1. SCOPE

The procedure is to establish the cable installation and testing procedure.

1.1 Covered Sections

- Medium Voltage and 1 000 V Power Cables.
- 600 V Control Cables.
- 300 V Instrumentation Cables.

2. EXECUTION

2.1 Inspection and Preparation

- Installation of raceways and supports shall be completed before installing cables.
- Conduits shall be tested for obstructions by pulling a mandrel or other approved object through the conduit. Obstructions shall be cleared with a cutting mandrel or other approved means.

2.2 Installation Requirements

- Cables shall be handled carefully when unreeling to avoid damage due to kinking or otherwise bending to radius less than the Manufacturer's or Electrical Code minimum recommended bending radius.
- Cables shall not be laid on rough ground or dragged over sharp objects.
- Cable Installation in Raceways:
  - Cable reels to be set as close as practical to the raceway entrance, and train the cable as directly as possible to the entrance with minimal bending.
  - A protector is to be used at the raceway entrance to protect the cable jacket.
  - For installation of multiple cables in a conduit, all cables are to be pulled simultaneously.
  - Cable installation to be performed so that no undue stress is placed upon the insulation and coverings when they are drawn through conduits or otherwise handled.
  - Cables to be neatly installed avoiding crosses as much as practical.
  - Cables to be supported clear of the tray lip where they exit the tray.
  - Cables to be anchored in place vertically at 1.0 m maximum intervals, and at each bend within 0.3 m of the change in direction at both sides of the bend with appropriate fasteners.
  - A barrier shall be provided to separate power and control cables for installations where they share a common cable tray. Fireproof sheeting shall be provided to separate power and control cables at tee or cross junctions.
- Installation Cables in Boxes and Cabinets:
  - Open wiring to be arranged in a neat and orderly manner.

- Groups of cables to be spaced and supported.
- Slack wire will be left in all junction boxes, pull boxes, and other places so that wires are not drawn tight against conduit and bushings or short radius corners and the insulation eventually damaged by being squeezed between conductor and other objects.

- The cable shall not be bended either temporarily during installation or permanently to a radius less than the Manufacturer's recommended minimum bending radius.
  - Cable Termination Instructions:
    - Leave each conductor of a cable long enough to reach the most distant terminal point in the equipment being installed. Loop and tie the conductors in a bundle.
    - Strip cable jackets only as far back as needed to accommodate the termination of the conductors.
    - Slack wire to be left at all terminal connections so that stress is not placed on terminal studs and other connections.
    - Control and Instrumentation Cables:
      - All shields on the shielded cables to be kept floating at the transducer and final control element ends (thermocouples, transmitters, analyzers, etc.) and to be terminated and grounded in DCS cabinets.
      - Motor terminal wiring to be bolted together with the ring tongue type terminals and tin plated bolts of the approximate size.
  - Cable Penetration Sealing: Fire stopping seal penetrations shall be in accordance with Client specifications.
  - Tagging of Cables Installations:
    - Identify all cables in accordance with attached cable tagging procedure.
    - Affix cable identification tags at each termination as close to the termination as possible, and at pull boxes, manholes or other points of access.
    - Individual conductor identification products may be slip-on, or heat shrink. Identification information to be typed or printed with indelible ink.
    - Single conductor cables shall be color coded and comply with the Canadian Electrical Code CSA C22.1-06, Article 4-036.

2.3 Inspection and Test Requirements

Installed power cables shall be inspected and tested, including continuity and insulation (Megger) of all cables, in accordance with applicable codes and standards.

Installed control shall be inspected and tested, including continuity, in accordance with applicable codes and standards.

Appendix A

ALL APPLICABLE ITRs & LOGs

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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: LUC SÉNÉCAL Date: 2017-07-10

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Agnico Eagle No. 6515-C-270-007-141-TES-0003 R: Sub002

DOCUMENT FOR INFORMATION

Agnico-Eagle Mines Ltd.

Contract no. 6515-C-270-007

Grounding Installation and Testing Procedure

AEM-EL-PRO-002

Area No.: All

System No.: All

PROMEC Approvals

Prepared by:	Stéphane Doré	**Signature:**		**Date:**	2017-04-25
Verified by:	Jonathan Roy	**Signature:**		**Date:**	2017-04-25
Approved by:	Éric Poulin	**Signature:**		**Date:**	2017-04-25.

CLIENT Approvals

Verified by:		**Signature:**		**Date:**	
Approved by:		**Signature:**		**Date:**	

TABLE OF CONTENTS

1. GENERAL

1.1 Introduction

- The purpose of electrical ground testing is to determine the effectiveness of the grounding medium with respect to true ground (earth). Most electrical systems do not rely on the earth to carry load current (this is done by the system conductors) but earth may provide the return path for fault currents, and for safety, all electrical equipment frames are connected to ground.
- During resistance testing, precautions shall be taken to ensure personnel safety. For example the test cable area shall be barricaded and testing personnel shall wear adequate PPE when handling test probes.
- All tests shall be documented and submitted to Owner's representative.
- Weather conditions (e.g. temperature and humidity) can have a considerable effect on resistance readings. Hence, it is important that weather conditions be documented for every resistance test.
- In general, the lower the ground resistance, the safer the system is considered to be. Where the resistance is unsatisfactory, those components of the circuit causing unsatisfactory readings shall be repaired or replaced until the resistance meets the minimum requirements.

1.2 References

- Canadian and National electrical code requirements.
- IEEE Standard IEEE-80 and 81
- IEEE 142, Recommended Practice for grounding of Industrial and Commercial Power Systems.
- International Electrical Testing Association Inc. (NETA).

1.3 Design requirements

- Ground electrical equipment in accordance with ANSI/ IEEE Standard 142, IEEE Standard 80 and the requirements of this Section.
- Design shall be such that acceptable levels of step and touch potential are not exceeded either for exposure to plant personnel or for external exposure via transfer potentials.
- The grounding system consists of a number of above ground interconnected conductors to provide a network to which all equipment and metallic structures are connected, either directly or by interconnecting cables. Bond the ground system to the main plant ground grid system at places designated on the Drawings.

2. PRODUCTS

2.1 Materials

- Bare Cable: Uninsulated, stranded, tinned copper cable of adequate size for station and substation ground grids, for connection of electrical and other equipment to the grounding grid and for running along the top of underground ductbanks.
- Insulated Cable: Soft drawn copper, Class B stranding with green colored insulation (if required).
- All ground connection will be bolted or compress type.
- Furnish all connectors, clamps, anchors, fittings, etc., made of copper or copper-alloy.

3. EXECUTION

3.1 Installation

- Install products in accordance with manufacturer's instructions.
- Equipment Safety Grounding
  a. Clamp the ground conductor running on building steel to the flanges of the steel and provide access for connecting equipment ground taps.
  b. If ground conductor is installed along the cable trays as a continuous conductor, clamp the ground cable to the outside of the trays side rail with

appropriate cable tray clamps. Run the cable on the top power tray wherever possible. The cable may be run along control trays in runs that do not have power trays. Do not run ground cables on any instrument trays.

c. For motors remote from the ground grid, run a bare ground cable with the duct bank or tray connecting the motor frame to the station ground grid.

d. Provide all enclosures of electrical distribution or control equipment with a visible grounding cable connection between the enclosure and the station grounding system.

e. Provide grounding cable taps to electrical equipment not shown on the Drawings sized to meet the requirements of the CSA C.22.1-02.

f. Regardless of any regulatory body, no conductor smaller than 6 is permitted for an exposed ground circuit except for grounding instrument cases and secondary circuits of instrument transformers where 16 will be permitted.

g. For equipment requiring grounding, provide a means for attachment of a ground cable to the enclosure. The grounding means may be a tapped hole in the enclosure with a matching bolt and a appropriate lug for copper cable. Hold-down bolts are not to be used for attaching grounding cables.

h. Provide "packaged" or "skid-mounted" equipment with single-point connection to ground grid.

i. Ground all metallic conduits above ground and underground in accordance with the requirements of the CSA C.22.1-02.

j. Install the cable trays electrically continuous to meet the requirements of Article CSA C.22.1-02.. Install a bonding jumper in the gaps in the tray runs to provide continuity.

- Circuit Grounding
  a. Power circuits to include a circuit ground conductor terminated appropriately at source end ground bus connection and at the load.
  b. Size the circuit ground conductor in accordance with the CSA C.22.1-02.

- Terminal Connections:
  a. Provide connections of ground conductors to cable trays and conduit with copper clamps or straps or by grounding bushings. Remove non-conductive protective coatings such as paint, mill scales, oil, grease, oxides, or enamel

on the conduit fittings from the threads or contact surfaces before attaching grounding connection. After ground connection is attached, cover any remaining exposed bare metal with a coating matching the original coating.

b. Above grade connections to equipment to be made using compression type connectors and bolted terminals.

c. Below grade connections, cable-to-cable or cable-to-ground rods and cable-to-structural steel to be made using compression lug.

d. Ground connections to piping to be generally "U clamp".

e. Connections of ground conductors to columns and similar structures to be welded.

f. Ground all cable shielding in accordance with the manufacturer's recommendations, or as directed by Owner.

g. Provide connections of ground conductors to equipment by means of a lug which shall be compressed on the cable end. Bolt the lug to the equipment frame using holes or terminals provided by the equipment manufacturer for this purpose. Where no such provisions are made, drill suitable holes in locations designated by Owner. Hold-down bolts are not to be used for ground connections. Ground connections to motors to be bolted directly to motor frame, and not to sole plates or supporting structures. At all bolted connections, scrape the joining surfaces clean and coat with NO-OX-ID, or equal compound.

- Control Cabinets Safety Ground

a. Connect all metal control cabinets to the ground buses. Insulate wires for connections between individual devices and the ground bus. Provide individual ground connections for each device; no looping permitted.

b. Do not make ground bus splice points coincident with the bolts which support the copper ground bus. Provide connections to the copper ground bus such that it is not necessary to open neither the ground bus nor any other connection to the bus to remove any ground connection. Separate bolted connections to the ground bus from the support and joint bolts.

- Control Cabinet Instrument Ground System:
  a. Install an instrument ground system, conform to Client standard and engineering drawings
  b. Install the instrument ground system in the following manner
     I. Connect the main and branch insulated ground conductors to instrument ground bus.
     II. Clearly label the instrument ground bus.
     III. Ensure that no loops are in the instrument ground system.
  c. "Reference" Distributed Control System (DCS) dc power "common" terminations and analog I/O field wiring shields to the instrument ground bus provided in each DCS enclosure. Provide all instruments and instrument cables with shields attached to only this instrument ground. Tape or insulate shielded cable with sleeves to prevent accidental grounding or touching of shields. Do not ground field ends.

3.2 Inspection and tests

- Visual and mechanical inspection: Check and inspect the installation to ensure that the grounding system has been built as per the engineering design. Ensure all connections to electrodes and ground cable are tight and secure.
- Ground resistance testing is needed after installation of the grounding system, typically five ohms for commercial and small industrial sites and one ohm for utility & transmission substation grounds and large industrial plant substation grounds.
- Follow the recommended manufacturer or designer grounding resistance levels specified. In general – all efforts shall be targeted toward achievement of minimum grounding resistance.

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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: LUC SÉNÉCAL Date: 2017-07-10

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Agnico Eagle No. 6515-C-270-007-141-TES-0005 R: Sub002

DOCUMENT FOR INFORMATION

Agnico-Eagle Mines Ltd.

Contract no. 6515-C-270-007

Electrical Apparatus, Equipment & Supports Installation Procedure

AEM-EL-PRO-004

Area No.: All

System No.: All

PROMEC Approvals

Prepared by:	Stéphane Doré	**Signature:**		**Date:**	2017-04-25
Verified by:	Jonathan Roy	**Signature:**		**Date:**	2017-04-25
Approved by:	Éric Poulin	**Signature:**		**Date:**	2017-04-25.

CLIENT Approvals

Verified by:		**Signature:**		**Date:**	
Approved by:		**Signature:**		**Date:**	

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1. PURPOSE

The procedure is to establish the electrical apparatus, equipment and supports installation procedure.

1.1 Submittals

The following drawings, information and data will be submitted:

- As-built drawings showing final setting dimensions where different from the design drawings.
- As-built drawings of all relative installation drawings.

2. EXECUTION

2.1 Installation

2.1.1 GENERAL

- Install all equipment in a neat manner using qualified trade persons in complete accordance with the Drawings and the equipment manufacturers instructions and recommendations.
- Fabricate and install any necessary temporary steel supports, brackets and anchors required for equipment erection or installation. Design of such supports, brackets, and anchors are subject to engineers' approval. Upon completion, remove all temporary supports, sand smooth, prime and paint welds on permanent plant structures, grout temporary anchor holes left in concrete and return the area to the originally installed condition.
- Prior to setting equipment:
  - Inspect equipment foundations for correctness in location, level, location of center lines, anchor bolt omissions, and height.
  - Uniformly roughen foundation surfaces.
  - Inspect all anchor bolts for straightness and damaged threads.
  - Straighten bent anchor bolts using acceptable methods.
  - Rerun bolts with damaged threads using suitable dies.
  - Clean and oil anchor bolts.
- Install all items shipped loose with equipment.
- Mount items with appropriate hardware.
- Provide additions and modifications to structural steel, grating, or floor steel required to completely install the equipment.
- Fabricate racks and supports for miscellaneous enclosures, boxes, cabinets and housings from rolled steel shapes, bars, rods, etc. of standard section and/or from strut material with accessory members and fittings.

- Use proper and adequate handling equipment and rigging at all times and inspect such equipment frequently. Lift electronic cabinets with the use of slings; do not use lifting eyes. Obtain exact weights and dimensions from approved manufacturers drawings or manufacturers representatives to ensure the use of adequate handling equipment.
- Welding
  - Perform in accordance with welding procedure
- Do not remove protective covers on flanges, pipe, or conduit connections until these connections are to be made.
- Fabrication and placing of shims:
  - Place shims, equipment baseplate, bedplates and soleplates as required for a minimum of 25 mm of grout such that shim pack thickness is no greater than 6 mm and no less than 3 mm for shims between the equipment and the top of the mounting plate.
  - Cut down and refinish where required, the tops of baseplate, soleplates, or rough foundations to allow for grouting.
  - Install shims of the required size, thickness and quality at the appropriate locations so there will be no deflection, deformation, or strain induced into the equipment bedplate or soleplate.
  - When the supporting structural steel frame is not level, taper the bottom shims to provide a level top bearing surface. Use a minimum number of shims at all times.
  - Wherever possible, place shims while the bedplate or equipment is in a jacked-up position using jacking or levelling nuts where provided or other means as necessary. Driving of shims to achieve a level top bearing surface is not permitted.

2.1.2 EQUIPMENT

- General
  - Set stationary equipment such as switchgear, motor control centers, and skid mounted equipment in a true vertical and horizontal plane and set anchor bolts evenly as required.
  - Tighten gasketed joints evenly around the entire gasketed area to insure uniform contact pressure.
  - Install wiring in conformance with connection diagrams, including jumpers where shown on terminal blocks. Install and terminate all wiring in accordance with Promec's procedure No. AEM-EL-PRO-001.
  - Install grounding systems and lightning protection in accordance with Promec's procedure No. AEM-EL-PRO-002.
  - Install cable tray system in accordance with Promec's procedure No. AEM-EL-PRO-003.
  - Install and terminate all cable in accordance with Promec's procedure No. AEM-EL-PRO-001.
- Panel boards and Transformers
  - Mount panel boards and transformers as specified in Client standards.

- Cabinets and Free Standing Panel boards
  - Handle, assemble, and maintain cabinets and free standing panels according to manufacturer's recommended procedures and documentation requirements.
  - Place cabinets and free standing panels immediately in their final positions, as shown on the drawing's temporary storage locations shall not be considered.
  - Wire cabinets and free standing panels in accordance with electrical wiring diagrams including jumpers shown on terminal blocks.

2.2 Personnel requirements

Provide qualified manufacturer's representatives for technical assistance as required.

2.3 Inspection and test requirements

- CEM Cabinets
  - Thoroughly inspect, clean, and remove all foreign matter, dust, debris, dirt, etc. from equipment cubicles, compartments and insulators.
- Transformers
  - Megger all winding terminals (maximum 1 kV) in accordance with manufacturer's requirements and provide results to Client for review.
- Construction Checkout
  - Perform and document all inspections and test activities in accordance with manufacturer's recommendations.

2.4 Adjustment and Cleaning

Remove any protective, non-permanent coatings applied by the equipment manufacturer.

Clean external surfaces of all equipment and materials of dirt, grease, oil, loose rust.

2.5 Corrosion Protection/Coatings

Following installation, touch-up all scratched or marred areas of manufacturer's primed or finished paint. Use the same paint as manufacturer's original finish or prime paint with surface preparation and paint application in accordance with the manufacturer's requirements.

Appendix A

ALL APPLICABLE ITRs & LOGs

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1 ☐ Proceed to next submission and status.

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Revise as noted and resubmit next submission and status.

4 ☑ Complete, no further submission required.

By: JEAN-FRANCOIS TREMBLAY JG Date: 2017-05-16

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Agnico Eagle No. 6515-C-270-007-141-TES-0006 R: Sub001

DOCUMENT FOR INFORMATION

Agnico-Eagle Mines Ltd.

Contract no. 6515-C-270-007

Instrumentation Installation and Testing Procedure

AEM-IN-PRO-001

Area No.: All

System No.: All

PROMEC Approvals

Prepared by:	Stéphane Doré	**Signature:**		**Date:**	2017-04-25
Verified by:	Jonathan Roy	**Signature:**		**Date:**	2017-04-25
Approved by:	Éric Poulin	**Signature:**		**Date:**	2017-04-25

CLIENT Approvals

Verified by:		**Signature:**		**Date:**	
Approved by:		**Signature:**		**Date:**	

Table of Contents

1 SCOPE

This procedure includes:

- Installation of:
  - Field instruments
  - Field instrument racks and stands
- Installation of package equipment loose instruments.
- Installation of package equipment sensing tubing up to local control panel.
- Installation of specialty instruments.

2 PRODUCTS

2.1 Materials

- Instruments: As identified in the Instrument List. The Instrument List is a listing of instruments to be installed after:
  - Promec shall furnish all materials required for complete installation of control and instrumentation devices. Provide all tools and equipment required for the installation.
  - Promec shall furnish instruments, control devices and instrument racks, stands, and enclosures.
  - Promec shall provide all calibration equipment as required in Sections 2.2 of this specification.
  - Promec shall furnish nameplates for all control and instrumentation equipment furnished or installed under these specifications, unless already provided. Nameplates shall be either of laminated phenolic (white background with black letters) or stainless steel. Engrave or stamp the nameplates with the Instrument Tag Numbers per the Instrument List. Attach phenolic type nameplates to control and instrumentation equipment by machine screws or stainless steel wire.

2.2 Inspection and Test Requirements

- Promec shall obtain the instruments from the receiving warehouse which has inspected them for obvious shipping damage and manufacturing defects. Promec will also inspect instruments for obvious shipping damage and manufacturing defects when they receive them. Each instrument will have been calibrated by the manufacturer. Vendor calibration report will be review by Promec for each instrument. The calibration of each instrument will be checked by Promec prior to installation.
- Promec shall use qualified and experienced personnel to perform adjustments and tests. Perform adjustments and tests as many times as necessary to assure proper operation of equipment and systems and quality of materials and workmanship.

2.3 Cleaning

- Promec shall clean and remove any protective non-permanent, coatings applied by manufacturers. Clean equipment and material external surfaces of all dirt, grease, oil, loose rust, and other foreign material.

2.4 Corrosion Protection/Coatings

- Following installation, Promec shall touch-up all scratched or marred areas of Manufacturer's prime or finish painting. Promec shall use paint the same as Manufacturer's original finish or prime paint with surface preparation and paint application in accordance with the Manufacturer's requirements.
- Threads shall not be painted
- Stainless steel and other corrosion-resisting surfaces: do not paint.
- Machined surfaces: do not paint.
- Omit paint at all areas: before field welding.

3 EXECUTION

3.1 Installation

3.1.1 GENERAL

- Install all controls and instrumentation in accordance with the requirements of this Section. Any installation procedures not specified herein shall be done in accordance with the manufacturer's recommendations and good engineering practice.
- Promec shall utilize experienced workers for installation of all controls and instrumentation, tubing, and piping.
- Promec shall furnish all necessary craft personnel, supervision and scheduling required for the completion of instrument installation within the Owner's schedule.

3.1.2 INSTALLATION OF LOCALLY MOUNTED EQUIPMENT

- In addition to the installation requirements indicated on the drawings, the manufacturer's submittals, and the Instrument List, the requirements specified herein apply.
- Install all instruments and associated devices shall be installed in easily accessible locations for maintenance, calibration, and replacement. Take special care to assure that indicator type instruments are easily readable from the nearest accessible floor or platform elevation.
- Solenoid valves and control loop accessories not located in enclosures or mounted on valves shall be mounted in easily accessible protected locations near the components with which they are associated.
- All pressure gages (indicators) shall be installed bear the process connections, unless otherwise on the drawings and locate where easily read.
- Pressure switches not mounted in enclosures shall be installed on a wall or building column, or on pipe stands, near the piping or duct to which they are connected and mount to permit ease of adjustment.

- All brackets, stands, supports, and other miscellaneous hardware shall be provided as required for mounting devices.
- Level transmitters, level controllers, and level switches of the displacer or float type shall be installed on vessel instrument piping columns as indicated on the piping detail drawings for that vessel. Top works of transmitters, controllers, and switches shall be provided as to positions which provide convenient access for operation and maintenance; perform prior to installation of tubing and wiring to the devices.
- Sight flow glasses shall be installed for maximum visibility.

3.1.3 INSTALLATION OF INSTRUMENT RACKS AND STANDS

- Freestanding racks, stands, and enclosures to the floor shall be attached to concrete equipment bases or supporting steel, at locations indicated on the drawings. Shim shall be provided for proper alignment before bolting to the floor or grouting.
- Non-freestanding racks and enclosures shall be mounted in accessible locations on columns and walls. Brackets shall be fabricated as required to install the racks and enclosures in a workmanlike manner.
- Rough edges and welds on all fabricated supports shall be grinded smooth; surfaces shall be finished with coating.
- Racks shall be located to provide the shortest reasonable instrument impulse line lengths for each of the instruments mounted thereupon.

3.1.4 CONNECTION OF EQUIPMENT AND DEVICES

- Design pressure and maximum process temperature shall be limited below manufacturer's specified data for all instruments.
- After flow instrument installation, Promec shall verify the high and low sides of the instrument with respect to the direction of flow.
- When reservoir tees are required, bent pipe shall be used between the root valve and the tee unless there is a space limitation. Fittings may be used if space is limited.
- Reservoir tees to be installed on vertical lines shall be mounted at or above the process line connection. These reservoir tees shall be mounted at the same elevation.
- Reservoir tees shall be provide for each reference leg for differential pressure transmitter used to measure level on the steam drums, deaerator storage tank, or any tank containing both liquid and vapour. Reservoir tees shall be provided on all steam flow and pressure applications to insure complete fill of the sensing line during operation. Reservoir tees must not be insulated. A filling connection shall be provided on the reservoir tees for initial filling of the sensing line.

3.1.5 FLOW METER TUBING

- Process sensing connections shall be provided between flow indicators, transmitters, controllers, or switches and shutoff valves on the main piping in accordance with the Drawings.
- Where tubing is run in open type trays, covers shall be installed wherever the trays pass through an open area where it is possible that the tubes can be damaged from falling objects.

3.2 Inspection and Test Requirements

3.2.1 GENERAL

- Pre-operational adjustments, material and equipment tests shall be made as specified and as required by governing codes, regulations, manufacturers' recommendations, and good construction methods.
- Instrument functional loop checkout shall be made to resolve any discrepancies and correct any field problems which arise in the scope of work.
- Assemble, test, and adjust, as required, for correct and reliable operation the control and instrument equipment (including gages, switches, thermostats, and other devices) which are a part of major equipment.

Appendix A

ALL APPLICABLE ITRs & LOGs

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Vendor Document Status

1 ☐ Proceed to next submission and status.

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Revise as noted and resubmit next submission and status.

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By: LUC SÉNÉCAL Date: 2017-07-10

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Agnico Eagle No. 6515-C-270-007-141-TES-0008 R: Sub002

DOCUMENT FOR INFORMATION

NUQSANA PROMEC MINING

AGNICO EAGLE

Agnico-Eagle Mines Ltd.

Contract no. 6515-C-270-007

Cable Tray Installation Procedure

AEM-EL-PRO-003

Area No.: All

System No.: All

PROMEC Approvals

Prepared by:	Stéphane Doré	**Signature:**		**Date:**	2017-04-25
Verified by:	Jonathan Roy	**Signature:**		**Date:**	2017-04-25
Approved by:	Éric Poulin	**Signature:**		**Date:**	2017-04-25

CLIENT Approvals

Verified by:		**Signature:**		**Date:**	
Approved by:		**Signature:**		**Date:**	

Table of Contents

1. GENERAL

1.1 Section Includes

- Cable Tray, Fittings, and Accessories.
- Hangers and Supports.

2. EXECUTION

2.1 Inspection and Preparation

- Before installation, inspect cable trays and fittings and clean off all dirt, cuttings, and other foreign material. Cut ends of the trays to be filed or ground to remove burrs and sharp edges, and coated to prevent rust.

2.2 Installation Requirements

- All Electrical Installations: in accordance with CSA Standard C22.1-06.
- In general, provide a recommended minimum vertical spacing between trays of 250 mm measured from the bottom of the upper tray to the top of the lower tray. Maintain minimum of 230 mm clearance between the top of the tray and beams, pipes, etc. for parallel runs, and 75 mm minimum for crossing runs. (Trays to be installed by others).
- Cut cable tray to size by use of a hack saw, or other approved tool. Do not flame cut trays or their accessories.
- Align cable trays carefully and level plumb and true. Secure the runs with at least two smooth head bolts at each support bracket.
- Supports for cable tray runs to be the cantilever or the trapeze type, fabricated of threaded rod, strut, and/or steel members and accessories. The support member is in contact with the cable tray and shall be approximately 75 mm longer than the width of the cable tray that it supports.
- Support cable trays at all bends, tees, dropouts, crossovers, risers, etc. as recommended by CSA Standard C22.2, No. 126.1-02.
- Fasten supports to building steel by means of beam clamps. Fasten supports to concrete by inserts or drilled-in anchors. Provide supports capable of supporting the ultimate tray loading capacity.

2.3 Inspection and Test Requirements

- Perform inspections and tests normally used either in installation, construction processes or as called for by the applicable codes and standards.
- Upon completion of cable tray installation, inspect the interior surfaces of the tray run for any burrs or rough edges that could result in cable damage during cable installation. Remove burrs and rough edges.

2.4 Corrosion Protection/Coatings

- Where the galvanizing of cable tray supports is damaged, repair by the application of appropriate galvanizing repair paints.

Control System Description

Rankin Inlet Tank Farm – 65PLC11601

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.

Sébastien Perron Instrumentation Date: 28/09/2017

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. 6515-C-270-007-280-GNS-0001 R: Sub003

DOCUMENT FOR INFORMATION

AGNICO EAGLE - MELIADINE DIVISION

Rankin Inlet, Nunavut

Project No: 591700

Prepared by: G. Gagnon, Eng.

Approved by: D. Carrier, Eng.

Document No: ULT-591700-CSD-001

Date: Sept 12, 2017

Revision: 1

REGISTERED PROFESSIONAL ENGINEER
13627
D. CARRIER
LICENSEE
NT/NU

Sept 12/2017

PERMIT TO PRACTICE
LE GROUPE ULTRAGEN LTÉE
Signature
Date SEP 12 2017
PERMIT NUMBER: P 1180
NT/NU Association of Professional Engineers and Geoscientists

REVISION INDEX

Rev	Prepared by	Reviewed by	Approved by	Date	Pages Revised / Remarks	Issued for
PA	G. GAGNON	E. LAROUCHE	D. CARRIER	2017/05/18		FOR REVIEW
0	G. GAGNON	E. LAROUCHE	D. CARRIER	2017/06/20		FOR CONSTRCUTION
1	D .CARRIER	E. LAROUCHE	D. CARRIER	2017/09/12		FOR START-UP

D. CARRIER, Eng. OIQ – 40308 / NAPEQ – L3627

Sept 12/2017
Date

INDEX

1 Overview

The control system at Rankin Inlet tank farm consists of the following components:

- PLC cabinet located in the operator room with a HMI touchscreen for operation.
- Flow Controller Smith Meter located in the operator room.
- A flow control kit including one flow valve, one flow meter and one temperature probe connected to the Flow Controller to measure the transferred quantity per transaction.
- Two Variable Frequency Drive (VFD), one per transfer pumps (2).
- Scully Module with plug to allow truck ground proving and truck overfill prevention.
- Radar level transmitters and temperature transmitters for monitoring the diesel tanks (2).
- Motorized Operated Valve (MOV) to allow the transfer between tanks and truck.
- E-stops (3) located in the truck area, inside the pumping station and inside the operator room.
- Strobe light on each diesel tank and one common horn on the pumping station to indicate high level tank.

2 PLC

2.1.1 One PLC for the Rankin Inlet tank farm diesel distribution.
Manufacturer: Schneider, Model: BMEP582040

3 I/O cards

3.1.1 PLC Input and outputs cards connected to field devices are as following:

Module	Manufacturer	Model
32 digital inputs module (120 Vac)	Schneider	BMXDDI3202K
32 digital outputs module	Schneider	BMXDDO3202K
8 analog inputs module (4 -20 mA)	Schneider	BMXAMI0810
Ethernet backplane card	Schneider	BMENOC0321

4 Human-Machine Interface (HMI)

4.1.1 One Touch screen HMI mounted in front of the PLC cabinet to monitor and control the transferred quantity from diesel tanks to tanker truck.
Manufacturer: Schneider, Model: HMIDT732 / HMIG3U

5 Flow controller

5.1.1 One Microload Flow controller c/w one flow meter, one digital flow valve and one RTD temperature to control the transferred quantity.

Instrument	Manufacturer	Model
Flow controller	FCM	Smith Meter ML-XP-STD-1, Microload
Flow valve (Digital pre-set valve) with two 120 Vac solenoids	TCS	OCV 115-3
Flow meter (positive displacement type)	TCS	700-40SP4DX
Pulse transmitter for flowmeter	TCS	DMP-100-3
RTD temperature sensor	FMC	TP-W-3C-2.5

6 Ground proving and overfill prevention device

6.1.1 A Scully module located beside the truck loading arm to connect to the tanker truck using a plug assembly. The 10-pins plug assembly allows the monitoring of up to 8 high level sensors and monitors the static ground verification on the tanker truck.
Manufacturer: Scully, Model: Intellitrol IC-OG, plug model: SC-8A

7 Motorized Operated Valve (MOV)

7.1.1 One MOV per vertical tank to control the tanks outlets. These valves are powered at 120 Vac and are controlled through 120 Vac output PLC cards. With one output configuration for the open command, it closes automatically when off. Open position, close position and fault status are monitored by the PLC.
Actuator Manufacturer: Rotork, Model: IQT500

Valve Manufacturer: M.A Stewart, Model: F-150-CSF-SS-FS-N

8 Communication

8.1.1 Ethernet TCP/IP is used for communication between the PLC, the HMI, the flow controller and the VFDs.

9 Ethernet switches

9.1.1 One Ethernet switch inside the PLC cabinet connected to the PLC Ethernet communication card, dedicated for the HMI and the plant Ethernet network.
Manufacturer: Schneider, Model: TCSESM083F2CSO

9.1.2 One Ethernet switch inside the PLC cabinet connected to the PLC CPU Ethernet port, dedicated for Microload controllers and VFDs.
Manufacturer: Schneider, Model: TCSESM083F1CSO

10 Software

10.1 PLC Programming

10.1.1 Schneider Unity Pro software, version 11 is the PLC programming software for the Schneider M580 PLC.

10.2 HMI Programming

10.2.1 Vijeo Designer software, version 6.2 is the HMI touch screen programming software.

10.3 PLC – Microload Controller exchange

10.3.1 The communication protocol used to transfer data between the PLC and the Microload controller is Ethernet Modbus TCP/IP (Accumulated volume, Pre-set volume, Flow rate, etc). The Microload keypad is disabled, all controls are done through the PLC.

11 Functional Description

11.1 Truck Loading

1. At the truck area

    a. Connect the Scully Intellitrol plug to the tanker truck to allow ground proving and truck overfill prevention, then attach the loading arm to the truck.

    b. Green Bar indicator is ON steady on the Scully Intellitrol Module when the plug is properly connected and the ground contact is made. Red Bar indicator ON means Scully not ready or no lights ON means no power. The Intellitrol also monitors the truck compartment levels, if one or many compartments LED are ON that indicates a faulty level sensor.

    c. The Scully Intellitrol switch interlocks the 120 Vac power to the flow control valve. In case of high level in tanker truck or loss of truck grounding contact, the 120 Vac power is removed from the flow control valve and the valve closes. The fault status is wired to PLC through interposing relay to prevent any loading operation. The running sequence is then paused and equipment are stopped and valves closed.

    d. The Scully Intellitrol can be bypassed with a bypass key held against the side of the Intellitrol for 10 to 30 seconds. When in bypassed mode, the Intellitrol Bar indicator will blink green.
        - The maximum bypass time is settable from 15 to 60 minutes.
        - Bypass operation automatically ends when the vehicle is disconnected.
        - A faulty sensor can only be bypassed at initial truck hookup.
        - A sensor wet during loading can never be bypassed.

2. At the pumping station operator room – Logging to the system

    a. Two levels of user security are available at the HMI;

        i. Operator username and PIN number 1111.

        ii. Maintenance username and PIN number 2222.

    b. At the operator security level, the truck loading sequence is fully automatic and there is no bypassed or manual mode available.

c. At the maintenance security level, the Microload controller could be bypassed and manual mode are available for the VFD and the motorized valves.

d. The security level is logout automatically after a predefined time of inactivity, to prevent the unauthorized use of the HMI.

3. Truck loading sequence

a. The HMI contents three main screens;

i. **Loading graphic screen** for visualisation including; tank levels, tank temperatures, Pumps status, MOV status, Scully status and the Microload bypass button.

ii. **Loading sequence screen** for sequence operation; Start, Pause and Stop loading sequence, tank's selection, truck load, sequence status, loading flow and load totalizer.

iii. **Alarm page** with active alarms in red and clear alarms in green. The clear all alarm button is active only with maintenance security level access.

b. To start the truck loading sequence the following actions shall be done:

i. Select one of the two main tanks. There is always one tank selected, make sure this is the right tank before starting the sequence.

ii. Enter the truck load to fill. A predefined load value is set at each transaction and could be modified as required.

iii. Verify the sequence is 'Ready to Start' in the sequence banner status. If not then other alarms texts will show the issues that need to be resolved prior to start the sequence.

iv. Press the START button to start the loading.

c. The sequence status shows 'Ready to start' if all conditions are met for the automatic loading sequence. Otherwise the status will show 'Not Ready' in red with the following alarms messages:

i. **Scully fault:** The Scully unit is faulty, ground contact or truck levels are in fault.

ii. **Equipment fault:** The pumps or the valves are not available; either in fault or in manual mode.

iii. **Tank low level:** The selected tank reached the low level.

d. There are three control buttons for the automatic sequence:

i. **START:** starts the sequence.

ii. **PAUSE:** pauses the sequence, the valves close, the pumps stop and the transaction is on hold, and wait for a restart (START) or a complete stop (STOP). This function allows the truck driver to hold the sequence to do visual checks.

iii. **STOP:** stops the sequence and ends the transaction through the Microload unit.

e. The START button starts the loading sequence and the PLC does an estimated time for the loading based on the truck load and pump flow. It generates an alarm if the time expires before the end of the sequence, meaning there is an issue with the system.

f. The sequence stops automatically once the truck load is reached. If the sequence stops on a fault, the sequence moves to the pause state, allowing the operator to clear the fault and restart or to stop the sequence. If no action is done, the sequence stops after the pause time expired.

g. The sequence starts by opening the selected tank's motorized valve and ramps up one of the VFD.

h. Pumps will run alternatively based on running hours accumulated, if both are available in auto mode before starting the sequence. The pumps have a selector AUTO/MANUAL on their HMI popup, this function is available only with the maintenance security access. If one pump does not start, a fault will be generated on the HMI and the other pump will start automatically. If one pump is in AUTO mode and the other in MAUAL mode, only the pump in AUTO mode will be used. If both pumps are in MANUAL mode, the sequence will not start. If none of the pumps start, the motorized valve closes, and the sequence goes to pause. Alarms are generated on the HMI.

i. The PLC sends a "Remote Start" to the Microload unit with the truck load. The Microload starts the loading control by opening the flow valve and monitoring the accumulated volume.

j. The truck load, the accumulated volume and flow rate are shown on the sequence screen. The data exchange with the Microload controller and the PLC is polled through Modbus link. At the end of transaction, the accumulated value and the truck load stay on the screen until a new transaction. The total of all fuel dispensed is totalized in PLC memory. This value is available and resettable in the PLC only, not on the HMI.

k. The loading sequence stops under the following conditions:

- Tanker truck is full OR;
- The estimated loading time is expired (meaning there is an issued with the truck level) OR;
- The Microload faults OR;
- Scully fault (grounding contact or high level) OR;
- MOV faults on open position OR;
- Fault on VFD pump OR;
- PAUSE or STOP buttons sequence are activated.

When the sequence stops, the pump stops, the MOV closes, the remote stop is set to Microload controller, and the flow valve closes. The status of the loading sequence is shown on the sequence screen.

l. The truck load is a pre-set value in the PLC based on one type of tanker truck. If more than one tanker truck capacity models are used, a pre-set selection could be added to facilitate trucker entries. To be defined on site.

m. The sequence could not start if there is a low low level in the main tank selected. But if the sequence is running when the low low level appears, the sequence will complete the loading. The low low level will be set to support one tanker truck load above the piping intake.

n. On the stop sequence, the pump stops first and then the motorized valve at the selected tank closes.

o. The valves positions and the pumps status are shown on the graphic screen.

p. There are three emergency push buttons, one on the PLC cabinet, one in the pump house and one at the truck area, and they are hardwired to the emergency relay inside the PLC cabinet. The emergency relay contacts stop the VFD pumps through VFD input (DIL and 24V) and remove the power to the flow valve. The emergency relay status is wired back to the PLC, to close the MOVs and set the "remote stop" command to the Microload controller.

q. Pumps interlocks – Starting conditions

- Scully contact through the truck plug (must be connected)
- Minimum level of diesel in the selected main tank (above low low level)

r. Process interlocks – Running conditions that can be bypassed

- Microload Controller ready and running. The bypass confirmation of the controller is available only through the maintenance security level. If the bypass valve is opened, it shall be confirmed on the HMI, to ensure proper functionality.

s. Safety trip conditions

- Emergency stop buttons

4. Maintenance mode

a. The maintenance mode is accessible by logging as maintenance username with the proper password.

b. The user in maintenance mode could access the motors and valves popups. The functionalities in popups allow individual control of the equipment; AUTO/MANUAL mode, START/STOP and feedback status.

c. In MANUAL mode, the user could take control of every equipment to manually operate them without interlock except for the E-Stops. The user is fully responsible of the equipment when running them in manual.

d. A maintenance mode banner is displayed in the graphic and sequence screens to identify that this mode is active.

e. The Microload bypass button is accessible in maintenance mode only.

f. The automatic loading sequence could not run in maintenance mode. Equipment left in manual mode does not return in auto mode automatically, the user is responsible to return them in auto mode to allow the automatic sequence to work properly.

11.2 Main tanks loading

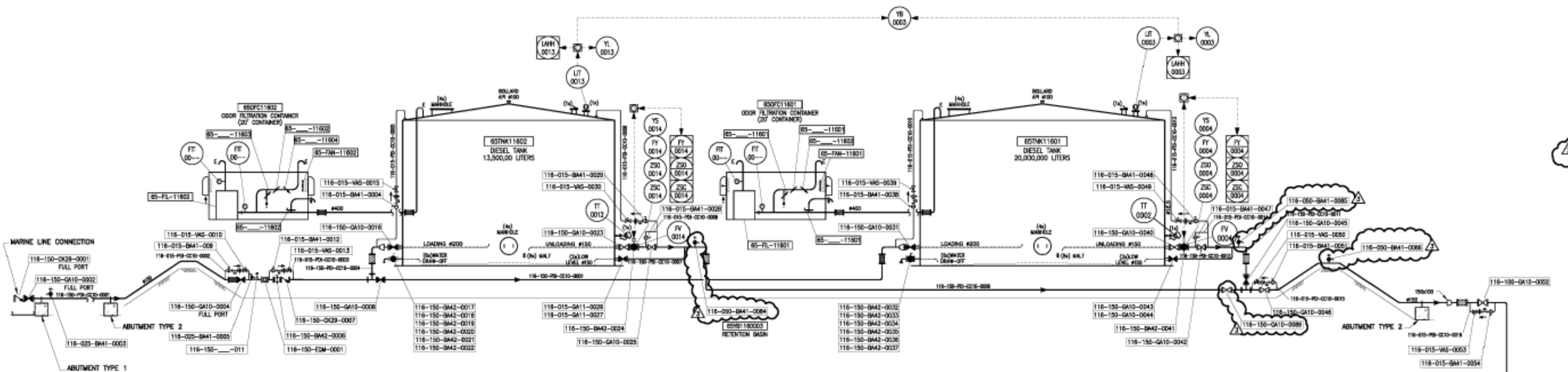
1. Overfill protection of tank during refueling from the marine line
    i. Overfill alarm is composed of one strobe light on each tank and one common horn installed on the pumping container.
    ii. When 90% of a tank capacity is reached, an overfill alarm is activated, turning on the tank strobe light and the horn.
    iii. The horn stops once the alarm is acknowledged.

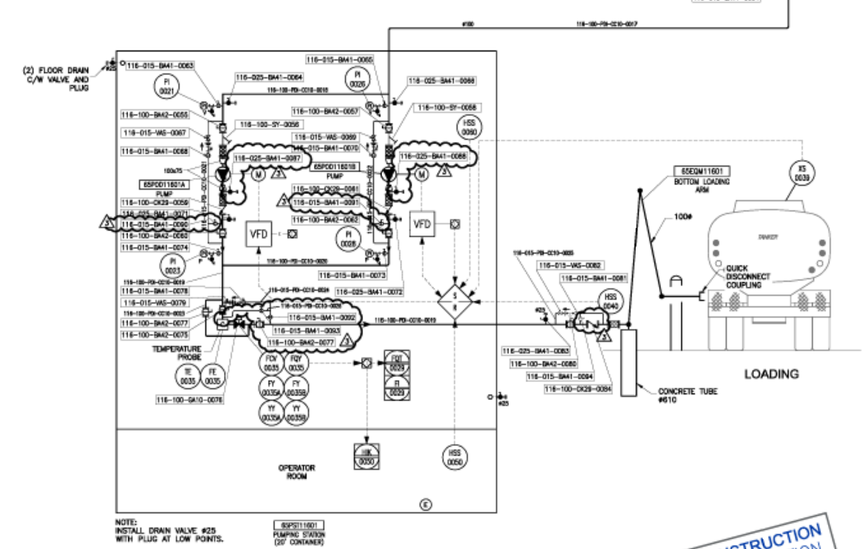
11.3 Alarms transmission

- At least 4 type of alarms are wired from PLC to Fire Alarm System
- Overfill alarm on tanks
- Emergency stop activated
- Temperature alarm
- Pumps and valves malfunction alarms

NO. DESSIN / DRAWING NO. 65-116-205-200_R3.dwg

FORMAT ARCHD





NOTE:
INSTALL DRAIN VALVE #25
WITH PLUG AT LOW POINTS.

65PST11601
PUMPING STATION
(20' CONTAINER)

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2018-04-16

LEGEND

PIPING

FLANGED / THREADED

- BALL VALVE
- GATE VALVE
- PRESSURE RELIEF VALVE
- CONTROL VALVE
- MOTORIZED BALL VALVE
- CHECK VALVE
- STRAINER
- FLEXIBLE
- REDUCER
- UNION
- FLANGES
- BLANK FLANGE
- CAP
- CONNECTION
- PIG CATCHER
- FLOW INDICATOR "VISI-FLOW"
- METER c/a STRAINER & BLEEDER
- VALVE-NORMALLY OPEN
- VALVE-NORMALLY CLOSED
- PIPE DOWN
- PIPE UP
- PUMP
- PRESSURE RELIEF VALVE KIT: PIPING #12,5 SCH. 80, PRESSURE RELIEF VALVE (AJUSTED TO 5 PSI UNLESS OTHERWISE SPECIFIED), UNION, T WITH PLUG & BALL VALVE
- PRESSURE GAGE TO VACUM OF POMPE (VACUUM)
- PRESSURE GAGE TO DISHARGE OF PUMP (POSITIVE PRESSURE)
- TEMPERATURE PROBE

VERTICAL TANK

- OUTLET
- GAGE HATCH
- RADAR GAGE
- TEMPERATURE SENSOR (OUTLET #19)
- VENT

VENTILATION

- AIR BALANCING KEY
- AIR PRESSURE RELIEF OR BACK-DRAFT DAMPER
- MANUEL FLAP
- AIR FLOW SWITCH

GENERAL

- EXTINGUISHER 20 BC

P&ID

SEE DWG 65-500-205-207

WORK AREA

WSP

1075, 3e AVENUE E
VAL-D'OR (QUÉBEC) CANADA J9P 6M1
TÉL. : 1-819-825-4711 | TÉLÉC. : 1-819-825-4715 | WWW.WSPGROUP.COM
Ref. 161-08443-40

NOTES GÉNÉRALES / GENERAL NOTES

1. REPLACE DRAWING : 65-103-205-200
2. EQUIPMENTS NUMBERING AS PER AEM STANDARDS, DOCUMENTS: 0102-000-100-STD-002 & 0102-CDL-02
3. ALL DRAINS TO BE INSTALLED HORIZONTALLY.

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	CLIENT
3	2018-04-16	EQUIPMENTS ADDED	J.M.	D.T.	
2	2017-09-05	NUMBERING OF EQUIPMENTS	J.M.	D.T.	
1	2017-07-20	INSTRUMENTATION ADDED	F.M.G.	L.S.	
0	2017-05-31	ISSUED FOR CONSTRUCTION	J.M.	D.T.	

REVISIONS

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
116 – FUEL TANK FARM
205 – P&ID
FUEL DISTRIBUTION
FLOW DIAGRAM

DESSINÉ PAR / DRAWN BY	GHISLAINE CORNUT, tech.	DATE 2017-05-26
VÉRIFIÉ PAR / CHECKED BY	JÖEL MORLIÈRE, tech.	2017-05-26
APPROUVÉ PAR / APPROVED BY	DENIS THIBODEAU, P. Eng.	2017-05-26
ÉCHELLE / SCALE: NONE	DATE: 2017-05-26	
NO. DESSIN / DRAWING NO.	65-116-205-200	
NO. PROJET / PROJECT NO.: 6515	REVISION: 3	FEUILLE / SHT: 1 / 1

FILE NO. 65-116-205-200_R3.dwg

65-116-275-200_R0

FORMAT ARCH D

EQUIPMENT LIST

ARTICLE NUMBER	SYMBOL	DESCRIPTION	MANUF.	TYPE	NOTE
30	XB	CONNECTION - CROSS CONNECTOR COMPRESSION CROSS CONNECTOR FOR TWO HORIZONTAL CONDUCTORS ON THE SAME PLANE. CABLE SIZE: 4/0AWG.	BURNDY	YGL-C	
31	GT	ROD AND GROUNDING ROD CONNECTOR STEEL ROD COATED WITH COPPER. COMPRESSION CONNECTOR FOR GROUNDING ROD. ROD DIAMETER: 0.5/8", ROD LENGTH: 3M CABLE SIZE: 4/0AWG.	BURNDY	YGLR-C	
32	TA	CONNECTION - TAP COMPRESSION CONNECTION FOR GROUNDING TAP OR LAP SPLICE. CABLE SIZE: 4/0AWG.	BURNDY	YGHP-C	
33		GROUND ROD TAP CONNECTION - HYGRL FOR CONNECTION TO GROUNDING ROD, HEAVY DUTY. ROD SIZE: 4/0AWG CABLE SIZE: 4/0AWG	BURNDY	YGHR	
34		COMPRESSION CONNECTION - GROUND PLATES HEAVY DUTY, CONSTRUCTION SITE RESISTANT CABLE SIZE: 4/0AWG	BURNDY	YGI	
35	PT	CONNECTION - PARALLEL HORIZONTAL CONDUCTORS COMPRESSED CONNECTOR FOR TWO PARALLEL HORIZONTAL CONDUCTORS. CABLE SIZE: 4/0AWG TAP CABLE SIZE: 4/0AWG.	BURNDY	YGHC	
36	VS	CONNECTION - STRUCTURE CONNECTION USED FOR VERTICAL STEEL SURFACE, BEAM OR STRUCTURAL STEEL CABLE SIZE: 4/0AWG.	BURNDY	GSTUD-HY	
37	LA	CONNECTION - HEAVY DUTY TERMINALS HEAVY DUTY TERMINALS DESIGNED TO CARRY SHORT CIRCUIT LOAD AND WITHSTAND HIGH MECHANICAL STRESS. CABLE SIZE: 4/0AWG.	BURNDY	YGHA	
38	VS2	CONNECTION - STRUCTURE CONNECTION USED FOR VERTICAL STEEL SURFACE (STRUCTURAL BEAMS) CABLE SIZE: 4/0AWG	BURNDY	YGD	EVERY BURNDY YGD CONNECTION (VS2) MUST BE COMBINED WITH A YGHA HEAVY DUTY TERMINAL (LA) AND 2 NUTS OF ADEQUATE SIZE FOR THE TERMINAL.
39		GROUNDING PLATE PREFABRICATED COPPER GROUNDING PLATE WITH ONE PIGTAIL, WIRE GAUGE: (4/0AWG, PLATE SIZE: 610mmX610mm, THICKNESS : 6.35mm	PENCAR	[illegible]	
40	CP	CONNECTION - PIPE MECHANICAL GROUNDING CONNECTOR CONDUCTOR TO PIPE CABLE SIZE: 4/0AWG.	BURNDY	[illegible] [illegible] [illegible] [illegible]	1¼" TO 2" (30MM TO 52MM) PIPE 2½" TO 3½" (65MM TO 89MM) PIPE 4" TO 5" (102MM TO 127MM) PIPE 6" (150MM) PIPE
41		CABLE TRAY CONNECTOR CABLE TRAY GROUNDING CLAMP FOR CABLE SIZE 4/0AWG.	THOMAS & BETTS	[illegible]	
42		BONDING JUMPER PREFABRICATED COPPER JUMPER, FOR EXPANSION JOINTS AND ADJUSTABLE JOINTS.	THOMAS & BETTS	[illegible]	
		COPPER GROUNDING CONDUCTOR 4/0 AWG, BARE, FLEXIBLE, TINNED, 19 STRANDS (ASTM STANDARDS B8 AND B33)	PHILLIPS CABLES		
	5m	COPPER CONDUCTOR IDENTICAL CHARACTERISTICS FOR FUTURE CONNECTIONS. THE LENGTH TO RESERVE IS SPECIFIED ON THE SYMBOL.	PHILLIPS CABLES		

ELECTRICAL LEGEND

SYMBOLS AND DISTRIBUTION

[illegible]

DETECTION & FIRE ALARM

[illegible]

ELECTRICAL EQUIPMENT

NO. EQUIP.	MANUFACTURER	CATALOG NUMBER	MOUNTING	DESCRIPTION
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[illegible]	SCHNEIDER ELECTRIC	[illegible]	SURF.	[illegible]
[illegible]	SCHNEIDER ELECTRIC	[illegible]	SURF.	TRANSFORMER [illegible]
[illegible]	SCHNEIDER ELECTRIC	[illegible]	SURF.	HEAVY DUTY FUSED SAFETY SWITCH [illegible]
[illegible]	SCHNEIDER ELECTRIC	[illegible]	SURF.	HEAVY DUTY FUSED SAFETY SWITCH [illegible]
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[illegible]	SCHNEIDER ELECTRIC	[illegible]	SURF.	[illegible]
[illegible]	SCHNEIDER ELECTRIC	[illegible]	SURF.	SAFETY SWITCH [illegible]
[illegible]	SCHNEIDER ELECTRIC	[illegible]	SURF.	[illegible]
[illegible]	[illegible]	[illegible]	SURF.	ELECTRIC HEATER [illegible]
[illegible]	THOMAS & BETTS	[illegible]	SURF.	[illegible]
[illegible]	[illegible]	[illegible]	SURF.	[illegible]

C-M. = CEILING-MOUNTED
BUILT = BUILT-IN
SURF. = SURFACE
SUSP. = SUSPENDED
H.C. = [illegible]
SUP = MOUNTED ON SUPPORT
[illegible]

FIRE DETECTION EQUIPMENT

TYPE	MANUFACTURER	CATALOG NUMBER	MOUNTING	DESCRIPTION
FAI	[illegible]	[illegible]	SURF.	[illegible]
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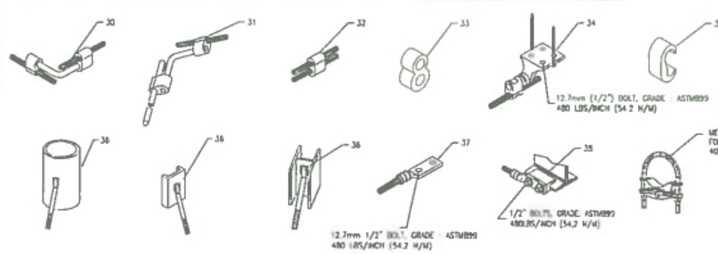
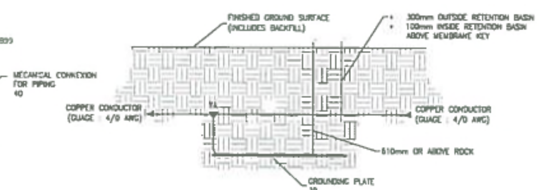
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	SURF.	[illegible]
	[illegible]	[illegible]	SURF.	[illegible]

BUILT. = BUILT-IN
SURF. = SURFACE



CONNECTOR TYPES - BURNDY
SCL: NONE
USABLE TYPES WHEN THE SYSTEM IS BURIED OR NOT



TYPICAL INSTALLATION - GROUNDING PLATE AND GROUNDING CONDUCTOR
SCL: 1:20

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2017-07-11

PLAN CLE
KEY PLAN

WSP
1075, 3e AVENUE EST
VAL-D'OR (QUÉBEC) CANADA J9P 0J7
TÉL.: 819 825-4711 | TÉLÉC.: 819 824-1514 | WWW.WSPGROUP.COM
Réf. 151-06449-00

NOTES GÉNÉRALES / GENERAL NOTES

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	# DWG
LEGEND, TABLES & DETAILS	65-116-275-200

AGNICO EAGLE

REV.	DATE	DESCRIPTION	DRAWN	APP.	CLIENT
0	2017-07-11	ISSUED FOR CONSTRUCTION	F.A.G.	L.S.	

REVISIONS

TITRE / TITLE
AGNICO EAGLE - MELIADINE DIVISION
116 - FUEL TANK FARM
275 - POWER ELECTRICAL
LEGEND, TABLES & DETAILS

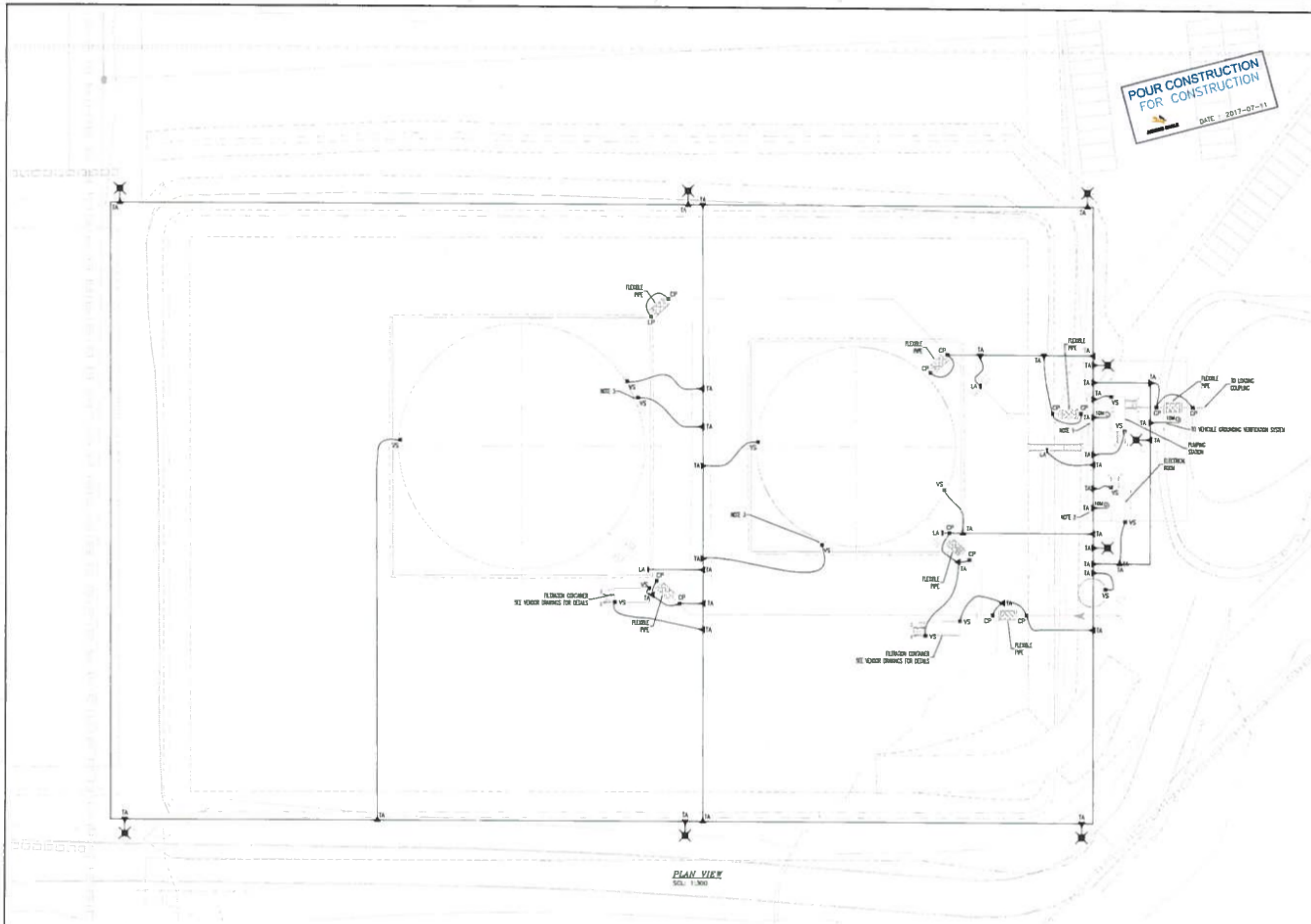
DESSINÉ PAR / DRAWN BY	M-A. FALARDEAU, Jr. Eng.	2016-06-22
VÉRIFIÉ PAR / CHECKED BY	RÉMI HÉNAULT, Tech.	2016-06-22
APPROUVÉ PAR / APPROVED BY	LUC SÉNÉCAL, P.Eng.	2017-07-11
ÉCHELLE / SCALE	INDICATED	DATE 2015-12-01

NO. DESSIN / DRAWING NO. 65-116-275-200

NO. PROJET / PROJECT NO.	RÉVISION	FEUILLE / SHEET
6515	0	1 / 1

FILE NO. [illegible]

65-116-275-201_RD



WORK AREA

WSP

NOTES GÉNÉRALES / GENERAL NOTES

1. GROUND EQUIPMENT INSIDE THE PUMPING STATION AT THE CONNECTION POINT.
2. GROUND THE MAIN SAFETY SWITCH IN THE ELECTRICAL ROOM CONTAINER.
3. GROUND THE STAIRWELL OF THE TANK.

- GROUND ALL THE PROTECTION BOLLARDS.
- GROUND ALL METALLIC ELEMENTS IN THE RETENTION BASIN AREA AND IN TRUCK LOADING AREA.
- THE LOCATION OF THE GROUND CONNECTIONS AND CONDUCTORS ARE APROXIMATIVE AND SHALL BE COORDINATED WITH OTHER CONTRACTORS.
- THE LOCATION OF CONTAINERS SHALL BE COORDINATED WITH OTHER CONTRACTORS.

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	#
GROUNDING LAYOUT	65-116-275-201
LEGEND, TABLES & DETAILS	65-116-275-200

AGNICO EAGLE

REV.	DATE	DESCRIPTION			
0	2017-07-11	ISSUED FOR CONSTRUCTION	F.A.B.	L.S.	

REVISIONS

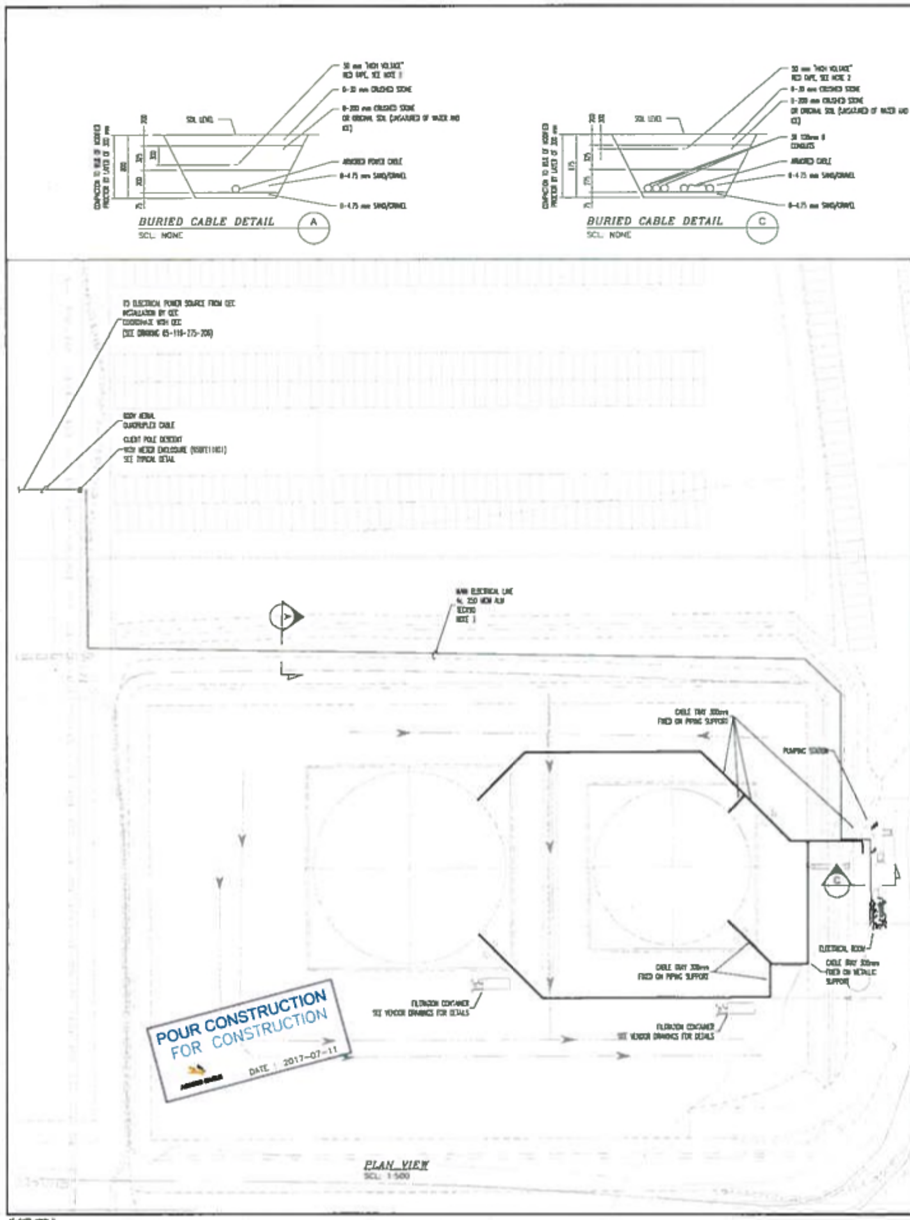
TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
116 – FUEL TANK FARM
275 – POWER ELECTRICAL
GROUNDING LAYOUT
PLAN VIEW

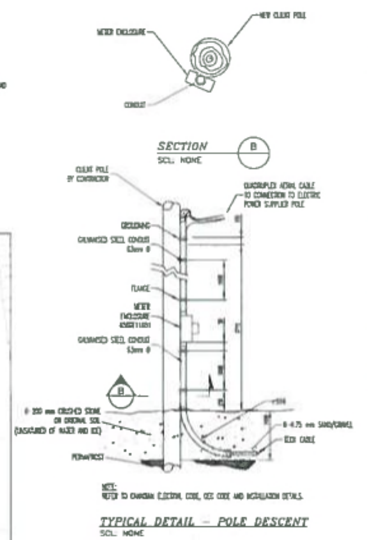
DESSINÉ PAR / DRAWN BY	RÉMI HÉNAULT, Tech.	2016-06-22
VÉRIFIÉ PAR / CHECKED BY	RÉMI HÉNAULT, Tech.	2016-06-22
APPROUVÉ PAR / APPROVED BY	LUC SÉNÉCAL, P.Eng.	2017-07-11
ÉCHELLE / SCALE	INDICATED	DATE 2016-01-25

NO. DESSIN / DRAWING NO. 65-116-275-201

NO. PROJET / PROJECT NO.	RÉVISION	FEUILLE / SHT
6515	0	1 / 1

FILE NO. 65-116-275-201_RD.dwg





PANEL No. : 65DPS11601

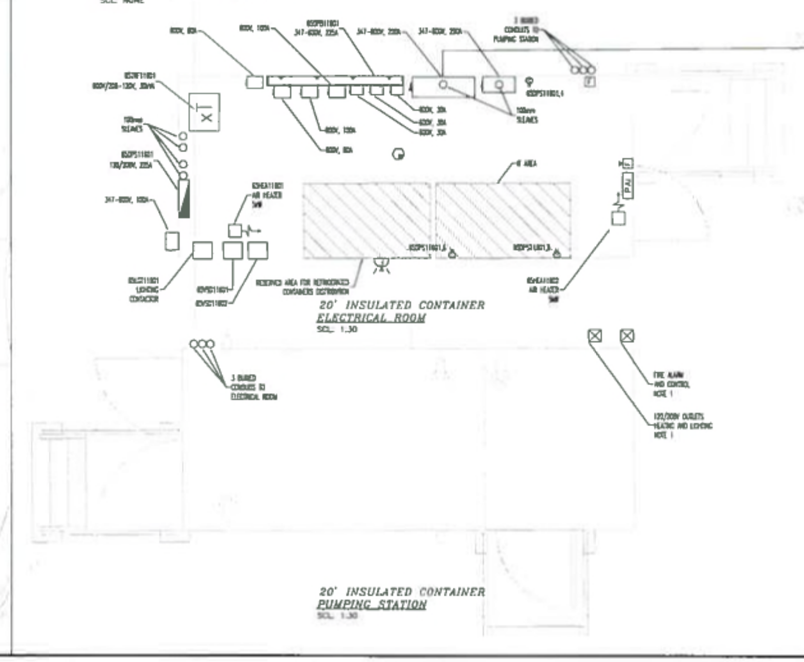
Tension:	120/208 Volts	Enclosure type:	NEMA 1
Powered by:	TRANSFORMER 30kVA	Main breaker:	-
Installation:	SURFACE	No. of circuits:	42 CCTS
Location:	ELECTRICAL ROOM CONTAINER	Bars:	225 A
Type:	NQ442L2C	Ampacity:	10 kA

Local and description	TYPE REF	QTY	WATTS	BREAK TYPE	BREAK AMP	CCT #		CCT #	BREAK AMP	BREAK TYPE	WATTS	QTY	TYPE REF	Local and description
LIGHTING FIXTURE TANK #2	L	7	341		15	1	A	2	15		240	2	P	OUTLET PUMPING STATION
	L	7	342			3	B	4	15		130	1	P	OUTLET ELECTRICAL ROOM
CONT CTRL FEEDER	L	1	37		15	5	C	6	15		340	2	P	ELEC ROOM IT AREA 103
LIGHT / EMER LIGHT PUMP STATION	L	5	[illegible]		15	7	A	8	15		400	1	O	CABINET [illegible]
LIGHT / EMER LIGHT ELEC ROOM	L	4	180		15	9	B	10	30		1000	1	H	65HEA11603
FILTRATION CONTAINER TANK #1	L	3	144		15	11	C	12			1000	1	H	
LIGHTING FIXTURE TANK #1	L	7	341		15	13	A	14	15		[illegible]	2	M	MOT OP VALVES FEEDER
	L	7	342			15	B	16	15		200	1	P	UTILITY CAB [illegible]
TANK #1 / TANK #2 GROUND FLOOD	L	1	138		15	17	C	18	15		[illegible]	1	O	INSTRUMENT
	L	4	138			19	A	20	15		50	1	M	VEN FILT CONTAINER TANK #1
OUT ELEC ROOM / OUT PUMP ST	L	7	341		15	21	B	22	15		50	1	M	VEN FILT CONTAINER TANK #2
	L	7	342			23	C	24	15					
FILTRATION CONTAINER TANK #2	L	2	144		15	25	A	26	15					
65HEA11605 FILTRATION CONTAINER TANK #1	H	1	2500		30	27	B	28	15					
	H	1	2500			29	C	30	15					
65HEA11606 FILTRATION CONTAINER TANK #1	H	1	2500		30	31	A	32	15					
	H	1	2500			33	B	34	15					
65HEA11607 FILTRATION CONTAINER TANK #2	H	1	2500		30	35	C	36	15					
	H	1	2500			37	A	38	15					
65HEA11608 FILTRATION CONTAINER TANK #2	H	1	2500		30	39	B	40	15					
	H	1	2500			41	C	42	15					

TYPE (REF)	Total(W)	Qty
(L) Lighting	3440	13
(P) Outlet	900	4
(H) Heating	23000	10
(M) Motors	900	3
(W) Water heater	0	0
(O) Others	500	2

TYPE (REF)	Qty (ref)
(S) Spare	0

	Watts	Amp
Phase A	7500	[illegible]
Phase B	[illegible]	[illegible]
Phase C	[illegible]	[illegible]
Total R	[illegible]	[illegible]



WSP

Ref: 161-00446-00

NOTES GÉNÉRALES / GENERAL NOTES

1. THE PUMPING STATION CONTAINER COMES PREWIRED WITH THOSE JONCTION BOXES. ELECTRICAL CONTRACTOR SHALL CONNECT THOSE JONCTION BOXES TO THE RIGHT SERVICES IN THE ELECTRICAL CONTAINER. ALL CABLES BETWEEN CONTAINERS SHALL BE TECK TYPE AND INSTALLED BURIED IN TRENCH. INSTALL 3X 100mm Ø CONDUITS FOR FUTURE CABLES.
2. THE RED TAPES SHALL BE INSTALLED ABOVE THE ELECTRICAL CABLES AND FOLLOW ALL THE BURIED PART OF THEM.
3. COORDINATE THE EXACT LOCATION AND DEPTH OF THE MAIN FEEDER CABLE.

* THE LOCATION OF PIPING IS APPROXIMATE AND SHALL BE COORDINATE WITH OTHER MECHANICAL DRAWINGS.

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

AGNICO EAGLE

REV	DATE	DESCRIPTION		
0	2017-07-11	ISSUED FOR CONSTRUCTION	F.M.O.	L.S.

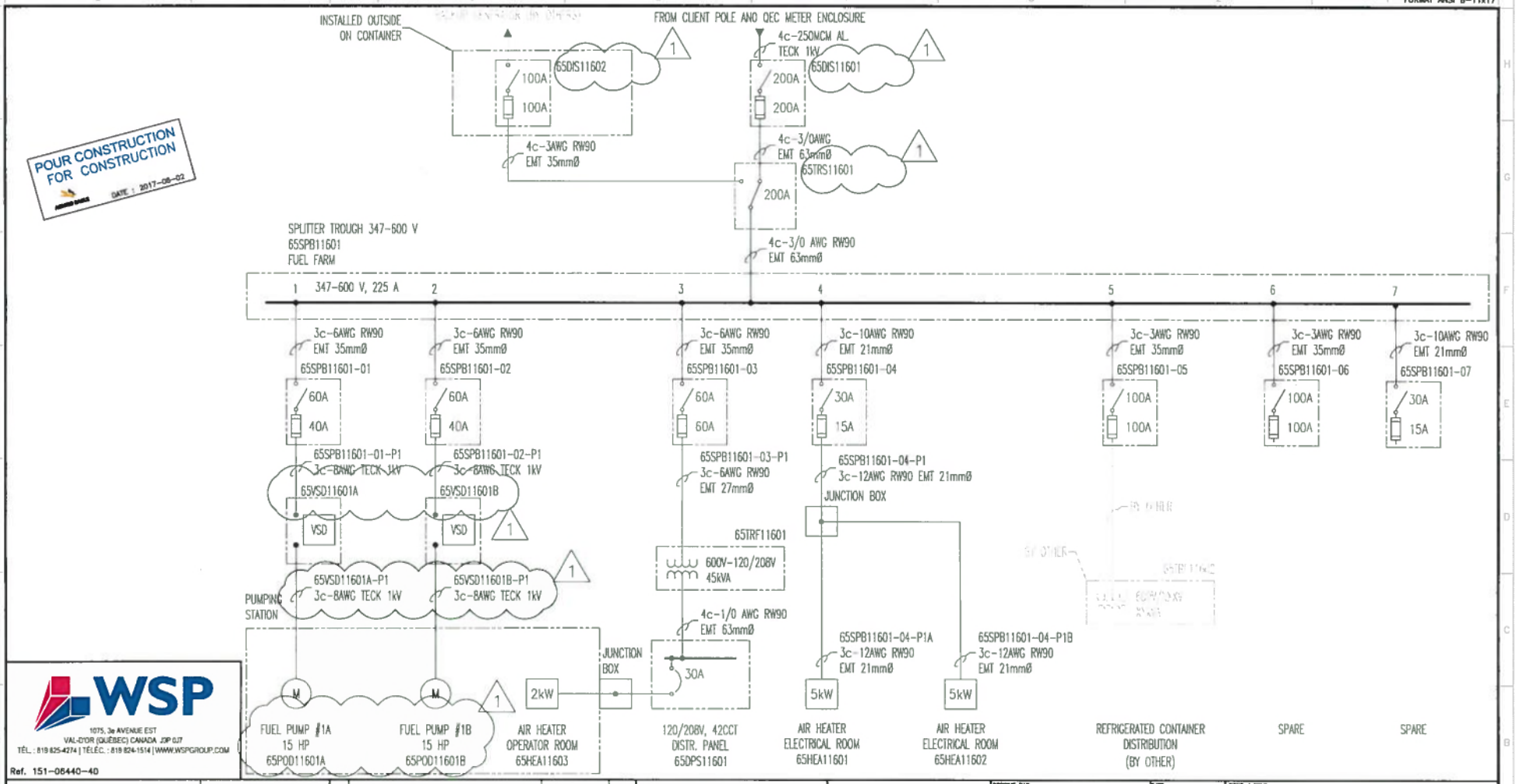
REVISIONS

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
116 – FUEL TANK FARM
275 – POWER ELECTRICAL
EQUIPMENT LAYOUT, DETAILS AND SERVICES PANEL
PLAN VIEW

DESSINÉ PAR / DRAWN BY	BRIAN FILDES, Tech.	2016-06-22
VÉRIFIÉ PAR / CHECKED BY	RÉMI HÉNAULT, Tech.	2016-06-22
APPROUVÉ PAR / APPROVED BY	LUC SÉNÉCAL, P.Eng.	2017-07-11
ÉCHELLE / SCALE	INDICATED	DATE 2016-01-25
NO. DESSIN / DRAWING NO.	65-116-275-202	
NO. PROJET / PROJECT NO. 6515	RÉVISION 0	FEUILLE / SHT 1/1

NO. DESSIN / DRAWING NO. 65-116-275-203_R1

FORMAT ANSI B-11x17



POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2017-08-02

WSP
1075, 3e AVENUE EST
VAL-D'OR (QUÉBEC) CANADA J9P 0J7
TÉL. : 819 825-4274 | TÉLÉC. : 819 824-1514 | WWW.WSPGROUP.COM

Ref. 151-06440-40

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_	_				
_	_				
_	_	1	ISSUED FOR CONSTRUCTION	2017-08-02	R.H.
600V DISTRIBUTION PANEL SINGLE LINE DIAGRAM	65-103-275-203	0	ISSUED FOR CONSTRUCTION	2017-07-11	F.M.G.
TITRE / TITLE	# DWG	REV	DESCRIPTION	DATE	PAR BY
DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS		REVISIONS			

AGNICO EAGLE

REGISTERED PROFESSIONAL ENGINEER L3514 POUR DESSINATEUR LICENSED NT/NU 2017-08-02

DESSINÉ PAR / DRAWN BY	BRIAN FILDES, Tech.	2016-08-22
VÉRIFIÉ PAR / CHECKED BY	RÉMI HÉNAULT, Tech.	2016-08-22
APPROUVÉ PAR / APPROVED BY	LUC SÉNÉCAL, P.Eng.	2017-07-11
No. PROJET / PROJECT NO.	6515	
DATE	2015-02-15	

TITRE / TITLE
AGNICO EAGLE – MELIADINE DIVISION
116 – FUEL TANK FARM
275 – POWER ELECTRICAL
600V DISTRIBUTION PANEL
SINGLE LINE DIAGRAM

ÉCHELLE / SCALE	NONE	FICHIER / FILE	65-116-275-203_R1.DWG
No. DESSIN / DRAWING NO.	65-116-275-203	REVISION	1
		FEUILLE / SHT	1 / 1

AE-CART-ANSI B

\\CaVda1Dat01\Projet_15X-XXXX-XX\151-06440-40\01-COMM\Envoyé_AEM\WSP-AEM-151-06440-40-849 (116 and 416 changing equipment number)\65-116-275-203_R1.dwg-2017-08-03 10:21:21

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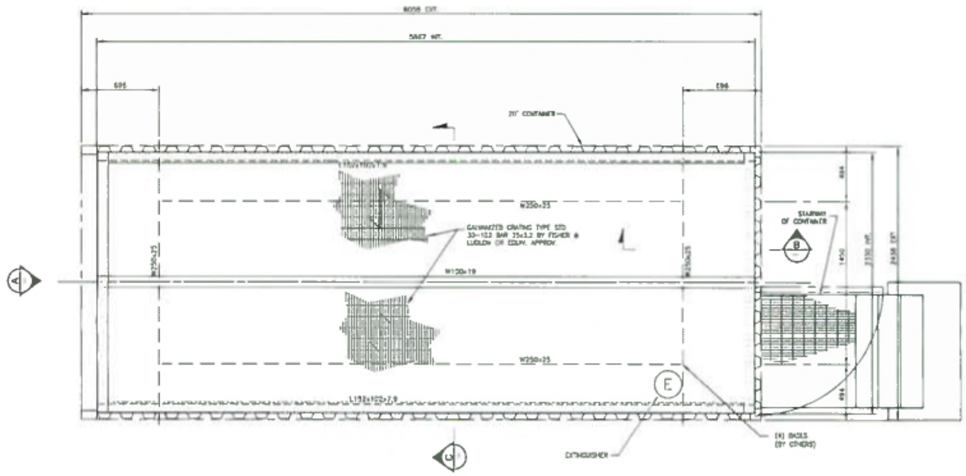
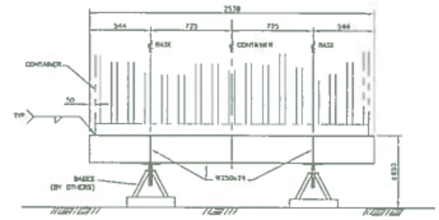


20' CONTAINER ELECTRICAL ROOM FLOOR (1)

SCL: 1:20

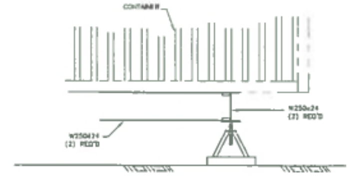
- 20' STANDARD CONTAINER (WOOD FLOOR REPLACED BY STEEL BY SUPPLIER)
- GRATING IS BOLTED (WELDING IS NOT PERMITTED)
- LEVELLING SHIMS MUST BE INSTALLED ON L152x102X7.9
- GRATING SECTION 300mm LARGE (INSTALLED ON CIRCULATION AREA)
- CONTAINER FLOOR MUST HAVE A SLIGHT SLOPE TOWARDS ACCESS DOORS



ELEVATION (A)

SCL: 1:20

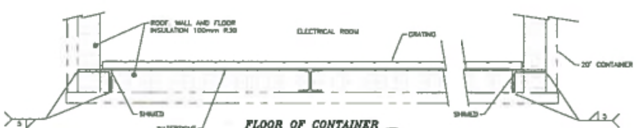
(1) ARRANGEMENT ELECTRICAL ROOM



ELEVATION (B)

SCL: 1:20

(1) ARRANGEMENT ELECTRICAL ROOM



FLOOR OF CONTAINER SECTION (C)

SCALE: 1:10

WSP

NOTES GÉNÉRALES / GENERAL NOTES

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

TITRE / TITLE	N° DWG
MODIFICATIONS & ADDITIONS AT THE CONTAINERS	65-163-275-204
LIGHTING	65-116-265-201
GROUNDING LAYOUT	65-116-275-301
EQUIPMENT LAYOUT	65-116-275-302

AGNICO EAGLE

REV.	DATE	DESCRIPTION	PAR/BY	APP.	
0	2017-07-11	ISSUED FOR CONSTRUCTION	R.H.	L.S.	

REVISIONS

AGNICO EAGLE – MELIADINE DIVISION
116 – FUEL TANK FARM
275 – POWER ELECTRICAL
ELECTRICAL ROOM
MODIFICATIONS & ADDITIONS AT THE CONTAINERS

		DATE
DESSINÉ PAR / DRAWN BY	RÉMI HÉNAULT, Tech.	2016-06-22
VÉRIFIÉ PAR / CHECKED BY	RÉMI HÉNAULT, Tech.	2016-06-22
APPROUVÉ PAR / APPROVED BY	LUC SÉNÉCAL, P.Eng.	2017-07-11
ÉCHELLE / SCALE	INDICATED	2016-02-02

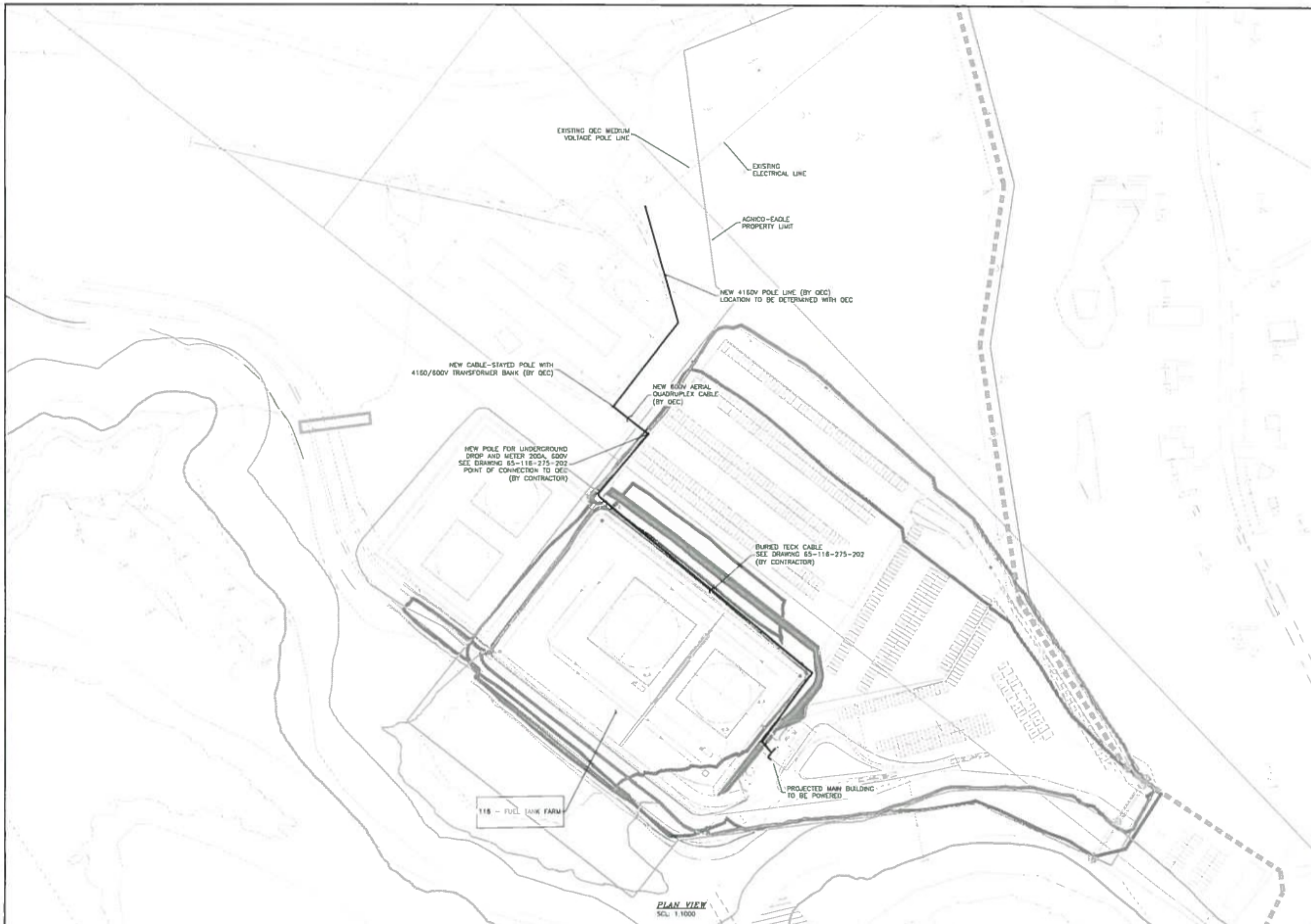
NO. DESSIN / DRAWING NO. 65-116-275-204

NO. PROJET / PROJECT NO.	RÉVISION	FEUILLE / SHT
6515	0	1/1

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE: 2017-07-11

FILE NO. 65-116-275-204_R0.dwg

No. DESSIN / DRAWING NO. 65-116-275-206_R0



WSP

NOTES GÉNÉRALES / GENERAL NOTES

POUR CONSTRUCTION
FOR CONSTRUCTION
DATE : 2017-07-11

DESSINS EN RÉFÉRENCE / REFERENCE DRAWINGS

AGNICO EAGLE

No.	DATE	DESCRIPTION		
0	2017-07-11	ÉMIS POUR CONSTRUCTION	F.G.B.	L.S.

REVISIONS

TITRE / TITLE
AGNICO EAGLE - MÉLIADINE DIVISION
116 - FUEL TANK FARM
275 - POWER ELECTRICAL
AERIAL LINE CONNECTION
PLAN VIEW

DESSINÉ PAR / DRAWN BY	BRYAN FILDES, Tech.	2016-08-11
VÉRIFIÉ PAR / CHECKED BY	JONATHAN CLOUTIER, P.Eng.	2016-08-11
APPROUVÉ PAR / APPROVED BY	LUC SÉNÉCAL, P.Eng.	2017-07-11
ÉCHELLE / SCALE: INDICATED	DATE: 2016-08-09	

No. DESSIN / DRAWING NO. 65-116-275-206

No. PROJET / PROJECT NO. 6515 — RÉVISION 0 — FEUILLE / SHT 1/1

FILE NO. 65-116-275-206_R0.dwg