



Building Permit Application

Howard County Maryland
Department of Inspections, Licenses and Permits
3430 Court House Drive
Permits: 410-313-2455
www.howardcountymd.gov

Date Received: _____

Permit No.: _____

Building Address: 1230S Carol Dr.
 City: Fulton State: MD Zip Code: 20759
 Suite/Apt. # _____ SDP/WP/BA #: _____
 Census Tract: _____ Subdivision: _____
 Section: _____ Area: _____ Lot: _____
 Tax Map: 0041 Parcel: 0493 Grid: 0001
 Zoning: _____ Map Coordinates: _____ Lot Size: _____

Existing Use: SFD
 Proposed Use: SFD With Solar
 Estimated Construction Cost: \$ 88,000
 Description of Work: Install 105 ground mounted solar PV panels. 29.4 kW

Occupant or Tenant: _____
 Was tenant space previously occupied? Yes No
 Contact Name: _____
 Address: _____
 City: _____ State: _____ Zip Code: _____
 Phone: _____ Fax: _____
 Email: _____

Property Owner's Name: Alfred Poiry
 Address: 1230S Carol Dr
 City: Fulton State: MD Zip Code: 20759
 Phone: 301-859-9969 Fax: _____
 Email: _____

Applicant's Name & Mailing Address, (if other than stated herein)
 Applicant's Name: _____
 Address: _____
 City: _____ State: _____ Zip Code: _____
 Phone: _____ Fax: _____
 Email: _____

Contractor Company: Solar Energy world
 Contact Person: _____
 Address: 5681 main st
 City: Euridge State: MD Zip Code: 21078
 License No.: 127353
 Phone: 410-579-2082 Fax: _____
 Email: _____

Engineer/Architect Company: _____
 Responsible Design Prof.: _____
 Address: _____
 City: _____ State: _____ Zip Code: _____
 Phone: _____ Fax: _____
 Email: _____

Commercial Building Characteristics	Residential Building Characteristics	
Height:	<input checked="" type="checkbox"/> SF Dwelling <input type="checkbox"/> SF Townhouse	
No. of stories:	Depth	Width
Gross area, sq. ft./floor:	1 st floor:	
	2 nd floor:	
Area of construction (sq. ft.):	Basement:	
	<input type="checkbox"/> Finished Basement	
Use group:	<input type="checkbox"/> Unfinished Basement	
	<input type="checkbox"/> Crawl Space	
<u>Construction type:</u>	<input type="checkbox"/> Slab on Grade	
<input type="checkbox"/> Reinforced Concrete	No. of Bedrooms:	
<input type="checkbox"/> Structural Steel	<u>Multi-family Dwelling</u>	
<input type="checkbox"/> Masonry	No. of efficiency units:	
<input type="checkbox"/> Wood Frame	No. of 1 BR units:	
<input type="checkbox"/> State Certified Modular	No. of 2 BR units:	
	No. of 3 BR units:	
	Other Structure:	
	Dimensions:	
<input checked="" type="checkbox"/> Roadside Tree Project Permit	Footings:	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Roof:	
Roadside Tree Project Permit #	<input type="checkbox"/> State Certified Modular	
	<input type="checkbox"/> Manufactured Home	

Utilities	
<u>Water Supply</u>	
<input type="checkbox"/> Public	
<input checked="" type="checkbox"/> Private	
<u>Sewage Disposal</u>	
<input type="checkbox"/> Public	
<input checked="" type="checkbox"/> Private	
Electric:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Gas:	<input type="checkbox"/> Yes <input type="checkbox"/> No
<u>Heating System</u>	
<input checked="" type="checkbox"/> Electric <input type="checkbox"/> Oil	
<input type="checkbox"/> Natural Gas <input type="checkbox"/> Propane Gas	
<input type="checkbox"/> Other:	
<u>Sprinkler System:</u>	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Grading Permit Number:	
Building Shell Permit Number:	

THE UNDERSIGNED HEREBY CERTIFIES AND AGREES AS FOLLOWS: (1) THAT HE/SHE IS AUTHORIZED TO MAKE THIS APPLICATION; (2) THAT THE INFORMATION IS CORRECT; (3) THAT HE/SHE WILL COMPLY WITH ALL REGULATIONS OF HOWARD COUNTY WHICH ARE APPLICABLE THERE TO; (4) THAT HE/SHE WILL PERFORM NO WORK ON THE ABOVE REFERENCED PROPERTY NOT SPECIFICALLY DESCRIBED IN THIS APPLICATION; (5) THAT HE/SHE GRANTS COUNTY OFFICIALS THE RIGHT TO ENTER ONTO THIS PROPERTY FOR THE PURPOSE OF INSPECTING THE WORK PERMITTED AND POSTING NOTICES.

Applicant's Signature _____
 Email Address _____
 Title/Company _____

Print Name _____
 Date _____

Checks Payable to: DIRECTOR OF FINANCE OF HOWARD COUNTY
 PLEASE WRITE NEATLY & LEGIBLY
 -FOR OFFICE USE ONLY-

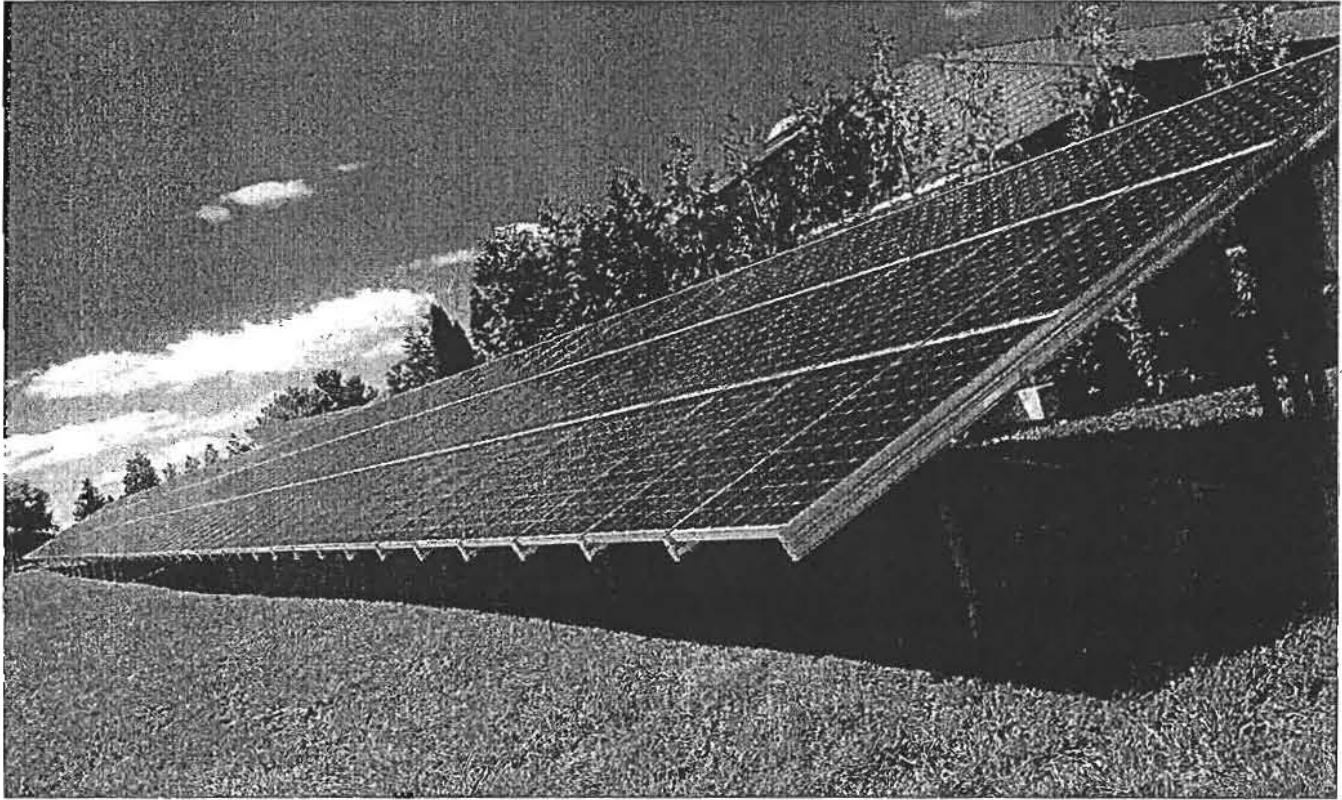
AGENCY	DATE	SIGNATURE OF APPROVAL
State Highways		
Building Officials		
PSZA (Zoning)		
PSZA (Engineering)		
Health	<u>3-30-17</u>	<u>Bernard</u>

Is Sediment Control approval required for issuance? Yes No
 CONTINGENCY CONSTRUCTION START

DPZ SETBACK INFORMATION
Front:
Rear:
Side:
Side St.:
All minimum setbacks met? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is Entrance Permit Required? <input type="checkbox"/> Yes <input type="checkbox"/> No
Historic District? <input type="checkbox"/> Yes <input type="checkbox"/> No
Lot Coverage for New Town Zone:
SDP/Red-line approval date:

Filing Fee	\$
Permit Fee	\$
Tech Fee	\$
Excise Tax	\$
PSFS	\$
Guaranty Fund	\$
Add'l per Fee	\$
Total Fees	\$
Sub- Total Paid	\$
Balance Due	\$
Check	#

PV Racking Ground System Installation Instructions



Key benefits:

- Easy installation. No clamps! No messy lubricants! No more straining to lean over and fasten bolts!
- Installation time is far less than required by other systems.
- Module "Hold Down Area" is more than 10x that of conventional clamps.
- The strongest racking system on the market today. Rest assured, our rails will hold modules securely through the expansion/contraction changes due to seasonal temperature fluctuations.
- Module placement is seamless. No gaps between the modules results in a clean, sleek finish, without interruption.

This manual provides recommendations. Local and National codes govern the requirements for solar installation and must be followed.



Important: Please Read Before Starting

PV Racking components carry a 15 Year Limited Warranty. (See PV Racking 15 Year Limited Warranty for terms and conditions.) Installer shall install and operate all PV Racking components in accordance with the specifications and instructions from PV Racking and shall comply with all applicable rules, laws and regulations from local, state and federal governments and agencies, including the latest NEC Guidelines in connection with the installation of solar systems. FAILURE TO DO SO SHALL VOID ALL WARRANTIES FROM PV RACKING.

PLEASE REVIEW THIS MANUAL THOROUGHLY BEFORE INSTALLING YOUR PV RACKING SYSTEM.

Getting Started

This Installation Guide will provide you with the information needed for a professional installation. Please note the following items are the sole responsibility of the Installer and must be completed prior to installation:

PV RACKING'S BILL OF MATERIALS ORDER SHEET IS USED SOLELY FOR CREATING A BILL OF MATERIALS FOR A SOLAR ARRAY AND DOES NOT INCLUDE ANY ENGINEERING ANALYSIS. PV RACKING STRONGLY RECOMMENDS THAT ALL SOLAR INSTALLERS USE THE SERVICES OF THEIR OWN PROFESSIONAL ENGINEERS IN DESIGNING A SOLAR ARRAY TO ENSURE IT SATISFIES ALL SITE SPECIFIC STRUCTURAL REQUIREMENTS.

Comply with all applicable local, state or national building codes, including the current NEC Guidelines, and any that may supersede this manual.

Verify that correct and appropriate design parameters are used in determining the design loading used for design of the specific installation. Parameters, such as snow loading, wind speed, exposure and topographic factor should be confirmed with the local building official or a licensed professional engineer.

Verify that the roof structure is structurally sound and can support the array under all code level loading conditions that are appropriate. Verify that the ground structure supporting the array is structurally sound and can support the array under all code level loading conditions that are appropriate.

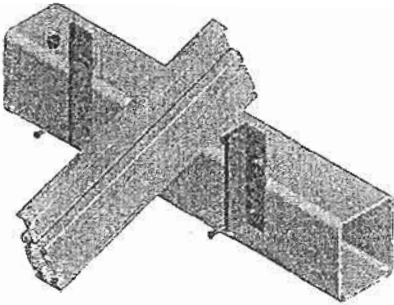
Only PV Racking parts used in conjunction with installer provided parts that are specified in the Installation Guide may be used. Substitution of other non approved parts may void the Limited Warranty.

ALWAYS PROVIDE A WORK ENVIRONMENT THAT IS GEARED TOWARDS PERSONAL SAFETY!

2 Ground Rail Mounting Brackets

Ground rail brackets connect the Rails to the horizontal beams. PV Racking Rails can be connected to three types of horizontal beams; (2" and 3" diameter schedule 40 pipes and 5"x 4" rectangular hollow beams). PV Racking offers all components to install with a 5" x 4" rectangular hollow beam, as seen below.

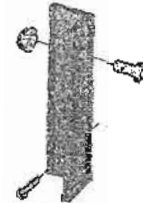
using self tapping screws (GBrckTL and GBrckR)



Each rail requires 4 brackets. Brackets sold in quantities of 20.

Self tapping Rail mounting brackets for 5" x 4" rectangular beam, left.

GBrckTL



Self tapping Rail mounting brackets for 5" x 4" rectangular beam, right.

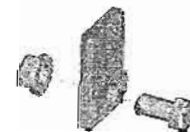
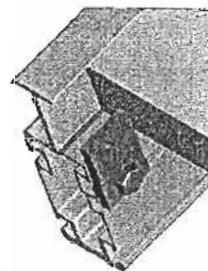
GBrckR



3

Module Stopper (each column of modules requires two stoppers)

GStp



4 Post caps

Post caps connect the vertical "legs" of the supporting structure to the horizontal beams. There are three types of horizontal beams (2" and 3" diameter schedule 40 pipes and 5"x 4" rectangular beams) and three types of "legs" (2", 2.5" and 3" schedule 40 pipes).

Wire Clip holds wires securely to the Rails.

WireClip-A300

Sold in quantities of 300.



8 WireRail provides protection for home run wires (17.5' long)

GWW





1.3.1.2 Calculate the length of the Horizontal Beam.

Calculate the length of the horizontal beam (L_{HB}) as follows:

$$L_{HB} = N_{oc} * (\text{horizontal width of module} + 0.225") + 8"$$

For example: 39 modules are installed in portrait format. There will be 3 modules per column. $N_{oc}=13$. Module is Sharp NU-U235F1. Dimensions are 39.1" x 64.6". Modules are installed in portrait format.

$$\begin{aligned} \text{Minimum length of the horizontal beam} &= (N_{oc} * (\text{horizontal width of module} + 0.225)) + 8 \\ &= (13 * (39.1 + 0.225)) + 8 = \\ &= (13 * 39.325) + 8 = \\ &= 511.225 + 8 = 519.25" \end{aligned}$$

Minimum length of the horizontal beam = 519.25" or about 43'-3"

1.3.1.3 Calculate the center distance between rails.

Calculate the center distance between rails (CD) as follows:

$$CD = \text{horizontal dimension of the installed module} + 0.225$$

For example: Module is Sharp NU-U235F1. Dimensions are 39.1" x 64.6". Modules are installed in portrait.

$$CD = \text{horizontal dimension of the installed module} + 0.225$$

$$CD = 39.1 + 0.225 = 39-21/64"$$

Using the GSpacer makes center dimension measurement obsolete. To use the templates set up the first two rails using tape measure and the above formula. Use these two rails to set up the templates. All additional rails can be quickly and precisely placed using the pair of templates without any further measuring.

1.3.1.4 Calculate the location of the Rail attachment points along the horizontal beam.

The exact position of the first Rail near the center of the horizontal beam depends on the number of columns (N_{oc}) calculated above. This is either an odd or an even number.

Case 1. Number of columns (N_{oc}) is even: There will be a Rail in the very center of the horizontal support beam.

Case 2. Number of columns (N_{oc}) is odd: The center of the first Rail piece is located on half of CD (calculated above) away from the center of the horizontal beam.

For example: $N_{oc}=13$. $CD = 39-21/64"$

Since $N_{oc}=13$ is an odd number, the center location for the first Rail is $CD/2$ ($19-5/8"$) away from the center of the horizontal beam. Locate the very center of the horizontal beam and measure $19-5/8"$ away from this point to locate the center of the first Rail.

Once the first rail is mounted the other rails are located CD away (measured center-to-center) from this and other rails.

Step 5. Install the self-tapper through the bracket and the hole in the cross beam. Tighten it to 5.5 ft-lbs. maximum.

Step 6. Tighten the 3/8 bolt to 15 ft-lbs. maximum.

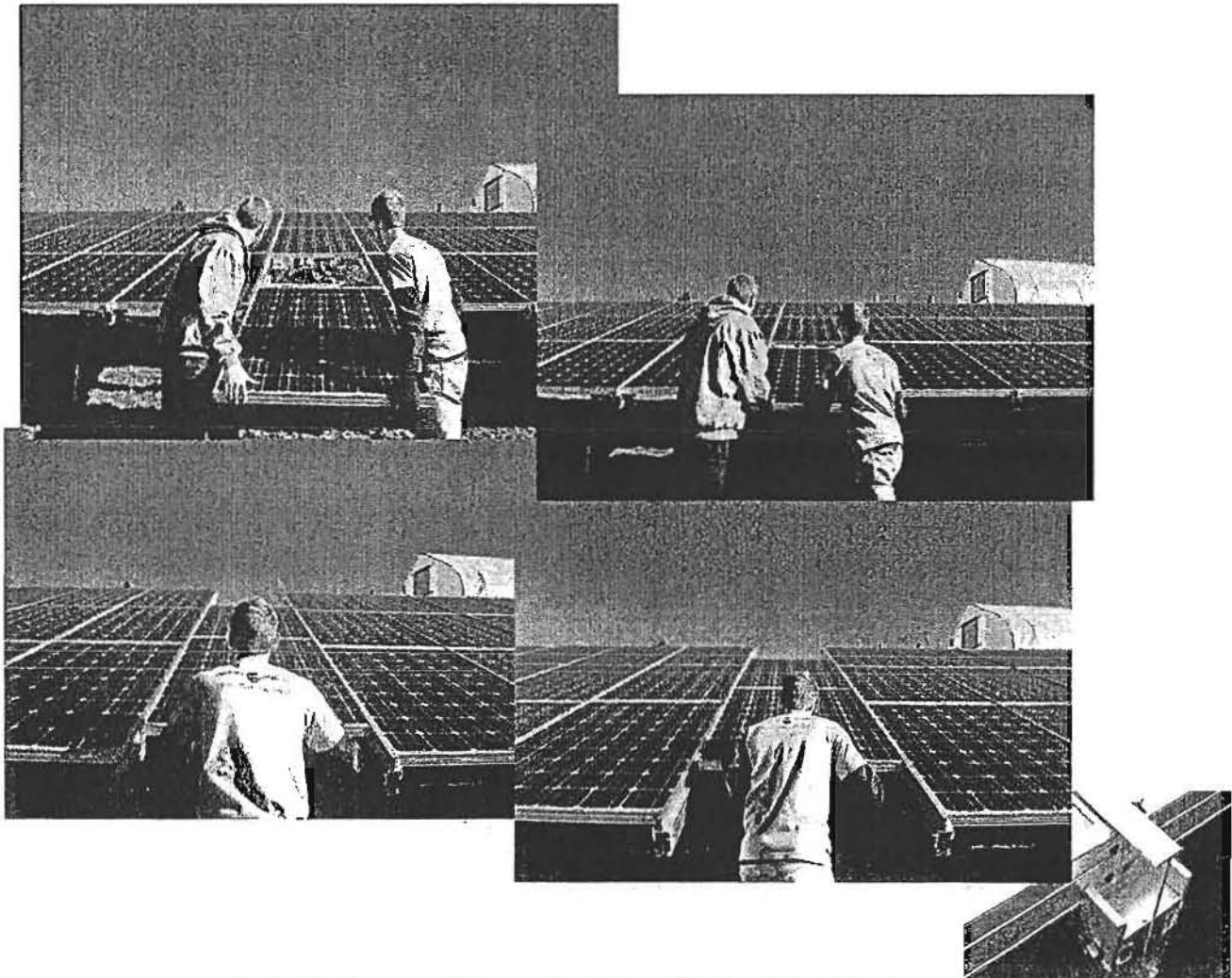
Step 7. Repeat the above steps to install the second bracket on the other side of the Rail.

Step 8. Repeat the above steps to install the other GBrcckL and GBrcckR brackets at the other Horizontal Beam of the same rail.

Install the next Rail at the calculated Center Distance (CD) away from the first one. Slide a module into the Rails to check the spacing. Make two spacers to tightly fit between the installed Rails. (Cut up an extra Rail for this purpose. Alternatively, use the Column Spacing Fixtures if the horizontal beam is 5" x 4".) These spacers would speed up the installation.

1.4 Installing the modules and end stops

Install the modules by sliding them into the Rails. Fasten an end stop at the bottom of each Rail.



1.5 Notes on Grounding the PV Racking System.

With DynoBond™:

The DynoBond™ replaces the conventional method of installing one ground lug per solar module and running a solid six gauge

This manual provides recommendations. Local and National codes govern the requirements for solar installation and must be followed.



The Racking System Designed by Installers for Installers

Rev.07
Dec, 2014

2.0 General Notes

2.1 *Installation instruction updates*

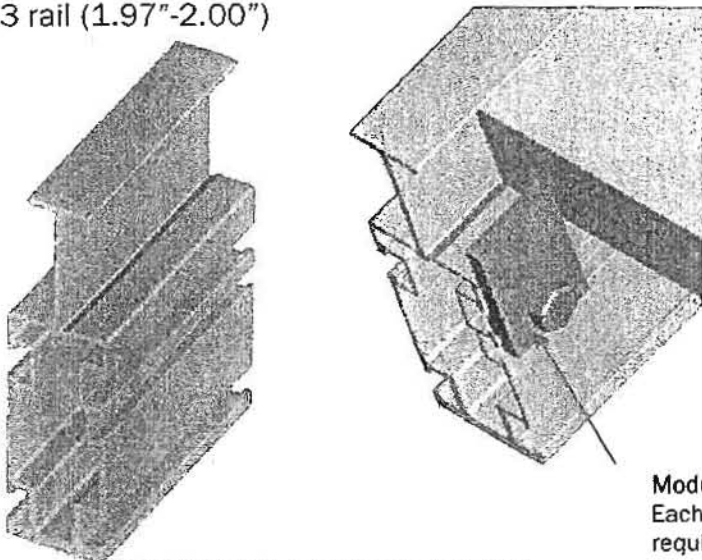
PV Racking continuously improves the product line. The latest installation information is available at www.PVRacking.US. Contact PVRacking should you have any questions or require additional information (610) 990-7199).

PV Racking provides continuous edge support for the modules. PV Racking does not put undo stress on the modules as it is designed to deflect minimally under full load. Design has been analyzed with advanced FEA methods and actual field testing. Please note that it is the installers' responsibility to check with the module manufacturer that this support method is acceptable.

PV RACKING GROUND RAIL TECHNICAL DATASHEET

V001 August 2013

PV Racking Ground Mount Rail
G213 rail (1.97"-2.00")



*If installing modules in landscape, the module frame must be approved for mounting on the short side

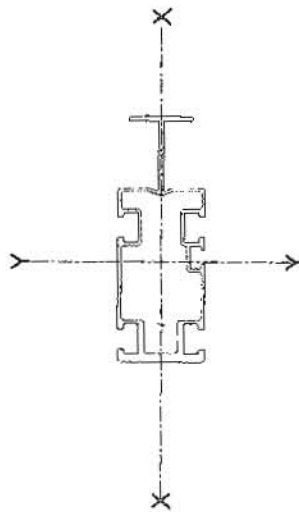
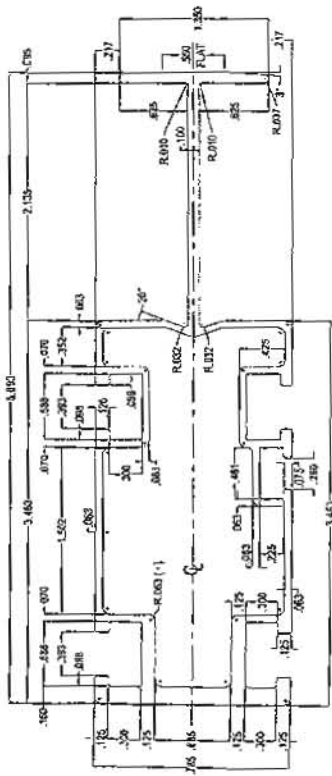
Rail

- Standard Finish: Mill finish
- Optional Finish: Clear or Black anodized

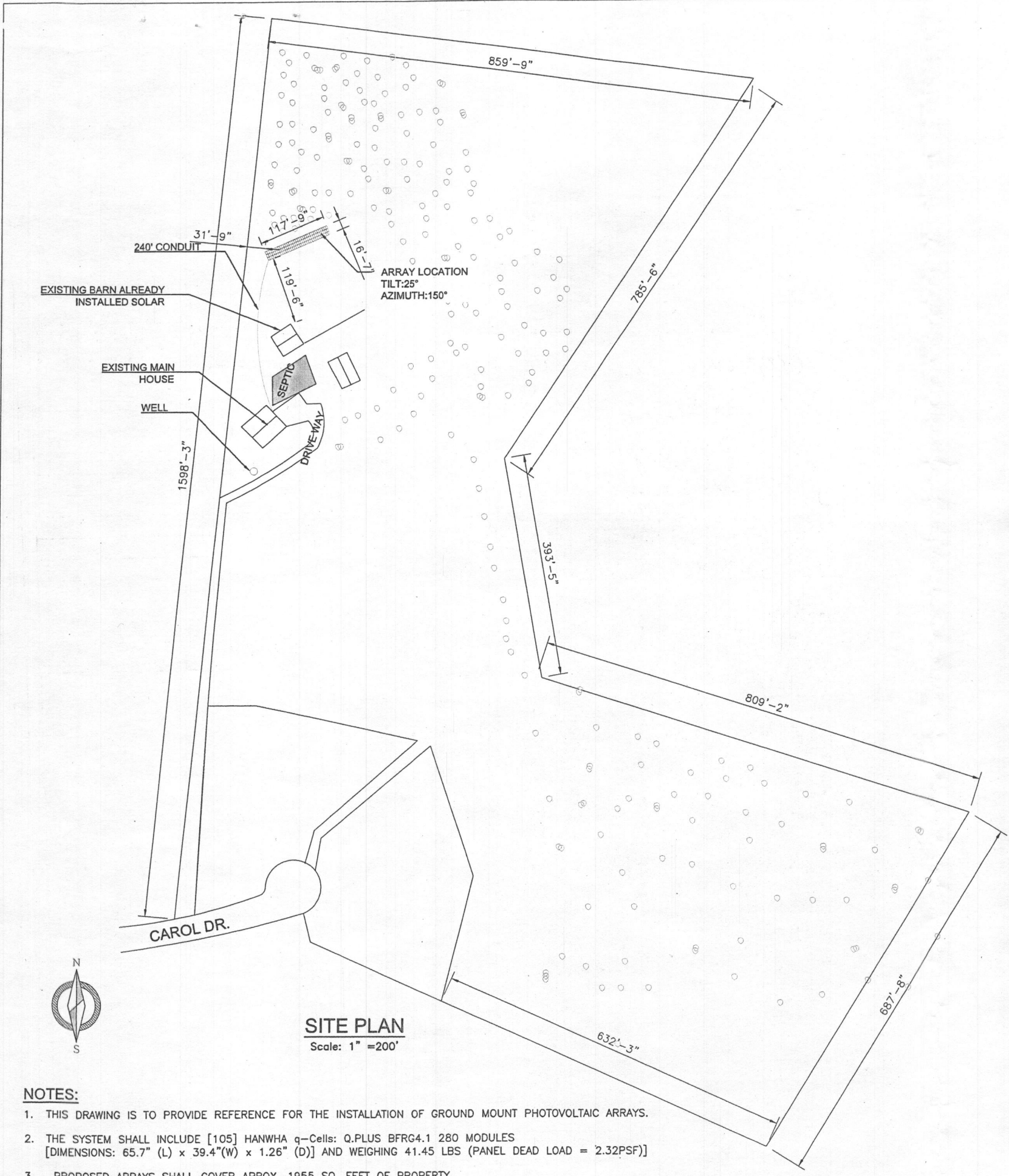
Module Stopper (GStp) Hardware

- 3/8-16 x 3/4 stainless steel hex head cap screw
- 3/8-16 serrated flange nut

Module Stopper
Each column of modules requires two stoppers

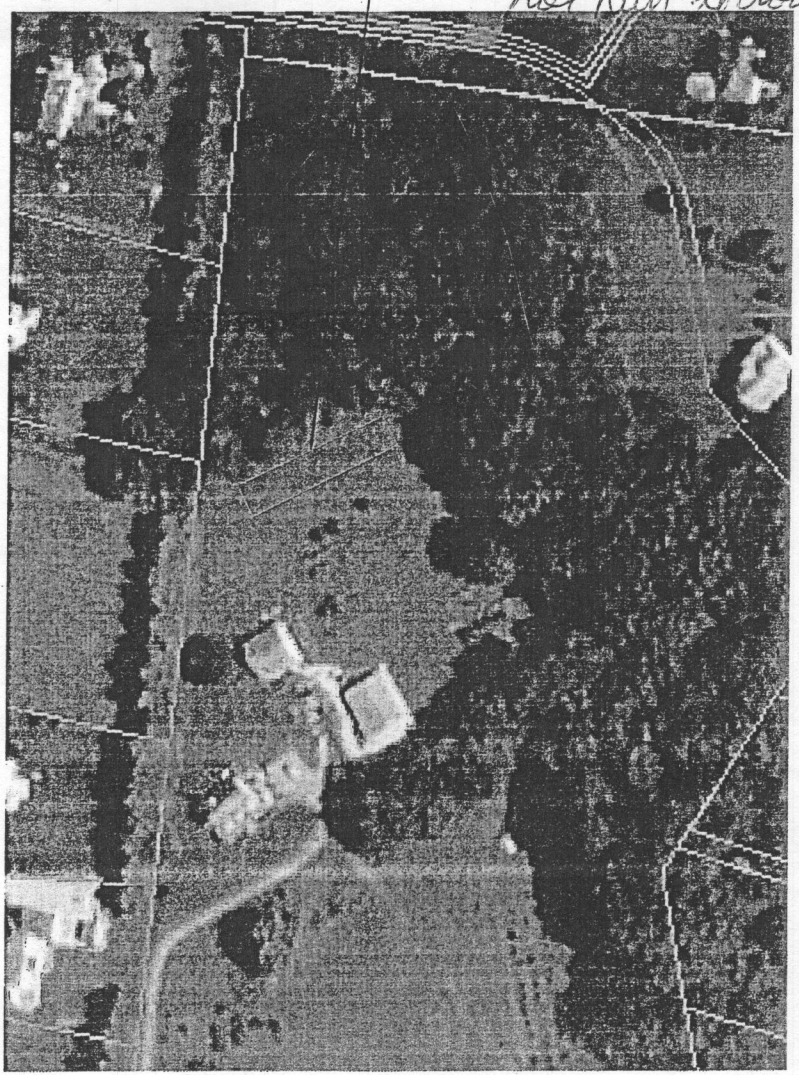


Rail Material	6105-T6
Rail Weight	1.844 lb/ft
Area	1.5325 SQ. IN
Perimeter	34.0547"
Radius of Gyration, r (X-X)	.5688"
Radius of Gyration, r (Y-Y)	1.8277"
Moment of Inertia, I (X-X)	.4959 IN ⁴
Moment of Inertia, I (Y-Y)	5.1195 IN ⁴
Section Modulus, S (X-X)	.5508 IN ³
Section Modulus, S (Y-Y)	1.4741 IN ³




APPROVED
WALK-THRU BUILDING PERMIT
 BP# _____ A# _____
 APP. SAND Bernard DATE: 3-30-17
 DESC. OF WORK: Solar Panels

*Approved As Shown
 > 10' away from septic area
 and 710' away from well area. Electrical may
 not run through septic area*



- NOTES:**
1. THIS DRAWING IS TO PROVIDE REFERENCE FOR THE INSTALLATION OF GROUND MOUNT PHOTOVOLTAIC ARRAYS.
 2. THE SYSTEM SHALL INCLUDE [105] HANWHA q-Cells: Q.PLUS BFRG4.1 280 MODULES [DIMENSIONS: 65.7" (L) x 39.4"(W) x 1.26" (D)] AND WEIGHING 41.45 LBS (PANEL DEAD LOAD = 2.32PSF)
 3. PROPOSED ARRAYS SHALL COVER APROX. 1955 SQ. FEET OF PROPERTY.

General Notes



Solar Energy World
 Tomorrow's Energy Today
 Solar Energy World LLC.
 5681 Main Street
 Elkridge, MD 21075
 (888) 497-3233

Disclaimer:
 This drawing is the property of Solar Energy World Inc. The information herein contained shall be used for the sole benefit of Solar Energy World. It shall not be disclosed to others outside the recipient's organization, in whole or in part, without the written permission of Solar Energy World, except in connection with the sale and use of the respective Solar Energy equipment.

Stamp

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. 28331, EXPIRATION DATE: NOVEMBER 05, 2017.

Project Name and Address
Alfred & May Pong (SR)
 12305 Carol Dr.
 Fulton, MD 20759
 29.4 kW

<small>Drawn by</small> MDM	<small>Sheet</small> A001
<small>Date</small> 3/27/17	
<small>Scale</small> AS NOTED	