
**SAN DIEGO GAS & ELECTRIC COMPANY
EAST COUNTY SUBSTATION PROJECT
LIGHTING MITIGATION PLAN**

OCTOBER 2012

PREPARED BY:

ENVIRONMENTAL VISION

PREPARED FOR:



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1 – INTRODUCTION

San Diego Gas & Electric Company's (SDG&E's) East County (ECO) Substation Project (Project) includes the construction of a new 500/230/138 kilovolt (kV) ECO Substation east of Jacumba, the rebuilding of Boulevard Substation near the community of Boulevard, and the installation of a new 138 kV transmission line between the Boulevard and ECO substations, along with a new transmission interconnect to the Southwest Powerlink (SWPL) at the ECO Substation site. This Lighting Mitigation Plan (Plan) outlines measures to be implemented by SDG&E to reduce the potential lighting impacts associated with the operation of the Project. Specifically, this Plan has been prepared to support compliance with Mitigation Measure (MM) VIS-4a: Reduce long-term night-lighting impacts from substations and ancillary facilities. This Plan also complies with the local San Diego County lighting requirements that are outlined in Section 3 – Applicable Lighting Requirements.

2 – OBJECTIVES

The purpose of this Plan is to address measures to help reduce potential night-lighting impacts associated with the operation and lighting design at the ECO and Boulevard substations. Implementation of the Plan will maintain consistency with MM VIS-4a, as specified in the Project's Mitigation Monitoring, Compliance, and Reporting Program (MMCRP), as well as with relevant San Diego County ordinances.

3 – APPLICABLE LIGHTING REQUIREMENTS

3.0 COUNTY OF SAN DIEGO LIGHT POLLUTION CODE

Section 59.100 of the County of San Diego Light Pollution Code provides specific restrictions for the use of outdoor light fixtures for buildings and structures, recreational facilities, parking lots, landscape lighting, billboards, street lighting, and walkway lighting. Section 59.106 lists lamp and shielding requirements for outdoor light fixtures that are applicable to the Project area (Class II, Zone B), which include the following:

- Low-pressure sodium lamp type – fully shielded
- Other lamp types above 4050 lumens – prohibited
- Other lamp types 4050 lumens and below – allowed.¹

¹ Consistent with MM VIS-4a, the San Diego Light Pollution Code provides that lights shall be shielded where feasible and focused to minimize spill light into the night sky or adjacent properties.

3.1 COUNTY OF SAN DIEGO ZONING ORDINANCE

Section 6322 of the County of San Diego Zoning Ordinance controls excessive or unnecessary outdoor light emissions that produce unwanted illumination of adjacent properties by restricting outdoor lighting usage. Between the hours of 11:00 p.m. and dawn, the following forms of outdoor lighting usage are prohibited:

- operation of searchlights for advertising purposes
- illumination of outdoor public recreational facilities
- outside illumination for aesthetic or dramatic purposes of any building
- illumination of outdoor advertising signs.

4 – MITIGATION MEASURES

As stipulated in the Final Environmental Impact Report/Environmental Impact Statement, MM VIS-4a is intended to reduce long-term night-lighting impacts from substations and ancillary facilities. The measure provides the following requirements:

“SDG&E shall design and install all permanent lighting such that light bulbs and reflectors are not visible from public viewing areas; lighting does not cause reflected glare; and illumination of the project facilities, vicinity, and nighttime sky is minimized. The Lighting Mitigation Plan shall be reviewed for consistency with the County of San Diego Light Pollution Code (Section 59.100 et. al) and Sections 6322 and 6322 of the Zoning Ordinance to ensure outdoor light fixtures emitting light into the night sky do not result in a detrimental effect on astronomical research and to ensure reflected glare and light trespass is minimized. SDG&E shall submit a Lighting Mitigation Plan to the CPUC for review and approval at least 90 days before ordering any permanent exterior lighting fixtures or components. SDG&E shall not order any exterior lighting fixtures or components until the Lighting Mitigation Plan is approved by the CPUC. The Plan shall include but is not necessarily limited to the following:

- Lighting shall be designed so exterior light fixtures are hooded, with lights directed downward or toward the area to be illuminated, and so that backscatter to the nighttime sky is minimized. The design of the lighting shall be such that the luminescence or light sources are shielded to prevent light trespass outside the project boundary.
- All lighting shall be of minimum necessary brightness consistent with worker safety.
- High illumination areas not occupied on a continuous basis shall have switches or motion detectors to light the area only when occupied.”

5 – PLAN IMPLEMENTATION

5.0 LIGHTING OPERATION AND DESIGN

The permanently installed lighting and temporary maintenance lighting at the ECO and Boulevard substations will meet the following lighting requirements specified in MM VIS-4a:

- All lighting will be of minimum necessary brightness consistent with worker safety.
- High illumination areas not occupied on a continuous basis will have switches or motion detectors to light the area only when occupied.
- SDG&E will design and install all permanent lighting such that light bulbs and reflectors are not visible from public viewing areas.
- Lighting will be designed so exterior light fixtures are hooded, with lights directed downward or toward the area to be illuminated, and so that backscatter to the nighttime sky is minimized. The design of the lighting shall be such that the luminescence or light sources are shielded to prevent light trespass outside the project boundary.

5.1 ECO SUBSTATION

Lighting at the ECO Substation is anticipated to include 28 floodlights (400 watt) and 14 building lights (70 watt) to provide ground level illumination of approximately 0.5-foot candles, the minimum amount of lighting necessary for worker safety. The anticipated locations of these lights are detailed in Attachment A: ECO Substation Lighting Plan; however, minor revisions to these locations may be necessary as final design is completed and construction proceeds.

Substation yard permanent lights will operate from switches in the control shelter, with lighting in each section of the substation (500 kV switchyard, 230 kV switchyard, and 138 kV switchyard) connected to different individual lighting circuits. The lights on the control shelters will be controlled by a manually operated three-way switch with locations at each substation gate. With this design, lighting at the ECO Substation will be limited to occupied areas, and maintenance crews will be able to turn on lights only in the work areas, minimizing light usage.

The lighting equipment specifications for the proposed permanent lighting fixtures at the ECO Substation are detailed in Attachment B: Lighting Equipment Specifications. The 28 proposed yard fixtures, mounted at a height of 30 to 40 feet in the locations shown in Attachment A: ECO Substation Lighting Plan, are General Electric model PF-154 Powerflood with a top and two-side visor model TSVDB-PF1. The 14 proposed wall lights are General Electric model Wallmount 175 Luminaire with top and side visor model TSVDB-WM7. The hooded/shielded fixtures are designed to generally direct light downward and to limit any upward illumination. In addition, the lights are mounted to tilt downward at an angle of 50 or 60 degrees to direct the light toward the ground and prevent light trespass outside the substation boundary. The light aiming schedule provided in Attachment A: ECO Substation Lighting Plan details the horizontal angle (direction the light is pointed) and vertical angle of each light. Once fixtures and components are ordered,

minor adjustments may be necessary, but similar models and installation methods will be utilized.

A map of the ECO Substation and its surroundings and sight lines from public viewing areas are shown in Attachment C: ECO Substation Plan Sight Line Sections and Diagram. The sight lines illustrate the distance to the substation lighting, as well as the vertical angle from the viewer to the lighting fixtures. In general, the public viewing areas are located to the north and west of the substation and include Old Highway 80, which is more than 0.25 mile away, and Interstate 8, which is more than 0.5 mile away. These public viewing areas are located at elevations lower than the ECO Substation pads. Therefore, the illuminated ground surface at the substation would not be visible and visible upward illumination would be minimal, as shown in the sight line drawings. The shielded light fixture diagram in Attachment C: ECO Substation Plan Sight Line Sections and Diagram illustrates that the hooded fixtures and the mounting of the fixtures to point downward will help prevent the light bulbs and reflectors from being visible at public viewing areas or having a detrimental effect on astronomical research. Therefore, the lighting design for the ECO Substation will comply with the requirements of MM VIS-4a.

5.2 BOULEVARD SUBSTATION

Lighting at the Boulevard Substation is anticipated to include 9 floodlights (400 watt) and 7 building lights (70 watt) to provide ground level illumination of approximately 0.5-foot candles, the minimum amount of lighting necessary for worker safety. The anticipated locations of these lights are detailed in Attachment D: Boulevard Substation Lighting Plan; however, minor revisions to these locations may be necessary as final design is completed and construction proceeds.

Substation yard permanent lights will operate from switches in the control shelter, with lighting in each corner of the substation. The lights on the control shelter will be controlled by a manually operated three-way switch located at the substation gate.

The lighting equipment specifications for the proposed permanent lighting fixtures at the Boulevard Substation are detailed in Attachment E: Boulevard Substation Lighting Equipment. The nine proposed yard fixtures, mounted at a height of approximately 30 feet in the locations shown on the substation plan in Attachment D: Boulevard Substation Lighting Plan, are Hubbell Lighting model MVM-0400S-268. The seven proposed wall lights are General Electric Wallmount 175 model WM7S07S0H1SN4DB. The hooded/shielded fixtures are designed to generally direct light downward and to limit any upward illumination. In addition, the lights are mounted to tilt downward at an angle of 50 or 60 degrees to direct the light at the ground and prevent light trespass outside of the substation boundary. The light aiming schedule provided in Attachment D: Boulevard Substation Lighting Plan details the horizontal angle (direction the light is pointed) and vertical angle of each light. Once fixtures and components are ordered, minor adjustments may be necessary, but similar models and installation methods will be utilized.

A map of the Boulevard Substation and surroundings with sight lines from Old Highway 80 and the nearest residence to the site are shown in Attachment F: Boulevard Substation Plan Sight Line Sections and Diagram. The sight lines illustrate the distance to the substation lighting, as

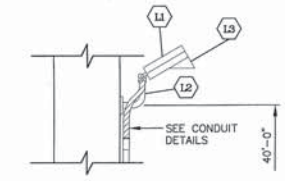
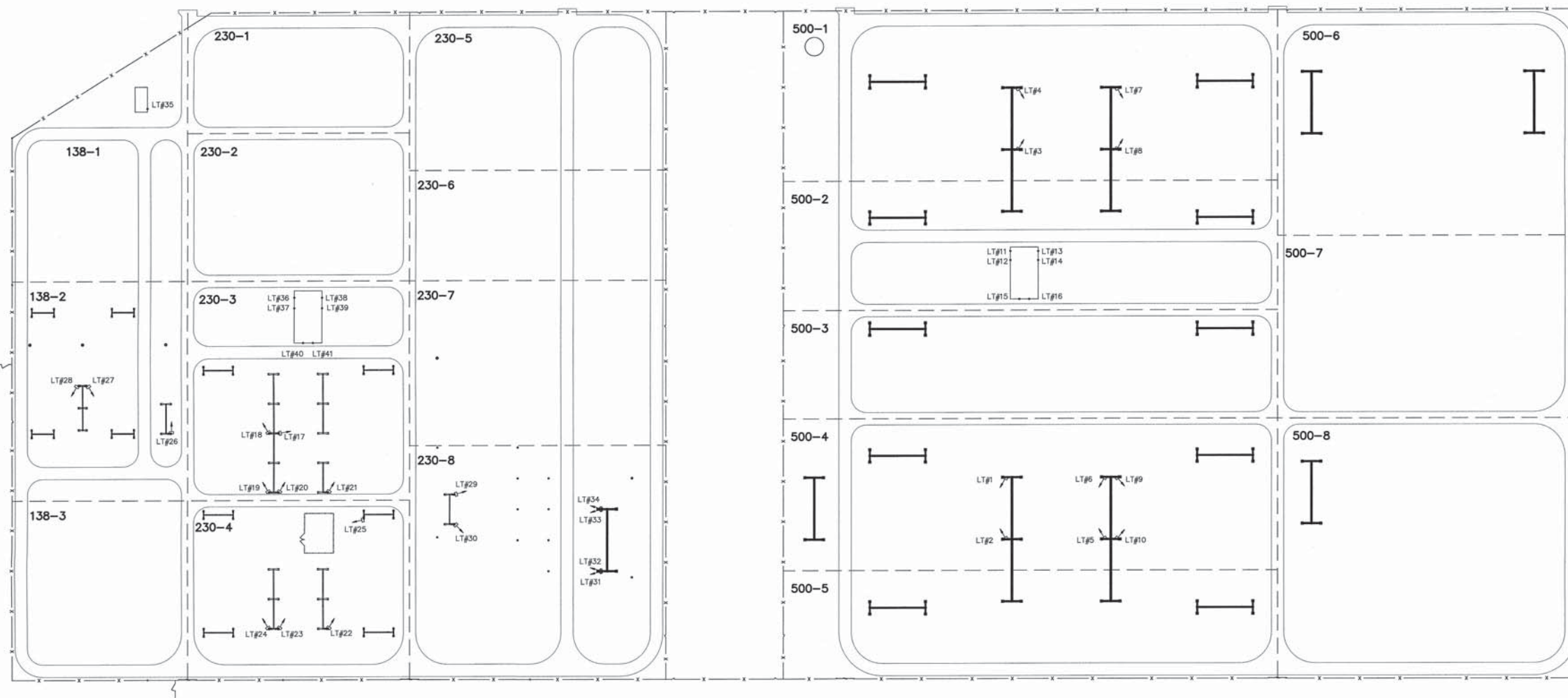
well as the vertical angle from the viewer to the nearest lighting fixture facing the viewpoint. In general, the public viewing areas are located to the north and west of the Boulevard Substation and include a relatively small portion of Old Highway 80, located approximately 200 feet away, and Tule Jim Lane, approximately 500 feet away. A limited number of viewers on Tule Jim Lane include local motorists and a few nearby residents; the closest residence lies approximately 200 feet west of the substation. The shielded light fixture diagram in Attachment F: Boulevard Substation Plan Sight Line Sections and Diagram illustrates that the hooded fixtures and the mounting of the fixtures to point downward will help prevent the light bulbs and reflectors from being visible at public viewing areas or having a detrimental effect on astronomical research. Project landscaping will provide additional screening of the substation and lighting. Therefore, the lighting design for the Boulevard Substation will comply with the requirements of MM VIS-4a.

6 – REFERENCES

- California Public Utilities Commission (CPUC).2012. East County Substation/Tule Wind/Energia Sierra Juarez Gen-Tie Projects Final Environmental Impact Report/Environmental Impact Statement. Online.
http://www.cpuc.ca.gov/environment/info/dudek/ECOSUB/ECO_Final_EIR-EIS.htm.
- SDG&E. 2009. ECO 500/230/138 kV Substation Project Proponent’s Environmental Assessment.
- BETA Engineering. April 25, 2012. East County Substation Outdoor Lighting Design.
- _____. August 29, 2012. Boulevard East Substation Outdoor Lighting Design.

ATTACHMENT A: ECO SUBSTATION LIGHTING PLAN

STATION NORTH



FLOODLIGHT MOUNTING DETAIL (N.T.S.)



BUILDING LIGHT MOUNTING DETAIL (N.T.S.)

500KV YARD			230/138/12KV YARD			LIGHT ORIENTATION		
LIGHT NO.	HORIZONTAL ANGLE (DEG) (MEASURED CLOCKWISE FROM NORTH)	VERTICAL ANGLE (DEG)	LIGHT NO.	HORIZONTAL ANGLE (DEG) (MEASURED CLOCKWISE FROM NORTH)	VERTICAL ANGLE (DEG)	LIGHT NO.	HORIZONTAL ANGLE (DEG) (MEASURED CLOCKWISE FROM NORTH)	VERTICAL ANGLE (DEG)
1	225	60	17	80	60	33	255	50
2	315	60	18	325	60	34	285	50
3	45	60	19	325	60	35	180	N/A
4	135	60	20	35	60	36	90	N/A
5	315	60	21	35	60	37	270	N/A
6	225	60	22	35	60	38	270	N/A
7	135	60	23	35	60	39	90	N/A
8	45	60	24	325	60	40	90	N/A
9	125	60	25	245	60	41	180	N/A
10	55	60	26	0	60	42	180	N/A
11	270	N/A	27	135	60			
12	270	N/A	28	225	60			
13	90	N/A	29	80	60			
14	90	N/A	30	135	60			
15	180	N/A	31	255	50			
16	180	N/A	32	285	50			

PLAN VIEW

ELEVATION VIEW

REFERENCE DRAWINGS

OVERALL CONDUIT PLAN & PULLBOX LAYOUT	ECO-S-645
500KV CONDUIT PLAN (NORTH)	ECO-S-645.4
500KV CONDUIT PLAN (SOUTH)	ECO-S-645.5
230KV CONDUIT PLAN (NORTH)	ECO-S-645.6
230KV CONDUIT PLAN (SOUTH)	ECO-S-645.7
138KV CONDUIT PLAN	ECO-S-645.8
TRANSFORMER YARD CONDUIT PLAN	ECO-S-645.9
CONDUIT DETAILS (SHEET 1 OF 4)	ECO-S-647
CONDUIT DETAILS (SHEET 2 OF 4)	ECO-S-647.1
CONDUIT DETAILS (SHEET 3 OF 4)	ECO-S-647.2
CONDUIT DETAILS (SHEET 4 OF 4)	ECO-S-647.3

BILL OF MATERIAL:

MARK NUMBER	CATALOG NUMBER	DESCRIPTION	QUANTITY
L1	PF1S405A1DBK	400W HPS FLOODLIGHT, MULTI-VOLT BALLAST WITH KNUCKLE SLIP FITTER, DARK BRONZE	28
L2	FBSFA2TTDB	FLOODLIGHT WALL MOUNT BRACKET, DARK BRONZE	28
L3	TSVDB-PF1	TOP AND SIDE VISOR, DARK BRONZE	28
L4	WM750750H1SN4DB	70W HPS WALLMOUNT LIGHT, MULTI-VOLT BALLAST, DARK BRONZE	14
L5	TSVDB-WM7	TOP AND SIDE VISOR, DARK BRONZE	14

- THE FLOODLIGHTS FOR YARD LIGHTING SHALL BE PROVIDED WITH VISORS. THESE LIGHTS SHALL BE CONTROLLED FROM AN AC PANEL LOCATED IN EACH STATION (500KV AND 230KV). THE BREAKER SHALL BE LABELED WITH THE DESIGNATION CORRESPONDING TO THE SECTION.
- THE EXTERIOR CONTROL SHELTER LIGHTS SHALL BE PROVIDED WITH VISORS. THESE LIGHTS SHALL BE CONTROLLED BY A THREE WAY SWITCH WITH LOCATIONS AT EACH GATE (2 REQUIRED) AND A HAND-OFF/AUTO SWITCH AT THE CONTROL SHELTER OF EACH RESPECTIVE STATION.
- THE EXTERIOR BUILDING LIGHTS ON THE MAINTENANCE SHELTER AND SPARING SHELTER SHALL BE CONTROLLED BY A SWITCH INSIDE EACH BUILDING.

REVISIONS

NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	

	BETA ENGINEERING PINEVILLE, LOUISIANA
	SAN DIEGO GAS & ELECTRIC COMPANY SAN DIEGO, CALIFORNIA
EAST COUNTY SUBSTATION OUTDOOR LIGHTING PLAN & DETAILS	
DRAWN BY: RLJ	DATE: 5/27/09
CHECKED BY: CJW	DATE: 5/27/09
APPROVED BY: CJW	DATE: 5/27/09
CAD NO.: ECOS960	PLOT SCALE: 1" = 1'
SCALE: 1"=100'	REV. 3
ECO-S-960	

ATTACHMENT B: LIGHTING EQUIPMENT SPECIFICATIONS



PF-154™ POWERFLOOD® FLOODLIGHT

APPLICATIONS

- Parking lots, building security and building facade
- Anywhere a compact 70 to 400 watt, wide beam floodlight is needed.

SPECIFICATION FEATURES

- /UL 1598 Listed (PF1S only)
Suitable For Wet Locations
- Heavy duty die-cast aluminum housing
- Enclosed, gasketed and activated-charcoal filtered optical assembly
- Heavy duty steel trunnion with degree indicator
- One-piece hydroformed reflector with Alzak† finish
- Knuckle slipfitter and wall mounting options
- Built-in "Sight-Track", quick aiming sight
- Tray mounted ballast available (150 watt maximum)
- Heat and shock resistant tempered glass lens
- Front access via hinged/removable door
- Polyester powder paint finish inside and out
- Corrosion-resistant external hardware
- Mogul base socket – E39 standard

F

FLOOD LIGHTING



The Energy Independence and Security Act of 2007 (EISA) affects Metal Halide (MH) and Pulse Metal Halide (PMH) wattages from 175W to 450W and for domestic usage, the new digit is "E = EISA-compliant PMH" which has a minimum efficiency of 88%. In many cases, the lumen value and lamp life of a lesser wattage meets or exceeds the former MH ballast/lamp system. For 175W applications, where 175W E-PMH is not available, 150W PMH may be an acceptable substitute. 150W PMH is medium base socket unless otherwise listed or requested.

ORDERING NUMBER LOGIC

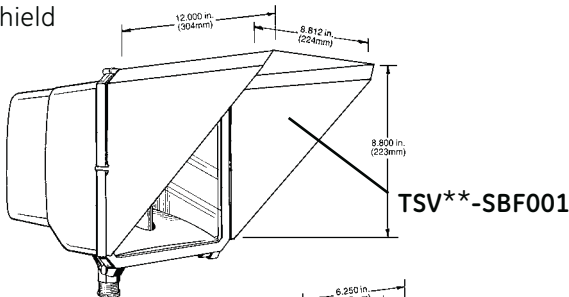
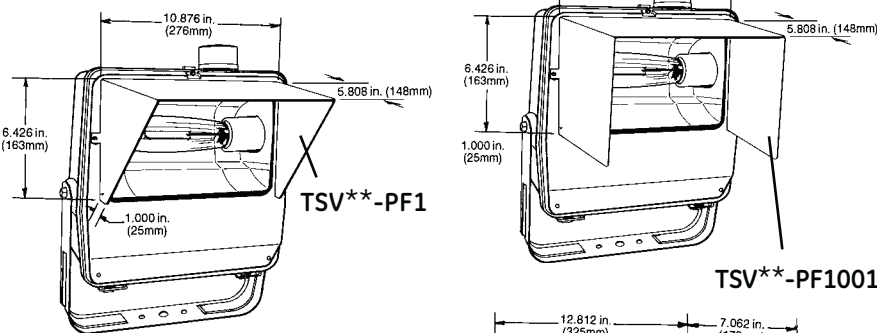
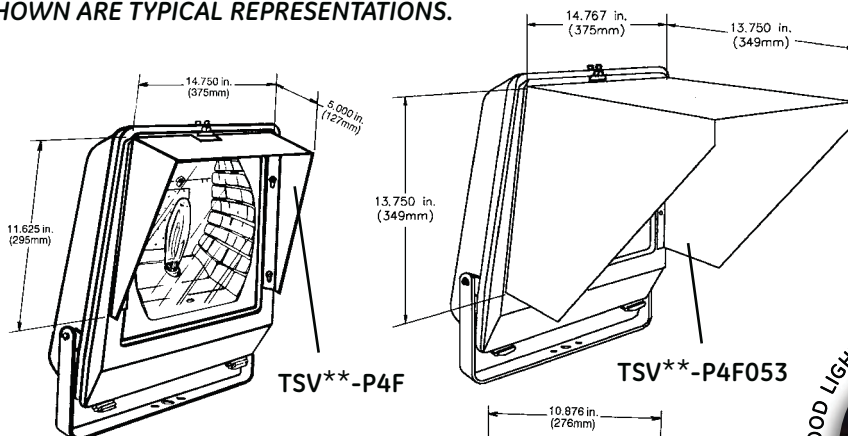
PF1S	40	S	0	A	1	6X6	DB	K
PRODUCT IDENT	WATTAGE	LIGHT SOURCE	VOLTAGE	BALLAST TYPE	PE FUNCTION	NEMA TYPE BEAM SPREAD HORIZ X VERT	COLOR	OPTIONS
XXXX	XX	X	X	X	X	XXX	XX	XXX
PF1S = PF-154 Standard NOTE: 150W Max Mag-Reg PF1T = PF-154 Floodlight with Tray Mounted Ballast 150 watt maximum NOTE: Mag-Reg not available.	07 = 70 10 = 100 15 = 150 17 = 175 20 = 200 24 = 250/400* 25 = 250 32 = 320 40 = 400 *Connected for 250W (HPS only)	E = Energy Act Compliant Pulse MH (EPMH) S = HPS M = MH P = PMH CAUTION: For 400W MH, an E-18 or ED-28 lamp must be used. Standard: Lamp not included.	60Hz 0 = 120/208/240/277 Multivolt 1 = 120 2 = 208 3 = 240 4 = 277 5 = 480 C = 120x240x277V D = 347 F = 120X347* T = 220 50Hz 6 = 220 R = 230 Y = 240 *Connected for 120V	See Ballast and Photometric Selection Table A = Autoreg H = HPF Reactor or Lag M = Mag-Reg N = NPF Reactor or Lag	1 = None 2 = PE Receptacle NOTE: Receptacle connected same voltage as unit. Order PE Control separately.	Select NEMA Type from Photometric Selection Table Example: 6X6 = 6X6	DB = Dark Bronze	F = Fusing (Not available with multivolt or 120X347V) K = Knuckle Slipfitter for 1.9-in. to 2.38-in. (48-60 mm) OD Tenon L = Latch for door P = Prewired with 6 ft (2 meters) #14/3 T = Terminal Board V = Knuckle Wall Mount Y = Dual Wattage Units Connect Higher Wattage

FLOODLIGHTING ACCESSORIES

REFER TO ACCESSORY INDEX TO MATCH ACCESSORY WITH PRODUCT.
ILLUSTRATIONS SHOWN ARE TYPICAL REPRESENTATIONS.

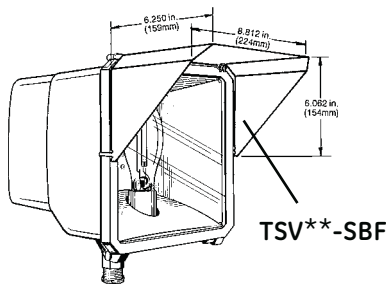
TOP AND TWO SIDES VISOR

- **TSVAL-P4F**
Aluminum
- **TSVDB-P4F**
Dark Bronze, can use with polycarbonate vandal shield **LVS-P4F**
Can use with wire guard **WG-P4F**
- **TSVDB-P4F053**
Heavy duty visor
- **TSVDB-PF1**
Dark Bronze, can use with **WG-PF1** wire guard
Can use with **LVS-PF1** vandal shield
- NEW** • **TSVDB-PF1001**
Dark Bronze, can use with **WG-PF1** wire guard
Can use with **LVS-PF1** vandal shield
- **TSVDB-P15**
Dark Bronze, can use with **LVS-P15** polycarbonate vandal shield

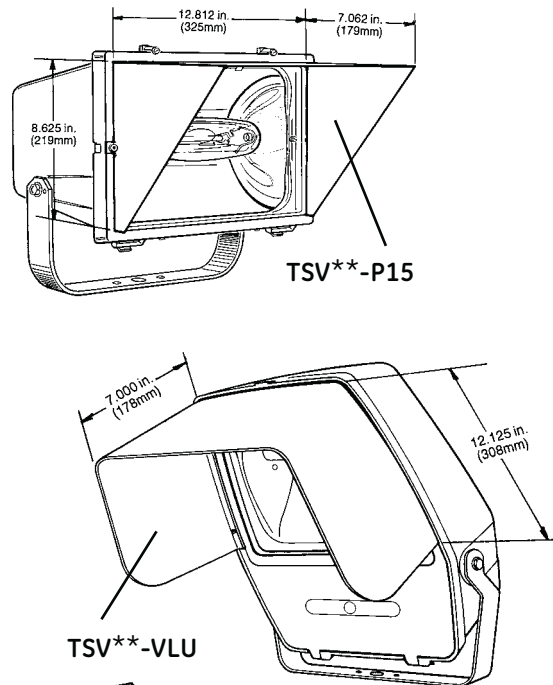


- **TSVAL-SBF001**
Aluminum

- **TSVDB-SBF**
Dark Bronze

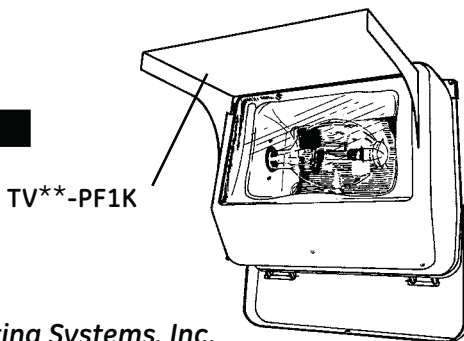


- **TSVAL-VLU**
Stainless Steel, can use with **LVS-VLU** polycarbonate vandal shield



TOP VISOR

- **TVAL2-PF1K**
Aluminum
- **TVDB2-PF1K**
Dark Bronze



F
FLOOD LIGHTING



WALLMOUNT™ 175 LUMINAIRE**APPLICATIONS**

- Building perimeters, entrances, walkways, residential yards and loading docks
- Area lighting applications where a glass refractor is needed or desired

SPECIFICATION FEATURES

- 1598 Listed
Suitable For Wet Locations
- UL listed to Canadian National Standards and Codes
- Die-cast aluminum housing and door
- Prismatic borosilicate refractor
- Standard and tamper-resistant hardware included
- Complete front access to ballast and lamp
- Side-hinged front door
- Multiple junction box mounting patterns (3.25 in. [83mm] octagonal, 4-in [102mm] octagonal, 2-in. X 4-in. [51X102mm] rectangle)
- Top .5 in. (13mm) threaded conduit entrance
- "Snap-in" anodized aluminum reflector
- Electrocoat paint finish
- Knock-out for field installed photoelectric control kit (Order kit separately)
- Two socket sizes available: mogul base – E39 standard and medium base – E26 standard (lamp included with medium base)
- Enclosed and Gasketed

The Energy Independence and Security Act of 2007 (EISA) affects Metal Halide (MH) and Pulse Metal Halide (PMH) wattages from 175W to 450W and for domestic usage, the new digit is "E = EISA-compliant PMH" which has a minimum efficiency of 88%. In many cases, the lumen value and lamp life of a lesser wattage meets or exceeds the former MH ballast/lamp system. For 175W applications, where 175W E-PMH is not available, 150W PMH may be an acceptable substitute. 150W PMH is medium base socket unless otherwise listed or requested.

ORDERING NUMBER LOGIC

WM7S	07	S	0	H	1	SN4	DB	Options*
PRODUCT IDENT	WATTAGE	LIGHT SOURCE	VOLTAGE	BALLAST TYPE	PE FUNCTION	IES DISTRIBUTION TYPE	COLOR	
XXXX	XX	X	X	X	X	XXX	XX	XXX
WM7M = Wallmount 175 Luminaire (Mogul Base E39 Socket Standard without Lamp)	See Ballast and Photometric Selection Table	See Ballast and Photometric Selection Table	See Ballast and Photometric Selection Table	See Ballast and Photometric Selection Table	1 = None 3 = Internal * PE Control	See Ballast and Photometric Selection Table	DB=Dark Bronze GR=Gray	B = Time Delay Automatically Switched Quartz F = Fusing—Not available with multivolt or 120X347 volt (Non-UL) L = Latch on door (Non-UL) Q = Non-Time Delay Automatically Switched Quartz
WM7S = Wallmount 175 Luminaire (Medium Base E26 Socket Standard with Lamp)	05 = 50 07 = 70 10 = 100 15 = 150 17 = 175	E = Energy Act Compliant S = HPS M = MH P = PMH	60Hz 0 = 120/208/ 240/277 Multivolt 1 = 120 2 = 208 3 = 240 4 = 277 5 = 480 C = 120X240X 277V D = 347 F = 120X347* T = 220 50Hz 6 = 220 *NOTE: 120X347V connected for 120V	A = Autoreg H = HPF Reactor or Lag K = Hot Restart* N = NPF Reactor or Lag *Available in WM7M only. (Non-UL)	* Not available with multivolt or 480V	SN4 = Short, Non-cutoff, Type IV		



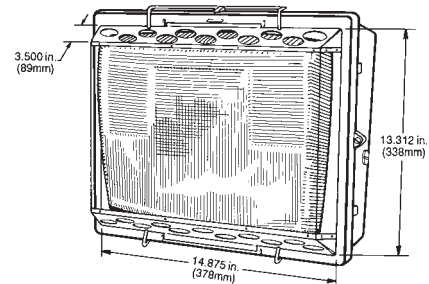
AREA WALLIGHTER ACCESSORIES

REFER TO ACCESSORY INDEX TO MATCH ACCESSORY WITH PRODUCT.
ILLUSTRATIONS SHOWN ARE TYPICAL REPRESENTATIONS.

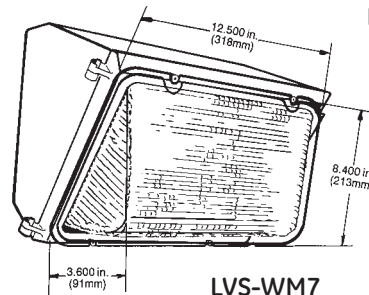


POLYCARBONATE VANDAL SHIELD

- **LVS-V2FWP** Prismatic
- **LVS-P4F** Flat Stipple V2FW
- **LVS-W40L001**
General Duty
Cannot use with Top Visor (**TVAL-W40L**, **TVDB-W40L**, **TVGR-W40L**)
- **LVS-W40L002**
Heavy Duty
Cannot use with Top Visor (**TVAL-W40L**, **TVDB-W40L**, **TVGR-W40L**)
- **LVS-WMTS**
- **LVS-WM7**
May be used with Top and Side visor (**TSVDB-WM7**) or Wire Guard (**WG-WM7**)



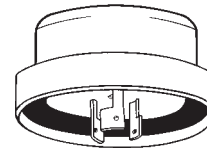
LVS-W40L001
LVS-W40L002



LVS-WM7

SHORTING CAP (With standard three-prong plug)

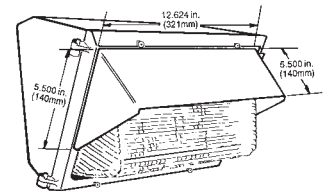
- **SCCL-PECTL**



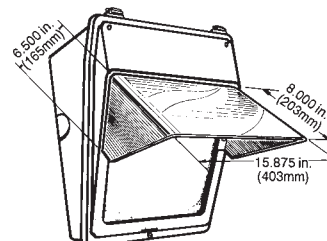
SCCL-PECTL

TOP AND SIDE VISOR

- **TSVDB-V2F**
Dark Bronze for Flat Glass
- **TSVDB-WM7**
Aluminum painted Dark Bronze. May be used with wire guard (**WG-WM7**) or polycarbonate vandal shield (**LVS-WM7**).

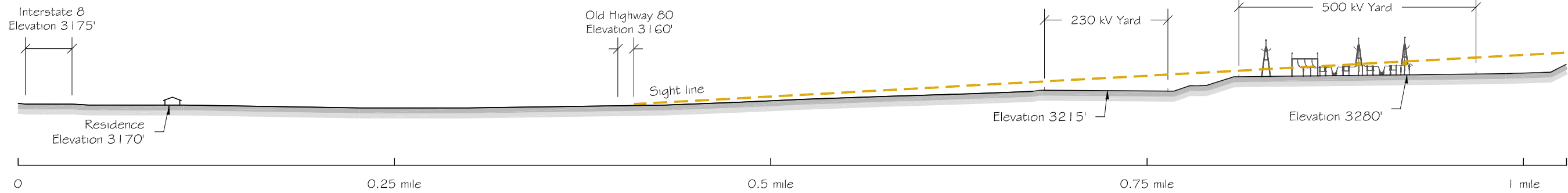


TSVDB-WM7

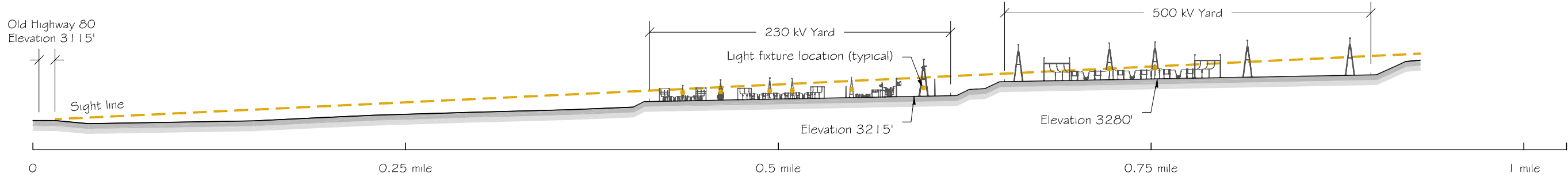


TSVDB-V2F

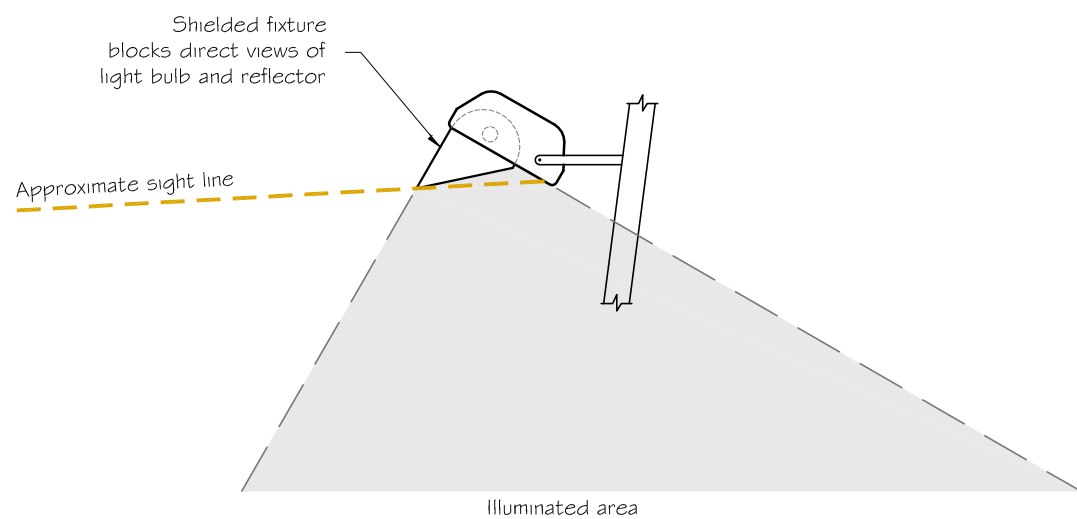
ATTACHMENT C: ECO SUBSTATION PLAN SIGHT LINE SECTIONS AND DIAGRAM



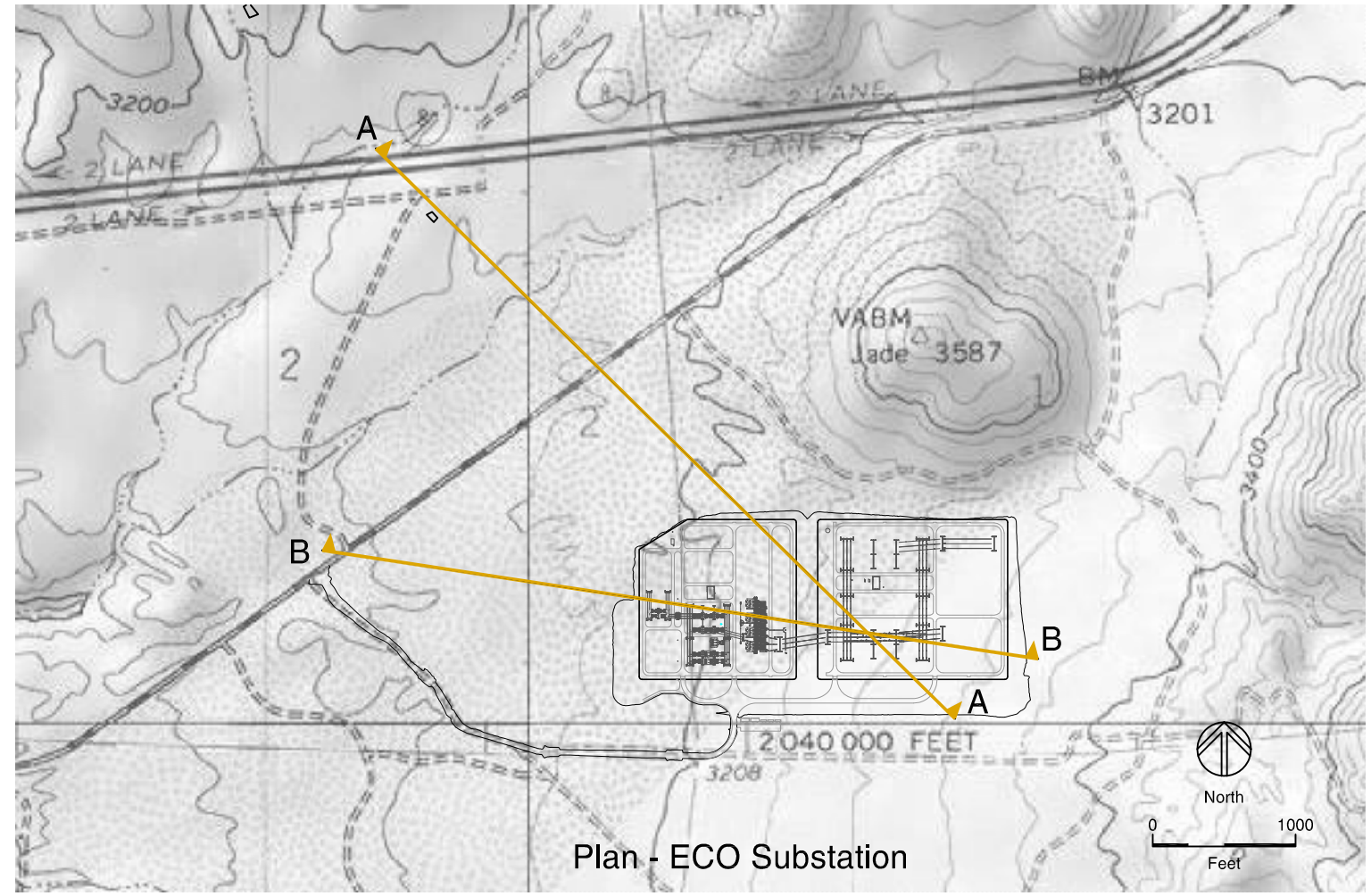
Section A-A



Section B-B



Shielded Light Fixture Diagram



Plan - ECO Substation

All distances and elevations are approximate

ENVIRONMENTAL VISION

SDGE
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NSIGNIA
ENVIRONMENTAL

Revisions	Date
XX	

Preliminary Set	
Design Review Set	
Plan Check Set	
Permit Set	
Construction Set	

LIGHTING MITIGATION PLAN

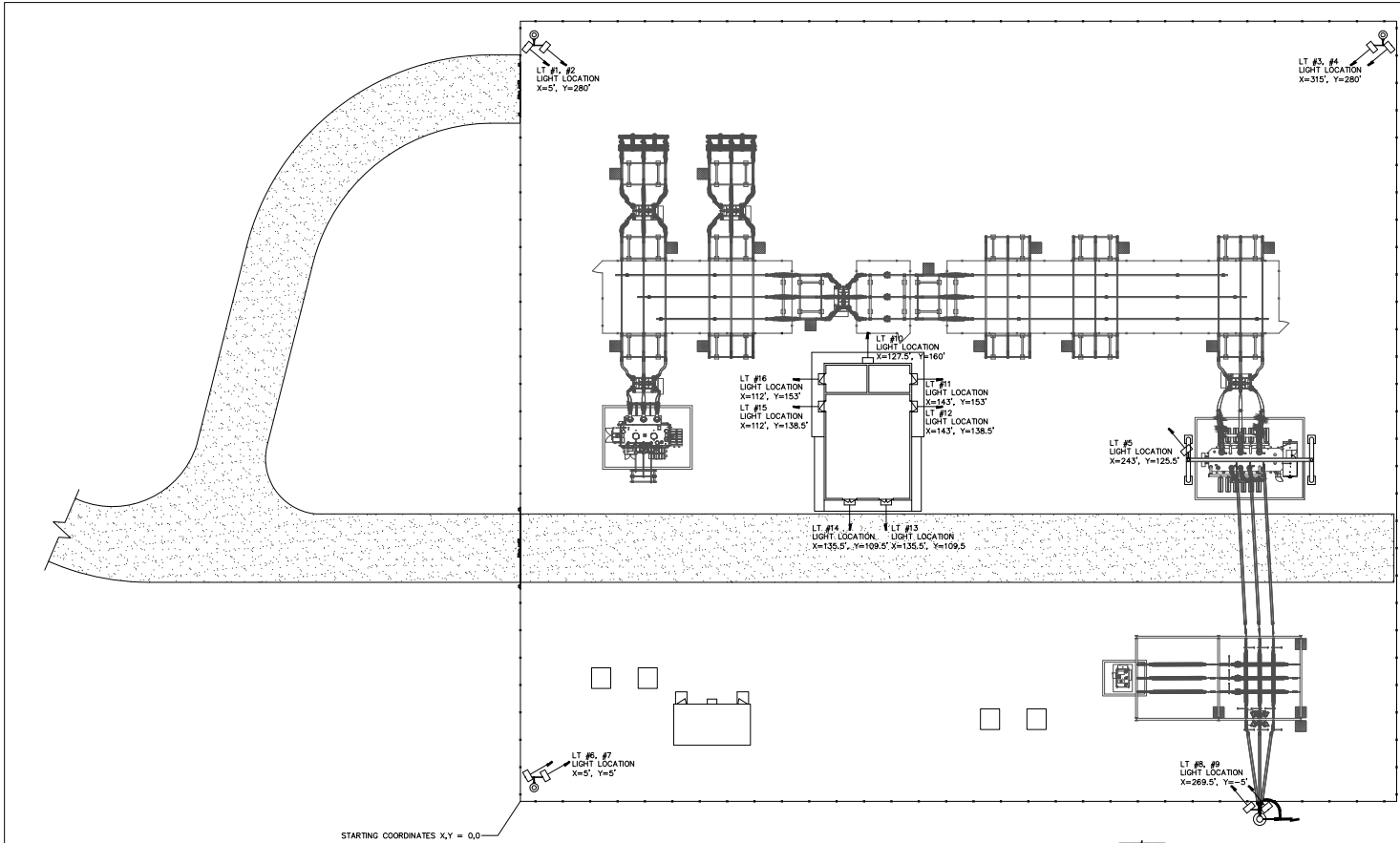
East County Substation Project
San Diego County, California

ATTACHMENT C:
ECO SUBSTATION PLAN
SIGHT LINE SECTIONS
AND DIAGRAM

DATE	8/29/2012
SCALE	
DRAWN	CIK
JOB	
DRAWING NUMBER	

OF SHEETS

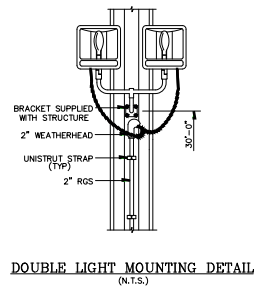
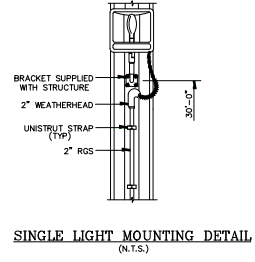
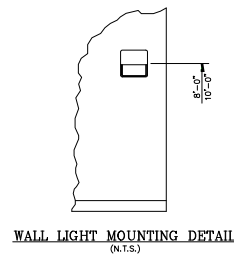
ATTACHMENT D: BOULEVARD SUBSTATION LIGHTING PLAN



LIGHT AIMING SCHEDULE		
LIGHT NO.	HORIZONTAL ANGLE (DEG) (MEASURED CLOCKWISE FROM NORTH)	VERTICAL ANGLE (DEG)
1	140	75
2	140	75
3	230	75
4	230	75
5	320	75
6	60	75
7	60	75
8	320	75
9	320	75
10	0	0
11	90	0
12	90	0
13	180	0
14	180	0
15	270	0
15	270	0

PLAN VIEW

ELEVATION VIEW



REVISIONS

NO.	WORK DONE	DATE	BY	APPROV	NO.	WORK DONE	DATE	BY	APPROV	NO.	WORK DONE	DATE	BY	APPROV	NO.

BETA	BETA ENGINEERING <small>PROVIDING SOLUTIONS</small>
SAN DIEGO GAS & ELECTRIC COMPANY SAN DIEGO, CALIFORNIA	
BOULEVARD SUBSTATION OUTDOOR LIGHTING DESIGN	
DRAWN BY: SPB	DATE: 7/13/12
CHECKED BY:	SCALE: 1" = 20'
APPROVED BY:	W.A.: 5984474
CAD NO.: BUES501	REV: 0
B567-OLD	
AUG 01, 2012 - 13:07:23	

ATTACHMENT E: BOULEVARD SUBSTATION LIGHTING EQUIPMENT

MAGNULITER® MV SERIES

Cat. #		Approvals
Job	Type	



APPLICATIONS

- General purpose floodlighting

SPECIFICATIONS

- Die cast aluminum housing with low 2.3 EPA.
- Die cast aluminum door with bottom hinge and twin Hubbell Gard® screw closures
- Tempered glass lens seals with silicone gaskets to frame and housing. Door pre-drilled for accessories
- Steel yoke with three hole mounting pattern (MVM) or 2³/₈" O.D. cast aluminum slipfitter (MVK). MVK has knuckle wiring chamber for splice or button photocontrol installation
- Wide, uniform beam (7 X 6 typical) from twin parabolic batwing reflectors. Socket is base down, mogul base

- Galvanized steel Powr-Panl® ballast tray is retained by 4 screws for easy mounting. All ballastry is HPF and is available in Quad-Tap®, Tri-Tap® and 480 volt. For 50Hz consult factory

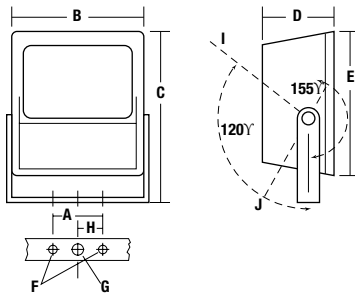
- Available in bronze, black, and gray powder paint finishes

LISTINGS

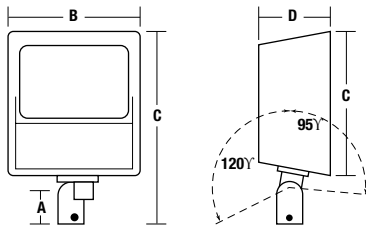
- Listed to UL1598 for use in wet locations



MVM



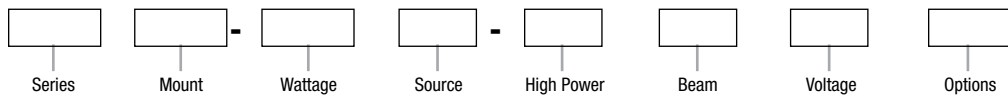
MVK



	A	B	C	D	E	F	G	H	I	J
MVM	3 ¹ / ₈ "	16 ³ / ₈ "	25 ¹ / ₂ "	9"	17 ⁷ / ₈ "	17 ¹ / ₃₇ "	7 ⁷ / ₈ "	19 ¹ / ₁₆ "	12" R	8 ⁵ / ₈ " R
	79 mm	416 mm	511 mm	229 mm	454 mm	13 mm	22 mm	40 mm	305 mm	219 mm
MVK	5 ¹ / ₂ "	16 ³ / ₈ "	25 ¹ / ₂ "	9"	17 ⁷ / ₈ "					
	140 mm	416 mm	648 mm	229 mm	454 mm					

ORDERING INFORMATION

ORDERING EXAMPLE: MVM-0400P-268F(120)



MV SERIES — Vertical lamp position. Features wide, uniform beam distribution.

(Coverage is four times set back distance)

Catalog Number MVM ³ Trunnion Mount	Catalog Number MVK ^{1,3} Slipfitter Mount	Photometry NEMA/IES H° x V°	Wattage	Weight lbs. (kg)	EPA ft ² m ²
Pulse Start Metal Halide					
MVM-HPS-SEA2¹		7(146°) x 6(115°)	less ballast	19 (8.6)	2.3 .22
MVM-0250P-268⁴	MVK-0250P-268⁴	7(146°) x 6(115°)	250	36 (16.3)	2.3 .22
MVM-0400P-268⁴	MVK-0400P-268⁴	7(146°) x 6(119°)	400	41 (18.6)	2.3 .22
MVM-1000H-268²	MVK-1000H-268²	6(130°) x 6(114°)	1000	48 (22.0)	2.3 .22
High Pressure Sodium					
MVM-0250S-268	MVK-0250S-268	7(144°) x 6(113°)	250	36 (17.3)	2.3 .22
MVM-0400S-268	MVK-0400S-268	7(144°) x 6(113°)	400	43 (19.5)	2.3 .22

- 1 For use with remote ballasts, maximum wattage: 400
- 2 BT-37 shape lamp and 3 ft. of 16/3 S.O. cord (cord on MVM style only) included
- 3 Dark bronze finish is standard
- 4 ED28 lamp size is required; For lamp shipped in fixture carton add - LP

REPLACEMENT PART

Catalog Number	Description
800-2918-0115	Lens door assembly, bronze

NOTE: Lamps are not included; All ballasts are HPF and Quad-Tap® 120/208/240/277V; For 480V, change last digit 8 to 5; For Tri-Tap® 120/277/347V, change last digit 8 to 6; For 220/240V, 50 Hz, consult factory; Order mounting accessories separately

ORDERING INFORMATION

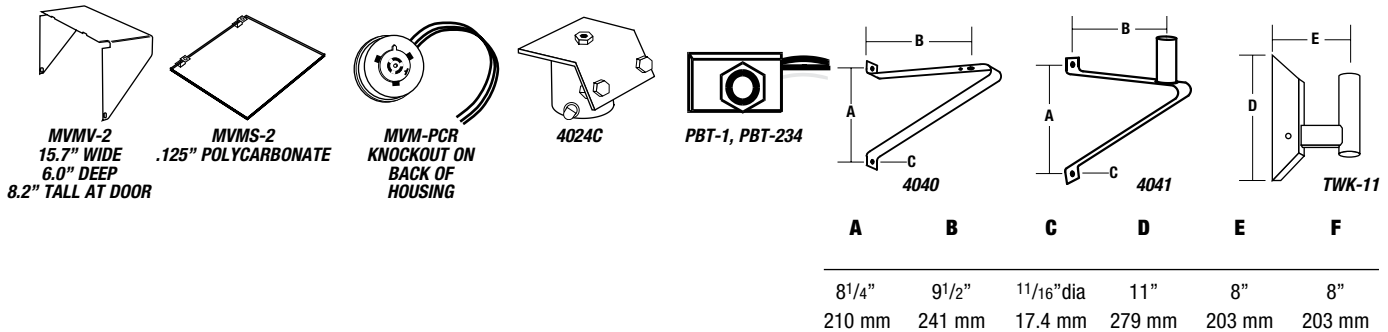
OPTIONS - Add Suffix

Catalog Number	Description
-F(X)	Single fuse for 120/277/347V; Double fuse for 208/240/480V; (specify voltage, e.g. "F(240)")
-PCR(X)	Twist-Lock® photocontrol receptacle, specify voltage (e.g. "PCR(120)") when ordering with Quad-Tap or Tri-Tap (PTL photocontrol or WIH-OM ordered separately)
-C(X ₁)(X ₂)	16/3 pre-wired S.O. Cord - replace X ₁ with cord length desired: 3 - 3ft.; 6 - 6ft.; 12 - 12ft.; specify voltage by replacing X ₂ (e.g. "C6(120)"); not available in knuckle style mounting
-L	Unit with lamp (shipped separately)
-M53	Gray Lektrocote® finish
-M50	Black Lektrocote® finish

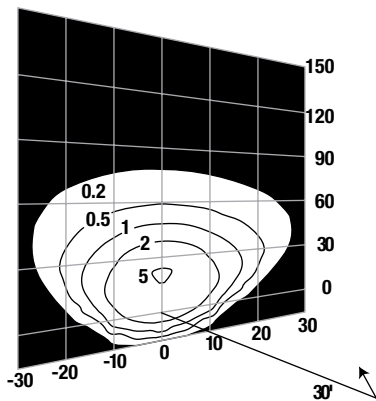
ACCESSORIES - Order Separately

Catalog Number	Description
MVM-V2 ¹	Top visor
MVM-S2 ^{1,2}	Polycarbonate shield
MVM-PCR	Photocontrol receptacle (120-480V) less photocontrol
4024C	Steel slipfitter for MVM, mounts over 2 3/8" OD tenons
PBT-1	Button photocontrol 120 volt (knockout on back & door)
PBT-234	Button photocontrol 208, 240, 277 volt
4040	Steel angle bracket for MVM, bronze finish
4041	Steel angle bracket with 2 3/8" OD tenon for MVK, bronze finish
TWK-11	Steel wall bracket with 2 3/8" tenon, bronze finish (use with MVK/MHK)

- 1 Visor and polycarbonate shield may be used together; Visors are finished in bronze Lektrocote®
 2 For use with 400w and below



PHOTOMETRICS For additional photometric information and IES downloads, visit our web site at www.hubbell-ltg.com



MAGNULITER MVM
MVM-0400H-X6X

PHOTOMETRIC REPORTS

Catalog Number	Report #
MVX-0400S-X6X	HP00740.IES
MVX-1000H-26X	HP03883S.IES

Due to our continued efforts to improve our products, product specifications are subject to change without notice.



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 For more information visit our web site: www.hubbelloutdoor.com

Outdoor Lighting

Sheet 2 of 3

Ordering Number Logic

Wallmount™ 175 (WM7M & WM7S)



SN4

PROD. ID	WATTAGE	LIGHT SOURCE	VOLTAGE	BALLAST TYPE SELECTION	PE FUNCTION	IES DISTRIBUTION TYPE	COLOR	OPTIONS
WM7M = Wallmount 175 Luminaire (Mogul Base E39 Socket Standard without Lamp)	See Ballast and Photometric Selection Table 05 = 50 07 = 70 10 = 100 15 = 150 (55V) 17 = 175	See Ballast and Photometric Selection Table E = Energy Act Compliant Pulse MH (EPMH) S = HPS M = MH P = PMH	See Ballast and Photometric Selection Table 60Hz 0 = 120/208/ 240/277 Multivolt 1 = 120 2 = 208 3 = 240 4 = 277 5 = 480 C = 120x240x 277V D = 347 F = 120X347* T = 220 50Hz 6 = 220 *NOTE: 120X347V connected for 120V	See Ballast and Photometric Selection Table A = Autoreg H = HPF Reactor or Lag K = Hot Restart* N = NPF Reactor or Lag *Available in WM7M only. (Non-UL)	1 = None 3 = Internal *PE control * Not available with multivolt or 480V	See Ballast and Photometric Selection Table SN4 = Short, Non-cutoff, Type IV	DB = Dark Bronze GR = Gray	B = Time Delay Automatically Switched Quartz F = Fusing—Not available with multivolt or 120X347 volt (Non-UL) L = Latch on door (Non-UL)

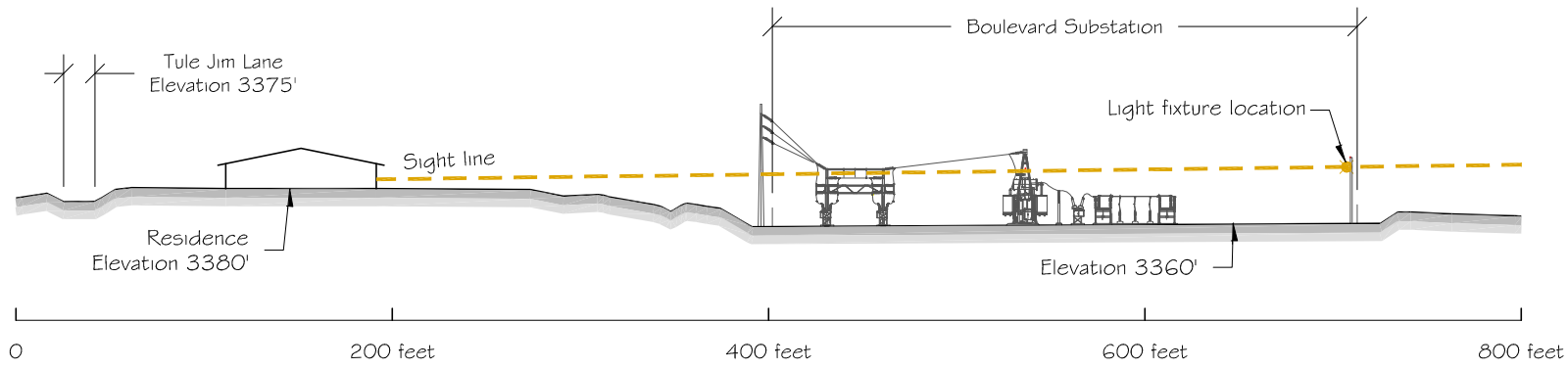
Ballast and Photometric Selection Table

All light sources are clear unless otherwise indicated.

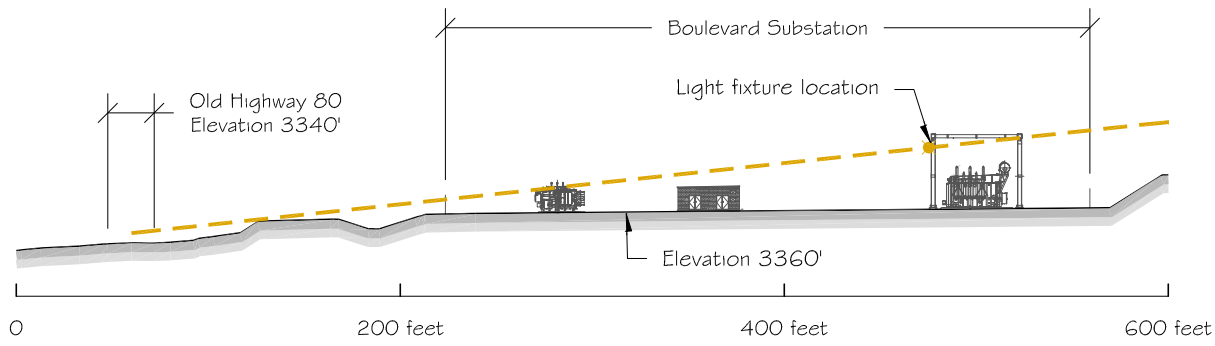
Wattage	Ballast Type/Voltage 60Hz							Ballast Type/Voltage 50Hz		
	Light Source	Multivolt	120	208, 240, 480	277	347, 120X347	220	220	IES Distribution Type	Photometric Curve Number 35-
WM7M Mogul Base Without Lamp										
50, 70, 100, 150 (55V)	HPS	H, N	H, K, N	H, N	H, N	H	H	H	SN4	177576
175	MH	N/A	N/A	N/A	N/A	A	A	A	SN4	177580
WM7S Medium Base With Lamp										
50, 70, 100, 150 (55V)	HPS	H, N	H, N	N/A	H, N	N/A	N/A	H	SN4	177576
70, 100	PMH	H	N/A	N/A	N/A	N/A*	N/A	H	SN4	177580
150****	PMH	H***	H	H	H, A	H, A	N/A	N/A	SN4	177580

NOTE: N/A = Not Available. **347 available "H" ***150W PMH Available in Tri-Volt Multivolt: 120X208X277V or 120X240X277V
****150W PMH Only available in HPF-LAG (H) Ballast Type for 120 or 208 or 240 or 277V and Auto-Reg (A) in 120 or 277V

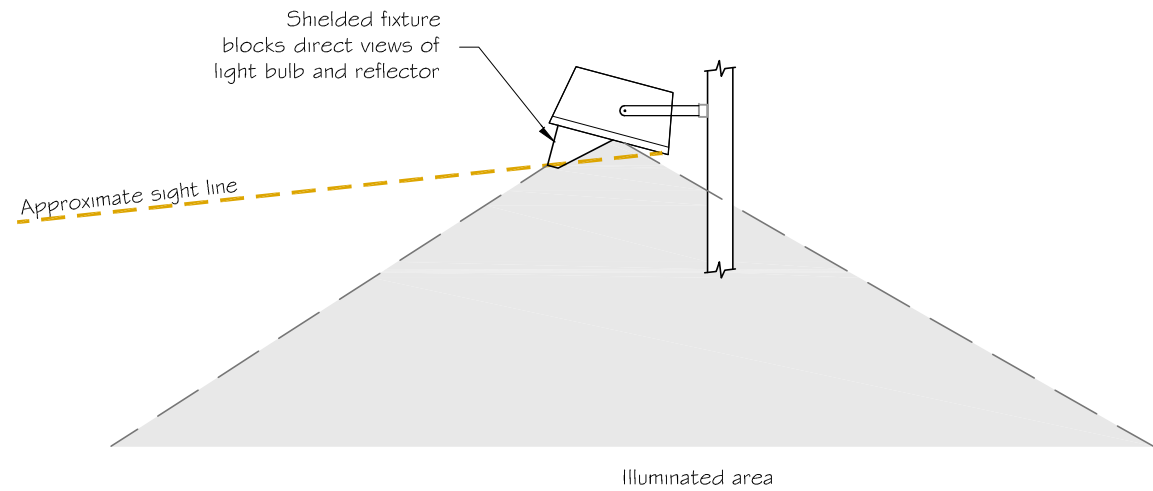
**ATTACHMENT F: BOULEVARD SUBSTATION PLAN SIGHT LINE SECTIONS AND
DIAGRAM**



Section A-A

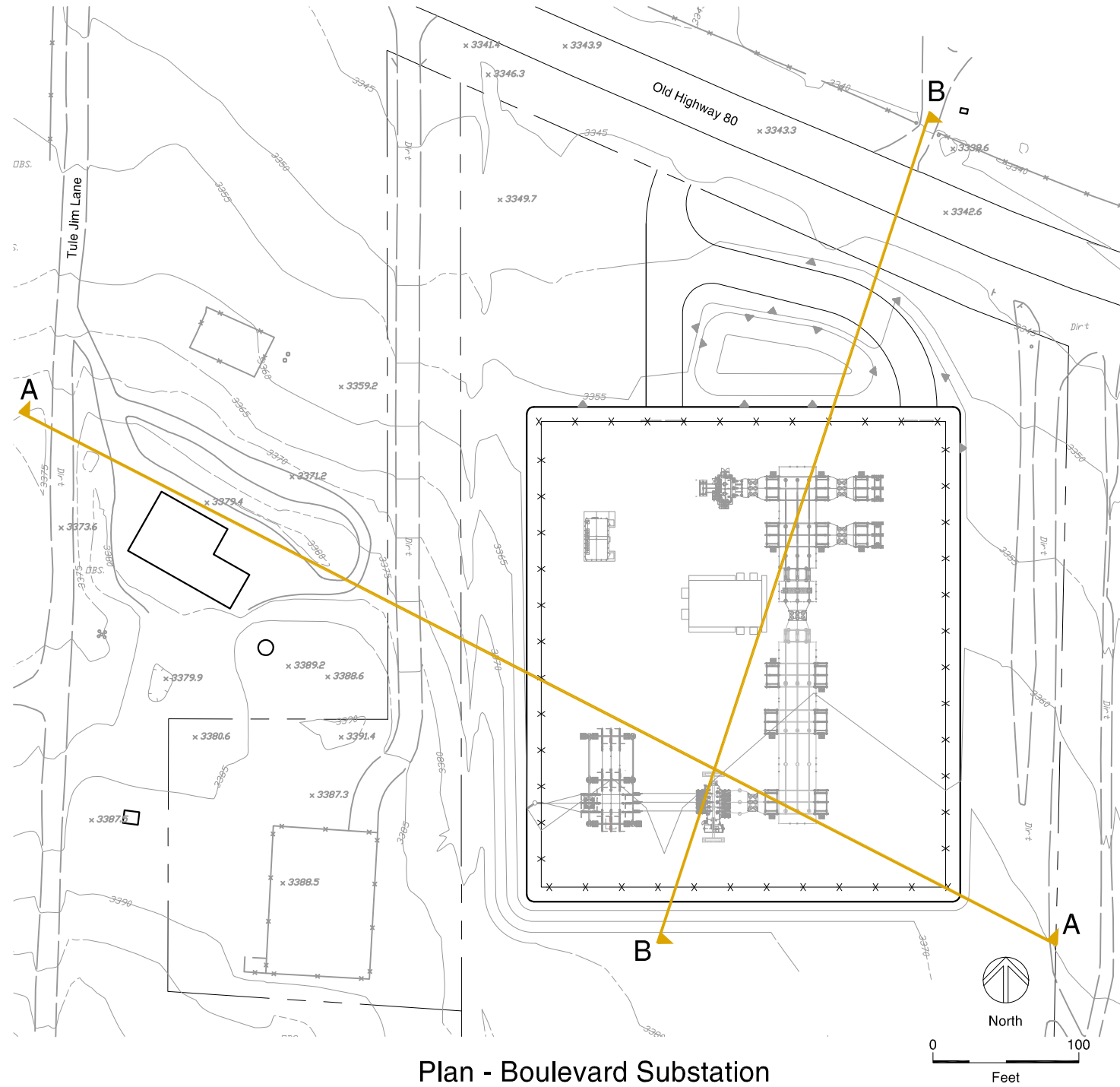


Section B-B



Shielded Light Fixture Diagram

All distances and elevations are approximate



Plan - Boulevard Substation

ENVIRONMENTAL VISION

SDGE
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INSIGNIA ENVIRONMENTAL

Revisions	Date
XX	

Preliminary Set	
Design Review Set	
Plan Check Set	
Permit Set	
Construction Set	

LIGHTING MITIGATION PLAN

East County Substation Project
San Diego County, California

ATTACHMENT F:
BOULEVARD SUBSTATION PLAN
SIGHT LINE SECTIONS
AND DIAGRAM

DATE	9/7/2012
SCALE	
DRAWN	CIK
JOB	
DRAWING NUMBER	
OF SHEETS	