AGNICO EAGLE

DESIGN REPORT FOR DISCOVERY ROAD PHASE 1

MELIADINE SITE, NUNAVUT

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Prepared by :

REGISTERED PROFESSIONAL ENGINEER
S.A. MOREAU
LICENSEE
NT/NU
12-03-206

Solène Moreau, P. Eng
Civil Engineer

NAPEG#L5021

PRODUCTION TEAM

CLIENT – AGNICO EAGLE MINES LIMITED	
Project Manager & Civil Lead	Jennifer Pyliuk, P. Eng.
Permitting Specialist Aquatics Lead	Sam Gordon

FIRM – TETRA TECH	
Civil Engineer	Solène Moreau, P. Eng.

FIRM – WSP Canada inc. (*)	
Senior Water Resources Specialist	Amir Joorabchi
Principal Water Resources Engineer	Curtis VanWerkhoven, MASc, P. Eng.

(*) : WSP Canada inc. team was responsible for the design of culverts located on fish bearing watercourses.

TABLE OF CONTENT

APPENDICES

Appendix A – CONSTRUCTION DRAWINGS
Appendix B – TECHNICAL MEMORANDUM DRC02/DRC03 BY WSP

ACRONYMS AND ABVREVIATIONS

The definition of acronyms and abbreviations used in this report are listed below.

Acronyms/Abbreviations	Definition
AWAR	All-Weather Access Road
ARD-ML	Acid Rock Drainage – Metal Leaching
FEIS	Final Environmental Impact Statement
ha	Hectare
IDF	Intensity duration frequency
km	Kilometer
m	Meter
N/A	Not Applicable
NPAG	Non-Potential Acid Generating
NWB	Nunavut Water Board
Tc	Time of concentration

1 INTRODUCTION

1.1 PROJECT OVERVIEW

Agnico Eagle Mines Ltd (AEM) is proposing to build a new road from the existing All Weather Access Road (AWAR) linking Rankin Inlet to Meliadine mine site in Nunavut. The road would be starting at KM 19+550 of the AWAR and branch toward the East to reach and support the development of a new potential site called “Discovery Mining Zone”. This new Discovery Road will have a final length of about 10 km. The project will be executed in 2 phases. Phase 1 consists of the first ±4km of the road starting from the AWAR to reach a 220 m long spur leading to the Meliadine Lake boat launch. This is a well-known access to Meliadine Lake for the local community and would still be used as a boat loading/unloading place with a better access from the proposed road. Phase 2 will consist of the remaining ±6km from the Boat Launch to the Discovery site and will be designed at a later date.

The design of the Phase 1 Discovery Road is based on the specifications of the AWAR and will consist of granular esker material. With respect to water management and fish habitat protection, it also includes the installation of five groups of culverts along the road to allow surface water to drain properly.

Figure 1 and Figure 2 below illustrates the geographical location of Rankin Inlet, Meliadine Mine Site and Discovery Mining Zone.

Drawing 65-DIS-117-230-000-001 provided in Appendix A shows a general location plan of the works.

Figure 1: Location map (general)

Figure 2: Location map (enlargement)

1.2 PURPOSE OF THE REPORT

Agnico Eagle retained the services of Tetra Tech to carry out the engineering design for the road and non fish habitat culverts for the Discovery Road Phase 1 project.

Agnico Eagle retained the services of WSP to carry out the design for the fish habitat culverts (refer to Appendix B).

As a requirement of the Type A Water Licence Permit No.2AM-MEL1631 (Nunavut Water Board), this report summarizes the site conditions, design basis, considerations, criteria, and the detailed design of the Discovery Road Phase 1 including the required culverts. It includes the final design and construction drawings.

1.3 SCHEDULE

The work for Discovery Road Phase 1 is expected to be executed over a two-year period, from 2026 to 2027. The first year of construction, 2026, will start in June and focus on farming and stockpiling of esker material and beginning road placement. The remaining road section and boat launch area will be completed in 2027.

1.4 INCLUSIONS AND EXCLUSIONS

The following items are included in the design report:

- Definition of the design parameters for roadway
- Hydrological and hydraulic analyses and definition of the design parameters for culverts
- Detailed engineering and construction drawings for:
  - Discovery Road Phase 1 (±4km)
  - Boat launch access road (±220m)
  - 3 culverts in non potential fish habitat areas (Culverts DRC01, DRC04, DRC05)
  - 2 culverts in potential fish habitat locations (Culverts DRC02, DRC03)
- Specifications and quantities estimation of required material for construction

Any elements not mentioned in the Inclusions are considered excluded from the design report.

1.5 ENGINEERING DOCUMENTS

The construction drawings produced by Tetra Tech are provided in Appendix A and provide construction details for the road and culverts DRC01, DRC04, DRC05.

The technical memo produced by WSP is provided in Appendix B. It includes the design basis and construction drawings for fish bearing culverts (DRC03, DRC04).

2 GENERAL SITE CONDITIONS

2.1 CLIMATE AND METEOROLOGY

The Project is located in the Kivalliq Region of Nunavut, near the northern border of the southern Arctic terrestrial ecozone, and within the Arctic tundra climate region. Within this region daylight reaches a minimum of 4 hours per day during the winter to a maximum of 20 hours per day during the summer. The climate is extreme with long cold winters and short cool summers. Temperatures are cool, with a mean temperature of 12°C in July and -31°C in January. The mean annual air temperature at the Project site is approximately -10.4 °C (Golder, 2012a).

The recorded prevailing winds are from north and north-northwest. The wind blows from the north and north-northwest direction more than 30% of the time, and the least frequent wind direction is west-southwest, with a frequency of 2.1%. The calm frequency is 2.8% of the time. The mean values for wind speed show that the north-northwest together with north and northwest winds have the highest speeds and tend to be the strongest.

Table 1 presents the annual precipitation, evaporation, and temperature characteristics. Detailed climate characteristics at the site are described in the FEIS of Support Document (SD) 7-1 Aquatic Baseline Synthesis Report.

Table 1: Estimated Monthly Climate Characteristics in Rankin Inlet

Month [a]	Monthly Air Temperature (˚C)			Monthly Precipitation (mm)		
	Minimum	Average	Maximum	Rainfall [b]	Snowfall [b]	Total [b]
January	-37.2	-30.9	-19.8	0.0	8.6	8.4
February	-35.3	-30.1	-24	0.0	8.7	8.4
March	-30.8	-25.1	-18.8	0.0	12.4	12.2
April	-20.2	-15.7	-10.4	1.2	19.2	20.0
May	-10.8	-5.9	-1.2	6.8	12.8	19.1
June	0.1	4.1	6.7	23.4	4.7	28.0
July	6.9	10.5	14.9	38.7	0.1	38.8
August	7.7	9.7	11.2	56.4	0.2	56.5
September	1.3	3.8	6.8	40.0	3.8	43.8
October	-9.9	-4.6	1.7	13.7	24.6	37.9
November	-23.6	-17.2	-10.2	0.3	22.2	21.6
December	-33.3	-25.9	-19.4	0.0	12.6	12.0
Annual	-37.2	-10.4	14.9	180.6	128.8	305.5

[a] Data obtained from SD 7-1 Aquatics Synthesis Baseline of the FEIS.

[b] Mean Monthly and Mean Annual Precipitation at Rankin Inlet A, from 1981 to September 2009

2.2 PERMAFROST

The project site is located within the Southern Arctic terrestrial eco-zone, one of the coldest and driest regions of Canada, in a zone of continuous permafrost. Continuous permafrost to depths of between 360 m to 495 m is expected based on historical and recent ground temperature data from thermistors installed near Tiriganiaq, F-Zone, and Discovery deposits (Golder, 2012b). The measured ground temperature data indicates that the active layer is 1.0 m to 3.0 m in areas of shallow soils and areas away from the influence of lakes. It is anticipated that the active layer adjacent to lakes or below a body of moving water such as a stream could be deeper. The typical permafrost ground temperatures at the depths of zero annual amplitude (typically at a depth of below 15 m) are in the range of -5.0°C to -7.5°C in the areas away from lakes and streams. The geothermal gradient ranges from 0.012°C/m to 0.02°C/m (Golder, 2012b). Terrain and permafrost conditions along the road comprise mostly overburden soil materials that would appear to contain excess visible ice in many locations as identified from the available satellite imagery. Ice wedge terrain is visible in these images indicating that the soils would be prone to thaw settlement (thaw susceptible) if thermally disturbed.

3 ROAD DESCRIPTION AND DESIGN PARAMETERS

3.1 PROPOSED ROUTING

The routing of the Phase 1 Discovery Road was selected to minimize possible effects on the environment, minimize water crossings, minimize snow drift, help drainage and avoid disturbance to others.

The selection of the route was based on a number of considerations, boundaries and restrictions, including the following:

- Geomorphology and terrain conditions;
- Watercourse crossings;
- 30 m offset from any archeological sites;
- 31 m offset from any waterbody;
- Safety considerations.

An overview of the proposed road routing is shown on drawing 65-DIS-117-230-000-001 in Appendix A. The drawing also presents the limits, obstacles and boundaries that have been considered.

The Phase 1 Discovery Road is ±4 km long and starts at km 19+550 of the existing AWAR, linking Rankin Inlet to Meliadine Mine Site. The alignment of the road goes north and then turns east toward the south end of Meliadine Lake. The spur to the boat launch area is located near Km 3+940 along the proposed Discovery Road. It is aligned toward north to reach the south end of Meliadine Lake, with an area for parking nearby and an area with sufficient room for turnaround. Because of the nature and purpose of these areas (to enhance access to Meliadine Lake), construction of the spur will connect to an existing boat launch area and occur within 31 m from Meliadine Lake.

3.2 DISCOVERY ROAD DESIGN

The construction drawings provided in Appendix A present the alignment, profile, and typical cross-section of the new road. For safety purposes and to allow for two-way traffic, 10 pullouts are proposed. The pullouts are 30 m in length and spaced at intervals of approximately 400 m. The nominal running surface at each pullout will be 12.5 m in width.

The majority of the road will be built on soil which is considered to be thaw susceptible. Thus, the minimum fill thickness of 1.2 m shall be used for the road foundation, unless specified otherwise. The fill thickness will be increased in culvert areas to allow for sufficient fill cover over the culverts. A geotextile shall be installed for fill material compaction purposes and to prevent loss of fill material if the construction schedule extends to the summer and the site conditions require it.

The geometric design parameters used for the Phase 1 Discovery Road are presented in Table 2.

Table 2: Design Summary for Phase 1 Discovery Road

Parameters	Value
Road length	4020 m
Road width	8.5 m
Embankment slope	2.5H :1V
Construction method	Fill (No Cut)
Minimum Radius of Curvature	165 m (min)
Maximum Slope Gradient	8% (max)
Minimum Sag Curve « K » Value	11 (min)
Minimum Crest Curve « K » Value	10 (min)
Minimum Cover above Culvert	1 m (min)
Minimum fill on running surface	1.2 m (Except at some high point locations where shallow rock or granular esker material is expected. For these locations, a layer of 0.5m minimum of fill is considered acceptable)
Number of pullouts	10 (Located every ±400m on the North side of the road)
Dimension of pullouts	4m (wide) x 30m (long)
Number of groups of culverts	5
Minimum distance from any waterbody	31m
Minimum distance from any archeological site	30 m

3.3 BOAT LAUNCH ACCESS ROAD DESIGN

The construction of the Discovery Road is considered a good opportunity to enhance boat launch access to Meliadine Lake for the local community. An already well-known access to Meliadine Lake will be more accessible by the proposed Boat Launch access road, as shown on construction drawings provided in Appendix A. This access road will be used as a boat loading/unloading area for local people during summertime. A parking area and a turnaround will also be built to make the boat launch functional and safe for the users. The placed material will blend into the existing beach and precautions will be taken so that no material will be entered into the water.

The geometric design parameters used for the Boat Launch Access Road are presented in Table 3.

Table 3: Design Summary for the Boat Launch Access Road

Parameters	Value
Road length	217 m
Road width	8 m
Embankment slope	2.5H :1V
Construction method	Fill (No Cut)
Radius of Curvature	NA
Maximum Slope Gradient	12.3%
Minimum Cover above Culvert	N/A
Minimum fill on running surface	1.2 m
Parking area dimension	30mx70m
Turn around dimension	Circular, R=20m

4 IDENTIFICATION OF CULVERTS NEEDS

4.1 HYDROLOGICAL ASSESSMENT

A hydrological assessment was completed to determine the location and the design parameters for culverts along the Discovery Road Phase 1. The water management strategy for this project is to minimize the potential negative impacts of the development, and as part of this objective, culverts are used to control and divert runoff crossing the road. It also facilitates potential fish passage where required.

The LIDAR type survey conducted in August 2022 by Agnico Eagle and satellite imagery of the areas surrounding were used as reference for the assessment.

Based on the analyses of the reference data, five (5) groups of culverts are required for runoff water crossing along the Discovery Road Phase 1. The catchment areas for drainage related to each culvert location has also been estimated.

Table 4 summarizes the location and the catchment area of the culverts. Refer also to drawing 65-DIS-117-230-000-002 provided in Appendix A for a plan view of the culverts' location.

Table 4: Drainage Areas for Proposed Culvert Locations

Culvert Design Identification	Approximate distance from AWAR junction	Drainage area
DRC01	KM 0+915	4 ha
DRC02	KM 1+370	269 ha
DRC03	KM 1+890	10 ha
DRC04	KM 2+720	51 ha
DRC05	KM 3+905	16 ha

4.2 WATERCOURSE CROSSINGS WITH POTENTIAL FISH HABITAT

A biological study was completed on-site by Agnico Eagle to identify watercourses in the area of the proposed path and also to evaluate the potential for fish habitat in the surrounding waterbodies (ponds).

The biological study identified watercourses with potential fish habitat that shall be considered in the design for culverts DRC02 and DRC03. The crossings at DRC02 and DRC03 will consequently be designed to accommodate low water fish passage. Refer to Section 6 for the design details of those culverts.

The culvert locations at crossings DRC01, DRC04 and DRC05 are accommodating runoff water management in local topographical depressions along the new road and their respective catchment areas are not part of any identified watercourses. The culverts will be designed for non permanent run-off water that is expected to occur during rain events and during spring snowmelt. No potential fish habitat is considered for those crossings. Refer to Section 5 for the design details of those culverts.

5 DESIGN OF CULVERTS DRC01, DRC04 AND DRC05

5.1 PEAK FLOW CALCULATIONS

Hydrologic and hydraulic analyses were carried out to determine the required culvert sizes to accommodate a 100-year return peak flows at each culvert location.

The Rational Method was applied to calculate the peak flows for the water crossings according to the catchment areas delineated.

Due to the site's proximity to Rankin Inlet, the intensity duration frequency (IDF) curve developed by Environment Canada for Rankin Inlet was used (Environment Canada 2014). A 1 in 100-year rainfall intensity for a duration equivalent to the time of concentration of the catchment area was used to determine the design peak flows for the culvert crossings.

The time of concentration (T_C), which represents the time it takes for the most remote portion of the catchment to contribute to the flow at the outlet of the catchment, was calculated using the Kirpich equation (Akan, A. O., & Houghtalen, R. J.,2003). The estimated peak flows for each water crossing are summarized in Table 5 below.

Table 5: Estimated Peak Flows at Crossings

Culvert Identification	Estimated Peak flow (m3/s)
DRC01	0.282
DRC04	1.644
DRC05	0.789

5.2 CULVERT DESIGN AND INSTALLATION

5.2.1 Culvert Sizing and Design

The proposed culverts for the crossings DRC01, DRC04 and DRC05 are sized based on the designed peak flow calculated in Section 5.1 and as per conventional hydraulic calculations for culverts.

The standard galvanized, corrugated steel pipe culvert is proposed. Each culvert crossing will consist of a group of several pipes that will be a combination of 1000 mm and 600 mm diameter culverts to convey the designed peak flow. Culverts will have a minimum corrugation profile of 68X13 mm, and a specified thickness of 2.8 mm for CSP Ø1000mm and 1.6mm for CSP Ø600mm. Refer to Section 7.2 for the complete proposed culvert specifications.

An “offset stacked” configuration will be used to enable flow conveyance before complete ice break-up within the watercourses. The lowest culvert(s) within the configuration is sized to accommodate the estimated peak flows at each crossing assuming inlet control. The higher culvert in the “offset stacked” configuration is a culvert with a diameter of 600mm and will allow an additional flow passage for a scenario in which the lowest culvert(s) is blocked with ice or debris.

Culvert capacity calculations were done with an inlet control and a HW/D ratio of 1 for non-embedded culverts. Table 6 presents the estimated culvert capacity for each diameter and configuration considered.

Table 6: Capacity of culvert

Culvert diameter	Configuration	HW/D value	Culvert capacity (m3/s)
600 mm	Non-Embedded	1	0.325
1000 mm	Non-Embedded	1	1.15

5.2.2 Culvert Installation

A minimum of 1.0 m fill cover shall be placed over the culverts according to the material thickness and the manufacturer’s recommendations for heavy traffic. The backfill around the culverts will be Granular Fill 0-30 mm and shall be placed in lifts no greater than 300 mm thick and compacted to the satisfaction of the Agnico field engineer.

Rip-rap of diameter 50-300 mm will be installed around the inlet and outlet areas of culverts to control erosion. The rip-rap material will come from a NPAG rock or esker source.

Refer to drawings provided in Appendix A for details of the culvert installations.

5.2.3 Summary of Proposed Culverts

The final design of the culverts and details for the installation is presented on the construction drawings provided in Appendix A. Table 7 summarizes the selection of culverts and their characteristics.

Table 7: Proposed Culverts Summary

Culvert Identification	Peak flow (m3/s)	Potential fish habitat identified	Culvert configuration description	Slope	Length	Culvert Capacity (m^3/s)
DRC01	0.282	No	1 x 1.0 m 1 x 0.6 m (high position)	1.35%	1 x 26 m 1 x 26 m	1.475
DRC04	1.644	No	2 x 1.0m 1 x 0.6 m (high position)	2.27%	2 x 25 m 1 x 25 m	2.625
DRC05	0.789	No	1 x 1.0m 1 x 0.6 m (high position)	4.88%	1 x 23 m 1 x 23 m	1.475

As indicated in the table above, the capacity of the proposed group of culverts are greater than the estimated peak flow for a return period of 1:25 years.

6 DESIGN OF CULVERTS DRC02 AND DRC03

Refer to WSP report #CA0056821.8485_MEL2025_024-TM-Rev0 for details provided in Appendix B.

7 CONSTRUCTION

7.1 MATERIAL QUANTITIES

Table 8 below presents the material quantities required for the construction of both the Discovery Road and Boat Launch access roads. The quantities presented are in-place quantities and do not include any contingency.

Table 8: Material quantities for construction

Item	Quantities (see note 1)
Granular fill 0-30 mm	**6 668 m3**
Granular fill 0-600 mm	**72 998 m3**
Rip-Rap 50-300 for culverts	**300 m3**
Culvert CSP Ø600 mm	**75 m**
Culvert CSP Ø1000 mm	**175 m**
Non-woven geotextile (200g/m2)	**358 m2**
Boulder Clusters	**See note 2**
Culvert Substrate Material	**See note 2**

Notes:

1. Quantities do not include any contingency. For material order purposes, it is recommended to add 10% for design accuracy, 10% for compaction (when applicable) and 20% for construction loss.
2. Boulder clusters and culvert substrate material are specified in the design of Culverts DRC02 and DRC03 for fish passage. Refer to WSP report #CA0056821.8485_MEL2025_024-TM-Rev0 for details provided in Appendix B.

7.2 CULVERTS SPECIFICATIONS

The product specifications for the culverts are presented in this Section. The culverts will be used for drainage purposes.

Where properties are specified, the following standards are applicable:

ASTM A796	Standard Practice for Structural Design of Corrugated Steel Pipe, Pipe-Arches, and Arches for Storm and Sanitary Sewers and Other Buried Applications
ASTM A760	Standard Specification for Corrugated Steel Pipe, Metallic Coated for Sewers and Drains
ASTM A929	Standard Specification for Steel Sheet, Metallic-Coated by the Hot-Dip Process for Corrugated Steel Pipe
CSA G401	Corrugated Steel Pipe Products

Culverts shall comprise of standard galvanized corrugated steel pipe (CSP) conforming to the properties in Table 9. The bolts and nuts shall be zinc plated. The couplers shall be standard annular corrugated couplers.

Table 9: Recommended Minimum Culvert Specifications

CSP pipe Diameter (mm)	Corrugation Profile (mm)	Minimum thickness (mm)
600	68 x 13	1.6
1000	68 x 13	2.8

7.3 EARTH WORK CONSTRUCTION MATERIAL SPECIFICATIONS

All earthworks materials to be used in the construction will be NPAG (Non-Potential Acid Generating) and determination will be done as per Agnico Eagle ARD-ML (Acid Rock Drainage – Metal Leaching) Testing and Sampling Plan. The general requirements for the materials are specified below.

7.3.1 Granular Fill (0-600 mm)

Granular Fill (0-600 mm) can have a wide variation of gradation, with maximum particle size 600 mm and fines (<0.075 mm) of less than 10%. Rock fill particles shall be derived from hard, durable rock. Any oversized boulders should be removed before the rock fill is placed into the earth structures.

7.3.2 Granular Fill (0-30 mm)

Granular Fill (0-30 mm) shall consist of, hard durable particles, be free of roots, topsoil and other organic material and have a particle size distribution as presented in Table 10. Processing will be required to achieve the specified gradation.

Table 10: Granular Fill (0-30 mm) – Particle Size Distribution Limits

Particle Size (mm)	% Passing
30	100
14	65 – 100
5	45 – 70
0.63	15 – 35
0.08	4 – 10

7.3.3 Rip-rap

Rip-rap shall be used as erosion protection materials. The particle size specifications for the graded rip-rap materials are presented in Table 11. The material shall be free of roots, topsoil, and other organic material. Processing may be required to achieve the specified gradation. The material can be processed from hard, durable, NAG rock. Rocks used for rip-rap

should generally be blocky with sharp clean edges and relatively flat faces. It is generally recommended that rocks should be close to equi-dimensional rather than elongate, although this is not always possible. Typically, the average ratio of the long axis to the thickness should be less than 2.

Table 11: Particle Size Specifications for Rip-rap Materials

Rip-rap Types	Minimum Particle Size (mm)	Median Particle Size (mm)	Maximum Particle Size (mm)
Rip-rap for Culvert	50	150	300

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7.3.4 Non-Woven Geotextile

A non-woven geotextile shall be placed under the road fill, when required by the site conditions and construction schedule. All geotextiles shall be comprised of needle punch polypropylene fabric made of 100% polypropylene staple fibers conforming to the properties in Table 12.

Table 12: Specifications for Geotextile

Parameter	Value	ASTM Test Method (or Approved Equal)
Grab Tensile (N/lbs)	710	D4632
Elongation (%)	50	D4632
Tear (N/lbs)	270	D4533
Puncture (N/lbs)	-	D4833
CBR Puncture (N)	1820	D6241
Weight (g/m^2)	200	D5261
UV Resistance	70	D4355

7.3.5 Boulder clusters and culvert substrate material

Boulder clusters and culvert substrate material are specified in the design of Culverts DRC02 and DRC03 for fish passage.

Refer to WSP report #CA0056821.8485_MEL2025_024-TM-Rev0 for details provided in Appendix B.

7.4 EROSION AND SEDIMENT CONTROL

During the installation of the culverts, if required, erosion and sediment control measures will be used in the work area to prevent sedimentation to downstream water bodies. Work will be monitored in accordance with the Sediment and Erosion Management Plan.

7.5 QUALITY CONTROL/ASSURANCE

A quality control/assurance program will be conducted during construction of each of the infrastructures to ensure that construction-sensitive features of the design are achieved.

7.6 INSTRUMENTATION AND MONITORING

Performance monitoring is an integral part of the operation of any water retention structure, particularly in an arctic environment. The performance of the culverts will be monitored throughout their construction and operating life. The monitoring activities may include, but not be limited to, visual inspection for any deformations, surface cracks, surface erosion, and seepage.

An annual site inspection may be required to document the performance of each of the earth structures. Regular maintenance activities will be required to ensure adequate operation of the road and culverts.

8 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Agnico Eagle Mines Ltd. and their agents. Tetra Tech does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Agnico Eagle Mines Ltd., or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Tetra Tech accepts no responsibility for losses, claims, expenses or damages, if any, suffered by a third party as a result of any decisions made or actions based on this report. Use of this report is subject to the terms and conditions stated in Tetra Tech's Services Agreement.

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Use of this Document acknowledges acceptance of the foregoing conditions.

APPENDIX A – CONSTRUCTION DRAWINGS

Number	Title	Rev
65-DIS-117-230-000-001	AGNICO EAGLE - MELIADINE DIVISION 117 – AWAR ROAD 230 - GENERAL EARTH WORKS PLAN VIEW DISCOVERY ROAD PHASE 1 GENERAL LOCATION PLAN	R1
65-DIS-117-230-000-002	AGNICO EAGLE - MELIADINE DIVISION 117 – AWAR ROAD 230 - GENERAL EARTH WORKS PLAN VIEW DISCOVERY ROAD PHASE 1 CULVERTS LOCATION PLAN	R1
65-DIS-117-230-000-003	AGNICO EAGLE - MELIADINE DIVISION 117 – AWAR ROAD 230 - GENERAL EARTH WORKS PLAN VIEW AND PROFILE DISCOVERY ROAD PHASE 1 ROAD SECTION 0+000 to 0+800	R1
65-DIS-117-230-000-004	AGNICO EAGLE - MELIADINE DIVISION 117 – AWAR ROAD 230 - GENERAL EARTH WORKS PLAN VIEW AND PROFILE DISCOVERY ROAD PHASE 1 ROAD SECTION 0+800 to 1+600	R1
65-DIS-117-230-000-005	AGNICO EAGLE - MELIADINE DIVISION 117 – AWAR ROAD 230 - GENERAL EARTH WORKS PLAN VIEW DISCOVERY ROAD PHASE 1 ROAD SECTION 1+600 to 2+400	R2
65-DIS-117-230-000-006	AGNICO EAGLE - MELIADINE DIVISION 117 – AWAR ROAD 230 - GENERAL EARTH WORKS PLAN VIEW DISCOVERY ROAD PHASE 1 ROAD SECTION 2+400 to 3+200	R2
65-DIS-117-230-000-007	AGNICO EAGLE - MELIADINE DIVISION 117 – AWAR ROAD 230 - GENERAL EARTH WORKS PLAN VIEW DISCOVERY ROAD PHASE 1 ROAD SECTION 3+200 to 4+000	R1
65-DIS-117-230-000-008	AGNICO EAGLE - MELIADINE DIVISION 117 – AWAR ROAD 230 - GENERAL EARTH WORKS PLAN VIEW AND PROFILE DISCOVERY ROAD PHASE 1 LAUNCH BOAT ACCESS ROAD	R2
65-DIS-117-230-000-009	AGNICO EAGLE - MELIADINE DIVISION 117 – AWAR ROAD 230 - GENERAL EARTH WORKS DETAILS DISCOVERY ROAD PHASE 1 TYPICAL DETAILS	R2

NO. DESSIN
DRAWING NO. 65-DIS-117-230-000-001

FORMAT ARCHD

MELIADINE LAKE

PROPOSED BOAT LAUNCH
ACCESS ROAD, L=217m
SEE DRAWING 65-DIS-117-230-000-008

TEMPORARY END OF ROAD
4+020 (PHASE 1)

PROPOSED DISCOVERY ACCESS ROAD (PHASE1) L=4020m
SEE DRAWINGS 65-DIS-117-230-000-003 TO 007

PROPOSED PULLOUTS TYP. (x10)

EXISTING ALL WEATHER ACCESS ROAD (AWAR)

AWAR KM19+550

TO RANKIN INLET

0+000, 0+200, 0+400, 0+600, 0+800, 1+000, 1+200, 1+400, 1+600, 1+800, 2+000, 2+200, 2+400, 2+600, 2+800, 3+000, 3+200, 3+400, 3+600, 3+800, 4+000

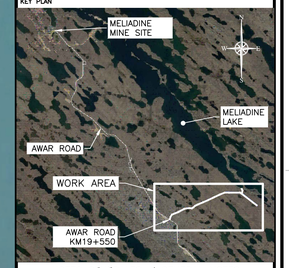
19+600, 19+500, 19+400, 19+300, 19+200, 19+100, 19+000, 18+900, 18+800

R1

1 : 5 000

50 0 50 100 150 200m

PLAN CLÉ
KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

1. THE UNITS SYSTEM IS METRIC AND THE COORDINATES SYSTEM IS UTM15 NAD83.
2. A SURVEY TYPE LIDAR WAS CONDUCTED BY HAMEL IN AUGUST 2022 AND IS USED AS REFERENCE.

LEGEND

EXISTING WATERBODY

31m LIMIT AWAY FROM WATERBODY

PROPOSED ROAD

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2026-02-27

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
R1	2026-02-27	ISSUED FOR CONSTRUCTION	D.R.	S.M.	
R0	2023-01-16	ISSUED FOR CONSTRUCTION	E.R.	S.M.	

REVISIONS

ORDRE DES INGÉNIEURS DU QUÉBEC
S.A. MOREAU
137955
2026-02-27

PERMIT TO PRACTICE
TETRA TECH QE INC.
Signature
Date 27-02-2026
PERMIT NUMBER: P 1029
NTNU Association of Professional Engineers and Geoscientists

TITRE / TITLE

AGNICO EAGLE – MELIADINE DIVISION
117 – ROADS, FENCES AND YARDS
230– GENERAL EARTH WORKS
PLAN VIEW
DISCOVERY ROAD PHASE 1
GENERAL LOCATION PLAN

DESSINÉ PAR / DRAWN BY	EDUARDO RODRIGUEZ	DATE 2022-09-20
VERIFIÉ PAR / CHECKED BY	SOLÈNE MOREAU	2022-09-20
APPROUVÉ PAR / APPROVED BY	JOSÉE ALARIE	2022-09-20
ÉCHELLE / SCALE	1:5000	DATE 2022-09-20

NO. DESSIN / DRAWING NO. 65-DIS-117-230-000-001

NO. PROJET / PROJECT NO. 65 (TT#49045) | REVISION R1 | FEUILLE / SHT 1 / 1

AE-CART-ARCH D

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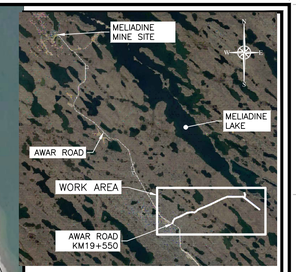
FILE NO. 65-DIS-117-230-000-001 .dwg



NOTES GÉNÉRALES / GENERAL NOTES

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3. REFER TO CONSTRUCTION DRAWINGS PROVIDED IN WSP REPORT #CA0056821.8485_MEL2025_024-TM-REV0 FOR DETAILS FOR CULVERTS DRC02 AND DRC03 (SPECIFIC DESIGN FOR FISH PASSAGE) (R1)

LEGEND

CULVERT FOR MANAGING AN EPHEMERAL WATER CROSSING WITH FISH HABITAT (REF : GOLDER AND AEM BIOLOGICAL STUDY)

CULVERT FOR MANAGING RUNOFF WATER (R1)

PROPOSED ROAD

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
R1	2026-02-27	ISSUED FOR CONSTRUCTION	D.R.	S.M.	
R0	2023-01-16	ISSUED FOR CONSTRUCTION	E.R.	S.M.	

REVISIONS

PERMIT TO PRACTICE
TETRA TECH QE INC.
Signature
Date 27-02-2026
PERMIT NUMBER: P 1029
NT/NU Association of Professional Engineers and Geoscientists

TITRE / TITLE

AGNICO EAGLE – MELIADINE DIVISION
117 – ROADS, FENCES AND YARDS
230– GENERAL EARTH WORKS
PLAN VIEW
DISCOVERY ROAD PHASE 1
CULVERTS LOCATION PLAN

DESSINÉ PAR / DRAWN BY	EDUARDO RODRIGUEZ	DATE 2022-09-21
VERIFIÉ PAR / CHECKED BY	SOLÈNE MOREAU	2022-09-21
APPROUVÉ PAR / APPROVED BY	JOSÉE ALARIE	2022-09-21
ÉCHELLE / SCALE	1:5000	DATE 2022-09-21

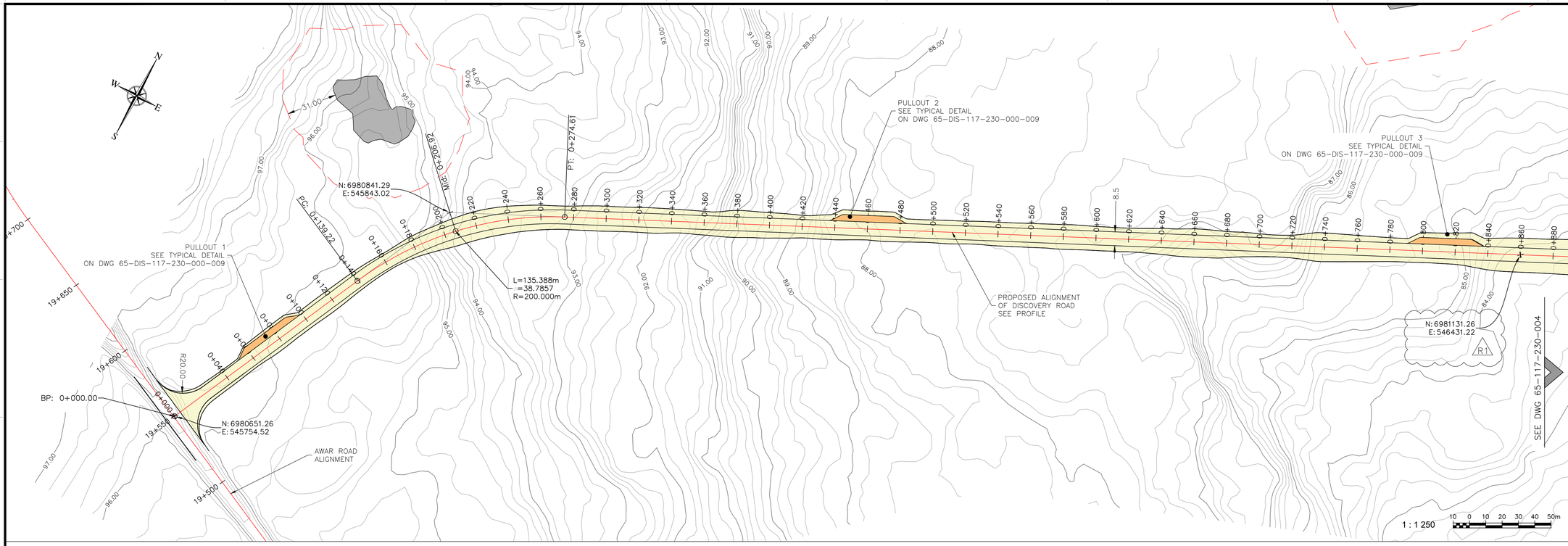
NO. DESSIN / DRAWING NO.
65-DIS-117-230-000-002

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
65 (TT#49045)	R1	1 / 1

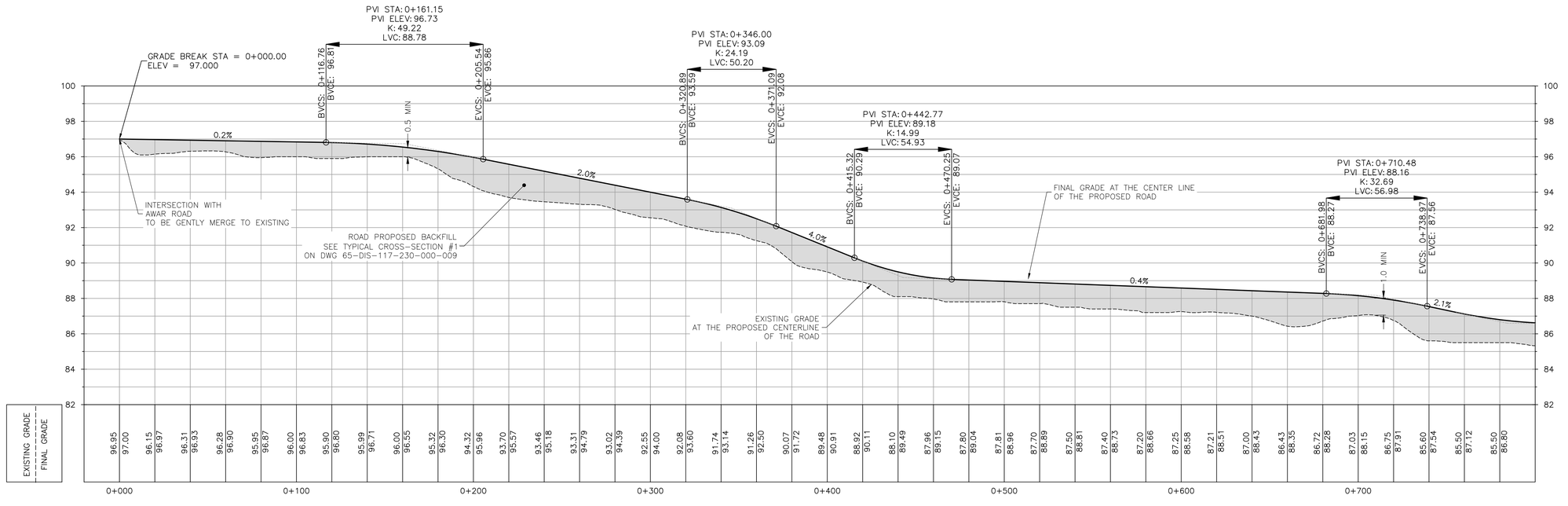
AE-CART-ARCH D

NO. DESSIN
DRAWING NO. 65-DIS-117-230-000-003

FORMAT ARCHD



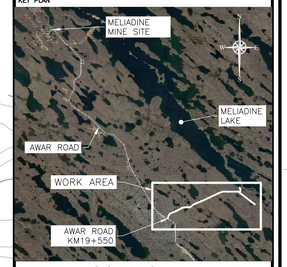
PLAN VIEW



DISCOVERY ROAD PROFILE (1)

SCALE: 1:1250
VERTICAL EXAGGERATION FACTOR: 10

PLAN CLÉ
KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

1. THE UNITS SYSTEM IS METRIC AND THE COORDINATES SYSTEM IS UTM15 NAD83.
2. A SURVEY TYPE LIDAR WAS CONDUCTED BY HAMEL IN AUGUST 2022 AND IS USED AS REFERENCE.

LEGEND

31m LIMIT AWAY FROM WATERBODY

PROPOSED ROAD

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2026-02-27

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
–	–
–	–
–	–
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–	–

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
R1	2026-02-27	ISSUED FOR CONSTRUCTION	D.R.	S.M.	
R0	2023-01-16	ISSUED FOR CONSTRUCTION	E.R.	S.M.	

REVISIONS

PERMIT TO PRACTICE
TETRA TECH QE INC.
Signature
Date 27-02-2026
PERMIT NUMBER: P 1029
NT/NU Association of Professional Engineers and Geoscientists

TITRE / TITLE

AGNICO EAGLE – MELIADINE DIVISION
117 – ROADS, FENCES AND YARDS
230 – GENERAL EARTH WORKS
PLAN VIEW AND PROFILE
DISCOVERY ROAD PHASE 1
ROAD SECTION 0+000 TO 0+800

DESSINÉ PAR / DRAWN BY	EDUARDO RODRIGUEZ	DATE 2022-09-20
VERIFIÉ PAR / CHECKED BY	SOLÈNE MOREAU	2022-09-27
APPROUVÉ PAR / APPROVED BY	JOSÉE ALARIE	2022-09-27
ÉCHELLE / SCALE	1:1250	DATE 2022-09-27

NO. DESSIN / DRAWING NO.
65-DIS-117-230-000-003

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
65 (TT#49045)	R1	1 / 1

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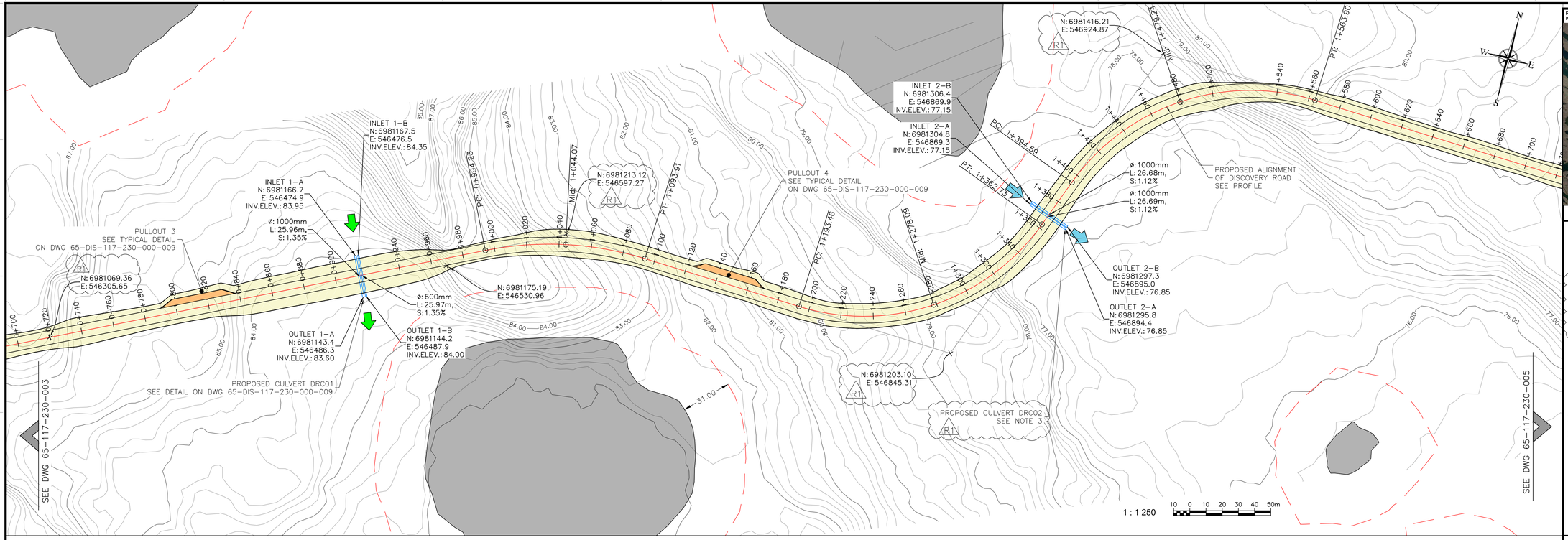
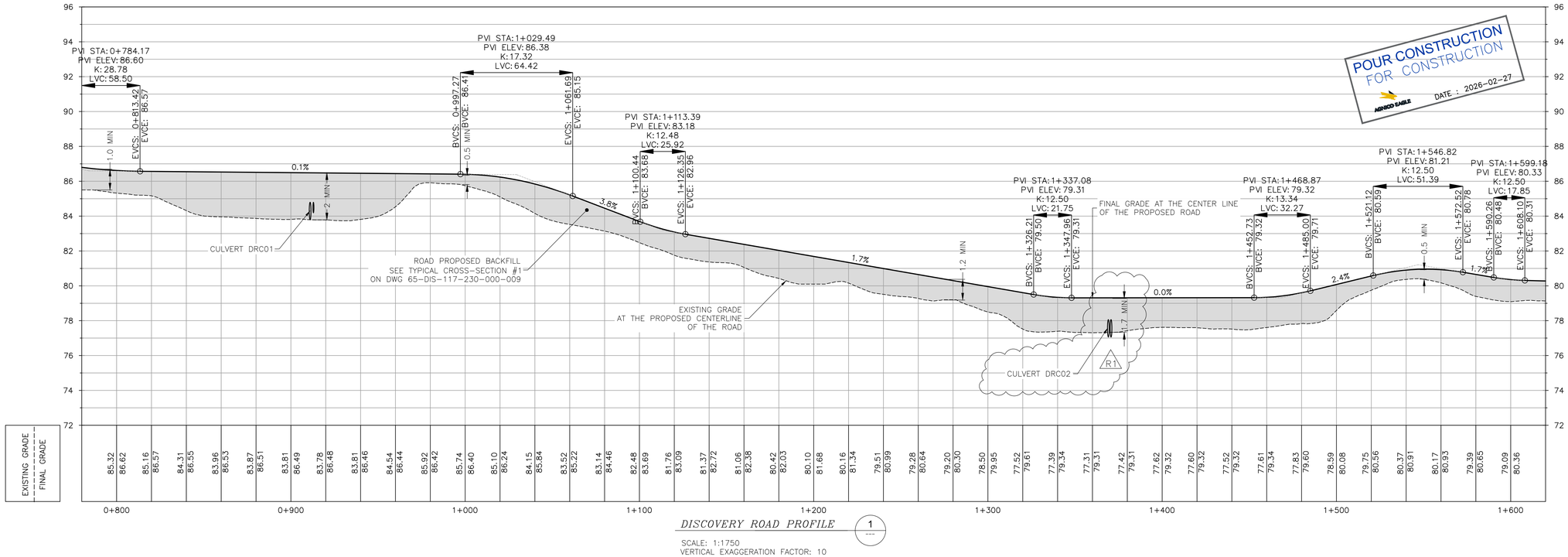
FILE NO. 65-DIS-117-230-000-003.dwg

NO. DESSIN
DRAWING NO. 65-DIS-117-230-000-004

FORMAT ARCHD



PLAN VIEW

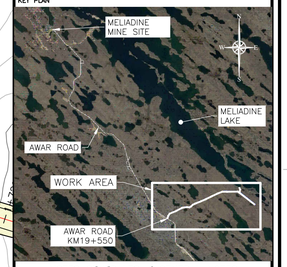


DISCOVERY ROAD PROFILE (1)

SCALE: 1:1750
VERTICAL EXAGGERATION FACTOR: 10

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2026-02-27

PLAN CLÉ
KEY PLAN



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LEGEND

CULVERT FOR MANAGING AN EPHEMERAL WATER CROSSING WITH FISH HABITAT (REF : GOLDER AND AEM BIOLOGICAL STUDY)

CULVERT FOR MANAGING RUNOFF WATER

R1

PROPOSED ROAD

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
R1	2026-02-27	ISSUED FOR CONSTRUCTION	D.R.	S.M.	
R0	2023-01-16	ISSUED FOR CONSTRUCTION	E.R.	S.M.	

REVISIONS

PERMIT TO PRACTICE
TETRA TECH QE INC.
Signature –
Date 27-02-2026
PERMIT NUMBER: P 1029
NT/NU Association of Professional Engineers and Geoscientists

TITRE / TITLE

AGNICO EAGLE – MELIADINE DIVISION
117 – ROADS, FENCES AND YARDS
230– GENERAL EARTH WORKS
PLAN VIEW AND PROFILE
DISCOVERY ROAD PHASE 1
ROAD SECTION 0+800 TO 1+600

DESSINÉ PAR / DRAWN BY	EDUARDO RODRIGUEZ	DATE 2022-09-20
VERIFIÉ PAR / CHECKED BY	SOLÈNE MOREAU	2022-09-27
APPROUVÉ PAR / APPROVED BY	JOSÉE ALARIE	2022-09-27
ÉCHELLE / SCALE	1:1250	DATE 2022-09-27

NO. DESSIN / DRAWING NO.
65-DIS-117-230-000-004

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
65 (TT#49045)	R1	1 / 1

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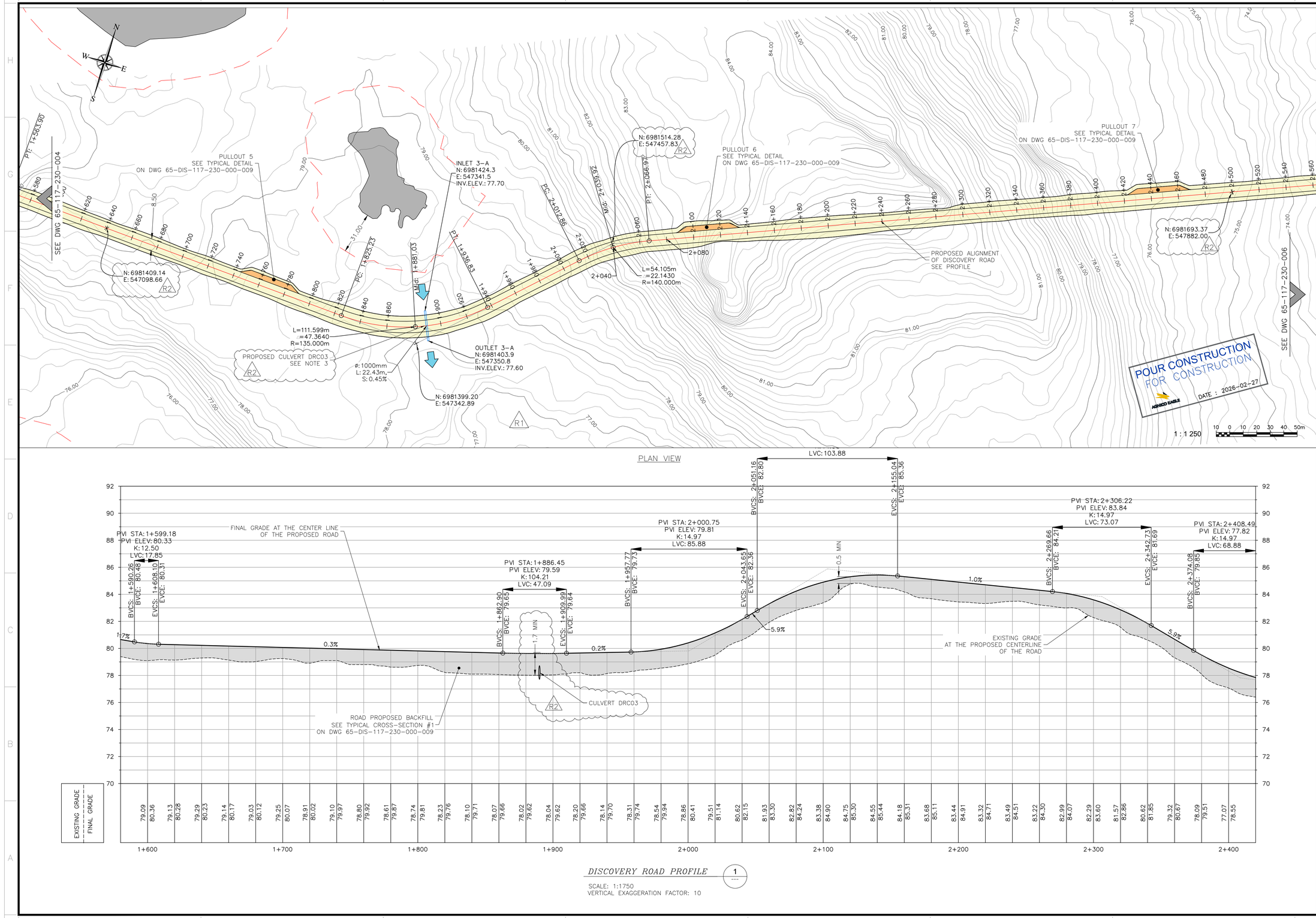
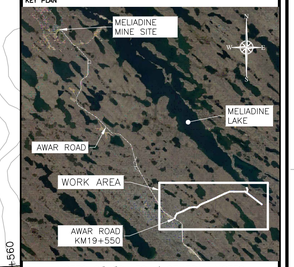
FILE NO. 65-DIS-117-230-000-004.dwg

NO. DESSIN
DRAWING NO. 65-DIS-117-230-000-005

FORMAT ARCHD



PLAN CLÉ
KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

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LEGEND

CULVERT FOR MANAGING AN EPHEMERAL WATER CROSSING WITH FISH HABITAT (REF : GOLDER AND AEM BIOLOGICAL STUDY)

CULVERT FOR MANAGING RUNOFF WATER R2

PROPOSED ROAD

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
R2	2026-02-27	ISSUED FOR CONSTRUCTION	D.R.	S.M.	
R1	2023-02-22	ISSUED FOR CONSTRUCTION	E.R.	S.M.	
R0	2023-01-16	ISSUED FOR CONSTRUCTION	E.R.	S.M.	

REVISIONS

PERMIT TO PRACTICE
TETRA TECH QE INC.
Signature
Date 27-02-2026
PERMIT NUMBER: P 1029
NT/NU Association of Professional Engineers and Geoscientists

2026-02-27

TITRE / TITLE

AGNICO EAGLE – MELIADINE DIVISION
117 – ROADS, FENCES AND YARDS
230– GENERAL EARTH WORKS
PLAN VIEW AND PROFILE
DISCOVERY ROAD PHASE 1
ROAD SECTION 1+600 TO 2+400

DESSINÉ PAR / DRAWN BY	EDUARDO RODRIGUEZ	DATE 2022-09-20
VERIFIÉ PAR / CHECKED BY	SOLÈNE MOREAU	2022-09-27
APPROUVÉ PAR / APPROVED BY	JOSÉE ALARIE	2022-09-27
ÉCHELLE / SCALE	1:1250	DATE 2022-09-27

NO. DESSIN / DRAWING NO.
65-DIS-117-230-000-005

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
65 (TT#49045)	R2	1 / 1

PLAN VIEW

DISCOVERY ROAD PROFILE 1

SCALE: 1:1750
VERTICAL EXAGGERATION FACTOR: 10

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FILE NO. 65-DIS-117-230-000-005.dwg

NO. DESSIN
DRAWING NO. 65-DIS-117-230-000-006

FORMAT ARCHD

SEE DWG 65-117-230-005

SEE DWG 65-117-230-007

INLET 4-A
N: 6981787.9
E: 548079.8
INV.ELEV.: 70.95

INLET 4-B
N: 6981788.4
E: 548081.5
INV.ELEV.: 70.95

INLET 4-C
N: 6981788.8
E: 548082.9
INV.ELEV.: 71.35

ø: 600mm
L: 24.26m,
S: 1.44%

ø: 1000mm
L: 24.26m,
S: 1.44%

ø: 1000mm
L: 24.26m,
S: 1.44%

OUTLET 4-A
N: 6981764.5
E: 548086.2
INV.ELEV.: 70.60

OUTLET 4-B
N: 6981765.0
E: 548087.9
INV.ELEV.: 70.60

OUTLET 4-C
N: 6981765.4
E: 548089.3
INV.ELEV.: 71.00

R2

PULLOUT 7
SEE TYPICAL DETAIL
ON DWG 65-DIS-117-230-000-009

PULLOUT 8
SEE TYPICAL DETAIL ON
DWG 65-DIS-117-230-000-009

PULLOUT 9
SEE TYPICAL DETAIL ON
DWG 65-DIS-117-230-000-009

PROPOSED ALIGNMENT
OF DISCOVERY ROAD
SEE PROFILE

N: 6981878.51
E: 548454.58

L=157.777m
=45.198°
R=200.000m

N: 6981766.07
E: 548650.39

N: 6981693.37
E: 547882.00

1 : 1 250

10 0 10 20 30 40 50m

PLAN VIEW

PVI STA: 2+408.49
PVI ELEV: 77.82
K: 14.97
LVC: 68.88

PVI STA: 2+497.30
PVI ELEV: 76.68
K: 27.37
LVC: 48.81

PVI STA: 2+616.23
PVI ELEV: 73.03
K: 20.75
LVC: 67.06

PVI STA: 2+914.33
PVI ELEV: 73.52
K: 19.19
LVC: 37.22

PVI STA: 3+048.28
PVI ELEV: 71.14
K: 16.21
LVC: 84.35

PVI STA: 3+137.16
PVI ELEV: 74.19
K: 20.25
LVC: 66.48

BVCS: 2+374.08
BVCE: 79.85

EVCS: 2+442.96
EVCE: 77.38

BVCS: 2+472.90
BVCE: 76.99

EVCS: 2+521.70
EVCE: 75.93

BVCS: 2+582.71
BVCE: 74.06

EVCS: 2+649.77
EVCE: 73.09

BVCS: 2+895.72
BVCE: 73.49

EVCS: 2+932.94
EVCE: 73.19

BVCS: 3+006.09
BVCE: 71.89

EVCS: 3+090.44
EVCE: 72.59

BVCS: 3+103.92
BVCE: 73.05

EVCS: 3+170.41
EVCE: 74.24

5.9%
1.3%
3.1%
0.2%
1.8%
3.4%

1.2 MIN
2m MIN
0.5 MIN

FINAL GRADE AT THE CENTER LINE
OF THE PROPOSED ROAD

ROAD PROPOSED BACKFILL
SEE TYPICAL CROSS-SECTION #1
ON DWG 65-DIS-117-230-000-009

CULVERT DRC04

EXISTING GRADE
AT THE PROPOSED CENTERLINE
OF THE ROAD

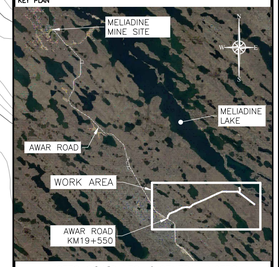
EXISTING GRADE
FINAL GRADE

2+400	2+500	2+600	2+700	2+800	2+900	3+000	3+100	3+200
79.32	80.67	78.09	79.51	77.07	78.55	76.39	77.85	76.06
77.42	75.82	77.16	75.65	76.89	75.27	76.51	74.79	75.98
74.11	75.37	73.59	74.76	73.09	74.14	72.50	73.60	71.99
73.25	71.55	73.09	71.29	73.10	71.19	73.14	70.97	73.17
70.79	73.20	70.94	73.23	70.92	73.27	71.38	73.30	71.65
73.33	72.02	73.37	72.08	73.40	72.16	73.43	72.34	73.46
72.21	73.49	72.05	73.38	71.80	73.06	71.46	72.71	70.88
72.35	70.60	72.00	70.40	71.70	70.40	71.64	70.42	71.83
70.48	72.26	71.22	72.92	71.58	73.54	72.90	73.97	73.52
74.20	73.24	74.25	73.10	74.28	72.98	74.31	72.99	74.34

DISCOVERY ROAD PROFILE 1

SCALE: 1:1250
VERTICAL EXAGGERATION FACTOR: 10

PLAN CLÉ
KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

1. THE UNITS SYSTEM IS METRIC AND THE COORDINATES SYSTEM IS UTM15 NAD83.
2. A SURVEY TYPE LIDAR WAS CONDUCTED BY HAMEL IN AUGUST 2022 AND IS USED AS REFERENCE.

LEGEND

- 31m LIMIT AWAY FROM WATERBODY
- CULVERT FOR MANAGING AN EPHEMERAL WATER CROSSING WITH FISH HABITAT (REF : GOLDER AND AEM BIOLOGICAL STUDY)
- CULVERT FOR MANAGING RUNOFF WATER
- PROPOSED ROAD

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2026-03-13

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
R2	2026-03-13	ISSUED FOR CONSTRUCTION	D.R.	S.M.	
R1	2026-02-27	ISSUED FOR CONSTRUCTION	D.R.	S.M.	
R0	2023-01-16	ISSUED FOR CONSTRUCTION	E.R.	S.M.	

REVISIONS

PERMIT TO PRACTICE
TETRA TECH QE INC.
Signature
Date 13-03-2026
PERMIT NUMBER: P 1029
NT/NU Association of Professional Engineers and Geoscientists

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
117 – ROADS, FENCES AND YARDS
230 – GENERAL EARTH WORKS
PLAN VIEW AND PROFILE
DISCOVERY ROAD PHASE 1
ROAD SECTION 2+400 TO 3+200

DESSINÉ PAR / DRAWN BY	EDUARDO RODRIGUEZ	2022-09-20
VERIFIÉ PAR / CHECKED BY	SOLÈNE MOREAU	2022-09-27
APPROUVÉ PAR / APPROVED BY	JOSÉE ALARIE	2022-09-27
ÉCHELLE / SCALE	1:1250	DATE 2022-09-27

NO. DESSIN / DRAWING NO.
65-DIS-117-230-000-006

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
65 (TT#49045)	R2	1 / 1

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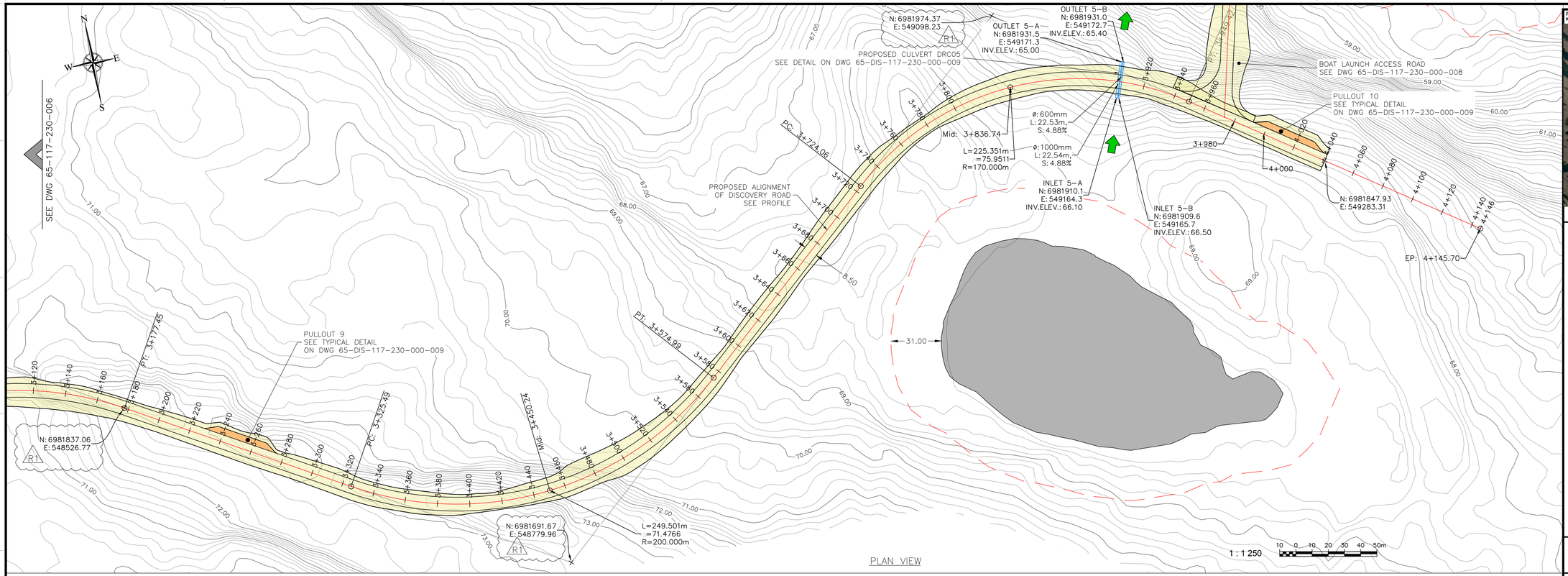
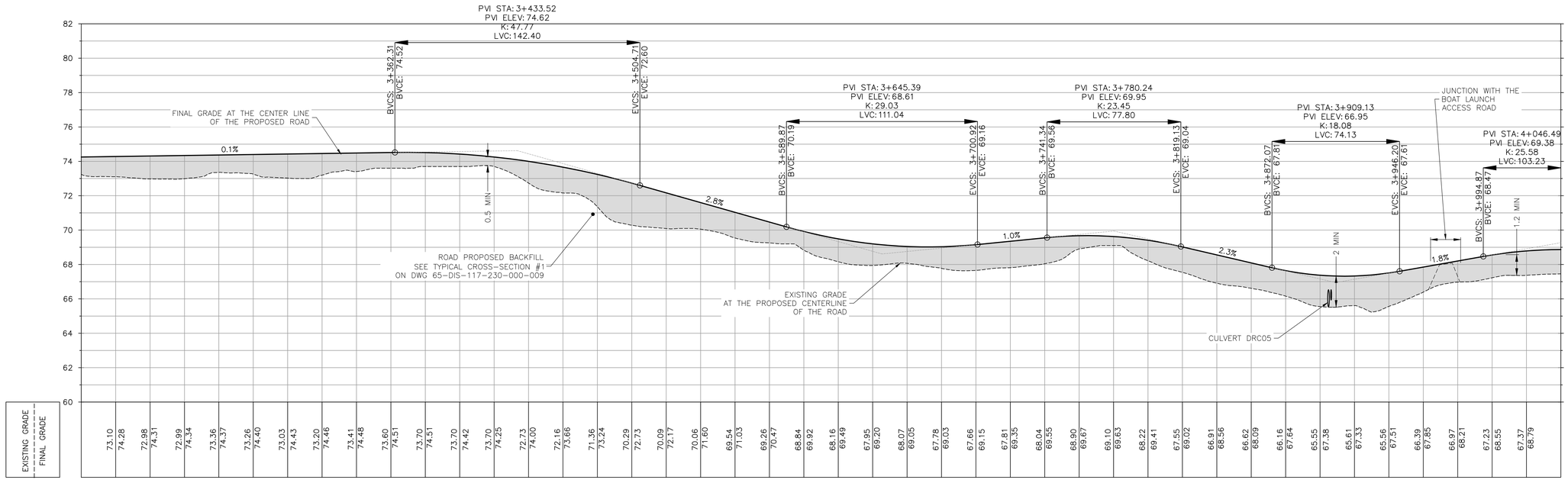
FILE NO. 65-DIS-117-230-000-006.dwg

NO. DESSIN
DRAWING NO. 65-DIS-117-230-000-007

FORMAT ARCHD





DISCOVERY ROAD PROFILE (1)

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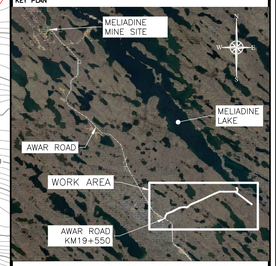
VERTICAL EXAGGERATION FACTOR: 10

PLAN CLÉ
KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

1. THE UNITS SYSTEM IS METRIC AND THE COORDINATES SYSTEM IS UTM15 NAD83.
2. A SURVEY TYPE LIDAR WAS CONDUCTED BY HAMEL IN AUGUST 2022 AND IS USED AS REFERENCE.

LEGEND

- 31m LIMIT AWAY FROM WATERBODY
- CULVERT FOR MANAGING AN EPHEMERAL WATER CROSSING WITH FISH HABITAT (REF : GOLDER AND AEM BIOLOGICAL STUDY)
- CULVERT FOR MANAGING RUNOFF WATER
- PROPOSED ROAD

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2026-02-27
AGNICO EAGLE

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
R1	2026-02-27	ISSUED FOR CONSTRUCTION	D.R.	S.M.	
R0	2023-01-16	ISSUED FOR CONSTRUCTION	E.R.	S.M.	

REVISIONS

PERMIT TO PRACTICE
TETRA TECH QE INC.
Signature
Date 27-02-2026
PERMIT NUMBER: P 1029
NT/NU Association of Professional Engineers and Geoscientists

S.A. MOREAU LICENCIÉE N7367 2026-02-27

TITRE / TITLE

AGNICO EAGLE – MELIADINE DIVISION
117 – ROADS, FENCES AND YARDS
230 – GENERAL EARTH WORKS
PLAN VIEW AND PROFILE
DISCOVERY ROAD PHASE 1
ROAD SECTION 3+200 TO 4+000

DESSINÉ PAR / DRAWN BY	EDUARDO RODRIGUEZ	DATE 2022-09-20
VERIFIÉ PAR / CHECKED BY	SOLÈNE MOREAU	2022-09-27
APPROUVÉ PAR / APPROVED BY	JOSÉE ALARIE	2022-09-27
ÉCHELLE / SCALE	1:1250	DATE 2022-09-27

NO. DESSIN / DRAWING NO.: 65-DIS-117-230-000-007

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
65 (TT#49045)	R1	1 / 1

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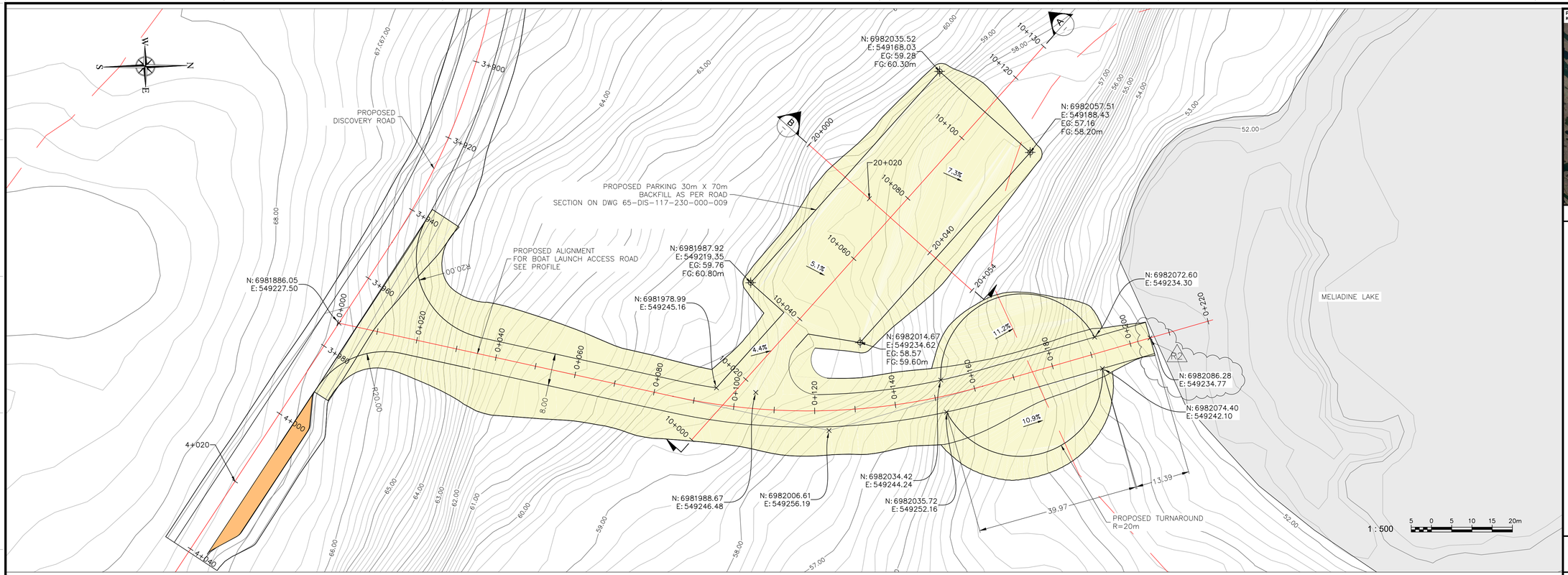
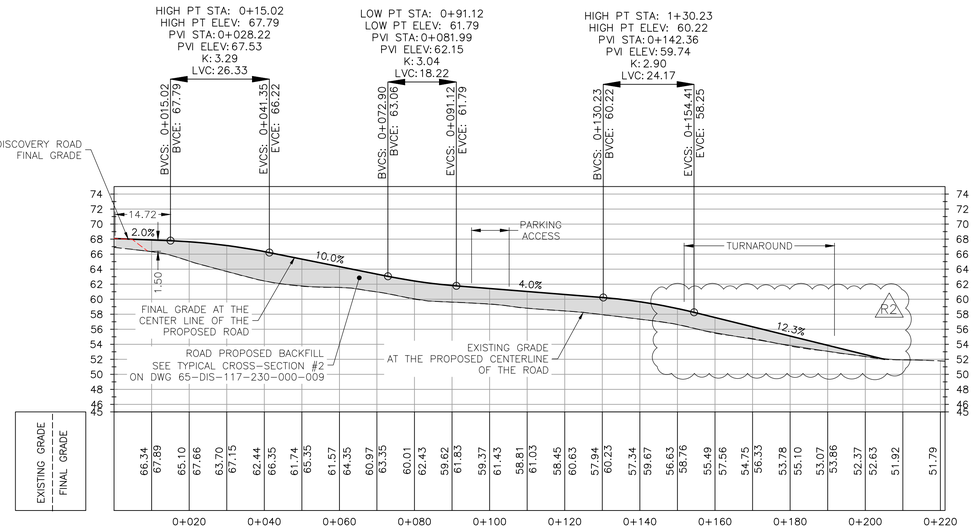
FILE NO. 65-DIS-117-230-000-007.dwg

NO. DESSIN
DRAWING NO. 65-DIS-117-230-000-008

FORMAT ARCHD



PLAN VIEW



BOAT ACCESS ROAD PROFILE (1)

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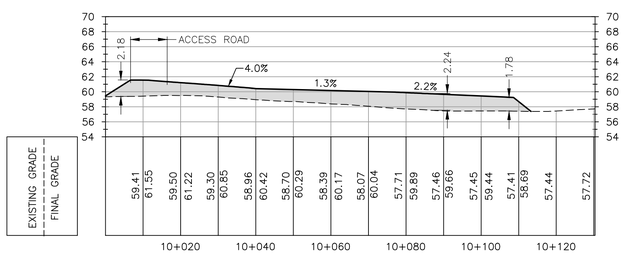
VERTICAL EXAGGERATION FACTOR: 2



SECTION (A)

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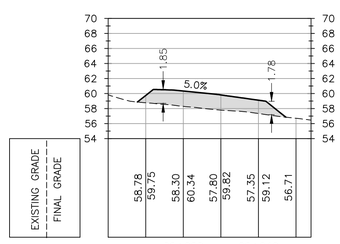
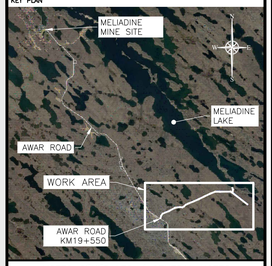
VERTICAL EXAGGERATION FACTOR: 2



SECTION (B)

SCALE: 1:750
VERTICAL EXAGGERATION FACTOR: 2

PLAN CLÉ
KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

1. THE UNITS SYSTEM IS METRIC AND THE COORDINATES SYSTEM IS UTM15 NAD83.
2. A SURVEY TYPE LIDAR WAS CONDUCTED BY HAMEL IN AUGUST 2022 AND IS USED AS REFERENCE.

LEGEND

N: NORTHING
E: EASTING
EG: EXISTING GRADE
FG: FINAL GRADE

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2026-03-13
AGNICO EAGLE

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
R2	2026-03-13	ISSUED FOR CONSTRUCTION	D.R.	S.M.	
R1	2026-02-27	ISSUED FOR CONSTRUCTION	D.R.	S.M.	
R0	2023-01-16	ISSUED FOR CONSTRUCTION	C.R.	S.M.	

REVISIONS

PERMIT TO PRACTICE
TETRA TECH QE INC.
Signature
Date 13-03-2026
PERMIT NUMBER: P 1029
NTAU Association of Professional Engineers and Geoscientists

TITRE / TITLE

AGNICO EAGLE – MELIADINE DIVISION
117-ROAD, FENCES AND YARDS
230 – GENERAL EARTH WORKS
PLAN VIEW AND PROFILE
DISCOVERY ROAD PHASE 1
BOAT LAUNCH ACCESS ROAD

DESSINÉ PAR / DRAWN BY	EDUARDO RODRIGUEZ	DATE 2022-09-27
VERIFIÉ PAR / CHECKED BY	JOSÉE ALARIE	2022-09-27
APPROUVÉ PAR / APPROVED BY	SOLÈNE MOREAU	2022-09-27
ÉCHELLE / SCALE	AS SHOWN	DATE 2022-09-27

NO. DESSIN / DRAWING NO.: 65-DIS-117-230-000-008

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
65 (TT#49045)	R2	1 / 1

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FILE NO. 65-DIS-117-230-000-008.dwg

NO. DESSIN DRAWING NO. 65-DIS-117-230-000-009

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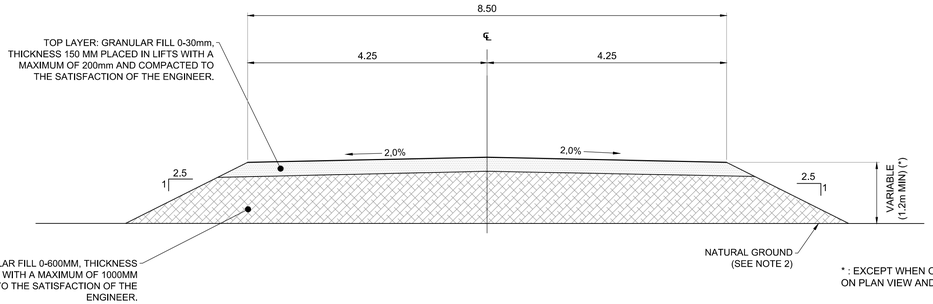
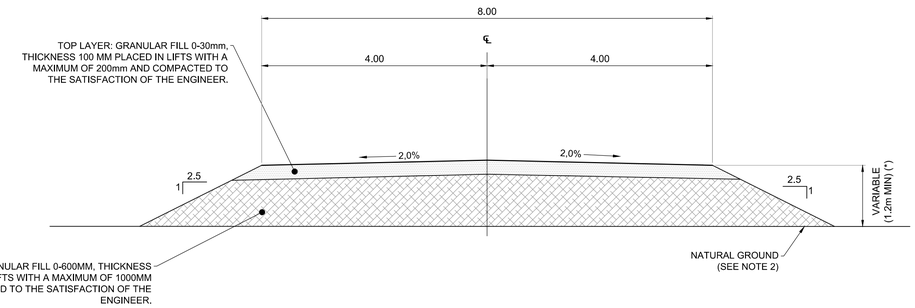


* : EXCEPT WHEN OTHERWISE SPECIFIED ON PLAN VIEW AND PROFILE.

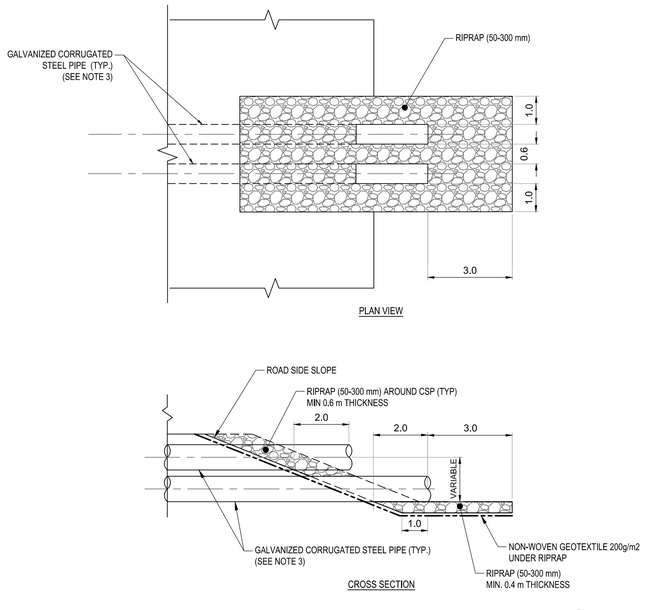
TYPICAL CROSS SECTION – DISCOVERY ROAD (1)

SCALE: NTS



TYPICAL CROSS SECTION – BOAT LAUNCH ACCESS ROAD (2)

SCALE: NTS



TYPICAL DETAIL – CULVERT RIPRAP FOR BOTH INLET AND OUTLET (3)

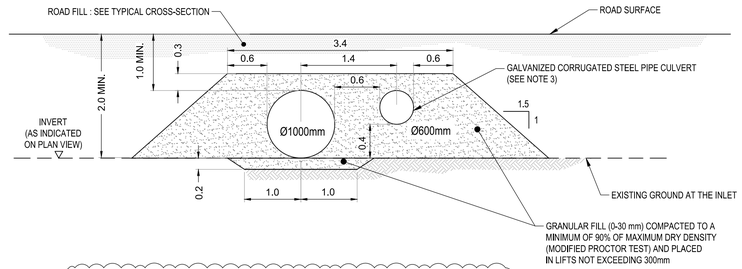
SCALE: NTS

REQUIRED MATERIAL QUANTITIES FOR CONSTRUCTION see note 1		
DISCOVERY ROAD PHASE 1		
Granular Fill 0-30mm	5950	m3
Granular Fill 0-600mm	60350	m3
Rip-Rap 50-300mm (for culvert)	300	m3
Culvert CSP Ø 0,6m	75	m
Culvert CSP Ø 1,0m	175	m
Non-woven geotextile(200g/m2)	358	m2
Boulder Clusters	see note 2	
Culvert Substrate Material	see note 2	
LAUNCH BOAT ACCESS ROAD (incl. Parking and Turnaround)		
Granular Fill 0-30mm	718	m3
Granular Fill 0-600mm	12648	m3

R2

Notes
1. Quantities do not include any extra for design accuracy, compaction or for material construction loss.
2. Boulder clusters and culvert substrate material are specified in the design of culverts DRC02 and DRC03 for fish passage. Refer to WSP report #CA0056821.8485_MEL2025_024-TM-Rev0 for details provided in Appendix B.

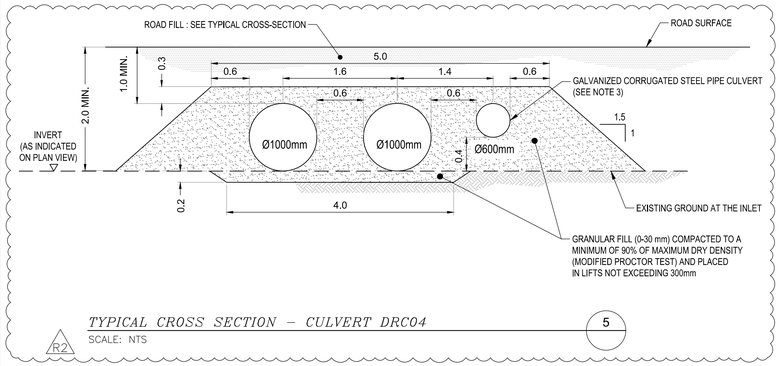
TABLE 1: MATERIAL QUANTITIES FOR CONSTRUCTION



TYPICAL CROSS SECTION – CULVERT DRC01 / DRC05 (4)

SCALE: NTS

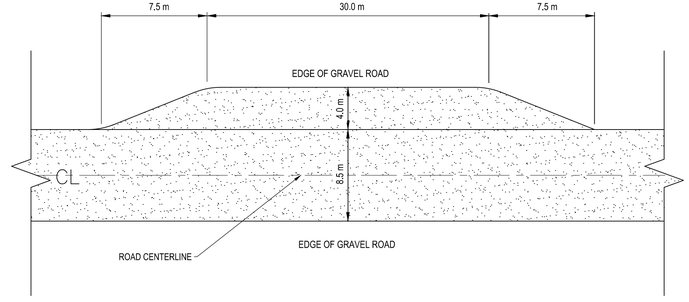
R2



TYPICAL CROSS SECTION – CULVERT DRC04 (5)

SCALE: NTS

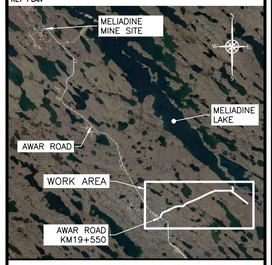
R2



TYPICAL DETAIL – PULLOUT (5)

SCALE: NTS

PLAN CLÉ
KEY PLAN



NOTES GÉNÉRALES / GENERAL NOTES

1. THE UNITS SYSTEM IS METRIC AND THE COORDINATES SYSTEM IS UTM15 NAD83.
2. GEOTEXTILE MAY BE REQUIRED BETWEEN THE ORIGINAL GROUND AND THE GRANULAR MATERIAL IF THE FIELD ENGINEER CONSIDERED THE GROUND UNSTABLE TO SUPPORT THE FILL MATERIAL COMPACTION, ESPECIALLY IN SUMMER.
3. CULVERT SPECIFICATION : CULVERTS ARE MADE OF CORRUGATED STEEL PIPE WITH A PROFILE OF 68X113MM. THE MINIMUM THICKNESS IS 2.8mm FOR CSP Ø 1000mm AND 1.6mm FOR CSP ø 600mm. MATERIAL SHALL COMPLY TO CSA-G401-07 STANDARD.

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2026-03-13

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
R2	2026-03-13	ISSUED FOR CONSTRUCTION	D.R.	S.M.	
R1	2026-02-27	ISSUED FOR CONSTRUCTION	D.R.	S.M.	
R0	2023-01-16	ISSUED FOR CONSTRUCTION	E.R.	S.M.	

REVISIONS

PERMIT TO PRACTICE
TETRA TECH QE INC.
Signature
Date 13-03-2026
PERMIT NUMBER: P 1029
NT/NU Association of Professional Engineers and Geoscientists

TITRE / TITLE

AGNICO EAGLE – MELIADINE DIVISION
117-ROAD, FENCES AND YARDS
230 – GENERAL EARTH WORKS
DETAILS
DISCOVERY ROAD PHASE 1
TYPICAL DETAILS

DESSINÉ PAR DRAWN BY	EDUARDO RODRIGUEZ	DATE 2022-10-13
VERIFIÉ PAR CHECKED BY	JOSÉE ALARIE	2022-10-13
APPROUVÉ PAR APPROVED BY	SOLÈNE MOREAU	2022-10-13
ÉCHELLE SCALE	AS SHOWN	DATE 2022-10-13

NO. DESSIN DRAWING NO. 65-DIS-117-230-000-009

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHT
65 (TT#49045)	R2	1 / 1

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APPENDIX B – TECHNICAL MEMORANDUM DRC02/DRC03 BY WSP

TECHNICAL MEMORANDUM

DATE August 26, 2025 **WSP Reference No.** CA0056821.8485_MEL2025_024-TM-Rev0

TO Sam Gordon
Agnico Eagle Mines Limited

FROM Amir Joorabchi, Curtis VanWerkhoven, and Brett McLeod **EMAIL** **amir.joorabchi@wsp.com; curtis.vanwerkhoven@wsp.com; brett.mcleod@wsp.com**

MELIADINE MINE – DRC02 & DRC03 CULVERT CROSSINGS ON THE DISCOVERY ROAD (IFC DESIGN)

1 INTRODUCTION

Agnico Eagle Mines Limited (Agnico Eagle) is operating the Meliadine Gold Mine located approximately 25 km north of Rankin Inlet, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. Two access roads are used to connect the Meliadine Gold Mine and Itivia: the All-Weather Access Road (AWAR) and the Rankin Inlet Bypass Road (RIBR). The proposed Discovery Road will connect the AWAR to the Meliadine Lake boat launch. The design of Discovery Road Phase 1 was previously completed by Tetra Tech (2023) and included preliminary designs of culverts DRC02 and DRC03, both located on fish bearing watercourses.

WSP Canada Inc. (WSP) on behalf of Nuqsana WSP Engineering and Environmental Inc. (Nuqsana WSP), was retained by Agnico Eagle to prepare Issued for Construction (IFC) drawings for upgrades to these two locations with fish passage considerations as required (locations shown in Figure 1 and Figure 2). Updates to the culvert designs include:

- Changes in the alignment of Discovery Road.
- Updates to the watershed delineation following a field visit and the design flow event, which resulted in changes to the estimated peak flows. Field verified drainage directions provided by Agnico Eagle in an email dated July 22, 2025 (Agnico Eagle 2025c).
- Inclusion of fish passage considerations.
- Advancement of the designs to IFC-level, including construction specifications.
- Alignment of designs using fish passage mitigations that were approved within recent culvert design submissions to Fisheries and Oceans Canada (DFO).

This technical memorandum provides background details, design basis, methodology, and concepts for culvert crossing designs, with consideration of fish passage.

2 AVAILABLE DATA AND MODELS

The data and models used in this study include:

- High Resolution Digital Elevation Model (HRDEM) CanElevation Series project 20-19 (ArcticDEM 2017).
- Location of culvert crossing provided by Agnico Eagle in July 2025 (Agnico Eagle 2025a).
- Alignment of Discovery Road provided by Agnico Eagle in July 2025 (Agnico Eagle 2025a).
- Google Maps World Imagery dated 2025.
- The Water Balance Model (WBM) for the Meliadine area recently updated by WSP (2024a), originally developed and calibrated as part of the Final Environmental Impact Statement (FEIS) for the Meliadine Gold Project (Golder 2014).
- Conceptual designs for Culverts DRC02 and DRC03 by Tetra Tech (2023), including road dimensions.
- Agnico Eagle Fish and Fish Habitat Field Reconnaissance Program (Agnico Eagle 2022).

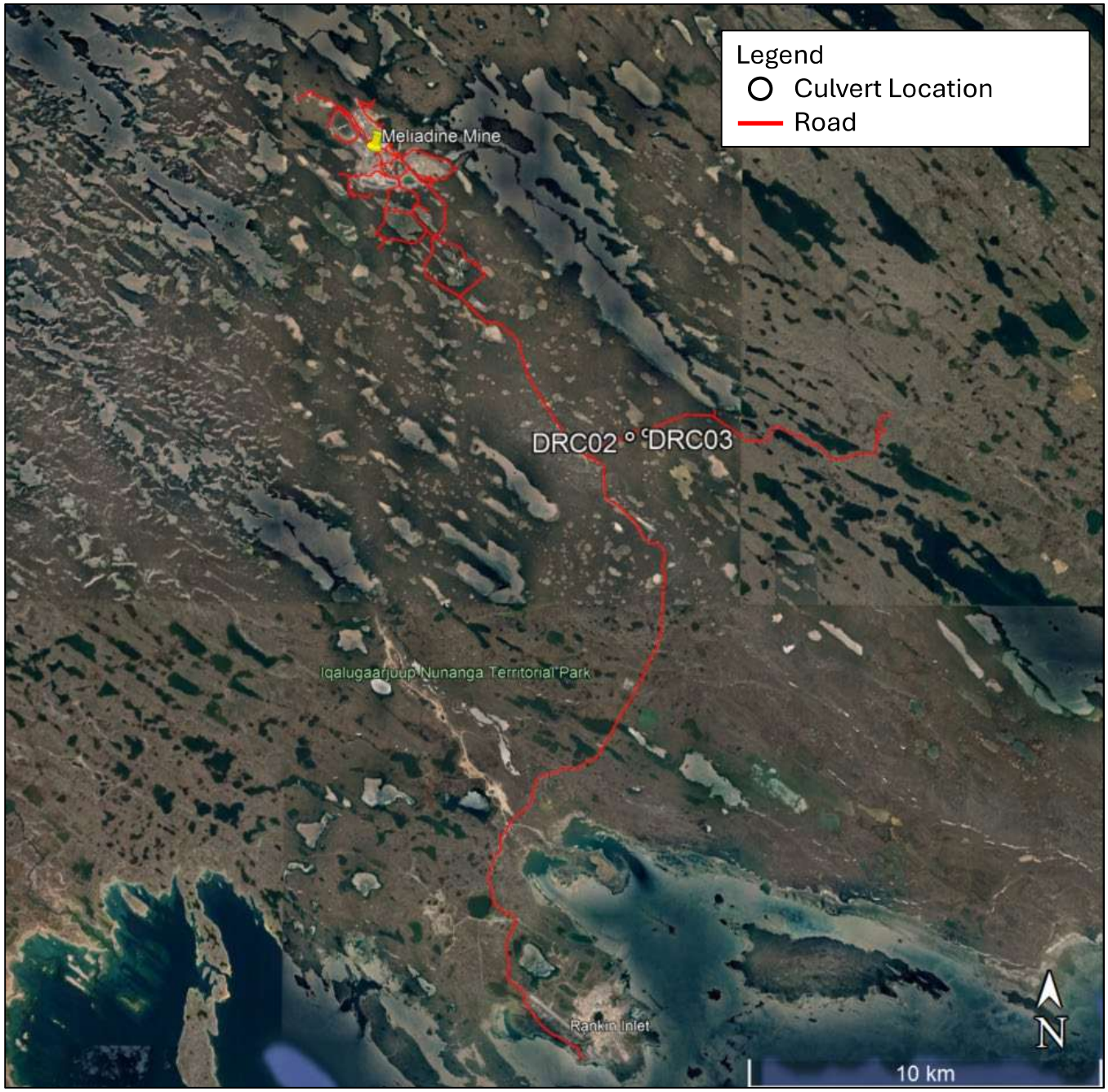

Figure 1: Site Overview with DRC02 and DRC03 Culvert Crossing Locations

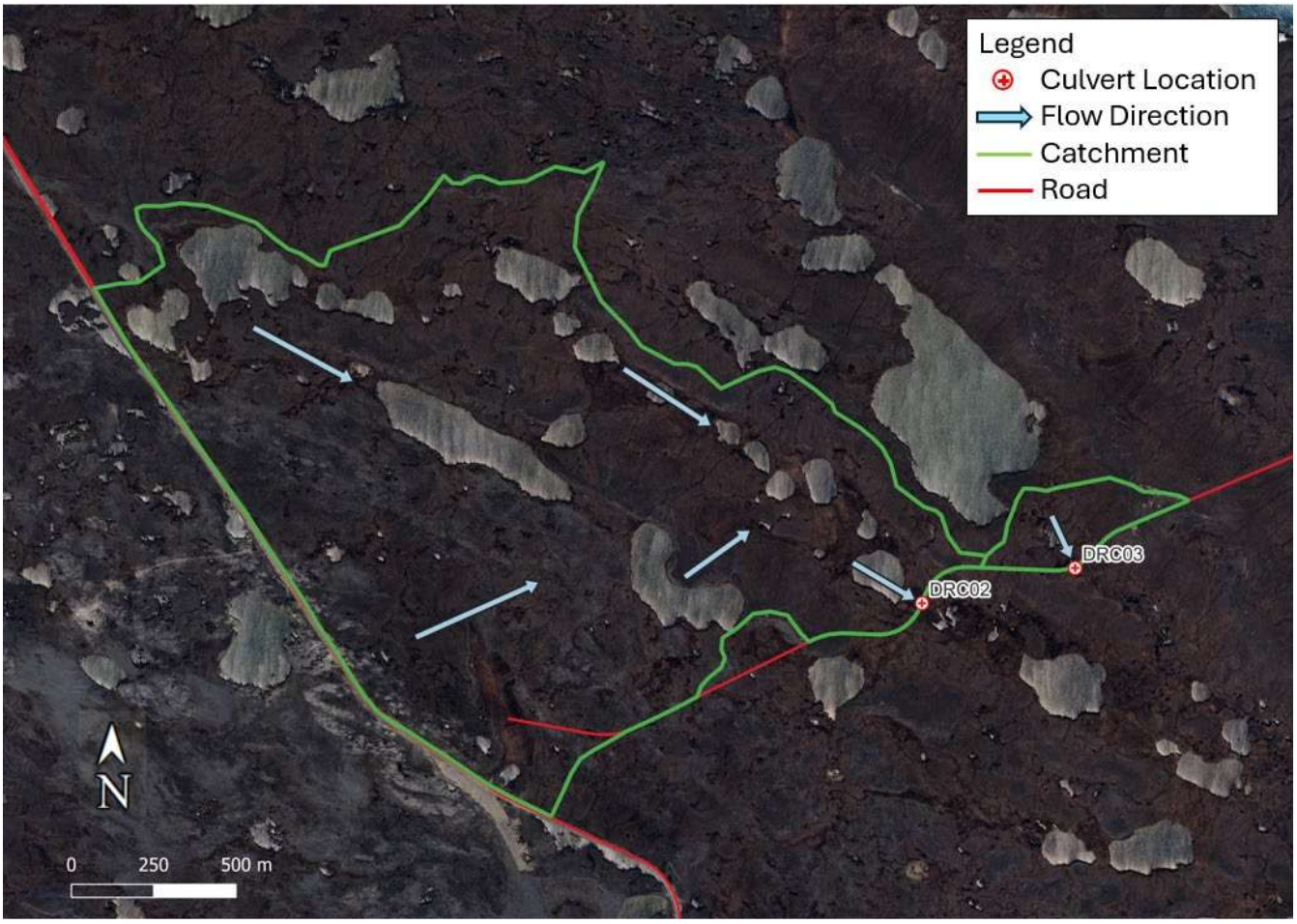

Figure 2: Discovery Road Crossing Locations and Catchments

3 DESIGN BASIS

The design basis for the IFC-level culvert crossing designs is presented in Table 1.

Table 1: Design Basis Summary

Item No.	Item Description	Design Basis	Reference/Rationale
Background			
1	Fish habitat requirements	Only small-bodied fish species (Ninespine Stickleback) and fish habitat with potential for small-bodied fish species were observed at the relevant crossing locations during the 2022 fish survey by Agnico Eagle. Small-bodied fish species do not move upstream during the freshet or high-volume flows; therefore, fish passage assessment and design are not required during high flows. Best practices for fish passage during typical summer flows are observed in designs, including matching culvert grade to existing grade, incorporating culvert embedment to avoid perching with substrate placement inside the culvert to minimize footprint and to facilitate fish passage, sizing culverts to avoid flow constriction during typical summer flows, and incorporating boulder cluster placements to reduce velocities and provide resting areas for fish.	(Agnico Eagle 2022) (WSP 2024a) (Agnico Eagle 2025b)
2	Culvert capacity design event	Q100	Email from Agnico Eagle dated August 7, 2025 (Agnico Eagle 2025c)
3	Reporting watersheds	The watersheds contributing inflow to the culvert crossings delineated using the topographical survey and aerial photo. The adopted watershed areas are summarized in Figure 2 and Table 2.	(ArcticDEM 2017) (Agnico Eagle 2025c) Satellite imagery
Climate and Hydrology			
4	Daily to instantaneous flow peaking factor	DRC02 1.5 DRC03 2.0	Adopted. Varies based on watershed size and lake attenuation effects
5	Historical climate data	Available historical data from 1981 to 2023 downloaded for Rankin Inlet Gauge combined with the Meliadine Mine site data for 2023 period.	(ClimateData 2024) (WSP 2024a)
6	Runoff coefficient	Natural catchment 0.7 Disturbed catchment 0.9 Lake 1.0	(Golder 2014) (WSP 2024a)
Hydraulics			
7	Tailwater channel geometry for hydraulic analysis	Tailwater channel width = culvert diameters + 0.5 m spacing between culverts + 1.5 m spacing on either side of the culvert(s) Channel side slope = 3H:1V Measured average slope from the HRDEM.	Adopted tailwater channel width and side slopes (ArcticDEM, 2017) Google Maps Satellite Imagery
8	Freeboard	Q100 instantaneous peak water level at the culvert inlet is at or below the culvert crown level.	Adopted
9	Road cover above culvert	Loading based on the maximum gross weight of Komatsu HD465-7. GVW = 99,680 kg Two axles with 68% loaded to the rear axle.	Email from Agnico Eagle dated July 23, 2025 (Agnico Eagle 2025c)

Table 1: Design Basis Summary

Item No.	Item Description	Design Basis	Reference/Rationale
10	Road	Top width = 8.5 m. Embankment slope = 2.5H:1V Road height to be designed by others based on minimum cover and culvert diameter.	(Tetra Tech 2023)
11	Culvert longitudinal slope	Channel slope to match existing grade based on HRDEM.	(ArcticDEM 2017)
12	Culvert embedment depth	A 30% embedment depth.	(USFWS 2024)
13	Culvert alignment	Culvert alignments are perpendicular to the roads.	(Tetra Tech 2023) Google Maps Satellite Imagery
14	Manning's roughness coefficients (n)	CSP (top and sides): n = 0.024 Culvert substrate and tailwater channel substrate: n = 0.035 Culvert substrate with boulder clusters: n = 0.075	(FHWA 2022) (GAT 2011)

4 WATERCOURSE CROSSING LOCATIONS AND WATERSHEDS

The locations of the watercourse crossings are depicted in Figure 1 and Figure 2, and are based on the locations provided by Agnico Eagle (2025a). The culvert locations, catchment areas, and land use types outlined in Table 2 were estimated based on the provided topographical survey data, waterbody GIS layers, and satellite imagery. Watershed areas are based on field verified flow directions provided by Agnico Eagle on July 22, 2025 (2025c).

Table 2: Watercourse Crossing Watershed Details

Crossing Name	Easting (m) UTM Z 15N	Northing (m) UTM Z 15N	Total Watershed Area (ha)	Land Area (ha)	Disturbed Area (ha)	Lake Area (ha)	Estimated Channel Slope (%)
DRC02	546,883	6,981,302	269	238	0	31	1
DRC03	547,349	6,981,409	10	10	0	0	1

5 FLOW ESTIMATION

A WBM was developed in 2009 to conduct various water-related assessments for the Meliadine project (Golder 2009). The model underwent updates and calibration in 2014 based on hydrometric data collected up to 2011, aiming to include additional lakes potentially affected by the mine development (Golder 2014). The model was further updated with data recorded from 2011 to 2023 for the proposed design and construction of a fishway at Pistol Bay Falls as part of the Meliadine Project Phase 2 Offsetting Plan (WSP 2024a).

The WBM was configured using GoldSim™ software with a daily time step, covering the period from 1981 to 2023. This timeframe was chosen to align with the climate data derived for the site, using long-term data from the Environment Canada Rankin Inlet A climate station (Station 2303401).

In the WBM, each lake was represented as a reservoir. Inflows to the reservoirs comprised local watershed rainfall and snowfall, segregated into land and lake components to accommodate runoff losses, in addition to inflows from upstream watersheds. Outflows consisted of evaporation and lake outlet discharges. The model also considered lake storage, with evapotranspiration implicitly factored into land runoff losses.

Stage-discharge rating curves for lake outlets are included in the model when the lake is large enough to attenuate the flow. The development of stage-discharge rating curves was detailed in Meliadine FEIS Appendix 7.3-B Baseline Model Calibration (Golder 2014) and were used for this assessment.

The WBM for the Meliadine area, as part of this study, was updated with estimated watershed areas and land use types to estimate flows for the culvert crossings. Both crossings' watersheds were evaluated for flow analysis. The model simulates mean daily flows for each watershed from 1981 to 2023. From the daily time series, a Flood Frequency Analysis (FFA) was conducted for each watershed to estimate the mean daily Q100 (1-in-100 year) flow. Since the model estimated the mean daily flow, a peaking factor was used to estimate the peak instantaneous value for the Q100 design event, which was used to assess the capacity of proposed culverts during a large flood. Peaking factors of 1.5 and 2.0 were used for the DRC02 and DRC03 watersheds, respectively. A higher peaking factor was adopted for DRC03 due to the DRC03 catchment being much smaller and having no significant lakes that would attenuate flows. The estimated Q100 design flows for each crossing are listed in Table 3. It is noted that the estimated peak flow at Crossing DRC02 was attenuated due to presence of upstream lake storage.

Table 3: Watercourse Crossing Estimated Flows

Crossing Name	Total Watershed Area (ha)	Q100
DRC02	269	0.99
DRC03	10	0.07

6 FISH PASSAGE CONSIDERATIONS

The culvert crossings intersect with small, ephemeral watercourses. Agnico Eagle has previously conducted low flow fisheries programs in 2022 and identified the presence of Ninespine Stickleback in small ponds around the culvert crossings DRC02 and DRC03 (Agnico Eagle 2022). Agnico Eagle also conducted a 2025 spring fisheries program to support development of the Discovery Road. No fish presence was observed during the 2025 spring fisheries program at any location (Agnico Eagle 2025b).

It is expected that small-bodied fish species use these small, ephemeral watercourses when water temperatures warm during early to mid-summer and when surface waters are present (e.g., during a rain event or years when there is above average precipitation). As such, the design of the culverts does not require a specific upstream fish passage assessment for spring freshet flow or high-flow velocity mitigation measures; instead, the designs include best practices to maintain sufficient water depths and include substrate for small-bodied fish species when these species are expected to use these watercourses. This approach is consistent with previous approvals (DFO file # 24-HCAA-02901) received by Agnico Eagle for culvert designs at three watercourses with small-bodied fish presence on the Exploration Camp Access Road and the All-Weather Access Road (WSP 2024b).

Best practice design considerations for culverts with passage requirements for small-bodied fish species include:

- 0.15 m deep V-notch in the embedment material to concentrate water to the centre of the culvert to create suitable flow conditions during low summer flows.
- Culvert embedment of 30% with suitable stream substrate to increase the base width of flows within the culvert, better reflecting hydraulic conditions in the natural channels.

- Culvert installation with a slope similar to the natural slope of the channel.
- Culvert design that represents hydraulic characteristics of the watercourse through a range of spring and fall flows.
- Boulder clusters to reduce channel velocity and provide protected rest areas for fish throughout the culvert.

7 HYDRAULIC ANALYSIS

The HY-8 culvert hydraulic analysis program was used to estimate the culvert sizes for the Q100 design flood event. The following culvert configurations were designed:

- Culvert DRC02: 2 x 1,000 mm diameter CSP of length 21 m with 30% embedment
- Culvert DRC03: 1 x 1,000 mm diameter CSP of length 21 m with 30% embedment

7.1 Culvert Hydraulics

The selected hydraulic roughness (Manning's n) of channel substrate in the culvert with boulder clusters is 0.075, tailwater channel is 0.035, and the CSP sidewalls are 0.024. The results of the hydraulic analysis for the Q100 design event in the culverts are summarized in Table 4.

Table 4: Hydraulic Analysis Results for Culverts

Crossing Name	Culvert Design	Culvert Slope	Embedment Depth (m)	Q100 Available Freeboard to Culvert Inlet Crown (m)	Q100 Culvert Outlet Velocity (m/s)
DRC02	2 x CSP 1,000 mm	1%	0.30	-0.04 [(a)]	1.7
DRC03	1 x CSP 1,000 mm	1%	0.30	0.49	0.9

(a) This water level was determined to be acceptable due to the high return period of the design event (1-in-100 years) and due to riprap protection design for 0.3 m above the culvert inlet crown. As well, the peak flow is only sustained for a short duration.

7.2 Riprap Erosion Protection

Riprap is designed to be placed at the inlets and outlets of all culverts (both as a riprap apron on the channel bed and banks, and also on the roadside slope embankment) to reduce erosion of the natural landscape without mobilization of sediment by high flows. Riprap design size was rounded up to the nearest riprap class. Angular, class 10 kg riprap shall be used at all culverts. Table 5 provides gradation for the specified riprap class.

Table 5: Riprap Gradation for Culvert Outlets

Class of Riprap	Intermediate Dimension (mm)			
	Percentage Smaller Than Intermediate Dimension			Max. Size
	15%	50%	85%	
10 kg	90	200	285	350

7.3 Boulder Cluster Rock Sizing

Boulder clusters are specified in both culverts to increase the stream bed complexity within the culvert and to provide refugia for fish by breaking up swim distances. Boulder sizing was designed following the Rock Ramp Design Guidelines (USGS 2007). Boulder clusters have been designed with the following specifications:

- Typical boulder diameters: 0.3 to 0.35 m
- Three boulders per cluster arranged in a V-formation (centre of V pointing upstream)
- Boulder clusters are spaced 3 m apart

Boulder clusters will be installed so that boulders are securely placed on channel substrate as per the construction drawings (Attachment 1).

8 CULVERT COVER

Road cover requirements were calculated using a loaded Komatsu HD465-7 for the design load and grading considerations for gravel roads in compliance with CSPI 2007. Table 6 provides additional typical construction information.

Table 6: Minimum Culvert Cover

Item	Value
Minimum Road Cover	1.0 m for 1,000 mm CSP at both DRC02 and DRC03

9 TECHNICAL SPECIFICATIONS

This section provides technical specifications which shall be read in conjunction with the issued for construction (IFC) design drawings, provided in Attachment 1.

1. PRIOR TO CONSTRUCTION

1.1 PRIOR TO ANY CULVERT CONSTRUCTION ACTIVITIES TAKING PLACE THE FOLLOWING SPECIFICATIONS SHALL BE FOLLOWED.

2. SCHEDULE

2.1 PROPOSED WORK IS PLANNED TO TAKE PLACE IN 2025.

3. ENVIRONMENTAL PROTECTION

3.1. THE WORK AREAS SHALL BE MONITORED FOR EROSION AND SEDIMENT TRANSPORT AS REQUIRED DURING CONSTRUCTION. ANY REQUIRED MITIGATION MEASURES WILL BE PUT IN PLACE AS PER THE SEDIMENT AND EROSION MANAGEMENT PLAN.

3.2. EXECUTION OF THE WORK IS RECOMMENDED TO FOLLOW FISHERIES AND OCEANS CANADA (DFO) STANDARDS AND CODE OF PRACTICES, WHICH MAY INCLUDE THE FOLLOWING: ICE BRIDGES AND SNOW FILLS, CULVERT MAINTENANCE, TEMPORARY FORDS, AND IN-WATER ISOLATION (DFO 2024), AND ADDITIONAL MEASURES OR RECOMMENDATIONS PROVIDED BY DFO DURING THE PERMITTING PROCESS.

4. QUALITY ASSURANCE INSPECTIONS

4.1. WORK THROUGHOUT THE ENTIRE PROJECT SHALL BE COMPLETED IN ACCORDANCE WITH THE INSPECTIONS AND TESTING GUIDELINES LAID OUT BY THE CANADIAN STANDARDS ASSOCIATION (CSA) IN CODE CSA-G401-14, WITH ADDITIONAL QUALITY ASSURANCE INSPECTIONS SUMMARIZED BELOW.

4.2. MONITORING OF THE QUALITY ASSURANCE (QA)/QUALITY CONTROL (QC) WILL BE CONDUCTED BY QUALIFIED AGNICO EAGLE PERSONNEL SO THAT WORK IS COMPLETED IN ACCORDANCE WITH THE DESIGN DRAWINGS AND TECHNICAL SPECIFICATIONS.

4.3. PRODUCTS SHALL BE MADE AVAILABLE FOR INSPECTION AND ACCEPTANCE BY THE ENGINEER AT THE POINT AND TIME OF INCORPORATION INTO THE WORK.

4.4. MINIMUM QUALITY CONTROL (QC) TESTS AND INSPECTIONS, TO BE PERFORMED BY THE CONTRACTOR, SHALL BE PER TABLE 1.

TABLE 1: QUALITY ASSURANCE REQUIREMENTS

ELEMENT	DESCRIPTION	REQUIREMENT
MANUFACTURERS QC	CONFIRM CULVERT MATCHES MATERIAL SPECIFICATIONS IN THIS DOCUMENT AND ANY FIELD FIT CHANGES ALIGN WITH MANUFACTURER'S SPECIFICATIONS, FOR EXAMPLE DEPTH OF COVER.	DOCUMENT THICKNESS OF CULVERT, CIRCUMFERENCE, CORRUGATIONS, CULVERT MATERIAL AND DEPTH OF COVER
VISUAL INSPECTIONS	INSPECT CULVERT AND COUPLERS FOR RUST, STAINING, DENTS/DEFORMITIES. REPAIR ANY MINOR DAMAGE SUCH AS RUST OR REPLACE IF DAMAGE IS MAJOR.	DOCUMENT CULVERT AND COUPLER CONDITION BEFORE COVERING, DO NOT INSTALL IF DAMAGED
VISUAL INSPECTIONS	INSPECT RIPRAP, CULVERT SUBSTRATE MATERIAL, ROAD SUB-BASE COARSE FILLS FOR ADHERENCE TO THE DESCRIPTIONS PROVIDED IN THESE SPECIFICATIONS.	INSPECT AND DOCUMENT MATERIAL CONDITION BEFORE INSTALLATION.
SURVEY	COMPLETE SURVEYS FOR APPROVAL FOR ITEMS LISTED BELOW: 1. LAYOUT OF WORK 2. EXCAVATED SURFACE 3. FINAL SURFACE 4. CULVERT ALIGNMENT AND ELEVATIONS	COMPLETE, DOCUMENT, AND PROVIDE SURVEYS FOLLOWING COMPLETION OF EVERY ITEM FOR APPROVAL BY THE ENGINEER.

5. MATERIALS

5.1. ALL MATERIALS USED SHALL BE NON-POTENTIAL ACID GENERATING (NPAG) AND NON-METAL LEACHING. ANY NEWLY SOURCED MATERIALS SHALL BE COLLECTED AND ANALYZED TO CONFIRM THEY ARE NPAG AND NON-METAL LEACHING.

5.2. NON-WOVEN GEOTEXTILE

5.2.1. NON-WOVEN GEOTEXTILE SHALL HAVE MINIMUM PARAMETERS CONFORMING TO THE FOLLOWING VALUES.

TABLE 2: GEOTEXTILE REQUIREMENTS

PARAMETER	VALUE
GRAB STRENGTH	650 N
PUNCTURE STRENGTH	275 N
TRAPEZOIDAL TEAR	250 N
BURST STRENGTH	2.1 MPa

5.3. CULVERTS

5.3.1. THE SUPPLY AND FABRICATION OF CORRUGATED STEEL PIPE (CSP) INCLUDING COUPLERS AND APPURTENANCES SHALL BE IN ACCORDANCE WITH CSA STANDARD G401-07

5.3.2. THE CSP SHALL BE GALVANIZED WITH MINIMUM WALL THICKNESS OF 2.8 mm AND A CORRUGATION PROFILE OF 68 mm X 13 mm.

5.4. RIPRAP

5.4.1. RIPRAP MATERIAL SHALL MEET THE FOLLOWING STANDARDS:

5.4.1.1. RIPRAP SHALL CONSIST OF WELL GRADED, HARD, DURABLE AND ANGULAR ROCK WHICH MEETS THE PHYSICAL AND GRADATION REQUIREMENTS SET OUT BELOW.

5.4.1.2. RIPRAP SHALL BE NON-POTENTIAL ACID GENERATING (NPAG). ANY NEW SOURCED MATERIAL SHALL BE COLLECTED AND ANALYZED BY APPROPRIATE GEOCHEMICAL ANALYSES TO CONFIRM IT IS NPAG AND NON-METAL LEACHING.

TABLE 3: RIPRAP GRADATION

CLASS	INTERMEDIATE AVERAGE DIMENSION (mm)			
	D15	D50	D85	D100
10 kg	90	200	285	350

5.5. CULVERT SUBSTRATE MATERIAL

5.5.1. CULVERT SUBSTRATE MATERIAL SHALL BE WELL GRADED SANDY/GRAVEL/COBBLE MIXTURE. COBBLES SHALL NOT EXCEED 150 mm IN DIAMETER. SUBSTRATE MATERIAL SHALL MATCH THE NATURAL STREAMBED MATERIAL, UNLESS NATURAL STREAMBED MATERIAL IS COMPOSED PRIMARILY OF FINES, IN WHICH CASE GRAVEL AND COBBLES SHALL BE ADDED TO THE CULVERT SUBSTRATE MATERIAL. MATERIAL SHALL BE APPROVED BY THE ENGINEER.

5.5.2. EXCAVATED CULVERT SUBSTRATE MATERIAL MAY BE USED FOR CULVERT SUBSTRATE IF APPROVED BY THE ENGINEER. SUBSTRATE MATERIAL SHALL BE STOCKPILED FOR LATER REUSE AS CULVERT SUBSTRATE MATERIAL (AS PER SPECIFICATION 6.1.1.4) AND SHALL BE KEPT FREE OF DEBRIS, OIL OR OTHER CONTAMINANTS, SNOW, AND OTHER SOURCES OF MOISTURE.

5.6. ENGINEERED BACKFILL, BASE AND BEDDING

5.6.1. ENGINEERED BACKFILL

5.6.1.1. ENGINEERED BACKFILL SHALL BE CLEAN, GRANULAR, AND POSSESS TIME-INDEPENDENT PROPERTIES.

5.6.1.2. BACKFILL MATERIAL SHALL BE FREE OF ORGANIC, FROZEN AND OTHERWISE DELETERIOUS MATERIAL AND CONSIST OF A WELL GRADED GRANULAR MATERIAL WITH ANGULAR GRAINS AND MEET THE FOLLOWING REQUIREMENTS OR AS APPROVED BY THE ENGINEER.

5.6.1.3. MAXIMUM PARTICLE SIZE SHALL NOT EXCEED 75 mm.

5.6.1.4. MINIMUM GRAVEL CONTENT (PARTICLE SIZE > 4.75 mm): 30%

5.6.1.5. MAXIMUM FINES CONTENT (PASSING THROUGH #200 SIEVE): 10%.

5.6.2. COMPACTED PIPE BEDDING

5.6.2.1. BASE AND PIPE BEDDING MATERIALS SHALL BE A 50 mm MINUS GRANULAR MATERIAL WHICH MEETS THE GRADATION SPECIFICATIONS PRESENTED IN TABLE 4.

5.6.2.2. BASE MATERIAL MAY NOT BE REQUIRED IF THE SUBSURFACE CONDITIONS ARE APPROVED BY THE ENGINEER.

TABLE 4: GRANULAR FILL (0-50 mm) – PARTICLE SIZE DISTRIBUTION LIMITS

PARTICLE SIZE (mm)	% PASSING
50	100
38	87-100
19	60-95
12.5	46-80
5	35-60
2	25-45
0.315	10-25
0.08	4-10

5.6.3 COMPACTION

5.6.3.1 MAXIMUM UNCOMPACTED LIFT HEIGHT SHALL BE 200 mm.

5.6.3.2 EACH LAYER SHALL BE COMPACTED TO A MINIMUM 95% STANDARD PROCTOR DENSITY (ASTM D698).

5.6.3.3 OPTIMUM MOISTURE CONTENT SHALL BE MAINTAINED DURING COMPACTION (ASTM D698).

6. EXECUTION

6.1. PREPARATION OF CULVERT SITE

6.1.1. PRIOR TO THE CULVERT BEING INSTALLED THE FOLLOWING SHALL BE FOLLOWED:

6.1.1.1. REMOVE LARGE STONES OR OTHER HARD MATERIALS IN THE CULVERT FOUNDATION, TRENCH WALLS, AND BACKFILL THAT MAY DAMAGE OR WEAKEN THE PIPING OR IMPEDE CONSISTENT BACKFILLING FOR COMPACTION. THIS SHALL INCLUDE THE REMOVAL OF ANY EXISTING, CULVERTS(S) AND ASSOCIATED MATERIALS.

6.1.1.2. EXISTING CULVERTS MAY REMAIN IN PLACE IF THEY COMPLY WITH THE EXCAVATION AND MINIMUM SPACING DIMENSIONS PROVIDED IN THE DESIGN DRAWINGS. CULVERTS SHALL BE REMOVED IF DAMAGED OR BACKFILL AND COVER REQUIREMENTS CAN NOT BE MET.

6.1.1.3. IT IS THE RESPONSIBILITY OF AGNICO EAGLE TO CONFIRM THAT THE EXISTING CULVERTS MEET THE REQUIREMENTS TO REMAIN IN PLACE DURING AND AFTER CONSTRUCTION.

6.1.1.4. IF CHANNEL SUBSTRATES ARE TO BE REMOVED, SEPARATE AND STOCKPILE GRANULAR SUBSTRATE MATERIAL (IF PRESENT) FOR USE AS CULVERT SUBSTRATE AND IF REMAINING MATERIAL IS AVAILABLE AT COMPLETION, REPLACE ALONG ANY DISTURBED STREAM AREAS, UPON COMPLETION OF PROJECT WORKS. SEPARATE SUBSTRATE MATERIAL INTO TWO STOCKPILES:

6.1.1.4.1. MATERIAL FROM THE TOP 0.3 m OF THE CHANNEL AND

6.1.1.4.2. MATERIAL BELOW THE TOP 0.3 m

6.1.1.5. MATERIAL STOCKPILES PLACED ADJACENT TO ANY EXCAVATION OR EMBANKMENT SHALL BE LIMITED TO MAXIMUM 1.2 m IN HEIGHT.

6.1.1.6. MATERIAL STOCKPILES SHALL BE PLACED A HORIZONTAL DISTANCE AWAY FROM AN EXCAVATION EQUIVALENT TO (OR GREATER THAN) THE EXCAVATION DEPTH.

6.1.1.7. MATERIAL STOCKPILES SHALL BE KEPT FREE OF DEBRIS, OIL OR OTHER CONTAMINANTS, SNOW, AND OTHER SOURCES OF MOISTURE.

6.1.1.8. STOCKPILES SHALL BE SIZED TO MINIMIZE SEGREGATION AND TO FACILITATE FUTURE USE.

6.1.1.9. CULVERT ELEVATIONS NOTED ON THE DESIGN DRAWINGS ARE ESTIMATED FROM TOPOGRAPHY DATA FOR STREAM INVERTS. CULVERT PLACEMENT AND INSTALLATION SHALL BE FIELD FIT, TO REFLECT ACTUAL CONDITIONS ENCOUNTERED ON-SITE, INCLUDING BUT NOT LIMITED TO CHANGES IN ELEVATION, GRADE, SKEW, AND/OR DEPTH BASED ON THE DIRECTION OF THE ENGINEER.

6.1.1.10. CULVERT SLOPES DEVIATING FROM THE DESIGN DRAWINGS SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.

6.1.1.11. ALL FIELD FIT REVISIONS TO THE DESIGN SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.

6.2. EXCAVATION AND TRENCHING

6.2.1. EXCAVATION SAFETY AND SUITABILITY OF FOUNDATION MATERIALS SHALL BE CARRIED OUT ACCORDING TO THE CONTRACTOR'S / OWNER'S GEOTECHNICAL ENGINEER.

6.2.2. DURING EXCAVATION OF THE CULVERT PLACEMENT AREA, THE EXCAVATED CLEAN CHANNEL SUBSTRATE SHALL BE STOCKPILED FOR REUSE AS PER 6.1.1.4.

6.2.3. EXCAVATED SUBGRADE CONDITIONS SHALL BE INSPECTED FOR THE SUITABILITY OF MATERIAL AND CULVERT PLACEMENT. SATURATED FINE-GRAINED SOILS, OR ICE-RICH FINE-GRAINED SOILS IN THE THAWED ACTIVE LAYER SHALL BE STRIPPED UNTIL COMPETENT SUBGRADE MATERIAL IS FOUND, SUBJECT TO APPROVAL BY THE ENGINEER.

6.3. CULVERT INSTALLATION

6.3.1. BASE

6.3.1.1. BASE MATERIAL SHALL BE PLACED ACCORDING TO THE DESIGN DRAWINGS OR AS APPROVED BY THE ENGINEER.

6.3.2. COMPACTED BEDDING

6.3.2.1. CULVERT BEDDING SHALL BE CONSTRUCTED ACCORDING TO THE DESIGN DRAWINGS, OR AS APPROVED BY THE ENGINEER.

6.3.2.2. BEDDING TO BE INSTALLED TO PROVIDE FULL CONTACT WITH CULVERT INVERT TO SUPPORT CULVERT AND LIMIT MOVEMENT

6.3.3. RIPRAP PLACEMENT

6.3.3.1. NON-WOVEN GEOTEXTILE FILTER CLOTH PLACEMENT, AS REQUIRED BY THE ENGINEER BASED ON SITE CONDITIONS, AND RIPRAP PLACEMENT SHALL FOLLOW THE FOLLOWING PRACTICES:

6.3.3.1.1. NON-WOVEN GEOTEXTILE SHALL BE PLACED BENEATH BOTH THE INLET AND OUTLET RIPRAP SHOWN IN THE DESIGN DRAWINGS AND SHALL BE KEYED INTO THE SLOPE AT THE TOP OF THE BANKS AT A MINIMUM DISTANCE OF 0.3 m. THE GEOTEXTILE SHALL BE KEYED INTO THE CULVERT BEDDING MATERIALS WHERE THE RIPRAP MEETS THE CULVERT BASE AND KEYED INTO THE THALWEG WHERE RIPRAP COVERAGE BLENDS IN WITH THE NATURAL CHANNEL.

6.3.3.1.2. THE CONTRACTOR SHALL EXERCISE CARE DURING RIPRAP PLACEMENT TO AVOID DAMAGE OR DISPLACEMENT OF THE NON-WOVEN GEOTEXTILE. CONSTRUCTION EQUIPMENT IS NOT PERMITTED ON THE SURFACE OF THE NON-WOVEN GEOTEXTILE.

6.3.3.1.3. NON-WOVEN GEOTEXTILE SHALL BE PLACED TO ENSURE THERE IS A MINIMUM OVERLAP OF 0.3 m AT EACH JOINT, OR AS RECOMMENDED BY THE MANUFACTURER.

6.3.3.1.4. RIPRAP PLACEMENT WILL BE FIELD FIT BY THE CONTRACTOR, WHO SHALL FOLLOW THE DETAILS SHOWN IN THE DESIGN DRAWINGS. RIPRAP SHALL FOLLOW THE NATURAL STREAM CHANNEL, CENTERED AT THE THALWEG AND CULVERT.

6.3.3.1.5. RIPRAP SHALL BE PLACED 0.3 m ABOVE THE CULVERT CROWNS AGAINST THE ROAD EMBANKMENT AT THE INLET AND OUTLET.

6.3.3.1.6. ENGINEERED BACKFILL MATERIAL (SECTION 5.6.1) SHALL BE LAID WITHIN THE VOIDS ON THE SURFACE OF THE RIPRAP AS DIRECTED BY THE ENGINEER.

6.3.4. CULVERT PLACEMENT

6.3.4.1. INSTALL AND CONSTRUCT CULVERT IN GENERAL ACCORDANCE WITH THE LINES, GRADES, AND LOCATIONS SPECIFIED IN THE DESIGN DRAWINGS.

6.3.4.2. LIFT OR ROLL PIPE INTO POSITION. DO NOT DROP OR DRAG THE CULVERT OVER PREPARED BEDDING.

6.3.4.3. ENSURE BOTTOM OF CULVERT MAKES CONTACT WITH THE SHAPED BED FOR THE ENTIRE LENGTH OF THE CULVERT.

6.3.4.4. INSERT AND TIGHTEN BOLTS TO PRODUCT SPECIFICATIONS SET OUT BY CULVERT MANUFACTURER.

6.3.5. CULVERT SUBSTRATE MATERIAL PLACEMENT

6.3.5.1. PLACE APPROVED CULVERT SUBSTRATE MATERIAL (AS PER SPECIFICATION 5.5) INSIDE THE CULVERT TO EMBEDMENT DEPTH AS PER DRAWINGS.

6.3.5.2. SUBSTRATE MATERIAL SHALL BE KEPT CLEAN AND DRY AND SOURCES OF MOISTURE SHALL NOT BE ALLOWED TO ACCUMULATE ON OR WITHIN THE MATERIAL.

6.3.5.3. THE SURFACE OF THE BACKFILLED CULVERT SUBSTRATE MATERIAL WITHIN THE CULVERTS SHALL CONFORM TO THE DIMENSIONS SHOWN IN THE DESIGN DRAWINGS.

6.3.5.4. FILL IN VOIDS IN CULVERT SUBSTRATE BY WASHING IN SAND/FINES.

6.3.6 BOULDER CLUSTER PLACEMENT

6.3.6.1 AFTER PLACEMENT OF SUBSTRATE MATERIAL SECURE BOULDER CLUSTERS IN PLACE AS SHOWN IN THE DRAWINGS.

6.3.7. BACKFILL AND PLACEMENT

6.3.7.1. FILL SHALL BE PLACED TO THE LINES AND GRADES AS SHOWN IN THE DRAWINGS, AND AS DIRECTED BY THE OWNER'S GEOTECHNICAL ENGINEER.

6.3.7.2. BACKFILL SHALL BE PLACED IN VERTICAL LIFTS NOT EXCEEDING 0.2 m. FILLS MAY BE PLACED DURING LIGHT SNOWFALL PROVIDED THAT THE SNOW ACCUMULATION IS LESS THAN 5 mm BETWEEN EACH LIFT. ANY HEAVIER SNOW ACCUMULATION ON THE LIFT SHALL BE REMOVED BEFORE CONTINUING PLACEMENT OF FILLS.

6.3.7.3. CAUTION SHALL BE EXERCISED WHILE PLACING AND COMPACTING BACKFILL NEAR THE CORNERS/HAUNCHES.

6.3.7.4. COMPACT ENGINEERED BACKFILL TO A MINIMUM 95% STANDARD PROCTOR.

6.3.7.5. MAINTAIN MOISTURE CONTENT OUTLINED IN SECTION 5.6.3.3 DURING COMPACTION

6.3.7.6. COMPACTION TESTING USING A NUCLEAR DENSOMETER SHALL BE CONDUCTED BY THE CONTRACTOR ON EVERY LIFT OF FILL. COMPACTION TESTING RESULTS SHALL BE PROVIDED TO THE ENGINEER FOR REVIEW.

6.3.8. ROADWAY SURFACE

6.3.8.1. FINAL ROADWAY SURFACE GEOMETRY AND MATERIAL IS TO BE DETERMINED BY THE OWNER.

6.4. COMPLETION OF WORK

6.4.1. ONCE THE CULVERTS HAVE BEEN INSTALLED AND ALL BACKFILLING AND RIPRAP PLACEMENT IS COMPLETE, THE FOLLOWING SHALL BE COMPLETED:

6.4.1.1. ENVIRONMENTAL AND EROSION AND SEDIMENT CONTROL MEASURES SHALL BE COMPLETED AS DIRECTED BY THE OWNER.

6.4.1.2. INSPECTIONS SHALL BE COMPLETED AND AS-BUILT MEASUREMENTS AND OBSERVATIONS FOR THE CULVERT AND FINAL ROADWAY SURFACE SHALL BE CONDUCTED AND SUBMITTED TO THE ENGINEER FOR APPROVAL.

10 SUMMARY AND CONCLUSIONS

This technical memorandum presents the background details, design basis, methodology and design details for culvert crossings at Culverts DRC02 and DRC03 with fish passage considerations. The assessment includes the analysis of watershed areas and hydrology to estimate Q100 design event flows for culvert capacity assessments. The analysis is recommended as suitable for preparation of culvert crossing designs. The IFC drawings and specifications are provided in Attachment 1 and should be referenced for design requirements prior to construction.

The following culvert crossing designs are proposed:

- Culvert DRC02: 2x 1,000 mm diameter CSP of 21 m length with 30% embedment (300 mm); Angular, class 10 kg riprap for inlet and outlet channel armouring.
- Culvert DRC03: 1x 1,000 mm diameter CSP of 21 m length with 30% embedment (300 mm); Angular, class 10 kg riprap for inlet and outlet channel armouring.

A 0.15 m deep V-notch in the culvert substrate is included in the design drawings to maintain flow depths for passage of fish during low-flow conditions. Boulder clusters are included in the design at 3 m spacing to improve fish passage by breaking up swimming distances and providing resting areas for small-bodied fish using the watercourses.

Execution of the work is recommended to follow DFO standards and code of practices, which may include the following: ice bridges and snow fills, culvert maintenance, temporary fords, and in-water isolation (DFO 2024), and additional measures or recommendations provided by DFO during the permitting process.

11 CLOSURE

This memorandum is to be read with the Study Limitations, which follows the text and forms an integral part of the memorandum.

WSP Canada Inc.

Amir Joorabchi
Senior Water Resources Specialist

Curtis VanWerkhoven, MASc, P.Eng.
Principal Water Resources Engineer

Brett McLeod, RPBio. CPESC
Senior Technical Manager, Aquatic Biologist

AM/AJ/CV/BM

Attachment 1: IFC Culvert Drawings

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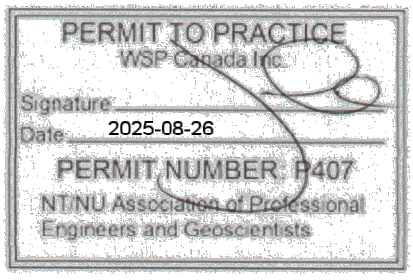

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WSP. 2024b. Meliadine Mine – IFC Design of Three Watercourse Crossings (Km 1.1 on the Exploration Camp Access Road and Km 15.4 and Km 8.8 on the All-Weather Access Road). WSP Ref. No. CA0021981.5443_MEL2024_051-TM-Rev0. December 17, 2024.

13 STUDY LIMITATIONS

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The conclusions presented in this report are based on work performed by trained, professional and technical staff, in accordance with their reasonable interpretation of current and accepted engineering and scientific practices at the time the work was performed.

The content and opinions contained in the present report are based on the observations and/or information available to WSP at the time of preparation, using investigation techniques and engineering analysis methods consistent with those ordinarily exercised by WSP and other engineering/scientific practitioners working under similar conditions, and subject to the same time, financial and physical constraints applicable to this project.

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Benchmark and elevations used in this report are primarily to establish relative elevation differences between the specific testing and/or sampling locations and should not be used for other purposes, such as grading, excavating, construction, planning, development, etc.

Design recommendations given in this report are applicable only to the project and areas as described in the text and then only if constructed in accordance with the details stated in this report. The comments made in this report on potential construction issues and possible methods are intended only for the guidance of the designer. The number of testing and/or sampling locations may not be sufficient to determine all the factors that may affect construction methods and costs. We accept no responsibility for any decisions made or actions taken as a result of this report unless we are specifically advised of and participate in such action, in which case our responsibility will be as agreed to at that time.

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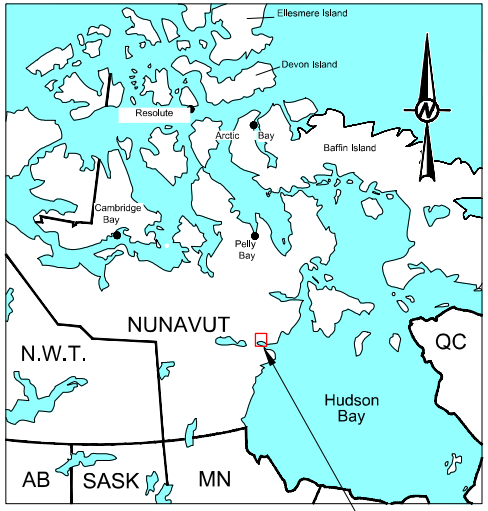
This limitations statement is considered an integral part of this report.

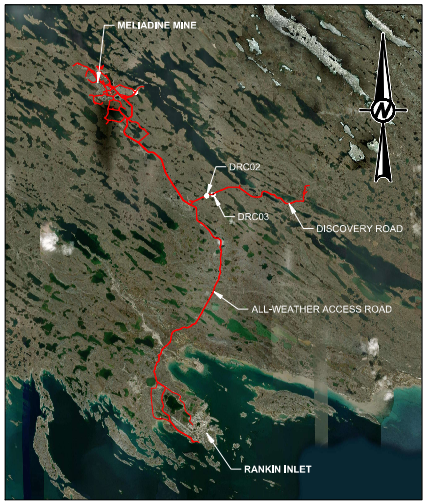
ATTACHMENT 1

IFC Culvert Drawings

AGNICO EAGLE MINES LTD.
MELIADINE GOLD PROJECT
DISCOVERY ROAD CULVERT CROSSINGS (DRC02 AND DRC03) - DETAILED DESIGN
NUNAVUT



PROJECT LOCATION MAP
NOT TO SCALE



CROSSING LOCATION MAP
NOT TO SCALE

SHEET LIST TABLE			
DRAWING No.	SHEET TITLE	REVISION	DATE
01	LOCATION PLAN AND DRAWING INDEX	0	2025-08-26
02	DISCOVERY ROAD CROSSING DRC02 PLAN	0	2025-08-26
03	DISCOVERY ROAD CROSSING DRC03 PLAN	0	2025-08-26
04	TYPICAL CULVERT PROFILE	0	2025-08-26
05	TYPICAL CULVERT CROSS-SECTION AND DETAILS	0	2025-08-26
06	TECHNICAL SPECIFICATIONS	0	2025-08-26

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0	2025-08-26	ISSUED FOR CONSTRUCTION	AM	JEF	AJ	CVW

SEAL
REGISTERED PROFESSIONAL ENGINEER
C.T. VANWERKHOVEN
LICENSEE
NT/NU
2025-08-26

CLIENT
AGNICO EAGLE MINES LTD.

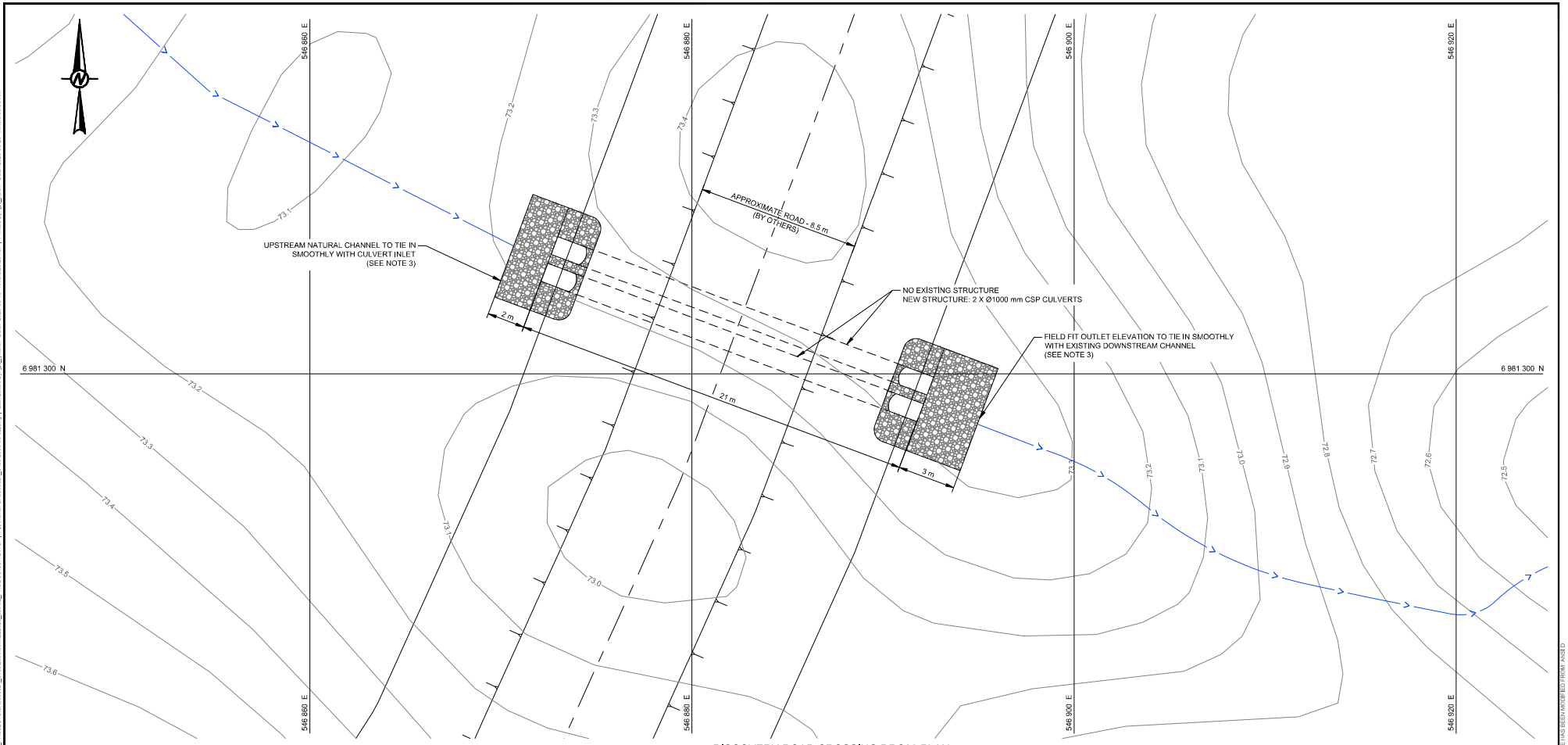
CONSULTANT
wsp
VANCOUVER
840 HOWE STREET
BRITISH COLUMBIA
CANADA
[+1] (604) 685 9381

PROJECT
MELIADINE GOLD PROJECT
DISCOVERY ROAD CULVERT CROSSINGS
(DRC02 AND DRC03) - DETAILED DESIGN NUNAVUT

TITLE
LOCATION PLAN AND DRAWING INDEX

PROJECT NO.	TASK/DOC.	REV.		DRAWING
CA0056821.8485	2000/50	0	1 of 6	01

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI D
0 25 mm



DISCOVERY ROAD CROSSING DRC02 PLAN

SCALE 1:100

ISSUED FOR CONSTRUCTION

LEGEND

- EXISTING STREAM (LOCATION APPROXIMATE)
- TOPOGRAPHIC CONTOUR (MAJOR INTERVAL = 0.1 m); (SEE REFERENCE 1)
- RIPRAP

NOTES

1. ALL UNITS ARE IN METRES UNLESS OTHERWISE NOTED.
2. COORDINATE SYSTEM: NAD83 UTM ZONE 15.
3. FIELD FIT CULVERT INLET AND OUTLET LOCATIONS TO ALIGN WITH LOWS AND INSTALL SO THAT RIPRAP TIES IN SMOOTHLY TO THE EXISTING CHANNEL.

REFERENCES

1. TOPOGRAPHIC INFORMATION GENERATED BY ArcticDEM, FILE: dsm_2m_polarstereo_20_19_1_2.tif, COLLECTED 2012-2017. ACCESSED JULY 22, 2025.
2. PROPOSED ROAD ALIGNMENT PROVIDED BY AGNICO EAGLE. DATE RECEIVED: JUNE 06, 2025.

0 5 10
1:100 METRES

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C.T. VANWERKHOVEN
LICENSEE
NT/NU
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AGNICO EAGLE MINES LTD.

CONSULTANT
wsp
VANCOUVER
840 HOWE STREET
BRITISH COLUMBIA
CANADA
[+1] (604) 685 9381

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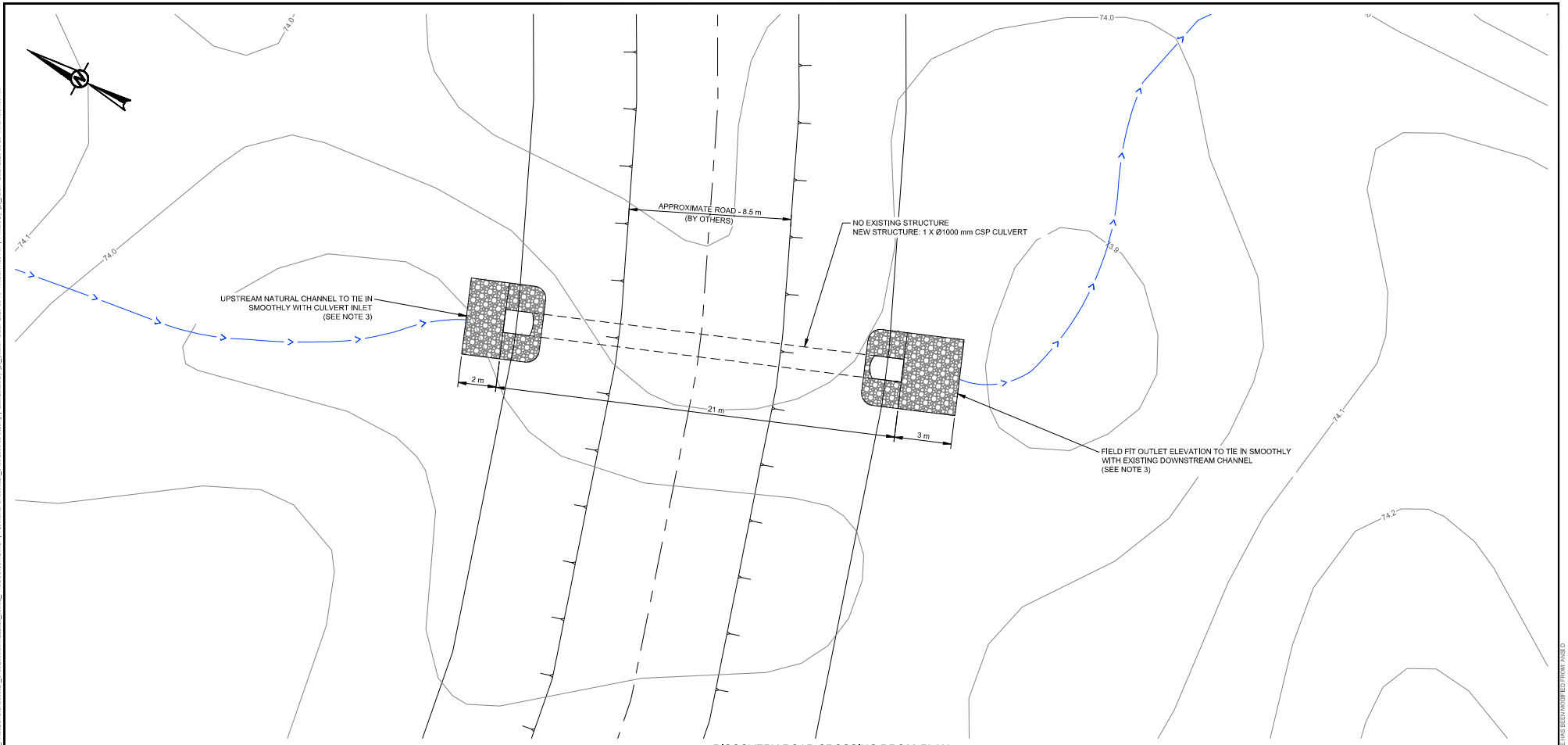
MELIADINE GOLD PROJECT
DISCOVERY ROAD CULVERT CROSSINGS
(DRC02 AND DRC03) - DETAILED DESIGN NUNAVUT

TITLE
DISCOVERY ROAD CROSSING DRC02 PLAN

PROJECT NO.	TASK/DOC.	REV.		DRAWING
CA0056821.8485	2000/50	0	2 of 6	02



DISCOVERY ROAD CROSSING DRC03 PLAN

SCALE 1:100

ISSUED FOR CONSTRUCTION

LEGEND

- EXISTING STREAM (LOCATION APPROXIMATE)
- TOPOGRAPHIC CONTOUR (MAJOR INTERVAL = 0.1 m); (SEE REFERENCE 1)
- RIPRAP

NOTES

1. ALL UNITS ARE IN METRES UNLESS OTHERWISE NOTED.
2. COORDINATE SYSTEM: NAD83 UTM ZONE 15.
3. FIELD FIT CULVERT INLET AND OUTLET LOCATIONS TO ALIGN WITH LOWS AND INSTALL SO THAT RIPRAP TIES IN SMOOTHLY TO THE EXISTING CHANNEL.

REFERENCES

1. TOPOGRAPHIC INFORMATION GENERATED BY ArcticDEM, FILE: dsm_2m_polarstereo_20_19_1_2.tif, COLLECTED 2012-2017. ACCESSED JULY 22, 2025.
2. PROPOSED ROAD ALIGNMENT PROVIDED BY AGNICO EAGLE. DATE RECEIVED: JUNE 06, 2025.

0 5 10
1:100 METRES

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LICENSEE
NT/NU

2025-08-26

CLIENT
AGNICO EAGLE MINES LTD.

CONSULTANT

VANCOUVER
840 HOWE STREET
BRITISH COLUMBIA
CANADA
[+1] (604) 685 9381

PROJECT
MELIADINE GOLD PROJECT
DISCOVERY ROAD CULVERT CROSSINGS
(DRC02 AND DRC03) - DETAILED DESIGN NUNAVUT

TITLE
DISCOVERY ROAD CROSSING DRC03 PLAN

PROJECT NO.	TASK/DOC.	REV.	1 of 6	DRAWING
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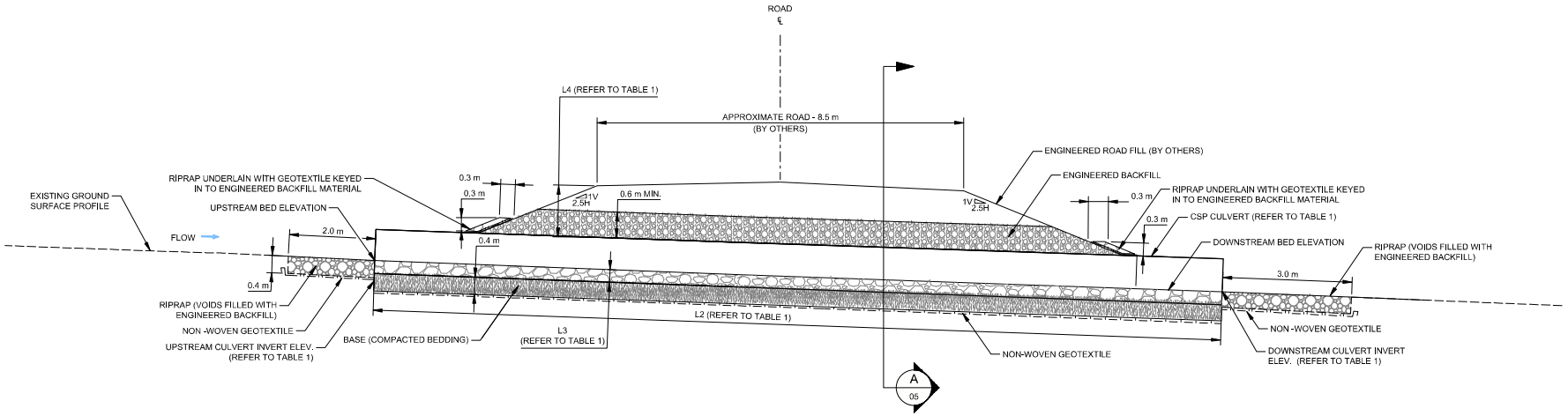

TYPICAL CULVERT CROSSING PROFILE

SCALE 1:50

TABLE 1

CROSSING NAME	CULVERT	L1 CSP CULVERT DIAMETER (m)	L2 CULVERT LENGTH (m)	L3 EMBEDMENT DEPTH (m)	CULVERT SLOPE	APPROXIMATE UPSTREAM CULVERT INVERT ELEVATION (m) (SEE NOTE 2)	APPROXIMATE DOWNSTREAM CULVERT INVERT ELEVATION (m) (SEE NOTE 2)	L4 MINIMUM CULVERT COVER (m)
DRC02	2x CSP 1000 mm	1.0	21.0	0.3	1%	73.2	73.0	1.0
DRC03	1x CSP 1000 mm	1.0	21.0	0.3	1%	74.1	73.9	1.0

LEGEND

- EXISTING GROUND SURFACE PROFILE
- ENGINEERED BACKFILL
- CULVERT SUBSTRATE MATERIAL
- RIPRAP
- COMPACTED BEDDING

NOTES

1. ALL UNITS ARE IN METRES UNLESS OTHERWISE NOTED.
2. CULVERT ELEVATIONS NOTED ON THE DESIGN DRAWINGS ARE ESTIMATED FROM HIGH-LEVEL TOPOGRAPHIC INFORMATION. CULVERT PLACEMENT AND INSTALLATION SHALL BE FIELD FIT, TO REFLECT ACTUAL CONDITIONS ENCOUNTERED ON-SITE, INCLUDING BUT NOT LIMITED TO CHANGES IN ELEVATION, GRADE, SKEW, AND/OR DEPTH BASED ON THE DIRECTION OF THE ENGINEER.

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0 2 4
1:50 METRES

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CONSULTANT

VANCOUVER
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CANADA
[+1] (604) 685 9381

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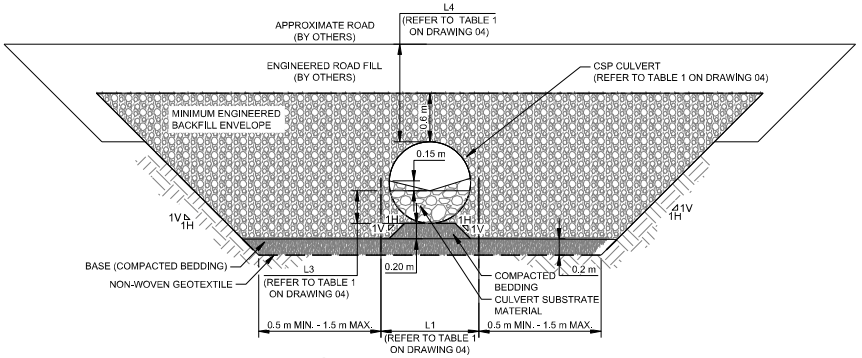
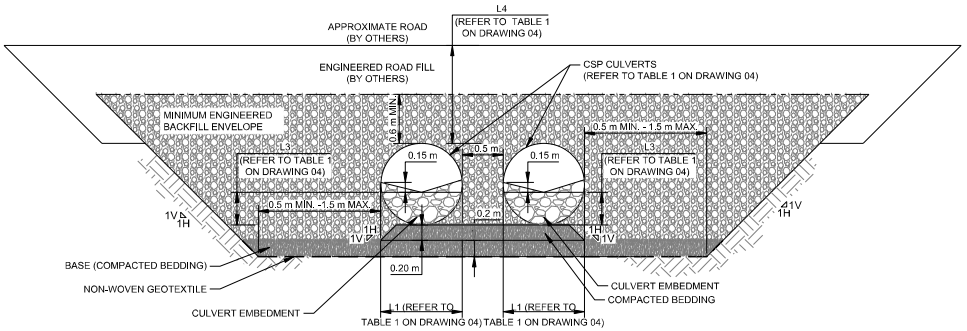
DISCOVERY ROAD CULVERT CROSSINGS
(DRC02 AND DRC03) - DETAILED DESIGN NUNAVUT

TITLE
TYPICAL CULVERT PROFILE

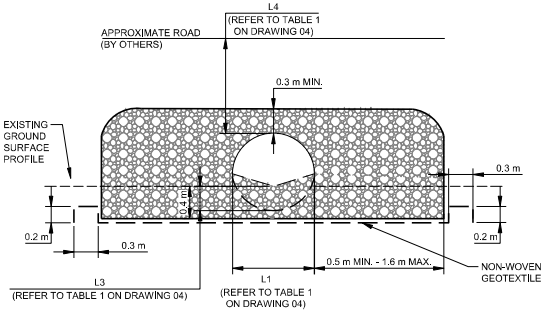
PROJECT NO.	TASK/DOC.	REV.	4 of 6	DRAWING
CA0056821.8485	2000/50	0		04



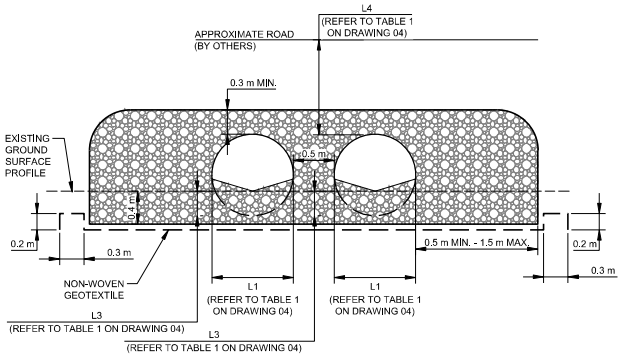
SCALE 1:30 A 02 TYPICAL SINGLE CULVERT CROSS-SECTION



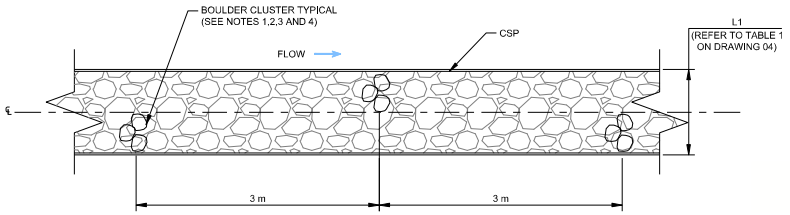
SCALE 1:30 A 02 TYPICAL DOUBLE CULVERT CROSS-SECTION



SCALE 1:30 1 TYPICAL CULVERT INLET AND OUTLET FACE RIPRAP DETAIL



SCALE 1:30 2 TYPICAL CULVERT INLET AND OUTLET FACE RIPRAP DETAIL



PLAN DETAIL - BOULDER CLUSTERS WITHIN CULVERT
SCALE 1:30

LEGEND

- NON-WOVEN GEOTEXTILE
- EXISTING GROUND SURFACE PROFILE
- ENGINEERED BACKFILL
- CULVERT SUBSTRATE MATERIAL
- COMPACTED BEDDING
- RIPRAP

GENERAL NOTES

1. ALL UNITS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ALL CULVERTS EMBEDDED AS PER L3 (EMBEDMENT DEPTH) IN TABLE 1 ON DRAWING 04.
3. EMBEDMENT DEPTH DOES NOT INCLUDE 150 mm V-NOTCH ABOVE THALWEG.
4. UPSTREAM AND DOWNSTREAM SLOPES SHALL BE MATCHED TO CHANNEL SLOPES DESCRIBED IN TABLE 1 ON DRAWING 04.

BOULDER CLUSTER NOTES

1. BOULDER CLUSTERS WITH BOULDER SIZES OF 300 - 350 mm.
2. BOULDER CLUSTERS SHALL BE COMPOSED OF 3 ROCKS ARRANGED IN A 'V' SHAPE POINTED TOWARDS THE UPSTREAM DIRECTION.
3. BOULDER CLUSTERS SHALL BE PLACED EVERY 3 m ON ALTERNATING SIDES OF THE CULVERT.
4. ROCKS SHALL BE EMBEDDED 50 mm WITHIN SUBSTRATE TO ANCHOR BOULDERS IN PLACE.

ISSUED FOR CONSTRUCTION

0 1 2
1:30 METRES

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NT/NU
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CLIENT
AGNICO EAGLE MINES LTD.

CONSULTANT
wsp
VANCOUVER
840 HOWE STREET
BRITISH COLUMBIA
CANADA
[+1] (604) 685 9381

PROJECT
MELIADINE GOLD PROJECT
DISCOVERY ROAD CULVERT CROSSINGS
(DRC02 AND DRC03) - DETAILED DESIGN NUNAVUT

TITLE
TYPICAL CULVERT CROSS-SECTION AND DETAILS

PROJECT NO.	TASK/DOC.	REV.	5 of 6	DRAWING
CA0056821.8485	2000/50	0		05

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0 25 mm

1. **PRIOR TO CONSTRUCTION**
1.1 PRIOR TO ANY CULVERT CONSTRUCTION ACTIVITIES TAKING PLACE THE FOLLOWING SPECIFICATIONS SHALL BE FOLLOWED.

2. **SCHEDULE**
2.1 PROPOSED WORK IS PLANNED TO TAKE PLACE IN 2025.

3. **ENVIRONMENTAL PROTECTION**
3.1. THE WORK AREAS SHALL BE MONITORED FOR EROSION AND SEDIMENT TRANSPORT AS REQUIRED DURING CONSTRUCTION. ANY REQUIRED MITIGATION MEASURES WILL BE PUT IN PLACE AS PER THE SEDIMENT AND EROSION MANAGEMENT PLAN.
3.2. EXECUTION OF THE WORK IS RECOMMENDED TO FOLLOW FISHERIES AND OCEANS CANADA (DFO) STANDARDS AND CODE OF PRACTICES, WHICH MAY INCLUDE THE FOLLOWING: ICE BRIDGES AND SNOW FILLS, CULVERT MAINTENANCE, TEMPORARY FORDS, AND IN-WATER ISOLATION (DFO 2024), AND ADDITIONAL MEASURES OR RECOMMENDATIONS PROVIDED BY DFO DURING THE PERMITTING PROCESS.

4. **QUALITY ASSURANCE INSPECTIONS**
4.1. WORK THROUGHOUT THE ENTIRE PROJECT SHALL BE COMPLETED IN ACCORDANCE WITH THE INSPECTIONS AND TESTING GUIDELINES LAID OUT BY THE CANADIAN STANDARDS ASSOCIATION (CSA) IN CODE CSA-G401-14, WITH ADDITIONAL QUALITY ASSURANCE INSPECTIONS SUMMARIZED BELOW.
4.2. MONITORING OF THE QUALITY ASSURANCE (QA)/QUALITY CONTROL (QC) WILL BE CONDUCTED BY QUALIFIED AGNICO EAGLE PERSONNEL SO THAT WORK IS COMPLETED IN ACCORDANCE WITH THE DESIGN DRAWINGS AND TECHNICAL SPECIFICATIONS.
4.3. PRODUCTS SHALL BE MADE AVAILABLE FOR INSPECTION AND ACCEPTANCE BY THE ENGINEER AT THE POINT AND TIME OF INCORPORATION INTO THE WORK.
4.4. MINIMUM QUALITY CONTROL (QC) TESTS AND INSPECTIONS, TO BE PERFORMED BY THE CONTRACTOR, SHALL BE PER TABLE 1.

TABLE 1: QUALITY ASSURANCE REQUIREMENTS

ELEMENT	DESCRIPTION	REQUIREMENT
MANUFACTURERS QC	CONFIRM CULVERT MATCHES MATERIAL SPECIFICATIONS IN THIS DOCUMENT AND ANY FIELD FIT CHANGES ALIGN WITH MANUFACTURER'S SPECIFICATIONS, FOR EXAMPLE DEPTH OF COVER.	DOCUMENT THICKNESS OF CULVERT, CIRCUMFERENCE, CORRUGATIONS, CULVERT MATERIAL AND DEPTH OF COVER
VISUAL INSPECTIONS	INSPECT CULVERT AND COUPLERS FOR RUST, STAINING, DENTS/DEFORMITIES. REPAIR ANY MINOR DAMAGE SUCH AS RUST, OR REPLACE IF DAMAGE IS MAJOR.	DOCUMENT CULVERT AND COUPLER CONDITION BEFORE COVERING, DO NOT INSTALL IF DAMAGED
VISUAL INSPECTIONS	INSPECT RIPRAP, CULVERT SUBSTRATE MATERIAL, ROAD SUB-BASE COARSE FILLS FOR ADHERENCE TO THE DESCRIPTIONS PROVIDED IN THESE SPECIFICATIONS.	INSPECT AND DOCUMENT MATERIAL CONDITION BEFORE INSTALLATION.
SURVEY	COMPLETE SURVEYS FOR APPROVAL FOR ITEMS LISTED BELOW: 1. LAYOUT OF WORK 2. EXCAVATED SURFACE 3. FINAL SURFACE 4. CULVERT ALIGNMENT AND ELEVATIONS	COMPLETE, DOCUMENT, AND PROVIDE SURVEYS FOLLOWING COMPLETION OF EVERY ITEM FOR APPROVAL BY THE ENGINEER.

5. **MATERIALS**
5.1. ALL MATERIALS USED SHALL BE NON-POTENTIAL ACID GENERATING (NPAG) AND NON-METAL LEACHING. ANY NEWLY SOURCED MATERIALS SHALL BE COLLECTED AND ANALYZED TO CONFIRM THEY ARE NPAG AND NON-METAL LEACHING.
5.2. NON-WOVEN GEOTEXTILE
5.2.1. NON-WOVEN GEOTEXTILE SHALL BE PROVIDED IF REQUIRED BY THE ENGINEER AND THE FOLLOWING VALUES.

TABLE 2: GEOTEXTILE REQUIREMENTS

PARAMETER	VALUE
GRAB STRENGTH	650 N
PUNCTURE STRENGTH	275 N
BURST STRENGTH	2.1 Mpa
TRAPEZOIDAL TEAR	250 N

5.3. CULVERTS
5.3.1. THE SUPPLY AND FABRICATION OF CORRUGATED STEEL PIPE (CSP) INCLUDING COUPLERS AND APPURTENANCES SHALL BE IN ACCORDANCE WITH CSA STANDARD G401-07
5.3.2. THE CSP SHALL BE GALVANIZED WITH MINIMUM WALL THICKNESS OF 2.8 mm AND A CORRUGATION PROFILE OF 68 mm X 13 mm.
5.4. RIPRAP
5.4.1. RIPRAP MATERIAL SHALL MEET THE FOLLOWING STANDARDS:
5.4.1.1. RIPRAP SHALL CONSIST OF WELL GRADED, HARD, DURABLE AND ANGULAR ROCK WHICH MEETS THE PHYSICAL AND GRADATION REQUIREMENTS SET OUT BELOW.
5.4.1.2. RIPRAP SHALL BE NON-POTENTIAL ACID GENERATING (NPAG). ANY NEW SOURCED MATERIAL SHALL BE COLLECTED AND ANALYZED BY APPROPRIATE GEOCHEMICAL ANALYSES TO CONFIRM IT IS NPAG AND NON-METAL LEACHING.

TABLE 3: RIPRAP GRADATION

CLASS	INTERMEDIATE AVERAGE DIMENSION (mm)			
	D15	D50	D85	D100
10 kg	90	200	285	350

5.5. CULVERT SUBSTRATE MATERIAL
5.5.1. CULVERT SUBSTRATE MATERIAL SHALL BE WELL GRADED SANDY/GRAVEL/COBBLE MIXTURE. COBBLES SHALL NOT EXCEED 150 mm IN DIAMETER. SUBSTRATE MATERIAL SHALL MATCH THE NATURAL STREAMBED MATERIAL, UNLESS NATURAL STREAMBED MATERIAL IS COMPOSED PRIMARILY OF FINES, IN WHICH CASE GRAVEL AND COBBLES SHALL BE ADDED TO THE CULVERT SUBSTRATE MATERIAL. MATERIAL SHALL BE APPROVED BY THE ENGINEER.
5.5.2. EXCAVATED CULVERT SUBSTRATE MATERIAL MAY BE USED FOR CULVERT SUBSTRATE IF APPROVED BY THE ENGINEER. SUBSTRATE MATERIAL SHALL BE STOCKPILED FOR LATER REUSE AS CULVERT SUBSTRATE MATERIAL (AS PER SPECIFICATION 6.1.1.4) AND SHALL BE KEPT FREE OF DEBRIS, OIL OR OTHER CONTAMINANTS, SNOW, AND OTHER SOURCES OF MOISTURE.
5.6. ENGINEERED BACKFILL, BASE AND BEDDING
5.6.1. ENGINEERED BACKFILL
5.6.1.1. ENGINEERED BACKFILL SHALL BE CLEAN, GRANULAR, AND POSSESS TIME-INDEPENDENT PROPERTIES.
5.6.1.2. BACKFILL MATERIAL SHALL BE FREE OF ORGANIC, FROZEN AND OTHERWISE DELETERIOUS MATERIAL AND CONSIST OF A WELL GRADED GRANULAR MATERIAL WITH ANGULAR GRAINS AND MEET THE FOLLOWING REQUIREMENTS.
5.6.1.3. MAXIMUM PARTICLE SIZE SHALL NOT EXCEED 75 mm OR AS APPROVED BY THE ENGINEER.
5.6.1.4. MINIMUM GRAVEL CONTENT (PARTICLE SIZE > 4.75 mm): 30%
5.6.1.5. MAXIMUM FINES CONTENT (PASSING THROUGH #200 SIEVE): 10%.
5.6.2. COMPACTED PIPE BEDDING
5.6.2.1. BASE AND PIPE BEDDING MATERIALS SHALL BE A 50 mm MINUS GRANULAR MATERIAL WHICH MEETS THE GRADATION SPECIFICATIONS PRESENTED IN TABLE 4.
5.6.2.2. BASE MATERIAL MAY NOT BE REQUIRED IF THE SUBSURFACE CONDITIONS ARE APPROVED BY THE ENGINEER.

TABLE 4: GRANULAR FILL (0-50 mm) - PARTICLE SIZE DISTRIBUTION LIMITS

PARTICLE SIZE (mm)	% PASSING
50	100
38	87-100
19	60-95
12.5	46-80
5	35-60
2	25-45
0.315	10-25
0.08	4-10

5.6.3 COMPACTION
5.6.3.1 MAXIMUM UNCOMPACTED LIFT HEIGHT SHALL BE 200 mm.
5.6.3.2 EACH LAYER SHALL BE COMPACTED TO A MINIMUM 95% STANDARD PROCTOR DENSITY (ASTM D698).
5.6.3.3 OPTIMUM MOISTURE CONTENT SHALL BE MAINTAINED DURING COMPACTION (ASTM D698).

6. **EXECUTION**
6.1. PREPARATION OF CULVERT SITE
6.1.1. PRIOR TO THE CULVERT BEING INSTALLED THE FOLLOWING SHALL BE FOLLOWED:
6.1.1.1. REMOVE LARGE STONES OR OTHER HARD MATERIALS IN THE CULVERT FOUNDATION, TRENCH WALLS, AND BACKFILL THAT MAY DAMAGE OR WEAKEN THE PIPING OR IMPEDE CONSISTENT BACKFILLING FOR COMPACTION. THIS SHALL INCLUDE THE REMOVAL OF ANY EXISTING, CULVERTS(S) AND ASSOCIATED MATERIALS.
6.1.1.2. EXISTING CULVERTS MAY REMAIN IN PLACE IF THEY COMPLY WITH THE EXCAVATION AND MINIMUM SPACING DIMENSIONS PROVIDED IN THE DESIGN DRAWINGS. CULVERTS SHALL BE REMOVED IF DAMAGED OR BACKFILL AND COVER REQUIREMENTS CAN NOT BE MET.
6.1.1.3. IT IS THE RESPONSIBILITY OF AGNICO EAGLE TO CONFIRM THAT THE EXISTING CULVERTS MEET THE REQUIREMENTS TO REMAIN IN PLACE DURING AND AFTER CONSTRUCTION.
6.1.1.4. IF CHANNEL SUBSTRATES ARE TO BE REMOVED, SEPARATE AND STOCKPILE GRANULAR SUBSTRATE MATERIAL (IF PRESENT) FOR USE AS CULVERT SUBSTRATE AND IF REMAINING MATERIAL IS AVAILABLE AT COMPLETION, REPLACE ALONG ANY DISTURBED STREAM AREAS, UPON COMPLETION OF PROJECT WORKS. SEPARATE SUBSTRATE MATERIAL INTO TWO STOCKPILES:
6.1.1.4.1. MATERIAL FROM THE TOP 0.3 m OF THE CHANNEL AND
6.1.1.4.2. MATERIAL BELOW THE TOP 0.3 m
6.1.1.5. MATERIAL STOCKPILES PLACED ADJACENT TO ANY EXCAVATION OR EMBANKMENT SHALL BE LIMITED TO MAXIMUM 1.2 m IN HEIGHT.
6.1.1.6. MATERIAL STOCKPILES SHALL BE PLACED A HORIZONTAL DISTANCE AWAY FROM AN EXCAVATION EQUIVALENT TO (OR GREATER THAN) THE EXCAVATION DEPTH.
6.1.1.7. MATERIAL STOCKPILES SHALL BE KEPT FREE OF DEBRIS, OIL OR OTHER CONTAMINANTS, SNOW, AND OTHER SOURCES OF MOISTURE.
6.1.1.8. STOCKPILES SHALL BE SIZED TO MINIMIZE SEGREGATION AND TO FACILITATE FUTURE USE.
6.1.1.9. CULVERT ELEVATIONS NOTED ON THE DESIGN DRAWINGS ARE ESTIMATED FROM TOPOGRAPHY DATA FOR STREAM INVERTS. CULVERT PLACEMENT AND INSTALLATION SHALL BE FIELD FIT, TO REFLECT ACTUAL CONDITIONS ENCOUNTERED ON-SITE, INCLUDING BUT NOT LIMITED TO CHANGES IN ELEVATION, GRADE, SKEW, AND/OR DEPTH BASED ON THE DIRECTION OF THE ENGINEER.
6.1.1.10. CULVERT SLOPES DEVIATING FROM THE DESIGN DRAWINGS SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.
6.1.1.11. ALL FIELD FIT REVISIONS TO THE DESIGN SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.
6.2. EXCAVATION AND TRENCHING
6.2.1. EXCAVATION SAFETY AND SUITABILITY OF FOUNDATION MATERIALS SHALL BE CARRIED OUT ACCORDING TO THE CONTRACTOR'S / OWNER'S GEOTECHNICAL ENGINEER.
6.2.2. DURING EXCAVATION OF THE CULVERT PLACEMENT AREA, THE EXCAVATED CLEAN CHANNEL SUBSTRATE SHALL BE STOCKPILED FOR REUSE AS PER 6.1.1.4.
6.2.3. EXCAVATED SUBGRADE CONDITIONS SHALL BE INSPECTED FOR THE SUITABILITY OF MATERIAL AND CULVERT PLACEMENT. SATURATED FINE-GRAINED SOILS, OR ICE-RICH FINE-GRAINED SOILS IN THE THAWED ACTIVE LAYER SHALL BE STRIPPED UNTIL COMPETENT SUBGRADE MATERIAL IS FOUND, SUBJECT TO APPROVAL BY THE ENGINEER.
6.3. CULVERT INSTALLATION
6.3.1. BASE
6.3.1.1. BASE MATERIAL SHALL BE PLACED ACCORDING TO THE DESIGN DRAWINGS OR AS APPROVED BY THE ENGINEER.
6.3.2. COMPACTED BEDDING
6.3.2.1. CULVERT BEDDING SHALL BE CONSTRUCTED ACCORDING TO THE DESIGN DRAWINGS, OR AS APPROVED BY THE ENGINEER.
6.3.2.2. BEDDING TO BE INSTALLED TO PROVIDE FULL CONTACT WITH CULVERT INVERT TO SUPPORT CULVERT AND LIMIT MOVEMENT
6.3.3. RIPRAP PLACEMENT
6.3.3.1. NON-WOVEN GEOTEXTILE FILTER CLOTH PLACEMENT, AS REQUIRED BY THE ENGINEER BASED ON SITE CONDITIONS, AND RIPRAP PLACEMENT SHALL ADHERE TO THE FOLLOWING PRACTICES:
6.3.3.1.1. NON-WOVEN GEOTEXTILE SHALL BE PLACED BENEATH BOTH THE INLET AND OUTLET RIPRAP SHOWN IN THE DESIGN DRAWINGS AND SHALL BE KEYED INTO THE SLOPE AT THE TOP OF THE BANKS AT A MINIMUM DISTANCE OF 0.3 m. THE GEOTEXTILE SHALL BE KEYED INTO THE CULVERT BEDDING MATERIALS WHERE THE RIPRAP MEETS THE CULVERT BASE AND KEYED INTO THE THALWEG WHERE RIPRAP COVERAGE BLENDS IN WITH THE NATURAL CHANNEL.
6.3.3.1.2. THE CONTRACTOR SHALL EXERCISE CARE DURING RIPRAP PLACEMENT TO AVOID DAMAGE OR DISPLACEMENT OF THE NON-WOVEN GEOTEXTILE. CONSTRUCTION EQUIPMENT IS NOT PERMITTED ON THE SURFACE OF THE NON-WOVEN GEOTEXTILE.
6.3.3.1.3. NON-WOVEN GEOTEXTILE SHALL BE PLACED TO ENSURE THERE IS A MINIMUM OVERLAP OF 0.3 m AT EACH JOINT, OR AS RECOMMENDED BY THE MANUFACTURER.
6.3.3.1.4. RIPRAP PLACEMENT WILL BE FIELD FIT BY THE CONTRACTOR, WHO SHALL FOLLOW THE DETAILS SHOWN IN THE DESIGN DRAWINGS. RIPRAP SHALL FOLLOW THE NATURAL STREAM CHANNEL, CENTERED AT THE THALWEG AND CULVERT.
6.3.3.1.5. RIPRAP SHALL BE PLACED 0.3 m ABOVE THE CULVERT CROWNS AGAINST THE ROAD EMBANKMENT AT THE INLET AND OUTLET.
6.3.3.1.6. ENGINEERED BACKFILL MATERIAL (SECTION 5.6.1) SHALL BE LAID WITHIN THE VOIDS ON THE SURFACE OF THE RIPRAP AS DIRECTED BY THE ENGINEER.
6.3.4. CULVERT PLACEMENT
6.3.4.1. INSTALL AND CONSTRUCT CULVERT IN GENERAL ACCORDANCE WITH THE LINES, GRADES, AND LOCATIONS SPECIFIED IN THE DESIGN DRAWINGS.
6.3.4.2. LIFT OR ROLL PIPE INTO POSITION, DO NOT DROP OR DRAG THE CULVERT OVER PREPARED BEDDING.
6.3.4.3. ENSURE BOTTOM OF CULVERT MAKES CONTACT WITH THE SHAPED BED FOR THE ENTIRE LENGTH OF THE CULVERT.
6.3.4.4. INSERT AND TIGHTEN BOLTS TO PRODUCT SPECIFICATIONS SET OUT BY CULVERT MANUFACTURER.
6.3.5. CULVERT SUBSTRATE MATERIAL PLACEMENT
6.3.5.1. PLACE APPROVED CULVERT SUBSTRATE MATERIAL (AS PER SPECIFICATION 5.5) INSIDE THE CULVERT TO EMBEDMENT DEPTH AS PER DRAWINGS.
6.3.5.2. SUBSTRATE MATERIAL SHALL BE KEPT CLEAN AND DRY AND SOURCES OF MOISTURE SHALL NOT BE ALLOWED TO ACCUMULATE ON OR WITHIN THE MATERIAL.
6.3.5.3. THE SURFACE OF THE BACKFILLED CULVERT SUBSTRATE MATERIAL WITHIN THE CULVERTS SHALL CONFORM TO THE DIMENSIONS SHOWN IN THE DESIGN DRAWINGS.
6.3.5.4. FILL IN VOIDS IN CULVERT SUBSTRATE BY WASHING IN SAND/FINES.
6.3.6. BOULDER CLUSTER PLACEMENT
6.3.6.1 AFTER PLACEMENT OF CULVERT SUBSTRATE MATERIAL SECURE BOULDER CLUSTERS IN PLACE AS SHOWN IN THE DRAWINGS.
6.3.7. BACKFILL AND PLACEMENT
6.3.7.1. FILL SHALL BE PLACED TO THE LINES AND GRADES AS SHOWN IN THE DRAWINGS, AND AS DIRECTED BY THE OWNER'S GEOTECHNICAL ENGINEER.
6.3.7.2. BACKFILL SHALL BE PLACED IN VERTICAL LIFTS NOT EXCEEDING 0.2 m. FILLS MAY BE PLACED DURING LIGHT SNOWFALL PROVIDED THAT THE SNOW ACCUMULATION IS LESS THAN 5 mm BETWEEN EACH LIFT. ANY HEAVIER SNOW ACCUMULATION ON THE LIFT SHALL BE REMOVED BEFORE CONTINUING PLACEMENT OF FILLS.
6.3.7.3. CAUTION SHALL BE EXERCISED WHILE PLACING AND COMPACTING BACKFILL NEAR THE CORNERS/HAUNCHES.
6.3.7.4. COMPACT ENGINEERED BACKFILL TO A MINIMUM 95% STANDARD PROCTOR.
6.3.7.5. MAINTAIN MOISTURE CONTENT OUTLINED IN SECTION 5.6.3.3 DURING COMPACTION
6.3.7.6. COMPACTION TESTING USING A NUCLEAR DENSOMETER SHALL BE CONDUCTED BY THE CONTRACTOR ON EVERY LIFT OF FILL. COMPACTION TESTING RESULTS SHALL BE PROVIDED TO THE ENGINEER FOR REVIEW.
6.3.8. ROADWAY SURFACE
6.3.8.1. FINAL ROADWAY SURFACE GEOMETRY AND MATERIAL IS TO BE DETERMINED BY THE OWNER.
6.4. COMPLETION OF WORK
6.4.1. ONCE THE CULVERTS HAVE BEEN INSTALLED AND ALL BACKFILLING AND RIPRAP PLACEMENT IS COMPLETE, THE FOLLOWING SHALL BE COMPLETED:
6.4.1.1. ENVIRONMENTAL AND EROSION AND SEDIMENT CONTROL MEASURES SHALL BE COMPLETED AS DIRECTED BY THE OWNER.
6.4.1.2. INSPECTIONS SHALL BE COMPLETED AND AS-BUILT MEASUREMENTS AND OBSERVATIONS FOR THE CULVERT AND FINAL ROADWAY SURFACE SHALL BE CONDUCTED AND SUBMITTED TO THE ENGINEER FOR APPROVAL.

ISSUED FOR CONSTRUCTION

PERMIT TO PRACTICE
WSP Canada Inc.
Signature
Date 2025-08-26
PERMIT NUMBER: P407
NT/NU Association of Professional Engineers and Geoscientists

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-08-26	ISSUED FOR CONSTRUCTION	AM	JEF	AJ	CVW

SEAL
REGISTERED PROFESSIONAL ENGINEER
C.T. VANWERKHOVEN
LICENSEE
NT/NU
2025-08-26

CLIENT
AGNICO EAGLE MINES LTD.

CONSULTANT
wsp
VANCOUVER
840 HOWE STREET
BRITISH COLUMBIA
CANADA
[+1] (604) 685 9381

PROJECT
MELIADINE GOLD PROJECT
DISCOVERY ROAD CULVERT CROSSINGS
(DRC02 AND DRC03) - DETAILED DESIGN NUNAVUT

TITLE
TECHNICAL SPECIFICATIONS

PROJECT NO.	TASK/DOC.	REV.	6 of 6	DRAWING
CA0056821.8485	2000/50	0		06

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI D
0 25 mm