

Staff recommends the HPC **approve** the HAWP.

SIGNIFICANCE: Outstanding Resource to the Takoma Park Historic District
 STYLE: Colonial Revival
 DATE: c.1910



1

PROPOSAL

The applicant proposes to install 58 solar panels on the roof the subject property.

APPLICABLE GUIDELINES

When reviewing alterations and new construction within the Takoma Park Historic District several documents are to be utilized as guidelines to assist the Commission in developing their decision. These documents include the historic preservation review guidelines in the approved and adopted amendment for the *Takoma Park Historic District (Guidelines)*, *Montgomery County Code Chapter 24A (Chapter 24A)*, and *the Secretary of the Interior's Standards for Rehabilitation (Standards)*, and Historic Preservation Commission Policy No. 20-01: ADDRESSING EMERGENCY CLIMATE MOBILIZATION THROUGH THE INSTALLATION OF ROOF-MOUNTED SOLAR PANELS. The pertinent. The pertinent information in these documents is outlined below.

Takoma Park Historic District Guidelines

There are two very general, broad planning and design concepts which apply to all categories. These are:

The design review emphasis will be restricted to changes that are at all visible from the public right-of-way, irrespective of landscaping or vegetation (it is expected that the majority of new additions will be reviewed for their impact on the overall district), and,

The importance of assuring that additions and other changes to existing structures act to reinforce and continue existing streetscape, landscape, and building patterns rather than to impair the character of the district.

Outstanding Resources have the highest level of architectural and/or historical significance. While they will receive the most detailed level of design review, it is permissible to make sympathetic alterations, changes and additions. The guiding principles to be utilized by the Historic Preservation Commission are the *Secretary of the Interior's Standards for Rehabilitation*

Specifically, some of the factors to be considered in reviewing HAWPs on Outstanding Resources:

Plans for all alterations should be compatible with the resource's original design; additions, specifically, should be sympathetic to existing architectural character, including massing, height, setback, and materials

Emphasize placement of major additions to the rear of existing structures so that they are less visible from the public right-of-way

All changes and additions should respect existing environmental settings, landscaping, and patterns of open space

Montgomery County Code; Chapter 24A-8

- (a) The commission shall instruct the director to issue a permit, or issue a permit subject to such conditions as are found to be necessary to ensure conformity with the purposes and requirements of this chapter, if it finds that:
 - (1) The proposal will not substantially alter the exterior features of an historic site or historic resource within an historic district; or
 - (2) The proposal is compatible in character and nature with the historical, archeological, architectural or cultural features of the historic site or the historic district in which an historic

- resource is located and would not be detrimental thereto or to the achievement of the purposes of this chapter; or
- (d) In the case of an application for work on an historic resource located within an historic district, the commission shall be lenient in its judgment of plans for structures of little historical or design significance or for plans involving new construction, unless such plans would seriously impair the historic or architectural value of surrounding historic resources or would impair the character of the historic district. (Ord. No. 9-4, § 1; Ord. No. 11-59.)

Secretary of the Interior's Standards for Rehabilitation:

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportions, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Historic Preservation Commission Policy No. 20-01: ADDRESSING EMERGENCY CLIMATE MOBILIZATION THROUGH THE INSTALLATION OF ROOF-MOUNTED SOLAR PANELS

Now, THEREFORE:

WHEREAS, Historic Area Work Permit decisions are guided by the criteria in Section 24A, The Secretary of the Interior's Standards for Rehabilitation, and pertinent guidance from applicable master plan amendments and/or site or district-specific studies;

WHEREAS, The Secretary of the Interior's Standards for Rehabilitation as interpreted by the National Park Service limit the placement of rooftop solar panels under Standards 2, 9, and 10 to less conspicuous locations;

WHEREAS, the County Council has established a Climate Emergency;

WHEREAS, the Historic Preservation is a body established by the County Executive and County Council;

WHEREAS, Section 24-8(b)(6) states, "In balancing the interest of the public in preserving the historic site or historic resource located within an historic district, with the interests of the public from the use and benefit of the alternative proposal, the general public welfare is better served by granting the permit;"

WHEREAS, the widespread use of solar panels, both for hot water and for electricity production, will reduce greenhouse gases in the county, in accordance with the aims of the Emergency Climate Mobilization resolution (Resolution No.: 18-974), it shall be the policy of the Historic Preservation Commission that:

1. The preferred locations for solar panel installation(s) on a designated historic site or an historic resource located within an historic district is a) on the rear of the property, b) on non-historic building additions, c) on accessory structures, or d) in ground-mounted arrays;
2. If it is not feasible to install solar panels in one of the identified preferred locations due to resource orientation or other site limitations; and,

3. The roof is determined to be neither architecturally significant, nor a character-defining feature of the resource, nor is it a slate or tile roof, that unless it can be demonstrated that the solar array will be installed without damaging the historic character of the resource or historic fabric; then
4. The public welfare is better served by approving a Historic Area Work Permit for solar panels on all visible side or front roof slopes under Section 24A-8(b)(6).
5. A Historic Area Work Permit (HAWP) is required for all work referenced in this policy.

STAFF DISCUSSION

The subject property is a two-story house with a front gable roof and a wrap-around porch with a port-cochere. Though the house faces Carroll Ave., vehicles access the property from Park Ave. The applicant proposes installing a total of fifty-eight solar panels on the roof of the subject property. Thirty-three of the panels are to be installed in a single array on the left (south-facing) roof slope, and the remaining twenty-five will be installed on the right (north-facing) roof slope.

Staff finds that the proposal includes a large number of solar panels, but nonetheless finds that the panels will not significantly detract from the historic character of the subject property or surrounding district. In evaluating the proposal, Staff first considers the preferred locations for solar panels. The lot is not large enough for a ground-mounted array, nor is there an accessory building in the rear of the property. The house has not been added onto, so there is not a building addition that can be utilized. Finally, because the roof of the subject property is a front gable, there is not a rear slope to install the panels so that they would be less visible from the public right-of-way (again, because the house has access from both Carroll and Park Aves., any alterations to a rear roof slope would still be visible from a right-of-way). Based on this analysis, Staff concludes that the only location for solar panels at the subject property is on the roof.

Staff further finds that the asphalt-shingled front gable roof is not architecturally significant and the proposed work will not permanently damage historic materials or the historic design. Staff finds that both the left and right roof slopes will be visible from the right-of-way.

The evaluation then comes down to the configuration and placement of the proposed panels. Staff finds that the most successful solar installations occur when the solar panels are installed in a single square or rectangular configuration. This simple rectilinear form better blends into the background instead of drawing visual attention by including additional corners and gaps in the array. The panels on the left roof slope will be installed in an 11×3 panel configuration, while the panels on the right are arranged in a 2×8 configuration at the front with an additional nine panels in a 3×3 arrangement at the rear. Staff finds that even though these panels will be visible from certain angles from the right-of-way they will not detract from the historic character of the house or surrounding district. Unlike the previously reviewed solar panel case involving an Outstanding Resource, (14 Crescent Place, Takoma Park¹) the entirety of one roof slope is not visible from the right-of-way. Only partial slopes are visible at the subject property. Staff also notes that the neighboring property at 7120 Carroll also installed a roof-mounted solar array which was limited to the left roof slope. This was done for two reasons. First, the Solar Policy had not been adopted by the HPC when this HAWP was submitted. Second, the open lot to the right of 7120 Carroll makes the entirety of the right roof slope visible from the right-of-way. Staff finds that while the proposed array includes a large number of panels, the configuration and placement does not detract from the character of the house or surrounding district and recommends the HPC approve the HAWP.

¹ See the Staff Report here: <https://montgomeryplanning.org/wp-content/uploads/2021/06/II.G-14-Crescent-Place-Takoma-Park.pdf>.

STAFF RECOMMENDATION

Staff recommends that the Commission **approve** the HAWP application under the Criteria for Issuance in Chapter 24A-8(b)(1) and (2) and the *Takoma Park Historic District Guidelines*, having found that the proposal will not substantially alter the exterior features of the historic resource and is compatible in character with the district and the purposes of Chapter 24A;

and with the *Secretary of the Interior's Standards for Rehabilitation* #2, 9, and 10;

and with the general condition that the applicant shall present an electronic set of drawings, if applicable, to Historic Preservation Commission (HPC) staff for review and stamping prior to submission for the Montgomery County Department of Permitting Services (DPS) building permits;

and with the general condition that final project design details, not specifically delineated by the Commission, shall be approved by HPC staff or brought back to the Commission as a revised HAWP application at staff's discretion;

and with the general condition that the applicant shall notify the Historic Preservation Staff if they propose to make **any alterations** to the approved plans. Once the work is completed the applicant will contact the staff person assigned to this application at 301-563-3400 or dan.bruechert@montgomeryplanning.org to schedule a follow-up site visit.



FOR STAFF ONLY:
HAWP# 963287
DATE ASSIGNED _____

**APPLICATION FOR
HISTORIC AREA WORK PERMIT**
HISTORIC PRESERVATION COMMISSION
301.563.3400

APPLICANT:

Name: Alberto Ramos
Address: 7118 Carroll Avenue
Daytime Phone: 301-891-3926

E-mail: albertoramos7118@gmail.com
City: Takoma Park Zip: 20912
Tax Account No.: 01058698

AGENT/CONTACT (if applicable):

Name: Advanced Solar
Address: 3321 75th Avenue
Daytime Phone: 240-593-5892

E-mail: permits@advanced.solar
City: Hyattsville Zip: 20785
Contractor Registration No.: 108569

LOCATION OF BUILDING/PREMISE: MIHP # of Historic Property 37/03

Is the Property Located within an Historic District? ☒ Yes/District Name City of Takoma Park
No/Individual Site Name

Is there an Historic Preservation/Land Trust/Environmental Easement on the Property? If YES, include a map of the easement, and documentation from the Easement Holder supporting this application.

Are other Planning and/or Hearing Examiner Approvals /Reviews Required as part of this Application? (Conditional Use, Variance, Record Plat, etc.?) If YES, include information on these reviews as supplemental information.

Building Number: _____ Street: 7118 Carroll Avenue

Town/City: Takoma Park Nearest Cross Street: Park Avenue

Lot: 3 Block: 2 Subdivision: 0025 Parcel: 0000

TYPE OF WORK PROPOSED: See the checklist on Page 4 to verify that all supporting items for proposed work are submitted with this application. Incomplete Applications will not be accepted for review. Check all that apply:

- | | | |
|---|--|--|
| <input type="checkbox"/> New Construction | <input type="checkbox"/> Deck/Porch | <input type="checkbox"/> Shed/Garage/Accessory Structure |
| <input type="checkbox"/> Addition | <input type="checkbox"/> Fence | <input checked="" type="checkbox"/> Solar |
| <input type="checkbox"/> Demolition | <input type="checkbox"/> Hardscape/Landscape | <input type="checkbox"/> Tree removal/planting |
| <input type="checkbox"/> Grading/Excavation | <input type="checkbox"/> Roof | <input type="checkbox"/> Window/Door |
| | | <input type="checkbox"/> Other: _____ |

I hereby certify that I have the authority to make the foregoing application, that the application is correct and accurate and that the construction will comply with plans reviewed and approved by all necessary agencies and hereby acknowledge and accept this to be a condition for the issuance of this permit.

Signature of owner or authorized agent

8/11/2021

Date

HAWP APPLICATION: MAILING ADDRESSES FOR NOTIFYING
[Owner, Owner's Agent, Adjacent and Confronting Property Owners]

Owner's mailing address 7118 Carroll Avenue Takoma Park, MD 20912	Owner's Agent's mailing address 3321 75th Avenue Hyattsville, MD 20785
Adjacent and confronting Property Owners mailing addresses	
7114 Carroll Avenue Takoma Park, MD 20912	7119 Carroll Avenue Takoma Park, MD 20912
7120 Carroll Avenue Takoma Park, MD 20912	7115 Carroll Avenue Takoma Park, MD 20912
118 Park Avenue Takoma Park, MD 20912	

Description of Property: Please describe the building and surrounding environment. Include information on significant structures, landscape features, or other significant features of the property:

We are installing solar panels are the roof. We are not changing anything else.

Description of Work Proposed: Please give an overview of the work to be undertaken:

We will be installing solar panels on the roof.

Work Item 1: <u>Roof</u>	
Description of Current Condition: Plain Roof	Proposed Work: Roof with Solar Panels
Work Item 2: _____	
Description of Current Condition:	Proposed Work:
Work Item 3: _____	
Description of Current Condition:	Proposed Work:

HISTORIC AREA WORK PERMIT CHECKLIST OF APPLICATION REQUIREMENTS

	Required Attachments						
Proposed Work	I. Written Description	2. Site Plan	3. Plans/ Elevations	4. Material Specifications	5. Photographs	6. Tree Survey	7. Property Owner Addresses
New Construction	*	*	*	*	*	*	*
Additions/ Alterations	*	*	*	*	*	*	*
Demolition	*	*	*		*		*
Deck/Porch	*	*	*	*	*	*	*
Fence/Wall	*	*	*	*	*	*	*
Driveway/ Parking Area	*	*		*	*	*	*
Grading/Excavation/ Landscaping	*	*		*	*	*	*
Tree Removal	*	*		*	*	*	*
Siding/ Roof Changes	*	*	*	*	*		*
Window/ Door Changes	*	*	*	*	*		*
Masonry Repair/ Repoint	*	*	*	*	*		*
Signs	*	*	*	*	*		*

THE

ALLMAX^Mplus⁺

FRAMED 120 HALF-CELL MODULE



120-Cell MONOCRYSTALLINE MODULE

320-335W
POWER OUTPUT RANGE

19.7%
MAXIMUM EFFICIENCY

0~+5W
POSITIVE POWER TOLERANCE

Founded in 1997, Trina Solar is the world's leading comprehensive solutions provider for solar energy. We believe close cooperation with our partners is critical to success. Trina Solar now distributes its PV products to over 60 countries all over the world. Trina is able to provide exceptional service to each customer in each market and supplement our innovative, reliable products with the backing of Trina as a strong, bankable partner. We are committed to building strategic, mutually beneficial collaboration with installers, developers, distributors and other partners.

Comprehensive Products And System Certificates

IEC61215/IEC61730/UL1703/IEC61701/IEC62716
ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO14064: Greenhouse gases Emissions Verification
OHSAS 18001: Occupation Health and Safety Management System



PRODUCTS	BACKSHEET COLOR	POWER RANGE
TSM-DD06H.08(II)	White	320-335W
TSM-DD06H.05(II)	Black	320-330W

FRAME COLOR: Black



Increased value

- Reduce BOS cost with high power bin
- Low thermal coefficients for greater energy production at higher temperature



Half-cell design brings higher efficiency

- New cell string layout and split J-box location to reduce the energy loss caused by inter-row shading
- Integrated LRF (Light Redirecting Film) to enhance power, specially for ground-mount applications (optional)
- Lower cell connection power losses due to half-cell layout (120 monocrystalline)



Highly reliable due to stringent quality control

- Over 30 in-house tests (UV, TC, HF etc)
- Increased module robustness to minimize micro-cracks
- PID resistant and free of snail trails
- Internal test requirement of Trina more stringent than certification authority

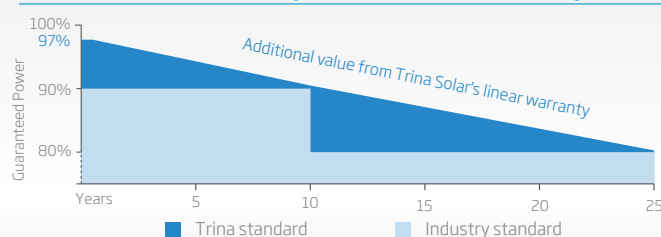


Certified to withstand the most challenging environmental conditions

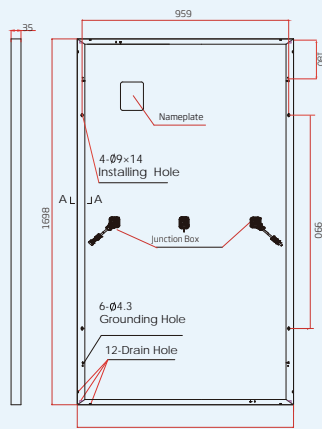
- 2400 Pa negative load
- 5400 Pa positive load

LINEAR PERFORMANCE WARRANTY

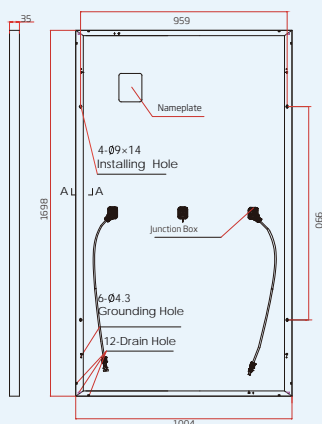
10 Year Product Warranty · 25 Year Linear Power Warranty



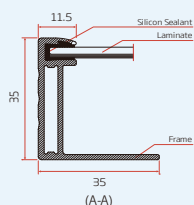
DIMENSIONS OF PV MODULE(mm)



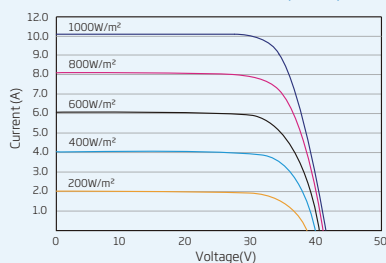
String Inverter Configuration



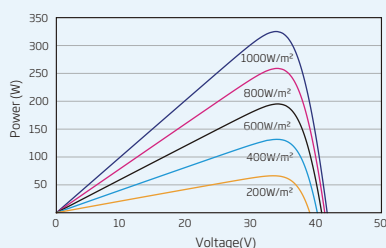
Microinverter or Optimizer Configuration



I-V CURVES OF PV MODULE(325W)



P-V CURVES OF PV MODULE(325W)



ELECTRICAL DATA (STC)

Peak Power Watts- P_{MAX} (Wp)*	320	325	330	335
Power Output Tolerance- P_{MAX} (W)	0 ~ +5			
Maximum Power Voltage- V_{MPP} (V)	33.3	33.7	34.0	34.4
Maximum Power Current- I_{MPP} (A)	9.60	9.65	9.70	9.75
Open Circuit Voltage- V_{OC} (V)	40.6	41.4	41.8	42.2
Short Circuit Current- I_{SC} (A)	10.00	10.07	10.14	10.21
Module Efficiency η_m (%)	18.8	19.1	19.4	19.7

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
*Measuring tolerance: $\pm 3\%$.

ELECTRICAL DATA (NMOT)

Maximum Power- P_{MAX} (Wp)	241	245	249	253
Maximum Power Voltage- V_{MPP} (V)	31.6	32.0	32.2	32.4
Maximum Power Current- I_{MPP} (A)	7.64	7.67	7.72	7.78
Open Circuit Voltage- V_{OC} (V)	38.2	39.0	39.3	39.6
Short Circuit Current- I_{SC} (A)	8.06	8.12	8.18	8.24

NMOT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

MECHANICAL DATA

Solar Cells	Monocrystalline
Cell Orientation	120 cells (6 × 20)
Module Dimensions	1698 × 1004 × 35 mm (66.85 × 39.53 × 1.38 inches)
Weight	18.7 kg (41.2 lb)
Glass	3.2 mm (0.13 inches), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	EVA
Backsheet	White [DD06H.08(II)]; Black [DD06H.05(II)]
Frame	35 mm (1.38 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm ² (0.006 inches ²), Portrait: N 140mm/P 285mm(5.51/11.22inches) Landscape: N 1200 mm /P 1200 mm (47.24/47.24 inches)
Connector	MC4

TEMPERATURE RATINGS

NMOT (Nominal Module Operating Temperature)	41°C ($\pm 3^\circ\text{C}$)
Temperature Coefficient of P_{MAX}	- 0.37%/°C
Temperature Coefficient of V_{OC}	- 0.29%/°C
Temperature Coefficient of I_{SC}	0.05%/°C

(DO NOT connect Fuse in Combiner Box with two or more strings in parallel connection)

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1000V DC (IEC) 1000V DC (UL)
Max Series Fuse Rating	20A

WARRANTY

10 year Product Workmanship Warranty
25 year Linear Power Warranty

(Please refer to product warranty for details)

PACKAGING CONFIGURATION

Modules per box: 30 pieces
Modules per 40' container: 780 pieces

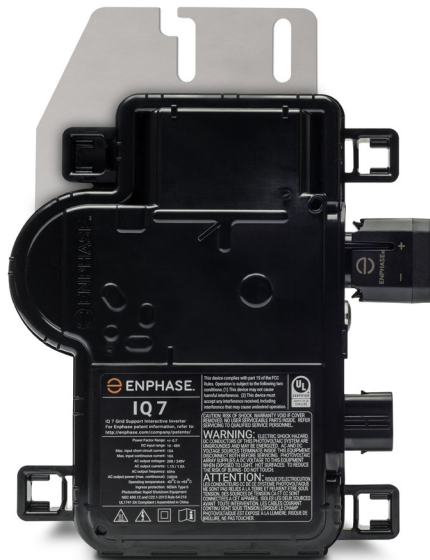


Enphase IQ 7 and IQ 7+ Microinverters

The high-powered smart grid-ready **Enphase IQ 7 Micro™** and **Enphase IQ 7+ Micro™** dramatically simplify the installation process while achieving the highest system efficiency.

Part of the Enphase IQ System, the IQ 7 and IQ 7+ Microinverters integrate with the Enphase IQ Envoy™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.



Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014 & 2017)

Productive and Reliable

- Optimized for high powered 60-cell and 72-cell* modules
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

* The IQ 7+ Micro is required to support 72-cell modules.



To learn more about Enphase offerings, visit enphase.com

Enphase IQ 7 and IQ 7+ Microinverters

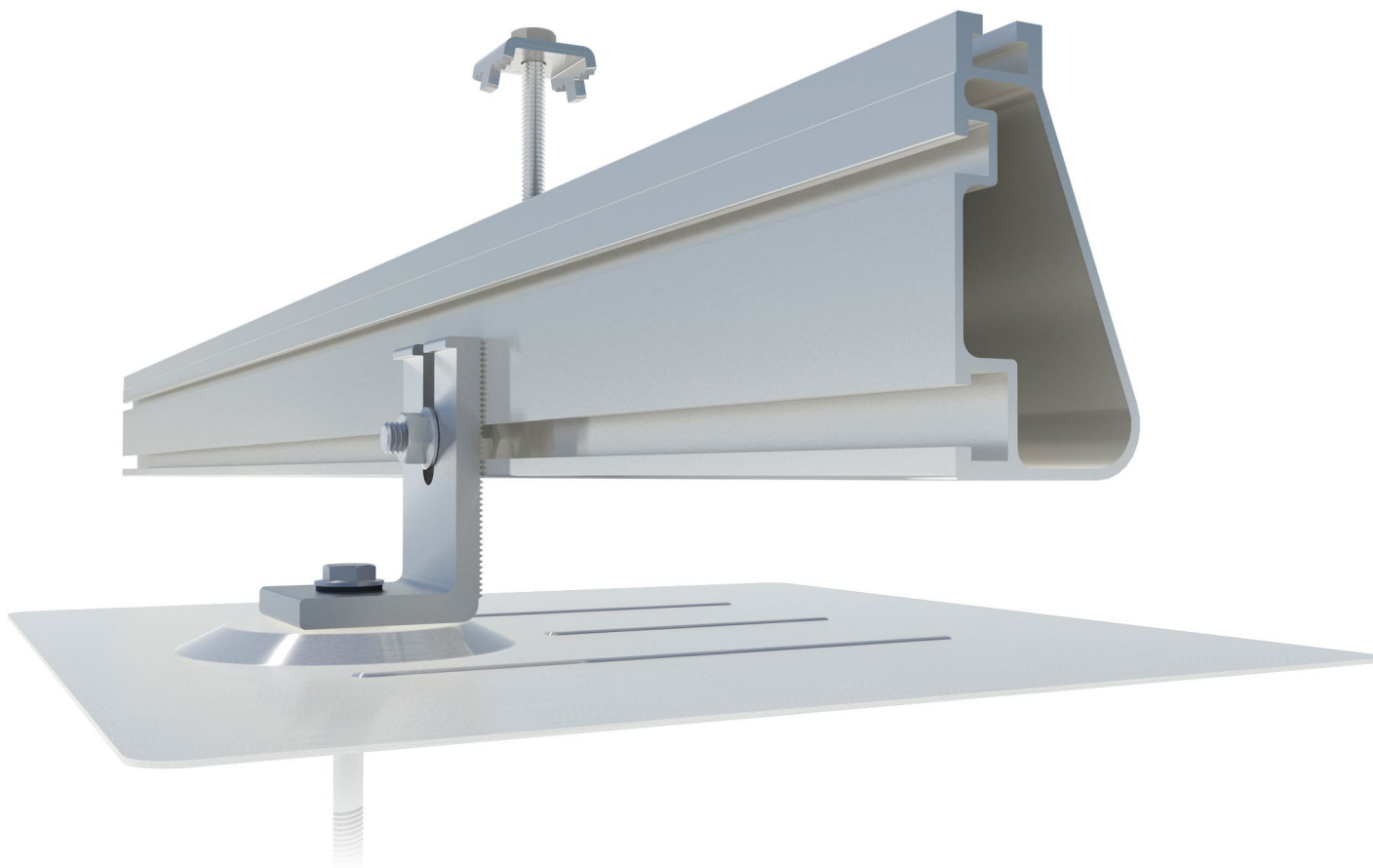
INPUT DATA (DC)	IQ7-60-2-US / IQ7-60-B-US		IQ7PLUS-72-2-US / IQ7PLUS-72-B-US	
Commonly used module pairings ¹	235 W - 350 W +		235 W - 440 W +	
Module compatibility	60-cell PV modules only		60-cell and 72-cell PV modules	
Maximum input DC voltage	48 V		60 V	
Peak power tracking voltage	27 V - 37 V		27 V - 45 V	
Operating range	16 V - 48 V		16 V - 60 V	
Min/Max start voltage	22 V / 48 V		22 V / 60 V	
Max DC short circuit current (module Isc)	15 A		15 A	
Overvoltage class DC port	II		II	
DC port backfeed current	0 A		0 A	
PV array configuration	1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit			
OUTPUT DATA (AC)	IQ 7 Microinverter		IQ 7+ Microinverter	
Peak output power	250 VA		295 VA	
Maximum continuous output power	240 VA		290 VA	
Nominal (L-L) voltage/range ²	240 V / 211-264 V	208 V / 183-229 V	240 V / 211-264 V	208 V / 183-229 V
Maximum continuous output current	1.0 A (240 V)	1.15 A (208 V)	1.21 A (240 V)	1.39 A (208 V)
Nominal frequency	60 Hz		60 Hz	
Extended frequency range	47 - 68 Hz		47 - 68 Hz	
AC short circuit fault current over 3 cycles	5.8 Arms		5.8 Arms	
Maximum units per 20 A (L-L) branch circuit ³	16 (240 VAC)	13 (208 VAC)	13 (240 VAC)	11 (208 VAC)
Overvoltage class AC port	III		III	
AC port backfeed current	0 A		0 A	
Power factor setting	1.0		1.0	
Power factor (adjustable)	0.7 leading ... 0.7 lagging		0.7 leading ... 0.7 lagging	
EFFICIENCY	@240 V	@208 V	@240 V	@208 V
Peak CEC efficiency	97.6 %	97.6 %	97.5 %	97.3 %
CEC weighted efficiency	97.0 %	97.0 %	97.0 %	97.0 %
MECHANICAL DATA				
Ambient temperature range	-40°C to +65°C			
Relative humidity range	4% to 100% (condensing)			
Connector type (IQ7-60-2-US & IQ7PLUS-72-2-US)	MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)			
Connector type (IQ7-60-B-US & IQ7PLUS-72-B-US)	Friends PV2 (MC4 intermateable). Adaptors for modules with MC4 or UTX connectors: - PV2 to MC4: order ECA-S20-S22 - PV2 to UTX: order ECA-S20-S25			
Dimensions (WxHxD)	212 mm x 175 mm x 30.2 mm (without bracket)			
Weight	1.08 kg (2.38 lbs)			
Cooling	Natural convection - No fans			
Approved for wet locations	Yes			
Pollution degree	PD3			
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure			
Environmental category / UV exposure rating	NEMA Type 6 / outdoor			
FEATURES				
Communication	Power Line Communication (PLC)			
Monitoring	Enlighten Manager and MyEnlighten monitoring options. Both options require installation of an Enphase IQ Envoy.			
Disconnecting means	The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690.			
Compliance	CA Rule 21 (UL 1741-SA) UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC-2014 and NEC-2017 section 690.12 and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer's instructions.			

1. No enforced DC/AC ratio. See the compatibility calculator at <https://enphase.com/en-us/support/module-compatibility>.

2. Nominal voltage range can be extended beyond nominal if required by the utility.

3. Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

To learn more about Enphase offerings, visit enphase.com



Built for solar's toughest roofs.

IronRidge builds the strongest roof mounting system in solar. Every component has been tested to the limit and proven in extreme environments.

Our rigorous approach has led to unique structural features, such as curved rails and reinforced flashings, and is also why our products are fully certified, code compliant and backed by a 20-year warranty.



Strength Tested

All components evaluated for superior structural performance.



PE Certified

Pre-stamped engineering letters available in most states.



Class A Fire Rating

Certified to maintain the fire resistance rating of the existing roof.



Design Software

Online tool generates a complete bill of materials in minutes.



Integrated Grounding

UL 2703 system eliminates separate module grounding components.



20 Year Warranty

Twice the protection offered by competitors.

XR Rails

XR10 Rail



A low-profile mounting rail for regions with light snow.

- 6' spanning capability
- Moderate load capability
- Clear & black anod. finish

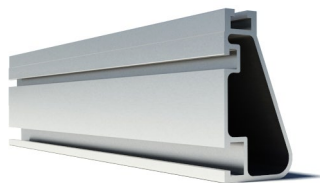
XR100 Rail



The ultimate residential solar mounting rail.

- 8' spanning capability
- Heavy load capability
- Clear & black anod. finish

XR1000 Rail



A heavyweight mounting rail for commercial projects.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish

Internal Splices

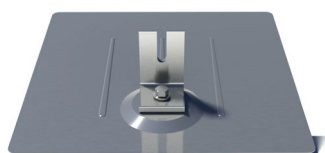


All rails use internal splices for seamless connections.

- Self-tapping screws
- Varying versions for rails
- Grounding Straps offered

Attachments

FlashFoot



Anchor, flash, and mount with all-in-one attachments.

- Ships with all hardware
- IBC & IRC compliant
- Certified with XR Rails

Slotted L-Feet



Drop-in design for rapid rail attachment.

- High-friction serrated face
- Heavy-duty profile shape
- Clear & black anod. finish

Standoffs



Raise flush or tilted systems to various heights.

- Works with vent flashing
- Ships pre-assembled
- 4" and 7" Lengths

Tilt Legs



Tilt assembly to desired angle, up to 45 degrees.

- Attaches directly to rail
- Ships with all hardware
- Fixed and adjustable

Clamps & Grounding

End Clamps



Slide in clamps and secure modules at ends of rails.

- Mill finish & black anod.
- Sizes from 1.22" to 2.3"
- Optional Under Clamps

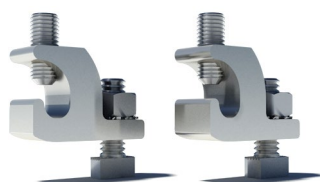
Grounding Mid Clamps



Attach and ground modules in the middle of the rail.

- Parallel bonding T-bolt
- Reusable up to 10 times
- Mill & black stainless

T-Bolt Grounding Lugs



Ground system using the rail's top slot.

- Easy top-slot mounting
- Eliminates pre-drilling
- Swivels in any direction

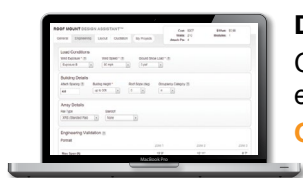
Accessories



Provide a finished and organized look for rails.

- Snap-in Wire Clips
- Perfected End Caps
- UV-protected polymer

Free Resources



Design Assistant

Go from rough layout to fully engineered system. For free.

Go to IronRidge.com/rm



NABCEP Certified Training

Earn free continuing education credits, while learning more about our systems.

Go to IronRidge.com/training



3321 75th Avenue
Suite F
202-505-5401

Customer Info
Alberto Ramos
7118 Carrol AVE
Takoma Park, MD 20912

Photos



design



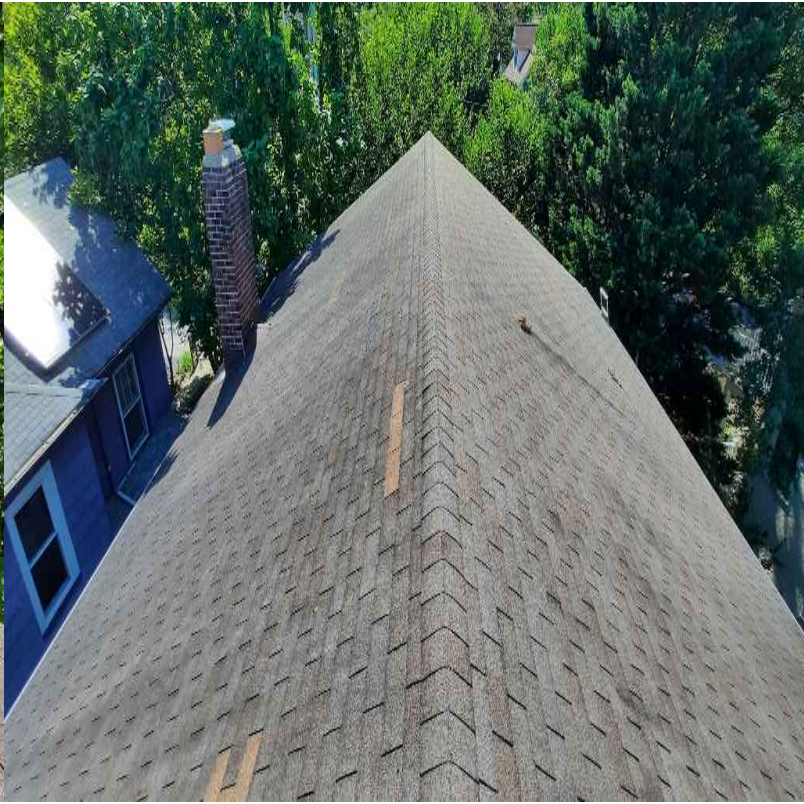
flat roof

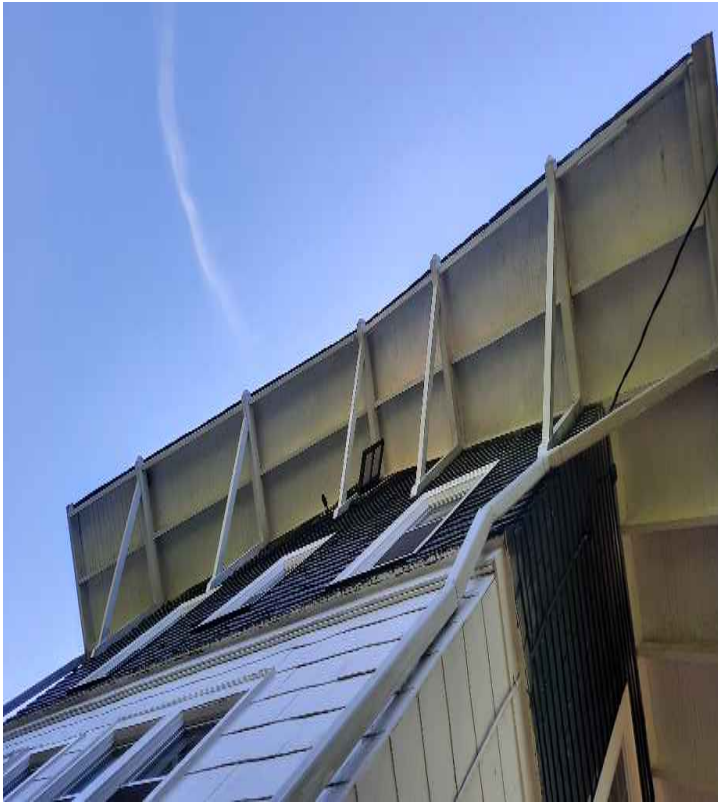


flat roof



flat roof





GENERAL NOTES

- 1.1.1 **PROJECT NOTES:**
- 1.1.2 THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (NEC) ARTICLE 690, ALL MANUFACTURERS'S LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION'S (AHJ) APPLICABLE CODES.
- 1.1.3 THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION
- 1.1.4 GROUND FAULT DETECTION AND INTERRUPTION (GFDI) DEVICE IS INTEGRATED WITH THE MICROINVERTER IN ACCORDANCE WITH NEC 690.41(B)
- 1.1.5 ALL PV SYSTEM COMPONENTS; MODULES, UTILITY-INTERACTIVE INVERTERS, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEMS AS REQUIRED BY NEC 690.4:
PV MODULES: UL1703, IEC61730, AND IEC61215, AND NFPA 70 CLASS C FIRE
INVERTERS: UL 1741 CERTIFIED, IEEE 1547, 929, 519
COMBINER BOX(ES): UL 1703 OR UL 1741 ACCESSORY
- 1.1.6 MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC. IF UNAVAILABLE, MAX DC VOLTAGE CALCULATED ACCORDING TO NEC 690.7.
- 1.1.7 ALL INVERTERS, PHOTOVOLTAIC MODULES, PHOTOVOLTAIC PANELS, AND SOURCE CIRCUIT COMBINERS INTENDED FOR USE IN A PHOTOVOLTAIC POWER SYSTEM WILL BE IDENTIFIED AND LISTED FOR THE APPLICATION PER 690.4 (D). SHALL BE INSTALLED ACCORDING TO ANY INSTRUCTIONS FROM LISTING OR LABELING [NEC 110.3].
- 1.1.8 ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC AND AHJ.
- 1.2.1 **SCOPE OF WORK:**
- 1.2.2 PRIME CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC SYSTEM RETROFIT. PRIME CONTRACTOR WILL BE RESPONSIBLE FOR COLLECTING EXISTING ONSITE REQUIREMENTS TO DESIGN, SPECIFY, AND INSTALL THE EXTERIOR ROOF-MOUNTED PORTION OF THE PHOTOVOLTAIC SYSTEMS DETAILED IN THIS DOCUMENT.
P.E. APPROVAL GIVEN FOR STRUCTURAL PORTION OF WORK ONLY.
- 1.3.1 **WORK INCLUDES:**
- 1.3.2 PV ROOF ATTACHMENTS - IRONRIDGE FLASHFOOT2
- 1.3.3 PV RACKING SYSTEM INSTALLATION - IRONRIDGE XR100
- 1.3.4 PV MODULE AND INVERTER INSTALLATION - TRINA SOLAR TSM-330DD06H.05(II) / ENPHASE IQ7-60-2-US
- 1.3.5 PV EQUIPMENT GROUNDING
- 1.3.6 PV SYSTEM WIRING TO A ROOF-MOUNTED JUNCTION BOX
- 1.3.7 PV LOAD CENTERS (IF INCLUDED)
- 1.3.8 PV METERING/MONITORING (IF INCLUDED)
- 1.3.9 PV DISCONNECTS
- 1.3.10 PV GROUNDING ELECTRODE & BONDING TO (E) GEC
- 1.3.11 PV FINAL COMMISSIONING
- 1.3.12 (E) ELECTRICAL EQUIPMENT RETROFIT FOR PV
- 1.3.13 SIGNAGE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE

SCOPE OF WORK

SYSTEM SIZE: STC: 58 x 330W = 19.140kW
PTC: 58 x 306.4W = 17.771kW
(58) TRINA SOLAR TSM-330DD06H.05(II)
(58) ENPHASE IQ7-60-2-US

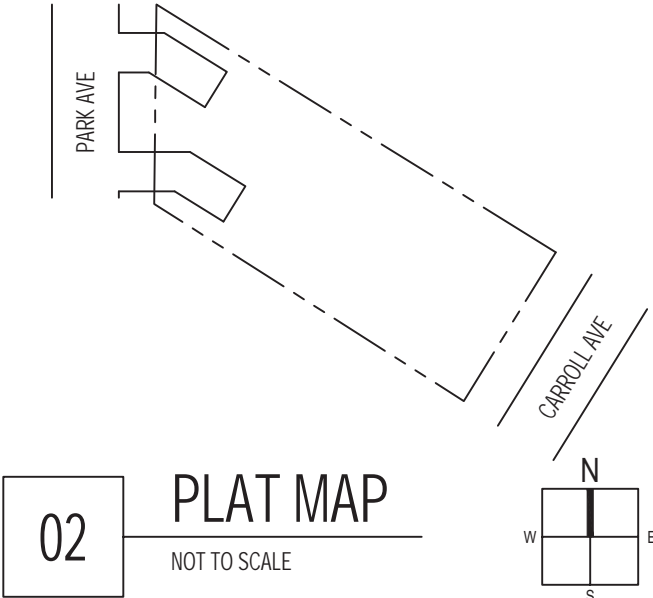
ATTACHMENT TYPE: IRONRIDGE FLASHFOOT2

MSP UPGRADE: NO

NEW PV SYSTEM: 19.140 kWp
RAMOS RESIDENCE
7118 CARROL AVE,
TAKOMA PARK, MD 20912
ASSESSOR'S #: 161301058698



01 AERIAL PHOTO
NOT TO SCALE



SHEET LIST TABLE

SHEET NUMBER	SHEET TITLE
T-001	COVER PAGE
G-001	NOTES
A-101	SITE PLAN
A-102	ELECTRICAL PLAN
A-103	SOLAR ATTACHMENT PLAN
E-601	LINE DIAGRAM
E-602	DESIGN TABLES
E-603	PLACARDS
S-501	ASSEMBLY DETAILS

PROJECT INFORMATION

OWNER

NAME: ALBERTO RAMOS

PROJECT MANAGER

NAME: BRENDAN WELSH
PHONE: 919-724-8129

CONTRACTOR

NAME: ADVANCED SOLAR
PHONE: 202-505-5401

AUTHORITIES HAVING JURISDICTION

BUILDING: MONTGOMERY COUNTY
ZONING: MONTGOMERY COUNTY
UTILITY: PEPCO

DESIGN SPECIFICATIONS

OCCUPANCY: II
CONSTRUCTION: SINGLE-FAMILY
ZONING: RESIDENTIAL
GROUND SNOW LOAD: 35 PSF
WIND EXPOSURE: B
WIND SPEED: 111 MPH

APPLICABLE CODES & STANDARDS

BUILDING: IBC 2018
ELECTRICAL: NEC 2017
FIRE: IFC 2015

FOR OFFICIAL USE ONLY

07.26.2021 PE STAMP



CONTRACTOR

ADVANCED SOLAR
3321 75TH AVE
HYATTSVILLE, MD 20785
PHONE: 202-505-5401
CONTRACTOR #: 108569



ALBERTO RAMOS RESIDENCE

RESIDENTIAL GRID INTERACTIVE SOLAR INSTALLATION
7118 CARROL AVE, TAKOMA PARK, MD 20912
APN: 161301058698
PHONE #:

COVER PAGE

SYSTEM AC SIZE @ STC: 13.920 kW
(58) TRINA SOLAR TSM-330DD06H.05(II)
(58) ENPHASE IQ7-60-2-US

SYSTEM DC SIZE @ STC: 19.140 kW

DRAWN BY:
V.P.

REV:

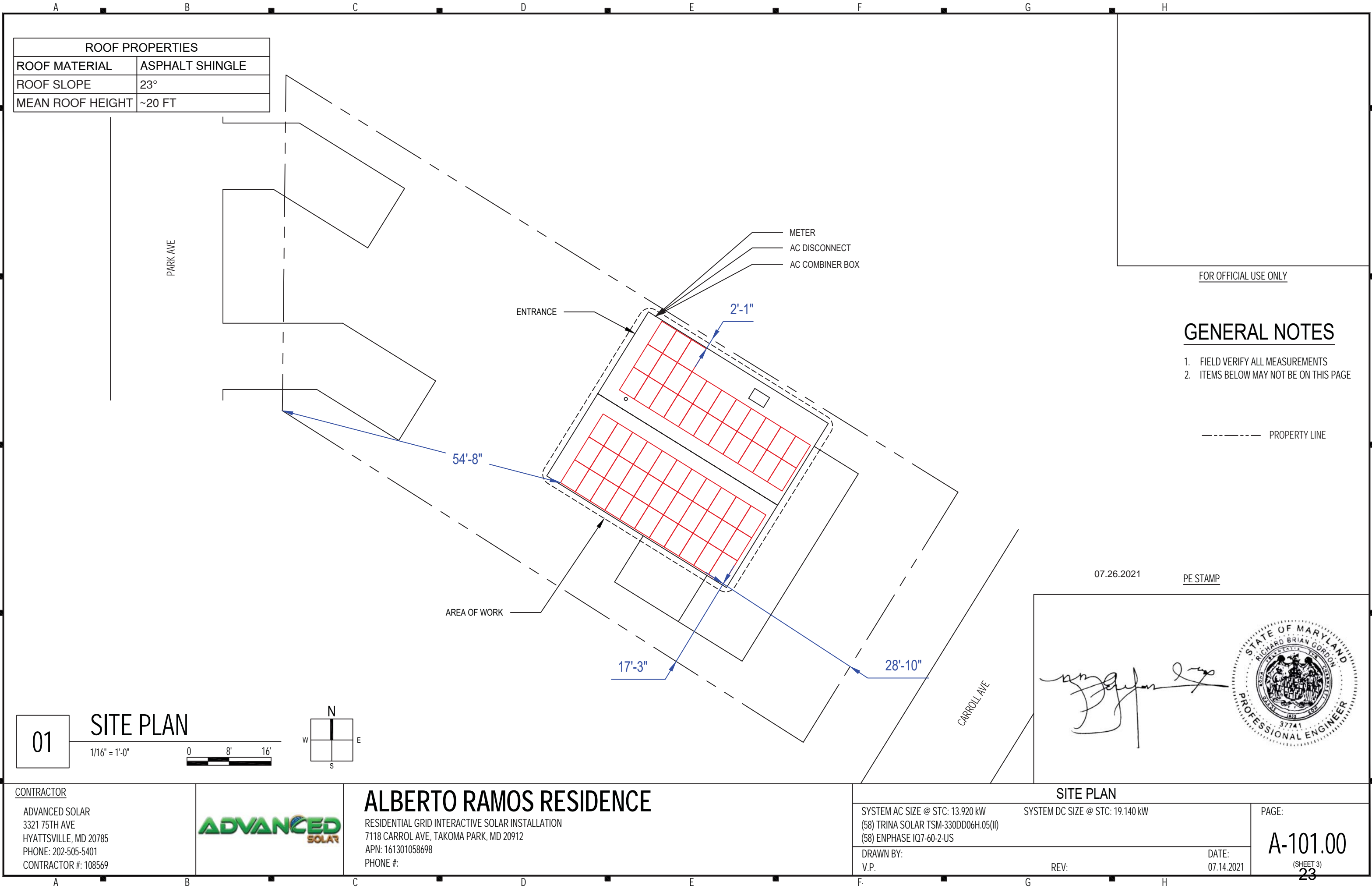
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ROOF PROPERTIES	
ROOF MATERIAL	ASPHALT SHINGLE
ROOF SLOPE	23°
MEAN ROOF HEIGHT	~20 FT

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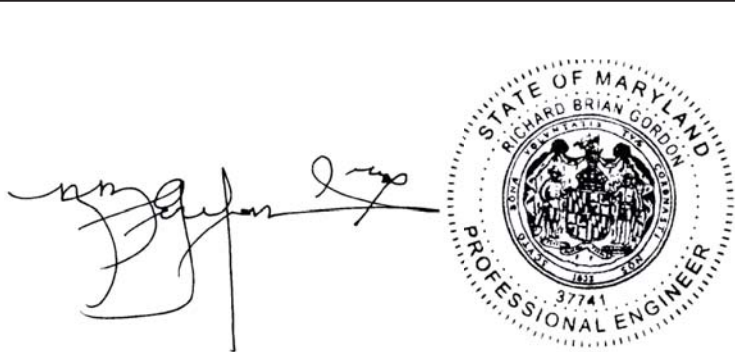
GENERAL NOTES

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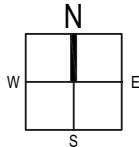
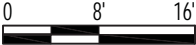
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01

SITE PLAN

1/16" = 1'-0"



CONTRACTOR

ADVANCED SOLAR
3321 75TH AVE
HYATTSVILLE, MD 20785
PHONE: 202-505-5401
CONTRACTOR #: 108569



ALBERTO RAMOS RESIDENCE

RESIDENTIAL GRID INTERACTIVE SOLAR INSTALLATION
7118 CARROL AVE, TAKOMA PARK, MD 20912
APN: 161301058698
PHONE #:

SITE PLAN

SYSTEM AC SIZE @ STC: 13.920 kW
(58) TRINA SOLAR TSM-330DD06H.05(II)
(58) ENPHASE IQ7-60-2-US

SYSTEM DC SIZE @ STC: 19.140 kW

DRAWN BY:
V.P.

REV:

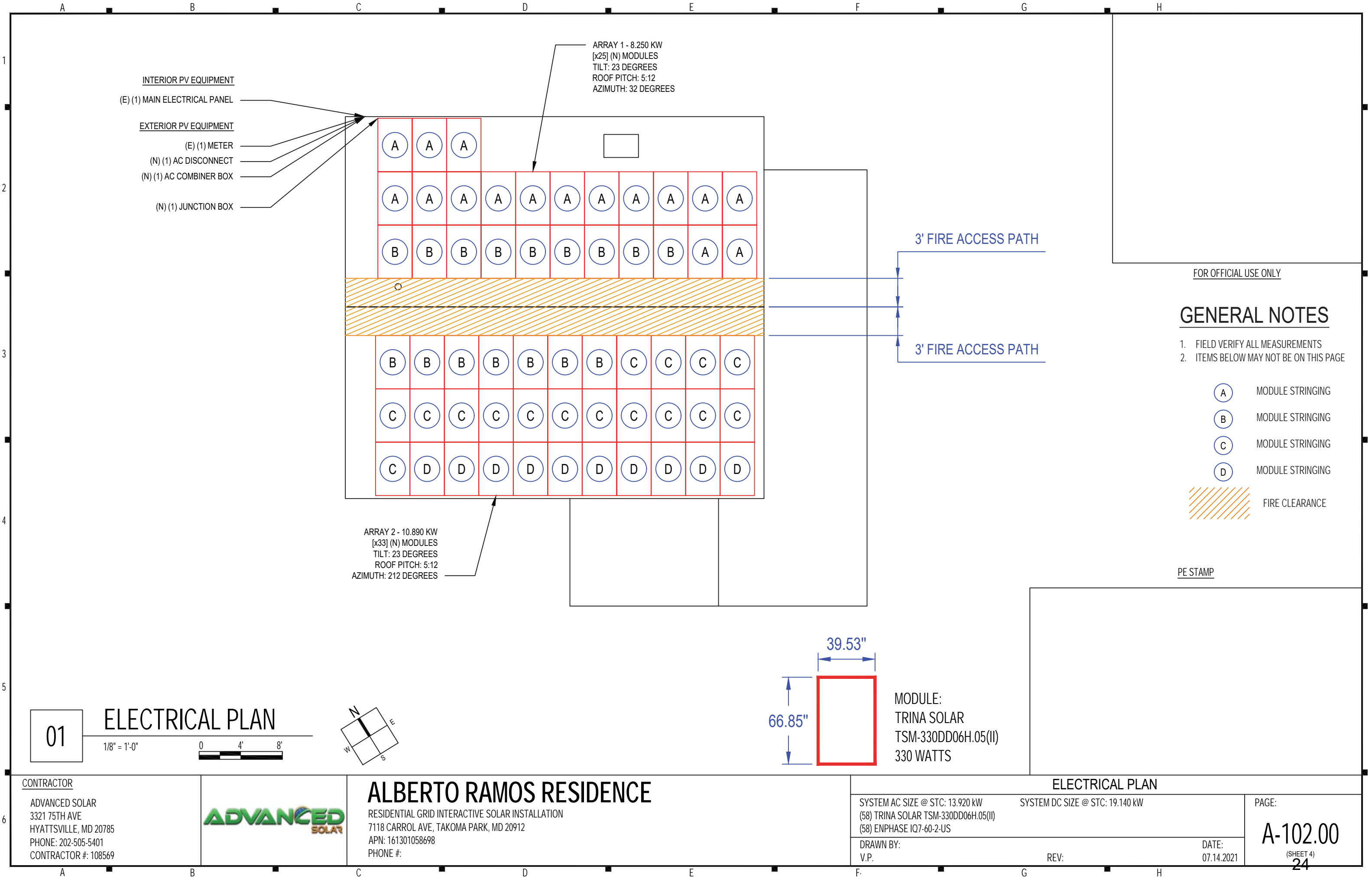
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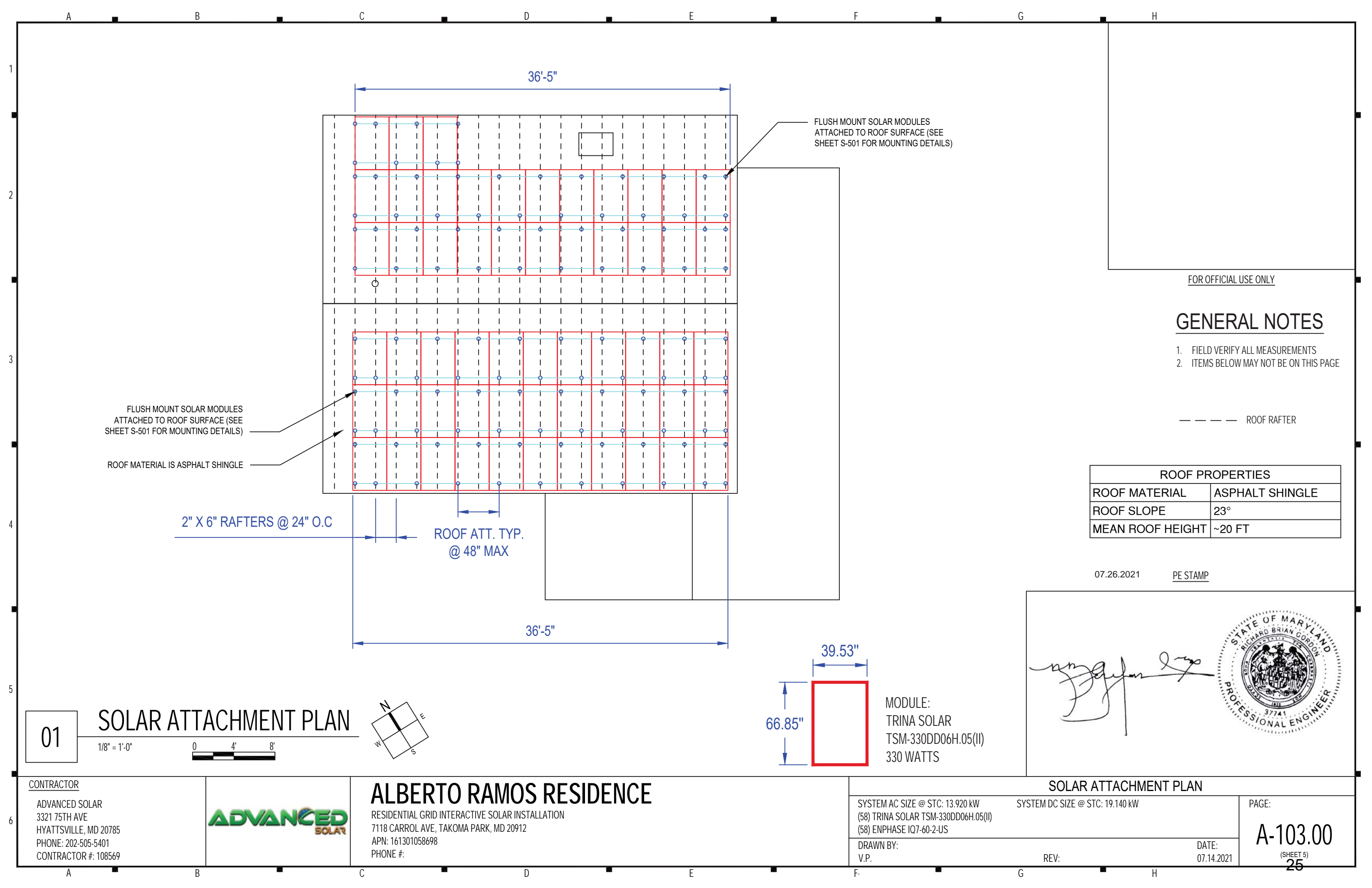
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— — — — ROOF RAFTER

ROOF PROPERTIES

ROOF MATERIAL	ASPHALT SHINGLE
ROOF SLOPE	23°
MEAN ROOF HEIGHT	~20 FT

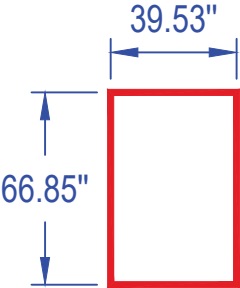
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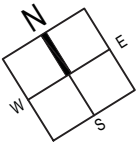
MODULE:
TRINA SOLAR
TSM-330DD06H.05(II)
330 WATTS



01

SOLAR ATTACHMENT PLAN

1/8" = 1'-0"



CONTRACTOR

ADVANCED SOLAR
3321 75TH AVE
HYATTSVILLE, MD 20785
PHONE: 202-505-5401
CONTRACTOR #: 108569



ALBERTO RAMOS RESIDENCE

RESIDENTIAL GRID INTERACTIVE SOLAR INSTALLATION
7118 CARROL AVE, TAKOMA PARK, MD 20912
APN: 161301058698
PHONE #:

SOLAR ATTACHMENT PLAN

SYSTEM AC SIZE @ STC: 13.920 kW
(58) TRINA SOLAR TSM-330DD06H.05(II)
(58) ENPHASE IQ7-60-2-US

SYSTEM DC SIZE @ STC: 19.140 kW

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V.P.

REV:

DATE:
07.14.2021

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25

CONDUCTOR AND CONDUIT SCHEDULE W/ELECTRICAL CALCULATIONS														
ID	TYPICAL	CONDUCTOR	CONDUIT	CURRENT-CARRYING CONDUCTORS IN CONDUIT	OCPD	EGC	TEMP. CORR. FACTOR	CONDUIT FILL FACTOR	CONT. CURRENT	MAX. CURRENT (125%)	BASE AMP.	DERATED AMP.	TERM. TEMP. RATING	AMP. @ TERMINAL
1	1	10 AWG THWN-2, COPPER	0.75" DIA EMT	8	20A	10 AWG THWN-2, COPPER	0.91 (35.2 °C)	0.7	16A	20A	40A	25.48A	75°C	35A
2	1	4 AWG THWN-2, COPPER	0.75" DIA EMT	2	80A	8 AWG THWN-2, COPPER	0.91 (35.2 °C)	1	58A	72.5A	95A	86.45A	75°C	85A
3	1	4 AWG THWN-2, COPPER	0.75" DIA EMT	2	N/A	8 AWG THWN-2, COPPER	0.91 (35.2 °C)	1	58A	72.5A	95A	86.45A	75°C	85A

- A

MODULE STRINGING
- B

MODULE STRINGING
- C

MODULE STRINGING
- D

MODULE STRINGING

D

10 IN BRANCH

C

16 IN BRANCH

B

16 IN BRANCH

A

16 IN BRANCH

(58) TRINA SOLAR
TSM-330DD06H.05(II)

(58) ENPHASE
IQ7-60-2-US

50' MAX 3/4 EMT:
(8) #10 THWN
(1) #10 GROUND

10' MAX 1 EMT:
(2) #4 THWN
(1) #8 GROUND
(1) #8 NEUTRAL

10' MAX 1 EMT:
(2) #4 THWN
(1) #8 GROUND
(1) #8 NEUTRAL

(E) MAIN ELECTRICAL PANEL
240/120 V 1Ø, 3W
MAIN BUSS: 200A

MAX. CONTINUOUS CURRENT: 65A
MAX. OCPD: 90A
125A AC COMBINER BOX
120/240V, 1Ø, 3W

SYSTEM EQUIPPED WITH RAPID SHUTDOWN
DISCONNECT PER NEC 690.12
SYSTEM COMPLIANT WITH NEC 690.13

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PE STAMP

CONTRACTOR

ADVANCED SOLAR
3321 75TH AVE
HYATTSVILLE, MD 20785
PHONE: 202-505-5401
CONTRACTOR #: 108569



ALBERTO RAMOS RESIDENCE

RESIDENTIAL GRID INTERACTIVE SOLAR INSTALLATION
7118 CARROL AVE, TAKOMA PARK, MD 20912
APN: 161301058698
PHONE #:

LINE DIAGRAM

SYSTEM AC SIZE @ STC: 13.920 kW
(58) TRINA SOLAR TSM-330DD06H.05(II)
(58) ENPHASE IQ7-60-2-US

SYSTEM DC SIZE @ STC: 19.140 kW

DRAWN BY:
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DATE:
07.14.2021

PAGE:

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(SHEET 6)

26

1

2

3

4

5

6

A

B

C

D

E

F

G

H

SYSTEM SUMMARY				
	BRANCH #1	BRANCH #2	BRANCH #3	BRANCH #4
INVERTERS PER BRANCH	16	16	16	10
MAX AC CURRENT	16A	16A	16A	10A
MAX AC OUTPUT POWER	4,000W	4,000W	4,000W	2,500W
ARRAY STC POWER	19,140W			
ARRAY PTC POWER	17,771W			
MAX AC CURRENT	58A			
MAX AC POWER	14,500W			
DERATED (CEC) AC POWER	14,500W			

MODULES										
REF.	QTY.	MAKE AND MODEL	PMAX	PTC	ISC	IMP	VOC	VMP	TEMP. COEFF. OF VOC	FUSE RATING
PM1-58	58	TRINA SOLAR TSM-330DD06H.05(I)	330W	306.4W	10.14A	9.7A	41.8V	34V	-0.121V/°C (-0.29%/°C)	20A

INVERTERS										
REF.	QTY.	MAKE AND MODEL	AC VOLTAGE	GROUND	OCPD RATING	RATED POWER	MAX OUTPUT CURRENT	MAX INPUT CURRENT	MAX INPUT VOLTAGE	CEC WEIGHTED EFFICIENCY
I1-58	58	ENPHASE IQ7-60-2-US	240V	FLOATING	20A	240W	1A	15A	48V	97.0%

DISCONNECTS				
REF.	QTY.	MAKE AND MODEL	RATED CURRENT	MAX RATED VOLTAGE
SW1	1	SQUARE D D223NRB OR EQUIV.	100A	240VAC

ASHRAE EXTREME LOW		-15°C (5.0°F), SOURCE: WASHINGTONNATIONAL (38.87°; -77.03°)
ASHRAE 2% HIGH		35.2°C (95.4°F), SOURCE: WASHINGTONNATIONAL (38.87°; -77.03°)

OCPDS			
REF.	QTY.	RATED CURRENT	MAX VOLTAGE
CB1-4	4	20A	240VAC
CB5	1	10A	240VAC
F1-2	2	80A	240VAC


BILL OF MATERIALS							
CATEGORY	MAKE	MODEL NUMBER	REF	QTY	UNIT	QTY/UNIT	DESCRIPTION
MODULE	TRINA SOLAR	TSM-330DD06H.05(I)	PM1-58	58	PIECES	1	TRINA SOLAR TSM-330DD06H.05(I) 330W 120 HALF-CUT CELLS, MONOCRYSTALLINE SILICON
INVERTER	ENPHASE	IQ7-60-2-US	I1-58	58	PIECES	1	ENPHASE IQ7-60-2-US 240W INVERTER
DISCONNECT	SQUARE D	D223NRB	SW1	1	PIECE	1	SQUARE D D223NRB, FUSED, 2-POLE, 100A, 240VAC OR EQUIVALENT
MISC ELECTRICAL EQUIPMENT		GEN-CABLE-CLIP	HDWR61-351	290	PIECES	1	GENERIC CABLE CLIP
AC COMBINER PANEL		ENPHASE-IQ3-PANEL	EP1	1	PIECE	1	ENPHASE IQ COMBINER 3 (X-IQ-AM1-240-3)
MONITORING		ENPHASE-ENVOY	ENV1	1	PIECE	1	ENPHASE ENVOY
WIRING	ENPHASE	Q-12-10-240	EN1-58	58	PIECES	1	ENPHASE ENGAGE (TM) TRUNK CABLE
WIRING	ENPHASE	Q-TERM-10	EN59	1	BUNDLE	10	ENPHASE ENGAGE (TM) BRANCH TERMINATOR
WIRING	ENPHASE	Q-SEAL-10	EN60	1	BUNDLE	10	ENPHASE ENGAGE (TM) WATERTIGHT SEALING CAP
WIRING		GEN-10-AWG-THWN-2-CU-RD	WR1	180	FEET	1	10 AWG THWN-2, COPPER, RED (LINE 1)
WIRING		GEN-10-AWG-THWN-2-CU-BLK	WR1	180	FEET	1	10 AWG THWN-2, COPPER, BLACK (LINE 2)
WIRING		GEN-10-AWG-THWN-2-CU-GR	WR1	45	FEET	1	10 AWG THWN-2, COPPER, GREEN (GROUND)
WIRING		GEN-4-AWG-THWN-2-CU-RD	WR2-3	20	FEET	1	4 AWG THWN-2, COPPER, RED (LINE 1)
WIRING		GEN-4-AWG-THWN-2-CU-BLK	WR2-3	20	FEET	1	4 AWG THWN-2, COPPER, BLACK (LINE 2)
WIRING		GEN-8-AWG-THWN-2-CU-WH	WR2-3	20	FEET	1	8 AWG THWN-2, COPPER, WHITE (NEUTRAL)
WIRING		GEN-8-AWG-THWN-2-CU-GR	WR2-3	20	FEET	1	8 AWG THWN-2, COPPER, WHITE (GROUND)
WIREWAY	ENPHASE	ET-SPLK-05	EN7	1	BUNDLE	5	ENPHASE ENGAGE (TM) ENGAGE COUPLER
WIREWAY		GEN-EMT-0.75" DIA	WW1-3	65	FEET	1	EMT CONDUIT, 0.75" DIA
OCPD	EATON	BR220	CB1-4	4	PIECES	1	CIRCUIT BREAKER, 20A, 240VAC
OCPD	EATON	BR210	CB5	1	PIECE	1	CIRCUIT BREAKER, 10A, 240VAC
OCPD	GENERIC MANUFACTURER	GEN-FU-80A-240VAC	F1-2	2	PIECES	1	FUSE, 80A, 240VAC
TRANSITION BOX	GENERIC MANUFACTURER	GEN-AWB-TB-4-4X	JB1	1	PIECE	1	TRANSITION/PASS-THROUGH BOX, WITH 4 TERMINAL BLOCKS

FOR OFFICIAL USE ONLY

PE STAMP

CONTRACTOR

ADVANCED SOLAR
3321 75TH AVE
HYATTSVILLE, MD 20785
PHONE: 202-505-5401
CONTRACTOR #: 108569



ALBERTO RAMOS RESIDENCE
RESIDENTIAL GRID INTERACTIVE SOLAR INSTALLATION
7118 CARROL AVE, TAKOMA PARK, MD 20912
APN: 161301058698
PHONE #:

DESIGN TABLES

SYSTEM AC SIZE @ STC: 13.920 kW
(58) TRINA SOLAR TSM-330DD06H.05(I)
(58) ENPHASE IQ7-60-2-US

SYSTEM DC SIZE @ STC: 19.140 kW

DRAWN BY:
V.P.

DATE:
07.14.2021

REV:

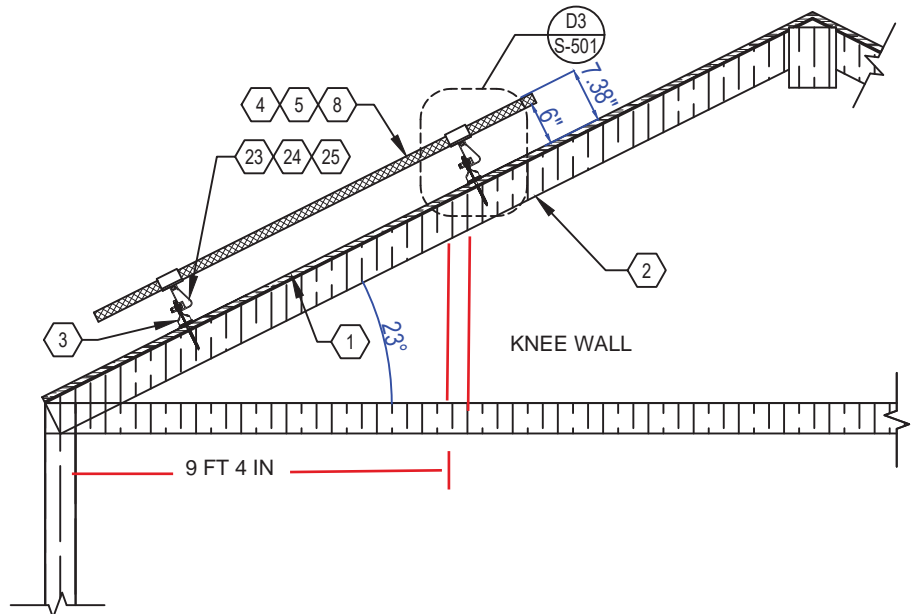
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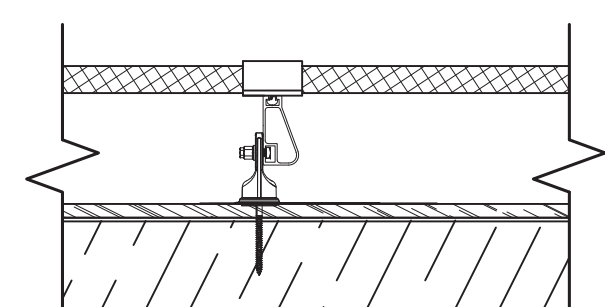
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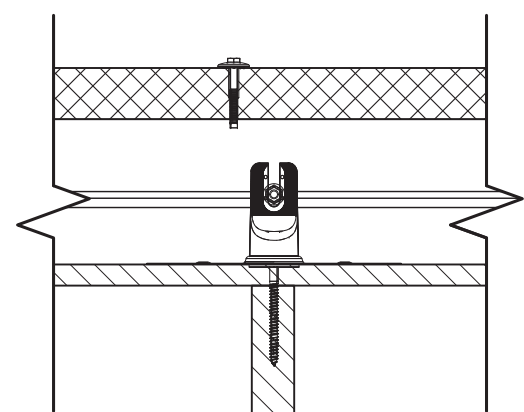
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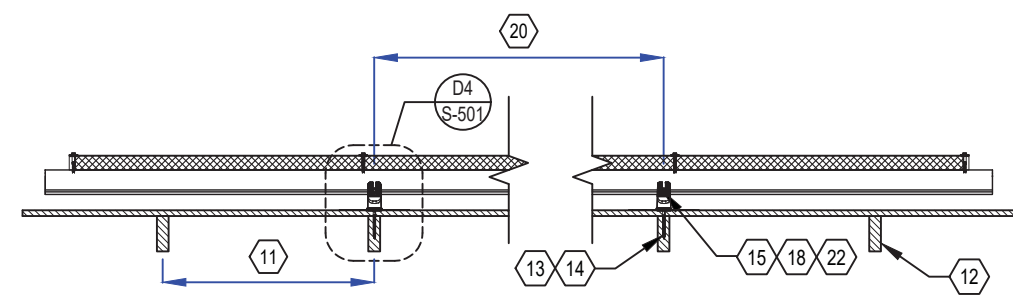
D1 RACKING DETAIL (TRANSVERSE)
NOT TO SCALE



D3 DETAIL (TRANSVERSE)
NOT TO SCALE



D4 DETAIL (LONGITUDINAL)
NOT TO SCALE



D2 RACKING DETAIL (LONGITUDINAL)
NOT TO SCALE

GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS

SHEET KEYNOTES

1. ROOF MATERIAL: ASPHALT SHINGLE
2. ROOF STRUCTURE: RAFTER
3. ATTACHMENT TYPE: IRONRIDGE FLASHFOOT2
4. MODULE MANUFACTURER: TRINA SOLAR
5. MODULE MODEL: TSM-330DD06H.05(II)
6. MODULE LENGTH: 66.85"
7. MODULE WIDTH: 39.53"
8. MODULE WEIGHT: 41.2 LBS.
9. SEE SHEET A-103 FOR DIMENSION(S)
10. MIN. FIRE OFFSET: 3' FROM RIDGE
11. RAFTER SPACING: 24 IN. O.C.
12. RAFTER SIZE: 2X6" NOMINAL
13. LAG BOLT DIAMETER: 5/16 IN.
14. LAG BOLT EMBEDMENT: 2 1/2 IN.
15. TOTAL # OF ATTACHMENTS: 113.
16. TOTAL AREA: 1064.37 SQ.FT.
17. TOTAL WEIGHT: 2787.48 LBS.
18. WEIGHT PER ATTACHMENT: 24.67 LBS.
19. DISTRIBUTED LOAD: 2.62 PSF
20. MAX. HORIZONTAL STANDOFF: 48" IN.
21. MAX. VERTICAL STANDOFF: IN ACCORDANCE WITH MODULE MANUFACTURER'S INSTRUCTIONS.
22. STANDOFF STAGGERING: YES
23. RAIL MANUFACTURER (OR EQUIV.): IRONRIDGE
24. RAIL MODEL (OR EQUIVALENT): XR100
25. RAIL WEIGHT: 0.68 PLF
26. MAX. RAFTER SPAN: 9 FT. 4 IN.

FOR OFFICIAL USE ONLY

07.26.2021

PE STAMP



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ASSEMBLY DETAILS		
SYSTEM AC SIZE @ STC: 13.920 kW (58) TRINA SOLAR TSM-330DD06H.05(II) (58) ENPHASE IQ7-60-2-US	SYSTEM DC SIZE @ STC: 19.140 kW	PAGE:
DRAWN BY: V.P.	REV:	DATE: 07.14.2021
		S-501.00 (SHEET 9) 29

We will be installing 58 Solar Panels on the roof. Please see attached photos and plan set. Thank you!