

## **PART 1 GENERAL**

### **1.1 REFERENCES**

- .1 American National Standards Institute (ANSI)
  - .1 ANSI C82.1-04, Lamp Ballasts-Line Frequency Fluorescent Lamp Ballast.
  - .2 ANSI C82.4-02 (R2007), Ballasts for High-Intensity-Discharge and Low-Pressure Sodium Lamps Multi Supply Type.
- .2 American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE)
  - .1 ANSI/IEEE C62.41-1991, Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits.
- .3 ASTM International Inc.
  - .1 ASTM F1137-00(2006), Standard Specification for Phosphate/Oil and Phosphate/Organic Corrosion Protective Coatings for Fasteners.
- .4 Canadian Standards Association (CSA International)
- .5 ICES-005-07, Radio Frequency Lighting Devices.
- .6 Underwriters' Laboratories of Canada (ULC)

### **1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide required submittals.
- .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 and spacing criterion.
- .3 Quality assurance submittals: provide the following:
  - .1 Manufacturer's instructions: provide manufacturer's written installation instructions and special handling criteria, installation sequence and cleaning procedures.

### **1.3 QUALITY ASSURANCE**

- .1 Provide required samples.

#### **1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.
- .2 Divert unused metal materials from landfill to metal recycling facility.
- .3 Disposal and recycling of fluorescent lamps as per local regulations.
- .4 Disposal of old PCB filled ballasts.

### **PART 2 PRODUCTS**

#### **2.1 LAMPS**

- .1 Fluorescent lamps to be T8, 32 watts, medium bi-pin, rapid-start, 4100 K, 30,000 hour lamp life, 2,950 initial lumens, CRI 80; or as indicated.
- .2 Compact fluorescent lamps to be 18 watts, G24q-2 base, 12,000 hour lamp life, 12,000 initial lumens, 4100 K, CRI 80; 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 30 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
  - .11 Minimum starting temperature: minus 34 degrees Celsius at 90% line voltage.
  - .12 Mounting: indoor.

#### **2.3 FINISHES**

- .1 Light fixture finish and construction to meet ULC listing and CSA certification related to intended installation.

**2.4 OPTICAL CONTROL DEVICES**

- .1 As indicated in luminaire schedule.

**2.5 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 SUPPORTS**

- .1 For suspended ceiling installations support luminaires from ceiling grid in accordance with local inspection requirements.

**3.4 LUMINAIRE ALIGNMENT**

- .1 Align luminaires mounted in continuous rows to form straight uninterrupted line.
- .2 Align luminaires mounted individually parallel or perpendicular to building grid lines.

**END OF SECTION**