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 related to the supply and installation of electrical power supply equipment under this Contract.

6.53.1.2 Any specific requirements related to the supply and installation of electrical power supply equipment under this Contract are set out in Section 4 *Special Technical Conditions* and on the drawings.

6.53.1.3 The requirements related to the supply and installation of conduit, junction boxes and pull boxes are set out in subsection 6.51 *Conduit, Junction Boxes and Pull Boxes.*

6.53.1.4 The requirements related to the supply and installation of electrical cables are set out in subsection 6.52 *Electrical Cables*.

6.53.2 REFERENCE STANDARDS

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

6.53.2.1.1 (ASTM) ASTM International

- ASTM A167-99(2004) *Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip;*
- ASTM A480/A480M-08b *Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip;*
- ASTM B177-01(2006)e1 *Standard Guide for Engineering Chromium Electroplating;*
- ASTM D2247-02 *Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity*

6.53.2.1.2 (ACNOR(CSA)) Canadian Standards Association

- CAN/CSA C22.2 NO. 0-M91 (C2006*) General Requirements – Canadian Electrical Code, Part II;*
- CAN/CSA C22.10-07 *Québec Construction Code - Chapter V, Electricity - Canadian Electrical Code, Part I (Twentieth Edition) with Québec Amendments*

6.53.2.1.3 (MTQ) Ministère des Transports du Québec

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

6.53.3 MATERIALS

6.53.3.1 GENERAL

6.53.3.1.1 All electrical power supply equipment shall be CSA approved.

6.53.3.1.2 All equipment to be supplied under this Contract shall be new and free of deformation, rust, cracks and other flaws.

6.53.3.2 POWER SUPPLY CABINETS

6.53.3.2.1 Power supply cabinets shall meet the requirements of standards CAN/CSA-C22.2 NO. 0 and CAN/CSA C22.10 and shall be CSA 4X certified.

6.53.3.2.2 The cabinets shall be fabricated from 12 gauge 304 stainless steel with a type 2B surface finish conforming to standards ASTM A167 and ASTM A480/A480M.

6.53.3.2.3 All inside and outside surfaces of the cabinets shall be free of bumps and other flaws; specifically, the inside welds shall not penetrate so much as to alter the appearance of the outside surfaces.

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

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

6.53.3.2.4.2 stainless steel piano hinges;

6.53.3.2.4.3 three-point closers with handles fitted with a stainless steel padlock locking device and Corbin 5R-6352 locks;

6.53.3.2.4.4 door retainers with fixed stainless steel bars;

6.53.3.2.4.5 neoprene seals.

6.53.3.2.5 The cabinets shall have a louvered vent with a bug screen, filter and deflector as specified on the drawings and in the *Special Technical Conditions.*

6.53.3.2.6 A thermostat-controlled exhaust fan shall be installed inside the cabinets. The cooling thermostat shall be a Hammond SKT-011419NO or an approved equivalent.

6.53.3.2.7 A document holder for drawings shall be supplied with each cabinet and firmly mounted on the inside of the cabinet door.

6.53.3.2.8 A polyester powder coating shall be applied electrostatically to the outside surfaces of the cabinets. The coating shall conform to standards ASTM D2247 and ASTM B177 and shall be at least 100 microns thick. It shall be the same colour as the structure on which the cabinets are mounted, as specified in the *Special Technical Conditions*.

6.53.3.2.9 All cabinet hardware, including the mounting bolts, shall be stainless steel.

6.53.3.2.10 The cabinet manufacturer shall place 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:

6.53.3.2.10.1 the manufacturer's name or trademark;

6.53.3.2.10.2 the manufacturer's certification number and the "type 4X" identification of the cabinet;

6.53.3.2.10.3 the CSA approval date.

6.53.3.2.11 The cabinets shall be manufactured by Roger Girard Inc. or another company with an approved equivalent product.

6.53.3.3 DESIGN

6.53.3.3.1 The **Contractor** is responsible for determining the required dimensions of the power supply cabinets and finalizing the cabinet design and the equipment layout in order to incorporate all of the power supply, electrical power distribution and system control equipment. The dimensions shown on the drawings are the minimum dimensions.

6.53.3.3.2 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.

6.53.3.3.3 The cabinets shall be designed to ensure that water does not drip in when the doors are open. Further, build-up of snow or ice on the cabinets or in the gutters shall not prevent the doors from opening.

6.53.4 EXECUTION OF WORK

6.53.4.1 PLANNING OF ELECTRICAL WORKS

6.53.4.1.1 As soon as the Contract is awarded, the **Contractor** shall initiate a request for a Hydro-Québec connection.

6.53.4.1.2 To connect electrical services at the location indicated on the drawings, the **Contractor** shall make all the necessary arrangements with Hydro-Québec, the Commission des services électriques de Montréal (CSEM) for roadway infrastructures on Montreal Island, and any other entity concerned.

6.53.4.1.3 The **Contractor** shall submit to the authorities concerned on behalf of the **Owner** all documents required for connection, including but not limited to permit and connection applications accompanied by all the necessary supporting documents.

6.53.4.1.4 The **Contractor** shall pay all fees related to connection to the Hydro-Québec grid, including, but not limited to, the cost of work done by Hydro-Québec and CSEM or any other authority.

6.53.4.1.5 At least fourteen (14) days before fabrication of the power supply cabinets begins, the **Contractor** shall submit to the Engineer for review and comment detailed shop drawings of the cabinets, including the position of the power supply and power distribution equipment and lighting controls.

6.53.4.2 INSTALLATION OF POWER SUPPLY CABINETS

6.53.4.2.1 The power supply cabinets shall be installed by the **Contractor** according to the specifications on the drawings and in the S*pecial Technical Conditions*.

6.53.4.3 BRANCH NETWORK

6.53.4.3.1 A new branch network linking a service well allowing connection to the Hydro-Québec grid and the power supply cabinet shall be constructed by the **Contractor**. The branch network shall comprise underground PVC conduit embedded in concrete and rigid metal conduit for the sections that extend above ground, 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.

6.53.4.3.2 The new electrical cables in the branch network shall be supplied and installed in accordance with the requirements of subsection 6.52 *Electrical Cables* and the drawings.

6.53.4.3.3 The **Contractor** shall supply conductors long enough for Hydro-Québec, CSEM or any other authority concerned to make the connection to its own network and to permit connection to the branch equipment in the cabinet.

6.53.5 QUALITY CONTROL

6.53.5.1 Any work that is not performed as required by the drawings and specifications shall be corrected by the **Contractor** at its expense and to the satisfaction of the Engineer.

6.53.5.2 If a product is not CSA approved when it is approved on site, the **Contractor** shall make at its expense the modifications needed to obtain CSA approval.

END OF SUBSECTION