

Menu Refine Search GIS Help My Filters Modul

Showing 1 of 1

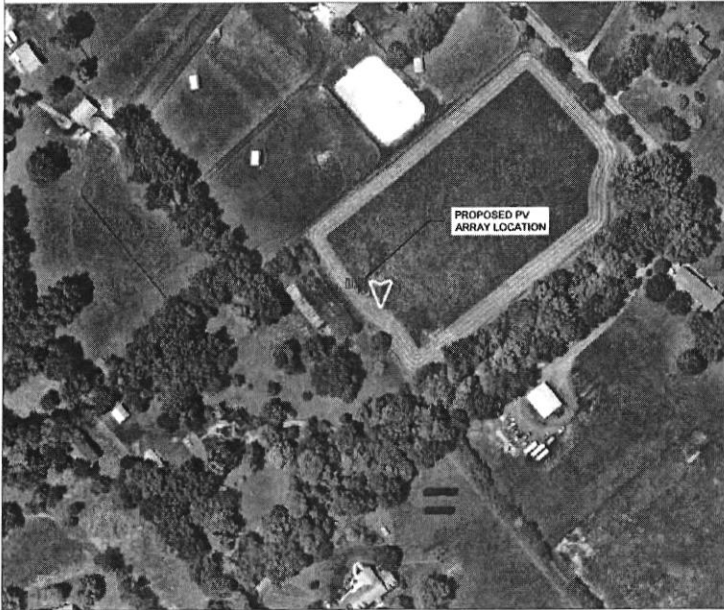
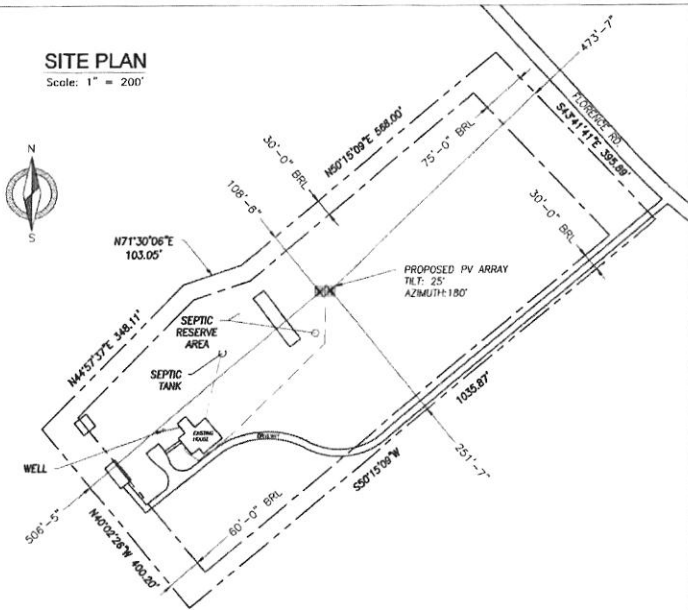
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<input type="checkbox"/> <u>B21004762</u>	Review In Process	Residential Solar Panels	3350	FLORENCE	RD			WOODB

Page of 1

Approved Septic System Plan
 Howard County Health Department
DBurnd 12-15-21
 Signature Date

SITE PLAN

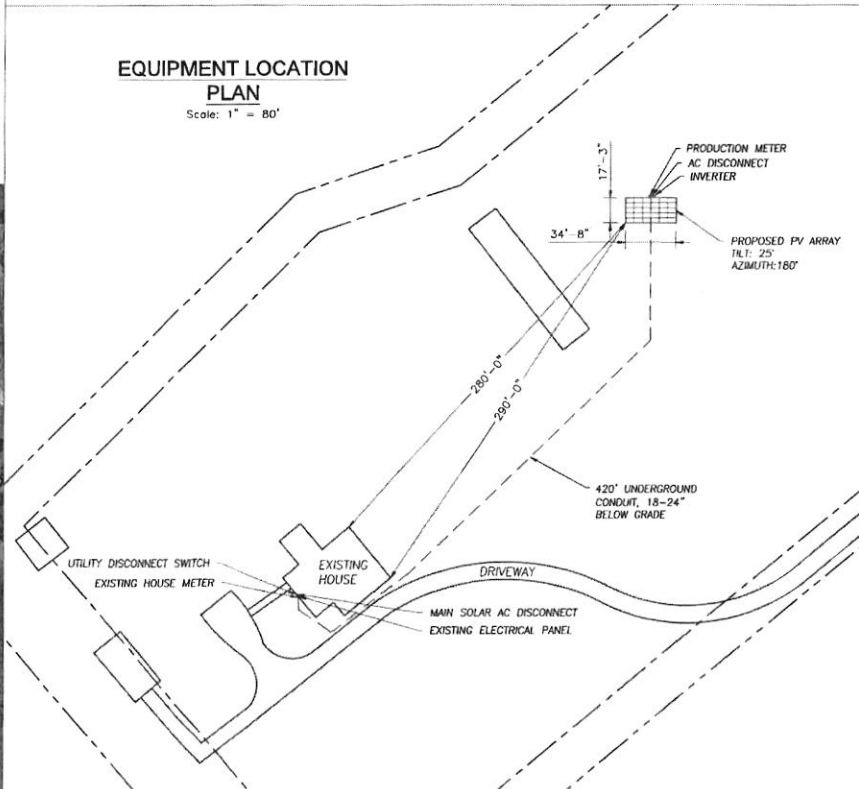
Scale: 1" = 200'



NOTES:

1. THIS DRAWING IS TO PROVIDE REFERENCE FOR THE INSTALLATION OF GROUND MOUNT PHOTOVOLTAIC ARRAYS.
2. THE SYSTEM SHALL INCLUDE [30] HANWHA Q-CELLS DUO BLK-G6 340W MODULES [DIMENSIONS: 68.5" (L) x 40.6"(W) x 1.26" (D)] AND WEIGHING 43.9 LBS (PANEL DEAD LOAD = 2.27PSF)
3. THE SOLAR FOUNDATIONS RACKING WILL BE INSTALLED PER MANUFACTURER'S INSTALLATION MANUAL.
4. THE PROPOSED ARRAY SHALL COVER APPROX. 600 SQ.FT. OF 9.47 AC. PROPERTY.
5. EQUIPMENT LOCATION PLAN IS APPROXIMATE, EXACT LOCATION TO BE VERIFIED WITH INSTALLATION CREW AND HOME OWNER AT THE TIME OF INSTALLATION

EQUIPMENT LOCATION PLAN
Scale: 1" = 80'



General Notes



SolarEnergyWorld
Because Tomorrow Matters
Solar Energy World LLC.
5881 Main Street
Elkridge, MD 21075
(888) 497-3233

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*STAMPED AND SIGNED FOR STRUCTURES ONLY

Project Name and Address
Ronald Reis GM
5Lx6C
3350 Florence Rd.
Woodbine, MD 21797
MD10432
10.20 kW

Drawn by
TML
Date
12-OCT-2021
Scale
AS NOTED

Sheet
A001

MODULE DATA

Module Manufacturer	Hanwha Q.Cells
Module Model	Q.PEAK BLK-G6 340
Power [W]	340
Rated Voltage, Vmp [V]	33.94
Rated Current, Imp [A]	10.02
Open Circuit Voltage, Voc [V]	40.66
Short Circuit Current, Isc [A]	10.52
Max. System Voltage [V]	1000

INVERTER DATA

Inverter #	3
Inverter Manufacturer	Fronius
Inverter Model	Primo 10.0-1 (240)
Max DC Voltage [V]	600
Max Output Power [W]	9995
Nominal AC Current [A]	41.6
Nominal AC Voltage [V]	240
Total AC Current [A]	

ARRAY DETAILS

No. of Modules per String	10
No. of Strings	3
Array Watts at STC [W]	10200
Max. Voltage [V]	480

690.53 Label Info. - DC PV POWER SOURCE

Rated MPP Current [A]	10.02
Rated MPP Voltage [V]	33.94
Max. System Voltage [V]	451
Max. Source Circuit Current [A]	13.2

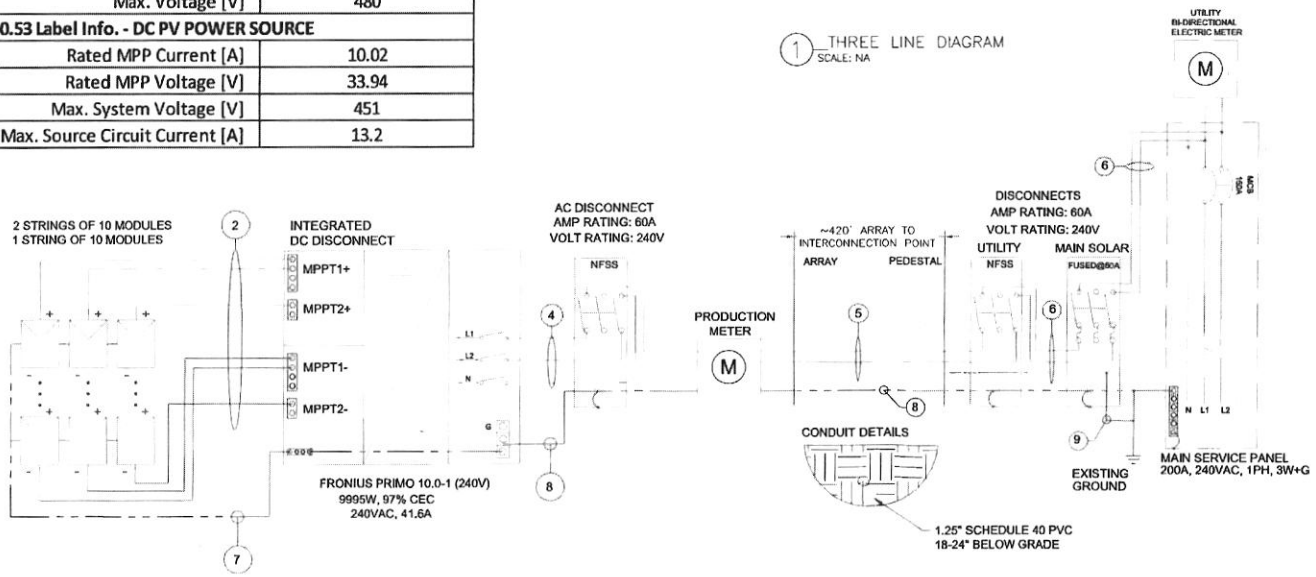
GENERAL ELECTRICAL NOTES: NEC2017

- 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.
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- 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 9.8 AMPS WITH A 15 AMP FUSE.

Wire sizing for OCPD
 $Ex(Isc \times 1.25) / (1.25) \times \#$ of strings in parallel = wire ampacity or using NEC690.8

WIRE/CONDUIT SCHEDULE ARRAY			
TAG	DESCRIPTION	WIRE SIZE/TYPE	NOTES
1	Panel	#10 PV WIRE 2KV RATED	Integrated
2	Panel to DC Disconnect	#10 PV WIRE	
3	DC Disconnect to Inverter	NA	Integrated
4	Inverter to AC Disconnect	#2 Cu THHN/THWN-2	
5	AC disconnect to Utility Disconnect	#2 Cu THHN/THWN-2 IN PVC	2.65% Vdrop
6	Utility Disconnect to Interconnection Point	#2 Cu THHN/THWN-2	
7	Equipment Grounding Conductor	#8 Bare Cu	
8	Equipment Grounding Conductor	#8 Cu THHN/THWN-2	
9	Grounding Electrode Conductor	#8 Cu	

1 THREE LINE DIAGRAM
 SCALE: NA



General Notes



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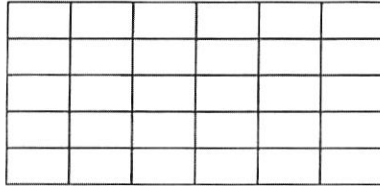
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 5Lx6C
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 Woodbine, MD 21797
 MD10432
 10.20 kW

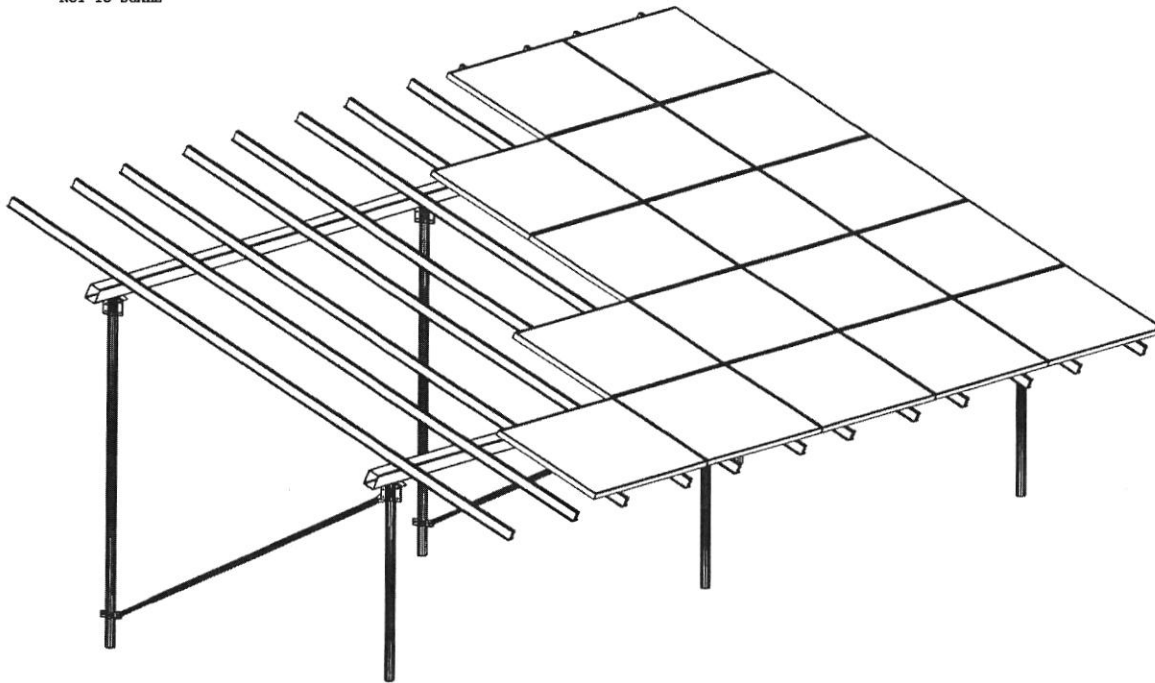
Drawn by
TML
 Date
12-OCT-2021
 Note
AS NOTED

E001



Plan View

NOT TO SCALE



Site Design Conditions

Basic Wind Speed: 110 MPH
 (Risk Category II)
 Basic Wind Speed: 102 MPH
 (Risk Category I)
 Exposure Category: C
 Ground Snow Load: 30 PSF
 Flat Roof Snow Load: N/A
 (if applicable)
 Site Contour: < 3 Degree Slope

Max. Leg Axial Bearing: 3,615 lbs.
 Max. Leg Uplift: 2,200 lbs.
 Max. Lateral Resistance: 1,640 lbs.
 Top Rail Max. Loading: 98.6 plf
 Helical Pile Depth: 60" Min
 Lateral Resistance Pile Size: Not Req'd

All design work has been performed in accordance with the Maryland Building Performance Standards Regulations including, but not limited to, the 2018 International Building Code with the Department of Labor, Licensing and Regulation modifications (ref: COMAR 09.12.51).

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.

5Lx6C Sub-Array Design Conditions

Front Leg Height: 34"
 Rear Leg Height: 82"
 North-South Leg Spacing: 102"
 West Span Leg Spacing: 12'-6"
 East Span Leg Spacing: 12'-6"
 Quantity Center Spans: 0
 Center Span Leg Spacing: N/A
 East & West Overhang: 4'-0"
 Overall Beam Length: 33'-0"
 Front Edge Ground Clearance: 24"
 Horizontal Rail Material: 5"x4" HSS
 Top Rail Material: SF Rails
 Qty Rails per Panel: 2
 Top Rail Length: 212"
 Top Rail Center Span: 112"
 Top Rail Overhangs: 49"

Array Tilt Angle: 25 Degree
 Overall Array East-West Dim: 34'-5"
 Number of Modules/Sub-Array: 30
 Number of Sub-Arrays: 1
 Module Columns/Sub-Array: 6
 Number of Module Rows: 5
 Module Orientation: Landscape
 Module Column Spacing: 1"
 Module Row Spacing: 1"
 Module Model: QPEAK DUO BLK G6
 Module Size: 40.55" x 68.50"
 Individual Module Rating: 340 watt
 Sub Array Power Rating: 10.20 kw
 Total Power Rating: 10.20 kw



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

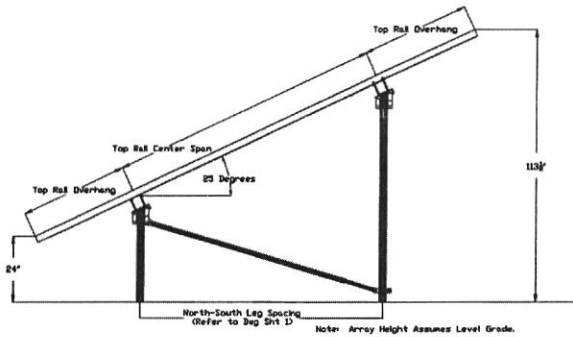
Solar Energy World

Solar Foundations USA

Date	Revision	Drawn By:	Review By:
11/22/2021	Original	MM	JD

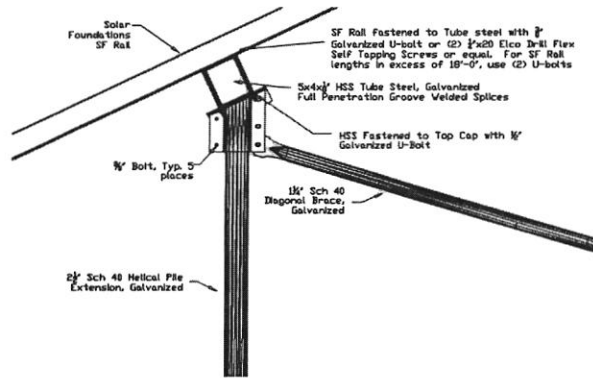
Project:
 Reis Residence
 3350 Florence Rd
 Woodbine, MD 21797

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



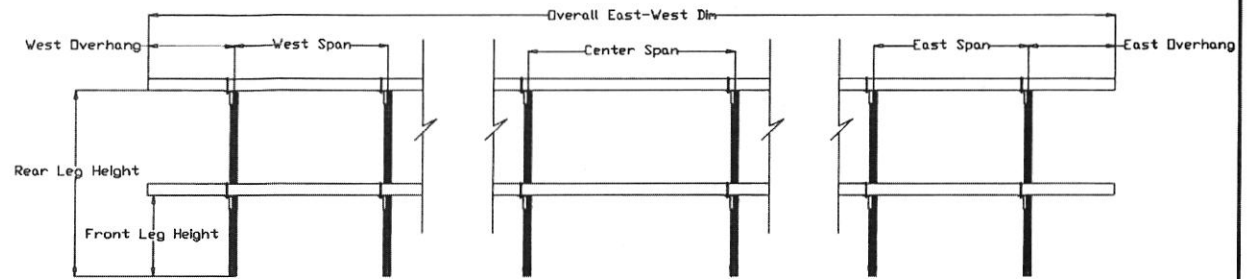
SIDE ELEVATION DETAIL

NOT TO SCALE



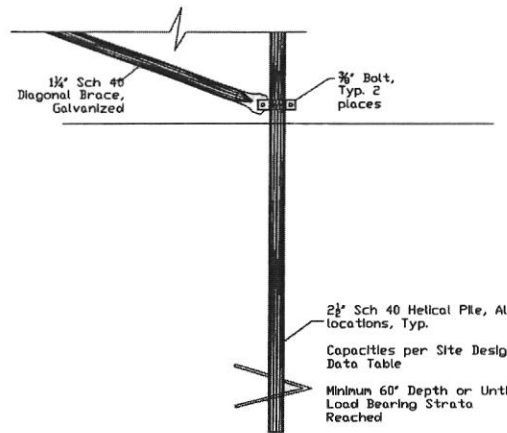
LOWER CAP DETAIL

NOT TO SCALE



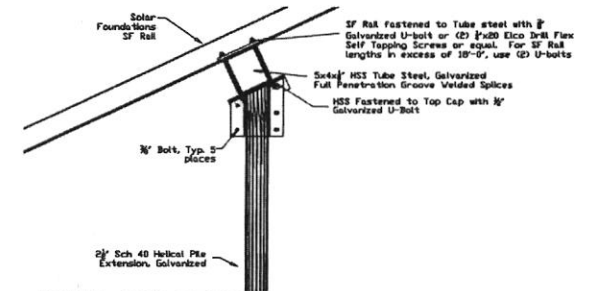
Refer to Dwg Sheet 1 for East-West Pile Spans and Front and Rear Leg Heights.
POST SPACING ELEVATION DETAIL

NOT TO SCALE



HELICAL PILE DETAIL

NOT TO SCALE



UPPER CAP DETAIL

NOT TO SCALE

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Sheet 2 of 3

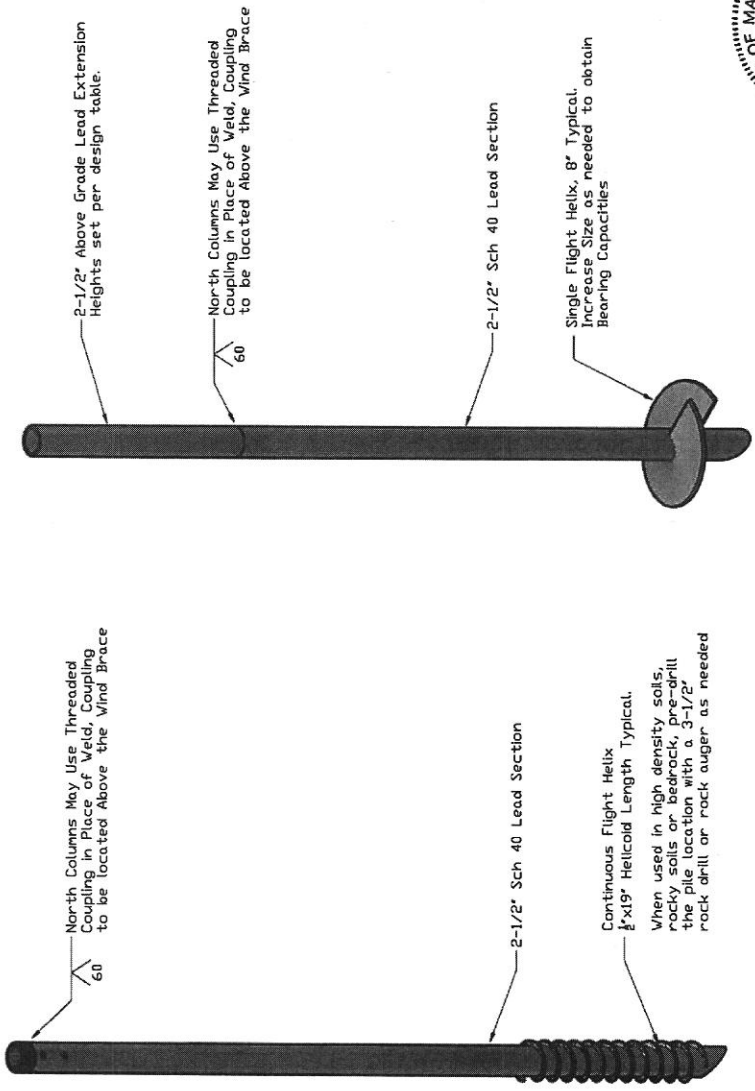
Solar Energy World

Date	Revision	Drawn By:	Review By:
11/22/2021	Original	MM	JD

Project:
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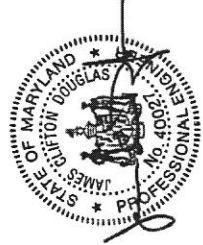
Solar Foundations USA

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



Helical Pile Detail
NOT TO SCALE

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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. Steel tube at least 1/2" thick shall be ASTM A500, High Yield (60 ksi).
2. Steel pipe for piles shall conform to ASTM A500 Grade C.
3. Steel pile extensions shall be ASTM A53 Grade B.
4. Steel pipe for diagonal bracing shall be ASTM A53 Grade A.
5. Fabricated steel plate for column cap assemblies, bracing clamps, etc. shall be ASTM A36 or A1011.
6. Steel bolts for cap fasteners shall conform to SAE J429 Grade 5 or better.
7. Steel U-bolts shall conform to ASTM ID1B.
8. 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 D11.1/11.1M - 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 and/or owner.
 - 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.

Solar Energy World

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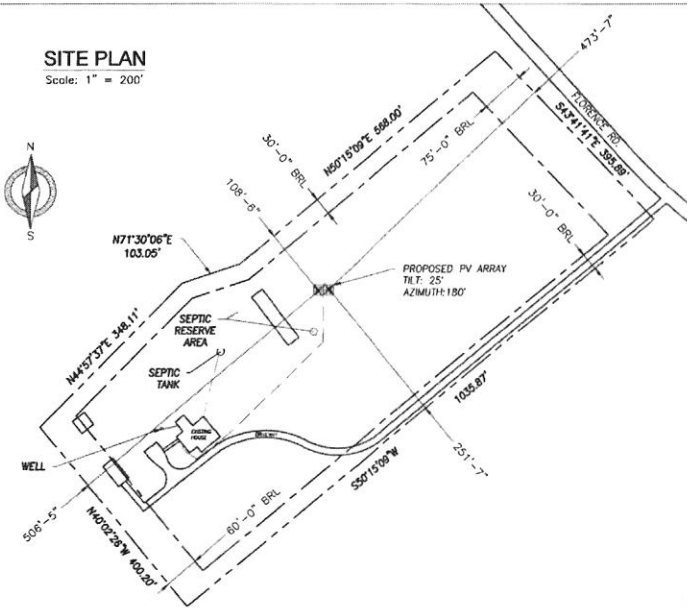
Project:
Reis Residence
3350 Florence Rd
Woodbine, MD 21797

Date	Revision	Drawn By:	Review By:
11/22/2021	Original	MM	JD

Sheet 3 of 3

SITE PLAN

Scale: 1" = 200'

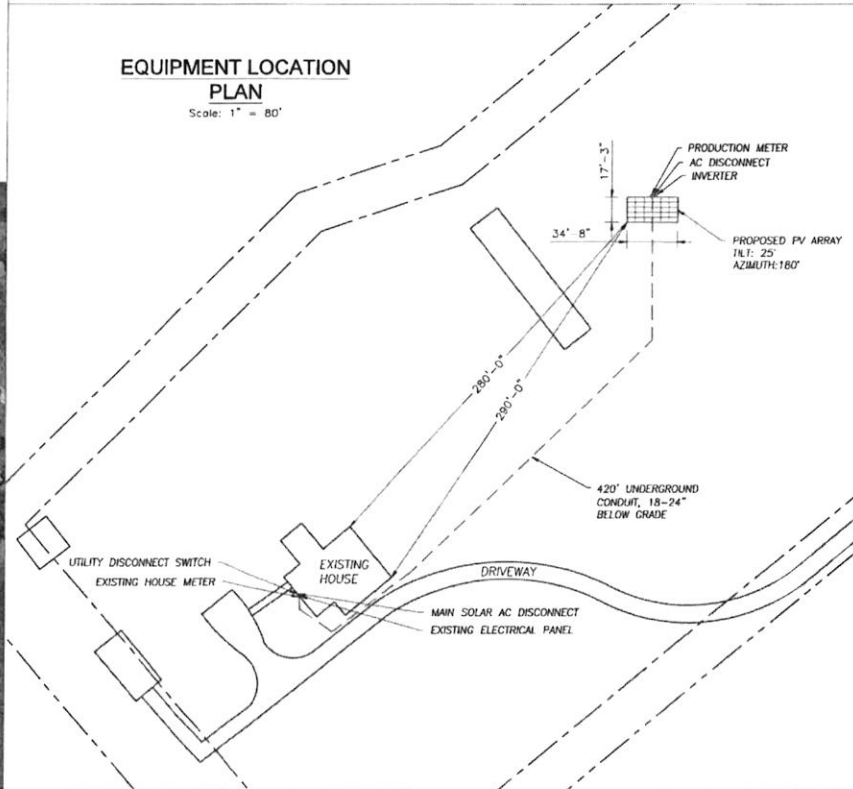


NOTES:

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EQUIPMENT LOCATION PLAN

Scale: 1" = 80'



General Notes



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Sheet
A001

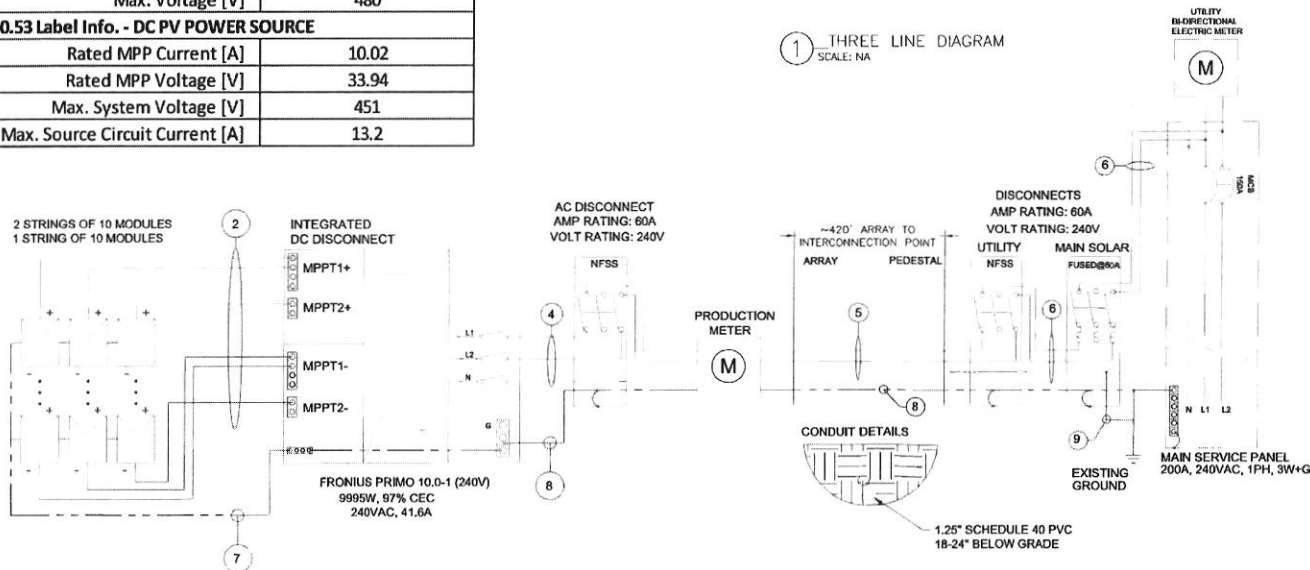
MODULE DATA	
Module Manufacturer	Hanwha Q.Cells
Module Model	Q.PEAK BLK-G6 340
Power [W]	340
Rated Voltage, Vmp [V]	33.94
Rated Current, Imp [A]	10.02
Open Circuit Voltage, Voc [V]	40.66
Short Circuit Current, Isc [A]	10.52
Max. System Voltage [V]	1000
INVERTER DATA	
Inverter #	3
Inverter Manufacturer	Fronius
Inverter Model	Primo 10.0-1 (240)
Max DC Voltage [V]	600
Max Output Power [W]	9995
Nominal AC Current [A]	41.6
Nominal AC Voltage [V]	240
Total AC Current [A]	
ARRAY DETAILS	
No. of Modules per String	10
No. of Strings	3
Array Watts at STC [W]	10200
Max. Voltage [V]	480
690.53 Label Info. - DC PV POWER SOURCE	
Rated MPP Current [A]	10.02
Rated MPP Voltage [V]	33.94
Max. System Voltage [V]	451
Max. Source Circuit Current [A]	13.2

GENERAL ELECTRICAL NOTES: NEC2017

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- Wire sizing for OCPD: $Ex(Isc \times (1.25)(1.25)) / \# \text{ of strings in parallel} = \text{wire ampacity or using NEC690.8}$

WIRE/CONDUIT SCHEDULE ARRAY			
TAG	DESCRIPTION	WIRE SIZE/TYPE	NOTES
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2	Panel to DC Disconnect	#10 PV WIRE	
3	DC Disconnect to Inverter	NA	Integrated
4	Inverter to AC Disconnect	#2 Cu THHN/THWN-2	
5	AC disconnect to Utility Disconnect	#2 Cu THHN/THWN-2 IN PVC	2.65% Vdrop
6	Utility Disconnect to Interconnection Point	#2 Cu THHN/THWN-2	
7	Equipment Grounding Conductor	#8 Bare Cu	
8	Equipment Grounding Conductor	#8 Cu THHN/THWN-2	
9	Grounding Electrode Conductor	#8 Cu	

① THREE LINE DIAGRAM
SCALE: NA



General Notes



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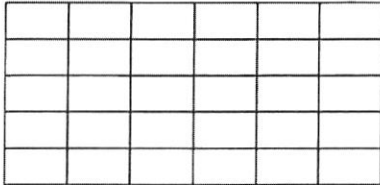
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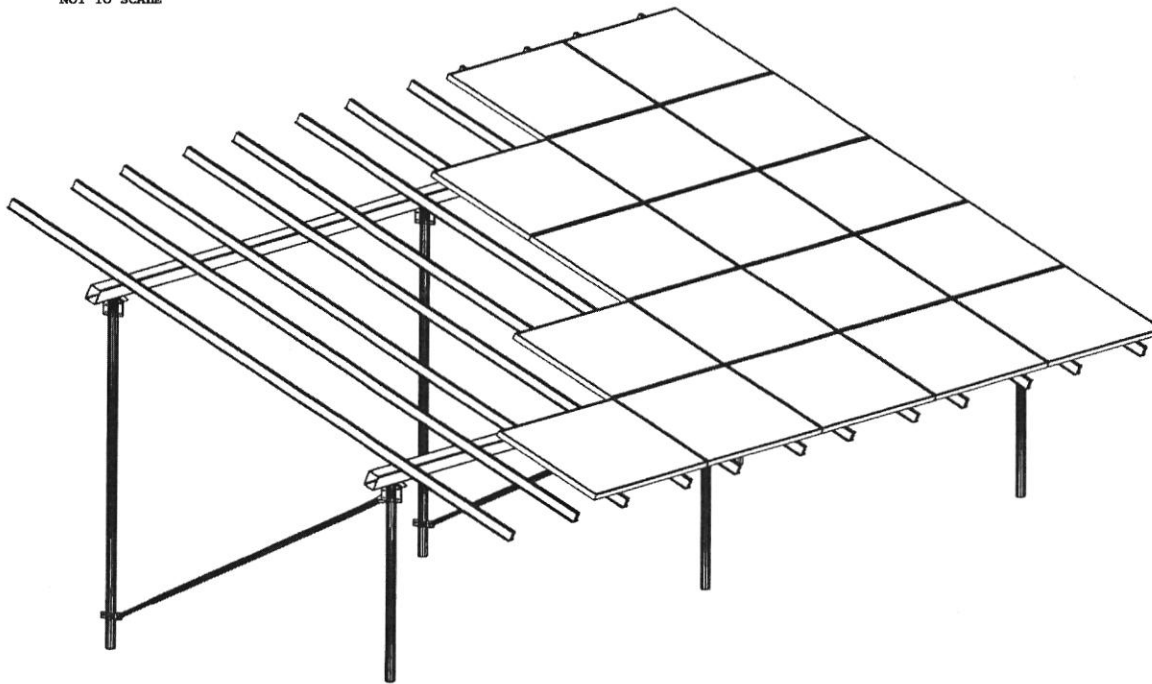
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TML
 Date
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 Scale
AS NOTED

Sheet
E001



Plan View

NOT TO SCALE



Site Design Conditions

Basic Wind Speed: 110 MPH	Max. Leg Axial Bearing: 3,615 lbs.
(Risk Category II)	
Basic Wind Speed: 102 MPH	Max. Leg Uplift: 2,200 lbs.
(Risk Category I)	
Exposure Category: C	Max. Lateral Resistance: 1,640 lbs.
Ground Snow Load: 30 PSF	Top Rail Max. Loading: 98.6 plf
Flat Roof Snow Load: N/A	Helical Pile Depth: 60" Min
(if applicable)	
Site Contour: < 3 Degree Slope	Lateral Resistance Plate Size: Not Req'd

All design work has been performed in accordance with the Maryland Building Performance Standards Regulations including, but not limited to, the 2018 International Building Code with the Department of Labor, Licensing and Regulation modifications (ref: COMAR 09.12.51).

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.

5Lx6C Sub-Array Design Conditions

Front Leg Height: 34 1/4"	Array Tilt Angle: 25 Degrees
Rear Leg Height: 82"	Overall Array East-West Dim: 34'-5"
North-South Leg Spacing: 102"	Number of Modules/Sub-Array: 30
West Span Leg Spacing: 12'-6"	Number of Sub-Arrays: 1
East Span Leg Spacing: 12'-6"	Module Columns/Sub-Array: 6
Quantity Center Spans: 0	Number of Module Rows: 5
Center Span Leg Spacing: N/A	Module Orientation: Landscape
East & West Overhang: 4'-0"	Module Column Spacing: 3"
Overall Beam Length: 33'-0"	Module Row Spacing: 3"
Front Edge Ground Clearance: 24"	Module Model: QPEAK DUO BLK G6
Horizontal Rail Material: 5"x4"x1/4" HSS	Module Size: 40.55" x 68.50"
Top Rail Material: SF Rails	Individual Module Rating: 340 watt
Qty Rails per Panel: 2	Sub Array Power Rating: 10.20 kw
Top Rail Length: 212"	Total Power Rating: 10.20 kw
Top Rail Center Span: 112 1/2"	
Top Rail Overhang: 49 1/4"	



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Sheet 1 of 3

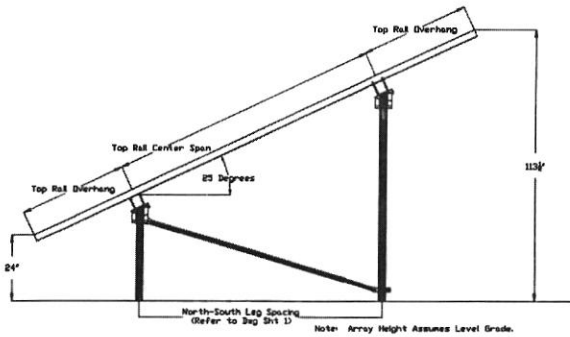
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 3350 Florence Rd
 Woodbine, MD 21797

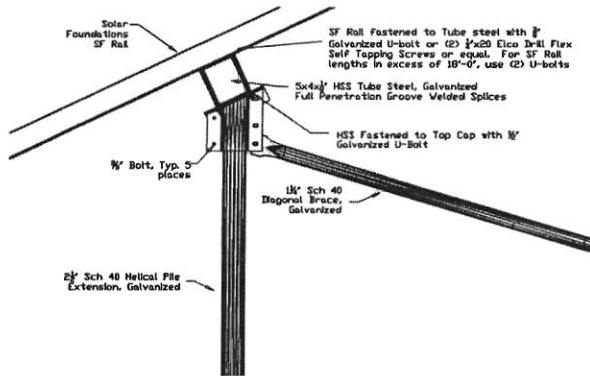
Solar Foundations USA

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



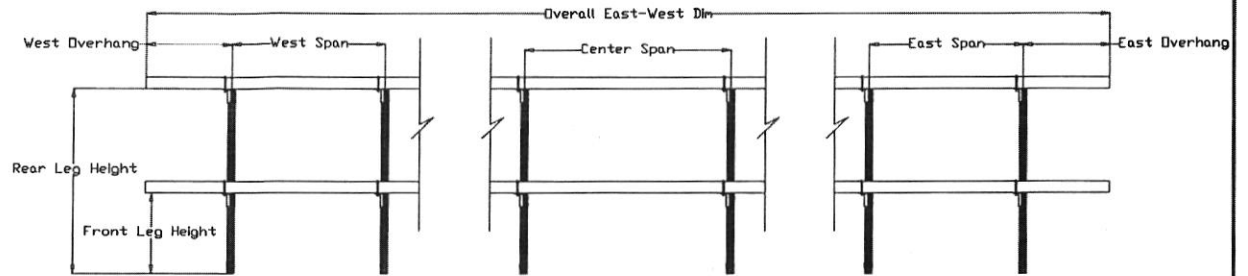
SIDE ELEVATION DETAIL

NOT TO SCALE



LOWER CAP DETAIL

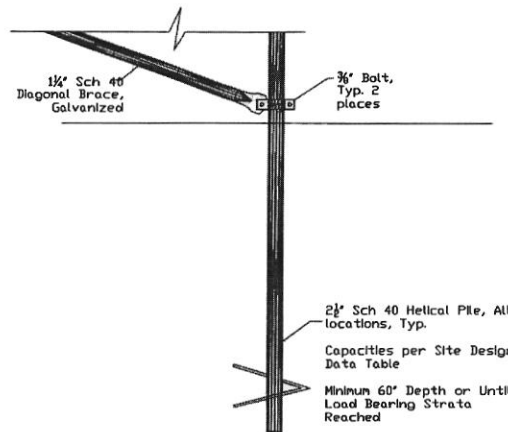
NOT TO SCALE



Refer to Dwg Sheet 1 for East-West Pile Spans and Front and Rear Leg Heights.

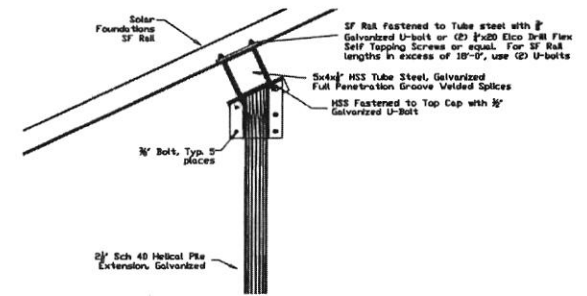
POST SPACING ELEVATION DETAIL

NOT TO SCALE



HELICAL PILE DETAIL

NOT TO SCALE



UPPER CAP DETAIL

NOT TO SCALE

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:
Reis Residence
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Woodbine, MD 21797

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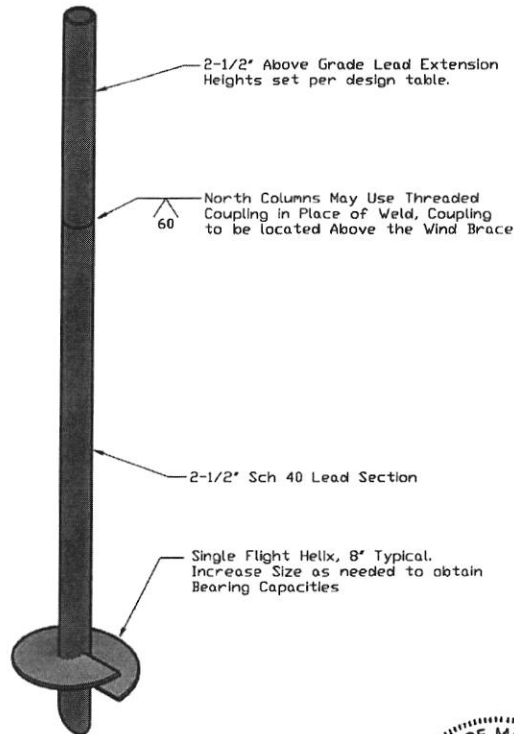
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Date	Revision	Drawn By:	Review By:
11/22/2021	Original	MM	JD



Helical Pile Detail

NOT TO SCALE



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.



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 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 and/or owner.
 - 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.

Sheet 3 of 3

Solar Energy World

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11/22/2021	Original	MM	JD

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