

HAWP #:	at:					
submitted on:						_
has been reviev	ved and detern	mined that the p	proposal fits i	nto the followi	ng category/ca	itegories:

Repair or replacement of a masonry foundation with new masonry materials that closely match the original in appearance;

Installation of vents or venting pipes in locations not visible from the public right-of-way;

New gutters and downspouts;

Removal of vinyl, aluminum, asbestos, or other artificial siding when the original siding is to be repaired and/or replaced in kind:

Removal of accessory buildings that are not original to the site or non-historic construction;

Repair or replacement of missing or deteriorated architectural details such as trim or other millwork, stairs or stoops, porch decking or ceilings, columns, railings, balusters, brackets shutters, etc., with new materials that match the old in design, texture, visual characteristics, and, where possible materials, so long as the applicant is able to provide one extant example, photographic evidence, or physical evidence that serves as the basis for the work proposed;

Construction of wooden decks that are at the rear of a structure and are not visible from a public right-of-way;

Roof replacement with -compatible roofing materials, or with architectural shingles replacing 3-Tab asphalt shingles;

Installation of storm windows or doors that are compatible with the historic resource or district;

Repair, replacement or installation of foundation-level doors, windows, window wells, and areaways, or foundation vents, venting pipes, or exterior grills that do not alter the character-defining features and/or the historic character of the resource:

Construction of fences that are compatible with the historic site or district in material, height, location, and design; Fence is lower than 48" in front of rear wall plane;

Construction of walkways, parking pads, patios, driveways, or other paved areas that are not visible from a public right-of-way and measure no more than 150 square feet in size;

Replacement of existing walkways, parking pads, patios, driveways, or other paved areas with materials that are compatible with the visual character of the historic site and district and that are no greater than the dimensions of the existing hardscape;

Construction of small accessory buildings no larger than 250 square feet in size that are not visible from the public right-of-way;

Installations of skylights on the rear of a structure that will not be visible from the public right-of-way, and would not remove or alter character-defining roof materials;

Installation of solar panels and arrays in locations that are not readily visible from the public right-of-way or that are designed so as to have a minimal impact on the historic resource or the historic district (e.g., systems that are ground-mounted in areas other than the front or side yard of a corner lot, located on accessory or outbuildings, on non-historic additions, or on rear facing roof planes);

Installation of car charging stations in any location on a property or in the right-of-way;

Installation of satellite dishes;

Removal of trees greater than 6" in diameter (d.b.h.) that are dead, dying, or present an immediate hazard.

Removal of trees greater than 6" in diameter (d.b.h.) in the rear of the property that will not impact the overall tree canopy of the surrounding district or historic site;

Replacement tree required as a condition; and, Other minor alterations that may be required by the Department of Permitting Services post-Commission approval that would have no material effect on the historic character of the property.

Staff finds the proposal complies with Chapte	r 24A, the Secretary	of the Interior's Standards for
Rehabilitation, and any additional requisite gu	uidance. Under the	authority of COMCOR No.
24A.04.01, this HAWP is approved by $7$	Trucketon	. The approval memo



#### HISTORIC PRESERVATION COMMISSION

Marc Elrich
County Executive

Sandra I. Heiler Chairman

Date: February 5, 2021

#### **MEMORANDUM**

TO: Mitra Pedoeem

Department of Permitting Services

FROM: Dan Bruechert

Historic Preservation Section

Maryland-National Capital Park & Planning Commission

SUBJECT: Historic Area Work Permit # 940456 - Solar Installation

The Montgomery County Historic Preservation Commission (HPC) has reviewed the attached application for a Historic Area Work Permit (HAWP). This application was **approved** by historic preservation staff.

The HPC staff has reviewed and stamped the attached construction drawings.

THE BUILDING PERMIT FOR THIS PROJECT SHALL BE ISSUED CONDITIONAL UPON ADHERENCE TO THE ABOVE APPROVED HAWP CONDITIONS AND MAY REQUIRE APPROVAL BY DPS OR ANOTHER LOCAL OFFICE BEFORE WORK CAN BEGIN.

Applicant: Philip Schuler

Address: 10 Montgomery Ave,. Takoma Park

This HAWP approval is subject to the general condition that the applicant will obtain all other applicable Montgomery County or local government agency permits. After the issuance of these permits, the applicant must contact this Historic Preservation Office if any changes to the approved plan are made. Once work is complete the applicant will contact Dan Bruechert at 301.563.3400 or dan.bruechert@montgomeryplanning.org to schedule a follow-up site visit.



# SOLAR PV SYSTEM: 3.24 kWp

# **SCHULER & SCHMIDT RESIDENCE**

10 MONTGOMERY AVENUE TAKOMA PARK.

**MD UNITED STATES 20912** 

**Montgomery County Historic Preservation Commission** 

**APPROVED** 

Sandral Kkiler

PROJECT INFORMATION

OWNER: PHILIP SCHULER AND RACHEL SCHMIDT

10 MONTGOMERY AVENUE ADDRESS: TAKOMA PARK, MD UNITED

STATES 20912

AHJ: **MONTGOMERY** 

255 ROCKVILLE PIKE, 2ND ADDRESS:

FLOOR ROCKVILLE. MD 20850

**RESIDENTIAL** ZONING: **BUILDING CODE:** IBC 2018 **ELECTRICAL CODE: NEC 2017 ASCE VERSION: ASCE 7-16** 

30 PSF **SNOW LOAD: WIND SPEED:** 110 MPH

WIND EXPOSURE: B

DC RATING: 3.24 kW **AC RATING:** 2.61 kW

UNIRAC SM LIGHT RAIL **RACKING:** 

**MODULE:** (9) REC360AA

(9) IQ7PLUS-72-2-US INVERTER:

REVIEWED

By Dan.Bruechert at 2:38 pm, Feb 05, 2021

# David Maplesden Realton

#### **PROJECT SCOPE**

THIS PROJECT INVOLVES THE INSTALLATION OF (9) REC 360 SOLAR MODULES. THE SOLAR MODULES WILL BE RACKED USING A PRE-ENGINEERED RACKING SYSTEM. THE RACKED MODULES WILL BE ELECTRICALLY CONNECTED TO (9) ENPHASE DC TO AC POWER INVERTERS, AND INTERCONNECTED TO THE LOCAL UTILITY USING MEANS AND METHODS CONSISTENT WITH THE RULES ENFORCED BY THE LOCAL UTILITY AND PERMITTING JURISDICTION.

INDEX OF PAGES			
Z001 COVER PAGE			
A001	ATTACHMENT & SITE PLAN		
S001	ASSEMBLY & LOAD CALCS		
E001	ELECTRICAL - LINE DIAGRAM		
E002	ELECTRICAL - WIRE CALCS		
E003	STRING & CONDUIT LAYOUT		
E004 EQUIP. RATINGS & SIGNAGE			
×	MODULE DATASHEET		
N.	INVERTER DATASHEET		
APPENDIX	RACKING DATASHEET		
A	ANCHOR DATASHEET		

DocuSigned by:



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.: 41308 Exp. Date: 01-06-2022 STAMPED AND SIGNED FOR STRUCTURAL ONLY

DocuSigned by Scott kirby -CAD180010D814CD.

1/24/2021

**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) ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE AND AS REQUIRED BY THE NEC AND AHJ.

3) PV SYSTEM CIRCUITS INSTALLED ON OR IN BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION TO REDUCE SHOCK HAZARD FOR **EMERGENCY RESPONDERS** 

4) THIS SYSTEM IS A UTILITY INTERACTIVE SYSTEM, AND THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE.

#### FOR PERMITTING USE ONLY

10 MONTGOMERY VENUE TAKOMA PARK, UNITED STATES 20912 HILIP SCHULER AND RACHEL SCHMIDT PHILIP

PROJECT ADDRESS:

**CONTRACTOR INFO:** 



3600 COMMERCE DR SUITE 601 BALTIMORE, MD 21227 (443) 955-0779

LICENSE NUMBER:

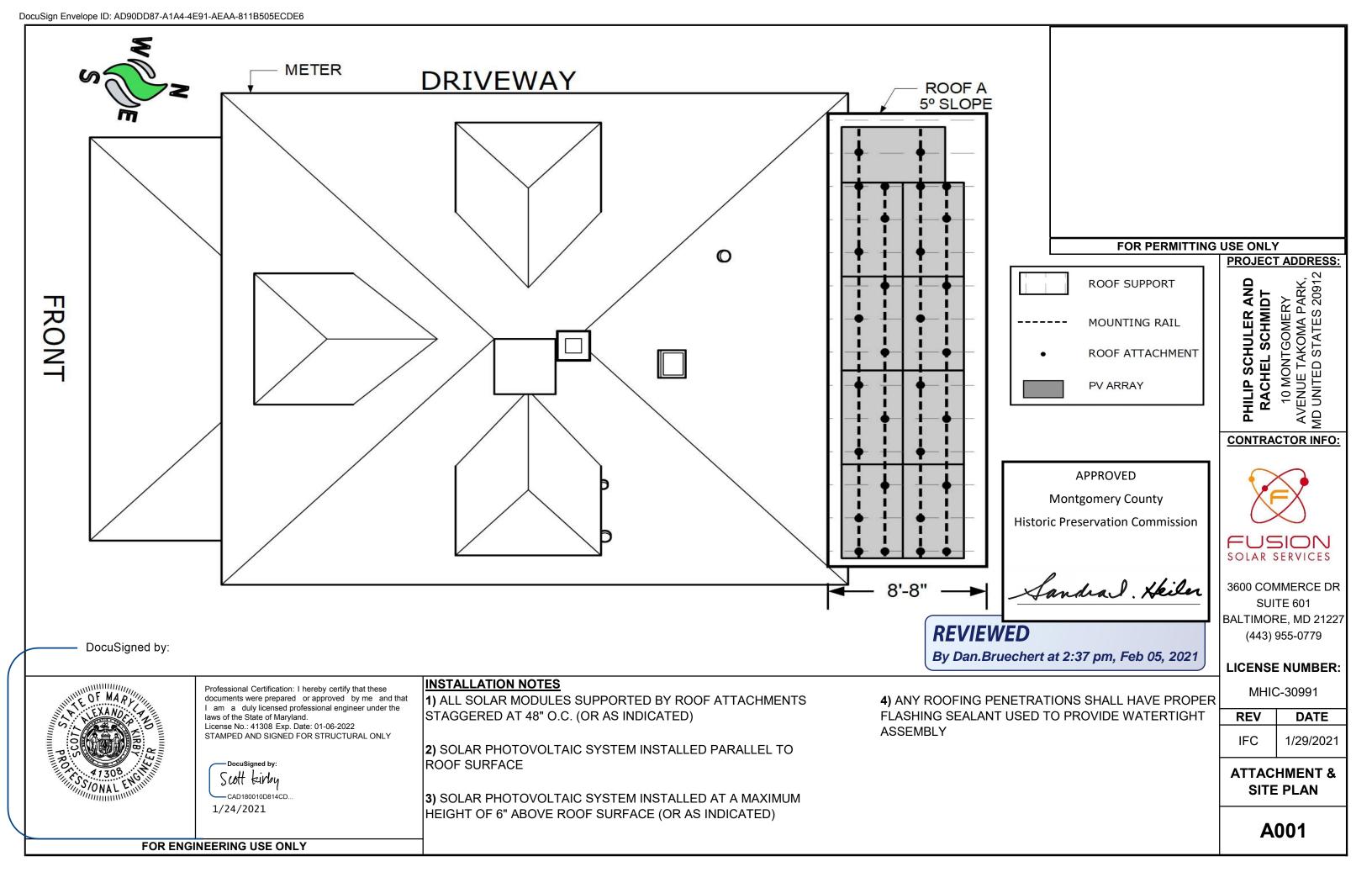
MHIC-30991

REV	DATE
IFC	1/29/2021

**COVER** 

**Z001** 

FOR ENGINEERING USE ONLY

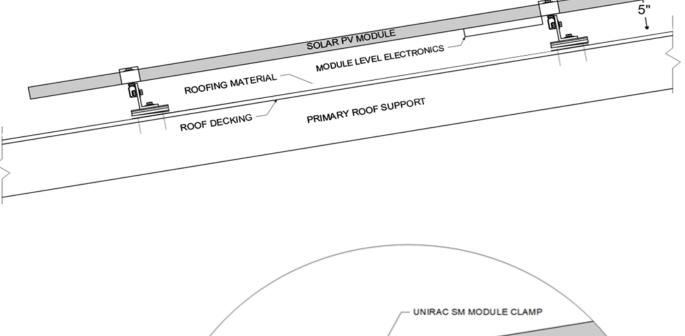


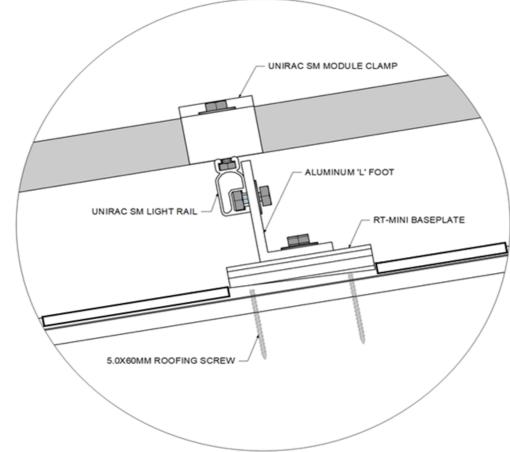
MOUNTING SYSTEM PROPERTIES				
RACKING	UNIRAC SM LIGHT RAIL			
STANDOFF	RT-MINI			
MAX. RAIL SPAN	48 IN			
MIN. FASTENER DEPTH	2.50 IN			
MAX. RAIL CANTILEVER	16 IN			
MAX. ARRAY HEIGHT	6"			

DEAD LOAD CALCULATION					
LOAD	QTY. OR LIN. FT.	WEIGHT PER (LB)	TOTAL LBS.		
MODULES	9	43	387.00		
M.L.E.'S	9	2.38	21.42		
RACKING	98.3	0.81	79.62		
STANDOFF	30	0.5	15.00		
TOTAL A	503.0				
TOTAL A	169.4				
DIST	2.97				

POINT LOAD CALCULATION	
TOTAL ARRAY WEIGHT (LBS)	503.04
TOTAL NUMBER OF STANDOFFS (TYP.)	30
POINT LOAD (LBS/STANDOFF)	16.77

ROOF LABEL:	Α
MATERIAL:	Modified Bitumen
PITCH:	5°
AZIMUTH:	349°
PRIMARY SUPPORT:	TRUE 2x4 RAFTERS
PRIMARY SUPPORT SPACING:	24"
LEAST HORIZONTAL DIMENSION:	20'
MEAN HEIGHT:	8'
RACKING:	UNIRAC SM LIGHT RAIL
STANDOFF:	RT-MINI





FOR PERMITTING USE ONLY

PROJECT ADDRESS:

10 MONTGOMERY AVENUE TAKOMA PARK, AD UNITED STATES 20912 PHILIP SCHULER AND RACHEL SCHMIDT

**CONTRACTOR INFO:** 



3600 COMMERCE DR SUITE 601 BALTIMORE, MD 21227 (443) 955-0779

**LICENSE NUMBER:** 

MHIC-30991

REV	DATE
IFC	1/29/2021

**ASSEMBLY & LOAD CALCS** 

**S001** 

#### **INSTALLATION NOTES**

- 1) ALL RACKING SHALL BE INSTALLED PER MANUFACTUER SPECIFICATIONS
- 2) M.L.E.'S = MODULE LEVEL ELECTRONICS (IE, POWER OPTIMIZERS, MICRO-INVERTERS, CABELS, ETC)
- 3) USE (2) 5.0X60MM ROOFING SCREWS TO MOUNT TO ROOF SUPPORT



DocuSigned by:

ROOF PROPERTIES

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.: 41308 Exp. Date: 01-06-2022 STAMPED AND SIGNED FOR STRUCTURAL ONLY

Scott kirby -CAD180010D814CD.

1/24/2021

FOR ENGINEERING USE ONLY

REVIEWED

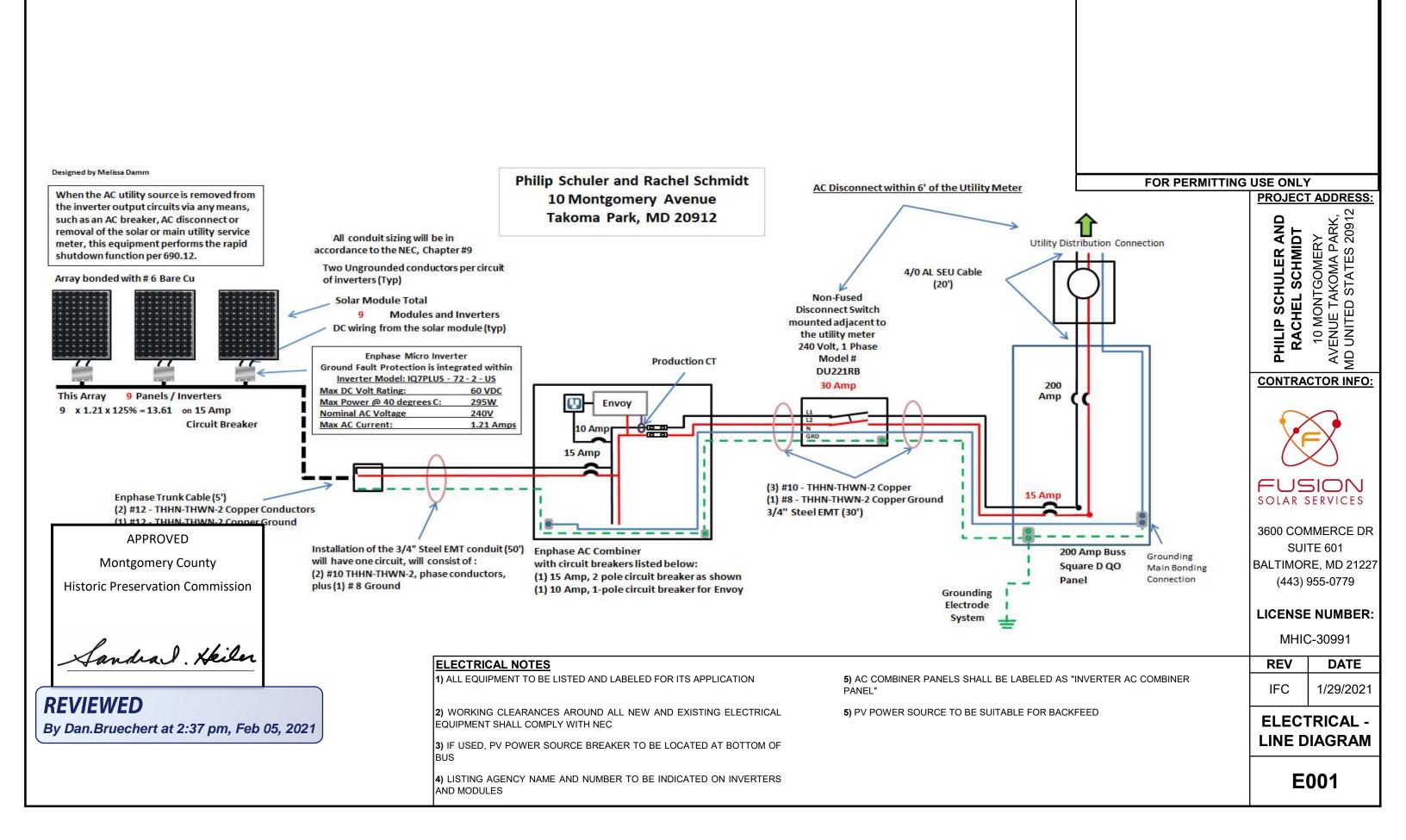
By Dan.Bruechert at 2:37 pm, Feb 05, 2021

**APPROVED** 

**Montgomery County** 

**Historic Preservation Commission** 

Sandral . Kkiler



Interconnection Breaker-Tap Wire Size #10 AWG WIRE SIZING CALCULATION 2017 NEC Article 310 Full Load Amperage .....: 10.89 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) Qty. of Circuit Current-Carrying Conductors: 2 **Conductor Requirement:** Full Load Amps .....: 10.89 Load Duty Multiplier .....: 1.25 Ambient Temp. Multiplier .: 1.15 Qty. Conductors Multiplier: 1.0 Required Conductor Ampacity: 15.65 Terminal Requirement: Full Load Amps .....: 10.89 Load Duty Multiplier .....: 1.25 Required Terminal Ampacity: 13.61 Selected Conductor: Conductor Ampacity .....: 40.0 Ambient Temp. Derate ....: 0.87 Qty. Conductors Derate ...: 1.0 Adjusted Ampacity .....: 34.8 **SELECTED CONDUCTOR SIZE: 10 Awg** 2 x Ohms/MilFt x Length x Amps 2 x 1.24 x 30 x 15.65 VD = ----- = 0.81 1000 x Qtv Wires per Phase 1000 x 1 Volts At Load Terminals.....: 239.19 Actual Percent Voltage Drop .: 0.34

**Combiner To Array** Wire Length 50'

Wire Size #10 AWG WIRE SIZING CALCULATION 2017 NEC Article 310 Full Load Amperage .....: 10.89 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 Average Outside Temp .....: 90 Deg. F 32.2 Deg. C

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

**Conductor Requirement:** Full Load Amps .....: 10.89 Load Duty Multiplier ....: 1.0 Ambient Temp. Multiplier .: 1.72 Qty. Conductors Multiplier: 1.0

Required Conductor Ampacity: 18.73

Terminal Requirement:

Full Load Amps .....: 10.89 Load Duty Multiplier ....: 1.0

Required Terminal Ampacity: 10.89

Selected Conductor:

Conductor Ampacity .....: 40.0 Ambient Temp. Derate .....: 0.58 Qty. Conductors Derate ...: 1.0

Adjusted Ampacity .....: 23.2 **SELECTED CONDUCTOR SIZE: 10 Awg** 

2 x Ohms/MilFt x Length x Amps 2 x 1.24 x 50 x 18.73 VD = ----- = 1.35

1000 x Qty Wires per Phase 1000 x 1 Volts At Load Terminals.....: 238.65 Actual Percent Voltage Drop .: 0.56

#### **APPROVED**

Montgomery County

**Historic Preservation Commission** 

Sandral. Kkiler

By Dan.Bruechert at 2:37 pm, Feb 05, 2021

SYSTEM CURRENT:

**DESIGN AMPERAGE:** 

MAIN BUSS RATING:

**EXISTING MAIN BREAKER:** 

MAX SOLAR BREAKER:

CIRCUIT #1 =

FOR PERMITTING USE ONLY

PROJECT ADDRESS:

10 MONTGOMERY VENUE TAKOMA PARK, UNITED STATES 20912 HILIP SCHULER AND RACHEL SCHMIDT

**CONTRACTOR INFO:** 



3600 COMMERCE DR SUITE 601 BALTIMORE, MD 21227 (443) 955-0779

LICENSE NUMBER:

MHIC-30991

**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) MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER GEC VIA WEEB LUG

**CALCULATION FOR PV BREAKER** 

**CALCULATION FOR MAIN PV BREAKER & CIRCUITS** 

Χ

Χ

Χ

125%

120%

200

1.21 x 125% =

=

=

=

=

10.89 A

240 A

200 A

40 A

13.61 A

13.6125 A

1.21

10.89

200

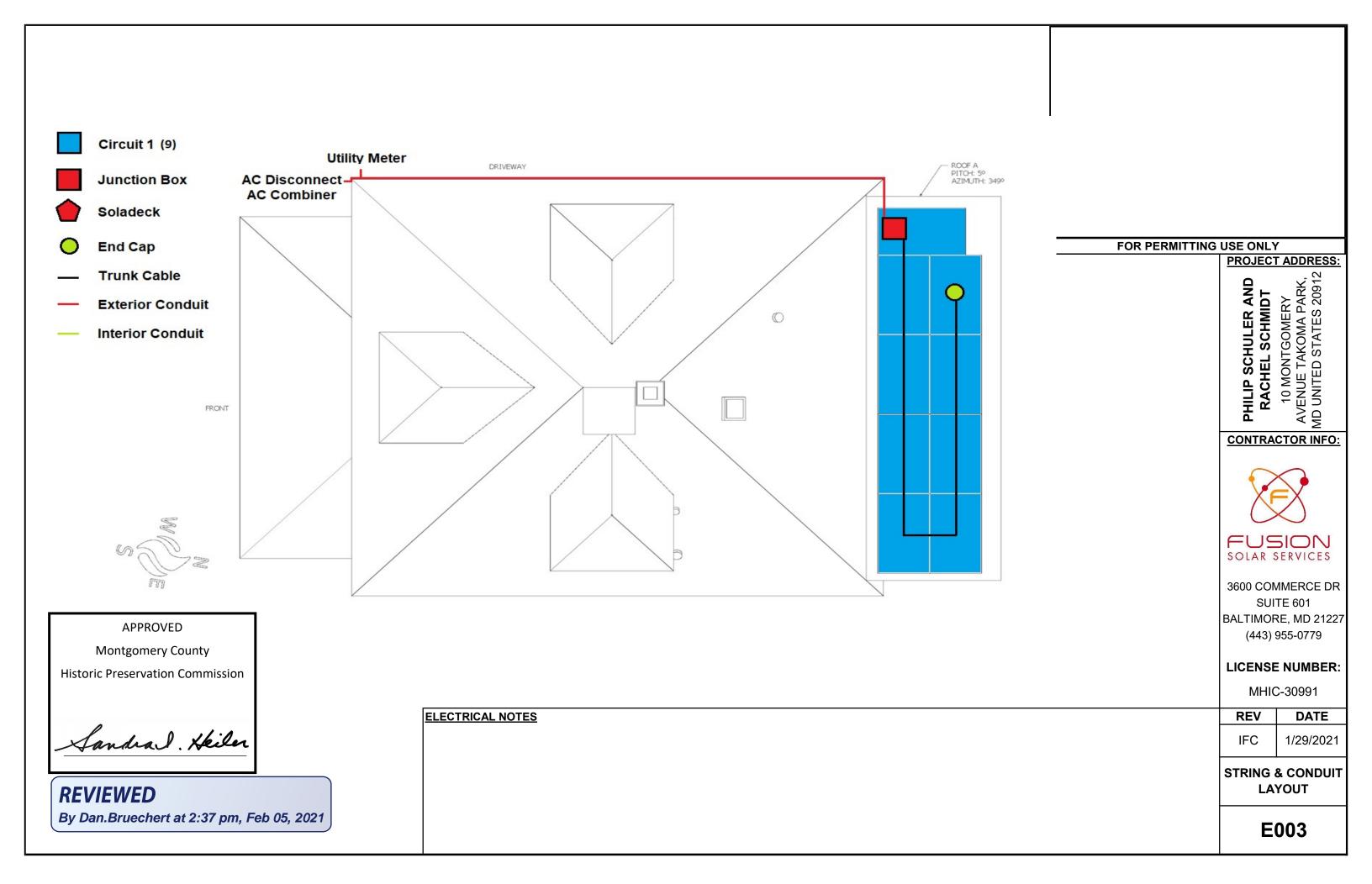
240

9

REV	DATE
IFC	1/29/2021

**ELECTRICAL** -**WIRE CALCS** 

E002



OCUAD MODULE DATINGS				
SOLAR MODULE RATINGS				
REC 360 Specification	<u>18</u>			
Length:	67.75	in		
Width:	40	in		
Thickness:	1.18	in		
Weight:	43	lbs		
Imp:	9.55	Α		
Vmp:	37.7	V		
Voc:	44.3	V		
lsc:	10.16	Α		
OCPD:	25	Α		
Pmax:	360	W		
Vmax:	1000	V		
Temp. Coefficient:	-0.24	%Voc/°C		

INVERTER 1 RATINGS				
IQ7PLUS-72-2-US Specifications				
Max # Per String:	13			
lmax (ac):	1.21	Α		
Vmax (dc):	60	V		
Pmax:	290	W		
Nom. AC Voltage:	240	V		
OCPD:	20	Α		
Weight (Optimizer):	2.38	lbs		
lmax (Input):	15	A		
Pmax (dc) Input:	N/A	V		

#### WARNING: PHOTOVOLTAIC **POWER SOURCE**

LABEL TO BE INSTALLED AT EXPOSED RACEWAYS, CABLE TRAYS, AND OTHER WIRING METHODS; SPACED AT MAXIMUM 10FT SECTION OR WHERE SEPARATED BY ENCLOSURES. WALLS, PARTITIONS, CEILINGS, OR FLOORS.

LETTERS AT LEAST 3/8 INCH: WHITE ON RED BACKGROUND: REFLECTIVE

#### **PHOTOVOLTAIC** DC DISCONNECT

LABEL TO BE INSTALLED AT EACH DC DISCONNECTING MEANS

#### **PHOTOVOLTAIC AC DISCONNECT**

LABEL TO BE INSTALLED AT EACH AC DISCONNECTING MEANS

#### PHOTOVOLTAIC SYSTEM **EQUIPPED WITH RAPID** SHUTDOWN

LABEL TO BE INSTALLED AT RAPID SHUTDOWN **SWITCH** 

LETTERS AT LEAST 3/8 INCH; WHITE ON RED BACKGROUND: REFLECTIVE

# **WARNING**

**ELECTRICAL SHOCK HAZARD** 

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

LABEL TO BE INSTALLED AT EACH DISCONNECTING MEANS FOR PHOTOVOLTAIC EQUIPMENT

# WARNING

**ELECTRICAL SHOCK HAZARD** 

IF GROUND FAULT IS INDICATED NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED

LABEL TO BE INSTALLED AT EACH DISCONNECTING MEANS FOR PHOTOVOLTAIC EQUIPMENT

#### SOLAR PV SYSTEM DISCONNECT

RATED AC OUTPUT CURRENT: 10.89 A

NOMINAL OPERATING AC VOLTAGE: 240 V

LABEL TO BE INSTALLED AT AN ACCESSIBLE LOCATION AT THE DISCONNECTING MEANS AS A POWER SOURCE

INVERTER OUTPUT CONNECTION, DO NOT RELOCATE THIS OVERCURRENT DEVICE

WARNING

WARNING

DUAL POWER SOURCE SECOND SOURCE IS

PHOTOVOLTAIC SYSTEM

LABEL TO BE INSTALLED ON EXTERIOR OF MAIN

ELECTRICAL PANEL

LABEL TO BE APPLIED TO THE DISTRIBUTION **EQUIPMENT** 

#### INTERACTIVE PHOTOVOLTAIC SYSTEM CONNECTED

SOLAR PV LOADCENTER

3.24 kW DC SOLAR ARRAY

240 VOLT AC SYSTEM

**INSTALLED COMPONENTS** 

(9) REC 360W Modules

(9) IQ7PLUS-72-2-US Inverters

**CIRCUIT CALCULATIONS** 

125%

1.21 x 125% = 13.61

1.21

10.89

LABEL TO BE INSTALLED AT UTILITY METER

**SYSTEM CURRENT:** 

**DESIGN AMPERAGE:** 

CIRCUIT #1 =

#### FOR PERMITTING USE ONLY

10.89 A

13.6125

10 MONTGOMERY VENUE TAKOMA PARK, UNITED STATES 20912 PHILIP SCHULER AND RACHEL SCHMIDT

PROJECT ADDRESS:

#### **CONTRACTOR INFO:**



3600 COMMERCE DR SUITE 601 BALTIMORE, MD 21227 (443) 955-0779

LICENSE NUMBER:

MHIC-30991

DATE

REV

IFC	1/29/2021

**EQUIP. RATINGS** & SIGNAGE

E004

#### 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

### **APPROVED Montgomery County**

**Historic Preservation Commission** 

Sandrad . Kkiler

## **REVIEWED**

By Dan.Bruechert at 2:36 pm, Feb 05, 2021