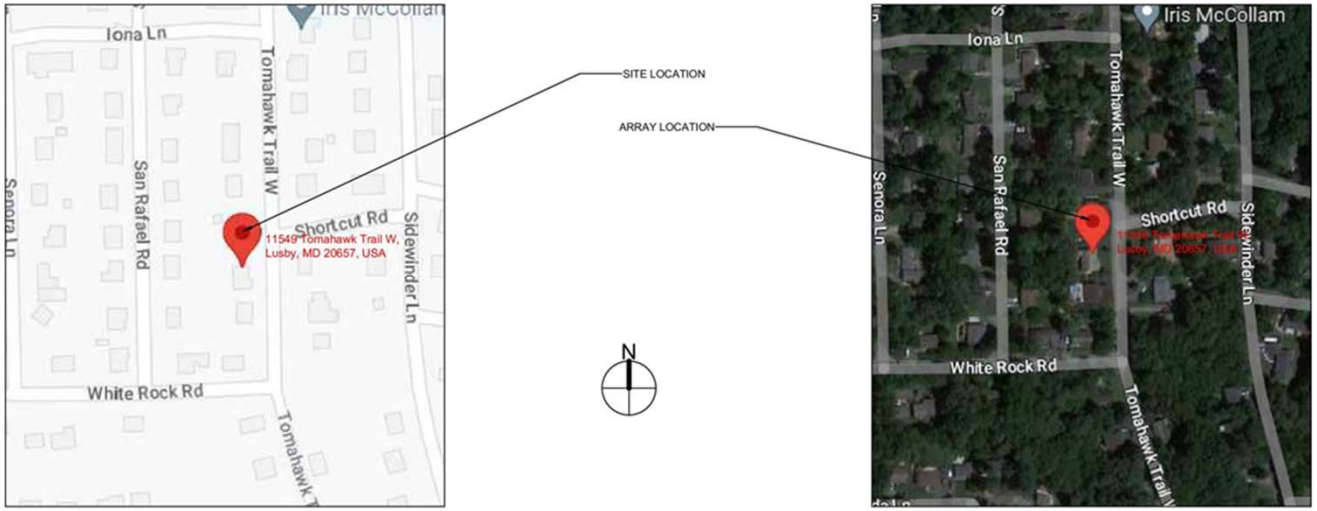
DESCRIPTION : NEW GRID-INTERACTIVE, ROOF-MOUNTED, PHOTOVOLTAIC SYSTEM - **14.76 kW**

INVERTER : SE 11400H-US
NO. OF INVERTERS : 1
PV PANELS : SEG 410W
NO. OF MODULES : 36

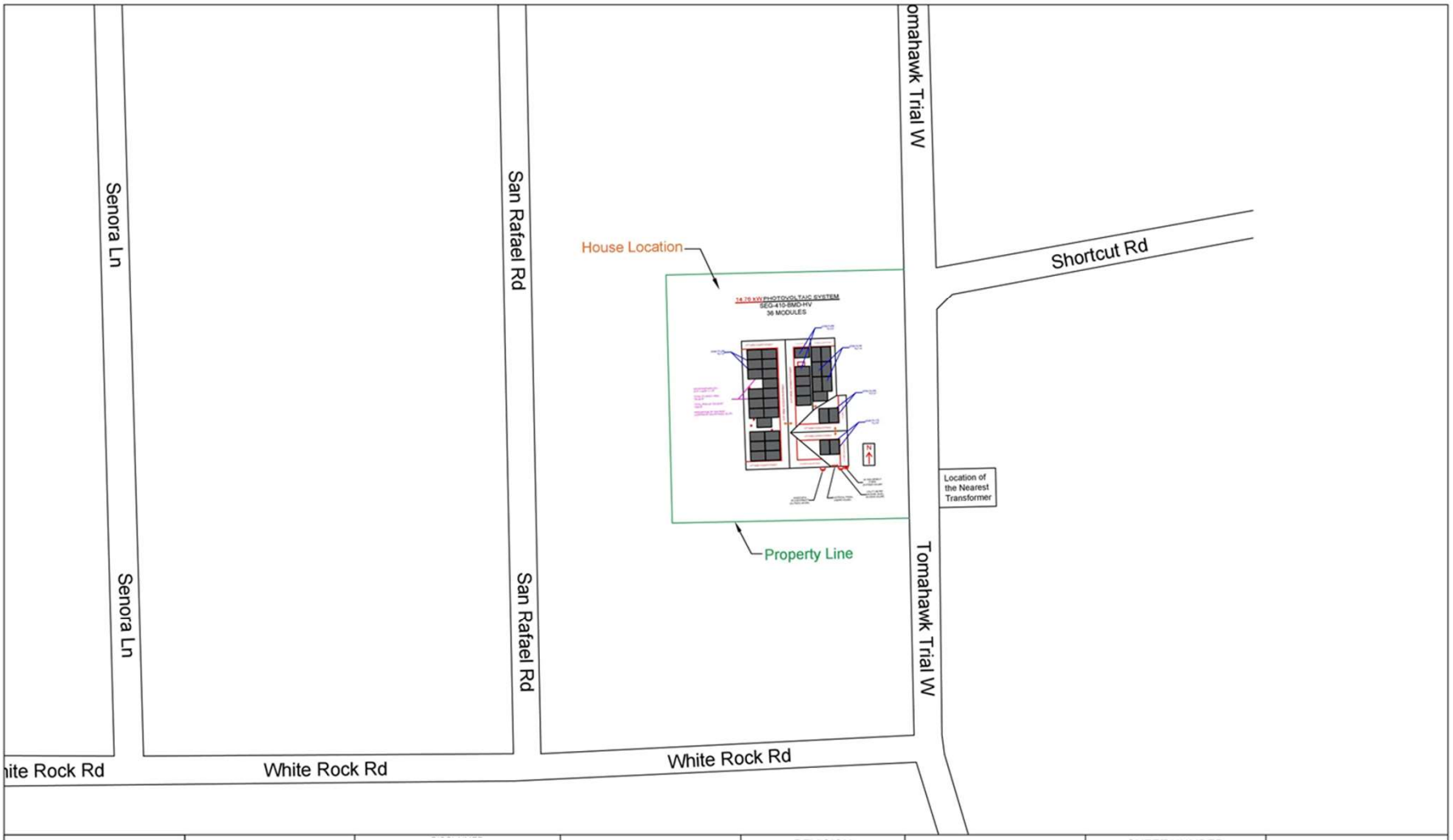
TABLE OF CONTENTS	
G001	INDEX
Z001	TOP VIEW
S001	ROOF FRAMING PLAN & ATTACHMENT SYSTEM
E001	ELECTRICAL LINE DIAGRAM
E002	SAFETY LABELS

SITE CO-ORDINATES - 38.36706256309468, -76.41595170000001



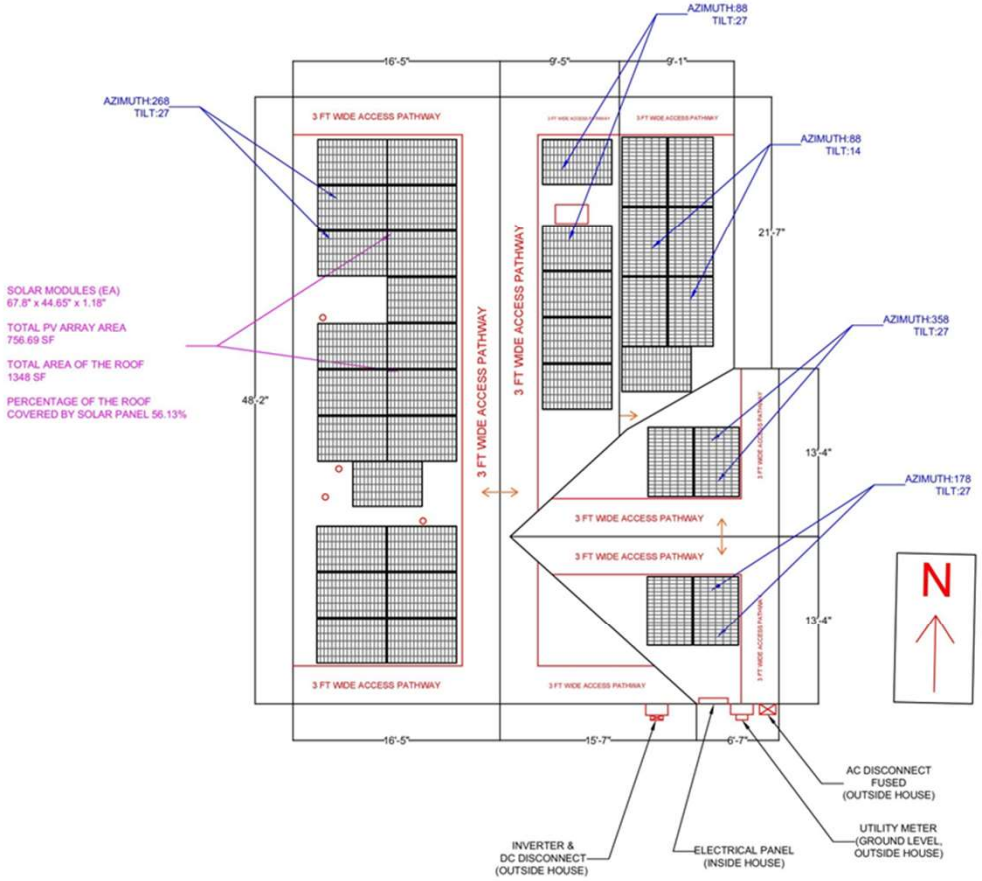
APPLICABLE CODES & STANDARDS
BUILDING: IBC 2018
RESIDENTIAL: IRC 2018
ELECTRICAL: NEC 2017

			DATE 05/09/2023	REVISION		SHEET NUMBER G001	INDEX
						SCALE NTS	



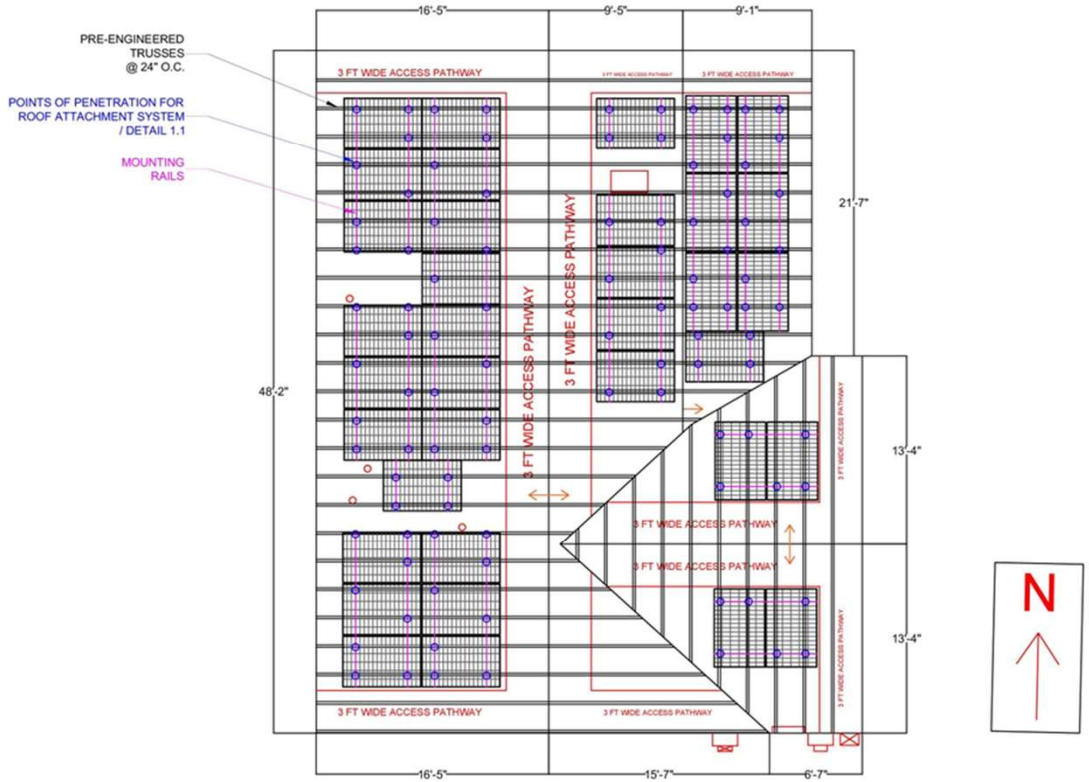
			PREPARED BY	REVISION		SHEET NUMBER	PLAT
						Z002	
			DATE			SCALE	
			08/29/2023			3/32"=1'-0"	

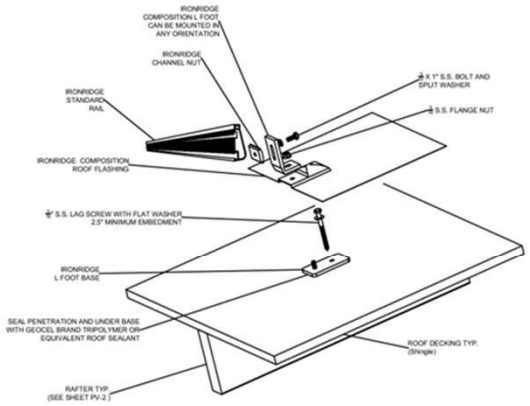
14.76 kW PHOTOVOLTAIC SYSTEM
SEG-410-BMD-HV
36 MODULES



			PREPARED BY	REVISION		SHEET NUMBER Z001	TOP VIEW
			DATE 08/29/2023			SCALE 3/32"=1'-0"	

14.76 kW PHOTOVOLTAIC SYSTEM
SEG-410-BMD-HV
36 MODULES

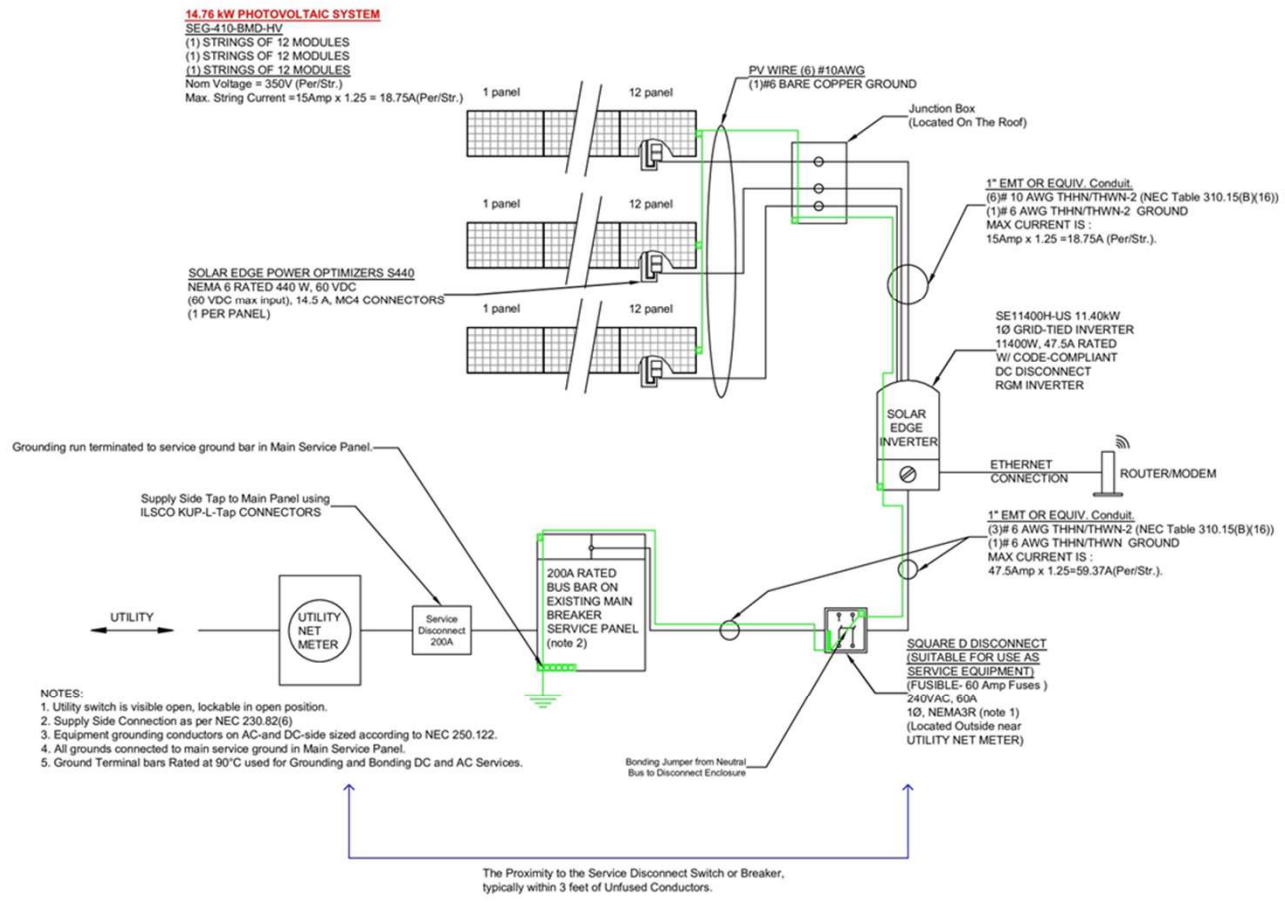




ROOF ATTACHMENT SYSTEM / DETAIL 1.1

HEIGHT OF PANEL FROM THE ROOF = 0.4 FT

			PREPARED BY	REVISION		SHEET NUMBER S001	ROOF-FRAMING PLAN & ATTACHMENT SYSTEM
			DATE 08/29/2023			SCALE 3/32" = 1'	



SYSTEM OUTPUT:
DC (STC) RATING: 14.76 kW
(36) SEG-410-BMD-HV
410 WATT MODULES
(1) SOLAREDGE SE11400H-US[240V] INVERTER

PV SYSTEM CALCULATIONS:

DC SIDE
MAXIMUM DC SYSTEM VOLTAGE:
31.05x1.12=34.776V
MAXIMUM PER DC SOURCE CIRCUIT CURRENT:
13.21x1.25=16.512A

AC SIDE
MAXIMUM AC SYSTEM VOLTAGE: 240V
MAXIMUM AC CURRENT FOR OVER-CURRENT PROTECTION:
1X47.5X1.25=59.37A

MODULE INFORMATION
SEG-410-BMD-HV
PEAK POWER: 410 WATTS
Isc: 13.80 x 1.25= 17.25A Voc: 37.32 Vdc
Imp: 13.21A Vmp: 31.05Vdc

			PREPARED BY	REVISION		SHEET NUMBER E001	ELECTRICAL LINE DIAGRAM
			DATE 08/23/2023			SCALE NTS	

⚠ WARNING
ELECTRIC SHOCK HAZARD
THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED

LABEL LOCATION:
DC DISCONNECT, INVERTER
(PER CODE: NEC 690.35(F))
[To be used when inverter is ungrounded]

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

LABEL LOCATION:
DC DISCONNECT, INVERTER
(PER CODE: NEC 690.35(F))
[To be used when inverter is ungrounded]

⚠ 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 DISCONNECT, POINT OF INTERCONNECTION
PER CODE: NEC 690.17(E), CB

⚠ WARNING
ELECTRIC 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:
AC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC 690.17(E))

WARNING - Electric Shock Hazard
No user serviceable parts inside
Contact authorized service provider for assistance

LABEL LOCATION:
INVERTER, JUNCTION BOXES (ROOF), AC DISCONNECT
(PER CODE: NEC690.13.G.3 & NEC 690.13.G.4)

WARNING: PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION:
CONDUIT, COMBINER BOX
(PER CODE: NEC690.31(G)(3)(4) & NEC 690.13(G)(4)

PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED AC OPERATING CURRENT 60 AMPS
AC NOMINAL OPERATING VOLTAG 240 VOLTS

LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC690.54)

RATED MAXIMUM POWER-POINT CURRENT (Imp)		A
RATED MAXIMUM POWER-POINT VOLTAGE (Vmp)	240	V
MAXIMUM SYSTEM VOLTAGE (VOC)	480	V
MAXIMUM CIRCUIT CURRENT (Isc)	45.5	A

LABEL LOCATION:
DC DISCONNECT, INVERTER
(PER CODE: CEC690.53)

CAUTION: SOLAR CIRCUIT

LABEL LOCATION:
MARKINGS PLACED ON ALL INTERIOR AND EXTERIOR DC CONDUIT, RACEWAYS, ENCLOSURES, AND CABLE ASSEMBLIES AT LEAST EVERY 10 FT, AT TURNS AND ABOVE/BELOW PENETRATIONS AND ALL COMBINER/JUCTION BOXES. (PER CODE: IFC605.11.1.4)

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: CEC 705.12(D)(4))

CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED

LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: CEC690.15. 690.13(B))

WARNING
INVERTER OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: NEC 705.12(D)(7))
[Not required if panelboard is rated not less than sum of ampere ratings of all overcurrent devices supplying it]

SOLAR DISCONNECT

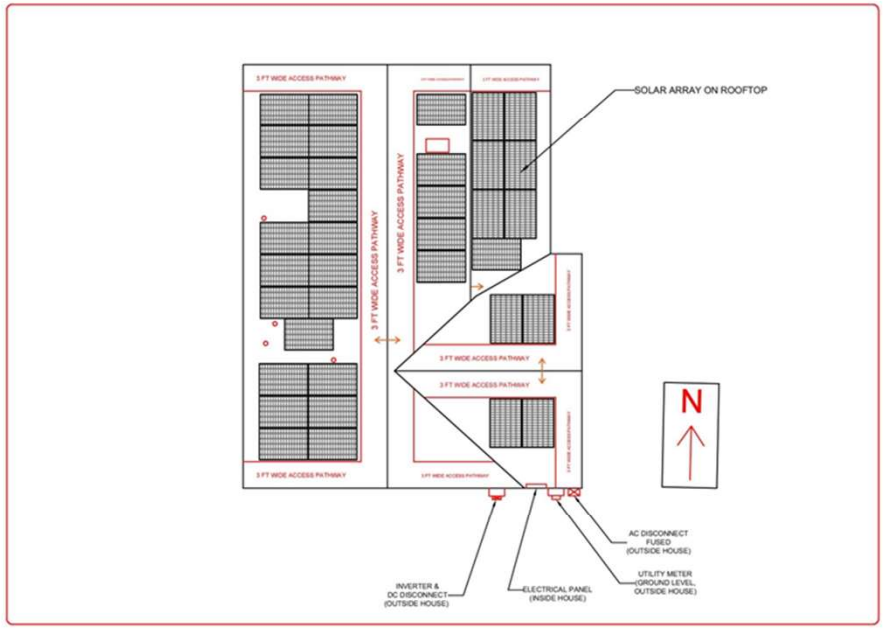
LABEL LOCATION:
DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC690.13(B))

ADHESIVE FASTENED SIGNS:
- THE LABEL SHALL BE SUITABLE FOR THE ENVIRONMENT WHERE IT IS INSTALLED.
- WHERE REQUIRED ELSEWHERE IN THIS CODE, ALL FIELD APPLIED LABELS, WARNINGS, AND MARKINGS SHOULD COMPLY WITH ANSI Z535.4 [NEC 110.21(B) FIELD MARKING].
- ADHESIVE FASTENED SIGNS MAY BE ACCEPTABLE IF PROPERLY ADHERED. VINYL SIGNS SHALL BE WEATHER RESISTANT [IFC 605.11.1.3]

			PREPARED BY	REVISION		SHEET NUMBER	SAFETY LABELS
			DATE 05/09/2023			SCALE NTS	

CAUTION

POWER TO THIS BUILDING IS ALSO SUPPLIED
FROM THE FOLLOWING SOURCES
WITH DISCONNECTS LOCATED AS SHOWN:



PV DISCONNECTING MEANS SHALL BE INSTALLED AT A READILY
AVAILABE LOCATION EITHER OUTSIDE OF A BUILDING OR STRUCTURE OR
INSIDE THE NEAREST POINT OF ENTRANCE OF THE
SYSTEM CONDUCTORS PER THE REQUIREMENTS OF NEC 690.56(A)(B), 705.10

			PREPARED BY	REVISION		SHEET NUMBER	PLACARD
			DATE 08/29/2023			SCALE NTS	

SolarEdge Extended Warranty

Dear Customer, This is to certify that the standard limited warranty of the product listed below has been extended to

25 years

This warranty certificate is valid for the following device:
Inverter Serial Number:

This Warranty is valid until:
27/09/2048

Please make this document available for tracking should the need arise.
SolarEdge Technologies Ltd. | www.solaredge.com
For support visit: http://www.solaredge.com/service/support

solaredge

Shea Jefferson

11549 Tomahawk Trail W
Lusby, MD 20657

Green Brilliance LLC
13655 Dulles Technology Drive, Suite
130, Herndon, VA 20171

Wind Load: Roof: Components & Cladding	31.5	PSF
Snow Load	30	PSF
PV Panel Unit Weight	2.3	PSF
PV Panel Size	18.61111	SQ. FT.
Panels Per Rail	1	
Total Panel Weight Per Rail	21.40278	LBS
Rack Rail Weight	6.33	LBS/FT
Rail Length	4	FT
Total Rail Weight	25.32	LBS
Total Wind Uplift Per Rail	293.125	LBS
Total Dead Load	46.72278	LBS
Net Wind Uplift	246.4022	LBS
Allowable Withdrawal Load: 5/16 SS Screw	460	LBS
Required No. of Screws Per Rail	0.535657	SCREWS

Note: AWC Connection Calculator allowable withdrawal load for 5/16-inch. Dia. stainless steel screw is 460lbs.

Systematic Engineering LLC
3803 Barn Owl Lane, Glen Allen, VA

Jesse Wastler, P.E.
703-431-6809

2/16/2023

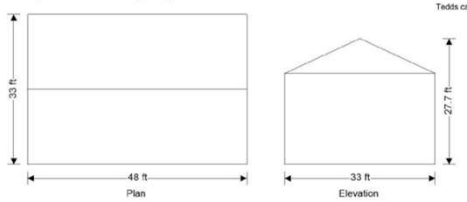
SYSTEMATIC ENGINEERING 3803 BARN OWL LANE SUITE 4A GLEN ALLEN, VA 23060	Project 11549 Tomahawk Trail W				Job Ref.	
	Section Wind Analysis				Sheet no./rev. 1	
	Calc. by 46462	Date 2/16/2023	Chk'd by	Date	App'd by	Date

WIND LOADING

In accordance with ASCE7-16

Using the components and cladding design method

Tedds calculation version 2.1.10



Building data

Type of roof	Gable
Length of building	b = **48.00** ft
Width of building	d = **33.00** ft
Height to eaves	H = **20.00** ft
Pitch of roof	α = **25.0** deg
Mean height	h = **23.85** ft

General wind load requirements

Basic wind speed	V = **115.0** mph
Risk category	II
Velocity pressure exponent coef (Table 26.6-1)	K_d = **0.85**
Ground elevation above sea level	z_g = **0** ft
Ground elevation factor	K_e = exp(-0.0000362 × z_g/1ft) = **1.00**
Exposure category (cl 26.7.3)	B
Enclosure classification (cl.26.12)	Enclosed buildings
Internal pressure coef +ve (Table 26.13-1)	GC_{pi_p} = **0.18**
Internal pressure coef –ve (Table 26.13-1)	GC_{pi_n} = **-0.18**
Gust effect factor	G$_f$ = **0.85**

Topography

Topography factor not significant	K_{zt} = 1.0

Velocity pressure

Velocity pressure coefficient (Table 26.10-1)	K_z = **0.65**
Velocity pressure	q_h = 0.00256 × K_z × K_{zt} × K_d × K_e × V^2 × 1psf/mph^2 = **18.7** psf

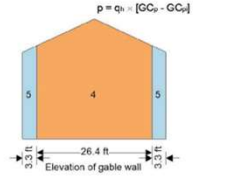
Peak velocity pressure for internal pressure

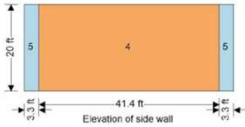
Peak velocity pressure – internal (as roof press.)	q_i = **18.73** psf

SYSTEMATIC ENGINEERING 3803 BARN OWL LANE SUITE 4A GLEN ALLEN, VA 23060	Project 11549 Tomahawk Trail W				Job Ref.	
	Section Wind Analysis				Sheet no./rev. 2	
	Calc. by 46462	Date 2/16/2023	Chk'd by	Date	App'd by	Date

Equations used in tables

Net pressure $p = q_h \times [GC_p - GC_{pi}]$





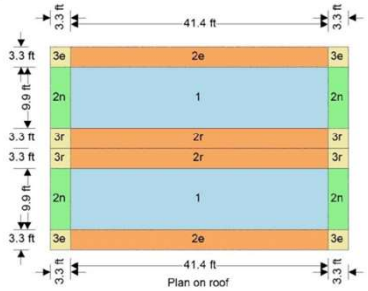
Components and cladding pressures - Roof (Figure 30.3-2C)

Component	Zone	Length (ft)	Width (ft)	Eff. area (ft^2)	$+GC_p$	$-GC_p$	Pres (+ve) (psf)	Pres (-ve) (psf)
<=10 sf	1	-	-	10.0	0.54	-1.50	13.4 #	-31.5
25 sf	1	-	-	25.0	0.44	-1.44	11.6 #	-30.4
50 sf	1	-	-	50.0	0.37	-1.26	10.3 #	-27.0
>100 sf	1	-	-	100.1	0.30	-1.08	9.0 #	-23.7
<=10 sf	2e	-	-	10.0	0.54	-1.50	13.4 #	-31.5
25 sf	2e	-	-	25.0	0.44	-1.44	11.6 #	-30.4
50 sf	2e	-	-	50.0	0.37	-1.26	10.3 #	-27.0
>100 sf	2e	-	-	100.1	0.30	-1.08	9.0 #	-23.7
<=10 sf	2n	-	-	10.0	0.54	-2.50	13.4 #	-50.2
50 sf	2n	-	-	50.0	0.37	-1.73	10.3 #	-35.7
100 sf	2n	-	-	100.0	0.30	-1.39	9.0 #	-29.5
>200 sf	2n	-	-	200.1	0.30	-1.20	9.0 #	-25.8
<=10 sf	2r	-	-	10.0	0.54	-2.50	13.4 #	-50.2
25 sf	2r	-	-	25.0	0.44	-2.06	11.6 #	-42.0
50 sf	2r	-	-	50.0	0.37	-1.73	10.3 #	-35.7
>100 sf	2r	-	-	100.1	0.30	-1.39	9.0 #	-29.5

SYSTEMATIC ENGINEERING 3803 BARN OWL LANE SUITE 4A GLEN ALLEN, VA 23060	Project 11549 Tomahawk Trail W				Job Ref.	
	Section Wind Analysis				Sheet no./rev. 3	
	Calc. by 46462	Date 2/16/2023	Chk'd by	Date	App'd by	Date

Component	Zone	Length (ft)	Width (ft)	Eff. area (ft^2)	$+GC_p$	$-GC_p$	Pres (+ve) (psf)	Pres (-ve) (psf)
<=2 sf	3e	-	-	2.0	0.70	-2.50	16.5	-50.2
10 sf	3e	-	-	10.0	0.54	-2.50	13.4 #	-50.2
100 sf	3e	-	-	100.0	0.30	-1.39	9.0 #	-29.5
>300 sf	3e	-	-	300.1	0.30	-1.20	9.0 #	-25.8
<=10 sf	3r	-	-	10.0	0.54	-2.95	13.4 #	-58.6
50 sf	3r	-	-	50.0	0.37	-1.80	10.3 #	-37.1
100 sf	3r	-	-	100.0	0.30	-1.80	9.0 #	-37.1
>200 sf	3r	-	-	200.1	0.30	-1.80	9.0 #	-37.1

The final net design wind pressure, including all permitted reductions, used in the design shall not be less than 16psf acting in either direction



Plan on roof

9/18/2018 Connection Calculator

Design Method	Allowable Stress Design (ASD)
Connection Type	Withdrawal loading
Fastener Type	Wood Screw
Loading Scenario	N/A

Main Member Type	Southern Pine
Main Member Thickness	3.5 in.
Side Member Type	Oriented Strand Board (OSB)
Side Member Thickness	23/32 in.
Wood Screw Number	20 (D = 0.32 in.)
Length	2.5 in.
Load Duration Factor	C_D = 1.0
Wet Service Factor	C_M = 1.0
Temperature Factor	C_t = 1.0

Adjusted ASD Capacity	**460 lbs.**

- The Adjusted ASD Capacity does not apply for wood screws installed in the end grain of wood members.
- The Adjusted ASD Capacity only applies to withdrawal of the fastener from the main member. It does not address head pull-through capacity of the fastener in the side member.

While every effort has been made to insure the accuracy of the information presented, and special effort has been made to assure that the information reflects the state-of-the-art, neither the American Wood Council nor its members assume any responsibility for any particular design prepared from this on-line Connection Calculator. Those using this on-line Connection Calculator assume all liability from its use.

The Connection Calculator was designed and created by Cameron Knudson, Michael Dodson and David Pollock at Washington State University. Support for development of the Connection Calculator was provided by American Wood Council.