

SECTION 16510

INTERIOR LUMINAIRES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Interior luminaires and accessories.
- B. Ballasts.
- C. Lamps.

1.2 RELATED SECTIONS

- A. Section 16130 – Boxes
- B. Section 16950 – Lighting Control System

1.3 REFERENCES

- A. ANSI C82.1 - Ballasts for Fluorescent Lamps - Specifications.
- B. ANSI/NFPA 70 - National Electrical Code.

1.4 SUBMITTALS

- A. Shop Drawings: Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
- B. Product data: Provide dimensions, ratings and performance data.

1.5 PROJECT RECORD DOCUMENTS

- A. Accurately record actual locations of each luminaire.

1.6 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

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PART 2 - PRODUCTS

2.1 LUMINAIRES

- A. Furnish products as specified in schedule attached to this Section.

2.2 BALLASTS

A. Electronic T8 fluorescent ballasts

1. Non-dimming ballasts:
 - a) *Sylvania* QHE/UNV ISN-SC series
 - b) *Advance* IOP/SC series
 - c) *Universal* B/IUNVHE series
2. Electronic Ballasts for T8 Lamps: Comply with ANSI C82.11; instant-start type, unless otherwise indicated, and designed for type and quantity of lamps served. Ballasts shall be designed for full light output unless dimmer or bi-level control is indicated.
 - a) Starting Method: Instant Start
 - b) Ballast Factor: 0.88 (minimum)
 - c) Circuit Type: Parallel
 - d) Lamp Frequency: > 40 kHz
 - e) Lamp CCF: < 1.7
 - f) Starting Temperature: 0 F (-17.8 C)
 - g) Input Frequency: 60 Hz
 - h) Total Harmonic Distortion (THD): <10%
 - i) Power Factor: >98%
 - j) Voltage: Universal 120-277 volts
 - k) Maximum Input Wattage:
 - (1) Single Lamp, T8 (32-watt lamps): 28 Watts
 - (2) Two Lamp T8, (32-watt lamps): 55 Watts

B. Ballasts For Compact Fluorescent Lamps:

1. Description: Electronic programmed rapid-start type, complying with ANSI C 82.11, designed for type and quantity of lamps indicated. Ballast shall be designed for full light output unless dimmer or bi-level control is indicated:
 - a) Starting Method: Programmed Rapid-Start (quad and triple-tube lamps); Instant Start (PL lamps)
 - b) Ballast Factor: 0.96 (minimum)
 - c) Circuit Type: Series (quad and triple-tube lamps); Parallel (PL lamps)
 - d) Lamp Frequency: > 40 kHz
 - e) Lamp CCF: < 1.7
 - f) Starting Temperature: 5 F (-20 C)
 - g) Input Frequency: 60 Hz
 - h) Total Harmonic Distortion (THD): <10%
 - i) Power Factor: >97%
 - j) Voltage: Universal 120-277 volts
 - k) Maximum Input Wattage:
 - (1) Single Quad-Tube Lamp T4, 13-Watt: 16 Watts

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- (2) Single Quad-Tube Lamp T4, 18-Watt: 20 Watts
- (3) Two Quad-Tube Lamp T4, 18-Watt: 38 Watts
- (4) Single Quad-Tube Lamp T4, 26-Watt: 28 Watts
- (5) Two Quad-Tube Lamp T4, 26-Watt: 57 Watts

2.3 FLUORESCENT AND COMPACT FLUORESCENT LAMPS

- A. Low-Mercury Lamps: Comply with EPA's toxicity characteristic leaching procedure test; shall yield less than 0.2 mg of mercury per liter when tested according to NEMA LL 1.
- B. 32-Watt, T8 Fluorescent Lamps:
 - 1. Base: Medium Bi-Pin
 - 2. Initial Lumens: 3100 (minimum)
 - 3. Mean Lumens: 2945 (minimum)
 - 4. CCT: 3500K
 - 5. CRI: 82 (minimum)
 - 6. Life: 20000 hours (3 hours/start)
- C. 17-Watt, T8 Fluorescent Lamps:
 - 1. Base: Medium Bi-Pin
 - 2. Initial Lumens: 1375 (minimum)
 - 3. Mean Lumens: 1305 (minimum)
 - 4. CCT: 3500K
 - 5. CRI: 85 (minimum)
 - 6. Life: 24000 hours (3 hours/start)
- D. 13-Watt, T4 Quad Tube Lamps:
 - 1. Base: 4-pin, G24Q-1
 - 2. Initial Lumens: 900
 - 3. Mean Lumens: 774
 - 4. CCT: 3000K
 - 5. CRI: 82
 - 6. Life: 12000 hours (3 hours/start)
- E. 18-Watt, T4 Quad Tube Lamps:
 - 1. Base: 4-pin, G24Q-2
 - 2. Initial Lumens: 1200
 - 3. Mean Lumens: 1032
 - 4. CCT: 3000K
 - 5. CRI: 82
 - 6. Life: 12000 hours (3 hours/start)
- F. 26-Watt, T4 Quad Tube Lamps:
 - 1. Base: 4-pin, G24Q-3
 - 2. Initial Lumens: 1710
 - 3. Mean Lumens: 1548
 - 4. CCT: 3000K

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5. CRI: 82
6. Life: 12000 hours (3 hours/start)

2.4 OWNER OPTION LIGHTING FIXTURES

- A. Provide a separate price quotation for the following luminaires, as may be selected on a per-unit basis by the owner. The price shall include installation.
 1. Type T1 track lighting.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrate and supporting grids for luminaires.
- B. Examine each luminaire to determine suitability for lamps specified.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install suspended luminaires using pendants supported from swivel hangers. Provide pendant length required to suspend luminaire at indicated height.
- C. Locate recessed ceiling luminaires as indicated on The Architectural reflected ceiling plans.
- D. Install surface mounted luminaires plumb and adjust to align with building lines and with each other. Secure to prohibit movement.
- E. Install recessed luminaires to permit removal from below.
- F. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating.
- G. Install wall mounted luminaires at height as scheduled.
- H. Install accessories furnished with each luminaire.
- I. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.
- J. Bond products and metal accessories to branch circuit equipment grounding conductor.
- K. Install specified lamps in each luminaire.

3.3 FIELD QUALITY CONTROL

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- A. Operate each luminaire after installation and connection. Inspect for proper connection and operation.

3.4 ADJUSTING

- A. Aim and adjust luminaires as directed.
- B. Re-lamp luminaires that have failed lamps at Substantial Completion.

3.5 CLEANING

- A. Clean electrical parts to remove conductive and deleterious materials.
- B. Remove dirt and debris from enclosure.
- C. Clean photometric control surfaces as recommended by manufacturer.
- D. Clean finishes and touch up damage.

END OF SECTION

Project: 118 Congress
Location: Portland, Maine
Date: February 26, 2014

Bartlett Design
942 Washington Street, Bath, ME
(T) 207-443-5447 (F) 207-443-5560

LIGHTING FIXTURE SCHEDULE

All fixtures are 120 volt, unless specifically noted otherwise.

Lamp designations refer to *Philips* products except where noted otherwise. Equivalent lamps by *Osram-Sylvania* or *General Electric* will also be considered for approval.



4.3125"

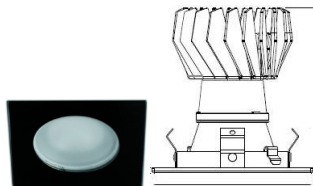
Dimensions: Recess Height = 6.55" Trim Diameter =
Aperture Diameter = 3.75"

Type: B1

Description: Recessed downlight with white regressed trim. Luminaire shall include an integral LED driver.

Lamps: 11-watt 2700K LED (supplied with luminaire)

Manufacturers: *Intense Lighting* # ICRLS4-650-279-W-SF (luminaire trim)
Intense Lighting # IL4AIC (housing)



Dimensions: Recess Height = 4.375" Trim = 4.25" sq
Aperture Diameter = 2.625"

Type: B2

Description: Recessed downlight with white trim, white reflector, and clear lens with frosted center. Luminaire shall include an integral LED driver. Luminaire shall be UL listed for wet locations.

Lamps: 18-watt 2700K LED (supplied with luminaire)

Manufacturers: *Contrast Lighting* # LEDS314FC-01012W2 (luminaire trim)
Contrast Lighting # NWLED300LU2 (housing)



Dimensions: Recess Height = 7.25" Aperture = 4.1875" sq

Type: B3

Description: Recessed trimless square downlight with sandblasted regressed lens. Luminaire shall include an integral LED driver.

Lamps: 30.5-watt 2700K LED (supplied with luminaire)

Manufacturers: *Intense Lighting* # STLD302W-SB (luminaire trim)
Intense Lighting # IL-DSTL-NC-L4-2700/82CRI-60 (housing)



Dimensions: Height = 4.5" Diameter = 15"

Type: C1

Description: Surface mounted ceiling fixture with white acrylic diffuser with fabric overlay. Fixture finish shall be white. Provide electronic ballast.

Lamps: (2) PL-C 26W/827/4P/ALTO

Manufacturers: *Brownlee Lighting # 2340-15-226Q-SIM-ES4*

Dimensions: Height = 4.5" Diameter = 12 1/4"

Type: C2

Description: Similar to Type C1 except smaller with one lamp.

Lamps: (1) PL-C 26W/827/4P/ALTO

Manufacturers: *Brownlee Lighting # 2340-13-26Q-SIM-ES4*



Dimensions: Height = 3" Diameter = 13 3/4"

Type: C3

Description: Surface mounted ceiling fixture with white acrylic diffuser. Fixture finish shall be white. Provide electronic ballast.

Lamps: (2) PL-C 26W/827/4P/ALTO

Manufacturers: *Brownlee Lighting # 2045-14-WH-226Q-ES4*

Dimensions: Height = 3" Diameter = 11 1/4"

Type: C4

Description: Similar to Type C3 except smaller with one lamp.

Lamps: (1) PL-C 26W/827/4P/ALTO

Manufacturers: *Brownlee Lighting # 2045-14-WH-26Q-ES4*



Dimensions: Height = 2.8" Length = 12" Width = 5.5"

Type: C5

Description: Surface mounted ceiling fixture with white housing. Provide integral LED driver. Install 12-inch length projecting out into the hall with the end of the luminaire immediately abutting the wall.

Lamps: 12-watt 30 00K LED (supplied with luminaire)

Manufacturers: *Tech Lighting # 700FMKYL-W-LED3*



Dimensions: Length = 12" Height = 3.75" Projection = 3.75"

Type: E1

Description: Wall mounted emergency light with self contained maintenance-free nickel-cadmium battery. Battery shall be rated to operate fixture lamps for 90 minutes upon loss of normal power. Mount bottom of fixture at 7' - 0" AFF. Luminaire finish color shall be white.

Lamps: (2) 1.8-watt LED (supplied with luminaire)

Manufacturer: *Lithonia* # EU2LEDM12



Dimensions: Width = 12" Height = 12.5" Projection = 9"

Type: E2

Description: Wall mounted emergency light with self contained maintenance-free nickel-cadmium battery. Battery shall be rated to operate fixture lamps for 90 minutes upon loss of normal power. Mount bottom of fixture at 7' - 0" AFF. Luminaire shall be UL listed for damp locations at -40°F - 131°F operation.

Lamps: (2) 9-watt krypton (supplied with luminaire)

Manufacturer: *Lithonia* # IND618-ULT



Dimensions: Width = 6.5" Height = 9.5" Projection = 2.75"

Type: G1

Description: Garage luminaire with die-cast aluminum housing with white finish color. Provide Type V medium optical distribution. Luminaire shall include a motion sensor and an integral 700 mA LED dimming driver factory pre-set to operate the luminaire at 30% power until occupancy is detected, whereupon the luminaire shall automatically increase to full light output. Luminaire shall also include integral surge protection. Pendant hang luminaires with 3/4" RGS conduit to height as indicated by Engineer.

Lamps: 26-watt 4000K LED array (supplied with luminaire)

Manufacturer: *Lithonia* # DSXPG LED/10C/700/40K/T5M/MVOLT/PIR360SS/SPD/DWHXD

Dimensions: Width = 6.5" Height = 9.5" Projection = 2.75"

Type: G1A

Description: Similar to Type G1 except operating continuously as a night light.

Lamps: 26-watt 4000K LED array (supplied with luminaire)

Manufacturer: *Lithonia* # DSXPG LED/10C/700/40K/T5M/MVOLT/SPD/DWHXD



Dimensions: Height = 4.5" Length = 49.75" Width = 5.375"

Type: J1

Description: Surface ceiling mounted fluorescent luminaire with impact-resistant, UV-stabilized polycarbonate diffuser. Provide electronic non-dimming ballast. Luminaire shall be UL listed for wet locations. Provide line-voltage motion sensor to be installed on luminaire to provide on/off control based on the detection of occupancy.

Lamps: (1) F32T8/TL830/ALTO

Manufacturers: *Lithonia* # VSLC-1-32-120-GEB10IS
SensorSwitch # CMRB-PDT-LT

Dimensions: Height = 4.5" Length = 49.75" Width = 5.375"

Type: J2

Description: Similar to Type J1 except without motion sensor.

Lamps: (1) F32T8/TL830/ALTO

Manufacturers: *Lithonia* # VSLC-1-32-120-GEB10IS



Dimensions: Height = 2 3/4" Length = 48" Width = 3 3/4"

Type: J3

Description: Surface ceiling mounted fluorescent strip. Provide electronic non-dimming ballast.

Lamps: (2) F32T8/TL830/ALTO

Manufacturers: *Lithonia* # C 2 32 MVOLT GEB10IS

Dimensions: Height = 2 3/4" Length = 48" Width = 3 3/4"

Type: J4

Description: Similar to Type J3 except single lamp.

Lamps: (1) F32T8/TL830/ALTO

Manufacturers: *Lithonia* # C 1 32 MVOLT GEB10IS



Dimensions: Nominal Vertical Height at Wall = 8'-0"
Nominal Horizontal Length at Ceiling = 6'-0"
Nominal Width = 4"

Type: K1

Description: Recessed luminaire with opal acrylic diffuser. Luminaire shall be installed to accommodate a flush fit within gypboard at the wall, and shall transition to suspended acoustic tile ceiling. The luminaire diffuser shall be continuous without trim at the intersection of the wall and ceiling. Provide 3000K linear LED lamps with an integral step-dimming driver rated to operate at 50% light output until remote ceiling motion sensors detect occupancy, whereupon the light output shall automatically increase to 100%.

Manufacturer: *Mark Lighting* # S4LR-8FT(WALL)/6FT(CLG)-TG-N-30-XX-120-SW

Lamps: 6-watts/LF 3000K LED (supplied with luminaire)



Dimensions: Height = 8.5" Width = 5.875" Projection = 4.5"

Type: L1

Description: Surface wall mounted luminaire with clear prismatic UV-stabilized polycarbonate diffuser. Luminaire shall be UL listed for wet locations. Mount in elevator pit 24" above pit floor. Provide electronic ballast.

Lamps: (1) PL-C 13W/830/4P/ALTO

Manufacturers: *Lithonia* # VR2B-13DTT-120-SCB



**Dimensions: Luminaire Height = 10" Overall Height = 24"
Diameter = 24"**

Type: R1

Description: Decorative pendant luminaire suspended with custom length stem and aircraft cable. Shade materials shall be silken mesh. Provide integral battery supply rated to operate luminaire for 90 minutes upon loss of normal power.

Lamps: (4) PL-C 18W/827/4P/ALTO

Manufacturers: *Brownlee* # 2345-24-GM-418Q-MAL-BBI-ES4



Dimensions: Diameter= 4.75" Recess Height = 7.25"

Type: S1

Description: Recessed LED downlight with narrow beam symmetrical light distribution, clear tempered glass lens, die-cast aluminum step baffle and internal aluminum reflector. Luminaire shall include an integral LED driver and shall be UL listed for wet locations. Luminaire trim finish color shall be brushed stainless steel.

Lamps: 6.5-watt 3000K LED (supplied with luminaire)

Manufacturers: *Bega* # 6604



Dimensions: Length=11.75" Height = 4.375" Projection = 3.375"

Type: S2

Description: Wall mounted die-cast aluminum luminaire with tempered etched glass lens and aluminum reflector. Luminaire shall include an integral LED driver and shall be UL listed for wet locations. Luminaire finish color shall be white).

Lamps: 12-watt 3000K LED (supplied with luminaire)

Manufacturers: *Bega* # 2380 LED WHT



**Dimensions: Luminaire Length= 6.2” Extension Arm = 6.89”
Luminaire Diameter = 2.44”**

Type: S3

Description: Wall mounted adjustable die-cast aluminum sign light with 360° rotation and 200° tilt.. Luminaire shall include an integral LED driver and shall be UL listed for wet locations. Luminaire finish color shall be silver. Install at height as directed by architect.

Lamps: 9-watt 3000K LED (supplied with luminaire)

Manufacturers: *Lumascap* # LS411LED-9H6-ME-A-09-CS

**Dimensions: Recess Height = 4.375” Trim = 4.25” sq
Aperture Diameter = 2.625”**

Type: S4

Description: Similar to Type B2 except installed in ceiling over outside deck.

Lamps: 18-watt 2700K LED (supplied with luminaire)

Manufacturers: *Contrast Lighting* # LEDS314FC-01012W2 (luminaire trim)
Contrast Lighting # NWLED300LU2 (housing)



Dimensions: Luminaire Length= 3.375” Luminaire Diameter = 3.375”

Type T1

Description: Adjustable (60° tilt and 350° rotation) LED track light with the capability to dim light output. Provide all components for a complete and functioning system. Provide single circuit track in 4-ft track length. Fixture finish shall be brushed nickel. Track finish shall be black. Provide compatible wall dimmer as certified by the luminaire manufacturer. Provide three track luminaires for each 4-foot track length. Type T1 track assembly with luminaire and wall dimmer shall be priced as a separate item (per each location) to be provided at the owner’s option.

Manufacturer: *Lithonia* # LTIKMSBK (luminaires and track)

Lamps: 8.3-watt 2700K LED (supplied with luminaire)



**Dimensions: Luminaire Length= 4” Luminaire Diameter = 3”
Overall Height = 6”**

Type T2

Description: Adjustable (258° rotation) LED track light with narrow flood optical distribution. Luminaire shall be suitable for mounting on a standard 4-inch box. Luminaire finish shall be white. Luminaire shall be supplied with an integral LED driver. Aim at sculpture as directed by Architect.

Manufacturer: *Intense* # OB1C-L1-27-W-24/LH4W/SNTRW-63

Lamps: 14-watt 2700K LED (supplied with luminaire)



Dimensions: Height = 1" Length = 18" Width = 3.625"

Type: U1

Description: Under-cabinet fluorescent luminaire with integral LED driver. Luminaire finish shall be white.

Lamps: 8.6-watt 2700K LED (supplied with luminaire)

Manufacturers: *Lithonia # UCLD18-2700-WH/UCD-JB*



Dimensions: Height = 1.25" Length = 121.57" Width = 1"

Type: U2

Description: Adjustable linear cove light with separate LED driver. Install luminaire on top of cabinet close to wall. Provide remote power supply on top of cabinet behind luminaire.

Lamps: 14.4-watts (total) 2700K LED (supplied with luminaire)

Manufacturers: *LED Linear # X00LUM R DONAR W827/3088-60-A-BS-X-IP20 (luminaire)*
LED Linear # 16000082 (power supply)

Type: U3

Dimensions: Height = 1.25" Length = 67.72" Width = 1"

Description: Similar to Type U2 except length.

Lamps: 14.4-watts (total) 2700K LED (supplied with luminaire)

Manufacturers: *LED Linear # X00LUM R DONAR W827/1720-60-A-BS-X-IP20 (luminaire)*
LED Linear # 16000082 (power supply)

Type: U4

Dimensions: Height = 1.25" Length = 81.18" Width = 1"

Description: Similar to Type U2 except length.

Lamps: 14.4-watts (total) 2700K LED (supplied with luminaire)

Manufacturers: *LED Linear # X00LUM R DONAR W827/2062-60-A-BS-X-IP20 (luminaire)*
LED Linear # 16000082 (power supply)

Type: U5

Dimensions: Height = 1.25" Length = 108.11" Width = 1"

Description: Similar to Type U2 except length.

Lamps: 14.4-watts (total) 2700K LED (supplied with luminaire)

Manufacturers: *LED Linear # X00LUM R DONAR W827/2746-60-A-BS-X-IP20 (luminaire)*
LED Linear # 16000082 (power supply)

Type: U6

Dimensions: Height = 1.25" Length = 40.79" Width = 1"

Description: Similar to Type U2 except length.

Lamps: 14.4-watts (total) 2700K LED (supplied with luminaire)

Manufacturers: *LED Linear # X00LUM R DONAR W827/1036-60-A-BS-X-IP20 (luminaire)*
LED Linear # 16000081 (power supply)



Dimensions: Height = 11" Width = 11 1/2" Projection = 6"

Type: W1

Description: Surface wall mounted luminaire with white front face acrylic diffuser and with white painted finish. Luminaire shall include an integral battery rated to operate the luminaire for 90 minutes upon loss of normal power. Mount bottom of luminaire at 6'-8" AFF.

Lamps: (2) PL-C 18W/827/4P/ALTO

Manufacturers: *Brownlee # 1520-WH-226Q-BBI-ES4*

Type: W2

Dimensions: Height = 7" Length = 5" Projection = 6"

Description: Similar to Type W3 except with a single lamp. Install immediately above vanity mirror.

Lamps: (1) LED (supplied with luminaire)

Manufacturers: *Elk Lighting Creativity # 54010/1*



Dimensions: Height = 5" Length = 22" Projection = 8"

Type: W3

Description: Surface wall mounted fixture with glass diffusers. Fixture finish shall be brushed nickel. Install immediately above vanity mirror.

Lamps: (3) LED (supplied with luminaire)

Manufacturers: *Elk Lighting Creativity # 54012/3*



Dimensions: Height = 6" Length = 27" Projection = 4.25"

Type: W4

Description: Linear surface wall mounted fixture with white acrylic diffuser. Fixture finish shall be white. Provide electronic ballast. Install immediately above closet door frame head.

Lamps: (1) FO17/830/XP/ECO

Manufacturers: *Brownlee Lighting# 5057-27-17L-ES4*



Dimensions: Height = 12 1/8" Width = 7 1/4" Projection = 4"

Type: W5

Description: Surface wall sconce with opal white blown glass diffuser and satin nickel trim hardware. Provide integral electronic non-dimming ballast. Install at height as directed by Architect.

Lamps: (1) PL-C 18W/827/4P/ALTO

Manufacturers: *Sistimalux # 5645-120V-06*



Dimensions: Length = 11 3/4" Height = 7 5/8" Projection = 4 1/2"

Type: X1

Description: Wall mounted edge-lighted exit sign with red letters and white housing. Luminaire shall include LED lamps. Provide directional arrows as indicated on the drawings. Exit sign shall also include an integral battery rated to operate the luminaire for 90 minutes upon loss of normal power.

Lamps: LED (supplied with luminaire)

Manufacturer: *Lithonia* # EDG-W-1-R-EL
