

**Part 1 General**

**1.1 REFERENCES**

- .1 American National Standards Institute (ANSI)
  - .1 ANSI C82.1, Lamp Ballasts-Line Frequency Fluorescent Lamp Ballast.
  - .2 ANSI C82.4, Ballasts for High-Intensity-Discharge and Low-Pressure Sodium Lamps Multi Supply Type.
- .2 ASTM International Inc.
  - .1 ASTM F1137, Standard Specification for Phosphate/Oil and Phosphate/Organic Corrosion Protective Coatings for Fasteners.
- .3 Canadian Standards Association (CSA International)
- .4 Underwriters' Laboratories of Canada (ULC)

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Provide manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Provide complete photometric data prepared by independent testing laboratory for luminaires where specified, for approval by Departmental Representative.
  - .3 Photometric data to include: VCP Table where applicable, spacing criterion.
- .3 Quality assurance submittals: provide following in accordance with Section 01 45 00 - Quality Control.
  - .1 Manufacturer's instructions: provide manufacturer's written installation instructions and special handling criteria, installation sequence, cleaning procedures.

**1.3 QUALITY ASSURANCE**

- .1 Provide mock-ups in accordance with Section 01 45 00 - Quality Control.

**1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.
- .3 Packaging Waste Management: remove in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

- .4 Divert unused metal materials from landfill to metal recycling facility.
- .5 Disposal and recycling of fluorescent lamps as per local regulations.

## **Part 2 Products**

### **2.1 LAMPS**

- .1 Fluorescent lamps to be - T8, 32 Watt, medium bi-pin, rapid-start, 4100 K, 30,000 hour lamp life, 2950 initial lumens, CRI 80; or as indicated.
- .2 Metal halide lamps to be - clear, BT37, 400 Watt, mogul base, horizontal burn, 4100 K, 15,000 hour lamp life, 36,000 initial lumens, CRI 65, open or enclosed type to suit the luminaire; or as indicated.
- .3 Compact fluorescent lamps to be - 26 Watt, TRT, or as indicated.

### **2.2 BALLASTS**

- .1 Fluorescent ballast: CBM and CSA certified, energy efficient type, IC electronic.
  - .1 Rating: 120 V, 60 Hz, for use with 2-32W, rapid start lamps.
  - .2 Totally encased and designed for 40 degrees Celsius ambient temperature.
  - .3 Power factor: minimum 95% with 95% of rated lamp lumens.
  - .4 Current crest factor: 1.7 maximum.
  - .5 Harmonics: 10% maximum THD.
  - .6 Operating frequency of electronic ballast: 20 kHz minimum.
  - .7 Total circuit power: 62 Watts.
  - .8 Ballast factor: greater than 0.90.
  - .9 Sound rated: Class A.
  - .10 Mounting: integral with luminaire.
- .2 Metal halide ballast:
  - .1 Rating: 120 V, 60 Hz, for use with 1-400W metal halide lamp. Provide circuitry for quartz re-strike standby light where indicated.
  - .2 Totally encased and designed for 40 degrees Celsius ambient temperature.
  - .3 Power factor: minimum 95% with 95% of rated lamp lumens.
  - .4 Type: constant wattage autotransformer.
  - .5 Input voltage range: plus or minus 10% of nominal.
  - .6 Minimum starting temperature: minus 30 degrees Celsius at 90% line voltage.
  - .7 Mounting: integral with luminaire.
  - .8 Current crest factor: 1.7 maximum current.

### **2.3 FINISHES**

- .1 Light fixture finish and construction to meet ULC listings and CSA certifications related to intended installation.

**2.4 LUMINAIRES**

- .1 As indicated in luminaire schedule.

**Part 3 Execution**

**3.1 INSTALLATION**

- .1 Locate and install luminaires as indicated.
- .2 Provide adequate support to suit ceiling system.

**3.2 WIRING**

- .1 Connect luminaires to lighting circuits:
  - .1 Install flexible or rigid conduit for luminaires as indicated.

**3.3 LUMINAIRE ALIGNMENT**

- .1 Align luminaires mounted individually parallel or perpendicular to building grid lines.

**3.4 CLEANING**

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**END OF SECTION**