





Mar 22, 2024, 10:05am  
\\cscos.com\cslm\Eng\Project\089 - City of Oceanside, CA\08903002 - Libby Lake Lighting Improvements - Design\Design\CADD\Sheet Files\08903002\_Electrical.dwg

D

STATE OF CALIFORNIA  
Outdoor Lighting  
NRCC-LTO-E

CALIFORNIA ENERGY COMMISSION  
CERTIFICATE OF COMPLIANCE  
Project Name: LIBBY LAKE LIGHTING IMPROVEMENTS  
Project Address: 504 Calle Montecito  
Report Page: (Page 2 of 7)  
Date Prepared: 3/1/2024

C. COMPLIANCE RESULTS  
Results in this table are automatically calculated from data input and calculations in Tables F through I. Note: If any cell on this table says "COMPLIES with Exceptional Conditions" refer to Table D. Exceptional Conditions for guidance or see applicable Table referenced below.  
Calculations of Total Allowed Lighting Power (Watts)  $\$140.7$  or  $\$141.0824$   
Compliance Results  
01 General Hardscape Allowance  $\$140.7(d1)$  (See Table J) + 02 Per Application  $\$140.7(d2)$  (See Table J) + 03 Sales Frontage  $\$140.7(d2)$  (See Table K) + 04 Ornamental  $\$140.7(d2)$  (See Table L) + 05 Per Specific Area  $\$140.7(d2)$  (See Table M) OR Existing Power Allowance  $\$141.0824$  (See Table N) = 06 Total Allowed (Watts)  $\geq$  07 Total Actual (Watts) 07 must be  $\geq$  08  
10,100 + --- + --- + --- + --- OR --- = 10,100  $\geq$  4,514 COMPLIES  
Cutoff Compliance (See Table G for Details) N/A  
Controls Compliance (See Table H for Details) COMPLIES

D. EXCEPTIONAL CONDITIONS  
This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS  
This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance  
Registration Date/Time: Report Version: 2019.1.003  
Registration Provider: Energysoft  
Schema Version: rev 20200601  
Report Generated: 2024-03-01 05:44:47

C

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Outdoor Lighting  
NRCC-LTO-E

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H. OUTDOOR LIGHTING CONTROLS  
This table demonstrates compliance with controls requirements for all new or altered luminaires installed as part of the permit application. For alteration projects, luminaires which are existing to remain (i.e. untouched) and luminaires which are removed and reinstalled (wiring only) do not need to be included in this table even if they are within the spaces covered by the permit application.  
When an option having a \* is selected, the notes section of this table must be completed. The lighting controls section of the Compliance Summary Table on the first page will show "DOES NOT COMPLY" if the notes are left blank.  
Mandatory Controls  
01 Area Description 02 Shut-Off  $\$130.2(c1)$  03 Auto-Schedule  $\$130.2(c2)$  04 Motion Sensor  $\$130.2(c3)$  05 Field Inspector  
Pass Fail  
\* NOTES: Controls with a \* require a note in the space below explaining how compliance is achieved.  
EX: Not permitted by health & safety to be turned off; EXCEPTION 1 to  $\$130.2(c)$

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B

STATE OF CALIFORNIA  
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CALIFORNIA ENERGY COMMISSION  
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Report Page: (Page 1 of 7)  
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A. GENERAL INFORMATION  
01 Project Location (city) Oceanside 04 Total Illuminated Hardscape Area (ft<sup>2</sup>) 350000  
02 Climate Zone 7  
03 Outdoor Lighting Zone per Title 24 Part 1  $\$10.114$  or as designated by Authority Having Jurisdiction (AHJ):  
☐ L2-0: Very Low - Undeveloped Parkland ☐ L2-2: Moderate - Rural Areas ☐ L2-4: High - Must be reviewed by CA Energy Commission for Approval  
☐ L2-1: Low - Developed Parkland ☒ L2-3: Moderately High - Urban Areas

B. PROJECT SCOPE  
This table includes outdoor lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in  $\$140.7$  or  $\$141.0824$  for alterations.  
My Project Consists of:  
01 ☒ New Lighting System Must Comply with Allowances from  $\$140.7$   
☐ Altered Lighting System Is your alteration increasing the connected lighting load (Watts)? ☒ Yes ☐ No  
03 % of Existing Luminaires Being Altered<sup>1</sup> Sum Total of Luminaires Being Added or Altered 05 Calculation Method  
☐ <10% ☐ >=10% and <50% ☐ >=50%  
Please proceed to Table F. Outdoor Lighting Fixture Schedule to define the project's luminaires.  
<sup>1</sup> FOOTNOTES: % of Existing Luminaires Being Altered = (Sum Total of Luminaires Being Added or Altered / Existing Luminaires within the Scope of the Permit Application) x 100.

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I. LIGHTING POWER ALLOWANCE (per  $\$140.7$ )  
This table includes areas using allowance calculations per  $\$140.7$ . General Hardscape Allowance is per Table 140.7-A while "Use It or lose It" Allowances are per Table 140.7-B.  
Indicate which allowances are being used to expand sections for user input. Luminaires that qualify for one of the "Use It or lose It" allowances shall not qualify for another "Use It or lose It" allowance.  
Calculated General Hardscape Lighting Power Allowance per Table 140.7-A (L2 0, 1 & 4)  
This section does not apply to this project.  
Calculated General Hardscape Lighting Power Allowance per Table 140.7-A (L2 2 & 3)  
02 Area Description 03 Surface Type 04 Illuminated Area (ft<sup>2</sup>) 05 Allowed Density (W/ft<sup>2</sup>) 06 Area Allowance (Watts) 07 Perimeter Length (ft) 08 Allowed Density (W/ft) 09 Linear Allowance (Watts) 10 Total General Allowance (Watts)  
Libby Lake Walkway Asphalt 350000 0.03 8750 4000 0.4 1000 9750  
Initial Wattage Allowance for Entire Site (Watts): 350  
Total General Hardscape Allowance (Watts): 10100

J. LIGHTING ALLOWANCE: PER APPLICATION  
This section does not apply to this project.

K. LIGHTING ALLOWANCE: SALES FRONTAGE  
This section does not apply to this project.

L. LIGHTING ALLOWANCE: ORNAMENTAL  
This section does not apply to this project.

M. LIGHTING ALLOWANCE: PER SPECIFIC AREA  
This section does not apply to this project.

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Report Page: (Page 7 of 7)  
Date Prepared: 3/1/2024

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT  
I certify that this Certificate of Compliance documentation is accurate and complete.  
Documentation Author Name: Alex Klimkow  
Signature Date: \_\_\_\_\_  
Company: C&S Companies  
Address: 499 Col. Eileen Collins Blvd.  
City/State/Zip: Syracuse NY 13212  
CEA/HERS Certification Identification (if applicable): \_\_\_\_\_  
Phone: \_\_\_\_\_

RESPONSIBLE PERSON'S DECLARATION STATEMENT  
I certify the following under penalty of perjury, under the laws of the State of California:  
1. The information provided on this Certificate of Compliance is true and correct.  
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).  
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.  
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.  
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.  
Responsible Designer Name: Barton Peters  
Signature: \_\_\_\_\_  
Company: C&S Companies  
Address: 2355 Northside Dr. Suite 350  
City/State/Zip: San Diego CA 92108  
License: 18924  
Phone: 6192969373

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Brian K. Thomas, City Engineer 60907

May 14, 2024  
Date



3/22/2024

LIBBY LAKE LIGHTING PROJECT CIP23-00017, BLDG 24-0055  
504 CALLE MONTECITO, OCEANSIDE, CA 92057

	03/22/24	100% CONSTRUCTION DOCS
MARK	DATE	DESCRIPTION
REVISIONS		
PROJECT NO:	Q89.003.002	
DATE:	JANUARY 2024	
DRAWN BY:	N. YOUNG	
DESIGNED BY:	B. PETERS, PE	
CHECKED BY:	B. PETERS, PE	
CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.		


TITLE 24  
COMPLIANCE

E002





**LIBBY LAKE LIGHTING PROJECT CIP23-00017, BLDG 24-00555  
504 CALLE MONTECITO, OCEANSIDE, CA 92057**

	04/15/24	100% CD - BACKCHECK #1
	03/22/24	100% CONSTRUCTION DOCS
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## SITE LAYOUT - NORTH

# E101

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### GENERAL NOTES

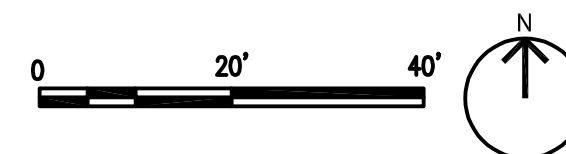
- A. NUMBERS ADJACENT TO LIGHTS AND HANDHOLES INDICATE CIRCUIT FROM PANELBOARD A.
  - B. VERIFY AND COORDINATE WITH CITY OF OCEANSIDE ENGINEERING DEPARTMENT EXACT ROUTING AND INSTALLATION OF ALL CONDUIT RUNS PRIOR TO START OF WORK. ALL NEW POLES SHALL BE INSTALLED AT A MINIMUM OF 24 INCHES FROM EDGE OF SIDEWALK.
- KEYED NOTES
1. PROVIDE REPLACEMENT HEAD TO EXISTING POLE PROTECTED IN PLACE. EXTEND AND RECONNECT EXISTING WIRING INSIDE LIGHT POLE TO REPLACEMENT LIGHT FIXTURE POLE HEAD.
  2. INTERCEPT EXISTING CIRCUIT IN EXISTING HANDHOLE, SPLICE AND EXTEND TO NEW POLE FIXTURE. PROVIDE 7/8" #10 & 1#10G AT 18" BFG TO NEW LIGHT POLE. REFER TO LIGHT POLE AND DUCT BANK DETAILS ON SHEET E501.
  3. PROVIDE NEW HANDHOLE PER DETAIL A5/E501 TO FACILITATE CONNECTION TO NEW LIGHT POLE.



These plans have been reviewed for general conformance with Industry Standards, federal, state and local laws, ordinances and standards and have been found to be acceptable. The Design Engineer or responsible person in charge is responsible for the design and all associated issues.

  
Brian K. Thomas, City Engineer 60907

May 14, 2024  
Date



<b>A1</b>	<b>SITE LAYOUT - SOUTH</b>
	SCALE: NOT TO SCALE



1 2 3 4 5

D

C

B

A



- GENERAL NOTES
- A. NUMBERS ADJACENT TO LIGHTS AND HANDHOLES INDICATE CIRCUIT FROM PANELBOARD A.
- KEYED NOTES
1. DISCONNECT AND REMOVE LIGHT FIXTURE HEAD FROM POLE. PROTECT AND MAINTAIN EXISTING WIRING INSIDE POLE FOR RECONNECTION. PROTECT LIGHT POLE IN PLACE.
  2. DISCONNECT AND REMOVE 2'X2' FIXTURES AND WALL-MOUNT FIXTURES FROM PAVILION (TYPICAL). MAINTAIN EXISTING CONDUIT AND WIRING FOR EXTENSION AND RECONNECTION TO NEW FIXTURES.
  3. APPROXIMATE LOCATION OF EXISTING STORM DRAIN.



**C&S**  
COMPANIES®

C&S Engineers, Inc.  
2355 Northside Drive  
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San Diego, California 92108  
Phone: 619-296-9373  
Fax: 619-296-0344  
www.cscos.com



LIBBY LAKE LIGHTING PROJECT CIP23-00017, BLDG 24-0055  
504 CALLE MONTECITO, OCEANSIDE, CA 92057

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REVISIONS			
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SITE DEMO LAYOUT  
- SOUTH

ED102

Mar 22, 2024 - 10:05am  
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Brian K. Thomas, City Engineer 60907

May 14, 2024  
Date



A1 SITE DEMO LAYOUT - SOUTH  
SCALE NOT TO SCALE





**LIBBY LAKE LIGHTING PROJECT CIP23-00017, BLDG 24-00555  
504 CALLE MONTECITO, OCEANSIDE, CA 92057**

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## SITE DEMO LAYOUT EAST

ED103

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GENERAL NOTES

A. NUMBERS ADJACENT TO LIGHTS AND HANDHOLES INDICATE CIRCUIT FROM PANELBOARD A.

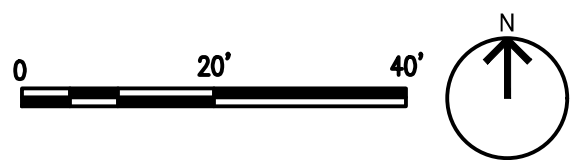
 **KEYED NOTES**

1. DISCONNECT AND REMOVE LIGHT FIXTURE HEAD FROM POLE. PROTECT AND MAINTAIN EXISTING WIRING INSIDE POLE FOR RECONNECTION. PROTECT LIGHT POLE IN PLACE.

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Brian K. Thomas, City Engineer 60907

May 14, 2024  
Date



<b>A1</b>	<b>SITE DEMO LAYOUT - EAST</b>
	SCALE: NOT TO SCALE





May 30, 2024 - 12:00pm  
P:\Project\Q89 - City of Oceanside, CA\Q89003002 - Libby Lake Lighting Improvements - Design\Design\CADD\Sheet Files\Q89003002\_Electrical.dwg




- GENERAL NOTES
- A. NUMBERS ADJACENT TO LIGHTS AND HANDHOLES INDICATE CIRCUIT FROM PANELBOARD A.
- B. VERIFY AND COORDINATE WITH CITY OF OCEANSIDE ENGINEERING DEPARTMENT EXACT ROUTING AND INSTALLATION OF ALL CONDUIT RUNS PRIOR TO START OF WORK. ALL NEW POLES SHALL BE INSTALLED AT A MINIMUM OF 24 INCHES FROM EDGE OF SIDEWALK.
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3. PROVIDE NEW HANDHOLE PER DETAIL A5/E501 TO FACILITATE CONNECTION TO NEW LIGHT POLE.

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www.cscos.com



LIBBY LAKE LIGHTING PROJECT CIP23-00017, BLDG 24-0055  
504 CALLE MONTECITO, OCEANSIDE, CA 92057

	04/15/24	100% CD - BACKCHECK #1
	03/22/24	100% CONSTRUCTION DOCS
MARK	DATE	DESCRIPTION
REVISIONS		
PROJECT NO:		Q89.003.002
DATE:		JANUARY 2024
DRAWN BY:		N. YOUNG
DESIGNED BY:		B. PETERS, PE
CHECKED BY:		B. PETERS, PE
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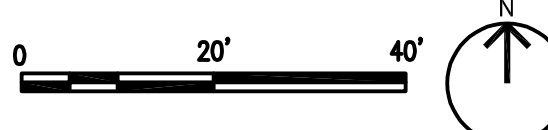
SITE LAYOUT - NORTH

E101

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Brian K. Thomas, City Engineer 60907

May 14, 2024  
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A1 SITE LAYOUT - SOUTH  
SCALE: NOT TO SCALE





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## SITE LAYOUT - SOUTH

E102


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GENERAL NOTES

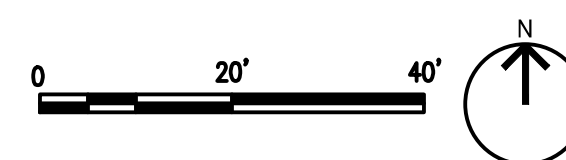
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  3. PROVIDE NEW HANDHOLE PER DETAIL A5/E501 TO FACILITATE CONNECTION TO NEW LIGHT POLE.
  4. EXTEND AND RECONNECT EXISTING CONDUIT AND WIRING TO NEW FIXTURES MOUNTED TO PAVILION 3/4"CH2#10 & 1#10G (TYPICAL).
  5. APPROXIMATE LOCATION OF EXISTING STORM DRAIN. COORDINATE ALL DIGGING IN THIS GENERAL AREA NOT TO DISTURB OR DAMAGE THE EXISTING PIPING.



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<b>A1</b>	<b>SITE LAYOUT - SOUTH</b>
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## SITE LAYOUT - EAST

E103

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### GENERAL NOTES

- A. NUMBERS ADJACENT TO LIGHTS AND HANDHOLES INDICATE CIRCUIT FROM PANELBOARD A.
- B. VERIFY AND COORDINATE WITH CITY OF OCEANSIDE ENGINEERING DEPARTMENT EXACT ROUTING AND INSTALLATION OF ALL CONDUIT RUNS PRIOR TO START OF WORK. ALL NEW POLES SHALL BE INSTALLED AT A MINIMUM OF 24 INCHES FROM EDGE OF SIDEWALK.

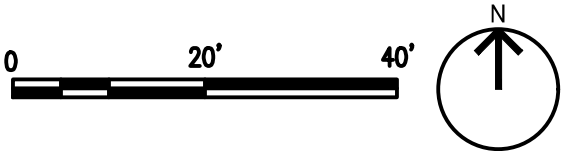
## KEYED NOTES

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May 14, 2024  
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<b>A1</b>	<b>SITE LAYOUT - EAST</b>
	SCALE: NOT TO SCALE



TYPE: EXISTING

SERVICE: 208Y/120 V 3 Ø,4 W

POLES: 18 PLUG ON

LOCATION:

A

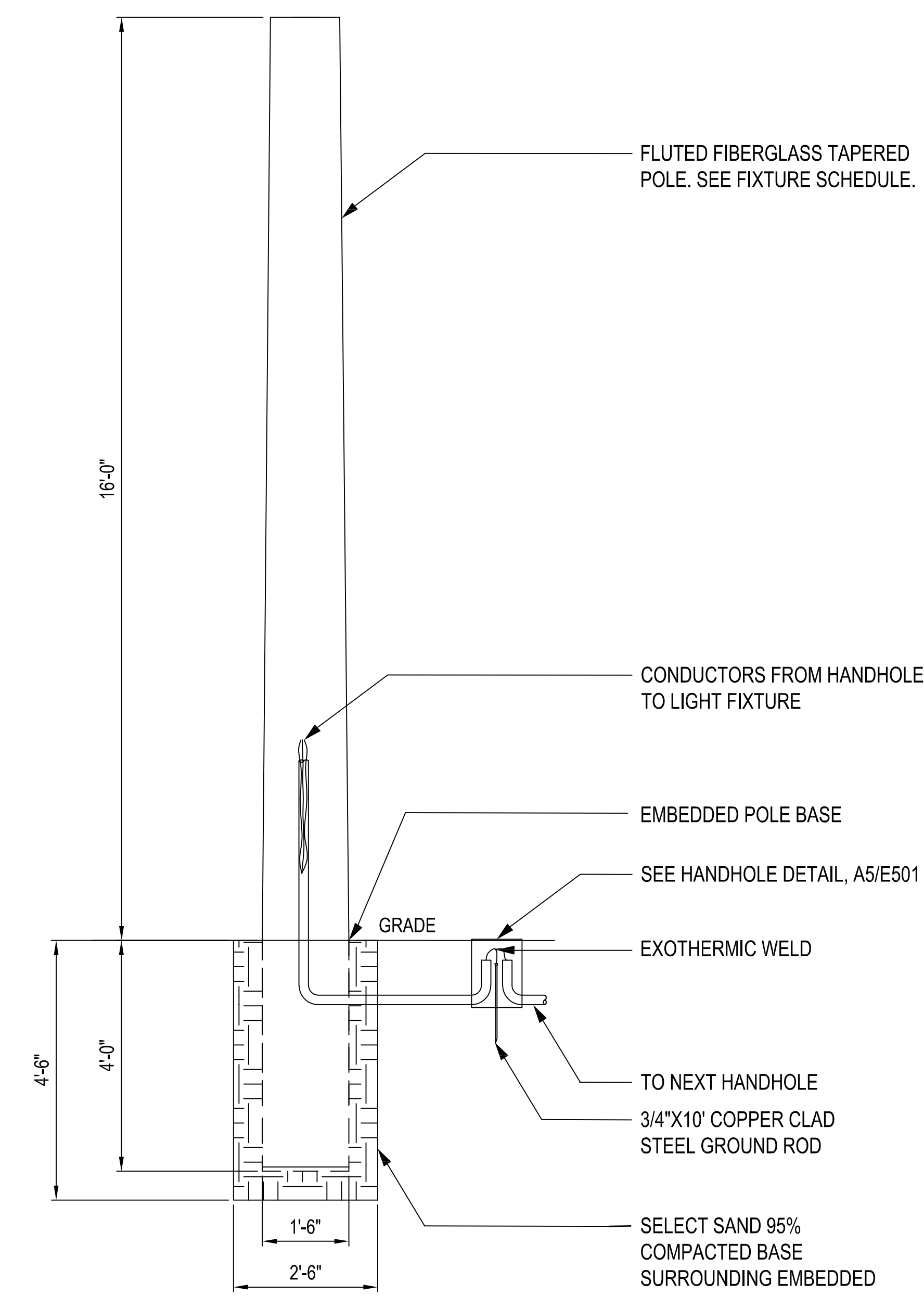
BUS: 100 AMP

MAINS: 100 A MCB

NEUTRAL: FULL

AIC: 10 KAIC

**	ØA	ØB	ØC				Load	CB	CKT	CB	Load				ØA	ØB	ØC	**	
1	0.9						EAST PARK LTG	20 /2	1 2	20 /2	TIMECLOCK				0.3				
1		0.9					-	-	3 4	-	-					0.3			
1	1.2						WEST PARK LTG	20 /2	5 6	20 /1	TIMECLOCK						0.3		
1		1.2					-	-	7 8										
									9 10										
									11 12										
									13 14										
									15 16										
									17 18										
**	DEMAND FACTORS AS NOTED					CIRCUIT BREAKER NOTES					LOAD SUMMARY					ØA	ØB	ØC	
1	LTG & CONTINUOUS LOAD					A - HACR CIRCUIT BREAKER					NON-CONTINUOUS LOAD					0.3	0.3	0.3	
2	RECEPTACLE LOAD					C- SOLENOID OPERATED CIRCUIT BREAKER					LIGHTING & CONTINUOUS LOAD					1.2	1.2		
3	MOTOR LOAD					G - GFI CIRCUIT BREAKER					RECEPTACLE LOAD								
4	KITCHEN EQUIPMENT LOAD					L - TO BE LOCKABLE IN OPEN POSITION					MOTOR LOAD								
5	SUBPANEL FEED AT 100%					N - INSTALL NEW CB IN EXISTING PANEL					KITCHEN EQPT LOAD								
NOTES:											TOTAL KVA					1.4	1.4	0.3	
											TOTAL AMPS					12	12	2	
											TOTAL LOAD (KVA)							3	



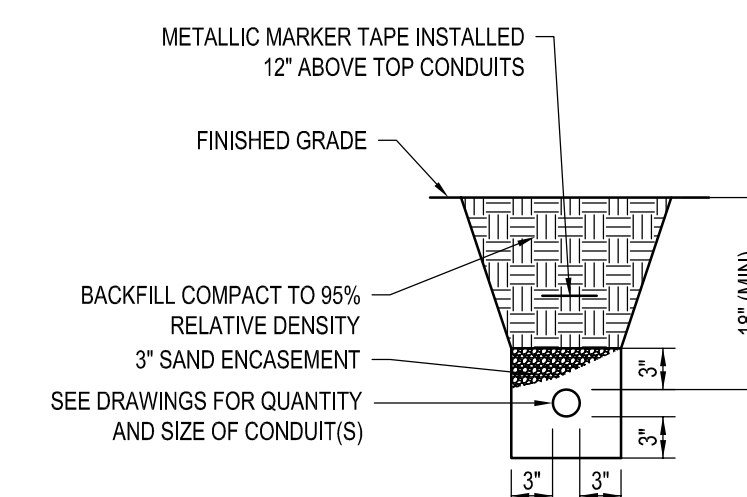
NOTE:  
PORTLAND CEMENT CONCRETE TO MEET SPECIFICATIONS SHOWN IN TABLE 200-1.5.5  
FROM THE CITY OF SAN DIEGO THE "WHITEBOOK" TO BE USED FOR EMBEDDED POLE  
FOUNDATION. REFER TO CALC PACKAGE FOR COMPLIANCE WITH CBC 1807.3

<b>C1</b>	<b>PANELBOARD SCHEDULE</b>
-----------	----------------------------

SCALE: NOT TO SCALE

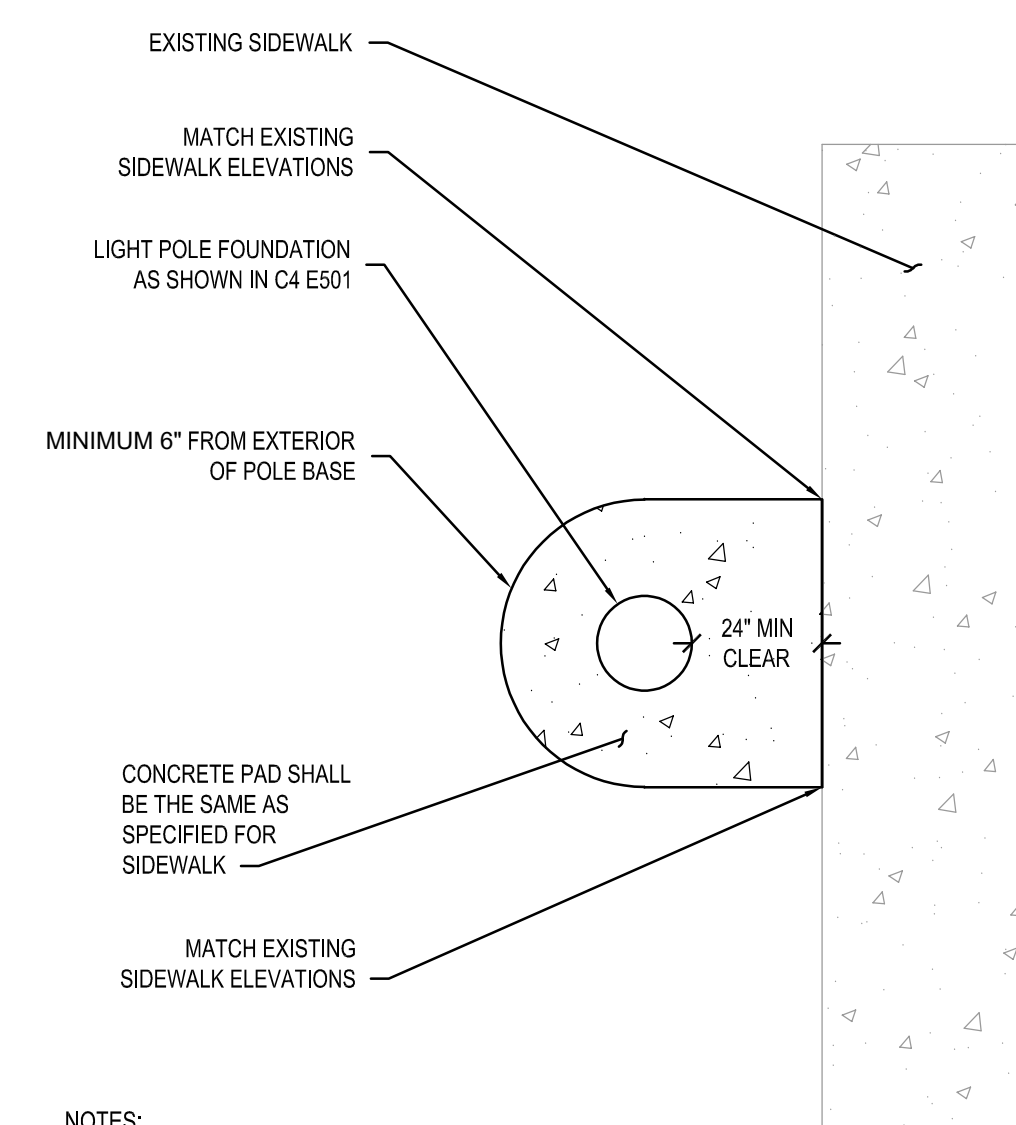
C4	LIGHT POLE DETAIL
----	-------------------

SCALE: NOT TO SCALE



<b>B4</b>	<b>UNDERGROUND DUCT BANK DETAIL</b>
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SCALE: NOT TO SCALE

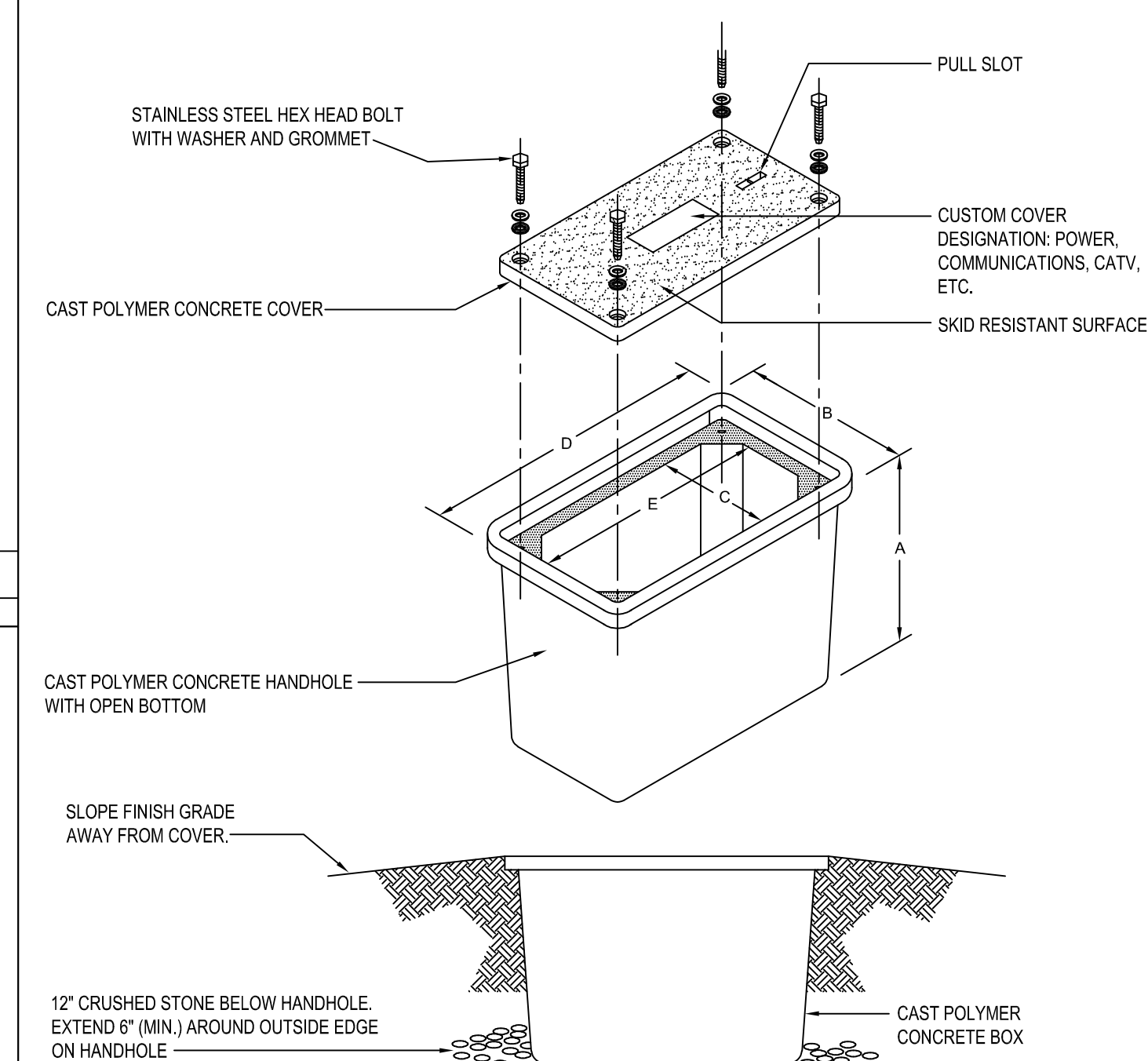


NOTES:

1. USE MONOLITHIC PLACEMENT FOR NEW CONSTRUCTION
2. POLE PADS SHALL DRAIN AT 1.5% MINIMUM IN SAME DIRECTION AS SIDEWALK

<b>A4</b>	<b>LIGHT POLE APRON FOR FIXTURE TYPE P2-N</b>
-----------	---

SCALE: NOT TO SCALE



DIMENSION SCHEDULE					
HANDHOLE TYPE	DIMENSION				
	A	B	C	D	E
HH	12"	12"	10"	20"	18"

## GENERAL NOTE

A. DO NOT LOCATE IN VEHICULAR TRAFFIC OR SIDEWALK AREAS.

<b>A5</b>	<b>HANDHOLE DETAIL</b>
-----------	------------------------

SCALE: NOT TO SCALE



**C&S**  
COMPANIES®

**C&S Engineers, Inc.**  
2355 Northside Drive  
Suite 350  
San Diego, California 92108  
Phone: 619-296-9373  
Fax: 619-296-0344  
[www.cscos.com](http://www.cscos.com)



4/15/2024

**LIBBY LAKE LIGHTING PROJECT CIP23-00017, BLDG 24-0055  
504 CALLE MONTECITO, OCEANSIDE, CA 92057**

	03/22/24	100% CONSTRUCTION DOCS
MARK	DATE	DESCRIPTION
REVISIONS		
PROJECT NO:		Q89.003.002
DATE:		JANUARY 2024
DRAWN BY:		N. YOUNG
DESIGNED BY:		B. PETERS, PE
CHECKED BY:		B. PETERS, PE
NOTIFIER SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.		

## DETAILS AND SCHEDULES

**E501**



Project Number: Q89.003.002  
Project Name: Libby Lake Lighting Improvements  
Date: April 15, 2024 Backcheck #1

## Direct Embed Light Pole Structural Design

PREPARED BY:



LICENSED ENGINEER:



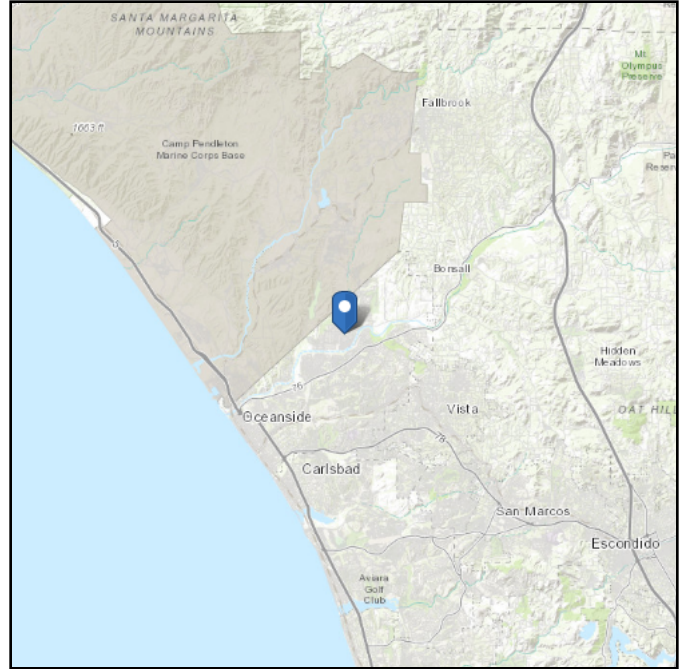
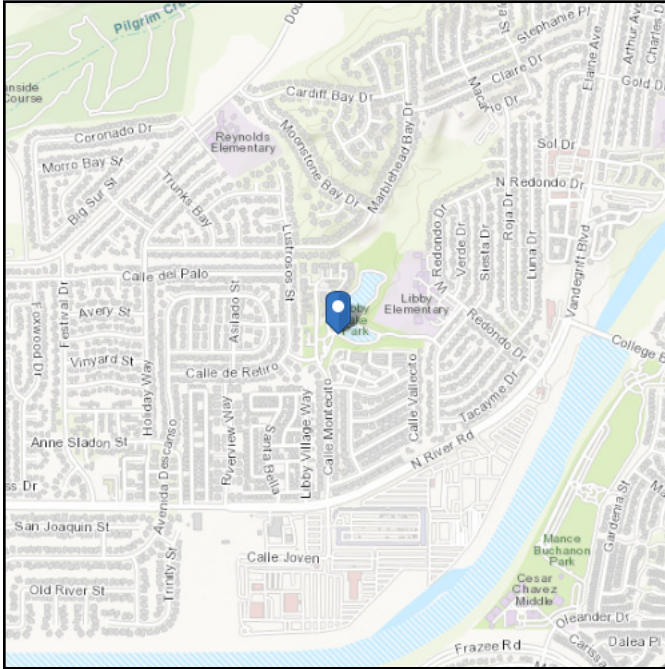


# ASCE Hazards Report

**Address:**  
No Address at This Location

**Standard:** ASCE/SEI 7-16  
**Risk Category:** II  
**Soil Class:** D - Default (see Section 11.4.3)

**Latitude:** 33.250393  
**Longitude:** -117.308373  
**Elevation:** 61.22384054512084 ft (NAVD 88)



## Wind

### Results:

Wind Speed	96 Vmph
10-year MRI	67 Vmph
25-year MRI	72 Vmph
50-year MRI	77 Vmph
100-year MRI	82 Vmph

**Data Source:** ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

**Date Accessed:** Thu Feb 22 2024

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.



**Site Soil Class:** D - Default (see Section 11.4.3)

**Results:**

$S_S$ :	0.923	$S_{D1}$ :	N/A
$S_1$ :	0.342	$T_L$ :	8
$F_a$ :	1.2	$PGA$ :	0.399
$F_v$ :	N/A	$PGA_M$ :	0.479
$S_{MS}$ :	1.108	$F_{PGA}$ :	1.201
$S_{M1}$ :	N/A	$I_e$ :	1
$S_{DS}$ :	0.738	$C_v$ :	1.262

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

**Data Accessed:** Thu Feb 22 2024

**Date Source:** [USGS Seismic Design Maps](#)



## WIND LOAD PARAMETERS

Risk Category = II

Wind Speed  $\bar{V} := 96 \text{ mph}$

Wind Directionality Factor  $K_d := 1.0$

Exposure Cat = C

Topographic Factor  $K_{zt} := 1.0$

Ground Elevation Factor  $K_e := 1.0$

Gust-effect Factor  $G := 0.85$

Velocity Pressure Coefficient (Varies with Height. See ASCE7-16 Table 26.10-1)

$$K_z := 1$$

Velocity Pressure

$$q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot K_e \cdot V^2 = 23.593 \text{ psf}$$

$$\bar{H} := 16 \text{ ft} \quad D := 1.5 \text{ ft}$$

$$\frac{H}{D} = 10.667 \quad D \cdot \sqrt{q_z} = 7.286 \text{ ft} \quad \text{Which is } > \text{ than } 2.5$$

If Assumed Circular  
Under "Very Rough"  
Condition

$$C_f := 1 + \frac{1.2 - 1}{25 - 7} \cdot \left( \frac{H}{D} - 7 \right) = 1.041$$

If Assumed Circular  
Under "Moderately  
Smooth" Condition

$$C_{f2} := 0.6 + \frac{0.7 - 0.6}{25 - 7} \cdot \left( \frac{H}{D} - 7 \right) = 0.62$$

Diameter of Light Pole  $D = 1.5 \cdot \text{ft}$

0.14"/foot Taper  $D_{\text{top}} := D - (0.14 \cdot 16) \text{ in} = 1.313 \cdot \text{ft}$

Area of Light Pole  $A_{\text{Pole}} := \frac{D_{\text{top}} + D}{2} \cdot H = 22.507 \cdot \text{ft}^2$

Area of Light Fixture  $A_{\text{Fixture}} := 23.81 \text{ in} \cdot 16.06 \text{ in} = 2.655 \cdot \text{ft}^2$



Wind Pressure on Pole

$$P_{\text{Pole}} := (q_z \cdot G \cdot C_{f2} \cdot A_{\text{Pole}}) \frac{\text{lbf}}{\text{ft}^2} = 280 \cdot \text{lbf}$$

Wind Pressure on Fixture

$$P_{\text{Fixture}} := (q_z \cdot G \cdot C_{f2} \cdot A_{\text{Fixture}}) \frac{\text{lbf}}{\text{ft}^2} = 33 \cdot \text{lbf}$$

$$L_{\text{Fixture}} := 16 \text{ft}$$

$$L_{\text{Pole}} := 8 \text{ft}$$

Need to Find Resultant for Wind Load

$$P_{\text{Pole}} + P_{\text{Fixture}} = 313.04 \cdot \text{lbf}$$

$$\frac{P_{\text{Pole}}}{P_{\text{Fixture}}} = 8.476 \qquad \frac{P_{\text{Fixture}}}{P_{\text{Pole}}} = 0.118$$

$$(L_{\text{Fixture}} - L_{\text{Pole}}) \cdot 0.118 = 0.944 \cdot \text{ft}$$

$$L_{\text{total}} := L_{\text{Pole}} + 1 \text{ft} = 9 \cdot \text{ft}$$



To find  $C_f$  use ASCE 7-16, figure 29.4-1 (as shown below)

FIGURE 29.4-1 Other Structures (All Heights): Force Coefficients,  $C_f$ , for Chimneys, Tanks, and Similar Structures

**Force Coefficients,  $C_f$**

Cross Section	Type of Surface	$h/D$		
		1	7	25
Square (wind normal to face)	All	1.3	1.4	2.0
Square (wind along diagonal)	All	1.0	1.1	1.5
Hexagonal or octagonal	All	1.0	1.2	1.4
Round, $D\sqrt{q_z} > 2.5$	Moderately smooth	0.5	0.6	0.7
$D\sqrt{q_z} > 5.3$ (in S.I.)	Rough ( $D'/D = 0.02$ )	0.7	0.8	0.9
	Very rough ( $D'/D = 0.08$ )	0.8	1.0	1.2
Round, $D\sqrt{q_z} \leq 2.5$	All	0.7	0.8	1.2
$D\sqrt{q_z} \leq 5.3$ (in S.I.)				

**Notation**

- $D$  = Diameter of circular cross section and least horizontal dimension of square, hexagonal, or octagonal cross sections at elevation under consideration, in ft (m)  
 $D'$  = Depth of protruding elements such as ribs and spoilers, in ft (m)  
 $h$  = Height of structure, in ft (m)  
 $q_z$  = Velocity pressure evaluated at height  $z$  above ground, in lb/ft<sup>2</sup> (N/m<sup>2</sup>).

**Notes**

- The design wind force shall be calculated based on the area of the structure projected on a vertical plane normal to the wind direction.  
The force shall be assumed to act parallel to the wind direction.
- Linear interpolation is permitted for  $h/D$  values other than shown.

EPA of Fixture and Pole Obtained from Manufacturer Information

$$EPA_{\text{Fixture}} := 1.4\text{ft}^2$$

$$EPA_{\text{Pole}} := \left[ 8.2 + \frac{10.7 - 8.2}{100 - 90} \cdot (96 - 90) \right] \cdot \text{ft}^2 = 9.7 \cdot \text{ft}^2$$

$$EPA := \begin{cases} \text{"OK"} & \text{if } EPA_{\text{Pole}} > EPA_{\text{Fixture}} \\ \text{"NG"} & \text{if } EPA_{\text{Pole}} < EPA_{\text{Fixture}} \end{cases} = \text{"OK"}$$

Dead Load

Tower of 16ft = 90lbs



## DIRECT EMBED CALCULATION

NONCONSTRAINED CONDITION - 1807.3.2.1

Assumed a Max Embedment  
Depth,  $h_d$

$$h_d := 4$$

DEPTH OF REQUIRED EMBEDMENT

$$\text{Wind} := 0.314 \text{ kip}$$

Assumed Sand, Silty Sand,  
Clayey Sand, Silty Gravel  
and Clayey Gravel

$$P_a := 150 \text{ psf}$$

$d$  = depth

$$\text{Diameter of Pole} \quad b := 1.5 \text{ ft}$$

$$\text{Distance to Applied Load} \quad h := 9 \text{ ft}$$

$$\text{Applied Lateral Force (ASD)} \quad P := 0.6 \text{ Wind} = 0.188 \text{ kip}$$

$$\text{Soil Bearing Capacity} \quad P_p := h_d \cdot (P_a \cdot 2) = 1.2 \text{ ksf}$$

$$\text{Soil Bearing Capacity at } 1/3 \text{ Depth} \quad S_1 := \frac{P_p}{3} = 0.4 \text{ ksf}$$

$$\text{Allowable Lateral Soil Bearing} \quad S_1 = 0.4 \text{ ksf}$$

$$A := \frac{2.34 \cdot P}{(S_1 \cdot b)} = 0.735 \text{ ft}$$

$$d := 0.5 \cdot A \cdot \left[ 1 + \left[ 1 + \left( \frac{4.36 \cdot h}{A} \right)^2 \right]^{\frac{1}{2}} \right] = 3.077 \text{ ft}$$

EMBEDMENT DEPTH

$$d = 3.077 \text{ ft}$$

Use 4ft

**TABLE 1806.2 PRESUMPTIVE LOAD-BEARING VALUES**

CLASS OF MATERIALS	VERTICAL FOUNDATION PRESSURE (psf)	LATERAL BEARING PRESSURE (psf/ft below natural grade)	LATERAL SLIDING RESISTANCE	
			Coefficient of friction <sup>a</sup>	Cohesion (psf) <sup>b</sup>
1. Crystalline bedrock	12,000	1,200	0.70	—
2. Sedimentary and foliated rock	4,000	400	0.35	—
3. Sandy gravel and gravel (GW and GP)	3,000	200	0.35	—
4. Sand, silty sand, clayey sand, silty gravel and clayey gravel (SW, SP, SM, SC, GM and GC)	2,000	150	0.25	—
5. Clay, sandy clay, silty clay, clayey silt, silt and sandy silt (CL, ML, MH and CH)	1,500	100	—	130

For SI: 1 pound per square foot = 0.0479 kPa, 1 pound per square foot per foot = 0.157 kPa/m.

a. Coefficient to be multiplied by the dead load.

b. Cohesion value to be multiplied by the contact area, as limited by Section 1806.3.2.



## Decorative Lamp Post - CF50 / Base D7M

- Fluted, tapered composite pole
- Direct embedded and anchor base models
- XTREME® elastomeric urethane base cover

### Ordering Information: Sample Catalog Number Logic

	B	C	D	E	F
<b>CF50-D7M</b>	12	AB	BLK	30	RC
<b>CF50-D7M</b>	15	DE	WHT	40	•
Pole and Base Design	Above Grade Height	Installation Method	Color	Tenon O.D.	Options

#### B Above Grade Height

Cat No.	Description
<b>6</b>	6 feet /1.8 M
<b>7</b>	7 feet /2.1 M
<b>8</b>	8 feet /2.4 M
<b>9</b>	9 feet /2.7 M
<b>10</b>	10 feet /3.0 M
<b>11</b>	11 feet /3.4 M
<b>12</b>	12 feet /3.7 M
<b>13</b>	13 feet /4.0 M
<b>14</b>	14 feet /4.3 M
<b>15</b>	15 feet /4.6 M
<b>16</b>	16 feet /4.9 M
<b>17</b>	17 feet /5.2 M

#### C Installation Method

Cat No.	Description
<b>DE</b>	Direct Embedded
<b>AB</b>	Anchor Base

#### D Color

Cat No.	Description
<b>BLK</b>	Black
<b>DBZ</b>	Dark Bronze
<b>DGR</b>	Dark Green
<b>SLV</b>	Silver
<b>WHT</b>	White
<b>GRY</b>	Grey
<b>CC</b>	Custom Color - Please provide a min. 3" x 3" color chip.
<b>RAL</b>	Please provide a four digit RAL color number.

#### E Tenon O.D. (Outside Diameter)

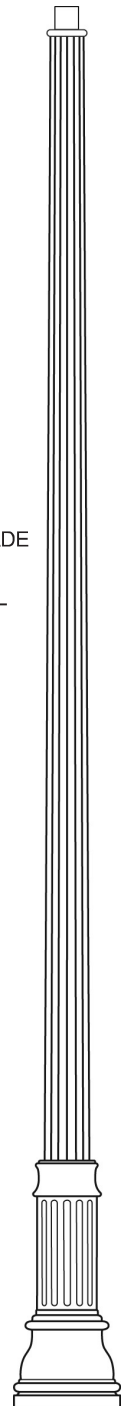
Cat No.	Description
<b>30</b>	3" (76 mm) O.D.
<b>40</b>	4" (102 mm) O.D.
<b>99</b>	Custom Tenon O.D.

- For other tenon sizes contact the factory.

#### F Options

Cat No.	Description
<b>RC</b>	Receptacle housing and a NEC-approved cover with 15A GFCI receptacle. Standard location is 12"/305 mm below the top of the pole.

- Other accessories are shown on the Accessories specification sheet.



ABOVE GRADE  
HEIGHT  
17' MODEL  
SHOWN

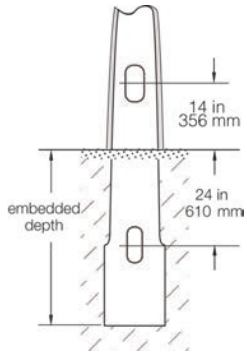
HEIGHT: 42"/1067 mm

BASE DIAMETER: 18"/457 mm



## CF50-D7M Fluted, tapered composite pole shaft

### Direct Embedded - DE



Shaft Length	Embedded Depth
6 to 13 ft	3 ft / .91 M
14 to 17 ft	4 ft / 1.2 M

\* Embedded depths may vary per local codes, site soil conditions, drainage and very high wind conditions.

### Specifications

#### POLE SHAFT

The CF50 pole shaft shall be round tapered with 16 flutes and a .14"/3.6 mm per foot taper. The hand hole shall be 2.5"/64 mm x 5"/127 mm with a cover. The shaft shall be constructed using an advanced resin transfer manufacturing process to produce an ornamental pole with extremely precise detail on the shaft flutes. The shaft shall be non-conductive and chemically inert. The fluting extends to the end of the pole and on embedded-type post shall serve as a resistance to rotation.

#### PERFORMANCE CRITERIA

The post shall be designed with a minimum safety factor of 1.5:1 and have no more than a 15% deflection at full wind loading. The post shall deflect no more than 2.5% of the above grade length with 100 lbs of lateral top load (stiffness). Poles shall be tested and rated per ANSI C136.20-2012.

#### DIRECT EMBEDDED INSTALLATION

Direct embedded poles shall have two 2.5 inch (64 mm) diameter holes at 180 degrees for conduit entrance 24 inches (610 mm) below finished grade. Embedded depths may vary per local codes, site soil conditions, drainage and very high wind conditions.

#### ANCHOR BASE

Anchor bases shall be constructed of hot dipped galvanized steel. The base shall be factory bonded to the post. The anchor base shall have four holes at ninety degrees, accommodating a bolt circle as indicated by the chart.

#### POST TOP

A painted aluminum or galvanized steel tenon shall be factory bonded to the pole for mounting a post-top luminaire or arm.

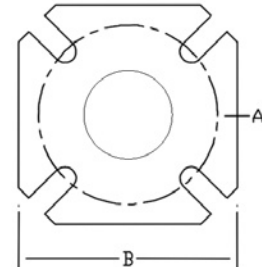
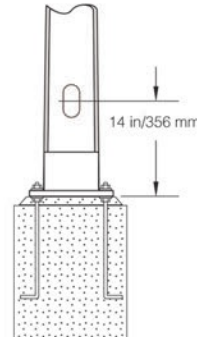
#### FINISH

The surface of the pole shall be uniform and consistent for the entire length of the post. A UV-resistant catalyzed urethane coating shall be extremely durable and retains its gloss after a 5000 hour exposure test per ASTM G154, with no dulling or chalking of the surface.

#### ORNAMENTAL BASE COVER

The ornamental decorative base cover shall be one or two piece and constructed of a proprietary elastomeric urethane and finished to match the post. The base shall be corrosion free and extremely resistant to impact and chipping.

### Anchor Base Installation - AB



Shaft Length	Bolt Circle (A)	Base Plate Size (B)	Anchor Bolts
6' - 17' (1.8 M to 5.2 M)	9" - 11" (229 mm - 279 mm)	10" (254 mm)	3/4" x 30"

### Wind Loading Data

		WIND SPEED (MPH) WITH 3 SECOND GUST FACTOR							
Cat No.	Description	WT	90	100	110	120	130	140	150
6	6 feet/1.8 M	55	11.9	9.4	7.5	6.1	5.0	4.2	3.6
7	7 feet/2.1 M	58	11.9	9.4	7.5	6.1	5.0	4.2	3.6
8	8 feet/2.4 M	61	11.9	9.4	7.5	6.1	5.0	4.2	3.6
9	9 feet/2.7 M	64	11.9	9.4	7.5	6.1	5.0	4.2	3.5
10	10 feet/3.0 M	67	11.9	9.4	7.5	6.1	5.0	4.2	3.5
11	11 feet/3.4 M	70	11.9	9.4	7.4	6.0	4.9	4.1	3.4
12	12 feet/3.7 M	75	11.9	9.3	7.4	5.9	4.8	4.0	3.3
13	13 feet/4.0 M	78	11.9	9.2	7.3	5.8	4.7	3.9	3.2
14	14 feet/4.3 M	82	11.8	9.1	7.1	5.7	4.6	3.7	3.1
15	15 feet/4.6 M	86	11.7	9.0	7.0	5.6	4.5	3.6	3.0
16	16 feet/4.9 M	90	10.7	8.2	6.3	5.0	4.0	3.2	2.6
17	17 feet/5.2 M	95	10.4	7.9	6.1	4.8	3.8	3.0	2.4

Wind speed values are for a 3 second gust per ASCE. Calculated per ANSI C136.20-2012. Assumes load 12 inches above the pole top. Safety factor = 1.5:1. Maximum weight for tenon mount is 100 lbs. Contact factory for AASHTO or specific local codes.





\* Arm Mount



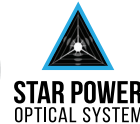
\* Wall Mount

**LED WATTAGE CHART**

	32L	48L	64L
350 milliamps	-	51w	66w
530 milliamps	-	80w	102w
700 milliamps	71w	104w	137w
1050 milliamps	106w	156w	205w

The beautiful and simple California Series LED Pedestrian Luminaires depict not only the California lifestyle, but the architecture of California as well. This ornamental piece is a delightful sight to see and a great model to illuminate any urban, rural, retail, or park, or campus setting.

The different caps and shades depict different California styles and a touch of California's historic Spanish mission era. The California Series is the perfect selection to combine both design and efficiency in light performance. Designed, tooled, manufactured and assembled in the USA.



**STAR POWER™ OPTICAL SYSTEM**

The Star Power™ reflector is an excellent system which provides great value and performance. Star Power Patent number: 10168023

**BUY AMERICAN**

To ensure the latest BAA/TAA/BABA Standards are being met, please select BAA, TAA, or BABA in the options section. Please contact the factory before placing an order for any NLS products requesting BAA (Buy American Act), TAA (Trade American Act), or BABA (Build America, Buy America).



Project Name:

Type:

## CAL-1 ORDERING GUIDE

Cat#	Top	Shade	Light Dist.	No. of LEDs	Milliamps
California Small 25" Diameter (CAL-1)	Top 1 (TP1)	Shade 1 (S1)	Type 2 (T2)	32 (32L)	350 (35) <sup>①</sup>
	Top 2 (TP2)	Shade 2 (S2)	Type 3 (T3)	48 (48L)	530 (53) <sup>①</sup>
	Top 3 (TP3)	Shade 4 (S4)	Type 4 (T4)	64 (64L)	700 (7)
		Shade 5 (S5)	Type 5 (T5)		1050 (1)
		Shade 6 (S6)			
		Shade 7 (S7)			
		Shade 8 (S8)			
Kelvin	Volts	Mounting	Color	Controls	Options
Amber 585-600nm (AMBER) <sup>②①</sup>	120-277 (UNV)	Arm Mount (AM) <sup>③</sup>	Bronze Textured (BRZ)	Button Photocell (PC) <sup>⑤</sup>	House Side Shield (HSS)
2700K, 70 CRI (27K7) <sup>⑦</sup>	347-480 (HV)	Wall Mount (WM) <sup>③</sup>	White Textured (WHT)	Nema 7-Pin Receptacle (PE7) <sup>⑥</sup>	Bird Spikes (BS)
2700K, 80 CRI (27K8) <sup>②⑦</sup>		Architectural Arm Wall Mount (AAWM) <sup>③</sup>	Smooth White Gloss (SWT)	Photocell + Receptacle (PCR) <sup>⑤</sup>	Marine Grade Finish (MGF)
3000K, 70 CRI (30K7) <sup>⑦</sup>			Silver (SVR)	Receptacle + Shorting Cap (PER) <sup>⑤</sup>	Frosted Lens (FL) <sup>⑤</sup>
3000K, 80 CRI (30K8) <sup>②⑦</sup>			Black Textured (BLK)	FSP-211 with Motion Sensor (UNV Voltage) (FSP-8) <sup>⑤</sup>	Buy American (BAA) <sup>②</sup>
3500K, 80 CRI (35K8)			Smooth Black Gloss (SBK)	*8' and Below (FSP-20) <sup>⑤</sup>	Trade American (TAA) <sup>②</sup>
4000K, 70 CRI (40K7)			Graphite Textured (GPH)	*9'-20' Heights (FSP-40) <sup>⑤</sup>	Build America Buy American (BABA) <sup>②</sup>
4000K, 80 CRI (40K8) <sup>②</sup>			Grey Textured (GRY)	*21'-40' Heights	
5000K, 70 CRI (50K7)			Green (GRN)	Custom Controls Integration (CCI) <sup>⑩</sup>	
5000K, 80 CRI (50K8) <sup>②</sup>			Custom (CS)		

### Notes:

- ① 48L-64L Only
- ② Consult Factory for Lead Time. Consult Factory for 90 CRI Requests.
- ③ For Arm Mount, please select an Architectural Arm (AA) separately.
- ④ Universal Voltage 120-277
- ⑤ Only compatible with Arm Mount Arch Arms: 2, 3, 7-11, 13-18
- ⑥ 48L option only, using IK-10 rated Silicone Optics
- ⑦ 3000K or lower must be selected to meet International Dark Sky Association certification.
- ⑧ For AAWM, please select an Architectural arm (AA) separately.
- ⑨ Consult Factory.
- ⑩ Please contact Factory for Custom Control Integration requests (nLight, NX, WaveLinx, Crestron, DMX/RDM, Synapse, Casambi, Dali II, or other control systems)
- ⑪ Turtle Safe
- ⑫ Consult factory for all BAA/TAA/BABA requests



701 Kingshill Place, Carson, CA 90746  
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nslighting.com



## PRODUCT SPECIFICATIONS

### HOUSING

Heavy Duty Marine Grade Cast and Spun Aluminum with 4 shade options and 3 cap options

### ELECTRICAL

- 120-277 Volts (UNV) or 347-480 Volts (HV)
- 0-10V dimming driver
- Driver power factor at maximum load is  $\geq .95$ , THD maximum load is 15%
- LED Drivers Ambient Temp. Min is  $-40^{\circ}\text{C}$  and Ambient Temp. Max ranges from  $50^{\circ}\text{C}$  to  $55^{\circ}\text{C}$  and, in some cases, even higher. Consult the factory for revalidation by providing the fixture catalog string before quoting and specifying it.
- All internal wiring UL certified for 600 VAC and  $105^{\circ}\text{C}$
- CRI 70, 80 or 90
- Color temperatures: Amber, 2700K, 3000K, 3500K, 4000K, 5000K
- Surge Protection: 20KA supplies as standard.

### OPTIONS

- **BIRD SPIKES (BS)**—offers effective and humane deterrent for larger bird species and provides cost-effective long-term solution to nuisance bird infestations..
- **MARINE GRADE FINISH (MGF)**—A multi-step process creating protective finishing coat against harsh environments.
  - Chemically washed in a 5 stage cleaning system.
  - Pre-baked
  - Powder coated 3-5 mils of Zinc Rich Super Durable Polyester Primer.
  - 1-2 feet inside pole coverage top and bottom.
  - Oven Baked.
  - Finished Powder Coating of Super Durable Polyester Powder Coat 3-5 mil thickness.
- **SHIELDS (HSS)**—House Side Shield (HSS) is designed for full property line cut-off.

### CONTROL OPTIONS

- FSP-211 (FSP-X) - Passive infrared (PIR) sensor providing multi-level control based on motion/daylight contribution.
- All control parameters adjustable via wireless configuration remote storing and transmitting sensor profiles.
- FSP-20 mounting heights 9-20 feet
- FSP-40 mounting heights 21-40 feet.
- Includes 5 dimming event cycles, 0-10V dimming with motion sensing, re-programmable in the field.
- FSIR-100 commissioning remote is required to change sensor settings. Please contact factory for ordering.
- Controls Agnostic: Please contact factory for your preferred controls option. (nLight, NX, WaveLinx, Crestron, DMX/RDM, Synapse, Casambi, Dali II, or other control systems)
- **NEMA 7-PIN RECEPTACLE (PE7)**—An ANSI C136.41-2013 receptacle provides electrical and mechanical interconnection between photo control cell and luminaire. Dimming receptacle available two or four dimming contacts supports 0-10 VDC dimming methods or Digital Addressable Lighting Interface (DALI), providing reliable power interconnect.
- **PHOTOCELL + RECEPTACLE (PCR)**—7-Pin Receptacle and Electronic Twist Lock Photocell for dusk to dawn operation.
- **RECEPTACLE + SHORTING CAP (PER)**—7-Pin Receptacle and Shorting Cap.

### FINISH

5 mils Powder Coat

### WARRANTY

Standard Warranty is 5 years for Driver and LEDs

### LISTINGS

UL 1598 Listed  
IDA Dark Sky Approved

### BUY AMERICAN OPTION

While all of the NLS Lighting products listed in this document qualify for the Buy America(n) Act of 1933, we reserve the right to change our listings without notice.

The information provided above is for general informational purposes only. We encourage you to consult legal professionals for advice particular to your projects concerning BAA, TAA, BABA or Buy America.

Additional NLS Products that meet BAA, TAA standards can be found at the following link:

[https://nslighting.com/wp-content/uploads/cs/NLS\\_BuyAmerica\(n\).pdf](https://nslighting.com/wp-content/uploads/cs/NLS_BuyAmerica(n).pdf)



The information and specifications on this document are subject to change without any notification. All values are design, nominal, typical or prorated values when measured under internal and external laboratory conditions.



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# PRODUCT SPECIFICATIONS

PART NUMBER	T2 LUMENS	LM/W	T3 LUMENS	LM/W	T4 LUMENS	LM/W	T5 LUMENS	LM/W	Watts
CAL-1-32L-7-30K7	7242	102	7313	103	7384	104	7100	100	71
CAL-1-32L-7-40K7	7526	106	7597	107	7597	107	7313	103	71
CAL-1-32L-7-50K7	7952	112	7881	111	7952	112	7526	106	71
CAL-1-32L-1-30K7	10812	102	10918	103	11024	104	10600	100	106
CAL-1-32L-1-40K7	11236	106	11342	107	11342	107	10918	103	106
CAL-1-32L-1-50K7	11872	112	11766	111	11872	112	11236	106	106
CAL-1-48L-35-30K7	5202	102	5304	104	5406	106	5151	101	51
CAL-1-48L-35-40K7	5406	106	5508	108	5661	111	5355	105	51
CAL-1-48L-35-50K7	5610	110	5712	112	5865	115	5457	107	51
CAL-1-48L-53-30K7	8160	102	8320	104	8480	106	8080	101	80
CAL-1-48L-53-40K7	8480	106	8640	108	8880	111	8400	105	80
CAL-1-48L-53-50K7	8800	110	8960	112	9200	115	8560	107	80
CAL-1-48L-7-30K7	10608	102	10816	104	11024	106	10504	101	104
CAL-1-48L-7-40K7	11024	106	11232	108	11544	111	10920	105	104
CAL-1-48L-7-50K7	11440	110	11648	112	11960	115	11128	107	104
CAL-1-48L-1-30K7	15912	102	16224	104	16536	106	15756	101	156
CAL-1-48L-1-40K7	16536	106	16848	108	17316	111	16380	105	156
CAL-1-48L-1-50K7	17160	110	17472	112	17940	115	16692	107	156
CAL-1-64L-35-30K7	6732	102	6864	104	6996	106	6666	101	66
CAL-1-64L-35-40K7	6996	106	7128	108	7326	111	6930	105	66
CAL-1-64L-35-50K7	7260	110	7392	112	7590	115	7062	107	66
CAL-1-64L-53-30K7	10404	102	10608	104	10812	106	10302	101	102
CAL-1-64L-53-40K7	10812	106	11016	108	11322	111	10710	105	102
CAL-1-64L-53-50K7	11220	110	11424	112	11730	115	10914	107	102
CAL-1-64L-7-30K7	13974	102	14248	104	14522	106	13837	101	137
CAL-1-64L-7-40K7	14522	106	14796	108	15207	111	14385	105	137
CAL-1-64L-7-50K7	15070	110	15344	112	15755	115	14659	107	137
CAL-1-64L-1-30K7	20910	102	21320	104	21730	106	20705	101	205
CAL-1-64L-1-40K7	21730	106	22140	108	22755	111	21525	105	205
CAL-1-64L-1-50K7	22550	110	22960	112	23575	115	21935	107	205

3000k or warmer must be selected to meet International Dark-Sky Association certification.

Lumen Maintenance Data							
Ambient Temperature	Drive Current	L90 Hours*	L70 Hours**	30,000 Hours*	50,000 Hours*	60,000 Hours*	100,000 Hours**
25°C	Up to 700mA	58,000	173,000	95.7%	91.6%	89.6%	82.1%
	1050mA	48,000	143,000	94.3%	89.5%	87.2%	78.5%

\*Reported extrapolations per IESNA TM-21

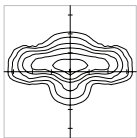
\*\*Projected extrapolations per IESNA TM-21

<b>EPA</b>	<b>CAL-1</b>
<b>Single</b>	1.4

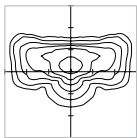
## OPTICS

Star Power T2, T3, T4 and T5

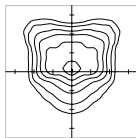
- IES Types



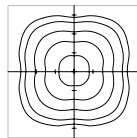
TYPE II (T2)



TYPE III (T3)



TYPE IV (T4)



TYPE V (T5)



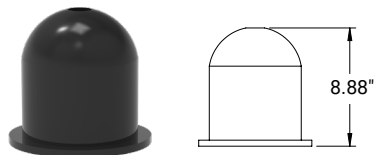
# PRODUCT SPECIFICATIONS

## PRODUCT CONFIGURATION

### TOPS

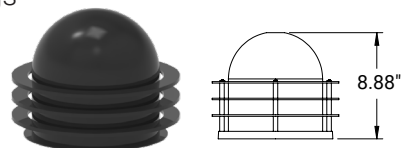
#### TOP 1

Smooth

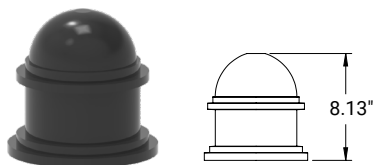


#### TOP 2

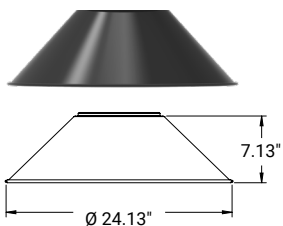
Alum. Rings



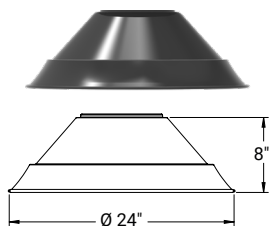
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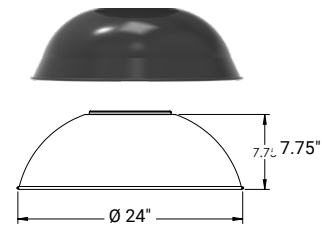
### SHADES



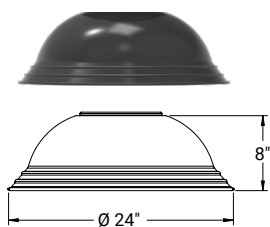
SHADE 1



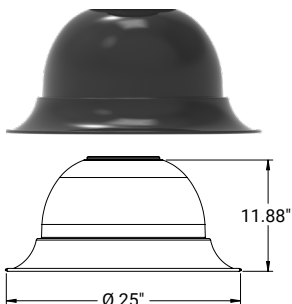
SHADE 2



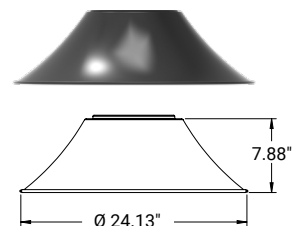
SHADE 4



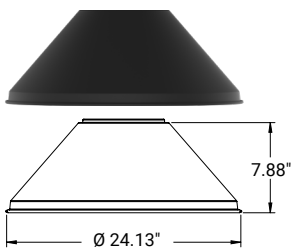
SHADE 5



SHADE 6



SHADE 7

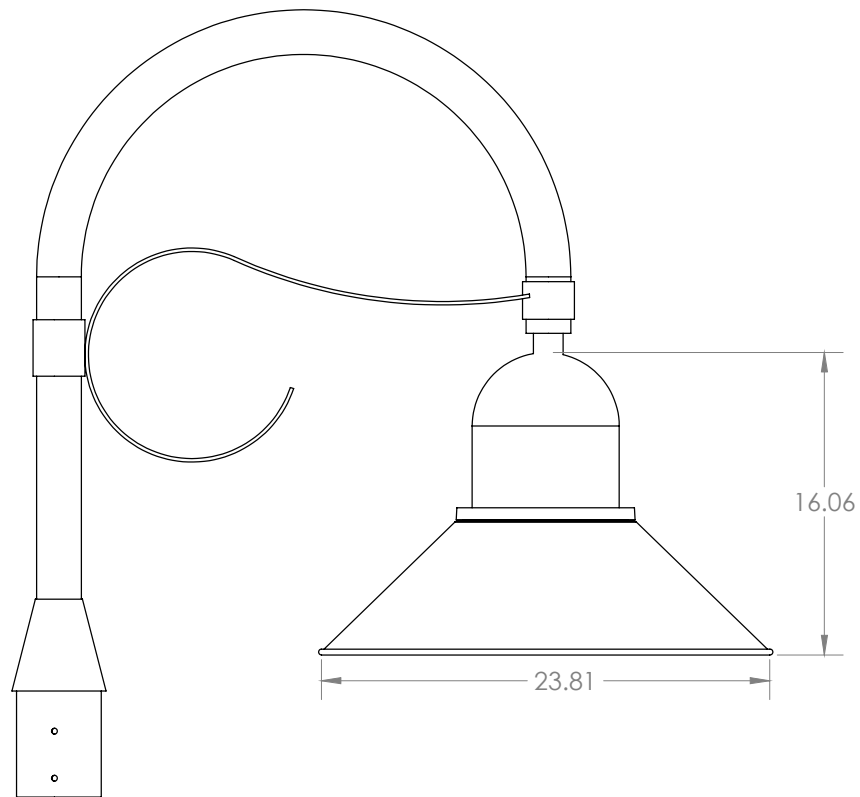


SHADE 8



## PRODUCT SPECIFICATIONS

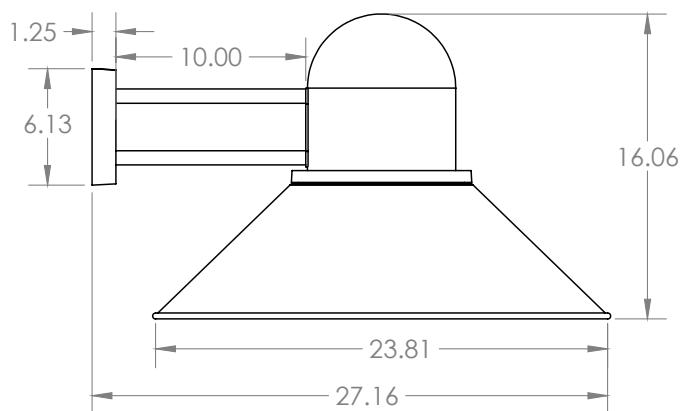
### CAL-1 ARM MOUNT





## PRODUCT SPECIFICATIONS

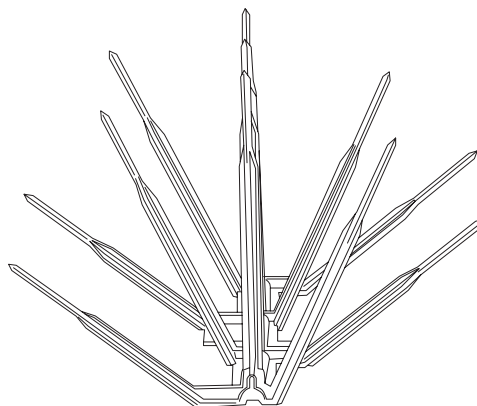
### CAL-1 WALL MOUNT





## BIRD SPIKES (BS)

Bird Spikes offers effective and humane deterrent for larger bird species and provides cost-effective long-term solution to nuisance bird infestations and protect your property.



## MARINE GRADE FINISH (MGF)

The **(MGF)** is a multi step process. Chemically washed in a 5 stage cleaning system. Pre-baked. Powder coated 3-5 mils of Zinc Rich Super Durable Polyester Primer. Oven Baked. Finished Powder Coating of Super Durable Polyester Powder Coat 3-5 mil thickness.

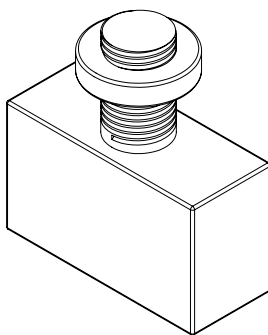


**Powder Coat Finish**  
3-5mm Powder Coat

**Primer Layer**  
3-5mm Zinc Rich  
Super Durable Polyester Primer

**Prepared Casting**  
Chemically washed in multi Step 5 stage  
cleaning process

## BUTTON PHOTOCELL



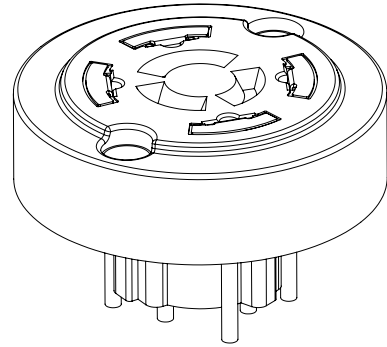
## Button Type Photocell (PC)

Photocell for dusk to dawn operation.  
Consult Factory.



## NEMA 7-PIN RECEPTACLE (PE7)

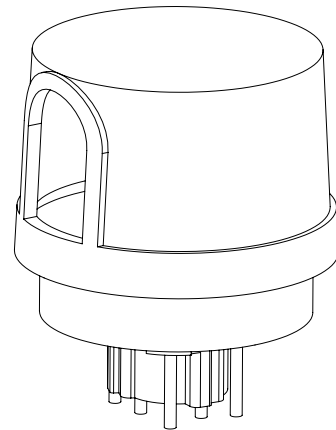
An ANSI C136.41-2013 receptacle provides electrical and mechanical interconnection between photo control cell and luminaire. Dimming receptacle available two or four dimming contacts supports 0-10 VDC dimming methods or Digital Addressable Lighting Interface (DALI), providing reliable power interconnect.



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## PHOTOCELL + RECEPTACLE (PCR)

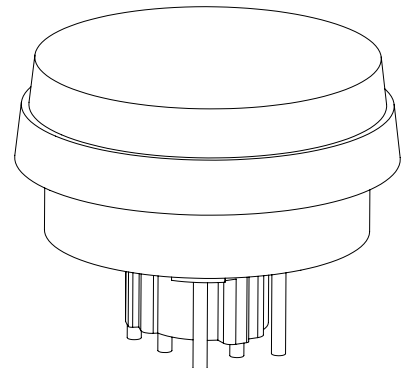
7-Pin Receptacle and Electronic Twist Lock Photocell for dusk to dawn operation.



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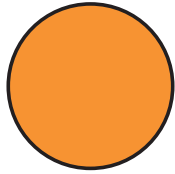
## RECEPTACLE + SHORTING CAP (PER)

7-Pin Receptacle and Shorting Cap.

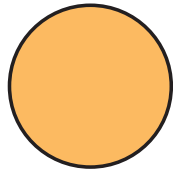




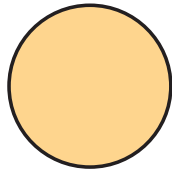
## LED KELVIN RANGE



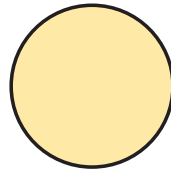
AMBER  
585-600 nm



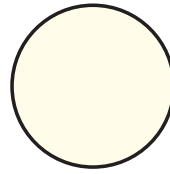
2700K 70 CRI



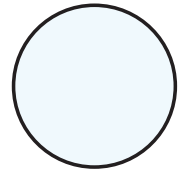
3000K 70 CRI



3500K 80 CRI



4000K 70 CRI

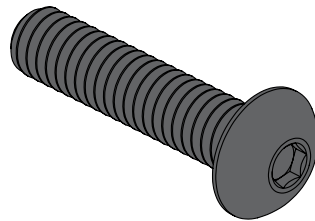


5000K 70 CRI

Color	Dominant or Peak Wavelength Range (nm)	
	Minimum	Maximum
Amber	585	600

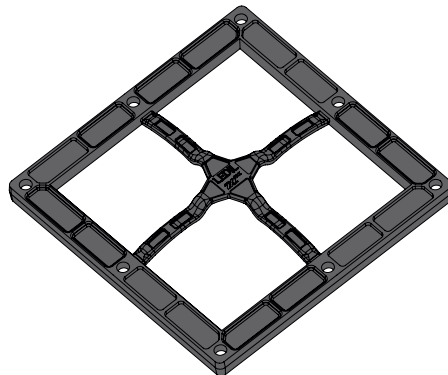
## BLACK HARDWARE

Optional black, zinc coated steel hardware.



## BLACK OPTIC FRAME

Optional Black Optic Frame.  
Standard is white.

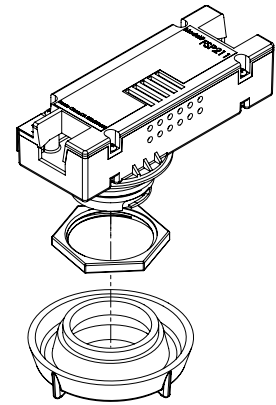




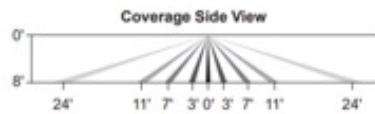
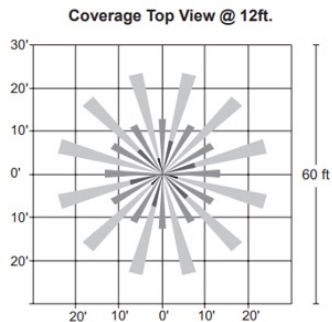
## PRODUCT SPECIFICATIONS

### CONTROLS

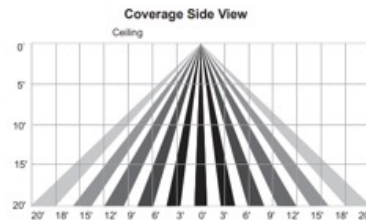
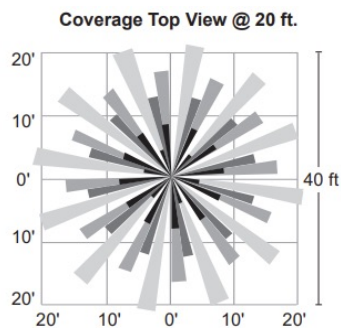
- **DIMMING CONTROL (FSP)**—Passive infrared (PIR) sensor providing multi-level control based on motion/daylight contribution.
  - All control parameters adjustable via wireless configuration remote storing and transmitting sensor profiles.
  - FSP-8 mounting heights 8 feet and below
  - FSP-20 mounting heights 9-20 feet
  - FSP-40 mounting heights 21-40 feet.
  - Includes 5 dimming event cycles, 0-10V dimming with motion sensing, re-programmable in the field.



### FSP-8



### FSP-20



### FSP-40

