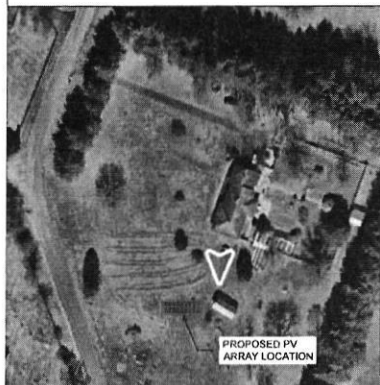


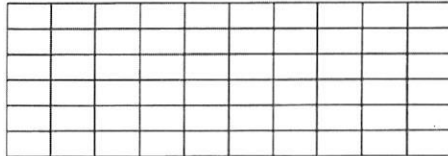
Showing 1 of 1

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<input type="checkbox"/> <u>B22003962</u>	Review In Process	Residential Solar Panels	875	WINDRIVER	DR			SYKESV

Online  
DB

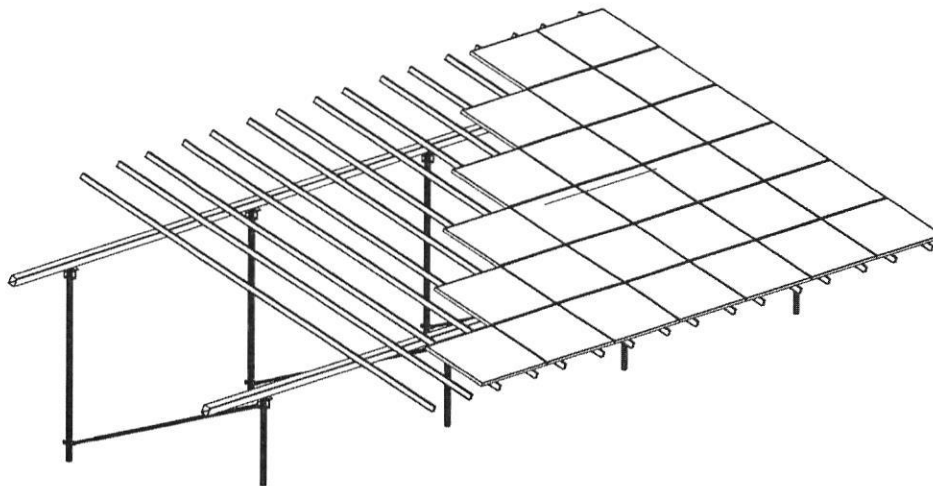


A001



# PLAN VIEW

N.T.S.



## Site Design Conditions

Basic Wind Speed: (Risk Category II)	115 MPH	Max. Leg Axial Bearing:	4,800 lbs.
Basic Wind Speed: (Risk Category I)	105 MPH	Max. Leg Uplift:	1,960 lbs.
Exposure Category:	B	Max. Lateral Resistance:	1,595 lbs.
Ground Snow Load:	40 PSF	Top Rail Max. Loading:	93.4 plf
Flat Roof Snow Load: (if applicable)	N/A	Helical Pile Depth:	60" Min
Site Contour:	<5 Degree Slope	Lateral Resistance Plate Size:	Not Req'd

All design work has been performed in accordance with the Howard County Building Code including, but not limited to, the 2021 International Building Code with Amendments per Section 3.101.

Net design pressures were calculated in accordance with ASCE 7-16 section 27.3.2, "Open Buildings with Monoslope, Pitched, or Troughed Roofs". All load cases were evaluated in determining the limiting design conditions. The data table above provides the results for the limiting load case. Maximum leg reaction forces represent the highest load condition seen by any leg in the structure. All legs in the structure are designed to meet the maximum load conditions.

## 6Lx10C Sub-Array Design Conditions

Front Leg Height:	30 1/2"	Array Tilt Angle:	25 Degrees
Rear Leg Height:	93"	Overall Array East-West Dim:	55'-8"
North-South Leg Spacing:	12 1/2"	Number of Modules/Sub-Array:	60
West Span Leg Spacing:	14'-9"	Number of Sub-Arrays:	1
East Span Leg Spacing:	14'-9"	Module Columns/Sub-Array:	10
Quantity Center Spans:	1	Number of Module Rows:	6
Center Span Leg Spacing:	14'-9"	Module Orientation:	Landscape
East & West Overhang:	5'-0"	Module Column Spacing:	4"
Overall Beam Length:	54'-3"	Module Row Spacing:	4"
Front Edge Ground Clearance:	24"	Module Model:	TSM-DD08M.05(1)
Horizontal Rail Material:	5"x4"x1/4" HSS	Module Size:	39.21" x 66.54"
Top Rail Material:	SF Rails	Individual Module Rating:	330 watt
Qty Rails per Panel:	2	Sub Array Power Rating:	19.80 kw
Top Rail Length:	242"	Total Power Rating:	19.80 kw
Top Rail Center Span:	134"		
Top Rail Overhang:	54"		

James C  
Douglas

Designated by James C. Douglas  
One South, New Castle, DE  
19720-1000  
P: (855) 738-7200  
F: (866) 644-5665  
E: james@solarengineers.com



Professional Certification. I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 40027, Expiration Date: 3/15/23.

## SHEET 1 OF 3

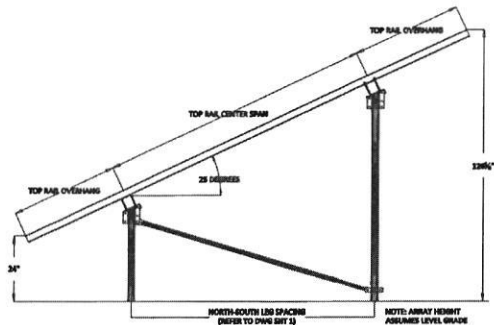
## SOLAR ENERGY WORLD

PROJECT:  
Meekins Residence (MD11958)  
875 Windriver Drive  
Sykesville, MD 21784

## Solar Foundations USA

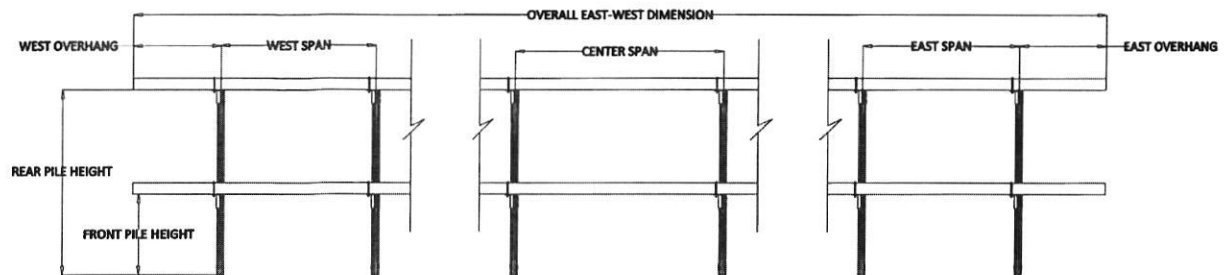
1142 River Road, New Castle, DE 19720 Ph: (855) 738-7200 Fax: (866) 644-5665

Date	Revision	Drawn By:	Review By:
09/26/2022	Original	JB	JD



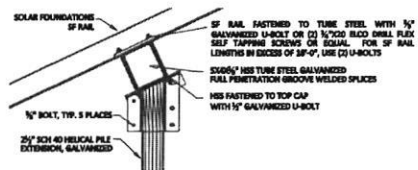
**SIDE ELEVATION**

N.T.S.



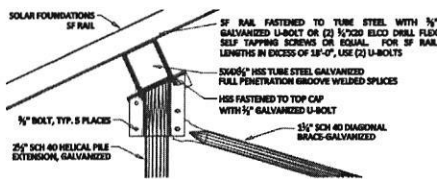
**PILE SPACING ELEVATION**

N.T.S.



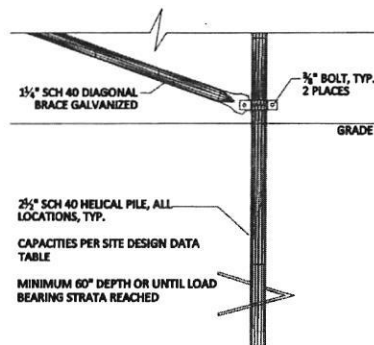
**UPPER CAP DETAIL**

N.T.S.



**LOWER CAP DETAIL**

N.T.S.



**HELICAL PILE DETAIL**

N.T.S.

James C  
Douglas

Digitally signed by James C Douglas  
DN: cn=James C Douglas, o=Solar Foundations USA, email=James.C.Douglas@SolarFoundationsUSA.com, c=US  
Date: 2022.09.26 10:27:12 -0400



Professional Certification. I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 40027, Expiration Date: 3/15/23.

**SHEET 2 OF 3**

**SOLAR ENERGY WORLD**

**PROJECT:**

**Meekins Residence (MD11958)**

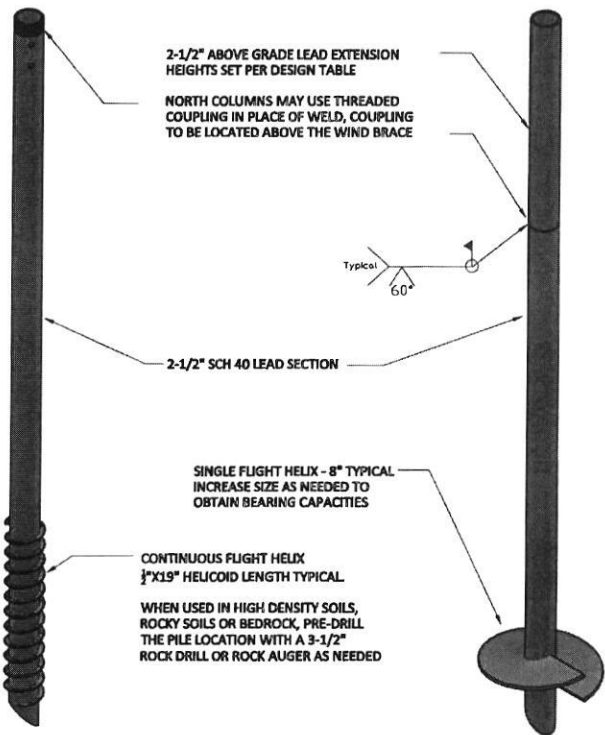
875 Windriver Drive

Sykesville, MD 21784

**Solar Foundations USA**

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Date	Revision	Drawn By:	Review By:
09/26/2022	Original	JB	JD



**HELICAL PILE DETAIL**  
N.T.S.

#### Specification Requirements:

The following material specification requirements pertain to the fabrication of the Solar Foundations USA ground mount solar support structure as indicated on these drawings.

1. Solar Foundation aluminum rails shall conform to ASTM B221.
2. Structural steel tubing shall be ASTM A500 High Yield (60 ksi).
3. Steel pipe for piles shall conform to ASTM A500 Grade C.
4. Steel pile extensions shall be ASTM A53 Grade B.
5. Steel pipe for diagonal bracing shall be ASTM A53 Grade A.
6. Fabricated steel plate for column cap assemblies, bracing clamps, etc. shall be ASTM A36 or A1011.
7. Steel bolts for cap fasteners shall conform to SAE J429 Grade 5. All other bolts shall conform to SAE J429 Grade 5 or better.
8. Steel U-bolts shall conform to ASTM 1018.
9. USS flat steel washers shall conform to ASTM F844 and nuts for steel connections shall conform to ASTM A563 Grade A.
10. All field welding shall conform to AWS D1.1/D1.1M -Structural Welding Code requirements.
11. All steel shall be hot-dip galvanized per ASTM A123 or A153 after all fabrication has been completed.

#### Installation Requirements:

1. The minimum average installation torque required to obtain the required indicated capacities and the minimum installation depth shown on the plans shall be satisfied prior to termination of the installation. The installation torque shall be an average of the installation torques indicated during the last 1 foot of installation.
2. The torsional strength rating of the torque anchor shall not be exceeded during the installation. If the torsional strength limit of the anchor has been reached, but the anchor has not reached the target depth, perform the following:
  - 2.1. If the torsional strength limit is achieved prior to reaching the target depth, the installation may be acceptable if reviewed and approved by the engineer.
  - 2.2. The installer may remove the torque anchor and install a new one with smaller diameter helical plate.
  - 2.3. If using a continuous flight pile, pre-drill the pile location with a 3-1/2" rock auger or 3-5/8" rock drill as needed.
3. If the target depth is achieved, but the torsional requirement has not been met the installer may do one of the following:
  - 3.1. Install the torque anchor deeper to obtain the required capacity
  - 3.2. Remove the torque anchor and install a new one with a larger diameter helical plate or one with multiple helical plates.
  - 3.3. Reduce the load capacity on the individual torque anchor by providing additional torque anchors at a reduced spacing.

Digitally signed by James C Douglas  
DN: cn=James C Douglas, email=jc.douglas@sefusa.com, c=US  
Date: 2022.09.26 10:27:34 -0400



Professional Certification. I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 40027, Expiration Date: 3/15/23.

#### SHEET 3 OF 3

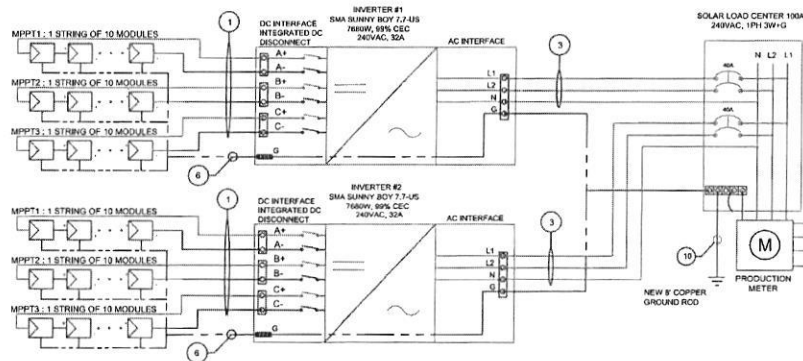
#### SOLAR ENERGY WORLD

**PROJECT:**  
Meekins Residence (MD11958)  
875 Windriver Drive  
Sykesville, MD 21784

#### Solar Foundations USA

1142 River Road, New Castle, DE 19720 Ph: (855) 738-7200 Fax: (866) 644-5665

Date	Revision	Drawn By:	Review By:
09/26/2022	Original	JB	JD



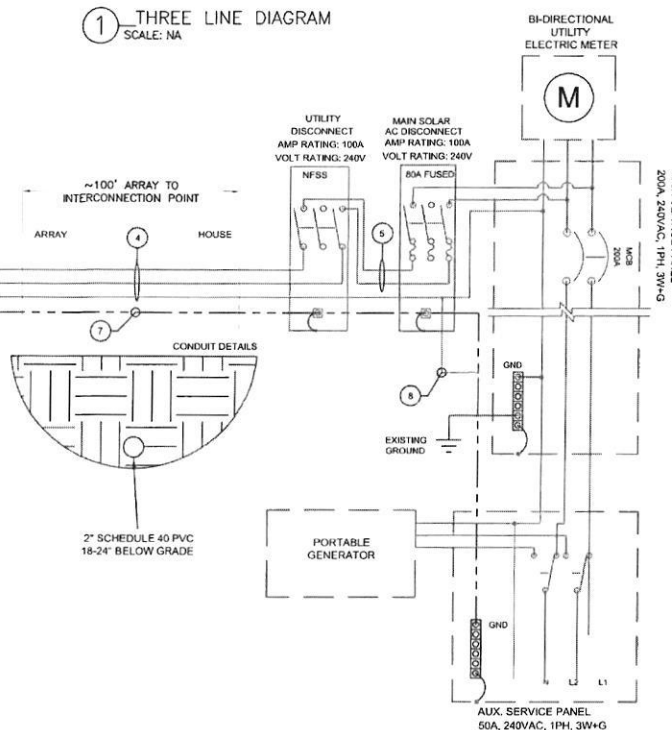
① THREE LINE DIAGRAM  
SCALE: NA

#### GENERAL ELECTRICAL NOTES: NEC2017

- EQUIPMENT USED SHALL BE NEW, UNLESS OTHERWISE NOTED.
- EQUIPMENT USED SHALL BE UL LISTED, UNLESS OTHERWISE NOTED.
- EQUIPMENT SHALL BE INSTALLED PROVIDING ADEQUATE PHYSICAL WORKING SPACE AROUND THE EQUIPMENT AND SHALL COMPLY WITH NEC.
- COPPER CONDUCTORS SHALL BE USED AND SHALL HAVE INSULATION RATING 600V, 90°C, UNLESS OTHERWISE NOTED.
- CONDUCTORS SHALL BE SIZED IN ACCORDANCE TO NEC. CONDUCTORS AMPACITY SHALL BE DE-RATED FOR TEMPERATURE INCREASE, CONDUIT FILL AND VOLTAGE DROP.
- ALL CONDUCTORS, EXCEPT PV WIRE, SHALL BE INSTALLED IN APPROVED CONDUITS OR RACEWAY. CONDUITS SHALL BE ADEQUATELY SUPPORTED AS PER NEC.
- AC DISCONNECT SHOWN IS REQUIRED IF THE UTILITY REQUIRES VISIBLE-BLADE SWITCH.
- EXPOSED NON-CURRENT CARRYING METAL PARTS SHALL BE GROUNDED AS PER NEC.
- LINE SIDE INTER-CONNECTION SHALL COMPLY WITH NEC.
- SMS MONITORING SYSTEM AND ITS CONNECTION SHOWN IS OPTIONAL. IF USED, REFER TO SMS INSTALLATION MANUAL FOR WIRING METHODS AND OPERATION PROCEDURE.
- ASHRAE FUNDAMENTAL OUTDOOR DESIGN TEMPERATURES DO NOT EXCEED 47°C IN THE U.S. (PHOENIX, AZ or PALM SPRINGS, CA).
- FOR LESS THAN 9 CURRENT-CARRYING CONDUCTORS IN ROOF MOUNTED SUNLIGHT CONDUIT USING THE OUTDOOR TEMPERATURE OF 47°C.
- 10AWG CONDUCTOR ARE GENERALLY ACCEPTABLE FOR MODULES WITH AN Isc OF 9.6 AMPS WITH A 15 AMP FUSE.

Wire sizing for OCPD  
 $\text{Exp}[(1.25)(1.25)(\# \text{ of strings in parallel})] = \text{wire ampacity or using NEC690.6}$

MODULE DATA	
Module Manufacturer	Trina
Module Model	TSM-DD06M.05(II) 330
Power [W]	330
Rated Voltage, Vmp [V]	33.8
Rated Current, Imp [A]	9.76
Open Circuit Voltage, Voc [V]	40.6
Short Circuit Current, Isc [A]	10.4
Max. System Voltage [V]	1000
INVERTER DATA	
Inverter #	2
Inverter Manufacturer	SMA
Inverter Model	S87.7
Max DC Voltage [V]	550
Max Output Power [W]	7680
Nominal AC Current [A]	32
Nominal AC Voltage [V]	240
Total AC Current [A]	64
ARRAY DETAILS	
No. of Modules per String	10
No. of Strings	3
Array Watts at STC [W]	9900
Max. Voltage [V]	480
690.53 Label Info. - DC PV POWER SOURCE	
Rated MPP Current [A]	9.76
Rated MPP Voltage [V]	310
Max. System Voltage [V]	454
Max. Source Circuit Current [A]	13.0



WIRE/CONDUIT SCHEDULE ARRAY			
TAG	DESCRIPTION	WIRE SIZE/TYPE	NOTES
1	Module to DC Disconnect	#10 PV WIRE 2KV RATED	
2	DC Disconnect to Inverter	NA	Integrated
3	Inverter to Solar Load Center	#8 Cu THHN/THWN-2 in 1.5" PVC	
4	Solar Load Center to Utility Disconnect	#4 Cu THHN/THWN-2 in 1.5" PVC	Vdrop=1.53%
5	Utility Disconnect to Interconnection Point	#4 Cu THHN/THWN-2 in EMT	
6	Equipment Grounding Conductor	#8 Bare Cu	
7	Equipment Grounding Conductor	#8 Cu THHN/THWN-2	
8	Grounding Electrode Conductor	#6 Cu	

#### General Notes



**SolarEnergyWorld**  
*Because Tomorrow Matters*  
 Solar Energy World LLC.

5681 Main Street  
 Elkridge, MD 21075  
 (888) 497-3233

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Stamp

\*STAMPED AND SIGNED FOR STRUCTURES ONLY

Project Name and Address  
**Andrew Meekins GM**  
 6Lx10C  
 875 Windriver Dr  
 Sykesville, MD 21784  
 MD11958  
 19.80 kW

Drawn by  
**J. Mountain**  
 Date  
 25-AUG-2022  
 Scale  
 AS NOTED

**E001**