

To:	Justin Bieber	Date:	August 8, 2022
cc:		Memo No.:	01
From:	Fai Ndofor, Bill Horne, Hongwei Xia, Ryan Okkema	File:	704-ENG.EARC03140-29
Subject:	CP6 Ramp Redesign and Issued for Construction Drawings AEM Document Number: 65-695-230-MEM-001		

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Agnico Eagle Mines Limited (Agnico Eagle) to assess and redesign the access ramp for Collection Pond 6 (CP6) at the Meliadine Gold Mine (the Mine), located approximately 25 km north from Rankin Inlet, Nunavut. CP6 was constructed between March 8 to April 23, 2020 by Agnico Eagle as part of the water management infrastructure to collect runoff water from the Waste Rock Storage Facility 3 (WRSF3) and to also serve as temporary water storage during mine operation. The design of CP6 was developed and issued to Agnico Eagle by Tetra Tech in January 2020.

The request to redesign the access ramp for CP6 is in response to recurring difficulties for site operations to dewater CP6 as the existing access ramp does not fully extend to the base of the collection pond. This prevents operations from fully dewatering the pond in an efficient and timely manner. The design volume of CP6 requires that the pond be fully dewatered after freshet and remains near empty prior to the winter season to ensure the necessary storage volume in CP6 is available for the freshet period annually. Therefore, the access ramp will be redesigned to fully extend to the bottom of CP6 to facilitate placement of the pump intake and dewatering operations.

Two ramp configurations were assessed by Tetra Tech and presented to Agnico Eagle for review: A switchback ramp configuration and a ramp extension configuration. The ramp extension configuration was selected due to easier construction, lower material requirements, and better access to the low area of the collection pond base for pump intake placement.

This memo summarizes the design parameters for the access ramp redesign and an update to the storage capacity of CP6. Issued for Construction drawings for the access ramp redesign are enclosed in this document.

2.0 RAMP DESIGN

The redesign of the ramp extension follows the parameters used during the initial design of CP6. A summary of the ramp extension design parameters is presented in Table 1. A safety berm on the outside of the ramp extension is incorporated in the design to serve as a temporary haul road for ramp construction and as a service road during operation. In accordance with the Mine Safety Act, the safety berm is proposed to be constructed on the pond side

of the ramp to minimize the risk of people or vehicles accidentally falling into the pond. Both the ramp and safety berm are designed for an assumed rock truck type of CAT 745 haul truck or equivalent which was used previously in the initial construction of CP6 and similar ponds (CP3 and CP4) at the site. The single-lane ramp extension has a minimum road width of 7.0 m and a typical longitudinal slope of approximately 10% which matches the existing ramp section. The design height of the safety berm is 1.5 m.

Table 1: Ramp Extension Design Parameters

Ramp Extension Minimum Width (m)	Safety Berm Width (m)	Ramp Extension Grade
7.0	3.0	10%

3.0 CP6 STORAGE UPDATE

The stage storage curve of CP6 was updated to reflect the reduced storage volume from construction of the ramp extension. The original design was based on retaining the IDF of 32,696 m³ below the 60.0 m elevation. The as-built pond is approximately 13,000 m³ larger at the 60.0 m elevation than the original design configuration. The estimated construction volume for the ramp extension is 1,381 m³, which will have a minimal impact on the overall storage capacity of CP6 and therefore the current operating level for CP6 can be retained. A summary of the design and as-built storage volume of CP6 at the 60.0 m level is presented in Table 2.

Table 2: Summary of CP6 Storage Volume at 60.0 m Elevation

Original Design Volume (m ³)	Existing As-built Volume (m ³)	Ramp Extension Design Material Volume (m ³)	Updated CP6 Storage Volume (m ³)
32,696	45,878	1,381	44,497

The stage-storage curve for CP6 was updated to incorporate the reduced storage volume due to construction of the ramp extension. The updated stage-storage curve for CP6 is summarized in Table 3.

Table 3: Stage Storage Curve

Pond Elevation (m)	Pond Storage Volume (m ³)	Pond Surface Area (m ²)
51.0	0	0
52.0	891	1,700
53.0	2,906	2,376
54.0	5,773	3,514
55.0	9,827	4,875
56.0	15,009	5,440
57.0	20,761	6,128
58.0	27,404	7,213
59.0	35,349	8,571
60.0	44,497	9,735
61.0	54,841	10,953

4.0 CONSTRUCTION OF CP6 RAMP EXTENSION

The ramp extension and safety berm will be constructed of clean rockfill material that will be sourced from mine development. The clean rockfill will be free from snow, ice, frozen chunks, organic matter, and debris and can have a wide variation of gradation with a maximum particle size of 600 mm. The clean rockfill will be non-potentially acid generating (NPAG). The estimated quantity of rockfill required for the ramp extension and safety berm is 1,381 m³. Finer road surfacing material may be required over the running surface of the ramp extension depending on the gradation of the rockfill.

The construction steps and methodology for the CP6 ramp extension include:

- Pumping CP6 down as much as practical to minimize total suspended solids resulting from placing materials in CP6. No other sedimentation or erosion controls are required;
- Waste rock sourced from Open Pit waste rock stockpiles of maximum particle size of 600 mm will be placed with a bulldozer to the lines and grades shown on the Issued For Construction drawings provided with this technical memorandum;
- As-built surveying will be conducted once the ramp is completed by Agnico Eagle;
- The above steps will be carried out by qualified Agnico Eagle personnel in accordance with the design report and drawings and following best management practices to ensure the required construction quality is met; and
- Quality assurance and quality control measures will consist of visual observation of the works that are carried out and of the construction materials that are used by Agnico Eagle.

Construction is expected to take place in late September or October of 2022 at the end of the open water season. The as-built survey and documentation will be required to verify the volume of the ramp extension and to update as-built drawings of the pond.

5.0 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Agnico Eagle Mines Limited and their agents. Tetra Tech Canada Inc. (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 Limited, 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 document is subject to the Limitations on Use of this Document attached or Contractual Terms and Conditions executed by both parties.

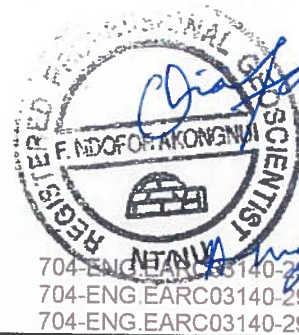
6.0 CLOSURE

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

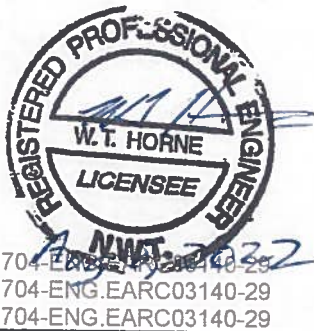
Respectfully submitted,
Tetra Tech Canada Inc.

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/kla

Attachments: Limitations on Use of this Document
CP6 Ramp Redesign Issued for Construction Drawings

PERMIT TO PRACTICE TETRA TECH CANADA INC.	
Signature	
Date	Aug 08, 2022
PERMIT NUMBER: P 018 NT/NU Association of Professional Engineers and Geoscientists	

REFERENCES

Agnico Eagle 2020, Construction Summary (As-built) Report for Collection Pond 6 (CP6) and Berm CP6, August 27, 2020. AEM Document Number: 6526-695-230-REP-002.

Tetra Tech 2020, Design Report for CP6 and CP6 Berm, Meliadine Project, Nunavut, January 24, 2020. AEM Document Number: 6526-695-100-REP-001.

LIMITATIONS ON USE OF THIS DOCUMENT

GEOTECHNICAL

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If any error or omission is detected by the Client or an Authorized Party, the error or omission must be immediately brought to the attention of TETRA TECH.

1.4 DISCLOSURE OF INFORMATION BY CLIENT

The Client acknowledges that it has fully cooperated with TETRA TECH with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The Client further acknowledges that in order for TETRA TECH to properly provide the services contracted for in the Contract, TETRA TECH has relied upon the Client with respect to both the full disclosure and accuracy of any such information.

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1.6 GENERAL LIMITATIONS OF DOCUMENT

This Professional Document is based solely on the conditions presented and the data available to TETRA TECH at the time the data were collected in the field or gathered from available databases.

The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

The Professional Document is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site conditions present, or variation in assumed conditions which might form the basis of design or recommendations as outlined in this document, at or on the development proposed as of the date of the Professional Document requires a supplementary exploration, investigation, and assessment.

TETRA TECH is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the Client.

1.7 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, TETRA TECH has not been retained to explore, address or consider and has not explored, addressed or considered any environmental or regulatory issues associated with development on the subject site.

1.8 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems, methods and standards employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. TETRA TECH does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

1.9 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

1.10 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historical environment. TETRA TECH does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional exploration and review may be necessary.

1.11 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

1.12 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

1.13 INFLUENCE OF CONSTRUCTION ACTIVITY

Construction activity can impact structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques, and construction sequence are known.

1.14 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, and the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

1.15 DRAINAGE SYSTEMS

Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function. Where temporary or permanent drainage systems are installed within or around a structure, these systems must protect the structure from loss of ground due to mechanisms such as internal erosion and must be designed so as to assure continued satisfactory performance of the drains. Specific design details regarding the geotechnical aspects of such systems (e.g. bedding material, surrounding soil, soil cover, geotextile type) should be reviewed by the geotechnical engineer to confirm the performance of the system is consistent with the conditions used in the geotechnical design.

1.16 DESIGN PARAMETERS

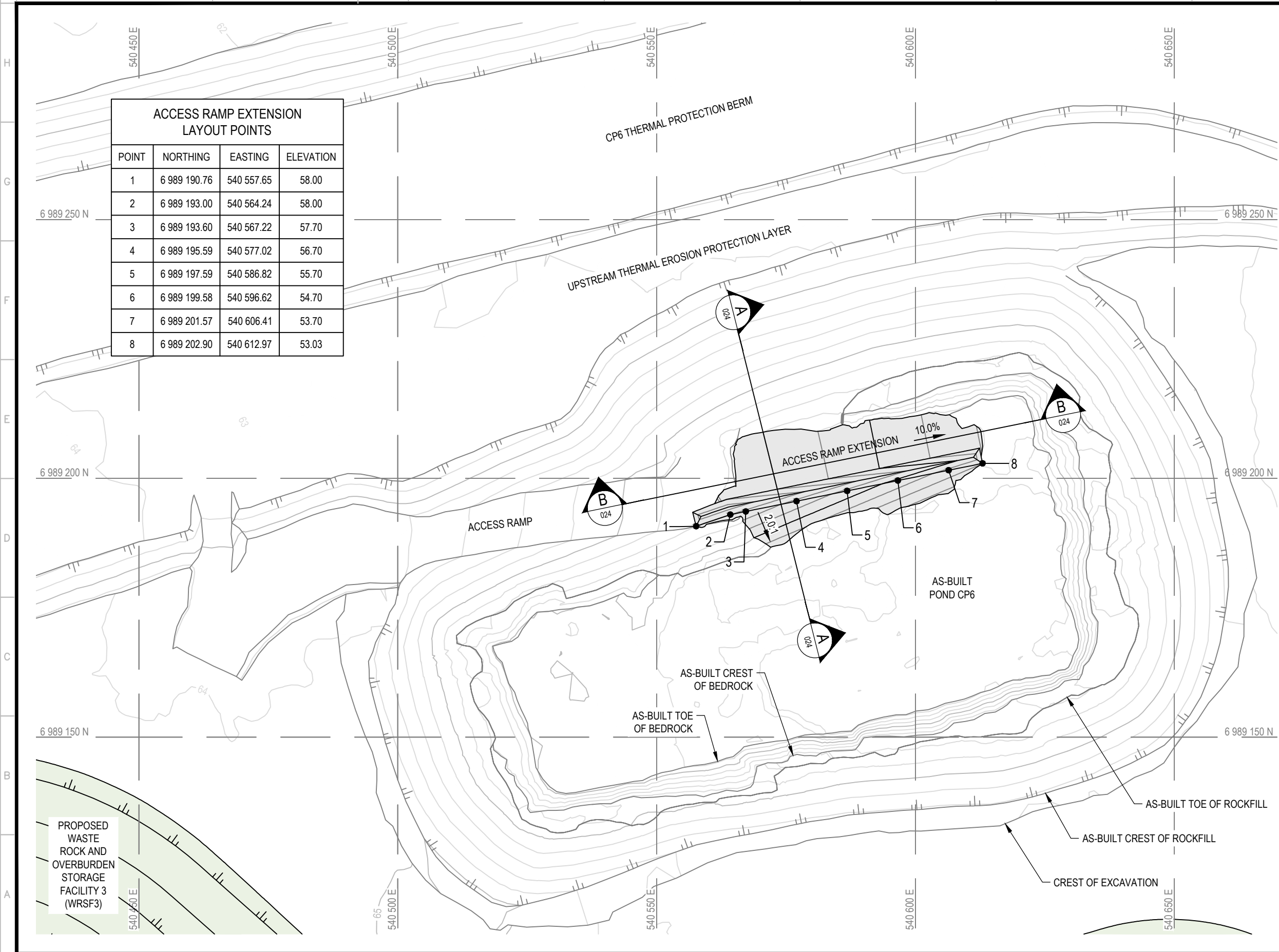
Bearing capacities for Limit States or Allowable Stress Design, strength/stiffness properties and similar geotechnical design parameters quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition used in this report. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions considered in this report in fact exist at the site.

1.17 SAMPLES

TETRA TECH will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

1.18 APPLICABLE CODES, STANDARDS, GUIDELINES & BEST PRACTICE

This document has been prepared based on the applicable codes, standards, guidelines or best practice as identified in the report. Some mandated codes, standards and guidelines (such as ASTM, AASHTO Bridge Design/Construction Codes, Canadian Highway Bridge Design Code, National/Provincial Building Codes) are routinely updated and corrections made. TETRA TECH cannot predict nor be held liable for any such future changes, amendments, errors or omissions in these documents that may have a bearing on the assessment, design or analyses included in this report.



NOTES:
1. THE SINGLE-LANE RAMP HAS A MINIMUM ROAD WIDTH OF 7.0 m (FOR CAT 745 HAUL TRUCKS OR SMALLER EQUIPMENT).

PERMIT TO PRACTICE
TETRA TECH CANADA INC.
Signature: *[Signature]*
Date: August 9, 2022
PERMIT NUMBER: P018
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TITRE / TITLE	# DWG

DESSINS EN RÉFÉRENCE/REFERENCE DRAWINGS

0	ISSUED FOR CONSTRUCTION	2022-08-03	RO
A	ISSUED FOR REVIEW	2022-07-26	RO
REV	DESCRIPTION	DATE	PAR BY

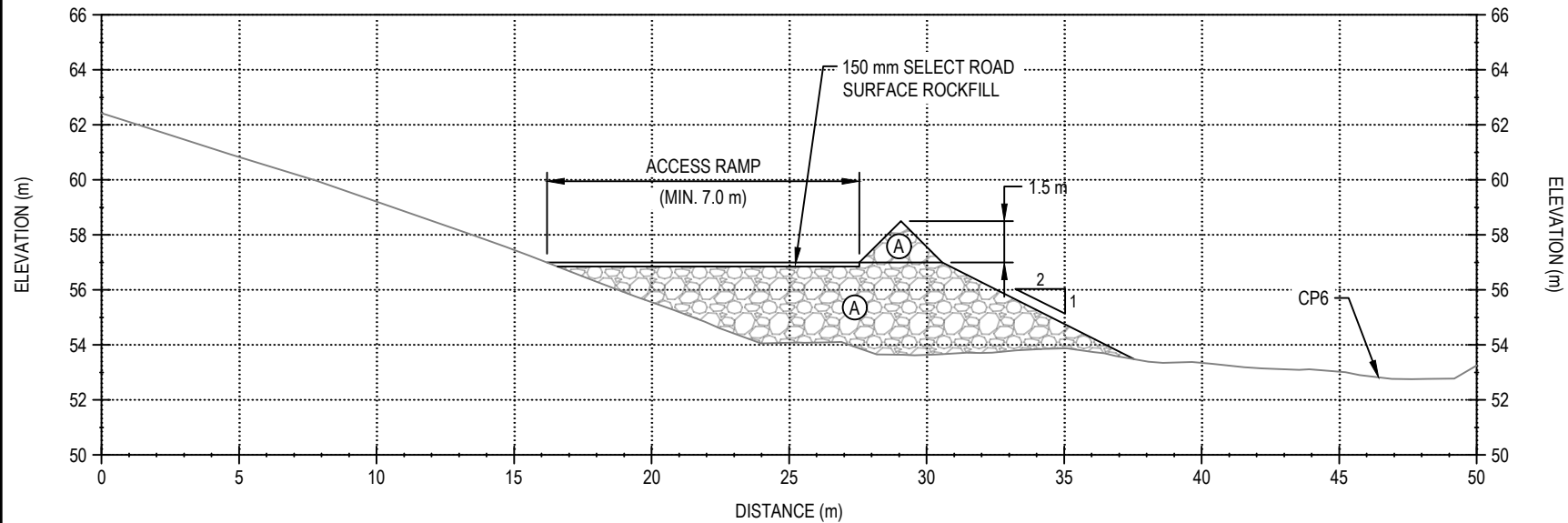
REVISIONS

DESSINÉ PAR DRAWN BY	EL	DATE	2022-08-03
VÉRIFIÉ PAR CHECKED BY	RO	2022-08-03	
APPROUVÉ PAR APPROVED BY	WTH	2022-08-03	

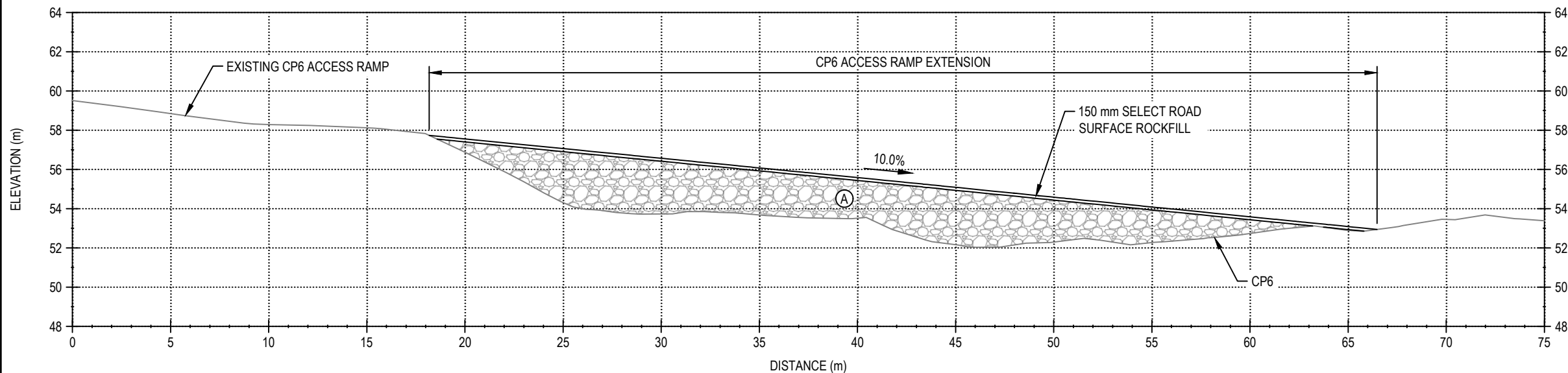
No. PROJET PROJECT NO.	6526
DATE	2022-08-03

TITRE / TITLE
AGNICO EAGLE MELIADINE GOLD PROJECT
CP6 ACCESS RAMP EXTENSION
PLAN VIEW

ÉCHELLE/ SCALE	9	FICHIER FILE	.DWG
No. DESSIN/ DRAWING NO.	65-695-230-023	REVISION	0
		FEUILLE/SHT	1 / 2



A CROSS-SECTION
023 SCALE: 1:250



B CROSS-SECTION
023 SCALE: 1:250

ITEM	UNITS	ESTIMATED IN-PLACE QUANTITY
Ⓐ CLEAN ROCKFILL FROM MINE ACTIVITIES (600 mm MINUS)	m³	1,381

NOTES:

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REV	DESCRIPTION	DATE	PAR BY
0	ISSUED FOR CONSTRUCTION	2022-08-03	RO
A	ISSUED FOR REVIEW	2022-07-26	RO

REVISIONS

DESSINÉ PAR DRAWN BY	EL	DATE	2022-08-03
VÉRIFIÉ PAR CHECKED BY	RO	2022-08-03	
APPROUVÉ PAR APPROVED BY	WTH	2022-08-03	
No. PROJET PROJECT NO.	6526		
DATE	2022-08-03		
TITRE / TITLE AGNICO EAGLE MELIADINE GOLD PROJECT CP6 ACCESS RAMP EXTENSION CROSS-SECTIONS			

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65-695-230-024			