Construction Specification for Power Supply Equipment

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TTS 806.100.01 SCOPE

This specification covers the requirements for the installation of the traffic signal power supply.

TTS 806.100.02 REFERENCES

This specification refers to the following standards, specifications, or publications:

City of Toronto Standard Specifications

TS 803	Ducts
TS 804	Cables
TTS 804.100	Construction Specification for Cable Installation
TTS 806.300	Power Failure Procedure
TTS 813.100	Construction Specifications for Grounding and Bonding

City of Toronto Standard Drawings

TTD 806.001	Power Supply Disconnect Installation Details for Overhead Power Feed
TTD 806.002	Power Supply Disconnect Installation Details for Underground Power Feed

Canadian Standards Association

CSA C22.2 No. 211.2-M1984 (R2003)	Rigid PVC, Unplasticized Conduit
CAN/CSA C22.2 No. 0.17-00	Evaluation of Properties of Polymeric Materials

ASTM International

A480	Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip
A666	Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar

TTS 806.100.03 DEFINITIONS – Not Used

TTS 806.100.04 DESIGN AND SUBMISSION REQUIREMENTS

TTS 806.100.04.01 Design Requirements

Power Supply equipment shall be according to the Contract Documents and shall be ‘service entrance ready’. Complete assemblies shall pass Electrical Safety Authority (ESA) equipment inspection and have an ESA label of approval. These approvals shall be obtained prior to the unit being shipped.

TTS 806.100.04.02 Shop Drawings

Shop drawings and specification sheets for the traffic signal power supply cabinet internal components shall be submitted to the Contract Administrator for review and acceptance in advance of the commencement of fabrication of the equipment. Manufacturer part numbers and description of all equipment being supplied shall be included.

Shop drawings submissions shall be submitted in Portable Document Format (PDF) format via e-mail or through downloadable link.

If alterations are required as indicated by the Contract Administrator, the Supplier shall resubmit corrected shop drawings within 5 Working Days.

Production of material shall not commence until the acceptance has been received from the Contract Administrator.

Once fabrication of the equipment has commenced, materials and dimensions shown on the final shop drawings shall not be changed without approval of the Contract Administrator. Resubmission of revised shop drawings showing any changes from the final shop drawings will be required. The materials shall include all components and wiring required to achieve data communication between the NITS units and the Controller in the traffic controller cabinet.

TTS 806.100.05 MATERIALS

All electrical materials shall be new and of uniform pattern throughout the work.

TTS 806.100.05.01 Pole Mounted Power Supply Equipment

Enclosures shall be welded 14 gauge stainless steel type 304 and shall have a No. 2B finish outside according to ASTM A666 and ASTM A480.

The panelboard for the traffic signal power supply assembly shall be manufactured to accommodate the number of standard-sized single-pole branch circuit breakers as specified in the Contract Documents. Unused openings shall be covered with removable blank covers or inserts.

The removable internal equipment panel consisting of a combination backboard and drip shield shall be fabricated from 14 gauge stainless steel type 304 and shall have a No. 2B finish according to ASTM A666 and ASTM A480.

Barriers and dead-front panels shall be fabricated from clear thermoplastic polycarbonate according to CAN/CSA C22.2 No. 0.17.

TTS 806.100.05.02 Power Supply Disconnect

The power supply disconnect shall be steel enclosure which includes interior trim and door and has a grey baked enamel finish.

The power supply disconnect shall be suitable for single phase 120/240 VAC application and has fixed mains lugs rated at 100A with space for two single pole circuit breakers. Circuit breakers ampacity shall be according to the Contract Documents.

The enclosure door shall permit access to the internal wiring connections without removal. The enclosure shall include padlockable stainless steel door latch.

The enclosure shall include a top-centered rainproof mounting boss for installation of conduit.

The power supply disconnect shall be rated NEMA 3R for outdoor application.

TTS 806.100.05.03 Cables

Power cables shall be in according to the requirements of TTS 804.100.

TTS 806.100.05.04 Ducts

Rigid PVC conduit and fittings for the installation of pole-mounted equipment shall be according to CSA C22.2 No. 211.2.

TTS 806.100.05.05 Grounding

Grounding materials shall be according to the requirements of TTS 813.100.

TTS 806.100.06 EQUIPMENT – Not Used

TTS 806.100.07 CONSTRUCTION

TTS 806.100.07.01 Pole Mounted Traffic Signal Power Supply

The traffic signal power supply assemblies shall be mounted securely on poles using stainless steel strapping.

Rigid PVC conduit and fittings shall be installed on wood poles using PVC coated pipe straps with galvanized lag screws at 1.5 m maximum centres. Installation on metal or concrete poles shall be done using stainless steel strapping at 1.5 m maximum centers. The conduit system shall be installed in straight lengths to follow the taper of the pole. Offset bends shall be used where required to avoid pole attachments and shall be kept free of kinks or scorch marks.

TTS 806.100.07.02 Power Supply Disconnect

The power supply disconnect shall be installed according to TTD 806.001 and 806.002.

TTS 806.100.07.03 Cables

Cables, terminations, and connections shall be installed in accordance with the requirements of TS 804. Service cables, from the point of service connection to the main disconnecting means shall meet the requirements of the Ontario Electrical Safety Code.

TTS 806.100.07.04 Ducts

Ducts shall be installed in the locations shown on the Contract Drawings.

Surface mounted ducts shall be installed neat and parallel to the structural surfaces, either horizontally or vertically, using offset bends or fittings where changes in alignment are necessary and shall be secured at intervals using conduit straps according to the Ontario Electrical Safety Code.

Installation of surface mounted ducts shall not overlap with existing conduits that may already be present at the pole.

Underground ducts and fittings shall be installed in accordance with the requirements of TS 803.

TTS 806.100.07.05 Grounding

Traffic signal power supply assemblies shall be grounded by means of the connection of service ground wire to the neutral bus.

All grounding work shall be carried out in accordance with the requirements of TS 813.

TTS 806.100.07.06 Quality Control

The Contractor shall perform all tests on wiring of equipment in accordance with the requirements of section 3.0 of TS 804. The Contractor shall perform all tests on grounding of equipment according to the requirements of sub-section TTS 813.100.07.08.

TTS 806.100.08 QUALITY ASSURANCE – Not Used

TTS 806.100.09 MEASUREMENT OF PAYMENT

TTS 806.100.09.01 Actual Measurement

TTS 806.100.09.01.01 Traffic Signal Power Supply

For measurement purposes, a count shall be made of the number of traffic signal power supply installed.

TTS 806.100.09.02 Plan Quantity Measurement

When measurement is by Plan Quantity, such measurement shall be based on the units shown in the clauses under Actual Measurement.

TTS 806.100.10 BASIS OF PAYMENT

TTS 806.100.10.01 Traffic Signal Power Supply – Item

Payment at the Contract Price for the above tender item shall be full compensation for all labour, Equipment and Material required to do the Work including coordination with Toronto Hydro when required.