

PART 1 - GENERAL

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| <u>1.1 RELATED REQUIREMENTS</u> | .1 | Section 01 33 00 - Submittal Procedures. |
| | .2 | Section 01 10 10 - General Instructions. |
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| <u>1.2 REFERENCES</u> | .1 | American National Standards Institute (ANSI).
.1 ANSI C82.1, Lamp Ballasts-Line Frequency Fluorescent Lamp Ballast. |
| | .2 | American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE).
.1 ANSI/IEEE C62.41, Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits. |
| | .3 | ASTM International Inc.
.1 ASTM F 1137, Standard Specification for Phosphate/Oil and Phosphate/Organic Corrosion Protective Coatings for Fasteners. |
| | .4 | Canadian Standards Association (CSA International). |
| | .5 | ICES-005, Radio Frequency Lighting Devices. |
| | .6 | Underwriters' Laboratories of Canada (ULC). |
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| <u>1.3 SUBMITTALS</u> | .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 review and 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 10 10 - General Instructions.
.1 Manufacturer's instructions: provide manufacturer's written installation instructions and |

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| <p>1.3 SUBMITTALS
(Cont'd)</p> <hr/> | <p>.3</p> | <p>Quality assurance submittals:(Cont'd)</p> <p>.1 Manufacturer's instructions:(Cont'd)
special handling criteria, installation sequence,
cleaning procedures and relamping schedule.</p> <p>.4 Luminaires described in the LIGHTING FIXTURES
SCHEDULE identify quality, performance criteria and
other parameters, as indicated for this project., and
as such, named fixture samples as requested by the
Departmental Representative.</p> <p>.5 Fixtures from other manufacturer's may be
acceptable, provided:</p> <p>.1 Appearance and lighting performance are
similar.</p> <p>.2 Quality is equal or better.</p> <p>.3 Lamp and Ballast criteria remain the same.</p> <p>.4 The fixture is provided with modifications and
accessories to provide a complete product in keeping
with the intent of the project.</p> <p>.5 Approval is obtained in writing from the
Departmental Representative to the
supplier/manufacturer five (5) days prior to bid
depository tender closing.</p> <p>.6 Provide Shop Drawings on all lamps and ballasts as
follows:</p> <p>.1 Lamps: Indicate initial lumens, life and
colour.</p> <p>.2 Ballast: Indicate total input watts, type,
voltage, THD, power factor and ballast factor.</p> <p>.7 Index each lamp and ballast type to light fixture
type.</p> |
| <p>1.4 QUALITY
ASSURANCE</p> <hr/> | <p>.1</p> | <p>Provide mock-ups in accordance with Section 01 10 10
- General Instructions.</p> |
| <p>1.5 DELIVERY,
STORAGE AND
HANDLING</p> <hr/> | <p>.1</p> <p>.2</p> <p>.3</p> | <p>Deliver, store and handle materials in accordance
with Section 01 10 10 - General Instructions.</p> <p>Deliver materials to site in original factory
packaging, labelled with manufacturer's name,
address.</p> <p>Packaging Waste Management: remove for reuse and
return by manufacturer of pallets, crates, padding
and packaging materials in accordance with Section
01 10 10 - General Instructions.</p> |
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March 2016

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| <u>1.5 DELIVERY,
STORAGE AND
HANDLING
(Cont'd)</u> | <ul style="list-style-type: none">.4 Divert unused metal materials from landfill to metal recycling facility..5 Disposal and recycling of fluorescent lamps as per local regulations..6 Disposal of old PCB filled ballasts. |
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PART 2 - PRODUCTS

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| <u>2.1 LAMPS</u> | <ul style="list-style-type: none">.1 Fluorescent Lamp.<ul style="list-style-type: none">.1 Lamp Design: A..2 Bulb Shape Wattage: T8-32..3 Base: Mini bi-pin..4 Initial Lumens: 3100..5 Life hr: 24,000..6 CRI: 85..7 Colour: 4100 K..8 Instant start high efficiency..9 Lumen Maintenance: >/= 94% |
| <u>2.2 BALLASTS</u> | <ul style="list-style-type: none">.1 Electronic T8 ballasts: Instant start electronic type and operate lamps a a frequency above 20 kHz..2 Operates from 60 Hz source of 120 or 347 volts and tolerate sustained variations of voltage and frequency of + 10% with not damage to the ballasts..3 Provide transient immunity as specified by ANSI C62.41..4 Operate lamps with hot visible flicker (< 5% flicker index)..5 Tolerate sustained open circuit and short circuit conditions without damage to the ballasts..6 Be CBM and CSA certified..7 Tolerate operation in ambient temperature up to 40°C without damage..8 Have power factor greater than 0.95..9 Have Lamp Current Crest Factor (ratio of peak to RMS lamp current) 1.7 or less in accordance with lamp manufacturer's recommendations and ANSI C62.11. |

2.2 BALLASTS
(Cont'd)

- .10 Have Ballast Factor as per drawings and ANSI C82.11.
- .11 Have Total Harmonic Distortion less than 10%.
Maximum input watts as per drawings.
- .12 Total circuit power:
 - .1 2 x Lamp T8 32W: 59 Watts @ 0.88 ballast factor.
- .13 Be fully encapsulated (potted) and enclosed in a metal housing.
- .14 Be warranted by the manufacturer in writing against defects in material and workmanship including replacement for five years form date of manufacture.
- .15 EMI/RF emissions meet FCC CFR 47, Part 18.
- .16 Class A. Minimum starting temperature: -10°C.
- .17 Sound level rating: Class A. Thermal.
- .18 Protection: Class P. Overcurrent Protection.
- .19 Integral fuse to disconnect ballast from line in the event of a component failure.
- .20 Ballast shall contain protection circuitry to ensure that ballast is not damaged when lamps are removed or replaced.
- .21 Standard of Acceptance:
 - .1 Refer to Fixture Schedule.
- .22 Acceptable alternates:
 - .1 Standard.
 - .2 Advance.
 - .3 Osram Sylvania.

2.3 FINISHES

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

2.4 OPTICAL CONTROL DEVICES

- .1 As indicated in luminaire schedule.

- 2.5 LUMINAIRES .1 As indicated in luminaire schedule in drawings.
Provide 10% spare lamps of each type noted in
luminaire schedule.

PART 3 - EXECUTION

- 3.1 INSTALLATION .1 Locate and install luminaires as indicated. Install
lamps in all fixtures.
.2 Provide adequate support to suit ceiling system.
.3 For suspended ceiling applications, support
luminaires independent from ceiling and in accordance
with local inspection requirements.

- 3.2 WIRING .1 Connect luminaires to lighting circuits:
.1 Install flexible conduit for vertical power
supply drop to 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.
.3 Align luminaires as indicated on drawings.

- 3.5 CLEANING .1 Clean in accordance with Section 01 10 10 - General
Instructions.
.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 10 10 -
General Instructions.