



PORTA

Cost Effective Solar Lighting Solutions

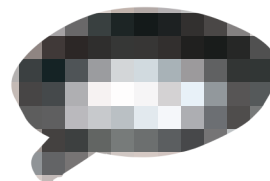
BRIGHTA | GENERAL SPECIFICATIONS



Greenshine

Light Fixture (GS-LED-260P)

Luminaire Input Voltage	DC 12V 24V
Power Consumption	30W 40W
Lumen	3929 5288 lumens
Color Temperature	3000-4000-5000K
IES Lighting Type	Type II III V
Material	Die-cast aluminum



Solar Panel (1 or 2 Units)

110W

180W

Rating Power	110 W	180 W
Maximum Power Voltage	17.60 V	18.95 V
Maximum Power Current	6.25 A	9.50 A
Open Circuit Current	21.7 V	22.74 V
Short Circuit Current	6.71	9.98 A
Size	47.5" x 27"	58.5" x 27"
Weight	29.5 lb	23.4 lb

Battery (1 or 2 Units)

Battery Type	GEL Deep Cycle Lead-Acid
Operating Voltage	12 V
Capacity	150 Ah at 20 hr-rate to 1.75 V per cell at 77°F
Dimensions	16(L)×7(W)×9.2(H) (in)
Expected Life	5 ~ 7 years

Solar Charger

Operating Voltage	12 V/24 V auto recognition
Max. Charge / Load Current	5 A/ 10 A/ 20 A (different models)
Night / Day Detection	2.5 V – 10 V
IP Class	IP68

Pole

Height	20 ft
Diameter	6 3/4" at the bottom, 4" at the top
Thickness	5/32"
Material	Galvanized Steel
Finishing	Powder Coating



BRIGHTA | GENERAL SPECIFICATIONS



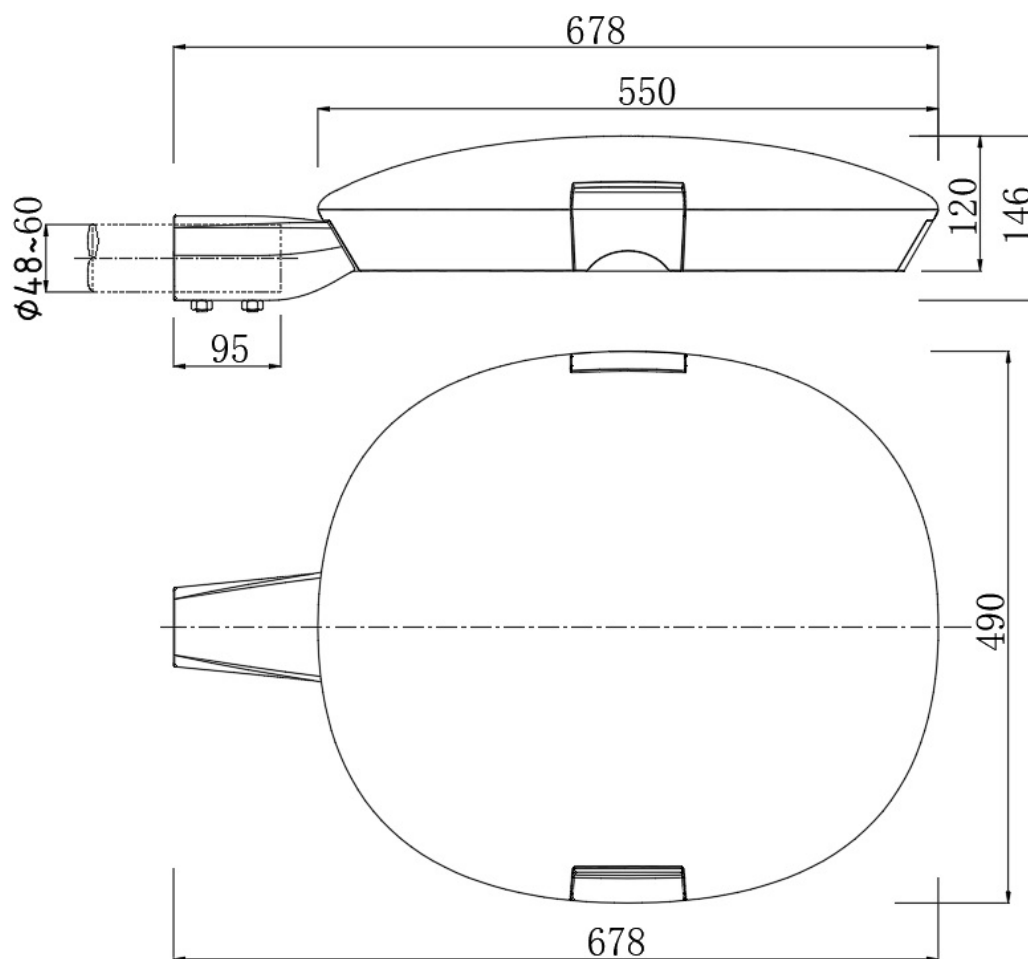
Greenshine

SPECIFICATIONS

Luminaire Input Voltage	DC 12V 24V
Power Consumption	30W 40W
Lumen Output	3929 5288 lumens
Color Temperature	3000-4000 K
IES Lighting Type	Type II III V
Material	High pressure die-cast aluminum
Lens	5mm toughened glass, optical grade PMMA
IP Class	IP 65
Insulation	Class I
Operating Temperature	-30°C ~+50°C/ -22°F ~+122°F
CRI	≥70

Weight: 8.3 kg | 18.3 lb

DIMENSIONS



GREENSHINE SOLAR PANEL

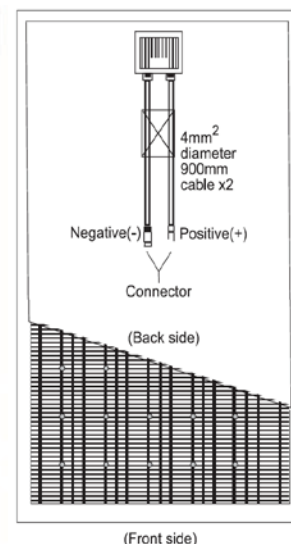
Solar Powered LED Lighting System



Greenshine

OVERVIEW

- Mono-Crystalline solar cells
- Aluminum frame with a unique design to withstand strong winds
- Highly resistant tempered glass
- Multilayer EVA encapsulation with triple layer back sheet
- 25-year power output warranty: 5 years/95%, 12 years/90%, 25 years/80%.



Rating Power

110W

180W

Product Tolerance	± 3%	± 3%
Maximum Power Voltage	17.60V	18.95V
Maximum Power Current	6.25A	9.50A
Open Circuit Voltage	21.7 V	22.74 V
Short Circuit Current	6.71 A	9.98 A
Frame	Anodized aluminum, 4mm thickness	
Dimensions	1208mm x 682mm 47.5" x 27" 13kg 29.5lb	1486mm x 682mm 58.5" x 27" 10.6kg 23.4lb
Test Temperature	25°C 77°F, 1000w/m², Air Mass 1.5	
Junction Box / Wiring	IP65 Junction box with 900mm cable with MC4 connectors	





Greenshine

ENJOY COST EFFECTIVE NATURAL ENERGY

Brighta Fixture Options



GS-260 PRO

DIMENSIONS: 26.69" x 19.2" x 5.7"

WEIGHT: 18.3 lb

COLORS: Black or Grey



GS-290D

DIMENSIONS: 26.2" x 13.4" x 5.9"

WEIGHT: 20 lb

COLORS: Black or Grey



NSB PRO

DIMENSIONS: 26.1" x 11.6" x 4.6"

WEIGHT: 15.6 lb

COLORS: Black or Grey

GREENSHINE GEL-TYPE BATTERY

Solar Powered LED Lighting System



Greenshine

OVERVIEW

GEL deep cycle battery with a 12 years floating design life is especially designed for frequent cyclic discharge under extreme temperature.

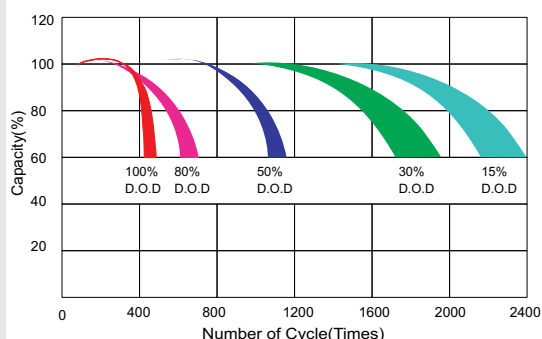


	GS-GEL-H80	GS-GEL-H120	GS-GEL-H150	GS-GEL-H200
Cells per unit	6	6	6	6
Voltage per unit	12V	12V	12V	12V
Capacity	80Ah @ 20hr-rate to 1.75V per cell @ 25°C / 77°F	120Ah @ 20hr-rate to 1.75V per cell @ 25°C / 77°F	150Ah @ 20hr-rate to 1.75V per cell @ 25°C / 77°F	200Ah @ 20hr-rate to 1.75V per cell @ 25°C / 77°F
Weight	26kg / 58lb	38kg / 84lb	46kg / 100lb	59.2kg / 131.5lb
Dimensions L x W x H	330 x 172 x 214(mm) 13" x 7" x 8.5"	406 x 173 x 233(mm) 16" x 7" x 9.2"	483 x 170 x 240(mm) 19" x 6.7" x 9.5"	522 x 240 x 218(mm) 20.5" x 9.44" x 8.7"
Max Discharge Current	800A (5 Sec)	1200A (5 Sec)	1500A (5 Sec)	2000A (5 Sec) ²
Operating Temp. range	-40°C~60°C -40°F~140°F			
Flot Charging Voltage	13.6 to 13.8 VDC / unit average at 25°C / 77°F			
Recommended max. charging current	16A	24A	30A	40A
Self-discharge	Valve Regulated Lead Acid can be stored for more than 6 months at 25°C/77°F. Self-discharge ratio less than 3% per month at 25°C/77°F. Please charge batteries before using.			
Equalization and cycle service	14.6 to 14.8 VDC / unit average at 25°C / 77°F			
Terminal type	5ft cooper wire leads from the battery case			

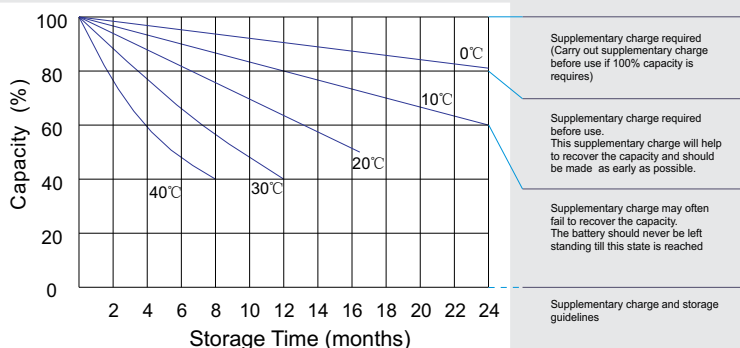
GREENSHINE GEL-TYPE BATTERY



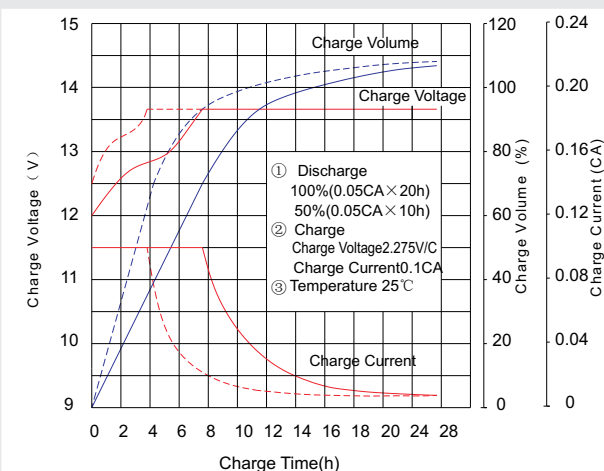
Life characteristics of cyclic use



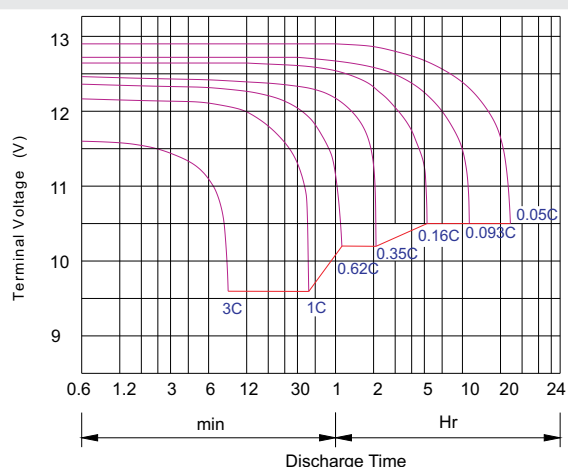
Storage characteristic



Charge characteristic curve for cyclic use



Discharge characteristic curve



Capacity Factors With Different Temperature

Battery Type		-20°C	-10°C	0°C	5°C	10°C	20°C	25°C	30°C	40°C	45°C
GEL Battery	6V&12V	50%	70%	83%	85%	90%	98%	100%	102%	104%	105%
	2V	60%	75%	85%	88%	92%	99%	100%	103%	105%	106%
AGM Battery	6V&12V	46%	66%	76%	83%	90%	98%	100%	103%	107%	109%
	2V	55%	70%	80%	85%	92%	99%	100%	104%	108%	110%

Discharge Current VS. Discharge Voltage

Final Discharge Voltage V /cell	1.75V	1.70V	1.60V
Discharge Current (A)	(A) ≤0.2C	0.2C < (A) <1.0C	(A) ≥1.0C

Charge the batteries at least once every six months, if they are stored at 25°C.

Charging Method:

Constant Voltage	-0.2Cx2h+14.4-14.7Vx24h, Max. Current 0.2C
Constant Current	-0.2Cx2h+0.1Cx12h
Fast	-0.2Cx2h+0.2Cx6h

Bolt	M5	M6	M8
Terminal	F3 F4 F13 F18 T25 T26	F8 F11 F12-1 F15	F5 F9 F10 F12 F14 F16
Torque	6-7N-m	8-10N-m	10-12N-m

Maintenance & Cautions

Cycle service

- ※ Avoid battery over discharge, especially battery series connection use.
- ※ Charged with recommend voltage, ensure battery can be full recharged.
- In general, recharge capacity should be 1.1-1.15 times discharge capacity.
- ※ Effect of temperature on cycle charge voltage: -4mV/°C/Cell.
- ※ There are a number of factors that will affect the length of cyclic service.
- The most significant are depth of discharge, ambient temperature, discharge rate, and the manner in which the battery is recharged.
- Generally speaking, the most important factors is depth of discharge.

GREENSHINE CONTROLLER

Solar Powered LED Lighting System



FEATURES

- Corrosion-proof epoxy-encapsulated PCB (IP68)
- Four-stage battery charging (main, float, boost, equalization)
- Temperature compensated
- Automatic system voltage recognition (12V/24V)
- Customized by Greenshine to fit specific needs of clients
- Easy to install

SPECIFICATIONS

System Voltage

Max. charge / load current

Deep discharge protection:

Cut-off Voltage

Reconnect Level

Overvoltage Protection

Undervoltage Protection

Max. Panel Voltage

Temperature compensation

(Charge Voltage)

Ambient Temperature

Max. Altitude

Battery Type

Adjustment Range:

Evening / Morning Hours

Night / Day Detection

Wire Cross Section

Type of Protection

12V | 24 Auto Recognition

5A | 10A | 20A (Different Models)

11V - 12V | 22V - 24V

12.8V | 25.6V

15.5V | 31.0V

10.5V | 21V

$U_{BATmin} + 30V$ (if module and battery are connected with correct polarity)

-25mV | K at 12V

-50mV | K at 24V

-40°C to +60°C, -40°F to +140°F

4,000m above sea level

Lead acid (GEL, AGM, flooded)

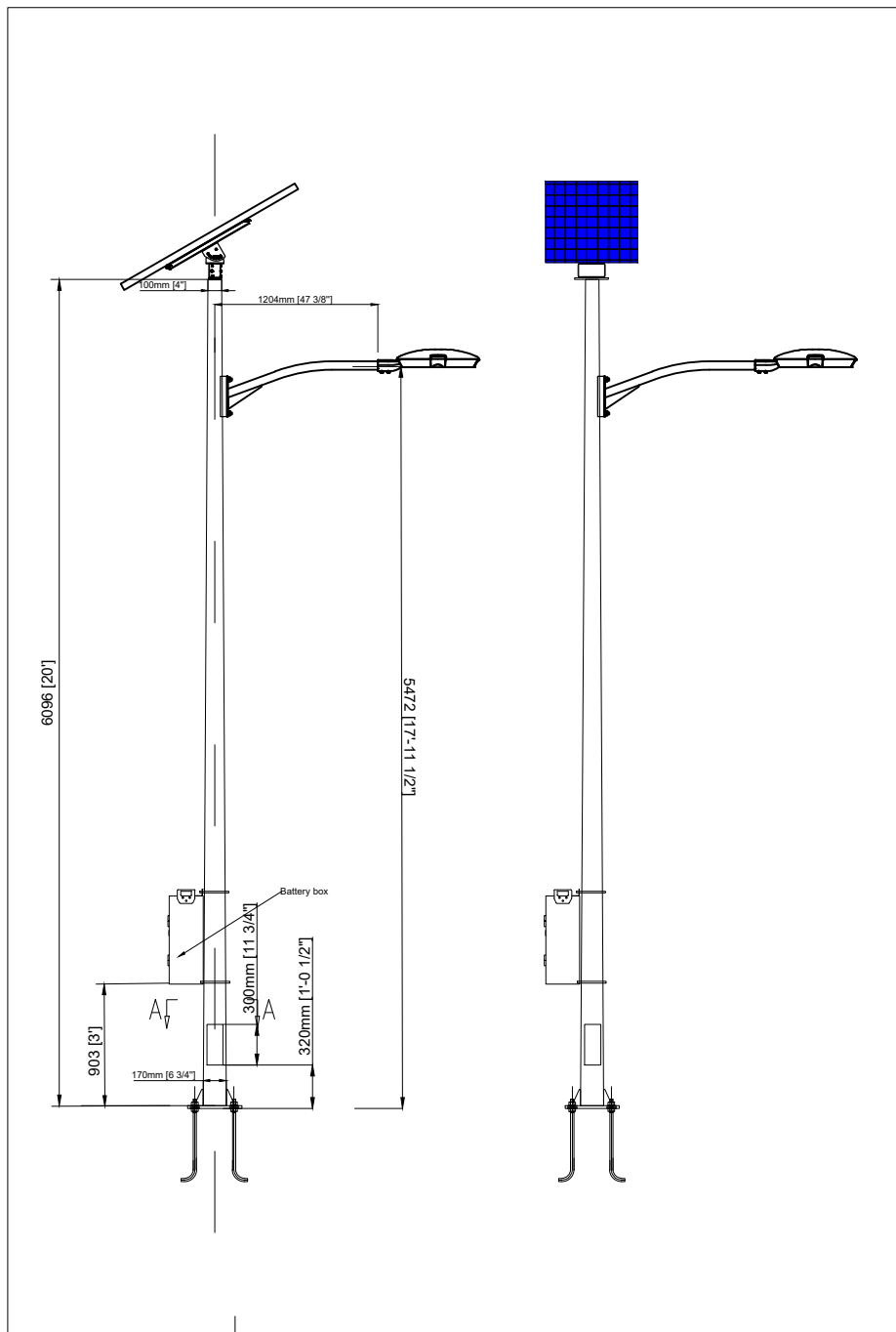
0 – 15h | 0 – 14h

2.5V – 10V

1.5mm²/ 1.5mm²/ 2.5mm², 15 (AWG)

IP68 (1.5 m, 72 h)

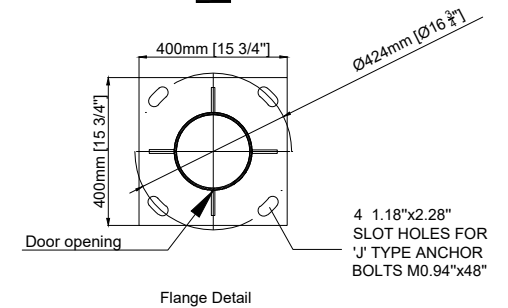
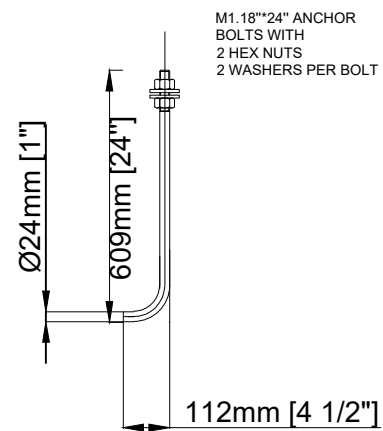




CONCRETE PAD


Greenshine New Energy do not provide the rebar cage material, contractor that performs the installation and build the concrete pads, is responsible for sourcing all the rebar material. Greenshine only provides the 24" J-bolts that connect to the steel pole

ANCHOR BOLT DETAIL



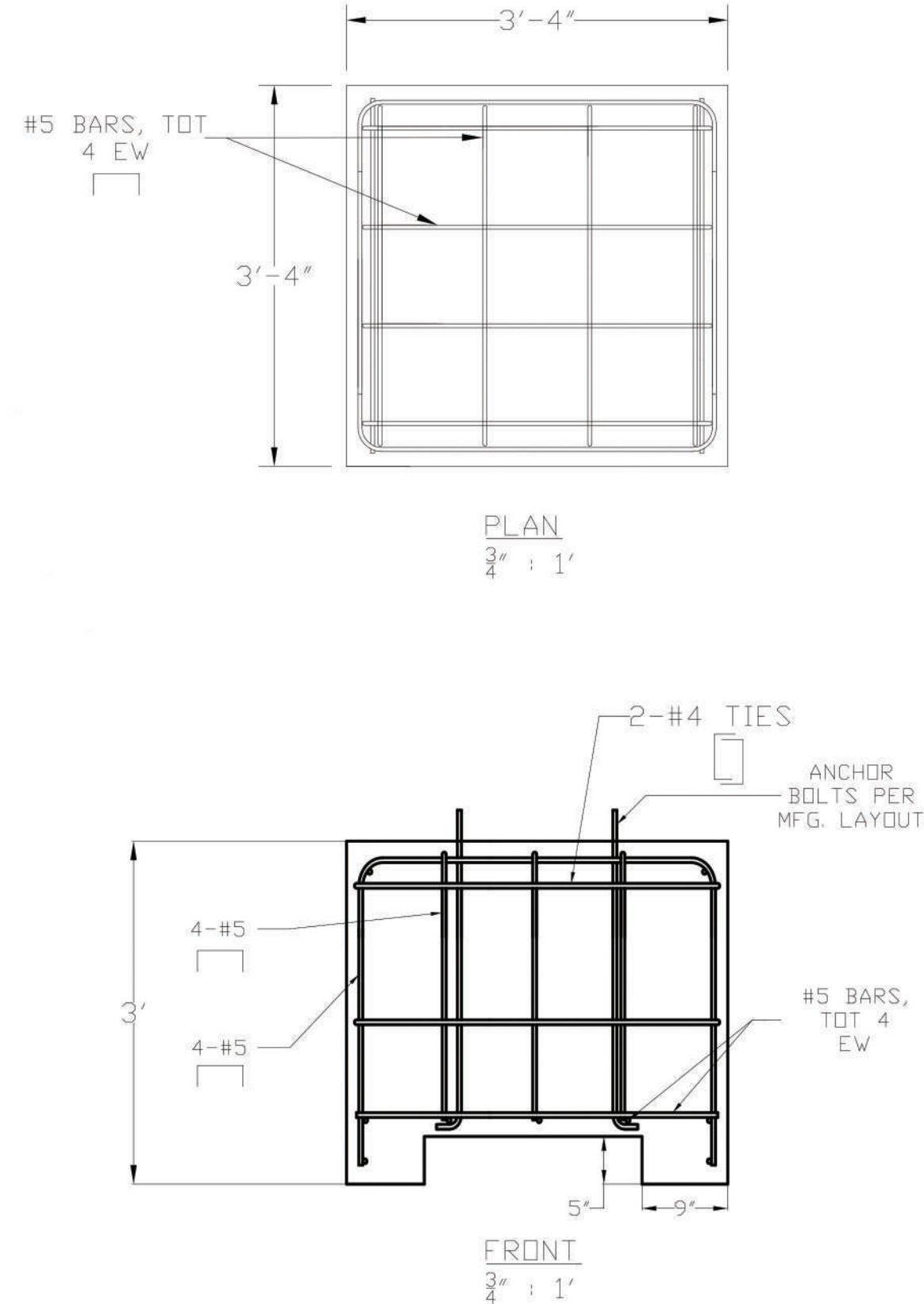
- Foundation dimensions shall be confirmed by a local engineering company, Greenshine New energy will not be held liable for any defect of the concrete foundation due to improper sizing.
- Drawings are based using hot-dipped galvanized steel, powder coating with a thickness of 52"
- *EPA of the system exclude the EPA of the pole, includes the solar panels, brackets, arm and LED fixture and battery box.
- **Wind resistance of the poles are indicative and further customization can be provided.

Tilt angle of the solar panels	15	30	45	60
EPA (ft²)	6.68	9.31	11.57	13.3
Wind resistance** (mph)	145	145	145	145

Proposal			
System	Brighta Portable - 20' pole -1 panel		
By	Luis Jimenez	Date	4/19/2019

NOTES:

1. MINIMUM REBAR AND ANCHOR BOLT CONCRETE CLEARANCE = 2",
2. BOTTOM REBAR MAT MAY BE SET AT A CLEARANCE OF 3" TO BOTTOM OF CONCRETE FOUNDATION.
3. MINIMUM CONCRETE COMPRESSIVE STRENGTH = 2500 PSI.
4. DESIGN WIND SPEED = 90 MPH (asd) AND IS BASED ON THE FOLLOWING PARAMETERS:
 - 4.1. DURATION OF SERVICE COULD POSSIBLY BE UP TO 2 YEARS. TYPICALLY APPLICATION INCLUDES A TEMPORARY PARKING LOT OR STORAGE YARD.
 - 4.2. SOLAR PANEL: 5FT X 2FT X 2 INCHES TALL. 30 LBS. +/-, USUALLY TILTED AT 30 DEGREES +/-.
 - 4.3. SOLAR BRACKET: 2FT X 2FT X 2 INCHES AND 15LBS +/-.
 - 4.4. ANGLE TENON: 1FT X 0.5FT X 0.5FT, AND 15LBS +/-.
 - 4.5. BATTERY BOX: 1.5FT X 0.7FT X 1.2 FT. AND 40 LBS +/-.
 - 4.6. BATTERY WILL BE INSIDE BATTERY BOX. 1.2FT X 0.5FT X 1.0 FT., AND 90 LBS. +/-.
 - 4.7. MAST ARM: 4FT L. DIAMETER OF 2.54" TUBE. WEIGHT 15 LBS +/-.
 - 4.8. 20' GALVANIZED STEEL POLE 6" X 20'. 350LBS. +/-, ONE UNIT OF EACH PART IS NEEDED PER SYSTEM.



SEE
ENGINEERING

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GREENSHINE NEW ENERGY
72 FAIRBANKS, BLDG 100
IRVINE, CA 92618

STREET-LIGHTS SOLAR
CONCRETE PEDESTAL
20 FOOT POLE SINGLE LIGHTS
90 MPH

DRAWN:
CEE

CHECKED BY:
SEE

CHECK DATE:
07/31/17

SHEET SIZE:
11x17

REVISION DATE:

SHEET:
1 OF 1

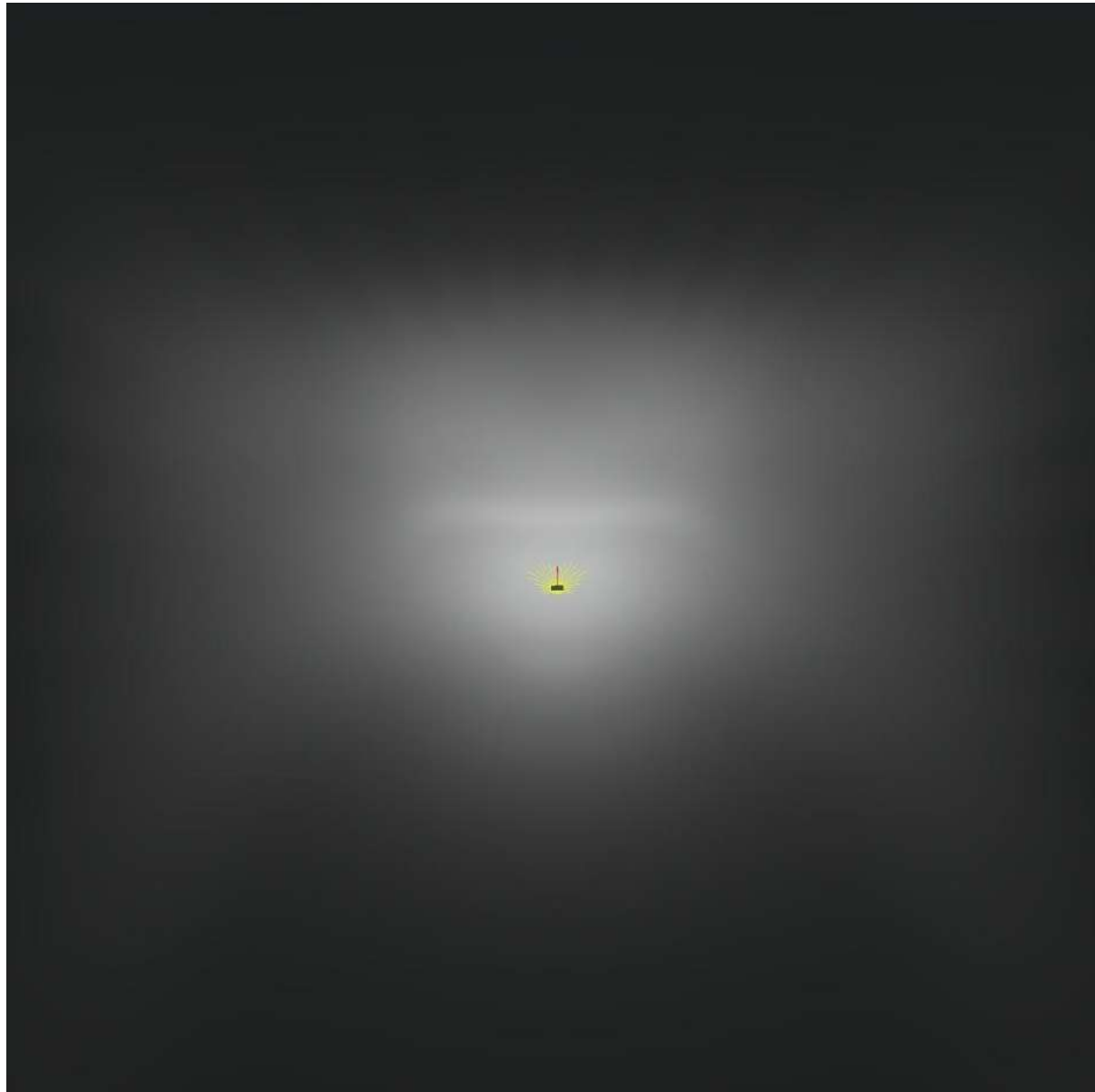


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PORTA 260P 30W - 20' POLE / 3D Rendering

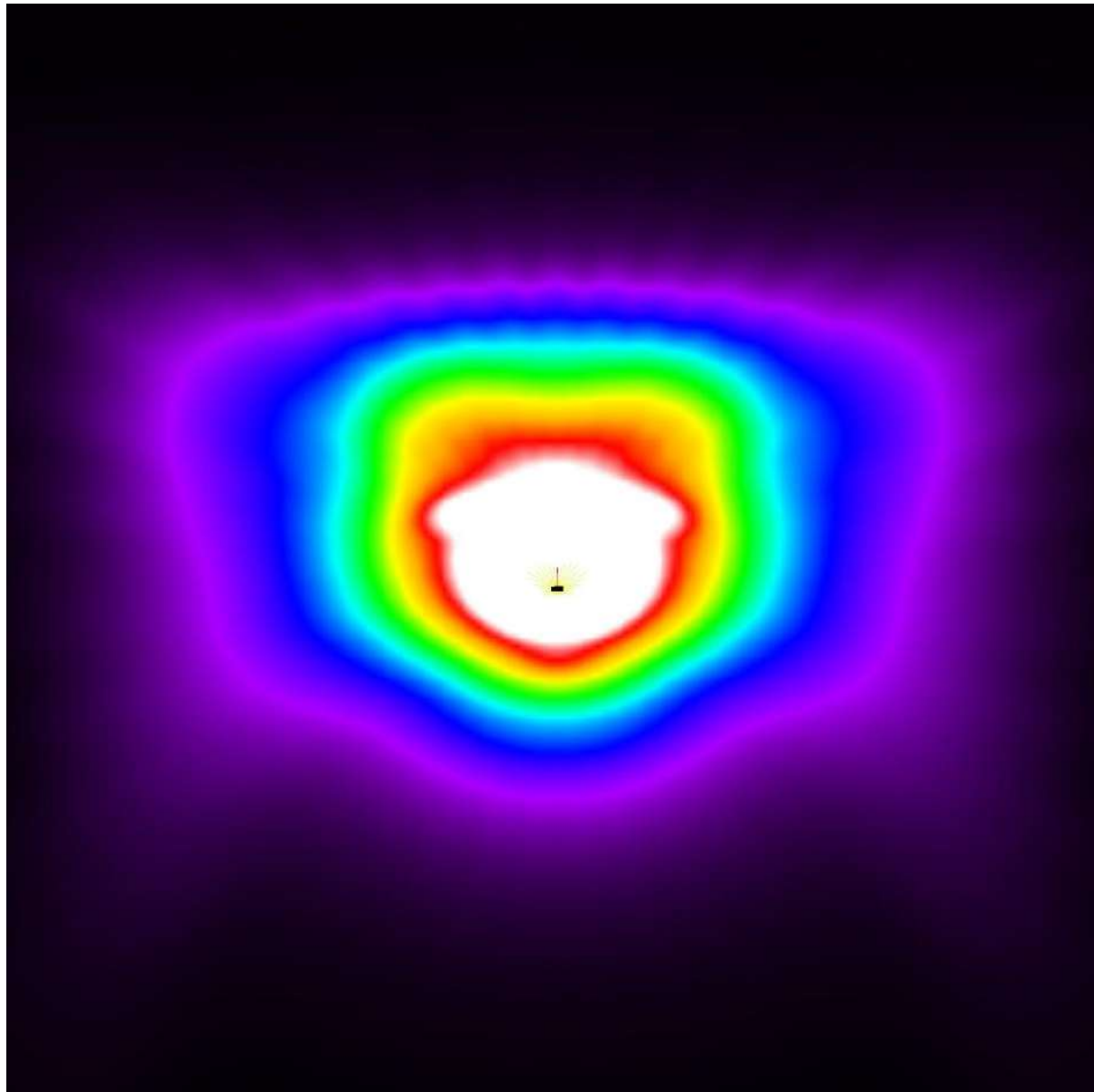




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PORTA 260P 30W - 20' POLE / False Color Rendering



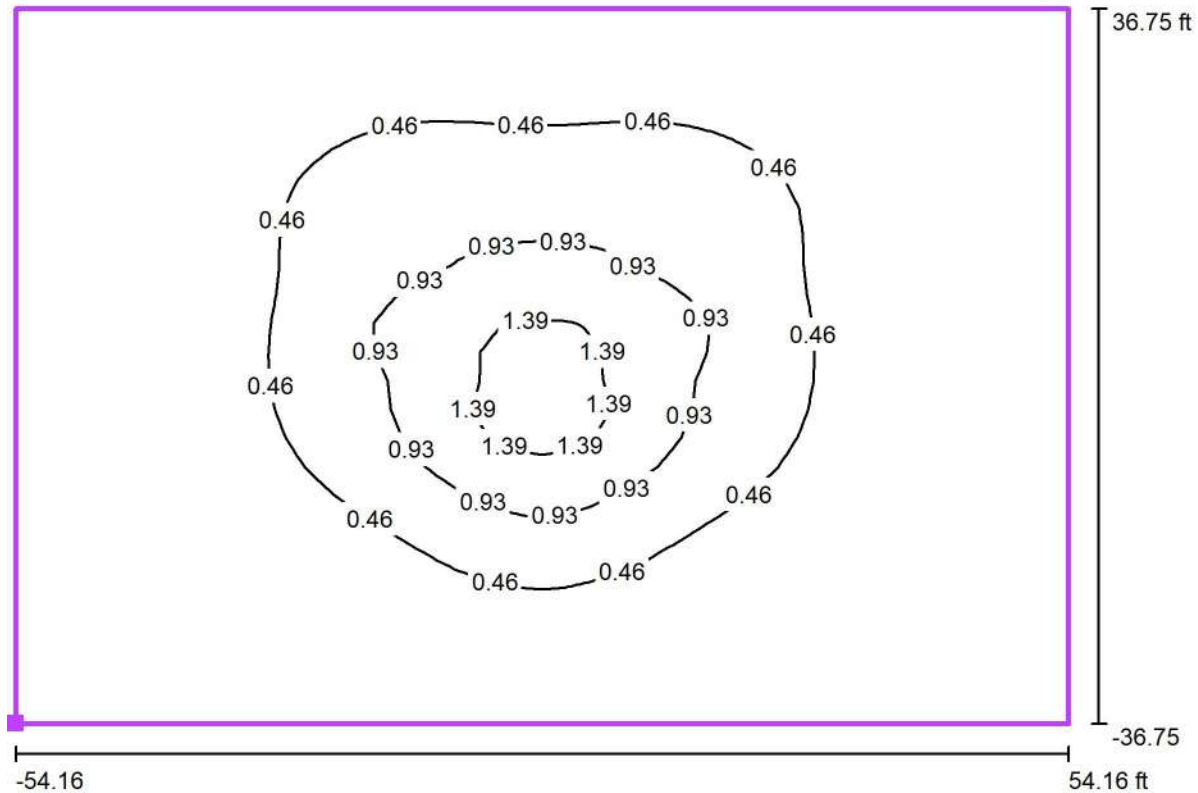
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fc

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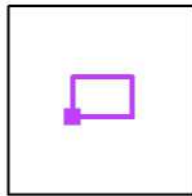
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PORTA 260P 30W - 20' POLE / Calculation Grid 1 / Isolines (E, Perpendicular)



Values in Footcandles, Scale 1 : 237

Position of surface in external scene:
Marked point: (117.649 ft, 141.261 ft,
0.000 ft)



Grid: 50 x 25 Points

E_{av} [fc]
0.38

E_{min} [fc]
0.05

E_{max} [fc]
1.58

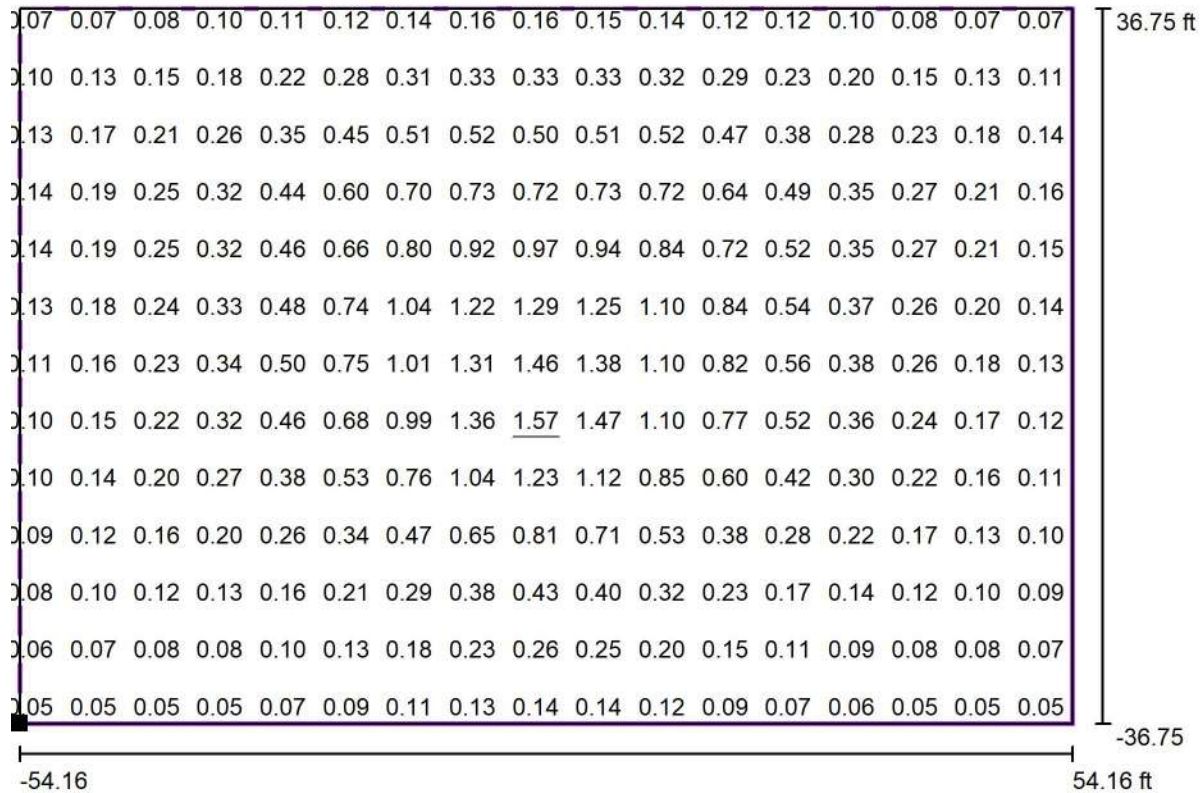
u_0
0.13

E_{min} / E_{max}
0.03

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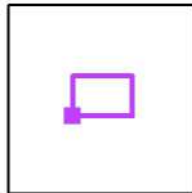
PORTA 260P 30W - 20' POLE / Calculation Grid 1 / Value Chart (E, Perpendicular)



Values in Footcandles, Scale 1 : 237

Not all calculated values could be displayed.

Position of surface in external scene:
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Grid: 50 x 25 Points

E_{av} [fc]
0.38

E_{min} [fc]
0.05

E_{max} [fc]
1.58

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