
17. CONSISTENCY WITH PORTLAND DESIGN STANDARDS & DESIGN MANUAL

The project will be in conformance with the City of Portland design standards contained within Section 14-526 of the City Code, as well as the WPDZ. The proposed development is consistent with the City's design standards as described below.

17.1 SITE PLAN STANDARDS (14-526)

a) *Transportation Standards*

The proposed M&O construction and site improvements are not anticipated to have a significant impact on the surrounding street systems. The proposed M&O building will be a replacement to the existing M&O building onsite, and is intended to better fit the current needs of the facility. The majority of traffic will remain the same with the addition of infrequent, off-peak increases due to training planned at the site.

The proposed work is not anticipated to have a significant impact on parking requirements within the area. An additional 20 spaces are proposed as part of the M&O building, 15 spaces are proposed onsite with two (2) being handicap van accessible, and an additional three (3) spaces are proposed along Commercial Street. In accordance with Section 14-332.1(j) Off-street parking is required at 50% of the required number of parking spaces for uses specified in Section 14-322. Utilizing section 14-322, prior to the 50% reduction 27 off street parking spaces are required. Currently, 15 off-street parking spaces are proposed which is greater than the 14 off-street parking spaces required after the 50% reduction is applied. Please refer to the attached Site Plan (Sheet 4) of the attached plan set for a breakdown of parking requirements.

Snow removal onsite will remain unchanged within the interior of the site, additional snow storage locations are located within lawn areas adjacent to the proposed parking area.

b) *Environmental Quality Standards*

1. *Preservation of Significant Natural Features*

The Site is fully developed and there are no known areas of significant natural features, including unusual natural areas, threatened or endangered botanical features, areas of significant wildlife habitats, aquifers, waterbodies, or wetland areas.

2. *Landscaping & Landscape Preservation*

Landscaping Plans are included in the Design Drawings attached to Section 3 of this Report. The landscaping has been designed to closely match the landscaping of the existing office building constructed in 2011. Ornamental trees and shrubs will be placed in the proposed grassed islands as shown on the Landscaping Plans.

3. *Water Quality, Stormwater Management & Erosion Control*

The existing site manages Stormwater through a series of catch basins that discharge to the Fore River. The proposed site upgrades will connect to the existing site collection system. The stormwater management approach is further described in Section 13 of this Report.

The proposed project will not result in the flooding of adjacent lots or City property. The proposed project is not located within the watershed of an Urban Impaired Stream and is not anticipated to pose a risk of groundwater contamination either during or post-construction.

The proposed project has also been designed to provide for adequate and sanitary disposal of sanitary sewage, as further described in Section 15 of this Report.

c) *Public Infrastructure & Community Safety Standards*

The availability and adequate capacity of public utilities is described in Section 15 of this Report.

The full plan set will be provided to the Fire Department Reviewer, along with a cover letter including the items in the Portland Fire Department Site Review Checklist, as described in Section 17 of this Report.

d) *Site Design Standards*

1. *Massing, ventilation, and wind impact:* The proposed building will not result in any reduction in ventilation to abutting structures or unsafe wind conditions on the site.
2. *Shadows:* No adverse impacts from shadows are anticipated to result from the proposed project.
3. *Snow and ice loading:* The proposed building has been designed to accommodate appropriate snow and ice loads and to prevent significant amounts of accumulated snow and ice from falling onto adjacent properties or public ways.
4. *View corridors:* The proposed development will not obstruct public view corridors identified in the City's Downtown Vision View Corridor Protection Plan.
5. *Historic Resources:* The project is not located within a Historic District and does not directly impact any historic landmarks.
6. *Exterior Lighting:* Photometric Plan, and cut sheets for proposed lighting fixtures are attached to this section.
7. *Noise and Vibration:* Noise and vibrations associated with the proposed development will not exceed regulated levels. Proposed HVAC equipment is further described in Section 18 of this Report.
8. *Signage and Wayfinding:* No specific signage is proposed at this time.
9. *Zoning Related Design Standards:* An assessment of the City Zoning requirements is provided in Section 7 of this Report.

17.2 ATTACHMENTS

- Lighting Fixture Cut Sheets
- Photometric Plan

Bartlett Design

LIGHTING & ELECTRICAL ENGINEERING

942 WASHINGTON STREET BATH, MAINE 04530

TEL (207) 443-5447

bartlettdesigninc@comcast.net

International Marine Terminal Maintenance & Operations Building

Commercial Street

Portland, Maine

July 28, 2017

PROPOSED SITE LIGHTING FIXTURES

TYPE S1



LUMINAIRE WITH SOLID FRONT

HOUSING

- Main housing shroud shall be of fabricated 5052-H32 aluminum alloy
- Housing mounting interface shall have a stamped silicone gasket.
- Luminaire housing shall be free of any visible heat fins, hardware or fasteners.
- Bracketry and hardware shall be stainless steel.

OPTICAL ARRAY

- LEDs shall be mounted to a metal printed circuit board assembly (MCPCB) with a uniform conformal coating over the panel surface and electrical features.
- Optical lenses shall be clear injection molded PMMA acrylic.
- Optical array shall be recessed in order to shield each LED optic across the length of the aperture.
- Optical array shall be sealed for IP66 rating.
- Secondary lens is impact resistant 5/32" tempered glass.

ELECTRICAL

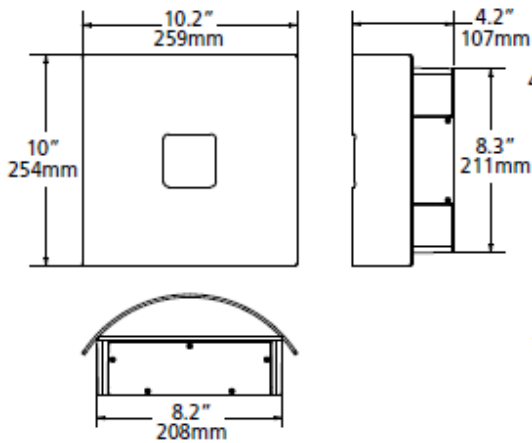
- Drivers shall be in direct contact with the die-cast aluminum housing across the entire surface area of the widest face for maximum thermal transfer.
- "Thermal Shield", primary side, thermister provides protection for the sustainable life of LED module and electronic components.

- Drivers shall have greater than a 0.9 power factor, less than 20% harmonic distortion, and be suitable for operation in -40°C to 40°C ambient environments
- Luminaires shall have integral surge protection that shall be U.L. recognized and have a surge current rating of 10,000 Amps using the industry standard 8/20uSec wave and surge rating of 372J. Surge protection device shall be wired in series.
- Drivers shall be U.L. recognized.
- Drivers shall not be compatible with current sourcing dimmers, consult factory for current list of known compatible dimming systems approved dimmers include Lutron Diva AVTV, Lutron Nova NFTV and NTFTV.

- Integral battery backup provides emergency path of egress lighting for the required 90

FINISH

- Luminaire finish shall consist of a five stage pretreatment regimen with a polymer primer sealer, oven dry off, and top coated with a thermoset super TGIC polyester powder coat finish.
- Luminaire finish shall meet the AAMA 605.2 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance.



TYPE S1

SERIES-OUTPUT (Base)

CY1-15 15w, 1500 nominal lumens
 CY1-25 25w, 2500 nominal lumens

CCT-CRI

3K7 3000K, 70CRI
 3K8 3000K, 80CRI
4K7 4000K, 70CRI
 4K8 4000K, 80CRI
 5K7 5000K, 70CRI

MODEL (Light Engine)

1 DownLight Only
 2 50/50 Down/Up
 3 90/10 Down/Up
 4 25/25/25/25 Split
 5 70/10/10/10 Split

MAIN DISTRIBUTION (Down)

1 IES Type I
 2 IES Type II
 3 IES Type III
 4 IES Type IV
 SP 15° Spot/Column
 WG 60° Wall Graze
 1D Type 1 Diffused
 2D Type 2 Diffused
 3D Type 3 Diffused
4D Type 4 Diffused

SECONDARY DISTRIBUTION (Up, Sides)

1 IES Type I
 2 IES Type II
 3 IES Type III
 4 IES Type IV
 SP 15° Spot/Column
 WG 60° Wall Graze
 PB* Pencil Beam
 1D Type 1 Diffused
 2D Type 2 Diffused

VOLTAGE

UNV 120-277V

BASE HOUSING FINISH

Standard Colors

AGN Antique Green
 BL Black
 BLT Matte Black
 CRT Corten
DB Dark Bronze
 DGN Dark Green
 LG Graphite
 GT Light Grey
 MAL Matte Aluminum
 MDB Metallic Bronze
 MG Medium Grey
 TT Titanium
 VBU Verde Blue
 WDB Weathered Bronze
 WH Arctic White

Premium Colors

SFM Seafoam
 SHK Shamrock
 SPP Salt and Pepper
 WCP Weathered Copper
 RAL Provide a RAL 4 digit color number
 CUSTOM Please provide color chip for
 COLOR matching

FASCIA FORM

F Flat
R Radius/Curved
 T Triangle/Wedge
 E Rounded Edge
 C Circle/Curved
 CB Cylinder Balanced
 CT Cylinder Tall
 CBM Custom
 Building Material Mount Ghost Fascia

FASCIA PANEL

FPP Full Panel Painted
 FPS Full Panel Stainless Steel
 FPC Full Panel Copper
 OPP Open Panel Painted
 OPS Open Panel Stainless Steel
 OPC Open Panel Copper
 4PP 4-Square Panel Painted
 4PS 4-Square Panel Stainless Steel
 4PC 4-Square Panel Copper
 PPP Perforated Panel Painted
 PPS Perforated Panel Stainless Steel
 PPC Perforated Panel Copper

Flat and Radius Fascia forms only. Painted panels by default match base housing finish/color. Consult factory for custom panel finishes.

CONTROL OPTIONS

PCU Universal Button Photocell (120-277V)

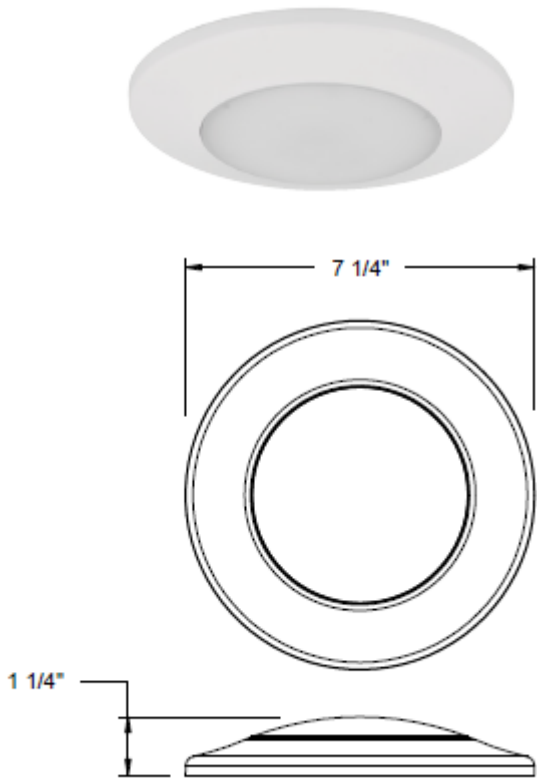
OPTIONS

EM Battery Backup Unit -20°C
 SF Single Fuse (120, 277)
 DF Double Fuse (208, 240)

Downlight only			Configuration									
Nominal Output (Lm)	Average System Wattage	Distribution	Bright White (5000K)				Neutral White (4000K)					
			Delivered Lumens	Efficacy (Lm/W)	BUG Rating			Delivered Lumens	Efficacy (Lm/W)	BUG Rating		
			5000K 70 CRI				4000K 70 CRI					
1,500	17	Type 1	1610	95	0	0	0	1615	95	0	0	0
		Type 2	1265	74	0	0	0	1268	75	0	0	0
		Type 3	1426	84	0	0	1	1430	84	0	0	1
		Type 4	1313	77	0	0	0	1317	77	0	0	0
		Wall Graze	1971	114	1	0	0	1976	116	1	0	0
		Spot/Column	1792	103	2	0	0	1797	106	2	0	0
		Type 1 Diffused	1327	78	1	0	0	1331	78	1	0	0
		Type 2 Diffused	1168	69	1	0	0	1171	69	1	0	0
		Type 3 Diffused	1161	68	1	0	0	1164	68	1	0	0
		Type 4 Diffused	1202	71	1	0	0	1206	71	1	0	0



TYPE S2



APPLICATIONS:

LiteBox Surface Mount LED modules are designed for use in new construction or retrofit IC or non-IC applications. It can be installed onto a standard 4" J-box, or into a 4", 5" or 6" recessed housing with optional mounting kit. Lumen output and distribution comparable to a 100 watt incandescent lamp while consuming only 17 watts of electricity. Energy Star qualified. Suitable for use with continuous room side temperatures up to 40°C (104°F).

LIGHT ENGINE:

High efficacy LED light engine integrated with durable aluminum heat sink for excellent thermal management. 120V, 50/60Hz, powered directly to AC without the need for a driver. Output over-voltage, over-current, and short circuit protection. System designed for optimal life and lumen maintenance (42,000 hours at 70% lumen maintenance per TM-21).

LENS/REFLECTOR:

All LiteBox LED modules are provided standard with a diffuse impact resistant polycarbonate lens for uniform illumination.

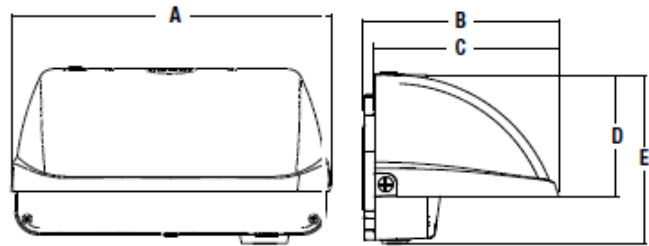
- LBSLEDA10L**
7" Surface Mount Round LED Module
- LBSQLEDA10L**
7" Surface Mount Square LED Module

- 27K¹**
2700 Kelvin
- 30K¹**
3000 Kelvin
- 35K¹**
3500 Kelvin
- 40K²**
4000 Kelvin
- 50K²**
5000 Kelvin

- 8**
80+ CRI
- 9**
90+ CRI

- WH**
White
- BL**
Black
- Z**
Zet
- BZ**
Bronze

TYPES S3 and S4



Fixture Weight: 27 pounds

A	B	C	D	E	Weight
17.2"	10.5"	9.9"	6.5"	8.9"	27 lbs.
436 mm	266 mm	251 mm	165 mm	226 mm	12.3 kg

Largest in the Litepak product family, the LNC4 is designed for perimeter illumination for safety, security and identity. Replaces up to 400w HID luminaires one-for-one replacement covering existing installation footprint. No uplight and lower glare lenses offer neighbor friendly lighting at typical mounting heights of 15-25'. Units have protective polyester powder coat finish for long lasting appearance. Ideal for schools, factories, hospitals, warehouses and retail applications. Energy efficient LEDs provide 70%+ energy savings with little to no maintenance when compared to traditional light sources. Battery backup option for meeting path of egress requirements.

Construction:

Die-cast aluminum housing protects components and provides an architectural appearance. Casting thermally conducts LED heat to optimize performance and long life. Powder paint finish provides durability in outdoor environments. Four 1/2" conduit entries (top, bottom, and sides) provided for surface conduit.

Electrical:

- 120-277, 347 and 480 voltage, 50/60Hz, 0-10V dimming drivers. Electronic driver. 10 kA surge protection (parallel); Automatically takes fixture off-line when device is consumed. Ambient operating temperature -40°C to 40°C.

Lenses:

- Zero uplight distributions using individual acrylic LED optics provide IES type II, III and IV distributions
- CS - Frosted acrylic diffuser option for reduced glare
- CSU - Frosted acrylic diffuser for inverted "up" mounting applications (lens required)

LED(s) CCT:

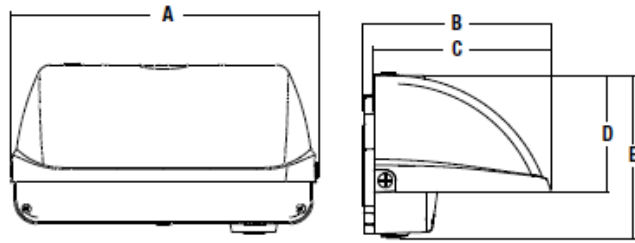
- 3000K, 4000K and 5000K CCT nominal with 70 CRI. 36 and 44 LED configurations available,

FAMILY	NUMBER OF LEDs	CCT	DRIVE CURRENT	IES DISTRIBUTION	VOLTAGE	FINISH
LNC4 Large Litepak Wallpack	36L 36LED 44L 44LED	3K 3000K	035 350mA 065 650mA 105 1150mA	2 Type II 3 Type III 4 Type IV	U 120V-277V 1 120V ¹ 2 208V ¹ 3 240V ¹ 4 277V ¹ 5 480V ¹ F 347V ¹	DB Bronze
		4K 4000K				BL Black
		5K 5000K				WH White
						GR Gray
						PS Platinum
						CC Custom Color

TYPE S3: Type IV Distribution

TYPE S4: Type III Distribution

TYPE S5



A	B	C	D	E	Weight / BBU
13"	10.5"	9.9"	5.8"	8.3"	18 lbs.
330.2 mm	266.7 mm	251 mm	147.3 mm	210.8 mm	8.6 kg

The mid-sized LNC3 is designed for perimeter illumination for safety, security and identity. No uplight and lower glare lens option offer neighbor friendly lighting at typical mounting heights of 10-20'. Units have protective polyester finish for long lasting appearance. Ideal for schools, factories, hospitals, warehouses and retail applications. Energy efficient LEDs provide 70%+ energy savings with little to no maintenance when compared to traditional light sources.

Construction:

Die-cast aluminum housing protects components and provides an architectural appearance. Casting thermally conducts LED heat to optimize performance and long life. Powder paint finish provides durability in outdoor environments. Four 1/2" conduit entries (top, bottom, and sides) provided for surface conduit.

Electrical:

- 120-277, 347 and 480 voltage, 50/60Hz, 0-10V dimming drivers
- Electronic driver
- 10kA surge protection (parallel); Automatically takes fixture off-line when device is consumed

LED(s) CCT:

- Ambient operating temperature -40°C to 40°C
- 3000K, 4000K and 5000K CCT nominal with 70 CRI
- Available in 2 or 24 LED configuration, see page 2 for electrical and photometric data

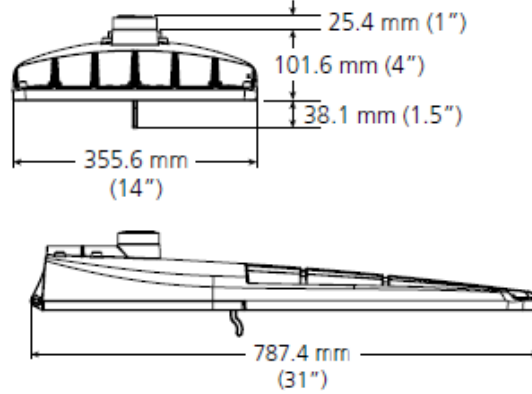
Lenses:

- Zero uplight distributions using individual acrylic LED optics provide IES type II, III and IV distributions
- CS - Frosted acrylic diffuser option for reduced glare
- CSU - Frosted acrylic diffuser for inverted "up" mounting applications (lens required)

FAMILY	NUMBER OF LEDS	CCT	DRIVE CURRENT	IES DISTRIBUTION	VOLTAGE	FINISH
LNC3 Medium Litepak Wallpack	24L 24LEDs	3K 3000K 4K 4000K 5K 5000K	050 500mA 075 750mA 105 1050mA	2 Type II 3 Type III 4 Type IV	U 120v-277v 1 120v ¹ 2 208v ¹ 3 240v ¹ 4 277v ¹ 5 480v ¹ F 347v ¹	DB Bronze BL Black WH White GR Gray PS Platinum CC Custom Color



TYPES S6 and S7



OPTICAL

Same Light: Performance is comparable to 250-400W HPS roadway luminaires.
 White Light: Correlated color temperature - 4000K, 70 CRI minimum, 3000K, 70CRI minimum or optional 5000K, 70 CRI minimum.
 Unique IP66 rated LED light engines provided 0% uplight and restrict backlight to within sidewalk depth, providing optimal application coverage and optimal pole spacing.
 Available in Type II, III, IV, & V roadway distributions.

ELECTRICAL

Expected Life: LED light engines are rated >100,000 hours at 25°C, L70. Electronic driver has an expected life of 100,000 hours at a 25°C ambient.
 Lower Energy: Saves an average of 40-60% over comparable HPS platforms.
 Robust Surge Protection: Three different surge protection options provide a minimum of ANSI C136.2 10kV/5kA protection. 20kV/10kA protection is also available.

MECHANICAL

Easy to Maintain: Includes standard AEL lineman-friendly features such as tool-less entry, 3 station terminal block and quick disconnects. Bubble level located inside the electrical compartment for easy leveling at installation.
 Rugged die-cast aluminum housing is polyester powder-coated for durability and corrosion resistance. Rigorous five-stage pre-treating and painting process yields a finish that achieves a scribe creepage rating of 7 (per ASTM D1654) after over 5000 hours exposure to salt fog chamber (operated per ASTM B117).
 Four-bolt mast arm mount is adjustable for arms from 1-1/4" to 2" (1-5/8" to 2-3/8" O.D.) diameter and provides a 3G vibration rating per ANSI C136.
 Wildlife shield is cast into the housing (not a separate piece).

Series	Performance Packages	Voltage	Optics
ATB2 Autobahn LED Roadway	40BLEDE70 40B Chips, 700mA Driver 40BLEDE10 40B Chips, 1050mA Driver 40BLEDE13 40B Chips, 1300mA Driver 40BLEDE15 40B Chips, 1500mA Driver	MVOLT Multi-volt, 120-277V 347 347V 480 480V	R2 Roadway Type II R3 Roadway Type III R4 Roadway Type IV R5 Roadway Type V

Color Temperature (CCT)

- (Blank)** 4000K CCT, 70 CRI Min.
- 3K** 3000K CCT, 70 CRI Min.
- 5K** 5000K CCT, 70 CRI Min.

Surge Protection

- (Blank)** Standard 10kV/5kA SPD
- 20** 20kV/10KA SPD
- MP¹** MOV Pack
- IL¹** SPD with Indicator Light

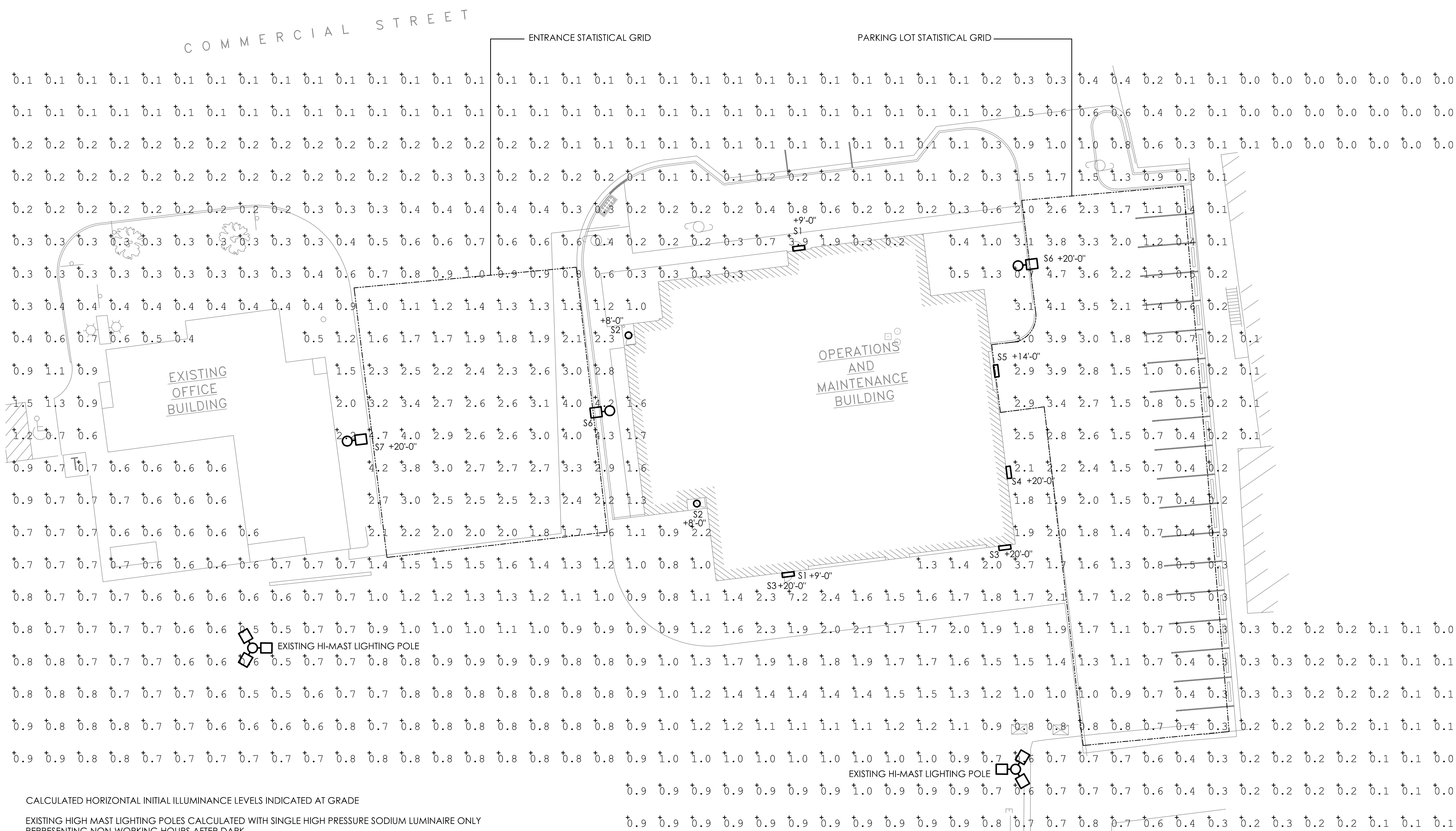
Paint

- (Blank)** Gray (Standard)
- BK** Black
- BZ** Bronze
- DDB** Dark Bronze
- GI** Graphite
- WH** White

TYPE S6: Luminaire with a 20 foot tall steel pole

TYPE S7: Replacement luminaire on existing pole



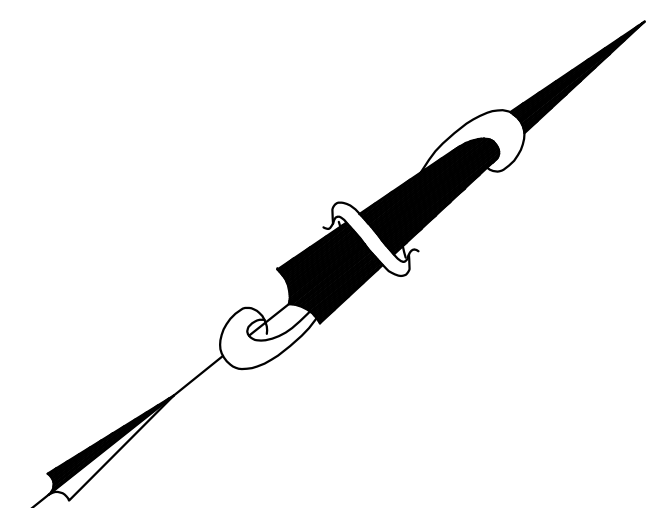


CALCULATED HORIZONTAL INITIAL ILLUMINANCE LEVELS INDICATED AT GRADE
 EXISTING HIGH MAST LIGHTING POLES CALCULATED WITH SINGLE HIGH PRESSURE SODIUM LUMINAIRE ONLY
 REPRESENTING NON-WORKING HOURS AFTER DARK.

CALCULATED LIGHTING RESULTS:
 PARKING LOT:
 AVERAGE: 1.5 FOOTCANDLES
 MAXIMUM: 4.7 FOOTCANDLES
 MINIMUM: 0.3 FOOTCANDLES
 AVERAGE-TO-MINIMUM UNIFORMITY RATIO: 4.9 : 1
 MAXIMUM-TO-MINIMUM UNIFORMITY RATIO: 15.7 : 1
 ENTRANCE:
 AVERAGE: 2.4 FOOTCANDLES
 MAXIMUM: 4.7 FOOTCANDLES
 MINIMUM: 1.0 FOOTCANDLES
 AVERAGE-TO-MINIMUM UNIFORMITY RATIO: 2.4 : 1
 MAXIMUM-TO-MINIMUM UNIFORMITY RATIO: 4.7 : 1

SITE LIGHTING ILLUMINANCE CALCULATION PLAN

SCALE: 1" = 20'-0"



PRELIMINARY
 NOT FOR CONSTRUCTION

Bartlett Design
 LIGHTING & ELECTRICAL ENGINEERING
 942 WASHINGTON STREET, BATH, ME 04630
 TEL. (207) 443-5447

STATE OF MAINE		DEPARTMENT OF TRANSPORTATION	
2194202		WIN 021942.02	
DATE	BY	PROJ. MGR.	JOEL KITTRIDGE
7-28-17	LEB	DESIGN-DETAILED	-
-	-	CHECKED-REVIEWED	-
-	-	DESIGN-DETAILED	-
-	-	REVISIONS 1	-
-	-	REVISIONS 2	-
-	-	REVISIONS 3	-
-	-	REVISIONS 4	-
-	-	FIELD CHANGES	-
SIGNATURE	P.E. NUMBER	DATE	-
PORTLAND INTERNATIONAL MARINE TERMINAL MAINTENANCE & OPERATIONS BUILDING CUMBERLAND COUNTY PORTLAND			
SITE LIGHTING CALCULATION PLAN			
SHEET NUMBER			
E0.1			
OF -			