SUNRISE POWERLINK

Suncrest Substation

Lighting Mitigation Plan

Revised
October 26, 2010

Background

In accordance with mitigation measure V-21a of the Mitigation Monitoring, Compliance, and Reporting Program (MMCRP) for the approved Sunrise Powerlink Project, SDG&E submits this Lighting Mitigation Plan for the initial installation of forty-two permanent lighting fixtures at Suncrest Substation for review and approval. The full text of V-21a is provided at the end of this document. Mitigation measure V-21a requires SDG&E to submit a Lighting Mitigation Plan 90 days prior to ordering permanent lighting fixtures for Suncrest Substation.

Suncrest Substation will be located south of Bell Bluff Truck Trail approximately 2.8 miles west of Japatul Valley Road, southwest of the Interstate 8 and Japatul Valley Road intersection, east of the city of Alpine, California in San Diego County. The substation is located on SDG&E owned property in a rural, sparsely developed setting. The site is bordered by Cleveland National Forest land to the north, west and south and private lands to the east. US Interstate 8 is approximately 2 miles north of the Substation.

Lighting Requirements

Suncrest Substation will be the primary interconnection between the new 500kV line and SDG&E's 230kV transmission system and the availability of the substation is paramount during high load conditions. This will require testing, maintenance, and emergency repair work to be performed primarily during nighttime, off-peak load conditions since scheduled outages may be required and the potential risk of forced outages could have severe system impacts resulting from transmission restrictions out of Suncrest.

SDG&E crews will utilize only the amount of permanent and temporary lighting to safely perform the required work. For ground-based activities, existing substation lighting will be used where feasible, with additional lighting provided by temporary, portable flood lighting directed downward where necessary. Aerial activities will be lit by temporary, portable flood lights used in a directed manner. The lighting will focus on the immediate work area to minimize reflected glare and illumination of the nighttime sky. The use of directed lighting for nighttime aerial activities is required to maintain worker safety. Nighttime construction/maintenance activities will only be required when system conditions are such that daytime line and bus outages at Suncrest Substation are not allowed. [1]

The portable flood lighting will be provided by portable lighting trailers, typically consisting of four (4) 1000W flood lights, powered by a 10kW diesel powered generator attached to the trailer. As discussed below, potentially sensitive

[1] In reviewing the last 20 year history for Imperial Valley 500/230kV Substation, it appears that emergency work has occurred 3 to 5 times a year. SDG&E does not maintain records on when temporary lighting was utilized but, not all of this emergency work required portable lighting and even when portable lighting is required only a few would require aerial activities.

receptors are located to the south and southeast of the substation pad. Therefore, care will be taken in the placement and orientation of portable lighting fixtures to avoid directing unshielded lights in the direction of sensitive receptors to the extent practicable. Accordingly, portable lighting will be directed away from sensitive receptors (toward the west, north, and east) to the extent possible, in order to avoid off-site direct exposure of sensitive receptors to unshielded lights. Portable lighting would only be allowed to be directed towards sensitive receptors when absolutely necessary for worker safety, or as necessary to accomplish critical maintenance or emergency tasks that extend into nighttime hours. In addition, the temporary flood lighting will be directed downward or turned off when not in immediate use. Appendix A shows the typical portable lighting trailer that will be used for maintenance activities.

Sensitive Receptors

Appendix B depicts the terrain surrounding SCR and approximate sight lines from the residences that may have a partial view of the substation. As displayed in this exhibit, the existing terrain will block the view of the substation from properties to the west, north, and east of the substation. The closest existing residences are located to the southeast and south of the substation and are approximately ¾ of a mile away. Depending on the relative elevations of these residences, they may have a partial view of the upper portions of the substation structures.

As discussed below, the lighting fixtures are equipped with visors and oriented in such a way that the bulbs would not be visible from locations outside the substation fence. Therefore, none of the residences referenced in Appendix B would have a direct view of the lights.[2]

Permanent Lighting Design

Appendix C shows the initial structure layout of Suncrest Substation including the plan for proposed permanent lighting. SDG&E will install (34) 400W sodium flood lights and (8) 70W wall mounted lights within the fenced substation yard. The 15 flood lights in the 500kV switchyard will be placed at approximately 40 feet from the ground, and have a hooded design. The 19 flood lights in the transformer yard and 230kV switchyard will be placed at approximately 30 feet above the ground, and have a hooded design that will direct the light towards the ground. The flood lights will be attached to steel structural members. As shown in Appendix C, the yard lights will be oriented at an angle of 60 degrees down from vertical so that the bulbs will not be visible from beyond the substation fence. The 8 wall lights will be mounted approximately 9 feet above the finished yard grade on the maintenance and control shelter walls within the substation.

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[2] In response to a question raised during the plan review, the residences identified in Appendix B that are along sightlines "A & B" would potential see 15 lighting fixtures, along sightline "C" would potential see 10 fixtures, and sightlines D&E would not see any lighting fixtures. Due to the lighting fixture orientation and use of visors on the fixtures, there will not be a direct view of any light bulbs from any location outside the substation fence.

Appendix D shows the design of the proposed permanent lighting fixtures with visors to minimize light pollution. The proposed yard fixtures are General Electric model PF-154 Powerflood with a top and 2 side visor model TSVDB-PF1. The proposed wall lights are General Electric model Wallmount 175 Luminaire with top and side visor model TSVDB-WM7.

Substation yard permanent lights will operate from switches in the control shelter, with lighting in each portion of the substation (500kV switchyard, 230kV switchyard, transformer area, etc.) connected to different individual lighting circuits. The lights on the control shelter and maintenance shelter operate from a switch located inside the substation near the main gate. With this design, maintenance crews are able to turn on lights only in the area(s) which they are working, minimizing light usage.

SDG&E designed the permanent lighting for this substation to provide the minimum amount of lighting necessary to safely move about the substation, identify hazards and perform required work activities. In general, the amount of light required for this purpose is approximately 0.5 foot-candles at ground level.

As designed, the permanently installed lighting and temporary maintenance lighting will meet the requirements of mitigation measure V-21a.

SDG&E operates a Customer Call Center (CCC) that is the first contact for the public with any issues related to SDG&E facilities, including lighting concerns at existing substations. The Customer Representatives that staff the call center are trained to refer questions and concerns from the public to the appropriate SDG&E functional groups that can address the issues raised. The CCC toll-free number is included on every customer bill as well as under the “Contact Us” link on the SDG&E web site (www.SDGE.com). In addition, there is an option through the same link on the web site to e-mail questions and concerns directly to the CCC. If the public is not satisfied with SDG&E’s response to their issues, they have the option to file a complaint with the California Public Utility Commission though the CPUC website (www.cpuc.ca.gov/). A link to this web site is also located from the SDG&E web site by following the “Rates and Regulation” link.

Applicable Mitigation Measure

V-21a: Reduce night lighting impacts.
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.

SDG&E shall submit a Lighting Mitigation Plan to the CPUC for review and approval at least 90 days prior to 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 is 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.

APPENDIX A

Typical Portable Flood Lighting

LTC 4C Light Tower

Item Number: 0620017

LTC 4C

Compact, heavy-duty light towers provide exceptional lighting

>> Heavy-duty, trailer-mounted light towers feature a compact and narrow body design for easy transport - two abreast a on flatbed truck. Distinctive elliptical light fixtures allow light to travel directly to the work area for brighter illumination. Each light can be individually adjusted without tools and a quick disconnect power cord allows for easy removal prior to transport. The 360-degree rotating mast allows for light adjustment while raised. <<

Additional Advantages

- Large capacity fuel tank allows for 68 hours of continuous lighting/run time.
- A lockable, weather protected, powder-coated steel enclosure protects components from the elements. Zinc/dichromate treated mast and lamp mounted bar provide superior corrosion resistance.
- Four 2,000 lb. rated zinc-plated leveling jacks provide easy leveling and stability on uneven terrain and in windy conditions.
- Control panel features an elapsed hour meter and a convenient 120V GFCI receptacle with circuit breakers for additional power. Separate engine control panel with full diagnostics for engine protection and operator convenience.
- Reliable diesel engine offers glow plug preheat system for long service life and easier cold weather starting. Automatic engine shutdown protects the engine from damage due to low oil pressure and high coolant temperature.
- Fully equipped highway-ready trailer offers combination pintle/ball hitch, tires, four tie-downs, DOT lighting, VIN number and chains.

Description	Metric	Imperial
Length x width x height (standard)	3886 x 1220 x 1600 mm	153 x 48 x 63 in
Operating weight	817 kg	1802 lb
Shipping weight (including packaging)	720 kg	1585 lb
Maximum tower height	9 m	30 ft
Sound level	72 dB(A)	72 dB(A)
Output	6 kW	6 PS
Voltage	120 V	120 V
Amperage	50 A	50 A
Frequency	60 Hz	60 Hz
Power draw	1,0 kW	1.0 hp
Voltage regulation no load to full load	+/- 5%	+/- 5%
Lamp Output	4 x 1.000W	4 x 1,000W
Coverage (Lighting levels as recommended by IES)	30.400 @ 5.4 lumens m^2	5-7 @ .5 footcandles Acres
Generator insulation	H	H
Speed	1.800 1/min	1,800 rpm
Generator type	Brushless	Brushless
Engine Type	Caterpillar diesel	Caterpillar diesel
Max. Rated Power at Rated Speed*	10 kW at 1800 rpm	13.4 hp at 1800 rpm
Displacement	954 cm^3	58 in^3
Power Rating Specification	ISO 3046 IFN	ISO 3046 IFN
Fuel tank capacity	114 l	30 US gal
Fuel consumption	1,91 l/h	.42 US gal/h

Standard Package - LTC 4C

Above package includes operator's manual and parts book.

Please refer to our Price List and Ordering Guide for complete accessory information.

Specifications may change due to continuous product development. Users are advised to consult Wacker Neuson's Operator's Manual and website for specific information regarding the engine power rating. Actual power output may vary due to conditions of specific use.

Generated on Friday, February 5, 2010

APPENDIX B

Suncrest Substation Sight Line Exhibit

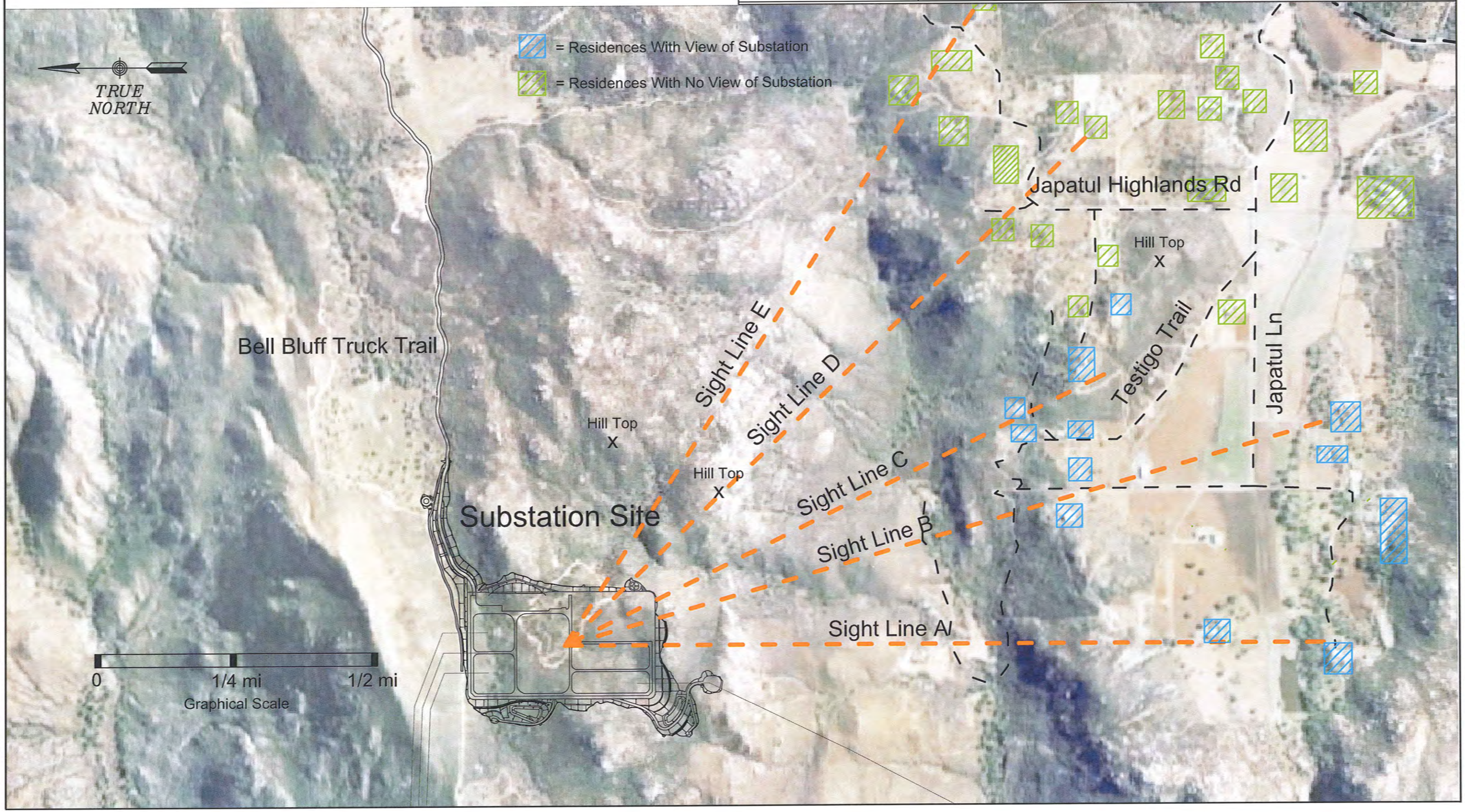
Suncrest Substation Sight Line Exhibit

Plan View

See Sheets 2-7 For Sight Line Profiles

Beta ENGINEERING

Job Name	Suncrest Substation	Job No.	B537
Customer	San Diego Gas & Electric	Date	2/8/10
Description	Lighting Sight Lines	Sheet	1

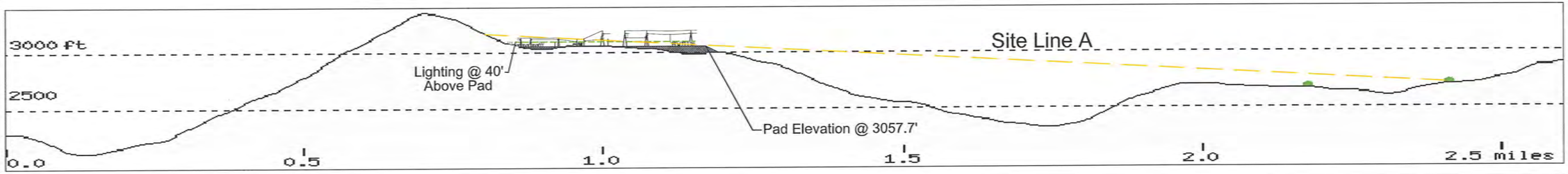


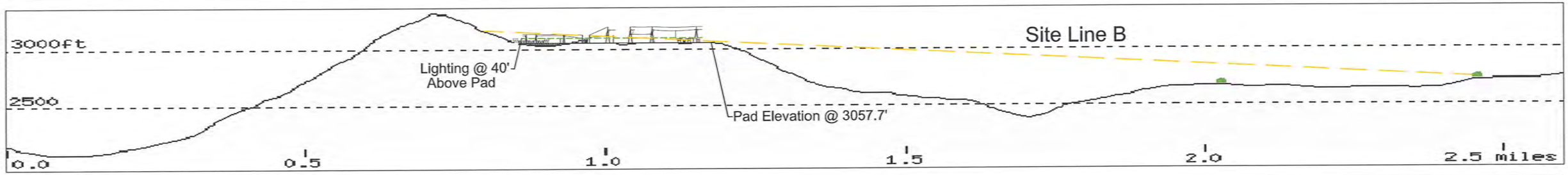
Suncrest Substation Sight Line Exhibit

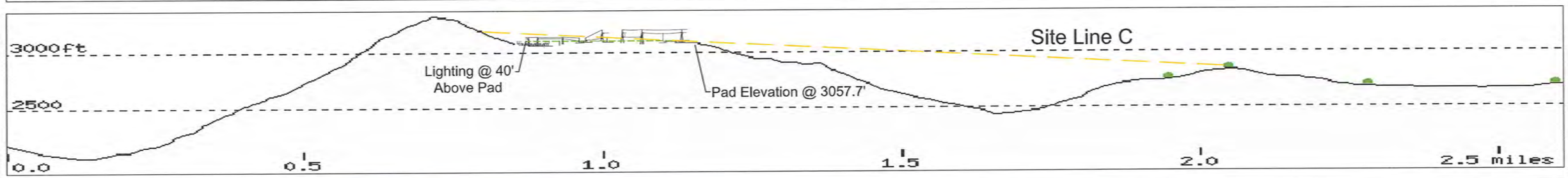
See Sheets 3, 4, 5, 6 & 7 For Substation Area Detail
No Scale
Horizontal = Vertical

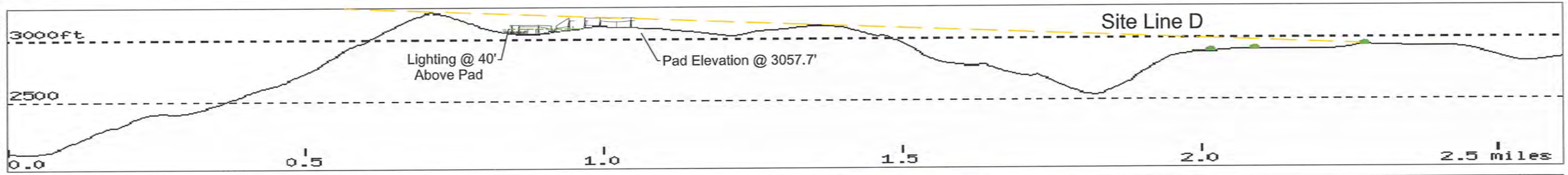
Beta ENGINEERING

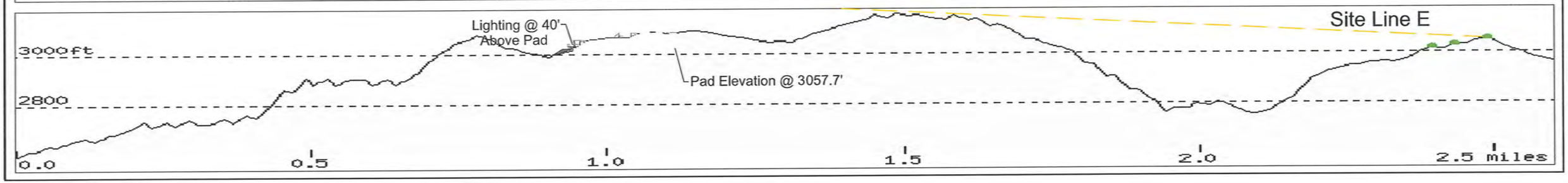
Job Name	Suncrest Substation	Job No.	B537
Customer	San Diego Gas & Electric	Date	2/8/10
Description	Lighting Sight Line Elevations	Sheet	2









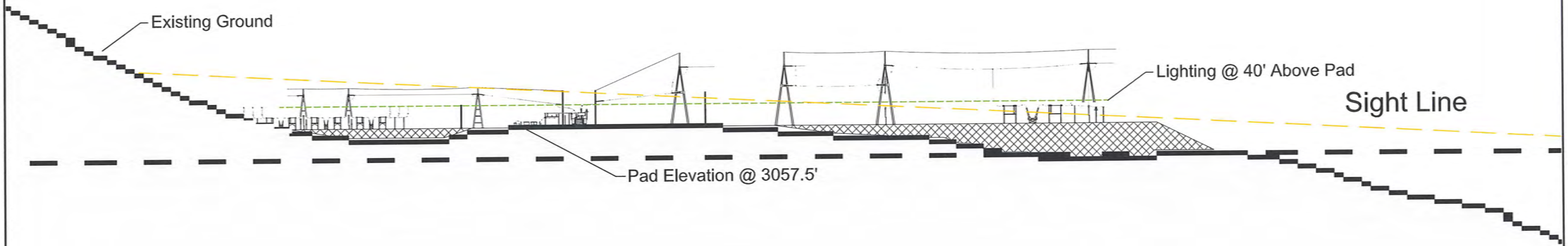


Suncrest Substation Sight Line Exhibit

Sight Line A
No Scale
Horizontal = Vertical

Beta ENGINEERING

Job Name	Suncrest Substation	Job No.	B537
Customer	San Diego Gas & Electric	Date	2/8/10
Description	Lighting Sight Line Elevations (Line A)	Sheet	3

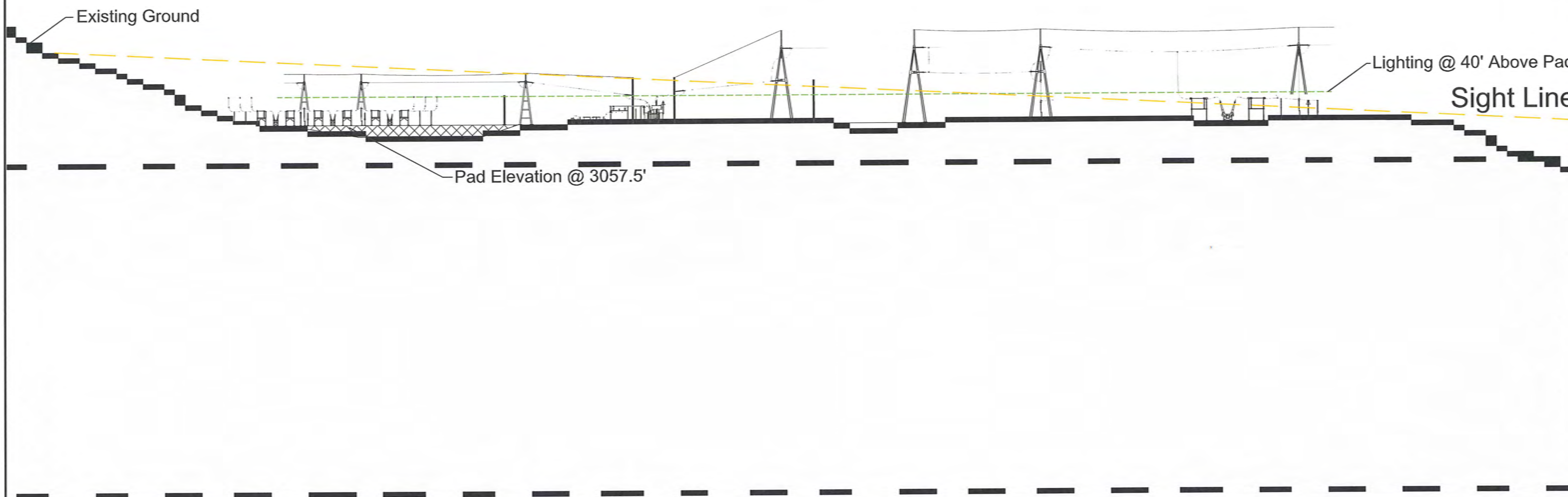


1:0

Suncrest Substation Sight Line Exhibit

Sight Line B
No Scale
Horizontal = Vertical

Job Name	Suncrest Substation	Job No.	B537
Customer	San Diego Gas & Electric	Date	2/8/10
Description	Lighting Sight Line Elevations (Line B)	Sheet	4



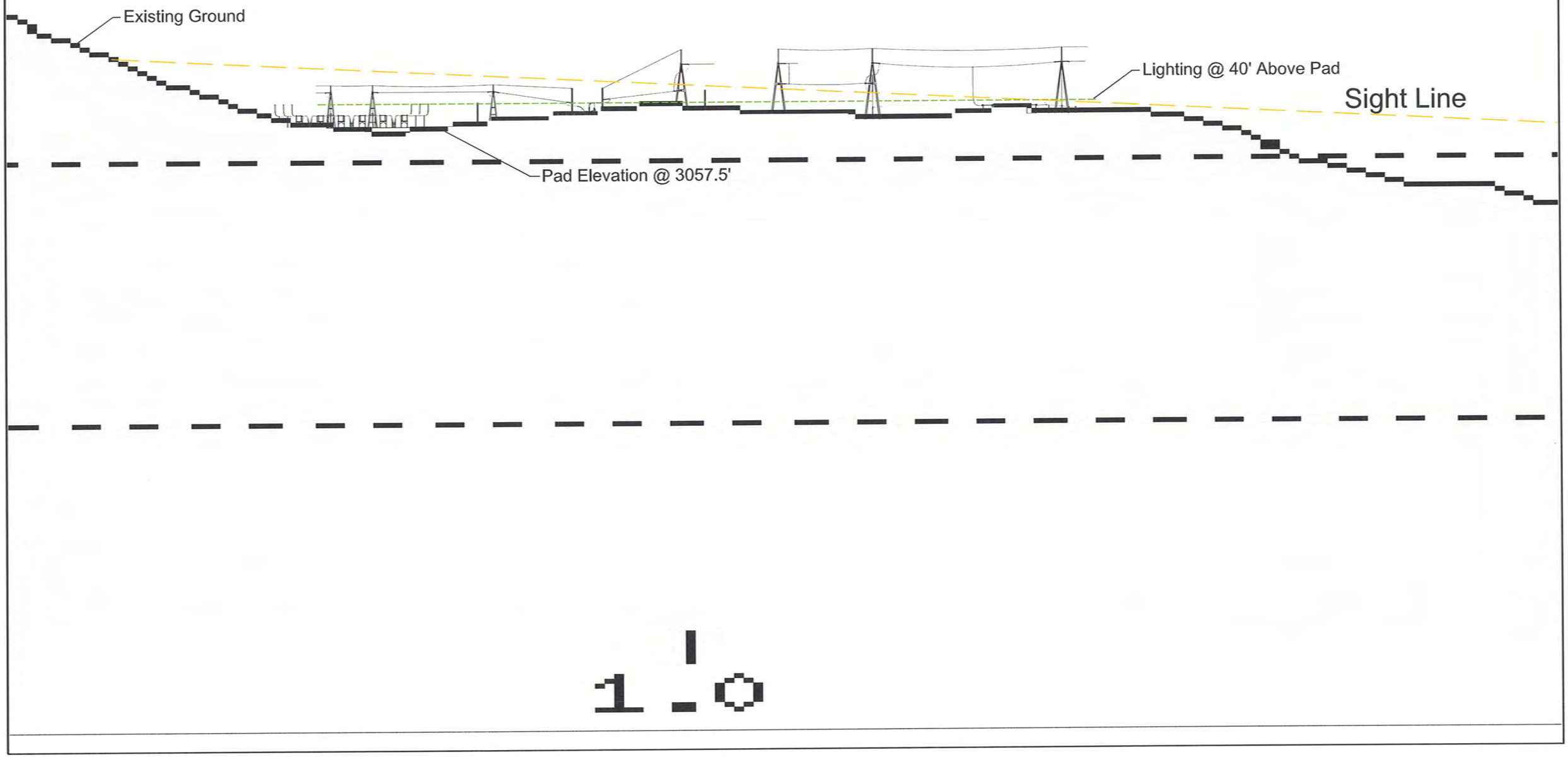
1.0

Suncrest Substation Sight Line Exhibit

Sight Line C
No Scale
Horizontal = Vertical

Beta ENGINEERING

Job Name	Suncrest Substation	Job No.	B537
Customer	San Diego Gas & Electric	Date	2/8/10
Description	Lighting Sight Line Elevations (Line C)	Sheet	5

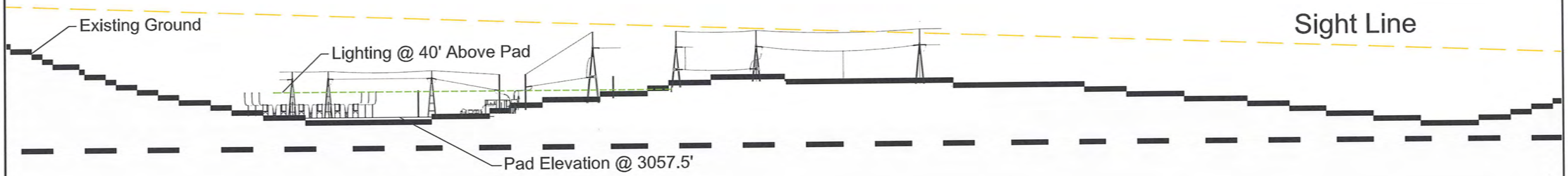


Suncrest Substation Sight Line Exhibit

Sight Line D
No Scale
Horizontal = Vertical

Beta ENGINEERING

Job Name	Suncrest Substation	Job No.	B537
Customer	San Diego Gas & Electric	Date	2/8/10
Description	Lighting Sight Line Elevations (Line D)	Sheet	6



1" = 10'

Suncrest Substation Sight Line Exhibit

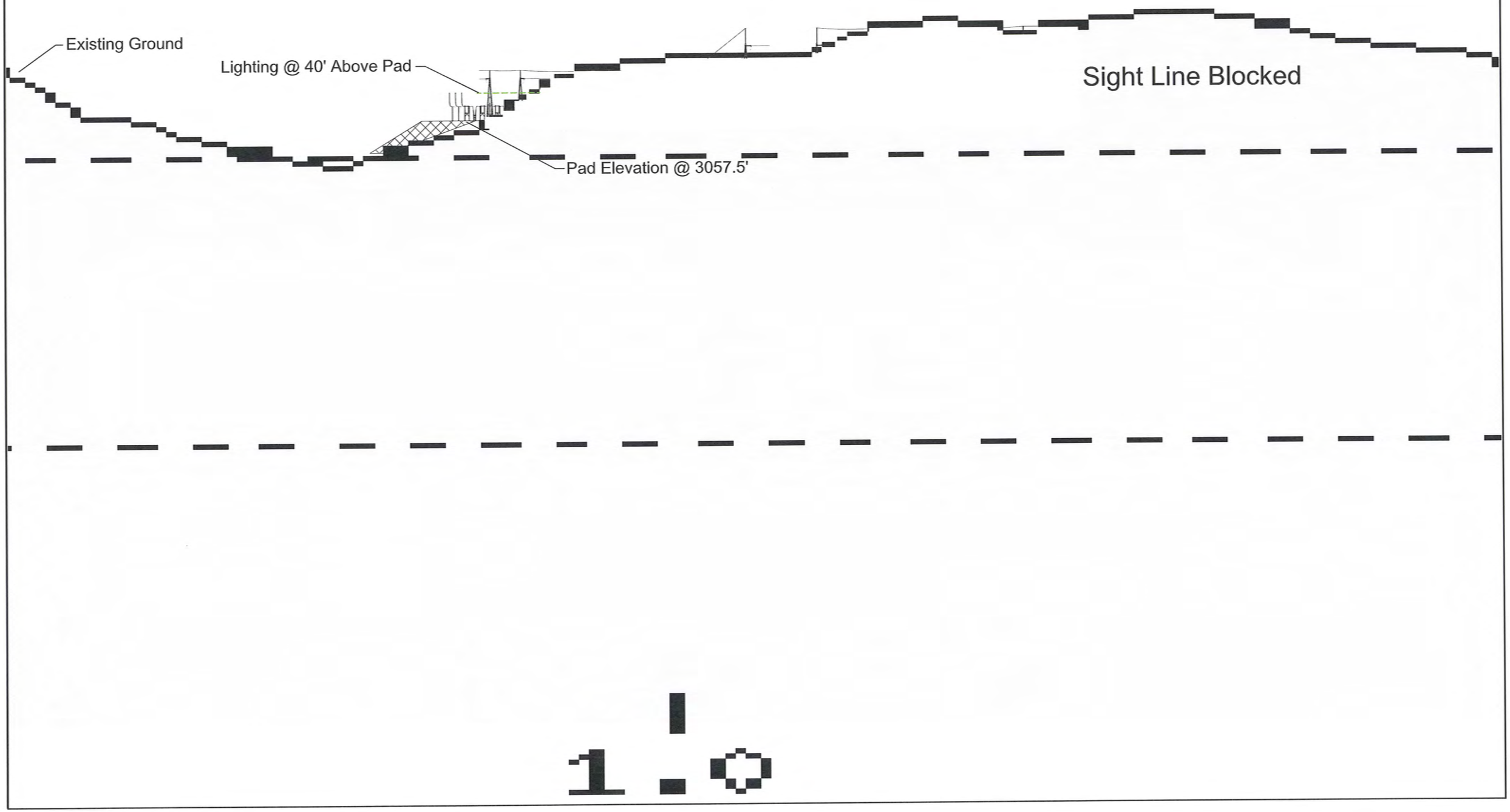
Sight Line E

No Scale

Horizontal = Vertical

Beta ENGINEERING

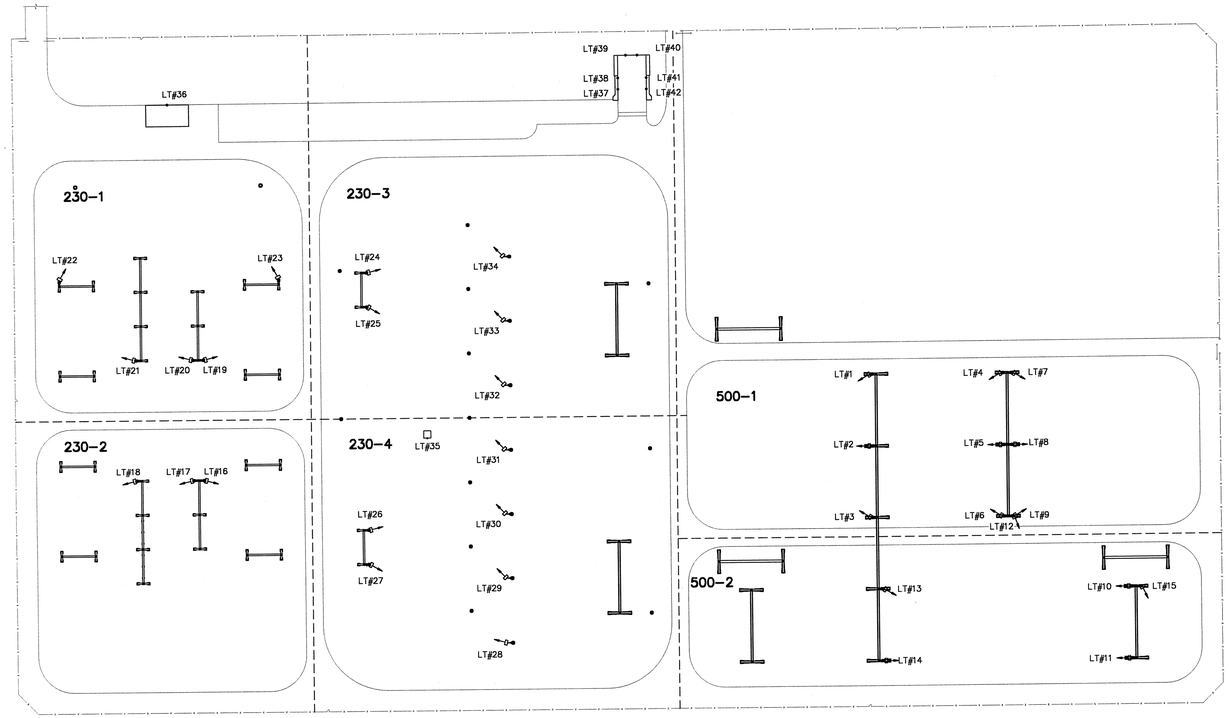
Job Name	Suncrest Substation	Job No.	B537
Customer	San Diego Gas & Electric	Date	2/8/10
Description	Lighting Sight Line Elevations (Line E)	Sheet	7

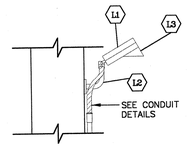


APPENDIX C

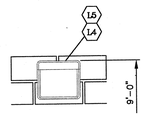
Suncrest Substation General Lighting Arrangement

TRUE NORTH





FLOODLIGHT MOUNTING DETAIL
(N.T.S.)

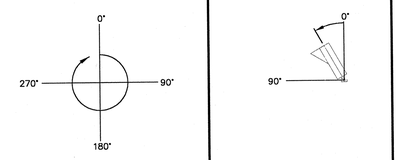


BUILDING LIGHT MOUNTING DETAIL
(N.T.S.)

LIGHT AIMING SCHEDULE

500KV YARD			230/138/12KV YARD					
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	345	60	16	195	60	31	45	60
2	0	60	17	345	60	32	45	60
3	15	60	18	345	60	33	45	60
4	345	60	19	165	60	34	45	60
5	0	60	20	15	60	35	270	N/A
6	15	60	21	15	60	36	90	N/A
7	205	60	22	120	60	37	0	N/A
8	180	60	23	60	60	38	0	N/A
9	160	60	24	165	60	39	90	N/A
10	0	60	25	240	60	40	90	N/A
11	0	60	26	165	60	41	180	N/A
12	255	60	27	225	60	42	180	N/A
13	210	60	28	15	60			
14	180	60	29	45	60			
15	165	60	30	45	60			

LIGHT ORIENTATION



PLAN VIEW | ELEVATION VIEW

BILL OF MATERIAL:

MARK NUMBER	CATALOG NUMBER	DESCRIPTION	QUANTITY
L1	PF1S40SOA1DBK	400W HPS FLOODLIGHT, MULTI-VOLT BALLAST WITH KNUCKLE SLIP FITTER, DARK BRONZE	34
L2	FBSFA2TTDB	FLOODLIGHT WALL MOUNT BRACKET, DARK BRONZE	34
L3	TSVDB-PF1	TOP AND SIDE VISOR, DARK BRONZE	34
L4	WM7S07SOH1SN4DB	70W HPS WALLMOUNT LIGHT, MULTI-VOLT BALLAST, DARK BRONZE	8
L5	TSVDB-WM7	TOP AND SIDE VISOR, DARK BRONZE	8

REFERENCE DRAWINGS

OVERALL CONDUIT PLAN & PULL BOX LAYOUT	SCR-S-645.1
500kV TRENCH PLAN VIEW	SCR-S-645.2
230kV & 12kV TRENCH PLAN VIEW	SCR-S-645.3
500kV CONDUIT PLAN (EAST)	SCR-S-645.5
500kV CONDUIT PLAN (WEST)	SCR-S-645.6
230kV CONDUIT PLAN (EAST)	SCR-S-645.7
230kV CONDUIT PLAN (WEST)	SCR-S-645.8
12kV TRANSFORMER YARD PLAN (EAST)	SCR-S-645.9
12kV TRANSFORMER YARD PLAN (WEST)	SCR-S-645.10
12kV TRANSFORMER BANK 80	SCR-S-645.11
12kV TRANSFORMER BANK 81	SCR-S-645.12

1. THE FLOODLIGHTS FOR YARD LIGHTING SHALL BE PROVIDED WITH VISORS. THESE LIGHTS SHALL BE CONTROLLED FROM A FUSED DISCONNECT SWITCH LOCATED IN THE CONTROL BUILDING. A SWITCH SHALL BE PROVIDED FOR EACH SECTION SHOWN TO MINIMIZE EXCESS LIGHT POLLUTION. EACH SWITCH SHALL BE STENCILED WITH THE DESIGNATION CORRESPONDING TO THE SECTION.
2. THE EXTERIOR BUILDING LIGHTS SHALL BE PROVIDED WITH VISORS. THESE LIGHTS SHALL BE CONTROLLED BY A THREE WAY SWITCH WITH LOCATIONS AT EACH GATE (2 REQUIRED) AND AT THE CONTROL SHELTER.

REVISIONS

NO.	WORK DONE	DATE	BY:	APP'D:

BETA ENGINEERING
PINEVILLE, LOUISIANA

SAN DIEGO GAS & ELECTRIC COMPANY
SAN DIEGO, CALIFORNIA

SUNCREST SUBSTATION

OUTDOOR LIGHTING PLAN & DETAILS

DRAWN BY: DDG	DATE: 12/4/09	SCALE: 1"=100'	W.O. –	REV. 0	SCR-S-960
CHECKED BY: CRL	DATE: 12/6/09				
APPROVED BY: TAM	DATE: 12/6/09				
CAD NO.: ECOS960	PLOT SCALE: 1 = 1				

APPENDIX D

Suncrest Substation Outdoor
Lighting and Fixture Design

Beta Engineering
4725 Hwy. 28 E
Pineville, LA 71360

Telephone 318-487-9599
Facsimile 318-442-1741
www.BetaEngineering.com

Engineering, Procurement & Construction of High Voltage Power Systems

SUNCREST SUBSTATION
SAN DIEGO GAS & ELECTRIC CO.
SAN DIEGO, CALIFORNIA

BETA PROJECT NO. B537

OUTDOOR LIGHTING DESIGN

BETA DOCUMENT NO. B537-LD
REVISION 0
DECEMBER 4, 2009

Designed by:	**Checked by:** CRL	**Approved by:** TAB

SUNCREST SUBSTATION
BETA PROJECT NO. B537
OUTDOOR LIGHTING DESIGN
BETA DOCUMENT NO.B537-LD
DECEMBER 4, 2009

SUMMARY OF DESIGN CRITERIA

The outdoor lighting design results shown on the following pages were obtained using Aladan Lighting Software from GE Lighting Systems. This program was used to calculate point to point light levels (in units of footcandles) with light reflecting on horizontal plane.

The following design philosophy was used to determine the location and orientation of each luminaire:

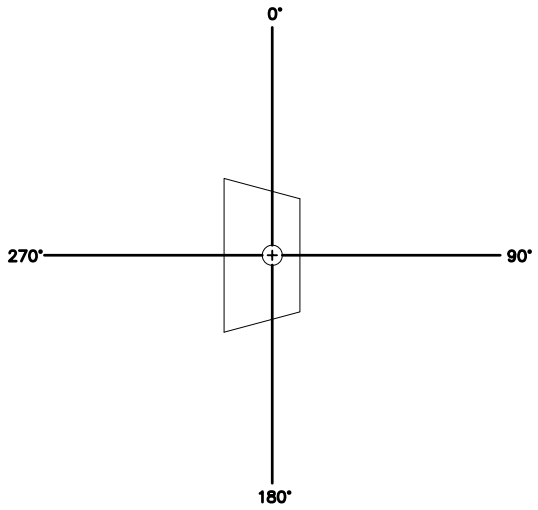
1. Substation area lighting shall be provided using multiple 400-watt high pressure sodium lamps to provide 0.5 footcandles of light around major electrical equipment. The lights will be used by the trouble-man during night time operation.

2. Light meter readings shall be taken on a horizontal plane at 0 feet.

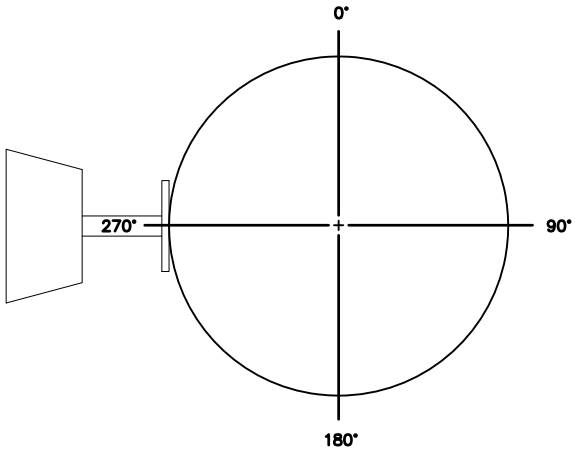
3. 70 watt high pressure sodium lights shall be provided and mounted near the building entrances for night entrance. The lights shall be directional, oriented downward to limit glare on to surrounding property. The lighting design shall be in accordance with the environmental mitigation requirements specified in the permit documents.

4. The IES (light information) files have been modified for the building lights to provide the correct lumen output based on 70W lights. Also, these files have accounted for the visors being installed to minimize excess light pollution. The 400W Floodlights will be supplied with visors, but modified IES files were not available to properly model the lights with visors.

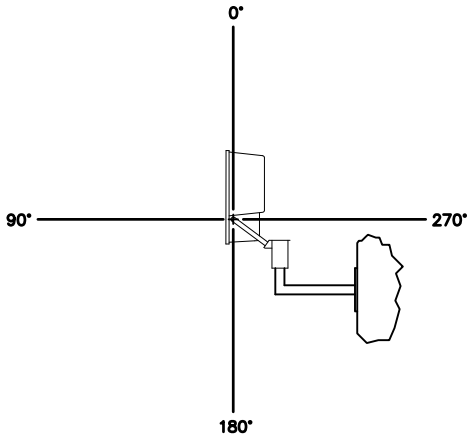
5. Light angles are taken from true north as represented in the design.



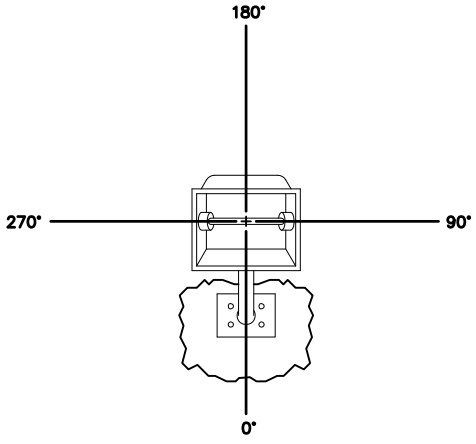
LT ORIENTATION



ARM ORIENTATION



TILT
(VERTICAL ANGLE)



ROLL

Section Divider

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Current Lighting Design								
LIGHT NUMBER	TYPE	CURVE NUMBER	NORTHING	EASTING	MOUNT HEIGHT	ARM ORIENTATION	LIGHT ORIENTATION	VERTICAL ANGLE
500kV Substation								
LT#1	YARD LIGHT	178610	1483	1464	40'	0	345	60
LT#2	YARD LIGHT	178610	1483	1364	40'	0	0	60
LT#3	YARD LIGHT	178610	1483	1264	40'	0	15	60
LT#4	YARD LIGHT	178610	1299	1464	40'	0	345	60
LT#5	YARD LIGHT	178610	1299	1364	40'	0	0	60
LT#6	YARD LIGHT	178610	1299	1264	40'	0	15	60
LT#7	YARD LIGHT	178610	1299	1464	40'	180	205	60
LT#8	YARD LIGHT	178610	1299	1364	40'	180	180	60
LT#9	YARD LIGHT	178610	1299	1264	40'	180	160	60
LT#10	YARD LIGHT	178610	1121	1164	40'	0	0	60
LT#11	YARD LIGHT	178610	1121	1064	40'	0	0	60
LT#12	YARD LIGHT	178610	1299	1264	40'	180	255	60
LT#13	YARD LIGHT	178610	1483	1164	40'	180	210	60
LT#14	YARD LIGHT	178610	1483	1064	40'	180	180	60
LT#15	YARD LIGHT	178610	1121	1164	40'	180	165	60

Current Lighting Design								
LIGHT NUMBER	TYPE	CURVE NUMBER	NORTHING	EASTING	MOUNT HEIGHT	ARM ORIENTATION	LIGHT ORIENTATION	VERTICAL ANGLE
230/138kV Substation								
LT#16	YARD LIGHT	178610.00	2434.00	1325.00	30'	180.00	195.00	60
LT#17	YARD LIGHT	178610.00	2434.00	1325.00	30'	0.00	345.00	60
LT#18	YARD LIGHT	178610.00	2514.00	1325.00	30'	0.00	345.00	60
LT#19	YARD LIGHT	178610.00	2434.00	1493.00	30'	180.00	165.00	60
LT#20	YARD LIGHT	178610.00	2434.00	1493.00	30'	0.00	15.00	60
LT#21	YARD LIGHT	178610.00	2514.00	1493.00	30'	0.00	15.00	60
LT#22	YARD LIGHT	178610.00	2628.00	1598.00	30'	90.00	120.00	60
LT#23	YARD LIGHT	178610.00	2320.00	1598.00	30'	90.00	60.00	60
LT#24	YARD LIGHT	178610.00	2204.00	1613.00	30'	180.00	165.00	60
LT#25	YARD LIGHT	178610.00	2204.00	1565.00	30'	180.00	240.00	60
LT#26	YARD LIGHT	178610.00	2204.00	1253.00	30'	180.00	165.00	60
LT#27	YARD LIGHT	178610.00	2204.00	1205.00	30'	180.00	225.00	60
LT#28	YARD LIGHT	178610.00	1996.00	1094.00	30'	0.00	15.00	60
LT#29	YARD LIGHT	178610.00	1996.00	1184.00	30'	0.00	45.00	60
LT#30	YARD LIGHT	178610.00	1996.00	1274.00	30'	0.00	45.00	60
LT#31	YARD LIGHT	178610.00	1996.00	1364.00	30'	0.00	45.00	60
LT#32	YARD LIGHT	178610.00	1996.00	1454.00	30'	0.00	45.00	60
LT#33	YARD LIGHT	178610.00	1996.00	1544.00	30'	0.00	45.00	60
LT#34	YARD LIGHT	178610.00	1996.00	1634.00	30'	0.00	45.00	60
LT#35	BUILDING LIGHT	177576.00	2113.00	1381.00	9'	N/A	270.00	N/A
LT#36	BUILDING LIGHT	177576.00	2474.00	1852.00	9'	N/A	90.00	N/A
LT#37	BUILDING LIGHT	177576.00	1841.00	1866.00	9'	N/A	0.00	N/A
LT#38	BUILDING LIGHT	177576.00	1841.00	1882.00	9'	N/A	0.00	N/A
LT#39	BUILDING LIGHT	177576.00	1829.00	1914.00	9'	N/A	90.00	N/A
LT#40	BUILDING LIGHT	177576.00	1813.00	1914.00	9'	N/A	90.00	N/A
LT#41	BUILDING LIGHT	177576.00	1801.00	1882.00	9'	N/A	180.00	N/A
LT#42	BUILDING LIGHT	177576.00	1801.00	1866.00	9'	N/A	180.00	N/A

Section Divider

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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

- ⓊL/cⓊL1598 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 PRODUCT IDENT	40 WATTAGE	S LIGHT SOURCE	0 VOLTAGE	A BALLAST TYPE	1 PE FUNCTION	6X6 NEMA TYPE BEAM SPREAD HORIZ X VERT	DB COLOR	K 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

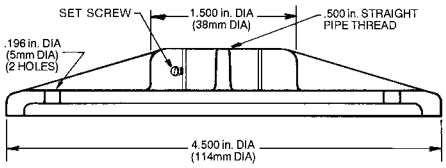
FLOODLIGHTING ACCESSORIES

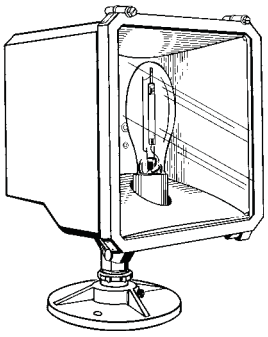
REFER TO ACCESSORY INDEX TO MATCH ACCESSORY WITH PRODUCT.
ILLUSTRATIONS SHOWN ARE TYPICAL REPRESENTATIONS.

FLAT SURFACE MOUNTING ADAPTER

- **FSMA-SBF**
  Flat mounting base for 4-inch (102mm) junction-box mounting

  NOTE: Also fits CPF Powerflood® Floodlight and Quartz Flood



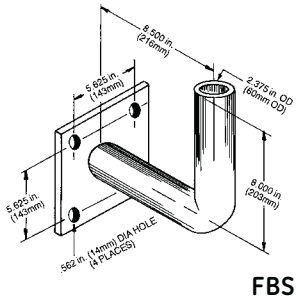


FSMA-SBF

FLOODLIGHT BRACKET

For Wall or Flat Surface

- **FBSFA2TTPP**
  Wall mounting bracket for mounting any floodlight with 2-inch (51mm) slipfitter to flat, vertical or horizontal surface (Prime painted steel)



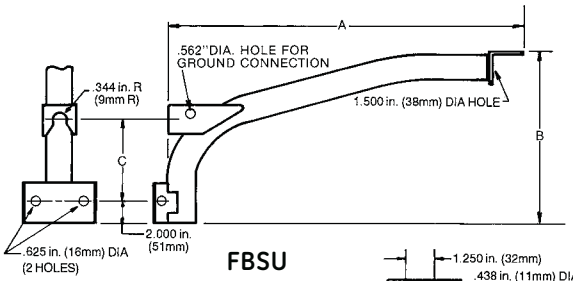
FBS

- **FBSFA2TTDB**
  Same as **FBSFA2TTPP** except painted Dark Bronze

- **FBSFA2TTGR**
  Same as **FBSFA2TTPP** except painted Gray

DIMENSIONS

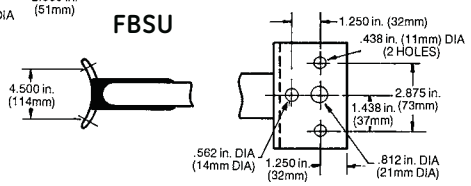
CATALOG NO.	A	B	C
FBSUWH19.5X2GV	19.500 in. 495mm	15.000 in. 381mm	7.000 in. 178mm
FBSUWH31.5X2GV	31.500 in. 800mm	16.625 in. 422mm	8.250 in. 210mm
FBSUWH48.5X2GV	48.500 in 1232mm	19.875 in. 505mm	8.250 in. 210mm



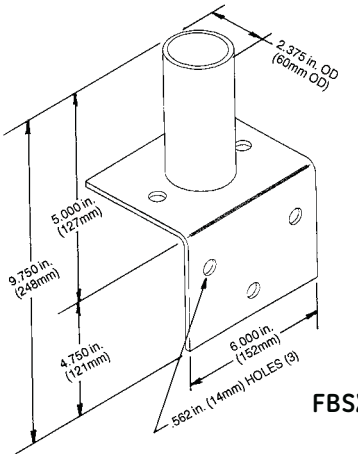
FBSU

For Trunnion Mounted Floodlights

- **FBSUWH19.5X2GV**
  FBSUWH31.5X2GV
  FBSUWH48.5X2GV
  Galvanized steel upsweep brackets for vertical wood pole. Accommodates trunnion mounting with a full 360-degree adjustment. A 3/4-inch diameter bolt, nut and lock washer are included to mount floodlight trunnion on flange. Maximum weight allowed is 90 lbs (41 kgs).



- **FBSXA2TTPP**
  Cross-arm bracket with 2.375-inch (60mm) OD vertical tenon for mounting any floodlight with 2-inch (51mm) slipfitter (Prime painted steel)



FBSX

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 polycarbon ate 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

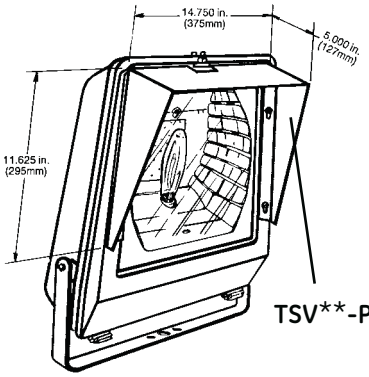
- **TSVDB-SBF**
  Dark Bronze

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

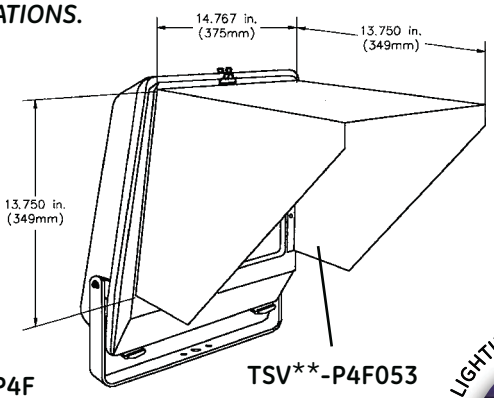
TOP VISOR

- **TVAL2-PF1K**
  Aluminum

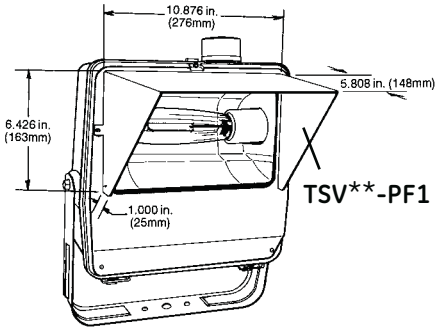
- **TVDB2-PF1K**
  Dark Bronze



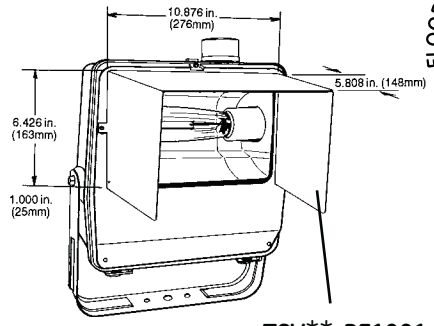
TSV**-P4F



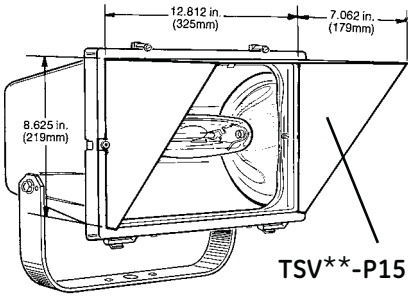
TSV**-P4F053



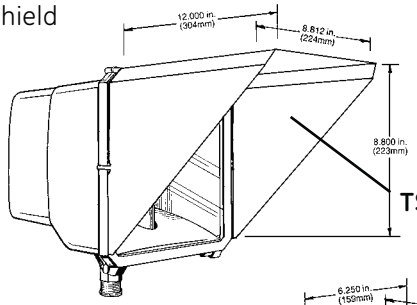
TSV**-PF1



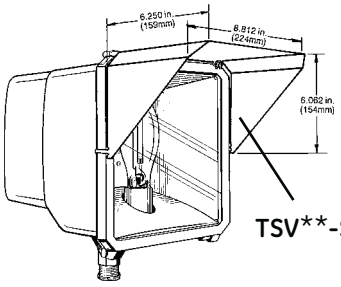
TSV**-PF1001



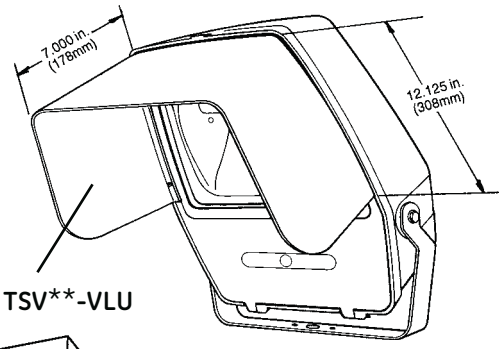
TSV**-P15



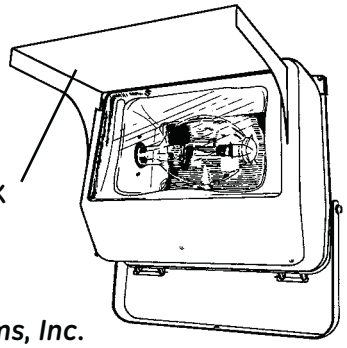
TSV**-SBF001



TSV**-SBF



TSV**-VLU


TV**-PF1K

F
FLOOD LIGHTING

PART NUMBER
WM7S07S0H1SN4DB

WALLMOUNT™ 175 LUMINAIRE

A
AREA LIGHTING

APPLICATIONS

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

SPECIFICATION FEATURES

- UL/cUL 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 acess 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

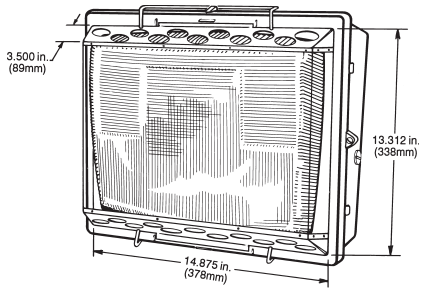
WM7S	07	S	0	H	1	SN4	DB	___
PRODUCT IDENT	WATTAGE	LIGHT SOURCE	VOLTAGE	BALLAST TYPE	PE FUNCTION	IES DISTRIBUTION TYPE	COLOR	OPTIONS*
XXXX	XX	X	X	X	X	XXX	XX	XXX
WM7M = Wallmount 175 Luminaire (Mogul Base E39 Socket Standard without Lamp) WM7S = Wallmount 175 Luminaire (Medium Base E26 Socket Standard with Lamp)	See Ballast and Photometric Selection Table 05 = 50 07 = 70 10 = 100 15 = 150 17 = 175	See Ballast and Photometric Selection Table E = Energy Act Compliant Pulse MH 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) Q = Non-Time Delay Automatically Switched Quartz

AREA WALLIGHTER ACCESSORIES

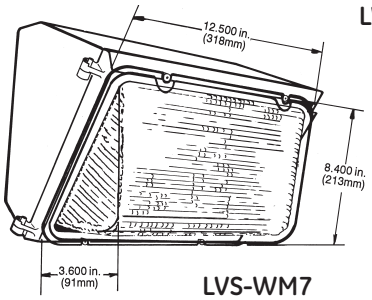
REFER TO ACCESSORY INDEX TO MATCH ACCESSORY WITH PRODUCT.
ILLUSTRATIONS SHOWN ARE TYPICAL REPRESENTATIONS.

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**)



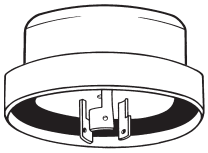
LVS-W40L001
LVS-W40L002



LVS-WM7

SHORTING CAP (With standard three-prong plug)

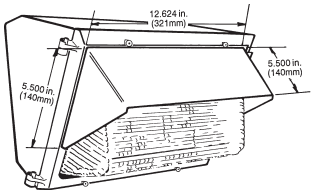
- **SCCL-PECTL**



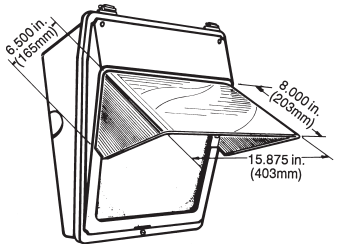
SCCL-PECTL

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

Section Divider

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Calculation Results, Pole Properties

Calculation Results - Horizontal Illuminance

Average:	0.55 fc	Ave/Min:	Undefined
Minimum:	0.00 fc	Max/Min:	Undefined

Type: LT#1

Pole Properties

Number of Poles Used:	1		
Pole Height:	40.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	40' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	40.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

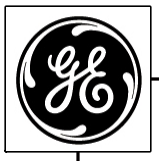
Type: LT#2

Pole Properties

Number of Poles Used:	1		
Pole Height:	40.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	40' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	40.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**



Calculation Results, Pole Properties

Type: LT#3

Pole Properties

Number of Poles Used:	1		
Pole Height:	40.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	40' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	40.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

Type: LT#4

Pole Properties

Number of Poles Used:	1		
Pole Height:	40.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	40' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	40.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

Calculation Results, Pole Properties

Type: LT#5

Pole Properties

Number of Poles Used:	1		
Pole Height:	40.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	40' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	40.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

Type: LT#6

Pole Properties

Number of Poles Used:	1		
Pole Height:	40.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	40' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	40.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

Calculation Results, Pole Properties

Type: LT#7

Pole Properties

Number of Poles Used:	1		
Pole Height:	40.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	40' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	40.00 ft.
Arm Length:	2.00 ft.
Start Angle:	180.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

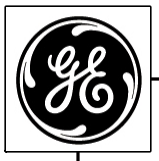
Type: LT#8

Pole Properties

Number of Poles Used:	1		
Pole Height:	40.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	40' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	40.00 ft.
Arm Length:	2.00 ft.
Start Angle:	180.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**



Calculation Results, Pole Properties

Type: LT#9

Pole Properties

Number of Poles Used:	1		
Pole Height:	40.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	40' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	40.00 ft.
Arm Length:	2.00 ft.
Start Angle:	180.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

Type: LT#10

Pole Properties

Number of Poles Used:	1		
Pole Height:	40.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	40' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	40.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

Calculation Results, Pole Properties

Type: LT#11

Pole Properties

Number of Poles Used:	1		
Pole Height:	40.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	40' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	40.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

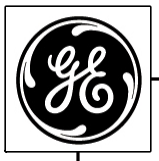
Type: LT#12

Pole Properties

Number of Poles Used:	1		
Pole Height:	40.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	40' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	40.00 ft.
Arm Length:	2.00 ft.
Start Angle:	180.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**



Calculation Results, Pole Properties

Type: LT#34

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

Type: LT#13

Pole Properties

Number of Poles Used:	1		
Pole Height:	40.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	40' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	40.00 ft.
Arm Length:	2.00 ft.
Start Angle:	180.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

Calculation Results, Pole Properties

Type: LT#14

Pole Properties

Number of Poles Used:	1		
Pole Height:	40.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	40' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	40.00 ft.
Arm Length:	2.00 ft.
Start Angle:	180.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

Type: LT#15

Pole Properties

Number of Poles Used:	1		
Pole Height:	40.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	40' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	40.00 ft.
Arm Length:	2.00 ft.
Start Angle:	180.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

Calculation Results, Pole Properties

Type: LT#16

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	180.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

Type: LT#17

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

Calculation Results, Pole Properties

Type: LT#18

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

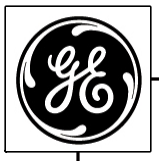
Type: LT#19

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	180.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**



Calculation Results, Pole Properties

Type: LT#20

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

Type: LT#21

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

Calculation Results, Pole Properties

Type: LT#22

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	90.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

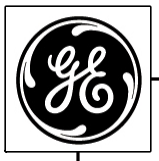
Type: LT#23

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	90.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**



Calculation Results, Pole Properties

Type: LT#24

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	180.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

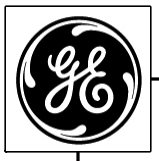
Type: LT#25

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	180.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**



Calculation Results, Pole Properties

Type: LT#26

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	180.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

Type: LT#27

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	180.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

Calculation Results, Pole Properties

Type: LT#28

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

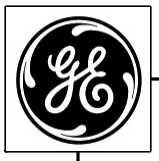
Type: LT#29

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**



Calculation Results, Pole Properties

Type: LT#30

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

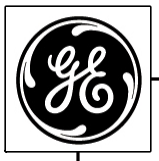
Type: LT#31

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**



Calculation Results, Pole Properties

Type: LT#32

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**

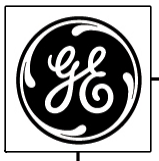
Type: LT#33

Pole Properties

Number of Poles Used:	1		
Pole Height:	30.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	30' mounting height		

Luminaire Properties (YARD LIGHT - Curve: 178610)

Number of Heads:	1
Mounting Height:	30.00 ft.
Arm Length:	2.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	51000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GELS "PF-154 POWERFLOOD" PF1S40S***6X6**



Calculation Results, Pole Properties

Type: LT#35

Pole Properties

Number of Poles Used:	1		
Pole Height:	9.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	9' mounting height		

Luminaire Properties (BUILDING LIGHT)

Number of Heads:	1
Mounting Height:	9.00 ft.
Arm Length:	0.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	10000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GE WALLMOUNT 175

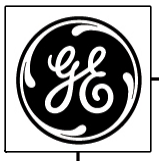
Type: LT#36

Pole Properties

Number of Poles Used:	1		
Pole Height:	9.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	9' mounting height		

Luminaire Properties (BUILDING LIGHT)

Number of Heads:	1
Mounting Height:	9.00 ft.
Arm Length:	0.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	10000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GE WALLMOUNT 175



Calculation Results, Pole Properties

Type: LT#37

Pole Properties

Number of Poles Used:	1		
Pole Height:	9.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	9' mounting height		

Luminaire Properties (BUILDING LIGHT)

Number of Heads:	1
Mounting Height:	9.00 ft.
Arm Length:	0.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	10000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GE WALLMOUNT 175

Type: LT#38

Pole Properties

Number of Poles Used:	1		
Pole Height:	9.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	9' mounting height		

Luminaire Properties (BUILDING LIGHT)

Number of Heads:	1
Mounting Height:	9.00 ft.
Arm Length:	0.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	10000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GE WALLMOUNT 175

Calculation Results, Pole Properties

Type: LT#39

Pole Properties

Number of Poles Used:	1		
Pole Height:	9.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	9' mounting height		

Luminaire Properties (BUILDING LIGHT)

Number of Heads:	1
Mounting Height:	9.00 ft.
Arm Length:	0.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	10000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GE WALLMOUNT 175

Type: LT#40

Pole Properties

Number of Poles Used:	1		
Pole Height:	9.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	9' mounting height		

Luminaire Properties (BUILDING LIGHT)

Number of Heads:	1
Mounting Height:	9.00 ft.
Arm Length:	0.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	10000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GE WALLMOUNT 175

Calculation Results, Pole Properties

Type: LT#41

Pole Properties

Number of Poles Used:	1		
Pole Height:	9.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	9' mounting height		

Luminaire Properties (BUILDING LIGHT)

Number of Heads:	1
Mounting Height:	9.00 ft.
Arm Length:	0.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	10000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GE WALLMOUNT 175

Type: LT#42

Pole Properties

Number of Poles Used:	1		
Pole Height:	9.00 ft.	Pole Cost:	$0.00
Total Cost:	$0.00	Arm Cost:	$0.00
Description:	9' mounting height		

Luminaire Properties (BUILDING LIGHT)

Number of Heads:	1
Mounting Height:	9.00 ft.
Arm Length:	0.00 ft.
Start Angle:	0.00°
Angle between:	0.00°
Wattage:	0.00
Lamp Lumens:	10000
Total Light Loss Factor:	1.00
Luminaire Cost:	$0.00
Luminaire Description:	GE WALLMOUNT 175

Section Divider

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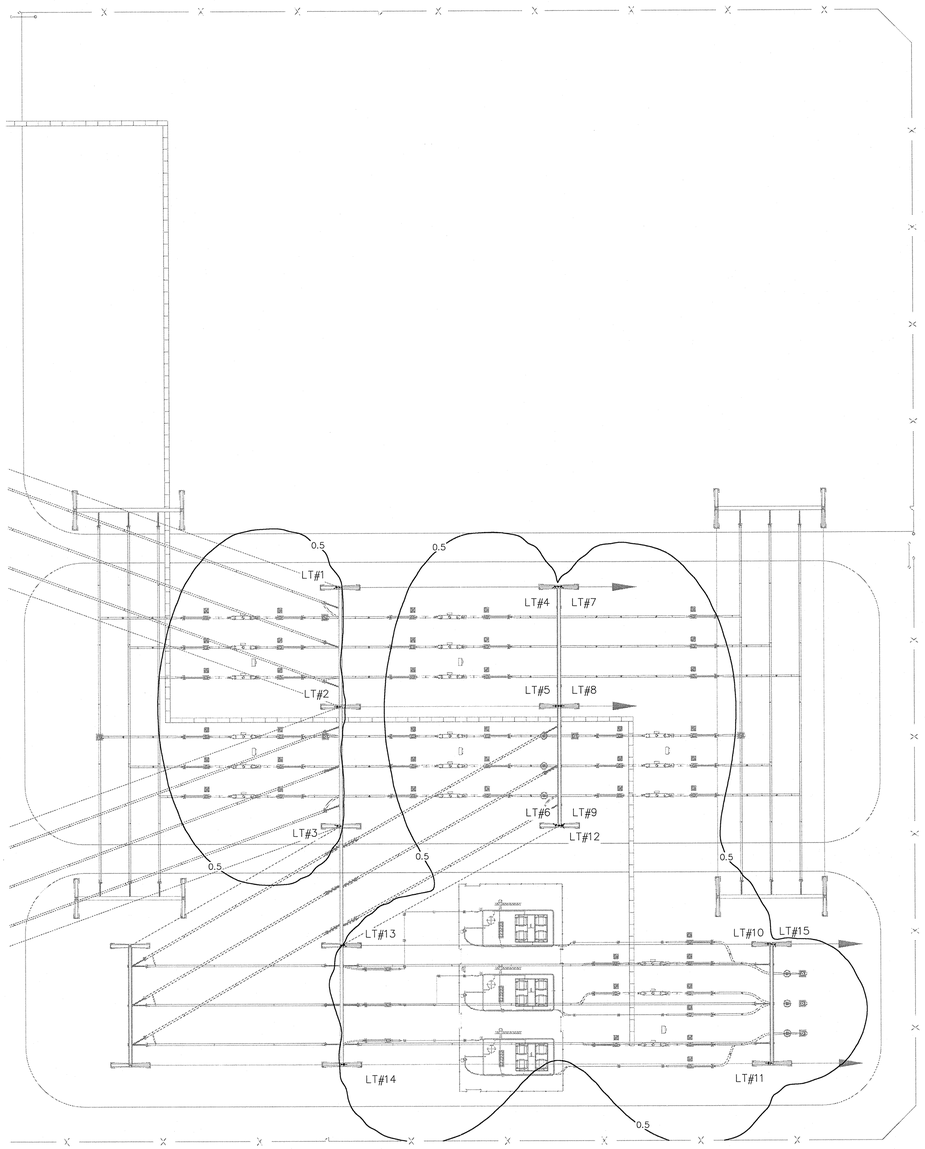
NORTH



YARD LIGHTS	
TOTAL LUMINARIES	15
TOTAL KW LOAD	5.20
CATALOG NUMBER	PF1S40S0A1DBK
INITIAL LUMENS	51,000
LIGHT LOSS FACTOR	1.00
FIXTURE WATTS	400
BUILDING LIGHTS	
TOTAL LUMINARIES	0
TOTAL KW LOAD	0.00
CATALOG NUMBER	WM7S07SOH1SN4DB
INITIAL LUMENS	6,400
LIGHT LOSS FACTOR	1.00
FIXTURE WATTS	70

ILLUMINANCE IS IN HORIZONTAL FOOT CANDLES TARGET PLANE Z = 0 FEET HORIZONTAL METERS	
NUMBER OF POINTS	N/A
AVERAGE	0.55
MAXIMUM	14.39
MINIMUM	0.00
AVG/MIN	UNDEFINED
MAX/MIN	UNDEFINED

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:

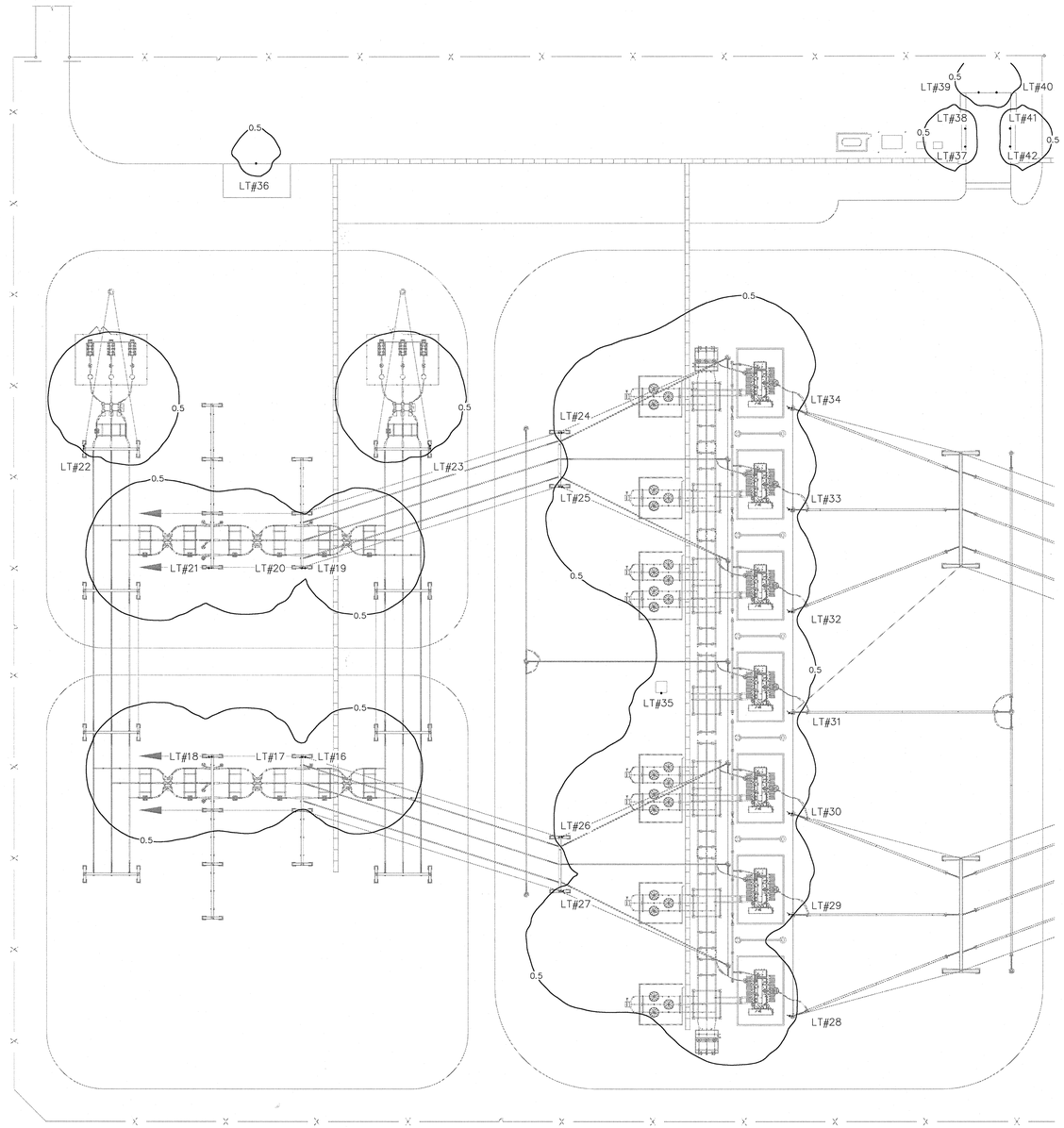
BETA ENGINEERING
PINEVILLE, LOUISIANA

SAN DIEGO GAS & ELECTRIC COMPANY
SAN DIEGO, CALIFORNIA

SUNCREST SUBSTATION

500KV OUTDOOR LIGHTING DESIGN

DRAWN BY: DDG	DATE: 11/17/09	SCALE: N.T.S.	W.O.: –	REV.: 0	
CHECKED BY: CRL	DATE: 12/3/09				
APPROVED BY:	DATE:	SHEET 1 OF 2			SCR–OLD1
CAD NO.: SCROLD1	PLOT SCALE: 1 = 1				



YARD LIGHTS	
TOTAL LUMINARIES	19
TOTAL KW LOAD	7.60
CATALOG NUMBER	PF1S40S0A1DBK
INITIAL LUMENS	51,000
LIGHT LOSS FACTOR	1.00
FIXTURE WATTS	400
BUILDING LIGHTS	
TOTAL LUMINARIES	8
TOTAL KW LOAD	0.56
CATALOG NUMBER	WM7S07SOH1SN4DB
INITIAL LUMENS	6,400
LIGHT LOSS FACTOR	1.00
FIXTURE WATTS	70

ILLUMINANCE IS IN HORIZONTAL FOOTCANDLES TARGET PLANE Z = 0 FEET HORIZONTAL METERS	
NUMBER OF POINTS	N/A
AVERAGE	0.55
MAXIMUM	14.39
MINIMUM	0.00
AVG/MIN	UNDEFINED
MAX/MIN	UNDEFINED

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

SUNCREST SUBSTATION

230KV OUTDOOR LIGHTING DESIGN

DRAWN BY: DDG	DATE: 11/17/09	SCALE: N.T.S.	W.O.: –	REV.: 0	SCR–OLD2
CHECKED BY: CRL	DATE: 12/3/09				
APPROVED BY:	DATE:	SHEET 2 OF 2			
CAD NO.: SCROLD2	PLOT SCALE: 1 = 1				