

Mounting systems for solar technology



EVEREST SOLAR SYSTEMS, LLC

CALCULATION BASIS

PROJECT: Sallee Real Estate 200 - MO
AUTHOR: Ryan Estrada
DATE: 5/7/2020



PROJECT DATA

GENERAL INFORMATION

Name	Sallee Real Estate 200 - MO
Mounting System	D Dome R ² 10°
Customer	SunSmart Technologies
Contact	Daniel Bergthold
Author	Ryan Estrada

LOCATION

Address	200 NE Missouri Rd, Lee's Summit, MO 64086, USA
Wind speed	110.0 mph
Wind exposure	B - Urban and suburban
Risk Category	I - Low hazard
Roof type	Flat roof
Roof covering	Flat
Building height	35.0 ft
Parapet wall height	4.0 ft
Roof pitch	0°
Minimum Roof Edge distance	4.0 ft
Friction coefficient	0.50

To ensure proper ballast calculation, coefficient of friction to be verified by Designer or Installer. Refer to D Dome R²-Coefficient of Friction document, located in the technical information section of website for values on common roof types.

LOADS

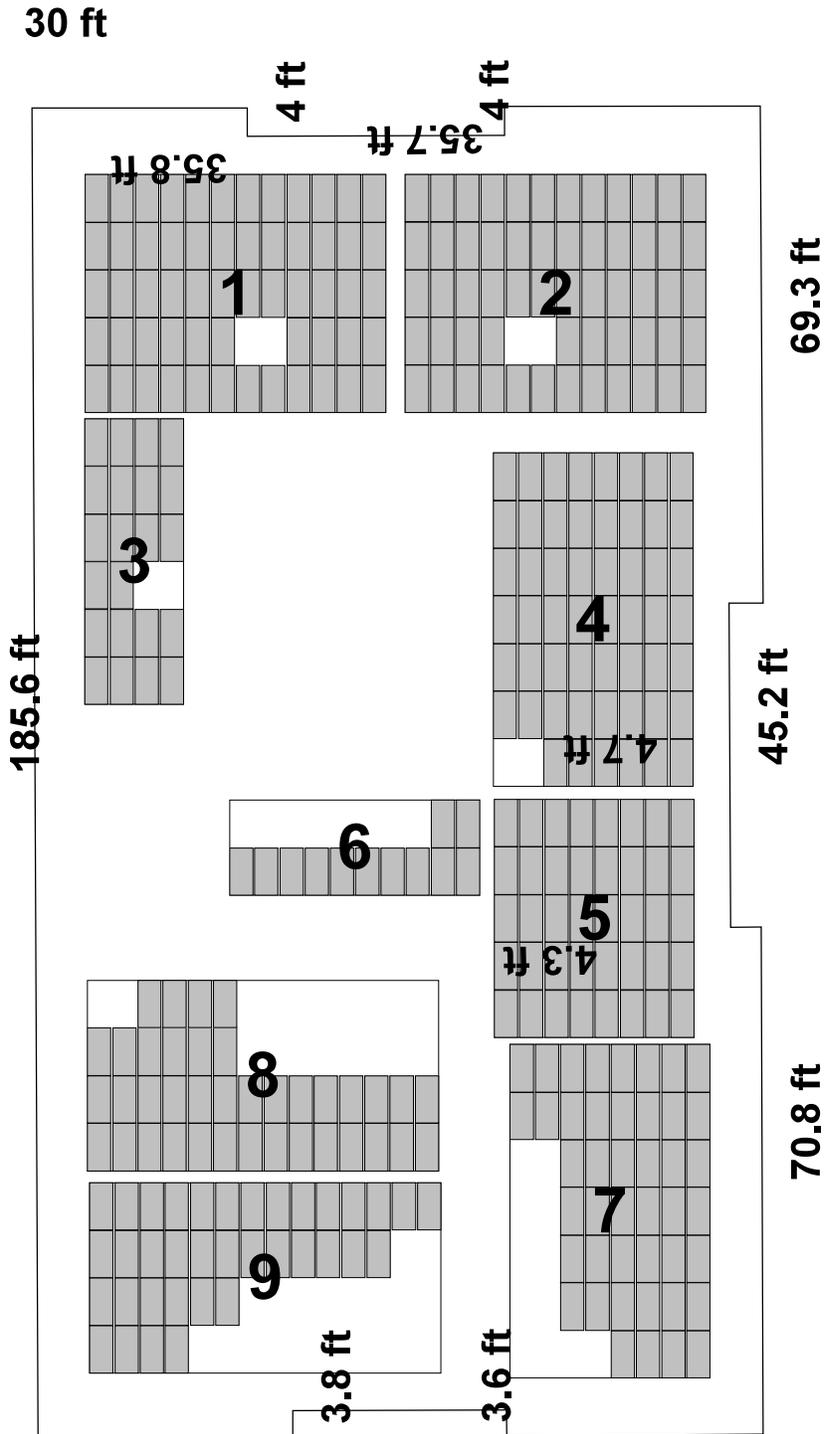
Design method	ASCE 7-10
velocity pressure	$q_p = 19.277$ psf
Snow load on ground level	$s_k = 20.000$ psf

MODULES

Manufacturer	JinkoSolar Holding Co.	Quantity	362
Name	JKM-400M-72HL-V	Output	144.800 kWp
Dimensions LxWxH	79.1 x 39.5 x 1.57 in		
Weight	49.6 lbm		
Power	400 W		



ASSEMBLY PLAN



Dimensions in [ft]

35.8 ft

29.8 ft

35.5 ft

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LEGEND

Distance to neighboring module array [ft]

Distance to roof edge [ft]

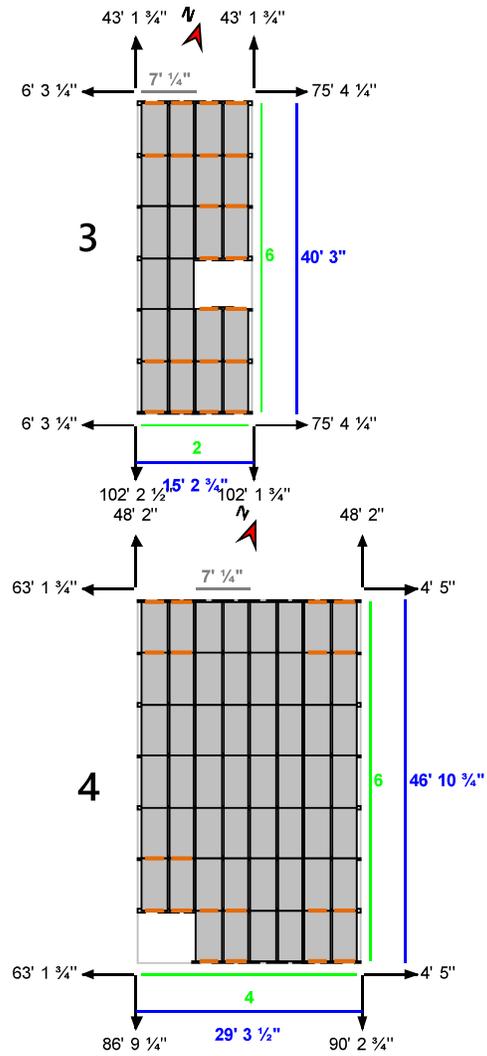
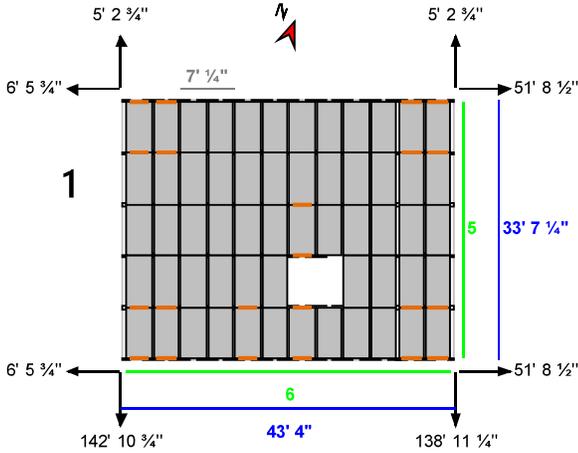
Module count

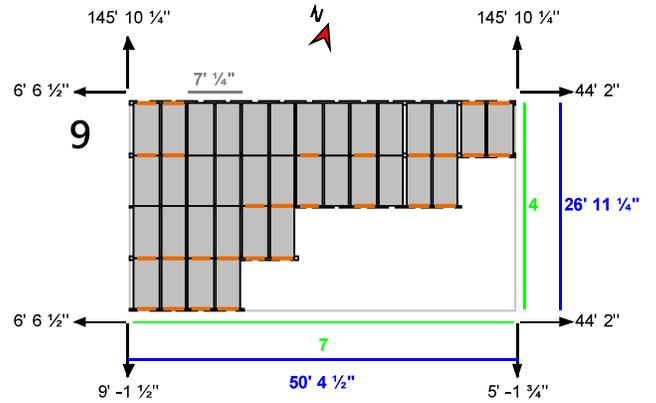
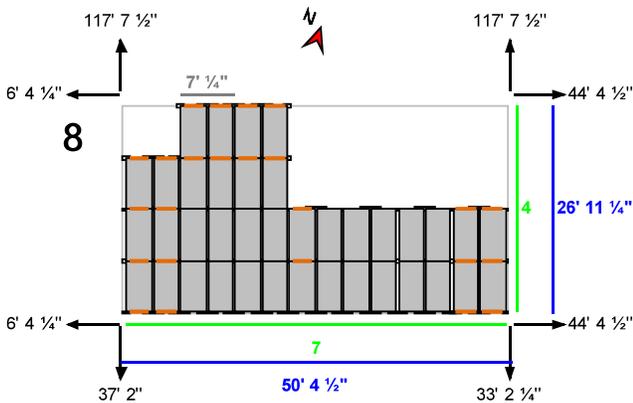
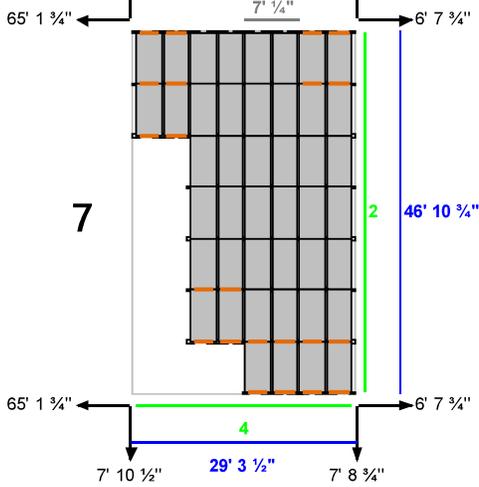
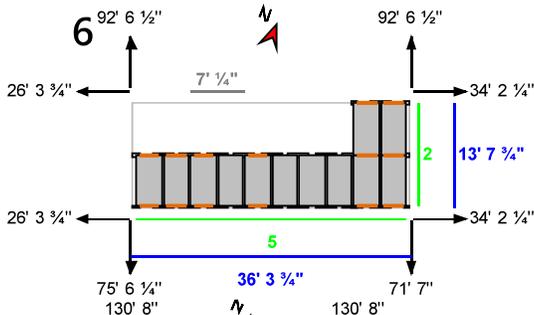
Length/width of module array [ft]

Row distance [ft]

Corner Strut for corner modules and ballast optimization

Array numbers shown on this page match those shown on the overall lay.







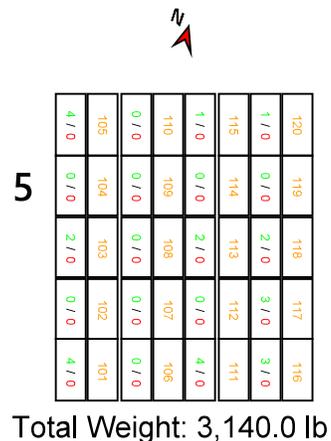
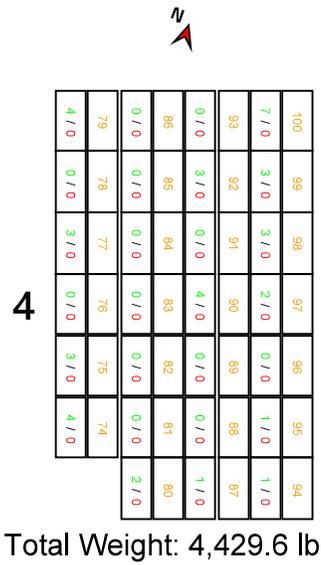
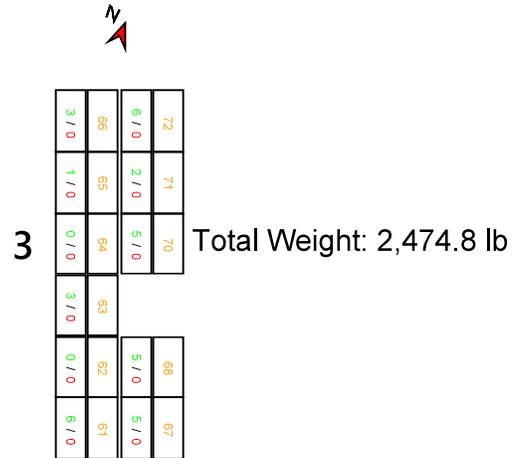
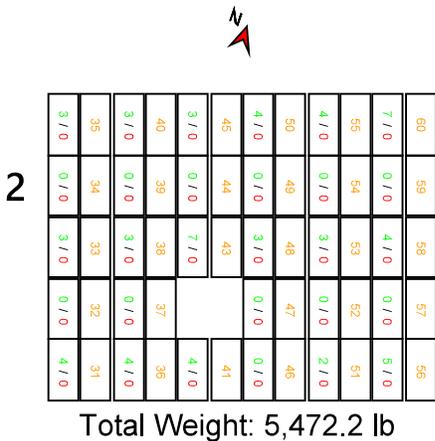
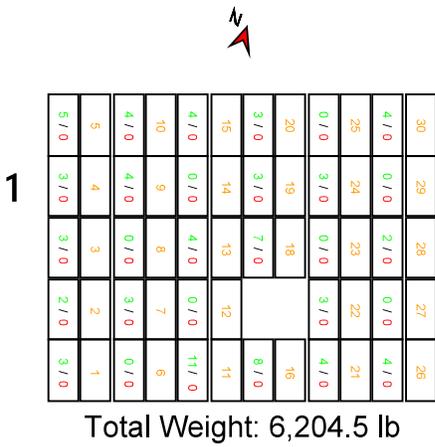
BALLAST PLAN

LEGEND

Number of Blocks

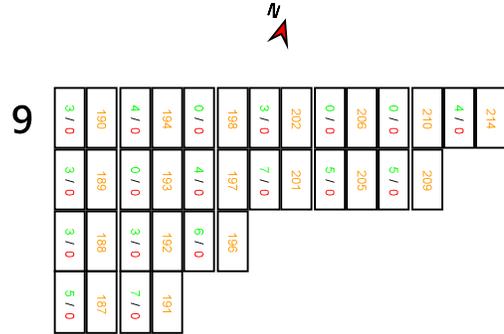
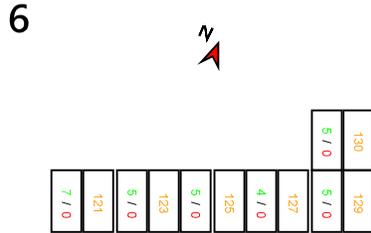
Number of Anchors

Module Pair Number (for locating pair)



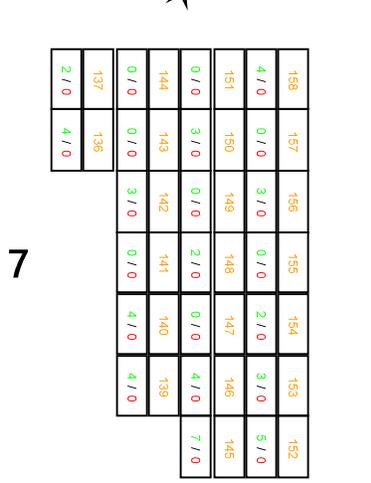


6 Total Weight: 1,726.6 lb



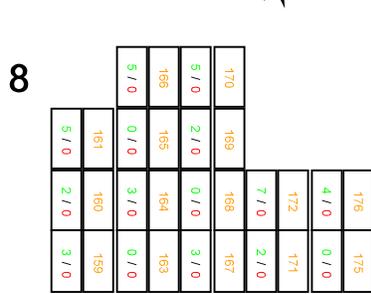
Total Weight: 4,128.7 lb

7 Total Weight: 4,173.0 lb



Total Weight: 4,173.0 lb

8 Total Weight: 3,879.6 lb



Total Weight: 3,879.6 lb





RESULTS

BALLAST CAPACITY

Block Weight	32.0 lbm
Blocks	18

No anchors used

Microinverter quantity	362
Average uplift pressure	4.07 psf
Average downward pressure	4.21 psf
Maximum downward pressure	10.32 psf

NOTES

- Module manufacturer installation guides must be followed. Use approved electrical bonding and grounding components as required by the local or national codes and AHJ.
- It is recommended to verify compatibility of the Roof Protection Mat and Spacer Pad with the particular roofing on the project.
- A thermal break is required at no more than 50 feet in both directions, North/South and East/West. A minimum separation of 2.5 inches is required between separate arrays.
- The default thermal break values of 2.5 inches do not account for AHJ-specific seismic offsets or applicable loading requirements. A qualified Professional Engineer may be required to analyze the design to ensure the system meets all applicable building codes.
- Before installation, Contractor must verify that the system meets all applicable laws, regulations, ordinances, and codes. Contractor shall verify that the roof or other structures to which the system is being attached are capable of carrying the system loads.
- Everest Solar Systems' Uplift calculations are performed using the result and wind pressure coefficients determined in the D Dome Wind Tunnel Test, performed in accordance with the requirements set forth in ASCE 7-05 and ASCE 7-10, and meet the conditions of SEAOC PV2-2012, Wind Design for Low-Profile Solar Photovoltaic Arrays on Flat Roofs. A qualified Professional Engineer may be required to analyze the design to ensure the applicable building codes are maintained.



STRUCTURAL ANALYSIS REPORT

GENERAL INFORMATION

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 Contact Daniel Bergthold
 Author Ryan Estrada

LOCATION

Address 200 NE Missouri Rd, Lee's Summit, MO 64086, USA
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 Wind exposure B - Urban and suburban
 Risk Category I - Low hazard
 Roof type Flat roof
 Roof covering Flat
 Building height 35.0 ft
 Parapet wall height 4.0 ft
 Roof pitch 0°
 Minimum Roof Edge distance 4.0 ft
 Friction coefficient 0.50

LOADS

Design method ASCE 7-10
 Wind speed $V = 110.0$ mph

Snow Load on Flat Roofs	$p_f = 16.00$ psf	Slope Factor	$C_s = 1.00$
Exposure Factor	$C_e = 1.00$	Thermal Factor	$C_t = 1.00$
Reduction Factor	$= 1.00$	Environment	Partially exposed
Snow load on ground level	$s_k = 20.000$ psf		
Snow load on roof	$s_i = 16.000$ psf		

DEAD LOAD

Weight	$G_M = 49.6$ lbm	Dead weight module	$= 2.29$ psf
Weight mounting system	$= 3.0$ lbm	Dead weight mounting system	$= 0.14$ psf
Module area	$A_M = 21.70$ ft ²	Total Dead Weight	$= 2.42$ psf



BILL OF MATERIALS

Position	Item no.	Item description	Quantity	Weight
1	4000592	Dome R ² Peak	229	359.5 lbm
2	4000593	Dome R ² Base	283	195.3 lbm
3	4000594	Dome R ² Roof Protection Mat	512	1035.8 lbm
4	4000636	Dome R ² Roof Spacer Mat	23	10.1 lbm
5	4000960	IlSCO Lug SGB-4	18	13.0 lbm
6	4000646	Dome R ² Optimizer Mounting Bracket Kit	362	103.5 lbm
7	4000605	DOME-XR MC Silver, SS UL2703+ 40-44mm	532	90.4 lbm
8	4005290	CrossRail EC Silver, AL 39-41mm	384	73.0 lbm
9	4000469	WEEB Clip BMC, CR48, XR, Dome	384	0.8 lbm
10	4000570	Dome R ² Ballast Porter, 74.5-80.5 in	242	1079.8 lbm
11	4000637	Dome R ² Corner Strut Kit	186	312.5 lbm
12	customer-suppli	Ballast block	450	-
Total				3273.7 lbm

