TS 812

PXO EQUIPMENT

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1.0 Scope

This specification covers the requirements for the installation of Pedestrian Crossover (PXO) devices, including flashing beacons, flashing mechanisms/timers and internally illuminated fixtures.

The requirements of TS 1.00 and TS 801 shall apply to this work.

2.0 References

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

Toronto Transportation:

TS 1.00	Maintenance of Traffic
TS 801	Electrical Work
TS 804	Cables
TS 808	Traffic Signal Equipment
TS 811	Flashing Beacons
TS 813	Grounding
TS 815	Removals

Others:

CSA Standard C22.2 No. 2 - 1956 (R1969) - Electrical Signs.
CSA C22.2 No. 45 - M1981 (R1999) - Rigid Metal Conduit
CSA Standard C22.2 No. 84 – 95 (R2004) - Incandescent Lamps
CSA C22.2 No. 211.2-M1984 (R2003) - Rigid PVC (Unplasticized) Conduit

3.0 Construction & Materials

3.1 Mast Arm Installation

Flashing beacons shall be installed 300mm from pedestrian crossover sign on offset hanger bracket. Flashing beacon shall be aligned facing the direction of approaching traffic. The internally illuminated fixtures of split pedestrian crossover installation shall be installed over the center line of associated traffic direction.

3.2 Aerial Installation

The Contractor shall install all equipment and fittings, hardware, junction boxes and accessories necessary for the mounting of equipment on aerial messenger cable systems. All compression units, locknuts and fitting hardware shall be securely tightened to prevent shifting of equipment by wind.

3.3 Wiring Apertures

Wiring apertures shall be drilled as required, in metal poles. Apertures shall be de-burred and painted with grey zinc rich paint. Rubber grommets shall be installed after paint is dry.

3.4 Conduit Systems

Where pedestrian crossover signal devices are to be installed on poles and mast arms, the Contractor shall install conduit systems including junction boxes and all necessary fittings and hardware. Conduit shall be installed along the centre of the arm using stainless steel strapping at 1.5m maximum spacing. Conduits shall be kept free of kinks or scorch marks.

3.5 Wiring

Wiring shall be installed between the pedestrian crossover fixtures and either the pole handhole or the pole mounted junction box. A minimum length of 600mm of riser cable shall be left in pole handholes. Drip loops shall be left on all external cable. Cable shall be protected with rigid PVC conduit where slack lengths of more than 450mm are externally exposed. Aerial cable from the junction box to the pedestrian cross over assembly shall be installed in accordance with the requirements of TS 804.

Riser cables shall be connected to terminal blocks, or at the direction of the Engineer, lampholder leads shall be disconnected from internal terminal strips in the flashing or pedestrian crossover fixture housing and connected to riser cables with insulated wingnut vibration proof spring connectors. All insulated spring connectors shall be held in place with three half wraps of electrical vinyl tape. Upon completion of connections, all conductors shall be neatly bundled together and secured with four wraps of electrical vinyl tape.

3.6 Grounding

All metal parts of pedestrian crossover assembly shall be grounded in accordance with the requirements of TS 813 by use of the designated spare conductor in the riser cable, connected securely to the ground terminal in at pole ground stud or the system ground wire in junction boxes except on TTC poles.

3.7 Equipment Modifications

Removal of existing equipment shall be done in accordance with the requirements of TS 815 and TS 801. Installation of new, refurbished or modified equipment shall be done in accordance with the requirements for installation of the particular items of equipment as described herein.

3.8 Quality Control

The Contractor shall locate, space and aim flashing beacons and internally illuminated fixtures to the instructions of the Engineer.

4.0 Measurement for Payment

Where the contract includes tender items using the Individual Item Method, measurement for payment for internally illuminated fixtures will be made of each device.

5.0 Basis of Payment

5.1 All Inclusive Price Method

Payment at the contract price for the tender item: "Pedestrian Crossovers" shall be full compensation for all labour, equipment and materials required to do all work specified herein including the installation of all flashing beacons, flashing mechanisms/timers, internally illuminated fixtures, conduit and fittings, lamps, mast arms, signal hangers, wiring and connections, associated arm mounted conduit, junction boxes and fittings, grounding, the removal of devices not included in order tender items and all testing and accessories required.

5.2 Individual Item Method

Payment at the contract price for the tender item "Internally Illuminated Fixtures" shall be full compensation for all labour, equipment and materials required to install each type of device regardless of size, mounting arrangement or number of lamps and shall include all associated wiring, grounding, and connections, lamps, conduit, fittings and associated hardware and all testing and accessories required.