AGNICO EAGLE

MELIADINE GOLD PROJECT

Mine Plan

APRIL 2015

VERSION 1

6513-MPS-10

ᓇᐃᓈᖅᓯᒪᔪᖅ

ᑖᒻᓇ ᑎᑎᖅᑲ ᑕᑯᒃᓴᐅᑎᑦ ᑎᔪᖅ ᐅᔭᕋᓐᓂᐊᕐᓂᕐᒧᑦ ᐸᕐᓇᐅᑎᒥᒃ (ᐸᕐᓇᐅᑎ) ᐊᒡᓃᑯᒃᑯᑦ ᑕᓯᕐᔪᐊᕐᒥᑦ ᒨᓗᒧᑦ ᐅᔭᕋᓐᓂᐊᕐᓂᕐᒧᑦ ᐃᑲᔪᐃᓂᕐᒧᑦ Type A ᐃᒪᕐᒧᑦ ᓚᐅᓴᒥᒃ ᑐᒃᓯᕋᐅᑎᒧᑦ. Type A ᐃᒪᕐᒧᑦ ᓚᐅᓴᒥᒃ ᑐᒃᓯᕋᐅᑎ ᐱᓕᕆᐊᖑᓛᖅᑐᖅ ᒪᓕᒃᓱᒋᑦ Type A ᐃᒪᕐᒧᑦ ᓚᐃᓴᓐᓯᒧᑦ ᑐᒃᓯᕋᐅᑎ ᐱᓕᕆᐊᖑᓛᖅᑐᖅ ᒪᓕᒃᓱᒋᑦ ᓄᓇᕗᒻᒥᑦ ᓄᓇᑖᕐᓂᕐᒧᑦ ᐊᖏᖅᑲᑎᒌᒍᑎ, ᓄᓇᕗᒻᒥ ᐃᒪᐃᑦ ᐊᒪᓗ ᓄᓇᕗᒻᒥ ᓄᓇᐅᑉ ᖄᖓᓐᓄᑦ ᐱᔪᓐᓇᐅᑎᖏᓐᓄᑦ ᐱᖁᔭᖅ, ᐊᒪᓗ ᓄᓇᕗᒻᒥ ᐃᒪᕐᓄᑦ ᒪᓕᒐᐃᑦ, ᑭᓯᐊᓂ ᐃᓱᒪᒋᔭᐅᓯᒪᑉᑐᓂ ᓇᓗᓇᐃᔭᖅᓯᒪᔪᒃᑯᑦ ᐃᒪᓐᓈᖅᑐᖅᑕᐅᓂᖅ ᑲᑎᒪᔩᓂᑦ *ᒪᓕᒃᑕᐅᔪᒃᓴᖅ 4-ᒥᑦ - ᐱᐊᓂᒃᓯᓂᖅ ᑐᓂᓯᓂᕐᓗ ᐃᒪᕐᒧᑦ ᓚᐃᓴᓐᓯᒧᑦ ᑐᒃᓯᕋᐅᑎᒥᒃ ᓄᑖᒧᑦ ᓚᐃᓴᓐᓯᒥᒃ ᐊᒪᓗ ᒪᓕᒃᑕᐅᔪᒃᓴᖅ ᑐᑭᓯᐅᒪᔾᔪᑎᒃᑲᓐᓂᕐᓄᑦ ᐅᔭᕋᓐᓂᐊᖅᑐᓕᕆᓂᕐᒧᑦ ᐊᒪᓗ ᓯᕗᓪᓕᑎᕆᓂᕐᒧᑦ* (SIG-MM3).

ᐊᒡᓃᑯᒃᑯᑦ ᐱᕙᓪᓕᐊᓂᖃᖅᑐᑦ ᑕᓯᕐᔪᐊᕐᒥᑦ ᒨᓗᒥᒃ ᐅᔭᕋᓐᓂᐊᕐᕕᖕᒥᑦ, 25 ᑭᓛᒥᑕᒥᒃ ᐅᐊᖕᓇᖖᒍᓂᑦ ᐅᖓᓯᒃᑎᒋᔪᖅ ᑲᖏᖅᖠᓂᕐᒥᑦ, ᐊᒪᓗ 80 ᑭᓛᒥᑕᒥᒃ ᓂᒋᖅᐸᓯᐊᓂᑦ ᐱᖓᖕᓇᖅᐸᓯᐊᓂᑦ ᐅᖓᓯᒃᑎᒋᔪᖅ ᐃᒡᓗᓕᒑᕐᔪᖕᒥᑦ ᑭᕙᓪᓕᕐᒥᑦ ᓄᓇᕗᒻᒥᑦ. ᐱᖓᖕᓇᖅᐸᓯᐊᓂᑦ ᑕᓯᐅᔭᕐᔪᐊᑉ, ᐱᓕᕆᐊᑉ ᐃᓂᖓ ᐸᓂᕐᓯᓚᒦᑐᖅ (the Peninsula) ᐊᑯᓐᓂᖓᓂᑦ ᑲᓇᖕᓇᐅᑉ ᓂᒋᐅᑉ, ᐊᒪᓗ ᐱᖓᖕᓇᖖᒍᓂᑦ ᑕᓯᕐᔪᐊᑉ (63° 1’ 23.8’’ N, 92° 13’ 6.42″W) ᐃᓄᐃᑦ ᓇᖕᒥᓂᖅ ᓄᓇᒋᔭᖖᒐᓂᑦ. ᐱᓕᕆᐊᖅ ᑕᓯᕐᔪᐊᕐᒦᑐᖅ Wilson ᐃᒪᕐᒧᑦ ᐊᐅᓚᑦᑎᓂᐅᑉ (ᓄᓇᕗᒻᒥᑦ ᐃᒪᕐᒧᑦ ᒪᓕᒐᐃᑦ ᑎᑎᖅᑲᖅ 4).

ᐊᒡᓃᑯᒃᑯᑦ ᒪᓂᖅᑲᒥᑦ ᐅᒃᑯᐃᖓᔪᒥᒃ ᐊᒪᓗ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐅᔭᕋᓐᓂᐊᖅᑐᓕᕆᓂᖅᑕᕈᒪᔪᑦ ᑎᕆᒐᓂᐊᖅ-ᒥᑦ ᒨᓗᓕᕆᓂᕐᒧᑦ, ᒪᕐᕉᒃ ᒪᓂᖅᑲᒥᑦ ᐅᒃᑯᐃᖓᔪᑦ (ᑎᕆᒐᓂᐊᖅ Phase 1 ᐊᒪᓗ Phase 2) ᐊᒪᓗ ᐊᑕᐅᓯᖅ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ. ᐅᔭᕋᓐᓂᐊᕐᕕᓕᐅᖅᑕᐅᔪᒪᔪᖅ ᒨᓗᑖᖅᑦᑕᕋᔭᖅᑐᖅ 12.1 ᒥᓕᔭᓐ ᑕᓐᓂᒃ (Mt) ᐅᔭᖅᑲᓂᒃ, 31.8 Mt ᐊᒃᑕᒨᖅᑕᐅᔪᓂᒃ ᐅᔭᖅᑲᓂᒃ, 7.4 Mt ᐅᖓᑕᐅᑎᔪᓂᒃ ᐅᔭᖅᑲᓂᒃ, ᐊᒪᓗ 12.1 Mt ᕿᒪᒃᑎᑦᑐᓂᒃ. ᓯᑕᒪᐅᓕᖓᔪᑦ ᐱᕙᓪᓕᐊᓂᖓ ᑎᕆᒐᓂᐊᖅ: ᓯᑕᒪᑦ ᐅᑭᐅᑦ ᐅᖓᑎᐊᕐᔪᐊᓄᑦ ᓴᓇᔭᐅᓂᖓ ((Q4 ᐅᑭᐅᖅ -5-ᒥᑦ ᐅᑭᐅᖅ -1-ᒧᑦ), 8-ᓄᑦ ᐅᑭᐅᓄᑦ ᐅᔭᕋᓐᓂᐊᕐᕕᒃ ᐊᐅᓛᕐᑐᓂ (ᐅᑭᐅᖅ 1-ᒥᑦ ᐅᑭᐅᖅ 8-ᒧᑦ), ᐱᖓᓱᑦ ᐅᑭᐅᓂᒃ ᐅᒃᑯᐊᖅᐸᓪᓕᐊᑐᒍ (ᐅᑭᐅᖅ 9-ᒥᑦ ᐅᑭᐅᖅ 11-ᒧᑦ), ᐊᒪᓗ ᐅᒃᑯᐊᖅᓯᒪᓕᖅᑎᓪᓗᒍ (ᐅᑭᐅᖅ 11-ᒥᑦ ᐅᖓᑖᓄᑦ).

ᐸᕐᓇᐅᑎᐅᑉ ᐱᔾᔪᑎᖓ ᑐᓂᓯᓂᕐᒧᑦ ᑲᑎᖅᓱᖅᓯᒪᔪᓂᒃ ᑐᑭᓯᐅᒪᔾᔪᑎᓂᒃ ᖃᓄᐃᖓᓂᐊᕐᓂᖓᓄᑦ, ᐊᐅᓚᕐᓂᖓᓄᑦ, ᐱᕚᓪᓕᐊᓂᕐᓂᒃ, ᐊᒻᒪ ᐊᕙᑎᒧᑦ ᐊᐅᓚᑦᑎᓂᕐᒥᒃ ᐅᔾᕋᖕᓂᐊᕐᓂᐅᑉ ᐊᒻᒪ ᓯᖃᓪᓕᑎᓇᕗᐅᑉ ᐱᕐᑯᑎᖏᓐᓄᑦ. ᐸᕐᓇᐅᑎ ᑐᓂᓯᖕᒥᔪᖅ ᖃᓄᐃᖓᓂᐊᕐᓂᖓᓂᒃ, ᐊᐅᓚᕐᓂᐊᕐᓂᖓᓂᒃ ᐊᒻᒪ ᑕᒪᐃᓃᖓᔪᒥᒃ ᐊᐅᓚᑦᑎᓂᕐᒨᖓᔪᓂᒃ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᑦ ᑖᓄᑦ ᐱᕐᑯᑎᓄᑦ, ᓲᕐᓗ ᐊᒃᑕᒫᖅᑕᐅᔪᑦ ᐅᔾᖅᑲᐃᑦ, ᐅᔾᕋᖕᓂᐊᖅᑕᐅᔪᓄᑦ ᐊᒻᒪ ᕿᒪᒃᑎᑦᑐᓄᑦ ᑐᖅᑯᖅᓯᒪᕖᑦ ᐊᒻᒪ ᐊᐅᓚᑦᑎᓃᑦ, ᐃᓚᐅᕐᓗᓂ ᐃᒪᕐᒧᑦ ᐊᐅᓚᓐᓂᐊᕐᓗᒍ ᖃᓄᖅᑑᕈᑏᑦ ᑭᕕᔪᑦ ᐊᐅᓚᓐᓂᐊᕐᓗᒋᑦ ᐊᒻᒪ ᖃᐅᔨᒋᐊᖃᑦᑕᕐᓂᕐᒧᑦ.

AGNICO EAGLE

EXECUTIVE SUMMARY

This document presents the Mine Plan (the Plan) for the Agnico Eagle Mines Limited (Agnico Eagle) Meliadine Gold Project (Project) to support the Type A Water Licence Application. The Type A Water Licence Application has been prepared in accordance with the Nunavut Land Claims Agreement, Nunavut Waters, and *Nunavut Surface Rights Tribunal Act*, and the Nunavut Water Regulations. It also takes into account the detailed guidance provided by the Nunavut Water Board in *Guide 4 – Completing and Submitting a Water Licence Application for a New Licence* and the *Supplemental Information Guide for Mining and Milling* (SIG-MM3 Guide).

Agnico Eagle is developing the Project, located approximately 25 kilometres north of Rankin Inlet, and 80 kilometres southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. Situated on the western shore of Hudson Bay, the Project site is located on a peninsula (the 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 Project is located within the Meliadine Lake watershed of the Wilson Water Management Area (Nunavut Water Regulations Schedule 4).

Agnico Eagle proposes open pit and underground mining methods for the development of the Tiriganiaq gold deposit, with two open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2) and one underground mine. The proposed mine will produce approximately 12.1 million tonnes (Mt) of ore, 31.8 Mt of waste rock, 7.4 Mt of overburden waste, and 12.1 Mt of tailings. There are four phases to the development of Tiriganiaq: just over 4 years construction (Q4 Year -5 to Year -1), 8 years mine operations (Year 1 to Year 8), 3 years closure (Year 9 to Year 11), and post-closure (Year 11 forwards).

The purpose of this Plan is to provide consolidated information on the design, operations, production, and environment management of the mining and milling facilities. The Plan also provides the design, operational and overall management criteria for associated facilities, such as waste rock, overburden, ore and tailings storage and management, including water management strategies for runoff control and monitoring.

TABLE OF CONTENTS

TABLES AND FIGURES

DOCUMENT CONTROL

Version	Date	Section	Page	Revision	Author
1	April 2015			Version 1	Agnico Eagle

ACRONYMS

Agnico Eagle	Agnico Eagle Mines Limited
ARD	Acid Rock Drainage
AWAR	All-weather Access Road
BGS	Below ground surface
CIL	Carbon-in-leach
CP	Collection Pond
DFO	Fisheries and Oceans Canada
FEIS	Final Environmental Impact Statement
GPS	Global Positioning System
LOM	Life of Mine
mASL	metres above sea level
ML	metal leaching
MMER	Metal Mining Effluent Regulations
NPAG	Non Potential Acid Generating
NWB	Nunavut Water Board
PAG	Potential Acid Generating
Project	Meliadine Gold Project
SFE	Shake Flask Extraction
TSF	Tailings Storage Facility
WRSF	Waste Rock Storage Facility
WTP	Water Treatment Plant

UNITS

%	percent
% solids	percent solids
d	day
d/y	day per year
h	hour
g	gram
g/L	gram per litre
g/t Au	gram per tonne of gold
ha	hectare
kg	kilogram
kg/h	kilogram per hour
kg/m2-h	kilogram per square metre per hour
km	kilometre
kW	killowatt
kWh	kilowatt hour
kWh/t	kilowatt hour per tonne
m	metre
m^2	square metre
m^3	cubic metre
m^3/m^2-h	cubic metre per square metre per hour
min	minute
ML	million litres
M m^3	million cubic metres
mg/L	milligram per litre
mm	millimetre
Mt	million tonne
mt/d	million tonne per day
mt/h	million tonne per hour
$mt/m^2/h$	million tonne per square meter per hour
oz	ounce
oz/d	ounce per day
oz/y	ounce per year
T	tonne
t/d	tonne per day
t/h	tonne per hour
tpd	tonne per day
y	year

1 INTRODUCTION

Agnico Eagle Mines Limited (Agnico Eagle) is developing the Meliadine Gold Project (Project), located approximately 25 kilometres (km) north of Rankin Inlet, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. Situated on the western shore of Hudson Bay, the proposed 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 lands. The Project is located within the Meliadine Lake watershed of the Wilson Water Management Area (Nunavut Water Regulations Schedule 4).

This Plan proposes open pit and underground mining methods for the development of the Tiriganiaq gold deposit, with two open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2) and one underground mine. The proposed mine will produce approximately 12.1 million tonnes (Mt) of ore, 31.8 Mt of waste rock, 7.4 Mt of overburden waste, and 12.1 Mt of tailings. There are four phases to the development of Tiriganiaq: just over 4 years construction (Q4 Year -5 to Year -1), 8 years mine operations (Year 1 to Year 8), 3 years closure (Year 9 to Year 11), and post-closure (Year 11 forwards).

Mining facilities include a plant site and accommodation buildings; three ore stockpiles; a temporary overburden stockpile; a tailings storage facility (TSF); three waste rock storage facilities (WRSFs); a water management system that includes collection ponds, water diversion channels, and retention dikes/berms; and a Water Treatment Plant (WTP). The general mine site location for the Project and a site layout plan are shown in Figures 1.1 and 1.2. The Rankin Inlet satellite site layout plan is shown in Figure 1.3.

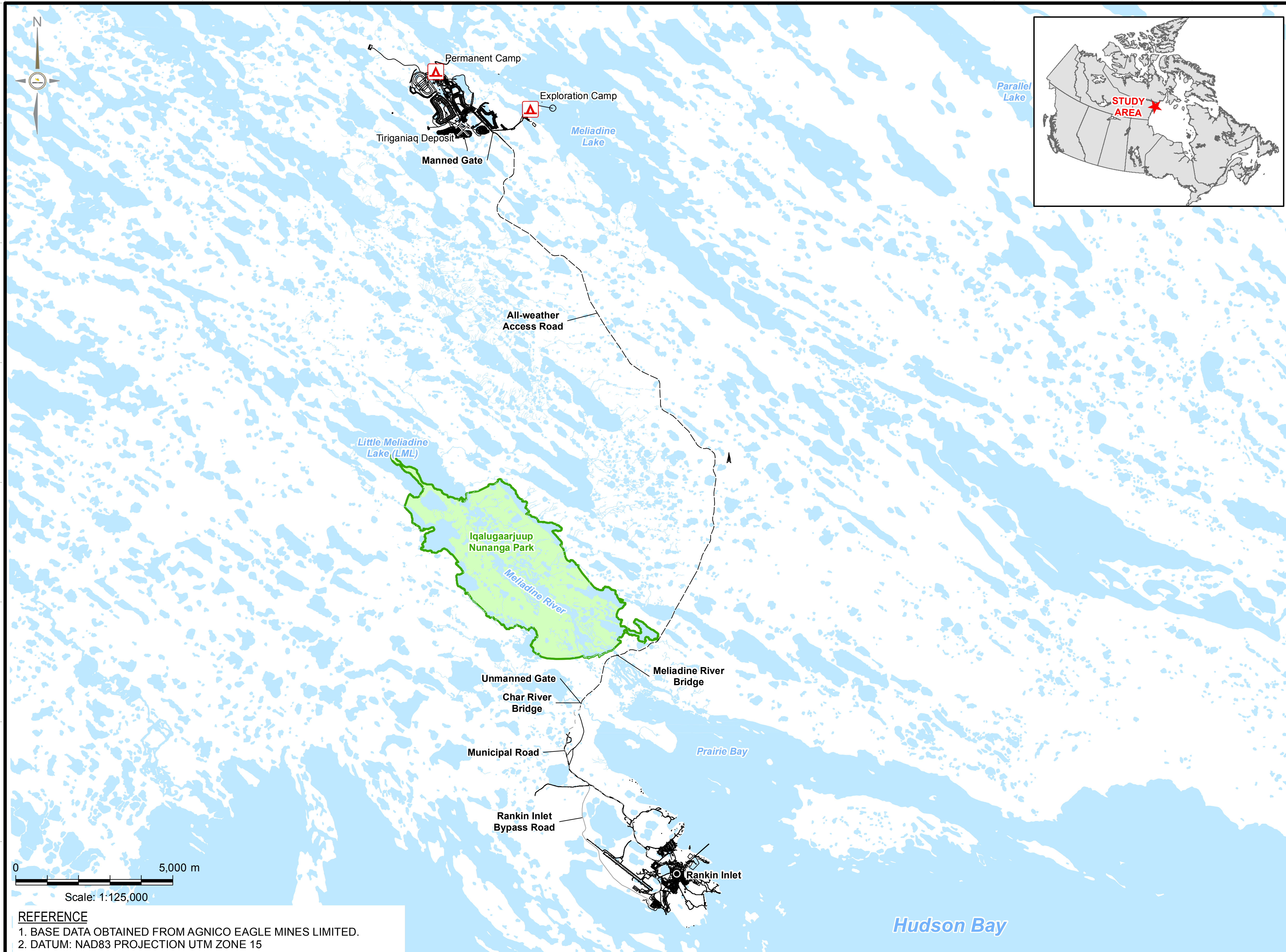
1.1 Concordance

The Project is subject to the land and resource management processes established by the Nunavut Land Claims Agreement and other Federal laws and regulations. Agnico Eagle is required in accordance with the *Nunavut Waters* and *Nunavut Surface Rights Tribunal Act,* and Nunavut Water Regulations to submit to the Nunavut Water Board (NWB) a Type A Water Licence Application for a Mining and Milling Undertaking (Application), to use water and to deposit waste in development of the Project.

The Type A Water Licence Application has been prepared in accordance with the Nunavut Land Claims Agreement, the *Nunavut Waters* and N*unavut Surface Rights Tribunal Act*, and the Nunavut Water Regulations. It also takes into account the detailed guidance provided by the NWB in Guide 4 – *Completing and Submitting a Water Licence Application for a New Licence and the Supplemental Information Guide for Mining and Milling* (SIG-MM3 Guide). Concordance has been assessed for the requirements of the NWB Guidelines and SIG-MM3 Guide and commitments made during the Nunavut Impact Review Board Part 5 Review of the Final Environmental Impact Statement (FEIS).

NO. DESSIN
DRAWING NO.

FORMAT ANSI B-11x17



LEGEND

- CAMP
- PROPOSED MINE SITE
- ALL-WEATHER ACCESS ROAD (AWAR)
- ROAD - NEW
- ROAD - EXISTING
- WATERCOURSE
- WATERBODY
- TERRITORIAL PARK

REFERENCE

1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

AGNICO EAGLE

Golder Associates

TITRE / TITLE	# DWG
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DESSINS EN RÉFÉRENCE/REFERENCE DRAWINGS

REV	DESCRIPTION	DATE	PAR BY
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–	–	–	–
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REVISIONS

DESSINÉ PAR / DRAWN BY	CDB	DATE	08-12-2014
VÉRIFIÉ PAR / CHECKED BY	IM		08-12-2014
APPROUVÉ PAR / APPROVED BY	JH		08-12-2014
No. PROJET / PROJECT NO.	1405283		
DATE	–		

TITRE / TITLE

AGNICO EAGLE – MELIADINE DIVISION
FIGURE 1.1 GENERAL PROJECT SITE LAYOUT LOCATION PLAN

ÉCHELLE/SCALE	FICHIER/FILE		
1:125,000	.DWG		
No. DESSIN/DRAWING NO.	REVISION	FEUILLE/SHT	
–	0	1 / 1	

AE-CART-ANSI B

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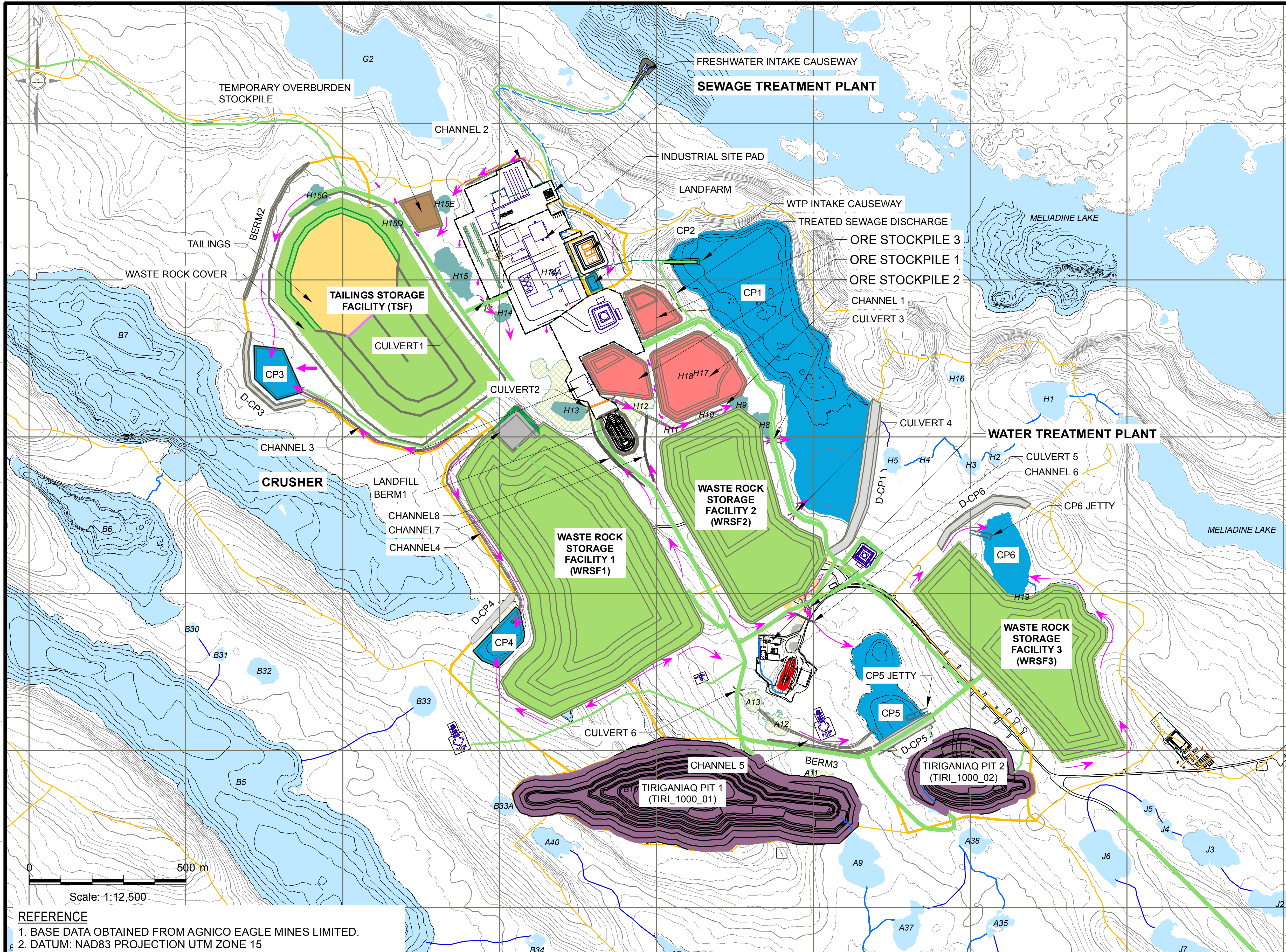

REFERENCE
1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

LEGEND

- CATCHMENT BOUNDARY
- SERVICE ROAD
- HAUL ROAD
- NON CONTACT WATERBODY
- CONTACT WATERBODY
- WATER COLLECTION POND
- DRAINED POND AREA
- OPEN PIT
- OVERBURDEN
- WASTE ROCK
- ORE
- TAILINGS
- INDUSTRIAL SITE PAD
- STREAM

AGNICO EAGLE

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TITRE / TITLE	# DWG
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DESSINS EN RÉFÉRENCE/REFERENCE DRAWINGS

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REVISIONS

DESSINÉ PAR DRAWN BY	CDB	DATE	05-12-2014
VÉRIFIÉ PAR CHECKED BY	LY		18-03-2015
APPROUVÉ PAR APPROVED BY	DRW		18-03-2015
No. PROJET PROJECT NO.	1405283		
DATE	–		

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
FIGURE 1.2 GENERAL SITE PLAN

ÉCHELLE/ SCALE	1:12500	FICHIER FILE	.DWG
No. DESSIN/ DRAWING NO.	–	REVISION 0	FEUILLE/SHT 1 / 1

AE−CART−ANSI B

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NO. DESSIN
DRAWING NO.

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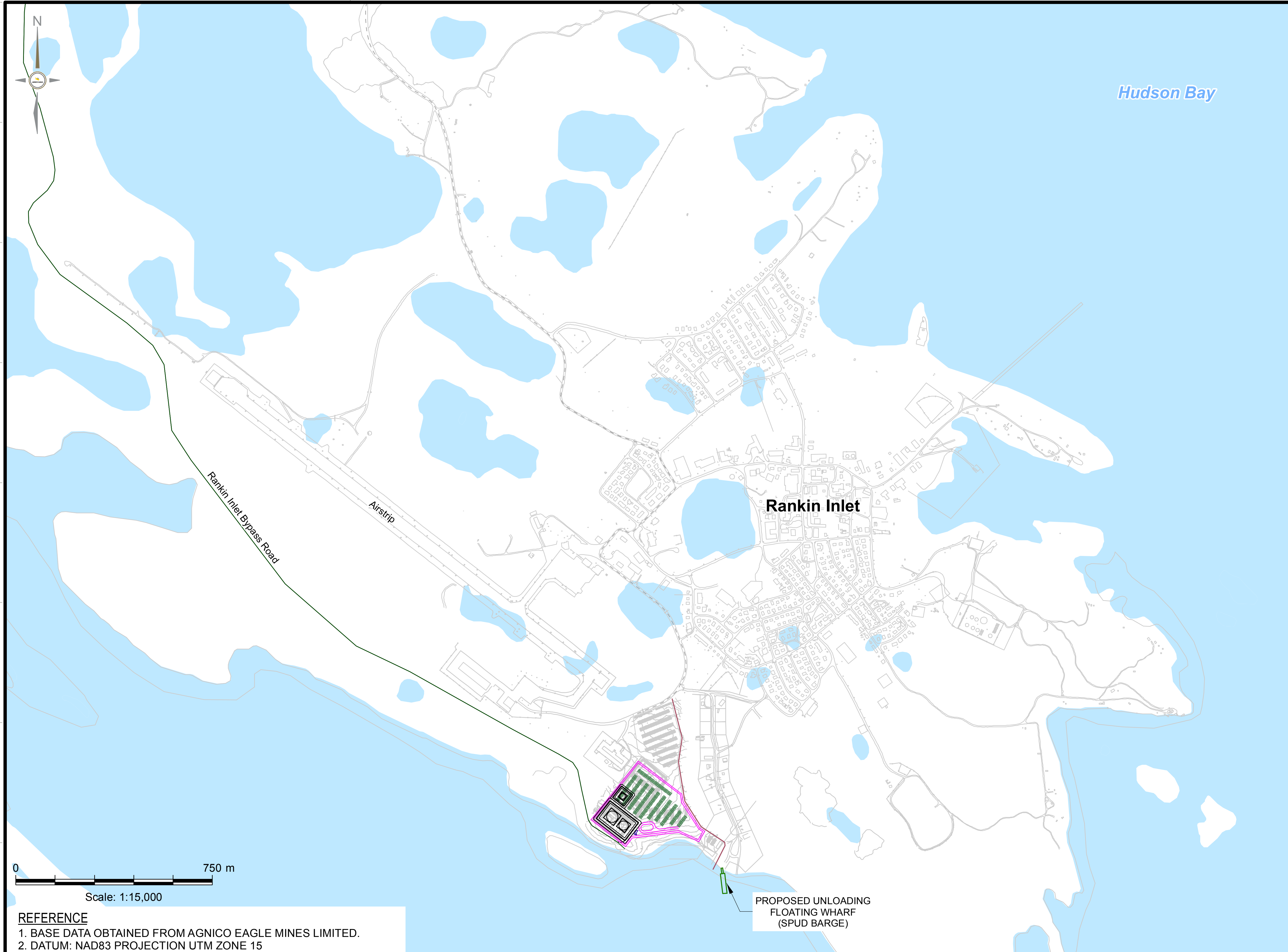

REFERENCE
1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

LEGEND
ROAD - NEW
ROAD - EXISTING
TANK FARM AREA
WATERCOURSE
WATERBODY

AGNICO EAGLE

Golder Associates

TITRE / TITLE	# DWG
-	-
-	-
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-	-
-	-

DESSINS EN RÉFÉRENCE/REFERENCE DRAWINGS

REV	DESCRIPTION	DATE	PAR BY
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REVISIONS

DESSINÉ PAR DRAWN BY	CDB	DATE	08-12-2014
VÉRIFIÉ PAR CHECKED BY	IM		08-12-2014
APPROUVÉ PAR APPROVED BY	JH		08-12-2014
No. PROJET PROJECT NO.	1405283		
DATE	-		

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
FIGURE 1.3 GENERAL LAYOUT PLAN
OF RANKIN INLET TANK FARM AND LAYDOWN PAD

ÉCHELLE/ SCALE	1:15,000	FICHIER FILE	.DWG
No. DESSIN/ DRAWING NO.	-	REVISION 0	FEUILLE/SHT 1 / 1

AE-CART-ANSI B

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1.2 The Mine Plan Summary

The purpose of the Mine Plan (Plan) is to provide consolidated information on the design, operations, production, and environmental management of the mining and milling facilities. The Plan also provides for the design, operations, and overall management of associated facilities, such as waste rock, overburden, ore and tailings storage and management, including water management strategies for runoff control and monitoring. The Plan is divided into the following sections:

- Introduction (Section 1);
- Project Description (Section 2):
  - A brief overview of the Plan (Section 2.1);
  - A description of the open pit mine, design and methods, operations, pit geotechnical parameters, production plan and overall environmental management (Section 2.2);
  - A description of the underground mine and portal, design and methods, operations, geotechnical parameters, production plan and schedule, supplemental infrastructure and overall environmental management (Section 2.3);
  - A description of the ore management (Section 2.4) and ore processing and associated activities (Section 2.5), including a description of the crusher plant, process plant, and paste backfill plant. This section also includes geotechnical considerations, and the reagents and additives used in ore processing;
  - A description of the waste rock and ore storage facilities, design, geometry, and overall water management (Section 2.6); and
  - A description of the tailings storage facility, design, geometry, site selection, geochemical testing, and operations (Section 2.7).

This Plan is subject to review and approval in the context of information requirements for concordance review for obtaining the Type A Water Licence. However, it is not Agnico Eagle's intent that the operational document be subject to annual review and approval by the NWB, as the final infrastructure designs, and as-built drawings, combined with the individual infrastructure management plans, will supersede information contained herein.

Document Control
Should issues requiring clarification be raised during the technical review and hearing for the Application, Agnico Eagle will submit information as an Addendum to this document. Agnico Eagle commits to revise the Plan within 90 days issuance of the licence to address concerns and issues raised prior to licence issuance.

1.3 Linkages to Other Management Plans

Documents included in the application package of the Type A Water Licence Application, and which support this Plan, include the following:

- Main Application Document;
- Environmental Management and Protection Plan;
- Water Management Plan;
- Ore Storage Management Plan;
- Mine Waste Management Plan; and
- Preliminary Closure and Reclamation Plan.

2 PROJECT DESCRIPTION

The Project involves building, operating, decommissioning, and rehabilitating a conventional gold mine. Some facilities development will take place at Rankin Inlet, where materials will be received by air and sea transport. Year-round access between Rankin Inlet and the proposed mine site will be facilitated by an All-weather Access Road (AWAR). Figure 1.1 shows the general Project location and overall Project layout, including the AWAR, Rankin Inlet bypass road, and Rankin Inlet proposed infrastructures. Figure 1.2 shows the main mine Site Layout Plan. The Rankin Inlet satellite site layout plan is shown in Figure 1.3.

Mine development will include open pit and underground mining that will provide ore to the mill. The mill, camp, powerhouse, tank farm, TSF, waste rock and overburden management areas, water supply, and sewage treatment plant are integral components of this proposal. Although five gold deposits have been identified as feasible for mining, only the Tiriganiaq deposit (the largest one) is proposed. The other deposits are: Discovery, F Zone, Pump, and Wesmeg. It is anticipated that these deposits will be feasible to mine and Agnico Eagle will submit a subsequent Type A Water Licence Application for further development during operations of Tiriganiaq.

The timing of capital expenditures on the Project beyond 2014 is subject to regulatory approval decisions and prevailing market conditions. Exploration will continue during the regulatory processes, as well as throughout the life of the proposed mine. Based on Meliadine Update Technical Study Phase 2 completed by Agnico Eagle and based on the Mineral Reserves Mineral Resources, as of December 2013, Meliadine had proven gold reserves of 2.8 million ounces in the Tiriganiaq deposits (Independent Expert Engineering Investigation and Review Panel 2015).

Non-local crew changes will take place by air through Rankin Inlet airport, and employees arriving at the airport will be transported by bus to the permanent camp – no additional on-site air transport facilities are proposed. The permanent camp will include accommodation, as well as a reception and security area, a kitchen and dining room, a laundry room, recreational facilities, an administration building, and a first-aid clinic.

Standard drill-and-blast and truck-and-shovel methods are proposed for open pit mining. A total of 3.6 Mt of ore will come from the open pits during the mine life. The ore will be trucked to the mill site located near the Tiriganiaq deposit. When possible, the ore will be dumped directly into the crusher and transported via conveyor to the milling circuit. Temporary ore storage pads are also planned, in case the crushers are not readily available. Waste rock and overburden (if not suitable/needed for construction purposes) will be placed in one of the identified storage areas.

In addition, the Tiriganiaq deposit will be mined using underground methods at a rate of about 3,000 tonnes per day (tpd). A long-hole method is planned to be used with a mining sequence consisting of a combination of transversal and longitudinal stoping, using conventional technology (rubber-tired diesel machinery and drill-and-blast excavation). The underground mine will use part of the existing decline built for the advanced underground exploration and bulk sampling program completed under Type B Licence 2BB-MEL0914, which expired in 2014. This decline will be extended and a new portal will also be built closer to the mill. The underground mining will produce a total of 8.5 Mt of ore and 5.4 Mt of waste rock over the mine life. The majority of the waste rock generated underground will be reused underground for ground stability purposes.

Once underground mining is complete and the potential for an extension of the underground operations has been dismissed, mined-out workings will be backfilled using 3.3 Mt of cemented paste backfill and 2 Mt uncemented rockfill. Dewatering will cease and the underground workings will be allowed to flood naturally.

The total quantity of explosives required is estimated at about 25,000 tonnes of emulsion over the life of mine (LOM). The Emulsion Plant will operate 7-days a week on a 12-h/day basis. The handling of explosives on-site will be carried out by the supplier and by qualified Agnico Eagle staff (blasters and helper-blasters).

The ore will be processed in a centrally located facility that will comprise: crushing, grinding, gravity recovery, cyanidation, and gold recovery in a carbon-in-leach (CIL) circuit. Gold bars will be smelted on-site. A thickener will be used to recover cyanide solution from the tailings for reuse in the mill. The tailings will be pressed to remove the water, then packed into cakes and transported for storage in the TSF or used in the paste backfill recipe and sent back underground; water removed from the tailings will be reused in the milling process.

Diversion infrastructure will be constructed to avoid the contact of clean runoff water with areas affected by mining activities. Contact water originating from affected areas, will be intercepted, collected, conveyed to central storage facilities for re-use in process, or treated (if needed) prior to re-use or release to Meliadine Lake. Fresh water for potable use and as make-up water for the mill and other operational needs will be sourced from Meliadine Lake.

Power will be generated by diesel-fuelled engines and will be completed with a heat recovery system. Camp waste will be managed through a waste management building to promote recycling and to direct waste to proper waste management infrastructure (incinerator, hazardous waste management, or landfill). A landfarm will be constructed on-site to treat soils contaminated with light hydrocarbons.

A full description of Project design considerations is provided in the Main Application Document.

2.1 Mine Plan Overview

Mine development activities will occur in four phases: pre-development, construction, operations, and closure, with additional monitoring and mitigation continuing into post-closure.

Pre-development is defined as any construction activities as defined below but specific to activities allowed under the provision of the Nunavut Land Claims Agreement Article 13, Section 13.5.5 or the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*. This phase will commence after receipt of the Project Certificate from the Nunavut Impact Review Board, the (new or amended) Type B Water Licence from the NWB, and the land use permit from the Kivalliq Inuit Association.

Construction is defined any activities undertaken for the purposes of establishing or constructing components, infrastructure, and facilities required for development of a mine. Full mine site construction will commence following receipt of a Type A Water Licence from the NWB and Land Use Permit from the Kivalliq Inuit Association. Construction will take a little over four years between the period Year -4 to Year -1.

Operations is defined as the period that the Process Plant is operating and producing a commodity (i.e., gold). During the mine start-up, this will include a 3 month commissioning period planned for October to December (i.e., Q4) of Year -1.

Closure (Abandonment, Reclamation, and Closure) **and Post-Closure** is defined as an Operator ceasing operations at a facility without the intent of resuming mining activities. The expectation will be that the site will be reclaimed and post-closure monitoring will continue until it can be demonstrated that the mine site is both chemically and physically stable.

Key mine development and water management activities, and sequence can be found in Table 2.1; for visual reference, water management activities and sequence figures can be found in the Water Management Plan, accompanying the application.

Table 2.1 Key Mine Development and Water Management Activities and Sequence

Mine Year	Mine Development Activities	Water Management Activities
Q4 of -5	• Start to construct the industrial pad • Develop the ramp to Tiriganiaq underground mine • Construct portion of rock pad for OP1 and OP2 stockpiles to store the ore from Tiriganiaq underground ramp development • Install Culvert2	• Start to re-use the underground water • Dewatering top 0.5 to 1.0 m of fresh water in Pond H17 (depending on receipt of Type A Water Licence)
-4	• Continue construction of the industrial pad and start to construct the associated buildings • Construct D-CP1 to impound CP1 and start to collect contact water within CP1 • Construct discharge diffuser in Meliadine Lake • Build WTP and water intake causeway and start to treat the contact water in CP1 • Construct Channel2 and install Culvert1	• Start to pump the water from CP1 to WTP for treatment prior to discharge to the outside environment via the diffuser in Meliadine Lake • Pump the underflow sludge water from the WTP to CP1. To limit recirculation of the sludge within CP1, the discharge will be located away from the WTP intake • Dewater Pond A54 in Q3 of Year -4 and pump the water to CP1
-3	• Complete the industrial pad • Construct freshwater intake causeway in Meliadine Lake • Construct CP2 and start to collect contact water • Construct Berm3 and Channel5 • Construct D-CP5 to impound CP5 and start to collect contact water • Construct and operate the landfill and landfarm	• Start to supply fresh water from Meliadine Lake to the camp area • Start to treat sewage water and pump the treated sewage water from STP to CP1 • Start to pump contact water from CP2 to CP1 • Start to pump contact water from CP5 to CP1 • Start to pump water from the landfarm to CP1 after pre-treatment for oil • Start to store the excess groundwater from the underground mine at surface
-2	• Expand the pad footprint of OP1 and OP2 to increase the storage capacity • Start to place waste rock in the WRSF1 • Construct Berm1, Channel1, Channel6, Channel7, and Channel8 • Install Culvert3 to Culvert 6	• Start to divert the contact water from industrial pad to CP1 via Channel1

Table 2.1 Key Mine Development and Water Management Activities and Sequence (continued)

Mine Year	Mine Development Activities	Water Management Activities
-1	• Complete the construction of the buildings on the industrial pad • Start process commissioning in Q4 of Year -1 • Start to place dry stack tailings in Cell 1 of TSF in Q4 of Year -1	• Start to pump the treated water from WTP to mill as make-up water • Start to pump the underflow sludge water from WTP to the mill During the open water season, the mill will be supplemented as much as possible with water from the WTP. For the balance of the year, fresh water will be used for ore processing • Start to pump excess truck wash water from the wash bay to CP1
1	• Start full capacity of ore processing • Construct Berm2, Channel3, and Channel4 • Construct D-CP3 to form CP3 and start to collect contact water • Construct D-CP4 to form CP4 and start to collect contact water	• Start to pump contact water in CP3 to the partially drained Pond H13 where the water will flow though Channel1 to CP1 • Start to pump contact water in CP4 to the partially drained Pond H13 where the water will flow though Channel1 to CP1
2	• Start to mine Tiriganiaq Pit 1 • Start to place overburden and waste rock from Tiriganiaq Pit 1 in WRSF1	• Start to pump contact water collected in Tiriganiaq Pit 1 to CP5
3	• Expand process plant to reach the process capacity of 5,000 tpd • Construct temporary overburden stockpile to store the selected ice-poor overburden that will be used for progressive reclamation of TSF	• Dewater Ponds H19 and H20 in Q3 of Year 3 and pump the water to CP1
4	• Increased mill production to 5,000 tpd • Start to mine Tiriganiaq Pit 2 • Start to place waste rock and overburden from Tiriganiaq Pit 2 in WRSF3 • Construct D-CP6 to CP6 and start to collect contact water • Start to place dry stack tailings in Cell 2 of TSF • Start to place low grade ore from the open pits in the OP1 stockpile • Construct rock pad for OP3 to store marginal grade ore from the open pits	• Start to pump contact water collected in Tiriganiaq Pit 2 to CP5 • Start to pump contact water in CP6 to CP1

Table 2.1 Key Mine Development and Water Management Activities and Sequence (continued)

Mine Year	Mine Development Activities	Water Management Activities
	• Stop placing rock and overburden in WRSF1 when WRSF1 reaches design capacity	
5	• Start to place waste rock from Tiriganiaq Pit 1 in WRSF2 • Place final closure cover on top of tailings surface in Cell 1 of TSF (waste rock cover over final Cell 1 perimeter slope to be placed as progressive reclamation as soon as slope reaches final grade)	• Water management plan similar to Year 4
6	• Start to place dry stack tailings in Cell 3 of TSF • Stop placing overburden waste in WRSF3	• Water management plan similar to Year 4
7	• Place final closure cover on top of tailings surface in Cell 2 of TSF (waste rock cover over final Cell 2 perimeter slope to be placed as for progressive reclamation as soon as slope reaches final grade) • Stop mining of Tiriganiaq Pit 1 and Tiriganiaq Pit 2 when the open pits reach design elevation • Stop Tiriganiaq underground operation when underground mine reaches design elevation • Stop placing waste rock and overburden in WRSF2 when WRSF2 reaches design capacity • Stop placing waste rock in WRSF3 when WRSF3 reaches design capacity	• Water management plan similar to Year 4 • Stop pumping water from the open pits when the pits are mined-out at end of year • Stop pumping excess water from underground when underground mine is completed
8	• Process the ore from the OP1, OP2, and OP3 until all stored ore is processed • Decommission underground mine surface openings as needed	• Start to fill the mined-out Tiriganiaq Pits 1 and 2 with active pumping water from Meliadine Lake • Start natural flooding of Tiriganiaq Underground mine with groundwater seepage • Stop pumping water to the process plant when the processing is completed

Table 2.1 Key Mine Development and Water Management Activities and Sequence (continued)

Mine Year	Mine Development Activities	Water Management Activities
Closure (Year 9 to 11)	• Place final closure cover on top of tailing surface in Cell 3 of TSF in Year 9 (waste rock cover over final Cell 3 perimeter slope to be placed as progressive reclamation as soon as slope reaches final grade) • Decommission non-essential mine infrastructure and support buildings in Years 9 and 10 • Continue to fill the mined-out open pits with active pumping of water from Meliadine Lake until Year 10 • Start monitoring and maintenance in Year 9 (start in Year 8 if possible)	• Finish flooding Tiriganiaq Pit 1 and Tiriganiaq Pit 2 by Q4 of Year 10 • Continue to collect and manage the contact water in CP1 to CP6 • Continue to pump the contact water in CP1 to WTP, if required, for treatment before being discharged to the outside environment • Remove non-essential site infrastructure • Pump the underflow sludge water from WTP to CP1 • Continue natural flooding of Tiriganiaq Underground mine with groundwater seepage • Remove Meliadine Lake pumping system
Post-Closure	• Continue monitoring and maintenance until Year 18	• Treat the contact water until water quality meet direct discharge criteria and then decommission the water management system • Continue natural flooding of Tiriganiaq Underground (progressive reclamation since Year 8) • Breach water retention dikes D-CP1, D-CP3, D-CP4, D-CP5 and D-CP6 once water quality monitoring results meet discharge criteria to allow water to naturally flow to outside environment • Remove culverts and breach remaining water retention dikes/berms in Year 18

tpd = tonnes per day; CP = Collection Pond; WRSF = Waste Rock Storage Facility; WTP = Water Treatment Plant; TSF = Tailings Storage Facility

2.2 Open Pit Mining

2.2.1 Design

Tiriganiaq resources located close to surface are to be mined by two open pits developed above the underground mine operation. Mining from these pits will increase production by an additional 2,000 tpd (to 5,000 tpd) of ore from the beginning of Year 4, following a mill expansion planned for Year 3. Tiriganiaq Pit 1 and Tiriganiaq Pit 2, with respective ultimate depths of 150 metres (m) and 100 m, contain a combined total of mineable material (rock and overburden) in excess of 38 Mt.

The main open pit (Tiriganiaq Pit 1 or Tiri1000_01) which hosts 86% of the open pit ore reserves (2.75 Mt) will be developed first during a 15 month period starting late in Year 2. The two pits contain a combined 3.4 Mt of ore at an average grade of 5.26 g/t (after dilution) and 0.2 Mt of marginal ore. This is enough ore to sustain mining for about 4.4 years (Year 4 to Year 8). The open pits will feed the process plant at a nominal rate of 2,000 tpd in Year 4 to Year 8. The mineral resources used to design the open pits were the indicated resource (including mineral reserves) as of December 31, 2013 (Table 2.2).

Table 2.2 Indicated Resources

Deposit	Category	Tonnes (000)	Gold grade (g/t)	Contained gold (000 Oz)
Tiriganiaq	Open Pit	6,365	5.32	1,089
	Underground	14,166	6.87	3,130
Tiri 600	Open Pit	1,815	4.34	253
	Underground	1,665	4.82	258
Tiri 900	Open Pit	877	4.89	138
	Underground	134	4.63	20
Total		**25,002**	**6.08**	**4,889**

The Tiriganiaq open pit operation will be supported by infrastructure installed to support the underground operation. This infrastructure will be expanded in Year 2 to accommodate the additional mobile fleet and manpower mobilized to develop and mine the two open pits. In particular, the maintenance shop will be extended to include four additional maintenance bays.

The Project lies within an area of continuous permafrost where two groundwater flow regimes can be observed: a shallow (active layer) and a deep (beneath permafrost) groundwater flow regime. No hydraulic connection is anticipated between the two flow systems because of the presence of the permafrost. Depth of permafrost in the Project site is estimated to be about 360 to 495 m (FEIS; Volume 7, Section 7.2.2.6; Agnico Eagle 2014).

The active layer in the area is about 1.7 m thick. The overburden material within the active layer generally consists of silty gravelly sand with a hydraulic conductivity on the order of 1 x 10-6 metres per second. This active layer becomes thawed in the late spring to early autumn. Shallow groundwater gradients should be similar to the topographic gradients which generally vary from 0.006 to 0.05 m/m throughout the Project site (FEIS; Volume 7, Section 7.2.2.7; Agnico Eagle 2014).

Since the pits are entirely within the permafrost layer, groundwater pressures were not considered in slope design criteria. Table 2.3 shows the characteristics of the open pit designs for Tiriganiaq.

Table 2.3 Tiriganiaq Open Pit Characteristics

Open Pit	Operating Years	Waste Rock Destination	Depth (m)	Bottom Elevation (m)
Pit 1	2 to 7	WRSF1, WRSF2	145	-70.0
Pit 2	4 to 7	WRSF2, WRSF3	95	-25.0

To keep the active layer drained and reduce the potential for overburden slope failure, drainage and slope management procedures will be implemented where pit slopes intersect areas of thick overburden that may contain ice. Controlled blasting operations, as well as adequate excavation, scaling and surface water management practices will help prevent slope instability. During pit development, a pit wall monitoring program, including geotechnical structural mapping, will be implemented to confirm design assumptions and to rapidly detect any unexpected conditions requiring follow-up and adaptive measures to be undertaken.

Design geometry of the mining benches were developed and used for pit design. The open pit optimization for Tiriganiaq was limited to 9,930 m level elevation; this was set as the ideal elevation for the transition between the open pit and underground mine with minimal ore loss. Ramp accesses were designed to the bottom of the pits using the geotechnical recommendations guiding bench geometry. The ramp's width includes a protection berm and a drainage ditch (Figure 2.1 and Figure 2.2). Ramp gradients have been established at 10% and were increased to 12% for the last three benches at the bottom of the pit. The safety berm on the outside edge will be constructed of crushed rock to a height equal to 3/4 of the rolling radius of the largest tire using the ramp.

The ramps and haul roads were designed for the largest equipment (70 payload tonne class haul trucks), with an operational width not exceeding 5.7 m, in accordance with Nunavut mine regulations. For double lane traffic, the ramp width will be 21.5 m decreasing to 15.8 m for single lane traffic at the pit bottom (last three benches) to reduce waste stripping.

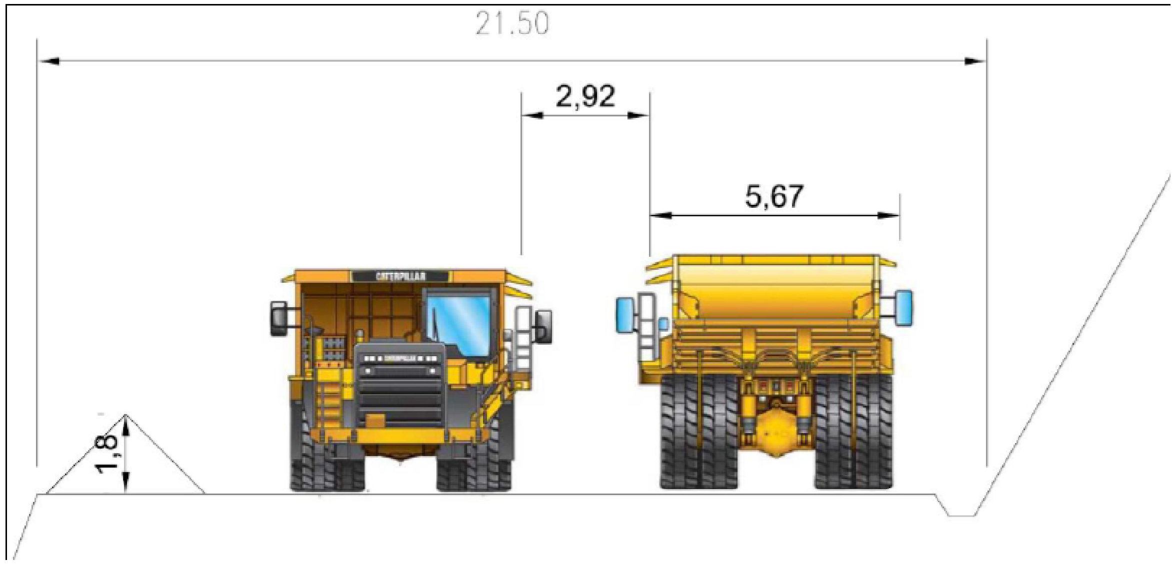


Figure 2.1 Double Lane Ramp Design

Figure 2.2 Single Lane Ramp Design

2.2.2 Operations

Conventional truck/shovel operations for both pits is planned, with different mining approaches for ore and waste zones. This strategy is based on trade-off studies and the latest review completed by Hatch in 2013 (Hatch 2013). To maximize the recovery of economic material and minimize dilution in the ore zones, selective and non-selective mining will be employed, based on mining in the ore zone and the waste zone, respectively.

Selective Mining

Selective mining involves large blasts, whereby rock movement is controlled and tracked. Within the ore zones, a tight drilling pattern with a large number of blast holes is required. The pattern will be confined on three or four faces and shot parallel to the deposit strike and to a confined face to limit blast movement (Figure 2.3).

To further reduce lateral blast movement, high velocity of detonation and low gas emulsion explosives combined with fast timing will be used. Five metre benches will be blasted in the ore zones and dug out on 2.5 m horizons. Digging will be performed with a mid-size shovel backhoe excavator perpendicular to the strike of the lodes from the hanging wall to the footwall direction (see Figure 2.4 and Figure 2.5).

Production blast patterns were developed with a target powder factor between 0.27 kg/t and 0.37kg/t, with six-inch and half diameter holes. In the ore zone, given the relatively shallow dip of the mineralization, the mining will be done in 5-m benches to minimize dilution. Pre-split blasting is also planned to maximize stable bench face and inter-ramp angles along final walls.

For the haulage, 65 to 70 tonne payload class trucks will be used.

Once processing begins, the ore mined from the pit will be either hauled to the crusher located near the process plant or placed on the marginal grade or low-grade stockpiles. High grade ore will be sent directly to the crusher.

Non-selective Mining (Waste Rock)

Within waste areas, where no material selectivity is required, 10 m benches are planned. A wider drilling pattern will be used and blasting will be done in such a way to maximize digging efficiency. Blast movement within the waste areas will be defined by the type of digging equipment involved. A front-end loader with a 10 to 11 cubic metre (m^3) bucket is suitable for use in the waste rock, due to its flexibility and ability to move quickly from one working area to another. The front-end-loader will also be used for stockpile re-handling. Figure 2.6 presents a typical cross-section of Tiriganiaq Pit 1 (Tiri1000_01) including the final pit wall, the mineralized lodes and the areas of selective and non-selective mining. About 47% of the total pit material will be mined selectively.

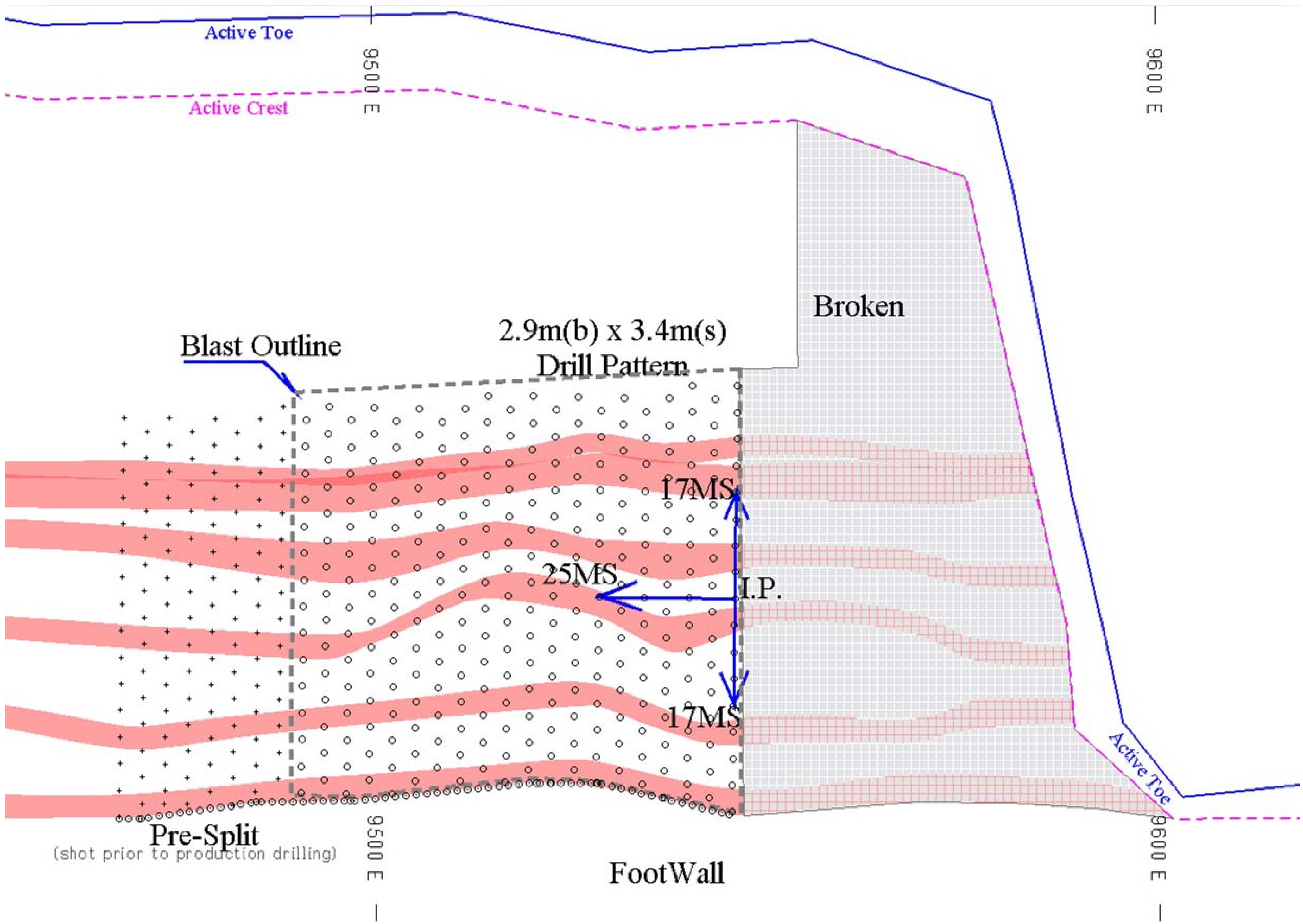


Figure 2.3 Typical Blast Layout in the Ore Zone

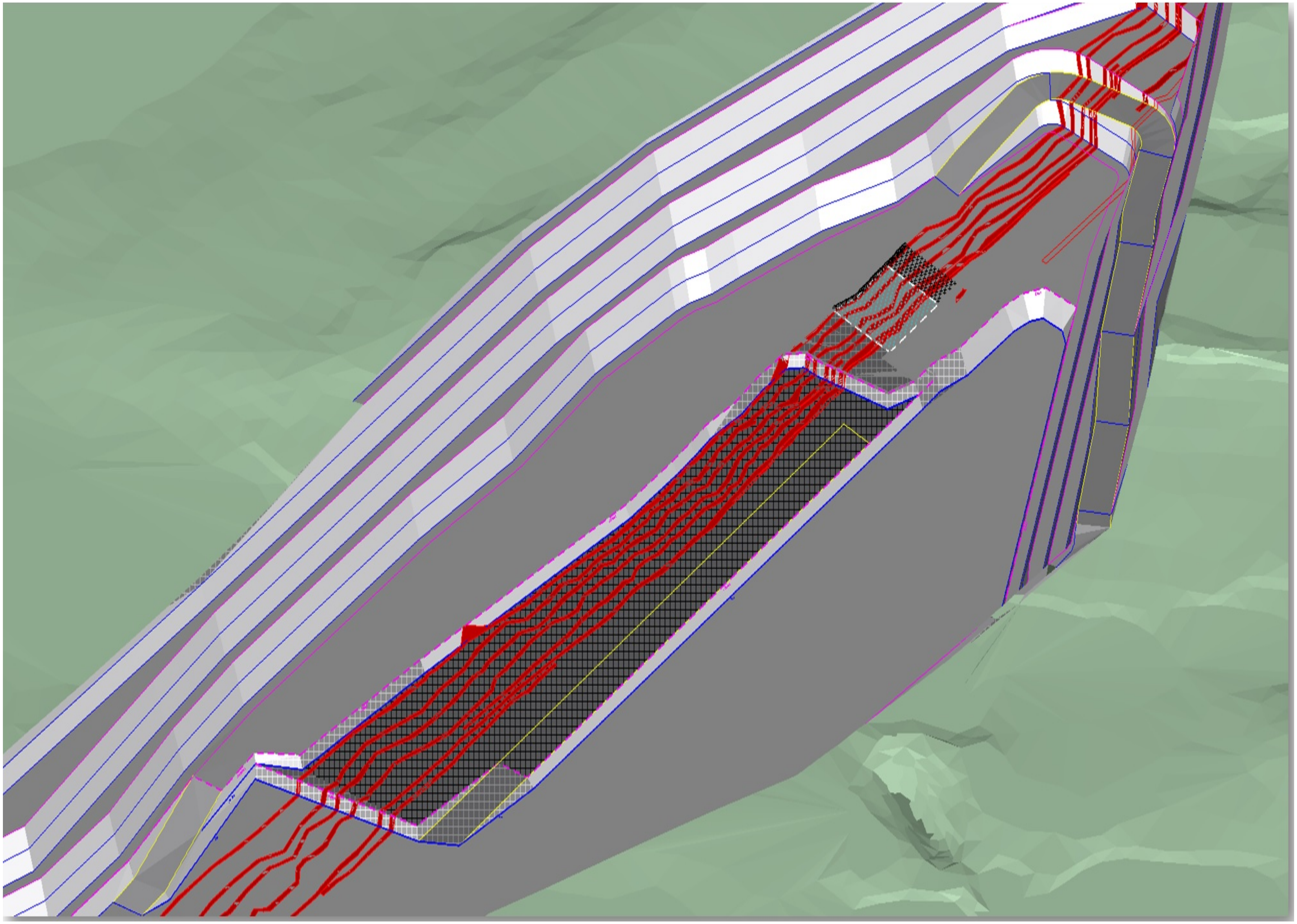


Figure 2.4 Meliadine Typical Bench Development in the Ore Zone

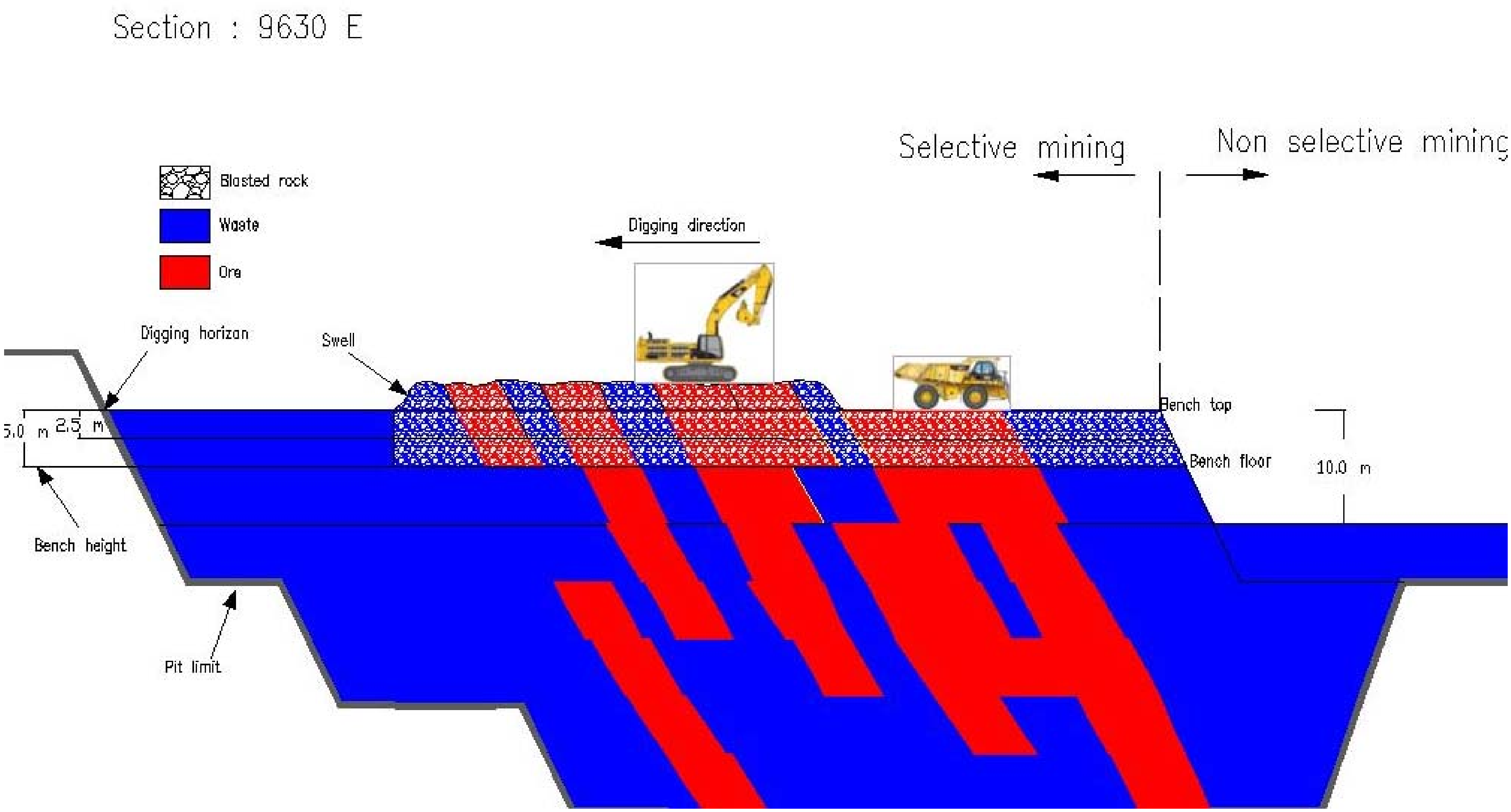
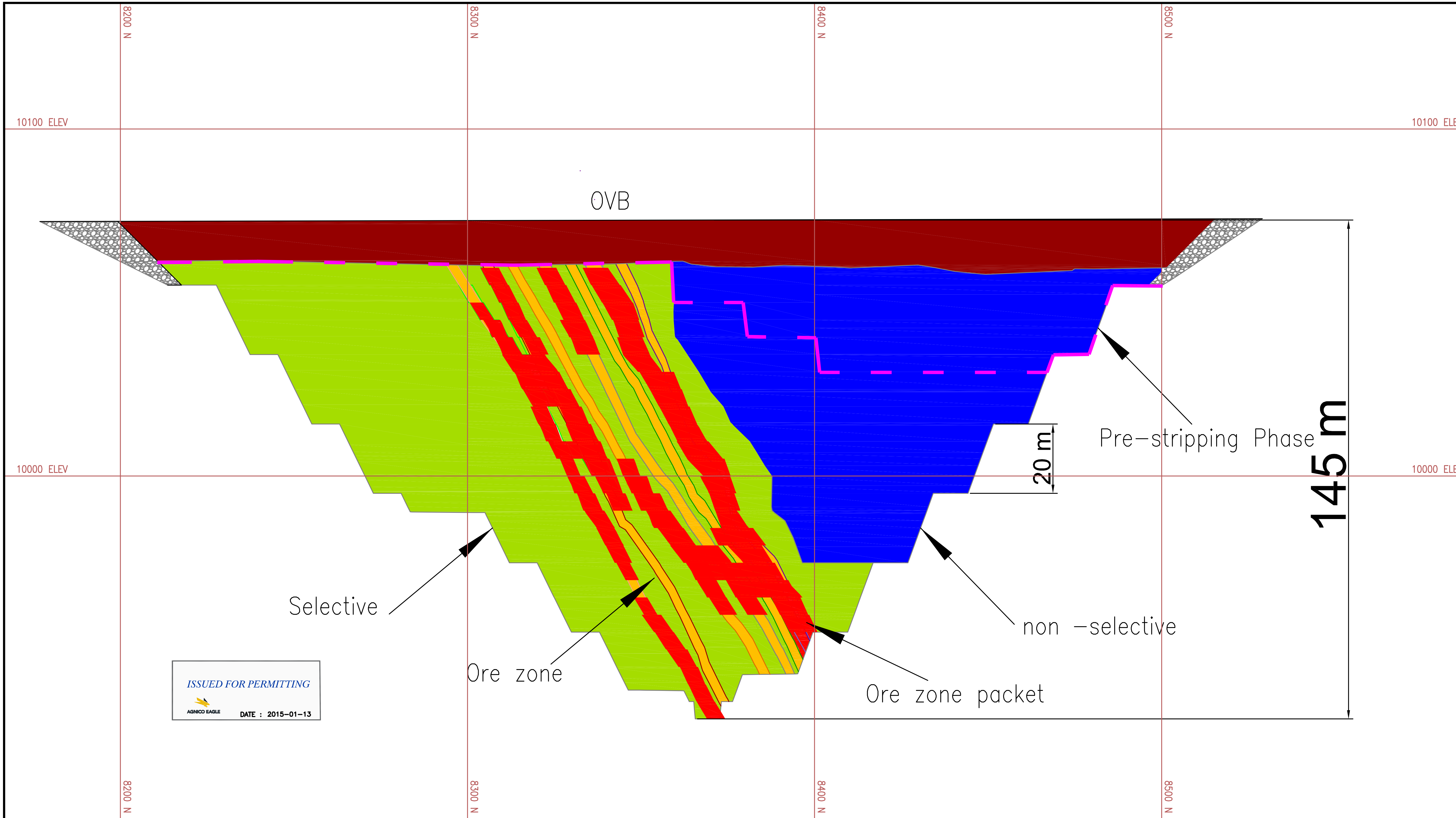


Figure 2.5 Meliadine Typical Section 9630E Showing Digging Horizons in the Ore Zone



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REVISIONS

SERVICES TECHNIQUES

AGNICO EAGLE

DESSINÉ PAR/DRAWN BY: JULIEN MARCOTTE, ing.		DATE: 2015–01–12	TITRE / TITLE: AGNICO EAGLE – MELIADINE PROJECT 300 – MINE OPEN PIT GENERAL Tiriganiaq Open Pit SECTION 9650 E 1 (TIRI000_01) TIRI1000_01 FIGURE 2.6
VÉRIFIÉ PAR/CHECKED BY: VICKY GALARNEAU		DATE: 2015–01–13	
APPROUVÉ PAR/APPROVED BY: DENIS CARON, ing.		DATE: 2015–01–13	
No. PROJET/PROJECT NO.: 6509	ÉCHELLE/SCALE: 1:1000	FEUILLE/SHT: 1/1	No. DESSIN/DRAWING NO.: 6509–TIR–01–300–00000–001 — REVISION: 0

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Drilling and Blasting

Explosives will be prepared on-site by an explosives supplier who will also be responsible for delivering explosives to the bore holes (see Explosives Management Plan, submitted as part of the Type A Water Licence Application for additional detail). For safety, environmental, and economic reasons, blast designs will be optimized and will include measures that favor complete detonation of all explosives. The primary blast hole drills will be diesel-powered rigs. Blast frequency will be between two and four blasts per day. Drill patterns, explosive loads, and initiation methods will be designed and performed by experienced professionals, and will be monitored to make necessary adjustments, as required. A number of operating procedures will also be implemented to adapt blasting to factors that can affect the operations, including, notably, weather (pit operation). Also, having a single explosives supplier and trained certified blasters loading the holes and performing blasting activities will ensure consistency and efficiency of the activity.

It is expected that overburden and ore stockpiles will be frozen and may require drilling and blasting prior to digging.

To minimize the drilling fleet and maintain some flexibility to move drills from one work area to another, 165 millimetres (mm) (6.5 in) blast holes will be drilled in both ore and waste rock (selective and non-selective mining). Similarly, pre-shearing of the final pit wall will also be accomplished with 165 mm diameter holes. Drills used for pre- shearing will be capable of drilling holes up to 22 m in length at dips ranging from 64° to 80°. Table 2.4 summarizes the drilling pattern considered for each application. Dust aprons will be used on open pit, production drills, where practical during all open pit drilling to control dust emissions.

Table 2.4 Production and Pre-shearing Drilling Patterns for Meliadine Open Pit Operations

	Unit	Selective Mining	Non-Selective Mining	Pre-shearing
Bench Height	m	5	10	20
Hole Diameter	mm	165	165	165
Burden	m	4.1	4.7	
Spacing	m	4.85	5.7	1.3-1.7[a]
Subdrill	m	1.2	1.2	0

[a] Depending on rock formation and explosive used

Blasting with a high energy bulk emulsion explosive is planned with a targeted powder factor of 0.37 kg/t in ore, and 0.27 kg/t in waste. Emulsion is a versatile product that can be used in dry and wet conditions. Moreover, pumped emulsion reduces spillage, and with excellent water resistance, minimizes potential nitrate leaching and the resultant environmental impact (ammonia in water).

Emulsion will be produced on-site within an explosive plant operated and maintained by an explosive supplier. The current plan is to use the same emulsion product for both open pit and underground operations to minimize the complexity of the plant (i.e., only one product).

Once blasted, the rock material will be loaded in rigid trucks by hydraulic excavators. A high-precision global positioning system (GPS) for machine guidance will be considered for the operation to minimize risks of accidents. In addition to protecting people and equipment, the GPS system improves the productivity and grade control.

An example of typical equipment requirement is shown in Table 2.5; this list shows the maximum number required of any unit. Models in brackets are indicated as examples only; actual models that end up being purchased for the proposed mine could differ slightly.

Table 2.5 Meliadine Typical Open Pit Equipment Requirements

Description Mobile Equipment	Quantity
Front end loader 12m^3	1
Shovel excavator	2
Shovel excavator with rock breaker	1
Haul truck 70 tonnes	6
Production drill	3
Track dozer with ripper	2
Wheel dozer	1
Motor grader	2
Fuel Truck - 50000l	1
Prime mover Lowboy 100T	1
Lube Truck	2
Service truck	2
Loader with side bucket for Stemming	1
Water truck	1
4x4 Crew cab, Pick up 1t (blasting crew)	1
4x4 Crew cab, Pick up 3/4t	16
Pit Busses Vision SL	3
4X4 pickup (bit truck)	1
Lighting tower	6
Dewatering pump 150hp	4

Blasted rock material will be transported by mine production haul truck to either: (a) the crusher dump zone near the mill area for ore material or, (b) the designated waste rock storage area. See the production plan in Table 2.6 for the details on production schedule and quantities of ore by year for Tiriganiaq and Table 2.7 and Table 2.8 for the details on the mine waste production schedule and summary of waste rock tonnage destinations.

Table 2.6 Production Schedule and Quantities of Ore by Year

Mine Year	Underground		Tiriganiaq Pit 1		Tiriganiaq Pit 2	
	High Grade (t)	Marginal Grade (t)	High Grade (t)	Low/Marginal Grade (t)	High Grade (t)	Low/Marginal Grade (t)
Yr-5	0	338	0	0	0	0
Yr-4	0	987	0	0	0	0
Yr-3	126	605	0	0	0	0
Yr-2	51,280	69,585	0	0	0	0
Yr-1	465,764	136,676	0	0	0	0
Yr1	1,015,651	169,752	0	0	0	0
Yr2	891,829	159,643	0	0	0	0
Yr3	1,053,481	200,812	0	0	0	0
Yr4	1,094,741	142,766	874,958	30,046	6,509	0
Yr5	1,097,825	56,469	699,642	43,250	61,837	8,749
Yr6	967,430	0	757,226	24,165	112,669	10,339
Yr7	888,008	0	667,949	43,004	238,893	15,147
Yr8	0	0	0	0	0	0
Total (t)	**7,526,135**	**937,633**	**2,999,775**	**140,465**	**419,908**	**34,235**
Volume (M m^3)	**4,003,263**	**498,741**	**1,595,625**	**74,715**	**223,355**	**18,210**

M m^3 = million cubic metres; t = tonnes

Table 2.7 Summary of Mine Waste Production Schedule

Year	Mine Waste from Underground (t)	Mine Waste from Tiriganiaq Pit 1 (t)		Mine Waste from Tiriganiaq Pit 2 (t)	
	Waste Rock	Overburden	Waste Rock	Overburden	Waste Rock
Yr-5	290,705[a]	0	0	66,746	26,260
Yr-4	355,200	0	0	200,239	373,739
Yr-3	583,679	0	0	0	0
Yr-2	691,529	0	0	0	0
Yr-1	764,683	0	0	0	0
Yr1	959,950	0	0	0	0
Yr2	789,614	2,038,237	68,930	0	0
Yr3	608,626	4,328,239	4,205,799	0	0
Yr4	336,059	236,246	5,774,071	391,137	287,727
Yr5	31,567	0	5,004,160	97,830	1,667,353
Yr6	0	0	3,703,548	0	2,468,635
Yr7	0	0	1,830,060	0	973,358
Total (t)	**5,411,612**	**6,602,722**	**20,586,568**	**755,952**	**5,797,072**

[a] The amount includes approximately 0.1 Mt of waste rock produced during development of the ramp to the underground mine prior to the construction phase (Year-5)

Table 2.8 Summary of Mine Waste Tonnage and Destination

Mine Waste Stream	Estimated Quantities		Waste Destination
Overburden	7.4 Mt		Temporary storage in the Overburden Stockpile ~ 0.1 Mt
			Closure and site reclamation for the TSF
			Co-disposed with waste rock within WRSFs
Waste Rock	31.8 Mt		Dike and road construction
			WRSFs
			Closure and site reclamation for the TSF
Tailings	12.1 Mt	9.7 Mt	As dry stack tailings placed in the TSF
		2.4 Mt	Backfilled to underground mine as cemented paste backfill

Two temporary ore stockpiling pads will be sited near the crusher dump area in case the crusher is not available when a truck arrives for dumping. As described in further detail in the Ore Storage Management Plan, these two temporary ore stockpiling pads will have the capacity to temporarily hold up to about 2.5 Mt ore material (approximately one-year of operations), though usage of the ore pads would be restricted as much as feasible to avoid double-handling material.

Final Pit Wall Control

To develop a safe pit wall, pre-shearing techniques and controlled blasting will be used to limit rock mass damage beyond the final pit limit. Wall scaling will also be done using an appropriate shovel to remove unstable loose materials that could eventually fall on the catch bench.

2.2.3 Ultimate Pit Geotechnical Parameters

Pit slope designs for the Project were derived based on a compilation and review of existing data complemented with the results of a 2013 geotechnical field investigation campaign (Golder 2013a). Bench scale stability was assessed by means of kinematic analysis to identify potential bench-scale planar, wedge and toppling instability. Analysis was undertaken to quantify the probability of failure for the dominant potential failure mechanisms identified in the kinematic analysis, and for an evaluation of potential back-break. Inter-ramp and overall slope stability for the north wall was also assessed.

Expected failure modes include mainly planar sliding along foliation in the south wall, wedge failures in the north and west walls, and potentially back break of the bench crests in the north wall along the shallow south dipping J0 joint set. Toppling potential is indicated mainly for the north wall but is considered unlikely in the permafrost environment, hence the steepening of the north wall. Nevertheless, raveling of material and minor bench scale failures are expected during the spring thaw. Furthermore, analytical results indicate that while overall slope failure is not expected, some potential exists for the development of tension near the slope crest of the north wall. A previously identified wedge failure in the east wall was largely related to the presence of a particular joint set (set J2). This set has been found to be sporadic rather than systematic based on 2011 geotechnical drilling data, hence the steepening of the east wall.

Experience from the Meadowbank Mine indicates a preference for steeper bench faces and wider berms to comply with the Nunavut regulation of minimum ‘effective’ 8 m berms. The selected pit slope designs copy this approach whenever possible; however, drill and blast trials will be carried out early in the mine development to validate and optimize the design. Shallow dipping foliation is generally the controlling factor for the southern walls of the pits, hence bench-face angles have been selected to follow the dip of the foliation. Pre-shear blasting is not operationally feasible below a bench face angle of about 65°; therefore, alternative drill and blast designs will have to be developed early in the mine life for these walls.

The mine design approach consists of mining using 5 m benches in ore and 10 m benches in waste. The final bench height will typically be 20 m (two 10-m benches) and the face angle will vary from 64° to 70°depending on the pit wall. The catch bench width in the rock varies from 8 to 10 m, resulting in inter-ramp angles of 4°8 to 49° (Table 2.9).

Table 2.9 Tiriganiaq Pit Slopes Design Parameters

Parameters	Unit	North Wall	South Wall	East Wall	West Wall
Bench face angle	(°)	70	64	70	65
Operating bench height	(m)	10	5	5	5
Bench configuration		double	double	double	double
Vertical separation	(m)	20	20	20	20
Catch bench width	(m)	10	8	10	8
Inter-ramp angle	(°)	49	48	49	49

Overburden thickness atop the Tiriganiaq deposit is expected to range from 5 to 10 m up to 15 to 20 m in places. The design recommendations for the overburden material are based on available shear strength information and operational experience at the Meadowbank Mine and elsewhere in the Arctic. Overburden slope design criteria are summarized in Table 2.10. To the extent practicable with the mining plan, the overburden material will be excavated in winter and kept frozen by use of a thermal protection cover. The bench face will be sloped at 40° followed by the placement of a 3 m thick layer of rip-rap material. The overall slope angle for this phase of the study is based on an assumed overburden thickness of 16 m. The actual geometry will depend on the depth and type of overburden, soil ice content, soil drainage conditions, and ground temperature during construction.

Table 2.10 Overburden Slope Design Criteria

Parameters	Overburden Slope Design
Bench face angle (°)	40 (with 3 m rip-rap thermal protection)
Bench height (m)	8
Catch bench width (m)	8
Rock/Overburden interface bench width (m) (First catch berm at the contact of the rock)	10 (1)
Inter-ramp overburden slope angle (°)	25
Overall slope angle (°)	23

Slope management requirements and operational considerations include the following:

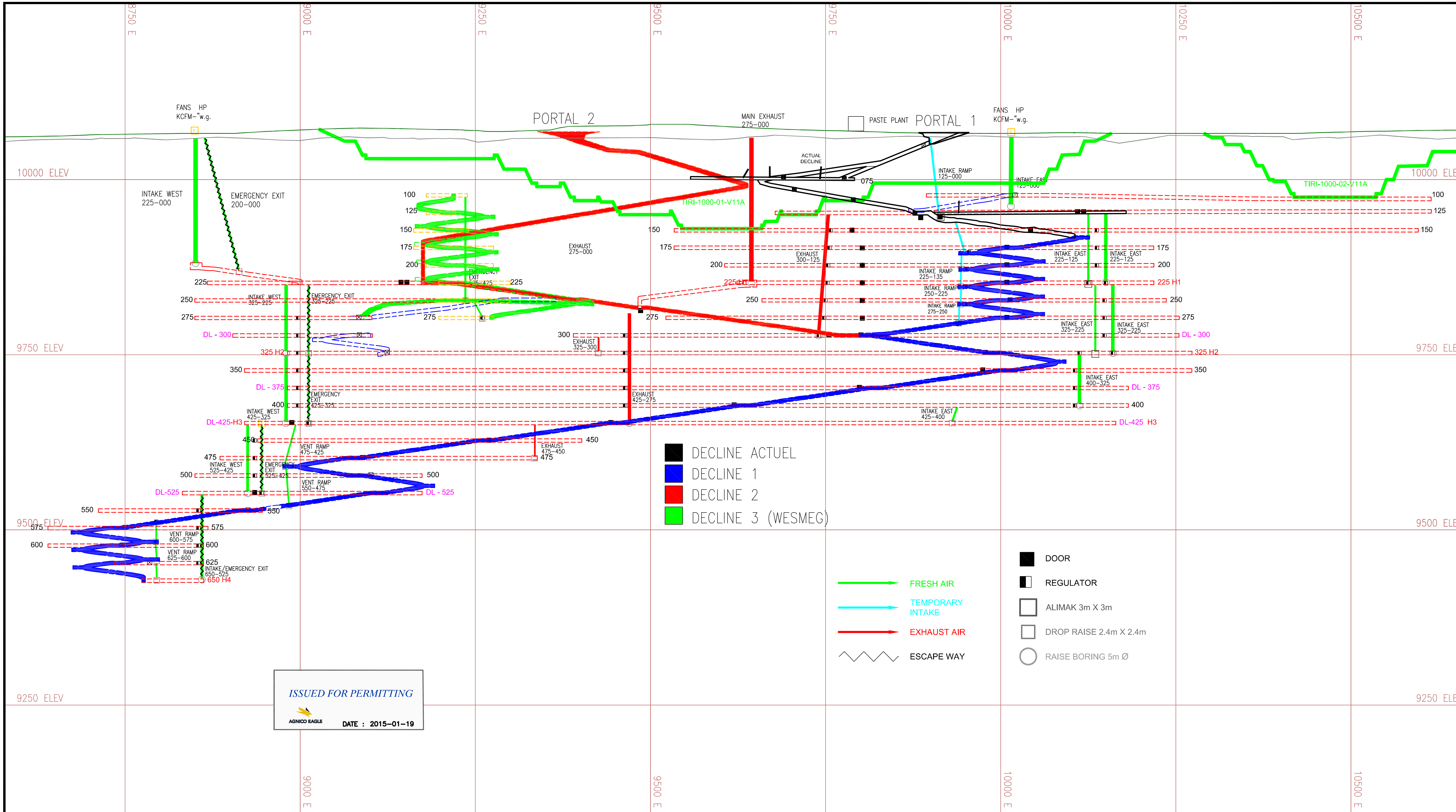
- excavation of overburden benches during the winter months and insulation with at least 3 m of rip-rap material;
- establishment of adequate drainage in areas of thick overburden to keep the active layer soils drained thus reducing the potential for overburden slope failure;
- surface water diversions to prevent the flow of surface water into the pits during the summer months;
- cleaning of catch benches in the fall to prepare for increased raveling during the spring thaw;
- controlled blasting, including pre-shearing of all walls except the south wall and appropriate scaling of walls;
- development of a blasting practice for the south wall; and
- geotechnical structural mapping.

Ultimate Pit Physical Constraints

No physical surface constraints have been considered in defining the ultimate pit limits within the Tiriganiaq deposit. The presence of different watercourses located within or near the pit footprints will require some water management including dewatering, drainage, and water retention dikes as discussed in the Water Management Plan, submitted as part of the application. The ultimate pit limits are controlled by the presence of the underground mine, which limits deepening of the pits.

Open Pit to Underground Interface

The floor of Tiriganiaq Pit 1 has been fixed at an elevation of 9,930 m to link with the former underground mine limits. The end result is the ability to coordinate the completion of mining from the open pit and underground at approximately at the same time (Figure 2.7).



REV	DESCRIPTION	DATE	PAR/BY

REVISIONS

SERVICES TECHNIQUES

AGNICO EAGLE

DESSINÉ PAR/DRAWN BY	MYRANE GODARD
DATE	2014–06–19
VÉRIFIÉ PAR/CHECKED BY	JULIEN MARCOTTE, ing. jr.
DATE	2014–06–19
APPROUVÉ PAR/APPROVED BY	DENIS CARON, ing.
DATE	2014–06–19
No. PROJET/PROJECT NO.	6509
ÉCHELLE/SCALE	1:5000
FEUILLE/SHT	1/1

TITRE / TITLE: AGNICO EAGLE – MELIADINE PROJECT

TYPICAL TIRIGANIAQ LONGITUDINAL SECTION SHOWING THE OPEN PIT LIMITS AND UNDERGROUND INFRASTRUCTURE

FIGURE 2.7

SERVICE – DEVELOPMENT TIRIGANIAQ

No. DESSIN/DRAWING NO.: 6509–TIR–210–000–000

REVISION: 0

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It is currently assumed that no permanent crown pillar will be left between the pit floor and the underground operations. The upper portion of the underground mine will be mined during the first years of operations with cemented paste backfill being placed as tightly to the back of the upper stopes as possible to maintain stability. The final pit floor will eventually sit on the underground backfilled stopes.

2.2.4 Open Pit Mine Production Plan

The mining plan assumes that the open pits will start supplying the process plant at the beginning of Year 4 (3 years after the initial process plant start-up) until the end of Year 7. Pre-stripping of the Tiriganiaq Pit 1 (Tiri1000_01) will start in Year 2 followed by pre-stripping Open Pit 2 (Tiri1000_02) in Year 4. Beginning in Year 4, the pits will be mined simultaneously until the end of mine operations. The production schedule and quantities of ore by year is provided in Table 2.6. Table 2.11 provides additional details and presents the mining schedule and ores sources.

Table 2.11 Milling Schedule and Ore Sources

Mine Year	Ore from Underground Mining (t)	Ore from Tiriganiaq Pit 1 (t)	Ore from Tiriganiaq Pit 2 (t)	Ore from Ore Stockpile 1 (t)	Ore from Ore Stockpile 2 (t)	Ore from Ore Stockpile 3 (t)	Total
Yr-1	202,350[a]	0	0	0	0	0	**202,350**
Yr1	1,015,651	0	0	79,349	0	0	**1,095,000**
Yr2	891,829	0	0	203,171	0	0	**1,095,000**
Yr3	1,053,481	0	0	41,519	0	0	**1,095,000**
Yr4	1,094,741	683,168	6,509	24,462	0	0	**1,808,880**
Yr5	1,097,825	665,337	61,837	0	0	0	**1,824,999**
Yr6	967,430	744,902	112,669	0	0	0	**1,825,001**
Yr7	888,008	667,949	238,893	0	30,150	0	**1,825,000**
Yr8	0	0	0	238,419	907,484	174,699	**1,320,602**
Total (t)	**7,211,315**	**2,761,356**	**419,908**	**586,920**	**937,634**	**174,699**	**12,091,832**
Volume (m^3)	**3,835,806**	**1,468,806**	**223,355**	**312,191**	**498,741**	**92,925**	**6,431,824**

[a] For commissioning in the last quarter of Year -1

m^3 = cubic metres

The mining plan considers that higher grades ore will be processed first, and lower grade ores will be stockpiled and processed at the end of operations. During the last year, only low grade ore and marginal material stockpiled from the pit operations will be processed. Table 2.12 presents the evolution of the ore stockpiles.

Table 2.12 Evolution of Ore Stockpiles

Mine Year	Ore Stockpile 1 High Grade Ore from Underground (t)	Ore Stockpile 1 Low Grade Ore from Open Pits (t)	Ore Stockpile 2 Marginal Grade Ore from Underground (t)	Ore Stockpile 3 Marginal Grade Ore from Open Pits (t)
Yr-5	33,682[a]	0	338	0
Yr-4	33,682	0	1,325	0
Yr-3	33,808	0	1,930	0
Yr-2	85,088	0	71,515	0
Yr-1	**348,501**	0	208,192	0
Yr1	269,153	0	377,944	0
Yr2	65,982	0	537,587	0
Yr3	24,462	0	738,399	0
Yr4	0	191,790	881,165	30,046
Yr5	0	226,095	**937,634**	82,045
Yr6	0	**238,419**	**937,634**	116,549
Yr7	0	238,419	907,484	**174,699**
Yr8	0	0	0	0
Maximum	**348,501**	**238,419**	**937,634**	**174,699**

[a] Ore produced during underground decline development

Waste rock and Overburden

Waste rock from the open pits and underground mining not used for site development purposes will be trucked to the WRSFs until the end of mine operations. Overburden material stripped as part of the mine development will either be co-disposed within the WRSFs or be temporally stored within the Temporary Overburden Stockpile facility that will be used as cover material for progressive closure and reclamation of the TSF area.

It is currently proposed to manage the majority of the overburden material and waste rock in the same facilities as it is anticipated that overburden will have geochemical characteristics compatible with waste rock and the majority of overburden material will not be reused for mine closure (see Mine Waste Management Plan). Three areas have been identified for waste rock storage, as shown on Figure 1.2 and can be described as follows:

- Waste Rock Storage Facility 1 – located to the north of Tiriganiaq Pit 1 with an approximate footprint of 41.4 hectares (ha).
- Waste Rock Storage Facility 2 – located to the south of Pond H17 (Collection Pond 1 [CP1]) with an approximate footprint of 20.2 ha.
- Waste Rock Storage Facility 3 – located north of Tiriganiaq Pit 2, covering pond H20 with an approximate footprint of 22.7 ha.

Approximately 31.8 Mt (~16.9 M m^3 with assumed rock in-place wet density of 1.88 t/m^3) of waste rock will be mined. About 25.7 Mt of waste rock will be deposited in the WRSFs. About 2.0 Mt will be backfilled to the underground mine, 1.65 Mt will be used for construction activities, and 2.45 Mt of waste rock will be used as TSF closure cover material.

A breakdown estimate for the production schedule, quantities, and distribution of waste rock by year is presented in Table 2.13. The yearly plan for the waste rock placement is shown in Figures 5.2 to 5.15 of the Mine Waste Management Plan.

Table 2.13 Schedule, Quantities, and Distribution of Waste Rock by Year

Mine Year	Total Waste Rock from Mine Operation (t)	Utilization of Waste Rock (t)			Waste Rock to be Placed in WRSFs(t)		
		Industrial Pad Construction	Rockfill for Underground Backfill	TSF Closure Cover	WRSF1	WRSF2	WRSF3
-5	316,965[(a)]	316,965	0	0	0	0	0
-4	728,939	728,939	0	0	0	0	0
-3	583,679	583,679	0	0	0	0	0
-2	691,529	0	0	0	691,529	0	0
-1	764,683	0	31,910	0	732,773	0	0
1	959,950	0	190,180	160,929	608,842	0	0
2	858,544	0	235,839	164,214	458,491	0	0
3	4,814,425	19,268	188,991	128,402	4,477,764	0	0
4	6,397,857	0	349,005	236,634	3,221,661	0	2,590,557
5	6,703,080	0	364,965	411,296	0	3,059,326	2,867,493
6	6,172,183	0	370,885	239,114	0	3,093,548	2,468,635
7	2,803,418	0	319,338	533,194	0	977,528	973,358
8	0	0	0	313,774	0	-313,774	0
9	0	0	0	269,094	0	-269,094	0
Total	**31,795,251**	**1,648,851**	**2,051,112**	**2,456,651**	**10,191,060**	**6,547,534**	**8,900,043**
Volume (M m^3)[(b)]	**16.9**	**0.88**	**1.09**	**1.30**	**5.42**	**3.43**	**4.73**

[(a)] The amount include approximately 112,775 tonne of waste rock produced during development of ramp to underground mine before construction phase starting in Year-5

[(b)] M m^3 = million cubic metres; assumed rock in-place wet density of 1.88 t/m^3

Approximately 7.4 Mt of overburden material will be removed from the surface footprint of the two pits over the mine life. The approximate quantities and locations of overburden deposited on the site are listed in Table 2.14. The yearly plan for the overburden placement is shown in Figures 5.2 to 5.15 of the Mine Waste Management Plan.

Some overburden will be used for site infrastructure construction. These amounts are included within the quantities of the overburden placed into the WRSFs as shown in Table 2.14. The amount used for the construction will reduce the amount stored in the WRSFs. A small overburden stockpile as shown in Figure 1.2 is located at the east side of the TSF to temporarily store the selected till overburden to be used as closure cover material for the TSF. This temporary overburden stockpile will accommodate approximately 0.1 Mt of selected overburden and has a footprint of 1.12 ha.

Table 2.14 Schedule, Quantities, and Distribution of Overburden by Year

Mine Year	Total Waste Overburden from Mine Operation (t)	Utilization of Overburden (t)		Waste Overburden to be Placed in WRSFs (t)		
		Overburden Stockpile for TSF Closure Cover Construction	Withdraw from Stockpile for TSF Closure Cover Construction	WRSF1	WRSF2	WRSF3
-5	66,746	0	0	0	66,746	0
-4	200,239	0	0	0	200,239	0
-3	0	0	0	0	0	0
-2	0	0	0	0	0	0
-1	0	0	0	0	0	0
1	0	0	0	0	0	0
2	2,038,237	0	0	2,038,237	0	0
3	4,328,239	94,816	0	4,233,423	0	0
4	627,383	0	0	236,246	0	391,137
5	97,830	0	20,844	0	0	97,830
6	0	0	0	**0**	0	0
7	0	0	26,737	0	**0**	**0**
8	0	0	0	0	0	0
9	0	0	47,235	0	0	0
Total	**7,358,674**	**94,816**	**94,816**	**6,507,906**	**266,985**	**488,967**
Volume ($M\ m^3$)[(a)]	**4.54**	**0.06**	**0.06**	**4.02**	**0.16**	**0.30**

[(a)] $M\ m^3$ = million cubic metres; assumed in-place wet density of 1.62 t/m^3

Communication/Fleet Management System

The fleet management data collection system will include mobile Wi-Fi communication towers. Screen, GPS, and Wi-Fi access will be installed in each machine. The system will be similar to the one installed at the Meadowbank Mine.

Open Pit Mobile Equipment

The fleet selection for the Project will be based on the efficiency, availability, fuel consumption of the equipment, and the average and the peak utilization rates during the LOM. The fleet will be used on two 12-hour shifts daily.

The maintenance department will fully maintain and repair the mobile equipment fleet, performing maintenance planning and training of employees. A maintenance control system will be implemented to manage maintenance and repair operations, linking with the parts management and inventory system.

2.2.5 Environmental Management

On-site water management including strategies, design criteria, systems, and control structures as these relate to the overall Project and infrastructure components is provided in the detailed Water Management Plan. Open pit water management involves the following:

- Fresh water and for dust/freezing control will be sourced from Meliadine Lake.
- Contact water will be used for drilling.

Sumps will be maintained in each of the open pits to collect any contact water or seepage. These sumps will be regularly pumped to CP5 for eventual pumping into CP1.

During open-pit mining, surface water with the potential to encroach on the pits will be controlled by construction Berm3 and D-CP5. Groundwater seepage into each of the pits is not anticipated since their maximum depth is much shallower than the average permafrost thickness.

Dust will be managed for environmental and safety reasons on pit haul ramps by spraying water whenever needed from a water truck. An effective blast pattern control will help minimize dust generation during blasting.

Equipment efficiency with reference to energy consumption will be ensured by following a regular maintenance schedule. In addition to enhancing overall equipment efficiency, such programs help prevent time lost due to equipment break down.

2.3 Underground Mining

A proposed 7.5 Mt of ore at an average grade of 8.65 g/t will be mined underground within the Tiriganiaq deposit. An estimated 0.94 Mt of marginal grade material at 3.42 g/t from the underground mine will be hauled and stockpiled on surface, then processed. The underground mine will feed the process plant at a nominal rate of 3,000 tpd in Year 1 to Year 7. Process plant feed from the underground is planned to start in the last quarter of Year -1. For additional information refer to the Ore Storage Management Plan.

Access to all underground workings is via one of two declines as shown on the longitudinal cross section of the Tiriganiaq deposit in Figure 2.7. The existing portal will be used as the initial mine access for pre-development, from which the existing Decline 1 will be extended to the 300 Level. At this point, pre-development will concentrate on pushing west to connect with Decline 2 from a newly constructed surface portal. During production, Decline 2 will be used as the trucking ramp and the main access for the underground mine. Decline 1 will remain as a secondary egress point and will provide direct access to the upper part of the mine.

The Tiriganiaq underground resource extends from 100 m below surface to 625 m below surface. The main underground mine consists of 21 levels, with one additional level extending to the east. The east section is accessed via a 250 m footwall drive extending from the 175 Level. All levels are set at 25 m intervals.

2.3.1 Underground Mining Method

A long-hole mining method was selected for the underground due to the shape, thickness and orientation of the orebody. The stope height was set at 25 m to minimize drill deviation and waste rock dilution, and maximize recoveries. Transverse and longitudinal stopes will be mined; the variant selected for a particular stope will depend on the ore zone thickness.

Considering the grade of the Tiriganiaq underground resource, ore recovery will be maximized by backfilling primary stopes with cemented paste backfill, whereas secondary stopes will be backfilled with uncemented rockfill. However, during operations, the flexibility to leave some rib pillars between primary and secondary stopes will be considered at specific locations where the geometry of the lodes (narrowing) and/or the ore grade justify it. The primary and secondary transverse stope width is set at 18 m. Longitudinal stopes are also set at 18 m long, but may be adjusted during operations, depending on the geometry of the individual lodes.

Transverse Mining Method

Transverse mining will be adopted for stopes with a local true ore-zone thickness of 4 m (average) or more. Transverse stopes will be mined according to a primary and secondary pyramid sequence. Primary stopes will be backfilled with cemented paste fill, whereas secondary stopes will be backfilled with uncemented rockfill. Stopes are sequenced to be extracted up to a maximum rate of 20 per year from a single transverse pyramid, depending on its size.

Longitudinal Mining Method

In general, longitudinal mining is adopted for stopes with a local true ore-zone thickness averaging less than 4 m. The longitudinal mining sequence requires each stope to be backfilled before an adjacent stope can be mined. Due to the curing time of the cemented paste backfill, a maximum of six stopes per year are planned from any single longitudinal mine sequence pyramid.

Ground Support

The ground support for the planned underground infrastructure was derived from results of geotechnical data analyses. Ground support underground will primarily be provided by bolting and screening as well as cable bolting. Cable bolting requirements for intersections and stopes were estimated using typical cable bolting patterns.

Ground support in development will consist of rebar or Swellex in the backs of excavation, and split sets in the walls. Drifts oriented parallel to the foliation in the east-west direction can be shaped to match the rock mass' natural tendency to break back to joint surfaces.

All underground infrastructure excavations will also be supported. One hundred mm (4") of shortcrete will be added to permanent excavations such as the maintenance bays, garage, and main refuges. Fifty mm (2") of shortcrete over the screen will be applied in lunchrooms, electrical substations, sump areas, and other minor permanent excavations.

Stope Support

Stopes will be excavated at width of 6 m in primary and secondary transverse stopes. Primary drift support will be installed during the excavation of the stope drifts. Stope support will be installed after the excavation of the drifts and will consist of bulged single strand cable bolts in primary stopes. In secondary stopes, the cables will be tensioned with plates and barrel and wedge assemblies. Cable bolt performance depends largely on the cable configuration (bulged versus plain strand), installation mode and grout strength. In situ testing of grout strength and cable bolt performance monitoring will be required in the early stages of mine development.

Longitudinal stopes will be supported with 7 m long bulged cable bolts in the back and 5 m long cable bolts in the hanging wall and footwall for 9 m wide stopes. Connectable Pm24 inflatable bolts may be used instead of cable bolts. If grout strength and/or quality assurance is found inadequate, connectable inflatable Pm24 bolts of equivalent length will be used instead of cable bolts.

Portal 2

Access to the underground mine will be by a portal from surface. At the portal, a multi-plate structural arch will be installed to stabilize the opening and protect it during inclement weather (Figure 2.8). The arch will have a span of 5.8 m, a height of 5.3 m, and a length of 100 m from portal to surface to accommodate the passage of major underground equipment.

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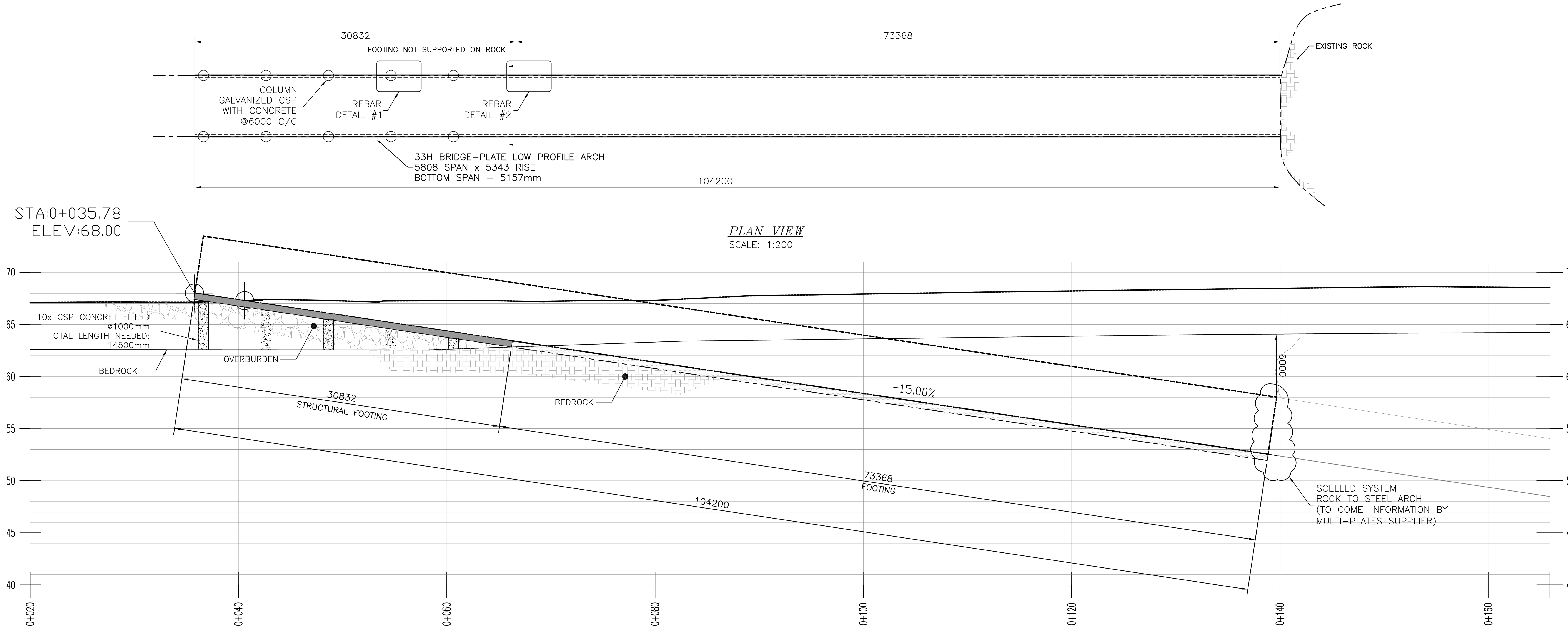

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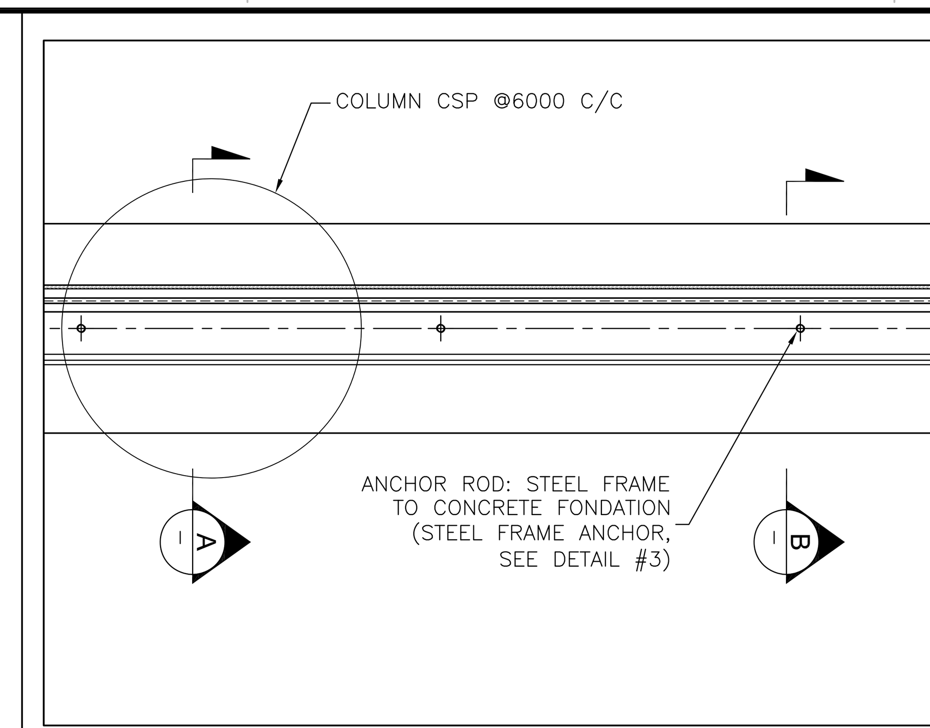
SIDE VIEW
SCALE: 1:200



DETAIL #1 (ON COLUMN)
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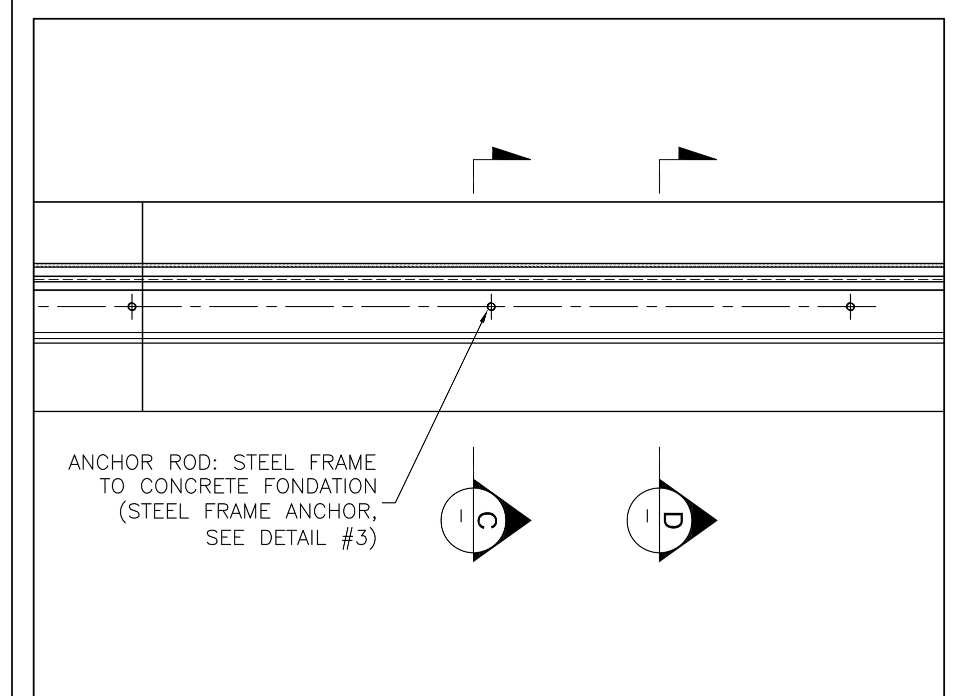
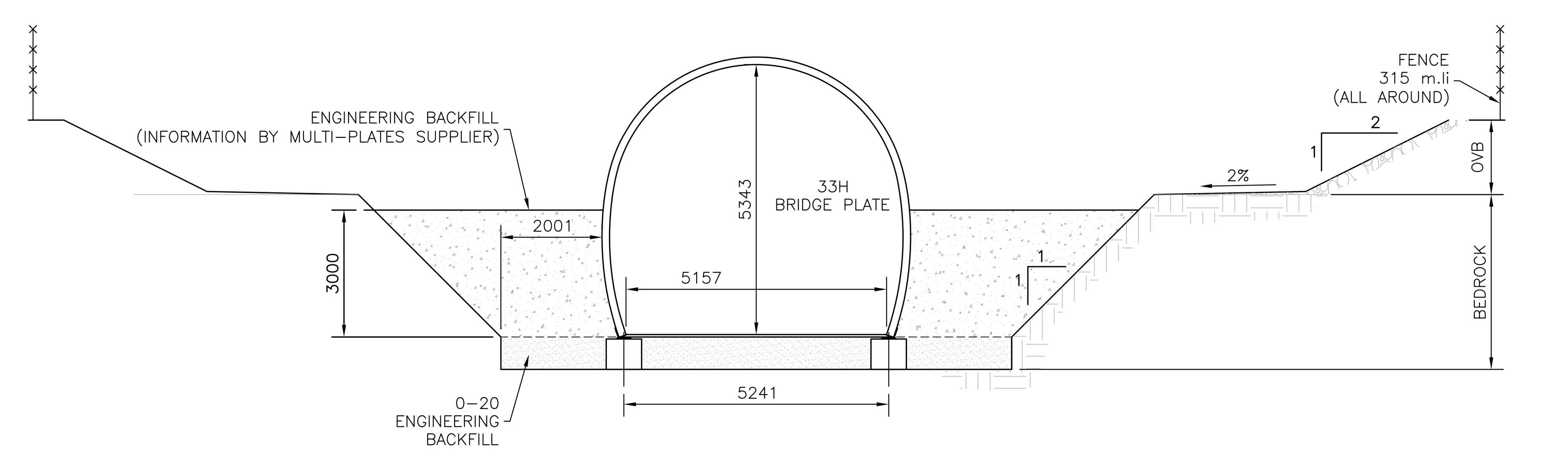
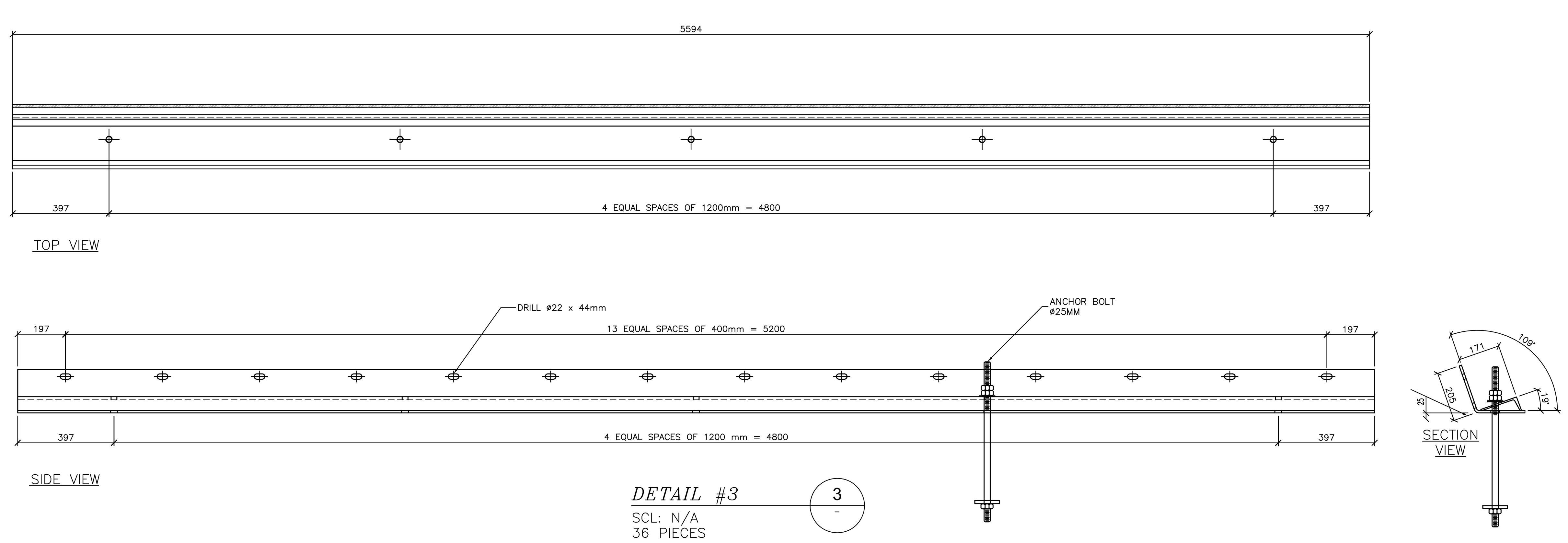


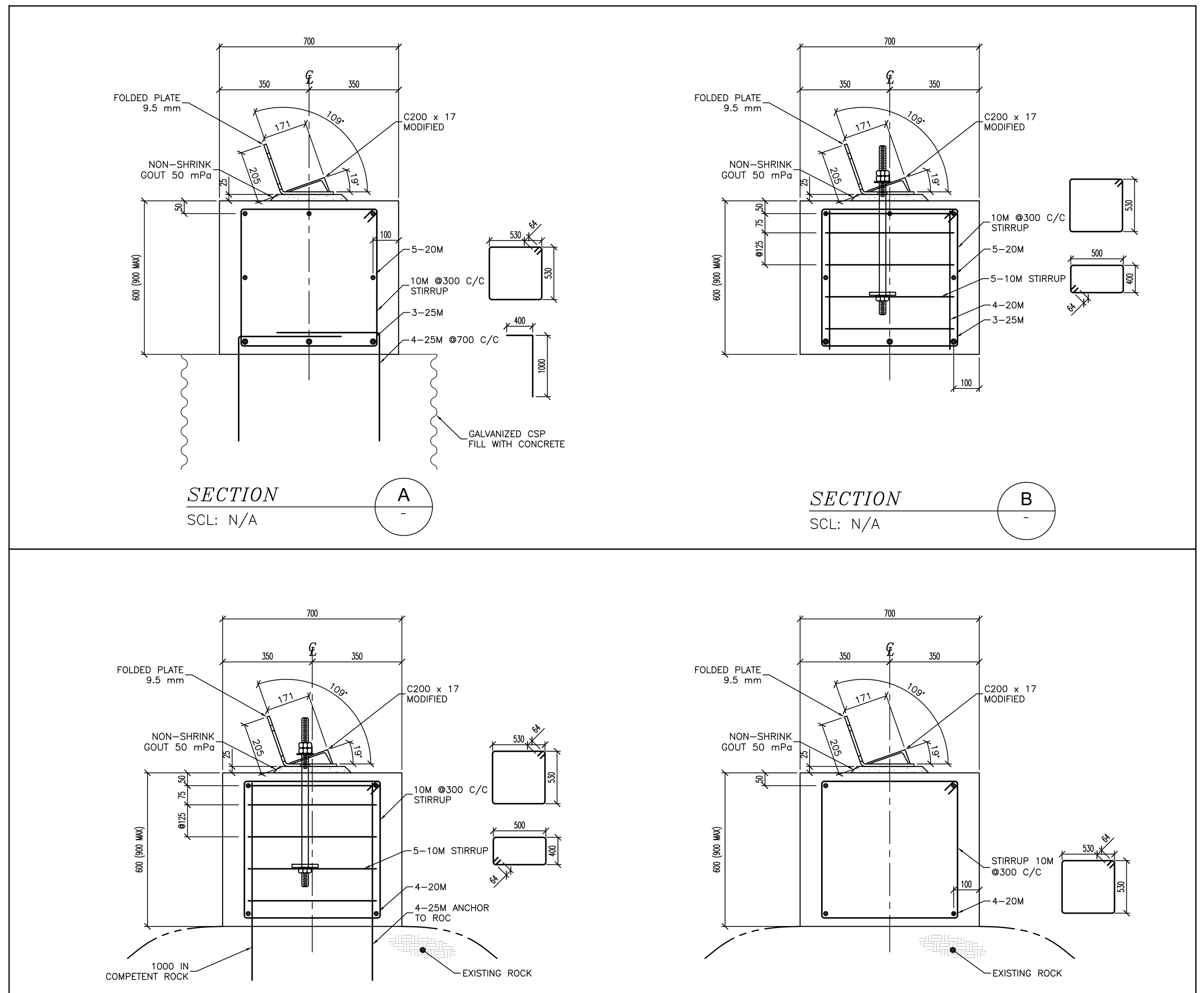
DETAIL #2 (ON ROCK)
SCL:1:20



FRONT VIEW
SCL: 1:100



DETAIL #3
SCL: N/A
36 PIECES



SECTION A
SCL: N/A

SECTION B
SCL: N/A

SECTION C
SCL: N/A

SECTION D
SCL: N/A

PLAN CLÉ
KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

ISSUED FOR PERMITTING
AGNICO EAGLE
DATE : 2014-12-23

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
1	2014-09-09	SLOPE EXCAVATION CORRECTION	J.C.	S.G.	
0	2014-08-28	ISSUED FOR BUDGET EVALUATION	J.C.	D.L.	
A	2014-08-28	ISSUED FOR INFORMATION	J.C.	S.G.	

REVISIONS

FIGURE 2.8

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
492 – RAMP PORTAIL (#2)
210 – GENERAL ARRANGEMENT
GENERAL ARRANGEMENT
ARCH PORTAIL – RAMP #2
CONCRETE, STEEL & EARTH WORK

DESSINÉ PAR / DRAWN BY	JOCELYN CRETE	DATE 2014-08-28
VERIFIÉ PAR / CHECKED BY	SYLVAIN GUAY	2014-08-28
APPROUVÉ PAR / APPROVED BY		
ÉCHELLE / SCALE	A/S	DATE 2014-08-28

NO. DESSIN / DRAWING NO. 6509-492-210-001

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
6509	1	1 / 1

AE-CART-ARCH D

C:\Users\jocelyn.crete\Desktop\FIGURE\FIG 2.10 2.11 6509-492-210-001.dwg-2013-02-19 14:03:29

FILE NO. FIG 2.10 2.11 6509-492-210-001.dwg

Rock Handling System

All rock (ore and waste) going to surface from underground will be trucked (CAT AD60) using mainly the Portal 2. Ore will be either sent to the crusher plant located at surface close to the processing facility, or stockpiled on specific ore stockpiles to be processed later on. Waste rock generated during the development and not used for backfilling will also be trucked to surface and stockpiled.

Dilution Estimates

On average, for Lode 1000, 1 m of overbreak is expected from the footwall and 1 m from the hanging wall. For the other lodes, average overbreak of 0.5 m is expected in the footwall and 1 m in the hanging wall due to the jointing pattern and shallow dip of the orebody.

2.3.2 Operations

Mine Development Schedule

A development schedule for the underground was designed so that the stopes will be available on time to sustain the process plant feed rate of 3,000 tpd in Year 1 to Year 3, and 5,000 tpd in Year 4 to 8 (including 2,000 tpd from the open pits). The majority of the development plan will use multiple faces (Multi face) and flexibility will be present to achieve design targets.

Table 2.6 indicates the production schedule and quantities of ore by year for Tiriganiaq and pre-production work. A total of 76 km of development will be required to access and develop the different stopes on time. The development of Decline 1 to access the different horizons and levels is on the critical path and will be prioritized. For this purpose, a contractor will be appointed in Year -5 to resume the development of this decline and also to develop Decline 2 to allow for haulage of the ore and waste to surface. The contractor will remain until Year -3 when Agnico Eagle development teams will be appointed.

Drilling and Blasting

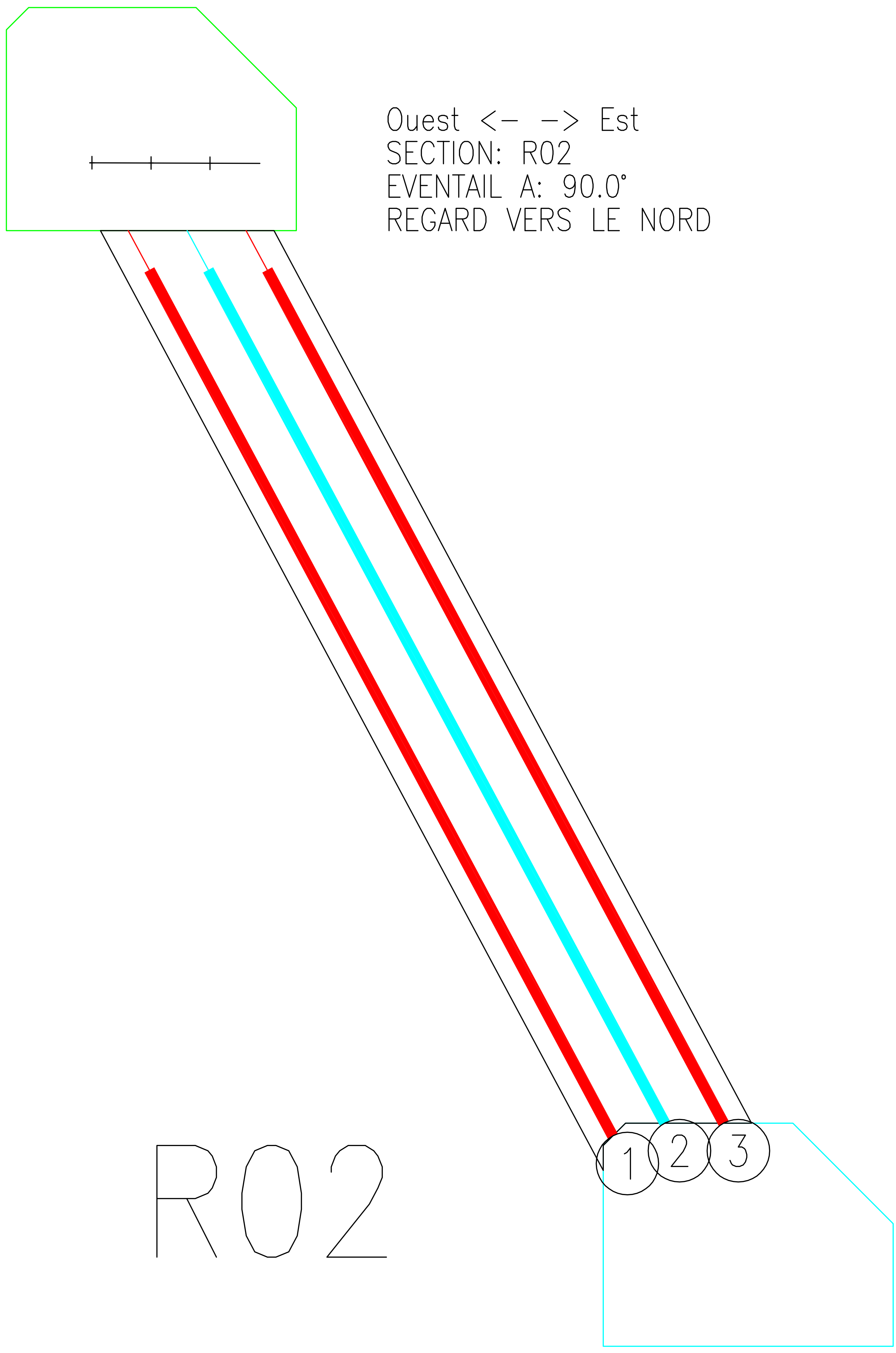
Longitudinal stopes will be drilled using 89 mm holes with a 762 mm (30 inch) slot. The average drilling factor was calculated to be 6.98 tonnes yielded per metre drilled. The average powder factor was calculated to be 0.9 kg of emulsion explosive required to blast 1 tonne of stope ore.

Transverse stopes will be drilled using 102 mm holes with a 762 mm (30 inch) slot. The average drilling factor was calculated to be 10.04 tonnes yielded per metre drilled, and the average powder factor to be 0.65 kg/t of ore blasted. These factors were derived from drill and blast designs constructed for average longitudinal and transverse primary stopes layouts (see Figure 2.9 and

Figure 2.10), and were used to calculate drilling and explosive requirements for both types of stopes.

Similar to the open pit operations, bulk emulsion product manufactured on-site will be used for the underground development and production. The product will be pumped inside the development holes or production blastholes using a loading unit specific for the application (development or production). Detailed information on explosives management is provided in the Explosives Management Plan.

Forage				Sautage				
Trou No.	Dist.ref. (m)	Angle (deg)	Long. (m)	Type Explosif	Collet	Long.Expl. (m)	Expl. end	Expl. Kg
1	3.8 W	−61.9 E	23.0	EMULSION	1.0	22.0	23.0	167
2	2.4 W	−61.9 E	22.7	EMULSION	1.0	21.7	22.7	165
3	1.1 W	−61.9 E	22.7	EMULSION	1.0	21.7	22.7	165
			68			65		497



REV	DESCRIPTION	DATE	PAR/BY
REVISIONS			

SERVICES TECHNIQUES

AGNICO EAGLE

DESSINÉ PAR/DRAWN BY: VICKY GALARNEAU — DATE: 2014−07−07

VÉRIFIÉ PAR/CHECKED BY: JULIEN MARCOTTE, ing. jr. — DATE: 2014−07−10

APPROUVÉ PAR/APPROVED BY: DENIS CARON, ing. — DATE: 2014−07−10

No. PROJET/PROJECT NO.: 6509 — ÉCHELLE/SCALE: 1: 100 — FEUILLE/SHT: 4/6

TITRE / TITLE: AGNICO EAGLE −MELIADINE PROJECT
200−MINE UG GENERAL SITE
SECTION
DRILL AND BLAST − LONGITUDINAL

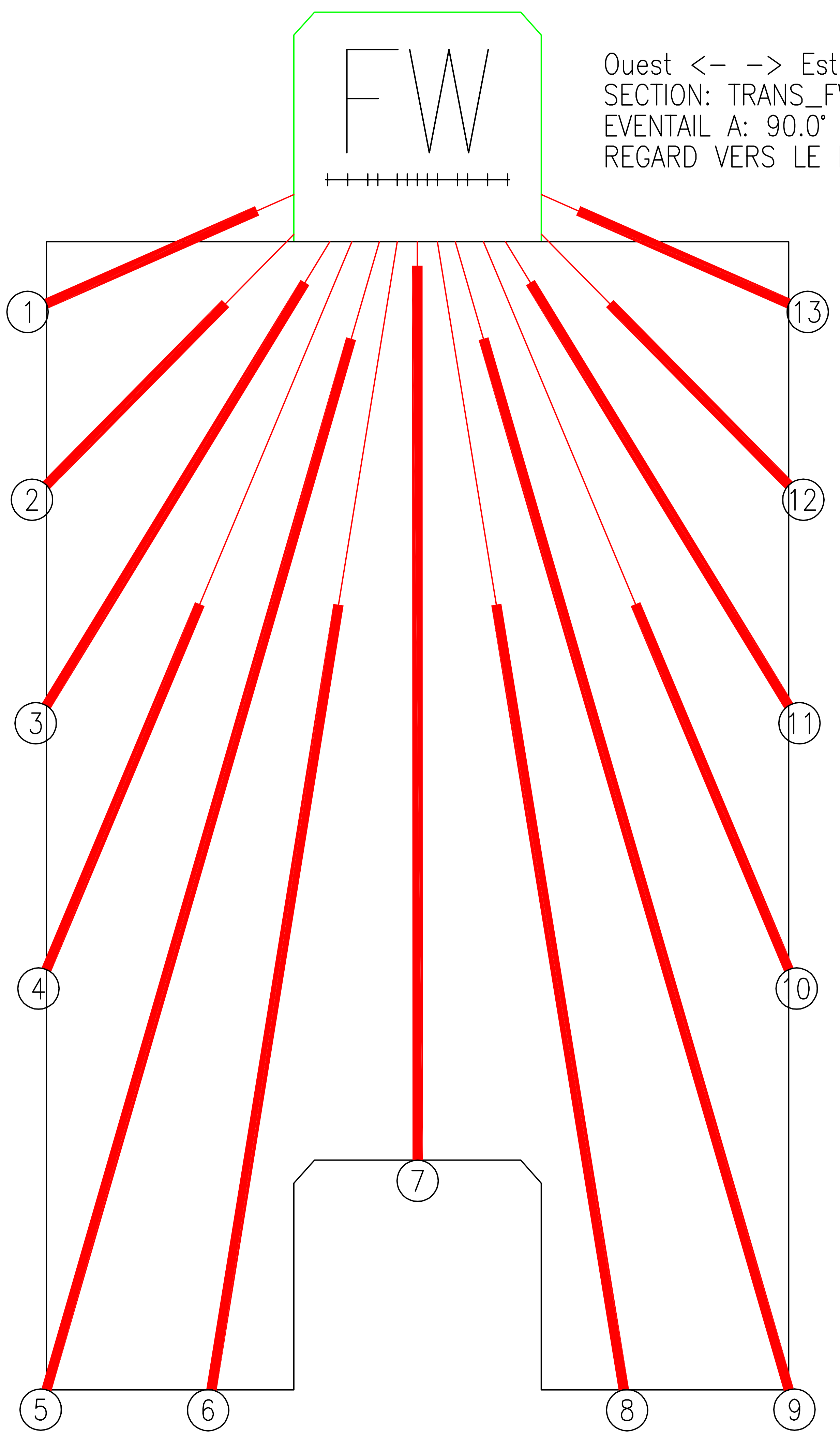
FIGURE 2.9

No. DESSIN/DRAWING NO.: 6509−TIR−200−000−002 — REVISION: A

t:\Regional\Groupe\Meliadine\050 Studies\6509 FS Phase 2\010 Info by area\200 Mine UG General Site\00 Drawings\6509-TIR-200-000-002_RA-drill_blast_Long.dwg , 2015-01-14 08:33:57

Forage				Sautage				
Trou No.	Dist.ref. (m)	Angle (deg)	Long. (m)	Type Explosif	Collet	Long.Expl. (m)	Expl. end	Expl. Kg
1	0.0 E	−23.8 W	6.6	EMULSION	1.0	5.6	6.6	55
2	0.5 E	−45.4 W	8.5	EMULSION	2.1	6.5	8.5	63
3	1.0 E	−58.6 W	13.2	EMULSION	1.2	12.0	13.2	118
4	1.2 E	−67.2 W	19.1	EMULSION	8.2	10.9	19.1	107
5	1.7 E	−73.8 W	29.0	EMULSION	2.5	26.5	29.0	259
6	1.9 E	−80.8 W	28.2	EMULSION	8.9	19.3	28.2	189
7	2.2 E	−90.0	22.3	EMULSION	0.6	21.7	22.3	212
8	2.4 E	−80.8 E	28.2	EMULSION	8.9	19.3	28.2	189
9	2.7 E	−73.8 E	29.0	EMULSION	2.5	26.5	29.0	259
10	3.2 E	−67.2 E	19.1	EMULSION	8.2	10.9	19.1	107
11	3.4 E	−58.6 E	13.2	EMULSION	1.2	12.0	13.2	118
12	3.9 E	−45.4 E	8.5	EMULSION	2.1	6.5	8.5	63
13	4.4 E	−23.8 E	6.6	EMULSION	1.0	5.6	6.6	55
			232			183		1794

Ouest <− −> Est
SECTION: TRANS_FW
EVENTAIL A: 90.0°
REGARD VERS LE NORD



REV	DESCRIPTION	DATE	PAR/BY

REVISIONS

SERVICES TECHNIQUES

AGNICO EAGLE

DESSINÉ PAR/DRAWN BY: VICKY GALARNEAU	DATE: 2014−07−07	
VÉRIFIÉ PAR/CHECKED BY: JULIEN MARCOTTE, ing. jr.	DATE: 2014−07−08	
APPROUVÉ PAR/APPROVED BY: DENIS CARON, ing.	DATE: 2014−07−08	
No. PROJET/PROJECT NO.: 6509	ÉCHELLE/SCALE: 1:125	FEUILLE/SHT: 2/7

TITRE / TITLE
AGNICO EAGLE −MELIADINE PROJECT
200−MINE UG GENERAL SITE
SECTION FIGURE 2.10
DRILL AND BLAST − TRANSVERSAL

No. DESSIN/DRAWING NO.: 6509−TIR−200−000−001
REVISION: A

I:\Regional\Groupe\Meliadine\050 Studies\6509 FS Phase 2\010 Info by area\200 Mine UG General Site\00 Drawings\6509-TIR-200-000-001_RA-drill_blast_Trans.dwg , 2015-01-14 08:31:53

Backfilling

The longitudinal mining sequence requires each stope to be backfilled before an adjacent stope can be mined. Primary stopes will be backfilled with cemented paste whereas secondary stopes will be backfilled with dry uncemented rockfill only. The majority of rockfill demand can be met by the transfer of waste from development headings. Any additional rockfill needed will be trucked from the waste stockpile generated from the open pit operations. This will become necessary in Year 3 and will continue in the following years.

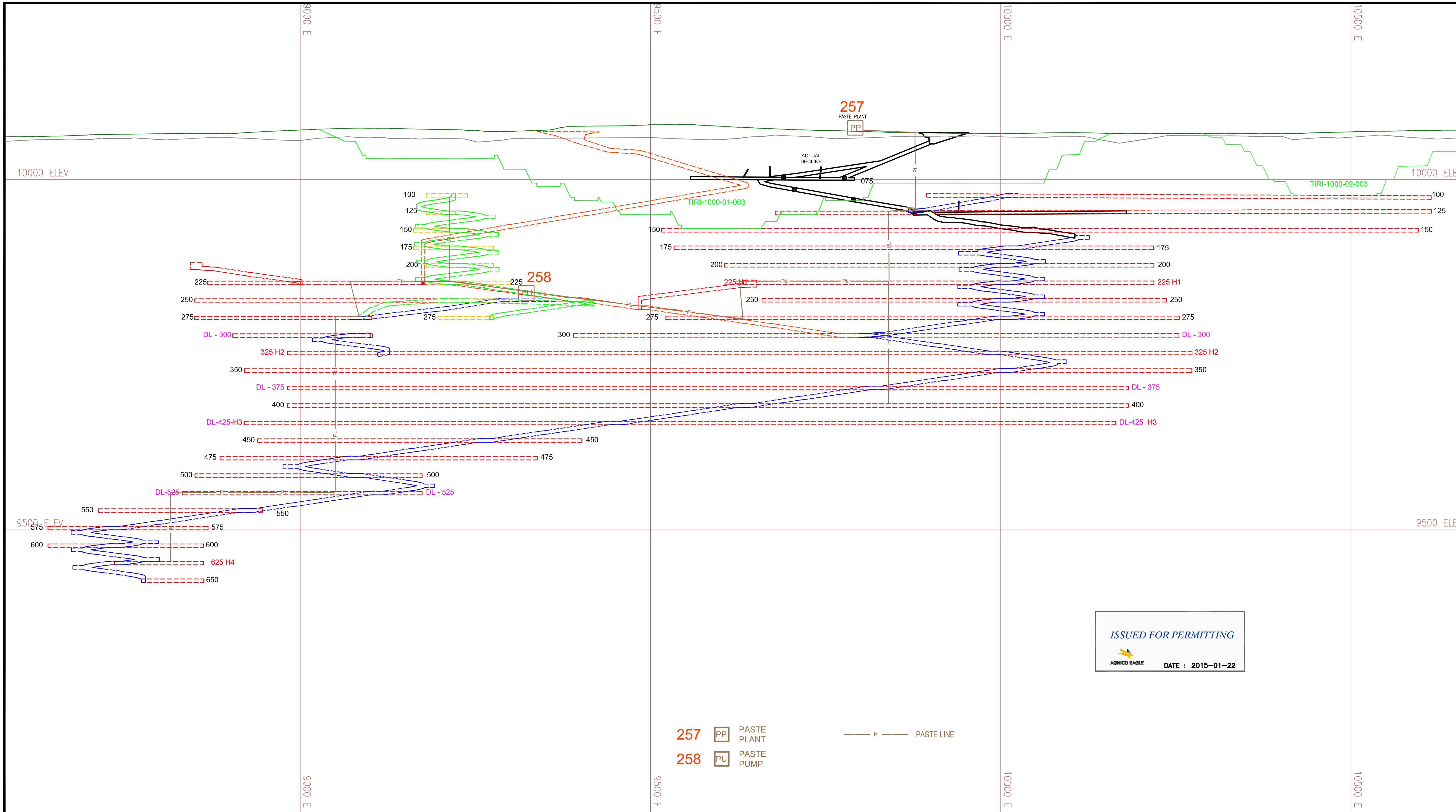
The cemented paste backfill will be made by mixing pressed filtered tailings, cement, and water in a facility located next to Mine Portal 1 The tailings will be trucked by the same trucks used to haul the tailings to the TSF, and will be discharged into a hopper. The main equipment in the paste backfill plant consists of a system for cement storage and addition, one mixer and one paste pump. The auxiliary equipment are the feeders for the tailings and the water distribution system used to adjust the viscosity of the paste and flush the line. Similar to the tailings, the cement will be discharged first into a hopper using a hydraulic inclining ramp, from which it will be blown into a 200 t cement silo.

The paste plant will be located approximately 1.5 km from the process plant to minimize pumping costs and avoid freezing difficulties during winter. Two boreholes will be used to backfill the mine: one is located at 250 m from the paste plant, and the other at 350 m. The targeted production rate for the paste plant is calculated at 3,000 tpd, with an average utilisation of 49 % over the LOM; a rate that complements underground production and provides more flexibility for plant maintenance. Based on 110 tpd of operation, the cement requirement varies between 4,700 and 20,600 tonnes per year over the LOM. Additional tests will be performed as part of detailed design of the Project to investigate more effective binders and to address the behaviour of the backfill in cold environments.

Paste Distribution System

The location of the paste plant reduced significantly the number of high pressure paste pumps required (compared to locating within the processing facility) while at the same time maintaining an acceptable paste line pressure. The design pipeline has an external diameter of 150 mm with a schedule 80 wall thickness. The average speed of the paste in the line would be 1.0 metres per second. Based on the rheological report prepared by Golder (2013b), the pressure loss expected in the line is 12.4 kPa/m with 76.5% solids (equivalent to 17.8 cm slump).

The paste distribution system is based on two boreholes and two reticulation system backbones. The first backbone, distributing the paste in the east part of the mine, is fed by a borehole having a length of 83 m (magenta line in Figure 2.11). The second backbone, distributing the paste in the west part of the mine, is fed by a borehole having a length of 271 m (yellow line in Figure 2.11).



REV	DESCRIPTION	DATE	PAR/BY
0	Final issue	2015–01–12	F.P.

REVISIONS

SERVICES TECHNIQUES

AGNICO EAGLE

DESSINÉ PAR/DRAWN BY: FREDERIC PARENT — DATE: 2015–01–12

VÉRIFIÉ PAR/CHECKED BY: SERGE OUELLET ing. — DATE: 2015–01–12

APPROUVÉ PAR/APPROVED BY: DENIS CARON ing. — DATE: 2015–01–12

No. PROJET/PROJECT NO.: 6509 — ÉCHELLE/SCALE: 1:5000 — FEUILLE/SHT: 1/1

TITRE / TITLE: AGNICO EAGLE – MELIADINE PROJECT
258 – UG PASTE DISTRIBUTION
LONGITUDINAL

FIGURE 2.11

TIRIGANIAQ PASTE DISTRIBUTION

No. DESSIN/DRAWING NO.: 6509–TIR–258–000–001 — REVISION: 0

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Figure 2.11 shows the longitudinal section of the underground mine with the two paste distribution backbones, and the east and the west distribution cone limits. Stopes located beyond the west limit would need to be backfilled with a paste having a lower viscosity than the ones inside the limits. The required maximum pressure to distribute the paste inside the cone limits is estimated to be 130 bars.

Underground Ventilation System

The *NWT Mine Health and Safety Act* and Regulations (NWT 2005) requires 0.06 m^3 per second of fresh air for each kilowatt of the diesel powered equipment operating at the work site. A total volume of required fresh air was calculated, based on Canmet regulation and expected utilization factors.

The ventilation was designed with all main fans located on surface, on the north side of the proposed open pit. The ventilation raises were located in areas with the least possible overburden thickness to simplify the ventilation building construction, especially for the foundation and the sealing of the elbow connection going underground. Particular attention will be paid to the location of the ventilation building during blasting activities in the open pits. Figures 2.12 and 2.13 illustrate the technical details and plan views of proposed ventilation infrastructure.

The fresh air will downcast through two main Fresh Air Raises (FAR) of 6.5 m diameter located at each extremity of the ore body. The air will be distributed underground through 4.5 to 4.8 m diameter FAR and fresh air drifts connected to the mining horizon. A temporary FAR will be necessary in Year -5 for decline development.

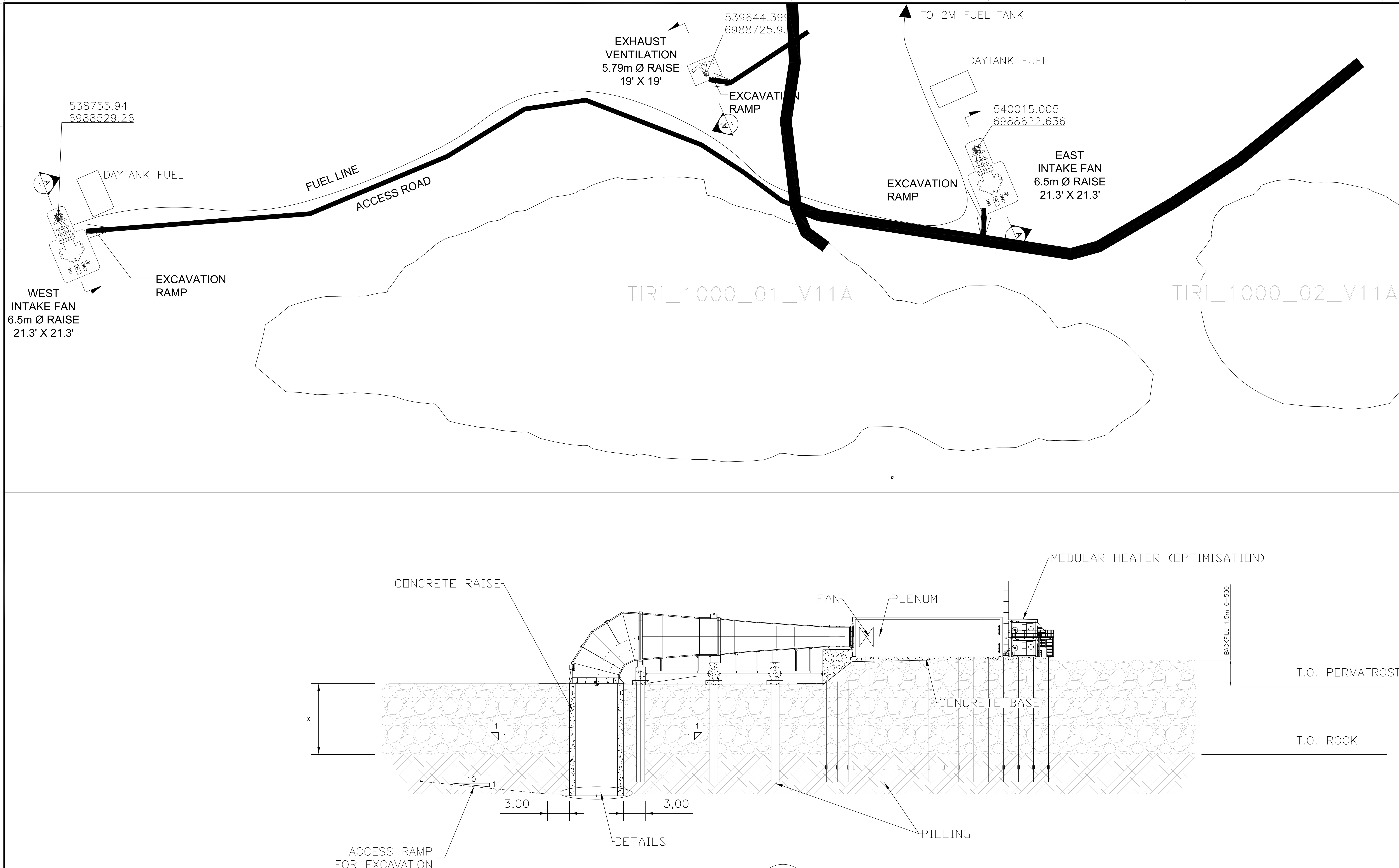
Most of the exhaust air will return to surface through a network of internal Return Air Raises (RAR) with a diameter of 4.8 m, leading to a main RAR of 5.8 m diameter to surface. Return air will also be exhausted to surface via the service and production ramps. Figure 2.14 illustrates the ventilation network and the installed fan horsepower per raise.

Figure 2.12 Overview of the Localization intake East, West, and Exhaust Showing Other Infrastructure

ISSUED FOR PERMITTING

AGNICO EAGLE

DATE : 2014-12-23



SECTION A
1:250

A' : INTAKE SECTION SHOWN – EXHAUST : SAME DESIGN
SEE DRAWING #6508-240-210-200 FOR DETAILS

*OVERBURDEN: ±6,75 WEST INTAKE FAN
±9,75 CENTER EXHAUST FAN
±3,75 EAST INTAKE FAN

ISSUED FOR PERMITTING
DATE : 2014-12-23

NOTES GÉNÉRALES / GENERAL NOTES

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
0	2014-09-29	ISSUED FOR BUDGETARY	J.C.	D.L.	
B	2014-08-07	FOR INFORMATION	KBB		
A	2014-07-28	FOR INFORMATION	F.D.	K.B.B.	

REVISIONS

FIGURE 2.13

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
240 – MAIN VENTILATION & EMERGENCY EGRESS
230 – EARTH WORK
PLAN & SECTION
VENTILATION SYSTEM – TYPICAL GROUND INSTALLATION

DESSINÉ PAR / DRAWN BY	JOCELYN CRETE	DATE 2013-12-18
VERIFIÉ PAR / CHECKED BY	DANY LAFLAMME	2013-12-18
APPROUVÉ PAR / APPROVED BY	DANY LAFLAMME	2014-10-08
ÉCHELLE / SCALE	A/S	DATE 2013-12-18

NO. DESSIN / DRAWING NO. 6509-240-230-001

NO. PROJET / PROJECT NO. 6509 | REVISION 0 | FEUILLE / SHT 1/1

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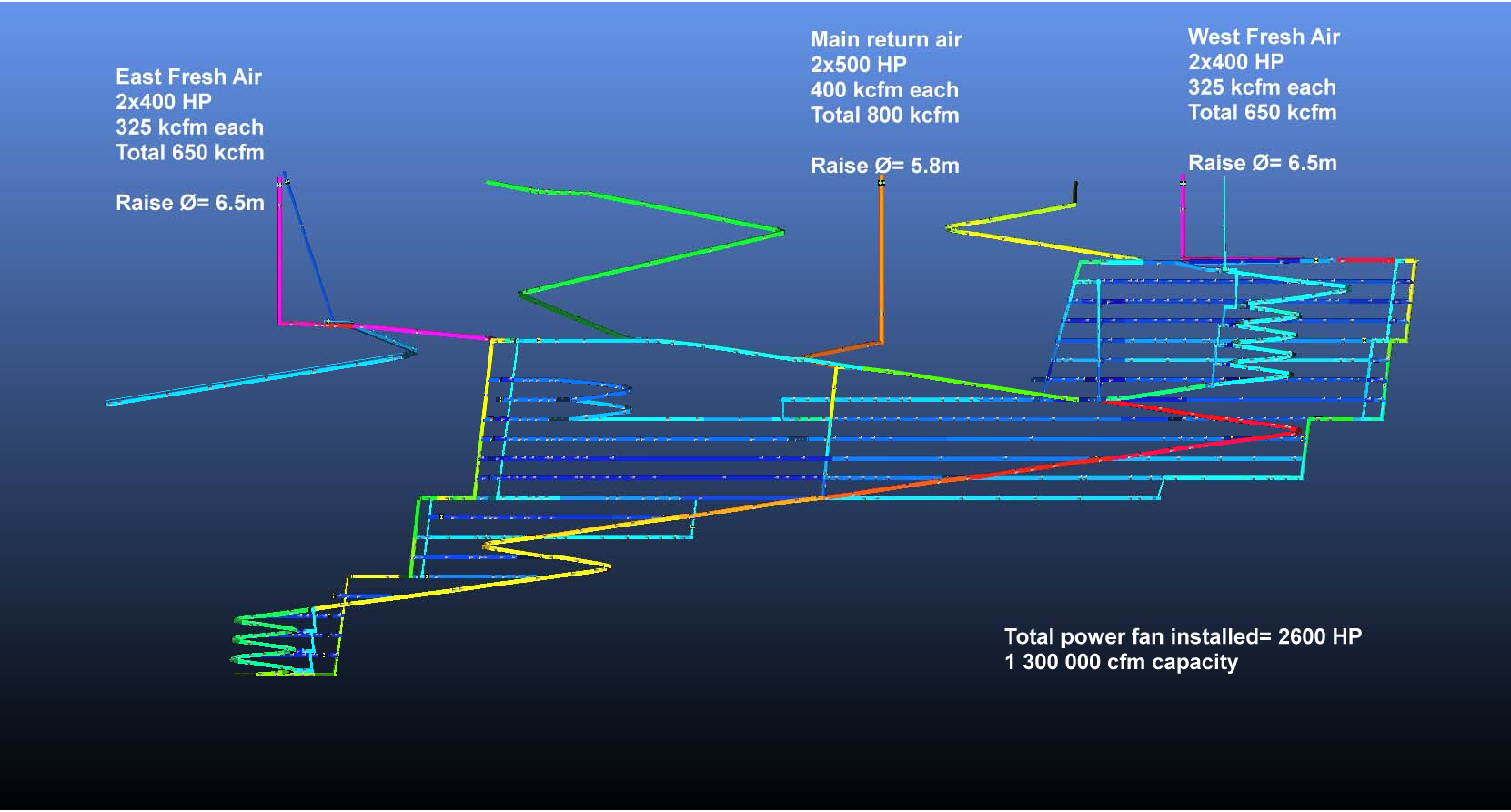


FIGURE 2.14 Ventilation Network and Installed Fan Horsepower Per Raise

The main fans have been designed for parallel fan installation complete with a heating system for winter months. All fans are mounted with variable frequency drive which gives flexibility in the air volume capacity to meet production requirements. The fan capacities were designed by Alphair Ventilation Systems Inc. in cooperation with Stantec.

Mine Air Heating

Permafrost extends to a depth of between approximately 360 and 495 m at the proposed mine site. Tiriganiaq mining will occur simultaneously within and below permafrost. Development will reach below permafrost at the end of Year -3, while production below permafrost starts in Year 2. Based on the experience of other northern mines, the entire underground mine will need to be heated. The required infrastructure for this will be installed during the initial mine site construction.

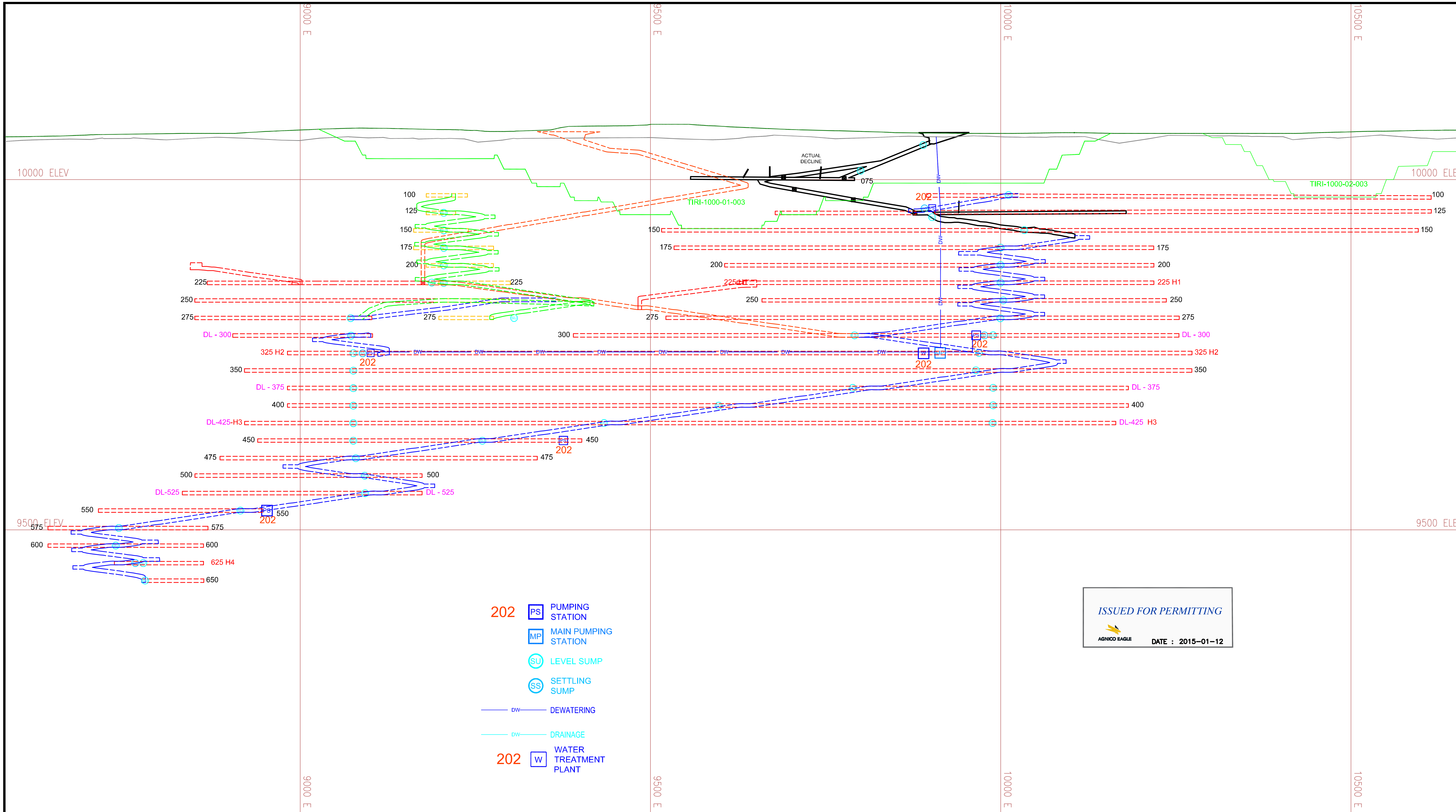
The mine air heating infrastructure consists of multiple indirect oil fired air heaters and heat exchangers per raise. The heat will come from both the heat recovery system at the power house and from direct fuel heating. Annual fuel consumption for the mine air heating will be around 4 million litres (ML).

A diesel-fired indirect heating system will be installed on each FAR intake to the mine, excluding the ramp FAR. The heating system is designed to heat intake air to a maximum temperature differential of 44°C (from -42°C to 2°C). The heating system has been designed with ACI CANEFCO support. The device consists of 12 modules per intake raises (FAR) for heat recovery coils per intake connected to two plenums, which lead to two headings and then link to the transfer elbow for underground feeding.

The heat recovery from the power plant remaining after heating all of the site buildings will be sent to the ventilation heating system. This heat recovery represents 4.1 MW of energy that will be added to the heating system allowing a reduction of annual heating costs by 10 to 12%.

Underground Water Distribution

The primary underground water source will be the main sump at 325 Level. Water will be distributed around the mine via a piping network. The sump is divided by a baffle for settlement of sediments. The sump will initially be filled with freshwater pumped from Meliadine Lake and then re-circulated. The sump will also be filled three times per year with freshwater from Meliadine Lake. Depending upon water availability, contact water from surface may also be used to refill the sump. Figure 2.15 illustrates the complete underground pumping station system. The risk associated with water freezing in the mine is low due to the approximate 2°C temperature that will be maintained underground. Also, the water in the 325 Level sumps will be mixed with the underground saline water, which will depress the freezing temperature of the water.



REV	DESCRIPTION	DATE	PAR/BY
0	Final issue	2015-01-12	F.P.

REVISIONS

SERVICES TECHNIQUES

AGNICO EAGLE

DESSINÉ PAR/DRAWN BY	FREDERIC PARENT	DATE	2015-01-12
VÉRIFIÉ PAR/CHECKED BY	SERGE OUELLET ing.	DATE	2015-01-12
APPROUVÉ PAR/APPROVED BY	DENIS CARON ing	DATE	2015-01-12
No. PROJET/PROJECT NO. 6509	ÉCHELLE/SCALE 1:5000	FEUILLE/SHT	1/1

TITRE / TITLE

AGNICO EAGLE – MELIADINE PROJECT

UNDERGROUND PUMP STATION SYSTEM FIGURE 2.15

TIRIGANIAQ DEWATERING NETWORK

No. DESSIN/DRAWING NO. 6509-TIR-202-000-001 REVISION 0

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Underground Dewatering System

Underground mine dewatering must take into consideration two different water streams: saline water from groundwater inflows, and mine water (also saline) from drilling and other operations. Due to the permafrost, groundwater inflow is only expected at levels below the permafrost layer (approximately 360 m to 495 m below surface). The dewatering infrastructure is designed assuming a water inflow of 525 m^3/day at steady state under permafrost, and assuming maximum recirculation of the water for operations. A hydrogeological study is planned for 2015 and 2016 to increase the accuracy of estimates of groundwater flow and quality. Depending on the results, the groundwater management plan will be adjusted accordingly.

The underground dewatering infrastructure consists of:

- a pumping station on all levels;
- a main pump station, which includes a primary settling sump and a clean water sump at the 325 level;
- a level sump on all levels; and
- secondary pump stations on levels 325 east and west, 450, and 550.

Tiriganiaq underground mine water will be pumped using eight multistage pumps. All water from the secondary pump station and level sumps will report to the primary settling sump (sump volume live 546 m^3) at the main station. The water then flows over a dam from the primary settling sump into a clean water sump (sump volume live 780 m^3). See Figures 2.16A and 2.16B for the layout of the main pump station. The pumps at the main station each have a capacity of 136 m^3/hour.

Four secondary pump stations containing two pumps each, one operational and one on standby, will be constructed (Figure 2.17). The pumps each have a capacity of 125 m^3/hour and the live sump volume on these levels is 179 m^3.

The level sump on all levels is a submersible pump with a capacity of 19 L/s and a live sump volume of 36 m^3 (Figure 2.18).

NO. DESSIN / DRAWING NO. 6509-202-210-001_R0

FORMAT ARCHD

DESIGN CRITERIA

MAX INFLOW	83.3 m3/H (367 GPM)
PUMP DISCHARGE PRESSURE	3.044 KPa (442 PSI)
PUMP FLOW	136.3 m3/H (600 GPM)
PUMP	HARD METAL CENTRIFUGAL PUMP
PUMPING TIME	14.7 H
SUMP VOLUME (LIVE)	CLEAN: 780 m3 (206,052 GAL) PRIMARY: 546 m3 (144,237 GAL)
SUMP AREA	PRIMARY: 167 m2 (1,794 SQ FT)
PUMP ON/OFF	CLEAN: 1.1 CYCLES/DAY PRIMARY: 1.4 CYCLES/DAY

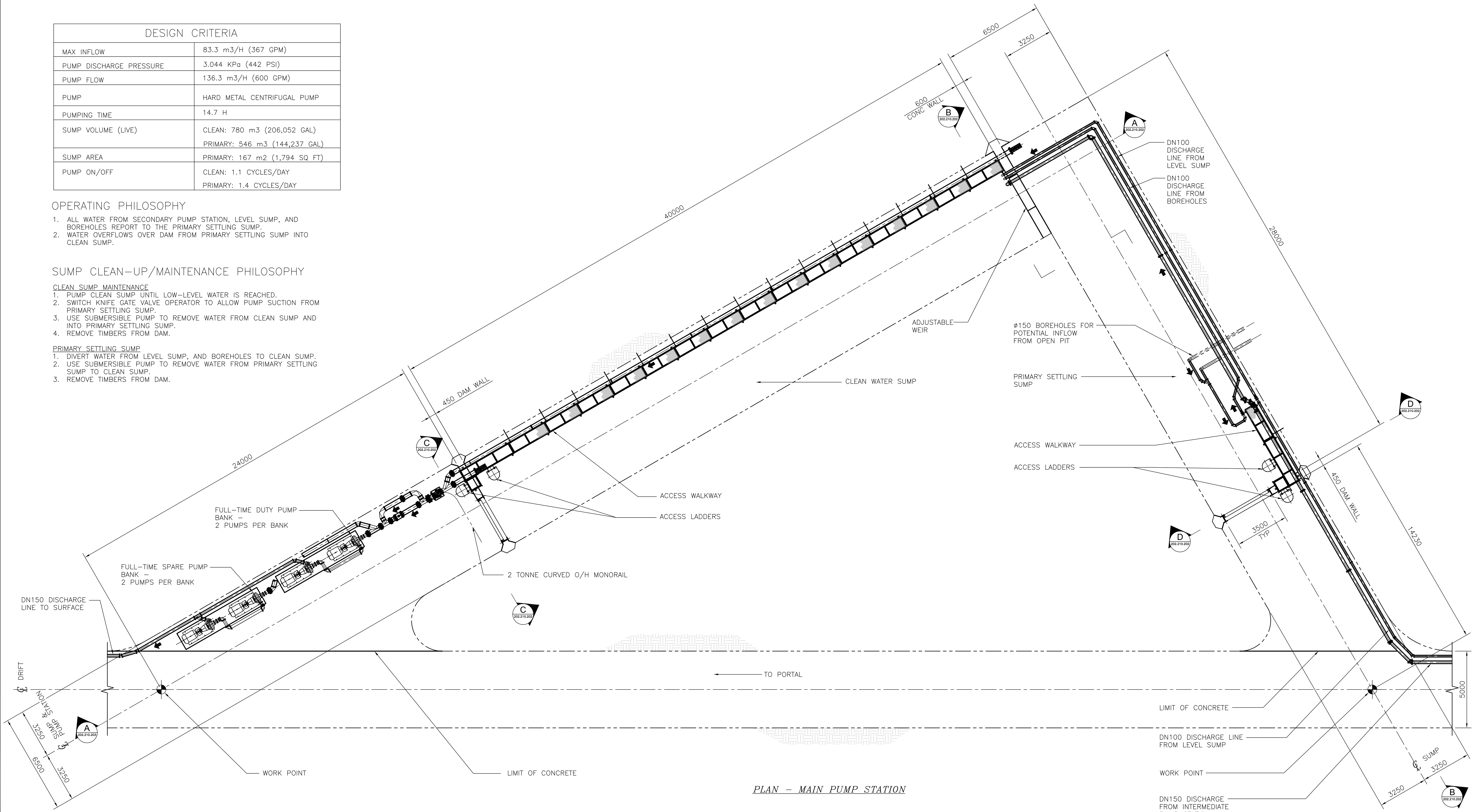
OPERATING PHILOSOPHY

1. ALL WATER FROM SECONDARY PUMP STATION, LEVEL SUMP, AND BOREHOLES REPORT TO THE PRIMARY SETTLING SUMP.
2. WATER OVERFLOWS OVER DAM FROM PRIMARY SETTLING SUMP INTO CLEAN SUMP.

SUMP CLEAN-UP/MAINTENANCE PHILOSOPHY

CLEAN SUMP MAINTENANCE
1. PUMP CLEAN SUMP UNTIL LOW-LEVEL WATER IS REACHED.
2. SWITCH KNIFE GATE VALVE OPERATOR TO ALLOW PUMP SUCTION FROM PRIMARY SETTLING SUMP.
3. USE SUBMERSIBLE PUMP TO REMOVE WATER FROM CLEAN SUMP AND INTO PRIMARY SETTLING SUMP.
4. REMOVE TIMBERS FROM DAM.

PRIMARY SETTLING SUMP
1. DIVERT WATER FROM LEVEL SUMP, AND BOREHOLES TO CLEAN SUMP.
2. USE SUBMERSIBLE PUMP TO REMOVE WATER FROM PRIMARY SETTLING SUMP TO CLEAN SUMP.
3. REMOVE TIMBERS FROM DAM.



PLAN – MAIN PUMP STATION

PLAN CLÉ / KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

ISSUED FOR PERMITTING

AGNICO EAGLE

DATE : 2014-12-23

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
0	2014-08-28	FINAL ISSUE	J.C.	D.L.	

REVISIONS

FIGURE 2.16A

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
202 – UNDERGROUND WATER
210
GENERAL ARRANGEMENT
PLAN VIEW
MAIN PUMP STATION

DESSINÉ PAR / DRAWN BY	J. CRETE	DATE 2013-12-05
VÉRIFIÉ PAR / CHECKED BY	D. LAFLAMME	2014-08-28
APPROUVÉ PAR / APPROVED BY	D. LAFLAMME	2014-08-28
ÉCHELLE / SCALE	1:125	DATE 2013-12-05

NO. DESSIN / DRAWING NO. 6509-202-210-001

NO. PROJET / PROJECT NO. 6509 | REVISION 0 | FEUILLE / SHT 1 / 1

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FILE NO. FIG 2.25 6509-202-210-001.dwg

NO. DESSIN DRAWING NO. 6509-202-210-002-R0

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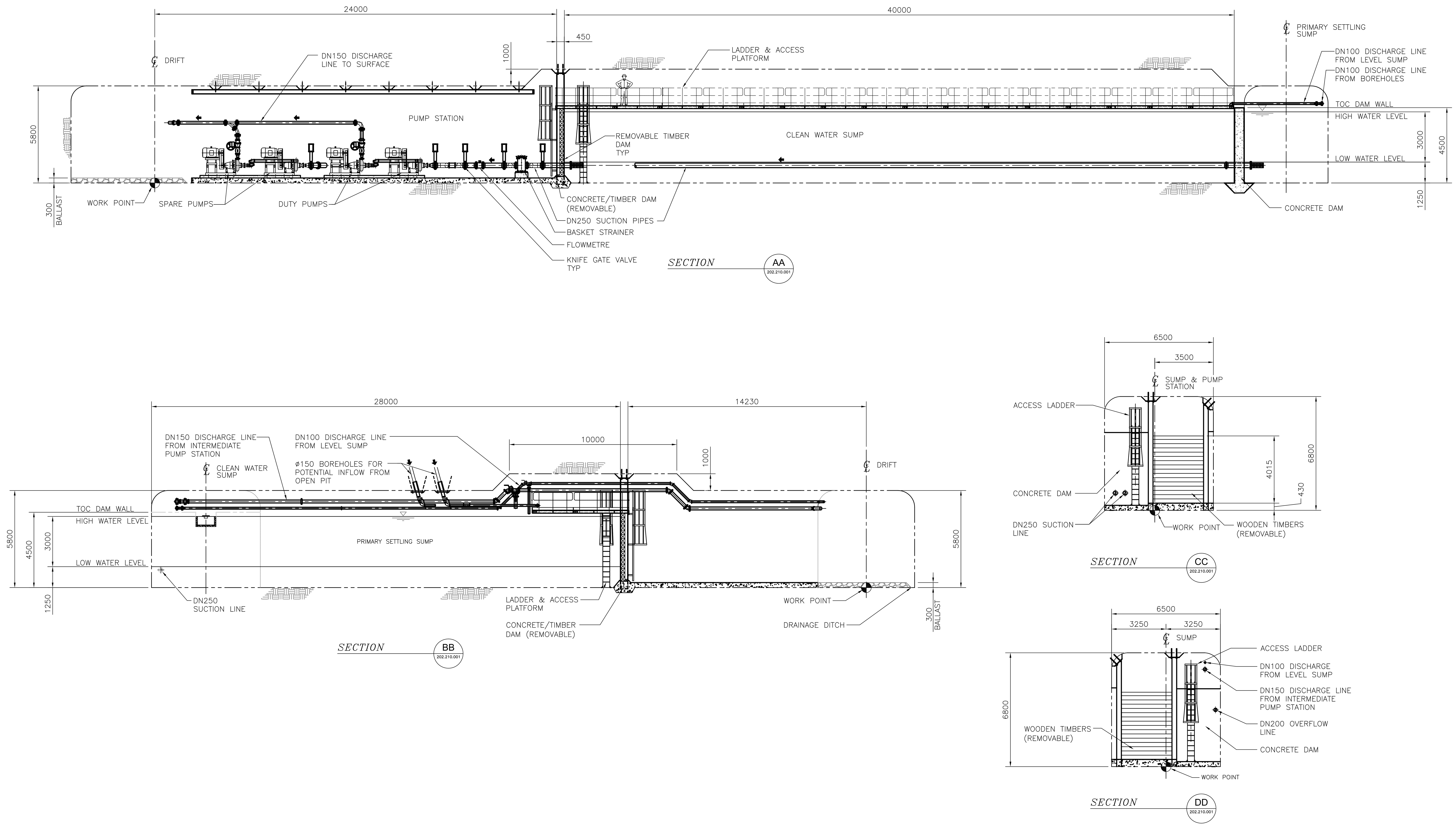

PLAN CLÉ KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

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DATE : 2014-12-23

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FIGURE 2.16B

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
202 – UNDERGROUND WATER
210
GENERAL ARRANGEMENT
SECTIONS
MAIN PUMP STATION

DESSINÉ PAR DRAWN BY	J. CRETE	DATE	2013-12-05
VÉRIFIÉ PAR CHECKED BY	D. LAFLAMME		2014-08-28
APPROUVÉ PAR APPROVED BY	D. LAFLAMME		2014-08-28
ÉCHELLE SCALE	A/S	DATE	2013-12-05

NO. DESSIN DRAWING NO. 6509-202-210-002

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHT
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C:\Users\jocelyn.crete\Desktop\FIGURE\FIG 2.24-2.27\FIG 2.25 6509-202-210-002.dwg-2013-02-19 14:03:29

FILE NO. FIG 2.25 6509-202-210-002.dwg

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DRAWING NO. 6509-202-210-003-R0

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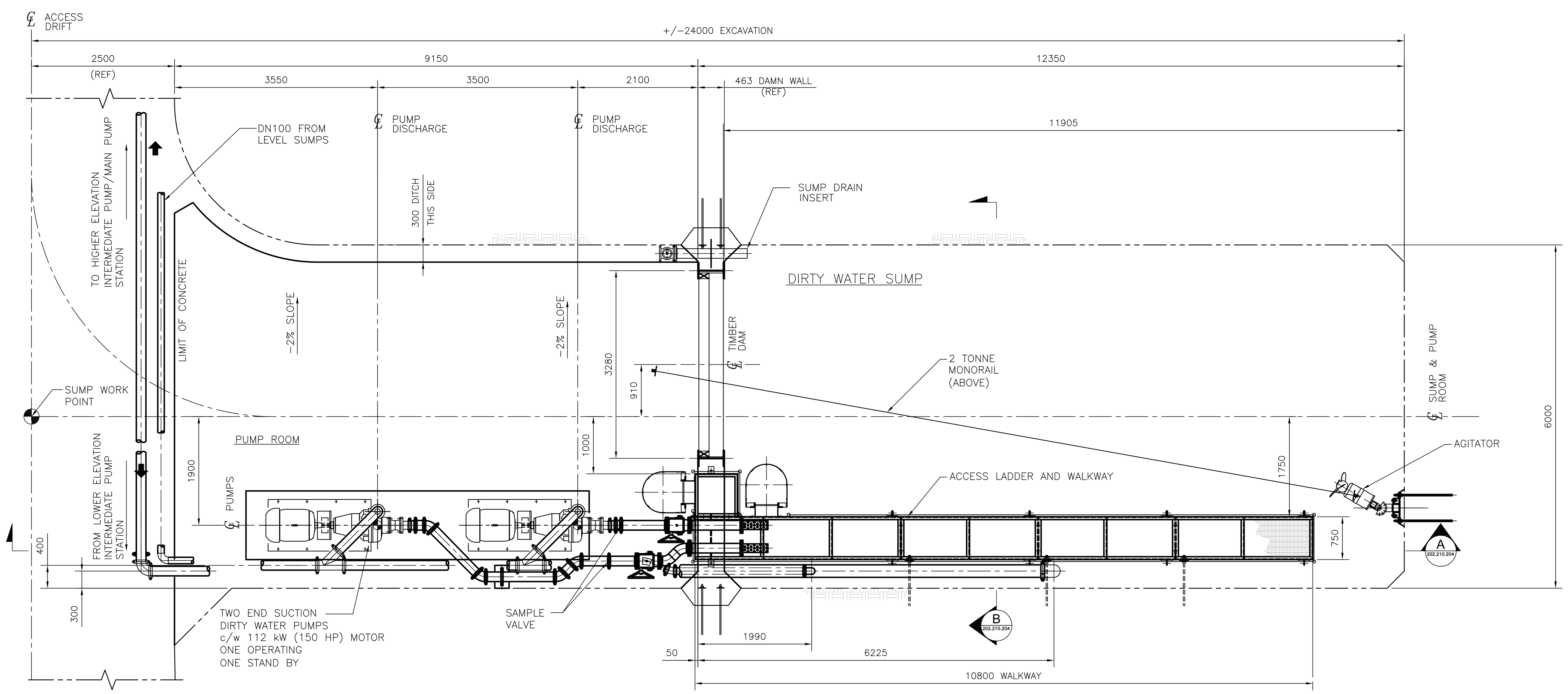


PLAN – DEWATERING SYSTEM – PRODUCTION PHASE – INTERMEDIATE PUMP STATION

NOTE:
NOT ALL PIPE SUPPORTS ARE SHOWN
ALL PIPE SUPPORTS TO BE RIGID TYPE UNO

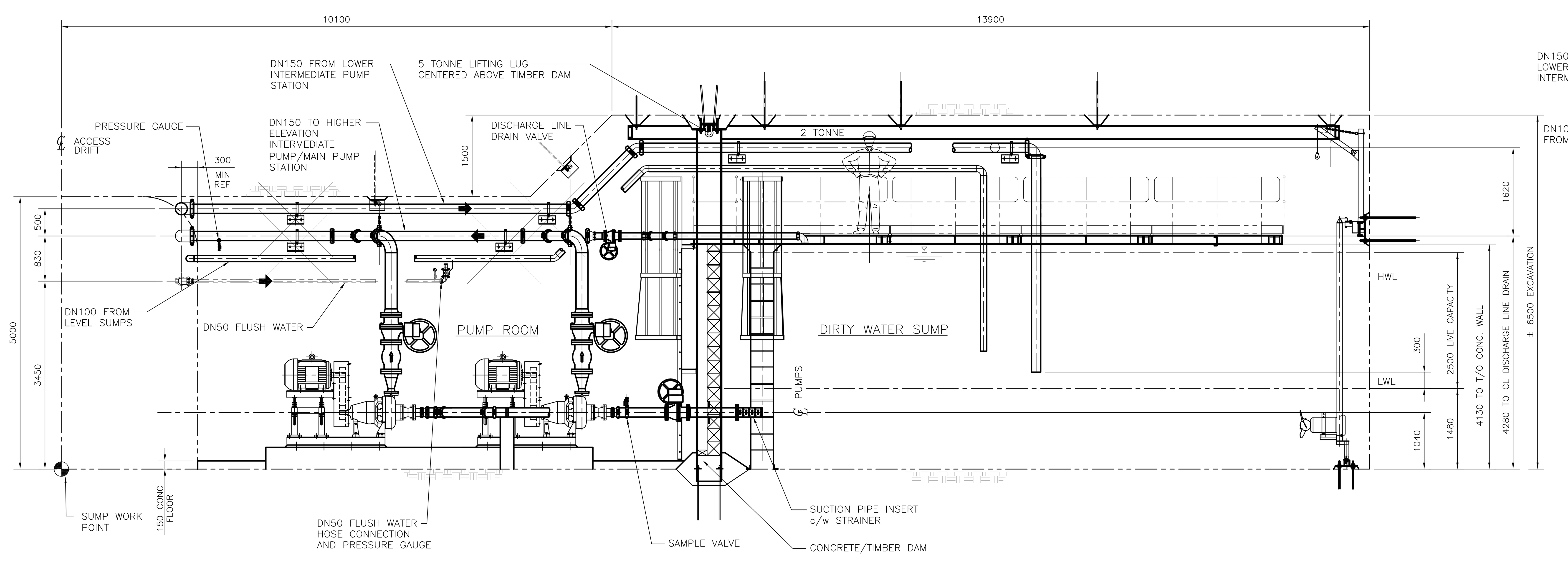
DESIGN CRITERIA	
MAX INFLOW	62.5 m3/H (275 GPM)
PUMP DISCHARGE PRESSURE	1,726 kPa (250 PSI)
PUMP FLOW	125 m3/H (550 GPM)
PUMP	HARD METAL CENTRIFUGAL PUMP
PUMPING TIME	2.9 H
SUMP VOLUME (LIVE)	179 m3 (47.174 GAL)
PUMP ON/OFF	4.2 CYCLES/DAY

OPERATING PHILOSOPHY

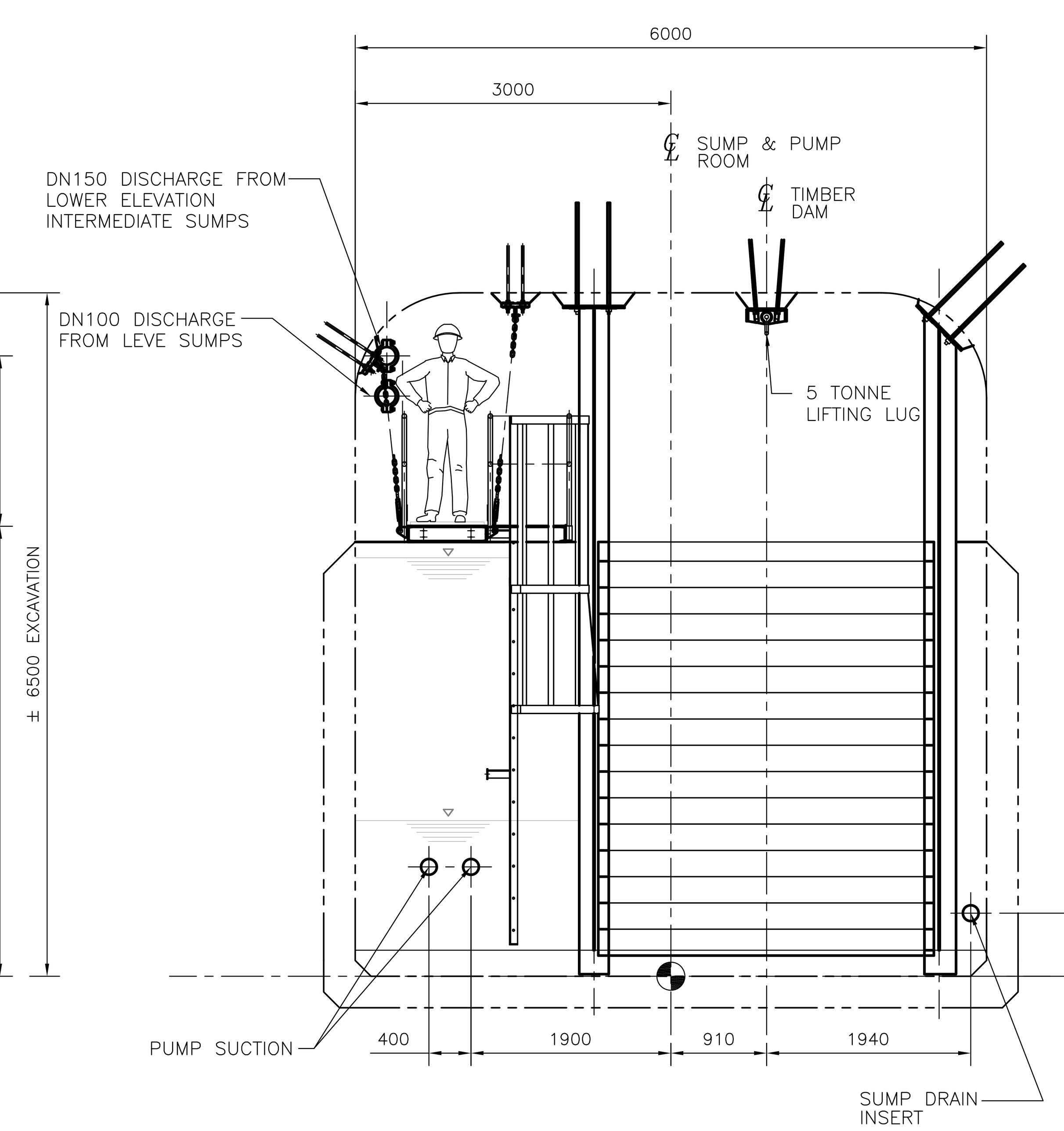
1. DISCHARGE WATER FROM MAIN PUMP STATION AND RAMP SUMPS FLOWS INTO INTERMEDIATE
2. PUMP OPERATES SIMULTANEOUSLY WITH MAIN PUMP STATION.

SUMP CLEAN-UP/MAINTENANCE PHILOSOPHY

1. CLOSE ALL SUMP INLET PIPING VALVES. LOCK-OUT MAIN PUMP STATION PUMPS.
2. OPERATE INTERMEDIATE PUMP IN MANUAL MODE UNTIL LOW-LEVEL WATER IS REACHED.
3. USE SUBMERSIBLE PUMP TO REMOVE REMAINING WATER FROM INTERMEDIATE SUMP INTO E SELECT RAMP SUMP.
4. REMOVE TIMBERS FROM DAM.



SECTION A



SECTION B

PLAN CLÉ
KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

PUMP STATION

ISSUED FOR PERMITTING
AGNICO EAGLE
DATE : 2014-12-23

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FIGURE 2.17

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
202 – UNDERGROUND WATER
210
GENERAL ARRANGEMENT
SECTION
INTERMEDIATE PUMP STATION

DESSINÉ PAR / DRAWN BY	J. CRETE	DATE 2013-12-05
VÉRIFIÉ PAR / CHECKED BY	D. LAFLAMME	2014-08-28
APPROUVÉ PAR / APPROVED BY	D. LAFLAMME	2014-08-28
ÉCHELLE / SCALE	A/S	DATE 2013-12-05

NO. DESSIN / DRAWING NO. 6509-202-210-003

NO. PROJET / PROJECT NO.	RÉVISION	FEUILLE / SHT
6509	0	1 / 1

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C:\Users\jocelyn.crete\Desktop\FIGURE\FIG 2.24-2.27\FIG 2.26 6509-202-210-003.dwg-2013-02-19 14:03:29
FILE NO. FIG 2.26 6509-202-210-003.dwg

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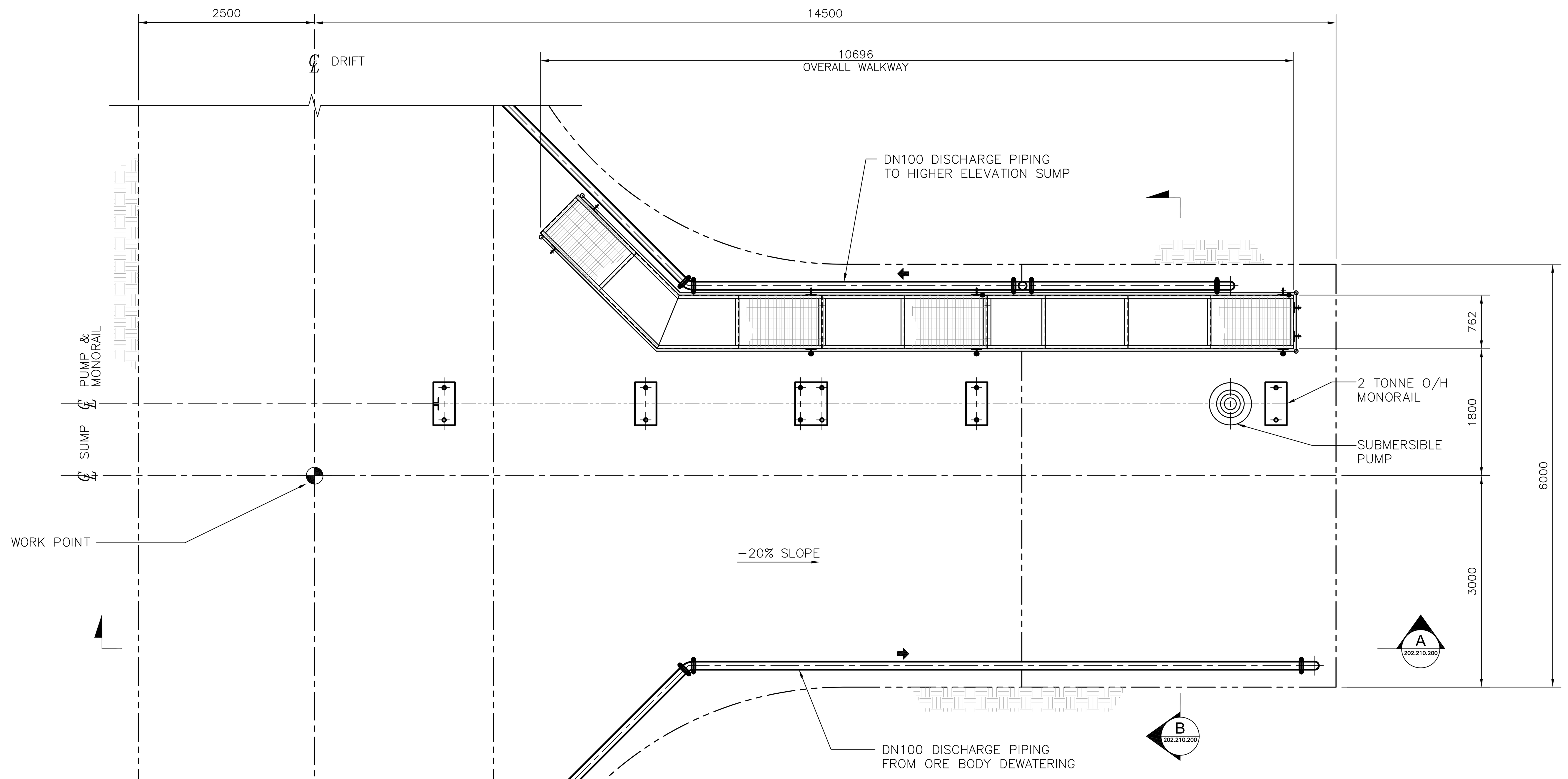
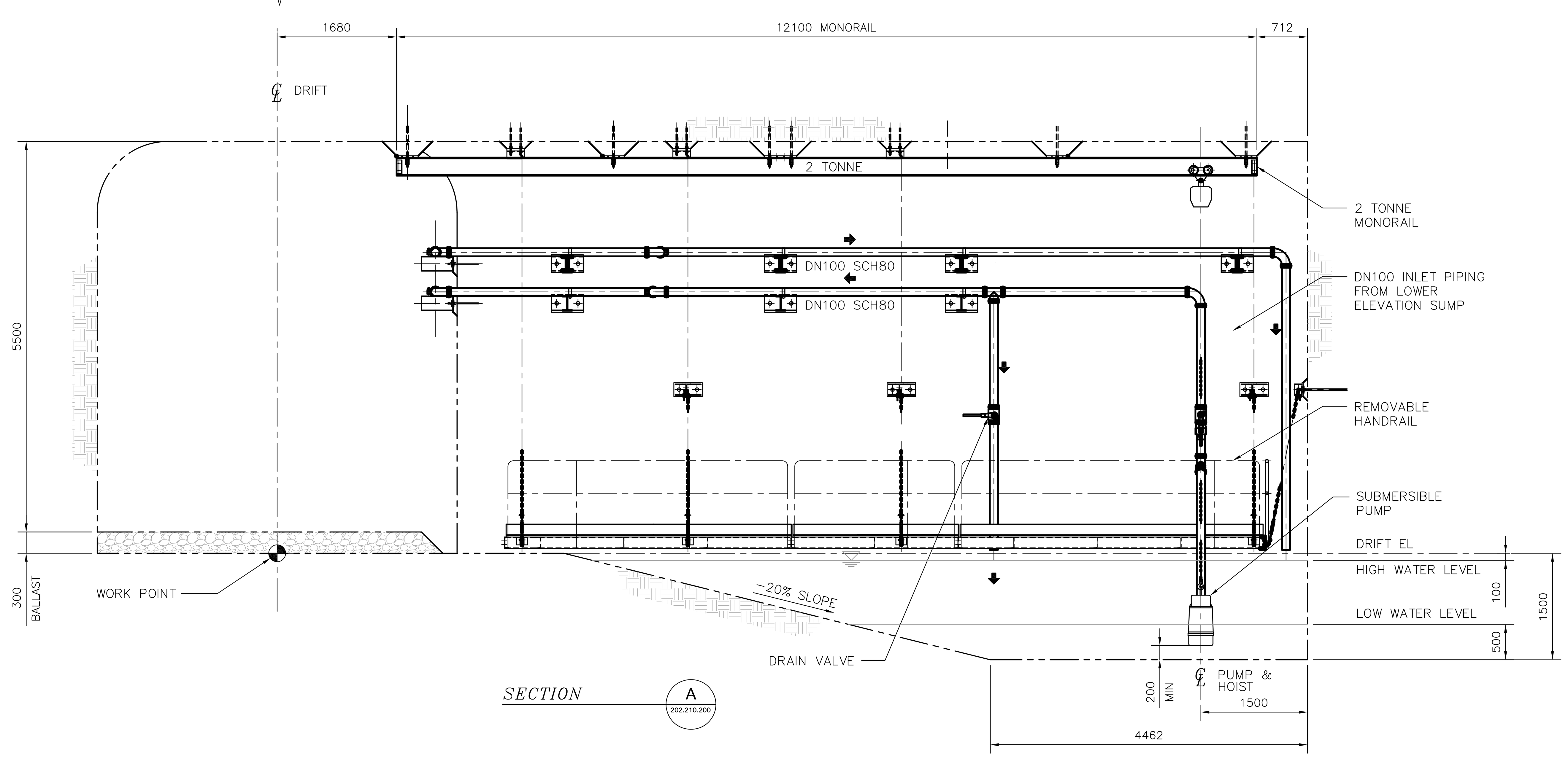
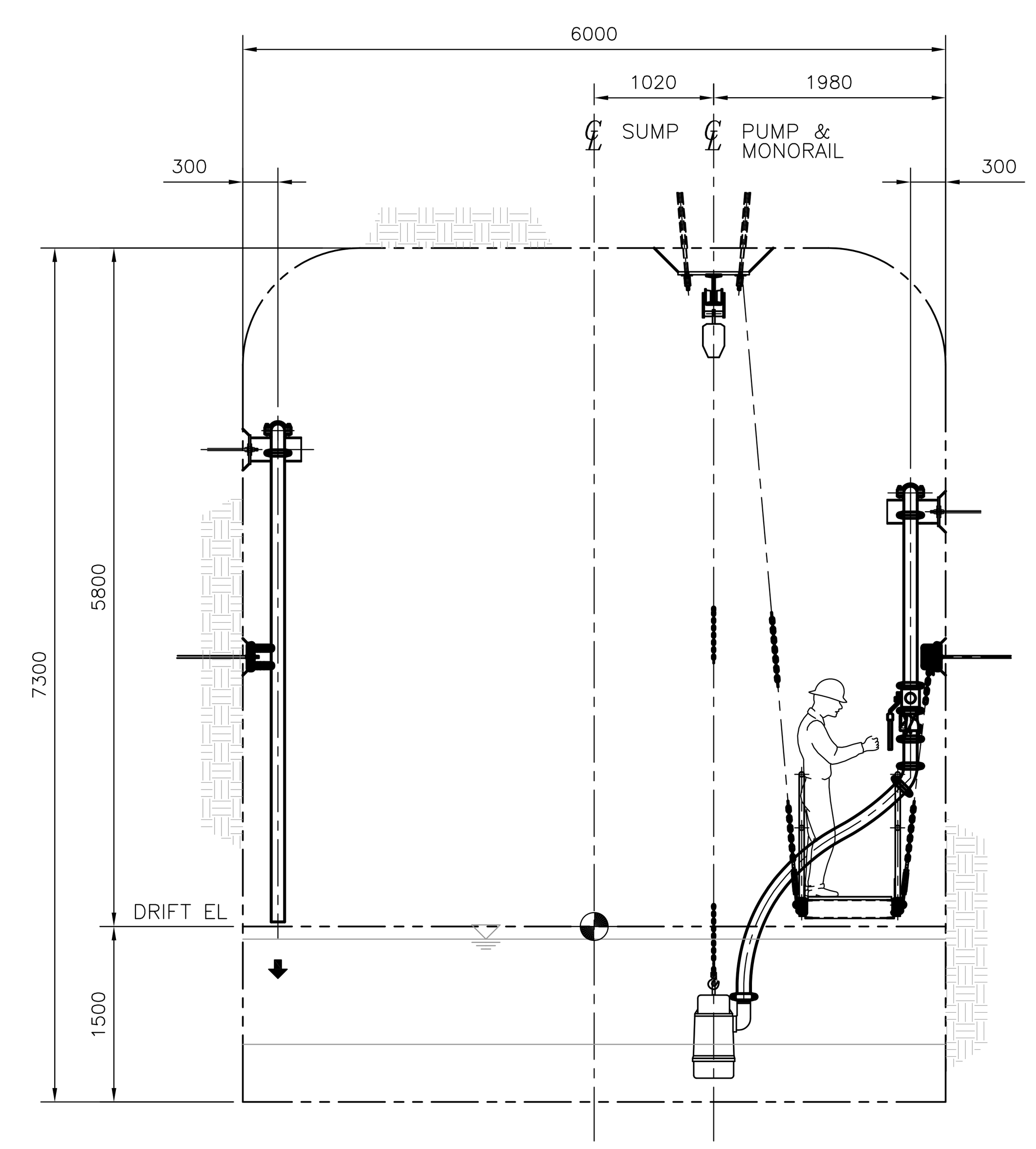


PLAN – TYPICAL LEVEL SUMP



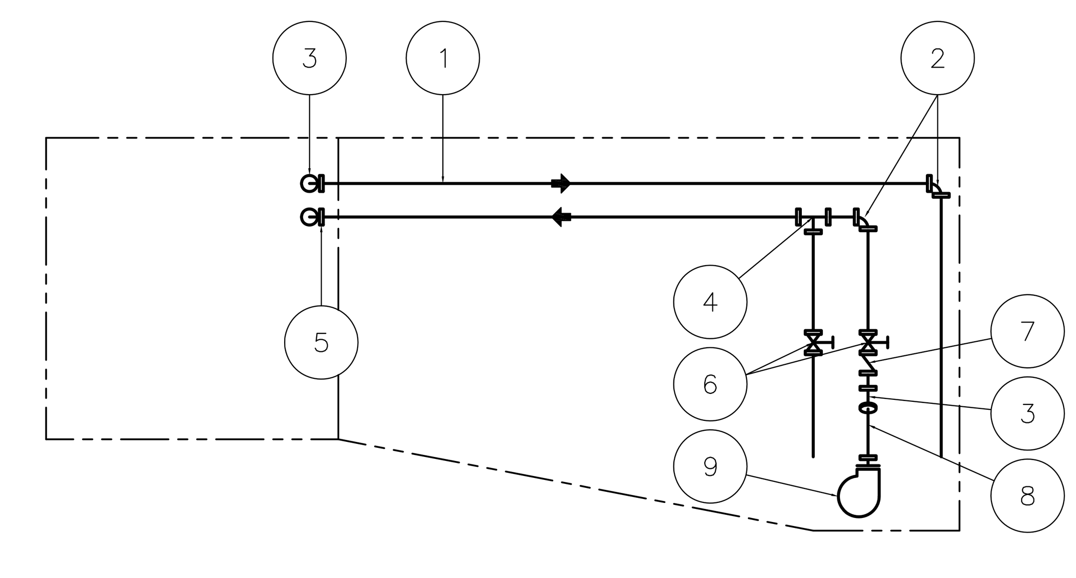
SECTION A 202.210.200



SECTION B 202.210.200

BILL OF MATERIALS

ITEM	DESCRIPTION	REMARKS	QTY.
1	DN100 SCH80 STEEL PIPE	VIC STANDARD CUT GROOVE	AS REQ'D
2	DN100 90 DEG ELBOW – LONG RADIUS (1.5 D)	VIC No 100	2
3	DN100 45 DEG ELBOW	VIC No 11	5
4	DN100 TEE	VIC No 20	1
5	DN100 COUPLING	VIC STYLE 77	21
6	DN100 BALL VALVE	VIC SERIES 726	2
7	DN100 CHECK VALVE	VIC SERIES 716	1
8	DN100 FLEXIBLE WATER HOSE	--	4m
9	SUBMERSIBLE PUMP	--	1



TYPICAL LEVEL SUMP DEWATERING SCHEMATIC
SCALE: NTS

TYPICAL LEVEL SUMP DESIGN CRITERIA	
PUMP	SUBMERSIBLE, 60 HP
PUMP FLOW	19 L/s
PUMP POWER	11.2 kW
WATER INFLOW	10 L/s
SUMP VOLUME (LIVE)	36,000 LITRES
PUMP ON/OFF	11.4 CYCLES/DAY

PLAN CLÉ
KEY PLAN

NOTES GÉNÉRAL / GENERAL NOTES

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DATE : 2014-12-23

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REVISIONS

FIGURE 2.18

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
202 – UNDERGROUND WATER
210
PLAN & SECTIONS
TIRIGANIAQ PRODUCTION PHASE
TYPICAL LEVEL SUMP – GENERAL ARRANGEMENT

DESSINÉ PAR DRAWN BY	J. CRETE	DATE 2013-12-05
VÉRIFIÉ PAR CHECKED BY	D. LAFLAMME	2014-08-28
APPROUVÉ PAR APPROVED BY	D. LAFLAMME	2014-08-28
ÉCHELLE SCALE 1:50	DATE	2013-12-05

NO. DESSIN DRAWING NO. 6509-202-210-004

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHT
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FILE NO. FIG 2.27 6509-202-210-004.dwg

<u>Fuel and Oil Distribution System</u>

There will be two fuel and oil distribution systems in the underground mine. The first one will be located on the 300 Level on the west side of the mine. The second one will be on the 475 Level, also in the west zone of the mine.

The fuel system presented in Figure 2.19 will be fed by a two-million litre tank, located beside a portal. A piping network in a separate bore hole will feed the underground lube stations and the network will be batch fed.

NO. DESSIN / DRAWING NO. 6509-204-210-001-R0

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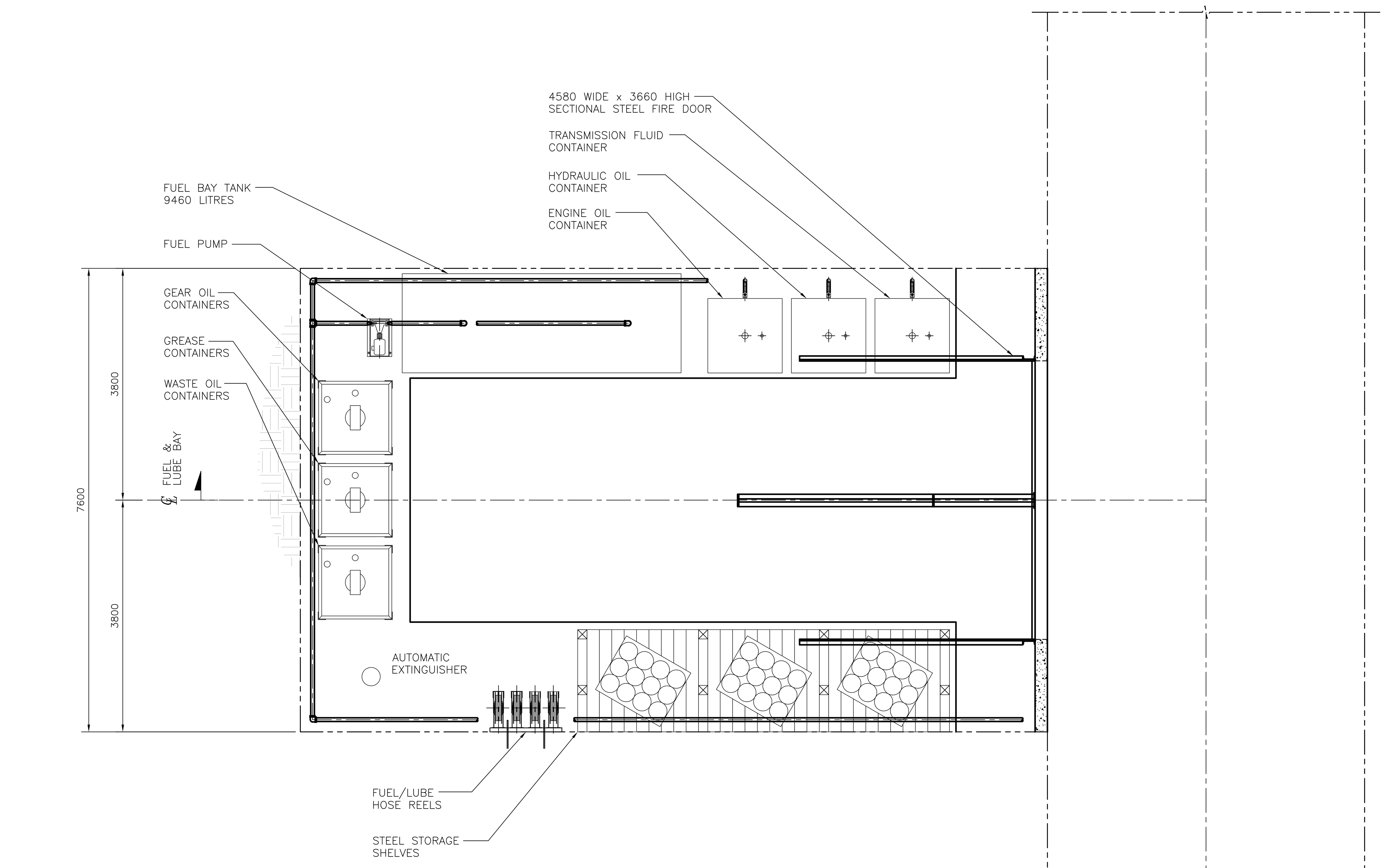
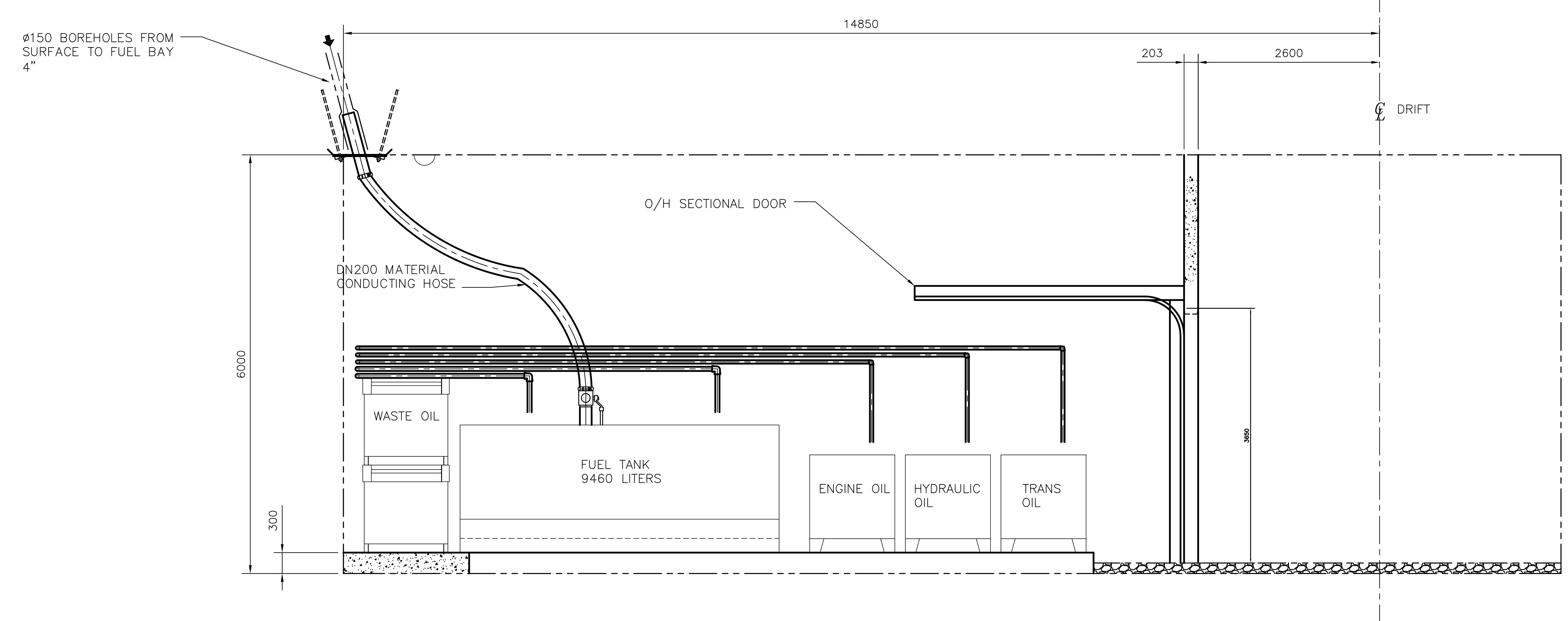
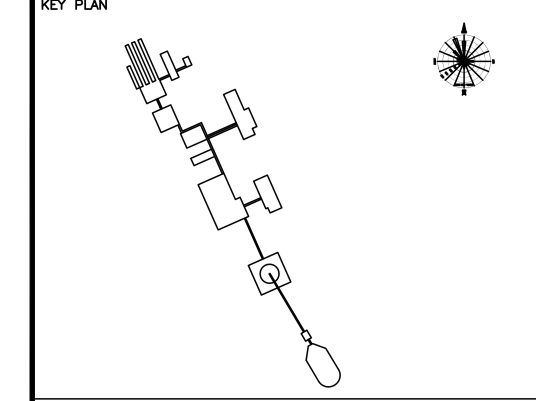


PLAN – UNDERGROUND FUEL/LUBE BAY



SECTION A

PLAN CLÉ / KEY PLAN



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AGNICO EAGLE

DATE : 2014-12-23

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FIGURE 2.19

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
204 – COMBUSTIBLES FUEL BAY
210
GENERAL ARRANGEMENT
PLAN & SECTION DETAILS
UNDERGROUND MAIN FUEL BAY / LUBE BAY

		DATE
DESSINÉ PAR / DRAWN BY	J. CRETE	2013-12-04
VERIFIÉ PAR / CHECKED BY	D. LAFLAMME	2014-08-28
APPROUVÉ PAR / APPROVED BY	D. LAFLAMME	2014-08-28
ÉCHELLE / SCALE	1:50	DATE 2013-12-04

NO. DESSIN / DRAWING NO. 6509-204-210-001

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
6509	0	1 / 1

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FILE NO. FIG 2.28 6509-204-210-001.dwg

2.3.3 Geotechnical Parameters

Geotechnical information was incorporated when designing the underground mine, including distribution of intact rock strength, distribution of rock mass classification values, and detailed structural geology information (orientation of joint sets, continuity and spacing of the joint sets, and engineering parameters for each joint set [shape, roughness, infill]). There have been no in-situ stress measurements made at the Project site; stress results were based on empirically determined estimates (Georock 2010).

The underground orebody at Tiriganiaq strikes in an east-west direction for approximately 2.5 km and dips to the north at approximately 62°. Gold mineralization is hosted in interbedded layers of banded chert and oxide iron formation, and in quartz veins. Mineralized zones are numbered with lode identifiers increasing from south to north (from structural footwall to structural hanging wall) starting with the 1000 Lode. At present, the Tiriganiaq underground orebody consists of seven mining lodes stacked en-echelon as shown in the schematic geological cross-section in Figure 2.20. Individual lodes vary in thickness from 3m to a maximum of about 30 m. Figure 2.21A shows a longitudinal projection of the Tiriganiaq economic stoping blocks defined with the Mineable Shape Optimizer (MSO) method. A typical cross-section towards the east end of the orebody is shown in Figure 2.21B.

Tiriganiaq underground includes 917 stopes in 12 lodes. Of these stopes, 303 will be mined longitudinally with an average true thickness of 4 m excluding the dilution (horizontal thickness approximately 6.0 to 6.5 m). The other 614 stopes will be mined in a transverse manner and have an average true thickness of 6.6 m including the dilution (horizontal thickness approximately 7.4 m). Figure 2.22 shows the distribution of average stoping widths including the dilution and the number of longitudinal and transverse stopes by lode. The maximum true thickness for all stopes is 26.3 m (29.5 m horizontal thickness), but 90% of all stopes have a true thickness of less than 9.0 m (10.3 m horizontal thickness).

The horizontal width distribution by lode is further detailed in Table 2.15 based on the MSO stope model (V10c).

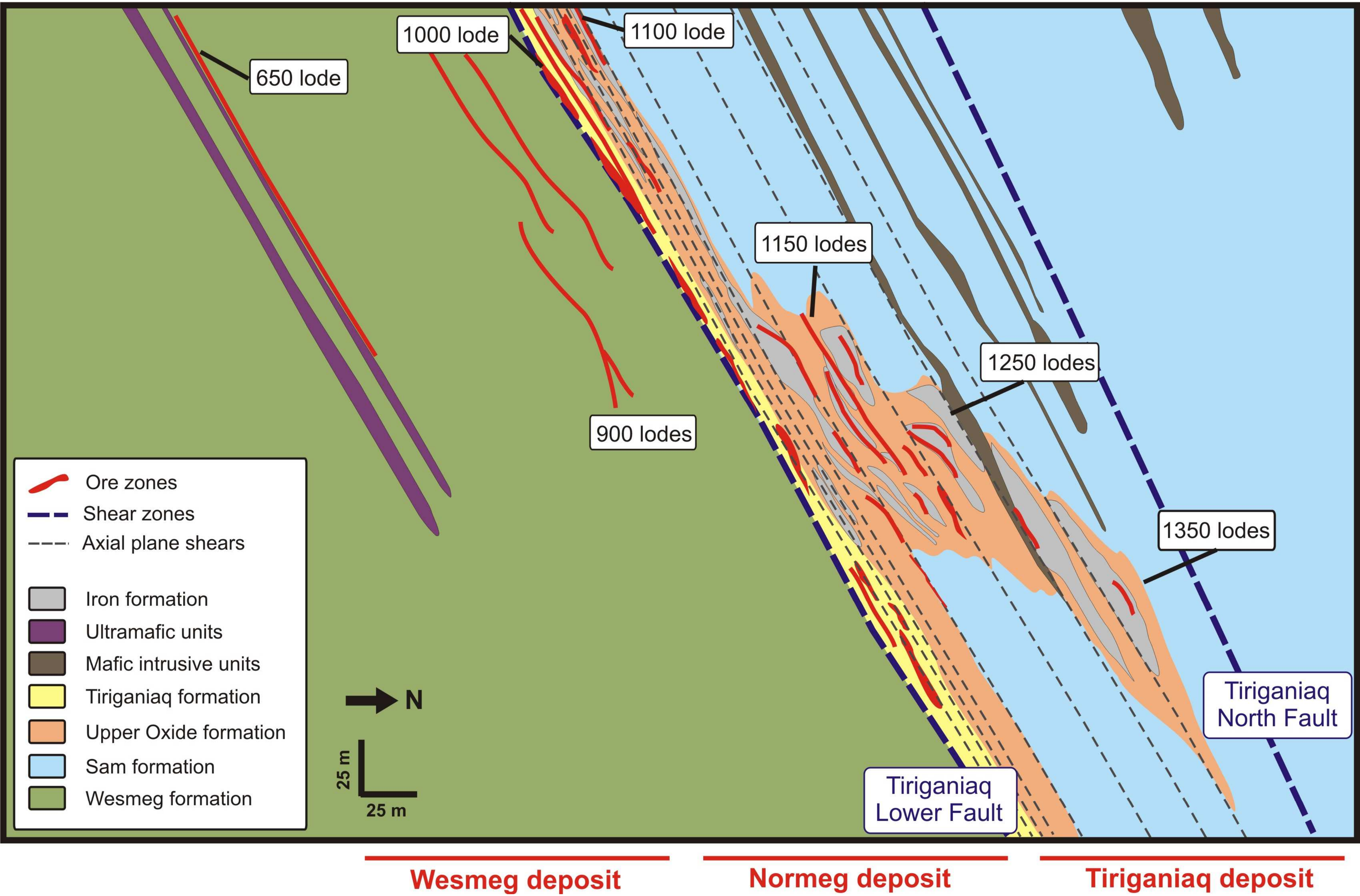

FIGURE 2.20 Representative Geological Cross-Section of the Tiriganiaq Deposit

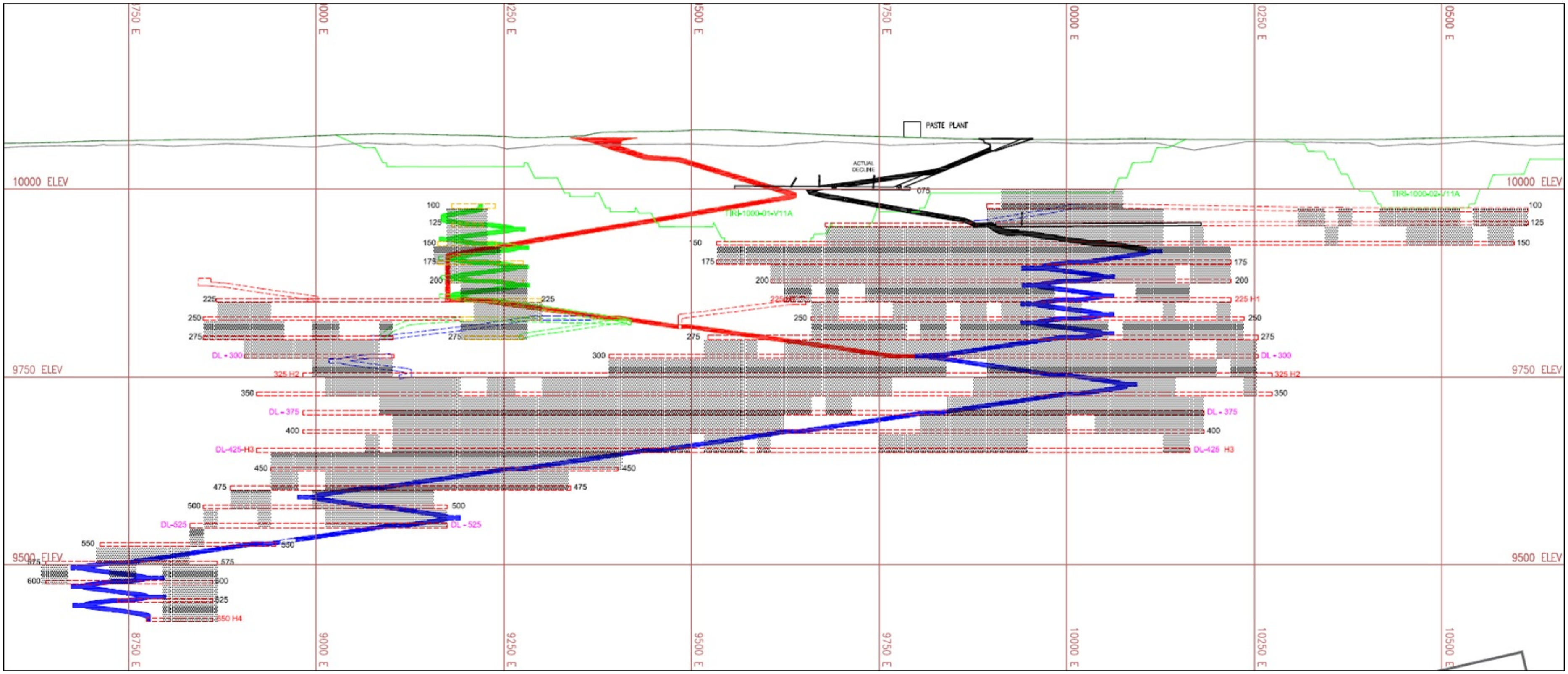

Figure 2.21A Longitudinal Projection of the Tiriganiaq Economic Stoping Blocks

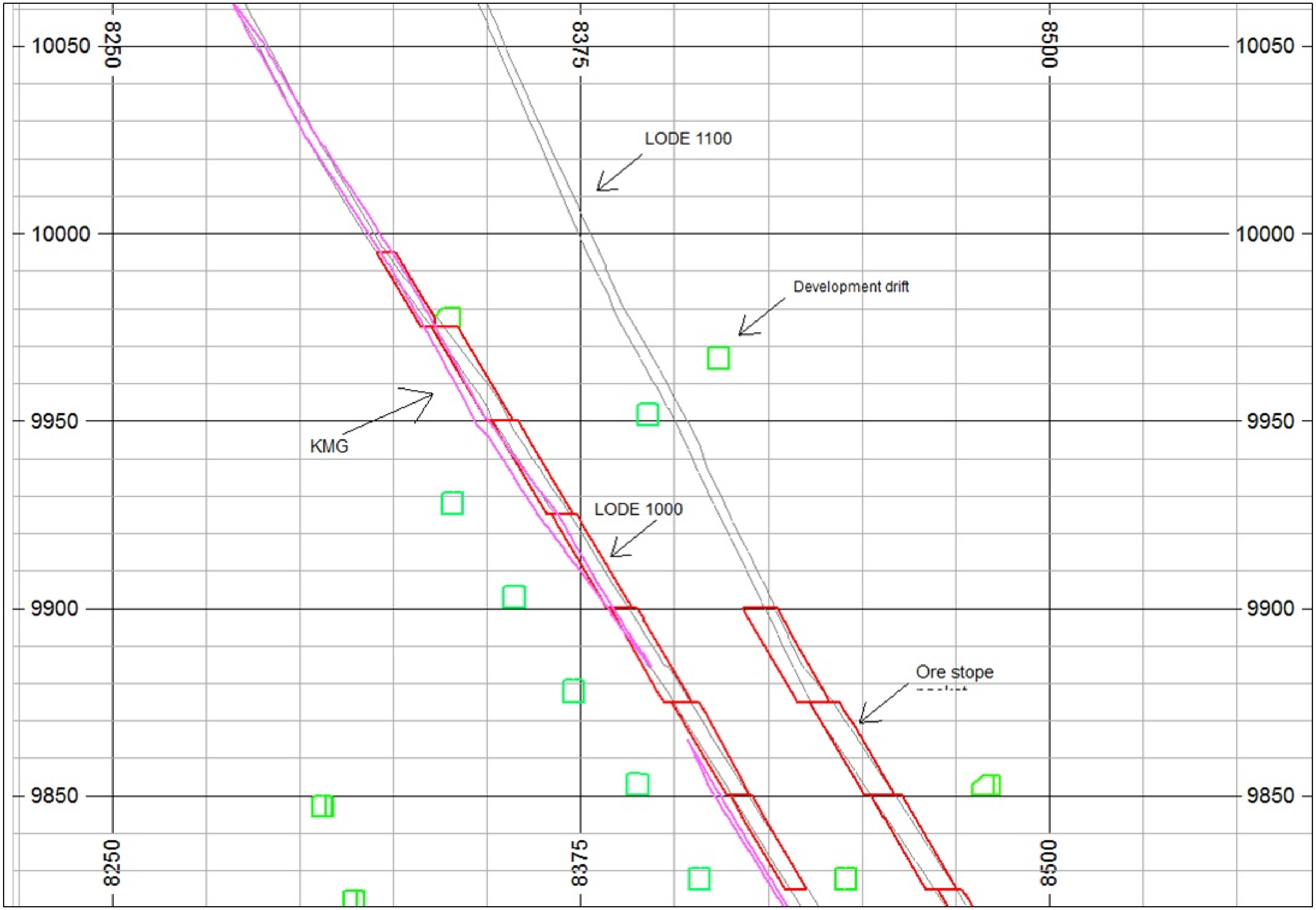

Figure 2.21B Typical Cross-Section Towards the East End of the Orebody

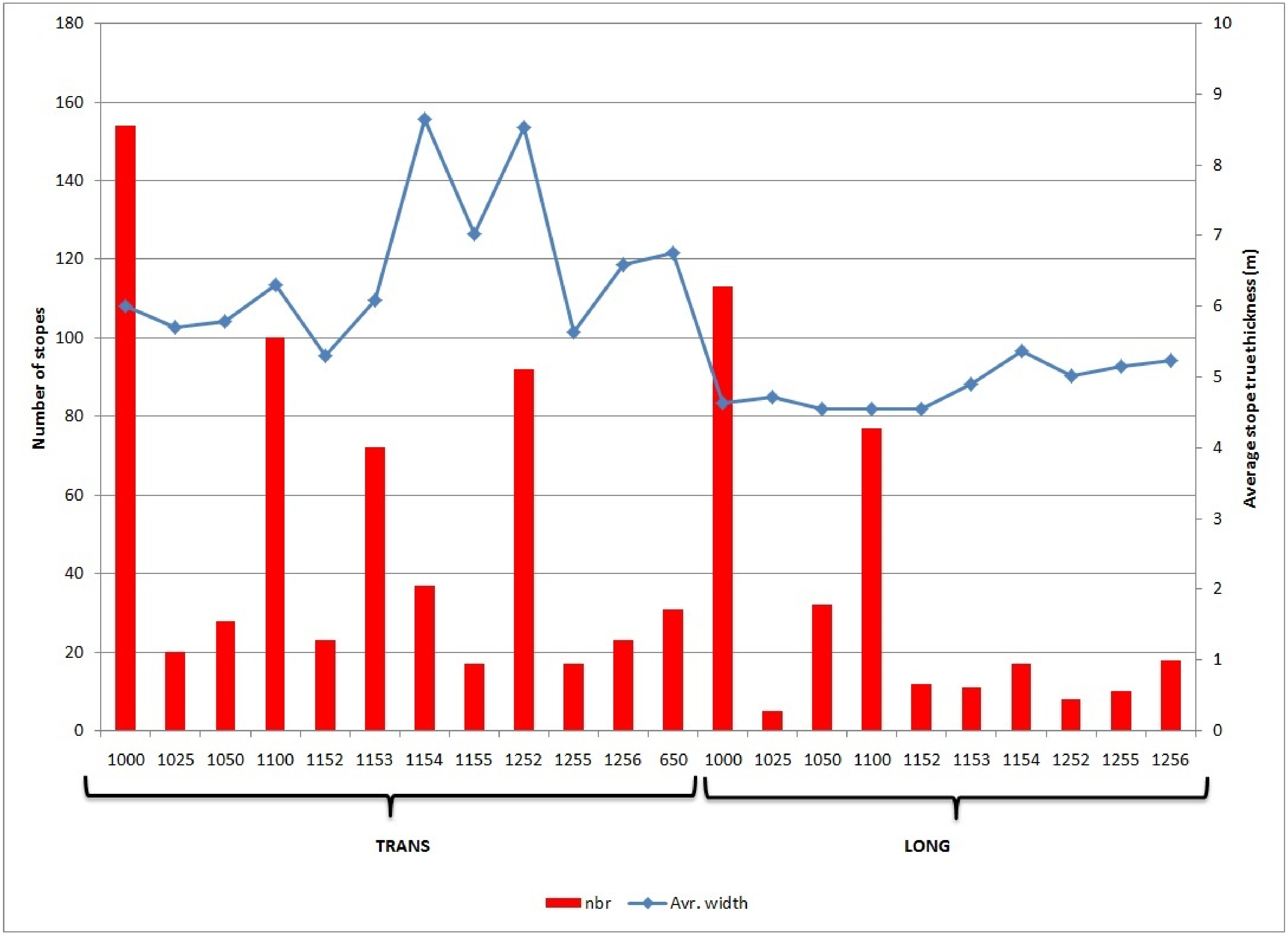

Figure 2.22 Distribution of Average Stope Widths and Number of Stopes in Each Lode Considering Longitudinal and Transverse Stoping Separately

Table 2.15 Maximum, Minimum, and 80th Percentile Horizontal Thickness in Metres for Stopes in Selected Lodes

Stope Type	Horizontal Thickness (m)	1000	1100	1153	1252	1256
Longitudinal	80th Percentile	6.1	6.2	5.9	6.5	6.4
	Maximum	8.8	8.4	8.6	9	7.2
	Minimum	5.1	5.1	5.1	5.1	5.1
Transverse	80th Percentile	10	8.3	10.1	17.2	8.2
	Maximum	18.6	15.1	18.2	32.9	11.8
	Minimum	5.8	5.1	5.1	5.1	5.1

The rock quality data used to assess the rock mass conditions within the direct zone of influence of the planned stoping areas were collected from geotechnical drill holes during drilling campaigns at Tiriganiaq in 1997, 2000, 2008, 2009, and 2011. Intact rock strength and rock mass quality data were analysed for the hanging wall (HW) and footwall (FW) of MSO stope blocks by extracting the geotechnical data from drill holes intersecting the stopes up to a distance of 10 m, measured perpendicular to the stope boundaries. Data corresponding to the mineable ore zones (Ore) and to the interstitial material (interstitial) between en-echelon stopes were also extracted and analysed separately. Thirty-two drill holes intersected the proposed stoping blocks in Lodes 1000, 1050, 1100, 1153, 1252, 1256, and 1260. This represents seven lodes, out of a total of twelve lodes containing stope blocks, for which geotechnical data are available. The drill holes provided good coverage of the overall Tiriganiaq deposit.

The 10 m thick influence zone of individual stopes is referred to as the ‘distal zone’ (distal HW and FW). Underground and drill core observations indicated that a zone of weaker and/or lower quality rock mass was sometimes present at the immediate contact of some ore zones. This ‘proximal zone’ can be present on both the hanging wall and footwall (proximal HW and FW) and its nature is not uniform in all cases. The rock mass qualities in the distal and proximal zones influence the anticipated stope and regional stability, and dilution estimates. The weak rock mass in the proximal zones is expected to slough with the excavation of the stope. Ground support may delay the failure in some cases, but it is most likely that the poorest quality rock would report in the stope as slough regardless. The distal rock mass will influence overall stope stability and was considered for Stability Graph analysis. In the distal rock mass, dilution from the hanging wall will be controlled by rock mass quality, but also by the continuity and strength of the foliation parallel to the stope hanging wall. For each lode, five zones were analysed: distal HW, proximal HW, Ore, proximal FW, and distal FW. Where the distance between stope blocks is less than 10 m, the interstitial zone was analysed separately, but the quantity of this data is very limited and is not considered reliable at this stage.

The geotechnical parameters analysed are those used in Bieniawski's RMR 76 (Bieniawski 1976) and NGI's Q (Barton et. al 1974) classification systems: RQD, Jn, Jr/Ja, intact rock strength, and fracture frequency.

Open stope dimensions were analysed using the Mathews/Potvin Stability Graph method (Hutchinson & Diederichs 1996) and associated empirical dilution estimates based on the ELOS (Equivalent Linear Overbreak Slough) database. Analyses considered a 25 m sublevel interval with 5 m high development drifts and a stope dip of 62°.

The localized poor quality zones predicted in the immediate hanging wall and footwall of stopes is expected to be encountered in 10% to 20% of the stopes.

The anticipated rock mass quality within the zone of influence of the stoping areas were extracted and analysed for review of the Tiriganiaq underground geotechnical model. The results, in terms of NGI Q', are presented in Table 2.16.

Table 2.16 Rock Mass Quality Q' within the Zone Of Influence of Stopes in Selected Lodes

	1000			1100			1153			1252			1256		
Q'	**High**	**Ave**	**Low**	**High**	**Ave**	**Low**	**High**	**Ave**	**Low**	**High**	**Ave**	**Low**	**High**	**Ave**	**Low**
Back	37	15	6	165	70	30	84	65	50	94	42	19	72	33	15
Walls	37	15	6	165	70	30	84	65	50	94	42	19	72	33	15
HW Prox	19	4.9	1	14	9	6	-	-	-	-	-	-	-	11	-
FW Prox	14	1.1	0.1	40	15	6	-	17	-	-	-	-	15	12	9
HW Distal	50	27	15	90	49	27	61	45	34	59	36	23	46	31	21
FW Distal	38	22	13	73	46	29	176	83	39	39	27	19	70	42	25

2.3.4 Underground Mine Production Plan

Table 2.17 presents some of the production rates used to define the labour and equipment required to achieve the production plan. These rates have been derived from some historical performance achieved by other Agnico Eagle operations where similar equipment and conditions exist, and consider the mechanical availability of the equipment and the effective working time worked during the shift to perform the activity.

Table 2.17 Underground Production Rates

Activities	Unit	Rates
Production drilling 4”	m/day-eqpt	114
Production drilling 3.5”	m/day-eqpt	170
Slot raise	m/day-eqpt	5
Mucking	t/day-eqpt	1134
Cable bolting	m/day-eqpt	170

eqpt = equipment

2.3.5 Supplemental infrastructure

Underground Mining Equipment

Fleet selection was based on the efficiency, availability, and fuel consumption of the equipment. The fleet will be used on two 11-hour shifts daily.

The underground mobile equipment for development, production, ground support, services, and construction (Table 2.18) is based on both the average and peak utilization rates and includes spare equipment during the LOM.

Table 2.18 Underground Equipment Fleet Required

Equipment	Capacity	Quantity Required
Main Equipment		
Truck	60T	8
Production scoop	12 yards	4
Development scoop	8 yards	4
Production drill with V30 attachment	3½ to 8½ po	2
Production drill	3½ to 8½ po	2
Production drill Top Hammer	3½ to 5 po	1
Jumbo	2 Booms	4
Cable drill		2
Development loading unit		3
Bolters		8
Production loading unit		2
Scissor Lift		6
Auxiliary Equipment		
Auxiliary scoop	3.5 yards	3
Men Carrier		6
boom truck		2

Table 2.18 Underground Equipment Fleet Required (continued)

Equipment	Capacity	Quantity Required
Grader	16 feet blade	2
Lube/fuel Truck		2
service tractor		11
supervision tractor		12
Concrete truck		2
small lift		2
small shovel		2
Total		**90**

Maintenance Bay

The maintenance shop will be located on surface; however, smaller maintenance bays will be located on the 300 Level and the 475 Level beside the fuel and oil bays. Both maintenance bays will be equipped with 5T overhead cranes. Only minor repairs will be done underground.

Refuge Station/Lunch Room

The underground refuge station is presented in Figure 2.23 and will be prefabricated units. A design of height units will be required during the LOM. Each unit will accommodate 20 workers and will be self-sufficient. There will be an electrical hookup installation for each unit.

Two lunch rooms (Figure 2.24) are planned to be built underground. One is to be located on the 300 Level and the other on the 475 Level. The design will be the same as at other Agnico Eagle mine sites, with shotcrete interiors and a capacity of 40 to 50 workers.

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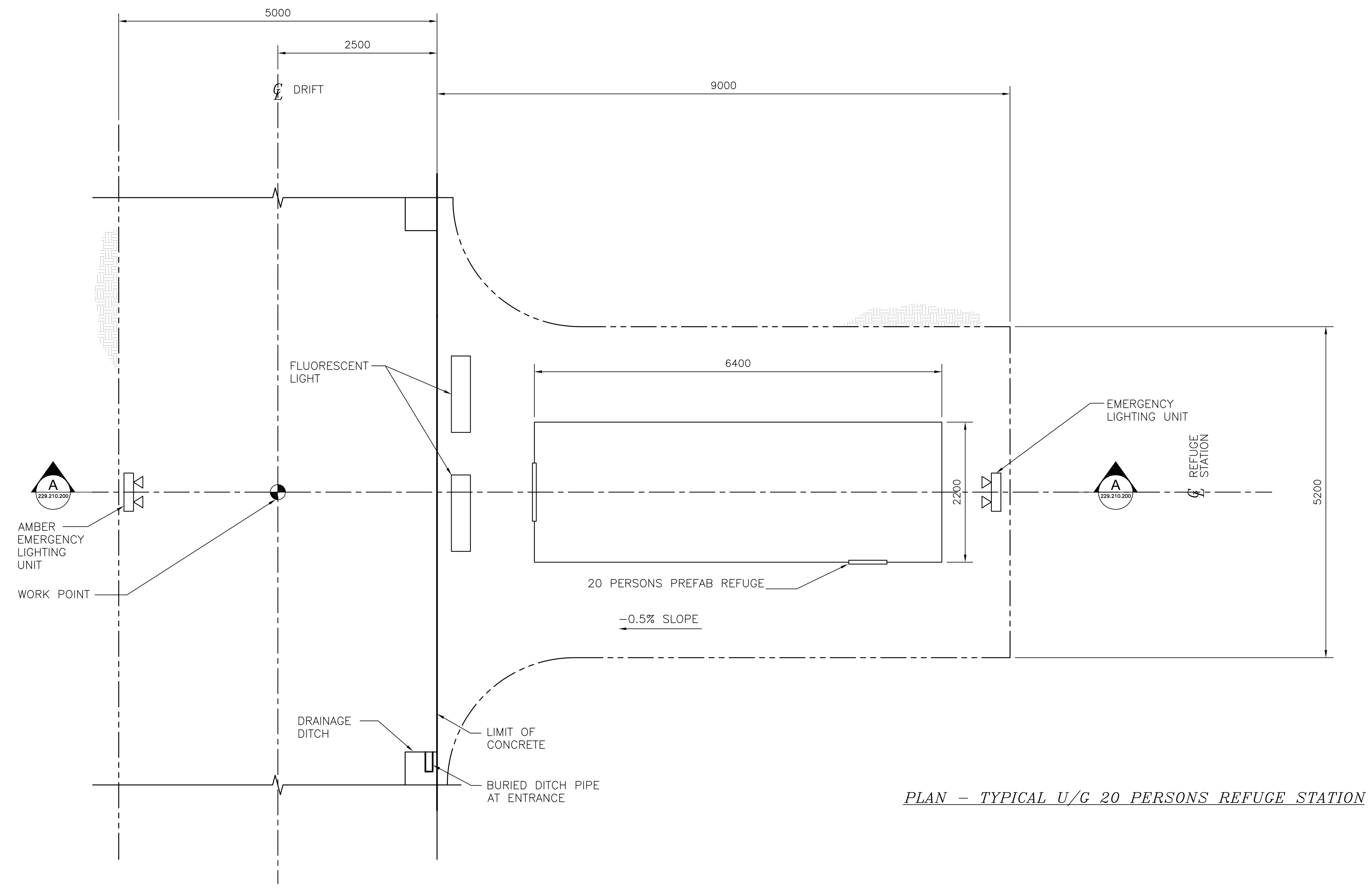
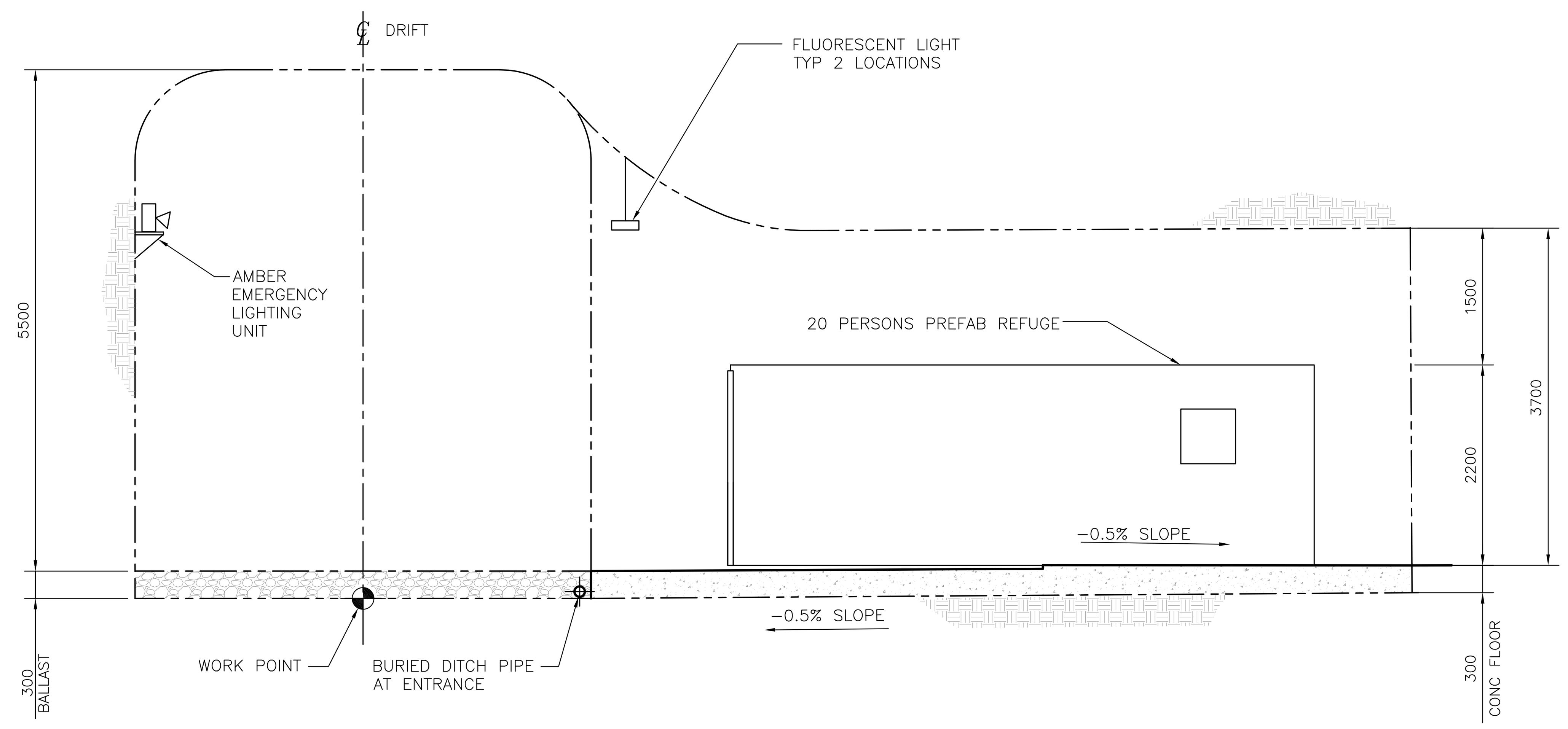


PLAN – TYPICAL U/G 20 PERSONS REFUGE STATION



SECTION A (229.210.002)

PLAN CLÉ / KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

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REVISIONS

FIGURE 2.23

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
229
210
GENERAL ARRANGEMENT
PLAN & SECTION
U/G 20 PERSONS REFUGE STATION

		DATE
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VÉRIFIÉ PAR / CHECKED BY	D. LAFLAMME	2014-08-28
APPROUVÉ PAR / APPROVED BY	D. LAFLAMME	2014-08-28
ÉCHELLE / SCALE	1:50	2013-12-02

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C:\Users\jocelyn.crete\Desktop\FIGURE\FIG 2.32 6509-229-210-002.dwg-2013-02-19 14:03:29

FILE NO. FIG 2.32 6509-229-210-002.dwg

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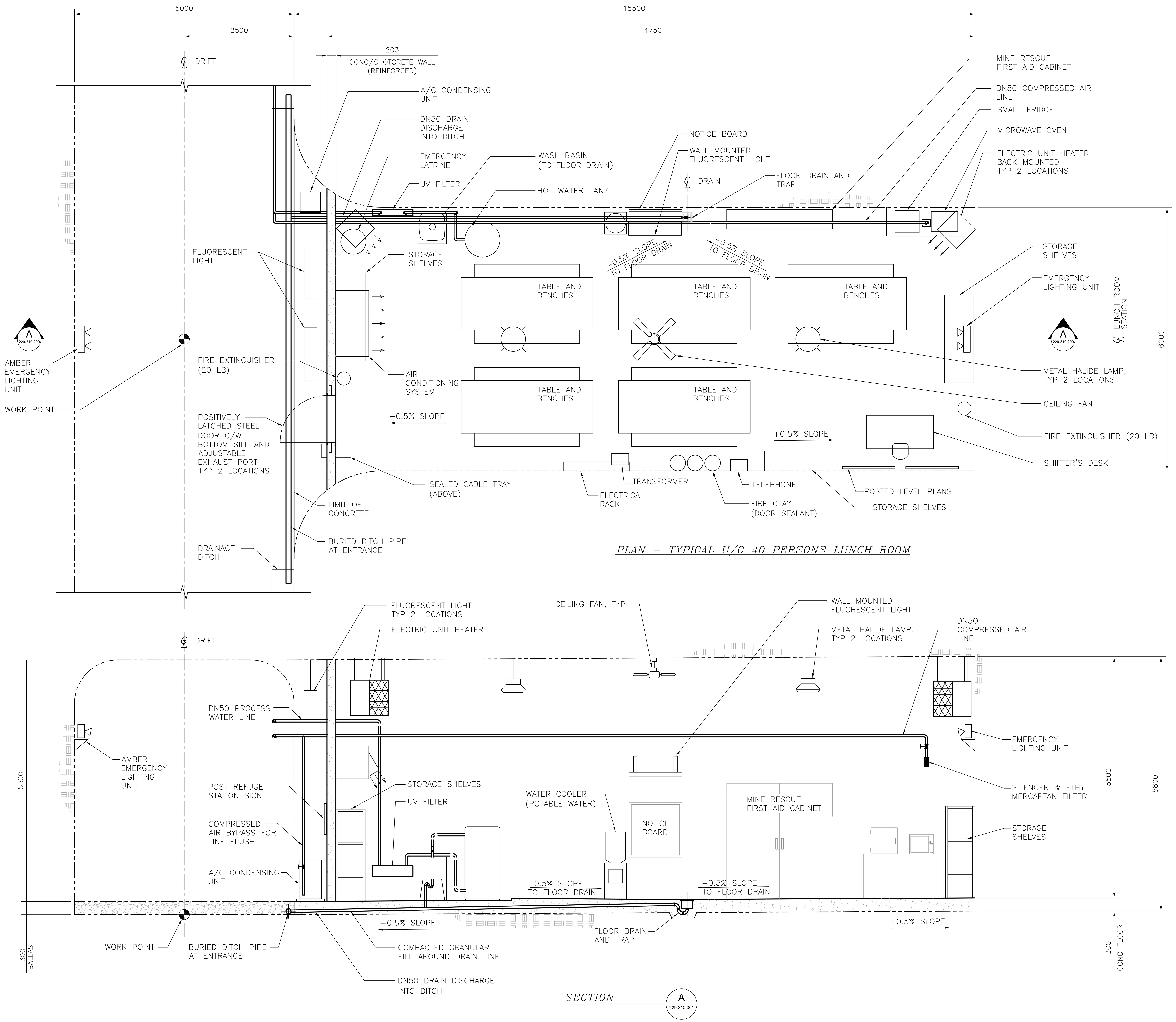

PLAN CLÉ / KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

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AGNICO EAGLE

DATE : 2014-12-23

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

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AGNICO EAGLE

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REVISIONS

FIGURE 2.24

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
229
210
GENERAL ARRANGEMENT
PLAN & SECTION
U/G 40 PERSONS LUNCH ROOMS

DESSINÉ PAR / DRAWN BY	J. CRETE	DATE	2013-12-02
VÉRIFIÉ PAR / CHECKED BY	D. LAFLAMME		2014-08-28
APPROUVÉ PAR / APPROVED BY	D. LAFLAMME		2014-08-28
ÉCHELLE / SCALE	1:50	DATE	2013-12-02

NO. DESSIN / DRAWING NO. 6509-229-210-001

NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
6509	0	1 / 1

AE-CART-ARCH D

C:\Users\jocelyn.crete\Desktop\FIGURE\FIG 2.33 6509-229-210-001.dwg-2013-02-19 14:03:29

FILE NO. FIG 2.33 6509-229-210-001.dwg

General Storage Bays

There will be no underground excavations dedicated to general storage. The plan is to use old draw points or other existing installations as storage areas.

Caps and Explosives Magazine Storage Bays

The caps and explosives magazine will be built to the same standards as magazines at other Agnico Eagle underground mine installations. Figure 2.25 shows the Meliadine design. The explosive plant on surface will minimize the quantity of explosives requiring storage underground and the size of the magazine to store them.

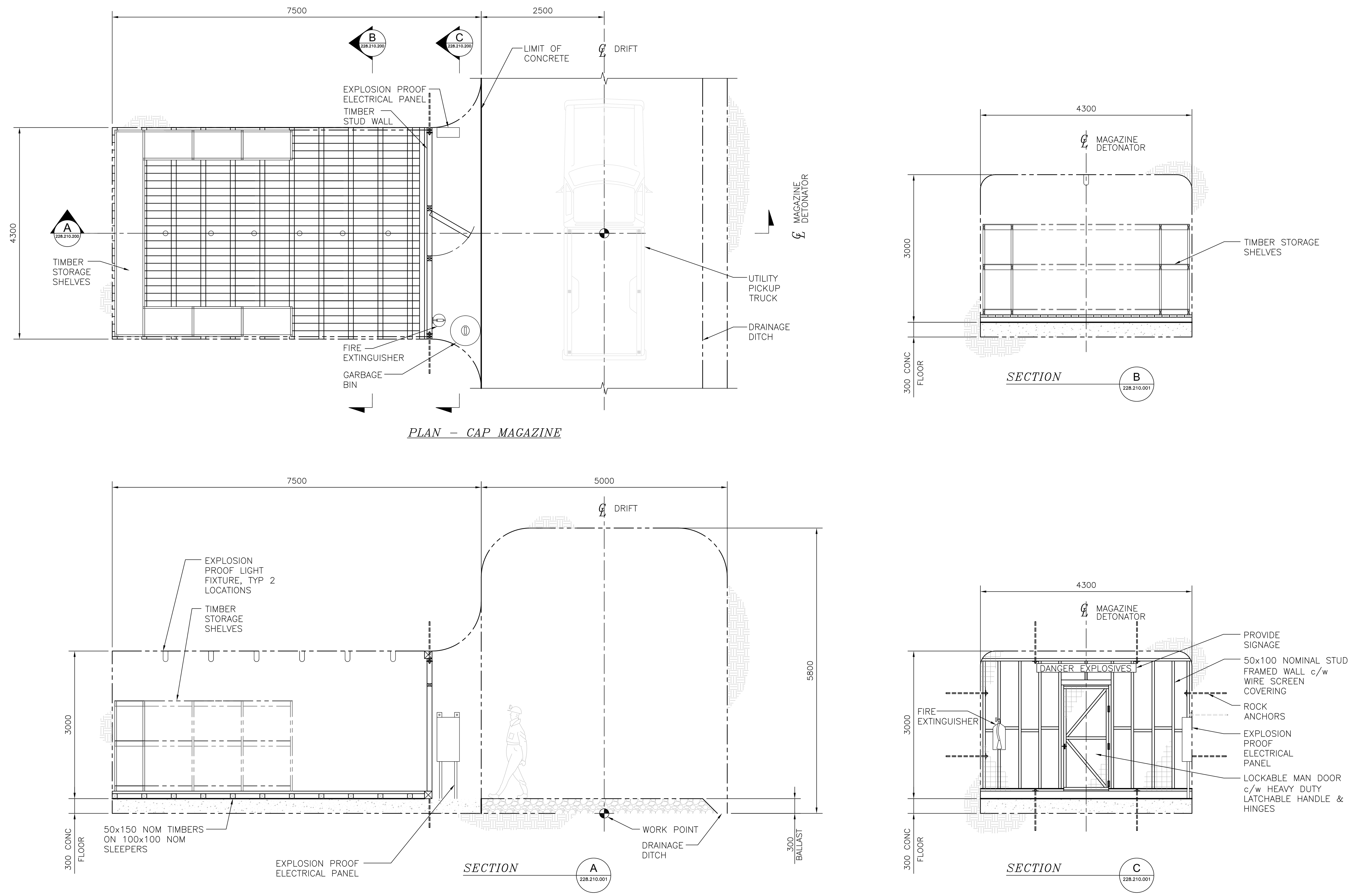
Electrical Distribution

Electrical power will be provided throughout the underground mine for operational and miscellaneous loads. The power will be distributed at 12.5kV through two primary feeders, located in the bore holes for the fresh air intakes East and West. The surface exhaust substation will be fed from the powerhouse electrical room. From there, power will be distributed to the intake substations East and West. Main feeders are located on the opposite side of the mine, to provide operation flexibility. A tie bus is located in the centre of the mine to achieve this flexibility. Main feeder capacity is equal to 7.8MVA each, and the expected underground load is 5.1 MW, including the main surface ventilation fans. Excluding the main fans, the load is expected to be 4 MW. A 1,000kVA, 12.5/0.6kV underground substation will be located on each level and along every 500 m of development. As underground development progresses, 30% of the electrical infrastructure will be reused underground. Boreholes will be used to connect substations between levels to minimize running cable on ramps or at level access points.

Figure 2.26 and Figure 2.27 illustrates the single line diagram underground.

NO. DESSIN DRAWING NO. 6509-228-210-001-R0

FORMAT ARCHD



PLAN CLÉ KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

ISSUED FOR PERMITTING

AGNICO EAGLE

DATE : 2014-12-23

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
0	2014-08-28	FINAL ISSUE	J.C.	D.L.	

REVISIONS

FIGURE 2.25

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
228 – CAP MAGAZINE
210
GENERAL ARRANGEMENT
PLAN & SECTION DETAILS

DESSINÉ PAR DRAWN BY	J. CRETE	DATE 2013-12-04
VÉRIFIÉ PAR CHECKED BY	D. LAFLAMME	2014-08-28
APPROUVÉ PAR APPROVED BY	D. LAFLAMME	2014-08-28
ÉCHELLE SCALE	1:50	DATE 2013-12-04

NO. DESSIN DRAWING NO. 6509-228-210-001

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHT
6509	0	1 / 1

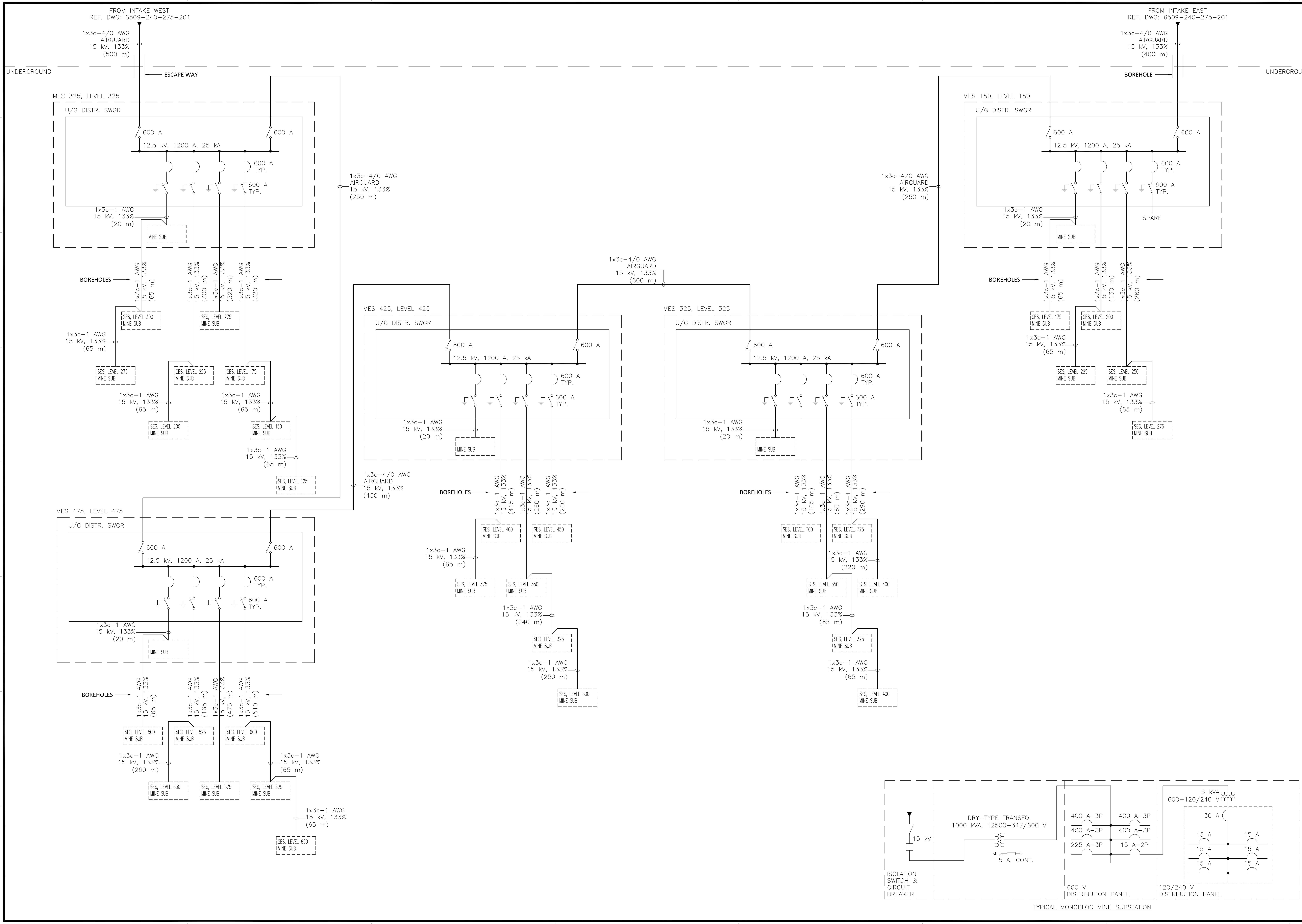
AE-CART-ARCH D

C:\Users\jocelyn.crete\Desktop\FIGURE\FIG 2.34 6509-228-210-001.dwg-2013-02-19 14:03:29

FILE NO. FIG 2.34 6509-228-210-001.dwg

NO. DESSIN DRAWING NO. FIG 2.35 6509-208-275-200

FORMAT ARCHD



PLAN CLÉ KEY PLAN

BBA
5287063-100208-47-D10-0001-R01

NOTES GÉNÉRAL / GENERAL NOTES

MES : MAIN ELECTRIC STATION
SES : SECONDARY ELECTRIC STATION

ISSUED FOR PERMITTING

AGNICO EAGLE

DATE : 2014-12-23

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
-	-
-	-
-	-
-	-
-	-
TIRIGANIAQ LONGITUDINAL	6509-TIR-208-000-002-R0

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
1	2014-08-26	UPDATED AS PER LATEST DEVELOPMENT PLAN	L.G.	S.L.	
0	2014-08-06	FINAL ISSUE	L.G.	S.L.	
A	2014-08-01	FOR COMMENTS	L.G.	S.L.	

REVISIONS

FIGURE 2.26

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
208 – MAIN ELECTRICAL SUBSTATION
POWER ELECTRICAL
SINGLE LINE DIAGRAM
U/G MINE ELECTRICAL DISTRIBUTION

DESSINÉ PAR DRAWN BY	E. GARIEPY	DATE	2014-07-24
VERIFIÉ PAR CHECKED BY	L. GELINAS		2014-07-24
APPROUVÉ PAR APPROVED BY	S. LANDRY		2014-07-24
ÉCHELLE SCALE	NONE	DATE	2014-07-24

NO. DESSIN DRAWING NO. 6509-208-275-200

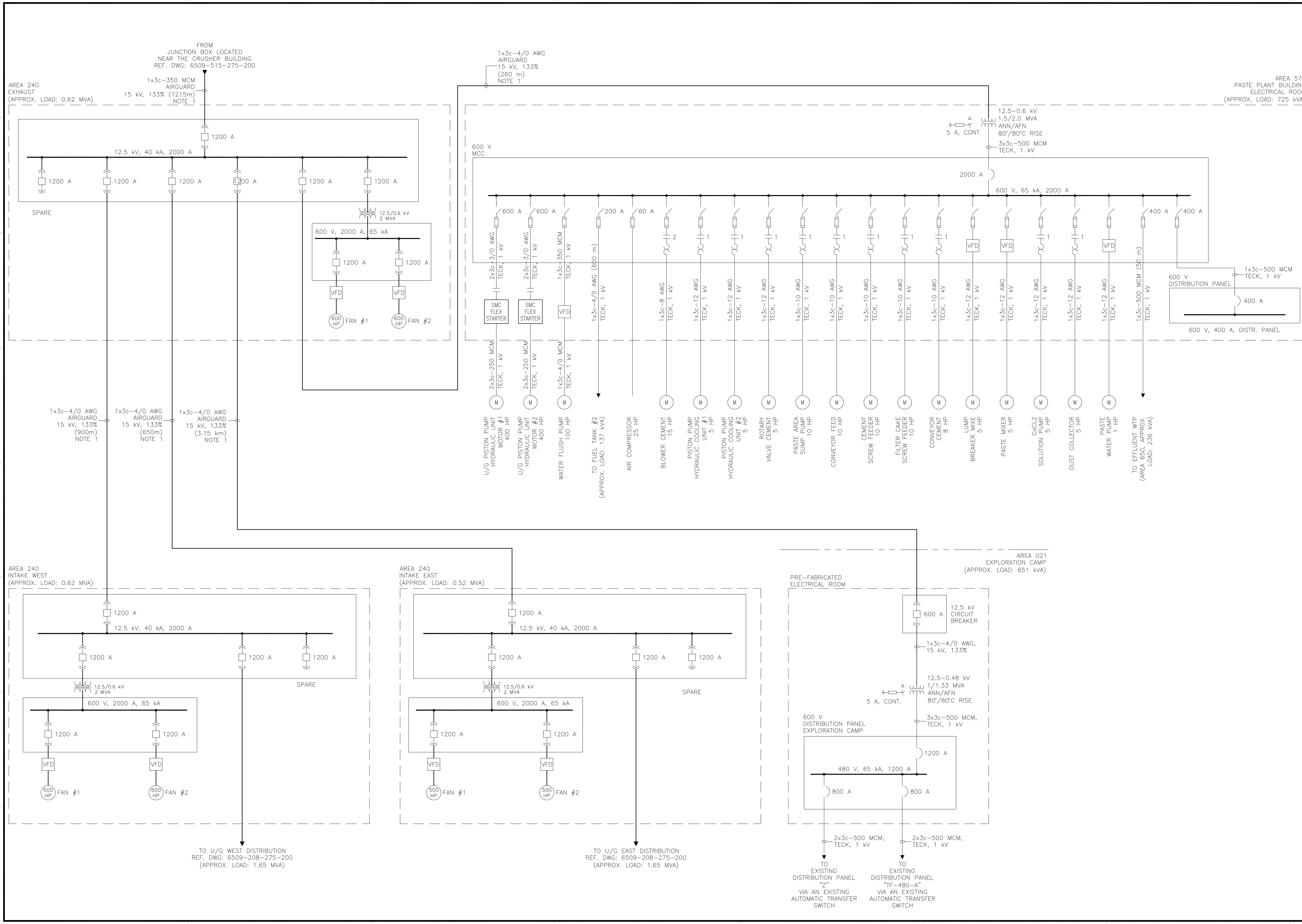
NO. PROJET PROJECT NO. 6509 — REVISION 1 — FEUILLE / SHT 1 / 1

AE-CART-ARCH D

C:\Users\jocelyn.crete\Desktop\FIGURE\FIG 2.35 6509-208-275-200.dwg-2013-02-19 14:03:29

FILE NO. FIG 2.35 6509-208-275-200.dwg

NO. DESSIN DRAWING NO. FIG 2.36 6509-240-275-201



PLAN CLÉ / KEY PLAN

BBA

5287063-100240-47-D10-0001-R00

NOTES GÉNÉRALES / GENERAL NOTES

1- POWER CABLES ARE LAYED ON GROUND (STONE DUST PATH) ALONG THE ROAD. A MOUND OF DUST OR SAND WILL BE ERECTED ON TOP OF THE CABLES TO PROTECT THEM.

ISSUED FOR PERMITTING

AGNICO EAGLE

DATE : 2014-12-23

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
0	2014-08-06	FINAL ISSUE	L.G.	S.L.	
A	2014-07-16	FOR COMMENTS	L.G.	S.L.	

REVISIONS

FIGURE 2.27

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
240 – MINE MAIN VENTILATION
POWER ELECTRICAL
SINGLE LINE DIAGRAM
AREA 021, 240 AND 575

DESSINÉ PAR / DRAWN BY	A. BABIN	DATE 2014-07-07
VÉRIFIÉ PAR / CHECKED BY	L. GELINAS	2014-07-16
APPROUVÉ PAR / APPROVED BY	S. LANDRY	2014-07-16
ÉCHELLE / SCALE	NONE	DATE 2014-07-10

NO. DESSIN / DRAWING NO. 6509-240-275-201

NO. PROJET / PROJECT NO. 6509 — REVISION 0 — FEUILLE / SHT 1/1

AE-CART-ARCH D

C:\Users\jocelyn.crete\Desktop\FIGURE\FIG 2.36 6509-240-275-201.dwg-2013-02-19 14:03:29

FILE NO. FIG 2.36 6509-240-275-201.dwg

Communication System

The underground communications system will consist of:

- digital leaky feeder communications system that will cover the entire mine;
- 48-core fibre optic network with patch panels that will connect electrical substations, pumping stations, underground regulators, and surface fans into a data monitoring system;
- underground fibre optic network linked to the main surface network; and
- direct phone lines installed in underground refuge stations.

The underground communications system will support the following:

- personnel and asset tracking;
- tracking devices, tracking stations, and tracking software/server;
- ventilation on demand;
- control ventilation regulators;
- control Variable Frequency Drives on auxiliary fans;
- control Variable Frequency Drives on surface fans;
- air quality monitoring stations for the fresh and return air system;
- main pump station automation;
- maintenance bay automation;
- refuge station and office communications; and
- stench gas injection systems.

2.3.6 Environmental Management

Groundwater from the underground workings will be collected and treated, as needed. Excess groundwater will be stored on the surface for the first two years of operation on surface. Agnico Eagle plans to complete hydrogeological studies in 2015 and 2016 to increase accuracy in estimates of the groundwater flow and quality. Subsequent to completion of the study, Agnico Eagle will submit an update to the Water Management Plan outlining the LOM plan for groundwater management. The feasible options for groundwater management are presented in Appendix F of the Water Management Plan, submitted in support of the Type A Water Licence Application.

Wastewater from the paste plant will be treated at the WTP, and then directed to the CP1. Mine water management will be handled through a series of sumps and pumping stations. Overall site water management is provided in the Water Management Plan.

Air quality and temperature will be controlled to protect worker health. Agnico Eagle will monitor its energy usage and consumption with a mandate to seek methods to reduce overall consumption. Energy consumption is considered a key environmental performance indicator at all of Agnico Eagle's operations. Agnico Eagle's energy consumption per unit of production (per tonne milled and per oz of gold produced) is monitored and reported on a monthly basis and is subject to review by senior management with a view to driving better energy efficiency measures. Agnico Eagle also reports this energy consumption data by intensity annually to the public as part of its corporate social responsibility reporting.

2.4 Ore Management

Based on Tiriganiaq, 12.1 Mt of ore will be mined and classified into high grade, low grade, and marginal grade ore. Ore transported from underground and the open pit will be preferentially directed to the crusher. When or if this is not possible, the ore will be temporarily stockpiled in one of three ore stockpiles the vicinity of the crusher (Figure 1.2). The evolution of ore stockpiles are summarized Table 2.12.

The temporary ore stockpiles themselves will be managed and operated so as to minimize potential freezing of the stockpiled materials. Detailed stockpile design and key design parameters for the ores stockpiles, as well as strategies for dust and runoff control from the stockpiles, are described in the Ore Storage Management Plan, submitted as part of the Type A Water Licence Application.

The selected ore stockpiles are located within the catchment of Pond H17 (CP1), as shown in Figure 1.2. Site contact water from the ore stockpiles will be collected by a perimeter water management system located to the south end of the stockpiles. Surface runoff water and seepage from the ore stockpiles will be diverted to CP1 via Channel 1, where the collected contact water will be treated by the WTP prior to being discharged to the outside environment. Detailed information on the management of runoff water and seepage from the ore stockpiles is described in the Water Management Plan.

2.4.1 High Grade Ore

High grade ore will be milled and processed during the early years of mine operation. Prior to commissioning in the last quarter of Year -1, high grade ore will be temporarily stored in Ore Stockpile 1. Thereafter, high grade ore from the open-pit operations will be directly trucked to the mill processing facility.

2.4.2 Low Grade Ore

Low grade ore produced from open-pit mining will be stored in Ore Stockpile 1 for subsequent processing. The maximum amount of the low grade stockpile in Ore Stockpile 1 will be approximately 238.4 kt.

2.4.3 Marginal Ore

The marginal grade ore from underground and open-pit mining will be stockpiled in Ore Stockpile 2 and Ore Stockpile 3, respectively. Approximately 1,112 kt of marginal ore will be produced and stockpiled during the life of mine.

2.5 Ore Processing and Associated Activities

The proposed ore processing facility will be centrally located relative to the mining site, but at a sufficient distance from the open pits (a minimum safety distance of 750 m was used) to reduce the impact of vibration and limiting the potential for fly rock caused by blasting from striking the facility (Figure 1.2).

The facilities will comprise crushing, grinding, gravity recovery, cyanidation, and gold recovery in a CIL circuit. The main ore processing streams will be continuous operations, while the carbon-handling and gold recovery circuits will be batch operations. The plant operating schedule will be on a continuous basis with 92 % plant availability, with a design processing rate at 385 tonnes per hour, or 3,000 tpd in Year 1 to Year 3. Expansion to 5,000 tpd is planned for Year 4 to Year 8. The processing plant is anticipated to operate for eight years.

The mineral processing facility consists of four main components:

1. Crusher plant;
2. Belt conveyor from crusher to the ore bin;
3. Process plant; and
4. Paste backfill plant.

The process plant building will house the ore processing equipment. The first three components are linked by covered conveyor structures to transport crushed ore to the process plant. The building will be a conventional steel structure covered with cladding and an insulated pre-painted roof system to be assembled on-site. Insulated pre-painted exterior walls, 100 mm thick (R30), and a roof 100 mm thick (R30) will be used. Internal walls will be constructed using steel studs, with single-skin steel panels; Gyproc will be added where required for fire rating compliance. Where possible, internal offices will be prefabricated modules to simplify installation and reduce on-site construction time. The building's dimensions are approximately 102 m x 73.5 m for a total area 7,145 m².

Truck doors will provide access to a central corridor that will run the length of the process plant, providing space for equipment laydown and access to parts and consumables. Overhead cranes will service the grinding circuit, the thickening circuit, the CIL circuit, and the refinery.

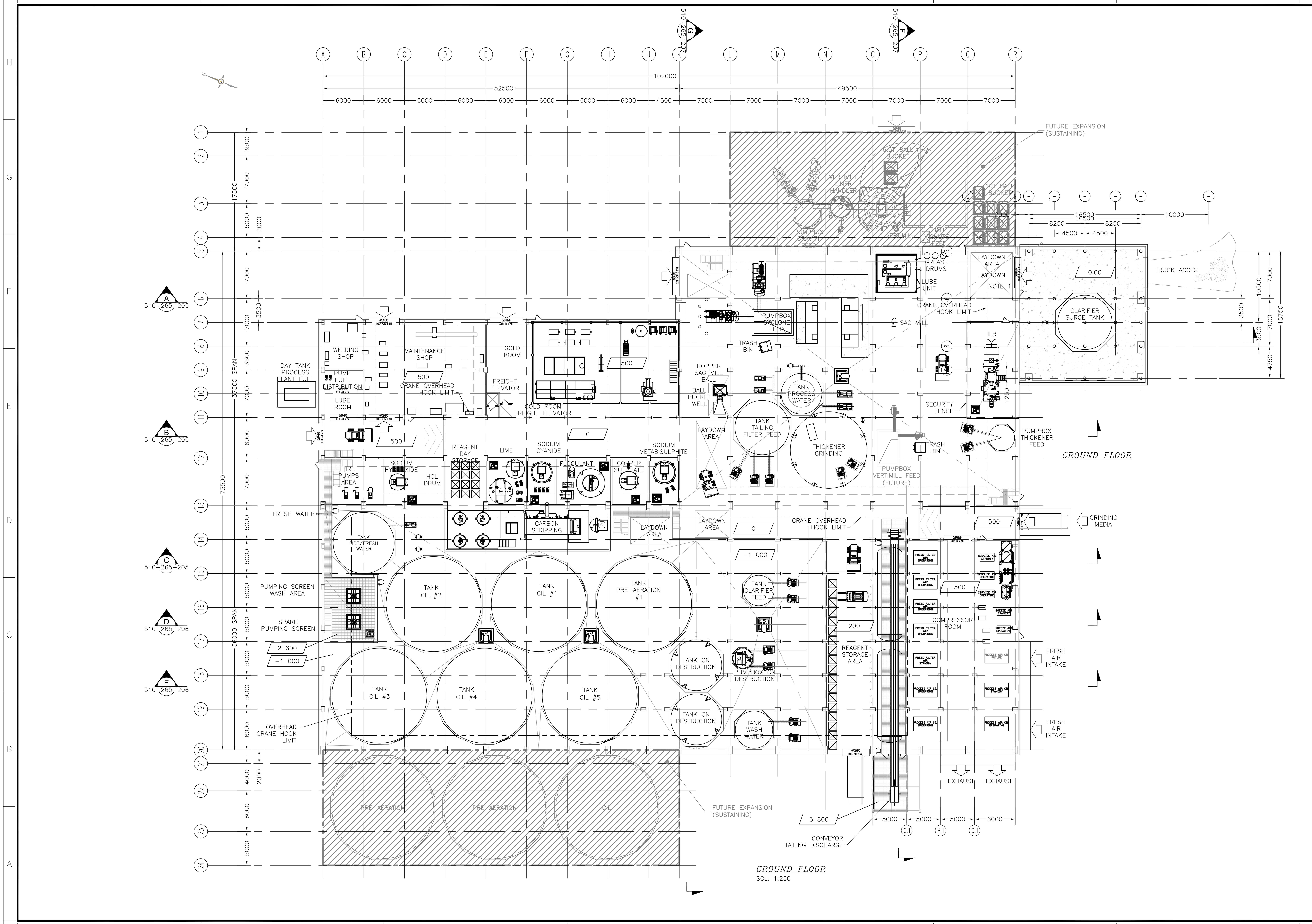
The process plant building foundation will be built on drilled piles embedded in bedrock. Heavy equipment will be placed on the structural concrete slab floor (a raft), which will be structurally supported by drilled piles. The process plant building is designed to maintain an average indoor temperature of 10°C.

Figure 2.28 gives an overview of the location of the main components at the first level of the processing facility.

All ore process equipment for the Project was sized based on metallurgical testing results or standard industry calculations. Table 2.19 summarizes the major design criteria selected for this Project (Agnico Eagle 2013a).

NO. DESSIN DRAWING NO. FIG 2.41 6509-510-265-202_R1

FORMAT ARCHD



PLAN CLÉ KEY PLAN

BBA

5287063-100510-45-D20-0001-R01

NOTES GÉNÉRAL / GENERAL NOTES

ISSUED FOR PERMITTING

AGNICO EAGLE

DATE : 2014-12-23

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
1	2014-08-29	CRUCHED ORE SILO REVIEW	SL	EF	
0	2014-08-01	FINAL ISSUE	LL	EF	
A	2014-07-02	FOR COMMENTS	LL		

REVISIONS

FIGURE 2.28

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
510 – MAIN BUILDING PROCESS PLANT
MECHANICAL
PLAN VIEW GROUND FLOOR

		DATE
DESSINÉ PAR DRAWN BY	L. LEMIEUX	2014-06-12
VÉRIFIÉ PAR CHECKED BY	S. CAMIRÉ, Eng.	2014-07-02
APPROUVÉ PAR APPROVED BY	É. FORGET, Eng.	2014-07-02
ÉCHELLE SCALE	1:250	2014-06-12

NO. DESSIN DRAWING NO. 6509-510-265-202

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHT
6509	1	1 / 1

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FILE NO. FIG 2.41 6509-510-265-202_R1.dwg

Table 2.19 Selected Design Criteria Ore Processing and Associated Facilities

Criteria	3000 TPD	5000 TPD	Units
General			
Mill operating days	365	365	d/y
Mill availability	92	92	%
Gravity gold recovery design	40	40	%
Gold production per year, nominal design	309,235	334,182	oz/y
Gold production per day, nominal design	847	916	oz/d
Crushing			
Availability	65	85	%
Crushing Plant Feed Rate operation design	209	302	mt/h
Crusher Feed Rate operation design	157	181	mt/h
Crusher undersize bypassing	25	40	%
Crushing circuit product P80 (mill feed)	80	115	mm
Grinding/Thickening			
Comminution specific energy (pinion)	22.7	19.1	kWh/t
SAG specific energy (pinion)	22.7	8.4	kWh/t
Single-stage SAG Mill pinion/motor efficiency	98.5	98.5	%
Single-stage SAG Mill Motor operation of its rated output	90	65	%
SAG mill circuit product transfer size T80 design	300	1300	microns
Bond ball work index, Bwi 200 mesh screen design (80th percentile)	14	14	kWh/t
Bond Abrasion index (Ai) design (80th percentile)	0.34	0.34	kWh/t
Vertimill specific energy	n/a	9	kWh/t
Vertimill motor operation of its rated output	n/a	90.0	%
Vertimill Installed motor	n/a	22350	kW
Vertimill motor power draw	n/a	2013	kW
Cyclone overflow P80	75	75	microns
Grinding thickener solids loading rate	2.9	2.9	$mt/m^2/h$
Grinding thickener diameter	11	11	m
Grinding thickener underflow density	55	55	% Solids
Gravity / Intensive Leaching			
Gravity concentrate grade	5264	3459	g/t Au
Gravity gold recovery design	40	40	%
Gravity weight recovery	0.07	0.07	%
Intensive Cyanidation Reactor feed design	2.28	3.80	mt/d

Table 2.19 Selected Design Criteria Ore Processing and Associated Facilities (continued)

Criteria	3000 TPD	5000 TPD	Units
Preaeration / Leaching			
No. preaeration stages	1	2	
Preaeration retention time	11.2	18.5	hours
CIL leach stages	5	7	
CIL retention time design	56	54	hours
Carbon concentration	15	15	g/L
Elution & Refinery			
Carbon per batch , design	6	6	mt
Carbon gold grade before elution design	2770	4630	g/mt
Carbon kiln feed rate	300	300	kg/h
Electrowinning cells no.	4	5	
Cyanide Destruction / Tailings Filtration			
Solids design	48.8	48.8	% Solids
Number of cyanide destruction tanks	2	2	
CN destruction feed CNWAD concentration Design	100	100	mg/L
Cyanide destruction tails solution CNWAD concentration target	10	10	mg/L
Cyanide destruction time	200	130	min
Number of filter operating	2	3	
Filter press solid throughput instantaneous (dry basis)	337	375	t/h
Filtration rate	149	149	kg/m^2-h
Filter press utilization	86	86	%
Lamella Flow loading rate	1.52	1.52	m^3/m^2-h
Clarifier underflow density	30	30	% Solids
Tailings Transport Truck loading rate (wet solid)	200	200	t/h
Tailings Transport Cake Hopper capacity	300	300	t
Paste backfill plant capacity (wet)	3000	3000	t/d
Paste backfill plant availability	92	92	%

2.5.1 Crusher Plant

The crusher plant has a dimension of 25 m x 9 m. The building will be a conventional steel structure covered with cladding and an insulated metal roof system to be assembled on-site. A rigid foundation with piles and concrete on bedrock will support equipment and structural loads. The ore will be trucked from the underground mine to the crusher plant located in the vicinity of the process plant. The trucks dump into a hopper equipped with a static grizzly and a hydraulic rock breaker that handles any oversize rocks. An apron feeder is located under the dump hopper. The ore is fed to a reciprocating grizzly feeder via the apron feeder. Oversize rock from the grizzly feeder is fed to a jaw crusher. The jaw crusher product and the undersize from the reciprocating grizzly feeder are both transferred by gravity to the jaw crusher discharge conveyor, which then carries the material to the 2,500 Mt capacity ore bin adjacent to the process plant. The ore is reclaimed from the bin using an apron feeder that discharges onto the semi-autogenous grinding (SAG) mill feed conveyor at an average feed rate of 136 tonnes per hour.

The crushing plant is designed to accommodate an increase in production from 3,000 to 5,000 tpd in Year 4.

Belt Conveyor (Crusher to Ore Bin)

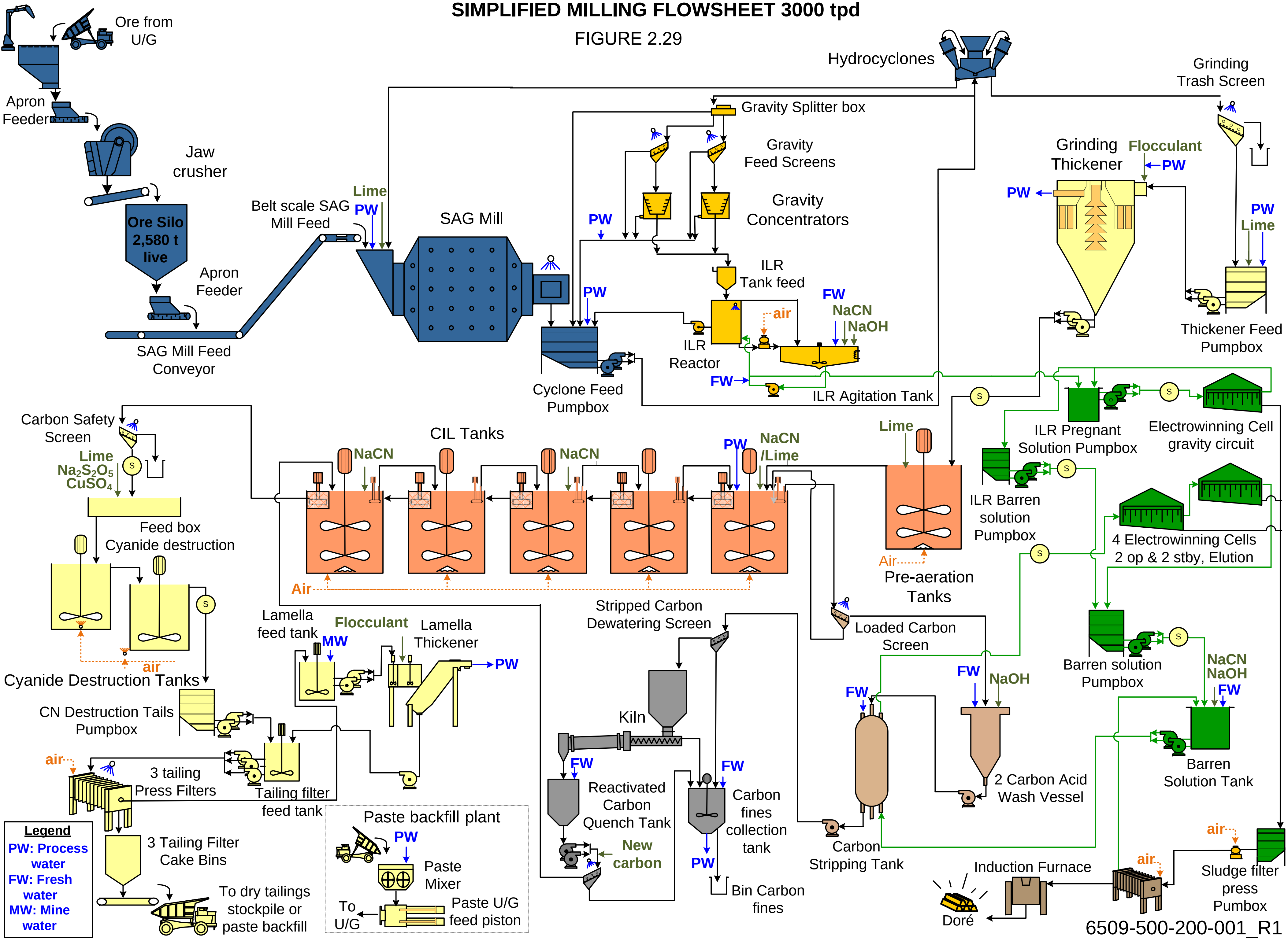
A belt conveyor system will be used to transport the ore between the crusher, the grizzly feeder, and the ore bin. Conveyor loads will be kept within designated load limits to minimize dust.

2.5.2 Process Plant

The ore will be milled in the process plant at a feeding rate of 3,000 tpd in Year 1 to Year 3, and 5,000 tpd in Year 4 to Year 8. Proposed milling flow sheets for 3,000 tpd and 5,000 tpd are shown in Figure 2.29 and Figure 2.30, respectively. In addition, Figure 2.28 shows the proposed process plant general arrangement for the operating floor. The ore processing flow sheet is similar to that at the Meadowbank Mine. This enabled Agnico Eagle to bring all of the lessons learned at its Meadowbank ore processing plant to the proposed Meliadine ore processing plant design.

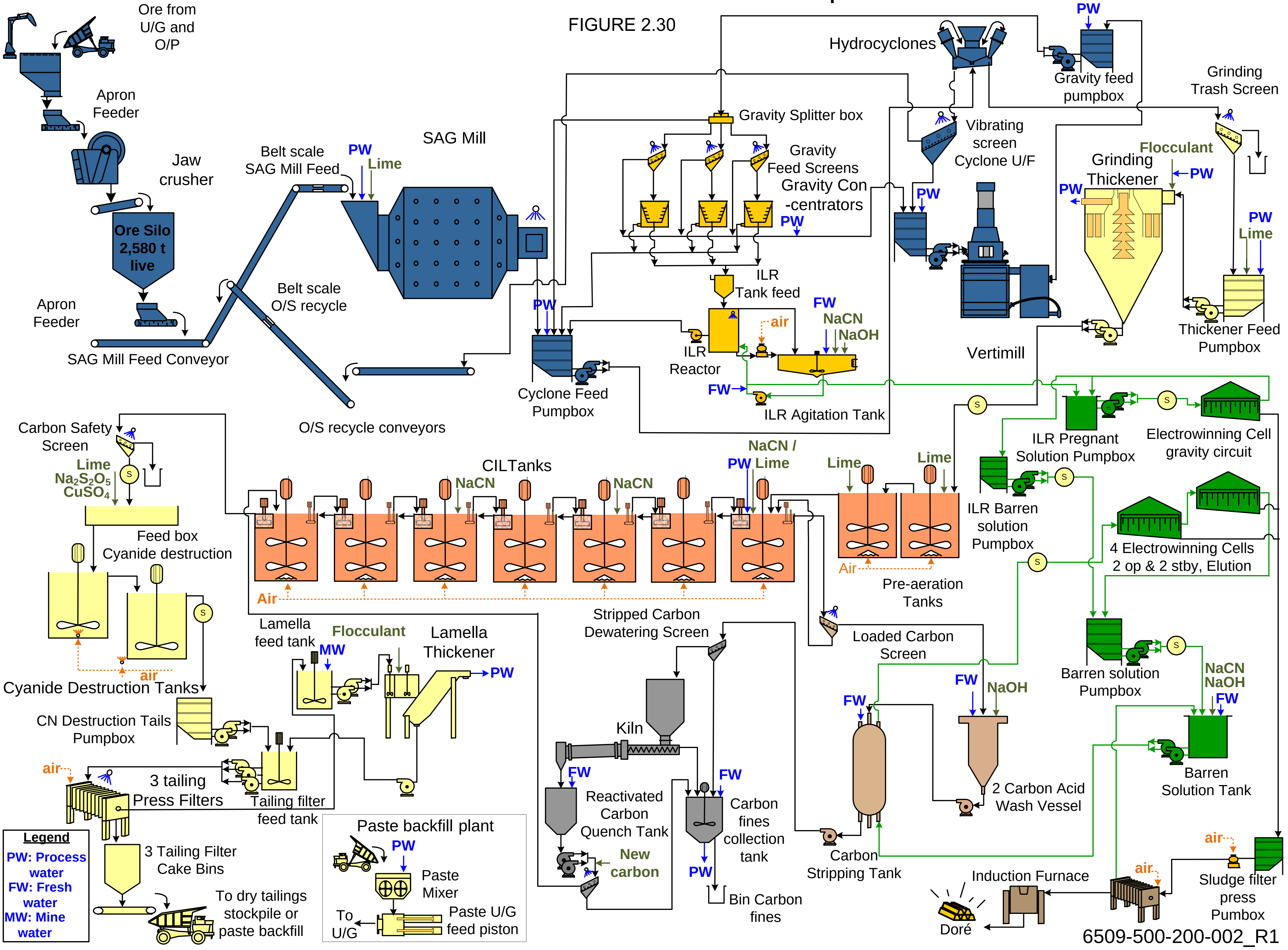
AGNICO EAGLE MINES LTD – MELIADINE 6509 FEAS CONCEPT REVIEW
SIMPLIFIED MILLING FLOWSHEET 3000 tpd

FIGURE 2.29



AGNICO EAGLE MINES LTD – MELIADINE 6509 FEAS CONCEPT REVIEW
SIMPLIFIED MILLING FLOWSHEET 5000 tpd

FIGURE 2.30



Grinding and Thickening

The single stage process plant discharges through a trommel screen. The trommel undersize feeds a pump box from which the slurry is pumped to the cyclone cluster, while the oversize is recovered in a trash bin and disposed of. Grinding is performed in a closed circuit, with the cyclone underflow recirculating to the SAG mill, while the overflow reports to the grinding trash screen and further to the thickener feed pump box. Underflow from the thickener is pumped to the CIL circuit and the overflow reports to the process water tank, which is the source of water for most applications in the plant. The proposed layout for the SAG mill discharge area takes into consideration the potential future retrofit of a vibrating screen and recycle conveyors, should the plant throughput be increased and the circuit expanded to a two-stage circuit.

Underflow from the grinding thickener is sent, after automatic sampling, to the CIL circuit pre-aeration tank into which process air is sparged to achieve sulphide oxidation. Lime is then added for pH control. The pre-aeration tank is followed by five agitation CIL tanks in series. Leaching is performed using sodium cyanide, and pH is controlled with lime addition. All CIL tanks are also sparged with process air.

Gravity Recovery

A portion of the SAG mill discharge is diverted to the gravity circuit, comprised of two centrifugal concentrators operating in parallel. Ahead of each concentrator is a vibrating screen that removes material coarser than 2 mm and returns it to the grinding circuit. The undersize from both screens feeds the centrifugal concentrators. The tailings from the concentrators are combined and returned to the cyclone feed pump box, while the concentrates are combined and sent to the intensive cyanidation reactor. Here the concentrates are leached prior to the pregnant solution being pumped to the electrowinning circuit. Space has been allocated in the layout for a third gravity concentrator unit for possible future expansion.

Carbon-in-Leach

Slurry travels through the CIL circuit via the inter stage pumping screens, while loaded carbon is pumped by the carbon transfer pumps, counter-current to the slurry flow, to the previous CIL tank and finally to the loaded carbon screen. This step is performed regularly, based on the carbon gold loading.

Space has been allocated to the west of the CIL circuit for possible future expansion consisting of three tanks of larger volume or two pre-aeration tanks followed by six agitation CIL tanks in series.

Carbon Stripping and Reactivation

Loaded carbon from CIL tank 1 is pumped to the loaded carbon screen. The screen undersize is returned to the same CIL tank, while screen oversize feeds the acid wash vessel.

Loaded carbon flows by gravity from the loaded carbon screen to the acid wash vessel. A dilute solution of hydrochloric acid is used to remove calcium carbonate and other contaminants from the carbon. The hydrochloric acid solution is circulated in an up-flow manner through the carbon bed in closed circuit with the acid solution pump and acid wash tank. The acid soak cycle follows the acid wash cycle. Once the washing step is complete, the solution is neutralized, discarded, and acid rinsing occurs. The carbon is rinsed with fresh water before it is transferred to the carbon stripping vessel. A pressurised Zadra desorption system is used to recover gold from the carbon. It is designed to run at approximately 140°C and a maximum operational pressure of 380 kPa.

In the strip vessel, carbon is combined with hot strip solution. The overflow from the stripping vessel consists of pregnant strip solution that is pumped to the electrowinning cells where gold is deposited onto stainless steel cathodes. The stripping cycle is operated for a predetermined period of time (typically 12 to 16 hours) and ends when the carbon loading reaches a low value. Barren solution is reused from one cycle to the other, but a solution bleed is periodically sent to the CIL circuit to control impurity buildups. Once the stripping cycle is completed, the carbon is rinsed and transferred to the reactivation kiln. The kiln thermally reactivates the carbon at ~700°C to remove organic compounds.

Reactivated carbon is quenched with fresh water upon exiting the kiln; from the kiln, it is pumped to the reactivated carbon sizing screen to remove fines. As required, new carbon is added to this stream after having been pre-treated. The screen oversize is returned by gravity to CIL tank 5, while screen undersize reports to the carbon fines collection tank by gravity.

The agitated carbon fines collection tank receives undersize from the stripped carbon dewatering screen and the reactivated carbon sizing screen, as well as fines from the kiln screw feeder. Underflow from the tank is pumped to the carbon fines filter and the resulting cake is collected and bagged.

Refinery

The gold recovery circuit encompasses three processes: electrowinning of gold from the intensive cyanidation pregnant solution, electrowinning of gold from the carbon strip pregnant solution, and smelting of the gold sludge from the electrowinning cells to produce doré bars.

To allow precise gold accounting from both the intensive cyanidation and the CIL, the electrowinning circuit is configured so that cells are dedicated to each stream. The design of the electrowinning circuit should also allow redirection of the streams to another cell if the dedicated one is down for maintenance. Once the electrowinning cycle is completed, gold sludge from the cells is pumped to the sludge filter press, and the resulting filter cake is dried in an oven and mixed with flux prior to gold melting. The melting furnace produces liquid metal and slag that is poured into molds. Doré bars are recovered, while the solidified slag is returned to the SAG mill.

The doré will be shipped to a refinery, where it will be further refined for a fee. The gold will then be returned to Agnico Eagle and sold on the open market.

Cyanide Destruction

Cyanide destruction is done in two tanks in series, using the sulphur dioxide (SO_2)/Air process. The tailings from the last CIL tank are directed to the carbon safety screen to recover any carbon that could have escaped the CIL circuit. The screen oversize is recovered into a bin, while the undersize is sampled before flowing to the cyanide destruction tank feed box that receives copper sulphate ($CuSO_4$), sodium metabisulphite ($Na_2S_2O_5$) and lime (CaO). Oxygen, required by the reaction will be introduced by sparging atmospheric air into the reaction vessels. The slurry then flows by gravity into cyanide destruction tank 1, where it is agitated and sparged with process air. The tank overflows into cyanide destruction tank 2, where it undergoes further agitation and sparging with process air. Cyanide destruction tank 2 overflows into the cyanide destruction tailings pumpbox after being sampled, where it is pumped to the filtration circuit. The two tanks will provide a total residence time of approximately 200 and 120 minutes for Year 1 to Year 3 and Year 4 to Year 8, respectively.

Tailings Dewatering

Tailings from the cyanide destruction circuit are pumped to the agitated filter feed tank, which acts as a buffer between the gold recovery process and the tailings filtration circuit. From there, the slurry is pumped to the tailings filter presses. The filtration plant consists of three recessed plate filter presses (two in operation, one standby), each with 60 filter chambers. The presses operate in a cycle, consisting of filter closing and clamping, filter feed, core wash and core blow, cake blow, and cake discharge.

The filters bring the moisture content of the filter cake below 16%. Filtrate and cloth wash solutions are collected and pumped to the Lamella clarifier. Part of the clarifier overflow is reused as filter cloth wash water, while the excess is forwarded to the gland seal water tank.

The filter cake is dropped onto a belt feeder located under each filter unit. Each belt feeder is located at an elevation such that the chute above it provides approximately 300 Mt of reserve. The three feeders discharge onto a collecting conveyor installed perpendicular to the three feeders. This conveyor extends outside the plant building to load the trucks that will transport the cake to the tailings area or to the paste backfill plant, as required.

Sampling and Metallurgical Balance

Sampling equipment for both solids and liquids are located at many locations within the plant, to maintain good metallurgical accountability. Primary metallurgical control is obtained from the pre-aeration feed head sample and the final tailings sample.

Services and Utility

The process plant air system consists of two separate systems. The process air (high pressure and low pressure) consists of three or four compressors, and is used to provide the required air flow to pre-aeration, cyanidation, cyanide destruction, and the filter presses. The plant and instrumentation air (100 psi) system provides compressed air for instrumentation, electrical and mechanical shops, as well as other services within the process plant building and power plant.

In the crusher plant, an air compressor and air receiver will be installed for operations and maintenance at the primary crushing area. Plant air compressors will provide service and instrument air for the entire process plant. An air dryer will remove moisture in instrument air. Low pressure air compressors will be installed for the pre-aeration/cyanide leach tanks and for the cyanide destruction tanks. A set of two blow down compressors and one squeeze in operation, will supply air to the two tailings press filters that will be in operation at any one time.

Process Water System

The process plant is comprised of four main water tanks: the fire/fresh water tank, the process water tank, the gland seal water tank, and the filter cloth wash water tank.

The process water tank receives water from the grinding thickener and excess water from the Lamella clarifier overflow. Makeup water from Meliadine Lake can be added to the tank, as required. This water serves most applications that do not require fresh or filtered water.

The gland seal water tank 7.4 m diameter is fed by the Lamella clarifier overflow. This water is used for pump gland sealing, gravity concentrator fluidization water, the intensive cyanidation circuit, and for cemented paste backfill. Fresh water can also be used as make-up for the gland seal water when the paste backfill plant is operating. A fourth water tank, fed by the Lamella clarifier overflow, is used exclusively for filter cloth wash water.

2.5.3 Paste Backfill Plant, including the Underground TSS Removal Plant and the Surface Water Treatment Plant

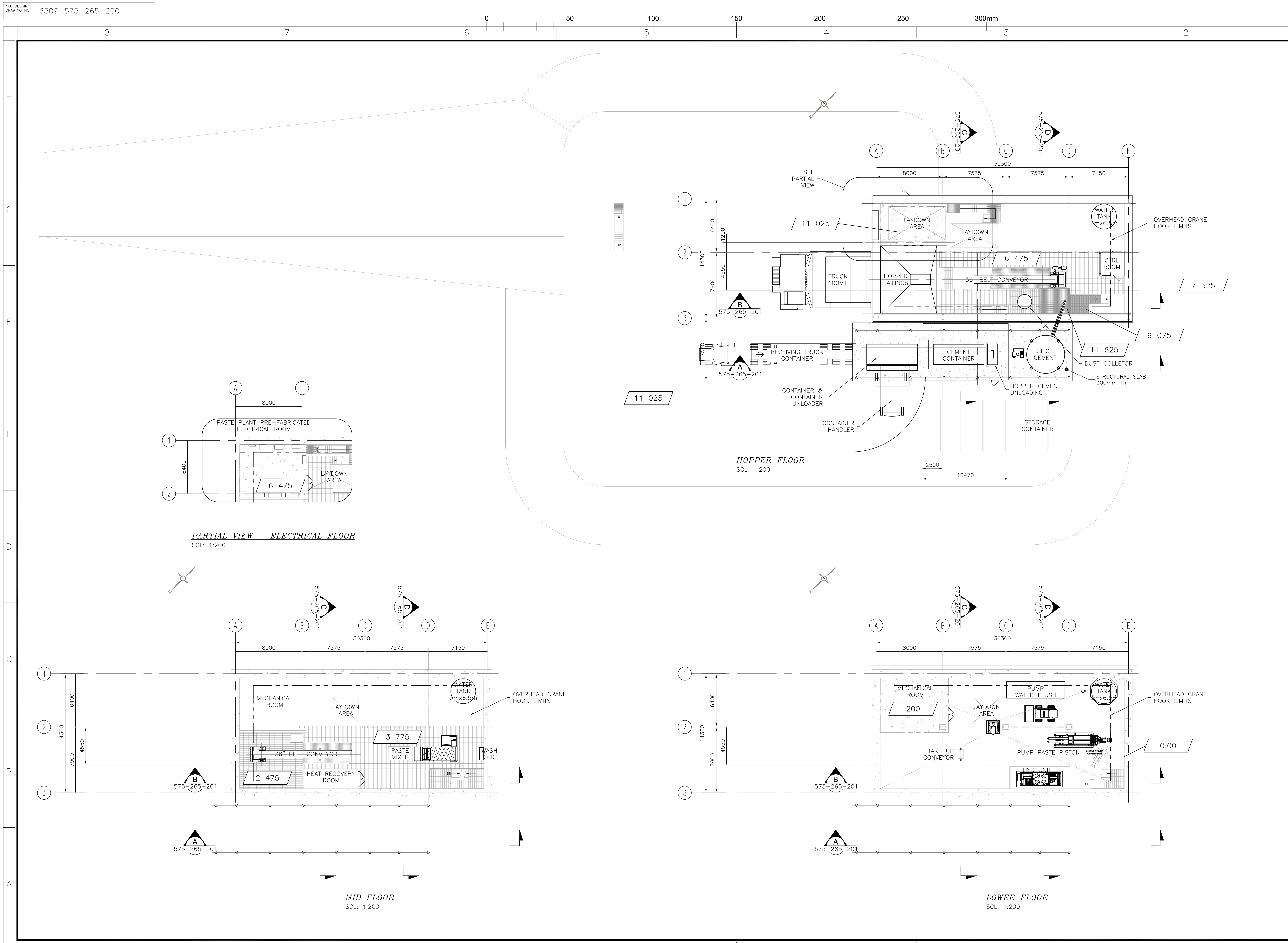
The paste plant building will measure 22 m x 21 m and will be located north of Portal 1 (Figure 1.2). The building will be a conventional steel structure covered with cladding and an insulated metal roof system to be assembled on-site. A rigid foundation with piles and/or concrete on bedrock will support equipment and structural loads (see Figures 2.31A and 2.31B).

The paste backfill circuit is detached from the main process plant and housed in a separate building located close to the underground mine Portal 1 (Figure 1.2). This building houses the services required for the operation (compressed air, maintenance work area, water). As required, filtered tailings are trucked from the process plant to the paste backfill plant and dumped into the receiving hopper. A screw feeder transfers the filtered tailings to a weigh scale conveyor that discharges into the paste mixer, where water is added. Cement is fed from a 200-tonne capacity bin adjacent to the paste backfill building. The paste mixer overflows into the paste pump hopper and from here the paste is pumped underground. One paste piston pump is installed.

The water required for the paste recipe will either be obtained from the underground mine or from the process plant via a pipeline installed between the two buildings.

NO. DESSIN / DRAWING NO. 6509-575-265-200

FORMAT ARCHD



PLAN CLÉ / KEY PLAN

BBA

5287063-100575-45-D20-0001-R00

NOTES GÉNÉRAL / GENERAL NOTES

ISSUED FOR PERMITTING

AGNICO EAGLE

DATE : 2014-12-23

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
0	2014-08-01	FINAL ISSUE	LL	EF	
A	2014-07-21	FOR COMMENTS	LL		

REVISIONS

FIGURE 2.31A

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
575 – PASTE PLANT
MECHANICAL
PLAN VIEW

DESSINÉ PAR / DRAWN BY	L. LEMIEUX	DATE 2014-07-21
VÉRIFIÉ PAR / CHECKED BY	S. CAMIRÉ, Eng.	2014-07-21
APPROUVÉ PAR / APPROVED BY	É. FORGET, Eng.	2014-07-21
ÉCHELLE / SCALE	1:200	DATE 2014-07-21

NO. DESSIN / DRAWING NO. 6509-575-265-200

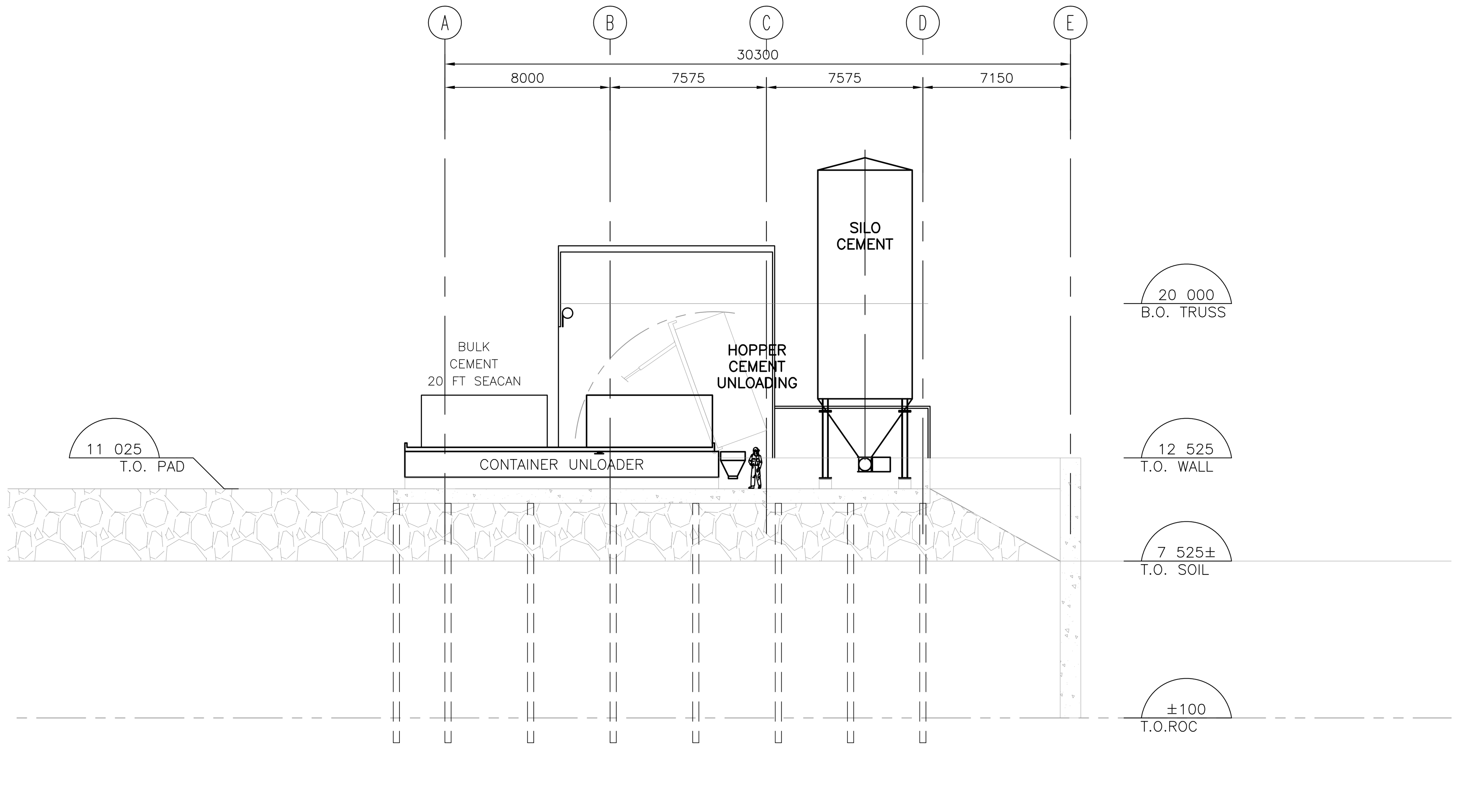
NO. PROJET / PROJECT NO.	REVISION	FEUILLE / SHT
6509	0	1 / 1

AE-CART-ARCH D

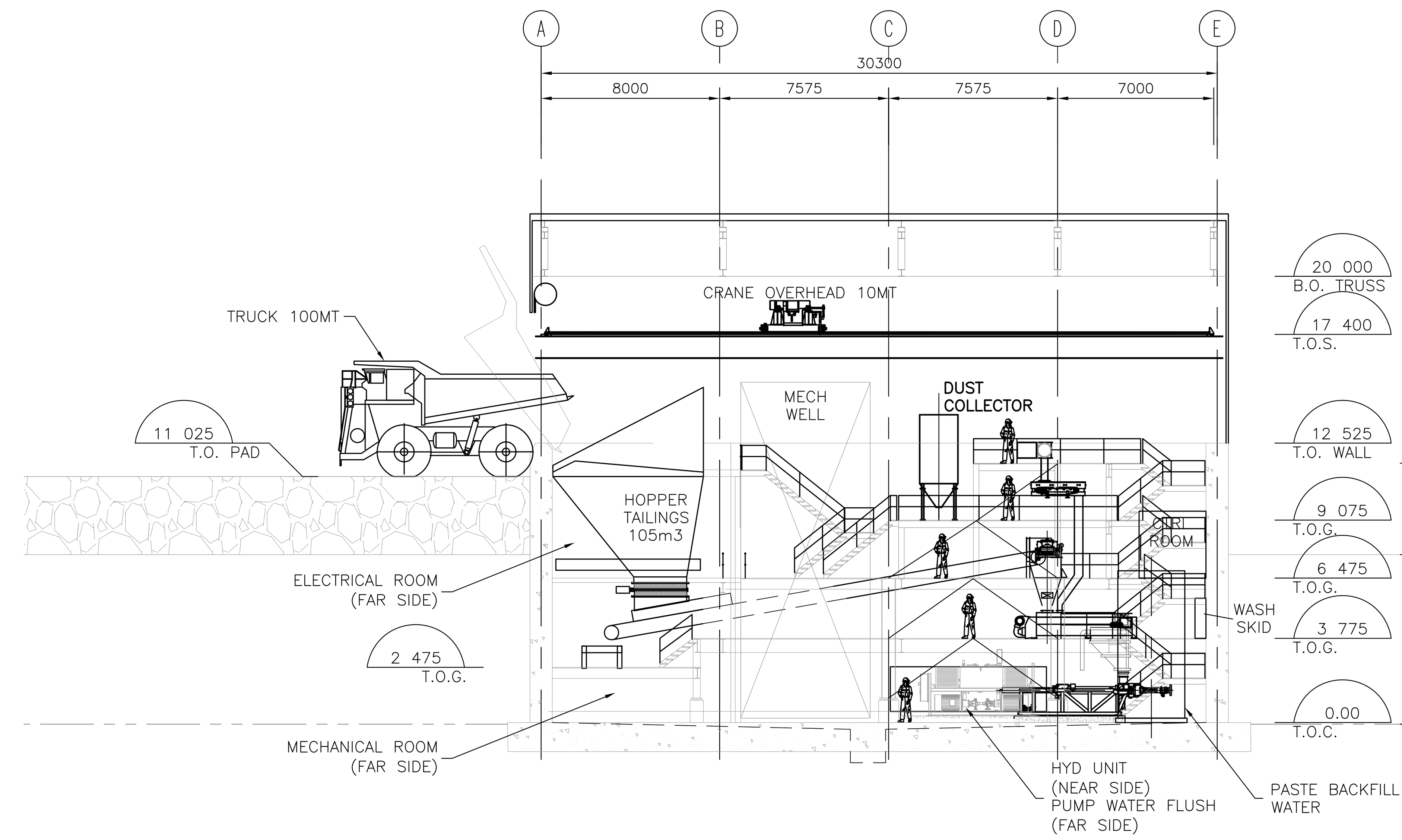
FILE NO. 6509-575-265-200.dwg

NO. DESSIN
DRAWING NO. 6509–575–265–201

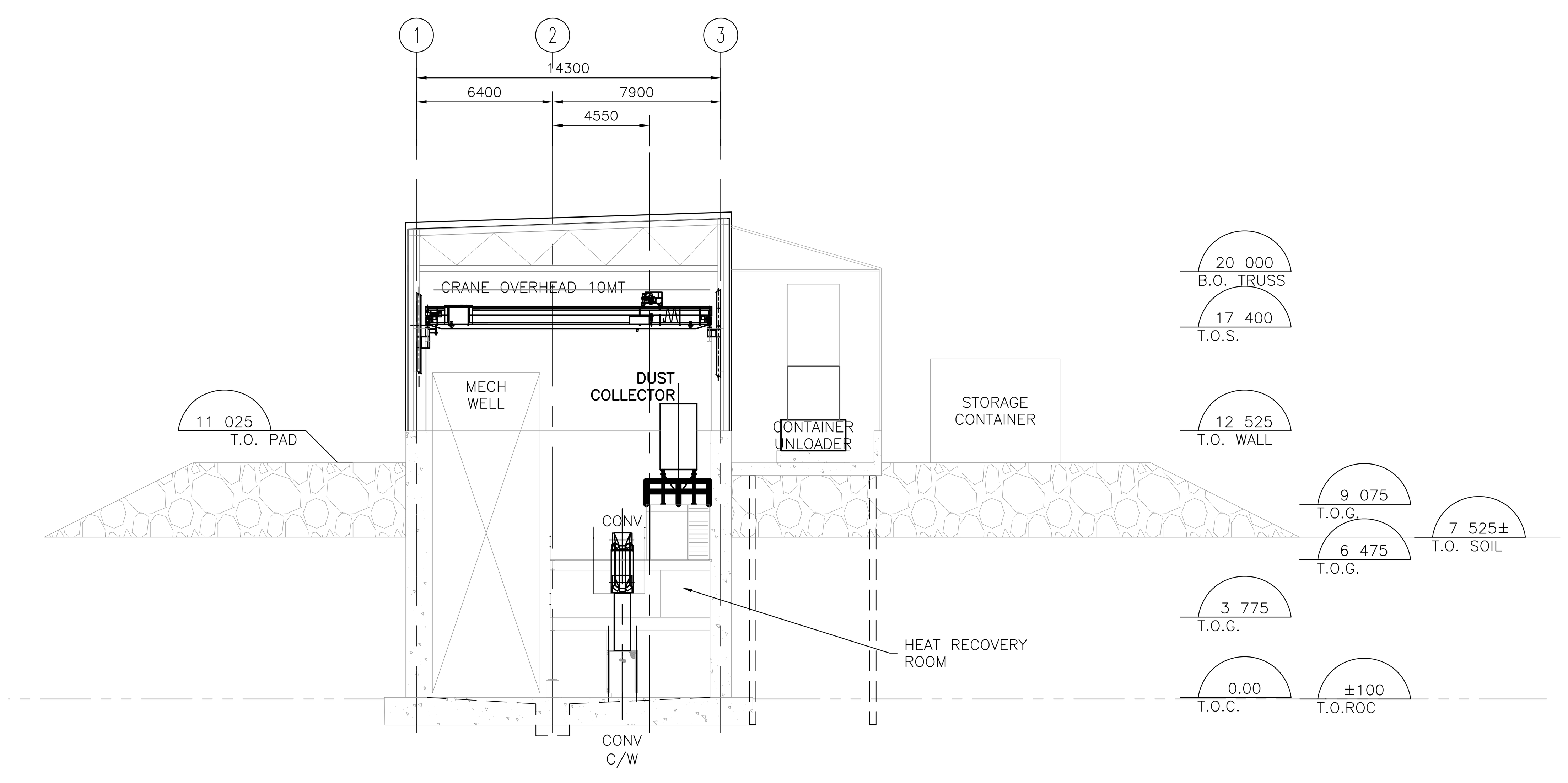
FORMAT ARCHD



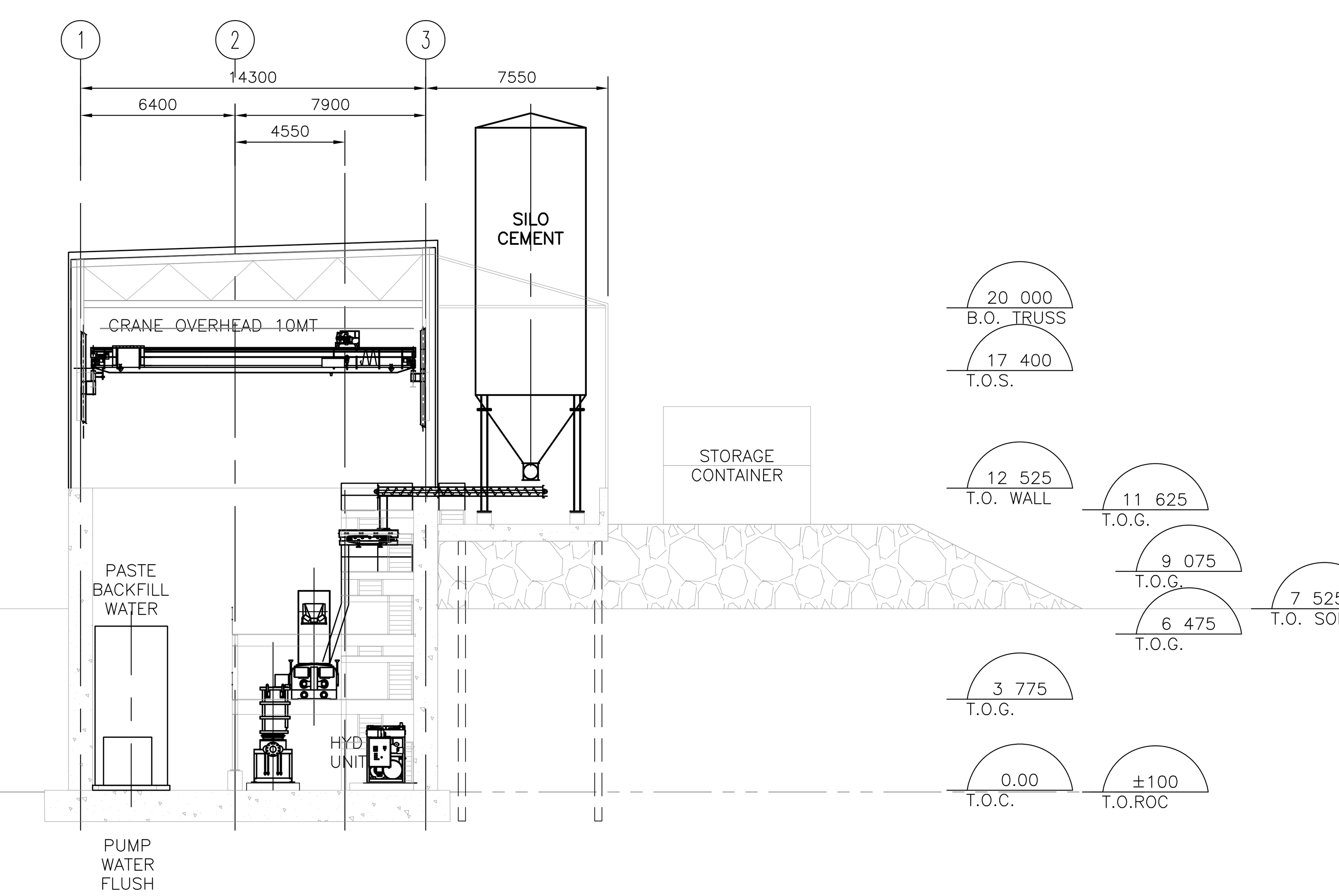
SECTION A
SCL: 1:200 575–265–200



SECTION B
SCL: 1:200 575–265–200



SECTION C
SCL: 1:200 575–265–200



SECTION D
SCL: 1:200 575–265–200

PLAN CLÉ
KEY PLAN

BBA
5287063-100575-45-D20-0002-R00

NOTES GÉNÉRAL / GENERAL NOTES

ISSUED FOR PERMITTING
AGNICO EAGLE
DATE : 2014–12–23

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
0	2014–08–01	FINAL ISSUE	LL	ÉF	
A	2014–07–21	FOR COMMENTS	LL		

REVISIONS

FIGURE 2.31B

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
575 – PASTE PLANT
MECHANICAL
SECTION VIEW A, B AND C

DESSINÉ PAR / DRAWN BY	L. LEMIEUX	DATE 2014–07–21
VERIFIÉ PAR / CHECKED BY	S. CAMIRÉ, Eng.	2014–07–21
APPROUVÉ PAR / APPROVED BY	É. FORGET, Eng.	2014–07–21
ÉCHELLE / SCALE 1:200	DATE 2014–07–21	
NO. DESSIN / DRAWING NO. 6509–575–265–201		
NO. PROJET / PROJECT NO. 6509	REVISION 0	FEUILLE / SHT 1 / 1

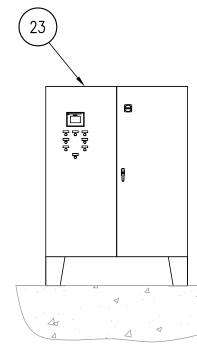
AE–CART–ARCH D

FILE NO. 6509–575–265–201.dwg

Based on the site wide water balance (Water Management Plan, Appendix B), a water treatment plant (WTP) will be required to treat and discharge 470,000 m^3 of contact at Year -4. The volume of water requiring treatment and discharge will increase to a maximum of 798,000 m^3 at Year 3 and then decrease to 673,000 m^3 at the last year of the life of mine (Year 8).

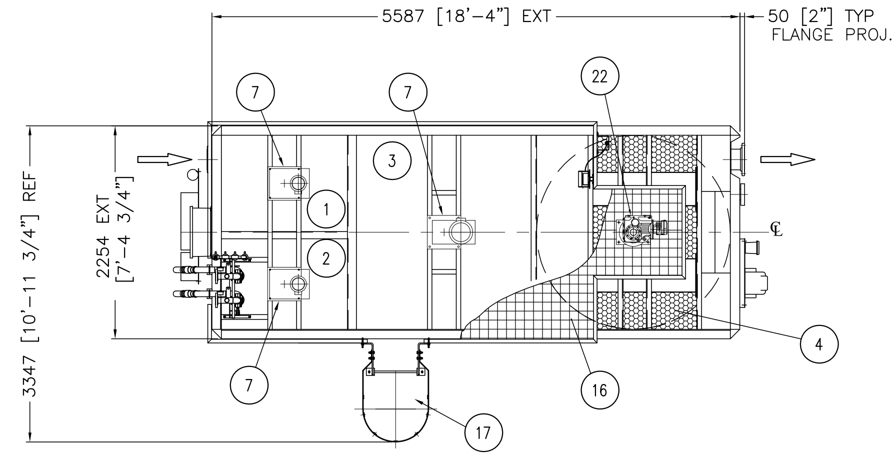
Based on the anticipated water quality (Water Management Plan, Appendix G) and water quantity, the WTP will be used to treat total suspended solids (TSS) in contact water. The WTP is designed to treat large volumes of water to minimize costs associated with water storage on-site. An iterative process was used to optimize the balance between the size of the collection ponds and the WTP. Based on the maximum flow rate required each year, it was determined that the WTP (Actiflo® system model ACP-600R) will have a capacity of 520 m^3/h (nominal flow) at Year -4 and will be increased with a second ACP-600R to reach a capacity of 1,040 m^3/h at Year 3 (Figure 2.33).

At Year -3, one WTP unit (Actiflo® system model ACP-300R [Figure 2.32]) having a TSS treatment capacity of 100 m^3/h will be installed underground to manage underground water including recirculated water for underground operation and excess groundwater. A description of the groundwater infrastructure for water management is provided in Section 2.3.2.



CONTROL PANEL

ALLOW 915 [3'-0"] MIN. CLEARANCE IN FRONT OF PANEL

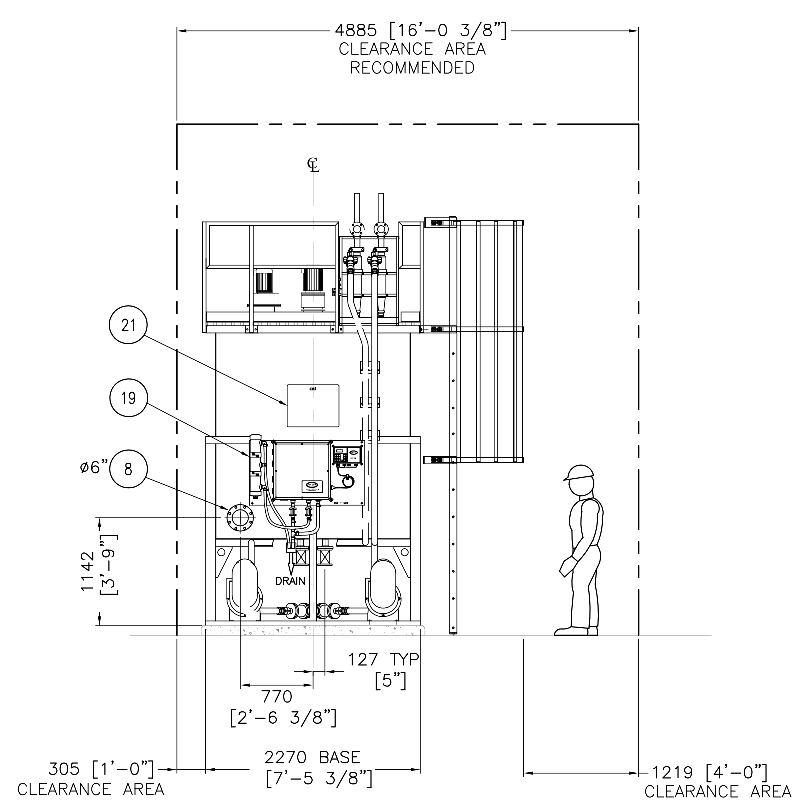


PLAN VIEW

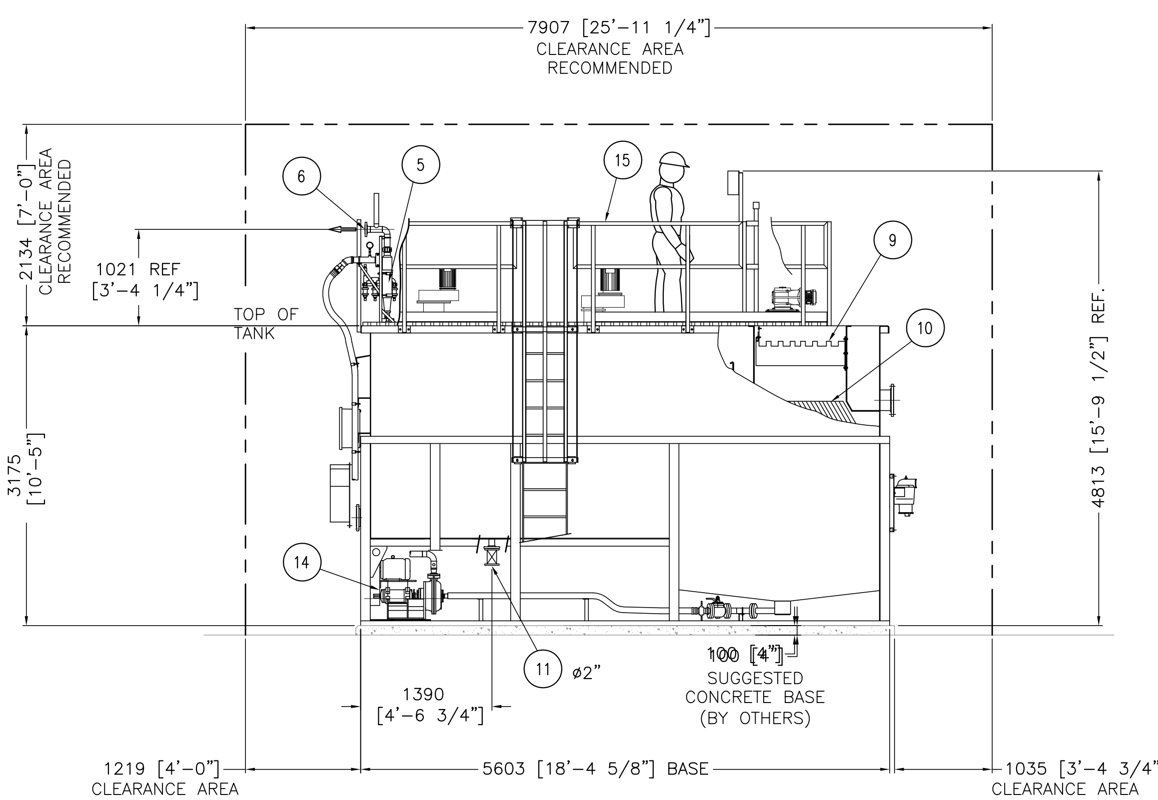
1 COAGULATION TANK	13 PARTIAL DRAIN (OPTIONAL)
2 INJECTION TANK	14 MICROSAND RECIRCULATION PUMPS
3 MATURATION TANK	15 GALVANIZED HANDRAIL
4 SETTLING TANK	16 FRP GRATING
5 HYDROCYCLONE	17 LADDER
6 HYDROCYCLONE SLUDGE OUTLET	18 COAGULATION pH METER
7 MIXER	19 RAW WATER TURBIDIMETER
8 RAW WATER INLET	20 CLARIFIED WATER TURBIDIMETER
9 CLARIFIED WATER TROUGH	21 JUNCTION BOX
10 LAMELLA	22 SCRAPER
11 DRAIN	23 CONTROL PANEL
12 CLARIFIED WATER OUTLET	

PRELIMINARY

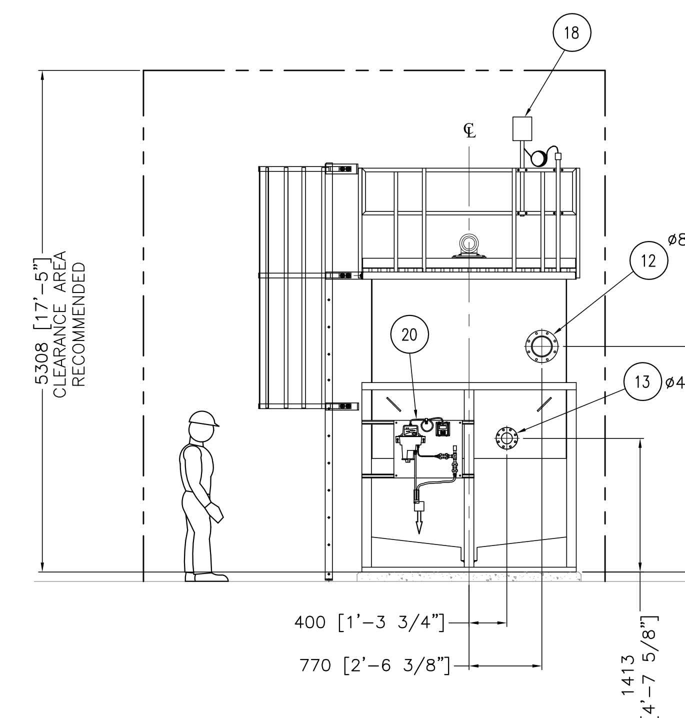
John Meunier



LEFT SIDE VIEW



ELEVATION



RIGHT SIDE VIEW

NOTES:

1- FOR LIST OF SUPPLY OF THIS EQUIPMENT, PLEASE REFER TO THE TECHNICAL SPECIFICATIONS.

2- OPTIONAL -----

3- A DROP AT EACH HYDROCYCLONE OULET IS IMPORTANT TO AVOID BACKFLOW THROUGH THE HYDROCYCLONE.

4- HYDROCYCLONE OUTLET ELEVATION MUST BE CONFIRMED BASED ON SUPPLIED RECIRCULATION FLOW (UPON AVAILABLE SELECTIONS).

5- TANK SHALL NOT BE USED AS SUPPORT FOR ANY OTHER EQUIPMENT. EQUIPMENT THAT NEED TO BE CONNECTED TO TANK SHALL BE SELF-SUPPORTED.

4- WEIGHT FOR (1) ACTIFLO:
TOTAL WEIGHT: 5 000 kg (11 000 LBS) (WITHOUT WATER)
TOTAL WEIGHT IN SERVICE:
35 000 kg (77 000 LBS) (WITH WATER)

REV	DESCRIPTION	DATE	DWN	CHKD	APVD	ECN
B	GENERAL REVIEW	2007-01-10	M.D.	P.S.		
A	PRELIMINARY	2005-07-27	C.M.	P.S.		

STD: "D" 22x34 | REF: | BAR = 1" AT PLOT SCALE

DESIGNER: M. LAUZON	DATE: 2005-07-27
CHECKER: P. SIMARD	DATE: 2005-07-27
ENGINEER	DATE
MANAGER	DATE
SCALE: 1 : 25	

TITLE: ACTIFLO ACP-300R GENERAL ARRANGEMENT

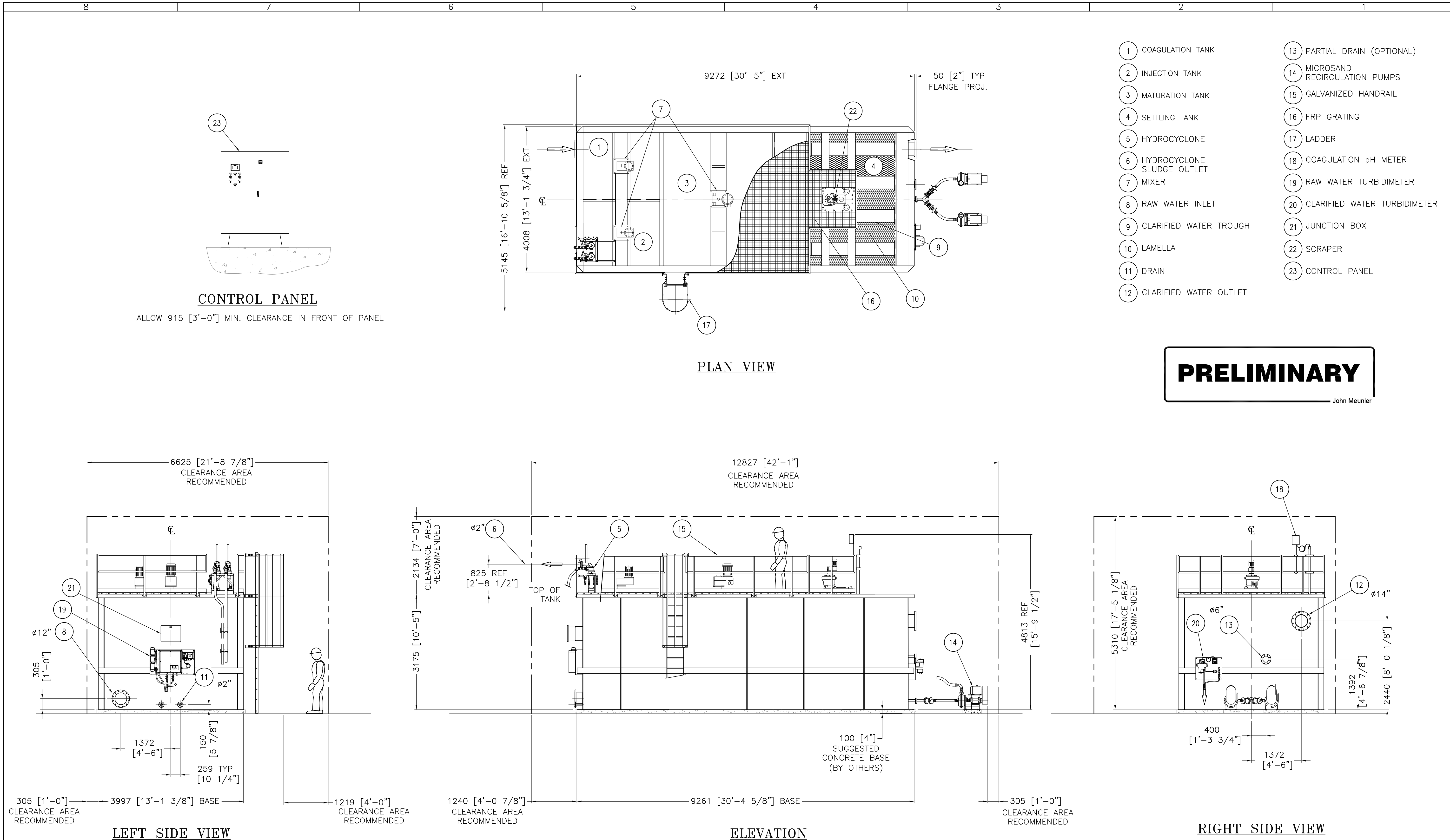
FIGURE 2.32

CLIENT

VEOLIA WATER Solutions & Technologies

VEOLIA Water Solutions & Technologies CANADA Inc.
4105 Sartelon Street,
Saint-Laurent, Qc, Canada H4S 2B3
Tel: (514) 334-7230 / Fax: (514) 334-5070

PROJECT	DRAWING	INTERNAL	SHEET	REV
	- GA100	ACP300R1	1 OF 1	B



NOTES:

1- FOR LIST OF SUPPLY OF THIS EQUIPMENT, PLEASE REFER TO THE TECHNICAL SPECIFICATIONS.

2- OPTIONAL -----

3- A DROP AT EACH HYDROCYCLONE OULET IS IMPORTANT TO AVOID BACKFLOW THROUGH THE HYDROCYCLONE.

4- HYDROCYCLONE OUTLET ELEVATION MUST BE CONFIRMED BASED ON SUPPLIED RECIRCULATION FLOW (UPON AVAILABLE SELECTIONS).

5- TANK SHALL NOT BE USED AS SUPPORT FOR ANY OTHER EQUIPMENT. EQUIPMENT THAT NEED TO BE CONNECTED TO TANK SHALL BE SELF-SUPPORTED.

4- WEIGHT FOR (1) ACTIFLO:
TOTAL WEIGHT: 11 000 kg (24 200 LBS) (WITHOUT WATER)
TOTAL WEIGHT IN SERVICE:
110 000 kg (242 000 LBS) (WITH WATER)

STD: JMI_22x34_D_ANG

REF:

BAR = 1" AT PLOT SCALE

REV	DESCRIPTION	DATE	DWN	CHKD	APVD	ECN
B	GENERAL REVIEW	2006-07-21	M.D.	P. S.		
A	PRELIMINARY RELEASE	05-04-25	ML	PS		

DESIGNER M.LAUZON	DATE 05-04-22
CHECKER P.SIMARD	DATE 05-04-25
ENGINEER	DATE
MANAGER	DATE
SCALE: 1:50	

TITLE: ACTIFLO ACP-600R
GENERAL ARRANGEMENT

FIGURE 2.33

CLIENT

VEOLIA WATER Solutions & Technologies
VEOLIA Water Solutions & Technologies CANADA Inc.
4105 Sartelon Street,
Saint-Laurent, Qc, Canada H4S 2B3
Tel: (514) 334-7230 / Fax: (514) 334-5070

PROJECT	DRAWING	INTERNAL	SHEET	REV
	- GA100	ACP600R1	1 OF 1	B

2.5.4 Reagents and Additives Used

The following reagents used in the processing of the ore will require handling, mixing, and distribution systems:

- flocculant;
- sodium cyanide;
- anti-scalant;
- caustic soda;
- lime;
- sodium metabisulphite;
- copper sulphate;
- hydrochloric acid
- activated carbon; and
- calcium chloride.

All reagents, except for anti-scalant and hydrochloric acid, are supplied in bulk bags. Reagent distribution systems are designed with 48 hours retention time.

Flocculant is supplied as a powder in bulk bags and is fed to the agitated polymer mixing tank via a bag loading hopper. Freshwater is added to the mix tank to form a solution that is transferred to the associated holding tank. From there it is pumped to the grinding thickener and the Lamella clarifier using metering pumps. In-line mixers are used to dilute the solution prior to the injection points.

Sodium cyanide (NaCN) is supplied as pellets in bulk bags and is fed to the agitated NaCN mix tank via a bag loading hopper. Freshwater is added to the mix tank to form a solution that is transferred to the associated holding tank. From the holding tank, it is distributed to the intensive cyanidation, CIL, and carbon stripping circuits.

Anti-scalant is obtained in drums and distributed to the water and carbon stripping circuits directly from the drum, using metering pumps. A total anti-scalant consumption of 0.005 kg/t is estimated for the process, assuming the partial replacement hydrochloric acid in the stripping circuit.

Caustic soda (NaOH) is supplied as a powder in bulk bags and is fed to the agitated NaOH mix tank via a bag loading hopper. Freshwater is added to the mix tank to form a solution that is transferred to the associated holding tank. From there it is distributed to the carbon stripping and gravity recovery circuits.

Lime (CaO) is supplied as a solid in bulk bags. The bulk bags are unloaded via a bag loading hopper and fed to the lime slaker along with fresh water. The slaked lime is then directed to the agitated lime mix/holding tank. From there, the milk of lime is pumped to the lime loop, where it is distributed to the various applications.

Sodium metabisulphite ($Na_2S_2O_5$) is supplied as a powder in bulk bags and is fed to the agitated Na2S2O5 mix tank via a bag loading hopper. Freshwater is added to the mix tank to form a solution that is then transferred to the associated holding tank. From there, it is distributed to the cyanide destruction circuit using a metering pump.

Copper sulphate ($CuSO_4.5H_2O$) is supplied as a powder in bulk bags and is fed to the agitated copper sulphate mix tank via a bag loading hopper. Freshwater is added to the mix tank to form a solution that is transferred to the associated holding tank. From there, it is pumped to the cyanide destruction circuit using a metering pump.

Hydrochloric acid will be sporadically used in the stripping circuit to eliminate the scale in the stripping circuit. The total hydrochloric acid consumption of 0.04 kg/t is expected based on experience and takes into account the usage of an anti-scalant. The delivery in tote bins will be by seacan.

Natural coconut shell-type activated carbon (dimension 6 mesh x 12 mesh) will be used in the adsorption circuit. The total estimated activated consumption is 0.04 kg/t, based on operation standards. The delivery will be by container of 20 bags of 500 kg or approximately 10 tonnes per shipment.

Calcium chloride could be use in the paste backfill recipe or use to unfreeze the ore stockpile, if needed

2.5.5 Geotechnical Considerations

The floor of the process plant will be a concrete slab on a well compacted structural fill. The process plant foundations are conceptually designed to be on piling. The plant location was selected using the permafrost and geotechnical baseline assessment work. The design intent is to avoid foundation conditions where thaw of the permafrost could be an issue. Prior to construction, if the Project is approved, Agnico Eagle will complete additional geotechnical assessment of foundation conditions. Dependent on actual foundation conditions, thermal modeling of permafrost will be completed, if required.

2.5.6 Environmental Considerations

The Water Management Plan provides water management and environmental protection measures related to water management for the processing plant.

All surface contact water will be collected and ultimately directed to CP1, which will also be a source of reclaim water for the mill. Freshwater use for the milling operations will be minimized as much as possible. Process water will be recirculated in the process plant.

Potential saline water will come from groundwater infiltration below the permafrost and will mix with other groundwater. Groundwater will be re-circulated for underground operations and excess groundwater will be pumped to the surface for management.

Tailings management is discussed in the Mine Waste Management Plan. Any other waste generated by the mill (waste reagents, for example) will be handled appropriately as per the Hazardous Materials Management Plan. Waste reagents that cannot be used in the milling process will be shipped back south for disposal at a licensed waste disposal facility. However, experience at the Meadowbank Mine suggests that the mill will generate very little in the form of waste reagents. Most waste from the mill (outside of tailings) will be in the form of waste lubricating oil from equipment oil changes, which will be disposed of in the incinerator (see Incineration Management Plan).

Dust bags will be present at appropriate locations in the crushing/conveying circuit and in the mill to control/minimize dust. Having a covered crushed pile will also limit dust dispersion.

The mill, especially the crushing circuit, is one of the biggest energy consumers of the mine operation. As such, optimizing energy consumption is one of the design criteria for the mill, and energy consumption optimization will be an ongoing activity.

2.6 Waste Rock Storage Facilities

Waste rock and overburden from the open pit operations will be trucked to one of three WRSFs (Figure 1.2) until the end of mine operation, with distribution according to the operation schedule. Table 2.7 summarizes the schedule and quantities to be mined from the open pit and underground mining operations. Table 2.8 presents a summary of the total tonnage of mine waste materials and their proposed usage or destination. The mine waste management flow diagram is provided in Figure 3.1 of the Mine Waste Management Plan. Waste Rock Storage Facilities management is described in detail in the Mine Waste Management Plan, submitted as part of the Type A Water Licence Application.

2.6.1 Mine Waste Storage

The overall objective of the site selection for the WRSFs was to minimize the footprint of the areas occupied by the waste rock and overburden, and where possible, to avoid environmentally and socially sensitive areas. Three areas were identified for the WRSFs to store waste rock and overburden material, as shown in Figure 1.2. These selected areas can be described as follows:

- WRSF1: located north of Tiriganiaq Pit 1 with an approximate footprint of 41.4 ha;

- WRSF2: located south of Pond H17 (CP1) with an approximate footprint of 20.2 ha; and
- WRSF3: located north of Tiriganiaq Pit 2, covering Pond H20, with an approximate footprint of 22.7 ha.

Two small shallow ponds (Ponds A17 and B9) are located within the footprint of WRSF1 and will be covered by the facility. WRSF1 will accept waste rock produced from Tiriganiaq underground mining and Tiriganiaq Pit 1, and overburden produced from Tiriganiaq Pit 1. It is anticipated that approximately 10.2 Mt (5.42 M m^3) of waste rock and 6.5 Mt (4.02 M m^3) of overburden will be placed in WRSF1. All overburden material produced from pre-stripping of Tiriganiaq Pit 1 will be placed in WRSF1. The WRSF1 is expected to reach its design capacity by end of Year 4.

Five small ponds (Ponds A58, H8, H9, H10, and H11) are located within the footprint of WRSF2. Pond A58 will be fully covered and the other four ponds will be partially covered by waste rock. The WRSF2 will accept the majority of waste rock produced from Tiriganiaq Pit 1 from Year 5 to Year 7. The WRSF2 is expected to reach its design capacity by end of Year 7.

Pond H20 will be covered by WRSF3. The facility will accept overburden from pre-stripping of Tiriganiaq Pit 2, and all waste rock produced from Tiriganiaq Pit 2 with some portions of waste rock from Tiriganiaq Pit 1 in Year 4 and Year 5. The WRSF3 is expected to reach its design capacity by end of Year 7.

2.6.2 Waste Rock/Overburden Stockpile Design Criteria

The following key design criteria were adopted for the design of the WRSFs:

- height of the first lift over original ground surface: 5 m;
- side slopes for each lift of waste rock: 1.3(H):1(V);
- width of the horizontal offset between the first lift and second lift: 15 m;
- width of the horizontal offset between two adjacent lifts above the second lift: 30 m for WRSF1 and 20 m for WRSF2 and WRSF3;
- side slopes for each lift of overburden: 1.6(H):1(V);
- maximum elevation of the WRSFs: 115 m for WRSF1, 102 m for WSRF2 and 100 m for WRSF3;
- average overall sideslopes for the WRSFs: 2.5(H):1(V) to 3.4(H):1(V) for WRSF1, 2.2(H):1(V) to 2.4(H):1(V) for WRSF2, and 2.3(H):1(V) to 2.5(H):1(V) for WRSF3;
- assumed waste rock in place wet density: 1.88 t/m^3; and
- assumed overburden in place wet density: 1.62 t/m^3.

2.6.3 Waste Rock and Overburden Distribution

Overburden and waste rock will be transported by haul trucks and discharged together in the same area, and then spread with a dozer. As overburden is excavated before the waste rock, the overburden will be placed approximately in the centre of the pile, and will be surrounded by waste rock. This approach minimizes the footprint, controls the dust potentially generated by the overburden, and limits/controls overburden creep. Approximately 0.1 Mt, will be stored in a temporary overburden stockpile that will be used as cover material for progressive closure and reclamation of the TSF area.

An estimate for the production schedule, quantities, and distribution of waste rock by year is presented in Table 2.13. Approximately 7.4 Mt of overburden material will be removed from the surface footprint of the two pits over the mine life. The approximate quantities and locations of overburden deposited on the site are listed in Table 2.14. The yearly plan for the waste rock placement and overburden placement is provided in the Mine Waste Management Plan, Figures 5.1 to 5.14.

The amounts of overburden used for site infrastructure construction are included within the quantities of overburden placed into the WRSFs, as shown in Table 2.14. The overburden for site infrastructure construction (including TSF closure cover construction) is negligible when compared to the total tonnage of overburden produced.

2.6.4 Environmental Considerations

The WRSFs were designed and will be operated to minimize the potential impact on the environment, and in consideration of geotechnical and geochemical stability.

The water management objectives for the Project are to minimize potential impacts to the quantity and quality of surface water at the site as further detailed in the Water Management Plan. Seepage and runoff water from the WRSFs and temporary overburden stockpile will be managed by water diversion channels, water retention dikes/berms, and water collection ponds as follows:

- seepage and runoff from WRSF1 within the catchment of Pond H17 will be diverted to CP1 via Channels 1, 7 and 8;
- seepage and runoff from WRSF1 within the catchment of Pond A54 will be diverted to CP5 via Channels 5 and 6;
- seepage and runoff from WRSF1 within the catchment of Lake B7 will be diverted and collected in CP4 via Channel 4;
- seepage water and runoff from WRSF2 within the catchment of Pond H17 will be diverted to CP1 via Channel1 and Channel7 or directly flow into CP1 (Figure 3.10);
- seepage water and runoff from WRSF2 within the catchment of Pond A54 will be diverted to CP5 via Channel 6;
- seepage and runoff from WRSF3 will directly report to CP6; and
- the water collected in CP4, CP5, and CP6 will be pumped to CP1, where the contact water will be treated by the WTP prior to discharging to outside environment.

The water management system will remain in place until mine closure activities are completed and monitoring results demonstrate that water quality conditions from the WRSFs are acceptable for the discharge of all contact water to the environment without further treatment. For details on closure of the WRSFs refer to the Preliminary Closure and Reclamation Plan, submitted as a supporting document with the Type A Water Licence Application

Dust suppression measures, typical of current mine practices and consistent with best management practices, will be adopted through the design, operation, and closure phases to control the potential for dust from the WRSFs. Minimal site preparations are required for the WRSFs and TSF; therefore, dust related to mine waste management during the construction phase is not expected to be problematic. Dust is also expected to be a minor issue during the operational phase as waste rock produced at the site will generally be large in size, and not susceptible to wind erosion. Most of the overburden materials will be stored inside of the WRSFs and gradually covered by waste rock; therefore, wind eroded dust from the overburden stockpiles is not expected to be an issue. Additional dust control measures such as spraying water and/or other approved chemical dust suppressions will be applied, if necessary. The monitoring program presented here includes; stability and deformation, ground temperature, annual inspections, thermal monitoring and seepage and runoff monitoring (see Section 10 of the Mine Waste Management Plan).

2.7 Tailings Storage Facility

An area, located on high ground west of the proposed mill, and east of Lake B7, has been identified for the tailings storage facility (Figure 1.2). Of the total 12.1 Mt of tailings produced over the approximately 8 year mine life, about 9.7 Mt tailings (80% of total tailings) will be placed in the TSF. The remaining 2.4 Mt (20% of total tailings) will be used as underground cemented paste backfill in the primary and longitudinal stopes. Based on an average tailings dry density of 1.71 t/m^3, the TSF will have a storage volume of 5.65 Mm^3.

The tailings management method is “dry stacking” which involves a mechanical dewatering of the tailings. Following the processing of the ore, tailings will be detoxified for cyanide (to 0.005% expressed as potassium cyanide) and filtered to approximately 85 wt % solids. The filtered tailings will be transported to the TSF by truck, laid down by the hauling equipment and compacted into thin lifts using a dozer and compactor. Depending on the season, weather conditions and percentage solids, moisture content of the placed tailings will vary greatly. A placement strategy adaptable to these continuously varying conditions will be implemented. Essentially, the tailings pile will have to be in a condition of adequate stability to allow haul trucks to drive on it without causing stability problems. Stability analysis will be performed during the construction phase following receipt of the Water Licence and prior to the disposal of tailings. During operations in situ density testing and moisture content determination of recently placed tailings will occur weekly.

Three cells (Cell 1, Cell 2, and Cell 3) in each stack are planned for tailings placement to limit dust generation, control tailings surface erosion, and facilitate the progressive closure of the TSF (see Figure 6.1 of the Mine Waste Management Plan). A typical section of the TSF is provided in Figure 6.2 of the Mine Waste Management Plan.

Periodically or on an as-needed basis, a layer of 0-20 mm material will be added onto the tailings surface to limit dust generation. An engineered cover will be placed over the tailings surface during the progressive closure. Based on estimates of fill material requirement, approximately 200,000 m^3 of rock of different sizes (run of mine, 0 to 200 mm, and 0 to 20 mm) is required for this infrastructure.

The following key design criteria were adopted for the design of the tailings facility:

- maximum height of TSF over original ground surface is 30m;
- side slope for the bottom 15m thick is 4H:1V;
- side slope for the top 15 m thick is 3H:1V; and
- slope of the final tailings surface at crest is 4%.

The tailings management strategy in the FEIS planned for thickened tailings (65 to 72% solids) in a facility confined by perimeter dikes. During the Meliadine review process and optimization phase, it was noted that the decision to advance a tailings management strategy using thickened tailings offered limited overall gains (economical, environmental, and closure). Therefore, a trade-off study between the slurry option and the dry stack option was undertaken (Agnico Eagle 2013b).

The trade-off focused on the differences between the two options (i.e., the tailings storage infrastructure, process equipment). Equipment capital expenditures were estimated using comparable budget quotations used in the previous studies. Other direct costs were estimated using typical estimation costing with percentages applied on the major equipment. As well, operating costs were estimated based on the electric load, manpower requirements, spare parts, and maintenance of the fixed and mobile equipment.

Following the completion of the trade-off study, a decision matrix was used to decide what option to include in the study. The decision matrix compared costs, the schedule, the quality, and the risks. Concerns raised during community consultations and the environmental impact study process were also considered in the selection of the preferred alternative. It was found that dry stack or filtered tailings placed in TSF constructed as a stack on land (not on a lake) could offer significant advantages over thickened tailings at many levels. This method of placement was then selected as the tailings management approach for the Project. The advantages and disadvantages identified during the evaluation process are outlined below.

2.7.1 Advantages of Dry Stack Tailings

- A TSF could be constructed without affecting significant bodies of water such as B7.

- Simplified permitting, reduced compensation costs for the loss of habitat, and simplified water management are some of the advantages that were identified by not impinging on bodies of water.
- Dike construction in the original concept represented a significant cost item and negatively affected the construction schedule. The availability of construction material (rock) is more critical and results in additional costs. Therefore, the use of filtered tailings placed in a pile or stack simplifies start-up and reduces costs by eliminating dike construction.
- Can be constructed with standard earth moving equipment (dozers, compactors, haul trucks) and avoids the use of tailings pipelines and associated mechanical equipment which can be difficult to manage during the long cold winter months.
- Water management for filtered or dry stack tailings simplifies start-up and continued operations in general. Minimal water management would be required, limited to collecting and managing runoff at freshet or during summer months.
- Dry stack tailings avoid the need to construct the TSF in a lake. No formal dewatering or water treatment would be required at start-up resulting in significant cost savings associated with the preparation of the TSF.
- Effective progressive closure by placement of a final cover over the portions of the TSF that have reached their final configuration can be more easily achieved.

2.7.2 Disadvantages of Dry Stack Tailings

- The requirement to install a series of filter presses in the process plant represents a significant capital expenditure at start-up and reduces the savings achieved through the elimination of dike construction.
- The operation of the TSF will require a dedicated haulage fleet that will transport the tailings to the TSF (haulage distance of approximately 0.5 to 2 km depending on the discharge position). Three articulated 40-tonne trucks would be used for the first 3 years of mining and then increased to four trucks after three years. A dozer is required to place the tailings.
- The main issue associated with the placement of the filtered tailings by truck is high traffic volume (AMEC 2008); a two-lane 17-m-wide haul road designed for 70-t trucks in dual lanes is required to lead to the TSF and paste plant.
- The production of dust could be a concern with the stacking of filtered tailings. Dust production will be mitigated with the placement of a thin layer of gravel when needed on surfaces generating excessive dust and the surface will be compressed with a roll compactor.
- B7 may be affected by the TSF; either by the dust or contact water during the freshet period. Collection ponds in the vicinity of B7 will be fully lined and ditches will be constructed around the TSF to collect runoff and snowmelt water and direct it to the collection ponds. The water collection system is designed to store the estimated snow melt equivalent to a spring freshet for a 1 in 100 wet precipitation year (EBA Engineering 2013).

The collection ponds will be emptied on as-needed basis, and pumped into the process water management system using a diesel pumping system.

- The ramp-up to achieve stable filter cake production and moisture is less forgiving than in a conventional slurry tailings facility. However, Agnico Eagle has experience with this type of operation as many of their current mine operations are using filter presses.

In a report studying the "*Engineering challenges for tailings management facilities and associated infrastructure with regard to climate change in Nunavut*" (Journeaux Assoc. 2012), it was concluded that "dry stacking combined with backfilling and/or open pit disposal are recommended for tailings disposal techniques for future mining endeavours. These disposal methods are deemed to be the best practices for tailings disposal in Nunavut." Therefore, this report, which was commissioned by the Government of Nunavut, with the assistance of National Resources Canada, further supports the decision to proceed with dry stack tailings for the proposed Project. Further details on the TSF can be found in the Mine Waste Management Plan.

2.7.3 Environmental Considerations

Dry stack tailings have the added benefit in that less water within the tailings will help promote in situ freezing of the tailings resulting in reduced water seepage and increase stability than would have been the case with the previously planned thickened tailings. Other environmental considerations related to TSF seepage and runoff water management as follows:

- Seepage and runoff from the TSF within the catchment of Pond H17 will be diverted to the CP1 using Channel 1;
- The seepage and runoff from the TSF within the catchment of Lake B7 will be diverted and collected in CP3 via Channel 3; and
- The water collected in CP3 will be pumped to CP1, where the contact water will be treated by the WTP prior to discharging to outside environment.

Monitoring activities for the TSF include in situ density testing and moisture content determination, visual inspections, elevation and geometry survey, runoff and seepage monitoring, and geotechnical surveys (see Section 10 of the Mine Waste Management Plan). During closure, water management infrastructure will remain in place until mine closure activities are completed and monitoring results demonstrate that contact water quality from the TSF and other mine infrastructure is acceptable for discharge to the environment. Once the water quality from the TSF meets the discharge criteria, the water retention dikes/berms will be breached or removed to allow the water from the TSF to directly flow to the outside environment. Further details on water management and associated earth structures for TSF are described in the Water Management Plan.

2.8 Summary

The intent of this Plan is to provide details of mining and milling for the Type A Water Licence Application. This Plan is not intended to be updated; it is intended to provide the Nunavut Water Board and other interveners the required level of information to fulfill the requirements of the Type A Water Licence Application.

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