

PART E

SPECIFICATIONS

PART E - SPECIFICATIONS

GENERAL

E1. GENERAL

E1.1 These Specifications shall apply to the Work.

E2. GOODS

E2.1 The Contractor shall supply and deliver LED signal retrofit units in accordance with the requirements hereinafter specified.

E2.2 This specification defines the general requirements applicable to long-life Light Emitting Diode (LED) Signal Retrofit Units for use with Traffic Signal Heads. The intent of this specification is to establish minimum acceptable electrical, mechanical, design and performance requirements, which all LED Signal Retrofit Units shall meet to ensure satisfactory and reliable operation. It is not intended to impose restrictions upon design or materials, which conform to the ITE Technical Standard. All ITE standards, current ITE Specification at time of contract, not specifically mentioned in this specification shall still apply. Where there is a conflict between this specification and the latest ITE Standard, this specification shall apply:

- (a) LED units shall properly fit within all ITE conforming Traffic Signal and Pedestrian Signal Heads for eight (8) inch or twelve (12) inch signal sections as per design;
- (b) All Light Emitting Diodes Retrofit Units shall conform to the current ITE specification for LED signals for Lumen Output and Chromaticity;
- (c) Units shall have a diode string failure rate of no more than "1 for 4", that is, for any individual diode failure no more than four (4) diodes may be out unless the ITE specification for LED signals specifies a lower amount;
- (d) Design of symbols shall conform to ITE standards for Circular Red/Amber/Green, Hand, Walking Man (outline only as to the Canadian Standard), Arrows, Bus Priority, and City of Winnipeg U-turn arrow;
- (e) All Arrow LED units shall have two rows of LED's for each segment making up the arrow configuration;
- (f) Units shall operate from 90 to 135 volts RMS 60 Hz. alternating and from minus 40 to plus 165 degrees Fahrenheit and from zero to one hundred percent humidity;
- (g) Units shall have a sharp voltage turn-off characteristic, decaying to less than 15 volts A.C. RMS within 200 milliseconds of removal of power, over the full 90 to 135 VAC specified operating voltage range, so as to not to cause false triggering of a signal Conflict Monitor device due to extended turn-off voltage decay;
- (h) Units shall not show any visible light when in the OFF condition when attached to a Model 200 Switch pack as used in the 170 type controller 33X control cabinet. (Evaluation of this requirement shall be undertaken in total darkness);
- (i) Each unit shall be identified with manufacture's name, wattage, voltage range, date of manufacture and "serial number, if used"; and
- (j) All circuit boards, including the LED mounting circuit board shall be conformal coated.

E3. DELIVERY

E3.1 Goods shall be delivered on an "as required" basis during the term of the Contract, f.o.b. destination, freight prepaid, to:

Central Stores
1277 Pacific Avenue
Winnipeg, MB

- E3.1.1 Goods shall be delivered within thirty (30) Business Days of the placing of an order, except where otherwise agreed at the time of ordering.
- E3.2 Goods shall be delivered between 7:30 a.m. and 3:00 p.m. on Business Days.

E4. INSPECTION AND ACCEPTANCE

- E4.1 The Contractor shall supply one (1) sample unit of the type being offered when the Contract Administrator or his/her designate calls, along with all testing and technical documentation.
- E4.2 Acceptance shall be based on the equipment supplied meeting the requirements of this specification.
- E4.3 The acceptance of LED signals retrofit units supplied are subject to inspection by the Contractor Administrator or his/her designate.