



DOCKET	
07-AFC-8	
DATE	JUN 23 2008
RECD.	JUN 23 2008

June 23, 2008

Ms. Melissa Jones
Executive Director
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: Carrizo Energy Solar Farm (07-AFC-8)
Preliminary Lighting Plan
URS Project No. 27658060.01804

Dear Ms. Jones:

On behalf of Ausra CA II, LLC (dba Carrizo Energy, LLC), URS Corporation Americas (URS) hereby submits the Applicant's Preliminary Lighting Plan (Carrizo Energy Solar Farm 07-AFC-8).

I certify under penalty of perjury that the foregoing is true, correct, and complete to the best of my knowledge. I also certify that I am authorized to submit the Applicant's Preliminary Lighting Plan on behalf of Carrizo Energy, LLC.

Sincerely,

URS CORPORATION

Angela Leiba
Project Manager

AL:ml



June 23, 2008

Mark Hamblin
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Subject: Carrizo Energy Solar Farm (07-AFC-8)
Preliminary Lighting Plan
URS Project No. 27658060.01804

Dear Mr. Hamblin:

Pursuant to CEC Data Request #100 (07-AFC-08) dated May 8, 2008; enclosed is a Preliminary Lighting Plan for the Carrizo Energy Solar Farm (CESF or Project).

Power Block

At the power block, permanently installed and normally illuminated lighting will be provided for the following:

- Main entrance;
- Perimeter roads;
- Parking area;
- Building exterior entrances;
- Power Distribution Center entrances;
- Transformer, fire pump, fueling station, and diesel generator areas; and
- General area lighting sufficient for safe access.

Normally, illuminated light fixtures will be controlled by photocells, so they only operate when necessary. All permanently installed light fixtures will be shielded and directed to minimize light scattering offsite as required per CEC and local regulations. Portable task lighting will be used for nighttime maintenance activities, when necessary.

Solar Field

In general, the solar field portion of the Project will not be lit at night. The only exception would be low level area lighting around the eight Power Distribution Centers to provide safe access around their associated transformers, as well as their walkways, stairs, and doors.



Mark Hamblin
California Energy Commission
June 23, 2008
Page 2

Perimeter fencing will be installed with motion detectors that would activate nearby light standards to illuminate perimeter areas. If necessary, these lights could also be manually activated from the plant control room. These light fixtures will be shielded and directed to minimize light scattering offsite as required per CEC and local regulations.

In addition, portable lighting will be used for task lighting for nighttime maintenance activities.

Attached are cut sheets for preliminary light fixtures representative of the type of fixtures anticipated to be used at the Project site. Also attached are preliminary sketches showing the light locations around the CESF Project site.

Sincerely,

URS CORPORATION

Angela Leiba
Senior Project Manager

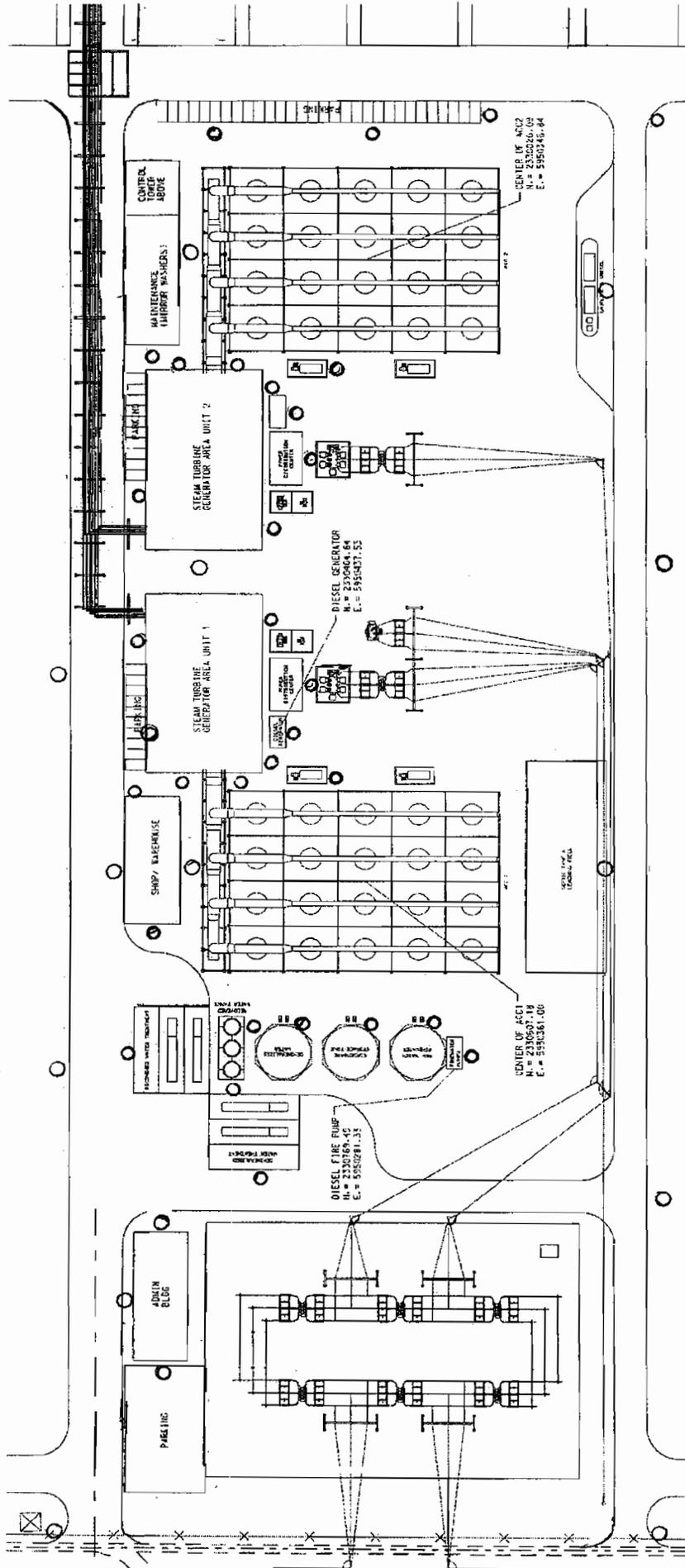
AL/AG:ml

Amy Gramlich
Environmental/Visual Resource Specialist

Enclosures: Preliminary Lighting Plan for the Carrizo Energy Solar Farm

Attachments: Cut Sheets For Preliminary Light Fixtures
Preliminary Sketches Showing the Light Locations

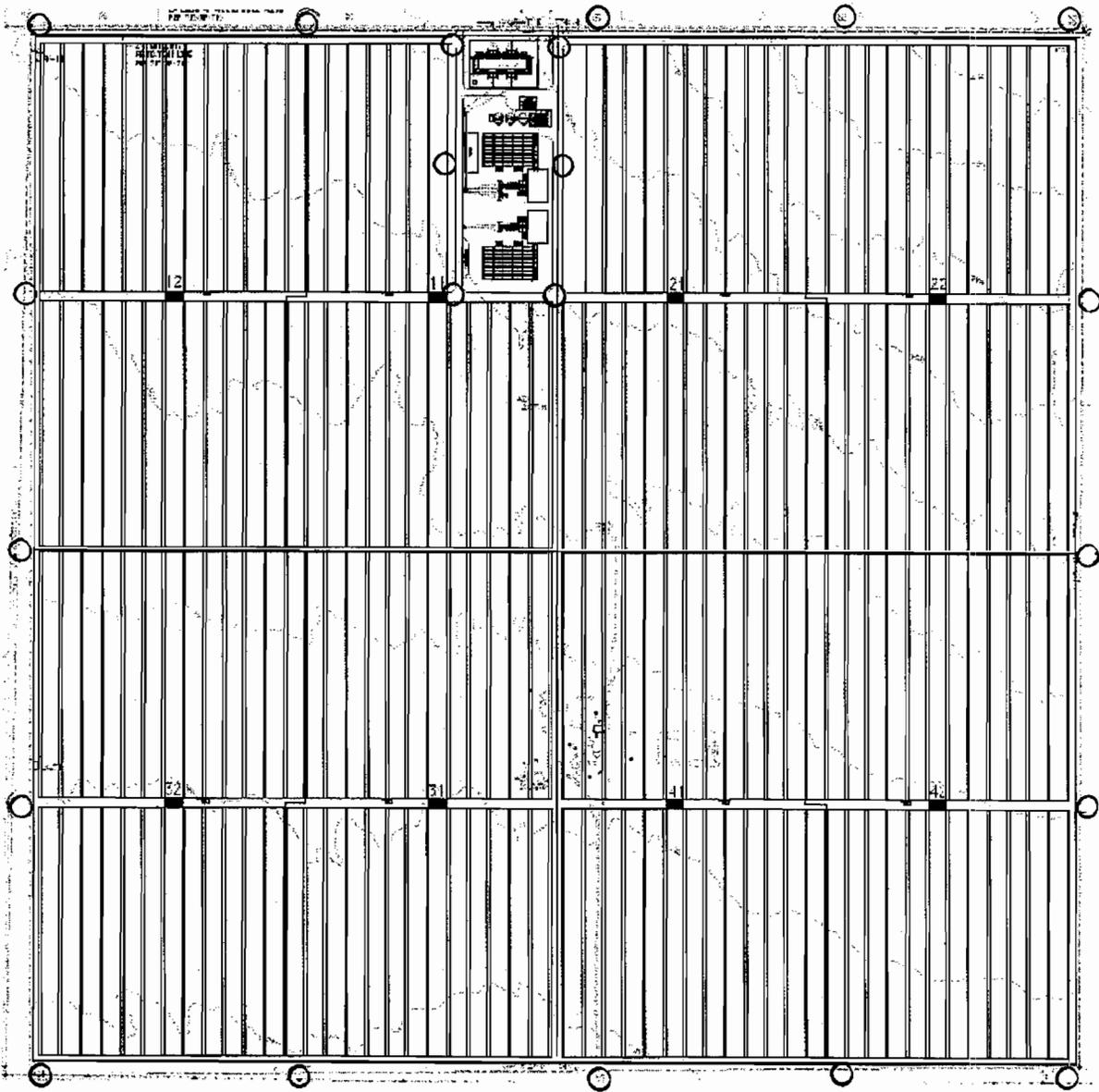
Preliminary Lighting Plan
Power Block



O = PERMANENTLY INSTALLED LIGHT FIXTURES

Not to Scale

Preliminary Lighting Plan
Perimeter Lighting for Solar Field



○ = MOTION DETECTION PERIMETER LIGHTING

Not to Scale

1. Outdoor general area lighting will utilize High Pressure Sodium lights with IES cutoff distribution optics.
2. Open area lighting will utilize pole-mounted fixtures; see attached Lithonia type "KAD" fixture cutsheet.
3. Wall mounted fixtures will be utilized where a building or structure exists that can be used to mount the fixture see attached Lithonia type "TWAC" fixtures cutsheet.
4. For open areas where poles are required, the fixture will be mounted 20 to 22 feet above grade.
5. Outdoor process area lighting will utilize High Pressure Sodium lights suitable for the environmental conditions. Environmental conditions that apply include Class 1, Division 2, Group D flammable vapor hazardous areas, high ambient temperatures, and vibration. Based on these conditions an industrial fixture is required. See attached Crouse-Hinds Champ VMV series fixture cutsheets. To control the distribution of the light, Dome and 30 ° Angle reflectors will be used on all outdoor VMV series fixtures.



FEATURES & SPECIFICATIONS

INTENDED USE — Ideal for parking areas, street lighting, walkways and car lots.

CONSTRUCTION— Rugged, die-cast, soft corner aluminum housing with 0.12" nominal wall thickness. Extruded 4" soft corner arm for pole or wall mounting is standard. Die-cast door frame has impact-resistant, tempered glass lens that is fully gasketed with one-piece tubular silicone.

FINISH — Standard finish is dark bronze (DDB) polyester powder, with other architectural colors available.

OPTICAL SYSTEM — Anodized, aluminum hydroformed reflectors: IES full cutoff distributions R2 (asymmetric), R3 (asymmetric), R4 (forward throw) and R5S (square). High-performance anodized, segmented aluminum reflectors IES full cutoff distributions SR2 (asymmetric), SR3 (asymmetric) and SR4SC (forward throw, sharp cutoff). Segmented reflectors attach with tool-less fasteners and are rotatable and interchangeable.

ELECTRICAL SYSTEM — High-reactance, high power factor ballast for 70/100/150W. Constant-wattage autotransformer for 250/400W. Ballast is copper-wound and 100% factory-tested.

Porcelain, horizontally oriented, mogul-base socket with copper alloy, nickel-plated screw shell and center contact. UL listed 1500W, 600V, 4KV pulse-rated.

LISTING — UL Listed (standard). CSA Certified (see Options). UL listed for wet locations. IP65 rated in accordance with standard IEC 529.

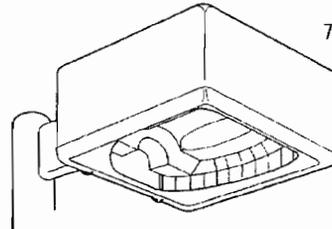
Catalog Number	
Notes	Type

Soft Square Cutoff Lighting

CONTOUR
SERIES

KAD

HIGH PRESSURE SODIUM
70W, 100W, 150W, 250W, 400W
20' to 35' Mounting



Standard Dimensions

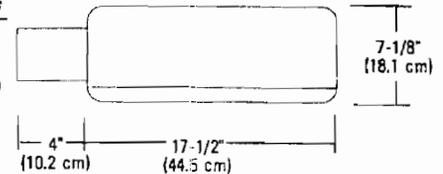
EPA: 1.2 ft²

Weight: 42 lbs (19.1 kg)

Length: 17-1/2" (44.5 cm)

Width: 17-1/2" (44.5 cm)

Depth: 7-1/8" (18.1 cm)



ORDERING INFORMATION

Choose the boldface catalog nomenclature that best suits your needs and write it on the appropriate line. Order accessories as separate catalog number.

Example: **KAD 400S R2 120 SPD04 LPI**

Series	Voltage	Mounting	Options																												
KAD 70S	120	SPD04 Square pole (4" arm) (standard)	Shipped Installed																												
KAD 100S	208 ⁷	SPD09 Square pole (9" arm) ³	SF Single fuse (120, 277, 347V, n/a TB)																												
KAD 150S	240 ⁷	RPD04 Round pole (4" arm)	DF Double fuse (208, 240, 480V, n/a TB)																												
KAD 250S	277	RPD09 Round pole (9" arm) ^{3,4}	LPI Lamp Included as standard																												
KAD 400S	347	WWDD4 Wood pole or wall (4" arm)	L/LP Less lamp																												
	480 ⁷	WWDD9 Wood pole or wall (9" arm) ^{3,4}	PER NEMA twist-lock receptacle only (no photocontrol)																												
	TB ²	WBDD4 Wall bracket (4" arm) ⁴	QRS Quartz restrike system (250W maximum, lamp not included)																												
		WBDD9 Wall bracket (9" arm) ⁴	PD Power Tray ⁸																												
		L/Arm (When ordering KMA, DAD12)	WTB Terminal Wiring Block ⁸																												
		Shipped Separately	CSA CSA Certified																												
		KMA Mast arm adapter	Shipped Separately⁴																												
		KTMB Twin mounting bar	PE1 NEMA twist-lock PE (120, 208, 240V)																												
		DAD12P Degree Arm (Pole)	PE3 NEMA twist-lock PE (347V)																												
		DAD12WB Degree Arm (Wall)	PE4 NEMA twist-lock PE (480V)																												
			PE7 NEMA twist-lock PE (277V)																												
			HS House-side shield (R2, R3, R4)																												
			KADVG Vandal guard																												
			KADWG Wire guard																												
			Accessories: Tenon Mounting Slipfitter																												
			Order as separate catalog number.																												
			Number of fixtures																												
			<table border="1"> <thead> <tr> <th>Tenon O.D.</th> <th>One</th> <th>Two@180°</th> <th>Two@90°</th> <th>Three@120°</th> <th>Three@90°</th> <th>Four@90°</th> </tr> </thead> <tbody> <tr> <td>2-3/8"</td> <td>T20-190</td> <td>T20-280</td> <td>T20-290⁶</td> <td>T20-320⁶</td> <td>T20-390⁶</td> <td>T20-490⁶</td> </tr> <tr> <td>2-7/8"</td> <td>T25-190</td> <td>T25-280</td> <td>T25-290⁶</td> <td>T25-320</td> <td>T25-390⁶</td> <td>T25-490⁶</td> </tr> <tr> <td>4"</td> <td>T35-190</td> <td>T35-280</td> <td>T35-290⁶</td> <td>T35-320</td> <td>T35-390⁶</td> <td>T35-490⁶</td> </tr> </tbody> </table>	Tenon O.D.	One	Two@180°	Two@90°	Three@120°	Three@90°	Four@90°	2-3/8"	T20-190	T20-280	T20-290 ⁶	T20-320 ⁶	T20-390 ⁶	T20-490 ⁶	2-7/8"	T25-190	T25-280	T25-290 ⁶	T25-320	T25-390 ⁶	T25-490 ⁶	4"	T35-190	T35-280	T35-290 ⁶	T35-320	T35-390 ⁶	T35-490 ⁶
Tenon O.D.	One	Two@180°	Two@90°	Three@120°	Three@90°	Four@90°																									
2-3/8"	T20-190	T20-280	T20-290 ⁶	T20-320 ⁶	T20-390 ⁶	T20-490 ⁶																									
2-7/8"	T25-190	T25-280	T25-290 ⁶	T25-320	T25-390 ⁶	T25-490 ⁶																									
4"	T35-190	T35-280	T35-290 ⁶	T35-320	T35-390 ⁶	T35-490 ⁶																									

NOTES:

- House-side shield available.
- Optional multi-tap ballast (120, 208, 240, 277V).
- The SPD09, RPD09 or WWDD9 must be used when two or more luminaires are oriented on a 90° drilling pattern.
- May be ordered as accessory.
- Additional architectural colors available; please see Architectural Colors brochure, form no. 794.3.
- Must use RPD09.
- Consult factory for availability in Canada.
- Only available with SR2, SR3, and SR4SC optics.

Outdoor

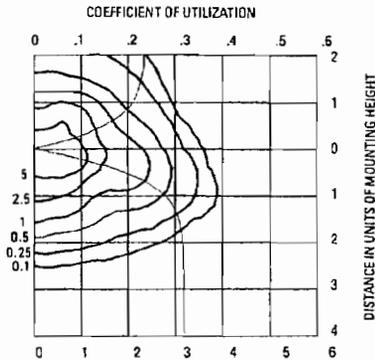
Sheet #: KAD-S

AL-380

KAD 400S Arm-mounted Soft Square Cutoff

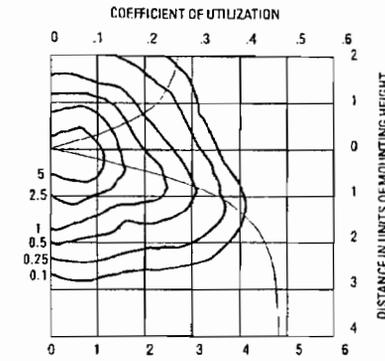
Coefficient of Utilization ———
Initial Footcandles ———

KAD R2 Test no. 1193082501



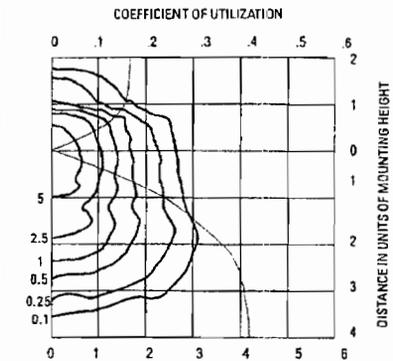
400W High Pressure Sodium lamp, 50,000 rated lumens, Footcandle values based on 30' mounting height, Distribution Type II, cutoff.

KAD R3 Test no. 1192040102



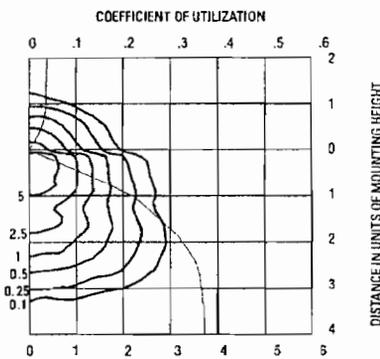
400W High Pressure Sodium lamp, 50,000 rated lumens, Footcandle values based on 30' mounting height, Distribution Type III, cutoff.

KAD R4 Test no. 1191120301



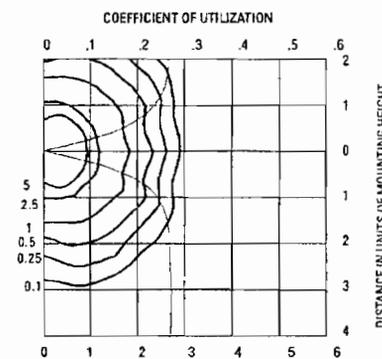
400W High Pressure Sodium lamp, 50,000 rated lumens, Footcandle values based on 30' mounting height, Distribution Type IV, cutoff.

KAD R4HS Test no. 1192041302



400W High Pressure Sodium lamp, 50,000 rated lumens, Footcandle values based on 30' mounting height, Distribution Type IV, cutoff.

KAD R5S Test no. 1194040702



400W High Pressure Sodium lamp, 50,000 rated lumens, Footcandle values based on 30' mounting height, Distribution Type V, cutoff.

ELECTRICAL CHARACTERISTICS

	Primary voltage	Line current (amps) start/operating	Primary dropout voltage	Input watts	Power factor (%)	Regulation Line V = Lamp lumens
400 CWA	120	2.82/4.30	90			
Autoregulator	208	1.56/2.48	156			
	240	1.36/2.15	180	465	90+	±10% = ±10%
	277	1.18/1.86	208			
	480	.75/1.10	360			

Tested to current IES and NEMA standards under stabilized laboratory conditions. Various operating factors can cause differences between laboratory data and actual field measurements. Dimensions and specifications on this sheet are based on the most current available data and are subject to change without notice.

Notes:

1 Photometric data for other distributions can be accessed from the Lithonia Lighting website. (www.lithonia.com)

Mounting Height Correction Factor

(Multiply the fc level by the correction factor)

25 ft. = 1.44

35 ft. = 0.72

40 ft. = .56

$$\left(\frac{\text{Existing Mounting Height}}{\text{New Mounting Height}} \right)^2 = \text{Correction Factor}$$



An Acuity Brands Company

Sheet #: KAD-S

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Lithonia Lighting

Acuity Lighting Group, Inc.

Outdoor

One Lithonia Way, Conyers, GA 30012

Phone: 770-922-9000 Fax: 770-918-1209

In Canada: 160 avenue Labrosse, Point-Claire, P.Q., H9R 1A1

www.lithonia.com





FEATURES & SPECIFICATIONS

INTENDED USE

For entrances, stairwells, corridors and other pedestrian areas.

CONSTRUCTION

Rear housing is rugged, corrosion-resistant, die-cast aluminum. Front cover is one-piece UV-resistant injection molded polycarbonate, internally painted. Captive external hardware is specially treated for corrosion resistance and includes slotted hex-head and tamperproof fasteners.

FINISH

Dark Bronze (DDB) corrosion resistant polyester powder.

OPTICAL SYSTEM

One-piece die-formed reflector is diffused aluminum. Refractor is clear UV stabilized polycarbonate, providing IES cutoff distribution and maximum lateral light output. Front cover is sealed and gasketed to inhibit the entrance of outside contaminants.

ELECTRICAL SYSTEM

Ballast is reactor normal power factor, copper wound. HPS ballasts are 100% factory tested and UL listed. Components are heat-sunked directly to the cast housing for maximum heat dissipation (For 50 hertz availability, consult factory.)

Porcelain, horizontally oriented medium-base socket with copper alloy, nickel-plated screw shell and center contact. UL listed 660W, 600W and 4kV pulse rated.

Medium-base lamp included with fixture.

INSTALLATION

Mount to any vertical surface or to a 4" round square outlet box. Back access through gasketed slot. Top wiring access through 1/2" threaded conduit entry. (Through-wiring requires use of a conduit tee). Photocells are field-installable.

LISTING

UL listed for wet locations. IP65 listed. Listed and labeled to comply with Canadian and Mexican Standards (see options).

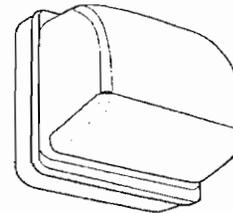
Catalog Number	
Notes	Type

Cutoff Mini-WallPaks

TWAC

HIGH PRESSURE SODIUM

35W, 50W, 70W, 100W



Height: 10" (25.4cm)
Width: 11-1/2" (29.2cm)
Depth: 8-15/16" (22.7cm)
Weight: 10 lbs. (4.53kg)



ORDERING INFORMATION

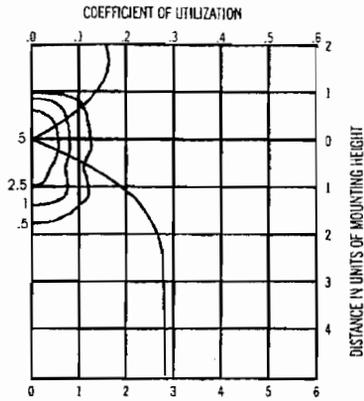
Choose the boldface catalog nomenclature that best suits your needs and write it on the appropriate line. Order accessories as separate catalog numbers (shipped separately).

Example: **TWAC 35S 120 LPI**

TWAC				Options	
Series	Wattage/lamp	Voltage			
TWAC		120	Shipped installed in fixture		
	35S ¹	208 ⁸	SF	Single fuse (120, 277, 347V) ⁴	
	50S ²	240 ⁸	DF	Double fuse (208, 240V) ⁴	
	70S	277	XHP	High power factor ballast	
	100S	347	EC	Emergency circuit ^{5,6}	
		TB ³	DC12	Emergency circuit 12 volt (35W lamp included std.) ⁹	
			2DC12	Emergency circuit 12 volt (2 35W lamps included std.) ⁹	
			QRS	Quartz restrike system ^{5,6}	
			CR	Enhanced corrosion-resistance	
			CRT	Non-stick protective coating ⁷	
			CSA	Listed and labeled to comply with Canadian Standards	
			NOM	Listed and labeled to comply with	
			PE	Photocell	
			L/LP	Less lamp	
			LPI	Lamp included as standard	
				Architectural Colors (optional)	
				DNA	Natural aluminum
				DBL	Black
				DDB	Medium bronze
				DWH	White
				DSS	Sandstone
NOTES:					
1 120V only.					
2 120 or 277V only.					
3 Optional multi-tap ballast (120,208,240,277V) In Canada 120,277,347V; ships as 120/347.					
4 Not available with multi-tap ballast.					
5 Lamp not included.					
6 Quartz lamp wattage not to exceed ballast wattage rating.					
7 Black finish on housing only.					
8 Consult factory for availability in Canada.					
9 Not available with QRS, EC or NOM.					
Accessories					
Order as separate catalog number					
RK1 PEB1 Photocell kit (120V only)					
RK1 PEB1 CSA Photocell kit (120V only)					
RK1 PEB2 Photocell kit (208, 240 or 277V)					
RK1 PEB3 CSA Photocell kit (347V)					
TAWAG Wireguard					

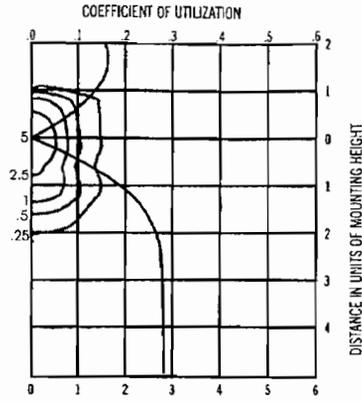
TWAC High Pressure Sodium Wall-Pak

TWAC 35S Test No. LTL8358



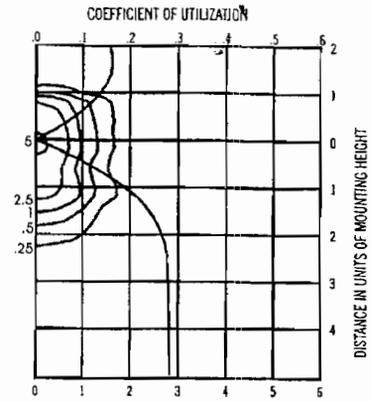
35W High Pressure Sodium lamp, 4000 rated lumens. Footcandle values based on 20' mounting height, Distribution, cutoff.

TWAC 50S Test No. LTL8357



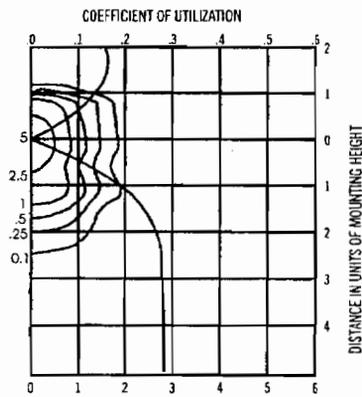
50W High Pressure Sodium lamp, 6300 rated lumens. Footcandle values based on 20' mounting height, Distribution, cutoff.

TWAC 70S Test No. LTL8356



70W High Pressure Sodium lamp, rated lumens. Footcandle values based on 20' mounting height, Distribution, cutoff.

TWAC 100S Test No. LTL8337



100W High Pressure Sodium lamp, 9500 rated lumens. Footcandle values based on 20' mounting height, Distribution, cutoff.

Mounting Height Correction Factor

(Multiply the fc level by the correction factor)

6'	8'	10'
8 ft. = 6.25	-	8 ft. = 6.25
10 ft. = 4.00	10 ft. = 4.00	-
12 ft. = 2.78	12 ft. = 2.78	12 ft. = 2.78



3L-2

50-175W VMV Series ♦



Champ®
H.I.D. Lighting Fixtures
Enclosed & Gasketed

Cl. I, Div. 2, Groups A,B,C,D
Cl. II, Groups E,F,G (HPS 50W, 70W)
Cl. III (HPS 50W, 70W)
Simultaneous Presence (HPS 50W, 70W)
3,3R,4,4X

Wet Locations
Marine
Locations
NEMA

Application:

VMV series Champ lighting fixtures are used:

- in manufacturing plants, refineries, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, offshore, dockside, and harbor installations, and other heavy industrial applications
- in areas in which ignitable concentrations of flammable gases or vapors will be present only due to abnormal, unusual, or accidental conditions ♦
- where combustible dusts are present ♦ *
- in marine applications where water spray and corrosive atmospheres are considerations
- in elevated ambient temperatures often found in industrial applications
- in installations where moisture, dirt, dust, vibration, corrosion, and rough usage are problems
- wherever the damaging effects of water, wind, snow, sleet, hot sun, or any combination of these elements are found

Features:

- Compact, lightweight design is ideal for medium and low mounting heights
- Cast copper-free aluminum construction (less than 0.4 of 1% copper) and epoxy powder finish provide excellent resistance to corrosion
- Seven mounting arrangements to suit any lighting layout – pendant, flexible pendant, ceiling, wall bracket, angle stanchion, straight stanchion, and quad-mount
- Wide range of light sources and wattages to meet specifiers' needs: 50, 70, 100, and 150 watt high pressure sodium (HPS); 100, and 175 watt mercury vapor (MV); 70, 100, 175 watt metal halide (MH)
- Hinged ballast housing for ease of installation and maintenance
- Wide choice of photometric distributions. Glass globes, refractors and compact refractors available for all wattage fixtures; plastic refractors (for non-hazardous applications only) for 50-100 watt fixtures
- All fixtures are designed to perform in a 40°C ambient temperature. Selected fixtures are suitable for ambient temperatures up to 65°C.
- Superior gasketing seals between the mounting module, housing, and optical assembly for optimum performance in wet and corrosive environments
- Hubs with an integral conduit stop and bushing to help prevent damage to field wiring during installation
- Low ambient capability to (-40°C)
- Dome and 30° angle reflectors made of bright white Krydon® material provide superior reflectivity, with twist-on feature requiring no tools or additional hardware. Will not chip, peel, dent, rust, or corrode
- Grounding wire for safety
- Ballasts available in voltages of 120, 208, 240, 277, 347, 480, 600 multi-tap* (dual-tap* for 50W HPS) and tri-tap
- Mogul base porcelain lamp socket



Standard Materials:

- Ballast housings and mountings – copper free aluminum (less than 0.4 of 1%)
- Exterior hardware – stainless steel
- Reflectors (dome and angle) – Krydon fiberglass-reinforced polyester material
- Globes – heat and impact resistant internally fluted glass
- Refractors – glass (50-175 watts); plastic (50-100 watts), for non-hazardous applications.
- Guards: globe – copper-free aluminum refractor – stainless steel

Standard Finishes:

- Copper-free aluminum – epoxy powder coat
- Krydon material – high reflectance white
- Stainless steel – natural

Electrical Ratings:

- 120, 208, 240, 277, 347, 480, 600, Multi-tap* (120, 208, 240 and 277)
- 50 to 150W HPS; 100 to 175W MV; 70 to 175W MH

Certifications and

Compliances:

- NEC: Class I, Division 2, Groups A,B,C,D – All; Class II, Division 1, Groups E,F,G; 50-70W HPS only; Simultaneous Presence (Class I, Division 2/Class II, Division 1) – 50-70W HPS only; Class III 50-70W HPS only.
- CEC: Class I, Division 2, Groups A,B,C,D – All; Class II, Groups E,F,G – All; Class III – All
- UL Standards: 595 Marine Locations; 844 Hazardous (Classified) Locations; 1572 Ordinary and Wet Locations
- CSA Standard: C22.2 No. 137

(Note: CEC/CSA Certified VMV Champ® HID Lighting - Crouse-Hinds Canada fixtures only.)

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Options:

The following special options are available from the factory by adding suffix to fixture Cat. No.:

- | Description | Suffix to be added to Cat. No. |
|--|--------------------------------|
| • Fused – to protect ballast and capacitors against abnormal line conditions. | S8580 |
| • Ballast-Gard™ starter cut-out switch – prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life. Available for use with 50-150W LX HPS only | BG |
| • Instant restrike – enables a hot HPS lamp to immediately restrike after a momentary loss of arc due to voltage fluctuation or power outage. It has no effect on the warm-up period of cold lamps. Available for use with 50-150W LX HPS only | IR |
| • Quartz auxiliary lighting for use with R2 & R5 large glass refractors only! – comes to full brightness immediately and remains lit until the HID lamp attains 60-70% of full illumination. For non-hazardous locations only | QTZ† |
| • Stainless steel insert – top hat with stainless steel threaded insert to attach ballast housing | S806 |
| • TEFLON coating on globe for increased shatter protection. | S808 (VMV T#S do not change) |
| • Factory assembled with H.I.D. lamps installed for additional labor savings. | FA |

(Note: BG and IR options cannot be used together. IR and QTZ options cannot be used together.)

- Restricted Breathing Construction
 - Class I Zone 2 suitability
 - Cooler T-Ratings for Class I Div 2

Accessories:

- See pages 3L-35 and 36 for complete listing.
- See page L-18 for family trees.

♦ See page 3L-0.
 • NEC - US Fixtures (UL) – Class II, Class III, Simultaneous Presence – 50 & 70 watt HPS only
 • CEC – Canada Fixtures (CSA) – Class I, Class II – All lamp types and wattages.
 † Quartz lamp not included use 100W single ended lamp – Q100DC, Q100C/DC or 100Q/C/DC. Consult factory for top hat limitations
 Ⓢ CSA certified fixtures are not available with fusing
 * CSA certified fixtures are not available with multi-tap or dual-tap ballast. CSA certified fixtures available with tri-tap ballast.
 TEFLON is a registered trademark of C.I. du/Perm Co.

3L HID Lighting

50-150W High Pressure Sodium VMV Series

Champ® H.I.D. Lighting Fixtures
Integral Ballast Enclosed & Gasketed

Cl. I, Div. 2, Groups A,B,C,D ♦
Cl. II, Groups E,F,G ♦ (HPS 50W, 70W)
Cl. III ♦ (HPS 50W, 70W)
Simultaneous Presence ♦ (HPS 50W, 70W)

Wet Locations
Marine Locations
NEMA 3,3R,4,4X

3L-3



High Pressure Sodium High Power Factor Ballast (Min. P.F. 90%) - See Notes 1 (to specify voltage) and 2

Mounting Style	Hub Size	Lamp Watts	With G24 Globe and P21 Guard Cat. No.†	With G241 Type I Compact Refractor Cat. No.**	With G245 Type V Compact Refractor Cat. No.**	With R5 Glass Refractor† Cat. No.***
	Pendant Mount	1/4	50	VMVS2A050G241	VMVS2A050G245	VMVS2A050R5
		1	50	VMVS3A050G241	VMVS3A050G245	VMVS3A050R5
	1/4	70	VMVS2A070G241	VMVS2A070G245	VMVS2A070R5	
		1	70	VMVS3A070G241	VMVS3A070G245	VMVS3A070R5
		100	VMVS2A100G241	VMVS2A100G245	VMVS2A100R5	
		1	100	VMVS3A100G241	VMVS3A100G245	VMVS3A100R5
1/4	150	VMVS2A150G241	VMVS2A150G245	VMVS2A150R5		
	1	150	VMVS3A150G241	VMVS3A150G245	VMVS3A150R5	
	Flexible Pendant Mount	1/4	50	VMVS2HA050G241	VMVS2HA050G245	VMVS2HA050R5
		1/4	70	VMVS2HA070G241	VMVS2HA070G245	VMVS2HA070R5
	1/4	100	VMVS2HA100G241	VMVS2HA100G245	VMVS2HA100R5	
		1/4	150	VMVS2HA150G241	VMVS2HA150G245	VMVS2HA150R5
	Ceiling Mount Thru-Feed	1/4	50	VMVS2C050G241	VMVS2C050G245	VMVS2C050R5
		1	50	VMVS3C050G241	VMVS3C050G245	VMVS3C050R5
	1/4	70	VMVS2C070G241	VMVS2C070G245	VMVS2C070R5	
		1	70	VMVS3C070G241	VMVS3C070G245	VMVS3C070R5
		100	VMVS2C100G241	VMVS2C100G245	VMVS2C100R5	
		1	100	VMVS3C100G241	VMVS3C100G245	VMVS3C100R5
1/4	150	VMVS2C150G241	VMVS2C150G245	VMVS2C150R5		
	1	150	VMVS3C150G241	VMVS3C150G245	VMVS3C150R5	
	Wall Mount Thru-Feed	1/4	50	VMVS2TW050G241	VMVS2TW050G245	VMVS2TW050R5
		1	50	VMVS3TW050G241	VMVS3TW050G245	VMVS3TW050R5
	1/4	70	VMVS2TW070G241	VMVS2TW070G245	VMVS2TW070R5	
		1	70	VMVS3TW070G241	VMVS3TW070G245	VMVS3TW070R5
		100	VMVS2TW100G241	VMVS2TW100G245	VMVS2TW100R5	
		1	100	VMVS3TW100G241	VMVS3TW100G245	VMVS3TW100R5
1/4	150	VMVS2TW150G241	VMVS2TW150G245	VMVS2TW150R5		
	1	150	VMVS3TW150G241	VMVS3TW150G245	VMVS3TW150R5	
	Quad-Mount Adjustable Thru-Feed, 25° Angle, 12 1/2°	1/4	50	VMVS2SQ050G241	VMVS2SQ050G245	VMVS2SQ050R5
		1/4	70	VMVS2SQ070G241	VMVS2SQ070G245	VMVS2SQ070R5
	1/4	100	VMVS2SQ100G241	VMVS2SQ100G245	VMVS2SQ100R5	
		1/4	150	VMVS2SQ150G241	VMVS2SQ150G245	VMVS2SQ150R5
	Stanchion Mount 25° Angle	1 1/2	50	VMVSJ050G241	VMVSJ050G245	VMVSJ050R5
		1 1/2	70	VMVSJ070G241	VMVSJ070G245	VMVSJ070R5
	1 1/2	100	VMVSJ100G241	VMVSJ100G245	VMVSJ100R5	
		1 1/2	150	VMVSJ150G241	VMVSJ150G245	VMVSJ150R5
	Stanchion Mount Straight	1 1/2	50	VMVSP050G241	VMVSP050G245	VMVSP050R5
		1 1/2	70	VMVSP070G241	VMVSP070G245	VMVSP070R5
	1 1/2	100	VMVSP100G241	VMVSP100G245	VMVSP100R5	
		1 1/2	150	VMVSP150G241	VMVSP150G245	VMVSP150R5

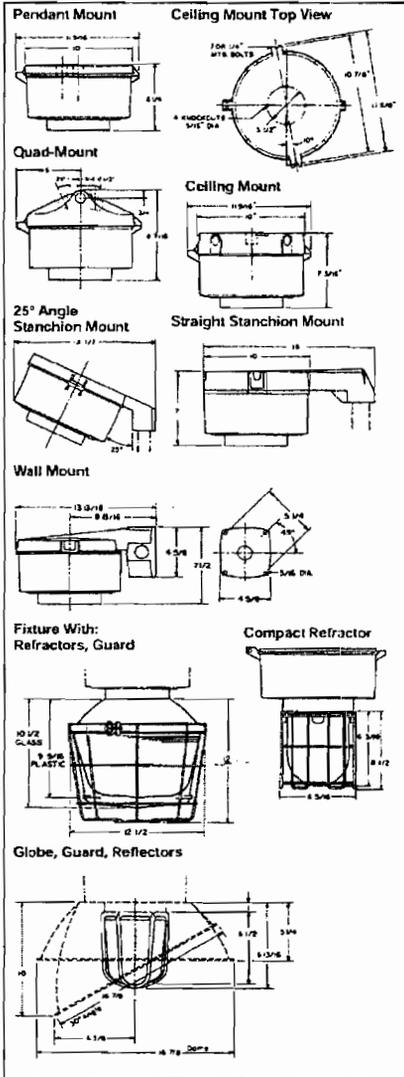
NOTES:

1. Catalog numbers are basic numbers. Voltage must be specified.
Voltage 120 208 240 277 347 480 600 Multi-Tap† T†-Tap
Suffix /120 /208 /240 /277 /347 /480 /600 /MT† /TT
50W HPS fixtures are only available with a 120/277 volt dual-tap ballast. To specify voltage, add suffix DT. (Multi-tap ballasts are provided for 277V)
2. For 150W HPS fixtures, "LIC" or "LCE" must be specified. To specify for use with 33V lamp, add suffix "LX." To specify for use with 100V lamp, add suffix "CE." ONLY LX suffix available from Crouse-Hinds Canada.
* CSA certified fixtures are not available with multi-tap ballasts.

† To obtain fixture without guard, omit suffix "P" from Cat. No.
** Available with optional wire guard. Order "P21" wire guard separately.
*** Available with optional wire guard. Order "P23" wire guard separately.
Accessories - see pages 3L-35 and 36 for complete listing.
Ballast Data - see pages 3L-39 to 42 for replacement ballasts.
♦ See page 3L-2.
* NEC - US Fixtures (UL) - Class II, Class III, Simultaneous Presence - 50 & 70 watt HPS only.
* CEC - Canada Fixtures (CSA) - Class II, Class III - All wattages.
† To substitute IES Type II refractor in place of Type V, change "R5" to "R2" in catalog number. R2 & R3 refractors not suitable for marine applications.

3L H.I.D. Lighting

3L-6 50-175W VMV Series
Champ® H.I.D. Lighting Fixtures
Integral Ballast Enclosed & Gasketed



Temperature Performance Data

Lamp Watts	Amb-ient Temp °C	Class I Division 2 Globe, S86&Guard/RS Series Refractor	Class II Division 1 and 2 Globe & Guard	Simultaneous Presence Class I, Division 2/Class II Globe & Guard	Supply Wire °C
High Pressure Sodium:					
50	40	T3A	T3B, T4	T4A, T3/T4A	75
	55	T3A	T3A	T4, T3/T4	75
	65	T3	T3	—	75
70	40	T3	T3B, T3C	T3C, T2D/T3C	75
	55	T3	T3	T3C, T2C/T3C	90
	65	—	—	—	—
100	40	T2C	T2D	—	90
	55	—	—	—	—
	65	—	—	—	—
150	40	T2A	T2B, T2C	—	90
	55	—	—	—	—
	65	—	—	—	—
Mercury Vapor:					
100	40	T2B	T2C, T2B	—	75
	55	—	—	—	—
	65	—	—	—	—
175	40	T2	T2A, T2B	—	90
	55	—	—	—	—
	65	—	—	—	—
Metal Halide:					
70	40	T3A	T3A	—	75
	55	T3	T3	—	90
	65	—	—	—	—
100	40	T2D	T2D	—	75
	55	T2D	T2D	—	85
	65	—	—	—	—
175	40	T2A	T2B, T2A	—	90
	55	—	—	—	—
	65	—	—	—	—

(Data not applicable with QTZ suffix)

Net Fixture Weights (lbs.):

Fixture Series	Lamp Watts 50	70	100	150	175
Fixture with Globe, Guards (lbs):					
VMVS	13½	14½	14½	14½	—
VMVC	—	—	13¼	—	15½
VMVM	13	—	13¼	—	15½
Fixture with Glass Refractor (lbs):					
VMVS	21¾	22¾	22¾	22¾	—
VMVC	—	—	21½	—	23¾
VMVM	21	—	21½	—	23¾

Add for mounting modules (lbs):

Pendant	1¼	Quad-Mount	3½
Flexible Pendant	1½	Angle Stanchion	3½
Ceiling	2¾	Straight Stanchion	4½
Wall	4½		

Add for reflectors (lbs):

Dome	1½	30° Angle	1½
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Deduct: ½ lb. for fixture without P21 Guard

* NEC - US Fixtures (UL) - Class II, Class III, Simultaneous Presence - 50 & 70 watt HPS only.
 • CEC - Canada Fixtures (CSA) - Class II, Class III - All lamp types and wattages.
 • CSA T-Rating: CSA testing for T # ½ is to different standards than UL.

Champ® H.I.D. Lighting Fixtures

Accessories

VMV, LMV, DMV, VMV High Wattage & N2MV Series

3L-35



Globes



G54



G24



G303

Lamp Watts	Fixture Series	Type	Cat. #
35-150	LMVS, LMVM	Heat/Impact resistant	G54
50-175	VMVC, VMVM, VMVS	Heat/Impact resistant	G24
50-250	DMVC, DMVM, DMVS	Heat/Impact resistant	G303
200-400	VMVS	Heat/Impact resistant	G303
250	VMVC, VMVM	Heat/Impact resistant	G303
50-175	N2MVC, N2MVM, N2MVS	Heat/Impact resistant	G303

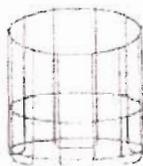
Guards



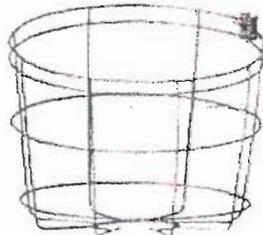
P50 - use with G54 globe



P21 - use with G24 globe



P33 - use with G303 globe



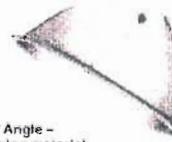
P23 - use with reflectors

Lamp Watts	Fixture Series	Type	Cat. #
35-150	LMVS, LMVM	Copper-free aluminum	P50
50-175	VMVC, VMVM, VMVS	Copper-free aluminum	P21
50-250	DMVC, DMVM, DMVS	Stainless steel	P33
200-400	VMVS	Stainless steel	P33
250	VMVC, VMVM	Stainless steel	P33
Reflectors	All	Stainless steel	P23
50-175	N2MVC, N2MVM, N2MVS	Stainless steel	P33

Reflectors



Dome - Krydon® material



30° Angle - Krydon material

Lamp Watts	Fixture Series	Dome Cat. #	Angle Cat. #
35-150	LMVS, LMVM	RD636 (RD66)	RA636 (RA66)
50-175	VMVC, VMVM, VMVS	RD70	RA70
50-250	DMVC, DMVM, DMVS	RD739 (RD79)	RA739 (RA79)
200-400	VMVS	RD739 (RD79)	RA739 (RA79)
250	VMVC, VMVM	RD739 (RD79)	RA739 (RA79)
50-175	N2MV, N2MVF(B)	RD739	RA740



Reflector/Lens - Etched Alzok aluminum reflector/tempered glass lens

Lamp Watts	Fixture Series	Type	Cat. #
200-400	VMVC, VMVM, VMVS	Reflector/Lens	GRD4
70-250	DMVS, DMVC, DMVM	Reflector/Lens	GRD4

Globes - Teflon Coated

Teflon coated for increased shatter protection

Lamp Watts	Fixture Series	Cat. #
50-175	VMVC, VMVM, VMVS	G24-S808
50-175	DMVC, DMVM, DMVS	G303-S808

Alzok is a registered trademark of Alcon.
Teflon is a registered trademark of E.I. DuPont Co.



BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE
STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION
For the CARRIZO ENERGY
SOLAR FARM PROJECT

Docket No. 07-AFC-8

PROOF OF SERVICE
(Revised 5/15/2008)

INSTRUCTIONS: All parties shall either (1) send an original signed document plus 12 copies or (2) mail one original signed copy AND e-mail the document to the address for the Docket as shown below, AND (3) all parties shall also send a printed or electronic copy of the document, which includes a proof of service declaration to each of the individuals on the proof of service list shown below:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 07-AFC-8
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docket@energy.state.ca.us

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DECLARATION OF SERVICE

I, Kristen E. Walker, declare that on June 23, 2008, I deposited copies of the attached Applicant's Preliminary Lighting Plan (Carrizo Energy Solar Farm 07-AFC-8) in the United States mail (FedEx) with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above.

OR

Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service list above.

I declare under penalty of perjury that the foregoing is true and correct.

