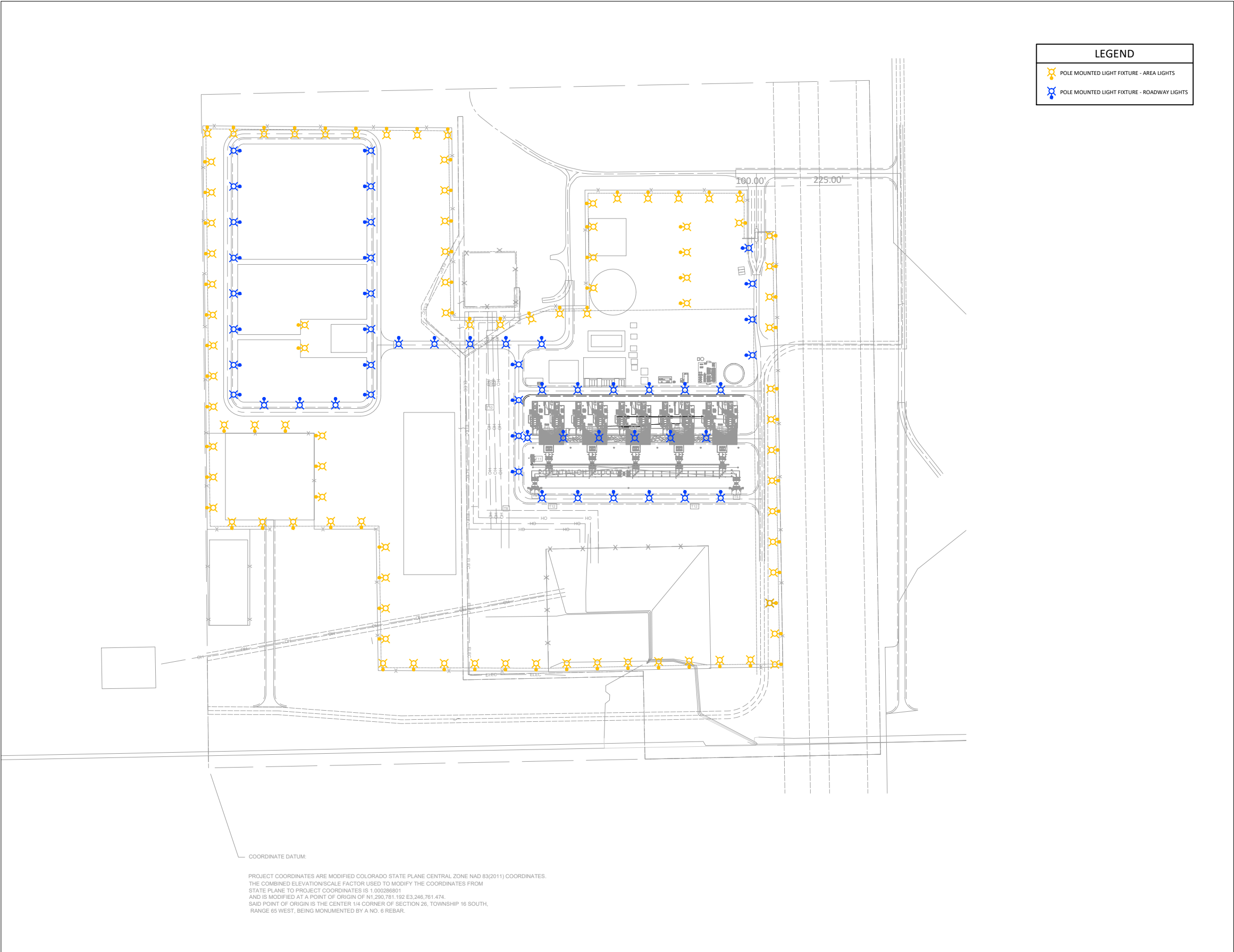




X. Lighting Plan

For

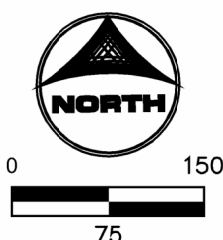
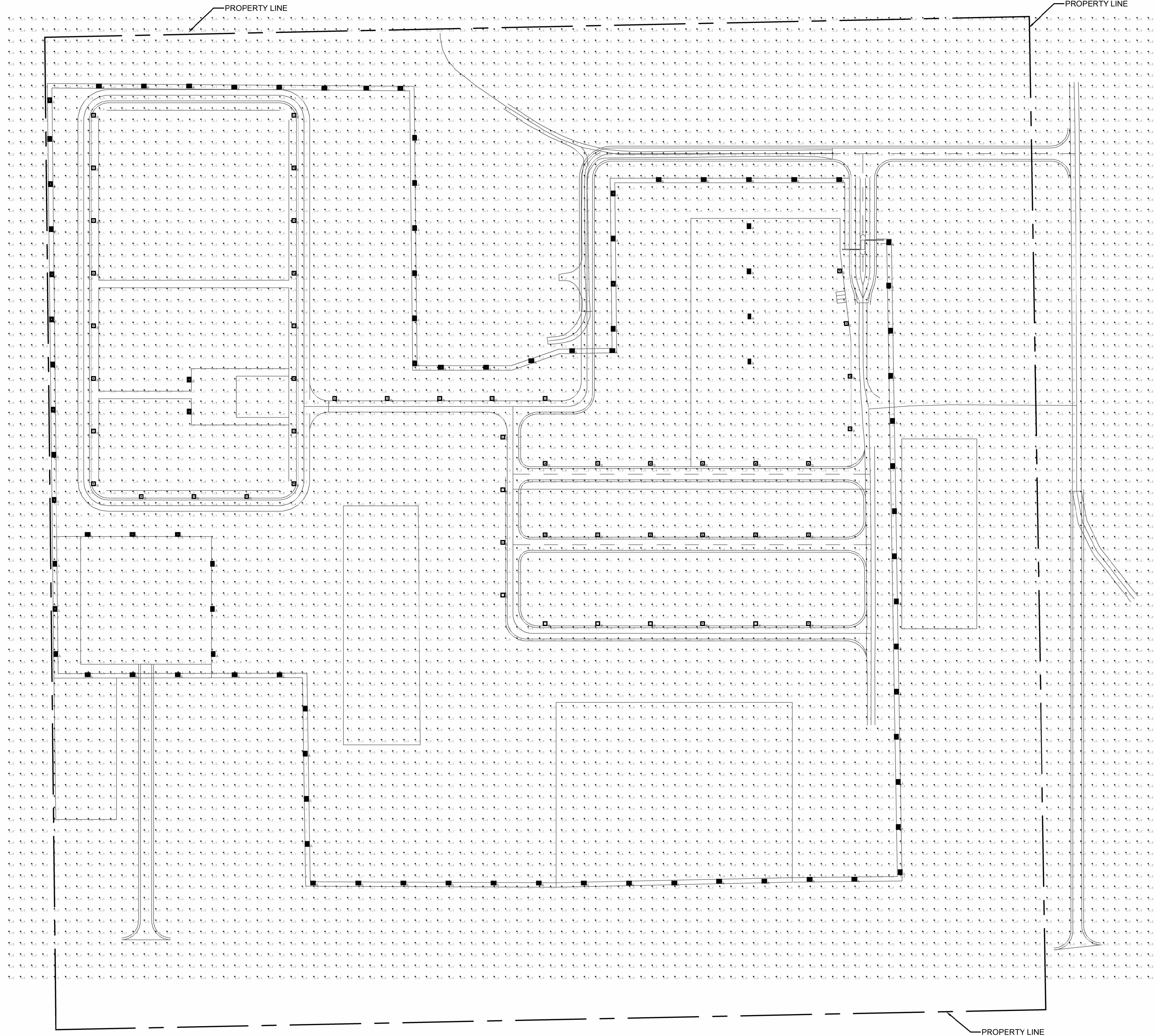
Williams Creek Generating Station



1. SITE PERIMETER FENCE LIGHTING ASSUMES A NOMINAL DISTANCE OF 120 FT BETWEEN LIGHT POLES.
2. ROADWAY LIGHTING ASSUMES A NOMINAL DISTANCE OF 140 FT BETWEEN LIGHT POLES.
3. ALL POLE/FIXTURE LOCATIONS SHOWN ARE ESTIMATES AND REQUIRE VERIFICATION FROM PHOTOMETRIC STUDY.
4. LIGHTING LAYOUT SHOWN DOES NOT ACCOUNT FOR FIXTURES INSTALLED ON BUILDINGS, STRUCTURES, OR MECHANICAL EQUIPMENT.

- PRELIMINARY -
NOT FOR CONSTRUCTION

OPEN	CONCEPTUAL EXHIBIT		
REV	DESIGN BY	CHECKED BY	DATE
COLORADO SPRINGS UTILITIES WILLIAMS CREEK			
 		 Colorado Springs Utilities <i>It's how we're all connected</i>	
Kiewit Confidential & Proprietary Information. All Rights Reserved.			
CIVIL SITE EXHIBIT			
☐	☐	<u> R. GROTANS </u> <u> J. ROWLAND </u> <u> D. DUBOSE </u> <u> T. ROARK </u>	DRAWING NUMBER
LEAD ENG			
ENG MGR			
PROJ MGR			



SITE LIGHTING CALCULATIONS

Luminaire Schedule									
Symbol	Tag	Qty	Label	Description	Arrangement	LLF	Luminaire Lumens	Luminaire Watts	Mounting Height
	A	90	RFL5-360L-130-4K7-M-TV	LED FLOOD LIGHT WITH TOP VISOR AND MEDIUM DISTRIBUTION MOUNTED TO 45-FOOT POLE AND AIME WITH 45-DEGREE TILT	Single	0.950	16575	136.1	45
	B	50	RFL5-360L-130-4K7-W	LED FLOOD LIGHT WITH WIDE DISTRIBUTION MOUNTED TO 45-FOOT POLE AND AIMED STRAIGHT DOWN	Single	0.950	19044	132.6	45

DRAWN BY: FILE JOB DATE: 9/25/2025
APPROVED: AM JOB NUMBER: CS25009.00
CAD DATE: 3/18/2025
CAD FILE: C:\Users\eric.eifealdt\OneDrive - ME Engineers Global\Desktop\Temp\Williams_Creek_PP_Ph

BAR IS ONE INCH ON OFFICIAL DRAWINGS.
IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

NO.	DATE	BY	REVISION DESCRIPTION

me engineers
M-E Engineers, Inc.
1125 kelly johnson blvd, ste 301
colorado springs, co 80920
t 719.536.0036 / f 719.536.0037
www.me-engineers.com

WILLIAMS CREEK POWER PLANT
COLORADO SPRINGS UTILITIES
COLORADO SPRINGS, COLORADO

DEVELOPMENT PLAN - WCPP
SITE LIGHTING CALCULATIONS

SHEET
LC1

1

RATIO Flood

MEDIUM AND LARGE

FEATURES

- Medium and Large LED flood with a variety of NEMA distributions for lighting applications such as area safety/security, accent, flag pole columns, or signs
- Part of the Ratio flood series, this luminaire was designed in cohesion with the site/area products to provide a sleek and timeless look
- Features a dense optical array, providing reduced pixelation and increased visual comfort without compromising performance
- Applications include safety/security, accent, flag pole, columns and signs



CONTROL TECHNOLOGY



SERVICE PROGRAMS

STOCK

SPECIFICATIONS

CONSTRUCTION

- Corrosion resistant, rugged die-cast aluminum housing with powder coatpaint finish
- High impact UV stabilized acrylic outer lens protects LEDs and allows for cleaning and debris removal
- Internal venting fins create optimal heat dissipation and allow all water to drain from the face of the luminaire
- Visor and louver options
- Easy maintenance access to electrical components with removal of four screws from back of fixture housing
- Lens hardware is internal to the fixture allowing for uniform pressure on the gasket for an optimal water tight seal

OPTICS

- 176 or 360 midpower LEDs
- Stock Versions: 4000K and 5000K CCT
- Variety of NEMA distributions: - N (3x3), M (4x4), and W (6x6). Stock version Wide (6x6) only
- Entire optical aperture illuminates to create a larger luminous surface area resulting in a low glare appearance without sacrificing optical performance

CONTROLS

- Photo control, occupancy sensor and wireless available for complete on/off dimming control

CONTROLS (CONTINUED)

- 7-pin ANSI C136.41–2013 photocontrol receptacle option available for twist lock photocontrols or wireless control modules (control accessories sold separately)
- 0–10V dimming leads available for use with control devices (provided by others), must specify lead length
- 0–10V dimming driver standard, continuous dimming option to have leads pulled out for easy connection

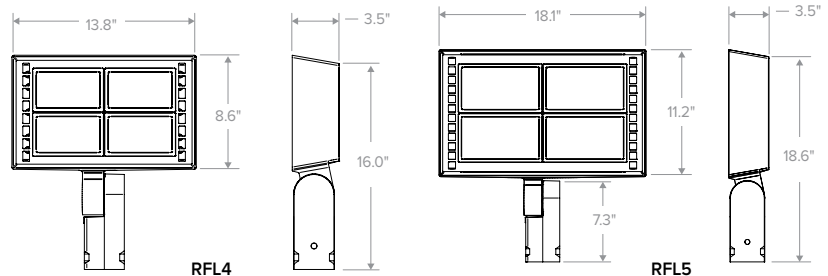
INSTALLATION

- Interchangeable knuckle and trunnion mounting options
- Knuckle arm fitter option available for 2-3/8" OD tenon. 180 degrees of adjustability (with no options). 4 degree adjustable increments
- Trunnion option available for surface and crossarm mounting using (1) 3/4" or (2) 1/2" size through bolts

ELECTRICAL

- 120–480V operation, 50/60Hz
- Driver IP66 and RoHS compliant driver
- Ambient operating temperature -40°C to 40°C. (265W configuration rated for 25°C)
- 7-pin module can limit backwards rotation of the luminaire
- Drivers have 90% power factor and less than 20% THD

RATIO



	Weight	EPA (Front/Side)
RFL4	16 lbs / 7.2 kg	1.24ft ² / 0.43ft ²
RFL5	25.7 lbs / 11.66 kg	2.00ft ² / 0.50ft ²

ELECTRICAL (CONTINUED)

- LED drivers have output power over-voltage, over-current protection and short circuit protection with auto recovery
- 10kA surge protector optional

CERTIFICATIONS

- Fixture is IP66 rated
- Listed to UL1598 for use in wet locations
- DLC® (DesignLights Consortium Qualified), with some Premium Qualified configurations. Please refer to the DLC website for specific product qualifications at www.designlights.org
- This product meets federal procurement law requirements under the Buy American Act (FAR 52.225-9) and Trade Agreements Act (FAR 52.225-11). See Buy America(n) Solutions (link to <https://www.currentlighting.com/resources/america-solutions>)

WARRANTY

- 5 year limited warranty

RATIO Flood

MEDIUM AND LARGE

DATE:	LOCATION:
TYPE:	PROJECT:
CATALOG #:	

STOCK ORDERING INFORMATION

Catalog Number	Mounting	Distribution	Wattage	Voltage	CCT	Lumens	LPW	Weight lbs. (KG)	Finish
RFL4-120-5K-K	Knuckle	Wide	124	120-277V	5000K	14746	122	16.0 (7.26)	Bronze
RFL4-120-4K-K	Knuckle	Wide	124	120-277V	4000K	15119	125	16.0 (7.26)	Bronze
RFL4-120-5K-T	Trunnion	Wide	124	120-277V	5000K	14746	122	16.0 (7.26)	Bronze
RFL4-120-4K-T	Trunnion	Wide	124	120-277V	4000K	15119	125	16.0 (7.26)	Bronze
RFL5-265-5K-K	Knuckle	Wide	266	120-277V	5000K	29362	116	25.7 (11.66)	Bronze
RFL5-265-4K-K	Knuckle	Wide	266	120-277V	4000K	30106	119	25.7 (11.66)	Bronze
RFL5-265-5K-T	Trunnion	Wide	266	120-277V	5000K	29362	116	25.7 (11.66)	Bronze
RFL5-265-4K-T	Trunnion	Wide	266	120-277V	4000K	30106	119	25.7 (11.66)	Bronze
RFL-TRN-XX ¹	Trunnion Accessory Kit								

¹ Specify finish color to match fixture

ORDERING GUIDE

Gray Shading

= Service Program
Limit of 15 luminaires

QS10

Example: RFL4-176L-95-3K7-M-UNV-K-BLT-PC-SP

CATALOG #

Model	# LEDs Wattage	CCT/CRI	Distribution	Voltage	Mounting
RFL4 Ratio Flood Size 4	176L-95 176 LEDs-12000lm	3K7 3000K, 70 CRI	N Narrow, 2x2	UNV Universal 120-277	K Knuckle
RFL5 Ratio Flood Size 5	176L-120 176 LEDs-15000lm	4K7 4000K, 70 CRI	M Medium Flood, 4x4	120 120V	T Trunnion
	360L-130 360 LEDs-18000lm	5K7 5000K, 70 CRI	W Wide Flood, 6x6	208 208V	
	360L-190 360 LEDs-25000lm			240 240V	
	360L-265 360 LEDs-30000lm			277 277V	
				347 347V	
				480 480V	

Color	Control Options	Options
BLT Black Matte Textured	PC Button style photocontrol	SP Surge Protector
BLS Black Gloss Smooth	CD Continuous dimmable	F Fusing
DBT Dark Bronze Matte Textured		
DBS Dark Brone Gloss Smooth		
GTT Graphite Matte Textured		
LGS Light Grey Gloss Smooth		
PSS Platinum Silver Smooth		
WHT White Matte Textured		
WHS White Gloss Smooth		
VGT Verde Green Textured		
Color Option		
CC Custom Color		

Control Options

NX Networked - Wireless

NXWS16F^{1,3}	NX Networked Wireless Enabled Integral NXSMP2-LMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth Programming
NXWS40F^{1,3}	NX Networked Wireless Enabled Integral NXSMP2-HMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth Programming
NXW^{1,3}	NX Networked Wireless Radio Module NXRM2 and Bluetooth Programming, without Sensor
WIR^{1,4}	LightGRID+ In-Fixture Module 2.4 GHz
WIRSC^{1,4}	LightGRID+ Module 2.4 GHz and Occupancy Sensor

Third-Party Control Options

SCP-F¹	Programmable occupancy sensor
7PR^{1,2}	7-Pin twist lock receptacle
7PR-SC^{1,2}	7-Pin receptacle with shorting cap
7PR-MD-F^{1,2}	Low voltage sensor for 7PR
7PR-TL^{1,2}	7-Pin PCR with photo control

- Option available with knuckle mounting
- Limits backwards rotation based on module height
- Items with a grey background can be done as a custom order. Contact brand representative.
- Networked Controls cannot be combined with other control options

RATIO Flood

MEDIUM AND LARGE

CONTROLS FUNCTIONALITY

OUTDOOR LIGHTING CONTROLS OPTIONS

LIGHTGRID⁺



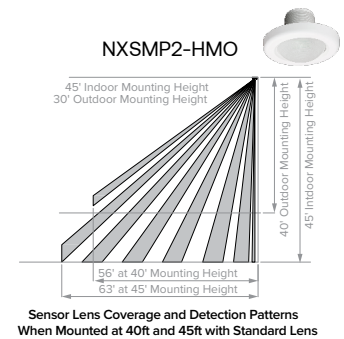
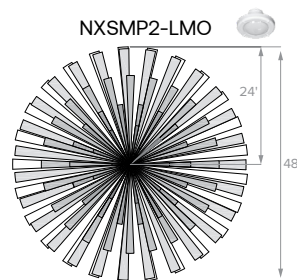
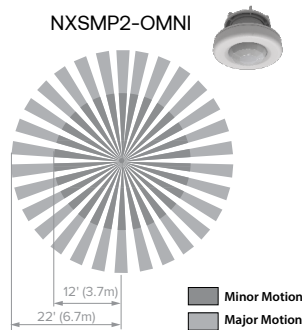
	Control Option Ordering Logic & Description	Control Option Functionality									Control Option Components
		Networkable	Grouping	Scheduling	Occupancy/ Motion	Daylight Harvesting	0-10V Dimming	On/Off Control	Bluetooth App Programming	Sensor Height	
NX Wireless	NXW	✓	✓	✓	-	-	✓	✓	✓	-	NXRM2-H
	NXWS16F	✓	✓	✓	✓	✓	✓	✓	✓	16ft	NXSMP2-LMO
	NXWS40F	✓	✓	✓	✓	✓	✓	✓	✓	40ft	NXSMP2-HMO
LightGRID+	WIR	✓	-	✓	-	-	✓	✓	Gateway	-	WIR
	WIRSC	✓	✓	✓	✓	✓	✓	✓	Gateway	14ft - 40ft	BTMSP

DEFAULT SETTINGS

NX Wireless	Occupancy Sensor	Enabled
	Occupancy Sensor Sensitivity	7
	Occupancy Sensor Timeout	15 Minutes
	Occupied Dim Level	100%
	Unoccupied Dim Level	0%
	Daylight Sensor	Disabled
	Bluetooth	Enabled
	2.4GHz Wireless Mesh	On
	"Passcode Factory Passcode: HubbN3T!"	Enabled

Stand Alone	Occupancy Sensor	Enabled
	Occupancy Sensor Sensitivity	7
	Occupancy Sensor Timeout	8 Minutes
	Occupied Dim Level	100%
	Unoccupied Dim Level	50%
	Daylight Sensor	Disabled

NX WIRELESS COVERAGE PATTERNS



NX LIGHTING CONTROLS FREE APP

CONTROLS TECH SUPPORT 800-888-8006 (7:00 AM - 7:00 PM)



The NX Lighting Controls App is free to use mobile application for programming both NX Lighting Controls System or Standalone Bluetooth Sensors. The mobile app allows you to configure devices, discover and setup wireless enable luminaires and program NX system settings.

Apple App: <https://apps.apple.com/us/app/nx-lighting-controls/id962112904>

Google Play: https://play.google.com/store/apps/details?id=io.cordova.NXBTR&hl=en_US&gl=US



Apple App



Google Play

RATIO Flood

MEDIUM AND LARGE

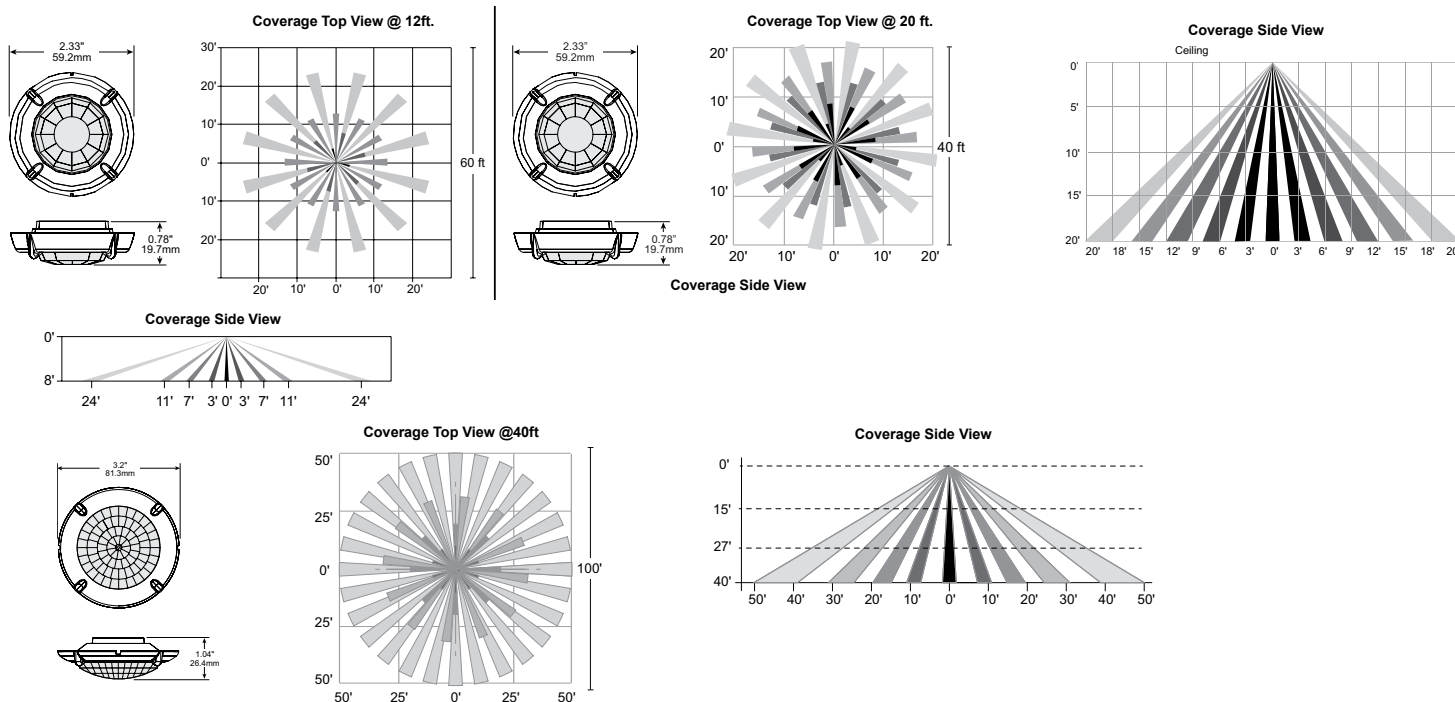
DATE:	LOCATION:
TYPE:	PROJECT:
CATALOG #:	

OUTDOOR LIGHTING CONTROLS OPTIONS

CONTROLS FUNCTIONALITY

Control Option Ordering Logic & Description		Control Option Functionality									Control Option Components	
		Networkable	Grouping	Scheduling	Occupancy/ Motion	Daylight Harvesting	0-10V Dimming	On/Off Control	Bluetooth App Programming	Sensor Height		
Independent	SCP_F	Sensor Control Programmable, sensor range, reference product specification for height selections	-	-	-	✓	✓	✓	✓	-	8ft or 20ft	SCP_F
	7PR	7-Pin Receptacle	-	-	Paired with external control	-	Paired with external control	-	Paired with external control	-	-	7PR
	7PR-SC	7-Pin Receptacle with shorting cap	-	-	-	-	-	-	-	-		7PR-SC
	7PR-TL	7-Pin with photocontrol	-	-	-	-	✓	-	✓	-	-	 7PR-TL

COVERAGE PATTERNS FOR SCP_F



PROGRAMMED CONTROLS

ADD-AutoDim Timer Based Options

- Light delay options from 1-9 hours after the light is turned on to dim the light by 10-100%. To return the luminaire to its original light level there are dim return options from 1-9 hours after the light has been dimmed previously.

EX: ADD-6-5-R6

ADD Control Options	Configurations Choices	Example Choice Picked
Auto-Dim Options	1-9 Hours	6 - Delay 6 hours
Auto-Dim Brightness	10-100% Brightness	5 - Dim to 50% brightness
Auto-Dim Return	Delay 0-9 Hours	R6 - Return to full output after 6 hours

ADT-AutoDim Time of Day Based Option

- Light delay options from 1AM-9PM after the light is turned on to dim the light by 10-100%. To return the luminaire to its original light level there are dim return options from 1AM-9PM after the light has been dimmed previously.

EX: ADT-6-5-R6

ADD Control Options	Configurations Choices	Example Choice Picked
Auto-Dim Options	12-3 AM and 6-11 PM	6 - Dim at 6PM
Auto-Dim Brightness	10-100% Brightness	5 - Dim to 50%
Auto-Dim Return	12-6 AM and 9-11P	R6 - Return to full output at 6AM

RATIO Flood

MEDIUM AND LARGE

DATE:	LOCATION:
TYPE:	PROJECT:
CATALOG #:	

ACCESSORIES AND REPLACEMENT PARTS (ORDERED SEPARATELY)

	Catalog Number	Description
☐	RFL4-TV-XX ¹	Top Visor - RFL4
☐	RFL4-FL-XX ¹	Louver - RFL4
☐	RFL5-TV-XX ¹	Top Visor - RFL5
☐	RFL5-FL-XX ¹	Louver - RFL5

¹ Specify finish color to match fixture, e.g. DBT - Dark Bronze Matte

CONTROL ACCESSORIES

	Catalog Number	Description
☐	SCPREMOTE	Order at least one per project location to program and control
☐	WIR-RME-L	LightGRID+ 2.4 GHz external control node; use with 7PR
☐	NXOFM-1R1D-UNV	NX external control node; use with 7PR

PERFORMANCE DATA

Series	Nominal Watts	Dist. Type	NEMA	Field Angle H X V	5K (5000K nominal, 70 CRI)			4K (4000K nominal, 70 CRI)			3K (3000K nominal, 70 CRI)		
					Lumens	LPW ¹	Max Beam Candlepower	Lumens	LPW ¹	Max Beam Candlepower	Lumens	LPW ¹	Max Beam Candlepower
RFL4	95	N	2 x 2	20 x 20	12594	135	213259	12913	140	218652	12510	136	211825
		M	4 x 4	57 x 57	11894	128	28457	12196	131	29177	11816	127	82866
		W	6 x 6	105 x 105	12355	132	7037	12668	135	7215	12272	131	6990
	120	N	2 x 2	20 x 20	15031	127	254521	15411	130	260957	14931	126	252810
		M	4 x 4	57 x 57	14196	119	33912	14555	122	34770	14102	118	33684
		W	6 x 6	105 x 105	14746	122	8399	15119	125	8611	14647	121	8343
RFL5	130	N	2 x 2	20 x 20	19019	145	322063	19501	149	330208	18892	144	319898
		M	4 x 4	57 x 57	17963	136	44645	18419	140	45774	17843	135	44345
		W	6 x 6	105 x 105	18658	140	10628	19131	144	10897	18534	139	10557
	190	N	2 x 2	20 x 20	25278	134	428052	25918	139	438877	25110	133	425174
		M	4 x 4	57 x 57	23875	126	58831	24478	129	60319	23714	125	58436
		W	6 x 6	105 x 105	24799	129	14126	25427	133	14483	24634	128	14031
	265	N	2 x 2	20 x 20	29930	120	30685	30688	123	519638	29730	120	503414
		M	4 x 4	57 x 57	28268	113	68911	28983	119	70654	28078	112	68448
		W	6 x 6	105 x 105	29362	116	30106	30106	119	17148	29167	115	16612

¹ Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application.

RATIO Flood

MEDIUM AND LARGE

DATE: _____ LOCATION: _____
 TYPE: _____ PROJECT: _____
 CATALOG #: _____

ELECTRICAL DATA

# LEDS	Nominal Wattage	Input Voltage	Oper. Current (Amps)	System Power (W)
RFL4	95	120	0.78	93.5
		208	0.45	
		240	0.39	
		277	0.34	
	120	120	1.00	120.2
		208	0.58	
		240	0.50	
		277	0.43	
RFL5	130	120	1.11	132.6
		208	0.58	
		240	0.50	
		277	0.43	
	190	120	1.59	191
		208	0.92	
		240	0.80	
		277	0.69	
	265	120	2.10	252
		208	1.21	
		240	1.05	
		277	0.91	

PROJECTED LUMEN MAINTENANCE

Ambient Temperature	Operating Hours					Calculated L70 (Hours)
	0	25,000	50,000	TM-21-11 60,000 ¹	100,000	
25°C / 77°F	1.00	0.96	0.94	0.91	0.83	> 191,000
40°C / 104°F	0.99	0.95	0.93	0.93	0.81	> 173,000

LUMINAIRE AMBIENT TEMPERATURE FACTOR (LATF)

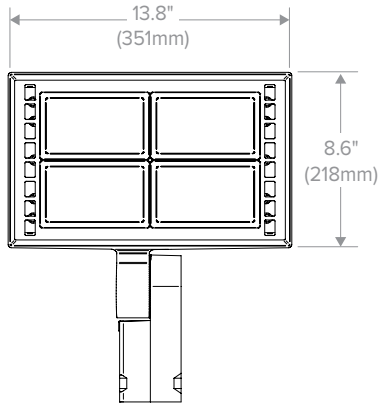
Ambient Temperature		Lumen Multiplier
0° C	32° F	1.03
10° C	50° F	1.01
20° C	68° F	1.00
25° C	77° F	1.00
30° C	86° F	0.99
40° C	104° F	0.98

Use these factors to determine relative lumen output for average ambient temperatures from 0–40°C (32–122°F)

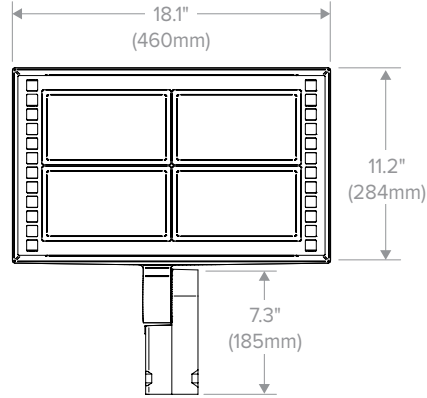
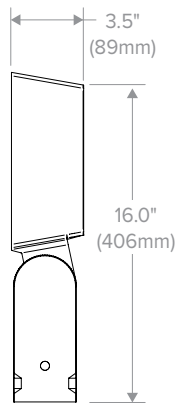
RATIO Flood

MEDIUM AND LARGE

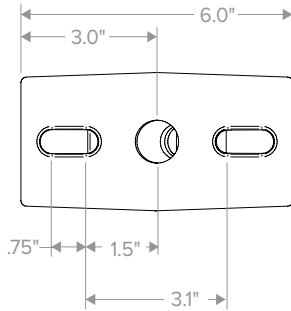
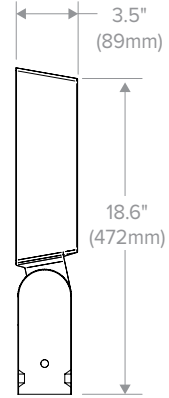
DIMENSIONS



RFL4



RFL5



Trunnion Mount

RFL4 EPA(Front/Side)	RFL5 EPA(Front/Side)
1.24ft ² / 0.43ft ²	2.00ft ² / 0.50ft ²

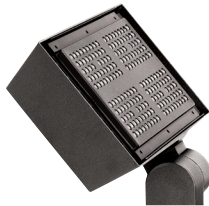
SHIPPING INFORMATION

Catalog Number	G.W (kg)/CTN	Carton Dimensions		
		Length Inch (cm)	Width Inch (cm)	Height Inch (cm)
RFL4	15lbs (6.8kg)	20.7 (52.7)	15.1 (38.4)	6.9 (17.6)
RFL5	19lbs (8.6kg)	25 (63.5)	15.1 (38.4)	6.9 (17.6)

ACCESSORIES



Visor



Louver

RATIO Flood

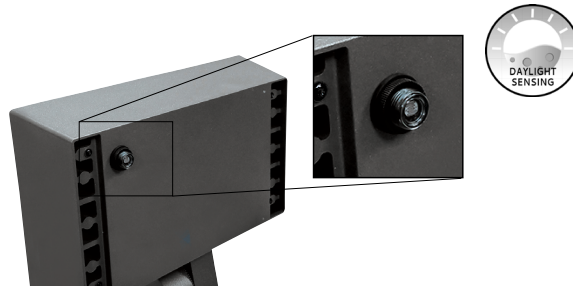
MEDIUM AND LARGE

ADDITIONAL INFORMATION

CONTROL IMAGES



Occupancy Sensor



Photocontrol



NX Lighting Controls



7-Pin Receptacle

DATE:	LOCATION:
TYPE:	PROJECT:
CATALOG #:	