

MONTGOMERY COUNTY HISTORIC PRESERVATION COMMISSION
STAFF REPORT

Address:	54 Walnut Avenue, Takoma Park	Meeting Date:	4/22/2020
Resource:	Contributing Resource Takoma Park Historic District	Report Date:	4/15/2020
Applicant:	Steve Shira	Public Notice:	4/8/2020
Review:	HAWP	Tax Credit:	n/a
Case Number:	37/03-20W	Staff:	Dan Bruechert
PROPOSAL:	Solar Panel Installation		

STAFF RECOMMENDATION:

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

ARCHITECTURAL DESCRIPTION:

SIGNIFICANCE: Contributing Resource to the Takoma Park Historic District
STYLE: Cottage
DATE: c.1920



Figure 1: 54 Walnut Ave. is located at the edge of the Takoma Park Historic District.

PROPOSAL

The applicant proposes to remove the existing three-tab asphalt shingle roof and replace it with a solar shingle roof.

APPLICABLE GUIDELINES:

When reviewing alterations and additions for new construction to Contributing Resources within the Takoma Park Historic District, decisions are guided by the Takoma Park Historic District Design Guidelines (*Guidelines*) and Montgomery County Code Chapter 24A (*Chapter 24A*), and the Secretary of the Interior's Standards for Rehabilitation (*Standards*). As this project is also in one of the two commercial districts in Takoma Park review of the project shall be guided by the *Design Guidelines for Commercial Buildings in the City of Takoma Park, Maryland*.

Takoma Park Historic District Design 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.

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

(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 will be retained and preserved. The removal of distinctive materials or alteration of features, space and spatial relationships that characterize a property will 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 Policy 20-01

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 and shinles, 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).

STAFF DISCUSSION

The applicant proposes to remove the existing three-tab asphalt shingle roof and install a Tesla solar shingle (specifications attached) roof in its place. Staff finds that the proposed roof will not significantly alter the character of the historic resource and is in keeping with the recently adopted solar panel policy and recommends approval.

The subject property is a one-story cottage with a side gable roof. According to historic preservation records, a side porch was added to the right side of the house in 1925. The Sanborn maps labeled the historic roofing has “composition.” In the 1920s these shingles were composed of pine tar or coal tar impregnated onto a felt or cotton rag backing, usually with some type of stone, like slate, mica, or even oyster shells added to the exterior for durability. There was no single design or size standard until the 1950s. The existing asphalt shingle roof has no historic significance and its removal will not be detrimental to the character of the building or the surrounding district.



Figure 2: 54 Walnut Ave. as viewed from Eastern Ave.

In place of the existing roof, the applicant proposes to install Tesla solar shingles. This is the first instance the HPC has evaluated this material, so this Staff Report will provide more background on the material than typical. To install the shingles, the existing asphalt shingles will be removed and much of the roof sheathing will be replaced. New sheathing and solar shingles will be installed on top of the existing roof structure. This means that the proposed solar shingles will preserve the roofline as it exists today. All of the electronic connections will be made under the roof surface, so there won't be any exposed conduit, unlike the roof-mounted solar panel arrays that have come before the HPC. In locations

that aren't conducive to collecting solar energy, 'dummy' shingles that look the same but lack the photovoltaics will be installed to maintain a uniform appearance.

The new shingles are larger than the exposed asphalt shingles. The proposed shingles measure 430 mm × 1140 mm (four hundred thirty millimeters by one thousand forty millimeters), this is approximately 15" × 45" (fifteen inches by forty-five inches). A typical three-tab shingle is 12" × 36" (twelve inches by thirty-six inches), though those shingles are divided so that each visible rectangle is 5" × 12" (five inches by twelve inches), see below. While the proposed shingles are noticeable larger, Staff does not find this difference in dimension to be detrimental to the character of the house or the surrounding district.

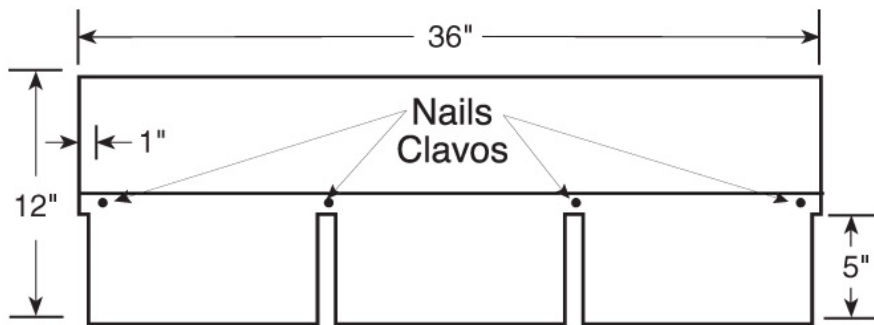


Figure 3: Typical 3-tab asphalt shingle dimensions.

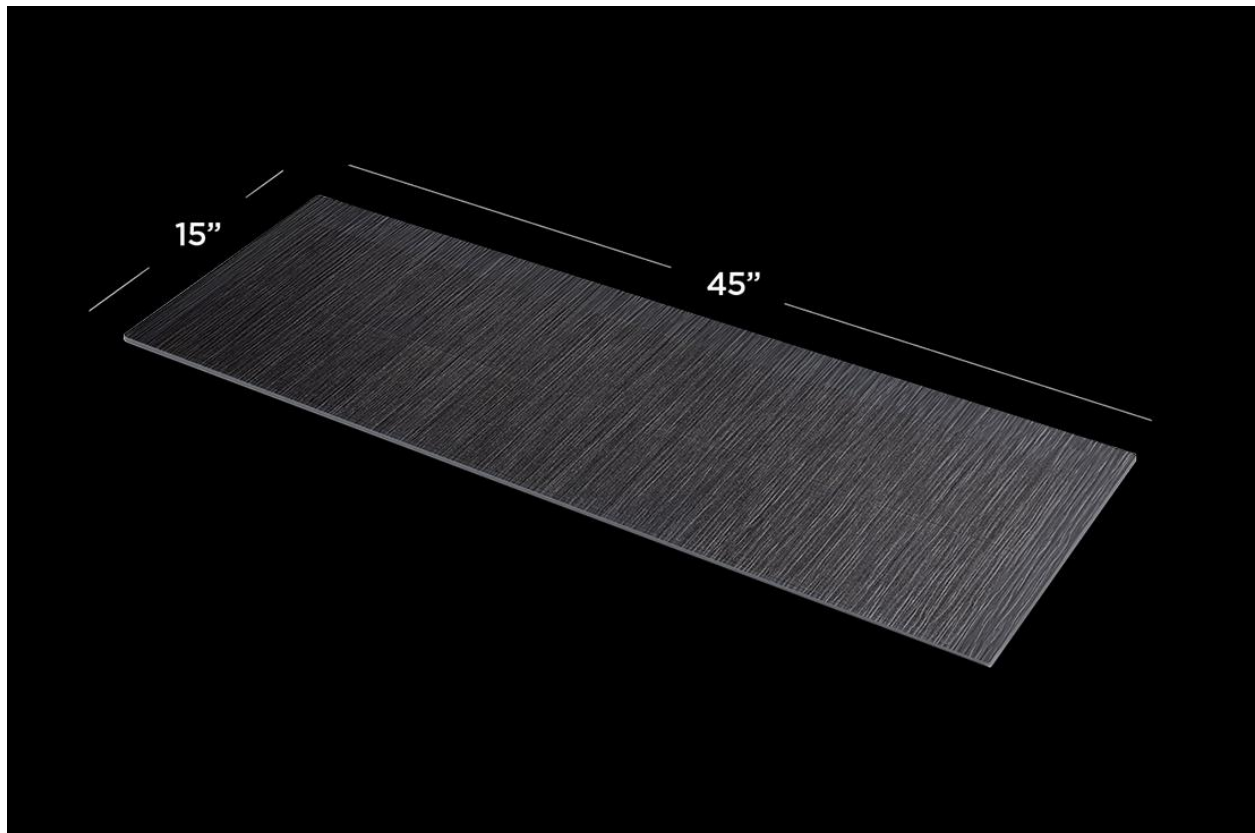


Figure 4: Tesla Solar Shingle dimensions.

Staff was directed by the project consultant to the house at 1946 Seminary Rd., Silver Spring as an example of a solar shingle roof installed. Staff visited the house and includes two photos in this Staff Report, but notes that the photographs are a poor substitute for seeing this roof in person.



Figure 5: 1946 Seminary Rd., Silver Spring (across from the fire station) is one of the first solar shingle installations in the county.

Staff observed that the solar shingle roof was more reflective than an asphalt shingle roof, which was to be expected. What was surprising was how much the uniform appearance of the solar shingle roof surface blended into the architecture of the house. Because there is only one material on the roof and it has uniform reflectivity, it didn't seem out of place the way some roof-mounted solar arrays can.

Staff finds that the proposed solar shingle roof is consistent with the Solar Panel Policy, will not substantially alter the historic character of the house (Standard 2), and is an appropriate use of a non-original material (per the *Design Guidelines*). Staff recommends the HPC approve the HAWP.



Figure 6: Oblique view of 1946 Seminary Rd., Silver Spring.

STAFF RECOMMENDATION

Staff recommends that the Commission **approve** the HAWP application:

Under the Criteria for Issuance in Chapter 24A-8(b)(1), (2), and (d), 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 in conformance with HPC Policy No. 20-01;

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 contact the staff person assigned to this application at 301-563-3400 or dan.bruechert@montgomeryplanning.org to schedule a follow-up site visit.



HISTORIC PRESERVATION COMMISSION
301/563-3400

DPS - #8

APPLICATION FOR HISTORIC AREA WORK PERMIT

Contact Email: lvallandingham@tesla.com Contact Person: Beth Vallandingham
 Tax Account No.: 01070736 Daytime Phone No.: 240-917-9885
 Name of Property Owner: STEVEN SHIRA Daytime Phone No.: (504) 220-1246
 Address: 54 WALNUT AVE, TAKOMA PARK MD, 20912
 Street Number City State Zip Code
 Contractor: Tesla Energy Operations, Inc. Phone No.: 888-765-2489
 Contractor Registration No.: 128948 (MHIC)
 Agent for Owner: Beth Vallandingham Daytime Phone No.: 240-917-9885

LOCATION OF BUILDING/PREMISE

House Number: 54 Street: WALNUT AVE
 Town/City: TAKOMA PARK Nearest Cross Street: EASTERN AVE NW
 Lot: 29 Block: A Subdivision: 0025
 Liber: 58431 Folio: 00450 Parcel: 0000

PART ONE: TYPE OF PERMIT ACTION AND USE

1A. CHECK ALL APPLICABLE:

☐ Construct ☐ Extend ☒ Alter/Renovate
☐ Move ☒ Install ☐ Wreck/Raze
☐ Revision ☐ Repair ☐ Revocable

CHECK ALL APPLICABLE:

☐ A/C ☐ Slab ☐ Room Addition ☐ Porch ☐ Deck ☐ Shed
☒ Solar ☐ Fireplace ☐ Woodburning Stove ☐ Single Family
☐ Fence/Wall (complete Section 4) ☐ Other: _____

1B. Construction cost estimate: \$ \$ 25,223

1C. If this is a revision of a previously approved active permit, see Permit # _____

PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTEND/ADDITIONS

2A. Type of sewage disposal: 01 ☐ WSSC 02 ☐ Septic 03 ☐ Other: _____
 2B. Type of water supply: 01 ☐ WSSC 02 ☐ Well 03 ☐ Other: _____

PART THREE: COMPLETE ONLY FOR FENCE/RETAINING WALL

3A. Height _____ feet _____ inches
 3B. Indicate whether the fence or retaining wall is to be constructed on one of the following locations:
☐ On party line/property line ☐ Entirely on land of owner ☐ On public right of way/easement

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

LB

Signature of owner or authorized agent

4/3/2020

Date

Approved: _____ For Chairperson, Historic Preservation Commission

Disapproved: _____ Signature: _____ Date: _____

Application/Permit No.: _____ Date Filed: _____ Date Issued: _____

**THE FOLLOWING ITEMS MUST BE COMPLETED AND THE
REQUIRED DOCUMENTS MUST ACCOMPANY THIS APPLICATION.**

1. **WRITTEN DESCRIPTION OF PROJECT**

- a. Description of existing structure(s) and environmental setting, including their historical features and significance:

876 SF, 1 story residential suburban single family dwelling, built in
1923

property land area of 10,492 SF

- b. General description of project and its effect on the historic resource(s), the environmental setting, and, where applicable, the historic district:

Re-roofing existing residential home with Solarglass (solar roof tiles)

2. **SITE PLAN**

Site and environmental setting, drawn to scale. You may use your plat. Your site plan must include:

- a. the scale, north arrow, and date;
- b. dimensions of all existing and proposed structures; and
- c. site features such as walkways, driveways, fences, ponds, streams, trash dumpsters, mechanical equipment, and landscaping.

3. **PLANS AND ELEVATIONS**

You must submit 2 copies of plans and elevations in a format no larger than 11" x 17". Plans on 8 1/2" x 11" paper are preferred.

- a. ***Schematic construction plans***, with marked dimensions, indicating location, size and general type of walls, window and door openings, and other fixed features of both the existing resource(s) and the proposed work.
- b. Elevations (facades), with marked dimensions; clearly indicating proposed work in relation to existing construction and, when appropriate, context. All materials and fixtures proposed for the exterior must be noted on the elevations drawings. An existing and a proposed elevation drawing of each facade affected by the proposed work is required.

4. **MATERIALS SPECIFICATIONS**

General description of materials and manufactured items proposed for incorporation in the work of the project. This information may be included on your design drawings.

5. **PHOTOGRAPHS**

- a. Clearly labeled photographic prints of each facade of existing resource, including details of the affected portions. All labels should be placed on the front of photographs.
- b. Clearly label photographic prints of the resource as viewed from the public right-of-way and of the adjoining properties. All labels should be placed on the front of photographs.

6. **TREE SURVEY**

If you are proposing construction adjacent to or within the dripline of any tree 6" or larger in diameter (at approximately 4 feet above the ground), you must file an accurate tree survey identifying the size, location, and species of each tree of at least that dimension.

7. **ADDRESSES OF ADJACENT AND CONFRONTING PROPERTY OWNERS**

For **ALL** projects, provide an accurate list of adjacent and confronting property owners (not tenants), including names, addresses, and zip codes. This list should include the owners of all lots or parcels which adjoin the parcel in question, as well as the owner(s) of lot(s) or parcel(s) which lie directly across the street/highway from the parcel in question.

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

Owner's mailing address STEVEN SHIRA 54 WALNUT AVE, TAKOMA PARK MD, 20912	Owner's Agent's mailing address TESLA ENERGY OPS, INC. 9000 VIRGINIA MANOR RD, SUITE 250, BETLSVILLE MD, 20705
Adjacent and confronting Property Owners mailing addresses	
DEBORAH GEORGE 56 WALNUT AVE, TAKOMA PARK MD, 20912	JEFFREY HOPKINS 51 WALNUT AVE, TAKOMA PARK MD, 20912
FANG-CHING CHEN 1634 EVERS DR, MCLEAN VA, 22101 (MAILING) 6815 EASTERN AVE, TAKOMA PARK MD, 20912 (PROPERTY)	

Existing Property Condition Photographs (duplicate as needed)



Detail: Front of house



Detail: Left side of house with existing electrical equipment

Applicant: Beth Vallandingham

Existing Property Condition Photographs (duplicate as needed)




Detail: Right/Back portion of home



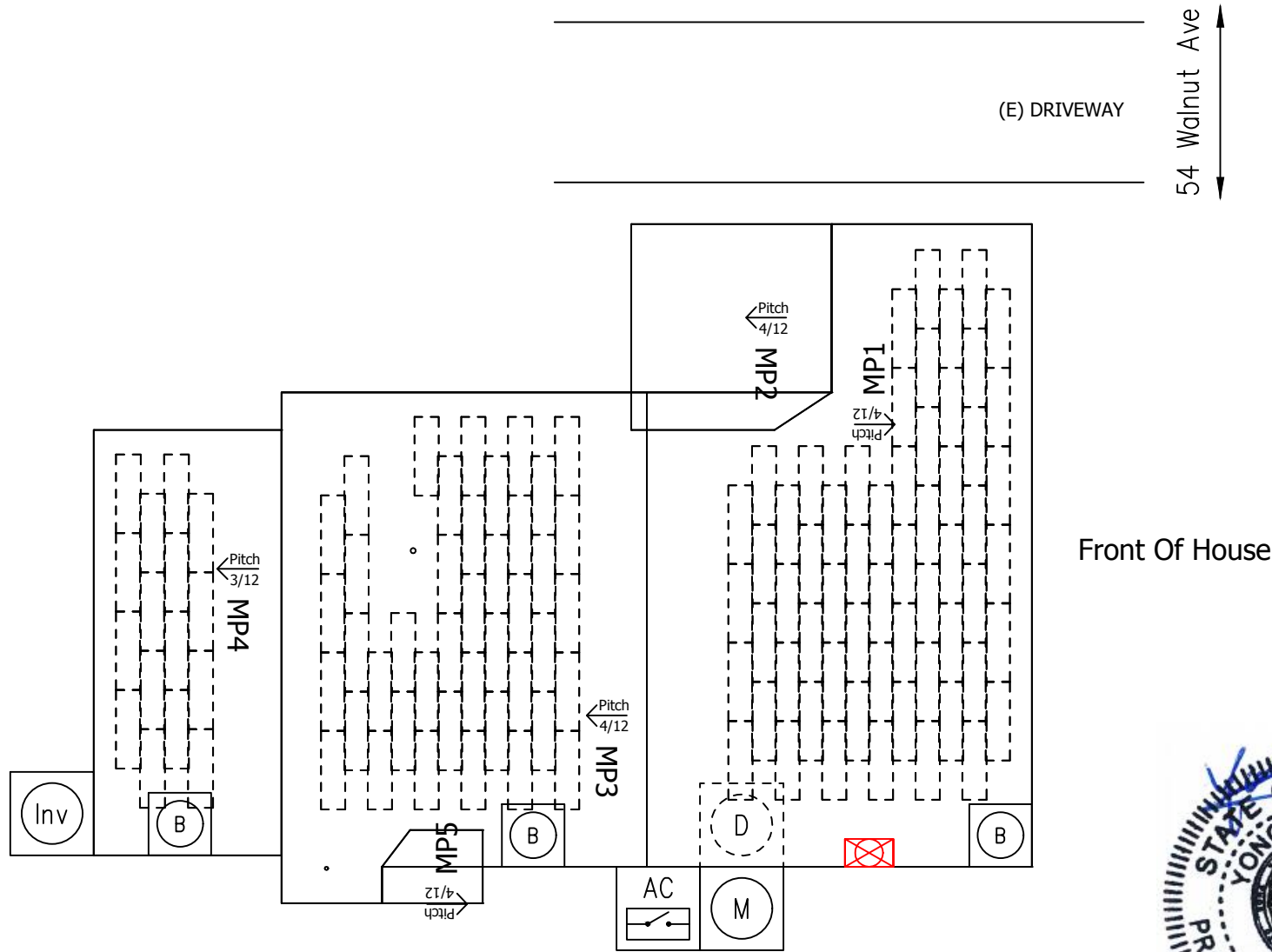
Detail: Map view

Recently completed Solarglass installation in Silver Spring



<div>ABBREVIATIONS</div> <div>A AMPERE AC ALTERNATING CURRENT BLDG BUILDING CONC CONCRETE DC DIRECT CURRENT EGC EQUIPMENT GROUNDING CONDUCTOR (E) EXISTING EMT ELECTRICAL METALLIC TUBING FSB FIRE SET-BACK GALV GALVANIZED GEC GROUNDING ELECTRODE CONDUCTOR GND GROUND HDG HOT DIPPED GALVANIZED I CURRENT Imp CURRENT AT MAX POWER Isc SHORT CIRCUIT CURRENT kVA KILOVOLT AMPERE kW KILOWATT LBW LOAD BEARING WALL MIN MINIMUM (N) NEW NEUT NEUTRAL NTS NOT TO SCALE OC ON CENTER PL PROPERTY LINE POI POINT OF INTERCONNECTION PV PHOTOVOLTAIC SCH SCHEDULE S STAINLESS STEEL STC STANDARD TESTING CONDITIONS TYP TYPICAL UPS UNINTERRUPTIBLE POWER SUPPLY V VOLT Vmp VOLTAGE AT MAX POWER Voc VOLTAGE AT OPEN CIRCUIT W WATT 3R NEMA 3R, RAINTIGHT</div>		<div>ELECTRICAL NOTES</div> <div>1. THIS SYSTEM IS GRID-INTERTIED VIA A UL-LISTED POWER-CONDITIONING INVERTER. 2. THIS SYSTEM HAS NO BATTERIES, NO UPS. 3. A NATIONALLY-RECOGNIZED TESTING LABORATORY SHALL LIST ALL EQUIPMENT IN COMPLIANCE WITH ART. 110.3. 4. WHERE ALL TERMINALS OF THE DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION, A SIGN WILL BE PROVIDED WARNING OF THE HAZARDS PER ART. 690.17. 5. EACH UNGROUNDED CONDUCTOR OF THE MULTIWIRE BRANCH CIRCUIT WILL BE IDENTIFIED BY PHASE AND SYSTEM PER ART. 210.5. 6. CIRCUITS OVER 250V TO GROUND SHALL COMPLY WITH ART. 250.97, 250.92(B). 7. DC CONDUCTORS EITHER DO NOT ENTER BUILDING OR ARE RUN IN METALLIC RACEWAYS OR ENCLOSURES TO THE FIRST ACCESSIBLE DC DISCONNECTING MEANS PER ART. 690.31(E). 8. ALL WIRES SHALL BE PROVIDED WITH STRAIN RELIEF AT ALL ENTRY INTO BOXES AS REQUIRED BY UL LISTING.</div>		<div>JURISDICTION NOTES</div>																													
<div>LICENSE</div> <div>#11805 MASTER ELECTRICIAN Nicholaus Meyers</div> <div>AHJ: Takoma Park</div> <div>UTILITY: PEPCO (MD)</div>		<div>GENERAL NOTES</div> <div>1. ALL WORK SHALL COMPLY WITH THE 2015 IBC AND 2015 IRC. 2. ALL ELECTRICAL WORK SHALL COMPLY WITH THE 2014 NATIONAL ELECTRIC CODE.</div>		<div>VICINITY MAP</div> <div></div>			<div>INDEX</div> <div>Sheet 1 COVER SHEET Sheet 2 SITE PLAN Sheet 3 THREE LINE DIAGRAM Cutsheets Attached</div> <table><thead><tr><th>REV</th><th>BY</th><th>DATE</th><th>COMMENTS</th></tr></thead><tbody><tr><td>REV A</td><td>NAME</td><td>DATE</td><td>COMMENTS</td></tr><tr><td>*</td><td>*</td><td>*</td><td>*</td></tr><tr><td>*</td><td>*</td><td>*</td><td>*</td></tr><tr><td>*</td><td>*</td><td>*</td><td>*</td></tr><tr><td>*</td><td>*</td><td>*</td><td>*</td></tr></tbody></table>			REV	BY	DATE	COMMENTS	REV A	NAME	DATE	COMMENTS	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
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<div>CONFIDENTIAL – THE INFORMATION HEREIN CONTAINED SHALL NOT BE USED FOR THE BENEFIT OF ANYONE EXCEPT TESLA INC., NOR SHALL IT BE DISCLOSED IN WHOLE OR IN PART TO OTHERS OUTSIDE THE RECIPIENT'S ORGANIZATION, EXCEPT IN CONNECTION WITH THE SALE AND USE OF THE RESPECTIVE TESLA EQUIPMENT, WITHOUT THE WRITTEN PERMISSION OF TESLA INC.</div>		<div>JOB NUMBER: JB-2094576 00</div> <div>MOUNTING SYSTEM: TESLA SOLAR ROOF</div> <div>MODULES: (118) TESLA # SR60T1</div> <div>INVERTER: (1) Delta Electronics # M8-TL-US [240V]</div>		<div>CUSTOMER: Steve Shira 54 Walnut Ave Takoma Park, MD 20912</div> <div>5042201246</div>		<div>DESCRIPTION: 6.89946 KW PV ARRAY</div> <div>PAGE NAME: COVER SHEET</div>		<div>DESIGN: Lilly-Jeanne Gurney</div> <div>SHEET: 1 REV: a DATE: 2/22/2020</div>		<div>TESLA</div> <div>15</div>																							

INSTALLER SHALL VERIFY SHEATHING TO BE MINIMUM 3/8"AND RAFTER SPACING TO BE A MAXIMUM OF 24"OC IN FIELD.



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 LAW OF THE STATE OF MARYLAND, LICENSE NO. ~~49464~~, EXPIRATION DATE: 05/26/2020

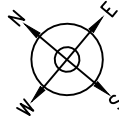
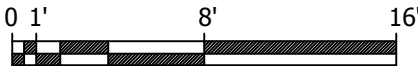
MP1	PITCH: 16 AZIMUTH: 140 MATERIAL: Solar Roof	ARRAY PITCH: 16 ARRAY AZIMUTH: 140 STORY: 2 Stories
MP3	PITCH: 16 AZIMUTH: 320 MATERIAL: Solar Roof	ARRAY PITCH: 16 ARRAY AZIMUTH: 320 STORY: 2 Stories
MP4	PITCH: 10 AZIMUTH: 320 MATERIAL: Solar Roof	ARRAY PITCH: 10 ARRAY AZIMUTH: 320 STORY: 2 Stories

LEGEND

- (M) (E) UTILITY METER & WARNING LABEL
- (Inv) INVERTER W/ INTEGRATED DC DISCO & WARNING LABELS
- DC DC DISCONNECT & WARNING LABELS
- AC AC DISCONNECT & WARNING LABELS
- (B) DC JUNCTION/COMBINER BOX & LABELS
- (D) DISTRIBUTION PANEL & LABELS
- (LC) LOAD CENTER & WARNING LABELS
- (M) DEDICATED PV SYSTEM METER
- (RSD) RAPID SHUTDOWN
- STANDOFF LOCATIONS
- CONDUIT RUN ON EXTERIOR
- - - CONDUIT RUN ON INTERIOR
- GATE/FENCE
- HEAT PRODUCING VENTS ARE RED
- - - INTERIOR EQUIPMENT IS DASHED

SITE PLAN

Scale: 1/8" = 1'



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JOB NUMBER: JB-2094576 00

MOUNTING SYSTEM:
TESLA SOLAR ROOF

MODULES:
(118) TESLA # SR60T1

INVERTER:
(1) Delta Electronics # M8-TL-US [240V]

CUSTOMER:
Steve Shira
54 Walnut Ave
Takoma Park, MD 20912

5042201246

DESCRIPTION:
6.89946 KW PV ARRAY

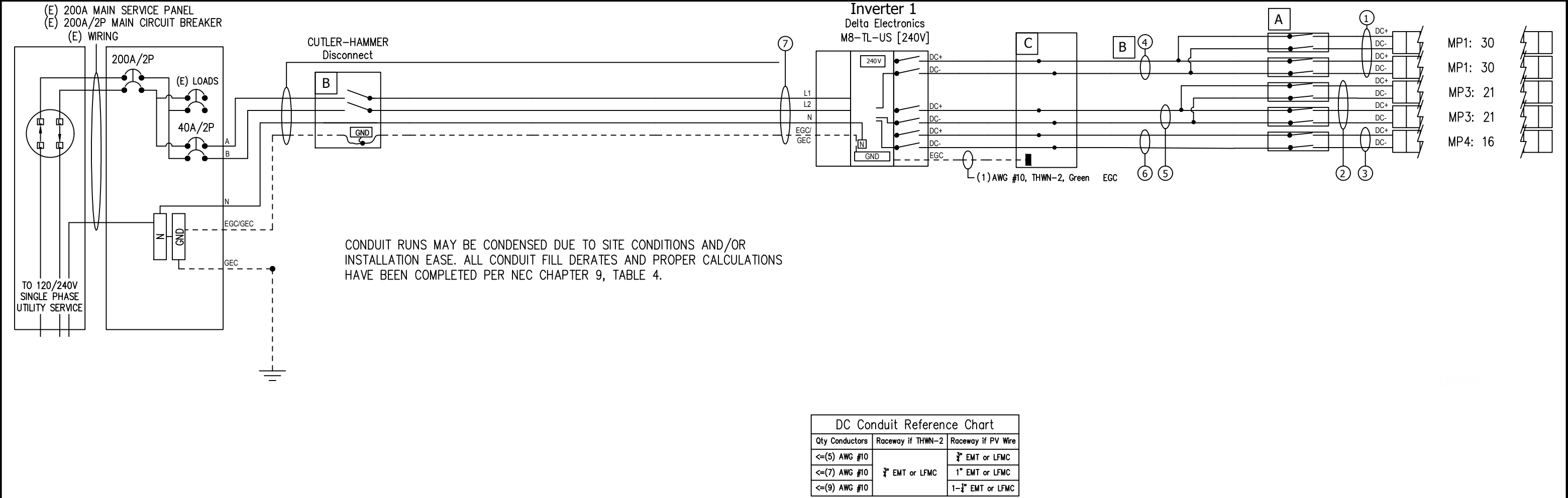
PAGE NAME:
SITE PLAN

DESIGN:
Lilly-Jeanne Gurney

SHEET: 2 REV: a DATE: 2/22/2020

TESLA

GROUND SPECS	MAIN PANEL SPECS	GENERAL NOTES	INVERTER SPECS		MODULE SPECS	LICENSE
BOND (N) #8 GEC TO (N) GROUND ROD AT PANEL WITH IRREVERSIBLE CRIMP	Panel Number: HOMC30UC(200A) Meter Number: NXA112136564 Underground Service Entrance	Inv 1: DC Ungrounded	INV 1	-(1)Delta Electronics # M8-TL-US [240V] Inverter; 7680W, 240V, 97.5% Inverter; 7680W, 240V/208V, 97.5%, Zigbee	-(1)5014123-00-B TESLA SRV3 Voc: 13.34 Vpmax: 10.99 Isc AND Imp ARE SHOWN IN THE DC STRINGS IDENTIFIER	#11805 MASTER ELECTRICIAN Nicholaus Meyers
			INV 2			
			INV 3			



Voc* = MAX VOC AT MIN TEMP

POI	(1) SQUARE D # HOM240 Breaker; 40A/2P, 2 Spaces — (1) Ground Rod 5/8" x 8", Copper	PV BACKFEED BREAKER	B	(1) CUTLER-HAMMER # DG222URB Disconnect; 60A, 240Vac, Non-Fusible, NEMA 3R — (1) CUTLER-HAMMER # DG100NB Ground/Neutral Kit; 60-100A, General Duty (DG)	AC	C	(3) Junction Box Metal; 6" x 6" x 4", Box w/ cover; Nema 1	DC	A	(12) Delta # GPI00010114 EGC/GEC MCI Rapid Shutdown, 600V, 12A, NEMA 4X, MC4, for Solar Roof	B	(2) MULTI-CONTACT PV-AZB4 32.0018; Branch Socket; MC4 U-Joint Connector, Female — (2) MULTI-CONTACT PV-AZS4 32.0019; Branch Plug; MC4 U-Joint Connector, Male	PTB	(3) 1145820-00-R PASS THROUGH BOX, TWO STRING, REWORKED
	⑦			④			⑤		⑥	①		②		③
	(1) AWG #8, THWN-2, Black (1) AWG #8, THWN-2, Red (1) AWG #10, THWN-2, White — (1) AWG #8, THWN-2, Green			Vmp = 240 VAC Imp= 32 AAC — (1) Conduit Kit; 3/4" EMT			(1) AWG #10, Black (1) AWG #10, Red (1) AWG #10, Black (1) AWG #10, Red (1) AWG #10, Black (1) AWG #10, Red			(4) AWG #10, PV Wire, 600V, Black (4) AWG #10, PV Wire, 600V, Black (2) AWG #10, PV Wire, 600V, Black				Voc* = 466.53VDC Isc = 11.3 ADC Vmp = 329.70VDC Imp= 10.64 ADC Voc* = 326.57VDC Isc = 11.3 ADC Vmp = 230.79VDC Imp= 10.64 ADC Voc* = 248.82VDC Isc = 5.65 ADC Vmp = 175.84 VDC Imp= 5.32 ADC Voc* = 466.53VDC Isc = 5.65 ADC Vmp = 329.70VDC Imp= 5.32 ADC Voc* = 326.57VDC Isc = 5.65 ADC Vmp = 230.79VDC Imp= 5.32 ADC Voc* = 248.82VDC Isc = 5.65 ADC Vmp = 175.84 VDC Imp= 5.32 ADC

CONFIDENTIAL – THE INFORMATION HEREIN CONTAINED SHALL NOT BE USED FOR THE BENEFIT OF ANYONE EXCEPT TESLA INC., NOR SHALL IT BE DISCLOSED IN WHOLE OR IN PART TO OTHERS OUTSIDE THE RECIPIENT'S ORGANIZATION, EXCEPT IN CONNECTION WITH THE SALE AND USE OF THE RESPECTIVE TESLA EQUIPMENT, WITHOUT THE WRITTEN PERMISSION OF TESLA INC.	JOB NUMBER: JB-2094576 00	CUSTOMER: Steve Shira 54 Walnut Ave Takoma Park, MD 20912 5042201246	DESCRIPTION: 6.89946 KW PV ARRAY PAGE NAME: THREE LINE DIAGRAM	DESIGN: Lilly-Jeanne Gurney SHEET: 3 REV: a DATE: 2/22/2020	TESLA
	MOUNTING SYSTEM: TESLA SOLAR ROOF				
	MODULES: (118) TESLA # SR60T1 INVERTER: (1) Delta Electronics # M8-TL-US [240V]				

WARNING: PHOTOVOLTAIC POWER SOURCE

Label Location:
(C)(CB)(JB)
Per Code:
NEC 690.31.G.3

Label Location:
(DC) (INV)
Per Code:
NEC 690.14.C.2

PHOTOVOLTAIC DC
DISCONNECT

WARNING

ELECTRIC SHOCK HAZARD
DO NOT TOUCH TERMINALS
TERMINALS ON BOTH LINE AND
LOAD SIDES MAY BE ENERGIZED
IN THE OPEN POSITION

Label Location:
(AC)(POI)
Per Code:
690.13.B

WARNING

ELECTRIC SHOCK HAZARD
THE DC CONDUCTORS OF THIS
PHOTOVOLTAIC SYSTEM ARE
UNGROUND AND
MAY BE ENERGIZED

Label Location:
(DC) (INV)
Per Code:
NEC 690.35(F)
TO BE USED WHEN
INVERTER IS
UNGROUND

MAXIMUM POWER-
POINT CURRENT (Imp) A
MAXIMUM POWER-
POINT VOLTAGE (Vmp) V
MAXIMUM SYSTEM
VOLTAGE (Voc) V
SHORT-CIRCUIT
CURRENT (Isc) A

Label Location:
(DC) (INV)
Per Code:
NEC 690.53

WARNING

INVERTER OUTPUT
CONNECTION
DO NOT RELOCATE
THIS OVERCURRENT
DEVICE

Label Location:
(POI)
Per Code:
NEC 690.64.B.7

WARNING

ELECTRIC SHOCK HAZARD
IF A GROUND FAULT IS INDICATED
NORMALLY GROUNDED
CONDUCTORS MAY BE
UNGROUND AND ENERGIZED

Label Location:
(DC) (INV)
Per Code:
NEC 690.5(C)

PHOTOVOLTAIC SYSTEM
EQUIPPED WITH RAPID
SHUTDOWN

Label Location:
(INV)
Per Code:
CEC 690.56(C)

CAUTION

PHOTOVOLTAIC SYSTEM
CIRCUIT IS BACKFED

Label Location:
(D) (POI)
Per Code:
NEC 690.64.B.4

WARNING

ELECTRICAL SHOCK HAZARD
DO NOT TOUCH TERMINALS
TERMINALS ON BOTH LINE AND
LOAD SIDES MAY BE ENERGIZED
IN THE OPEN POSITION
DC VOLTAGE IS
ALWAYS PRESENT WHEN
SOLAR MODULES ARE
EXPOSED TO SUNLIGHT

Label Location:
(DC) (CB)
Per Code:
NEC 690.17(4)

CAUTION

DUAL POWER SOURCE
SECOND SOURCE IS
PHOTOVOLTAIC SYSTEM

Label Location:
(POI)
Per Code:
NEC 690.64.B.4

PHOTOVOLTAIC AC
DISCONNECT

Label Location:
(AC) (POI)
Per Code:
NEC 690.14.C.2

PHOTOVOLTAIC POINT OF
INTERCONNECTION
WARNING: ELECTRIC SHOCK
HAZARD. DO NOT TOUCH
TERMINALS. TERMINALS ON
BOTH THE LINE AND LOAD SIDE
MAY BE ENERGIZED IN THE OPEN
POSITION. FOR SERVICE
DE-ENERGIZE BOTH SOURCE
AND MAIN BREAKER.
PV POWER SOURCE

Label Location:
(POI)
Per Code:
NEC 690.17.4; NEC 690.54

MAXIMUM AC
OPERATING CURRENT A
MAXIMUM AC
OPERATING VOLTAGE V

Label Location:
(AC) (POI)
Per Code:
NEC 690.54

MAXIMUM AC
OPERATING CURRENT A
MAXIMUM AC
OPERATING VOLTAGE V

(AC): AC Disconnect
(C): Conduit
(CB): Combiner Box
(D): Distribution Panel
(DC): DC Disconnect
(IC): Interior Run Conduit
(INV): Inverter With Integrated DC Disconnect
(LC): Load Center
(M): Utility Meter
(POI): Point of Interconnection

SOLARGLASS

DATASHEET



ROOFING SYSTEM SPECIFICATIONS

CERTIFICATIONS

UL Listed	ETL Listed
UL/IEC 61730	UL 790 Class A
UL 9703	TAS100
UL 1741	ASTM D3161 Class F

ELECTRICAL CHARACTERISTICS

Maximum open circuit voltage rating of connected branch circuits per diode (at STC): 13.34 V
Maximum series fuse rating: 15 A
Maximum system voltage: 600 V

ROOF PITCH RANGE

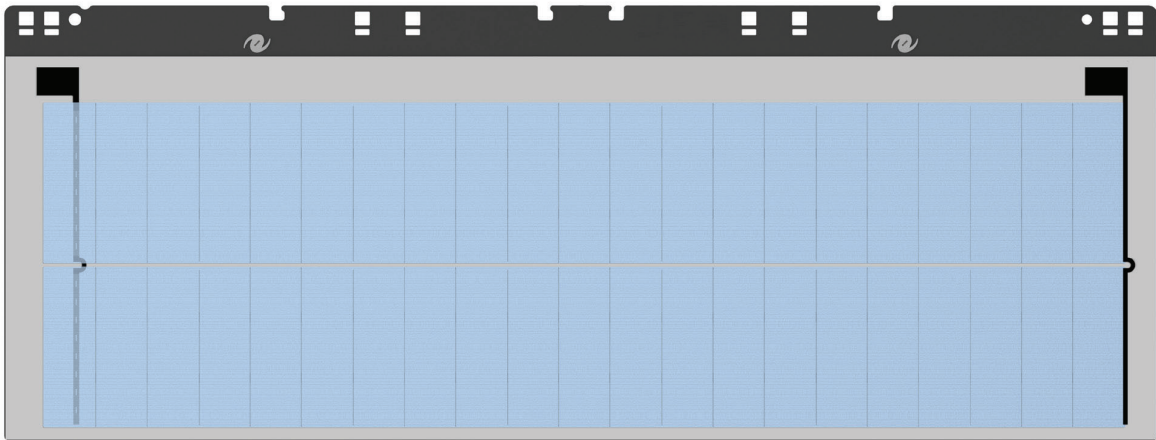
2:12 - 12:12

MODULE SPECIFICATIONS

MODEL #SR60T1 14-CELL MODULE

Irradiance (W/m ²)	Temp. (Celsius)	Voc (V)	Vmp (V)	Isc (A)	Imp (A)	Pmax (W)
1000	25	13.34	10.99	5.65	5.32	58.47

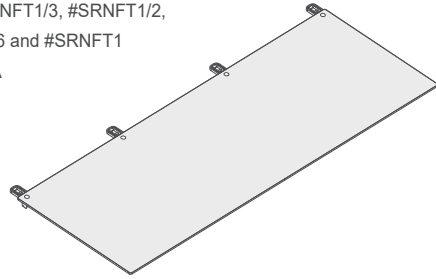
These electrical characteristics are within ± 5% of the indicated values of Isc, Voc, and Pmax under standard test conditions (irradiance of 1000 W/m², AM 1.5 spectrum, and a cell temperature of 25 °C or 77 °F).



Dimensions	430 mm x 1140 mm x 34.5 mm
Principal Materials	Glass, Polymers, Fiberglass and Silicon
Installed System Weight	Textured Glass: 16.4 kg/m ² or 3.4 psf Installed weights include all components of system above roof sheathing

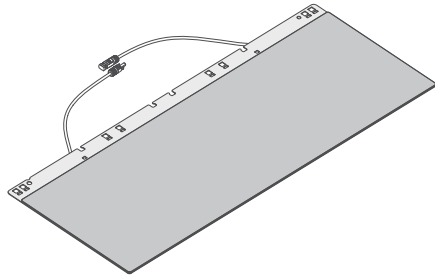
ROOFING MODULES, FULL AND PARTIAL

Model #SRNFT1/6, #SRNFT1/3, #SRNFT1/2,
#SRNFT2/3, #SRNFT5/6 and #SRNFT1
Listed to UL 790 Class A
ASTM D3161 Class F
TAS100



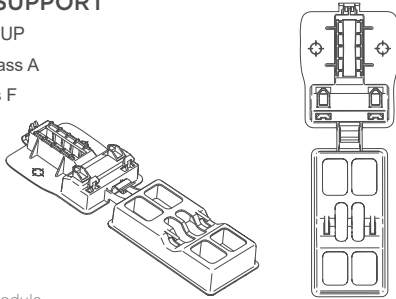
PV MODULE

Model #SR60T1
Listed to UL/IEC 61730
UL 790 Class A
ASTM D3161 Class F
TAS100



FOOT WITH SUPPORT

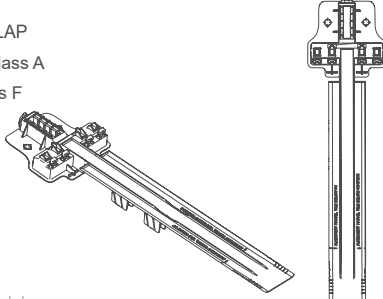
Model #SR-FOOTSUP
Listed to UL 790 Class A
ASTM D3161 Class F
TAS100



Center foot for PV module

FOOTLAP

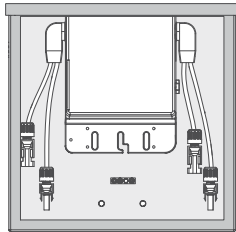
Model #SR-FOOTLAP
Listed to UL 790 Class A
ASTM D3161 Class F
TAS100



Edge foot for PV module

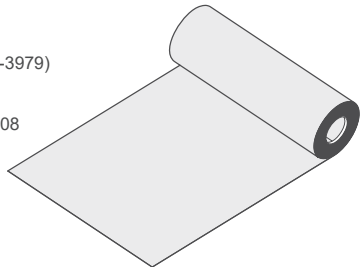
RAPID SHUTDOWN DEVICE

Delta RSS-600 1-1
Listed to UL 1741
NEC Article 690.12
NEMA 3R Enclosure



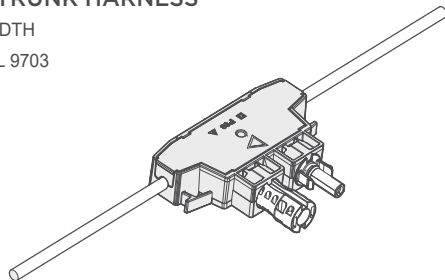
FIRESTONE UNDERLAYMENT

Clad-Gard SA FR
ASTM D226 Type I & II
Certified to ICC-ES AC188 (ESR-3979)
and ASTM D1970
Class A Fire Rated per ASTM E108



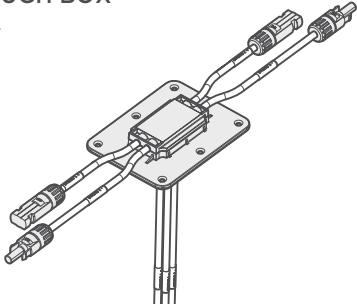
DIODE TRUNK HARNESS

Model #SRDTH
Listed to UL 9703



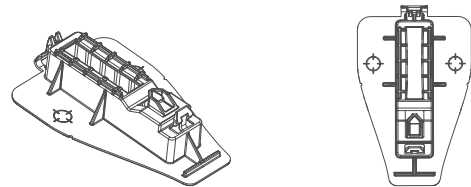
PASS THROUGH BOX

Model #SRPTB-4
Listed to UL 1741



ROOFING FOOT

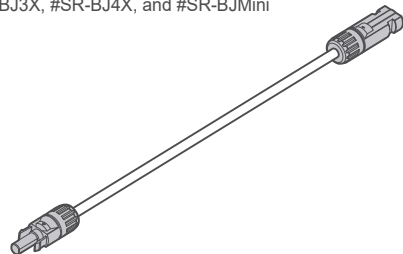
Model #SR-FOOT



Center foot for Roofing module

BRANCH JUMPER

Model #SR-BJ2X, #SR-BJ3X, #SR-BJ4X, and #SR-BJMini
Listed to UL 9703





Rapid Shutdown Device for Delta 3.0~7.6 TL Inverters

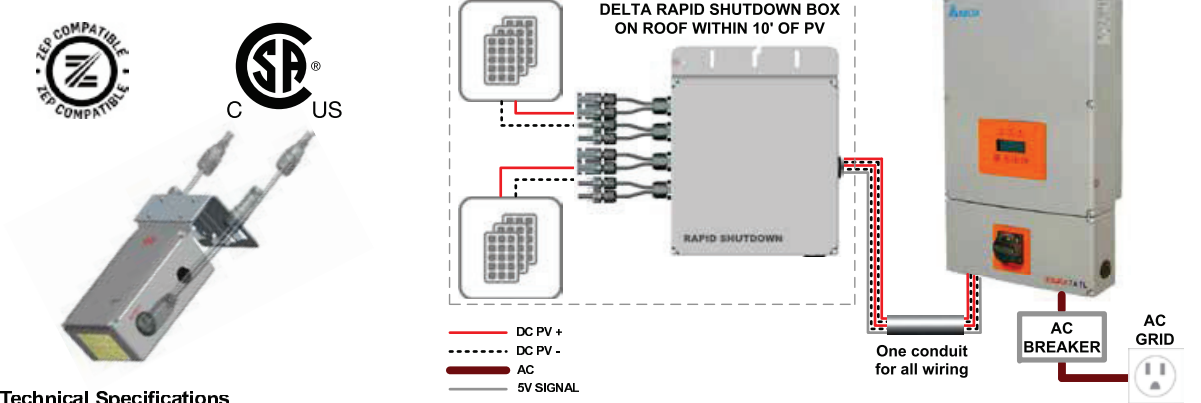
Delta’s Rapid Shutdown Devices provide an automatic disconnect of 600VDC residential or small commercial PV array system, fully compliant with the Rapid Shutdown requirements of NEC 2014 article 690.12. It is compatible with Delta’s single-phase residential inverters.

KEY FEATURES

- NEMA 4X Protection
- Compact and Lightweight
- Rack Mount Installation
- Fast Connect with PV Connectors
- Compliant with NEC 2014 article 690.12
- PLC Communication (Model RSS-600 1-1 only)



Model RSS-600 4-2 Connection Diagram:



Technical Specifications

Input Ratings	RSS-600 1-1	RSS-600 4-2
Max. System Voltage	600V DC	600V DC
Max. Number of Input Circuit	1	4
Rated Input Current Per String	20A	10A
Fuse Rating	N/A	15A
Output Ratings		
Max. Number of Output Circuit	1	2
Rated Output Current Per Circuit	20A	20A
Maximum Current Controlled Conductor	25A	25A
Output Terminal Wire Size	10 AWG	12-6 AWG
Output Conduit Size	N/A	3/4" (two holes)
Control Signal Method	PLC Signal	5V Signal Wire
5V Signal Wire Voltage Rating	N/A	600V
5V Signal Wire Size Range	N/A	24-14 AWG
General Data		
Enclosure Size in Inches L x W x D (mm)	7.87 x 5.91 x 2.09 (200 x 150 x 53)	12.44 x 10.04 x 2.16 (316 x 255 x 55)
Weight	2.86lbs (1.3kg)	6.6lbs (3.0kg)
Input Connectors	MC-4 PV Connector or Amphenol H4 PV Connector	MC-4 PV Connector or Amphenol H4 PV Connector
Output Connectors	MC-4 PV Connector or Amphenol H4 PV Connector	Screw Terminal Blocks
Operating Temperature	-40 ~ 158°F (-40 ~ 70°C)	-40 ~ 158°F (-40 ~ 70°C)
Storage Temperature	-40 ~ 185°F (-40 ~ 85°C)	-40 ~ 185°F (-40 ~ 85°C)
Humidity	0 ~ 100%	0 ~ 100%
Max. Operating Altitude	2000m above sea level	2000m above sea level
Warranty	10 Years	10 Years
Standard Compliance		
Enclosure Protection Rating	NEMA 4X	NEMA 4X
Safety	UL 1741, CSA 22.2 107-1	UL 1741, CSA 22.2 107-1
NEC Code	NEC 2014 Article 690.12	NEC 2014 Article 690.12

Product specifications subject to change without notice.

Delta Products Corporation, Inc.
46101 Fremont Blvd.
Fremont, CA 94538
Sales Email: Inverter.Sales@delta-corp.com
Support Email: Inverter.Support@delta-corp.com
Sales Hotline: +1-877-440-5851 or
+1-626-369-8021
Support Hotline: +1-877-442-4832
Support (Intl.): +1-626-369-8019
Monday to Friday from 7am to 5pm PST (apart from Holidays)

www.delta-americas.com/solarinverters
Rev. 01/2017 - All information and specifications area subject to change without notice



Single Phase Solar Inverter for North America

M4-TL-US | M5-TL-US | M6-TL-US | M8-TL-US | M10-TL-US



Key Features:

- Smart inverter with BLE, optional WiFi, Ethernet, 3G / 4G cellular communication
- Support bi-directional cloud communication
- Support remote diagnosis and OTA
- Type 4 protection
- Built-in AFCI & Rapid shutdown controller
- CEC efficiency 97.5%
- Option: Revenue Grade Meter: ANSI 12.20 (0.5% accuracy)
- UL 1741 SA, HECO & CA Rule 21 compliant



SPECIFICATIONS

Model	M4-TL-US	M5-TL-US	M6-TL-US	M8-TL-US	M10-TL-US
INPUT (DC)					
Maximum system voltage	600 V				
Nominal voltage	380 V				
Maximum operating voltage Voc	540 V				
Operating MPPT range	50 V to 480 V				
Maximum input current (per MPPT)	12 A	12 A	12 A	12 A	20 A
Maximum short circuit current @ STC	15 A / 15 A	15 A / 15 A	15 A / 15 A / 15 A	15 A / 15 A / 15 A	25 A / 25 A
Maximum DC/AC ratio	1.3				
DC disconnect	Integrated				
MPP tracker	2	2	3	3	2
Input strings available	2 - 2	2 - 2	2 - 2 - 2	2 - 2 - 2	2 - 2
OUTPUT (AC)					
Nominal power @ 240V	3840 W	4800 W	5760 W	7680 W	9600 W
Maximum output power	4000 W	5000 W	6000 W	8000 W	10000 W
Voltage range	183 Vac to 228 Vac @ 208 Vac 211 Vac to 264 Vac @ 240 Vac				
Maximum continuous current	16 A	20 A	24 A	32 A	40 A
Nominal frequency	60 Hz				
Frequency range	59.3 Hz to 60.5 Hz				
Adjustable frequency range	50 Hz to 66 Hz				
Night consumption	< 1.5 W *				
THD @ nominal power	< 3 %				
Power factor @ nominal power	> 0.99				
Adjustable power factor range	0.85i to 0.85c				
GENERAL SPECIFICATION					
Maximum efficiency	98%				
CEC efficiency	97.0 % @ 208 V 97.5 % @ 240 V	97.5 % @ 208 V 97.5 % @ 240 V	97.0 % @ 208 V 97.5 % @ 240 V	97.5 % @ 208 V 97.5 % @ 240 V	97.5 % @ 208 V 97.5 % @ 240 V
Operating temperature range	-22 °F to 149 °F (-30 °C to 65 °C) de-rating above 113 °F (45 °C)				
Storage temperature range	-40 °F to 185 °F (-40 °C to 85 °C)				
Humidity	0% to 95%				
Maximum operating altitude	9,843 ft (3,000 m)				
Acoustic noise	< 45 dB(A) @ 3 ft (1m)				

Rev 12A – 06/2019 © Copyright 2019 Delta Electronics (Americas), Ltd. All rights reserved.
Specifications subject to change without prior notice.



Solar Inverter for North America

SPECIFICATIONS

Model	M4-TL-US	M5-TL-US	M6-TL-US	M8-TL-US	M10-TL-US
MECHANICAL DESIGN					
Dimensions (W x H x D)	16.7 x 23.2 x 5.9 in (425 x 590 x 150 mm)				
Weight ¹⁾	41.9 lbs (19.0 kg)	41.9 lbs (19.0 kg)	44.3 lbs (20.1 kg)	45.2 lbs (20.5 kg)	47.6 lbs (21.6 kg)
Cooling	Natural convection			Natural convection with internal fan	
DC connection	Spring contact type				
Admissible conductor size DC	AWG 12 to AWG 8				AWG 10 to AWG 8
AC connection	Spring contact type				
Admissible conductor size AC	AWG 10 to AWG 6				AWG 8 to AWG 6
Communication interface	BLE, optional WiFi, Ethernet, 3G / 4G cellular communication				
Enclosure material	Die-casting aluminum				
STANDARDS / DIRECTIVES					
Enclosure protection rating	Type 4				
Safety	UL 1741, CSA-C22.2 No. 107.1-01				
Software approval	UL 1998				
Ground fault protection	UL 1741 CRD				
Anti-islanding protection	IEEE 1547, IEEE 1547.1				
EMC	FCC part 15 Class B				
AFCI	UL 1699B (Type 1), NEC 2017 Article 690.11				
Integrated meter	ANSI C12.20 (meets 0.5% accuracy)				
Grid support regulation	UL 1741 SA, California Rule 21 phase 1, 2 (pending), HECO Compliant				
WARRANTY					
Standard warranty	10 years				



1) Without communication meter

Delta Electronics (Americas), Ltd.
46101 Fremont Blvd, Fremont, CA 94538
Sales Email: Inverter.Sales@deltaww.com
Support Email: Inverter.Support@deltaww.com
Sales Hotline: +1-877-440-5851 or +1-626-369-8021
Support Hotline: +1-877-442-4832
Support (Intl.): +1-626-369-8019
Monday to Friday from 6am to 6pm PST (apart from Holidays)
www.Delta-Americas.com





Accessory: MCI (Middle Circuit Interrupter)

Features:

- Automatic function test upon startup, ensure safety
- Enclosure protection Type 4
- Meet 2017 NEC Article 690.12 Rapid Shutdown
- No installation needed for every PV Module, make better cost performance for PV system
- With PLC, no additional cable needed

INPUT RATINGS	
Delta part number	GPI00010110
Maximum system voltage	600 Vdc
Rated input operating voltage	6 Vdc to 80 Vdc
Number of input circuit	1
Rated input current	12 A
OUTPUT RATINGS	
Rated output current	12 A
Control signal method	PLC signal
GENERAL DATA	
Dimensions (W x H x D)	3.8 x 6.5 x 1.1 in (97.3 x 165 x 27.3 mm)
Weight	1.4 lbs (0.64 kg)
Cooling	Natural convection
DC input/ output connectors	MC4 PV connector
Enclosure material	Plastic
Operating temperature	-40 °F to 185 °F (-40 °C to 85 °C)
Storage temperature	-40 °F to 185 °F (-40 °C to 85 °C)
Humidity	0% to 95%
Maximum operating altitude	9,843 ft (3,000m) above sea level
Self power consumption	<3.0 W
Warranty	10 years
STANDARD COMPLIANCE	
Enclosure protection rating	Type 4
Safety	UL 1741, CSA-C22.2 No. 107.1-01
Rapid shutdown	NEC 2017 Article 690.12
EMC	FCC Part 15 Class B

City of Takoma Park

Housing and Community Development Department

Main Office 301-891-7119
Fax 301-270-4568
www.takomaparkmd.gov



7500 Maple Avenue
Takoma Park, MD 20912

MUNICIPALITY LETTER

March 3, 2020

To: Steve Shira
54 Walnut Avenue
Takoma Park MD, 20912

To: Department of Permitting Services
255 Rockville Pike, 2nd Floor
Rockville, Maryland 20850-4166 Fax 240-777-6398; 240-777-6262; 240-777-6223

From: Planning and Development Services Division

THIS IS NOT A PERMIT – For Informational Purposes Only

VALID FOR ONE YEAR FROM DATE OF ISSUE

The property owner is responsible for obtaining all required permits from Montgomery County and the City of Takoma Park. If this property is in the **Takoma Park Historic District**, it is subject to Montgomery County Historic Preservation requirements.

Representative/email: Beth Vallandingham / bvallandingham@tesla.com

Location of Project: 54 Walnut Avenue, Takoma Park, MD 20912

Proposed Scope of Work: Re-roof with Solarglass (solar roof tile)- 6.90 kW

The purpose of this municipality letter is to inform you that the City of Takoma Park has regulations and city permit requirements that may apply to your project. This municipality letter serves as notification that, in addition to all Montgomery County requirements, you are required to comply with all City permitting requirements, including:

- Tree Impact Assessment/Tree Protection Plan
- Stormwater management
- City Right of Way

Failure to comply with these requirements could result in the issuance of a Stop Work Order and other administrative actions within the provisions of the law. Details of Takoma Park's permit requirements are attached on page 2.

The issuance of this letter does not indicate approval of the project nor does it authorize the property owner to proceed with the project. The City retains the right to review and comment on project plans during the Montgomery County review process.

City Of Takoma Park



The City of Takoma Park permits for the following issues:

Tree Impact Assessment/Tree Protection Plan/Tree Removal Application:

Construction activities that occur within 50 feet of any urban forest tree (7 5/8" in diameter or greater), located on the property or on an adjacent property, may require a Tree Impact Assessment and Tree Protection Plan. Make sure to submit a Tree Impact Assessment and schedule a site visit with the City's Urban Forest Manager if any urban forest tree will be impacted by the proposed construction. The removal of any urban forest tree will require a tree removal application. The tree ordinance is detailed in the City Code, section 12.12. For permit information check: <https://takomaparkmd.gov/services/permits/tree-permits/> The City's Urban Forest Manager can be reached at 301-891-7612 or janvz@takomaparkmd.gov

Stormwater Management:

If you plan to develop or redevelop property, you may be required to provide appropriate stormwater management measures to control or manage runoff, as detailed in City Code section 16.04. All commercial or institutional development in the city must apply for Stormwater Management Permit regardless of the size of the land disturbance. Additions or modifications to existing detached single-family residential properties do not require a Stormwater Management permit if the project does not disturb more than 5,000 square feet of land area. For more information: <https://takomaparkmd.gov/government/public-works/stormwater-management-program/>. The City Engineer should be contacted to determine if a City permit is required at 301-891-7620.

City Right of Way:

- To place a **construction dumpster or storage container** temporarily on a City right of way (usually an adjacent road), you will need to obtain a permit. A permit is not required if the dumpster is placed in a privately-owned driveway or parking lot.
- If you plan to install a new **driveway apron**, or enlarge or replace an existing driveway apron, you need a Driveway Apron Permit.
- If you plan to construct a **fence** in the City right of way, you need to request a Fence Agreement. If approved, the Agreement will be recorded in the Land Records of Montgomery County.

For more information and applications for City permits, see <https://takomaparkmd.gov/services/permits/> or contact the Takoma Park Department of Public Works at 301-891-7633.

Failure to comply with the City's permitting requirements could result in the issuance of a Stop Work Order and other administrative actions within the provisions of the law.

SOLARGLASS

DATASHEET



ROOFING SYSTEM SPECIFICATIONS

CERTIFICATIONS

UL Listed	ETL Listed
UL/IEC 61730	UL 790 Class A
UL 9703	TAS100
UL 1741	ASTM D3161 Class F

ELECTRICAL CHARACTERISTICS

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Maximum series fuse rating: 15 A
Maximum system voltage: 600 V

ROOF PITCH RANGE

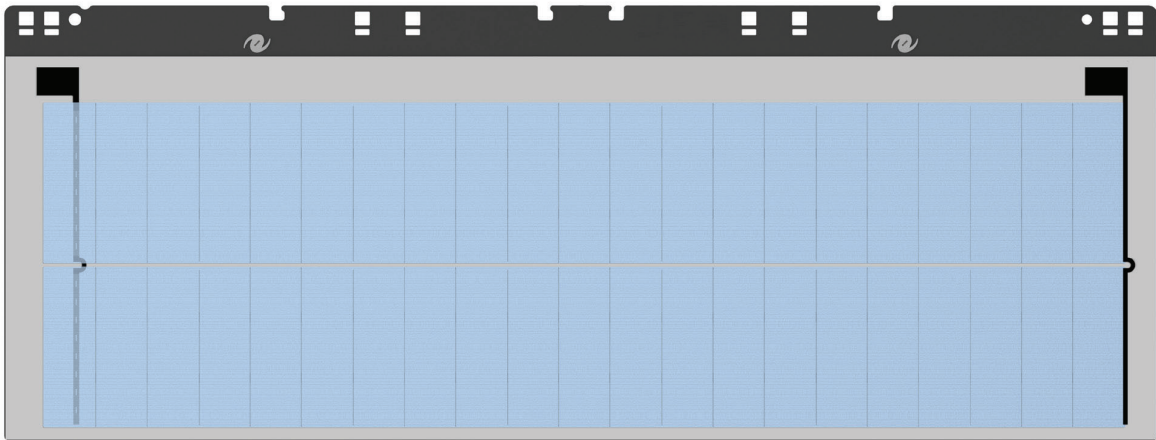
2:12 - 12:12

MODULE SPECIFICATIONS

MODEL #SR60T1 14-CELL MODULE

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1000	25	13.34	10.99	5.65	5.32	58.47

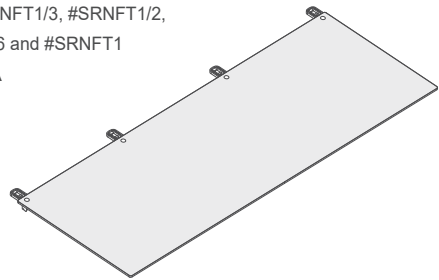
These electrical characteristics are within ± 5% of the indicated values of Isc, Voc, and Pmax under standard test conditions (irradiance of 1000 W/m², AM 1.5 spectrum, and a cell temperature of 25 °C or 77 °F).



Dimensions	430 mm x 1140 mm x 34.5 mm
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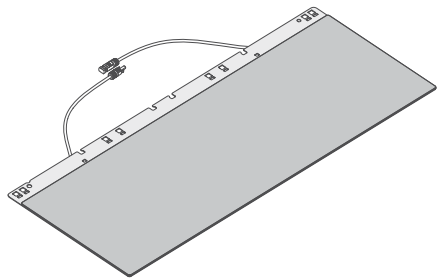
ROOFING MODULES, FULL AND PARTIAL

Model #SRNFT1/6, #SRNFT1/3, #SRNFT1/2,
#SRNFT2/3, #SRNFT5/6 and #SRNFT1
Listed to UL 790 Class A
ASTM D3161 Class F
TAS100



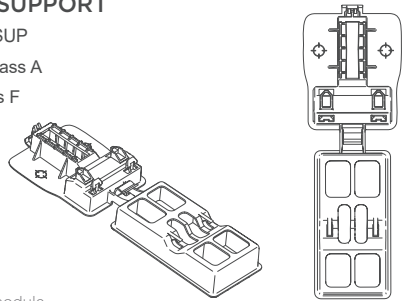
PV MODULE

Model #SR60T1
Listed to UL/IEC 61730
UL 790 Class A
ASTM D3161 Class F
TAS100



FOOT WITH SUPPORT

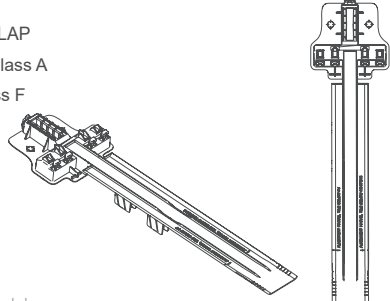
Model #SR-FOOTSUP
Listed to UL 790 Class A
ASTM D3161 Class F
TAS100



Center foot for PV module

FOOTLAP

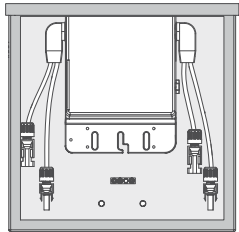
Model #SR-FOOTLAP
Listed to UL 790 Class A
ASTM D3161 Class F
TAS100



Edge foot for PV module

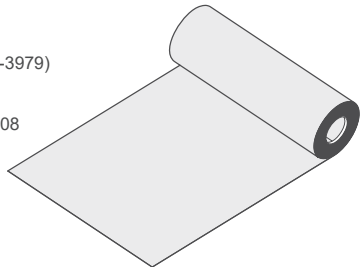
RAPID SHUTDOWN DEVICE

Delta RSS-600 1-1
Listed to UL 1741
NEC Article 690.12
NEMA 3R Enclosure



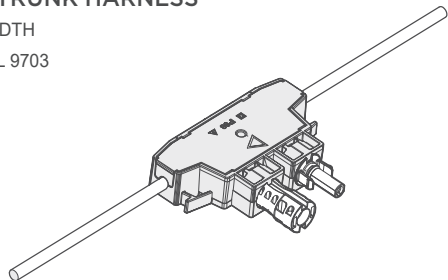
FIRESTONE UNDERLAYMENT

Clad-Gard SA FR
ASTM D226 Type I & II
Certified to ICC-ES AC188 (ESR-3979)
and ASTM D1970
Class A Fire Rated per ASTM E108



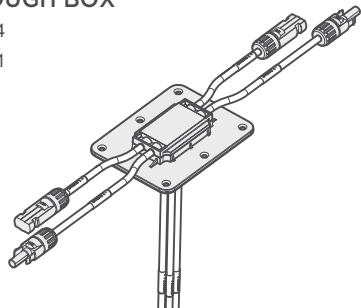
DIODE TRUNK HARNESS

Model #SRDTH
Listed to UL 9703



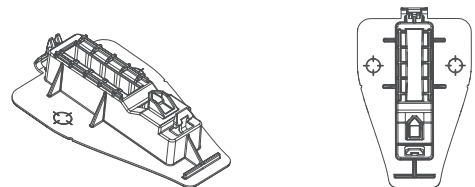
PASS THROUGH BOX

Model #SRPTB-4
Listed to UL 1741



ROOFING FOOT

Model #SR-FOOT



Center foot for Roofing module

BRANCH JUMPER

Model #SR-BJ2X, #SR-BJ3X, #SR-BJ4X, and #SR-BJMini
Listed to UL 9703

