Agnico Eagle Mines Ltd/Meliadine Division

Paste Line C

Meliadine Site, Rankin Inlet, NU

Technical Report

Construction Summary Report for Paste Line C - Piping

BBA Document No.-Rev.: 5287324-010001-40-ERA-0002-R0
AEM Document No.-Rev.: 6537-584-132-REP-005_R0
June 6, 2025

FINAL

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Client Project No.: 6537

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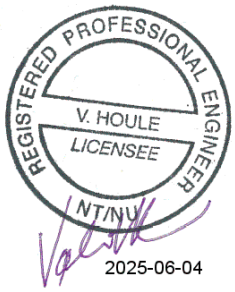
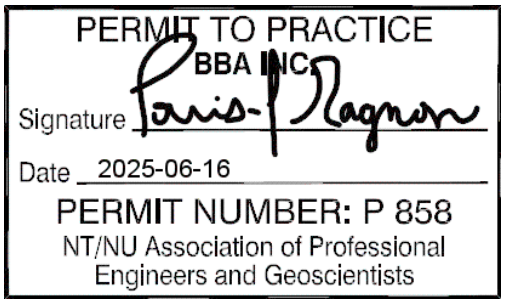
NAPEG No. L3183





Approved by:
Valérie Houle, P.Eng.
NAPEG No. L3241

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Client – Engineering Superintendent
Agnico Eagle Mines Limited

BBA Document No. / Rev.: 6537-584-132-REP-005_R0.docx

REVISION HISTORY

Revision	Document Status – Revision Description	Date
R0	Final	2025-06-06

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

1. Introduction

1.1 Project overview

Agnico Eagle (AEM) is operating the Meliadine Gold Mine located near the western shore of Hudson Bay in the Nunavut Territory, 32 km north of Rankin Inlet. They have a Paste Plant building on their site to make the mix of cement and tailings called "paste". The paste is distributed from the surface to the underground network using pipelines and boreholes. The paste is used for backfilling in the underground mine. There are already two pipelines (A and B) to feed the underground, but a third one will be necessary to ensure sufficient distribution.

The main objective of the project was to install the "Paste Line C" that connects the Paste Plant to a new borehole. The new granular pad has already been submitted and presented in the construction summary report for "Paste Line C" Pad - 6537-584-123-REP-004.

1.2 Purpose of the report

This report aims to present the construction summary for the piping of the Paste Line C. The work includes the pipe supports, piping, insulation, heat tracing, and temperature sensor. This document includes drawings issued for as-built (Appendix) as specified under Nunavut Water Board (NWB) Water License 2AM-MEL 1631.

1.3 Construction schedule

The construction started in September 2024 and was completed by the end of the same year.

2. Construction summary

Figure 1 presents an aerial view of the new Paste Line C. The Paste Line C has an approximate length of 220 m. The piping line number is 200-SPB-CH1-0014 (See appendix C).

The following activities have been completed for the piping installation:

- Placing and burying the pipe supports in the ground;
- Placing and welding the pipe together;
- Putting the pipe through the casing under the road;

- Welding the pipe shoes in position;
- Performing pressure tests;
- Performing weld examination;
- Installing the heat tracing and the temperature sensors;
- Installing the fibreglass insulation;
- Connection at the Tie-In point.

Figure 1: Paste Line C installed – Aerial view

2.1 Paste Line C – Construction activities

2.1.1 Piping

The installation for the pipe from tie-in point TP01 to TP02 has been completed. The design criteria used are from AEM's pipe specifications (document numbers 60-000-270-GGD-001-R3 and 60-000-270-GGD-002-R0). The as-built route is shown in the drawing 65-584-210-003 - General Arrangement in Appendix A.

The pipes are sitting on supports using pipe shoes. The connection point inside the Paste Plant is bolted flanges. The same mechanical joint will be used for the connection point at the Borehole entry. The connection between each pipe section is buttwelded or bolted in accordance with the drawings issued for construction.

The expansion loop was built in accordance with the Isometric drawings. The picture in Figure 2 shows the expansion loop and the connection at the borehole.

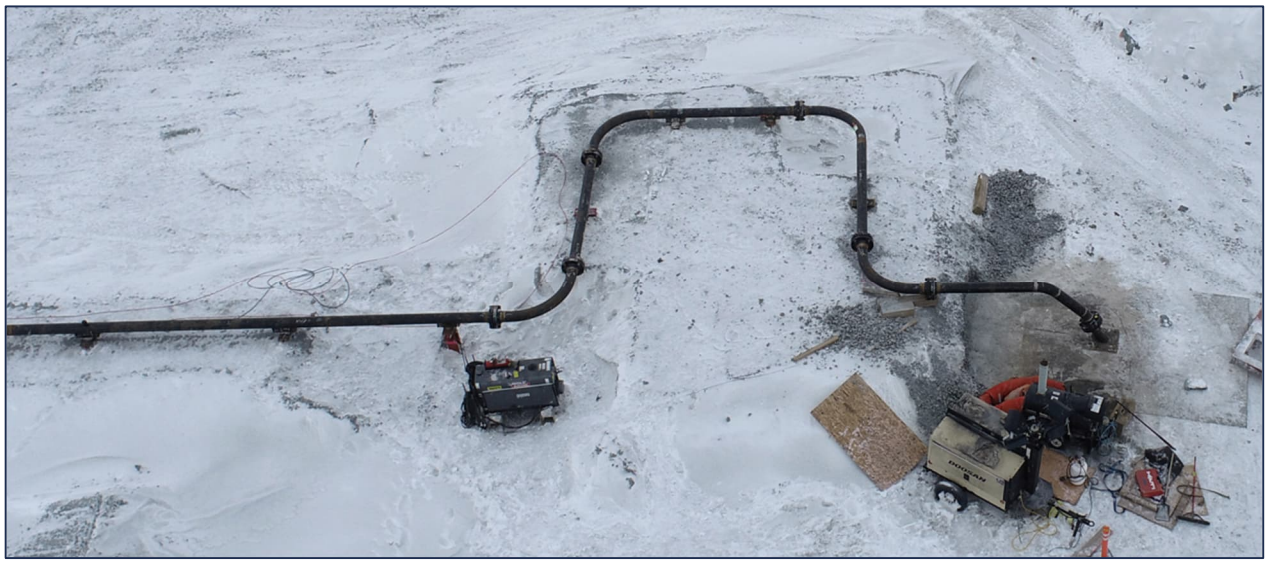


Figure 2 : Expansion loop and borehole connection

Being an outdoor pipeline, insulation is used for freeze protection. The insulation selection is made using the AEM's General Guideline for Design – Insulation of Piping, Tanks and Equipment (60-000-270-GGD-003-R0). The selected solution is of heat tracing and fibreglass insulation. It is designed to maintain a minimum fluid temperature of 4°C in all conditions.

2.1.2 Structure – Pipe support

The pipe supports are made of structural steel. The design criteria used are from the AEM's Structural Design Criteria (60-000-245-GGD-002-R0) and Site Information and Design Coefficients (60-000-100-GGD-001-R1). The as built is shown in the drawing 65-584-245-008-1 in Appendix B. The pipe supports were made in factory before being shipped to the Meliadine site.

The pipe supports are partially buried in the new pad. Any displacement after installation can be corrected using shims and spacers to adjust the height between the pipe shoe and the pipe support. Upon verification with the geotechnical report, the vertical and lateral support of the structure are assumed by the structural pad. The pictures in Figure 3 show the pipe support Type 1 installation.

Figure 3: Installation of the pipe supports.

The casing under the road has been changed for a longer one. It created the need to replace one pipe support (red) by a support inside the casing as in drawing 65-584-210-003 – Section B. It does not impact the design as it respects the maximal span between two supports.

2.1.3 Electric and ATI

The piping system outside the building is heat traced. Also, an additional temperature sensor has been installed for monitoring temperature directly through an existing PLC.

2.2 Works Limit

The Paste Line C limits are from the borehole (TP01) to the Paste Plant (TP02).

2.3 Construction monitoring

A quality control program was followed during the construction by the project supervisor. The following quality control (monitoring) activities have been completed:

- Survey to validate the position of all pipes supports in accordance with the construction drawings;
- Inspection of pipe welding using an approved methodology;

- Leak and pressure tests (hydrostatic) were done after the installation of the pipeline;
- Pre-operational verification on the heat tracing and the electric line.

Qualified Agnico Eagle personal was responsible for the quality insurance on site.

3. Compliance with code

Table 1 below presents a summary of the codes and standards that were respected for the activities related to the project.

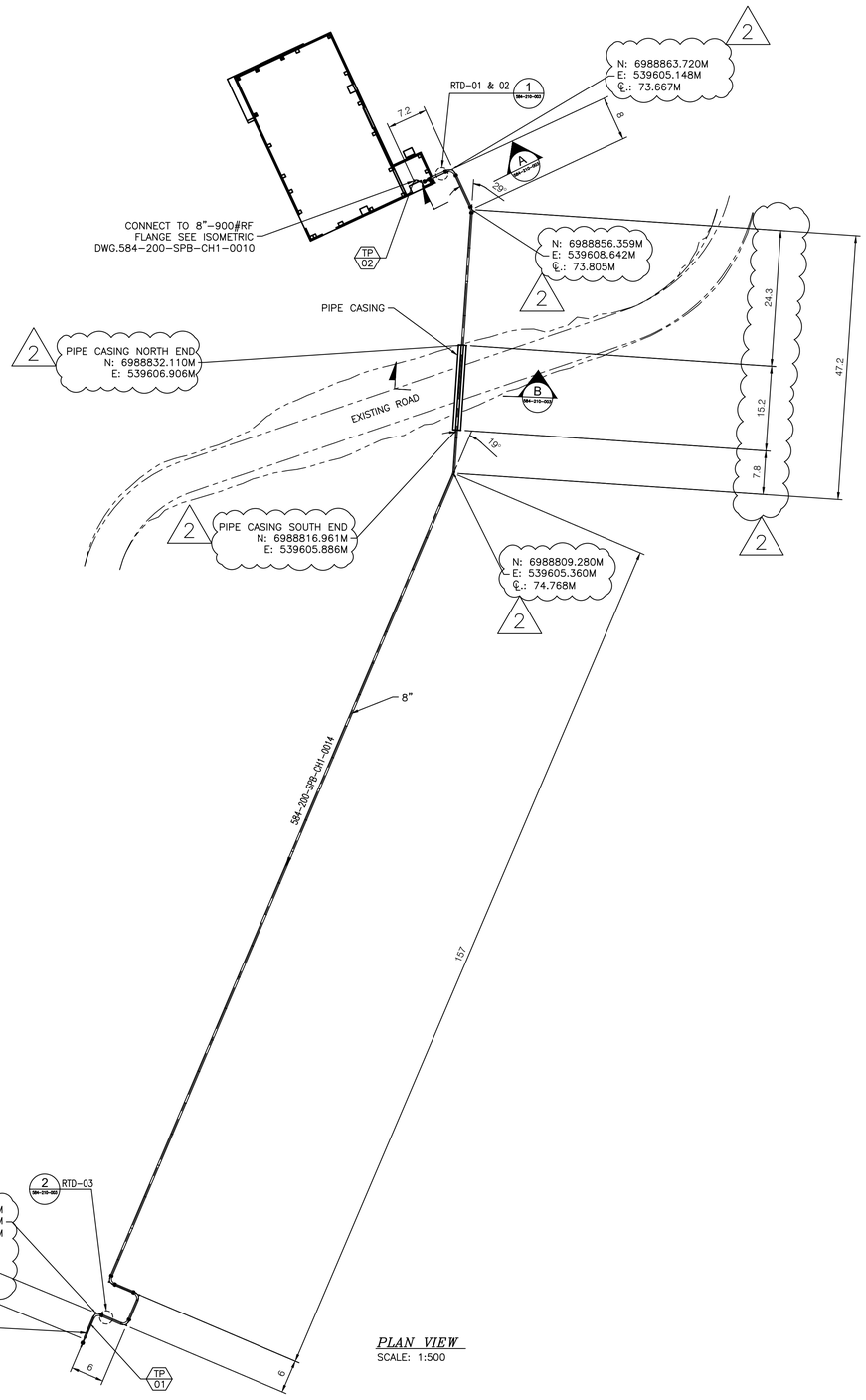
Table 1: Codes and standards list

	Code number	Title
Piping	ASME – B31.3	Process piping
	CSA – B51	Boiler, pressure vessel, and pressure piping code
	NBC 2015	National Building Code of Canada
Structural steel	CSA - S16	Design and construction of steel structures
Concrete	CSA - A23.3	Design of concrete structures
Electric and ATI	CSA - C22.1	Canadian Electrical Code, Part I, Safety Standard for Electrical Installations
	CSA - C22.2 No.03	Test Methods for Electrical Wires and Cables
	CSA - M421	Use of Electricity in Mines
	CSA - Z462	Workplace Electrical Safety

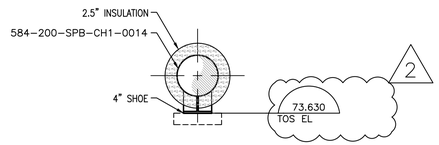
Appendix A: General Arrangement – Paste Line C – 65-584-210-003-2-R2

NO. DESSIN
DRAWING NO. 65-584-210-003-2_R2_ABD

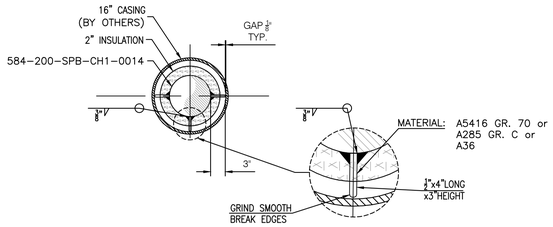
FORMAT ARCHD



PLAN VIEW
SCALE: 1:500

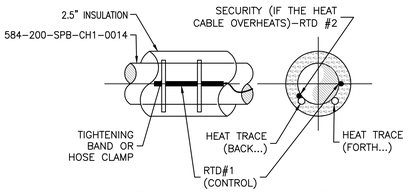


SECTION A (584-210-003)
ÉCH: 1:15



SECTION B (584-210-003)
ÉCH: 1:15

SUPPORT



PLAN VIEW

DETAIL 1 (584-210-003)
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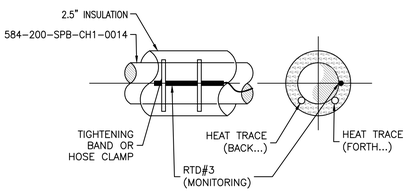
QTÉ: 2
RESISTANCE TEMPERATURE DETECTOR (RTD 01 & RTD 02)

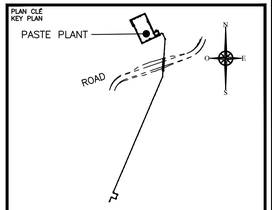


PLAN VIEW

DETAIL 2 (584-210-003)
ÉCH: 1:15
QTÉ: 1
RESISTANCE TEMPERATURE DETECTOR (RTD 03)

TEL QUE CONSTRUIT
AS BUILT
AGNICO EAGLE
DATE : 2025-04-14

PLAN CLÉ
KEY PLAN



BBA #5287324

NOTES GÉNÉRALES / GENERAL NOTES

1. ALL DIMENSIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
2. FOR DETAIL INFORMATION OF BOREHOLE SEE WSP CANADA DWG 23595000-4000-S-1002.
3. ALL MATERIAL MUST BE AS PER PIPING SPECIFICATION CH1 IN 60-000-270-GGD-001 REFER TO 6537-S-270-032-MTO-001 FOR B.O.M. REQUIREMENT.
4. SUPPORT DETAIL CAN BE FOUND UNDER PIPE SUPPORT SPECIFICATION 6537-S-245-008-SPT-001.
5. INSULATION IN ACCORDANCE TO THE LINE LIST 6537-584-270-PPL-001 AND SPECIFICATION 60-000-270-GGD-003.
6. LOCATE THE RTD AT LEAST 1.5 METERS FROM THE END/START OF THE HEAT TRACE INSTALLATION.
7. COORDINATE SYSTEM IS UTM15-NAD83. COORDINATES ARE SHOWN AS REFERENCE ONLY. VALIDATION ON SITE MUST BE DONE.
8. STRUCTURAL STEEL PIPE SUPPORT DETAILS TO BE FOUND ON 65-284-245-008-1.

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
PASTE PLANT - TOP VIEW, SECTION & ISOMETRIC VIEWS	584-200-SPB-CH1-0010
PASTE PLANT - STRUCTURAL STEEL - PIPE SUPPORT DETAILS	65-584-245-008
GENERAL EARTH WORKS - PLAN VIEW, SECTIONS AND DETAILS	65-584-230-003
ISOMETRICS	65-584-200-SPB-CH1-0014
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
2	2025-04-14	ISSUED FOR AS-BUILD	D.L.	L.G.	
1	2024-09-12	ISSUED FOR CONSTRUCTION	G.F.	L.G.	
0	2024-08-22	ISSUED FOR CONSTRUCTION	G.F.	L.G.	

REVISIONS

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
584 – PASTE PLANT
210 – GENERAL ARRANGEMENT
PLAN VIEW AND DETAILS
PIPING PASTE LINE C

DESSINÉ PAR DRAWN BY	GABRIEL FERNANDEZ	DATE 2024-08-22
REVU PAR REVIEWED BY	DOMINIK LAPIERRE, P.ENG.	2024-08-22
VÉRIFIÉ PAR VERIFIED BY	LOUIS-FRANCOIS GAGNON , P.ENG.	2024-08-22
ÉCHELLE SCALE	1:500	DATE 2024-08-22
NO. DESSIN DRAWING NO.	65-584-210-003	
NO. PROJET PROJECT NO.	6537	REVISION 2 / FEUILLE / SHT 2 / 2

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FILE NO. 65-584-210-003-2_R2_ABD.dwg

Appendix B: Pipe Supports Details – Paste Line C - 65-584-245-008-1-R2

NO. DESSIN
DRAWING NO. 65-584-245-008-1

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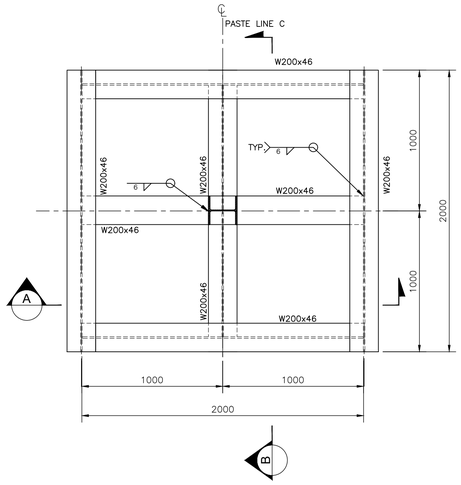

SUPPORT TYPE 1 – PLAN VIEW
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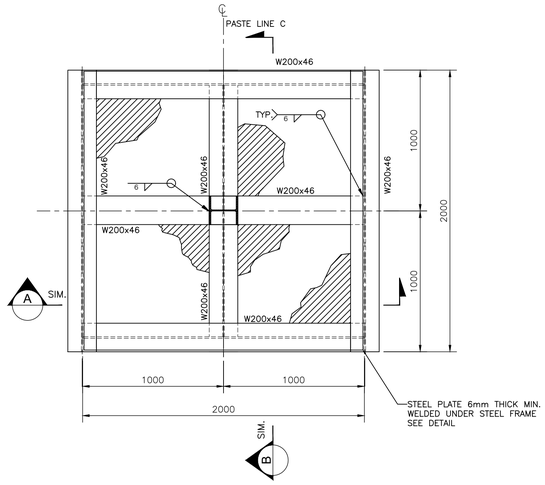
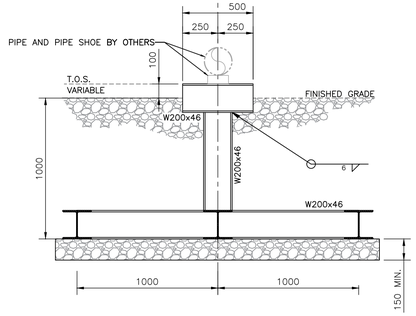
(52 REQ)



SUPPORT TYPE 2 – PLAN VIEW
SCL:1/20

(4 REQ)

– SUPPORT TYPE 2 REQUIRED AT SUPPORT #11, #41, #42 AND #43 (SEE DRAWING 65-584-210-003-1 & 65-584-210-003-2 FOR SUPPORT LOCALISATION)



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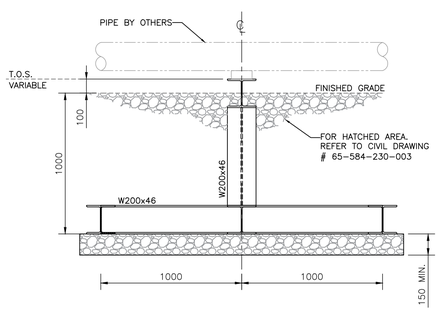
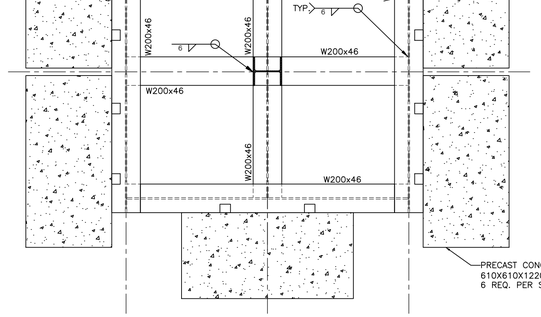
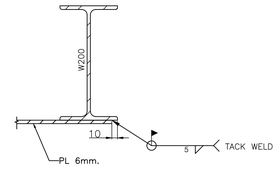


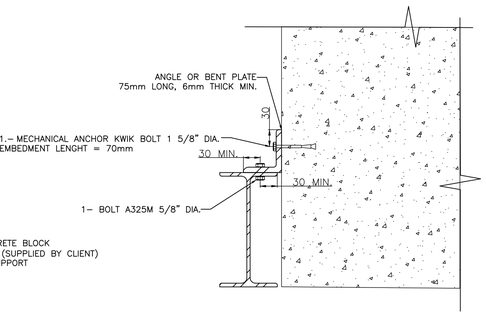
SECTION B
SCL:1/20



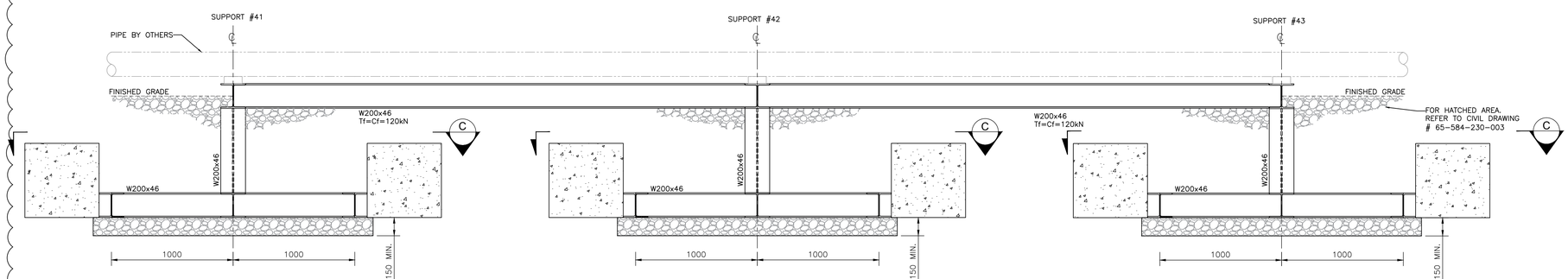
SECTION B
SCL:1/20



DETAIL – STEEL PLATE ASSEMBLY
SCL:1/20



DETAIL – CONCRETE BLOCK ATTACHMENT
SCL:1/20
– 2 REQUIRED PER BLOCK



SUPPORT ASSEMBLY – SUPPORT #41, #42, #43
SCL:1/20
– THE BEAM CONNECTED BETWEEN THE SUPPORTS MUST BE SITTING DIRECTLY ON COMPACTED BACKFILL.

TEL QUE CONSTRUIT
AS BUILT
AGNICO EAGLE
DATE : 2025-04-14

NOTES:

1.– FOR GENERAL NOTES REFER TO DRAWING # 23595000-4000-S-1001-0

2.– FOR STRUCTURAL DESIGN CRITERIA REFER TO DOCUMENTS 60-000-100-GCD-001 AND 60-000-245-GCD-002.

3.– FOR STRUCTURAL STEEL SPECIFICATION REFER TO DOCUMENT 60-000-245-GGD-003.

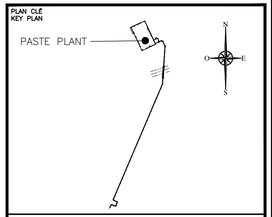
4.– FOR PAINT SPECIFICATION REFER TO DOCUMENT 60-000-245-GGD-001.

5.– THE DRAWING SHOULD BE READ IN CONJUNCTION WITH CIVIL DRAWING 65-584-230-003 AND MECHANICAL DRAWING 65-584-210-003.

6.– SINCE OF THE GEOTECHNICAL PARAMETERS OF THE BACKFILL ARE UNKNOWN, THE SETTLEMENTS OF THE PIPE SUPPORT UNDER PIPE LOAD OF FREEZE-THAW CYCLES HAVE NOT BEEN EVALUATED. IT IS SUGGESTED THAT THE PIPELINE BE MONITORED DURING ITS UTILIZATION TO EVALUATE THE SETTLEMENTS IN REAL TIME.

7.– FOR PIPING DRAWING SEE DRAWING 65-584-210-003-1 & 65-584-210-003-2

PLAN CLÉ
KEY PLAN



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NOTES GÉNÉRALES / GENERAL NOTES

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
230-GENERAL EARTH WORKS – PLAN VIEW,	–
SECTIONS AND DETAILS – PASTE LINE C PAD	65-584-230-003
584 – PASTE PLANT – PLAN VIEW AND	–
DETAILS – PIPING PASTE LINE C	65-584-210-003
–	–
–	–

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
2	2025-05-09	AS-BUILT	R.G.F.	V.L.	
1	2024-09-13	ADDITION OF TYPICAL SUPPORT	F.L.	V.H.	
0	2024-07-04	ISSUED FOR CONSTRUCTION	F.L.	V.H.	
AA	2024-06-13	ISSUED FOR PERMITTING	F.L.	V.H.	

REVISIONS

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
584 – PASTE PLANT
245 – STRUCTURAL STEEL
PIPE SUPPORTS DETAILS – PASTE LINE C

DESSINÉ PAR DRAWN BY	FABIOLA LIZAMA	DATE 2024-06-13
REVU PAR REVIEWED BY	BEATRICE LACOMBE, P. Eng.	2024-06-13
VÉRIFIÉ PAR VERIFIED BY	VALÉRIE HOULE, P. Eng.	2024-06-13
ÉCHELLE SCALE	AS SHOWN	DATE 2024-06-12

NO. DESSIN DRAWING NO. 65-584-245-008

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHT
6537	2	1 / 1

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FILE NO. 65-584-245-008_R2.dwg

Appendix C: P&ID – 584-Paste Plant - 65-584-205-201-2-R8

NO. DESSIN DRAWING NO. 65-584-205-201-2_R3

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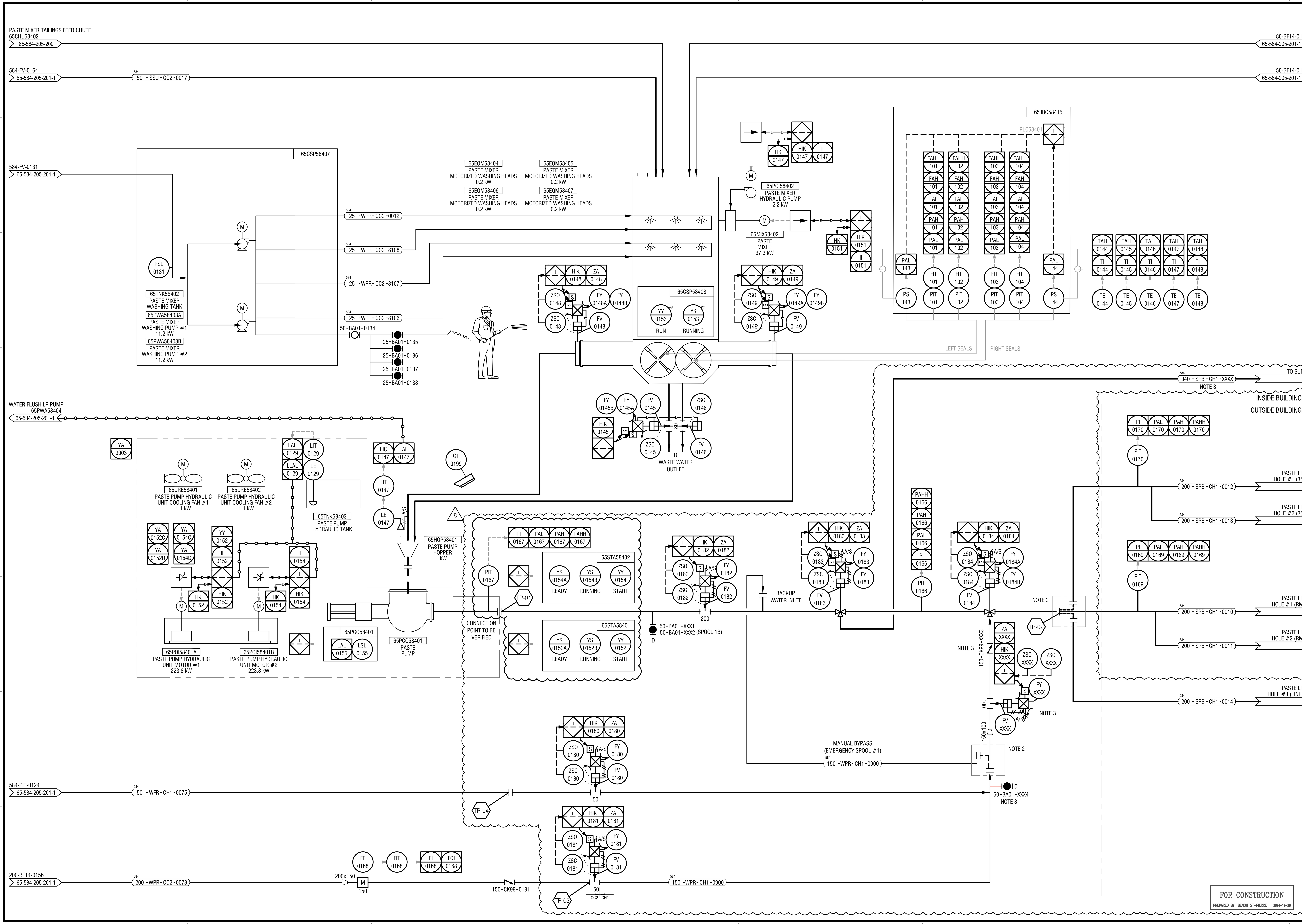

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65-584-205-201-1
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80-BF14-0123
65-584-205-201-1
50-BF14-0139
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584-FV-0131
65-584-205-201-1
65CSP58407
65EQM58404
PASTE MIXER
MOTORIZED WASHING HEADS
0.2 kW
65EQM58405
PASTE MIXER
MOTORIZED WASHING HEADS
0.2 kW
65EQM58406
PASTE MIXER
MOTORIZED WASHING HEADS
0.2 kW
65EQM58407
PASTE MIXER
MOTORIZED WASHING HEADS
0.2 kW
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25 -WPR-CC2-8108
25 -WPR-CC2-8107
25 -WPR-CC2-8106
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PASTE MIXER
WASHING TANK
65PWA58403A
PASTE MIXER
WASHING PUMP #1
11.2 kW
65PWA58403B
PASTE MIXER
WASHING PUMP #2
11.2 kW
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25-BA01-0135
25-BA01-0136
25-BA01-0137
25-BA01-0138
65POI58402
PASTE MIXER
HYDRAULIC PUMP
2.2 kW
65MIX58402
PASTE
MIXER
37.3 kW
65CSP58408
RUN
RUNNING
65JBC58415
PLC58401
LEFT SEALS
RIGHT SEALS
WASTE WATER
OUTLET
WATER FLUSH LP PUMP
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TO SUMP
040 - SPB - CH1 -XXXX
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OUTSIDE BUILDING
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65URE58402
PASTE PUMP HYDRAULIC
UNIT COOLING FAN #2
1.1 kW
65TNK58403
PASTE PUMP
HYDRAULIC TANK
65HOP58401
PASTE PUMP
HOPPER
kW
65STA58402
READY
RUNNING
START
65STA58401
READY
RUNNING
START
65PC058401
65PC058401
PASTE
PUMP
CONNECTION
POINT TO BE
VERIFIED
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PASTE PUMP HYDRAULIC
UNIT MOTOR #1
223.8 kW
65POI58401B
PASTE PUMP HYDRAULIC
UNIT MOTOR #2
223.8 kW
50-BA01-XXX1
50-BA01-XXX2 (SPOOL 1B)
BACKUP
WATER INLET
PASTE LINE
HOLE #1 (350)
200 - SPB - CH1 - 0012
PASTE LINE
HOLE #2 (350)
200 - SPB - CH1 - 0013
PASTE LINE
HOLE #1 (RM3)
200 - SPB - CH1 - 0010
PASTE LINE
HOLE #2 (RM3)
200 - SPB - CH1 - 0011
PASTE LINE
HOLE #3 (LINE C)
200 - SPB - CH1 - 0014
NOTE 2
NOTE 3
100-CK99-XXX3
MANUAL BYPASS
(EMERGENCY SPOOL #1)
150 -WPR- CH1 -0900
50-BA01-XXX4
NOTE 3
584-PIT-0124
65-584-205-201-1
50 -WFR- CH1 -0075
200-BF14-0156
65-584-205-201-1
200 -WPR- CC2 -0078
150-CK99-0191
150 -WPR- CH1 -0900

FOR CONSTRUCTION
PREPARED BY BENOIT ST-PIERRE 2024-12-20

PLAN CLÉ
KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

1. BOTH LP & HP WATER WILL BE CONNECTED TO SAME BRANCH, BUT DISCONNECTED AND BLANKED DURING PASTE PUMP OPERATION.
2. MANUAL CONNECTION. FEED ONE LINE AT THE TIME.
3. ALL VALVES OR LINE NUMBER CONTAINING X INSTEAD OF NUMBERING ARE WAITING ON PROPER NUMBERING FROM THE CLIENT. THIS INFORMATION REQUIRED TO BE UPDATED AS SOON AS POSSIBLE.

BASIC ENGINEERING FINAL APPROVAL PROCESS

NAME	TITLE	APPROVAL SIGNATURE	DATE
P-A BOSSÉ	PROJECT COORDINATOR		
MARTIN GAUMONT	MELIADINE PROCESS PLANT SUPERINTENDANT		
DANIEL SÉGUIN	ENGINEERING MANAGER MELIADINE		

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
5	2023-05-11	REMOVED EQUIPMENTS	M.D.	M.D.	
4	2023-1-2	SEAL FLOW SUPERVISION	D.DUP	M.L.	
3	2022-12-08	GREASE DISPENSER REMOVED	D.R.	M.L.	
8	2024-12-20	ADDED PASTE LINE C INSTRUST.	B. S.-P.		
7	2024-03-02	Interlock PWA58404	A.C.		
6	2023-07-24	New LIT Pressure Sensor	D.DUP		

REVISIONS

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
584 – PASTE PLANT
205 – PIPING & INSTRUMENTATION DIAGRAM
PART #1

DESSINÉ PAR / DRAWN BY	JONATHAN LAVOIE	DATE 2018-02-02
VERIFIÉ PAR / CHECKED BY	BERTRAND FORTIN, P. Eng. ÉRIC LAVOIE, P. Eng.	2018-03-22
APPROUVÉ PAR / APPROVED BY	BERTRAND FORTIN, P. Eng. ÉRIC LAVOIE, P. Eng.	2018-09-19
ÉCHELLE / SCALE	NO SCALE	DATE 2015-08-05
NO. DESSIN / DRAWING NO.	65-584-205-201	
NO. PROJET / PROJECT NO. 6526	REVISION 8	FEUILLE / SHT 2 / 2

AE-CART-ARCH D

FILE NO. 65-584-205-201-2_R8.dwg