April 14th 2017

Karen Kharatyan
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU
X0B 1J0

Re: Water License 2AM-MEL1631 Part D, Items 1&2 - Submission of Final Design and Construction Drawings for the Itivia Laydown Area Culvert

Mr. Kharatyan,

Agnico Eagle Mines Limited (Agnico Eagle) is developing the Meliadine Project (the Project), a goldmine located approximately 25 km north from Rankin Inlet, and 80 km southwest from Chesterfield Inlet in the Kivalliq Region of Nunavut. Situated on the western shore of Hudson Bay, the Project site is located on a peninsula between the east, south, and west basins of Meliadine Lake (63°1'23.8'' N, 92°13'6.42"W) on Inuit Owned Land. Agnico Eagle is developing the mine for production in late 2019.

Future facilities at Itivia that are intended to support the Project include a bypass road to divert traffic related to the Project around the community of Rankin Inlet, a fuel storage and containment facility as well as a laydown area which includes a culvert.

In accordance with Water License 2AM-MEL1631, Part D, Items 1 and 2, please find enclosed with this letter, a copy of the final design and construction drawings for the Itivia Laydown Area culvert.

Should you have any questions regarding this submission, please contact me.

Regards,

Agnico Eagle Mines Limited – Meliadine Division

Manon Turmel
manon.turmel@agnicoeagle.com
819-759-3555 x8025
Environmental Compliance Counselor

DESIGN REPORT FOR
ITIVIA LAYDOWN AREA CULVERT
MELIADINE PROJECT, NUNAVUT

PRESENTED TO

Agnico Eagle Mines Ltd.

APRIL 2017
ISSUED FOR USE
TETRA TECH PROJECT NUMBER: 28920
AGNICO EAGLE DOCUMENT NUMBER: 6515-C-230-005-230-REP-002

Tetra Tech
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Montreal, QC H1V 3R9, CANADA
Tel 514.257.1112 Fax 514.257.0717

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 Site Location and Access

Agnico Eagle Mines Limited (Agnico Eagle) is developing the Meliadine Gold Mine Project (the Project), a gold mine located approximately 25 km north from Rankin Inlet, and 80 km southwest from Chesterfield Inlet in the Kivalliq Region of Nunavut. Situated on the western shore of Hudson Bay, the Project site is located on a peninsula between the East, South, and West basins of Meliadine Lake (63°1'23.8'' N, 92°13'6.42"W) on Inuit Owned Land.

The mine site is accessible from the all-weather gravel road linking the existing exploration camp with Rankin Inlet.

The studied area for the culvert is located at the future laydown area in Itivia district (Rankin Inlet). The site location is shown in Figure 1 and Figure 2 in Appendix A.

1.2 Future Facilities at Itivia (Rankin Inlet)

Future facilities at Itivia that are intended to support the Project include a bypass road to divert traffic related to the Project around the community of Rankin Inlet, a fuel storage and containment facility as well as a laydown area which includes a culvert.

The Nunavut Water Board (NWB) has issued Type A Water License 2AM-MEL1631 to Agnico Eagle for the Meliadine Gold Project site authorizing the use of water and the disposal of waste required by mining and milling and associated uses.

This report includes the final design and construction drawings for the culvert at Itivia laydown area, as specified under Water License 2AM-MEL1631 Part D, Item 1.

1.3 Scope of Work

Agnico Eagle retained the services of Tetra Tech to carry out the planning and design works associated with the Water and Environment and the Civil Works components of the Project. As part of the scope of work, Agnico Eagle asked Tetra Tech to conduct this design report and associated drawings for the culvert at the Itivia laydown area.

2.0 DESIGN

2.1 Culvert Design Basis and Water Management Strategy

The overall objective of the water management strategy of this project is to develop a practical and feasible site wide water management plan to minimize the potential negative impacts of mining development on the surrounding environment including habitats for fish and wildlife, and to facilitate mine operation and long-term closure and reclamation of the mine site. To attain this objective, culverts are used to control and divert runoff underneath the roads and laydown area.

A culvert is required to allow the passage of runoff through the Itivia laydown area.

The location of the proposed culvert is shown in Appendix A.

2.2 Hydraulic analyses and peak flow calculations

Hydrologic and hydraulic analyses were carried out to provide recommendations on culvert sizes to accommodate a 25-year peak design flow.

The Rational Method was applied. 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 25 year rainfall intensity for a duration equivalent to the time of concentration of the catchment was used to determine the design peak flow for the culvert.

2.3 Culvert specifications

As shown on drawing 65-131-230-201 presented in Appendix B, the culvert under Itivia laydown area road will be a group of 2 pipes, length of 30 m each and diameter of 900 mm.

The culverts that are proposed will be in service for up to 15 years. The standard galvanized, corrugated steel pipe culvert, with a profile of 68x13 mm and a minimum thickness of 2.0 mm is proposed.

A minimum of 825 mm fill cover will be placed over the culverts. The backfill around the culverts will be granular fill 0-50 mm, or equivalent approved, and will be placed in lifts no greater than 0.3 m thick and compacted to a minimum of 95% of Maximum Dry Density (ASTM D698).

2.4 Erosion control

To control erosion, some rip rap of diameter 50-300 mm will be installed around the culvert inlet and outlet areas, and on a length of 3 m minimum. For the rip rap section, see drawing 65-131-230-201 given in Appendix B.

3.0 FIGURES AND DRAWINGS

Figures 1 and 2 in Appendix A present the location of the Itivia laydown area culvert.

Drawing 65-131-230-201 in Appendix B presents the construction details for the culvert.

4.0 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. Use of this report is subject to the terms and conditions stated in Tetra Tech's Services Agreement.

5.0 CLOSURE

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech

PERMIT TO PRACTICE
TETRA TECH INDUSTRIES, INC.
O/A TETRA TECH
Signature
Date 2017-04-13
PERMIT NUMBER: P 1029
NT/NU Association of Professional Engineers and Geoscientists

INGÉNIEURE - ENGINEER
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QUÉBEC
2017.04.13

REGISTERED PROFESSIONAL ENGINEER
J.M.I.F. ALARIE
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2017-04-13

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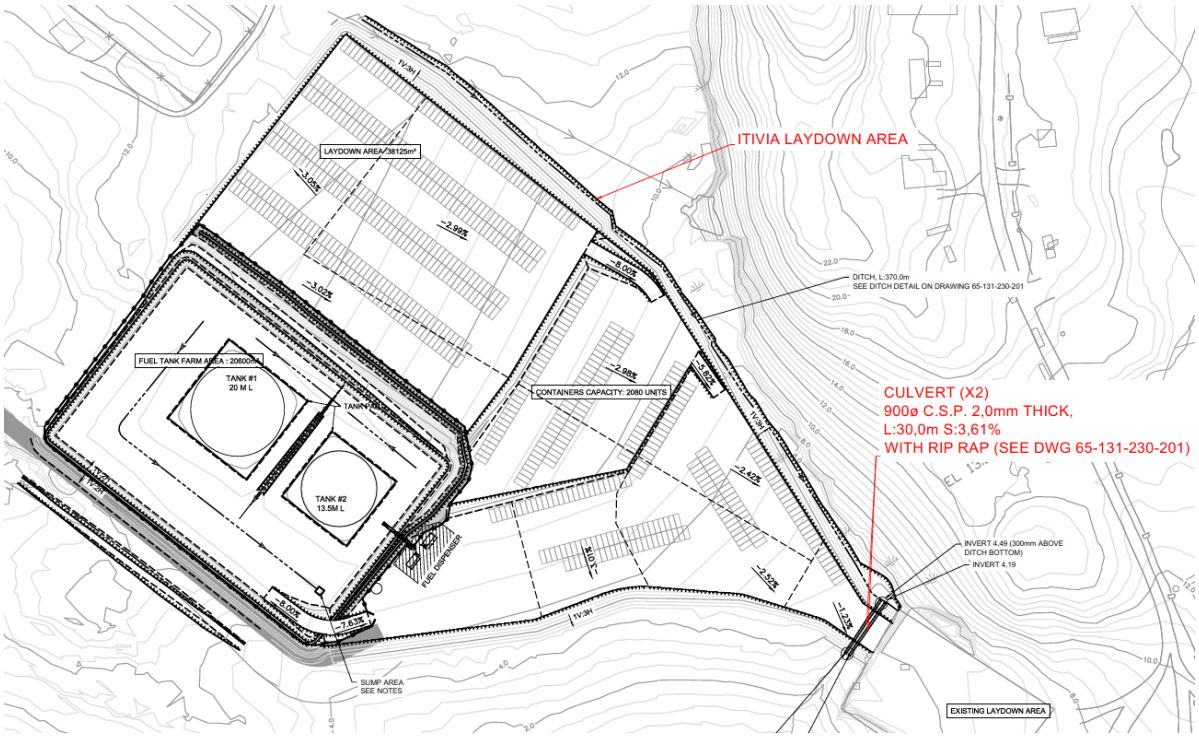
APPENDIX A
Figures 1 and 2

FIGURE 1: General view – location of Itivia laydown area and culvert

FIGURE 2: Detailed view - location of Itivia laydown area and culvert

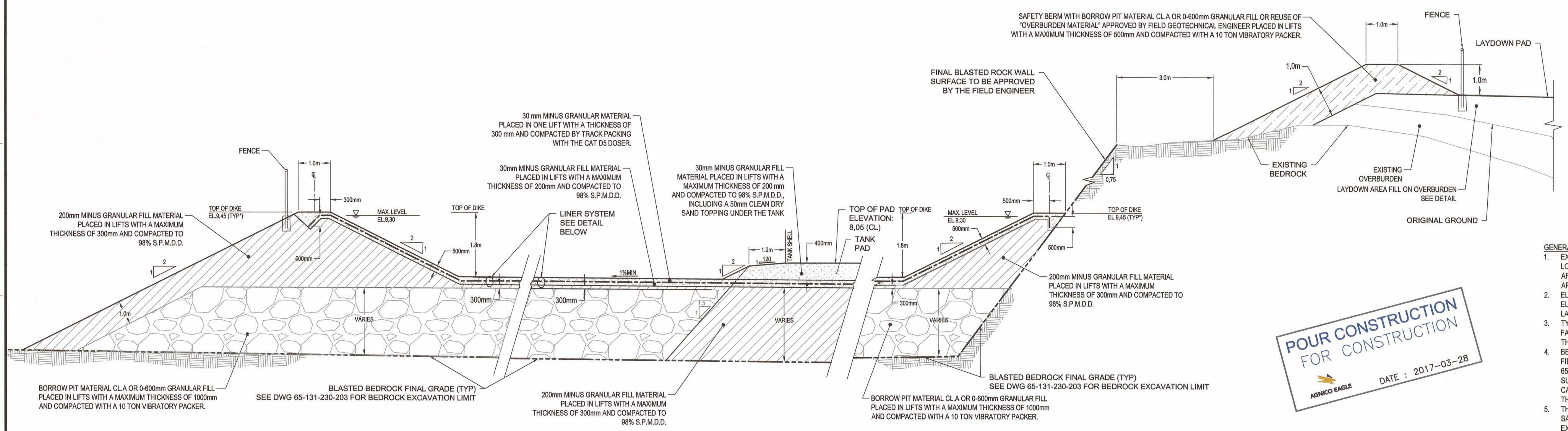


APPENDIX B

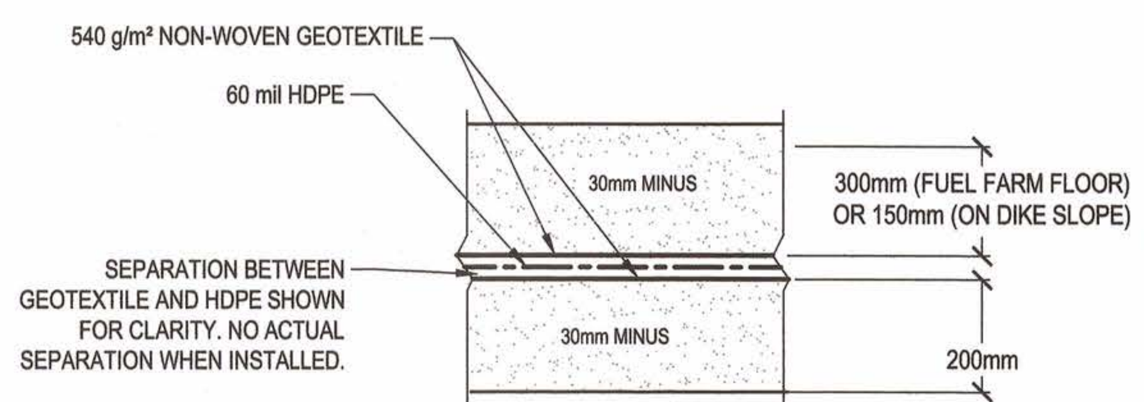
Construction Drawing
65-131-230-201

NO. DESSIN DRAWING NO. 65-131-230-200TO202_R0_203_R4_206_R0

FORMAT ARCHD



DIKE AND TANK PAD FILL DETAIL
N.T.S.



TYPICAL LINER SYSTEM DETAIL
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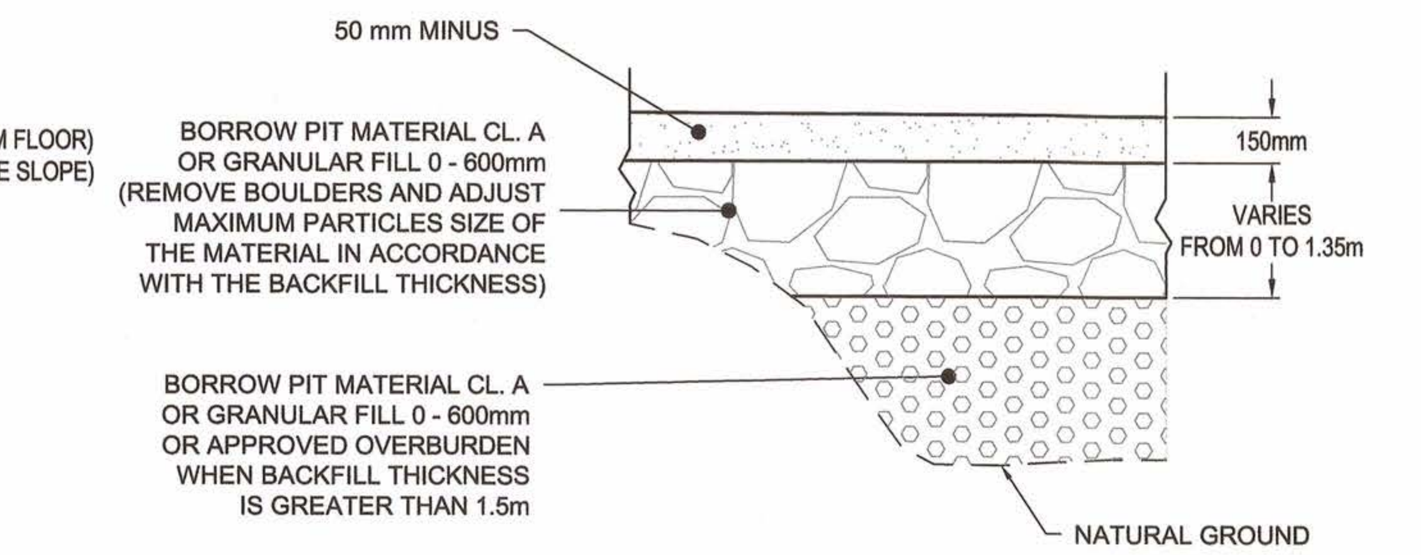

LAYDOWN AREA FILL DETAIL
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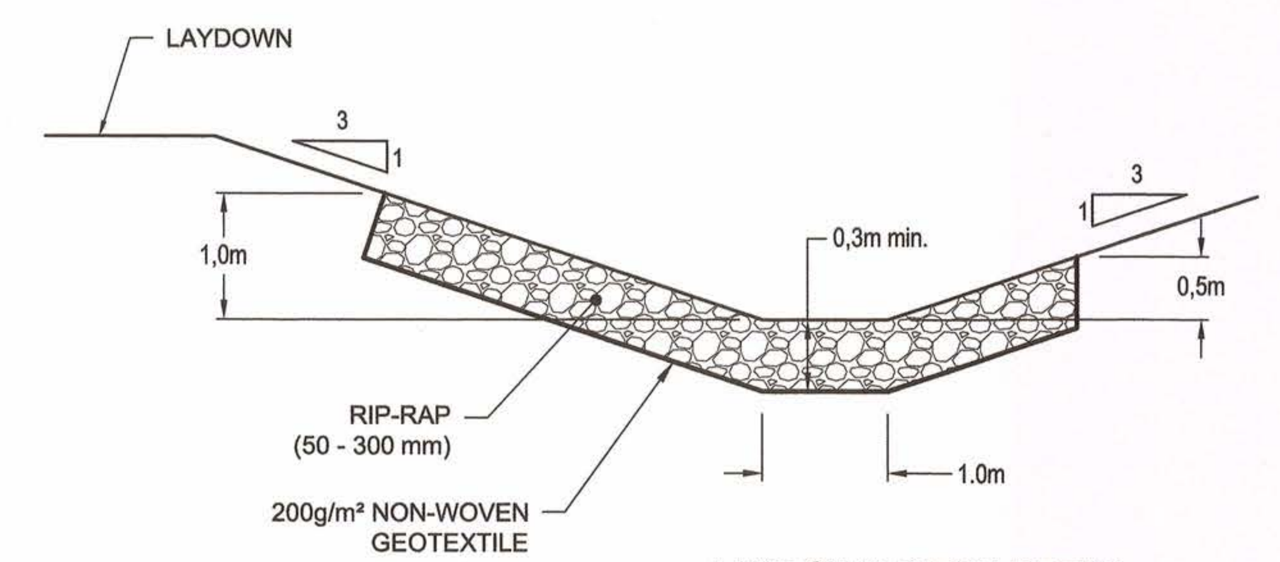
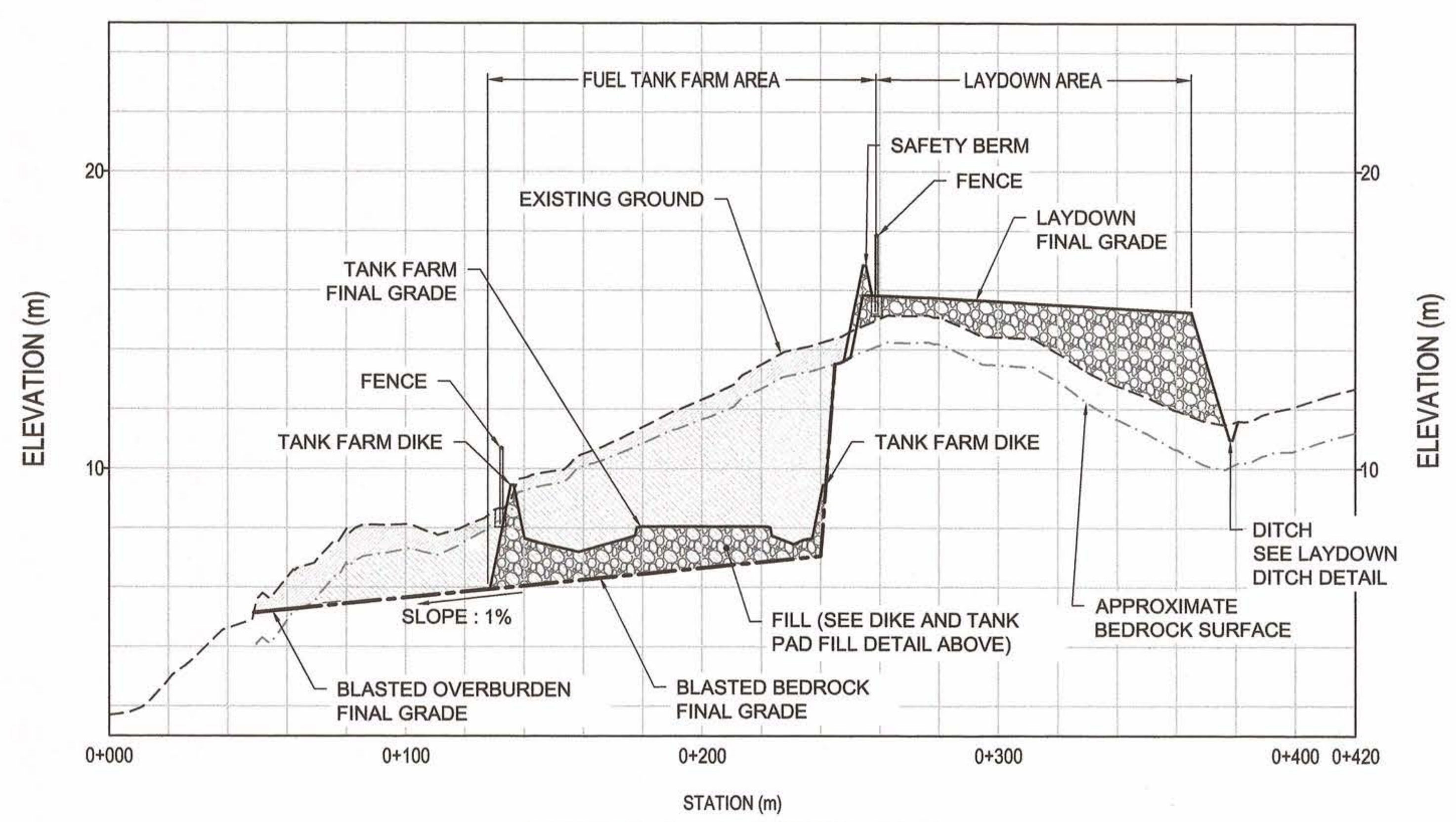
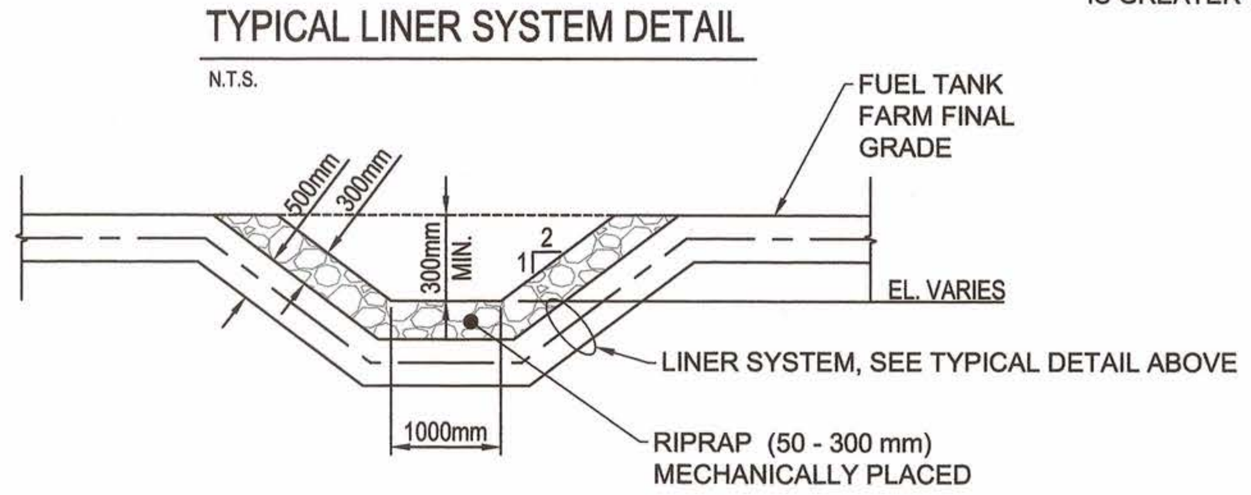


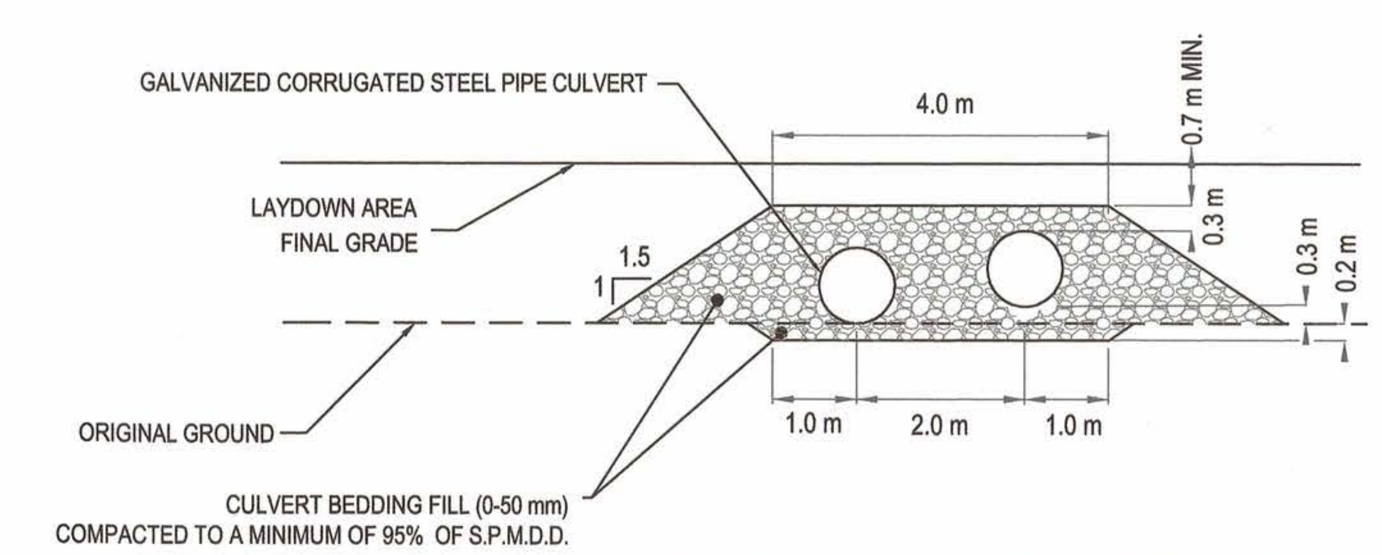
LAYDOWN DITCH DETAIL
N.T.S.



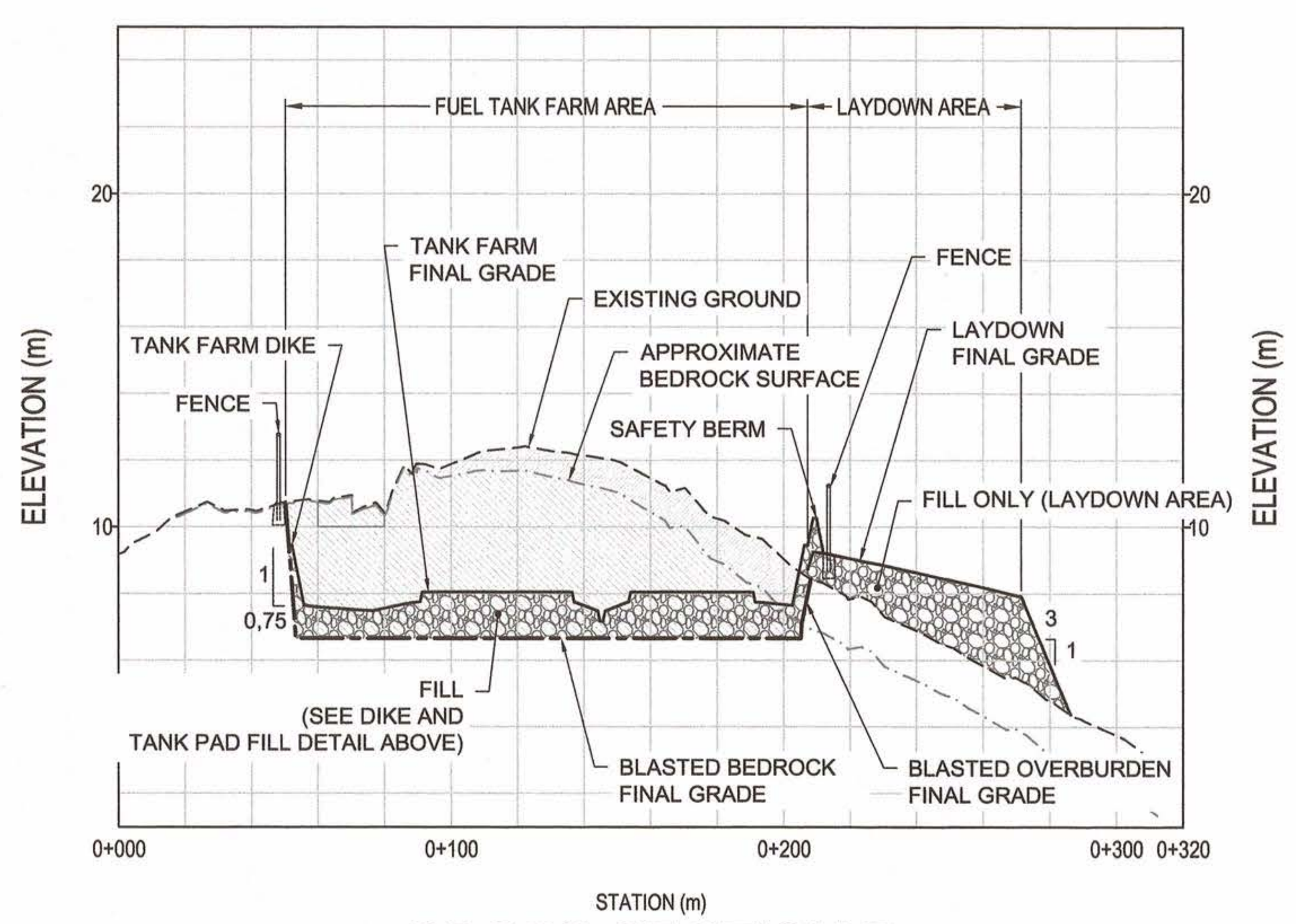
CROSS-SECTION A



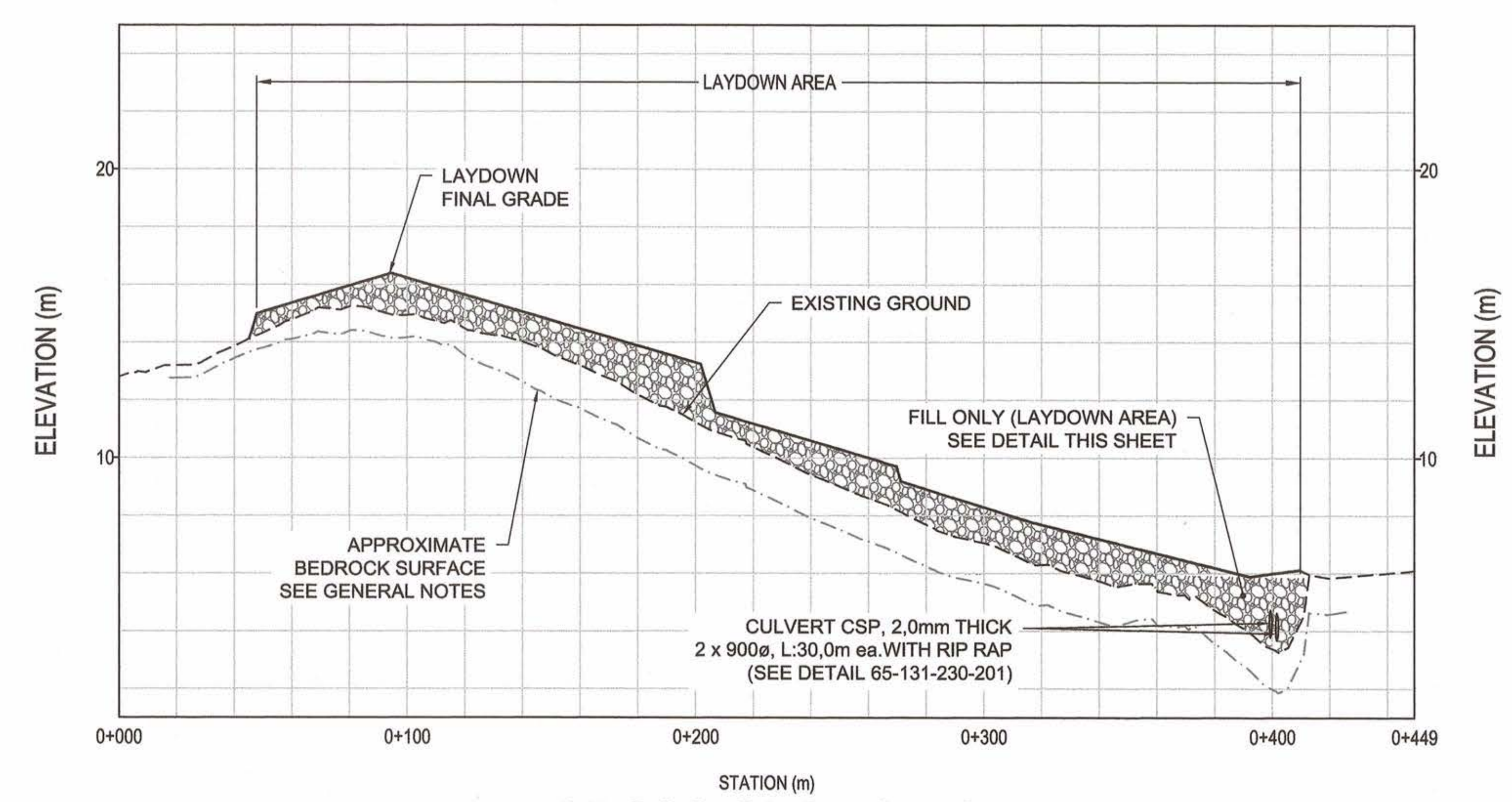
TYPICAL FUEL TANK FARM DITCH DETAIL
N.T.S.



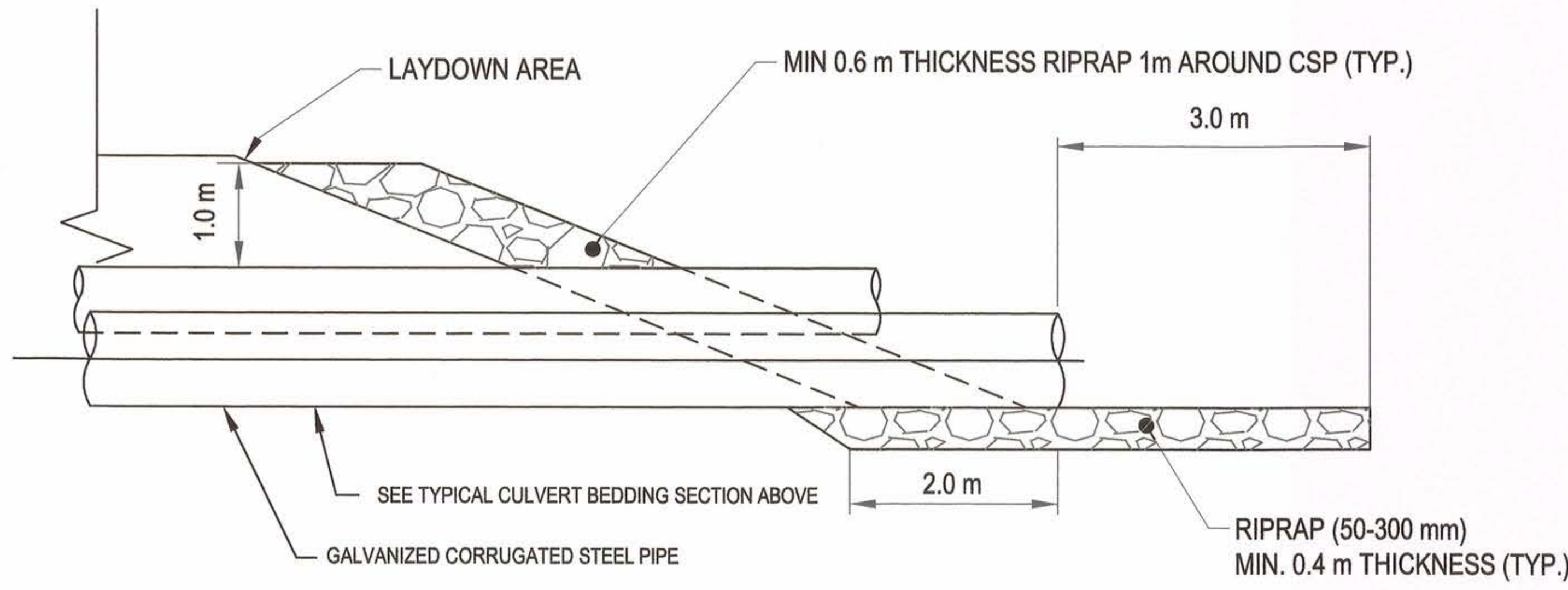
TYPICAL CULVERT BEDDING SECTION
N.T.S.



CROSS-SECTION B



CROSS-SECTION C



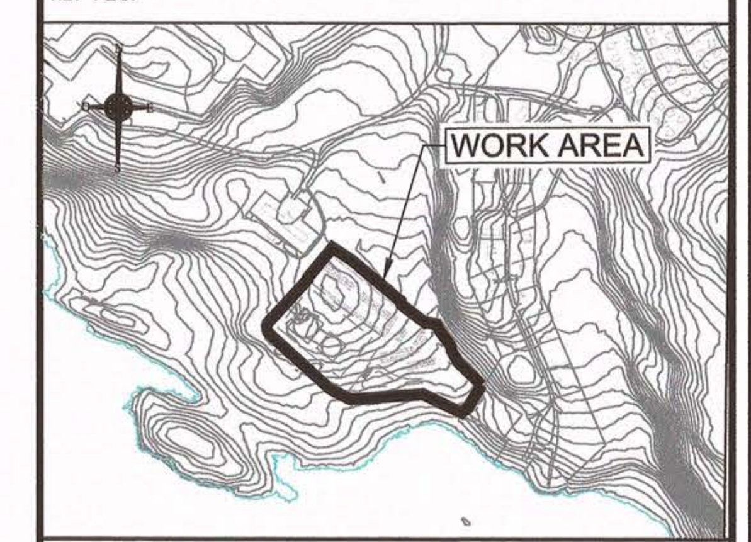
DOUBLE CULVERT CROSS SECTION
N.T.S.

POUR CONSTRUCTION / FOR CONSTRUCTION
AGNICO EAGLE DATE : 2017-03-28

GENERAL NOTES:

1. EXISTING GROUND DTM PROVIDED BY AEM RANKIN LOCAL SYSTEM WITH BM ESTABLISHED BY HAMEL ARPENTAGE. USE BM PROVIDED BY HAMEL ARPENTAGE INC. TO BUILD.
2. ELEVATIONS IN DRAWING PROVIDE FINISHED GRADE ELEVATIONS AT THE TOP OF THE SURFACE GRAVEL LAYER.
3. TYPICAL FILL SLOPES TO BE 1V:3H EXCEPT FOR TANK FARM BERM 1V:2H. FILL SLOPES TO BE CONFIRMED IN THE FIELD BY THE GEOTECHNICAL ENGINEER.
4. BEDROCK DEPTH FROM GEOTECHNICAL STUDY AND FIELD TEST PITS ARE SHOWN IN DRAWING 65-131-230-200 FOR INFORMATION. THE BEDROCK SURFACE COULD BE IRREGULAR AND CONSIDERABLE CAUTION MUST BE EXERCISED IN EXTRAPOLATING THE FINDINGS BETWEEN TEST.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY SECURITY AND SLOPES OF ALL EXCAVATIONS, BACKFILL AND SHALL ABIDE BY ALL RELEVANT STANDARDS AND REGULATIONS. THE STABILITY, DEWATERING AND MAINTENANCE OF ALL EXCAVATIONS OR BACKFILL SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
6. AN AS-BUILT DRAWING SHALL BE PROVIDED AFTER CONSTRUCTION.
7. SUMP AREA MADE FROM THE BOTTOM PART OF A 205L STEEL DRUM OR EQUIVALENT.

PLAN CLÉ / KEY PLAN



TETRA TECH

NOTES GÉNÉRALES / GENERAL NOTES

8. GRANULAR MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING 300mm AND COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY (STANDARD PROCTOR) UNLESS OTHERWISE SPECIFIED IN THE DRAWINGS AND SPECIFICATIONS. BORROW PIT MATERIAL, GRANULAR FILL MATERIAL 0-600mm OR OVERBURDEN MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING 600mm AND COMPACTED TO A MINIMUM OF 90% OF MAXIMUM DRY DENSITY (STANDARD PROCTOR) UNLESS OTHERWISE SPECIFIED IN THE DRAWINGS AND SPECIFICATIONS. MOISTURE CONDITIONING MAY BE REQUIRED PRIOR TO COMPACTION.
9. OVERBURDEN MATERIAL CAN BE USED FOR FILL, IN THE INDICATED AREAS ON THE DRAWINGS, ONLY WHEN THE OVERBURDEN MATERIAL IS APPROVED BY THE THE FIELD GEOTECHNICAL ENGINEER.
10. DRILL AND BLAST WILL BE REQUIRED. THE CONTRACTOR IS RESPONSIBLE OF ENSURING THAT BLASTING PROCEDURES USED ARE WITHIN GUIDELINES SET BY ALL REGULATORY BODIES AND AUTHORITIES HAVING JURISDICTION IN THE AREA.
11. THE CONTRACTOR SHALL SUBMIT COMPLETE DETAILS AND BLASTING PROCEDURES OF THE PROPOSED CONTROLLED BLASTING TECHNIQUES FOR APPROVAL 15 DAYS PRIOR TO ANY WORK.

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
–	–
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
0	2017-03-28	ISSUED FOR CONSTRUCTION	P.H.	J.A.	
H	2017-02-24	ISSUED FOR TENDER	JG.M.	J.A.	
G	2017-02-20	ISSUED FOR COMMENTS	P.H.	J.A.	

REVISIONS

PERMIT TO PRACTICE
TETRA TECH INDUSTRIES, INC.
O/A TETRA TECH
Signature [signature]
Date 2017-03-30
PERMIT NUMBER: P 1029
NT/NU Association of Professional Engineers and Geoscientists

REGISTERED PROFESSIONAL ENGINEER J.M.I.F. ALARIE LICENSEE NT/NU [signature] 29-03-2017

TITRE / TITLE
AGNICO-EAGLE – MELIADINE DIVISION
000-SITE PREP
230-GENERAL EARTH WORKS
RANKIN FUEL TANK FARM AND LAYDOWN AREA
CROSS-SECTIONS AND DETAILS

DESSINÉ PAR / DRAWN BY	PATRICK HAMEL	DATE 2017-03-28
VERIFIÉ PAR / CHECKED BY	MÉLANIE YIP WOON SUN	2017-03-28
APPROUVÉ PAR / APPROVED BY	JOSÉE ALARIE	2017-03-28
ÉCHELLE / SCALE	H 1:2000, V 1:200	DATE 2015-07-16

NO. DESSIN / DRAWING NO. 65-131-230-201

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
6515/28920	0	1 / 1

AE-CART-ARCH D

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