNDATION APPROVAL - 0+205 @ 0+149
IVR DIVERSION CHANNEL
CONTRACT # 11-811



KIVALLIQ CONTRACTORS
GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 07-10-2020
CON-FD-355_REV1

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-25
DOCUMENT #:	20200925-FDN-02	**TIME:**	8:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Patrice Gagnon

APPROVAL FOR :

☑ Foundation approval (trench bottom and slopes)

☐ Fill placement approval: ______________________________

☐ Other: ______________________________

LOCATION		**PREVIOUS APPROVALS**	
Station	0+205 to 0+234	**Station:**	0+149 to 0+205
Inclination:		**Details:**	20200924-FDN-01
ELEVATION :	☑ varies _________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

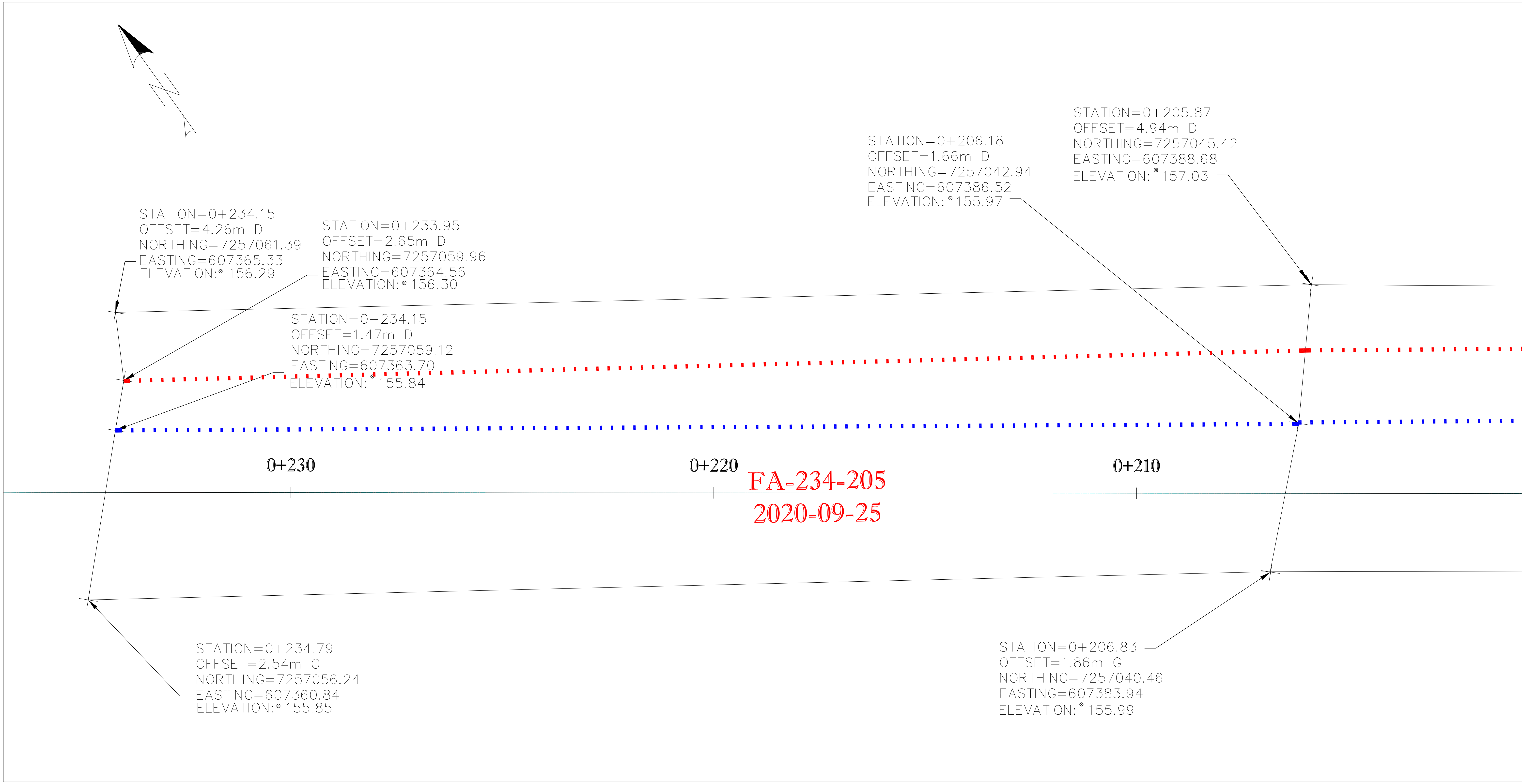
	VERIFICATIONS DONE BY:				
	QA AEM		**QC AEM**		**N/A**
	Y	**N**	**Y**	**N**	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					
12.					
13.					

DETAILS (Refer to list above for item #)		**APPROVED BY:**			
		QA AEM		**QC AEM**	
ITEM		**Y**	**N**	**Y**	**N**
2	Presence of water at the bottom of excavation. Fill placement from upstream to downstream to push the water out before placing the material. Remove and replace the fill by appropriate material when it becomes oversaturated with water/mud.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES		2020-09-25
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-09-25
AEM QA REPRESENTATIVE	PATRICE GAGNON		2020-09-25
OWNER'S REPRESENTATIVE	PATRICE GAGNON		

Figure 1: Foundation approval between 0+205 and 0+234

FOUNDATION APPROVAL - 0+234 @ 0+205
IVR DIVERSION CHANNEL
CONTRACT # 11-811



KIVALLIQ CONTRACTORS
GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 07-10-2020
CON-FD-356_REV1

AGNICO EAGLE

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-25
DOCUMENT #:	20200925-FDN-03	**TIME:**	17:30
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Patrice Gagnon

APPROVAL FOR :

- ☑ Foundation approval (trench bottom and slopes)
- ☐ Fill placement approval: ____________________
- ☐ Other: ____________________

LOCATION		**PREVIOUS APPROVALS**	
Station	0+235 to 0+262	**Station:**	n/a
Inclination:		**Details:**	
ELEVATION :	☑ varies _________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY: QA AEM		QC AEM		N/A
	Y	**N**	**Y**	**N**	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					
12.					
13.					

DETAILS

(Refer to list above for item #)

		APPROVED BY:			
		QA AEM		QC AEM	
ITEM		**Y**	**N**	**Y**	**N**
2	The bottom of the excavation is composed of ice-rich till. The ice-rich till has been excavated to an average depth of 1.2m below the normal elevation of the bottom of the channel. The excavation could not have been done deeper due to safety reasons. The ice-rich material removed will be replaced by esker.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES		2020-09-25
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE		2020-09-25
AEM QA REPRESENTATIVE	PATRICE GAGNON		2020-09-25
OWNER'S REPRESENTATIVE	PATRICE GAGNON		

AGNICO EAGLE

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-26
DOCUMENT #:	20200926-FDN-04	**TIME:**	11:30
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Patrice Gagnon

APPROVAL FOR :

- ☑ Foundation approval (trench bottom and slopes)
- ☐ Fill placement approval: ______________________________
- ☐ Other: ______________________________

LOCATION		**PREVIOUS APPROVALS**	
Station	0+234 to 0+260	**Station:**	0+205 to 0+234
Inclination:		**Details:**	20200925-FDN-02
ELEVATION :	☑ varies _________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

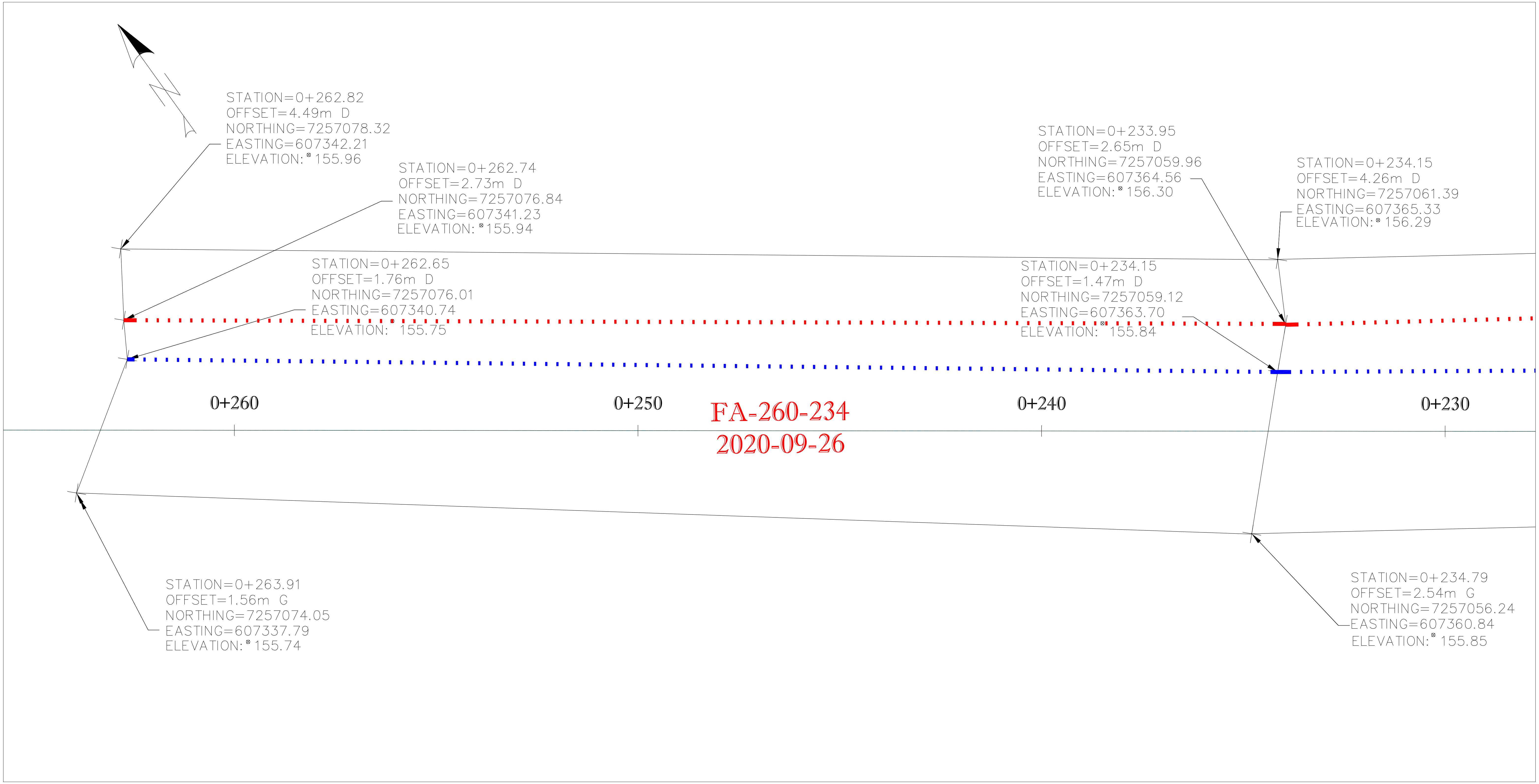
	VERIFICATIONS DONE BY:				
	QA AEM		**QC AEM**		**N/A**
	Y	**N**	**Y**	**N**	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water	✓		✓		
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					
12.					
13.					

DETAILS		**APPROVED BY:**			
(Refer to list above for item #)		**QA AEM**		**QC AEM**	
ITEM		**Y**	**N**	**Y**	**N**
2	Ice-rich material removed over an average depth of 1.2m and replaced by esker. Refer to 20200925-FDN-03 for details.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES	[signature]	2020-09-26
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-09-26
AEM QA REPRESENTATIVE	PATRICE GAGNON		2020-09-26
OWNER'S REPRESENTATIVE	PATRICE GAGNON		

Figure 1: Foundation approval between 0+234 and 0+260

FOUNDATION APPROVAL - 0+260 @ 0+234
IVR DIVERSION CHANNEL
CONTRACT # 11-811



KIVALLIQ CONTRACTORS
GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 07-10-2020
CON-FD-357_REV1

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-26
DOCUMENT #:	20200926-FDN-05	**TIME:**	17:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Patrice Gagnon

APPROVAL FOR :

☑ Foundation approval (trench bottom and slopes)

☐ Fill placement approval: ______________________________

☐ Other: ______________________________

LOCATION		**PREVIOUS APPROVALS**	
Station	0+260 to 0+284.5	**Station:**	0+234 to 0+260
Inclination:		**Details:**	20200926-FDN-04
ELEVATION :	☑ varies ________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

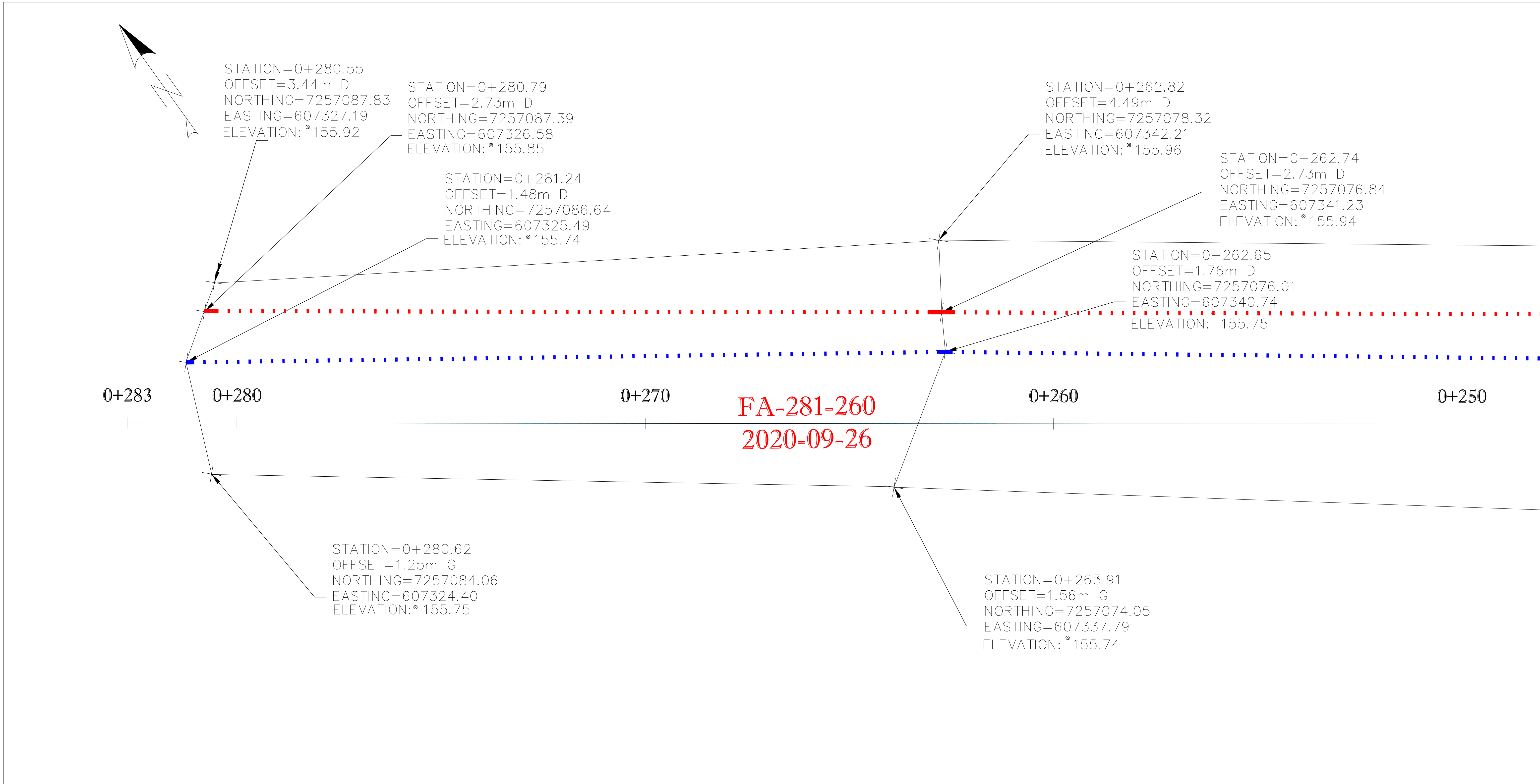
	VERIFICATIONS DONE BY: QA AEM Y	QA AEM N	QC AEM Y	QC AEM N	N/A
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					
12.					
13.					

DETAILS		**APPROVED BY:**			
(Refer to list above for item #)		**QA AEM**		**QC AEM**	
ITEM		**Y**	**N**	**Y**	**N**
2	Presence of water at the bottom of excavation. Fill placement from upstream to downstream to push the water out before placing the material. Remove and replace the fill by appropriate material when it becomes oversaturated with water/mud.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES	[signature]	2020-09-26
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-09-26
AEM QA REPRESENTATIVE	PATRICE GAGNON		2020-09-26
OWNER'S REPRESENTATIVE	PATRICE GAGNON		

Figure 1: Foundation approval between 0+260 and 0+285

FOUNDATION APPROVAL - 0+281 @ 0+260
IVR DIVERSION CHANNEL
CONTRACT # 11-811



KIVALLIQ CONTRACTORS
GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 07-10-2020
CON-FD-358_REV1

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-27
DOCUMENT #:	20200927-FDN-06	**TIME:**	15:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Patrice Gagnon

APPROVAL FOR :

- ☑ Foundation approval (trench bottom and slopes)
- ☐ Fill placement approval: ____________________
- ☐ Other: ____________________

LOCATION		**PREVIOUS APPROVALS**	
Station	0+090 to 0+125	**Station:**	n/a
Inclination:		**Details:**	
ELEVATION :	☑ varies ________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY:				
	QA AEM		QC AEM		N/A
	Y	N	Y	N	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					
12.					
13.					

DETAILS

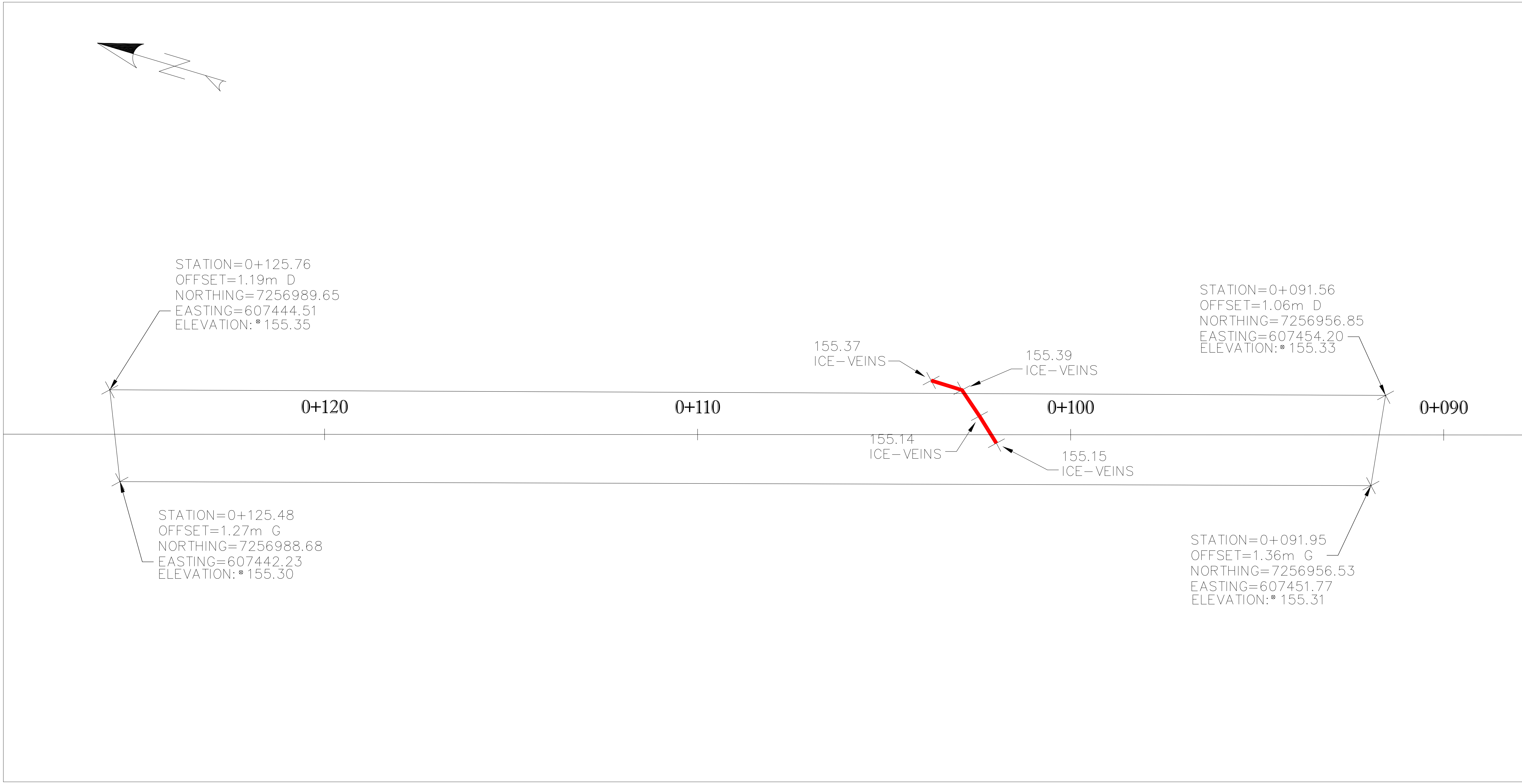
(Refer to list above for item #)

		APPROVED BY:			
		QA AEM		QC AEM	
ITEM		Y	N	Y	N
2	The bottom of the excavation is composed of ice-rich till. The ice-rich till has been excavated to an average depth of 1.1m below the normal elevation of the bottom of the channel. The excavation could not have been done deeper due to safety reasons. The ice-rich material removed will be replaced by esker.	✓		✓	

APPROVED BY:	NAME	SIGNATURE	DATE
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES	[signature]	2020-09-27
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-09-27
AEM QA REPRESENTATIVE	PATRICE GAGNON		2020-09-27
OWNER'S REPRESENTATIVE	PATRICE GAGNON		

Figure 1: Ice removal approval between 0+090 and 0+125

ICE VEINS APPROVAL - 0+125 @ 0+090
IVR DIVERSION CHANNEL
CONTRACT # 11-811



KIVALLIQ CONTRACTORS
GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 08-10-2020
CON-FD-364_REV1

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-28
DOCUMENT #:	20200928-FDN-07	**TIME:**	8:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Patrice Gagnon

APPROVAL FOR :

- ☑ Foundation approval (trench bottom and slopes)
- ☐ Fill placement approval: ____________________
- ☐ Other: ____________________

LOCATION		**PREVIOUS APPROVALS**	
Station	0+090 to 0+149	**Station:**	0+149 to 0+205
Inclination:		**Details:**	20200924-FDN-01
ELEVATION :	☑ varies _________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY:				
	QA AEM		**QC AEM**		**N/A**
	Y	**N**	**Y**	**N**	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water	✓		✓		
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					
12.					
13.					

DETAILS		**APPROVED BY:**			
(Refer to list above for item #)		**QA AEM**		**QC AEM**	
ITEM		**Y**	**N**	**Y**	**N**
2	Ice-rich material removed over an average depth of 1.1m and replaced by esker between 0+090 and 0+125. Refer to 20200927-FDN-06 for details.	✓		✓	

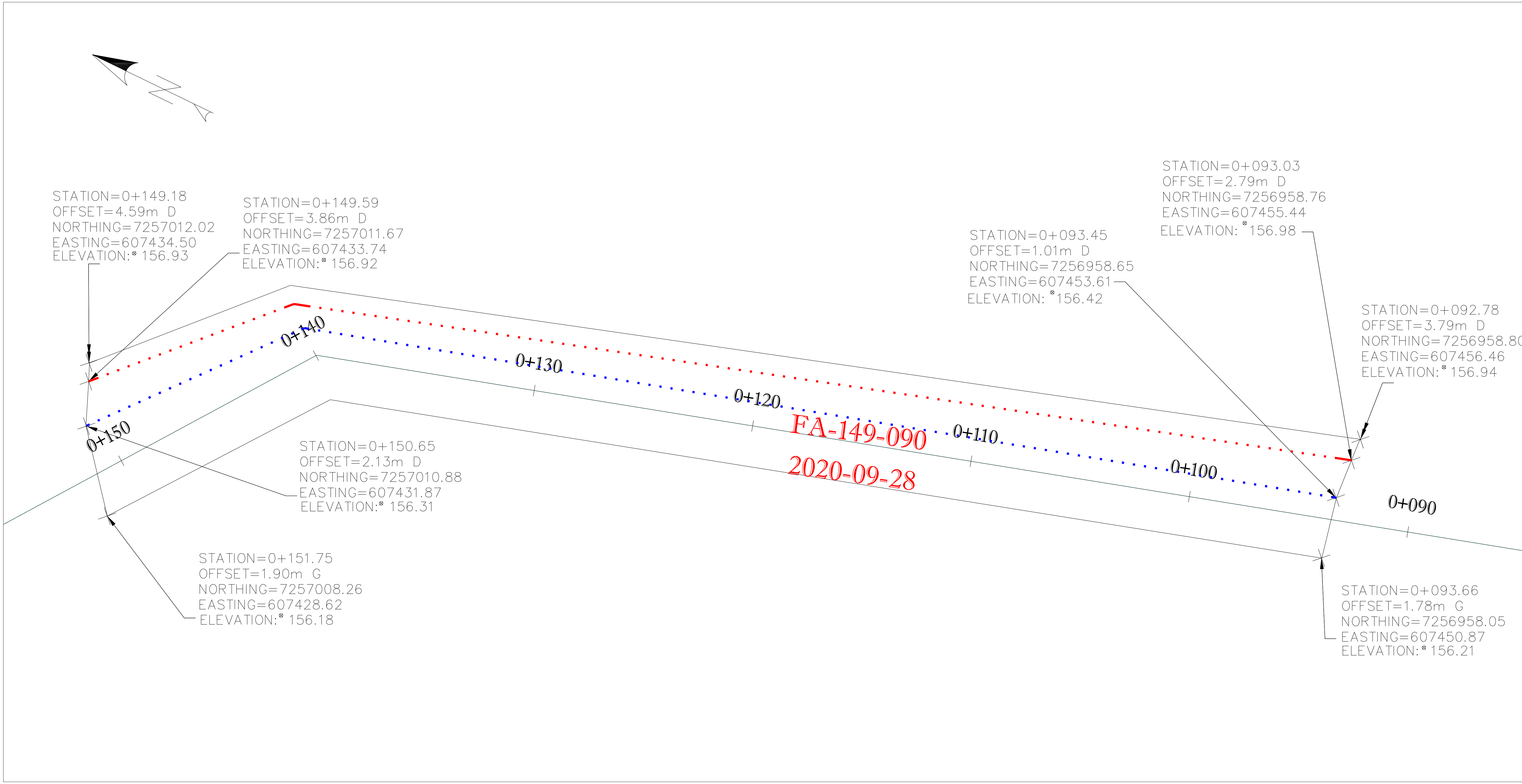
APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES	[signature]	2020-09-28
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-09-28
AEM QA REPRESENTATIVE	PATRICE GAGNON		2020-09-28
OWNER'S REPRESENTATIVE	PATRICE GAGNON		

Figure 1: Foundation approval between 0+138 and 0+149

Figure 2: Foundation approval between 0+090 and 0+140

Figure 3: Foundation approval, different point of view

FOUNDATION APPROVAL - 0+149 @ 0+090
IVR DIVERSION CHANNEL
CONTRACT # 11-811



KIVALLIQ CONTRACTORS GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 07-10-2020
CON-FD-354_REV1

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-28
DOCUMENT #:	20200928-FDN-08	**TIME:**	8:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Patrice Gagnon

APPROVAL FOR :

- ☑ Foundation approval (trench bottom and slopes)
- ☐ Fill placement approval: ______________________________
- ☐ Other: ______________________________

LOCATION		**PREVIOUS APPROVALS**	
Station	0+029 to 0+070	**Station:**	n/a
Inclination:		**Details:**	
ELEVATION :	☑ varies _________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

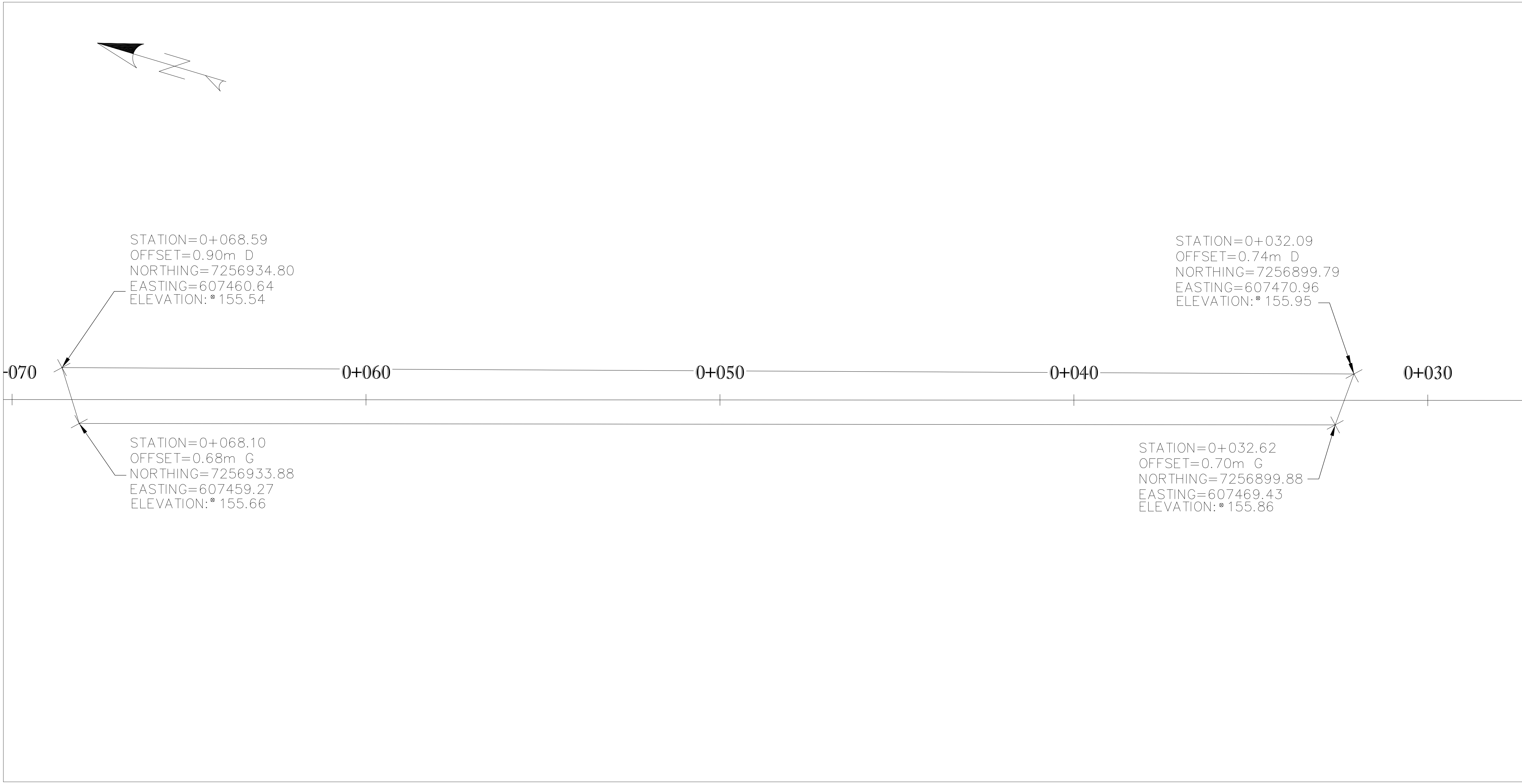
	VERIFICATIONS DONE BY:				
	QA AEM		**QC AEM**		**N/A**
	Y	**N**	**Y**	**N**	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					
12.					
13.					

DETAILS (Refer to list above for item #)		APPROVED BY:			
		QA AEM		QC AEM	
ITEM		**Y**	**N**	**Y**	**N**
2	The bottom of the excavation is composed of ice-rich till. The ice-rich till has been excavated to an average depth of 1.2m below the normal elevation of the bottom of the channel. The excavation could not have been done deeper due to safety reasons. The ice-rich material removed will be replaced by esker.	✓		✓	

APPROVED BY:	NAME	SIGNATURE	DATE
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES	[illegible]	2020-09-28
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-09-28
AEM QA REPRESENTATIVE	PATRICE GAGNON		2020-09-28
OWNER'S REPRESENTATIVE	PATRICE GAGNON		

Figure 1: Ice removal approval between 0+029 and 0+070

ICE VEINS APPROVAL - 0+070 @ 0+030
IVR DIVERSION CHANNEL
CONTRACT # 11-811



C:\Users\arpenteur\Dropbox (Groupe Gilbert)_arpentage meadowbank\02-E - OFFICIAL DRAWING\11-811 - AMQ DIKES\CON-FD (AS BUILT)\CON-FD-365- IVR CHANNEL ICE VEINS APPROVAL 0+070@0+030_REV1.dwg

KIVALLIQ CONTRACTORS GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 08-10-2020
CON-FD-365_REV1

AGNICO EAGLE

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-29
DOCUMENT #:	20200929-FDN-09	**TIME:**	11:30
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Patrice Gagnon

APPROVAL FOR :

- ☑ Foundation approval (trench bottom and slopes)
- ☐ Fill placement approval: ______________________________
- ☐ Other: ______________________________

LOCATION		**PREVIOUS APPROVALS**	
Station	0+029 to 0+090	**Station:**	0+090 to 0+149
Inclination:		**Details:**	20200928-FDN-07
ELEVATION :	☑ varies _________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY:				
	QA AEM		**QC AEM**		**N/A**
	Y	**N**	**Y**	**N**	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					
12.					
13.					

DETAILS (Refer to list above for item #)		**APPROVED BY:** QA AEM		QC AEM	
ITEM		**Y**	**N**	**Y**	**N**
2	Slight presence of snow on the foundation between 0+029 and 0+070. The amount is negligible and was removed progressively during fine filter placement.	✓		✓	
2	Frozen material has been observed at station 0+073. The situation is localized only near the road on a small section. The frozen material was removed such that the bottom of the excavation is at the appropriate elevation, but no excess excavation was requested. From the results of the material testing done on frozen material of this section, the material is not ice-rich. Visual inspection also shows less than 10% visible ice.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES	[signature]	2020-09-29
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-09-29
AEM QA REPRESENTATIVE	PATRICE GAGNON		2020-09-29
OWNER'S REPRESENTATIVE	PATRICE GAGNON		

AGNICO EAGLE

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-30
DOCUMENT #:	20200930-FDN-10	**TIME:**	8:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Laurier Collette

APPROVAL FOR :

- ☑ Foundation approval (trench bottom and slopes)
- ☐ Fill placement approval: ____________________
- ☐ Other: ____________________

LOCATION		**PREVIOUS APPROVALS**	
Station	0-015 to 0+029	**Station:**	0+029 to 0+090
Inclination:		**Details:**	20200929-FDN-09
ELEVATION :	☑ varies _________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY: QA AEM Y	QA AEM N	QC AEM Y	QC AEM N	N/A
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					
12.					
13.					

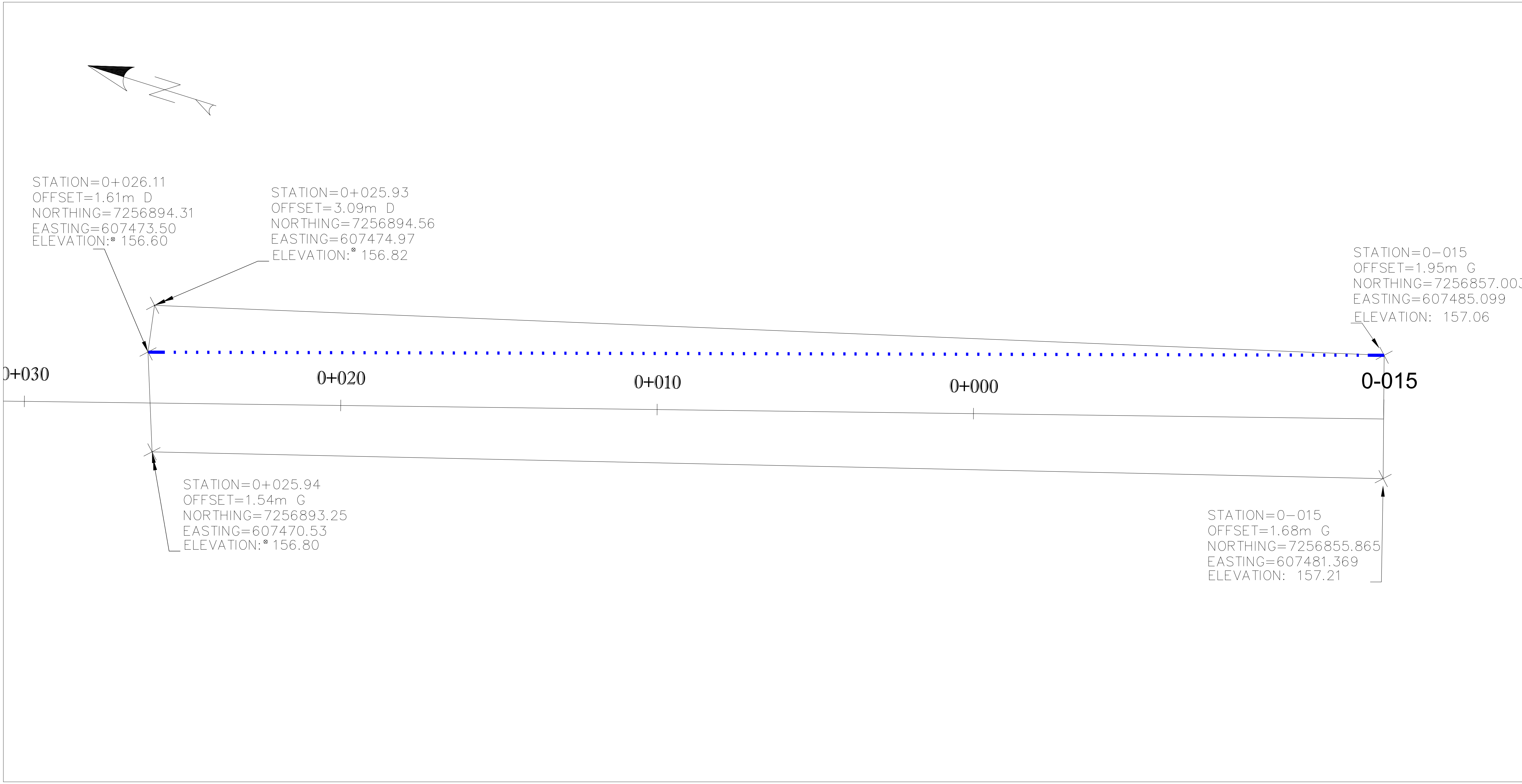
DETAILS (Refer to list above for item #)		**APPROVED BY:** QA AEM		QC AEM	
ITEM		**Y**	**N**	**Y**	**N**
2	Presence of water at the bottom of excavation. Fill placement from upstream to downstream to push the water out before placing the material. Remove and replace the fill by appropriate material when it becomes oversaturated with water/mud.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES		2020-09-30
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-09-30
AEM QA REPRESENTATIVE	LAURIER COLLETTE		2020-09-30
OWNER'S REPRESENTATIVE	LAURIER COLLETTE		

Figure 1: Foundation approval between 0-010 and 0+029

Figure 2: Approval between 0-015 and 0-010

FOUNDATION APPROVAL - 0+026 @ 0-015
IVR DIVERSION CHANNEL
CONTRACT # 11-811



C:\Users\arpenteur\Dropbox (Groupe Gilbert)_arpentage meadowbank\02-E - OFFICIAL DRAWING\11-811 - AMQ DIKES\CON-FD (AS BUILT)\CON-FD-352- IVR CHANNEL FOUNDATION APPROVAL 0-015@0+025.dwg

KIVALLIQ CONTRACTORS GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 07-10-2020
CON-FD-352_REV1

APPROVAL FORM

AGNICO EAGLE

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-10-02
DOCUMENT #:	20201002-FDN-11	**TIME:**	18:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Laurier Collette

APPROVAL FOR :

- ☑ Foundation approval (trench bottom and slopes)
- ☐ Fill placement approval: ________________
- ☐ Other: ________________

LOCATION		**PREVIOUS APPROVALS**	
Station	0+155 to 0+240	**Station:**	varies
Inclination:		**Details:**	20200924-FDN-01 20200925-FDN-02 20200926-FDN-04
ELEVATION :	☑ varies ________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY:				
	QA AEM		**QC AEM**		**N/A**
	Y	**N**	**Y**	**N**	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					

DETAILS		**APPROVED BY:**			
(Refer to list above for item #)		**QA AEM**		**QC AEM**	
ITEM		**Y**	**N**	**Y**	**N**
2	Presence of water at the bottom of the slope. The remaining part of the slope is free from ice, snow and water.	✓		✓	
3	Slope is well cleaned, rocks over the top of the slope were removed by hand. Non-conforming material like organic material or soaked material has been excavated and replaced by well-compacted fine filter. The locations at which material was removed and replaced by fine filter are from 0+155 to 0+166, 0+195 to 0+205 and 0+230 to 0+240.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES		2020-10-02
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-10-02
AEM QA REPRESENTATIVE	LAURIER COLLETTE		2020-10-02
OWNER'S REPRESENTATIVE	LAURIER COLLETTE		

Figure 1: Approval between 0+155 and 0+165

Figure 2: Approval between 0+165 and 0+230

Figure 3: Approval between 0+230 and 0+240

SLOPE EXCAVATION APPROVAL - 0+240 @ 0+155
IVR DIVERSION CHANNEL
CONTRACT # 11-811

KIVALLIQ CONTRACTORS
GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 07-10-2020
CON-FD-367

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-10-03
DOCUMENT #:	20201003-FDN-12	**TIME:**	8:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Laurier Collette

APPROVAL FOR :

- ☑ Foundation approval (trench bottom and slopes)
- ☐ Fill placement approval: ______________________________
- ☐ Other: ______________________________

LOCATION		**PREVIOUS APPROVALS**	
Station	0+240 to 0+284.5	**Station:**	varies
Inclination:		**Details:**	20200926-FDN-04 20200926-FDN-05 20201002-FDN-11
ELEVATION :	☑ varies ________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY:				
	QA AEM		**QC AEM**		**N/A**
	Y	**N**	**Y**	**N**	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					

DETAILS (Refer to list above for item #)		**APPROVED BY:** QA AEM		QC AEM	
ITEM		**Y**	**N**	**Y**	**N**
2	Presence of water at the bottom of the slope and snow on the foundation. The snow layer thickness on top of the foundation is so small that it can be neglected.	✓		✓	
2	Frozen material was found at 0+250. The sample IVR-EX-17 has been taken to the lab for ice content analysis. The ice content of the sample was less than 30%, but the decision was already taken to leave the material in place because the amount of frozen material found was minimal.	✓		✓	
3	Slope is well cleaned, rocks over the top of the slope were removed by hand.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES	[signature]	2020-10-03
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-10-03
AEM QA REPRESENTATIVE	LAURIER COLLETTE		2020-10-03
OWNER'S REPRESENTATIVE	LAURIER COLLETTE		

AGNICO EAGLE

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-10-03
DOCUMENT #:	20201003-FDN-13	**TIME:**	15:30
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Laurier Collette

APPROVAL FOR :

- ☑ Foundation approval (trench bottom and slopes)
- ☐ Fill placement approval: ____________________
- ☐ Other: ____________________

LOCATION		**PREVIOUS APPROVALS**	
Station	0+090 to 0+155	**Station:**	varies
Inclination:		**Details:**	20200924-FDN-01 20200928-FDN-07 20201002-FDN-11
ELEVATION :	☑ varies ________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY:				
	QA AEM		**QC AEM**		**N/A**
	Y	**N**	**Y**	**N**	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					

DETAILS

(Refer to list above for item #)

		APPROVED BY:			
		QA AEM		QC AEM	
ITEM		**Y**	**N**	**Y**	**N**
2	Presence of water at the bottom of the slope. Water entry from under the road at 0+145. Material has been excavated and replaced by well compacted fined filter. Water was still coming out, but the flow was considerably reduced.	✓		✓	
3	Slope is well cleaned, rocks over the top of the slope were removed by hand. Nonconforming material like oversaturated mud and organic material was identified (Figure 1), removed (Figure 2) and replaced by well compacted fine filter (Figure 3). Material was removed and replaced by fine filter from 0+130 to 0+140 and from 0+145 to 0+150.	✓		✓	

APPROVED BY:	NAME	SIGNATURE	DATE
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES		2020-10-03
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-10-03
AEM QA REPRESENTATIVE	LAURIER COLLETTE		2020-10-03
OWNER'S REPRESENTATIVE	LAURIER COLLETTE		

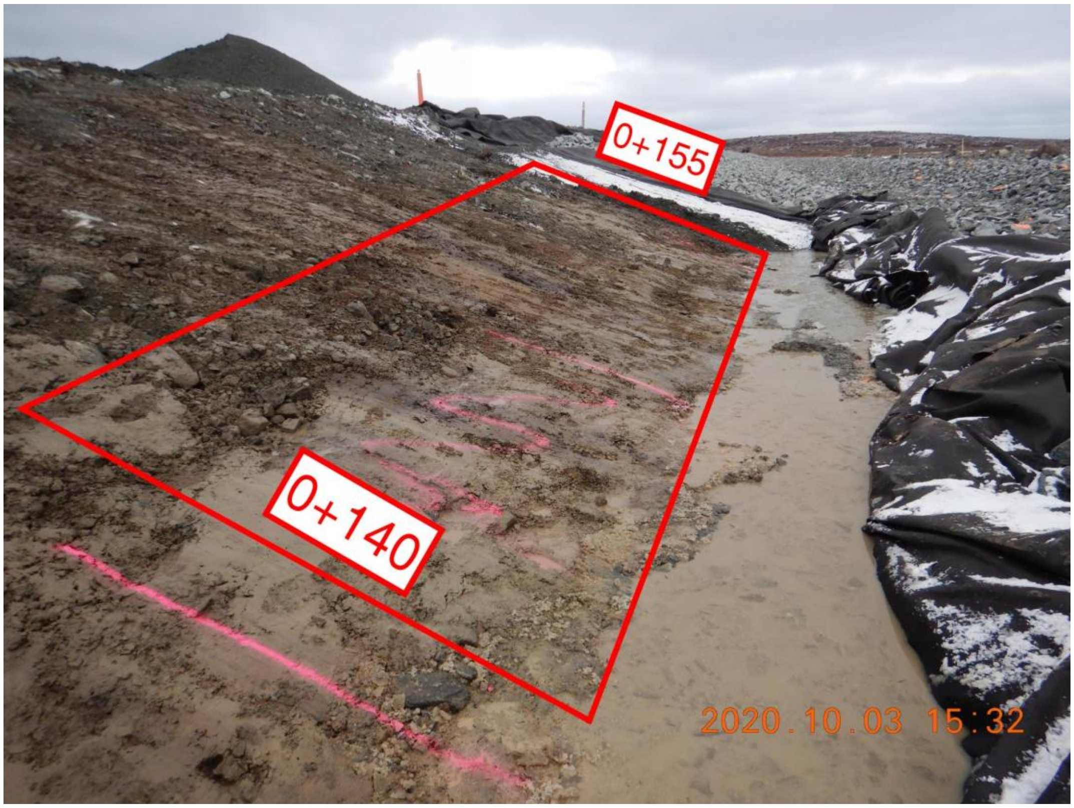


Figure 1: Approval between 0+140 and 0+155

Figure 2: Material excavated near 0+140

Figure 3: Excavated material replaced by well-compacted fine filter

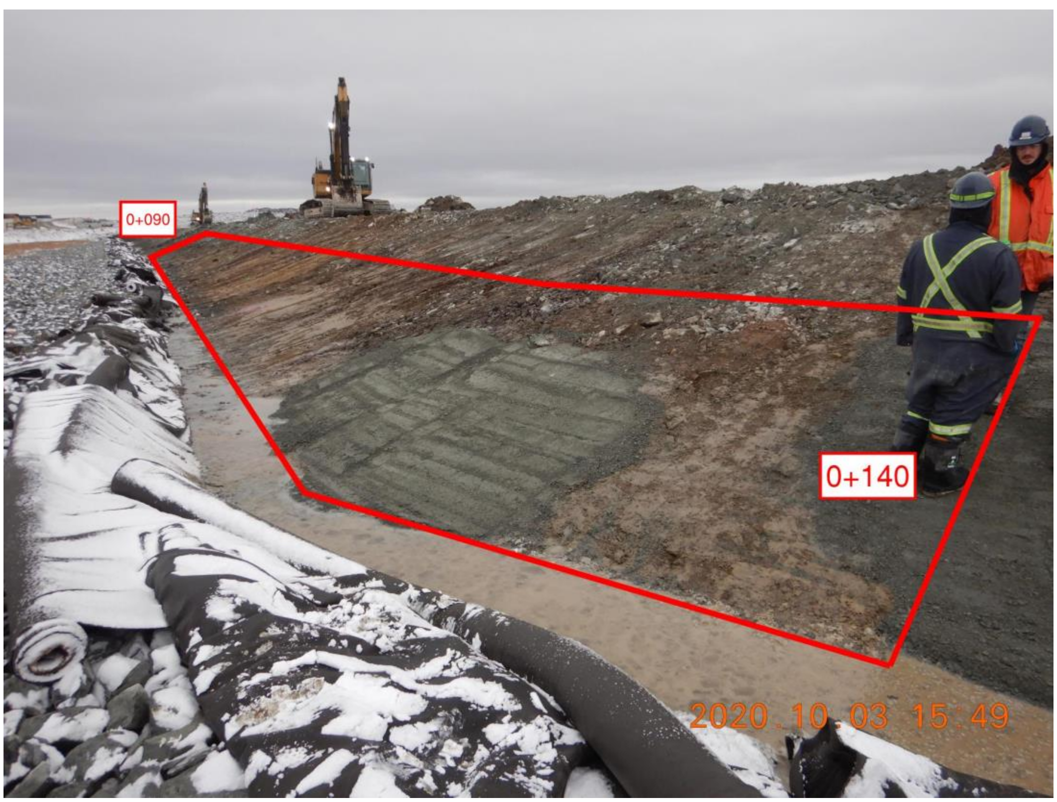


Figure 4: Approval between 0+090 and 0+140

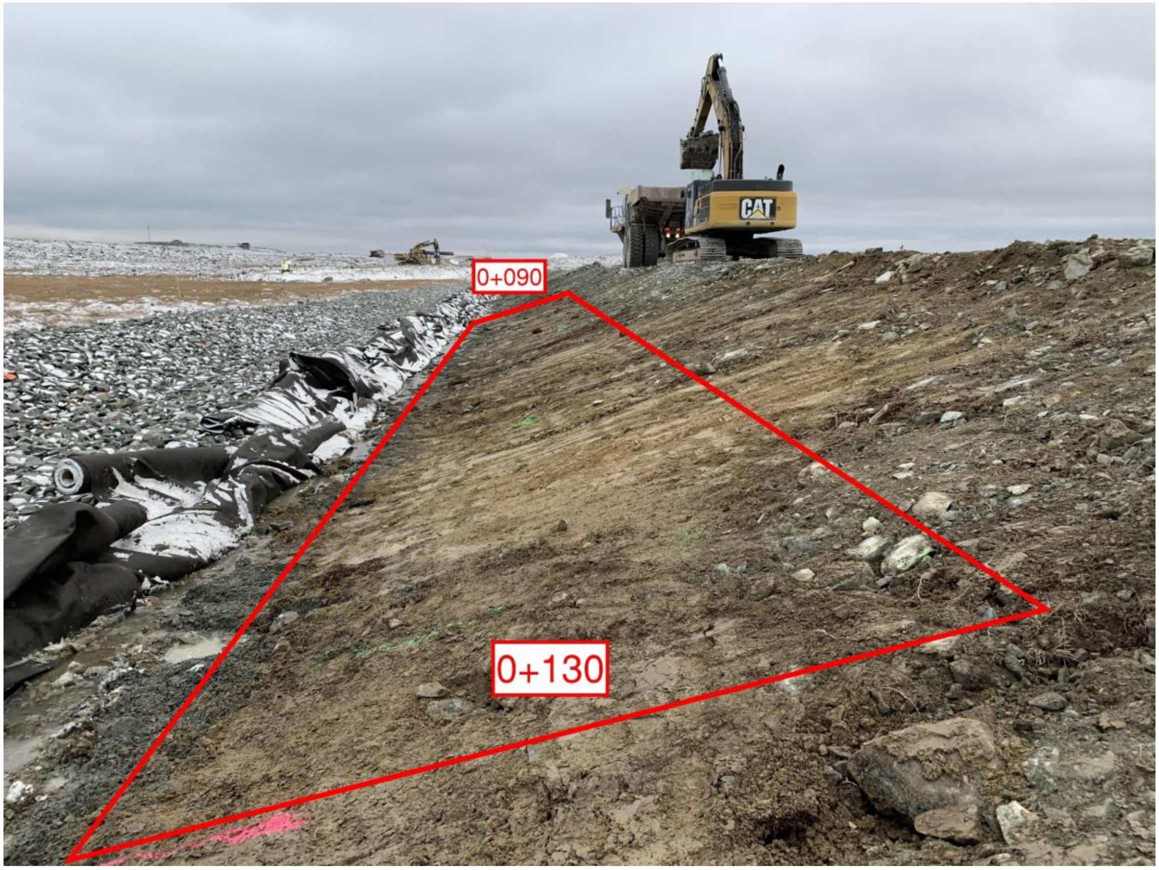
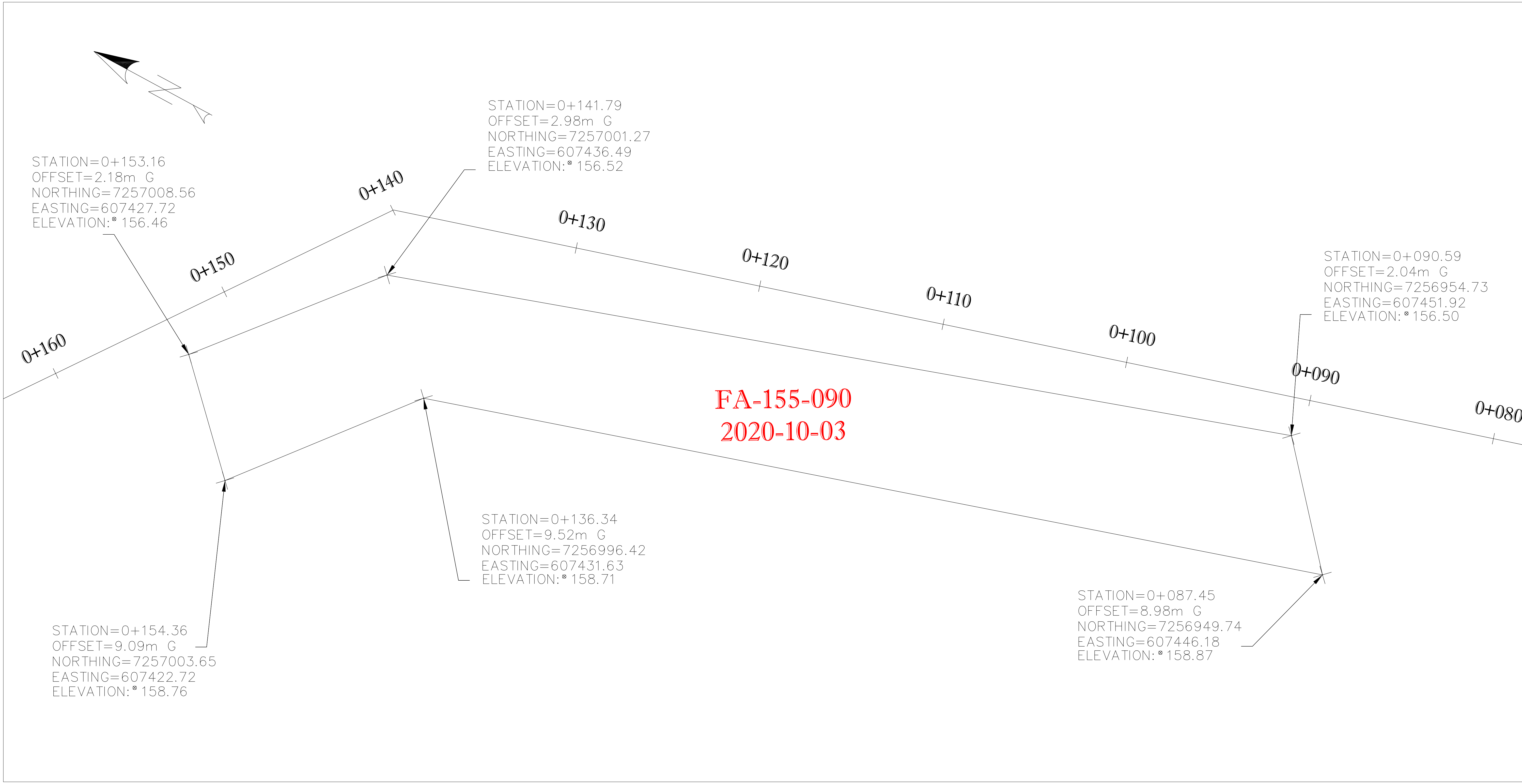


Figure 5: Alternate view of approval between 0+090 and 0+130

SLOPE EXCAVATION APPROVAL - 0+155 @ 0+090
IVR DIVERSION CHANNEL
CONTRACT # 11-811



KIVALLIQ CONTRACTORS
GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 07-10-2020
CON-FD-369

APPROVAL FORM

AGNICO EAGLE

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-10-04
DOCUMENT #:	20201004-FDN-14	**TIME:**	10:30
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Laurier Collette

APPROVAL FOR :

- ☑ Foundation approval (trench bottom and slopes)
- ☐ Fill placement approval: ____________________
- ☐ Other: ____________________

LOCATION		**PREVIOUS APPROVALS**	
Station	0-015 to 0+090	**Station:**	varies
Inclination:		**Details:**	20200929-FDN-09 20200930-FDN-10 20201003-FDN-13
ELEVATION :	☑ varies ________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY: QA AEM Y	QA AEM N	QC AEM Y	QC AEM N	N/A
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					

DETAILS (Refer to list above for item #)		**APPROVED BY:** QA AEM		**APPROVED BY:** QC AEM	
ITEM		**Y**	**N**	**Y**	**N**
2	Presence of water at the bottom of the slope. A pump was placed near 0+010 to remove excess water before fine filter placement. (Figure 5)	✓		✓	
3	Slope is well cleaned, rocks over the top of the slope were removed by hand. Nonconforming material like oversaturated mud and organic material was identified, removed and replaced by well compacted fine filter from 0+010 to 0+040 and from 0+080 to 0+090.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES	[signature]	2020-10-04
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-10-04
AEM QA REPRESENTATIVE	LAURIER COLLETTE		2020-10-04
OWNER'S REPRESENTATIVE	LAURIER COLLETTE		

Figure 1: Approval between 0+080 and 0+090

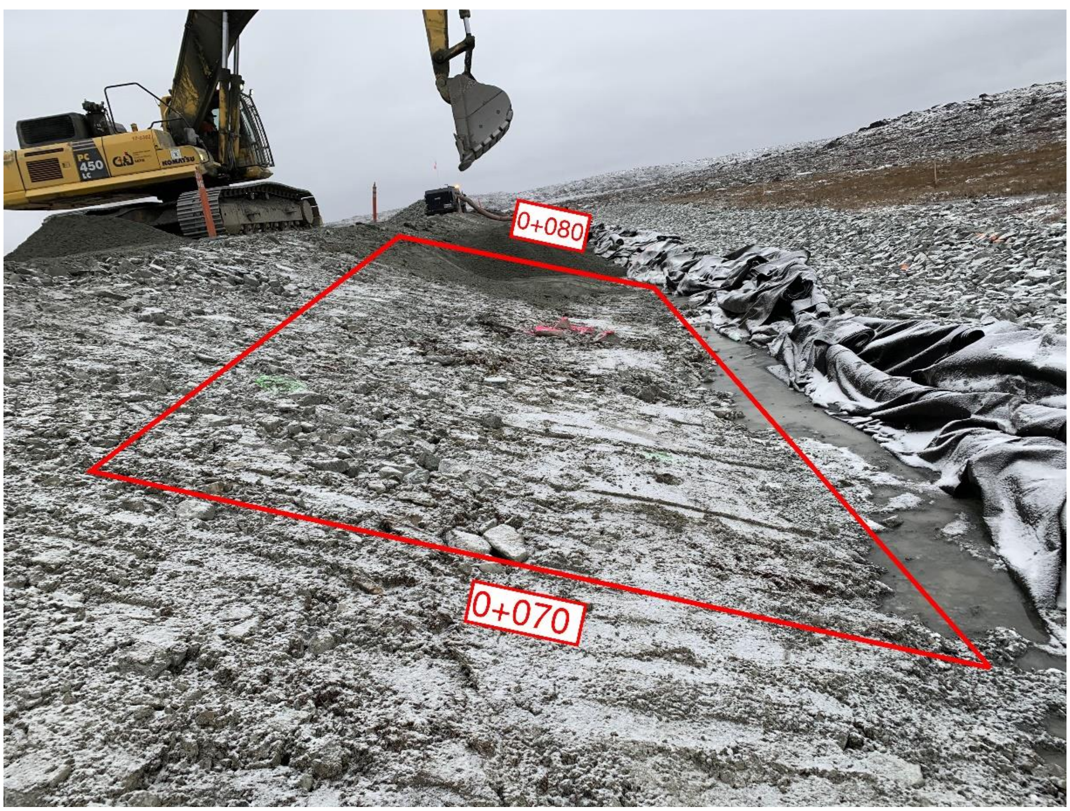


Figure 2: Approval between 0+070 and 0+080

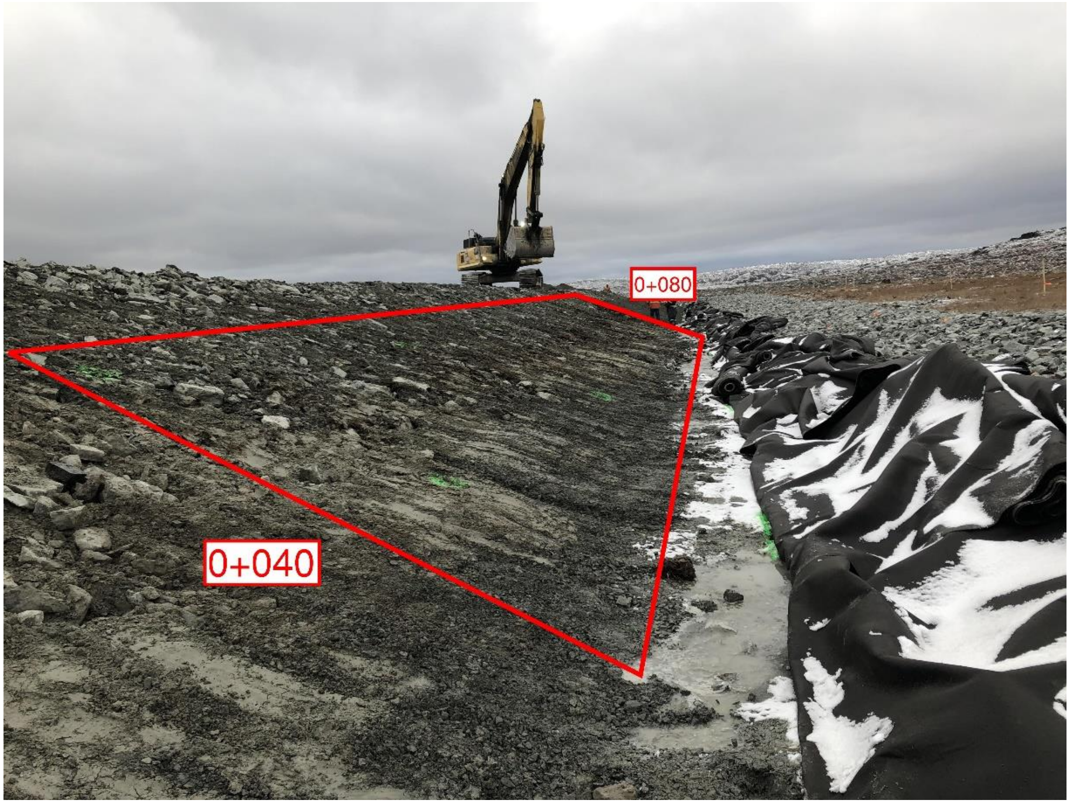


Figure 3: Approval between 0+040 and 0+080

Figure 4: Approval between 0-015 and 0+040

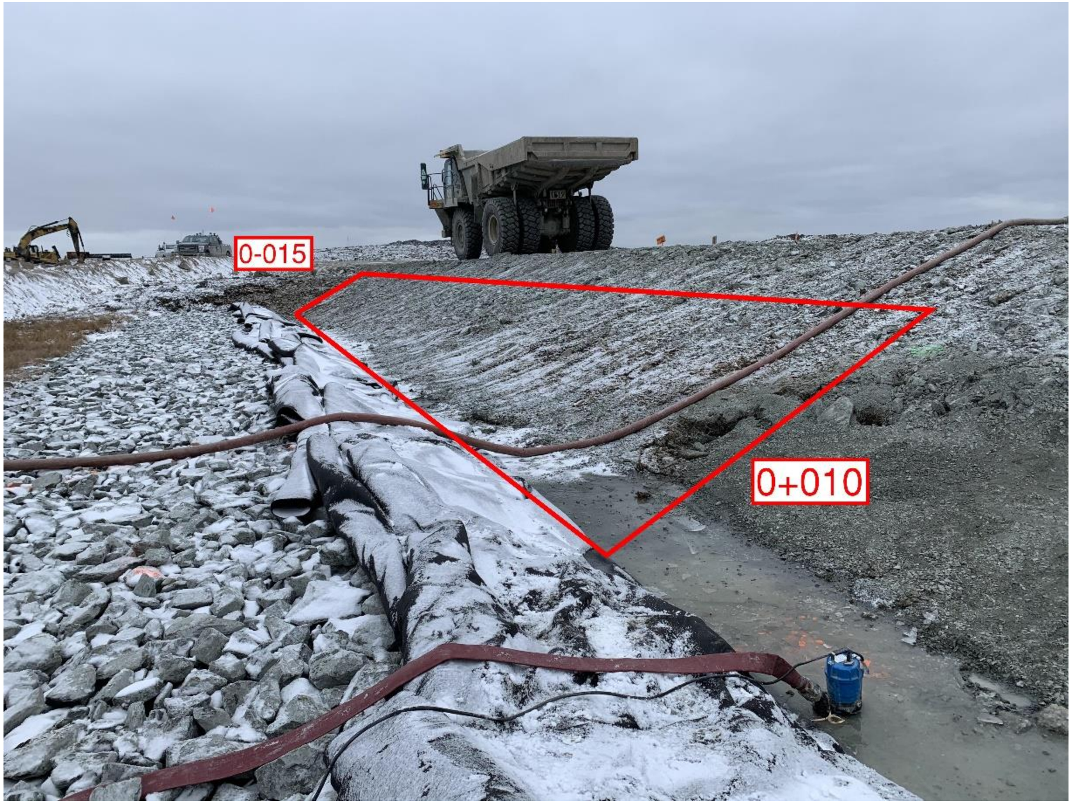
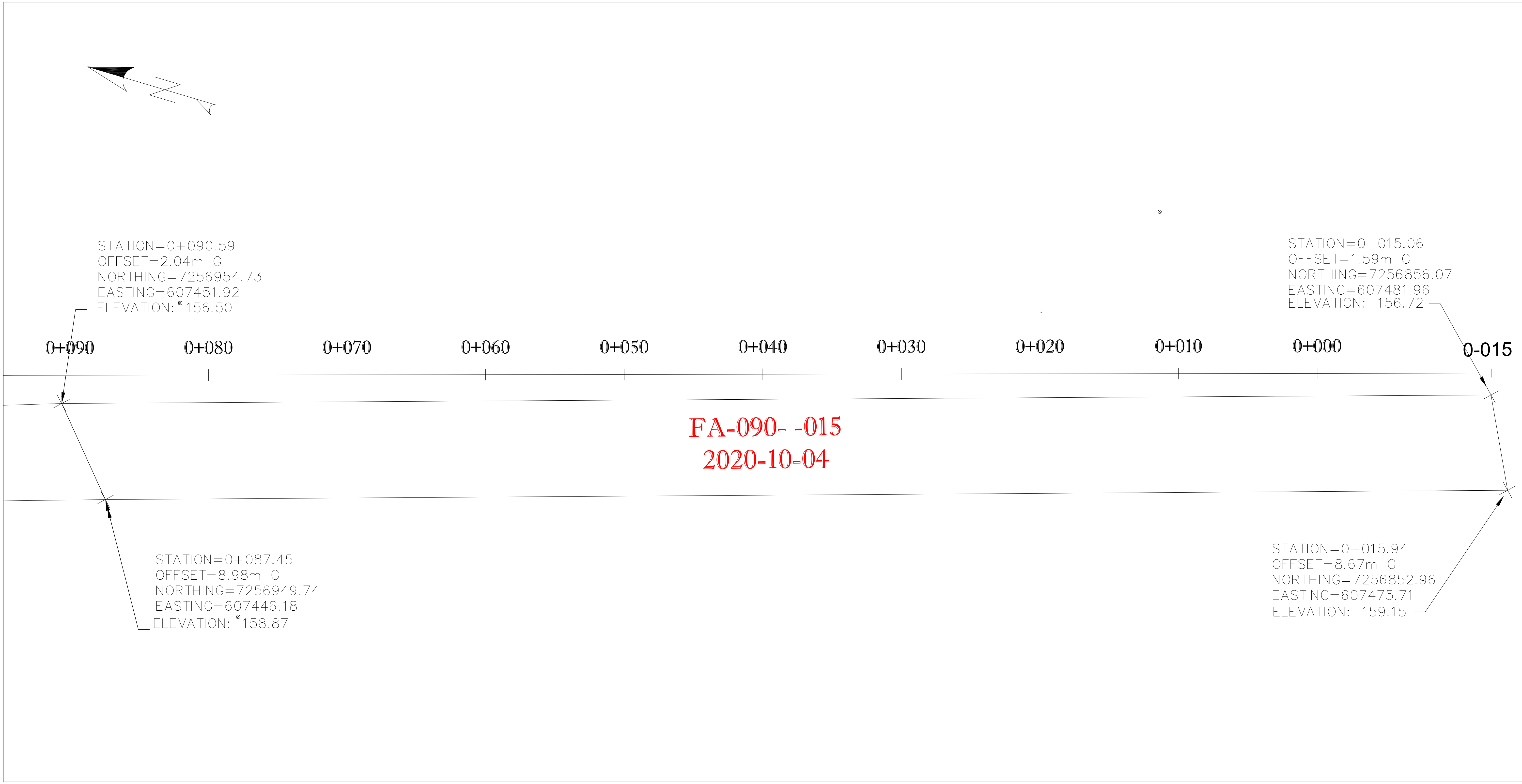


Figure 5: Approval between 0-015 and 0+010

Figure 6: Material removed between 0+010 and 0+030

SLOPE EXCAVATION APPROVAL - 0+090 @ 0-015
IVR DIVERSION CHANNEL
CONTRACT # 11-811



KIVALLIQ CONTRACTORS
GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 07-10-2020
CON-FD-370

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-27
DOCUMENT #:	20200927-GT-01	**TIME:**	15:30
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Patrice Gagnon

APPROVAL FOR :

- ☐ Foundation approval (trench bottom and slopes)
- ☐ Fill placement approval: ______________________
- ☑ Other: Geotextile

LOCATION		**PREVIOUS APPROVALS**	
Station	0+149 to 0+284.5	**Station:**	n/a
Inclination:		**Details:**	
ELEVATION :	☑ varies ________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY: QA AEM Y	QA AEM N	QC AEM Y	QC AEM N	N/A
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8. Overlaps continuous and over 600mm	✓		✓		
9. Free of defects/holes	✓		✓		
10.					
11.					
12.					
13.					

DETAILS

(Refer to list above for item #)

		APPROVED BY:			
		QA AEM		**QC AEM**	
ITEM		**Y**	**N**	**Y**	**N**
2	Presence of water at some locations.	✓		✓	
N/A	2 layers of Novatex V	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES		2020-09-27
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-09-27
AEM QA REPRESENTATIVE	PATRICE GAGNON		2020-09-27
OWNER'S REPRESENTATIVE	PATRICE GAGNON		

Figure 1: Overlaps are conforming to technical requirements

Figure 2: Geotextile between 0+225 and 0+240

Figure 3: Geotextile between 0+190 and 0+220

Figure 4: Global view of the geotextile between 0+149 and 0+285

AGNICO EAGLE

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-27
DOCUMENT #:	20200929-GT-02	**TIME:**	15:30
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Mikaël Turcotte

APPROVAL FOR :

- ☐ Foundation approval (trench bottom and slopes)
- ☐ Fill placement approval: ____________________
- ☑ Other: Geotextile

LOCATION		**PREVIOUS APPROVALS**	
Station	0+032 to 0+149	**Station:**	0+149 to 0+284.5
Inclination:		**Details:**	20200927-GT-01
ELEVATION :	☑ varies ________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY:				
	QA AEM		**QC AEM**		**N/A**
	Y	**N**	**Y**	**N**	
1. Lines and Grades			✓		
2. Free of ice/snow/water				✓	
3. Cleaning of excavation bottom			✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed			✓		
8. Overlaps continuous and over 600mm			✓		
9. Free of defects/holes			✓		
10.					
11.					
12.					
13.					

DETAILS (Refer to list above for item #)		**APPROVED BY:**			
		QA AEM		**QC AEM**	
ITEM		**Y**	**N**	**Y**	**N**
2	Presence of water at some locations.	✓		✓	
N/A	2 layers Novatex V used for most of the approval 2 layers of Mirafi 1100N used near 0+060. Only 3-4 pieces were used for this section.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES	[illegible]	2020-09-29
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-09-29
AEM QA REPRESENTATIVE	LAURIER COLLETTE		2020-09-29
OWNER'S REPRESENTATIVE	LAURIER COLLETTE		

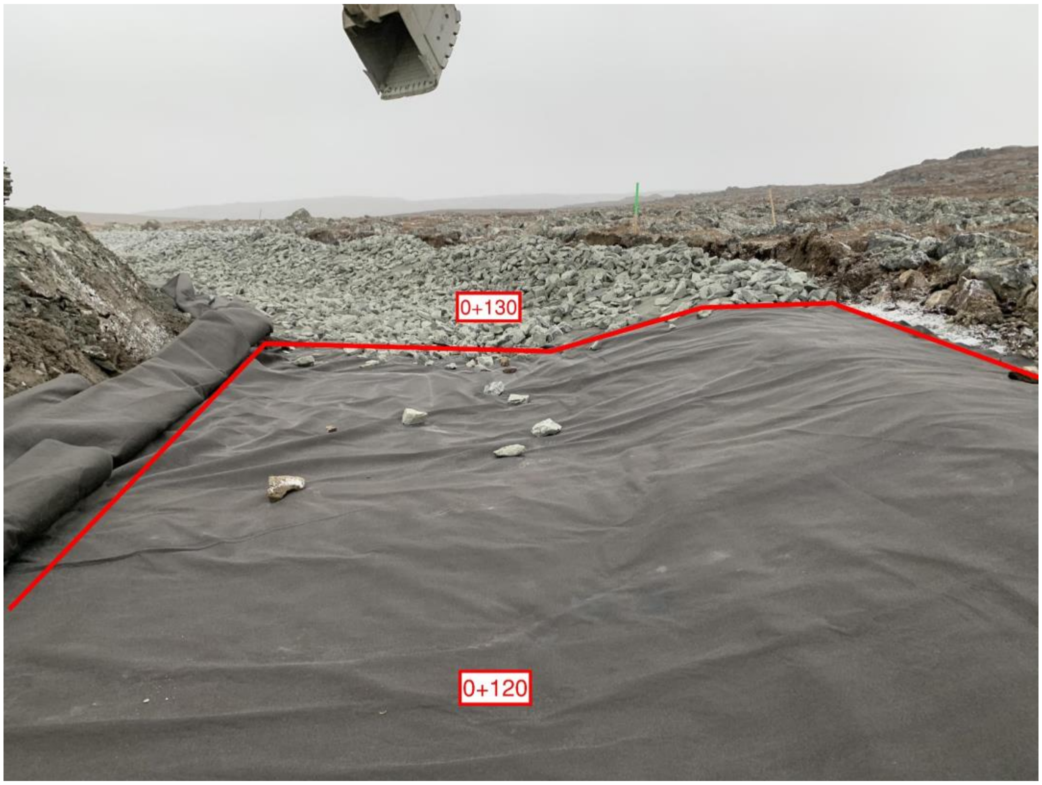


Figure 1: Geotextile between 0+120 and 0+130

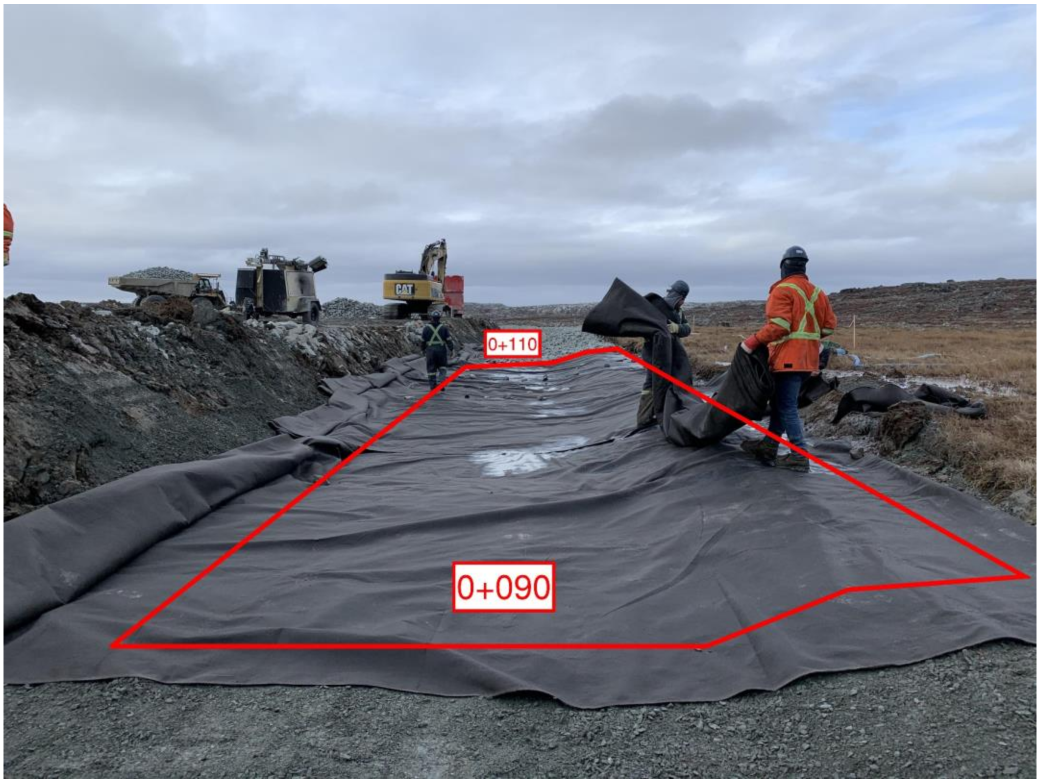


Figure 2: Geotextile between 0+090 and 0+110

Figure 3: Geotextile between 0+032 and 0+070

AGNICO EAGLE

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-30
DOCUMENT #:	20200930-GT-03	**TIME:**	11:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Laurier Collette

APPROVAL FOR :

- ❐ Foundation approval (trench bottom and slopes)
- ❐ Fill placement approval: ______________________
- ☑ Other: Geotextile

LOCATION		**PREVIOUS APPROVALS**	
Station	0-015 to 0+032	**Station:**	0+032 to 0+149
Inclination:		**Details:**	20200929-GT-02
ELEVATION :	☑ varies _________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY:				
	QA AEM		QC AEM		N/A
	Y	N	Y	N	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water	✓		✓		
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8. Overlaps continuous and over 600mm	✓		✓		
9. Free of defects/holes	✓		✓		
10.					
11.					
12.					
13.					

DETAILS (Refer to list above for item #)		**APPROVED BY:** QA AEM		QC AEM	
ITEM		**Y**	**N**	**Y**	**N**
N/A	2 layers of Mirafi 1100N used for this approval.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES	[signature]	2020-09-30
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-09-30
AEM QA REPRESENTATIVE	LAURIER COLLETTE		2020-09-30
OWNER'S REPRESENTATIVE	LAURIER COLLETTE		

Figure 1: Final geotextile between 0-015 and 0+032

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-10-03
DOCUMENT #:	20201003-GT-04	**TIME:**	17:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Laurier Collette

APPROVAL FOR :

- ☐ Foundation approval (trench bottom and slopes)
- ☐ Fill placement approval: ______________________
- ☑ Other: Geotextile

LOCATION		**PREVIOUS APPROVALS**	
Station	0+140 to 0+284.5	**Station:**	Varies
Inclination:		**Details:**	20200927-GT-01 20200929-GT-02
ELEVATION :	☑ varies ________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY:				
	QA AEM		**QC AEM**		**N/A**
	Y	**N**	**Y**	**N**	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8. Overlaps continuous and over 600mm	✓		✓		
9. Free of defects/holes		✓		✓	
10.					
11.					
12.					
13.					

DETAILS		**APPROVED BY:**			
(Refer to list above for item #)		**QA AEM**		**QC AEM**	
ITEM		**Y**	**N**	**Y**	**N**
2	Presence of water at the bottom of the slope. Some geotextile rolls were frozen and needed to be thawed before unrolling.	✓		✓	
9	Holes observed at some locations. All the holes identified are appropriately patched.	✓		✓	
N/A	2 layers of Novatex V				

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES	[signature]	2020-10-03
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-10-03
AEM QA REPRESENTATIVE	LAURIER COLLETTE		2020-10-03
OWNER'S REPRESENTATIVE	LAURIER COLLETTE		

AGNICO EAGLE

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-10-04
DOCUMENT #:	20201004-GT-05	**TIME:**	17:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Laurier Collette

APPROVAL FOR :

- ☐ Foundation approval (trench bottom and slopes)
- ☐ Fill placement approval: ______________________
- ☑ Other: Geotextile

LOCATION		**PREVIOUS APPROVALS**	
Station	0-015 to 0+140	**Station:**	Varies
Inclination:		**Details:**	20200929-GT-02 20200930-GT-03
ELEVATION :	☑ varies __________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY:				
	QA AEM		**QC AEM**		**N/A**
	Y	**N**	**Y**	**N**	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water		✓		✓	
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)					✓
5. Placement (lift thickness, segregation, etc.)					✓
6. Compaction					✓
7. As-built survey completed	✓		✓		
8. Overlaps continuous and over 600mm	✓		✓		
9. Free of defects/holes		✓		✓	
10.					
11.					
12.					
13.					

DETAILS (Refer to list above for item #)		**APPROVED BY:** QA AEM		QC AEM	
ITEM		**Y**	**N**	**Y**	**N**
2	Presence of water at the bottom. Some geotextile rolls were frozen and needed to be thawed before unrolling.	✓		✓	
9	Holes observed at some locations. All the holes identified are appropriately patched.	✓		✓	
N/A	2 layers of novatex V for most of the section between 0+032 and 0+140. 2 layers of Mirafi 1100N from 0-015 to 0+032 and 3-4 pieces used near 0+060.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES	[signature]	2020-10-04
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-10-04
AEM QA REPRESENTATIVE	LAURIER COLLETTE		2020-10-04
OWNER'S REPRESENTATIVE	LAURIER COLLETTE		

Figure 1: Geotextile between 0-015 and 0+020

Figure 2: Geotextile between 0+050 and 0+090

AGNICO EAGLE

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-09-30
DOCUMENT #:	20200930-RR-01	**TIME:**	17:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Laurier Collette

APPROVAL FOR :

- ☐ Foundation approval (trench bottom and slopes)
- ☑ Fill placement approval: Riprap
- ☐ Other:

LOCATION		**PREVIOUS APPROVALS**	
Station	0-015 to 0+284.5	**Station:**	n/a
Inclination:		**Details:**	
ELEVATION :	☑ varies _________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY:				
	QA AEM		QC AEM		N/A
	Y	N	Y	N	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water	✓		✓		
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)		✓		✓	
5. Placement (lift thickness, segregation, etc.)	✓		✓		
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					
12.					
13.					

DETAILS

(Refer to list above for item #)

		APPROVED BY:			
		QA AEM		QC AEM	
ITEM		**Y**	**N**	**Y**	**N**
4	Too much fines at some locations. The situation is not generalized, but before the final approval all the fine material visible will have to be removed by hand.	✓		✓	
5	Placement at both ends of the channel needs to be finalized before final approval.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES		2020-09-30
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-09-30
AEM QA REPRESENTATIVE	LAURIER COLLETTE		2020-09-30
OWNER'S REPRESENTATIVE	LAURIER COLLETTE		

Figure 1: Nonconforming material to be removed before final approval

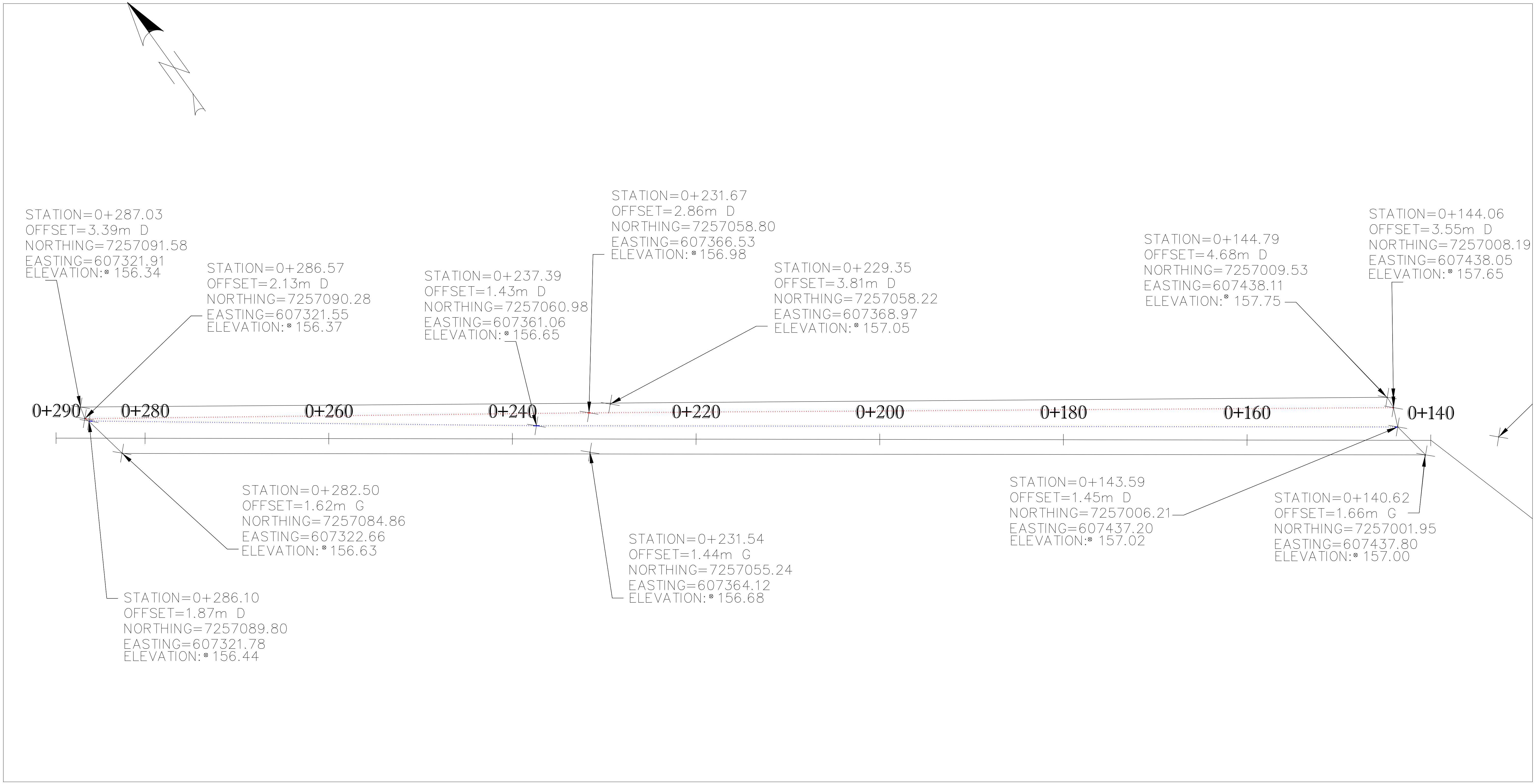
Figure 2: Riprap between 0-015 and 0+140

Figure 3: Riprap between 0-015 and 0+130

Figure 4: Riprap between 0+140 and 0+285

Figure 5: Riprap between 0+140 and 0+285

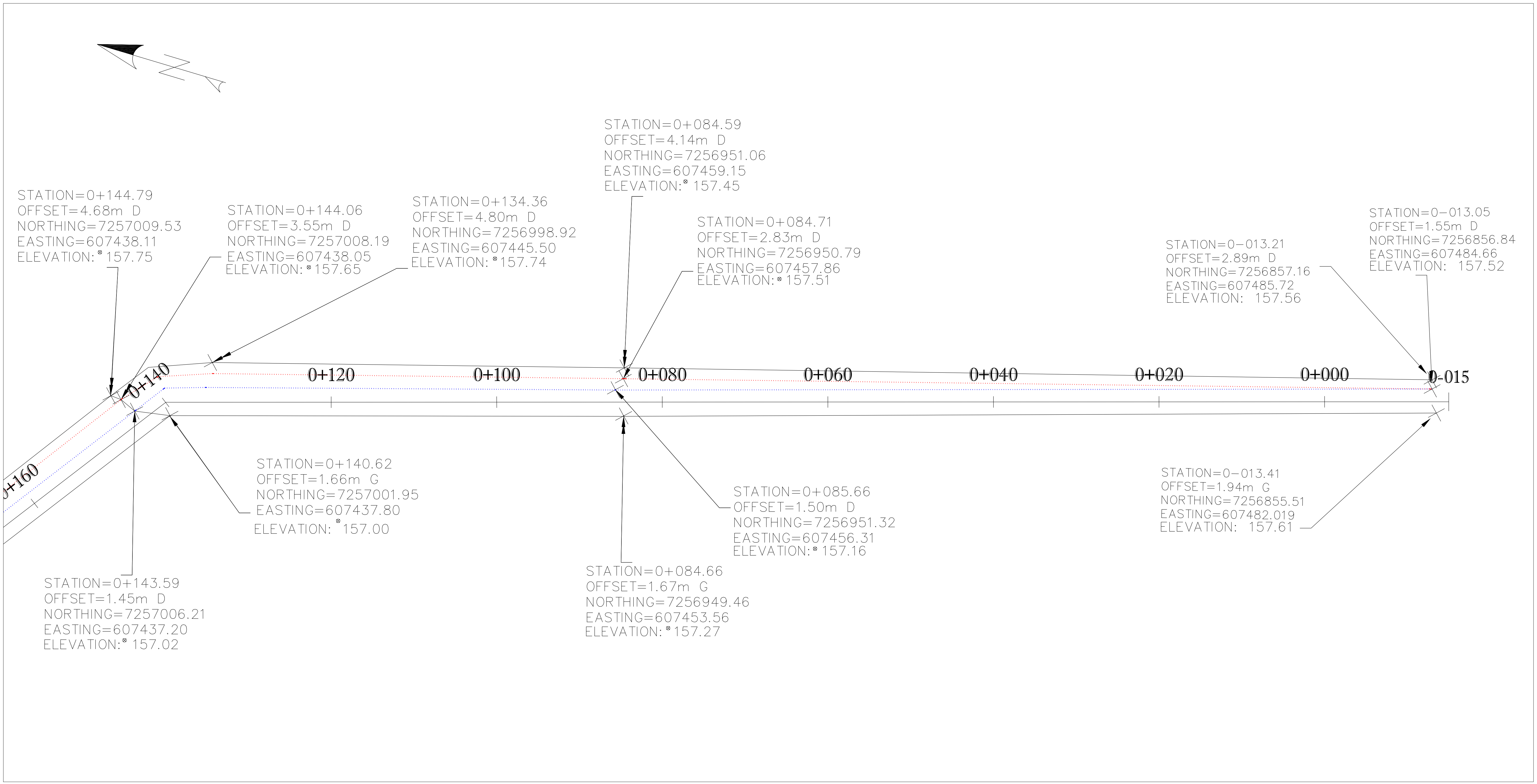
RIP RAP APPROVAL - 0+285 @ 0-140
IVR DIVERSION CHANNEL
CONTRACT # 11-811



KIVALLIQ CONTRACTORS
GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 08-10-2020
CON-FD-366-1_REV1

RIP RAP APPROVAL - 0+140 @ 0--015
IVR DIVERSION CHANNEL
CONTRACT # 11-811



KIVALLIQ CONTRACTORS
GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 08-10-2020
CON-FD-366-2_REV1

AGNICO EAGLE

APPROVAL FORM

PROJECT :	**IVR Diversion Construction**		
PROJECT #:	6127	**DATE:**	2020-10-06
DOCUMENT #:	20201006-RR-02	**TIME:**	14:00
	(YYYYMMDD-DS/NS-01) DS/NS = Day/Night shift		(24 hour clock)

COMPLETED BY (AEM QA REPRESENTATIVE): Laurier Collette

APPROVAL FOR :

- ☐ Foundation approval (trench bottom and slopes)
- ☑ Fill placement approval: Riprap
- ☐ Other:

LOCATION		**PREVIOUS APPROVALS**	
Station	0-015 to 0+290	**Station:**	0-015 to 0+284.5
Inclination:		**Details:**	20200930-RR-01
ELEVATION :	☑ varies _________ m		

COMPLIANCE WITH TECHNICAL SPECIFICATIONS:

(Add additional items if needed)

	VERIFICATIONS DONE BY:				
	QA AEM		**QC AEM**		**N/A**
	Y	**N**	**Y**	**N**	
1. Lines and Grades	✓		✓		
2. Free of ice/snow/water	✓		✓		
3. Cleaning of excavation bottom	✓		✓		
4. Fill gradation (visual)	✓		✓		
5. Placement (lift thickness, segregation, etc.)	✓		✓		
6. Compaction					✓
7. As-built survey completed	✓		✓		
8.					
9.					
10.					
11.					
12.					
13.					

DETAILS		**APPROVED BY:**			
(Refer to list above for item #)		**QA AEM**		**QC AEM**	
ITEM		**Y**	**N**	**Y**	**N**
4	All the sectors with too much fine material were identified and the fine material was removed by hand.	✓		✓	

APPROVED BY:	**NAME**	**SIGNATURE**	**DATE**
CONTRACTOR REPRESENTATIVE	MANUEL BUSSIÈRES	[signature]	2020-10-06
AEM QC REPRESENTATIVE	MIKAËL TURCOTTE	Mikaël Turcotte	2020-10-06
AEM QA REPRESENTATIVE	LAURIER COLLETTE		2020-10-06
OWNER'S REPRESENTATIVE	LAURIER COLLETTE		

Figure 1: Fine material removal by hand

Figure 2: Riprap after fine material removal

Figure 3: Riprap between 0-015 and 0+020

Figure 4: Riprap between 0+020 and 0+140

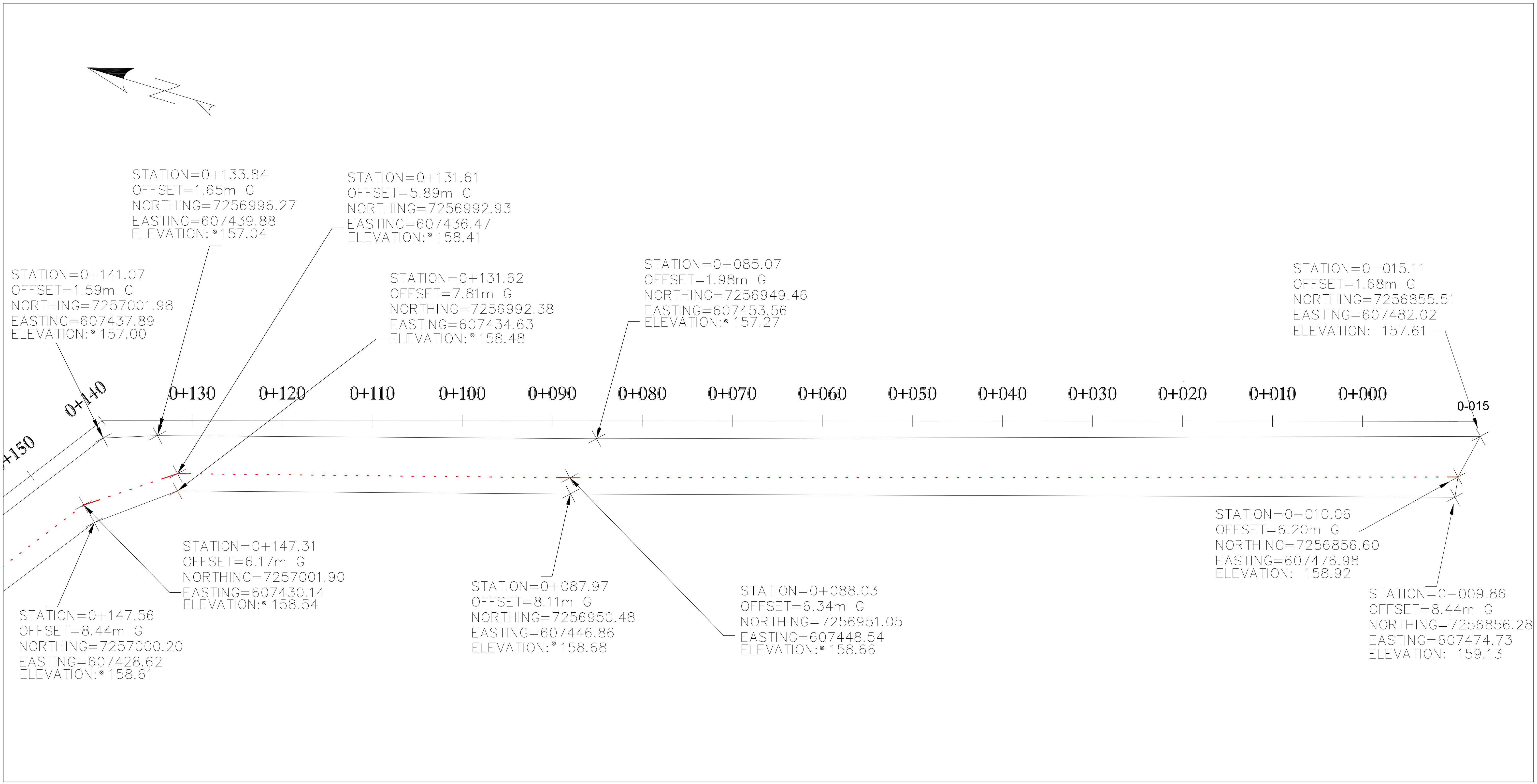
Figure 5: Riprap between 0-015 and 0+100

Figure 6: Riprap between 0+140 and 0+200

Figure 7: Riprap between 0+180 and 0+290

Figure 8: Riprap between 0+140 and 0+290

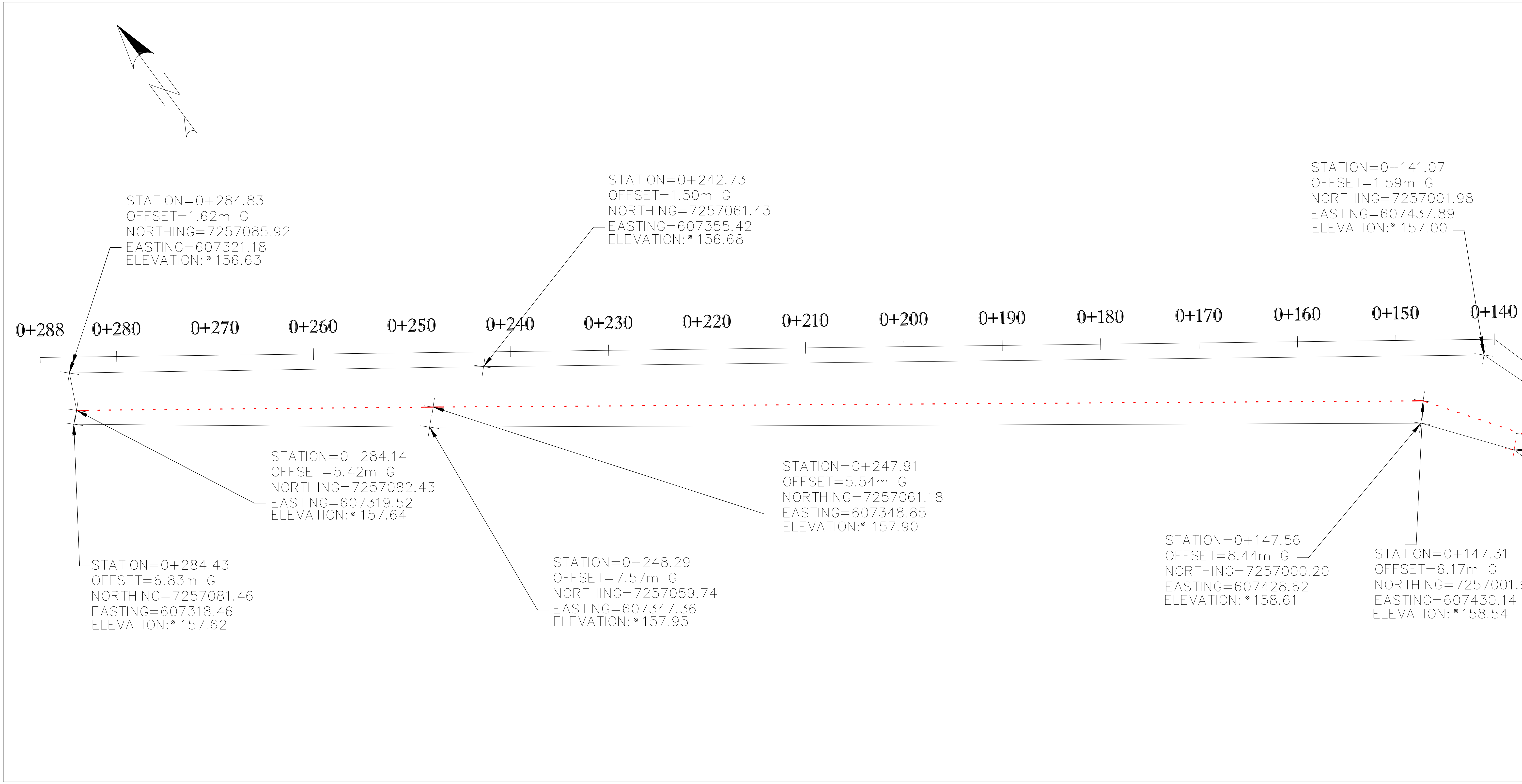
SLOPE RIP RAP APPROVAL - 0+280 @ 0-015
IVR DIVERSION CHANNEL
CONTRACT # 11-811



KIVALLIQ CONTRACTORS
GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 08-10-2020
CON-FD-373-1

SLOPE RIP RAP APPROVAL - 0+280 @ 0-015
IVR DIVERSION CHANNEL
CONTRACT # 11-811



C:\Users\arpenteur\Dropbox (Groupe Gilbert)_arpentage meadowbank\02-E – OFFICIAL DRAWING\11-811 – AMQ DIKES\CON-FD (AS BUILT)\CON-FD-373-2– IVR CHANNEL SLOPE RIP RAP APPROVAL 0+280@0-015.dwg

KIVALLIQ CONTRACTORS GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 08-10-2020
CON-FD-373-2

APPENDIX B5

Laboratory Results

Analysis Report - Soils and Aggregates

Client: AEM

Project N°: 6127

Sample N°: IVR-ES-02

Projet: Derivation channel

Sampling Date: 2020-09-29

Sampled by: Mikael Turcotte (WSP)

Description of Material: Esker

Origin: Load dumped on site

Location of Sampling: Station xx Elevation xx

Proposed Use: Dtermine the gradation of the esker used to backfill the excavated ice-rich material

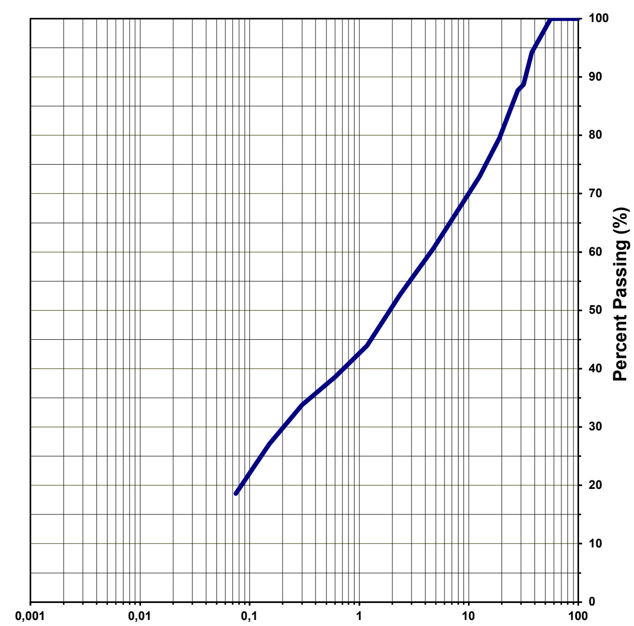
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	94	89	88	80	73	69	61	53	44	39	34	27	18,6
Require-ments	min.																
	max.																

Autres essais	Résultats	Exigences min.	Exigences max.
Wet mass of sample + container (g)	13828		
Dry mass of sample + container (g)	13004		
Mass of container (g)	1394		
Moisture Content (%)	7,10%		

Proctor Test (NQ 2501-255, method)	Results	
Maximum Dry Unit Weight	#REF!	(kg/m³)
Optimum Moisture Content	#REF!	(%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
19	42	39

Remarks

Prepared by: Mikaël Turcotte (WSP)

Verified by:

Date:

Analysis Report - Soils and Aggregates

Client:	**AEM**	**Project N°:**	**6127**
		Sample N°:	IVR-EX-01
Projet:	Derivation channel	**Sampling Date:**	2020-09-21
		Sampled by:	Mikael Turcotte (WSP)
Description of Material:	Sand and gravel		
Origin:	Channel	**Location of Sampling:**	Station 0+232 Elevation xx
Proposed Use:	Gradation used to determine the type of soil at the bottom of the channel (quality control)		

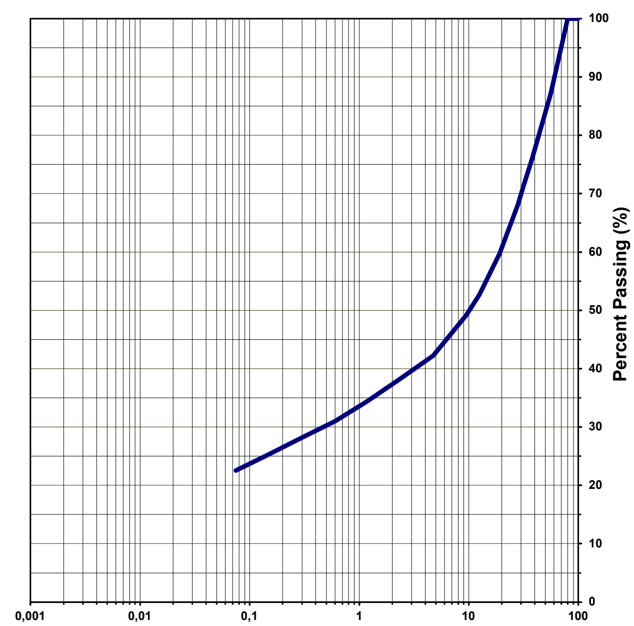
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	87	76	71	68	60	53	49	42	38	34	31	28	25	22,5
Require-ments	min.																
	max.																

Autres essais	Résultats	Exigences min.	Exigences max.
Wet mass of sample + container (g)	17463		
Dry mass of sample + container (g)	16411		
Mass of container (g)	1439		
Moisture Content (%)	7,03%		

Proctor Test (NQ 2501-255, method)	Results	
Maximum Dry Unit Weight	#REF!	(kg/m^3)
Optimum Moisture Content	#REF!	(%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
23	20	58

Remarks **Foundation material is appropriate**

Prepared by: Mikaël Turcotte (WSP) 2020-09-23 Verified by: ____________ Date: ____________

Analysis Report - Soils and Aggregates

Client:	**AEM**	**Project N°:**	**6127**
		Sample N°:	IVR-EX-03-01
Projet:	Derivation channel	**Sampling Date:**	2020-09-21
		Sampled by:	Mikael Turcotte (WSP)
Description of Material:	Silty Till		
Origin:	Channel	**Location of Sampling:**	Station 0+115 Elevation xx
Proposed Use:	Gradation used to determine the type of soil at the bottom of the channel (quality control)		

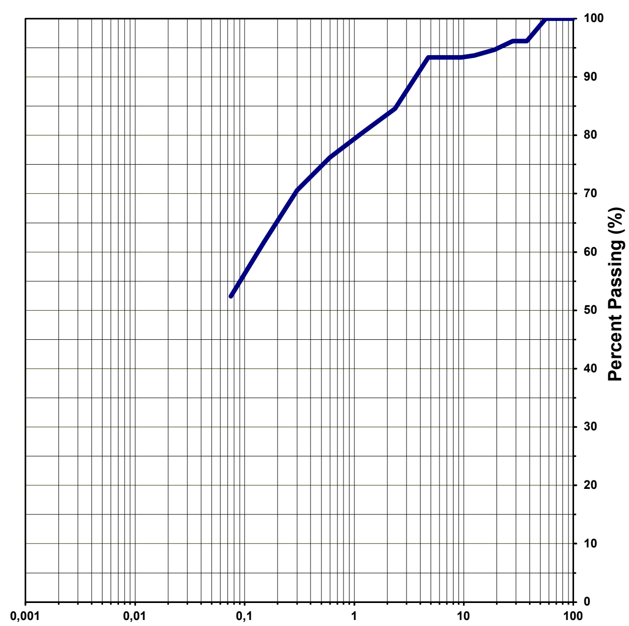
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	96	96	96	95	94	93	93	85	80	76	71	62	52,4
Require-ments	min.																
	max.																

Autres essais	Résultats	Exigences min.	Exigences max.
Wet mass of sample + container (g)	13838		
Dry mass of sample + container (g)	11902		
Mass of container (g)	1403		
Moisture Content (%)	18,44%		

Proctor Test (NQ 2501-255, method)	Results	
Maximum Dry Unit Weight	#REF!	(kg/m³)
Optimum Moisture Content	#REF!	(%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
52	41	7

Remarks **Ice-rich till (not acceptable foundation material)**

Prepared by: Mikaël Turcotte (WSP) 2020-09-23 Verified by: Date:

Analysis Report - Soils and Aggregates

Client:	**AEM**	**Project N°:**	**6127**
		Sample N°:	IVR-EX-03-02
Projet:	Derivation channel	**Sampling Date:**	2020-09-21
		Sampled by:	Mikael Turcotte (WSP)
Description of Material:	Silty Till		
Origin:	Channel	**Location of Sampling:**	Station 0+115 Elevation xx
Proposed Use:	Gradation used to determine the type of soil at the bottom of the channel (quality control)		

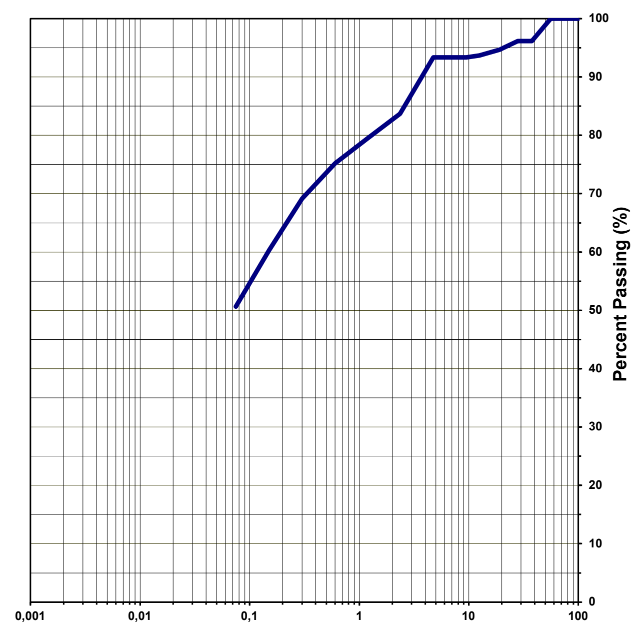
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	96	96	96	95	94	93	93	84	79	75	69	60	50,6
Require-ments	min.																
	max.																

Autres essais	Résultats	Exigences min.	Exigences max.
Wet mass of sample + container (g)	13838		
Dry mass of sample + container (g)	11902		
Mass of container (g)	1403		
Moisture Content (%)	18,44%		

Proctor Test (NQ 2501-255, method)	Results	
Maximum Dry Unit Weight	#REF!	(kg/m^3)
Optimum Moisture Content	#REF!	(%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
51	42	7

Remarks **Ice-rich till (not acceptable foundation material)**

Prepared by: Mikaël Turcotte (WSP) 2020-09-23

Verified by: ____________________ Date: __________

Analysis Report - Soils and Aggregates

Client:	**AEM**	**Project N°:**	**6127**
		Sample N°:	IVR-EX-03-03
Projet:	Derivation channel	**Sampling Date:**	2020-09-21
		Sampled by:	Mikael Turcotte (WSP)
Description of Material:	Silty Till		
Origin:	Channel	**Location of Sampling:**	Station 0+115 Elevation xx
Proposed Use:	Gradation used to determine the type of soil at the bottom of the channel (quality control)		

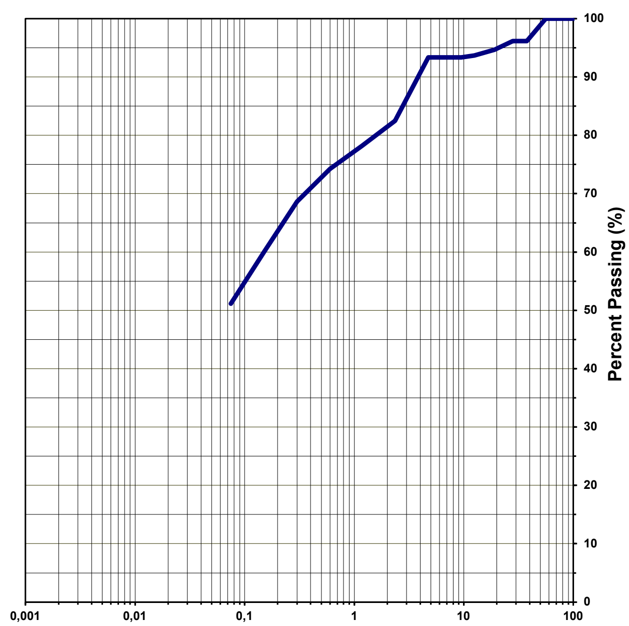
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	96	96	96	95	94	93	93	82	78	74	69	60	51,1
Require-ments	min.																
	max.																

Autres essais	Résultats	Exigences min.	Exigences max.
Wet mass of sample + container (g)	13838		
Dry mass of sample + container (g)	11902		
Mass of container (g)	1403		
Moisture Content (%)	18,44%		

Proctor Test (NQ 2501-255, method)	Results	
Maximum Dry Unit Weight	#REF!	(kg/m³)
Optimum Moisture Content	#REF!	(%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
51	42	7

Remarks **Ice-rich till (not acceptable foundation material)**

Prepared by: Mikaël Turcotte (WSP) 2020-09-23

Verified by: ______________________ Date: __________

Analysis Report - Soils and Aggregates

Client: AEM

Project N°: 6127

Sample N°: IVR-EX-03-04

Projet: Derivation channel

Sampling Date: 2020-09-21

Sampled by: Mikael Turcotte (WSP)

Description of Material: Silty Till

Origin: Channel

Location of Sampling: Station 0+115 Elevation xx

Proposed Use: Gradation used to determine the type of soil at the bottom of the channel (quality control)

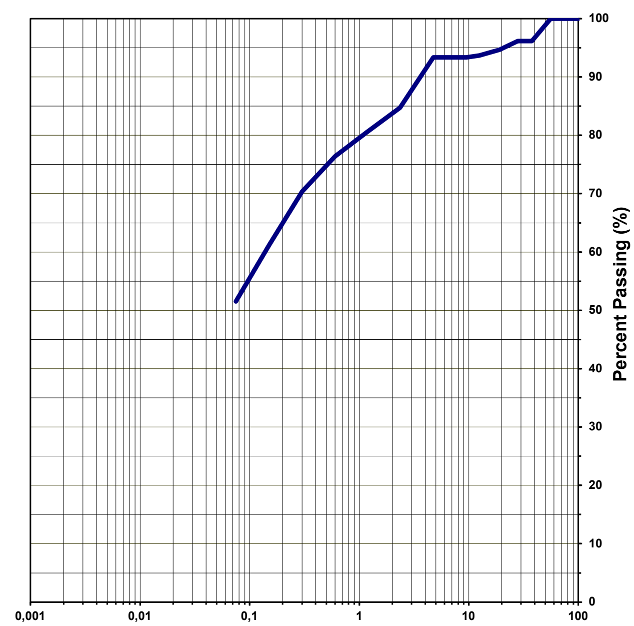
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	96	96	96	95	94	93	93	85	81	76	70	61	51,5
Require-ments	min.																
	max.																

Autres essais	Résultats	Exigences min.	Exigences max.
Wet mass of sample + container (g)	13838		
Dry mass of sample + container (g)	11902		
Mass of container (g)	1403		
Moisture Content (%)	18,44%		

Proctor Test (NQ 2501-255, method)	Results	
Maximum Dry Unit Weight	#REF!	(kg/m³)
Optimum Moisture Content	#REF!	(%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
52	42	7

Remarks **Ice-rich till (not acceptable foundation material)**

Prepared by: Mikaël Turcotte (WSP) 2020-09-23

Verified by: ______________________ Date: __________

Analysis Report - Soils and Aggregates

Client:	**AEM**	**Project N°:**	**6127**
		Sample N°:	IVR-EX-01
Projet:	Derivation channel	**Sampling Date:**	2020-09-23
		Sampled by:	Mikael Turcotte (WSP)
Description of Material:	Permafrost		
Origin:	Channel	**Location of Sampling:**	Station 0+240 Elevation xx
Proposed Use:	Gradation used to determine the type of soil at the bottom of the channel (quality control)		

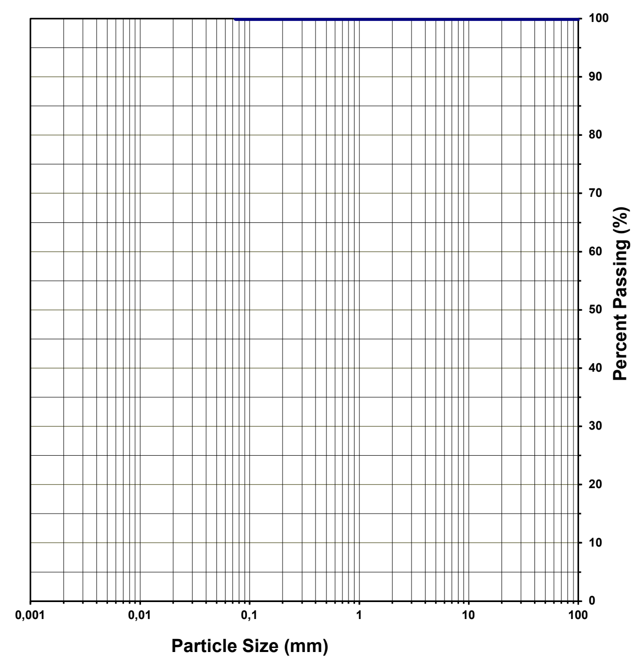
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		**No gradation. Sampled for ice content**															
Require-ments	min.																
	max.																

Autres essais	Résultats	Exigences min.	Exigences max.
Wet mass of sample + container (g)	13709		
Dry mass of sample + container (g)	7890		
Mass of container (g)	1578		
Ice Content (%)	**92,19%**		

Proctor Test (NQ 2501-255, method)	**Results**	
Maximum Dry Unit Weight	**#REF!**	**(kg/m³)**
Optimum Moisture Content	**#REF!**	**(%)**

Sieve Analysis Graph



Clay and silt	Sand	Gravel
0	0	0

Remarks **Ice-rich till (not acceptable foundation material)**

Prepared by: Mikaël Turcotte (WSP) 2020-09-24

Verified by: ____________________

Date: ____________

GHD Consultants Ltée. 4600 boul. de la Côte-Vertu Montréal Qc H4S 1C7

Analysis Report - Soils and Aggregates

Client: AEM

Project N°: 6127

Sample N°: IVR-EX-11

Projet: Derivation channel

Sampling Date: 2020-09-27

Sampled by: Mikael Turcotte (WSP)

Description of Material: Ice-rich sand and silt

Origin: Channel

Location of Sampling: Station 0+090 to 0+125 Elevation 155.3m

Proposed Use: Gradation used to determine the type of soil at the bottom of the channel (quality control)

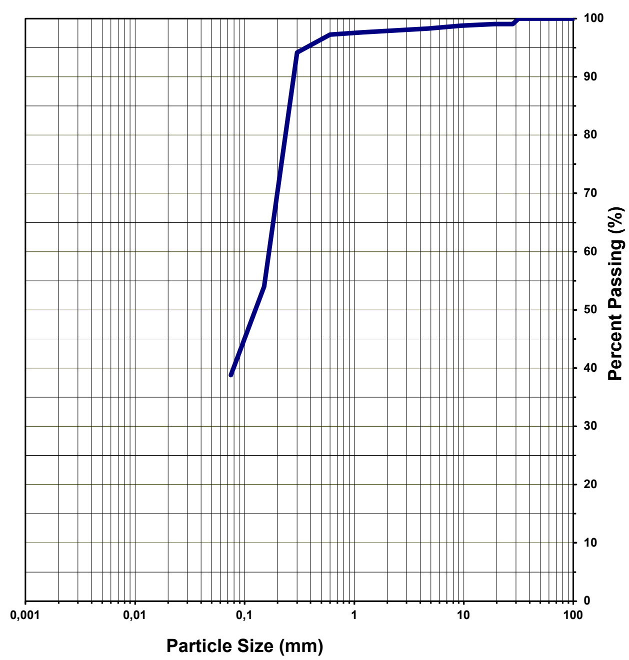
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	100	100	99	99	99	99	98	98	98	97	94	54	38,8
Require-ments	min.																
	max.																

Autres essais	Résultats	Exigences min.	Exigences max.
Frozen mass of sample + container (g)	8796		
Thawed mass of sample with water removed + container (g)	n/a		
Dry mass of sample + container (g)	5076		
Mass of container (g)	1116		
Ice Content (%)	n/a		
Moisture Content (%)	93,94%		

Proctor Test (NQ 2501-255, method)	Results
Maximum Dry Unit Weight	#REF! (kg/m³)
Optimum Moisture Content	#REF! (%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
39	59	2

Remarks **Foundation material is not appropriate (ice-rich)**

Prepared by: Mikaël Turcotte (WSP)

Verified by:

Date:

Analysis Report - Soils and Aggregates

Client: AEM

Project N°: 6127

Sample N°: IVR-EX-12

Projet: Derivation channel

Sampling Date: 2020-09-27

Sampled by: Mikael Turcotte (WSP)

Description of Material: Sand and gravel

Origin: Channel

Location of Sampling: Station 0+115 Elevation 155.975m

Proposed Use: Gradation used to determine the type of soil at the bottom of the channel (quality control)

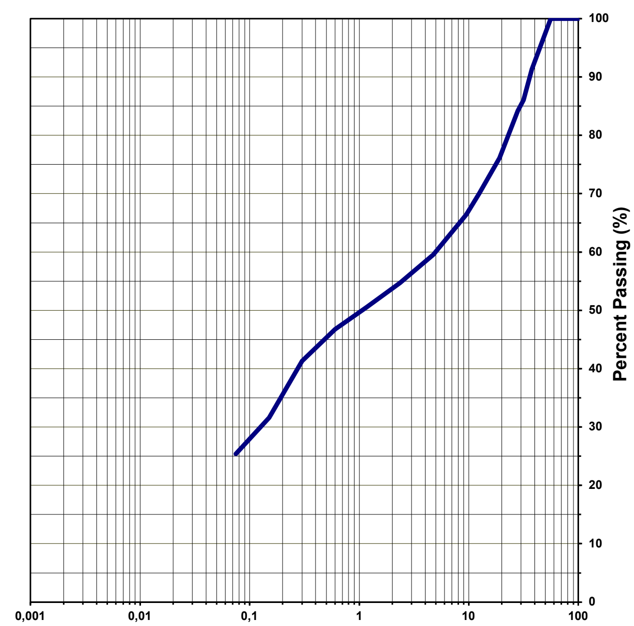
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	91	86	84	76	70	66	60	55	51	47	41	32	25,4
Require-ments	min.																
	max.																

Autres essais	Résultats	Exigences min.	Exigences max.
Frozen mass of sample + container (g)	12541		
Thawed mass of sample with water removed + container (g)	9995		
Dry mass of sample + container (g)	9139		
Mass of container (g)	1401		
Ice Content (%)	22,85%		
Moisture Content (%)	11,06%		

Proctor Test (NQ 2501-255, method)	Results	
Maximum Dry Unit Weight	#REF!	(kg/m^3)
Optimum Moisture Content	#REF!	(%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
25	35	40

Remarks **Foundation material is appropriate**

Prepared by: Mikaël Turcotte (WSP)

Verified by:

Date:

Analysis Report - Soils and Aggregates

Client:	**AEM**	**Project N°:**	**6127**
		Sample N°:	IVR-EX-13
Projet:	Derivation channel	**Sampling Date:**	2020-09-27
		Sampled by:	Mikael Turcotte (WSP)
Description of Material:	Sand and gravel		
Origin:	Channel	**Location of Sampling:**	Station 0+090 to 0+125 Elevation 155.425m
Proposed Use:	Gradation used to determine the type of soil at the bottom of the channel (quality control)		

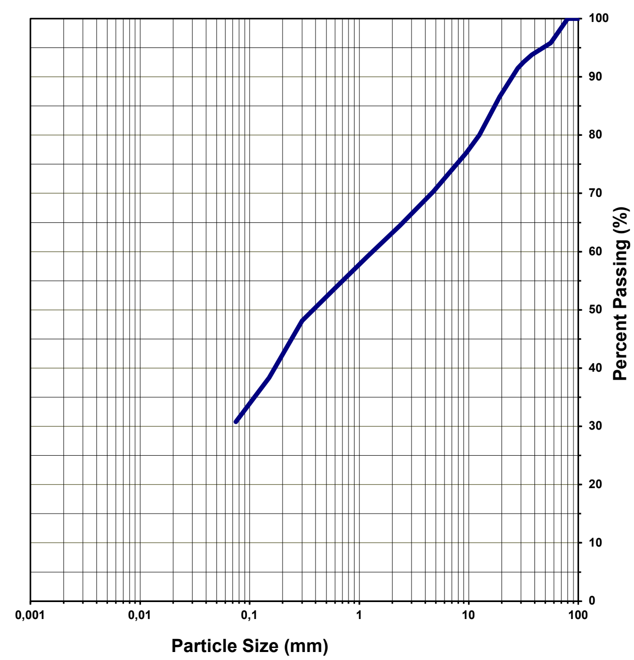
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	96	94	93	91	87	80	77	70	64	59	54	48	38	30,8
Require-ments	**min.**																
	max.																

Autres essais	Résultats	Exigences min.	Exigences max.
Frozen mass of sample + container (g)	11846		
Thawed mass of sample with water removed + container (g)	8967		
Dry mass of sample + container (g)	7920		
Mass of container (g)	1312		
Ice Content (%)	27,33%		
Moisture Content (%)	15,84%		

Proctor Test (NQ 2501-255, method)	**Results**	
Maximum Dry Unit Weight	**#REF!**	**(kg/m^3)**
Optimum Moisture Content	**#REF!**	**(%)**

Sieve Analysis Graph



Clay and silt	Sand	Gravel
31	39	30

Remarks **Foundation material is appropriate**

Prepared by: Mikaël Turcotte (WSP) Verified by: ____________ Date: ____________

Analysis Report - Soils and Aggregates

Client: AEM

Project N°: 6127

Sample N°: IVR-EX-14

Projet: Derivation channel

Sampling Date: 2020-09-27

Sampled by: Mikael Turcotte (WSP)

Description of Material: Sand and gravel

Origin: Channel

Location of Sampling: Station 0+090 to 0+125
Elevation 155.3m

Proposed Use: Gradation used to determine the type of soil at the bottom of the channel (quality control)

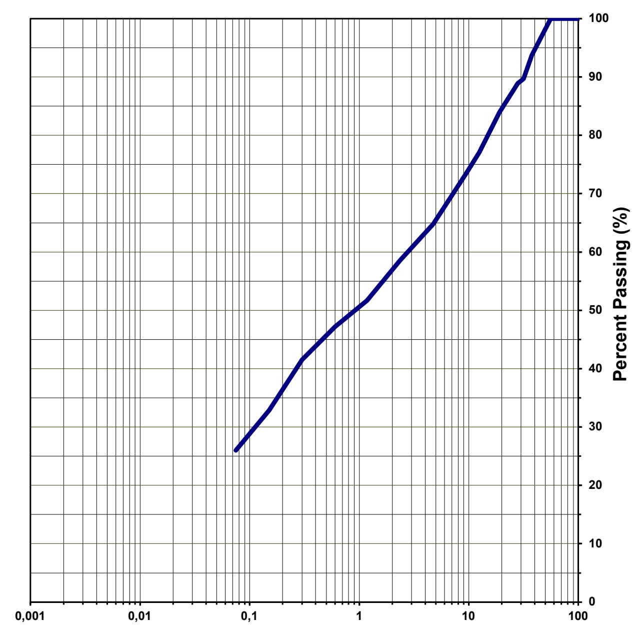
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	94	90	89	84	77	73	65	59	52	47	42	33	26,0
Require-ments	min.																
	max.																

Autres essais	Résultats	Exigences min.	Exigences max.
Frozen mass of sample + container (g)	9111		
Thawed mass of sample with water removed + container (g)	6819		
Dry mass of sample + container (g)	6214		
Mass of container (g)	1394		
Ice Content (%)	29,70%		
Moisture Content (%)	12,55%		

Proctor Test (NQ 2501-255, method)	Results	
Maximum Dry Unit Weight	#REF!	(kg/m^3)
Optimum Moisture Content	#REF!	(%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
26	39	35

Remarks: **Foundation material is appropriate**

Prepared by: Mikaël Turcotte (WSP) 2020-10-04

Verified by: ____________

Date: ____________

Analysis Report - Soils and Aggregates

Client: AEM

Project N°: 6127

Sample N°: IVR-EX-15

Projet: Derivation channel

Sampling Date: 2020-09-28

Sampled by: Patrice Gagnon

Description of Material: Sand and silt with gravel

Origin: Channel

Location of Sampling: Station 0+050 Elevation: Bottom of excavation

Proposed Use: Gradation used to determine the type of soil at the bottom of the channel (quality control)

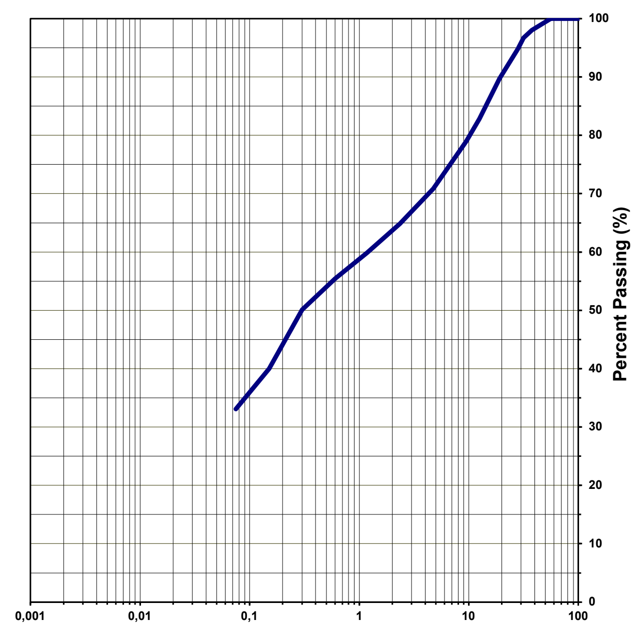
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	98	97	95	90	83	79	71	65	60	55	50	40	33,1
Require-ments	min.																
	max.																

Autres essais	Résultats	Exigences min.	Exigences max.
Frozen mass of sample + container (g)	8563		
Thawed mass of sample with water removed + container (g)	n/a		
Dry mass of sample + container (g)	7042		
Mass of container (g)	1632		
Ice Content (%)	n/a		
Moisture Content (%)	28,11%		

Proctor Test (NQ 2501-255, method)	Results	
Maximum Dry Unit Weight	#REF!	(kg/m^3)
Optimum Moisture Content	#REF!	(%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
33	38	29

Remarks: **Foundation material is appropriate**

Prepared by: Mikaël Turcotte (WSP) 2020-10-04

Verified by:

Date:

Analysis Report - Soils and Aggregates

Client: AEM

Project N°: 6127

Sample N°: IVR-EX-16

Projet: Derivation channel

Sampling Date: 2020-09-30

Sampled by: Mikael Turcotte (WSP)

Description of Material: Sand and gravel

Origin: Channel

Location of Sampling: Station 0+000 to 0+030 Elevation 156.5m

Proposed Use: Gradation used to determine the type of soil at the bottom of the channel (quality control)

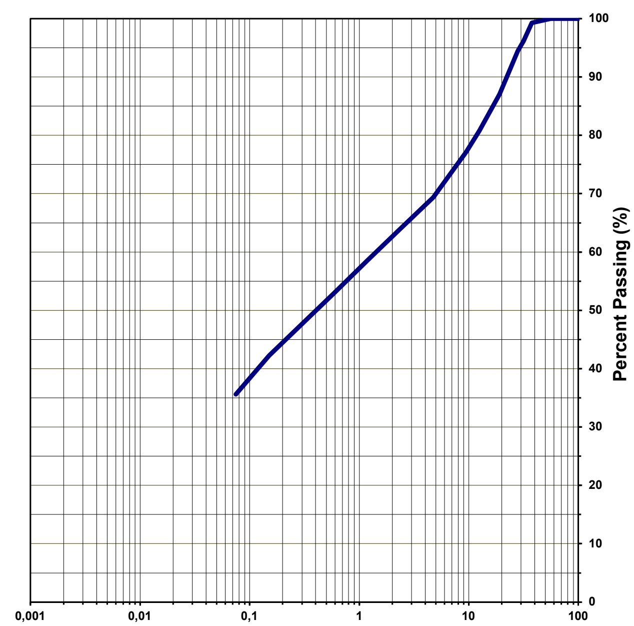
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	99	96	94	87	81	77	69	64	59	53	48	42	35,6
Require-ments	min.																
	max.																

Autres essais	Résultats	Exigences min.	Exigences max.
Frozen mass of sample + container (g)	n/a		
Wet mass of sample + container (g)	16718		
Dry mass of sample + container (g)	14625		
Mass of container (g)	1396		
Ice Content (%)	n/a		
Moisture Content (%)	15,82%		

Proctor Test (NQ 2501-255, method)	Results
Maximum Dry Unit Weight	#REF! (kg/m³)
Optimum Moisture Content	#REF! (%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
36	33	31

Remarks: **Foundation material is appropriate**

Prepared by: Mikaël Turcotte (WSP)

Verified by:

Date:

Analysis Report - Soils and Aggregates

Client: **AEM**

Project N°: **6127**

Sample N°: IVR-EX-17

Projet: Derivation channel

Sampling Date: 2020-10-03

Sampled by: Mikael Turcotte (WSP)

Description of Material: Silt & clay with traces of gravel

Origin: Channel

Location of Sampling: Station 0+250 slope
Elevation ???

Proposed Use: Gradation used to determine the type of soil at the bottom of the channel (quality control)

Sieve Analysis (% Passing) (LC 21-040)																	
Sieve		**112 mm**	**80 mm**	**56 mm**	**37,5 mm**	**31,5 mm**	**28 mm**	**19 mm**	**12,5 mm**	**9,5 mm**	**4,75 mm**	**2,36 mm**	**1,18 mm**	**600 µm**	**300 µm**	**150 µm**	**75 µm**
Cumulative Results		No gradation, for moisture content only															
Require-ments	**min.**																
	max.																

Autres essais	Résultats	Exigences min.	Exigences max.
Frozen mass of sample + container (g)	3331		
Thawed mass of sample with water removed + container (g)	2577		
Dry mass of sample + container (g)	2090		
Mass of container (g)	487		
Ice Content (%)	26,51%		
Moisture Content (%)	30,38%		

Proctor Test (NQ 2501-255, method)	**Results**	
Maximum Dry Unit Weight	**#REF!**	**(kg/m^3)**
Optimum Moisture Content	**#REF!**	**(%)**

Clay and silt	Sand	Gravel
0	0	100

Remarks **Foundation material is not appropriate**

Prepared by: Mikaël Turcotte (WSP)

Verified by:

Date:

Analysis Report - Soils and Aggregates

Client: **AEM**

Project N°: **6127**

Sample N°: IVR-FF-001

Projet: Derivation channel

Sampling Date: 2020-09-20

Sampled by: Mikael Turcotte (WSP)

Description of Material: Granular 0-3/4"

Origin: Stockpile

Location of Sampling: Station xx Elevation xx

Proposed Use: Fine filter at the bottom of the IVR channel

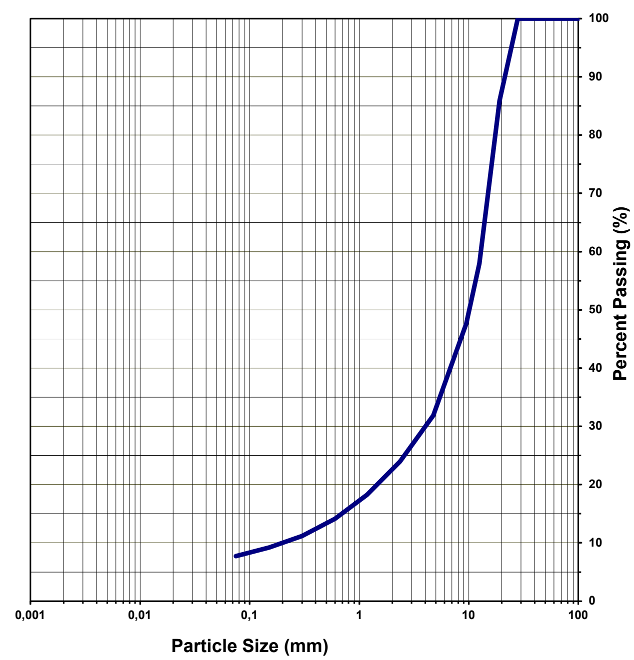
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	100	100	100	86	58	48	32	24	18	14	11	9	7,7
Require-ments	min.						100			51	30	17		11	9		
	max.						100			88	64	41		27	18		

Autres essais	Résultats	Exigences min.	Exigences max.
Wet mass of sample + container (g)	14640		
Dry mass of sample + container (g)	14203		
Mass of container (g)	1578		
Moisture Content (%)	3,46%		

Proctor Test (NQ 2501-255, method)	Results	
Maximum Dry Unit Weight	#REF!	(kg/m³)
Optimum Moisture Content	#REF!	(%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
8	24	68

Remarks **Not conform (Sampling method was not good)**

Prepared by: Mikaël Turcotte (WSP) 2020-09-23

Verified by: ______________________ Date: __________

Analysis Report - Soils and Aggregates

Client: AEM

Project N°: 6127

Sample N°: IVR-FF-002

Projet: Derivation channel

Sampling Date: 2020-09-20

Sampled by: Mikael Turcotte (WSP)

Description of Material: Granular 0-3/4"

Origin: Stockpile

Location of Sampling: Station xx
Elevation xx

Proposed Use: Fine filter at the bottom of the IVR channel

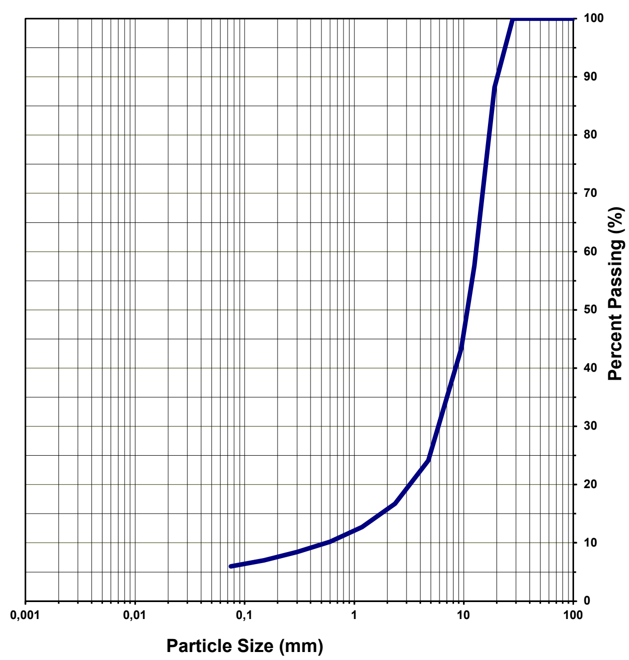
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	100	100	100	88	58	43	24	17	13	10	8	7	6,0
Require-ments	min.						100			51	30	17		11	9		
	max.						100			88	64	41		27	18		

Autres essais	Résultats	Exigences min.	Exigences max.
Wet mass of sample + container (g)	14420		
Dry mass of sample + container (g)	13953		
Mass of container (g)	1590		
Moisture Content (%)	3,78%		

Proctor Test (NQ 2501-255, method)	Results	
Maximum Dry Unit Weight	#REF!	(kg/m³)
Optimum Moisture Content	#REF!	(%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
6	18	76

Remarks **Not conform (Sampling method was not good)**

Prepared by: Mikaël Turcotte (WSP) 2020-09-23

Verified by: ____________________ Date: __________

Analysis Report - Soils and Aggregates

Client:	**AEM**	**Project N°:**	**6127**
		Sample N°:	IVR-FF-003
Projet:	Derivation channel	**Sampling Date:**	2020-09-20
		Sampled by:	Mikael Turcotte (WSP)
Description of Material:	Granular 0-3/4"		
Origin:	Stockpile	**Location of Sampling:**	Station xx Elevation xx
Proposed Use:	Fine filter at the bottom of the IVR channel		

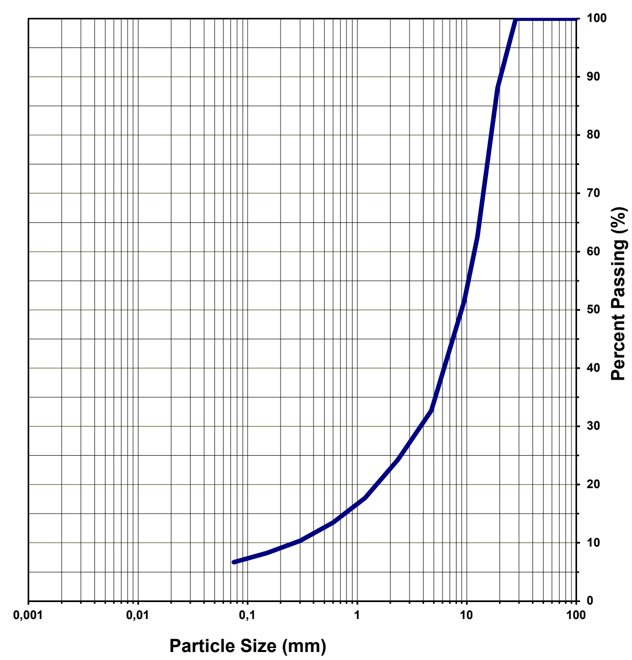
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	100	100	100	88	63	52	33	24	18	13	10	8	6,7
Require-ments	min.						100			51	30	17		11	9		
	max.						100			88	64	41		27	18		

Autres essais	Résultats	Exigences min.	Exigences max.
Wet mass of sample + container (g)	15409		
Dry mass of sample + container (g)	15236		
Mass of container (g)	1632		
Moisture Content (%)	1,27%		

Proctor Test (NQ 2501-255, method)	Results	
Maximum Dry Unit Weight	#REF!	(kg/m^3)
Optimum Moisture Content	#REF!	(%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
7	26	67

Remarks **Gradation is conform**

Prepared by: Mikaël Turcotte (WSP) 2020-09-23

Verified by: ______________________ Date: ____________

GHD Consultants Ltée. 4600 boul. de la Côte-Vertu Montréal Qc H4S 1C7

Analysis Report - Soils and Aggregates

Client:	**AEM**	**Project N°:**	**6127**
		Sample N°:	IVR-FF-004
Projet:	Derivation channel	**Sampling Date:**	2020-09-20
		Sampled by:	Mikael Turcotte (WSP)
Description of Material:	Granular 0-3/4"		
Origin:	Stockpile	**Location of Sampling:**	Station xx Elevation xx
Proposed Use:	Fine filter at the bottom of the IVR channel		

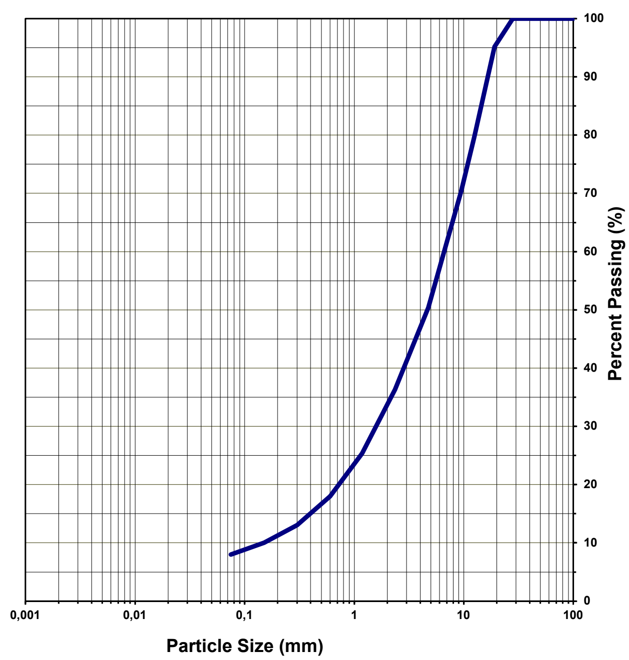
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	100	100	100	95	80	70	50	36	25	18	13	10	8,0
Require-ments	min.						100			51	30	17		11	9		
	max.						100			88	64	41		27	18		

Autres essais	Résultats	Exigences min.	Exigences max.
Wet mass of sample + container (g)	14608		
Dry mass of sample + container (g)	14478		
Mass of container (g)	1632		
Moisture Content (%)	1,01%		

Proctor Test (NQ 2501-255, method)	Results	
Maximum Dry Unit Weight	#REF!	(kg/m³)
Optimum Moisture Content	#REF!	(%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
8	42	50

Remarks **Gradation is conform**

Prepared by: Mikaël Turcotte (WSP) 2020-09-23

Verified by: ____________

Date: ____________

Analysis Report - Soils and Aggregates

Client:	**AEM**	**Project N°:**	**6127**
		Sample N°:	IVR-FF-005
Projet:	Derivation channel	**Sampling Date:**	2020-09-21
		Sampled by:	Mikael Turcotte (WSP)
Description of Material:	Granular 0-3/4"		
Origin:	Stockpile	**Location of Sampling:**	Station xx Elevation xx
Proposed Use:	Fine filter at the bottom of the IVR channel		

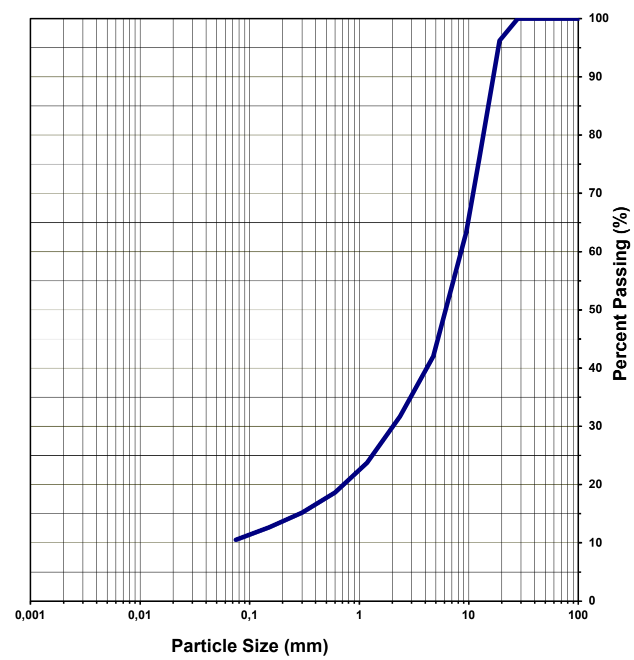
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	100	100	100	96	76	63	42	32	24	19	15	13	10,5
Require-ments	**min.**						100			51	30	17		11	9		
	max.						100			88	64	41		27	18		

Autres essais	Résultats	Exigences min.	Exigences max.
Wet mass of sample + container (g)	14875		
Dry mass of sample + container (g)	14245		
Mass of container (g)	1398		
Moisture Content (%)	4,90%		

Proctor Test (NQ 2501-255, method)	Results	
Maximum Dry Unit Weight	#REF!	(kg/m³)
Optimum Moisture Content	#REF!	(%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
11	32	58

Remarks **Gradation is conform**

Prepared by: Mikaël Turcotte (WSP) 2020-09-23

Verified by: ______________________ Date: __________

Analysis Report - Soils and Aggregates

Client: **AEM**

Project N°: **6127**

Sample N°: IVR-FF-006

Projet: Derivation channel

Sampling Date: 2020-09-21

Sampled by: Mikael Turcotte (WSP)

Description of Material: Granular 0-3/4"

Origin: Stockpile

Location of Sampling: Station xx Elevation xx

Proposed Use: Fine filter at the bottom of the IVR channel

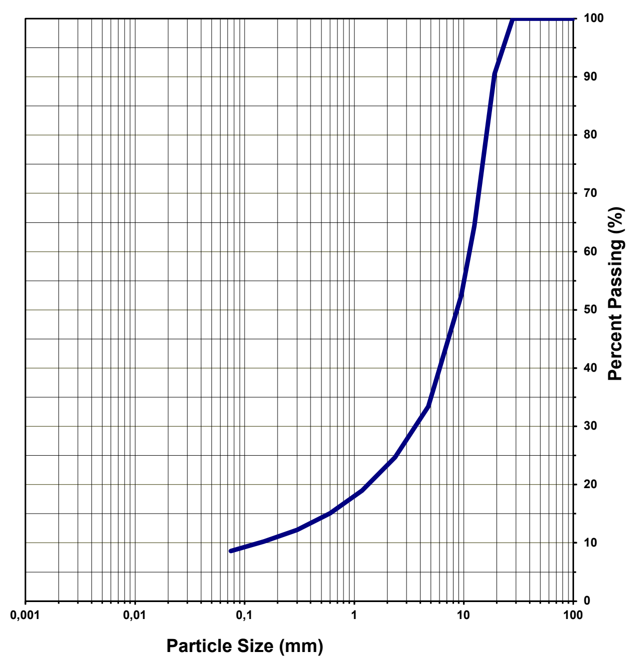
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	100	100	100	90	64	52	33	25	19	15	12	10	8,6
Require-ments	min.						100			51	30	17		11	9		
	max.						100			88	64	41		27	18		

Autres essais	Résultats	Exigences min.	Exigences max.
Wet mass of sample + container (g)	15332		
Dry mass of sample + container (g)	14697		
Mass of container (g)	1116		
Moisture Content (%)	4,68%		

Proctor Test (NQ 2501-255, method)	Results	
Maximum Dry Unit Weight	#REF!	(kg/m^3)
Optimum Moisture Content	#REF!	(%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
9	24	67

Remarks **Gradation is conform**

Prepared by: Mikaël Turcotte (WSP) 2020-09-23

Verified by: ____________

Date: ____________

Analysis Report - Soils and Aggregates

Client: AEM

Project N°: 6127

Sample N°: IVR-FF-007

Projet: Derivation channel

Sampling Date: 2020-09-21

Sampled by: Mikael Turcotte (WSP)

Description of Material: Granular 0-3/4"

Origin: Stockpile

Location of Sampling: Station xx Elevation xx

Proposed Use: Fine filter at the bottom of the IVR channel

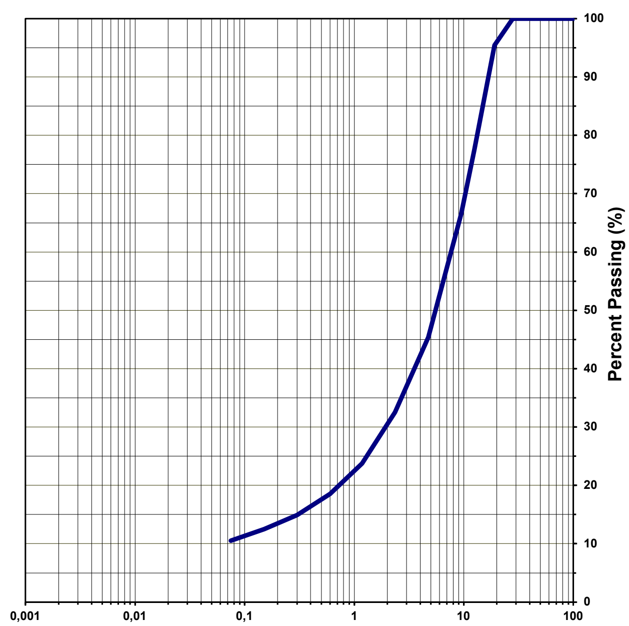
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	100	100	100	95	78	67	45	33	24	19	15	13	10,5
Require-ments	min.						100			51	30	17		11	9		
	max.						100			88	64	41		27	18		

Autres essais	Résultats	Exigences min.	Exigences max.
Wet mass of sample + container (g)	18387		
Dry mass of sample + container (g)	17563		
Mass of container (g)	1578		
Moisture Content (%)	5,15%		

Proctor Test (NQ 2501-255, method)	Results	
Maximum Dry Unit Weight	#REF!	(kg/m³)
Optimum Moisture Content	#REF!	(%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
11	35	55

Remarks **Gradation is conform**

Prepared by: Mikaël Turcotte (WSP) 2020-09-23

Verified by: ______________________ Date: __________

Analysis Report - Soils and Aggregates

Client: **AEM**

Project N°: **6127**

Sample N°: IVR-FF-008

Projet: Derivation channel

Sampling Date: 2020-09-21

Sampled by: Mikael Turcotte (WSP)

Description of Material: Granular 0-3/4"

Origin: Stockpile

Location of Sampling: Station xx
Elevation xx

Proposed Use: Fine filter at the bottom of the IVR channel

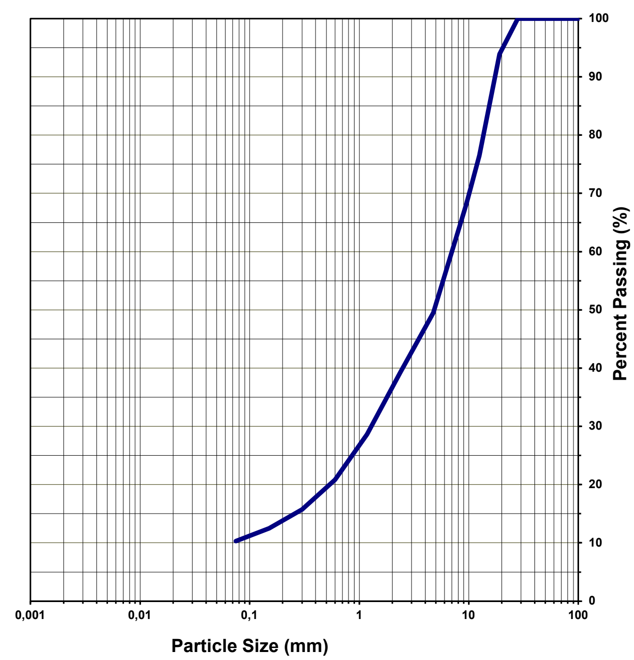
Sieve Analysis (% Passing) (LC 21-040)

Sieve		112 mm	80 mm	56 mm	37,5 mm	31,5 mm	28 mm	19 mm	12,5 mm	9,5 mm	4,75 mm	2,36 mm	1,18 mm	600 µm	300 µm	150 µm	75 µm
Cumulative Results		100	100	100	100	100	100	94	76	68	49	39	29	21	16	13	10,3
Require-ments	min.						100			51	30	17		11	9		
	max.						100			88	64	41		27	18		

Autres essais	Résultats	Exigences min.	Exigences max.
Wet mass of sample + container (g)	18505		
Dry mass of sample + container (g)	18055		
Mass of container (g)	1590		
Moisture Content (%)	2,73%		

Proctor Test (NQ 2501-255, method)	Results	
Maximum Dry Unit Weight	#REF!	(kg/m³)
Optimum Moisture Content	#REF!	(%)

Sieve Analysis Graph



Clay and silt	Sand	Gravel
10	39	51

Remarks **Gradation is conform**

Prepared by: Mikaël Turcotte (WSP) 2020-09-23

Verified by:

Date:

Moisture-Density Determination Test (ASTM METHOD)

Client	AEM	**Project No**	6127
Project / Site	IVR Diversion	**Lab Sample No**	IVR-FF-04
Soil Type		**Sample Identification**	
Material	Gravel (0-3/4")	**Source - Sample Location**	Stockpile
Proposed Use	Fine filter at bottom of channel	**Aggregate Supplier / Pit Name**	Amaruq
Date Sampled	septembre 20, 2020	**Sampled By**	Mikaël Turcotte (WSP)

Test Preparation

Sample Preparation	**Dry**	**--**	**Moist**	**X**		
ASTM D698/D1557 Test Method	**A (4.75mm)**	**--**	**B (9.5mm)**	**--**	**C (19.0mm)**	**X**
Wt of Total Sample (kg)		Oversize (%)	28.0%	Specific Gravity		
Wt Retained on 4.75mm (kg)		Wt of Tested Sample (kg)	5.500			

Apparatus Used For Testing

Proctor Mold No.	FGL 18-9717	Oven No.		Grad. Cylinder No.	
Wt. of Mold (kg)	5.616	Rammer No.	FGL 18-9718	Scale No.	
Volume of Mold (dm3)	2.117	Splitter No.			

Moisture Increment Determination

Trial Number:	1	2	3	4	5	6	7
Estimated Moisture Content (%)	In place	In place	2.0	4.0	6.0	8.0	10.0
Volume of Water Added (mL)			250	250	200	200	100

Density Determination

Wt of Sample Wet + Mold (kg)			10.496	10.685	10.969	10.940	10.988
Wet Density [C/D] (kg/m3)			2305	2394	2529	2515	2538
Dry Density [E/(1+Moisture)] (kg/m3)			2254	2297	2388	2341	2332

Moisture Content Determination

Container Number			S11	S10	S4	S3	C1
Wt of Sample Wet + Tare (kg)			0.541	0.582	0.539	0.916	1.463
Wt of Sample Dry + Tare (kg)			0.533	0.568	0.522	0.869	1.384
Wt of Water (kg)			0.008	0.014	0.017	0.047	0.079
Tare (kg)			0.180	0.238	0.233	0.236	0.488
Wt of Soil Dry (kg)			0.353	0.330	0.289	0.633	0.896
Moisture Content (%)			2.27%	4.24%	5.88%	7.42%	8.82%

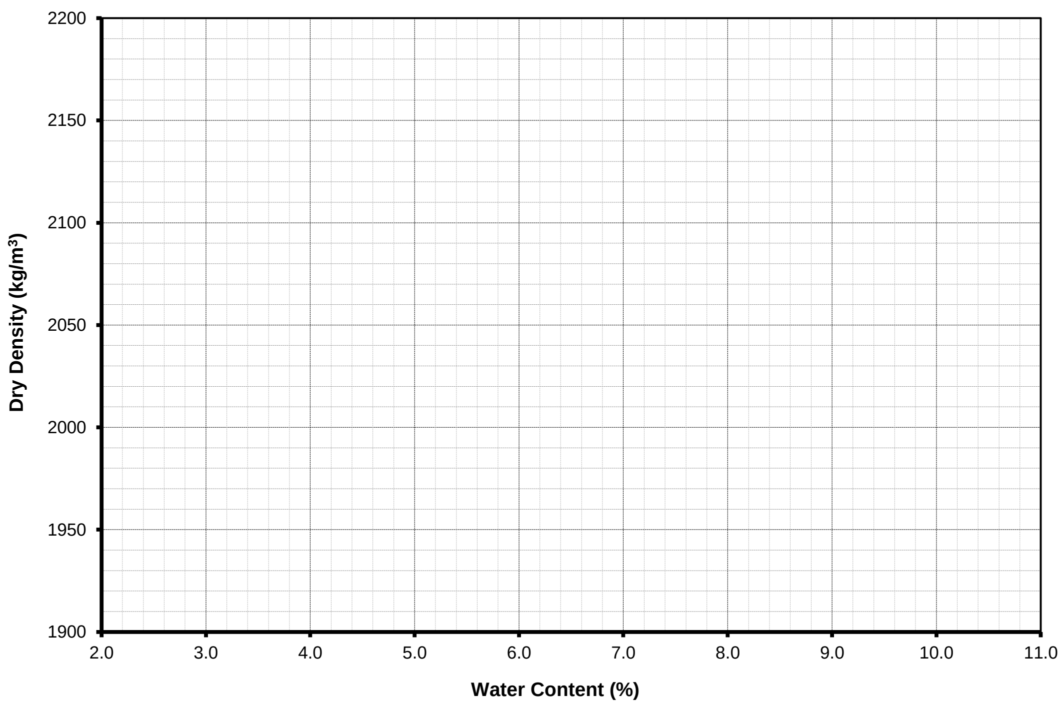
Tested By	**Mikaël Turcotte**	**Date**	**septembre 23, 2020**
Checked By		**Date**	

F0-930.205 (On)/IA/11-14

Method
4.75mm (kg)
9.5mm (kg)
19.0mm (kg)

Standard Proctor Test
(ASTM D698)

Client :	AEM	**Lab N^o :**	IVR-FF-04
Project/Site :	IVR Diversion	**Project N^o :**	6127



Proctor Curve	
Lower Moisture Limit	2
Upper Moisture Limit	11

Prepared Sample:	Dry	--	Moist	X			Assumed G_s*:	0.00
ASTM D698 Test Method:	A	--	B	--	C	X	Type of Hammer:	Manual

Soil Type:	
Material:	Gravel (0-3/4")
Proposed Use:	Fine filter at bottom of channel
Sample Identification:	
Sample Location:	Stockpile
Aggregate Supplier / Pit Name:	Amaruq
Sample Date:	septembre 20, 2020
Sampled By:	Mikaël Turcotte (WSP)

Max. Dry Density:	**0**	**kg/m^3**
Optimum Moisture:	**#N/A**	**%**
% Retained on 4.75mm	**28.0**	**%**
Corrected Dry Density:	**-**	**kg/m^3**
Corrected Opt. Moist.:	**-**	**%**

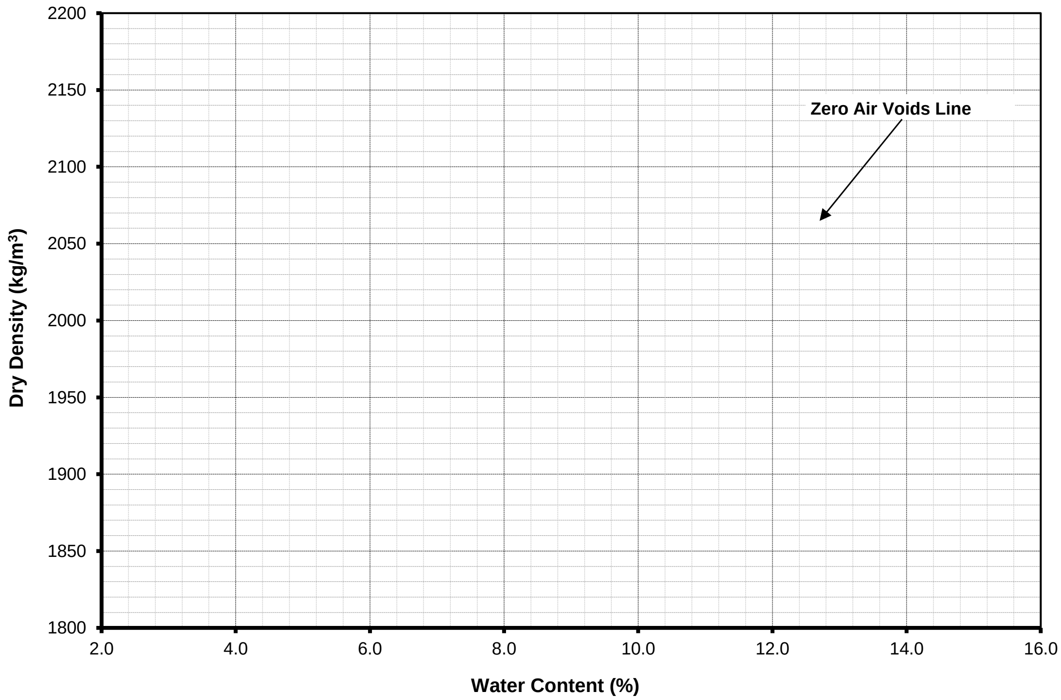
Remarks : % retained on 4.75mm is the average of Fine Filter (59%) minus 6% of bentonite.

Each specimens have been hydrated during 36h to assure an homogeneous material.

Performed by :	Thomas Dahm	**Date :**	avril 19, 2020
Verified by :	Thomas Dahm	**Date :**	avril 19, 2020

Modified Proctor Test
(ASTM D1557)

Client :	AEM	**Lab N^o :**	IVR-FF-04
Project/Site :	IVR Diversion	**Project N^o :**	6127



Proctor Curve

Lower Moisture Limit	2
Upper Moisture Limit	10

Prepared Sample:	Dry	--	Moist	X			Assumed G_s*:	0.00
ASTM D1557 Test Method:	A	--	B	--	C	X	Type of Hammer:	Manual

Soil Type:	
Material:	Gravel (0-3/4")
Proposed Use:	Fine filter at bottom of channel
Sample Identification:	
Sample Location:	Stockpile
Aggregate Supplier / Pit Name:	Amaruq
Sample Date:	septembre 20, 2020
Sampled By:	Mikaël Turcotte (WSP)

Max. Dry Density:	**0**	**kg/m^3**
Optimum Moisture:	**#N/A**	**%**
% Retained on 4.75mm	**28.0**	**%**
Corrected Dry Density:	**#DIV/0!**	**kg/m^3**
Corrected Opt. Moist.:	**#N/A**	**%**

Remarks :

Performed by :	Mikaël Turcotte	**Date :**	septembre 23, 2020
Verified by :		**Date :**	

	1	2	3	4	5	6
Dry Density	0	0	2254.06517	2296.9785	2388.10161	2341.05699
Moisture Content	0	0	0.02266289	0.04242424	0.05882353	0.07424961

Saturation		
	2450	#DIV/0!
	2390	#DIV/0!
	2330	#DIV/0!
	2270	#DIV/0!
	2210	#DIV/0!
	2150	#DIV/0!
	2090	#DIV/0!
	2030	#DIV/0!
	1970	#DIV/0!
	1910	#DIV/0!
	1850	#DIV/0!
	1790	#DIV/0!
	1730	#DIV/0!
	1670	#DIV/0!
	1610	#DIV/0!
	1550	#DIV/0!
	1490	#DIV/0!
	1430	#DIV/0!
	1370	#DIV/0!
	1310	#DIV/0!
	1250	#DIV/0!
	1190	#DIV/0!
	1130	#DIV/0!
	1070	#DIV/0!

$$\text{Saturation : W} = \frac{(Yw*1000)(Gs) - (Yd)}{(Yd)(Gs)} * 100$$

as per ASTM D698

	Mold No.	FGL 18-9717	FGL 18-9717	FGL 18-9717	FGL 18-9717
A	Wt of Sample Wet + Mold (kg)	0.000	0.000	10.496	10.685
B	Wt of Mold (kg)	5.614	5.614	5.614	5.614
C	Wt of Sample Wet [A-B] (kg)	-5.614	-5.614	4.882	5.071
D	Volume of Mold (dm3)	2.117	2.117	2.117	2.117
E	Wet Density [C/D] (kg/m3)	-2652	-2652	2306	2395
F	Dry Density [E/(1+Moisture)] (kg/m3)	0	0	0	0

Mold Information	Mold No.	Weight	Volume
	2010-152-01	6.462	2.117
	2011-152-01	6.486	2.107
	2012-152-01	4.225	0.941
	2018-152-01	5.614	2.117

21.5	1.5E+11	#N/A	#N/A
21.6	1.52E+11	#N/A	#N/A
21.7	1.54E+11	#N/A	#N/A
21.8	1.57E+11	#N/A	#N/A
21.9	1.59E+11	#N/A	#N/A
22	1.61E+11	#N/A	#N/A
22.1	1.63E+11	#N/A	#N/A
22.2	1.65E+11	#N/A	#N/A
22.3	1.68E+11	#N/A	#N/A
22.4	1.7E+11	#N/A	#N/A
22.5	1.72E+11	#N/A	#N/A
22.6	1.74E+11	#N/A	#N/A
22.7	1.77E+11	#N/A	#N/A
22.8	1.79E+11	#N/A	#N/A
22.9	1.82E+11	#N/A	#N/A
23	1.84E+11	#N/A	#N/A
23.1	1.86E+11	#N/A	#N/A
23.2	1.89E+11	#N/A	#N/A
23.3	1.91E+11	#N/A	#N/A
23.4	1.94E+11	#N/A	#N/A
23.5	1.96E+11	#N/A	#N/A
23.6	1.99E+11	#N/A	#N/A
23.7	2.01E+11	#N/A	#N/A
23.8	2.04E+11	#N/A	#N/A
23.9	2.06E+11	#N/A	#N/A
24	2.09E+11	#N/A	#N/A
24.1	2.12E+11	#N/A	#N/A
24.2	2.14E+11	#N/A	#N/A
24.3	2.17E+11	#N/A	#N/A
24.4	2.2E+11	#N/A	#N/A
24.5	2.22E+11	#N/A	#N/A
24.6	2.25E+11	#N/A	#N/A
24.7	2.28E+11	#N/A	#N/A
24.8	2.31E+11	#N/A	#N/A
24.9	2.34E+11	#N/A	#N/A
25	2.36E+11	#N/A	#N/A
25.1	2.39E+11	#N/A	#N/A
25.2	2.42E+11	#N/A	#N/A
25.3	2.45E+11	#N/A	#N/A
25.4	2.48E+11	#N/A	#N/A
25.5	2.51E+11	#N/A	#N/A
25.6	2.54E+11	#N/A	#N/A
25.7	2.57E+11	#N/A	#N/A
25.8	2.6E+11	#N/A	#N/A
25.9	2.63E+11	#N/A	#N/A
26	2.66E+11	#N/A	#N/A
26.1	2.69E+11	#N/A	#N/A
26.2	2.72E+11	#N/A	#N/A
26.3	2.75E+11	#N/A	#N/A
26.4	2.78E+11	#N/A	#N/A
26.5	2.82E+11	#N/A	#N/A
26.6	2.85E+11	#N/A	#N/A

26.7	2.88E+11	#N/A	#N/A
26.8	2.91E+11	#N/A	#N/A
26.9	2.95E+11	#N/A	#N/A
27	2.98E+11	#N/A	#N/A
27.1	3.01E+11	#N/A	#N/A
27.2	3.05E+11	#N/A	#N/A
27.3	3.08E+11	#N/A	#N/A
27.4	3.11E+11	#N/A	#N/A
27.5	3.15E+11	#N/A	#N/A
27.6	3.18E+11	#N/A	#N/A
27.7	3.22E+11	#N/A	#N/A
27.8	3.25E+11	#N/A	#N/A
27.9	3.29E+11	#N/A	#N/A
28	3.32E+11	#N/A	#N/A
28.1	3.36E+11	#N/A	#N/A
28.2	3.39E+11	#N/A	#N/A
28.3	3.43E+11	#N/A	#N/A
28.4	3.47E+11	#N/A	#N/A
28.5	3.5E+11	#N/A	#N/A
28.6	3.54E+11	#N/A	#N/A
28.7	3.58E+11	#N/A	#N/A
28.8	3.62E+11	#N/A	#N/A
28.9	3.65E+11	#N/A	#N/A
29	3.69E+11	#N/A	#N/A
29.1	3.73E+11	#N/A	#N/A
29.2	3.77E+11	#N/A	#N/A
29.3	3.81E+11	#N/A	#N/A
29.4	3.85E+11	#N/A	#N/A
29.5	3.89E+11	#N/A	#N/A
29.6	3.93E+11	#N/A	#N/A
29.7	3.97E+11	#N/A	#N/A
29.8	4.01E+11	#N/A	#N/A
29.9	4.05E+11	#N/A	#N/A
30	4.09E+11	#N/A	#N/A
30.1	4.13E+11	#N/A	#N/A
30.2	4.17E+11	#N/A	#N/A
30.3	4.21E+11	#N/A	#N/A
30.4	4.25E+11	#N/A	#N/A
30.5	4.3E+11	#N/A	#N/A
30.6	4.34E+11	#N/A	#N/A
30.7	4.38E+11	#N/A	#N/A
30.8	4.43E+11	#N/A	#N/A
30.9	4.47E+11	#N/A	#N/A
31	4.51E+11	#N/A	#N/A
31.1	4.56E+11	#N/A	#N/A
31.2	4.6E+11	#N/A	#N/A
31.3	4.64E+11	#N/A	#N/A
31.4	4.69E+11	#N/A	#N/A
31.5	4.73E+11	#N/A	#N/A
31.6	4.78E+11	#N/A	#N/A
31.7	4.83E+11	#N/A	#N/A
31.8	4.87E+11	#N/A	#N/A

31.9	4.92E+11	#N/A	#N/A
32	4.96E+11	#N/A	#N/A
32.1	5.01E+11	#N/A	#N/A
32.2	5.06E+11	#N/A	#N/A
32.3	5.11E+11	#N/A	#N/A
32.4	5.15E+11	#N/A	#N/A
32.5	5.2E+11	#N/A	#N/A
32.6	5.25E+11	#N/A	#N/A
32.7	5.3E+11	#N/A	#N/A
32.8	5.35E+11	#N/A	#N/A
32.9	5.4E+11	#N/A	#N/A
33	5.45E+11	#N/A	#N/A
33.1	5.49E+11	#N/A	#N/A
33.2	5.54E+11	#N/A	#N/A
33.3	5.6E+11	#N/A	#N/A
33.4	5.65E+11	#N/A	#N/A
33.5	5.7E+11	#N/A	#N/A
33.6	5.75E+11	#N/A	#N/A
33.7	5.8E+11	#N/A	#N/A
33.8	5.85E+11	#N/A	#N/A
33.9	5.9E+11	#N/A	#N/A
34	5.96E+11	#N/A	#N/A
34.1	6.01E+11	#N/A	#N/A
34.2	6.06E+11	#N/A	#N/A
34.3	6.12E+11	#N/A	#N/A
34.4	6.17E+11	#N/A	#N/A
34.5	6.22E+11	#N/A	#N/A

MODIFIED PROCTOR CURVE PLOT DATA

PROCTOR CURVE : START / END OPTION

		2	1.11E+08	2	1.11E+08
Min		2.1	1.3E+08	2.1	1.3E+08
	2	2.2	1.5E+08	2.2	1.5E+08
Max		2.3	1.71E+08	2.3	1.71E+08
	10	2.4	1.95E+08	2.4	1.95E+08
		2.5	2.22E+08	2.5	2.22E+08
		2.6	2.5E+08	2.6	2.5E+08
		2.7	2.81E+08	2.7	2.81E+08
		2.8	3.14E+08	2.8	3.14E+08
		2.9	3.49E+08	2.9	3.49E+08
		3	3.88E+08	3	3.88E+08
		3.1	4.28E+08	3.1	4.28E+08
		3.2	4.72E+08	3.2	4.72E+08
		3.3	5.19E+08	3.3	5.19E+08
		3.4	5.68E+08	3.4	5.68E+08
		3.5	6.21E+08	3.5	6.21E+08
		3.6	6.76E+08	3.6	6.76E+08
		3.7	7.35E+08	3.7	7.35E+08
		3.8	7.98E+08	3.8	7.98E+08
		3.9	8.63E+08	3.9	8.63E+08
		4	9.33E+08	4	9.33E+08
		4.1	1.01E+09	4.1	1.01E+09
		4.2	1.08E+09	4.2	1.08E+09
		4.3	1.16E+09	4.3	1.16E+09
		4.4	1.25E+09	4.4	1.25E+09
		4.5	1.33E+09	4.5	1.33E+09
		4.6	1.43E+09	4.6	1.43E+09
		4.7	1.52E+09	4.7	1.52E+09
		4.8	1.62E+09	4.8	1.62E+09
		4.9	1.73E+09	4.9	1.73E+09
		5	1.84E+09	5	1.84E+09
		5.1	1.95E+09	5.1	1.95E+09
		5.2	2.07E+09	5.2	2.07E+09
		5.3	2.19E+09	5.3	2.19E+09
		5.4	2.32E+09	5.4	2.32E+09
		5.5	2.45E+09	5.5	2.45E+09
		5.6	2.59E+09	5.6	2.59E+09
		5.7	2.73E+09	5.7	2.73E+09
		5.8	2.88E+09	5.8	2.88E+09

Moisture-Density Determination Test (LS METHOD)

Client		**Project No**	
Project / Site		**Lab Sample No**	
Soil Type		**Sample Identification**	
Material		**Source - Sample Location**	
Proposed Use		**Aggregate Supplier / Pit Name**	
Date Sampled		**Sampled By**	

Test Preparation

Sample Preparation	**Dry**	**X**	**Moist**	**--**			
LS-706/707 Test Procedure	**1 (4.75mm)**	**--**	**2 (26.5mm)**	**--**	**3 (26.5mm)**	**X**	

Wt of Total Sample (kg)	Oversize (%)	Specific Gravity 2.75
Wt Retained on 26.5mm (kg)	Wt of Tested Sample (kg)	

Method
4.75mm (kg)
26.5mm (kg)

Apparatus Used For Testing

Proctor Mold No.		Oven No.		Grad. Cylinder No.	
Wt. of Mold (kg)		Rammer No.		Scale No.	
Volume of Mold (dm3)		Splitter No.			

Moisture Increment Determination

Trial Number:	1	2	3	4	5	6	7
Estimated Moisture Content (%)							
Volume of Water Added (mL)							
Density Determination							
Wt of Sample Wet + Mold (kg)							
Wet Density [C/D] (kg/m3)							
Dry Density [E/(1+Moisture)] (kg/m3)							
Moisture Content Determination							
Container Number							
Wt of Sample Wet + Tare (g)							
Wt of Sample Dry + Tare (g)							
Wt of Water (g)							
Tare (g)							
Wt of Soil Dry (g)							
Moisture Content (%)							

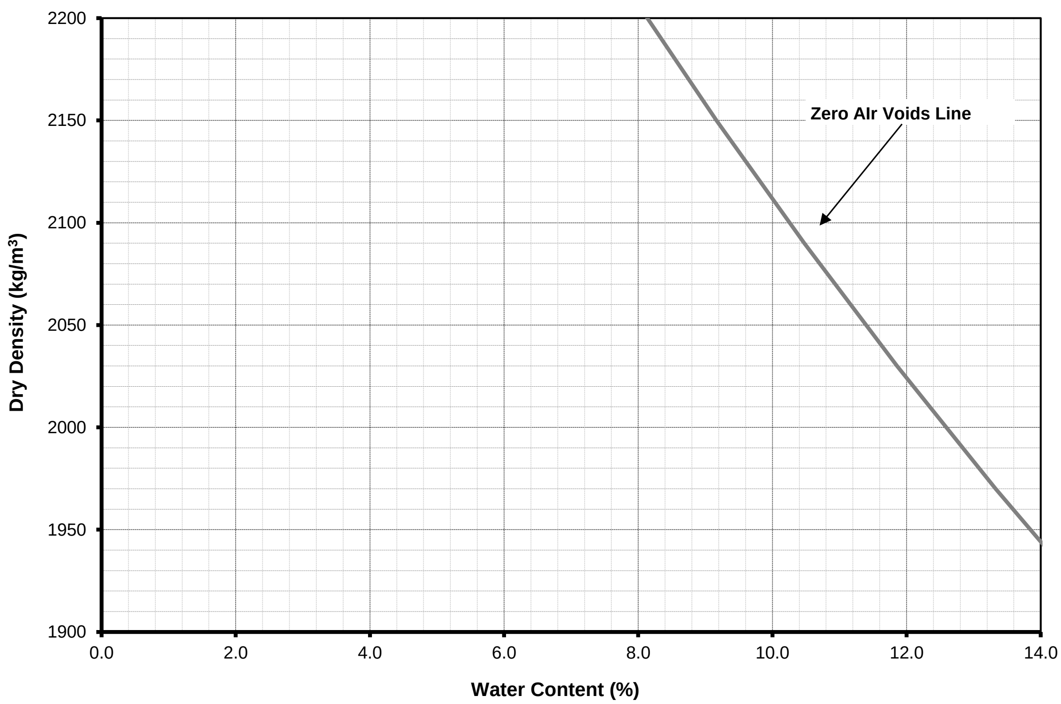
Tested By ______________________ **Date** ______________

Checked By ______________________ **Date** ______________

F0-930.205(On)/IA/11-14

Standard Proctor Test
(MTO LS-706)

Client :	AEM	**Lab N^o :**	IVR-FF-04
Project/Site :	IVR Diversion	**Project N^o :**	6127



Proctor Curve

Lower Moisture Limit	2
Upper Moisture Limit	10

Prepared Sample:	Dry	X	Moist	--			Assumed G_s*:	2.75
LS-706 Test Procedure:	1	--	2	--	3	X	Type of Hammer:	Manual

Soil Type:
Material:
Proposed Use:
Sample Identification:
Sample Location:
Aggregate Supplier / Pit Name:
Sample Date:
Sampled By:

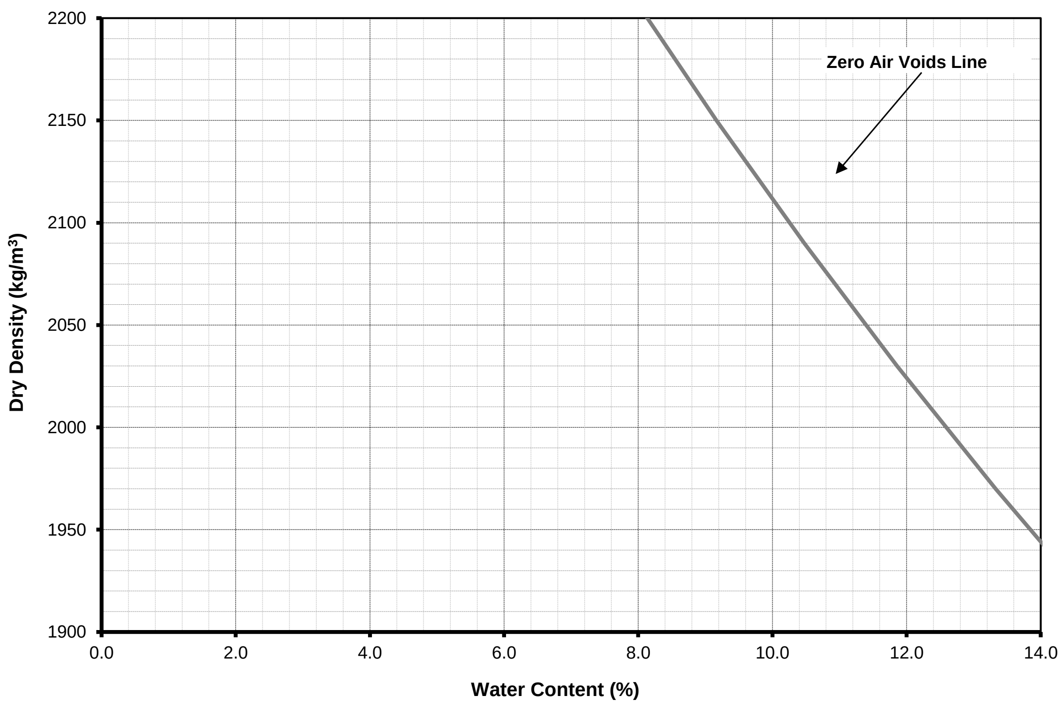
Max. Dry Density:	**######**	**kg/m^3**
Optimum Moisture:	**######**	**%**
% Retained on 26.5mm	**######**	**%**
Corrected Dry Density:	**######**	**kg/m^3**
Corrected Opt. Moist.:	**######**	**%**

Remarks :

Performed by :	Mikaël Turcotte	**Date :**	septembre 23, 2020
Verified by :		**Date :**	

Modified Proctor Test
(MTO LS-707)

Client :	AEM	**Lab N° :**	IVR-FF-04
Project/Site :	IVR Diversion	**Project N° :**	6127



Proctor Curve

Lower Moisture Limit	2
Upper Moisture Limit	10

Prepared Sample:	Dry	X	Moist	--			Assumed G_s*:	2.75
LS-707 Test Procedure:	1	--	2	--	3	X	Type of Hammer:	Manual

Soil Type:
Material:
Proposed Use:
Sample Identification:
Sample Location:
Aggregate Supplier / Pit Name:
Sample Date:
Sampled By:

Max. Dry Density:	######	**kg/m³**
Optimum Moisture:	######	**%**
% Retained on 26.5mm	######	**%**
Corrected Dry Density:	######	**kg/m³**
Corrected Opt. Moist.:	######	**%**

Remarks :

Performed by :	Mikaël Turcotte	**Date :**	septembre 23, 2020
Verified by :		**Date :**	

SAND CONE TEST

Client:	AEM	**Material :**	ES
Project:	IVR Diversion Ditch	**Shift:**	Day / Night
Location:	Berm	**QC rep.:**	Mikaël Turcotte

Sand cone test

Test Values			Test 1	Test 2	Test 3	Test 4	Test 5
			2.00	2.00	4.00	4.00	6.00
Mass of sand before test	M_1	kg					
Mass of sand after test	M_2	kg					
Mass of sand used	M_3	kg	0.00	0.00	0.00	0.00	0.00
Cone volume	V_1	m^3	0.00121	0.00121	0.00121	0.00121	0.00121
Sand density	ρ	kg/m^3	1449.00	1449.00	1449.00	1449.00	1449.00
Mass of sand in cone	M_4	kg	1.75	1.75	1.75	1.75	1.75
Mass of sand in hole	M_5	kg	-1.75	-1.75	-1.75	-1.75	-1.75
Volume of hole	V_2	m^3	-0.00121	-0.00121	-0.00121	-0.00121	-0.00121
Mass of container	M_6	g					
Mass of container + wet soil	M_7	g					
Mass of container + dry soil	M_8	g					
Mass of wet soil	M_9	g	0.0	0.0	0.0	0.0	0.0
Mass of dry soil	M_{10}	g	0.0	0.0	0.0	0.0	0.0
Mass of water	M_{11}	g	0.0	0.0	0.0	0.0	0.0
Moisture content	w	%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Wet density of soil	ρ_h	kg/m^3	0.0	0.0	0.0	0.0	0.0
Dry density of soil	ρ_d	kg/m^3	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Dry density on proctor	ρ_d	kg/m^3					
% Compaction	w	%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Comments on the test :

Performed by :

Date :

APPENDIX B6

Construction Weekly MOM

Whale Tail Project - 6127
IVR Diversion Ditch – Weekly Meeting 001

Date: 9/25/2020 **Time :** 10H00CT **Localization**: Teams/Amaruq construction conference room

Attendees:		
Name	***Function***	***Department / Company***
Marc-André Beaudet (MAB)	Construction Lead	AEM
Mikael Turcotte (MT)	Construction QC	WSP
Dany Pageau (DP)	Superintendent	KCG
Alex Gélinas (AG)	Construction Resident Engineer	AEM
Jean-Francois Béland (JFB)	Construction Civil General Supervisor	AEM
Richard Saint-Jean (RSJ)	Site Manager	KCG
Patrice Gagnon (PG)	Geotechnical Specialist (QA)	AEM
Alexandre Lavallée (AL)	Engineering	AEM
Thomas Lepine (TL)	Engineering	AEM

Item	Requestor	Description	Action by
Schedule			
	N/A	Construction start date is September 18th to October 9th 2020 Planned construction of 21 days (See schedule for more details)	N/A
Construction and Engineering Concerns and Site Change			
	Construction	Health and Safety, Environment key points discussion	N/A
	Construction	Water management is done with 2 electrical sump pumps and the method was approved by environment	N/A
	Construction	The temporary access road is built with soap stone. This one will be removed from there before the ground froze. It will be removed to the tundra level.	N/A
	Cons/Eng.	The membrane geotextile that construction request for this infrastrure (Mirafi 1600) is on the last boat of the season for Amaruq, it will not be on site in time. We've proposed to SNC the replace it by a Novatex V, and it's been approved with two layers as a replacement. On the section 0+000 to 0+149 there's some ice-rich material that can cause more displacement, Engineering proposed to add 2 more layers of geotextile Novatex V to have a better resistance in this area.	Cons.
	Engineering	The change of geotextile will be consider as a Design Change. The documentation concerning that change will be send to Engineering.	Cons.

Whale Tail Project - 6127
IVR Diversion Ditch – Weekly Meeting 002

Date: 10/02/2020 **Time :** 10h00 AM **Localisation**: Amaruq

Attendees:		
Name	***Function***	***Department / Company***
Marc-André Beaudet (MAB)	Construction Lead	AEM
Mikael Turcotte (MT)	Construction QC	WSP
Jessy Gauthier (JG)	Construction Résident	WSP
Dany Pageau (DP)	Superintendant	KCG
Jean-Francois Béland (JFB)	Construction Civil General Supervisor	AEM
Alexandre Lavallee (AL)	Engineering	AEM
Thomas Lépine (TL)	Engineering	AEM
Laurier Collette (CL)	Geotechnical Engineer	AEM
Nicolas Tremblay	Project Manager	KCG

Item	Requestor	Description	Action by	Status/ Comment
Subject 1				
1	Construction	Health and safety, environment key points discuss, the temporary road will be scoop out at the end of the job	N/A	
2	Construction	1.5 meter of ice was retrieved under the channel and esker was use to fill it up with compaction	N/A	
3	Construction	Fine filter will be finish with a *tablet method*	N/A	
4	Construction	All the geotextile was install as SNC directive. There was not enough Novatex V for the channel, SNC has approves the Mirafi 1100 with 2 layers to finish the work. Some frost fighter are in place to prevent the geotextile from freezing	N/A	
5	Construction	The rip rap is acceptation is done, there's some little part to clean at the end of the work	N/A	
6	Construction	The access road is done	N/A	

APPENDIX C

Design changes records

SNC-LAVALIN INC.

1140, de Maisonneuve Blvd. West
Montreal (Quebec)
Canada H3A 1M8
Tel: (514) 393-1000
Fax: (514) 390-2765

TO :	Alexandre Lavallée, Frédérick Bolduc, Thomas Lépine, Patrice Gagnon, Laurier Collette, Bruno Roy (AEM)	**DATE :**	October 16th, 2020
C.C. :	Anh Long Nguyen		
FROM :	Nina Quan	**REF. :**	668284-7000-60CA-0001 Rev 01
OBJECT :	IVR Diversion - Summary of Design Changes During Construction in September and October 2020		

1.0 Introduction

This memorandum summarizes the design and technical specifications changes made during the construction of the IVR Diversion due to site conditions.

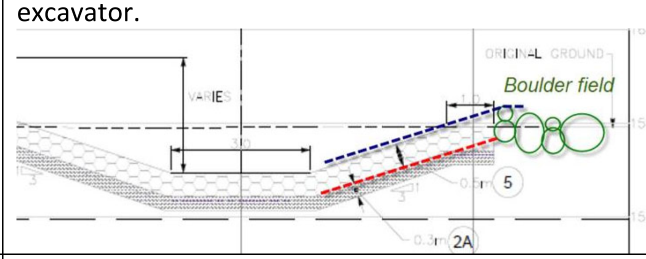
2.0 Summary of Design Modifications

Table 2.1 presents the list of changes made in design and technical specifications during the construction.

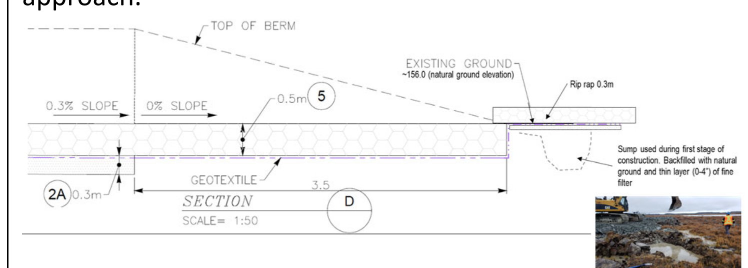
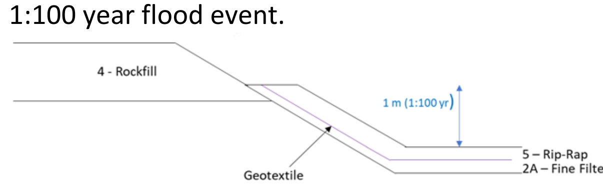
Table 2-1: List of Changes Made to the Design and Technical Specifications to the IVR Diversion during Construction

<table>
<tr><th>Deviation No.</th><th>Date Received</th><th>Date Responded</th><th>Status</th><th>Subject</th><th>Location</th><th>Notes</th></tr>
<tr><td>001</td><td>2020-09-03</td><td>2020-09-10</td><td>Accepted</td><td>AEM planned to use ultramafic rockfill instead of esker for the berm. Ultramafic rockfill is very fine and easily degrade under compaction which usually make it a low permeability element.</td><td>All along the channel</td><td>Using ultramafic rockfill is an acceptable alternative considering that:
a) The diversion is operational only for a limited time;
b) Traffic frequency is almost negligible and limited to light trucks</td></tr>
<tr><td>002</td><td>2020-09-19
And
2020-09-30</td><td>2020-09-21
And
2020-09-30</td><td>Accepted</td><td>2020-09-19:
Geotextile: Mirafi S1600 geotextile was ordered as per technical specifications. Shipment has arrived, however due to Caribou migration the geotextile cannot be delivered on time for the construction. AEM proposed to use two layers of Novatex V geotextile.

2020-09-29
Geotextile: AEM informed thy ran out of Novatex V on site but have Mirafi 1100N, which visually is thicker thant Novatex V. The approach for construction to be used with this material is similar to Novatex V (two layer with overlap).</td><td>All the channel</td><td>2020-09-21
Physical and Mechanical Properties of the two geotextile types are summarized:
<table>
<tr><th>Physical Properties</th><th>Unit</th><th>Mirafi@1600</th><th>Novatex V</th></tr>
<tr><td>Weight</td><td>g/m²</td><td>542</td><td>270</td></tr>
<tr><td>Thickness</td><td>mm</td><td>4.4</td><td>2.5</td></tr>
<tr><td>Mechanical Properties</td><td></td><td></td><td></td></tr>
<tr><td>Grab tensile strength</td><td>N</td><td>1,891</td><td>1,000</td></tr>
<tr><td>Grab Tensile Elongation</td><td>%</td><td>50</td><td>50-85</td></tr>
<tr><td>Trapezoid Tear Strength</td><td>N</td><td>690</td><td></td></tr>
<tr><td>CBR Puncture Strength</td><td>N</td><td>5,340</td><td>2,560</td></tr>
<tr><td>Apparent Opening size</td><td>mm</td><td>0.15</td><td>0.055-0.1</td></tr>
<tr><td>Hydraulic Properties</td><td></td><td></td><td></td></tr>
<tr><td>Permittivity</td><td>s⁻¹</td><td>0.7</td><td>1.26</td></tr>
<tr><td>Permeability</td><td>cm/s</td><td>0.31</td><td>0.3</td></tr>
</table>
The thickness and CBR strength of Novatex V is only half compared to Mirafi's. The non-woven geotextile may not have the required mechanical properties to withstand deformations. If Novatex V is used, two layers shall be used.

2020-09-30
The use of Mirafi 1100 N with a two layout approach with overlap is acceptable.</td></tr>
<tr><td>003</td><td>2020-09-24</td><td>2020-09-25</td><td>Accepted</td><td>The ground at this time of year is saturated and therefor unstable. AEM planned to eliminate the small plateau on the upstream side of the channel and replace it with fine filter. The plan is to join the soft ground with the fine filter until the base of the boulder field then cover it with riprap to match the elevation of the surface of the boulders. The constraint is the reach of the excavator.

</td><td>0+143 to 0+281</td><td>The request was accepted understanding that it is due to the constraint of equipment (excavator reach) and the saturated soil condition. However, this request was not put in effect. The excavator operator managed to reach the far end of the excavation in the deepest portion of the channel and the plateau could be built as per design.</td></tr>
<tr><td>004</td><td>2020-09-27</td><td>2020-09-29</td><td>Accepted</td><td>Ice Rich Till: deep ice rich till layer was encountered at 0+235 to 0+260, 0+125 to 0+090 and 0+070 to 0+029. AEM excavated to total depth of 1.8m (0.6m to planned depth and an additional 1.2m). The additional excavation was due to the ice rich till material. 1.2m was backfilled with compacted esker to reach the planned depth. Due to safety reasons, if the excavation is deeper than 2m the downstream berm could not be properly sloped to preserve excavator reach. With the aggregates, a total of 2m of added granular material will be sitting above the ice-rich till left in place.

AEM confirmed that from 0+235 to 0+260 the bedrock was encountered in about 10% of the surface excavated. Bedrock is believed to be somewhat close to the bottom of the excavation.</td><td>0+235 to 0+260;
0+125 to 0+090,
0+070 to 0+029</td><td>The approach was accepted given that 1.2 m of ice rich material was removed and excavated area was backfilled compacted to the designed elevation. AEM assured that bedrock was slightly below the excavated depth.</td></tr>
</table>

Deviation No.	Date Received	Date Responded	Status	Subject	Location	Notes
005	2020-09-28	2020-09-29	Resolved	Channel Entrance:  There is about 15 m from the station 0+000 to where the channel begins. In order to complete coverage of the area by the channel and collect all water, the excavation will be continued for 15m until it reaches the natural ground. AEM asked for the proposed solution as fill materials for the 15m in order to match the existing fill of the channel knowing that the actual proposed fill thickness would end up creating a bump above the topography.	0+000 to 0-15	Recommended design is as follow: • Station -15 to -7.5: fine filter + geotextile + a little layer of rip-rap • Station -7.5 to 0: fine filter + geotextile + rip-rap • Station 0: start of the IVR Diversion • Fine filter thickness goes from 300 (at 0) to 150 mm (at -15) • The inlet shall have a similar slope as the IVR Diversion.
006	2020-09-29	2020-09-29	Accepted	Geotextile: AEM ran out of the Novetex V and wondered if Mirafi 1100N can be substitute. The installation of Mirafi 1100N will be the same as Novetex V where two layers with overlap will be applied.		The physical and material properties of Mirafi 1100N are stronger than Novetex V. Mirafi 1100N can be used as a substitution.
007	2020-09-30	2020-09-30	Resolved	Channel outlet: the riprap layer is below the ground surface  .		SNC explained the design intent which the riprap layer should be at ground elevation at the outlet. AEM confirmed that at the channel outlet near the energy dissipator, a sump was in place at the early stage of the construction. This area was backfilled to original ground. On top, a thin layer of fine filter was placed to fill the local depressions between large boulders. The final fine filter elevation corresponds to natural ground elevation at the exit of the energy dissipator. SNC is Okay with the approach. 
008	2020-10-03	2020-10-05	Resolved	Berm: AEM would like to add an additional 0.5m of rockfill on the berm to increase the height to a minimum of 2m. This layer would be placed after the construction of the channel and will act as the thermal cap to contain the active layer in the berm. The rip-rap and geotextile layer will also be reduced to the 1:100 year flood event. 		SNC is okay with the additional lift as long as the rip-rap and geotextile are extended to a height of 1m from the invert along the entire channel length. SNC is okay with placing the rip-rap and geotextile layer only upto the Elevation of the 1:100 yr flood event.

End of Document

DESIGN CHANGE LOG **PROJECT:** **IVR DIVERSION CHANNEL**

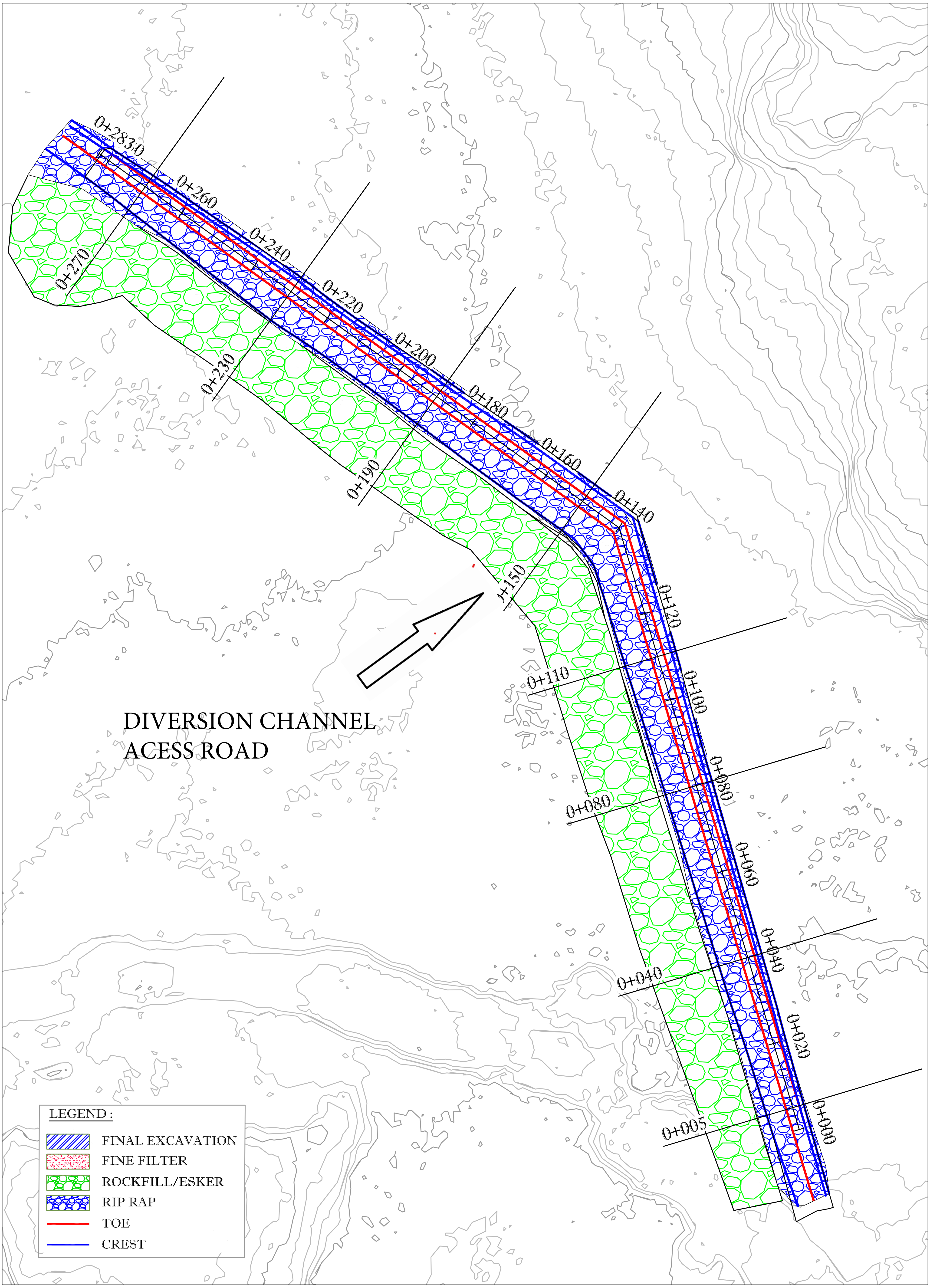
AGNICO EAGLE MEADOWBANK

No	DATE	SUBJECT	ITEM	LOCATION	DRAWING OR SPEC REF.	DESIGN	CHANGE	STATUS	APPROVED BY	NOTES
01	9/10/2020	Material change	Access road/berm material	All the road	61-695-230-201	Compacted esker material 1.5m thick	Compacted rockfill (ultramafi soapstone) 2m thick	Approved. Memo received	SNC (Deviation No 001 & 008)	fine rockfill (type soapstone), granulometry used 0-600mm, all large particle put aside
02	9/19/2020	Material change	Geotextile product	All the channel	668284-7000-40EF-0001	Mirafi 1600 or equivalent	2 Layers of Novatex V	Approved. Memo received	SNC (Deviation No 002)	Overlap remains the same. The second layer started half way through the first layer at bottom for better coverage.
03		Geometry change	East crest	0+143 to 0+281	61-695-230-201	On the east side of the channel, 1m wide flat crest at the top of the slope	Rather than a flat crest, slope continues over 1m wide so that the top of the Fine Filter layer merges with the top of natural saturated ground material. Rip rap layer on top follows the Fine filter slope and merges with the boulder field surface.	Approved. Memo received Change not executed	SNC (Deviation No 003)	Change initially requested because of equipement limitation (maximum excavator reach), but the operator ended up being able to build the east side of the channel as per the initial design
04	9/25/2020	Over-excavation	Channel invert foundation	0+225 to 0+260 0+125 to 0+090 0+070 to 0+029	668284-7000-40EF-0001	The channel invert shall be sitting on ice-poor material surface or on bedrock surface	Excavation for ice-rich material removal does not extend beyond 1.2m below channel invert.	Approved. Memo received	SNC (Deviation No 004)	Maximum over-excavation of 1200mm below targetted elevation to remove most of the ice rich till. Material replaced by 2 layers of fine esker, dry, well compacted.
05	9/27/2020	Geometry change	Channel inlet	-0+015 to 0+000	61-695-230-201	channel upstream end is at STA 0+000	Channel upstream section extends to -0+015, and follows design intent (slope, layers, etc.)	Approved. Memo received	SNC (Deviation No 005)	Excavation of the material pass the channel limit in order to collect a water pond sitting in the area.
06	9/29/2020	Material change	Geotextile product	All the channel	668284-7000-40EF-0001	Mirafi 1600 or equivalent	2 Layers of Mirafi 1100N for -0+015 to 0+060	Approved. Memo received	SNC (Deviation No 006)	The site ran out of Novatex V but Mirafi 1100N was readily avaiable. Same installation procedure as with Novatex V
07	10/1/2020	Geometry change	Channel outlet	0+284 to 0+290	61-695-230-201	Geotextile end at the bottom of the excavation and rip rap is even to natural ground elevation	Geotextile goes up and extends beyond the dissipator to lay at natural ground elevation. Rip rap added on top of the geotextile to hold it in place and dissipates the energy of water dischargin out of the channel	Approved. Memo received	SNC (Deviation No 007)	Added geotextile and rip rap layer covers the backfilled temporary sump around 0+286
08	10/3/2020	Geometry change	West slope cross-section	All the channel	61-695-230-201	Fine filter stops at natural ground elevation. Geotextile and rip rap extends to the top of the road.	Fine filter top elevation to be 1m above inlet. Geotextile and rip rap to end there accordingly, rather than being extended to top of the road	Approved. Memo received	SNC (Deviation No 008)	1m above the inlet is enough to contain 1:100year event and allows material saving

APPENDIX D

AS-BUILT DRAWINGS

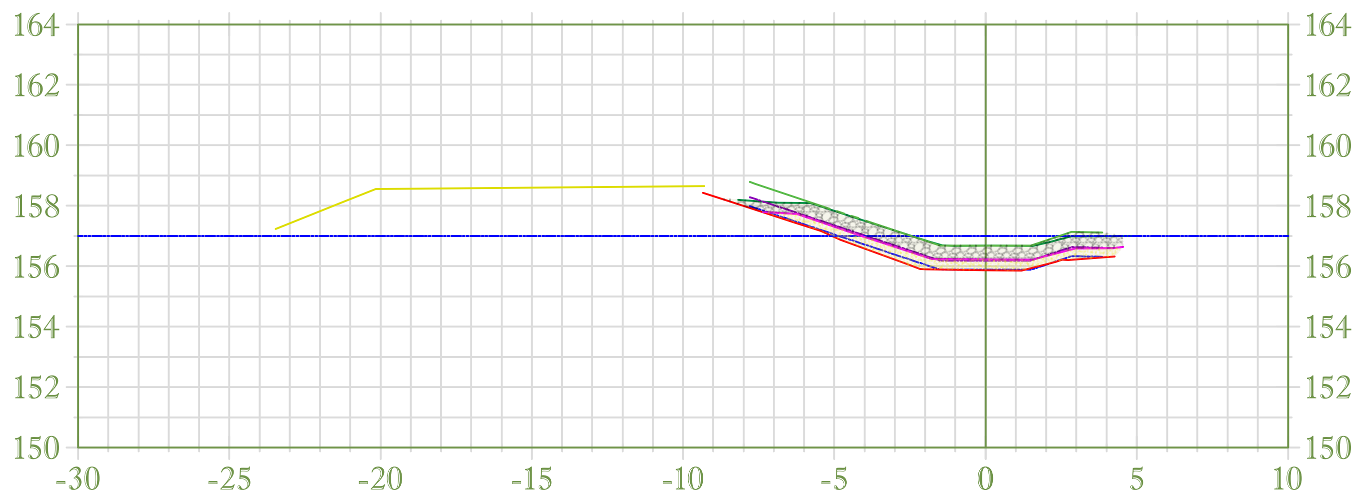
DIVERSION CHANNEL AS-BUILT
AMARUQ ROAD CONSTRUCTION
CONTRACT # 11-607



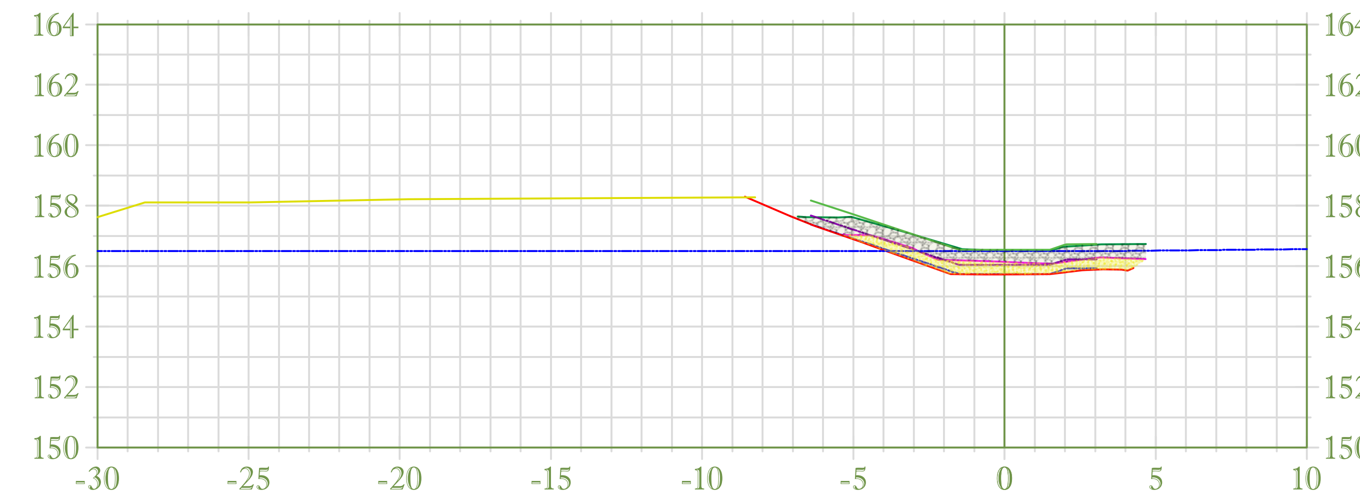
KIVALLIQ CONTRACTORS GROUP LTD

PREPARED BY : FRANCIS PAULIN
DATE : 13-02-2021
CON-FD-374.REV1

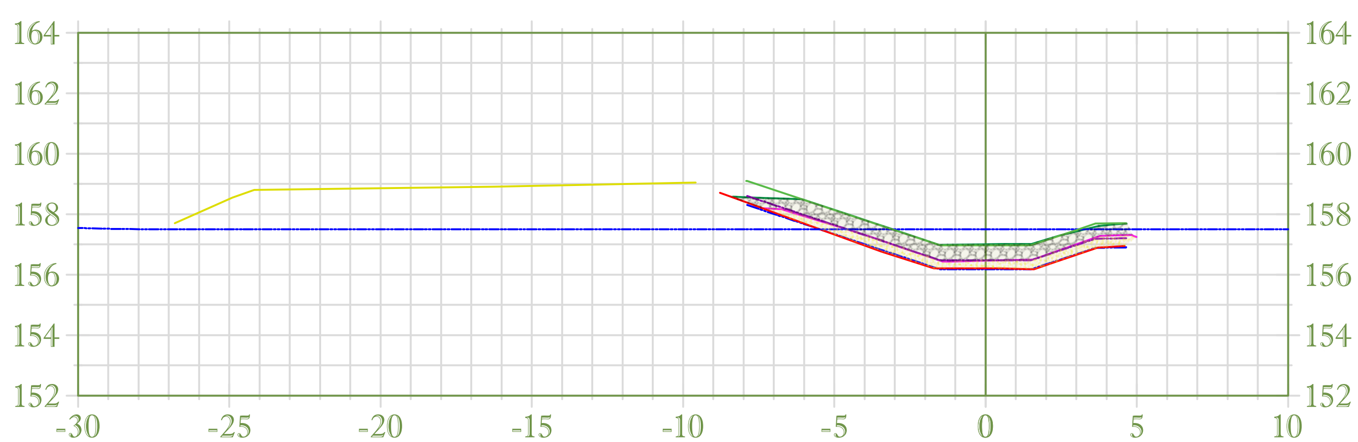
DIVERSION CHANNEL CROSS SECTION AS-BUILT
AMARUQ DIVERSION CHANNEL
CONTRACT # 11-811



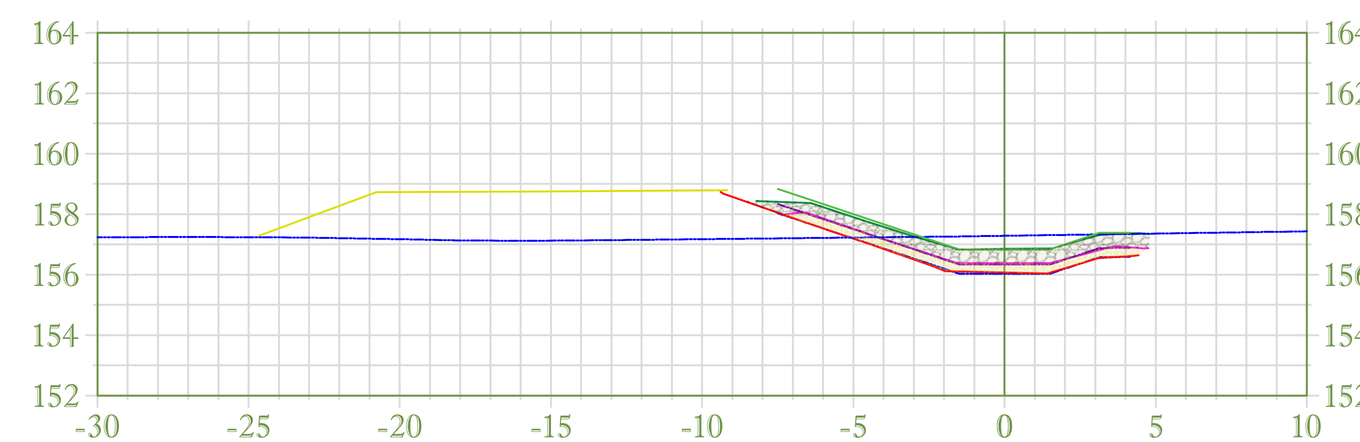
0+230



0+270



0+150



0+190

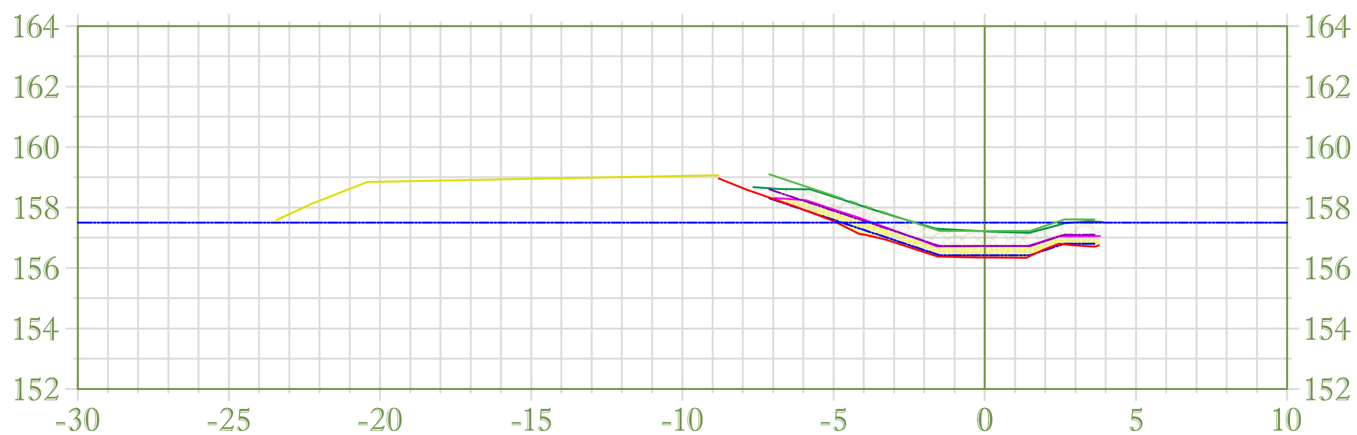
SCALE = 1:250

KIVALLIQ CONTRACTORS GROUP LTD

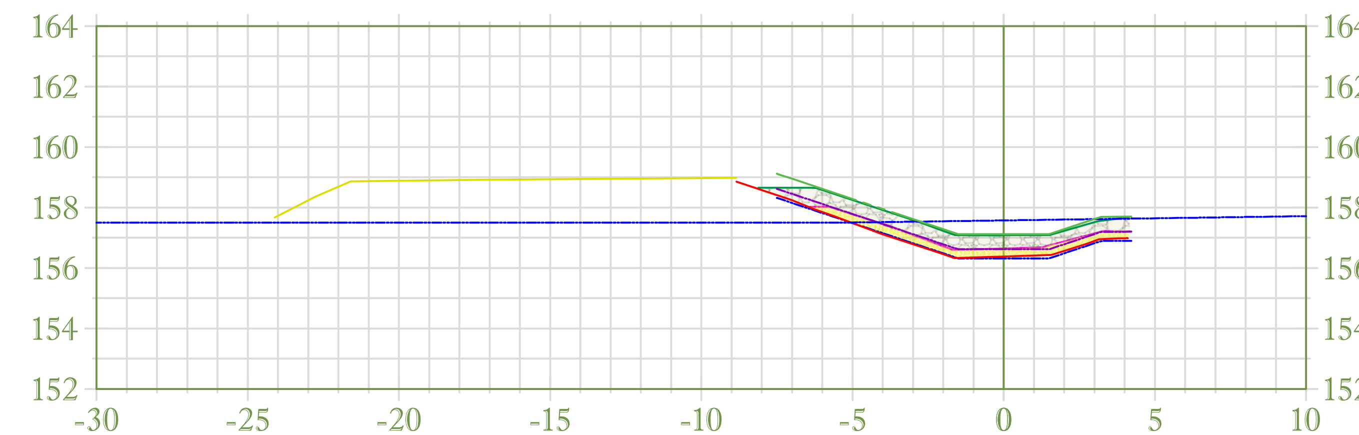
- THEORETICAL EXCAVATION
- THEORETICAL FINE FILTER
- THEORETICAL RIP RAP
- NATURAL GROUND
- AS-BUILT EXCAVATION
- AS-BUILT FINE FILTER / GEOTEXTILE
- AS-BUILT RIP RAP
- AS-BUILT ROAD

PREPARED BY : FRANCIS PAULIN
DATE : 13-02-2021
CON-FD-374-2.REV1

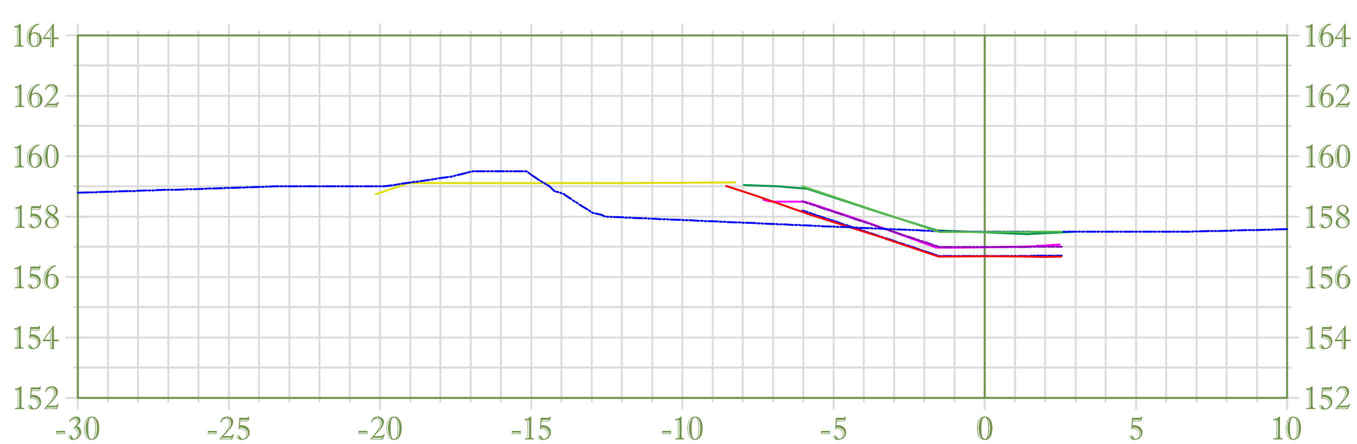
DIVERSION CHANNEL CROSS SECTION AS-BUILT
AMARUQ DIVERSION CHANNEL
CONTRACT # 11-811



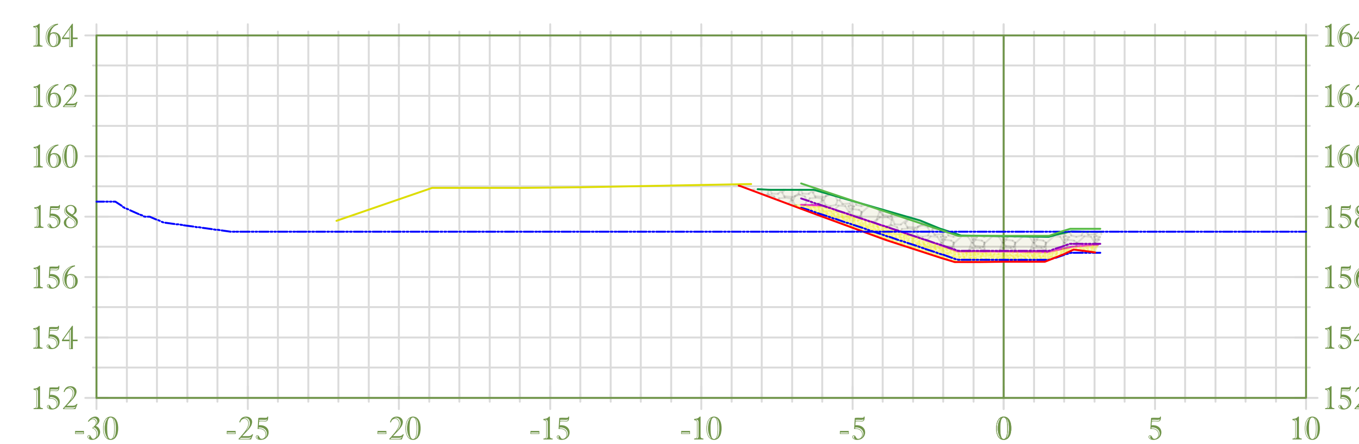
0+080



0+110



0+005



0+040

SCALE = 1:250

C:\Users\francis\Dropbox (Groupe Gilbert)_arpentage meadowbank\02-E - OFFICIAL DRAWING\11-811 - AMQ DIKES\CON-FD (AS BUILT)\CON-FD-374- IVR CHANNEL CROSS-SECTION ASBUILT 0+280@0-015_REV1.dwg

KIVALLIQ CONTRACTORS
GROUP LTD

THEORETICAL EXCAVATION	AS-BUILT EXCAVATION
THEORETICAL FINE FILTER	AS-BUILT FINE FILTER
THEORETICAL RIP RAP	AS-BUILT RIP RAP
NATURAL GROUND	AS-BUILT ROAD

PREPARED BY : FRANCIS PAULIN
DATE : 13-02-2021
CON-FD-374-1.REV1

PHOTOS

Photo 1: channel site before construction, St.0+000 looking North.

Photo 2: channel site before construction, St.0+025 looking North-West.

Photo 3: first lift of the downstream berm construction with ultramafic rockfill, St. 0+140 looking South.

Photo 4: construction of the second lift of the downstream berm construction with ultramafic rockfill, St. 0+180 looking South.

Photo 5: excavation of the temporary sump to manage water 5m North of the outlet, St.0+285 looking South.

Photo 6: First step of the excavation where 500mm of material is dug to promote drainage of the overburden, St.0+270 looking North-east.

Photo 7: excavation St.0+150 looking South. First step of preliminary excavation near the shovel and final depth reached at bottom left, St.0+150 looking South-East.

Photo 8: Final excavation at bottom of channel before the upstream tablet was completed, St.0+140 looking North-West.

Photo 9: final excavation reached at bottom of the channel with tablet completed on the upstream slope. The downstream slope was not built to preserve excavator reach to place aggregates.

Photo 10: ice-rich till at the bottom of the planned excavation, St.0+250 looking North.

Photo 11: ice lens within an ice-rich till area, St.0+247. Ice was removed from the bottom of the excavation and under the downstream slope toe, right on the photo.

Photo 12: ice-rich till removal with a mechanical hammer, first 600mm material removal, St.0+125 looking South-East.

Photo 13: ice-rich till removal completed with the mechanical hammer, first 1200mm material removed, before backfilling it with esker, St.0+125 looking South-East.

Photo 14: backfilling of the ice-rich till zone with compacted esker material, first 600mm completed. St.0+125 looking South East.

Photo 15: backfilling of the ice-rich till area 0+125-0+090 with compacted esker material completed to match planned channel bottom elevation, looking South-East.

Photo 16: Approved foundation ready for the fine filter placement, St.0+090 looking North.

Photo 17: fine filter placement, St.0+145 looking North-West.

Photo 18: fine filter placement, pushing the water and mud out of the approved foundation before placement, St.0+240.

Figure 19: fine filter placement final approval before geotextile installation, St.0+140 looking North-West.

Photo 20: approved foundation of the energy dissipator following overburden excavation, looking at channel outlet.

Photo 21: energy dissipator at the channel outlet covered with fine filter, St.0+275 looking North-West.

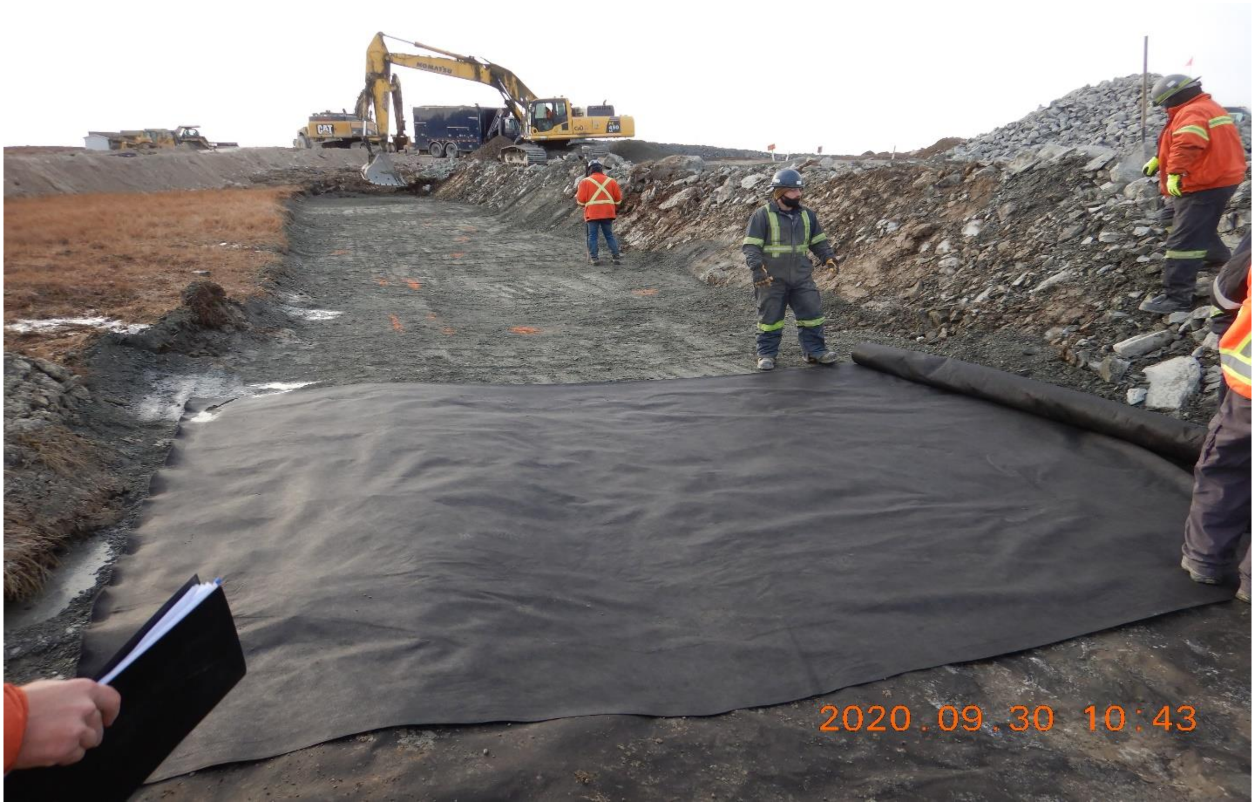


Photo 22: geotextile installation, St.0+050 looking South-East.

Photo 23: geotextile installation showing overlap of the different layers installed, St. 0+050.

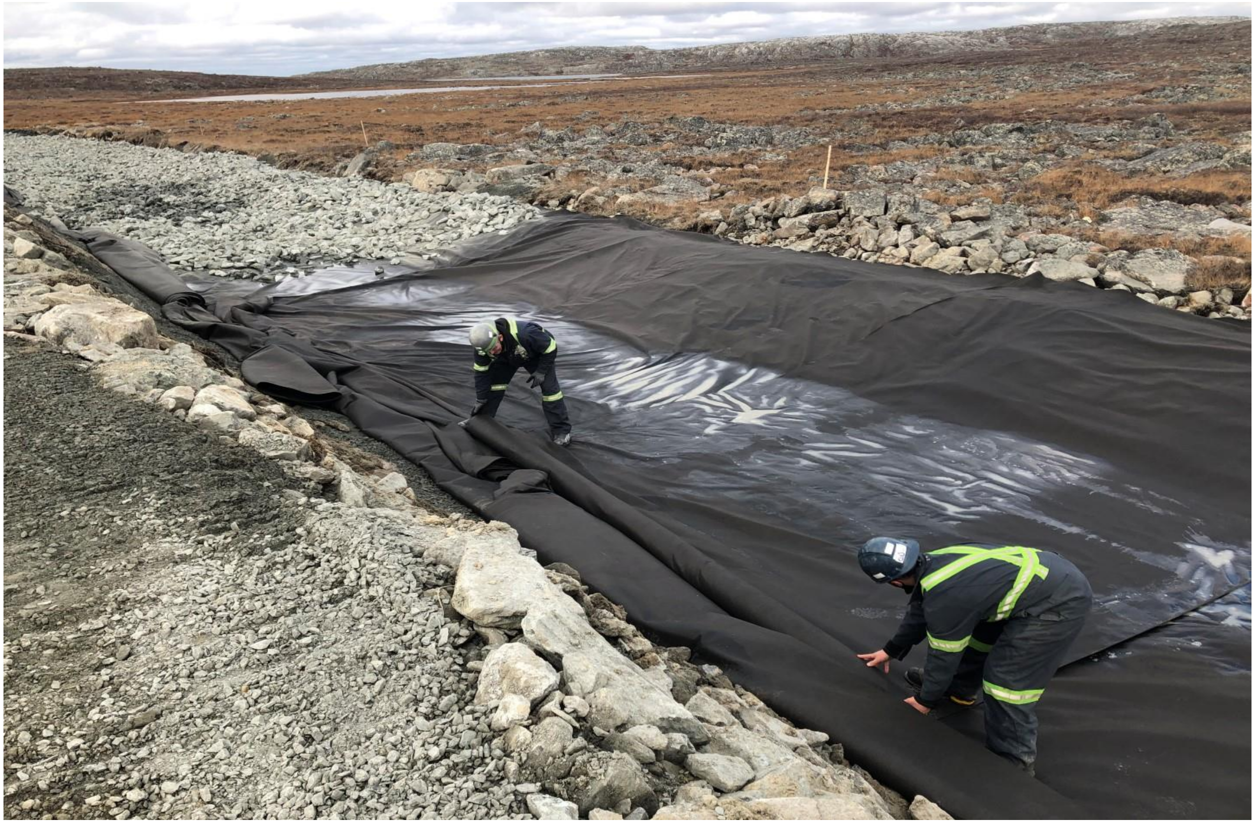


Photo 24: geotextile installation followed by rip-rap placement, St.0+200.

Photo 25: rip rap placement over the geotextile matching the natural topography on the upstream side, St.0+140 looking North.

Photo 26: rip rap placement completed on the upstream side for section 0-015 to 0+090, looking South-East. Downstream berm not sloped to final grade.

Photo 27: sloping of the downstream berm from foundation to top of platform, St.0+140 looking North-East.

Photo 28: approved surface of the downstream berm sloped ready for fine filter placement, St.0+200 looking North-West.

Photo 29: fine filter placement in downstream slope, St. 0+170 looking South-East.

Photo 30: final fine filter placement in the downstream slope before geotextile placement, St. 0+070 looking North-West.

Figure 31: ballasting the approved installed geotextile with rip rap to prevent wind action, St.0+125 looking North.

Figure 32: rip rap placement on top of geotextile in the downstream slope, St.0+100 looking South.

Photo 33: view of the finalized channel, St. 0+000 looking North-West.

Photo 34: Channel inlet completed with rip rap placement.

Photo 35: channel outlet completed with geotextile and rip rap.

Photo 36: view of the completed channel section 0+000 to 0+140.