



MEADOWBANK GOLD PROJECT

Baker Lake Bulk Fuel Storage Facility: Environmental Performance Monitoring Plan

In Accordance with Water License 2AM-MEA1526

Prepared by:
Agnico Eagle Mines Limited – Meadowbank Division

Version 4
August 2018

EXECUTIVE SUMMARY

Agnico Eagle Mines Limited – Meadowbank Division (Agnico Eagle) is currently operating the Meadowbank Gold Project approximately 70 km north of the Hamlet of Baker Lake. As part of the project, six 10 million litres fuel storage tanks for diesel and twenty (20) 100,000L fuel storage tank for Jet-A were constructed at the Baker Lake Marshalling Area to receive and store bulk shipments of fuel for the Meadowbank Project. It is currently proposed to add two (2) 10 million litres diesel fuel storage tanks similar to the existing ones.

To adequately assess the environmental performance of the bulk fuel storage tank at Meadowbank this report provides: a summary of the design, installation, operation and maintenance that follows the CCME (2003) Environmental Code of Practice for Aboveground Storage Tank Systems Containing Petroleum and Allied Petroleum Products; a summary of the location and environmental setting; a summary of the NWB Type A water license requirements; and an environmental assessment to support the recommended environmental monitoring for the ongoing evaluation of the secondary containment.

IMPLEMENTATION SCHEDULE

As required by Water License 2AM-MEA1526, Part B, Item 11, the proposed implementation schedule for this Plan is outlined below.

This Plan will be immediately implemented (August 2018) subject to any modifications proposed by the NWB as a result of the review and approval process.

DISTRIBUTION LIST

Agnico Eagle – General Mine Manager

Agnico Eagle – Environment Superintendent

Agnico Eagle – Environmental Coordinator

Agnico Eagle – Environmental Technician

Agnico Eagle – Energy and Infrastructures Superintendent

Agnico Eagle – Field Services Supervisor

DOCUMENT CONTROL

Version	Date (YMD)	Section	Page	Revision
1	09/12/22			Comprehensive plan for Baker Lake Bulk Fuel Storage Facility
2	11/12/13			Update all items related to the Baker Lake Fuel Storage Installations: Final Report of Phase 3 (2010)
3	30/06/2014			Add Jet-A Tank information and 2014 comprehensive review
4	2018/08/16			Text updated to reflect proposal to add 2 diesel fuel tanks.

Prepared By:



Environmental Compliance Counselor

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SECTION 1. INTRODUCTION

Agnico Eagle Mines Ltd. (Agnico Eagle) is currently operating the Meadowbank Gold Project approximately 70 km north of the Hamlet of Baker Lake. As part of the project, six 10 million liters diesel fuel storage tanks and twenty (20) Jet-A bulk fuel storage tanks were constructed at the Baker Lake Marshalling Area to receive and store bulk shipments of fuel for the Meadowbank Project. In 2007-2008, four (4) 10 million diesel tank were constructed. Following the amendment No.1 - Marshalling Area Bulk Fuel Storage Facility Expansion Water Licence 2AM-MEA0815 Type A, 2 more ten million liters bulk fuel storage tank (#5 and #6) were constructed in 2010. This amendment also permitted the construction of twenty (20) Jet A Fuel tanks installed in 2013 in a new containment area located northwest of Tanks 5 and 6. These tanks supply fuel for the aircrafts flying into the Meadowbank mine site. Agnico Eagle is currently proposing to add two (2) 10 million liters diesel fuel storage tanks.

To adequately assess the environmental performance of the bulk fuel storage tank at Meadowbank this report provides: a summary of the design, installation, operation and maintenance that follows the CCME (2003) Environmental Code of Practice for Aboveground Storage Tank Systems Containing Petroleum and Allied Petroleum Products; a summary of the location and environmental setting; a summary of the NWB Type A water license requirements; and an environmental assessment to support the recommended environmental monitoring for the ongoing evaluation of the secondary containment.

SECTION 2. SITE LOCATION, CONSTRUCTION AND OPERATION

2.1 SITE LOCATION

The Baker Lake Bulk Fuel Storage Tank Facility is located east of the hamlet of Baker Lake, on the north shore of Baker Lake. There are six (6) above ground diesel storage tanks, each with a capacity of 10 million liters, and twenty (20) above grounds Jet-A storage tanks, each with a capacity of 100,000 liters. The GPS coordinates of these facilities is NAD 83 15W E 356874 N 7134486. A general site location is provided in Figure 2.1. A site layout of the infrastructure and tanks is provided in Figure 2.2. Agnico Eagle is proposing to add two (2) 10 million liters diesel fuel tanks to the north of existing ones. The proposed tank location is shown on Figure 2.2

2.2 DESIGN AND INSTALLATION SUMMARY

Following regulatory approval, during the summer of 2007, Agnico Eagle built bulk fuel tanks #1 and #2. The construction of the secondary containment enclosure and installation of the HDPE liner in accordance with CCME (2003) specifications was also completed in 2007 (Agnico Eagle, 2009a). Bulk fuel storage tanks #3 and #4 were completed in October 2008; the secondary containment enclosure and installation of the HDPE liner was completed for these tanks in July 2009 (AEM, 2009b). Following amendment of the Water License Type A, Agnico Eagle built bulk fuel tank #5 and #6: the secondary containment enclosure and installation of the HDPE line was completed for these tanks in October 2010 (Agnico Eagle, 2010). In 2013, the twenty (20) Jet-A tanks, the construction of the secondary containment enclosure and installation of the HDPE liner in accordance with CCME (2003) specifications was completed.

All of the aboveground storage tanks were field erected. For the diesel tank, construction activity was supervised by Hatch Engineering and Stavibel Engineering and included qualified steel fabricators and installers. For the Jet-A tank, Stavibel Engineering provided the design, planning and construction oversight related to the installation of infrastructure of Agnico Eagle's new Jet A Fuel Storage facility which consists of 100,000 liters double walled tanks, associated piping and pumping systems and secondary requirement. Stavibel had supervised the construction of the secondary containment and SM Construction had installed the new Jet-A tanks.

Tanks #7 and #8 will be built upon regulatory approvals.

2.3 OPERATION AND MAINTENANCE SUMMARY

Inventory control of transfer and weekly volume inspections using manual or electronic dip reconciliation are conducted by Meadowbank mine operations staff. Weekly inspections are logged and reported by the Environmental Department. Weekly visual inspections and inventory reconciliation are used to evaluate and determine bulk fuel tank leakage.

The bulk fuel storage facility is maintained in accordance with best management practices.

The bulk fuel tanks are filled during barge season on an annual basis. During the period of re-filling there is the greatest risk of over-filling. Through regular visual inspections, inventory control and monitored fuel

transfer, the risk of over-filling is significantly reduced. In the case of a spill, the spill contingency plan will be implemented (Agnico Eagle, 2013).

Figure 2-1: General Location of Baker Lake Bulk Fuel Storage Facilities

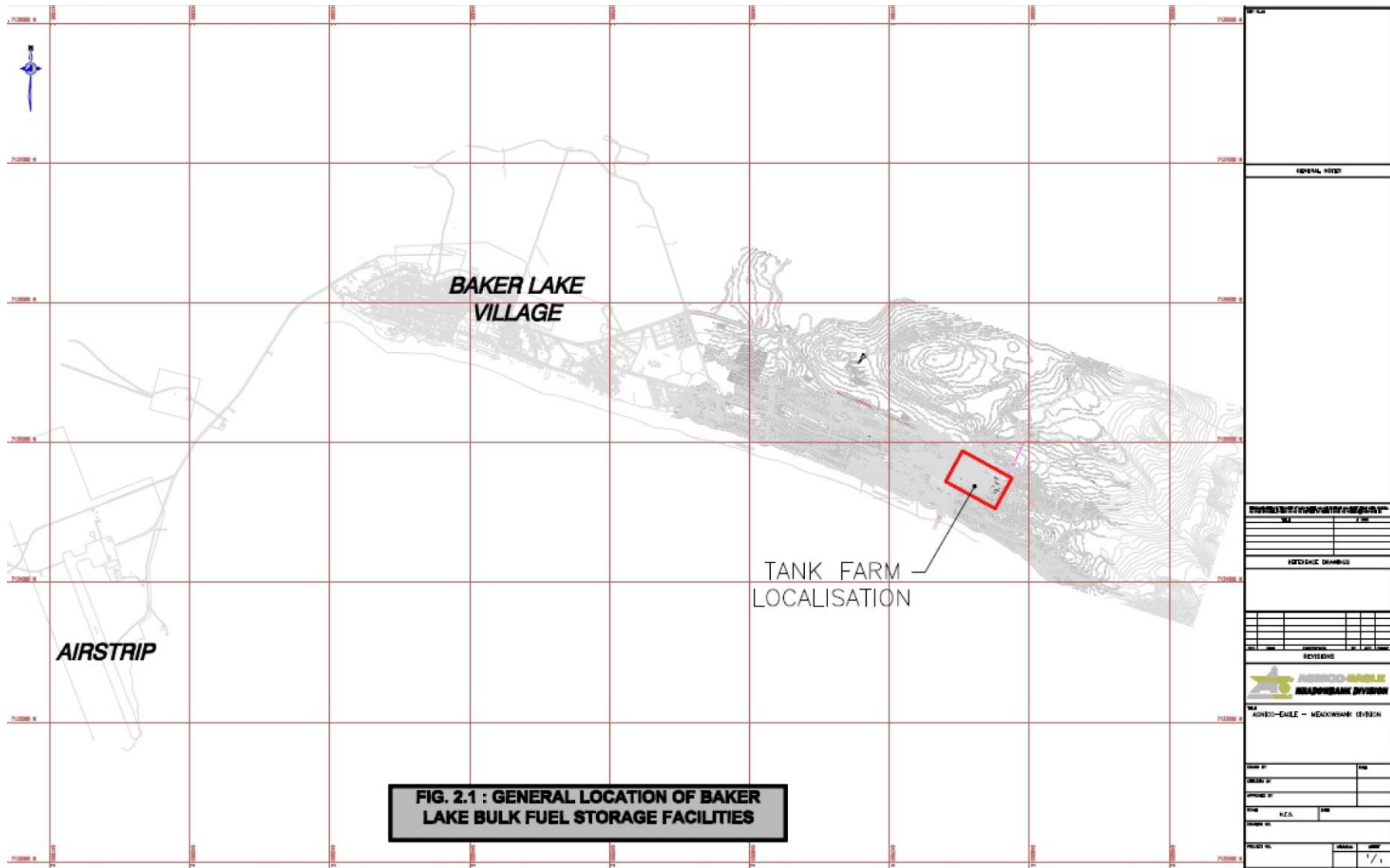
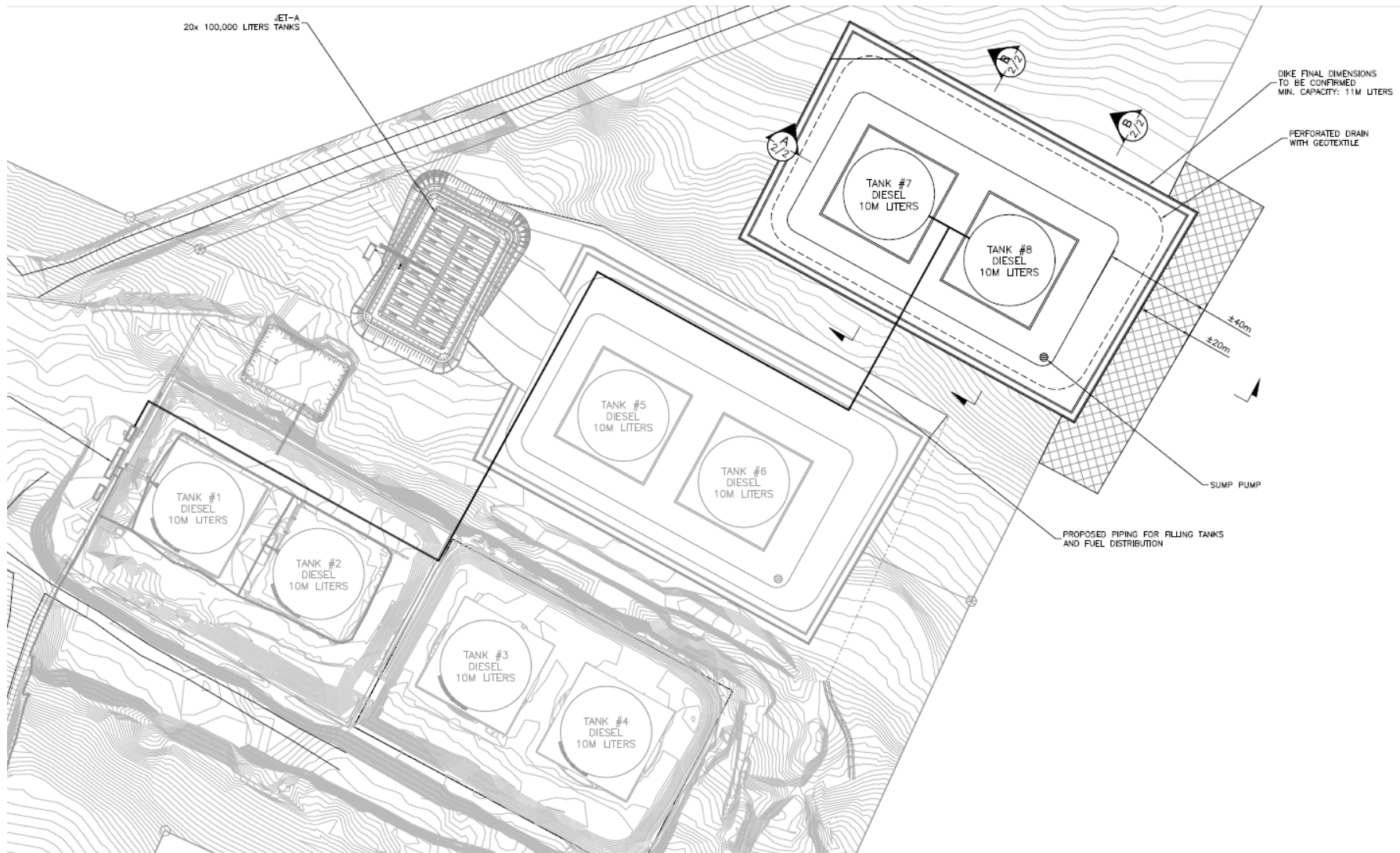


Figure 2-2: Baker Lake Bulk Fuel Storage Facility Site Layout and proposed location for Tank #7 and #8



SECTION 3. ENVIRONMENTAL SETTING

3.1 TOPOGRAPHY

The bulk fuel storage area is located east of the Hamlet of Baker Lake, approximately 350 m north of Baker Lake. The storage facility sits on a low terrace parallel with the shoreline of the lake. There is a gradual slope (5 to 10% grade) toward Baker Lake with an approximate elevation change of 35 m from the bulk fuel storage facility to the Baker Lake shoreline.

The Baker Lake shoreline is gently sloping, well-drained and is lined with marine gravels, sands and boulders.

3.2 GEOLOGY

The regional surficial geology is characterized by sandy till, bedrock outcrops, felsenmeer (ice-shattered bedrock) and shallow lakes (Golder, 2007). The most common soil type in this region is glacial till. Marine beach deposits are found along the north shore of Baker Lake.

The soil near the bulk fuel storage facility is comprised of silts, sands, gravels, cobble and boulders and frost-susceptible glacial till overlying weathered bedrock (Golder, 2007). The soil thickness is typically less than 1.4 m with permafrost or bedrock encountered at less than 2 m. Approximately 60% of the surface area surrounding the bulk fuel storage facility is comprised of bedrock outcrop.

3.3 FLORA AND FAUNA

There are no trees and few shrubs in the area surrounding the bulk fuel storage facility. The site is covered by low-lying vegetation; predominated by grassy hummocks, dwarf willow, sedge, green moss and lichen.

Arctic ground squirrels, ptarmigan and songbirds are inhabitants in the area surrounding the bulk fuel storage facility. Lake cisco, lake trout, arctic char, lake whitefish, round whitefish, slimy sculpin and stickleback are predominant species found in Baker Lake.

3.4 SUBSURFACE CONDITIONS

Test pits excavated in 2005 near the bulk fuel storage facility and between the tanks and the shoreline indicate a saturated top layer (0.2 m) of organic material (primarily green moss) (Golder, 2005; 2007). A layer of grey to black medium sand is present up to 0.7 m thickness throughout the area, below which a saturated, grey brown, sand and silt layer is found.

Bedrock is exposed at shallow depths throughout the site in locations where topsoil or till soils are present (Golder, 2005). Bedrock is encountered at a maximum depth of 1.4 m. As predicted by the soil conditions, seepage flows in test pits indicate high site drainage.

3.5 WATER QUALITY

Baker Lake water quality closely resembles distilled water as many conventional water chemistry parameters are at or below detection limits (BAER, 2005). The water column is generally well mixed and the water chemistry homogenous. During the open water season there is limited vertical stratification in temperature and dissolved oxygen, with observed higher salinity in the bottom strata.

SECTION 4. NWB TYPE A WATER LICENSE CONDITIONS

The Nunavut Water Board (NWB) Type A Water License 2AM-MEA1526 requirements related to the bulk fuel storage facility in Baker Lake are provided below. Agnico Eagle is committed to achieving all of these requirements.

Part F: Conditions Applying to Waste Disposal and Management

8. The Discharge of Effluent to land from fuel containment facilities at the Baker Lake Bulk Fuel Storage Facility and Meadowbank Fuel Storage Facility (ST-37 through ST-40), shall not exceed the following Effluent quality limits:

Parameter	Maximum Average Concentration (MAC)	Maximum Concentration of any single Grab sample
pH	6.0 to 9.5	6.0 to 9.5
Total Arsenic (mg/L)	**0.5	1.0
Total Copper (mg/L)	**0.3	0.6
Total Nickel (mg/L)	**0.5	1.0
Total Zinc (mg/L)	*0.5	1.0
Total Suspended Solids (mg/L)	*15	30
Ammonia (mg/L)	6.0	6.0
Benzene (µg/L)	370	370
Toluene (µg/L)	2	2
Ethylbenzene (µg/L)	90	90
Lead (mg/L)	0.1	0.1
Oil and Grease (mg/L)	5 and no visible sheen	5 and no visible sheen

* Environmental Guideline for Industrial Waste Discharges in the NWT, 2004

** Metal Mines Effluent Regulations (MMER)

9. The Licensee shall, under Part F, Item 8, discharge Effluent in such a manner as to minimize surface erosion at a distance of at least thirty-one (31) metres above the ordinary High Water Mark of any Water body, where direct flow into a Water body is not possible and no additional impacts are created, or as otherwise approved by the Board in writing.

11. The Licensee shall confirm compliance with Effluent quality limits in Part F, Items 3, 4 and 8 prior to Discharge.

12. The Licensee shall provide at least ten (10) days' notice to the Inspector prior to any planned Discharges from any facilities. The notice shall include an estimated volume proposed for Discharge and the receiving location.

Part H: Conditions Applying to Emergency Response and Contingency Planning

2. The License shall prevent any chemicals, petroleum product or unauthorized Wastes associated

with the project from entering Water.

3. The License shall provide secondary containment for fuel and chemical storage as required by applicable standards and acceptable industry practice
4. The License shall perform weekly inspections of fuel containment facilities for leaks and settlement and shall keep a written log of inspections to be made to an Inspector upon request.

SECTION 5. ENVIRONMENTAL PERFORMANCE ASSESSMENT

To adequately assess the environmental performance of the bulk fuel storage tanks and facilities, a desk-top review of the design and installation reports (Agnico Eagle, 2009a, b) were completed. In addition, a consultant performed a geotechnical inspection to annually evaluate the site drainage, secondary containment and performed an environmental assessment of the bulk fuel storage facility. The latest inspection was performed in 2017 by Golder Associates.

5.1 DESK-TOP REPORT REVIEW

The Baker Lake bulk fuel storage facility was commissioned in 2007 (for tanks #1 and #2,) July 2009 (for tanks #3 and #4), 2010 (for tanks #5 and #6) and 2013 for Jet-A Tank. The installation reports (Agnico Eagle, 2009a, b; Agnico Eagle, 2010; and Agnico Eagle 2011 for diesel tank and Agnico Eagle, 2013 for Jet-A tanks; attached in Appendix A) indicated the use of best management practices during the installation of the aboveground fuel storage tanks. Following the diesel tank construction, X-Ray testing of horizontal and vertical welds was completed. All of the welds met the specifications outlined in the API Standard 650 (Agnico Eagle, 2009a, b). For the Jet-A tank, after construction all tanks were cleaned and washed inside and pressure tested was performed as per specifications.

Under the supervision of Hatch Engineering, the construction of the secondary containment berms for tanks #1 and #2 was completed. Enviroline Services Inc. was hired in October 2007 to install the HDPE membrane liner in accordance with CCME (2003) specifications; this liner was subsequently covered with a surface layer of crushed stone. Under the supervision of Stavibel Engineering the secondary containment berms were constructed and the HDPE membrane liner was designed and installed for bulk fuel storage tanks #3, #4 under the supervision of Luc Croisetière and Agnico Eagle. Under the supervision of Stavibel Engineering, the construction of the secondary containment berms for tanks #5 and #6 was completed. Enviroline Services Inc. was hired in May 2010 to install the HDPE membrane liner (Agnico Eagle, 2010). Under the supervision of Stavibel Engineering, the construction of the secondary containment berms for Jet-A Tank was completed. Texcel was hired in July 2013 to install the HDPE membrane liner (Agnico Eagle, 2013).

A secondary containment volume calculation using Autocad Civil 3D was completed to provide verification on the liquid storage capacity of the storage tank system. The CCME Environmental Code of Practice for Aboveground Storage Tanks (2003) states:

a storage tank system that consists of more than one storage tank which should have a volumetric capacity of not less than the sum of the capacity of the largest storage tank located in the contained space and 10% of the capacity of the largest tank or the aggregate capacity of all other storage tanks located in the contained space.

In accordance with the CCME (2003) code of practice, the Baker Lake bulk fuel storage tanks meet the volumetric requirements for a storage tank system (Agnico Eagle, 2009a,b; Agnico Eagle, 2010; and Agnico Eagle, 2011).

Upon Tanks #7 and #8 construction completion, this environmental performance monitoring plan will be

revised to include construction details.

5.2 SECONDARY CONTAINMENT VISUAL INSPECTION

A consultant performs a geotechnical inspection annually and inspects the bulk fuel secondary containment structures, the report is sent to NWB annually. The last inspection was performed in 2017 by Golder Associates (Golder Associates, 2018).

5.3 ENVIRONMENTAL ASSESSMENT

The management of site drainage, surface water collection and water/fuel removal within the secondary containment area is an important measure in the protection of the terrestrial environment, surface water and ground water from potential sources of contamination. The environmental protection objectives, strategy and an evaluation of the potential of leaks or seepage to contaminate the terrestrial environment, surface water and ground water are provided in the following sections. Much of the environmental protection strategies focus on the control of contact water. In this report contact water is defined as any water that may be physically or chemically affected by the nearby operational activities.

5.3.1 Terrestrial Environment

The primary objective of the terrestrial management plan is to minimize any adverse impacts to the terrestrial (soil, flora and fauna) environment. To meet this objective, bulk fuel storage facility structures have been constructed to minimize the operational footprint and control contact run-off water within the secondary containment area. Due to the site grading, all water that comes into contact with the bulk fuel storage facility is intercepted and directed into the impermeable HDPE lined secondary containment area.

The ground beneath the secondary containment area has been adequately graded to ensure berm stability.

5.3.2 Surface Water

The objective of water management around the bulk fuel storage facility is to minimize impacts on the quantity and quality of surface water and groundwater. To meet this objective, the bulk fuel storage facility structures have been constructed to intercept and direct contact run-off water to the impermeable HDPE lined secondary containment area. As there is a high volume of fuel transfer and activity around the modular fuel dispenser, the pad below the modular fuel dispenser and refueling station is lined and sloped toward the secondary containment berm.

Seepage flows in test pits indicate high site drainage due to the high soil porosity. Therefore, should contact water reach the natural environment, the ultimate fate of the contaminants is likely to be in shallow groundwater or surface water (Golder, 2007).

5.3.3 Groundwater

It is not expected that groundwater would be impacted as there is no direct pathway for contaminated water to seep from the bulk fuel storage facility. Due to the site grading, all contact water from the bulk fuel storage facility is directed inside the HDPE lined secondary containment area. Should the integrity of the liner become compromised, there could be leakage into the below grade soil; this would likely present the

greatest source of hydrocarbon contamination to impact groundwater and receiving water.

SECTION 6. PERFORMANCE MONITORING PLAN

The environmental performance monitoring plan is a tiered approach with an emphasis on visual and operational inspections; routine surface water sampling to control and monitor the quality of the contact water; and event monitoring (in the case of a spill emergency or occurrence). Management of the bulk fuel storage facility will be guided by the monitoring results.

6.1 VISUAL AND OPERATIONAL INSPECTIONS

Visual and operational inspections are a central component of the environmental performance monitoring plan. Visual inspections of the secondary containment structure are important because if the integrity of the berm walls or liner is compromised this presents the greatest potential for leaks or seepage into groundwater and ultimately the receiving environment.

Weekly visual inspections are conducted by the environmental department and weekly manual or electronic dip tests are conducted for inventory reconciliation by the operation staff. The environmental department inspect the facilities for: tank and piping condition, secondary containment berm structure and integrity, indicators of liner damage, precipitation/ run-off accumulation, evidence of tampering or misuse, any structural abnormalities and visible sheens on contact water pools and crush material inside the secondary containment.

Environmental staff follow-up with operations staff and advise the supervisor if any non-conformity is observed. A weekly written log is completed and available upon request.

6.2 ROUTINE CONTACT WATER MONITORING

Due to snow accumulation, melting and precipitation, contact water will unavoidably collect inside the secondary containment area. Contact water from inside the secondary containment area will be sampled as described below prior to its release into the terrestrial environment. During water discharge, piping will be directed onto the nearby tundra at least 30 m from the high tide mark, to allow for natural attenuation and drainage (i.e. surface water will never be pumped directly into Baker Lake).

During visual inspections the quantity of contact water collected inside the secondary containment area will be evaluated. If there is a visible sheen on the contact water or if water withdrawal is deemed necessary, water samples will be collected and analyzed for the following parameters: pH, Total Arsenic, Total Copper, Total Lead, Total Nickel, Total Zinc, Total Suspended Solids, Ammonia, Total Cyanide, Benzene, Toluene, Ethylbenzene, Lead, and Oil and Grease. If the contact water exceeds the licensed limits, the portable oil-water separator will be used to treat the water. Prior to withdrawal, samples will be analyzed at a certified laboratory.

In addition, water samples from Baker Lake are collected as part of the Core Receiving Environment Management Program (CREMP, 2015). The results of these analyzes are included in the annual report. These samples are used to evaluate the performance of the overall water management plan for the Baker Lake Marshalling Area.

6.3 EVENT MONITORING

In the event of a spill occurrence at the bulk fuel storage facility, the spill contingency plan will be followed (Agnico Eagle, 2016). As a follow-up to the spill response, the environmental staff will conduct an environmental assessment to determine the extent of impacts of the spill occurrence on the nearby environment. This will include the identification of the potential environmental pathways of concern that may result in impacts to surface water (i.e. Baker Lake near-shore surface water), soil or groundwater.

6.3.1 Soil Sampling

Following the unlikely event where a spill is not contained within the secondary containment area, soil sampling may be required to locate and prevent further impact to the terrestrial and aquatic receiving environment. Depending on the quantity of the spill, the organic surface soils and silt-containing till below the surface are a likely sink for hydrocarbons, thus soil samples will be taken at selected locations to horizontally and vertically delineate the impacted areas. Furthermore, the soil samples will provide valuable information used to determine the necessity of installing groundwater wells (see Section 6.3.3 below).

6.3.2 Water Sampling

Following a spill event, an environmental assessment will be conducted. Similar to routine contact water sampling (inside the secondary containment area), if there is a visible sheen on the contact water or if water withdrawal is deemed necessary, water samples will be collected and analyzed for the following parameters: pH, Total Arsenic, Total Copper, Total Lead, Total Nickel, Total Zinc, Total Suspended Solids, Ammonia, Total Cyanide, Benzene, Toluene, Ethylbenzene, Lead, and Oil and Grease. If the contact water exceeds the licensed limits, the portable oil-water separator will be used to treat the water. Prior to withdrawal, samples will be analyzed at a certified laboratory.

As part of the CREMP (CREMP, 2015), receiving environment surface and at- depth water samples will be taken in Baker Lake and analyzed for the same parameters as listed above.

6.3.3 Assessment of the Need for Groundwater Well Installation

Following a spill event, if soil sample results identify elevated concentrations of contaminants (i.e. exceeding the CCME Canada-Wide Standard (CWS) for Petroleum Hydrocarbons (PHC) in Soil, 2008) and/or if water samples identify elevated receiving environment water samples (i.e. exceeding licensed limits caused as a result of the spill event), an assessment of the need for groundwater wells will be conducted. The assessment, and if required, design for installation, monitoring and maintenance of vertical ground water monitoring wells will be in accordance with CCME (2003) procedures.

SECTION 7. REFERENCES

Agnico Eagle (2009a). Baker Lake Fuel Storage Installations: Interim Report of Phase 1 (2007) and Phase 2- A (2008). April 2009.

Agnico Eagle (2009b). Baker Lake Fuel Storage Installations: Final Report of Phase 2-B (2009). December 2009.

Agnico Eagle (2010). Baker Lake Fuel Storage Installations: Final Report of Phase 3 (2010). January 2011. AEM (2011). Meadowbank Gold Project: Spill Contingency Plan. December 2011.

Agnico Eagle (2015). Core-Receiving Environment Monitoring Program: Meadowbank Gold Project. November 2015.

BAER (2005). Meadowbank Gold Project Baseline Aquatic Ecosystem Report. October 2005.

CCME (2008). Canadian Council of Ministers of the Environment: Canada Wide Standards for Petroleum Hydrocarbons in Soil. PN 1398. January 2008.

CCME (2003). Canadian Council of Ministers of the Environment: Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products. PN 1326

Golder Associates Ltd. (2007). Water Use and Management Plan: Baker Lake Marshalling Area Meadowbank Gold Project. March 2007.

Golder Associates Ltd (2005). Field Geotechnical Investigations Baker Lake Staging Area, Meadowbank Gold Project. Report N. 05-1413-040.

Golder Associates Ltd (2018). 2017 Annual Geotechnical Inspection Meadowbank Gold Mine, Nunavut. Report 1784282-1574-RPT-Rev0

Appendix A1

Baker Lake Diesel Fuel Storage Installations: Interim Report Following Construction of Phase 1 (2007) and Phase 2-A (2008)



**AGNICO-EAGLE MINES LTD
MEADOWBANK DIVISION**

BAKER LAKE FUEL STORAGE INSTALLATIONS

**INTERIM REPORT
FOLLOWING THE CONSTRUCTION
OF
PHASE 1 (2007)
PHASE 2-A (2008)**



**AGNICO-EAGLE MINES LTD
MEADOWBANK DIVISION**

BAKER LAKE FUEL STORAGE INSTALLATIONS

INTERIM REPORT

FOLLOWING THE CONSTRUCTION

OF

**PHASE 1 (2007)
PHASE 2-A (2008)**

PREPARED BY :



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**AGNICO-EAGLE MINES LTD
MEADOWBANK DIVISION**

BAKER LAKE FUEL STORAGE INSTALLATIONS

**INTERIM REPORT
FOLLOWING THE CONSTRUCTION
OF PHASE 1 (2007) AND PHASE 2-A (2008)**

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APPENDIX 1 : DRAWINGS

VD2259-BKL-001	VD2259-BKL-002	VD2259-BKL-003	VD2259-BKL-004
VD2259-BKL-005	VD2259-BKL-006	VD2259-BKL-007	VD2259-BKL-008
VD2259-BKL-009	VD2259-BKL-010	VD2259-BKL-011	VD2259-BKL-012

VENDOR DRAWINGS FROM CHAMCO INDUSTRIES LTD

APPENDIX 2

SAFE FILL LEVEL FOR ALL FUEL TANKS

EXECUTIVE SUMMARY

Agnico-Eagle Mines Limited is currently in the process of building a gold mining project in the Kivalliq region of Nunavut, about 70 km north of Baker Lake.

The yearly operations of this mining operation requires the storage of a minimum of forty million (40 000 000) liters of diesel fuel, which represents four (4) bulk fuel storage tanks, each with a nominal capacity of ten million (10 000 000) liters.

PHASE 1

During the summer of 2007, Agnico-Eagle Mines Limited has built the first two (2) bulk fuel tanks, with a combined capacity twenty million (20 000 000) liters of diesel fuel. An impervious enclosure was built around it in order to provide secondary containment around the fuel tanks. These first two (2) bulk fuel tanks were then in condition to be filled.

PHASE 2-A

During the summer of 2008, Agnico-Eagle Mines Limited has built another two (2) bulk fuel tanks, for a total combined capacity of forty million (40 000 000) liters of diesel fuel. Only a portion of the enclosure was built around it, with the final purpose being to provide secondary containment around the fuel tanks. These other two (2) bulk fuel tanks were completed in late October 2008, and they remain empty as of April 2009.

PHASE 2-B

During 2009, Agnico-Eagle Mines Limited plans to complete the installation of an impermeable HDPE membrane, which will provide adequate secondary containment around the fuel tanks. This will allow to fill up all four (4) bulk fuel tanks in the summer of 2009, once the piping installation has been completed

DESCRIPTION OF THE MANDATE

Agnico-Eagle Mines has given a mandate to the undersigned in order to verify the compliance with applicable regulations of its fuel storage installations in Baker Lake, Nunavut.

According to the terms of reference, the mandate consists summarily in the following activities.

A. Review and compilation of the available documentation ;

B. Collection of any information that may be missing ;

C. REVISION OF CONSTRUCTION DRAWINGS

a. Preparation of *AS BUILT* drawings of the construction of PHASE 1 ;

b. Preparation of *AS BUILT* drawings of the construction of PHASE 2-A ;

c. Preparation of *IFC* drawings for the construction of PHASE 2-B ;

D. Verifications to the storage capacity within the existing containment berms of PHASE 1 and verifications for PHASE 2 in regards to the applicable regulations.

A. DOCUMENTATION READILY AVAILABLE

GOLDER ASSOCIATES - Vancouver Office

For the Baker Lake bulk fuel storage facilities, this firm has produced some construction specifications on 2006-04-28, which were given reference SP-GAL-03 under their project number 06-1413-009.

NISHI-KHON / SNC-LAVALIN LTD - Vancouver Office

For the Baker Lake bulk fuel storage facilities, this firm has produced a set of drawings issued **for construction** on 2007-08-03, under their project number 017202. Some specifications for fuel piping and valves were also issued.

EARTHWORK DRAWINGS	017202-1000-41D1-0006	17202-1000-46ES-1001A	017202-8000-46DC-9150
017202-1000-41D1-0001	FUEL PIPING DRAWINGS	17202-1000-46ES-1001B	017202-8000-46DC-9152
017202-1000-41D1-0002	017202-1000-41D1-0007	ELECTRICAL DRAWINGS	017202-8000-46DC-9153
017202-1000-41D1-0003	017202-1000-46D4-1004	017202-1000-46D6-1001	017202-8000-46DC-9156
017202-1000-41D1-0004	017202-1000-46D4-1005	017202-1000-47D2-2001	017202-8000-46DC-9157
017202-1000-41D1-0005	017202-1000-46D4-1006	017202-8000-47DA-9004	017202-8000-46DC-9166

GEM STEEL EDMONTON LTD

This vendor has submitted a set of drawings issued **for review**, which consist in four (4) structural drawings showing the details of a fuel tank of 10 million liters nominal capacity. The original design of this fuel tank is shown on revision A of drawings BL-2007-1, BL-2007-2, BL-2007-3, and BL-2007-4.

CHAMCO INDUSTRIES LTD

This vendor has submitted a set of preliminary drawings issued **for approval** under their project number 1014938ABS, consisting of the following drawings. These documents have all been reviewed by HATCH.

DRAWING NUMBER	H325174-M268-VD-0040	H325174-M268-VD-0041	H325174-M268-VD-0010
H325174-M268-VD-0011	H325174-M268-VD-0012	H325174-M268-VD-0013	H325174-M268-VD-0014
H325174-M268-VD-0015	H325174-M268-VD-0016	H325174-M268-VD-0017	H325174-M268-VD-0019
H325174-M268-VD-0020	H325174-M268-VD-0021	H325174-M268-VD-0029	H325174-M268-VD-0030
H325174-M268-VD-0031	H325174-M268-VD-0032	H325174-M268-VD-0033	H325174-M268-VD-0034
H325174-M268-VD-0035	H325174-M268-VD-0036	H325174-M268-VD-0037	H325174-M268-VD-0039

B. ADDITIONAL COLLECTION OF INFORMATION

HATCH - Vancouver Office

Role during construction phase : Field Supervision during construction of PHASE 1 (2007).

Mr. Marlon Coakley and Jim Bonia, which were HATCH employees at the time, have supervised the construction of the fuel containment area around tanks #1 and #2, in phase 1 of this project. A specialized crew coming from Saskatoon (Enviroline Service inc.) was hired in October 2007 to install an HDPE membrane over the berms. This HDPE membrane has been covered with a layer of about 150 mm thickness of crushed stone. During August 2008, some additional HDPE membrane was installed under the tanks #3 and #4, but the final installation of the impermeable enclosure for phase 2-B remains to be done in 2009.

GEM STEEL EDMONTON LTD

Role during construction phase : Fabrication and field assembly of 10 M liters fuel tanks

Construction of phase 1 (tanks #1 and #2) took place from September to November 2007, with a crew of about 16 workers. During this time, a crew has welded a pipeline towards a booster pump and installed flanged connections and gate valves between fuel tank #1 and the fuel dispensing module manufactured by CHAMCO. The connection of the booster pump to the barge, using hoses, allowed for fuel tank #1 to be filled up in 2007. During August 2008, tanks #1 and #2 were also filled up with fuel by barge delivery.

Construction of phase 2-A (tanks #3 and #4) took place from August to October 2008. Following each phase of this field work, a crew from ACUREN has proceeded to X-RAY testing of horizontal and vertical welds according to specifications described in the latest edition of API Standard 650. According to the report made by ACUREN, no repairs of defective welds were required, either on the tank shell or nozzles.

MOSHER ENGINEERING LTD

Role during construction phase : Welding of pipelines and support brackets between the 10 M liters tanks and the sea hose connection.

In September 2008, a crew of four (4) workers has extended a pipeline towards the barge landing and installed pipes with flanged connections and gate valves between fuel tank #2 and the fuel dispensing module manufactured by CHAMCO. They have also installed check valves on both the inlet and outlet nozzles of tank #2, as well as a pressure relief valve set at 75 psi to bypass the gate valve on the outlet of tank #2.

This safety feature against thermal expansion of fuel inside the pipeline towards the fuel dispensing module remains to be installed on tank #1. The grade of material that was used for this pipeline was A333 cold temperature rated steel.

CHAMCO INDUSTRIES LTD

Role during construction phase : Manufacturing of the fuel dispensing module.

This fuel dispensing module was manufactured in 2006 and sent to the Meadowbank site. A representative from CHAMCO was present during the commissioning. Possibly due to vibrations during transport, there were many flanged connections that needed tightening.

C. REVISION OF CONSTRUCTION DRAWINGS

AEM has hired STAVIBEL Engineering Services, a firm based in Val-d'Or, in order to complete the drawings that were used in producing this report. Those twelve (12) drawings are enclosed in **Appendix 1** of this report.

Drawing VD2259-BKL-001 shows the general layout of fuel storage area. It has been compiled using surveying data collected by a crew from NUNA.

Drawing VD2259-BKL-002 shows the fuel storage area and existing piping for PHASE 1. It has been compiled using surveying data collected by NUNA.

Drawing VD2259-BKL-003 shows the fuel storage area and location of a sump for collection of surface water, to be built in PHASE 2-B. It shows the limits of the HDPE membrane that has been installed in 2008 under the fuel tanks.

Drawings VD2259-BKL-004, 005, and 006 show cross-sections of the containment area in PHASE 2 (to be completed in 2009). These cross-sections are derived from surfaces that were generated using the *Autocad Civil 3D* software, and are also based on information collected from existing land surveys. This drawing file was also used to verify containment volumes, as it is described further in section D.

Drawing VD2259-BKL-007 is an as-built version of structural drawing BL2007-1, which was designed and issued by Gem Steel Edmonton Limited. This drawing has been updated to reflect nozzle orientations that were noted during a visit. No significant changes were noted, except those made to the nozzle schedule.

Drawing VD2259-BKL-008 shows the proposed piping for PHASE 2. It contains a schedule of valves and fittings that remain to be installed.

Drawing VD2259-BKL-009 shows the location of the existing pipeline and sea hose connection with the barge for fuel unloading. Also, a spill containment sump is proposed on this drawing.

Drawing VD2259-BKL-010 is a process and instrumentation diagram. It shows the details of the existing and proposed piping, along with further details for the fuel dispensing module.

Drawing VD2259-BKL-011 is a general layout that shows the location of existing grounding wire and proposed layout to extend this grounding into PHASE 2.

Drawing VD2259-BKL-012 shows the details of the barge and laydown areas, along with the details of a ditch and culvert for diversion of surface water run-off.

Also enclosed are two (2) vendor drawings from CHAMCO INDUSTRIES LTD, which shows the piping details inside the fuel dispensing module.

D. VERIFICATIONS TO STORAGE CAPACITY WITHIN BERMS

STAVIBEL Engineering Services has completed verifications on the liquid storage capacity inside the containment berms, which create an impermeable enclosure around tank #1 and #2.

The method used was a volume calculation using *Autocad CIVIL 3D* software.

The maximum storage capacity of fuel tank #1 is 10 515 000 litres of diesel fuel at a standard temperature of fifteen degrees Celcius (15 °C).

The maximum storage capacity of fuel tank #2 is 10 480 000 litres of diesel fuel at a standard temperature of fifteen degrees Celcius (15 °C).

It has been verified using the above software that the impermeable enclosure built in PHASE 1 will effectively hold one hundred percent (100 %) of the maximum storage capacity of the biggest tank, plus ten percent (10 %) of the maximum storage capacity of the other tank. This calculation has been summarized in a worksheet that is shown on PAGE 8, hereunder.

The containment volume for tanks #1 and #2 is 11 586 cubic meters, of which 367 cubic meters were occupied by accumulation of surface water as of 2008-10-31.

Thus, the lowest point of the HDPE membrane that sits atop the containment area is sufficiently high (at elevation 33.86 m) to meet the above criteria.

A worst case scenario has been simulated, and consists in either a rupture of the first course of side plates in the tank shell, or a failure in the outlet piping, when either one of fuel tanks is 100% full.

This simulation shows that, in such a worst case scenario, the hydraulic balancing level inside the containment area would not exceed the point with the lowest elevation on the surrounding berms, providing that there is no substantial accumulation of surface water inside. There is a no additional safety margin.

However, with the upcoming completion in phase 2-B (summer 2009) of the impermeable enclosure around tanks #3 and #4, a breach will be made into the berm dividing the two containment areas. This is also shown on a sketch, hereby.

When phase 2-b is completed in summer of 2009, the containment volume for tanks #3 and #4 will be 10 855 cubic meters As a result, the new containment requirement of 130% of the biggest tank volume (or 13 647 cubic meters), expressed while considering all four (4) tanks as a whole, will then be exceeded.

DESIGN REVIEW - FOR FUEL SPILL CONTAINMENT BERMS AT BAKER LAKE

EQUIPMENT #	diam (ft)	rim el. (m)	radius (m)	surface (m2)	top el. (m)	height (m)	volume (m3)
740-TK-044 TANK # 1	110	32.99	16.764	882.89	44.90	11.910	10 515
740-TK-044 TANK # 2	110	33.03	16.764	882.89	44.90	11.870	10 480

Let's say berms are 5' 3" higher than the average tank floor (so 1.60 m total height) with variable slopes and that the tanks are sitting on cones made of crushed stone of 20 m diameter x 1.0 m height.

Volume
11 563 m3

Secondary Containment Requirement
according to ref. PN-1326, Section 3.9.1(1) 2-b-ii

110%

DESIGN OF BERM DIMENSIONS

elevation	height (m)	width (m)	length (m)	surface (m2)			cumulative volume (m3)
32.00	0.00	64.0	104.0	6656.00	slope ratio N-S		0
32.66	0.66	69.3	107.6	7452.03	horizontal	vertical	4656
32.76	0.76	70.1	108.1	7575.93	4.0	1	5407
32.86	0.86	70.9	108.6	7700.69	slope ratio E-W		6171
32.96	0.96	71.7	109.2	7826.31			6947
33.06	1.06	72.5	109.7	7952.80	horizontal	vertical	7736
33.16	1.16	73.3	110.3	8080.15	2.7	1	8538
33.26	1.26	74.1	110.8	8208.36			9352
33.36	1.36	74.9	111.3	8337.44			10 180
33.46	1.46	75.7	111.9	8467.38			11 020
33.56	1.56	76.5	112.4	8598.19			11 873
33.66	1.66	77.3	113.0	8729.86			12 739
33.76	1.76	78.1	113.5	8862.39			13 619
33.86	1.86	78.9	114.0	8995.79	GROSS CONTAINMENT		14 512
34.00							CUBIC METERS

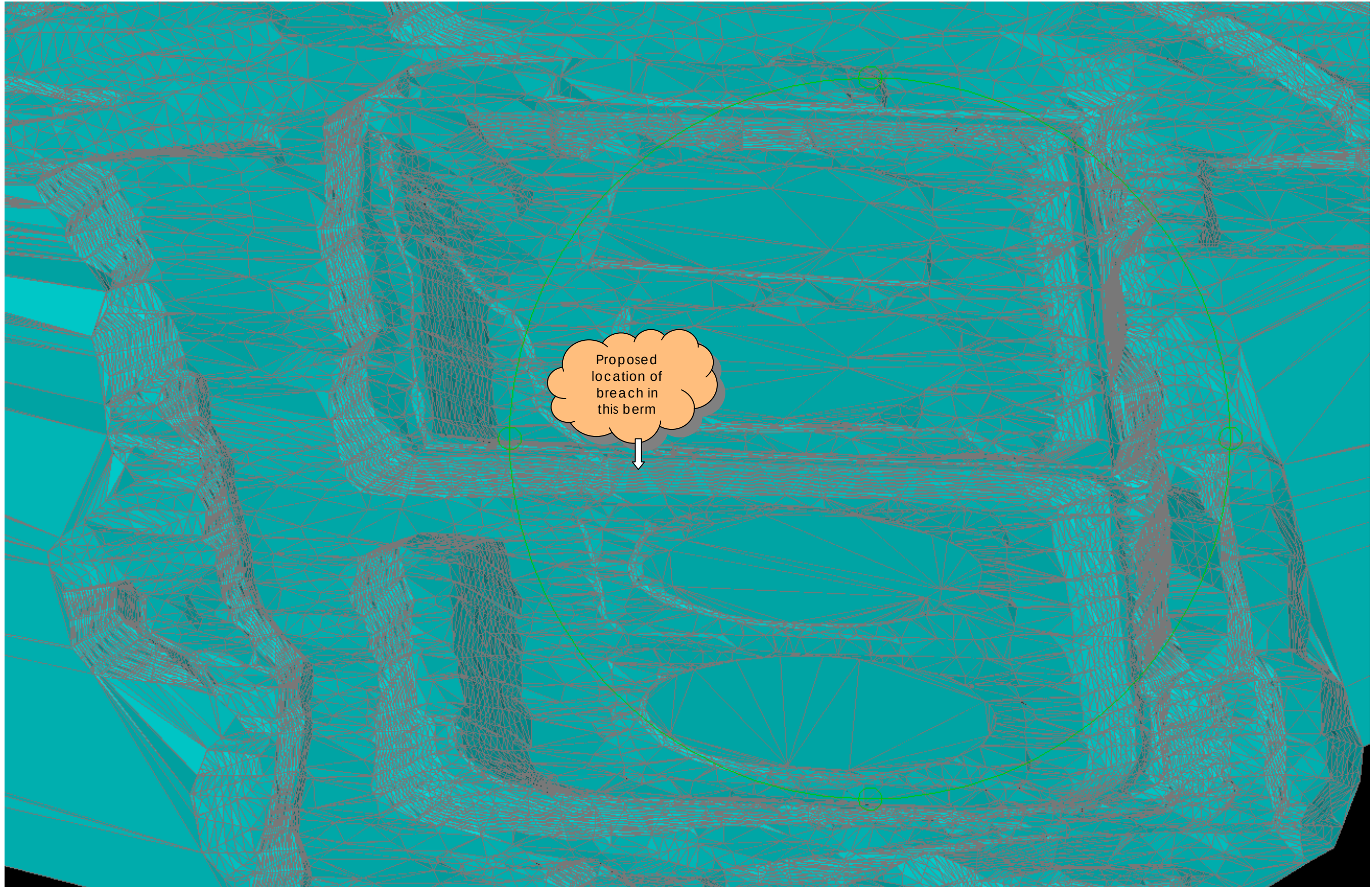
containment volume to be subtracted for the two (2) cones made of crushed stone

	perimeter (m)	number	radius (m)	surface (m2)	height (m)	volume (m3)
CONES	126.0	2	20.05	1262.93	1.01	-2680
RAMP		1			variable	-246

containment volume to be subtracted for accumulation of surface water

elevation	volume (m3)
water level as of November 2008 31.70	-367.0

Volume
NET CONTAINMENT 11 219 m3
or 107%



APPENDIX 1

AS BUILT DRAWINGS for PHASE 2-A

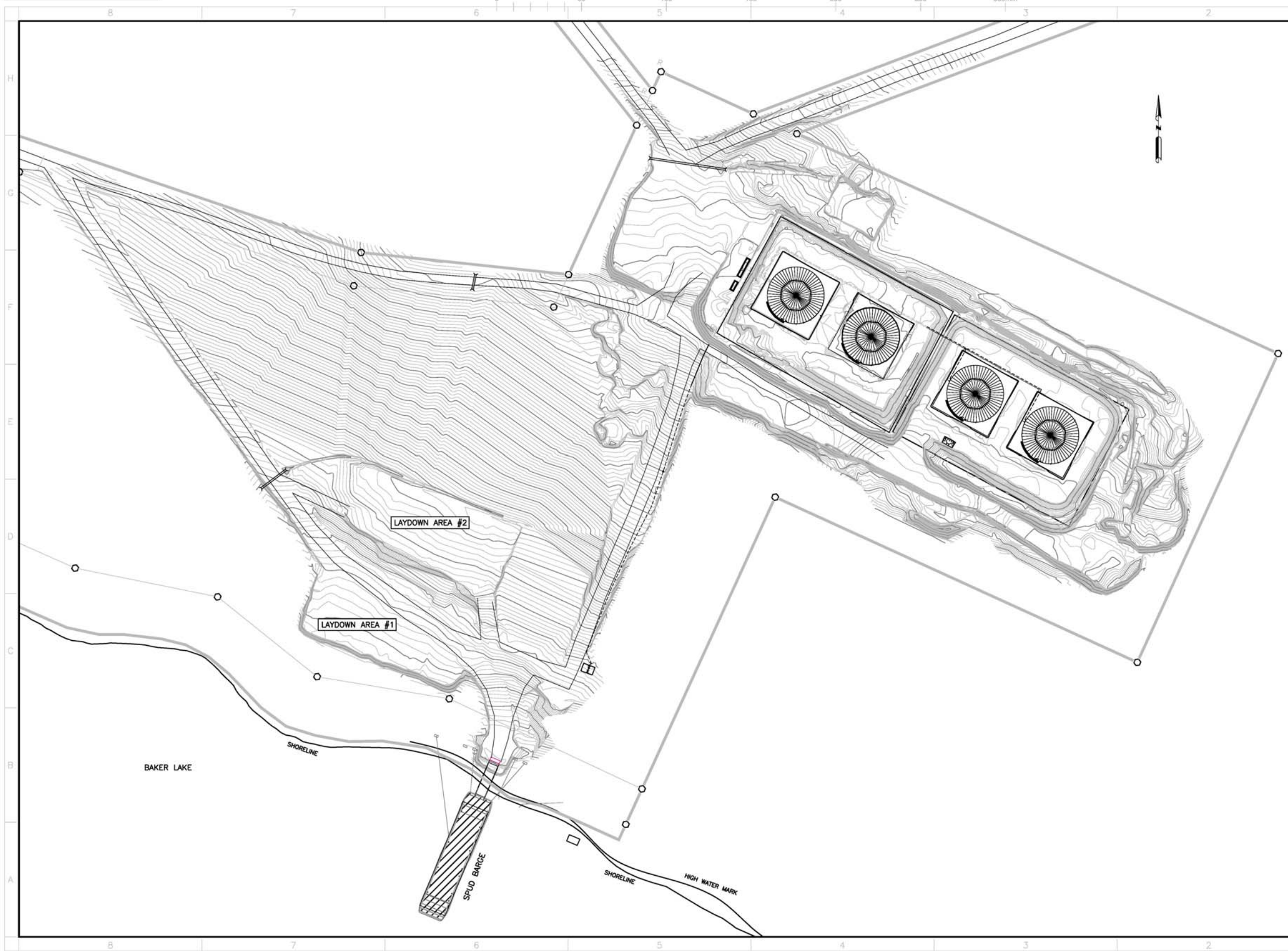
IFC DRAWINGS (10) for PHASE 2-B

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VD2259-BKL-005	VD2259-BKL-006	VD2259-BKL-007	VD2259-BKL-008
VD2259-BKL-009	VD2259-BKL-010	VD2259-BKL-011	VD2259-BKL-012

**Plus two (2) drawings from
CHAMCO INDUSTRIES LTD**

**Vendor ref. # CUP1014938-22
 CUP1014938-25**

DRAWING NO.



KEY PLAN

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1	08-03-27	FOR CONSTRUCTION	F.R.	P.G.	

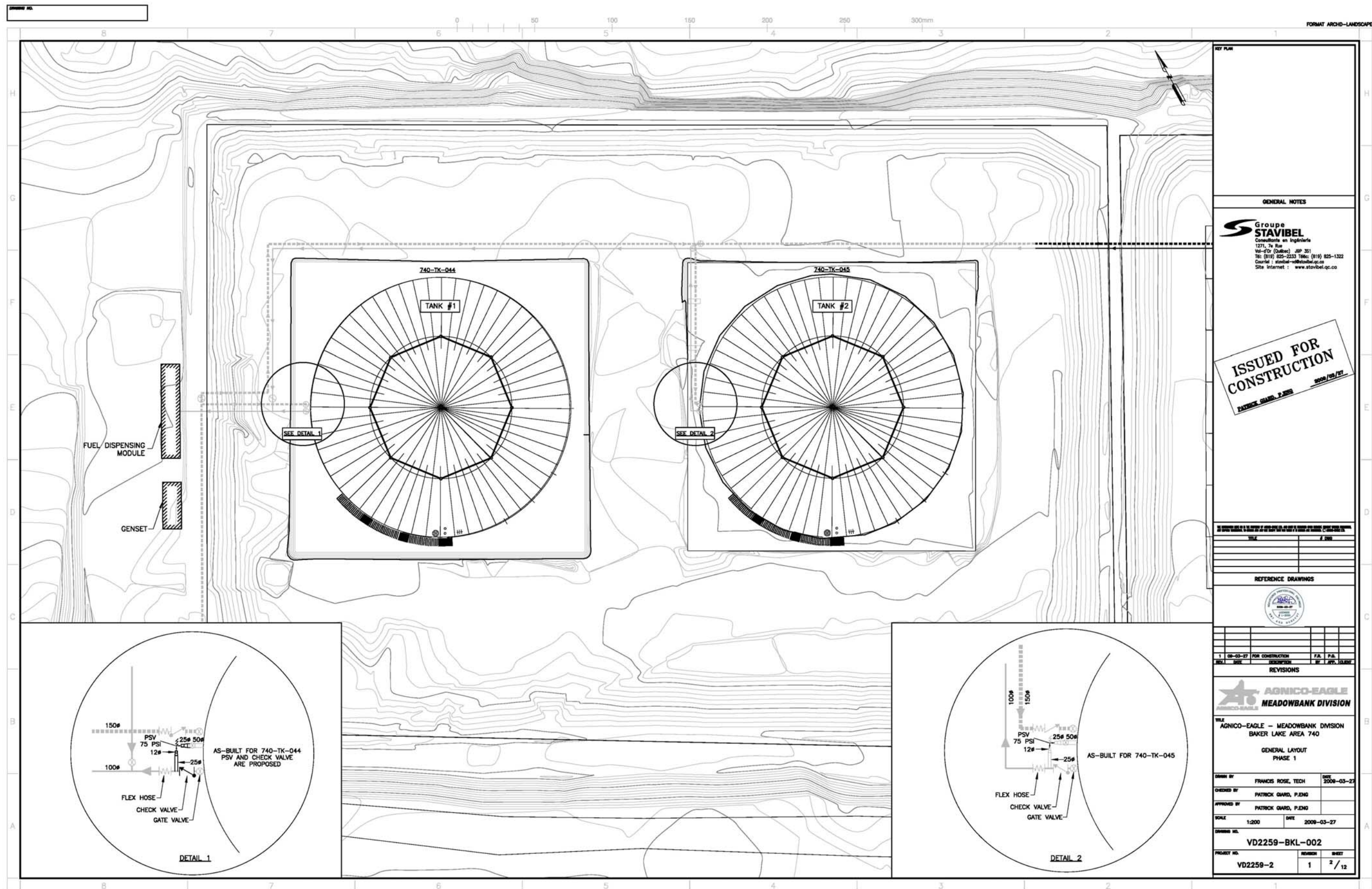
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TITLE	#

AGNICO-EAGLE
MEADOWBANK DIVISION

TITLE
AGNICO-EAGLE -- MEADOWBANK DIVISION
BAKER LAKE AREA 740
GENERAL LAYOUT

DRAWN BY: FRANCIS ROSE, TECH DATE: 2008-03-27
CHECKED BY: PATRICK GARD, P.ENG
APPROVED BY: PATRICK GARD, P.ENG
SCALE: 1:1000 DATE: 2008-03-27
DRAWING NO.: VD2259-BKL-001
PROJECT NO.: VD2259-2 REVISION: 1 SHEET: 1 / 12



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PATRICK GARD, P.ENG 2008/03/27

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1	08-03-27	FOR CONSTRUCTION	P.A.	P.A.

AGNICO-EAGLE
MEADOWBANK DIVISION

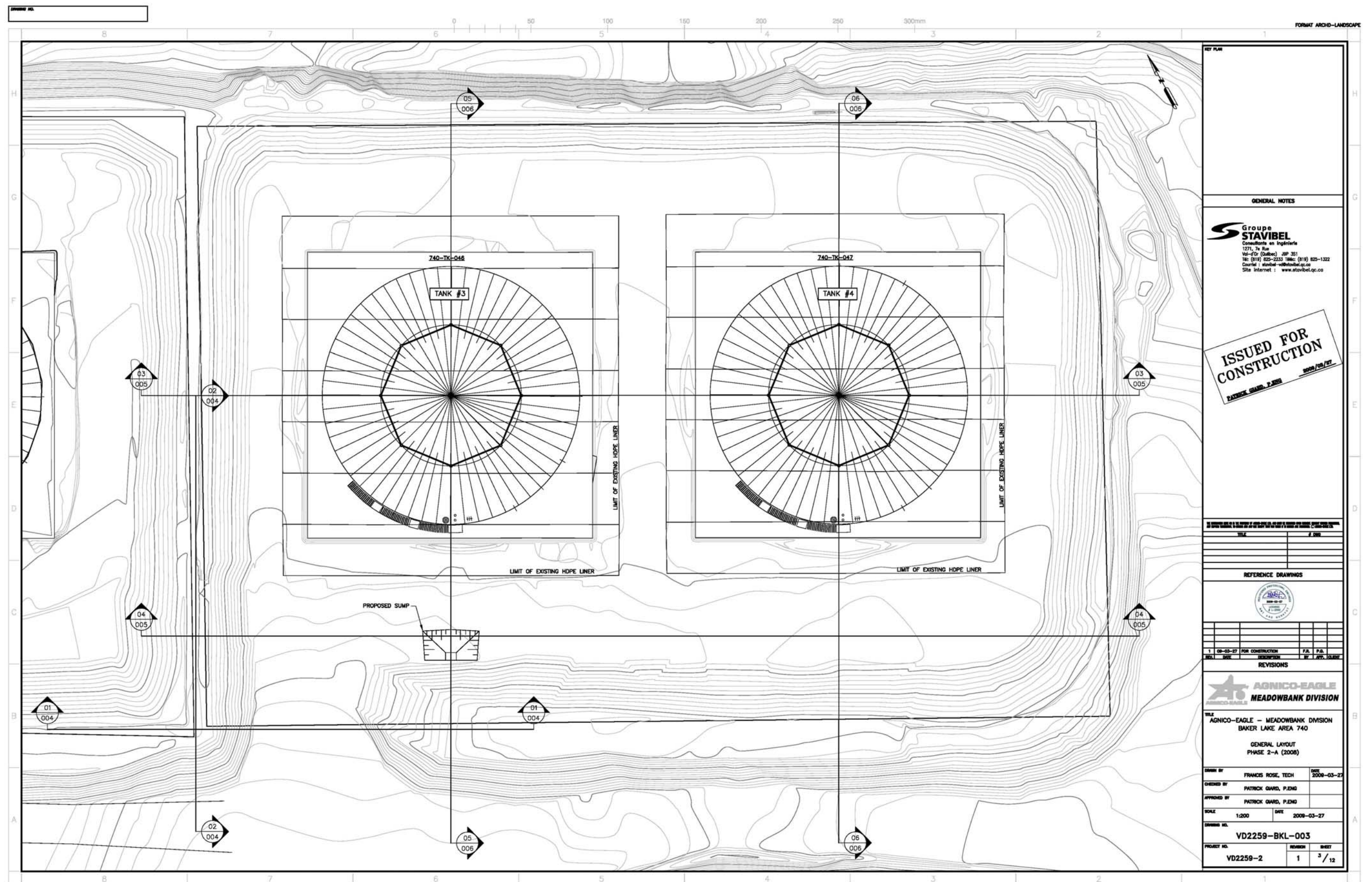
AGNICO-EAGLE — MEADOWBANK DIVISION
BAKER LAKE AREA 740
GENERAL LAYOUT
PHASE 1

DRAWN BY: FRANCIS ROSE, TECH DATE: 2008-03-27
CHECKED BY: PATRICK GARD, P.ENG
APPROVED BY: PATRICK GARD, P.ENG

SCALE: 1:200 DATE: 2008-03-27

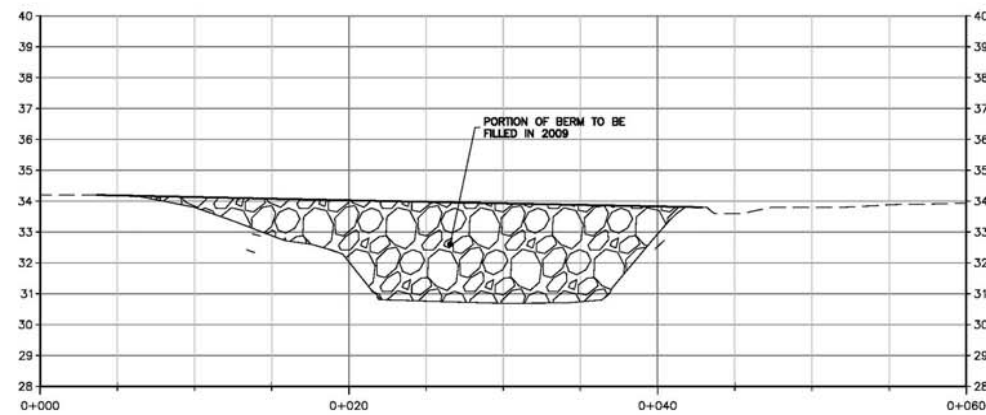
VD2259-BKL-002

PROJECT NO. VD2259-2 REVISION: 1 SHEET: 2/12

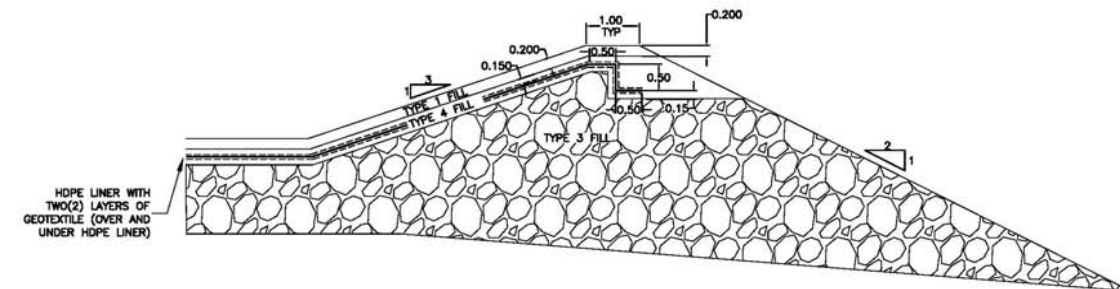


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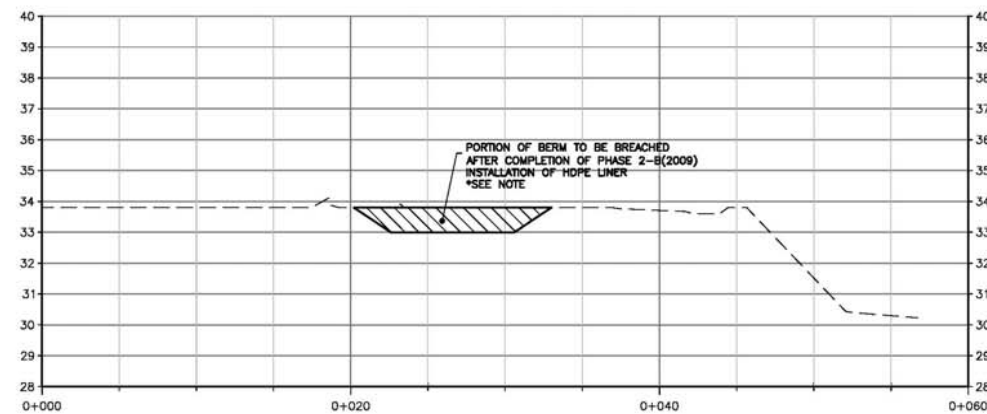
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CROSS-SECTION



TYPICAL CROSS-SECTION



CROSS-SECTION



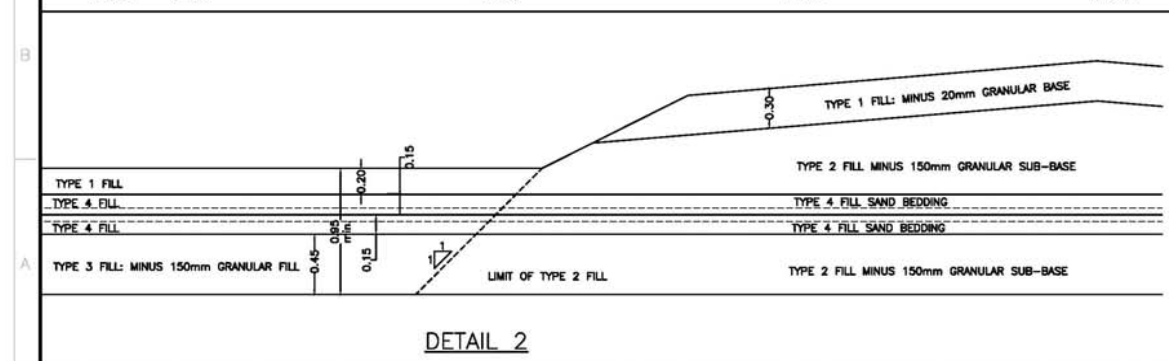
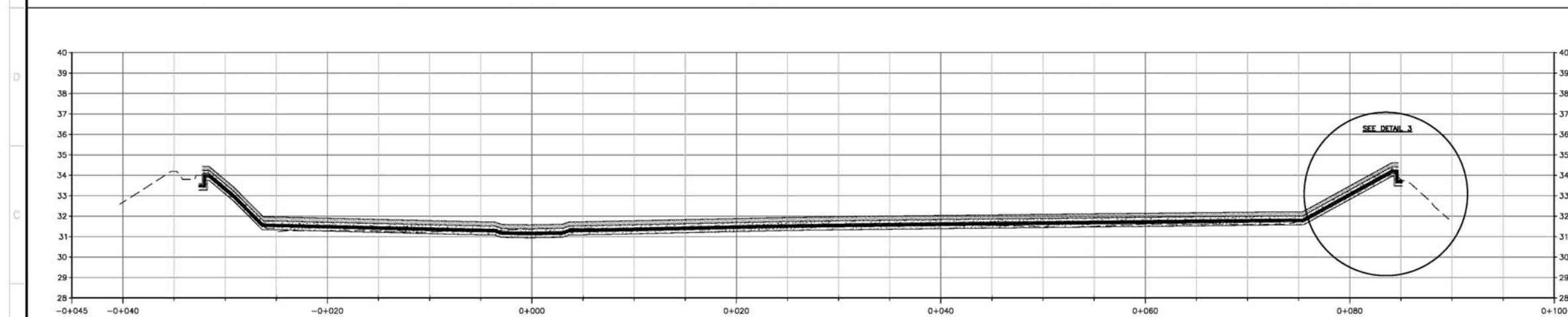
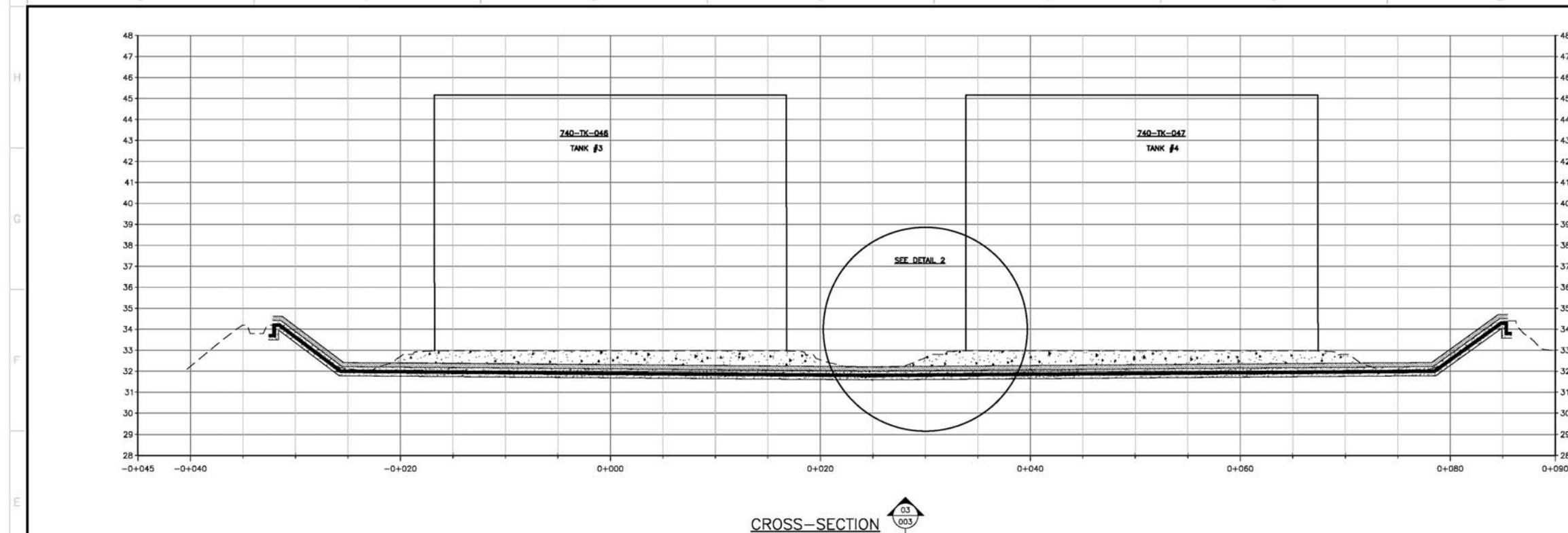
*NOTE:
HOPE LINER MUST BE WELDED BACK ON TOP OF EXISTING LINER ON BERM ONCE BREACH HAS BEEN EXCAVATED TO ENSURE IMPERMEABLE LINK BETWEEN BOTH BERM ENCLOSURES

KEY PLAN	
GENERAL NOTES	
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ISSUED FOR CONSTRUCTION PATRICK GARD, P.ENG 2008/03/27	
REVISIONS	
1 08-03-27 FOR CONSTRUCTION P.A. P.A.	
REVISIONS	
1 08-03-27 FOR CONSTRUCTION P.A. P.A.	
AGNICO-EAGLE MEADOWBANK DIVISION	
AGNICO-EAGLE - MEADOWBANK DIVISION BAKER LAKE AREA 740 CROSS-SECTIONS OF HOPE MEMBRANE PHASE 2-B (2009)	
DRAWN BY FRANCIS ROSE, TECH DATE 2008-03-27	
CHECKED BY PATRICK GARD, P.ENG	
APPROVED BY PATRICK GARD, P.ENG	
SCALE: HORIZ:1:200 VERT:1:100 DATE 2008-03-27	
DRAWING NO. VD2259-BKL-004	
PROJECT NO. VD2259-2	
REVISION 1	
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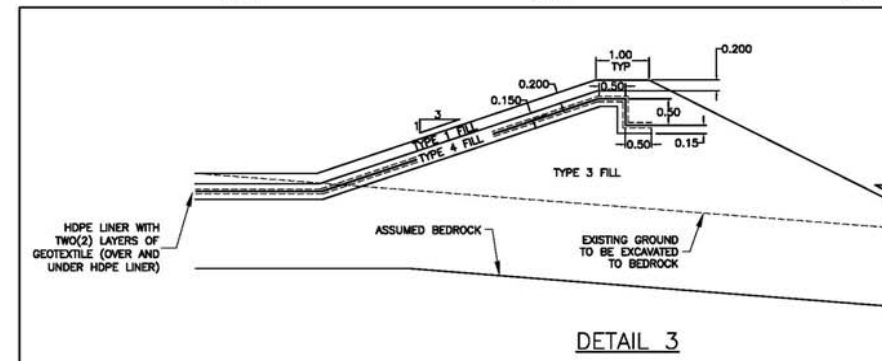
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FORMAT ARCHD-LANDSCAPE



CROSS-SECTION



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GENERAL NOTES

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PATRICK GARD, P.ENG 2009/05/17

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REFERENCE DRAWINGS

NO.	DATE	DESCRIPTION	BY	APP.	REMARKS
1	08-03-07	FOR CONSTRUCTION	P.A.	P.A.	

AGNICO-EAGLE
MEADOWBANK DIVISION

AGNICO-EAGLE - MEADOWBANK DIVISION
BAKER LAKE AREA 740
CROSS-SECTIONS
PHASE 2-B (2009)

DRAWN BY: FRANCIS ROSE, TECH DATE: 2008-03-27

CHECKED BY: PATRICK GARD, P.ENG

APPROVED BY: PATRICK GARD, P.ENG

SCALE: HOR: 1:200 VER: 1:100 DATE: 2008-03-27

DRAWING NO.: VD2259-BKL-005

PROJECT NO.: VD2259-2

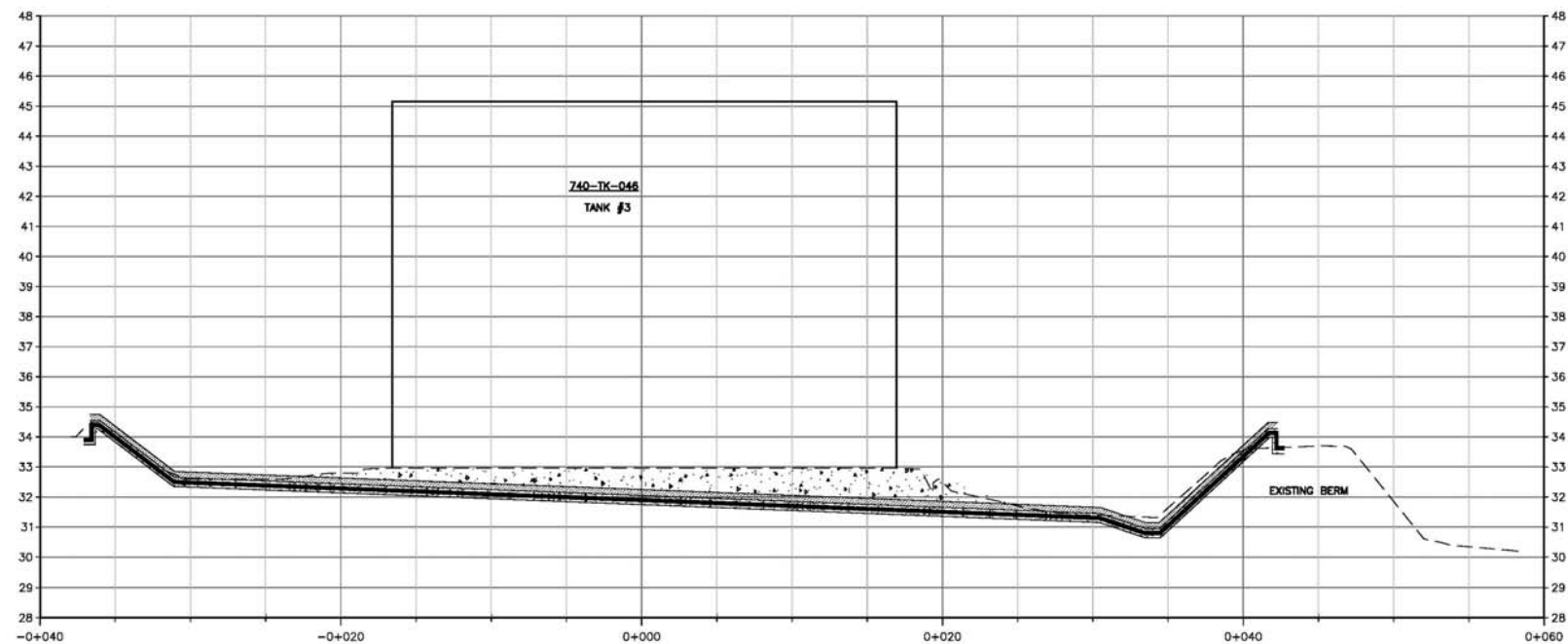
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SHEET: 8 / 12

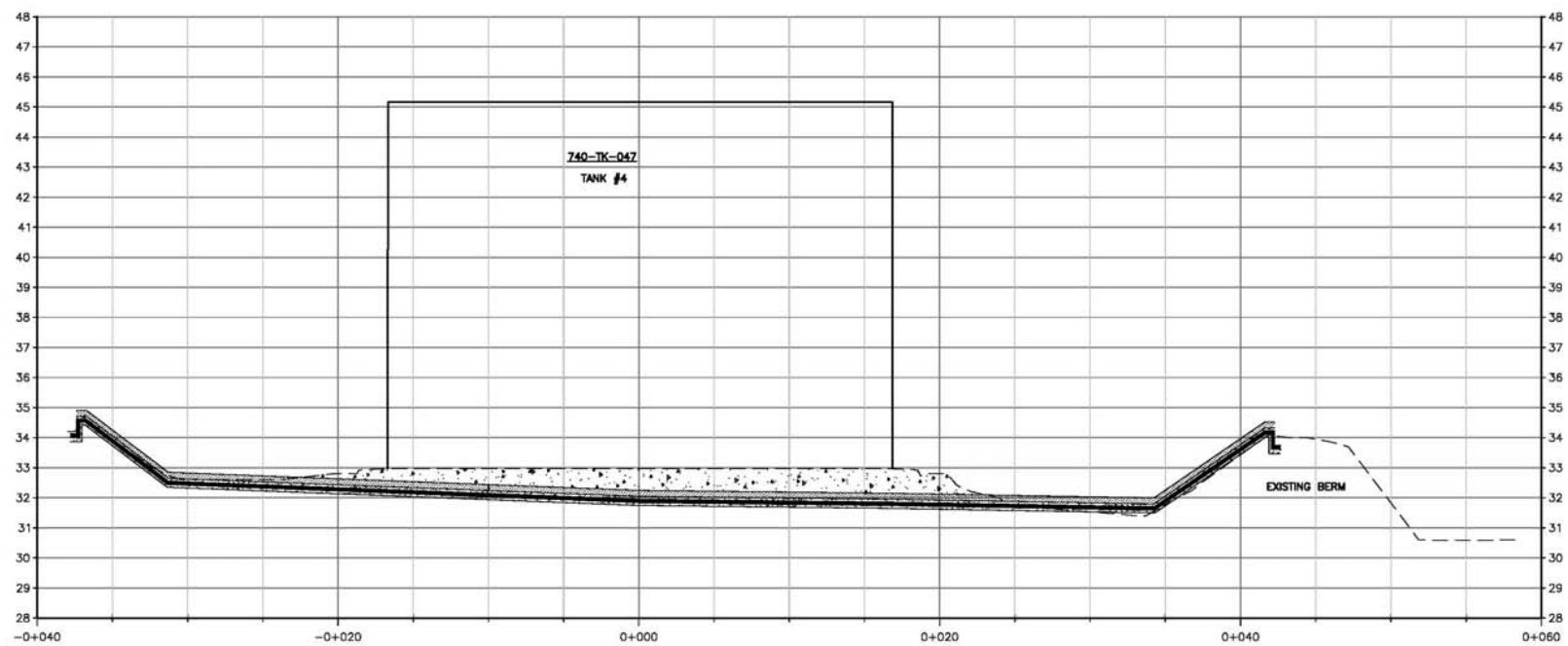
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FORMAT ARCHD-LANDSCAPE



CROSS-SECTION



CROSS-SECTION



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PATRICK GARD, P.ENG 2009/03/27

REVISIONS

REFERENCE DRAWINGS



1 08-03-07 FOR CONSTRUCTION P.A. P.A.
REV. DATE DESCRIPTION BY / APP. LAURENT

REVISIONS

AGNICO-EAGLE
MEADOWBANK DIVISION

TITLE
AGNICO-EAGLE - MEADOWBANK DIVISION
BAKER LAKE AREA 740
CROSS-SECTIONS
PHASE 2-B (2009)

DRAWN BY FRANCIS ROSE, TECH DATE 2008-03-27

CHECKED BY PATRICK GARD, P.ENG

APPROVED BY PATRICK GARD, P.ENG

SCALE HOR:1:200 VER:1:100 DATE 2008-03-27

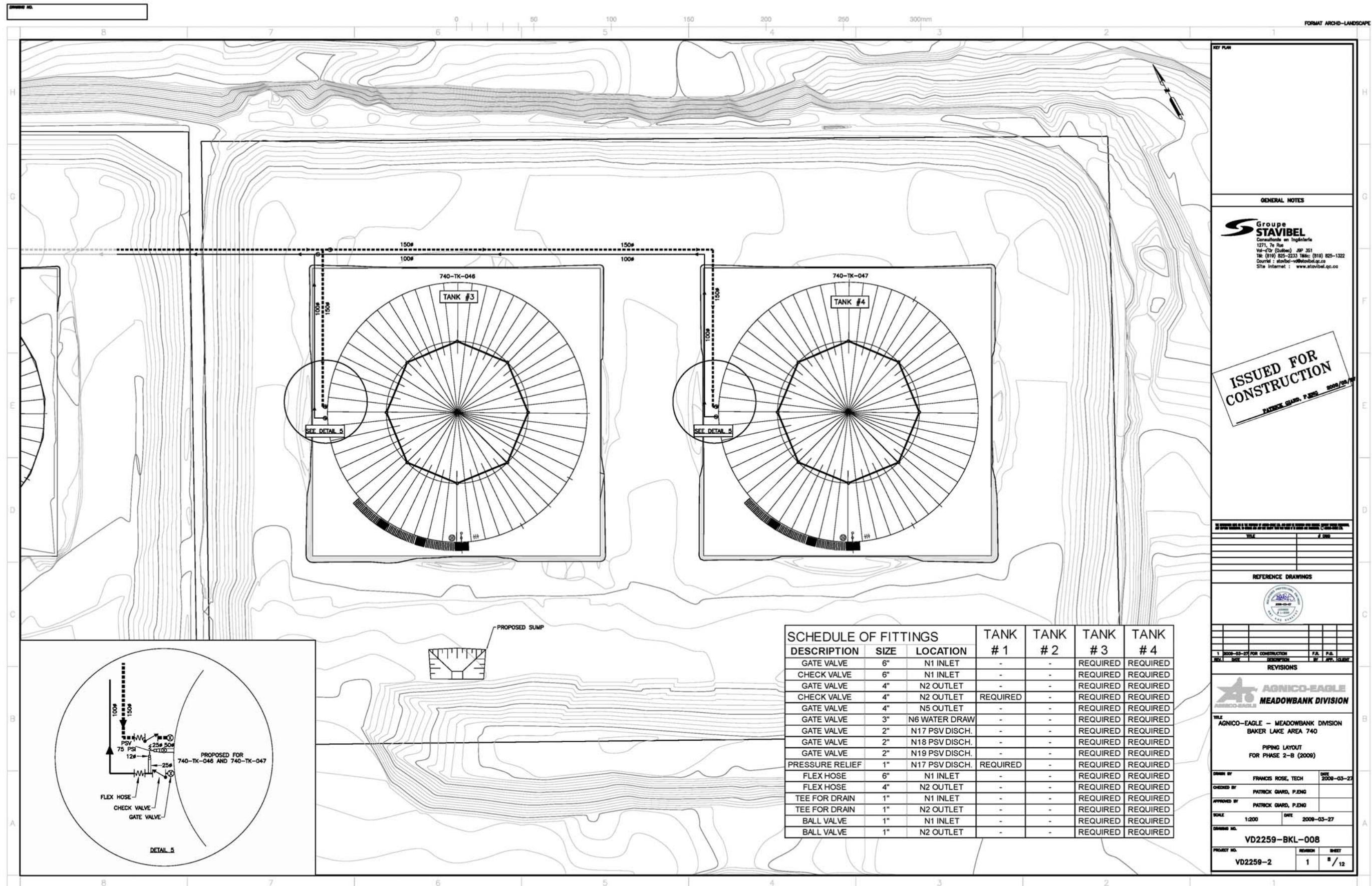
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PROJECT NO. VD2259-2 REVISION 1 SHEET 8/12



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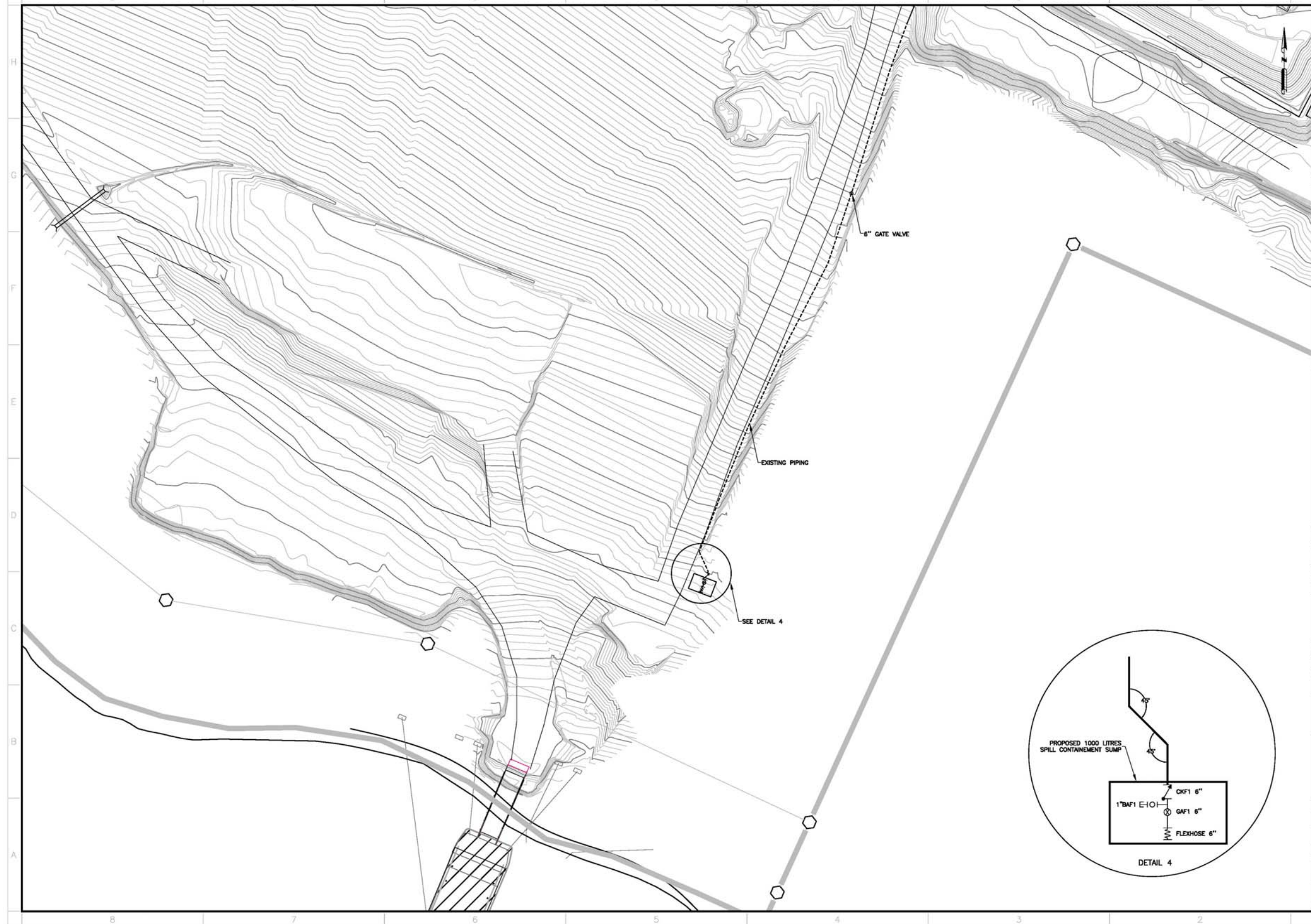
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DRAWING NO.

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FORMAT ARCHD-LANDSCAPE



KEY PLAN

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PATRICK GARD, P.ENG 2009/03/27

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NO.	DATE	DESCRIPTION	BY	APP.	DATE
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REFERENCE DRAWINGS

AGNICO-EAGLE
MEADOWBANK DIVISION

AGNICO-EAGLE -- MEADOWBANK DIVISION
BAKER LAKE AREA 740
PIPING LAYOUT

DRAWN BY: FRANCIS ROSE, TECH DATE: 2009-03-27

CHECKED BY: PATRICK GARD, P.ENG

APPROVED BY: PATRICK GARD, P.ENG

SCALE: 1:500 DATE: 2009-03-27

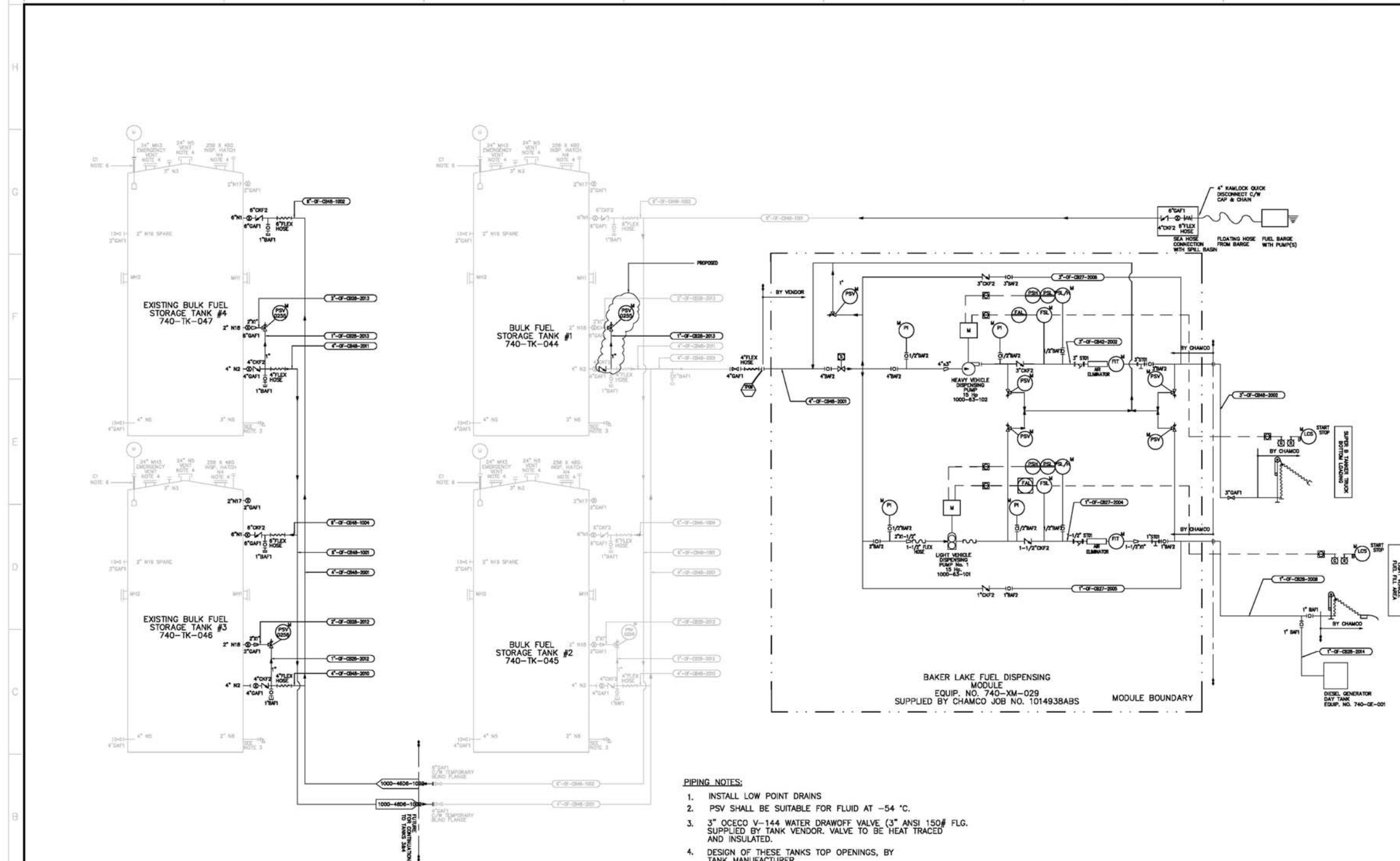
DRAWING NO. VD2259-BKL-009

PROJECT NO. VD2259-2 REVISION: 1 SHEET: 9/12

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FORMAT ARCHD-LANDSCAPE



PIPING NOTES:

1. INSTALL LOW POINT DRAINS
2. PSV SHALL BE SUITABLE FOR FLUID AT -54 °C.
3. 3" OCECO V-144 WATER DRAFF VALVE (3" ANSI 150# FLG. SUPPLIED BY TANK VENDOR. VALVE TO BE HEAT TRACED AND INSULATED.
4. DESIGN OF THESE TANKS TOP OPENINGS, BY TANK MANUFACTURER
5. FLEXIBLE SS BRAIDED HOSE, 750mm LG. (FLEXONIC SENIOR, OR EQUAL)
6. VAREC 2500 LEVEL INDICATOR BY TANK MANUFACTURER

*SEE PLAN 008 FOR SCHEDULE OF FITTINGS

KEY PLAN

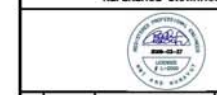
GENERAL NOTES

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ISSUED FOR CONSTRUCTION
PATRICK GARD, P.ENG 2009/03/27

REVISIONS

REFERENCE DRAWINGS



1 00-03-07 FOR CONSTRUCTION P.A. P.A.
REV. DATE DESCRIPTION BY I. JPT. J. JPT.

AGNICO-EAGLE
MEADOWBANK DIVISION

FILE
AGNICO-EAGLE - MEADOWBANK DIVISION
BAKER LAKE AREA 740
PROCESS AND INSTRUMENTATION DIAGRAM

DRAWN BY FRANCIS ROSE, TECH DATE 2008-03-27

CHECKED BY PATRICK GARD, P.ENG

APPROVED BY PATRICK GARD, P.ENG

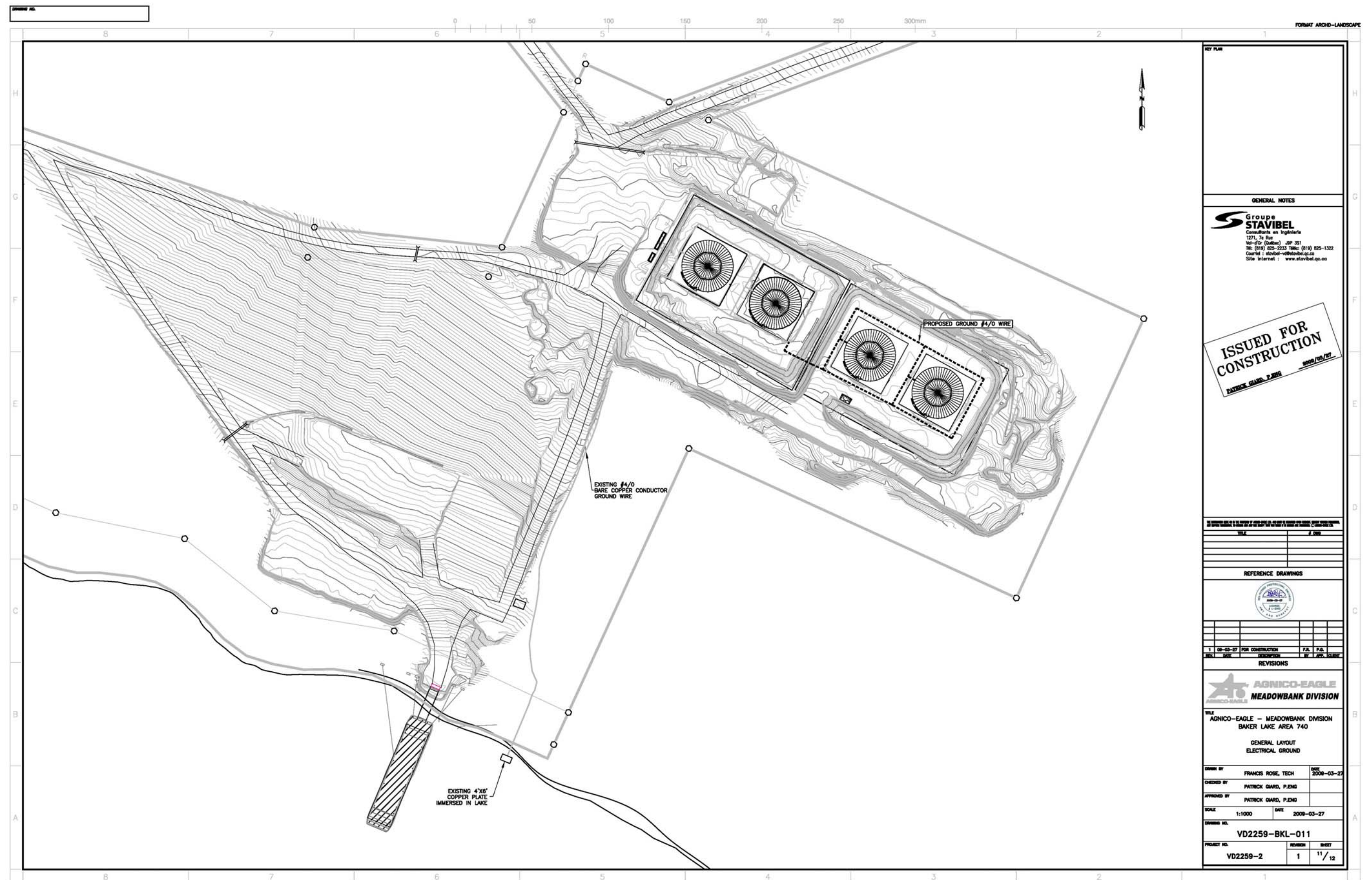
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DRAWING NO. VD2259-BKL-010

PROJECT NO. VD2259-2

REVISION 1

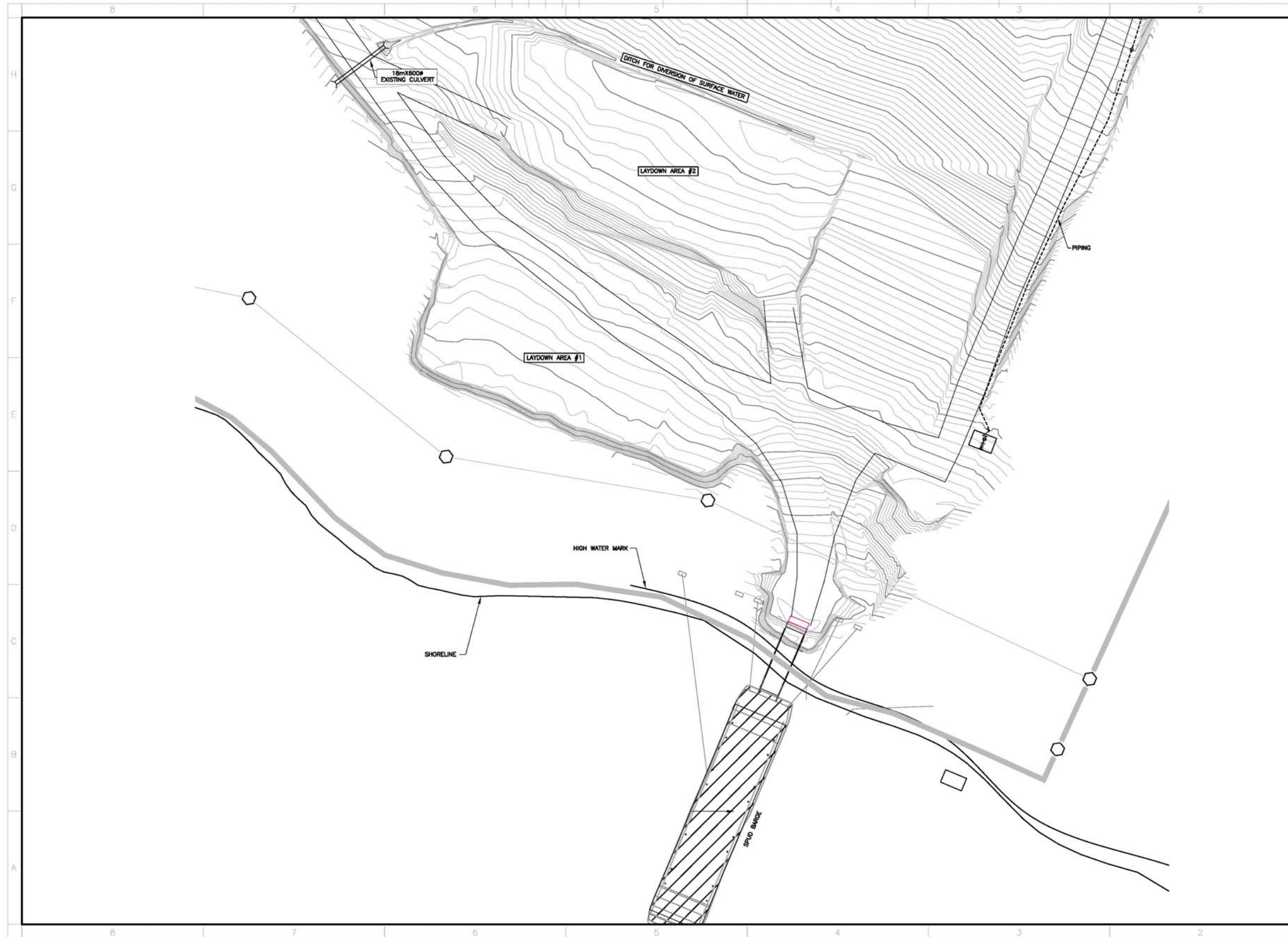
SHEET 10/12



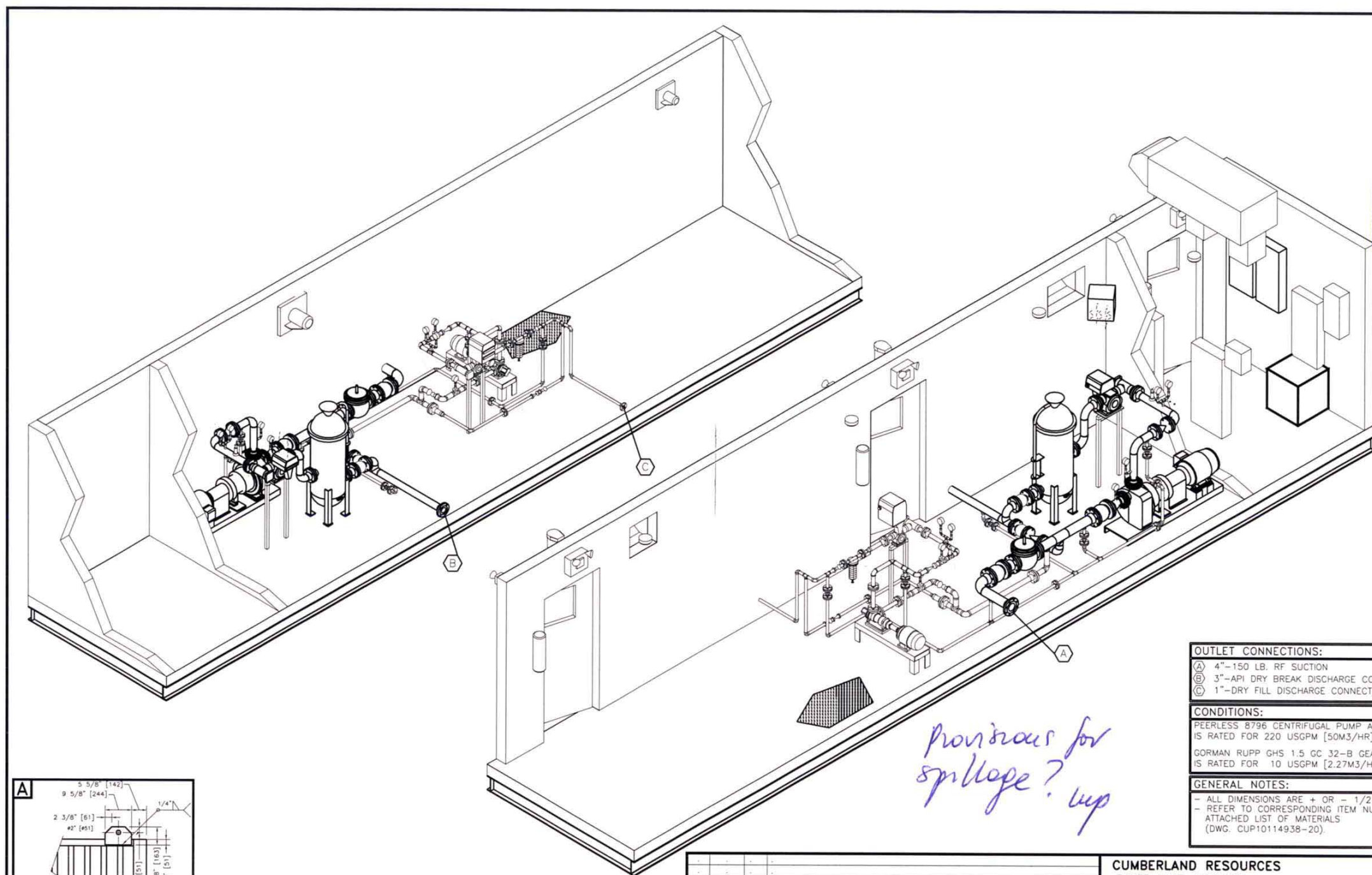
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FORMAT ARCHD-LANDSCAPE



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GENERAL NOTES	
Groupe STAVIBEL Consultants en Ingénierie 1271, 7e Rue Val-d'Or (Québec) J9P 3S1 Tél: (819) 825-2233 Téléc: (819) 825-1322 Courriel : stavel@stabilbel.qc.ca Site Internet : www.stabilbel.qc.ca	
REVISIONS	
REFERENCE DRAWINGS	
AGNICO-EAGLE MEADOWBANK DIVISION	
AGNICO-EAGLE - MEADOWBANK DIVISION BAKER LAKE AREA 740 GENERAL LAYOUT	
DESIGNED BY	FRANCIS ROSE, TECH
CHECKED BY	PATRICK GARD, P.ENG
APPROVED BY	PATRICK GARD, P.ENG
SCALE	1:500
DATE	2009-03-27
VD2259-BKL-012	
PROJECT NO.	VD2259-2
REVISION	1
SHEET	12 / 12



HATCH

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☐ Code 3 "Do not Proceed, Revise as Noted and Re-submit"

☐ Code 4 "Information Only"

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HATCH

By _____

Date _____

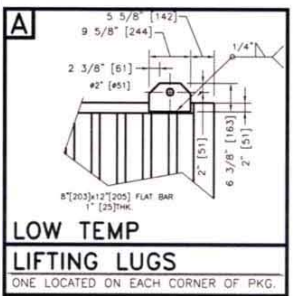
RECEIVED

JUL 18 2007

DRAWING CONTROL

HATCH

Provisions for
spillage? up



OUTLET CONNECTIONS:

(A) 4"-150 LB. RF SUCTION

(B) 3"-API DRY BREAK DISCHARGE CONNECTION (HEAVY FILL)

(C) 1"-DRY FILL DISCHARGE CONNECTION (LIGHT FILL)

CONDITIONS:

PEERLESS 8796 CENTRIFUGAL PUMP AT DISCHARGE HEAD IS RATED FOR 220 USGPM [50M3/HR] AT 100' [30M] TDH.

GORMAN RUPP GHS 1.5 GC 32-B GEAR PUMP AT DISCHARGE HEAD IS RATED FOR 10 USGPM [2.27M3/HR] AT 110' [33.53M] TDH.

GENERAL NOTES:

- ALL DIMENSIONS ARE + OR - 1/2" [13 mm].

- REFER TO CORRESPONDING ITEM NUMBER ON THE ATTACHED LIST OF MATERIALS (DWG. CUP1014938-20).

PRELIMINARY

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CUMBERLAND RESOURCES

BAKER LAKE, NUNAVUT

P.O. No. M268

BAKER LAKE DISPENSING FUEL TRANSFER MODULE

PEERLESS 8796, 3x3x13MTP CENTRIFUGAL PUMP (1)

GORMAN RUPP GHS 1.5 GC 32-B GEAR PUMP (1)

ISOMETRIC VIEW GENERAL ARRANGEMENT

DESIGNED BY D.J.C.

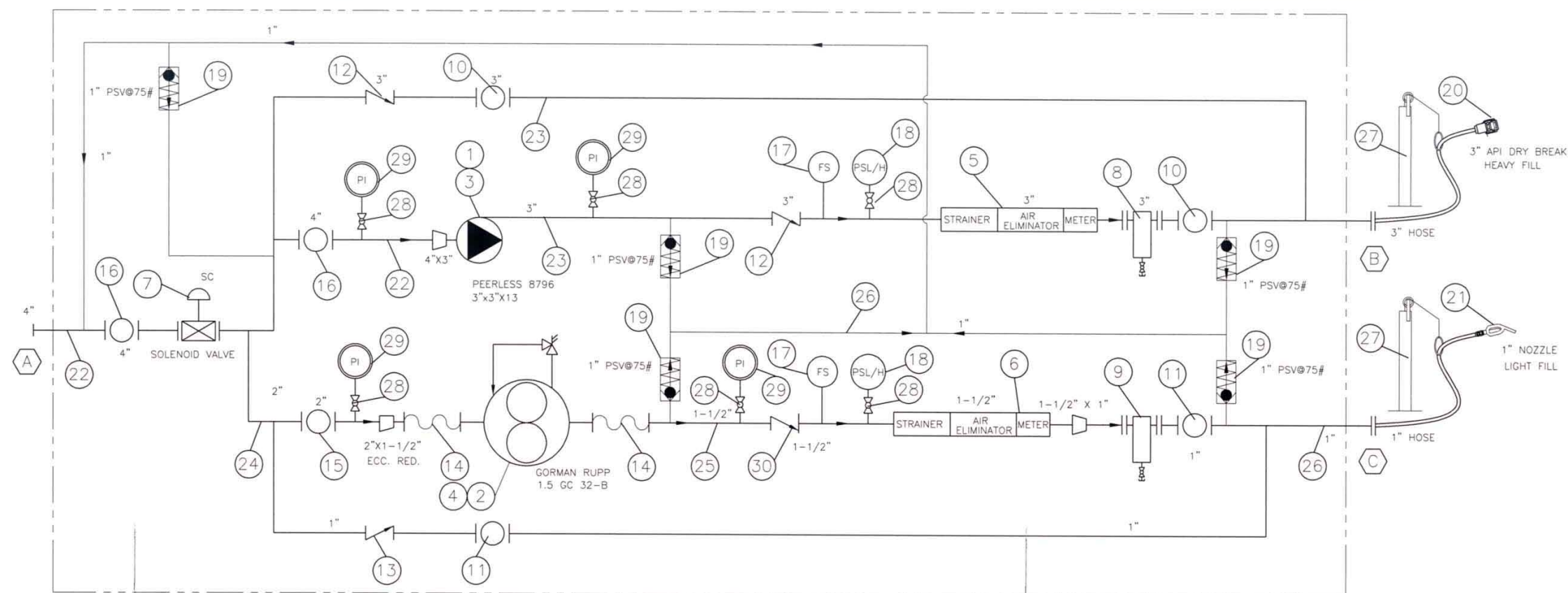
DRAWN BY G.R.M.

CHECKED BY

JOB No. 1014938ABS

DATE 25-APRIL-07 SCALE N.T.S. DWG No. CUP1014938-22 REV. 0

4-30-1741-M268-VD-0012



LEGEND

- ① PEERLESS - 3" X 3" - 13 MTP 8796 HEAVY FILL PUMP RATED AT 220 USGPM (1)
- ② GORMAN RUPP GHS 1.5 GC 32-B PUMP RATED AT 10 USGPM - LIGHT FILL (1)
- ③ ELECTRIC MOTOR (15HP, 1800 RPM, 254T, 3/60/575V) - NOT SHOWN
- ④ ELECTRIC MOTOR (1.5HP, 1200 RPM, 182T, 3/60/575V) - NOT SHOWN
- ⑤ TCS 700-30 3" AIR ELLIMINATOR, DISCHARGE STRAINER AND FLOW METER
- ⑥ TCS 700-15 1-1/2" ELLIMINATOR, DISCHARGE STRAINER AND FLOW METER
- ⑦ 4" 120VAC SOLENOID FIRE SAFE VALVE
- ⑧ 3" BASKET FILTER
- ⑨ 1" BASKET FILTER
- ⑩ 3" BALL VALVE
- ⑪ 1" BALL VALVE
- ⑫ 3" CHECK VALVE
- ⑬ 1" CHECK VALVE
- ⑭ 1-1/2" FLEX HOSE
- ⑮ 2" BALL VALVE
- ⑯ 4" BALL VALVE
- ⑰ FLOW SWITCH
- ⑱ PRESSURE SWITCH HIGH/LO DISCHARGE PRESSURE ALARM
- ⑲ 1" PSV SET AT 75PSI
- ⑳ 3" API DRY BREAK (HEAVY FILL)
- ㉑ 1" NOZZLE (LIGHT FILL)
- ㉒ 4" LOW TEMP PIPE AND FITTINGS
- ㉓ 3" LOW TEMP PIPE AND FITTINGS
- ㉔ 2" LOW TEMP PIPE AND FITTINGS
- ㉕ 1-1/2" LOW TEMP PIPE AND FITTINGS
- ㉖ 1" LOW TEMP PIPE AND FITTINGS
- ㉗ HIGH HOSE RETRIEVER AND BUN
- ㉘ 1/2" BALL VALVE
- ㉙ PRESSURE GAUGE
- ㉚ 1-1/2" CHECK VALVE

HATCH

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HATCH

By _____



BAKER LAKE DISPENSING MODULE

OUTLET CONNECTIONS:

- ① 4"-150# RFWN FLANGE
- ② 3"-API DRY BREAK- HEAVY FILL
- ③ 1"-DISCHARGE NOZZLE-LIGHT FILL

CONDITIONS:

EACH PEERLESS 8796 CENTRIFUGAL PUMP AT DISCHARGE HEAD IS RATED FOR 220 USgpm [50M3/HR] AT 100' [30M] TDH.
EACH GORMANN RUPP GHS 1.5 GC 32-B GEAR PUMP AT DISCHARGE HEAD IS RATED FOR 10 USgpm[2.27M3/HR] AT 110'[33.53M] TDH.

GENERAL NOTES:

- ALL DIMENSIONS ARE + OR - 1/2" [13 mm].

REV.	DATE	BY	DESCRIPTION

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CUMBERLAND RESOURCES BAKER LAKE, NUNAVUT P.O. No. M268 BAKER LAKE DISPENSING FUEL TRANSFER MODULE PEERLESS 8796, 3x3x13MTP CENTRIFUGAL PUMP (1) GORMAN RUPP GHS 1.5 GC 32-B GEAR PUMP (1) FLOW DIAGRAM	DESIGNED BY D.J.C. DRAWN BY G.R.M. CHECKED BY . JOB No. 1014938ABS
DATE 25-APRIL-07 SCALE N.T.S. DWG No. CUP1014938-25 REV. 0	

APPENDIX 2

SAFE FILL LEVELS FOR ALL FUEL TANKS

TEMPERATURE OF FUEL in the barge at discharge	MAXIMUM FUEL LEVEL to be read on the VAREC float level			
	TANK #1	TANK #2	TANK #3	TANK #4
0°C	11.68 m	11.64 m	11.70 m	11.70 m
+ 5°C	11.73 m	11.69 m	11.75 m	11.75 m
+10°C	11.79 m	11.75 m	11.81 m	11.81 m
+15°C	11.84 m	11.80 m	11.86 m	11.86 m

NOTE : EACH TANK HAS A SLIGHTLY DIFFERENT ELEVATION, SO CARE MUST BE TAKEN DURING HYDRAULIC BALANCING OF TANKS, ESPECIALLY WHEN THOSE ARE FULL.

Appendix A2

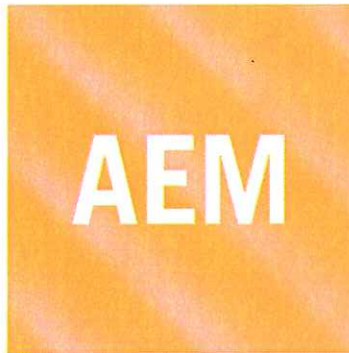
Baker Lake Diesel Fuel Storage Installations: Final Report Following Construction of Phase 2-B (2009)



**AGNICO-EAGLE MINES LTD
MEADOWBANK DIVISION**

BAKER LAKE FUEL STORAGE INSTALLATIONS

**FINAL REPORT
FOLLOWING THE CONSTRUCTION
OF
PHASE 2-B (2009)**



**AGNICO-EAGLE MINES LTD
MEADOWBANK DIVISION**

BAKER LAKE FUEL STORAGE INSTALLATIONS

**FINAL REPORT
FOLLOWING THE CONSTRUCTION
OF
PHASE 2-B (2009)**

PREPARED BY :

Patrick Giard, P.Eng., CCE

2009-12-07



**AGNICO-EAGLE MINES LTD
MEADOWBANK DIVISION**

BAKER LAKE FUEL STORAGE INSTALLATIONS

FINAL REPORT

FOLLOWING THE CONSTRUCTION

TABLE OF CONTENTS

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APPENDIX 1 : AS-BUILT DRAWINGS

VD2259-BKL-001 (revision 2), VD2259-BKL-008 (revision 3)

APPENDIX 2

QUALITY CONTROL DOCS : HDPE welding log and instrument qualification

1.0 EXECUTIVE SUMMARY

Agnico-Eagle Mines Limited has undertaken construction of a gold mining project in the Kivalliq region of Nunavut, about 70 km north of Baker Lake.

The yearly operations of this mining operation requires the storage of a minimum of forty million (40 000 000) liters of diesel fuel, which represents four (4) bulk fuel storage tanks, each with a nominal capacity of ten million (10 000 000) liters.

PHASE 1 (2007)

During the summer of 2007, Agnico-Eagle Mines Limited has built the first two (2) bulk fuel tanks, with a combined capacity twenty million (20 000 000) liters of diesel fuel. An impervious enclosure was built around it in order to provide secondary containment around the fuel tanks. These first two (2) bulk fuel tanks were then in condition to be filled.

PHASE 2-A (2008)

During the summer of 2008, Agnico-Eagle Mines Limited has built another two (2) bulk fuel tanks, for a total combined capacity of forty million (40 000 000) liters of diesel fuel. Only a portion of the enclosure was built around it, with the final purpose being to provide secondary containment around the fuel tanks. These other two (2) bulk fuel tanks were completed in late October 2008, and they have remained empty during the winter of 2008-09.

PHASE 2-B (2009)

During 2009, Agnico-Eagle Mines Limited has completed the installation of an impermeable HDPE membrane, which provides adequate secondary containment around the fuel tanks. This has allowed to fill up all four (4) bulk fuel tanks in the summer of 2009, with the piping installation towards tanks 3 and 4 being completed.

PHASE 3

Consideration is currently being given to an expansion project for the fuel storage facilities in Baker Lake. The scale of the project has been defined in a set of drawings and technical specifications, which will be used for the permitting process.

2.0 SECONDARY CONTAINMENT BERMES

2.1 Final completion of berm enclosure

During the construction of fuel tanks 3 and 4 there was a small part of the secondary containment enclosure built in 2008 had been left open to provide easy access.

The granular material and rock fill that was used for civil works was taken from an approved quarry, which has been demonstrated not to produce Acid Rock Drainage and to be non-Metal Leaching.

Given that these fuel tanks were to be filled up in August 2009, the berm enclosure was fully completed in July 2009, exactly as shown on the construction drawings and at a minimal crest elevation of 34.20 m.

2.2 Breach in middle berm

Once the berm enclosure was fully completed, a breach was made in the middle berm between fuel tanks 2 and 3. At that moment, fuel tanks 1 and 2 had been fully drawn with truck tankers, and were totally empty. Meanwhile, the mine operations relied on the fuel tanks located at the Meadowbank site.

The breach section in this middle berm was capped with an HDPE membrane at the 33.00 m elevation mark, which is the same as the tank rim elevation. This HDPE membrane was welded to the existing ones on the berm crests, thus ensuring an impermeable transition from one side to the other of both secondary containment areas. An access ramp was built over this breach to provide vehicle access inside the secondary containment area around fuel tanks 3 and 4.

3.0 HDPE MEMBRANE WELDING

A specialized crew from Saskatchewan was mobilized to Baker Lake for the completion of the HDPE membrane installation. The contractor was Enviroline Services inc.

During July 2008, or prior to the construction of fuel tanks 3 and 4, some HDPE panels were laid out under the fuel tanks. The edges of this HDPE membrane had been protected with plywood sheets and covered with a layer of screened sand.

The work that took place in 2009 was to weld some HDPE membrane rolls to those existing panels, and extend all those HDPE membrane rolls right up to the berm crest. The membrane was anchored into a trench, as indicated on the construction drawings.

Detailed reports of wedge welder seam logs and qualification tests, as well as logs for extrusion welder and qualification tests are enclosed herein, in Appendix 1.

4.0 GEOTEXTILE INSTALLATION

As indicated on the construction drawings, a geotextile was placed directly under and over the HDPE membrane, as a means to reduce the risk of puncturing this membrane.

5.0 SCREENED SAND COVER

As indicated on the construction drawings, a layer of screened sand was placed directly under and over the geotextile, as an additional means to reduce the risk of puncturing the HDPE membrane. This sand was screened at the Blueberry Hill pit and hauled to the worksite by local truckers.

6.0 WELDING OF PIPELINE

A crew from the ABF Mines contractor, composed of a qualified welder and a pipefitter, have completed the extension of the barge discharge pipeline towards tanks 3 and 4.

Also, some additional piping was installed from the tank 3 and 4 towards the fuel dispensing module, thus allowing to draw fuel from these tanks, after barge delivery.

Some pressure release valves were installed on each of these pipelines, with a discharge pressure set at 75 psi and piped back into the fuel tanks. This constitutes a protection feature against the effects of thermal expansion of fuel which was indicated on the construction drawings.

Another feature of the modifications implemented in 2009 is the installation of some swing check valves at the N₂ nipple outlets of all fuel tanks. This will most likely help the fuel dispensing pump keeps its prime when the fuel levels get low in the tanks.

The only exception to the complete compliance of these installations with the piping drawings is that the containment sump for the fuel sea hose connection shown on section A of drawing 017202-1000-46D4-1004 from SNC-Lavalin has not been installed.

The flanges and gaskets that were use for mechanical joints are rated for 150 psi.

7.0 PRESSURE TESTING OF PIPELINE

7.1 Selection of test method and suitable air pressure for testing

The purpose of the leak detection program is to proof the fuel delivery system in a non-destructive manner. Fuel pipelines were pressure tested with a non-inert gas, given that no petroleum product had ever entered the pipelines prior to testing.

Section 6.2 of CCME PN_1326 states that the testing pressure must be greater than 350 kPa (50.8 psi), but without exceeding the manufacturer specifications for flanges and gaskets of 1034 kPa (150 psi). For that purpose, an evaluation was made of the maximum operating pressure at the fuel sea hose connection of the barge discharge pipeline. The results are as follows :

Expected discharge flow rate : 0.090 m³/s

Maximum operating pressure = static pressure + velocity pressure + friction loss

Maximum operating pressure = 29.64 m + 1.24 m + 35.80 m = **94.7 psi**

Whereas static pressure = elevation of (tank overflow - pump intake) x 0.8396
static pressure = (44.90 m - 9.60 m) x diesel fuel density @ 2°C

Whereas friction loss was evaluated to be :

Pressure Loss (psi): 50.95 psi **Head Loss (ft):** 139.83 ft of diesel fuel

for the barge discharge pipeline

Fluid: diesel fuel

Pipe/Tubing ID (in): 6" or 150 mm

Flow Rate (USGPM): 1426.5 USGPM or 0.090 m³/s

Dynamic Viscosity of diesel fuel (cP): 5.0 cP

Specific Gravity (water=1): 0.8396 at 35°F

Temperature (F): 35°F or 2°C

Pipe Roughness (ft): 0.00015

Fluid Velocity (ft/sec): 16.19 ft/s or 4.93 m/s

Friction Factor: 0.019

Piping Length (ft): 900

Pressure Loss (psi): 50.84 psi

Head Loss (ft): 139.88 ft or 42.64 m of diesel fuel @ 0.8396

7.2 Results of air pressure testing of fuel piping

The test pressure has been set at 690 kPa (100 psi), and the stabilization of pressure due to ambient temperature was noted after pressurization at 100 psi was achieved for testing. The piping system was not considered to be leaking due to a pressure variation occurrence of less than 2% within at least two (2) hours, after noted stabilization of air pressure. Detailed results are stated hereunder.

TESTING DAY ONE

Section of piping tested	100 mm pipe	from TANK 3 to TANK 4	
DATE OF TESTING :	2009-07-24	Air temperature :	N/A
TEST STARTED AT :	07:55 AM	TEST WAS ENDED AT :	02:57 PM
INITIAL PRESSURE	99 PSI	FINAL PRESSURE READING	102 PSI

Section of piping tested	150 mm pipe	from TANK 3 to TANK 4	
DATE OF TESTING :	2009-07-24	Air temperature :	N/A
TEST STARTED AT :	10:25 AM	TEST WAS ENDED AT :	02:55 PM
INITIAL PRESSURE	99 PSI	FINAL PRESSURE READING	102 PSI

TESTING DAY TWO

Section of piping tested	100 mm pipe	from TANK 2 to TANK 3	
DATE OF TESTING :	2009-07-25	Air temperature :	18°C
TEST STARTED AT :	01:08 PM	TEST WAS ENDED AT :	VOID TEST
INITIAL PRESSURE	100 PSI	FINAL PRESSURE READING	NIL

The cause of air pressure drop was located (missing gasket) and testing resumed.

Section of piping tested	100 mm pipe	from TANK 2 to TANK 3	
DATE OF TESTING :	2009-07-25	Air temperature :	18°C
TEST STARTED AT :	02:12 PM	TEST WAS ENDED AT :	06:15 PM
INITIAL PRESSURE	100 PSI	FINAL PRESSURE READING	100 PSI

TESTING DAY THREE

Section of piping tested	150 mm pipe	from TANK 2 to TANK 3	
DATE OF TESTING :	2009-07-26	Air temperature :	15°C
TEST STARTED AT :	09:30 AM	TEST WAS ENDED AT :	VOID TEST
INITIAL PRESSURE	100 PSI	FINAL PRESSURE READING	80 PSI

The cause of air pressure drop was located (tightening bolts) and testing resumed.

Section of piping tested	100 mm pipe	from TANK 2 to TANK 3	
DATE OF TESTING :	2009-07-26	Air temperature :	18°C
TEST STARTED AT :	11:45 AM	TEST WAS ENDED AT :	04:25 PM
INITIAL PRESSURE	100 PSI	FINAL PRESSURE READING	101 PSI

AGNICO EAGLE MINES LTD
MEADOWBANK DIVISION
PROJECT REF. VD2415-000

BAKER LAKE: TANK FARM

IMPERMEABLE ENCLOSURE AROUND TANKS #3 AND #4

CONTRACTOR: ENVIROLINE SERVICES INC.

- Contents
- 1) AS BUILT
 - 2) WEDGE WELDER SEAM LOG
 - 3) WEDGE WELDER QUALIFICATIONS
 - 4) EXTRUSION LOG
 - 5) EXTRUSION WELDER QUALIFICATIONS

Enviroline Services Supervisor


DEREK PROVOST

JULY 08, 2009
ENVIROLINE

 2009/07/08
PATRICK GIARD, P.Eng.

July 1 - 8 2009

—E

BAKER LAKE: TANK FARM

AN

ENVIKOLINE

08/07/09

60 mil / geotextile x2

400°C @ 35%

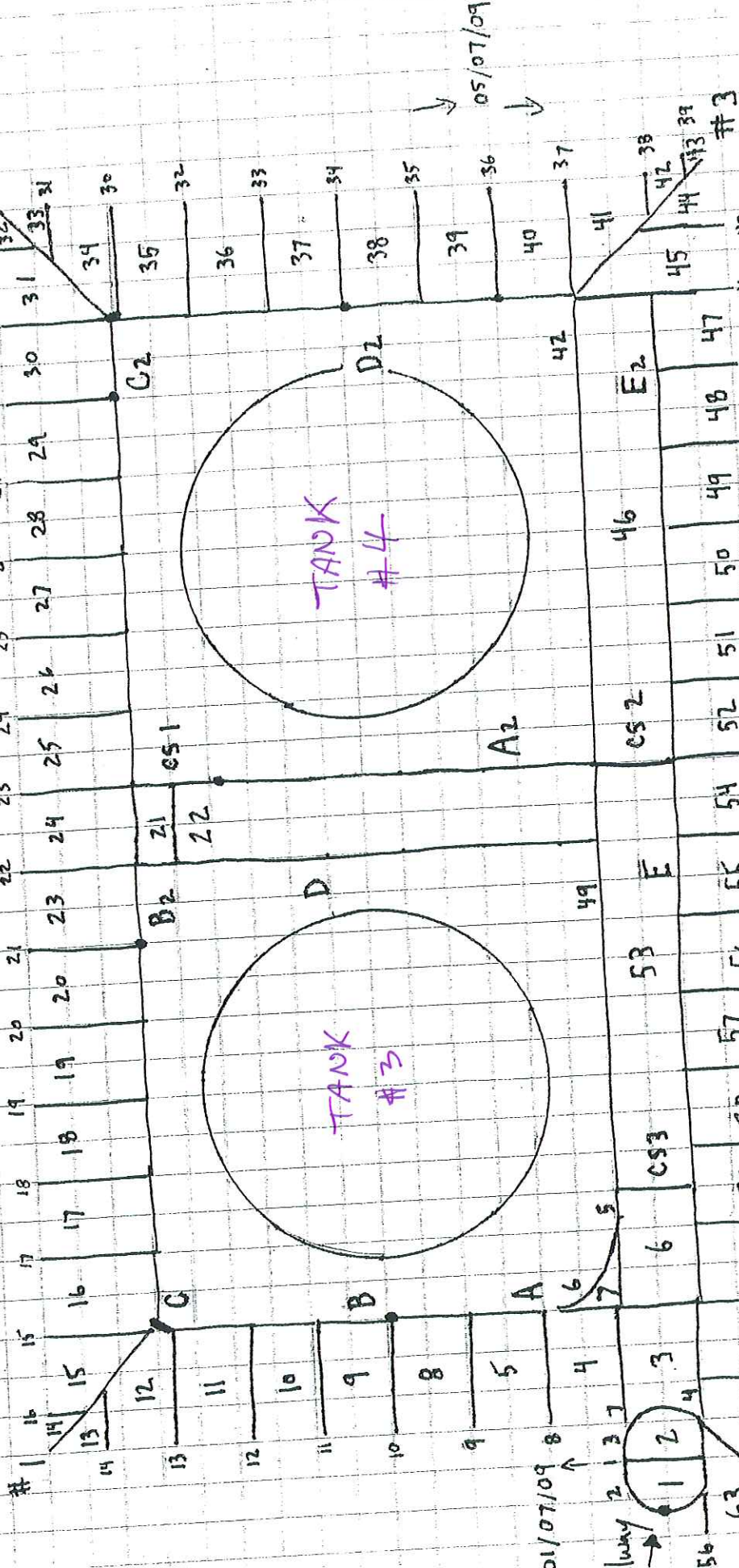
DAP C4

ATP @ 60psi / MP

→ 04/07/09 →

→ 03/07/09 →

→ 02/07/09 →



* Seams are highlighted

• = patch

A-E + A2 - E2 - Tie in seams

#1234 corners

07/07/09

End.

Wiroline services Inc.

7538 Sackman, St. 57K 414 Tel 386 242 8836 Fax 386 249 6721 Email: drh@wiroline.com

Edge Welder Seam Log

Project	TANK FARM	QC Tech.	MD	Drive Pressure	60
Location	BAKER LAKE	Wedge Temp.	400°C	Dwell Pressure	
Serial	60 mil	Wedge Gap		Comments	

Fusion Information				Testing Information						Date		Comments
HDPE		Weld		Peel Test		Air Test		60 psi		Date	Date	
in #	Tech.	Temp	Speed	Vise Grip	Inside	Outside	Start	Finish	Start	Finish	Welded	Tested
1	DAR	400	35%	✓	121	114	6:35	6:40	60	60	01	02
2				✓	109	115	5:30	5:35			01	02
3				✓	115	117	5:55	6:00			01	02
4				✓	117	116	6:40	6:45			01	02
5				✓	118	119	6:29	6:34			01	02
6				✓	119	112	1:05	1:11			01	02
7				✓	119	114	1:12	1:17			01	02
8				✓	112	112	11:42	11:47			02	03
9				✓	120	113	11:49	11:54			02	03
10				✓	113	114	11:56	12:01			02	03
11				✓	117	116	10:00	10:05			02	03
12				✓	118	114	10:06	10:11			02	03
13				✓	114	115	10:12	10:17			02	03
14				✓	121	112	10:18	10:23			02	03
15				✓	122	112	10:24	10:29			02	03
16				✓	109	121	8:45	8:50			03	04
17				✓	118	116	8:51	8:56			03	04
18				✓	114	117	8:57	9:02			03	04
19				✓	116	119	9:30	9:35			03	04
20				✓	120	118	9:03	9:08	✓	✓	03	04

Edge Welder Seam Log

Project	TANK FARM	QC Tech.	MP	Drive Pressure	60
Location	BAKER LAKE	Wedge Temp.	400°C	Dwell Pressure	
Serial	60 mil	Wedge Gap		Comments	

Fusion Information				Testing Information						Date		Comments	
										6/07/09			
mm #	Tech.	HDPE Temp	Weld Speed	Peel Test		Air Test		60 psi Start	60 psi Finish	Date Welded	Date Tested		
				Inside	Outside	Start	Finish						
1	DAP	400	35%	✓	116	121	8:16	8:21	60	60	04	05	July 2009
2				✓	117	123	8:22	8:27			05	05	
3				✓	112	119	2:25	2:30			05	05	
4				✓	108	117	2:31	2:36			05	05	
5				✓	114	119	2:37	2:42			05	05	
6				✓	115	121	2:49	2:54			05	05	
7				✓	110	120	2:55	3:00			05	06	
8				✓	113	118	6:10	6:15			05	06	
9				✓	117	114	6:16	6:21			05	06	
10				✓	117	113	6:22	6:27			05	06	
11				✓	116	117	6:28	6:33			05	06	
12				✓	112	119	6:15	6:20			06	06	
13				✓	113	121	6:21	6:26			06	06	
14				✓	115	120	6:27	6:32			06	06	
15				✓	117	116	6:33	6:38			06	06	
16				✓	114	115	6:39	6:44			06	06	
17				✓	112	117	6:45	6:50			06	06	
18				✓	118	120	6:51	6:56			06	07	
19				✓	113	114	6:57	7:02			06	07	
20				✓	113	118	7:03	7:08	✓	✓	06	07	

Welder Seam Log

TANK FARM	QC Tech.	M7	Drive Pressure	60
BAKER LAKE	Wedge Temp.	400°C	Dwell Pressure	
60 mil	Wedge Gap		Comments	

Testing Information

HDPE Weld		Peel Test		Air Test		60 psi		Date	Date	Comments				
Tech.	Temp	Speed	Weld	Vis	Grip	Inside	Outside	Start	Finish	Start	Finish	Welded	Tested	
DAP	400	35%	✓	✓		109	114	6:09	7:14	60	60	06	06	July 2009
			✓	✓		114	118	2:30	2:35			06	06	
			✓	✓		115	116	2:36	2:41			06	06	
			✓	✓		114	118	2:42	2:47			06	06	
			✓	✓		113	112	2:48	2:53			06	06	
			✓	✓		112	111	3:00	3:05			06	06	
			✓	✓		113	113	3:06	3:11			06	06	
			✓	✓		110	115	3:12	3:17			06	06	
			✓	✓		116	117	6:20	6:25			06	08	
			✓	✓		118	118	6:26	6:31			06	08	
			✓	✓		112	116	6:32	6:37			07	08	
			✓	✓		114	117	6:38	6:43			07	08	
			✓	✓		119	118	6:44	6:49			07	08	
			✓	✓		117	116	6:50	6:55			07	08	
			✓	✓		115	118	6:56	7:01			07	08	
			✓	✓		114	115	7:06	7:11			07	08	
			✓	✓		112	118	7:12	7:17			07	08	
			✓	✓		109	119	7:18	7:23			07	08	
			✓	✓		111	114	7:24	7:29			07	08	
			✓	✓		115	117	7:30	7:35	✓	✓	07	08	

Welder Seam Log

	QC Tech.	My	Drive Pressure
TANK FARM	Wedge Temp.	400 °C	Dwell Pressure
BAKER LAKE	Wedge Gap		Comments
60 mil			

on Information				Testing Information				Date				Comments
HDPE Weld		Peel Test		Air Test		psi		Date		Date		
Tech.	Temp	Speed	Vise Grip	Inside	Outside	Start	Finish	Start	Finish	Welded	Tested	
DAP	400°C	35%	✓	116	117	11:30	11:35	60	60	02	02	July 2009
			✓	114	112	11:36	11:41			02	02	
			✓	114	114	11:42	11:47			02	02	
			✓	117	116	1:24	1:29			03	04	
			✓	113	119	1:30	1:35			04	04	
			✓	109	121	6:55	7:00			04	04	
			✓	111	109	7:00	7:05			05	05	
			✓	112	112	7:12	7:17			05	05	
			✓	118	117	7:18	7:23			05	05	
			✓	115	121	2:24	7:29			05	05	
			✓	112	119	11:42	11:47			02	02	
			✓	118	117	11:00	11:05			03	03	
			✓	116	112	1:10	1:15			06	07	
			✓	117	119	1:25	1:30			07	07	
			✓	116	114	2:31	2:36			03	03	
			✓	112	121	1:30	1:35			07	07	
			✓	119	117	8:00	8:05			07	08	

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Wedge Welder Qualification Data

Date	July 1, 2009	Wedge Welder #	04
Project	Tank Farm	Travel Speed	35%
Work Area	Baker Lake	Drive Pressure	* 60
Material	60 mil	Dwell Pressure	*
QC tech.	MD	Wedge Setting	*
Welder/Operator	DAP	Wedge Temp.	400°C
Test Identification	A.M.	Sheet Temp.	*
Test Location	ON SITE	Testing Temp.	14°C

Destructive Testing Results

Vice Grip Peel	
Outside Track	Inside Track
✓	✓
✓	✓

Tensometer Peel				
Outside Track		Inside Track		Comments
Lb/Inch	%Separation	Lb/Inch	% Separation	
118	0	117	0	P
104	0	107	0	P
116	0	116	0	P
102	0	122	0	P
107	0	104	0	P

Seam Tensile		
Lb/Inch	% Elongation	Comments
181	*	P
172	*	P

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Wedge Welder Qualification Data

Date	July 2, 2009	Wedge Welder #	C4
Project	Baker Lake	Travel Speed	40%
Work Area	Tank Farm	Drive Pressure	60
Material	60 mil	Dwell Pressure	
QC tech.	MD	Wedge Setting	
Welder/Operator	DAP	Wedge Temp.	400°C
Test Identification	R.M.	Sheet Temp.	
Test Location	ON SITE	Testing Temp.	13°C

Destructive Testing Results

Vice Grip Peel	
Outside Track	Inside Track
✓	✓
✓	✓

Tensometer Peel				
Outside Track		Inside Track		Comments
Lb/Inch	% Separation	Lb/Inch	% Separation	
114	0	107	0	P
116	0	109	0	P
111	0	112	0	P
114	0	114	0	P
115	0	114	0	P

107 - 117

Seam Tensile		
Lb/Inch	% Elongation	Comments
179		P
188		P

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Wedge Welder Qualification Data

Date	July 02, 2009	Wedge Welder #	C4
Project	Baker Lake	Travel Speed	35%
Work Area	Tank Farm	Drive Pressure	60
Material	60 mil	Dwell Pressure	
QC tech.	MD	Wedge Setting	
Welder/Operator	DAP	Wedge Temp.	400°C
Test Identification	P.M.	Sheet Temp.	
Test Location	ON SITE	Testing Temp.	18°C

Destructive Testing Results

Vice Grip Peel	
Outside Track	Inside Track
✓	✓

Tensometer Peel				
Outside Track		Inside Track		Comments
Lb/Inch	%Separation	Lb/Inch	% Separation	
113	0	116	0	P
112	0	115	0	P
114	0	114	0	P
110	0	111	0	P
119	0	113	0	P

Seam Tensile		
Lb/Inch	% Elongation	Comments
181		P
185		P

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Wedge Welder Qualification Data

Date	July 03, 2009	Wedge Welder #	C4
Project	Baker Lake	Travel Speed	35%
Work Area	Tank Farm	Drive Pressure	60
Material	60 mil	Dwell Pressure	
QC tech.	MD	Wedge Setting	
Welder/Operator	DAP	Wedge Temp.	400°C
Test Identification	A.M.	Sheet Temp.	
Test Location	ON SITE	Testing Temp.	13°C

Destructive Testing Results

Vice Grip Peel	
Outside Track	Inside Track
✓	✓
✓	✓

Tensometer Peel				
Outside Track		Inside Track		Comments
Lb/Inch	% Separation	Lb/Inch	% Separation	
112	0	109	0	P
114	0	111	0	P
115	0	107	0	P
113	0	109	0	P
114	0	110	0	P

Seam Tensile		
Lb/Inch	% Elongation	Comments
183		P
185		P

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Wedge Welder Qualification Data

Date	July 04, 2009	Wedge Welder #	C4
Project	Baker Lake	Travel Speed	35%
Work Area	Tank Farm	Drive Pressure	60
Material	60 mil	Dwell Pressure	
QC tech.	MD	Wedge Setting	
Welder/Operator	DAP	Wedge Temp.	400°C
Test Identification	A.M	Sheet Temp.	
Test Location	ON SITE	Testing Temp.	12°C

Destructive Testing Results

Vice Grip Peel	
Outside Track	Inside Track
✓	✓
✓	✓

Tensometer Peel				
Outside Track		Inside Track		Comments
Lb/Inch	%Separation	Lb/Inch	% Separation	
116	0	118	0	P
120	0	117	0	P
121	0	119	0	P
114	0	112	0	P
114	0	119	0	P

Seam Tensile		
Lb/Inch	% Elongation	Comments
191		P
188		P

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Wedge Welder Qualification Data

Date	July 02, 2009	Wedge Welder #	04
Project	Baker Lake	Travel Speed	35%
Work Area	Tank Farm	Drive Pressure	60
Material	60 mil	Dwell Pressure	
QC tech.	MD	Wedge Setting	
Welder/Operator	DAP	Wedge Temp.	400°C
Test Identification	P.M.	Sheet Temp.	
Test Location	ON SITE	Testing Temp.	18°C

Destructive Testing Results

Vice Grip Peel	
Outside Track	Inside Track
✓	✓
✓	✓

Tensometer Peel				
Outside Track		Inside Track		Comments
Lb/Inch	% Separation	Lb/Inch	% Separation	
119	0	113	0	P
116	0	119	0	P
118	0	115	0	P
112	0	114	0	P
113	0	116	0	P

Seam Tensile		
Lb/Inch	% Elongation	Comments
177	200	P
181	200	P

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Wedge Welder Qualification Data

Date	July 05, 2009	Wedge Welder #	C4
Project	Baker Lake	Travel Speed	35%
Work Area	Tank Farm	Drive Pressure	60
Material	60 mil	Dwell Pressure	
QC tech.	MP	Wedge Setting	
Welder/Operator	DAP	Wedge Temp.	400°C
Test Identification	A.M.	Sheet Temp.	
Test Location	ON SITE	Testing Temp.	14°C

Destructive Testing Results

Vice Grip Peel	
Outside Track	Inside Track
✓	✓
✓	✓

Tensometer Peel				
Outside Track		Inside Track		Comments
Lb/Inch	% Separation	Lb/Inch	% Separation	
116	0	118	0	P
113	0	112	0	P
117	0	110	0	P
119	0	116	0	P
118	0	115	0	P

Seam Tensile		
Lb/Inch	% Elongation	Comments
184	200	P
180	200	P

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Wedge Welder Qualification Data

Date	July 06, 2009	Wedge Welder #	C4
Project	Baker Lake	Travel Speed	35%
Work Area	Tank Farm	Drive Pressure	60
Material	60 mil	Dwell Pressure	
QC tech.	MD	Wedge Setting	
Welder/Operator	DAP	Wedge Temp.	400°C
Test Identification	A.M.	Sheet Temp.	
Test Location	ON SITE	Testing Temp.	14°C

Destructive Testing Results

Vice Grip Peel	
Outside Track	Inside Track
✓	✓
✓	✓

Tensometer Peel				
Outside Track		Inside Track		Comments
Lb/Inch	% Separation	Lb/Inch	% Separation	
116	0	115	0	P
113	0	115	0	P
112	0	119	0	P
119	0	121	0	P
117	0	113	0	P

Seam Tensile		
Lb/Inch	% Elongation	Comments
185	200	P
189	200	P

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Wedge Welder Qualification Data

Date	July 07, 2009	Wedge Welder #	C4
Project	Baker Lake	Travel Speed	35%
Work Area	Tank Farm	Drive Pressure	60
Material	60 mil	Dwell Pressure	
QC tech.	MD	Wedge Setting	
Welder/Operator	DAP	Wedge Temp.	400°C
Test Identification	A.M.	Sheet Temp.	
Test Location	ON SITE	Testing Temp.	12°C

Destructive Testing Results

Vice Grip Peel	
Outside Track	Inside Track
✓	✓
✓	✓

Tensometer Peel				
Outside Track		Inside Track		Comments
Lb/Inch	%Separation	Lb/Inch	% Separation	
112	0	119	0	P
119	0	116	0	P
116	0	111	0	P
117	0	117	0	P
114	0	113	0	P

Seam Tensile		
Lb/Inch	% Elongation	Comments
180	200	P
184	200	P

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Wedge Welder Qualification Data

Date	July 07, 2009	Wedge Welder #	C4
Project	Baker Lake	Travel Speed	35%
Work Area	Tank Farm	Drive Pressure	60
Material	60 mil	Dwell Pressure	
QC tech.	MP	Wedge Setting	
Welder/Operator	DAP	Wedge Temp.	400°C
Test Identification	P.M	Sheet Temp.	
Test Location	ON SITE	Testing Temp.	16°C

Destructive Testing Results

Vice Grip Peel	
Outside Track	Inside Track
✓	✓
✓	✓

Tensometer Peel				
Outside Track		Inside Track		Comments
Lb/Inch	%Separation	Lb/Inch	% Separation	
112	0	112	0	P
117	0	111	0	P
114	0	116	0	P
116	0	121	0	P
115	0	112	0	P

Seam Tensile		
Lb/Inch	% Elongation	Comments
181	200	P
182	200	P

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Extrusion Welding Log

[illegible]

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Extrusion Welding Qualification Data

Date	July 1, 09	Extruder#	X2-Z
Project	Baker Lase	Operator	DAP
QC Tech:	MD	Preheat Temp.	280°C
Material	60 mil	Barrel Temp.	245°C
Test Identification	P.M.	Shoe Height	1/4"
Temp.	20	Weld Type	Flat

Destructive Testing Results

Vice Grip Peel	
Type of failure	Comments

Tensometer Peel		
Lb/Inch	% Separation	Comments

106	0	P
115	0	P
115	0	P
107	0	P
114	0	P

Seam Tensile		
Lb/inch	% Elongation	Comments

181	200	P
172	200	P

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Extrusion Welding Qualification Data

Date	July 2, 2009	Extruder#	X2-2
Project	Baker Lake	Operator	DAP
QC Tech:	MP	Preheat Temp.	280°C
Material	60 mil	Barrel Temp.	245°C
Test Identification	A.M.	Shoe Height	1/4"
Temp.	8°C	Weld Type	Flat

Destructive Testing Results

Vice Grip Peel

Type of failure	Comments

Tensometer Peel

Lb/Inch	% Separation	Comments
113	0	P
117	0	P
116	0	P
115	0	P
116	0	P

Seam Tensile

Lb/inch	% Elongation	Comments
179	200	P
178	200	P

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1 306 242 8836 Fax 306 249 6721 email enviroline@sasktel.net

Extrusion Welding Qualification Data

Date	July 03, 2009	Extruder#	XZ-2
Project	Baker Lake	Operator	DAP
QC Tech:	MD	Preheat Temp.	280°C
Material	60 mil	Barrel Temp.	230°C
Test Identification	A.M.	Shoe Height	1/4"
Temp.	10°	Weld Type	Flat

Destructive Testing Results

Vice Grip Peel

Type of failure	Comments

Tensometer Peel

Lb/Inch	% Separation	Comments
	0	P
117	0	P
114	0	P
112	0	P
112	0	P
118	0	P

Seam Tensile

Lb/inch	% Elongation	Comments
		P
183	200	P
177	200	

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Extrusion Welding Qualification Data

Date	July 4 2009	Extruder#	X2-Z
Project	Baker Lake	Operator	DAP
QC Tech:	MD	Preheat Temp.	280°C
Material	60 mil	Barrel Temp.	245°C
Test Identification	AM	Shoe Height	1/4"
Temp.	14°C	Weld Type	flat

Destructive Testing Results

Vice Grip Peel

Type of failure	Comments

Tensometer Peel

Lb/Inch	% Separation	Comments
117	0	P
114	0	P
116	0	P
112	0	P
113	0	P

Seam Tensile

Lb/inch	% Elongation	Comments
183	200	P
177	200	P

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Extrusion Welding Qualification Data

Date	July 5 2009	Extruder#	X2-2
Project	Baker Lake	Operator	DAP
QC Tech:	MP	Preheat Temp.	270°C
Material	60 mil	Barrel Temp.	235°C
Test Identification	A.M.	Shoe Height	1/4"
Temp.	7°	Weld Type	Flat

Destructive Testing Results

Vice Grip Peel

Type of failure	Comments

Tensometer Peel

Lb/Inch	% Separation	Comments
	0	P
110	0	P
117	0	P
109	0	P
111	0	P
118	0	P

Seam Tensile

Lb/inch	% Elongation	Comments
	200	P
178	200	P
173		

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Extrusion Welding Qualification Data

Date	July 6, 2009	Extruder#	X2-2
Project	Baker Lake	Operator	DAP
QC Tech:	MD	Preheat Temp.	272°C
Material	60 mil	Barrel Temp.	238°C
Test Identification	A.M.	Shoe Height	1/4"
Temp.	11°C	Weld Type	Flat

Destructive Testing Results

Vice Grip Peel

Type of failure	Comments

Tensometer Peel

Lb/Inch	% Separation	Comments
114	0	P
115	0	P
118	0	P
112	0	P
117	0	P

Seam Tensile

Lb/inch	% Elongation	Comments
181	200	P
176	200	P

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Extrusion Welding Qualification Data

Date	July 2, 09	Extruder#	X2-2
Project	Baker Lake	Operator	DAP
QC Tech:	MP	Preheat Temp.	270°C
Material	60 mil	Barrel Temp.	239°C
Test Identification	A.M.	Shoe Height	1/4"
Temp.	7°C	Weld Type	Flat

Destructive Testing Results

Vice Grip Peel

Type of failure	Comments

Tensometer Peel

Lb/Inch	% Separation	Comments
	0	P
114	0	P
115	0	P
115	0	P
119	0	P
114	0	P

Seam Tensile

Lb/inch	% Elongation	Comments
		P
183	200	P
188	200	

Appendix A3

Baker Lake Diesel Fuel Storage Installations: Final Report Following Construction of Phase 3 (2010)

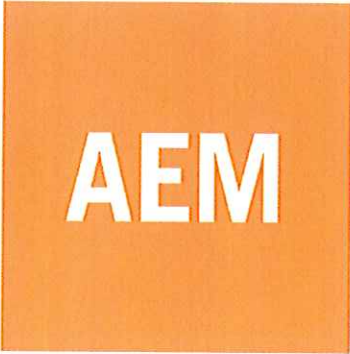


**AGNICO-EAGLE MINES LTD
MEADOWBANK DIVISION**

**BAKER LAKE FUEL STORAGE INSTALLATIONS
TANK # 5 AND # 6**

2010

**FINAL REPORT
FOLLOWING THE CONSTRUCTION
OF
PHASE 3 (2010)**



AEM

**AGNICO-EAGLE MINES LTD
MEADOWBANK DIVISION**

BAKER LAKE FUEL STORAGE INSTALLATIONS

**FINAL REPORT
FOLLOWING THE CONSTRUCTION
OF
PHASE 3 (2010)**

PREPARED BY :



**France Bérubé, Eng..Jr
Civil
STAVIBEL**



**Serge Beaulé, Eng. associate
Head Department Civil
STAVIBEL**



2011-02-23

JANUARY 2011

**AGNICO-EAGLE MINES LTD
MEADOWBANK DIVISION**

BAKER LAKE FUEL STORAGE INSTALLATIONS TANK # 5 AND # 6

FINAL REPORT

**FOLLOWING THE CONSTRUCTION
PHASE 3 (2010)**

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APPENDIX 1 : DRAWINGS

APPENDIX 2 : SAFE FILL LEVEL FOR ALL FUEL TANK

A. DESCRIPTION OF MANDATE

Agnico-Eagle Mines has given a mandate to Stavibel, engineering services in order to verify the compliance with applicable regulations of its fuel storage installations in Baker Lake, Nunavut.

Accord to the terms of reference, the mandate consists summarily in the following activities.

- A. Review and compilation of the available documentation;
- B. Collection of any information that may be missing;
- C. REVISION OF CONSTRUCTION DRAWINGS
 - Preparation of « *AS BUILT* » drawing of the construction tank #5 and #6, of phase 3.
- D. Verifications to the storage capacity within the existing containment berms of phase 3.

B. DOCUMENTATION READILY AVAILABLE

GOLDER ASSOCIATES – Vancouver office (phase 1, 2, 3)

For the Baker Lake bulk fuel storage facilities, this firm has produced some construction specifications on 2006-04-25, which were given reference SP-GAL-03 under their project number 06-1413-009.

NISHI-KHON/SNC LAVALIN LTD – Vancouver office (phase 1, 2)

For the Baker Lake bulk fuel facilities, this firm has produced a set of drawings issued **for construction** on 2007-08-03, under their project number 017202. Some specifications for fuel piping and valves were also issued.

EARTHWORK DRAWINGS	017202-1000-41D1-0006	17202-1000-46ES-1001A	017202-8000-46DC-9150
017202-1000-41D1-0001	FUEL PIPING DRAWINGS	17202-1000-46ES-1001B	017202-8000-46DC-9152
017202-1000-41D1-0002	017202-1000-41D1-0007	ELECTRICAL DRAWINGS	017202-8000-46DC-9153
017202-1000-41D1-0003	017202-1000-46D4-1004	017202-1000-46D6-1001	017202-8000-46DC-9156
017202-1000-41D1-0004	017202-1000-46D4-1005	017202-1000-47D2-2001	017202-8000-46DC-9157
017202-1000-41D1-0005	017202-1000-46D4-1006	017202-8000-47DA-9004	017202-8000-46DC-9166

GEM STEEL EDMONTON LTD (phase 1, 2, 3)

This vendor has submitted a set of « AS BUILT » drawings issued for the completion and permitting, which consist in four (4) structural drawings showing the details of a fuel tank of 10 million liters nominal capacity. These fuel tanks are shown on revision 1 of drawings BL-2010-1, BL210-2, BL-2010-3 and BL-2010-4.

CHAMCO INDUSTRIES LTD (phase 1, 2)

This vendor has submitted a set of drawings issued **for construction** under their project number 1014938ABS, consisting of the following drawings. These documents have all been received by HATCH and approved.

DRAWING NUMBER	H325174-M268-VD-0040	H325174-M268-VD-0041	H325174-M268-VD-0010
H325174-M268-VD-0011	H325174-M268-VD-0012	H325174-M268-VD-0013	H325174-M268-VD-0014
H325174-M268-VD-0015	H325174-M268-VD-0016	H325174-M268-VD-0017	H325174-M268-VD-0019
H325174-M268-VD-0020	H325174-M268-VD-0021	H325174-M268-VD-0029	H325174-M268-VD-0030
H325174-M268-VD-0031	H325174-M268-VD-0032	H325174-M268-VD-0033	H325174-M268-VD-0034
H325174-M268-VD-0035	H325174-M268-VD-0036	H325174-M268-VD-0037	H325174-M268-VD-0039

C. STAVIBEL, ROUYN-NORANDA OFFICE (phase 3)

This firm has produced a set of construction and has built drawings consisting of the following drawings.

Fuel tanks of phase 3 are shown on these drawing as well as the earthwork, the piping and electrical grounding details.

Earthwork drawings

DRAWING NUMBER
740-C-0123
740-C-0124
740-C-0125

Fuel piping drawings

DRAWING NUMBER
740-M-0100

Electrical drawings

DRAWING NUMBER
740-E-0120

D. ADDITIONAL COLLECTION OF INFORMATION

TECHNIC EXPERT INC.

Role during construction phase #3 : Field supervision during construction of phase 3 (2010)

Mr. Luc Croisetière, which is a civil consultant at the time and Julie Bacon (AEM employee), have supervised the construction of the fuel containment area around tank #5 and #6, in phase 3 of this project. A specialized crew coming from Saskatoon (Enviroline Service inc.) was hired in May 2010 to install an HDPE membrane over the berms. This HDPE membrane has been covered with a minimum layer of about 150 mm thickness of crushed stone.

The installation of the liners has been done and completed on October 5th 2010 before the blizzard and snow arrival. Also, before any fuel fill in these new set of tank.

QAMANITTUAP, SANA, GILBERT GOUP.

Role during construction phase #3

In early May 2010, and considering a short window of time for the 2010 tanks construction, (2) diamond drills and (1) crew of blasters were required 24 hr/day considering an estimated $\pm 125\,000$ tons of rock to blast, excavate and haul to a dump area. The bottom final floor was cutted at the elevation ± 35.5 and completely on slip rock.

GEM STEEL EDMONTON LTD

Role during construction phase #3 : Fabrication and field assembly of 10 M liters fuel tanks

Construction of phase 3 (tanks #5 and #6) took place from July to September 2010, with a crew of about 16 workers.

Following phase 3 of this field work, a crew from ACUREN has proceeded to X-RAY testing of horizontal and vertical welds according to specifications described in the latest edition of API Standard 650. According to the report made by ACUREN, minor repairs of defective welds were required, either on the tank shell or nozzles.

SM CONSTRUCTION INC.

Role during construction phase #3

As the connection and pipe were already built in 2009 for the phase 3 future development a crew of 4 welders have installed pipeline from existing tank #4 to reach tank #5 and #6. This work have been completed on September 30th 2010. The tank fuel filling planned in mid-october 2010.

E. REVISION OF CONSTRUCTION DRAWINGS

AEM has hired Stavibel Engineering Services, a firm based in Rouyn-Noranda, in order to complete the drawings that were used in producing this report. Those drawings are enclosed in Appendix 1 of this report.

Drawing 740-C-0123 shows the general layout of fuel storage area. It has been compiled using surveying data by a crew from NUNA and Agnico Eagle.

Drawing 740-C-0124 shows the cross sections of the containment area of phase 3. They are generated using AutoCad CIVIL 3D software and based on the informations collected by Agnico Eagle.

Drawing 740-C-0125 shows the details of the HDPE membrane, its limits and the components of the phase3.

Drawing 740-M-0100 G shows the general of the piping layout and also the specification of the main equipment (valves, check valves, etc.)

Drawing 740-E-0120 shows the layout and the details of the electrical grounding of fuel storage area. It's based on the informations collected by Agnico Eagle.

Drawing BL2010-01 shows the general tank elevation of the fuel storage tanks.

Drawing BL2010-02 shows the roof and the nozzle plan of the fuel storage tanks.

Drawing BL2010-03 shows the details of the assembly of the fuel storage tanks.

Drawing BL2010-04 shows also the details of the assembly of the fuel storage tanks.

F. VERIFICATION TO STORAGE CAPACITY WITHIN BERMS

Stavibel Engineering Services has completed verifications on the liquid storage capacity inside the containment berms, which create an impermeable enclosure around tank #5 and #6.

The method used was volume calculation using AutoCad CIVIL 3D software.

The maximum storage capacity of fuel tanks #5 and #6 is 15 500 m³ of diesel fuel at a standard temperature of fifteen degrees Celcius (15 °C).

It has been verified using the above software that the impermeable enclosure built in phase 3 will effectively hold 100% of the maximum storage capacity of the biggest tank, plus 10% of the maximum storage of the other tank. This calculation has been summarized in a worksheet that is shown on page 7, here under.

The containment volume for tanks #3 and #4 is 15 500 m³.

Thus, the lowest point of the HDPE membrane that sits atop the containment area is sufficiently high (at elevation 39.3 m) to meet the above criteria.

A worst case scenario has been simulated, and consists in either a rupture of the first course of side plates in the tank shell, or a failure in the outlet piping, when either one of fuel tank is 100% full.

This simulation shows that, in such a worst case scenario, the hydraulic balancing level inside the containment area would not exceed the point with the lowest elevation (39.3 m) on the surrounding berms, which is located on the south-west side. On north-east side, the berm gives more elevation at an elevation of approximative ±45 m.

The containment volume for tanks #5 and #6 is 15 500 m³ as a result, this new containment requirement of 110% of the biggest tank volume (or 11 843 m³), expressed while considering all two (2) tanks as a whole, will then be exceeded by 45%.

DESIGN REVIEW – FOR FUEL SPILL CONTAINMENT BERMS AT BAKER LAKE

ÉQUIPEMENTS	DIAM (ft)	RIM EL. (m)	Radius (m)	Surface (m ²)	TOP EL. (m)	Height (m)	Volume (m ³)
740-TK-044-TANK #5	110	*37.846	16.764	882.89	50.04	12.195	10.767
740-TK-044-TANK #5	110	*37.831	16.764	882.89	50.03	12.195	10.767

Let's say berms are 5' 3" higher than the average tank floor (so 1.60 m total height) with variable slopes and that the tanks are sitting on cones made of crushed stone of 20 m diameter x 1.0 m height.

*Average tank #5 = $(37.839 + 37.846 + 37.848 + 37.852)/4 = 37.846$

*Average tank #6 = $(37.835 + 37.825 + 37.830 + 37.833)/4 = 37.831$

Volume

Secondary Containment Requirement → 11 843 m³

according to ref. PN-1326, Section 3.9.1 (1) 2-b-ii → 110%

Containment volume to be subtracted for the two (2) cones made of crushed stone: already reduced from AutoCad 3D

<u>Volume</u> NET CONTAINMENT 15 500 m³ or 144% > 110%

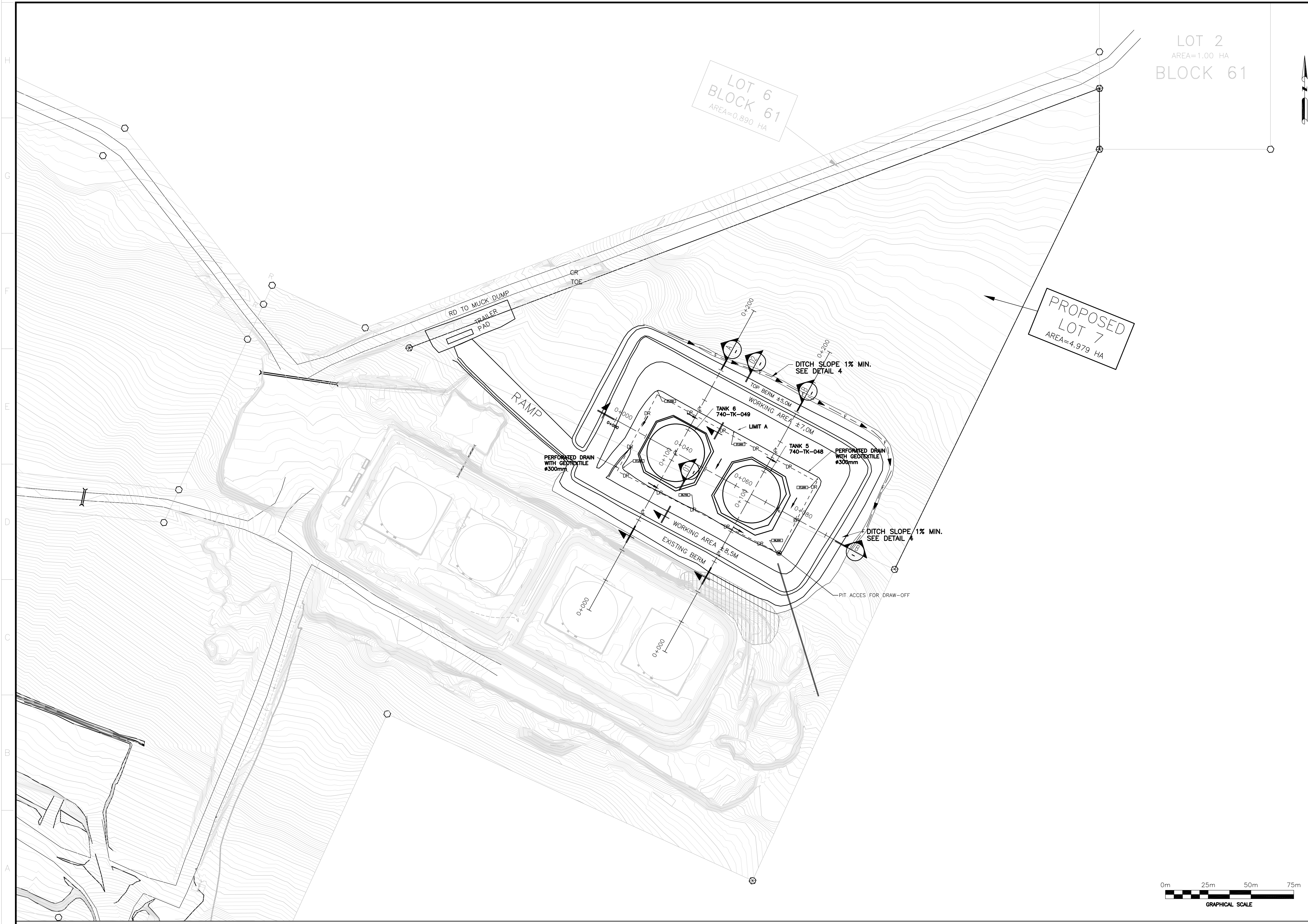
APPENDIX 1

AS BUILT DRAWINGS FOR PHASE 3

DRAWINGS NUMBER			
Earthwork drawings	Fuel piping drawing	GEM Steel drawings	BL2010-4
740-C-0123	740-M-0100	BL2010-1	
740-C-0124	Electrical drawings	BL2010-2	
740-C-0125	740-E-0120	BL2010-3	

IFC DRAWING FOR PHASE 3

DRAWINGS NUMBER			
Earthwork drawings	Fuel piping drawing	GEM Steel drawings	BL2010-4
740-C-0123	740-M-0100	BL2010-1	
740-C-0124	Electrical drawings	BL2010-2	
740-C-0125	740-E-0120	BL2010-3	



PLAN CLE
KEY PLAN

NOTES GÉNÉRAL / GENERAL NOTES

TEL QUE CONSTRUIT
AS BUILT

DATE : 21/01-2011

L'INFORMATION D'ORDRE EST LA PROPRIÉTÉ DE AGNICO-EAGLE INC. ET NE DOIT ÊTRE REPRODUITE NI COMMUNIQUÉE À UN TIERS SANS LA PERMISSE ÉCRITE D'AGNICO-EAGLE INC. / L'INFORMATION D'ORDRE EST LA PROPRIÉTÉ DE AGNICO-EAGLE INC. ET NE DOIT ÊTRE REPRODUITE NI COMMUNIQUÉE À UN TIERS SANS LA PERMISSE ÉCRITE D'AGNICO-EAGLE INC.

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

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



REV.	DATE	DESCRIPTION	PAR/ÉVAL.	APP.	CLIENT
C	21-01-2011	AS BUILT	J-F.S.	S.B.	
B	20-07-2010	APPROVAL	J-F.S.	S.B.	
A	16-07-2010	APPROVAL	J-F.S.	S.B.	

RÉVISIONS



Stavibel Inc.
150, rue Gambelle Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél. : 819 764-5181 Téléc. : 819 797-0158
Courriel : stavibel-m@stavibel.qc.ca
www.stavibel.qc.ca

Projet No. : -

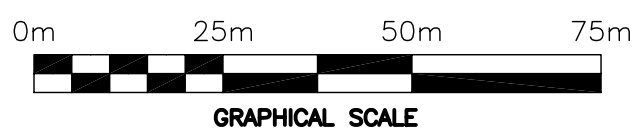
TITRE / TITLE
AGNICO-EAGLE - MEADOWBANK DIVISION
BAKER LAKE AREA 740
TANK #5 AND #6
GENERAL LAYOUT

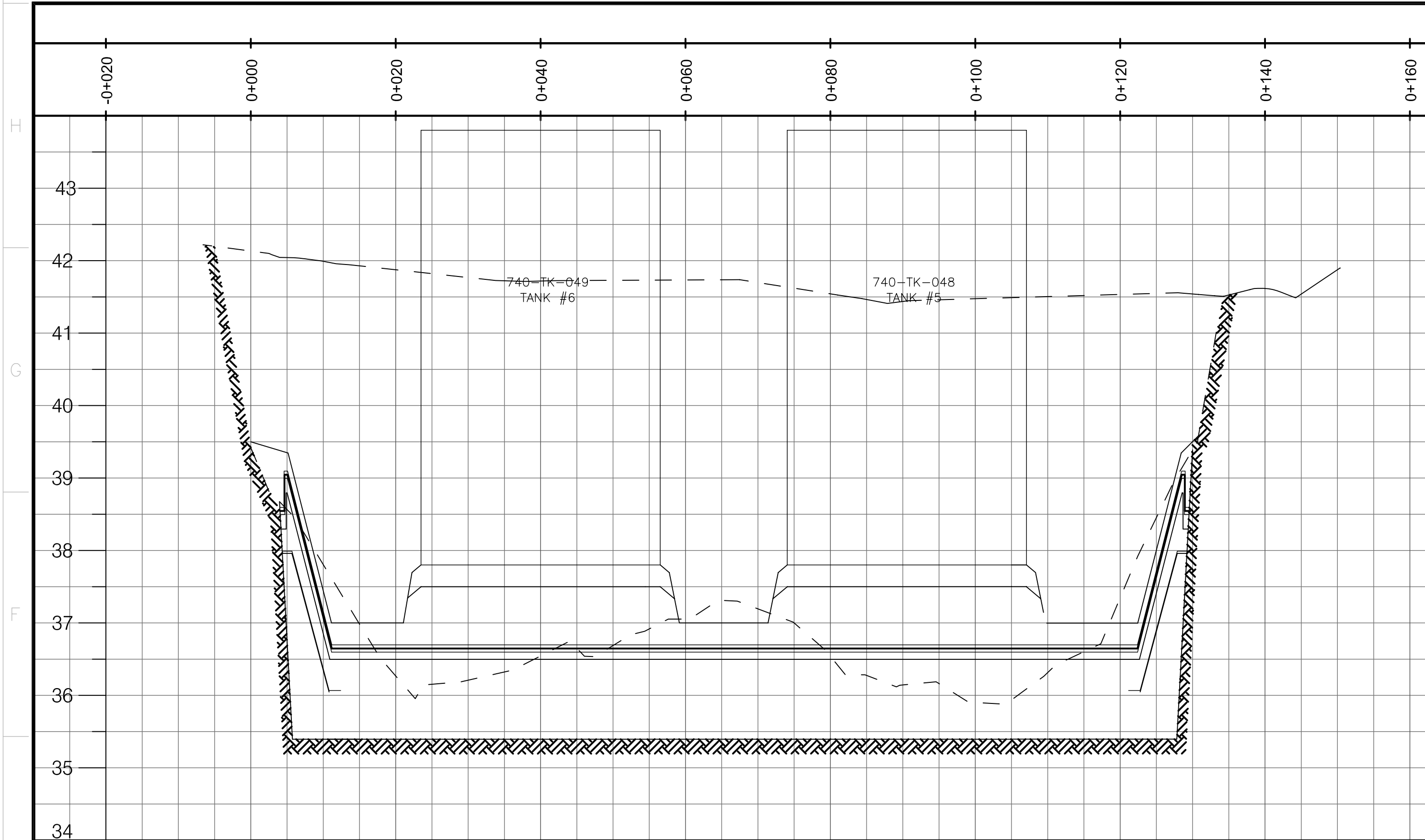
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VÉRIFIÉ PAR CHECKED BY	FRANCE BÉRUBÉ, ING. JR.	2010-07-20
APPROUVÉ PAR APPROVED BY	SERGE BEAULÉ, ING.	2010-07-20

ÉCHELLE
SCALE 1:1000 DATE 30-06-2010

NO. DESIGN
DRAWING NO. 740-C-0123

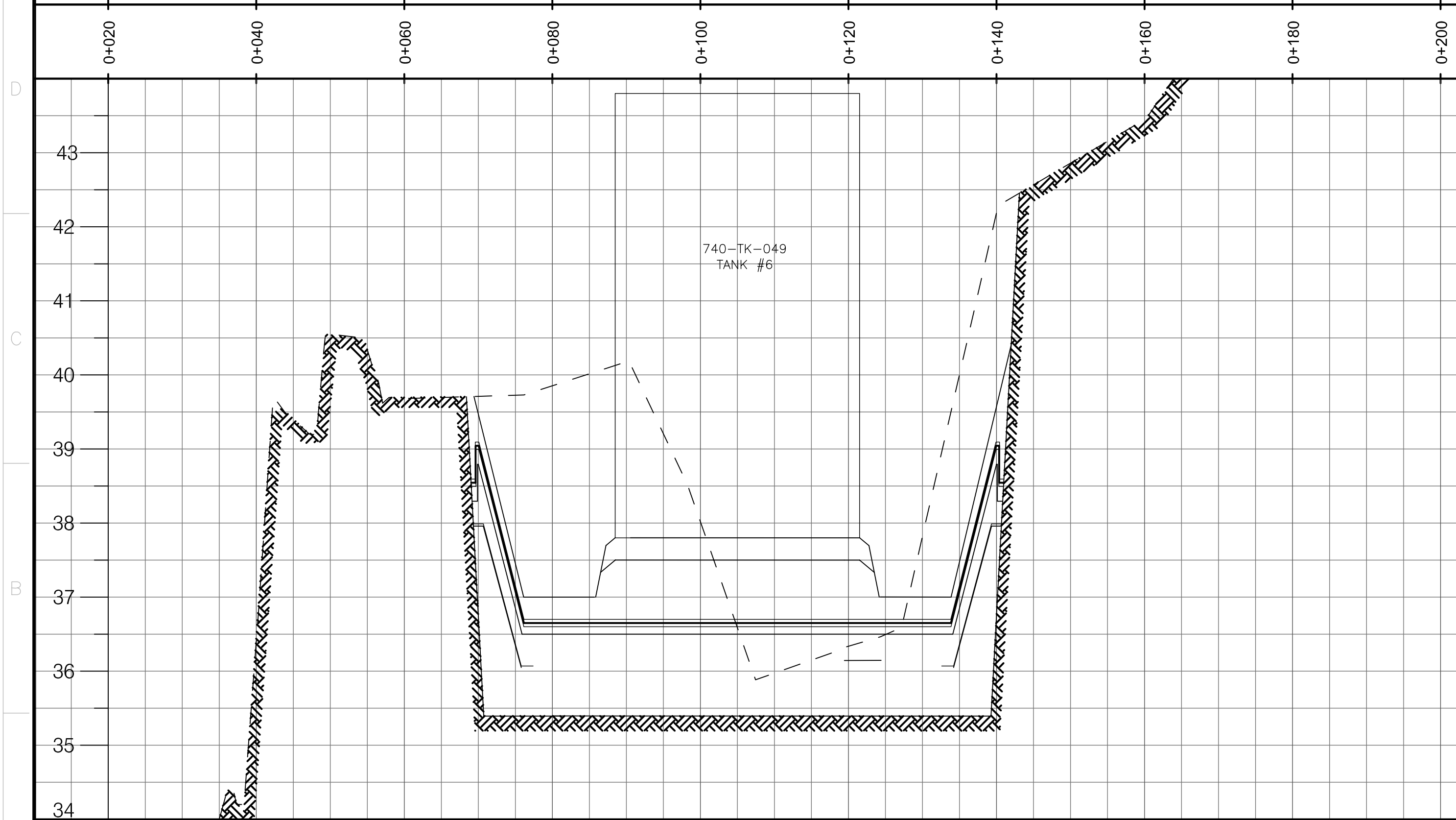
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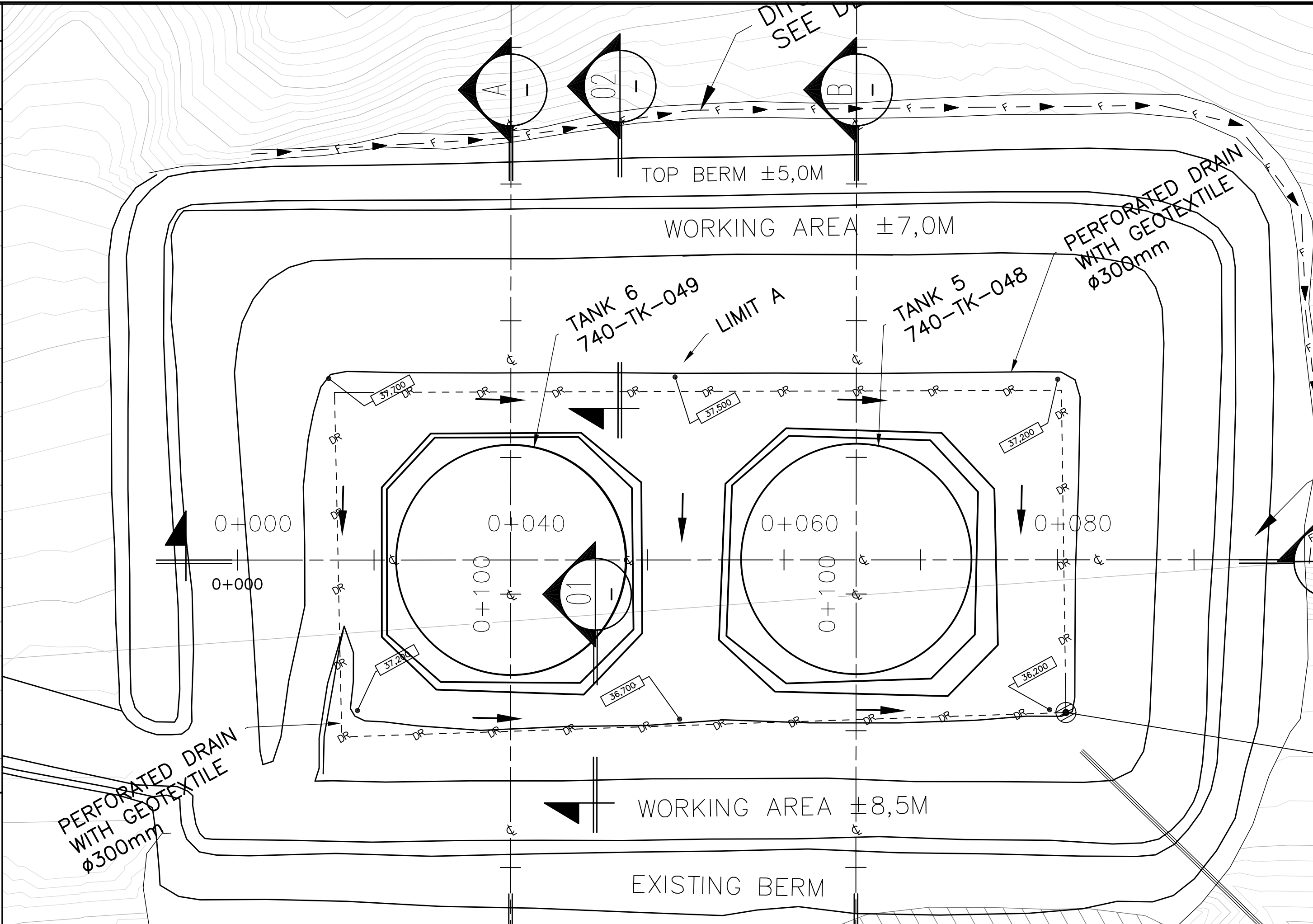
PROFIL TANK 5 & 6

CROSS SECTION C



PROFIL TANK 6

CROSS SECTION A



PROFIL TANK 5

CROSS SECTION B

PLAN CLE
KEY PLAN

NOTES GENERAL / GENERAL NOTES

TEL QUE CONSTRUIT
AS BUILT
DATE : 21/01-2011

L'INFORMATION Q-COORDONNE EST LA PROPRIÉTÉ DE AGNICO-EAGLE INC. ET NE DOIT ÊTRE REPRODUITE QUE PAR AGNICO-EAGLE INC. / L'INFORMATION Q-COORDONNE EST LA PROPRIÉTÉ DE AGNICO-EAGLE INC. ET NE DOIT ÊTRE REPRODUITE QUE PAR AGNICO-EAGLE INC.

DESSEINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG

AGNICO-EAGLE

REV.	DATE	DESCRIPTION	PAR/EN	APP.	CLIENT
C	21-01-2011	AS BUILT	J-F.S.	S.B.	
B	20-07-2010	APPROVAL	J-F.S.	S.B.	
A	16-07-2010	APPROVAL	J-F.S.	S.B.	

REVISIONS

STAVIBEL

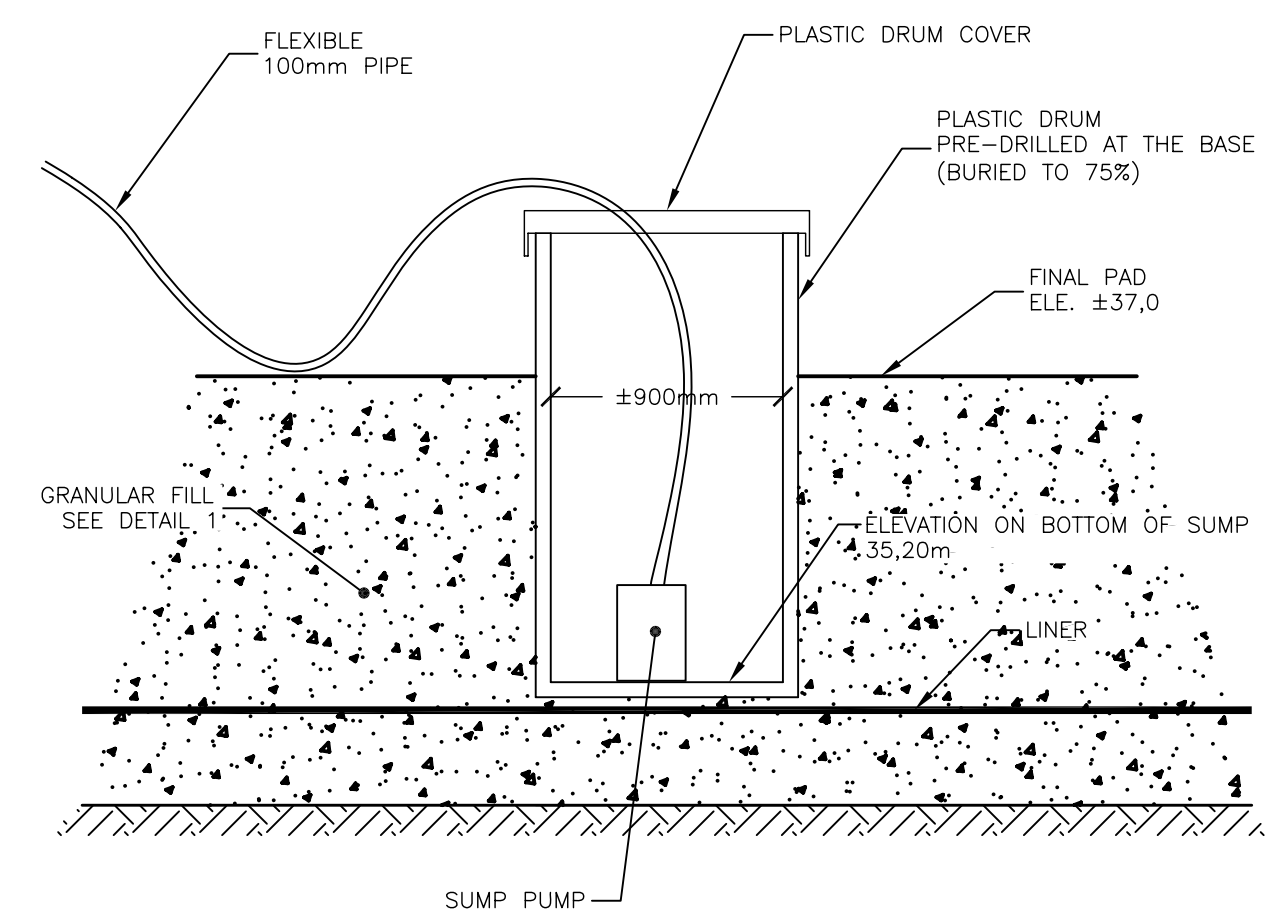
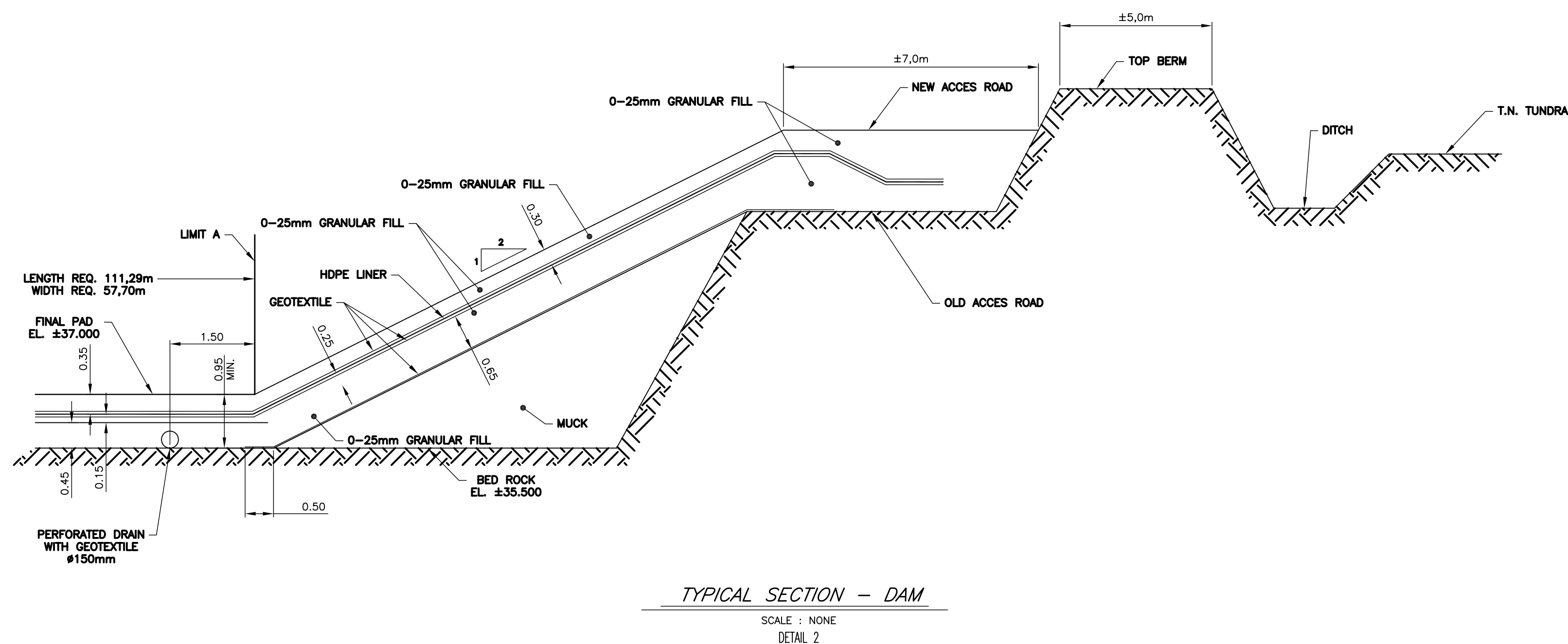
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél. : 819 764-5181 Téléc. : 819 797-0168
Courriel : stavibel-m@stavibel.qc.ca
www.stavibel.qc.ca

Projet No. : -

TITRE / TITLE
AGNICO-EAGLE - MEADOWBANK DIVISION
BAKER LAKE AREA 740
TANK #5 AND #6
PLAN VIEW AND CROSS SECTION

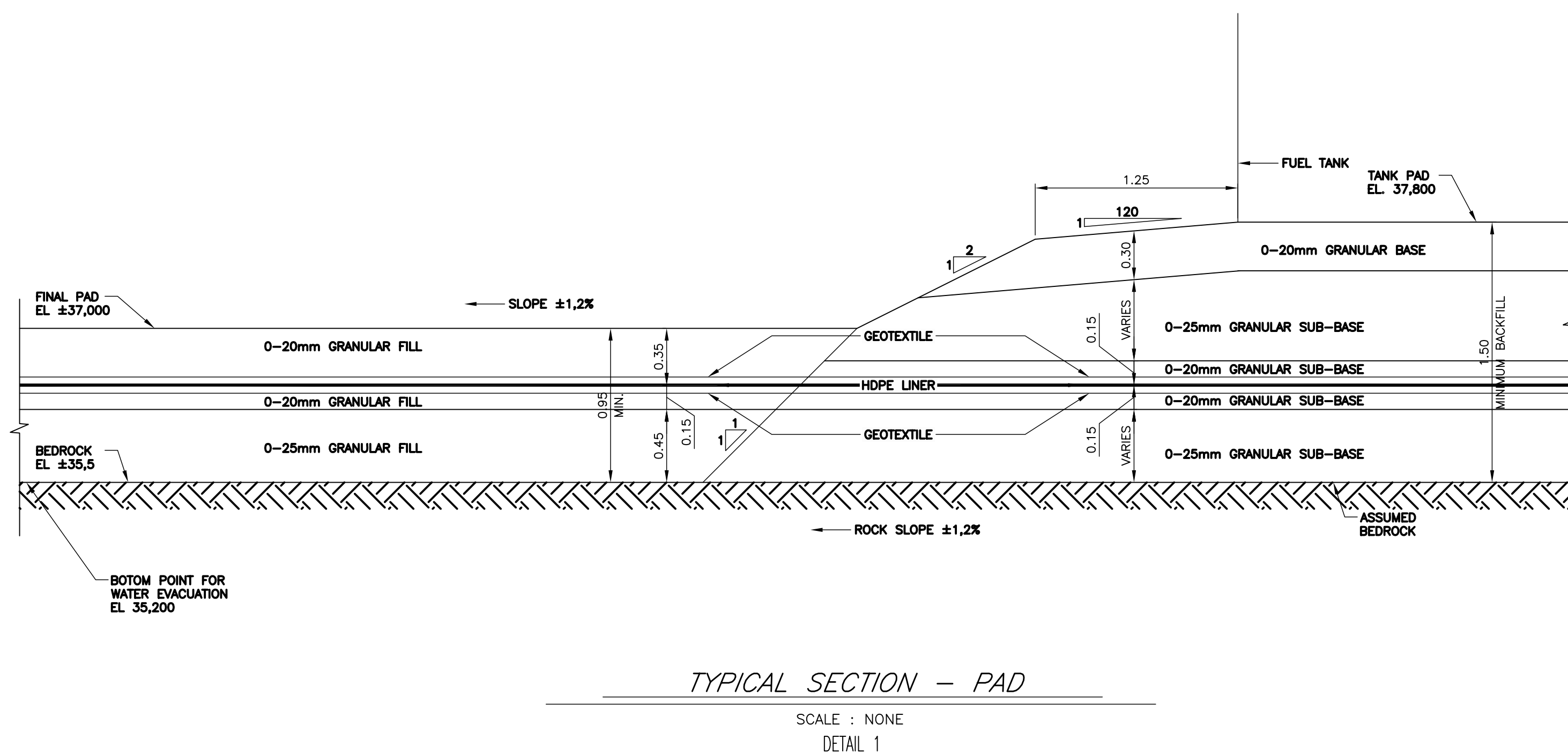
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VERIFIÉ PAR CHECKED BY	FRANCE BÉRUBÉ, ING. JR.	2010-07-20
APPROUVÉ PAR APPROVED BY	SERGE BEAULÉ, ING.	2010-07-20

ÉCHELLE SCALE	N/A	DATE 30-06-2010
NO. DESSIN DRAWING NO.	740-C-0124	
NO. PROJET PROJECT NO.	MEAD-I-400	REVISION C
		FEUILLE / SHEET 2 / 3



NOTES :

- THE WATER WILL BE REJECTED TO THE INFERIOR BASIN WHERE IT WILL BE TREATED WITH AN OIL SEPARATOR.



ACCESS WELL
FOR DRAINING

SCALE : NONE
DETAIL 3

PLAN GLE
KEY PLAN

NOTES GÉNÉRAL / GENERAL NOTES

TEL QUE CONSTRUIT
AS BUILT

AGNICO-EAGLE

DATE : 21/01-2011

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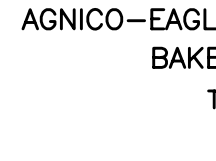
DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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AGNICO-EAGLE

C	21-01-2011	AS BUILT	J-F.S.	S.B.
B	20-07-2010	APPROVAL	J-F.S.	S.B.
A	16-07-2010	APPROVAL	J-F.S.	S.B.

REV.	DATE	DESCRIPTION	PARK/ETH	APP.	CLIENT
REVISIONS					

STAVIBEL
services d'ingénierie

Stavibel inc.

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Tél. : 819 764-5151 / Téléc. : 819 797-0158

Courriel : stavibel-m@stavibel.qc.ca

www.stavibel.qc.ca

Project No. : -

TITRE / TITLE

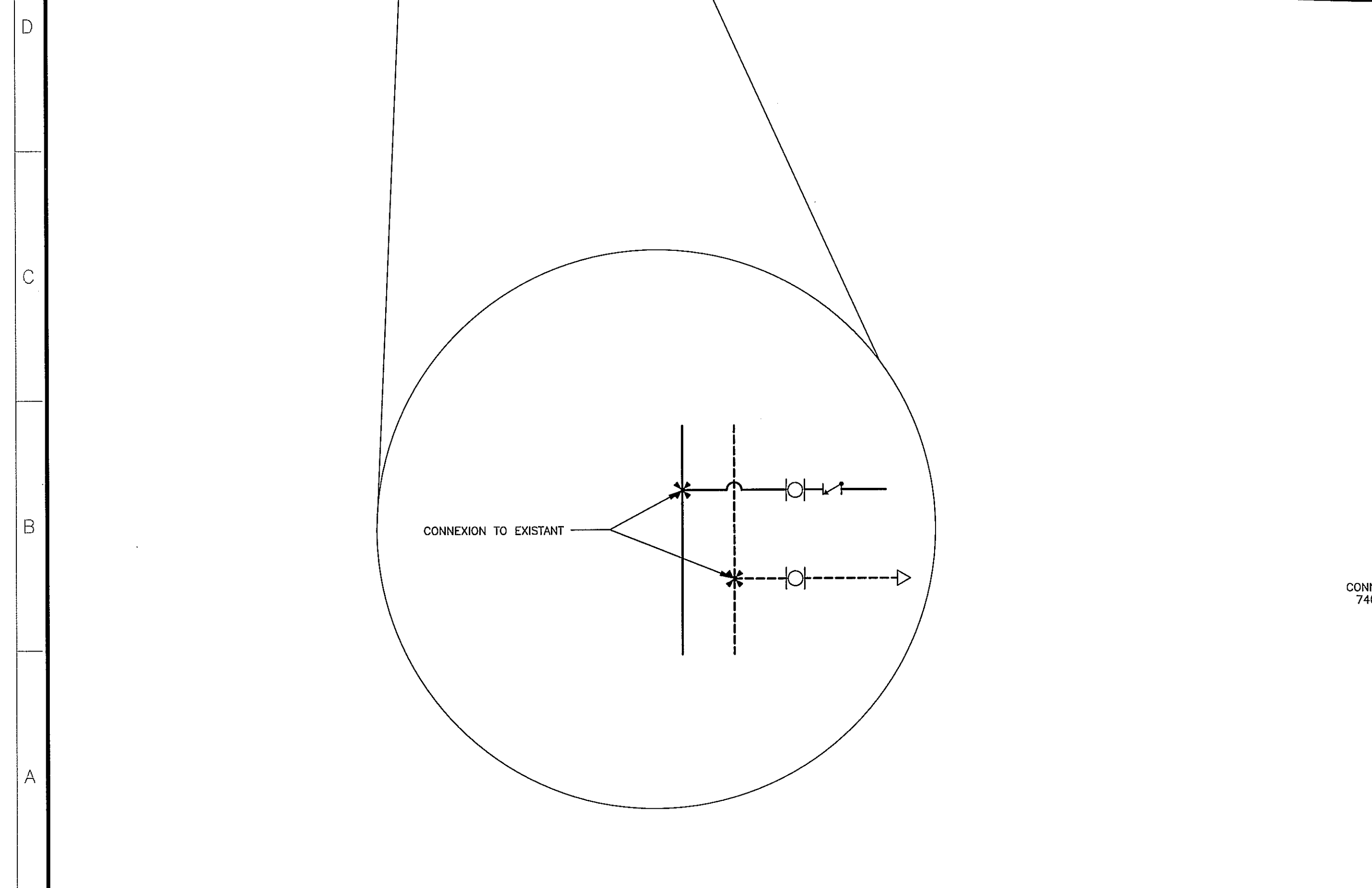
AGNICO-EAGLE - MEADOWBANK DIVISION
BAKER LEAK AREA 740
TANK #5 AND #6
DETAILS

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VÉRIFIÉ PAR CHECKED BY	FRANCE BÉRUBÉ, ING. JR.		2010-07-20
APPROUVÉ PAR APPROVED BY	SERGE BEAULÉ, ING.		2010-07-20

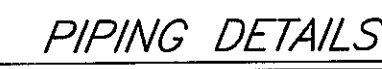
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740-C-0125

NO. PROJET PROJECT NO.	MEAD-I-400	REVISION	FEUILLE / SHEET
		C	3 / 3



⁽¹⁾ Reference to "PIPE AND VALVE SPECIFICATION" #D 17202-0000-46ES-1001 by SNC Lavalin 15th august 2007



**POUR CONSTRUCTION
FOR CONSTRUCTION**

 **DATE : 12/08/2010**

L'INFORMATION CI-DESSOUS EST LA PROPRIÉTÉ DE AGRO-CO-ÉCART LÉVÉ ET DOIT ÊTRE RENVUÉE SUIVANT LES RÈGLES, SANS AUTORISATION ÉCRITE PRÉALABLE, TOUTE TRANSMISSION DE COPIES À UN TITRE ET TOUTE UTILISATION AUTRE QUE CELLE POUR LAQUELLE L'INFORMATION EST PRÉSENTÉE.

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REVISIONS

[Signature]

L-2198

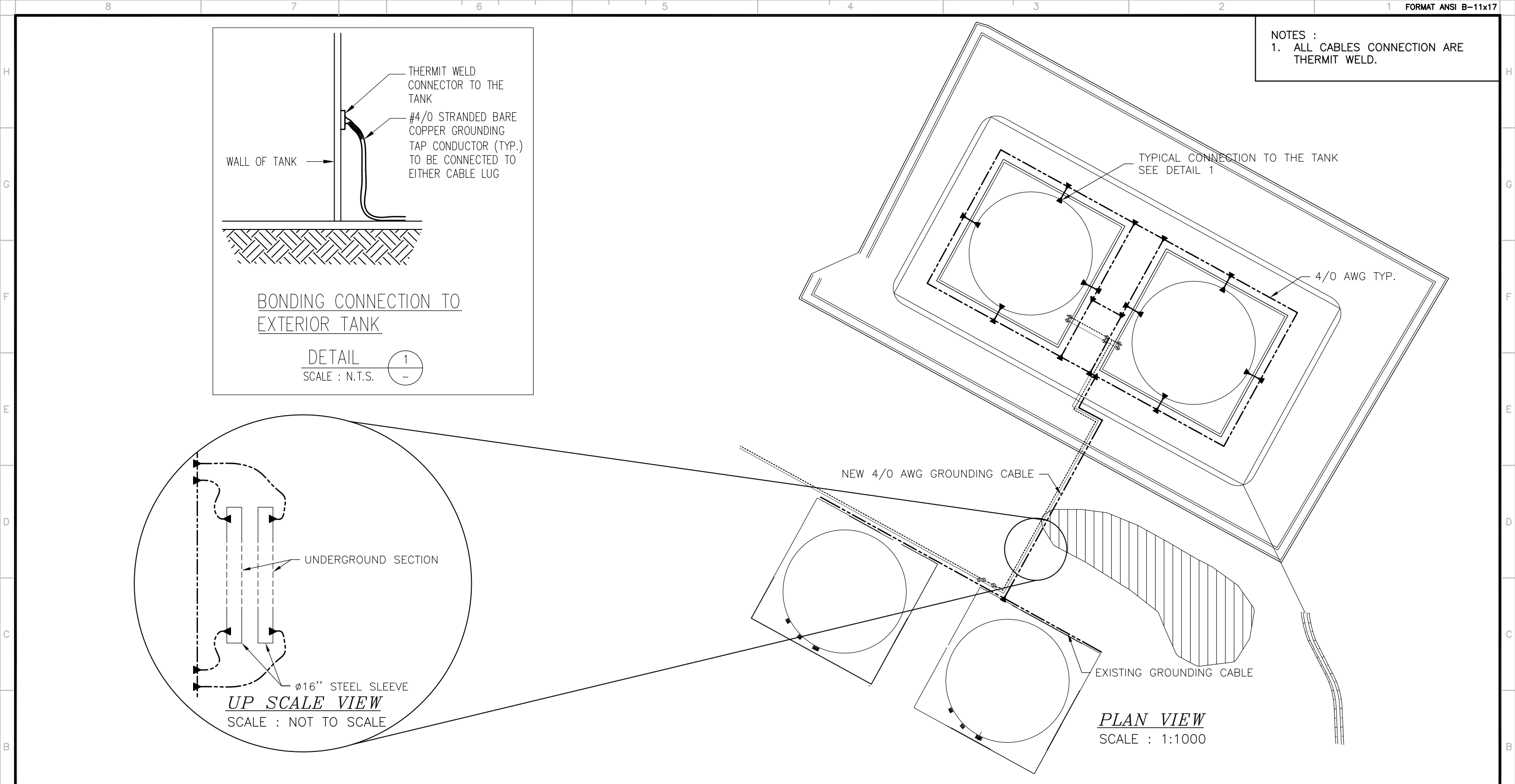
2010-08-12

TITLE / TITLE
AGNICO-EAGLE -- MEADOWBANK DIVISION
BAKER LAKE AREA 740
TANK #5 AND #6
FUEL DISTRIBUTION PIPING
LAYOUT AND DETAILS

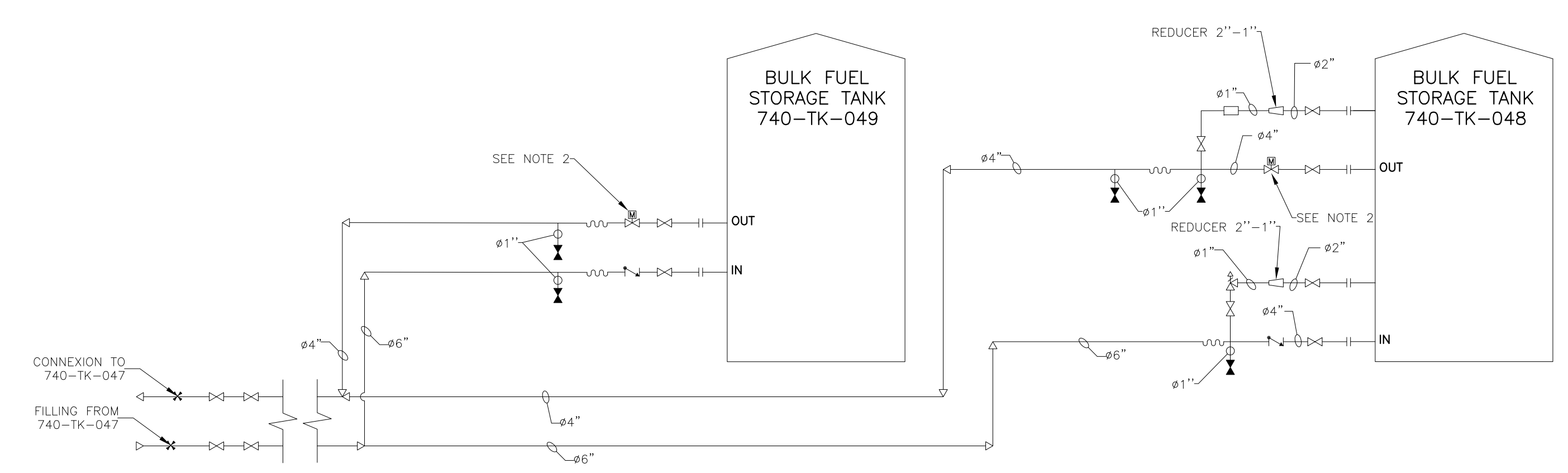
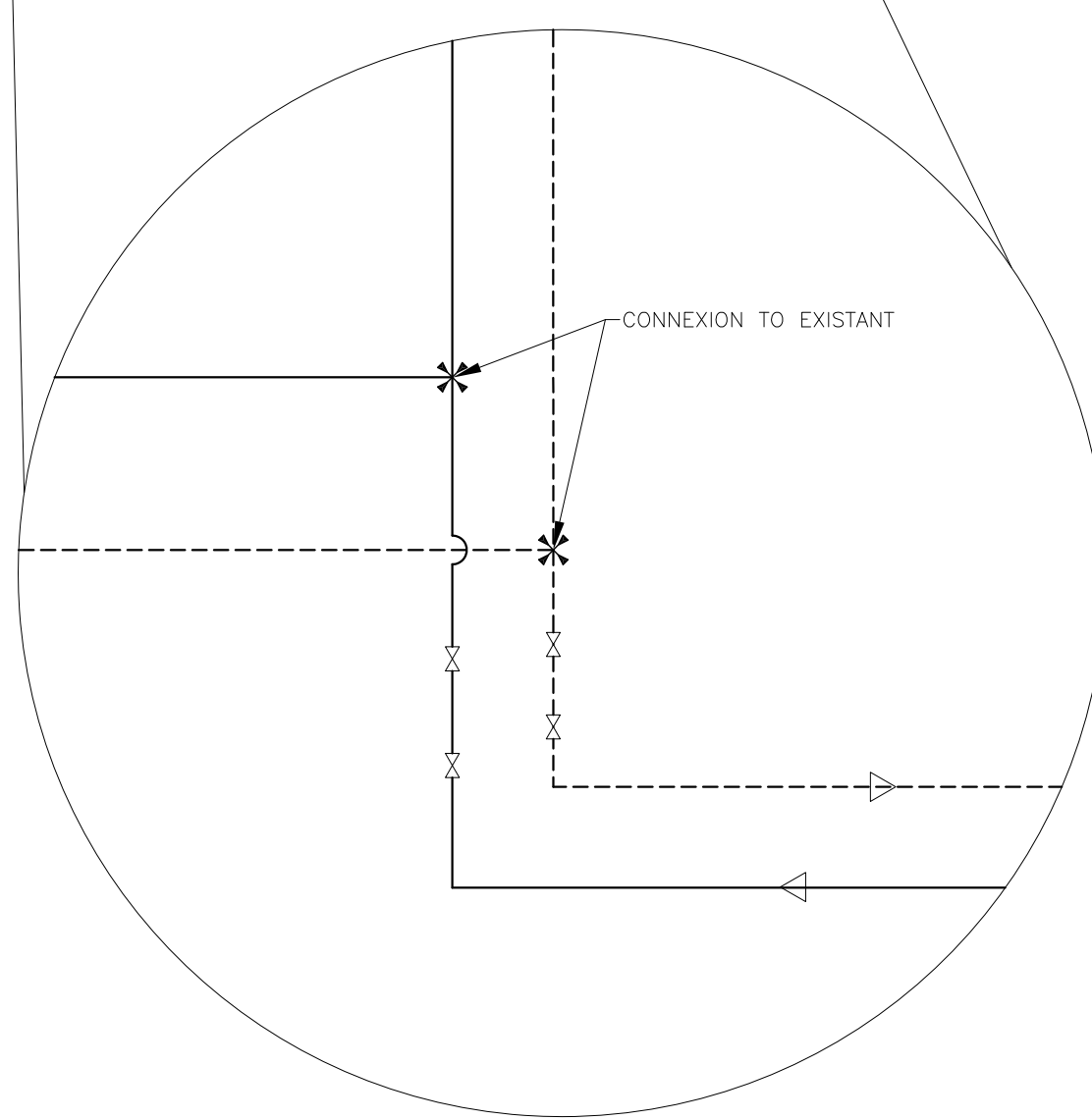
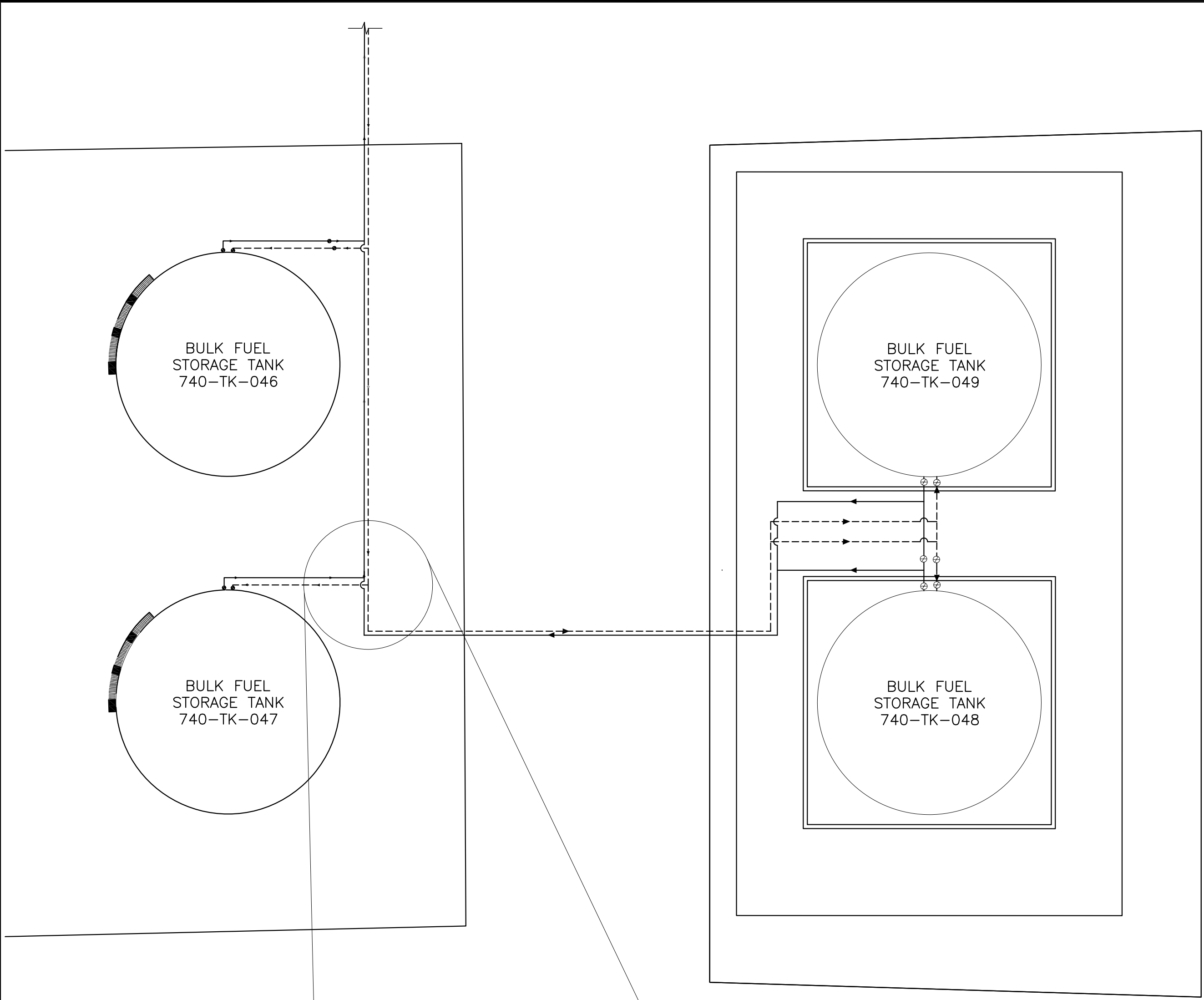
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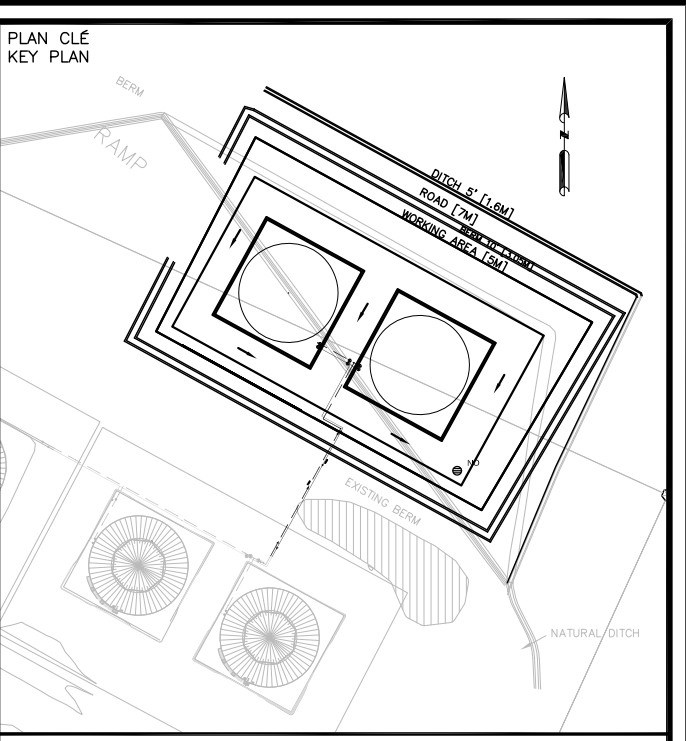
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MEAD-I-400	0	1 / 1



—	—					 AGNICO-EAGLE	DESSINÉ PAR DRAWN BY		M.MATTEAU, T.P.	DATE	2011-01-12	TITRE / TITLE AGNICO-EAGLE — MEADOWBANK AREA 740 BAKER LAKE ELECTRICAL GROUNDING PLAN								
—	—						VÉRIFIÉ PAR CHECKED BY		M. OUELLETTE (AEM)											
—	—						APPROUVÉ PAR APPROVED BY													
—	—						No. PROJET PROJECT NO.		VD2622-001			ÉCHELLE/ SCALE	INDICATED	FICHIER FILE	740-E-0120.DWG	REVISION	FEUILLE/SHT 1 / 1			
—	—	0	AS BUILD	14-01-2011	M.O.		DATE		2011-01-12											
TITRE / TITLE		# DWG	REV	DESCRIPTION	DATE		PAR BY													
DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS			REVISIONS																	



Piping	Symbol	Equipment	Details	Type	Models	Diameter	Quantity
Filling of Tank 740-TK-048 Tank 740-TK-049		Gate Valve	Class 150; flanged, face to face dimension ANSI B16.10, End flange dimension ANSI B16.5, API STD 600; carbon steel body, ASTM A 352-LCC	NA	Beric Class 150	1"	2
		Gate Valve	Class 150; flanged, face to face dimension ANSI B16.10, End flange dimension ANSI B16.5, API STD 600; carbon steel body, ASTM A 352-LCC	NA	Beric Class 150	6"	4
		Flanged Metallic flexible tube	- Flanges: Class 150, raised face and ANSI B16.5, carbon steel; - Metallic flexible tube: 18" length in Stainless Steel	NA	CONNECTALL AAB181LL0240	6"	2
		Gasket	Composition: Aramid fibers with a nitril binder Thickness: 1/8"	NA	Garlock Blue guard Style 3000	1" 6"	as required
		Piping	Carbon steel piping sch. 40 ASTM A53 gr. B seamless	NA	NA	1" 6"	as required
Distribution from Tank 740-TK-048 Tank 740-TK-049		Gate Valve	Class 150; flanged, face to face dimension ANSI B16.10, End flange dimension ANSI B16.5, API STD 600; carbon steel body, ASTM A 352-LCC	NA	Beric Class 150	4"	4
		Gate Valve	Class 150; flanged, face to face dimension ANSI B16.10, End flange dimension ANSI B16.5, API STD 600; carbon steel body, ASTM A 352-LCC	NA	Beric Class 150	1"	4
		Flanged Metallic flexible tube	- Flanges: Class 150, raised face and ANSI B16.5, carbon steel; - Metallic flexible tube: 18" length in Stainless Steel	NA	CONNECTALL AAB181WWW0240	4"	2
		Check valve	Class 150; flanged, face to face dimension ANSI B16.10, End flange dimension ANSI B16.5, ANSI B16.34 (CONFORMS TO THE APPLICABLE REQUIREMENTS OF API 600); carbon steel body, ASTM A 352-LCC	NA	Beric Class 150	4"	2
		Motorized Valve	- Ball valve class 150; - Body material: Carbon Steel Body; - Reinforced TFE Seats; - Flanges: Class 150 raised face and ANSI B16.5; C/W: Actuator Electric Serie XE (XE-2640) ATEX certified for Flame Proof Exd IIB T4 + Heater	NA	TRIAC Actuator electric XE-2640 C/W Ball valve classe 150	4"	1
		Gasket	Composition: Aramid fibers with a nitril binder Thickness: 1/8"	NA	Garlock Blue guard Style 3000	1" 4"	as required
		Piping	Carbon steel piping sch. 40 ASTM A53 gr. B seamless	NA	NA	1" 4"	as required
Overpressure line filling tank 740-TK-048 filling tank 740-TK-049		Gate Valve	Class 150; flanged, face to face dimension ANSI B16.10, End flange dimension ANSI B16.5, API STD 600; carbon steel body, ASTM A 352-LCC	NA	Beric Class 150	2"	4
		Gate Valve	Class 150; flanged, face to face dimension ANSI B16.10, End flange dimension ANSI B16.5, API STD 600; carbon steel body, ASTM A 352-LCC	NA	Beric Class 150	1"	2
		Check valve	- Carbon steel; - Set pressure at 25 PSI;	NA	Check All UN-3 (U3)	1"	1
		Pressure safety valve	- Carbon steel; - Set pressure at 80 PSI; - 16 USGPM capacity; - Temperature range: -50 to 750F	NA	FARRIS Serie 2700	1"	1
		Gasket	Composition: Aramid fibers with a nitril binder Thickness: 1/8"	NA	Garlock Blue guard Style 3000	1/2"	as required
		Piping	Carbon steel piping sch. 40 ASTM A53 gr. B seamless	NA	NA	1/2"	as required
		Piping	Carbon steel piping sch. 40 ASTM A53 gr. B seamless	NA	NA	1/2"	as required



NOTES GÉNÉRAL / GENERAL NOTES

1-ALL THE PIPING CONNECTION MUST BE AT THE BOTTOM OF THE TANK

2-MOTORIZED VALVES ARE INSTALLED BUT NOT RECORDED. THEY ARE IN OPEN POSITION.

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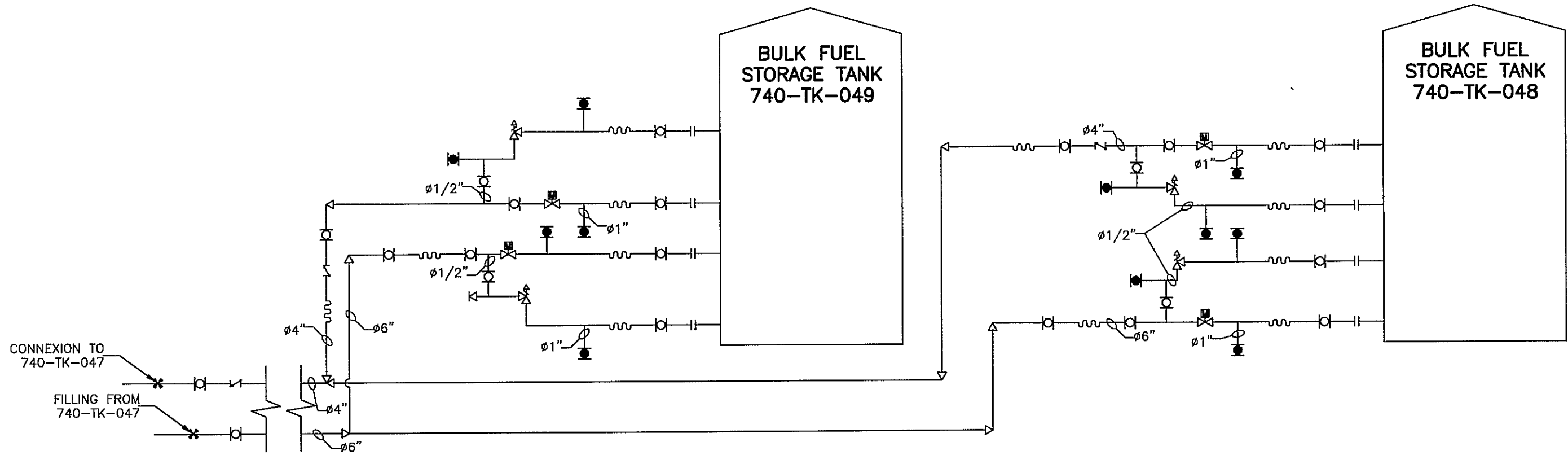
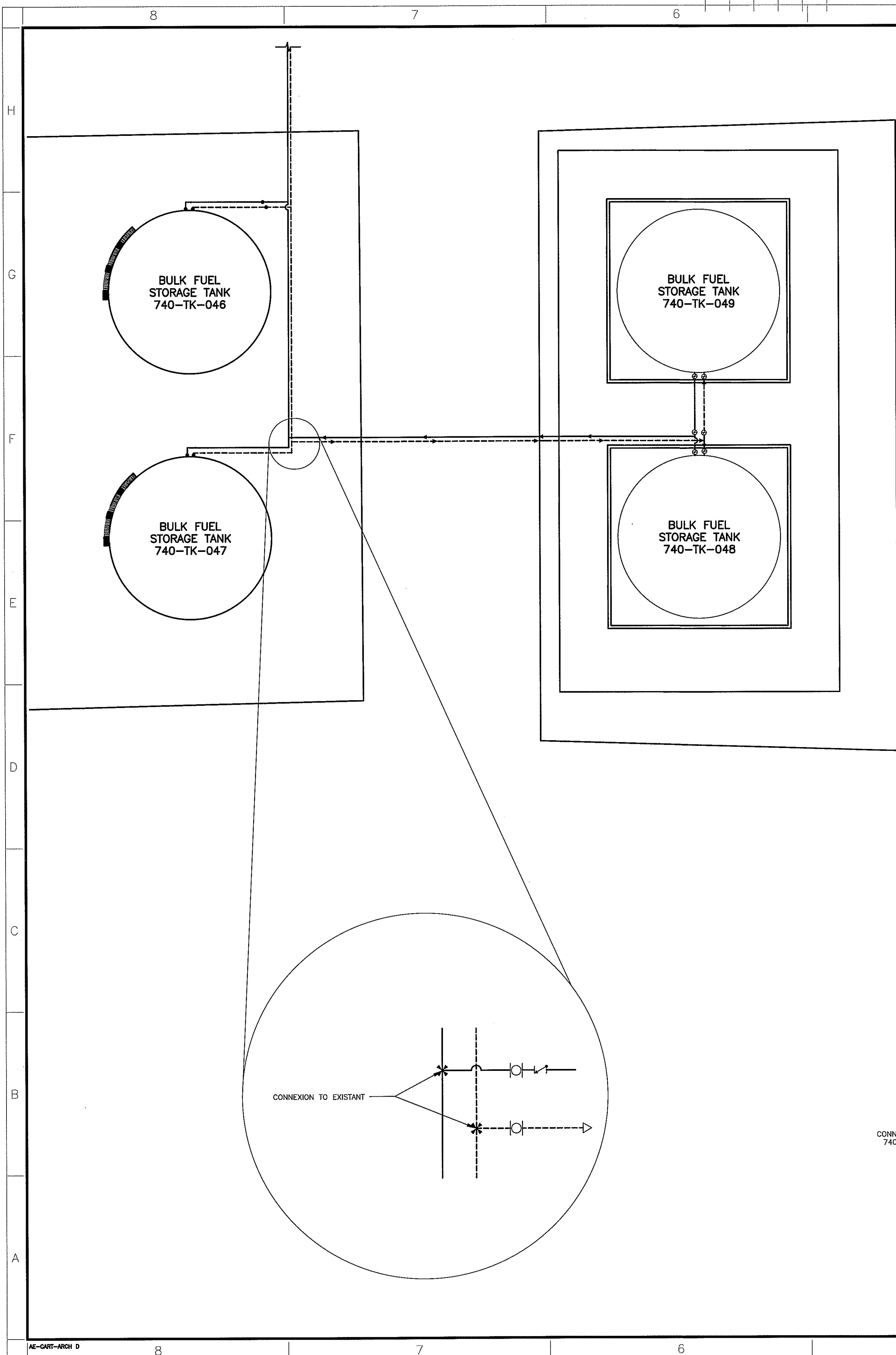
DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
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REV.	DATE	DESCRIPTION	PAR/REV	APP.	CLIENT
1	31-01-2011	AS FIELD	K.F.	JM.C.	
0	2010-08-12	FOR CONSTRUCTION	MA.BED	JM.C.	
B	2010-07-28	FOR APPROVAL	V.Cre.	JM.C.	
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AGNICO-EAGLE

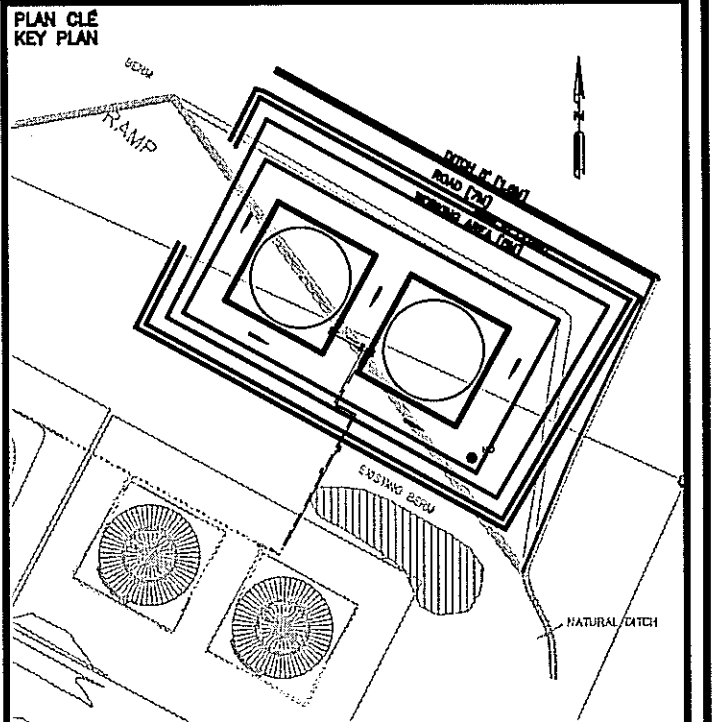
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VÉRIFIÉ PAR CHECKED BY	J-M CHARRON, Ing.	2010-08-20
APPROUVÉ PAR APPROVED BY	J-M CHARRON, Ing.	2010-08-20
ÉCHELLE SCALE	N/A	DATE
NO. DESSIN DRAWING NO.	740-M-0100	
NO. PROJET PROJECT NO.	MEAD-I-400	REVISION 1
		FEUILLE / SHEET 1 / 1



PIPING DETAILS

Piping	Symbol	Equipment	Details	Type	Models	Diameter	Quantity
Filling of Tank 740-TK-048 Tank 740-TK-049		Gate Valve	Integrally reinforced extended body gate, female socket weld outboard end; API STD 602; forged carbon steel; ASTM A 105/A 105M; OS&Y; welded bonnet or bolted bonnet with flexible graphite-filled spiral wound gasket; trim #8; flexible graphite packing; metal tagged V903; Class 800	NA	Velan W-DD-2-17-4W-02-TY (1") or equivalent	1"	2
		Gate Valve	Class 150; flanged, raised-face; API STD 602; carbon steel body; ASTM A 105/A 105M or ASTM A 216/A 216M Grade WCB; OS&Y; solid or flexible wedge; bolted bonnet with stainless steel reinforced flexible graphite bonnet gasket; trim #8; flexible graphite packing; metal tagged V903; full port.	NA	Velan F-DD-0-05-4C-02-TY (6") or equivalent	6"	7
		Flanged Metallic flexible tube	- Flanges: Class 150, raised face and ANSI B16.5; - Metallic flexible tube: 18" length in Stainless Steel	NA	CONNECTALL AA1-096-0180 or equivalent	6"	4
		Motorized Valve	- 6" direct mount split body ball valve; - Body material: Carbon Steel Body; - SS 316 Trim, Seat Reinforced TFE Seats; - Flanges: Class 150 raised face and ANSI B16.5; C/W: Actuator Electric Serie XE (XE-6900) ATEX certified for Flame Proof Exed IIB T4 + Heater	NA	Matheson valves D9C-F1-600-XHE1-XX 6.00	6"	2
		Gasket	Composition: Aramid fibers with a nitril binder Thickness: 3/8"	NA	Garlock Blue guard Style 3000	1" 6"	as required
		Piping	Carbon steel piping sch. 40 ASTM A53 gr.8 seamless	NA	NA	1" 6"	as required
Distribution from Tank 740-TK-048 Tank 740-TK-049		Gate Valve	Class 150; flanged, raised-face; API STD 602; carbon steel body; ASTM A 105/A 105M or ASTM A 216/A 216M Grade WCB; OS&Y; solid or flexible wedge; bolted bonnet with stainless steel reinforced flexible graphite bonnet gasket; trim #8; flexible graphite packing; metal tagged V903; Class 800	NA	Velan F-DD-0-05-4C-02-TY (4") or equivalent	4"	7
		Gate Valve	Integrally reinforced extended body gate, female socket weld outboard end; API STD 602; forged carbon steel; ASTM A 105/A 105M; OS&Y; welded bonnet or bolted bonnet with flexible graphite-filled spiral wound gasket; trim #8; flexible graphite packing; metal tagged V903; Class 800	NA	Velan W-DD-2-17-4W-02-TY (1") or equivalent	1"	2
		Flanged Metallic flexible tube	- Flanges: Class 150, raised face and ANSI B16.5; - Metallic flexible tube: 18" length in Stainless Steel	NA	CONNECTALL AA1-064-0150 or equivalent	4"	4
		Check valve	- Cast steel flanged check valve; - Body material: Low temperature cast carbon steel to ASTM A352, grade LC8; - Trim material: Disc - Stainless steel, 13% Cr; Seat - Stainless steel, 13% Cr; - Valve: Face to face dimension to ANSI B16.10; - Flanges: Class 150, raised face and ANSI B16.5.	CKF1 ⁽¹⁾	Kitz 150 SCORL or equivalent	4"	3
		Motorized Valve	- 4" direct mount split body ball valve; - Body material: Carbon Steel Body; - SS 316 Trim, Seat Reinforced TFE Seats; - Flanges: Class 150 raised face and ANSI B16.5; C/W: Actuator Electric Serie XE (XE-2640) ATEX certified for Flame Proof Exed IIB T4 + Heater	NA	Matheson valves D9C-F1-400-XEE-1-XX 4.00	4"	2
		Gasket	Composition: Aramid fibers with a nitril binder Thickness: 3/8"	NA	Garlock Blue guard Style 3000	1" 4"	as required
Overpressure line filling tank 740-TK-048 filling tank 740-TK-049		Gate Valve	Integrally reinforced extended body gate, female socket weld outboard end; API STD 602; forged carbon steel; ASTM A 105/A 105M; OS&Y; welded bonnet or bolted bonnet with flexible graphite-filled spiral wound gasket; trim #8; flexible graphite packing; metal tagged V903; Class 800	NA	Velan W-DD-2-17-4W-02-TY (1") or equivalent	1/2"	8
		Flanged Metallic flexible tube	- Flanges: Class 150, raised face and ANSI B16.5; - Metallic flexible tube: 18" length in Stainless Steel	NA	CONNECTALL AA-B1B1-HH-0180-0150 or equivalent	1/2"	4
		Pressure safety valve	- Stainless steel; - Set pressure at 75 PSI	NA	Swagelok SS-RL4M8F8-BU	1/2"	2
		Gasket	Composition: Aramid fibers with a nitril binder Thickness: 3/8"	NA	Garlock Blue guard Style 3000	1/2"	as required
		Piping	Carbon steel piping sch. 40 ASTM A53 gr.8 seamless	NA	NA	1/2"	as required

⁽¹⁾ Reference to "PIPE AND VALVE SPECIFICATION" #0 17202-0000-46ES-1001. by SNC Lavalin 15th august 2007



NOTES GENERAL / GENERAL NOTES

1-ALL THE PIPING CONNECTION MUST BE AT THE BOTTOM OF THE TANK



CONSTRUCTION O-CONTINUE DE LA PRESSION DE JARVIS-CHATELAIN ET DE LA PRESSION DE JARVIS-CHATELAIN. POUR INFORMATION DES PROPRIETAIRES, TOUTE MODIFICATION DE CONCEPTION A FAIRE ET TOUTE PRESSION A FAIRE DEVEUT ETRE APPROUVEE PAR LE PROPRIETAIRE. LE PROPRIETAIRE NE SERA PAS RESPONSABLE DE LA PRESSION DE JARVIS-CHATELAIN. LE PROPRIETAIRE NE SERA PAS RESPONSABLE DE LA PRESSION DE JARVIS-CHATELAIN. LE PROPRIETAIRE NE SERA PAS RESPONSABLE DE LA PRESSION DE JARVIS-CHATELAIN.

DESSINS EN REFERENCE / REFERENCE DRAWINGS

TITLE / TITRE	#	CHG



REV.	DATE	DESCRIPTION	DESIGNER	APP.	CLIENT
O	2010-08-12	FOR CONSTRUCTION	WALBET	J.M.C.	
B	2010-07-20	FOR APPROVAL	V.CHE	J.M.C.	
A	2010-07-16	FOR APPROVAL	V.CHE	J.M.C.	

REVISIONS
[Signature]
L-2198
2010-08-12

TITLE / TITRE
AGRICICO-EAGLE -- MEADOWBANK DIVISION
BAKER LAKE AREA 740
TANK #5 AND #6
FUEL DISTRIBUTION PIPING
LAYOUT AND DETAILS

DESIGNED PAR DRAWN BY	VICKY CRETE, TECH.	DATE	2010-07-16
VERIFIE PAR CHECKED BY	J-M CHARRON, Ing.		
APPROUVE PAR APPROVED BY	J-M CHARRON, Ing.		

ÉCHELLE
SCALE N/A

NO. DESSIN
DRAWING NO. 740-M-0100

NO. PROJET PROJECT NO.	REVISION	FEUILLE / SHEET
MEAD-I-400	0	1 / 1

APPENDIX 2

SAFE FILL LEVELS FOR ALL FUEL TANKS

TEMPERATUE OF FUEL in the barge at discharge	MAXIMUM FUEL LEVEL To be read on the VAREC float level	
	TANK # 5	TANK #6
0 °C	9,63	9,63
+ 5 °C	9,67	9,67
+ 10 °C	9,72	9,72
+ 15 °C	9,76	9,76

NOTE: EACH TANK HAS A SLIGHTLY DIFFERENT ELEVATION, SO CARE MUST BE TAKEN DURING HYDRAULIC BALANCING OF TANKS, ESPECIALLY WHEN THOSE ARE FULL

Appendix A4

Baker Lake Jet-A Fuel Storage Installations: As-built Report (Agnico Eagle (2013))



AGNICO EAGLE
MEADOWBANK

AGNICO EAGLE MINES LTD
MEADOWBANK DIVISION

BAKER LAKE JET A FUEL STORAGE INSTALLATIONS

2013

AS BUILT CONSTRUCTION REPORT

PREPARED BY:

Yanick Simard

Project General Foreman

AEM.

APPROVED BY:



AGNICO EAGLE MINES LTD

MEADOWBANK DIVISION

BAKER LAKE JET A FUEL STORAGE INSTALLATIONS

2013

AS BUILT CONSTRUCTION REPORT

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1. DESCRIPTION OF CONSTRUCTION ACTIVITIES	1
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2.1 Excavation of the existing area	2
2.2 Construction of the pad Phase 1	2
2.3 Installation of the bituminous liner	3
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3. DESCRIPTION OF THE FACILITIES AND MECHANICAL PARTS ASSEMBLING	4
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APPENDIX 1: DRAWINGS

APPENDIX 2: STAVIBEL'S CONSTRUCTION DAILY REPORTS

APPENDIX 3: SM'S TECHNICAL DATA SHEETS & DRAWINGS DOCUMENT

1- DESCRIPTION OF CONSTRUCTION ACTIVITIES

Agnico Eagle mines has contracted Stavibel Engineering Services to design the Jet A fuel storage facilities located in Baker Lake, Nunavut, complying with specifications required by environmental and governmental regulations, namely Environment Canada's Fuel Tank Storage Regulations and the CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products.

Stavibel provided the design, planning and construction oversight related to the installation of infrastructure of AEM's new Jet A Fuel Storage facility which consists of 20 – 100,000L double walled tanks, associated piping and pumping systems and secondary requirement. AEM prepared a site survey to ensure proper measurements and elevation of the existing area.

The main activities related to the construction were scheduled as follow:

- I: AEM sent surveyed data of the existing area to Stavibel
- II: Stavibel sent first design plans for comments
- III: AEM moved the existing tanks and prepared the field for the construction
- IV: Construction of the infrastructure pad
- V: Assembling of all the installation of tanks and mechanical infrastructure.

2- DESCRIPTION OF THE FUEL CONTAINEMENT PAD CONSTRUCTION STEPS

2.1 EXCAVATION OF THE EXISTING AREA. July 14th 2013.

Quality control and quality approval: Stavibel

Construction contractor: Quamanittuap-Sana (FGL)

General supervision and foreman: AEM

Starting with test pits, the presence of water was observed in the excavation area. It was then decided to increase the elevation of the pad by +300mm. Presence of contaminated soil was found as well; it was removed, analyzed by environmental department and sent to the soil landfarm at Meadowbank. The total amount was 128m³. All non-contaminated soil and rock that was removed and was placed aside to be used during the backfilling of the pad. (1) 365 CAT excavator, (1) D6 CAT dozer, (1) operator and (1) surveyor were necessary for the initial phase.

2.2 CONSTRUCTION OF THE PAD PHASE 1. July 15th – July 25th 2013.

Quality control and quality approval: Stavibel

Construction contractor: Quamanittuap-Sana (FGL)

Material transportation: BLCS

General supervision and foreman: AEM

During this phase of the project, a (1) 365 CAT excavator, (1) 320 CAT excavator, (1) Komatsu 39PX dozer, (1) Hamm 3625 compactor and (1) 740 CAT haul truck were utilized. In addition, staff included were (1) operator plus (1) surveyor. The first step was to backfill the pad up to the determined level with 0-200mm NPAG rock, and then enlarge the road south of the pad. Excess water (clean) was drained in order to construct the containment berms around the pad as showed in appendix 1 B. Once the rock pad was at the determined elevation, crushed 0-20mm NPAG material was placed on top of the berms. Corrective measures around the pad were undertaken due to some instability in the area where the fuel cabinet would be installed. Crushed 0-20mm NPAG material was placed on the top of the pad, compacted to prepare for the installation of the bituminous liner. Excavation in the surrounding ditches was completed in accordance with design specifications. A total amount of 1217m³ of NPAG 0-200mm and 455m³ of NPAG 0-20mm was used to complete this phase of the construction.

2.3 INSTALATION OF THE BITOUMINOUS LINER.

July 25th – July 27th 2013

Quality control and quality approval: Stavibel

Construction contractor: Quamanittuap-Sana (FGL)

Liner crew: Texcel

General supervision and foreman: AEM

Equipment and manpower used included (1) 365 CAT excavator to unroll the liner and we had (1) operator, (1) surveyor, (2) liner installers and (3) laborers from Baker Lake. The liner was installed over a two day period. After installation, any holes that resulted were repaired and conformity tests were undertaken (pressure and tension). In addition, soft geotextile was placed under and over the liner to prevent puncturing that could occur while walking on the liner or during placement of the covering granular material. It was calculated that 2400m² of bituminous liner and 2625m² of soft geotextile was placed.

2.4 CONSTRUCTION OF THE TANK PAD PHASE 2.

July 27th- July 31st 2013

Quality control and quality approval: Stavibel

Construction contractor: Quamanittuap-Sana (FGL)

Material transportation: BLCS

General supervision and foreman: AEM

Phase 2 of construction of the pad was to place crushed 0-20mm NPAG over the bituminous liner (previously covered with geotextile). The following equipment and manpower were used, (1) 365 CAT excavator, (1) 307 Cat excavator, (1) 39 PX Komatsu bulldozer, (1) 740 CAT haul truck, (1) Hamm 3625 compactor, (1) operator and (1) surveyor. During this phase the contractor's (BLCS) was out of service due to mechanical issues so the 0-20mm NPAG layer was screened to maintain quality. Any materials that screened larger than 0-20mm were removed by hand. A total of 728m³ of 0-20mm NPAG granular material were used to build the 300mm thick layer of liner protection. A slopped trench was excavated (1000mm up to ground level) to place an 8 inches steel conduit for electrical cable necessary to operate the pump house.

- FURTHER INFORMATION, PICTURES AND PLANS FOR THOSE STEPS CAN BE FOUND IN THE APPENDIX 1 AND 2

3- DESCRIPTION OF THE FACILITIES AND MECHANICAL PARTS ASSEMBLING.

3.1 NEW TANKS PLACEMENT AND INSTALATION OF THE PUMP HOUSE. Aug 5th –Aug 12th 2013

Installation crew: SM Construction

Field supervisor: Quamanittuap-Sana (FGL)

Crane and operator: J.M Francoeur

General supervision and foreman: AEM

20, double walled, 100,000L fuel storage tanks meeting CCME ULC requirements were placed on the pad described in Sec 2 above. Equipment and manpower used during this phase included (1) 35tns MCR crane, (6) technicians, (1) welder and (1) electrician. The tanks were placed according to the design specifications, ie level. Once the tanks placement was completed, foot bridges were installed as well as the pump house. * See figure at page 523 in SM'S manual, appendix 3

3.2 PIPING CONNECTION AND ELECTRICAL ASSEMBLING PHASE 1. Aug 12th – Aug 19th 2013

Installation crew: SM Construction

Field supervisor: Quamanittuap-Sana (FGL)

General supervision and foreman: AEM

During this phase (6) technicians and (1) welder assembled the 4 inch pipe and connections between the tanks and pump house. Also (1) electrician started the installation of electrical cables and control panels for the facility. All piping, pumps, electrical connections, etc. conformed to all applicable codes, specifications and regulations. * See SM'S manual under the technical data section, Pp. 3 to 512, APPENDIX 3.

3.3 PIPING CONNECTION AND ELECTRICAL ASSEMBLING PHASE 2.

Aug 29th – Sept 17th

Installation crew: SM Construction

Field supervisor: Quamanittuap-Sana (FGL)

General supervision and foreman: AEM

For the final phase of the project, (6) technicians and (1) welder completed assembling and installation of the pipe connections between the tanks and inside the pump house. An (1) electrician connected all of the main cables, the panels and computers inside the pump house. Hi-level alarms were also placed on all tanks and were tested as per specifications. All alarms were noted to be functional. After installation, all tanks were cleaned and washed inside and pressure tested as per specifications. During the pressure test, one tank indicated a loss of pressure. A small crack was found between the inside two layers of the tank. This might have occurred during the placement of this tank. It was decided not to add fuel to this tank this year. Repairs will be undertaken prior to re-fueling. At this point the tanks were ready to use for fuel storage.

- FURTHER INFORMATIONS, PARTS DESCRIPTIONS, PHOTOGRAPH, INSTALLATION AND ELECTRICAL PLANS CAN BE FOUND IN APPENDIX 3.

APPENDIX 1.

DRAWINGS.

A. DESIGN PLAN FOR COMMENTS:

Drawing number: 61-740-230-211_A

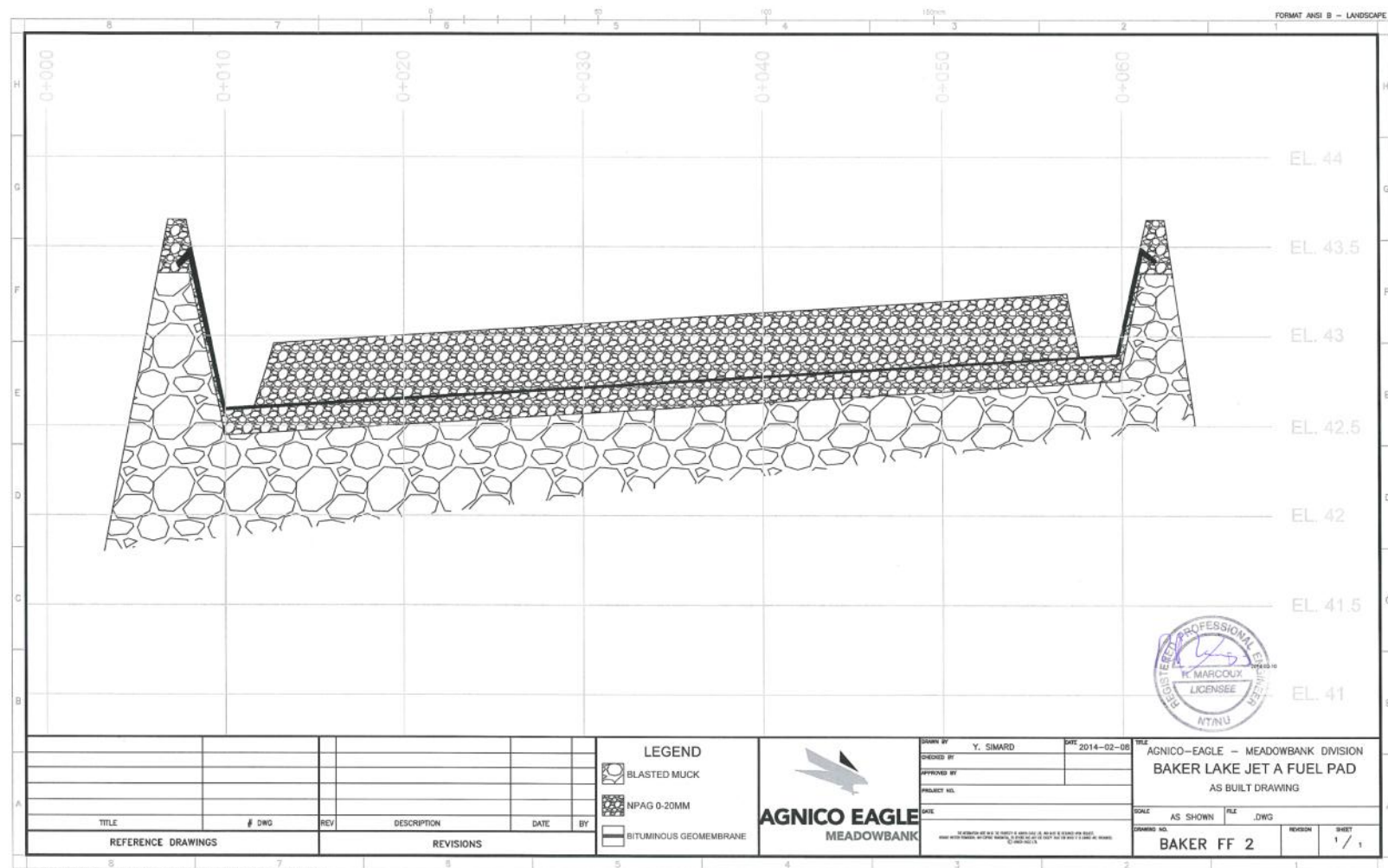
B. AS BUILT DRAWINGS:

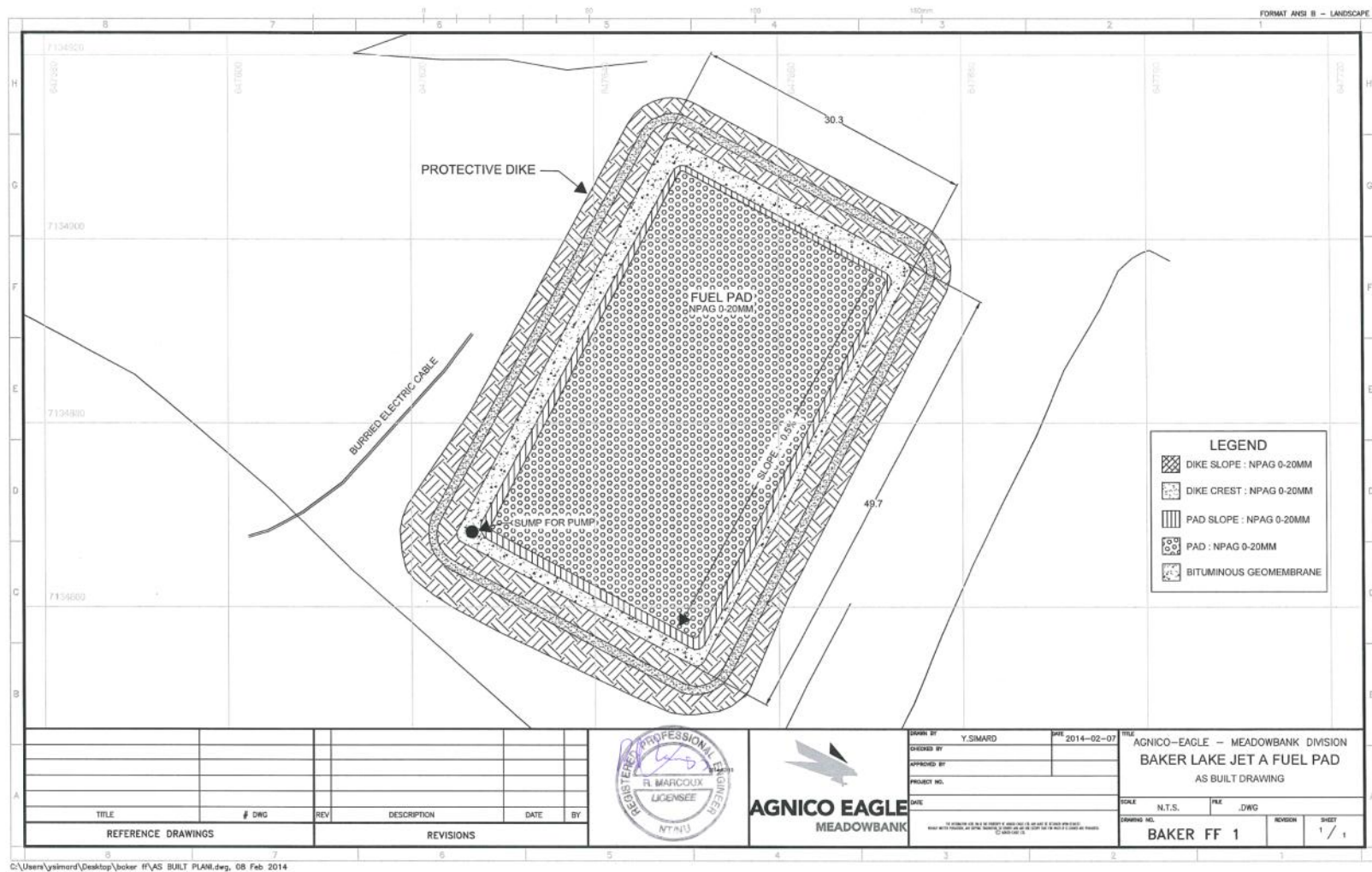
Drawing number:	BAKER FF 1	PLANIMETRICAL VIEW
	BAKER FF 2	SECTION VIEW



ACCESS WELL FOR DRAINING

NO. PROJ PROJECT NO.	REVISION	FEUILLE
OP-84541-J	A	1 /





APPENDIX 2.

STAVIBEL'S CONSTRUCTION DAILY REPORT.

DESCRIPTION OF THE FUEL CONTAINEMENT PAD CONSTRUCTION STEPS.

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-14
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-01
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	10 à 16°C Wind : 5 à 15 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
1 Shovel CAT 365C L	FGL	11
Operator	FGL	12
Surveyor	FGL	9
10 tons roller compactor	BLCS	0
Bulldozer CAT D6 (DOZ09)	AEM	1
Field inspector	Stavibel	12

- **7h à 9h** Shovel 365 moves from Baker Lake to the Fuel Farm.
- **9h à 10h** Shovel 365 makes pit test at the North extremity of the projected pond.
- **10h à 12h** Shovel 365 removes the 0-20mm crushed stone in place.
- **13h à 17h30** Shovel 365 stockpiles the contaminated material outside the projected pond.
- **17h30 à 18h30** Bulldozer D6 profiles the infra.

Comments :

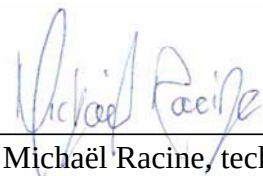
- Visit of Jean-François Béland (AEM foreman) and Dany Pageault (FGL superintendant) de 12h à 16h30
- After 3 test pits in the excavation zone, we found the presence of water and frozen material above the proposed elevation of the excavation. We need to increase the elevation of the project of 300mm.
- Presence of contaminated material and organic soil. The materials are stockpile and will be analyse by the environment. Thereafter, they will indicate how to dispose of it.

- Photo #1 – 3 test pits. Smell of Jet-A fuel and water arrival.



- Photo #2 – Excavation and stockpile of the contaminated material until the final level of the infra.



Par : 
Michaël Racine, tech.

Richard Marcoux, ing.
No OIQ : 38724
Project manager

Title of project : Baker Lake Jet-A Fuel Farm	Date : 2013-07-15
Project # : OP-84541-J /VD3356	Doc #: VD3356-003-RV-02
Prepared by : Michaël Racine	Contractor : Fernand Gilbert Ltée
Verified by : Richard Marcoux, ing.	Temperature : 8 à 17°C Wind : 5 à 30 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours	Volume (m3)
1 Shovel CAT 365C L	FGL	7	
Opérateur	FGL	12	
Surveyor	FGL	12	
Roller compactor	BLCS	1.9	
Bulldozer CAT D6T (DOZ09)	AEM	5	
Shovel 330C	BLCS	8.5	
2 articulated trucks CAT 740	BLCS	8.5	576
Field inspector	Stavibel	12	

- **6h30 à 18h30** Shovel 365 and Bulldozer D6T backfill with blasted rock 0-200 mm from quarry #1.
- **9h30 à 18h30** Loader 966 et 2 trucks haul the blasted rock 0-200 mm from quarry #1.
- **6h30 à 18h30** Compactor compacts the blasted rock when required.

Comments :

- Attempt to cover the stockpile of contaminated material with tarps after the request of the environment. Unfortunately the wind make this operation impossible.
- The water accumulations are pumped before backfilling above.

- Photo #1 – Overview of the infra. Some water accumulations caused by the thaw of the material in place. A small ditch will be made to try to drain this water during night.



Par :


Michaël Racine, tech.

Richard Marcoux, ing.
No OIQ : 38724
Project manager

Title of project : Baker Lake Jet-A Fuel Farm	Date : 2013-07-16
Project # : OP-84541-J /VD3356	Doc #: VD3356-003-RV-03
Prepared by : Michaël Racine	Contractor : Fernand Gilbert Ltée
Verified by : Richard Marcoux, ing.	Temperature : 8 à 17°C Wind : 5 à 30 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours	Volume (m3)
1 Shovel CAT 365C L	FGL	11	
Operator	FGL	12	
Surveyor	FGL	12	
Roller compactor Protec Boxer 114	BLCS	0	
Bulldozer CAT D6T (DOZ09)	AEM	0	
Shovel CAT 330C	BLCS	11	
2 Articulated trucks CAT 740	BLCS	11	816
Field inspector	Stavibel	12	

- **6h30 à 18h30** Loader 966 and 2 trucks haul the blasted rock 0-200 mm from quarry #1.
- **6h30 à 12h00** Shovel 365 widens the road on the south side of the pond Sud with blasted rock 0-200 mm from quarry #1.
- **6h30 à 18h30** Shovel 365 backfills with blasted rock 0-200 mm from quarry #1.

Comments :

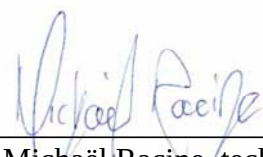
- Beginning of haulage of the contaminated material to the mine (4 loads per day).

- Photo #1 – Windening of the road on the south side of the pond



- Photo #2 – Drainage of the water on north side of the pad. The ground is more stable at the end of the day.



Par : 
Michaël Racine, tech.

Richard Marcoux, ing.
No OIQ : 38724
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-17
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-04
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	8 à 17°C Wind : 30 à 70 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours	Volume (m3)
1 Shovel CAT 365C L	FGL	11	
Operator	FGL	12	
Surveyor	FGL	12	
Loader CAT 966H + operator	AEM	10	
Roller compactor Protec Boxer 114	BLCS	2.54	
Bulldozer CAT D6T (DOZ09)	AEM	0	
Shovel CAT 330C	BLCS	5	
2 articulated trucks CAT 740	BLCS	11	muck : 254.4 0-20mm : 272.5
Fiel inspector	Stavibel	12	

- **6h30 à 18h30** Shovel 365 builds the mini dikes with blasted rock 0-200 mm.
- **6h30 à 11h30** Shovel 330 and 2 trucks (BLCS) haul the blasted rock 0-200 mm from quarry #1.
- **7h30 à 10h15** Loader 966 separates the contaminated and the non-contaminated material.
- **10h15 à 18h30** Loader 966 builds the mini dikes.
- **13h à 18h** 2 trucks 740 (BLCS) haul the 0-20mm.

Comments :

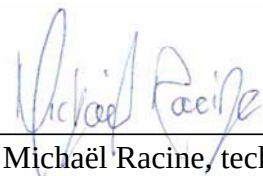
- Haulage of the contaminated material to the mine (4 loads of 10 wheeler per day).
- The non-contaminated material that contain a bit of organic soil is stockpile in order to do the access road for the pump house.

- Photo #1 – Construction of the mini dikes around the pad. Stockpile of the 0-20mm on the pad.



- Photo #2 – Loading of the contaminated material.



Par : 
Michaël Racine, tech.

Richard Marcoux, ing.
No OIQ : 38724
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-18
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-05
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	5 à 10°C Wind : 30 à 50 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
1 Shovel CAT 365C L	FGL	9
Operator	FGL	12
Surveyor	FGL	12
Loader CAT 966H + operator	AEM	8
Roller compactor Protec Boxer 114	BLCS	0
Bulldozer CAT D6T (DOZ09)	AEM	0
Field inspector	Stavibel	12

- **6h30 à 12h00** Shovel 365 builds the mini dikes with blasted rock 0-200 mm.
- **6h30 à 15h30** Loader 966 loads the contaminated material, moves the contaminated stockpile that disturbed the construction of the ditch and moves the sea-cans.
- **13h à 15h** Shovel 365 stands by for mechanical problems.
- **15h à 18h30** Shovel 365 puts the 0-20mm on the mini dike.

Comments :

- Haulage of the contaminated material to the mine (6 loads of 10 wheeler per day).
- The crushed stone 0-20mm is stockpile and survey. The results give 18,17 m3/trucks instead of 24m3 as specified in the spec of the truck. Here are the adjusted volumes for the last days :

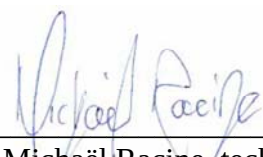
	2013-07-15		2013-07-16		2013-07-17		Cumulatif	
	load	volume (m3)	load	volume (m3)	load	volume (m3)	load	volume (m3)
Muck quarry 1	24	436,048	34	617,7347	14	254,3613	72	1308,144
0-3/4" BLCS		0		0	15	272,53	15	272,53

- Photo #1 – Placing the crushed stone 0-20mm on the mini dike.



- Photo #2 – Moving the contaminated stockpile to make the drainage ditch behind the north dike.



Par : 
Michaël Racine, tech.

Richard Marcoux, ing.
No OIQ : 38724
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-19
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-06
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	8 à 18°C Wind : 20 à 30 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
1 Shovel CAT 365C L	FGL	11
Opérateur	FGL	12
Arpenteur	FGL	12
Rouleau compacteur Protec Boxer 114	BLCS	1.21
Chargeur CAT 966H + opérateur	AEM	3.5
Camion 10 roues + opérateur	AEM	5.5
Bulldozer CAT D6T (DOZ09)	AEM	0
Surveillant de chantier	Stavibel	12

- **6h30 à 12h00** Shovel 365 loads the truck with the non-contaminated material that contain organic soil.
- **6h30 à 12h00** 10 wheels truck hauls the material containing organic soil for the construction of the access road for the pump house.
- **6h30 à 10h00** Loader 966 moves the concrete blocks and other small jobs.
- **13h à 18h30** Shovel 365 builds the mini dike and the infra on the north side of the pad.

Comments :

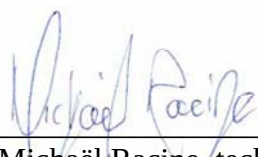
- Haulage of the contaminated material to the mine (6 loads of 10 wheeler per day).

- Photo #1 – Loading the truck with the non-contaminated material that contain organic soil for the construction of the access road for the pump house.



- Photo #2 – Reparation of an instability on the North-East side of the pad.



Par : 
Michaël Racine, tech.

Richard Marcoux, ing.
No OIQ : 38724
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-20
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-07
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	8 à 18°C Wind : 5 à 10 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	2
Shovel CAT 320	FGL	5
Bulldozer Komat'su 39px	FGL	4
Operator	FGL	12
Surveyor	FGL	12
Roller compactor Protec Boxer 114	BLCS	0.4
Truck CAT 740	BLCS	114.1 m3
Bulldozer CAT D6T (DOZ09)	AEM	0
Field inspector	Stavibel	12

- **6h30 à 8h30** Shovel 365 builds the mini dike.
- **8h30 à 10h30** Shovel 320 is moving from Baker Lake to the field.
- **10h30 à 14h30** Shovel 320 builds the mini dike and profile the ditch.
- **14h30 à 18h30** Bulldozer 39px places the 0-20mm crushed stone.
- **14h30 à 18h30** Truck CAT 740 places the 0-20mm crushed stone.

Comments :

- Survey of a load of 0-20mm crushed stone to confirm the volume. Recalculation of the volumes with 16.3m³/load.

	2013-07-15		2013-07-16		2013-07-17		2013-07-20		Cumulative	
	load	volume	load	volume	load	volume	load	volume	load	volume
Muck quarry 1	24	391,2	34	554,2	14	228,2			72	1173,6
0-3/4" BLCS		0		0	15	244,5	7	114,1	15	407,5

- Photo #1 – There is frost in the north ditch that prevent the excavation to the desired elevation.

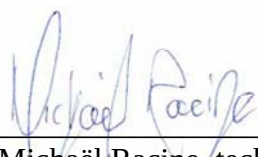


- Photo #2 – A bit of water on the pad because of the ditch that is too high. No instability.



- Photo #3 – Placing the 0-20mm crushed stone.



Par : 
Michaël Racine, tech.

Richard Marcoux, ing.
No OIQ : 38724
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-21
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-08
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	8 à 18°C Wind : 5 à 10 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	0
Shovel CAT 320	FGL	9
Bulldozer Komat'su 39px	FGL	2
Operator	FGL	12
Surveyor	FGL	12
Roller compacter Hamm 3625	FGL	2
Truck CAT 740	BLCS	48.9 m3
Bulldozer CAT D6T (DOZ09)	AEM	0
Field inspector	Stavibel	12

- **6h30 à 15h30** Shovel 320 builds the dike, builds the access road and places the concrete blocks for the pump house.
- **15h30 à 17h30** Bulldozer 39px places the 0-20mm crushed stone.
- **17h30 à 18h30** Shovel 320 digs the ditch.
- **15h30 à 17h00** Truck CAT 740 hauls the 0-20mm crushed stone.

Comments :

- Volumes of material hauled by BLCS :

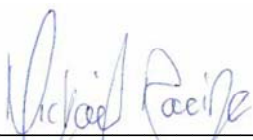
	2013-07-15		2013-07-16		2013-07-17		2013-07-20		2013-07-21		Cumulative	
	load	volume	load	volume	load	volume	load	volume	load	volume	load	volume
Muck quarry 1	24	391,2	34	554,2	14	228,2					72	1173,6
0-3/4" BLCS		0		0	15	244,5	7	114,1	3	48,9	15	407,5

- Photo #1 – Placing the 0-20mm crushed stone. All the 0-20mm is on the field at the end of the day.



- Photo #2 – Excavation of the north ditch at the good elevation to drain the pad infra.



Par : 
Michael Racine, tech.

Richard Marcoux, ing.
No OIQ : 38724
Project manager

Title of project : Baker Lake Jet-A Fuel Farm	Date : 2013-07-22
Project # : OP-84541-J /VD3356	Doc #: VD3356-003-RV-09
Prepared by : Michaël Racine	Contractor : Fernand Gilbert Ltée
Verified by : Richard Marcoux, ing.	Temperature : 8 à 15°C Wind : 5 à 10 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	0
Shovel CAT 320	FGL	2.5
Bulldozer Komat'su 39px	FGL	0
Operator	FGL	5.5
Surveyor	FGL	5.5
Roller compactor Hamm 3625	FGL	0
Field inspector	Stavibel	12

- **16h à 18h30** Shovel 320 digs the ditch around the pad.

Comments :

- Cross shift. No activity on the field before 16h. I make a roundtrip to Meadowbank to go get the new operator and surveyor.
- Volumes of material hauled by BLCS :

	2013-07-15	2013-07-16	2013-07-17	2013-07-20	2013-07-21	Cumulative
	load volume	load volume	load volume	load volume	load volume	load volume
Muck quarry 1	24 391,2	34 554,2	14 228,2			72 1173,6
0-3/4" BLCS	0	0	15 244,5	7 114,1	3 48,9	15 407,5

- Photo #1 – Excavation of the north ditch to the frost. There is a groundwater artery.



Par :


Michaël Racine, tech.

Richard Marcoux, ing.
No OIQ : 38724
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-23
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-10
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	8 à 15°C Wind : 5 à 10 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	0
Shovel CAT 320	FGL	9
Bulldozer Komat'su 39px	FGL	1
Operator	FGL	12
Surveyor	FGL	12
Roller compactor Hamm 3625	FGL	5
Truck CAT 740	BLCS	32.6 m3
Field inspector	Stavibel	12

- **6h30 à 11h** Shovel 320 places the 0-20mm crushed stone.
- **8h à 9h** Truck CAT 740 hauls the 0-20mm crushed stone.
- **11h à 12h** Bulldozer 39px places the 0-20mm crushed stone.
- **12h à 15h** Shovel 320 finishes the mini dike and builds the key for the membrane.
- **15h à 18h30** Shovel 320 builds the access road for the pump house.

Comments :

- Volumes of material hauled by BLCS :

	2013-07-15		2013-07-16		2013-07-17		2013-07-20		2013-07-21		2013-07-23		Cumulative	
	load	volume	load	volume	load	volume	load	volume	load	volume	load	volume	load	volume
Muck 0-3/4"	24	391,2	34	554,2	14	228,2							72	1173,6
					15	244,5	7	114,1	3	48,9	2	32,6	15	440,1

- Photo #1 – Overview of the pond ready for the geotextile and the bituminous geomembrane.



- Photo #2 – Small key trench for the membrane.



- Photo #3 – Construction of the access road for the pump house.



- Photo #4 – Arrival of 11 tanks of 100 000L and 2 tanks of 50 000L on the barge.



Par :


Michaël Racine, tech.

Richard Marcoux, ing.
No OIQ : 38724
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-24
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-11
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	15 à 23°C Wind : 5 à 20 km/h

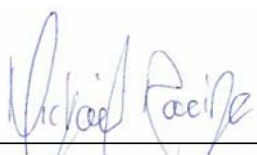
Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	0
Shovel CAT 320	FGL	0
Bulldozer Komat'su D39px	FGL	1
Operator	FGL	12
Surveyor	FGL	12
Roller compactor Hamm 3625	FGL	0
3 labours	FGL	4
2 membrane installers	Texcel	3.5
Shovel CAT 307	AEM	4.5
Field inspector	Stavibel	12

- **6h30 à 7h30** Stand by
- **7h30 à 12h** Shovel 307 cleans the membrane in prevision of the reparations between the existing diesel tanks #1 and 2.
- **8h à 12h** 3 labours place the crushed stone 0-20 mm crushed stone to make sure the foundation for the bituminous geomembrane is flat.
- **17h à 18h** Bulldozer 39px places the 0-20mm crushed stone on the access road for the pump house.

Comments:

- The membrane installers arrive at 15h.

Par : 
Michaël Racine, tech.

Richard Marcoux, ing.
No OIQ : 38724
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-25
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-12
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	15 à 24°C Wind : 5 à 20 km/h

Object : Contractor's schedule (approximative hours)

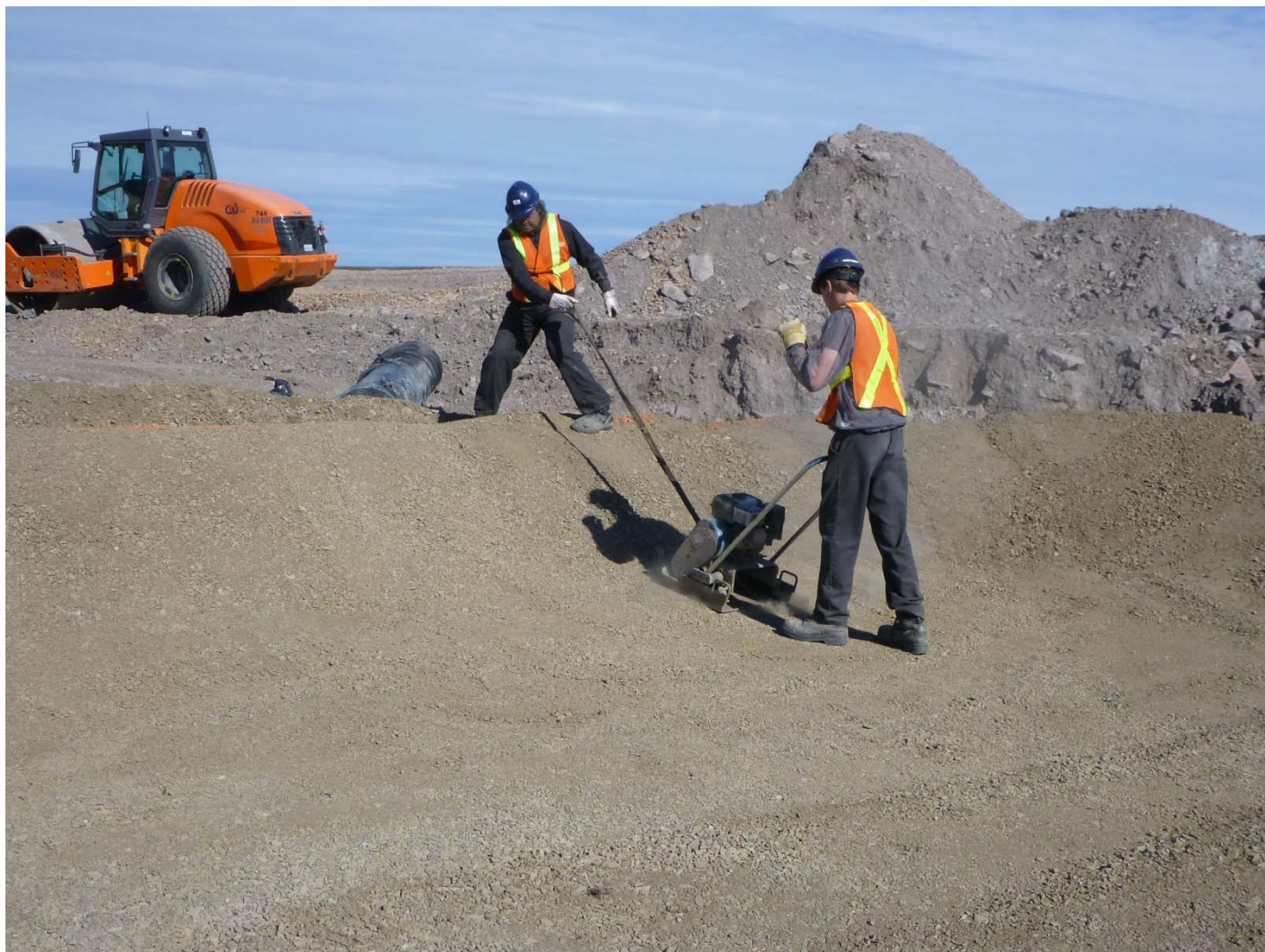
Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	9
Shovel CAT 320	FGL	0
Bulldozer Komat'su 39px	FGL	0
Roller compactor Hamm 3625	FGL	0
Operator	FGL	12
Surveyor	FGL	12
3 Labours	FGL	12
Vibratory plate (small)	BLCS	1 jour
2 membrane installers	Texcel	12
Field inspector	Stavibel	12

- **6h30 à 11h30** Shovel 365 places the geotextile and failed attempt for the installation of the bituminous geomembrane.
- **11h30 à 16h30** Stand by
- **16h30 à 20h** Shovel 365 places the bituminous geomembrane.

Comments :

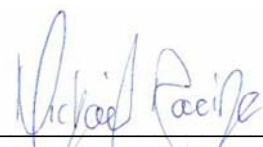
- Impossible to place the membrane with the membrane rack available. Waiting for the rack with bearings to roll out the membrane from 11h30 to 16h30. The wasted time is caught up after souper.

- Photo #1 – Compaction of the slopes with the vibratory plate to avoid rock punching in the membrane.



- Photo #2 – Placing the geotextile and the bituminous geomembrane.



Par : 
Michaël Racine, tech.

Richard Marcoux, ing.
No OIQ : 38724
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-26
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-13
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	15 à 26°C Wind: 5 à 20 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	4.5
Shovel CAT 320	FGL	0
Bulldozer Komat'su 39px	FGL	0
Roller compactor Hamm 3625	FGL	0
Operator	FGL	12
Surveyor	FGL	12
3 labours	FGL	12
2 membrane installers	Texel	12
Field inspector	Stavibel	12

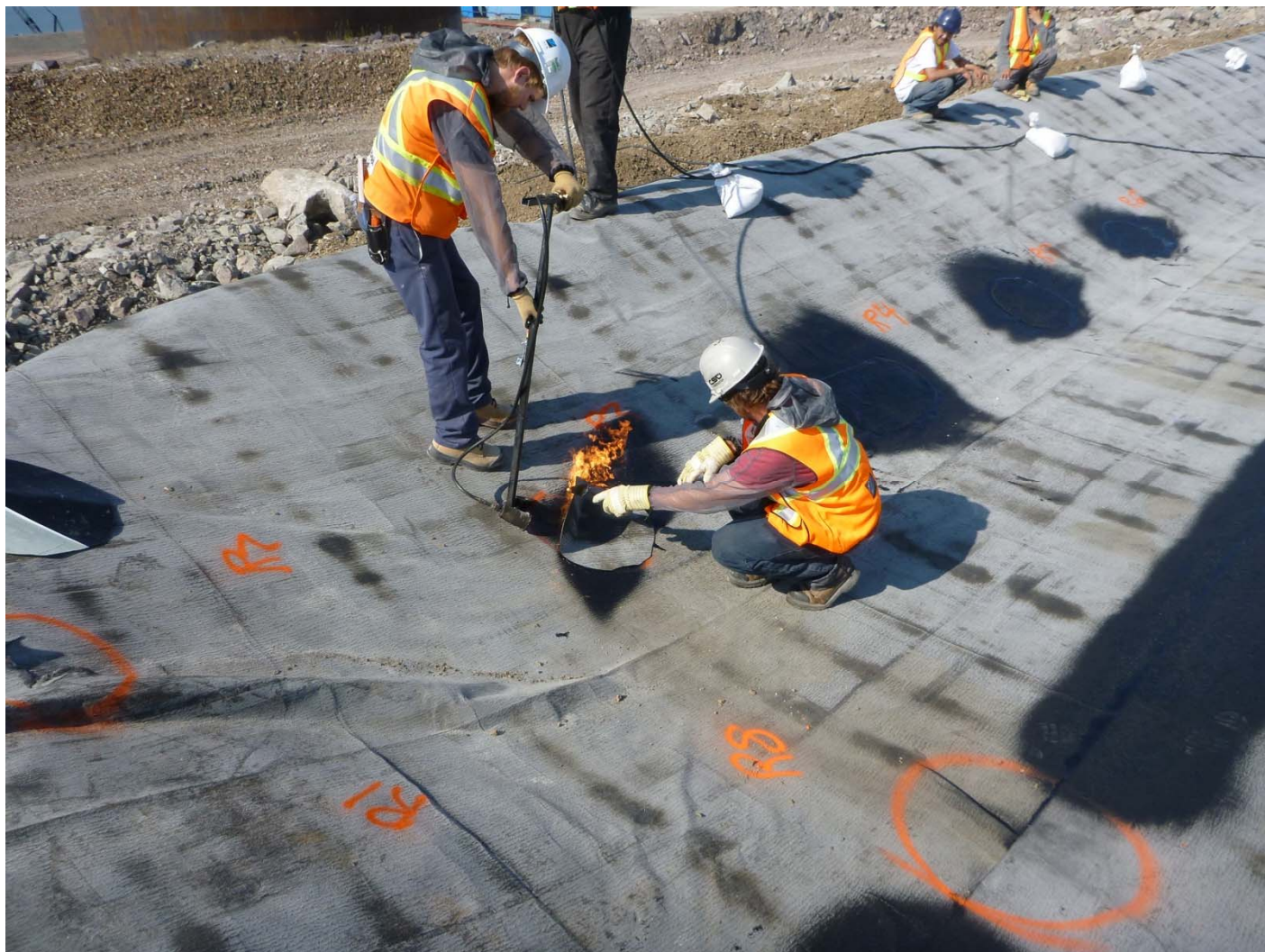
- **6h30 à 18h30** 4 labours (FGL) et 2 labours (Texcel) place the bituminous geomembrane.
- **6h30 à 9h** Shovel 365 places the bituminous geomembrane.
- **9h à 12h** Shovel 320 works on another project for the diesel fuel tanks.
- **13h à 15h** Shovel 365 places the bituminous geomembrane.
- **15h à 16h** Shovel 320 works on another project for the diesel fuel tanks.
- **16h à 18h30** Shovel 365 places the bituminous geomembrane.

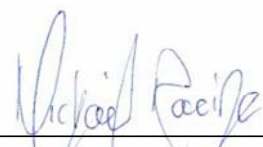
Comments :

- Photo #1 – Placing the bituminous geomembrane with a geotextile under.



- Photo #2 – Reparation of hole in the bituminous geomembrane.



Par : 
Michaël Racine, tech.

Richard Marcoux, ing.
No OIQ : 38724
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-27
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-14
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	15 à 23°C Wind : 0 à 10 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	5.5
Shovel CAT 320	FGL	0
Bulldozer Komat'su 39px	FGL	0
Roller compactor Hamm 3625	FGL	0
Operator	FGL	12
Surveyor	FGL	12
3 Labours	FGL	4
Generator 6000 W	BLCS	1 jour
Truck Cat 740	BLCS	55.2 m3
2 membrane installers	Texel	6.5
Field inspector	Stavibel	12

- **6h30 à 12h** Shovel 365 et 2 labours (Texcel) place the bituminous geomembrane.
- **6h30 à 10h30** 3 labours (FGL) place the bituminous geomembrane.
- **13h à 15h** 2 labours (Texcel) test the resistance of the welds in the bituminous geomembrane.
- **13h à 18h30** Operator and surveyor (FGL) stand by.
- **17h à 18h30** Truck CAT 740 hauls the 0-20mm crushed stone.

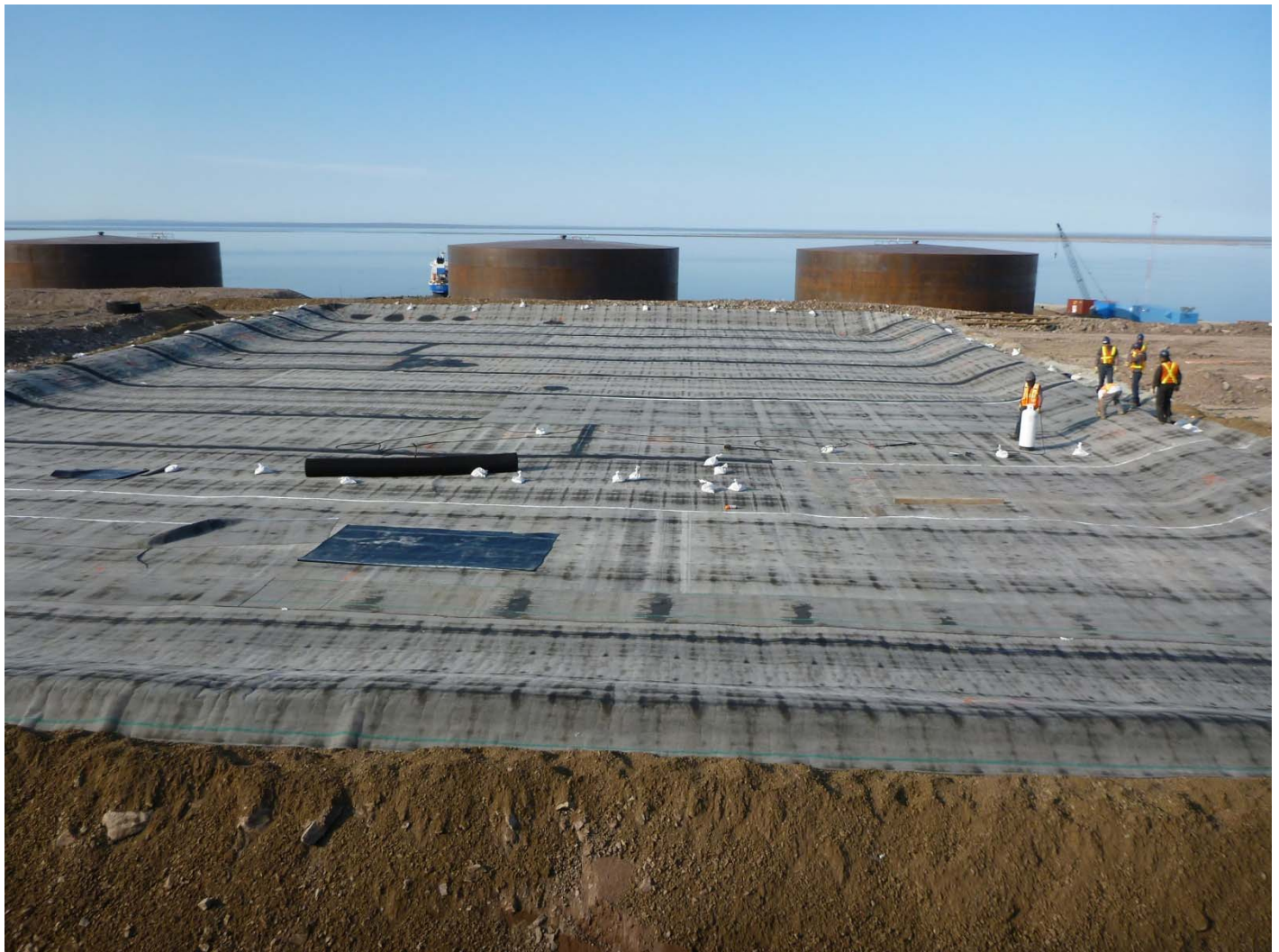
Comments :

- Inspection of the membrane.
- The 0-20 mm crushed stone produce by BLCS for the pad above the bituminous geomembrane is non- compliant. It contains particules up to 1-1/2". The material is rescreened and the placing of the 0-20 mm crushed stone begins at the end of the day.
- I inspect the membrane before filling above to make sure that no hole and no punching remains. Small rocks are detected under the membrane. Pieces of membrane are added on it.

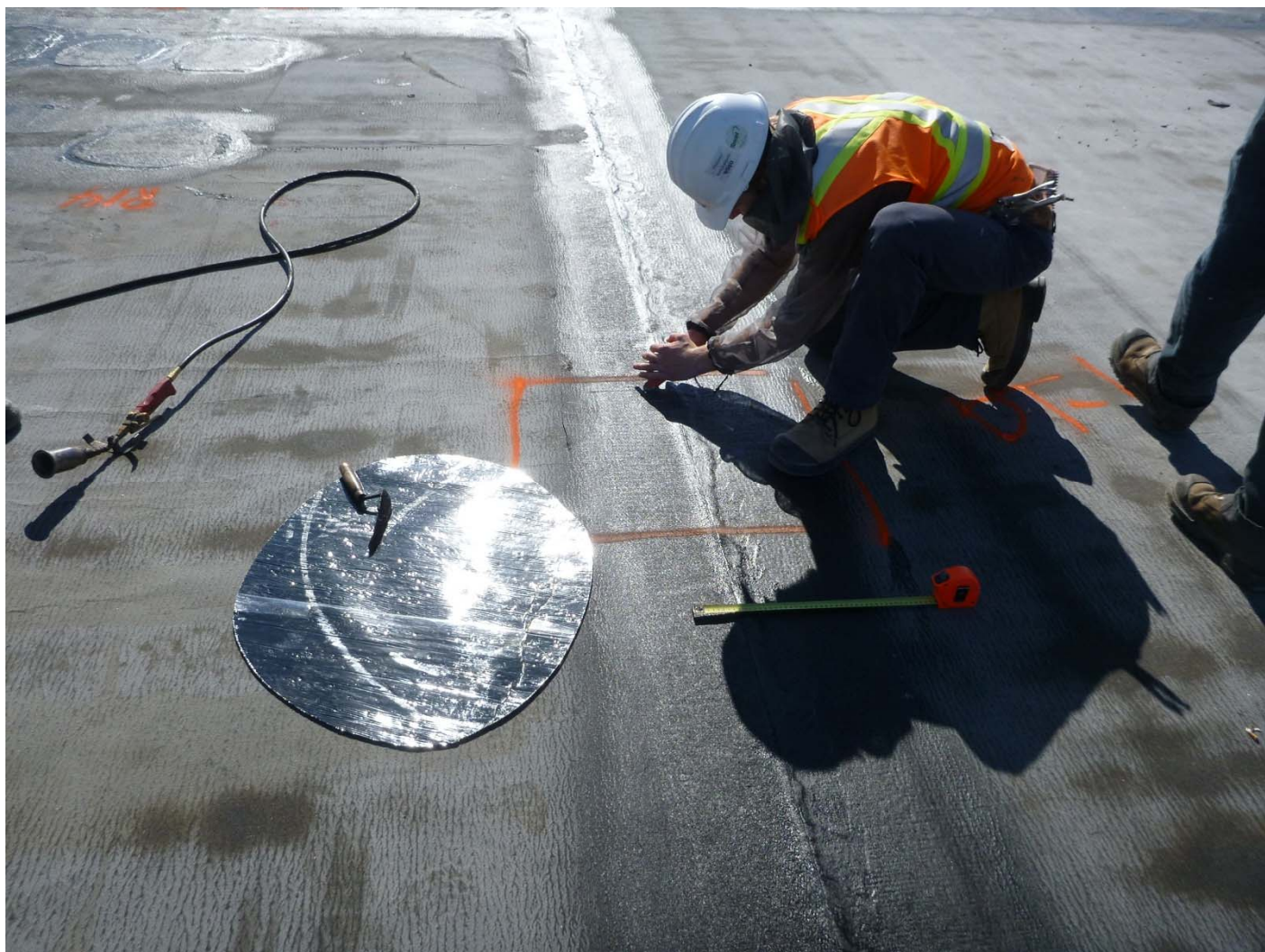
- Survey of a load of 0-20 mm crushed stone. The result is 18.4 m³/load. Here are the corrected quantities according to this new volume:

	0-3/4"		Muck quarry 1	
	load	volume (m3)	load	volume (m3)
2013-07-15			24	441,6
2013-07-16			34	625,6
2013-07-17	15	276	14	257,6
2013-07-20	7	128,8		
2013-07-21	3	55,2		
2013-07-23	2	36,8		
2013-07-27	3	55,2		
Cumulative	30	552	72	1324,8

- Photo #1 – Installing the bituminous geomembrane with a geotextile under.



- Photo #2 – Sampling of Colétanche in place to test the welds resistance with the tensometer. The results are compliant according to the Texel membrane installers.





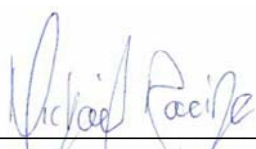
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**RAPPORT DE VISITE DE
CHANTIER**



- Photo #3 – Inspection of the membrane. Small prominent rocks (10mm and less) are detected at some place under the membrane. A second thickness of colétanche is added on these spots to make sure there will not be any punching.



Par : 
Michaël Racine, tech.

Richard Marcoux, ing.
No OIQ : 38724
Project manager

Title of project : Baker Lake Jet-A Fuel Farm	Date : 2013-07-28
Project # : OP-84541-J /VD3356	Doc #: VD3356-003-RV-15
Prepared by : Michaël Racine	Contractor : Fernand Gilbert Ltée
Verified by : Richard Marcoux, ing.	Temperature : 15 à 23°C Wind : 0 à 10 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	8
Shovel CAT 320	FGL	0
Bulldozer Komat'su 39px	FGL	2
Roller compactor Hamm 3625	FGL	0
Operator	FGL	12
Surveyor	FGL	12
Truck Cat 740	BLCS	239.2 m3
Shovel Cat 307	AEM	1
Field inspector	Stavibel	12

- **6h30 à 18h30** Shovel 365, Shovel 320 et Bulldozer 39px (alternating) place the 0-20mm crushed stone on the bituminous geomembrane.
- **8h à 18h30** Truck CAT 740 hauls the 0-20mm crushed stone.

Comments :

- After comparison of the specs of the shovel CAT 307 and the bulldozer Komat'su 39px, we decide to use the bulldozer instead of the shovel 307. The ground pressure is 33.34 kPa (with the bulldozer) instead of 32.3 kPa (with the shovel).
- Big waiting time for the BLCS material. Only 1 truck. Around 2 loads/hour.

- Summary of the volumes hauled by BLCS (18.4 m³/load) :

	0-3/4"		Muck quarry 1	
	load	volume (m3)	load	volume (m3)
2013-07-15			24	441,6
2013-07-16			34	625,6
2013-07-17	15	276	14	257,6
2013-07-20	7	128,8		
2013-07-21	3	55,2		
2013-07-23	2	36,8		
2013-07-27	3	55,2		
2013-07-28	13	239,2		
Cumulative	43	791,2	72	1324,8

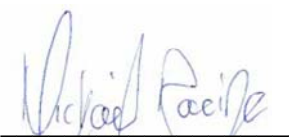
- Photo #1 – Screening of the 0-20mm and loading of the trucks at the Nuna Pad (BLCS).



- Photo #2 – Placing the 0-20mm above the bituminous geomembrane. A geotextile is place before.



Par :


Michaël Racine, tech.

Richard Marcoux, ing.
No OIQ : 38724
Project manager

Title of project : Baker Lake Jet-A Fuel Farm	Date : 2013-07-29
Project # : OP-84541-J /VD3356	Doc #: VD3356-003-RV-16
Prepared by : Michaël Racine	Contractor : Fernand Gilbert Ltée
Verified by : Richard Marcoux, ing.	Temperature : 15 à 17°C Wind : 20 à 30 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	7.5
Shovel CAT 320	FGL	0
Bulldozer Komat'su 39px	FGL	3.5
Rolle compactor Hamm 3625	FGL	0
Operator	FGL	12
Surveyor	FGL	12
Truck Cat 740	BLCS	257.6 m3
Shovel Cat 307	AEM	0
Field inspector	Stavibel	12

- **6h30 à 18h30** Shovel 365 et Bulldozer 39px (alternating) place the 0-20mm on the bituminous geomembrane.
- **7h à 18h30** Camion CAT 740 hauls the 0-20mm.

Comments :

- Big waiting time for the BLCS material. Only 1 truck. About 40 minutes between loads.
- The BLCS crusher is out of use. The 0-20mm will be make entirely by the screener.

- Summary of the volumes hauled by BLCS (18.4 m³/load) :

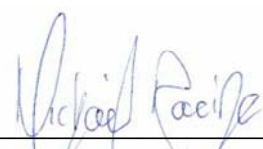
	0-3/4"		Muck quarry 1	
	load	volume (m3)	load	volume (m3)
2013-07-15			24	441,6
2013-07-16			34	625,6
2013-07-17	15	276	14	257,6
2013-07-20	7	128,8		
2013-07-21	3	55,2		
2013-07-23	2	36,8		
2013-07-27	3	55,2		
2013-07-28	13	239,2		
2013-07-29	14	257,6		
Cumulative	57	1048,8	72	1324,8

- Photo #1 – Lot of particules bigger than 20mm in the 0-20mm brought by BLCS. We advise BLCS to check the screener. Indeed, there was a gap on the side of the screen because of a missing inner bar. After the reparation of the screener, there is still presence of particules up to 100mm in the material from an unknow source. We remove them by hand on the field, but there is still a lot of rocks around 1 1/2" big.



- Photo #2 – Placing the 0-20mm above the bituminous geomembrane. A geotextile is placed before.



Par : 
Michaël Racine, tech.

Richard Marcoux, ing.
No OIQ : 38724
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-30
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-17
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	15 à 17°C Wind : 20 à 30 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	7
Shovel CAT 320	FGL	0
Bulldozer Komat'su 39px	FGL	4
Roller compactor Hamm 3625	FGL	0
Operator	FGL	12
Surveyor	FGL	12
Truck Cat 740	BLCS	202.4 m3
Shovel Cat 307	AEM	0
Field inspector	Stavibel	12

- **6h30 à 18h30** Shovel 365 and Bulldozer 39px (alternating) place the 0-20mm on the bituminous geomembrane.
- **8h à 18h00** Truck CAT 740 hauls the 0-20mm.

Comments :

- Big waiting time for the BLCS material. Only 1 truck. About 40 minutes between loads.
- The BLCS crusher is out of use. The 0-20mm will be make entirely by the screener.
- Taking of 2 samples of 0-20mm on the field and 1 more sample in the BLSC stockpile at the Nuna Pad.

- Summary of the volumes hauled by BLCS (18.4 m³/load) :

	0-3/4"		Muck quarry 1	
	load	volume (m3)	load	volume (m3)
2013-07-15			24	441,6
2013-07-16			34	625,6
2013-07-17	15	276	14	257,6
2013-07-20	7	128,8		
2013-07-21	3	55,2		
2013-07-23	2	36,8		
2013-07-27	3	55,2		
2013-07-28	13	239,2		
2013-07-29	14	257,6		
2013-07-30	11	202,4		
Cumulative	68	1251,2	72	1324,8

- Photo #1 – I measured the mesh size of the BLCS screener. The opening of 30mm explain the presence of particules higher than 20 mm. BLCS affirmed that they don't have a smaller screen on July 27th when they change the screen. Also, there is still several rocks up to 100 mm in the 0-20 mm. We remove them by hand on the field.

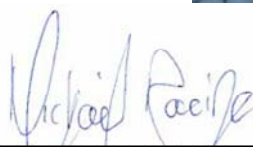


- Photo #2 – Placing the 0-20mm above the bituminous geomembrane. A geotextile is placed before.



- Photo #3 – Compaction test with the roller compacter Hamm 3625 on low vibration directly on the 0-20mm uncompacted and without any covering above. Not any hole nor any deformation are noticed on the bituminous geomembrane. The decision is taken to use the roller compactor for the compaction of the pad above the Colétanche membrane.



Par : 
Michaël Racine, tech.

Richard Marcoux, ing.
No OIQ : 38724
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-31
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-18
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	15 à 17°C Wind : 20 à 30 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	5
Shovel CAT 320	FGL	4.5
Bulldozer Komat'su 39px	FGL	1.5
Roller compactor Hamm 3625	FGL	2
Operator	FGL	12
Surveyor	FGL	12
Truck Cat 740	BLCS	33.8 m3
Water tanker	Hamlet	2
Shovel Cat 307	AEM	0
Field inspector	Stavibel	12

- **6h30 à 10h** Shovel 365 and Bulldozer 39px (alternating) place the 0-20mm on the bituminous geomembrane.
- **8h30 à 10h30** Water tanker moistens the 0-20mm using a total of 15234 L of water.
- **10h30 à 13h30** Compactor compacts the pad of 0-20mm.
- **10h à 14h** Shovel 365 moves the contaminated stockpile to profile better the ditch.
- **14h à 18h30** Shovel 320 backfills the small key trench for the bituminous geomembrane and installs a steel pipe for the electric wire feeding the pump house..

Comments :

- Departure of the field inspector (myself) on August 1st around 7h.

- Survey of 42 loads of 0-20mm in place uncompacted. Here is the summary of the volumes haules by BLCS (estimate with an average of 16.9 m³/load) :

	0-3/4"		Muck quarry 1	
	load	volume (m3)	load	volume (m3)
2013-07-15			24	405,6
2013-07-16			34	574,6
2013-07-17	15	253,5	14	236,6
2013-07-20	7	118,3		
2013-07-21	3	50,7		
2013-07-23	2	33,8		
2013-07-27	3	50,7		
2013-07-28	13	219,7		
2013-07-29	14	236,6		
2013-07-30	11	185,9		
2013-07-31	2	33,8		
Cumulative	70	1183	72	1216,8

- Photo #1 – Moistening and compaction of the 0-20mm. Compaction: 2 static passes, 1 vibratory pass in each direction and 2 last static passes.

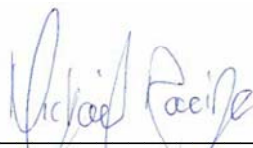


- Photo #2 – Installation of a steel pipe with a rope inside in prevision of passing the electric wire to the pump house.



- Photo #3 – Overview of the second containment system ready to take the Jet-A tanks.



Par : 
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