MEADOWBANK GOLD PROJECT

# Baker Lake Bulk Fuel Storage Facility: Environmental Performance Monitoring Plan

In Accordance with Water License 2AM-MEA1530

Prepared by:
Agnico Eagle Mines Limited – Meadowbank Complex

Version 6
January 2022

# EXECUTIVE SUMMARY

Agnico Eagle Mines Limited – Meadowbank Complex (Agnico Eagle) is currently operating the Meadowbank Gold Project approximately 70 km north of the Hamlet of Baker Lake. Agnico Eagle is also operating the Amaruq property, approximately 150 kilometers (km) north of the hamlet of Baker Lake and approximately 50 km northwest of Meadowbank Mine, in the Kivalliq Region of Nunavut. The Whale Tail deposit is being mined and ore is hauled by truck to the approved infrastructure at Meadowbank Mine for milling. Agnico Eagle received approval on January 2019 to add two (2) 10 million liters diesel fuel storage tanks to the Marshalling Area Bulk Fuel Storage Facility in Baker Lake. Agnico has since built and commissioned the two approved tanks. In 2019, one of the approved tanks (Tank 7) was added to the facility, and in 2021, the second approved tank (Tank 8) was added to the facility. As part of the project, a total of eight (8) 10 million litres fuel storage tanks for diesel and eighteen (18) 100,000L fuel storage tank for Jet-A will receive and store bulk shipments of fuel for the Meadowbank Project at the Baker Lake Marshalling Area. Two (2) 100,000L fuel storage tank for Jet-A are scheduled to be re-added the system in 2022 as approved by the Water License.

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-MEA1530, Part B, Item 11, the proposed implementation schedule for this Plan is outlined below.

This Plan will be immediately implemented (January 2022) 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 – Superintendent of Environment and Critical Infrastructures

Agnico Eagle – Environment General Supervisor

Agnico Eagle – Environmental Coordinator

Agnico Eagle – Environmental Technician

Agnico Eagle – Energy and Infrastructures Superintendent

# DOCUMENT CONTROL

| Version | Date (YMD) | Section | Page | Revision |
|---|---|---|---|---|
| 1 | 2009/12/22 | | | Comprehensive plan for Baker Lake Bulk Fuel Storage Facility |
| 2 | 2011/12/13 | | | Update all items related to the Baker Lake Fuel Storage Installations: Final Report of Phase 3 (2010) |
| 3 | 2014/06/30 | | | Add Jet-A Tank information and 2014 comprehensive review |
| 4 | 2018/08/16 | | | Text updated to reflect proposal to add 2 diesel fuel tanks. |
| 5 | 2020/01/17 | 1 | | Add Tank 7 information |
| | | 2 | | Deleted as it's a duplicate of Section 4 and 5.1 |
| | | Figure 1-2 | | Update Figure to add Tank 7 information + |
| | | 3 | | Adjust condition Part H Item 4 as per the Water License |
| | | 4.1 | | Add Tank 7 information |
| | | 5.1 | | Update with current monitoring / inspection |
| | | 6 | | Update reference section |
| 6 | 2022/01/17 | 1 | | Add Tank 8 information |
| | | Figure 1-1 | | Update Figure |
| | | 3 | | Adjust conditions to align with section numbers in Water License 2AM-MEA1530 |
| | | 4.1 | | Add Tank 8 information |
| | | 5.1 | | Updated inspection frequency during summer and Freshet |
| | | 6 | | Added Tank 8 construction summary to references. |

Prepared By: Environmental Department

Approved by:

Alexandre Lavallee
Superintendent of Environment and Critical Infrastructures

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# SECTION 1. INTRODUCTION

Agnico Eagle Mines Limited – Meadowbank Complex (Agnico Eagle) is currently operating the Meadowbank Gold Project approximately 70 km north of the Hamlet of Baker Lake. Agnico Eagle is also operating the Amaruq property, approximately 150 kilometers (km) north of the hamlet of Baker Lake and approximately 50 km northwest of Meadowbank Mine, in the Kivalliq Region of Nunavut. The Whale Tail deposit is being mined and ore is hauled by truck to the approved infrastructure at Meadowbank Mine for milling.

The Baker Lake Bulk Fuel Storage Tank Facility is located east of the hamlet of Baker Lake, on the north shore of Baker Lake. The GPS coordinates of these facilities is NAD 83 15W E 356874 N 7134486. A general site location is provided in Figure 1.1. A site layout of the infrastructure and tanks is provided in Figure 1.2.

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, two (2) more 10 million liters bulk fuel storage tank (#5 and #6) were constructed in 2010. This amendment also permitted the construction, in 2013, of Jet A Fuel tanks.

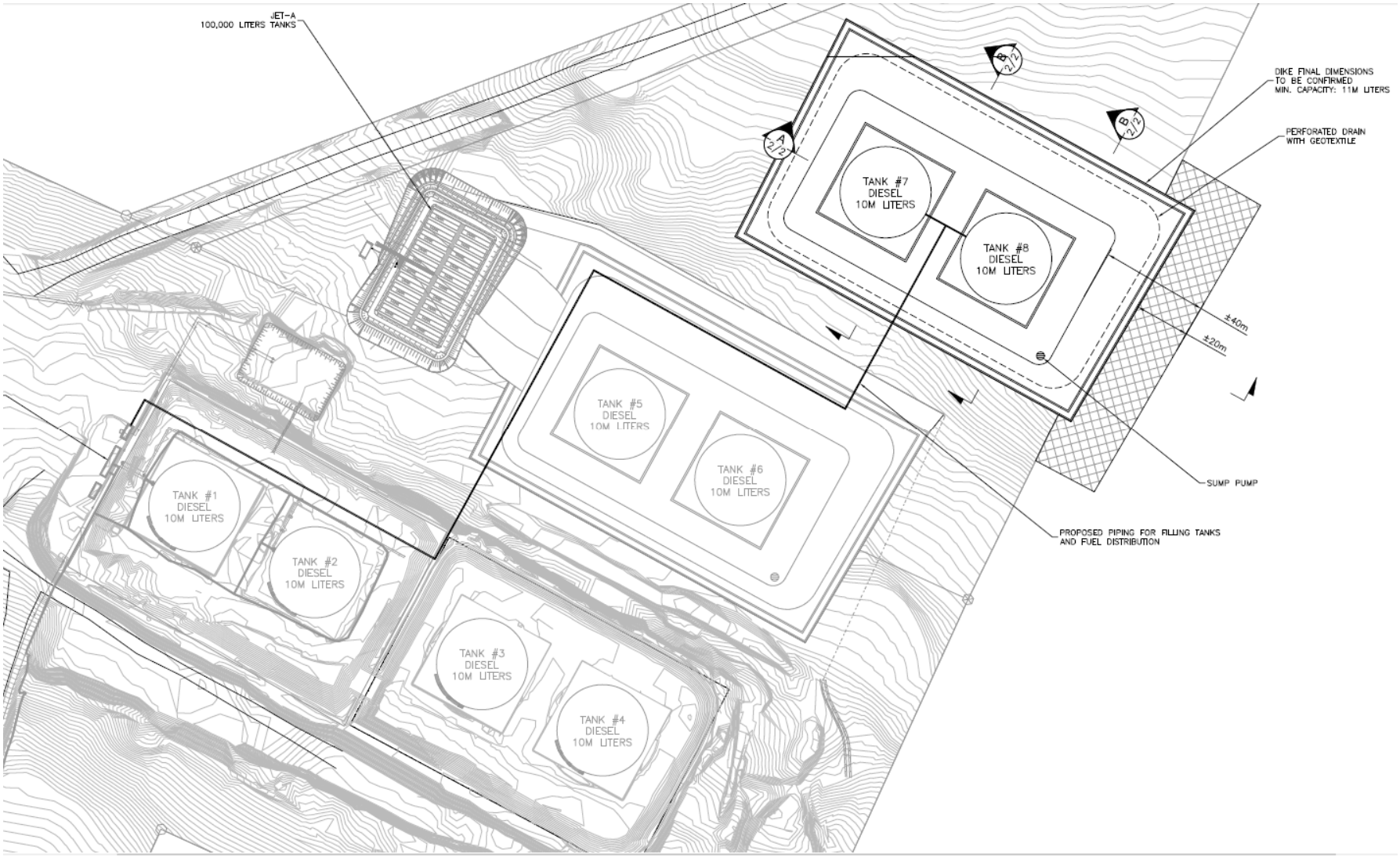
Following a modification to the Water License 2AM-MEA1526, Agnico Eagle received approval in January 2019, to add two (2) 10 million liters diesel fuel storage tanks to the Marshalling Area Bulk Fuel Storage Facility in Baker Lake. In 2019, Agnico has built and commissioned one of the two approved tanks (Tank 7), and in 2021, the second approved tank (Tank 8) was added to the Fuel Storage Facility.

As part of the project, a total of eight (8) 10 million litres fuel storage tanks for diesel and eighteen (18) 100,000L fuel storage tank for Jet-A will receive and store bulk shipments of fuel for the Meadowbank Project at the Baker Lake Marshalling Area. Two (2) 100,000L fuel storage tank for Jet-A are scheduled to be re-added the system in 2022 as approved by the Water License.

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.

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

**Figure 1-2: Baker Lake Bulk Fuel Storage Facility Site Layout**



# SECTION 2. ENVIRONMENTAL SETTING

## 2.1 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.

## 2.2 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.

## 2.3 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.

## 2.4 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.

## 2.5 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 3. NWB TYPE A WATER LICENSE CONDITIONS

The Nunavut Water Board (NWB) Type A Water License 2AM-MEA1530 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

9. The Discharge of Effluent to land from fuel containment facilities at the Baker Lake Bulk Fuel Storage Facility and Meadowbank Fuel Storage Facility (Monitoring Program Stations 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 and Diamond Mines Effluent Regulations (MDMER)

10. The Licensee shall, under Part F, Item 9, discharge Effluent in such a manner as to minimize surface erosion at a distance of at least thirty-one (31) meters 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.

12. The Licensee shall confirm compliance with Effluent quality limits in Part F, Items 3, 4, 5, 7 and 9 prior to Discharge.

13. 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 Licensee shall prevent any chemicals, petroleum product or unauthorized Wastes associated

with the project from entering Water.

3. The Licensee shall provide secondary containment for fuel and chemical storage as required by applicable standards and acceptable industry practice

4. The Licensee shall perform weekly inspections of petroleum products storage and containment facilities, fuel tanks and connectors, for leaks and settlement and shall keep a written log of inspections to be made available to an Inspector upon request. More frequent inspections may be requested by an Inspector.

# SECTION 4. 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 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.

## 4.1 DESK-TOP REPORT REVIEW

The installation/construction reports (Agnico Eagle, 2009a, b; Agnico Eagle, 2010; Agnico Eagle 2011, Agnico Eagle 2020, Agnico Eagle 2021 for diesel tanks 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.

During the summer of 2007, Agnico Eagle built bulk fuel tanks #1 and #2. Under the supervision of Hatch Engineering, the construction of the secondary containment berm 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. Tanks were commissioned in 2007.

Bulk fuel storage tanks #3 and #4 were completed in October 2008. 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 and #4 under the supervision of Luc Croisetière and Agnico Eagle. Works were completed for these tanks in July 2009 and tanks were commissioned the same year.

Bulk fuel storage tank #5 and #6 were completed in October 2010. 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. Tanks were commissioned the same year.

Construction of the bulk fuel storage tank #7 was completed in September 2019. Under the supervision of Agnico Eagle the secondary containment berms were constructed. The HDPE membrane liner was installed and tested by Geosynthetiques ZTG Inc. for bulk fuel storage tank #7.

Under the supervision of Agnico Eagle, construction of the bulk fuel storage tank #8 was completed in September 2021. Piping installation work associated with the tank system was finalized in October 2021.

All of the aboveground storage tanks were field erected. For the diesel tanks, construction activity was supervised by Hatch Engineering, Stavibel Engineering and Agnico Eagle and included qualified steel fabricators and installers. Following the diesel tank construction, X-Ray testing of horizontal and vertical welds was completed. For tanks #7 and #8, to attest welds quality, inspectors relied on visual inspection, magnetic particulate tests and high penetration oil tests. All of the welds met the specifications outlined in the API Standard 650 (Agnico Eagle, 2009a, b, 2020, 2021).

In 2013, the Jet-A tanks, the secondary containment enclosure and installation of the HDPE liner in accordance with CCME (2003) specifications was completed and commissioned. Stavibel Engineering provided the design, planning and construction oversight related to the installation of infrastructure of Agnico Eagle's Jet A Fuel Storage facility which consists of 100,000 liters double walled tanks, associated piping and pumping systems and secondary requirement. SM Construction had installed the Jet-A tanks and Texcel was hired in July 2013 to install the HDPE secondary containment membrane liner. After construction, all tanks were cleaned and washed inside and pressure tests were performed as per specifications.

A secondary containment volume calculation 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.

## 4.2 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 as per requirement of the Water Licence.

## 4.3 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.

### 4.3.1 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.

### 4.3.2 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).

### 4.3.3 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 5. 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.

## 5.1 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.

Inspections are logged and reported by the Environmental Department, these are conducted on a weekly basis and increased to a twice weekly frequency during Freshet and summer months. Monthly inspections are also conducted by the Energy and Infrastructure Department. Inspection of the facilities included: 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.

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

An annual geotechnical inspection is also conducted annually by a third party to evaluate the site drainage, secondary containment and performed an environmental assessment of the bulk fuel storage facility. Corrective action/ maintenance may be necessary following the inspection to ensure optimal performance of the facility. 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 is significantly reduced. The fuel transfer from ship to shore is detailed in the Oil Pollution Emergency Plan and Oil Pollution Prevention Plan (OPEP/OPPP) and the Product Transfer Area Assessment – Baker Lake Oil Handling Facility found in Spill Contingency Plan Appendix. In the case of a spill, the spill contingency plan and the OPEP/OPPP will be followed.

## 5.2 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 in Section 3 above prior to its release into the terrestrial environment. During water discharge, piping will be directed onto the nearby tundra at least 31 m above the ordinary High Water 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. When water withdrawal is deemed necessary, water samples will be collected and analyzed for the parameters: pH, Total Arsenic, Total Copper, Total Lead, Total Nickel, Total Zinc, Total Suspended Solids, Ammonia, Benzene, Toluene, Ethylbenzene, Xylene, and Oil and Grease. If the contact water exceeds the licensed limits detailed in Section 3 above, the portable oil-water separator will be used to treat the water prior to discharge to the receiving environment or water will be pumped and disposed at the Meadowbank Tailings Storage Facility or Stormwater Management Pond. 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). 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.

## 5.3 EVENT MONITORING

In the event of a spill occurrence at the bulk fuel storage facility, the spill contingency plan and the OPEP/OPPP will be followed. 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.

### 5.3.1 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 5.3.3 below).

### 5.3.2 Water Sampling

Following a spill event, an environmental assessment could be conducted. Similar to routine contact water sampling (inside the secondary containment area), 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, Benzene, Toluene, Ethylbenzene, Xylene, and Oil and Grease.

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

### 5.3.3 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 industrial standard levels outlined in 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 6. 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.

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

Agnico Eagle (2020). Construction Summary Report: Baker Lake Fuel Storage Tank 7 and Containment Facilities. January 2020.

Agnico Eagle (2021). Construction Summary Report: Baker Lake Fuel Storage Tank 8. December 2021.

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.

# 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 :**


**Patrick Giard**, P.Eng., CCE
Supervisor, Construction Department
AGNICO-EAGLE MINES LTD, *Meadowbank Division*

# 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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# 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 |
|---|---|
| **Secondary Containment Requirement** | **11 563 m3** |
| 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 | | | 6171 |
| 32.96 | 0.96 | 71.7 | 109.2 | 7826.31 | **slope ratio E-W** | | 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** |

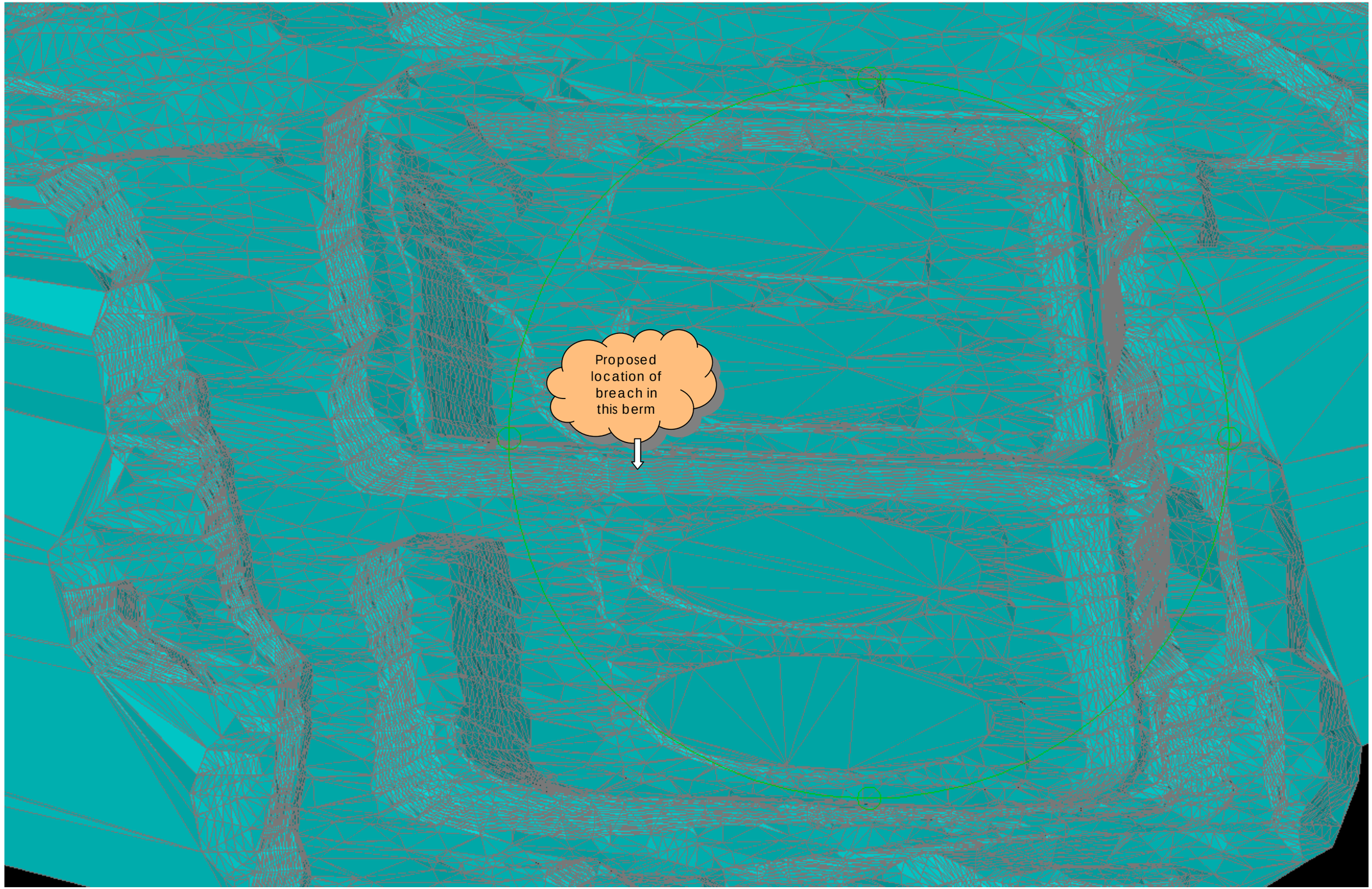
**containment volume to be substracted for the two ( 2 ) cones made of crushed stone**

| | 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 substracted 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%** |


Proposed location of breach in this berm

# APPENDIX 1

## AS BUILT DRAWINGS for PHASE 2-A

## IFC DRAWINGS ( 10 ) for PHASE 2-B

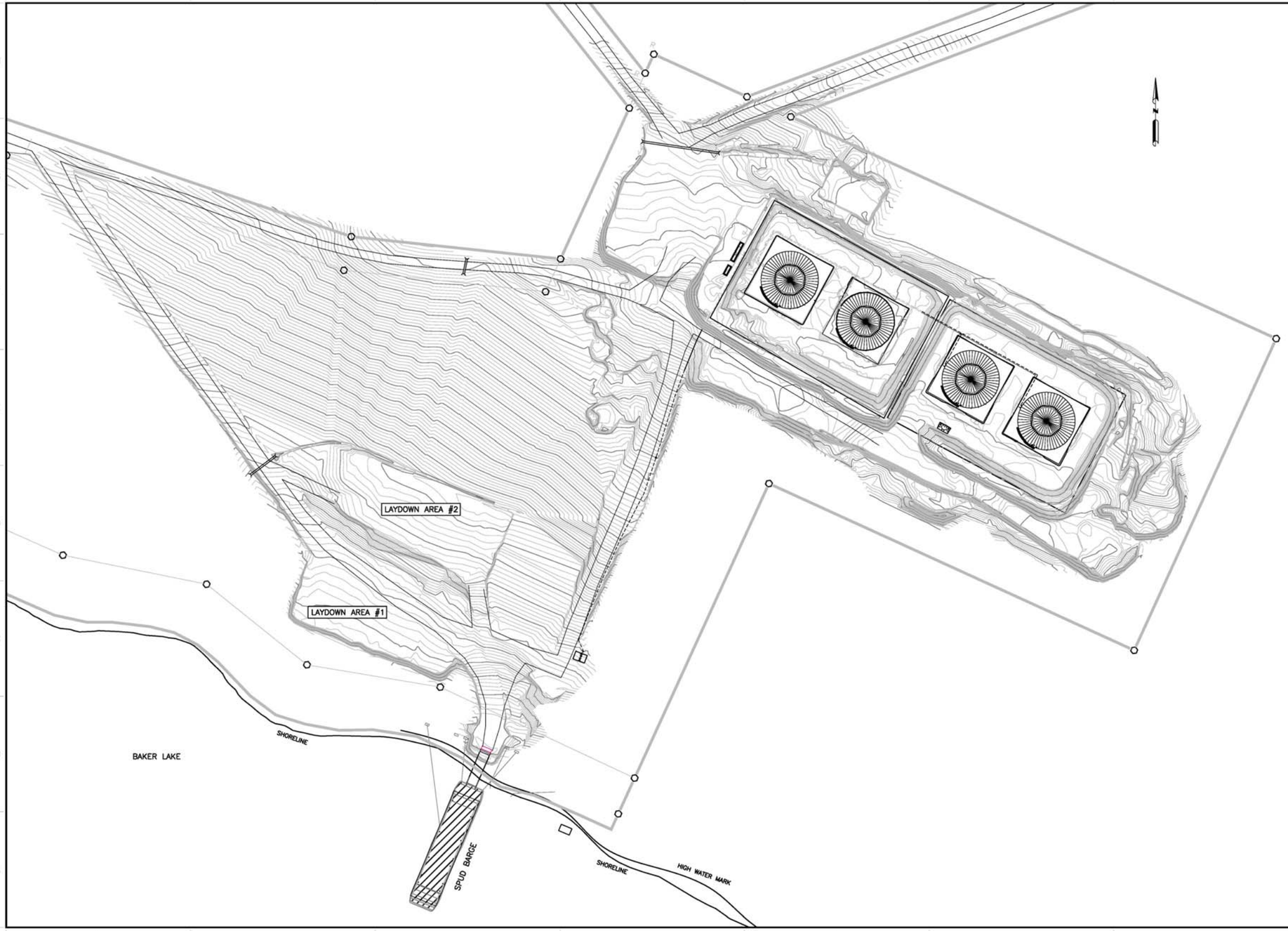
| | | | |
|---|---|---|---|
| VD2259-BKL-001 | VD2259-BKL-002 | VD2259-BKL-003 | VD2259-BKL-004 |
| VD2259-BKL-005 | VD2259-BKL-006 | VD2259-BKL-007 | VD2259-BKL-008 |
| VD2259-BKL-009 | VD2259-BKL-010 | VD2259-BKL-011 | VD2259-BKL-012 |

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

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

DRAWING NO.

FORMAT ARCHD-LANDSCAPE




KEY PLAN

GENERAL NOTES

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Site Internet : www.stavibel.qc.ca

| TITLE | # DWG |
|---|---|
| | |

REFERENCE DRAWINGS

| REV. | DATE | DESCRIPTION | BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 09-03-27 | FOR CONSTRUCTION | F.R. | P.G. | |

REVISIONS

AGNICO-EAGLE
MEADOWBANK DIVISION

TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740

GENERAL LAYOUT

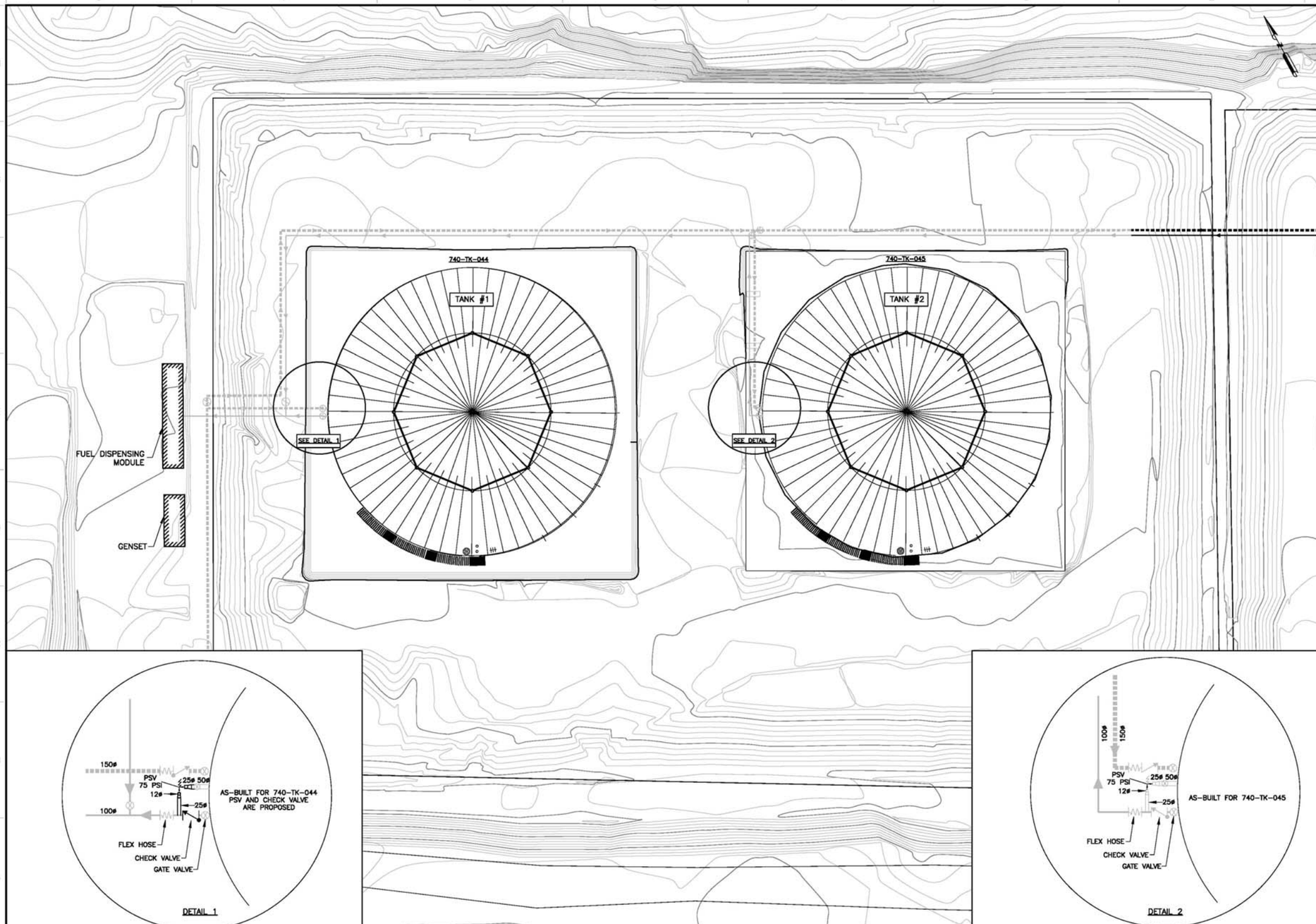
| | | |
|---|---|---|
| DRAWN BY | FRANCIS ROSE, TECH | DATE 2009-03-27 |
| CHECKED BY | PATRICK GIARD, P.ENG | |
| APPROVED BY | PATRICK GIARD, P.ENG | |
| SCALE 1:1000 | DATE 2009-03-27 | |

DRAWING NO.
VD2259-BKL-001

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

DRAWING NO.

FORMAT ARCHD-LANDSCAPE

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2009/03/27
PATRICK GUARD, P.ENG



| TITLE | # DWG |
|---|---|
| | |

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| REV. | DATE | DESCRIPTION | BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 09-03-27 | FOR CONSTRUCTION | F.R. | P.G. | |

REVISIONS

AGNICO-EAGLE
MEADOWBANK DIVISION

TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740

GENERAL LAYOUT
PHASE 1

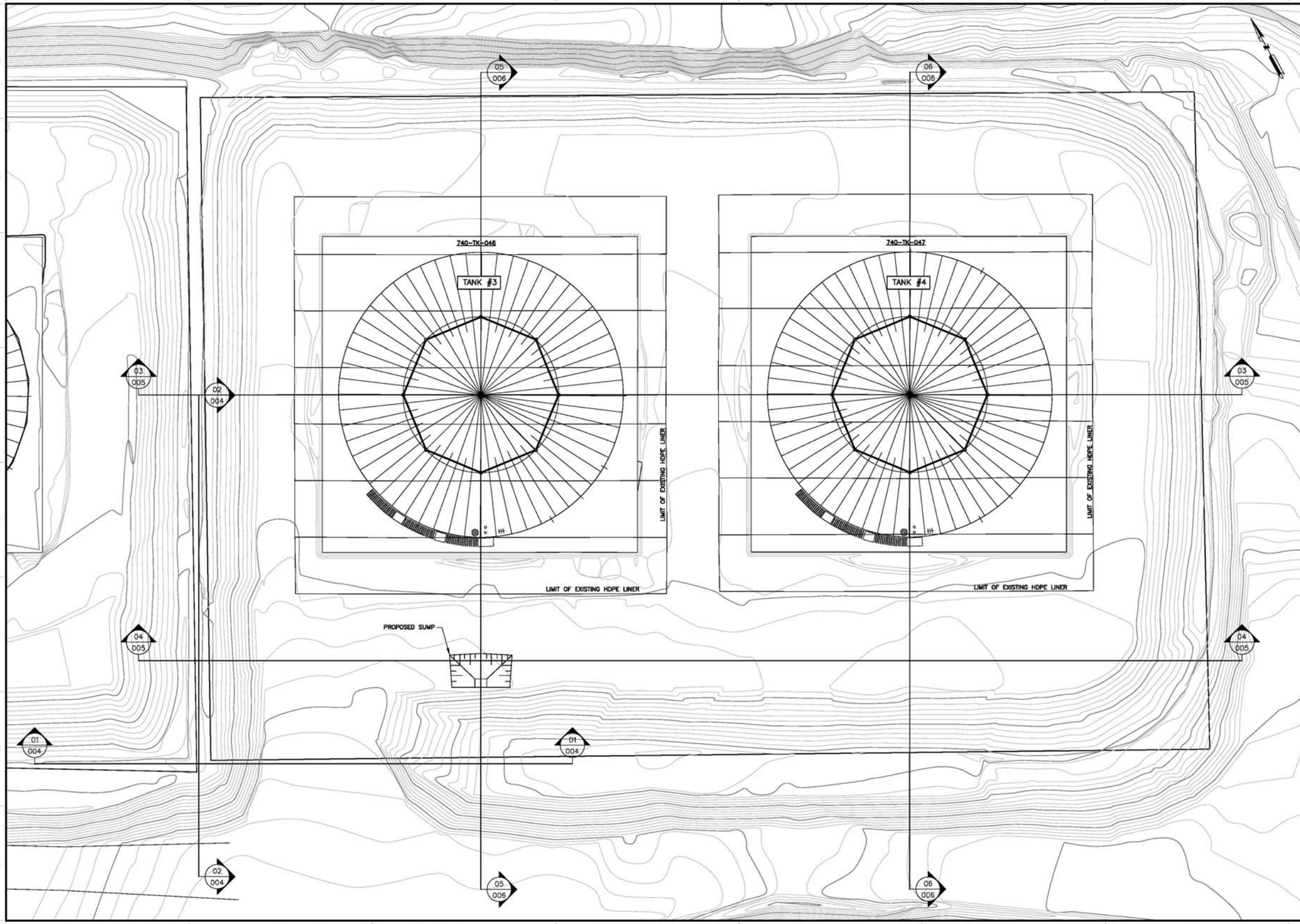
| | | |
|---|---|---|
| DRAWN BY | FRANCIS ROSE, TECH | DATE 2009-03-27 |
| CHECKED BY | PATRICK GUARD, P.ENG | |
| APPROVED BY | PATRICK GUARD, P.ENG | |
| SCALE 1:200 | DATE 2009-03-27 | |

DRAWING NO.
VD2259-BKL-002

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

DRAWING NO.

FORMAT ARCHD-LANDSCAPE




KEY PLAN

GENERAL NOTES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| TITLE | # DWG |
|---|---|
| | |

REFERENCE DRAWINGS

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|---|---|---|---|---|---|
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REVISIONS

AGNICO-EAGLE
MEADOWBANK DIVISION

TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740

GENERAL LAYOUT
PHASE 2-A (2008)

| | | |
|---|---|---|
| DRAWN BY | FRANCIS ROSE, TECH | DATE 2009-03-27 |
| CHECKED BY | PATRICK GIARD, P.ENG | |
| APPROVED BY | PATRICK GIARD, P.ENG | |
| SCALE 1:200 | DATE 2009-03-27 | |

DRAWING NO.
VD2259-BKL-003

| PROJECT NO. | REVISION | SHEET |
|---|---|---|
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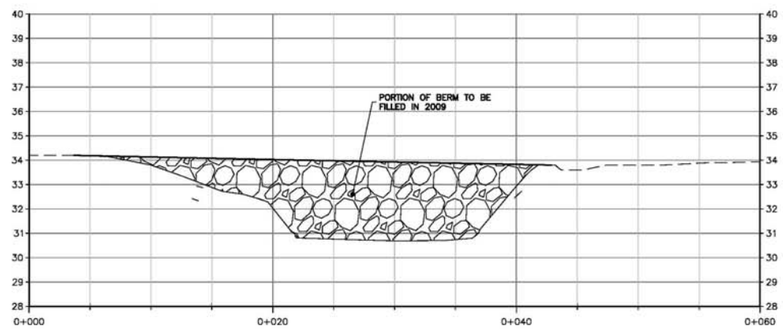
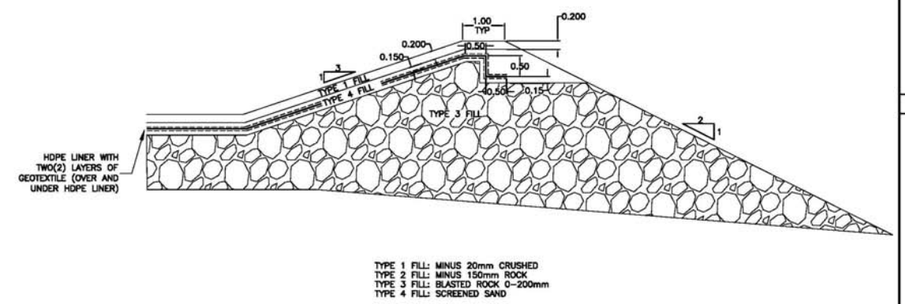
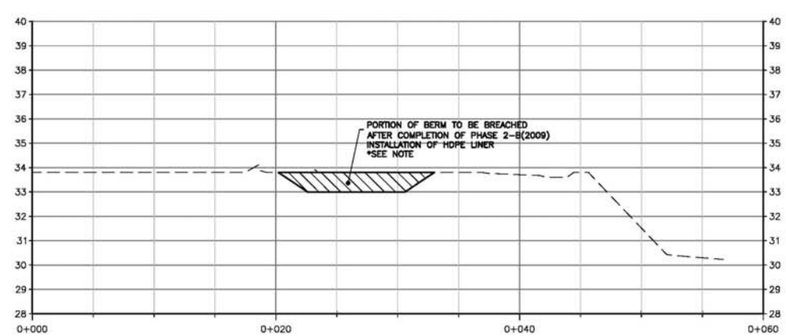



CROSS-SECTION 01/003




TYPICAL CROSS-SECTION




CROSS-SECTION 02/003

*NOTE:
HDPE 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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|---|---|---|---|---|---|
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REVISIONS

AGNICO-EAGLE
MEADOWBANK DIVISION

TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740

CROSS-SECTIONS OF HDPE MEMBRANE
PHASE 2-B (2009)

| | | |
|---|---|---|
| DRAWN BY | FRANCIS ROSE, TECH | DATE 2009-03-27 |
| CHECKED BY | PATRICK GIARD, P.ENG | |
| APPROVED BY | PATRICK GIARD, P.ENG | |
| SCALE HOR:1:200 VER:1:100 | DATE 2009-03-27 | |

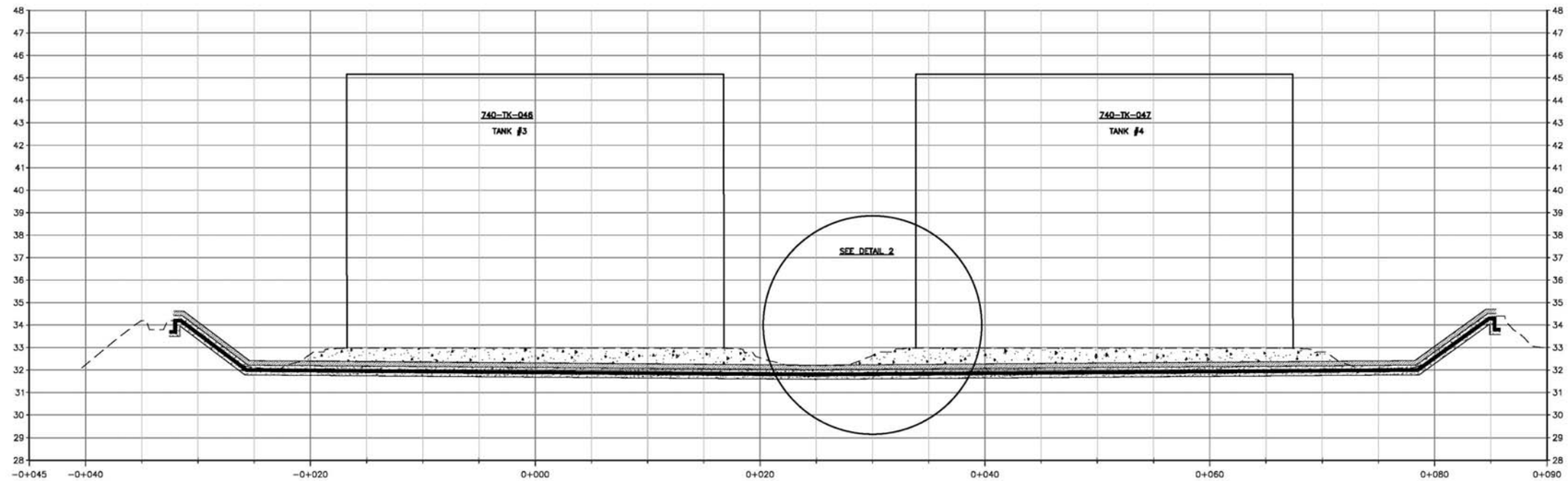
DRAWING NO.
VD2259-BKL-004

| PROJECT NO. | REVISION | SHEET |
|---|---|---|
| VD2259-2 | 1 | 4/12 |

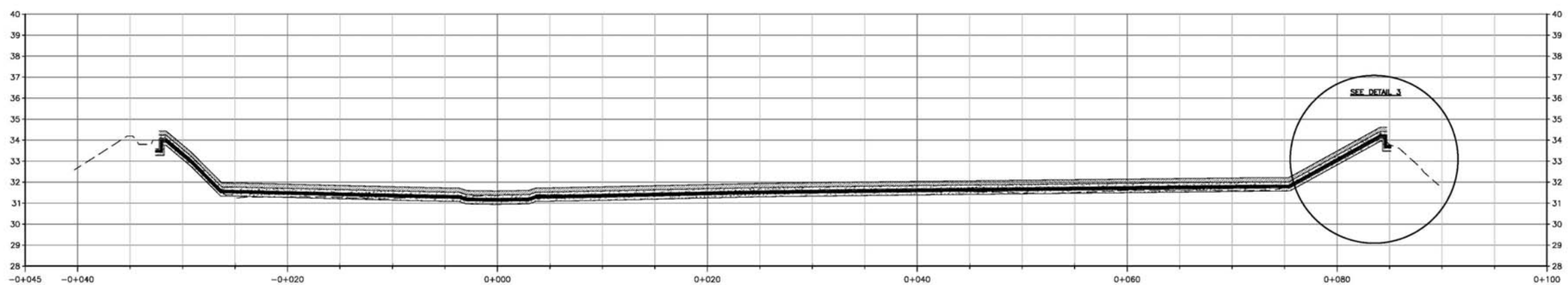
FORMAT ARCHD-LANDSCAPE

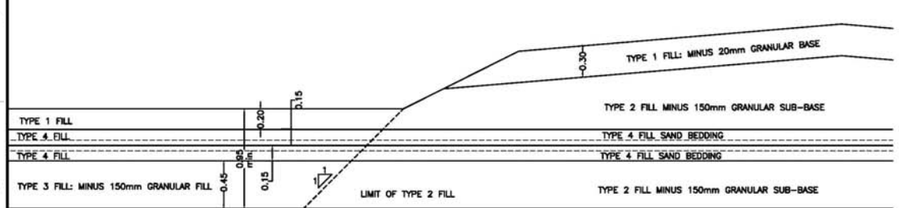
DRAWING NO.

FORMAT ARCHD-LANDSCAPE



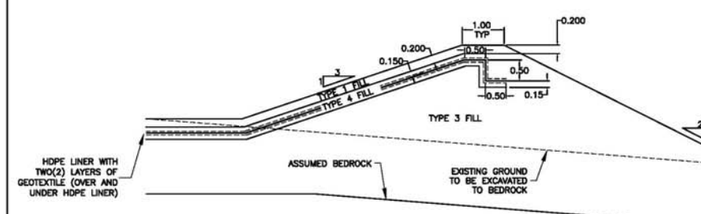

CROSS-SECTION 03/003




DETAIL 2

CROSS-SECTION 04/003




DETAIL 3

KEY PLAN

GENERAL NOTES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ISSUED FOR CONSTRUCTION
PATRICK GIARD, P.ENG 2009/04/

| TITLE | # DWG |
|---|---|
| | |

REFERENCE DRAWINGS

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|---|---|---|---|---|---|
| 1 | 09-03-27 | FOR CONSTRUCTION | F.R. | P.G. | |

REVISIONS

AGNICO-EAGLE
MEADOWBANK DIVISION

TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740

CROSS-SECTIONS
PHASE 2-B (2009)

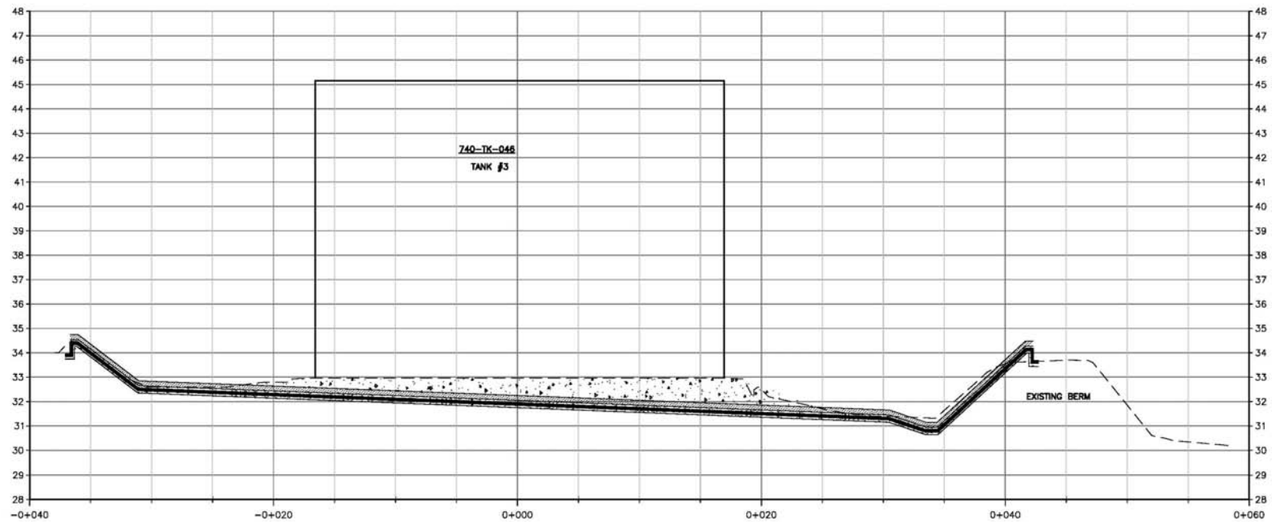
| | | |
|---|---|---|
| DRAWN BY | FRANCIS ROSE, TECH | DATE 2009-03-27 |
| CHECKED BY | PATRICK GIARD, P.ENG | |
| APPROVED BY | PATRICK GIARD, P.ENG | |
| SCALE HOR:1:200 VER:1:100 | DATE 2009-03-27 | |

DRAWING NO.
VD2259-BKL-005

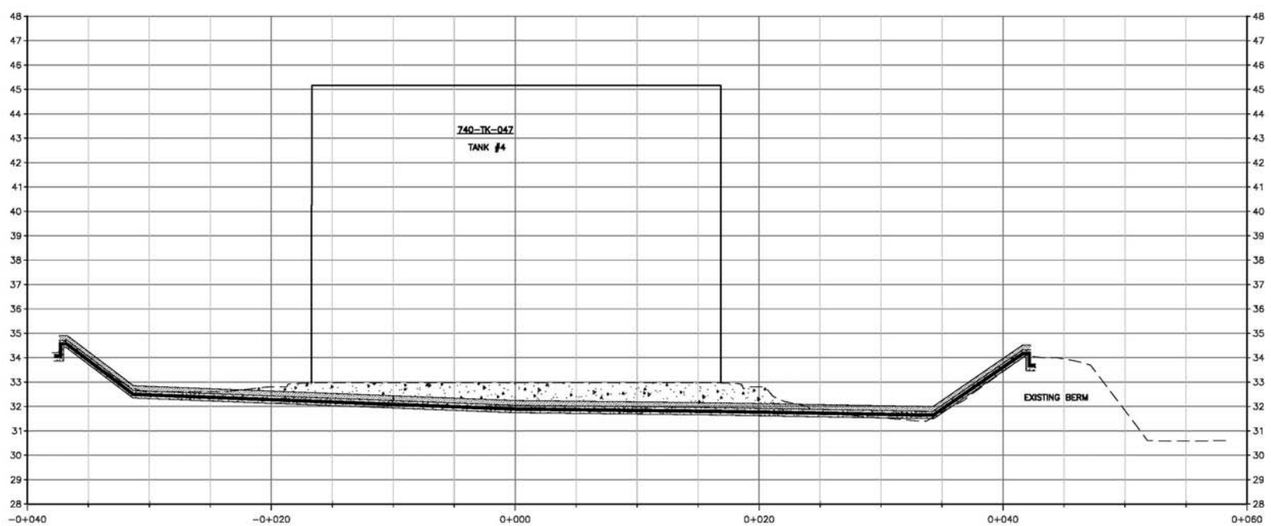
| PROJECT NO. | REVISION | SHEET |
|---|---|---|
| VD2259-2 | 1 | 5/12 |

DRAWING NO.

FORMAT ARCHD-LANDSCAPE




CROSS-SECTION 05/003




CROSS-SECTION 06/003

KEY PLAN

GENERAL NOTES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Site Internet : www.stavibel.qc.ca


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

| TITLE | # DWG |
|---|---|
| | |

REFERENCE DRAWINGS

| REV. | DATE | DESCRIPTION | BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 09-03-27 | FOR CONSTRUCTION | F.R. | P.G. | |

REVISIONS

AGNICO-EAGLE
MEADOWBANK DIVISION

TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740

CROSS-SECTIONS
PHASE 2-B (2009)

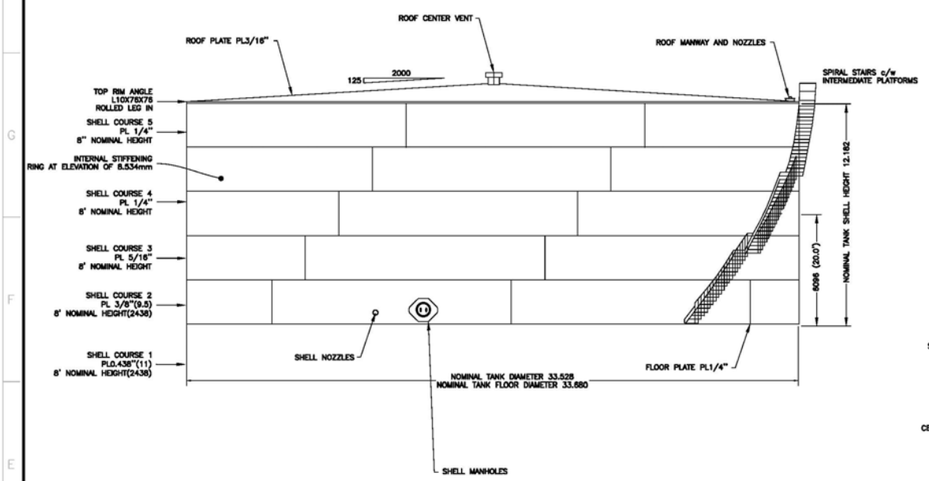
| | | |
|---|---|---|
| DRAWN BY | FRANCIS ROSE, TECH | DATE 2009-03-27 |
| CHECKED BY | PATRICK GIARD, P.ENG | |
| APPROVED BY | PATRICK GIARD, P.ENG | |
| SCALE HOR:1:200 VER:1:100 | DATE 2009-03-27 | |

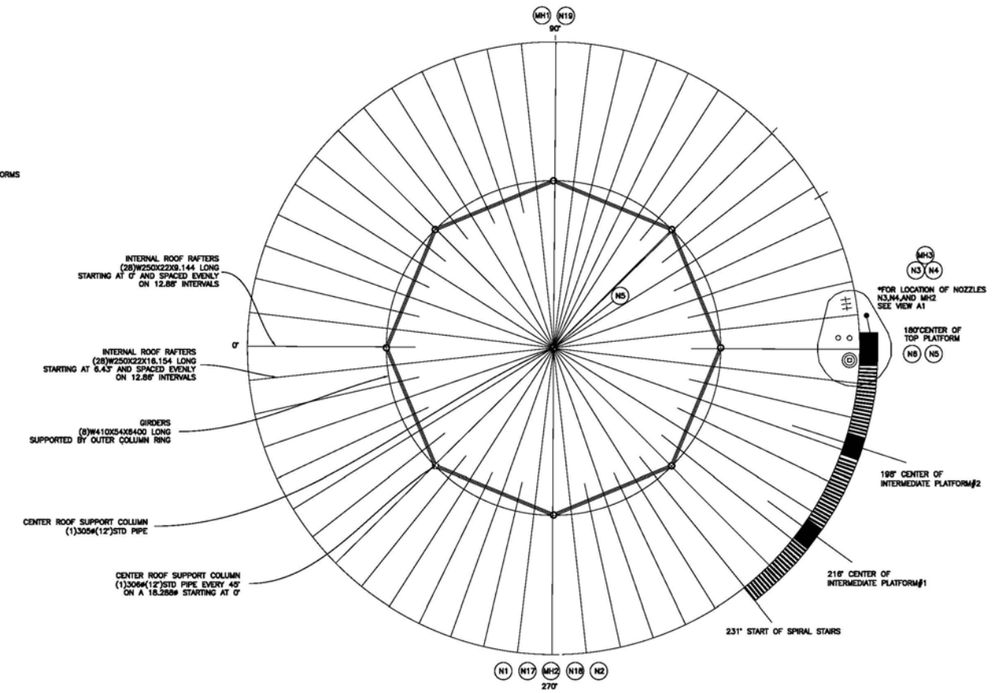
DRAWING NO.
VD2259-BKL-006

| PROJECT NO. | REVISION | SHEET |
|---|---|---|
| VD2259-2 | 1 | 5/12 |

DRAWING NO.

FORMAT ARCHD-LANDSCAPE




FOUR(4) TANKS WERE BUILT WITH IDENTICAL NOZZLE SPECS : 740-TK-045
740-TK-046
740-TK-047
740-TK-048

## GENERAL NOTES

### DESIGN

1. CODE OF CONSTRUCTION: API-650, LATEST EDITION
2. ALL DIMENSIONS ARE IN mm UNLESS NOTED OTHERWISE
3. PRODUCT STORED: DIESEL FUEL
4. DIAMETER 33.528mm±
5. HEIGHT: 12.192
6. NOMINAL CAPACITY: 10,780,000 LITRES
7. WORKING CAPACITY: 10,000,000 LITRES
8. DESIGN METAL TEMP: -40°C
9. PRODUCT SPECIFIC GRAVITY: 0.9±15°C

### INSPECTION

1. VACUUM TESTING: FLOOR
2. RADIOGRAPHY: VERTICAL SHELL WELDS-SPOT AS PER API 650
3. AIR TEST: NOZZLES
4. VACUUM OR DIESEL TEST: SHELL WELDS

### MATERIALS

1. BOLTS: A-325
2. PIPE NOZZLES: A333 Gr.6
3. FORGED FLANGES AND COUPLINGS:A350M, Gr.LF2 AND ANSI 816.5 LF2 CLASS D
4. PIPE FITTINGS: A420 Gr.WPG-6
5. STRUCTURAL STEEL: G40.21 300W
6. SHELL STEEL PLATE: G40.21M-260WT, KILLED AND FINE-GRAIN PRACTICE, IMPACT ENERGY 15ft/lbs(20J@-40°C)
7. FLOOR AND ROOF STEEL PLATE: G40.21M-250WT
8. TANK MANWAYS: STRUCTURAL GRADE PIPE OR BETTER

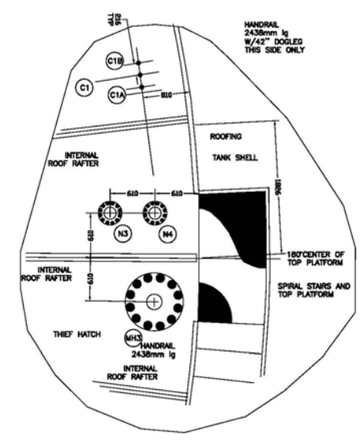
API STANDARD 650 STORAGE TANKS

CONNECTIONS

SHELL NOZZLES

| MARK | NO REQ'D | SIZE | FLANGED | THREADED | REINFORCEMENT | ORIENTATION N=0 | HEIGHT FROM BOTTOM (mm) | NAME/SERVICE |
|---|---|---|---|---|---|---|---|---|
| N1 | 1 | 6" | SFL 150RF | | API 650 Fig 3-5 | 270°(OFFSET 450mm) | 305 | INLET FROM BARGE PIPELINE |
| N2 | 1 | 4" | SFL 150RF | | API 650 Fig 3-5 | 270°(OFFSET 450mm) | 305 | OUTLET TO FUEL DISPENSING |
| N5 | 1 | 4" | SFL 150RF | | API 650 Fig 3-5 | 180° | 610 | DRAIN PUMPOUT |
| MH1 | 2 | 24" | | | API 650 Fig 3-5 | 90° | 762 | SHELL MANHOLES |
| MH2 | 2 | 24" | | | API 650 Fig 3-5 | 270° | 762 | SHELL MANHOLES |
| N8 | 1 | 3" | SFL 150RF | | API 650 Fig 3-5 | 180° | 305 | WATER DRAWOFF |
| N17 | 1 | 2" | SFL 150RF | | API 650 Fig 3-5 | 270°(OFFSET 155mm) | 1000 | PSV DISCHARGE |
| N18 | 1 | 2" | SFL 150RF | | API 650 Fig 3-5 | 270°(OFFSET 155mm) | 1000 | (SPARE) INTENDED PSV |
| N19 | 1 | 2" | SFL 150RF | | API 650 Fig 3-5 | 90° | 1000 | (SPARE) INTENDED PSV |

| MARK | NO REQ'D | SIZE | FLANGED | THREADED | REINFORCEMENT | ORIENTATION N=0 | HEIGHT FROM BOTTOM (mm) | NAME/SERVICE |
|---|---|---|---|---|---|---|---|---|
| N3 | 1 | 3" | SFL 150RF* | | API 650 Fig 3-5 | 179° | 15.656 | SPARE |
| N4 | 1 | 256X460 | | | API 650 Fig 3-5 | 179° | 15.636 | INSPECTION-HATCH** |
| MH3 | 1 | 24" | SFL 150RF | | API 2000 | 182° | 15.048 | EMERGENCY VENT/MANHOLE* |
| N5 | 1 | 24" | SFL 150RF | | API 2000 | 0 | 0 | CENTRE ROOF VENT* |
| C1 | 1 | | | | | | | VAREC 2500 LEVEL INDICATOR |




KEY PLAN

GENERAL NOTES

**GEM STEEL**

9060-24 STREET
EDMONTON, ALBERTA
CANADA T6P 1X8
PH. (780) 449-0000
FAX. (780) 449-0001

| TITLE | # |
|---|---|
| GENERAL TANK ELEVATION | BL2007-1 |
| ROOF AND NOZZLE PLAN | BL2007-2 |
| GENERAL TANK DETAILS | BL2007-3 |
| GENERAL TANK DETAILS | BL2007-4 |

REFERENCE DRAWINGS

| REV. | DATE | DESCRIPTION | BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 09-03-30 | AS-BUILT | F.R. | | P.S. |
| 0 | 07-09-17 | FOR DISCUSSION | J.D.C. | B.K.G. | |

REVISIONS

AGNICO-EAGLE
MEADOWBANK DIVISION

TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740

STRUCTURE

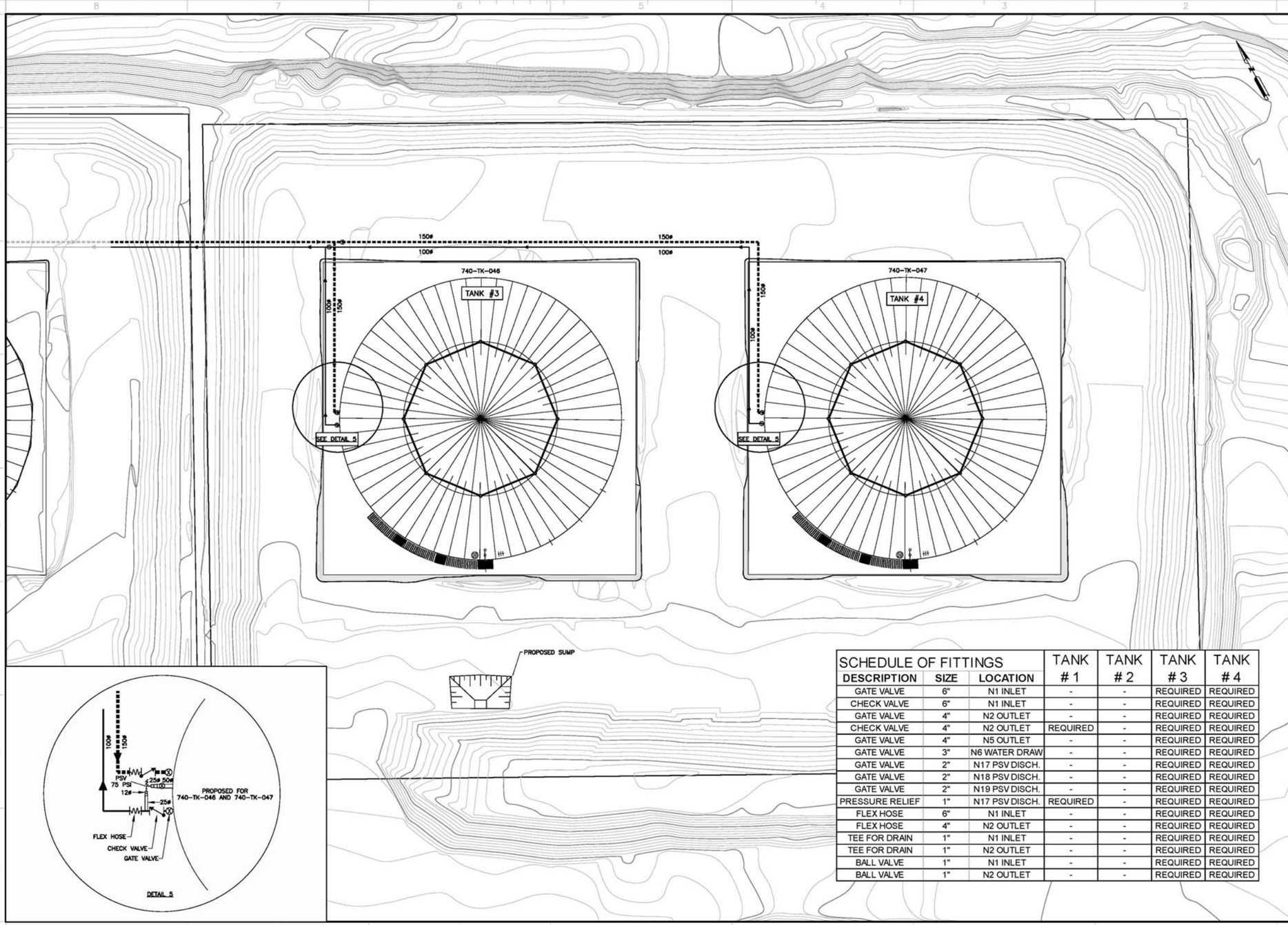
| | | |
|---|---|---|
| DRAWN BY | FRANCIS ROSE, TECH | DATE 2009-03-30 |
| CHECKED BY | PATRICK GIARD, P.ENG | |
| APPROVED BY | GEM STEEL EDMONTON LTD | |
| SCALE N.T.S. | DATE 2009-03-27 | |

DRAWING NO.
VD2259-BKL-007

| PROJECT NO. | REVISION | SHEET |
|---|---|---|
| VD2259-2 | 1 | 7/12 |

DRAWING NO.

FORMAT ARCHD-LANDSCAPE




| SCHEDULE OF FITTINGS | | | TANK # 1 | TANK # 2 | TANK # 3 | TANK # 4 |
|---|---|---|---|---|---|---|
| DESCRIPTION | SIZE | LOCATION | | | | |
| GATE VALVE | 6" | N1 INLET | - | - | REQUIRED | REQUIRED |
| CHECK VALVE | 6" | N1 INLET | - | - | REQUIRED | REQUIRED |
| GATE VALVE | 4" | N2 OUTLET | - | - | REQUIRED | REQUIRED |
| CHECK VALVE | 4" | N2 OUTLET | REQUIRED | - | REQUIRED | REQUIRED |
| GATE VALVE | 4" | N5 OUTLET | - | - | REQUIRED | REQUIRED |
| GATE VALVE | 3" | N6 WATER DRAW | - | - | REQUIRED | REQUIRED |
| GATE VALVE | 2" | N17 PSV DISCH. | - | - | REQUIRED | REQUIRED |
| GATE VALVE | 2" | N18 PSV DISCH. | - | - | REQUIRED | REQUIRED |
| GATE VALVE | 2" | N19 PSV DISCH. | - | - | REQUIRED | REQUIRED |
| PRESSURE RELIEF | 1" | N17 PSV DISCH. | REQUIRED | - | REQUIRED | REQUIRED |
| FLEX HOSE | 6" | N1 INLET | - | - | REQUIRED | REQUIRED |
| FLEX HOSE | 4" | N2 OUTLET | - | - | REQUIRED | REQUIRED |
| TEE FOR DRAIN | 1" | N1 INLET | - | - | REQUIRED | REQUIRED |
| TEE FOR DRAIN | 1" | N2 OUTLET | - | - | REQUIRED | REQUIRED |
| BALL VALVE | 1" | N1 INLET | - | - | REQUIRED | REQUIRED |
| BALL VALVE | 1" | N2 OUTLET | - | - | REQUIRED | REQUIRED |

KEY PLAN

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 : stavibel-val@stavibel.qc.ca
Site Internet : www.stavibel.qc.ca


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

| TITLE | # DWG |
|---|---|
| | |

REFERENCE DRAWINGS

| REV. | DATE | DESCRIPTION | BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 2009-03-27 | FOR CONSTRUCTION | F.R. | P.G. | |

REVISIONS

AGNICO-EAGLE
MEADOWBANK DIVISION

TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740

PIPING LAYOUT
FOR PHASE 2-B (2009)

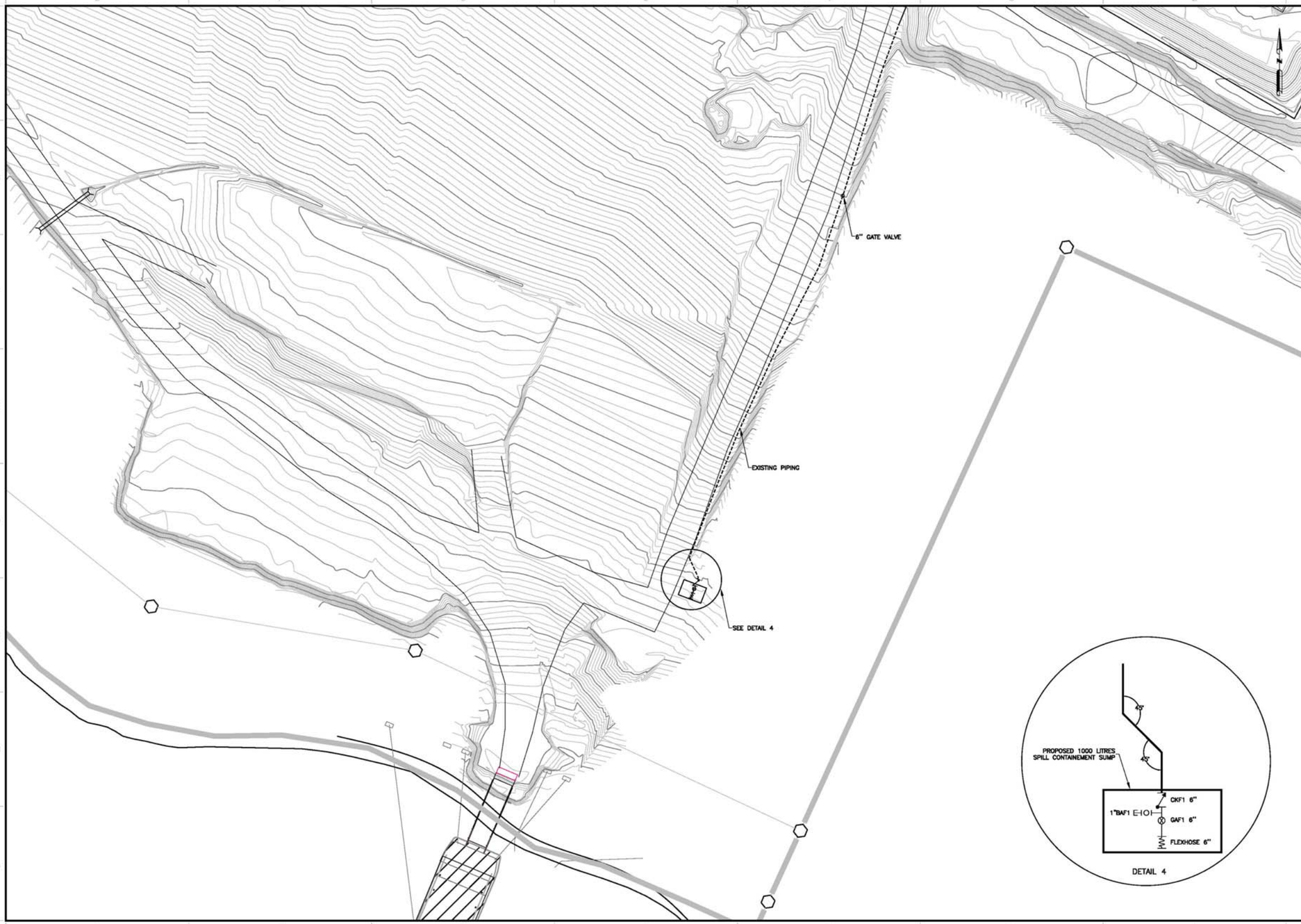
| | | |
|---|---|---|
| DRAWN BY | FRANCIS ROSE, TECH | DATE 2009-03-27 |
| CHECKED BY | PATRICK GIARD, P.ENG | |
| APPROVED BY | PATRICK GIARD, P.ENG | |
| SCALE 1:200 | DATE 2009-03-27 | |

DRAWING NO.
VD2259-BKL-008

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

DRAWING NO.

FORMAT ARCHD-LANDSCAPE




KEY PLAN

GENERAL NOTES


Groupe STAVIBEL
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Val-d'Or (Québec) J9P 3S1
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PATRICK GIARD, P.ENG 2009/03/27

| TITLE | # DWG |
|---|---|
| | |

REFERENCE DRAWINGS

| REV. | DATE | DESCRIPTION | BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 09-03-27 | FOR CONSTRUCTION | F.A. | P.G. | |

REVISIONS

AGNICO-EAGLE MEADOWBANK DIVISION

TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740

PIPING LAYOUT

| | | |
|---|---|---|
| DRAWN BY | FRANCIS ROSE, TECH | DATE 2009-03-27 |
| CHECKED BY | PATRICK GIARD, P.ENG | |
| APPROVED BY | PATRICK GIARD, P.ENG | |
| SCALE 1:500 | DATE 2009-03-27 | |

DRAWING NO.
VD2259-BKL-009

| PROJECT NO. | REVISION | SHEET |
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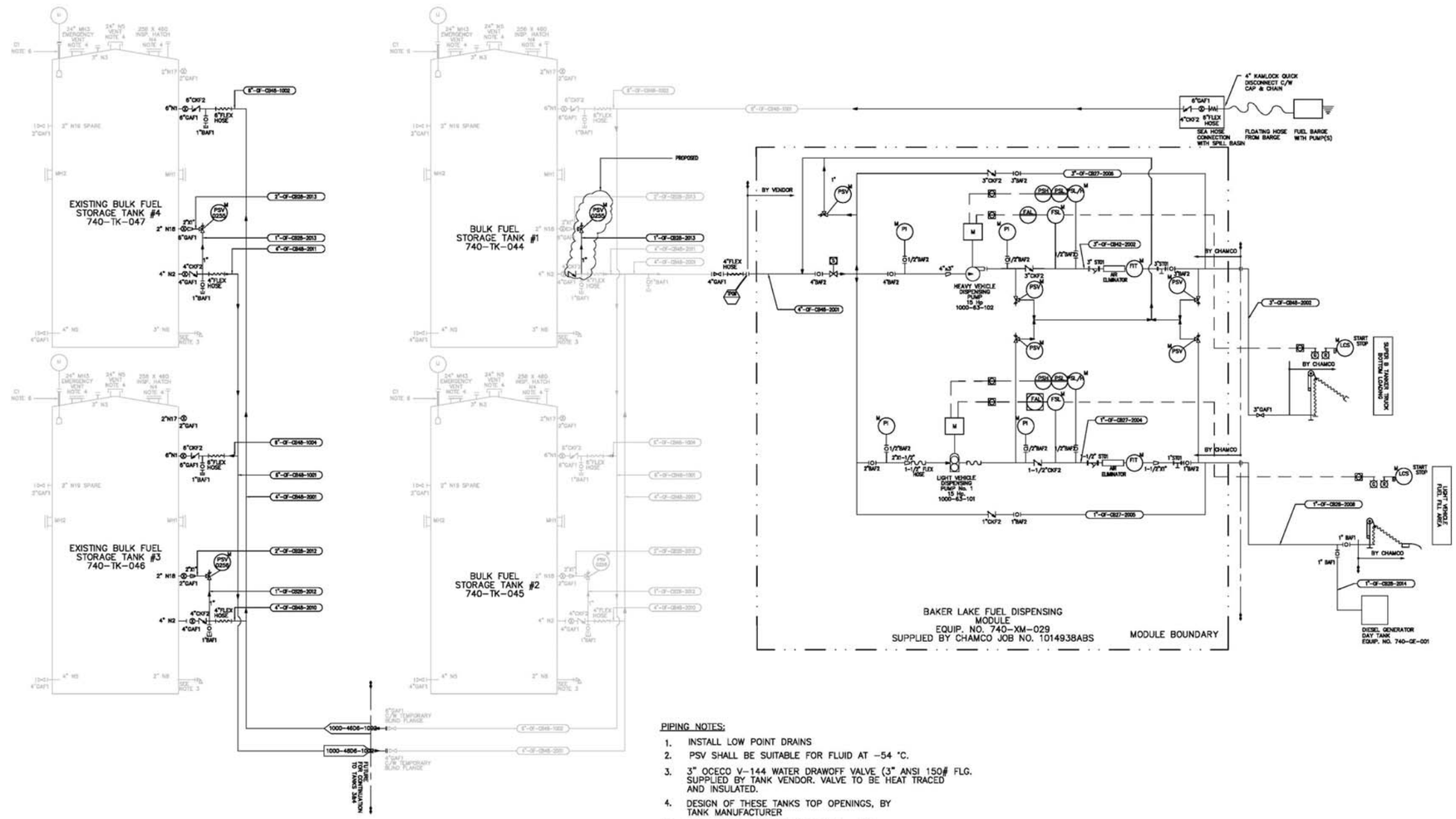


PIPING NOTES:

1. INSTALL LOW POINT DRAINS
2. PSV SHALL BE SUITABLE FOR FLUID AT −54 °C.
3. 3" OCECO V-144 WATER DRAWOFF 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

FORMAT ARCHD-LANDSCAPE

KEY PLAN

GENERAL NOTES

Groupe STAVIBEL
Consultants en Ingénierie
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Val-d'Or (Québec) J9P 3S1
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Courriel : stavibel-vd@stavibel.qc.ca
Site internet : www.stavibel.qc.ca

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

| TITLE | # DWG |
|---|---|

REFERENCE DRAWINGS

| REV. | DATE | DESCRIPTION | BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 09-03-27 | FOR CONSTRUCTION | F.R. | P.G. | |

REVISIONS

AGNICO-EAGLE MEADOWBANK DIVISION

TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740

PROCESS AND INSTRUMENTATION DIAGRAM

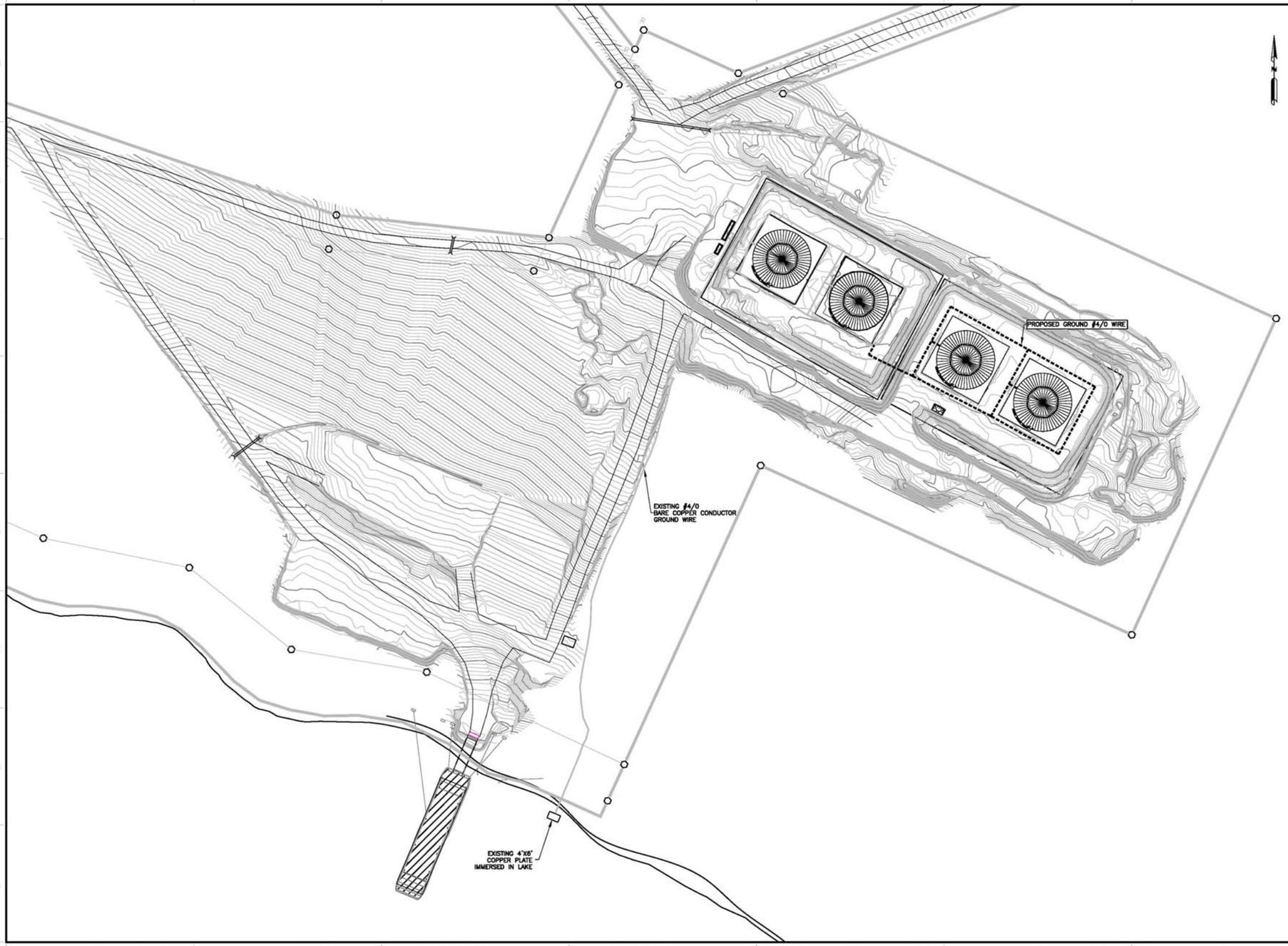
| | | |
|---|---|---|
| DRAWN BY | FRANCIS ROSE, TECH | DATE 2009-03-27 |
| CHECKED BY | PATRICK GIARD, P.ENG | |
| APPROVED BY | PATRICK GIARD, P.ENG | |
| SCALE N.T.S | DATE 2009-03-27 | |

DRAWING NO.
VD2259-BKL-010

| PROJECT NO. | REVISION | SHEET |
|---|---|---|
| VD2259-2 | 1 | 10/12 |

DRAWING NO.

FORMAT ARCHD-LANDSCAPE




KEY PLAN

GENERAL NOTES


Groupe STAVIBEL
Consultants en Ingénierie
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Val-d'Or (Québec) J9P 3S1
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Courriel : stavibel-vd@stavibel.qc.ca
Site internet : www.stavibel.qc.ca


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2009/03/27
PATRICK GUARD, P.ENG

TITLE | # DWG

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|---|---|---|---|---|---|
| 1 | 09-03-27 | FOR CONSTRUCTION | F.R. | P.G. | |

REVISIONS

AGNICO-EAGLE
MEADOWBANK DIVISION

TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740

GENERAL LAYOUT
ELECTRICAL GROUND

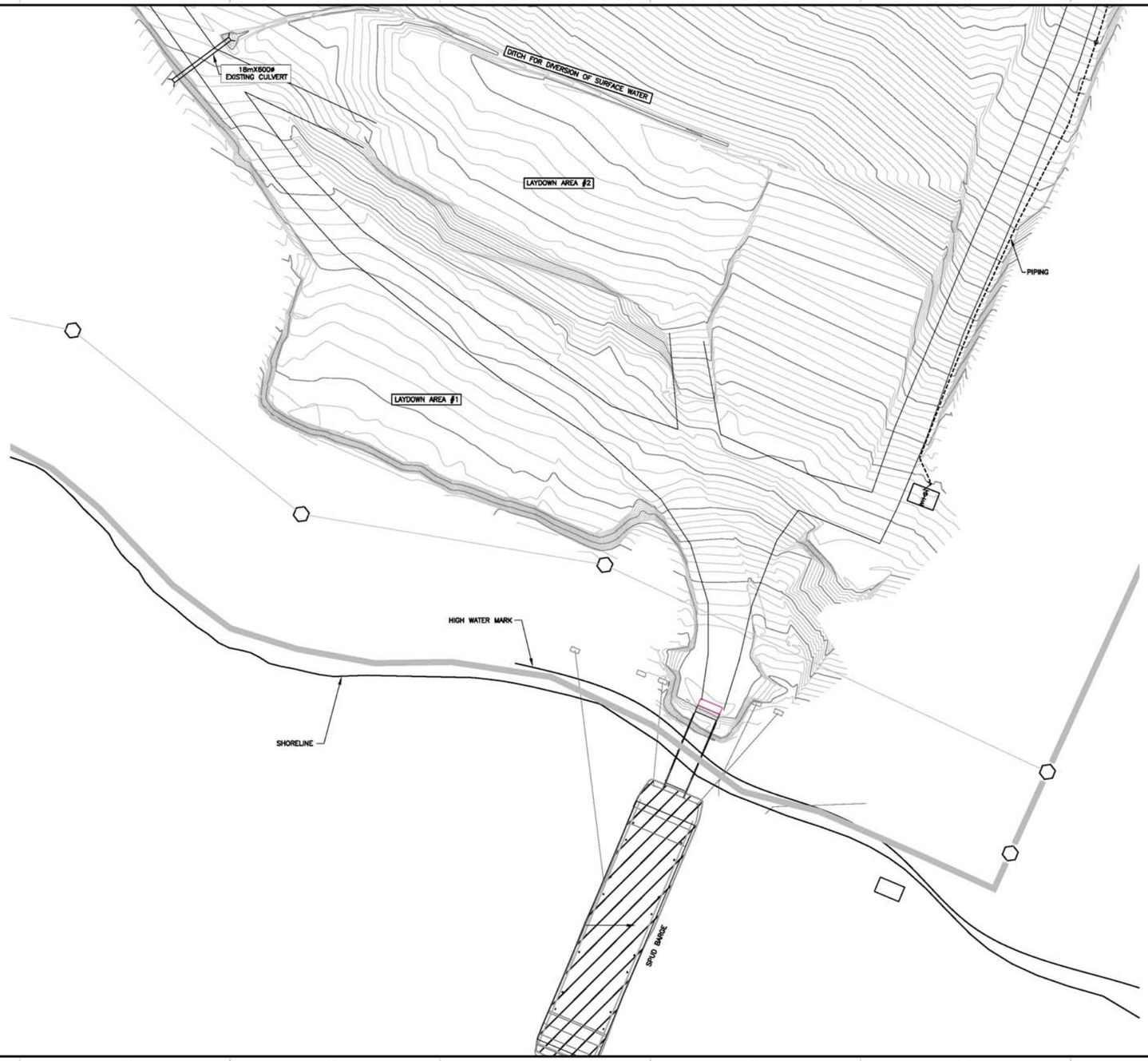
| | | |
|---|---|---|
| DRAWN BY | FRANCIS ROSE, TECH | DATE 2009-03-27 |
| CHECKED BY | PATRICK GUARD, P.ENG | |
| APPROVED BY | PATRICK GUARD, P.ENG | |
| SCALE 1:1000 | DATE 2009-03-27 | |

DRAWING NO.
VD2259-BKL-011

| PROJECT NO. | REVISION | SHEET |
|---|---|---|
| VD2259-2 | 1 | 11/12 |

DRAWING NO.

FORMAT ARCHD-LANDSCAPE




KEY PLAN

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 : stavibel-vd@stavibel.qc.ca
Site internet : www.stavibel.qc.ca


| TITLE | # DWG |
|---|---|
| | |

REFERENCE DRAWINGS

| REV. | DATE | DESCRIPTION | BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 09-03-27 | AS-BUILT | F.R. | P.G. | |

REVISIONS

AGNICO-EAGLE
MEADOWBANK DIVISION

TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740

GENERAL LAYOUT

| | | |
|---|---|---|
| DRAWN BY | FRANCIS ROSE, TECH | DATE 2009-03-27 |
| CHECKED BY | PATRICK GIARD, P.ENG | |
| APPROVED BY | PATRICK GIARD, P.ENG | |
| SCALE 1:500 | DATE 2009-03-27 | |

DRAWING NO.
VD2259-BKL-012

| PROJECT NO. | REVISION | SHEET |
|---|---|---|
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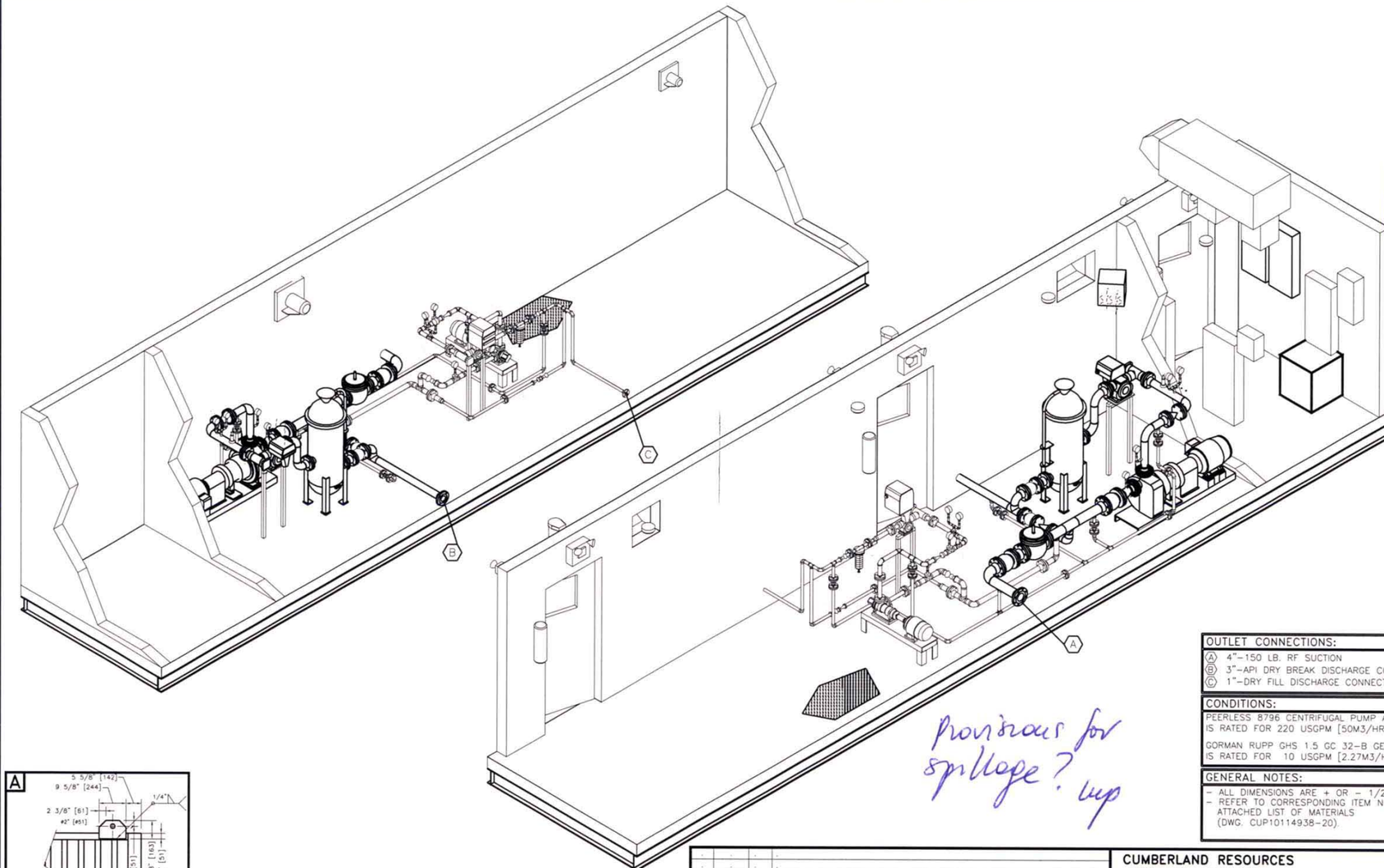


HATCH

☐ Code 1" Proceed, No Exception Taken"
☐ Code 2 "Proceed, with Exceptions as Noted and Re-submit"
☐ Code 3 "Do not Proceed, Revise as Noted and Re-submit"
☐ Code 4 "Information Only"

Reviewed only for general conformity with the drawings and specifications. The Consulting Engineer does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing.

HATCH

By _____

Date _____

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JUL 18 2007
DRAWING CONTROL
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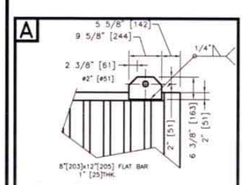
Provisions for spillage? mp

| 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. CUP10114938-20). |

A




LOW TEMP

LIFTING LUGS

ONE LOCATED ON EACH CORNER OF PKG.

PRELIMINARY
FOR APPROVAL
CHAMCO INDUSTRIES LTD.

| REV. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |



CHAMCO
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VANCOUVER - CALGARY - EDMONTON - PRINCE GEORGE

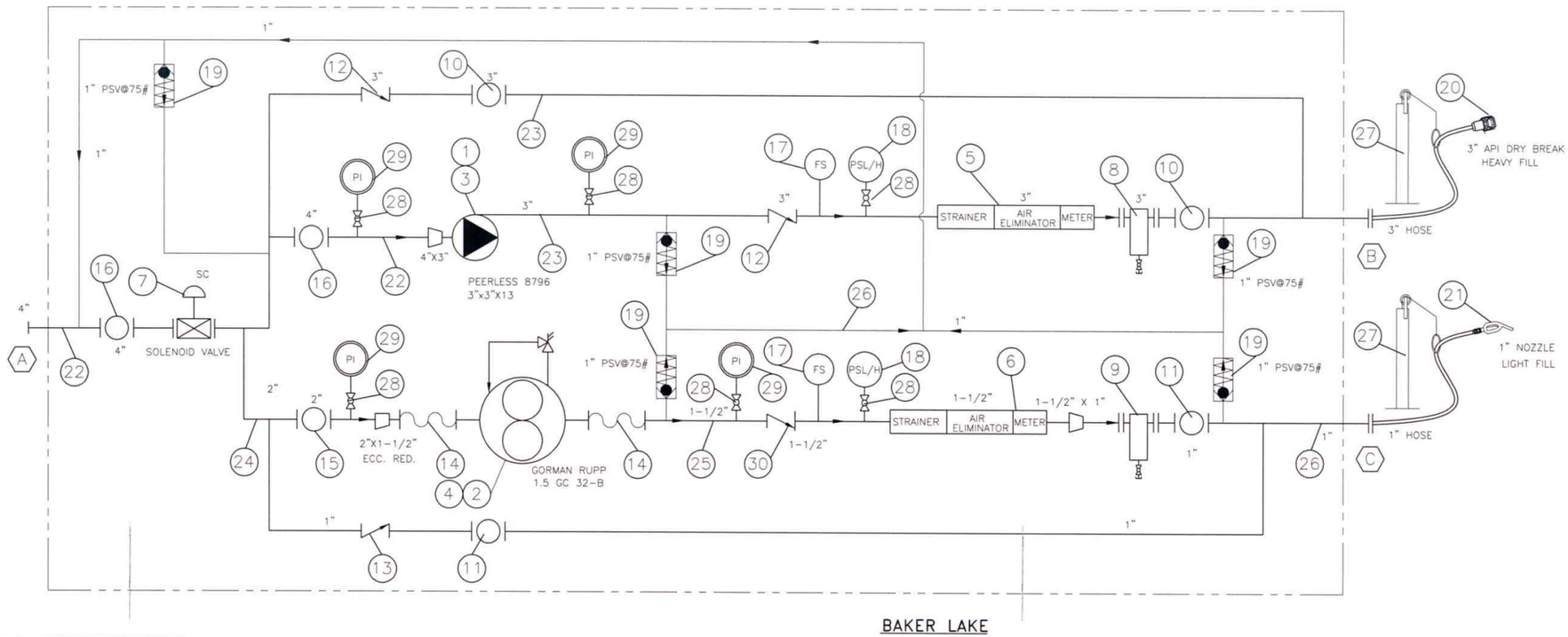
CUMBERLAND RESOURCES
BAKER LAKE, NUNAVUT
.
P.O. No. M268

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

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

| | |
|---|---|
| DESIGNED BY | D.J.C. |
| DRAWN BY | G.R.M. |
| CHECKED BY | . |
| JOB No. | 1014938ABS |

1711-M268-VD-0012




BAKER LAKE
DISPENSING MODULE

## 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
- ☐ Code 1" Proceed, No Exception Taken"
- ☐ Code 2 "Proceed, with Exceptions as Noted and Re-submit"
- ☐ Code 3 "Do not Proceed, Revise as Noted and Re-submit"
- ☐ Code 4 "Information Only"

Reviewed only for general conformity with the drawings and specifications. The Consulting Engineer does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the part submitting the drawing.

HATCH

By _____

Date _____

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JUL 1 3 2007
DRAWING CONTROL
HATCH

H325174-M268-A1 D013

**OUTLET CONNECTIONS:**

- (A) 4"–150# RFWN FLANGE
- (B) 3"–API DRY BREAK– HEAVY FILL
- (C) 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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FOR APPROVAL
CHAMCO INDUSTRIES LTD.

CHAMCO
CHAMCO INDUSTRIES LTD.
VANCOUVER – CALGARY – EDMONTON – PRINCE GEORGE

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 | SCALE | DWG No. | REV. |
|---|---|---|---|
| 25–APRIL–07 | N.T.S. | CUP1014938–25 | 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)

AEM

**AGNICO-EAGLE MINES LTD**
**MEADOWBANK DIVISION**

# BAKER LAKE FUEL STORAGE INSTALLATIONS

# FINAL REPORT

**FOLLOWING THE CONSTRUCTION**

**OF**

**PHASE 2-B (2009)**

AEM

# AGNICO-EAGLE MINES LTD
# MEADOWBANK DIVISION

## BAKER LAKE FUEL STORAGE INSTALLATIONS

# FINAL REPORT

## FOLLOWING THE CONSTRUCTION

## OF

## PHASE 2-B (2009)

**PREPARED BY :**

REGISTERED PROFESSIONAL ENGINEER
B.A.P. GIARD
LICENSEE
NWT/NU

**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

# 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 BERMS

## 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 theses 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 fuels tanks located at the Meadowbank site.

The breach section in this midside 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 $m^3/s$

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<br>**Fluid:** diesel fuel<br>**Pipe/Tubing ID (in):** 6" or 150 mm<br>**Flow Rate (USGPM):** 1426.5 USGPM or 0.090 $m^3/s$<br>**Dynamic Viscosity of diesel fuel (cP):** 5.0 cP<br>**Specific Gravity (water=1):** 0.8396 at 35°F<br>**Temperature (F):** 35°F or 2°C<br>**Pipe Roughness (ft):** 0.00015<br>**Fluid Velocity (ft/sec):** 16.19 ft/s or 4.93 m/s<br>**Friction Factor:** 0.019<br>**Piping Length (ft):** 900<br>**Pressure Loss (psi):** 50.84 psi<br>**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.

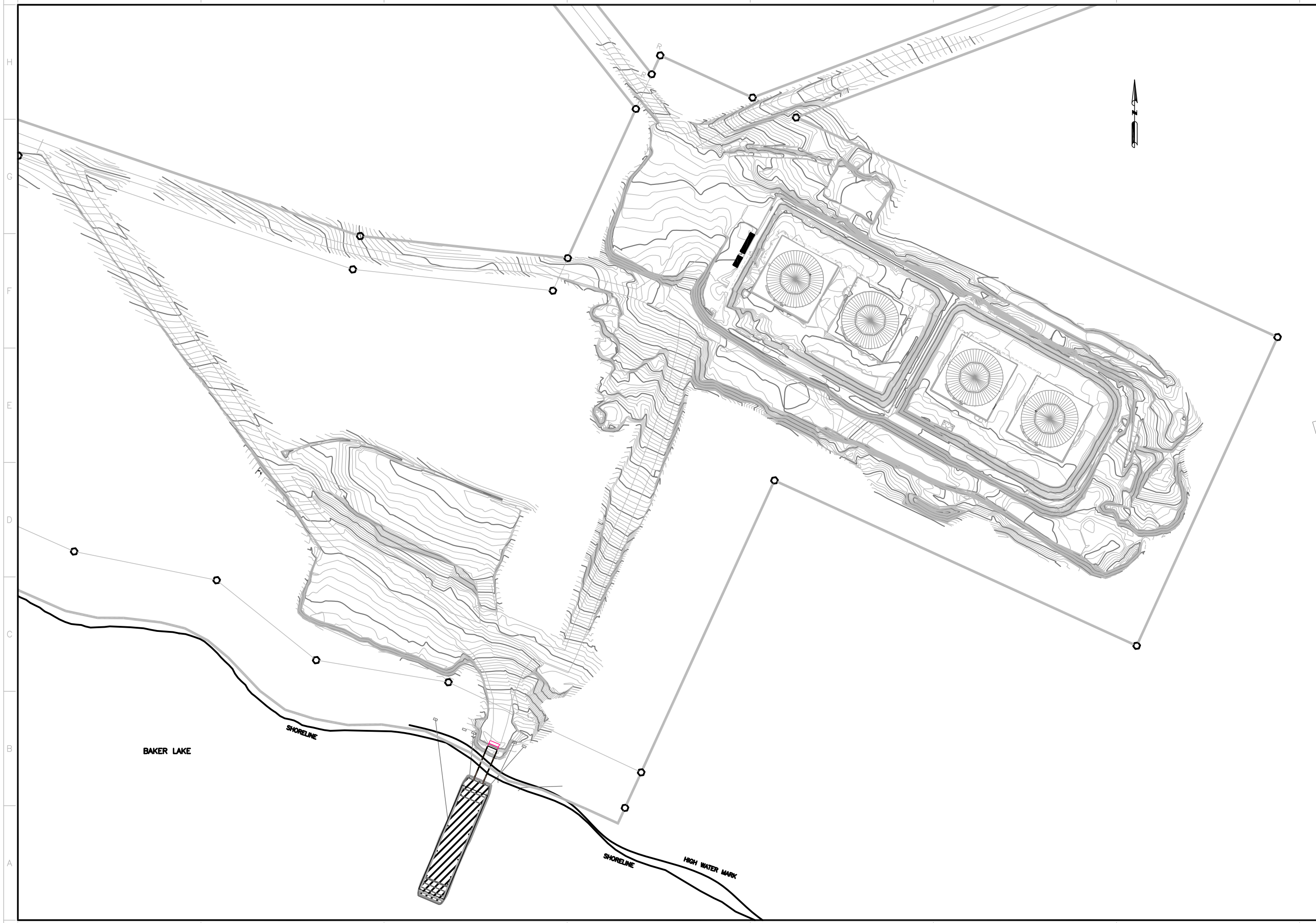
| **Section of piping tested** | 100 mm pipe | from TANK 2 to TANK 3 | |
|---|---|---|---|
| DATE OF TESTING : | 2009-07-25 | Air temperature : | 18°C |
| TEST STARTED AT : | 02:12 PM | TEST WAS ENDED AT : | 06:15 PM |
| INITIAL PRESSURE | **100 PSI** | FINAL PRESSURE READING | **100 PSI** |

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** |




KEY PLAN

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 : stavibel-vd@stavibel.qc.ca
Site Internet : www.stavibel.qc.ca

AS BUILT
Groupe STAVIBEL
PATRICK GIARD, P.ENG. 2009-12-07

| REV. | DATE | REVISION | BY | APP. | DATE |
|---|---|---|---|---|---|
| 2 | | AS BUILT | JL | P.G. | |

REFERENCE DRAWINGS

REVISIONS

AGNICO-EAGLE
MEADOWBANK DIVISION

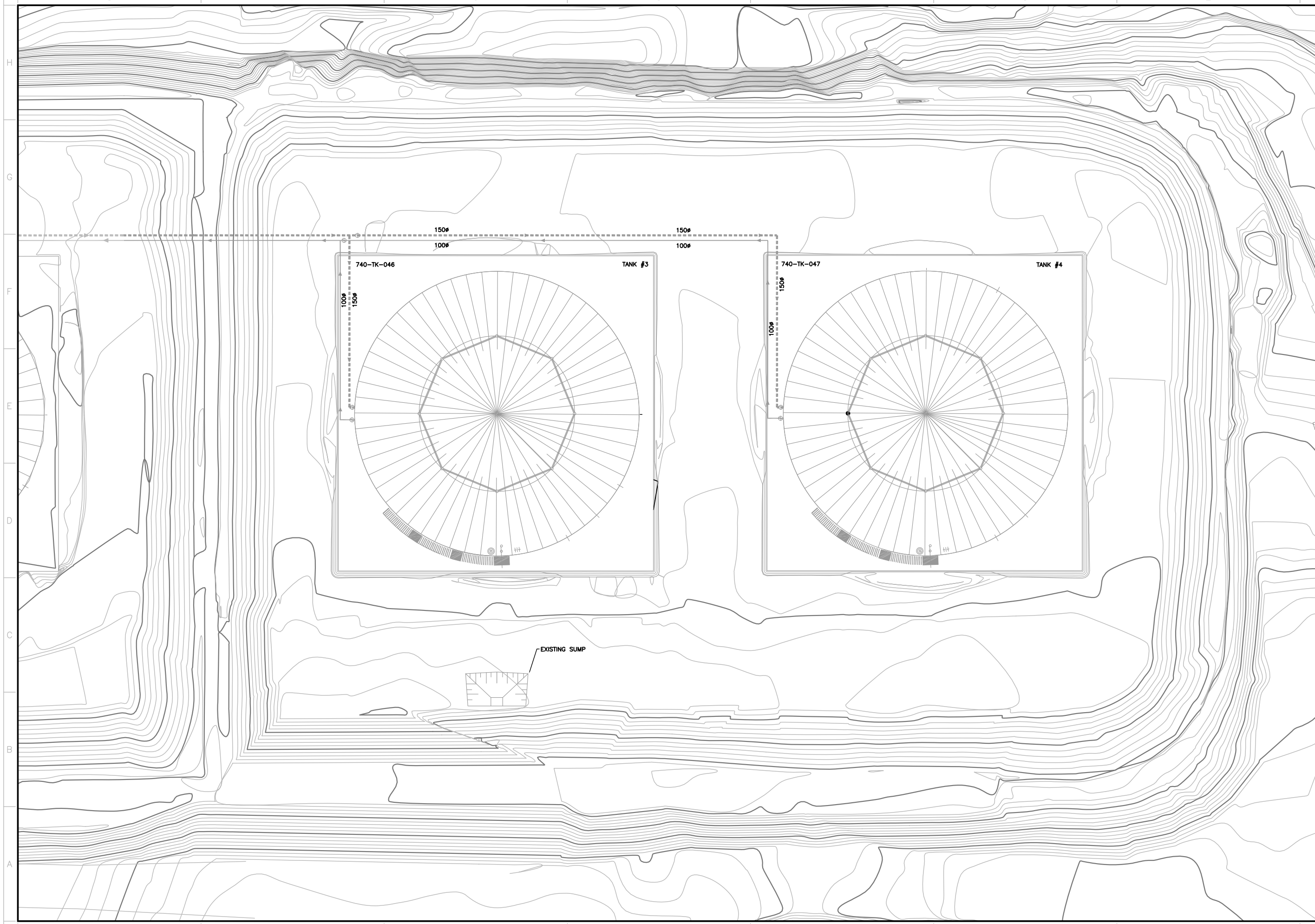
TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740

GENERAL LAYOUT

| | | |
|---|---|---|
| DRAWN BY | FRANCIS ROSE, TECH | DATE |
| CHECKED BY | PATRICK GIARD, P.ENG | |
| APPROVED BY | PATRICK GIARD, P.ENG | |
| SCALE 1:1000 | DATE | |

DRAWING NO.
VD2259-BKL-001

| PROJECT NO. | REVISION | SHEET |
|---|---|---|
| VD2259-2 | 2 | 1/10 |




KEY PLAN

GENERAL NOTES

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Courriel : stavibel-vd@stavibel.qc.ca
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AS BUILT
Groupe STAVIBEL
PATRICK GIARD, P.ENG. 2009-12-07

| REV | DATE | REVISION | BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 2 | | AS BUILT | J.L. | | P.G. |
| 1 | | FOR CONSTRUCTION | P.R. | | P.G. |

REFERENCE DRAWINGS

REVISIONS

AGNICO-EAGLE
MEADOWBANK DIVISION

TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740

PIPING LAYOUT
FOR PHASE 2-B (2009)

| | | |
|---|---|---|
| DRAWN BY | FRANCIS ROBE, TECH | DATE |
| CHECKED BY | PATRICK GIARD, P.ENG | |
| APPROVED BY | PATRICK GIARD, P.ENG | |
| SCALE | 1:1000 | DATE |

DRAWING NO.
VD2259-BKL-002

| PROJECT NO. | REVISION | SHEET |
|---|---|---|
| VD2259-2 | 2 | 8/10 |

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



JULY 08, 2009
ENVIROLINE

Enviroline Services Supervisor

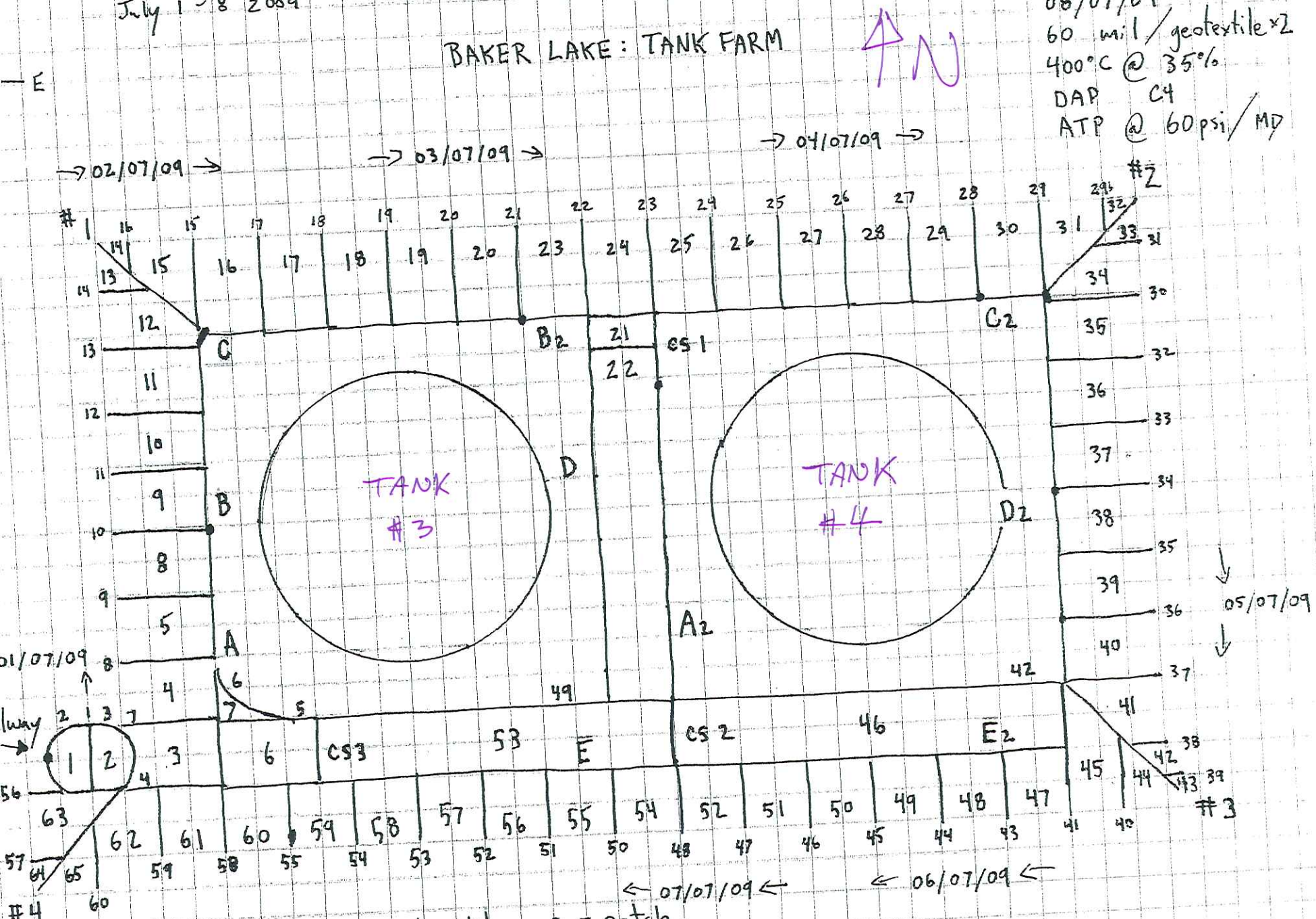
DEREK PROVOST

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

July 1 - 8 2009

# BAKER LAKE : TANK FARM

ENVIROLINE
08/07/09
60 mil / geotextile x2
400°C @ 35%
DAP C4
ATP @ 60 psi / MD




07/07/09
End.

* Seam #s are highlit • = patch

#1234 corners

A - E + A2 - E2 - TIE IN SEAMS

nviroline services inc.
ox 7539 Saskatoon, SK. S7K 4L4 Tel. 306 242 8836 Fax 306 249 6721 Email: dvbarnes@home.com

# dge Welder Seam Log

| | | | | | |
|---|---|---|---|---|---|
| ect | TANK FARM | QC Tech. | MD | Drive Pressure | 60 |
| tion | BAKER LAKE | Wedge Temp. | 400°C | Dwell Pressure | |
| erial | 60 mil | Wedge Gap | | Comments | |

| Fusion Information | | | | | Testing Information | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | HDPE Weld | | | Peel Test | | Air Test | | 60 psi 60 | | Date 7/07/09 | Date | |
| n # | Tech. | Temp | Speed | Vise Grip | Inside | Outside | Start | Finish | Start | Finish | Welded | Tested | Comments |
| | DAP | 400 | 35% | ✓ | 121 | 114 | 6:35 | 6:40 | 60 | 60 | 01 | 02 | July 2009 |
| 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 | |

nviroline services inc.
ox 7539 Saskatoon, SK. S7K 4L4 Tel. 306 242 8836 Fax 306 249 6721 Email: divbarnes@home.com

# edge Welder Seam Log

| | | | | | |
|---|---|---|---|---|---|
| ect | TANK FARM | QC Tech. | MD | Drive Pressure | 60 |
| ation | BAKER LAKE | Wedge Temp. | 400°C | Dwell Pressure | |
| erial | 60 mil | Wedge Gap | | Comments | |

| Fusion Information | | | | | Testing Information | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | HDPE Weld | | | Peel Test | | Air Test | | 60 psi 60 | | Date -/07/09 | Date | |
| m # | Tech. | Temp | Speed | Vise Grip | Inside | Outside | Start | Finish | Start | Finish | Welded | Tested | Comments |
| 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 | |
| 27 | | | | ✓ | 118 | 120 | 2:55 | 3:00 | | | 05 | 06 | |
| 28 | | | | ✓ | 113 | 118 | 6:10 | 6:15 | | | 05 | 06 | |
| 29 | | | | ✓ | 117 | 114 | 6:16 | 6:21 | | | 05 | 06 | |
| 30 | | | | ✓ | 117 | 113 | 6:22 | 6:27 | | | 05 | 06 | |
| 31 | | | | ✓ | 116 | 117 | 6:28 | 6:33 | | | 05 | 06 | |
| 32 | | | | ✓ | 112 | 119 | 6:15 | 6:20 | | | 06 | 06 | |
| 33 | | | | ✓ | 113 | 121 | 6:21 | 6:26 | | | 06 | 06 | |
| 34 | | | | ✓ | 115 | 120 | 6:27 | 6:32 | | | 06 | 06 | |
| 35 | | | | ✓ | 117 | 116 | 6:33 | 6:38 | | | 06 | 06 | |
| 36 | | | | ✓ | 114 | 115 | 6:39 | 6:44 | | | 06 | 06 | |
| 37 | | | | ✓ | 112 | 117 | 6:45 | 6:50 | | | 06 | 06 | |
| 38 | | | | ✓ | 118 | 120 | 6:51 | 6:56 | | | 06 | 07 | |
| 39 | | | | ✓ | 113 | 114 | 6:57 | 7:02 | | | 06 | 07 | |
| 40 | | | | ✓ | 113 | 118 | 7:03 | 7:08 | | | 06 | 07 | |

W. oline services inc.
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# ge Welder Seam Log

| | | | | | |
|---|---|---|---|---|---|
| | TANK FARM | QC Tech. | MJ | Drive Pressure | 60 |
| a | BAKER LAKE | Wedge Temp. | 400°C | Dwell Pressure | |
| l | 60 mil | Wedge Gap | | Comments | |

| on Information | | | | Testing Information | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | HDPE Weld | | | Peel Test | | Air Test | | 60 psi 60 | | Date | Date - /07/09 | |
| Tech. | Temp | Speed | Vise Grip | Inside | Outside | Start | Finish | Start | Finish | Welded | Tested | Comments | |
| DAP | 400 | 35% | ✓ | 109 | 114 | 6:07 | 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 | | |

...oline services inc.
...539 Saskatoon, SK. S7K 4L4 Tel. 306 242 8836 Fax 306 249 6721 Email: dvhornes@home.com

# ...ge Welder Seam Log

| | | | |
|---|---|---|---|
| ... | TANK FARM | QC Tech. MD | Drive Pressure 60 |
| ...n | BAKER LAKE | Wedge Temp. 400°C | Dwell Pressure |
| ...l | 60 mil | Wedge Gap | Comments |

| ...on Information | | | | | Testing Information | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HDPE Weld | | | | Peel Test | | Air Test | | psi | | Date | Date | |
| | Tech. | Temp | Speed | Vise Grip | Inside | Outside | Start | Finish | Start | Finish | Welded | Tested | Comments |
| | DAP | 400°C | 35% | ✓ | 116 | 117 | 11:30 | 11:35 | 60 | 60 | 02 | 02 | July 2009 |
| | ↓ | ↓ | ↓ | ✓ | 114 | 112 | 11:36 | 11:41 | ↓ | ↓ | 02 | 02 | |
| | | | | ✓ | 119 | 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 | |
| 1 | | | | ✓ | 112 | 121 | 1:30 | 1:35 | | | 07 | 07 | |
| 2 | | | | ✓ | 119 | 117 | 8:00 | 8:05 | ↓ | ↓ | 07 | 08 | |
| 3 | ↓ | ↓ | ↓ | ✓ | | | | | | | | | |
| | | | | ✓ | | | | | | | | | |
| | | | | ✓ | | | | | | | | | |

**enviroline** Services Inc.

P O Box 7539 Saskatoon, SK. S7K 4L4 Tel.306 242 8836 Fax 306 249 6721 Email: dybarnes@home.com

## Wedge Welder Qualifiication Data

| | | | |
|---|---|---|---|
| Date | July 1, 2009 | Wedge Welder # | C4 |
| 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 | % Enlongation | Comments |
| 181 | * | P |
| 172 | * | P |

**enviroline** Services Inc.

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# Wedge Welder Qualifiication Data

| | | | |
|---|---|---|---|
| Date | July 7, 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 | % Enlongation | Comments |
|---|---|---|
| 179 | | P |
| 188 | | P |

**enviroline** Services Inc.

P O Box 7539 Saskatoon, SK. S7K 4L4 Tel.306 242 8836 Fax 306 249 6721 Email: dybarnes@home.com

## Wedge Welder Qualifiication 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 | % Enlongation | Comments |
|---|---|---|
| 181 | | P |
| 185 | | P |

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## Wedge Welder Qualifiication 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 | % Enlongation | Comments |
|---|---|---|
| 183 | | P |
| 185 | | P |

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# Wedge Welder Qualifiication 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. | MP | 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 | % Enlongation | Comments |
|---|---|---|
| 191 | | P |
| 188 | | P |

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# Wedge Welder Qualifiication 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 | |
| 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 | % Enlongation | Comments |
|---|---|---|
| 177 | 200 | P |
| 181 | 200 | P |

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## Wedge Welder Qualifiication 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 | 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 | % Enlongation | Comments |
|---|---|---|
| 184 | 200 | P |
| 180 | 200 | P |

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## Wedge Welder Qualifiication 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 | % Enlongation | Comments |
|---|---|---|
| 185 | 200 | P |
| 189 | 200 | P |

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## Wedge Welder Qualifiication 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 | |

### Seam Tensile

| Lb/Inch | % Enlongation | Comments |
|---|---|---|
| 180 | 200 | P |
| 184 | 200 | P |

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## Wedge Welder Qualifiication 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 | % Enlongation | Comments |
|---|---|---|
| 181 | 200 | P |
| 182 | 200 | P |

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# *Extrusion Welding Log*

Project: BAKER LAKE
Work Area: TANK FARM
QC Tech. MD
Material: 60 mil mil HDPE

| Extrusion # | Type | Location | Weld Date | Operator | Test Date | Vac Test | Pik Test | QC | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Patch | S 2 | 01/07/09 | DAP | 01/07 | ✓ | | MD | |
| 2 | ↓ | S 10 | 02/07/09 | ↓ | 02/07 | ✓ | | | |
| 3 | | Corner #1 | 02/07/09 | | 02/07 | ✓ | | | |
| 4 | | S 21 | 03/07/09 | | 03/07 | ✓ | | | |
| 5 | | S 23 | 03/07/09 | | 03/07 | ✓ | | | |
| 6 | | S 28 | 04/07/09 | | 04/07 | ✓ | | | |
| 7 | | Corner #2 | 04/07/09 | | 05/07 | | ✓ | | |
| 8 | | S 34 | 05/07/09 | | 05/07 | ✓ | | | |
| 9 | | S 36 | 05/07/09 | | 05/07 | ✓ | ✓ | | |
| 10 | | S 55 | 07/07/09 | | 07/07 | ✓ | | | |
| 11 | | Corner #4 | 07/07/09 | | 07/07 | ✓ | | | |

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# Extrusion Welding Qualification Data

| | | | |
|---|---|---|---|
| Date | July 1, 09 | Extruder# | X2 - 2 |
| Project | Baker Lake | 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 | % Enlongation | 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: | MD | 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 | % Enlongation | Comments |
|---|---|---|
| 179 | 200 | P |
| 178 | 200 | P |

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# Extrusion Welding Qualification Data

| | | | |
|---|---|---|---|
| Date | July 03, 2009 | Extruder# | X2-2 |
| Project | Baker Lake | Operator | PAP |
| 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 |
|---|---|---|
| 117 | 0 | P |
| 114 | 0 | P |
| 112 | 0 | P |
| 112 | 0 | P |
| 118 | 0 | P |

### Seam Tensile

| Lb/inch | % Enlongation | Comments |
|---|---|---|
| 183 | 200 | P |
| 177 | 200 | P |

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# Extrusion Welding Qualification Data

| | | | |
|---|---|---|---|
| Date | July 4 2009 | Extruder# | X2-2 |
| 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 | % Enlongation | Comments |
|---|---|---|
| 183 | 200 | P |
| 177 | 200 | P |

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

# 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 |
|---|---|---|
| 110 | 0 | P |
| 117 | 0 | P |
| 109 | 0 | P |
| 111 | 0 | P |
| 118 | 0 | P |

### Seam Tensile

| Lb/inch | % Enlongation | Comments |
|---|---|---|
| 178 | 200 | P |
| 173 | 200 | P |

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

# 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 | % Enlongation | 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 |
|---|---|---|
| 114 | 0 | P |
| 115 | 0 | P |
| 115 | 0 | P |
| 119 | 0 | P |
| 114 | 0 | P |

### Seam Tensile

| Lb/inch | % Enlongation | Comments |
|---|---|---|
| 183 | 200 | P |
| 188 | 200 | P |

# Appendix A3

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

AEM

# 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)

JANUARY 2011

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

REGISTERED PROFESSIONAL ENGINEER
S.M. BEAULE
LICENSEE
NWT/NU

2011-02-23

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


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)

## TABLE OF CONTENTS

## 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 show 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 ± 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 word, 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 futur 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 $m^3$ of diesel fuel at a standard temperature of fifteen degrees Celcius (15 $^oC$).

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 $m^3$.

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 $m^3$ as a result, this new containment requirement of 110% of the biggest tank volume (or 11 843 $m^3$), 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 **$m^3$**
according to ref. PN-1326, Section 3.9.1 (1) 2-b-ii → 110%

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

Volume
NET CONTAINMENT 15 500 $m^3$
or 144% > 110%

# APPENDIX 1

## AS BUILT DRAWINGS FOR PHASE 3

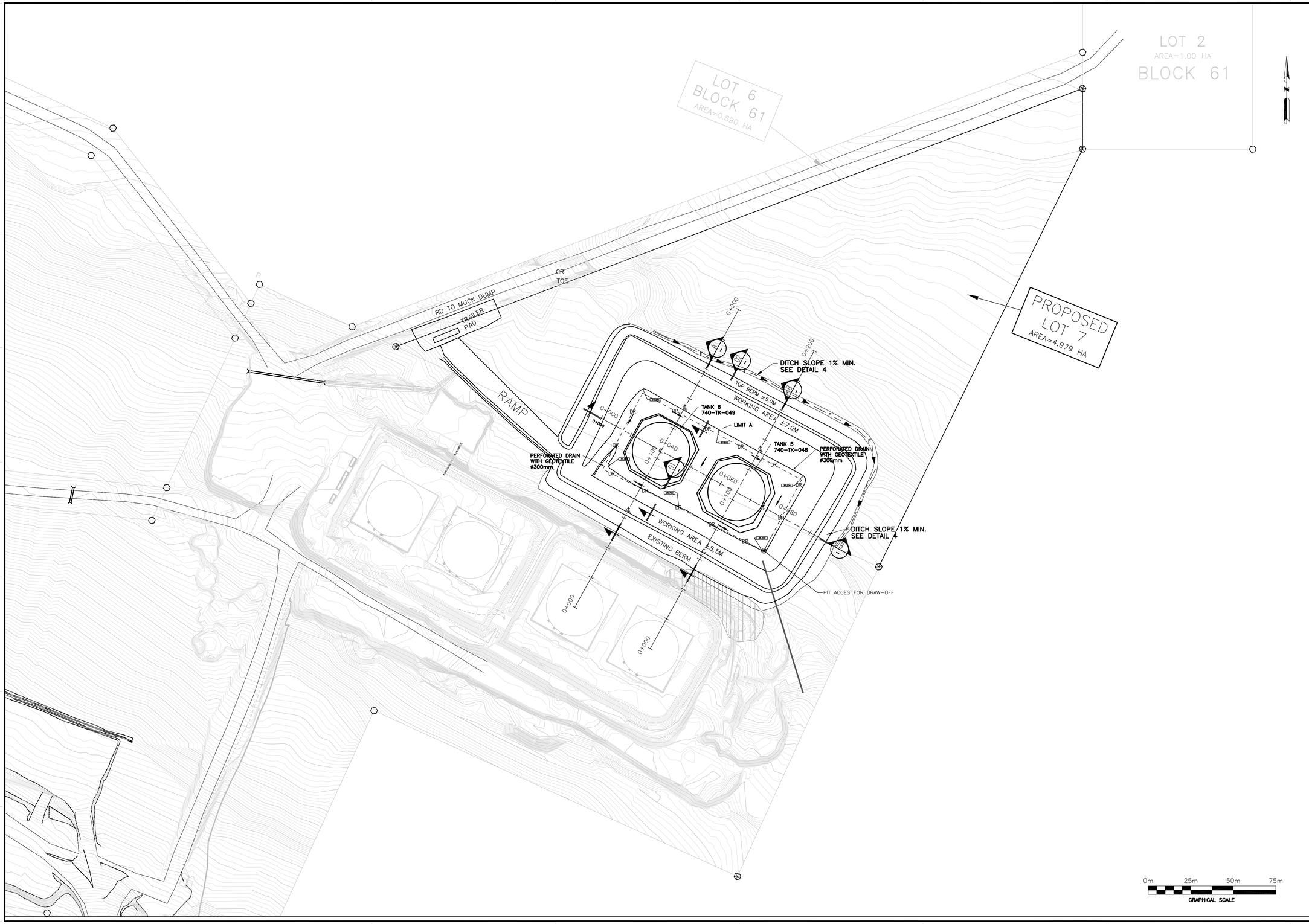
| DRAWINGS NUMBER | | | |
|---|---|---|---|
| **Earthwork drawings** | **Fuel piping drawing** | **GEM Steel drawings** | BL2010-4 |
| 740-C-0123 | 740-M-0100 | BL2010-1 | |
| 740-C-0124 | **Electrical drawings** | BL2010-2 | |
| 740-C-0125 | 740-E-0120 | BL2010-3 | |

## 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 | |

NO. DESSIN
DRAWING NO. 740-C-0123-0125 TQC

FORMAT ARCHD




PLAN CLÉ
KEY PLAN

NOTES GÉNÉRAL / GENERAL NOTES

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



DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |

AGNICO-EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | 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
SERVICES D'INGÉNIERIE
Stavibel inc.
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél. : 819 764-5181 Téléc. : 819 797-0158
Courriel : stavibel-rn@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

| | | |
|---|---|---|
| DESSINÉ PAR / DRAWN BY | J-F SYLVESTRE, TECH. | DATE 2010-07-20 |
| VERIFIÉ 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. DESSIN / DRAWING NO. 740-C-0123

| NO. PROJET / PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| MEAD-I-400 | C | 1 / 3 |

AE-CART-ARCH D

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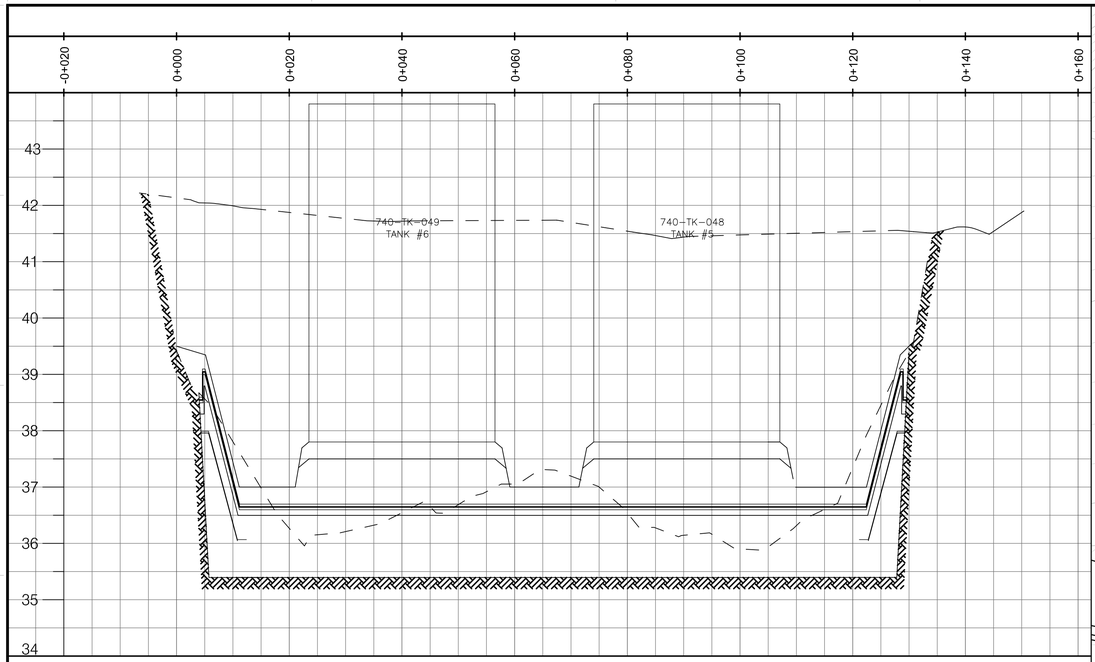
FILE NO. 740-C-0123-0125 TQC.dwg

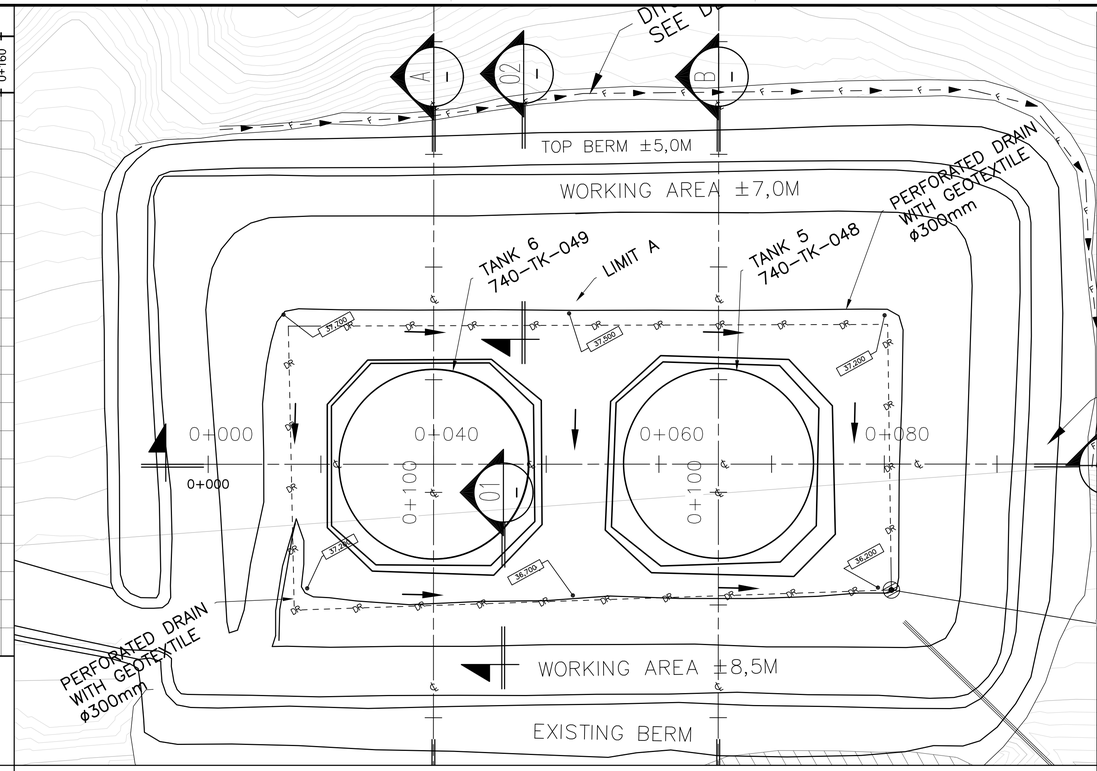
NO. DESSIN
DRAWING NO. 740-C-0123-0125 TQC

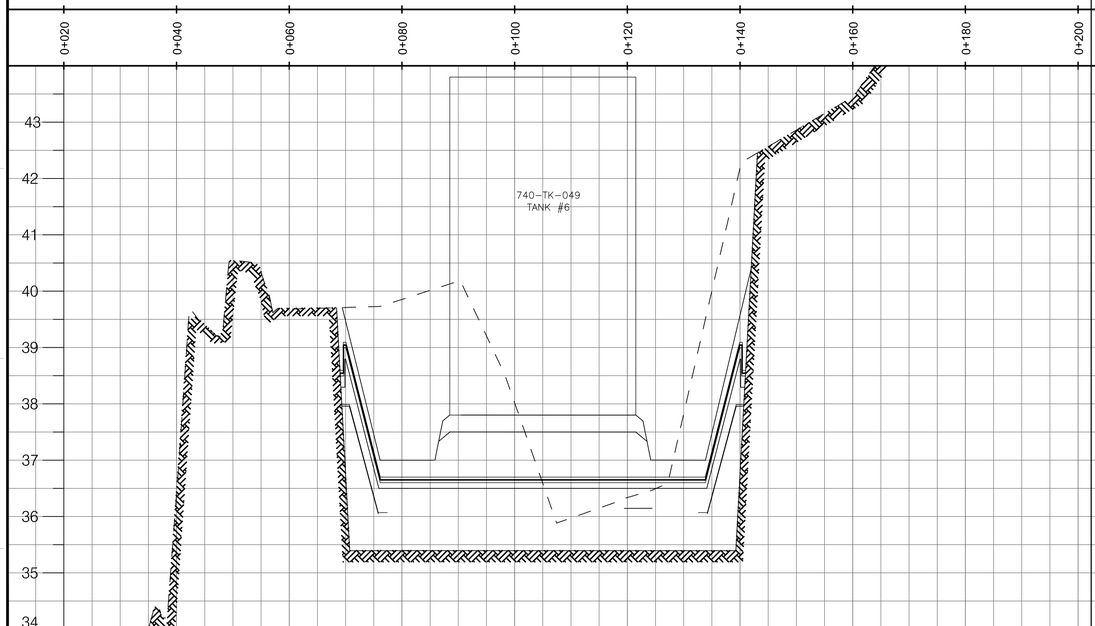
FORMAT ARCHD




PROFIL TANK 5 & 6

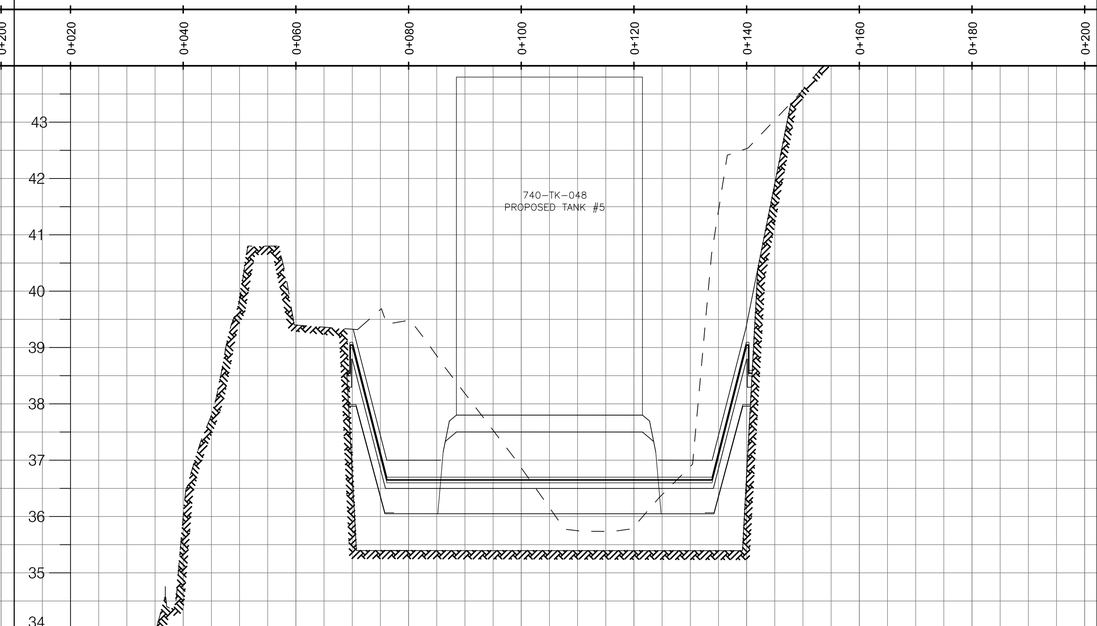
CROSS SECTION C




PROFIL TANK 6

CROSS SECTION A




PROFIL TANK 5

CROSS SECTION B

PLAN CLÉ
KEY PLAN

NOTES GÉNÉRAL / GENERAL NOTES

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



DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| – | – |
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AGNICO-EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | 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

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Courriel : stavibel-rn@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

| | | |
|---|---|---|
| DESSINÉ PAR / DRAWN BY | J-F SYLVESTRE, TECH. | DATE 2010-07-20 |
| 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. | REVISION | FEUILLE / SHT |
|---|---|---|
| MEAD-I-400 | C | 2 / 3 |

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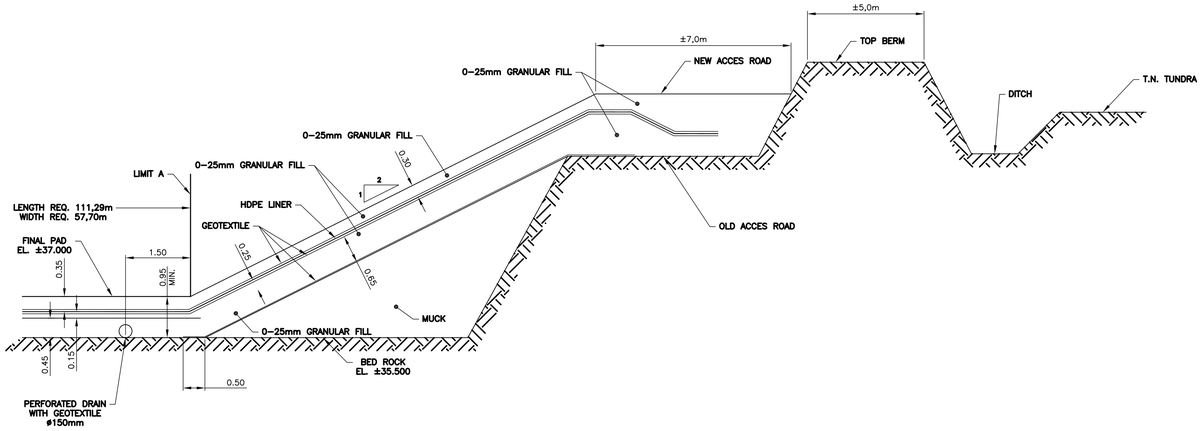
FILE NO. 740-C-0123-0125 TQC.dwg

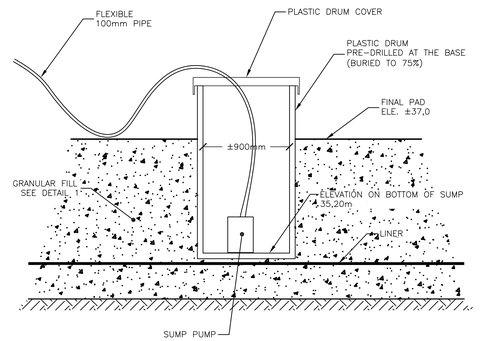
NO. DESSIN
DRAWING NO. 740-C-0123-0125 TQC

FORMAT ARCHD




*TYPICAL SECTION – DAM*

SCALE : NONE
DETAIL 2

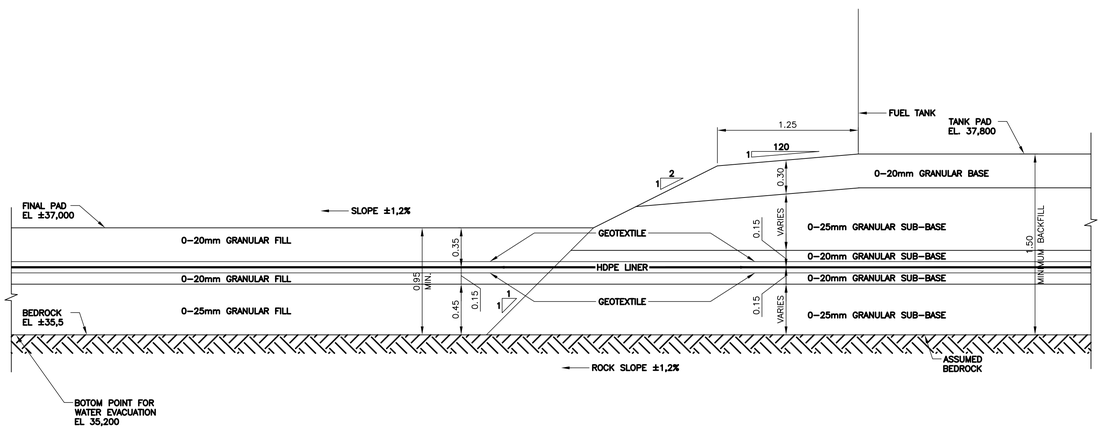



**NOTES :**

- 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




*TYPICAL SECTION – PAD*

SCALE : NONE
DETAIL 1

PLAN CLÉ
KEY PLAN

NOTES GÉNÉRAL / GENERAL NOTES

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



DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
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AGNICO-EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | 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

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Tél.: 819 764-5181 Télec.: 819 797-0158
Courriel : stavibel-rn@stavibel.qc.ca
www.stavibel.qc.ca

Projet No.: - -

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

| | | |
|---|---|---|
| DESSINÉ PAR / DRAWN BY | J-F SYLVESTRE, TECH. | DATE 2010-07-20 |
| 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-0125

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

AE-CART-ARCH D

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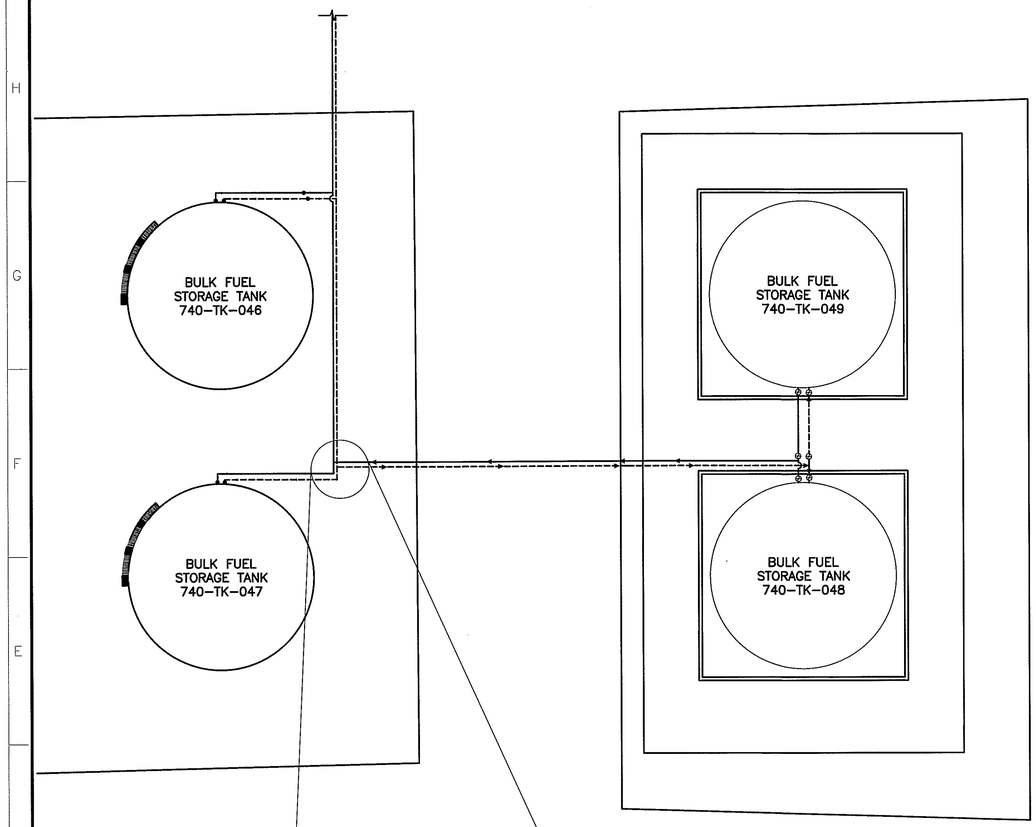
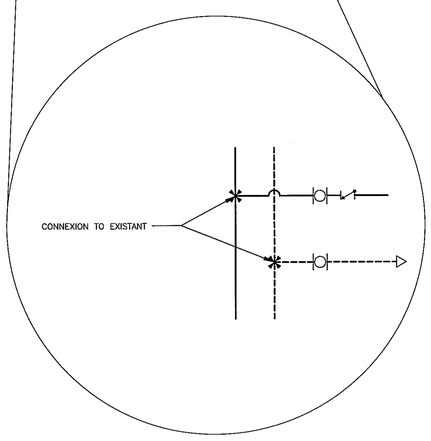
FILE NO. 740-C-0123-0125 TQC.dwg

NO. DESSIN DRAWING NO. VD2622–001(MEAD–I–400)00

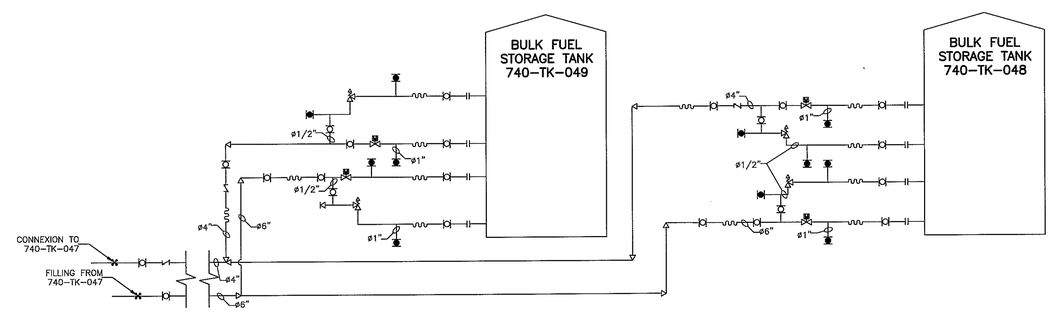
FORMAT ARCHD



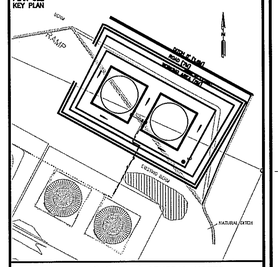

| Piping | Symbol | Equipment | Details | Type | Models | Diameter | Quantity |
|---|---|---|---|---|---|---|---|
| Filling of Tank 740-TK-048 Tank 740-TK-049 | | Gate Valve | Integrally reinforced extended body gate, female socket weld outboard end; API STD 602; forged carbon steel; ASTM A 105/A 105M; 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 600; 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 VGA01; full port. | NA | Velan F-DD-0-06-4C-02-TY (6") or equivalent | 6" | 7 |
| | | Flanged Mettallic flexible tube | - Flanges: Class 150, raised face and ANSI B16.5;<br>- 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;<br>- Body materieal: Carbon Steel Body;<br>- SS 316 Trim, Seat Reinforced TFE Seats ;<br>- Flanges: Class 150 raised face and ANSI B16.5;<br>C/W: Actuator Electric Serie XE (XE-6900) ATEX certified for Flame Proof Eexd IIB T4 + Heater | NA | Matheson valves D9C-F1-600-XHE1-XX 6.00 | 6" | 2 |
| | | Gasket | Composition: Aramid fibers with a nitril binder<br>Tickness: 1/8" | NA | Garlock Blue guard Style 3000 | 1"<br>6" | as required |
| | | Piping | Carbon steel piping sch. 40 ASTM A53 gr.B seamless | NA | NA | 1"<br>6" | as required |
| Distribution from Tank 740-TK-048 Tank 740-TK-049 | | Gate Valve | Class 150; flanged, raised-face; API STD 600; 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 VGA01; full port. | NA | Velan F-DD-0-06-4C-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 Mettallic flexible tube | - Flanges: Class 150, raised face and ANSI B16.5;<br>- Metallic flexible tube: 18" length in Stainless Steel | NA | CONNECTALL AA1-064-0150 or equivalent | 4" | 4 |
| | | Check valve | - Cast steel flanged check valve ;<br>- Body material: Low temperature cast carbon steel to ASTM A352, grade LCB;<br>- Trim material: Disc - Stainless steel, 13% Cr<br>Seat - Stainless steel, 13% Cr;<br>- Valve: Face to face dimensions to ANSI B16.10;<br>- Flanges: Class 150, raised face and ANSI B16.5. | CKF1 [1] | Kitz 150 SCOBL or equivalent | 4" | 3 |
| | | Motorized Valve | - 4" direct mount split body ball valve;<br>- Body materieal: Carbon Steel Body;<br>- SS 316 Trim, Seat Reinforced TFE Seats ;<br>- Flanges: Class 150 raised face and ANSI B16.5;<br>C/W: Actuator Electric Serie XE (XE-2640) ATEX certified for Flame Proof Eexd IIB T4 + Heater | NA | Matheson valves D9C-F1-400-XEE-1-XX 4.00 | 4" | 2 |
| | | Gasket | Composition: Aramid fibers with a nitril binder<br>Tickness: 1/8" | NA | Garlock Blue guard Style 3000 | 1"<br>4" | as required |
| | | Piping | Carbon steel piping sch. 40 ASTM A53 gr.B seamless | NA | NA | 1"<br>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 (¾") or equivalent | ¾" | 8 |
| | | Flanged Mettallic flexible tube | - Flanges: Class 150, raised face and ANSI B16.5;<br>- Metallic flexible tube: 18" length in Stainless Steel | NA | CONNECTALL AA-B1B1-HHH-0180-0150 or equivalent | ¾" | 4 |
| | | Pressure safety valve | - Stainless steel;<br>- Set pressure at 75 PSI | NA | Swagelok SS-RL4MBF8-BU | ¾" | 2 |
| | | Gasket | Composition: Aramid fibers with a nitril binder<br>Tickness: 1/8" | NA | Garlock Blue guard Style 3000 | ¾" | as required |
| | | Piping | Carbon steel piping sch. 40 ASTM A53 gr.B seamless | NA | NA | ¾" | as required |

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




*PIPING DETAILS*

PLAN CLÉ
KEY PLAN




NOTES GÉNÉRAL / GENERAL NOTES

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

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 12/08/2010



DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |
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AGNICO-EAGLE

| REV. | DATE | DESCRIPTION | DAR/TRI | APP. | CLIENT |
|---|---|---|---|---|---|
| 0 | 2010–08–12 | FOR CONSTRUCTION | MA.BED | JM.C | |
| B | 2010–07–20 | FOR APPROVAL | V.Crs. | JM.C | |
| A | 2010–07–16 | FOR APPROVAL | V.Crs. | JM.C | |

REVISIONS

L-2198
2010-08-12

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

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | VICKY CRÊTE, TECH. | DATE 2010–07–16 |
| VERIFIÉ PAR CHECKED BY | J–M CHARRON, Ing. | |
| APPROUVÉ PAR APPROVED BY | J–M CHARRON, Ing. | |
| ÉCHELLE SCALE | N/A | DATE |

NO. DESSIN DRAWING NO. 740–M–0100

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| MEAD–I–400 | 0 | 1 / 1 |

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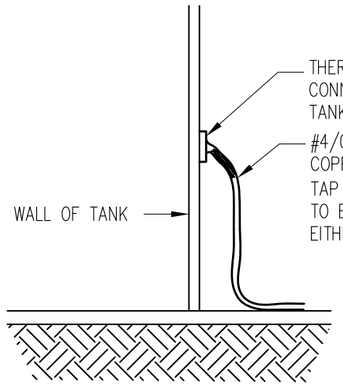
\\groupe\stantbel\Projet\300–INI\VD2622\001\Dessins maîtres\75–PEF\VD2622–001(MEAD–I–400)00.dwg, 12 Aoû 2010

FILE NO. VD2622–001(MEAD–I–400)00.dwg

NO. DESSIN / DRAWING NO. 740-E-0120

FORMAT ANSI B-11x17

NOTES :
1. ALL CABLES CONNECTION ARE THERMIT WELD.




BONDING CONNECTION TO EXTERIOR TANK

DETAIL 1 / –

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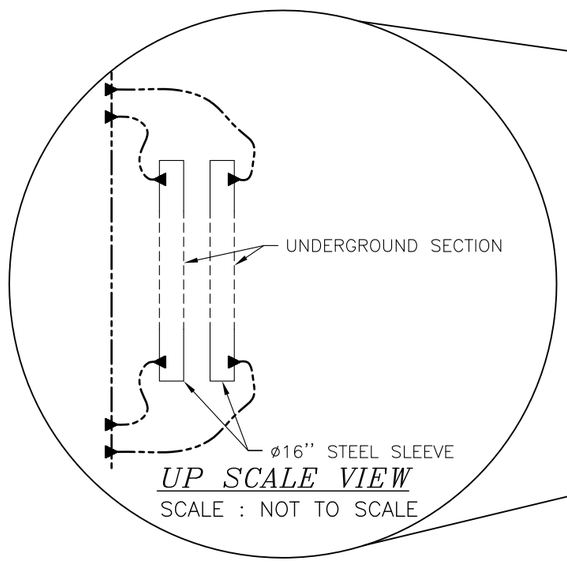
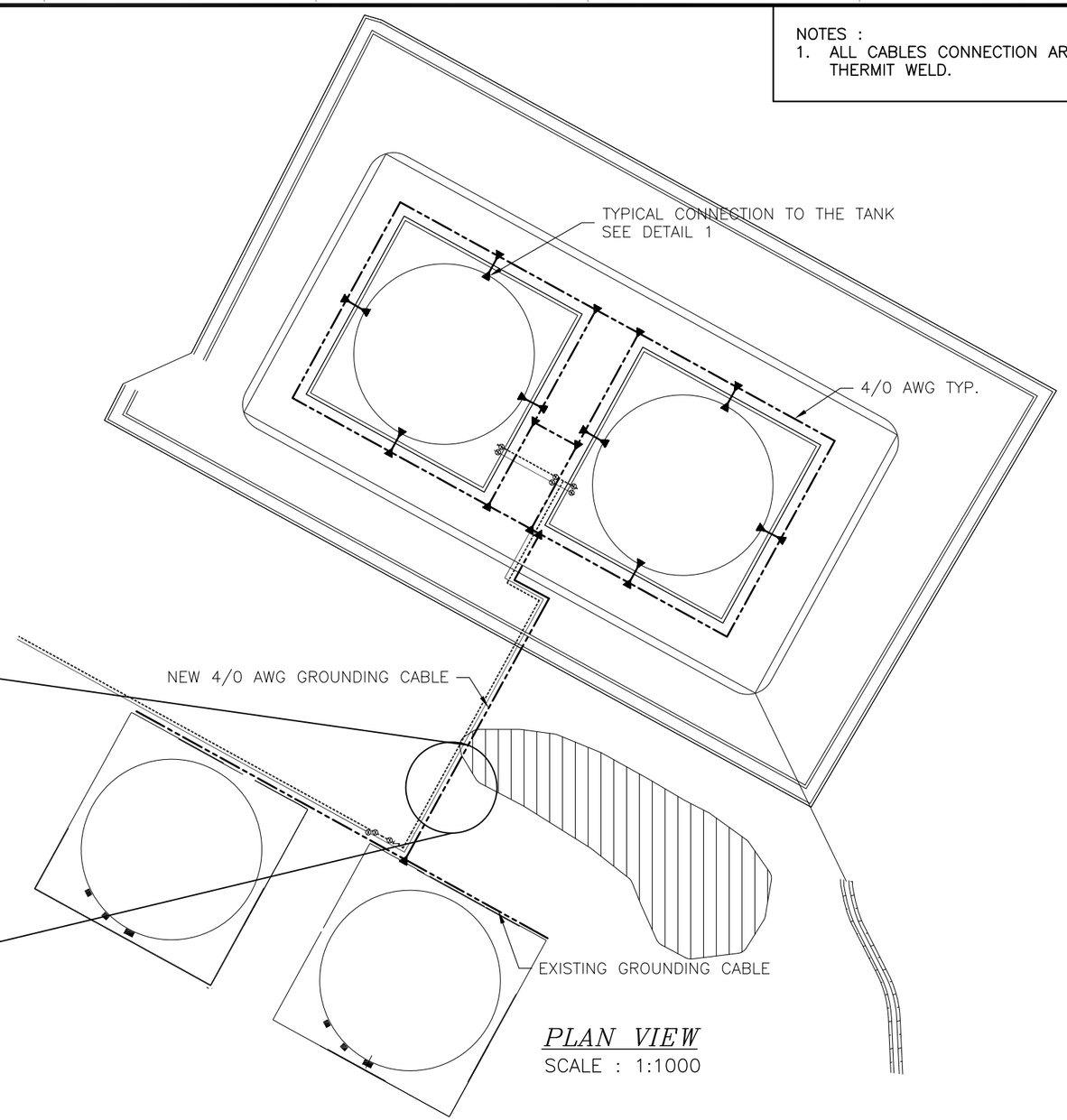



*UP SCALE VIEW*

SCALE : NOT TO SCALE




*PLAN VIEW*

SCALE : 1:1000

| TITRE / TITLE | # DWG | REV | DESCRIPTION | DATE | PAR BY |
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| – | – | | | | |
| – | – | 0 | AS BUILD | 14-01-2011 | M.O. |

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

REVISIONS

AGNICO-EAGLE

| | | | |
|---|---|---|---|
| DESSINÉ PAR / DRAWN BY | M.MATTEAU, T.P. | DATE | 2011-01-12 |
| VÉRIFIÉ PAR / CHECKED BY | M. OUELLETTE (AEM) | | |
| APPROUVÉ PAR / APPROVED BY | | | |
| No. PROJET / PROJECT NO. | VD2622-001 | | |
| DATE | 2011-01-12 | | |



TITRE / TITLE

AGNICO-EAGLE – MEADOWBANK
AREA 740 BAKER LAKE
ELECTRICAL
GROUNDING PLAN

| | | | |
|---|---|---|---|
| ÉCHELLE/ SCALE | INDICATED | FICHIER FILE | 740-E-0120.DWG |
| No. DESSIN/ DRAWING NO. | 740-E-0120 | REVISION 0 | FEUILLE/SHT 1 / 1 |

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NO. DESSIN
DRAWING NO. VD2622-001(MEAD-I-400)00

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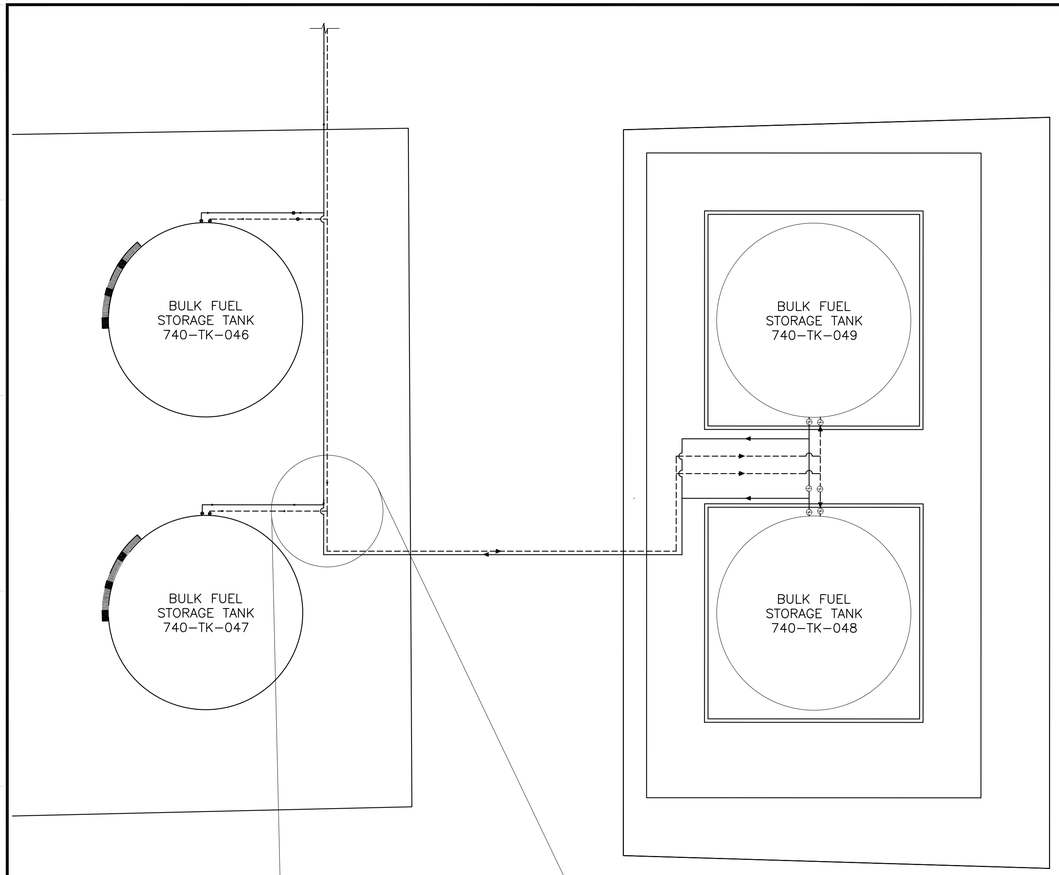
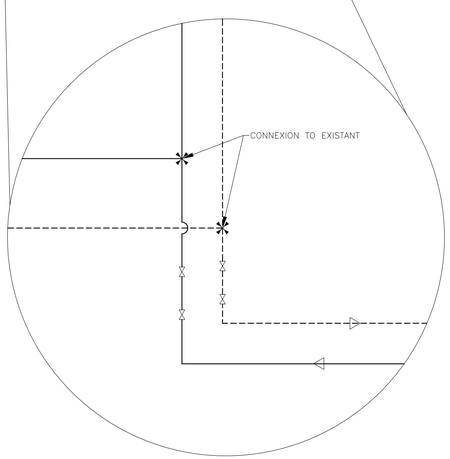
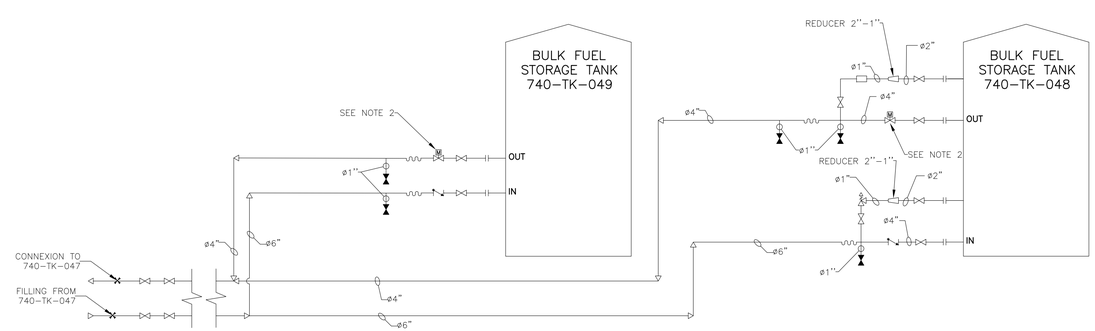


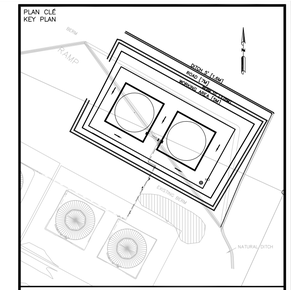




| Piping | Symbol | Equipment | Details | Type | Models | Diameter | Quantity |
|---|---|---|---|---|---|---|---|
| Filling of Tank 740-TK-048 Tank 740-TK-049 | | Gate Valve | Class 150; flanged, face to face dimension ANSI B16.10, End flange dimension ANSI B16.5, API STD 600; carbon steel body, ASTM 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 Mettalic flexible tube | - Flanges: Class 150, raised face and ANSI B16.5, carbon steel; - Metallic flexible tube: 18" length in Stainless Steel | NA | CONNECTALL AAB1B1LLL0240 | 6" | 2 |
| | | Gasket | Composition: Aramid fibers with a nitril binder Tickness: 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 Mettalic flexible tube | - Flanges: Class 150, raised face and ANSI B16.5, carbon steel; - Metallic flexible tube: 18" length in Stainless Steel | NA | CONNECTALL AAB1B1WWW0240 | 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 |
| | M | Motorized Valve | - Ball valve class 150; - Body materieal: 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 Eexd 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 Tickness: 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 Tickness: 1/8" | NA | Garlock Blue guard Style 3000 | ½" | as required |
| | | Piping | Carbon steel piping sch. 40 ASTM A53 gr.B seamless | NA | NA | ½" | as required |




PIPING DETAILS

PLAN CLÉ
KEY PLAN




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.



DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
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AGNICO-EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 31-01-2011 | AS FIELD | K.F | JM.C | |
| 0 | 2010-08-12 | FOR CONSTRUCTION | MA.BÉD | JM.C | |
| B | 2010-07-20 | FOR APPROVAL | V.Cre. | JM.C | |
| A | 2010-07-16 | FOR APPROVAL | V.Cre. | JM.C | |

REVISIONS

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

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | VICKY CRÊTE, TECH. | DATE 2010-07-16 |
| VERIFIÉ 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. | REVISION | FEUILLE / SHT |
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FILE NO. VD2622-001(MEAD-I-400)01.dwg

NO. DESSIN DRAWING NO. VD2622–001(MEAD–I–400)00

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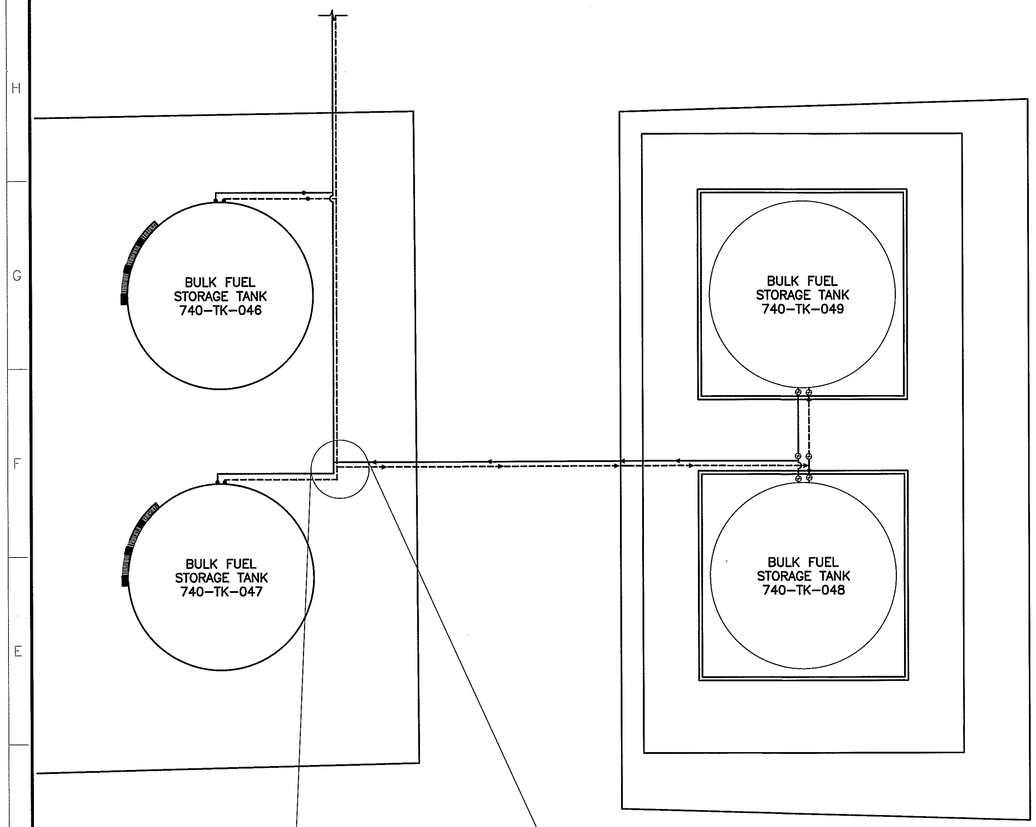
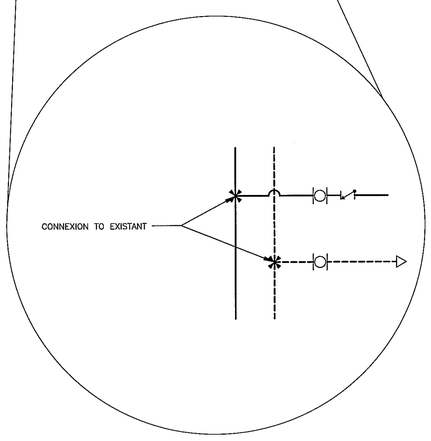
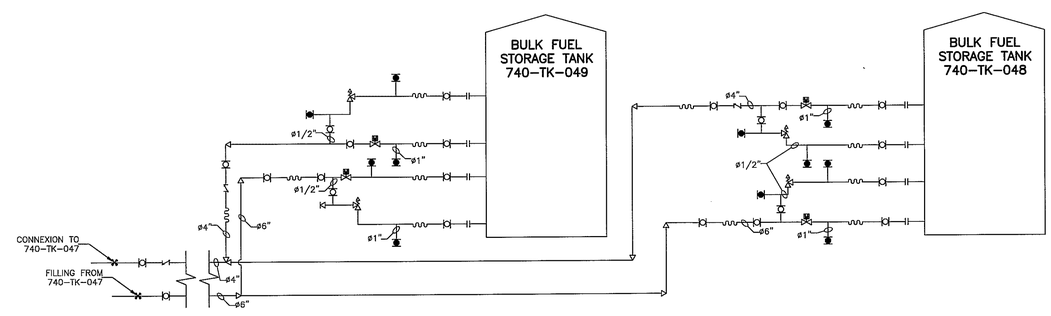


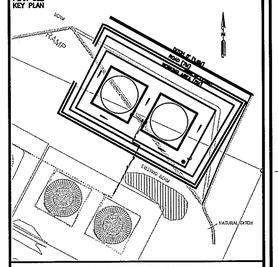

| Piping | Symbol | Equipment | Details | Type | Models | Diameter | Quantity |
|---|---|---|---|---|---|---|---|
| Filling of Tank 740-TK-048 Tank 740-TK-049 | | Gate Valve | Integrally reinforced extended body gate, female socket weld outboard end; API STD 602; forged carbon steel; ASTM A 105/A 105M; 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 600; 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 VGA01; full port. | NA | Velan F-DD-0-06-4C-02-TY (6") or equivalent | 6" | 7 |
| | | Flanged Mettallic flexible tube | - Flanges: Class 150, raised face and ANSI B16.5;<br>- 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;<br>- Body materieal: Carbon Steel Body;<br>- SS 316 Trim, Seat Reinforced TFE Seats ;<br>- Flanges: Class 150 raised face and ANSI B16.5;<br>C/W: Actuator Electric Serie XE (XE-6900) ATEX certified for Flame Proof Eexd IIB T4 + Heater | NA | Matheson valves D9C-F1-600-XHE1-XX 6.00 | 6" | 2 |
| | | Gasket | Composition: Aramid fibers with a nitril binder<br>Tickness: 1/8" | NA | Garlock Blue guard Style 3000 | 1"<br>6" | as required |
| | | Piping | Carbon steel piping sch. 40 ASTM A53 gr.B seamless | NA | NA | 1"<br>6" | as required |
| Distribution from Tank 740-TK-048 Tank 740-TK-049 | | Gate Valve | Class 150; flanged, raised-face; API STD 600; 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 VGA01; full port. | NA | Velan F-DD-0-06-4C-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 Mettallic flexible tube | - Flanges: Class 150, raised face and ANSI B16.5;<br>- Metallic flexible tube: 18" length in Stainless Steel | NA | CONNECTALL AA1-064-0150 or equivalent | 4" | 4 |
| | | Check valve | - Cast steel flanged check valve ;<br>- Body material: Low temperature cast carbon steel to ASTM A352, grade LCB;<br>- Trim material: Disc - Stainless steel, 13% Cr<br>Seat - Stainless steel, 13% Cr;<br>- Valve: Face to face dimensions to ANSI B16.10;<br>- Flanges: Class 150, raised face and ANSI B16.5. | CKF1 [1] | Kitz 150 SCOBL or equivalent | 4" | 3 |
| | | Motorized Valve | - 4" direct mount split body ball valve;<br>- Body materieal: Carbon Steel Body;<br>- SS 316 Trim, Seat Reinforced TFE Seats ;<br>- Flanges: Class 150 raised face and ANSI B16.5;<br>C/W: Actuator Electric Serie XE (XE-2640) ATEX certified for Flame Proof Eexd IIB T4 + Heater | NA | Matheson valves D9C-F1-400-XEE-1-XX 4.00 | 4" | 2 |
| | | Gasket | Composition: Aramid fibers with a nitril binder<br>Tickness: 1/8" | NA | Garlock Blue guard Style 3000 | 1"<br>4" | as required |
| | | Piping | Carbon steel piping sch. 40 ASTM A53 gr.B seamless | NA | NA | 1"<br>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 (¾") or equivalent | ¾" | 8 |
| | | Flanged Mettallic flexible tube | - Flanges: Class 150, raised face and ANSI B16.5;<br>- Metallic flexible tube: 18" length in Stainless Steel | NA | CONNECTALL AA-B1B1-HHH-0180-0150 or equivalent | ¾" | 4 |
| | | Pressure safety valve | - Stainless steel;<br>- Set pressure at 75 PSI | NA | Swagelok SS-RL4MBF8-BU | ¾" | 2 |
| | | Gasket | Composition: Aramid fibers with a nitril binder<br>Tickness: 1/8" | NA | Garlock Blue guard Style 3000 | ¾" | as required |
| | | Piping | Carbon steel piping sch. 40 ASTM A53 gr.B seamless | NA | NA | ¾" | as required |

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




*PIPING DETAILS*

PLAN CLÉ
KEY PLAN




NOTES GÉNÉRAL / GENERAL NOTES

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

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 12/08/2010



DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
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AGNICO-EAGLE

| REV. | DATE | DESCRIPTION | DAR/TRI | APP. | CLIENT |
|---|---|---|---|---|---|
| 0 | 2010–08–12 | FOR CONSTRUCTION | MA.BED | JM.C | |
| B | 2010–07–20 | FOR APPROVAL | V.Crs. | JM.C | |
| A | 2010–07–16 | FOR APPROVAL | V.Crs. | JM.C | |

REVISIONS

L-2198
2010-08-12

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

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | VICKY CRÊTE, TECH. | DATE 2010–07–16 |
| VERIFIÉ PAR CHECKED BY | J–M CHARRON, Ing. | |
| APPROUVÉ PAR APPROVED BY | J–M CHARRON, Ing. | |
| ÉCHELLE SCALE | N/A | DATE |

NO. DESSIN DRAWING NO. 740–M–0100

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
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# 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 |

**<u>NOTE:</u> 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 (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:**

REGISTERED PROFESSIONAL ENGINEER
R. MARCOUX
LICENSEE
NT/NU

AGNICO EAGLE MINES LTD

*MEADOWBANK DIVISION*

# BAKER LAKE JET A FUEL STORAGE INSTALLATIONS

2013

# AS BUILT CONSTRUCTION REPORT

## TABLE OF CONTENTS

## 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. Correctives 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 hose. 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:

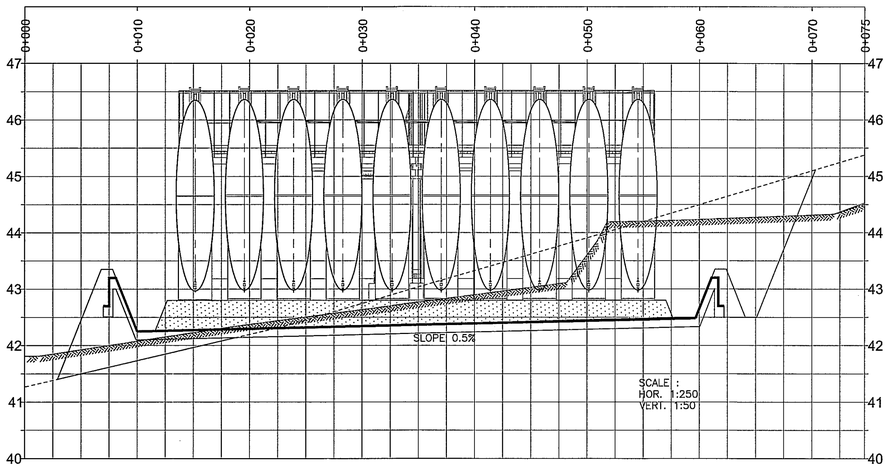
Drawing number: 61-740-230-211_A

### B. AS BUILT DRAWINGS:

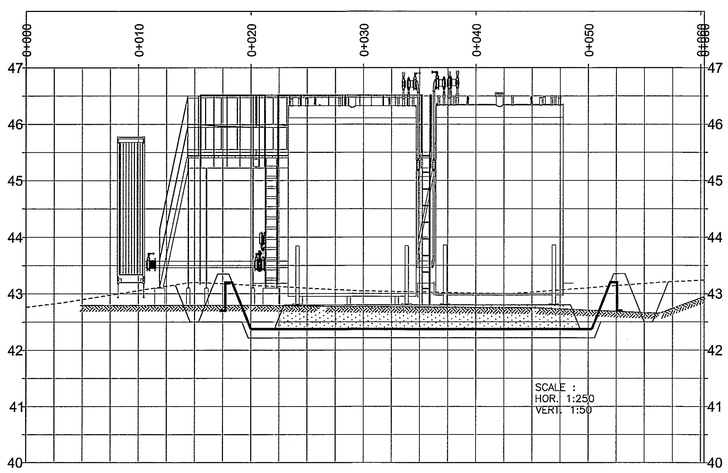
| | | |
|---|---|---|
| Drawing number: | BAKER FF 1 | PLANIMETRICAL VIEW |
| | BAKER FF 2 | SECTION VIEW |

NO. DESSIN DRAWING 61-740-230-211-A

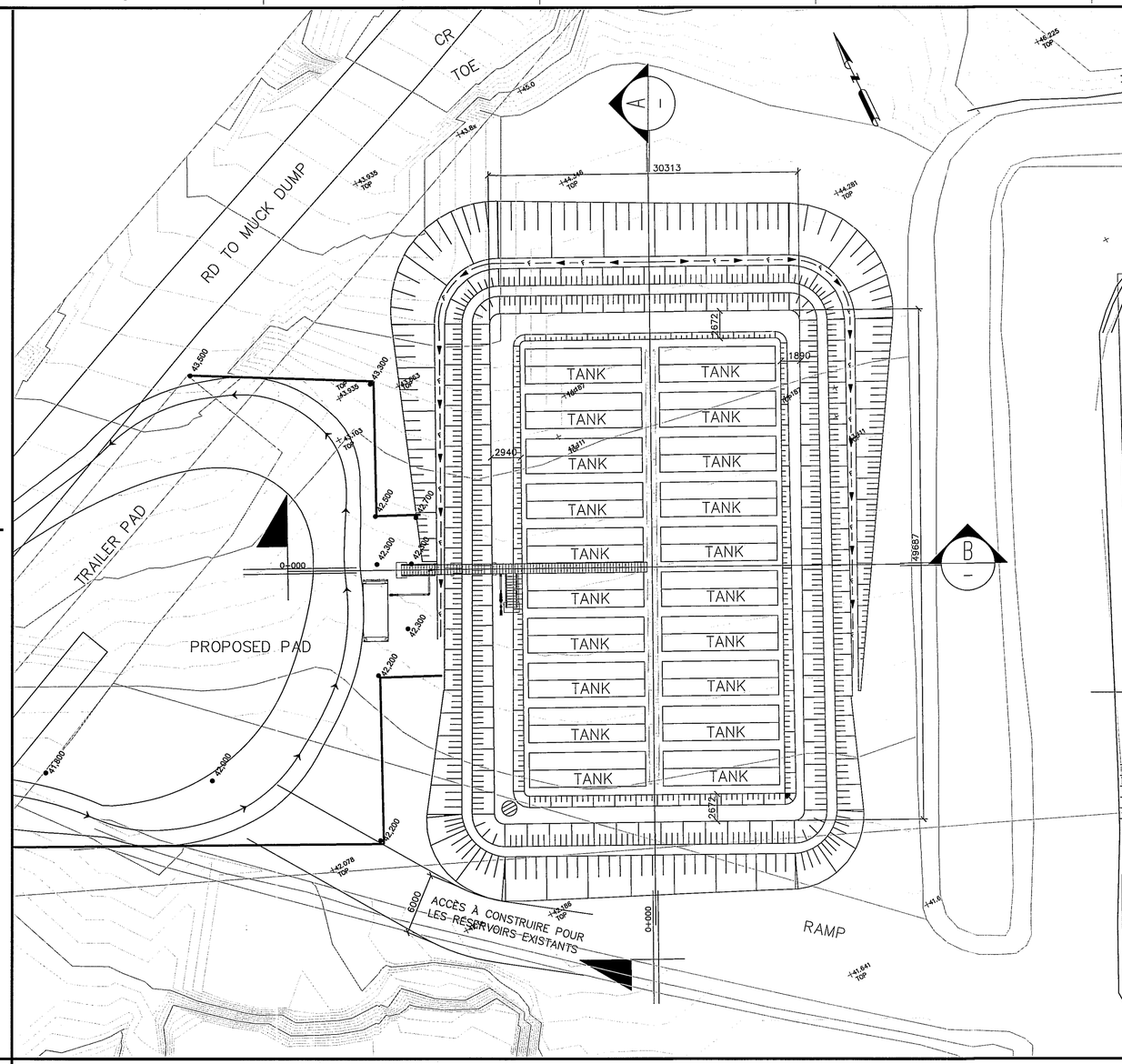
FORMAT ARCHD

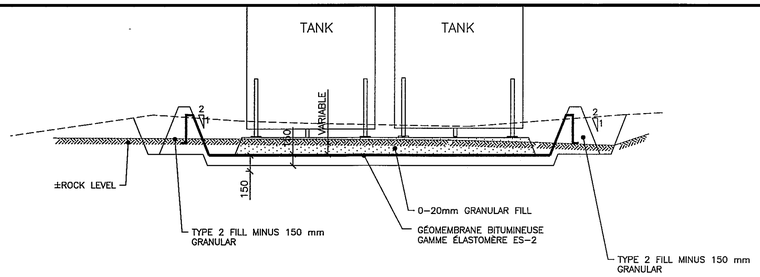



SECTION - A



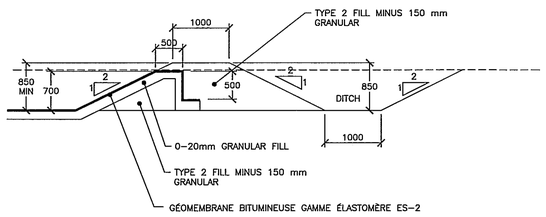

SECTION - B



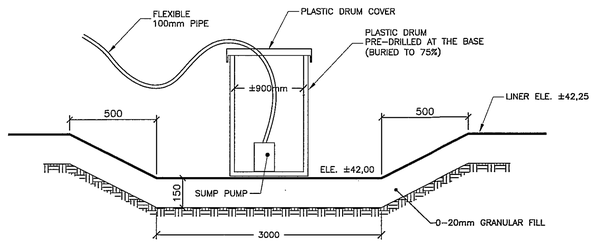

*TYPICAL SECTION WITH OPTION COLETANCHE*

SCALE : NONE




*TYPICAL SECTION – DAM*

SCALE : NONE




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

PLAN CLÉ
KEY PLAN

NOTES GÉNÉRAL / GENERAL NOTES

POUR COMMENTAIRES
FOR COMMENTS
AGNICO EAGLE
DATE : 2013-06-14



DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| A | 2013-06-14 | FOR COMMENTS | R.M. | R.M. | A.H. |

REVISIONS

REGISTERED PROFESSIONAL ENGINEER
R. MARCOUX
LICENSEE
NT/NU

TITRE / TITLE

AGNICO-EAGLE – MEADOWBANK
740 FUEL STORAGE LAYDOWN AREA
230 GENERAL CIVIL WORKS
PLAN VIEW AND CROSS SECTION
TANKS

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | YVES BOISVERT, T.P. | DATE 2013-06-14 |
| VERIFIÉ PAR CHECKED BY | RICHARD MARCOUX, Ing. | 2013-06-14 |
| APPROUVÉ PAR APPROVED BY | ALAIN HAMEL | 2013-06-14 |
| ÉCHELLE SCALE | AS SHOWN | DATE 2013-06-14 |
| NO. DESSIN DRAWING NO. | 61-740-230-211_A | |
| NO. PROJET PROJECT NO. | OP-84541-J | REVISION A / FEUILLE / SHT 1/1 |

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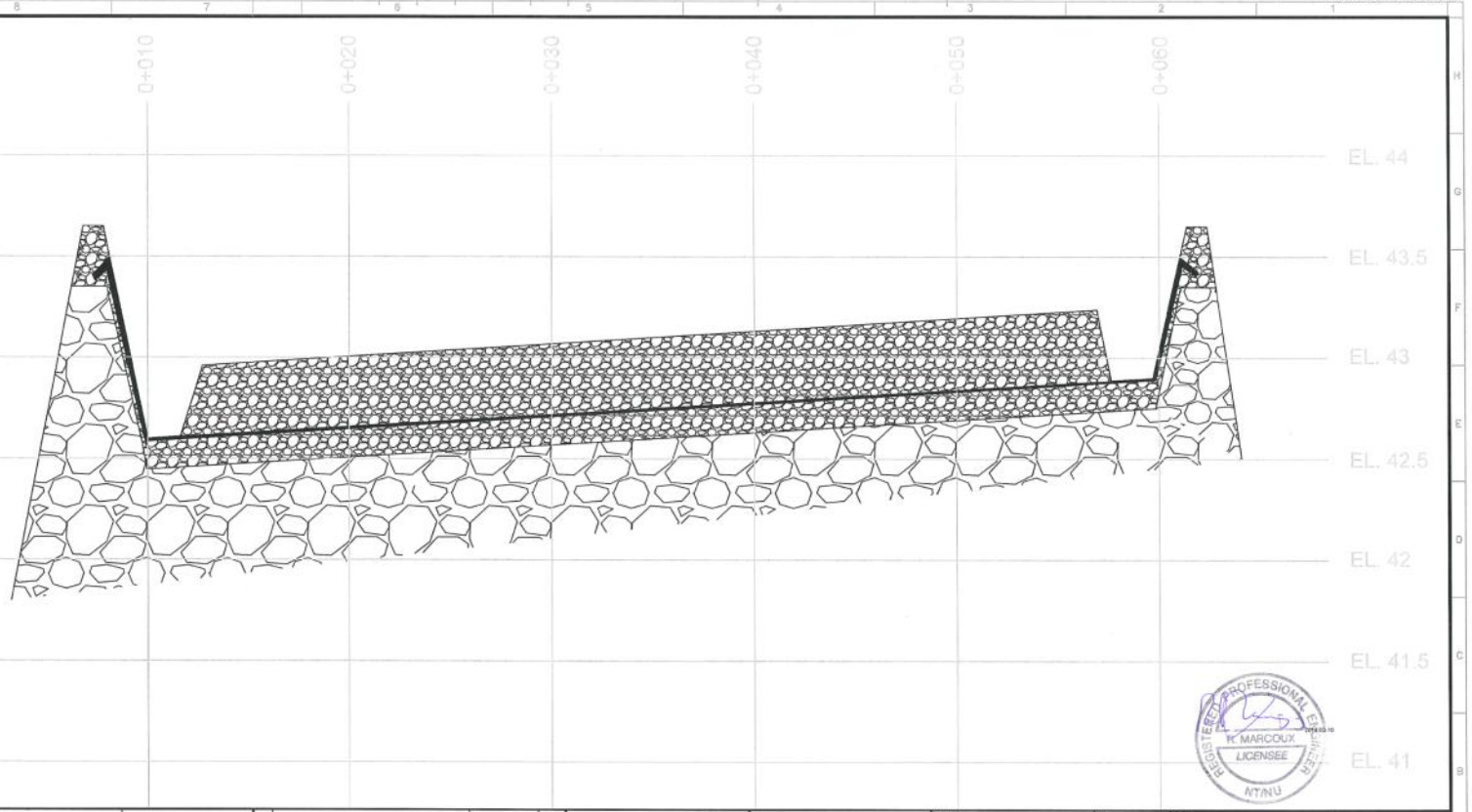
FILE NO. 61-740-230-211_A

FORMAT ANSI B – LANDSCAPE




| TITLE | # DWG | REV | DESCRIPTION | DATE | BY |
|---|---|---|---|---|---|
| REFERENCE DRAWINGS | | REVISIONS | | | |

LEGEND

- BLASTED MUCK
- NPAG 0-20MM
- BITUMINOUS GEOMEMBRANE

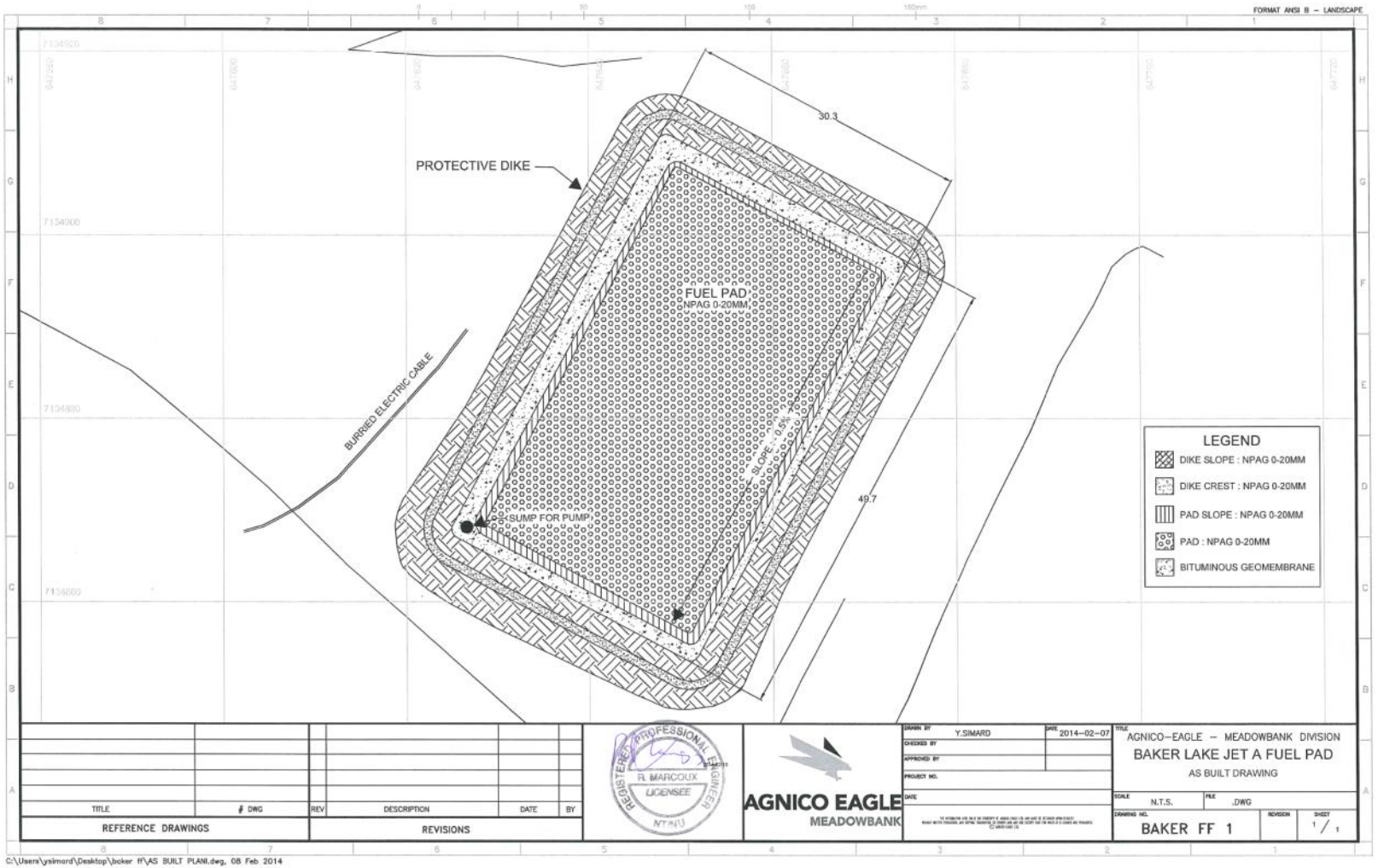
AGNICO EAGLE
MEADOWBANK

DRAWN BY: Y. SIMARD — DATE: 2014-02-06
CHECKED BY
APPROVED BY
PROJECT NO.
DATE

TITLE: AGNICO–EAGLE – MEADOWBANK DIVISION
BAKER LAKE JET A FUEL PAD
AS BUILT DRAWING

SCALE: AS SHOWN — FILE: .DWG
DRAWING NO.: BAKER FF 2 — REVISION — SHEET: 1 / 1

C:\Users\ysimard\Desktop\TQC FF BAKER\AS BULIT COUPE.dwg, 10 Feb 2014


FORMAT ANSI B – LANDSCAPE
PROTECTIVE DIKE
30.3
FUEL PAD
NPAG 0-20MM
BURRIED ELECTRIC CABLE
SUMP FOR PUMP
49.7
LEGEND
DIKE SLOPE : NPAG 0-20MM
DIKE CREST : NPAG 0-20MM
PAD SLOPE : NPAG 0-20MM
PAD : NPAG 0-20MM
BITUMINOUS GEOMEMBRANE
TITLE
# DWG
REFERENCE DRAWINGS
REV
DESCRIPTION
DATE
BY
REVISIONS
REGISTERED PROFESSIONAL ENGINEER
R. MARCOUX
LICENSEE
NT/NU
AGNICO EAGLE
MEADOWBANK
DRAWN BY Y.SIMARD
DATE 2014-02-07
CHECKED BY
APPROVED BY
PROJECT NO.
DATE
TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE JET A FUEL PAD
AS BUILT DRAWING
SCALE N.T.S.
FILE .DWG
DRAWING NO.
BAKER FF 1
REVISION
SHEET 1 / 1
C:\Users\ysimard\Desktop\boker ff\AS BUILT PLAN1.dwg, 08 Feb 2014

# APPENDIX 2.

## STAVIBEL'S CONSTRUCTION DAILY REPORT.

DESCRIPTION OF THE FUEL CONTAINEMENT PAD CONSTRUCTION STEPS.

AGNICO EAGLE

**RAPPORT DE VISITE DE CHANTIER**

STAVIBEL

| | | | |
|---|---|---|---|
| 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 16ºC 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 environnment. 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

AGNICO EAGLE

# RAPPORT DE VISITE DE CHANTIER

STAVIBEL

| | | | |
|---|---|---|---|
| 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 | |
| Opérator | 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 make to try to drain this water during night.

Par : _____
Michaël Racine, tech.

_____
Richard Marcoux, ing.
No OIQ : 38724
Project manager

AGNICO EAGLE

**RAPPORT DE VISITE DE CHANTIER**

STAVIBEL

| | | | |
|---|---|---|---|
| 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

AGNICO EAGLE

**RAPPORT DE VISITE DE CHANTIER**

STAVIBEL

| | | | |
|---|---|---|---|
| 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<br>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 containt 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

AGNICO EAGLE

**RAPPORT DE VISITE DE CHANTIER**

STAVIBEL

| | | | |
|---|---|---|---|
| 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 10ºC 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

AGNICO EAGLE

**RAPPORT DE VISITE DE CHANTIER**

STAVIBEL

| | | | |
|---|---|---|---|
| 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 18ºC 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

AGNICO EAGLE

# RAPPORT DE VISITE DE CHANTIER

STAVIBEL

| | | | |
|---|---|---|---|
| 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 18ºC 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 16.3m$^3$/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 to high. No instability.

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

Par : _____
Michaël Racine, tech.

_____
Richard Marcoux, ing.
No OIQ : 38724
Project manager

AGNICO EAGLE

# RAPPORT DE VISITE DE CHANTIER

STAVIBEL

| | | | |
|---|---|---|---|
| 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 18ºC 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 : _____
Michaël Racine, tech.

_____
Richard Marcoux, ing.
No OIQ : 38724
Project manager

AGNICO EAGLE

# RAPPORT DE VISITE DE CHANTIER

STAVIBEL

| | | | |
|---|---|---|---|
| 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

AGNICO EAGLE

**RAPPORT DE VISITE DE CHANTIER**

STAVIBEL

| | | | |
|---|---|---|---|
| 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 15ºC 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 cruched stone.
- **11h à 12h** Bulldozer 39px places the 0-20mm cruched stone.
- **12h à 15h** Shovel 320 finishes the mini dike and builds the key for the membrane.
- **15h à 18h30** Shovel 320 builds the acces 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** | 24 | 391,2 | 34 | 554,2 | 14 | 228,2 | | | | | | | 72 | **1173,6** |
| **0-3/4"** | | | | | 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

AGNICO EAGLE

# RAPPORT DE VISITE DE CHANTIER

STAVIBEL

| | | | |
|---|---|---|---|
| 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 23ºC 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 previson 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

AGNICO EAGLE

**RAPPORT DE VISITE DE CHANTIER**

STAVIBEL

| | | | |
|---|---|---|---|
| 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 catched 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

AGNICO EAGLE

**RAPPORT DE VISITE DE CHANTIER**

STAVIBEL

| | | | |
|---|---|---|---|
| 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 26ºC 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

AGNICO EAGLE

**RAPPORT DE VISITE DE CHANTIER**

STAVIBEL

| | | | |
|---|---|---|---|
| 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 23ºC 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.

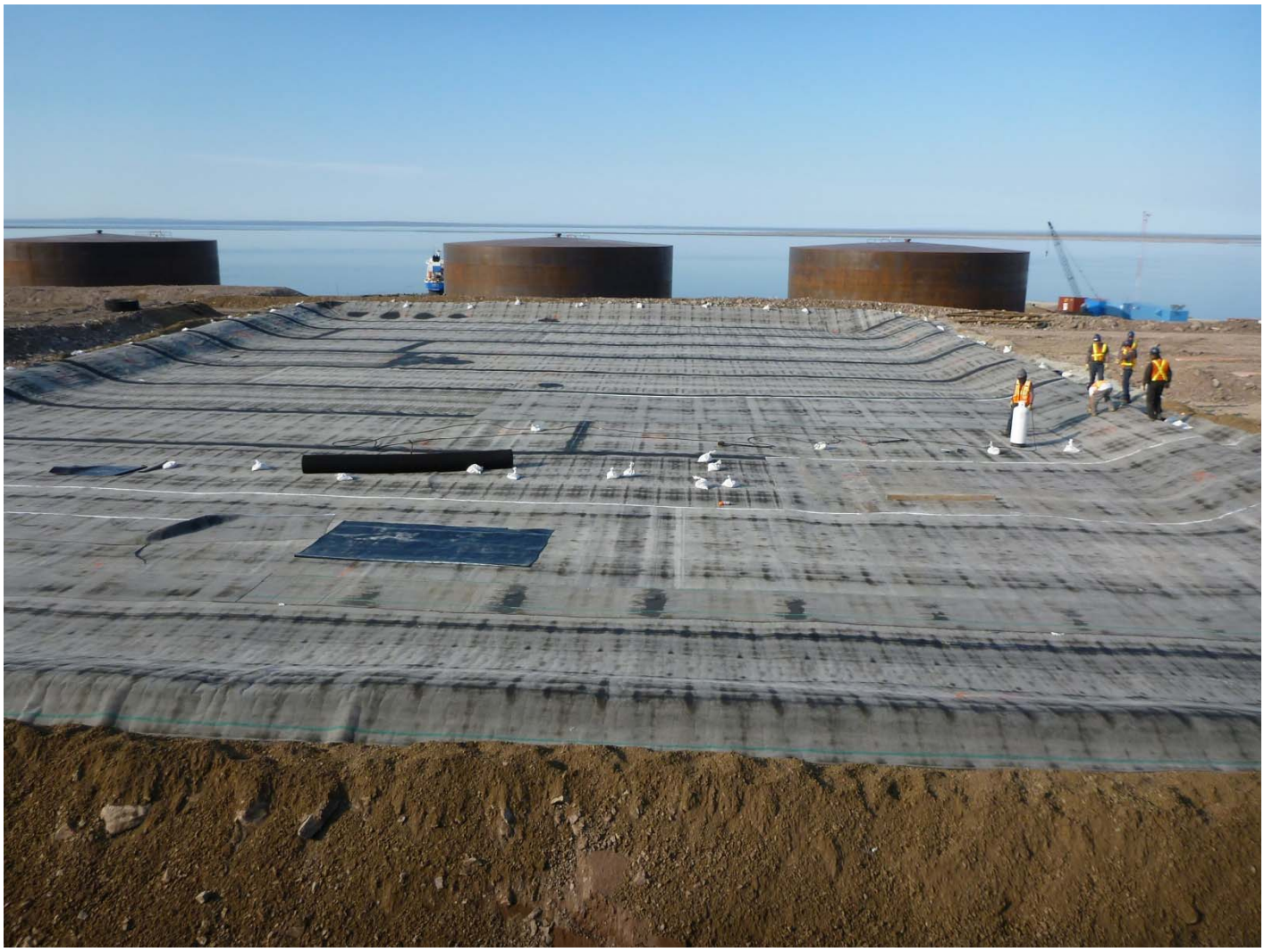
**Comments :**

- 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.

- Photo #3 – Inspection of the membrane. Small proeminent rocks (10mm and less) are detected at some place under the membrane. A second tickness 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

AGNICO EAGLE

**RAPPORT DE VISITE DE CHANTIER**

STAVIBEL

| | | | |
|---|---|---|---|
| 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 23ºC 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 $m^3$/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 – Sreening 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

AGNICO EAGLE

**RAPPORT DE VISITE DE CHANTIER**

STAVIBEL

| | | | |
|---|---|---|---|
| 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 (alterning) 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 $m^3$/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 sreener. Indeed, there was a gap on the side of the sreen 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

AGNICO EAGLE

**RAPPORT DE VISITE DE CHANTIER**

STAVIBEL

| | | | |
|---|---|---|---|
| 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 (alterning) 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 $m^3$/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 mesured 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

AGNICO EAGLE

**RAPPORT DE VISITE DE CHANTIER**

STAVIBEL

| | | | |
|---|---|---|---|
| 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 (alterning) 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 $m^3$/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 : _____
Michaël Racine, tech.

_____
Richard Marcoux, ing.
No OIQ : 38724
Project manager

# Appendix A5

# Construction Summary Report: Baker Lake Fuel Storage Tank 7 and Containment Facilities (2020)

SNC·LAVALIN
Building what matters

# CONSTRUCTION SUMMARY REPORT
# Baker Lake Fuel Storage Tank 7 and Containment Facilities

Agnico Eagle Mines Ltd

Report

653281-0004-40ER-0005_0

January 17, 2020

Authorized Signatory:

REGISTERED PROFESSIONAL ENGINEER
I. GAGNON
LICENSEE
NT/NU
L3940
2020-01-16

**Israël Gagnon,** P.Eng., MBA
Mechanical engineer

# EXECUTIVE SUMMARY

SNC Lavalin Stavibel Inc. was retained by Agnico Eagle Mines Limited to prepare a construction summary (as built) report for the fuel storage tank and containment facilities of the Meadowbank Gold Project, Nunavut. SNC Lavalin Stavibel Inc. previously prepared the construction drawings and specifications as well as the design report for the fuel storage tank and containment facilities.

SNC Lavalin Stavibel Inc. wasn't involved in the construction of the fuel storage tank and containment facilities, the information presented in this report was provided in part by Agnico Eagle.

The construction of the fuel storage tank and containment facilities were completed in September 2019. The construction monitoring and quality assurance was managed by Agnico Eagle.

This report summarizes the construction as-built information for the fuel storage tank and containment facilities.

# Table of contents

# 1. Introduction

This document presents the fuel storage tank 7 and containment facilities construction summary report required by the Water Licence 2AM-MEA1526 Part D Item 14 and Part G Item 4. As required by Water Licence Schedule D, this report contains the final design and construction drawings, a summary of construction activities including pictures recorded before, during and after construction. The as-built drawings, detailed explanation of field decision to reflect any deviations from the original construction drawings/plans and how such deviations may affect performance of engineered structures, a discussion of the mitigation measures implemented during construction and its effectiveness are also presented.

# 2. Construction Summary

## 2.1 Site location plan

Agnico Eagle is developing the Whale Tail Project in the Kivalliq Region of Nunavut (65°24’25” N, 96°41’50” W). The 99,878-hectare Amaruq property is located on Inuit-owned and federal crown land, approximately 55 km north of the Meadowbank mine. The Meadowbank mine is accessible from Baker Lake, located 70 kilometers to the south. The Baker Lake Bulk Fuel Storage Tank Facility is located east of the hamlet of Baker Lake, on the north shore of Baker Lake.


Figure 1 – Baker Lake Fuel Farm Site Overview (tank 7 in construction)

## 2.2 Fuel tank size

Baker Lake fuel farm now includes seven (7) fuel storage tank. This report is base on the seventh tank built in spring/summer 2019.

The Table 1 below presents the tank main dimensions.

Table 1 – Description of the fuel farm

| Fuel farm Description | Baker Lake fuel tank 7 |
|---|---|
| Product | Diesel |
| Volume (liter) | 10 M |
| Diameter (m) | 33.5 |
| Height (m) | 12.2 |

The detailed design of the Fuel Farm is presented in drawings in Appendix A.

## 2.3 Tank Foundations Design

The tank foundation pad is built 2 meters lower than the surrounding ground with a minimum total thickness of 800 mm of compacted material which includes the liner system. A 3 m shoulder surround the tank with a slope of 1V:2H away from the tank. The embankments of the foundation pad are no steeper than 1V:2H.

The Table 2 below presents the design parameters for the tank foundations.

Table 2 – Design parameters for the tank foundations

| Tank Foundation Pad | |
|---|---|
| Tank Diameter (m) | 33.5 |
| Tank foundation pad top (m) | 2x 18.0 x 18.0 |
| Tank foundation pad average thickness, above surrounding ground (m) | 1.2 |
| Slope on shoulder | 1V:2H |
| Embankment slope | 1V:2H |

## 2.4 Berms Design

The storage tank is enclosed inside berms to contain accidental spillage of fuel product. The berms are made of granular material and are made impervious with a geomembrane.

The design parameters for the berms surrounding the fuel tank are presented in the table below.

Table 3 - Design parameters for fuel farm Berms

| Tank Farm Berms | |
|---|---|
| Berms length (distance between the outer sides of the Berms) (m) | 125 |
| Berms width (distance between the outer sides of the Berms) (m) | 71 |
| Berms height (min) (m) | 3 |
| Containment height (m) | 2 |
| Berms flat top width (m) | 1.5 |
| Berms embankment slope | 1V:2H |
| Impervious area ($m^2$) | 10 000 |

## 2.5 Secondary Containment Capacity

The required capacity of the fuel farms new section was calculated based on the following codes and regulations:

- National Fire Code of Canada (NFCC);
- National Fire Protection Association (NFPA); and
- Design Rationale for Fuel Storage and Distribution Facility (DRFS).

As per the latest edition of NFCC, art. 4.3.7.3, the required secondary containment capacity for a fuel farm must have a volumetric capacity of not less than the sum of:

- A) The capacity of the largest storage tank located in the contained space, and;
- B) 10% of the greater of:
    i. The capacity specified in Clause (A), or;
    ii. The aggregate capacity of all other storage Tanks located in the contained space.

The volume occupied by the Tank foundation is considered in the total secondary containment capacity. The height of the secondary containment capacity is 300 mm lower than the berms' maximum elevation. Based on the above-mentioned, the secondary containment capacity requirements and the available capacity for fuel farms are summarized in the Table 4.

Table 4 – Fuel farm new section containment capacity

| New section | |
|---|---|
| Volume (liter) | 20 M (2X 10M) |
| Required Containment Capacity (liter) | 11 M |
| Available Containment Capacity (liter) | 20M |

## 2.6 Secondary Containment Imperviousness

As per NFCC art. 4.3.7.2, the base and walls of the fuel farms secondary containment are designed, constructed and maintained to withstand full hydrostatic head and provide a permeability of not more than $10^{-6}$ cm/s to the flammable liquids or combustible liquids contained in the storage tank. The berm is impervious to avoid any seepage into the environment. A 5.10 mm ES-2 Coletanche geomembrane provide adequate imperviousness.

## 2.7 Secondary Containment Drainage

The finished grade of the secondary containment is sloped away from the Tank to drain the runoff water. The bottom of the berms surface is built with slopes that will allow accidental spills to be concentrated at a low point. A drainage basin located at the low point allows the recovery by pumping accumulations of rainwater and accidental spills.

## 2.8 Drawings and photographs

Fuel farm tank and containment final design and construction drawings are available in the Appendix A, construction pictures are available in Appendix C.

## 2.9 Timeline

The baker lake fuel storage tank number 7 and containment facility where built in 2019. Civil and earth work started on April 2019, followed by tank and piping fabrication in August 2019. Construction work were finalised on September 17th, 2019.

# 3. Field decisions

## 3.1 Equipment and controls

Equipment where build in containers and installed without modification on site document 6120-C-260-001-REP-001 Fuel Tank Storage and Containment Facilities Design Report and Drawings, present the rational and decisions that led to its construction. No modifications were performed, and the Fuel storage tank and containment facilities are operational as they were designed.

## 3.2 Piping

Piping between filling and distributing container and the fuel tank respect the point to point design. The piping isn’t exactly as per drawing (can be seen on photos in Appendix C) but respect the P&ID. As built drawings can be consulted in Appendix B.

# 4. Mitigation measure

Quarrying activities to build the berm was at Quarry #2 situated at KM 13 on AWAR. No blast were done on the construction site. During the fuel storage tank and containment facilities construction, no sediments were released in water from construction areas and no water was used to manage dust emissions from construction activity.

# 5. Construction monitoring and inspection test plan

## 5.1 Membrane

The manufacture and supply of the liner system for the fuel farm comply with ASTM standard. The manufacturer provided a certification stating that the material proposed has physical properties that meet the required values. The rolls of liner were labelled, packaged, shipped, off-loaded, stored and handled by appropriate means to prevent damage to the material.

The subgrade surface was inspected by an engineer to verify suitability prior to installation of the liner system. A minimum thickness of fill covering the liner is maintained for operating equipment over the liner to prevent any damage. The installation of the liner system was performed by a qualified technician. All seaming, patching, welding operations, and testing were performed by a qualified technician. Joints/seams between liners panels were welded using the manufacturer's recommended procedures and equipment. The backfill material was placed in accordance with the drawings and specifications for the maximum lift thickness, compaction requirements and final grade levels.

During membrane installation, visual testing by a qualified worker was carried. Those tests were done on cooled bitumen. Joints were tested with a round-tipped trowel to ensure that the welds were not separating. All defects were clearly marked for repair.

## 5.2 Tank weld

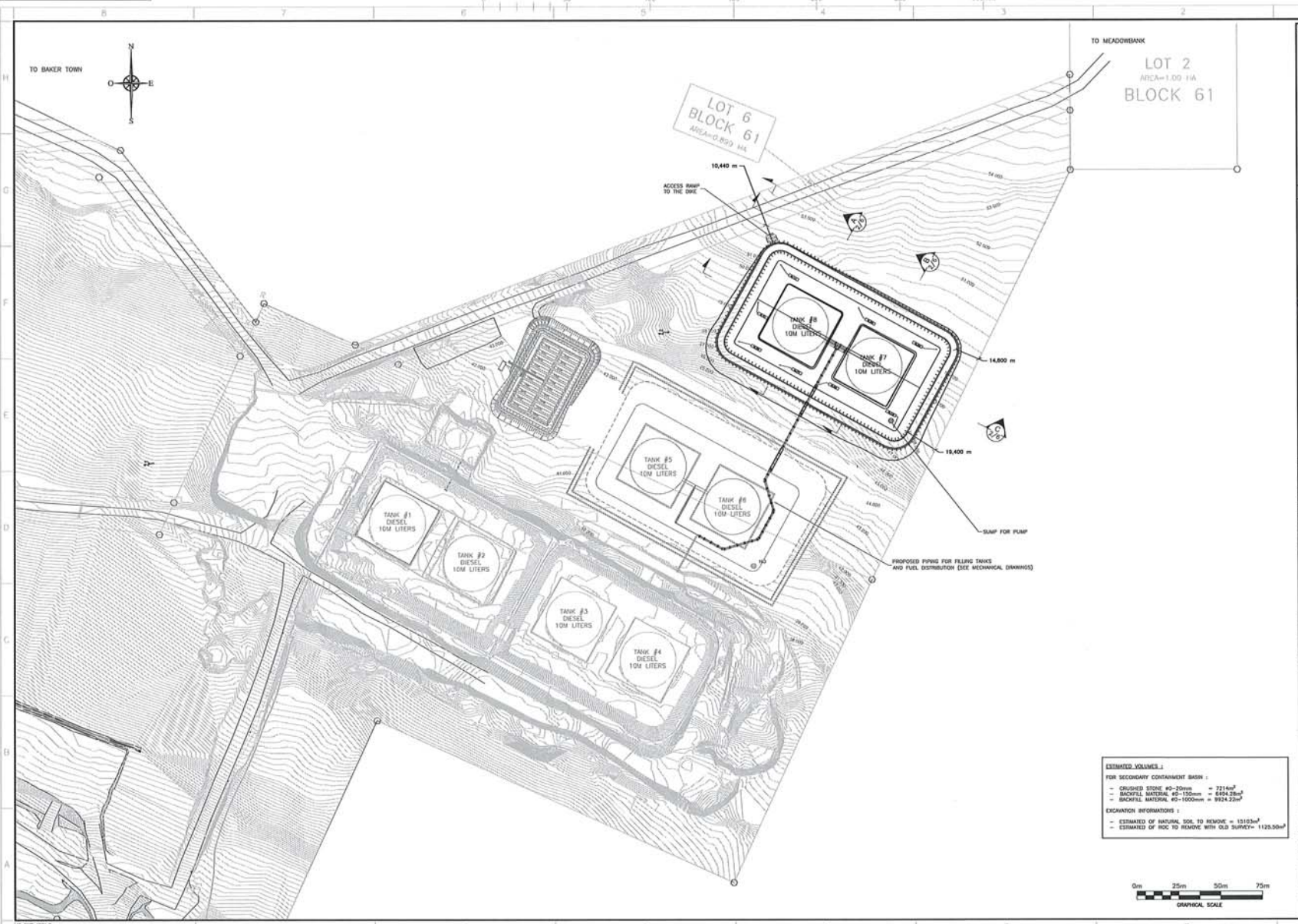
During the tank construction, a testing protocol was followed by the construction team. To meet API Standard 650, companies building tank are required to monitor their work trough an inspection program. In this program, the contractor registers welder's qualifications, confirm construction material quality and outlines its testing protocol. The results from weld tests are also registered there. All that information is required by API 650 standard. Testing on welds took place during the whole construction process. To attest welds quality, inspector relied on visual inspection, magnetic particulate tests and high penetration oil tests. To review those tests results, the materials quality and weld inspection results can be consulted in Appendix D.

# Appendix A

Final construction drawing

NO. DESSIN DRAWING NO. 61-740-210-201_1RC

FORMAT ARCH2




ESTIMATED VOLUMES :

FOR SECONDARY CONTAINMENT BASIN :

- CRUSHED STONE #0-20mm = 7214m³
- BACKFILL MATERIAL #0-150mm = 6404.28m³
- BACKFILL MATERIAL #0-1000mm = 9924.22m³

EXCAVATION INFORMATIONS :

- ESTIMATED OF NATURAL SOIL TO REMOVE = 15103m³
- ESTIMATED OF ROC TO REMOVE WITH OLD SURVEY= 1125.50m³

PLAN CLÉ
KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-05-06

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

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

AGNICO EAGLE

| REV | DATE | DESCRIPTION | PAR/DR | APP. | CLIENT |
|---|---|---|---|---|---|
| 2 | 2019-05-06 | FOR CONSTRUCTION | R.M. | W.H. | – |
| 0 | 2019-04-04 | FOR CONSTRUCTION | R.M. | W.H. | – |

REVISIONS

ELECTRONICALLY SIGNED DOCUMENT
QUÉBEC
FRANCIS PERRON
INGÉNIEUR
INGENIEUR
2019-05-06

TITRE / TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
GENERAL ARRANGEMENT
PLAN VIEW
10M LITERS TANKS LOCATION
TANKS #7 & #8

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | FRANCIS PERRON, TECH. | DATE 2018-12-10 |
| VÉRIFIÉ PAR CHECKED BY | RICHARD MARCOUX, ING. | 2018-12-10 |
| APPROUVÉ PAR APPROVED BY | MARC HÉNAULT, P. ENG. | 2018-12-10 |
| ÉCHELLE SCALE | 1 : 1000 | DATE 2018-07-18 |

NO. DESSIN DRAWING NO. 61-740-230-200

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| 61 | 1 | 1 / 1 |

AC-CAD1-ARCH 2

FILE NO. 61-740-230-(200@201)-R0 2019-04-24.dwg

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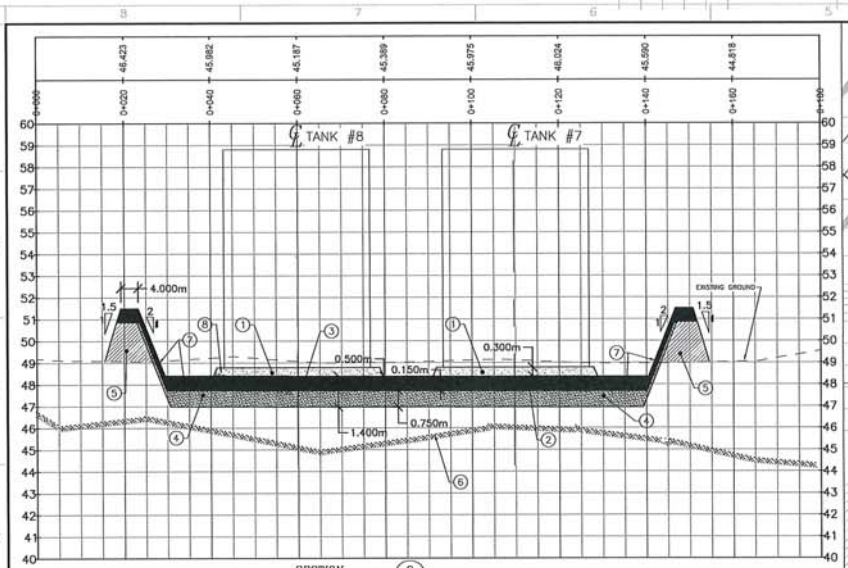


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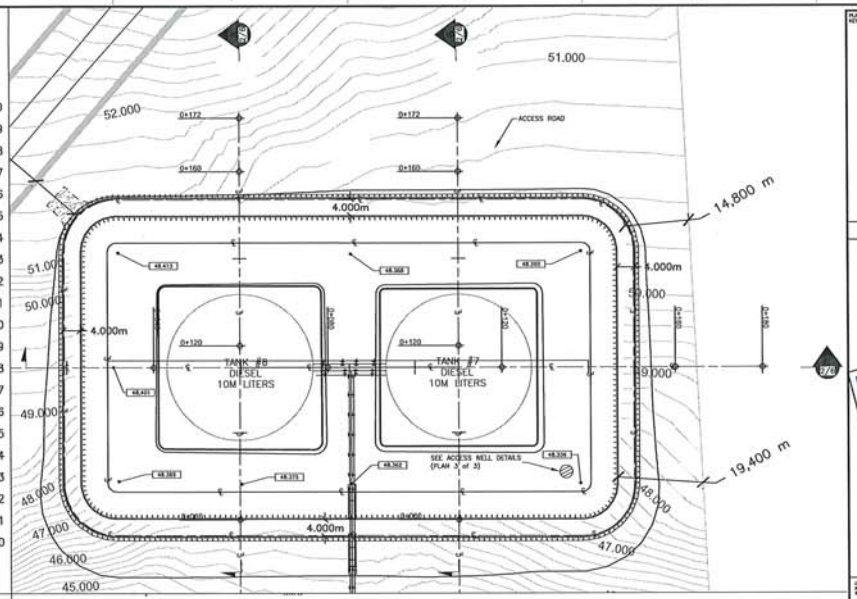


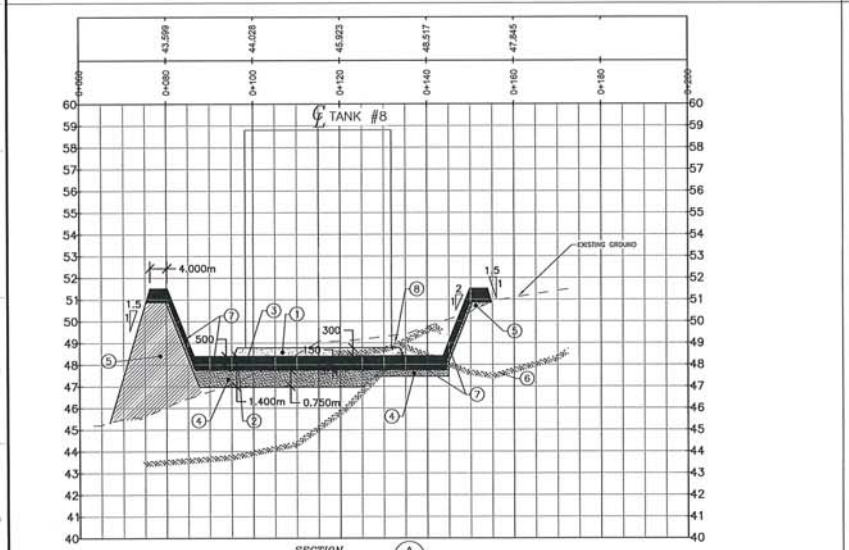


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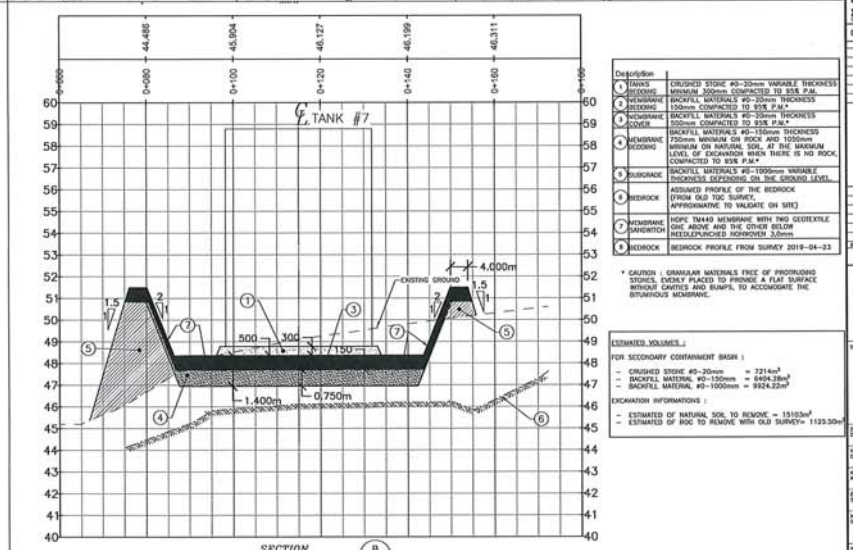


SECTION B 2/6
SCALE: HOR:1:500 VER:1:100

| | Description | |
|---|---|---|
| 1 | TANKS BEDDING | CRUSHED STONE #0-20mm VARIABLE THICKNESS MINIMUM 300mm COMPACTED TO 95% P.M. |
| 2 | MEMBRANE BEDDING | BACKFILL MATERIALS #0-20mm THICKNESS 150mm COMPACTED TO 95% P.M.* |
| 3 | MEMBRANE COVER | BACKFILL MATERIALS #0-20mm THICKNESS 500mm COMPACTED TO 95% P.M.* |
| 4 | MEMBRANE BEDDING | BACKFILL MATERIALS #0-150mm THICKNESS 750mm MINIMUM ON ROCK AND 1000mm MINIMUM ON NATURAL SOIL, AT THE MAXIMUM LEVEL OF EXCAVATION WHEN THERE IS NO ROCK, COMPACTED TO 95% P.M.* |
| 5 | SUBGRADE | BACKFILL MATERIALS #0-1000mm VARIABLE THICKNESS DEPENDING ON THE GROUND LEVEL |
| 6 | BEDROCK | ASSUMED PROFILE OF THE BEDROCK (FROM OLD TOC SURVEY, APPROXIMATIVE TO VALIDATE ON SITE) |
| 7 | MEMBRANE SANDWITCH | HDPE TM440 MEMBRANE WITH TWO GEOTEXTILE ONE ABOVE AND THE OTHER BELOW NEEDLEPUNCHED NONWOVEN 3,0mm |
| 8 | BEDROCK | BEDROCK PROFILE FROM SURVEY 2019-04-23 |

* CAUTION : GRANULAR MATERIALS FREE OF PROTRUDING STONES, EVENLY PLACED TO PROVIDE A FLAT SURFACE WITHOUT CAVITIES AND BUMPS, TO ACCOMODATE THE BITUMINOUS MEMBRANE.

ESTIMATED VOLUMES :

FOR SECONDARY CONTAINMENT BASIN :

- CRUSHED STONE #0-20mm = 7214m³
- BACKFILL MATERIAL #0-150mm = 6404.28m³
- BACKFILL MATERIAL #0-1000mm = 9924.22m³

EXCAVATION INFORMATIONS :

- ESTIMATED OF NATURAL SOIL TO REMOVE = 1510.3m³
- ESTIMATED OF ROC TO REMOVE WITH OLD SURVEY= 1123.50m³

PLAN CLÉ
KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-05-06

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

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

AGNICO EAGLE

| REV | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 2019-05-06 | FOR CONSTRUCTION | R.M. | M.H. | - |
| 0 | 2019-04-04 | FOR CONSTRUCTION | R.M. | M.H. | - |

REVISIONS

ELECTRONICALLY SIGNED DOCUMENT
2019-05-06

TITRE / TITLE
AGNICO-EAGLE — MEADOWBANK DIVISION
740 BAKER LAKE AREA
GENERAL ARRANGEMENT
PLAN VIEW AND PROFILE
10M LITERS TANKS LOCATION
TANKS #7 & #8

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | FRANCIS PERRON, TECH. | DATE 2018-12-10 |
| VÉRIFIÉ PAR CHECKED BY | RICHARD MARCOUX, ING. | 2018-12-10 |
| APPROUVÉ PAR APPROVED BY | MARC HÉNAULT, P. ENG. | 2018-12-10 |
| ÉCHELLE SCALE | 1 : 500 | DATE 2018-07-18 |

NO. DESSIN DRAWING NO. 61-740-230-201

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
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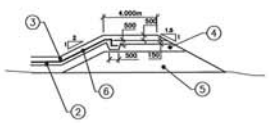


* CAUTION : GRANULAR MATERIALS FREE OF PROTRUDING STONES, EVENLY PLACED TO PROVIDE A FLAT SURFACE WITHOUT CAVITIES AND BUMPS, TO ACCOMODATE THE BITUMINOUS MEMBRANE.

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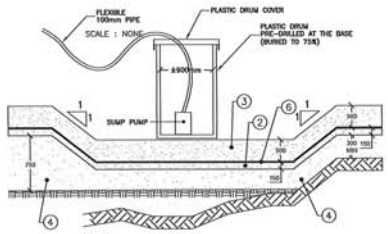
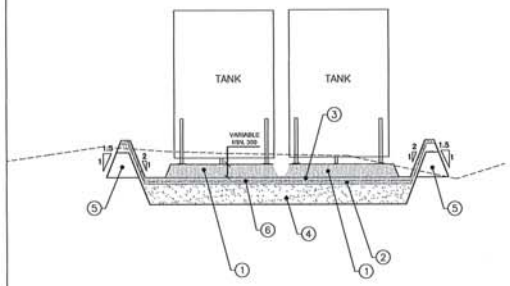



NOTES :

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

ACCESS WELL FOR DRAINING

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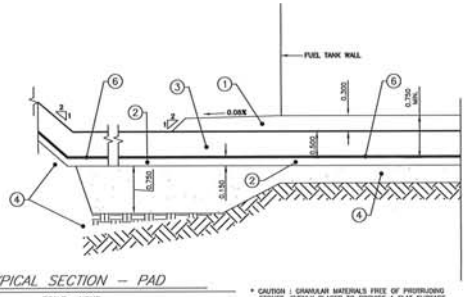


TYPICAL SECTION – PAD

SCALE : NONE

DETAIL 1

* CAUTION : GRANULAR MATERIALS FREE OF PROTRUDING STONES, EVENLY PLACED TO PROVIDE A FLAT SURFACE WITHOUT CAVITIES AND BUMPS, TO ACCOMODATE THE BITUMINOUS MEMBRANE.

| Description | | |
|---|---|---|
| 1 | TANKS BEDDING | CRUSHED STONE #0-20mm VARIABLE THICKNESS MINIMUM 300mm COMPACTED TO 95% P.M. |
| 2 | MEMBRANE BEDDING | BACKFILL MATERIALS #0-20mm THICKNESS 150mm COMPACTED TO 95% P.M.* |
| 3 | MEMBRANE COVER | BACKFILL MATERIALS #0-20mm THICKNESS 500mm COMPACTED TO 95% P.M.* |
| 4 | MEMBRANE BEDDING | BACKFILL MATERIALS #0-150mm THICKNESS 0mm ON ROCK AND 750mm MINIMUM ON NATURAL SOIL, AT THE MAXIMUM LEVEL OF EXCAVATION WHEN THERE IS NO ROCK, COMPACTED TO 95% P.M.* |
| 5 | SUBGRADE | BACKFILL MATERIALS #0-1000mm VARIABLE THICKNESS DEPENDING ON THE GROUND LEVEL. |
| 6 | MEMBRANE SANDWITCH | TERANAP HDPE TM440 MEMBRANE WITH TWO GEOTEXTILE ONE ABOVE AND THE OTHER BELOW NEEDLEPUNCHED NONWOVEN 3.0mm |

* CAUTION : GRANULAR MATERIALS FREE OF PROTRUDING STONES, EVENLY PLACED TO PROVIDE A FLAT SURFACE WITHOUT CAVITIES AND BUMPS, TO ACCOMODATE THE BITUMINOUS MEMBRANE.

PLAN DE REF
KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-05-06

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG. |
|---|---|
| | |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PAR/DR | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 2019-05-06 | FOR CONSTRUCTION | R.M. | M.H. | – |
| 0 | 2019-04-04 | FOR CONSTRUCTION | R.M. | M.H. | – |

REVISIONS

ELECTRONICALLY SIGNED DOCUMENT

2019-05-06

TITRE / TITLE

AGNICO-EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
GENERAL ARRANGEMENT
DETAILS
10M LITERS TANKS LOCATION
TANKS #7 & #8

| | | DATE |
|---|---|---|
| DESSINÉ PAR DRAWN BY | FRANCIS PERRON, TECH. | 2018-12-10 |
| VÉRIFIÉ PAR CHECKED BY | RICHARD MARCOUX, ING. | 2018-12-10 |
| APPROUVÉ PAR APPROVED BY | MARC HÉNAULT, P. ENG. | 2018-12-10 |

ÉCHELLE SCALE: NONE — DATE: 2018-07-18

NO. DESSIN DRAWING NO. 61-740-230-204

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| 61 | 1 | 1/1 |

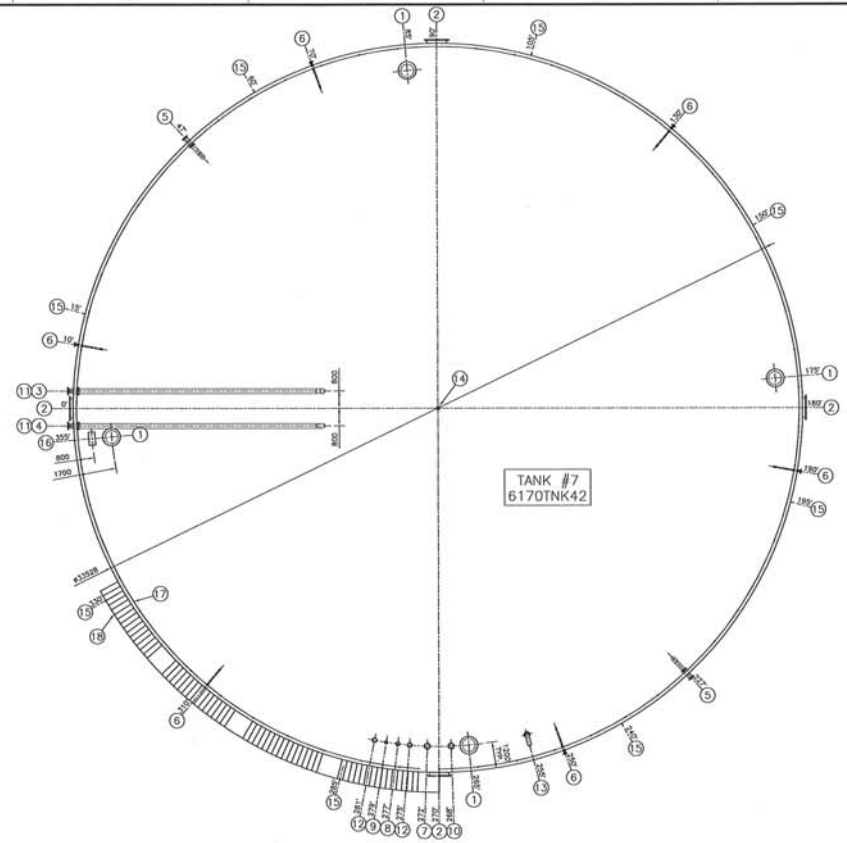
AE-CART-ARCH D

FILE NO. 61-740-230-(2008205)-R0 2018-04-24.dwg

NO. DESSIN DRAWING NO. 61-740-260-200

FORMAT ARCHD

| TANK #7 - 6170TNK42 - DIESEL | | | | |
|---|---|---|---|---|
| SPECIFICATIONS: | | | NOMINAL DIAMETER (METERS): | ± 33.528m (TO BE CONFIRMED BY MANUFACTURER) |
| | | | ORIGINAL NOMINAL HEIGHT (METERS): | ± 12.192m (TO BE CONFIRMED BY MANUFACTURER) |
| | | | NOMINAL CAPACITY: | 10,780,000 LITERS |
| | | | WORKING CAPACITY: | 10,000,000 LITERS |
| TAG | QTY. | DIA. | DESCRIPTION | REMARKS |
| 1 | 4 | 600 | ROOF MANHOLE | TO API 650 STANDARDS |
| 2 | 4 | 900 | SHELL MANHOLE | TO API 650 STANDARDS |
| 3 | 1 | 200 | FIXED PIPE - TANK LOADING 11.7m LG. | TO API 650 STANDARDS, SEE DETAIL |
| 4 | 1 | 200 | FIXED PIPE - TANK UNLOADING 11.7m LG. | TO API 650 STANDARDS, SEE DETAIL |
| 5 | 2 | 150 | PUMPING LOW LEVEL | TO API 650 STANDARDS, SEE DETAIL |
| 6 | 6 | 80 | WATER DRAW-OFF | TO API 650 STANDARDS, SEE DETAIL |
| 7 | 1 | 150 | GAUGE HATCH | TO API 650 STANDARDS, SEE DETAIL |
| 8 | 1 | 80 | OVERFILL PROTECTION | TO API 650 STANDARDS, SEE DETAIL |
| 9 | 1 | 50 | TEMPERATURE & WATER DETECTION PROBE | TO API 650 STANDARDS, SEE DETAIL |
| 10 | 1 | 150 | RADAR - LEVEL DETECTION | TO API 650 STANDARDS, SEE DETAIL |
| 11 | 2 | 50 | ROOF PRESSURE RELIEF LINE CONNECTION, HALF COUPLING 25mm DIA. (THREADED) | TO API 650 STANDARDS AND NBC, SEE DETAIL |
| 12 | 2 | 100 | SPARE | TO API 650 STANDARDS, SEE DETAIL |
| 13 | - | - | VENT OPENING | TO API 2000 & 650 STANDARDS. DIA. AND QTY. TO BE DETERMINATE BY THE MANUFACTURER, SEE DETAIL |
| 14 | 1 | 100 | PAINTER SCAFFOLD CABLE SUPPORT | TO API 650 STANDARDS |
| 15 | 8 | - | GROUNDING LUG | TO API 650 STANDARDS, SEE DETAIL |
| 16 | 1 | - | ROOF INSPECTION FRAME | TO API 650 STANDARDS |
| 17 | 1 | - | ROOF GUARDRAIL | TO API 650 STANDARDS AND NBC |
| 18 | 1 | - | SPIRAL STAIRWAY, GUARDRAIL & HANDRAIL | TO API 650 STANDARDS AND NBC |

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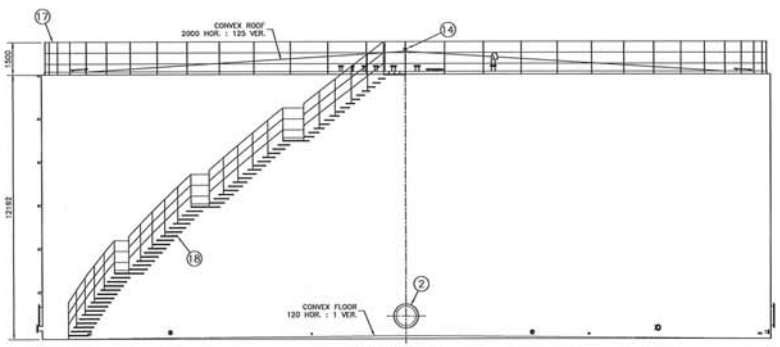
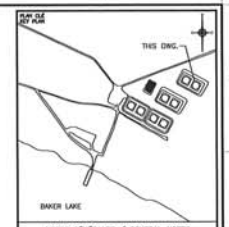



ELEVATION VIEW
SCALE: 1:100

PLAN CLÉ
KEY PLAN




NOTES GÉNÉRALES / GENERAL NOTES

NE PAS UTILISER POUR CONSTRUCTION
NOT FOR CONSTRUCTION
AGNICO EAGLE DATE : 2019-03-12

POUR SOUMISSION
FOR TENDER
AGNICO EAGLE DATE : 2019-03-12

SNC-LAVALIN

SNC-Lavalin Stockyard Inc.
155, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél.: 819 764-5151 Fax: 819 797-8152
www.snc-lavalin.com

Project # : 660534-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| - | - |
| - | - |
| - | - |
| TANK #7 & #8 – LOCATION PLAN | 61-740-210-201 |
| TANK #7 & #8 – DETAILS | 61-740-260-202 |
| TANK #8 – PLAN & ELEVATION | 61-740-260-201 |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 2019-03-12 | ISSUED FOR TENDER | S.LEM | M.HÖN | R.LAVOIE |
| 0 | 2018-12-14 | ISSUED FOR TENDER | S.LEM | M.HÖN | R.LAVOIE |

REVISIONS

DOCUMENT SCELLÉ NUMÉRIQUEMENT

2019-03-14

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
PLATEWORK
PLAN & ELEVATION
10M LITERS DIESEL TANK
TANK #7 – 6170TNK42

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | B.LEMIEUX, Tech. | DATE 2018/11/16 |
| VÉRIFIÉ PAR CHECKED BY | R. LAVOIE, Jr. Eng. | 2018/11/16 |
| APPROUVÉ PAR APPROVED BY | M. HÖNAULT, P. Eng | 2018/11/16 |
| ÉCHELLE SCALE | INDICATED | DATE 2018/11/16 |

NO. DESSIN DRAWING NO. 61-740-260-200

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 6120 | 1 | 1/1 |

AC-0401-ARCH D

FILE NO. 61-740-260-200_R1.dwg

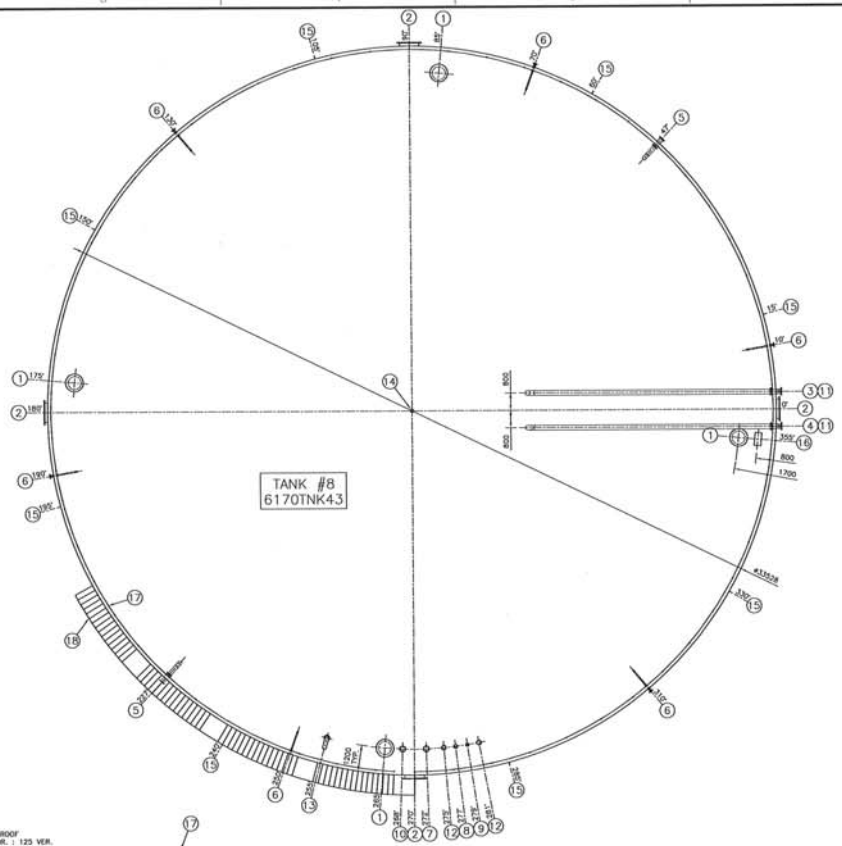
NO. DESSIN DRAWING NO. 61-740-260-201

FORMAT ARCHO

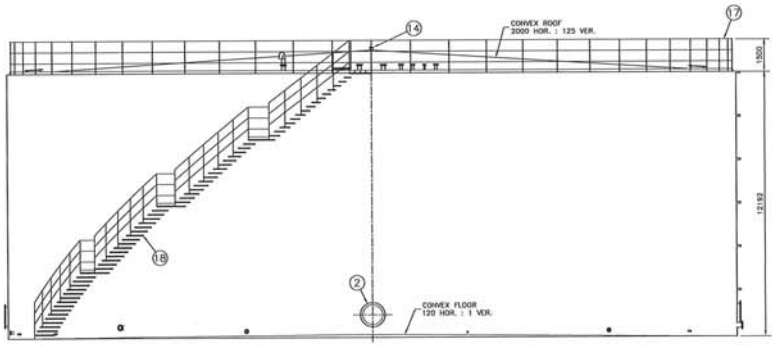
TANK #8 - 6170TNK43 - DIESEL

| SPECIFICATIONS: | |
|---|---|
| NOMINAL DIAMETER (METERS): | ± 33.528m (TO BE CONFIRMED BY MANUFACTURER) |
| ORIGINAL NOMINAL HEIGHT (METERS): | ± 12.192m (TO BE CONFIRMED BY MANUFACTURER) |
| NOMINAL CAPACITY: | 16,780,000 LITERS |
| WORKING CAPACITY: | 10,000,000 LITERS |

| TAG | QTY. | DIA. | DESCRIPTION | REMARKS |
|---|---|---|---|---|
| 1 | 4 | 600 | ROOF MANHOLE | TO API 650 STANDARDS |
| 2 | 4 | 900 | SHELL MANHOLE | TO API 650 STANDARDS |
| 3 | 1 | 200 | FIXED PIPE - TANK LOADING 11.7m LG. | TO API 650 STANDARDS, SEE DETAIL |
| 4 | 1 | 200 | FIXED PIPE - TANK UNLOADING 11.7m LG. | TO API 650 STANDARDS, SEE DETAIL |
| 5 | 2 | 150 | PUMPING LOW LEVEL | TO API 650 STANDARDS, SEE DETAIL |
| 6 | 6 | 80 | WATER DRAW-OFF | TO API 650 STANDARDS, SEE DETAIL |
| 7 | 1 | 150 | GAUGE HATCH | TO API 650 STANDARDS, SEE DETAIL |
| 8 | 1 | 80 | OVERFILL PROTECTION | TO API 650 STANDARDS, SEE DETAIL |
| 9 | 1 | 50 | TEMPERATURE & WATER DETECTION PROBE | TO API 650 STANDARDS, SEE DETAIL |
| 10 | 1 | 150 | RADAR - LEVEL DETECTION | TO API 650 STANDARDS, SEE DETAIL |
| 11 | 2 | 50 | ROOF PRESSURE RELIEF LINE CONNECTION, HALF COUPLING 25mm DIA. (THREADED) | TO API 650 STANDARDS AND NBC, SEE DETAIL |
| 12 | 2 | 100 | SPARE | TO API 650 STANDARDS, SEE DETAIL |
| 13 | - | - | VENT OPENING | TO API 2000 & 650 STANDARDS. DIA. AND QTY. TO BE DETERMINATE BY THE MANUFACTURER, SEE DETAIL |
| 14 | 1 | 100 | PAINTER SCAFFOLD CABLE SUPPORT | TO API 650 STANDARDS |
| 15 | 8 | - | GROUNDING LUG | TO API 650 STANDARDS, SEE DETAIL |
| 16 | 1 | - | ROOF INSPECTION FRAME | TO API 650 STANDARDS |
| 17 | 1 | - | ROOF GUARDRAIL | TO API 650 STANDARDS AND NBC |
| 18 | 1 | - | SPIRAL STAIRWAY, GUARDRAIL & HANDRAIL | TO API 650 STANDARDS AND NBC |

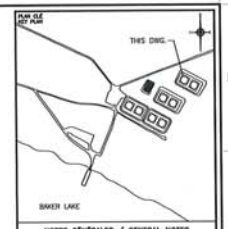



PLAN VIEW
SCALE: 1:100




ELEVATION VIEW
SCALE: 1:100

PLAN CLÉ
KEY PLAN




NOTES GÉNÉRALES / GENERAL NOTES

NE PAS UTILISER POUR CONSTRUCTION
NOT FOR CONSTRUCTION
AGNICO EAGLE DATE : 2019-03-12

POUR SOUMISSION
FOR TENDER
AGNICO EAGLE DATE : 2019-03-12

SNC·LAVALIN

Project # : 660534-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| TANK #7 & #8 – LOCATION PLAN | 61-740-210-201 |
| TANK #7 & #8 – DETAILS | 61-740-250-202 |
| TANK #7 – PLAN & ELEVATION | 61-740-260-200 |

AGNICO EAGLE

| NO | DATE | DESCRIPTION | PROJET | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 2019-03-12 | ISSUED FOR TENDER | B.LEM | M.HÉN | R.LAV |
| 0 | 2019-12-10 | ISSUED FOR TENDER | B.LEM | M.HÉN | R.LAV |

REVISIONS

2019-03-14

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
PLATEWORK
PLAN & ELEVATION
10M LITERS DIESEL TANK
TANK #8 – 6170TNK43

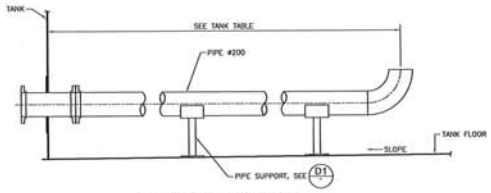
| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | B.LEMIEUX, Tech. | DATE 2018/11/16 |
| VÉRIFIÉ PAR CHECKED BY | R. LAVOIE, Jr. Eng. | 2018/11/16 |
| APPROUVÉ PAR APPROVED BY | M. HÉNAULT, P. Eng. | 2018/11/16 |
| ÉCHELLE SCALE | INDICATED | DATE 2018/11/16 |
| NO. DESSIN DRAWING NO. | 61-740-260-201 | |
| NO. PROJET PROJECT NO. 6120 | REVISION 1 | FEUILLE / SHT 1 / 1 |

AC-CART-ARCH 0

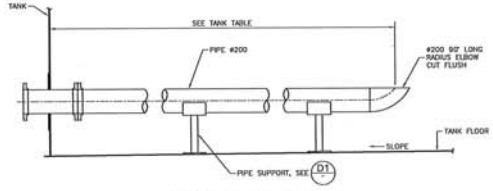
FILE NO. 61-740-260-201_R1.dwg

NO. DESSIN DRAWING NO. 61-740-260-202

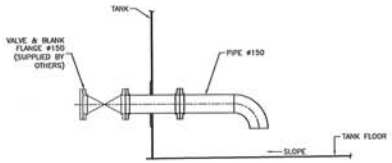
FORMAT ARCHO



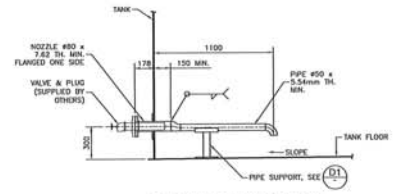

③ TANK LOADING DETAIL
SCALE: 1:20



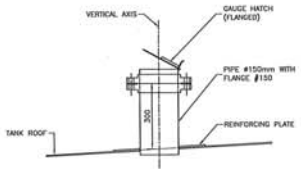

④ TANK UNLOADING DETAIL
SCALE: 1:20



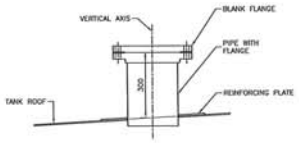

⑤ PUMPING LOW LEVEL DETAIL
SCALE: 1:20



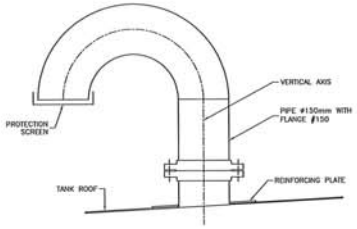

⑥ WATER DRAW-OFF DETAIL
SCALE: 1:20



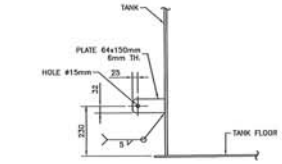

⑦ GAUGE HATCH DETAIL
SCALE: 1:10



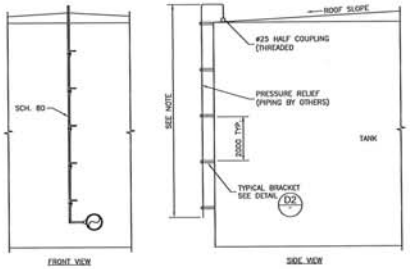

⑧⑨⑩⑫ NOZZLE DETAIL
SCALE: 1:10




⑬ VENT DETAIL
SCALE: 1:10

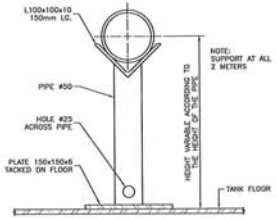



⑮ GROUNDING LUGS DETAIL
SCALE: 1:10

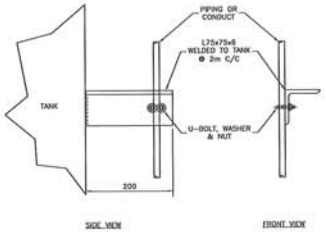



NOTE:
WELDED JOINTS & TESTED ON THIS SECTION (NOT THREADED JOINTS)

⑪ PRESSURE RELIEF LINE DETAIL
SCALE: N.T.S.

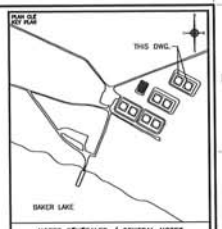



D1 PIPE SUPPORT
SCALE: 1:5




NOTE: FOR ITEMS 8 & 13

D2 BRACKET FOR PIPING OR ELECTRICAL CONDUCT TO THE SHELL TANK
SCALE: 1:5




NOTES GÉNÉRALES / GENERAL NOTES

NE PAS UTILISER POUR CONSTRUCTION
NOT FOR CONSTRUCTION
AGNICO EAGLE DATE : 2018-12-10

POUR SOUMISSION
FOR TENDER
AGNICO EAGLE DATE : 2018-12-10

SNC·LAVALIN

Project # : 660534-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| DWG / TITLE | # DWG |
|---|---|
| — | — |
| — | — |
| — | — |
| TANK #7 & #8 – LOCATION PLAN | 61-740-210-201 |
| TANK #8 – PLAN & ELEVATION | 61-740-260-201 |
| TANK #7 – PLAN & ELEVATION | 61-740-260-200 |

AGNICO EAGLE

| REV | DATE | DESCRIPTION | DIS/DES | APP. | CLIENT |
|---|---|---|---|---|---|
| 0 | 2018-12-10 | ISSUED FOR TENDER | BLEM | NJHÔN | KJACK |

REVISIONS

2018-12-10

DWG / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
PLATEWORK
DÉTAILS
10M LITERS DIESEL TANK
TANK #7 & #8

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | B.LEMIEUX, Tech. | DATE 2018/11/16 |
| VERIFIÉ PAR CHECKED BY | R. LAVOIE, Jr. Eng. | 2018/11/16 |
| APPROUVÉ PAR APPROVED BY | M. HÔNAULT, P. Eng. | 2018/11/16 |
| ÉCHELLE SCALE | INDICATED | DATE 2018/11/16 |

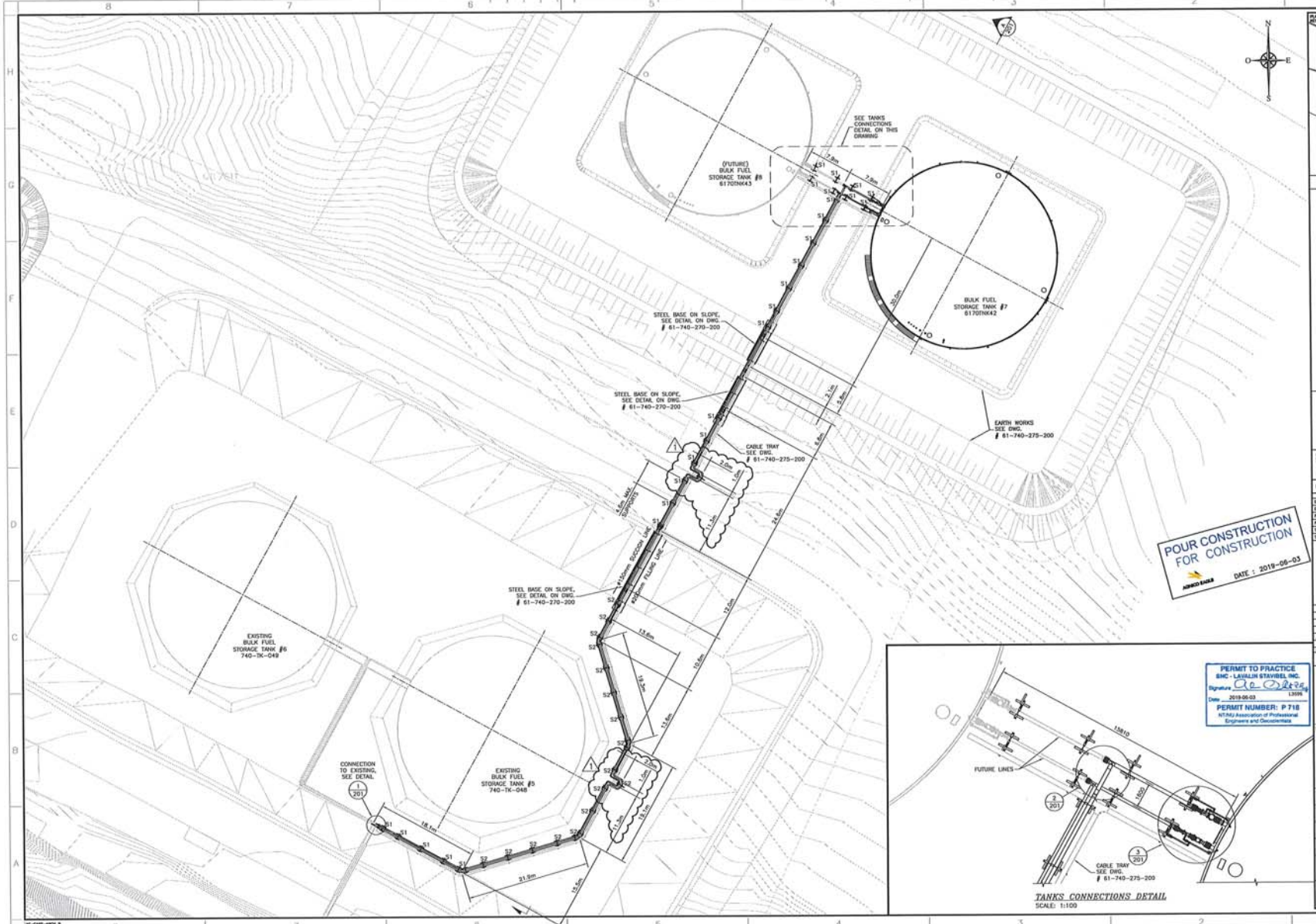
NO. DESSIN DRAWING NO. 61-740-260-202

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 6120 | A | 1/1 |

FILE NO. 61-740-260-200x202_R0.dwg

NO. DESSIN DRAWING NO. 61-740-270-200

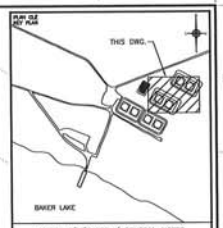
FORMAT ARCHID




POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2019-06-03

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2019-06-03
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

PLAN DE SITE
SITE PLAN




NOTES GÉNÉRALES / GENERAL NOTES

S1: PIPE SUPPORT TYPE 1
S2: PIPE SUPPORT TYPE 2
SEE DWG. # 61-740-270-202

SNC·LAVALIN

SNC-Lavalin Stavibel Inc.
195, rue Carrée Street
Rouyn-Noranda (Québec) J9X 2A7
Tel.: 819 764-5151 Fax.: 819 797-6108
www.snclavalin.com

Project # : 660534-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| GENERAL EARTH WORKS | 61-740-330-200 TO 205 |
| ELECTRICAL | 61-740-275-200 TO 201 |
| P&ID | 61-740-J-6100_2/2 |
| P&ID | 61-740-J-6100_1/2 |
| TANK 7 & 8 PIPE SUPPORTS – DETAILS | 61-740-270-200 |
| TANK 7 & 8 PIPING – ELEV. & DETAILS | 61-740-270-201 |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PRU/DE | APP. | TLEAM |
|---|---|---|---|---|---|
| 1 | 2019-06-03 | ISSUED FOR CONSTRUCTION | B.L. | A.G. | B.RAY |
| 0 | 2019-04-25 | ISSUED FOR TENDER | B.L. | A.G. | R.MÉN. |

REVISIONS

PROFESSIONAL ENGINEER A. OUELLET LICENCE L3595 NTMG
2019-06-03

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
PIPING
PLAN VIEW
10M LITERS DIESEL TANK #7 (6170TNK42)
& TANK #8 (6170TNK43) PIPING

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | B. LEMIEUX, Tech. | 2019/02/15 |
| VÉRIFIÉ PAR CHECKED BY | R. LAVOIE, Jr. Eng. | 2019/02/15 |
| APPROUVÉ PAR APPROVED BY | A. OUELLET, P. Eng. | 2019/02/15 |

ÉCHELLE SCALE 1 : 300 DATE 2019/02/15

NO. DESSIN DRAWING NO. 61-740-270-200

NO. PROJET PROJECT NO. 6120 | REVISION 1 | FEUILLE / SHT 1/1

AC-CAVT-ARCH B

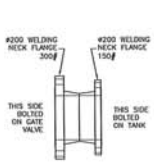
FILE NO. 61-740-270-200_R1.dwg

NO. DESIGN DRAWING NO. 61-740-270-201

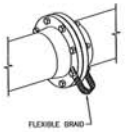
FORMAT ARCHO

## BILL OF MATERIAL

| ITEM | DIAMETER | DESCRIPTION | TYPE | CLASS / SCHEDULE | QTY | QTY FUTURE |
|---|---|---|---|---|---|---|
| 1 | 200 | PIPE | CARBON STEEL, ASTM A333 GR.6 | SCH.STD | 190 m △1 | 7 m |
| 2 | 200 | 45° ELBOW | CARBON STEEL, ASTM A420 GR.WPL6, BW | SCH.STD | 7 | - |
| 3 | 200 | ±30° ELBOW (CUSTOM FROM 45°) | CARBON STEEL, ASTM A420 GR.WPL6, BW | SCH.STD | 6 | - |
| 4 | 200 | TEE | CARBON STEEL, ASTM A420 GR.WPL6, BW | SCH.STD | 1 | - |
| 5 | 200 | FLANGE WELDING NECK | FORGED STEEL, ASTM A350 GR.LF2 | 300 # | 17 | 5 |
| 6 | 200 | FLANGE WELDING NECK | FORGED STEEL, ASTM A350 GR.LF2 | 150 # | 2 | 2 |
| 7 | 200 | BLIND FLANGE | FORGED STEEL, ASTM A350 GR.LF2 | 300 # | 1 | - |
| 8 | 200 | 450mm L.G. FLEXIBLE HOSE | FLEXTRONIC SENIOR SA-B5FS SERIES, FLANGED | 300 # | 6 | 1 |
| 9 | 200x150 | EXCENTRIC REDUCER | CARBON STEEL, ASTM A420 GR.WPL6, BW | SCH.STD | 2 | 1 |
| 10 | 150 | PIPE | CARBON STEEL, ASTM A333 GR.6 | SCH.STD | 190 m △1 | 7 m |
| 11 | 150 | 45° ELBOW | CARBON STEEL, ASTM A420 GR.WPL6, BW | SCH.STD | 4 | - |
| 12 | 150 | ±30° ELBOW (CUSTOM FROM 45°) | CARBON STEEL, ASTM A420 GR.WPL6, BW | SCH.STD | 6 | - |
| 13 | 150 | TEE | CARBON STEEL, ASTM A420 GR.WPL6, BW | SCH.STD | 2 | - |
| 14 | 150 | FLANGE WELDING NECK | FORGED STEEL, ASTM A350 GR.LF2 | 150 # | 17 | 5 |
| 15 | 150 | BLIND FLANGE | FORGED STEEL, ASTM A350 GR.LF2 | 150 # | 1 | - |
| 16 | 150 | 450mm L.G. FLEXIBLE HOSE | FLEXTRONIC SENIOR SA-B5FS SERIES, FLANGED | 150 # | 6 | 1 |
| 17 | 150x100 | EXCENTRIC REDUCER | CARBON STEEL, ASTM A420 GR.WPL6, BW | SCH.STD | 1 | - |
| 18 | 100 | PIPE | CARBON STEEL, ASTM A333 GR.6 | SCH.STD | 1 m | - |
| 19 | 100 | TEE | CARBON STEEL, ASTM A420 GR.WPL6, BW | SCH.STD | 1 | - |
| 20 | 50 | PIPE | CARBON STEEL, ASTM A333 GR.6 | SCH. 80 | 28 m △1 | 26 m |
| 21 | 50 | 90° ELBOW | FORGED STEEL, ASTM A350 GR.LF2, SW | CLASS 3000 | 10 △1 | 6 △1 |
| 22 | 50x25 | CONCENTRIC REDUCER | FORGED STEEL, ASTM A350 GR.LF2, SW | CLASS 3000 | 4 △1 | 2 |
| 23 | 25 | PIPE | CARBON STEEL, ASTM A333 GR.6 | SCH. 80 | 5 m △1 | 3 m |
| 24 | 25 | THREADOLET | FORGED STEEL, ASTM A350 GR.LF2 | CLASS 3000 | 6 △1 | 4 |
| 25 | 200 | GATE VALVE | BERIC, ASTM A-352, FLANGED, API STD 600, LCC BODY | 300 # | 4 | 1 |
| 26 | 200 | GATE VALVE | BERIC, ASTM A-352, FLANGED, API STD 600, LCC BODY | 150 # | 1 | 1 |
| 27 | 150 | GATE VALVE | BERIC, ASTM A-352, FLANGED, API STD 600, LCC BODY | 150 # | 3 | - |
| 28 | 200 | CHECK VALVE | BERIC, ASTM A-352, FLANGED, API STD 600, LCC BODY | 300 # | 2 | 1 |
| 29 | 150 | CHECK VALVE | BERIC, ASTM A-352, FLANGED, API STD 600, LCC BODY | 150 # | 1 | 1 |
| 30 | 150 | MOTORIZED BALL VALVE (SEE NOTE 1) | ITT CAM-TITE 316SS WITH RCS SURE-150-15 1800 INLBS ACTUATOR | 150 # | 1 | 1 |
| 31 | 50 | BALL VALVE | APOLLO 83L-240-24 SERIES, SW | | 8 △1 | 4 △1 |
| 32 | 25 | BALL VALVE | APOLLO 83L-240-24 SERIES, SW | | 8 △1 | 4 |
| 33 | 25 | PRESSURE RELIEF VALVE | FARRIS 2700 SERIES, THREADED, SET PRESSURE 80 PSIG | | 4 △1 | 2 |
| 34 | - | FLEXIBLE BRAID | NVENT MBJ 35-250-25 | | 44 | 15 |
| 35 △1 | 200 △1 | 90° ELBOW △1 | CARBON STEEL, ASTM A420 GR.WPL6, BW △1 | SCH.STD △1 | 8 △1 | - △1 |
| 36 △1 | 150 △1 | 90° ELBOW △1 | CARBON STEEL, ASTM A420 GR.WPL6, BW △1 | SCH.STD △1 | 8 △1 | - △1 |
| 37 △1 | 50 △1 | TEE △1 | FORGED STEEL, ASTM A350 GR.LF2, SW △1 | CLASS 3000 △1 | 4 △1 | 2 △1 |



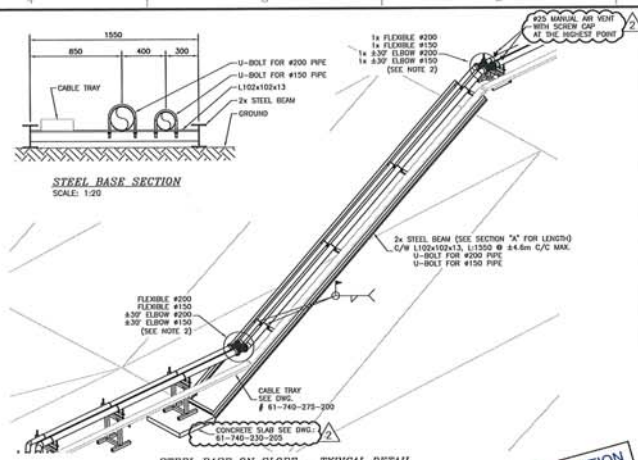

DETAIL 4 / –
SCALE: 1:10




TYPICAL FLANGE DETAIL
SCALE: N/A




STEEL BASE SECTION
SCALE: 1:20




STEEL BASE ON SLOPE – TYPICAL DETAIL
SCALE: N/A

POUR CONSTRUCTION FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-06-03


### NOTES GÉNÉRALES / GENERAL NOTES

NOTE 1:
SUPPLY OF MOTORIZED VALVE BY AEM AND INSTALLATION BY CONTRACTOR.

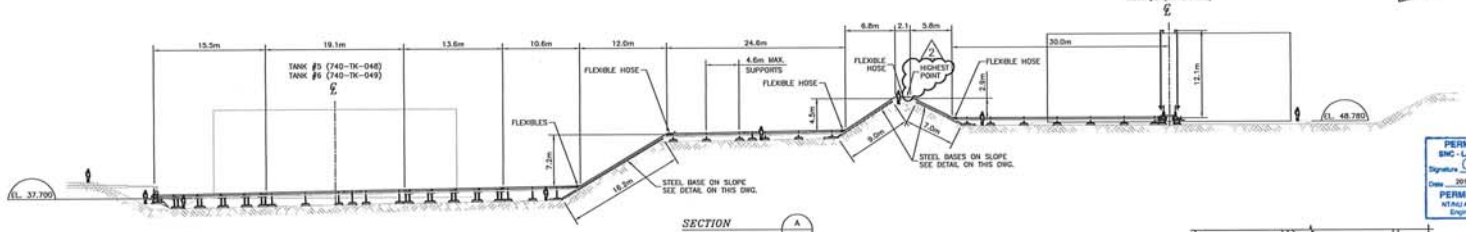
NOTE 2:
THE EXACT DEGRE OF ±30° ELBOWS IS TO BE VALIDATED WITH THE FINAL GRADE OF THE DAM. ±30° ELBOWS ARE TO BE MODIFIED ON FIELD, FROM A STD. 45° ELBOW.

SNC·LAVALIN

Project # : 660534-0000

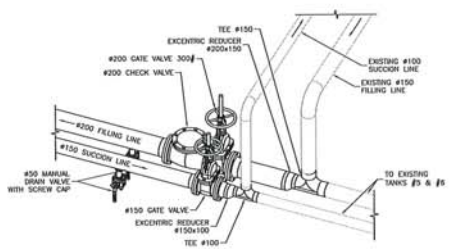
### DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| GENERAL EARTH WORKS | 61-740-230-200 TO 205 |
| ELECTRICAL | 61-740-275-200 TO 201 |
| P&ID | 61-740-J-0100_3/3 |
| P&ID | 61-740-J-0100_1/3 |
| TANK 7 & 8 PIPE SUPPORTS – DETAILS | 61-740-270-202 |
| TANK 7 & 8 PIPING – PLAN VIEW | 61-740-270-200 |

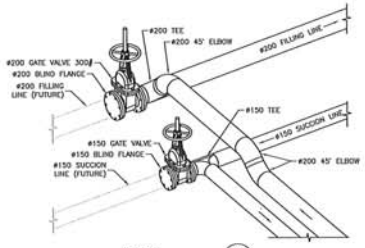



SECTION A / 200
SCALE: 1:300

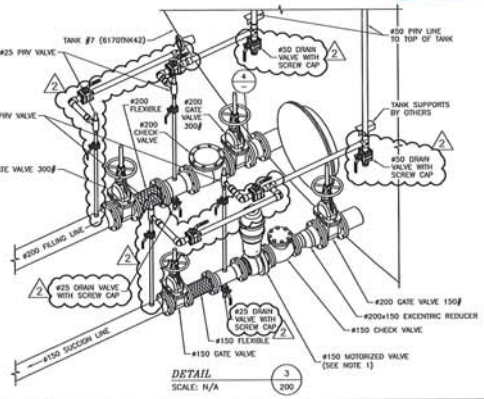
PERMIT TO PRACTICE
SNC-LAVALIN STAVIBEL INC.
Signature
Date 2019-06-03
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists




DETAIL 1 / 200
SCALE: N/A




DETAIL 2 / 200
SCALE: N/A




DETAIL 3 / 200
SCALE: N/A

AGNICO EAGLE

| REV | DATE | DESCRIPTION | PAR/DES | APP. | CLIENT |
|---|---|---|---|---|---|
| 3 | 2019-06-03 | ISSUED FOR CONSTRUCTION | B.L. | A.G. | SUBDY |
| 2 | 2019-05-02 | ADDENDUM DRAW / AR VALVE | F.G.C. | A.G. | KAIÑL |
| 0 | 2019-04-25 | ISSUED FOR TENDER | B.L. | A.G. | KAIÑL |

REVISIONS

PROFESSIONAL ENGINEER A. OUELLET LICENSEE 13595 NT/NU
2019-05-03

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
PIPING
SECTION & DETAILS
10M LITERS DIESEL TANK #7 (6170TNK42)
& TANK #8 (6170TNK43) PIPING

| | | DATE |
|---|---|---|
| DESSINÉ PAR DRAWN BY | B. LEMIEUX, Tech. | 2019/02/15 |
| VÉRIFIÉ PAR CHECKED BY | R. LAVOIE, Jr. Eng. | 2019/02/15 |
| APPROUVÉ PAR APPROVED BY | A. OUELLET, P. Eng. | 2019/02/15 |
| ÉCHELLE SCALE | INDICATED | DATE 2019/02/15 |

NO. DESSIN DRAWING NO. 61-740-270-201

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 6120 | 2 | 1/1 |

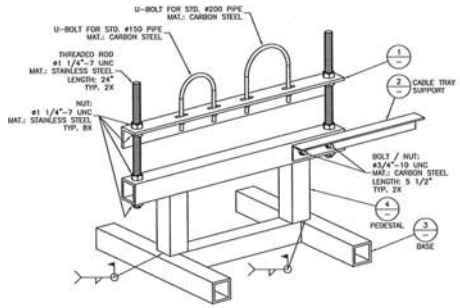
AC-CART-ARCH D

FILE NO. 61-740-270-201_R2.dwg

NO. DESSIN DRAWING NO. 61-740-270-202

FORMAT ARCHO

NOTES:
- FABRICATE THE BASE AND THE PEDESTAL SEPERATELY.
- WILL BE WELD AT SITE.
- SEND PAINT AT SITE FOR TOUCH-UP.




S1 – PIPE SUPPORT TYPE 1
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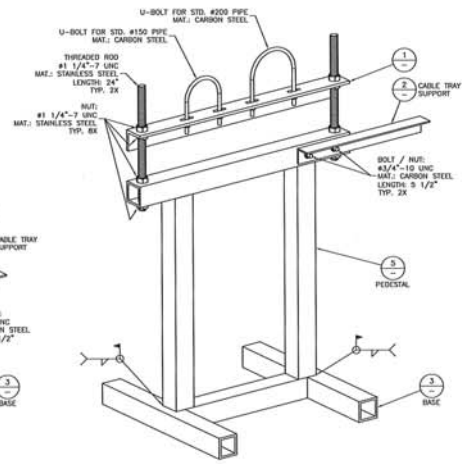
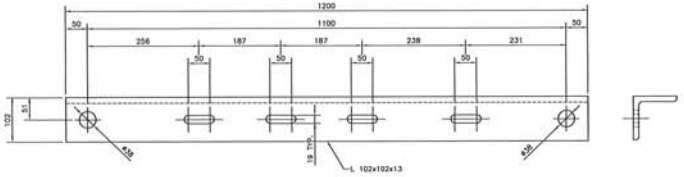
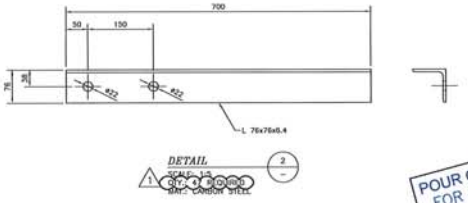


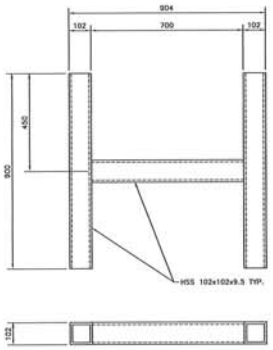

S2 – PIPE SUPPORT TYPE 2
SCALE: N/A



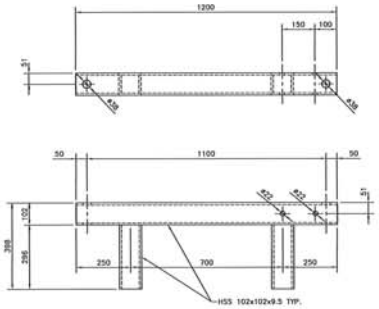

DETAIL 1
SCALE: 1:5
MAT.: CARBON STEEL



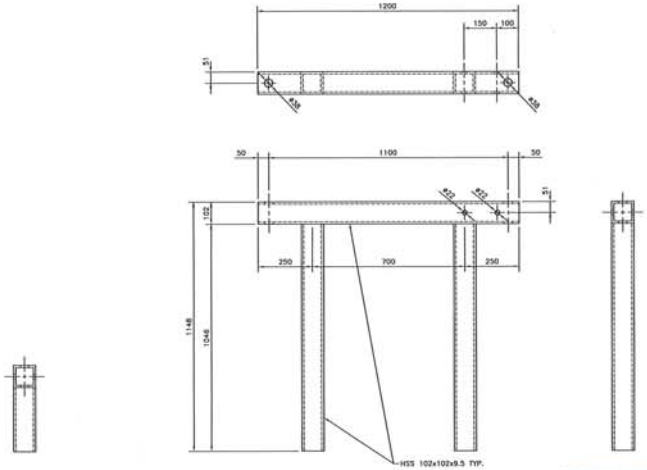

DETAIL 2
SCALE: 1:5
MAT.: CARBON STEEL



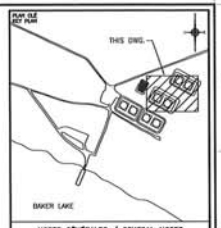

DETAIL 3
SCALE: 1:10
MAT.: CARBON STEEL




DETAIL 4
SCALE: 1:10
MAT.: CARBON STEEL




DETAIL 5
SCALE: 1:10
MAT.: CARBON STEEL




## NOTES GÉNÉRALES / GENERAL NOTES

1. ALL STRUCTURAL STEEL SHALL BE NEW AND IN COMPLIANCE WITH THE LATEST EDITION OF THESE STANDARDS:
   - STRUCTURAL STEEL G40.21 300W (44W) OR ASTM A36
   - HSS G40.21 350W (50W) OR ASTM A500
2. ALL WELDING AND WELDING PLANS SHALL BE IN COMPLIANCE WITH C.S.A. STANDARD W59 OR AWS STANDARD D1.1 (LATEST EDITION), AND BE DONE BY A CERTIFIED WELDER AS PER C.S.A. W47.1 OR AWS D1.1 (LATEST EDITION).
3. THE CONTRACTOR SHALL SUPPLY ALL NECESSARY LABOR, MATERIALS AND EQUIPMENT FOR COMPLETION OF THE WORK SHOWED ON PLANS.
4. NO DIMENSIONS SHOULD BE DRAWN TO SCALE ON PLAN. CONTACT THE PROJECT ENGINEER FOR ANY ADDITIONAL INFORMATION.
5. ALL DIMENSIONS ARE IN MILLIMETERS.
6. EXTERIOR PAINTING:
   - SP-1 (EXCIPROP 88) FOLLOWED BY SP-6 SURFACE PREPARATION (PROFILE 1.5 TO 2 MILL. MAXIMUM);
   - APPLY ONE (1) TO TWO (2) LAYERS OF EPOXY BAR-RUST 235 (8 TO 10 MILL. DRY FILM THICKNESS);
   - APPLY ONE (1) LAYER OF DEXTHANE 369 U.V. RAY RESISTANT (2 TO 3 MILL. DRY FILM THICKNESS).

   COLORS:
   - GRAY (STRUCTURE)
   - SECURITY YELLOW (HANDRAILS)
   - BLUE (EQUIPMENTS)

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-06-03


SNC-LAVALIN
SNC-Lavalin Stavibel Inc.
105, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél.: 819 764-5181 Fax: 819 797-6158
www.snclavalin.com


Project # : 660534-0000



## DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TYPE / TITLE | # DWG |
|---|---|
| – | – |
| – | – |
| – | – |
| TANK 7 & 8 PIPING – ELEV. & DETAILS | 61-740-270-201 |
| TANK 7 & 8 PIPING – PLAN VIEW | 61-740-270-200 |

AGNICO EAGLE

| NO. | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 2019-06-03 | ISSUED FOR CONSTRUCTION | B.L. | A.O. | B.ROY |
| 0 | 2019-04-25 | ISSUED FOR TENDER | B.L. | A.O. | B.ROY |

REVISIONS

PROFESSIONAL ENGINEER A. OUELLET LICENCE 13095 P.ENG.
2019-06-03

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
PIPING
DETAILS
10M LITERS DIESEL TANK #7 (6170TNK42)
& TANK #8 (6170TNK43) – PIPE SUPPORTS

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | B. LEMIEUX, Tech. | DATE 2019/03/19 |
| VÉRIFIÉ PAR CHECKED BY | R. LAVOIE, Jr. Eng. | 2019/03/19 |
| APPROUVÉ PAR APPROVED BY | A. OUELLET, P. Eng. | 2019/03/19 |
| ÉCHELLE SCALE | INDICATED | DATE 2019/03/19 |

NO. DESSIN DRAWING NO. 61-740-270-202

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 6120 | 1 | 1 / 1 |

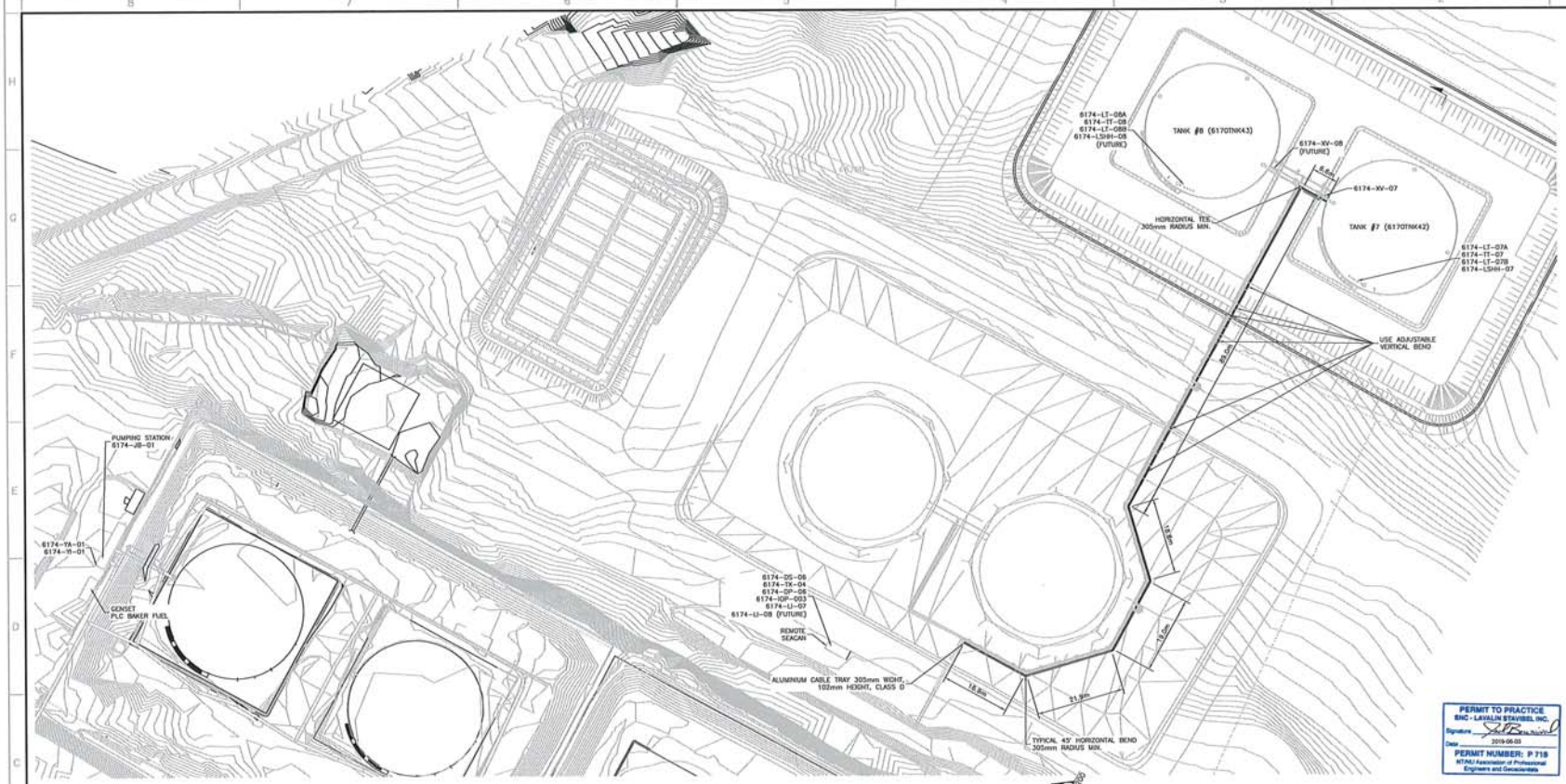
PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2019-06-03
L3395
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

AE-CART-ARCH B

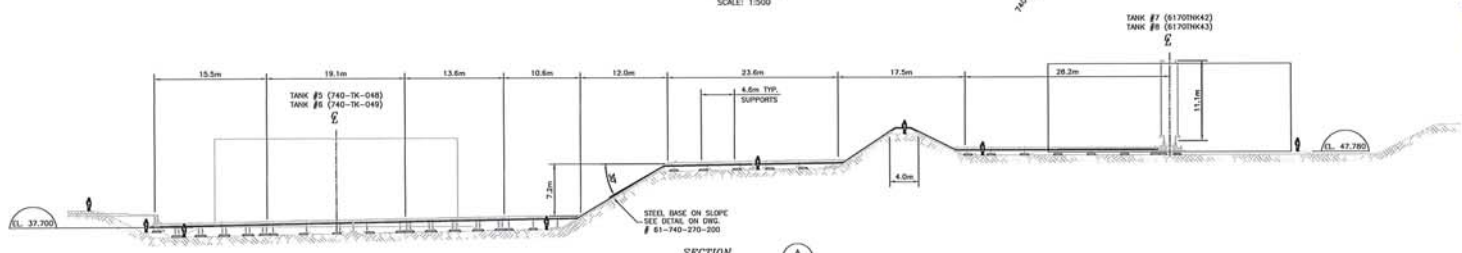
FILE NO. 61-740-270-202_R1.dwg

NO. DESSIN DRAWING NO. 61-740-275-200

FORMAT ARCHO




PLAN VIEW
SCALE: 1:500

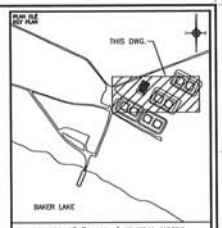



SECTION
SCALE: 1:300

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2019-06-03
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

DOCUMENT SCELLÉ NUMÉRIQUEMENT
P LEMIRE
LICENCIÉ
14098
NT/NU
2019-06-03

PLAN CLÉ
KEY PLAN




NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-06-03

SNC·LAVALIN
SNC-Lavalin Stavibel Inc.
155, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél.: 819 764-5151 Fax.: 819 797-0158
www.snclavalin.com

Project # : 660534-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

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

AGNICO EAGLE

| NO | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 2019-06-03 | ISSUED FOR CONSTRUCTION | S.MAR. | P.LEM. | |
| 0 | 2019-05-03 | ISSUED FOR TENDER | D.PEL. | P.LEM. | |

REVISIONS

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 – BAKER LAKE AREA
POWER ELECTRICAL
SECTION & DETAILS
10M LITERS DIESEL TANK #7 (6170TNK42)
& TANK #8 (6170TNK43) CABLE TRAY

| | | DATE |
|---|---|---|
| DESSINÉ PAR DRAWN BY | DONALD PELLERIN, Tech. | 2018-04-24 |
| VERIFIÉ PAR CHECKED BY | PHILIPPE LEMIRE, P. Eng. | 2019-04-25 |
| APPROUVÉ PAR APPROVED BY | PHILIPPE LEMIRE, P. Eng. | 2019-05-03 |
| ÉCHELLE SCALE | INDICATED | DATE 2019-04-24 |

NO. DESSIN DRAWING NO. 61-740-275-200

NO. PROJET PROJECT NO. 6120 | REVISION 1 | FEUILLE / SHEET 1/1

AC-CAD7-ARCH D

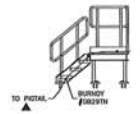
FILE NO. 61-740-275-200_R1.dwg

NO. DESSIN DRAWING NO. 61-740-275-201

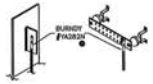
FORMAT ARCHO

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-06-03

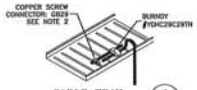

*C-TAPS* (1)
SCL: NTS
CONDUCTOR TO CONDUCTOR CONNECTOR



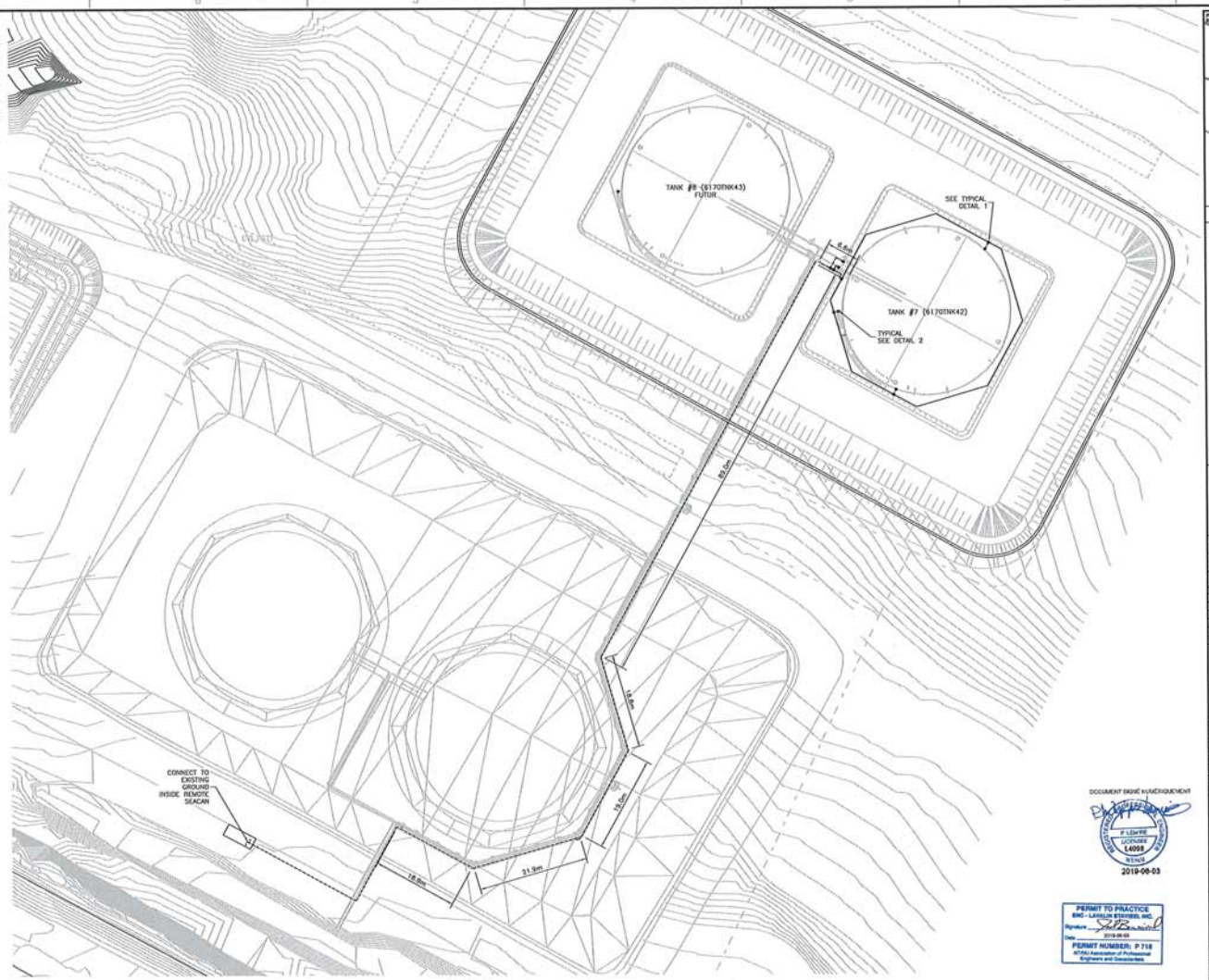

*STAIRS* (2)
SCL: NTS




*LUG YA-28* (3)
SCL: NTS
EQUIPEMENT, CONTAINER, GROUND BAR




*CABLE TRAY* (4)
SCL: NTS



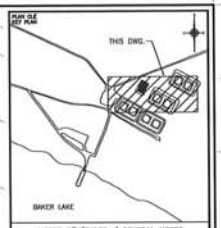

*PLAN VIEW*
SCALE: 1:400

DOCUMENT SIGNÉ SUIVANT REQUIS

P. LEMIRE
LICENCE
L4098
NUNAVUT
2019-06-03

PERMIT TO PRACTICE
SNC - LAVALIN STANTEC, INC.
Signature
Date 2019-06-03
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

PLAN CLÉ
KEY PLAN




## NOTES GÉNÉRALES / GENERAL NOTES

LEGEND

——— BURIED STRANDED TINNED BARE COPPER CONDUCTOR #1/0 AWG

- - - - - - SURFACE STRANDED TINNED BARE COPPER CONDUCTOR #1/0 AWG IN CABLE TRAY

NOTES

1- THE PERIMETER GROUND CONDUCTOR OF THE TANK MUST BE ABOVE THE GEOMEMBRANE

2- THE GROUND CONDUCTOR MUST BE FIXED TO THE CABLE TRAY TO ALL 15 METER MINIMUM WITH MECHANICAL CONNECTOR. BURNDY MODEL GB29

SNC·LAVALIN

SNC-Lavalin Stantec Inc.
100, rue Gamble Ouest
Rouyn-Noranda (Québec), J9X 2R7
Tél.: 819 764-9181 Fax: 819 797-0159
www.snclavalin.com

Project # : 660034-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

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

AGNICO EAGLE

| REV | DATE | DESCRIPTION | PAR/DR | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 2019-06-03 | ISSUED FOR CONSTRUCTION | S.MAR. | P.LEM. | |
| 0 | 2019-05-03 | ISSUED FOR TENDER | D.PEL. | P.LEM. | |

REVISIONS

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 – BAKER LAKE AREA
275 – POWER ELECTRICAL
ARRANGEMENT
10M LITERS DIESEL TANK #7 (6170TNK42)
& TANK #8 (6170TNK43) GROUNDING

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | DONALD PELLERIN, Tech. | DATE 2019-04-24 |
| VÉRIFIÉ PAR CHECKED BY | PHILIPPE LEMIRE, P. Eng. | 2019-04-25 |
| APPROUVÉ PAR APPROVED BY | PHILIPPE LEMIRE, P. Eng. | 2019-05-03 |
| ÉCHELLE SCALE | INDICATED | DATE 2019-04-24 |

NO. DESSIN DRAWING NO. 61-740-275-201

NO. PROJET PROJECT NO. 6120 | REVISION 1 | FEUILLE / SHT 1/1

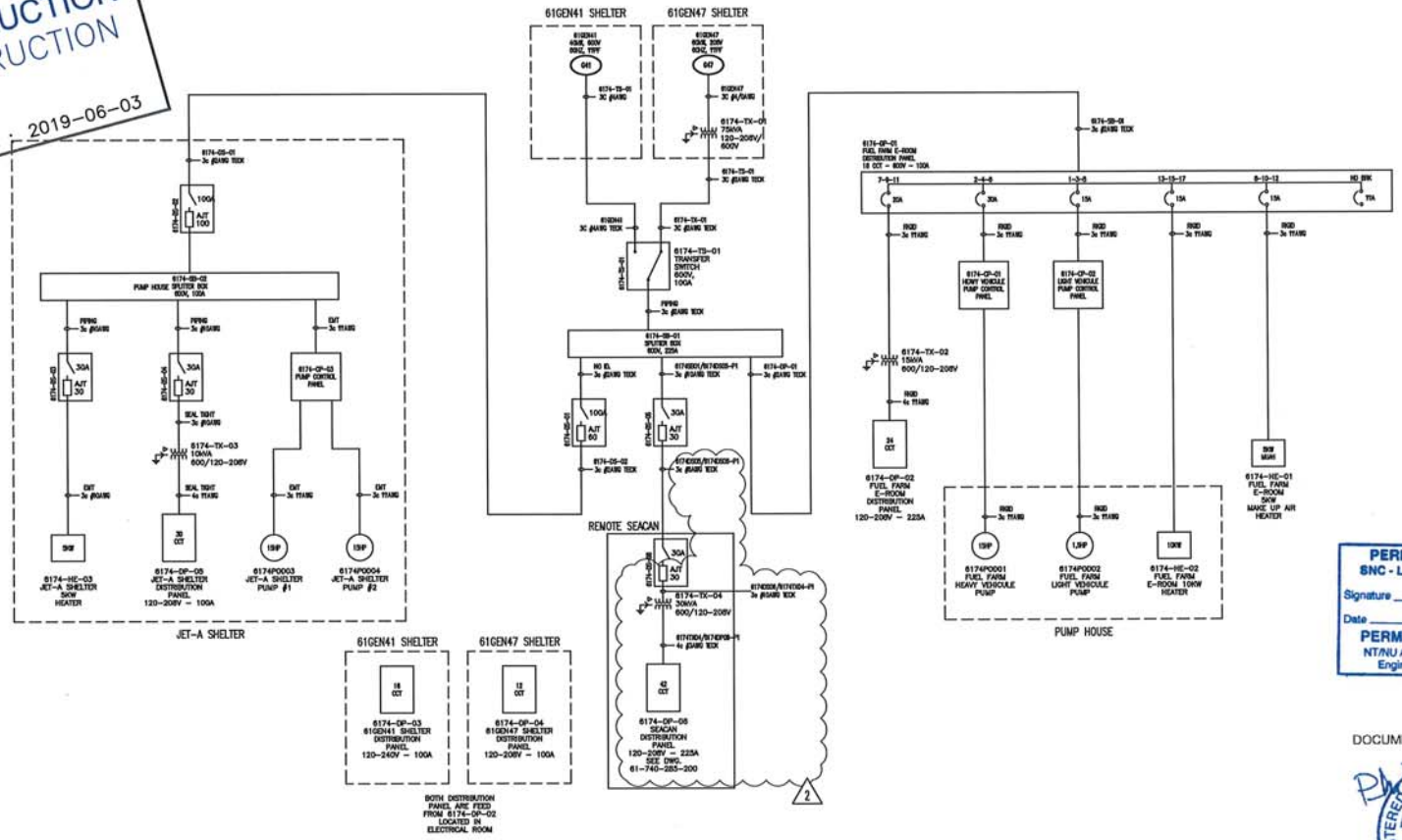
AC-GMT-MKH 0

FILE NO. 61-740-275-201_R1.dwg

NO. DESSIN / DRAWING NO. 61-740-275-202

FORMAT ANSI B-11x17

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-06-03




PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2019-06-03
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

DOCUMENT SIGNÉ NUMÉRIQUEMENT

REGISTERED PROFESSIONAL ENGINEER
P. LEMIRE
LICENSEE
L4098
NT/NU
2019-06-03

| REV | DESCRIPTION | DATE | PAR BY |
|---|---|---|---|
| 2 | ISSUED FOR CONSTRUCTION | 2019-06-03 | P.LEM. |
| 1 | ISSUED FOR TENDER | 2019-05-03 | P.LEM. |
| 0 | ORIGINAL DRAWING WAS 6174-E-003 | JUNE/16 | M.B. |

TITRE / TITLE — # DWG

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

REVISIONS

AGNICO EAGLE

Project # : 660534-0000
REV:1

SNC·LAVALIN
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tel. : 819 764-5181 Fax : 819 797-0158
www.snclavalin.com

| | | |
|---|---|---|
| DESSINÉ PAR / DRAWN BY | ST | MAY/16 |
| VÉRIFIÉ PAR / CHECKED BY | ST | JUNE/16 |
| APPROUVÉ PAR / APPROVED BY | | |
| No. PROJET / PROJECT NO. | 6120 | |
| DATE | MAY/16 | |

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
275 – POWER ELECTRICAL
SINGLE LINE
ELECTRICAL ROOM BAKER LAKE FUEL FARM DISTRIBUTION

ÉCHELLE/SCALE N/A — FICHIER/FILE 61-740-275-202_R2.dwg

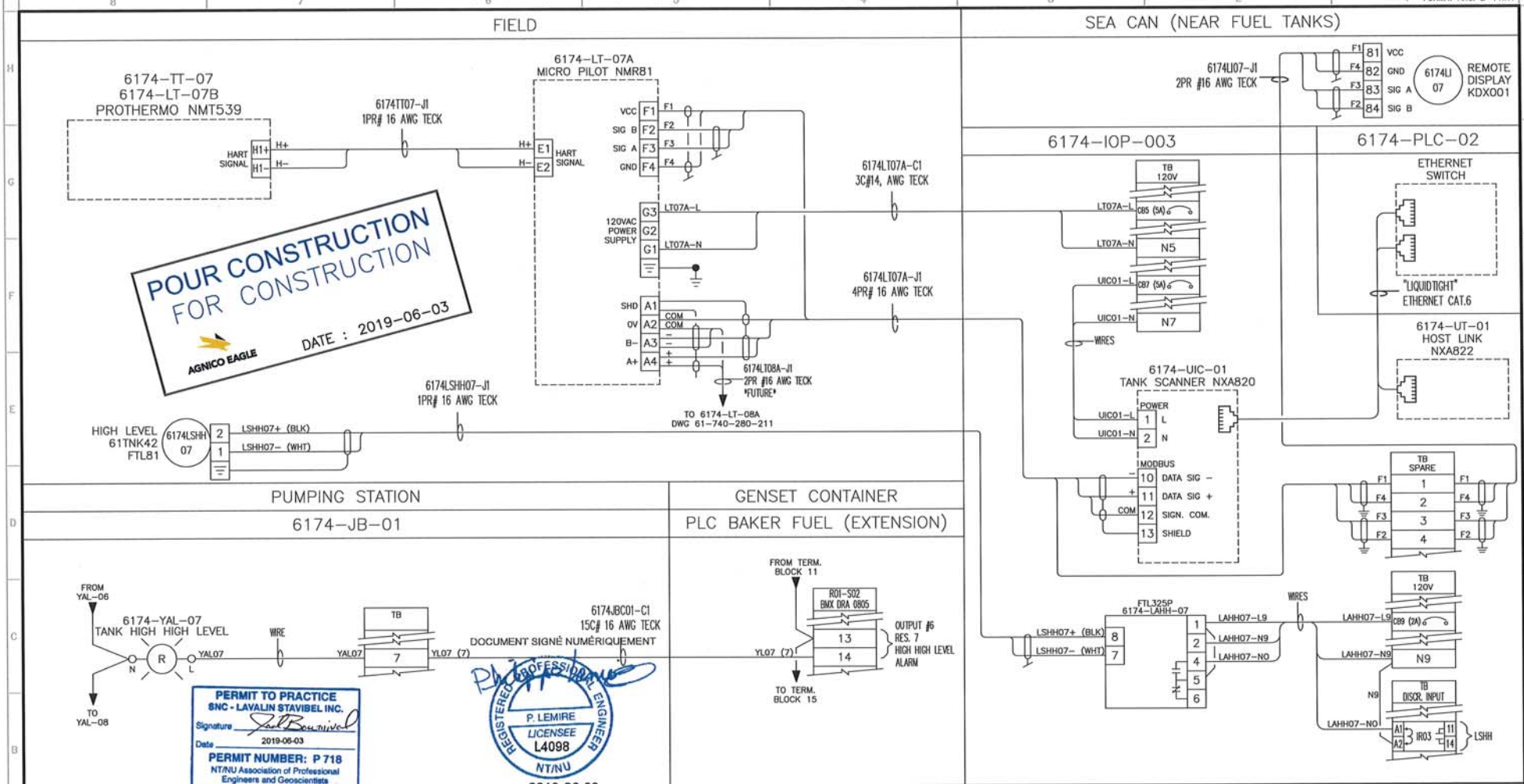
No. DESSIN/DRAWING NO. 61-740-275-202 — REVISION 2 — FEUILLE/SHT 1 / 1

AE-CART-ANSI B

\\sli.bz\stavibel\Projet\300-RN\660534\0000\4-Ingenierie\D-Dessins maitres\47-EL\61-740-275-202_R2.dwg-2013-02-19 14:03:29

NO. DESSIN DRAWING NO. 61-740-280-209

FORMAT ANSI B-11x17




PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2019-06-03
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

REGISTERED PROFESSIONAL ENGINEER
P. LEMIRE
LICENSEE
L4098
NT/NU
2019-06-03

| | | | | | |
|---|---|---|---|---|---|
| 6174JBC01 – ARRANGEMENT / WIRING | 61-740-280-214 | | | | |
| PLC BAKER FUEL (EXT.) – WIRING DIAGRAM | 61-740-280-213 | | | | |
| 6174IOP003 – WIRING DIAGRAM | 61-740-280-207 | 1 | ISSUED FOR CONSTRUCTION | 2019-06-03 | P.LEM |
| 61TNK43 – LEVEL MONITORING | 61-740-280-211 | 0 | ISSUED FOR TENDER | 2019-05-03 | P.LEM |
| TITRE / TITLE | # DWG | REV | DESCRIPTION | DATE | PAR BY |
| DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS | | REVISIONS | | | |

AGNICO EAGLE

Project # : 660534-0000

SNC·LAVALIN
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tel. : 819 764-5181 Fax : 819 797-0158
www.snclavalin.com

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | S.MARCOTTE, TECH. | 2019-04-29 |
| VERIFIÉ PAR CHECKED BY | PHILIPPE LEMIRE, P.ENG. | 2019-04-29 |
| APPROUVÉ PAR APPROVED BY | PHILIPPE LEMIRE, P.ENG. | 2019-05-03 |
| No. PROJET PROJECT NO. | 6120 | |
| DATE | 2019-04-29 | |

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
280 – INSTRUMENTATION & CONTROL
WIRING DIAGRAM
61TNK42 – LEVEL MONITORING

ÉCHELLE/SCALE NTS
FICHIER FILE 61-740-280-209_R1.dwg
No. DESSIN/DRAWING NO. 61-740-280-209
REVISION 1
FEUILLE/SHT 1 / 1

AE-CART-ANSI B

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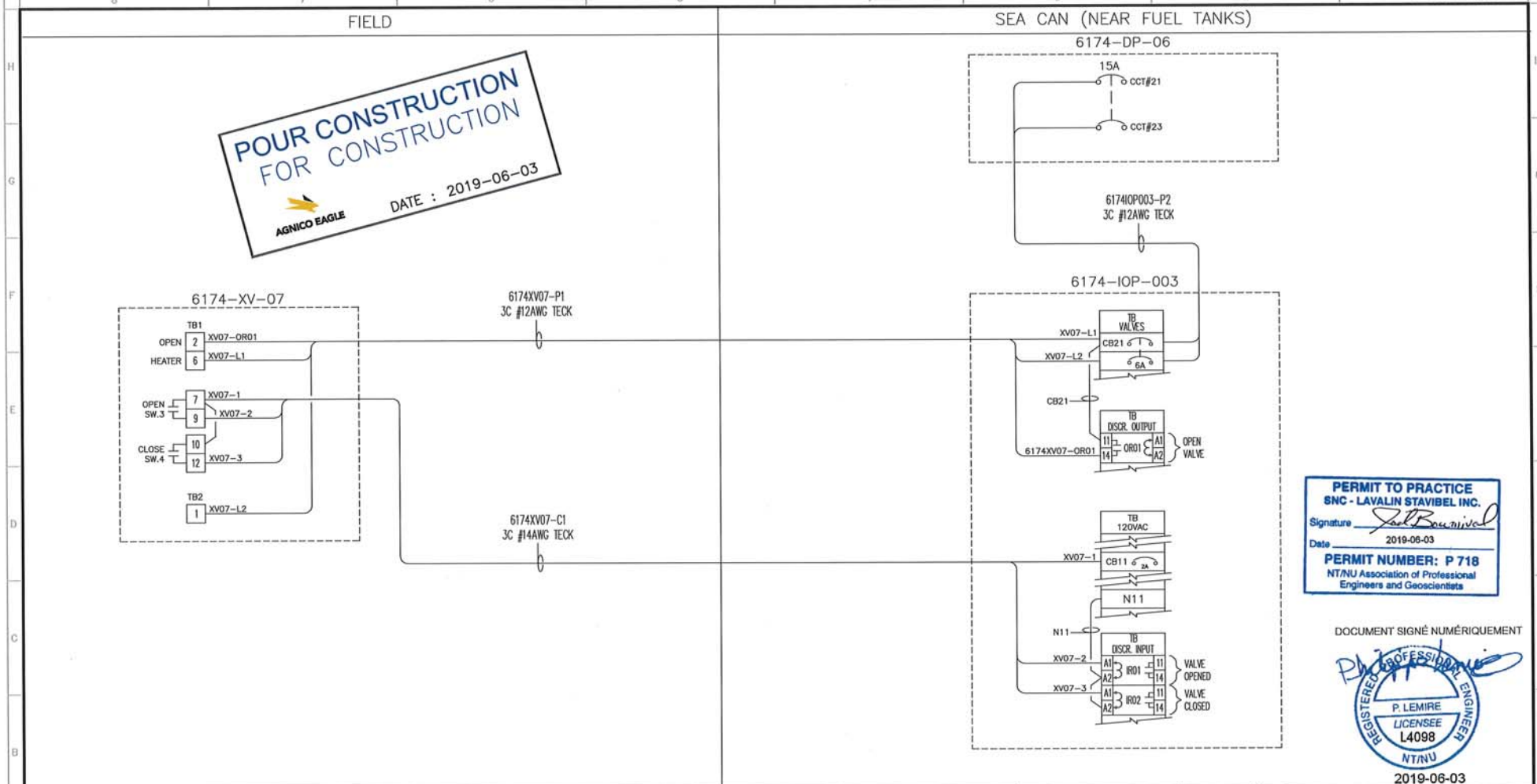
NO. DESSIN / DRAWING NO. 61-740-280-210

FORMAT ANSI B-11x17




PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2019-06-03
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

DOCUMENT SIGNÉ NUMÉRIQUEMENT

REGISTERED PROFESSIONAL ENGINEER
P. LEMIRE
LICENSEE
L4098
NT/NU

2019-06-03

| TITRE / TITLE | # DWG | REV | DESCRIPTION | DATE | PAR BY |
|---|---|---|---|---|---|
| 6174-DP-06 – SCHEDULE | 61-740-285-200 | 1 | ISSUED FOR CONSTRUCTION | 2019-06-03 | P.LEM |
| 6174IOP003– WIRING DIAGRAM | 61-740-280-207 | 0 | ISSUED FOR TENDER | 2019-05-03 | P.LEM |

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS — REVISIONS

AGNICO EAGLE

Project # : 660534-0000

SNC·LAVALIN
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tel. : 819 764-5181 Fax : 819 797-0158
www.snclavalin.com

| | | |
|---|---|---|
| DESSINÉ PAR / DRAWN BY | S.MARCOTTE, TECH. | 2019-04-29 |
| VÉRIFIÉ PAR / CHECKED BY | PHILIPPE LEMIRE, P.ENG. | 2019-04-29 |
| APPROUVÉ PAR / APPROVED BY | PHILIPPE LEMIRE, P.ENG. | 2019-05-03 |
| No. PROJET / PROJECT NO. | 6120 | |
| DATE | 2019-04-29 | |

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
280 – INSTRUMENTATION & CONTROL
WIRING DIAGRAM
6170TNK42 – VALVE 6174-XV-07

ÉCHELLE/SCALE NTS
FICHIER/FILE 61-740-280-210_R1.dwg
No. DESSIN/DRAWING NO. 61-740-280-210
REVISION 1
FEUILLE/SHT 1 / 1

AE-CART-ANSI B

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NO. DESSIN / DRAWING NO. 61-740-280-211

FORMAT ANSI B-11x17

## FIELD

6174-TT-08
6174-LT-08B
PROTHERMO NMT539

HART SIGNAL H1+ H1- H+ H-

6174TT08B-J1
1PR# 16 AWG TECK

6174-LT-08A
MICRO PILOT NMR81

H+ H- E1 E2 HART SIGNAL

VCC F1 F1
SIG B F2 F2
SIG A F3 F3
GND F4 F4

6174LI08-C1
2PR#16 AWG TECK

6174LT08A-C1
3C# AWG TECK

120VAC POWER SUPPLY
G3 LT08A-L
G2
G1 LT08A-N

FROM 6174-LT-07A
DWG 61-740-280-209

6174LT08A-J1
2PR# 16 AWG TECK

SHD A1
0V A2 COM
B- A3 -
A+ A4 +

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-06-03

6174LSHH08-J1
1PR# 16 AWG TECK

HIGH LEVEL
61TNK43
FTL81

6174LSHH 08
2 LSHH08+ (BLK)
1 LSHH08- (WHT)

## SEA CAN (NEAR FUEL TANKS)

6174LI 08
F1 81 VCC
F4 82 GND
F3 83 SIG A
F2 84 SIG B

REMOTE DISPLAY KDX001

### 6174-IOP-003

FTL325P
6174LAHH08

LSHH08+ (BLK) 8
LAHH08- (WHT) 7

1 LAHH08-L12
2 LAHH08-N12
4 LAHH08-NO
5
6

WIRES

TB 120V
LT08A-L CB10 (5A)
LT08A-N N10
LAHH08-L12 CB12 (2A)
LAHH08-N12 N12

N12
TB DISCR. INPUT
LAHH08-NO A1 A2 IR06 11 14 LSHH

## PUMPING STATION

### 6174-JB-01

FROM YAL-07
6174-YL-08
TANK HIGH HIGH LEVEL
R N L

WIRE

TB
YAL08 8 YAL08 (8)
YAL-N 9 YAL-N22 (9)

TO YAL-01

6174JBC01-C1
15C# 16 AWG TECK

## GENSET CONTAINER

### PLC BAKER FUEL (EXTENSION)

TB 120VAC
YAL-N22 (9) N22

FROM TERM. BLOCK 13
R01-S02
BMX DRA 0805
15
YL08 (8) 16

OUTPUT #7
RES. 08
HIGH HIGH LEVEL ALARM

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2019-06-03
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

DOCUMENT SIGNÉ NUMÉRIQUEMENT
REGISTERED PROFESSIONAL ENGINEER
P. LEMIRE
LICENSEE
L4098
NT/NU
2019-06-03

| TITRE / TITLE | # DWG | REV | DESCRIPTION | DATE | PAR BY |
|---|---|---|---|---|---|
| 6174JBC01 – ARRANGEMENT / WIRING | 61-740-280-214 | | | | |
| PLC BAKER FUEL (EXT.) – WIRING DIAGRAM | 61-740-280-213 | | | | |
| 6174IOP003 – WIRING DIAGRAM | 61-740-280-207 | 1 | ISSUED FOR CONSTRUCTION | 2019-06-03 | P.LEM |
| 61TNK42 – LEVEL MONITORING | 61-740-280-209 | 0 | ISSUED FOR TENDER | 2019-05-03 | P.LEM |

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS — REVISIONS

AGNICO EAGLE

SNC·LAVALIN
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tel. : 819 764-5181 Fax : 819 797-0158
www.snclavalin.com

Project # : 660534-0000

| | | DATE |
|---|---|---|
| DESSINÉ PAR / DRAWN BY | S.MARCOTTE, TECH. | 2019-04-29 |
| VERIFIÉ PAR / CHECKED BY | PHILIPPE LEMIRE, P.ENG. | 2019-04-29 |
| APPROUVÉ PAR / APPROVED BY | PHILIPPE LEMIRE, P.ENG. | 2019-05-03 |
| No. PROJET / PROJECT NO. | 6120 | |
| DATE | 2019-04-29 | |

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
280 – INSTRUMENTATION & CONTROL
WIRING DIAGRAM
61TNK43 – LEVEL MONITORING

ÉCHELLE/SCALE NTS
FICHIER/FILE 61-740-280-211_R1.dwg
No. DESSIN/DRAWING NO. 61-740-280-211
REVISION 1
FEUILLE/SHT 1 / 1

AE-CART-ANSI B

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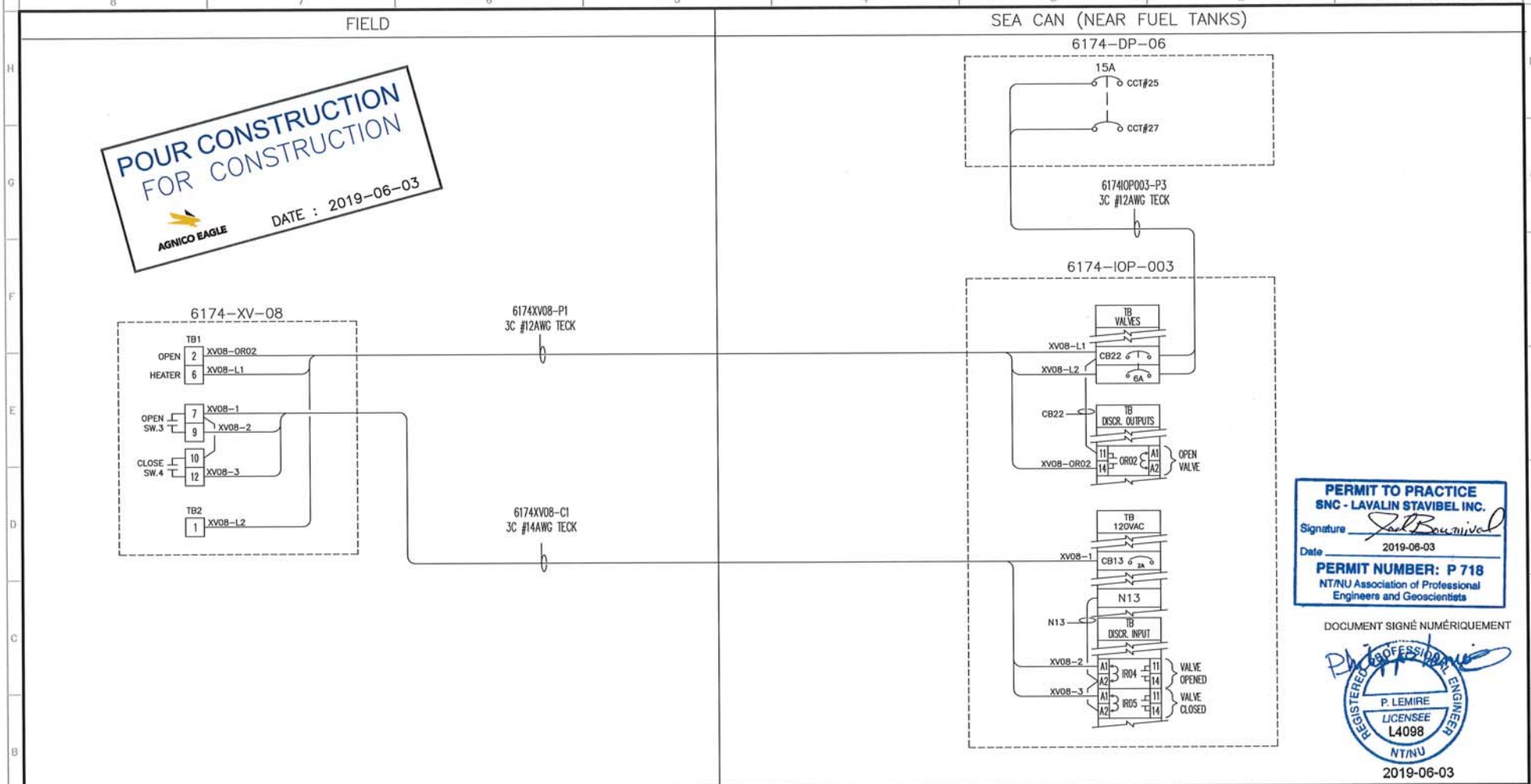
NO. DESSIN / DRAWING NO. 61-740-280-212

FORMAT ANSI B-11x17




PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2019-06-03
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

DOCUMENT SIGNÉ NUMÉRIQUEMENT

REGISTERED PROFESSIONAL ENGINEER
P. LEMIRE
LICENSEE
L4098
NT/NU

2019-06-03

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| 6174-DP-06 – SCHEDULE | 61-740-285-200 | 1 | ISSUED FOR CONSTRUCTION | 2019-06-03 | P.LEM |
| 6174IOP003 – WIRING DIAGRAM | 61-740-280-207 | 0 | ISSUED FOR TENDER | 2019-05-03 | P.LEM |

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS — REVISIONS

AGNICO EAGLE

Project # : 660534-0000

SNC·LAVALIN
150, rue Gamble Ouest
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| | | DATE |
|---|---|---|
| DESSINÉ PAR / DRAWN BY | S.MARCOTTE, TECH. | 2019-04-30 |
| VÉRIFIÉ PAR / CHECKED BY | PHILIPPE LEMIRE, P.ENG. | 2019-04-30 |
| APPROUVÉ PAR / APPROVED BY | PHILIPPE LEMIRE, P.ENG. | 2019-05-03 |
| No. PROJET / PROJECT NO. | 6120 | |
| DATE | 2019-04-30 | |

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
280 – INSTRUMENTATION & CONTROL
WIRING DIAGRAM
6170TNK43 – VALVE 6174-XV-08

ÉCHELLE/SCALE NTS
FICHIER/FILE 61-740-280-212_R1.dwg
No. DESSIN/DRAWING NO. 61-740-280-212
REVISION 1
FEUILLE/SHT 1 / 1

AE-CART-ANSI B

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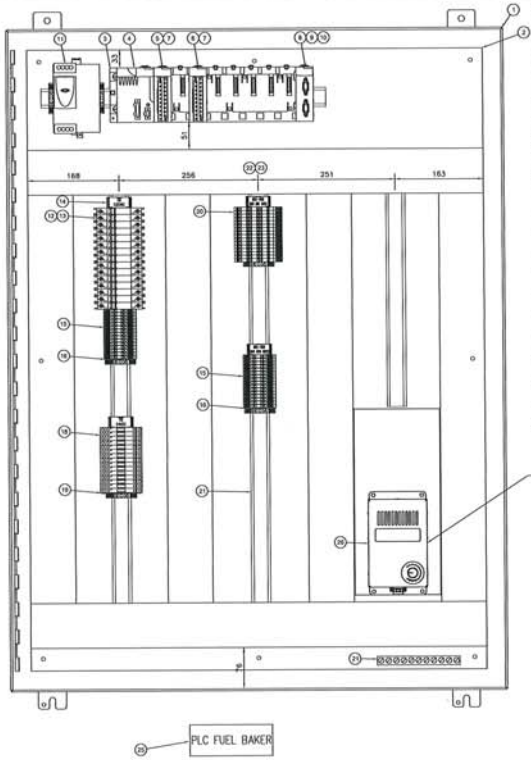
NO. DESSIN DRAWING NO. 61-740-280-213

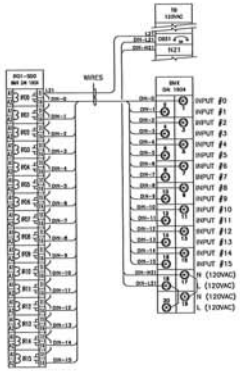
FORMAT ARCHO



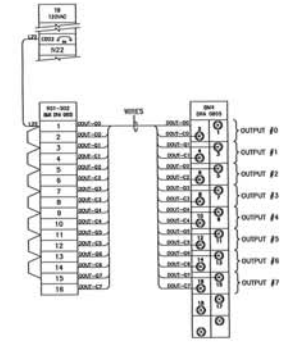

*PLC FUEL BAKER (EXTENSION)*

| ITEM | QTY | DESCRIPTION | NO. PIÈCE | MANUFACTURER |
|---|---|---|---|---|
| 1 | 1 | PLC CABINET [48"X36"X10"] (1219mmX914mmX254mm), NEMA 12, WALL-MOUNT ENCLOSURE | A48361OLP | HOFFMAN |
| 2 | 1 | BACKPLANE [45"X33"] (1143mmX838mm) | A48P36G | HOFFMAN |
| 3 | 1 | 6-SLOT X-BUS BACKPLANE | BMX XBP 0600 | SCHNEIDER |
| 4 | 1 | POWER SUPPLY 100/240VAC | BMX CPS 3500 | SCHNEIDER |
| 5 | 1 | DISCRETE INPUT, 120VAC, 16 PTS CONNECTED VIA A 20-PIN TERMINAL BLOCK | BMX DAI 1604 | SCHNEIDER |
| 6 | 1 | AC/DC RELAY OUTPUT, 8 PTS ISOLATED CONNECTED VIA A 20-PIN TERMINAL BLOCK | BMX DRA 0805 | SCHNEIDER |
| 7 | 2 | 20-PIN TERMINAL BLOCK FOR M340, SCREW CLAMP, REMOVABLE | BMX FTB 2010 | SCHNEIDER |
| 8 | 2 | RACK EXTENSION MODULE | BMX XBE 1000 | SCHNEIDER |
| 9 | 1 | RACK EXTENSION MODULE CABLE 1,5M | BMX XBC 015K | SCHNEIDER |
| 10 | 1 | END OF LINE MODULE | TSX TLY EX | SCHNEIDER |
| 11 | 1 | POWER SUPPLY 24VDC, 10A, 240W | ABLBRP3241100 | SCHNEIDER |
| 12 | 8 | CIRCUIT BREAKER 5A, 1P, 120VAC | GL-1-13-DM-KM-05 - 9926251005 | WEIDMULLER |
| 13 | 7 | CIRCUIT BREAKER 2A, 1P, 120VAC | GL-1-13-DM-KM-02 - 9926251002 | WEIDMULLER |
| 14 | AS REQ. | TERMINAL STRIP MARKER HOLDER | SCHT 5 - 0292450000 | WEIDMULLER |
| 15 | AS REQ. | TERMINAL BLOCK | WDU 4 - 1020100000 | WEIDMULLER |
| 16 | AS REQ. | END PLATE | WAP 2.5-10 - 1050000000 | WEIDMULLER |
| 17 | AS REQ. | END BRACKET | WEW 35/2 - 1061200000 | WEIDMULLER |
| 18 | AS REQ. | DOUBLE DECK FUSE TERMINAL BLOCK WITH LED INDICATOR FOR 10 TO 36V AC/DC | KDKS 1EN/LC - 9902720001 | WEIDMULLER |
| 19 | AS REQ. | END PLATE DOUBLE DECK FUSE TERMINAL BLOCK | AP KDKS1 DB - 9532470000 | WEIDMULLER |
| 20 | 16 | RELAY, 1 CONTACT, SPRING CONNECTION, 6A | TRZ - 24-230VUC 1CO - 1122970000 | WEIDMULLER |
| 21 | AS REQ. | DIN RAIL 35mm/15mm, PREPUNCHED, 2M | TS 35X15/EX18 2M/STI/ZN - 1805960000 | WEIDMULLER |
| 22 | AS REQ. | WIRING DUCT 3" X 3" | F3XLG6 | PANDUIT |
| 23 | AS REQ. | COVER FOR WIRING DUCT 3" | C3LG6 | PANDUIT |
| 24 | 1 | GROUND BAR WITH SCREWS | D167-10 | ILSCO |
| 25 | 1 | LAMICOID NAMEPLATE 1 1/2" X 4" WHITE ON A BLACK BACKGROUND | | |
| 26 | 1 | ELECTRIC HEATER, 400W, 240VAC | DAH4002B | HOFFMAN |

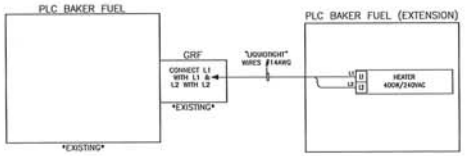
*MATERIAL LIST*



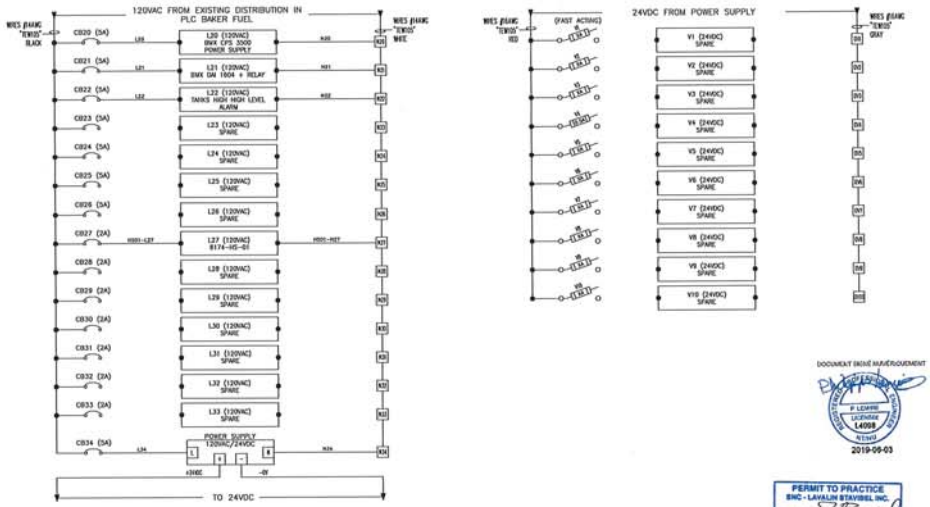

*BMX DAI 1604 – SLOT 00*
DISCRETE INPUT MODULE




*BMX DRA 0805 SLOT 02*
DISCRETE OUTPUT MODULE




*HEATER WIRING*




*120VAC & 24VDC DISTRIBUTION*

DOCUMENT SCELLÉ NUMÉRIQUEMENT
P. LEMIRE
LICENCIÉ
14098
NT/NU
2019-05-03

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2019-05-03
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-06-03

NOTES GÉNÉRALES / GENERAL NOTES

NOTES:

- THE PLC CABINET SHALL BE PROPERLY INSULATED FOR INSTALLATION IN AN UNHEATED SEA CONTAINER.

WIRING COLOR:

BLACK : HOT 120VAC (14 AWG)
WHITE : NEUTRAL 120VAC (14 AWG)

RED: POSITIVE 24VDC (16 AWG)
GRAY: NEGATIVE 0VDC (16 AWG)

YELLOW : DIGITAL OUTPUT (16 AWG)
BLUE : DIGITAL INPUT (16 AWG)

SNC·LAVALIN

SNC-Lavalin Stavibel Inc.
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél.: 819 764-5151 Fax.: 819 797-0159
www.snclavalin.com

Project # : 660534-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
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AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 2019-06-03 | ISSUED FOR CONSTRUCTION | S.MAR | P.LEM | |
| 0 | 2019-05-03 | ISSUED FOR TENDER | S.PEL | P.LEM | |

REVISIONS

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 – BAKER LAKE AREA
280 – INSTRUMENTATION & CONTROL
ARRANGEMENT
PLC FUEL BAKER
EXTENSION PANEL

| | | DATE |
|---|---|---|
| DESSINÉ PAR DRAWN BY | DONALD PELLERIN, TECH. | 2019-04-25 |
| VÉRIFIÉ PAR CHECKED BY | PHILIPPE LEMIRE, P.ENG. | 2019-04-25 |
| APPROUVÉ PAR APPROVED BY | PHILIPPE LEMIRE, P.ENG. | 2019-05-03 |

ÉCHELLE SCALE: NTS — DATE: 2019-04-25

NO. DESSIN DRAWING NO. 61-750-280-213

NO. PROJET PROJECT NO. 6120 — REVISION 1 — FEUILLE / SHT 1/1

FILE NO. 61-740-280-213_R1.dwg

NO. DESSIN DRAWING NO. 61-740-280-214_R1

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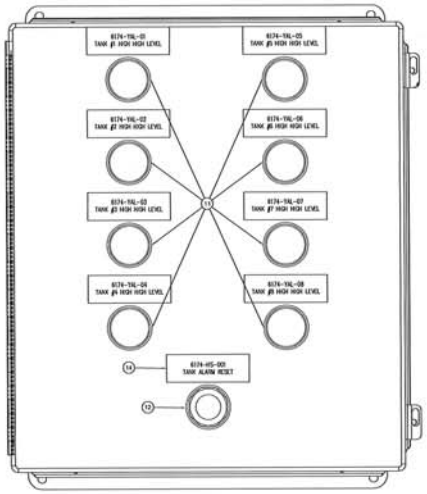
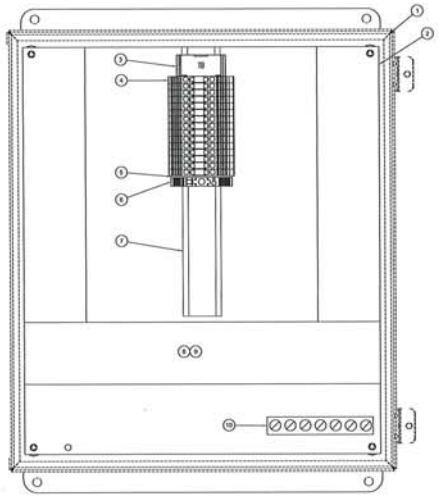
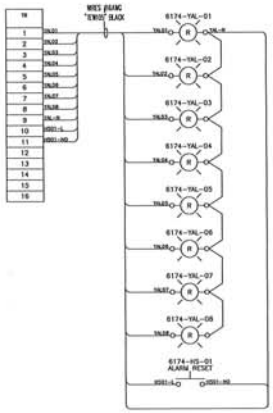


6174-JBC-01

*JUNCTION BOX – 6174-JBC-01*
SCL: 1:2




*PANEL DOOR WIRING DIAGRAM*

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-06-03

| ITEM | QTY | DESCRIPTION | NO. PIÈCE | MANUFACTURER |
|---|---|---|---|---|
| 1 | 1 | PLC CABINET [16"X14"X8"] [406mmX356mmX152mm], NEMA 12, WALL-MOUNT ENCLOSURE | A1614CH | HOFFMAN |
| 2 | 1 | BACKPLANE [15"X13"] [375mmX327mm] | A16P14G | HOFFMAN |
| 3 | AS REQ. | TERMINAL STRIP MARKER HOLDER | SCHT 5 - 0292400000 | WEIDMULLER |
| 4 | AS REQ. | TERMINAL BLOCK | WDU 4 - 1020100000 | WEIDMULLER |
| 5 | AS REQ. | END PLATE | WAP 2.5-10 - 1050000000 | WEIDMULLER |
| 6 | AS REQ. | END BRACKET | WEW 35/2 - 1061200000 | WEIDMULLER |
| 7 | AS REQ. | DIN RAIL 35mm/15mm, PREPUNCHED, 2M | TS 35X15/8X18 3M/STI/ZN - 1805980000 | WEIDMULLER |
| 8 | AS REQ. | WIRING DUCT 2" X 2" | F2X2LG6 | PANDUIT |
| 9 | AS REQ. | COVER FOR WIRING DUCT 2" | C2LG6 | PANDUIT |
| 10 | 1 | GROUND BAR WITH SCREWS | D187-4 | ILSCO |
| 11 | 1 | LAMICOID NAMEPLATE 1 1/2" X 4" WHITE ON A BLACK BACKGROUND | | |
| 12 | 8 | PILOT LIGHT, RED, LED 120VAC | 800T-QH2R | ALLEN-BRADLEY |
| 13 | 1 | PUSH BUTTON, FLUSH HEAD BLACK, MOMENTARY | 800T-A2A | ALLEN-BRADLEY |
| 14 | 9 | LAMICOID NAMEPLATE 1" X 3" WHITE ON A BLACK BACKGROUND | | |

*MATERIAL LIST*

DOCUMENT DIGNÉ NUMÉRIQUEMENT
P. LEMIRE LICENCE 14095 QUÉBEC
2019-06-03

PERMIT TO PRACTICE
SNC - LAVALIN STADIUS INC.
Signature
Date 2019-06-03
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

NOTES GÉNÉRALES / GENERAL NOTES

SNC·LAVALIN
SNC-Lavalin Stadius Inc.
155, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél : 819 764-5181 Fax : 819 797-0159
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Project # : 660534-0000

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
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AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 2019-06-03 | ISSUED FOR CONSTRUCTION | S.MAR | P.LEM | |
| 0 | 2019-05-02 | ISSUED FOR TENDER | D.PEL | P.LEM | |

REVISIONS

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 – BAKER LAKE AREA
280 – INSTRUMENTATION & CONTROL
ARRANGEMENT
JUNCTION BOX
6174-JBC-01

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | DONALD PELLERIN, TECH. | DATE 2019-05-02 |
| VÉRIFIÉ PAR CHECKED BY | PHILIPPE LEMIRE, P.ENG. | 2019-05-03 |
| APPROUVÉ PAR APPROVED BY | PHILIPPE LEMIRE, P.ENG. | 2019-05-03 |
| ÉCHELLE SCALE | AS SHOWN | DATE 2019-05-02 |

NO. DESSIN DRAWING NO. 61-750-280-214

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 6120 | 1 | 1/1 |

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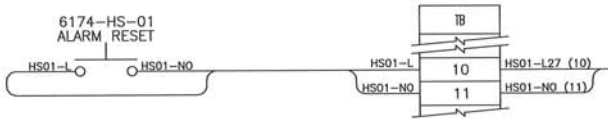
FILE NO. 61-740-280-214_R1.dwg

NO. DESSIN DRAWING NO. 61-740-280-215

FORMAT ANSI B-11x17

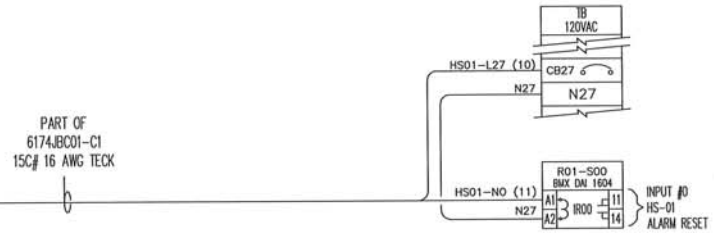
## PUMPING STATION

### 6174-JB-01



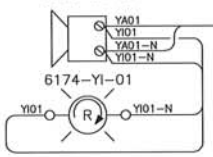

## GENSET CONTAINER

### PLC BAKER FUEL (EXTENSION)




## OUTSIDE PUMPING STATION

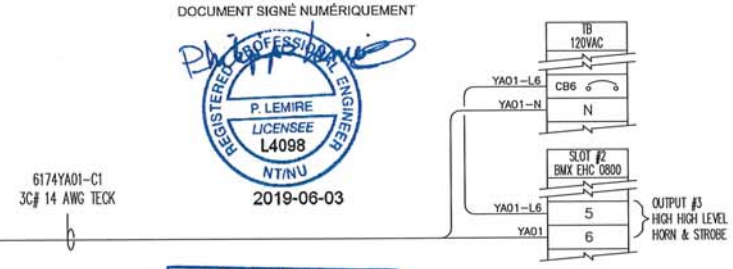
POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-06-03




## PLC BAKER FUEL

DOCUMENT SIGNÉ NUMÉRIQUEMENT

REGISTERED PROFESSIONAL ENGINEER
P. LEMIRE
LICENSEE
L4098
NT/NU
2019-06-03




PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2019-06-03
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

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|---|---|---|---|---|---|
| | | 1 | ISSUED FOR CONSTRUCTION | 2019-06-03 | P.LEM |
| PLC FUEL BAKER (EXT) – WIRING DIAGRAM | 61-750-280-213 | 0 | ISSUED FOR TENDER | 2019-05-03 | YG |

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

REVISIONS

AGNICO EAGLE

Project # : 660534-0000

SNC·LAVALIN
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tel. : 819 764-5181 Fax : 819 797-0158
www.snclavalin.com

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | Y.GAUTHIER. TECH. | 2019-05-02 |
| VÉRIFIÉ PAR CHECKED BY | PHILIPPE LEMIRE, P.ENG. | 2019-05-03 |
| APPROUVÉ PAR APPROVED BY | PHILIPPE LEMIRE, P.ENG. | 2019-05-03 |
| No. PROJET PROJECT NO. | 6120 | |
| DATE | 2019-05-03 | |

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
280 – INSTRUMENTATION & CONTROL
WIRING DIAGRAM
HIGH HIGH LEVEL ALARM – TANKS

ÉCHELLE/SCALE NTS
FICHIER FILE 61-740-280-215_R1.dwg
No. DESSIN/DRAWING NO. 61-740-280-215
REVISION 1
FEUILLE/SHT 1 / 1

AE-CART-ANSI B

\\sli.bz\stavibel\Projet\300-RN\660534\0000\4-Ingenierie\D-Dessins maitres\48-IC\61-740-280-215_R1.dwg-2013-02-19 14:03:29

NO. DESSIN / DRAWING NO. 61-740-285-200

FORMAT ANSI B-11x17

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-06-03

## Panel Ident.: 6174-DP-06

| | |
|---|---|
| Power source: | 120 208 Volts |
| Feeder : | 6174-TX-04 |
| Mount: | Surface |
| Localisation: | BAKER LAKE SEA CAN |
| Type: | Schneider QO Series |

| | |
|---|---|
| Encl. Type : | NEMA 1 |
| Main breaker: | N/A |
| Nb. of circuit: | 42 |
| Bars (Amps): | 225A |
| Cap. rupt. (kA) | 10 |

| Local and description | TYPE REF | TYPE Qty | WATTS | DISJ. TYPE | DISJ. AMP | CT # | | CT # | DISJ. AMP | DISJ. TYPE | WATTS | TYPE Qty | TYPE REF | Local and description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6174-PLC-02 Power | D | | | | 15 | 1 | A | 2 | 15 | | | | E | Sea Can Lighting |
| 6174-XV-01 - Elect. Actuator valve | M | | | | 15 | 3 | B | 4 | 15 | | | | P | Sea Can Receptacle |
| 6174-XV-02 - Elect. actuator valve | M | | | | 15 | 5 | C | 6 | 15 | | | | | Spare breaker |
| 6174-XV-03 - Elect. actuator valve | M | | | | 15 | 7 | A | 8 | 15 | | | | | Spare breaker |
| 6174-XV-04 - Elect. actuator valve | M | | | | 15 | 9 | B | 10 | 15 | | | | | Spare breaker |
| 6174-XV-05 - Elect. actuator valve | M | | | | 15 | 11 | C | 12 | 15 | | | | | Spare breaker |
| 6174-XV-06 - Elect. actuator valve | M | | | | 15 | 13 | A | 14 | 15 | | | | | Spare breaker |
| (2) 6174-IOP-003 power | D | | | | 15 | 15 | B | 16 | 15 | | | | | Spare breaker |
| Spare breaker | | | | | 15 | 17 | C | 18 | 30 | | | | | Spare breaker |
| Spare breaker | | | | | 15 | 19 | A | 20 | | | | | | |
| (2) 6174-XV-07 Res. #7 Valve Actuator | M | | | | 15 | 21 | B | 22 | 15 | GFI | | | C | 6174-HEA-07 Res. #7 Valve Heating (2) |
| | | | | | | 23 | C | 24 | | | | | | |
| (2) 6174-XV-08 Res. #7 Valve Actuator | M | | | | 15 | 25 | A | 26 | 15 | GFI | | | C | 6174-HEA-08 Res. #7 Valve Heating (2) |
| | | | | | | 27 | B | 28 | | | | | | |
| Space | | | | | | 29 | C | 30 | | | | | | Space |
| Space | | | | | | 31 | A | 32 | | | | | | Space |
| Space | | | | | | 33 | B | 34 | | | | | | Space |
| Space | | | | | | 35 | C | 36 | | | | | | Space |
| Space | | | | | | 37 | A | 38 | | | | | | Space |
| Space | | | | | | 39 | B | 40 | | | | | | Space |
| Space | | | | | | 41 | C | 42 | | | | | | Space |

| TYPE (REF) | (W) total | Qty |
|---|---|---|
| (E) Lighting | 0 | 0 |
| (P) Parking plug | 0 | 0 |
| (C) Heating | 0 | 0 |
| (M) Motor | 0 | 0 |
| (W) Water heater | 0 | 0 |
| (D)Other | 0 | 0 |
| | 0 | 0 |

| TYPE (REF) | Qty (ref) |
|---|---|
| (L) Spare | 0 |
| (S) Space | 0 |
| | 0 |
| | 0 |
| | 0 |

| | Watts | Amp |
|---|---|---|
| Phase A | 0 | 0,00 |
| Phase B | 0 | 0,00 |
| Phase C | 0 | 0,00 |
| Total R | 0 | 0,00 |

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2019-06-03
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

DOCUMENT SIGNÉ NUMÉRIQUEMENT
REGISTERED PROFESSIONAL ENGINEER
P. LEMIRE
LICENSEE
L4098
NT/NU
2019-06-03

| TITRE / TITLE | # DWG | REV | DESCRIPTION | DATE | PAR BY |
|---|---|---|---|---|---|
| – | – | | | | |
| – | – | | | | |
| – | – | 2 | ISSUED FOR CONSTRUCTION | 2019-06-03 | P.LEM. |
| – | – | 1 | ISSUED FOR TENDER | 2019-05-03 | P.LEM. |
| – | – | 0 | ORIGINAL DRAWING WAS 6174-E-002 | JUNE/16 | M.B. |

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

REVISIONS

AGNICO EAGLE

Project # : 660534-0000
REV:1

SNC·LAVALIN
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tel. : 819 764-5181 Fax : 819 797-0158
www.snclavalin.com

| | | |
|---|---|---|
| DESSINÉ PAR / DRAWN BY | MV | MAY/16 |
| VÉRIFIÉ PAR / CHECKED BY | ST | JUNE/16 |
| APPROUVÉ PAR / APPROVED BY | ST | JUNE/16 |
| No. PROJET / PROJECT NO. | 6120 | |
| DATE | JUNE/16 | |

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
285 – SERVICE ELECTRICAL – LIGHT AND DISTRIBUTION
6174-DP-06 PANEL SCHEDULE
BAKER LAKE SEA CAN – DISTRIBUTION PANEL 120/208VAC

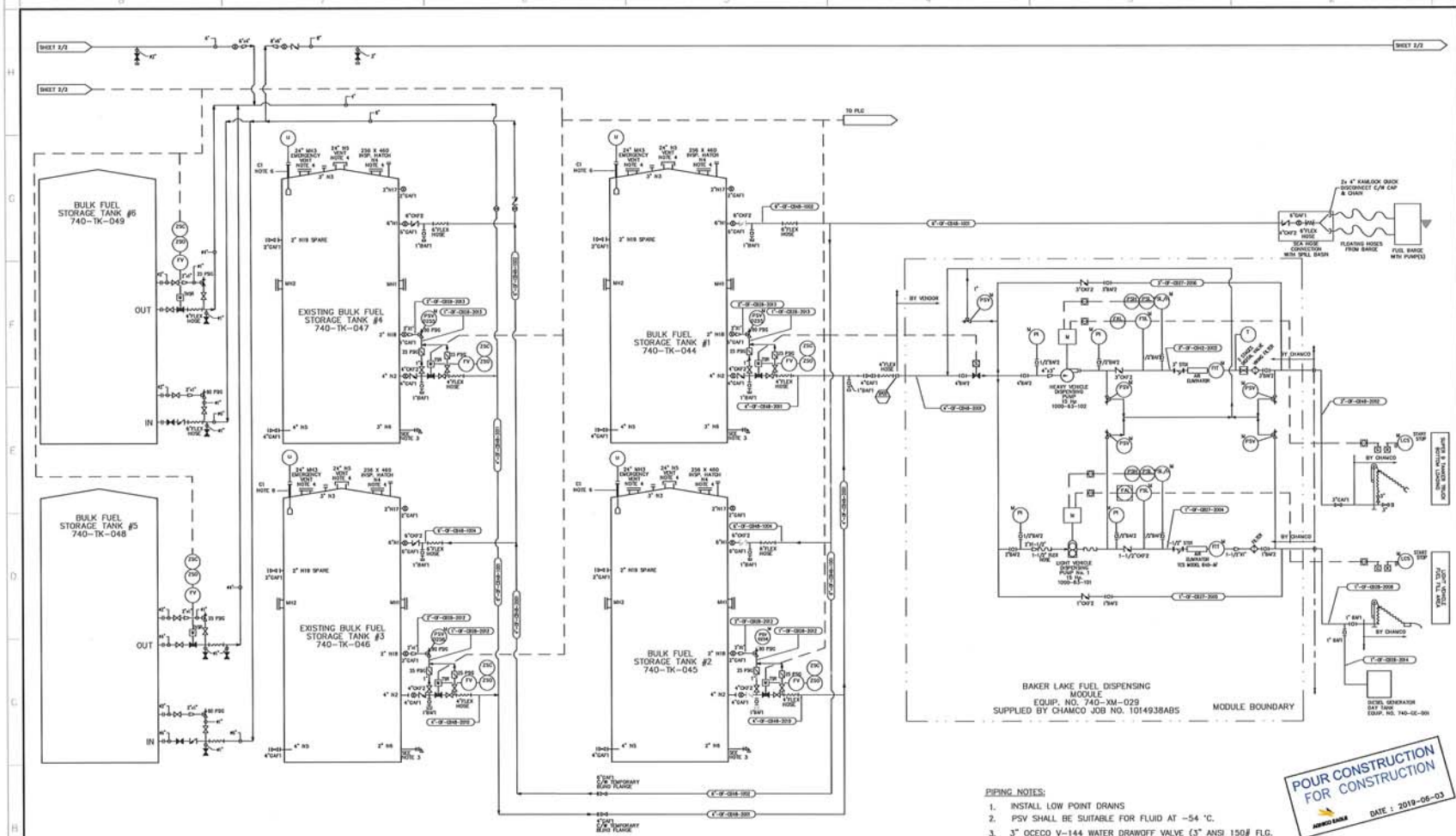
ÉCHELLE/SCALE N/A
FICHIER/FILE 61-740-285-200_R2.dwg
No. DESSIN/DRAWING NO. 61-740-285-200
REVISION 2
FEUILLE/SHT 1 / 1

AE-CART-ANSI B

\\ell.bz\stavibel\Projet\300-RN\660534\0000\4-Ingenierie\D-Dessins maitres\47-EL\61-740-285-200_R2.dwg-2013-02-19 14:03:29

NO. DESIGN DRAWING NO. 61-740-J-0100-1-R7

FORMAT ARCHD




PIPING NOTES:

1. INSTALL LOW POINT DRAINS
2. PSV SHALL BE SUITABLE FOR FLUID AT -54 °C.
3. 3" OCECO V-144 WATER DRAWOFF 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

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE DATE : 2019-06-03

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2019-06-03
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

NOTES GÉNÉRALES / GENERAL NOTES

SNC·LAVALIN

Project #: 660534-0000 REV.: 7

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| TANKS #5 AND #6 – FUEL DIST. PIPING | 61-740-M-0100 |
| | – |
| | – |
| | – |
| | – |
| | – |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PAR/DR | APP. | CLIENT |
|---|---|---|---|---|---|
| 7 | 2019-05-02 | ISSUED FOR CONSTRUCTION | B.L. | A.O. | SJROY |
| 6 | 2019-05-02 | ADDENDUM #01 / DRAIN VALVE | P.H.C | A.O. | M.MÉN. |
| 5 | 2019-04-02 | ISSUED FOR TENDER | B.L. | A.O. | M.MÉN. |
| 4 | 2018-12-12 | FOR COMMENTS | B.L. | M.H. | M.MÉN. |
| 3 | 2018-06-22 | FOR CONSTRUCTION | S.T.M. | M.K. | – |
| 2 | 2013-06-17 | DRAWING UPDATE | S.T.M. | M.K. | – |

REVISIONS

A. OUELLET LICENCE L3595 NTNU 2019-06-03

TITRE / TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
–
PROCESS AND INSTRUMENTATION DIAGRAM
–
–

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | FRANCIS ROSE, TECH | DATE 2009-03-27 |
| VÉRIFIÉ PAR CHECKED BY | PATRICK GIARD, P.ENG | – |
| APPROUVÉ PAR APPROVED BY | PATRICK GIARD, P.ENG | – |
| ÉCHELLE SCALE | N.T.S | DATE 2009-03-27 |

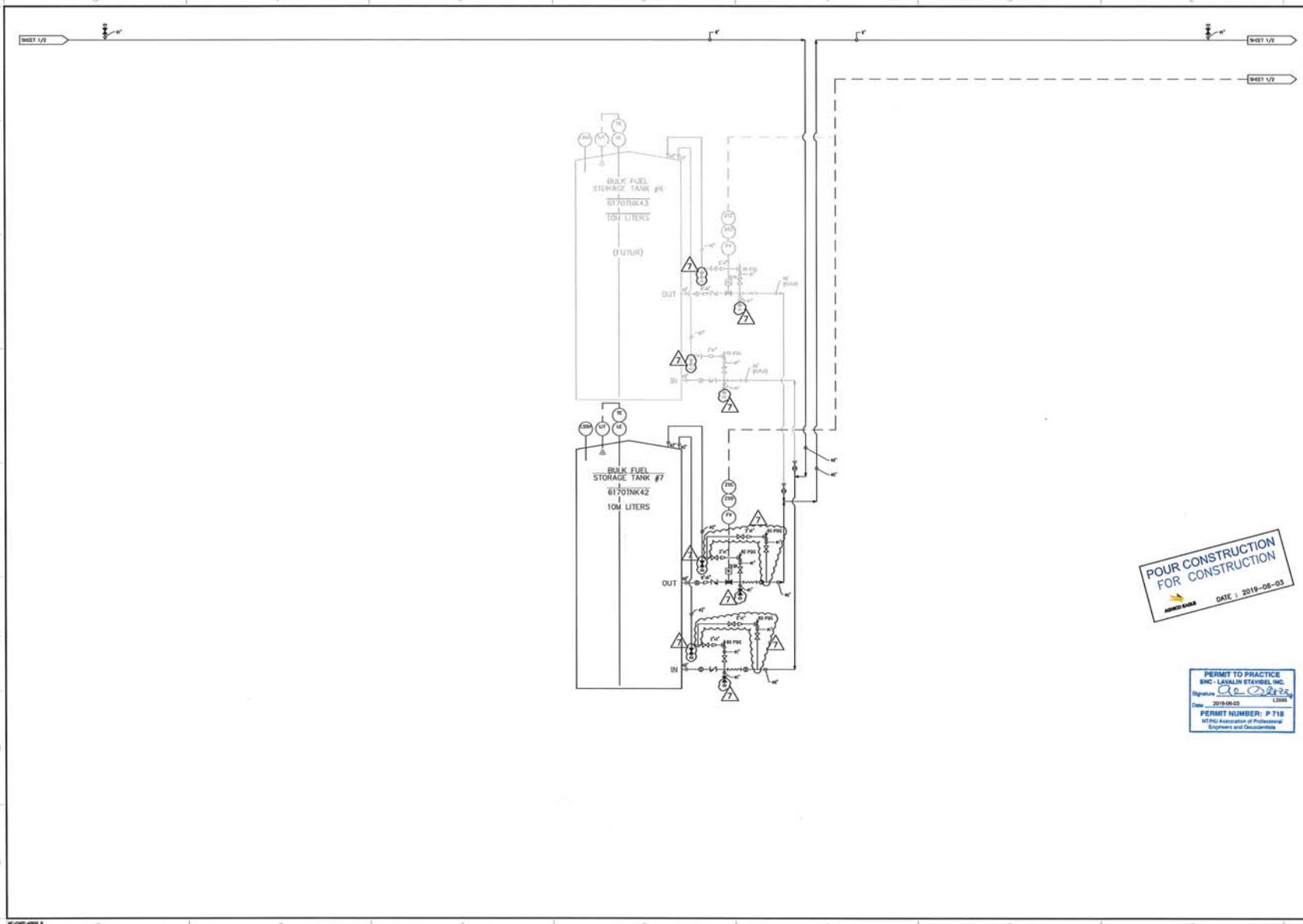
NO. DESSIN DRAWING NO. 61-740-J-0100

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| VD2259-2 | 7 | 1/2 |

FILE NO. 61-740-J-0100-1-R7.dwg

NO. DESSIN DRAWING NO. 61-740-J-0100-1-R7

FORMAT ARCH D




POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-06-03

PERMIT TO PRACTICE
SNC · LAVALIN STAYBEL INC.
Signature
Date 2019-06-03
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

PLAN CLÉ
KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

SNC·LAVALIN

SNC-Lavalin Staybel Inc.
155 Ave Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél.: 819 764-5181 Fax: 819 797-6158
www.snclavalin.com

Project #: 668534-0000 REV.: 7

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| TANK #8 AND #9 – FUEL DIST. PIPING | 61-740-M-0102 |
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | DWN/DS | APP. | CLIENT |
|---|---|---|---|---|---|
| 7 | 2019-06-03 | ISSUED FOR CONSTRUCTION | S.L. | A.G. | S.PAY |
| 6 | 2019-03-05 | ADDENDUM AIR / DRAIN VALVE | P.G.C | A.G. | R.MÉN. |
| 5 | 2019-04-05 | ISSUED FOR TENDER | S.L. | A.G. | R.MÉN. |
| 4 | 2018-12-12 | FOR COMMENTS | S.L. | M.H. | R.MÉN. |
| 3 | 2015-06-23 | FOR CONSTRUCTION | ST.AL | M.K. | – |
| 2 | 2015-06-17 | DRAWING UPDATE | ST.AL | M.K. | – |

REVISIONS

PROFESSIONAL ENGINEER A. OUELLET LICENSE 13595 NT/NU
2019-06-03

TITRE / TITLE
AGNICO–EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
–
PROCESS AND INSTRUMENTATION DIAGRAM
–
–

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | FRANCIS ROSE, TECH | DATE 2009-03-27 |
| VÉRIFIÉ PAR CHECKED BY | PATRICK GIARD, P.ENG | – |
| APPROUVÉ PAR APPROVED BY | PATRICK GIARD, P.ENG | – |
| ÉCHELLE SCALE N.T.S | DATE 2009-03-27 | |

NO. DESSIN DRAWING NO. 61-740-J-0100

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| V02259-2 | 7 | 2 / 2 |

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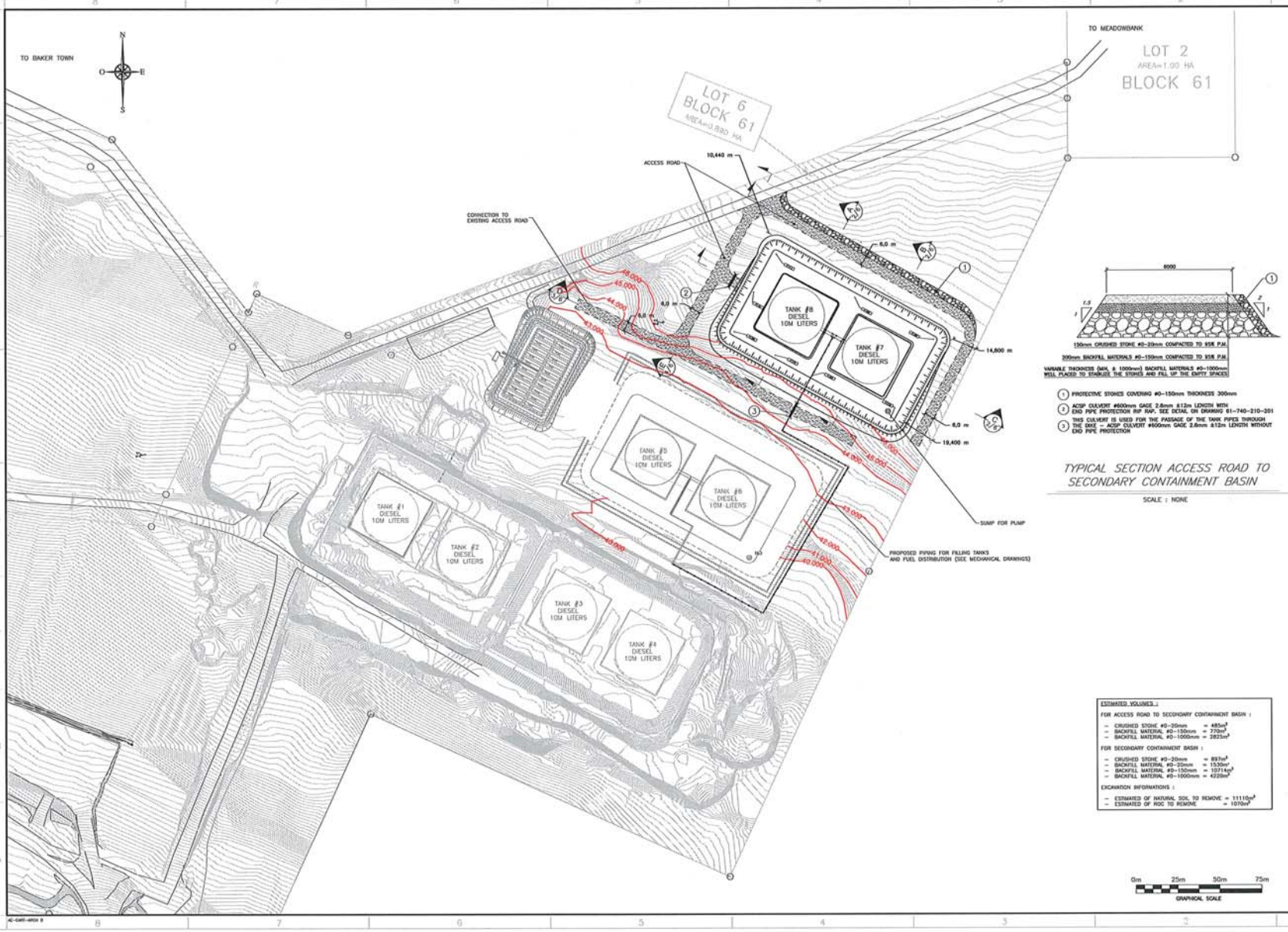
FILE NO. 61-740-J-0100-1-R7.dwg

# Appendix B

As built drawing

NO. DESSIN DRAWING NO. 61-740-210-201_1RC

FORMAT ARCHD







150mm CRUSHED STONE #0-20mm COMPACTED TO 95% P.M.

200mm BACKFILL MATERIALS #0-150mm COMPACTED TO 95% P.M.

VARIABLE THICKNESS (MIN. 8. 1000mm) BACKFILL MATERIALS #0-1000mm WELL PLACED TO STABILIZE THE STONES AND FILL UP THE EMPTY SPACES

1. PROTECTIVE STONES COVERING #0-150mm THICKNESS 300mm
2. ACSP CULVERT #600mm GAGE 2.8mm &12m LENGTH WITH END PIPE PROTECTION RIP RAP, SEE DETAIL ON DRAWING 61-740-210-201
3. THIS CULVERT IS USED FOR THE PASSAGE OF THE TANK PIPES THROUGH THE DIKE – ACSP CULVERT #600mm GAGE 2.8mm &12m LENGTH WITHOUT END PIPE PROTECTION

## TYPICAL SECTION ACCESS ROAD TO SECONDARY CONTAINMENT BASIN

SCALE : NONE

ESTIMATED VOLUMES :

FOR ACCESS ROAD TO SECONDARY CONTAINMENT BASIN :

- CRUSHED STONE #0-20mm = 483m³
- BACKFILL MATERIAL #0-150mm = 770m³
- BACKFILL MATERIAL #0-1000mm = 2823m³

FOR SECONDARY CONTAINMENT BASIN :

- CRUSHED STONE #0-20mm = 893m³
- BACKFILL MATERIAL #0-20mm = 1530m³
- BACKFILL MATERIAL #0-150mm = 10714m³
- BACKFILL MATERIAL #0-1000mm = 4228m³

EXCAVATION INFORMATIONS :

- ESTIMATED OF NATURAL SOIL TO REMOVE = 11110m³
- ESTIMATED OF ROC TO REMOVE = 1070m³

0m 25m 50m 75m

GRAPHICAL SCALE

PLAN CLÉ KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-03-11

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # (NO) |
|---|---|
| | |

AGNICO EAGLE

| REV | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 2019-03-11 | FOR CONSTRUCTION | D.L.-L. | M.H. | - |

REVISIONS

TITRE / TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
GENERAL ARRANGEMENT
PLAN VIEW
10M LITERS TANKS LOCATION
TANKS #7 & #8

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | FRANCIS PERRON, TECH. | DATE 2018-12-10 |
| VÉRIFIÉ PAR CHECKED BY | RICHARD MARCOUX, ING. | 2018-12-10 |
| APPROUVÉ PAR APPROVED BY | MARC HÉNAULT, P. ENG. | 2018-12-10 |
| ÉCHELLE SCALE | 1 : 1000 | DATE 2018-07-18 |

NO. DESSIN DRAWING NO.
61-740-230-200

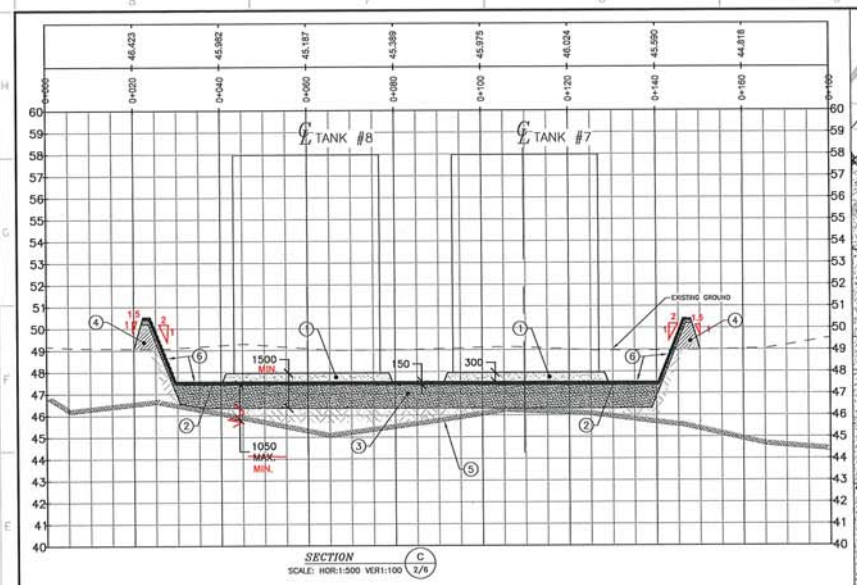
| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 61 | 1 | 1/6 |

AC-GAR1-ARCH D

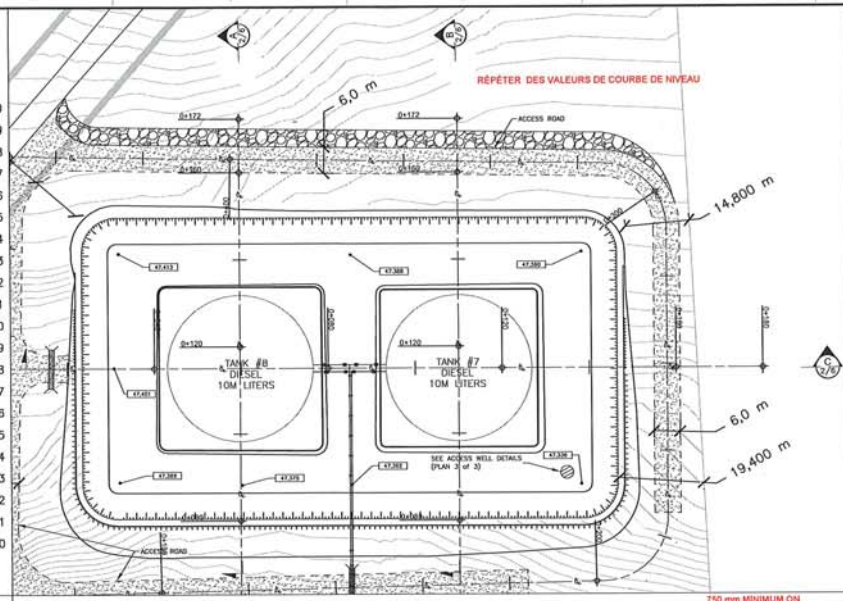
FILE NO. 61-740-210-201_RC.dwg

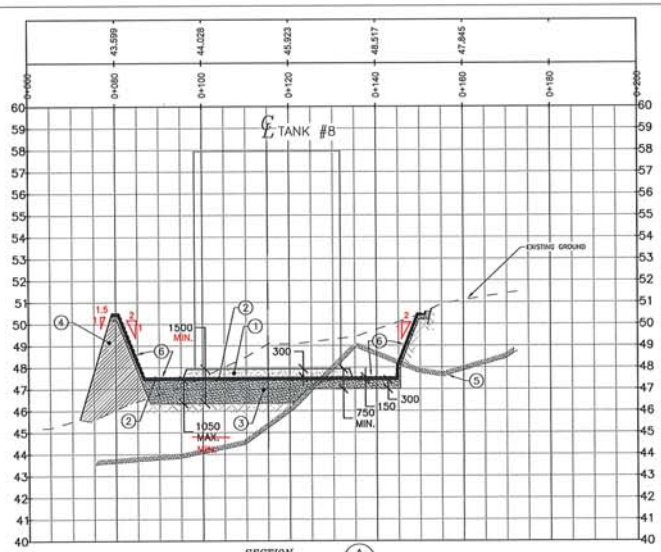
NO. DESSIN DRAWING NO. 61-740-210-201_1RC

FORMAT ARCHO




SECTION C 2/6
SCALE: HOR:1:500 VER:1:100

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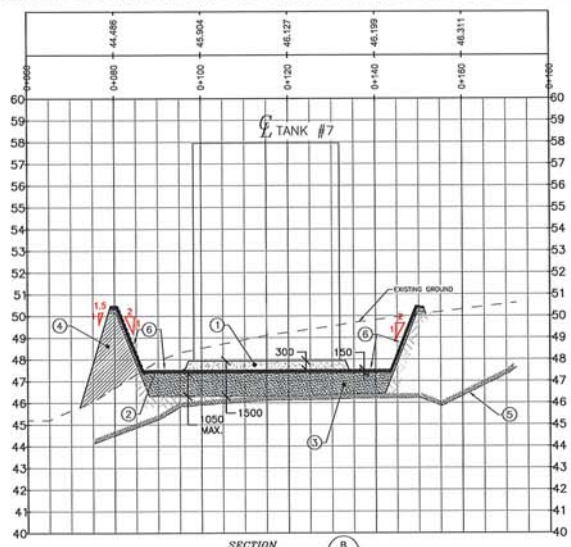
SCALE: HOR:1:500 VER:1:100




SECTION B 2/6
SCALE: HOR:1:500 VER:1:100

750 mm MINIMUM ON ROCK AND MINIMUM 1050 mm ON NATURAL SOIL, AT THE MAXIMUM LEVEL OF EXCAVATION WHEN NO ROCK

| | Description | |
|---|---|---|
| 1 | TANKS BEDDING | CRUSHED STONE #0-20mm VARIABLE THICKNESS MINIMUM 300mm COMPACTED TO 95% P.M. |
| 2 | MEMBRANE BEDDING | BACKFILL MATERIALS #0-20mm THICKNESS 150mm COMPACTED TO 95% P.M.* |
| 3 | MEMBRANE BEDDING | BACKFILL MATERIALS #0-150mm THICKNESS 300mm COMPACTED TO 95% P.M.* |
| 4 | SUBGRADE | BACKFILL MATERIALS #0-1000mm VARIABLE THICKNESS DEPENDING ON THE GROUND LEVEL. |
| 5 | BEDROCK | ASSUMED PROFILE OF THE BEDROCK (APPROXIMATIVE TO VALIDATE ON SITE) |
| 6 | BITUMINOUS MEMBRANE | TYPE COLETANCHE GEOMEMBRANE ES-2 |

* CAUTION : GRANULAR MATERIALS FREE OF PROTRUDING STONES, EVENLY PLACED TO PROVIDE A FLAT SURFACE WITHOUT CAVITIES AND BUMPS, TO ACCOMODATE THE BITUMINOUS MEMBRANE.

ESTIMATED VOLUMES :

FOR ACCESS ROAD TO SECONDARY CONTAINMENT BASIN :
- CRUSHED STONE #0-20mm = 485m³
- BACKFILL MATERIAL #0-150mm = 770m³
- BACKFILL MATERIAL #0-1000mm = 2825m³

FOR SECONDARY CONTAINMENT BASIN :
- CRUSHED STONE #0-20mm = 897m³
- BACKFILL MATERIAL #0-20mm = 1530m³
- BACKFILL MATERIAL #0-150mm = 10714m³
- BACKFILL MATERIAL #0-1000mm = 4220m³

EXCAVATION INFORMATIONS :
- ESTIMATED OF NATURAL SOIL TO REMOVE = 11110m³
- ESTIMATED OF ROC TO REMOVE = 1070m³

PLAN CLÉ KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-03-11

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

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

AGNICO EAGLE

| REV | DATE | DESCRIPTION | PAR/DRF | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 2019-03-11 | FOR CONSTRUCTION | R.M. | M.A. | - |

REVISIONS

TITRE / TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
GENERAL ARRANGEMENT
PLAN VIEW AND PROFILE
10M LITERS TANKS LOCATION
TANKS #7 & #8

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | FRANCIS FERRON, TECH. | DATE 2018-12-10 |
| VÉRIFIÉ PAR CHECKED BY | RICHARD MARCOUX, ING. | 2018-12-10 |
| APPROUVÉ PAR APPROVED BY | MARC MÉNAULT, P. ENG. | 2018-12-10 |
| ÉCHELLE SCALE | 1 : 500 | DATE 2018-07-18 |

NO. DESSIN DRAWING NO. 61-740-230-201

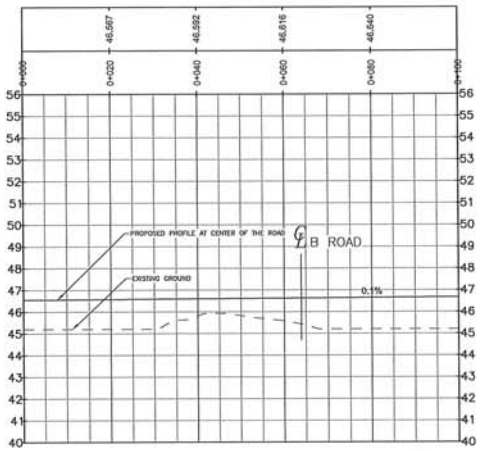
NO. PROJET PROJECT NO. 61 | REVISION 1 | FEUILLE / SHT 2 / 6

AC-CART-ARCH 0

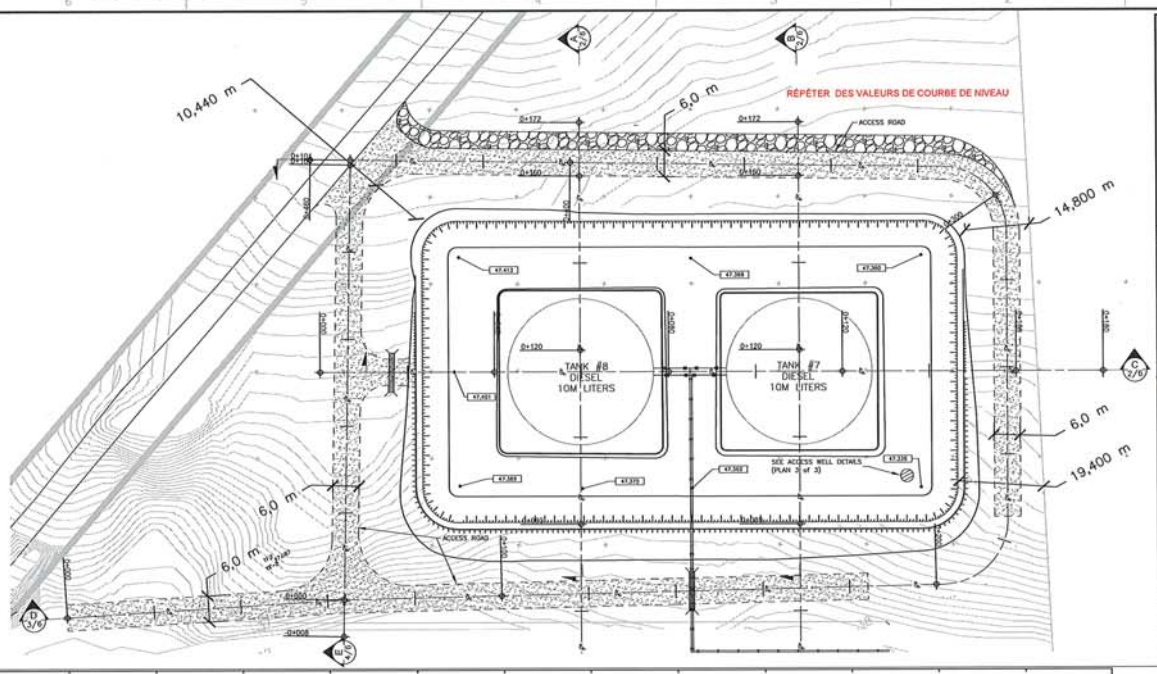
FILE NO. 61-740-210-201_RC.dwg

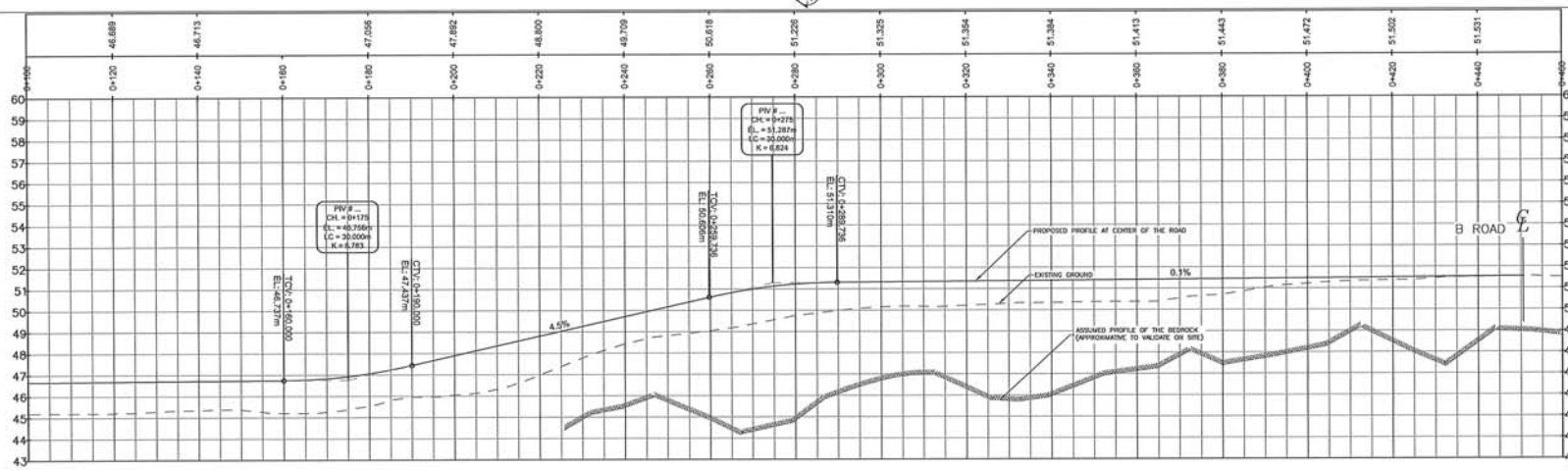
NO. DESSIN DRAWING NO. 61-740-210-201_1RC

FORMAT ARCH D




SECTION D 3/6
SCALE: HOR:1:500 VER:1:100




SECTION D 3/6
SCALE: HOR:1:500 VER:1:100

PLAN CLÉ
KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-03-11

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

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

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PRÉP./DRF | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 2019-03-11 | FOR CONSTRUCTION | R.M. | N.H. | - |

REVISIONS

TITRE / TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
GENERAL ARRANGEMENT
PLAN VIEW AND PROFILE
10M LITERS TANKS LOCATION
TANKS #7 & #8

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | FRANCIS PERRON, TECH. | DATE 2018-12-10 |
| VÉRIFIÉ PAR CHECKED BY | RICHARD MARCOUX, ING. | 2018-12-10 |
| APPROUVÉ PAR APPROVED BY | MARC HÉNAULT, P. ENG. | 2018-12-10 |
| ÉCHELLE SCALE | 1 : 500 | DATE 2018-07-18 |

NO. DESSIN DRAWING NO. 61-740-230-202

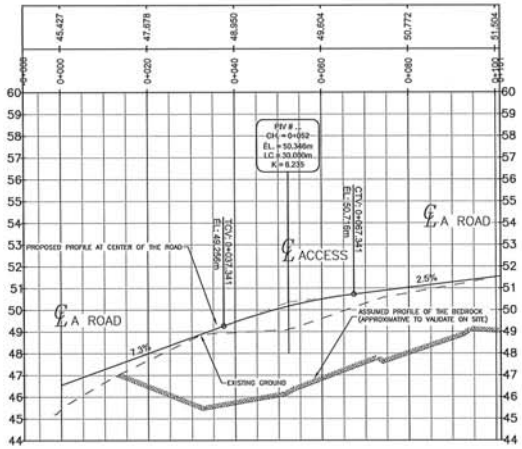
| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 61 | 1 | 3 / 6 |

AC-GAR1-ARCH D

FILE NO. 61-740-210-201_RC.dwg

NO. DESSIN DRAWING NO. 61-740-210-201_1RC

FORMAT ARCHD




*SECTION* E
SCALE: N.T.S.

PLAN CLÉ
KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-03-11

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

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

AGNICO EAGLE

| REV | DATE | DESCRIPTION | DWN/DIT | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 2019-03-11 | FOR CONSTRUCTION | P.M. | M.H. | - |

REVISIONS

TITRE / TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
GENERAL ARRANGEMENT
PLAN VIEW AND PROFILE
10M LITERS TANKS LOCATION
TANKS #7 & #8

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | FRANCIS PERRON, TECH. | DATE 2018-12-10 |
| VÉRIFIÉ PAR CHECKED BY | RICHARD MARCOUX, ING. | 2018-12-10 |
| APPROUVÉ PAR APPROVED BY | MARC HÉNAULT, P. ENG. | 2018-12-10 |
| ÉCHELLE SCALE | 1 : 1000 | DATE 2018-07-18 |

NO. DESSIN DRAWING NO. 61-740-230-203

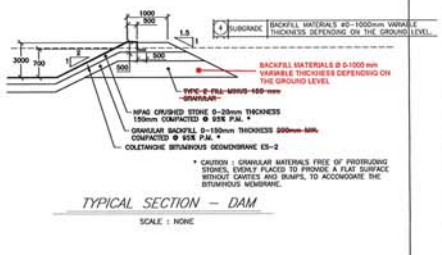
| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 61 | 1 | 4 / 6 |

AE-CAD-ARCH D

FILE NO. 61-740-210-201_RC.dwg

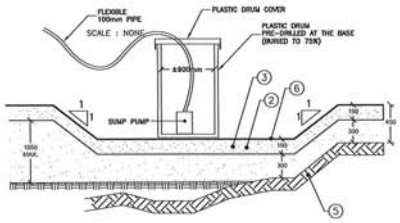
NO. DESSIN DRAWING NO. 61-740-210-201_1RC

FORMAT ARCHD




TYPICAL SECTION – DAM

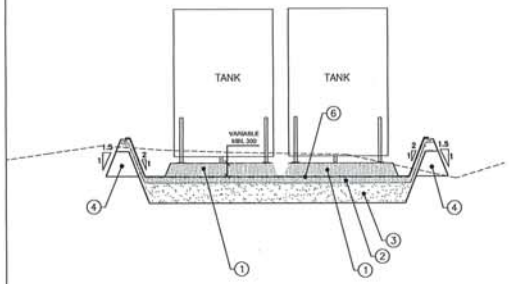
SCALE : NONE




NOTES :

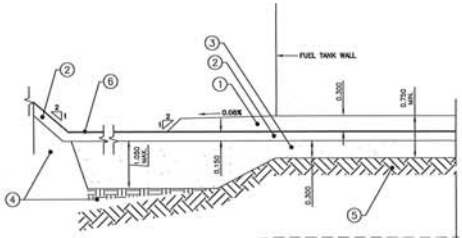
* THE WATER WILL BE REJECTED TO THE INFERIOR BASIN WHERE IT WILL BE TREATED WITH AN OIL SEPARATOR.

ACCESS WELL FOR DRAINING




TYPICAL SECTION WITH OPTION COLETANCHE

SCALE : NONE




TYPICAL SECTION – PAD

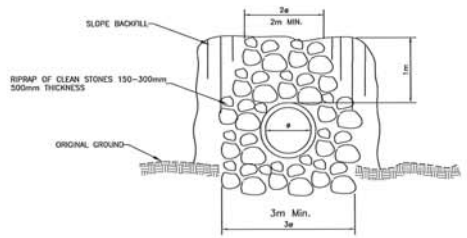
SCALE : NONE

DETAIL 1

* CAUTION : GRANULAR MATERIALS FREE OF PROTRUDING STONES, EVENLY PLACED TO PROVIDE A FLAT SURFACE WITHOUT CAVITIES AND BUMPS, TO ACCOMODATE THE BITUMINOUS MEMBRANE.

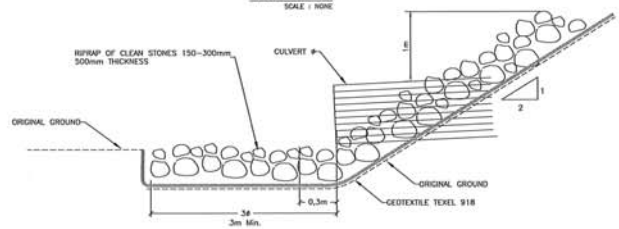
| Description | | |
|---|---|---|
| 1 | TANKS BEDDING | CRUSHED STONE #0-20mm VARIABLE THICKNESS MINIMUM 300mm COMPACTED TO 95% P.M. |
| 2 | MEMBRANE BEDDING | BACKFILL MATERIALS #0-20mm THICKNESS 150mm COMPACTED TO 95% P.M.* |
| 3 | MEMBRANE BEDDING | BACKFILL MATERIALS #0-150mm THICKNESS 1000mm COMPACTED TO 95% P.M.* |
| 4 | SUBGRADE | BACKFILL MATERIALS #0-1000mm VARIABLE THICKNESS DEPENDING ON THE GROUND LEVEL. |
| 5 | BEDROCK | ASSUMED PROFILE OF THE BEDROCK (APPROXIMATIVE TO VALIDATE ON SITE) |
| 6 | BITUMINOUS MEMBRANE | TYPE COLETANCHE GEOMEMBRANE ES-2 |

* CAUTION : GRANULAR MATERIALS FREE OF PROTRUDING STONES, EVENLY PLACED TO PROVIDE A FLAT SURFACE WITHOUT CAVITIES AND BUMPS, TO ACCOMODATE THE BITUMINOUS MEMBRANE.




FRONT VIEW

SCALE : NONE




SIDE VIEW

SCALE : NONE

END PIPE PROTECTION WITH RIPRAP
TYPICAL CROSS SECTION

SCALE : NONE

PLAN CLÉ KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-03-11

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| NUMÉRO / NUMBER | # DWG |
|---|---|
| | |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | VÉR./CHK. | APP./APP. | CLIENT |
|---|---|---|---|---|---|---|
| 1 | 2018-03-17 | POUR CONSTRUCTION | R.M. | M.H. | - | |

REVISIONS

TITRE / TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
GENERAL ARRANGEMENT
DETAILS
10M LITERS TANKS LOCATION
TANKS #7 & #8

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | FRANCIS PERRON, TECH. | DATE 2018-12-10 |
| VÉRIFIÉ PAR CHECKED BY | RICHARD MARCOUX, ING. | 2018-12-10 |
| APPROUVÉ PAR APPROVED BY | MARC HÉNAULT, P. ENG. | 2018-12-10 |
| ÉCHELLE SCALE | NONE | DATE 2018-07-18 |

NO. DESSIN DRAWING NO. 61-740-230-204

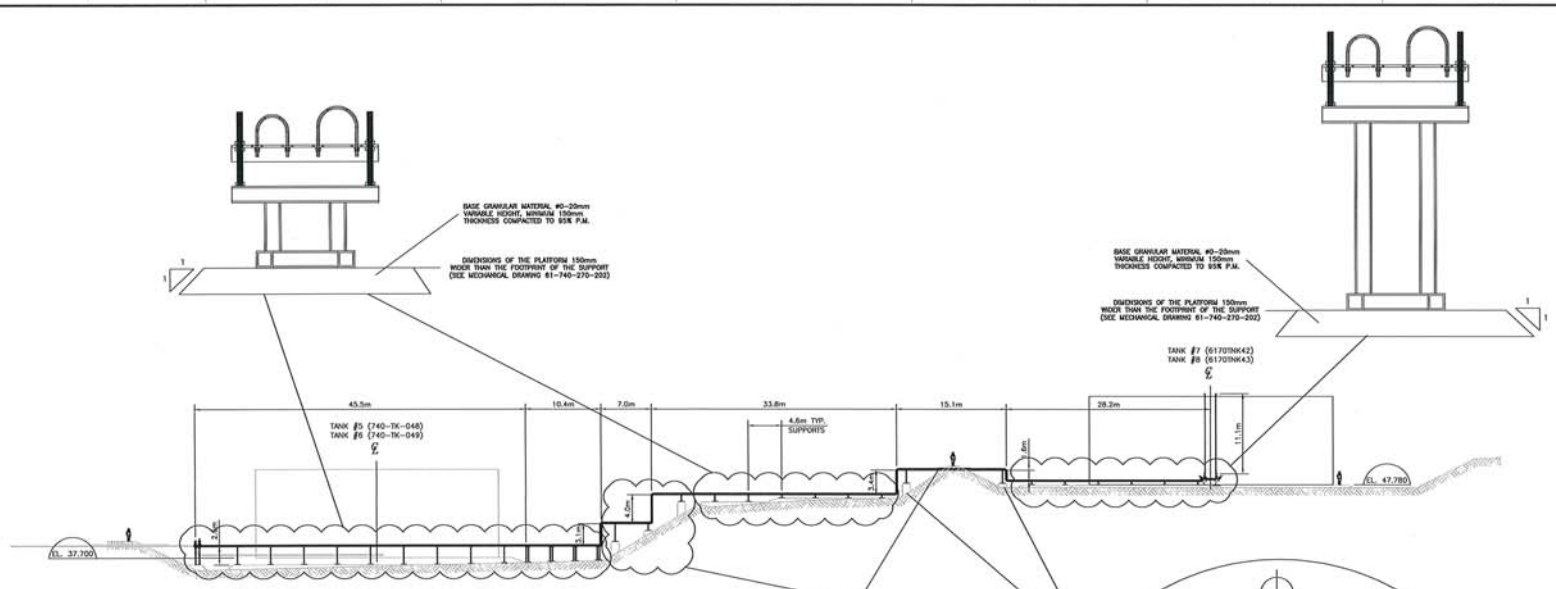
| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 61 | 1 | 5 / 6 |

AC-CART-ARCH D

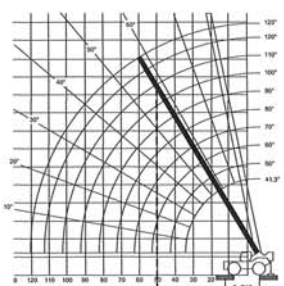
FILE NO. 61-740-210-201_RC.dwg

NO. DESSIN DRAWING NO. 61-740-210-201_1RC

FORMAT ARCHD




THIS CULVERT IS USED FOR THE PASSAGE OF THE TANK PIPES THROUGH THE DIKE – ACSP CULVERT #900mm GAGE 2.8mm ±12m LENGTH WITHOUT END PIPE PROTECTION




8545 kg = 15,25m = 145 465kg*m
THEREFORE 145 465kg*m ÷ 5,74m = 25 345kg
TOTAL LOAD ON FRONT SUPPORT : 49 820 kg
PRESSURE ON THE STEEL PLATE :
49 820kg ÷ 18,6m² (PLATE 10' x 20') = 2680kg/m²

8545 kg
21 000lbs

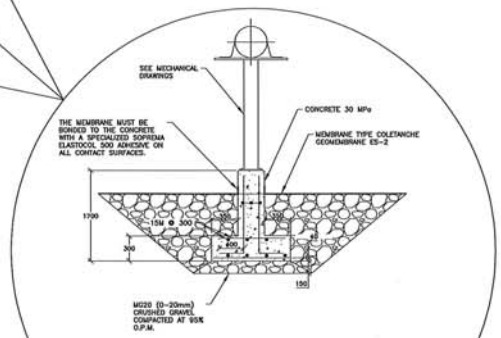
GROSS WEIGHT 24 474KG | GROSS WEIGHT 25 114KG

LOAD : 49 820kg | TOTAL : 575 kg/m²

TOTAL : 2680 kg/m² OU 27 kPa

STEEL PLATE TO BE UNDER THE CRANE SUPPORTS TO DISTRIBUTE THE LOADS 4 PLATE OF ¾" x 10'x20'

CAUTION
MINIMUM GRAVEL THICKNESS 0-20mm ABOVE THE MEMBRANE TO PERMIT THE CIRCULATION OF THE MACHINERY = 200mm




*TYPICAL DETAIL – CONCRETE PIPE SUPPORT*

SCALE : NONE

PLAN CLÉ
KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2019-03-11

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

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

AGNICO EAGLE

| REV | DATE | DESCRIPTION | RÉALISÉ | VÉR. | APP. | CLIENT |
|---|---|---|---|---|---|---|
| 1 | 2019-03-11 | FOR CONSTRUCTION | R.M. | M.H. | – | |

REVISIONS

TITRE / TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
GENERAL ARRANGEMENT
DETAILS
10M LITERS TANKS LOCATION
TANKS #7 & #8

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | FRANCIS PERRON, TECH. | DATE 2018-12-10 |
| VÉRIFIÉ PAR CHECKED BY | RICHARD MARCOUX, ING. | 2018-12-10 |
| APPROUVÉ PAR APPROVED BY | MARC HÉNAULT, P. ENG. | 2018-12-10 |
| ÉCHELLE SCALE | 1 : 1000 | DATE 2018-07-18 |

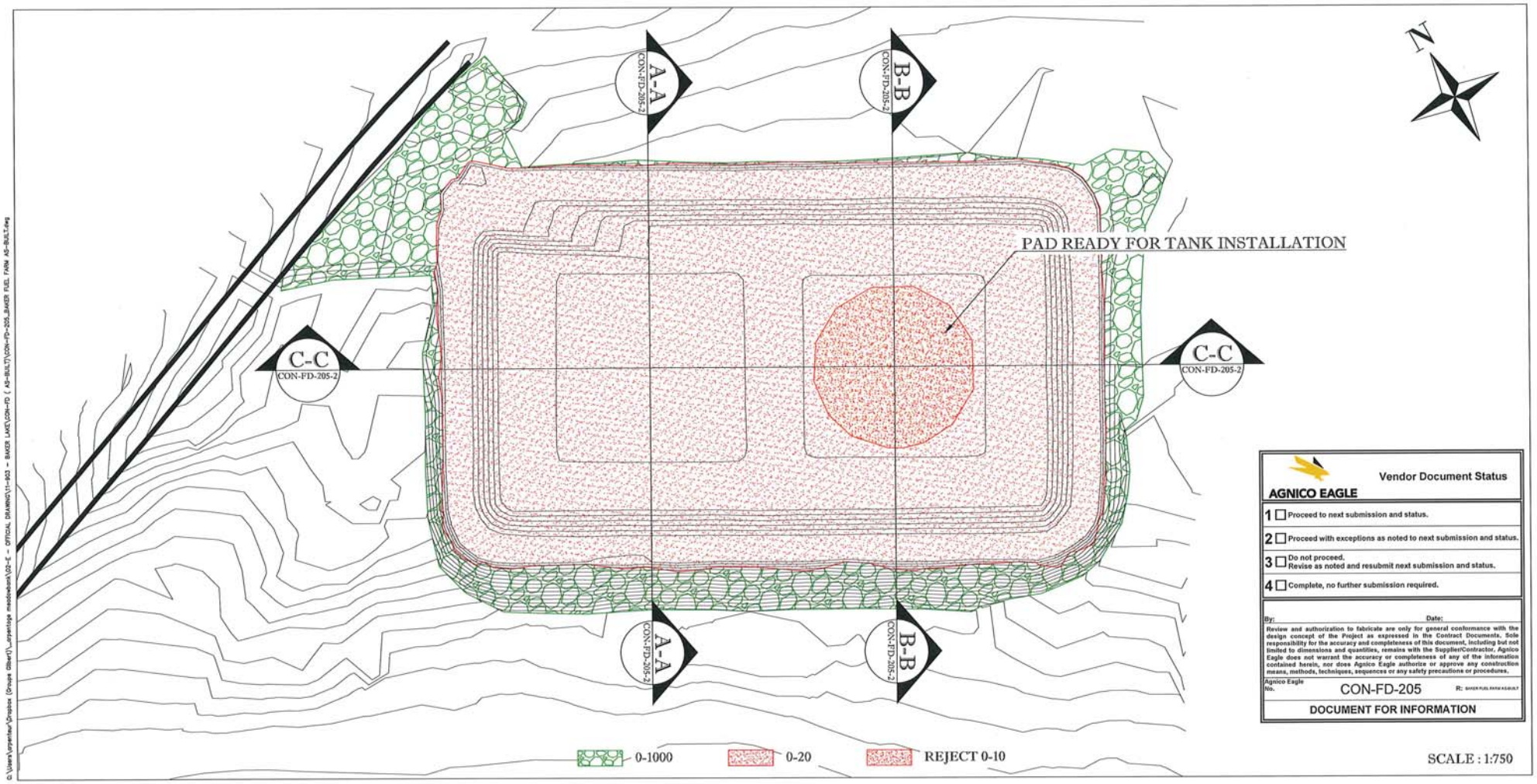
NO. DESSIN DRAWING NO. 61-740-230-205

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 61 | 1 | 6 / 6 |

AE-CART-ARCH D

FILE NO. 61-740-210-201_RC.dwg

# AS-BUILT
# BAKER LAKE FUEL FARM CONSTRUCTION
# CONTRACT # 11-903




AGNICO EAGLE

Vendor Document Status

1 ☐ Proceed to next submission and status.

2 ☐ Proceed with exceptions as noted to next submission and status.

3 ☐ Do not proceed. Revise as noted and resubmit next submission and status.

4 ☐ Complete, no further submission required.

By: Date:

Review and authorization to fabricate are only for general conformance with the design concept of the Project as expressed in the Contract Documents. Sole responsibility for the accuracy and completeness of this document, including but not limited to dimensions and quantities, remains with the Supplier/Contractor. Agnico Eagle does not warrant the accuracy or completeness of any of the information contained herein, nor does Agnico Eagle authorize or approve any construction means, methods, techniques, sequences or any safety precautions or procedures.

Agnico Eagle No. CON-FD-205 R: BAKER FUEL FARM AS-BUILT

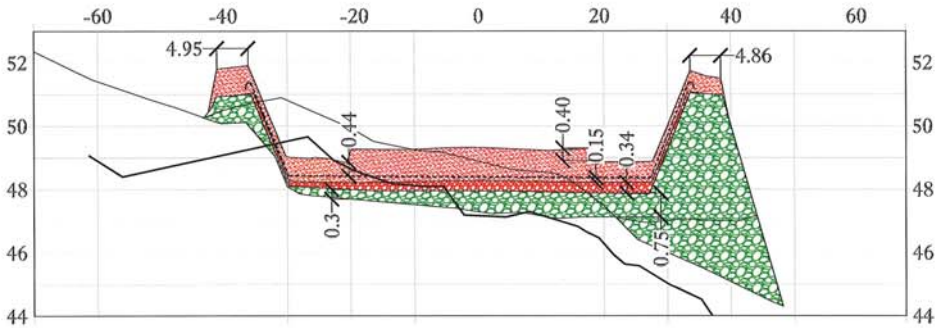
DOCUMENT FOR INFORMATION

KIVALLIQ CONTRACTORS GROUP LTD

Julie Belanger Digitally signed by Julie Belanger
DN: cn=Julie Belanger
Date: 2019.09.16 08:23:09 -05'00'

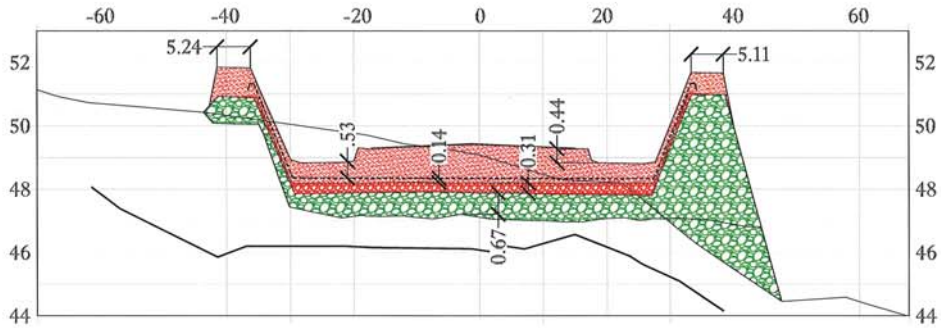
PREPARED BY : MIKAËL LÉVESQUE
DATE : 10-07-2019
CON-FD-205-1

# AS-BUILT
# BAKER LAKE FUEL FARM CONSTRUCTION
# CONTRACT # 11-903



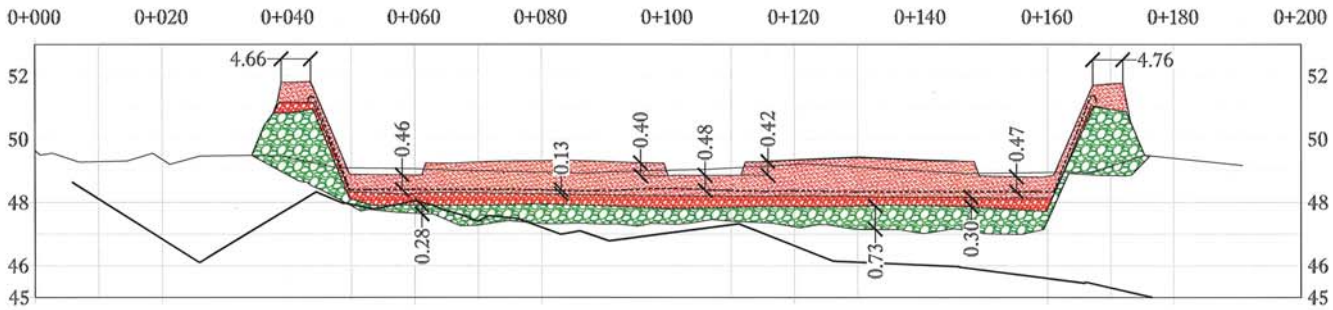

SECTION A-A - TRANSVERSAL SECTION

SCALE : H : 1:750
V : 1:150




SECTION B-B - TRANSVERSAL SECTION

SCALE : H : 1:750
V : 1:150




SECTION C-C - TRANSVERSAL SECTION

SCALE : H : 1:750
V : 1:150

BASIN FUEL CAPACITY : 13 757 m³

BEDROCK — BITUMINOUS GEOMEMBRANE — 0-1000 — 0-150 — 0-20

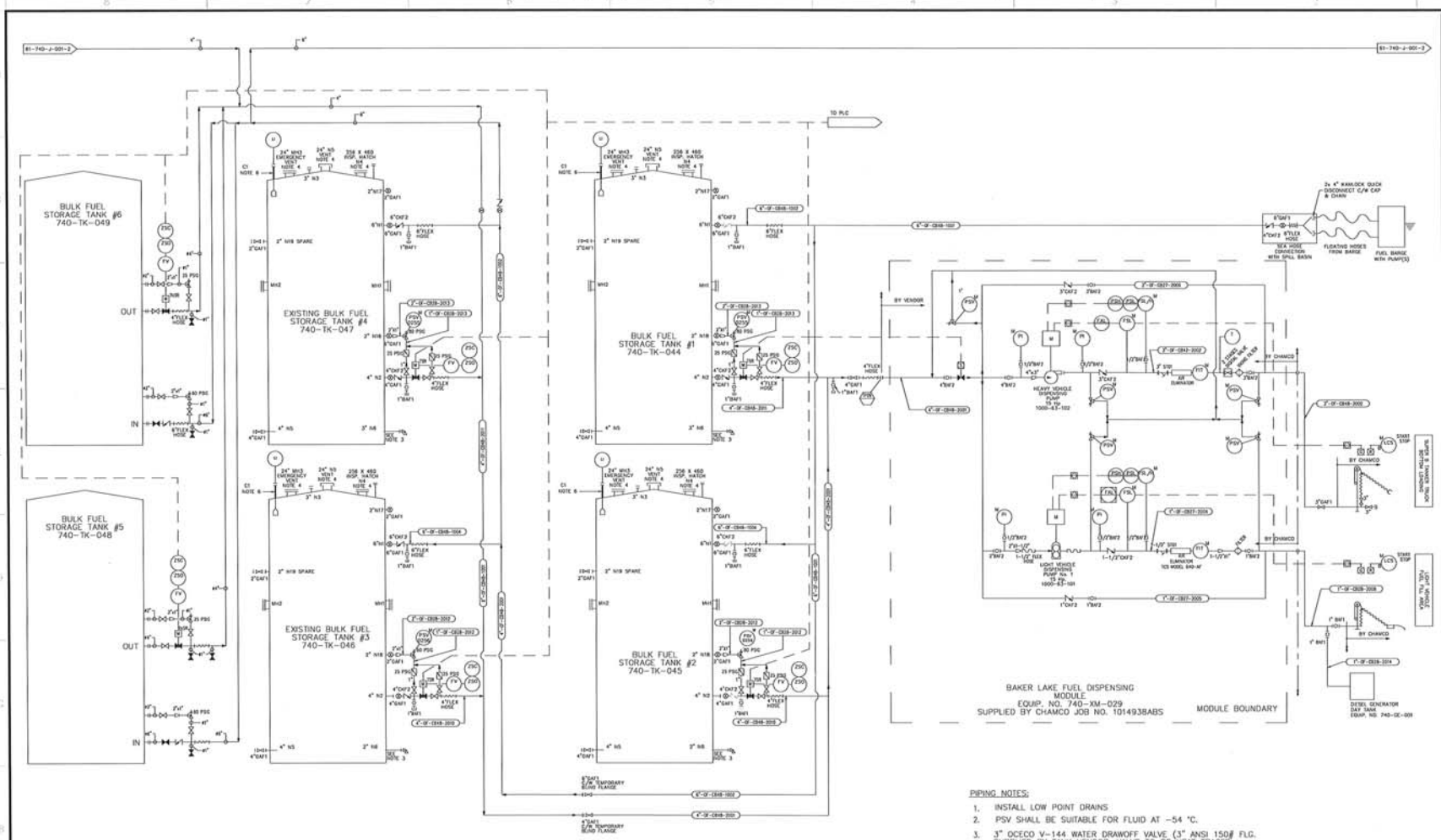
SCALE : 1:750
VERTICAL EXAGERATION : 5

KIVALLIQ CONTRACTORS GROUP LTD

PREPARED BY : MIKAËL LÉVESQUE
DATE : 10-07-2019
CON-FD-205-2

NO. DESIGN DRAWING NO. 61-740-J-0100-1

FORMAT ARCHD




PIPING NOTES:

1. INSTALL LOW POINT DRAINS
2. PSV SHALL BE SUITABLE FOR FLUID AT -54 °C.
3. 3" OCECO V-144 WATER DRAWOFF 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

NOTES GÉNÉRALES / GENERAL NOTES

TEL QUE CONSTRUIT AS BUILT
AGNICO EAGLE DATE : 2019-12-16

SNC·LAVALIN

Project # : 660534-0000 REV.: 7

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG. |
|---|---|
| TANKS #5 AND #6 - FUEL DIST. PIPING | 61-740-M-0100 |
| -- | -- |
| -- | -- |
| -- | -- |
| -- | -- |
| -- | -- |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 8 | 2019-12-16 | AS BUILT | S.P. | B.R. | - |
| 7 | 2019-08-05 | ISSUED FOR CONSTRUCTION | B.L. | A.O. | S.MOY |
| 6 | 2019-05-03 | ADDENDUM #01 / DRAIN VALVE | P.D.Z | A.O. | N.WEN. |
| 5 | 2019-04-25 | ISSUED FOR TENDER | B.L. | A.O. | N.WEN. |
| 4 | 2018-12-12 | FOR COMMENTS | B.L. | M.H. | N.WEN. |
| 3 | 2010-06-22 | FOR CONSTRUCTION | M.M. | M.K. | -- |

REVISIONS

TITRE / TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
--
PROCESS AND INSTRUMENTATION DIAGRAM
--
--

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | FRANCIS ROSE, TECH | DATE 2009-03-27 |
| VÉRIFIÉ PAR CHECKED BY | PATRICK GIARD, P.ENG | -- |
| APPROUVÉ PAR APPROVED BY | PATRICK GIARD, P.ENG | -- |
| ÉCHELLE SCALE N.T.S | DATE 2009-03-27 | |

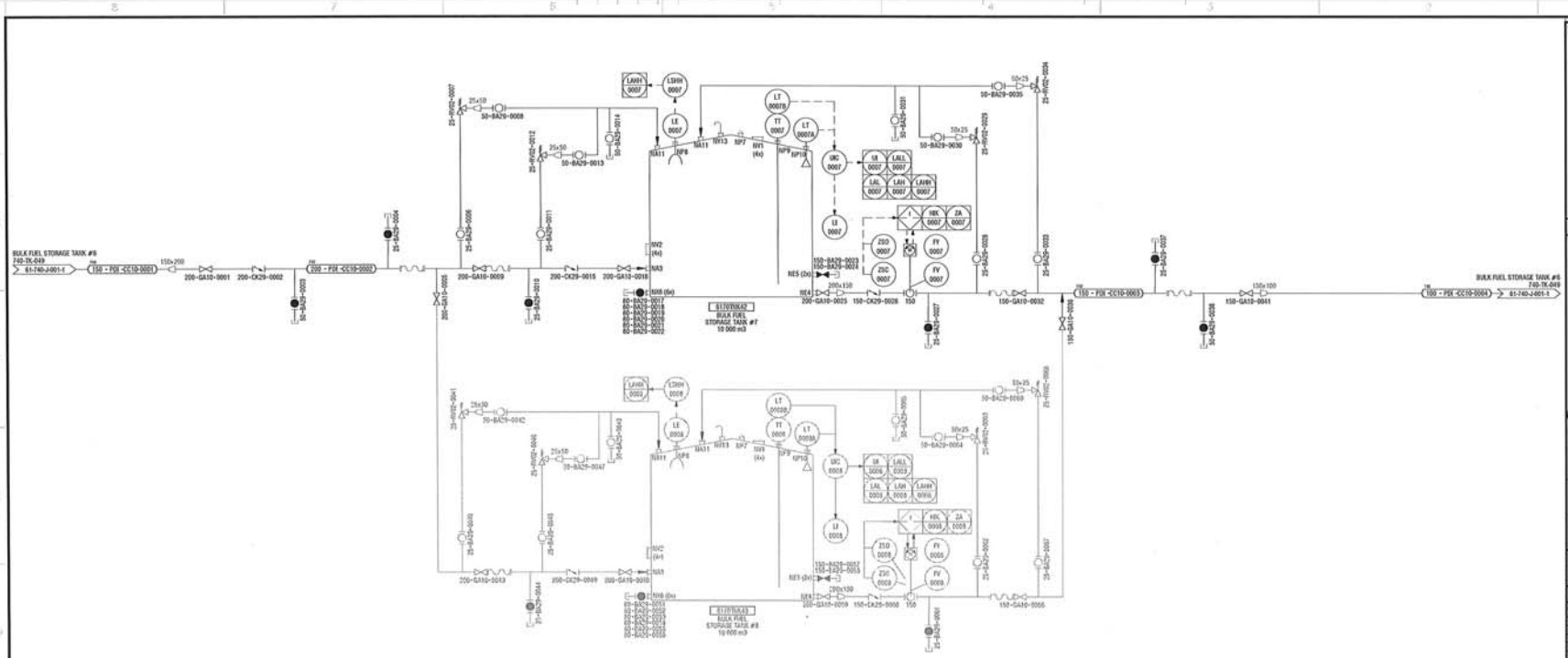
NO. DESSIN DRAWING NO. 61-740-J-0100

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 6120 | 8 | 1/2 |

FILE NO. 61-740-J-0100-1.dwg

NO. DESSIN DRAWING NO. 61-740-J-0100-2

FORMAT ARCH D




NOTES GÉNÉRALES / GENERAL NOTES

TEL QUE CONSTRUIT
AS BUILT
DATE : 2019-12-16

SNC·LAVALIN

SNC-Lavalin Bio-Énd inc.
155, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél : 819 764-5151 Fax : 819 797-0118
www.snclavalin.com

Project # : 660534-0000 REV.: 7

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TYPE / TITLE | # DWG |
|---|---|
| TANK #5 AND #6 – FUEL DIST. PIPING | 61-740-M-0100 |
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | APP. | CLEAR |
|---|---|---|---|---|---|
| 8 | 2019-12-16 | AS BUILT | S.P. | B.R. | – |
| 7 | 2019-09-03 | ISSUED FOR CONSTRUCTION | B.L. | A.G. | B.RIOP |
| 6 | 2019-05-03 | ADDENDUM AR / DRAIN VALVE | P.D.C | A.G. | N.WÔL |
| 5 | 2019-04-29 | ISSUED FOR TENDER | B.L. | A.G. | N.WÔL |
| 4 | 2018-12-12 | FOR COMMENTS | B.L. | M.H. | N.WÔL |
| 3 | 2015-06-22 | FOR CONSTRUCTION | D.M. | M.H. | – |

REVISIONS

TYPE / TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
–
PROCESS AND INSTRUMENTATION DIAGRAM
–
–

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | FRANCIS ROSE, TECH | DATE 2009-03-27 |
| VERIFIÉ PAR CHECKED BY | PATRICK GIARD, P.ENG | – |
| APPROUVÉ PAR APPROVED BY | PATRICK GIARD, P.ENG | – |
| ÉCHELLE SCALE N.T.S | DATE 2009-03-27 | |

NO. DESSIN DRAWING NO. 61-740-J-0100

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 6120 | 8 | 2 / 2 |

AC-CART-ARCH D

FILE NO. 61-740-J-0100-2.dwg

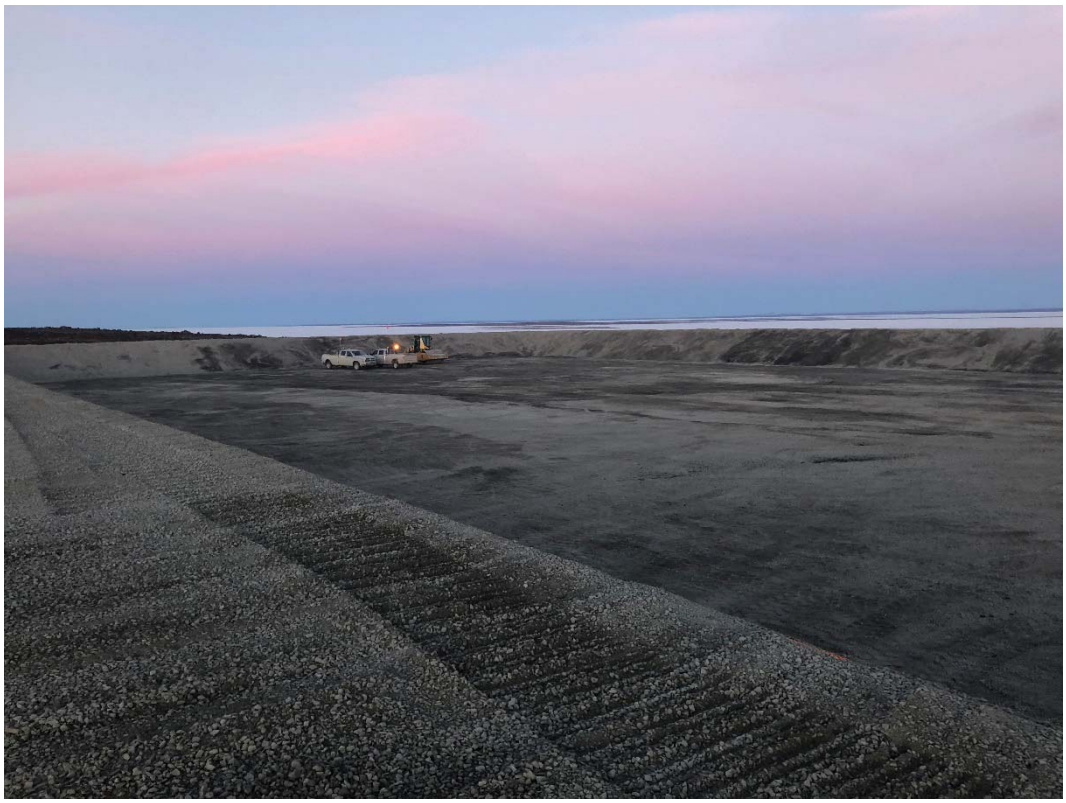
# Appendix C

Photographs


***General site view before tank and containment construction***

***Overburden excavation***

***Pad and Berm construction***



***Containment overview***


***Tank pad construction***

***Tank floor construction***

***Tank wall welding***

*Tank roof structure*

*Piping to and from fuel tank*

***Tank general view***

# Appendix D

Fuel tank handover package

# TURNOVER PACKAGE TANK #7

# BAKER LAKE , NU

| AGNICO EAGLE | Vendor Document Status |
|---|---|
| 1 ☐ | Proceed to next submission and status. |
| 2 ☐ | Proceed with exceptions as noted to next submission and status. |
| 3 ☐ | Do not proceed. Revise as noted and resubmit next submission and status. |
| 4 ☑ | Complete, no further submission required. |

By: Date:

Review and authorization to fabricate are only for general conformance with the design concept of the Project as expressed in the Contract Documents. Sole responsibility for the accuracy and completeness of this document, including but not limited to dimensions and quantities, remains with the Supplier/Contractor. Agnico Eagle does not warrant the accuracy or completeness of any of the information contained herein, nor does Agnico Eagle authorize or approve any construction means, methods, techniques, sequences or any safety precautions or procedures.

Agnico Eagle No. Turnover #1 Rev. A R:

DOCUMENT FOR INFORMATION

PREPARED FOR

AGNICO EAGLE

ENGINEERING DESIGN AND MATERIAL PROVIDED BY

Inukshuk Construction Limited

Industrial Contracting Project Management

ERECTED BY

STS STORAGE TANK SOLUTIONS

Rev. A

SEPTEMBER 12, 2019

# INSPECTION & TEST PLAN

| | | | | | | |
|---|---|---|---|---|---|---|
| Tank: | Tank #7 6170TNK42 | | Project: | AEM Baker Lake Fuel Tanks | Document: | TK#7 ITP |
| By: | Inukshuk Construction Ltd | | Proj. #: | 315 | Revision: | 2 - Issued for Construction |

| Item | Component | Activity | ITP Type | Documentation | Acceptance Criteria | Notes |
|---|---|---|---|---|---|---|
| 1 | Kick-Off Meeting | Kickoff Meeting | N/A | Meeting Minutes | N/A | |
| 2 | Signature Log | Verify | N/A | Signature Log | N/A | |
| 3 | Welder Qualification | Verify | N/A | Individual Welder Qualifications / Welder Log | API-650 / ASME IX | |
| 4 | Inspector Qualification | Verify | N/A | In house Inspector & 3rd Party Qualifications | API-650 | |
| 5 | Weld Procedures | Verify | N/A | Approved Weld Procedures | API-650 / ASME IX, CWB W47.1 | |
| 6 | Welding Consumable | Electrode Storage | N/A | N/A | Manufacturer's Instructions | |
| 7 | Foundation | Foundation Survey | DC | Foundation Acceptance Report, Compaction Report & Survey from 3rd Party | API-650 Para 7.5.5 | |
| 8 | Floor | Materials | FI | MTR Confirmation to Dwg | Drawing & API-650 Sect. 4 | MTR issued prior to shipping |
| | | Fit up | VE, DC | As Built Drawing | Drawing | per API-650 5.1.5.4 - bottom plates under the shell shall have the outer ends of the joints fitted and lap-welded |
| | | Welding | VE | Weld Map, Visual Report | API-650 Para 7.2 & 8.5 & WPS | |
| | | Vacuum Test | VB | Vacuum Box Test Report | API-650 Para 7.3.3(a) & 8.6 | |
| 9 | Shell to Floor Seams | Initial Weld Pass | VE | Weld Map, Visual Report | API-650 Para 8.5, 7.2.4.1 | |
| | | Final Weld Pass | VE | Weld Map, Visual Report | API-650 Para 8.5, 7.2.4.1 | |
| | | LPT | NDT | Diesel Test Report | API-650 Para 7.2.4.1 d | LPT inside of shell to floor seam |
| 10 | Shell | Materials | FI | MTR Confirmation to Dwg | Drawing & API-650 Sect. 4 | MTR issued prior to shipping |
| | | Fit up 1st Course | VE, DC | As Built Drawing | Drawing | |
| | | Roundness | DC | Dimension Report | API-650 Para 7.5.3 | |
| | | Welding | VE | Weld Map, Visual Report | API-650 Para 7.2, 7.5, 8.5 & WPS | |
| | | Diesel Test | NDT | Diesel Test Report | API-650 Para 7.2.4.1 d | Diesel Test inside of shell butt weld joints |
| | | Tolerance Check – Plumbness & Local Deviations | DC | Dimension Report from 3rd party | API-650 Para 7.5 | |
| | | Radiography | NDT | X-ray report / Log / Map | API-650 Para 7.2.3 & 8.1 | Testing by a qualified independent inspection firm |
| Item | Component | Activity | ITP Type | Documentation | Acceptance Criteria | Notes |
| 11 | Compression Ring | Fit up | VE, DC | As Built Drawing | Drawing | |
| | | Welding | VE | Weld Map, Visual Report | API-650 Para 7.2 & 8.5 & WPS | |
| 12 | Roof | Fit up | VE, DC | As Built Drawing | Drawing | |
| | | Welding | VE | Visual Report | API-650 Para 7.2 & 8.5 & WPS | |
| | | Vacuum Test | VB | Vacuum Box Test Report | API-650 Para 7.3.8(b) & 8.6 | |
| 13 | Roof Structure | Fit up | VE, DC | As Built Drawing | Drawing | |
| | | Column Plumbness | DC | Dimension Report | API-650 Para 7.5.2 b) | |
| | | Welding | VE | Visual Report | API-650 Para 7.2 & 8.5 & WPS | |
| 14 | Nozzles | Layout | VE, DC | As Built Drawing | Drawing | |
| | | Fit up | VE, DC | As Built Drawing | Drawing | |
| | | Shop Prep Welding | VE | Weld Map, Visual Report | API-650 Para 7.2 & 8.5 & WPS | |
| | | Welding | VE | Weld Map, Visual Report | API-650 Para 7.2 & 8.5 & WPS | |
| | | Tolerance Check – Plumbness & Local Deviations | DC | Dimension Report | API-650 Para 7.5 | |
| | | Shell Nozzle Repad Air test | AT | Leak Test Report | API-650 Para 7.3.5 | |
| | | MPI of Shell Nozzles | NDT | MPI Report | API-650 Para 7.2.3.5 | All welds of Shell Nozzles |
| 15 | Manways | Layout | VE, DC | As Built Drawing | Drawing | |
| | | Fit up | VE, DC | As Built Drawing | Drawing | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Welding | VE | Weld Map, Visual Report | API–650 Para 7.2 & 8.5 & WPS | |
| 15 | Manways | Tolerance Check – Plumbness & Local Deviations | DC | Dimension Report | API-650 Para 7.5 | |
| | | Shell Manway Repad Air test | AT | Leak Test Report | API-650 Para 7.3.5 | |
| | | MPI | NDT | MPI Report | API-650 Para 7.2.3.6 | All welds of Shell Manways |
| 16 | Internals | Layout | VE, DC | As Built Drawing | Drawing | |
| | | Fit up | VE, DC | As Built Drawing | Drawing | |
| | | Welding | VE | Visual Report | API–650 Para 7.2 & 8.5 & WPS | |
| 17 | Externals | Layout | VE, DC | As Built Drawing | Drawing | |
| | | Fit up | VE, DC | As Built Drawing | Drawing | |
| | | Welding | VE | Visual Report | API–650 Para 7.2 & 8.5 & WPS | |
| 18 | Stairs & Platforms | Layout | VE, DC | As Built Drawing | Drawing | |
| | | Fit up | VE, DC | As Built Drawing | Drawing | |
| | | Welding | VE | Visual Report | API–650 Para 7.2 & 8.5 & WPS | |
| 19 | Bolts & Nuts | Inspection | VE, DC | As Built Drawing | Drawing | Bolt Torque |
| **Item** | **Component** | **Activity** | **ITP Type** | **Documentation** | **Acceptance Criteria** | **Notes** |
| 21 | Final | Name Plate Verification | N/A | Scan of Name Plate | Drawings | |
| | | Final Inspection | FI | As Built Drawings, Data Sheet, Manufacturer's Certification (3rd Party), Punch List | Drawings | |

**DEFINITIONS:**

**AT - AIR TEST:** Specified component and/or installation to be air tested according to specified documentation and specifications.

**DC - DIMENSION CHECK:** Physical dimensions of component and/or installation to be verified according to specified documentation and specifications.

**FI - FINAL INSPECTION:** Specified inspection procedures to be executed prior to release of the component and/or installation and verified according to specified documentation and specifications.

**NDT - NON DESTRUCTIVE TESTING:** Specified component and/or installation to be inspected using a named non destructive testing method according to specified documentation and specifications.

**VE - VISUAL Examination:** Specified component and/or installation to be examined visually according to specified documentation and specification.

**VB - VACUUM-BOX TEST:** Specified component and/or installation to be vacuum box tested according to specified documentation and specifications.

Exhibit 27, Rev 1

## SIGNATURE LOG

| PRINT | SIGNATURE | COMPANY | DATE |
|---|---|---|---|
| Alan Martin | | STS | |
| Matthew MacKenzie | | STS | Aug 10/19 |
| Christopher Jaques | | STS | |
| Bruno Roy | Bruno R | AEM | Aug 20/19 |
| Sylvain Chartier | | AEM | Aug. 28, 2019 |
| Pierre Gauthier | | AEM | Sept 04/2019 |
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# ALL CAN INSPECTION SERVICES (2011) INC.

**Report #** **J1706**

**9323-37 Avenue, NW, Edmonton, Alberta T6E 5N4**
**SHOP:** 780-462-1072 **OFFICE:** 780-462-9797 **FAX:** 780-462-6664
**EMAIL**: shop@allcaninspection.com **www.allcaninspection.com**



| | | | |
|---|---|---|---|
| Client: | **Storage Tank Solutions** | Client Job # | **Welder Coupons** |
| Address: | 9 Well Head Street, Devon AB, T9G1Z6 | P.O. # | **Sebastien** |
| Contact: Name: | Sebastien Ouellet | Date: | **Feb 25/19** |
| Phone: | 780-982-3980 | | |
| Work Location: | All Can Inspection Shop | Work Description: | |

**CODES**
1. ASME B31.3 N/S
2. ASME B31.3 S/C
3. ASME Sec. VIII Div 1 UW51
4. ASME Sec. VIII Div. 1 UW52
5. CSA Z662
6. CSA Z662 (Sour)
7. API 650
8. Other: QW191.2

LF - Lack of Fusion; IP - Incomplete Penetration; IC - Internal Concavity; BT - Burn Through; TI - Tungsten Inclusion; IU: Internal Undercut; EU: External Undercut; EP - Excessive Penetration; P - Porosity; S - Slag; HL - High-Low; C - Crack; AB - Arc Burn; HB - Hollow Bead

**Severity:** 1 = Slight, 2 = Medium, 3 = Severe (Reject)

| NDE No: | Size & thickness Plus Code Max. reinforcement | Material | Code | IQI | Technique Number | Source Side of Object to Film Distance | Source to Object Distance | Number of Exposures | Welder ID | Discontinuity | Severity | Accept | Reject |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 - 8 | See Back | See Back | inches | inches | | | | 1 - 3 | √ | X |
| 2G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **KW** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 3G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **KW** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 4G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **KW** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| | | | | | | | | | | | | | |
| 2G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **MM** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 3G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **MM** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 4G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **MM** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 2G Subarc | 1/2" SPOT | P1 | 8 | 2 | RT-2 | 0.625 | 25.000 | 1 | **MM** | | | | |
| | 0-15" | | | | | | | | | P @ 0" | 1 | √ | |
| | | | | | | | | | | | | | |
| 2G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **CJ** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 3G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **CJ** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 4G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **CJ** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 2G Subarc | 1/2" SPOT | P1 | 8 | 2 | RT-2 | 0.625 | 25.000 | 1 | **CJ** | | | | |
| | 0-15" | | | | | | | | | | | √ | |
| | | | | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|
| RT Technician: | Gordon Thomas | CGSB Level: | 2 | Reg. # : | 6 | SNT-TC-1A Level: III | SNT-TC-1A No: 6 |
| RT Assistant # 1 | Adele Kezama | CEDO #: | 18988 | | | SNT-TC-1A Level: II | SNT-TC-1A No: 18988 |
| RT Assistant # 2 | | CEDO #: | | | | SNT-TC-1A Level: | SNT-TC-1A No: |

**IMPORTANT: See reverse side of this form for All Can Inspection Services (2011) Inc. LIMITED LIABILITY POLICY**

Technician Signature — Date: Feb 25/19

Client Representative Signature — Evaluation Date

**The above interpretation is a technical opinion, not a guarantee.**
**Client signature indicates acceptance of the report and results.**
Clock tape marker and start arrow marked on weldment.
It is the customer's responsibility to map welds on drawings.

| | | | |
|---|---|---|---|
| Film Make / Brand | AGFA | Film Class / Type: | 1-D5 |
| Screens Lead | Front 0.010" | Back 0.010" | One (no.) film per screen |
| Film Density in H & D: | Min. 2.0 | Max. 4.0 | |
| Penetrometer (IQI hole type) designation: | N/A | Recommended Max. U.G.: | 0.20" |
| Source Isotope: | IRIDIUM-192 (Gamma) | Wall Viewing: | Single |
| Effective Focal Spot Size: | 0.146 inches | Processing: | Automatic |

## RADIOGRAPHIC EXAMINATION REPORT

# ALL CAN INSPECTION SERVICES (2011) INC.

**Report #** J1778

**9323-37 Avenue, NW, Edmonton, Alberta T6E 5N4**
**SHOP:** 780-462-1072 **OFFICE:** 780-462-9797 **FAX:** 780-462-6664
**EMAIL**: shop@allcaninspection.com **www.allcaninspection.com**



| | | | |
|---|---|---|---|
| Client: | **Storage Tank Solutions** | Client Job # | **Welder Coupons** |
| Address: | 9 Well Head Street, Devon AB, T9G1Z6 | P.O. # | **Sebastien** |
| Contact: Name: | Sebastien Ouellet | Date: | **Mar 1/19** |
| Phone: | 780-982-3980 | | |
| Work Location: | All Can Inspection Shop | Work Description: | |

**CODES**
1. ASME B31.3 N/S
2. ASME B31.3 S/C
3. ASME Sec. VIII Div 1 UW51
4. ASME Sec. VIII Div. 1 UW52
5. CSA Z662
6. CSA Z662 (Sour)
7. API 650
8. Other: QW191.2

LF - Lack of Fusion; IP - Incomplete Penetration; IC - Internal Concavity; BT - Burn Through; TI - Tungsten Inclusion; IU: Internal Undercut; EU: External Undercut; EP - Excessive Penetration; P - Porosity; S - Slag; HL - High-Low; C - Crack; AB - Arc Burn; HB - Hollow Bead

**Severity:** 1 = Slight, 2 = Medium, 3 = Severe (Reject)

| NDE No: | Size & thickness Plus Code Max. reinforcement | Material | Code | IQI | Technique Number | Source Side of Object to Film Distance | Source to Object Distance | Number of Exposures | Welder ID | Discontinuity | Severity | Accept | Reject |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 - 8 | See Back | See Back | inches | inches | | | | 1 - 3 | √ | X |
| 2G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **SO** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 3G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **SO** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 4G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **SO** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 2G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **DZ** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 3G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **DZ** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 4G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **DZ** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 2G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **JN** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 3G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **JN** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 4G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **JN** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 2G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **TM** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 3G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **TM** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 4G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **TM** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
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|---|---|---|---|---|---|---|---|
| RT Technician: | Gordon Thomas | CGSB Level: | 2 | Reg. # : | 6 | SNT-TC-1A Level: III | SNT-TC-1A No: 6 |
| RT Assistant # 1 | Adele Kezama | CEDO #: | 18988 | | | SNT-TC-1A Level: II | SNT-TC-1A No: 18988 |
| RT Assistant # 2 | | CEDO #: | | | | SNT-TC-1A Level: | SNT-TC-1A No: |

**IMPORTANT: See reverse side of this form for All Can Inspection Services (2011) Inc. LIMITED LIABILITY POLICY**

Technician Signature — Date: Mar 1/19

Client Representative Signature — Evaluation Date

**The above interpretation is a technical opinion, not a guarantee.**
**Client signature indicates acceptance of the report and results.**

Clock tape marker and start arrow marked on weldment.
It is the customer's responsibility to map welds on drawings.

| | | | |
|---|---|---|---|
| Film Make / Brand | AGFA | Film Class / Type: | 1-D5 |
| Screens Lead | Front 0.010" | Back 0.010" | One (no.) film per screen |
| Film Density in H & D: | Min. 2.0 | Max. 4.0 | |
| Penetrometer (IQI hole type) designation: | N/A | Recommended Max. U.G.: | 0.20" |
| Source Isotope: | IRIDIUM-192 (Gamma) | Wall Viewing: | Single |
| Effective Focal Spot Size: | 0.146 inches | Processing: | Automatic |

## RADIOGRAPHIC EXAMINATION REPORT

# ALL CAN INSPECTION SERVICES (2011) INC.

**Report #** **J3424**

**9323-37 Avenue, NW, Edmonton, Alberta T6E 5N4**
**SHOP:** 780-462-1072 **OFFICE:** 780-462-9797 **FAX:** 780-462-6664
**EMAIL**: shop@allcaninspection.com **www.allcaninspection.com**



| | | | |
|---|---|---|---|
| Client: | **Storage Tank Solutions** | Client Job # | **Welder Coupons** |
| Address: | 9 Well Head Street, Devon AB, T9G1Z6 | P.O. # | **Sebastien** |
| Contact: Name: | Sebastien Ouellet | Date: | **June 18/19** |
| Phone: | 780-982-3980 | | |
| Work Location: | All Can Inspection Shop | Work Description: | |

**CODES**
1. ASME B31.3 N/S
2. ASME B31.3 S/C
3. ASME Sec. VIII Div 1 UW51
4. ASME Sec. VIII Div. 1 UW52
5. CSA Z662
6. CSA Z662 (Sour)
7. API 650
8. Other: QW191.2

LF - Lack of Fusion; IP - Incomplete Penetration; IC - Internal Concavity; BT - Burn Through; TI - Tungsten Inclusion; IU: Internal Undercut; EU: External Undercut; EP - Excessive Penetration; P - Porosity; S - Slag; HL - High-Low; C - Crack; AB - Arc Burn; HB - Hollow Bead

**Severity:** 1 = Slight, 2 = Medium, 3 = Severe (Reject)

| NDE No: | Size & thickness Plus Code Max. reinforcement | Material | Code | IQI | Technique Number | Source Side of Object to Film Distance | Source to Object Distance | Number of Exposures | Welder ID | Discontinuity | Severity | Accept | Reject |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 - 8 | See Back | See Back | inches | inches | | | | 1 - 3 | √ | X |
| 2GSMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **AM** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 3G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **AM** | | | | |
| | 0-6" | | | | | | | | | P @ 0", 2 1/2", & 4 1/2" | 1 | √ | |
| 4G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **AM** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| Subarc | 1/2" SPOT | P1 | 8 | 2 | RT-2 | 0.625 | 25.000 | 1 | **AM** | | | | |
| | 0-12" | | | | | | | | | | | √ | |
| | | | | | | | | | | | | | |
| 2GSMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **JO** | | | | |
| | 0-6" | | | | | | | | | P @ End | 1 | √ | |
| 3G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **JO** | | | | |
| | 0-6" | | | | | | | | | P @ 0" & End | 1 | √ | |
| 4G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **JO** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| Subarc | 1/2" SPOT | P1 | 8 | 2 | RT-2 | 0.625 | 25.000 | 1 | **JO** | | | | |
| | 0-12" | | | | | | | | | | | √ | |
| | | | | | | | | | | | | | |
| 2GSMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **DM** | | | | |
| | 0-6" | | | | | | | | | P @ End | 1 | √ | |
| 3G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **DM** | | | | |
| | 0-6" | | | | | | | | | | | √ | |
| 4G SMAW | 5/8" SPOT | P1 | 8 | 2 | RT-2 | 0.750 | 25.000 | 1 | **DM** | | | | |
| | 0-6" | | | | | | | | | P @ 1" | 1 | √ | |
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|---|---|---|---|---|---|---|---|
| RT Technician: | Gordon Thomas | CGSB Level: 2 | Reg. # : 6 | SNT-TC-1A Level: | III | SNT-TC-1A No: | 6 |
| RT Assistant # 1 | Shannon Berg | CEDO #: | 17583 | SNT-TC-1A Level: | I | SNT-TC-1A No: | 17583 |
| RT Assistant # 2 | | CEDO #: | | SNT-TC-1A Level: | | SNT-TC-1A No: | |

**IMPORTANT: See reverse side of this form for All Can Inspection Services (2011) Inc. LIMITED LIABILITY POLICY**

Technician Signature — Date: June 18/19

Client Representative Signature — Evaluation Date

**The above interpretation is a technical opinion, not a guarantee.**
**Client signature indicates acceptance of the report and results.**

Clock tape marker and start arrow marked on weldment.
It is the customer's responsibility to map welds on drawings.

| | | | |
|---|---|---|---|
| Film Make / Brand | AGFA | Film Class / Type: | 1-D5 |
| Screens Lead | Front 0.010" | Back 0.010" | One (no.) film per screen |
| Film Density in H & D: | Min. 2.0 | Max. 4.0 | |
| Penetrometer (IQI hole type) designation: | N/A | Recommended Max. U.G.: | 0.20" |
| Source Isotope: | IRIDIUM-192 (Gamma) | Wall Viewing: | Single |
| Effective Focal Spot Size: | 0.146 inches | Processing: | Automatic |

## RADIOGRAPHIC EXAMINATION REPORT

| Storage Tank Solutions Inc. | WELDERS' QUALIFICATION RECORD<br>API 650 | Exhibit 8, Rev A |
|---|---|---|

| WELDER NAME | WELDER SYMBOL | DATE QUALIF. | QUALIFICATION PROCEDURE | LIMITATIONS | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | PROCESS | ELECTRODE | POSITION | THICKNESS RANGE | DIAMETER RANGE | |
| Matthew MacKenzie | MM | 25/02/2019 | STS-1 | SMAW, UP | F3-F4 | 2G,3G,4G | .116-1.75 | ALL | X-RAY REPORT J1706 |
| | MM | 25/02/2019 | STS-4 | SMAW, DOWN | F3-F4 | 2G,3G,4G | .116-1.75 | ALL | X-RAY REPORT J1706 |
| | MM | 25/02/2019 | STS-2 | SAW | F7A6 | 2G | .116-1.75 | ALL | X-RAY REPORT J1706 |
| | MM | 25/02/2019 | STS-7 | SAW | F7A6 | 2G | .116-1.75 | ALL | X-RAY REPORT J1706 |
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| **QC (PRINT)**<br><br>**SIGN:** | **DATE** (yyyy-MM-dd): |
| **QA (PRINT)**<br><br>**SIGN:** | **DATE** (yyyy-MM-dd): |

| Storage Tank Solutions Inc. | WELDERS' QUALIFICATION RECORD<br>API 650 | Exhibit 8, Rev A |
|---|---|---|

| WELDER NAME | WELDER SYMBOL | DATE QUALIF. | QUALIFICATION PROCEDURE | LIMITATIONS | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | PROCESS | ELECTRODE | POSITION | THICKNESS RANGE | DIAMETER RANGE | |
| Christopher Jaques | CJ | 25/02/2019 | STS-1 | SMAW, UP | F3-F4 | 2G,3G,4G | .116-1.75 | ALL | X-RAY REPORT J1706 |
| | CJ | 25/02/2019 | STS-4 | SMAW, DOWN | F3-F4 | 2G,3G,4G | .116-1.75 | ALL | X-RAY REPORT J1706 |
| | CJ | 25/02/2019 | STS-2 | SAW | F7A6 | 2G | .116-1.75 | ALL | X-RAY REPORT J1706 |
| | CJ | 25/02/2019 | STS-7 | SAW | F7A6 | 2G | .116-1.75 | ALL | X-RAY REPORT J1706 |
| | | | | | | | | | |
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| **QC (PRINT)**<br><br>**SIGN:** | **DATE** (yyyy-MM-dd)**:** |
| **QA (PRINT)**<br><br>**SIGN:** | **DATE** (yyyy-MM-dd)**:** |

| Storage Tank Solutions Inc. | WELDERS' QUALIFICATION RECORD<br>API 650 | Exhibit 8, Rev A |
|---|---|---|

| WELDER NAME | WELDER SYMBOL | DATE QUALIF. | QUALIFICATION PROCEDURE | LIMITATIONS | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | PROCESS | ELECTRODE | POSITION | THICKNESS RANGE | DIAMETER RANGE | |
| ALAN MARTIN | AM | 18/06/2019 | STS-1 | SMAW, UP | F3-F4 | 2G,3G,4G | .116-1.75 | ALL | X-RAY REPORT J3424 |
| | AM | 18/06/2019 | STS-4 | SMAW, DOWN | F3-F4 | 2G,3G,4G | .116-1.75 | ALL | X-RAY REPORT J3424 |
| | AM | 18/06/2019 | STS-2 | SAW | F7A6 | 2G | .116-1.75 | ALL | X-RAY REPORT J3424 |
| | AM | 18/06/2019 | STS-7 | SAW | F7A6 | 2G | .116-1.75 | ALL | X-RAY REPORT J3424 |
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| **QC (PRINT)**<br><br>**SIGN:** | **DATE** (yyyy-MM-dd)**:** |
| **QA (PRINT)**<br><br>**SIGN:** | **DATE** (yyyy-MM-dd)**:** |

| Storage Tank Solutions Inc. | WELDERS' QUALIFICATION RECORD<br>API 650 | Exhibit 8, Rev A |
|---|---|---|

| WELDER NAME | WELDER SYMBOL | DATE QUALIF. | QUALIFICATION PROCEDURE | LIMITATIONS | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | PROCESS | ELECTRODE | POSITION | THICKNESS RANGE | DIAMETER RANGE | |
| JOEL OVERGUARD | JO | 18/06/2019 | STS-1 | SMAW, UP | F3-F4 | 2G,3G,4G | .116-1.75 | ALL | X-RAY REPORT J3424 |
| | JO | 18/06/2019 | STS-4 | SMAW, DOWN | F3-F4 | 2G,3G,4G | .116-1.75 | ALL | X-RAY REPORT J3424 |
| | JO | 18/06/2019 | STS-2 | SAW | F7A6 | 2G | .116-1.75 | ALL | X-RAY REPORT J3424 |
| | JO | 18/06/2019 | STS-7 | SAW | F7A6 | 2G | .116-1.75 | ALL | X-RAY REPORT J3424 |
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| **QC (PRINT)**<br><br>**SIGN:** | **DATE** (yyyy-MM-dd)**:** |
| **QA (PRINT)**<br><br>**SIGN:** | **DATE** (yyyy-MM-dd)**:** |

| Storage Tank Solutions Inc. | WELDERS' QUALIFICATION RECORD<br>API 650 | Exhibit 8, Rev A |
|---|---|---|

| WELDER NAME | WELDER SYMBOL | DATE QUALIF. | QUALIFICATION PROCEDURE | LIMITATIONS | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | PROCESS | ELECTRODE | POSITION | THICKNESS RANGE | DIAMETER RANGE | |
| DAVID MORRICE | DM | 18/06/2019 | STS-1 | SMAW, UP | F3-F4 | 2G,3G,4G | .116-1.75 | ALL | X-RAY REPORT J3424 |
| | DM | 18/06/2019 | STS-4 | SMAW, DOWN | F3-F4 | 2G,3G,4G | .116-1.75 | ALL | X-RAY REPORT J3424 |
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| **QC (PRINT)**<br><br>**SIGN:** | **DATE** (yyyy-MM-dd)**:** |
| **QA (PRINT)**<br><br>**SIGN:** | **DATE** (yyyy-MM-dd)**:** |

| Storage Tank Solutions Inc. | WELDERS' QUALIFICATION RECORD<br>API 650 | Exhibit 8, Rev A |
|---|---|---|

| WELDER NAME | WELDER SYMBOL | DATE QUALIF. | QUALIFICATION PROCEDURE | LIMITATIONS | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | PROCESS | ELECTRODE | POSITION | THICKNESS RANGE | DIAMETER RANGE | |
| JOSEPH NEDERHOFF | JN | 01/03/2019 | STS-1 | SMAW, UP | F3-F4 | 2G,3G,4G | .116-1.75 | ALL | X-RAY REPORT J1778 |
| | JN | 01/03/2019 | STS-4 | SMAW, DOWN | F3-F4 | 2G,3G,4G | .116-1.75 | ALL | X-RAY REPORT J1778 |
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| **QA (PRINT)**<br><br>**SIGN:** | **DATE** (yyyy-MM-dd)**:** |

| Storage Tank Solutions Inc. | WELDERS' QUALIFICATION RECORD<br>API 650 | Exhibit 8, Rev A |
|---|---|---|

| WELDER NAME | WELDER SYMBOL | DATE QUALIF. | QUALIFICATION PROCEDURE | LIMITATIONS | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | PROCESS | ELECTRODE | POSITION | THICKNESS RANGE | DIAMETER RANGE | |
| DUSTIN ZUBACH | DZ | 01/03/2019 | STS-1 | SMAW, UP | F3-F4 | 2G,3G,4G | .116-1.75 | ALL | X-RAY REPORT J1778 |
| | DZ | 01/03/2019 | STS-4 | SMAW, DOWN | F3-F4 | 2G,3G,4G | .116-1.75 | ALL | X-RAY REPORT J1778 |
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| **QC (PRINT)**<br><br>**SIGN:** | **DATE** (yyyy-MM-dd)**:** |
| **QA (PRINT)**<br><br>**SIGN:** | **DATE** (yyyy-MM-dd)**:** |

| Storage Tank Solutions Inc. | WELDERS' QUALIFICATION RECORD<br>API 650 | Exhibit 8, Rev A |
|---|---|---|

| WELDER NAME | WELDER SYMBOL | DATE QUALIF. | QUALIFICATION PROCEDURE | LIMITATIONS | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | PROCESS | ELECTRODE | POSITION | THICKNESS RANGE | DIAMETER RANGE | |
| TYLER MONCRIEFF | TM | 01/03/2019 | STS-1 | SMAW, UP | F3-F4 | 2G,3G,4G | .116-1.75 | ALL | X-RAY REPORT J1778 |
| | TM | 01/03/2019 | STS-4 | SMAW, DOWN | F3-F4 | 2G,3G,4G | .116-1.75 | ALL | X-RAY REPORT J1778 |
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| **QC (PRINT)**<br><br>**SIGN:** | **DATE** (yyyy-MM-dd)**:** |
| **QA (PRINT)**<br><br>**SIGN:** | **DATE** (yyyy-MM-dd)**:** |

**Exhibit 28, Rev 1**

# EXAMINER QUALIFICATIONS

Customer: AGNICO EAGLE TANK 7

Location: BAKER LAKE

Code Requiring Test: API 650 (section 8.5.1) Reason for Test: New Construction

Storage Tank Solutions Inc. certifies that each visual examiner meets the following requirements:

a) Has a vision (with correction, if necessary) to be able to read a Jeager Type 2 standard chart at a distance of not less that 12in. and is capable of passing a color contrast test. Examiners will be checked annually to ensure that they meet the requirement; and
b) Is competent in the technique of the visual examination, including performing the examination and interpreting and evaluating results; however, where the examination method consists of more than one operation, the examiner performing only a portion of the test need only be qualified for the portion that the examiner performs.

Qualified examiner: _____

_____

_____

_____

_____

# QUALITY CONTROL MANUAL
## FOUNDATION REPORT

**TANK TAG NUMBER:** TANK 7 **WORK ORDER NUMBER:** 315

**CUSTOMER:** AEM **PROJECT:** BAKER LAKE

**ITP LINE NUMBER:** 7 **DATE:** Aug 8/19.

**1.0 TANK PAD ACCEPTANCE GUIDELINES**

1.1 In acceptance of the Tank Foundation, we acknowledges that the following requirements have been met:

a) The foundation circumference meets the requirements of API 650 Para 7.5.

b) The foundation has been staked to clearly identify the major tank axis (North, South, East, West) and the tank center point

c) There is adequate access to the tank erection area to commence erection activities.

1.2 Our acceptance of the tank foundation is limited only to the above requirements. Acceptance does not constitute certification of the foundation design and/or construction including but not limited to the following:

a) Certification of the foundation design including that of the leak detection and cathodic protection system.

b) Certification that the foundation has the load bearing capacities required.

c) Dimensional accuracy other than that explicitly stated above.

d) That the coordinate axis complies with the clients plot plan.

e) That soil embedded items have been properly placed according to approved drawings. This will be confirmed during the installation of components associated with the embedded items.

f) Certification that the foundation has been properly constructed or is structurally acceptable.

g) Certifications that the leak detection and/or cathodic protection systems have been properly installed.

**OBSERVATIONS:**

Tank Foundation meets the requirements of API 650.

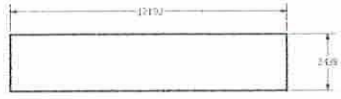
**ACCEPTED BY:** (NAME & SIGNATURE) **DATE:** Aug 8/19.
**STS QC REPRESENTATIVE**

**ACCEPTED BY:** (NAME & SIGNATURE) **DATE:** Aug 8/19
**CLIENT INSPECTOR**

PARTS LIST

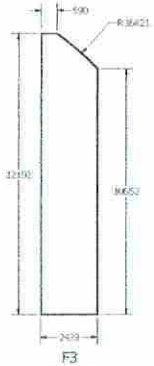
| ITEM | QTY | DESCRIPTION | MATERIAL | UNIT WT (KG) | TOT WT (KG) |
|---|---|---|---|---|---|
| F1 | 17 | PL 6.35 X 2438 X 12192 | G40.21M-350W | 1492 | 25,364 |
| F2 | 2 | PL 6.35 X 2438 x 10769 | G40.21M-350W | 1307 | 2,614 |
| F3 | 4 | PL 6.35 X 2438 x 12192 | G40.21M-350W | 1417 | 5,668 |
| F4 | 4 | PL 6.35 X 2438 x 10693 | G40.21M-350W | 1126 | 4,504 |
| F5 | 4 | PL 6.35 X 1129 X 5279 | G40.21M-350W | 335 | 1,340 |
| F6 | 4 | PL 6.35 X 2438 X 2469 | G40.21M-350W | 76 | 312 |
| F7 | 2 | PL 6.35 X 2438 x 7315 | G40.21M-350W | 899 | 1798 |
| F8 | 4 | PL 6.35 X 2438 x 4837 | G40.21M-350W | 295 | 1180 |
| F9 | 2 | PL 6.35 X 1115 x 10249 | G40.21M-350W | 356 | 712 |
| F10 | 4 | PL 6.35 X 2379 X 3112 | G40.21M-350W | 338 | 1352 |

TOT WT: 45,929

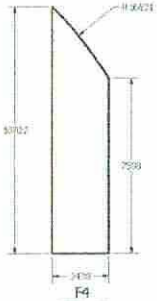


F1
QTY:17
SCALE 1 / 100

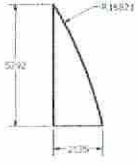
F2
QTY:2
SCALE 1 / 100



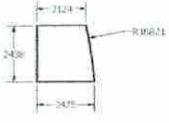
F3
QTY: 4
SCALE 1 / 100



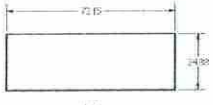
F4
QTY: 4
SCALE 1 / 100



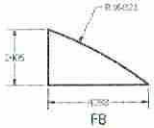
F5
QTY: 4
SCALE 1/100



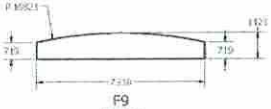
F6
QTY: 4
SCALE 1/100



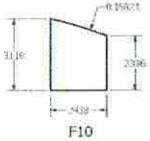
F7
QTY:2
SCALE 1/100



F8
QTY:4
SCALE 1/100



F9
QTY:2
SCALE 1/100



F10
QTY: 4
SCALE 1/100

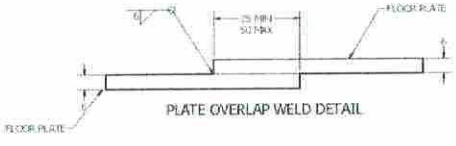
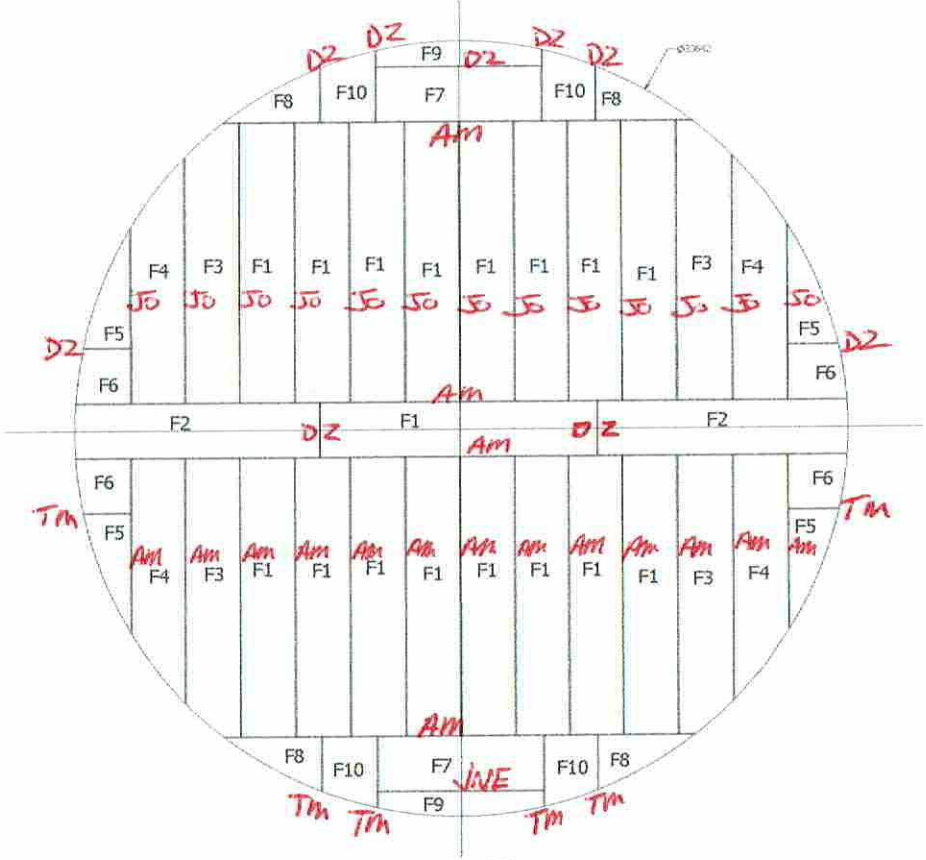



PLATE OVERLAP WELD DETAIL




FLOOR LAYOUT
SCALE 1 / 100

16-Feb-2019

Pencil Blanket: PKT

REVISION HISTORY

| REV | DESCRIPTION | DATE |
|---|---|---|
| 1 | ISSUED FOR CONSTRUCTION | 2/15/2019 |

DRAWN: EMRY LOSIER 2/14/2019
CHECKED
QA
MFG
APPROVED

TITLE: FLOOR LAYOUT

BAKER LAKE WHALE TAIL PROJECT FLOOR AND ROOF LAYOUT FOR 10,000CUM TANK

SIZE: A1
DRAWING: 315-M1
REV: 1
SCALE:
SHEET 1 OF 2

# VISUAL TEST REPORT

Customer: AGNICO EAGLE

Location: BAKER LAKE

Code Requiring Test: API 650 (section 8.5.2) Reason for Test: New Construction

A weld shall be acceptable by visual examination if the inspection shows the following.

a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.
c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.) of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).
d) The reinforcement of the welds on all thicknesses:

| Plate Thickness mm (in.) | Maximum Reinforcement Thickness mm (in.) | |
|---|---|---|
| | Vertical Joints | Horizontal Joints |
| ≤ 13 (1/2) | 2.5 (3/32) | 3 (1/8) |
| > 13 (1/2) to 25 (1) | 3 (1/8) | 5 (3/16) |
| > 25 (1) | 5 (3/16) | 6 (1/4) |

Surface Condition (As Welded)

Test Solution: N/A Test Date(s): August 17/19

Tested by: Mat Mackenzie Ambient Conditions: 10°

Items Tested:

Floor welds.

Results:

No defects were found. All welding acceptable

STS Representative Signature: [signature] Date: Aug 17/19

Client Representative Signature: Bruno D [signature] Date: Aug 20/19

Exhibit 14, Rev 1

# VACUUM BOX TEST REPORT – FLOOR PLATE WELDS

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TANK 7

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(A vacuum box/soap solution test for floor plate weld seams is required for new construction or major alterations, no visible leaks should be observed)

Test Solution: Water / Snoop Ambient Conditions: 10°

Test Date(s): August 17/19 Surface Condition: Clean

Tested by: Matt MacKenzie Surface Test Temperature:

Pressure Gauge:

Items Tested:

Floor plates _____

_____

_____

Results:

No leak detected _____

_____

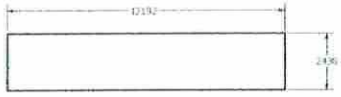
STS Representative Signature: _____ Date: Aug 17/19.

Client Representative Signature: _____ Date: Aug 20/19

PARTS LIST

| ITEM | QTY | DESCRIPTION | MATERIAL | UNIT WT (KG) | TOT WT (KG) |
|---|---|---|---|---|---|
| F1 | 17 | PL 6.35 X 2438 X 12192 | G40.21M-260W | 1482 | 25,194 |
| F2 | 2 | PL 6.35 X 2438 X 10769 | G40.21M-260W | 1303 | 2,604 |
| F3 | 4 | PL 6.35 X 2438 X 12192 | G40.21M-260W | 1417 | 5,668 |
| F4 | 4 | PL 6.35 X 2438 X 10652 | G40.21M-260W | 1126 | 4,504 |
| F5 | 4 | PL 6.35 X 2129 X 5279 | G40.21M-260W | 535 | 2,140 |
| F6 | 4 | PL 6.35 X 2438 X 2458 | G40.21M-260W | 78 | 312 |
| F7 | 2 | PL 6.35 X 2438 X 7316 | G40.21M-260W | 539 | 1078 |
| F8 | 4 | PL 6.35 X 2438 X 4877 | G40.21M-260W | 295 | 1180 |
| F9 | 2 | PL 6.35 X 1115 X 12192 | G40.21M-260W | 356 | 712 |
| F10 | 4 | PL 6.35 X 2274 X 3118 | G40.21M-260W | 338 | 1352 |

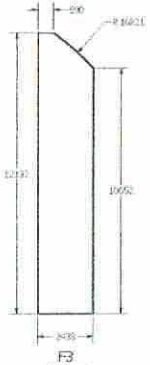
TOT WT: 45,414



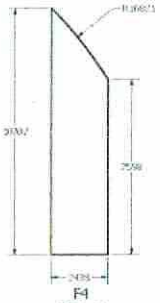
F1
QTY:17
SCALE 1 / 100

F2
QTY:2
SCALE 1 / 100

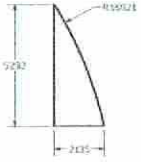
INSIDE CORNER - AM



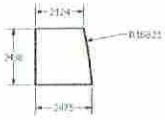
F3
QTY: 4
SCALE 1 / 100



F4
QTY: 4
SCALE 1 / 100

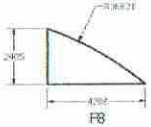


F5
QTY: 4
SCALE 1/100

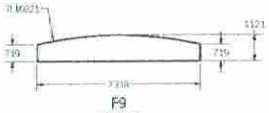


F6
QTY: 4
SCALE 1/100

F7
QTY:2
SCALE 1/100



F8
QTY:4
SCALE 1/100



F9
QTY:2
SCALE 1/100

F10
QTY: 4
SCALE 1/100

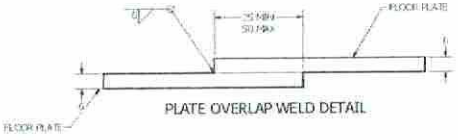
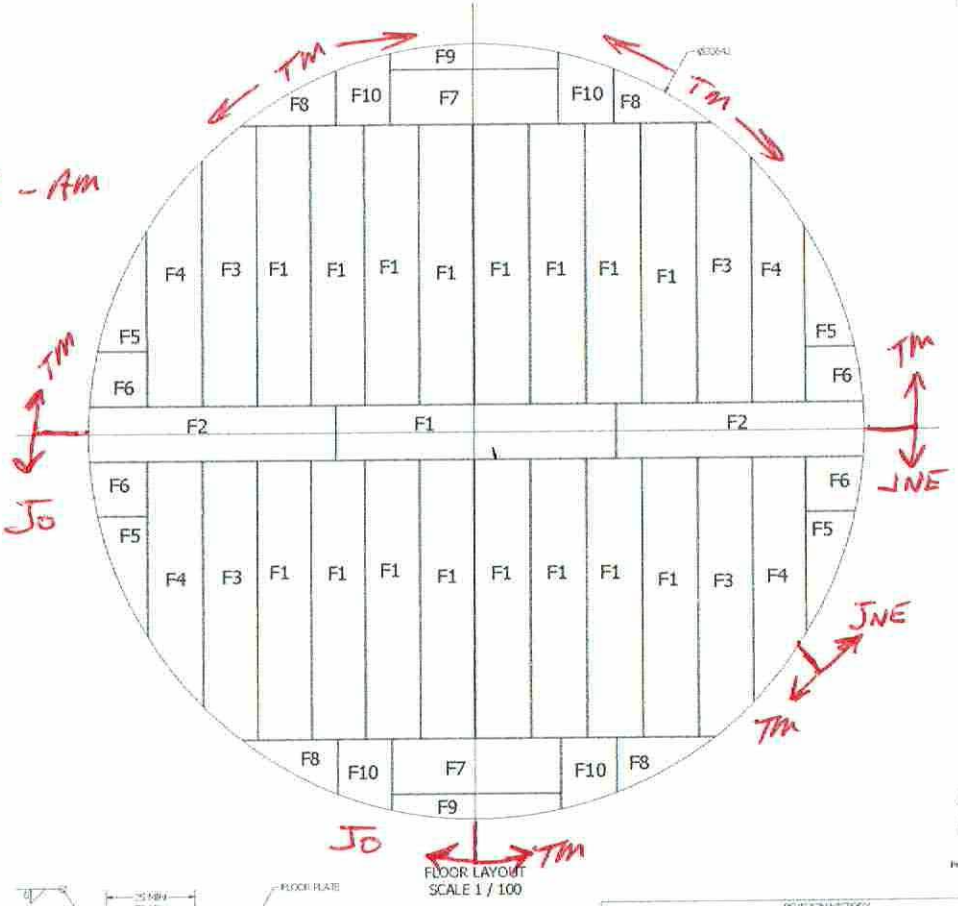



PLATE OVERLAP WELD DETAIL




FLOOR LAYOUT
SCALE 1 / 100

16-Feb-2019

Permit Number: M25

REVISION HISTORY

| REV | DESCRIPTION | DATE |
|---|---|---|
| 1 | ISSUED FOR CONSTRUCTION | 2/13/2019 |

DRAWN
PARTS LOCATED
CHECKED
QA
MFG
APPROVED

SAQ/GRD

TITLE
FLOOR LAYOUT

BAKER LAKE WHALE TAIL PROJECT FLOOR AND ROOF LAYOUT FOR 10,000CUM TANK

SIZE A1 | DRAWING 315-M1 | REV 1

SCALE | SHEET 1 OF 2

# VISUAL TEST REPORT

Customer: AGNICO EAGLE

Location: BAKER LAKE

Code Requiring Test: API 650 (section 8.5.2) Reason for Test: New Construction

A weld shall be acceptable by visual examination if the inspection shows the following.

a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.
c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.) of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).
d) The reinforcement of the welds on all thicknesses:

| Plate Thickness mm (in.) | Maximum Reinforcement Thickness mm (in.) | |
|---|---|---|
| | Vertical Joints | Horizontal Joints |
| ≤ 13 (1/2) | 2.5 (3/32) | 3 (1/8) |
| > 13 (1/2) to 25 (1) | 3 (1/8) | 5 (3/16) |
| > 25 (1) | 5 (3/16) | 6 (1/4) |

Surface Condition (As Welded)

Test Solution: N/A Test Date(s): August 16/19

Tested by: Matt MacKenzie Ambient Conditions: 10°

Items Tested: Shell to floor weld

Initial weld pass

Results:

No defects were found. All welding acceptable

STS Representative Signature: [signature] Date: August 16/19.

Client Representative Signature: [signature] Date: August 20/19

# VISUAL TEST REPORT

Customer: AGNICO EAGLE

Location: BAKER LAKE

Code Requiring Test: API 650 (section 8.5.2) Reason for Test: New Construction

A weld shall be acceptable by visual examination if the inspection shows the following.

a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.
c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.) of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).
d) The reinforcement of the welds on all thicknesses:

| Plate Thickness mm (in.) | Maximum Reinforcement Thickness mm (in.) | |
|---|---|---|
| | Vertical Joints | Horizontal Joints |
| ≤ 13 (1/2) | 2.5 (3/32) | 3 (1/8) |
| > 13 (1/2) to 25 (1) | 3 (1/8) | 5 (3/16) |
| > 25 (1) | 5 (3/16) | 6 (1/4) |

Surface Condition (As Welded)

Test Solution: N/A Test Date(s): Aug 29/19

Tested by: Matt MacKenzie Ambient Conditions: 10°

Items Tested: Shell to floor weld

Final weld pass

Results:

No defects were found. All welding acceptable

STS Representative Signature: Date: Aug 29/19

Client Representative Signature: Date: Sept 3, 2019

Exhibit 24, Rev 1

# DIESEL TEST REPORT (SHELL TO BOTTOM WELD)

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TK 7

Equipment Type: STORAGE TANK

Equipment Description:

Code Requiring Test: API 650 (section 7.2.4) Reason for Test: New Construction

(The initial weld pass inside the shell shall have all slag and non-metals removed from the surface of the weld and then examined for its entire circumference both visually and applying a high Flash-point penetrating oil such as light diesel to the gap between the shell and the bottom, letting stand for at least four hours, and examining the weld for evidence of wicking.)

Surface Condition (As Welded)

Test Solution: Diesel Test Date(s): August 17/19

Tested by: Matt MacKenzie Ambient Conditions: 10°

Items Tested:

Shell to bottom seam weld

Results:

No leaks detected at the time of the examination

STS Representative Signature: [signature] Date: August 17/19.

Client Representative Signature: Bruno [signature] Date: August 20/19

Exhibit 18, Rev 1

# DIMENSIONAL CHECK REPORT – ROUNDNESS

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TK 7

Equipment Type: DIESEL STORAGE TANK

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(The tank shell will be checked for roundness at 12" above the tank floor. Roundness will be checked at 45 degree intervals or less, max. 20' spacing)

Test Date(s): August 8/19

Tested by: Matt MacKenzie.

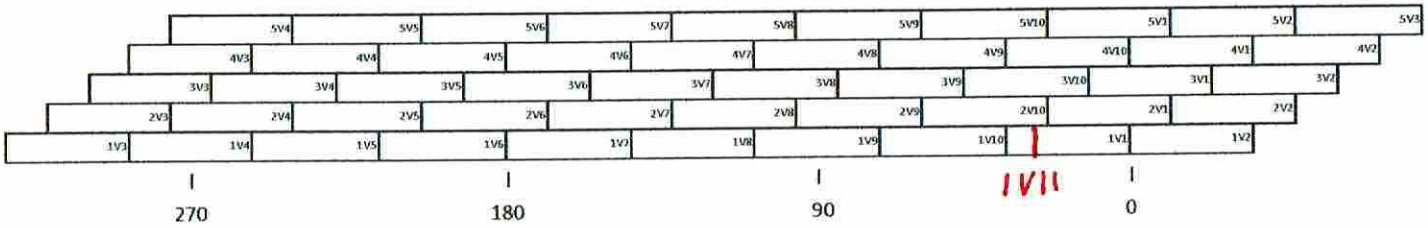
Seam Test Results:

Roundness checks were acceptable

STS Representative Signature: _____ Date: August 8/19.

Client Representative Signature: _____ Date: August 8/19

# Tank #7 Baker Lake (AEM)




## VERTS (Welder ID)

| | IN | OUT |
|---|---|---|
| 1V1 | D2 | D2 |
| 1V2 | TMO | TMO |
| 1V3 | JO | JO |
| 1V4 | D2 | JO |
| 1V5 | JNE | JNE |
| 1V6 | DMO | DMO |
| 1V7 | JO | JNE |
| 1V8 | TMO | CJ |
| 1V9 | D2 | D2 |
| 1V10 | D2 | D2 |
| 1V11 | JNE | JNE |

| | IN | OUT |
|---|---|---|
| 2V1 | JNE | JNE |
| 2V2 | JNE | JNE |
| 2V3 | JNE | JNE |
| 2V4 | D2 | D2 |
| 2V5 | DMO | DMO |
| 2V6 | DMO | TMO |
| 2V7 | DMO | DMO |
| 2V8 | CJ | CJ |
| 2V9 | CJ | CJ |
| 2V10 | CJ | CJ |

| | IN | OUT |
|---|---|---|
| 3V1 | CJ | CJ |
| 3V2 | JNE | JNE |
| 3V3 | JNE | JNE |
| 3V4 | JNE | JNE |
| 3V5 | D2 | D2 |
| 3V6 | DMO | DMO |
| 3V7 | DMO | DMO |
| 3V8 | DMO | DMO |
| 3V9 | CJ | CJ |
| 3V10 | CJ | CJ |

| | IN | OUT |
|---|---|---|
| 4V1 | CJ | CJ |
| 4V2 | JNE | JNE |
| 4V3 | JNE | JNE |
| 4V4 | JNE | JNE |
| 4V5 | D2 | D2 |
| 4V6 | DMO | DMO |
| 4V7 | DMO | DMO |
| 4V8 | DMO | DMO |
| 4V9 | CJ | CJ |
| 4V10 | CJ | CJ |

| | IN | OUT |
|---|---|---|
| 5V1 | D2 | D2 |
| 5V2 | D2 | D2 |
| 5V3 | JO | JNE |
| 5V4 | JO | JNE |
| 5V5 | JO | JNE |
| 5V6 | D2 | D2 |
| 5V7 | TMO | TMO |
| 5V8 | TMO | TMO |
| 5V9 | TMO | CJ |
| 5V10 | D2 | CJ |

## HORIZONTAL (Welder ID)

| | IN | OUT |
|---|---|---|
| H1 | MM | JO |
| | | |

| | IN | OUT |
|---|---|---|
| H2 | MM | JO |

| | IN | OUT |
|---|---|---|
| H3 | MM | JO |

| | IN | OUT |
|---|---|---|
| H4 | MM | JO |

## PLATES IDENTIFICATION (heat numbers)

| | Heat Number |
|---|---|
| 1V1 | |
| 1V2 | |
| 1V3 | |
| 1V4 | |
| 1V5 | |
| 1V6 | |
| 1V7 | |
| 1V8 | |
| 1V9 | |
| 1V10 | |

| | Heat Number |
|---|---|
| 2V1 | |
| 2V2 | |
| 2V3 | |
| 2V4 | |
| 2V5 | |
| 2V6 | |
| 2V7 | |
| 2V8 | |
| 2V9 | |
| 2V10 | |

| | Heat Number |
|---|---|
| 3V1 | |
| 3V2 | |
| 3V3 | |
| 3V4 | |
| 3V5 | |
| 3V6 | |
| 3V7 | |
| 3V8 | |
| 3V9 | |
| 3V10 | |

| | Heat Number |
|---|---|
| 4V1 | |
| 4V2 | |
| 4V3 | |
| 4V4 | |
| 4V5 | |
| 4V6 | |
| 4V7 | |
| 4V8 | |
| 4V9 | |
| 4V10 | |

| | Heat Number |
|---|---|
| 5V1 | |
| 5V2 | |
| 5V3 | |
| 5V4 | |
| 5V5 | |
| 5V6 | |
| 5V7 | |
| 5V8 | |
| 5V9 | |
| 5V10 | |

**Exhibit 26, Rev 1**

# VISUAL TEST REPORT

Customer: AGNICO EAGLE

Location: BAKER LAKE

Code Requiring Test: API 650 (section 8.5.2) Reason for Test: New Construction

A weld shall be acceptable by visual examination if the inspection shows the following.

a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.
c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.) of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).
d) The reinforcement of the welds on all thicknesses:

| Plate Thickness mm (in.) | Maximum Reinforcement Thickness mm (in.) | |
|---|---|---|
| | Vertical Joints | Horizontal Joints |
| ≤ 13 (1/2) | 2.5 (3/32) | 3 (1/8) |
| > 13 (1/2) to 25 (1) | 3 (1/8) | 5 (3/16) |
| > 25 (1) | 5 (3/16) | 6 (1/4) |

Surface Condition (As Welded)

Test Solution: N/A Test Date(s): Sept 2/19

Tested by: Matt MacKenzie Ambient Conditions: 7°

Items Tested:

SR1 VERTICALS

Results:

No defects were found. All welding acceptable

STS Representative Signature: [signature] Date: Sept 2/19

Client Representative Signature: [signature] Date: Sept 2/19

# VISUAL TEST REPORT

Customer: AGNICO EAGLE

Location: BAKER LAKE

Code Requiring Test: API 650 (section 8.5.2) Reason for Test: New Construction

A weld shall be acceptable by visual examination if the inspection shows the following.

a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.
c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.) of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).
d) The reinforcement of the welds on all thicknesses:

| Plate Thickness mm (in.) | Maximum Reinforcement Thickness mm (in.) | |
|---|---|---|
| | Vertical Joints | Horizontal Joints |
| ≤ 13 (1/2) | 2.5 (3/32) | 3 (1/8) |
| > 13 (1/2) to 25 (1) | 3 (1/8) | 5 (3/16) |
| > 25 (1) | 5 (3/16) | 6 (1/4) |

Surface Condition (As Welded)

Test Solution: N/A Test Date(s): August 10/19

Tested by: Matt MacKenzie Ambient Conditions: 12°

Items Tested:

SR2 VERTICALS AND FIRST HORIZONTAL

Results:

No defects were found. All welding acceptable

STS Representative Signature: [signature] Date: August 10/19

Client Representative Signature: Bruno [signature] Date: August 20/19

**Exhibit 26, Rev 1**

# VISUAL TEST REPORT

Customer: AGNICO EAGLE

Location: BAKER LAKE

Code Requiring Test: API 650 (section 8.5.2) Reason for Test: New Construction

A weld shall be acceptable by visual examination if the inspection shows the following.

a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.
c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.) of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).
d) The reinforcement of the welds on all thicknesses:

| Plate Thickness mm (in.) | Maximum Reinforcement Thickness mm (in.) | |
|---|---|---|
| | Vertical Joints | Horizontal Joints |
| ≤ 13 (1/2) | 2.5 (3/32) | 3 (1/8) |
| > 13 (1/2) to 25 (1) | 3 (1/8) | 6 (3/16) |
| > 25 (1) | 6 (5/16) | 8 (1/4) |

Surface Condition (As Welded)

Test Solution: N/A Test Date(s): AUGUST 12/19

Tested by: MATT MACKENZIE Ambient Conditions: 10°

Items Tested:

SR3 VERTICALS AND SECOND HORIZONTAL

Results:

No defects were found. All welding acceptable

STS Representative Signature: [signature] Date: August 12/19

Client Representative Signature: Bruno [signature] Date: August 20/19

**Exhibit 26, Rev 1**

# VISUAL TEST REPORT

Customer: AGNICO EAGLE

Location: BAKER LAKE

Code Requiring Test: API 650 (section 8.5.2) Reason for Test: New Construction

A weld shall be acceptable by visual examination if the inspection shows the following.

a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.
c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.) of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).
d) The reinforcement of the welds on all thicknesses:

| Plate Thickness mm (in.) | Maximum Reinforcement Thickness mm (in.) | |
|---|---|---|
| | Vertical Joints | Horizontal Joints |
| ≤ 13 (1/2) | 2.5 (3/32) | 3 (1/8) |
| > 13 (1/2) to 25 (1) | 3 (1/8) | 6 (3/16) |
| > 25 (1) | 6 (3/16) | 8 (1/4) |

Surface Condition (As Welded)

Test Solution: N/A Test Date(s): AUGUST 14/19

Tested by: MATT MACKENZIE Ambient Conditions: 10°

Items Tested:

SR4 VERTICALS AND THIRD HORIZONTAL

Results:

No defects were found. All welding acceptable

STS Representative Signature: [signature] Date: August 14/19.

Client Representative Signature: Bruno [signature] Date: August 20/19

# VISUAL TEST REPORT

Customer: AGNICO EAGLE

Location: BAKER LAKE

Code Requiring Test: API 650 (section 8.5.2) Reason for Test: New Construction

A weld shall be acceptable by visual examination if the inspection shows the following.

a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.
c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.) of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).
d) The reinforcement of the welds on all thicknesses:

| Plate Thickness mm (in.) | Maximum Reinforcement Thickness mm (in.) | |
|---|---|---|
| | Vertical Joints | Horizontal Joints |
| ≤ 13 (1/2) | 2.5 (3/32) | 3 (1/8) |
| > 13 (1/2) to 25 (1) | 3 (1/8) | 5 (3/16) |
| > 25 (1) | 5 (3/16) | 6 (1/4) |

Surface Condition (As Welded)

Test Solution: N/A Test Date(s): AUGUST 17/19

Tested by: MATT MACKENZIE Ambient Conditions: 10°

Items Tested:

SR5 VERTICALS AND FOURTH HORIZONTAL

Results:

No defects were found. All welding acceptable

STS Representative Signature: [signature] Date: August 17/19.

Client Representative Signature: Bruno R[signature] Date: August 20/19

Exhibit 16, Rev 1

# DIMENSIONAL CHECK REPORT – PEAKING

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TK 7

Equipment Type: DIESEL STORAGE TANK

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(Each vertical seam will be checked for peaking and max. peak dimension recorded for that seam.)

Test Date(s):

Tested by:

Seam Test Results:

1V1- 0 1V2- 1/16 1V3- 1/16 1V4- 1/4 1V5- 0

1V6- 0 1V7- 1/4 1V8- 1/16 1V9- 0 1V10- 1/16

1V11- 1/16.

STS Representative Signature: [signature] Date: Sept 2/19

Client Representative Signature: [signature] Date: Sept 3/19

Exhibit 17, Rev 1

# DIMENSIONAL CHECK REPORT – BANDING

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TK 7

Equipment Type: DIESEL STORAGE TANK

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(Each circumferential seam will be checked for banding and max. banding dimension recorded for that seam. Circumferential seams will be checked at 45 degree intervals or less, max. 20' spacing)

Test Date(s): AUGUST 10/19

Tested by: MATT MACKENZIE

Seam Test Results:

MAXIMUN BANDING RECORDED FOR THE FIRST HORIZONTAL - 3/8"

STS Representative Signature: [signature] Date: Aug 10/19

Client Representative Signature: Bruno [signature] Date: Aug 20/19

Exhibit 16, Rev 1

# DIMENSIONAL CHECK REPORT – PEAKING

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TK 7

Equipment Type: DIESEL STORAGE TANK

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(Each vertical seam will be checked for peaking and max. peak dimension recorded for that seam.)

Test Date(s): AUGUST 12/19

Tested by: MATT MACKENZIE

Seam Test Results:

2V1- 1/16 2V2- 1/16 2V3- 1/8 2V4- 0 2V5- 1/16

2V6- 0 2V7- 0 2V8- 1/16 2V9- 3/16 2V10- 1/4

STS Representative Signature: [signature] Date: Aug 12/19.

Client Representative Signature: Bruno R[illegible] Date: AUG 20/19

Exhibit 17, Rev 1

# DIMENSIONAL CHECK REPORT – BANDING

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TK 7

Equipment Type: DIESEL STORAGE TANK

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(Each circumferential seam will be checked for banding and max. banding dimension recorded for that seam. Circumferential seams will be checked at 45 degree intervals or less, max. 20' spacing)

Test Date(s): AUGUST 12/19

Tested by: MATT MACKENZIE

Seam Test Results:

MAXIMUN BANDING RECORDED FOR THE SECOND HORIZONTAL - 1/4"

STS Representative Signature: [signature] Date: Aug 12/19

Client Representative Signature: Bruno [signature] Date: AUG 20/19

Exhibit 16, Rev 1

# DIMENSIONAL CHECK REPORT – PEAKING

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TK 7

Equipment Type: DIESEL STORAGE TANK

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(Each vertical seam will be checked for peaking and max. peak dimension recorded for that seam.)

Test Date(s): AUGUST 13/19

Tested by: MATT MACKENZIE

Seam Test Results:

3V1- 1/8 3V2- 1/16 3V3- 1/8 3V4- 3/16 3V5- 1/16

3V6- 1/8 3V7- 0 3V8- 3/16 3V9- 0 3V10- 0

STS Representative Signature: [signature] Date: Aug 13/19

Client Representative Signature: Bruno [signature] Date: Aug 20/19

Exhibit 17, Rev 1

# DIMENSIONAL CHECK REPORT – BANDING

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TK 7

Equipment Type: DIESEL STORAGE TANK

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(Each circumferential seam will be checked for banding and max. banding dimension recorded for that seam. Circumferential seams will be checked at 45 degree intervals or less, max. 20' spacing)

Test Date(s): August 13/19

Tested by: MATT MACKENZIE

Seam Test Results:

MAXIMUN BANDING RECORDED FOR THE THIRD HORIZONTAL - 1/4"

STS Representative Signature: [signature] Date: August 13/19

Client Representative Signature: Bruno R[signature] Date: August 20/19

Exhibit 16, Rev 1

# DIMENSIONAL CHECK REPORT – PEAKING

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TK 7

Equipment Type: DIESEL STORAGE TANK

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(Each vertical seam will be checked for peaking and max. peak dimension recorded for that seam.)

Test Date(s): AUGUST 14/19

Tested by: MATT MACKENZIE

Seam Test Results:

4V1- 3/16 4V2- 1/8 4V3- Ø 4V4- 1/16 4V5- 1/8

4V6- 1/8 4V7- Ø 4V8- 3/16 4V9- Ø 4V10- 1/16

STS Representative Signature: [signature] Date: AUGUST 14/19

Client Representative Signature: Bruno R[signature] Date: August 20/19

Exhibit 17, Rev 1

# DIMENSIONAL CHECK REPORT – BANDING

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TK 7

Equipment Type: DIESEL STORAGE TANK

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(Each circumferential seam will be checked for banding and max. banding dimension recorded for that seam. Circumferential seams will be checked at 45 degree intervals or less, max. 20' spacing)

Test Date(s): AUGUST 14/19

Tested by: MATT MACKENZIE

Seam Test Results:

MAXIMUN BANDING RECORDED FOR THE FOURTH HORIZONTAL - 1/4"

STS Representative Signature: [signature] Date: August 14/19.

Client Representative Signature: Bruno [signature] Date: August 20/19

Exhibit 16, Rev 1

# DIMENSIONAL CHECK REPORT – PEAKING

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TK 7

Equipment Type: DIESEL STORAGE TANK

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(Each vertical seam will be checked for peaking and max. peak dimension recorded for that seam.)

Test Date(s): AUGUST 17/19

Tested by: MATT MACKENZIE

Seam Test Results:

5V1- 1/16 5V2- 1/16 5V3- 1/8 5V4- 1/8 5V5- 1/8

5V6- 1/8 5V7- 1/8 5V8- 1/16 5V9- 1/16 5V10- 0

STS Representative Signature: [signature] Date: August 17/19

Client Representative Signature: Bruno R Date: August 20/19

**Exhibit 25, Rev 1**

# DIESEL TEST REPORT (SHELL)

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TK 7

Equipment Type: STORAGE TANK

Equipment Description

Code Requiring Test: API 650 (section 7.3.5) Reason for Test: New Construction

(The shell shall be tested by painting all of the joints on the inside with a highly penetrating oil and carefully examining the outside of the joints for leakage.)

Surface Condition (As Welded)

Test Solution: Diesel Test Date(s): Sept 2/19

Tested by: Matt MacKenzie Ambient Conditions: 70

Items Tested:

SR1, SR2, SR3, SR4, SR5 VERTS AND FIRST SECOND THIRD AND FORTH

HORIZONTAL

Results:

NO LEAK DETECTRED

STS Representative Signature: [signature] Date: Sept 2/19.

Client Representative Signature: [signature] Date: Sept 3/19

Exhibit 19, Rev 1

# DIMENSIONAL CHECK REPORT – PLUMBNESS

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TK 7

Equipment Type: DIESEL STORAGE TANK

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(The tank shell will be checked for plumb at 12" below the tank roof. Plumb measurements will be checked at 45 degree intervals or less, max. 20' spacing)

Test Date(s): August 29/19

Tested by: Matt Mackenzie

Seam Test Results:

0° - 90° - 7/16, - 1 1/2, - 1 15/16, - 3/8, - 3/8

90° - 180° - 3/8, - 1 1/4, - 1 7/8, + 1/8, + 3/16, + 2

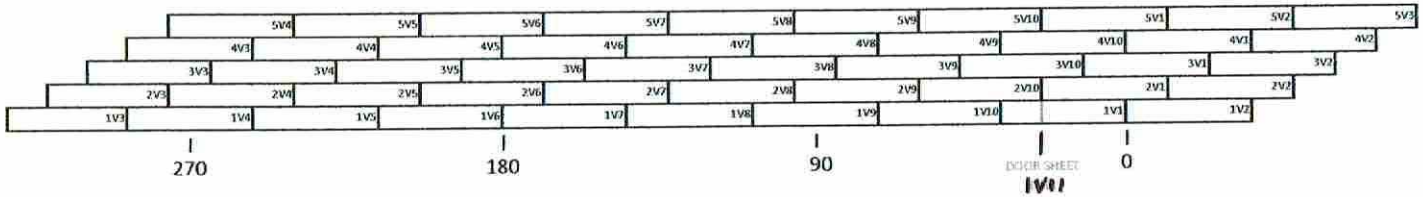
180° - 270° + 2 1/8, - 7/8, - 1 7/8, - 1 1/16, - 1 5/8

270° - 0° - 1 5/8, - 1 7/8, - 1 1/16, - 1 5/8, - 3/4

STS Representative Signature: _____ Date: Aug 29/19

Client Representative Signature: _____ Date: Sept 3, 19

# Tank #7 Baker Lake (AEM)




NDT TECHNICIAN WILL INITIAL EACH BOX WHEN WELD IS ACCEPTABLE

B ---> BOTTOM OF THE VERT (0-6") | M ---> MIDDLE OF THE VERT (45"-51") | T ---> TOP OF THE VERT (90"-96")

## VERTICAL SEAMS MAPPING UT

| | B | M | T | FULL |
|---|---|---|---|---|
| 1V1 | UT FULL BECAUSE NOZZLE INTO VERT | | | MC |
| 1V2 | MC | MC | MC | |
| 1V3 | MC | MC | MC | |
| 1V4 | MC | MC | MC | |
| 1V5 | MC | MC | MC | |
| 1V6 | UT FULL BECAUSE NOZZLE INTO VERT | | | MC |
| 1V7 | MC | MC | MC | |
| 1V8 | MC | MC | MC | |
| 1V9 | MC | MC | MC | |
| 1V10 | MC | MC | MC | |
| 1V11 | MC | MC | MC | |

| | B | T |
|---|---|---|
| 2V1 | MC | MC |
| 2V2 | MC | MC |
| 2V3 | MC | MC |
| 2V4 | MC | MC |
| 2V5 | MC | MC |
| 2V6 | MC | MC |
| 2V7 | MC | MC |
| 2V8 | MC | MC |
| 2V9 | MC | MC |
| 2V10 | MC | MC |

| | B | T |
|---|---|---|
| 3V1 | MC | MC |
| 3V2 | MC | MC |
| 3V3 | MC | MC |
| 3V4 | MC | MC |
| 3V5 | MC | MC |
| 3V6 | MC | MC |
| 3V7 | MC | MC |
| 3V8 | MC | MC |
| 3V9 | MC | MC |
| 3V10 | MC | MC |

| | B | T |
|---|---|---|
| 4V1 | MC | MC |
| 4V2 | MC | MC |
| 4V3 | MC | MC |
| 4V4 | MC | MC |
| 4V5 | MC | MC |
| 4V6 | MC | MC |
| 4V7 | MC | MC |
| 4V8 | MC | MC |
| 4V9 | MC | MC |
| 4V10 | MC | MC |

| | B | T |
|---|---|---|
| 5V1 | MC | N/A |
| 5V2 | MC | N/A |
| 5V3 | MC | N/A |
| 5V4 | MC | N/A |
| 5V5 | MC | N/A |
| 5V6 | MC | N/A |
| 5V7 | MC | N/A |
| 5V8 | MC | N/A |
| 5V9 | MC | N/A |
| 5V10 | MC | N/A |

## HORIZONTAL SEAMS MAPPING UT

| | | |
|---|---|---|
| H1V2 | 30"-36" | MC |
| H1V8 | 42"-48" | MC |
| Middle door sheet | | MC |

| | | |
|---|---|---|
| H2V3 | 24"-30" | MC |
| H2V9 | 36"-42" | MC |

| | | |
|---|---|---|
| H3V1 | 60"-66" | MC |
| H3V7 | 42"-48" | MC |

| | | |
|---|---|---|
| H4V5 | 24"-30" | MC |
| H4V9 | 36"-42" | MC |

## MAG PARTICLE

| | |
|---|---|
| SHELL MANHOLE 0° | MC |
| SHELL MANHOLE 90° | MC |
| SHELL MANHOLE 180° | MC |
| SHELL MANHOLE 270° | MC |

| | |
|---|---|
| SHELL MANHOLE NECK (SEAM) 0° | MC |
| SHELL MANHOLE NECK (SEAM) 90° | MC |
| SHELL MANHOLE NECK (SEAM) 180° | MC |
| SHELL MANHOLE NECK (SEAM) 270° | MC |

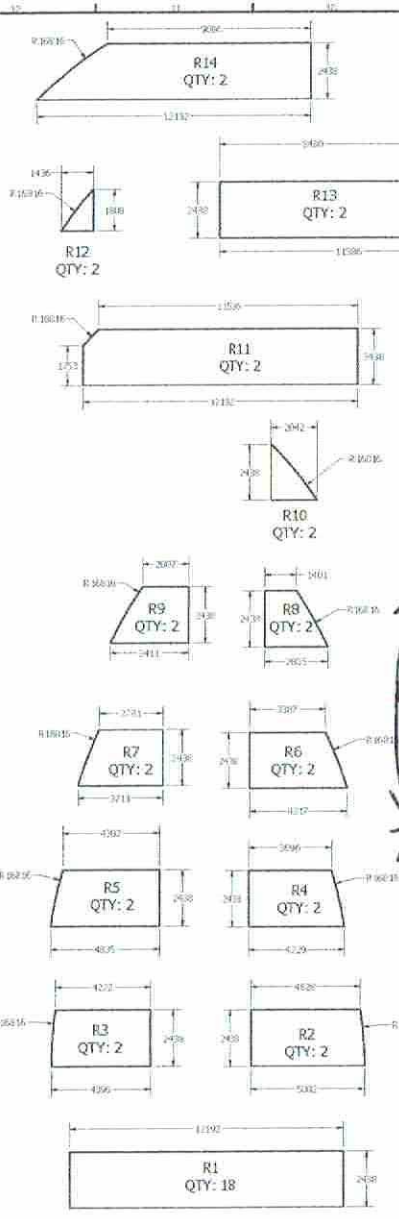
| | |
|---|---|
| NOZZLE SN3 (x1) | MC |
| NOZZLE SN4 (x1) | MC |
| NOZZLE SN5 (x2) | MC |
| NOZZLE SN6 (x6) | MC |

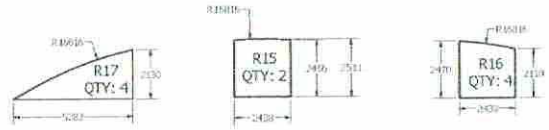
STS Representative Signature: [signature] Date: Sept 2/19.

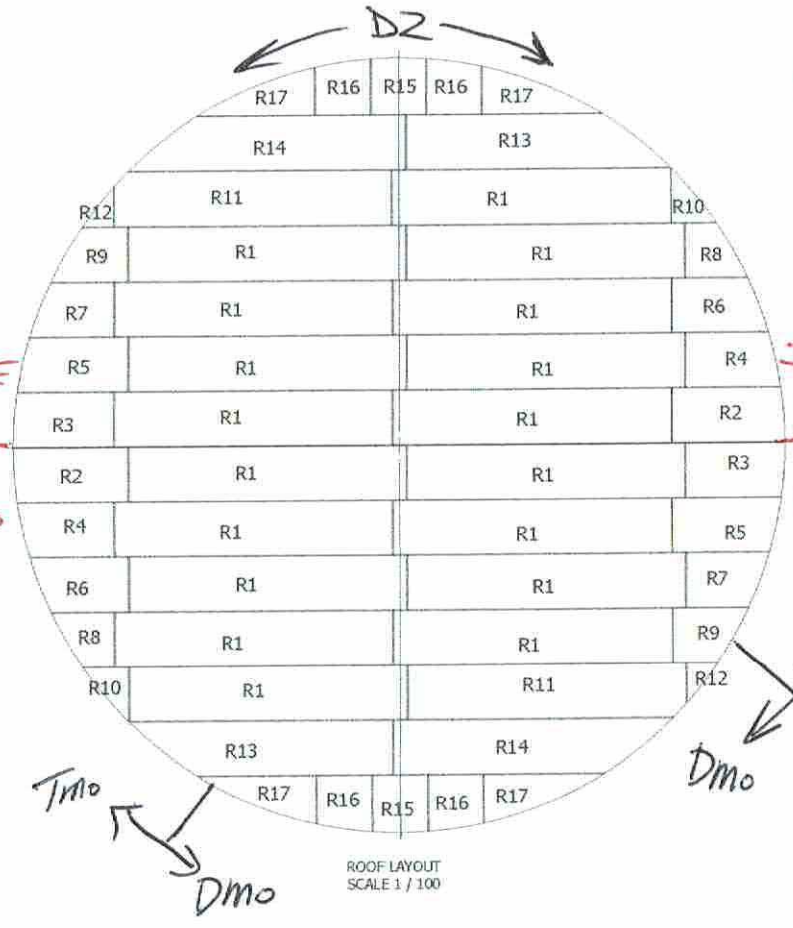
Client Representative Signature: [signature] Date: Sept 2/19

NDT Representative Signature: MC Date: 2019-09-02

MICHAEL LAFRENIERE
CGSB 48.9712 MT-PT-UT
LEVEL II INSPECTOR
CERT#: 12977



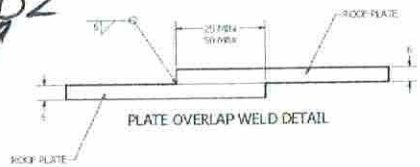




ROOF LAYOUT
SCALE 1 / 100

| PARTS LIST | | | | | |
|---|---|---|---|---|---|
| ITEM | QTY | DESCRIPTION | MATERIAL | UNIT WT (KG) | TOT WT (KG) |
| R1 | 18 | PL 6.35 X 2438 X 12192 | G40.21M-260W | 1481 | 26658 |
| R2 | 2 | PL 6.35 X 2438 X 5002 | G40.21M-260W | 601 | 1202 |
| R3 | 2 | PL 6.35 X 2438 X 4596 | G40.21M-260W | 527 | 1054 |
| R4 | 2 | PL 6.35 X 2438 X 4229 | G40.21M-260W | 485 | 970 |
| R5 | 2 | PL 6.35 X 2438 X 4805 | G40.21M-260W | 559 | 1118 |
| R6 | 2 | PL 6.35 X 2438 X 4317 | G40.21M-260W | 473 | 946 |
| R7 | 2 | PL 6.35 X 2438 X 3711 | G40.21M-260W | 398 | 796 |
| R8 | 2 | PL 6.35 X 2438 X 2805 | G40.21M-260W | 261 | 522 |
| R9 | 2 | PL 6.35 X 2438 X 2411 | G40.21M-260W | 334 | 668 |
| R10 | 2 | PL 6.35 X 2438 X 2942 | G40.21M-260W | 192 | 384 |
| R11 | 2 | PL 6.35 X 2438 X 12192 | G40.21M-260W | 1471 | 2943 |
| R12 | 2 | PL 6.35 X 1806 X 1806 | G40.21M-260W | 63 | 126 |
| R13 | 2 | PL 6.35 X 2438 X 11586 | G40.21M-260W | 1235 | 2470 |
| R14 | 2 | PL 6.35 X 2438 X 12192 | G40.21M-260W | 1358 | 2716 |
| R15 | 2 | PL 6.35 X 2438 X 2511 | G40.21M-260W | 300 | 600 |
| R16 | 4 | PL 6.35 X 2438 X 2470 | G40.21M-260W | 292 | 1168 |
| R17 | 4 | PL 6.35 X 2130 X 5282 | G40.21M-260W | 326 | 1304 |
| | | | | TOT WT: | 46,400 |

COMPRESSION RING TOPSIDE

COMPRESSION RING OVER HEAD.




| REVISION HISTORY | | |
|---|---|---|
| REV | DESCRIPTION | DATE |
| 1 | ISSUED FOR CONSTRUCTION | 27/09/21 |

DRAWN: MARC LOGIES 24/2019
CHECKED
DP
APPD
RAILSAFE

TITLE: ROOF LAYOUT

BAKER LAKE WHALE TAIL PROJECT FLOOR AND ROOF LAYOUT FOR 10,000CUM TANK

SIZE: A1 | DRAWING: 315-M1 | REV: 1

SCALE: 1 | SHEET 2 OF 2

**Exhibit 26, Rev 1**

# VISUAL TEST REPORT

Customer: AGNICO EAGLE

Location: BAKER LAKE

Code Requiring Test: API 650 (section 8.5.2) Reason for Test: New Construction

A weld shall be acceptable by visual examination if the inspection shows the following.

a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.
c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.) of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).
d) The reinforcement of the welds on all thicknesses:

| Plate Thickness mm (in.) | Maximum Reinforcement Thickness mm (in.) | |
|---|---|---|
| | Vertical Joints | Horizontal Joints |
| ≤ 13 (1/2) | 2.5 (3/32) | 3 (1/8) |
| > 13 (1/2) to 25 (1) | 3 (1/8) | 5 (3/16) |
| > 25 (1) | 5 (3/16) | 6 (1/4) |

Surface Condition (As Welded)

Test Solution: N/A Test Date(s): AUGUST 19/19

Tested by: MATT MACKENZIE Ambient Conditions: 10°

Items Tested:

COMPRESSION RING WELD

Results:

NO DEFECTS WERE FOUND. ALL WELDING ACCEPTABLE

STS Representative Signature: [signature] Date: Aug 19/19

Client Representative Signature: Bruno [signature] Date: August 20/19

**Exhibit 26, Rev 1**

# VISUAL TEST REPORT

Customer: AGNICO EAGLE

Location: BAKER LAKE

Code Requiring Test: API 650 (section 8.5.2) Reason for Test: New Construction

A weld shall be acceptable by visual examination if the inspection shows the following.

a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.
c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.) of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).
d) The reinforcement of the welds on all thicknesses:

| Plate Thickness mm (in.) | Maximum Reinforcement Thickness mm (in.) | |
|---|---|---|
| | Vertical Joints | Horizontal Joints |
| ≤ 13 (1/2) | 2.5 (3/32) | 3 (1/8) |
| > 13 (1/2) to 25 (1) | 3 (1/8) | 6 (3/16) |
| > 25 (1) | 5 (3/16) | 6 (1/4) |

Surface Condition (As Welded)

Test Solution: N/A Test Date(s): Aug 25/19

Tested by: MATT MACKENZIE Ambient Conditions: 12°

Items Tested:

ROOF WELDS

Results:

NO DEFECTS WERE FOUND. ALL WELDING ACCEPTABLE

STS Representative Signature: [signature] Date: Aug 25/19.

Client Representative Signature: [signature] Date: Aug 28/19

Exhibit 15, Rev 1

# VACUUM BOX TEST REPORT – ROOF PLATE WELDS

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TANK 7

Equipment Type:

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(A vacuum box/soap solution test for roof plate weld seams is required for new construction or major alterations, no visible leaks should be observed)

Test Solution: Water / Snoop Ambient Conditions: 10°

Test Date(s): AUGUST 28/19 Surface Condition: CLEAN.

Tested by: MATT MACKENZIE. Surface Test Temperature:

Pressure Gauge:

Items Tested:

ROOF PLATES WELDS

Results:

NO LEAK DETECTED

STS Representative Signature: [signature] Date: Aug 28/19.

Client Representative Signature: [signature] Date: Sept 3, 19

Exhibit 19, Rev 1

# DIMENSIONAL CHECK REPORT – PLUMBNESS

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TK 7

Equipment Type: DIESEL STORAGE TANK

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(The tank shell will be checked for plumb at 12" below the tank roof. Plumb measurements will be checked at 45 degree intervals or less, max. 20' spacing)

Test Date(s): Aug 26/19

Tested by: Matt MacKenzie

Test Results:

The Maximum out of plumbness of the **columns** does not exceed 1/200 of the total height

STS Representative Signature: [signature] Date: Aug 26/19

Client Representative Signature: [signature] Date: Aug 26/19

# VISUAL TEST REPORT

Customer: AGNICO EAGLE

Location: BAKER LAKE

Code Requiring Test: API 650 (section 8.5.2) Reason for Test: New Construction

A weld shall be acceptable by visual examination if the inspection shows the following.

a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.
c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.) of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).
d) The reinforcement of the welds on all thicknesses:

| Plate Thickness mm (in.) | Maximum Reinforcement Thickness mm (in.) | |
|---|---|---|
| | Vertical Joints | Horizontal Joints |
| ≤ 13 (1/2) | 2.5 (3/32) | 3 (1/8) |
| > 13 (1/2) to 25 (1) | 3 (1/8) | 5 (3/16) |
| > 25 (1) | 5 (3/16) | 6 (1/4) |

Surface Condition (As Welded)

Test Solution: N/A Test Date(s): Aug 26/19

Tested by: Matt Mackenzie Ambient Conditions: 12°

Items Tested:

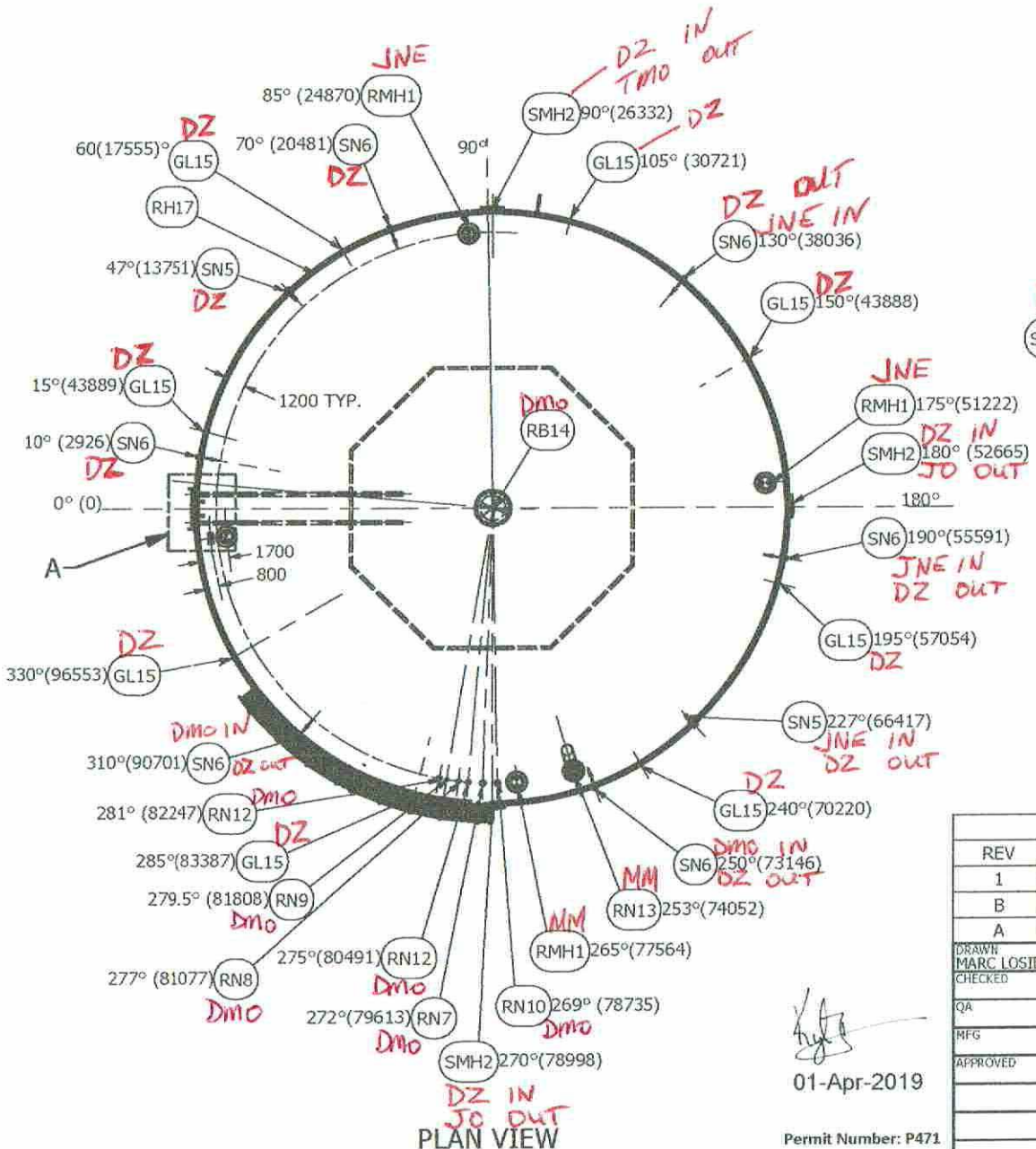
ROOF STUCTURE FIELD WELDS.

Results:

NO DEFECTS WERE FOUND. ALL WELDING ACCEPTABLE

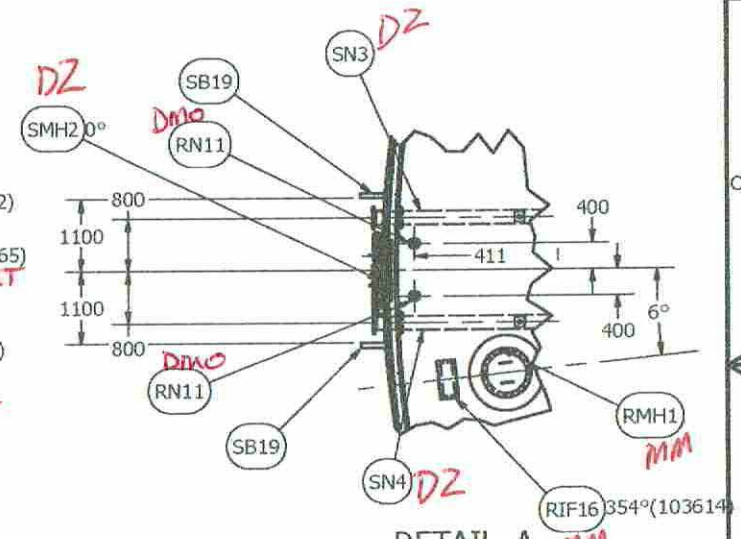
STS Representative Signature: [signature] Date: Aug 26/19

Client Representative Signature: [signature] Date: August 28/19




PLAN VIEW

DIMENSION IN () DENOTES
ARC LENGTH ON THE EXTERIOR OF
THE SHELL FROM 0° IN MILLIMETRES
MEASURED ON COURSE ONE (1) FOR SHELL NOZZLES
AND ON COURSE FIVE (5) FOR ROOF NOZZLES




DETAIL A
SCALE 1/75

MM

| REVISION HISTORY | | |
|---|---|---|
| REV | DESCRIPTION | DATE |
| 1 | ISSUED FOR CONSTRUCTION | 3/27/2019 |
| B | ISSUED FOR REVIEW | 3/25/2019 |
| A | ISSUED FOR REVIEW | 2/26/2019 |

DRAWN MARC LOSIER 2/19/2019
CHECKED
QA
MFG
APPROVED

GENERAL ARRANGEMENT AND NOZZLE LAYOUT

TITLE
BAKER LAKE WHALE TAIL PROJECT - 10M LITERS - TANK #7: 6170TNK42

SIZE A3 | DWG NO 315-M6 | REV 1
SCALE 1/250 | SHEET 1 OF 6

01-Apr-2019

Permit Number: P471

# VISUAL TEST REPORT

Customer: AGNICO EAGLE

Location: BAKER LAKE

Code Requiring Test: API 650 (section 8.5.2) Reason for Test: New Construction

A weld shall be acceptable by visual examination if the inspection shows the following.

a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.
c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.) of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).
d) The reinforcement of the welds on all thicknesses:

| Plate Thickness mm (in.) | Maximum Reinforcement Thickness mm (in.) | |
|---|---|---|
| | Vertical Joints | Horizontal Joints |
| ≤ 13 (1/2) | 2.5 (3/32) | 3 (1/8) |
| > 13 (1/2) to 25 (1) | 3 (1/8) | 5 (3/16) |
| > 25 (1) | 5 (3/16) | 6 (1/4) |

Surface Condition (As Welded)

Test Solution: N/A Test Date(s): Aug 28/19

Tested by: MATT MACKENZIE Ambient Conditions: 12°

Items Tested:

NOZZLES WELDS.

Results:

NO DEFECTS WERE FOUND. ALL WELDING ACCEPTABLE

STS Representative Signature: [signature] Date: Aug 28/19

Client Representative Signature: [signature] Date: August 28/19

Exhibit 31, Rev 1

# DIMENSIONAL CHECK REPORT- NOZZLES

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TK 7

Equipment Type: DIESEL STORAGE TANK

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(Nozzles (excluding manholes) shall be installed within the following tolerances:
a) specified projection from outside of tank shell to extreme face of flange: ±5 mm (3/16 in.);
b) elevation of shell nozzle or radial location of a roof nozzle: ±6 mm (1/4 in.);
c) flange tilt in any plane, measured on the flange face:
±1/2 degree for nozzles greater than NPS 12 in. nominal diameter,
±3 mm (1/8 in.) at the outside flange diameter for nozzles NPS 12 and smaller;
d) flange bolt hole orientation: ±3 mm (1/8 in.).)

Test Date(s): Sept 2/19

Tested by: Matt MacKenzie

Test Results:

ALL NOZZLES ARE WITHIN TOLERENCES

STS Representative Signature: _____ Date: Sept 2/19

Client Representative Signature: _____ Date: Sept 3, 19

Exhibit 12, Rev 1

# AIR TEST REPORT – NOZZLE REINFORCEMENT PLATE WELDS

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TANK 7

Equipment Type:

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(An air pressure/soap solution test for nozzle reinforcement plate weld seams is required for new construction or major alterations, no visible leaks should be observed)

Test Pressure: 100 kPa (15 psi) Surface Condition (As Welded, Painted, Blasted)

Test Solution: Water / Snoop: Test Date(s): Sept 2/19

Tested by: Matt MacKenzie Pressure Gauge: Ambient Conditions: 7°

Items Tested:

SHELL NOZZLES

Results:

NO LEAKS WERE DETECTED AT THE TIME OF THE INSPECTION

STS Representative Signature: Date: Sept 2/19.

Client Representative Signature: Date: Sept 3, 19

# VISUAL TEST REPORT

Customer: AGNICO EAGLE

Location: BAKER LAKE

Code Requiring Test: API 650 (section 8.5.2) Reason for Test: New Construction

A weld shall be acceptable by visual examination if the inspection shows the following.

a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.
c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.) of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).
d) The reinforcement of the welds on all thicknesses:

| Plate Thickness mm (in.) | Maximum Reinforcement Thickness mm (in.) | |
|---|---|---|
| | Vertical Joints | Horizontal Joints |
| ≤ 13 (1/2) | 2.5 (3/32) | 3 (1/8) |
| > 13 (1/2) to 25 (1) | 3 (1/8) | 6 (3/16) |
| > 25 (1) | 5 (3/16) | 6 (1/4) |

Surface Condition (As Welded)

Test Solution: N/A Test Date(s): Aug 28/19

Tested by: Matt MacKenzie Ambient Conditions: 12°

Items Tested:

MANWAY WELDS.

Results:

NO DEFECTS WERE FOUND. ALL WELDING ACCEPTABLE

STS Representative Signature: [signature] Date: Aug 28/19.

Client Representative Signature: [signature] Date: August 28/19

Exhibit 32, Rev 1

# DIMENSIONAL CHECK REPORT- MANWAYS

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TK 7

Equipment Type: DIESEL STORAGE TANK

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(Manholes shall be installed within the following tolerances:
a) specified projection from outside of shell to extreme face of flange, ±13 mm (1/2 in.)
b) elevation and angular location, ±13 mm (1/2 in.)
c) flange tilt in any plane, measured across the flange diameter, ±13 mm (1/2 in.))

Test Date(s): Sept 2/19

Tested by: Matt MacKenzie

Test Results:

ALL MANWAYS ARE WITHIN TOLERENCES

STS Representative Signature: Date: Sept 2/19

Client Representative Signature: Date: Sept 3, 19

Exhibit 12, Rev 1

# AIR TEST REPORT – NOZZLE REINFORCEMENT PLATE WELDS

Customer: AGNICO EAGLE

Location: BAKER LAKE

Equipment Tag No.: TANK 7

Equipment Type:

Equipment Description:

Code Requiring Test: API 650 Reason for Test: New Construction

(An air pressure/soap solution test for nozzle reinforcement plate weld seams is required for new construction or major alterations, no visible leaks should be observed)

Test Pressure: 100 kPa (15 psi) Surface Condition (As Welded, Painted, Blasted)

Test Solution: Water / Snoop: Test Date(s): Sept 2/19

Tested by: Matt MacKenzie Pressure Gauge: Ambient Conditions: 7°

Items Tested:

SHELL MANWAYS

Results:

NO LEAKS WERE DETECTED AT THE TIME OF THE INSPECTION

STS Representative Signature: Date: Sept 2/19.

Client Representative Signature: Date: Sept 3, 19

# VISUAL TEST REPORT

Customer: AGNICO EAGLE

Location: BAKER LAKE

Code Requiring Test: API 650 (section 8.5.2) Reason for Test: New Construction

A weld shall be acceptable by visual examination if the inspection shows the following.

a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.
c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.) of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).
d) The reinforcement of the welds on all thicknesses:

| Plate Thickness mm (in.) | Maximum Reinforcement Thickness mm (in.) | |
|---|---|---|
| | Vertical Joints | Horizontal Joints |
| ≤ 13 (1/2) | 2.5 (3/32) | 3 (1/8) |
| > 13 (1/2) to 25 (1) | 3 (1/8) | 5 (3/16) |
| > 25 (1) | 5 (3/16) | 6 (1/4) |

Surface Condition (As Welded)

Test Solution: N/A Test Date(s): Aug 28/19

Tested by: Matt MacKenzie Ambient Conditions: 12°

Items Tested:

INTERNALS WELDS.

Results:

NO DEFECTS WERE FOUND. ALL WELDING ACCEPTABLE

STS Representative Signature: [signature] Date: Aug 28/19

Client Representative Signature: [signature] Date: Aug. 28/19

# VISUAL TEST REPORT

Customer: AGNICO EAGLE

Location: BAKER LAKE

Code Requiring Test: API 650 (section 8.5.2) Reason for Test: New Construction

A weld shall be acceptable by visual examination if the inspection shows the following.

a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.
c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.) of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).
d) The reinforcement of the welds on all thicknesses:

| Plate Thickness mm (in.) | Maximum Reinforcement Thickness mm (in.) | |
|---|---|---|
| | Vertical Joints | Horizontal Joints |
| ≤ 13 (1/2) | 2.5 (3/32) | 3 (1/8) |
| > 13 (1/2) to 25 (1) | 3 (1/8) | 5 (3/16) |
| > 25 (1) | 5 (3/16) | 6 (1/4) |

Surface Condition (As Welded)

Test Solution: N/A Test Date(s): Sept 2/19

Tested by: Matt MacKenzie Ambient Conditions: 7°

Items Tested:

EXTERNALS/ ATTACHEMENTS WELDS.

Results:

NO DEFECTS WERE FOUND. ALL WELDING ACCEPTABLE

STS Representative Signature: [signature] Date: Sept 2/19.

Client Representative Signature: [signature] Date: Sept 3, 19

**Exhibit 26, Rev 1**

# VISUAL TEST REPORT

Customer: AGNICO EAGLE

Location: BAKER LAKE

Code Requiring Test: API 650 (section 8.5.2) Reason for Test: New Construction

A weld shall be acceptable by visual examination if the inspection shows the following.

a) There are no crater cracks, other surface cracks or arc strikes in or adjacent to the welded joints.
b) Maximum permissible undercut is 0.4 mm (1/64 in.) in depth for vertical butt joints, vertically oriented permanent attachments, attachment welds for nozzles, manholes, flush-type openings, and the inside shell-to-bottom welds. For horizontal butt joints, horizontally oriented permanent attachments, and annular-ring butt joints, the maximum permissible undercut is 0.8 mm (1/32 in.) in depth.
c) The frequency of surface porosity in the weld does not exceed one cluster (one or more pores) in any 100 mm (4 in.) of length, and the diameter of each cluster does not exceed 2.5 mm (3/32 in.).
d) The reinforcement of the welds on all thicknesses:

| Plate Thickness mm (in.) | Maximum Reinforcement Thickness mm (in.) | |
|---|---|---|
| | Vertical Joints | Horizontal Joints |
| ≤ 13 (1/2) | 2.5 (3/32) | 3 (1/8) |
| > 13 (1/2) to 25 (1) | 3 (1/8) | 5 (3/16) |
| > 25 (1) | 5 (3/16) | 6 (1/4) |

Surface Condition (As Welded)

Test Solution: N/A Test Date(s): Aug 29/19

Tested by: Matt MacKenzie Ambient Conditions: 10°

Items Tested:

STAIRS AND PLATFORMS WELDS.

Results:

NO DEFECTS WERE FOUND. ALL WELDING ACCEPTABLE

STS Representative Signature: [signature] Date: Aug 29/19

Client Representative Signature: [signature] Date: Sept 3, 19

# QUALITY CONTROL MANUAL

## DEFICIENCY PUNCH LIST RECORD

Exhibit 29, Rev 1

| **Project:** AEM, BAKER LAKE | | **Project No.:** Inukshuk Construction -1 | **Tank Tag:** Tk-7<br>**Date:** Sept 4/19 | |
|---|---|---|---|---|
| Item No. | Drawing No. | Deficiency | Date Completed | Sign Off |
| 1 | | Internal piping Torque. | Sept 4/19. | BR |
| 2 | | Clean up rocks inside tank. | Sept 4/19. | B. R |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |

| | | |
|---|---|---|
| Matthew MacKenzie<br>STORAGE TANK SOLUTIONS | Signature | Sept 4/19.<br>Date: |
| BRUNO ROY<br>Agnico Eagle Representative | Signature | Sept 4/19<br>Date: |

| | | | |
|---|---|---|---|
| **Client :** | **Inukshuk Construction Ltd.** | **Date d'intervention :** **Intervention date :** | 2019-08-30 to 2019-09-03 |
| **Adresse/Address :** | 1869 Upper Water St, Halifax, NS, B3J 1S9 | | |
| **Contact :** | Marc Losier | **Date du rapport :** **Report date :** | 2019-09-02 |
| **Entrepreneur :** **Contractor :** | Storage Tank Solutions | **Nº dossier :** **File no :** | **00197** |
| **Endroit du travail :** **Job location :** | Baker Lake, Nunavut | **Commande :** **Order :** | |



**INSP. VISUELLE / VISUAL INSP.** ☐ **MAGNÉTOSCOPIE / MAGNETIC PARTICLES** ☒ **RESSUAGE / LIQUID PENETRANT** ☐ **ULTRASONS / ULTRASONIC** ☐

**DESCRIPTION :**

**BAKER LAKE WHALE TAIL PROJECT – 10M LITERS TANK #7 (6170TNK42)**

Magnetic particles test on all shell openings (nozzles, manways and reinforcement pads) on the tank, in accordance of API 650.

Reference Drawing No: 315-M6 Rev 1 (6 sheets) & 315-M10 Rev

## INSP. VISUELLE / VISUAL INSP.

**NORME :** **SPECIFICATION :**

**N° équip. :** **Equip. no :**

## MAGNÉTOSCOPIE / MAGNETIC PARTICLES

**NORME :** **SPECIFICATION :** API 650 & ASME Section V article 7

**N° équip. :** **Equip. no :** MPTR38

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Ampérage :** **Amperage :** | Culasse/Yoke | **Continue** **Continuous** | ☒ | **Résiduelle** **Residual** | ☐ | **Humide** **Wet** | ☐ | **Sèche** **Dry** | ☒ |
| **Longitudinale** **Longitudinal** | ☒ | **Circulaire** **Circular** | ☐ | **C.A.** **A.C.** | ☒ | **C.C.** **D.C.** | ☐ | **Démagnétisée** **Demagnetized** | ☐ |

## RESSUAGE / LIQUID PENETRANT

**NORME :** **SPECIFICATION :**

**N° équip. :** **Equip. no :**

**Pénétrant/Penetrant :** **Émulsifiant/Emulsifier :** **Révélateur/Developer :**

**Temps/Time :** **Temps/Time :** **Temps/Time :**

## ULTRASONS / ULTRASONIC

**NORME :** **SPECIFICATION :**

**ÉTALONNAGE/CALIBRATION :**

**Bloc/Block :** **Trou/Hole :** **C.A.D. /D.A.C. :** ☐

**APPAREIL/EQUIPMENT :**

**Instrument :** **Couplant :** **Échelle/Sweep length :**

**N° équip./Equip. no :** **Palpeur/Transducer :**

**RÉSULTATS/RESULTS :**

After inspection, all the openings components welds were found acceptable as the standard.

See the result details as described in the table below and the photos attached

Note: Visual inspection was performed by client.

| | | |
|---|---|---|
| **Techniciens :** **Technicians :** Michael Lafreniere<br>CSA W178.2 Level II<br>CGSB 48.9712 UT-MT-PT Level II | **Assistants:** | **Approuvé par :** **Approved by :**<br>CSA W178.2 |

| | | | |
|---|---|---|---|
| **Client :** | **Inukshuk Construction Ltd.** | **Date d'intervention :** **Intervention date :** | 2019-08-30 to 2019-09-03 |
| **Adresse/Address :** | 1869 Upper Water St, Halifax, NS, B3J 1S9 | | |
| **Contact :** | Marc Losier | **Date du rapport :** **Report date :** | 2019-09-02 |
| **Entrepreneur :** **Contractor :** | Storage Tank Solutions | **Nº dossier :** **File no :** | **00197** |
| **Endroit du travail :** **Job location :** | Baker Lake, Nunavut | **Commande :** **Order :** | |



## MAGNETIC PARTICULES INSPECTION TANK-- RESULT TABLE

| SHELL OPENING PART # | DEGREE LOCATION | INSPECTION WELDS | MT RESULTS | |
|---|---|---|---|---|
| | | | INSIDE | OUTSIDE |
| Manway SMH2 | 0 | Circular / Reinforced pad / Seam | Accepted | Accepted |
| Nozzle SN3 | 3 (approx.) | Circular / Reinforced pad | Accepted | Accepted |
| Nozzle SN6 | 10 | Circular / Reinforced pad | Accepted | Accepted |
| Nozzle SN5 | 47 | Circular / Reinforced pad | Accepted | Accepted |
| Nozzle SN6 | 70 | Circular / Reinforced pad | Accepted | Accepted |
| Manway SMH2 | 90 | Circular / Reinforced pad / Seam | Accepted | Accepted |
| Nozzle SN6 | 130 | Circular / Reinforced pad | Accepted | Accepted |
| Manway SMH2 | 180 | Circular / Reinforced pad / Seam | Accepted | Accepted |
| Nozzle SN6 | 190 | Circular / Reinforced pad | Accepted | Accepted |
| Nozzle SN5 | 227 | Circular / Reinforced pad | Accepted | Accepted |
| Nozzle SN6 | 250 | Circular / Reinforced pad | Accepted | Accepted |
| Manway SMH2 | 270 | Circular / Reinforced pad / Seam | Accepted | Accepted |
| Nozzle SN6 | 310 | Circular / Reinforced pad | Accepted | Accepted |
| Nozzle SN4 | 357(approx.) | Circular / Reinforced pad | Accepted | Accepted* |

*Accepted after a grinding of surface indication.

Note: Location degree are taken as the reference drawing No: 315-M6 Rev 1 (sheet 1)



| | | |
|---|---|---|
| **Techniciens :** **Technicians :** Michael Lafreniere<br>CSA W178.2 Level II<br>CGSB 48.9712 UT-MT-PT Level II | **Assistants:** | **Approuvé par :** **Approved by :**<br>CSA W178.2 |

| | | | |
|---|---|---|---|
| **Client :** | **Inukshuk Construction Ltd.** | **Date d'intervention :** **Intervention date :** | 2019-08-30 to 2019-09-03 |
| **Adresse/Address :** | 1869 Upper Water St, Halifax, NS, B3J 1S9 | | |
| **Contact :** | Marc Losier | **Date du rapport :** **Report date :** | 2019-09-02 |
| **Entrepreneur :** **Contractor :** | Storage Tank Solutions | **Nº dossier :** **File no :** | **00197** |
| **Endroit du travail :** **Job location :** | Baker Lake, Nunavut | **Commande :** **Order :** | |




**Photo #1:**

**Overview**

**Baker lake whale tail project – 10m liters tank #7**



| | | |
|---|---|---|
| **Techniciens :** **Technicians :** Michael Lafreniere<br>CSA W178.2 Level II<br>CGSB 48.9712 UT-MT-PT Level II | **Assistants:** | **Approuvé par :** **Approved by :**<br>CSA W178.2 |

| | | | |
|---|---|---|---|
| **Client :** | **Inukshuk Construction Ltd.** | **Date d'intervention :**<br>**Intervention date :** | 2019-08-30 to 2019-09-03 |
| **Adresse/Address :** | 1869 Upper Water St,<br>Halifax, NS, B3J 1S9 | | |
| **Contact :** | Marc Losier | **Date du rapport :**<br>**Report date :** | 2019-09-02 |
| **Entrepreneur :**<br>**Contractor :** | Storage Tank Solutions | **N° dossier :**<br>**File no :** | **00197** |
| **Endroit du travail :**<br>**Job location :** | Baker Lake, Nunavut | **Commande :**<br>**Order :** | |



**Photo #2:** Manway (0 degree)
Nozzles SN3 (3degree) & SN4 (357 degree)


**Photo #3:** Nozzle SN6 (10 degree)


**Photo #4:** Nozzle SN5 (47 degree)


**Photo #5:** Nozzle SN6 (70 degree)

**Photo #6:** Manway (90 degree)


**Photo #7:** Nozzle SN6 (130 degree)

| | | |
|---|---|---|
| **Techniciens :**<br>**Technicians :** Michael Lafreniere<br>CSA W178.2 Level II<br>CGSB 48.9712 UT-MT-PT Level II | **Assistants:** | **Approuvé par :**<br>**Approved by :**<br>CSA W178.2 |

| | | | |
|---|---|---|---|
| **Client :** | **Inukshuk Construction Ltd.** | **Date d'intervention :**<br>**Intervention date :** | 2019-08-30 to 2019-09-03 |
| **Adresse/Address :** | 1869 Upper Water St,<br>Halifax, NS, B3J 1S9 | **Date du rapport :**<br>**Report date :** | 2019-09-02 |
| **Contact :** | Marc Losier | | |
| **Entrepreneur :**<br>**Contractor :** | Storage Tank Solutions | **Nº dossier :**<br>**File no :** | **00197** |
| **Endroit du travail :**<br>**Job location :** | Baker Lake, Nunavut | **Commande :**<br>**Order :** | |



**Photo #8:** Manway (180 degree)


**Photo #9:** Nozzle SN6 (190 degree)


**Photo #10:** Nozzle SN5 (227 degree)


**Photo #11:** Nozzle SN6 (250 degree)

**Photo #12:** Manway (270 degree)

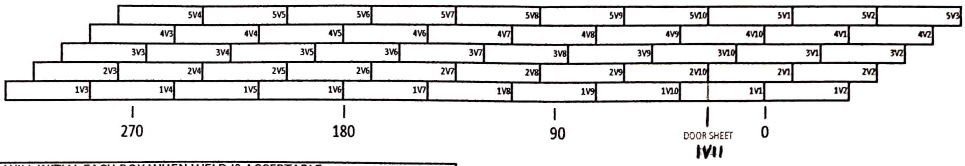

**Photo #13:** Nozzle SN6 (310 degree)

| | | |
|---|---|---|
| **Techniciens :**<br>**Technicians :** Michael Lafreniere<br>CSA W178.2 Level II<br>CGSB 48.9712 UT-MT-PT Level II | **Assistants:** | **Approuvé par :**<br>**Approved by :**<br>CSA W178.2 |

| | | | |
|---|---|---|---|
| **Client :** | **Inukshuk Construction Ltd.** | **Date d'intervention :** **Intervention date :** | 2019-08-30 to 2019-09-03 |
| **Adresse/Address :** | 1869 Upper Water St, Halifax, NS, B3J 1S9 | | |
| **Contact :** | Marc Losier | **Date du rapport :** **Report date :** | 2019-09-02 |
| **Entrepreneur :** **Contractor :** | Storage Tank Solutions | **N° dossier :** **File no :** | **00197** |
| **Endroit du travail :** **Job location :** | Baker Lake, Nunavut | **Commande :** **Order :** | |



# Tank #7 Baker Lake (AEM)




NDT TECHNICIAN WILL INITIAL EACH BOX WHEN WELD IS ACCEPTABLE

B ---> BOTTOM OF THE VERT (0-6") | M ---> MIDDLE OF THE VERT (45"-51") | T ---> TOP OF THE VERT (90"-96")

## VERTICAL SEAMS MAPPING UT

| | B | M | T | FULL |
|---|---|---|---|---|
| 1V1 | UT FULL BECAUSE NOZZLE INTO VERT | | | MC |
| 1V2 | MC | MC | MC | |
| 1V3 | MC | MC | MC | |
| 1V4 | MC | MC | MC | |
| 1V5 | MC | MC | MC | |
| 1V6 | UT FULL BECAUSE NOZZLE INTO VERT | | | MC |
| 1V7 | MC | MC | MC | |
| 1V8 | MC | MC | MC | |
| 1V9 | MC | MC | MC | |
| 1V10 | MC | MC | MC | |
| 1V11 | MC | MC | MC | |

| | B | T |
|---|---|---|
| 2V1 | MC | MC |
| 2V2 | MC | MC |
| 2V3 | MC | MC |
| 2V4 | MC | MC |
| 2V5 | MC | MC |
| 2V6 | MC | MC |
| 2V7 | MC | MC |
| 2V8 | MC | MC |
| 2V9 | MC | MC |
| 2V10 | MC | MC |

| | B | T |
|---|---|---|
| 3V1 | MC | MC |
| 3V2 | MC | MC |
| 3V3 | MC | MC |
| 3V4 | MC | MC |
| 3V5 | MC | MC |
| 3V6 | MC | MC |
| 3V7 | MC | MC |
| 3V8 | MC | MC |
| 3V9 | MC | MC |
| 3V10 | MC | MC |

| | B | T |
|---|---|---|
| 4V1 | MC | MC |
| 4V2 | MC | MC |
| 4V3 | MC | MC |
| 4V4 | MC | MC |
| 4V5 | MC | MC |
| 4V6 | MC | MC |
| 4V7 | MC | MC |
| 4V8 | MC | MC |
| 4V9 | MC | MC |
| 4V10 | MC | MC |

| | B | T |
|---|---|---|
| 5V1 | MC | N/A |
| 5V2 | MC | N/A |
| 5V3 | MC | N/A |
| 5V4 | MC | N/A |
| 5V5 | MC | N/A |
| 5V6 | MC | N/A |
| 5V7 | MC | N/A |
| 5V8 | MC | N/A |
| 5V9 | MC | N/A |
| 5V10 | MC | N/A |

## HORIZONTAL SEAMS MAPPING UT

| | | |
|---|---|---|
| H1V2 | 30"-36" | MC |
| H1V8 | 42"-48" | MC |
| Middle door sheet | | MC |

| | | |
|---|---|---|
| H2V3 | 24"-30" | MC |
| H2V9 | 36"-42" | MC |

| | | |
|---|---|---|
| H3V1 | 60"-66" | MC |
| H3V7 | 42"-48" | MC |

| | | |
|---|---|---|
| H4V5 | 24"-30" | MC |
| H4V9 | 36"-42" | MC |

## MAG PARTICLE

| | |
|---|---|
| SHELL MANHOLE 0° | MC |
| SHELL MANHOLE 90° | MC |
| SHELL MANHOLE 180° | MC |
| SHELL MANHOLE 270° | MC |

| | |
|---|---|
| SHELL MANHOLE NECK (SEAM) 0° | MC |
| SHELL MANHOLE NECK (SEAM) 90° | MC |
| SHELL MANHOLE NECK (SEAM) 180° | MC |
| SHELL MANHOLE NECK (SEAM) 270° | MC |

| | |
|---|---|
| NOZZLE SN3 (x1) | MC |
| NOZZLE SN4 (x1) | MC |
| NOZZLE SN5 (x2) | MC |
| NOZZLE SN6 (x6) | MC |

STS Representative Signature: [signature] Date: Sept 2/19.

Client Representative Signature: [signature] Date: Sept 2/19

NDT Representative Signature: MC Date: 2019-09-02

MICHAEL LAFRENIERE
CGSB 48.9712 MT-PT-UT
LEVEL II INSPECTOR
CERT#: 12977

**CLIENT QUALITY INSPECTION PLAN**

| | | |
|---|---|---|
| **Techniciens :** **Technicians :** Michael Lafreniere<br>CSA W178.2 Level II<br>CGSB 48.9712 UT-MT-PT Level II | **Assistants:** | **Approuvé par :** **Approved by :** CSA W178.2 |

| | | | |
|---|---|---|---|
| **Client :** | **Inukshuk Construction Ltd.** | **Date d'intervention :** **Intervention date :** | 2019-08-30 to 2019-09-03 |
| **Adresse/Address :** | 1869 Upper Water St, Halifax, NS, B3J 1S9 | | |
| **Contact :** | Marc Losier | **Date du rapport :** **Report date :** | 2019-09-02 |
| **Entrepreneur :** **Contractor :** | Storage Tank Solutions | **N° dossier :** **File no :** | **00197** |
| **Endroit du travail :** **Job location :** | Baker Lake, Nunavut | **Commande :** **Order :** | |



**INSP. VISUELLE / VISUAL INSP.** ☐ **MAGNÉTOSCOPIE / MAGNETIC PARTICLES** ☐ **RESSUAGE / LIQUID PENETRANT** ☐ **ULTRASONS / ULTRASONIC** ☒

**DESCRIPTION :**

**BAKER LAKE WHALE TAIL PROJECT – 10M LITERS TANK #7 (6170TNK42)**

Ultrasonic inspection on butt joints tank in accordance of API 650.

Reference Drawing No: 315-M6 Rev 1 (6 sheets) & 315-M10 Rev

## INSP. VISUELLE / VISUAL INSP.

**NORME :** **SPECIFICATION :** **N° équip. :** **Equip. no :**

## MAGNÉTOSCOPIE / MAGNETIC PARTICLES

**NORME :** **SPECIFICATION :** **N° équip. :** **Equip. no :**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Ampérage :** **Amperage :** | Culasse/Yoke | **Continue** **Continuous** | ☐ | **Résiduelle** **Residual** | ☐ | **Humide** **Wet** | ☐ | **Sèche** **Dry** ☐ |
| **Longitudinale** **Longitudinal** | ☐ | **Circulaire** **Circular** | ☐ | **C.A.** **A.C.** | ☐ | **C.C.** **D.C.** | ☐ | **Démagnétisée** **Demagnetized** ☐ |

## RESSUAGE / LIQUID PENETRANT

**NORME :** **SPECIFICATION :** **N° équip. :** **Equip. no :**

**Pénétrant/Penetrant :** **Émulsifiant/Emulsifier :** **Révélateur/Developer :**

**Temps/Time :** **Temps/Time :** **Temps/Time :**

## ULTRASONS / ULTRASONIC

**NORME :** **SPECIFICATION :** API 650 & ASME Section V article 4

**ÉTALONNAGE/CALIBRATION :**

**Bloc/Block :** IIW & ASME 19mm **Trou/Hole :** 3/32 **C.A.D. /D.A.C. :** ☒

**APPAREIL/EQUIPMENT :**

**Instrument :** GE USM Go **Couplant :** Echogel **Échelle/Sweep length :** 0-150mm

**N° équip./Equip. no :** UT-42 **Palpeur/Transducer :** 0 degree, 1/2"Ø, 2.25Mhz & 70 Ø, 0.75 X0.625", 2.25Mhz

**RÉSULTATS/RESULTS :**

**TANK SPECIFICATIONS :**

- Circumferential length: **105.332 m**
- Height for each ring level: **2438 mm**
- Plate thickness ring level 1 (bottom): **12.5 mm**
- Plate thickness ring level 2: **9.5 mm**
- Plate thickness ring level 3: **7.9 mm**
- Plate thickness ring level 4: **7.9 mm**
- Plate thickness ring level 5 (top): **6.4 mm**

After ultrasonic inspection, repairs of 3 spots and a re-inspection of these repairs, all the 112 spots were found acceptable as the standard. For more details, see the result as described in the table below and the photos attached

Note: Visual inspection was performed by client. The client takes the responsibility to process the inspections with manual ultrasonic test in lieu of radiographic test as describe in API 650 annex U

| | | |
|---|---|---|
| **Techniciens :** **Technicians :** Michael Lafreniere<br>CSA W178.2 Level II<br>CGSB 48.9712 UT-MT-PT Level II | **Assistants:** | **Approuvé par :** **Approved by :**<br>CSA W178.2 |

## ULTRASONIC INSPECTION TANK-- RESULT TABLE

| LOCALISATION | QUANTITY OF SPOTS | ULTRASONIC RESULTS |
|---|---|---|
| **Intersections (T) weld all rings level**<br><br>(150mm vertical & 100mm horizontal) | **80 T spots**<br><br>(All intersections between the 5 rings) | **Accepted**<br><br>After 3 repairs accepted R-1* |
| **Vertical welds ring level 1**<br><br>(150mm vertical) | **10 spots from bottom (0-150mm)**<br><br>**10 spots in the middle (1143 to 1296mm)**<br><br>**2 full welds inspected**<br>The vertical welds 1V1 (position at 0) and 1V6 (position at 180) were 100% inspected due manways crossing | **Accepted** |
| **Horizontal welds all rings level**<br><br>(150mm horizontal) | **8 spots**<br><br>(2 random spots between each rings level) | **Accepted** |
| **Door plate ring level 1 (1V11)**<br><br>(T intersection 150 x 100mm)<br>Middle 150mm vertical<br>Middle 150mm horizontal) | **1 T spot**<br><br>**1 spot vertical from bottom (0-150mm)**<br><br>**1 spot vertical in the middle (1143 to 1296mm)**<br><br>**1 spot horizontal in the middle (1220 to 1370mm)** | **Accepted** |

*The repair spots requirements extensions were accomplished according to API 650 article 8.1.6.



| | | |
|---|---|---|
| **Techniciens :** **Technicians :** Michael Lafreniere<br><br>CSA W178.2 Level II<br>CGSB 48.9712 UT-MT-PT Level II | **Assistants:** | **Approuvé par :** **Approved by :**<br><br>CSA W178.2 |

| | | | |
|---|---|---|---|
| **Client :** | **Inukshuk Construction Ltd.** | **Date d'intervention :**<br>**Intervention date :** | 2019-08-30 to 2019-09-03 |
| **Adresse/Address :** | 1869 Upper Water St,<br>Halifax, NS, B3J 1S9 | | |
| **Contact :** | Marc Losier | **Date du rapport :**<br>**Report date :** | 2019-09-02 |
| **Entrepreneur :**<br>**Contractor :** | Storage Tank Solutions | **Nº dossier :**<br>**File no :** | **00197** |
| **Endroit du travail :**<br>**Job location :** | Baker Lake, Nunavut | **Commande :**<br>**Order :** | |




**Photo #1:**

**Overview**

**Baker lake whale tail project – 10m liters tank #7**



| | | |
|---|---|---|
| **Techniciens :**<br>**Technicians :** Michael Lafreniere<br>CSA W178.2 Level II<br>CGSB 48.9712 UT-MT-PT Level II | **Assistants:** | **Approuvé par :**<br>**Approved by :**<br>CSA W178.2 |

| | | | |
|---|---|---|---|
| **Client :** | **Inukshuk Construction Ltd.** | **Date d'intervention :**<br>**Intervention date :** | 2019-08-30 to 2019-09-03 |
| **Adresse/Address :** | 1869 Upper Water St,<br>Halifax, NS, B3J 1S9 | **Date du rapport :**<br>**Report date :** | 2019-09-02 |
| **Contact :** | Marc Losier | | |
| **Entrepreneur :**<br>**Contractor :** | Storage Tank Solutions | **Nº dossier :**<br>**File no :** | **00197** |
| **Endroit du travail :**<br>**Job location :** | Baker Lake, Nunavut | **Commande :**<br>**Order :** | |



## TYPICAL SPOT LOCATIONS AND DIMENSIONS


**Photo #2:**
**Typical vertical spot from bottom**
**(0-150mm)**

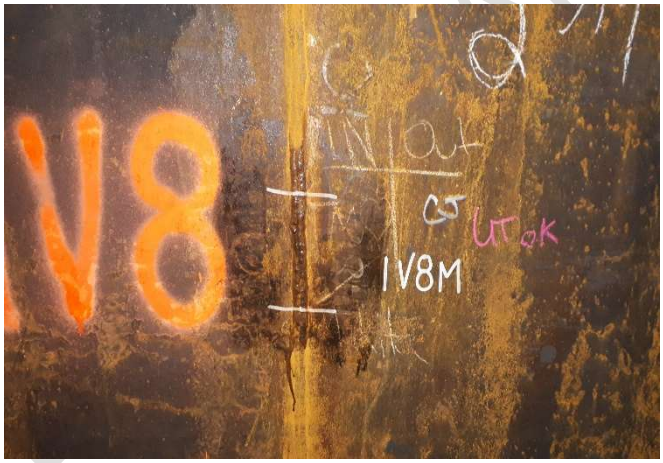



**Photo #3:**
**Typical vertical spot in the middle**
**(1143 to 1296mm)**


**Photo #4:**
**Typical intersection T spot**
**(150mm vertical & 100mm horizontal)**


**Photo #5:**
**Typical horizontal spot**
**(150mm length)**

| | | |
|---|---|---|
| **Techniciens :**<br>**Technicians :** Michael Lafreniere<br>CSA W178.2 Level II<br>CGSB 48.9712 UT-MT-PT Level II | **Assistants:** | **Approuvé par :**<br>**Approved by :**<br>CSA W178.2 |

| | | | |
|---|---|---|---|
| **Client :** | **Inukshuk Construction Ltd.** | **Date d'intervention :**<br>**Intervention date :** | 2019-08-30 to 2019-09-03 |
| **Adresse/Address :** | 1869 Upper Water St,<br>Halifax, NS, B3J 1S9 | | |
| **Contact :** | Marc Losier | **Date du rapport :**<br>**Report date :** | 2019-09-02 |
| **Entrepreneur :**<br>**Contractor :** | Storage Tank Solutions | **Nº dossier :**<br>**File no :** | **00197** |
| **Endroit du travail :**<br>**Job location :** | Baker Lake, Nunavut | **Commande :**<br>**Order :** | |



# ULTRASONIC REJECTABLE DEFECTS LOCATION

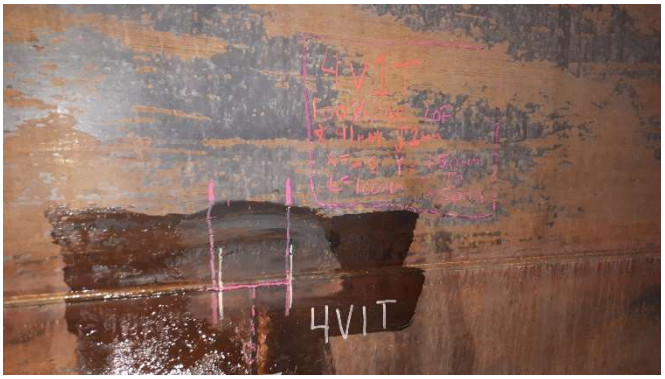



**Photo #6:**
**Lack of fusion found**
**T intersection ring level 4 - plate 1 - Top horizontal position**


**Photo #7:**
**Lack of fusion found**
**T intersection ring level 1 - plate 5 - Top vertical position**

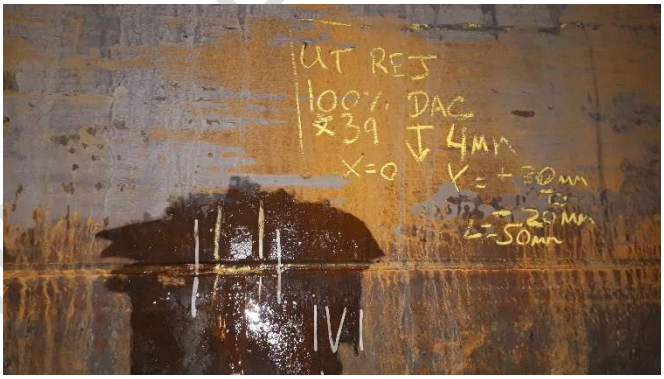



**Photo 8:**
**Lack of fusion found**
**T intersection ring level 1 - plate 1 - Top horizontal position**



| | | |
|---|---|---|
| **Techniciens :**<br>**Technicians :**<br>Michael Lafreniere<br>CSA W178.2 Level II<br>CGSB 48.9712 UT-MT-PT Level II | **Assistants:** | **Approuvé par :**<br>**Approved by :**<br>CSA W178.2 |

| | | | |
|---|---|---|---|
| **Client :** | **Inukshuk Construction Ltd.** | **Date d'intervention :**<br>**Intervention date :** | 2019-08-30 to 2019-09-03 |
| **Adresse/Address :** | 1869 Upper Water St,<br>Halifax, NS, B3J 1S9 | **Date du rapport :**<br>**Report date :** | 2019-09-02 |
| **Contact :** | Marc Losier | | |
| **Entrepreneur :**<br>**Contractor :** | Storage Tank Solutions | **Nº dossier :**<br>**File no :** | **00197** |
| **Endroit du travail :**<br>**Job location :** | Baker Lake, Nunavut | **Commande :**<br>**Order :** | |



# ASME RESULT DETAILS

| Line # | Indication # | Plate thickness (mm) | Angle | Face | Half-Skip# | Amplitude level compared to the CAD (%) | Length (mm) | Angular distance (mm) | Depth | Distance | | Type | Evaluation | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | From X (mm) | From Y (mm) | | | |
| 1 | 1 | 6.4 to 7.9 | 70 | A (top) | 2 | **100% CAD** | 100 | 41 | 2 | -8 | -50 to +50 from top T | LOF* | **REJ** | Locate at the T intersection<br>Ring level 4<br>Plate 1<br>Top horizontal position<br>**ACCEPTED R-1** |
| 2 | 1 | 9.5 to 12.5 | 70 | B (Right) | 2 | **100% CAD** | 20 | 34 | 11 | 0 | -40 from top T | LOF* | **REJ** | Locate at the T intersection<br>Ring level 1<br>Plate 5<br>Top vertical position<br>**ACCEPTED R-1** |
| 3 | 1 | 9.5 to 12.5 | 70 | A (top) | 2 | **100% CAD** | 50 | 39 | 4 | 0 | -20 to +30 from top T | IRF** | **REJ** | Locate at the T intersection<br>Ring level 1<br>Plate 1<br>Top vertical position<br>**ACCEPTED R-1** |

*LOF: Lack of fusion
**IRF: Incomplete root fusion

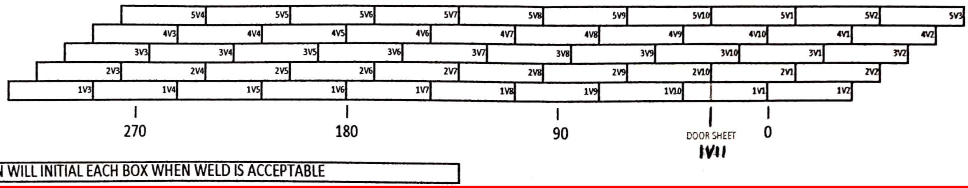


| | | |
|---|---|---|
| **Techniciens :**<br>**Technicians :** Michael Lafreniere<br>CSA W178.2 Level II<br>CGSB 48.9712 UT-MT-PT Level II | **Assistants:** | **Approuvé par :**<br>**Approved by :**<br>CSA W178.2 |

| | | | |
|---|---|---|---|
| **Client :** | **Inukshuk Construction Ltd.** | **Date d'intervention :** **Intervention date :** | 2019-08-30 to 2019-09-03 |
| **Adresse/Address :** | 1869 Upper Water St, Halifax, NS, B3J 1S9 | | |
| **Contact :** | Marc Losier | **Date du rapport :** **Report date :** | 2019-09-02 |
| **Entrepreneur :** **Contractor :** | Storage Tank Solutions | **N° dossier :** **File no :** | **00197** |
| **Endroit du travail :** **Job location :** | Baker Lake, Nunavut | **Commande :** **Order :** | |



# Tank #7 Baker Lake (AEM)




NDT TECHNICIAN WILL INITIAL EACH BOX WHEN WELD IS ACCEPTABLE

B ---> BOTTOM OF THE VERT (0-6") | M ---> MIDDLE OF THE VERT (45"-51") | T ---> TOP OF THE VERT (90"-96")

## VERTICAL SEAMS MAPPING UT

| | B | M | T | FULL |
|---|---|---|---|---|
| 1V1 | UT FULL BECAUSE NOZZLE INTO VERT | | | |
| 1V2 | | | | |
| 1V3 | | | | |
| 1V4 | | | | |
| 1V5 | | | | |
| 1V6 | UT FULL BECAUSE NOZZLE INTO VERT | | | |
| 1V7 | | | | |
| 1V8 | | | | |
| 1V9 | | | | |
| 1V10 | | | | |
| 1V11 | | | | |

| | B | T |
|---|---|---|
| 2V1 | | |
| 2V2 | | |
| 2V3 | | |
| 2V4 | | |
| 2V5 | | |
| 2V6 | | |
| 2V7 | | |
| 2V8 | | |
| 2V9 | | |
| 2V10 | | |

| | B | T |
|---|---|---|
| 3V1 | | |
| 3V2 | | |
| 3V3 | | |
| 3V4 | | |
| 3V5 | | |
| 3V6 | | |
| 3V7 | | |
| 3V8 | | |
| 3V9 | | |
| 3V10 | | |

| | B | T |
|---|---|---|
| 4V1 | | |
| 4V2 | | |
| 4V3 | | |
| 4V4 | | |
| 4V5 | | |
| 4V6 | | |
| 4V7 | | |
| 4V8 | | |
| 4V9 | | |
| 4V10 | | |

| | B | T |
|---|---|---|
| 5V1 | | N/A |
| 5V2 | | N/A |
| 5V3 | | N/A |
| 5V4 | | N/A |
| 5V5 | | N/A |
| 5V6 | | N/A |
| 5V7 | | N/A |
| 5V8 | | N/A |
| 5V9 | | N/A |
| 5V10 | | N/A |

## HORIZONTAL SEAMS MAPPING UT

| | | |
|---|---|---|
| H1V2 | 30"-36" | |
| H1V8 | 42"-48" | |
| Middle door sheet | | |

| | | |
|---|---|---|
| H2V3 | 24"-30" | |
| H2V9 | 36"-42" | |

| | | |
|---|---|---|
| H3V1 | 60"-66" | |
| H3V7 | 42"-48" | |

| | | |
|---|---|---|
| H4V5 | 24"-30" | |
| H4V9 | 36"-42" | |

## MAG PARTICLE

| | |
|---|---|
| SHELL MANHOLE 0° | |
| SHELL MANHOLE 90° | |
| SHELL MANHOLE 180° | |
| SHELL MANHOLE 270° | |

| | |
|---|---|
| SHELL MANHOLE NECK (SEAM) 0° | |
| SHELL MANHOLE NECK (SEAM) 90° | |
| SHELL MANHOLE NECK (SEAM) 180° | |
| SHELL MANHOLE NECK (SEAM) 270° | |

| | |
|---|---|
| NOZZLE SN3 (x1) | |
| NOZZLE SN4 (x1) | |
| NOZZLE SN5 (x2) | |
| NOZZLE SN6 (x6) | |

STS Representative Signature: _____ Date: Sept 2/19.

Client Representative Signature: _____ Date: Sept 2/19

NDT Representative Signature: _____ Date: 2019-09-02

MICHAEL LAFRENIERE
CGSB 48.9712 MT-PT-UT
LEVEL II INSPECTOR
CERT#: 12977

**CLIENT QUALITY INSPECTION PLAN**

| | | |
|---|---|---|
| **Techniciens :** **Technicians :** Michael Lafreniere<br>CSA W178.2 Level II<br>CGSB 48.9712 UT-MT-PT Level II | **Assistants:** | **Approuvé par :** **Approved by :** CSA W178.2 |

# AGNICO EAGLE BAKER LAKE

## Baker Lake, Nunavut, Canada

# Tank No. 7

## INNAGE TABLE

Calibration@AmSpecGroup.com

**CAPACITIES GIVEN IN CUBIC METERS**

**GAUGE HEIGHT - 12.555 M**

| cm | 0 M | cm | 1 M | cm | 2 M | cm | 3 M | cm | 4 M | cm | 5 M | cm | 6 M | cm | 7 M | cm | 8 M | cm | 9M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | CROWN BOTTOM ***15.918*** | 0.00 | 886.949 | 0.00 | 1,767.881 | 0.00 | 2,648.794 | 0.00 | 3,529.774 | 0.00 | 4,410.887 | 0.00 | 5,292.323 | 0.00 | 6,173.759 | 0.00 | 7,055.489 | 0.00 | 7,937.265 |
| 0.01 | ***22.215*** | 0.01 | 895.762 | 0.01 | 1,776.689 | 0.01 | 2,657.603 | 0.01 | 3,538.584 | 0.01 | 4,419.702 | 0.01 | 5,301.138 | 0.01 | 6,182.574 | 0.01 | 7,064.307 | 0.01 | 7,946.083 |
| 0.02 | ***28.512*** | 0.02 | 904.575 | 0.02 | 1,785.496 | 0.02 | 2,666.413 | 0.02 | 3,547.393 | 0.02 | 4,428.516 | 0.02 | 5,309.952 | 0.02 | 6,191.388 | 0.02 | 7,073.124 | 0.02 | 7,954.901 |
| 0.03 | ***35.930*** | 0.03 | 913.388 | 0.03 | 1,794.303 | 0.03 | 2,675.223 | 0.03 | 3,556.203 | 0.03 | 4,437.330 | 0.03 | 5,318.766 | 0.03 | 6,200.202 | 0.03 | 7,081.942 | 0.03 | 7,963.719 |
| 0.04 | ***43.349*** | 0.04 | 922.201 | 0.04 | 1,803.111 | 0.04 | 2,684.033 | 0.04 | 3,565.013 | 0.04 | 4,446.145 | 0.04 | 5,327.581 | 0.04 | 6,209.017 | 0.04 | 7,090.760 | 0.04 | 7,972.536 |
| 0.05 | ***51.419*** | 0.05 | 931.014 | 0.05 | 1,811.918 | 0.05 | 2,692.843 | 0.05 | 3,573.823 | 0.05 | 4,454.959 | 0.05 | 5,336.395 | 0.05 | 6,217.831 | 0.05 | 7,099.578 | 0.05 | 7,981.354 |
| 0.06 | ***59.490*** | 0.06 | 939.827 | 0.06 | 1,820.726 | 0.06 | 2,701.652 | 0.06 | 3,582.633 | 0.06 | 4,463.773 | 0.06 | 5,345.209 | 0.06 | 6,226.645 | 0.06 | 7,108.395 | 0.06 | 7,990.172 |
| 0.07 | ***68.031*** | 0.07 | 948.640 | 0.07 | 1,829.533 | 0.07 | 2,710.462 | 0.07 | 3,591.442 | 0.07 | 4,472.588 | 0.07 | 5,354.024 | 0.07 | 6,235.460 | 0.07 | 7,117.213 | 0.07 | 7,998.990 |
| 0.08 | ***76.573*** | 0.08 | 957.454 | 0.08 | 1,838.340 | 0.08 | 2,719.272 | 0.08 | 3,600.252 | 0.08 | 4,481.402 | 0.08 | 5,362.838 | 0.08 | 6,244.274 | 0.08 | 7,126.031 | 0.08 | 8,007.807 |
| 0.09 | ***85.330*** | 0.09 | 966.267 | 0.09 | 1,847.148 | 0.09 | 2,728.082 | 0.09 | 3,609.062 | 0.09 | 4,490.217 | 0.09 | 5,371.652 | 0.09 | 6,253.088 | 0.09 | 7,134.849 | 0.09 | 8,016.625 |
| 0.10 | ***94.088*** | 0.10 | 975.080 | 0.10 | 1,855.955 | 0.10 | 2,736.892 | 0.10 | 3,617.872 | 0.10 | 4,499.031 | 0.10 | 5,380.467 | 0.10 | 6,261.903 | 0.10 | 7,143.666 | 0.10 | 8,025.443 |
| 0.11 | ***102.893*** | 0.11 | 983.893 | 0.11 | 1,864.762 | 0.11 | 2,745.701 | 0.11 | 3,626.682 | 0.11 | 4,507.845 | 0.11 | 5,389.281 | 0.11 | 6,270.717 | 0.11 | 7,152.484 | 0.11 | 8,034.261 |
| 0.12 | ***111.699*** | 0.12 | 992.706 | 0.12 | 1,873.570 | 0.12 | 2,754.511 | 0.12 | 3,635.491 | 0.12 | 4,516.660 | 0.12 | 5,398.096 | 0.12 | 6,279.531 | 0.12 | 7,161.302 | 0.12 | 8,043.078 |
| 0.13 | ***120.503*** | 0.13 | 1,001.519 | 0.13 | 1,882.377 | 0.13 | 2,763.321 | 0.13 | 3,644.301 | 0.13 | 4,525.474 | 0.13 | 5,406.910 | 0.13 | 6,288.346 | 0.13 | 7,170.120 | 0.13 | 8,051.896 |
| 0.14 | ***129.307*** | 0.14 | 1,010.332 | 0.14 | 1,891.184 | 0.14 | 2,772.131 | 0.14 | 3,653.111 | 0.14 | 4,534.288 | 0.14 | 5,415.724 | 0.14 | 6,297.162 | 0.14 | 7,178.937 | 0.14 | 8,060.714 |
| 0.15 | ***138.109*** | 0.15 | 1,019.145 | 0.15 | 1,899.992 | 0.15 | 2,780.941 | 0.15 | 3,661.921 | 0.15 | 4,543.103 | 0.15 | 5,424.539 | 0.15 | 6,305.979 | 0.15 | 7,187.755 | 0.15 | 8,069.532 |
| 0.16 | 146.911 | 0.16 | 1,027.958 | 0.16 | 1,908.799 | 0.16 | 2,789.750 | 0.16 | 3,670.731 | 0.16 | 4,551.917 | 0.16 | 5,433.353 | 0.16 | 6,314.797 | 0.16 | 7,196.573 | 0.16 | 8,078.349 |
| 0.17 | 155.712 | 0.17 | 1,036.771 | 0.17 | 1,917.606 | 0.17 | 2,798.560 | 0.17 | 3,679.540 | 0.17 | 4,560.731 | 0.17 | 5,442.167 | 0.17 | 6,323.614 | 0.17 | 7,205.391 | 0.17 | 8,087.167 |
| 0.18 | 164.514 | 0.18 | 1,045.584 | 0.18 | 1,926.414 | 0.18 | 2,807.370 | 0.18 | 3,688.350 | 0.18 | 4,569.546 | 0.18 | 5,450.982 | 0.18 | 6,332.432 | 0.18 | 7,214.209 | 0.18 | 8,095.985 |
| 0.19 | 173.316 | 0.19 | 1,054.397 | 0.19 | 1,935.221 | 0.19 | 2,816.180 | 0.19 | 3,697.160 | 0.19 | 4,578.360 | 0.19 | 5,459.796 | 0.19 | 6,341.250 | 0.19 | 7,223.026 | 0.19 | 8,104.803 |
| 0.20 | 182.118 | 0.20 | 1,063.210 | 0.20 | 1,944.028 | 0.20 | 2,824.990 | 0.20 | 3,705.970 | 0.20 | 4,587.175 | 0.20 | 5,468.610 | 0.20 | 6,350.068 | 0.20 | 7,231.844 | 0.20 | 8,113.621 |
| 0.21 | 190.920 | 0.21 | 1,072.023 | 0.21 | 1,952.836 | 0.21 | 2,833.799 | 0.21 | 3,714.780 | 0.21 | 4,595.989 | 0.21 | 5,477.425 | 0.21 | 6,358.885 | 0.21 | 7,240.662 | 0.21 | 8,122.438 |
| 0.22 | 199.721 | 0.22 | 1,080.836 | 0.22 | 1,961.643 | 0.22 | 2,842.609 | 0.22 | 3,723.589 | 0.22 | 4,604.803 | 0.22 | 5,486.239 | 0.22 | 6,367.703 | 0.22 | 7,249.480 | 0.22 | 8,131.256 |
| 0.23 | 208.523 | 0.23 | 1,089.649 | 0.23 | 1,970.450 | 0.23 | 2,851.419 | 0.23 | 3,732.399 | 0.23 | 4,613.618 | 0.23 | 5,495.054 | 0.23 | 6,376.521 | 0.23 | 7,258.297 | 0.23 | 8,140.074 |
| 0.24 | 217.324 | 0.24 | 1,098.462 | 0.24 | 1,979.258 | 0.24 | 2,860.229 | 0.24 | 3,741.209 | 0.24 | 4,622.432 | 0.24 | 5,503.868 | 0.24 | 6,385.339 | 0.24 | 7,267.115 | 0.24 | 8,148.892 |
| 0.25 | 226.125 | 0.25 | 1,107.275 | 0.25 | 1,988.065 | 0.25 | 2,869.039 | 0.25 | 3,750.019 | 0.25 | 4,631.246 | 0.25 | 5,512.682 | 0.25 | 6,394.156 | 0.25 | 7,275.933 | 0.25 | 8,157.709 |
| 0.26 | 234.926 | 0.26 | 1,116.088 | 0.26 | 1,996.872 | 0.26 | 2,877.848 | 0.26 | 3,758.829 | 0.26 | 4,640.061 | 0.26 | 5,521.497 | 0.26 | 6,402.974 | 0.26 | 7,284.751 | 0.26 | 8,166.527 |
| 0.27 | 243.727 | 0.27 | 1,124.901 | 0.27 | 2,005.680 | 0.27 | 2,886.658 | 0.27 | 3,767.638 | 0.27 | 4,648.875 | 0.27 | 5,530.311 | 0.27 | 6,411.792 | 0.27 | 7,293.568 | 0.27 | 8,175.345 |
| 0.28 | 252.529 | 0.28 | 1,133.714 | 0.28 | 2,014.489 | 0.28 | 2,895.468 | 0.28 | 3,776.448 | 0.28 | 4,657.689 | 0.28 | 5,539.125 | 0.28 | 6,420.610 | 0.28 | 7,302.386 | 0.28 | 8,184.163 |
| 0.29 | 261.330 | 0.29 | 1,142.527 | 0.29 | 2,023.298 | 0.29 | 2,904.278 | 0.29 | 3,785.258 | 0.29 | 4,666.504 | 0.29 | 5,547.940 | 0.29 | 6,429.428 | 0.29 | 7,311.204 | 0.29 | 8,192.980 |
| 0.30 | 270.135 | 0.30 | 1,151.340 | 0.30 | 2,032.107 | 0.30 | 2,913.088 | 0.30 | 3,794.068 | 0.30 | 4,675.318 | 0.30 | 5,556.754 | 0.30 | 6,438.245 | 0.30 | 7,320.022 | 0.30 | 8,201.798 |
| 0.31 | 278.940 | 0.31 | 1,160.153 | 0.31 | 2,040.917 | 0.31 | 2,921.897 | 0.31 | 3,802.878 | 0.31 | 4,684.132 | 0.31 | 5,565.568 | 0.31 | 6,447.063 | 0.31 | 7,328.839 | 0.31 | 8,210.616 |
| 0.32 | 287.747 | 0.32 | 1,168.966 | 0.32 | 2,049.727 | 0.32 | 2,930.707 | 0.32 | 3,811.687 | 0.32 | 4,692.947 | 0.32 | 5,574.383 | 0.32 | 6,455.881 | 0.32 | 7,337.657 | 0.32 | 8,219.434 |
| 0.33 | 296.555 | 0.33 | 1,177.779 | 0.33 | 2,058.537 | 0.33 | 2,939.517 | 0.33 | 3,820.497 | 0.33 | 4,701.761 | 0.33 | 5,583.197 | 0.33 | 6,464.699 | 0.33 | 7,346.475 | 0.33 | 8,228.251 |
| 0.34 | 305.362 | 0.34 | 1,186.592 | 0.34 | 2,067.347 | 0.34 | 2,948.327 | 0.34 | 3,829.307 | 0.34 | 4,710.576 | 0.34 | 5,592.011 | 0.34 | 6,473.516 | 0.34 | 7,355.293 | 0.34 | 8,237.069 |
| 0.35 | 314.169 | 0.35 | 1,195.402 | 0.35 | 2,076.156 | 0.35 | 2,957.137 | 0.35 | 3,838.117 | 0.35 | 4,719.390 | 0.35 | 5,600.826 | 0.35 | 6,482.334 | 0.35 | 7,364.111 | 0.35 | 8,245.887 |
| 0.36 | 322.977 | 0.36 | 1,204.211 | 0.36 | 2,084.966 | 0.36 | 2,965.946 | 0.36 | 3,846.927 | 0.36 | 4,728.204 | 0.36 | 5,609.640 | 0.36 | 6,491.152 | 0.36 | 7,372.928 | 0.36 | 8,254.705 |
| 0.37 | 331.784 | 0.37 | 1,213.018 | 0.37 | 2,093.776 | 0.37 | 2,974.756 | 0.37 | 3,855.736 | 0.37 | 4,737.019 | 0.37 | 5,618.455 | 0.37 | 6,499.970 | 0.37 | 7,381.746 | 0.37 | 8,263.523 |
| 0.38 | 340.592 | 0.38 | 1,221.826 | 0.38 | 2,102.586 | 0.38 | 2,983.566 | 0.38 | 3,864.546 | 0.38 | 4,745.833 | 0.38 | 5,627.269 | 0.38 | 6,508.787 | 0.38 | 7,390.564 | 0.38 | 8,272.340 |
| 0.39 | 349.399 | 0.39 | 1,230.633 | 0.39 | 2,111.396 | 0.39 | 2,992.376 | 0.39 | 3,873.356 | 0.39 | 4,754.647 | 0.39 | 5,636.083 | 0.39 | 6,517.605 | 0.39 | 7,399.382 | 0.39 | 8,281.158 |
| 0.40 | 358.206 | 0.40 | 1,239.440 | 0.40 | 2,120.205 | 0.40 | 3,001.186 | 0.40 | 3,882.166 | 0.40 | 4,763.462 | 0.40 | 5,644.898 | 0.40 | 6,526.423 | 0.40 | 7,408.199 | 0.40 | 8,289.976 |
| 0.41 | 367.014 | 0.41 | 1,248.248 | 0.41 | 2,129.015 | 0.41 | 3,009.995 | 0.41 | 3,890.976 | 0.41 | 4,772.276 | 0.41 | 5,653.712 | 0.41 | 6,535.241 | 0.41 | 7,417.017 | 0.41 | 8,298.794 |
| 0.42 | 375.821 | 0.42 | 1,257.055 | 0.42 | 2,137.825 | 0.42 | 3,018.805 | 0.42 | 3,899.786 | 0.42 | 4,781.090 | 0.42 | 5,662.526 | 0.42 | 6,544.058 | 0.42 | 7,425.835 | 0.42 | 8,307.611 |
| 0.43 | 384.628 | 0.43 | 1,265.863 | 0.43 | 2,146.635 | 0.43 | 3,027.615 | 0.43 | 3,908.595 | 0.43 | 4,789.905 | 0.43 | 5,671.341 | 0.43 | 6,552.876 | 0.43 | 7,434.653 | 0.43 | 8,316.429 |
| 0.44 | 393.436 | 0.44 | 1,274.670 | 0.44 | 2,155.445 | 0.44 | 3,036.425 | 0.44 | 3,917.405 | 0.44 | 4,798.719 | 0.44 | 5,680.155 | 0.44 | 6,561.694 | 0.44 | 7,443.470 | 0.44 | 8,325.247 |
| 0.45 | 402.243 | 0.45 | 1,283.477 | 0.45 | 2,164.254 | 0.45 | 3,045.235 | 0.45 | 3,926.215 | 0.45 | 4,807.534 | 0.45 | 5,688.969 | 0.45 | 6,570.512 | 0.45 | 7,452.288 | 0.45 | 8,334.065 |
| 0.46 | 411.050 | 0.46 | 1,292.285 | 0.46 | 2,173.064 | 0.46 | 3,054.044 | 0.46 | 3,935.025 | 0.46 | 4,816.348 | 0.46 | 5,697.784 | 0.46 | 6,579.330 | 0.46 | 7,461.106 | 0.46 | 8,342.882 |
| 0.47 | 419.861 | 0.47 | 1,301.092 | 0.47 | 2,181.874 | 0.47 | 3,062.854 | 0.47 | 3,943.835 | 0.47 | 4,825.162 | 0.47 | 5,706.598 | 0.47 | 6,588.147 | 0.47 | 7,469.924 | 0.47 | 8,351.700 |
| 0.48 | 428.672 | 0.48 | 1,309.899 | 0.48 | 2,190.684 | 0.48 | 3,071.664 | 0.48 | 3,952.644 | 0.48 | 4,833.977 | 0.48 | 5,715.413 | 0.48 | 6,596.965 | 0.48 | 7,478.741 | 0.48 | 8,360.518 |
| 0.49 | 437.485 | 0.49 | 1,318.707 | 0.49 | 2,199.494 | 0.49 | 3,080.474 | 0.49 | 3,961.454 | 0.49 | 4,842.791 | 0.49 | 5,724.227 | 0.49 | 6,605.783 | 0.49 | 7,487.559 | 0.49 | 8,369.336 |
| 0.50 | 446.298 | 0.50 | 1,327.514 | 0.50 | 2,208.303 | 0.50 | 3,089.284 | 0.50 | 3,970.264 | 0.50 | 4,851.605 | 0.50 | 5,733.041 | 0.50 | 6,614.601 | 0.50 | 7,496.377 | 0.50 | 8,378.153 |
| 0.51 | 455.111 | 0.51 | 1,336.321 | 0.51 | 2,217.113 | 0.51 | 3,098.093 | 0.51 | 3,979.074 | 0.51 | 4,860.420 | 0.51 | 5,741.856 | 0.51 | 6,623.418 | 0.51 | 7,505.195 | 0.51 | 8,386.971 |
| 0.52 | 463.924 | 0.52 | 1,345.129 | 0.52 | 2,225.923 | 0.52 | 3,106.903 | 0.52 | 3,987.884 | 0.52 | 4,869.234 | 0.52 | 5,750.670 | 0.52 | 6,632.236 | 0.52 | 7,514.013 | 0.52 | 8,395.789 |
| 0.53 | 472.737 | 0.53 | 1,353.936 | 0.53 | 2,234.733 | 0.53 | 3,115.713 | 0.53 | 3,996.693 | 0.53 | 4,878.048 | 0.53 | 5,759.484 | 0.53 | 6,641.054 | 0.53 | 7,522.830 | 0.53 | 8,404.607 |
| 0.54 | 481.550 | 0.54 | 1,362.743 | 0.54 | 2,243.543 | 0.54 | 3,124.523 | 0.54 | 4,005.503 | 0.54 | 4,886.863 | 0.54 | 5,768.299 | 0.54 | 6,649.872 | 0.54 | 7,531.648 | 0.54 | 8,413.424 |
| 0.55 | 490.363 | 0.55 | 1,371.551 | 0.55 | 2,252.352 | 0.55 | 3,133.333 | 0.55 | 4,014.313 | 0.55 | 4,895.677 | 0.55 | 5,777.113 | 0.55 | 6,658.689 | 0.55 | 7,540.466 | 0.55 | 8,422.242 |
| 0.56 | 499.176 | 0.56 | 1,380.358 | 0.56 | 2,261.162 | 0.56 | 3,142.143 | 0.56 | 4,023.123 | 0.56 | 4,904.491 | 0.56 | 5,785.927 | 0.56 | 6,667.507 | 0.56 | 7,549.284 | 0.56 | 8,431.060 |
| 0.57 | 507.989 | 0.57 | 1,389.165 | 0.57 | 2,269.972 | 0.57 | 3,150.952 | 0.57 | 4,031.933 | 0.57 | 4,913.306 | 0.57 | 5,794.742 | 0.57 | 6,676.325 | 0.57 | 7,558.101 | 0.57 | 8,439.878 |
| 0.58 | 516.802 | 0.58 | 1,397.973 | 0.58 | 2,278.782 | 0.58 | 3,159.762 | 0.58 | 4,040.742 | 0.58 | 4,922.120 | 0.58 | 5,803.556 | 0.58 | 6,685.143 | 0.58 | 7,566.919 | 0.58 | 8,448.696 |
| 0.59 | 525.615 | 0.59 | 1,406.780 | 0.59 | 2,287.592 | 0.59 | 3,168.572 | 0.59 | 4,049.552 | 0.59 | 4,930.935 | 0.59 | 5,812.370 | 0.59 | 6,693.960 | 0.59 | 7,575.737 | 0.59 | 8,457.514 |
| 0.60 | 534.428 | 0.60 | 1,415.587 | 0.60 | 2,296.401 | 0.60 | 3,177.382 | 0.60 | 4,058.362 | 0.60 | 4,939.749 | 0.60 | 5,821.185 | 0.60 | 6,702.778 | 0.60 | 7,584.555 | 0.60 | 8,466.331 |
| 0.61 | 543.241 | 0.61 | 1,424.395 | 0.61 | 2,305.211 | 0.61 | 3,186.192 | 0.61 | 4,067.172 | 0.61 | 4,948.563 | 0.61 | 5,829.999 | 0.61 | 6,711.596 | 0.61 | 7,593.372 | 0.61 | 8,475.149 |
| 0.62 | 552.054 | 0.62 | 1,433.202 | 0.62 | 2,314.021 | 0.62 | 3,195.001 | 0.62 | 4,075.982 | 0.62 | 4,957.378 | 0.62 | 5,838.814 | 0.62 | 6,720.414 | 0.62 | 7,602.190 | 0.62 | 8,483.967 |
| 0.63 | 560.867 | 0.63 | 1,442.010 | 0.63 | 2,322.831 | 0.63 | 3,203.811 | 0.63 | 4,084.791 | 0.63 | 4,966.192 | 0.63 | 5,847.628 | 0.63 | 6,729.232 | 0.63 | 7,611.008 | 0.63 | 8,492.785 |
| 0.64 | 569.680 | 0.64 | 1,450.817 | 0.64 | 2,331.641 | 0.64 | 3,212.621 | 0.64 | 4,093.601 | 0.64 | 4,975.006 | 0.64 | 5,856.442 | 0.64 | 6,738.049 | 0.64 | 7,619.826 | 0.64 | 8,501.603 |
| 0.65 | 578.493 | 0.65 | 1,459.624 | 0.65 | 2,340.450 | 0.65 | 3,221.431 | 0.65 | 4,102.411 | 0.65 | 4,983.821 | 0.65 | 5,865.257 | 0.65 | 6,746.867 | 0.65 | 7,628.643 | 0.65 | 8,510.421 |
| 0.66 | 587.307 | 0.66 | 1,468.432 | 0.66 | 2,349.260 | 0.66 | 3,230.241 | 0.66 | 4,111.221 | 0.66 | 4,992.635 | 0.66 | 5,874.071 | 0.66 | 6,755.685 | 0.66 | 7,637.461 | 0.66 | 8,519.239 |
| 0.67 | 596.120 | 0.67 | 1,477.239 | 0.67 | 2,358.070 | 0.67 | 3,239.050 | 0.67 | 4,120.031 | 0.67 | 5,001.449 | 0.67 | 5,882.885 | 0.67 | 6,764.503 | 0.67 | 7,646.279 | 0.67 | 8,528.056 |
| 0.68 | 604.933 | 0.68 | 1,486.046 | 0.68 | 2,366.880 | 0.68 | 3,247.860 | 0.68 | 4,128.840 | 0.68 | 5,010.264 | 0.68 | 5,891.700 | 0.68 | 6,773.320 | 0.68 | 7,655.097 | 0.68 | 8,536.874 |
| 0.69 | 613.746 | 0.69 | 1,494.854 | 0.69 | 2,375.690 | 0.69 | 3,256.670 | 0.69 | 4,137.650 | 0.69 | 5,019.078 | 0.69 | 5,900.514 | 0.69 | 6,782.138 | 0.69 | 7,663.915 | 0.69 | 8,545.692 |
| 0.70 | 622.559 | 0.70 | 1,503.661 | 0.70 | 2,384.499 | 0.70 | 3,265.480 | 0.70 | 4,146.460 | 0.70 | 5,027.892 | 0.70 | 5,909.328 | 0.70 | 6,790.956 | 0.70 | 7,672.732 | 0.70 | 8,554.510 |
| 0.71 | 631.372 | 0.71 | 1,512.468 | 0.71 | 2,393.309 | 0.71 | 3,274.290 | 0.71 | 4,155.273 | 0.71 | 5,036.707 | 0.71 | 5,918.143 | 0.71 | 6,799.774 | 0.71 | 7,681.550 | 0.71 | 8,563.328 |
| 0.72 | 640.185 | 0.72 | 1,521.276 | 0.72 | 2,402.119 | 0.72 | 3,283.099 | 0.72 | 4,164.085 | 0.72 | 5,045.521 | 0.72 | 5,926.957 | 0.72 | 6,808.591 | 0.72 | 7,690.368 | 0.72 | 8,572.146 |
| 0.73 | 648.998 | 0.73 | 1,530.083 | 0.73 | 2,410.929 | 0.73 | 3,291.909 | 0.73 | 4,172.900 | 0.73 | 5,054.336 | 0.73 | 5,935.771 | 0.73 | 6,817.409 | 0.73 | 7,699.186 | 0.73 | 8,580.964 |
| 0.74 | 657.811 | 0.74 | 1,538.890 | 0.74 | 2,419.739 | 0.74 | 3,300.719 | 0.74 | 4,181.714 | 0.74 | 5,063.150 | 0.74 | 5,944.586 | 0.74 | 6,826.227 | 0.74 | 7,708.003 | 0.74 | 8,589.782 |
| 0.75 | 666.624 | 0.75 | 1,547.698 | 0.75 | 2,428.549 | 0.75 | 3,309.529 | 0.75 | 4,190.528 | 0.75 | 5,071.964 | 0.75 | 5,953.400 | 0.75 | 6,835.045 | 0.75 | 7,716.821 | 0.75 | 8,598.599 |
| 0.76 | 675.437 | 0.76 | 1,556.505 | 0.76 | 2,437.358 | 0.76 | 3,318.339 | 0.76 | 4,199.343 | 0.76 | 5,080.779 | 0.76 | 5,962.215 | 0.76 | 6,843.862 | 0.76 | 7,725.639 | 0.76 | 8,607.417 |
| 0.77 | 684.250 | 0.77 | 1,565.312 | 0.77 | 2,446.168 | 0.77 | 3,327.148 | 0.77 | 4,208.157 | 0.77 | 5,089.593 | 0.77 | 5,971.029 | 0.77 | 6,852.680 | 0.77 | 7,734.457 | 0.77 | 8,616.235 |
| 0.78 | 693.063 | 0.78 | 1,574.120 | 0.78 | 2,454.978 | 0.78 | 3,335.958 | 0.78 | 4,216.971 | 0.78 | 5,098.407 | 0.78 | 5,979.843 | 0.78 | 6,861.498 | 0.78 | 7,743.274 | 0.78 | 8,625.053 |
| 0.79 | 701.876 | 0.79 | 1,582.927 | 0.79 | 2,463.788 | 0.79 | 3,344.768 | 0.79 | 4,225.786 | 0.79 | 5,107.222 | 0.79 | 5,988.658 | 0.79 | 6,870.316 | 0.79 | 7,752.092 | 0.79 | 8,633.871 |
| 0.80 | 710.689 | 0.80 | 1,591.734 | 0.80 | 2,472.598 | 0.80 | 3,353.578 | 0.80 | 4,234.600 | 0.80 | 5,116.036 | 0.80 | 5,997.472 | 0.80 | 6,879.134 | 0.80 | 7,760.910 | 0.80 | 8,642.689 |
| 0.81 | 719.502 | 0.81 | 1,600.542 | 0.81 | 2,481.407 | 0.81 | 3,362.388 | 0.81 | 4,243.415 | 0.81 | 5,124.850 | 0.81 | 6,006.286 | 0.81 | 6,887.951 | 0.81 | 7,769.728 | 0.81 | 8,651.507 |
| 0.82 | 728.315 | 0.82 | 1,609.349 | 0.82 | 2,490.217 | 0.82 | 3,371.197 | 0.82 | 4,252.229 | 0.82 | 5,133.665 | 0.82 | 6,015.101 | 0.82 | 6,896.769 | 0.82 | 7,778.545 | 0.82 | 8,660.324 |
| 0.83 | 737.128 | 0.83 | 1,618.156 | 0.83 | 2,499.027 | 0.83 | 3,380.007 | 0.83 | 4,261.043 | 0.83 | 5,142.479 | 0.83 | 6,023.915 | 0.83 | 6,905.587 | 0.83 | 7,787.363 | 0.83 | 8,669.142 |
| 0.84 | 745.941 | 0.84 | 1,626.964 | 0.84 | 2,507.837 | 0.84 | 3,388.817 | 0.84 | 4,269.858 | 0.84 | 5,151.294 | 0.84 | 6,032.729 | 0.84 | 6,914.405 | 0.84 | 7,796.181 | 0.84 | 8,677.960 |
| 0.85 | 754.754 | 0.85 | 1,635.771 | 0.85 | 2,516.647 | 0.85 | 3,397.627 | 0.85 | 4,278.672 | 0.85 | 5,160.108 | 0.85 | 6,041.544 | 0.85 | 6,923.222 | 0.85 | 7,804.999 | 0.85 | 8,686.778 |
| 0.86 | 763.567 | 0.86 | 1,644.579 | 0.86 | 2,525.456 | 0.86 | 3,406.437 | 0.86 | 4,287.486 | 0.86 | 5,168.922 | 0.86 | 6,050.358 | 0.86 | 6,932.040 | 0.86 | 7,813.817 | 0.86 | 8,695.596 |
| 0.87 | 772.380 | 0.87 | 1,653.386 | 0.87 | 2,534.266 | 0.87 | 3,415.246 | 0.87 | 4,296.301 | 0.87 | 5,177.737 | 0.87 | 6,059.173 | 0.87 | 6,940.858 | 0.87 | 7,822.634 | 0.87 | 8,704.414 |
| 0.88 | 781.193 | 0.88 | 1,662.193 | 0.88 | 2,543.076 | 0.88 | 3,424.056 | 0.88 | 4,305.115 | 0.88 | 5,186.551 | 0.88 | 6,067.987 | 0.88 | 6,949.676 | 0.88 | 7,831.452 | 0.88 | 8,713.232 |
| 0.89 | 790.006 | 0.89 | 1,671.001 | 0.89 | 2,551.886 | 0.89 | 3,432.866 | 0.89 | 4,313.929 | 0.89 | 5,195.365 | 0.89 | 6,076.801 | 0.89 | 6,958.493 | 0.89 | 7,840.270 | 0.89 | 8,722.049 |
| 0.90 | 798.819 | 0.90 | 1,679.808 | 0.90 | 2,560.696 | 0.90 | 3,441.676 | 0.90 | 4,322.744 | 0.90 | 5,204.180 | 0.90 | 6,085.616 | 0.90 | 6,967.311 | 0.90 | 7,849.088 | 0.90 | 8,730.867 |
| 0.91 | 807.632 | 0.91 | 1,688.615 | 0.91 | 2,569.505 | 0.91 | 3,450.486 | 0.91 | 4,331.558 | 0.91 | 5,212.994 | 0.91 | 6,094.430 | 0.91 | 6,976.129 | 0.91 | 7,857.905 | 0.91 | 8,739.685 |
| 0.92 | 816.445 | 0.92 | 1,697.423 | 0.92 | 2,578.315 | 0.92 | 3,459.295 | 0.92 | 4,340.372 | 0.92 | 5,221.808 | 0.92 | 6,103.244 | 0.92 | 6,984.947 | 0.92 | 7,866.723 | 0.92 | 8,748.503 |
| 0.93 | 825.258 | 0.93 | 1,706.230 | 0.93 | 2,587.125 | 0.93 | 3,468.105 | 0.93 | 4,349.187 | 0.93 | 5,230.623 | 0.93 | 6,112.059 | 0.93 | 6,993.764 | 0.93 | 7,875.541 | 0.93 | 8,757.321 |
| 0.94 | 834.071 | 0.94 | 1,715.037 | 0.94 | 2,595.935 | 0.94 | 3,476.915 | 0.94 | 4,358.001 | 0.94 | 5,239.437 | 0.94 | 6,120.873 | 0.94 | 7,002.582 | 0.94 | 7,884.359 | 0.94 | 8,766.139 |
| 0.95 | 842.884 | 0.95 | 1,723.845 | 0.95 | 2,604.745 | 0.95 | 3,485.725 | 0.95 | 4,366.816 | 0.95 | 5,248.251 | 0.95 | 6,129.687 | 0.95 | 7,011.400 | 0.95 | 7,893.176 | 0.95 | 8,774.957 |
| 0.96 | 851.697 | 0.96 | 1,732.652 | 0.96 | 2,613.554 | 0.96 | 3,494.535 | 0.96 | 4,375.630 | 0.96 | 5,257.066 | 0.96 | 6,138.502 | 0.96 | 7,020.218 | 0.96 | 7,901.994 | 0.96 | 8,783.775 |
| 0.97 | 860.510 | 0.97 | 1,741.459 | 0.97 | 2,622.364 | 0.97 | 3,503.344 | 0.97 | 4,384.444 | 0.97 | 5,265.880 | 0.97 | 6,147.316 | 0.97 | 7,029.036 | 0.97 | 7,910.812 | 0.97 | 8,792.592 |
| 0.98 | 869.323 | 0.98 | 1,750.267 | 0.98 | 2,631.174 | 0.98 | 3,512.154 | 0.98 | 4,393.259 | 0.98 | 5,274.695 | 0.98 | 6,156.130 | 0.98 | 7,037.853 | 0.98 | 7,919.630 | 0.98 | 8,801.410 |
| 0.99 | 878.136 | 0.99 | 1,759.074 | 0.99 | 2,639.984 | 0.99 | 3,520.964 | 0.99 | 4,402.073 | 0.99 | 5,283.509 | 0.99 | 6,164.945 | 0.99 | 7,046.671 | 0.99 | 7,928.447 | 0.99 | 8,810.228 |

NOTE: TANK STRAPPED AND COMPUTED IN ACCORDANCE WITH API STANDARD MPMS CHAPTER 2.2C.
NOTE: CAPACITY TABLE REFLECTS AN OPERATING TEMPERATURE OF 60 DEGREES F.
NOTE: LIQUID HEAD STRESS HAS BEEN APPLIED TO CAPACITY TABLE AT API GRAVITY 35.0.
NOTE: A 20.6 CM CROWN BOTTOM HAS BEEN APPLIED BELOW 15.2 CM
NOTE: GAUGE POINT IS LOCATED 1.14 M IN FROM TANK SHELL.
NOTE: NOMINAL TANK DIAMETER = 33.53 M SHELL HEIGHT = 12.19 M
NOTE: CHART EXTENDS TO THE EXTREME HEIGHT OF THE TANK SHELL

DATE STRAPPED: 09/04/19 BY: SO
DATE COMPUTED: 09/10/19 BY: WLH
DATE ISSUED: 09/10/19

**AMSPEC**

Calibration@AmSpecGroup.com

# AGNICO EAGLE BAKER LAKE

## Baker Lake, Nunavut, Canada

# Tank No. 7

## INNAGE TABLE

**CAPACITIES GIVEN IN CUBIC METERS**

**GAUGE HEIGHT - 12.555 M**

| cm | 10 M | cm | 11 M | cm | 12 M | cm | 13 M | cm | 14 M | cm | 15 M | cm | 16 M | cm | 17 M | cm | 18 M | cm | 19 M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 8,819.046 | 0.00 | 9,700.832 | 0.00 | 10,580.472 | 0.00 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| 0.01 | 8,827.864 | 0.01 | 9,709.650 | 0.01 | 10,589.290 | 0.01 | | 0.01 | | 0.01 | | 0.01 | | 0.01 | | 0.01 | | 0.01 | |
| 0.02 | 8,836.682 | 0.02 | 9,718.468 | 0.02 | 10,598.108 | 0.02 | | 0.02 | | 0.02 | | 0.02 | | 0.02 | | 0.02 | | 0.02 | |
| 0.03 | 8,845.500 | 0.03 | 9,727.286 | 0.03 | 10,606.926 | 0.03 | | 0.03 | | 0.03 | | 0.03 | | 0.03 | | 0.03 | | 0.03 | |
| 0.04 | 8,854.317 | 0.04 | 9,736.104 | 0.04 | 10,615.744 | 0.04 | | 0.04 | | 0.04 | | 0.04 | | 0.04 | | 0.04 | | 0.04 | |
| 0.05 | 8,863.135 | 0.05 | 9,744.922 | 0.05 | 10,624.562 | 0.05 | | 0.05 | | 0.05 | | 0.05 | | 0.05 | | 0.05 | | 0.05 | |
| 0.06 | 8,871.953 | 0.06 | 9,753.740 | 0.06 | 10,633.380 | 0.06 | | 0.06 | | 0.06 | | 0.06 | | 0.06 | | 0.06 | | 0.06 | |
| 0.07 | 8,880.771 | 0.07 | 9,762.557 | 0.07 | 10,642.198 | 0.07 | | 0.07 | | 0.07 | | 0.07 | | 0.07 | | 0.07 | | 0.07 | |
| 0.08 | 8,889.589 | 0.08 | 9,771.375 | 0.08 | 10,651.016 | 0.08 | | 0.08 | | 0.08 | | 0.08 | | 0.08 | | 0.08 | | 0.08 | |
| 0.09 | 8,898.407 | 0.09 | 9,780.193 | 0.09 | 10,659.833 | 0.09 | | 0.09 | | 0.09 | | 0.09 | | 0.09 | | 0.09 | | 0.09 | |
| 0.10 | 8,907.225 | 0.10 | 9,789.011 | 0.10 | 10,668.651 | 0.10 | | 0.10 | | 0.10 | | 0.10 | | 0.10 | | 0.10 | | 0.10 | |
| 0.11 | 8,916.042 | 0.11 | 9,797.829 | 0.11 | 10,677.469 | 0.11 | | 0.11 | | 0.11 | | 0.11 | | 0.11 | | 0.11 | | 0.11 | |
| 0.12 | 8,924.860 | 0.12 | 9,806.647 | 0.12 | 10,681.932 | 0.12 | | 0.12 | | 0.12 | | 0.12 | | 0.12 | | 0.12 | | 0.12 | |
| 0.13 | 8,933.678 | 0.13 | 9,815.465 | 0.13 | | 0.13 | | 0.13 | | 0.13 | | 0.13 | | 0.13 | | 0.13 | | 0.13 | |
| 0.14 | 8,942.496 | 0.14 | 9,824.283 | 0.14 | | 0.14 | | 0.14 | | 0.14 | | 0.14 | | 0.14 | | 0.14 | | 0.14 | |
| 0.15 | 8,951.314 | 0.15 | 9,833.100 | 0.15 | | 0.15 | | 0.15 | | 0.15 | | 0.15 | | 0.15 | | 0.15 | | 0.15 | |
| 0.16 | 8,960.132 | 0.16 | 9,841.918 | 0.16 | | 0.16 | | 0.16 | | 0.16 | | 0.16 | | 0.16 | | 0.16 | | 0.16 | |
| 0.17 | 8,968.950 | 0.17 | 9,850.736 | 0.17 | | 0.17 | | 0.17 | | 0.17 | | 0.17 | | 0.17 | | 0.17 | | 0.17 | |
| 0.18 | 8,977.768 | 0.18 | 9,859.554 | 0.18 | | 0.18 | | 0.180 | | 0.18 | | 0.18 | | 0.18 | | 0.18 | | 0.18 | |
| 0.19 | 8,986.585 | 0.19 | 9,868.372 | 0.19 | | 0.19 | | 0.19 | | 0.19 | | 0.19 | | 0.19 | | 0.19 | | 0.19 | |
| 0.20 | 8,995.403 | 0.20 | 9,877.190 | 0.20 | | 0.20 | | 0.20 | | 0.20 | | 0.20 | | 0.20 | | 0.20 | | 0.20 | |
| 0.21 | 9,004.221 | 0.21 | 9,886.008 | 0.21 | | 0.21 | | 0.21 | | 0.21 | | 0.21 | | 0.21 | | 0.21 | | 0.21 | |
| 0.22 | 9,013.039 | 0.22 | 9,894.825 | 0.22 | | 0.22 | | 0.22 | | 0.22 | | 0.22 | | 0.22 | | 0.22 | | 0.22 | |
| 0.23 | 9,021.857 | 0.23 | 9,903.643 | 0.23 | | 0.23 | | 0.23 | | 0.23 | | 0.23 | | 0.23 | | 0.23 | | 0.23 | |
| 0.24 | 9,030.675 | 0.24 | 9,912.461 | 0.24 | | 0.24 | | 0.24 | | 0.24 | | 0.24 | | 0.24 | | 0.24 | | 0.24 | |
| 0.25 | 9,039.493 | 0.25 | 9,921.279 | 0.25 | | 0.25 | | 0.25 | | 0.25 | | 0.25 | | 0.25 | | 0.25 | | 0.25 | |
| 0.26 | 9,048.310 | 0.26 | 9,930.097 | 0.26 | | 0.26 | | 0.26 | | 0.26 | | 0.26 | | 0.26 | | 0.26 | | 0.26 | |
| 0.27 | 9,057.128 | 0.27 | 9,938.915 | 0.27 | | 0.27 | | 0.27 | | 0.27 | | 0.27 | | 0.27 | | 0.27 | | 0.27 | |
| 0.28 | 9,065.946 | 0.28 | 9,947.733 | 0.28 | | 0.28 | | 0.28 | | 0.28 | | 0.28 | | 0.28 | | 0.28 | | 0.28 | |
| 0.29 | 9,074.764 | 0.29 | 9,956.551 | 0.29 | | 0.29 | | 0.29 | | 0.29 | | 0.29 | | 0.29 | | 0.29 | | 0.29 | |
| 0.30 | 9,083.582 | 0.30 | 9,965.368 | 0.30 | | 0.30 | | 0.30 | | 0.30 | | 0.30 | | 0.30 | | 0.30 | | 0.30 | |
| 0.31 | 9,092.400 | 0.31 | 9,974.186 | 0.31 | | 0.31 | | 0.31 | | 0.31 | | 0.31 | | 0.31 | | 0.31 | | 0.31 | |
| 0.32 | 9,101.218 | 0.32 | 9,983.004 | 0.32 | | 0.32 | | 0.32 | | 0.32 | | 0.32 | | 0.32 | | 0.32 | | 0.32 | |
| 0.33 | 9,110.036 | 0.33 | 9,991.822 | 0.33 | | 0.33 | | 0.33 | | 0.33 | | 0.33 | | 0.33 | | 0.33 | | 0.33 | |
| 0.34 | 9,118.853 | 0.34 | 10,000.640 | 0.34 | | 0.34 | | 0.34 | | 0.34 | | 0.34 | | 0.34 | | 0.34 | | 0.34 | |
| 0.35 | 9,127.671 | 0.35 | 10,009.458 | 0.35 | | 0.35 | | 0.35 | | 0.35 | | 0.35 | | 0.35 | | 0.35 | | 0.35 | |
| 0.36 | 9,136.489 | 0.36 | 10,018.276 | 0.36 | | 0.36 | | 0.36 | | 0.36 | | 0.36 | | 0.36 | | 0.36 | | 0.36 | |
| 0.37 | 9,145.307 | 0.37 | 10,027.093 | 0.37 | | 0.37 | | 0.37 | | 0.37 | | 0.37 | | 0.37 | | 0.37 | | 0.37 | |
| 0.38 | 9,154.125 | 0.38 | 10,035.911 | 0.38 | | 0.38 | | 0.38 | | 0.38 | | 0.38 | | 0.38 | | 0.38 | | 0.38 | |
| 0.39 | 9,162.943 | 0.39 | 10,044.729 | 0.39 | | 0.39 | | 0.39 | | 0.39 | | 0.39 | | 0.39 | | 0.39 | | 0.39 | |
| 0.40 | 9,171.761 | 0.40 | 10,053.547 | 0.40 | | 0.40 | | 0.40 | | 0.40 | | 0.40 | | 0.40 | | 0.40 | | 0.40 | |
| 0.41 | 9,180.578 | 0.41 | 10,062.365 | 0.41 | | 0.41 | | 0.41 | | 0.41 | | 0.41 | | 0.41 | | 0.41 | | 0.41 | |
| 0.42 | 9,189.396 | 0.42 | 10,071.183 | 0.42 | | 0.42 | | 0.42 | | 0.42 | | 0.42 | | 0.42 | | 0.42 | | 0.42 | |
| 0.43 | 9,198.214 | 0.43 | 10,080.001 | 0.43 | | 0.43 | | 0.43 | | 0.43 | | 0.43 | | 0.43 | | 0.43 | | 0.43 | |
| 0.44 | 9,207.032 | 0.44 | 10,088.818 | 0.44 | | 0.44 | | 0.44 | | 0.44 | | 0.44 | | 0.44 | | 0.44 | | 0.44 | |
| 0.45 | 9,215.850 | 0.45 | 10,097.636 | 0.45 | | 0.45 | | 0.45 | | 0.45 | | 0.45 | | 0.45 | | 0.45 | | 0.45 | |
| 0.46 | 9,224.668 | 0.46 | 10,106.454 | 0.46 | | 0.46 | | 0.46 | | 0.46 | | 0.46 | | 0.46 | | 0.46 | | 0.46 | |
| 0.47 | 9,233.486 | 0.47 | 10,115.272 | 0.47 | | 0.47 | | 0.47 | | 0.47 | | 0.47 | | 0.47 | | 0.47 | | 0.47 | |
| 0.48 | 9,242.303 | 0.48 | 10,124.090 | 0.48 | | 0.48 | | 0.48 | | 0.48 | | 0.48 | | 0.48 | | 0.48 | | 0.48 | |
| 0.49 | 9,251.121 | 0.49 | 10,132.908 | 0.49 | | 0.49 | | 0.49 | | 0.49 | | 0.49 | | 0.49 | | 0.49 | | 0.49 | |
| 0.50 | 9,259.939 | 0.50 | 10,141.726 | 0.50 | | 0.50 | | 0.50 | | 0.50 | | 0.50 | | 0.50 | | 0.50 | | 0.50 | |
| 0.51 | 9,268.757 | 0.51 | 10,150.544 | 0.51 | | 0.51 | | 0.51 | | 0.51 | | 0.51 | | 0.51 | | 0.51 | | 0.51 | |
| 0.52 | 9,277.575 | 0.52 | 10,159.361 | 0.52 | | 0.52 | | 0.52 | | 0.52 | | 0.52 | | 0.52 | | 0.52 | | 0.52 | |
| 0.53 | 9,286.393 | 0.53 | 10,168.179 | 0.53 | | 0.53 | | 0.53 | | 0.53 | | 0.53 | | 0.53 | | 0.53 | | 0.53 | |
| 0.54 | 9,295.211 | 0.54 | 10,176.997 | 0.54 | | 0.54 | | 0.54 | | 0.54 | | 0.54 | | 0.54 | | 0.54 | | 0.54 | |
| 0.55 | 9,304.029 | 0.55 | 10,185.815 | 0.55 | | 0.55 | | 0.55 | | 0.55 | | 0.55 | | 0.55 | | 0.55 | | 0.55 | |
| 0.56 | 9,312.846 | 0.56 | 10,194.633 | 0.56 | | 0.56 | | 0.56 | | 0.56 | | 0.56 | | 0.56 | | 0.56 | | 0.56 | |
| 0.57 | 9,321.664 | 0.57 | 10,203.451 | 0.57 | | 0.57 | | 0.57 | | 0.57 | | 0.57 | | 0.57 | | 0.57 | | 0.57 | |
| 0.58 | 9,330.482 | 0.58 | 10,212.269 | 0.58 | | 0.58 | | 0.58 | | 0.58 | | 0.58 | | 0.58 | | 0.58 | | 0.58 | |
| 0.59 | 9,339.300 | 0.59 | 10,221.086 | 0.59 | | 0.59 | | 0.59 | | 0.59 | | 0.59 | | 0.59 | | 0.59 | | 0.59 | |
| 0.60 | 9,348.118 | 0.60 | 10,229.904 | 0.60 | | 0.60 | | 0.60 | | 0.60 | | 0.60 | | 0.60 | | 0.60 | | 0.60 | |
| 0.61 | 9,356.936 | 0.61 | 10,238.722 | 0.61 | | 0.61 | | 0.61 | | 0.61 | | 0.61 | | 0.61 | | 0.61 | | 0.61 | |
| 0.62 | 9,365.754 | 0.62 | 10,247.540 | 0.62 | | 0.62 | | 0.62 | | 0.62 | | 0.62 | | 0.62 | | 0.62 | | 0.62 | |
| 0.63 | 9,374.571 | 0.63 | 10,256.358 | 0.63 | | 0.63 | | 0.63 | | 0.63 | | 0.63 | | 0.63 | | 0.63 | | 0.63 | |
| 0.64 | 9,383.389 | 0.64 | 10,265.176 | 0.64 | | 0.64 | | 0.64 | | 0.64 | | 0.64 | | 0.64 | | 0.64 | | 0.64 | |
| 0.65 | 9,392.207 | 0.65 | 10,273.994 | 0.65 | | 0.65 | | 0.65 | | 0.65 | | 0.65 | | 0.65 | | 0.65 | | 0.65 | |
| 0.66 | 9,401.025 | 0.66 | 10,282.811 | 0.66 | | 0.66 | | 0.66 | | 0.66 | | 0.66 | | 0.66 | | 0.66 | | 0.66 | |
| 0.67 | 9,409.843 | 0.67 | 10,291.629 | 0.67 | | 0.67 | | 0.67 | | 0.67 | | 0.67 | | 0.67 | | 0.67 | | 0.67 | |
| 0.68 | 9,418.661 | 0.68 | 10,300.447 | 0.68 | | 0.68 | | 0.68 | | 0.68 | | 0.68 | | 0.68 | | 0.68 | | 0.68 | |
| 0.69 | 9,427.479 | 0.69 | 10,309.265 | 0.69 | | 0.69 | | 0.69 | | 0.69 | | 0.69 | | 0.69 | | 0.69 | | 0.69 | |
| 0.70 | 9,436.297 | 0.70 | 10,318.083 | 0.70 | | 0.70 | | 0.70 | | 0.70 | | 0.70 | | 0.70 | | 0.70 | | 0.70 | |
| 0.71 | 9,445.114 | 0.71 | 10,326.901 | 0.71 | | 0.71 | | 0.71 | | 0.71 | | 0.71 | | 0.71 | | 0.71 | | 0.71 | |
| 0.72 | 9,453.932 | 0.72 | 10,335.719 | 0.72 | | 0.72 | | 0.72 | | 0.72 | | 0.72 | | 0.72 | | 0.72 | | 0.72 | |
| 0.73 | 9,462.750 | 0.73 | 10,344.537 | 0.73 | | 0.73 | | 0.73 | | 0.73 | | 0.73 | | 0.73 | | 0.73 | | 0.73 | |
| 0.74 | 9,471.568 | 0.74 | 10,353.354 | 0.74 | | 0.74 | | 0.74 | | 0.74 | | 0.74 | | 0.74 | | 0.74 | | 0.74 | |
| 0.75 | 9,480.386 | 0.75 | 10,362.172 | 0.75 | | 0.75 | | 0.75 | | 0.75 | | 0.75 | | 0.75 | | 0.75 | | 0.75 | |
| 0.76 | 9,489.204 | 0.76 | 10,370.990 | 0.76 | | 0.76 | | 0.76 | | 0.76 | | 0.76 | | 0.76 | | 0.76 | | 0.76 | |
| 0.77 | 9,498.022 | 0.77 | 10,379.808 | 0.77 | | 0.77 | | 0.77 | | 0.77 | | 0.77 | | 0.77 | | 0.77 | | 0.77 | |
| 0.78 | 9,506.839 | 0.78 | 10,388.626 | 0.78 | | 0.78 | | 0.78 | | 0.78 | | 0.78 | | 0.78 | | 0.78 | | 0.78 | |
| 0.79 | 9,515.657 | 0.79 | 10,397.444 | 0.79 | | 0.79 | | 0.79 | | 0.79 | | 0.79 | | 0.79 | | 0.79 | | 0.79 | |
| 0.80 | 9,524.475 | 0.80 | 10,406.262 | 0.80 | | 0.80 | | 0.80 | | 0.80 | | 0.80 | | 0.80 | | 0.80 | | 0.80 | |
| 0.81 | 9,533.293 | 0.81 | 10,415.079 | 0.81 | | 0.81 | | 0.81 | | 0.81 | | 0.81 | | 0.81 | | 0.81 | | | |
| 0.82 | 9,542.111 | 0.82 | 10,423.897 | 0.82 | | 0.82 | | 0.82 | | 0.82 | | 0.82 | | 0.82 | | 0.82 | | | |
| 0.83 | 9,550.929 | 0.83 | 10,432.715 | 0.83 | | 0.83 | | 0.83 | | 0.83 | | 0.83 | | 0.83 | | 0.83 | | | |
| 0.84 | 9,559.747 | 0.84 | 10,441.533 | 0.84 | | 0.84 | | 0.84 | | 0.84 | | 0.84 | | 0.84 | | 0.84 | | | |
| 0.85 | 9,568.564 | 0.85 | 10,450.351 | 0.85 | | 0.85 | | 0.85 | | 0.85 | | 0.85 | | 0.85 | | 0.85 | | | |
| 0.86 | 9,577.382 | 0.86 | 10,459.169 | 0.86 | | 0.86 | | 0.86 | | 0.86 | | 0.86 | | 0.86 | | 0.86 | | | |
| 0.87 | 9,586.200 | 0.87 | 10,467.987 | 0.87 | | 0.87 | | 0.87 | | 0.87 | | 0.87 | | 0.87 | | 0.87 | | | |
| 0.88 | 9,595.018 | 0.88 | 10,476.805 | 0.88 | | 0.88 | | 0.88 | | 0.88 | | 0.88 | | 0.88 | | 0.88 | | | |
| 0.89 | 9,603.836 | 0.89 | 10,485.622 | 0.89 | | 0.89 | | 0.89 | | 0.89 | | 0.89 | | 0.89 | | 0.89 | | | MM |
| 0.90 | 9,612.654 | 0.90 | 10,494.440 | 0.90 | | 0.90 | | 0.90 | | 0.90 | | 0.90 | | 0.90 | | 0.90 | | 0.001 | 0.881 |
| 0.91 | 9,621.472 | 0.91 | 10,503.258 | 0.91 | | 0.91 | | 0.91 | | 0.91 | | 0.91 | | 0.91 | | 0.91 | | 0.002 | 1.762 |
| 0.92 | 9,630.290 | 0.92 | 10,512.076 | 0.92 | | 0.92 | | 0.92 | | 0.92 | | 0.92 | | 0.92 | | 0.92 | | 0.003 | 2.643 |
| 0.93 | 9,639.107 | 0.93 | 10,520.894 | 0.93 | | 0.93 | | 0.93 | | 0.93 | | 0.93 | | 0.93 | | 0.93 | | 0.004 | 3.524 |
| 0.94 | 9,647.925 | 0.94 | 10,529.712 | 0.94 | | 0.94 | | 0.94 | | 0.94 | | 0.94 | | 0.94 | | 0.94 | | 0.005 | 4.406 |
| 0.95 | 9,656.743 | 0.95 | 10,538.530 | 0.95 | | 0.95 | | 0.95 | | 0.95 | | 0.95 | | 0.95 | | 0.95 | | 0.006 | 5.287 |
| 0.96 | 9,665.561 | 0.96 | 10,547.347 | 0.96 | | 0.96 | | 0.96 | | 0.96 | | 0.96 | | 0.96 | | 0.96 | | 0.007 | 6.168 |
| 0.97 | 9,674.379 | 0.97 | 10,556.165 | 0.97 | | 0.97 | | 0.97 | | 0.97 | | 0.97 | | 0.97 | | 0.97 | | 0.008 | 7.049 |
| 0.98 | 9,683.197 | 0.98 | 10,564.983 | 0.98 | | 0.98 | | 0.98 | | 0.98 | | 0.98 | | 0.98 | | 0.98 | | 0.009 | 7.930 |
| 0.99 | 9,692.015 | 0.99 | 10,573.801 | 0.99 | | 0.99 | | 0.99 | | 0.99 | | 0.99 | | 0.99 | | 0.99 | | | |

DATE STRAPPED: 09/04/19 BY: SO
DATE COMPUTED: 09/10/19 BY: WLH
DATE ISSUED: 09/10/19

**AMSPEC**

# 6120-C-265-001 MPEI

# QUALITY CONTROL REPORT

AGNICO EAGLE

**Vendor Document Status**

1 ☐ Proceed to next submission and status.

2 ☐ Proceed with exceptions as noted to next submission and status.

3 ☐ Do not proceed.
Revise as noted and resubmit next submission and status.

4 ☑ Complete, no further submission required.

By: Bruno Roy

Date: Digitally signed by Bruno Roy
Date: 2019.12.13 11:20:39 -05'00'

Review and authorization to fabricate are only for general conformance with the design concept of the Project as expressed in the Contract Documents. Sole responsibility for the accuracy and completeness of this document, including but not limited to dimensions and quantities, remains with the Supplier/Contractor. Agnico Eagle does not warrant the accuracy or completeness of any of the information contained herein, nor does Agnico Eagle authorize or approve any construction means, methods, techniques, sequences or any safety precautions or procedures.

Agnico Eagle No. 6120-C-265-001 R: ABF.QC.REPORT

**DOCUMENT FOR INFORMATION**

1. WELDING PROCEDURE SPECIFICATION (WPS)
2. WELDER QUALIFICATION TEST (WQT)
    - 2.1 Camirand, Sébastien
    - 2.2 Caouette, Francois
    - 2.3 St-Hilaire, Joel
3. PNEUMATIC PRESSURE TEST PROCEDURE.
4. PNEUMATIC PRESSURE TEST RESULTS.
5. MILLTEST & HEAT NUMBER DOCUMENTATION.
6. VALVE & EQUIPMENT CERTIFICATION

# 1

Préparé par:
CONSULTANTS EN SOUDAGE MEQUALTECH Pour :
18C-088

# DESCRIPTION DE LA MÉTHODE DE SOUDAGE (DMS)
## *WELDING PROCEDURE SPECIFICATION (WPS)*

(Référence ASME Sections VIII & IX. ed. 2017 & ASME B31.3 ed. 2016)

NOTE: Les titres désignent les hommes et les femmes / Titles refer to men and women

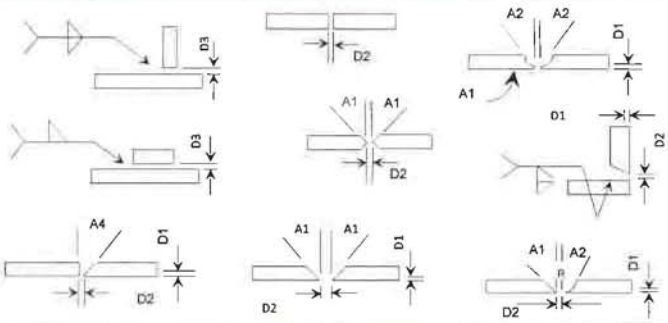
| | | Désignation de la Méthode *Provincial registration* | | Enregistrement provincial *Provincial registration* |
|---|---|---|---|---|
| **ABF CONSTRUCTION**<br>138, Chemin des Boisés<br>Val-d'Or,secteur Dubuisson,<br>Qc, J9P 4N7 | Canada | DMS / *WPS* | **SMAW-P1-P1**<br>Révision: 0 | MTL 310.6 |
| | | RMS / *PQR* | **SMAW-P1-P1-A** | |

**Procédé(s) de soudage / *Welding process***

| | | | | |
|---|---|---|---|---|
| **SMAW** | Manuel *Manual* | X | Semi-automatique *Semi-automatic* | Machine-auto *Auto.machine* |

**Joints / *Joints* (QW-402)**

| | | |
|---|---|---|
| Genre / *Design* | **Carré, chanfreiné, angle** ***Square, groove, fillet*** | |
| Soutien / *Backing* | Oui / *Yes* | X |
| | Non / *No* | X |
| Matériau de soutien *Backing material* | Option | **Soudure ou P1** ***Weld or P1*** |
| Support de retenue *Retainer* | **Aucun / *None*** | |
| Autre / *Other* | **Aucun / *None*** | |




**A1**=30½°±2½° (VAISSEAU / *VESSEL*)
**A1**=37½°±2½° (TUYAUTERIE / *PIPING*)
**A2**=20½°±2½° **A3**=10½°±2½° **A4**=45°±5½°
**D1**=1/16" ± 1/16"
**D2**=1/16" ± 1/16"
(SANS BARRE DE SOUTIEN / *WITHOUT BACKING*)
**D2**=3/16" ± 1/8"
(AVEC BARRE DE SOUTIEN / *WITH BACKING*)
**D3**= 0" + 5/32"

**Métaux de base / *Base metal* (QW-403)**

| | |
|---|---|
| Métaux de base P. No. / *Base metal: P.No.* | **P1** (Gr: 1 ou / or 2) à/*to* **P1** (Gr. 1 ou / or 2) |
| Gamme d'épaisseurs qualifiées pour le métal de base *Base metal thickness range qualified* | Chanfrein / *Groove* : **0.1685" à/*to* 0.587" maximum** (Voir / See note 4)<br>Angle / *Fillet* : **Aucune limite / *No limit*** |
| Épaisseur maximale de la plus épaisse des passes de soudage *Maximun thickness of any welding pass* | **0.250" maximum** |
| Autre / *Others* | **Aucun / *None*** |

**Métaux d'apport / *Filler metals* (QW-404)**

| | | | | | |
|---|---|---|---|---|---|
| 1 AWS N° / No | **E-6010** | SF A: **5.1** | F-No. **3** | A-No. **1** | **Dia:** 3/32"-1/8"-5/32" |
| | **E-7018-1** | SF A: **5.1** | F-No. **4** | A-No. **1** | **Dia:** 3/32"-1/8"-5/32"-3/16"-1/4" |
| Gamme des épaisseurs qualifiées pour le dépôt de soudage *Weld metal thickness range qualified* | Chanfrein / *Groove* **(F3: 0.250" max.) (F4: 0.424" max.)**<br>Angle / *Fillet* : **Aucune limite / *No limit*** | | | | |
| Pièce insérée consumable / *Consumable insert* | **Aucun / *None*** | | | | |
| Poudre ou fil supplémentaire / *Supplementary powder or wire* | **Aucun / *None*** | | | | |

**Position / *Positions* (QW-405)**

| | |
|---|---|
| Position(s) du chanfrein / *Position of groove* | **Toutes positions / *All positions*** |
| Progression du soudage / *Welding progression* | **Montant, descendant / *Up, down*** |
| Position(s) de l'angle / *Position(s) of fillet* | **Toutes positions / *All positions*** |

**Préchauffage / *Preheat (QW-406)***

| | | |
|---|---|---|
| Température de préchauffage, maintien du préchauffage (Optionel) *Preheat temperature, preheat temperature (Optional).* | **T ≤ 1½ in.: 50° F Min.**<br>**1½ in. < T ≤ 2½ in.: 150° F Min.** | **2½ in. < T ≤ 4 in.: 250° F Min.**<br>**T > 4 in.: 300° F Min.** |
| Température de l'interpasse / *Enterpass temperature* | 50° F Min. | |
| Autre / *Other* | **Aucun / *None*** | |

**Traitement thermique postchauffage / *Posteweld heat treatment* (QW-407)**

| | |
|---|---|
| Gamme de températures / *Temperature range* | **Aucun / *None*** |
| Gamme de durée / *Time range* | **Aucun / *None*** |
| Note / *Note* | **Aucun / *None*** |

**Gaz / *Gas* (QW-408)**

| | |
|---|---|
| Composition du gas de protection / *Shielding gas composition* | **Aucun / *None*** |
| Débit du gaz / *Gas flow rate* | **Aucun / *None*** |
| Composition du gaz de soutien / *Backing gas composition* | **Aucun / *None*** |
| Gaz de protection trainant / *Training sheilding gas composition* | **Aucun / *None*** |

**Caractéristiques électrique et technique / *Electrical, technical characteristics* (QW-409-QW-410)**

| Métal d'apport / *Filler metal* | | | | Courant / *Current* | | | |
|---|---|---|---|---|---|---|---|
| Procédé *Process* | Diamètre *Diameter* | Classification *Classification* | Position de soudage *Weld position* | Type, polarité *Type, polarity* | Gamme d'ampèrage *Amperage range* | Gamme de voltage *Voltage range* | Gamme de vitesse *Travel speede range* |
| SMAW | 3/32" | E-6010 | Toutes / *All* | **CC-DC / *EP-RP*** | **50-85** | **20-30** | **Variable / *Variable*** |
| SMAW | 1/8" | E-6010 | Toutes / *All* | **CC-DC / *EP-RP*** | **60-120** | **22-32** | **Variable / *Variable*** |
| SMAW | 5/32" | E-6010 | Toutes / *All* | **CC-DC / *EP-RP*** | **80-150** | **24-34** | **Variable / *Variable*** |
| SMAW | 3/32" | E-7018-1 | Toutes / *All* | **CC-DC / *EP-RP*** | **75-115** | **20-28** | **Variable / *Variable*** |
| SMAW | 1/8" | E-7018-1 | Toutes / *All* | **CC-DC / *EP-RP*** | **90-160** | **20-28** | **Variable / *Variable*** |
| SMAW | 5/32" | E-7018-1 | Toutes / *All* | **CC-DC / *EP-RP*** | **130-220** | **20-28** | **Variable / *Variable*** |
| SMAW | 3/16" | E-7018-1 | Toutes / *All* | **CC-DC / *EP-RP*** | **160-315** | **24-32** | **Variable / *Variable*** |
| SMAW | 1/4" | E-7018-1 | Toutes / *All* | **CC-DC / *EP-RP*** | **280-380** | **24-32** | **Variable / *Variable*** |

| | |
|---|---|
| Courant pulsé / *Pulse current* | **N/A** |
| Grosseur et type d'électrode de tungstène *Tungsten electrode size and type* | **N/A** |
| Mode de transfert du métal / *Mode of metal transfer* GMAW / FCAW / MCAW | **N/A** |
| Cordon droit ou oscillant String or weave bead | **Droit ou oscillant / *String or wave, Largeur / Whidth: 3 x dia. Electrode*** |
| Procédé de gougeage arrière Method of back gouging | **Meulage, scie,outil d'allésage / *Grinding, saw, bit tool*** |
| Nettoyage initial et entre les passes / *Initial and interpass cleaning* | **Les surfaces à souder doivent être libres de graisse, d'huile, de peinture ou de matière pouvant nuire à la qualité de la soudure; brossage, meulage, ciseau pneumatique / *All surfaces within one (1) inch from the welding joint and all edges shall be free from all traces of lubrifiants, cutting oils and foreign matter; brushimg, grinding, chipping.*** |
| Diamètre de la tuyière à gaz / *Orifice or gas cup size* | **N/A** |
| Oscillation / *Oscillation* | Fréquence / *Frequency* : **N/A** |
| Distance entre tuyière et pièce / *Contact tube to work distance* | **N/A** |
| Passe unique ou multiple (par côté) / *Multiple or single pass (per side)* | **Unique ou multiple / *Single or multiple pass*** |
| Électrode unique ou multiple / *Multiple or single electrode* | **Unique / *Single*** |
| Gamme de vitesse d'alimentation de l'électrode / Electrode wire feed speed range | **N/A** |
| Autre / *Other* | **Aucun martelage permis / *Peening is not permitted*** |

**Autres commentaires / *Supplementary Comments***

| | |
|---|---|
| 1) Essais de pliage guidés / *Guided bend tests* | **Voir rapport / *See report* 18C-088 1/3** |
| 2) Essais de traction / *Tensile tests* | **Voir rapport / *See report* 18C-088 2/3** |
| 3) Essais de dureté / *Hardness test* | **Non requis / *Not required*** |
| 4) Essais de résilience / *Impact test* | Lorsque les essais d'impact ne sont pas requis, les matériaux de base de tout groupe peuvent être soudés et la gamme d'épaisseur qualifiée est de 0.1685" à 0.587" selaon ASME B31.3, table 323.3.1. / *When impact test is not required, base material of all group may be welded and thickness range qualified is 0.1685" to 0.587" according to ASME B31.3 table 323.3.1* |
| 5) Analyse chimique / *Chimical analysis* | **Non requis / *Not required*** |
| 6) Ferriscomètre / *Ferriscometer* | **Non requis / *Not required*** |
| 7) Macrographie / *Macro-examination* | **Non requis / *Not required*** |
| 8) Métallographie / *Metallography* | **Non requis / *Not required*** |
| 9) Traitement thermique / *Heat treatment* | **Non requis / *Not required*** |
| 10) Énergie de chaleur (J/in) / *Heat inmput (J/in)* | **E-6011 : 22390 (J/in) max. / E-7018-1 : 28641 (J/in) max.** |
| 11) Critères d'acceptation / *Acceptance criteria* | **ASME sect. VIII Div. 1 UG-84 B31.3 Art.323.3** |

**Signature du représentant de l'entreprise / *Company representative signature***

18C-088

**Réservé au autorités / *Departement use only***

Vérifié par : I. CRIHAN

Date: 03 AVR. 2018

QC RÉGIE DU BÂTIMENT
MTL310-6
ENREGISTRÉ
SELON LA LOI SUR LES APPAREILS SOUS PRESSION 20.01
VÉRIFIÉ PAR I.C.
DATE 03 AVR. 2018

Préparé par:
CONSULTANTS EN SOUDAGE MEQUALTECH Pour :
18C-088

# RÉSULTAT DE LA MÉTHODE DE SOUDAGE (RMS)
## *PROCEDURE QUALIFICATION RESULT (PQR)*

(Référence ASME Sections VIII & IX. ed. 2017 & ASME B31.3 ed. 2016)

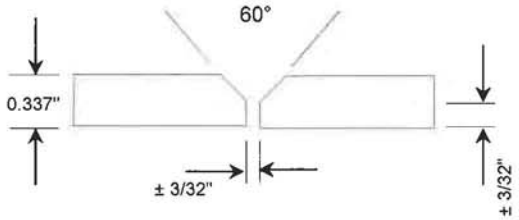
NOTE: Les titres désignent les hommes et les femmes / Titles refer to men and women

| | Désignation de la Méthode *Procedure identification* | | Enregistrement provincial *Provincial registration* |
|---|---|---|---|
| **ABF CONSTRUCTION**<br>138, Chemin des Boisés<br>Val-d'Or,secteur Dubuisson,<br>Qc, J9P 4N7 Canada | *RMS PQR* | **SMAW-P1-P1-A** | MTL-310.6 |
| | DMS *WPS* | **SMAW-P1-P1 Rev.0** | |

| Procédé(s) de soudage / *Welding process* | | | | |
|---|---|---|---|---|
| **SMAW** | Manuel *Manual* | X | Semi-auto. *Semi-auto.* | Machine-auto *Auto.machine* |

| Métaux de base / *Base metals* (QW-403) | |
|---|---|
| **SA-333 Gr. 6 à / *to* SA-350 LF2** | |
| Épaisseur / *Thickness* | **0.337"** |
| Épaisseur de la couche la plus épaisse *Thickness of the thicker pass* | **0.125"** |
| Autre / *Other* | **Aucun / None** |

Joint / *Joint* (QW-402)




| Métaux d'apport / *Filler metals* (QW-404) | | | | |
|---|---|---|---|---|
| Classe / *Class* AWS | SFA. No. | F-No | A-No | Épaisseur du dépot *Weld thickness* |
| **E 6011** | **5.1** | **3** | **1** | **0.125"** |
| **E 7018** | **5.1** | **4** | **1** | **0.212"** |

| Positions / *Positions* (QW-405) | |
|---|---|
| Position du chanfrein *Position of groove* | **6 G** |
| Progression de soudage *Welding progression* | **Verticale montante / *Vertical up*** |
| Autre / *Other* | **Aucun / *None*** |

| Préchauffage / *Preheat* (QW-406) | |
|---|---|
| Température de préchauffage *Preheat temperature* | **50° F** |
| Température de l'interpasse *Interpass temperature* | **50° F min.** |
| Autre / *Other* | **Aucun / *None*** |

| Traitement postchauffage/ *Postweld heat treatment* (QW-407) | |
|---|---|
| Gamme de température *Temperature range* | **Aucun / *None*** |
| Gamme de durée / *Time range* | ..... |
| Autre / *Other* | **Aucun / *None*** |

| Gaz / *Gas* (QW-408) | |
|---|---|
| Composition du gaz de protection *Shielding gas composition* | **Aucun / *None*** |
| Débit de gaz / *Gas flow rate* | ..... |
| Composition gaz soutien *Backing gas composition* | **Aucun / *None*** |
| Débit de gaz / *Gas flow rate* | ..... |
| Autre / *Other* | **Aucun / *None*** |

| Technique / *Technique* (QW-410) | |
|---|---|
| Cordon droit ou oscillant *String or weave bead* | **Droit / *String*** |
| Oscillation / Osciillation | **N/A** |
| Passe unique ou multiple (par côté) *Multiple or single pass ( per side)* | **Côté A Multiple / *Multiple*** |
| Électrode unique ou multiple *Multiple or single electrode* | **Unique / *Single*** |
| Autre / *Other* | **Aucun / *None*** |

Caractéristiques électrique et techniques / *Electrical and technical characteristics* (QW-409-410)

| Couche *Layer* | Procédé *Process* | Classification *Classification* | Diamètre *Diameter* | Type *Type* | Polarité *Polarity* | Ampérage *Amperage* | Voltage *Volt range* | Gamme de vitesse *Travel speed range* | Débit de chaleur *Heat input* |
|---|---|---|---|---|---|---|---|---|---|
| 1A | SMAW | E-6011 | 1/8" | CC/*DC* | EP/*RP* | **85** | **27** | **6,15 in/min.** | **22390 (J/in.)** |
| 2A | SMAW | E-7018-1 | 1/8" | CC/*DC* | EP/*RP* | **110** | **23** | **5,3 in/min.** | **28641 (J/in.)** |
| 3A | SMAW | E-7018-1 | 1/8" | CC/*DC* | EP/*RP* | **110** | **23** | **5,3 in/min.** | **28641 (J/in.)** |
| 4A | SMAW | E-7018-2 | 1/8" | CC/*DC* | EP/*RP* | **110** | **22** | **5,4 in/min.** | **26888 (J/in.)** |
| 5A | SMAW | E-7018-1 | 1/8" | CC/*DC* | EP/*RP* | **110** | **22** | **5,4 in/min.** | **26888 (J/in.)** |

**Essais à la traction / *Tensile test* (QW-150)**

| Éprouvette *Specimen* | Largeur *Width* | Épaisseur *Thickness* | Surface *Area* | Charge ultime *Ultimate total load* | Limite de contrainte *Ultimate unit stress* | Nature, endroit de rupture *Character, location of failure* |
|---|---|---|---|---|---|---|
| 1 | 0,756 in. | 0,328 in. | 0,2480 $in^2$ | 19375 lbs | 78135 PSI / 539 Mpa | Base material / Ductile |
| 4 | 0,758 in. | 0,335 in. | 0,2539 $in^2$ | 19475 lbs | 76694 PSI / 529 Mpa | Base material / Ductile |

**Essais de pliage guidé / *Guide bend test* (QW-160)**

| Éprouvette / *Specimen* | Face / *Face* | Racine / *Root* | Côté / *Side* | Résultat / *Result* |
|---|---|---|---|---|
| 2 | x | | | Accepté / Accepted |
| 3 | | x | | Accepté / Accepted |
| 5 | x | | | Accepté / Accepted |
| 6 | | x | | Accepté / Accepted |

**Essais de résilience / *Toughness test* (QW-170)**

| Éprouvette Specimen | Endroit de l'entaille *Notch location* | Forme de l'entaille *Notch type* | Température d'éprouvette *Specimen temperature* | Energie de rupture *Impact value* | Expansion latérale *Lateral expension* | | Essai chute libre *Drop weigth* | |
|---|---|---|---|---|---|---|---|---|
| | | | | | % cisaillement *Shear* | Millième *Mills* | Cassé *Break* | Non cassé *No break* |
| 1 | Soudure / Weld | v | - 45°C | 95 J | 60 | 81 | √ | |
| 2 | Soudure / Weld | v | - 45°C | 36 J | 40 | 32 | √ | |
| 3 | Soudure / Weld | v | - 45°C | 89 J | 60 | 71 | √ | |
| 1 | ZAT / HAZ SA-333 | v | - 45°C | 87 J | 70 | 74 | √ | |
| 2 | ZAT / HAZ SA-333 | v | - 45°C | 89 J | 60 | 75 | √ | |
| 3 | ZAT / HAZ SA-333 | v | - 45°C | 49 J | 50 | 43 | √ | |
| 1 | ZAT / HAZ SA-350 | v | - 45°C | 124 J | 85 | 77 | √ | |
| 2 | ZAT / HAZ SA-350 | v | - 45°C | 119 J | 85 | 80 | √ | |
| 3 | ZAT / HAZ SA-350 | v | - 45°C | 153 J | 100 | 84 | √ | |

**Analyse chimique / *Chimical analysis***

| C | Si | Mn | Ni | Cr | Nb | P | S | Fe | Cu | Mo | Ti | V | AL | B | Co | W | Be | Pb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Non requis / *Not required***

**Essais de dureté / *Hardness test***

**Non requis / *Not required***

**Essais effectués par / GROUPE MEQUALTECH / *Test conducted by***

LABORATOIRE D'ESSAI MEQUALTECH

18C-088

Nous certifions que les renseignements concernant ce résultat sont exactes et que les essais de soudage ont été préparés, soudé et exécutés conformément aux exigences de la section IX du code ASME. *We certify that statements in this record are correct and that the test weld prepared, weld and test in accordance with the requirement of ASME code IX.*

**Nom du soudeur, symbole / *Welder's name, stamp no.***

Joel St-Hilaire (J)

**Signature du représentant de l'entreprise / *Company representative signature***

2018-03-

**Réservé aux autorités / *Departement use only***

Pièce soudée le: *Welded on:* 6 MARS 2018 Inspecteur: *Inspector:* i.C. (Y) for M.M.

Résultats vérifiés: *Verified on:* 03 AVR. 2018 Inspecteur: *Inspector:* i.C. (Y)

QC RÉGIE DU BÂTIMENT MTL 310.6 ENREGISTRÉ SELON LA LOI SUR LES APPAREILS SOUS PRESSION (R.S.Q.) VÉRIFIÉ PAR i.C. (Y) DATE 03 AVR. 2018

LABORATOIRE D'ESSAI MEQUALTECH
8740 Boul. PIE IX
Montréal, Qc, H1Z 3V1
Tel: (514) 593-5755 Fax: (514) 593-8338



# RAPPORT D'ESSAI DE PLIAGE
# BEND TEST REPORT

CLIENT: ABF CONSTRUCTION
ADRESSE / ADDRESS: 138, Chemin des Boisés
Val-d'Or (secteur Dubuisson), Qc
J9P 4N7
CONTACT: Rocky Pelletier

| BON DE COMMANDE / P.O. #: | # TRAVAIL / JOB #: | PROCEDURE MEQUALTECH: | | Rev. |
|---|---|---|---|---|
| 16651-20155 | WPS# SMAW-P1-P1 Rev.0 | | P4b-PLI-06 | 0 |

| IDENTIFICATION | ACC. | REJ. | DÉFAUT / DEFECT | SENS DU PLIAGE / BEND DIRECTION | | |
|---|---|---|---|---|---|---|
| | | | | RACINE / ROOT | FACE | CÔTÉ / SIDE |
| PQR# SMAW-P1-P1 A | ☐ | ☐ | | | | |
| Specimen #2 | ☑ | ☐ | | | X | |
| Specimen #3 | ☑ | ☐ | | X | | |
| Specimen #5 | ☑ | ☐ | | | X | |
| Specimen #6 | ☑ | ☐ | | X | | |
| | ☐ | ☐ | | | | |
| | ☐ | ☐ | | | | |
| | ☐ | ☐ | | | | |
| | ☐ | ☐ | | | | |
| | ☐ | ☐ | | | | |
| | ☐ | ☐ | | | | |

MÉTHODE / METHOD

| Rayon de Mandrin / Mandrel rad. (A) | 0,67 inch | ANGLE DE PLIAGE / BEND ANGLE | 180° |
|---|---|---|---|

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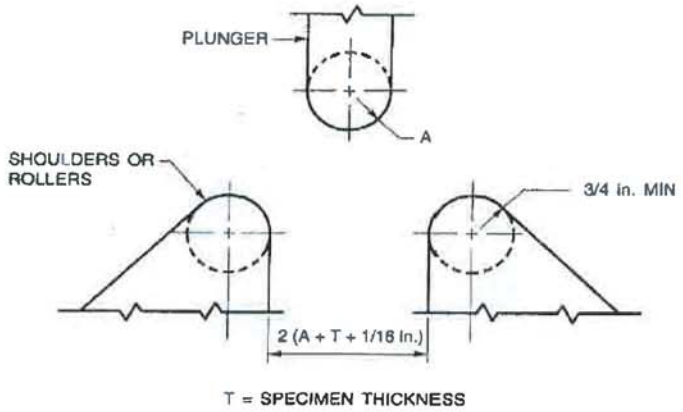


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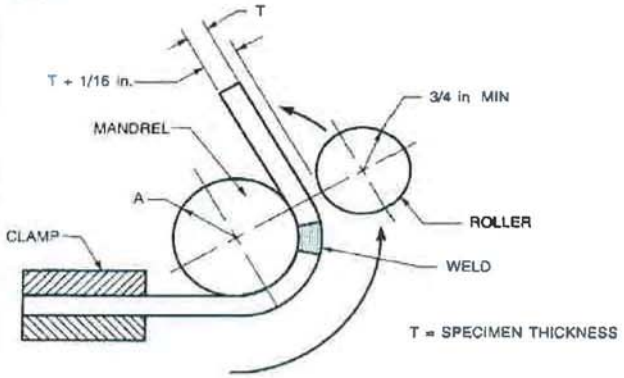


| CRITÈRES D'ACCEPTATION / ACCEPTANCE CRITERIA: | ASME Section IX Edition 2017 - QW-163 |
|---|---|
| RÉSULTATS / RESULTS : | ☑ CONFORME ☐ NON-CONFORME |

REMARQUE(S) / REMARK(S):

**PQR# SMAW-P1-P1 A.**
**Pipe 4"X 0,337", SA-333 grade 6 to Flange SA-350 grade LF2.**
**Position 6G.**

The parts being tested are kept for a one month period after the results have been sent. Test results apply only to the parts being tested.


ESSAIS EFFECTUÉS PAR / TESTS PERFORMED BY:

| Pascal Morin, ing. | Chef de service | 2018-03-16 |
|---|---|---|
| TECHNICIEN / TECHNICIAN OPERATEUR / OPERATOR | QUALIFICATION | DATE |



GROUPE MEQUALTECH

LABORATOIRE D'ESSAI MEQUALTECH
8740 Boul. PIE IX
Montréal, Qc, H1Z 3V1
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# RAPPORT D'ESSAI DE TRACTION
# TENSILE TEST REPORT

CLIENT: ABF CONSTRUCTION
ADRESSE / ADDRESS: 138, Chemin des Boisés
Val-d'Or (secteur Dubuisson), Qc
J9P 4N7
CONTACT: Rocky Pelletier

| BON DE COMMANDE / P.O. #: | # TRAVAIL / JOB #: | STANDARD D'ESSAI / STANDARD: | ASME SECTION IX |
|---|---|---|---|
| 16651-20155 | WPS# SMAW-P1-P1 Rev.0 | Procédure Mequaltech procedure | P4b-TRA-05 |

| INSTRUMENT: | MARQUE / TRADE MARK : | MODÈLE / MODEL# : | SÉRIE / SERIAL# : |
|---|---|---|---|
| | Tinius Olsen | Standard 60,000 Lbs | 115,925 |

| IDENTIFICATION ET RÉSULTATS / IDENTIFICATION AND RESULTS | ÉCHANTILLON / SAMPLE | | | |
|---|---|---|---|---|
| ÉPROUVETTE / SAMPLE : | #1 | #4 | | |
| DIAMÈTRE INITIALE / INITIAL DIAMETER (IN): | | | | |
| LARGEUR INITIALE/ INITIAL WIDTH (IN) : | 0,756 | 0,758 | | |
| ÉPAISSEUR INITIALE / INITIAL THICKNESS (IN) : | 0,328 | 0,335 | | |
| SURFACE INITIALE / INITIAL SURFACE (square inches): | 0,2480 | 0,2539 | | |
| CHARGE ULTIME / MAXIMUM LOAD (lbs): | 19375 | 19475 | | |
| LIMITE D'ÉLASTICITÉ À 0,2% / 0,2% YIELD POINT (lbs) : | | | | |
| LIMITE D'ÉLASTICITÉ À 0,5% / 0,5% YIELD POINT (lbs) : | | | | |
| DIAMÈTRE FINALE / FINAL DIAMETER (IN): | | | | |
| LARGEUR FINALE/ FINAL WIDTH (IN) : | | | | |
| ÉPAISSEUR FINALE / FINAL THICKNESS (IN) : | | | | |
| SURFACE FINALE / FINAL SURFACE (square inches): | | | | |
| CONTRAINTE ULTIME / ULTIMATE TENSILE STRENGTH (PSI ): | 78135 | 76694 | | |
| CONTRAINTE ULTIME / ULTIMATE TENSILE STRENGTH (Mpa) : | 539 | 529 | | |
| LIMITE D'ÉLASTICITÉ À 0,2% / 0,2% YIELD STRENGTH (PSI) : | | | | |
| LIMITE D'ÉLASTICITÉ À 0,2% / 0,2% YIELD STRENGTH (Mpa) : | | | | |
| LIMITE D'ÉLASTICITÉ À 0,5% / 0,5% YIELD STRENGTH (PSI) : | | | | |
| LIMITE D'ÉLASTIITÉ À 0,5% / 0,5% YIELD STRENGTH (Mpa): | | | | |
| :LONGUEUR INITALE / INITIAL LENGTH (IN) | | | | |
| LONGUEUR FINALE / FINAL LENGTH (IN): | | | | |
| ALLONGEMENT / ELONGATION (%) : | | | | |
| STRICTION / REDUCTION OF AREA (%) : | | | | |
| RUPTURE / BREAK : | BASE MATERIAL | BASE MATERIAL | | |
| FACIES DE RUPTURE/ TYPE OF BREAK: | Ductile | Ductile | | |

CRITERES D'ACCEPTATION / ACCEPTANCE CRITERIA: ASME Section IX Edition 2017 - QW-153

RÉSULTATS / RESULTS : ☑ CONFORME ☐ NON-CONFORME

REMARQUE(S) / REMARK(S):

**PQR# SMAW-P1-P1 A.**

**Pipe 4"X 0,337", SA-333 grade 6 to Flange SA-350 grade LF2.**

**Position 6G.**

The parts being tested are kept for a one month period after the results have been sent. Test results apply only to the parts being tested.



ESSAIS EFFECTUES PAR / TESTS PERFORMED BY:

| Pascal Morin, ing. | Chef de service | 2018-03-16 |
|---|---|---|
| TECHNICIEN / TECHNICIAN OPÉRATEUR / OPERATOR | QUALIFICATION | DATE |



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# RAPPORT D'ESSAI DE RÉSILIENCE
# IMPACT TEST REPORT

CLIENT: ABF CONSTRUCTION
ADRESSE / ADDRESS: 138, Chemin des Boisés
Val-d'Or (secteur Dubuisson), Qc
J9P 4N7
CONTACT: Rocky Pelletier

| BON DE COMMANDE / P.O. #: | # DE CONTRAT / JOB #: | PROCEDURE MEQUALTECH: | | Rev. | |
|---|---|---|---|---|---|
| 16651-20155 | WPS# SMAW-P1-P1 Rev.0 | P4b-RES-03 | | 0 | |
| INSTRUMENT: | MARQUE / TRADE MARK : Satec | MODÈLE / MODEL# : SI-1C3 | # DE SÉRIE / SERIAL# : 1628 | | |

DESCRIPTION DE LA PIÈCE OU PROCÉDÉS DE SOUDAGE / PART DESCRIPTION OR WELDING PROCESS DETAIL :

PQR# SMAW-P1-P1 A - Pipe 4" X 0,337" (SA-333 grade 6) to Flange SA-350 grade LF2.

TEMPÉRATURE : -45°C | RÉSULTATS/ RESULTS (FT.LBS OU/OR JOULES) : ☐ FT./LBS ☑ JOULES | DIMENSIONS: 7 mm X 10 mm

| | ÉNERGIE ABSORBÉE / ABSORBED ENERGY | EXPANSION LATÉRALE / LATERAL EXPANSION( Mils) | % DE CISAILLEMENT / SHEAR % | CASSÉ / BREAK |
|---|---|---|---|---|
| **WELD** | | | | |
| | 95 | 81 | 60 | ☑ |
| | 36 | 32 | 40 | ☑ |
| | 89 | 71 | 60 | ☑ |
| | | | | ☐ |
| | | | | ☐ |
| | | | | ☐ |
| **HAZ - Pipe SA-333 grade 6 side** | | | | |
| | 87 | 74 | 70 | ☑ |
| | 89 | 75 | 60 | ☑ |
| | 49 | 43 | 50 | ☑ |
| | | | | ☐ |
| | | | | ☐ |
| | | | | ☐ |
| **HAZ - Flange SA-350 grade LF2 side** | | | | |
| | 124 | 77 | 85 | ☑ |
| | 119 | 80 | 85 | ☑ |
| | 153 | 84 | 100 | ☑ |
| | | | | ☐ |
| | | | | ☐ |
| | | | | ☐ |

CRITERES D'ACCEPTATION / ACCEPTANCE CRITERIA: ASME B31.3-2016 Table 323.3.5 = 20 Joules minimum*

RÉSULTATS / RESULTS : ☑ CONFORME ☐ NON-CONFORME

REMARQUE(S) / REMARK(S):

*70% subsize specimens used: Acceptance criteria becomes 14 Joules minimum average.

The parts being tested are kept for a one month period after the results have been sent. Test results apply only to the parts being tested.
This report can not be reproduced, except completely, without a written autorisation from the laboratory.

ESSAIS EFFECTUÉS PAR / TESTS PERFORMED BY:

| Pascal Morin, ing. | Chef de service | 2018-03-16 |
|---|---|---|
| TECHNICIEN / TECHNICIAN OPERATEUR / OPERATOR | QUALIFICATION | DATE |



GROUPE MEQUALTECH

# 2

Préparé par
CONSULTANTS EN SOUDAGE MEQUALTECH Pour
16C-224

# ÉPREUVE DE SOUDEUR OU D'OPÉRATEUR
*WELDER OR WELDING OPERATOR QUALIFICATION TEST*

Note: Les titres désignent également les hommes et les femmes

A. B. F Construction
1310, Avenue Davy,
Rouyn-Noranda,
Québec Canada J9Y 0A8

| Désignation de la DMS *Using WPS No.* | Enregistrement provincial *Provincial registration* |
|---|---|
| SMAW-11-1 | RN-72.6 |

Nom du soudeur ou opérateur / *Welder or operator's name*

CAMIRAND, SÉBASTIEN ( SC )

| | Variables *Variables* | Inscrire valeurs *Record actual values* | | Gamme qualifiée *Qualification range* | |
|---|---|---|---|---|---|
| **QW-353** Procédé/*ess* | Shielded metal arc welding | SMAW F3 Manuel / *Manual* | SMAW F4 Manuel / *Manual* | **SMAW F3** Manuel / *Manual* | **SMAW F4** Manuel / *Manual* |
| **QW-403** Métaux de base *Base metals* | Matériaux / *Material* | P1 à/*to* P1 | P1 à/*to* P1 | **(P1 à/*to* P15F) (P34) (P41 à/*to* P49)** | **(P1 à/*to* P15F) (P34) (P41 à/*to* P49)** |
| | Diamètre / *Diameter* | 2.375" D E / *O D* | 2.375" D E / *O D* | **≥ 1" D.E / *O.D*** | **≥ 1" D.E / *O.D*** |
| | Chanf. épaisseur / *Groove thick* | 0.343" | 0.343" | **Aucune limite / *No limit*** | **Aucune limite / *No limit*** |
| | Angle épais. / *Fillet thickness* | Tous / *All* | Tous / *All* | **Aucune limite / *No limit*** | **Aucune limite / *No limit*** |
| **QW-408** Gas / *Gaz* | Gaz de soutien / *Backing gas* | N/A | N/A | **N/A** | **N/A** |
| **QW-409** Électricité *Electrecity* | Courant / *Current* | CC / *DC* | CC / *DC* | **Tous / *All*** | **Tous / *All*** |
| | Polarité / *Polarity* | EP / *RP* | EP / *RP* | **Tous / *All*** | **Tous / *All*** |
| | Mode transfert / *Transfer mode* | N/A | N/A | **N/A** | **N/A** |
| **QW-404** Métaux d'apport *Filler metals* | No spec. / Spec No (SFA) | 5.1 | 5.1 | **5.1 5.4 5.5** | **5.1 5.4 5.5** |
| | AWS Classe / *Class* | F3 E-6010 | F4 E-7018 | **F3** | **F1, F2, F4** |
| | Dépôt soudure / *Weld deposit* | 0.125" | 0.218" | **0.250" Maximum** | **0.436" Maximum** |
| | Pièce inserée / *Insert* | Aucune / *None* | Aucune / *None* | **N/A** | **N/A** |
| **QW-402** Joint | Soutien / *Backing* | Sans soutien *Without backing* | Avec soutien *With backing* | **Avec ou sans soutien *With or without backing*** | **Avec soutien *With backing*** |
| **QW-405** Position | Position / *Progression* | 6G Montant / *Up* | 6G Montant / *Up* | **Toutes positions-montant *All positions-up*** | **Toutes positions-montant *All positions-up*** |
| **QW-360** Machine | Automatique / *Automatic* | N/A | N/A | **N/A** | **N/A** |

**Résultat de pliage ou de radiographie / *Guided bend or radiographic results***

| **QW-191** Specimens | Pliage de coté *Side bend* | Pliage transversal *Transverse bend* | Pliage longitudinal *Longitudinal bend* | Radiogrphie *Radiographic* | **ACCEPTÉ / *QUALIFIED*** | **REFUSÉ / *REFUSED*** |
|---|---|---|---|---|---|---|
| | | | | √ | ACCEPTÉ | |

**QW-194** Visu / el / *al*
Pénétration complète, fusion complète
*Complete joint penetration, complete fusion*

LABORATOIRE D'ESSAI MEQUALTECH
ONGC/ASNT-TC-1A Level II

Nous certifions que les renseignements ci-dessus sont exacts et que les essaies de soudage ont été preparés et executés conformement aux exigences de la section IX du Code ASME
*We certify that the statements in this record are correct and the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code*

**Entreprise / *Organization***

A. B. F Construction

**Organisme autorisé / *Accredited organization***

| | | | |
|---|---|---|---|
| Soudé le: *Welded on* | OCT 17 2019 | Inspecteur: *Inspetor.* | Accepté: *Accepted.* |
| Vérifié le : *Inspected on* | | Inspecteur *Inspector* | Refusé: *Refused* |

Préparé par
CONSULTANTS EN SOUDAGE MEQUALTECH Pour:
16C-224

# ÉPREUVE DE SOUDEUR OU D'OPÉRATEUR
*WELDER OR WELDING OPERATOR QUALIFICATION TEST*

Note: Les titres désignent également les hommes et les femmes.

A. B. F Construction
127-A, Avenue Marcel-Baril,
Rouyn-Noranda
Québec Canada J9X-7B9

| Désignation de la DMS *Using WPS No.* | Enregistrement provincial *Provincial registration* |
|---|---|
| SMAW-11-1 | RN-72.6 |

Nom du soudeur ou opérateur / *Welder or operator's name*

CAOUETTE FRANÇOIS (F)

| | Variables *Variables* | Inscrire valeurs *Record actual values* | | Gamme qualifiée *Qualification range* | |
|---|---|---|---|---|---|
| **QW-353** Proc/édé/ess | Shielded metal arc welding | SMAW F3 Manuel / *Manual* | SMAW F4 Manuel / *Manual* | **SMAW F3** Manuel / *Manual* | **SMAW F4** Manuel / *Manual* |
| **QW-403** Métaux de base *Base metals* | Matériaux / *Material* | P1 à/*to* P1 | P1 à/*to* P1 | **(P1 à/*to* P15F) (P34) (P41 à/*to* P49)** | **(P1 à/*to* P15F) (P34) (P41 à/*to* P49)** |
| | Diamètre / *Diameter* | 2.375" D.E / *O.D* | 2.375" D.E / *O.D* | **≥ 1" D.E / *O.D*** | **≥ 1" D.E / *O.D*** |
| | Chanf. épaisseur / *Groove thick.* | 0.343" | 0.343" | **Aucune limite / *No limit*** | **Aucune limite / *No limit*** |
| | Angle épais. / *Fillet thickness* | Tous / *All* | Tous / *All* | **Aucune limite / *No limit*** | **Aucune limite / *No limit*** |
| **QW-408** Gas / *Gaz* | Gaz de soutien / *Backing gas* | N/A | N/A | **N/A** | **N/A** |
| **QW-409** Électricité *Electrecity* | Courant / *Current* | CC / *DC* | CC / *DC* | **Tous / *All*** | **Tous / *All*** |
| | Polarité / *Polarity* | EP / *RP* | EP / *RP* | **Tous / *All*** | **Tous / *All*** |
| | Mode transfert / *Transfer mode* | N/A | N/A | **N/A** | **N/A** |
| **QW-404** Métaux d'apport *Filler metals* | No spec. / Spec No (SFA) | 5.1 | 5.1 | **5.1 5.4 5.5** | **5.1 5.4 5.5** |
| | AWS Classe / *Class* | F3 E-6010 | F4 E-7018 | **F3** | **F1, F2, F4** |
| | Dépôt soudure / *Weld deposit* | 0.125" | 0.218" | **0.250" Maximum** | **0.436" Maximum** |
| | Pièce inserée / *Insert* | Aucune / *None* | Aucune / *None* | **N/A** | **N/A** |
| **QW-402** Joint | Soutien / *Backing* | Sans soutien *Without backing* | Avec soutien *With backing* | **Avec ou sans soutien *With or without backing*** | **Avec soutien *With backing*** |
| **QW-405** Position | Position / *Progression* | 6G Montant / *Up* | 6G Montant / *Up* | **Toutes positions-montant *All positions-up*** | **Toutes positions-montant *All positions-up*** |
| **QW-360** Machine | Automatique / *Automatic* | N/A | N/A | **N/A** | **N/A** |

**Résultat de pliage ou de radiographie / *Guided bend or radiographic results***

| **QW-191** Specimens | Pliage de coté *Side bend* | Pliage transversal *Transverse bend* | Pliage longitudinal *Longitudinal bend* | Radiogrphie *Radiographic* | **ACCEPTÉ / *QUALIFIED*** | **REFUSÉ / *REFUSED*** |
|---|---|---|---|---|---|---|
| | | | | √ | ✓ | |

**QW-194** Visu / el / *al*: Pénétration complète, fusion complète
*Complete joint penetration, complete fusion*

LABORATOIRE D'ESSAI MEQUALTECH

ONGC/ASNT-TC-1A Level II

18M 4079-1 2018-09-21

Nous certifions que les renseignements ci-dessus sont exacts et que les essaies de soudage ont été preparés et executés conformement aux exigences de la section IX du Code ASME.
*We certify that the statements in this record are correct and the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.*

**Entreprise / *Organization***

A. B. F Construction

**Organisme autorisé / *Accredited organization***

| | | |
|---|---|---|
| Soudé le: *Welded on:* 14 SEPT 2018 | Inspecteur: *Inspetor:* | Accepté: *Accepted:* |
| Vérifié le : *Inspected on:* | Inspecteur *Inspector:* | Refusé: *Refused:* |

Préparé par:
CONSULTANTS EN SOUDAGE MEQUALTECH Pour:
16C-224

# ÉPREUVE DE SOUDEUR OU D'OPÉRATEUR
*WELDER OR WELDING OPERATOR QUALIFICATION TEST*

Note: Les titres désignent également les hommes et les femmes.

A. B. F Construction
1310, Avenue Davy,
Rouyn-Noranda
Québec Canada J9Y 0A8

| Désignation de la DMS *Using WPS No.* | Enregistrement provincial *Provincial registration* |
|---|---|
| SMAW-11-1 | RN-72.6 |

Nom du soudeur ou opérateur / *Welder or operator's name*

ST-HILAIRE JOEL ( J )

| | Variables *Variables* | Inscrire valeurs *Record actual values* | | Gamme qualifiée *Qualification range* | |
|---|---|---|---|---|---|
| QW-353 Proc/édé/ess | Shielded metal arc welding | SMAW F3 Manuel / *Manual* | SMAW F4 Manuel / *Manual* | SMAW F3 Manuel / *Manual* | SMAW F4 Manuel / *Manual* |
| QW-403 Métaux de base *Base metals* | Matériaux / *Material* | P1 à/*to* P1 | P1 à/*to* P1 | (P1 à/*to* P15F) (P34) (P41 à/*to* P49) | (P1 à/*to* P15F) (P34) (P41 à/*to* P49) |
| | Diamètre / *Diameter* | 2.375" D.E / *O.D* | 2.375" D.E / *O.D* | ≥ 1" D.E / *O.D* | ≥ 1" D.E / *O.D* |
| | Chanf. épaisseur / *Groove thick.* | 0.343" | 0.343" | Aucune limite / *No limit* | Aucune limite / *No limit* |
| | Angle épais. / *Fillet thickness* | Tous / *All* | Tous / *All* | Aucune limite / *No limit* | Aucune limite / *No limit* |
| QW-408 Gas / *Gaz* | Gaz de soutien / *Backing gas* | N/A | N/A | N/A | N/A |
| QW-409 Électricité *Electrecity* | Courant / *Current* | CC / *DC* | CC / *DC* | Tous / *All* | Tous / *All* |
| | Polarité / *Polarity* | EP / *RP* | EP / *RP* | Tous / *All* | Tous / *All* |
| | Mode transfert / *Transfer mode* | N/A | N/A | N/A | N/A |
| QW-404 Métaux d'apport *Filler metals* | No spec. / Spec No (SFA) | 5.1 | 5.1 | 5.1 5.4 5.5 | 5.1 5.4 5.5 |
| | AWS Classe / *Class* | F3 E-6010 | F4 E-7018 | F3 | F1, F2, F4 |
| | Dépôt soudure / *Weld deposit* | 0.125" | 0.218" | 0.250" Maximum | 0.436" Maximum |
| | Pièce inserée / *Insert* | Aucune / *None* | Aucune / *None* | N/A | N/A |
| QW-402 Joint | Soutien / *Backing* | Sans soutien *Without backing* | Avec soutien *With backing* | Avec ou sans soutien *With or without backing* | Avec soutien *With backing* |
| QW-405 Position | Position / *Progression* | 6G Montant / *Up* | 6G Montant / *Up* | Toutes positions-montant *All positions-up* | Toutes positions-montant *All positions-up* |
| QW-360 Machine | Automatique / *Automatic* | N/A | N/A | N/A | N/A |

**Résultat de pliage ou de radiographie / *Guided bend or radiographic results***

| QW-191 Specimens | Pliage de coté *Side bend* | Pliage transversal *Transverse bend* | Pliage longitudinal *Longitudinal bend* | Radiogrphie *Radiographic* | ACCEPTÉ / *QUALIFIED* | REFUSÉ / *REFUSED* |
|---|---|---|---|---|---|---|
| | | | | √ | ✓ | |

QW-194 Visu / el / *al*: Pénétration complète, fusion complète
*Complete joint penetration, complete fusion.*

LABORATOIRE D'ESSAI MEQUALTECH
ONGC/ASNT-TC-1A Level II

2018-09-21 18M4079-11

Nous certifions que les renseignements ci-dessus sont exacts et que les essaies de soudage ont été preparés et exécutés conformement aux exigences de la section IX du Code ASME
*We certify that the statements in this record are correct and the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.*

**Entreprise / *Organization***

A. B. F Construction

**Organisme autorisé / *Accredited organization***

| | | |
|---|---|---|
| Soudé le: *Welded on* 14-SEPT - 2018 | Inspecteur: *Inspetor:* | Accepté: *Accepted:* |
| Vérifié le : *Inspected on* | Inspecteur *Inspector:* | Refusé: *Refused:* |

# 3

# PROCEDURE FOR PNEUMATIC TESTING OF PIPING ASSEMBLY

***(PROCÉDURE D'ESSAIS SUR TUYAUTERIE PAR ÉPREUVE PNEUMATIQUE)***

## 1.0 GOAL *(But)* :

Defining the procedure for testing of piping assembly. *(Définir la procédure d'essais des assemblages de tuyauterie.)*

## 2.0 APPLICATION *(Domaine d'application)* :

This Procedure is intended to describe the pneumatic testing methodology for piping assemblies at Agnico-Eagle Div. Meadowbank Project, NU. *(Cette procédure s'applique à définir la méthodologie d'essai d'étanchéité des assemblages de tuyauterie à Agnico-Eagle Div. Meadowbank Project, NU.)*

## 3.0 RESPONSABILITIES *(Responsabilités)* :

Work is performed by ABF Mines inc., pipefitters performing the test are responsible for the quality and safety of their work. The foreman supervises and witnesses the quality and safety of the testing. AEM representative verifies and approves each test. *(Les travaux sont réalisés par ABF Mines Inc., les tuyauteurs qui réalisent les essais sont responsables de la qualité et de la sécurité de leurs travaux, le CTM supervise les travaux et témoigne de tous les essais. Le représentant d'AEM inc. vérifie et approuve les essais réalisés.)*

## 4.0 METHODOLOGY (Méthodologie) :

The work consists of testing on piping assemblies according to the present procedures by ABF Mines Inc. *(Les travaux consistent à la réalisation d'essais sur les assemblages de tuyauterie selon la présente procédure par ABF Mines inc.)*

## 5.0 STEPS *(Étapes)*:

Advise 24hr prior to testing, the AEM supervisor in charge of the piping installation, of the time of test. *(Aviser par courriel 24 heures à l'avance le représentant d'AEM de l'exécution des essais pneumatiques.)*

Every piping assembly, subject to testing is inspected for any restriction. Piping is then coupled with appropriate instrument and pressure gage. *(Chaque ensemble de tuyauterie fabriqué et à inspecter, est inspecté pour toute obstruction de manière appropriée. Ilest ensuite couplé adéquatement des raccords, nourrice, purge et d'instruments indicateurs de pression.)*

The area is cleared and barricaded with red (danger) tape at reasonable and secure distance. *(Le secteur est évacué, des rubans de délimitation rouge (Danger) sont installés à une distance raisonnable et sécuritaire).*

The pressure for testing is determined on 1.2X the service pressure as per system specifications, every instrument below that set pressure is remove for testing. Maximum testing pressure allowed is 690kPa/100Psi. *(Les pressions d'essais sont déterminées à 1.2X la pression de service selon la spécification du système. Si une unité performe en deçà de cette pression d'utilisation, elle est isolé pour la duré du test. La pression maximale autorisée est de 690kPa/100Ps.)*

The pressure is raised in three (3) equal stages. With a 10 min. waiting period between each increase until maximum pressure is obtained. *(La pression maximale est obtenue en trois étapes, d'égale pression, avec 15 min. d'attente entre chaque augmentation de pression.)*

The testing pressure is maintained without pressure drop, nor leak, for a minimum of one hour. *(La pression d'essais est maintenue, sans baisse de pression, ni fuite, pendant une durée minimale d'une heure.)*

In case of pressure drop, potential leaks are spotted using soapy water (Snoop). Any leak is then isolated, purged and repaired. Pressure is then raised back to testing pressure for a full one (1) hour phase. *(En cas de baisse de pression, l'application d'un détecteur de fuite à base d'eau savonneuse (Snoop) est appliqué sur toute la surface des joints suspects. Toute fuite est isolée, la ligne purgée et réparée. La pression est rétablie dans tout le réseau pour une heure complète.)*

The testing is concluded by purging the air, this process is also used to remove all loose fine particles inside the system. Instruments of calibration are reinstalled. *(Après la conclusion de l'épreuve, l'air est purgé et les équipements de calibration réinstallés.)*

All parts of system then tested is identified as so on the quality control's P'nID.
*(Les ensembles testés seront identifiés sur le diagramme de procédé réservé à cet effet)*

The inspection report is signed by participants and preserved for future reference. *(La fiche d'inspection signée sera classée et conservée dans le cartable à cet effet pour futures références.*

## 6.0 ÉQUIPEMENTS :

- Appropriate Gauge *(Manomètres)*
- Temporary Piping *(Tuyauterie temporaire)*
- Fittings, Flanges, Blind-Flanges, Spectacle-blind, hoses and valves.
  *(Raccords, brides, brides pleines ou plaques d'obturation, boyau et robinet)*
- Vents *(Évents)*
- Compressor *(Compresseur)*
- Soapy water *(Eau* Savonneuse)

## RÉFÉRENCES

© Typical procedure Xenit Industries inc.

# 4

ABF ARCTIC

# AEM / MPEI fuel tank Baker Lake

## Project no. 6120-C-265-001

## Piping Pressure testing Report

| Date | Hydro (Check) | AIR (Check) | Line # or Piping localisation From To | Service | Test Pressure (Psi) | Time | Result[1] Ok | Result[1] Drop | Result[2] Ok | Result[2] Drop |
|---|---|---|---|---|---|---|---|---|---|---|
| 2019-09-14 | | ✓ | Tank 5/6 to Tie in. | | 50 psi | 16:56 | ✓ | | ✓ (36H) | |
| 2019-09-15 | | ✓ | Tie in Line 6" to the tank 7 | | 50 PSI | 13:00. | ✓ | | ✓ | |
| 2019-09-17 | | ✓ | Tie in Line 8" to the tank 7 | | 50 PSI | 11:50 | ✓ | | ✓ (48H) | |
| | | | | | | | | | | |
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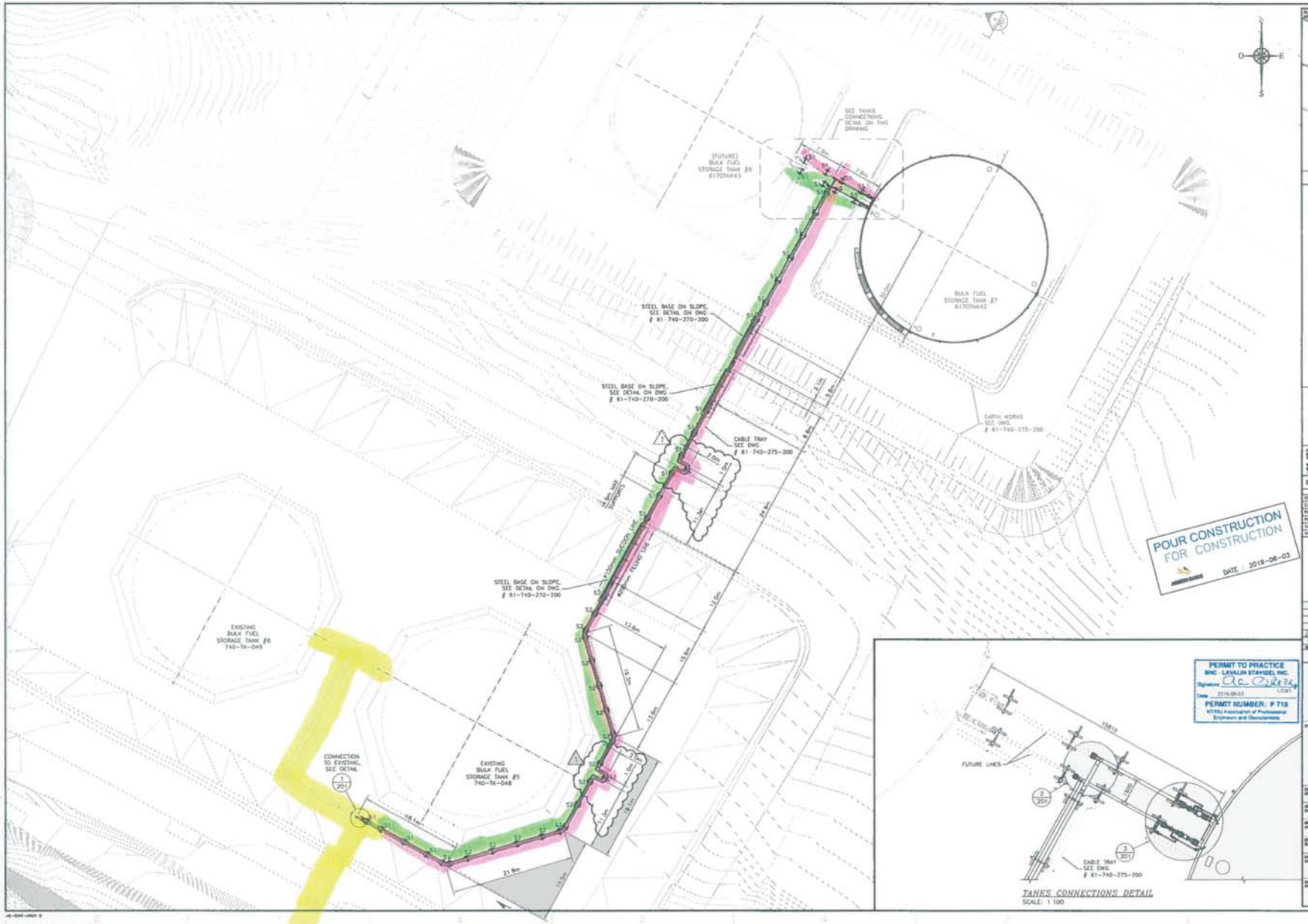
| | | | | | | | | | | |

(Signature) (date) (Print) Rep. ABF Arctic

(Signature) (date) (Print) Rep. AEM

(Signature) (date) (Print) Rep. Gov. (If required)


SEE TANKS CONNECTIONS DETAIL ON THIS DRAWING
(FUTURE) BULK FUEL STORAGE TANK #8 61TOTNK43
BULK FUEL STORAGE TANK #7 61TOTNK42
STEEL BASE ON SLOPE, SEE DETAIL ON DWG # 61-740-270-200
STEEL BASE ON SLOPE, SEE DETAIL ON DWG # 61-740-270-200
CABLE TRAY SEE DWG. # 61-740-275-200
EARTH WORKS SEE DWG. # 61-740-275-200
STEEL BASE ON SLOPE, SEE DETAIL ON DWG # 61-740-270-200
EXISTING BULK FUEL STORAGE TANK #6 740-TK-049
EXISTING BULK FUEL STORAGE TANK #5 740-TK-048
CONNECTION TO EXISTING, SEE DETAIL
POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2019-06-03
PERMIT TO PRACTICE
SNC - LAVALIN STANTEC INC.
PERMIT NUMBER: P 715
NT/NU Association of Professional Engineers and Geoscientists
FUTURE LINES
CABLE TRAY SEE DWG. # 61-740-275-200
TANKS CONNECTIONS DETAIL
SCALE: 1:100
THIS DWG
BAKER LAKE
NOTES GÉNÉRALES / GENERAL NOTES
S1: PIPE SUPPORT TYPE 1
S2: PIPE SUPPORT TYPE 2
SEE DWG. # 61-740-270-202
SNC·LAVALIN
Project # : 660534-0000
DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS
AGNICO EAGLE
REVISIONS
ACNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
PIPING
PLAN VIEW
10M LITERS DIESEL TANK #7 (61TOTNK42)
& TANK #8 (61TOTNK43) PIPING
B. LEMIEUX, Tech.
R. LAVOIE, Jr. Eng.
A. OUELLET, P. Eng.
1 : 300
61-740-270-200
6120
1


2019-09-14.
17456.

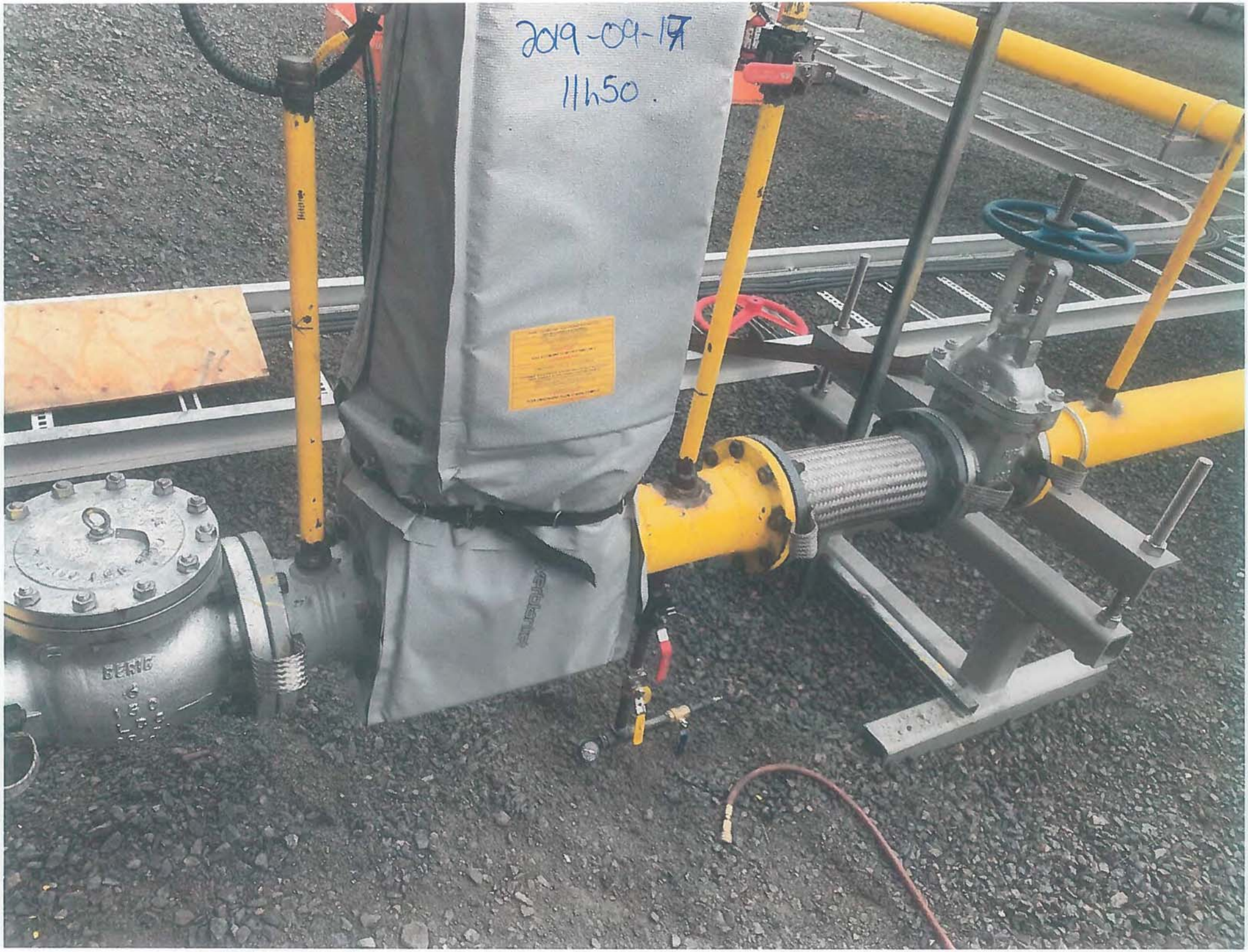
2014-04-15
17422

2019-09-15.
17h29.

2019-09-15
13:02.

2019-09-15

14:30


2019-09-17
11h50.


MPa
bar
psi
NORGREN
IMi

# 5

MLTS_6056-18731
Heat# SEE BELOW

CCTF CORPORATION

4151 North Service Road, Burlington, ON L7L 4X6 (905) 335-5320

Date: 6/5/2019

# Mill Test Reports

**Invoice:** 1596625-00
**PO:** 4072649

**Customer:** 49300-001
A.B.F MINES INC (ROUYN NORANDA
LIVRER A EQUIPEMENT KN
8254 RANG DU VIEUX PONT
ROUYN-NORANDA, QC J9Y 0H4

| Line | Heat# | Product | Description |
|---|---|---|---|
| 2 | 176433 | 2530031 | 1 A333-6 STD BLK SMLS SRL |
| 3 | 141352 | 2530074 | 2 A333-6 STD BLK SMLS SRL |
| 4 | 610879 | 2530090 | 4 A333-6 STD BLK SMLS SRL |
| 5 | 175147 | 2530104 | 6 A333-6 STD BLK SMLS SRL |
| 5 | 178322 | 2530104 | 6 A333-6 STD BLK SMLS SRL |
| 6 | 175142 | 2530112 | 8 A333-6 STD BLK SMLS SRL |
| 6 | 175146 | 2530112 | 8 A333-6 STD BLK SMLS SRL |
| 6 | 176433 | 2530112 | 8 A333-6 STD BLK SMLS SRL |
| 6 | 177833 | 2530112 | 8 A333-6 STD BLK SMLS SRL |

***Heat codes*** followed by ** have been corrected, change may not show on the packing slip

vallourec

Vallourec Soluções Tubulares do Brasil S.A.
Barreiro Plant - Av. Olinto Meireles, 65
ZIP 30640-010 - Belo Horizonte, MG

EcoTube

RINA

# Inspection Certificate

(According to DIN EN 10204.3.1)

**N°.: 0030030837 / 00**

Sheet: 1 / 4

**Customer:** VALLOUREC CANADA INC

**Country:** Canada

**Material Number:** 276243
**Work Order:** 531796 / 10
**Customer Order:** VM-4682 - P.O 4038589-00

**Inspection:** Vallourec Soluções Tubulares do Brasil S.A.

**PRODUCT:** SEAMLESS STEEL PIPE, HOT FINISHED , PLAIN ENDS , NORMALIZED
**DIMENSIONS:** 33,40 mm X 3,38 mm **SCHEDULE:** 040 **GRADE:** GRADE 290 # GR 1 # 6 # B 1 STD 2530031
**STANDARD:** CSA-Z245.1-14 - CATEGORY II
**IN ACCORDANCE ALSO TO THE STANDARDS:** ASTM A 333M - 16 ASTM A 999M - 18 # ASTM A 106M - 18 ASTM A 530M - 12 # ASTM A 53M - 12 # ASME SA-333M - 17 ASME SA 999M - 17 # ASME SA-106M - 17 ASME SA 530M - 17
**CUSTOMER SPECIFICATION:** CCTF GrB,1,6,290 Cat II SS , 20.11.2017
**SURFACE PROTECTION: EXTERNAL:** LACQUER **PIPE ENDS PROTECTOR:** PLASTIC CAP
**TOLERANCES: OUTSIDE DIAMETER (PIPE BODY):** -0,40 mm / +0,40 mm **WALL THICKNESS:** -0,42 mm / +0,68 mm
**TOLERANCES(PIPE ENDS): OUTSIDE DIAMETER:** -0,40 mm / +0,40 mm
**LENGTH:** RANDOM 5486,00 mm - 6706,00 mm
**STANDARD MARKING:** PAINT STENCILED IN THE PIPE BODY: 531796/10 MANUFACTURER CSA-Z245.1-14 33,40 X 3,38 290 CAT II SS S HN HEAT NUMBER ASTM A/ASME SA 333, 1/6 HF SCH 040 LT -46C ASTM A/ASME SA 106 B 20700 KPA ASTM A 53 B NPS 1" X SCH 40 VSB LOGO
**SHIPPING MARKING:** NACE MR 0175/NACE MR 0103 - MADE IN BRAZIL * VM4682 / P.O # 4038589-00/ITEM-1 * TORONTO * CCTF

| Heat | Pieces |
|---|---|
| 176433 | 337 |
| Total | 337 |

**THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS:** DIMENSIONAL # VISUAL # FLATTENING TEST # BENDING TEST # ENDS INSPECTION : UNTESTED ENDS CROPPED # HYDROSTATIC TEST: 20700,0 KPA 5 S # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST : CSAZ245.1-N10,LON/TRAN.OUT/INS # ULTRASONIC TEST FOR LAMINAR DEFECTS: ACC. CSA Z245.1-SOUR SERVICE #

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RINA

**Inspection Certificate**
(According to DIN EN 10204.3.1)
**N°.: 0030030837 / 00**



## Chemical Composition (%)

**Process: Basic Oxygen Furnace, heats fully killed**

Ceq: CSA-Z245.1-CE11 — Ceq: C+Mn/6+(Cr+Mo+V)/5 +(Ni+Cu)/15 — CE1: Cr + Cu + Mo + Ni + V

| | | C | Mn | P | S | Si | Ni | Cr | Mo | Al | Cu | V | Nb | B | Ti | N | Ca | Ceq | Ceq | CE1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heat Analisys | Min | | 0,400 | | | 0,100 | | | | | | | | | | | | | | |
| | Max | 0,240 | 1,350 | 0,025 | 0,025 | 0,500 | 0,400 | 0,300 | 0,120 | | 0,400 | 0,080 | 0,020 | 0,0010 | 0,110 | | | 0,400 | 0,430 | 1,000 |
| Product Analisys | Min | | 0,400 | | | 0,100 | | | | | | | | | | | | | | |
| | Max | 0,240 | 1,350 | 0,025 | 0,025 | 0,500 | 0,400 | 0,300 | 0,120 | | 0,400 | 0,080 | 0,020 | 0,0010 | 0,110 | | | 0,400 | 0,430 | 1,000 |
| Heat | Control Lot | | | | | | | | | | | | | | | | | | | |
| 176433 | 030003101210 | 0,10 | 1,27 | 0,012 | 0,004 | 0,28 | 0,03 | 0,06 | 0,01 | 0,029 | 0,070 | 0,004 | 0,015 | 0,0004 | 0,002 | 0,0099 | 0,0012 | 0,265 | 0,333 | 0,174 |
| | Check 1 | 0,11 | 1,29 | 0,011 | 0,004 | 0,29 | 0,03 | 0,06 | 0,01 | 0,029 | 0,074 | 0,005 | 0,017 | 0,0003 | 0,002 | 0,0098 | 0,0013 | 0,277 | 0,347 | 0,179 |
| | Check 2 | 0,10 | 1,29 | 0,011 | 0,004 | 0,29 | 0,03 | 0,06 | 0,01 | 0,029 | 0,074 | 0,005 | 0,017 | 0,0003 | 0,002 | 0,0088 | 0,0013 | 0,267 | 0,337 | 0,179 |

Ceq: Carbon Equivalent; Ceq: Carbon Equivalent; CE: Combined Elements;

## Tensile Test

Specimen Direction: Longitudinal — Temperature: Room Temperature — Wall Thickness: 3,38 mm — Gage Length: L0=2"

Method:Elong.Total Under Load 0,50 %

| | | Type of Specimen | Area (MM2) | YS (MPA) | TS (MPA) | E (%) |
|---|---|---|---|---|---|---|
| Required: | Min | | | 290 | 415 | 25 |
| | Max | | | | 625 | |
| Heat | Control Lot | | | | | |
| 176433 | 030003101210 | FULL SECTION | 321,3 | 349 | 477 | 44 |
| | | FULL SECTION | 330,4 | 355 | 490 | 45 |

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

## Hardness Test Through Wall

Scale: HV

| | | Individual |
|---|---|---|
| Required: | Min | |
| | Max | 246,0 |

| Heat | Control Lot | | MW1 | MW2 | MW3 | Avg |
|---|---|---|---|---|---|---|
| 176433 | 030003101210 | Q1 | 160,0 | 159,0 | 162,0 | 160,3 |

MW - Middle Wall;

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RINA

**Inspection Certificate**
(According to DIN EN 10204.3.1)
**N°.: 0030030837 / 00** Sheet:3 / 4

## Impact Test

Test Specimen: CHARPY 10X55X2.5 V NOTCH — Direction: Longitudinal — Temperature: -55°C — Striker radius: 8 mm

| | | AE1 (J) | AE2 (J) | AE3 (J) | AE4 (J) | AE5 (J) | AE Avg (J) | SA1 (%) | SA2 (%) | SA3 (%) | SA4 (%) | SA5 (%) | SA Avg (%) | LE1 (Mils) | LE2 (Mils) | LE3 (Mils) | LE Avg (Mils) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Required: Min | 7 | 7 | 7 | | | 7 | 50 | 50 | 50 | | | 60 | | | | |
| | Max | | | | | | | | | | | | | | | | |
| Heat | Control Lot | | | | | | | | | | | | | | | | |
| 176433 | 030003101210 | 52 | 56 | 55 | | | 54 | 100 | 100 | 100 | | | 100 | 55 | 55 | 55 | 55 |

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

Remarks:

1. MATERIAL IN ACCORDANCE WITH NACE MR 0175
PAR. 3.2/ISO 15156-2, ANNEX A.2.1.2/NACE MR0103 PAR.2.1. ALL LATEST
EDITIONS

2. SKU 2530031

3 THE WORKS OPERATE A QUALITY MANAGEMENT SYSTEM ACCORDING TO EUROPEAN
DIRECTIVE 2014/68/UE ANNEX I PAR. 4.3 (CERTIFICATE 2016 BH MP 02-03
VALID UNTIL 12.05.2019).
- MATERIAL ACCORDING TO PED 2014/68/UE ANNEX I PAR. 7.5

"STEEL MADE BY BOF PROCESS"

4. - NO WELD REPAIR
- FREE OF MERCURY CONTAMINATION
- NO RADIOACTIVE CONTAMINATION
- FINE GRAIN PRACTICE
- FULLY KILLED STEEL.
- MATERIAL FROM BRAZIL

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ISO 9001 - ISO/TS 16949
ISO 14001 - ISO 50001 OHSAS 18001
Certified Management Systems

**Inspection Certificate**
(According to DIN EN 10204.3.1)
**N°.: 0030030837 / 00**

Sheet:4 / 4

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2773

e-mail:luis.silva@vallourec.com

ENG. LUIZ FERNANDO DA SILVA - CREA/MG 58834-D
TECHNICAL RESPONSIBLE

DATE
11.20.2018

vallourec
Vallourec Soluções Tubulares do Brasil S.A.
Barreiro Plant - Av. Olinto Meireles, 65
ZIP 30640-010 - Belo Horizonte, MG

EcoTube

RINA

# Inspection Certificate

(According to DIN EN 10204.3.1)

N°.: 0030023868 / 00

Sheet: 1 / 3

Customer: VALLOUREC CANADA INC

Country: Canada

Material Number: 273193
Work Order: 509784 / 10
Customer Order: VM4238/P.O # 4037205-00

Inspection: Vallourec Soluções Tubulares do Brasil S.A

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED , BEVELED ENDS 30 DEG. , NORMALIZED
DIMENSIONS: 60.30 mm X 3.90 mm SCHEDULE: 040 GRADE: GRADE 290 # 6 # GR 1 2 STD 2530074
STANDARD: CSA-Z245.1-14 - CATEGORY II
IN ACCORDANCE ALSO TO THE STANDARDS: ASTM A 333M - 16 ASTM A 999M - 16 # ASME SA-333M - 15
SURFACE PROTECTION: EXTERNAL: LACQUER PIPE ENDS PROTECTOR: PLASTIC CAP
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -0,60 mm / +0,60 mm WALL THICKNESS: -0,49 mm / +0,78 mm
LENGTH: RANDOM 5486,00 mm - 6706,00 mm
STANDARD MARKING: Paint stenciled in the pipe body: 509784/10 MANUFACTURER CSA-Z245.1-14 60.30 X 3.90 290 CAT II SS S HN LENGTH HEAT NUMBER ASTM A/ASME SA 333, 1/6 HF SCH 040 LT -46C NACE MR 0175/NACE MR 0103 VSB LOGO
SHIPPING MARKING: MADE IN BRAZIL * VM4238 / P.O # 4037205-00 * VANCOUVER
TOLERANCES(PIPE ENDS): OUTSIDE DIAMETER: -0,40 mm / +0,80 mm

| Heat | Pieces |
|---|---|
| 141352 | 122 |
| Total | 122 |

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # FLATTENING TEST # ENDS INSPECTION : UNTESTED ENDS CROPPED # HYDROSTATIC TEST: 20700,0 KPA 5 S # RESIDUAL MAGNETISM: MAX 30 GAUSS # TESTE ELETROMAGNÉTICO : ACCORDING TO CSA Z245.1 # ULTRASONIC TEST FOR LAMINAR DEFECTS: ACC. CSA Z245.1-SOUR SERVICE #

## Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: CSA-Z245.1-CE11 CE1: Mn/C

| | | C | Mn | P | S | Si | Ni | Cr | Mo | Cu | V | Nb | B | Ti | Ceq | CE1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heat Analisys | Min | | 0,400 | | | 0,100 | | | | | | | | | | 3,000 |
| | Max | 0,240 | 1,350 | 0,025 | 0,025 | 0,500 | 0,400 | 0,300 | 0,120 | 0,400 | 0,080 | 0,020 | 0,0010 | 0,110 | 0,400 | |
| Product Analisys | Min | | 0,400 | | | 0,100 | | | | | | | | | | 3,000 |
| | Max | 0,240 | 1,350 | 0,025 | 0,025 | 0,500 | 0,400 | 0,300 | 0,120 | 0,400 | 0,080 | 0,020 | 0,0010 | 0,110 | 0,400 | |
| Heat / Control Lot | | | | | | | | | | | | | | | | |
| 141352 | 030002889902 | 0,10 | 1,32 | 0,020 | 0,001 | 0,31 | 0,01 | 0,07 | 0,03 | 0,010 | 0,006 | 0,015 | 0,0002 | 0,002 | 0,342 | 13,200 |
| | Check 1 | 0,10 | 1,32 | 0,020 | 0,001 | 0,31 | 0,01 | 0,07 | 0,03 | 0,012 | 0,006 | 0,016 | 0,0002 | 0,002 | 0,343 | 12,941 |
| | Check 2 | 0,10 | 1,32 | 0,020 | 0,001 | 0,31 | 0,01 | 0,07 | 0,03 | 0,012 | 0,006 | 0,016 | 0,0002 | 0,002 | 0,343 | 12,816 |

Ceq: Carbon Equivalent; CE: Combined Elements;

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**Inspection Certificate**
(According to DIN EN 10204.3.1)
N°.: 0030023868 / 00

Sheet:2 / 3

## Tensile Test

Specimen Direction: Longitudinal  Temperature: Room Temperature  Gage Length: L0=2"  Method:Elong.Total Under Load 0.50 %

| | | Type of Specimen | Area (MM2) | YS (MPA) | TS (MPA) | E (%) |
|---|---|---|---|---|---|---|
| Required: Min | | | | 290 | 415 | 26 |
| Max | | | | | 625 | |
| Heat | Control Lot | | | | | |
| 141352 | 030002889902 | STRIP WIDTH 19.05 MM | 83.6 | 406 | 517 | 37 |

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

## Hardness Test Through Wall

Scale: HV

| | | Individual | | AE2 | | AE3 |
|---|---|---|---|---|---|---|
| Required: Min | | | | | | |
| Max | | 246.0 | | | | |
| | | MW1 | MW2 | MW3 | Avg | |
| Heat | Control Lot | | | | | |
| 141352 | 030002889902 | Q1 163.0 | 166.0 | 160.0 | 163.0 | |

MW - Middle Wall;

## Impact Test

Test Specimen: CHARPY 10X55X2.5 V NOTCH  Direction: Longitudinal  Temperature: -57°C  Striking tup: 8 mm

| | | AE1 (J) | AE2 (J) | AE3 (J) | AE4 (J) | AE5 (J) | AE Avg (J) |
|---|---|---|---|---|---|---|---|
| Required: Min | | 4 | 4 | 4 | | | 5 |
| Max | | | | | | | |
| Heat | Control Lot | | | | | | |
| 141352 | 030002889902 | 42 | 40 | 46 | | | 43 |

AE - Absorbed Energy;

Remarks:
1. MATERIAL IN ACCORDANCE WITH NACE MR 0175
PAR. 3.2/ISO 15156-2, ANNEX A.2.1.2/NACE MR0103 PAR.2.1. ALL LATEST EDITIONS.

2. SKU 2530074

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**Inspection Certificate**
(According to DIN EN 10204.3.1)
**N°.: 0030023868 / 00**
Sheet:3 / 3

3. - MATERIAL SOUR SERVICE AS DEFINED IN PARAGRAPH 16 OF CSA Z241.1, BUT WITHOUT HIC TEST

4. MATERIAL:
- NO WELD REPAR
- FREE OF MERCURY
- FINE GRAIN PRACTICE
- FULLY KILLED STEEL
- MATERIAL FROM BRAZIL

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2617

e-mail:gustavo.pinheiro@vallourec.com

DR. GUSTAVO ALVES PINHEIRO - CREA/MG-109170/D
TECHNICAL RESPONSIBLE

DATE
08.14.2017

ECO TUBES: The tubes from Vallourec do Brasil S.A. are manufactured with steel which uses charcoal as a source of energy in its production. This coal comes from more than 100.000 ha of forest planted by Vallourec Florestal Ltda.. With the acquisition of 4,6 ton(s) os steel tubes from Vallourec do Brasil S.A., your company contributed to the reduction of the greenhouse effect, avoiding the accumulation of 8,3 ton(s) of Carbon Dioxide CO2 in the atmosphere.

**Benteler Steel/Tube GmbH**
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33043 Paderborn
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Tel.: + 49.5254.81-0 Fax: + 49.5254.13666

BENTELER
Steel/Tube

# ABNAHMEPRÜFZEUGNIS EN 10204-3.1

**INSPECTION CERTIFICATE EN 10204-3.1**
CERTIFICAT DE RECEPTION EN 10204-3.1
EN 10204:2005-01

Benteler Steel/Tube GmbH - Postfach 1340 - 33043 Paderborn - Deutschland

CCTF Corporation
Unit 2 4151 North Service Road
BURLINGTON, ON ON L7L 4X6
CANADA

Dokument-Nr.: / **Document No.:** / No. du document: 65-1069887/001/E

Prüf-Nr.: / **Inspection No.:** / No. du certificat:

Blatt: / **Page:** / Page: 1 / 6

Kunden-Bestell-Nr.: / **Purchase Order No.:** / No. de commande du client: 46005849 / CCTF 4038177-00

Hersteller: / **Manufacturer:** / Producteur: Warmrohrwerk Dinslaken
[DIN EN ISO 9001, ISO/TS-16949 CERTIFIED BY TUEV NORD CERT]
[PED 2014/68/EU CERTIFIED BY TUEV NORD SYSTEMS]

Benteler Auftrags-Nr.: / **Benteler Order No.:** / No. de commande Benteler: 1646606

Herstellerzeichen: / **Manufacturer's brand:** / Marque du producteur:

Versandanzeigen-Nr.: / **Dispatch Note No.:** / No. d'avis d'expédition: 6591130

Stempel des Abnahmebeauftragten: / **Stamp of the inspection representative:** / Poinçon du contrôleur: WA

Produkt: / **Product:** / Produit: NAHTLOSE STAHLROHRE / SEAMLESS STEEL TUBES / TUBES D' ACIER SANS SOUDURE

Stahlerschmelzungsverfahren: / **Steelmaking process:** / Procédé d'élaboration de l'acier: ELEKTROSTAHL / ELECTRIC FURNACE / FOUR ELECTRIQUE

| | |
|---|---|
| Lieferbedingungen: **Terms of delivery:** Conditions de livraison: | ASTM-A 106-2015, ASTM-A 333-2016-HF, ASME SA-106, ASME BPVC.II.A-2017, ASME SA-333-HF, ASME BPVC.II.A-2017, CSA Standard Z245.1-14 Category II, Sour Service, ANSI/NACE MR0175/ISO 15156-1: 2015, ANSI/NACE MR0175/ISO 15156-2: 2015 |
| Maße - Toleranzen: **Dimensions-tolerances:** Dimensions-tolérances: | ASME SA-106, ASME BPVC.II.A-2017, ASTM-A 106-2015, ASME SA-999 ASME BPVC.II.A-2017, ASTM-A 999-2016 |
| Stahlsorte: **Steel grade:** Nuance d'acier: | GRADE 1, GRADE 290, GRADE 6, GRADE B |
| Lieferzustand: **Delivery condition:** État de livraison: | Normalized |
| Produktkennzeichnung: **Product marking:** Marquage du produit: | FS: BENTELER Z.245.1 - 14 - A / SA-106 / A / SA-333 B/1/6/290 CATEGORIE 2 SS HEAT-NO. LT 50 SMLS HN DIMENSION TEST PRESSURE S6 WA GERMANY PO 4038177-00 / 2530090 DIMENSIONS SCHEDULE<br>PS: HEAT-NO. DIMENSIONS SCHEDULE B/1/6/290 SS |

AEZ = Ätztintenbeschriftung, Etching ink marking, Gravure à l'encre FK = Farbkennzeichnung, color marking, marquage par couleur FS = Farbschablonierung, paint stenciling, marquage par peinture FSD = Farbstrahldrucker Color jet printer, imprimante à jet d'encre de couleur LK = Laserkennzeichnung, Laser marking, Marquage laser PKE = Etikettenkennzeichnung, tag marking, marquage sur étiquette PS = Prägestempel, die stamp, marquage par poinçonnage TS = Tintenstrahlkennzeichnung, Ink jet spray marking, imprimante à jet d'encre

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BENTELER
Steel/Tube

# ABNAHMEPRÜFZEUGNIS EN 10204-3.1
**INSPECTION CERTIFICATE EN 10204-3.1**
CERTIFICAT DE RECEPTION EN 10204-3.1

Dokument-Nr.: / **Document No.:** / No. du document: 65-1069887/001/E

Prüf-Nr.: / **Inspection No.:** / No. du certificat:



| Pos. / **Item** / Poste | Stück / **Number** / Nombre | Maße / **Dimensions** / Dimensions | Gesamtlänge / **Length total** / Longueur totale feet | Gewicht / **Weight** / Poids lbs | Schmelzen-Nr. / **Heat No.** / No. de coulée | Prüfdruck / **Test pressure** / Pression d'épreuve PSI | s | Rohr-Nr.-Gruppe / **Tube number group** / Série de no. des tubes | Vielfachlängen / **Multiple lengths** / Longueurs multiples |
|---|---|---|---|---|---|---|---|---|---|
| 0002 | 72 | 4" NPS * Sched. 40 feet 2530090<br>20 FT - 22 FT | 1570,90 | 17284 | 610879 | 2650 | 5 | | |

Schmelzenanalyse [%] / **Heat analysis [%]** / Analyse sur coulée [%]

| Pos. / **Item** / Poste | Schmelzen-Nr. / **Heat No.** / No. de coulée | C | SI | MN | P | S | CR | MO | NI | CU | V | NB | TI | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0002 | 610879 | 0,130 | 0,320 | 1,25 | 0,008 | 0,001 | 0,14 | 0,06 | 0,25 | 0,11 | 0,062 | 0,014 | 0,003 | 0,0003 |

1. Formel: CE IIW= C+ (Mn/6)+ ((Cr+ Mo+ V)/5)+ ((Cu+ Ni)/15)< = 0,42 %
2. Formel: CEV= C+ F* ((Mn/6)+ (Si/24)+ (Cu/15)+ (Ni/20)+ ((Cr+ Mo+ V+ Nb)/5) + (5* B)) < = 0,40 %
3. Formel: Mn / C > = 3 / 1
4. Formel: Cr+ Cu+ Mo+ Ni+ V< = 1,00 %

Formelergebnisse / **Formula results** / Résultats des formules

| Pos. / **Item** / Poste | Schmelzen-Nr / **Heat No.** / No. de coulée | 1. Formel / **1.** / 1. | 2. Formel / **2.** / 2. | 3. Formel / **3.** / 3. | 4. Formel / **4.** / 4. |
|---|---|---|---|---|---|
| 0002 | 610879 | 0,415 | 0,369 | 9,615 | 0,622 |

Produktanalyse [%] / **Product analysis [%]** / Analyse sur produit [%]

| Pos. / **Item** / Poste | Schmelzen-Nr. / **Heat No.** / No. de coulée | C | SI | MN | P | S | CR | MO | NI | CU | V | NB | TI | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0002 | 610879 | 0,130 | 0,320 | 1,21 | 0,004 | 0,003 | 0,15 | 0,06 | 0,26 | 0,09 | 0,067 | 0,017 | 0,005 | 0,0004 |

1. Formel: CE IIW= C+ (Mn/6)+ ((Cr+ Mo+ V)/5)+ ((Cu+ Ni)/15)< = 0,42 %
2. Formel: CEV= C+ F* ((Mn/6)+ (Si/24)+ (Cu/15)+ (Ni/20)+ ((Cr+ Mo+ V+ Nb)/5) + (5* B)) < = 0,40 %
3. Formel: Mn / C > = 3 / 1
4. Formel: Cr+ Cu+ Mo+ Ni+ V< = 1,00 %

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BENTELER
Steel/Tube

# ABNAHMEPRÜFZEUGNIS EN 10204-3.1
**INSPECTION CERTIFICATE EN 10204-3.1**
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Dokument-Nr.: / **Document No.:** / No. du document: 65-1069887/001/E

Prüf-Nr.: / **Inspection No.:** / No. du certificat:



## Formelergebnisse / **Formula results** / Résultats des formules

| Pos. / **Item** / Poste | Schmelzen-Nr / **Heat No.** / No. de coulée | 1. Formel / **1.** / 1. | 2. Formel / **2.** / 2. | 3. Formel / **3.** / 3. | 4. Formel / **4.** / 4. |
|---|---|---|---|---|---|
| 0002 | 610879 | 0,410 | 0,366 | 9,308 | 0,627 |

## Prüfergebnisse / **Test results** / Résultats des essais

Die Rohre sind auf Dichtheit geprüft durch:
**The tubes have been submitted to a leak tightness test by:**
Les tubes ont passé un contrôle d'étanchéité par:
Hydrostatic test: acc. to CSA Z245.1, holding time min 5 seconds, Test pressure/Time-record — PASSED

Die Rohre wurden zerstörungsfrei geprüft:
**The tubes are non destructive tested:**
Les tubes ont passé un essai non destructif:
ET-test: acc. to CSA Z245.1; for imperfections; drilled hole: 3,20 mm — PASSED

Augensichtkontrolle: / **Visual inspection:** / Examen visuel: PASSED

Maßkontrolle: / **Dimensions examination:** / Vérification des dimensions: PASSED

Ringfaltversuch: / **Flattening test:** / Essai d'aplatissement: PASSED

## Ergebnisse der mechanischen Prüfung / **Results of mechanical testing** / Résultats des essais mécaniques

Die Probennahme erfolgte an Vielfachlängen.
**The sampling was carried out on multiple lengths.**
L'echantillonage etait realise aux longueurs multiples.

## Zugversuch längs bei RT, Streifenprobe / **Tensile test longitudinal at RT, Strip test specimen** / Essai de traction longitudinale à TA, Bande decoupee sur tube

| Pos. / **Item** / Poste | Proben-Nr. / **Specimen No.** / No. de l'éprouv. | Schmelzen-Nr. / **Heat No.** / No. de coulée | Probenabmessung / **Specimen dimensions** / Dimensions de l'éprouv. | Streckgrenze / **Yield strength** / Limite élastique | Zugfestigkeit / **Tensile strength** / Résistance à la traction | Dehnung / **Elongation** / Allongement | |
|---|---|---|---|---|---|---|---|
| Anforderungen / **Requirements** / Exigences | | | mm | RT 0,5 % / PSI / 42206-71794 | Rm / PSI / 60046-90504 | A2" / % / MIN 32.00 | 1. Formel / **1. Formula** / 1. Formule |
| 0002 | 000001 | 610879 | 25,40 X 5,80 | 59175 | 77740 | 32,00 | |
| 0002 | 000002 | 610879 | 25,40 X 6,10 | 58305 | 78320 | 32,00 | |
| 0002 | 000003 | 610879 | 25,40 X 6,20 | 58885 | 77305 | 32,00 | |
| 0002 | 000004 | 610879 | 25,40 X 6,20 | 59466 | 79336 | 34,00 | |

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BENTELER
Steel/Tube

# ABNAHMEPRÜFZEUGNIS EN 10204-3.1
**INSPECTION CERTIFICATE EN 10204-3.1**
CERTIFICAT DE RECEPTION EN 10204-3.1

Dokument-Nr.: / **Document No.:** / No. du document: 65-1069887/001/E

Prüf-Nr.: / **Inspection No.:** / No. du certificat:

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## Härteprüfung / **Hardness test** / Essai de dureté

| Pos. / **Item** / Poste | Proben-Nr. / **Specimen No.** / No. de l'éprouv. | Schmelzen-Nr. / **Heat No.** / No. de coulée | Härte / **Hardness** / Dureté | | | | |
|---|---|---|---|---|---|---|---|
| Anforderungen / **Requirements** / Exigences | | | HRC | HB | HV | HRB | HBW |
| | | | | MAX 200 | | | |
| 0002 | 000001 | 610879 | | 159 | | | |
| 0002 | 000002 | 610879 | | 158 | | | |
| 0002 | 000003 | 610879 | | 160 | | | |
| 0002 | 000004 | 610879 | | 156 | | | |

## Kerbschlagbiegeversuch **Notched bar impact test** / Essai de flexion par choc (résilience) [1 CHARPY_V]

Probenlage: längs (L); Prüftemperatur: -51 °F
Specimen position: longitudinal (L);Test temperature: -51 °F
Position de l'éprouvette: longitudinal (L);Température d'essai: -51 °F

| Pos. / **Item** / Poste | Proben-Nr. / **Specimen No.** / No. de l'éprouv. | Schmelzen-Nr. / **Heat No.** / No. de coulée | Probenabmessung / **Specimen dimensions** / Dimensions de l'éprouvette | | | Kerbschlagarbeit / **Absorbed energy** / Energie absorbée | | Kerbschlagzähigkeit / **Impact strength** / Résistance au choc | | Verf.-Bruchanteil / **Shear fracture** / Rupture ductile | | Laterale Breitung / **Lateral expansion** / Expansion latérai | | Sprödbruchanteil / **Brittle Fracture** / Rupture Fragile | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Anforderungen / **Requirements** / Exigences | | | Länge / **Length** / Longueur | Breite / **Width** / Largeur | Höhe / **Height** / Hauteur | einzel / **single** / individuelle | mittel / **average** / moyenne | einzel / **single** / individuelle | mittel / **average** / moyenne | einzel / **single** / individuelle | mittel / **average** / moyenne | einzel / **single** / individuelle | mittel / **average** / moyenne | einzel / **single** / individuelle | mittel / **average** / moyenne |
| | | | mm | mm | mm | J | J | J/cm² | | % | % | mm | mm | | |
| | | | 55 | 5,00 | 10,00 | MIN 014 | | | | | | | | | |
| 0002 | 000001 | 610879 | 55 | 5,00 | 10,00 | 88 | | | | 70 | | 2,20 | | | |
| | | | | 5,00 | 10,00 | 89 | | | | 70 | | 2,10 | | | |
| | | | | 5,00 | 10,00 | 85 | 87 | | | 70 | 70 | 2,00 | 2,10 | | |

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Tel.: + 49.5254.81-0 Fax: + 49.5254.13666

BENTELER
Steel/Tube

ABNAHMEPRÜFZEUGNIS EN 10204-3.1
**INSPECTION CERTIFICATE EN 10204-3.1**
CERTIFICAT DE RECEPTION EN 10204-3.1

Dokument-Nr.: / **Document No.:** / No. du document: 65-1069887/001/E

Prüf-Nr.: / **Inspection No.:** / No. du certificat:

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Kerbschlagbiegeversuch **Notched bar impact test** / Essai de flexion par choc (résilience) [2 CHARPY_V]

Probenlage: quer (Q); Prüftemperatur: -51 °F
Specimen position: transversal (Q);Test temperature: -51 °F
Position de l'éprouvette: transversal (Q);Température d'essai: -51 °F

| Pos. / **Item** / Poste | Proben-Nr. / **Specimen No.** / No. de l'éprouv. | Schmelzen-Nr. / **Heat No.** / No. de coulée | Probenabmessung / **Specimen dimensions** / Dimensions de l'éprouvette | | | Kerbschlagarbeit / **Absorbed energy** / Energie absorbée | | Kerbschlagzähigkeit / **Impact strength** / Résistance au choc | | Verf.-Bruchanteil / **Shear fracture** / Rupture ductile | | Laterale Breitung / **Lateral expansion** / Expansion latéral | | Sprödbruchanteil / **Brittle Fracture** / Rupture Fragile | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Anforderungen / **Requirements** / Exigences | | | Länge / **Length** / Longueur | Breite / **Width** / Largeur | Höhe / **Height** / Hauteur | einzel / **single** / individuelle | mittel / **average** / moyenne | einzel / **single** / individuelle | mittel / **average** / moyenne | einzel / **single** / individuelle | mittel / **average** / moyenne | einzel / **single** / individuelle | mittel / **average** / moyenne | einzel / **single** / individuelle | mittel / **average** / moyenne |
| | | | mm | mm | mm | J | J | J/cm² | | % | % | mm | mm | | |
| | | | 55 | 5,00 | 10,00 | MIN 014 | MIN 020 | | | MIN 50 | MIN 60 | | | | |
| 0002 | 000001 | 610879 | 55 | 5,00 | 10,00 | 35 | | | | 60 | | 1,20 | | | |
| | | | | 5,00 | 10,00 | 32 | | | | 60 | | 1,10 | | | |
| | | | | 5,00 | 10,00 | 33 | 33 | | | 60 | 60 | 1,00 | 1,10 | | |

Wärmebehandlung / **Heat treatment** / Traitement thermique

Normalizing temperature: 920°C, Holding time: 5 min., Cooling: Air

Restmagnetismus / **Demagnetize** / Démagnétiser

demagnetized tubes; 1 measurement per 4 hours on both tube ends Two readings 180°apart around the circumference. Average value max 3.0 Millitesla (24 A/cm), individual value max 3.5 Millitesla (28 A/cm)

Vermerk / **Remark** / Remarque

NACE Standard: Hardness acc. to NACE Standard MR0175 HRC max. 22., The material meets the requirements of NACE MR0103, Region 3, in accordance to Figure 1 and Appendix A.2, ANSI/NACE MR0175/ISO 15156-2:2015; Certificate remarks: fully killed fine grained steel, This is to confirm that the seamless linepipe supplied by BENTELER and verified to CSA Standard Z245.1-14 meets the requirement for micro hardness of max. 248 HV 500 gf., No weld repair has been carried out, Sour Service, The Material is Aluminium deoxydized and inclusion shape controlled with Calcium-Silicon treatment, It is the end user's responsibility to ensure that all environmental requirements as well as the requirements regarding engineering, construction and operation of facilities are fulfilled in the country of use. Fit for purpose of the parts as well as homologation is not the scope of this contract., Steelmaking: BENTELER Steel Mill Lingen

Grain size: acc. to ASTM-E 112; Grain size and finer: 6

Verkäufer(in) / **Sales Personnel** / Personne chargée : Mr Dyka, Tel.: 05254/81-4265-204265, Fax: 204229

**Benteler Steel/Tube GmbH**
Postfach 13 40
33043 Paderborn
Deutschland
Tel.: + 49.5254.81-0 Fax: + 49.5254.13666

BENTELER
Steel/Tube

ABNAHMEPRÜFZEUGNIS EN 10204-3.1
**INSPECTION CERTIFICATE EN 10204-3.1**
CERTIFICAT DE RECEPTION EN 10204-3.1

Dokument-Nr.: **Document No.:** No. du document: 65-1069887/001/E

Prüf-Nr.: **Inspection No.:** No. du certificat:

Blatt: **Page:** Page: 6 / 6

Dinslaken, 13.04.2018, TEL.: 02064.623-5360 FAX: 02064.623-5390

Abnahmebeauftragter
**Inspection representative**
Contrôleur
i. A. Patrick Hanraths / LABACH

Es wird bestätigt, daß die gelieferten Erzeugnisse den techn. Lieferbedingungen des Auftrages entsprechen.Dieses Dokument wurde mittels EDV erstellt und ist ohne Unterschrift rechtsgültig.
We certify that the supplied products comply with the order specifications. This document was prepared by means of electronic data processing and is valid without signature.
Nous attestons que les produits livrés sont conformes aux stipulations de la commande.Ce document a été établi par traitement électronique de l'information et est valide sans signature.

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Vallourec Soluções Tubulares do Brasil S.A
Barreiro Plant - Av. Olinto Meireles, 65
ZIP 30640-010 - Belo Horizonte, MG

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# Inspection Certificate

(According to DIN EN 10204 3.1)

**N°.: 0030032296 / 00**

Sheet: 1 / 4

**Customer:** VALLOUREC CANADA INC

**Country:** Canada

**Material Number:** 276430
**Work Order:** 536721 / 20
**Customer Order:** VM-4811/P.O.4038915-00

**Inspection:** Vallourec Soluções Tubulares do Brasil S.A.

**PRODUCT:** SEAMLESS STEEL PIPE, HOT FINISHED , BEVELED ENDS 30 DEG. , NORMALIZED
**DIMENSIONS:** 168,30 mm X 7,11 mm **GRADE:** GRADE 290 # GR I # 6 # B 6 STD 2530104
**STANDARD:** CSA-Z245.1-18 - CATEGORY II
**IN ACCORDANCE ALSO TO THE STANDARDS:** ASTM A 333M - 18 ASTM A 999M - 18 # ASTM A 106M - 18 ASTM A 530M - 18 # ASTM A 53M - 18 # ASME SA-333M - 17 ASME SA 999M - 17 # ASME SA-106M - 17 ASME SA 530M - 17
**CUSTOMER SPECIFICATION:** CCTF GrB,1,6,290 Cat II SS , 20.11.2017
**SURFACE PROTECTION: EXTERNAL:** LACQUER **PIPE ENDS PROTECTOR:** PLASTIC CAP
**TOLERANCES: OUTSIDE DIAMETER (PIPE BODY):** -0,80 mm / +1,26 mm **WALL THICKNESS:** -0,89 mm / +1,07 mm
**TOLERANCES(PIPE ENDS): OUTSIDE DIAMETER:** -0,40 mm / +1,60 mm
**LENGTH:** RANDOM 5486,00 mm - 6706,00 mm
**STANDARD MARKING:** PAINT STENCILED IN THE PIPE BODY: 536721/20 MANUFACTURER CSA-Z245.1-18 168,30 X 7,11 290 CAT II M46C SS S HN LENGTH HEAT NUMBER ASTM A/ASME SA 333, 1/6 HF SCH 040 LT -46C ASTM A/ASME SA 106 B 18400 KPA WEIGHT ASTM A 53 B VSB LOGO
**SHIPPING MARKING:** NPS 6" X SCH 40 NACE MR 0175/NACE MR 0103 - MADE IN BRAZIL * VM4811 / P.O # 4038915-00/ITEM-2 * TORONTO * CCTF

| Heat | Pieces |
|---|---|
| 175147 | 11 |
| 175724 | 24 |
| 178322 | 89 |
| **Total** | **124** |

**THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS:** DIMENSIONAL # VISUAL # FLATTENING TEST # ENDS INSPECTION : UNTESTED ENDS CROPPED # HYDROSTATIC TEST: 18400,0 KPA 5 S # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST : CSAZ245.1-N10,LON/TRAN,OUT/INS # ULTRASONIC TEST FOR LAMINAR DEFECTS: ACC. CSA Z245.1-SOUR SERVICE #

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**Inspection Certificate**
(According to DIN EN 10204.3.1)
**N°.: 0030032296 / 00**



## Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: CSA-Z245.1-CE11 — Ceq: C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 — CE1: Cr + Cu + Mo + Ni + V

| | | C | Mn | P | S | Si | Ni | Cr | Mo | Al | Cu | V | Nb | B | Ti | N | Ca | Ceq | Ceq | CE1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heat Analisys | Min | | 0,400 | | | 0,100 | | | | | | | | | | | | | | |
| | Max | 0,240 | 1,350 | 0,025 | 0,025 | 0,500 | 0,400 | 0,300 | 0,120 | | 0,400 | 0,080 | 0,020 | 0,0010 | 0,110 | | | 0,400 | 0,430 | 1,000 |
| Product Analisys | Min | | 0,400 | | | 0,100 | | | | | | | | | | | | | | |
| | Max | 0,240 | 1,350 | 0,025 | 0,025 | 0,500 | 0,400 | 0,300 | 0,120 | | 0,400 | 0,080 | 0,020 | 0,0010 | 0,110 | | | 0,400 | 0,430 | 1,000 |
| Heat | Control Lot | | | | | | | | | | | | | | | | | | | |
| 175147 | 030003127653 | 0,12 | 1,31 | 0,010 | 0,007 | 0,30 | 0,01 | 0,04 | 0,01 | 0,027 | 0,025 | 0,004 | 0,016 | 0,0004 | 0,003 | 0,0055 | 0,0013 | 0,309 | 0,351 | 0,084 |
| | Check 1 | 0,12 | 1,29 | 0,010 | 0,005 | 0,29 | 0,01 | 0,04 | 0,01 | 0,028 | 0,024 | 0,004 | 0,017 | 0,0002 | 0,003 | 0,0050 | 0,0011 | 0,309 | 0,348 | 0,088 |
| | Check 2 | 0,12 | 1,29 | 0,010 | 0,006 | 0,28 | 0,01 | 0,04 | 0,01 | 0,027 | 0,023 | 0,004 | 0,016 | 0,0002 | 0,002 | 0,0050 | 0,0012 | 0,308 | 0,347 | 0,086 |
| 175724 | 030003127905 | 0,11 | 1,30 | 0,009 | 0,003 | 0,30 | 0,02 | 0,05 | 0,01 | 0,029 | 0,030 | 0,004 | 0,015 | 0,0004 | 0,002 | 0,0045 | 0,0015 | 0,284 | 0,347 | 0,115 |
| | Check 1 | 0,11 | 1,31 | 0,009 | 0,002 | 0,29 | 0,02 | 0,05 | 0,01 | 0,031 | 0,029 | 0,004 | 0,016 | 0,0002 | 0,002 | 0,0050 | 0,0013 | 0,285 | 0,346 | 0,116 |
| | Check 2 | 0,11 | 1,32 | 0,009 | 0,002 | 0,28 | 0,02 | 0,05 | 0,01 | 0,030 | 0,029 | 0,003 | 0,016 | 0,0002 | 0,002 | 0,0050 | 0,0013 | 0,287 | 0,346 | 0,115 |
| 178322 | 030003155671 | 0,10 | 1,28 | 0,012 | 0,003 | 0,29 | 0,04 | 0,06 | 0,02 | 0,028 | 0,080 | 0,004 | 0,016 | 0,0004 | 0,002 | 0,0071 | 0,0015 | 0,267 | 0,348 | 0,201 |
| | Check 1 | 0,10 | 1,29 | 0,013 | 0,003 | 0,29 | 0,04 | 0,06 | 0,02 | 0,030 | 0,083 | 0,002 | 0,017 | 0,0002 | 0,002 | 0,0071 | 0,0014 | 0,269 | 0,350 | 0,197 |
| | Check 2 | 0,10 | 1,27 | 0,011 | 0,004 | 0,30 | 0,04 | 0,06 | 0,02 | 0,029 | 0,082 | 0,004 | 0,015 | 0,0002 | 0,003 | 0,0075 | 0,0013 | 0,267 | 0,347 | 0,203 |

Ceq: Carbon Equivalent; Ceq: Carbon Equivalent; CE: Combined Elements;

## Tensile Test

Specimen Direction: Longitudinal — Temperature: Room Temperature — Wall Thickness: 7,11 mm — Gauge Length: L0=2"

Method:Elong.Total Under Load 0,50 %

| | | Type of Specimen | Area (MM2) | YS (MPA) | TS (MPA) | E (%) |
|---|---|---|---|---|---|---|
| | Required: Min | | | 290 | 415 | 33 |
| | Max | | | | 625 | |
| Heat | Control Lot | | | | | |
| 175147 | 030003140032 | STRIP WIDTH 25,4 MM | 188,5 | 376 | 500 | 40 |
| | | STRIP WIDTH 25,4 MM | 190,0 | 382 | 505 | 40 |
| 175724 | 030003127905 | STRIP WIDTH 25,4 MM | 188,8 | 371 | 486 | 39 |
| | | STRIP WIDTH 25,4 MM | 186,2 | 369 | 500 | 39 |
| | 030003140031 | STRIP WIDTH 25,4 MM | 188,8 | 370 | 489 | 39 |
| | | STRIP WIDTH 25,4 MM | 189,2 | 373 | 492 | 40 |
| 178322 | 030003155671 | STRIP WIDTH 25,4 MM | 186,5 | 355 | 488 | 39 |
| | | STRIP WIDTH 25,4 MM | 185,9 | 360 | 492 | 40 |

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

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(According to DIN EN 10204.3.1)
**N°.: 0030032296 / 00**



## Hardness Test

Scale: HV

| | | Max | |
|---|---|---|---|
| | Required: Min | | |
| | Max | 246,0 | |
| Heat | Control Lot | | |
| 175147 | 030003140032 | 156,0 | 156,0 |
| 175724 | 030003127905 | 163,0 | 167,0 |
| | 030003140031 | 163,0 | 167,0 |
| 178322 | 030003155671 | 143,0 | 143,0 |

## Impact Test

Test Specimen: CHARPY 10X55X5 V NOTCH — Direction: Longitudinal — Temperature: -53°C — Striker radius: 8 mm

| | | AE1 (J) | AE2 (J) | AE3 (J) | AE4 (J) | AE5 (J) | AE Avg (J) | SA1 (%) | SA2 (%) | SA3 (%) | SA4 (%) | SA5 (%) | SA Avg (%) | LE1 (Mils) | LE2 (Mils) | LE3 (Mils) | LE Avg (Mils) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Required: Min | 14 | 14 | 14 | | | 14 | 50 | 50 | 50 | | | 60 | | | | |
| | Max | | | | | | | | | | | | | | | | |
| Heat | Control Lot | | | | | | | | | | | | | | | | |
| 175147 | 030003140032 | 122 | 123 | 123 | | | 123 | 100 | 100 | 100 | | | 100 | 64 | 64 | 65 | 67 |
| 175724 | 030003140031 | 122 | 122 | 122 | | | 122 | 100 | 100 | 100 | | | 100 | 64 | 64 | 67 | 67 |
| 178322 | 030003155671 | 144 | 142 | 151 | | | 146 | 100 | 100 | 100 | | | 100 | 79 | 79 | 66 | 75 |

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

## Impact Test

Test Specimen: CHARPY V 10X55X5 FLATTENED — Direction: Transverse — Temperature: -46°C — Striker radius: 8 mm

| | | AE1 (J) | AE2 (J) | AE3 (J) | AE4 (J) | AE5 (J) | AE Avg (J) | SA1 (%) | SA2 (%) | SA3 (%) | SA4 (%) | SA5 (%) | SA Avg (%) | LE1 (Mils) | LE2 (Mils) | LE3 (Mils) | LE Avg (Mils) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Required: Min | 14 | 14 | 14 | | | 14 | 50 | 50 | 50 | | | 60 | | | | |
| | Max | | | | | | | | | | | | | | | | |
| Heat | Control Lot | | | | | | | | | | | | | | | | |
| 175147 | 030003140032 | 121 | 121 | 122 | | | 121 | 100 | 100 | 100 | | | 100 | 53 | 58 | 59 | 64 |
| 175724 | 030003140031 | 121 | 122 | 121 | | | 122 | 100 | 100 | 100 | | | 100 | 55 | 60 | 55 | 68 |
| 178322 | 030003155671 | 106 | 111 | 104 | | | 106 | 100 | 100 | 100 | | | 100 | 76 | 80 | 72 | 76 |

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

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**Inspection Certificate**
(According to DIN EN 10204.3.1)
**N°.: 0030032296 / 00**



Remarks:
1. MATERIAL IN ACCORDANCE WITH NACE MR 0175 PAR. 3.2/ISO 15156-2, ANNEX A.2.1.2/NACE MR0103 PAR.2.1. ALL LATEST EDITIONS

2. SKU 2530104

3. THE WORKS OPERATE A QUALITY MANAGEMENT SYSTEM ACCORDING TO EUROPEAN DIRECTIVE 2014/68/UE ANNEX I PAR. 4.3 (CERTIFICATE 2016 BH MP 02-03 VALID UNTIL 12.05.2019).

- MATERIAL ACCORDING TO PED 2014/68/UE ANNEX I PAR. 7.5

4. - NO WELD REPAIR
- FREE OF MERCURY CONTAMINATION
- NO RADIOACTIVE CONTAMINATION
- FINE GRAIN PRACTICE
- FULLY KILLED STEEL
- MATERIAL FROM BRAZIL

NORMALIZED
TEMPERATURE 892°C
SOAKING TIME 40 MINUTES
METHOD OF COOLING : AIR

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2773

e-mail:loiz.silva@vallourec.com

ENG. LUIZ FERNANDO DA SILVA - CREA/MG 58834-D
TECHNICAL RESPONSIBLE

DATE
02.27.2019

vallourec

Vallourec Soluções Tubulares do Brasil S.A
Barreiro Plant - Av. Olinto Meircles, 65
ZIP 30640-010 - Belo Horizonte, MG

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# Inspection Certificate

(According to DIN EN 10204.3.1)

**N°.: 0030032296 / 00**

Sheet:1 / 4

**Customer:** VALLOUREC CANADA INC

**Country:** Canada

**Material Number:** 276430
**Work Order:** 536721 / 20
**Customer Order:** VM-4811/P.O.4038915-00

**Inspection:** Vallourec Soluções Tubulares do Brasil S.A.

**PRODUCT:** SEAMLESS STEEL PIPE, HOT FINISHED , BEVELED ENDS 30 DEG. , NORMALIZED
**DIMENSIONS:** 168,30 mm X 7,11 mm **GRADE:** GRADE 290 # GR 1 # 6 # B 6 STD 2530104
**STANDARD:** CSA-Z245.1-18 - CATEGORY II
**IN ACCORDANCE ALSO TO THE STANDARDS:** ASTM A 333M - 18 ASTM A 999M - 18 # ASTM A 106M - 18 ASTM A 530M - 18 # ASTM A 53M - 18 # ASME SA-333M - 17 ASME SA 999M - 17 # ASME SA-106M - 17 ASME SA 530M - 17
**CUSTOMER SPECIFICATION:** CCTF GrB,1,6,290 Cat II SS , 20.11.2017
**SURFACE PROTECTION: EXTERNAL:** LACQUER **PIPE ENDS PROTECTOR:** PLASTIC CAP
**TOLERANCES: OUTSIDE DIAMETER (PIPE BODY):** -0,80 mm / +1,26 mm **WALL THICKNESS:** -0,89 mm / +1,07 mm
**TOLERANCES(PIPE ENDS): OUTSIDE DIAMETER:** -0,40 mm / +1,60 mm
**LENGTH:** RANDOM 5486,00 mm - 6706,00 mm
**STANDARD MARKING:** PAINT STENCILED IN THE PIPE BODY: 536721/20 MANUFACTURER CSA-Z245.1-18 168,30 X 7,11 290 CAT II M46C SS S HN LENGTH HEAT NUMBER ASTM A/ASME SA 333, 1/6 HF SCH 040 LT -46C ASTM A/ASME SA 106 B 18400 KPA WEIGHT ASTM A 53 B VSB LOGO
**SHIPPING MARKING:** NPS 6" X SCH 40 NACE MR 0175/NACE MR 0103 - MADE IN BRAZIL * VM4811 / P.O # 4038915-00/ITEM-2 * TORONTO * CCTF

| Heat | Pieces |
|---|---|
| 175147 | 11 |
| 175724 | 24 |
| 178322 | 89 |
| Total | 124 |

**THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS:** DIMENSIONAL # VISUAL # FLATTENING TEST # ENDS INSPECTION : UNTESTED ENDS CROPPED # HYDROSTATIC TEST: 18400,0 KPA 5 S # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST : CSAZ245.1-N10.LON/TRAN.OUT/INS # ULTRASONIC TEST FOR LAMINAR DEFECTS: ACC. CSA Z245.1-SOUR SERVICE #

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**Inspection Certificate**
(According to DIN EN 10204.3.1)
**N°.: 0030032296 / 00**



## Chemical Composition (%)

**Process: Basic Oxygen Furnace, heats fully killed**

Ceq: CSA-Z245.1-CE11 — Ceq: C+Mn/6+(Cr+Mo+V)/5 +(Ni+Cu)/15 — CE1: Cr + Cu + Mo + Ni + V

| | | C | Mn | P | S | Si | Ni | Cr | Mo | Al | Cu | V | Nb | B | Ti | N | Ca | Ceq | Ceq | CE1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heat Analisys | Min | | 0,400 | | | 0,100 | | | | | | | | | | | | | | |
| | Max | 0,240 | 1,350 | 0,025 | 0,025 | 0,500 | 0,400 | 0,300 | 0,120 | | 0,400 | 0,080 | 0,020 | 0,0010 | 0,110 | | | 0,400 | 0,430 | 1,000 |
| Product Analisys | Min | | 0,400 | | | 0,100 | | | | | | | | | | | | | | |
| | Max | 0,240 | 1,350 | 0,025 | 0,025 | 0,500 | 0,400 | 0,300 | 0,120 | | 0,400 | 0,080 | 0,020 | 0,0010 | 0,110 | | | 0,400 | 0,430 | 1,000 |
| Heat | Control Lot | | | | | | | | | | | | | | | | | | | |
| 175147 | 030003127653 | 0,12 | 1,31 | 0,010 | 0,007 | 0,30 | 0,01 | 0,04 | 0,01 | 0,027 | 0,025 | 0,004 | 0,016 | 0,0004 | 0,003 | 0,0055 | 0,0013 | 0,309 | 0,351 | 0,084 |
| | Check 1 | 0,12 | 1,29 | 0,010 | 0,005 | 0,29 | 0,01 | 0,04 | 0,01 | 0,028 | 0,024 | 0,004 | 0,017 | 0,0002 | 0,003 | 0,0050 | 0,0011 | 0,309 | 0,348 | 0,088 |
| | Check 2 | 0,12 | 1,29 | 0,010 | 0,006 | 0,28 | 0,01 | 0,04 | 0,01 | 0,027 | 0,023 | 0,004 | 0,016 | 0,0002 | 0,002 | 0,0050 | 0,0012 | 0,308 | 0,347 | 0,086 |
| 175724 | 030003127905 | 0,11 | 1,30 | 0,009 | 0,003 | 0,30 | 0,02 | 0,05 | 0,01 | 0,029 | 0,030 | 0,004 | 0,015 | 0,0004 | 0,002 | 0,0045 | 0,0015 | 0,284 | 0,347 | 0,115 |
| | Check 1 | 0,11 | 1,31 | 0,009 | 0,002 | 0,29 | 0,02 | 0,05 | 0,01 | 0,031 | 0,029 | 0,004 | 0,016 | 0,0002 | 0,002 | 0,0050 | 0,0013 | 0,285 | 0,346 | 0,116 |
| | Check 2 | 0,11 | 1,32 | 0,009 | 0,002 | 0,28 | 0,02 | 0,05 | 0,01 | 0,030 | 0,029 | 0,003 | 0,016 | 0,0002 | 0,002 | 0,0050 | 0,0013 | 0,287 | 0,346 | 0,115 |
| 178322 | 030003155671 | 0,10 | 1,28 | 0,012 | 0,003 | 0,29 | 0,04 | 0,06 | 0,02 | 0,028 | 0,080 | 0,004 | 0,016 | 0,0004 | 0,002 | 0,0071 | 0,0015 | 0,267 | 0,348 | 0,201 |
| | Check 1 | 0,10 | 1,29 | 0,013 | 0,003 | 0,29 | 0,04 | 0,06 | 0,02 | 0,030 | 0,083 | 0,002 | 0,017 | 0,0002 | 0,002 | 0,0071 | 0,0014 | 0,269 | 0,350 | 0,197 |
| | Check 2 | 0,10 | 1,27 | 0,011 | 0,004 | 0,30 | 0,04 | 0,06 | 0,02 | 0,029 | 0,082 | 0,004 | 0,015 | 0,0002 | 0,003 | 0,0075 | 0,0013 | 0,267 | 0,347 | 0,203 |

**Ceq: Carbon Equivalent; Ceq: Carbon Equivalent; CE: Combined Elements;**

## Tensile Test

**Specimen Direction:** Longitudinal — **Temperature:** Room Temperature — **Wall Thickness:** 7,11 mm — **Gauge Length:** L0=2"

**Method:Elong.Total Under Load 0,50 %**

| | | Type of Specimen | Area (MM2) | YS (MPA) | TS (MPA) | E (%) |
|---|---|---|---|---|---|---|
| | Required: Min | | | 290 | 415 | 33 |
| | Max | | | | 625 | |
| Heat | Control Lot | | | | | |
| 175147 | 030003140032 | STRIP WIDTH 25,4 MM | 188,5 | 376 | 500 | 40 |
| | | STRIP WIDTH 25,4 MM | 190,0 | 382 | 505 | 40 |
| 175724 | 030003127905 | STRIP WIDTH 25,4 MM | 188,8 | 371 | 486 | 39 |
| | | STRIP WIDTH 25,4 MM | 186,2 | 369 | 500 | 39 |
| | 030003140031 | STRIP WIDTH 25,4 MM | 188,8 | 370 | 489 | 39 |
| | | STRIP WIDTH 25,4 MM | 189,2 | 373 | 492 | 40 |
| 178322 | 030003155671 | STRIP WIDTH 25,4 MM | 186,5 | 355 | 488 | 39 |
| | | STRIP WIDTH 25,4 MM | 185,9 | 360 | 492 | 40 |

**YS-Yield Strength; TS-Tensile Strength; E-Elongation;**

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**Inspection Certificate**
(According to DIN EN 10204.3.1)
**N°.: 0030032296 / 00**



## Hardness Test

Scale: HV

| | | Min | |
|---|---|---|---|
| | Required: Min | | |
| | Max | 246,0 | |
| Heat | Control Lot | | |
| 175147 | 030003140032 | 156,0 | 156,0 |
| 175724 | 030003127905 | 163,0 | 167,0 |
| | 030003140031 | 163,0 | 167,0 |
| 178322 | 030003155671 | 143,0 | 143,0 |

## Impact Test

Test Specimen: CHARPY 10X55X5 V NOTCH — Direction: Longitudinal — Temperature: -53°C — Striker radius: 8 mm

| | | AE1 (J) | AE2 (J) | AE3 (J) | AE4 (J) | AE5 (J) | AE Avg (J) | SA1 (%) | SA2 (%) | SA3 (%) | SA4 (%) | SA5 (%) | SA Avg (%) | LE1 (Mils) | LE2 (Mils) | LE3 (Mils) | LE Avg (Mils) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Required: Min | 14 | 14 | 14 | | | 14 | 50 | 50 | 50 | | | 60 | | | | |
| | Max | | | | | | | | | | | | | | | | |
| Heat | Control Lot | | | | | | | | | | | | | | | | |
| 175147 | 030003140032 | 122 | 123 | 123 | | | 123 | 100 | 100 | 100 | | | 100 | 64 | 64 | 65 | 67 |
| 175724 | 030003140031 | 122 | 122 | 122 | | | 122 | 100 | 100 | 100 | | | 100 | 64 | 64 | 67 | 67 |
| 178322 | 030003155671 | 144 | 142 | 151 | | | 146 | 100 | 100 | 100 | | | 100 | 79 | 79 | 66 | 75 |

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

## Impact Test

Test Specimen: CHARPY V 10X55X5 FLATTENED — Direction: Transverse — Temperature: -46°C — Striker radius: 8 mm

| | | AE1 (J) | AE2 (J) | AE3 (J) | AE4 (J) | AE5 (J) | AE Avg (J) | SA1 (%) | SA2 (%) | SA3 (%) | SA4 (%) | SA5 (%) | SA Avg (%) | LE1 (Mils) | LE2 (Mils) | LE3 (Mils) | LE Avg (Mils) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Required: Min | 14 | 14 | 14 | | | 14 | 50 | 50 | 50 | | | 60 | | | | |
| | Max | | | | | | | | | | | | | | | | |
| Heat | Control Lot | | | | | | | | | | | | | | | | |
| 175147 | 030003140032 | 121 | 121 | 122 | | | 121 | 100 | 100 | 100 | | | 100 | 53 | 58 | 59 | 64 |
| 175724 | 030003140031 | 121 | 122 | 121 | | | 122 | 100 | 100 | 100 | | | 100 | 55 | 60 | 55 | 68 |
| 178322 | 030003155671 | 106 | 111 | 104 | | | 106 | 100 | 100 | 100 | | | 100 | 76 | 80 | 72 | 76 |

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

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**Inspection Certificate**
(According to DIN EN 10204.3.1)
**N°.: 0030032296 / 00** Sheet 4 / 4

Remarks:
1. MATERIAL IN ACCORDANCE WITH NACE MR 0175 PAR 3.2/ISO 15156-2, ANNEX A.2.1.2/NACE MR0103 PAR.2.1 ALL LATEST EDITIONS

2. SKU 2530104

3. THE WORKS OPERATE A QUALITY MANAGEMENT SYSTEM ACCORDING TO EUROPEAN DIRECTIVE 2014/68/UE ANNEX I PAR. 4.3 (CERTIFICATE 2016 BH MP 02-03 VALID UNTIL 12.05.2019).

- MATERIAL ACCORDING TO PED 2014/68/UE ANNEX I PAR. 7.5

4. - NO WELD REPAIR
- FREE OF MERCURY CONTAMINATION
- NO RADIOACTIVE CONTAMINATION
- FINE GRAIN PRACTICE
- FULLY KILLED STEEL
- MATERIAL FROM BRAZIL

NORMALIZED
TEMPERATURE 892°C
SOAKING TIME 40 MINUTES
METHOD OF COOLING : AIR

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2773

e-mail:luiz.silva@vallourec.com

ENG. LUIZ FERNANDO DA SILVA - CREA/MG 58834-D
TECHNICAL RESPONSIBLE

DATE
02.27.2019

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Vallourec Soluções Tubulares do Brasil S.A.
Barreiro Plant - Av. Olinto Meireles, 65
ZIP 30640-010 - Belo Horizonte, MG

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ISO 9001 - ISO/TS 16949
ISO 14001 ISO 50001 OHSAS 18001
Certified management system

# Inspection Certificate

(According to DIN EN 10204.3.1)

**N°.: 0030030841 / 00**

Sheet: 1 / 4

**Customer:** VALLOUREC CANADA INC

**Country:** Canada

**Material Number:** 274465
**Work Order:** 531796 / 50
**Customer Order:** VM-4682 - P O 4038589-00

**Inspection:** Vallourec Soluções Tubulares do Brasil S.A.

**PRODUCT:** SEAMLESS STEEL PIPE, HOT FINISHED , BEVELED ENDS 30 DEG. , NORMALIZED
**DIMENSIONS:** 219,10 mm X 8,18 mm **SCHEDULE:** 040 **GRADE:** GRADE 290 # GR 1 # 6 # B 8 STD 2530112
**STANDARD:** CSA-Z245.1-14 - CATEGORY II
**IN ACCORDANCE ALSO TO THE STANDARDS:** ASTM A 333M - 16 ASTM A 999M - 18 # ASTM A 106M - 18 ASTM A 530M - 12 # ASTM A 53M - 12 # ASME SA-333M - 17 ASME SA 999M - 17 # ASME SA-106M - 17 ASME SA 530M - 17
**CUSTOMER SPECIFICATION:** CCTF GrB,1,6,290 Cat II SS , 20.11.2017
**SURFACE PROTECTION: EXTERNAL:** LACQUER **PIPE ENDS PROTECTOR:** PLASTIC CAP
**TOLERANCES: OUTSIDE DIAMETER (PIPE BODY):** -0,80 mm / +1,60 mm **WALL THICKNESS:** -1,02 mm / +1,23 mm
**TOLERANCES(PIPE ENDS): OUTSIDE DIAMETER:** -0,40 mm / +1,60 mm
**LENGTH:** RANDOM 5486,00 mm - 6706,00 mm
**STANDARD MARKING:** PAINT STENCILED IN THE PIPE BODY: 531796/50 MANUFACTURER CSA-Z245.1-14 219,10 X 8,18 290 CAT II SS S IIN LENGTH HEAT NUMBER ASTM A/ASME SA 333, 1/6 HF SCH 040 LT -46C ASTM A/ASME SA 106 B 16300 KPA WEIGHT ASTM A 53 B NPS 8" X SCH 40 VSB LOGO
**SHIPPING MARKING:** NACE MR 0175/NACE MR 0103 - MADE IN BRAZIL * VM4682 / P.O # 4038589-00/ITEM-5 * TORONTO * CCTF

| Heat | Pieces |
|---|---|
| 175141 | 6 |
| 175142 | 8 |
| 176433 | 28 |
| **Total** | **42** |

**THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS:** DIMENSIONAL # VISUAL # FLATTENING TEST # ENDS INSPECTION : UNTESTED ENDS CROPPED # HYDROSTATIC TEST: 16300,0 KPA 5 S # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST : CSAZ245.1-N10,LON/TRAN,OUT/INS # ULTRASONIC TEST FOR LAMINAR DEFECTS: ACC. CSA Z245.1-SOUR SERVICE #

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# Inspection Certificate

(According to DIN EN 10204.3.1)

**N°.: 0030030841 / 00**



## Chemical Composition (%)

**Process: Basic Oxygen Furnace, heats fully killed**

Ceq: CSA-Z245.1-CE11 — Ceq: C+Mn/6+(Cr+Mo+V)/5 −(Ni+Cu)/15 — CE1: Cr + Cu + Mo + Ni + V

| | | | C | Mn | P | S | Si | Ni | Cr | Mo | Al | Cu | V | Nb | B | Ti | N | Ca | Ceq | Ceq | CE1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heat Analisys | | Min | | 0,400 | | | 0,100 | | | | | | | | | | | | | | |
| | | Max | 0,240 | 1,350 | 0,025 | 0,025 | 0,500 | 0,400 | 0,300 | 0,120 | | 0,400 | 0,080 | 0,020 | 0,0010 | 0,110 | | | 0,400 | 0,430 | 1,000 |
| Product Analisys | | Min | | 0,400 | | | 0,100 | | | | | | | | | | | | | | |
| | | Max | 0,240 | 1,350 | 0,025 | 0,025 | 0,500 | 0,400 | 0,300 | 0,120 | | 0,400 | 0,080 | 0,020 | 0,0010 | 0,110 | | | 0,400 | 0,430 | 1,000 |
| Heat | Control Lot | | | | | | | | | | | | | | | | | | | | |
| 175141 | 030003103023 | | 0,10 | 1,28 | 0,009 | 0,003 | 0,27 | 0,02 | 0,05 | 0,01 | 0,026 | 0,028 | 0,001 | 0,016 | 0,0005 | 0,001 | 0,0070 | 0,0019 | 0,262 | 0,329 | 0,109 |
| | Check 1 | | 0,10 | 1,26 | 0,008 | 0,003 | 0,28 | 0,02 | 0,04 | 0,01 | 0,026 | 0,030 | 0,004 | 0,015 | 0,0003 | 0,001 | 0,0065 | 0,0016 | 0,258 | 0,324 | 0,104 |
| | Check 2 | | 0,11 | 1,28 | 0,008 | 0,002 | 0,28 | 0,02 | 0,04 | 0,01 | 0,026 | 0,031 | 0,004 | 0,016 | 0,0002 | 0,001 | 0,0065 | 0,0016 | 0,270 | 0,338 | 0,105 |
| 175142 | 030003103024 | | 0,11 | 1,29 | 0,010 | 0,004 | 0,28 | 0,02 | 0,05 | 0,01 | 0,030 | 0,025 | 0,001 | 0,015 | 0,0004 | 0,002 | 0,0077 | 0,0016 | 0,283 | 0,340 | 0,106 |
| | Check 1 | | 0,11 | 1,28 | 0,011 | 0,003 | 0,28 | 0,03 | 0,06 | 0,01 | 0,031 | 0,021 | 0,005 | 0,016 | 0,0003 | 0,002 | 0,0072 | 0,0013 | 0,283 | 0,342 | 0,126 |
| | Check 2 | | 0,11 | 1,29 | 0,009 | 0,003 | 0,28 | 0,02 | 0,04 | 0,01 | 0,029 | 0,025 | 0,004 | 0,015 | 0,0003 | 0,002 | 0,0075 | 0,0014 | 0,281 | 0,339 | 0,099 |
| 176433 | 030003103452 | | 0,10 | 1,27 | 0,012 | 0,004 | 0,28 | 0,03 | 0,06 | 0,01 | 0,029 | 0,070 | 0,004 | 0,015 | 0,0004 | 0,002 | 0,0099 | 0,0012 | 0,265 | 0,333 | 0,174 |
| | Check 1 | | 0,11 | 1,29 | 0,013 | 0,004 | 0,29 | 0,03 | 0,06 | 0,01 | 0,028 | 0,066 | 0,005 | 0,016 | 0,0003 | 0,002 | 0,0096 | 0,0013 | 0,277 | 0,346 | 0,171 |
| | Check 2 | | 0,11 | 1,26 | 0,013 | 0,004 | 0,28 | 0,03 | 0,06 | 0,01 | 0,028 | 0,066 | 0,005 | 0,016 | 0,0002 | 0,002 | 0,0096 | 0,0013 | 0,273 | 0,341 | 0,171 |

Ceq: Carbon Equivalent; Ceq: Carbon Equivalent; CE: Combined Elements;

## Tensile Test

**Specimen Direction:** Longitudinal — **Temperature:** Room Temperature — **Wall Thickness:** 8,18 mm — **Gage Length:** L0=2"

**Method:Elong.Total Under Load 0,50 %**

| | | Type of Specimen | Area (MM2) | YS (MPA) | TS (MPA) | E (%) |
|---|---|---|---|---|---|---|
| Required: Min | | | | 290 | 415 | 35 |
| Max | | | | 495 | 625 | |
| Heat | Control Lot | | | | | |
| 175141 | 030003103023 | STRIP WIDTH 38,1 MM | 336,8 | 360 | 472 | 41 |
| | | STRIP WIDTH 38,1 MM | 348,7 | 389 | 455 | 40 |
| 175142 | 030003103024 | STRIP WIDTH 38,1 MM | 318,9 | 395 | 502 | 42 |
| | | STRIP WIDTH 38,1 MM | 330,1 | 401 | 490 | 40 |
| 176433 | 030003103452 | STRIP WIDTH 38,1 MM | 328,0 | 396 | 508 | 43 |
| | | STRIP WIDTH 38,1 MM | 341,8 | 410 | 495 | 40 |

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

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**Inspection Certificate**
(According to DIN EN 10204.3.1)
**N°.: 0030030841 / 00**



## Hardness Test

Scale: HV

| | | Max | |
|---|---|---|---|
| | Required: Min | | |
| | Max | 246,0 | |
| Heat | Control Lot | | |
| 175141 | 030003103023 | 158,0 | 160,0 |
| 175142 | 030003103024 | 162,0 | 164,0 |
| 176433 | 030003103452 | 169,0 | 170,0 |

## Impact Test

Test Specimen: CHARPY 10X55X7.5 V NOTCH — Direction: Longitudinal — Temperature: -46°C — Striker radius: 8 mm

| | | AE1 (J) | AE2 (J) | AE3 (J) | AE4 (J) | AE5 (J) | AE Avg (J) | SA1 (%) | SA2 (%) | SA3 (%) | SA4 (%) | SA5 (%) | SA Avg (%) | LE1 (Mils) | LE2 (Mils) | LE3 (Mils) | LE Avg (Mils) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Required: Min | 21 | 21 | 21 | | | 21 | 50 | 50 | 50 | | | 60 | | | | |
| | Max | | | | | | | | | | | | | | | | |
| Heat | Control Lot | | | | | | | | | | | | | | | | |
| 175141 | 030003103023 | 267 | 264 | 261 | | | 264 | 100 | 100 | 100 | | | 100 | 75 | 75 | 75 | 75 |
| 175142 | 030003103024 | 270 | 267 | 255 | | | 264 | 100 | 100 | 100 | | | 100 | 80 | 80 | 80 | 80 |
| 176433 | 030003103452 | 245 | 235 | 245 | | | 242 | 100 | 100 | 100 | | | 100 | 80 | 80 | 80 | 80 |

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

## Impact Test

Test Specimen: CHARPY 10X55X6.67 V NOTCH — Direction: Transverse — Temperature: -46°C — Striker radius: 8 mm

| | | AE1 (J) | AE2 (J) | AE3 (J) | AE4 (J) | AE5 (J) | AE Avg (J) | SA1 (%) | SA2 (%) | SA3 (%) | SA4 (%) | SA5 (%) | SA Avg (%) | LE1 (Mils) | LE2 (Mils) | LE3 (Mils) | LE Avg (Mils) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Required: Min | 18 | 18 | 18 | | | 18 | 50 | 50 | 50 | | | 60 | | | | |
| | Max | | | | | | | | | | | | | | | | |
| Heat | Control Lot | | | | | | | | | | | | | | | | |
| 175141 | 030003103023 | 196 | 208 | 213 | | | 206 | 100 | 100 | 100 | | | 100 | 75 | 78 | 81 | 78 |
| 175142 | 030003103024 | 203 | 179 | 187 | | | 190 | 100 | 100 | 100 | | | 100 | 82 | 82 | 82 | 82 |
| 176433 | 030003103452 | 160 | 187 | 156 | | | 168 | 100 | 100 | 100 | | | 100 | 80 | 82 | 78 | 80 |

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

Remarks:

1. MATERIAL IN ACCORDANCE WITH NACE MR 0175
PAR. 3.2/ISO 15156-2, ANNEX A.2.1.2/NACE MR0103 PAR.2.1. ALL LATEST

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**Inspection Certificate**
(According to DIN EN 10204.3.1)
**N°.: 0030030841 / 00** Sheet 4 / 4

EDITIONS

2. SKU 2530112

3. THE WORKS OPERATE A QUALITY MANAGEMENT SYSTEM ACCORDING TO EUROPEAN DIRECTIVE 2014/68/UE ANNEX I PAR. 4.3 (CERTIFICATE 2016 BH MP 02-03 VALID UNTIL 12.05.2019).
- MATERIAL ACCORDING TO PED 2014/68/UE ANNEX I PAR. 7.5

"STEEL MADE BY BOF PROCESS"

4. - NO WELD REPAIR
- FREE OF MERCURY CONTAMINATION
- NO RADIOACTIVE CONTAMINATION
- FINE GRAIN PRACTICE
- FULLY KILLED STEEL
- MATERIAL FROM BRAZIL

**We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.**

QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2773

e-mail:luis.silva@vallourec.com

ENG. LUIZ FERNANDO DA SILVA - CREA-MG 58834-D
TECHNICAL RESPONSIBLE

DATE
11.20.2018

vallourec

Vallourec Soluções Tubulares do Brasil S.A.
Barreiro Plant - Av. Olinto Meireles, 65
ZIP 30640-010 - Belo Horizonte, MG

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# Inspection Certificate

(According to DIN EN 10204.3.1)

N°.: 0030031810 / 00

Sheet:1 / 4

Customer: VALLOUREC CANADA INC

Country: Canada

Material Number: 276624
Work Order: 534782 / 80
Customer Order: VM-4748 - P.O 4038825-00

Inspection: Vallourec Soluções Tubulares do Brasil S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED , BEVELED ENDS 30 DEG, , NORMALIZED
DIMENSIONS: 219,10 mm X 8,18 mm SCHEDULE: 040 GRADE: GRADE 290 # GR 1 # 6 # B 8 STD 2530112
STANDARD: CSA-Z245.1-18 - CATEGORY II
IN ACCORDANCE ALSO TO THE STANDARDS: ASTM A 333M - 16 ASTM A 999M - 18 # ASTM A 106M - 18 ASTM A 530M - 12 # ASTM A 53M - 12 # ASME SA-333M - 17 ASME SA 999M - 17 # ASME SA-106M - 17 ASME SA 530M - 17
CUSTOMER SPECIFICATION: CCTF GrB.1,6.290 Cat II SS , 20.11.2017
SURFACE PROTECTION: EXTERNAL: LACQUER PIPE ENDS PROTECTOR: PLASTIC CAP
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -0,80 mm / +1,60 mm WALL THICKNESS: -1,02 mm / +1,23 mm
TOLERANCES(PIPE ENDS): OUTSIDE DIAMETER: -0,40 mm / +1,60 mm
LENGTH: RANDOM 5486,00 mm - 6706,00 mm
STANDARD MARKING: PAINT STENCILED IN THE PIPE BODY: 534782 80 MANUFACTURER CSA-Z245.1-18 219,10 X 8.18 290 CAT II M46C SS S HN LENGTH HEAT NUMBER ASTM A ASME SA 333, 1 6 HF SCH 040 LT -46C ASTM A/ASME SA 106 B 16300 KPA WEIGHT ASTM A 53 B NPS 8" X SCH 40 VSB LOGO
SHIPPING MARKING: NACE MR 0175/NACE MR 0103 - MADE IN BRAZIL * VM4748 / P.O # 4038825-00/ITEM-8 * TORONTO * CCTF

| Heat | Pieces |
|---|---|
| 175146 | 12 |
| 177833 | 26 |
| Total | 38 |

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # FLATTENING TEST # ENDS INSPECTION : UNTESTED ENDS CROPPED # HYDROSTATIC TEST 16300,0 KPA 5 S # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST : CSA/Z245.1-N10,LON/TRAN,OUT INS # ULTRASONIC TEST FOR LAMINAR DEFECTS: ACC, CSA Z245.1-SOUR SERVICE #

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ISO 9001 ISO/TS 16949 ISO 14001 ISO 50001 OHSAS 18001

# Inspection Certificate

(According to DIN EN 10204.3.1)

N°.: 0030031810 / 00



## Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: CSA-Z245.1-CE11

Ceq: C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

CE1: Cr + Cu + Mo + Ni + V

| | | | C | Mn | P | S | Si | Ni | Cr | Mo | Al | Cu | V | Nb | B | Ti | N | Ca | Ceq | Ceq | CE1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heat Analisys | | Min | | 0,400 | | | 0,100 | | | | | | | | | | | | | | |
| | | Max | 0,240 | 1,350 | 0,025 | 0,025 | 0,500 | 0,400 | 0,300 | 0,120 | | 0,400 | 0,080 | 0,020 | 0,0010 | 0,110 | | | 0,400 | 0,430 | 1,000 |
| Product Analisys | | Min | | 0,400 | | | 0,100 | | | | | | | | | | | | | | |
| | | Max | 0,240 | 1,350 | 0,025 | 0,025 | 0,500 | 0,400 | 0,300 | 0,120 | | 0,400 | 0,080 | 0,020 | 0,0010 | 0,110 | | | 0,400 | 0,430 | 1,000 |
| Heat | Control Lot | | | | | | | | | | | | | | | | | | | | |
| 175146 | 030003113164 | | 0,11 | 1,29 | 0,010 | 0,004 | 0,29 | 0,01 | 0,04 | 0,01 | 0,027 | 0,022 | 0,004 | 0,015 | 0,0004 | 0,002 | 0,0074 | 0,0012 | 0,281 | 0,338 | 0,086 |
| | Check 1 | | 0,11 | 1,29 | 0,010 | 0,005 | 0,30 | 0,01 | 0,05 | 0,01 | 0,028 | 0,022 | 0,005 | 0,015 | 0,0005 | 0,002 | 0,0077 | 0,0012 | 0,284 | 0,340 | 0,097 |
| | Check 2 | | 0,11 | 1,30 | 0,009 | 0,005 | 0,31 | 0,01 | 0,04 | 0,01 | 0,029 | 0,020 | 0,004 | 0,016 | 0,0002 | 0,002 | 0,0079 | 0,0014 | 0,283 | 0,339 | 0,084 |
| 177833 | 030003140903 | | 0,11 | 1,29 | 0,010 | 0,004 | 0,28 | 0,03 | 0,07 | 0,01 | 0,029 | 0,090 | 0,004 | 0,014 | 0,0003 | 0,002 | 0,0067 | 0,0018 | 0,289 | 0,350 | 0,204 |
| | Check 1 | | 0,11 | 1,28 | 0,011 | 0,003 | 0,27 | 0,03 | 0,07 | 0,01 | 0,030 | 0,090 | 0,003 | 0,015 | 0,0002 | 0,002 | 0,0064 | 0,0018 | 0,287 | 0,348 | 0,203 |
| | Check 2 | | 0,10 | 1,28 | 0,011 | 0,003 | 0,27 | 0,03 | 0,07 | 0,01 | 0,030 | 0,090 | 0,003 | 0,015 | 0,0002 | 0,002 | 0,0067 | 0,0016 | 0,277 | 0,338 | 0,203 |

Ceq: Carbon Equivalent; Ceq: Carbon Equivalent; CE: Combined Elements;

## Tensile Test

Specimen Direction: Longitudinal

Temperature: Room Temperature

Wall Thickness: 8.18 mm

Gauge Length: 1.0=2"

Method:Elong.Total Under Load 0.50 %

| | | Type of Specimen | Area (MM2) | YS (MPA) | TS (MPA) | E (%) |
|---|---|---|---|---|---|---|
| Required: Min | | | | 290 | 415 | 35 |
| Max | | | | 495 | 625 | |
| Heat | Control Lot | | | | | |
| 175146 | 030003113164 | STRIP WIDTH 38 MM | 324,3 | 383 | 502 | 41 |
| | | STRIP WIDTH 38 MM | 329,7 | 399 | 515 | 40 |
| 177833 | 030003140903 | STRIP WIDTH 38,1 MM | 305,2 | 420 | 519 | 42 |
| | | STRIP WIDTH 38,1 MM | 300,7 | 425 | 525 | 40 |

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

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**Inspection Certificate**
(According to DIN EN 10204.3.1)
N°.: 0030031810 / 00 Sheet:3 4

## Hardness Test

Scale: HV

| | | Max | |
|---|---|---|---|
| | Required: Min | | |
| | Max | 246,0 | |
| Heat | Control Lot | | |
| 175146 | 030003113164 | 148,0 | 150,0 |
| 177833 | 030003140903 | 152,0 | 155,0 |

## Impact Test

Test Specimen: CHARPY 10X55X7.5 V NOTCH — Direction: Longitudinal — Temperature: -46°C — Striker radius: 8 mm

| | | AE1 (J) | AE2 (J) | AE3 (J) | AE4 (J) | AE5 (J) | AE Avg (J) | SA1 (%) | SA2 (%) | SA3 (%) | SA4 (%) | SA5 (%) | SA Avg (%) | LE1 (Mils) | LE2 (Mils) | LE3 (Mils) | LE Avg (Mils) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Required: Min | 21 | 21 | 21 | | | 21 | 50 | 50 | 50 | | | 60 | | | | |
| | Max | | | | | | | | | | | | | | | | |
| Heat | Control Lot | | | | | | | | | | | | | | | | |
| 175146 | 030003113164 | 270 | 275 | 262 | | | 269 | 100 | 100 | 100 | | | 100 | 78 | 81 | 80 | 80 |
| 177833 | 030003140903 | 275 | 263 | 270 | | | 269 | 100 | 100 | 100 | | | 100 | 71 | 79 | 69 | 73 |

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

## Impact Test

Test Specimen: CHARPY 10X55X6.67 V NOTCH — Direction: Transverse — Temperature: -46°C — Striker radius: 8 mm

| | | AE1 (J) | AE2 (J) | AE3 (J) | AE4 (J) | AE5 (J) | AE Avg (J) | SA1 (%) | SA2 (%) | SA3 (%) | SA4 (%) | SA5 (%) | SA Avg (%) | LE1 (Mils) | LE2 (Mils) | LE3 (Mils) | LE Avg (Mils) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Required: Min | 18 | 18 | 18 | | | 18 | 50 | 50 | 50 | | | 60 | | | | |
| | Max | | | | | | | | | | | | | | | | |
| Heat | Control Lot | | | | | | | | | | | | | | | | |
| 177833 | 030003140903 | 210 | 186 | 174 | | | 190 | 100 | 100 | 100 | | | 100 | 88 | 87 | 88 | 88 |

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

Remarks:

1. MATERIAL IN ACCORDANCE WITH NACE MR 0175
PAR. 3.2/ISO 15156-2, ANNEX A.2.1.2/NACE MR0103 PAR.2.1, ALL LATEST
EDITIONS

2. SKU 2530112

3. THE WORKS OPERATE A QUALITY MANAGEMENT SYSTEM ACCORDING TO EUROPEAN

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**Inspection Certificate**
(According to DIN EN 10204 3.1)
N°.: 0030031810 / 00 Sheet:4 4

DIRECTIVE 2014/68/UE ANNEX I PAR. 4.3 (CERTIFICATE 2016 BH MP 02-03
VALID UNTIL 12.05.2019).
- MATERIAL ACCORDING TO PED 2014/68/UE ANNEX I PAR. 7.5

4. - NO WELD REPAIR
- FREE OF MERCURY CONTAMINATION
- NO RADIOACTIVE CONTAMINATION
- FINE GRAIN PRACTICE
- FULLY KILLED STEEL
- MATERIAL FROM BRAZIL

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2773

e-mail:luis.silva@vallourec.com

ENG. LUIZ FERNANDO DA SILVA - CREA-MG 58834-D
TECHNICAL RESPONSIBLE

DATE
01.22.2019

vallourec

Vallourec Soluções Tubulares do Brasil S.A.
Barreiro Plant - Av. Olinto Meireles, 65
ZIP 30640-010 - Belo Horizonte, MG

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# Inspection Certificate

(According to DIN EN 10204.3.1)

**N°.: 0030030841 / 00**

Sheet: 1 / 4

**Customer:** VALLOUREC CANADA INC

**Country:** Canada

**Material Number:** 274465
**Work Order:** 531796 / 50
**Customer Order:** VM-4682 - P O 4038589-00

**Inspection:** Vallourec Soluções Tubulares do Brasil S.A.

**PRODUCT:** SEAMLESS STEEL PIPE, HOT FINISHED , BEVELED ENDS 30 DEG. , NORMALIZED
**DIMENSIONS:** 219,10 mm X 8,18 mm **SCHEDULE:** 040 **GRADE:** GRADE 290 # GR 1 # 6 # B 8 STD 2530112
**STANDARD:** CSA-Z245.1-14 - CATEGORY II
**IN ACCORDANCE ALSO TO THE STANDARDS:** ASTM A 333M - 16 ASTM A 999M - 18 # ASTM A 106M - 18 ASTM A 530M - 12 # ASTM A 53M - 12 # ASME SA-333M - 17 ASME SA 999M - 17 # ASME SA-106M - 17 ASME SA 530M - 17
**CUSTOMER SPECIFICATION:** CCTF GrB,1,6,290 Cat II SS , 20.11.2017
**SURFACE PROTECTION: EXTERNAL:** LACQUER **PIPE ENDS PROTECTOR:** PLASTIC CAP
**TOLERANCES: OUTSIDE DIAMETER (PIPE BODY):** -0,80 mm / +1,60 mm **WALL THICKNESS:** -1,02 mm / +1,23 mm
**TOLERANCES(PIPE ENDS): OUTSIDE DIAMETER:** -0,40 mm / +1,60 mm
**LENGTH:** RANDOM 5486,00 mm - 6706,00 mm
**STANDARD MARKING:** PAINT STENCILED IN THE PIPE BODY: 531796/50 MANUFACTURER CSA-Z245.1-14 219,10 X 8,18 290 CAT II SS S HN LENGTH HEAT NUMBER ASTM A/ASME SA 333, 1/6 HF SCH 040 LT -46C ASTM A/ASME SA 106 B 16300 KPA WEIGHT ASTM A 53 B NPS 8" X SCH 40 VSB LOGO
**SHIPPING MARKING:** NACE MR 0175/NACE MR 0103 - MADE IN BRAZIL * VM4682 / P.O # 4038589-00/ITEM-5 * TORONTO * CCTF

| Heat | Pieces |
|---|---|
| 175141 | 6 |
| 175142 | 8 |
| 176433 | 28 |
| Total | 42 |

**THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS:** DIMENSIONAL # VISUAL # FLATTENING TEST # ENDS INSPECTION : UNTESTED ENDS CROPPED # HYDROSTATIC TEST: 16300,0 KPA 5 S # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST : CSAZ245.1-N10,LON/TRAN,OUT/INS # ULTRASONIC TEST FOR LAMINAR DEFECTS: ACC. CSA Z245.1-SOUR SERVICE #

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RINA

# Inspection Certificate

(According to DIN EN 10204.3.1)

N°.: 0030030841 / 00



## Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: CSA-Z245.1-CE11 — Ceq: C+Mn/6+(Cr+Mo+V)/5 +(Ni+Cu)/15 — CE1: Cr + Cu + Mo + Ni + V

| | | C | Mn | P | S | Si | Ni | Cr | Mo | Al | Cu | V | Nb | B | Ti | N | Ca | Ceq | Ceq | CE1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heat Analisys | Min | | 0,400 | | | 0,100 | | | | | | | | | | | | | | |
| | Max | 0,240 | 1,350 | 0,025 | 0,025 | 0,500 | 0,400 | 0,300 | 0,120 | | 0,400 | 0,080 | 0,020 | 0,0010 | 0,110 | | | 0,400 | 0,430 | 1,000 |
| Product Analisys | Min | | 0,400 | | | 0,100 | | | | | | | | | | | | | | |
| | Max | 0,240 | 1,350 | 0,025 | 0,025 | 0,500 | 0,400 | 0,300 | 0,120 | | 0,400 | 0,080 | 0,020 | 0,0010 | 0,110 | | | 0,400 | 0,430 | 1,000 |
| Heat | Control Lot | | | | | | | | | | | | | | | | | | | |
| 175141 | 030003103023 | 0,10 | 1,28 | 0,009 | 0,003 | 0,27 | 0,02 | 0,05 | 0,01 | 0,026 | 0,028 | 0,001 | 0,016 | 0,0005 | 0,001 | 0,0070 | 0,0019 | 0,262 | 0,329 | 0,109 |
| | Check 1 | 0,10 | 1,26 | 0,008 | 0,003 | 0,28 | 0,02 | 0,04 | 0,01 | 0,026 | 0,030 | 0,004 | 0,015 | 0,0003 | 0,001 | 0,0065 | 0,0016 | 0,258 | 0,324 | 0,104 |
| | Check 2 | 0,11 | 1,28 | 0,008 | 0,002 | 0,28 | 0,02 | 0,04 | 0,01 | 0,026 | 0,031 | 0,004 | 0,016 | 0,0002 | 0,001 | 0,0065 | 0,0016 | 0,270 | 0,338 | 0,105 |
| 175142 | 030003103024 | 0,11 | 1,29 | 0,010 | 0,004 | 0,28 | 0,02 | 0,05 | 0,01 | 0,030 | 0,025 | 0,001 | 0,015 | 0,0004 | 0,002 | 0,0077 | 0,0016 | 0,283 | 0,340 | 0,106 |
| | Check 1 | 0,11 | 1,28 | 0,011 | 0,003 | 0,28 | 0,03 | 0,06 | 0,01 | 0,031 | 0,021 | 0,005 | 0,016 | 0,0003 | 0,002 | 0,0072 | 0,0013 | 0,283 | 0,342 | 0,126 |
| | Check 2 | 0,11 | 1,29 | 0,009 | 0,003 | 0,28 | 0,02 | 0,04 | 0,01 | 0,029 | 0,025 | 0,004 | 0,015 | 0,0003 | 0,002 | 0,0075 | 0,0014 | 0,281 | 0,339 | 0,099 |
| 176433 | 030003103452 | 0,10 | 1,27 | 0,012 | 0,004 | 0,28 | 0,03 | 0,06 | 0,01 | 0,029 | 0,070 | 0,004 | 0,015 | 0,0004 | 0,002 | 0,0099 | 0,0012 | 0,265 | 0,333 | 0,174 |
| | Check 1 | 0,11 | 1,29 | 0,013 | 0,004 | 0,29 | 0,03 | 0,06 | 0,01 | 0,028 | 0,066 | 0,005 | 0,016 | 0,0003 | 0,002 | 0,0096 | 0,0013 | 0,277 | 0,346 | 0,171 |
| | Check 2 | 0,11 | 1,26 | 0,013 | 0,004 | 0,28 | 0,03 | 0,06 | 0,01 | 0,028 | 0,066 | 0,005 | 0,016 | 0,0002 | 0,002 | 0,0096 | 0,0013 | 0,273 | 0,341 | 0,171 |

Ceq: Carbon Equivalent; Ceq: Carbon Equivalent; CE: Combined Elements;

## Tensile Test

Specimen Direction: Longitudinal — Temperature: Room Temperature — Wall Thickness: 8,18 mm — Gage Length: L0=2"

Method:Elong.Total Under Load 0,50 %

| | | Type of Specimen | Area (MM2) | YS (MPA) | TS (MPA) | E (%) |
|---|---|---|---|---|---|---|
| Required: Min | | | | 290 | 415 | 35 |
| Max | | | | 495 | 625 | |
| Heat | Control Lot | | | | | |
| 175141 | 030003103023 | STRIP WIDTH 38,1 MM | 336,8 | 360 | 472 | 41 |
| | | STRIP WIDTH 38,1 MM | 348,7 | 389 | 455 | 40 |
| 175142 | 030003103024 | STRIP WIDTH 38,1 MM | 318,9 | 395 | 502 | 42 |
| | | STRIP WIDTH 38,1 MM | 330,1 | 401 | 490 | 40 |
| 176433 | 030003103452 | STRIP WIDTH 38,1 MM | 328,0 | 396 | 508 | 43 |
| | | STRIP WIDTH 38,1 MM | 341,8 | 410 | 495 | 40 |

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

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**Inspection Certificate**
(According to DIN EN 10204.3.1)
**N°.: 0030030841 / 00**



## Hardness Test

Scale: HV

| | | Max | |
|---|---|---|---|
| | Required: Min | | |
| | Max | 246,0 | |
| Heat | Control Lot | | |
| 175141 | 030003103023 | 158,0 | 160,0 |
| 175142 | 030003103024 | 162,0 | 164,0 |
| 176433 | 030003103452 | 169,0 | 170,0 |

## Impact Test

Test Specimen: CHARPY 10X55X7.5 V NOTCH — Direction: Longitudinal — Temperature: -46°C — Striker radius: 8 mm

| | | AE1 (J) | AE2 (J) | AE3 (J) | AE4 (J) | AE5 (J) | AE Avg (J) | SA1 (%) | SA2 (%) | SA3 (%) | SA4 (%) | SA5 (%) | SA Avg (%) | LE1 (Mils) | LE2 (Mils) | LE3 (Mils) | LE Avg (Mils) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Required: Min | 21 | 21 | 21 | | | 21 | 50 | 50 | 50 | | | 60 | | | | |
| | Max | | | | | | | | | | | | | | | | |
| Heat | Control Lot | | | | | | | | | | | | | | | | |
| 175141 | 030003103023 | 267 | 264 | 261 | | | 264 | 100 | 100 | 100 | | | 100 | 75 | 75 | 75 | 75 |
| 175142 | 030003103024 | 270 | 267 | 255 | | | 264 | 100 | 100 | 100 | | | 100 | 80 | 80 | 80 | 80 |
| 176433 | 030003103452 | 245 | 235 | 245 | | | 242 | 100 | 100 | 100 | | | 100 | 80 | 80 | 80 | 80 |

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

## Impact Test

Test Specimen: CHARPY 10X55X6.67 V NOTCH — Direction: Transverse — Temperature: -46°C — Striker radius: 8 mm

| | | AE1 (J) | AE2 (J) | AE3 (J) | AE4 (J) | AE5 (J) | AE Avg (J) | SA1 (%) | SA2 (%) | SA3 (%) | SA4 (%) | SA5 (%) | SA Avg (%) | LE1 (Mils) | LE2 (Mils) | LE3 (Mils) | LE Avg (Mils) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Required: Min | 18 | 18 | 18 | | | 18 | 50 | 50 | 50 | | | 60 | | | | |
| | Max | | | | | | | | | | | | | | | | |
| Heat | Control Lot | | | | | | | | | | | | | | | | |
| 175141 | 030003103023 | 196 | 208 | 213 | | | 206 | 100 | 100 | 100 | | | 100 | 75 | 78 | 81 | 78 |
| 175142 | 030003103024 | 203 | 179 | 187 | | | 190 | 100 | 100 | 100 | | | 100 | 82 | 82 | 82 | 82 |
| 176433 | 030003103452 | 160 | 187 | 156 | | | 168 | 100 | 100 | 100 | | | 100 | 80 | 82 | 78 | 80 |

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

**Remarks:**

1. MATERIAL IN ACCORDANCE WITH NACE MR 0175
PAR. 3.2/ISO 15156-2, ANNEX A.2.1.2/NACE MR0103 PAR.2.1. ALL LATEST

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**Inspection Certificate**
(According to DIN EN 10204.3.1)
**N°.: 0030030841 / 00** Sheet:4 / 4

EDITIONS

2. SKU 2530112

3. THE WORKS OPERATE A QUALITY MANAGEMENT SYSTEM ACCORDING TO EUROPEAN DIRECTIVE 2014/68/UE ANNEX I PAR. 4.3 (CERTIFICATE 2016 BH MP 02-03 VALID UNTIL 12.05.2019).
- MATERIAL ACCORDING TO PED 2014/68/UE ANNEX I PAR. 7.5

"STEEL MADE BY BOF PROCESS"

4. - NO WELD REPAIR
- FREE OF MERCURY CONTAMINATION
- NO RADIOACTIVE CONTAMINATION
- FINE GRAIN PRACTICE
- FULLY KILLED STEEL
- MATERIAL FROM BRAZIL

**We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.**

QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2773

e-mail:luis.silva@vallourec.com

ENG. LUIZ FERNANDO DA SILVA - CREA-MG 58834-D
TECHNICAL RESPONSIBLE

DATE
11.20.2018

vallourec

Vallourec Soluções Tubulares do Brasil S.A.
Barreiro Plant - Av. Olinto Meireles, 65
ZIP 30640-010 - Belo Horizonte, MG

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# Inspection Certificate

(According to DIN EN 10204,3.1)

N°.: 0030031810 / 00

Sheet: 1 / 4

Customer: VALLOUREC CANADA INC

Country: Canada

Material Number: 276624
Work Order: 534782 / 80
Customer Order: VM-4748 - P.O 4038825-00

Inspection: Vallourec Soluções Tubulares do Brasil S.A.

PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED , BEVELED ENDS 30 DEG., NORMALIZED
DIMENSIONS: 219,10 mm X 8,18 mm SCHEDULE: 040 GRADE: GRADE 290 # GR 1 # 6 # B 8 STD 2530112
STANDARD: CSA-Z245.1-18 - CATEGORY II
IN ACCORDANCE ALSO TO THE STANDARDS: ASTM A 333M - 16 ASTM A 999M - 18 # ASTM A 106M - 18 ASTM A 530M - 12 # ASTM A 53M - 12 # ASME SA-333M - 17 ASME SA 999M - 17 # ASME SA-106M - 17 ASME SA 530M - 17
CUSTOMER SPECIFICATION: CCTF GrB.1,6.290 Cat II SS , 20.11.2017
SURFACE PROTECTION: EXTERNAL: LACQUER PIPE ENDS PROTECTOR: PLASTIC CAP
TOLERANCES: OUTSIDE DIAMETER (PIPE BODY): -0,80 mm / +1,60 mm WALL THICKNESS: -1,02 mm / +1,23 mm
TOLERANCES(PIPE ENDS): OUTSIDE DIAMETER: -0,40 mm / +1,60 mm
LENGTH: RANDOM 5486,00 mm - 6706,00 mm
STANDARD MARKING: PAINT STENCILED IN THE PIPE BODY: 534782 80 MANUFACTURER CSA-Z245.1-18 219,10 X 8,18 290 CAT II M46C SS S HN LENGTH HEAT NUMBER ASTM A/ASME SA 333, 1/6 HF SCH 040 LT -46C ASTM A/ASME SA 106 B 16300 KPA WEIGHT ASTM A 53 B NPS 8" X SCH 40 VSB LOGO
SHIPPING MARKING: NACE MR 0175/NACE MR 0103 - MADE IN BRAZIL * VM4748 / P.O # 4038825-00/ITEM-8 * TORONTO * CCTF

| Heat | Pieces |
|---|---|
| 175146 | 12 |
| 177833 | 26 |
| Total | 38 |

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # FLATTENING TEST # ENDS INSPECTION : UNTESTED ENDS CROPPED # HYDROSTATIC TEST 16300,0 KPA 5 S # RESIDUAL MAGNETISM: MAX 30 GAUSS # ELECTROMAGNETIC TEST : CSA/Z245.1-N10,LON/TRAN,OUT INS # ULTRASONIC TEST FOR LAMINAR DEFECTS: ACC. CSA Z245.1-SOUR SERVICE #

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# Inspection Certificate

(According to DIN EN 10204.3.1)

N°.: 0030031810 / 00



## Chemical Composition (%)

Process: Basic Oxygen Furnace, heats fully killed

Ceq: CSA-Z245.1-CE11 Ceq: C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 CE1: Cr + Cu + Mo + Ni + V

| | | C | Mn | P | S | Si | Ni | Cr | Mo | Al | Cu | V | Nb | B | Ti | N | Ca | Ceq | Ceq | CE1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heat Analisys | Min | | 0,400 | | | 0,100 | | | | | | | | | | | | | | |
| | Max | 0,240 | 1,350 | 0,025 | 0,025 | 0,500 | 0,400 | 0,300 | 0,120 | | 0,400 | 0,080 | 0,020 | 0,0010 | 0,110 | | | 0,400 | 0,430 | 1,000 |
| Product Analisys | Min | | 0,400 | | | 0,100 | | | | | | | | | | | | | | |
| | Max | 0,240 | 1,350 | 0,025 | 0,025 | 0,500 | 0,400 | 0,300 | 0,120 | | 0,400 | 0,080 | 0,020 | 0,0010 | 0,110 | | | 0,400 | 0,430 | 1,000 |
| Heat | Control Lot | | | | | | | | | | | | | | | | | | | |
| 175146 | 030003113164 | 0,11 | 1,29 | 0,010 | 0,004 | 0,29 | 0,01 | 0,04 | 0,01 | 0,027 | 0,022 | 0,004 | 0,015 | 0,0004 | 0,002 | 0,0074 | 0,0012 | 0,281 | 0,338 | 0,086 |
| | Check 1 | 0,11 | 1,29 | 0,010 | 0,005 | 0,30 | 0,01 | 0,05 | 0,01 | 0,028 | 0,022 | 0,005 | 0,015 | 0,0005 | 0,002 | 0,0077 | 0,0012 | 0,284 | 0,340 | 0,097 |
| | Check 2 | 0,11 | 1,30 | 0,009 | 0,005 | 0,31 | 0,01 | 0,04 | 0,01 | 0,029 | 0,020 | 0,004 | 0,016 | 0,0002 | 0,002 | 0,0079 | 0,0014 | 0,283 | 0,339 | 0,084 |
| 177833 | 030003140903 | 0,11 | 1,29 | 0,010 | 0,004 | 0,28 | 0,03 | 0,07 | 0,01 | 0,029 | 0,090 | 0,004 | 0,014 | 0,0003 | 0,002 | 0,0067 | 0,0018 | 0,289 | 0,350 | 0,204 |
| | Check 1 | 0,11 | 1,28 | 0,011 | 0,003 | 0,27 | 0,03 | 0,07 | 0,01 | 0,030 | 0,090 | 0,003 | 0,015 | 0,0002 | 0,002 | 0,0064 | 0,0018 | 0,287 | 0,348 | 0,203 |
| | Check 2 | 0,10 | 1,28 | 0,011 | 0,003 | 0,27 | 0,03 | 0,07 | 0,01 | 0,030 | 0,090 | 0,003 | 0,015 | 0,0002 | 0,002 | 0,0067 | 0,0016 | 0,277 | 0,338 | 0,203 |

Ceq: Carbon Equivalent; Ceq: Carbon Equivalent; CE: Combined Elements;

## Tensile Test

Specimen Direction: Longitudinal Temperature: Room Temperature Wall Thickness: 8.18 mm Gauge Length: 1.0 2"

Method:Elong.Total Under Load 0.50 %

| | | Type of Specimen | Area (MM2) | YS (MPA) | TS (MPA) | E (%) |
|---|---|---|---|---|---|---|
| Required: Min | | | | 290 | 415 | 35 |
| Max | | | | 495 | 625 | |
| Heat | Control Lot | | | | | |
| 175146 | 030003113164 | STRIP WIDTH 38 MM | 324,3 | 383 | 502 | 41 |
| | | STRIP WIDTH 38 MM | 329,7 | 399 | 515 | 40 |
| 177833 | 030003140903 | STRIP WIDTH 38,1 MM | 305,2 | 420 | 519 | 42 |
| | | STRIP WIDTH 38,1 MM | 300,7 | 425 | 525 | 40 |

YS-Yield Strength; TS-Tensile Strength; E-Elongation;

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ISO 9001 · ISO/TS 16949
ISO 14001 · ISO 50001 · OHSAS 18001

**Inspection Certificate**
(According to DIN EN 10204.3.1)
N°.: 0030031810 / 00



## Hardness Test

Scale: HV

| | | Max | |
|---|---|---|---|
| | Required: Min | | |
| | Max | 246,0 | |
| Heat | Control Lot | | |
| 175146 | 030003113164 | 148,0 | 150,0 |
| 177833 | 030003140903 | 152,0 | 155,0 |

## Impact Test

Test Specimen: CHARPY 10X55X7.5 V NOTCH — Direction: Longitudinal — Temperature: -46°C — Striker radius: 8 mm

| | | AE1 (J) | AE2 (J) | AE3 (J) | AE4 (J) | AE5 (J) | AE Avg (J) | SA1 (%) | SA2 (%) | SA3 (%) | SA4 (%) | SA5 (%) | SA Avg (%) | LE1 (Mils) | LE2 (Mils) | LE3 (Mils) | LE Avg (Mils) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Required: Min | 21 | 21 | 21 | | | 21 | 50 | 50 | 50 | | | 60 | | | | |
| | Max | | | | | | | | | | | | | | | | |
| Heat | Control Lot | | | | | | | | | | | | | | | | |
| 175146 | 030003113164 | 270 | 275 | 262 | | | 269 | 100 | 100 | 100 | | | 100 | 78 | 81 | 80 | 80 |
| 177833 | 030003140903 | 275 | 263 | 270 | | | 269 | 100 | 100 | 100 | | | 100 | 71 | 79 | 69 | 73 |

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

## Impact Test

Test Specimen: CHARPY 10X55X6.67 V NOTCH — Direction: Transverse — Temperature: -46°C — Striker radius: 8 mm

| | | AE1 (J) | AE2 (J) | AE3 (J) | AE4 (J) | AE5 (J) | AE Avg (J) | SA1 (%) | SA2 (%) | SA3 (%) | SA4 (%) | SA5 (%) | SA Avg (%) | LE1 (Mils) | LE2 (Mils) | LE3 (Mils) | LE Avg (Mils) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Required: Min | 18 | 18 | 18 | | | 18 | 50 | 50 | 50 | | | 60 | | | | |
| | Max | | | | | | | | | | | | | | | | |
| Heat | Control Lot | | | | | | | | | | | | | | | | |
| 177833 | 030003140903 | 210 | 186 | 174 | | | 190 | 100 | 100 | 100 | | | 100 | 88 | 87 | 88 | 88 |

AE - Absorbed Energy; SA - Shear Area; LE - Lateral Expansion;

Remarks:

1. MATERIAL IN ACCORDANCE WITH NACE MR 0175
PAR. 3.2/ISO 15156-2, ANNEX A.2.1.2/NACE MR0103 PAR.2.1. ALL LATEST
EDITIONS

2. SKU 2530112

3. THE WORKS OPERATE A QUALITY MANAGEMENT SYSTEM ACCORDING TO EUROPEAN

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RINA

**Inspection Certificate**
(According to DIN EN 10204 3.1)
N°.: 0030031810 / 00 Sheet:4 4

DIRECTIVE 2014/68/UE ANNEX I PAR. 4.3 (CERTIFICATE 2016 BH MP 02-03 VALID UNTIL 12.05.2019).
- MATERIAL ACCORDING TO PED 2014/68/UE ANNEX I PAR. 7.5

4. - NO WELD REPAIR
- FREE OF MERCURY CONTAMINATION
- NO RADIOACTIVE CONTAMINATION
- FINE GRAIN PRACTICE
- FULLY KILLED STEEL
- MATERIAL FROM BRAZIL

We hereby certify that this product has been manufactured and examined in accordance with all requirements of the standards and specifications and all the results are found to be satisfactory. This testimonial and certificate respectively is recorded by a computer system and is valid without signature. Alteration or use for others products are regarded as falsification of documents and will be subject to criminal jurisdiction.

QUALITY CONTROL DEPARTMENT
FAX: (55-31) 3328-2773
e-mail:luis.silva@vallourec.com

ENG. LUIZ FERNANDO DA SILVA - CREA MG 58834-D
TECHNICAL RESPONSIBLE

DATE
01.22.2019

MLTS_6059-18732
Heat# 61B1013 18.38332

CCTF CORPORATION

4151 North Service Road, Burlington, ON L7L 4X6 (905) 335-5320

**Date: 6/11/2019**

# Mill Test Reports

**Invoice:** 1596643-01
**PO:** 2610087

**Customer:** 27403-261
EQUIPEMENT KN
POUR ABF MINES
8254 RANG DU VIEUX PONT
ROUYN-NORANDA, QC J9Y 0H4

| Line | Heat# | Product | Description |
|---|---|---|---|
| 3 | 61b01013 ** | 7561296 | 8 STD LR 45 WELD ELL A420WPL6 |
| 10 | 18/38332 | 7583949 | 8 300 RF WN FLG STD A350LF2 |

***Heat codes*** followed by ** have been corrected, change may not show on the packing slip

Purchaser : _____

# INSPECTION CERTIFICATE

TO EN10204 3.1

BENKAN.
Thai Benkan Co., Ltd.
58 Soi Watkrunai, Bangkru, Prapadaeng,
Samutprakarn, 10130 Thailand.

Purchase Order No. Job No.

D M Y Certificate No.
06/06/2018 T - 2018020878

| E-No. | Specification for Material Made from Seamless Pipe | Specification for Inspection | Visual Examination | Dimensional Inspection |
|---|---|---|---|---|
| ME-567 - | A234-18/SA234-17 Gr.WPB/A420-16/SA420-17 Gr.WPL6 CSA Z245.11-17 GR.241 CAT II M6C 95 | ASME B16.9-2012,B16.25-2017 | Good | Good |

| MFG. No. | Product & Size (T:*1) | Quantity | Hardness Actual Data |
|---|---|---|---|
| 61B01013 | 7561296 45 EL WPB/WPL6 8 STD | 50 | HBW.123,126,129 |

| | Material Heat No. | Chemical Composition%(Note1) | Boron (%) |
|---|---|---|---|
| | J6K1169 | Ti= 1 | 0.0001 |

| Specification | Chemical Composition % | | | | | | | | | | | | | *2 Tension Test transverse | | | HARDNESS MAX 197 HB : GOOD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | P | S | Cu | Ni | Cr | Mo | Al | V | Nb | C.E. | YS | TS | E | Impact Test (J) longitudinal 10 X 6.7 X 2V AT -46 °C |
| | X 100 | X 100 | X 100 | X 1000 | X 1000 | X 100 | X 100 | X 100 | X 100 | X 1000 | X 1000 | X 1000 | X 100 | MPa | | % | |
| Min. | | 15 | 50 | | | | | | | | | | | 240 | 415 | 30 | 116 |
| Max. | 23 | 40 | 135 | 35 | 40 | 40 | 40 | 30 | 12 | | 80 | 20 | 40 | | 585 | | 127 |
| | 12 | 27 | 127 | 13 | 1 | 1 | 3 | 11 | 1 | | 0 | 0 | 36 | 295 | 452 | 46 | 90 |

AVE. 111

NORMALIZING 910 C X 40 MINUTES. COOLED IN STILL AIR

(Note 1) : Specification of Ti Composition (%) : Max 11 (Ti x 100) Material according to ANSI/NACE MR0175/ISO 15156-2-2015 Annex A & MR0103-2015 (SSC Region 3)

"Fully killed and fine grain practiced" "Steel making process : Basic Oxygen" Tensile test with longitudinal specimen and 50 mm. gauge length.

C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

* 1 : 'T' symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation

Rungnapa Kamphaeon
Quality Assurance Manager
Thai Benkan Co., Ltd.

PO#: 4039378 Seq: 3
WF 8 STD 45 L6 Part Description: Weld Fittings 8" (219.1mm O.D.) STD 45 DEG ELBOW A/SA420-WPL6
Heat#: 61B01013 Mill: BKL - Thai Benkan

| COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV GL = ISO 9001 = = ISO 14001 = | METALFAR PRODOTTI INDUSTRIALI SPA A01<br>23861 CESANA BRIANZA (LC) - ITALY<br>VIA G. PARINI, 28<br>PHONE + 39 031 655441 - FAX +39 031 655149<br>certificate@metalfaritaly.com | COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV GL = ISO 9001 = = ISO 14001 = |
|---|---|---|

**INSPECTION CERTIFICATE EN 10204:2004 / 3.1** A02 — Nr A03 2018-C_MFF-04299 — Data / Dated 31.10.2018 Z00

| | | | |
|---|---|---|---|
| SILBO INDUSTRIES A06<br>50 CHESTNUT RIDGE ROAD SUITE 204<br>07645 MONTVALE N.J. US | Ordine / PO | 69051/BG | A07 |
| | Item | 015 | |
| | DDT / Delivery note | 2018-3E301-0004398 | |
| | Packing List | 2018-3E401-0004238 | |
| | Fattura / Invoice | 2018-3E401-0004238 | A08 |
| | Ns. rif. / Our ref. | 2017-3E201-0003478-0015 | |

Dest. A05
CA

| Cod. colata Heat Code B07 | Nr. colata Heat Nr B07 | Quantità Quantity B06 | | Descrizione Description B01 - (B05 - B11) |
|---|---|---|---|---|
| | 18/38332 | 50,00 | 7583949<br>W/N 300 RF 8" STD LF2CL1 | |

Mat. in acc. a / Mat. in acc. to B02 ASTM A 350M -18 ,ASME SA 350 M - 17 ,ASME CODE SECT. II, PART A, ED. 2017
ASTM A350 LF2 CL1
ASTM A105M - 18 ,ASME SA105M-17 ASME CODE SECT. II, PART A, ED. 2017
NACE MR-0175/2015 ISO 15156 Part 2 _ Annex A - SOUR SERVICE
NACE MR-0103/2015 ISO 17495- SOUR SERVICE
CSA Z245.12-17 GRADE 248 CAT.II SOUR SERVICE
CSA Z245.12-17 GRADE 248 CAT.I SOUR SERVICE
Q.A.S.IN ACCORD.WITH PRESS.EQUIPM.DIRECT.2014/68/EU(PED) ANNEX I,PARAGRAPH 4.3
CERT 4687-2014-CE-ITA-DNV GL

Ann. mat. / Mat. remarks B02 FULLY KILLED STEEL AND FINE GRAIN PRACTICED
GRAIN SIZE 7 OR FINER
NO WELD REPAIR

| Elementi / Elements (C71 - C92) | C | Si | Mn | S | P | Cr | Ni | Mo | Ti | Cu | V | Nb | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LADLE ANALYSIS | 0,185 | 0,220 | 1,090 | 0,008 | 0,009 | 0.110 | 0,050 | 0,010 | 0,016 | 0,160 | 0,002 | 0,001 | 0,008 |
| PRODUCT ANALYSIS | 0.184 | 0.228 | 1,096 | 0.007 | 0 012 | 0,116 | 0,055 | 0,013 | 0,019 | 0,164 | 0,004 | 0,002 | 0,007 |
| | Al | B | Ca | | | | | | CE | | F1 | F2 | PREN |
| LADLE ANALYSIS | 0,025 | 0,0004 | 0,002 | | | | | | 0,407 | | 0,332 | 0,120 | -- |
| PRODUCT ANALYSIS | 0,027 | 0,0000 | 0,002 | | | | | | 0,408 | | 0,352 | 0,129 | -- |

CE=C+F(Mn/6+Si/24+Cu/15+Ni/20+(Cr+Mo+V+Nb)/5+5B) F1=Cu+Ni+Cr+Mo+V F2=Cr+Mo

| Provetta Test specimen Sez/Sect mm2 | Gauge L mm | Forma C10 Shape 1=O - 2=□ | *C C23 | Snervamento>0,2% C11 Yield Strength>0,2% MPa | Snervamento>1,0% C11 Yield Strength>1,0% MPa | Rottura C12 Tensile MPa | Allungamento C13 Elongation % | Contrazione C15 Reduction of area % |
|---|---|---|---|---|---|---|---|---|
| 126,60 | 50,80 | 1 | 20 | 335,0 | -- | 530,0 | 37,0 | 69,0 |

| DUREZZA / HARDNESS C22 HBW | Tipo/Type C40 | RESILIENZA / IMPACT TEST Provetta / Test Specimen | °C C21 | 1-Joule C42 | 2-Joule C42 | 3-Joule C42 | Media/Average C43 |
|---|---|---|---|---|---|---|---|
| 162,0 ; 166,0 ; 160,0 | KV | 10x10 mm | -46 | 57 | 60 | 50 | 55,7 |

| | | |
|---|---|---|
| Tratt. Term. / Heat treatment C70 | NORMALIZED AT 930 °C - COOLED IN STILL AIR | GAS FURNACE |
| Dim in acc. a / Dim. acc. to B14 | ASME/ANSI B16.5 -2017 ; ASME/ANSI B36.10M -2015 ; ASME/ANSI B16.25 -2017 | |
| Finitura / Roughness | ASME/ANSI B46.1 -2009<br>125-250 uin AARH | |

| Marcatura in acc. B06 Marking in acc. to | ANSI/MSS SP-25-2018 | Vis. & Dim. | SATISFACTORY | Origine Origin of Steel | ITALY |
|---|---|---|---|---|---|

Note / Notes 100% MANUFACTURED IN ITALY

Introduction of flanges on the furnace at temperature below 200°C
Heating of piece of 150°C every hour till 930°C
Holding time 1 hour/ Inch. - min 2 hours - Cooled in still air
Test specimen orientation : Longitudinal

| UFFICIO CONTROLLO QUALITA' A05 QUALITY CONTROL DEPARTMENT | ENTE UFFICIALE DI COLLAUDO Z03 INSPECTION AUTHORITY | MARCHIO PRODUZIONE A04 MANUFACTURER'S SYMBOL |
|---|---|---|
| G. Frigeno | | MFF |

MLTS_6056-18732
Heat# SEE BELOW

CCTF CORPORATION

4151 North Service Road, Burlington, ON L7L 4X6 (905) 335-5320

**Date: 6/14/2019**

# Mill Test Reports

**Invoice:** 1597082-00
**PO:** 2610096

**Customer:** 27403-261
A.B.F MINES/2985080
1310 AVE DAVY
REF 18777-6056
ROUYN NORANDA, QC J9Y 0A8

| Line | Heat# | Product | Description |
|---|---|---|---|
| 1 | 956v | 7561733 | 8 STD WELD TEE A420WPL6 |
| 2 | 508105d | 7586891 | 8 150 RF WN FLG STD A350LF2 |
| 3 | 508101C | 7585666 | 8 300 RF BLIND FLG A350LF2 |
| 4 | 886v | 7561288 | 6 STD LR 45 WELD ELL A420WPL6 |
| 5 | 18c1054 | 7561725 | 6 STD WELD TEE A420WPL6 |
| 6 | 508105g | 7586832 | 6 150 RF WN FLG STD A350LF2 |
| 7 | b03459 | 7585585 | 6 150 RF BLIND FLG A350LF2 |

***Heat codes*** followed by ** have been corrected, change may not show on the packing slip

# INSPECTION CERTIFICATE

Customer : CCTF CORPORATION
Product : SEAMLESS LOW TEMPERATURE CARBON STEEL BUTT WELD FITTINGS
Spec : ASTM A420-16/ASME SA420-15 WPL6, CSA Z245.11-17 Gr 241 Cat II -45C SS NACE MR0175/ISO 15156-2 Region 3-15 & NACE MR0103-16, ASTM A234-18/ASME SA234-15 WPB

ACCORDANCE WITH EN 10204-3.1

**CHUP HSIN ENTERPRISE CO., LTD.**
17, TUNG LI ROAD, HSIAO KANG DISTRICT,
KAOHSIUNG CITY, TAIWAN, R.O.C.
TEL:(07)831-9157 FAX:(07)821-7500, 831-2942

Certificate No : 00700020-0401
Order No : 4038285-00
Date : 2018/12/11

| Raw Material | Specification for Inspection | Visual Inspection | Dimensional Inspection |
|---|---|---|---|
| ASTM A106 GR.B/GREEN PIPE FOR A333-6 | ASME B16.9-2012 | PASS | PASS |

| | Item | Description | | Quantity | Heat ID | Heat No | Raw Material Certificate No. | NDE MT | Impact Test: Test Temp ℃ | Size of specimen mm | Charpy V.-Notch Impact Value J | | | Ave. J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7560109 | 3 | 90 E L/R WPL6 STD | 3 | 100 | A606 | 18321606 | BAOSTEEL BGSAG1801240000400 | | -45 | 10 X 5.0 X 55 | 62 | 48 | 56 | 55.33 |
| 7560873 | 9 | 90 E L/R WPL6 XS | 2 | 120 | C023 | 18322023 | BAOSTEEL BGSAG1804020007200 | | -45 | 10 X 5.0 X 55 | 48 | 40 | 52 | 46.67 |
| 7560926 | 10 | 90 E L/R WPL6 XS | 8 | 5 | A304 | 18323304 | BAOSTEEL BGSAG1804250001100 | | -45 | 10 X 10 X 55 | 230 | 216 | 212 | 219.33 |
| 7561733 | 16 | TEE WPL6 STD | 8 | 5 | 956V | 1535956V | HENGYANG C201538794-1 | PASS | -45 | 10 X 7.5 X 55 | 46 | 52 | 48 | 48.67 |

| Specification | Chemical Composition% C | Si | Mn | P | S | Cu | Ni | Cr | Mo | V | Nb | C.E | Tensile Test Y.S | T.S | E | Hardness Test | Heat Treatment | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | X100 | X100 | X100 | X1000 | X1000 | X100 | X100 | X100 | X100 | X1000 | X1000 | X100 | P.S.I | P.S.I | % | HB | | |
| Min. | | 15 | 50 | | | | | | | | | | 35000 | 60000 | 30 | | NORM. 910℃x0.5HR AC | |
| Max. | 30 | 40 | 135 | 35 | 40 | 40 | 40 | 30 | 12 | 80 | 20 | 50 | | 95000 | | 197 | | |
| 3 | 13 | 17 | 78 | 10 | 3 | 4 | 2 | 4 | 1 | <1 | <1 | 27 | 42950 | 66700 | 39.0 | 133-134 | | |
| 9 | 12 | 16 | 80 | 7 | 6 | 2 | 1 | 3 | 1 | <1 | <1 | 26 | 41208 | 67300 | 35.0 | 133-134 | | |
| 10 | 13 | 16 | 73 | 11 | 3 | 3 | 2 | 4 | 1 | <1 | 20 | 26 | 44256 | 65300 | 44.0 | 134-135 | | |
| 16 | 12 | 27 | 124 | 13 | 3 | 2 | 1 | 7 | 2 | 5 | 2 | 35 | 46722 | 67000 | 42.0 | 133-134 | | |

C.E. = C+Mn / 6 + (Cr+Mo+V)/5 + (Ni+Cu)/15

We hereby certify that the material herein described has been manufactured, sampled, tested and inspected in accordance with, and was found to meet, the requirements of above specifications and purchaser's order.

K. Y. Tsai

Chief of Quality Assurance Section

# CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

**ST&H CORPORATION**
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

CE
RPS 0160308 / 01

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

**Certificate No.** MJH0165-02/07 **Date :** DEC. 20. 2018
**Customer** CCTF CORPORATION
**Contract No.** 4038829-00
**Spec. For Material** ASTM A105N-18,ASME SA105N-17,ASTM A350 LF2 CL1-18,ASME SA350 LF2 CL1-17,NACE MR0175/ISO 15156-2:2015,NACE MR0103/ISO 17495-1:2016
**Heat Treatment** 930°C NORMALIZED & A.C **Dimensional inspection**ASME B16.5 - 2017

| ITEM / SIZE | | Q'ty | Heat No./ Batch No. | Size of Test Specimen D mm | Size of Test Specimen GL mm | Tension Test | Y.S MPa | T.S MPa | E.L % | R.A % | Hardness Test (HB) | | Charpy Impact Test (10X10mm Specimen Size) Indiv. 16J | Ave. 20J | Notch V | Temp. -46°C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Max | | 655 | | | 187 | | Test Result (J) | | | Ave.(J) |
| | | | | 12.5 | 50.0 | Min | 250 | 485 | 22.0 | 30.0 | | | | | | |
| 7586502 | 150LBS TH RF 6" | 5 | 508105C | 12.5 | 50.0 | | 330 | 522 | 33 | 73 | 150 | 155 | 136 | 154 | 142 | 144 |
| 7581210 | 300LBS WN RF XH 6" | 20 | 508105C | 12.5 | 50.0 | | 330 | 522 | 33 | 73 | 150 | 155 | 136 | 154 | 142 | 144 |
| 7586891 | 150LBS WN RF STD 8" | 20 | 508105D | 12.5 | 50.0 | | 330 | 522 | 33 | 73 | 150 | 155 | 136 | 154 | 142 | 144 |
| 7586867 | 300LBS WN RF STD 4" | 25 | 508105D | 12.5 | 50.0 | | 330 | 522 | 33 | 73 | 150 | 155 | 136 | 154 | 142 | 144 |
| 7585496 | 300LBS WN RF STD 6" | 35 | 508105D | 12.5 | 50.0 | | 330 | 522 | 33 | 73 | 150 | 155 | 136 | 154 | 142 | 144 |
| | BLANK | | BLANK | | | | | BLANK | | | BLANK | | | | | |

| Heat No./ Batch No. | | Chemical Composition (%) C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | Nb | | | | | | CE | NDE UT | MT | PT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max | 0.300 | 0.300 | 1.350 | 0.035 | 0.040 | 0.400 | 0.300 | 0.120 | 0.400 | 0.080 | 0.020 | | | | | | | | | |
| | Min | | 0.150 | 0.600 | | | | | | | | | | | | | | | | | |
| | H | 0.159 | 0.234 | 1.260 | 0.011 | 0.003 | 0.019 | 0.077 | 0.005 | 0.017 | 0.001 | 0.004 | | | | | | 0.388 | | | |
| 508105C | P | 0.160 | 0.244 | 1.250 | 0.014 | 0.003 | 0.017 | 0.079 | 0.006 | 0.018 | 0.001 | 0.004 | | | | | | 0.387 | | | |
| | H | 0.159 | 0.234 | 1.260 | 0.011 | 0.003 | 0.019 | 0.077 | 0.005 | 0.017 | 0.001 | 0.004 | | | | | | 0.388 | | | |
| 508105D | P | 0.160 | 0.244 | 1.250 | 0.014 | 0.003 | 0.017 | 0.079 | 0.006 | 0.018 | 0.001 | 0.004 | | | | | | 0.387 | | | |
| | | | | | | | | | | BLANK | | | | | | | | | | | |

**REMARK** * H : Heat Analysis P : Product Analysis

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

# CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

**ST&H CORPORATION**
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

RPS 0160300 / 01

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

**Certificate No.** MJH0137-07/11 **Date :** DEC. 19. 2018
**Customer** CCTF CORPORATION
**Contract No.** 4038743-00
**Spec. For Material** ASTM A10SN-18,ASME SA10SN-17,ASTM A350 LF2 CL1-18,ASME SA350 LF2 CL1-17,NACE MR0175/ISO 15156-2:2015,NACE MR0103/ISO 17495-1:2016
**Heat Treatment** 930°C NORMALIZED & A.C **Dimensional inspection**ASME B16.5 - 2017

| ITEM / SIZE | | Q'ty | Heat No./ Batch No. | Size of Test Specimen D mm | Size of Test Specimen GL mm | Tension Test | Y.S MPa | T.S MPa | E.L % | R.A % | Hardness Test (HB) | | Charpy Impact Test (10X10mm Specimen Size) Indiv. 16J | Ave. 20J | Notch V | Temp. -46°C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Max | | 655 | | | 187 | | | | | |
| | | | | 12.5 | 50.0 | Min | 250 | 485 | 22.0 | 30.0 | | | Test Result (J) | | | Ave.(J) |
| 7585585 | 150LBS BL RF 6" | 40 | 508101C | 12.5 | 50.0 | | 339 | 525 | 34 | 78 | 159 | 162 | 188 | 165 | 195 | 183 |
| 7585666 | 300LBS BL RF 8" | 25 | 508101C | 12.5 | 50.0 | | 339 | 525 | 34 | 78 | 159 | 162 | 188 | 165 | 195 | 183 |
| 7580185 | 900/1500LBS SW RF S160 2" | 20 | 508101C | 12.5 | 50.0 | | 339 | 525 | 34 | 78 | 159 | 162 | 188 | 165 | 195 | 183 |
| 7580219 | 150LBS SO RF 10" | 20 | 508101F | 12.5 | 50.0 | | 339 | 525 | 34 | 78 | 159 | 162 | 188 | 165 | 195 | 183 |
| 7586507 | 150LBS SO RF 3" | 50 | 508101F | 12.5 | 50.0 | | 339 | 525 | 34 | 78 | 159 | 162 | 188 | 165 | 195 | 183 |
| 7586508 | 150LBS SO RF 4" | 25 | 508101F | 12.5 | 50.0 | | 339 | 525 | 34 | 78 | 159 | 162 | 188 | 165 | 195 | 183 |
| 7586509 | 150LBS SO RF 6" | 70 | 508101F | 12.5 | 50.0 | | 339 | 525 | 34 | 78 | 159 | 162 | 188 | 165 | 195 | 183 |
| 7580218 | 150LBS SO RF 8" | 25 | 508101F | 12.5 | 50.0 | | 339 | 525 | 34 | 78 | 159 | 162 | 188 | 165 | 195 | 183 |
| | BLANK | | BLANK | | | | | BLANK | | | BLANK | | | | | |

| Heat No./ Batch No. | | Chemical Composition (%) C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | Nb | | | | | | CE | NDE UT | MT | PT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max | 0.300 | 0.300 | 1.350 | 0.035 | 0.040 | 0.400 | 0.300 | 0.120 | 0.400 | 0.080 | 0.020 | | | | | | | | | |
| | Min | | 0.150 | 0.600 | | | | | | | | | | | | | | | | | |
| | H | 0.160 | 0.207 | 1.250 | 0.009 | 0.007 | 0.020 | 0.091 | 0.002 | 0.024 | 0.001 | 0.004 | | | | | | 0.390 | | | |
| 508101C | P | 0.164 | 0.220 | 1.250 | 0.009 | 0.005 | 0.013 | 0.092 | 0.002 | 0.022 | 0.003 | 0.004 | | | | | | 0.394 | | | |
| | H | 0.160 | 0.207 | 1.250 | 0.009 | 0.007 | 0.020 | 0.091 | 0.002 | 0.024 | 0.001 | 0.004 | | | | | | 0.390 | | | |
| 508101F | P | 0.164 | 0.220 | 1.250 | 0.009 | 0.005 | 0.013 | 0.092 | 0.002 | 0.022 | 0.003 | 0.004 | | | | | | 0.394 | | | |
| | | | | | | | | | | BLANK | | | | | | | | | | | |

**REMARK** * H : Heat Analysis P : Product Analysis

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

# INSPECTION CERTIFICATE

Customer : CCTF CORPORATION
Product : SEAMLESS LOW TEMPERATURE CARBON STEEL BUTT WELD FITTINGS
Spec : ASTM A420-16/ASME SA420-15 WPL6, CSA Z245.11-17 Gr 241 Cat II -45C SS NACE MR0175/ISO 15156-2 Region 3-15 & NACE MR0103-16, ASTM A234-18/ASME SA234-15 WPB

ACCORDANCE WITH EN 10204-3.1
**CHUP HSIN ENTERPRISE CO., LTD.**
17, TUNG LI ROAD, HSIAO KANG DISTRICT,
KAOHSIUNG CITY, TAIWAN, R.O.C.
TEL:(07)831-9157 FAX:(07)821-7500, 831-2942

Certificate No : 00700220-0110
Order No : 4039057-00
Date : 2019/03/19

| Raw Material | Specification for Inspection | Visual Inspection | Dimensional Inspection |
|---|---|---|---|
| ASTM A106 GR.B/GREEN PIPE FOR A333-6 | ASME B16.9-2012 | PASS | PASS |

| Item | Description | | | Quantity | Heat ID | Heat No | Raw Material Certificate No. | NDE MT | Impact Test: Test Temp ℃ | Size of specimen mm | Charpy V.-Notch Impact Value J | | | Ave. J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 756 | | | | | | | | | | | | |
| 123 | 45 E L/R WPL6 STD | 1288 | 6 | 35 | 886V | 1834886V | HENGYANG C201841289-1 | | -45 | 10 X 5.0 X 55 | 56 | 62 | 62 | 60 |
| 131 | RED TEE WPL6 STD | 2624 | 4 X 2 | 10 | 885V | 1834885V | HENGYANG C201841281-1 | PASS | -45 | 10 X 5.0 X 55 | 54 | 48 | 52 | 51.33 |
| 132 | RED TEE WPL6 STD | 2608 | 4 X 3 | 15 | 885V | 1834885V | HENGYANG C201841281-1 | PASS | -45 | 10 X 5.0 X 55 | 54 | 48 | 52 | 51.33 |
| 135 | TEE WPL6 XS | 1938 | 6 | 8 | A248 | 18322248 | BAOSTEEL BGSAG1803080005100 | PASS | -45 | 10 X 10 X 55 | 128 | 142 | 150 | 140 |
| 136 | TEE WPL6 XS | 1946 | 8 | 2 | E274 | 34274H | BAOSTEEL BGSQG1804040002900 | PASS | -45 | 10 X 10 X 55 | 162 | 184 | 178 | 174.67 |

| Specification | Chemical Composition% | | | | | | | | | | | | Tensile Test | | | Hardness Test | Heat Treatment | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | P | S | Cu | Ni | Cr | Mo | V | Nb | C.E | Y.S | T.S | E | | | |
| | X100 | X100 | X100 | X1000 | X1000 | X100 | X100 | X100 | X100 | X1000 | X1000 | X100 | P.S.I | P.S.I | % | HB | | |
| Min. | | 15 | 50 | | | | | | | | | | 35000 | 60000 | 30 | | | |
| Max. | 30 | 40 | 135 | 35 | 40 | 40 | 40 | 30 | 12 | 80 | 20 | 50 | | 95000 | | 197 | | |
| 123 | 13 | 31 | 98 | 11 | 1 | 5 | 2 | 6 | 1 | 1 | <1 | 31 | 49044 | 68100 | 42.5 | 135-138 | NORM. 910 C x0.5HR AC | |
| 131 | 13 | 31 | 100 | 11 | 2 | 5 | 2 | 6 | 2 | <1 | <1 | 31 | 47738 | 67600 | 37.0 | 138-139 | | |
| 132 | 13 | 31 | 100 | 11 | 2 | 5 | 2 | 6 | 2 | <1 | <1 | 31 | 47738 | 67600 | 37.0 | 138-139 | | |
| 135 | 13 | 15 | 74 | 6 | 4 | 4 | 2 | 4 | 1 | <1 | <1 | 27 | 39322 | 63600 | 40.0 | 138-139 | | |
| 136 | 15 | 18 | 89 | 9 | 4 | 1 | 3 | 4 | <1 | <1 | 1 | 31 | 38306 | 68100 | 35.5 | 134-135 | | |

C.E. = C+Mn / 6 + (Cr+Mo+V)/5 + (Ni+Cu)/15

We hereby certify that the material herein described has been manufactured, sampled, tested and inspected in accordance with, and was found to meet, the requirements of above specifications and purchaser's order.

K. Y. Tsai

Chief of Quality Assurance Section

# INSPECTION CERTIFICATE

RIGID INDUSTRIES CO., LTD.

8. MEI-CHUNG RD. NIAO-SONG,
KAOHSIUNG 83301,TAIWAN
TEL: 886-77310527~8
FAX: 886-77315887

PURCHASER: SEYBOLD INT'L CORP.

STANDARD: ASTM A420 WPL6-16
ASME SA420 WPL6-04
CSA Z245.11-17 Gr.290 CAT II Sour Service

MATERIALS: ASTM A333-6

INSP SPEC: ASME B16.9 -12

DATE: 2019-01-07

ORDER NO: 7014596/4038286-00

P.I. NO: 18B05-1

CERTIFI. NO: 181212-1

ACCORDING TO EN10204/DIN50049/3.1

| ITEM NO. | PRODUCT & SIZE | QUANTITY PCS | MFG NO. | VISUAL & DIMENTIONAL INSPECTION | HARDNESS MAX. 197 HB | HEAT TREATMENT (NOTE) | MAGNETIC PARTICLE EXAMINATION | IMPACT TEST (J) |
|---|---|---|---|---|---|---|---|---|
| 35 | TEE 6"WPL6 STD<br>7561725 | 25 | 18C1054 | GOOD | 132-143 | N | GOOD | 10 x 5.0 x 2V<br>AT -45 °C<br>112.4<br>115.3<br>129.7<br>119.1 |

| ITEM NO. | MATERIAL CHARGE NO. | | CHEMICAL COMPOSITION % | | | | | | | | | | | | | * PHYSICAL TEST | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | C x100 | Si x100 | Mn x100 | P x1000 | S x1000 | Cu x100 | Ni x100 | Cr x100 | Mo x100 | V x100 | Nb x1000 | Ti x100 | B x1000 | Y S KSI | T S KSI | E % | ** | *CE x100 | *CEQ x100 |
| | STANDARD | MIN. | | 15 | 60 | | | | | | | | | | | 42.0 | 60.0 | 27.0 | | | |
| | | MAX. | 30 | 50 | 160 | 50 | 60 | 150 | 100 | 25 | 25 | 13 | 100 | 2 | 1 | | 95.0 | | | 50 | 50 |
| 35 | J4LB254 | | 11 | 26 | 130 | 14 | 3 | 1 | 2 | 12 | 1 | <1 | <1 | 2 | <1 | 44.1 | 66.9 | 30.9 | L | 35 | 29 |

(NOTE): A:HOT FORMED WITH FINAL TEMPERATURE BETWEEN 620°C-980°C, AIR COOLING.
N:NORMALIZING AT TEMPERATURE 880°C X0.5HR, AIR COOLING S:STRESS RELIEF AT TEMPERATURE 650°C X0.5HR
NACE MR0175-2015/ISO15156-1 NACE MR0103-2015/ISO17945:SATISFACTORY

WE HEREBY CERTIFY THAT THE PRODUCT DESCRIBED HEREIN HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE SPECIFICATIONS CONCERNED AND ALSO WITH THE PURCHASER' S REQUIREMENTS AND THAT THE TEST RESULTS SHOWN HEREIN ARE CORRECT.

* TYPE OF SPECIMEN:STRIP(WIDTH:1 in./GAUGE LENGTH:2 in.) ** SAMPLING DIRECTION:L=LONGITUDINAL, T=TRANSVERSE

*CE=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15 *CEQ=C+F(Mn/6+Si/24+Cu/15+Ni/20+(Cr+Mo+V+Nb)/5+5B)

Ou Li Lan

MANAGER OF Q.A. DEPT.

# CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

**ST&H CORPORATION**
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

RPS 0150309 / 01

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

**Certificate No.** MJH0165-03/07 **Date :** DEC. 20. 2018
**Customer** CCTF CORPORATION
**Contract No.** 4038829-00
**Spec. For Material** ASTM A105N-18,ASME SA105N-17,ASTM A350 LF2 CL1-18,ASME SA350 LF2 CL1-17,NACE MR0175/ISO 15156-2:2015,NACE MR0103/ISO 17495-1:2016
**Heat Treatment** 930°C NORMALIZED & A.C **Dimensional inspection** ASME B16.5 - 2017

| ITEM / SIZE | | Q'ty | Heat No./ Batch No. | Size of Test Specimen D mm | Size of Test Specimen GL mm | Tension Test | Y.S MPa | T.S MPa | E.L % | R.A % | Hardness Test (HB) | | Charpy Impact Test (10X10mm Specimen Size) Indiv. 16J | Ave. 20J | Notch V | Temp. -46℃ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Max | | 655 | | | 187 | | | | | |
| | | | | 12.5 | 50.0 | Min | 250 | 485 | 22.0 | 30.0 | | | Test Result (J) | | | Ave.(J) |
| 7585860 | 150LBS BL RF 8" | 5 | 508105E | 12.5 | 50.0 | | 330 | 522 | 33 | 73 | 150 | 155 | 136 | 154 | 142 | 144 |
| 7585640 | 300LBS BL RF 4" | 10 | 508105E | 12.5 | 50.0 | | 330 | 522 | 33 | 73 | 150 | 155 | 136 | 154 | 142 | 144 |
| 7585658 | 300LBS BL RF 6" | 10 | 508105E | 12.5 | 50.0 | | 330 | 522 | 33 | 73 | 150 | 155 | 136 | 154 | 142 | 144 |
| 7585666 | 300LBS BL RF 8" | 5 | 508105E | 12.5 | 50.0 | | 330 | 522 | 33 | 73 | 150 | 155 | 136 | 154 | 142 | 144 |
| 7586832 | 150LBS WN RF STD 6" | 50 | 508105G | 12.5 | 50.0 | | 330 | 522 | 33 | 73 | 150 | 155 | 136 | 154 | 142 | 144 |
| | BLANK | | BLANK | | | | | BLANK | | | BLANK | | | | | |

| Heat No./ Batch No. | | Chemical Composition (%) C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | Nb | | | | | | CE | NDE UT | MT | PT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max | 0.300 | 0.300 | 1.350 | 0.035 | 0.040 | 0.400 | 0.300 | 0.120 | 0.400 | 0.080 | 0.020 | | | | | | | | | |
| | Min | | 0.150 | 0.600 | | | | | | | | | | | | | | | | | |
| | H | 0.159 | 0.234 | 1.260 | 0.011 | 0.003 | 0.019 | 0.077 | 0.005 | 0.017 | 0.001 | 0.004 | | | | | | 0.388 | | | |
| 508105E | P | 0.160 | 0.244 | 1.250 | 0.014 | 0.003 | 0.017 | 0.079 | 0.006 | 0.018 | 0.001 | 0.004 | | | | | | 0.387 | | | |
| | H | 0.159 | 0.234 | 1.260 | 0.011 | 0.003 | 0.019 | 0.077 | 0.005 | 0.017 | 0.001 | 0.004 | | | | | | 0.388 | | | |
| 508105G | P | 0.160 | 0.244 | 1.250 | 0.014 | 0.003 | 0.017 | 0.079 | 0.006 | 0.018 | 0.001 | 0.004 | | | | | | 0.387 | | | |
| | | | | | | | | | | BLANK | | | | | | | | | | | |

**REMARK** * H : Heat Analysis P : Product Analysis

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

# CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

ST&H CORPORATION
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

RPS 0160306 / 01

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

**Certificate No.** MJH0290-01/05 **Date :** FEB. 14. 2019
**Customer** CCTF CORPORATION
**Contract No.** 4039095-00
**Spec. For Material** ASTM A105N-18,ASME SA105N-17,ASTM A350 LF2 CL1-18,ASME SA350 LF2 CL1-17,NACE MR0175/ISO 15156-2:2015,NACE MR0103/ISO 17495-1:2016
**Heat Treatment** 930℃ NORMALIZED & A.C **Dimensional inspection**ASME B16.5 - 2017

| ITEM / SIZE | | Q'ty | Heat No./ Batch No. | Size of Test Specimen D mm | Size of Test Specimen GL mm | Tension Test | Y.S MPa | T.S MPa | E.L % | R.A % | Hardness Test (HB) | | Charpy Impact Test (10X10mm Specimen Size) Indiv. 16J | Ave. 20J | Notch V | Temp. -46℃ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Max | | 655 | | | 187 | | | | | |
| | | | | 12.5 | 50.0 | Min | 250 | 485 | 22.0 | 30.0 | | | Test Result (J) | | | Ave.(J) |
| 7585585 | 150LBS BL RF 6" | 20 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7585860 | 150LBS BL RF 8" | 10 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7580218 | 150LBS SO RF 8" | 20 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7580202 | 150LBS SO RF 14" | 2 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7586502 | 150LBS TH RF 6" | 5 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7586824 | 150LBS WN RF STD 4" | 50 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7586832 | 150LBS WN RF STD 6" | 30 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7586891 | 150LBS WN RF STD 8" | 20 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7583949 | 300LBS WN RF STD 8" | 10 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7585321 | 150LBS WN RF STD 10" | 20 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |

| Heat No./ Batch No. | | Chemical Composition (%) C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | Nb | | | | | | CE | NDE UT | MT | PT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max | 0.300 | 0.300 | 1.350 | 0.035 | 0.040 | 0.400 | 0.300 | 0.120 | 0.400 | 0.080 | 0.020 | | | | | | | | | |
| | Min | | 0.150 | 0.600 | | | | | | | | | | | | | | | | | |
| | H | 0.163 | 0.226 | 1.230 | 0.012 | 0.002 | 0.057 | 0.138 | 0.017 | 0.147 | 0.001 | 0.006 | | | | | | 0.412 | | | |
| B03459 | P | 0.162 | 0.224 | 1.240 | 0.011 | 0.002 | 0.054 | 0.136 | 0.014 | 0.138 | 0.001 | 0.001 | | | | | | 0.411 | | | |
| | | | | | | | | | | BLANK | | | | | | | | | | | |

**REMARK** * H : Heat Analysis P : Product Analysis

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

MLTS_6056-18777
Heat# SEE BELOW

CCTF CORPORATION
5407 53rd Avenue, Edmonton, AB T6B 3G2 (780) 463-8700

Date: 6/14/2019

# Mill Test Reports

**Invoice:** 5736215-00
**PO:** WT

**Customer:** 498
A.B.F. MINES/2985080 CANADA
1310 AVE DAVY
REF 18777-6056
ROUYN-NORANDA, QC J9Y 0A8

| Line | Heat# | Product | Description |
|---|---|---|---|
| 1 | 61k01m028 | 7561296 | 8 STD LR 45 WELD ELL A420WPL6 |
| 1 | 61m01m049 | 7561296 | 8 STD LR 45 WELD ELL A420WPL6 |
| 1 | 61n01m031-1 | 7561296 | 8 STD LR 45 WELD ELL A420WPL6 |
| 2 | b21a8 | 7583949 | 8 300 RF WN FLG STD A350LF2 |

***Heat codes*** followed by ** have been corrected, change may not show on the packing slip

Purchaser : CCTF CORPORATION

# INSPECTION CERTIFICATE

TO EN10204 3.1

BENKAN
Thai Benkan Co., Ltd.
58 Soi Watkrunai, Bangkru, Prapadaeng,
Samutprakarn, 10130 Thailand.

Purchase Order No. 4901160-00 Job No.

D M Y Certificate No.
09/11/2018 T - 2018031531

| E-No. | Specification for Material Made from Seamless Pipe | Specification for Inspection | Visual Examination | Dimensional Inspection |
|---|---|---|---|---|
| TA-162 | ASTM A420-16 / ASME SA420-17 Gr.WPL6<br>CSA Z245.11-17 Gr.241 CAT II M15C Sour Service | ASME B16.9-2012,B16.25-2017 | Good | Good |

| MFG. No. | Product & Size (T:*1) | Quantity | Hardness Actual Data |
|---|---|---|---|
| 61K01M028 | 45 EL WPL6 8 STD | 10 | HBW:115-145 |

| | Material Heat No. | Item No. | | |
|---|---|---|---|---|
| | 184740 | 7561296 | | |

| Specification | Chemical Composition % | | | | | | | | | | | | | *2 Tension Test transverse | | | HARDNESS MAX 197 HB : GOOD | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | P | S | Cu | Ni | Cr | Mo | Al | V | Nb | C.E. | Y S | T S | E | Impact Test (J) longitudinal 10 X 6.7 X 2V AT -45 °C | |
| | X 100 | X 100 | X 100 | X 1000 | X 1000 | X 100 | X 100 | X 100 | X 100 | X 1000 | X 1000 | X 1000 | X 100 | MPa. | | % | | |
| Min. | | 15 | 50 | | | | | | | | | | | 241 | 415 | 30 | 120 | |
| Max. | 30 | 35 | 135 | 35 | 40 | 40 | 40 | 30 | 12 | | 80 | 20 | | | 585 | | 129 | AVE. 127 |
| | 15 | 21 | 105 | 9 | 5 | 6 | 4 | 5 | 2 | | 1 | 1 | 35 | 305 | 481 | 41 | 131 | |

NORMALIZING 910 C X 40 MINUTES. COOLED IN STILL AIR

The product was manufactured,sampled,tested, and inspected as specified in this Standard and the purchase order, and was found to have met such requirements.

The material meet ANSI/NACE MR0175/ISO15156-2 (Region 3) :2015 & MR0103-2015

C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation

Form T7-61/1

Rungrapa Kampiranon
Quality Assurance Manager
Thai Benkan Co., Ltd.

Purchaser : CCTF CORPORATION

# INSPECTION CERTIFICATE

TO EN10204 3.1

BENKAN.
Thai Benkan Co., Ltd.
58 Soi Watkrunai, Bangkru, Prapadaeng,
Samutprakarn, 10130 Thailand.

Purchase Order No. 4901220-00 Job No.

D M Y Certificate No.
09/11/2018 T - 2018031547

| E-No. | Specification for Material Made from Seamless Pipe | Specification for Inspection | Visual Examination | Dimensional Inspection |
|---|---|---|---|---|
| TA-169 | ASTM A420-16 / ASME SA420-17 Gr.WPL6<br>CSA Z245.11-17 Gr.241 CAT II M45C Sour Service | ASME B16.9-2012,B16.25-2017 | Good | Good |

| MFG. No. | Product & Size (T:*1) | Quantity | Hardness Actual Data |
|---|---|---|---|
| 61M01M049 | 45 EL WPL6 8 STD | 10 | HBW:115-146 |

| | Material Heat No. | Item No. | | |
|---|---|---|---|---|
| | J8K4597 | 7561298 | | |

| Specification | Chemical Composition % | | | | | | | | | | | | | *2 Tension Test transverse | | | HARDNESS MAX 197 HB : GOOD | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | P | S | Cu | Ni | Cr | Mo | Al | V | Nb | C.E. | YS | TS | E | Impact Test (J) longitudinal | |
| | X 100 | X 100 | X 100 | X 1000 | X 1000 | X 100 | X 100 | X 100 | X 100 | X 1000 | X 1000 | X 1000 | X 100 | MPa. | | % | 10 X 6.7 X 2V AT -46 °C | |
| Min. | | 15 | 50 | | | | | | | | | | | 241 | 415 | 30 | 161 | |
| Max. | 30 | 35 | 135 | 35 | 40 | 40 | 40 | 30 | 12 | | 80 | 20 | | | 585 | | 174 | AVE. 173 |
| | 12 | 27 | 128 | 11 | 1 | 2 | 2 | 11 | 1 | | 0 | 0 | 36 | 286 | 458 | 46 | 183 | |

NORMALIZING 910 C X 40 MINUTES. COOLED IN STILL AIR

The product was manufactured,sampled,tested, and inspected as specified in this Standard and the purchase order, and was found to have met such requirements.

The material meet ANSI/NACE MR0175/ISO15156-2 (Region 3) :2015 & MR0103-2015

C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation

Form T7-61/1

Rungnapa Kanpiracou
Quality Assurance Manager
Thai Benkan Co., Ltd.

Purchaser : CCTF CORPORATION

# INSPECTION CERTIFICATE

TO EN10204 3.1

BENKAN
Thai Benkan Co., Ltd.
58 Soi Watkrunai, Bangkru, Prapadaeng,
Samutprakarn, 10130 Thailand.

Purchase Order No. 4901279-00

Job No.

D M Y 11/12/2018

Certificate No. T - 2018031649

| E-No. | Specification for Material Made from Seamless Pipe | Specification for Inspection | Visual Examination | Dimensional Inspection |
|---|---|---|---|---|
| TA-194 | ASTM A420-16 / ASME SA420-17 Gr.WPL6<br>CSA Z245.11-17 Gr 241 CAT II M45C Sour Service | ASME B16.9-2012,B16.25-2017 | Good | Good |

| MFG. No. | Product & Size (T:*1) | Quantity | Hardness Actual Data |
|---|---|---|---|
| 61N01M031-1 | 45 EL WPL6 8 STD | 9/10 | HBW:115-145 |

| Material Heat No. | Item No. |
|---|---|
| 185081 | 7561296 |

| Specification | Chemical Composition % | | | | | | | | | | | | | *2 Tension Test transverse | | | HARDNESS MAX 197 HB : GOOD | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | P | S | Cu | Ni | Cr | Mo | Al | V | Nb | C.E. | YS | TS | E | Impact Test (J) longitudinal 10 X 7.5 X 2V AT -46 °C | |
| | X 100 | X 100 | X 100 | X 1000 | X 1000 | X 100 | X 100 | X 100 | X 100 | X 1000 | X 1000 | X 1000 | X 100 | MPa. | | % | | |
| Min. | | 15 | 50 | | | | | | | | | | | 241 | 415 | 30 | 115 | |
| Max. | 30 | 35 | 135 | 35 | 40 | 40 | 40 | 30 | 12 | | 80 | 20 | | | 585 | | 118 | AVE. 118 |
| | 16 | 25 | 106 | 10 | 4 | 6 | 4 | 5 | 2 | | 1 | 1 | 36 | 309 | 480 | 40 | 120 | |

NORMALIZING 910 C X 40 MINUTES. COOLED IN STILL AIR

The material meet ANSI/NACE MR0175/ISO15156-2 (Region 3) :2015 & MR0103-2015

The product was manufactured,sampled,tested, and inspected as specified in this Standard and the purchase order, and was found to have met such requirements.

C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation

Form TZ-6J/1

Rungnana Kamplranon
Quality Assurance Manager
Thai Benkan Co., Ltd.

HEAT: b21a8 CCTF Sku: 7583949 8 300 RF WN FLG STD A350LF2 Invoice: 5736215-00 PO: WT 6/14/2019 9:51:10 AM

CLIENTE / Customer / Client
CCTF CORPORATION (ONTARIO)
4151 NORTH SERVICE RD.
UNIT 2
BURLINGTON, ONTARIO
L7L4X6 - CANADA
CAN

# CERTIFICADO DE INSPECCION

UNE EN 10204:06 / 3.1
Inspection Certificate - Certificat de Réception ISO 10474:15 / 3.1

FECHA: Date: 27/06/2018 N.º No. 196066 HOJA: Page: 2

SGI 1922164 SGI 6000236 SGI 6009987

ULMA FORJA, S.COOP.
Management Systems certified by LRQAE
Certified acc. PED 97/23/EC+AD2000-W0
PED 14/68/UE
by TÜV Rheinland
N.º 01 202 E/Q 02 7443

Bº Zubillaga, 3 - Apdo. 14
20560 OÑATI (Gipuzkoa) SPAIN
Tel.: 34 - 943 780552
Fax: 34 - 943 781808
E-mail: ulma@ulmapiping.com

PRODUCTO / Article - Produit: FLANGES

SU PEDIDO N.º / Your Order No. / Votre Cde. N.º: 43038605-00 TORONTO

DE / of. - de: 28/05/2018

NORMAS APLICABLES / Requirements - Normes Applicables: ASME B16.5-17

MARCA DEL FABRICANTE / Mark of factory / Marque du fabricant

Packing 140699

MATERIAL CORRESPONDIENTE / Material Correspondent - Qualité: ASME SA350LF2CL1-2-17, ASTM A350LF2CL1-2-17

MODO DE FUSION (*) / Steel Making - Elaboration de l'acier / E = Elec. Y = Oxígeno básico: NACE MR0175/ISO15156-02/03-15 & NACE MR0103/ISO17495-15
Clause 7.2.1.4, Annex A.2 and SSC Region 3.
CSA-Z245.12-17 GR248 CAT II-SS (WN & BLIND FLANGES ONLY)

DEPARTAMENTO / Section / Département: QUALITY ASSURANCE

| PARTIDA Item Poste | CANTIDAD Quantity Quantité | DESCRIPCION Description Description | LOTE | OBSERVACIONES Remarks Observations (*) | COLADA N.º Heat No N.º Coulée | RESISTENCIA T.Strength Resist Rupt N/mm2 | LIMITE ELAST Y.Strength 0.2 % N/mm2 | ALARGAM Elongation Allongement Lo:50mm/4d % | ESTRICCION Red. Area Striction % | RESILIENCIA Impact test Résilience Joules | | | CHARPY V 10x10mm MEDIA Average Moyenne | ºC | DUREZA Hardness Dureté HBW | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 39 7580201 | 30 | WN 1.1/2 150LB XS/80 RF A350LF2 | 24Y16 | NE | A45A6 | 517 | 320 | 26,00 | 45,00 | 58 | 63 | 65 | 62 | -50 | 152 | 156 |
| 45 7581005 | 1 | BLIND 14 150LB RF A350LF2 | 02M18G | NE | 25AV8 | 522 | 308 | 30,20 | 62,80 | 59 | 57 | 64 | 60 | -50 | 150 | 154 |
| 46 7581006 | 1 | BLIND 16 150LB RF A350LF2 | 06J803 | NE | 69AV8 | 507 | 304 | 30,40 | 58,20 | 60 | 58 | 63 | 60 | -50 | 147 | 148 |
| 46 7581006 | 1 | BLIND 16 150LB RF A350LF2 | 19D17 | NE | B64A7 | 499 | 296 | 33,30 | 66,70 | 45 | 35 | 42 | 40 | -50 | 144 | 148 |
| 48 7583949 | 1 | WN 8 300LB STD/40 RF A350LF2 | 16Y816 | NE | 97AV8 | 517 | 307 | 29,80 | 60,70 | 75 | 71 | 70 | 72 | -50 | 150 | 151 |
| 48 7583949 | 7 | WN 8 300LB STD/40 RF A350LF2 | 04J802 | NE | B21A8 | 515 | 298 | 32,60 | 67,30 | 69 | 76 | 67 | 70 | -50 | 148 | 150 |
| 52 7582780 | 3 | BLIND 8 600LB RF A350LF2 | 22Y827 | NE | 73AV8 | 511 | 297 | 36,30 | 69,80 | 58 | 50 | 62 | 57 | -50 | 147 | 148 |
| 52 7582780 | 3 | BLIND 8 600LB RF A350LF2 | 23Y809 | NE | 73AV8 | 502 | 319 | 38,10 | 70,10 | 90 | 69 | 62 | 74 | -50 | 146 | 149 |

COMPOSICION QUIMICA - STEEL MAKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE

| COLADA N.º Heat No N.º Coulée | C % | Si % | Mn % | P % | S % | Cr % | Ni % | Mo % | Nb % | V % | Cu % | Al % | Ti % | B % | CEq % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25AV8 | 0,190 | 0,230 | 1,050 | 0,005 | 0,007 | 0,068 | 0,090 | 0,014 | 0,002 | 0,004 | 0,180 | 0,025 | 0,002 | 0,0003 | 0,40 |
| 69AV8 | 0,184 | 0,200 | 1,115 | 0,012 | 0,003 | 0,055 | 0,147 | 0,017 | 0,001 | 0,001 | 0,138 | 0,033 | 0,001 | 0,0001 | 0,40 |
| 73AV8 | 0,190 | 0,193 | 1,073 | 0,011 | 0,003 | 0,062 | 0,075 | 0,015 | 0,001 | 0,001 | 0,112 | 0,037 | 0,002 | 0,0001 | 0,40 |
| 97AV8 | 0,190 | 0,220 | 1,110 | 0,005 | 0,007 | 0,045 | 0,072 | 0,012 | 0,003 | 0,005 | 0,150 | 0,027 | 0,002 | 0,0003 | 0,40 |
| A45A6 | 0,195 | 0,222 | 0,994 | 0,007 | 0,008 | 0,053 | 0,103 | 0,024 | 0,000 | 0,001 | 0,212 | 0,028 | 0,001 | 0,0005 | 0,40 |
| B21A8 | 0,170 | 0,190 | 1,060 | 0,011 | 0,004 | 0,110 | 0,090 | 0,009 | 0,004 | 0,000 | 0,180 | 0,029 | 0,001 | 0,0004 | 0,39 |
| B64A7 | 0,190 | 0,170 | 1,030 | 0,011 | 0,004 | 0,100 | 0,060 | 0,008 | 0,007 | 0,006 | 0,150 | 0,041 | 0,001 | 0,0002 | 0,40 |

(*) OBSERVACIONES. Remarks Observations: N_NORMALIZED AT 900 C AND ALLOWED TO COOL IN STILL AIR.

- Las dimensiones y la condición superficial se hallaron satisfactorias.
- Dimension and surface condition were found acceptable
- Les dimensions et états de surface sont satisfaisants.

- Los materiales citados cumplen las normas aplicables.
- Manufacturing requirements are satisfied.
- Les normes applicables sont respectées.

EL INSPECTOR
Works Inspector - L'Inspecteur

ULMA
ULMA FORJA S. COOP.
Dpto. de Garantía de Calidad
Quality Assurance Dept.

MLTS_6056-18929
Heat# B03238 A07A9 B011568B B05432B

CCTF CORPORATION
4151 North Service Road, Burlington, ON L7L 4X6 (905) 335-5320

**Date: 8/8/2019**

# Mill Test Reports

**Invoice:** 1599344-00
**PO:** 2610155

**Customer:** 27403-261
A.B.F. MINES/2985080
1310 AVE DAVY
ROUYN-NORANDA, QC J9Y 0A8

| Line | Heat# | Product | Description |
|---|---|---|---|
| 1 | b03238 | 7586832 | 6 150 RF WN FLG STD A350LF2 |
| 2 | a07a9 | 7586824 | 4 150 RF WN FLG STD A350LF2 |
| 3 | b01568b | 7586509 | 6 150 RF SO FLG A350LF2 |
| 4 | b05432b | 7586508 | 4 150 RF SO FLG A350LF2 |

***Heat codes*** followed by ** have been corrected, change may not show on the packing slip

# CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

ST&H CORPORATION
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

CE
RPS 0250209 / 01

Certificate No. MJH0103-10/16 Date : AUG. 27. 2018
Customer CCTF CORPORATION
Contract No. 4038603-00
Spec. For Material ASTM A105N-14,ASME SA105N-17,ASTM/ASME A/SA350 LF2 CL1-17,NACE MR0175/ISO 15156-2:2015,NACE MR0103/ISO 17495-1:2016
Heat Treatment 930°C NORMALIZED & A.C

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

Dimensional inspection ASME B16.5 - 2017

| ITEM / SIZE | | Q'ty | Heat No./ Batch No. | Size of Test Specimen D mm | Size of Test Specimen GL mm | Tension Test | Y.S MPa | T.S MPa | E.L % | R.A % | Hardness Test (HB) | | Charpy Impact Test (10X10mm Specimen Size) Indiv. 16J | Ave. 20J | Notch V | Temp. -46°C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Max | | 655 | | | 187 | | | | | |
| | | | | 12.5 | 50.0 | Min | 250 | 485 | 22.0 | 30.0 | | | Test Result (J) | | | Ave.(J) |
| 7586502 | 150LBS TH RF 6" | 2 | B03238 | 12.5 | 50.0 | | 375 | 545 | 35 | 67.5 | 151 | 153 | 118 | 145 | 68 | 110 |
| 7586824 | 150LBS WN RF STD 4" | 50 | B03238 | 12.5 | 50.0 | | 375 | 545 | 35 | 67.5 | 151 | 153 | 118 | 145 | 68 | 110 |
| 7586832 | 150LBS WN RF STD 6" | 50 | B03238 | 12.5 | 50.0 | | 375 | 545 | 35 | 67.5 | 151 | 153 | 118 | 145 | 68 | 110 |
| 7585267 | 150LBS WN RF XH 4" | 10 | B03238 | 12.5 | 50.0 | | 375 | 545 | 35 | 67.5 | 151 | 153 | 118 | 145 | 68 | 110 |
| 7580014 | 300LBS SO RF 4" | 5 | B03238 | 12.5 | 50.0 | | 375 | 545 | 35 | 67.5 | 151 | 153 | 118 | 145 | 68 | 110 |
| 7587735 | 300LBS SO RF 6" | 2 | B03238 | 12.5 | 50.0 | | 375 | 545 | 35 | 67.5 | 151 | 153 | 118 | 145 | 68 | 110 |
| 7585259 | 600LBS WN RF STD 3" | 10 | B03238 | 12.5 | 50.0 | | 375 | 545 | 35 | 67.5 | 151 | 153 | 118 | 145 | 68 | 110 |
| 7581040 | 600LBS WN RF XH 3" | 25 | B03238 | 12.5 | 50.0 | | 375 | 545 | 35 | 67.5 | 151 | 153 | 118 | 145 | 68 | 110 |
| 7581007 | 150LBS BL RF 18" | 2 | B03776 | 12.5 | 50.0 | | 375 | 540 | 38 | 74.5 | 152 | 154 | 135 | 80 | 118 | 111 |
| 7580205 | 150LBS SO RF 20" | 2 | B03776 | 12.5 | 50.0 | | 375 | 540 | 38 | 74.5 | 152 | 154 | 135 | 80 | 118 | 111 |

| Heat No./ Batch No. | | Chemical Composition (%) C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | Nb | | | | | | CE | NDE UT | MT | PT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max | 0.300 | 0.300 | 1.350 | 0.035 | 0.040 | 0.400 | 0.300 | 0.120 | 0.400 | 0.080 | 0.020 | | | | | | | | | |
| | Min | | 0.150 | 0.600 | | | | | | | | | | | | | | | | | |
| | H | 0.176 | 0.201 | 1.060 | 0.015 | 0.004 | 0.032 | 0.077 | 0.004 | 0.050 | 0.001 | 0.001 | | | | | | 0.374 | | | |
| B03238 | P | 0.178 | 0.216 | 1.060 | 0.016 | 0.002 | 0.036 | 0.073 | 0.007 | 0.050 | 0.002 | 0.001 | | | | | | 0.376 | | | |
| | H | 0.172 | 0.220 | 1.290 | 0.013 | 0.007 | 0.012 | 0.045 | 0.006 | 0.008 | 0.004 | 0.019 | | | | | | 0.399 | | | |
| B03776 | P | 0.174 | 0.220 | 1.290 | 0.011 | 0.003 | 0.012 | 0.044 | 0.006 | 0.008 | 0.001 | 0.015 | | | | | | 0.400 | | | |

BLANK

**REMARK** * H : Heat Analysis P : Product Analysis

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

CLIENTE / Customer / Client
CCTF CORPORATION (ONTARIO)
4151 NORTH SERVICE RD.
UNIT 2
BURLINGTON, ONTARIO
L7L4X6 - CANADA
CAN

# CERTIFICADO DE INSPECCION

UNE EN 10204:06 / 3.1
ISO 10474:15 / 3.1

## Inspection Certificate - Certificat de Réception

FECHA: Date: 21/05/2019

N.º No. 203034

HOJA: Page: 2

SGI 1922164 SGI 6000236 SGI 6009987

Management Systems certified by LRQAE

ULMA FORJA, S.COOP.
Certified acc. PED 97/23/EC+AD2000-W0
PED 14/68/UE
by TÜV Rheinland
N.º 01 202 E/Q 02 7443

Bº Zubillaga, 3 - Apdo. 14
20560 OÑATI (Gipuzkoa) SPAIN
Tel.: 34 - 943 780552
Fax: 34 - 943 781808
E-mail: ulma@ulmapiping.com

PRODUCTO / Article - Produit: FLANGES

SU PEDIDO N.º / Your Order No. / Votre Cde. N.º: 4039198-00

DE / of. - de: 18/02/2019

NORMAS APLICABLES / Requirements - Normes Applicables: ASME B16.5-17

MARCA DEL FABRICANTE / Mark of factory / Marque du fabricant

Packing 148506

MATERIAL CORRESPONDIENTE / Material Correspondent - Qualité: ASME SA350LF2CL1-2-17, ASTM A350LF2CL1-2-18

MODO DE FUSION (*) / Steel Making - Elaboration de l'acier / E = Elec. Y = Oxigeno básico

NACE MR0175/ISO15156-02/03-15 & NACE MR0103/ISO17495-15
Clause 7.2.1.4, Annex A.2 and SSC Region 3.
CSA-Z245.12-17 GR248 CAT II-SS (WN & BLIND FLANGES ONLY)

DEPARTAMENTO / Section / Département: QUALITY ASSURANCE

| PARTIDA Item Poste | CANTIDAD Quantity Quantité | DESCRIPCION Description Description | LOTE | OBSERVACIONES Remarks Observations (*) | COLADA N.º Heat No N.º Coulée | RESISTENCIA T.Strength Resist Rupt N/mm2 | LIMITE ELAST Y.Strength 0.2 % N/mm2 | ALARGAM. Elongation Allongement Lo:50mm/4o % | ESTRICCION Red Area Striction % | RESILIENCIA Impact test Résilience Joules | | | CHARPY V 10x10mm MEDIA Average Moyenne | °C | DUREZA Hardness Dureté HBW | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 7586824 | 56 | WN 4 150LB STD/40 RF A350LF2 | 18M912 | NE | A07A9 | 502 | 300 | 36,44 | 71,53 | 102 | 137 | 99 | 113 | -50 | 146 | 148 |
| 22 7585496 | 24 | WN 6 300LB STD/40 RF A350LF2 | 01F901 | NE | B88A8 | 494 | 301 | 36,14 | 74,27 | 125 | 124 | 55 | 101 | -50 | 138 | 138 |
| 30 7586646 | 10 | BLIND 2 600LB RF A350LF2 | 09A901 | NE | A63A9 | 512 | 314 | 30,40 | 72,40 | 112 | 106 | 100 | 106 | -50 | 140 | 146 |

COMPOSICION QUIMICA - STEEL MAKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE

| COLADA N.º Heat No Ladle: L Product: P | C % | Si % | Mn % | P % | S % | Cr % | Ni % | Mo % | Nb % | V % | Cu % | Al % | Ti % | B % | CEq % | | | Origin of Steel |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A07A9 L | 0,192 | 0,206 | 1,138 | 0,008 | 0,004 | 0,037 | 0,050 | 0,017 | 0,000 | 0,002 | 0,053 | 0,034 | 0,001 | 0,0002 | 0,40 | | | Germany |
| B88A8 L | 0,182 | 0,206 | 1,153 | 0,010 | 0,005 | 0,050 | 0,057 | 0,014 | 0,001 | 0,002 | 0,061 | 0,028 | 0,001 | 0,0004 | 0,40 | | | Germany |
| A63A9 L | 0,189 | 0,223 | 1,151 | 0,011 | 0,005 | 0,049 | 0,055 | 0,012 | 0,001 | 0,002 | 0,094 | 0,028 | 0,002 | 0,0002 | 0,40 | | | Germany |

- Las dimensiones y la condición superficial se hallaron satisfactorias.
- Dimension and surface condition were found acceptable.
- Les dimensions et états de surface sont satisfaisants.

- Los materiales citados cumplen las normas aplicables.
- Manufacturing requirements are satisfied.
- Les normes applicables sont respectées.

EL INSPECTOR
Works Inspector - L'Inspecteur

ULMA FORJA S. COOP.
Dpto. de Garantía de calidad
Quality Assurance Dept.

(*) OBSERVACIONES: Remarks Observations: N_NORMALIZED AT 900 C AND ALLOWED TO COOL IN STILL AIR.

# CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

**ST&H CORPORATION**
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

**Certificate No.** MJH0427-06/08 **Date :** JUN. 17. 2019
**Customer** CCTF CORPORATION
**Contract No.** 4039342-00
**Spec. For Material** ASTM A105N-18,ASME SA105N-17,ASTM A350 LF2 CL1-18,ASME SA350 LF2 CL1-17,NACE MR0175/ISO15156-2:2015,NACE MR0103/ISO17945:2015
**Heat Treatment** 930°C NORMALIZED & A.C **Dimensional inspection**ASME B16.5 - 2017

| ITEM / SIZE | | Q'ty | Heat No./ Batch No. | Size of Test Specimen D mm | Size of Test Specimen GL mm | Tension Test | Y.S MPa | T.S MPa | E.L % | R.A % | Hardness Test (HB) | | Charpy Impact Test (10X10mm Specimen Size) Indiv. 16J | Ave. 20J | Notch V | Temp. -46°C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Max | | 655 | | | 187 | | | | | |
| | | | | 12.5 | 50.0 | Min | 250 | 485 | 22.0 | 30.0 | 137 | | Test Result (J) | | | Ave.(J) |
| 7580219 | 150LBS SO RF 10" | 15 | B01568B | 12.5 | 50.0 | | 356 | 515 | 39 | 76 | 147 | 154 | 83 | 78 | 81 | 80 |
| 7580220 | 150LBS SO RF 12" | 25 | B01568B | 12.5 | 50.0 | | 356 | 515 | 39 | 76 | 147 | 154 | 83 | 78 | 81 | 80 |
| 7586509 | 150LBS SO RF 6" | 70 | B01568B | 12.5 | 50.0 | | 356 | 515 | 39 | 76 | 147 | 154 | 83 | 78 | 81 | 80 |
| 7580218 | 150LBS SO RF 8" | 12 | B01568B | 12.5 | 50.0 | | 356 | 515 | 39 | 76 | 147 | 154 | 83 | 78 | 81 | 80 |
| 7580200 | 150LBS WN RF STD 1" | 15 | B01568B | 12.5 | 50.0 | | 356 | 515 | 39 | 76 | 147 | 154 | 83 | 78 | 81 | 80 |
| 7586832 | 150LBS WN RF STD 6" | 45 | B01568B | 12.5 | 50.0 | | 356 | 515 | 39 | 76 | 147 | 154 | 83 | 78 | 81 | 80 |
| 7583949 | 300LBS WN RF STD 8" | 40 | B01568B | 12.5 | 50.0 | | 356 | 515 | 39 | 76 | 147 | 154 | 83 | 78 | 81 | 80 |
| 7580203 | 150LBS SO RF 16" | 4 | B01979E | 12.5 | 50.0 | | 344 | 541 | 35 | 75.5 | 150 | 152 | 60 | 65 | 59 | 61 |
| 7580204 | 150LBS SO RF 18" | 5 | B01979E | 12.5 | 50.0 | | 344 | 541 | 35 | 75.5 | 150 | 152 | 60 | 65 | 59 | 61 |
| 7580205 | 150LBS SO RF 20" | 2 | B01979E | 12.5 | 50.0 | | 344 | 541 | 35 | 75.5 | 150 | 152 | 60 | 65 | 59 | 61 |

| Heat No./ Batch No. | | Chemical Composition (%) C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | Nb | | | | | | CE | NDE UT | MT | PT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max | 0.300 | 0.300 | 1.350 | 0.035 | 0.040 | 0.400 | 0.300 | 0.120 | 0.400 | 0.080 | 0.020 | | | | | | | | | |
| | Min | | 0.150 | 0.600 | | | | | | | | | | | | | | | | | |
| | H | 0.172 | 0.243 | 1.290 | 0.011 | 0.004 | 0.026 | 0.094 | 0.017 | 0.020 | 0.001 | 0.001 | | | | | | 0.412 | | | |
| B01568B | P | 0.177 | 0.250 | 1.300 | 0.012 | 0.005 | 0.029 | 0.101 | 0.015 | 0.020 | 0.002 | 0.001 | | | | | | 0.420 | | | |
| | H | 0.177 | 0.212 | 1.270 | 0.009 | 0.003 | 0.010 | 0.061 | 0.004 | 0.009 | 0.001 | 0.012 | | | | | | 0.403 | | | |
| B01979E | P | 0.180 | 0.229 | 1.280 | 0.009 | 0.002 | 0.012 | 0.038 | 0.006 | 0.012 | 0.001 | 0.015 | | | | | | 0.403 | | | |
| | | | | | | | | | | BLANK | | | | | | | | | | | |

**REMARK** * H : Heat Analysis P : Product Analysis * C:Mn = 1≤5

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

# CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

**ST&H CORPORATION**
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

CE
RPS 0160308 / 01

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

**Certificate No.** MJH0427-07/08 **Date :** JUN. 17. 2019
**Customer** CCTF CORPORATION
**Contract No.** 4039342-00
**Spec. For Material** ASTM A105N-18,ASME SA105N-17,ASTM A350 LF2 CL1-18,ASME SA350 LF2 CL1-17,NACE MR0175/ISO15156-2:2015,NACE MR0103/ISO17945:2015
**Heat Treatment** 930°C NORMALIZED & A.C **Dimensional inspection**ASME B16.5 - 2017

| ITEM / SIZE | | Q'ty | Heat No./ Batch No. | Size of Test Specimen D mm | Size of Test Specimen GL mm | Tension Test | Y.S MPa | T.S MPa | E.L % | R.A % | Hardness Test (HB) | | Charpy Impact Test (10X10mm Specimen Size) Indiv. 16J | Ave. 20J | Notch V | Temp. -46°C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Max | | 655 | | | 187 | | | | | |
| | | | | 12.5 | 50.0 | Min | 250 | 485 | 22.0 | 30.0 | 137 | | Test Result (J) | | | Ave.(J) |
| 7589925 | 300LBS SO RF 12" | 2 | B01979E | 12.5 | 50.0 | | 344 | 541 | 35 | 75.5 | 150 | 152 | 60 | 65 | 59 | 61 |
| 7580216 | 150LBS SO RF 1" | 15 | B05432B | 12.5 | 50.0 | | 357 | 515 | 41 | 76 | 150 | 154 | 89 | 86 | 99 | 91 |
| 7586504 | 150LBS SO RF 2" | 25 | B05432B | 12.5 | 50.0 | | 357 | 515 | 41 | 76 | 150 | 154 | 89 | 86 | 99 | 91 |
| 7586507 | 150LBS SO RF 3" | 50 | B05432B | 12.5 | 50.0 | | 357 | 515 | 41 | 76 | 150 | 154 | 89 | 86 | 99 | 91 |
| 7586508 | 150LBS SO RF 4" | 80 | B05432B | 12.5 | 50.0 | | 357 | 515 | 41 | 76 | 150 | 154 | 89 | 86 | 99 | 91 |
| 7587602 | 150LBS SW RF XH 1" | 25 | B05432B | 12.5 | 50.0 | | 357 | 515 | 41 | 76 | 150 | 154 | 89 | 86 | 99 | 91 |
| 7587603 | 150LBS SW RF XH 1 1/2" | 25 | B05432B | 12.5 | 50.0 | | 357 | 515 | 41 | 76 | 150 | 154 | 89 | 86 | 99 | 91 |
| 7587600 | 150LBS SW RF XH 1/2" | 250 | B05432B | 12.5 | 50.0 | | 357 | 515 | 41 | 76 | 150 | 154 | 89 | 86 | 99 | 91 |
| 7587604 | 150LBS SW RF XH 2" | 50 | B05432B | 12.5 | 50.0 | | 357 | 515 | 41 | 76 | 150 | 154 | 89 | 86 | 99 | 91 |
| 7587601 | 150LBS SW RF XH 3/4" | 25 | B05432B | 12.5 | 50.0 | | 357 | 515 | 41 | 76 | 150 | 154 | 89 | 86 | 99 | 91 |

| Heat No./ Batch No. | | Chemical Composition (%) C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | Nb | | | | | | CE | NDE UT | MT | PT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max | 0.300 | 0.300 | 1.350 | 0.035 | 0.040 | 0.400 | 0.300 | 0.120 | 0.400 | 0.080 | 0.020 | | | | | | | | | |
| | Min | | 0.150 | 0.600 | | | | | | | | | | | | | | | | | |
| | H | 0.177 | 0.212 | 1.270 | 0.009 | 0.003 | 0.010 | 0.061 | 0.004 | 0.009 | 0.001 | 0.012 | | | | | | 0.403 | | | |
| B01979E | P | 0.180 | 0.229 | 1.280 | 0.009 | 0.002 | 0.012 | 0.038 | 0.006 | 0.012 | 0.001 | 0.015 | | | | | | 0.403 | | | |
| | H | 0.175 | 0.251 | 1.250 | 0.014 | 0.003 | 0.010 | 0.010 | 0.003 | 0.016 | 0.001 | 0.001 | | | | | | 0.387 | | | |
| B05432B | P | 0.178 | 0.249 | 1.250 | 0.014 | 0.003 | 0.011 | 0.011 | 0.004 | 0.015 | 0.001 | 0.001 | | | | | | 0.391 | | | |
| | | | | | | | | | | BLANK | | | | | | | | | | | |

**REMARK** * H : Heat Analysis P : Product Analysis * C:Mn = 1≤5

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

MLTS_6056-18945-1
Heat# 7690075, 7690149, 7690199

# CERTIFIED MILL TEST REPORT

The Best Value - *Price, Quality, Service* All The Time.

**LOG NO.** F00000000100245 

**BONNEY FORGE CORPORATION**
P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-0330
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

**CUSTOMER:** CCTF CORPORATION

**DATE** 10/04/2017

**CUSTOMER ORDER NO.:** 4037926-00

**BONNEY ORDER NO.** B000229128

**SHIP TO:** CCTF CORPORATION (BURLINGTON)
4151 NORTH SERVICE ROAD
UNIT 2
BURLINGTON ON L7L 4X6
Canada

| ITEM | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO. / CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS: |
|---|---|---|---|
| 3 | 50 | 50196 | 36-3X1 3M LF2 FLEX T — SA/A350 LF2 CL1 |
| 7690075 | | | Al 0.032 C 0.200 Co 0.002 Cr 0.040 Cu 0.030 Mn 1.050 Mo 0.003 Nb 0.014<br>Ni 0.020 P 0.005 S 0.019 Si 0.270 V 0.003<br>CE(Long Formula) = 0.39<br>T/S(PSI) 71,610 Y/S(PSI) 47,449 EL(%) 36.85 RA(%) 57.04<br>Brinell 135 BHN 135 BHN<br>Charpy -50 F 77/66/56 (Ft-Lbs)<br>Average 66.30 |
| 5 | 50 | 50076 | 36-11/2X3/4 3M LF2 FLEX S — SA/A350 LF2 CL1 |
| 7690149 | | | Al 0.027 C 0.200 Co 0.004 Cr 0.050 Cu 0.100 Mn 0.970 Mo 0.016 Nb 0.013<br>Ni 0.060 P 0.011 S 0.019 Si 0.220 V 0.003<br>CE(Long Formula) = 0.39<br>T/S(PSI) 76,500 Y/S(PSI) 53,000 EL(%) 31.00 RA(%) 64.00<br>Brinell 159 BHN 146 BHN<br>Charpy -50 F 42/58/45 (Ft-Lbs)<br>Average 48.30 |
| 6 | 50 | 50196 | 36-3X1 3M LF2 FLEX S — SA/A350 LF2 CL1 |
| 7690199 | | | Al 0.032 C 0.200 Co 0.002 Cr 0.040 Cu 0.030 Mn 1.050 Mo 0.003 Nb 0.014<br>Ni 0.020 P 0.005 S 0.019 Si 0.270 V 0.003<br>CE(Long Formula) = 0.39<br>T/S(PSI) 71,610 Y/S(PSI) 47,449 EL(%) 36.85 RA(%) 57.04<br>Brinell 135 BHN 135 BHN<br>Charpy -50 F 77/66/56 (Ft-Lbs)<br>Average 66.30 |

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Kylee Ruiz
Kylee Ruiz
**QUALITY PROCESS MANAGER**

**CMTR: REV2**

# CERTIFIED MILL TEST REPORT

The Best Value - *Price, Quality, Service* All The Time.

**LOG NO.** F00000000100245



**BONNEY FORGE CORPORATION**
P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-0330
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

**CUSTOMER:** CCTF CORPORATION

**DATE** 10/04/2017

**CUSTOMER ORDER NO.:** 4037926-00

**BONNEY ORDER NO.** B000229128

**SHIP TO:** CCTF CORPORATION (BURLINGTON)
4151 NORTH SERVICE ROAD
UNIT 2
BURLINGTON ON L7L 4X6
Canada

| ITEM | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO. CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS |
|---|---|---|---|

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. CERTIFYING TO ASTM A350 LF2 07 REVISION.
3. THE MATERIAL OF THE FITTINGS SUPPLIED IS ASTM A350-LF2 BUT MEETS THE REQUIREMENTS OF ASME SA350-LF2.
4. THE CHARPY V-NOTCH IMPACT TEST WAS PERFORMED AT -50 DEGREES FAHRENHEIT IN ACCORDANCE WITH A350-LF2.
5. THE MATERIAL SUPPLIED AS A350 LF2 CL1 MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
6. THE MATERIAL SUPPLIED WAS NORMALIZED IN ACCORDANCE WITH ASTM A350 HEAT TREATING REQUIREMENTS.
7. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
8. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE REPORTED IN PSI.
9. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Kylee Ruiz

Kylee Ruiz
**QUALITY PROCESS MANAGER**

**CMTR: REV2**

MLTS_6056-18945
Heat# B01568B B03238 50313

CCTF CORPORATION

4151 North Service Road, Burlington, ON L7L 4X6 (905) 335-5320

**Date: 8/13/2019**

# Mill Test Reports

**Invoice:** 1599535-00
**PO:** 2610160-00

**Customer:** 27403-261
A.B.F. MINES
1310 AVE DAVY
ROUYN-NORANDA, QC J9Y 0A8

| Line | Heat# | Product | Description |
|---|---|---|---|
| 1 | b01568b | 7583949 | 8 300 RF WN FLG STD A350LF2 |
| 2 | b03238 | 7586832 | 6 150 RF WN FLG STD A350LF2 |
| 3 | 50313 ** | 7690199 | 1 X 3-36 3000 SOL A350LF2 |

***Heat codes*** followed by ** have been corrected, change may not show on the packing slip

# CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

**ST&H CORPORATION**
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

**Certificate No.** MJH0427-06/08 **Date :** JUN. 17. 2019
**Customer** CCTF CORPORATION
**Contract No.** 4039342-00
**Spec. For Material** ASTM A105N-18,ASME SA105N-17,ASTM A350 LF2 CL1-18,ASME SA350 LF2 CL1-17,NACE MR0175/ISO15156-2:2015,NACE MR0103/ISO17945:2015
**Heat Treatment** 930°C NORMALIZED & A.C **Dimensional inspection**ASME B16.5 - 2017

| ITEM / SIZE | | Q'ty | Heat No./ Batch No. | Size of Test Specimen D mm | GL mm | Tension Test | Y.S MPa | T.S MPa | E.L % | R.A % | Hardness Test (HB) | | Charpy Impact Test (10X10mm Specimen Size) Indiv. 16J | Ave. 20J | Notch V | Temp. -46°C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Max | | 655 | | | 187 | | | | | |
| | | | | 12.5 | 50.0 | Min | 250 | 485 | 22.0 | 30.0 | 137 | | Test Result (J) | | | Ave.(J) |
| 7580219 | 150LBS SO RF 10" | 15 | B01568B | 12.5 | 50.0 | | 356 | 515 | 39 | 76 | 147 | 154 | 83 | 78 | 81 | 80 |
| 7580220 | 150LBS SO RF 12" | 25 | B01568B | 12.5 | 50.0 | | 356 | 515 | 39 | 76 | 147 | 154 | 83 | 78 | 81 | 80 |
| 7586509 | 150LBS SO RF 6" | 70 | B01568B | 12.5 | 50.0 | | 356 | 515 | 39 | 76 | 147 | 154 | 83 | 78 | 81 | 80 |
| 7580218 | 150LBS SO RF 8" | 12 | B01568B | 12.5 | 50.0 | | 356 | 515 | 39 | 76 | 147 | 154 | 83 | 78 | 81 | 80 |
| 7580200 | 150LBS WN RF STD 1" | 15 | B01568B | 12.5 | 50.0 | | 356 | 515 | 39 | 76 | 147 | 154 | 83 | 78 | 81 | 80 |
| 7586832 | 150LBS WN RF STD 6" | 45 | B01568B | 12.5 | 50.0 | | 356 | 515 | 39 | 76 | 147 | 154 | 83 | 78 | 81 | 80 |
| 7583949 | 300LBS WN RF STD 8" | 40 | B01568B | 12.5 | 50.0 | | 356 | 515 | 39 | 76 | 147 | 154 | 83 | 78 | 81 | 80 |
| 7580203 | 150LBS SO RF 16" | 4 | B01979E | 12.5 | 50.0 | | 344 | 541 | 35 | 75.5 | 150 | 152 | 60 | 65 | 59 | 61 |
| 7580204 | 150LBS SO RF 18" | 5 | B01979E | 12.5 | 50.0 | | 344 | 541 | 35 | 75.5 | 150 | 152 | 60 | 65 | 59 | 61 |
| 7580205 | 150LBS SO RF 20" | 2 | B01979E | 12.5 | 50.0 | | 344 | 541 | 35 | 75.5 | 150 | 152 | 60 | 65 | 59 | 61 |

| Heat No./ Batch No. | | Chemical Composition (%) C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | Nb | CE | NDE UT | MT | PT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max | 0.300 | 0.300 | 1.350 | 0.035 | 0.040 | 0.400 | 0.300 | 0.120 | 0.400 | 0.080 | 0.020 | | | | |
| | Min | | 0.150 | 0.600 | | | | | | | | | | | | |
| | H | 0.172 | 0.243 | 1.290 | 0.011 | 0.004 | 0.026 | 0.094 | 0.017 | 0.020 | 0.001 | 0.001 | 0.412 | | | |
| B01568B | P | 0.177 | 0.250 | 1.300 | 0.012 | 0.005 | 0.029 | 0.101 | 0.015 | 0.020 | 0.002 | 0.001 | 0.420 | | | |
| | H | 0.177 | 0.212 | 1.270 | 0.009 | 0.003 | 0.010 | 0.061 | 0.004 | 0.009 | 0.001 | 0.012 | 0.403 | | | |
| B01979E | P | 0.180 | 0.229 | 1.280 | 0.009 | 0.002 | 0.012 | 0.038 | 0.006 | 0.012 | 0.001 | 0.015 | 0.403 | | | |

BLANK

**REMARK** * H : Heat Analysis P : Product Analysis * C:Mn = 1≤5

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

# CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

**ST&H CORPORATION**
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

RPS 0360309 / 01

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

**Certificate No.** MJH0103-10/16 **Date :** AUG. 27. 2018
**Customer** CCTF CORPORATION
**Contract No.** 4038603-00
**Spec. For Material** ASTM A105N-14,ASME SA105N-17,ASTM/ASME A/SA350 LF2 CL1-17,NACE MR0175/ISO 15156-2:2015,NACE MR0103/ISO 17495-1:2016
**Heat Treatment** 930°C NORMALIZED & A.C **Dimensional inspection** ASME B16.5 - 2017

| ITEM / SIZE | | Q'ty | Heat No./ Batch No. | Size of Test Specimen D mm | Size of Test Specimen GL mm | Tension Test | Y.S MPa | T.S MPa | E.L % | R.A % | Hardness Test (HB) | | Charpy Impact Test (10X10mm Specimen Size) Indiv. 16J | Ave. 20J | Notch V | Temp. -46°C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Max | | 655 | | | 187 | | | | | |
| | | | | 12.5 | 50.0 | Min | 250 | 485 | 22.0 | 30.0 | | | Test Result (J) | | | Ave.(J) |
| 7586502 | 150LBS TH RF 6" | 2 | B03238 | 12.5 | 50.0 | | 375 | 545 | 35 | 67.5 | 151 | 153 | 118 | 145 | 68 | 110 |
| 7586824 | 150LBS WN RF STD 4" | 50 | B03238 | 12.5 | 50.0 | | 375 | 545 | 35 | 67.5 | 151 | 153 | 118 | 145 | 68 | 110 |
| 7586832 | 150LBS WN RF STD 6" | 50 | B03238 | 12.5 | 50.0 | | 375 | 545 | 35 | 67.5 | 151 | 153 | 118 | 145 | 68 | 110 |
| 7585267 | 150LBS WN RF XH 4" | 10 | B03238 | 12.5 | 50.0 | | 375 | 545 | 35 | 67.5 | 151 | 153 | 118 | 145 | 68 | 110 |
| 7580014 | 300LBS SO RF 4" | 5 | B03238 | 12.5 | 50.0 | | 375 | 545 | 35 | 67.5 | 151 | 153 | 118 | 145 | 68 | 110 |
| 7587735 | 300LBS SO RF 6" | 2 | B03238 | 12.5 | 50.0 | | 375 | 545 | 35 | 67.5 | 151 | 153 | 118 | 145 | 68 | 110 |
| 7585259 | 600LBS WN RF STD 3" | 10 | B03238 | 12.5 | 50.0 | | 375 | 545 | 35 | 67.5 | 151 | 153 | 118 | 145 | 68 | 110 |
| 7581040 | 600LBS WN RF XH 3" | 25 | B03238 | 12.5 | 50.0 | | 375 | 545 | 35 | 67.5 | 151 | 153 | 118 | 145 | 68 | 110 |
| 7581007 | 150LBS BL RF 18" | 2 | B03776 | 12.5 | 50.0 | | 375 | 540 | 38 | 74.5 | 152 | 154 | 135 | 80 | 118 | 111 |
| 7580205 | 150LBS SO RF 20" | 2 | B03776 | 12.5 | 50.0 | | 375 | 540 | 38 | 74.5 | 152 | 154 | 135 | 80 | 118 | 111 |

| Heat No./ Batch No. | | Chemical Composition (%) C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | Nb | | | | | | CE | NDE UT | MT | PT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max | 0.300 | 0.300 | 1.350 | 0.035 | 0.040 | 0.400 | 0.300 | 0.120 | 0.400 | 0.080 | 0.020 | | | | | | | | | |
| | Min | | 0.150 | 0.600 | | | | | | | | | | | | | | | | | |
| | H | 0.176 | 0.201 | 1.060 | 0.015 | 0.004 | 0.032 | 0.077 | 0.004 | 0.050 | 0.001 | 0.001 | | | | | | 0.374 | | | |
| B03238 | P | 0.178 | 0.216 | 1.060 | 0.016 | 0.002 | 0.036 | 0.073 | 0.007 | 0.050 | 0.002 | 0.001 | | | | | | 0.376 | | | |
| | H | 0.172 | 0.220 | 1.290 | 0.013 | 0.007 | 0.012 | 0.045 | 0.006 | 0.008 | 0.004 | 0.019 | | | | | | 0.399 | | | |
| B03776 | P | 0.174 | 0.220 | 1.290 | 0.011 | 0.003 | 0.012 | 0.044 | 0.006 | 0.008 | 0.001 | 0.015 | | | | | | 0.400 | | | |
| | | | | | | | | | | BLANK | | | | | | | | | | | |

**REMARK** * H : Heat Analysis P : Product Analysis

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

ST-801-14-02

HEAT: 50313 ** CCTF Sku: 7690199 1 X 3-36 3000 SOL A350LF2 Invoice: 1599535-00 PO: 2610160-00 8/13/2019 11:51:31 AM

# CERTIFIED MILL TEST REPORT

The Best Value - *Price, Quality, Service* All The Time.

LOG NO. F00000000110349



BONNEY FORGE CORPORATION
P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-0330
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

**CUSTOMER:** CCTF CORPORATION

**DATE** 07/13/2018

**CUSTOMER ORDER NO.:** 4038733-00

**BONNEY ORDER NO.** B000243044

**SHIP TO:** CCTF CORPORATION (BURLINGTON)
4151 NORTH SERVICE ROAD
UNIT 2
BURLINGTON ON L7L 4X6
Canada

| ITEM | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO. CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS: |
|---|---|---|---|
| 3 | 50 | 50200 | 36-3/4 X 1/2 3M LF2 FLEX T — SA/A350 LF2 CL1 |
| 7690072 | | | Al 0.024 C 0.200 Co 0.002 Cr 0.030 Cu 0.050 Mn 1.040 Mo 0.005 Nb 0.012<br>Ni 0.020 P 0.006 S 0.022 Si 0.230 V 0.003<br>CE(Long Formula) = 0.39<br>T/S(PSI) 71,500 Y/S(PSI) 48,100 EL(%) 35.00 RA(%) 69.00<br>Brinell Hardness 137 BHN 135 BHN<br>Charpy -50 F 78/55/52 (Ft-Lbs)<br>Average 61.70 |
| 4 | 50 | 50313 | 36-3X1 3M LF2 FLEX S — SA/A350 LF2 CL1 |
| 7690199 | | | Al 0.036 C 0.200 Co 0.002 Cr 0.060 Cu 0.080 Mn 1.000 Mo 0.006 Nb 0.014<br>Ni 0.030 P 0.006 S 0.023 Si 0.240 V 0.003<br>CE(Long Formula) = 0.39<br>T/S(PSI) 73,427 Y/S(PSI) 48,233 EL(%) 35.25 RA(%) 61.22<br>Brinell Hardness 135 BHN 135 BHN<br>Charpy -50 F 27/28/33 (Ft-Lbs)<br>Average 29.30 |
| 5 | 100 | 50295 | 36-11/2X3/4 3M LF2 FLEX S — SA/A350 LF2 CL1 |
| 7690149 | | | Al 0.021 C 0.200 Co 0.002 Cr 0.030 Cu 0.080 Mn 1.020 Mo 0.007 Nb 0.011<br>Ni 0.030 P 0.005 S 0.023 Si 0.260 V 0.003<br>CE(Long Formula) = 0.39<br>T/S(PSI) 73,778 Y/S(PSI) 50,401 EL(%) 36.55 RA(%) 65.23<br>Brinell Hardness 135 BHN 135 BHN<br>Charpy -50 F 43/68/39 (Ft-Lbs)<br>Average 50.00 |

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Kylee Ruiz

Kylee Ruiz
QUALITY PROCESS MANAGER

CMTR: REV2

# CERTIFIED MILL TEST REPORT

The Best Value - *Price, Quality, Service* All The Time.

**LOG NO.** F00000000110349



**BONNEY FORGE CORPORATION**
P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-0330
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

**CUSTOMER:** CCTF CORPORATION

**DATE** 07/13/2018

**CUSTOMER ORDER NO.:** 4038733-00

**BONNEY ORDER NO.** B000243044

**SHIP TO:** CCTF CORPORATION (BURLINGTON)
4151 NORTH SERVICE ROAD
UNIT 2
BURLINGTON ON L7L 4X6
Canada

| ITEM | QUANTITY | LOT NO. | GRADE OR SPECIFICATION NO.<br>CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS: |
|---|---|---|---|

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. CERTIFYING TO ASTM A350 LF2 17 REVISION.
3. THE MATERIAL OF THE FITTINGS SUPPLIED IS ASTM A350-LF2 BUT MEETS THE REQUIREMENTS OF ASME SA350-LF2.
4. THE CHARPY V-NOTCH IMPACT TEST WAS PERFORMED AT -50 DEGREES FAHRENHEIT IN ACCORDANCE WITH A350-LF2.
5. THE MATERIAL SUPPLIED AS A350 LF2 CL1 MEETS THE REQUIREMENTS OF BOTH NACE MRO103/ISO 17945 - 2015 & NACE MRO175/ISO 15156-2 - 2015 EDITION.
6. THE MATERIAL SUPPLIED WAS NORMALIZED IN ACCORDANCE WITH ASTM A350 HEAT TREATING REQUIREMENTS.
7. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
8. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE REPORTED IN PSI.
9. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Kylee Ruiz

Kylee Ruiz
**QUALITY PROCESS MANAGER**

**CMTR: REV2**

MLTS_6056-18953
Heat# 35596, X1651

# BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, REN-SIN ROAD, REN-WU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C.(81460)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : http://www.bothwell.com.tw E-Mail : box@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

## MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : SEYBOLD INTERNATIONAL CORP. PAGE : 19
CERT NO. : 180410 INVOICE NO. : 5200011852 DATE : 02/12/2018
ORDER NO. : 7013926 L/C NO. : ORIGIN : TAIWAN

| ITEM | RAW HEAT NO. / HEAT NO. | QTY | DESC/ GRADE OR SPECIFICATION NO. / CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES. |
|---|---|---|---|
| 108 | 355196<br>YB0001 | 100 PCS | UNION NUT(OCT) - BODY(ROD) LF2 CL1 (N) 1-1/2" 3000# S/W SQK3U1.5-BW<br>C: 0.18 Si: 0.25 Mn: 1.05 P: 0.014 S: 0.005 Cu: 0.04 Cr: 0.07<br>Ni: 0.03 Mo: 0.01 V: 0.003 Nb: 0.003 N: 0.0099 Ti: 0.002<br>CE: 0.38<br>TS(KSI): 73.8 YS 0.2%(KSI): 55.5 EL(%): 32.5 R.A.(%): 69.1<br>HARDNESS 1(HBW): 141 HARDNESS 2(HBW): 143 IMPACT TEST -46℃<br>(-50.8℉) 1: 48 J 2: 87 J 3: 67 J AVG: 67 J |

1½# 3000 FS SW
union A350LF2

REMARK :
THE MATERIAL SUPPLIED IDENTIFIED AS ASTM A350 -15, ASME SA350 -2015ED, LF2 CL.1
THE FITTING SUPPLIED IDENTIFIED AS MSS SP-83 - 2014
THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH SPECIFICATION(SURFACE & DIM. : GOOD
STANDARD : CHEMICAL COMPOSITION(%) & MECHANICAL PROPERTIES.

| | C | Si | Mn | P | S | Cu | Cr | Ni | Mo | V | Cb(Nb) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MIN | - | 0.15 | 0.60 | - | - | - | - | - | - | - | - |
| MAX | 0.30 | 0.30 | 1.35 | 0.035 | 0.040 | 0.40 | 0.30 | 0.40 | 0.12 | 0.08 | 0.02 |
| | N | Al | Ti | Zr | CE | TS(KSI) | YS(KSI) | YS 0.2%(KSI) | EL(%) | R of A(%) | HARDNESS(HBW) |
| MIN | - | | | | - | 70 | | 36 | 22 | 30 | - |
| MAX | - | | | | 0.47 | 95 | | - | - | - | 197 |

HEAT TREATMENT : NORMALIZED 900℃(1652℉) A.C.
CONFORM TO NACE MR0175-15/ISO 15156-15/MR0103-15
FULLY KILLED AND FINE GRAIN PRACTICE
FREE FROM RADIATION CONTAMINATION
REF#90817ABW

WE CERTIFY THE ABOVE MENTIONED FITTINGS HAVE BEEN MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH THE SPECIFICATIONS SHOWN

C.C. Huang C.L. Ko
Q.C. MANAGER INSPECTOR

BW D0839 REV: 4

柏韓鐵工股份有限公司
高雄縣仁武鄉烏林村仁心路 303 號
BOTH-WELL STEEL FITTINGS CO., LTD.
NO.303, JEN-HSIN ROAD JEN-WU HSIANG
KAOHSIUNG HSIEN, TAIWAN R.O.C.(81460)
TEL: 886-7-371-0497, 371-1536, 372-0260 FAX: 886-7-371-3864 , 371-3882
web site :http://www.bothwell.com.tw e-mail:bothwell@www.bothwell.com.tw or box@mail.bothwell.com.tw

An ISO 9001:2000 Registered Manufacturer

ISO 9001 BUREAU VERITAS Certification N° TW00091Q

ANAB ACCREDITED

# MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN10204/DIN50049/3.1.B

ORIGIN: TAIWAN

CUSTOMER: WEIFANG STEEL CANADA LTD. INVOICE NO: BW089706095 DATE: 12/10/08

CERT NO: 83363-2 ORDER NO: AG0031-LF2 L/C NO: PAGE: 4

| ITEM | BOTH WELL HT.CD. | RAW MATERIAL HEAT NO. | DESCRIPTION | QUANTITY | SPECIFICATION: ASTM A350 -04a ASME SA350 -E04 LF2-Class1 DIMENSION: ASME B16.11-2005 SURFACE: BY VISUAL...GOOD |
|---|---|---|---|---|---|
| 014 | Y050 | X1651 | TEE 3/4" 3000# NPT | 300 PC | |
| 023 | Y050 | X1651 | FULL CPLG 1-1/2" 3000# NPT | 1000 PC | |
| 029 | Y050 | X1651 | HALF CPLG 1-1/2" 3000# NPT | 300 PC | |
| 035 | Y050 | X1651 | CAP 1-1/2" 3000# NPT | 400 PC | |
| 036 | Y050 | X1651 | CAP 2" 3000# NPT | 600 PC | |
| 070 | Y047 | X1653 | 90D ELBOW 2" 3000# S/W | 110 PC | |
| 070 | Y047 | X1653 | 90D ELBOW 2" 3000# S/W | 50 PC | |

CHEMICAL COMPOSITION (%)

| ITEM | BOTH WELL HT.CD | C | Si | Mn | P | S | Cu | Cr | Ni | Mo | V | Cb(Nb) | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Min | | - | 0.150 | 0.600 | - | - | - | - | - | - | - | - | - |
| Max | | 0.300 | 0.300 | 1.350 | 0.035 | 0.040 | 0.400 | 0.300 | 0.400 | 0.120 | 0.080 | 0.020 | - |
| 014 | Y050 | 0.200 | 0.190 | 1.040 | 0.007 | 0.001 | 0.030 | 0.060 | 0.030 | 0.010 | 0.001 | 0.000 | - |
| 023 | Y050 | 0.200 | 0.190 | 1.040 | 0.007 | 0.001 | 0.030 | 0.060 | 0.030 | 0.010 | 0.001 | 0.000 | - |
| 029 | Y050 | 0.200 | 0.190 | 1.040 | 0.007 | 0.001 | 0.030 | 0.060 | 0.030 | 0.010 | 0.001 | 0.000 | - |
| 035 | Y050 | 0.200 | 0.190 | 1.040 | 0.007 | 0.001 | 0.030 | 0.060 | 0.030 | 0.010 | 0.001 | 0.000 | - |
| 036 | Y050 | 0.200 | 0.190 | 1.040 | 0.007 | 0.001 | 0.030 | 0.060 | 0.030 | 0.010 | 0.001 | 0.000 | - |
| 070 | Y047 | 0.200 | 0.220 | 1.050 | 0.012 | 0.001 | 0.040 | 0.190 | 0.040 | 0.020 | 0.010 | 0.000 | - |
| 070 | Y047 | 0.200 | 0.220 | 1.050 | 0.012 | 0.001 | 0.040 | 0.190 | 0.040 | 0.020 | 0.010 | 0.000 | - |

MECHANICAL TEST

| ITEM | BOTH WELL HT.CD | Tensile Strength (KSI) | Yield Strength (KSI) | Elon-Gation (%) | R of A (%) | Hardness (AVG.) (HB) |
|---|---|---|---|---|---|---|
| Min | | 70.0 | 36.0 | 22.0 | 30.0 | - |
| Max | | 95.0 | - | - | - | 197 |
| 014 | Y050 | 79.7 | 60.7 | 34.6 | 76.2 | 151 |
| 023 | Y050 | 79.7 | 60.7 | 34.6 | 76.2 | 151 |
| 029 | Y050 | 79.7 | 60.7 | 34.6 | 76.2 | 151 |
| 035 | Y050 | 79.7 | 60.7 | 34.6 | 76.2 | 151 |
| 036 | Y050 | 79.7 | 60.7 | 34.6 | 76.2 | 151 |
| 070 | Y047 | 78.1 | 58.1 | 36.2 | 80.3 | 144 |
| 070 | Y047 | 78.1 | 58.1 | 36.2 | 80.3 | 144 |

Remark:
CONFORM TO NACE MR0175-2003/MR0103
STEEL MAKING PROCESS : ELECTRIC FURNACE
HEAT TREATED(℃) NORMALIZED:900℃ TEMPERED:620℃
IMPACT VALUE(CHARPY) -50°F(-46.0℃)

| HEAT NO. | HT.CD. | JOULE(J) | | | AVG.(J) |
|---|---|---|---|---|---|
| X1653 | Y047 | 285 | 272 | 257 | 271.333 |
| X1651 | Y050 | 242 | 188 | 175 | 201.667 |

WE CERTIFY THE ABOVE MENTIONED FITTINGS HAVE BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH THE SPECIFICATIONS SHOWN

C.C. Hsieh
Q.C. MANAGER
CHIN CHENG HSIEH

C.C. Huang
INSPECTOR
CHUN CHIEH HUANG

BW-D0839 REV:0

**CapProducts, Ltd.**
25 Winnipeg St
Vanastra, ON N0M 1L0

*Commanding a Higher Standard*sm

# Phoenix * Capitol * Camco
# CapProducts

## Certified Material Test Report

Printed: 8/20/2019
Certified: 12/18/2018

**Customer**
EMCO DISTRIBUTION GROUP
PO BOX 5300 STATION A
LONDON, ON N6A 4N7

**P.O.** 2610174-00
**Tag** 3050060

**Heat No** 174321
**Heat Code** 87AH
**Phoenix Order #** 1481945

**Material** ASTM A333 GR6 2015/ASME SA333 GR6 2015 Edition

**Part Number**
15111512CSA

**Description**
1-1/2X6 XHSML BK STL NIPL A333 GR6 CSA

**Chemical Properties**

| C | Mn | P | S | Si | Cu | Ni | Cr |
|---|---|---|---|---|---|---|---|
| 0.1300 | 1.3200 | 0.0090 | 0.0050 | 0.3100 | 0.0390 | 0.0200 | 0.0600 |

| C Eq. Long |
|---|
| 0.3687 |

| Mo | V | Co | Al | Cb | N | Pb | Sn | Ta | Ti |
|---|---|---|---|---|---|---|---|---|---|
| 0.0100 | 0.0040 | | | 0.0180 | | | | | 0.0020 |

**Additional Chemical Properties**

| B | | | | |
|---|---|---|---|---|
| 0.00030 | | | | |

| Cr + Cu + Ni |
|---|
| 0.1190 |

**Mechanical Properties**

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. or 4D | R of A | HBW | HBW2 |
|---|---|---|---|---|---|
| 72,374 | 55,985 | 37.0% | | 150 | 0 |

**Charpy Minimum Impact - ft/lbs**

| Test 1 | Test 2 | Test 3 | Average | Test Temp. |
|---|---|---|---|---|
| 48 | 41 | 49 | 46.00 | -54 |

* Bend test passed.
We hereby certify that these parts were manufactured, sampled, tested, and inspected in accordance with the product specifications stated and were found to meet the requirements.
We further certify that this material was inspected using independentinspectors conforming to the requirements of EN 10204 3.1. These products meet the requirements of the latest editions of NACE MR0175, NACE MR0103, and ISO 15156. No weld repair has been performed on these products. This material was not exposed to mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession

**Comments:**

Flattening test passed. Ultrasonic test passed.
Charpy V Impact Tested at -54° C. Specimen size - 10 x 3.33 mm
Hot finished, Normalized

**CapProducts, Ltd.**
25 Winnipeg St
Vanastra, ON N0M 1L0

*Commanding a Higher Standard*sm

# Phoenix * Capitol * Camco
## CapProducts

## Certified Material Test Report

Printed: 8/20/2019
Certified: 06/07/2019

**Customer**
EMCO DISTRIBUTION GROUP
PO BOX 5300 STATION A
LONDON, ON N6A 4N7

**P.O.** 2610174-00
**Tag** 3050060

**Heat No** 608622
**Heat Code** 87HU
**Phoenix Order #** 1481945

**Material** ASTM A333 GR6 2015/ASME SA333 GR6 2015 Edition

189553-60056

**Part Number**
15111512CSA

**Description**
1-1/2X6 XHSML BK STL NIPL A333 GR6 CSA

**Chemical Properties**

| C | Mn | P | S | Si | Cu | Ni | Cr |
|---|---|---|---|---|---|---|---|
| 0.1300 | 0.7200 | 0.0140 | 0.0030 | 0.2000 | 0.0900 | 0.0700 | 0.0900 |

| C Eq. Long |
|---|
| 0.2833 |

| Mo | V | Co | Al | Cb | N | Pb | Sn | Ta | Ti |
|---|---|---|---|---|---|---|---|---|---|
| 0.0200 | 0.0030 | | | 0.0140 | | | | | 0.0020 |

**Additional Chemical Properties**

| Boron | | | | |
|---|---|---|---|---|
| 0.00010 | | | | |

| Cr + Cu + Ni |
|---|
| 0.2500 |

**Mechanical Properties**

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. or 4D | R of A | HBW | HBW2 |
|---|---|---|---|---|---|
| 64,107 | 44,672 | 34.0% | | 134 | 0 |

**Charpy Minimum Impact - ft/lbs**

| Test 1 | Test 2 | Test 3 | Average | Test Temp. |
|---|---|---|---|---|
| 44 | 44 | 46 | 44.67 | -55 |

* Hydro test passed. at 3000 psi.

* Bend test passed.
We hereby certify that these parts were manufactured, sampled, tested, and inspected in accordance with the product specifications stated and were found to meet the requirements.
We further certify that this material was inspected using independentinspectors conforming to the requirements of EN 10204 3.1. These products meet the requirements of the latest editions of NACE MR0175, NACE MR0103, and ISO 15156. No weld repair has been performed on these products. This material was not exposed to mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession

**Comments:**

Flattening test passed.
Charpy V Impact Tested at -55° C. Specimen size - 10 x 4 mm.
Normalized

**CapProducts, Ltd.**
25 Winnipeg St
Vanastra, ON N0M 1L0

*Commanding a Higher Standard℠*

# Phoenix * Capitol * Camco
## CapProducts
## Certified Material Test Report

MLTS_6056-18953-1
Heat# 608622, 174321

Printed: 8/20/2019
Certified: 06/07/2019

**Customer**
EMCO DISTRIBUTION GROUP
PO BOX 5300 STATION A
LONDON, ON N6A 4N7

**P.O.** 2610174-00
**Tag** 3050060

**Heat No** 608622
**Heat Code** 87HU
**Phoenix Order #** 1481945

**Material** ASTM A333 GR6 2015/ASME SA333 GR6 2015 Edition

**Part Number**
15111512CSA

**Description**
1-1/2X6 XHSML BK STL NIPL A333 GR6 CSA

**Chemical Properties**

| C | Mn | P | S | Si | Cu | Ni | Cr |
|---|---|---|---|---|---|---|---|
| 0.1300 | 0.7200 | 0.0140 | 0.0030 | 0.2000 | 0.0900 | 0.0700 | 0.0900 |

| C Eq. Long |
|---|
| 0.2833 |

| Mo | V | Co | Al | Cb | N | Pb | Sn | Ta | Ti |
|---|---|---|---|---|---|---|---|---|---|
| 0.0200 | 0.0030 | | | 0.0140 | | | | | 0.0020 |

**Additional Chemical Properties**

| Boron | | | | |
|---|---|---|---|---|
| 0.00010 | | | | |

| Cr + Cu + Ni |
|---|
| 0.2500 |

**Mechanical Properties**

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. or 4D | R of A | HBW | HBW2 |
|---|---|---|---|---|---|
| 64,107 | 44,672 | 34.0% | | 134 | 0 |

**Charpy Minimum Impact - ft/lbs**

| Test 1 | Test 2 | Test 3 | Average | Test Temp. |
|---|---|---|---|---|
| 44 | 44 | 46 | 44.67 | -55 |

* Hydro test passed. at 3000 psi.

* Bend test passed.
We hereby certify that these parts were manufactured, sampled, tested, and inspected in accordance with the product specifications stated and were found to meet the requirements.
We further certify that this material was inspected using independentinspectors conforming to the requirements of EN 10204 3.1. These products meet the requirements of the latest editions of NACE MR0175, NACE MR0103, and ISO 15156. No weld repair has been performed on these products. This material was not exposed to mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession

**Comments:**

Flattening test passed.
Charpy V Impact Tested at -55° C. Specimen size - 10 x 4 mm.
Normalized

**CapProducts, Ltd.**
25 Winnipeg St
Vanastra, ON N0M 1L0

*Commanding a Higher Standard℠*

# Phoenix * Capitol * Camco
## CapProducts

# Certified Material Test Report

Printed: 8/20/2019
Certified: 12/18/2018

**Customer**
EMCO DISTRIBUTION GROUP
PO BOX 5300 STATION A
LONDON, ON N6A 4N7

**P.O.** 2610174-00
**Tag** 3050060

**Heat No** 174321
**Heat Code** 87AH
**Phoenix Order #** 1481945

**Material** ASTM A333 GR6 2015/ASME SA333 GR6 2015 Edition

**Part Number**
15111512CSA

**Description**
1-1/2X6 XHSML BK STL NIPL A333 GR6 CSA

**Chemical Properties**

| C | Mn | P | S | Si | Cu | Ni | Cr |
|---|---|---|---|---|---|---|---|
| 0.1300 | 1.3200 | 0.0090 | 0.0050 | 0.3100 | 0.0390 | 0.0200 | 0.0600 |

| C Eq. Long |
|---|
| 0.3687 |

| Mo | V | Co | Al | Cb | N | Pb | Sn | Ta | Ti |
|---|---|---|---|---|---|---|---|---|---|
| 0.0100 | 0.0040 | | | 0.0180 | | | | | 0.0020 |

**Additional Chemical Properties**

| B | | | | |
|---|---|---|---|---|
| 0.00030 | | | | |

| Cr + Cu + Ni |
|---|
| 0.1190 |

**Mechanical Properties**

| Tensile (PSI) | Yield (PSI) | Elong. % in 2 in. or 4D | R of A | HBW | HBW2 |
|---|---|---|---|---|---|
| 72,374 | 55,985 | 37.0% | | 150 | 0 |

**Charpy Minimum Impact - ft/lbs**

| Test 1 | Test 2 | Test 3 | Average | Test Temp. |
|---|---|---|---|---|
| 48 | 41 | 49 | 46.00 | -54 |

* Bend test passed.
We hereby certify that these parts were manufactured, sampled, tested, and inspected in accordance with the product specifications stated and were found to meet the requirements.
We further certify that this material was inspected using independentinspectors conforming to the requirements of EN 10204 3.1. These products meet the requirements of the latest editions of NACE MR0175, NACE MR0103, and ISO 15156. No weld repair has been performed on these products. This material was not exposed to mercury or any other metal alloy that is liquid at ambient temperatures during processing or while in our possession

**Comments:**

Flattening test passed. Ultrasonic test passed.
Charpy V Impact Tested at -54° C. Specimen size - 10 x 3.33 mm
Hot finished, Normalized

MLTS_6056-18971
Heat# B03459

CCTF CORPORATION

4151 North Service Road, Burlington, ON L7L 4X6 (905) 335-5320

**Date: 9/9/2019**

# Mill Test Reports

**Invoice:** 1600715-00
**PO:** 2610192

**Customer:** 27403-261
A.B.F. MINES/2985080 CANA 261
1310 AVE DAVY
.
ROUYN NORANDA, QC J9Y 0A8

| Line | Heat# | Product | Description |
|---|---|---|---|
| 1 | b03459 | 7585585 | 6 150 RF BLIND FLG A350LF2 |

***Heat codes*** followed by ** have been corrected, change may not show on the packing slip

# CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

**ST&H CORPORATION**
OFFICE - 74, Jwadongsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail :qm@stnhcorp.com

RPS 0160308 / 01

Certified to ISO9001/ ISO14001:2015,PED2014/68/EC by LRQA

**Certificate No.** MJH0290-01/05 **Date :** FEB. 14. 2019
**Customer** CCTF CORPORATION
**Contract No.** 4039095-00
**Spec. For Material** ASTM A105N-18,ASME SA105N-17,ASTM A350 LF2 CL1-18,ASME SA350 LF2 CL1-17,NACE MR0175/ISO 15156-2:2015,NACE MR0103/ISO 17495-1:2016
**Heat Treatment** 930°C NORMALIZED & A.C **Dimensional inspection** ASME B16.5 - 2017

| ITEM / SIZE | | Q'ty | Heat No./ Batch No. | Size of Test Specimen | | Tension Test | | | | | Hardness Test (HB) | | Charpy Impact Test (10X10mm Specimen Size) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | D mm | GL mm | | Y.S MPa | T.S MPa | E.L % | R.A % | | | Indiv. 16J | Ave. 20J | Notch V | Temp. -46°C |
| | | | | 12.5 | 50.0 | Max | | 655 | | | 187 | | Test Result (J) | | | Ave.(J) |
| | | | | | | Min | 250 | 485 | 22.0 | 30.0 | | | | | | |
| 7585585 | 150LBS BL RF 6" | 20 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7585860 | 150LBS BL RF 8" | 10 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7580218 | 150LBS SO RF 8" | 20 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7580202 | 150LBS SO RF 14" | 2 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7586502 | 150LBS TH RF 6" | 5 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7586824 | 150LBS WN RF STD 4" | 50 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7586832 | 150LBS WN RF STD 6" | 30 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7586891 | 150LBS WN RF STD 8" | 20 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7583949 | 300LBS WN RF STD 8" | 10 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |
| 7585321 | 150LBS WN RF STD 10" | 20 | B03459 | 12.5 | 50.0 | | 330 | 520 | 34 | 76 | 150 | 156 | 80 | 75 | 86 | 80 |

| Heat No./ Batch No. | | Chemical Composition (%) | | | | | | | | | | | | | | | | | NDE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | Nb | | | | | | CE | UT | MT | PT |
| | Max | 0.300 | 0.300 | 1.350 | 0.035 | 0.040 | 0.400 | 0.300 | 0.120 | 0.400 | 0.080 | 0.020 | | | | | | | | | |
| | Min | | 0.150 | 0.600 | | | | | | | | | | | | | | | | | |
| | H | 0.163 | 0.226 | 1.230 | 0.012 | 0.002 | 0.057 | 0.138 | 0.017 | 0.147 | 0.001 | 0.006 | | | | | | 0.412 | | | |
| B03459 | P | 0.162 | 0.224 | 1.240 | 0.011 | 0.002 | 0.054 | 0.136 | 0.014 | 0.138 | 0.001 | 0.001 | | | | | | 0.411 | | | |
| | | | | | | | | | | BLANK | | | | | | | | | | | |

**REMARK** * H : Heat Analysis P : Product Analysis

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

ST-801-14-02

Witnessed by / H. J. LEE

Manager of Q.A Dept. / JAY KIM
ST&H CORPORATION

# 6

# Material Test Report

06/17/19

Cert No: 1087586

CAMERON

NEWCO® | OIC® | DOUGLAS CHERO™

13127 Trinity Dr., Stafford, TX 77477
Tel: 281-302-4900 Fax: 281-302-4801

Cameron Newco is a 9001 certified registered company
CRN: OC7998.5C - EN 10204-3.1

Item No: B3080030F*LCCW27B*****GA
Size/Type: 8" / Swing Check
Quantity: 1
Country of Origin: China
FigNo: 33F--LCC4/2-NC

**Inspection**
Dimension: Passed
Visual: Passed

Valve Materials meet the requirements for NACE MR0103 and NACE MR0175

**Pressure Test Result**

| Item | Test Pressure (Mpa) | Test Pressure (PSI) | Duration (sec) | Test Result |
|---|---|---|---|---|
| Shell | 7.757 | 1125 | 120 | Passed |
| Backseat | - | - | - | |
| Seat Hydro | 5.688 | 825 | 120 | Passed |
| Seat Air | - | - | - | |

Standard: API 598 / ASME B16.34

Customer: EMCO
Customer Number: 32043
Customer PO: 2610091-00
Cameron SO: QRC SO# 1007020
Project Name:
Valve Serial No:
Description: 300# RF A352-LCC (TRIM 12) BC SWING CHECK
NACE
Customer Tag No:

MLTS_6056-18734
Cert# 1087586

## Part: Body Type 3.1 — Material Code: A352 LCC — Heat No: N9183W

Heat Treatment: QUENCHING+TEMPERING
Notes:

**Chem Comp (%)**

| Spec: | C | Cr | Cu | Mn | Mo | Ni | P | S | Si | V |
|---|---|---|---|---|---|---|---|---|---|---|
| Min: | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Max: | 0.25 | 0.50 | 0.30 | 1.20 | 0.20 | 0.50 | 0.040 | 0.05 | 0.60 | 0.03 |
| Val: | 0.180 | 0.040 | 0.018 | 1.040 | 0.002 | 0.014 | 0.021 | 0.010 | 0.520 | 0.004 |

**Physical Props**

| Tensile KSI | Yield KSI | Elong % | Reduct % | Hard(HB) |
|---|---|---|---|---|
| 70.0 | 39.9 | 22.0 | 35.0 | 100.0 |
| 95.0 | 999.9 | 100.0 | 100.0 | 225.0 |
| 79.0 | 54.4 | 32.0 | 66.0 | 169.0 |

**Impact Tests @-50 deg F** (lb/ft)
# 1: 140
# 2: 18
# 3: 20
Avg: 59

## Part: Bonnet/Cap Type 3.1 — Material Code: A350 LF2 — Heat No: LF2-B025

Heat Treatment: QUENCHING+TEMPERING
Notes:

**Chem Comp (%)**

| Spec: | C | Cr | Cu | Mn | Mo | Nb | Ni | P | S | Si | V |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Min: | 0.00 | 0.00 | 0.00 | 0.60 | 0.00 | 0.00 | 0.00 | 0.001 | 0.00 | 0.15 | 0.00 |
| Max: | 0.30 | 0.30 | 0.40 | 1.35 | 0.12 | 0.02 | 0.40 | 0.035 | 0.04 | 0.30 | 0.08 |
| Val: | 0.220 | 0.200 | 0.210 | 0.900 | 0.070 | 0.000 | 0.220 | 0.010 | 0.013 | 0.210 | 0.010 |

**Physical Props**

| Tensile KSI | Yield KSI | Elong % | Reduct % | Hard(HB) |
|---|---|---|---|---|
| 70.0 | 36.0 | 22.0 | 30.0 | 1.0 |
| 95.0 | 999.9 | 100.0 | 100.0 | 197.0 |
| 81.2 | 38.4 | 35.0 | 50.0 | 170.0 |

**Impact Tests @-50 deg F** (lb/ft)
# 1: 36
# 2: 25
# 3: 47
Avg: 36

Comments: Cameron declares that the parts above are in accordance with applicable material specification and purchase order requirements.
No Asbestos is contained in this product. Packing: | Gasket: Graphite Spiral Wound (316)
Valves covered in this certificate are in full compliance with purchase order requirements and specifications.

MTR created by: DR

Signature 06/17/19

# Material Test Report

06/17/19

Cert No: 1087587

CAMERON

NEWCO® | OIC® | DOUGLAS CHERO™

13127 Trinity Dr., Stafford, TX 77477
Tel: 281-302-4900 Fax: 281-302-4801

Cameron Newco is a 9001 certified registered company
CRN: OC7998.5C - EN 10204-3.1

MLTS_6056-18734
Cert# 1087587

Customer: EMCO
Customer Number: 32043
Customer PO: 2610091-00
Cameron SO: QRC SO# 1007020
Project Name:
Valve Serial No:
Description: 300# RF A352-LCC (TRIM 12) BC SWING CHECK NACE
Customer Tag No:

Item No: B3080030F*LCCW27B*****GA
Size/Type: 8" / Swing Check
Quantity: 1
Country of Origin: China
FigNo: 33F--LCC4/2-NC

**Inspection**
Dimension: Passed
Visual: Passed

Valve Materials meet the requirements for NACE MR0103 and NACE MR0175

**Pressure Test Result**

| Item | Test Pressure (Mpa) | Test Pressure (PSI) | Duration (sec) | Test Result |
|---|---|---|---|---|
| Shell | 7.757 | 1125 | 120 | Passed |
| Backseat | - | - | - | |
| Seat Hydro | 5.688 | 825 | 120 | Passed |
| Seat Air | - | - | - | |

Standard: API 598 / ASME B16.34

## Part: Body Type 3.1 — Material Code: A352 LCC — Heat No: N9158W

Heat Treatment: QUENCHING+TEMPERING

Notes:

| Chem Comp (%) | C | Cr | Cu | Mn | Mo | Ni | P | S | Si | V |
|---|---|---|---|---|---|---|---|---|---|---|
| Spec: Min: | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Spec: Max: | 0.25 | 0.50 | 0.30 | 1.20 | 0.20 | 0.50 | 0.040 | 0.05 | 0.60 | 0.03 |
| Val: | 0.190 | 0.025 | 0.015 | 1.090 | 0.004 | 0.014 | 0.023 | 0.009 | 0.550 | 0.005 |

| Physical Props | Tensile KSI | Yield KSI | Elong % | Reduct % | Hard(HB) |
|---|---|---|---|---|---|
| | 70.0 | 39.9 | 22.0 | 35.0 | 100.0 |
| | 95.0 | 999.9 | 100.0 | 100.0 | 225.0 |
| | 85.6 | 59.5 | 33.0 | 66.0 | 180.0 |

Impact Tests @-50 deg F (lb/ft): # 1: 30, # 2: 20, # 3: 23, Avg: 25

## Part: Bonnet/Cap Type 3.1 — Material Code: A350 LF2 — Heat No: LF2-B025

Heat Treatment: QUENCHING+TEMPERING

Notes:

| Chem Comp (%) | C | Cr | Cu | Mn | Mo | Nb | Ni | P | S | Si | V |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Spec: Min: | 0.00 | 0.00 | 0.00 | 0.60 | 0.00 | 0.00 | 0.00 | 0.001 | 0.00 | 0.15 | 0.00 |
| Spec: Max: | 0.30 | 0.30 | 0.40 | 1.35 | 0.12 | 0.02 | 0.40 | 0.035 | 0.04 | 0.30 | 0.08 |
| Val: | 0.220 | 0.200 | 0.210 | 0.900 | 0.070 | 0.000 | 0.220 | 0.010 | 0.013 | 0.210 | 0.010 |

| Physical Props | Tensile KSI | Yield KSI | Elong % | Reduct % | Hard(HB) |
|---|---|---|---|---|---|
| | 70.0 | 36.0 | 22.0 | 30.0 | 1.0 |
| | 95.0 | 999.9 | 100.0 | 100.0 | 197.0 |
| | 81.2 | 38.4 | 35.0 | 50.0 | 170.0 |

Impact Tests @-50 deg F (lb/ft): # 1: 36, # 2: 25, # 3: 47, Avg: 36

Comments: Cameron declares that the parts above are in accordance with applicable material specification and purchase order requirements.
No Asbestos is contained in this product. Packing: | Gasket: Graphite Spiral Wound (316)
Valves covered in this certificate are in full compliance with purchase order requirements and specifications.

MTR created by: DR

Signature 06/17/19

MLTS_6056-18734
Cert# GATE BERIC

# HEAT / SERIAL NUMBER RECORD

M. A. Stewart & Sons Ltd.
VALVES AND FITTINGS

(FORM 4.15.4A)

COMPANY; Erco / Equipment - KN (For ABF mines)
BRANCH; Rouyn - Noranda, QC
ATTN; Richard Knight
PO#; 26/0090 - 00

PAGE; 1 OF 1
MAS SALES REGISTER; 1436324
DATE; June 10/19

| ITEM | QTY | SIZE | VALVE NO. | BODY | BONNET#/CAP# | ~~ACTUATOR# SOLENOID# INDICATOR#~~ |
|---|---|---|---|---|---|---|
| 1 | 3 | 8" | Beric | HCNNC | HCNNC | DF-01-105-180206-12 |
| 2 | | | 103-RF-AH12-H-N | LDRAC | LDRAC | DF-01-306-180901-12 |
| 3 | | | | LDRAC | LDRAC | DF-01-305-180901-12. |
| 7 | | | | | | |
| 8 | 1 | 8" | Beric | LDRAC | LDRAC | DF-01-250-180901-12 |
| 9 | | | 101-RF-AH12-H-N | | | |
| 10 | | | | | | |
| 11 | | | | | | |
| 12 | 2 | 6" | Beric | GDN71 | GDN71 | DF-01-216-190116-12 |
| 13 | | | 101-RF-AH12-H-N | LDRAC | LDRAC | DF-01-247-180901-12 |
| 14 | | | | | | |
| 15 | | | | | | |
| 16 | 1 | 6" | Beric | GDN71 | GDN71 | DF-01-228-190116-12 |
| 17 | | | 301-RF-FH12-X-N | | | |
| 18 | | | | | | |
| 19 | | | | | | |
| 20 | | | | | | |
| 21 | | | | | | |
| 22 | | | | | | |
| 23 | | | | | | |
| 24 | | | | | | |
| 25 | | | | | | |

FAX STAMP

FORM 4.3.2C REV-2-15-08

# MATERIAL TEST REPORT

(CHEMICAL, PHYSICAL & HYDROSTATIC)

Beric-Davis Companies International, Ltd.
6059 South Loop East
Houston, TX 77087
Phone: 713 673-2073
Fax: 713 673-4641

TAG NO.: 103-08-RF-AH12-H-N

| SIZE : | NPS 8 | Class Rating: | 300 | Q'ty : 1 Pcs |
|---|---|---|---|---|

DATE : SEP.1.2018
ARTICLE : 8 GATE VALVE RF 300 TRIM 12
FIGURE. NO. : 103-08-RF-AH12-H-N
SERIAL NO. : DF-01-305-180901-12

| PARTS NAME | | Body (BD) | Bonnet (BN) | Wedge/Disc (WD/DS) | Body Seat Ring | Stem |
|---|---|---|---|---|---|---|
| MATERIAL | ASTM | A352 LCC | A352 LCC | A352 LCC+316 | A350 LF2+HF | A182 F316 |

| DIMENSION INSPECTION ( mm ) | | | | | | | | PRESSURE TEST (ASME B16.34 & API 598) | | | VISUAL TEST |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INSPECTION | Face to Face (End to End) | Flange Diameter | Bolt Circle | Dia. Of Raised Face | Flange Thickness | No. of Bolt Hole | Bolt Hole Diameter | SHELL ( PSIG ) | SEAT(Air) ( PSIG ) | BACK SEAT ( PSIG ) | VISUAL |
| **STANDARD** | **419±1.6** | **381** | **330** | **270** | **42** | **12** | **25** | **1125** | **80** | **815** | **MSS-SP-55** |
| RESULT | ※ W.T | W.T | W.T | W.T | W.T | W.T | W.T | GOOD | GOOD | GOOD | GOOD |

※ W.T : Within Tolerance

| SERIAL NO. BATCH | PARTS | HEAT NUMBER | CHEMICAL COMPOSITION (%) (ASTM STD.) | | | | | | | | | | | | | TENSION TEST(MIN.) (ASTM) | | | | HARDNESS | CHARPY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | | | | T.S ( MPa ) | Y.P ( MPa ) | EL. % | R.A % | (HB) | |
| STANDARD | A352 LCC | Min. | | | | | | | | | | | | | | 485 | 275 | 22.0 | 35.0 | 237 | Min≥16J |
| | | Max. | 0.250 | 0.600 | 1.200 | 0.040 | 0.045 | 0.500 | 0.500 | 0.200 | 0.300 | 0.030 | | | | 655 | | | | | Avg≥20J |
| DF-01-305-180901-12 | BODY | LDRAC | 0.210 | 0.420 | 0.960 | 0.006 | 0.013 | 0.015 | 0.060 | 0.010 | 0.010 | 0.001 | | | | 563 | 352 | 29.0 | 53.0 | 160 | 46-38-32 |
| | BONNET | LDRAC | 0.210 | 0.420 | 0.960 | 0.006 | 0.013 | 0.015 | 0.060 | 0.010 | 0.010 | 0.001 | | | | 563 | 352 | 29.0 | 53.0 | 160 | 46-38-32 |
| | WEDGE/DISC | LDRAC | 0.210 | 0.420 | 0.960 | 0.006 | 0.013 | 0.015 | 0.060 | 0.010 | 0.010 | 0.001 | | | | 563 | 352 | 29.0 | 53.0 | 160 | 46-38-32 |

BLANK

REMARKS : IN ACCORDANCE WITH EN 10204.3.1
HEAT TREATMENT; LCC QUENCHED; 930℃ X 3HR(W.C)+TEMPERED 700℃ X 3HR(A.C)
TO NACE MR0103

Manager, Q.A Department *Jane*

Witness Inspector *ALEX*

Valve design and construction is in accordance with API 600, ASME B16.34
Products supplied are in compliance with the requirements of the purchase order

# MATERIAL TEST REPORT

(CHEMICAL, PHYSICAL & HYDROSTATIC)

Beric-Davis Companies International, Ltd.
6059 South Loop East
Houston, TX 77087
Phone: 713 673-2073
Fax: 713 673-4641

TAG NO.: 103-08-RF-AH12-H-N

| SIZE : | NPS 8 | Class Rating: | 300 | Q'ty : 1 Pcs |
|---|---|---|---|---|

DATE : SEP.1.2018
ARTICLE : 8 GATE VALVE RF 300 TRIM 12
FIGURE. NO. : 103-08-RF-AH12-H-N
SERIAL NO. : DF-01-306-180901-12

| PARTS NAME | | Body (BD) | Bonnet (BN) | Wedge/Disc (WD/DS) | Body Seat Ring | Stem |
|---|---|---|---|---|---|---|
| MATERIAL | ASTM | A352 LCC | A352 LCC | A352 LCC+316 | A350 LF2+HF | A182 F316 |

| DIMENSION INSPECTION | | | | | ( mm ) | | | PRESSURE TEST (ASME B16.34 & API 598) | | | VISUAL TEST |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INSPECTION | Face to Face (End to End) | Flange Diameter | Bolt Circle | Dia. Of Raised Face | Flange Thickness | No. of Bolt Hole | Bolt Hole Diameter | SHELL ( PSIG ) | SEAT(Air) ( PSIG ) | BACK SEAT ( PSIG ) | VISUAL |
| **STANDARD** | **419±1.6** | **381** | **330** | **270** | **42** | **12** | **25** | **1125** | **80** | **815** | **MSS-SP-55** |
| RESULT | ※ W.T | W.T | W.T | W.T | W.T | W.T | W.T | GOOD | GOOD | GOOD | GOOD |

※ W.T : Within Tolerance

| SERIAL NO. BATCH | PARTS | HEAT NUMBER | CHEMICAL COMPOSITION (%) (ASTM STD.) | | | | | | | | | | | | | TENSION TEST(MIN.) (ASTM) | | | | HARDNESS | CHARPY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | | | | T.S ( MPa ) | Y.P ( MPa ) | EL. % | R.A % | (HB) | |
| STANDARD | A352 LCC | Min. | | | | | | | | | | | | | | 485 | 275 | 22.0 | 35.0 | 237 | Min≥16J |
| | | Max. | 0.250 | 0.600 | 1.200 | 0.040 | 0.045 | 0.500 | 0.500 | 0.200 | 0.300 | 0.030 | | | | 655 | | | | | Avg≥20J |
| DF-01-306-180901-12 | BODY | LDRAC | 0.210 | 0.420 | 0.960 | 0.006 | 0.013 | 0.015 | 0.060 | 0.010 | 0.010 | 0.001 | | | | 563 | 352 | 29.0 | 53.0 | 160 | 46-38-32 |
| | BONNET | LDRAC | 0.210 | 0.420 | 0.960 | 0.006 | 0.013 | 0.015 | 0.060 | 0.010 | 0.010 | 0.001 | | | | 563 | 352 | 29.0 | 53.0 | 160 | 46-38-32 |
| | WEDGE/DISC | LDRAC | 0.210 | 0.420 | 0.960 | 0.006 | 0.013 | 0.015 | 0.060 | 0.010 | 0.010 | 0.001 | | | | 563 | 352 | 29.0 | 53.0 | 160 | 46-38-32 |

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REMARKS : IN ACCORDANCE WITH EN 10204.3.1
HEAT TREATMENT; LCC QUENCHED; 930℃ X 3HR(W.C)+TEMPERED 700℃ X 3HR(A.C)
TO NACE MR0103

Manager, Q.A Department *Jane*

Witness Inspector *ALEX*

Valve design and construction is in accordance with API 600, ASME B16.34
Products supplied are in compliance with the requirements of the purchase order

# MATERIAL TEST REPORT

(CHEMICAL, PHYSICAL & HYDROSTATIC)

Beric-Davis Companies International, Ltd.
6059 South Loop East
Houston, TX 77087
Phone: 713 673-2073
Fax: 713 673-4641

**TAG NO.: 103-08-RF-AH12-H-N**

| SIZE : | NPS 8 | Class Rating: | 300 | Q'ty : 1 Pcs |
|---|---|---|---|---|

DATE : FEB.6.2018
ARTICLE : 8 GATE VALVE RF 300 TRIM 12
FIGURE. NO. : 103-08-RF-AH12-H-N

| PARTS NAME | | Body (BD) | Bonnet (BN) | Wedge/Disc (WD/DS) | Body Seat Ring | Stem |
|---|---|---|---|---|---|---|
| MATERIAL | ASTM | A352 LCC | A352 LCC | A352 LCC+316 | LF2+HF | F316 |

| DIMENSION INSPECTION ( mm ) | | | | | | | | PRESSURE TEST (ASME B16.34 & API 598) | | | VISUAL TEST |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INSPECTION | Face to Face (End to End) | Flange Diameter | Bolt Circle | Dia. Of Raised Face | Flange Thickness | No. of Bolt Hole | Bolt Hole Diameter | SHELL ( PSIG ) | SEAT(AIR) ( PSIG ) | BACK SEAT ( PSIG ) | VISUAL |
| **STANDARD** | **419±1.6** | **381** | **330** | **270** | **42** | **12** | **25** | **1125** | **80** | **825** | **MSS-SP-55** |
| RESULT | ※ W.T | W.T | W.T | W.T | W.T | W.T | W.T | GOOD | GOOD | GOOD | GOOD |

※ W.T : Within Tolerance

| SERIAL NO. BATCH | PARTS | HEAT NUMBER | CHEMICAL COMPOSITION (%) (ASTM STD.) | | | | | | | | | | | | | TENSION TEST(MIN.) (ASTM) | | | | HARDNESS | CHARPY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | | | | T.S ( MPa ) | Y.P ( MPa ) | EL. % | R.A % | (HB) | |
| STANDARD | A352 LCC | Min. | | | | | | | | | | | | | | 485 | 275 | 22.0 | 35.0 | 237 | Min≥16J |
| | | Max. | 0.250 | 0.600 | 1.200 | 0.040 | 0.045 | 0.500 | 0.500 | 0.200 | | 0.030 | | | | 655 | | | | | Avg≥20J |
| DF-01-105-180206-12 | BODY | HCNNC | 0.181 | 0.399 | 0.999 | 0.021 | 0.011 | 0.005 | 0.047 | 0.014 | 0.021 | 0.007 | | | | 612 | 435 | 31.0 | 61.0 | 172 | 36-40-39 |
| | BONNET | HCNNC | 0.181 | 0.399 | 0.999 | 0.021 | 0.011 | 0.005 | 0.047 | 0.014 | 0.021 | 0.007 | | | | 612 | 435 | 31.0 | 61.0 | 172 | 36-40-39 |
| | WEDGE/DISC | HCNNC | 0.181 | 0.399 | 0.999 | 0.021 | 0.011 | 0.005 | 0.047 | 0.014 | 0.021 | 0.007 | | | | 612 | 435 | 31.0 | 61.0 | 172 | 36-40-39 |

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REMARKS : IN ACCORDANCE WITH EN 10204.3.1
HEAT TREATMENT; LCC QUENCHED; 930℃ X 3HR(W.C)+TEMPERED 700℃ X 3HR(A.C)
TO NACE MR0103

Manager, Q.A Department *Jane*

Witness Inspector *ALEX*

Valve design and construction is in accordance with API 600, ASME B16.34
Products supplied are in compliance with the requirements of the purchase order

# MATERIAL TEST REPORT

(CHEMICAL, PHYSICAL & HYDROSTATIC)

Beric-Davis Companies International, Ltd.
6059 South Loop East
Houston, TX 77087
Phone: 713 673-2073
Fax: 713 673-4641

TAG NO.: 101-06-RF-AH12-H-N

| SIZE : | NPS 6 | Class Rating: | 150 | Q'ty : 1 Pcs |
|---|---|---|---|---|

DATE : SEP.1.2018
ARTICLE : 6 GATE VALVE RF 150 TRIM 12
FIGURE. NO. : 101-06-RF-AH12-H-N
SERIAL NO. : DF-01-247-180901-12

| PARTS NAME | | Body (BD) | Bonnet (BN) | Wedge/Disc (WD/DS) | Body Seat Ring | Stem |
|---|---|---|---|---|---|---|
| MATERIAL | ASTM | A352 LCC | A352 LCC | A352 LCC+316 | A350 LF2+HF | A182 F316 |

| DIMENSION INSPECTION ( mm ) | | | | | | | | PRESSURE TEST (ASME B16.34 & API 598) | | | VISUAL TEST |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INSPECTION | Face to Face (End to End) | Flange Diameter | Bolt Circle | Dia. Of Raised Face | Flange Thickness | No. of Bolt Hole | Bolt Hole Diameter | SHELL ( PSIG ) | SEAT(Air) ( PSIG ) | BACK SEAT ( PSIG ) | VISUAL |
| **STANDARD** | **267±1.6** | **279** | **241.5** | **216** | **26** | **8** | **22** | **450** | **80** | **315** | **MSS-SP-55** |
| RESULT | ※ W.T | W.T | W.T | W.T | W.T | W.T | W.T | GOOD | GOOD | GOOD | GOOD |

※ W.T : Within Tolerance

| SERIAL NO. BATCH | PARTS | HEAT NUMBER | CHEMICAL COMPOSITION (%) (ASTM STD.) | | | | | | | | | | | | | TENSION TEST(MIN.) (ASTM) | | | | HARDNESS | CHARPY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | | | | T.S ( MPa ) | Y.P ( MPa ) | EL. % | R.A % | (HB) | |
| STANDARD | A352 LCC | Min. | | | | | | | | | | | | | | 485 | 275 | 22.0 | 35.0 | 237 | Min≥16J |
| | | Max. | 0.250 | 0.600 | 1.200 | 0.040 | 0.045 | 0.500 | 0.500 | 0.200 | 0.300 | 0.030 | | | | 655 | | | | | Avg≥20J |
| DF-01-247-180901-12 | BODY | LDRAC | 0.210 | 0.420 | 0.960 | 0.006 | 0.013 | 0.015 | 0.060 | 0.010 | 0.010 | 0.001 | | | | 563 | 352 | 29.0 | 53.0 | 160 | 46-38-32 |
| | BONNET | LDRAC | 0.210 | 0.420 | 0.960 | 0.006 | 0.013 | 0.015 | 0.060 | 0.010 | 0.010 | 0.001 | | | | 563 | 352 | 29.0 | 53.0 | 160 | 46-38-32 |
| | WEDGE/DISC | LDRAC | 0.210 | 0.420 | 0.960 | 0.006 | 0.013 | 0.015 | 0.060 | 0.010 | 0.010 | 0.001 | | | | 563 | 352 | 29.0 | 53.0 | 160 | 46-38-32 |

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REMARKS : IN ACCORDANCE WITH EN 10204.3.1
HEAT TREATMENT; LCC QUENCHED; 930℃ X 3HR(W.C)+TEMPERED 700℃ X 3HR(A.C)
TO NACE MR0103

Manager, Q.A Department *Jane*

Witness Inspector *ALEX*

Valve design and construction is in accordance with API 600, ASME B16.34
Products supplied are in compliance with the requirements of the purchase order

# MATERIAL TEST REPORT

(CHEMICAL, PHYSICAL & HYDROSTATIC)

Beric-Davis Companies International, Ltd.
6059 South Loop East
Houston, TX 77087
Phone: 713 673-2073
Fax: 713 673-4641

TAG NO.: 101-06-RF-AH12-H-N

| SIZE : | NPS 6 | Class Rating: | 150 | Q'ty : 1 Pcs |
|---|---|---|---|---|

DATE : JAN.16.2019
ARTICLE : 6 GATE VALVE RF 150 TRIM 12
FIGURE. NO. : 101-06-RF-AH12-H-N
SERIAL NO. : DF-01-216-190116-12

| PARTS NAME | | Body (BD) | Bonnet (BN) | Wedge/Disc (WD/DS) | Body Seat Ring | Stem |
|---|---|---|---|---|---|---|
| MATERIAL | ASTM | A352 LCC | A352 LCC | A352 LCC+316 | A350 LF2+HF | A182 F316 |

| DIMENSION INSPECTION ( mm ) | | | | | | | | PRESSURE TEST (ASME B16.34 & API 598) | | | VISUAL TEST |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INSPECTION | Face to Face (End to End) | Flange Diameter | Bolt Circle | Dia. Of Raised Face | Flange Thickness | No. of Bolt Hole | Bolt Hole Diameter | SHELL ( PSIG ) | SEAT(Air) ( PSIG ) | BACK SEAT ( PSIG ) | VISUAL |
| **STANDARD** | **267±1.6** | **279** | **241.5** | **216** | **26** | **8** | **22** | **450** | **80** | **320** | **MSS-SP-55** |
| RESULT | ※ W.T | W.T | W.T | W.T | W.T | W.T | W.T | GOOD | GOOD | GOOD | GOOD |

※ W.T : Within Tolerance

| SERIAL NO. BATCH | PARTS | HEAT NUMBER | CHEMICAL COMPOSITION (%) (ASTM STD.) | | | | | | | | | | | | | TENSION TEST(MIN.) (ASTM) | | | | HARDNESS | CHARPY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | | | | T.S ( MPa ) | Y.P ( MPa ) | EL. % | R.A % | (HB) | |
| STANDARD | A352 LCC | Min. | 0.250 | 0.600 | 1.200 | 0.040 | 0.045 | 0.500 | 0.500 | 0.200 | 0.300 | 0.030 | | | | 485 | 275 | 22.0 | 35.0 | 237 | Min≥16J |
| | | Max. | | | | | | | | | | | | | | 655 | | | | | Avg≥20J |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| DF-01-216-190116-12 | BODY | GDN71 | 0.200 | 0.480 | 1.140 | 0.027 | 0.014 | 0.015 | 0.103 | 0.028 | 0.028 | 0.002 | | | | 534 | 348 | 32.0 | 55.0 | 151 | 33-37-40 |
| | BONNET | GDN71 | 0.200 | 0.480 | 1.140 | 0.027 | 0.014 | 0.015 | 0.103 | 0.028 | 0.028 | 0.002 | | | | 534 | 348 | 32.0 | 55.0 | 151 | 33-37-40 |
| | WEDGE/DISC | GDN71 | 0.200 | 0.480 | 1.140 | 0.027 | 0.014 | 0.015 | 0.103 | 0.028 | 0.028 | 0.002 | | | | 534 | 348 | 32.0 | 55.0 | 151 | 33-37-40 |

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REMARKS : IN ACCORDANCE WITH EN 10204.3.1
HEAT TREATMENT; LCC QUENCHED; 930℃ X 3HR(W.C)+TEMPERED 700℃ X 3HR(A.C)
TO NACE MR0103

Manager, Q.A Department *Jane*

Witness Inspector *ALEX*

Valve design and construction is in accordance with API 600, ASME B16.34
Products supplied are in compliance with the requirements of the purchase order

# MATERIAL TEST REPORT

(CHEMICAL, PHYSICAL & HYDROSTATIC)

Beric-Davis Companies International, Ltd.
6059 South Loop East
Houston, TX 77087
Phone: 713 673-2073
Fax: 713 673-4641

TAG NO.: 101-08-RF-AH12-H-N

| SIZE : | NPS 8 | Class Rating: | 150 | Q'ty : 1 Pcs |
|---|---|---|---|---|

DATE : SEP.1.2018
ARTICLE : 8 GATE VALVE RF 150 TRIM 12
FIGURE. NO. : 101-08-RF-AH12-H-N
SERIAL NO. : DF-01-250-180901-12

| PARTS NAME | | Body (BD) | Bonnet (BN) | Wedge/Disc (WD/DS) | Body Seat Ring | Stem |
|---|---|---|---|---|---|---|
| MATERIAL | ASTM | A352 LCC | A352 LCC | A352 LCC+316 | A350 LF2+HF | A182 F316 |

| DIMENSION INSPECTION ( mm ) | | | | | | | | PRESSURE TEST (ASME B16.34 & API 598) | | | VISUAL TEST |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INSPECTION | Face to Face (End to End) | Flange Diameter | Bolt Circle | Dia. Of Raised Face | Flange Thickness | No. of Bolt Hole | Bolt Hole Diameter | SHELL ( PSIG ) | SEAT(Air) ( PSIG ) | BACK SEAT ( PSIG ) | VISUAL |
| **STANDARD** | **292±1.6** | **343** | **298.5** | **270** | **29** | **8** | **22** | **450** | **80** | **315** | **MSS-SP-55** |
| RESULT | ※ W.T | W.T | W.T | W.T | W.T | W.T | W.T | GOOD | GOOD | GOOD | GOOD |

※ W.T : Within Tolerance

| SERIAL NO. BATCH | PARTS | HEAT NUMBER | CHEMICAL COMPOSITION (%) (ASTM STD.) | | | | | | | | | | | | | TENSION TEST(MIN.) (ASTM) | | | | HARDNESS | CHARPY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | | | | T.S ( MPa ) | Y.P ( MPa ) | EL. % | R.A % | (HB) | |
| STANDARD | A352 LCC | Min. | | | | | | | | | | | | | | 485 | 275 | 22.0 | 35.0 | 237 | Min≥16J |
| | | Max. | 0.250 | 0.600 | 1.200 | 0.040 | 0.045 | 0.500 | 0.500 | 0.200 | 0.300 | 0.030 | | | | 655 | | | | | Avg≥20J |
| DF-01-250-180901-12 | BODY | LDRAC | 0.210 | 0.420 | 0.960 | 0.006 | 0.013 | 0.015 | 0.060 | 0.010 | 0.010 | 0.001 | | | | 563 | 352 | 29.0 | 53.0 | 160 | 46-38-32 |
| | BONNET | LDRAC | 0.210 | 0.420 | 0.960 | 0.006 | 0.013 | 0.015 | 0.060 | 0.010 | 0.010 | 0.001 | | | | 563 | 352 | 29.0 | 53.0 | 160 | 46-38-32 |
| | WEDGE/DISC | LDRAC | 0.210 | 0.420 | 0.960 | 0.006 | 0.013 | 0.015 | 0.060 | 0.010 | 0.010 | 0.001 | | | | 563 | 352 | 29.0 | 53.0 | 160 | 46-38-32 |

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REMARKS : IN ACCORDANCE WITH EN 10204.3.1
HEAT TREATMENT; LCC QUENCHED; 930℃ X 3HR(W.C)+TEMPERED 700℃ X 3HR(A.C)
TO NACE MR0103

Manager, Q.A Department *Jane*

Witness Inspector *ALEX*

Valve design and construction is in accordance with API 600, ASME B16.34
Products supplied are in compliance with the requirements of the purchase order

Beric-Davis Companies International, Ltd.
6059 South Loop East
Houston, TX 77087
Phone: 713 673-2073
Fax: 713 673-4641

# MATERIAL TEST REPORT

(CHEMICAL, PHYSICAL & HYDROSTATIC)

DATE : JAN.16.2019
ARTICLE : 6 CHECK VALVE RF 150 TRIM 12
FIGURE. NO. : 301-06-RF-FH12-X-N
SERIAL NO. : DF-01-228-190116-12

**TAG NO.: 301-06-RF-FH12-X-N**

| SIZE : | NPS 6 | Class Rating: | 150 | Q'ty : 1 Pcs |
|---|---|---|---|---|

| PARTS NAME | | Body (BD) | Bonnet (BN) | Wedge/Disc (WD/DS) | Body Seat Ring | Pin |
|---|---|---|---|---|---|---|
| MATERIAL | ASTM | A352 LCC | A352 LCC | A350 LF2+316 | A350 LF2+HF | A182 F316 |

| DIMENSION INSPECTION ( mm ) | | | | | | | | PRESSURE TEST (ASME B16.34 & API 598) | | | VISUAL TEST |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INSPECTION | Face to Face (End to End) | Flange Diameter | Bolt Circle | Dia. Of Raised Face | Flange Thickness | No. of Bolt Hole | Bolt Hole Diameter | SHELL ( PSIG ) | SEAT(Hydro) ( PSIG ) | BACK SEAT ( PSIG ) | VISUAL |
| **STANDARD** | **356±1.6** | **279** | **241.5** | **216** | **26** | **8** | **22** | **450** | **320** | **N/A** | **MSS-SP-55** |
| RESULT | ※ W.T | W.T | W.T | W.T | W.T | W.T | W.T | GOOD | GOOD | N/A | GOOD |

※ W.T : Within Tolerance

| SERIAL NO. BATCH | PARTS | HEAT NUMBER | CHEMICAL COMPOSITION (%) (ASTM STD.) | | | | | | | | | | TENSION TEST(MIN.) (ASTM) | | | | HARDNESS | CHARPY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | C | Si | Mn | P | S | Ni | Cr | Mo | Cu | V | T.S ( MPa ) | Y.P ( MPa ) | EL % | R.A % | (HB) | |
| STANDARD | A352 LCC | Min. | | | | | | | | | | | 485 | 275 | 22.0 | 35.0 | 237 | Min≥16J |
| | | Max. | 0.250 | 0.600 | 1.200 | 0.040 | 0.045 | 0.500 | 0.500 | 0.200 | 0.300 | 0.030 | 655 | | | | | Avg≥20J |
| | LF2 | Min. | | 0.15 | 0.60 | | | | | | | | 485 | 250 | 22.0 | 30.0 | | Min≥16J |
| | | Max. | 0.300 | 0.300 | 1.350 | 0.035 | 0.040 | 0.400 | 0.300 | 0.120 | 0.400 | 0.080 | 655 | | | | | Avg≥20J |
| | | | | | | | | | | | | | | | | | | |
| DF-01-228-190116-12 | BODY | GDN71 | 0.200 | 0.480 | 1.140 | 0.027 | 0.014 | 0.015 | 0.103 | 0.028 | 0.028 | 0.002 | 534 | 348 | 32.0 | 55.0 | 151 | 33-37-40 |
| | BONNET | GDN71 | 0.200 | 0.480 | 1.140 | 0.027 | 0.014 | 0.015 | 0.103 | 0.028 | 0.028 | 0.002 | 534 | 348 | 32.0 | 55.0 | 151 | 33-37-40 |
| | WEDGE/DISC | 1606106 | 0.230 | 0.240 | 1.210 | 0.015 | 0.001 | 0.010 | 0.020 | 0.002 | 0.010 | 0.001 | 535 | 325 | 34.0 | 69.0 | 165 | 27-28-29 |

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REMARKS : IN ACCORDANCE WITH EN 10204.3.1
HEAT TREATMENT; LCC QUENCHED; 930℃ X 3HR(W.C)+TEMPERED 700℃ X 3HR(A.C)
TO NACE MR0103

Manager, Q.A Department *Jane*

Witness Inspector *ALEX*

Valve design and construction is in accordance with API 594, ASME B16.34
Products supplied are in compliance with the requirements of the purchase order

MLTS_6056-18734
Cert# GATE POWELL

# HEAT / SERIAL NUMBER RECORD

M. A. Stewart & Sons Ltd.
VALVES AND FITTINGS

(FORM 4.15.4A)

COMPANY; Erco / Equipment - KN (For ABF mines)
BRANCH; Rouyn - Noranda, QC
ATTN; Richard Knight
PO# 26/0090 - 00

PAGE; 1 OF 1
MAS SALES REGISTER; 1436324
DATE June 10/19

| | | | | | | |
|---|---|---|---|---|---|---|
| 4 | | | | | | |
| 5 | 1 | 8" | Powell 3003FK 86XXX | C5CL54 | C5CL54 | 7F19226 |
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FAX STAMP

FORM 4.3.2C REV-2-15-08

POWELL VALVES

# VALVE CERTIFICATION

CERTIFIED MATERIAL TEST REPORT/CERTIFICATE OF CONFORMANCE
CERTIFIED TO ISO 9001 QUALITY STANDARDS

CERTIFICATE NUMBER: **7F19226**
DATE: 7/15/15

2503 Spring Grove Ave.
Cincinnati, OH 45214 U.S.A
Tel: 513-852-2000
info@powellvalves.com

**CUSTOMER:** M. A. STEWART & SONS LTD.
**CUSTOMER PO #:** 1001802
**POWELL ORDER:** 904159
**ITEM NUMBER:** 8.0 3003FK8GXXX
**DESCRIPTION:** CLASS 300, BOLTED BONNET, GATE VALVE, FLG END, A352 LCC, API TRIM 8, GRAPHITE PACKING, S.W. GRAPHITE GASKET

## PRESSURE TEST

**Standard:** API-598

| | | |
|---|---|---|
| **SHELL** | 1125 | PASS |
| **SEAT (AIR)** | 80 | PASS |
| **SEAT (HYDRO)** | N/A | N/A |
| **BACKSEAT** | 825 | PASS |

(Values are PSI minimums)

## INSPECTION

| | |
|---|---|
| **Dimensional:** | PASS |
| **Operational:** | PASS |
| **Visual:** | PASS |

We certify that the valve meets the requirements of one or more of the following industry standards:

| | |
|---|---|
| API 598 | Valve Inspection and Testing |
| API 600 | Bolted Bonnet Cast Steel Valves |
| API 602 | Forged Valves |
| API 603 | Bolted Bonnet Cast Stainless Steel Valves |
| API 622/624 | Fugitive Emissions |
| ASME B16.10 | End to End Dimensions |
| ASME B16.34 | Valves |
| MSS SP25 | Valve Markings |
| MSS SP55 | Casting Surface Inspection |

**COMPONENT DATA (Chemical Properties)**

BODY — HEAT NO: C5CL54 — MATERIAL: A352LCC — PHYSICAL PROPERTIES

| C | SI | MN | P | S | NI | CR | MO | CU | V | | | | | Tensile (KSI) | Yield (KSI) | Elong% | Reduct% | HB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .19 | .432 | .86 | .019 | .011 | .214 | .047 | .015 | .031 | .001 | | | | | 76.4 | 53.9 | 30.0 | 62.0 | 152 |

Normalized 1650°F Min, Liquid Quench, Temper 1100°F Min

BONNET/CAP — HEAT NO: C5CL54 — MATERIAL: A352LCC — PHYSICAL PROPERTIES

| C | SI | MN | P | S | NI | CR | MO | CU | V | | | | | Tensile (KSI) | Yield (KSI) | Elong% | Reduct% | HB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .19 | .432 | .86 | .019 | .011 | .214 | .047 | .015 | .031 | .001 | | | | | 76.4 | 53.9 | 30.0 | 62.0 | 152 |

Normalized 1650°F Min, Liquid Quench, Temper 1100°F Min

DISC — HEAT NO: C5C680 — MATERIAL: A352LCC — PHYSICAL PROPERTIES

| C | SI | MN | P | S | NI | CR | MO | CU | V | | | | | Tensile (KSI) | Yield (KSI) | Elong% | Reduct% | HB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .197 | .446 | .915 | .022 | .009 | .274 | .058 | .007 | .026 | .006 | | | | | 91.6 | 66.1 | 31.0 | 62.0 | 159 |

Normalized 1650°F Min, Liquid Quench, Temper 1100°F Min

CHARPY IMPACT RESULT

| BODY | BONNET/CAP | DISC | |
|---|---|---|---|
| 28.7 | 28.7 | 34.6 | MIN. OF 1 SPECIMEN (FT-LB) |
| 28.7 | 28.7 | 37.6 | AVG OF 3 SPEC., MIN. OF 2 SPEC. (FT-LAB) |
| -50 | -50 | -50 | TEST TEMPERATURE (DEGREES F) |

SHELL TEST : 10 MIN MINIMUN DURATION

WE CERTIFY THAT THE ABOVE PRODUCT(S) CONFORM TO THE APPLICABLE REQUIREMENTS OF THE PURCHASE ORDER.
THESE RESULTS ARE IN ACCORDANCE WITH EN 10204 TYPE 3.1. http://www.powellvalves.com

CERTIFIED TO ISO 9001 QUALITY STANDARDS

Willard E. Painter Jr.

Quality Manager
THE WM. POWELL COMPANY
Form F.10.6 2/23/11

WE CERTIFY THAT THE ABOVE PRODUCT(S) CONFORM TO THE APPLICABLE REQUIREMENTS OF THE PURCHASE ORDER.
THESE RESULTS ARE IN ACCORDANCE WITH EN 10204 TYPE 3.1. http://www.powellvalves.com

CERTIFIED TO ISO 9001 QUALITY STANDARDS

# Apollo Valves

**Division of Conbraco Industries**

Conway, SC 29526

FAX: 843/347-1773

PHONE: 843/347-4666


ISO 9001:2015 NSAI CERTIFIED

MLTS_6056-18735
Cert# BV APOLLO

## MATERIAL TEST REPORT

We certify that the below listed components were manufactured, tested, and inspected in accordance with the requirements of the procurement documents as stated.

Model Number: **83I**
Size: **2"**
Quantity: **8**
Material Specification: **ASTM A352-18 LCC(LCC)**

Customer Name: **Masdom LTD**
Customer Order Number: **19503**
Valve Part Number: **83L-248-24**
User Tag Number: **B36652**

| Heat Code | C | Mn | P | S | Si | Cr | Ni | Mo | Cu | V | Cb | TENSILE PSI | YIELD PSI | %ELO 2" | %RA | HARDNESS (RB unless noted) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AX | 0.1965 | 1.3639 | 0.0109 | 0.0128 | 0.2577 | 0.1313 | 0.0341 | 0.0134 | 0.0443 | 0.0027 | | 81002 | 54270 | 25 | 74 | 80 |
| BW | 0.1901 | 1.3903 | 0.0123 | 0.0138 | 0.3772 | 0.064 | 0.0364 | 0.0047 | 0.0433 | 0.0025 | | 79634 | 53506 | 30 | 65 | 77 |
| HU | 0.197 | 1.34 | 0.014 | 0.008 | 0.334 | 0.061 | 0.038 | 0.012 | 0.115 | 0.003 | | 83872 | 54730 | 31 | 67 | 81 |
| KW | 0.2085 | 1.314 | 0.0139 | 0.0115 | 0.2952 | 0.0273 | 0.0216 | 0.0052 | 0.0327 | 0.0023 | 0 | 77629 | 52937 | 27 | 70 | 79 |

**Charpy Impact Test**: Conducted in accordance with ASTM A370 Sections 19 Through 20. Standard full size test specimen.

**Test Temperature: -50F**

| Heat Code | Average of 3 Test | Test 1 | Test 2 | Test 3 |
|---|---|---|---|---|
| AX | 36.52 | 32.95 | 29.95 | 46.67 |
| BW | 20.5333 | 20 | 20.4 | 21.2 |
| HU | 21.4667 | 23.2 | 20.8 | 20.4 |
| KW | 22.8667 | 22.8 | 23.6 | 22.2 |

*TESTING PROCEDURE: All Apollo Valves are 100% tested in accordance with their standard of construction. Valves designed to the requirements of ASME B16.34 are tested to meet or exceed the requirements of*

*API 598, ASME B16.34, MSS SP-61 and MSS SP-72. Valves designed to the requirements of MSS SP-110, are tested to meet or exceed the requirements of MSS SP-110. Specification sheets are available at www.apollovalves.com.*

We certify that the above listed components meet the requirements of the procurement documents as stated.
This material certificate complies with EN 10204-2004 Type 3.1 (formerly Type F3.1.B).

Date: **08/01/19**
Signed:

Steve Causey

Steve Causey
Quality Assurance Manager

The above listed information is certified to be true and accurate to the best of my knowledge and belief.

# Apollo Valves

**Division of Conbraco Industries**

Conway, SC 29526

FAX: 843/347-1773

PHONE: 843/347-4666


ISO 9001:2015 NSAI CERTIFIED

# MATERIAL TEST REPORT

We certify that the below listed components were manufactured, tested, and inspected in accordance with the requirements of the procurement documents as stated.

Model Number: **83l**
Size: **1"**
Quantity: **8**
Material Specification: **ASTM A352-18 LCC(LCC)**

Customer Name: **Masdom LTD**
Customer Order Number: **19503**
Valve Part Number: **83L-245-24**
User Tag Number: **B36652**

| Heat Code | C | Mn | P | S | Si | Cr | Ni | Mo | Cu | V | Cb | TENSILE PSI | YIELD PSI | %ELO 2" | %RA | HARDNES S (RB unless noted) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AX | 0.1965 | 1.3639 | 0.0109 | 0.0128 | 0.2577 | 0.1313 | 0.0341 | 0.0134 | 0.0443 | 0.0027 | | 81002 | 54270 | 25 | 74 | 80 |
| KW | 0.2085 | 1.314 | 0.0139 | 0.0115 | 0.2952 | 0.0273 | 0.0216 | 0.0052 | 0.0327 | 0.0023 | 0 | 77629 | 52937 | 27 | 70 | 79 |
| LW | 0.1848 | 1.3624 | 0.0111 | 0.002 | 0.2961 | 0.1055 | 0.0326 | 0.0114 | 0.0266 | 0.0021 | | 77277 | 50671 | 27.2 | 71.7 | 79 |

**Charpy Impact Test**: Conducted in accordance with ASTM A370 Sections 19 Through 20. Standard full size test specimen.

**Test Temperature: -50F**

| Heat Code | Average of 3 Test | Test 1 | Test 2 | Test 3 |
|---|---|---|---|---|
| AX | 36.52 | 32.95 | 29.95 | 46.67 |
| KW | 22.8667 | 22.8 | 23.6 | 22.2 |
| LW | 25.6 | 20 | 21.1 | 35.7 |

*TESTING PROCEDURE: All Apollo Valves are 100% tested in accordance with their standard of construction. Valves designed to the requirements of ASME B16.34 are tested to meet or exceed the requirements of API 598, ASME B16.34, MSS SP-61 and MSS SP-72. Valves designed to the requirements of MSS SP-110, are tested to meet or exceed the requirements of MSS SP-110. Specification sheets are available at www.apollovalves.com.*

We certify that the above listed components meet the requirements of the procurement documents as stated.
This material certificate complies with EN 10204-2004 Type 3.1 (formerly Type F3.1.B).

Date: **08/01/19**
Signed:

The above listed information is certified to be true and accurate to the best of my knowledge and belief.

Steve Causey

Steve Causey
Quality Assurance Manager

SO 1SL047059-1 PO No. 00026111

CURTISS-WRIGHT

# Certificate of Compliance (QC-02)

FARRIS ENGINEERING
DIV. OF CURTISS-WRIGHT FCC
10195 BRECKSVILLE RD
BRECKSVILLE OH 44141
UNITED STATES

Date: 07/10/2019

MLTS_6056-18735
Cert# PRV FARRIS

Sales Order No.: 1SL047059
Customer:
Customer Order No.: 00026111
CRN No.: CSA-0G11969.5CL

| Line | Tag Number | Model Number | Serial Number |
|---|---|---|---|
| 1 | | 27EA34-M20 | 942333-1-KE |
| 1 | | 27EA34-M20 | 942333-2-KE |
| 1 | | 27EA34-M20 | 942333-3-KE |
| 1 | | 27EA34-M20 | 942333-4-KE |

We hereby certify that the valve(s) indicated above have been designed, manufactured and tested in accordance with ASME Section VIII, Division 1 by Curtiss-Wright Flow Control Corp.- Farris Engineering in accordance with the company's Quality Control Program. The Brecksville Facility's Quality Control Program is registered to ISO 9001:2015, Certificate Identity No. 10076249. We hereby certify that they were produced in conformance with the contract and Farris Worldwide Quality Manual Revision N, dated 13-Sep-18.

The representative signing the document states that the above information is correct and true.

Anthony Korinek

Anthony J. Korinek

Certified Individual

Date:07/10/2019

CURTISS-WRIGHT

# Material Test Reports (QC-04)

FARRIS ENGINEERING
DIV. OF CURTISS-WRIGHT FCC
10195 BRECKSVILLE RD
BRECKSVILLE OH 44141
UNITED STATES

Sales Order No.: 1SL047059 Line No.: 1 Qty: 4
Customer:
Customer Order No.: 00026111
Model No.: 27EA34-M20
Serial No.: 942333-1-KE, 942333-2-KE, 942333-3-KE, 942333-4-KE
Tag No.:

| Serial No. | Component | Item Number | Lot Number | Material Description |
|---|---|---|---|---|
| 942333-1-KE | BODY 1 X 1/2 MNPT 2700 | 325737X1-010 | 872-0118 | ASME SA-479 316SS |
| 942333-1-KE | DISC 2700 | 325742-010 | 900758 | ASME SA-479 316SS |
| 942333-1-KE | BONNET 2700 | 326076X2-023 | 640G | ASME SA-216 WCB |
| 942333-2-KE | BODY 1 X 1/2 MNPT 2700 | 325737X1-010 | 872-0118 | ASME SA-479 316SS |
| 942333-2-KE | DISC 2700 | 325742-010 | 900758 | ASME SA-479 316SS |
| 942333-2-KE | BONNET 2700 | 326076X2-023 | 640G | ASME SA-216 WCB |
| 942333-3-KE | BODY 1 X 1/2 MNPT 2700 | 325737X1-010 | 872-0118 | ASME SA-479 316SS |
| 942333-3-KE | DISC 2700 | 325742-010 | 900758 | ASME SA-479 316SS |
| 942333-3-KE | BONNET 2700 | 326076X2-023 | 640G | ASME SA-216 WCB |
| 942333-4-KE | BODY 1 X 1/2 MNPT 2700 | 325737X1-010 | 872-0118 | ASME SA-479 316SS |
| 942333-4-KE | DISC 2700 | 325742-010 | 900758 | ASME SA-479 316SS |
| 942333-4-KE | BONNET 2700 | 326076X2-023 | 640G | ASME SA-216 WCB |

Note: Traceability of individual parts to their NDE and special process reports is maintained through Lot Codes created by serializing the lot number shown on the material manufacturer's Material Test Report.

# 产品质量证明书 INSPECTION CERTIFICATE
## ---EN10204 3.1

TJ8868

江阴市不锈钢材料厂JIANGYINSHI STAINLESS STEEL MATERIAL FACTORY

地址：中国江苏省江阴市周庄镇路口桥
Add: Lukouqiao Zhouzhuang Town JiangYin JiangSu China
TEL:(0510)86236681 FAX:(0510)86905200

收货单位：成飞机械 执行标准：ASME SA479 2015 合同号：7969 编号：20180901

SOLD TO: Curtisswrigh (Tian jin) Flow Control CO.,LTD EXECUTIVE STANDARDS: CONTRACT NO: Serial number:

| 序号 No | 钢号 Grade | 规格 Size | 冶炼炉号 Heat No. | 支数 Bundles | 重量 Weight (kg) | 化学成分 Chemical Composition (%) C. | Si | Mn | P | S | Cr: | Mo | Ni |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ≤0.030 | ≤1.00 | ≤2.00 | ≤0.045 | ≤0.030 | 16.00-18.00 | 2.00-3.00 | 10.00-14.00 |
| 1 | 316/316L | ϕ78 | 872-0118 | 9 | 1120 | 0.03 | 0.4 | 1.76 | 0.034 | 0.025 | 16.52 | 2.07 | 10.2 |
| 2 | 316/316L | ϕ72 | 872-0117 | 18 | 2176 | 0.026 | 0.4 | 1.74 | 0.034 | 0.02 | 16.64 | 2.05 | 10.14 |
| 3 | 316/316L | ϕ72 | 872-0117 | 9 | 1075 | 0.026 | 0.4 | 1.74 | 0.034 | 0.02 | 16.64 | 2.05 | 10.14 |
| 4 | 316/316L | ϕ50.8 | 872-0118 | 15 | 1093 | 0.03 | 0.4 | 1.76 | 0.034 | 0.025 | 16.52 | 2.07 | 10.2 |
| 5 | 316/316L | ϕ50.8 | 872-0118 | 9 | 984 | 0.03 | 0.4 | 1.76 | 0.034 | 0.025 | 16.52 | 2.07 | 10.2 |

机械性能：Mechanical Properties

| 序号 No. | 热处理炉号 Heat treatment furnace no. | 热处理状态Heat treatment condition | 抗拉强度 Tensile Strength Rm (Mpa)≥515 | 屈服强度 Yield Strength Rp0.2(Mpa) ≥205 | 伸长率 Elongation A (%)≥30 | 断面收缩率 Reduction of Area Z (%)≥40 | 冲击试验Impact charpy Individual Kv2(J)≥41 Individual单个功 | Average平均功 | 硬度 HardnessHB≤189 | 交货状态 The delivery status |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 180326-1 | 固溶处理 Solution treatme | 587 | 310 | 58 | 80 | | | 161 | 光亮Bright |
| 2 | 180326-1 | | 592 | 311 | 56 | 78 | | | 163 | |
| 3 | 180315-1 | | 595 | 314 | 55 | 76 | | | 164 | |
| 4 | 180407-1 | | 590 | 312 | 57 | 79 | | | 162 | |
| 5 | 180407-1 | | 590 | 312 | 57 | 79 | | | 162 | |

APPROVED
2018-11-30
FARRIS ENGINEERING
QUALITY CONTROL
BY QC 04

说明：1.有异议时，来函请标明钢号、炉号、规格、发货日期、原因，并将实物保管好。
Notes:（1）When there is any complain,you are kindly requested to mark the Steel Grade,Heat No.,Size,Delivery Date,Causes and reserve the materials in the condition

备注：Heat treatment:Solution treatment :1900℉,1hours minimum,rapidly cooled to below 90℉.

The material supplied meets the requirements of the current versions of NACE MR0103 and MR0175/ISO 15156，提供的材料符合NACE MR0103 and MR0175/ISO15156标准要求。

热处理：固溶处理：1040℃最少1小时保温，出炉急冷到32℃以下。

签发日期：2018/9/10 Issued Date 制单：卞玉霞 Principal 审核：examime and verify 质量部门盖章有效 Stamp of Department of Quality Assurance

江阴市不锈钢材料厂 质量检验章

福建省明溪县长虹精密铸钢有限公司
Fujian Mingxi Changhong Precision Steel Casting Co.,Ltd.
Address: Pingpu industrial Park Mingxi county, Fujian, China. Tel:0598-2866208, Fax:0598-2867736

# 材料质量证明书
Material Inspection
EN 10204 3.1

CHHJZ

TJ9105

Customer:Curtiss-wright Flow Control
Farris Engneering
Address: No.3 Quanhui Road, Wuqing Development Area, Tianjin China. Tel:86-22-82166100, Fax:86-22-82166160

证书编号Cert. No.: 201901085

| No. | 产品名称 Product | 零件号 Part No. | 执行标准 Product Std. | 材质 Material | 数量 Quantity | 炉号 Heat No. | 订单号 Order No. |
|---|---|---|---|---|---|---|---|
| 1 | Bonnet | 326076X2-023 | ASME SA216-2015 | WCB | 12 | 637G | 6PR002478 |
| 2 | Bonnet | 326076X2-023 | ASME SA216-2015 | WCB | 10 | 638G | 6PR002478 |
| 3 | Bonnet | 326076X2-023 | ASME SA216-2015 | WCB | 10 | 639G | 6PR002478 |
| 4 | Bonnet | 326076X2-023 | ASME SA216-2015 | WCB | 25 | 640G | 6PR002478 |
| 5 | Bonnet | 326076X2-023 | ASME SA216-2015 | WCB | 22 | 641G | 6PR002478 |
| 6 | Bonnet | 326076X2-023 | ASME SA216-2015 | WCB | 17 | 642G | 6PR002478/2480 |
| 7 | Bonnet | 326076X2-023 | ASME SA216-2015 | WCB | 20 | 752G | 6PR002480 |

化学成分 Chemical Compositions

| Spec. | C | Si | Mn | P | S | Cr | Ni | Mo | Cu | V | N |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 标准值 | ≤0.3 | ≤0.6 | ≤1.0 | ≤0.04 | ≤0.045 | ≤0.5 | ≤0.5 | ≤0.2 | ≤0.3 | ≤0.03 | |
| 637G | 0.222 | 0.197 | 0.772 | 0.017 | 0.007 | 0.071 | 0.024 | 0.004 | 0.011 | 0.001 | |
| 638G | 0.213 | 0.210 | 0.703 | 0.020 | 0.008 | 0.071 | 0.017 | 0.002 | 0.010 | 0.002 | |
| 639G | 0.215 | 0.212 | 0.703 | 0.020 | 0.008 | 0.071 | 0.017 | 0.002 | 0.010 | 0.001 | |
| 640G | 0.261 | 0.204 | 0.672 | 0.022 | 0.008 | 0.099 | 0.026 | 0.003 | 0.011 | 0.002 | |
| 641G | 0.212 | 0.230 | 0.675 | 0.018 | 0.006 | 0.096 | 0.030 | 0.003 | 0.011 | 0.002 | |
| 642G | 0.212 | 0.229 | 0.677 | 0.019 | 0.006 | 0.096 | 0.029 | 0.003 | 0.011 | 0.002 | |
| 752G | 0.220 | 0.218 | 0.689 | 0.021 | 0.006 | 0.057 | 0.030 | 0.004 | 0.011 | 0.002 | |

| Spec. | 抗拉强度 Tensile Strength (MPa) | 屈服强度 Yieid Strength (MPa) | 延伸率 Elongation % | 断面收缩率 Reduction of Area % | 冲击功 Charpy Impact Test (J) Temp. ℃ | Average | Individual | | | 硬度 Hardness HB |
|---|---|---|---|---|---|---|---|---|---|---|
| 标准值 | 485-655 | ≥250 | ≥22 | ≥35 | -29 | ≥27J | ≥19J | ≥19 | ≥19 | ≤237 |
| 637G | 550 | 360 | 37 | 60 | | | | | | 159 |
| 638G | 553 | 350 | 36 | 62 | | | | | | 158 |
| 639G | 555 | 363 | 36 | 60 | | | | | | 157 |
| 640G | 546 | 357 | 38 | 59 | | | | | | 156 |
| 641G | 549 | 352 | 37 | 61 | | | | | | 156 |
| 642G | 549 | 348 | 36 | 60 | | | | | | 153 |
| 752G | 537 | 361 | 35 | 63 | | | | | | 158 |

热处理 Heat Treatment

| 序号 No. | 热处理炉号 Heat Lot. | 浇注炉号 Heat No. | 入炉时间 Charging time | 入炉温度℃ Charging Temp. | 到温时间 Start Time | 到温温度℃ Hold Temp. | 出炉时间 Finished Time | 出炉温度℃ Finish Temp. | 保温时间 H Soak time (H) | 冷却方式 Cooling |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 181030-1 | 637G | 7:25 | 413 | 9:20 | 905 | 11:20 | 907 | 2:00 | Air空气 |
| 2 | 181030-1 | 638G | 7:25 | 413 | 9:20 | 905 | 11:20 | 907 | 2:00 | Air空气 |
| 3 | 181030-1 | 639G | 7:25 | 413 | 9:20 | 905 | 11:20 | 907 | 2:00 | Air空气 |
| 4 | 181108-1 | 640G | 7:16 | 520 | 9:00 | 902 | 11:00 | 906 | 2:00 | Air空气 |
| 5 | 181106-1 | 641G | 8:00 | 368 | 10:00 | 901 | 12:00 | 905 | 2:00 | Air空气 |
| 6 | 181106-1 | 642G | 8:00 | 368 | 10:00 | 901 | 12:00 | 905 | 2:00 | Air空气 |
| 7 | 180830-1 | 752G | 7:25 | 425 | 9:20 | 908 | 11:20 | 910 | 2:00 | Air空气 |

其他信息 Other Informations

| 序号 No. | 外观尺寸检查 Visual & Dimension | | 无损探伤 NDT MT/PT | UT | RT | 交货状态 Delivery Condition |
|---|---|---|---|---|---|---|
| 1 | OK. | OK | | | | 正火状态 Normalized |

1. We hereby certify that the materials described herein have been manufactured, inspected and tested in accordance with the customer's specification(s), and that they satisfy the requirements.
2. All of casting visual inspection according to MSS-SP-55.
3. The material supplied meets the requirments of the current version of NACE MR0103 and MR0175/ISO 15156.

APPROVED
2019-01-30
FARRIS ENGINEERING
QUALITY CONTROL
BY QC 03

编 制 Prepared By:
谢海荣 2019-1-25

审 批 Approved By:
易娟 2019-1-25

sidenor

# MILL TEST CERTIFICATE

Basauri Plant

ISO 9001; ISO-TS 16949; ISO 14001 Y OHSAS 18001

AENOR ER Empresa Registrada UNE-EN ISO 9001 | AENOR ER Quality in Automotive Sector ISO/TS 16949 | www.tuv.com TÜVRheinland ID:9105017378

7722

Product Made in Spain

| | | |
|---|---|---|
| CUSTOMER:MAGELLAN CORPORATION | | WORKS REFERENCE:1910594 |
| REFERENCE:211222 | SALES ORDER:299090-2 | HEAT NUMBER:900758 |
| PRODUCT NR: | MASTER REFERENCE:215719 | ROLLED:04.01.2017 |

**REQUIRED PRODUCT**

AISI316/316L ROUND BARS TURNED SOLUTION ANNEALED 0.8750" SPECIFICATION´S TOLERANCE 12'-12'2" NORMAL

**EXPEDITION** DELIVERY:0080571873 WEIGHT (KG):4.614 BUNDLES:6 UNITS:400

**MADE ACCORDING TO**

AISI STAINLESS STEELS - 01.03.1999; ASME SA182-SA182M SECTION II, PART A - . . .2015
ASME SA193-SA193M/SECTION II, PART A - . . .2015; ASME SA320-SA320M/SECTION II, PART A 2013 . . . 2013
ASME SA479-SA479M SECTION II, PART A - . . .2015; ASTM A182-A182M 2015 01.06.2015
ASTM A193-A193M 2015 01.06.2015; ASTM A276/A276M 15 01.01.2015; ASTM A314 2015 15.07.2015
ASTM A320-A320M 2015 01.05.2015; ASTM A370 2014 15.05.2014; ASTM A473 13 01.11.2013
ASTM A479-A479M 2015 15.07.2015; ASTM A484-A484M 15 01.03.2015; ASTM A751 2014 01.03.2014
EN 10204 :2004 OCT. 2004 3.1; MAGELLAN MIC 1751 AMD12.3 21.12.2016
MAGELLAN MIC 1751 SUPP AISI316/AISI316L - 24.06.2015; NACE MR0103-2005 - 2005
NACE MR0175/ISO 15156-1 3ª EDICION 23.11.2015; NACE MR0175/ISO 15156-3 3ª EDICION 23.11.2015
SAE AMS 5648 L . .09.2012; SAE AMS 5653 H .. 11.2012; SAE AMS-QQ-S-763 D 03.2015

**CHEMICAL ANALYSIS OF HEAT** U:% HEAT NUMBER:900758

| | C | Mn | Si | P | S | Cr | Ni | Mo | V | W | Co |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Min. | | 1,250 | | | 0,020 | 16,500 | 10,000 | 2,000 | | | |
| Max. | 0,030 | 2,000 | 0,750 | 0,040 | 0,030 | 18,000 | 13,000 | 2,500 | 0,100 | 0,100 | 0,3000 |
| Cer. | 0,015 | 1,490 | 0,488 | 0,026 | 0,025 | 16,700 | 10,120 | 2,030 | 0,060 | 0,082 | 0,2280 |

| | Cu | Al | Ti | Nb | N |
|---|---|---|---|---|---|
| Min. | | | | | |
| Max. | 0,750 | 0,100 | 0,1000 | 0,1000 | 0,1000 |
| Cer. | 0,337 | 0,006 | 0,0050 | 0,0160 | 0,0730 |

**INCLUSIONS (MICROINCLUSIONS)**

Standard(ASTM E45 2013 . . . 2013); Type/method(A); A(t):2,5; A(h):1; B(t):0,5; B(h):0,5; C(t):1,5
C(h):1; D(t):0,5; D(h):0,5

APPROVED
PARRIS ENGINEERING - QUALITY CONTRO
NOV. 14 2018
BY № 1005557
JJh 7722

**MECHANICAL PROPERTIES AS SUPPLIED (TEST)**

Sample:Supply section (bar prolongation); Specimen Test location:Nucleus
Standard(1)(ASTM A370 2014 15.05.2014); Standard(2)(ASTM E8/E8M 2015A 15.05.2015)
Tensile direction:Longitudinal; Tensile test Temp.(Room temperature):Room temperature
Ts(83.000/120.000PSI):89.605PSI; Ys(0,2% >=30.000PSI):0,2% 44.089PSI; El.(2" >=40%):2" 57,2%
Z(>=50%):74,9%; Standard(ASTM E23 07-AE1 2007)
Notch impact direction:Longitudinal; Notch Impact sample type(CHARPY-V):CHARPY-V
Notch Impact Temp.(68°F):68°F; K(1):203Ft.Lb; K(2):206Ft.Lb; K(3):205Ft.Lb; K (average):204,67
K (single)(>=75Ft.Lb):203Ft.Lb; Hardness Standard(1)(ASTM A370 2014 15.05.2014)
Hardness Standard(2)(ASTM E10 2015 01.05.2015)
Surface hardness(of the bar 140/223HB):of the bar 208HB
Hardness at(at 1/2 radius of the bar 140/223HB):at 1/2 radius of the bar 162HB

**ADDITIONAL TESTS**

Standard(ASTM A262 - 01.07.2014); Type / Method(Practice E):Practice E
Standard(ASTM E112 2013 01.10.2013); Grain size:Austenitic 6; Standard(ASTM E381 2001 R2006)
macroetching(1):S 1; macroetching(2):R 1; macroetching(3):C 1; Intercrystalline Corrosion:O.K.

TECHNOLOGY & QUALITY CERTIFIES THAT THE PRODUCT FULL FILLS THE ORDER´S SPECIFICATION

APPROVED BY:ALBERTO CUBERO ZABALA SIGN:

DATE:21.02.2017



REF.:1002484420000

Analyst of Quality certificates

sidenor BASAURI

Sidenor

# MILL TEST CERTIFICATE

Basauri Plant

ISO 9001; ISO-TS 16949; ISO 14001 Y OHSAS 18001

Product Made in Spain

| | | |
|---|---|---|
| CUSTOMER:MAGELLAN CORPORATION | | WORKS REFERENCE:1910594 |
| REFERENCE:211222 | SALES ORDER:299090-2 | HEAT NUMBER:900758 |
| PRODUCT NR: | MASTER REFERENCE:215719 | ROLLED:04.01.2017 |

**NON DESTRUCTIVE TESTS**

U.T. standard(1)(ASTM A388-A388M 2015 15.07.2015); U.T. type/method(1)(FBH)
U.T. standard(2)(API SPEC 6A 20°ED.+ER1&2+AD12.3 . .03.2013); U.T. type/method(2)(PSL3)
U.T. standard(3)(ISO 10423 4°ED.2009 15.12.2009); U.T. type/method(3)(PSL3)
ULTRASONIC INSPECTION 100% : O.K. (1) =<1,5 mm.(according to Suplem.1 ASTM A388)
ULTRASONIC INSPECTION 100% : O.K. (2) according to: API 6A/ISO-10423 "PSL3"
ULTRASONIC INSPECTION 100% : O.K. (3); CRACKS CONTROL 100% : O.K.

**ADDITIONAL INFORMATION**

Reduction ratio:49,7; "Macrostructure: Satisfactory"
Ultrasonic Inspection Results ("ASTM A388: Satisfactory"); DFARS Compliant
HEAT MELTED AT OUTOKUMPU (UK) AND PROCESSED AT SIDENOR (SPAIN); RoHs Compliant
Material Cold Finished, Peeled and Reeled; CONTINUOUS CASTING 150 X 150 mm.
SOLUTION ANNEALED at 1922°F - IN AIR; .; .

Material manufactured through the Electric Arc Furnace and AOD.
Steel not exposed to Mercury, or to any other metal alloy that is liquid, at ambient temperatures during processing or while in Sidenor's possession.
Steel is free from Uranium or any other harmful radioactive contamination.
Steel products were not repaired by welding.
100% anti mix test performed by spectrometry.

APPROVED
FARRIS ENGINEERING - QUALITY CONTROL
NOV 14 2018
BY № 1005557
HW7722

TECHNOLOGY & QUALITY CERTIFIES THAT THE PRODUCT FULL FILLS THE ORDER'S SPECIFICATION

APPROVED BY:ALBERTO CUBERO ZABALA
DATE:21.02.2017
REF.:1002484420000

SIGN:

Sidenor BASAURI

Analyst of Quality certificates

M.A. Stewart & Sons Ltd.

# PICK TICKET

## MAS Edmonton Branch
## 1315473

| PICK DATE | PICK TICKET | ORDER NUMBER |
|---|---|---|
| 8/20/2019 | 1315473 | 1452662 |

| SHIP TO NO | CUSTOMER NO | PAGE |
|---|---|---|
| 103449 | 103449 | 1 of 1 |

| PICKED BY: | CHECKED BY: |
|---|---|

MTR's WHEN APPLICABLE

MLTS_6056-18953
Cert# BV MAS

SOLD TO
EMCO LTD WESTLUND (261) ROUYN-NORANDA
PO BOX 5300 STN A
WESTLUND
LONDON, ON N6A 4N7
CANADA

Ex EDM
MTL

Ordered By: Chantal Gregoire

SHIP TO
ABF MINES CANADA INC. (2985080)
1310 AVE DAVY
ROUYN-NORANDA, QC J9Y 0A8
CANADA

| ORDER DATE | CUSTOMER PO / ORDER NUMBER | CARRIER | TAKER |
|---|---|---|---|
| 8/20/2019 | DO2610173-00 | Purolator | ANDREN |

| Delivery / Quick Notes | QTY | Item | Box ID | Skid ID |
|---|---|---|---|---|
| *Delivery Instructions:* EX: EDMONTON / PUROLATOR # 7334590 | | | | |
| 18FF | 4 EA | 014-53208 MAS LSSF3-HDFS-N<br>1 3000WOG FP LCC IP 3PC FS NACE BALL | | |
| 18FF 18JF | 1 EA | 014-53214 MAS LSSF3-HDFS-N<br>2 2000WOG FP LCC IP 3PC FS NACE BALL | | |

Total Lines: 2
Total Pieces: 5
Total Weight: 32.891

| Total Skids / Boxes: | Shipment Weight: |
|---|---|
| | |

* Complete Order *
12.10.807 - 08/03/12

# JY VALVE & MFG. CO., LTD.

(Qianguo Village,Huangtang Town)Chengxi Taiwanese Business Base
Huian County,Quanzhou,Fujian,China 362101
TEL : (0595) 2730-1335 FAX : (0595) 2730-1336


MESSRS.: M. A. STEWART & SONS LTD.

DELIVER TO: VANCOUVER SHEET NO.: LSSF3HDFSN-F181206-1

P.O. NO. #1011686 DATE : DEC. 26, 2018

## CERTIFICATE OF COMPLIANCE

WE, JY VALVE & MFG. CO., LTD. HEREBY CERTIFY THAT OUR PRODUCTS AS SHOWN ON DRAWINGS OF OUR MODEL LSSF3-HDFS-N ARE MANUFACTURED, INSPECTED AND TESTED FULLY IN ACCORDANCE WITH THE FOLLOWING STANDARDS:

| | | |
|---|---|---|
| PRESSURE-TEMPERATURE RATING | 1/4" TO 1" | 3000 PSIG @100°F |
| | 1-1/4" TO 2" | 2000 PSIG @100°F |
| | 2-1/2" TO 3" | 1000 PSIG @100°F |
| BODY & CAP | ASTM A352-LCC | |
| SEAT MATERIAL | R-PTFE | |
| VALVE TESTING | API 598 ※ | |
| FIRE TEST STANDARD | API 607 5TH EDITION | |
| END CONNECTION | NPT THREADS TO ANSI B1.20.1 | |

※ HIGH PRESSURE SHELL TEST AND LOW PRESSURE SEAT TEST ARE PERFORMED 100%.

- NACE MR-0175-2002 AND MR-0103 COMPLIANCE

JY VALVE & MFG. CO., LTD.

CHARLES CHAN, PRESIDENT

# JY VALVE & MFG. CO., LTD.

(Qianguo Village,Huangtang Town)Chengxi Taiwanese Business Base Huian County,Quanzhou,Fujian,China 362101
Tel: 86-595-27301335 Fax: 86-595-27301336

## INSPECTION CERTIFICATE

MESSRS. : M. A. STEWART & SONS LTD.
T O : VANCOUVER
P.O. NO.: : #1011686

SHEET NO. : LSSF3HDFSN-F181206-2
EXPORT NO. : F181206
DATE : DEC. 26, 2018

Jason Huang

WITNESSED BY: JY VALVE & MFG. CO., LTD.

JASON HUANG, QC MANAGER

| VALVE MODEL | DESCRIPTION | SIZE (INCH) | Q'TY (PCS) | PRESSURE TEST (PSIG) | | | | MATERIAL | DIMENSION | VISUAL | OPERATION |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SHELL | SEAT | | RESULT | | | | |
| | | | | HYDRO | HYDRO | AIR | | | | | |
| LSSF3-HDFS-N | 3000/2000/1000 WOG CARBON STEEL 3-PIECE TYPE INVESTMENT CAST BALL VALVES (NACE-MR-0175) | 1" | 18 | 4500 | | 80 | GOOD | GOOD | GOOD | GOOD | GOOD |
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# MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
TO : VANCOUVER
P.O. NO. : #1011686

SHEET NO. : LSSF3HDFSN-F181206-3
EXPORT NO : F181206
DATE : DEC. 26, 2018

VALVE MODEL : LSSF3-HDFS-N
3000/2000/1000 WOG BALL VALVE

SIZE : 1"
MATERIAL: ASTM-A352 GRADE LCC

REVIEWED BY : QUAN ZHOU JING YING VALVE CO., LTD.

Jason Huang

JASON HUANG, QC MANAGER
JY VALVE & MFG. CO., LTD.

| CHEMICAL REQUIREMENT (%) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ELEMENT | | C | Si | Mn | P | S | Ni | Cr | Mo | V | | | |
| SPEC (MAX.) | | 0.250 | 0.600 | 1.200 | 0.040 | 0.045 | 0.500 | 0.500 | 0.200 | 0.030 | | | |
| Production No | Parts Name | B For each reduction of 0.01% below the specified maximum carbon content, an increase of 0.04% Mn above the specified maximum will be permitted up to a maximum of 1.28% | | | | | | | | | | | |
| 18FF | BODY & CAP | 0.2010 | 0.4400 | 0.6900 | 0.0150 | 0.0048 | 0.3230 | 0.4000 | 0.0740 | 0.0120 | | | |
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| TENSILE REQUIREMENTS | | Tensile Stength (MPa) | Yield Strength (MPa) | Elongation (%) | Reduction of area (%) | Hardness (HB) | Charpy V-Notch Energy value |
|---|---|---|---|---|---|---|---|
| Production No | Parts Name | 485 - 655 | Min. 275 | Min. 22 | Min. 35 | Max. 187 | Min. 20 |
| 18FF | BODY & CAP | 524 | 288 | 36 | 45 | 160 | 52 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Heat treatment | NORMALIZED @890 DEGREE C - 1H AIR COOLING AND TEMPERED | | | | | | |

**WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIED ARE SATSIFACTORY IN ACCORDANCE WITH THE SPECIFICAITON.**

# MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
TO : VANCOUVER
P.O. NO. : #1011686

SHEET NO. : LSSF3HDFSN-F181206-4
EXPORT NO : F181206
DATE : DEC. 26, 2018

VALVE MODEL : LSSF3-HDFS-N
SIZE : 1"
3000/2000/1000 WOG BALL VALVE
MATERIAL: ASTM-A351 GRADE CF8M
REVIEWED BY : FUZHOU SHI GANG VALVE MANUFACTURE CO.,LTD

Jason Huang

JASON HUANG, QC MANAGER
JY VALVE & MFG. CO., LTD.

| CHEMICAL REQUIREMENT (%) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ELEMENT | | C | Mn | Si | S | P | Cr | Ni | Mo | | |
| SPEC (MAX.) | | 0.080 | 1.500 | 1.500 | 0.040 | 0.040 | 18.0-21.0 | 9.0-12.0 | 2.0-3.0 | | |
| Production No | Parts Name | | | | | | | | | | |
| B-1118 | BALL | 0.0510 | 0.7900 | 0.5090 | 0.0083 | 0.0383 | 18.0900 | 9.0400 | 2.0700 | | |
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| TENSILE REQUIREMENTS | | Tensile Stength (MPa) | Yield Strength (MPa) | Elongation (%) | Hardness (HB) | |
|---|---|---|---|---|---|---|
| Production No | Parts Name | Min.485 | Min. 205 | Min. 30 | Max. 187 | |
| B-1118 | BALL | 515 | 225 | 35 | 165 | |
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| Heat treatment | SOLUTION TREATMENT: @1080 DEGREE C - 1H WATER QUENCHING | | | | | |

**WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIED ARE SATSIFACTORY IN ACCORDANCE WITH THE SPECIFICAITON.**

# MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
TO : VANCOUVER
P.O. NO. : #1011686

SHEET NO. : LSSF3HDFSN-F181206-5
EXPORT NO : F181206
DATE : DEC. 26, 2018

VALVE MODEL : LSSF3-HDFS-N
3000/2000/1000 WOG BALL VALVE

SIZE : 1"
MATERIAL: ASTM-A276 TYPE 316

REVIEWED BY : GAOYOU WEI DA STAINLESS STEEL CO., LTD.

Jason Huang

JASON HUANG, QC MANAGER
JY VALVE & MFG. CO., LTD.

| CHEMICAL REQUIREMENT (%) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ELEMENT | | C | Mn | P | S | Si | Cr | Ni | Mo | | |
| SPEC (MAX.) | | 0.080 | 2.000 | 0.045 | 0.030 | 1.000 | 16.0-18.0 | 10.0-14.0 | 2.00-3.00 | | |
| Production No | Parts Name | | | | | | | | | | |
| S-1118 | STEM | 0.0780 | 0.9800 | 0.0020 | 0.0210 | 0.6500 | 16.6200 | 10.8000 | 2.0800 | | |
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| TENSILE REQUIREMENTS | | Tensile Stength (MPa) | Yield Strength (MPa) | Elongation (%) | Reduction of area (%) | Hardness (HB) |
|---|---|---|---|---|---|---|
| Production No | Parts Name | Min. 515 | Min. 205 | Min. 40 | Min. 50 | Max. 187 |
| S-1118 | STEM | 518 | 218 | 48 | 53 | 166 |
| | | | | | | |
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| Heat treatment | HOT-FINISHED | | | | | |

**WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIED ARE SATSIFACTORY IN ACCORDANCE WITH THE SPECIFICAITON.**

# JY VALVE & MFG. CO., LTD.

(Qianguo Village,Huangtang Town)Chengxi Taiwanese Business Base
Huian County,Quanzhou,Fujian,China 362101
TEL : (0595) 2730-1335 FAX : (0595) 2730-1336


MESSRS.: M. A. STEWART & SONS LTD.

DELIVER TO: VANCOUVER SHEET NO.: LSSF3HDFSN-F190403-1

P.O. NO. #1011686 DATE : APR. 24, 2019

## CERTIFICATE OF COMPLIANCE

WE, JY VALVE & MFG. CO., LTD. HEREBY CERTIFY THAT OUR PRODUCTS AS SHOWN ON DRAWINGS OF OUR MODEL LSSF3-HDFS-N ARE MANUFACTURED, INSPECTED AND TESTED FULLY IN ACCORDANCE WITH THE FOLLOWING STANDARDS:

| | | |
|---|---|---|
| PRESSURE-TEMPERATURE RATING | 1/4" TO 1" | 3000 PSIG @100°F |
| | 1-1/4" TO 2" | 2000 PSIG @100°F |
| | 2-1/2" TO 3" | 1000 PSIG @100°F |
| BODY & CAP | ASTM A352-LCC | |
| SEAT MATERIAL | R-PTFE | |
| VALVE TESTING | API 598 ※ | |
| FIRE TEST STANDARD | API 607 5TH EDITION | |
| END CONNECTION | NPT THREADS TO ANSI B1.20.1 | |

※ HIGH PRESSURE SHELL TEST AND LOW PRESSURE SEAT TEST ARE PERFORMED 100%.

- NACE MR-0175-2002 AND MR-0103 COMPLIANCE

JY VALVE & MFG. CO., LTD.

CHARLES CHAN, PRESIDENT

# JY VALVE & MFG. CO., LTD.

(Qianguo Village,Huangtang Town)Chengxi Taiwanese Business Base Huian County,Quanzhou,Fujian,China 362101
Tel: 86-595-27301335 Fax: 86-595-27301336

## INSPECTION CERTIFICATE

MESSRS. : M. A. STEWART & SONS LTD.
T O : VANCOUVER
P.O. NO.: : #1011686

SHEET NO. : LSSF3HDFSN-F190403-2
EXPORT NO. : F190403
DATE : APR. 24, 2019

Jason Huang

WITNESSED BY: JY VALVE & MFG. CO., LTD.

JASON HUANG, QC MANAGER

| VALVE MODEL | DESCRIPTION | SIZE (INCH) | Q'TY (PCS) | PRESSURE TEST (PSIG) | | | | MATERIAL | DIMENSION | VISUAL | OPERATION |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SHELL | SEAT | | RESULT | | | | |
| | | | | HYDRO | HYDRO | AIR | | | | | |
| LSSF3-HDFS-N | 3000/2000/1000 WOG CARBON STEEL 3-PIECE TYPE INVESTMENT CAST BALL VALVES (NACE-MR-0175) | 2" | 50 | 3000 | | 80 | GOOD | GOOD | GOOD | GOOD | GOOD |
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# MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
TO : VANCOUVER
P.O. NO. : #1011686

SHEET NO. : LSSF3HDFSN-F190403-3
EXPORT NO : F190403
DATE : APR. 24, 2019

VALVE MODEL : LSSF3-HDFS-N
3000/2000/1000 WOG BALL VALVE
REVIEWED BY : QUAN ZHOU JING YING VALVE CO., LTD.

SIZE : 2"
MATERIAL: ASTM-A352 GRADE LCC

Jason Huang

JASON HUANG, QC MANAGER
JY VALVE & MFG. CO., LTD.

| CHEMICAL REQUIREMENT (%) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ELEMENT | | C | Si | Mn | P | S | Ni | Cr | Mo | V | | | |
| SPEC (MAX.) | | 0.250 | 0.600 | 1.200 | 0.040 | 0.045 | 0.500 | 0.500 | 0.200 | 0.030 | | | |
| Production No | Parts Name | B For each reduction of 0.01% below the specified maximum carbon content, an increase of 0.04% Mn above the specified maximum will be permitted up to a maximum of 1.28% | | | | | | | | | | | |
| 18FF | BODY | 0.2010 | 0.4400 | 0.6900 | 0.0150 | 0.0048 | 0.3230 | 0.4000 | 0.0740 | 0.0120 | | | |
| 18JF | CAP | 0.2010 | 0.4400 | 0.6900 | 0.0150 | 0.0048 | 0.3230 | 0.4000 | 0.0740 | 0.0120 | | | |
| | | | | | | | | | | | | | |
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| TENSILE REQUIREMENTS | | Tensile Stength (MPa) | Yield Strength (MPa) | Elongation (%) | Reduction of area (%) | Hardness (HB) | Charpy V-Notch Energy value |
|---|---|---|---|---|---|---|---|
| Production No | Parts Name | 485 - 655 | Min. 275 | Min. 22 | Min. 35 | Max. 187 | Min. 20 |
| 18FF | BODY | 524 | 288 | 36 | 45 | 160 | 52 |
| 18JF | CAP | 524 | 288 | 36 | 45 | 160 | 52 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Heat treatment | NORMALIZED @890 DEGREE C - 1H AIR COOLING AND TEMPERED | | | | | | |

**WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIED ARE SATSIFACTORY IN ACCORDANCE WITH THE SPECIFICAITON.**

# MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
TO : VANCOUVER
P.O. NO. : #1011686

SHEET NO. : LSSF3HDFSN-F190403-4
EXPORT NO : F190403
DATE : APR. 24, 2019

VALVE MODEL : LSSF3-HDFS-N
3000/2000/1000 WOG BALL VALVE

SIZE : 2"
MATERIAL: ASTM-A351 GRADE CF8M

REVIEWED BY : FUZHOU SHI GANG VALVE MANUFACTURE CO.,LTD

Jason Huang

JASON HUANG, QC MANAGER
JY VALVE & MFG. CO., LTD.

| CHEMICAL REQUIREMENT (%) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ELEMENT | | C | Mn | Si | S | P | Cr | Ni | Mo | | |
| SPEC (MAX.) | | 0.080 | 1.500 | 1.500 | 0.040 | 0.040 | 18.0-21.0 | 9.0-12.0 | 2.0-3.0 | | |
| Production No | Parts Name | | | | | | | | | | |
| B-0319 | BALL | 0.0503 | 0.6880 | 0.4740 | 0.0065 | 0.0378 | 18.3200 | 9.1600 | 2.0500 | | |
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| TENSILE REQUIREMENTS | | Tensile Stength (MPa) | Yield Strength (MPa) | Elongation (%) | Hardness (HB) | |
|---|---|---|---|---|---|---|
| Production No | Parts Name | Min.485 | Min. 205 | Min. 30 | Max. 187 | |
| B-0319 | BALL | 545 | 245 | 47 | 140 | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Heat treatment | SOLUTION TREATMENT: @1080 DEGREE C - 1H WATER QUENCHING | | | | | |

**WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIED ARE SATSIFACTORY IN ACCORDANCE WITH THE SPECIFICAITON.**

# MATERIAL TEST RESULTS

MESSRS. : M. A. STEWART & SONS LTD.
TO : VANCOUVER
P.O. NO. : #1011686

SHEET NO. : LSSF3HDFSN-F190403-5
EXPORT NO : F190403
DATE : APR. 24, 2019

VALVE MODEL : LSSF3-HDFS-N
SIZE : 2"
3000/2000/1000 WOG BALL VALVE
MATERIAL: ASTM-A276 TYPE 316
REVIEWED BY : GAOYOU WEI DA STAINLESS STEEL CO., LTD.

Jason Huang

JASON HUANG, QC MANAGER
JY VALVE & MFG. CO., LTD.

| CHEMICAL REQUIREMENT (%) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ELEMENT | | C | Mn | P | S | Si | Cr | Ni | Mo | | |
| SPEC (MAX.) | | 0.080 | 2.000 | 0.045 | 0.030 | 1.000 | 16.0-18.0 | 10.0-14.0 | 2.00-3.00 | | |
| Production No | Parts Name | | | | | | | | | | |
| S-0319 | STEM | 0.0700 | 0.9600 | 0.0020 | 0.0230 | 0.7500 | 16.8200 | 10.6000 | 2.2500 | | |
| | | | | | | | | | | | |
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| TENSILE REQUIREMENTS | | Tensile Stength (MPa) | Yield Strength (MPa) | Elongation (%) | Reduction of area (%) | Hardness (HB) |
|---|---|---|---|---|---|---|
| Production No | Parts Name | Min. 515 | Min. 205 | Min. 40 | Min. 50 | Max. 187 |
| S-0319 | STEM | 518 | 218 | 48 | 53 | 166 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Heat treatment | HOT-FINISHED | | | | | |

**WE HEREBY CERTIFY THAT THE MATERIAL HEREIN DESCRIED ARE SATSIFACTORY IN ACCORDANCE WITH THE SPECIFICAITON.**

# Material Test Report

09/09/19

Cert No: 1101809

CAMERON

NEWCO® | OIC® | DOUGLAS CHERO™

13127 Trinity Dr., Stafford, TX 77477
Tel: 281-302-4900 Fax: 281-302-4801

Cameron Newco is a 9001 certified registered company
CRN: OC7998.5C - EN 10204-3.1

Item No: B1060015FHLCCW27RF***GZA
Size/Type: 6" / Gate
Quantity: 1
Country of Origin: China
FigNo: 11F-LCC4/2-NC

**Inspection**
Dimension: Passed
Visual: Passed

Valve Materials meet the requirements for NACE MR0103 and NACE MR0175

**Pressure Test Result**

| Item | Test Pressure (Mpa) | Test Pressure (PSI) | Duration (sec) | Test Result |
|---|---|---|---|---|
| Shell | 3.103 | 450 | 60 | Passed |
| Backseat | 2.241 | 325 | 60 | Passed |
| Seat Hydro | - | - | - | |
| Seat Air | 0.552 | 80 | 60 | Passed |

Standard: API 598 / ASME B16.34

Customer: EMCO
Customer Number: 32043
Customer PO: 2610191-00
Cameron SO: QRC SO# 1010576
Project Name:
Valve Serial No:
Description: 150# RF A352-LCC (TRIM 12) OS&Y BB GATE NACE
Customer Tag No:

MLTS_6056-18971
Cert# 1101809

## Part: Body Type 3.1 — Material Code: A352 LCC — Heat No: N86718

Heat Treatment: QUENCHING+TEMPERING

Notes:

| Chem Comp (%) | C | Cr | Cu | Mn | Mo | Ni | P | S | Si | V |
|---|---|---|---|---|---|---|---|---|---|---|
| Spec: Min: | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Spec: Max: | 0.25 | 0.50 | 0.30 | 1.20 | 0.20 | 0.50 | 0.040 | 0.05 | 0.60 | 0.03 |
| Val: | 0.180 | 0.063 | 0.018 | 1.070 | 0.007 | 0.016 | 0.027 | 0.008 | 0.440 | 0.004 |

| Physical Props | Tensile KSI | Yield KSI | Elong % | Reduct % | Hard(HB) |
|---|---|---|---|---|---|
| | 70.0 | 39.9 | 22.0 | 35.0 | 100.0 |
| | 95.0 | 999.9 | 100.0 | 100.0 | 225.0 |
| | 80.5 | 53.7 | 30.0 | 65.0 | 174.0 |

| Impact Tests @-58 deg F | lb/ft |
|---|---|
| # 1: | 45 |
| # 2: | 58 |
| # 3: | 33 |
| Avg: | 45 |

## Part: Bonnet/Cap Type 3.1 — Material Code: A352 LCC — Heat No: N86718

Heat Treatment: QUENCHING+TEMPERING

Notes:

| Chem Comp (%) | C | Cr | Cu | Mn | Mo | Ni | P | S | Si | V |
|---|---|---|---|---|---|---|---|---|---|---|
| Spec: Min: | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Spec: Max: | 0.25 | 0.50 | 0.30 | 1.20 | 0.20 | 0.50 | 0.040 | 0.05 | 0.60 | 0.03 |
| Val: | 0.180 | 0.063 | 0.018 | 1.070 | 0.007 | 0.016 | 0.027 | 0.008 | 0.440 | 0.004 |

| Physical Props | Tensile KSI | Yield KSI | Elong % | Reduct % | Hard(HB) |
|---|---|---|---|---|---|
| | 70.0 | 39.9 | 22.0 | 35.0 | 100.0 |
| | 95.0 | 999.9 | 100.0 | 100.0 | 225.0 |
| | 80.5 | 53.7 | 30.0 | 65.0 | 174.0 |

| Impact Tests @-58 deg F | lb/ft |
|---|---|
| # 1: | 45 |
| # 2: | 58 |
| # 3: | 33 |
| Avg: | 45 |

Comments: Cameron declares that the parts above are in accordance with applicable material specification and purchase order requirements.
No Asbestos is contained in this product. Packing: Flexible Graphite | Gasket: Corrugated (316) W/ Grafoil
Valves covered in this certificate are in full compliance with purchase order requirements and specifications.

MTR created by: DR

Signature 09/09/19

# Material Test Report

09/09/19

Cert No: 1101813

CAMERON

NEWCO® | OIC® | DOUGLAS CHERO™

13127 Trinity Dr., Stafford, TX 77477
Tel: 281-302-4900 Fax: 281-302-4801

Cameron Newco is a 9001 certified registered company
CRN: OC7998.5C - EN 10204-3.1

Item No: B1060015FHLCCW27RF***GZA
Size/Type: 6" / Gate
Quantity: 1
Country of Origin: China
FigNo: 11F-LCC4/2-NC

**Inspection**
Dimension: Passed
Visual: Passed

Valve Materials meet the requirements for NACE MR0103 and NACE MR0175

**Pressure Test Result**

| Item | Test Pressure (Mpa) | Test Pressure (PSI) | Duration (sec) | Test Result |
|---|---|---|---|---|
| Shell | 3.103 | 450 | 60 | Passed |
| Backseat | 2.241 | 325 | 60 | Passed |
| Seat Hydro | - | - | - | |
| Seat Air | 0.552 | 80 | 60 | Passed |

Standard: API 598 / ASME B16.34

Customer: EMCO
Customer Number: 32043
Customer PO: 2610191-00
Cameron SO: QRC SO# 1010576
Project Name:
Valve Serial No:
Description: 150# RF A352-LCC (TRIM 12) OS&Y BB GATE
NACE
Customer Tag No:

MLTS_6056-18971
Cert# 1101813

## Part: Body Type 3.1 — Material Code: A352 LCC — Heat No: N86708

Heat Treatment: QUENCHING+TEMPERING
Notes:

| Chem Comp (%) Spec: | C | Cr | Cu | Mn | Mo | Ni | P | S | Si | V |
|---|---|---|---|---|---|---|---|---|---|---|
| Min: | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Max: | 0.25 | 0.50 | 0.30 | 1.20 | 0.20 | 0.50 | 0.040 | 0.05 | 0.60 | 0.03 |
| Val: | 0.190 | 0.034 | 0.017 | 1.030 | 0.002 | 0.017 | 0.033 | 0.012 | 0.520 | 0.004 |

| Physical Props | Tensile KSI | Yield KSI | Elong % | Reduct % | Hard(HB) |
|---|---|---|---|---|---|
| | 70.0 | 39.9 | 22.0 | 35.0 | 100.0 |
| | 95.0 | 999.9 | 100.0 | 100.0 | 225.0 |
| | 80.5 | 52.9 | 28.0 | 55.0 | 181.0 |

Impact Tests @-58 deg F (lb/ft): # 1: 22, # 2: 30, # 3: 19, Avg: 24

## Part: Bonnet/Cap Type 3.1 — Material Code: A352 LCC — Heat No: N86707

Heat Treatment: QUENCHING+TEMPERING
Notes:

| Chem Comp (%) Spec: | C | Cr | Cu | Mn | Mo | Ni | P | S | Si | V |
|---|---|---|---|---|---|---|---|---|---|---|
| Min: | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Max: | 0.25 | 0.50 | 0.30 | 1.20 | 0.20 | 0.50 | 0.040 | 0.05 | 0.60 | 0.03 |
| Val: | 0.190 | 0.052 | 0.018 | 1.120 | 0.006 | 0.016 | 0.029 | 0.007 | 0.490 | 0.004 |

| Physical Props | Tensile KSI | Yield KSI | Elong % | Reduct % | Hard(HB) |
|---|---|---|---|---|---|
| | 70.0 | 39.9 | 22.0 | 35.0 | 100.0 |
| | 95.0 | 999.9 | 100.0 | 100.0 | 225.0 |
| | 80.5 | 56.6 | 29.0 | 60.0 | 172.0 |

Impact Tests @-58 deg F (lb/ft): # 1: 31, # 2: 46, # 3: 31, Avg: 36

Comments: Cameron declares that the parts above are in accordance with applicable material specification and purchase order requirements.
No Asbestos is contained in this product. Packing: Flexible Graphite | Gasket: Corrugated (316) W/ Grafoil
Valves covered in this certificate are in full compliance with purchase order requirements and specifications.

MTR created by: DR

Signature 09/09/19

# Appendix A6

# Construction Summary Report: Baker Lake Fuel Storage Tank 8 (2021)

# Construction Summary Report

Baker Lake Fuel Storage Tank #8

Agnico Eagle Mines Ltd

Engineering, Design and Project Management

07 | 12 | 2021

report
Internal ref. 681783-0000-40ER-0001_R0

SNC·LAVALIN
Building what matters

# CONSTRUCTION SUMMARY REPORT
# Baker Lake Fuel Storage Tank #8

Agnico Eagle Mines Ltd

## Report

6129-740-132-REP-001

December 7, 2021

Authorized Signatory:

REGISTERED PROFESSIONAL ENGINEER
I. GAGNON
LICENSEE
NT/NU
L3940
2021-12-07

**Israël Gagnon,** P.Eng., MBA
Mechanical engineer

# EXECUTIVE SUMMARY

SNC Lavalin Inc. was retained by Agnico Eagle Mines Limited to prepare a construction summary (as built) report for the fuel storage tank #8 facilities of the Meadowbank Gold Project, Nunavut. SNC Lavalin Inc. previously prepared the construction drawings and specifications for the fuel storage tank facilities.

SNC Lavalin Inc. wasn't involved in the construction of the fuel storage tank, the information presented in this report was provided in part by Agnico Eagle.

The construction of the fuel storage tank facilities was completed in October 2021. The construction monitoring and quality assurance was managed by Agnico Eagle.

This report summarizes the construction as-built information for the fuel storage tank #8 facilities.

# Table of content



## Figure



## Tables



## Appendices

# 1. Introduction

This document presents the fuel storage tank 8 facilities construction summary report required by the Water Licence 2AM-MEA1530 Part D Item 14 and Part G Item 4. As required by Water Licence Schedule D, this report contains the final design and construction drawings, a summary of construction activities including pictures recorded before, during and after construction. The as-built drawings, detailed explanation of field decision to reflect any deviations from the original construction drawings/plans and how such deviations may affect performance of engineered structures, a discussion of the mitigation measures implemented during construction and its effectiveness are also presented.

# 2. Construction Summary

## 2.1 Site location plan

Agnico Eagle is developing the Whale Tail Project in the Kivalliq Region of Nunavut (65°24’25” N, 96°41’50” W). The 99,878-hectare Amaruq property is located on Inuit-owned and federal crown land, approximately 55 km north of the Meadowbank mine. The Meadowbank mine is accessible from Baker Lake, located 70 kilometers to the south. The Baker Lake Bulk Fuel Storage Tank Facility is located east of the hamlet of Baker Lake, on the north shore of Baker Lake.

Figure 1 – Baker Lake Fuel Farm Site Overview (tank #7 and #8)

## 2.2 Fuel tank size

Baker Lake fuel farm now includes eight (8) 10M liter fuel storage tank. This report is based on tank #8 construction, built in summer/fall 2021.

The Table 1 below presents the tank main dimensions.

Table 1 – Description of the fuel farm

| Fuel farm Description | Baker Lake fuel tank 8 |
|---|---|
| Product | Diesel |
| Volume (liter) | 10 M |
| Diameter (m) | 33.5 |
| Height (m) | 12.2 |

The detailed design drawings of the tank 8 are presented in Appendix A.

## 2.3 Tank Foundations Design

The tank foundation pad is built 2 meters lower than the surrounding ground with a minimum total thickness of 800 mm of compacted material which includes the liner system. A 3 m shoulder surround the tank with a slope of 1V:2H away from the tank. The embankments of the foundation pad are no steeper than 1V:2H.

The Table 2 below presents the design parameters for the tank foundations.

Table 2 – Design parameters for the tank foundations

| Tank Foundation Pad | |
|---|---|
| Tank Diameter (m) | 33.5 |
| Tank foundation pad top (m) | 2x 18.0 x 18.0 |
| Tank foundation pad average thickness, above surrounding ground (m) | 1.2 |
| Slope on shoulder | 1V:2H |
| Embankment slope | 1V:2H |

## 2.4 Berms Design

The storage tank is enclosed inside berms to contain accidental spillage of fuel product. The berms are made of granular material and are made impervious with a geomembrane. For more detail regarding containment, consult document 653281-0004-40ER-0005_0 Baker Lake Fuel Storage Tank #7 and Containment Facilities construction summary report.

## 2.5 Secondary Containment Capacity

The required capacity of the fuel farms section was calculated based on the following codes and regulations:

- National Fire Code of Canada (NFCC);
- National Fire Protection Association (NFPA); and
- Design Rationale for Fuel Storage and Distribution Facility (DRFS).

As per the latest edition of NFCC, art. 4.3.7.3, the required secondary containment capacity for a fuel farm must have a volumetric capacity of not less than the sum of:

- A) The capacity of the largest storage tank located in the contained space, and;
- B) 10% of the greater of:
  - i. The capacity specified in Clause (A), or;
  - ii. The aggregate capacity of all other storage Tanks located in the contained space.

The volume occupied by the Tank foundation is considered in the total secondary containment capacity. The height of the secondary containment capacity is 300 mm lower than the berms' maximum elevation. Based on the above-mentioned, the secondary containment capacity requirements and the available capacity for fuel farms are summarized in the Table 3.

Table 3 – Fuel farm containment capacity

| New section | |
|---|---|
| Volume (liter) | 20 M (2X 10M) |
| Required Containment Capacity (liter) | 12 M |
| Available Containment Capacity (liter) | 20M |

## 2.6 Drawings and photographs

Fuel farm tank final design and construction drawings are available in the Appendix A, construction pictures are available in Appendix C.

## 2.7 Timeline

The baker lake fuel storage tank # 8 was built in 2021. Earth work started on July 2021, followed by tank and piping fabrication in August and September 2021. Tank #8 construction ended September 8th, 2021, Piping installation work were finalised on October 12th, 2021.

# 3. Field decisions

## 3.1 Equipment and controls

Fuel tank #8 was built as in Document 6120-C-260-001-REP-001 Fuel Tank Storage and Containment Facilities Design Report and Drawings. This document presents the rational and decisions that led to its construction. No modifications were performed, and the Fuel storage tank is operational as it was designed.

## 3.2 Piping

Piping between filling line and the fuel tank respect the point-to-point design. The piping can be seen on photos in Appendix C and respect the P&ID. Red mark drawings can be consulted in Appendix B. Modifications made to the piping won't affect the construction performance in any ways.

# 4. Mitigation measure

No Quarrying activities where required to build tank #8. No blast were done on the construction site. During the fuel storage tank construction, no sediments were released in water from construction areas and no water was used to manage dust emissions from construction activity.

# 5. Construction monitoring and inspection test plan

## 5.1 Tank weld

During the tank construction, a testing protocol was followed by the construction team. To meet API Standard 650, companies building tank are required to monitor their work trough an inspection program. In this program, the contractor registers welder's qualifications, confirm construction material quality and outlines its testing protocol. The results from weld tests are also registered there. All that information is required by API 650 standard. Testing on welds took place during the whole construction process. To attest welds quality, inspector relied on visual inspection, magnetic particulate tests and high penetration oil tests. To review those tests results, the materials quality and weld inspection results can be consulted in Appendix D.

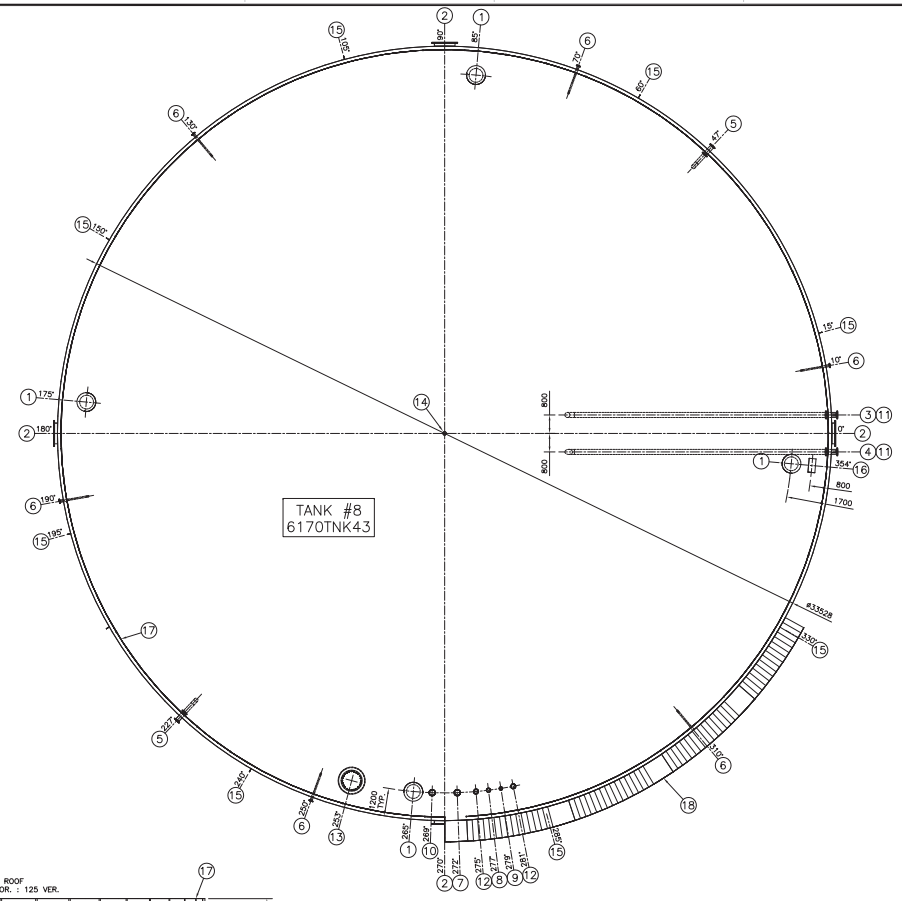
# Appendix A

Final construction drawing

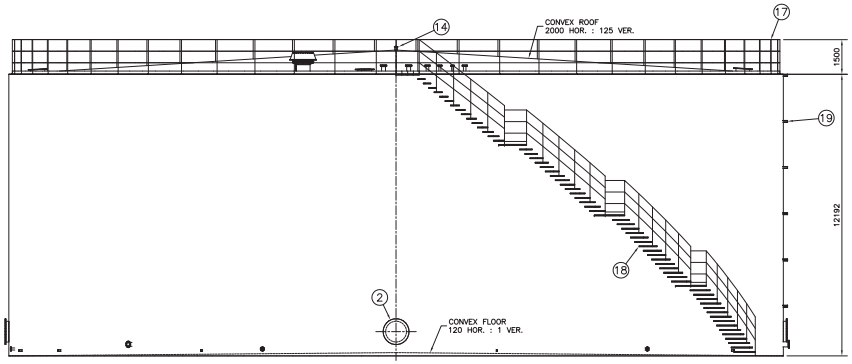
NO. DESSIN DRAWING NO. 61–740–260–201

FORMAT ARCHD

| TANK #8 - 6170TNK43 - DIESEL | | | | |
|---|---|---|---|---|
| SPECIFICATIONS: | | | NOMINAL DIAMETER (METERS): | ± 33.528m (TO BE CONFIRMED BY MANUFACTURER) |
| | | | ORIGINAL NOMINAL HEIGHT (METERS): | ± 12.192m (TO BE CONFIRMED BY MANUFACTURER) |
| | | | NOMINAL CAPACITY: | 10,790,000 LITERS |
| | | | WORKING CAPACITY: | 10,000,000 LITERS |
| TAG | QTY. | DIA. | DESCRIPTION | REMARKS |
| 1 | 4 | 600 | ROOF MANHOLE | TO API 650 STANDARDS |
| 2 | 4 | 900 | SHELL MANHOLE | TO API 650 STANDARDS |
| 3 | 1 | 200 | FIXED PIPE - TANK LOADING 11.7m LG. | TO API 650 STANDARDS, SEE DETAIL |
| 4 | 1 | 200 | FIXED PIPE - TANK UNLOADING 11.7m LG. | TO API 650 STANDARDS, SEE DETAIL |
| 5 | 2 | 150 | PUMPING LOW LEVEL | TO API 650 STANDARDS, SEE DETAIL |
| 6 | 6 | 80 | WATER DRAW-OFF | TO API 650 STANDARDS, SEE DETAIL |
| 7 | 1 | 150 | GAUGE HATCH | TO API 650 STANDARDS, SEE DETAIL |
| 8 | 1 | 80 | OVERFILL PROTECTION | TO API 650 STANDARDS, SEE DETAIL |
| 9 | 1 | 50 | TEMPERATURE & WATER DETECTION PROBE | TO API 650 STANDARDS, SEE DETAIL |
| 10 | 1 | 150 | RADAR - LEVEL DETECTION | TO API 650 STANDARDS, SEE DETAIL |
| 11 | 2 | 50 | ROOF PRESSURE RELIEF LINE CONNECTION, HALF COUPLING 25mm DIA. | TO API 650 STANDARDS AND NBC, SEE DETAIL |
| 12 | 2 | 100 | SPARE | TO API 650 STANDARDS, SEE DETAIL |
| 13 | - | 600 | VENT OPENING | TO API 2000 & 650 STANDARDS. DIA. AND QTY. TO BE DETERMINATE BY THE MANUFACTURER, SEE DETAIL |
| 14 | 1 | 100 | PAINTER SCAFFOLD CABLE SUPPORT | TO API 650 STANDARDS |
| 15 | 8 | - | GROUNDING LUG | TO API 650 STANDARDS, SEE DETAIL |
| 16 | 1 | - | ROOF INSPECTION FRAME | TO API 650 STANDARDS |
| 17 | 1 | - | ROOF GUARDRAIL | TO API 650 STANDARDS AND NBC |
| 18 | 1 | - | SPIRAL STAIRWAY, GUARDRAIL & HANDRAIL | TO API 650 STANDARDS AND NBC |
| 19 | 12 | - | BRACKET FOR PRV PIPING | TO API 650 STANDARDS AND NBC |

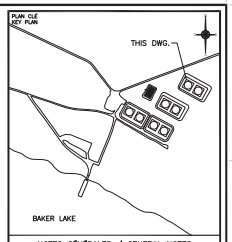



PLAN VIEW
SCALE: 1:100




ELEVATION VIEW
SCALE: 1:100

PLAN CLÉ
KEY PLAN




NOTES GÉNÉRALES / GENERAL NOTES

GENERAL ARRANGEMENT ONLY. TANK SHALL BE DESIGNED AS PER API 650 AND FABRICATION DRAWING APPROVED BY PROFESSIONAL ENGINEER OF NUNAVUT (NAPEG). REFER TO DOCUMENT NUMBER: 6120–C–260–001–SOW–001.

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2021–02–23


SNC·LAVALIN
SNC-Lavalin Stantec Inc.
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél.: 819 764-5181 Fax: 819 797-0158
www.snclstantec.com


Project # : 671087-0000



DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| – | – |
| – | – |
| TANK #8 – PIPING | 61–740–270–001 |
| TANK #7 & #8 – LOCATION PLAN | 61–740–210–201 |
| TANK #7 & #8 – DETAILS | 61–740–260–202 |
| TANK #7 – PLAN & ELEVATION | 61–740–260–200 |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 2 | 2021–02–23 | ISSUED FOR CONSTRUCTION | ST.MAR | A.GUE | N.MÉN |
| 1 | 2019–03–12 | ISSUED FOR TENDER | B.LEM | M.HÉN | N.MÉN |
| 0 | 2018–12–10 | ISSUED FOR TENDER | B.LEM | M.HÉN | N.MÉN |

REVISIONS

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
PLATEWORK
PLAN & ELEVATION
10M LITERS DIESEL TANK
TANK #8 – 6170TNK43

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | B.LEMIEUX, Tech. | DATE 2018/11/16 |
| VERIFIÉ PAR CHECKED BY | R. LAVOIE, Jr. Eng. | 2018/11/16 |
| APPROUVÉ PAR APPROVED BY | M. HÉNAULT, P. Eng. | 2018/11/16 |
| ÉCHELLE SCALE | INDICATED | DATE 2018/11/16 |

NO. DESSIN DRAWING NO. 61–740–260–201

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 6120 | 2 | 1 / 1 |

AE–CART–ARCH D

C:\Users\mvarca11\Desktop\temp\00–AE\671087–0000 – Amarok\61–740–260–201_R2.dwg–2013–02–19 14:03:29

FILE NO. 61–740–260–201_R2.dwg

NO. DESSIN DRAWING NO. 61-740-260-202

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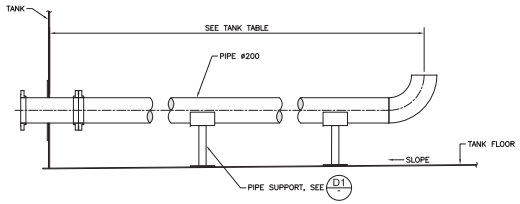


3 TANK LOADING DETAIL
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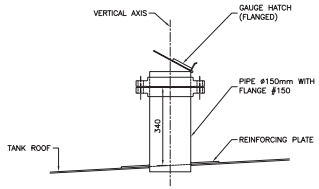


7 GAUGE HATCH DETAIL
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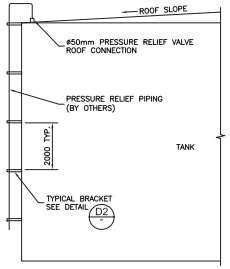


11 19 PRESSURE RELIEF BRACKET DETAIL
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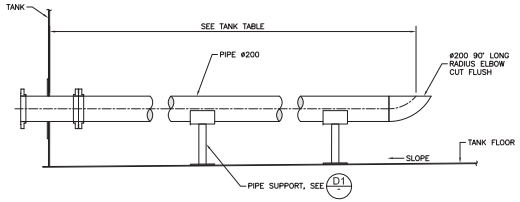
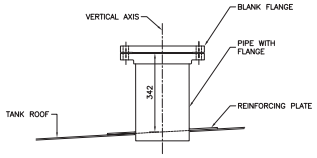
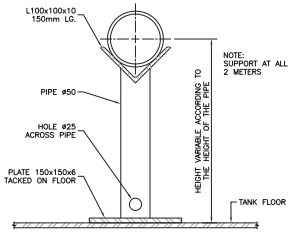


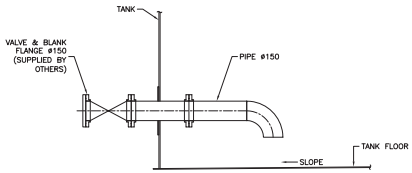

4 TANK UNLOADING DETAIL
SCALE: 1:20



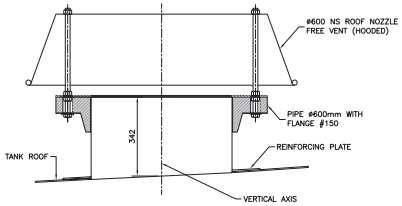

8 9 10 12 NOZZLE DETAIL
SCALE: 1:10



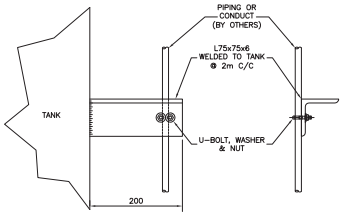

D1 PIPE SUPPORT
SCALE: 1:5




5 PUMPING LOW LEVEL DETAIL
SCALE: 1:20

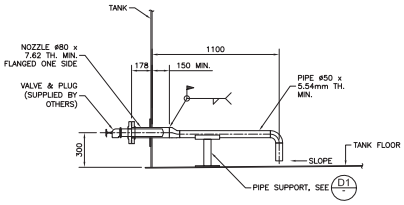



13 VENT DETAIL
SCALE: 1:10

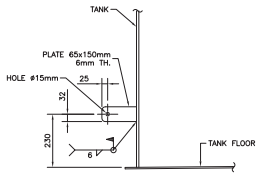



NOTE: FOR ITEMS 8 & 13

D2 BRACKET FOR PIPING OR ELECTRICAL CONDUCT TO THE SHELL TANK
SCALE: 1:5

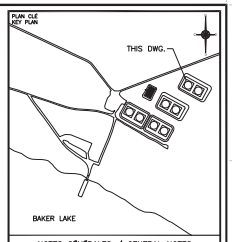



6 WATER DRAW-OFF DETAIL
SCALE: 1:20




15 GROUNDING LUGS DETAIL
SCALE: 1:10

PLAN CLÉ KEY PLAN




NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2021-02-23


SNC·LAVALIN
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150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél.: 819 764-3181 Fax: 819 797-0158
www.snclavalin.com


Project # : 671087-0000



DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| – | – |
| – | – |
| – | – |
| TANK #7 & #8 – LOCATION PLAN | 61-740-210-201 |
| TANK #8 – PLAN & ELEVATION | 61-740-260-201 |
| TANK #7 – PLAN & ELEVATION | 61-740-260-200 |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 1 | 2021-02-23 | ISSUED FOR CONSTRUCTION | ST.MAR | A.GUE | N.MEN |
| 0 | 2018-12-10 | ISSUED FOR TENDER | B.LEM | M.HÉN | N.MEN |

REVISIONS

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
PLATEWORK
DETAILS
10M LITERS DIESEL TANK
TANK #7 & #8

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | B.LEMIEUX, Tech. | DATE 2018/11/16 |
| VERIFIÉ PAR CHECKED BY | R. LAVOIE, Jr. Eng. | 2018/11/16 |
| APPROUVÉ PAR APPROVED BY | M. HÉNAULT, P. Eng. | 2018/11/16 |
| ÉCHELLE SCALE | INDICATED | DATE 2018/11/16 |

NO. DESSIN DRAWING NO. 61-740-260-202

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 6120 | 1 | 1 / 1 |

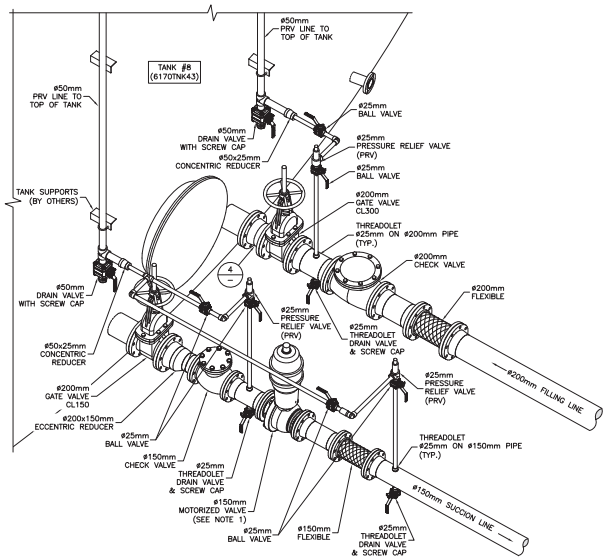
AE-CART-ARCH D

C:\Users\marce11\Desktop\temp\GD-AE\671087-0000 - Amorsk\61-740-260-202_R1.dwg-2013-02-19 14:03:29

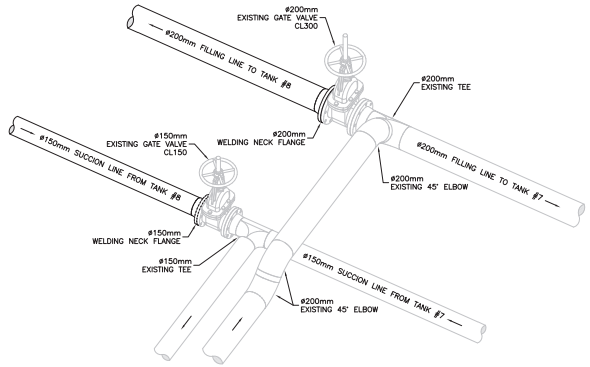
FILE NO. 61-740-260-202_R1.dwg

NO. DESSIN DRAWING NO. 61-740-270-200

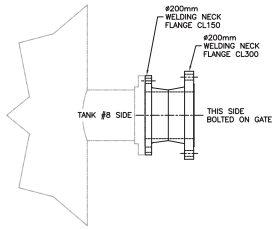
FORMAT ARCHD



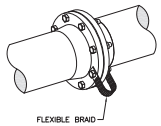

*DETAIL* 1/200
SCALE: N/A



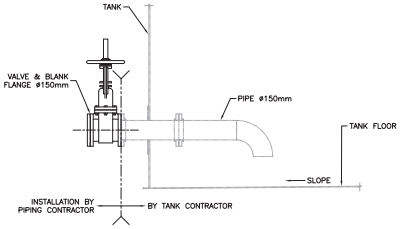

*DETAIL* 2/200
SCALE: N/A



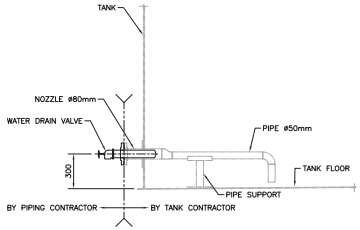

*DETAIL* 4/–
SCALE: N.T.S.



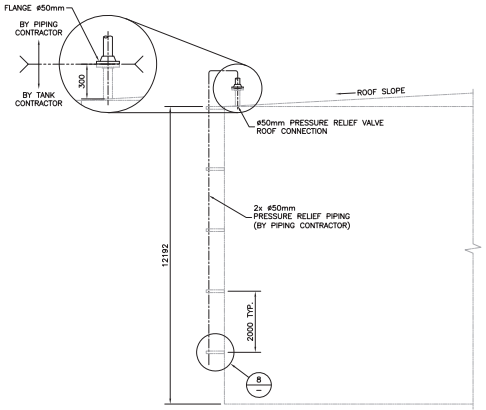

*TYPICAL FLANGE DETAIL*
SCALE: N/A



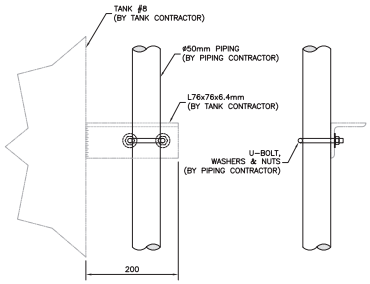

*DETAIL* 5/200
SCALE: 1:20
QTY.: 2




*DETAIL* 6/200
SCALE: 1:20
QTY.: 6

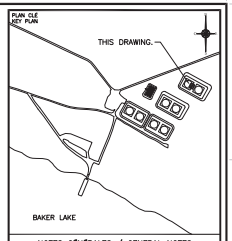



*DETAIL* 7/200
SCALE: N.T.S.




*DETAIL* 8/–
SCALE: 1:5

PLAN CLÉ
KEY PLAN




**NOTES GÉNÉRALES / GENERAL NOTES**

NOTE 1:
SUPPLY OF MOTORIZED VALVE BY AEM AND INSTALLATION BY CONTRACTOR.

NOTE 2:
AEM WILL SUPPLY VALVES, PIPING AND ACCESSORIES. CONTRACTOR ARE RESPONSIBLE OF INSTALLATION.

NOTE 3:
REFER TO DOCUMENT NUMBER 6129-C-265-002-SPT-001 FOR INSTALLATION SPECIFICATIONS.

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2021-03-23


SNC·LAVALIN
SNC-Lavalin Stratégie inc.
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél.: 819 764-3181 Fax: 819 797-0158
www.snclavalin.com


Project # : 671087-0000 REV.: 0



**DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS**

| TITRE / TITLE | # DWG |
|---|---|
| P&ID | 61-740-J-0100_2/2 |
| TANK 7 & 8 PIPE SUPPORTS – DETAILS | 61-740-270-202 |
| TANK 7 & 8 PIPING – ELEV. & DETAILS | 61-740-270-201 |
| 10M L. DIESEL TNK #7 & TNK #8 PIPING | 61-740-270-200 |
| – | – |
| – | – |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 0 | 2021-03-23 | ISSUED FOR CONSTRUCTION | D.L.L. | A.OUE | N.MEN |

**REVISIONS**

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
270 – PIPING
DETAILS
10M LITERS DIESEL TANK #8 (6170TNK43)

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | ST. MARCOTTE, Tech. | DATE 2021/02/24 |
| VERIFIÉ PAR CHECKED BY | R. LAVOIE, P. Eng. | 2021/02/24 |
| APPROUVÉ PAR APPROVED BY | A. OUELLET, P. Eng. | 2021/02/23 |
| ÉCHELLE SCALE | AS SHOWN | DATE 2021/02/24 |

NO. DESSIN DRAWING NO. 61-740-270-001

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 6129 | 0 | 1/1 |

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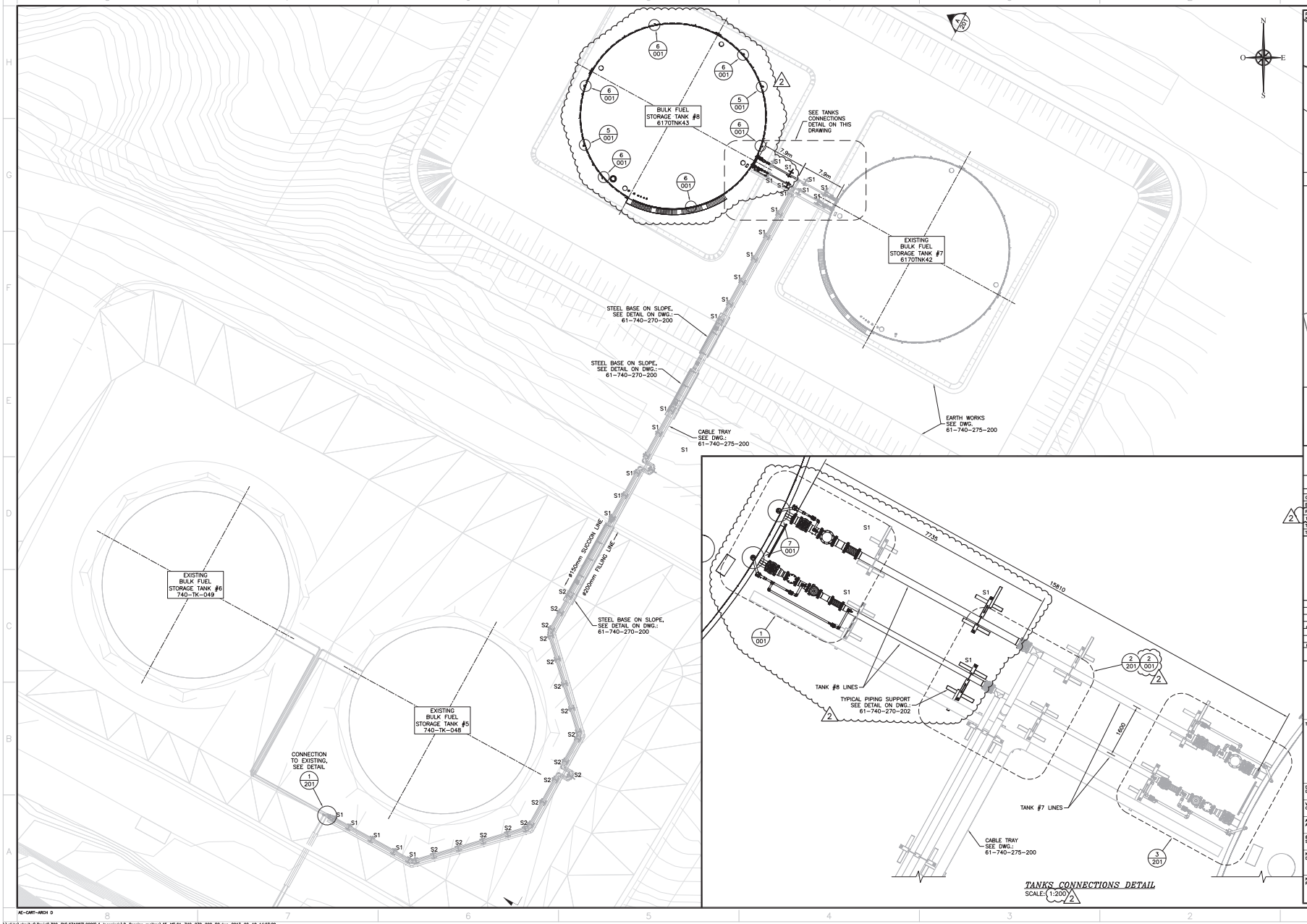
\\ali.ad\snclavalin\Projet\300-RN\671087\0000\0-Docs Emis\02 - Tank No.8 Baker Lake\2021-03-23 - Construction\61-740-270-001_R0.dwg-2013-02-19 14:03:29

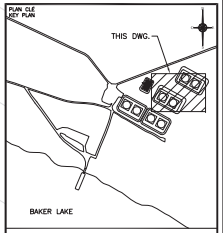
FILE NO. 61-740-270-001_R0.dwg

NO. DESSIN
DRAWING NO. 61–740–270–200

FORMAT ARCHD




PLAN CLÉ
KEY PLAN




## NOTES GÉNÉRALES / GENERAL NOTES

S1: PIPE SUPPORT TYPE 1
S2: PIPE SUPPORT TYPE 2
SEE DWG. # 61–740–270–202

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2021–03–23


SNC·LAVALIN
SNC-Lavalin Stratégies inc.
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél.: 819 764-3181 Fax: 819 797-0158
www.snclavalin.com


Project # : 671087–0000 REV.: 2



## DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| GENERAL EARTH WORKS | 61–740–230–200 TO 205 |
| ELECTRICAL | 61–740–275–200 TO 201 |
| P&ID | 61–740–J–0100_1 & 2 |
| 10M LITERS DIESEL TANK #8 (6170TNK43) | 61–740–270–001 |
| DWG 7 & 8 PIPE SUPPORTS – DETAILS | 61–740–270–202 |
| TANK 7 & 8 PIPING – ELEV. & DETAILS | 61–740–270–201 |

AGNICO EAGLE

## REVISIONS

| REV. | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 2 | 2021–03–23 | ISSUED FOR CONSTRUCTION | D.L.L. | A.OUE | N.MÉN |
| 1 | 2019–06–03 | ISSUED FOR CONSTRUCTION | B.L. | A.O. | B.ROY |
| 0 | 2019–04–05 | ISSUED FOR TENDER | B.L. | A.O. | N.MÉN |

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
PIPING
PLAN VIEW
10M LITERS DIESEL TANK #7 (6170TNK42)
& TANK #8 (6170TNK43) PIPING

| | | |
|---|---|---|
| DESSINÉ PAR / DRAWN BY | B. LEMIEUX, Tech. | DATE 2019/02/15 |
| VERIFIÉ PAR / CHECKED BY | R. LAVOIE, Jr. Eng. | 2019/02/15 |
| APPROUVÉ PAR / APPROVED BY | A. OUELLET, P. Eng. | 2019/02/15 |
| ÉCHELLE / SCALE | 1 : 300 | DATE 2019/02/15 |
| NO. DESSIN / DRAWING NO. | 61–740–270–200 | |
| NO. PROJET / PROJECT NO. 6120 | REVISION 2 | FEUILLE / SHT 1 / 1 |

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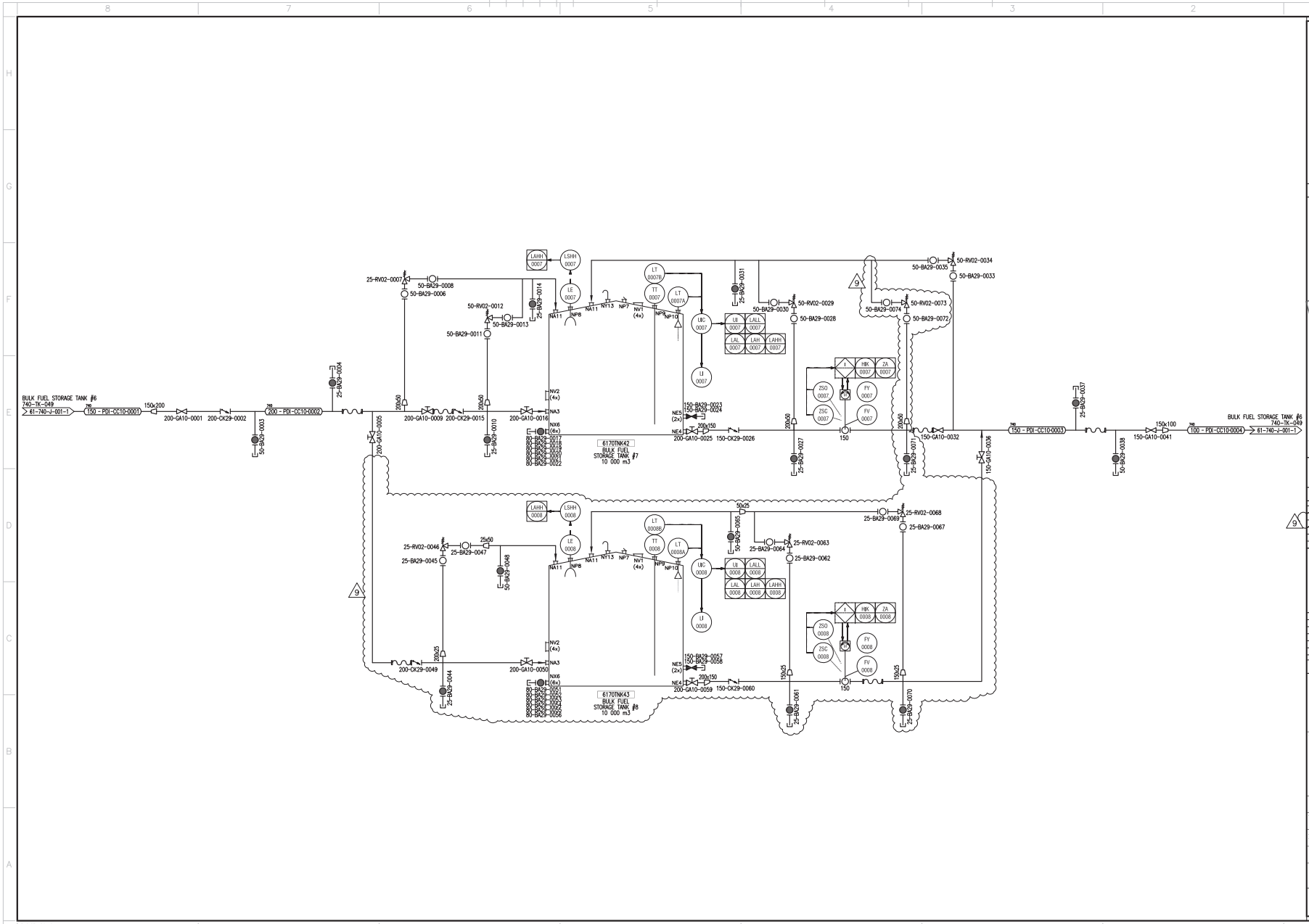
FILE NO. 61–740–270–200_R2.dwg

NO. DESSIN
DRAWING NO. 61-740-J-0100-2_R9

FORMAT ARCHD




PLAN CLÉ
KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2021-03-23


SNC·LAVALIN
SNC-Lavalin Stantec Inc.
532, 7e Rue Ouest, Bureau 101
Amos (Québec) J9T 3N7
Tél : 819 733-4355 Téléc : 819 733-4359
www.snclavalin.com


Projet No. : 671087-0000 REV.: 9



DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| TANK #6 AND #8 – FUEL DIST. PIPING | 61-740-M-0100 |
| 10M LITERS DIESEL TANK #8 (6170TNK43) | 61-740-270-001 |
| 10M L. DIESEL TNK #7 & TNK #8 PIPING | 61-740-270-200 |
| – | – |
| – | – |
| – | – |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 8 | 2019-12-14 | AS BUILT | S.P. | B.R. | – |
| 7 | 2019-06-03 | ISSUED FOR CONSTRUCTION | B.L. | A.O. | B.ROY |
| 6 | 2019-05-03 | ADDENDUM AIR / DRAIN VALVE | P.O.C. | A.O. | N.MEN. |
| 5 | 2019-04-26 | ISSUED FOR TENDER | B.L. | A.O. | N.MEN. |
| 4 | 2018-12-12 | FOR COMMENTS | B.L. | M.H. | N.MEN. |
| 9 | 2021-03-23 | ISSUED FOR CONSTRUCTION | D.L.L. | A.OUE | N.MEN |

REVISIONS

TITRE / TITLE
AGNICO-EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
–
PROCESS AND INSTRUMENTATION DIAGRAM
–
–

| | | | |
|---|---|---|---|
| DESSINÉ PAR / DRAWN BY | FRANCIS ROSE, TECH | DATE | 2009/03/27 |
| VERIFIÉ PAR / CHECKED BY | PATRICK GIARD, P.ENG | – | |
| APPROUVÉ PAR / APPROVED BY | PATRICK GIARD, P.ENG | – | |
| ÉCHELLE / SCALE | N.T.S. | DATE | 2009-03-27 |

NO. DESSIN / DRAWING NO. 61-740-J-0100

| NO. PROJET / PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 6120 | 9 | 2 / 2 |

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\\ellos\ulavalnet\Projet\300-RN\671087\0000P\4-Ingenierie\D-Dessins maitres\48-IC\61-740-J-0100-2_R9.dwg-2013-02-19 14:03:29

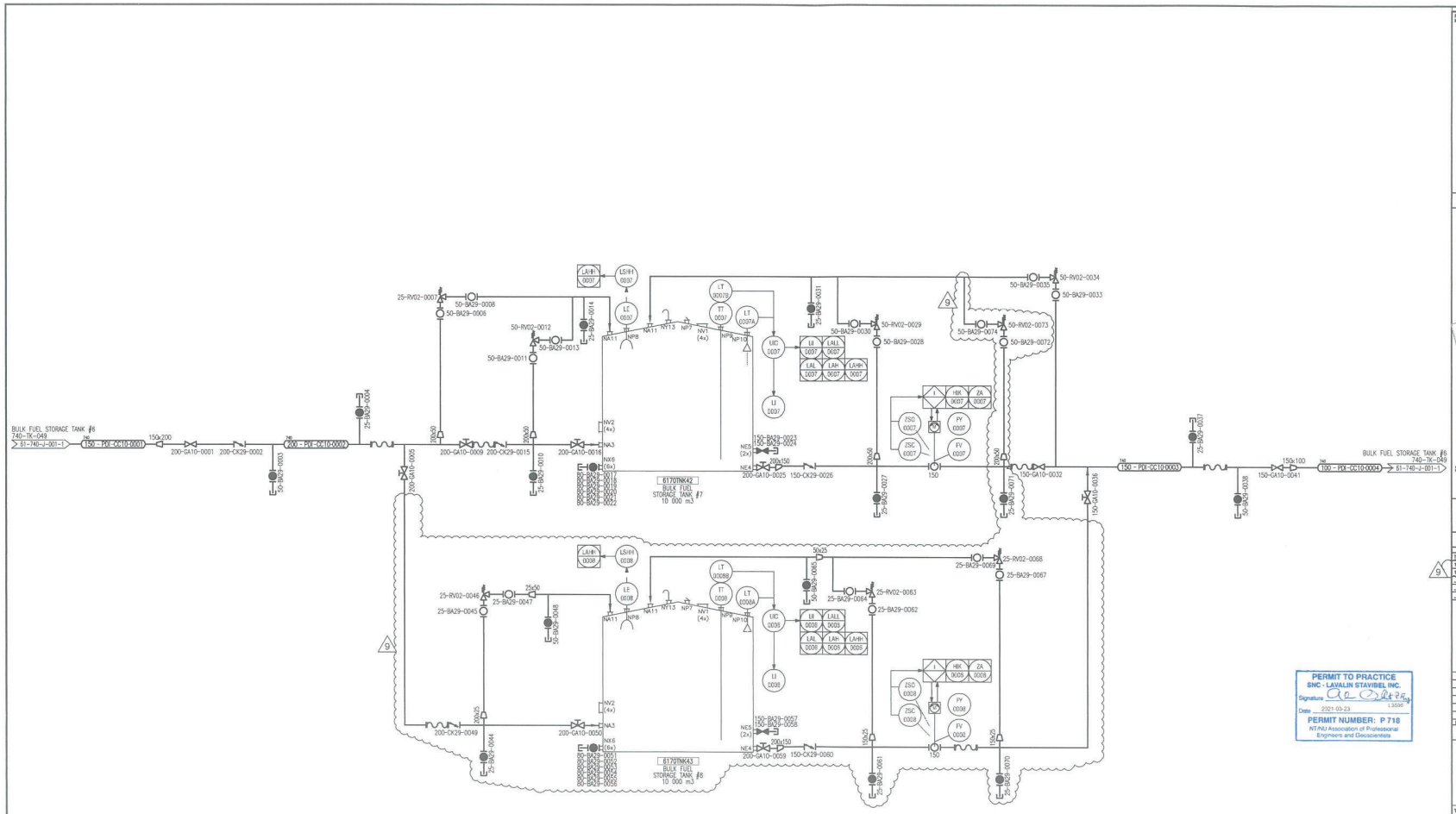
FILE NO. 61-740-J-0100-2_R9.dwg

# Appendix B

As built drawing

NO. DESSIN DRAWING NO. 61-740-J-0100-2_R9

FORMAT ARCHD




PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2021-03-23
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

PLAN CLÉ KEY PLAN

NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2021-03-23


SNC·LAVALIN
SNC-Lavalin Stavibel inc.
522, Av. Rue Dunn, Bureau 101
Amos (Québec) J9T 3W7
Tél. : 819 732-6055 Télec. : 819 732-0259
www.snclavalin.com


Projet No. : 671087-0000 REV. : 9



DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| | TITRE / TITLE | # DWG |
|---|---|---|
| | TANK #6 AND #8 – FUEL DIST. PIPING | 61-740-M-0100 |
| 9 | 10M LITERS DIESEL TANK #6 (61701TNK42) | 61-740-270-001 |
| | 10M L. DIESEL TNK #7 & TNK #8 PIPING | 61-740-270-200 |
| | – | – |
| | – | – |
| | – | – |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PVR/DPI | APP. | QUEDIT |
|---|---|---|---|---|---|
| 8 | 2019-12-16 | AS BUILT | S.P. | B.R. | – |
| 7 | 2019-05-03 | ISSUED FOR CONSTRUCTION | B.L. | A.O. | G.ROY |
| 6 | 2019-03-05 | ADDIDIONAL AIR / DRAIN VALVE P.D.C. | B.L. | A.O. | N.MOL |
| 5 | 2018-04-25 | ISSUED FOR TENDER | B.L. | A.O. | N.MOL |
| 4 | 2018-12-12 | FOR COMMENTS | B.L. | M.H. | N.MOL |
| 9 | 2021-03-23 | ISSUED FOR CONSTRUCTION | D.L.L. | A.OUE | N.MOL |

REVISIONS

2021-03-23 — 2021-03-23

TITRE / TITLE

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

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | FRANCIS ROSE, TECH | DATE 2009/03/27 |
| VERIFIÉ PAR CHECKED BY | PATRICK GIARD, P.ENG | – |
| APPROUVÉ PAR APPROVED BY | PATRICK GIARD, P.ENG | – |
| ÉCHELLE SCALE | N.T.S. | DATE 2009-03-27 |

NO. DESSIN DRAWING NO. 61-740-J-0100

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 6120 | 9 | 2 / 2 |

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\\pll.lst\atelier$\Projet\300-RP\671087\2000\1-Ingenierie\3-Dessins mcllrw\49-87\61-740-J-0100-2_R9.dwg-2013-08-18 14:03:59

FILE NO. 61-740-J-0100-2_R9.dwg

NO. DESSIN / DRAWING NO. 61-740-285-200

FORMAT ANSI B-11x17

## Panel Ident.: 6174-DP-06

| | |
|---|---|
| Power source: | 120 208 Volts |
| Feeder : | 6174-TX-04 |
| Mount: | Surface |
| Localisation: | BAKER LAKE SEA CAN |
| Type: | Schneider QO Series |

| | |
|---|---|
| Encl. Type : | NEMA 1 |
| Main breaker: | N/A |
| Nb. of circuit: | 42 |
| Bars (Amps): | 225A |
| Cap. rupt. (kA): | 10 |

| Local and description | TYPE REF | TYPE Qty | WATTS | DISJ. TYPE | DISJ. AMP | CT # | | | CT # | DISJ. AMP | DISJ. TYPE | WATTS | TYPE Qty | TYPE REF | Local and description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6174-PLC-02 Power | D | | | | 15 | 1 | A | | 2 | 15 | | | | E | Sea Can Lighting |
| 6174-XV-01 - Elect. Actuator valve | M | | | | 15 | 3 | B | | 4 | 15 | | | | P | Sea Can Receptacle |
| 6174-XV-02 - Elect. actuator valve | M | | | | 15 | 5 | C | | 6 | 15 | | | | | Spare breaker |
| 6174-XV-03 - Elect. actuator valve | M | | | | 15 | 7 | A | | 8 | 15 | | | | | Spare breaker |
| 6174-XV-04 - Elect. actuator valve | M | | | | 15 | 9 | B | | 10 | 15 | | | | | Spare breaker |
| 6174-XV-05 - Elect. actuator valve | M | | | | 15 | 11 | C | | 12 | 15 | | | | | Spare breaker |
| 6174-XV-06 - Elect. actuator valve | M | | | | 15 | 13 | A | | 14 | 15 | | | | | Spare breaker |
| 6174-IOP-003 power | D | | | | 15 | 15 | B | | 16 | 15 | | | | | Spare breaker |
| Spare breaker | | | | | 15 | 17 | C | | 18 | 30 | | | | | Spare breaker |
| Spare breaker | | | | | 15 | 19 | A | | 20 | | | | | | |
| 6174-XV-07 Res. #7 Valve Actuator | M | | | | 15 | 21 | B | | 22 | 15 | GFI | | | C | 6174-HEA-07 Res. #7 Valve Heating |
| | | | | | | 23 | C | | 24 | | | | | | |
| 6174-XV-08 Res. #8 Valve Actuator | M | | | | 15 | 25 | A | | 26 | 15 | GFI | | | C | 6174-HEA-08 Res. #8 Valve Heating |
| | | | | | | 27 | B | | 28 | | | | | | |
| Space | | | | | | 29 | C | | 30 | | | | | | Space |
| Space | | | | | | 31 | A | | 32 | | | | | | Space |
| Space | | | | | | 33 | B | | 34 | | | | | | Space |
| Space | | | | | | 35 | C | | 36 | | | | | | Space |
| Space | | | | | | 37 | A | | 38 | | | | | | Space |
| Space | | | | | | 39 | B | | 40 | | | | | | Space |
| Space | | | | | | 41 | C | | 42 | | | | | | Space |

| TYPE (REF) | (W) total | Qty |
|---|---|---|
| (E) Lighting | 0 | 0 |
| (P) Parking plug | 0 | 0 |
| (C) Heating | 0 | 0 |
| (M) Motor | 0 | 0 |
| (W) Water heater | 0 | 0 |
| (D)Other | 0 | 0 |
| | 0 | 0 |

| TYPE (REF) | Qty (ref) |
|---|---|
| (L) Spare | 0 |
| (S) Space | 0 |
| | 0 |
| | 0 |
| | 0 |

| | Watts | Amp |
|---|---|---|
| Phase A | 0 | 0,00 |
| Phase B | 0 | 0,00 |
| Phase C | 0 | 0,00 |
| Total R | 0 | 0,00 |

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2021-03-10

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2021-03-17
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

J. BOURNIVAL LICENSEE NWT/NU
2021-03-17

| TITRE / TITLE | # DWG | REV | DESCRIPTION | DATE | PAR BY |
|---|---|---|---|---|---|
| – | – | 4 | ISSUED FOR CONSTRUCTION | 2021-03-10 | J.BOU |
| – | – | 3 | AS BUILT | 2020-01-24 | S.MAR |
| – | – | 2 | ISSUED FOR CONSTRUCTION | 2019-06-03 | P.LEM. |
| – | – | 1 | ISSUED FOR TENDER | 2019-05-03 | P.LEM. |
| – | – | 0 | ORIGINAL DRAWING WAS 6174-E-002 | JUNE/16 | M.B. |

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

REVISIONS

AGNICO EAGLE

SNC·LAVALIN
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tel. : 819 764-5181 Fax : 819 797-0158
www.snclavalin.com

Project # : 660534-0000
REV:1

| | | DATE |
|---|---|---|
| DESSINÉ PAR / DRAWN BY | MV | MAY/16 |
| VÉRIFIÉ PAR / CHECKED BY | ST | JUNE/16 |
| APPROUVÉ PAR / APPROVED BY | ST | JUNE/16 |
| No. PROJET / PROJECT NO. | 6120 | |
| DATE | JUNE/16 | |



TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
285 – SERVICE ELECTRICAL – LIGHT AND DISTRIBUTION
6174-DP-06 PANEL SCHEDULE
BAKER LAKE SEA CAN – DISTRIBUTION PANEL 120/208VAC

| ÉCHELLE/ SCALE | FICHIER FILE | No. DESSIN/ DRAWING NO. | REVISION | FEUILLE/SHT |
|---|---|---|---|---|
| N/A | 61-740-285-200_R4.dwg | 61-740-285-200 | 4 | 1 / 1 |

AE-CART-ANSI B

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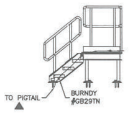
NO. DESSIN DRAWING NO. 61-740-275-201

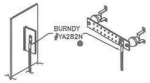
FORMAT ARCHD

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2021-03-10

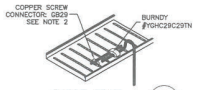

*C-TAPS* (1)
SCL: NTS
CONDUCTOR TO CONDUCTOR CONNECTOR



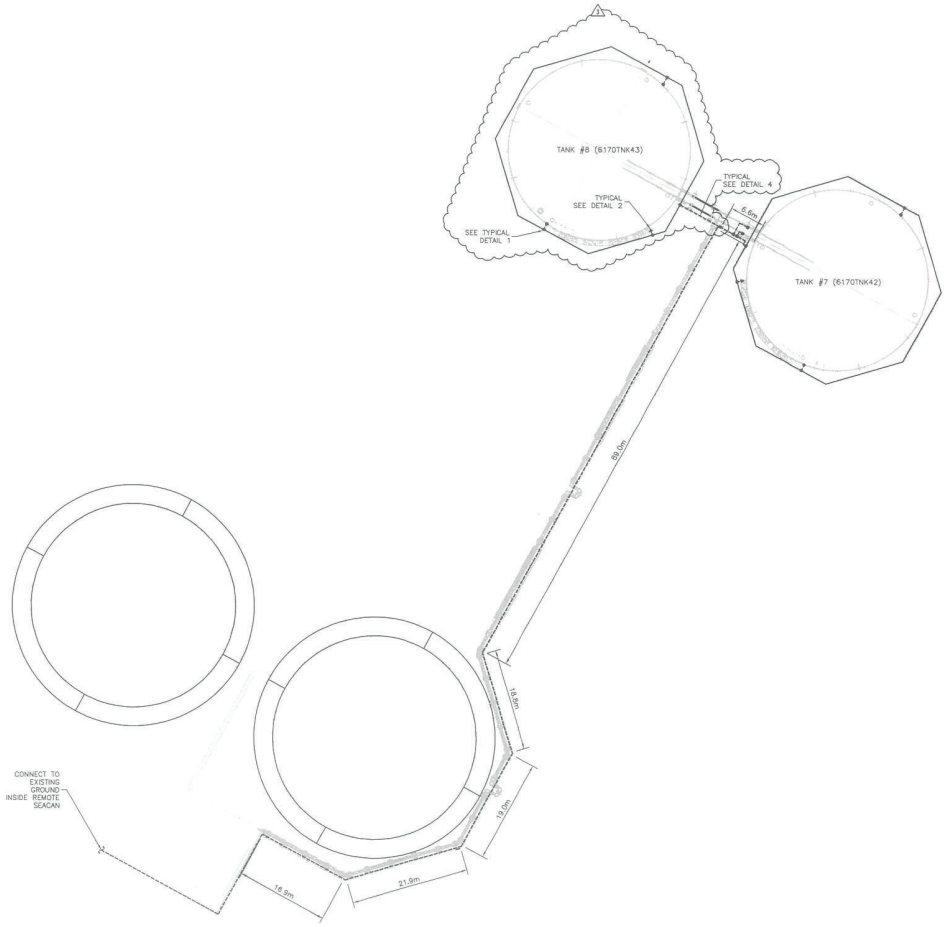

*STAIRS* (2)
SCL: NTS




*LUG YA-28* (3)
SCL: NTS
EQUIPEMENT, CONTAINER, GROUND BAR



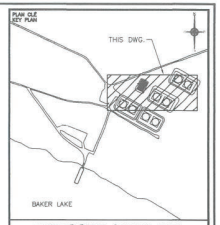

*CABLE TRAY* (4)
SCL: NTS




*PLAN VIEW*
SCALE: 1:400

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2021-03-17
PERMIT NUMBER: P 718
NITPU Association of Professional Engineers and Geoscientists

PLAN CLÉ
KEY PLAN




## NOTES GÉNÉRALES / GENERAL NOTES

LEGEND

——— BURIED STRANDED TINNED BARE COPPER CONDUCTOR #4/0 AWG

- - - - - SURFACE STRANDED TINNED BARE COPPER CONDUCTOR #4/0 AWG IN CABLE TRAY

NOTES

1- THE PERIMETER GROUND CONDUCTOR OF THE TANK MUST BE ABOVE THE GEOMEMBRANE

2- THE GROUND CONDUCTOR MUST BE FIXED TO THE CABLE TRAY TO ALL 15 METER MINIMUM WITH MECHANICAL CONNECTOR. BURNDY MODEL GB29


SNC·LAVALIN
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www.snclavalin.com


Project # : 660534-0000



## DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |

AGNICO EAGLE

## REVISIONS

| REV. | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 3 | 2021-03-10 | ISSUED FOR CONSTRUCTION | D.PEL. | J.BOU. | |
| 2 | 2020-01-24 | AS BUILT | S.MAR. | | L.LAV |
| 1 | 2019-05-03 | ISSUED FOR CONSTRUCTION | S.MAR. | P.LEM. | |
| 0 | 2019-05-03 | ISSUED FOR TENDER | D.PEL. | P.LEM. | |

2021.03.17

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 – BAKER LAKE AREA
275 – POWER ELECTRICAL ARRANGEMENT
10M LITERS DIESEL TANK #7 (6170TNK42) & TANK #8 (6170TNK43) GROUNDING

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | DONALD PELLERIN, Tech. | DATE 2019-04-24 |
| VÉRIFIÉ PAR CHECKED BY | PHILIPPE LEMIRE, P. Eng. | 2019-04-25 |
| APPROUVÉ PAR APPROVED BY | PHILIPPE LEMIRE, P. Eng. | 2019-05-03 |
| ÉCHELLE SCALE | INDICATED | DATE 2019-04-24 |
| NO. DESSIN DRAWING NO. | 61-740-275-201 | |
| NO. PROJET PROJECT NO. | 6120 | REVISION 3 / FEUILLE / SHT 1/1 |

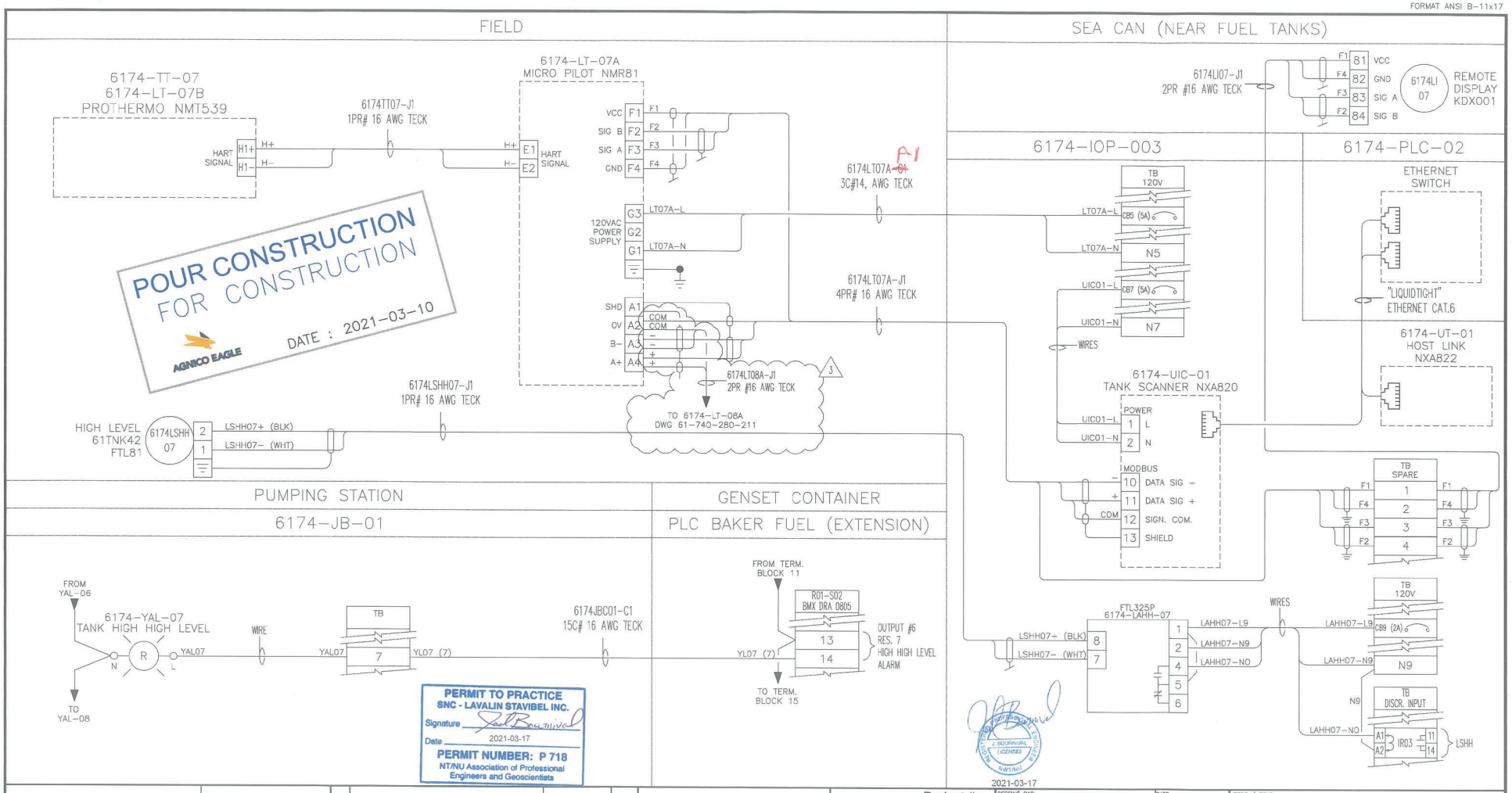
AC-CMT-ARCH 9

P:\200-INF\171267\0000\4-Ingenierie\3-Dessins modeles\48-ET\61-740-275-201_R3.dwg-2013-02-19 14:03:29

FILE NO. 61-740-275-201_R3.dwg

NO. DESSIN / DRAWING NO. 61-740-280-209

FORMAT ANSI B-11x17




| TITRE / TITLE | # DWG | REV | DESCRIPTION | DATE | PAR BY |
|---|---|---|---|---|---|
| 6174JBC01 – ARRANGEMENT / WIRING | 61-740-280-214 | 3 | ISSUED FOR CONSTRUCTION | 2021-03-10 | J.BOU |
| PLC BAKER FUEL (EXT.) – WIRING DIAGRAM | 61-740-280-213 | 2 | AS BUILT | 2020-01-24 | S.MAR |
| 6174IOP003 – WIRING DIAGRAM | 61-740-280-207 | 1 | ISSUED FOR CONSTRUCTION | 2019-06-03 | P.LEM. |
| 61TNK43 – LEVEL MONITORING | 61-740-280-211 | 0 | ISSUED FOR TENDER | 2019-05-03 | P.LEM |

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

REVISIONS

AGNICO EAGLE

Project # : 660534-0000

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Rouyn-Noranda (Québec) J9X 2R7
Tel. : 819 764-5181 Fax : 819 797-0158
www.snclavalin.com

| | | |
|---|---|---|
| DESSINÉ PAR / DRAWN BY | S.MARCOTTE, TECH. | DATE 2019-04-29 |
| VÉRIFIÉ PAR / CHECKED BY | PHILIPPE LEMIRE, P.ENG. | 2019-04-29 |
| APPROUVÉ PAR / APPROVED BY | PHILIPPE LEMIRE, P.ENG. | 2019-05-03 |
| No. PROJET / PROJECT NO. | 6120 | |
| DATE | 2019-04-29 | |



TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
280 – INSTRUMENTATION & CONTROL
WIRING DIAGRAM
61TNK42 – LEVEL MONITORING

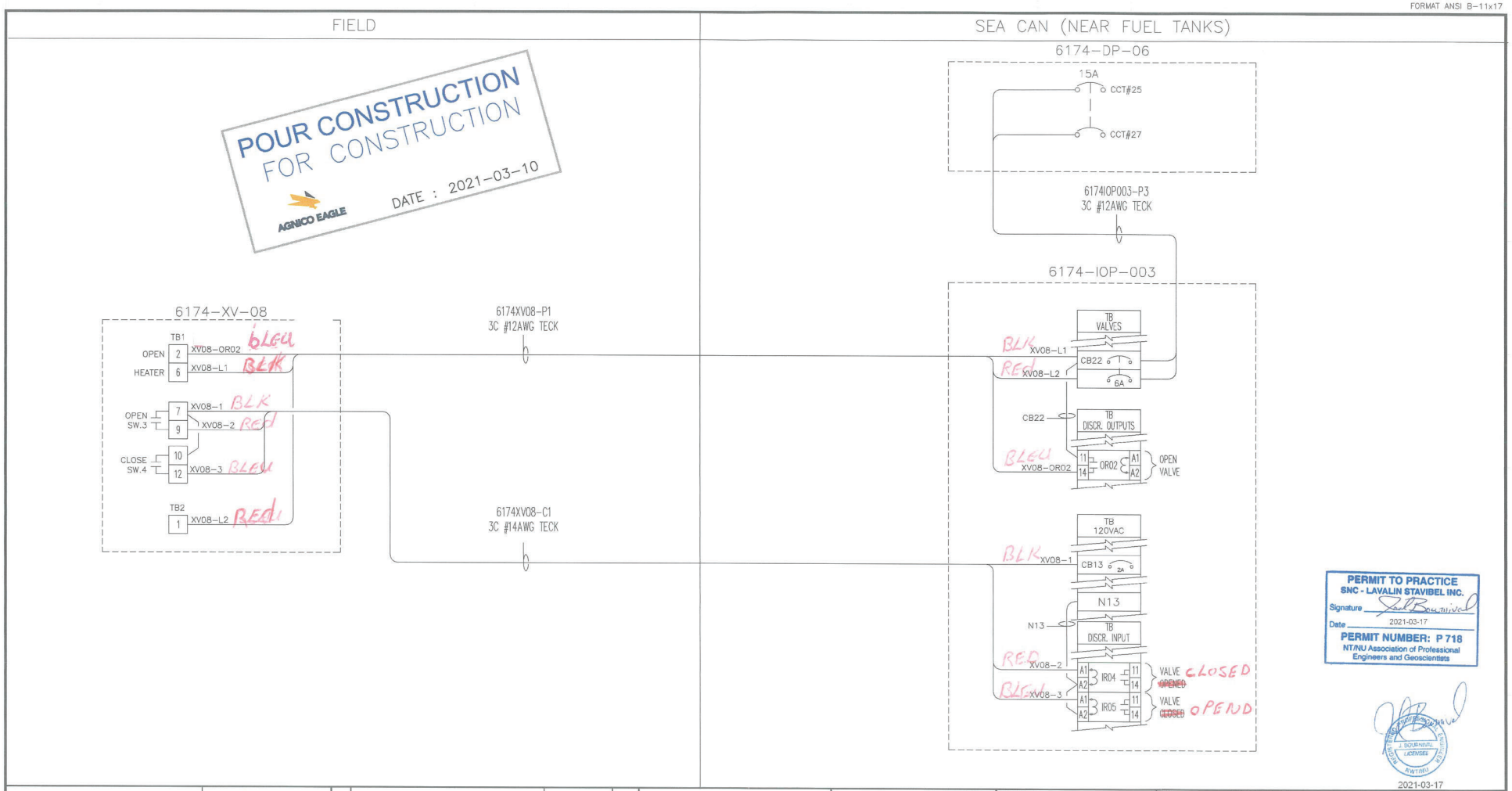
ÉCHELLE / SCALE: NTS
FICHIER / FILE: 61-740-280-209_R3.dwg
No. DESSIN / DRAWING NO.: 61-740-280-209
REVISION: 3
FEUILLE / SHT: 1 / 1

AE-CART-ANSI B

C:\Users\pelld4\Desktop\Projet\Agnico\671087\61-740-280-209_R3.dwg-2013-02-19 14:03:29

NO. DESSIN / DRAWING NO. 61-740-280-212

FORMAT ANSI B-11x17




PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2021-03-17
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

2021-03-17

| | | | | | |
|---|---|---|---|---|---|
| | | 3 | ISSUED FOR CONSTRUCTION | 2021-03-10 | J.BOU |
| | | 2 | AS BUILT | 2020-01-24 | S.MAR |
| 6174-DP-06 – SCHEDULE | 61-740-285-200 | 1 | ISSUED FOR CONSTRUCTION | 2019-06-03 | P.LEM |
| 6174IOP003 – WIRING DIAGRAM | 61-740-280-207 | 0 | ISSUED FOR TENDER | 2019-05-03 | P.LEM |
| TITRE / TITLE | # DWG | REV | DESCRIPTION | DATE | PAR BY |
| DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS | | REVISIONS | | | |

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www.snclavalin.com

Project # : 660534-0000

| | | |
|---|---|---|
| DESSINÉ PAR / DRAWN BY | S.MARCOTTE, TECH. | DATE 2019-04-30 |
| VÉRIFIÉ PAR / CHECKED BY | PHILIPPE LEMIRE, P.ENG. | 2019-04-30 |
| APPROUVÉ PAR / APPROVED BY | PHILIPPE LEMIRE, P.ENG. | 2019-05-03 |
| No. PROJET / PROJECT NO. | 6120 | |
| DATE | 2019-04-30 | |



TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
280 – INSTRUMENTATION & CONTROL
WIRING DIAGRAM
6170TNK43 – VALVE 6174-XV-08

ÉCHELLE/SCALE NTS | FICHIER/FILE 61-740-280-212_R3.dwg

No. DESSIN/DRAWING NO. 61-740-280-212 | REVISION 3 | FEUILLE/SHT 1 / 1

AE-CART-ANSI B

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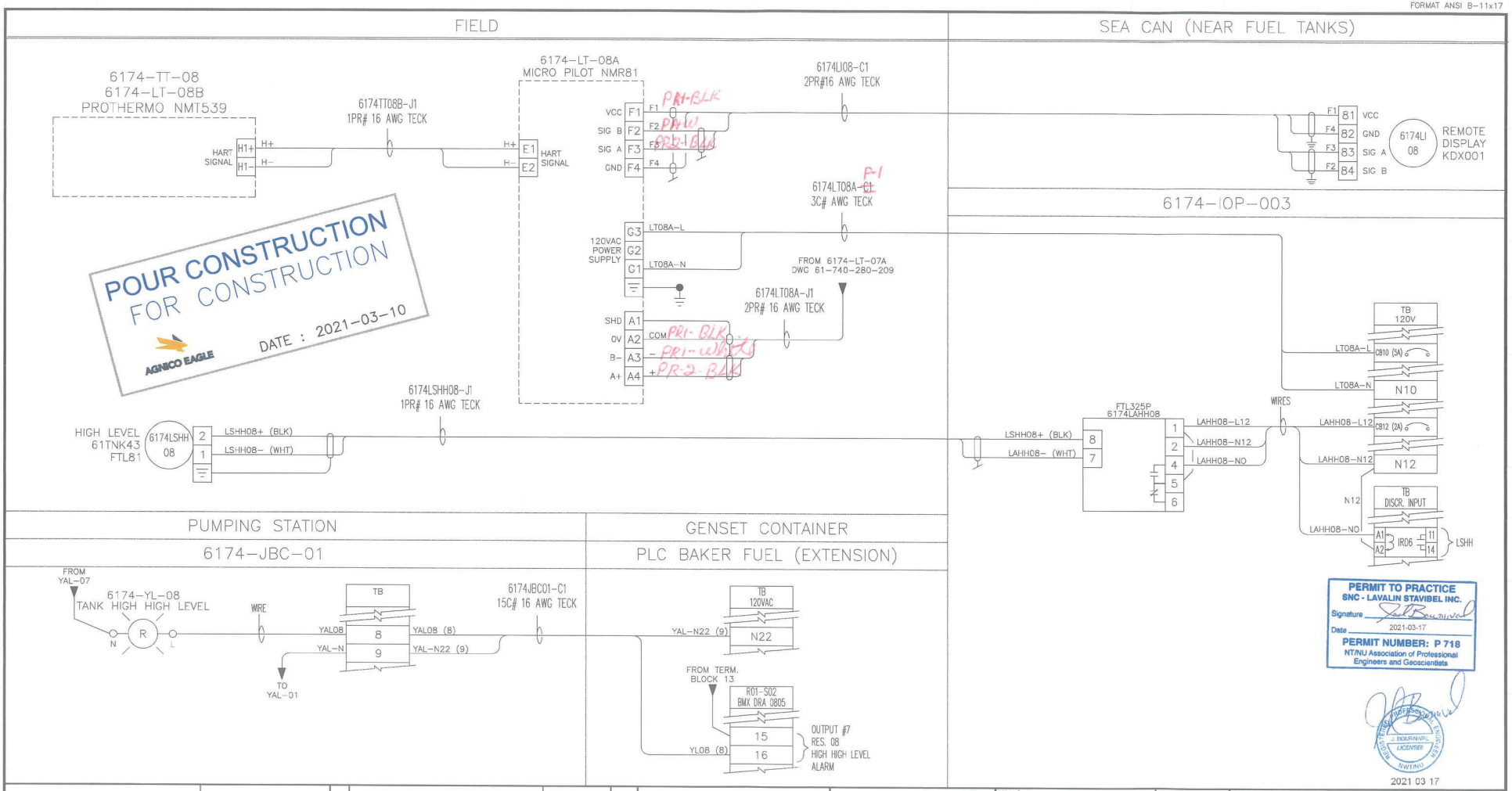
NO. DESSIN / DRAWING NO. 61-740-280-211

FORMAT ANSI B-11x17




| TITRE / TITLE | # DWG | REV | DESCRIPTION | DATE | PAR BY |
|---|---|---|---|---|---|
| 6174JBC01 – ARRANGEMENT / WIRING | 61-740-280-214 | 3 | ISSUED FOR CONSTRUCTION | 2021-03-10 | J.BOU |
| PLC BAKER FUEL (EXT.) – WIRING DIAGRAM | 61-740-280-213 | 2 | AS BUILT | 2020-01-24 | S.MAR |
| 6174IOP003 – WIRNG DIAGRAM | 61-740-280-207 | 1 | ISSUED FOR CONSTRUCTION | 2019-06-03 | P.LEM |
| 61TNK42 – LEVEL MONITORING | 61-740-280-209 | 0 | ISSUED FOR TENDER | 2019-05-03 | P.LEM |

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS — REVISIONS

AGNICO EAGLE

Project # : 660534-0000

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| | | |
|---|---|---|
| DESSINÉ PAR / DRAWN BY | S.MARCOTTE, TECH. | 2019-04-29 |
| VÉRIFIÉ PAR / CHECKED BY | PHILIPPE LEMIRE, P.ENG. | 2019-04-29 |
| APPROUVÉ PAR / APPROVED BY | PHILIPPE LEMIRE, P.ENG. | 2019-05-03 |
| No. PROJET / PROJECT NO. | 6120 | |
| DATE | 2019-04-29 | |



TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
280 – INSTRUMENTATION & CONTROL
WIRING DIAGRAM
61TNK43 – LEVEL MONITORING

ÉCHELLE/SCALE NTS | FICHIER/FILE 61-740-280-211_R3.dwg

No. DESSIN/DRAWING NO. 61-740-280-211 | REVISION 2 | FEUILLE/SHT 1 / 1

AE-CART-ANSI B

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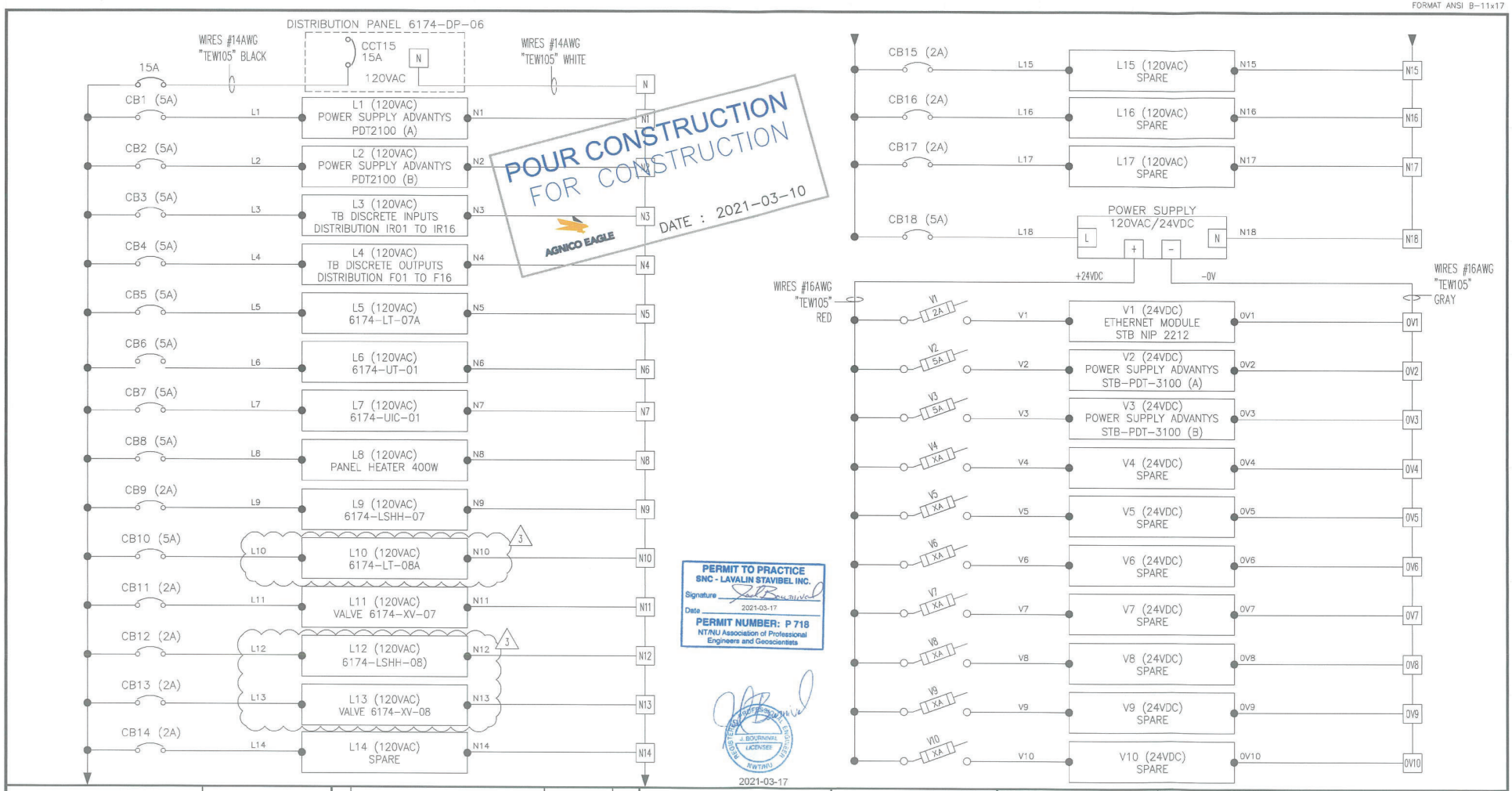
NO. DESSIN / DRAWING NO. 61-740-280-208

FORMAT ANSI B-11x17




| | | | | | |
|---|---|---|---|---|---|
| | | 3 | ISSUED FOR CONSTRUCTION | 2021-03-10 | J.BOU |
| | | 2 | AS BUILT | 2020-01-24 | S.MAR |
| 6174IOP003 – WIRING DIAGRAM | 61-740-280-207 | 1 | ISSUED FOR CONSTRUCTION | 2019-05-15 | P.LEM |
| 6174IOP003 – ARRANGEMENT | 61-740-280-206 | 0 | ISSUED FOR TENDER | 2019-05-03 | P.LEM |
| TITRE / TITLE | # DWG | REV | DESCRIPTION | DATE | PAR BY |
| DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS | | REVISIONS | | | |

AGNICO EAGLE

Project # : 660534-0000

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| | | | |
|---|---|---|---|
| DESSINÉ PAR / DRAWN BY | S.MARCOTTE, TECH. | DATE | 2019-04-25 |
| VERIFIÉ PAR / CHECKED BY | PHILIPPE LEMIRE, P.ENG. | | 2019-04-25 |
| APPROUVÉ PAR / APPROVED BY | PHILIPPE LEMIRE, P.ENG. | | 20190-05-03 |
| No. PROJET / PROJECT NO. | 6120 | | |
| DATE | 2019-04-18 | | |



TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
BAKER LAKE AREA 740
280 – INSTRUMENTATION & CONTROL
WIRING DIAGRAM
120VAC AND 24VDC DISTRIBUTION

| | | | |
|---|---|---|---|
| ÉCHELLE/ SCALE | NTS | FICHIER FILE | 61-740-280-208_R3.dwg |
| No. DESSIN/ DRAWING NO. | 61-740-280-208 | REVISION 3 | FEUILLE/SHT 1 / 1 |

AE-CART-ANSI B

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| | | | |
|---|---|---|---|
| OWNER | Agnico Eagle Mines | BY: | Nathan Bisson |
| PROJECT NAME: | Baker Lake Fuel Farm | APPROVED: | Roxanne Lavoie, P.Eng. (OIQ) / I.Gagnon P.Eng. |
| PROJECT NO: | 6129-S-265-020 | REV: | 0 - For Tender |
| DOC NO: | 6129-S-265-020-MTO-002 | REV DATE: | 2021-06-30 |

SNC·LAVALIN

AGNICO EAGLE

**MTO Piping - Baker Lake Fuel Farm**
Drawing number: 61-740-270-003

MATERIAL TAKE OFF
Description

| Rev. Date | Qty[1] | Unit | Description | ND | STANDARD | SCH./PN | PACKAGE # | MTO # | MATERIAL | MANUFACTURER | MODEL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PIPING AND FITTING TABLE** | | | | | | | | | | | | |
| 2021-06-30 | 260 | m | STEEL PIPING | Ø150mm | ASTM A333 GR.6 | SCH. STD | | | CARBON STEEL | | | SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW |
| 2021-06-30 | 20 | UNIT | WIELDING NECK FLANGE | Ø150mm | A350 GR. LF2 | CL150 | | | FORGED STEEL | | | SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW |
| 2021-06-30 | 2 | UNIT | BLIND FLANGE | Ø150mm | ASTM A420 GR.WPL6 | CL150 | | | FORGED STEEL | | | SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW |
| 2021-06-30 | 19 | UNIT | 45° ELBOW BUTT WELD | Ø150mm | ASTM A420 GR.WPL6, BW | SCH. STD | | | FORGED STEEL | | | SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW |
| 2021-06-30 | 4 | UNIT | 90° LONG RADIUS ELBOW BUTT WELD | Ø150mm | ASTM A420 GR.WPL6, BW | SCH. STD | | | FORGED STEEL | | | SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW |
| 2021-06-30 | 5 | UNIT | STRAIGHT TEE BUTT WELD | Ø150mm | ASTM A420 GR.WPL6, BW | SCH. STD | | | FORGED STEEL | | | SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW |
| 2021-06-30 | 1 | UNIT | WELDED 45° LATERAL BUTT WELD | Ø150mm | ASTM A420 GR.WPL6, BW | SCH. STD | | | FORGED STEEL | | | SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW |
| 2021-06-30 | 2 | UNIT | FLEXIBLE HOSE, 350 mm Lg. | Ø150mm | FLANGED | CL150 | | | STAINLESS STEEL | SENIOR FLEXTRONICS | SA-BSFS SERIES | |
| 2021-06-30 | 1 | UNIT | FLEXIBLE HOSE, 450 mm Lg. | Ø150mm | FLANGED | CL150 | | | STAINLESS STEEL | SENIOR FLEXTRONICS | SA-BSFS SERIES | |
| 2021-06-30 | 6 | UNIT | ECCENTRIC REDUCER BUTT WELD | Ø150x100mm | ASTM A420 GR.WPL6, BW | SCH. STD | | | CARBON STEEL | | | SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW |
| 2021-06-30 | 6 | UNIT | BLIND FLANGE | Ø100mm | ASTM A420 GR.WPL6 | CL150 | | | FORGED STEEL | | | SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW |
| 2021-06-30 | 10 | UNIT | WIELDING NECK FLANGE | Ø100mm | A350 GR. LF2 | CL150 | | | FORGED STEEL | | | SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW |
| 2021-06-30 | 3 | UNIT | THREADOLET FOR Ø150mm PIPE | Ø25mm | ASTM A350 GR.LF2 | CL3000 | | | FORGED STEEL | | | |
| 2021-06-30 | 2 | m | PIPING | Ø25mm | ASTM A333 GR.6 | SCH. 80 | | | CARBON STEEL | | | SHOP PAINTED AS PER 60-000-245-GGD-001. YELLOW |
| 2021-06-30 | 3 | UNIT | SCREW CAP | Ø25mm | FORGED STEEL | CL3000 | | | FORGED STEEL | | | |
| 2021-06-30 | 22 | UNIT | FLEXIBLE BRAID | - | - | - | | | | NVENT | MBJ 35-250-25 | |
| **PIPING AND SUPPORT TABLE** | | | | | | | | | | | | |
| 2021-06-30 | 12 | UNIT | TYPE 1 PREFAB PIPING SUPPORT ON DRAWING 61-740-270-XXX | - | HSS G40 350 W OR ASTM A500 | - | | | STRUCTURAL STEEL | | | SHOP PAINTED AS PER 60-000-245-GGD-001. GREY |
| 2021-06-30 | 43 | UNIT | TYPE 2 PREFAB PIPING SUPPORT ON DRAWING 61-740-270-XXX | - | HSS G40 350 W OR ASTM A500 | - | | | STRUCTURAL STEEL | | | SHOP PAINTED AS PER 60-000-245-GGD-001. GREY |
| 2021-06-30 | 4 | UNIT | TYPE 3 PREFAB PIPING SUPPORT ON DRAWING 61-740-270-XXX | - | HSS G40 350 W OR ASTM A500 | - | | | STRUCTURAL STEEL | | | SHOP PAINTED AS PER 60-000-245-GGD-001. GREY |
| 2021-06-30 | 15 | UNIT | EXTRA GREY PAINT GALLONS | - | - | - | | | - | | | FOR PAINT TOUCH-UP ON SITE |
| 2021-06-30 | 10 | UNIT | EXTRA YELLOW PAINT GALLON | - | - | - | | | - | | | FOR PAINT TOUCH-UP ON SITE |
| **VALVE TABLE** | | | | | | | | | | | | |
| 2021-06-30 | 7 | UNIT | GATE VALVE | Ø150mm | ASTM A-352, FLANGED | CL150 | | | LCC | BERIC | API 600, LCC BODY | |
| 2021-06-30 | 3 | UNIT | BALL VALVE API 607 | Ø25mm | SOCKET WELD | | | | LCC | APOLLO | 83L-240-24 SERIES | |

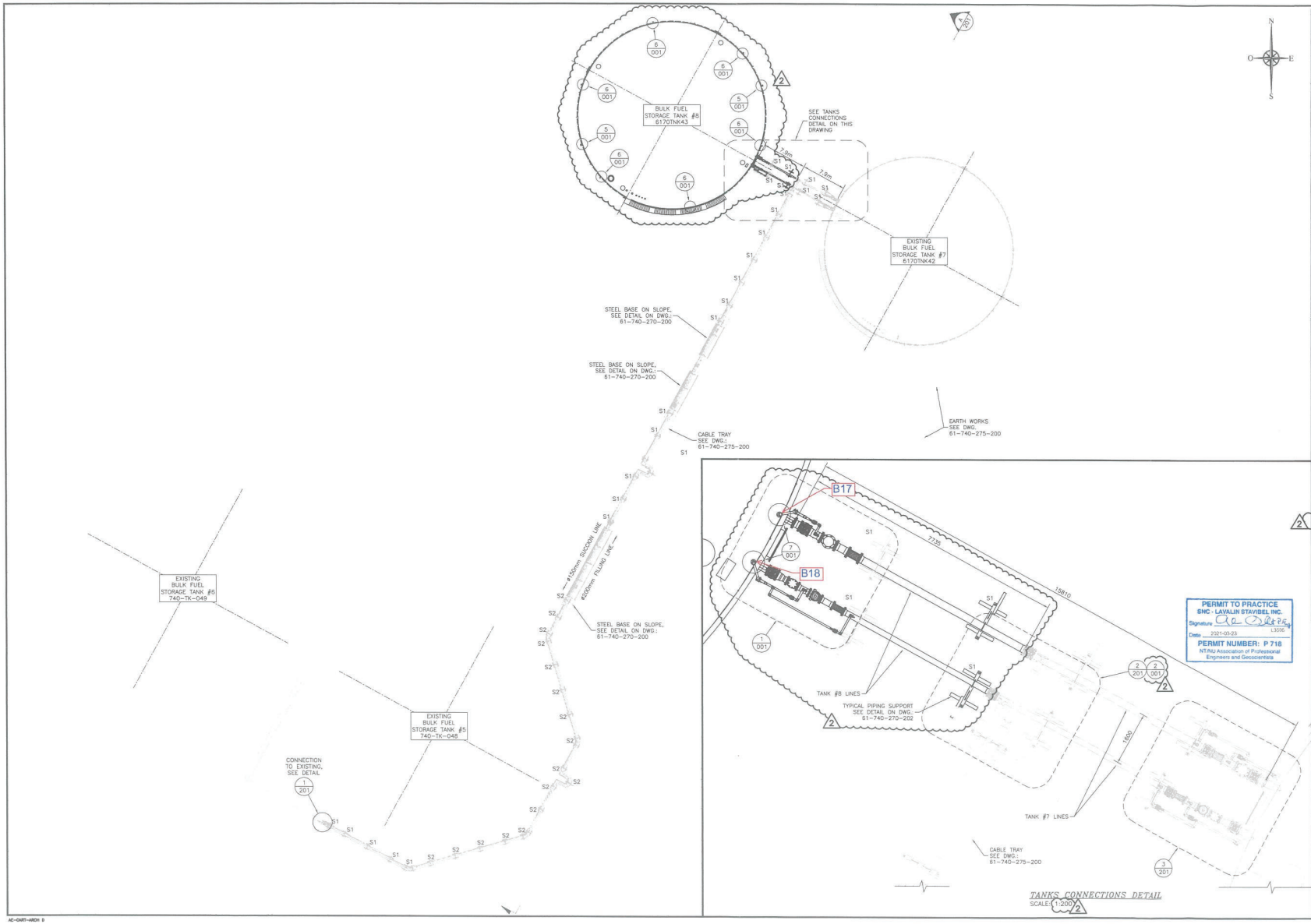
[1] *No contingency was planned on material take off list and no material was planned for field adjustment.*

Roxanne Lavoie

ing.
L3940 2021-06-30

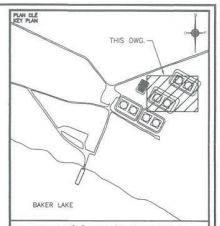
NO. DESSIN DRAWING NO. 61-740-270-200

FORMAT ARCHD




PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date : 2021-03-23
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

PLAN CLÉ KEY PLAN




NOTES GÉNÉRALES / GENERAL NOTES

S1: PIPE SUPPORT TYPE 1
S2: PIPE SUPPORT TYPE 2
SEE DWG. # 61-740-270-202

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2021-03-23

SNC·LAVALIN
SNC-Lavalin Stavibel inc.
150, rue Gamble Ouest
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www.snclavalin.com

Project # : 671087-0000 REV.: 2



DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| GENERAL EARTH WORKS | 61-740-230-200 TO 208 |
| ELECTRICAL | 61-740-275-200 TO 201 |
| P&ID | 61-740-2-0100_1 & 2 |
| 10M LITERS DIESEL TANK #8 (6170TNK43) | 61-740-270-001 |
| TNK 7 & 8 PIPE SUPPORTS – DETAILS | 61-740-270-202 |
| TNK 7 & 8 PIPING – ELEV. & DETAILS | 61-740-270-201 |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 2 | 2021-03-23 | ISSUED FOR CONSTRUCTION | D.L.L. | A.OUE | N.MEN |
| 1 | 2019-04-05 | ISSUED FOR CONSTRUCTION | B.L. | A.O. | R.MOY |
| 0 | 2019-04-25 | ISSUED FOR TENDER | B.L. | A.O. | N.MEN |

REVISIONS

PROFESSIONAL ENGINEER A. OUELLET LICENSE L3595 NT/NU
2021-03-23

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
PIPING
PLAN VIEW
10M LITERS DIESEL TANK #7 (6170TNK42)
& TANK #8 (6170TNK43) PIPING

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | B. LEMIEUX, Tech. | DATE 2019/02/15 |
| VERIFIÉ PAR CHECKED BY | R. LAVOIE, Jr. Eng. | 2019/02/15 |
| APPROUVÉ PAR APPROVED BY | A. OUELLET, P. Eng. | 2019/02/15 |
| ÉCHELLE SCALE | 1 : 300 | DATE 2019/02/15 |

NO. DESSIN DRAWING NO. 61-740-270-200

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 6120 | 2 | 1 / 1 |

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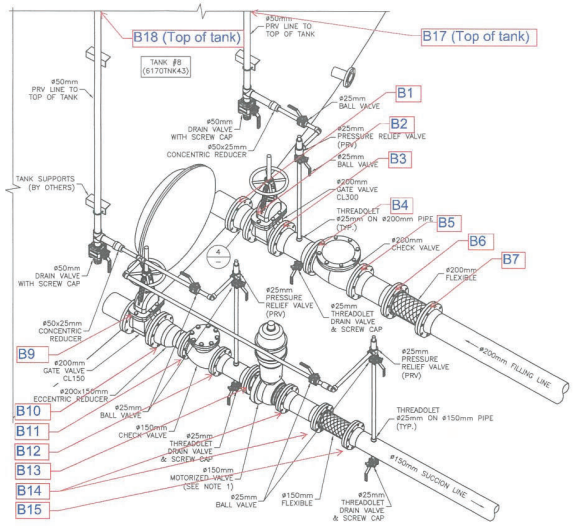
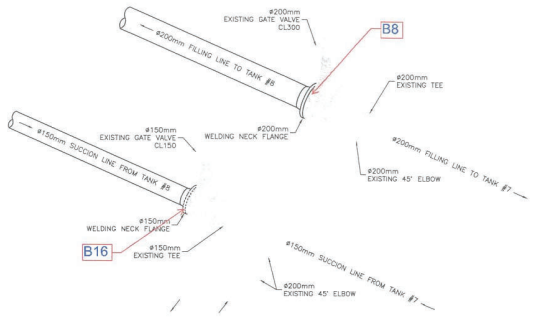
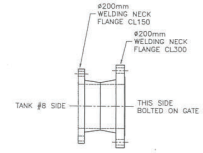
FILE NO. 61-740-270-200_R2.dwg

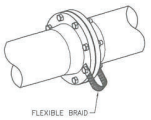
NO. DESSIN / DRAWING NO. 61-740-270-200

FORMAT ARCHD

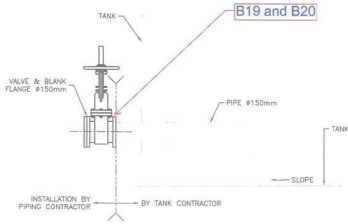


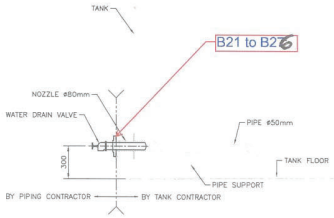



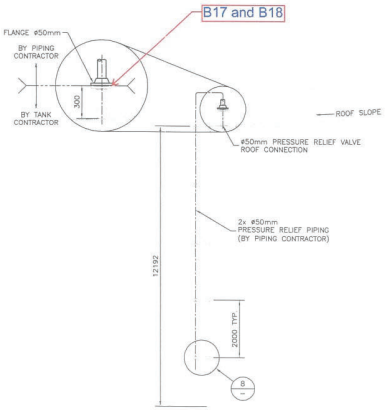



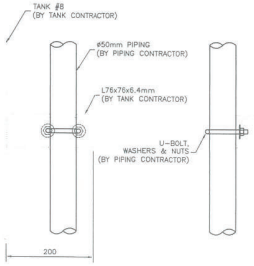




*TYPICAL FLANGE DETAIL*
SCALE: N/A



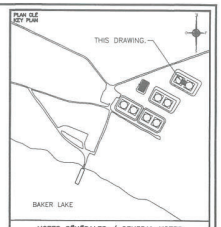




PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature A. Ouellet
Date 2021-03-23 L3595
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

PLAN OLE / KEY PLAN




**NOTES GÉNÉRALES / GENERAL NOTES**

NOTE 1:
SUPPLY OF MOTORIZED VALVE BY AEM AND INSTALLATION BY CONTRACTOR.

NOTE 2:
AEM WILL SUPPLY VALVES, PIPING AND ACCESSORIES. CONTRACTOR ARE RESPONSIBLE OF INSTALLATION.

NOTE 3:
REFER TO DOCUMENT NUMBER 6129-C-265-002-SPT-001 FOR INSTALLATION SPECIFICATIONS.

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2021-03-23


SNC·LAVALIN
SNC-Lavalin Stavibel Inc.
150, rue Gamelin Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tel.: 819 764-5181 Fax : 819 797-0158
www.snclavalin.com


Project # : 671087-0000 REV.: 0



**DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS**

| TITRE / TITLE | # DWG |
|---|---|
| P&ID | 61-740-J-5100_2/2 |
| TANK 7 & 8 PIPE SUPPORTS – DETAILS | 61-740-270-202 |
| TANK 7 & 8 PIPING – ELEV. & DETAILS | 61-740-270-201 |
| 10M L. DIESEL TNK #7 & TNK #8 PIPING | 61-740-270-200 |
| – | – |
| – | – |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 0 | 2021-03-23 | ISSUED FOR CONSTRUCTION | D.L.L. | A.O.UE | N.MCH |

**REVISIONS**

PROFESSIONAL ENGINEER A. OUELLET LICENSEE L3595 NT/NU 2021-03-23

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
270 – PIPING
DETAILS
10M LITERS DIESEL TANK #8 (6170TNK43)

| | | |
|---|---|---|
| DESSINÉ PAR / DRAWN BY | ST. MARCOTTE, Tech. | DATE 2021/02/24 |
| VÉRIFIÉ PAR / CHECKED BY | R. LAVOIE, P. Eng. | 2021/02/24 |
| APPROUVÉ PAR / APPROVED BY | A. OUELLET, P. Eng. | 2021/02/23 |
| ÉCHELLE / SCALE | AS SHOWN | DATE 2021/02/24 |

NO. DESSIN / DRAWING NO. 61-740-270-001

| NO. PROJET / PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 6129 | 0 | 1 / 1 |

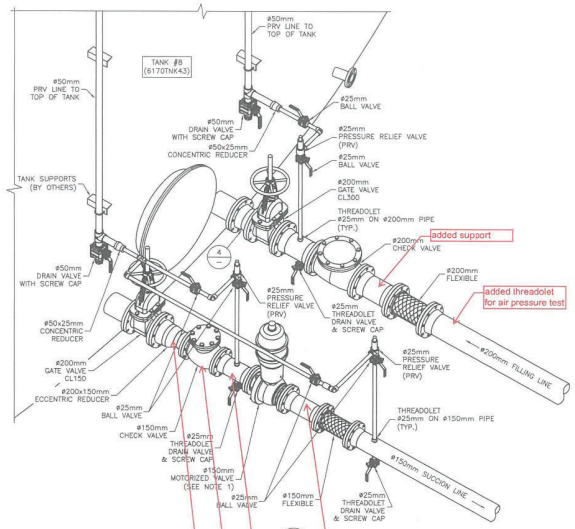
AE-CART-ARCH: 0

\\sfl.ds\sfdrive\Projet\300-INV\671087\2000\0-Dess Emb\28 – Tank No.8 Baker Lake\2021-03-23 – Construction\61-740-270-001_R0.dwg-2013-02-19 14:03:29

FILE NO. 61-740-270-001_R0.dwg

NO. DESSIN DRAWING NO. 61-740-270-200

FORMAT ARCHD

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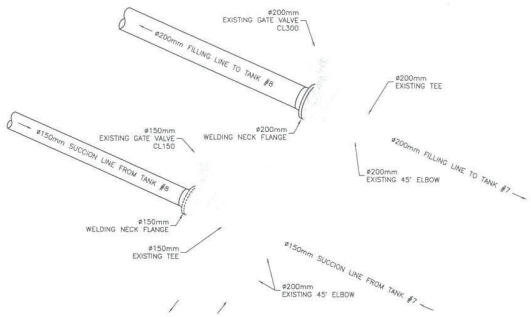


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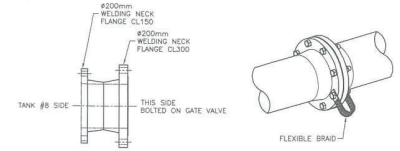


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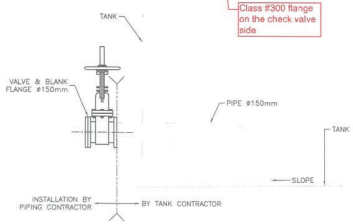
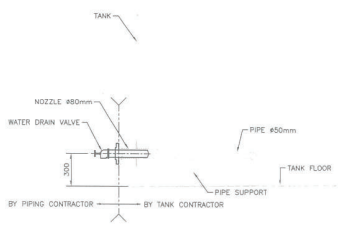
DETAIL 4/–
SCALE: N.T.S.




DETAIL 5/200
SCALE: 1:20
QTY.: 2

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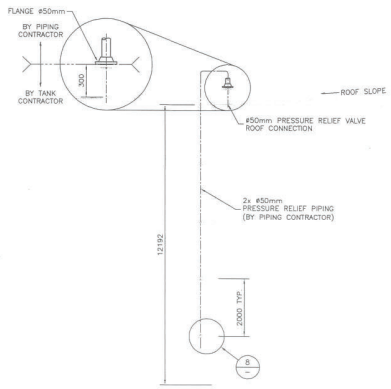
SCALE: 1:20
QTY.: 6

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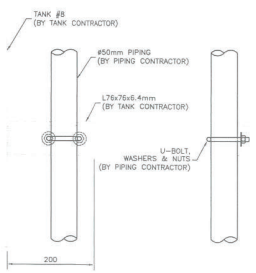
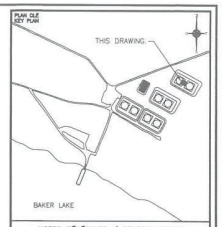
SCALE: N.T.S.




DETAIL 8/–
SCALE: 1:5

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2021-03-23
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists

PLAN OLÉ KEY PLAN




NOTES GÉNÉRALES / GENERAL NOTES

NOTE 1:
SUPPLY OF MOTORIZED VALVE BY AEM AND INSTALLATION BY CONTRACTOR.

NOTE 2:
AEM WILL SUPPLY VALVES, PIPING AND ACCESSORIES. CONTRACTOR ARE RESPONSIBLE OF INSTALLATION.

NOTE 3:
REFER TO DOCUMENT NUMBER 6129-C-265-002-SPT-001 FOR INSTALLATION SPECIFICATIONS.

POUR CONSTRUCTION
FOR CONSTRUCTION
AGNICO EAGLE
DATE : 2021-03-23


SNC-LAVALIN
SNC-Lavalin Stavibel inc.
155, rue Gamble Ouest
Rouyn-Noranda (Québec) J9X 2R7
Tél.: 819 764-5191 Fax: 819 763-0154
www.snclin.com


Project # : 671087-0000 REV.: 0



DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| PAID | 61-740-J-0100_2/2 |
| TANK 7 & 8 PIPE SUPPORTS – DETAILS | 61-740-270-202 |
| TANK 7 & 8 PIPING – ELEV. & DETAILS | 61-740-270-201 |
| 10M L. DIESEL TNK #7 & TNK #8 PIPING | 61-740-270-200 |
| – | – |
| – | – |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PAR/BY | APP. | CLIENT |
|---|---|---|---|---|---|
| 0 | 2021-03-23 | ISSUED FOR CONSTRUCTION | D.L.L. | A.DUE | N.A(NT) |

REVISIONS

ORDRE DES INGÉNIEURS DU QUÉBEC
A. OUELLET
LICENSE L3335
NT/NU
2021-03-23

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
270 – PIPING
DETAILS
10M LITERS DIESEL TANK #8 (617DTNK43)

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | ST. MARCOTTE, Tech. | DATE 2021/02/24 |
| VERIFIÉ PAR CHECKED BY | R. LAVOIE, P. Eng. | 2021/02/24 |
| APPROUVÉ PAR APPROVED BY | A. OUELLET, P. Eng. | 2021/02/23 |
| ÉCHELLE SCALE | AS SHOWN | DATE 2021/02/24 |

NO. DESSIN DRAWING NO. 61-740-270-001

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 6129 | 0 | 1/1 |

AE-CMRT-ARCH 5

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FILE NO. 61-740-270-001_R0.dwg

NO. DESSIN DRAWING NO. 61-740-270-200

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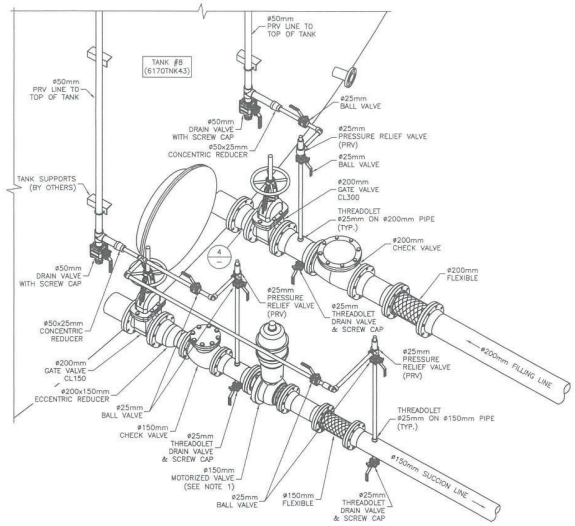


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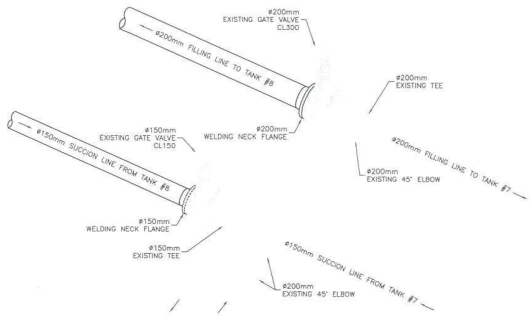


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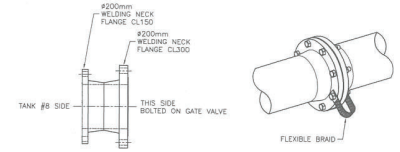
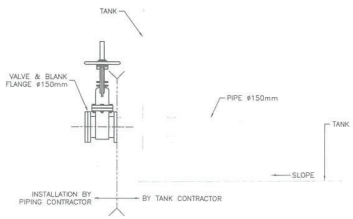
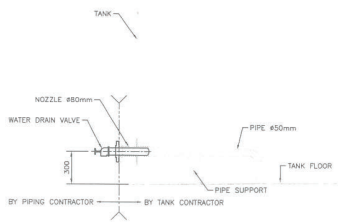



TYPICAL FLANGE DETAIL
SCALE: N/A

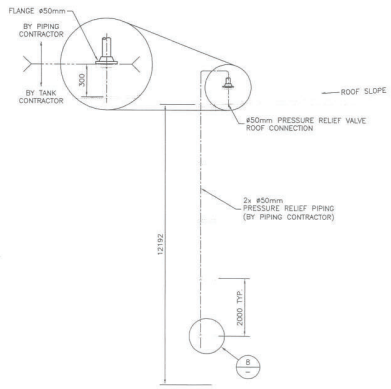
DETAIL 4/–
SCALE: N.T.S.




DETAIL 5/200
SCALE: 1:20
QTY.: 2




DETAIL 6/200
SCALE: 1:20
QTY.: 6




DETAIL 7/200
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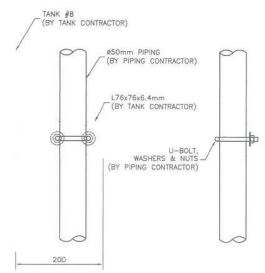
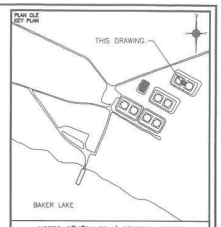



DETAIL 8/–
SCALE: 1:5

PERMIT TO PRACTICE
SNC - LAVALIN STAVIBEL INC.
Signature
Date 2021-03-23
PERMIT NUMBER: P 718
NT/NU Association of Professional Engineers and Geoscientists




NOTES GÉNÉRALES / GENERAL NOTES

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NOTE 3:
REFER TO DOCUMENT NUMBER 6129-C-002-SPT-001 FOR INSTALLATION SPECIFICATIONS.

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2021-03-23


SNC·LAVALIN
SNC-Lavalin Stavibel Inc.
150, rue Gamble Ouest
Rouyn-Noranda (Québec) J2X 2R7
Tel.: (819) 764-0191 Fax : (819) 797-5156
www.snclavalin.com


Project # : 671087-0000 REV.: 0



DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

| TITRE / TITLE | # DWG |
|---|---|
| PAID | 61-740-J-0100_2/2 |
| TANK 7 & 8 PIPE SUPPORTS – DETAILS | 61-740-270-202 |
| TANK 7 & 8 PIPING – ELEV. & DETAILS | 61-740-270-201 |
| 10M L. DIESEL TNK #7 & TNK #8 PIPING | 61-740-270-200 |
| – | – |
| – | – |

AGNICO EAGLE

| REV. | DATE | DESCRIPTION | PRÉP./DR. | APP. | CLIENT |
|---|---|---|---|---|---|
| 0 | 2021-03-23 | ISSUED FOR CONSTRUCTION | D.L.L. | A.QUE | N.MON |

REVISIONS

OFFICE OF PROFESSIONAL ENGINEERS
A. OUELLET
LICENSEE
L3505
NT/NU
2021-03-23

TITRE / TITLE
AGNICO EAGLE – MEADOWBANK DIVISION
740 BAKER LAKE AREA
270 – PIPING
DETAILS
10M LITERS DIESEL TANK #8 (6170TNK43)

| | | |
|---|---|---|
| DESSINÉ PAR DRAWN BY | ST. MARCOTTE, Tech. | DATE 2021/02/24 |
| VÉRIFIÉ PAR CHECKED BY | R. LAVOIE, P. Eng. | 2021/02/24 |
| APPROUVÉ PAR APPROVED BY | A. OUELLET, P. Eng. | 2021/02/23 |
| ÉCHELLE SCALE | AS SHOWN | DATE 2021/02/24 |

NO. DESSIN DRAWING NO. 61-740-270-001

| NO. PROJET PROJECT NO. | REVISION | FEUILLE / SHT |
|---|---|---|
| 6129 | 0 | 1/1 |

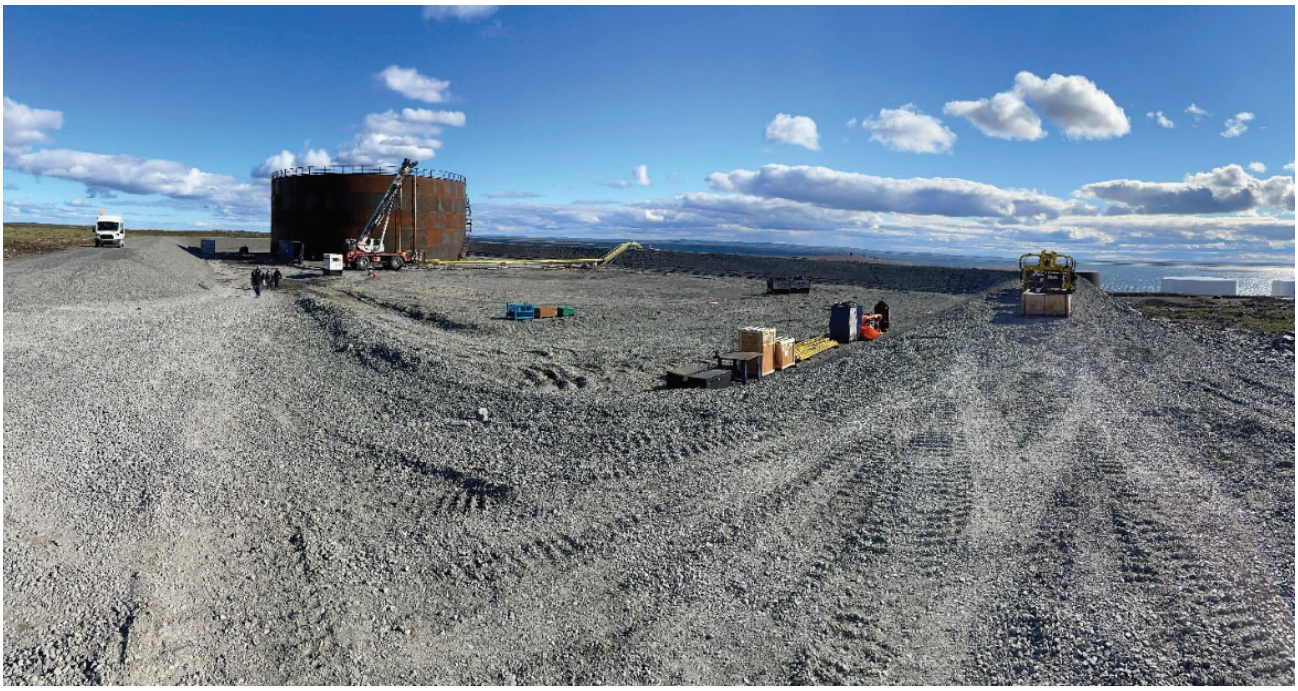
AE-CART-ARCH 0

\\pilot\stavibel\Projet\300-99\671087\2000\0-Cases Ends\DE - Tank No.8 Baker Lake\2021-03-23 - Construction\61-740-270-001_R0.dwg-2013-02-19 14:03:29

FILE NO. 61-740-270-001_R0.dwg

# Appendix C

Photographs



*Tank #8 pad before construction*

*Tank floor construction*

*Weld testing with vacuum*

*Tank wall welding*

*Tank wall third ring installation*

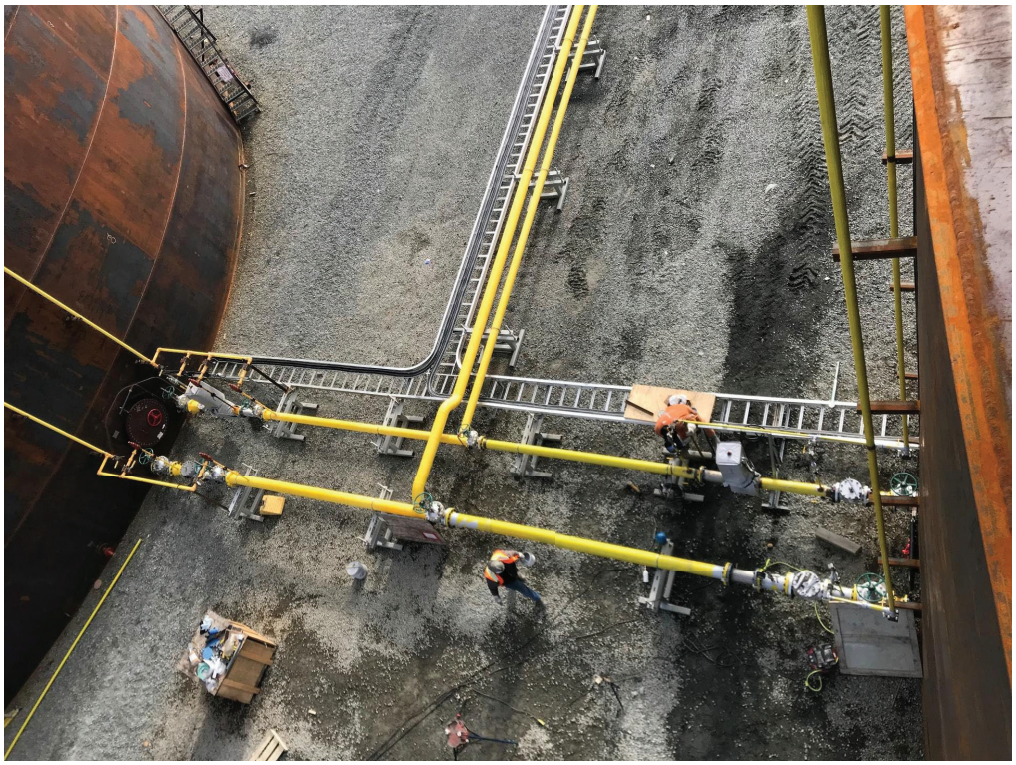
*Tank general view*

*Tank roof structure*

*Tank roof plate welding*

*Control cable tray and over pressure valve piping*

*Tank #8 piping installation*



*Tank #8 piping overview*