

# Rayport 430 - 10 Degree Ballast Design

\*Based on ASCE 7-05



Project	SUR Energy- Corner Health Center ARRAY 1		AET Project No.	14-7262-01	Date	September 26, 2014	
Customer	McNaughton - McKay Electric Co.		Contact	Mark Ferda	Phone	(734) 645-6005	
Project Address	47 North Huron St Ypsilanti, MI		Wind Speed (mph)	90.0	Building Height (ft)	30.0	
			Exposure Category	B	Module Tilt Angle	10.0	
Site Condition	No Topographical Features		Importance Factor per ASCE7-05 Section 6.5.5	1.00	Seismic, $S_s$	0.00	
Module Manufacturer	SolarWorld	Model Number	Sunmodule SW 250 mono	Output Rating (watts)	250	Module Weight (lbs)	46.74
Module Length (in)	65.94	Module Width (in)	39.41	Module Height (in)	1.22	Module Area (sf)	18.05

## Ballast and Anchor Calculations per ASCE 7-05

V	$K_d$	I	$K_z$	$K_{zt}$	q	G	$C_f$	$A_f$	F	$F_{normal}$	lbs/Panel	$F_{vert}$	$F_{horiz}$	$W_{req}/Module$	Blocks/Module	Modules/Bolt	Modules/Lag
90	0.85	1.00	0.70	1.00	12.34	0.85	1.3	-	25.9	4.5	81.2	79.9	14.1	75.0	3	0	0

## System BOM

	Qty	Wt. - lbs	Total lbs.
Modules	20	46.7	935
Rails	40	2.9	115
Trays	24	5.6	134
Clamps / Screws	80	0.20	16
Ballast Bricks	54	32.0	1,728
<b>Total System Dead Load (lbs)</b>			<b>2,928</b>
		<b>Area - ft<sup>2</sup></b>	<b>563</b>
		<b>Pounds per Square Foot</b>	<b>5.20</b>

## Loading Details

	$W_{req}/Panel$	Modules	Total Wt. (lbs)
Total ballast required per ASCE calculations	75.0	20	1,499
		Bricks / Tray	Load (psi)*
North Row Tray Requirement		3	7.27
Second Row Tray Requirement		2	5.76
Edge Column Tray Requirement		2	5.76
Second Column Tray Requirement		2	5.76
Remaining Middle Tray Requirement		2	5.76

\* **Load** is contact load of ballasted tray to roof surface in pounds per square inch.