projects@evengineersnet.com
http://www.evengineersnet.com

276-220-0064

1/31/2023

RE: Structural Certification for Installation of a Ground Mount Solar Array
MAYRENE HERTZLER:1763 WIRE ROAD, BUNNLEVEL, NC 28323, USA

Attn: To Whom It May Concern

I have reviewed plans for the proposed ground mount project design for the address above using Ironridge Ground Mounting System to support PV. The design satisfy tables referenced in the Starling Madison Lofquist, Inc. (SML) Report done for IronRidge Ground Mount as well a the design tool developped by Ironridge. Design was based on site-specific design criteria below:

Design Criteria

Code	2018 NC State Building Code (ASCE 7-16)				
Risk category		I	Wind Load	(Monoslope Open Structure)	
PV Dead Load	DPV	3 psf		V(ult)	110 mph
Ground Snow	S	10 psf		Exposure	C
			Soil Class	4	(Conservatively assumed)
			Bearing Capacity	1500	psf

Arrays Maximum Loading from Ironridge

Maximum Uplift	1,380 lbs
Maximum Shear	1,532 lbs
Maximum Moment	3,830 ft-lbs

Arrays Design Results

Panel Tilt	30 degrees
Pipe	3" Schedule 40 galvanized pipe with Hollaender pipe fittings (Unbraced)
Rail	Ironridge XR-1000 Rails
Vertical Post Spacing	9'-0"
Frame maximum Spacing	8'-0" with a 3'-2" Maximum cantilever
Concrete	2500 psi at 28 days
Foundation	12" diameter piers with a 7'-6" minimum embedment

Installation must follow all manufacturers specification.
If you have any questions on the above, please do not hesitate to call.

Sincerely,

Vincent Mwumvaneza, P.E.
EV Engineering, LLC
projects@evengineersnet.com
http://www.evengineersnet.com

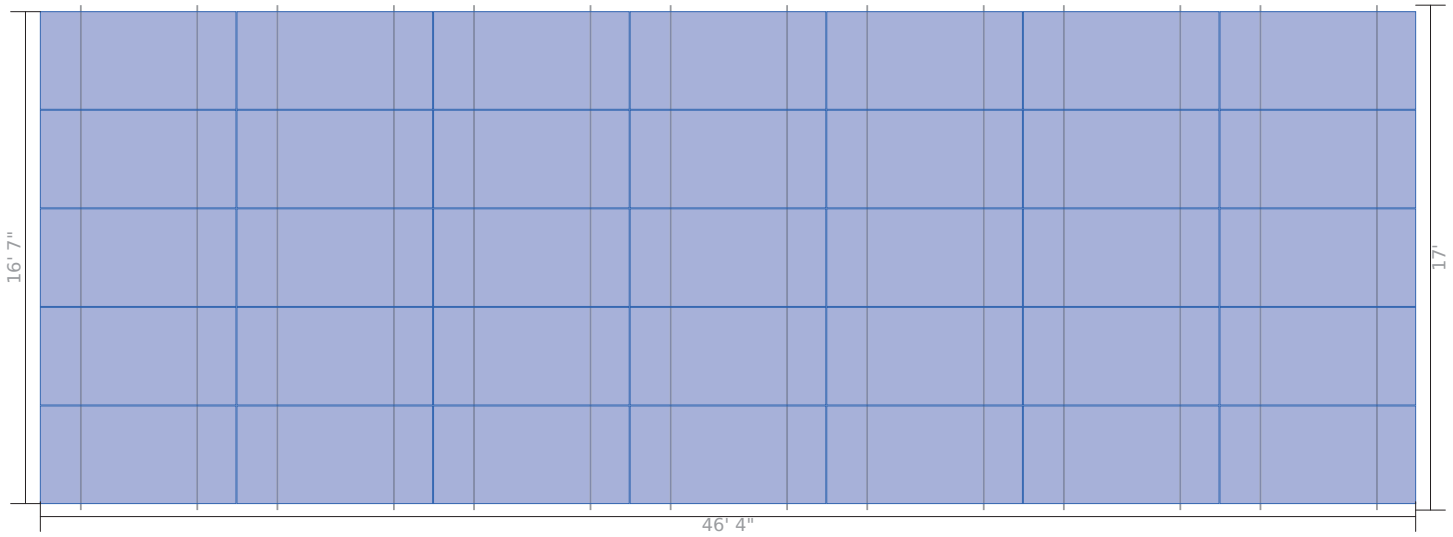
IRONRIDGE
28357 INDUSTRIAL BLVD., HAYWARD, CA 94545

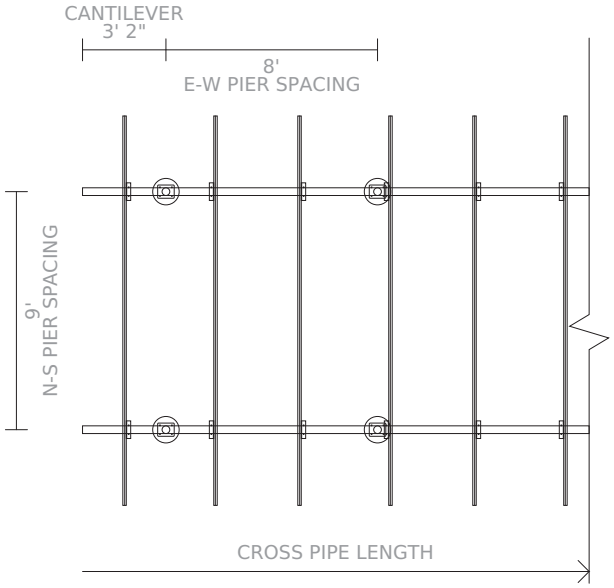
Project Details			
Name	MAYRENE HERTZLER	**Date**	01/29/2023
Location	1763 Wire Road, Bunnlevel, NC 28323	**ASCE code**	7.16
Total modules	35	**Wind speed**	110 mph
Module	Jinko: JKM390-72HBL-V (40mm)	**Snow load**	10 psf
Dimensions	Dimensions: 79.06" x 39.45" x 1.57" (2008.0mm x 1002.0mm x 40.0mm)	**Wind exposure**	C
Total watts	13,650 kW	**Piers**	12
		Concrete	2.62 yd³

Substructure & Foundation			
Tilt	30°	**South facing grade**	0°
Pipe/tubing diameter	3"	**Soil class**	4
Foundation type	Concrete	**Hole diameter**	12"

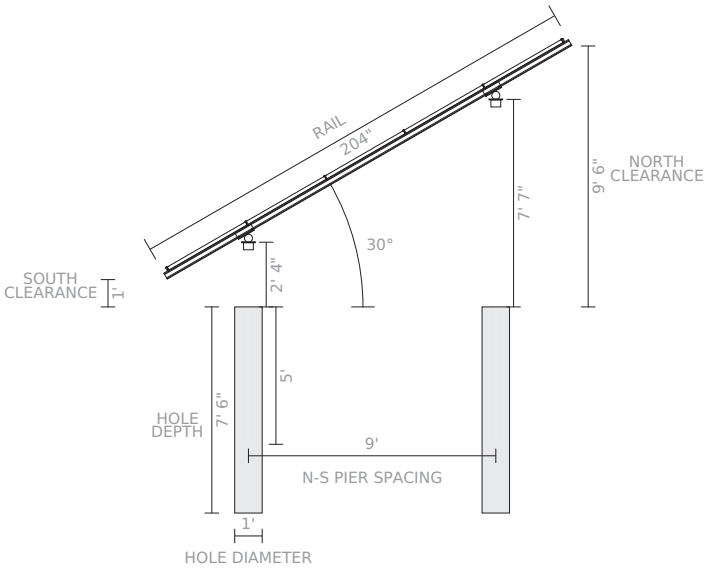
IRONRIDGE
28357 INDUSTRIAL BLVD., HAYWARD, CA 94545

Sub array #1					
Rows	5	**Columns**	7	**# Arrays**	1
Area	46' 4" (EW) × 16' 9" (NS)	**Rail type**	XR1000	**Diagonal bracing**	no
E/W spacing	8'	**Rail cantilever**	3' 4"	**Pipe cantilever**	3' 2"
Piers/array	12	**Total south piers**	6 (7' 4")	**Total north piers**	6 (12' 7")
Total cross pipes	2 (46' 4")	**Total pipe length**	212'		
Shear	1,532 lbs	**Moment**	3,830 ft-lbs	**Uplift**	-1,380 lbs



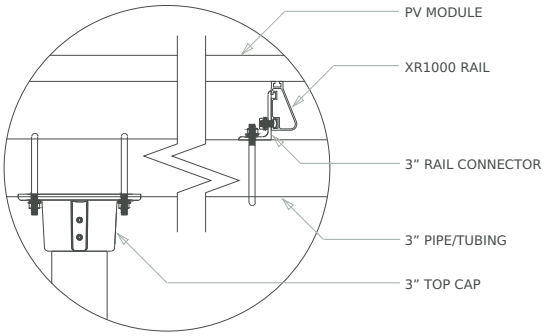


IRONRIDGE
28357 INDUSTRIAL BLVD., HAYWARD, CA 94545

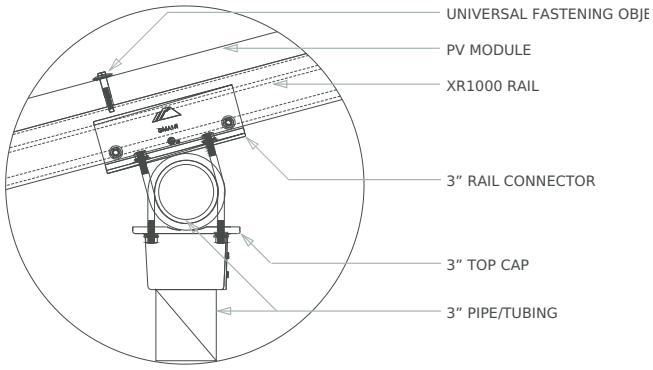


Pipe Fitting Detail

XR1000 Rail

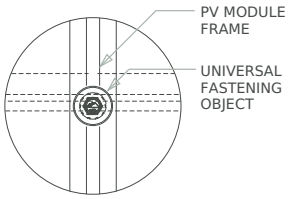


Front View

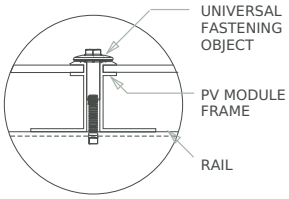


Side View

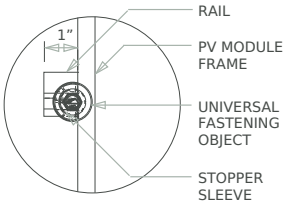
Clamp Detail



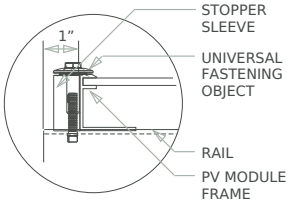
Mid Clamp, Plan



Mid Clamp, Front



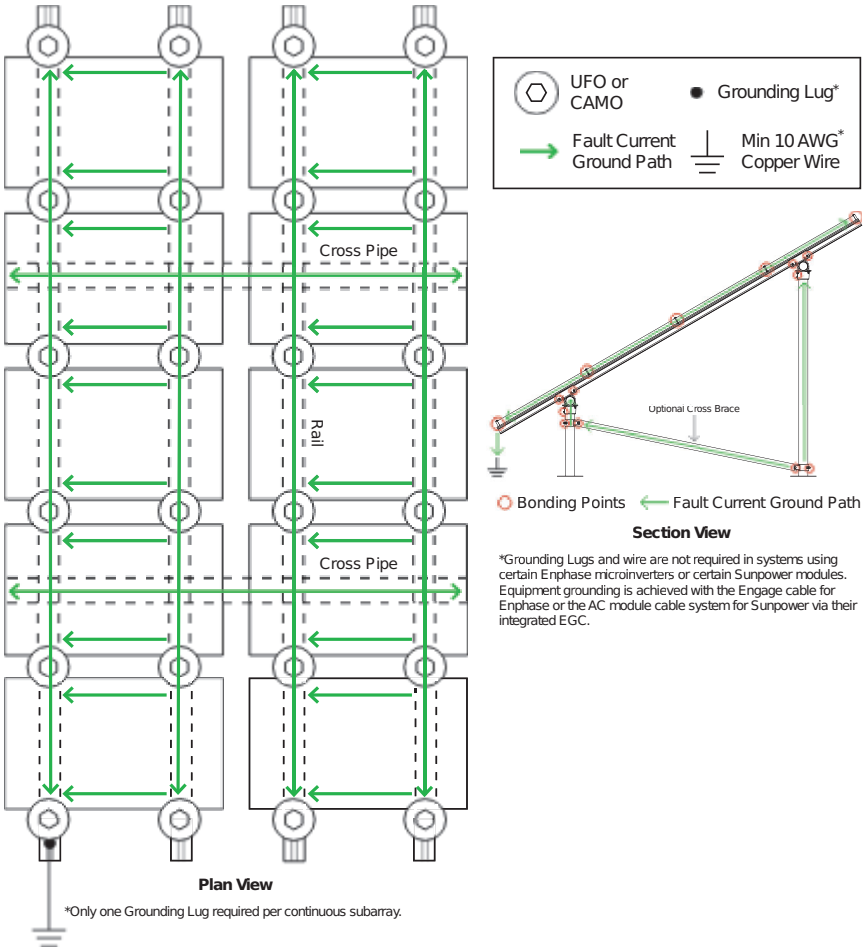
End Clamp, Plan



End Clamp, Front

IRONRIDGE
28357 INDUSTRIAL BLVD., HAYWARD, CA 94545

Grounding Diagram



Plan View

*Only one Grounding Lug required per continuous subarray.

Section View

*Grounding Lugs and wire are not required in systems using certain Enphase microinverters or certain Sunpower modules. Equipment grounding is achieved with the Engage cable for Enphase or the AC module cable system for Sunpower via their integrated EGC.

IRONRIDGE
28357 INDUSTRIAL BLVD., HAYWARD, CA 94545

Bill of Materials

Part	Spares	Total Qty
Rails		
XR-1000-204A XR1000, Rail 204" (17 Feet) Clear	0	14
Clamps & Grounding		
UFO-CL-01-A1 Universal Module Clamp, Clear	0	84
UFO-STP-40MM-M1 Stopper Sleeve, 40MM, Mill	0	28
XR-LUG-03-A1 Grounding Lug, Low Profile	0	1
Substructure		
70-0300-SGA SGA Top Cap at 3"	0	12
GM-BRC-003 Ground Mount Bonded Rail Connector - 3"	0	28