MONTGOMERY COUNTY HISTORIC PRESERVATION COMMISSION

Address:	20 Montgomery Avenue, Takoma Park	Meeting Date:	9/9/2020
Resource:	Contributing Resource Takoma Park Historic District	Report Date:	9/2/2020
Applicant:	Joshua Stebbins	Public Notice:	8/26/2020
Review:	HAWP	Tax Credit:	n/a
Case No.:	37/03-20MMM	Staff:	Dan Bruechert
Proposal:	Solar Panel Installation		

RECOMMENDATION

Staff recommends the HPC **<u>approve</u>** the HAWP application.

PROPERTY DESCRIPTION

SIGNIFICANCE:	Contributing Resource to the Takoma Park Historic District
STYLE:	Vernacular
DATE:	1888



Figure 1: 20 Montgomery Ave. has a side gable roof with a non-historic rear addition.

PROPOSAL

The applicant proposes to install 29 (twenty-nine) solar panels on the roof of the house.

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).* The work proposed is additionally covered by the adopted policy on solar panels, *Historic Preservation Commission Policy No. 20-01: ADDRESSING EMERGENCY CLIMATE MOBILIZATION THROUGH THE INSTALLATION OF ROOF-MOUNTED SOLAR PANELS.* The pertinent information in these documents is outlined below.

Montgomery County Code, Chapter 24A Historic Resources Preservation

(b) 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 insure 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

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.

Contributing Resources should receive a more lenient review than those structures that have been classified as Outstanding. This design review should emphasize the importance of the resource to the overall streetscape and its compatibility with existing patterns rather than focusing on a close scrutiny of architectural detailing. In general, however, changes to Contributing Resources should respect the predominant architectural style of the resource. As stated above, 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.

Some of the factors to be considered in reviewing HAWPs on Contributing Resources include:

• All exterior alterations, including those to architectural features and details, should be generally consistent with the predominant architectural style and period of the resource

and should preserve the predominant architectural features of the resource; exact replication of existing details and features is, however, not required

- Minor alterations to areas that do not directly front on a public right-of-way such as vents, metal stovepipes, air conditioners, fences, skylights, etc. should be allowed as a matter of course; alterations to areas that do not directly front on a public way-of-way which involve the replacement of or damaged to original ornamental or architectural features are discouraged, but may be considered and approved on a case-by-case basis
- Some non-original building materials may be acceptable on a case-by-case basis; artificial siding on areas visible to the public right-of-way is discouraged where such materials would replace or damage original building materials that are in good condition
- Alterations to features that are not visible from the public right-of-way should be allowed as a matter of course
- All changes and additions should respect existing environmental settings, landscaping, and patterns of open space.

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.

Chapter 24A

(b) 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 insure 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
- (3) The proposal would enhance or aid in the protection, preservation and public or private utilization of the historic site or historic resource located within an historic district in a manner compatible with the historical, archeological, architectural or cultural value of the historic site or historic district in which an historic resource is located.
- (6) In balancing the interests 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.

(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.)

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, south-facing, house with a T-shaped plan. The existing roof is sheathed in modern asphalt shingles. The applicant proposes to install 29 (twenty-nine) roof-mounted solar panels in five arrays. Two of the arrays, encompassing 17 panels, are on a rear non-historic

addition; while a two-panel array is on the rear projecting gable; and two arrays with ten panels are on the front gable slope and front gable-L.

Of the proposed 29 (twenty nine) panels, 19 (nineteen) of them are on the rear of the house and are not visible from the public right-of-way. The *Design Guidelines* state that these features should be approved as a matter of course. The remaining 10 (ten) panels will be installed on front-facing roof surfaces that are visible from the right-of-way. The adopted Solar Policy encourages the installation of solar panels on accessory structures, non-historic construction, or the rear of historic buildings. Staff finds the applicant proposes installing the maximum number of solar panels that can be accommodated on the non-historic rear addition and rear slope of the roof.



Figure 2: Front elevation of 20 Montgomery Ave.

To maximize the solar collection of the proposed array the remaining panels need to be installed to face south or west. Due to the southern orientation of the house, panels installed in these locations will necessarily be visible from the right-of-way. The adopted Solar Policy states that where solar panels cannot be located in one of the preferred locations and the roof is not architecturally significant, the proposal should be approved under 24A-8(b)(6). Staff supports the approval of the proposed 10 (ten) front-facing solar panels.

STAFF RECOMMENDATIONS

Staff recommends that the Commission approve the HAWP application under the Criteria for Issuance in

Chapter 24A-8(b)(1), (6), and (d), having found that the proposal, is consistent with and compatible in character with the purposes of Chapter 24A; The Takoma Park Historic District Design Guidelines; the HPC Policy 20-01 on Roof-Mounted Solar Panels;

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 the **3 permit sets 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 <u>contact the staff person</u> assigned to this application at 301-563-3400 or <u>dan.bruechert@montgomeryplanning.org</u> to schedule a follow-up site visit.

	For Staff only: HAWP# 919870
HISTORIC AREA WO HISTORIC PRESERVATION 301.563.340	
APPLICANT:	
Name: JOSHUA STEBBINS	E-mail: JOSH.STEBBINS@SIERRACLUB.ORG
Address: 20 MONGOMERY AVE	City: TAKOMA PARK Zip: 20912
Daytime Phone: <u>202-294-5421</u>	Tax Account No.: 01062576
AGENT/CONTACT (if applicable):	
Name: AARON WILLIAMS	E-mail: <u>AWILLIAMS@FUSIONSS.NET</u>
Address: 3600 COMMERCE DR, #601	City: <u>BALTIMORE</u> Zip: <u>21227</u>
Daytime Phone: <u>443-425-5988</u>	Contractor Registration No.: MHIC30991
LOCATION OF BUILDING/PREMISE: MIHP # of Histori	c Property
Is the Property Located within an Historic District? \underline{X}	/es/District Name <u>TAKOMA PARK</u>
Is there an Historic Preservation/Land Trust/Environme map of the easement, and documentation from the Eas	ntal Easement on the Property? If YES, include a sement Holder supporting this application.
Are other Planning and/or Hearing Examiner Approvals (Conditional Use, Variance, Record Plat, etc.?) If YES, in supplemental information.	/Reviews Required as part of this Application? clude information on these reviews as
Building Number: Street:	
Town/City: Nearest Cros	s Street:
Lot: Block: Subdivision: _	Parcel:
TYPE OF WORK PROPOSED: See the checklist on Pa for proposed work are submitted with this applica	age 4 to verify that all supporting items ition. Incomplete Applications will not
be accepted for review. Check all that apply:	Shed/Garage/Accessory Structure
Addition Fence	Tree removal/planting
Demolition Hardscape/Lands	cape Window/Door
Grading/Excavation Roof	Other:
I hereby certify that I have the authority to make the for and accurate and that the construction will comply wit	regoing application, that the application is correct h plans reviewed and approved by all necessary
agencies and hereby acknowledge and accept this to b	be a condition for the issuance of this permit.
Aaron Williams	7/29/2020

HAWP APPLICATION: MAILING ADDRESSES FOR NOTIFING [Owner, Owner's Agent, Adjacent and Confronting Property Owners] Owner's mailing address **Owner's Agent's mailing address** 20 MONGOMERY AVE, TAKOMA PARK, MD 20912 3600 COMMERCE DR, # 601, BALTIMORE, MD 21227 Adjacent and confronting Property Owners mailing addresses NEIGHBOR TO THE WEST NEIGHBOR TO THE EAST **18 MONTGOMERY AVE** 22 MONTGOMERY AVE ACROSS THE STREET ACROSS THE STREET **25 MONTGOMERY AVE 19 MONTGOMERY AVE** ACROSS THE STREET ACROSS THE STREET 15 MONTGOMERY AVE **17 MONTGOMERY AVE**

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

STANDARD 2 STORY SINGLE FAMILY HOME, CRAFTSMAN STYLE W/ FRONT AND BACK YARD

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

ADDING SOLAR PANELS TO MULTIPLE ROOF SURFACES. TREES IN FRONT YARD SHOULD BLOCK VIEW FROM THE STREET

Work Item 1: SOLAR PANELS	
Description of Current Condition:	Proposed Work:
ROOF IS FAIRLY NEW AND IN GREAT CONDITION	ADDING SOLAR PANELS TO MULTIPLE ROOF SURFACES. TREES IN FRONT YARD SHOULD BLOCK VIEW FROM THE STREET
Work Item 2:	
Description of Current Condition:	Proposed Work:

Nork Item 3:					
Description of Current Condition:	Proposed Work:				



DEPARTMENT OF PERMITTING SERVICES

Marc Elrich *County Executive* Mitra Pedoeem Director

BUILDING PERMIT

Issue Date: 07/21/2020

Permit No: 919870 AP Type: BUILDING Expires: 07/21/2021 X Ref.: Rev. No: ID: 1308656

THIS IS TO CERTIFY THAT:	Joe Rice 3701 Commerce Drive STE 108 HALTHORPE, MD 21227		
HAS PERMISSION TO:	ALTER	SINGLE FAMILY DWE	LLING
PERMIT CONDITIONS:	Customer Wants To Use ePlans,	INSTALL 29 ROOF MO	UNTED SOLAR PANELS
MODEL NAME:			
PREMISE ADDRESS:	20 MONTGOMERY AVE TAK	OMA PARK, MD 20912	
LOT - BLOCK: 10 - 18	ZONE:	R-60	ELECTION DISTRICT: 13
BOND NO.:	BOND TYPE:		PS NUMBER:
PERMIT FEE: \$ 227.12	SUBDIVISION:	TAKOMA PARK	

The permit fee is calculated based on the approved Executive Regulations multiplied by the Enterprise Fund Stabilization Factor for the current fiscal year.

TRANSPORTATION IMPACT TAX DUE: SCHOOLS IMPACT TAX DUE: SCHOOLS FACILITY PAYMENT DUE:

MUST BE KEPT AT JOB SITE AN APPROVED FINAL INSPECTION IS REQUIRED PRIOR TO USE OR OCCUPANCY

Every new one- or two-family dwelling, *every townhouse* and any *attached accessory structure* must be equipped with a *fire sprinkler system*. A separate sprinkler permit is required for the installation of the fire sprinkler system.

Many subdivisions and neighborhoods within Montgomery County have private deed restrictions and covenants regulating building construction. Obtaining a building permit does not relieve the property owner of responsibility for complying with applicable covenants.

<u>NOTICE</u> THIS APPROVAL DOES NOT INCLUDE PLUMBING, GAS PIPING OR ELECTRICAL OR CONSTRUCTION IN ANY DEDICATED RIGHT-OF-WAY. <u>NOTE</u> THIS PERMIT DOES NOT INCLUDE APPROVAL FOR ANY ELECTRICAL WORK. YOU MUST HAVE A SEPARATE ELECTRICAL PERMIT TO DO ANY ELECTRICAL WORK.

Director, Department of Permitting Services



DEPARTMENT OF PERMITTING SERVICES

Mitra Pedoeem Director

ELECTRICAL PERMIT

Issue Date: 07/21/2020

FUSION SOLAR SERVICES LLC

Permit No: 920763 Expires: 07/21/2021 ID: EB225689

	25 BEAVER PO PARKVILLE, N	ND CIR ID 21234									
HAS PERMISSION TO:	INSTALL	SINGLE F.	AMILY DWELLIN	IG							
Service Size 200 Amps	N New	Y Existing	N Replac	e N	Reloc	ate	Ν	N Hea	ivy-Up		
Y Residential	N Commercial	N Comm Fit	Ups, Alt, Add	Sqft: 0			#Stories	: 0			
N Multi Fam. Bldg	0 #Units	N Modular	/ Trailer Home	N Inspec	ction D	ecks / S	labs				
N Temp Wiring (fairs etc)	1	N Temp For Cons	t	N Trailer		N Pole	e Serv				
0-400 amps 0	Batter	ry Pack 0	Pool/Hot Tub	o/Spa 0					Qty	HP	
Over 400 amps 0	В	onding 0	Motion Pi	cture 0		Ai	r Conditi	ion	0	0	
Rough Wiring 0	Ctrl	Wiring 0	Pt Thtre E	Equip 0		Ν	Central				
Fixtures 0	Dental	Chairs 0	Smoke Det	ector 0		Ν	Window	v	Qty	KW	
Appliances 0	Gas / G	Dil Htg. 0	Vaults, Duct	Bank 0		Ele	ectrical H	Htg.	0	0	
Alarms Systems 0	Gas	Pumps 0	X Ray Mac	chine 0		Lo	w Voltag	ge	0		
Antenna / Dish 0	Meter	Stacks 0	S	Signs 0		UI	.#				
Arc Vaporlamps 0	Miscell	aneous 0				Mt	r / Trans	s / Ger	n (HP/KV	A/KW)	
N Owner Bld	Use Code: SFD		N Hold for pmt.	Up to	10	20	30	50	75	^	
SEC Service Entrance Co	ode: 0			Qty	0	0	0	0	0	0	
DESIGN FOR LIFE:	Ν	Alternative S	ensory Alarm, App	olicance or Contr	ol						
NOTE:	Please do not re	quest inspections u	nder this permit u	intil 2 business o	lays af	ter peri	mit issua	ance.			
PREMISE ADDRESS:	20 MONTGOM TAKOMA PARI	ERY AVE K, MD 20912									
The permit fee is calculat year.	ted based on the approve	ed Executive Regula	ations multiplied b	y the Enterpris	e Func	l Stabili	zation F	Factor	for the c	urrent fisc	al
LOT - BLOCK:10 - 18		ZONE	: R-60]	ELECT	TION DI	STRICT	F: 13			

BOND NO: PERMIT FEE:\$346.08

Marc Elrich

County Executive

THIS IS TO CERTIFY THAT:

PERMIT MUST BE KEPT AT THE JOB SITE

SUBDIVISION: TAKOMA PARK

BOND TYPE:

Any activity within 10 feet of a high voltage line shall comply with Maryland DLLR Articles 6-106 and 6-107.

This permit does not include the formal review or permission to install the fire alarm system or devices. Submit shop drawings, equipment lists and specifications to this office for review, approval and a fire alarm permit prior to installation/alteration of any fire alarm system. Failure to obtain these permits may result in the imposition of civil or criminal penalties and/or loss of license.

Director, Department of Permitting Services

PS NUMBER:

255 Rockville Pike, 2nd Floor · Rockville, MD 20850 · (240)777-0311 · (240)777-6256 TTY www.montgomerycountymd.gov/dps **PROJECT INFORMATION**

JOSHUA STEBBINS

STATES 20912

MONTGOMERY

RESIDENTIAL

IBC 2015

ASCE 7-10

30 PSF

115 MPH

10.44 kW

8.41 kW

(29) REC360AA

UNIRAC SM LIGHT RAIL

(29) IQ7PLUS-72-2-US

20 MONTGOMERY AVENUE

TAKOMA PARK, MD UNITED

255 ROCKVILLE PIKE, 2ND

FLOOR ROCKVILLE, MD 20850

OWNER:

AHJ:

ADDRESS:

ADDRESS:

ZONING:

BUILDING CODE:

ASCE VERSION:

SNOW LOAD:

WIND SPEED:

DC RATING:

AC RATING:

RACKING:

MODULE:

INVERTER:

WIND EXPOSURE: B

ELECTRICAL CODE: NEC 2017

SOLAR PV SYSTEM: 10.44 kWp

<u>STEBBINS RESIDENCE</u>	
20 MONTGOMERY AVENUE TAKOMA PARK	٢,
MD UNITED STATES 20912	



PROJECT SCOPE

THIS PROJECT INVOLV (29) REC 360W SOLA MODULES WILL BE ENGINEERED RACKIN MODULES WILL BE ELE (29) ENPHASE DC TO A INTERCONNECTED TO MEANS AND METHOD RULES ENFORCED BY PERMITTING JURISDICT





DocuSigned by: Andrew Oesterneicher 4A8006A02EA947F...

STAMPED AND SIGNED FOR STRUCTURAL ONLY

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. <u>49910</u> Expires: <u>9/15/20</u>

GENERAL NOTES

1) 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 (AHJ).

2) PV SYSTEM CIRCUITS INSTALLED ON OR IN BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION TO REDUCE SHOCK HAZARD FOR EMERGENCY RESPONDERS IN ACCORDANCE WITH 690.12(A) THROUGH (D). 3) THIS SYSTEM IS A UTILITY INTERACTIV ARE CONSIDERED NON-COMBUSTIBLE.

4) ALL SIGNAGE TO BE PLACED IN ACC CODE AND AS REQUIRED BY THE NEC AN

5) PV EQUIPMENT SHALL BE GROUNDED MINIMUM NEC TABLE 250.122.

FOR ENGINEERING USE ONLY

FOR PERMITTING	USE ONLY	/	
	PROJEC	T ADDRESS:	
VES THE INSTALLATION OF AR MODULES. THE SOLAR RACKED USING A PRE- G SYSTEM. THE RACKED ECTRICALLY CONNECTED TO AC POWER INVERTERS, AND THE LOCAL UTILITY USING OS CONSISTENT WITH THE Y THE LOCAL UTILITY AND TION.	JOSHUA STEBBINS	20 MONTGOMERY AVENUE TAKOMA PARK, MD UNITED STATES 20912	
OF PAGES	CONTRA	CTOR INFO:	
= T & SITE PLAN LOAD CALCS - LINE DIAGRAM - WIRE CALCS DNDUIT LAYOUT NGS & SIGNAGE	SOLAR SERVICES		
	3701 COI SUI	MMERCE DR	
	BALTIMO	≺E, MD 21227	
	(443)	900-0779	
TASHEET			
TASHEET		0.00004	
I		-30991	
	REV	DATE	
YE SYSTEM, AND THE PV MODULES	IFC	7/13/2020	
ORDANCE WITH LOCAL BUILDING ID AHJ. D ACCORDING TO NEC 690.43 AND	COVER		
	Z	001 13	
		13	

	ROOF LABEL:	Α	В	С	D	E
IES	MATERIAL:	Architectual Comp. Shingle				
L L	PITCH:	34°	34°	34°	34°	34°
Ē	AZIMUTH:	169°	259°	259°	259°	79°
ROP	PRIMARY SUPPORT:	2x6 RAFTERS	2x6 RAFTERS	2x6 RAFTERS	2x12 RAFTERS	2x12 RAFTERS
₽.	PRIMARY SUPPORT SPACING:	24"	22"	22"	24"	24"
Ы	LEAST HORIZONTAL DIMENSION:	22'	18'	18'	16'	16'
ŏ	MEAN HEIGHT:	25'	25'	25'	25'	25'
Ř	RACKING:	UNIRAC SM LIGHT RAIL				
	STANDOFF:	UNIRAC FLASHLOC				

- ALL SOLAR MODULES SUPPORTED BY ROOF ATTACHMENTS 48" O.C.
- SOLAR PHOTOVOLTAIC SYSTEM INSTALLED PARALLEL TO ROOF SURFACE
- SOLAR PHOTOVOLTAIC SYSTEM INSTALLED AT A MAXIMUM HEIGHT OF 6" ABOVE ROOF SURFACE







	DocuSigned by: Andrew Oesterseicher 4A8006A02EA947F	FRONT	
NOTER:	STAMPED AND SIGNED FOR STRUCTURAL ONLY	INSTALLATION NOTES 1) ALL RACKING SHALL BE INSTALLED PER MANUFACTUER SPECIFICATIONS	4) REFER TO PAGE S001 FOR MAXIMU MODULE OVERHANG, AND ATTACHMENT I
	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.	2) ALL ROOFING PENETRATIONS SHALL EMBED IN STRUCTURAL MEMBERS AND PROPER FLASHING SEALANT SHALL BE USED TO PROVIDE WATERTIGHT ASSEMBLY	5) ALL RACKING AND STRUCTURAL WORK COMPLY WITH BUILDING CODE, IBC 2015 /
No. Contraction	License No. <u>49910</u> Expires: <u>9/15/20</u>	3) WHEN POSSIBLE, ALL RACKING STANDOFFS WILL BE STAGGERED AMONGST THE ROOF SUPPORT MEMBERS	

FOR ENGINEERING USE ONLY

	A001
AND ASCE 7-10	ATTACHMENT & SITE PLAN
DETAILS	IFC 7/13/2020
	REV DATE
	MHIC-30991
	LICENSE NUMBER:
	(443) 955-0779
	SUITE 101 BALTIMORE, MD 21227
	3701 COMMERCE DR
	SOLAR SERVICES
	CONTRACTOR INFO:
RRAY	AVE MD U
ATTACHMENT	
NTING RAIL	EBB EBB NTGC TAKO D ST/
- SUPPORT	UA INS MER MA P.
	Υ ARK, 20912
FOR PERMI	PROJECT ADDRESS:

MOUNTING SYSTEM PROPERTIES				
RACKING UNIRAC SM LIGHT RAIL				
STANDOFF UNIRAC FLASHLOC				
FASTENING DETAILS SEE NOTE 3				
MAX. RAIL SPAN 48"				
MIN. FASTENER DEPTH 2.25"				
MAX. RAIL CANTILEVER	16"			
MAX. ARRAY HEIGHT	6"			

SITE CONDITIONS		
WIND SPEED	115 MPH	
SNOW LOAD	30 PSF	
ROOF ZONE (TYP.)	3	
BUILDING CODE	IBC 2015	
ELECTRICAL CODE	NEC 2017	
ASCE VERSION	ASCE 7-10	

DEAD LOAD CALCULATION							
LOAD	D QTY. OR WEIGHT LIN. FT. PER (LB)						
MODULES	29	43	1247.00				
M.L.E.'S	29	2.38	69.02				
RACKING	276.4	0.81	223.86				
STANDOFF	115	0.5	57.50				
TOTAL A	1597.4						
TOTAL A	545.8						
DISTRIBUTED LOAD (PSF) 2.9							

POINT LOAD CALCULATION		
TOTAL ARRAY WEIGHT (LBS)	1597.38	
TOTAL NUMBER OF STANDOFFS (TYP.)	115	
POINT LOAD (LBS/STANDOFF)	13.89	



	Wrench Size	Recommended Torque (ft-lbs)
1/4" Hardware eoo	7/16"	-10
3/8" Hardware o	9/16"	*30
#12 Hardware	5/16*	10

Stainless steel hardware can seize up, a process called galling. To significantly reduce its likelihood: J.Apply minimal lubricant to bolts, preferably Anti-Seize commonly found at auto parts stores 2. Shade hardware prior to installation, and 3. Avoid spinning stainless nuts onto bolts at high

ORAIL: Supports PV modules. Use row of modules. Aluminum extru: mill, clear anodized, or dark anodiz mill, clear anodized, or dark anodiz C RAIL SPLICE: Non structural sj aligns, and electrically bonds rails single length of rail. Forms a rigid : inches long, preassembled with bo Available in dark anodized or mill f C L-FOOT: Use to secure rails throi material to building structure. Refe tables or U-Builder for spacing. C L-FOOT T. BOLT: (S/3* X4' or 1' L-foot to secure rail to L-foot. Stain Supplied with L-foot in combinatio nut, provides electrical bond between L O SERBATED FLANCE MUT: Libe or C

OSERRATED FLANGE NUT : Use or to secure and bond rail to Lfoot. St Supplied with L-foot.

Supplied with L-foot. OMODULE ENDCLAMP: Provides I endclamp.Pre-assembled aluminur in clear or dark finish. Supplied wa and bolt upright for ease of assemI OMODULE MIDCLAMP: Pre-as provides module and mc Stainless stele (amp and T-bolt.) or dark finish.

OMICROINVERTERMOUNTINGBOI bolt and nut attaches and bonds rail. Washer at base keeps bolt up

assembly NOTE - POSITION INDICATOR: T-bc the hardware end corresponding to the T-Head.



	DocuSigned by:		
	Andrew Oesterreicher		
OFMARL	4A8006A02EA947F		
OESTERRE		RACKING AND STRUCTURAL NOTES	
CT.D	STAMPED AND SIGNED FOR STRUCTURAL ONLY	1) ALL RACKING SHALL BE INSTALLED PER MANUFACTUER SPECIFICATIONS	4) ALL RACKING AND STRUCTURAL WORK COMPLY WITH BUILDING CODE, IBC 2015 A
	Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed	2) M.L.E.'S = MODULE LEVEL ELECTRONICS (IE, POWER OPTIMIZERS, MICRO- INVERTERS, CABELS, ETC)	
49910	professional engineer under the laws of the State of Maryland. License No. 49910 Expires: 9/15/20	3) USE 5/16" X 4"HEX HEAD STAINLESS STEEL LAG SCREWS	

FOR ENGINEERING USE ONLY

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	FOR PERMITTING		
			20 MONTGOMERY AVENUE TAKOMA PARK, MD UNITED STATES 20912
			CTOR INFO:
		3701 CON SUI BALTIMOF (443) LICENSF	MMERCE DR TE 101 RE, MD 21227 955-0779 E NUMBER:
		мніс	C-30991
		REV	DATE
FOR THIS	S PROJECT SHALL E 7-10	IFC	7/13/2020
		ASSE LOAD	MBLY & CALCS
		S	001 15



AND MODULES PER NEC110.3(b)

ELECTRICAL NOTES 1) ALL EQUIPMENT TO BE LISTED AND LABELED FOR ITS APPLICATION 5) AC PANE 2) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL 5) P EQUIPMENT SHALL COMPLY WITH NEC110.26 5) NEC6 3) IF USED, PV POWER SOURCE BREAKER TO BE LOCATED AT BOTTOM OF BUS PER NEC690.64(b)(7) 4) LISTING AGENCY NAME AND NUMBER TO BE INDICATED ON INVERTERS

5) AC COMBINER PANELS SHALL BE LABEI PANEL"

5) PV POWER SOURCE TO BE SU NEC690.64(b)(5)

	FOR PERMITTING	USE ONLY	,
		PROJEC	T ADDRESS:
		JOSHUA STEBBINS	20 MONTGOMERY AVENUE TAKOMA PARK, MD UNITED STATES 20912
		CONTRA	CTOR INFO:
	2) ChargePoint EV hargers (will need to dd tandems)		
		3701 CON SUI BALTIMOR	MMERCE DR TE 101 RE, MD 21227
		(443)	955-0779
			E NUMBER:
		мню	C-30991
		REV	DATE
LED AS "I	NVERTER AC COMBINER	IFC	7/13/2020
JITABLE	FOR BACKFEED PER	ELEC ⁻ LINE D	TRICAL - DIAGRAM
		E	001

Interconnection Line Side Tap Wire Size #8 AWG WIRE SIZING CALCULATION 2011/2014 NEC Article 310 Full Load Amperage: 35.09 Source Voltage: : 240 Length of Run (Feet): : 30 Load Duty: : Continuous Conductor Type: THWN-2 Conductor Material.....: : Copper Conductor Location: Dry or Wet Conductor Insulation Temperature : 90 °C Ambient Temperature: : 26-30 °C = 78-86 °F Terminal Temperature Rating : 60 °C Circuit Type : Single Phase 3 Wire (2 phase conductors & neutral) Average Outside Temp : 90 Deg. F 32.2 Deg. C Qty. of Circuit Current-Carrying Conductors : 2 Conductor Requirement: Full Load Amps: : 35.09 Load Duty Multiplier : 1.25 Ambient Temp. Multiplier . : 1.15 Qty. Conductors Multiplier : 1.0 **Required Conductor Ampacity: 50.44** Terminal Requirement: Full Load Amps : 35.09 Load Duty Multiplier : 1.25 Required Terminal Ampacity : 43.86 Selected Conductor: Conductor Ampacity : 55.0 Ambient Temp. Derate : 0.87 Qty. Conductors Derate ... : 1.0 Adjusted Ampacity : 47.85 **SELECTED CONDUCTOR SIZE : 8 Awg** 2 x Ohms/MilFt x Length x Amps 2 x 0.778 x 30 x 50.44 VD = ----- = ---------- = 1.64 1000 x Qty Wires per Phase 1000 x 1 Volts At Load Terminals..... : 238.36 Actual Percent Voltage Drop .: 0.68

Combiner to Array Wire Length 50' Wire Size #10 AWG WIRE SIZING CALCULATION 2011/2014 NEC Article 310 Full Load Amperage: : 12.1 Source Voltage: : 240 Length of Run (Feet): : 50 Load Duty: Noncontinuous Conductor Type: THWN-2 Conductor Material..... : Copper Conductor Location: : Dry or Wet Conductor Insulation Temperature : 90 °C Rooftop Installation: NEC 310.15(B)(3)(c) Distance Above Roof : 23mm (7/8 inch) or greater above rooftop Temperature Adder: : 60 Deg. F 33 Deg. C Adjusted Ambient Temperature ... : 150.0 Deg. F 65.2 Deg. C Terminal Temperature Rating : 60 °C Circuit Type : Single Phase 2 Wire (2 phase conductors, or phase & neutral) Qty. of Circuit Current-Carrying Conductors : 2 Additional Current-Carrying Conductors: 4 Total Qty. Current-Carrying Conductors : 6 Conductor Requirement: Full Load Amps: : 12.1 Load Duty Multiplier : 1.0 Ambient Temp. Multiplier . : 1.72 **Qty. Conductors Multiplier : 1.25 Required Conductor Ampacity: 26.02** Terminal Requirement: Full Load Amps: : 12.1 Load Duty Multiplier : 1.0 Required Terminal Ampacity : 12.1 Selected Conductor: Conductor Ampacity : 40.0 Ambient Temp. Derate : 0.58 Qty. Conductors Derate ... : 0.8 Adjusted Ampacity : 18.56 SELECTED CONDUCTOR SIZE : 10 Awg 2 x Ohms/MilFt x Length x Amps 2 x 1.24 x 50 x 26.02 VD = ----- = 1.5 1000 x Qty Wires per Phase 1000 x 1 Volts At Load Terminals..... : 238.5 Actual Percent Voltage Drop .: 0.63

					FOR PERMITT	ING	USE ONLY PROJECT	GOMERY BOMA PARK, BOMA PARK, COMA
							JOSH	20 MONTC AVENUE TAK MD UNITED S7
C/		ON FOR F	V BREAK	ER		T		CTOR INFO:
CALCULAT	ION FOR M	MAIN PV E	BREAKER	& CIRCU	ITS			
SYSTEM CURRENT:	1.21	Х	29	=	35.09 A			
DESIGN AMPERAGE:	35.09	X	125%	=	43.8625 A	_	XF	=X
MAIN BUSS RATING:	200	X	120%	=	240 A	-		$\langle \rangle$
	2/0	_	200	_	200 A 40 A	-		\sim
	240	-	200	_			FUS	SION
CIRCUIT #1 =	10	х	1.21 x	125% =	15.13 A	-	SOLAR S	SERVICES
CIRCUIT #2 =	10	х	1.21 x 1	125% =	15.13 A	1		
CIRCUIT #3 =	9	х	1.21 x 1	125% =	13.61 A		3701 CON	MERCE DR
							SUI	TE 101
					ļ		BALTIMOF	RE, MD 21227
							(443)	955-0779
					 	-	LICENSE	NUMBER:
							МНІС	2-30991
							REV	DATE
MODULE SUPPORT RAIL TO A WEEB LUG PER NEC690.4(D BE BON (c)	DED TO	CONTINUC	OUS COF	PER GEC		IFC	7/13/2020
							ELECT WIRE	RICAL - CALCS
							E	002

ELECTRICAL NOTES

1) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 90°C AND WET ENVIRONMENT, UNLESS OTHERWISE NOTED.

2) ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.

3) MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER MANUFACTURER'S INSTRUCTION.

4) MC VIA W



PROJECT	T ADDRESS:
JOSHUA STEBBINS	20 MONTGOMERY AVENUE TAKOMA PARK, MD UNITED STATES 20912
CONTRA	CTOR INFO:
SOLAR S	
3701 CON SUI BALTIMOF (443)	MMERCE DR TE 101 RE, MD 21227 955-0779
LICENSE	E NUMBER:
мніс	C-30991
REV	DATE
IFC	7/13/2020
STRING	& CONDUIT YOUT
E	003

SOLAR MODULE RATINGS			
REC 360 Specifications		WARNING: PHOTOVOLTAIC	WARNING
Length:	67.75 in	POWER SOURCE	WARNING
Width:	40 in	LABEL TO BE INSTALLED AT EXPOSED	
Thickness:	1.18 in	RACEWAYS, CABLE TRAYS, AND OTHER WIRING	ELECTRICAL SHOCK HAZARD
Weight:	43 lbs	OR WHERE SEPARATED BY ENCLOSURES,	
Imp:	9.55 A	WALLS, PARTITIONS, CEILINGS, OR FLOORS.	DO NOT TOUCH TERMINALS
Vmp:	37.7 V	[NEC 690.31(G)]	DO NOT TOUCH TERMINALS!
Voc:	44.3 V	BACKGROUND; REFLECTIVE [IFC 605.11.1.1]	TERMINALS ON BOTH LINE AND
lsc:	10.16 A		LOAD SIDES MAY BE ENERGIZED
OCPD:	25 A		
Pmax:	360 W		IN THE OPEN POSITION
Vmax:	1000 V	DC DISCONNECT	
Temp. Coefficient:	-0.24 %Voc/ºC	LABEL TO BE INSTALLED AT EACH DC	LABEL TO BE INSTALLED AT EACH DISCONNECTING MEANS FOR
INVERTER 1 RATINGS		DISCONNECTING MEANS [NEC 690.13(B)]	PHOTOVOLTAIC EQUIPMENT [NEC 690.13 AND 690.15]
IQ7PLUS-72-2-US Speci	fications	İ	
Max # Per String:	13	PHOTOVOLTAIC	WARNING
Imax (ac):	1.21 A		
Vmax (dc):	60 V		ELECTRICAL SHOCK HAZARD
Pmax:	290 W	LABEL TO BE INSTALLED AT EACH AC DISCONNECTING MEANS [NEC.690, 13/B)]	
Nom. AC Voltage:	240 V		
OCPD:	20 A		IF GROUND FAULT IS INDICATED
Weight (Optimizer):	2.38 lbs	PHOTOVOLTAIC SYSTEM	
Imax (Input):	15 A	EQUIPPED WITH RAPID	NORMALLY GROUNDED
Pmax (dc) Input:	N/A V	SHUTDOWN	CONDUCTORS MAY BE
		LABEL TO BE INSTALLED AT RAPID SHUTDOWN	UNGROUNDED AND ENERGIZED
		[NEC 690.56(C)]	
		LETTERS AT LEAST 3/8 INCH; WHITE ON RED	
		BACKGROUND; REFLECTIVE [IFC 605.11.1.1]	LABEL TO BE INSTALLED AT EACH DISCONNECTING MEANS FOR PHOTOVOLTAIC EQUIPMENT [NEC 690.13 AND 690.15]
		SOLAR PV SYSTEM DIS	CONNECT
		RATED AC OUTPUT CURRENT.	35.09.4
		RATED AS SOTT OF SORRENT.	33.09 A
		NOMINAL OPERATING AC VOLTAG	GE: 240 V
		LABEL TO BE INSTALLED AT AN ACCESSIBLE LOCATION AT AS A POWER SOURCE [NEC 690.54]	THE DISCONNECTING MEANS

WARNING

DUAL POWER SOURCE SECOND SOURCE PHOTOVOLTAIC SYSTEM

LABEL TO BE INSTALLED ON EXTERIOR OF ELECTRICAL PANEL

WARNING

INVERTER OUTPUT CONNECTION. DO RELOCATE THIS OVERCURRENT DEV

LABEL TO BE APPLIED TO THE DISTRIBUTIC EQUIPMENT [NEC 690.64(B)(7)]

INTERACTIVE PHOTOVOLT SYSTEM CONNECTED

LABEL TO BE INSTALLED AT UTILITY METER [NEC 690.56(B)]

SOLAR PV L

10.4<u>4 kW DC</u>

240 VOLT

INSTALLED (29) REC 3 (29) IQ7PLUS-

CIRCUIT CA

 SYSTEM CURRENT:
 1.21

 DESIGN AMPERAGE:
 35.09

CIRCUIT #1 = CIRCUIT #2 = CIRCUIT #3 = 10 10

SIGNAGE NOTES

1) ALL PLAQUES AND LABELS SHALL HAVE A RED BACKGROUND (OR AS SHOWN HERE)

2) ALL LETTERING SHALL BE WHITE AND HAVE A MINIMUM HEIGHT OF 3/8" (OR AS SHOWN HERE)

3) FONT SHALL BE ARIAL (OR SIMILAR) AND ALL LETTERING SHALL BE CAPITALIZED

4) ALL PLAQUES AND LABELS SHALL BE OF A MATERIAL SUITABLE FOR THE ENVIRONMENT INSTALLED

USE ONLY	,
PROJECT	<u>r ADDRESS:</u> ∾
AL INS	MERY MA PARK, TES 2091
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	D U
CONTRACTOR INFO:	
SOLAR 3701 COM SUI BALTIMOF (443)	MMERCE DR TE 101 RE, MD 21227 955-0779
	2 20004
	J-JUBBI
REV	DAIE
IFC	7/13/2020
EQUIP. & SIG	RATINGS GNAGE
E	004
	USE ONLY PROJECT VOHSOS SOLARS CONTRA CONTRA CONTRA CONTRA SOLARS 3701 COM SUI BALTIMOF (443) LICENSE MHIC REV IFC EQUIP. & SIC