

TENDER DOCUMENTS

SUBSECTION 6.53 POWER SUPPLY

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SUBSECTION 6.53 POWER SUPPLY

6.53.1 GENERAL

- 6.53.1.1 This subsection sets out the requirements relating to the supply and installation of the electrical power supply equipment covered by this Contract.
- 6.53.1.2 Any specific requirements pertaining to the supply and installation of the electrical power supply equipment covered by this Contract are set out on the drawings and in Section 4 *Special Technical Conditions*.
- 6.53.1.3 The requirements relating to the supply and installation of conduit, junction boxes and pull boxes are described in subsection 6.51 *Conduit, Junction Boxes and Pull Boxes*.
- 6.53.1.4 The requirements relating to the supply and installation of electrical cables are described in subsection 6.52 *Electrical Cables*.

6.53.2 MEASUREMENT UNITS

- 6.53.2.1 The measurement units and respective symbols thereof used in this subsection are described as follows:

Measurement Unit	Designation	Symbol
length	millimeter	mm
length	micrometer	µm

6.53.3 REFERENCE STANDARDS

- 6.53.3.1 The **Contractor** shall perform all power supply work in accordance with the requirements of the following standards and documents to which the provisions of this Contract are added:

6.53.3.1.1 (ACNOR(CSA)) Canadian Standards Association:

- CAN/CSA-C22.2 NO. 0 *General Requirements - Canadian Electrical Code, Part II;*
- CAN/CSA C22.10 *Quebec Construction Code, Chapter V - Electricity – Canadian Electrical Code, Part I with Quebec Amendments.*

6.53.3.1.2 (ASTM) ASTM International:

- ASTM A480/A480M *Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip;*
- ASTM B177/B177M *Standard Guide for Engineering Chromium Electroplating;*

- STM D2247 *Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.*

6.53.3.1.3 (MTQ) Ministère des Transports du Québec:

- MTQ – *Cahier des charges et devis généraux (CCDG).*

6.53.4 MATERIALS

6.53.4.1 GENERAL

6.53.4.1.1 All electrical power supply equipment shall be CSA approved.

6.53.4.1.2 All equipment to be supplied under this Contract shall be new and free of deformation, rust and defects such as cracks.

6.53.4.2 POWER SUPPLY CABINETS

6.53.4.2.1 The power supply cabinets shall meet the requirements of standards CAN/CSA-C22.2 N°0 and CAN/CSA C22.10 and shall be CSA-certified Type 4X.

6.53.4.2.2 The cabinets shall be made of 12 AWG Type 316 stainless steel and shall have a Type 2B surface finish compliant with standard ASTM A480/A480M.

6.53.4.2.3 All cabinet inner and outer surfaces shall be free of roughness and other defects, notably the internal welds, which shall not penetrate so much as to alter the appearance of the cabinet outer surfaces.

6.53.4.2.4 The cabinet doors which are to be supplied under this Contract shall have the following features:

6.53.4.2.4.1 lexan windows as indicated on the drawings, held in place with four riveted “Z” bars;

6.53.4.2.4.2 12 AWG Type 316 stainless steel piano hinges;

6.53.4.2.4.3 three-point lock mechanisms with handles fitted with a Type 316 stainless steel padlocking device and Corbin 5R-6352 locks;

6.53.4.2.4.4 stainless steel fixed bar door holder;

6.53.4.2.4.5 neoprene seals.

6.53.4.2.5 The cabinets shall have a ventilation louver with mosquito nets, filters and deflectors as indicated on the drawings.

- 6.53.4.2.6 A thermostat controlled exhaust fan shall be installed inside the cabinets. The cooling thermostat shall be a Hammond SKT-011419NO or equivalent authorized by the Engineer.
- 6.53.4.2.7 A document holder for inserting drawings shall be supplied with each cabinet and firmly secured on the inner face of the housing door.
- 6.53.4.2.8 A polyester powder coating shall be applied, by electrostatic process, to the outer surfaces of the cabinets. The coating shall comply with standards ASTM D2247 and ASTM B177/B177M and shall have a minimum thickness of 100 microns. It shall be the same colour as that of the structure on which the cabinets are mounted.
- 6.53.4.2.9 All cabinet hardware, including the mounting bolts, shall be Type 316 stainless steel.
- 6.53.4.2.10 The cabinet manufacturer shall fix a label inside the cabinet in a location that is easy to read. The label shall bear the CSA certification and provide the following information:
- 6.53.4.2.10.1 the manufacturer's name or trademark;
- 6.53.4.2.10.2 the manufacturer's certification number and the "Type 4X" identification of the cabinet;
- 6.53.4.2.10.3 the CSA approval date.
- 6.53.4.2.11 The cabinets shall be fabricated by Roger Girard Inc. or equivalent authorized by the Engineer.
- 6.53.4.3 BLINDING BASES
- 6.53.4.3.1 All ground-based electrical equipment shall be mounted on a blinding base and the perimeter of the equipment shall be sealed with a minimum 10 mm joint width.
- 6.53.4.3.2 The blinding bases to seat the equipment shall be made of concrete and have a minimum height of 100 mm above the finished floor surface for indoor installations and of 300 mm for outdoor installations.
- 6.53.4.3.3 The blinding bases shall protrude by at least 50 mm all around the equipment and have bevelled edges.

6.53.4.4 DESIGN

- 6.53.4.4.1 The **Contractor** is responsible for determining the dimensions required for the power supply cabinets and for finalizing the cabinet design and the equipment layout in order to incorporate all power supply, electrical power distribution and system control equipment. The dimensions indicated on the drawings are the minimum dimensions.
- 6.53.4.4.2 The **Contractor** shall design the layout and assembly of the electrical components on the base plates in accordance with the requirements of standard CAN/CSA C22.10.
- 6.53.4.4.3 The cabinets shall be designed in such a way that water does not drip inside when the door opens. In addition, the accumulation of snow or ice on the cabinets or in the gutters shall not prevent the door from opening.

6.53.5 EXECUTION OF WORK

6.53.5.1 PLANNING OF ELECTRICAL WORK

- 6.53.5.1.1 As soon as the Contract is awarded, the **Contractor** shall initiate the connection request procedure with Hydro-Québec.
- 6.53.5.1.2 For the connection of the electrical services at the location indicated on the drawings, the **Contractor** shall make all the required coordination with Hydro-Québec, the *Commission des services électriques de Montréal (CSEM)* for the structures on the island of Montreal and with any other entity concerned.
- 6.53.5.1.3 The **Contractor** shall submit to the authorities concerned, on behalf of the **Owner**, all documents required for the connection including, without limitation, the permit applications and the connection requests accompanied by all required supporting documents.
- 6.53.5.1.4 The **Contractor** shall pay all expenses related to the connection to Hydro-Québec's power grid, including, without limitation, the cost of work carried out by Hydro-Québec and the CSEM or any other authority.
- 6.53.5.1.5 At least fourteen (14) days before the fabrication of the power supply cabinets begins, the **Contractor** shall submit to the Engineer, for review, the detailed shop drawings of the cabinets, including the position of the power supply, power distribution and lighting control equipment.

6.53.5.2 INSTALLATION OF POWER SUPPLY CABINETS

- 6.53.5.2.1 The power supply cabinets shall be installed by the **Contractor** according to the indications on the drawings.

6.53.5.3 CONNECTION NETWORK

- 6.53.5.3.1 A new connection network linking a service well, which makes the connection to Hydro-Québec's power grid possible, and the power supply cabinet shall be constructed by the **Contractor**. This connection network shall consist of underground polyvinyl chloride PVC conduit encased in concrete and rigid metal conduit for the raceway sections that extend above ground level, which conduit shall be supplied and installed in accordance with the requirements of subsection 6.51 *Conduit, Junction Boxes and Pull Boxes* and as indicated on the drawings.
- 6.53.5.3.2 The new electrical cables inside the connection network shall be supplied and installed in accordance with the subsection 6.52 *Electrical Cables* and of the drawings.
- 6.53.5.3.3 The **Contractor** shall ensure that the conductors are long enough to make it possible for Hydro-Québec, the CSEM or any other authority concerned to make the connection to its own power grid and to connect the cabinet connection equipment.

6.53.6 QUALITY CONTROL

- 6.53.6.1 Any work that is not performed as indicated on the drawings and specifications shall be corrected by the **Contractor** at its expense and to the satisfaction of the Engineer.
- 6.53.6.2 If the product is not CSA approved at the time when it is approved on site, the **Contractor** shall make, at its expense, the modifications needed to obtain the CSA Group approval.

END OF SUBSECTION