

Standard Specification for LED Pedestrian Crossover (PXO) Fixtures Material

TTS 812.200.01 SCOPE

This specification covers the requirements for the supply, installation and testing of LED PXO Fixtures for a Level 1 Type A PXO.

TTS 812.200.02 REFERENCES

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

City of Toronto Transportation Services Standard Specifications

TS 1.00	Maintenance of Traffic
TS 801	Electrical Work
TS 804	Cables
TS 808	Traffic Signal Equipment
TS 811	Flashing Beacon
TS 812	PXO Equipment
TS 813	Grounding
TS 815	Removals

Canadian Standards Association

C22.2	No. 2 – Electrical Signs
C22.2	No. 45 – Rigid Metal Conduit
C22.2	No. 84 – Incandescent Lamps
C22.2	No. 211.2 – Rigid PVC (Un-plasticized) Conduit

American Society for Testing and Materials

D 4956	Standard Specification for Retroreflective Sheeting for Traffic Control
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Others:

Ontario Electrical Safety Code
Ontario Traffic Manual (OTM) Book 6, Warning Signs
Ontario Traffic Manual (OTM) Book 15, Pedestrian Crossing Facilities

TTS 812.200.03 DEFINITIONS

Level 1 Type A PXO means the use of regulatory and warning signs, flashing amber beacons, and pavement markings prescribed and illustrated by Ontario Regulation 402/15. This treatment system uses internally illuminated overhead warning signs.

TTS 812.200.04 DESIGN AND SUBMISSION REQUIREMENTS

TTS 812.200.04.01 Submission Requirements

The Contractor shall supply the specification sheets for the LED PXO Fixture ("Fixture") for review prior to ordering.

TTS 812.200.05 MATERIALS

TTS 812.200.05.01 General

Each Fixture shall be 'Overhead X Sign' type Wc-20 or Wc-120. The Fixtures shall be according to the aesthetic and dimensional requirements of OTM Books 6 and 15.

Fixtures shall be operationally compatible with the existing PXO infrastructure within the City such that the Contractor can directly remove and replace existing Wc-120 fixtures in its entirety without the need for new or special mounting hardware. No further modifications are needed for the installation of retrofit Wc-120 LED fixtures.

Each fixture shall be continuously illuminated, both day and night, displaying the yellow background colour specified in the ASTM D 4956.

Each Fixture shall be a self-contained device which has been pre-assembled prior to on-site installation. All Fixture internal components shall be mounted such that they can be removed as a single unit and installed in another Wc-20 or WC-120 fixture.

Additionally, all Fixture internal components, for example power supplies and LED modules shall be modular and designed for plug and play replacement.

Each fixture assembly and manufacturing process for the modules shall be designed to assure all internal LED and electronic components are adequately supported to withstand mechanical shock and vibration due to high winds and other sources.

TTS 812.200.05.02 LED Characteristics

Each Fixture shall be comprised of LED modules, comprised of LED arrays spaced to evenly distribute light. The light shall be directed downwards at the crossing and towards each of the two directions of vehicular traffic.

The light emitted from the fixtures shall have an "incandescent" look, providing a softened uniform appearance.

Each Fixture(s) shall provide continuous downward illumination spanning the entire crosswalk, from curb to curb as outlined in OTM Book 15. Downward illumination shall be no less than 45 lux, measured at the roadway under the midpoint of the Fixture.

The Fixtures shall be rated for an average lifespan of 50,000 hours.

The LED color temperature shall be 3000K.

TTS 812.200.05.03 Environmental

Each LED PXO Fixtures and its associated electronics shall be rated for use throughout an ambient operating temperature range of -40°C through +55°C.

TTS 812.200.05.04 Electrical

Each fixture shall have a maximum power consumption of 80W.

Each fixture shall operate given a 120VAC input voltage. The fixture shall contain all necessary power supplies/convertors required to operate the LED modules.

Each fixture shall have AC surge protection.

All wiring, cabling and terminations shall meet the requirements of the Ontario Electrical Safety Code and TS 804.

TTS 812.200.05.05 Grounding

Grounding shall be according to TS 813.

TTS 812.200.05.06 Mounting Hardware

All mounting hardware provided shall be according to TS 812.

TTS 812.200.06 EQUIPMENT – NOT USED

TTS 812.200.07 CONSTRUCTION

The Contractor shall install the fixtures according to TS 812.

The Contractor shall install wiring and cabling according to TS 804.

The Contractor shall install grounding according to TS 813.

If required, the Contractor shall remove and salvage existing incandescent fixtures according to TS 815. Existing mounting hardware shall be salvaged for re-use with new LED Fixture.

TTS 812.200.08 QUALITY ASSURANCE

As part of pre-installation testing, the Contractor shall shop test the Fixture to ensure that it runs for 48 hours without interruption or failure. In the event of failure, a new fixture shall be provided. Test results shall be recorded and provided to the Contract Administrator.

As part of Proof of Performance testing after Fixture installation, the Contractor shall test and ensure that the Fixture meets the requirements according to clause TTS 812.200.05.02 herein. City personnel or representative shall be present at the testing and test results shall be recorded and provided

TTS 812.200.09 MEASUREMENT FOR PAYMENT

TTS 812.200.09.01 Pedestrian Crossover Fixture (1000m)

For measurement purposes, a count shall be made of number of pedestrian crossover fixture (1000 m) units installed.

TTS 812.200.09.02 Pedestrian Crossover Fixture (2000m)

For measurement purposes, a count shall be made of number of pedestrian crossover fixture (2000m) units installed.

TTS 812.200.10 BASIS OF PAYMENT

TTS 812.200.10.01 Pedestrian Crossover Fixture (1000m) – Item

Pedestrian Crossover Fixture (2000m) – Item

Payment at the Contract Price for the above tender item shall be full compensation for all labour, Equipment, and Material to do the work.