

AtkinsRéalis



Apache pass section Design report

Agnico Eagle Mines Limited

2025-05-28

Client document No: 6537-180-230-REP-001

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MELIADINE SALINE EFFLUENT DISCHARGE SYSTEM

SIGNATURES

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Job number	6537
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Contents

1.	Introduction.....	1
1.1	Project Overview	1
1.2	Purpose of the report	2
2.	Design rationale.....	2
2.1	Existing conditions	2
2.2	Proposed work	3
3.	Construction methods	4
3.1	Schedule	4
3.2	Work description	4
3.3	Equipment to be used	5
3.4	Water source	5
3.5	Erosion and sediment release control.....	5
3.6	Construction monitoring	5
4.	Earthwork	6
4.1	Construction material specification	6
4.1.1	Granular fill (0-50 mm)	6
4.1.2	Granular Esker fill (600 mm)	6
4.1.3	Erosion protection	7

Tables

Table 1 - Granular fill 50 mm distribution.....	6
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Figures

Figure 1 - Rankin Inlet	1
Figure 2 - Apache Pass	2
Figure 3 - Community line.....	3
Figure 4 - ATV crossing	3
Figure 5 - Proposed service road location	4



1. Introduction

This section presents the project overview and purpose of the report.

1.1 Project Overview

Agnico Eagle Mines Ltd. (Agnico Eagle) operates the Meliadine gold mine near Rankin Inlet and is currently in the process of building a saline effluent discharge system between the mine site and Itivia Harbour.

The portion of the discharge system between the industrial site and Itivia Harbour consists of a pair of high-density polyethylene (HDPE) pipes installed mainly along the all weather access road (AWAR). Located approximately 6km north-west of Rankin Inlet the AWAR crosses a rock outcrop, designated as Apache Pass, with a limited width where an alternate routing was required for the pipes. This report will cover the HDPE routing and required associated infrastructures at this location.

Figures 1 and 2 below show the geographical locations of Rankin Inlet and Apache Pass.



Figure 1 - Rankin Inlet



Figure 2 - Apache Pass

1.2 Purpose of the report

Agnico Eagle has retained AtkinsRéalis to design the HDPE routing and infrastructures of the Meliadine saline effluent discharge system between the Meliadine mine site and the Itivia Harbour. This report is intended to present the design rationale, construction method and technical specifications related to the Apache Pass section of the project. It includes the final design and construction drawings as specified under Nunavut Water Board (NWB) Water License 2AM-MEL1631.

2. Design rationale

2.1 Existing conditions

Located east of the Apache Pass is an existing 300 mm HDPE pipe, property of the Hamlet of Rankin Inlet, used to deliver fresh water to the community (the community line). The line sits directly on the original ground, consisting of a

mix of low-growing plants and small rocks. Figure 3 Figure 4 below show the typical existing conditions. No water body is to be found between the AWAR and the community line or along the latest survey route.



Figure 3 - Community line



Figure 4 - ATV crossing

2.2 Proposed work

Pending the required regulatory approvals, a new service road will be constructed along the community line and the new twin 400 mm HDPE pipes required for the project between the industrial site and Itivia Harbour would be installed

beside it, on a non-exclusive ground licence, as illustrated on Figure 5. The road foundation will use 600 mm granular fill with a 100 mm rolling layer consisting of 0-50 mm material. This section will cover chainage 6+850 to 9+000 of the saline effluent discharge system, representing 2.15 km of service road to build. The forking will occur at km 3.8 and km 5.6 of the AWAR. Drawings 65-180-230-216 to 65-180-230-219 show the detailed routing.

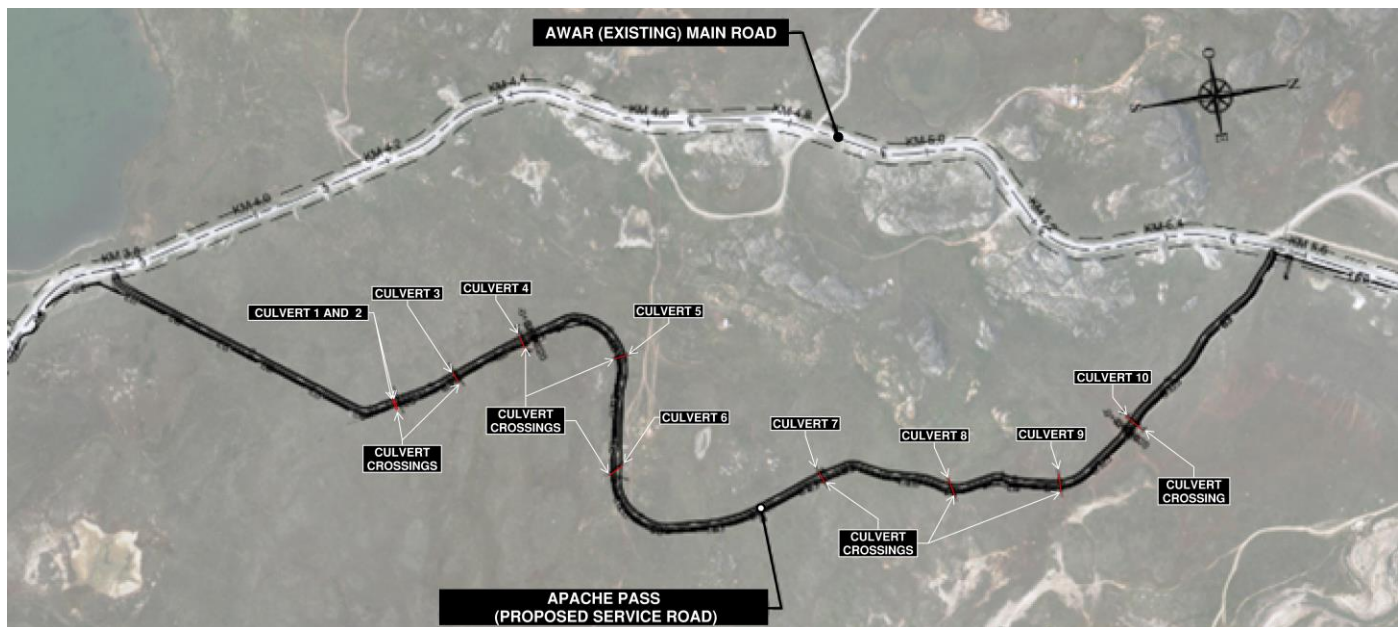


Figure 5 - Proposed service road location

As the backfill for the service road will be higher than the original ground, 10 culverts with a diameter of 1000 mm must be installed to allow drainage of the low points of the terrain through the barrier formed by the road embankment. Crossing structures must also be installed to allow the passage of two (2) HDPE pipes for the saline effluent discharge and the community line.

The 2 parallel HDPE pipes laid on the side of the road will be covered with 0-50mm esker material, except for the expansion loops, following the typical details shown on drawing 65-180-230-246. This aligns with the other portion of the saline effluent discharge system, along the AWAR.

3. Construction methods

3.1 Schedule

The service road work is planned to start in July 2025 once the regulatory process is completed. The HDPE installation and subsequent backfill will then take place with a completion date for mid-October 2025.

3.2 Work description

The following work sequence is planned:

- The 600 mm granular fill foundation of the service road, along with the culverts, will be placed and the granular fill will be adequately compacted.

- The 0-50 mm rolling surface material will then be put in place and also adequately compacted.
- The community line will undergo slight adjustments to follow only the toe of the road, including being raised in the split casings for the culvert crossings.
- Both of the new 400 mm HDPE pipes will be installed along the community line.
- The fiber optics cables required for the saline effluent discharge system leak detection will be affixed to the two 400mm HDPE pipes, as is typical along the whole line.
- The HDPE lines will be backfilled to complete the required work.

3.3 Equipment to be used

For service road, an excavator, a bulldozer, a roller compactor and haul trucks are expected to be required to conduct the work on site.

For the relocation, installation and backfill of the HDPE pipes, excavators, telehandlers and haul trucks will be used in conjunction with support and specialized fusion equipment.

3.4 Water source

No water use is required to conduct the work.

3.5 Erosion and sediment release control

The work area will be monitored for erosion during construction, and any required mitigation measures will be put in place as per the Sediment and Erosion Management Plan. This plan must be followed throughout all construction activities, ensuring that there are no uncontrolled water runoffs from the project site. Additionally, a qualified environmental professional will monitor the area for the duration of the work to ensure compliance and effectiveness of the mitigation measures.

3.6 Construction monitoring

During construction, a quality control/assurance program is necessary and will be implemented by competent personnel from Agnico Eagle. This program will ensure that the construction aligns with this Design report and adheres to best management practices.

The monitoring activities during construction will encompass:

- Conducting regular visual inspections to ensure design compliance.
- Placing the backfill material and HDPE pipes in line with the construction drawings.
- Carrying out surveys to document the complete saline effluent discharge system.
- Ensuring that all environmental measures are in place and that everyone strictly adheres to them.



4. Earthwork

4.1 Construction material specification

All the granular material to be used is NPAG (Non-Potential Acid Generating) and non-metal leaching material, following AEM specification 6515-GNS-014 copied below.

4.1.1 Granular fill (0-50 mm)

Granular fill (0-50 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 1. Processing will be required to achieve the specified gradation.

Table 1 - Granular fill 50 mm distribution

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

4.1.2 Granular Esker fill (600 mm)

The raw material sourced from the esker, primarily consisting of particles smaller than 200 mm, may also contain some larger blocks or rocks, with a maximum size of 600 mm, as well as fines (<0.075 mm) making up less than 10%. Any oversized blocks must be removed before placing the rockfill into the earth structures. The rockfill particles must be angular and derived from hard, durable rock.

The following procedure must be followed when installing these materials:

- Spread the materials across the entire width of the surface to be covered, in layers thick enough to accommodate the largest rocks, but not exceeding 1 m in thickness.
- Carefully distribute the rocks to fill all voids with smaller fragments, resulting in a compact mass.
- At the forming layer level, fill voids with rock chips or other selected materials to create a surface capable of retaining the soil to be deposited.



4.1.3 Erosion protection

To prevent erosion caused by the flow of water, protective rip rap must be installed at the inlet and outlet of the culverts.

The protective rip rap placed at the ends of the culverts must consist of clean angular stones, ranging from 100 to 200 mm in diameter and 300 mm in thickness, laid on a separation geotextile membrane of type BNQ R1 or MTQ Type II.

Upstream, the rip rap must extend over a length equal to the culvert diameter or at least one meter. Downstream, the length must be three times the culvert diameter or at least three meters.

Both protective embankments (rip rap) must be installed with a width equal to twice the culvert diameter or at least two meters for the upper slope section, and three times the culvert diameter or at least three meters for the lower embankment slope section. The embankment slopes will have a 3:1 horizontal-to-vertical ratio.

The typical drawing on plan 65-180-230-246 illustrates the standard installation of protective rip rap at culvert ends.

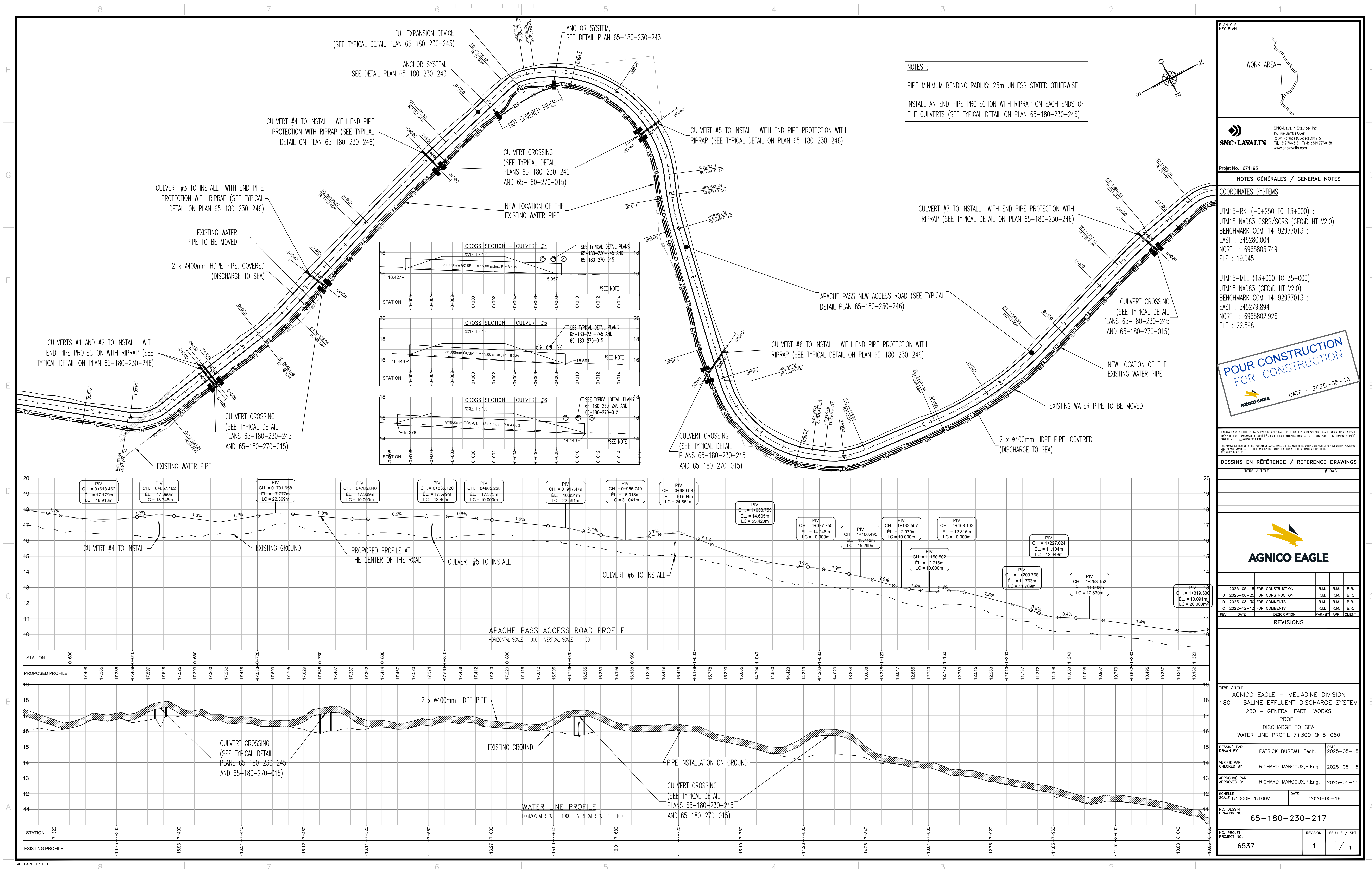


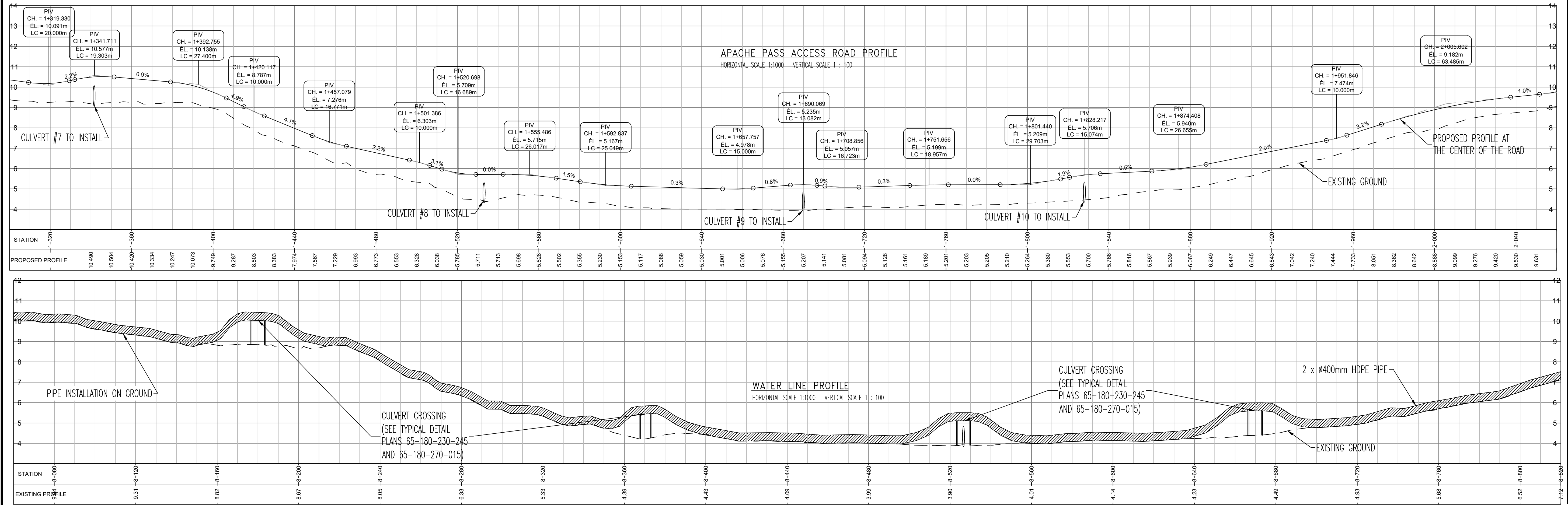
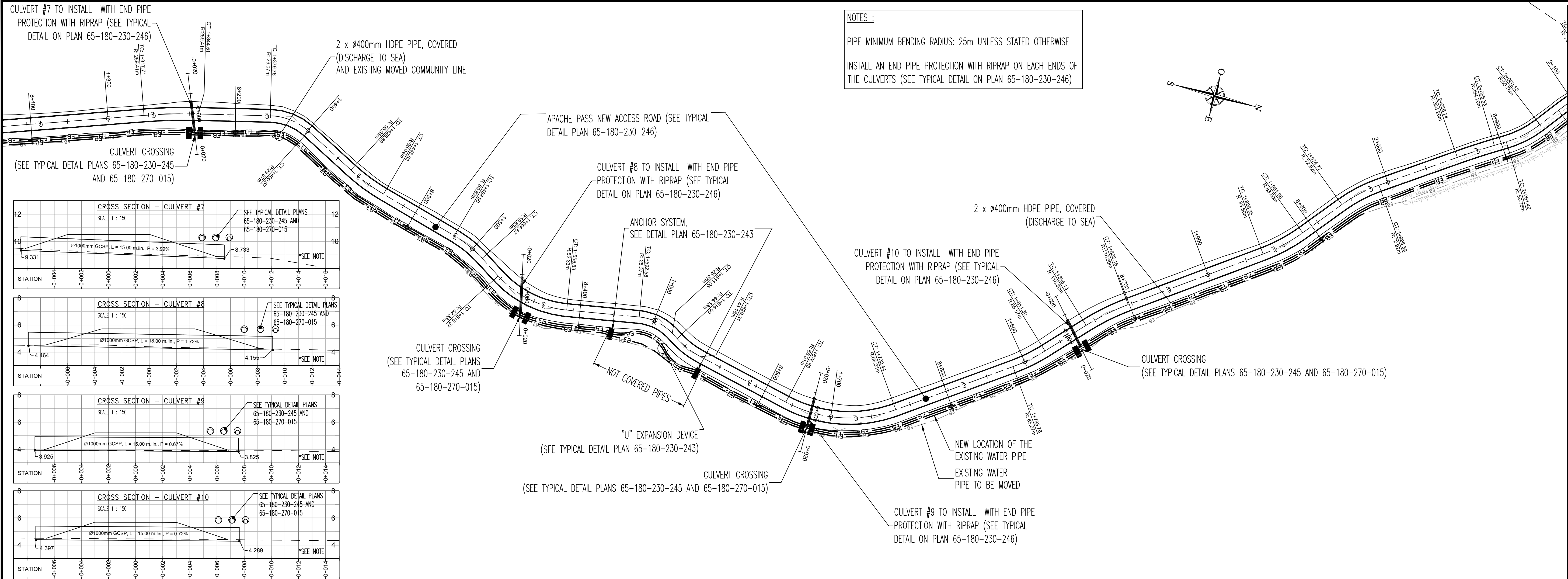
APPENDICES

Appendix A.

Drawings:

- 65-180-230-216
- 65-180-230-217
- 65-180-230-218
- 65-180-230-219
- 65-180-230-246
- 65-180-270-015





PLAN CLE
KEY PLAN

WORK AREA

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www.snc-lavalin.com

Project No. : 674195

NOTES GÉNÉRALES / GENERAL NOTES

COORDINATES SYSTEMS

UTM15-RKI (-0+250 TO 13+000) :
UTM15 NAD83 CSRS/SCRS (GEOID HT V2.0)
BENCHMARK CCM-14-92977013 :
EAST : 545280.004
NORTH : 6965803.749
ELE : 19.045

UTM15-MEL (13+000 TO 35+000) :
UTM15 NAD83 (GEOID HT V2.0)
BENCHMARK CCM-14-92977013 :
EAST : 545279.894
NORTH : 6965802.926
ELE : 22.598

POUR CONSTRUCTION
FOR CONSTRUCTION

DATE : 2025-05-15

AGNICO EAGLE

DESSEINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/APP.	APP.	CLIENT
1	2025-05-15	FOR CONSTRUCTION	R.M.	R.M.	B.R.
2	2023-08-25	FOR CONSTRUCTION	R.M.	R.M.	B.R.
3	2023-03-30	FOR COMMENTS	R.M.	R.M.	B.R.
4	2022-12-13	FOR COMMENTS	R.M.	R.M.	B.R.

REVISIONS

TITRE / TITLE
AGNICO EAGLE - MELIADINE DIVISION
180 - SALINE EFFLUENT DISCHARGE SYSTEM
230 - GENERAL EARTH WORKS
PROFIL
DISCHARGE TO SEA
WATER LINE PROFIL 8+060 @ 8+820

DESSEINÉ PAR
DRAW BY PATRICK BUREAU, Tech. DATE 2025-05-15

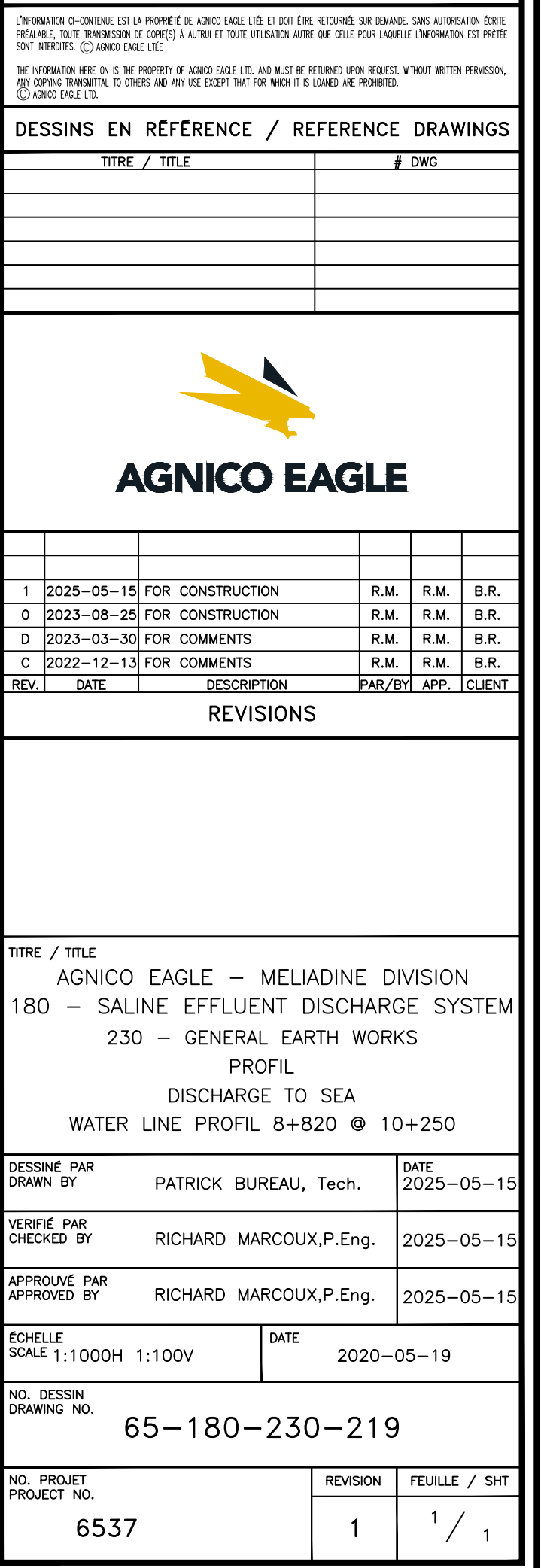
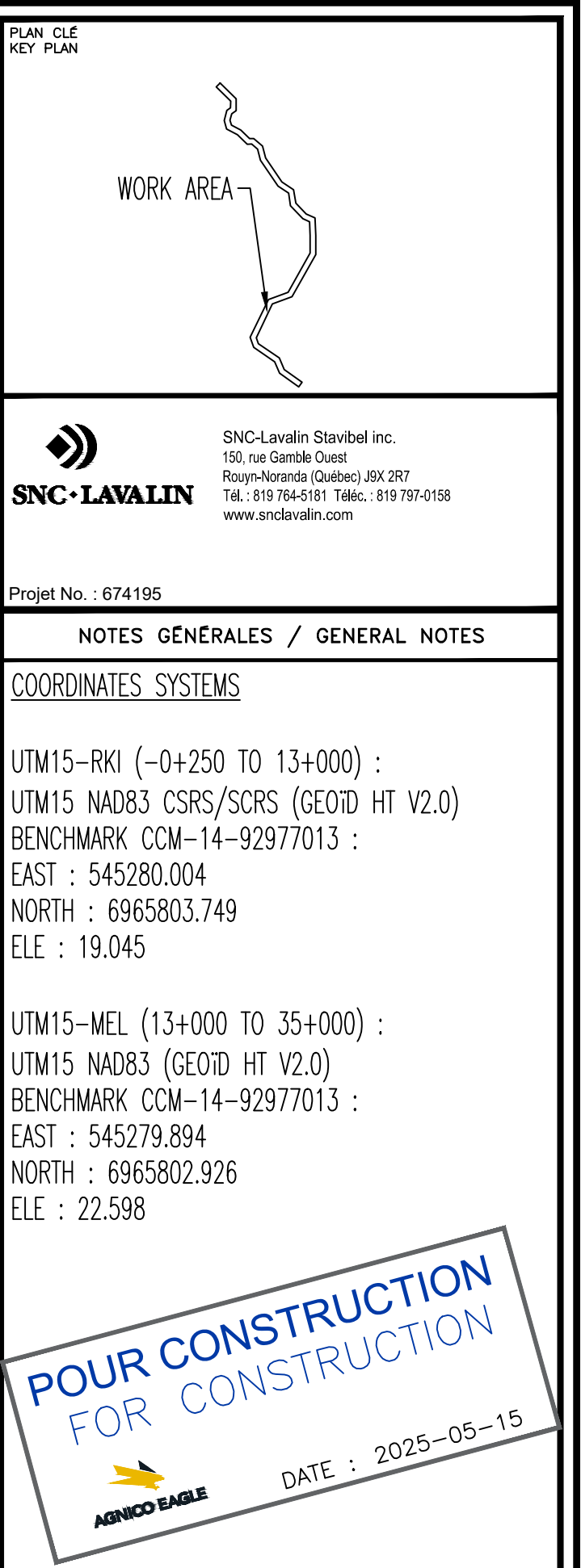
VÉRIFIÉ PAR
CHECKED BY RICHARD MARCOUX, P.Eng. 2025-05-15

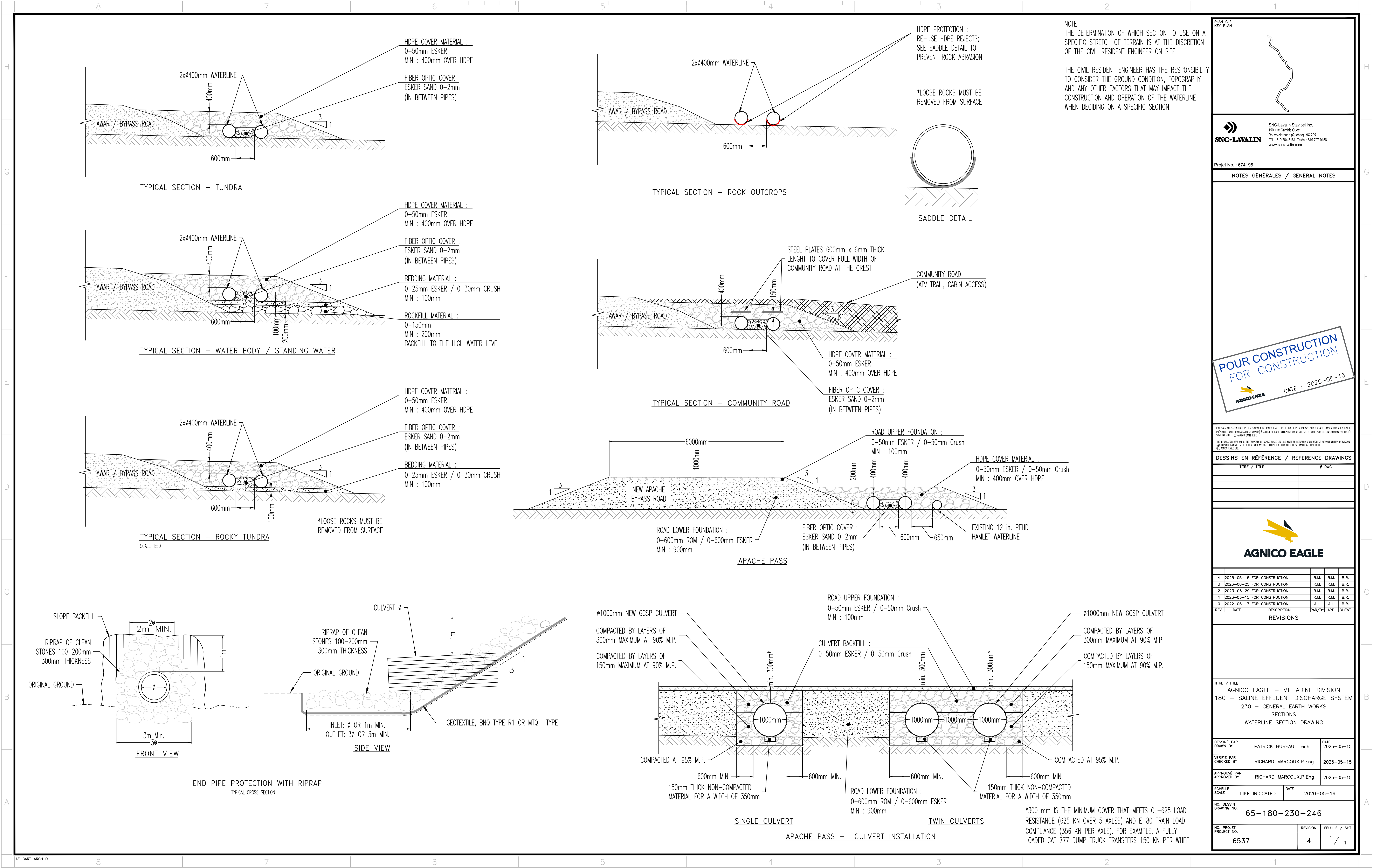
APPROUVÉ PAR
APPROVED BY RICHARD MARCOUX, P.Eng. 2025-05-15

ÉCHELLE
SCALE 1:1000H 1:100V DATE 2020-05-19

NO. DESSIN
DRAWING NO. 65-180-230-218

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHEET
6537	1	1 / 1





NOTE :
THE DETERMINATION OF WHICH SECTION TO USE ON A SPECIFIC STRETCH OF TERRAIN IS AT THE DISCRETION OF THE CIVIL RESIDENT ENGINEER ON SITE.

THE CIVIL RESIDENT ENGINEER HAS THE RESPONSIBILITY TO CONSIDER THE GROUND CONDITION, TOPOGRAPHY AND ANY OTHER FACTORS THAT MAY IMPACT THE CONSTRUCTION AND OPERATION OF THE WATERLINE WHEN DECIDING ON A SPECIFIC SECTION.



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Projet No. : 674195

NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION
FOR CONSTRUCTION

AGNICO EAGLE

DATE : 2025-05-15

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DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS	
TITRE / TITLE	# DWG



REV.	DATE	DESCRIPTION	PAR/APP.	CLIENT	
4	2025-05-15	FOR CONSTRUCTION	R.M.	R.M.	B.R.
3	2023-08-29	FOR CONSTRUCTION	R.M.	R.M.	B.R.
2	2023-06-29	FOR CONSTRUCTION	R.M.	R.M.	B.R.
1	2023-03-15	FOR CONSTRUCTION	R.M.	R.M.	B.R.
0	2022-06-17	FOR CONSTRUCTION	A.L.	A.L.	B.R.

REVISIONS

TITRE / TITLE
AGNICO EAGLE — MELIADINE DIVISION
180 — SALINE EFFLUENT DISCHARGE SYSTEM
230 — GENERAL EARTH WORKS
SECTIONS
WATERLINE SECTION DRAWING

DESSINÉ PAR DRAWN BY	PATRICK BUREAU, Tech.	DATE 2025-05-15
VÉRIFIÉ PAR CHECKED BY	RICHARD MARCOUX, P.Eng.	2025-05-15
APPROUVÉ PAR APPROVED BY	RICHARD MARCOUX, P.Eng.	2025-05-15

ÉCHELLE
SCALE
LIKE INDICATED

DATE
2020-05-19

NO. DESSIN
DRAWING NO.
65-180-230-246

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHEET
6537	4	1 / 1

1. GENERAL

1.1.FOR CULVERT AND EARTHWORK DETAILS, SEE DRAWING 65-180-230-245.

2. STEEL SPECIFICATIONS

2.1. WELDED AND/OR HOT ROLLED STRUCTURAL STEEL CONFORMING TO CAN/CSA-G40.20 AND CAN/CSA-G40.21:

2.2.SURFACES AND EDGES MUST BE SMOOTH, UNIFORM AND EXEMPT OF CUTTING EDGES AND CRACKS.

WELDING

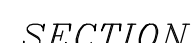
3.1.ELECTRODE ACCORDING TO E490 (E70XX).

3.2. WELDS SHALL CONFORM TO STANDARDS CSA W59 AND CSA W47.1 EXECUTED BY AN ORGANISATION RECOGNIZED BY THE CANADIAN WELDING BUREAU

3.3.ALL WELDS MUST BE BRUSHED WITH A STEEL WIRE BRUSH.



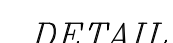
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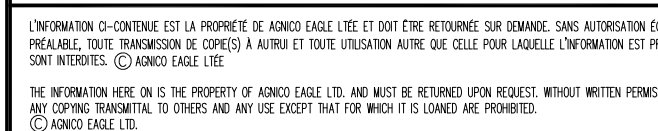


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NOTES GÉNÉRALES / GENERAL NOTES

NOTES GÉNÉRALES / GENERAL NOTES



DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS



AGNICO EAGLE

REVISIONS

TITLE / TITLE
AGNICO EAGLE - MELIADINE DIVISION
180 - SALINE EFFLUENT DISCHARGE SYSTEM
270 - PIPING
PLAN & SECTION
DISCHARGE TO SEA
TYPICAL CULVERT PIPING DETAILS

ÉCHELLE SCALE	NOT TO SCALE	DATE	2025/03/14
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NO. DESSIN DRAWING NO.	65-180-270-015
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6537

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