PHOTOVOLTAIC ROOF MOUNT SYSTEM

(THOMAS COLLINS) 47 MODULES-ROOF MOUNTED - 16.45 KWDC, 15.20 KWAC

1250 NW DALIAN LN, LAKE CITY, FL 32055 USA

SYSTEM SUMMARY:

(N) 47 - HANWHA Q CELLS Q.PEAK DUO BLK-G8 (350W) MODULES
(N) 02 - SOLAREDGE SE7600H-US INVERTERS
(N) 47 - SOLAREDGE P401 POWER OPTIMIZERS
(N) 03 - JUNCTION BOX
(N) 125A LOAD PANEL WITH (N) 100A MAIN BREAKER
(E) 125A SUB PANEL WITH (N) 100A MAIN BREAKER
(N) 125A SUB PANEL
(N) 200A METER MAIN COMBO
(N) 02 - NEMA 14-50 OUTLET
(N) 01 - 5kW AC BATTERY TESLA POWERWALL AC NRTL LISTED, NEMA3R (13.5kWH)

GOVERNING CODES:

2020 7TH EDITION FLORIDA BUILDING CODE : BUILDING
2020 7TH EDITION FLORIDA BUILDING CODE : RESIDENTIAL
2020 7TH EDITION FLORIDA BUILDING CODE : MECHANICAL
2020 7TH EDITION FLORIDA BUILDING CODE : PLUMBING
2020 7TH EDITION FLORIDA BUILDING CODE : FUEL GAS
2020 7TH EDITION FLORIDA BUILDING CODE : ENERGY CONSERVATION
2020 7TH EDITION FLORIDA BUILDING CODE : EXISTING BUILDING
2020 7TH EDITION FLORIDA BUILDING CODE : ACCESSIBILITY
2020 7TH EDITION FLORIDA FIRE PREVENTION CODE (NFPA)
2017 NATIONAL ELECTRIC CODE (NEC)

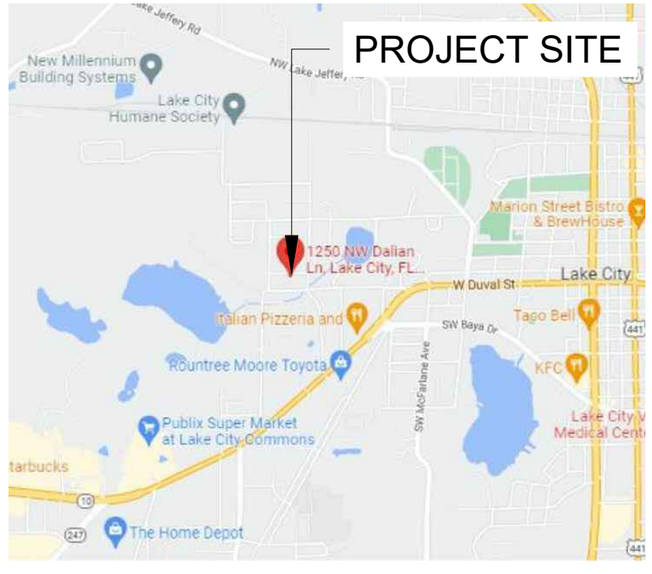
SHEET INDEX

DESIGN CRITERIA:

ROOF TYPE: - CORRUGATED METAL
NUMBER OF LAYERS: - 01
ROOF FRAME: - 2"X4" RAFTERS @24" O.C.
SEAMS SPACING : - SEAMS @12" O.C.
STORY: - ONE STORY
SNOW LOAD : - 0 PSF
WIND SPEED :- 118 MPH
WIND EXPOSURE:- B
ASCE CODE :- ASCE 7-16 (SECTION 29.4.4)
RISK CATEGORY = II

GENERAL NOTES:
1. APPLICABLE CODE: 2020 FLORIDA BUILDING CODE (7TH EDITION) & ASCE 7-16 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.
2. LAG SCREW DIAMETER AND EMBEDMENT LENGTHS ARE DESIGNED PER 2020 FLORIDA BUILDING CODE (7TH EDITION) REQUIREMENTS. ALL BOLT CAPACITIES ARE BASED ON SOUTHERN YELLOW PINE (SYP) RESIDENTIAL WOOD ROOF RAFTERS AS EMBEDMENT MATERIAL.
3. ALL WIND DESIGN CRITERIA AND PARAMETERS ARE FOR HIP AND GABLE RESIDENTIA ROOFS, CONSIDERING FROM A 7° TO A MAXIMUM 23° (5/12 TO A MAXIMUM 7/12 PITCH) ROOF IN SCHEDULE. CONTRACTOR TO FIELD VERIFY THAT MEAN ROOF HEIGHT DOES NOT EXCEED 30'-0".
4. ROOF SEALANTS SHALL CONFORM TO ASTM C920 AND ASTM 6511, AND IS THE RESPONSIBILITY OF THE CONTRACTOR TO PILOT DRILL AND FILL ALL HOLES.
5. ALL DISSIMILAR MATERIALS SHALL BE SEPARATED WITH NEOPRENE WASHERS, PADS, ETC OR SIMILAR.
6. ALL ALUMINIUM COMPONENTS SHALL BE ANODIZED ALUMINIUM 6105-T5 UNLESS OTHERWISE NOTED.
7. ALL LAG SCREW SHALL BE ASTM A276 STAINLESS STEEL UNLESS OTHERWISE NOTED.
8. ALL SOLAR RAILING AND MODULES SHALL BE INSTALLED PER MANUFACTURER INSTRUCTIONS.
9. CONTRACTOR SHALL ENSURE ALL ROOF PENETRATIONS TO BE INSTALLED AND SEALED PER 2020 FLORIDA BUILDING CODE (7TH EDITION) OR LOCAL GOVERNING CODE

1 AERIAL PHOTO
PV-0 SCALE: NTS



2 VICINITY MAP
PV-0 SCALE: NTS

N
W E
S

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BARRY JACOBSON
4509 NW 23RD AVE, STE 20,
GAINESVILLE, FL 32606
TEL: (352)281-5946
CSLB # : CVC56761
Email barry@solarimpact.com

REVISIONS

DESCRIPTION	DATE	REV
INITIAL RELEASE	04/26/2022	UR

BARRY M JACOBSON LICENSE NUMBER 94126 STATE OF FLORIDA PROFESSIONAL ENGINEER

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PROJECT NAME

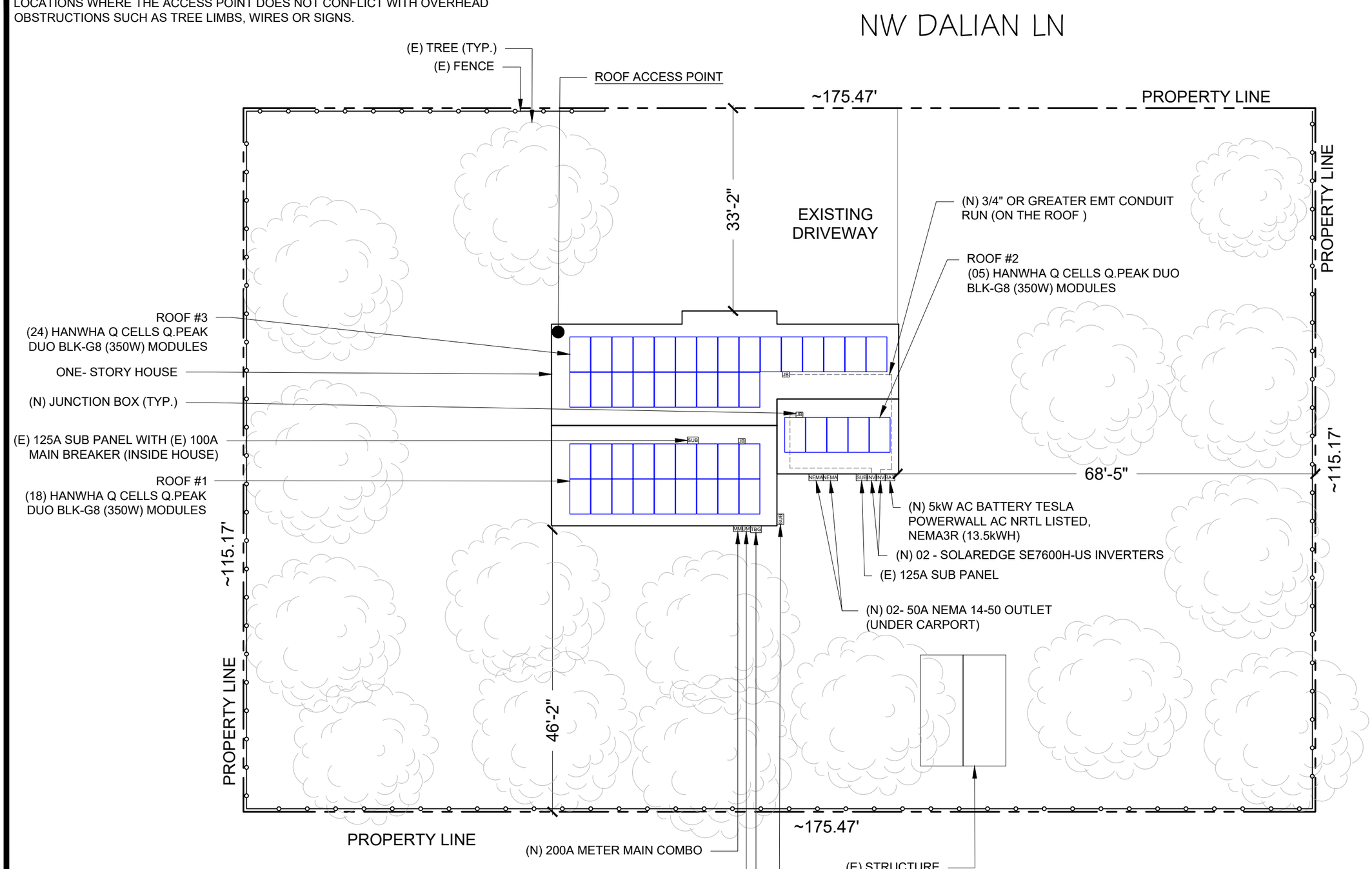
THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 31S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
COVER SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-0

● **ROOF ACCESS POINT** SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.



1 SITE PLAN WITH ROOF PLAN

SCALE: 1/16" = 1'-0"

NOTE:

- ALL ELECTRICAL EQUIPMENT, INVERTERS, DISCONNECTS, MAIN SERVICE PANELS, ETC. SHALL NOT BE INSTALLED WITHIN 3' OF THE GAS METERS' SUPPLY OR DEMAND PIPING.

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REVISIONS

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PROJECT NAME

THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME

SITE PLAN WITH ROOF PLAN

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-1

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 47 MODULES
MODULE TYPE = HANWHA Q CELLS Q.PEAK DUO BLK-G8 (350W) MODULES
MODULE WEIGHT = 43.9 LBS / 20.0 KG.
MODULE DIMENSIONS = 68.5"X 40.6" = 19.31 SF
UNIT WEIGHT OF ARRAY = 2.27 PSF

R324.6.2 - PROVING ARRAYS TAKE LESS THAN 33% OF TOTAL ROOF AREA.WHEN THE ARRAYS TAKE LESS THAN 33% WE CAN JUSTIFY AN 18" SETBACK ON BOTH SIDES OF THE RIDGE. WHEN IT TAKES MORE THAN 33% OF THE ROOF AREA WE MUST USE A 3' SETBACKS AT THE RIDGE.

TOTAL ROOF AREA:
1752.66 sqft

AREA OF ARRAYS:
68.5"X 40.6" (PANEL DIMENSIONS)
68.5"X 40.6" = 19.31 sqft (PER PANEL)
19.31 $^{sqft}/_{panel}$ X 47 panels = 907.72 sqft (TOTAL PANEL AREA)

PERCENTAGE OF TOTAL ROOF AREA:
(907.72 sqft / 1752.66 sqft)(100)= 51.79%

THE PANELS USE 51.79% OF THE TOTAL ROOF AREA

ROOF DESCRIPTION

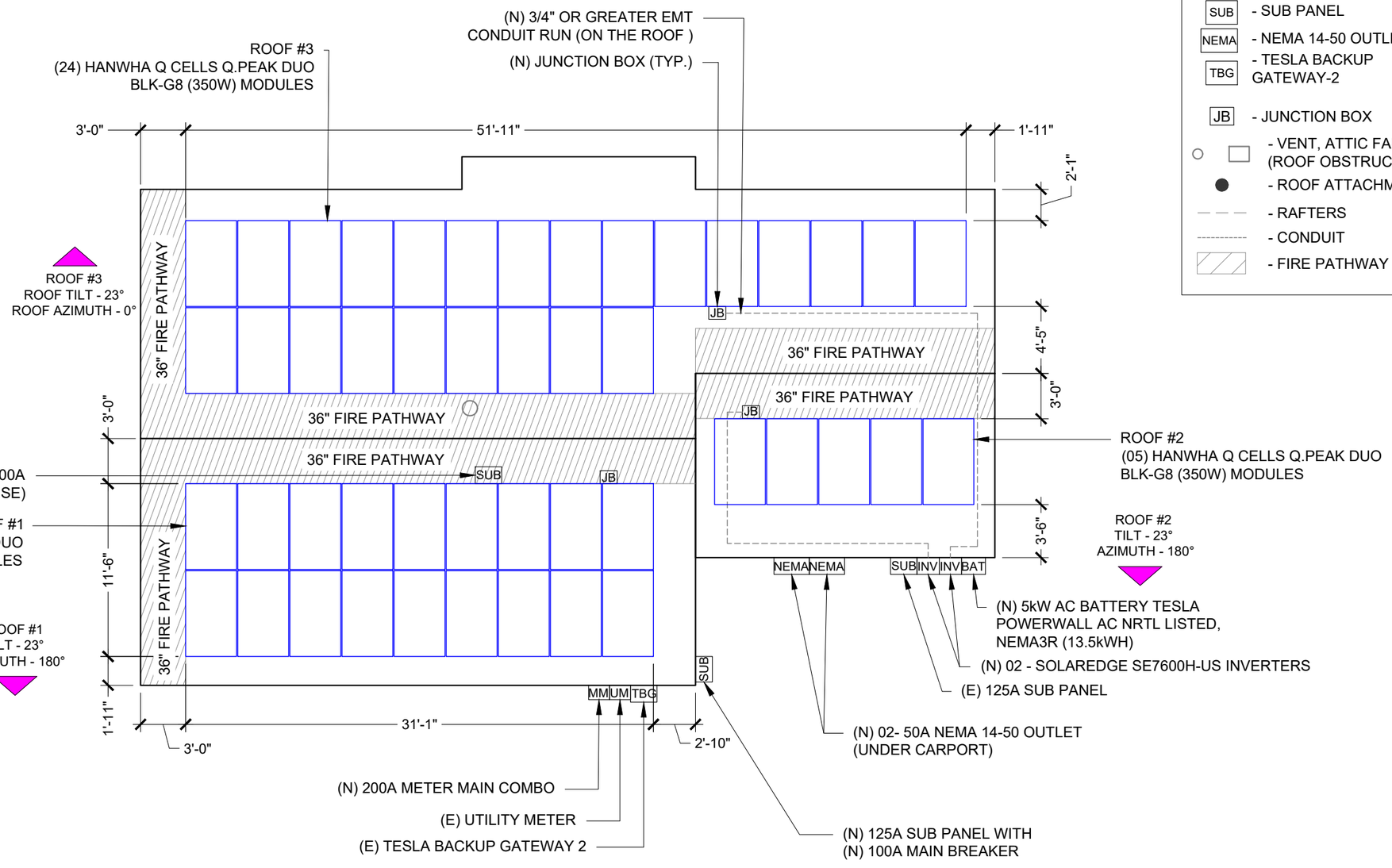
ROOF TYPE			CORRUGATED METAL ROOF		
ROOF	ROOF TILT	AZIMUTH	RAFTERS SIZE	SEAMS SPACING	RAFTERS SPACING
#1	23°	180°	2"x4"	12" O.C.	24" O.C.
#2	23°	180°	2"x4"	12" O.C.	24" O.C.
#3	23°	0°	2"x4"	12" O.C.	24" O.C.

ARRAY AREA & ROOF AREA CALC'S

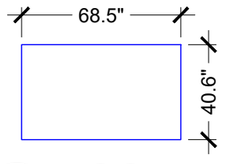
ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	18	347.64	628.81	55.28
#2	05	96.57	247.29	39.05
#3	24	463.52	898.25	51.60

LEGEND

- UM - UTILITY METER
- MSP - MAIN SERVICE PANEL
- MM - METER MAIN COMBO
- INV - INVERTER
- BAT - BATTERY
- SUB - SUB PANEL
- NEMA - NEMA 14-50 OUTLET
- TBG - TESLA BACKUP GATEWAY-2
- JB - JUNCTION BOX
- VENT, ATTIC FAN (ROOF OBSTRUCTION)
- ROOF ATTACHMENT
- RAFTERS
- CONDUIT
- FIRE PATHWAY



PHOTOVOLTAIC MODULES
HANWHA Q CELLS Q.PEAK DUO BLK-G8 (350W)



1 ROOF PLAN WITH MODULES

SCALE: 1/8" = 1'-0"

N

NOTE: THE STRUCTURAL DESIGNS CALCULATIONS ARE SUPERSEDED BY THE STRUCTURAL DESIGN REPORT.

- PLUMBING VENTS, SKYLIGHTS AND MECHANICAL VENTS SHALL NOT BE COVERED, MOVED, RE-ROUTED OR RE-LOCATED.

NOTE: ACTUAL ROOF CONDITIONS AND RAFTERS (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

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REVISIONS

DESCRIPTION	DATE	REV
INITIAL RELEASE	10/26/2022	UR

BARRY M JACOBSON LICENSE 51042 STATE OF FLORIDA PROFESSIONAL ENGINEER

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2022.07.05 18:51:17 -04'00'

PROJECT NAME

THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
ROOF PLAN WITH MODULES

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-2

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 47 MODULES
MODULE TYPE = HANWHA Q CELLS Q.PEAK DUO BLK-G8 (350W) MODULES
MODULE WEIGHT = 43.9 LBS / 20.0 KG.
MODULE DIMENSIONS = 68.5"X 40.6" = 19.31 SF
UNIT WEIGHT OF ARRAY = 2.27 PSF

ROOF LAYOUT NOTE
ROOFSOLAR PANEL LAYOUT IS CONCEPTUAL, BUT AS PROVIDED, CONFORMS WITH THE REQUIREMENTS SET IN SHEET PV-3 CONTRACTOR MAY ADJUST PANEL LOCATION. SOLID CORNERS (4'X4') SHOWN THE PLAN IS WIND ZONE 3. SEE 2020 FLORIDA RESIDENTIAL CODE (7TH EDITION) FOR MORE DETAILS

APPLICABLE CODE: 2020 FLORIDA BUILDING CODE (7TH EDITION) & ASCE 7-16 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

LAG SCREW DIAMETER AND EMBEDMENT LENGTHS ARE DESIGNED PER 2020 FLORIDA BUILDING CODE (7TH EDITION) REQUIREMENTS.ALL BOLT CAPACITIES ARE BASED ON A SOUTHER YELLOW PINE (SYP) RESIDENTIAL WOOD ROOF RAFTERS AS EMBEDMENT MATERIAL.

ALL WIND DESIGN CRITERIA AND PARAMETERS ARE FOR HIP AND GABLE RESIDENTIAL ROOFS, CONSIDERING FROM 7° TO A MAXIMUM 23° (7/12 TO A MAXIMUM 7/12 PITCH) ROOF IN SCHEDULE. CONTRACTOR TO FIELD VERIFY THAT MEAN ROOF HEIGHT DOES NOT EXCEED 30'-0".

ROOF SEALANTS SHALL CONFORM TO ASTM C920 AND ASTM 6511, AND IS THE RESPONSIBILITY OF THE CONTRACTOR TO PILOT DRILL AND FILL ALL HOLES.

ALL DISSIMILAR MATERIALS SHALL BE SEPARATED WITH NEOPRENE WASHERS, PADS, ETC OR SIMILAR.

ALL ALUMINUM COMPONENTS SHALL BE ANODIZED ALUMINUM 6105-T5 UNLESS OTHERWISE NOTED.

ALL LAG SCREW SHALL BE ASTM A276 STAINLESS STEEL UNLESS OTHERWISE NOTED.

ALL SOLAR RAILING AND MODULES SHALL BE INSTALLED PER MANUFACTURER INSTRUCTIONS.

CONTRACTOR SHALL ENSURE ALL ROOF PENETRATIONS TO BE INSTALLED AND SEALED PER 2020 FLORIDA BUILDING CODE (7TH EDITION) OR LOCAL GOVERNING CODE.

NOTE TO INSTALLER:
NOTE FIELD ADJUSTMENTS CAN BE MADE TO THE LAYOUT OF THE ARRAY.

PLUMBING VENTS, SKYLIGHTS AND MECHANICAL VENTS SHALL NOT BE COVERED, MOVED, RE-ROUTED OR RE-LOCATED.

Use following span and cantilever limits for this installation. Attachment spacing limited by max allov of lbs max allowable uplift per attachment lbs and rail tolerances

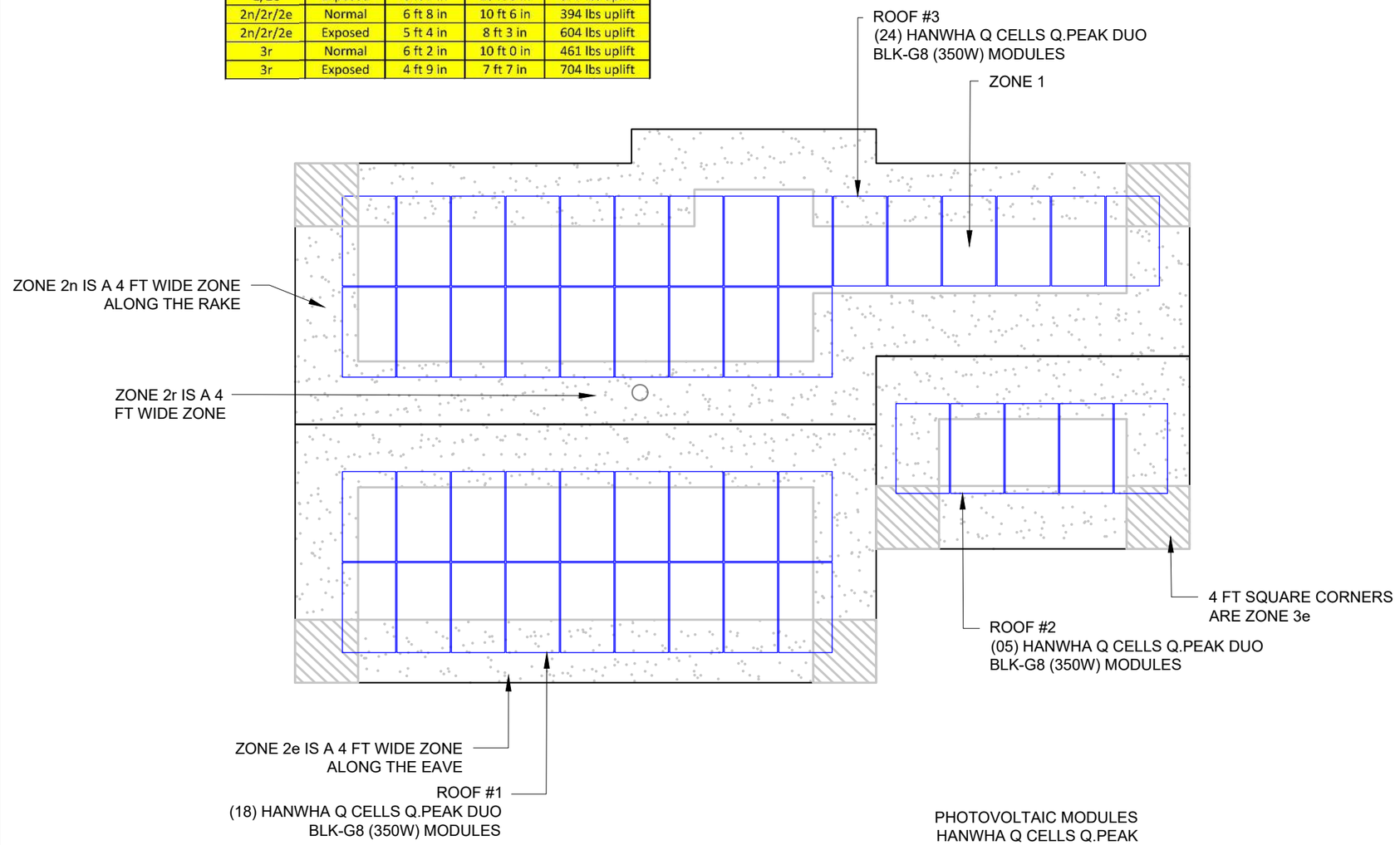
		XR10	XR100	XR10	XR100	XR10
Zone	Type	Span Limits		Cantilever Limits		Up
1/2e	Normal	7 ft 4 in	10 ft 9 in	2 ft 11 in	4 ft 4 in	260 lb
1/2e	Exposed	6 ft 7 in	10 ft 3 in	2 ft 8 in	4 ft 1 in	369 lb
2n/2r/2e	Normal	6 ft 8 in	10 ft 6 in	2 ft 8 in	4 ft 2 in	407 lb
2n/2r/2e	Exposed	5 ft 4 in	8 ft 3 in	2 ft 2 in	3 ft 4 in	503 lb
3r	Normal	6 ft 2 in	10 ft 0 in	2 ft 6 in	4 ft 0 in	447 lb
3r	Exposed	4 ft 9 in	6 ft 12 in	1 ft 11 in	2 ft 10 in	528 lb

IronRidge website info used for span and cantilever calculations

		XR10	XR100	Reaction Forces
Zone	Type	Span Limits		for 4' span
1/2e	Normal	7 ft 4 in	10 ft 9 in	243 lbs uplift
1/2e	Exposed	6 ft 7 in	10 ft 3 in	377 lbs uplift
2n/2r/2e	Normal	6 ft 8 in	10 ft 6 in	394 lbs uplift
2n/2r/2e	Exposed	5 ft 4 in	8 ft 3 in	604 lbs uplift
3r	Normal	6 ft 2 in	10 ft 0 in	461 lbs uplift
3r	Exposed	4 ft 9 in	7 ft 7 in	704 lbs uplift

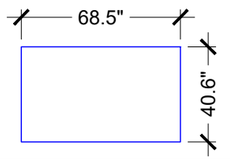
NOTE: ACTUAL ROOF CONDITIONS AND RAFTERS (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

NW DALIAN LN
FRONT YARD



REAR YARD

PHOTOVOLTAIC MODULES
HANWHA Q CELLS Q.PEAK DUO BLK-G8 (350W)



LEGEND
- WIND ZONE
- CORNER WIND ZONE

1 ROOF ZONING DETAILS

SCALE: 1/8" = 1'-0"

N

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PROJECT NAME

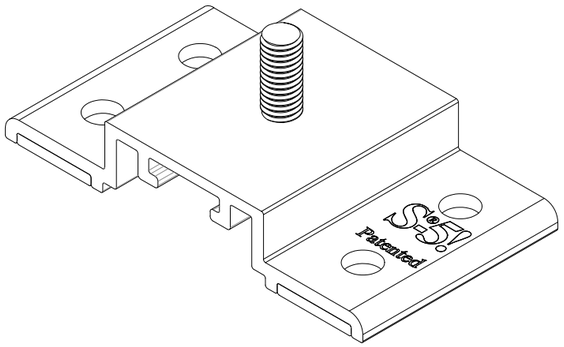
THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 31S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
ROOF ZONING DETAILS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-2.1

SolarFoot



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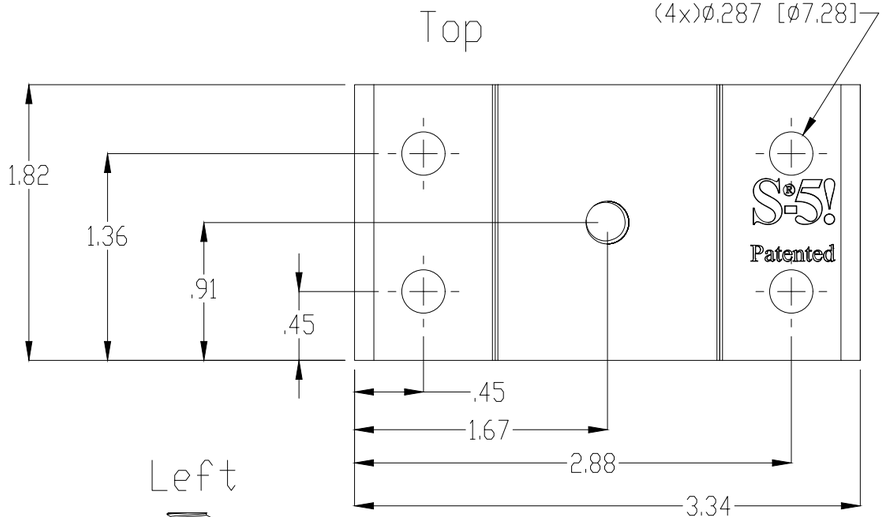

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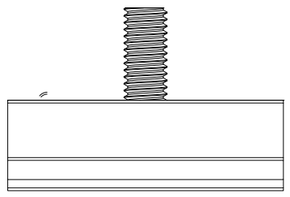

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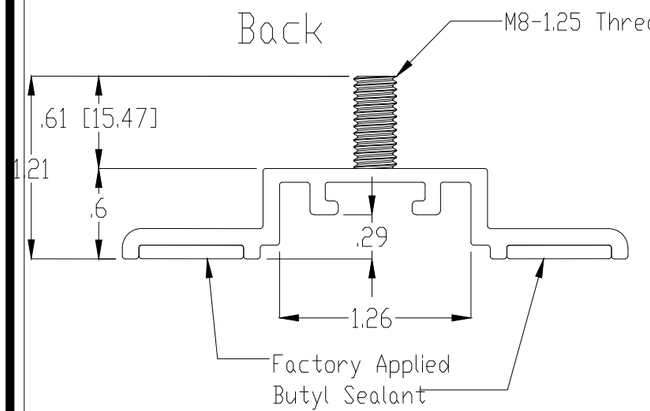

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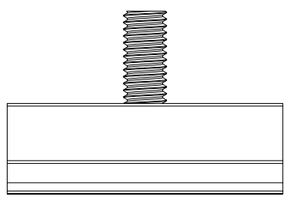
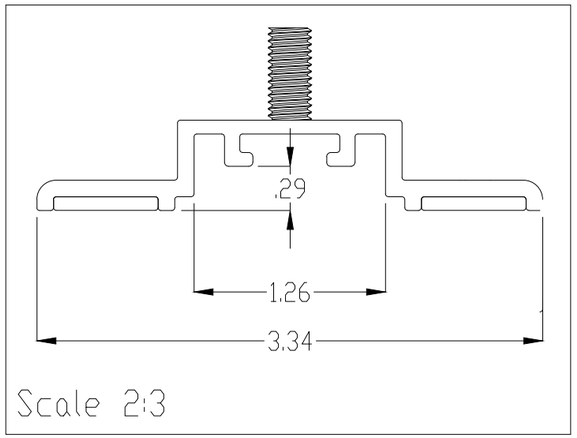
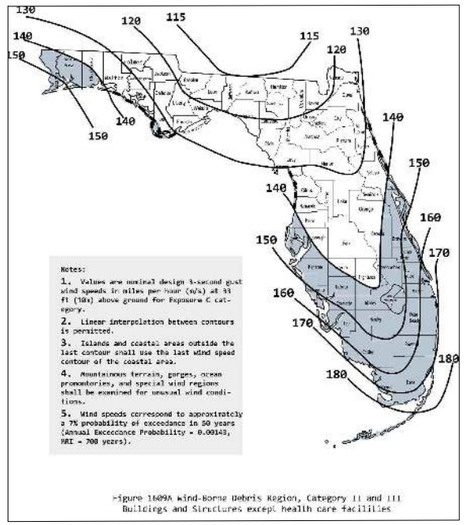




NOTE: ACTUAL ROOF CONDITIONS AND RAFTERS (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS



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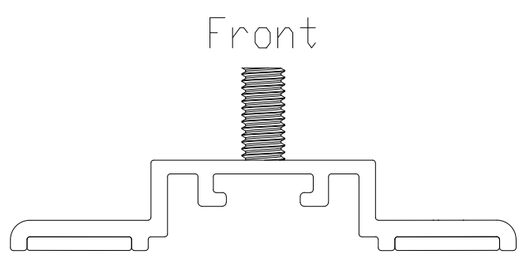

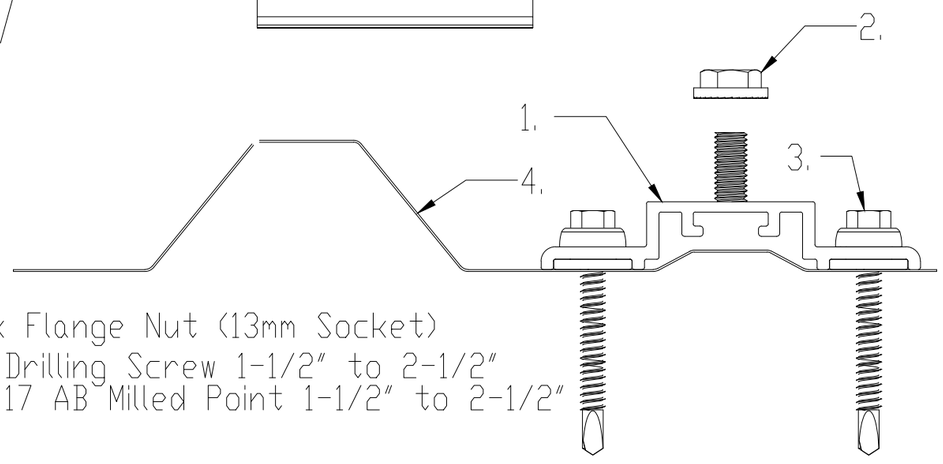

FOR STANDING SEAM SPECIFIC MECHANICAL LOAD TEST INFORMATION AND CLAMP INSTALLATION INFORMATION PLEASE VISIT: WWW.S-5.COM

General Notes:

1. SolarFoot
2. M8-1.25 Stainless Steel Hex Flange Nut (13mm Socket)
3. Metal to Metal:1/4-14 Self Drilling Screw 1-1/2" to 2-1/2"
   Metal to Wood:1/4-14 Type 17 AB Milled Point 1-1/2" to 2-1/2"
4. Example roof

MATERIAL: 6005A T61 Al	S-5! The Right Way!	METAL ROOF INNOVATIONS, LTD. 8655 TABLE BUTTE RD COLORADO SPRINGS, CO 80908 719-495-0518 719-495-0045(FAX)	
EST ASSEMBLY WEIGHT: 0.248 lbs	TITLE: SolarFoot [CCD]		
SUPPLIED HARDWARE: M8-1.25 Hex Flange Nut	SCALE: 2:3	DRAWING NO. LP66-A-0-A	DRAWN BY: Paul Leitch / DATE: 09/20/2017
EST. WEIGHT: Bracket:0.129 lbs Fastener: 0.026 lbs Nut: 0.015 lbs	S-5!®PRODUCTS ARE PROTECTED BY MULTIPLE U.S. AND FOREIGN PATENTS. VISIT OUR WEBSITE AT WWW.S-5.COM FOR COMPLETE INFORMATION ON PATENTS AND TRADEMARKS.		

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THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

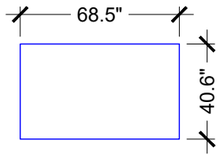
SHEET NAME
ATTACHMENT DETAILS

SHEET SIZE
ANSI B
11" X 17"

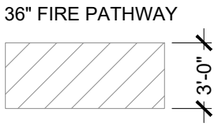
SHEET NUMBER
PV-3

(47) HANWHA Q CELLS Q.PEAK DUO BLK-G8 (350W) MODULES
(47) SOLAREDGE P401 POWER OPTIMIZERS
(02) SOLAREDGE SE7600H-US INVERTERS
(03) STRINGS OF 12 MODULES &
(01) STRING OF 11 MODULES CONNECTED IN SERIES

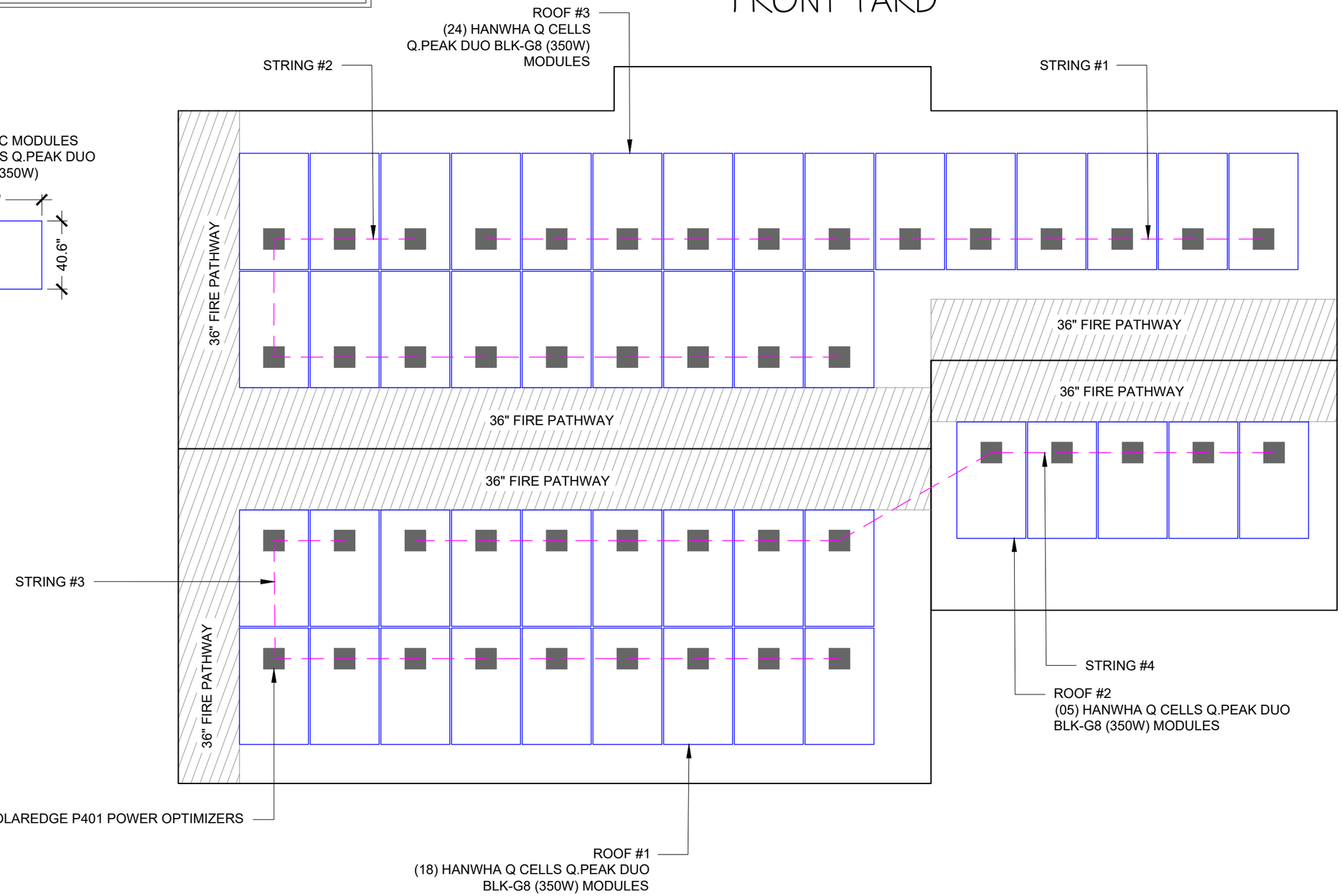
PHOTOVOLTAIC MODULES
HANWHA Q CELLS Q.PEAK DUO BLK-G8 (350W)



36" FIRE PATHWAY



NW DALIAN LN
FRONT YARD



1 STRING LAYOUT
SCALE: 3/16" = 1'-0"

N

REAR YARD

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REVISIONS

DESCRIPTION	DATE	REV
INITIAL RELEASE	5/4/2022	UR

BARRY M JACOBSON LICENSE 51706 STATE OF FLORIDA PROFESSIONAL ENGINEER

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PROJECT NAME

THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
STRING LAYOUT

SHEET SIZE
ANSI B
11" X 17"

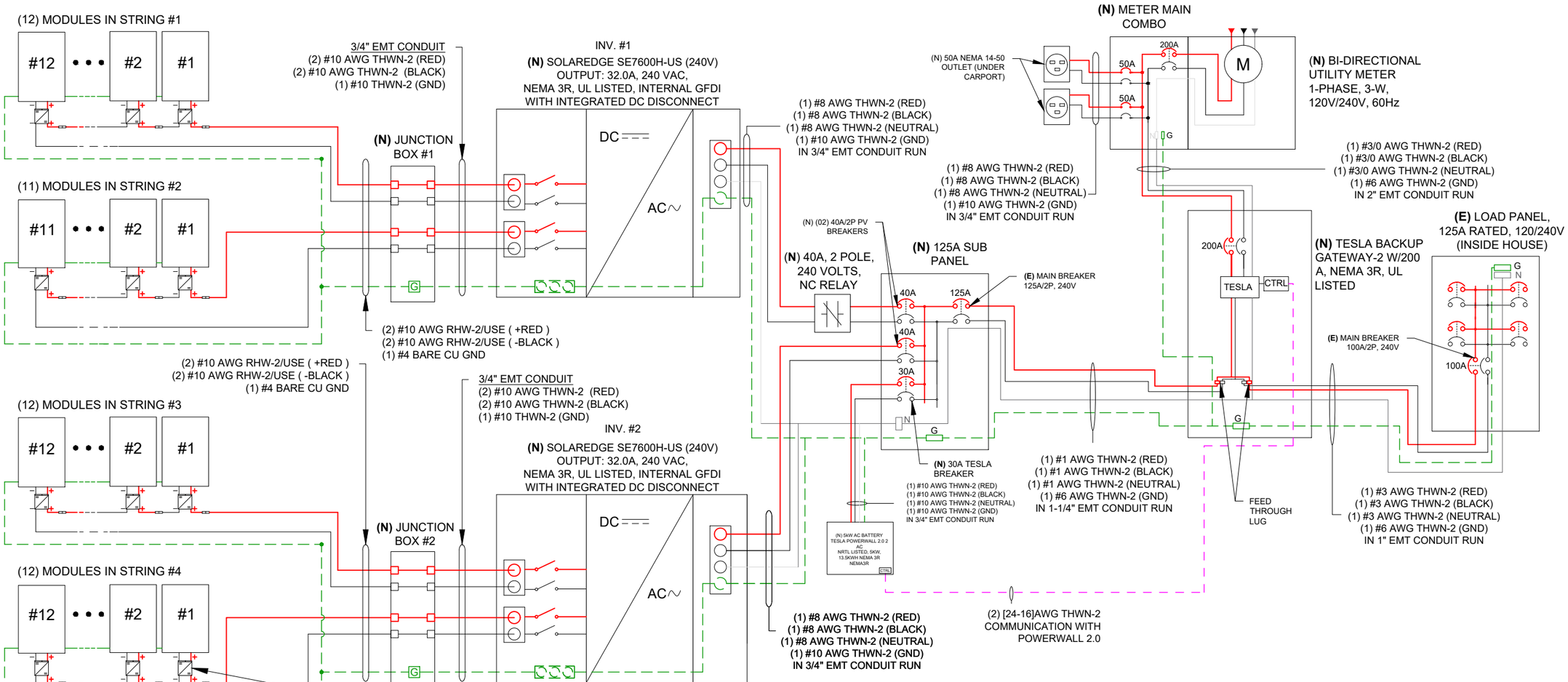
SHEET NUMBER
PV-4

(47) HANWHA Q CELLS Q.PEAK DUO BLK-G8 (350W) MODULES
(47) SOLAREDGE P401 POWER OPTIMIZERS
(02) SOLAREDGE SE7600H-US INVERTERS
(03) STRINGS OF 12 MODULES &
(01) STRING OF 11 MODULES CONNECTED IN SERIES

SYSTEM SIZE:- 47 x 350W = 16.45 kWDC
SYSTEM SIZE:- (7600+7600)/1000 = 15.20 kWAC

BILL OF MATERIALS

EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	47	HANWHA Q CELLS Q.PEAK DUO BLK-G8 (350W) MODULES
INVERTER	02	SOLAREDGE SE7600H-US STRING - INVERTERS
OPTIMIZER	47	SOLAREDGE P401 POWER OPTIMIZERS
JUNCTION BOX	3	JUNCTION BOX
SUB PANEL	1	125A SUB PANEL
SUB PANEL	1	125A SUB PANEL WITH 100A MAIN BREAKER
TESLA GATEWAY	1	TESLA BACKUP GATEWAY-2 W/200 A, NEMA 3R, UL LISTED
NEMA	2	50A NEMA 14-50 OUTLET (UNDER CARPORT)
RELAY	1	40A, 2 POLE, 240 VOLTS, NC RELAY
TESLA POWERWALL	1	TESLA POWERWALL 2.0 LI-ION BATTERY 5KW CONTINUOUS POWER 13.5KWH STORAGE
SUB PANEL BRAEKERS	1	ZIGBEE KITS AND THE BREAKERS ON THE 125 AMPS SUB-PANEL (125A MAIN, 40A /2P, AND 30A/2P)



1 ELECTRICAL LINE DIAGRAM

SCALE: NTS

SERVICE INFO.

UTILITY PROVIDER:	FPL
MAIN SERVICE VOLTAGE:	240V
MAIN PANEL BRAND:	EATON
MAIN SERVICE PANEL:	(N) 125A
MAIN CIRCUIT BREAKER RATING:	(N) 100A
MAIN SERVICE LOCATION:	SOUTH
SERVICE FEED SOURCE:	OVERHEAD

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REVISIONS		
DESCRIPTION	DATE	REV
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BARRY M JACOBSON LICENSE STATE OF FLORIDA PROFESSIONAL ENGINEER

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PROJECT NAME

THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
ELECTRICAL LINE DIAGRAM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-5

SOLAR MODULE SPECIFICATIONS

MANUFACTURER / MODEL #	HANWHA Q CELLS Q.PEAK DUO BLK-G8 (350W)MODULES
VMP	34.97
IMP	10.01
VOC	41.21
ISC	10.51
MODULE DIMENSION	68.5"L x 40.6"W x 1.37"D (In Inch)

INVERTER SPECIFICATIONS

MANUFACTURER / MODEL #	SOLAREDGE SE7600H-US
NOMINAL AC POWER	7.60KW
NOMINAL OUTPUT VOLTAGE	240 VAC
NOMINAL OUTPUT CURRENT	32A

AMBIENT TEMPERATURE SPECS

WEATHER STATION: GAINESVILLE REGIONAL AP

RECORD LOW TEMP	-5°
AMBIENT TEMP (HIGH TEMP 2%)	34°
CONDUIT HEIGHT	ON THE ROOF
ROOF TOP TEMP	34°
CONDUCTOR TEMPERATURE RATE	90°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.284%/°C

OPTIMIZER SPECIFICATIONS

POWER OPTIMIZER	SOLAREDGE P401
DC INPUT POWER	430W

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
.80	4-6
.70	7-9
.50	10-20

ELECTRICAL NOTES

1.) ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
2.) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
3.) WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
4.) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
5.) DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
6.) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
7.) ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
8.) MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
9.) MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER E.G.C VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
10.) THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE

DC CONDUCTOR AMPACITY CALCULATIONS: ARRAY TO JUNCTION BOX #1:

EXPECTED WIRE TEMP (In Celsius)	34°
TEMP. CORRECTION PER TABLE 310.15(B)(2)(a)	0.96
NO. OF CURRENT CARRYING CONDUCTORS	4
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a)	0.80
CIRCUIT CONDUCTOR SIZE	10 AWG
CIRCUIT CONDUCTOR AMPACITY	40A
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B)	18.75A
1.25 X MAX. DC OUTPUT CURRENT	
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC 310.15(B)(2)(a)	30.72A
TEMP. CORRECTION PER TABLE 310.15(B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY	
RESULT SHOULD BE GREATER THAN (18.75A) OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY	

DC CONDUCTOR AMPACITY CALCULATIONS: ARRAY TO JUNCTION BOX #2:

EXPECTED WIRE TEMP (In Celsius)	34°
TEMP. CORRECTION PER TABLE 310.15(B)(2)(a)	0.96
NO. OF CURRENT CARRYING CONDUCTORS	4
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a)	0.80
CIRCUIT CONDUCTOR SIZE	10 AWG
CIRCUIT CONDUCTOR AMPACITY	40A
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B)	18.75A
1.25 X MAX. DC OUTPUT CURRENT	
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC 310.15(B)(2)(a)	30.72A
TEMP. CORRECTION PER TABLE 310.15(B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY	
RESULT SHOULD BE GREATER THAN (18.75A) OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY	

DC CONDUCTOR AMPACITY CALCULATIONS: JUNCTION #1 & #2 BOX TO INVERTER #1 & #2:

EXPECTED WIRE TEMP (In Celsius)	34°
TEMP. CORRECTION PER TABLE 310.15(B)(2)(a)	0.96
NO. OF CURRENT CARRYING CONDUCTORS	4
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a)	0.80
CIRCUIT CONDUCTOR SIZE	10 AWG
CIRCUIT CONDUCTOR AMPACITY	40A
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B)	18.75A
1.25 X MAX. DC OUTPUT CURRENT	
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC 310.15(B)(2)(a)	30.72A
TEMP. CORRECTION PER TABLE 310.15(B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY	
RESULT SHOULD BE GREATER THAN (18.75A) OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY	

AC CONDUCTOR AMPACITY CALCULATIONS: INVERTER #1 & #2 TO SUB PANEL:

EXPECTED WIRE TEMP (In Celsius)	34°
TEMP. CORRECTION PER TABLE 310.15(B)(2)(a)	0.96
NO. OF CURRENT CARRYING CONDUCTORS	3
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a)	1.00
CIRCUIT CONDUCTOR SIZE	8AWG
CIRCUIT CONDUCTOR AMPACITY	55A
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B)	40.00A
1.25 X INVERTER OUTPUT CURRENT	
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC 310.15(B)(2)(a)	52.80A
TEMP. CORRECTION PER TABLE 310.15(B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY	
RESULT SHOULD BE GREATER THAN (40.00A) OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY	

AC CONDUCTOR AMPACITY CALCULATIONS: SUB PANEL TO TBG:

EXPECTED WIRE TEMP (In Celsius)	34°
TEMP. CORRECTION PER TABLE 310.15(B)(2)(a)	0.96
NO. OF CURRENT CARRYING CONDUCTORS	3
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a)	1.00
CIRCUIT CONDUCTOR SIZE	1 AWG
CIRCUIT CONDUCTOR AMPACITY	130A
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B)	110.00A
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC 310.15(B)(2)(a)	124.80A
TEMP. CORRECTION PER TABLE 310.15(B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY	
RESULT SHOULD BE GREATER THAN (110.00A) OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY	

AC CONDUCTOR AMPACITY CALCULATIONS: TBG TO INTERCONNECTION:

EXPECTED WIRE TEMP (In Celsius)	34°
TEMP. CORRECTION PER TABLE 310.15(B)(2)(a)	0.96
NO. OF CURRENT CARRYING CONDUCTORS	3
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a)	1.00
CIRCUIT CONDUCTOR SIZE	3/0AWG
CIRCUIT CONDUCTOR AMPACITY	225A
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B)	200.00A
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC 310.15(B)(2)(a)	216.00A
TEMP. CORRECTION PER TABLE 310.15(B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY	
RESULT SHOULD BE GREATER THAN (200.00A) OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY	

1 ELECTRICAL CALCULATION
SCALE: NTS

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REVISIONS

DESCRIPTION	DATE	REV
INITIAL RELEASE	04/26/2022	UR

BARRY M JACOBSON LICENSE NO. 94106 STATE OF FLORIDA PROFESSIONAL ENGINEER

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PROJECT NAME

THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 31351706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
ELECTRICAL CALCULATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-6

VOLTAGE DROP CALCULATIONS							
WIRE RUN	# OF INV	V (VOLTS)	I (AMPS)	L (FT)	VD (%)	WIRE SIZE*	RACEWAY
STRING #1 (MODULE) TO PASS THRU J. BOX	1	350	18.75	31	0.39%	10 AWG	FREE AIR
STRING #2 (MODULE) TO PASS THRU J. BOX	1	350	18.75	28	0.36%	10 AWG	FREE AIR
STRING #3 (MODULE) TO PASS THRU J. BOX	1	350	18.75	27	0.34%	10 AWG	FREE AIR
STRING #4 (MODULE) TO PASS THRU J. BOX	1	350	18.75	27	0.34%	10 AWG	FREE AIR
PASS THRU J. BOX #1 & #2 TO INVERTER #1 & #2 (MAX STRING)	1	350	18.75	31	0.39%	10 AWG	3/4" EMT
INVERTER #1 & #2 TO SUB PANEL	1	240	40.00	10	0.23%	8 AWG	3/4" EMT
SUB PANEL TO INTERCONNECTION	2	240	80.00	20	0.22%	1 AWG	1-1/4" EMT
		MAX VOLTAGE DROP: 1.23%					

1 VOLTAGE DROP CALCULATION
SCALE: NTS

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REVISIONS

DESCRIPTION	DATE	REV
INITIAL RELEASE	04/26/2022	UR

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PROJECT NAME

THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
VOLTAGE DROP CALCULATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-6.1

⚠ WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION:
AC & DC DISCONNECT AND SUB PANEL
(PER CODE: NEC 690.13(B))

⚠ WARNING

ELECTRIC SHOCK HAZARD

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 DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC 690.13(B))

WARNING

ELECTRIC SHOCK HAZARD

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

LABEL LOCATION:
AC & DC DISCONNECT AND SUB PANEL
(PER CODE: NEC 690.41(B))

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:
MAIN SERVICE PANEL & NET METER
(PER CODE: NEC 705.12(D)(3), NEC 705.12(B)(3-4) & NEC 690.59)

⚠ WARNING

THE DISCONNECTION OF THE GROUNDED CONDUCTOR(S) MAY RESULT IN OVERVOLTAGE ON THE EQUIPMENT

LABEL LOCATION:
INVERTER
(PER CODE: NEC 690.31(I)

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

LABEL LOCATION:
MAIN SERVICE DISCONNECT / UTILITY METER
(PER CODE: NEC 690.13(B))

PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED AC OPERATING CURRENT 64.0 AMPS
AC NOMINAL OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION:
AC DISCONNECT & INVERTER
(PER CODE: NEC690.54)

⚠ WARNING
POWER SOURCE OUTPUT CONNECTION
DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
SERVICE PANEL IF SUM OF BREAKERS EXCEEDS PANEL RATING
(PER CODE: NEC 705.12 (B)(2)(3)(b)

WARNING:PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION:
EMT / CONDUIT RACEWAYS
(PER CODE: NEC 690.31(G)(3)

4"

WARNING:

EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVER CURRECT DEVICES, EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE, SHALL NOT EXCEED AMPACITY OF BUSBUR

2"

LOCATION: GENERATION PANEL

RATED MAXIMUM POWER-POINT CURRENT (Imp)	20.13	A
RATED MAXIMUM POWER-POINT VOLTAGE (Vmp)	400	V
MAXIMUM SYSTEM VOLTAGE (VOC)	480	V
MAXIMUM CIRCUIT CURRENT (Isc)	30	A

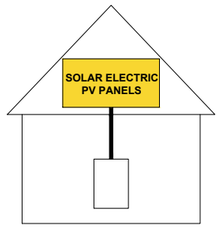
LABEL LOCATION:
DC DISCONNECT, INVERTER #1
(PER CODE: NEC690.53)

RATED MAXIMUM POWER-POINT CURRENT (Imp)	21.00	A
RATED MAXIMUM POWER-POINT VOLTAGE (Vmp)	400	V
MAXIMUM SYSTEM VOLTAGE (VOC)	480	V
MAXIMUM CIRCUIT CURRENT (Isc)	30	A

LABEL LOCATION:
DC DISCONNECT, INVERTER #2
(PER CODE: NEC690.53)

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN ARRAY



LABEL LOCATION:
AC DISCONNECT, DC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: 605.11.3.1(1) & 690.56(C)(1)(a))

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL LOCATION:
RAPID SHUTDOWN
(PER CODE: NEC 690.56(C)(3)

2"

CAUTION

THIS PANEL HAS SPLICED FEED THROUGH CONDUCTORS LOCATION OF DISCONNECT AT BATTERY BACKUP LOAD PANEL

1"

LOCATION: BACK UP GATEWAY

PHOTOVOLTAIC

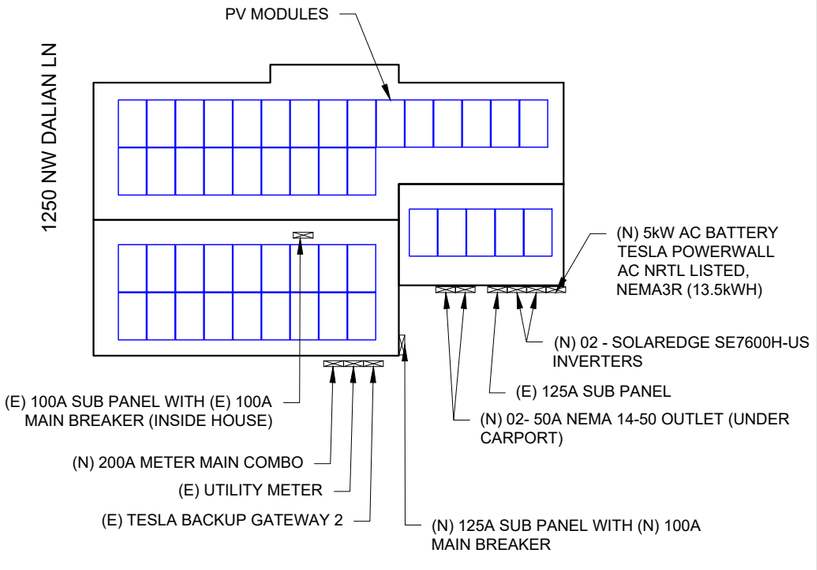
AC DISCONNECT

LABEL LOCATION:
AC DISCONNECT
NEC 690.13(B)

CAUTION !

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

AT: MAIN SERVICE PANEL & UTILITY METER, AC DISCONNECT & INVERTER & BATTERY EQUIPMENTS



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REVISIONS		
DESCRIPTION	DATE	REV
INITIAL RELEASE	04/26/2022	UR

BARRY M JACOBSON LICENSE NO. 93001 STATE OF FLORIDA PROFESSIONAL ENGINEER

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PROJECT NAME

THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
WARNING LABELS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-7

1. EACH MODULE TO BE GROUNDED USING THE SUPPLIED CONNECTION POINT PER MANUFACTURER'S REQUIREMENTS. ALL SOLAR MODULES, EQUIPMENT, AND METALLIC COMPONENTS ARE TO BE BONDED. IF THE EXISTING GROUNDING ELECTRODE SYSTEM CAN NOT BE VERIFIED OR IS ONLY METALLIC WATER PIPING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE.

2. ALL PLAQUES AND SIGNAGE REQUIRED BY THE LATEST EDITION OF NATIONAL ELECTRICAL CODE. LABEL SHALL BE METALLIC OR PLASTIC, ENGRAVED OR MACHINE PRINTED IN A CONTRASTING COLOR TO THE PLAQUE. PLAQUE SHALL BE UV RESISTANT IF EXPOSED TO SUNLIGHT.

3. DC CONDUCTORS SHALL BE RUN IN EMT AND SHALL BE LABELED, "CAUTION DC CIRCUIT" OR EQUIV. EVERY 10 FT.

4. EXPOSED NON-CURRENT CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.136(A).

5. CONFIRM LINE SIDE VOLTAGE AT ELECTRIC UTILITY SERVICE PRIOR TO CONNECTING INVERTER. VERIFY SERVICE VOLTAGE IS WITHIN INVERTER VOLTAGE OPERATIONAL RANGE.

6. OUTDOOR EQUIPMENT SHALL BE NEMA-3R RATED OR BETTER.

7. ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT EXPANSION JOINTS AND ANCHOR CONDUIT RUNS AS REQUIRED PER NEC.

8. ALL WIRING MUST BE PROPERLY SUPPORTED BY DEVICES OR MECHANICAL MEANS DESIGNED AND LISTED FOR SUCH USE, AND FOR ROOF-MOUNTED SYSTEMS, WIRING MUST BE PERMANENTLY AND COMPLETELY HELP OFF OF THE ROOF SURFACE. NEC 110.2 - 110.4 / 300.4

BARRY JACOBSON
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REVISIONS

DESCRIPTION	DATE	REV
INITIAL RELEASE	5/24/2022	UR

BARRY M JACOBSON LICENSE NO. 94026 STATE OF FLORIDA PROFESSIONAL ENGINEER

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PROJECT NAME

THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME

ADDITIONAL NOTES

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-8

powered by Q.ANTUM DUO

Q.PEAK DUO BLK-G8

335-350

HÖG PRESTANDA
ÖVER TID

pv magazine award 2017 top innovation

VDE Quality Tested
www.VDEinfo.com
ID. 40032587

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2019

Q CELLS YIELD SECURITY
- ANTI PID TECHNOLOGY (APT)
- HOT-SPOT PROTECT (HSP)
- TRACEABLE QUALITY (TRA.Q™)
- ANTI LID TECHNOLOGY (ALT)

Q.ANTUM CELLTEKNIK: LÅGA KOSTNADER FÖR ELGENERERING
Högre avkastning per yta och lägre BOS-kostnader tack vare högre effektklasser och en effektivitet på upp till 19,8 %.

INNOVATIV ALLVÄDERSTEKNOLOGI
Optimal effekt vid alla väderlekar tack vare utmärkta egenskaper vid dåliga ljusförhållanden och olika temperaturer.

KAPACITET SOM HÅLLER LÄNGRE
Långvarig funktionssäkerhet med Anti LID Technology, Anti PID Technology[1], Hot-Spot Protect och Traceable Quality Tra.Q™.

UTVECKLAD FÖR ANVÄNDNING UNDER EXTREMA VÄDERFÖRHÅLLANDEN
Ram tillverkad av högteknologisk aluminiumlegering, certifierad för höga snö- (5400 Pa) och vindlaster (4000 Pa).

EN SÄKER INVESTERING
Omfattas av 12 års produktgaranti samt 25 års linjär effektgaranti[2].

MODERN SOLPANELSTEKNIK
Q.ANTUM DUO förenar aktuell halvcellsteknik och innovativ celledningsdragning med den fullt utvecklade Q.ANTUM Technology.

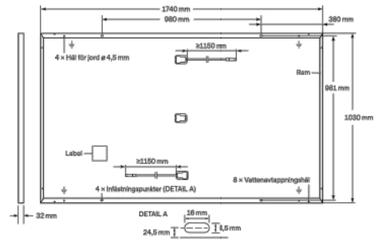
[1] APT-villkor enligt IEC/TS 62804-1:2015, metod B (–1500 V, 168 h)
[2] Se databladets baksida för mer information.

DEN PERFEKTA LÖSNINGEN FÖR:
Montering på villatak

Engineered in Germany

MEKANISK SPECIFIKATION

Format	1740 mm × 1030 mm × 32 mm (inklusive ram)
Vikt	19,9 kg
Frontskydd	3,2 mm termiskt förspänt glas med antireflex-behandling
Skydd baksida	Laminatfilm
Ram	Svart, anodiserat aluminium
Cell	6 × 20 Q.ANTUM monokristallina solar halvceller
Uttag	53-101 mm × 32-60 mm × 15-18 mm kapslingsklass IP67, med bypass dioder
Kabel	4 mm² solcellskabel; (+) ≥1150 mm, (–) ≥1150 mm
Stickkontakt	Stäubli MC4; IP68

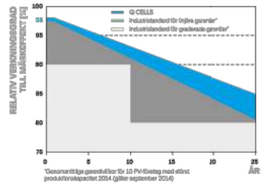


ELEKTRISKA EGENSKAPER

PRESTANDAKATEGORIER			335	340	345	350
MINSTA PRESTANDA VID STANDARDTESTFÖRHÅLLANDEN, STC[1] (STRÖM TOLERANS +5 W / –0 W)						
Minimum	Prestanda i MPP[1]	P_{MPP} [W]	335	340	345	350
Minimum	Kortslutningsström[1]	I_{SC} [A]	10,34	10,40	10,45	10,51
Minimum	Tomgångsspänning[1]	U_{OC} [V]	40,44	40,70	40,95	41,21
Minimum	Ström vid MPP	I_{MPP} [A]	9,85	9,90	9,96	10,01
Minimum	Spänning vid MPP	U_{MPP} [V]	34,01	34,34	34,65	34,97
Minimum	Effektivitet[1]	η [%]	≥18,7	≥19,0	≥19,3	≥19,5
MINIMAL PRESTANDA UNDER NORMALA DRIFTFÖRHÅLLANDEN, NMOT[2]						
Minimum	Prestanda i MPP	P_{MPP} [W]	250,9	254,6	258,4	262,1
Minimum	Kortslutningsström	I_{SC} [A]	8,33	8,38	8,42	8,47
Minimum	Tomgångsspänning	U_{OC} [V]	38,13	38,38	38,62	38,86
Minimum	Ström vid MPP	I_{MPP} [A]	7,75	7,79	7,84	7,88
Minimum	Spänning vid MPP	U_{MPP} [V]	32,36	32,67	32,97	33,27

[1] Mättoleranser P_{MPP} ±3 %; I_{SC}; U_{OC} ±5 % at STC: 1000 W/m², 25 ± 2 °C, AM 1,5 enligt IEC 60904-3 • [2] 800 W/m², NMOT, Spektrum AM 1,5

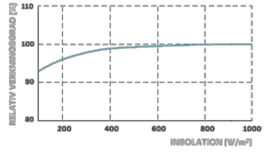
Q CELLS PRESTANDAGARANTI



Minst 98 % av märkeffekt inom det första året. Sedan max. 0,54 % sliteage per år. Minst 93,1 % av märkeffekt 10 år. Minst 85 % av märkeffekten efter 25 år.

Alla data inom mättoleranserna. Fullständig produkt- och prestandagaranti i enlighet med aktuellt gällande garantier från Q CELLS återförsäljare.

EGENSKAPER VID SÄMRE LJUSFÖRHÅLLANDEN



Typisk moduleffekt vid låga strålningsförhållanden jämfört med STC-förhållanden (25 °C, 1000 W/m²).

TEMPERATURKOEFFICIENTER						
Temperaturkoefficient I_{SC}	α	[%/K]	+0,04	Temperaturkoefficient U_{OC}	β	[%/K]	–0,27
Temperaturkoefficient P_{MPP}	γ	[%/K]	–0,35	Normal Module Operating Temperature	NMOT	[°C]	43±3

EGENSKAPER FÖR INTEGRERING I SYSTEM

Maximal systemspänning	U_{SYS}	[V]	1000	Skyddsklass	II
Spärrströmbelastbarhet	I_R	[A]	20	Brandskyddsklass baserande på ANSI / UL 1703	C / TYPE 2
Max. Tillåten belastning tryck / drag		[Pa]	3600 / 2667	Tillåten modultemperatur i kontinuerlig	–40 °C - +85 °C
Max. Provbelastning tryck / drag		[Pa]	5400 / 4000		

KVALIFIKATIONER OCH CERTIFIKAT

VDE Quality Tested; IEC 61215:2016; IEC 61730:2016, användningsklass II. Detta datablad motsvars kraven i DIN EN 50380.

FÖRPACKNINGSINFORMATION

Antal moduler per lastpall	32
Antal lastpallar lastbil (24 t)	28
Antal lastpallar 40-fots-HC-container (26 t)	24
Mått på lastpall (L × B × H)	1815 × 1150 × 1220 mm
Vikt för lastpall	683 kg

ANVISNING: Installationsinstruktionerna måste ovillkorligen följas. Mer information om hur produkterna får användas finns i Installations- och driftinstruttionerna eller kan fås av den teknisk serviceavdelningen.

Hanwha Q CELLS GmbH
Sonnenallee 17-21, 06766 Bitterfeld-Wolfen, Germany | **TEL** +49 (0)3494 66 99-23444 | **FAX** +49 (0)3494 66 99-23000 | **EMAIL** sales@q-cells.com | **WEB** www.q-cells.com

Engineered in Germany

solar impact
BARRY JACOBSON
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REVISIONS

DESCRIPTION	DATE	REV
INITIAL RELEASE	04/26/2022	UR

BARRY M JACOBSON LICENSE # 93822 STATE OF FLORIDA PROFESSIONAL ENGINEER

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PROJECT NAME

THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-10

Single Phase Inverter with HD-Wave Technology

for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US

INVERTERS

12-25 YEAR WARRANTY

Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking efficiency
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Extremely small
- Built-in module-level monitoring
- Outdoor and indoor installation
- Optional: Revenue grade data, ANSI C12.20 Class 0.5 (0.5% accuracy)

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Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US/ SE7600H-US / SE10000H-US / SE11400H-US

	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
OUTPUT								
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	✓	Vac
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac
AC Frequency (Nominal)	59.3 - 60 - 60.5[1]							Hz
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A
GFDI Threshold	1							A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							
INPUT								
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W
Transformer-less, Ungrounded	Yes							
Maximum Input Voltage	480							Vdc
Nominal DC Input Voltage	380				400			Vdc
Maximum Input Current @240V[2]	8.5	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V[2]	-	9	-	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45							Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600ka Sensitivity							
Maximum Inverter Efficiency	99	99.2						%
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption	< 2.5							W
ADDITIONAL FEATURES								
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)							
Revenue Grade Data, ANSI C12.20	Optional[3]							
Rapid Shutdown - NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect							
STANDARD COMPLIANCE								
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07							
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)							
Emissions	FCC Part 15 Class B							
INSTALLATION SPECIFICATIONS								
AC Output Conduit Size / AWG Range	1" Maximum / 14-6 AWG					1" Maximum /14-4 AWG		
DC Input Conduit Size / # of Strings / AWG Range	1" Maximum / 1-2 strings / 14-6 AWG					1" Maximum / 1-3 strings / 14-6 AWG		
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174					21.3 x 14.6 x 7.3 / 540 x 370 x 185		in / mm
Weight with Safety Switch	22 / 10		25.1 / 114	26.2 / 11.9		38.8 / 17.6		lb / kg
Noise	< 25				<50			dBA
Cooling	Natural Convection							
Operating Temperature Range	-13 to +140 / -25 to +60[4] (-40°F / -40°C option)[5]							°F / °C
Protection Rating	NEMA 4X (Inverter with Safety Switch)							

[1] For other regional settings please contact SolarEdge support
[2] A higher current source may be used; the inverter will limit its input current to the values stated
[3] Revenue grade inverter P/N: SExxxxH-US000NNC2
[4] For power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf
[5] -40 version P/N: SExxxxH-US000NNU4

RoHS

solar impact

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REVISIONS

DESCRIPTION	DATE	REV
INITIAL RELEASE	6/14/2022	UR

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PROJECT NAME

THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-11

Power Optimizer

For North America

P370 / P400 / P401 / P485 / P505

POWER OPTIMIZER

PV power optimization at the module-level

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- Flexible system design for maximum space utilization
- Fast installation with a single bolt
- Next generation maintenance with module-level monitoring
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- Module-level voltage shutdown for installer and firefighter safety

solaredge.com

solaredge

Power Optimizer

For North America

P370 / P400 / P401 / P485 / P505

Optimizer model (typical module compatibility)	P370 (for higher-power 60 and 72-cell modules)	P400 (for 72 & 96-cell modules)	P401 (for high power 60 and 72 cell modules)	P485 (for high-voltage modules)	P505 (for higher current modules)	
INPUT						
Rated Input DC Power[1]	370	400	430	485	505	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	60	80	60	125[2]	83[2]	Vdc
MPPT Operating Range	8 - 60	8 - 80	8-60	12.5 - 105	12.5 - 83	Vdc
Maximum Short Circuit Current (Isc)	11	10.1	12.5	11	14	Adc
Maximum DC Input Current	13.75	12.5	14.65	12.5	17.5	
Maximum Efficiency	99.5					%
Weighted Efficiency	98.8					%
Overvoltage Category	II					
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)						
Maximum Output Current	15					Adc
Maximum Output Voltage	60			80		Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)						
Safety Output Voltage per Power Optimizer	1 ± 0.1					Vdc
STANDARD COMPLIANCE						
EMC	FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3					
Safety	IEC62109-1 (class II safety), UL1741, NEC/PVRSS					
Material	UL94 V-0 , UV Resistant					
RoHS	Yes					
INSTALLATION SPECIFICATIONS						
Maximum Allowed System Voltage	1000					Vdc
Compatible inverters	All SolarEdge Single Phase and Three Phase inverters					
Dimensions (W x L x H)	129 x 153 x 27.5 / 5.1 x 6 x 1.1	129 x 153 x 33.5 / 5.1 x 6 x 1.3	129 x 153 x 29.5 / 5.1 x 6 x 1.16	129 x 159 x 49.5 / 5.1 x 6.3 x 1.9	129 x 162 x 59 / 5.1 x 6.4 x 2.3	mm / in
Weight (including cables)	630 / 1.4	750 / 1.7	655 / 1.5	845 / 1.9	1064 / 2.3	gr / lb
Input Connector	MC4[3]			MC4[3]	MC4[3]	
Input Wire Length	0.16 / 0.5					m / ft
Output Wire Type / Connector	Double Insulated / MC4					
Output Wire Length	1.2 / 3.9					m / ft
Operating Temperature Range[5]	-40 to +85 / -40 to +185					°C / °F
Protection Rating	IP68 / Type6B					
Relative Humidity	0 - 100					%

(1) Rated power of the module at STC will not exceed the optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed
(2) NEC 2017 requires max input voltage be not more than 80V
(3) For other connector types please contact SolarEdge
(4) Longer inputs wire lengths are available for use. For 0.9m input wire length order P401-xxxLxxx
(5) For ambient temperature above +85°C / +185°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf

PV System Design Using a SolarEdge Inverter[6][7]		Single Phase HD-Wave	Single phase	Three Phase for 208V grid	Three Phase for 277/480V grid	
Minimum String Length (Power Optimizers)	P370, P400, P401	8		10	18	
	P485, P505	6		8	14	
Maximum String Length (Power Optimizers)		25		25	50	
Maximum Power per String		5700[8] (6000 with SE7600-US - SE11400-US)	5250[8]	6000[9]	12750[10]	W
Parallel Strings of Different Lengths or Orientations		Yes				

(6) For detailed string sizing information refer to: http://www.solaredge.com/sites/default/files/string_sizing_na.pdf
(7) It is not allowed to mix P485/P505 with P370/P400/P401 in one string
(8) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement
(9) For 208V grid: it is allowed to install up to 6,500W per string when the maximum power difference between each string is 1,000W
(10) For 277/480V grid: it is allowed to install up to 15,000W per string when the maximum power difference between each string is 2,000W

Intertek RoHS

solar impact
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REVISIONS

DESCRIPTION	DATE	REV
INITIAL RELEASE	5/26/2022	UR

BARRY M JACOBSON LICENSE NO. 94028 STATE OF FLORIDA PROFESSIONAL ENGINEER

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PROJECT NAME

THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-12

POWERWALL

Tesla Powerwall is a fully-integrated AC battery system for residential or light commercial use. Its rechargeable lithium-ion battery pack provides energy storage for solar self-consumption, time-based control, and backup.

Powerwall's electrical interface provides a simple connection to any home or building. Its revolutionary compact design achieves market-leading energy density and is easy to install, enabling owners to quickly realize the benefits of reliable, clean power.

PERFORMANCE SPECIFICATIONS

AC Voltage (Nominal)	120/240 V
Feed-In Type	Split Phase
Grid Frequency	60 Hz
Total Energy	14 kWh
Usable Energy	13.5 kWh
Real Power, max continuous	5 kW (charge and discharge)
Real Power, peak (10 s, off-grid/backup)	7 kW (charge and discharge)
Apparent Power, max continuous	5.8 kVA (charge and discharge)
Apparent Power, peak (10 s, off-grid/backup)	7.2 kVA (charge and discharge)
Maximum Supply Fault Current	10 kA
Maximum Output Fault Current	32 A
Overcurrent Protection Device	30 A
Imbalance for Split-Phase Loads	100%
Power Factor Output Range	+/– 1.0 adjustable
Power Factor Range (full-rated power)	+/– 0.85
Internal Battery DC Voltage	50 V
Round Trip Efficiency[1,3]	90%
Warranty	10 years

[1]Values provided for 25°C (77°F), 3.3 kW charge/discharge power.
[2]In Backup mode, grid charge power is limited to 3.3 kW.
[3]AC to battery to AC, at beginning of life.

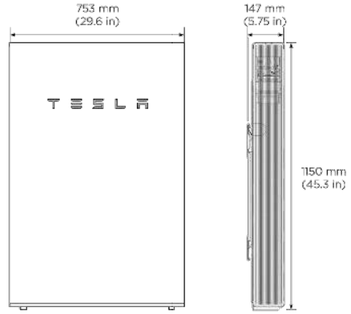
COMPLIANCE INFORMATION

Certifications	UL 1642, UL 1741, UL 1973, UL 9540, IEEE 1547, UN 38.3
Grid Connection	Worldwide Compatibility
Emissions	FCC Part 15 Class B, ICES 003
Environmental	RoHS Directive 2011/65/EU
Seismic	AC156, IEEE 693-2005 (high)

MECHANICAL SPECIFICATIONS

Dimensions[1]	1150 mm x 755 mm x 147 mm (45.3 in x 29.6 in x 5.75 in)
Weight[1]	114 kg (251.3 lbs)
Mounting options	Floor or wall mount

[1]Dimensions and weight differ slightly if manufactured before March 2019. Contact Tesla for additional information.

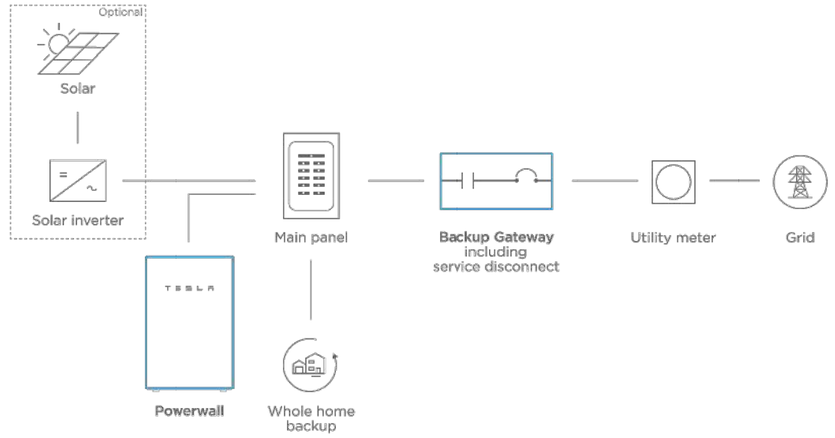


ENVIRONMENTAL SPECIFICATIONS

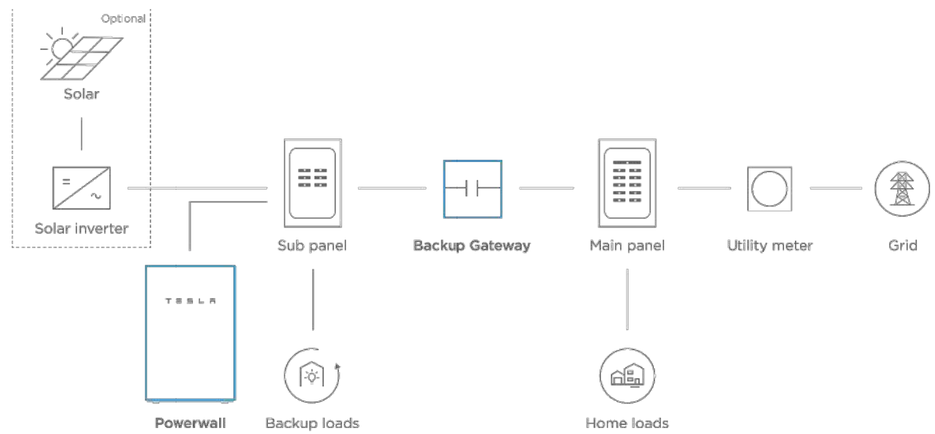
Operating Temperature	–20°C to 50°C (–4°F to 122°F)
Recommended Temperature	0°C to 30°C (32°F to 86°F)
Operating Humidity (RH)	Up to 100%, condensing
Storage Conditions	–20°C to 30°C (–4°F to 86°F) Up to 95% RH, non-condensing State of Energy (SoE): 25% initial
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Type	NEMA 3R
Ingress Rating	IP67 (Battery & Power Electronics) IP56 (Wiring Compartment)
Wet Location Rating	Yes
Noise Level @ 1m	< 40 dBA at 30°C (86°F)

TYPICAL SYSTEM LAYOUTS

WHOLE HOME BACKUP



PARTIAL HOME BACKUP



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INITIAL RELEASE	5/26/2022	UR

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PROJECT NAME

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1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-13

POWERWALL
Backup Gateway 2

The Backup Gateway 2 for Tesla Powerwall provides energy management and monitoring for solar self-consumption, time-based control, and backup.

The Backup Gateway 2 controls connection to the grid, automatically detecting outages and providing a seamless transition to backup power. When equipped with a main circuit breaker, the Backup Gateway 2 can be installed at the service entrance. When the optional internal panelboard is installed, the Backup Gateway 2 can also function as a load center.

The Backup Gateway 2 communicates directly with Powerwall, allowing you to monitor energy use and manage backup energy reserves from any mobile device with the Tesla app.

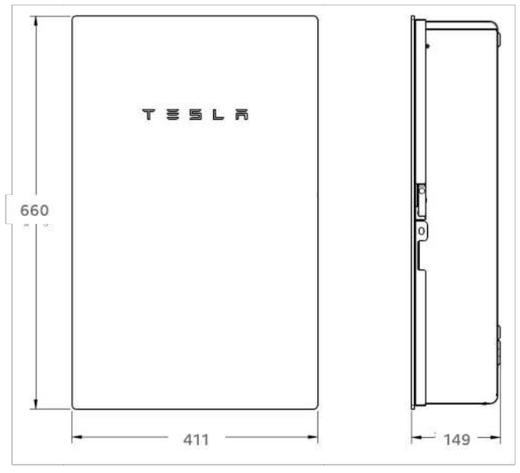
PERFORMANCE SPECIFICATIONS

AC Voltage (Nominal)	120/240V
Feed-In Type	Split Phase
Grid Frequency	60 Hz
Current Rating	200 A
Maximum Input Short Circuit Current	10 kA[1]
Overcurrent Protection Device	100-200A; Service Entrance Rated[1]
Overvoltage Category	Category IV
AC Meter	Revenue accurate (+/– 0.2 %)
Primary Connectivity	Ethernet, Wi-Fi
Secondary Connectivity	Cellular (3G, LTE/4G)[2]
User Interface	Tesla App
Operating Modes	Support for solar self-consumption, time-based control, and backup
Backup Transition	Automatic disconnect for seamless backup
Modularity	Supports up to 10 AC-coupled Powerwalls
Optional Internal Panelboard	200A 6-space / 12 circuit Eaton BR Circuit Breakers
Warranty	10 years

[1] When protected by Class J fuses, Backup Gateway 2 is suitable for use in circuits capable of delivering not more than 22kA symmetrical amperes.
[2] The customer is expected to provide internet connectivity for Backup Gateway 2; cellular should not be used as the primary mode of connectivity. Cellular connectivity subject to network operator service coverage and signal strength.

MECHANICAL SPECIFICATIONS

Dimensions	660 mm x 411 mm x 149 mm (26 in x 16 in x 6 in)
Weight	20.4 kg (45 lb)
Mounting options	Wall mount, Semi-flush mount



COMPLIANCE INFORMATION

Certifications	UL 67, UL 869A, UL 916, UL 1741 PCS CSA 22.2 0.19, CSA 22.2 205
Emissions	FCC Part 15, ICES 003

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	–20°C to 50°C (–4°F to 122°F)
Operating Humidity (RH)	Up to 100%, condensing
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Type	NEMA 3R

solar impact
BARRY JACOBSON
4509 NW 23RD AVE, STE 20,
GAINESVILLE, FL 32606
TEL: (352)281-5946
CSLB # : CVC56761
Email barry@solarimpact.com

REVISIONS

DESCRIPTION	DATE	REV
INITIAL RELEASE	04/26/2022	UR

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PROJECT NAME

THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-14

Tech Brief

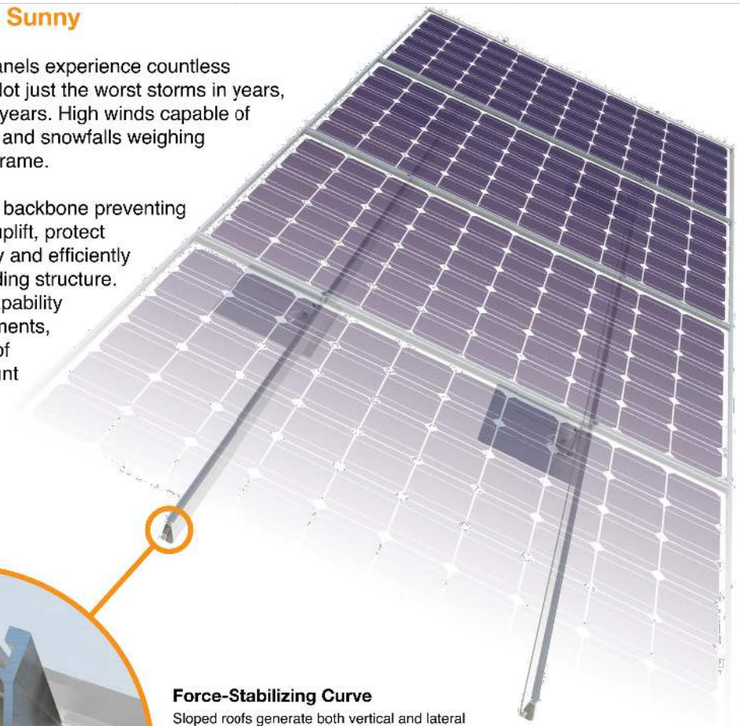
IRONRIDGE

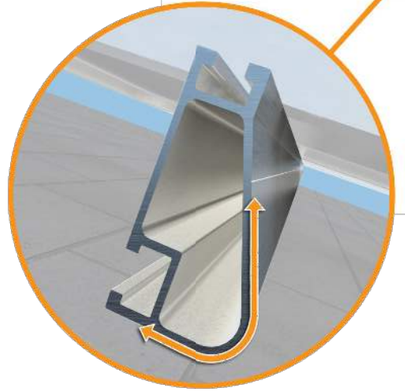
XR Rail Family

Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.





Force-Stabilizing Curve

Sloped roofs generate both vertical and lateral forces on mounting rails which can cause them to bend and twist. The curved shape of XR Rails is specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

Compatible with Flat & Pitched Roofs

XR Rails are compatible with FlashFoot and other pitched roof attachments.

IronRidge offers a range of tilt leg options for flat roof mounting applications.

Corrosion-Resistant Materials

All XR Rails are made of 6000-series aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.

Tech Brief

XR Rail Family

The XR Rail Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads, while minimizing material costs. Depending on your location, there is an XR Rail to match.

XR10

XR10 is a sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves spans up to 6 feet, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear & black anodized finish
- Internal splices available

XR100

XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 10 feet.

- 10' spanning capability
- Heavy load capability
- Clear & black anodized finish
- Internal splices available

XR1000

XR1000 is a heavyweight among solar mounting rails. It's built to handle extreme climates and spans up to 12 feet for commercial applications.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish
- Internal splices available

Rail Selection

The table below was prepared in compliance with applicable engineering codes and standards.* Values are based on the following criteria: ASCE 7-16, Gable Roof Flush Mount, Roof Zones 1 & 2e, Exposure B, Roof Slope of 8 to 20 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed certification letters.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	90	XR10		XR100		XR1000	
	120						
	140						
	160						
20	90						
	120						
	140						
	160						
30	90						
	160						
40	90						
	160						
80	160						
120	160						

*Table is meant to be a simplified span chart for conveying general rail capabilities. Use approved certification letters for actual design guidance.

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PROJECT NAME

THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-15

Tech Brief

IRONRIDGE

Class A Fire Rating

Background

All roofing products are tested and classified for their ability to resist fire.

Recently, these fire resistance standards were expanded to include solar equipment as part of the roof system. Specifically, this requires the modules, mounting hardware and roof covering to be tested together as a system to ensure they achieve the same fire rating as the original roof covering.

These new requirements are being adopted throughout the country in 2016.

IronRidge Certification

IronRidge was the first company to receive a Class A Fire Rating—the highest possible rating—from Intertek Group plc., a Nationally Recognized Testing Laboratory.

IronRidge Flush Mount and Tilt Mount Systems were tested on sloped and flat roofs in accordance with the new UL 1703 & UL 2703 test standards. The testing evaluated the system's ability to resist flame spread, burning material and structural damage to the roof.

Refer to the table below to determine the requirements for achieving a Class A Fire Rating on your next project.

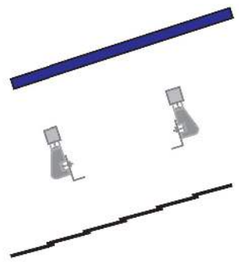
Fire Testing Process

Test Setup

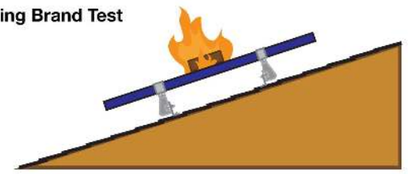
Solar Modules
Solar modules are given a Type classification based on their materials and construction.

Mounting System
Mounting is tested as part of a system that includes type-tested modules and fire-rated roof covering.

Roof Covering
Roof covering products are given a Fire Class Rating of A, B or C based on their tested fire resistance.

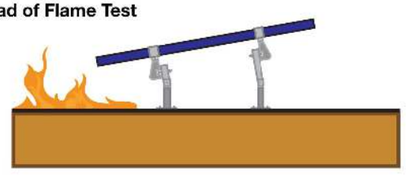


Burning Brand Test



A burning wooden block is placed on module as a fan blows at 12 mph. Flame cannot be seen on underside of roof within 90 minutes.

Spread of Flame Test



Flame at southern edge of roof is aimed up the roof as a fan blows at 12 mph. The flame cannot spread 6 feet or more in 10 minutes.

System	Roof Slope	Module	Fire Rating*
Flush Mount	Any Slope	Type 1, 2, & 3	Class A
Tilt Mount	≤ 6 Degrees	Type 1, 2, & 3	Class A

*Class A rated PV systems can be installed on Class A, B, and C roofs.

Tech Brief

Frequently Asked Questions

What is a "module type"?

The new UL1703 standard introduces the concept of a PV module type, based on 4 construction parameters and 2 fire performance parameters. The purpose of this classification is to certify mounting systems without needing to test it with every module.

What roofing materials are covered?

All fire rated roofing materials are covered within this certification including composition shingle, clay and cement tile, metal, and membrane roofs.

What if I have a Class C roof, but the jurisdiction now requires Class A or B?

Generally, older roofs will typically be "grandfathered in", and will not require re-roofing. However, if 50% or more of the roofing material is replaced for the solar installation the code requirement will be enforced.

Where is the new fire rating requirement code listed?

2012 IBC: 1509.7.2 Fire classification. Rooftop mounted photovoltaic systems shall have the same fire classification as the roof assembly required by Section 1505.

Where is a Class A Fire Rating required?

The general requirement for roofing systems in the IBC refers to a Class C fire rating. Class A or B is required for areas such as Wildland Urban Interface areas (WUI) and for very high fire severity areas. Many of these areas are found throughout the western United States. California has the most Class A and B roof fire rating requirements, due to wild fire concerns.

Are standard mid clamps covered?

Mid clamps and end clamps are considered part of the PV "system", and are covered in the certification.

What attachments and flashings are deemed compatible with Class A?

Attachments and their respective flashings are not constituents of the rating at this time. All code-compliant flashing methods are acceptable from a fire rating standpoint.

What mounting height is acceptable?

UL fire testing was performed with a gap of 5", which is considered worst case in the standard. Therefore, the rating is applicable to any module to roof gap.

Am I required to install skirting to meet the fire code?

No, IronRidge achieved a Class A fire rating without any additional racking components.

What determines Fire Classification?

Fire Classification refers to a fire-resistance rating system for roof covering materials based on their ability to withstand fire exposure.

Class A - effective against severe fire exposure
Class B - effective against moderate fire exposure
Class C - effective against light fire exposure

What if the roof covering is not Class A rated?

The IronRidge Class A rating will not diminish the fire rating of the roof, whether Class A, B, or C.

What tilts is the tilt mount system fire rated for?

The tilt mount system is rated for 1 degrees and up and any roof to module gap, or mounting height.

More Resources

Installation Manuals
Visit our website for manuals that include UL 2703 Listing and Fire Rating Classification.
Go to IronRidge.com

Engineering Certification Letters
We offer complete engineering resources and pre-stamped certification letters.
Go to IronRidge.com

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1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-16

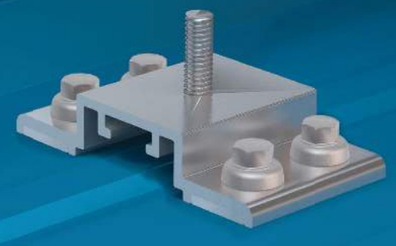
S-5!®

The Right Way!

NEW PRODUCT
SolarFoot™

Introducing the new SolarFoot™ for exposed fastener metal roofing with the strength, testing, quality, and time-proven integrity you expect from S-5!. The SolarFoot provides an ideal mounting platform to attach the L-Foot (not included) of a rail-mounted PV system to the roof. This solution is The Right Way to secure rail-mounted solar systems to exposed fastener metal such as AG-Panel or R-Panel.

The right way to attach almost anything to metal roofs!



SolarFoot Features:

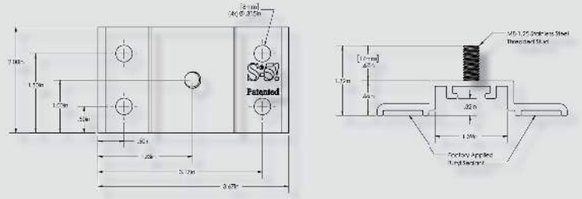
- Manufactured in the U.S.A. from certified raw material
- Fabricated in our own ISO 9001:2015 certified factory
- All aluminum and stainless components
- 25yr limited warranty
- Compatible with all commercial L-Foot products on the market
- Factory applied 40-year isobutylene/isoprene crosslink polymer sealant for reliable weathertightness
- Sealant reservoir to prevent over-compression of sealant
- Load-to-failure tested Normal to Seam by a nationally accredited laboratory on numerous metal roof materials and substrates
- Four points of attachment into structure or deck with tested holding strength for engineered applications
- Integrated M8-1.25x17mm stud and M8-1.25 stainless steel hex flange nut included

888-825-3432 | www.S-5.com | MADE IN THE USA

S-5!®
The Right Way!

SolarFoot™ Mounting for Exposed Fastener Roofing

The SolarFoot is a simple, cost-effective pedestal for L-Foot (not included) attachment of rail-mounted solar PV. The unique design is compatible with all rail producer L-Foot components. The new SolarFoot assembly ensures a durable weathertight solution for the life of the roof. Special factory applied butyl co-polymeric sealant contained in a reservoir is The Right Way, allowing a water-tested seal. Stainless integrated stud and hex flange lock-nut secure the L-Foot into position. A low center of gravity reduces the moment arm commonly associated with L-Foot attachments. Direct attachment of the SolarFoot to the structural member or deck provides unparalleled holding strength.



**Fasteners sold separately. Fastener type varies with substrate. Contact S-5! on how to purchase fasteners and obtain our test results. L-Foot also sold separately.*

Fastener Selection

Metal to Metal:
1/4-14 Self Drilling Screw
1-1/2" to 2-1/2"

Metal to Wood:
1/4-14 Type 17 AB Milled Point
1-1/2" to 2-1/2"

To source fasteners for your projects, contact: S-5!

When other brands claim to be "just as good as S-5!", tell them to PROVE IT.

SolarFoot Advantages:

- Exposed fastener mounting platform for solar arrays attached via L-Foot and Rails
- Weatherproof attachment to exposed fastener roofing
- Butyl sealant reservoir provides long-term waterproof seal
- M8-1.25x17mm stud with M8 hex flange nut for attachment of all popular L-Foot/rail combinations
- Tool: 13 mm Hex Socket or ½" Hex Socket
- Tool Required: Electric screw gun with hex drive socket for self-tapping screws.
- Low Center of Gravity reduces moment arm commonly associated with L-Foot/Rail solar mounting scenarios
- Attaches directly to structure or deck for optimal holding strength
- S-5! Recommended substrate-specific (e.g. steel purlin, wood 2x4, OSB, etc.) fasteners provide excellent waterproofing and pull-out strength
- Fastener through-hole locations comply with NDS (National Design Specification)for Wood Construction

S-5!® Warning! Please use this product responsibly!

The independent lab test data found at www.S-5.com can be used for load-critical designs and applications.

Products are protected by multiple U.S. and foreign patents. For published data regarding holding strength, fastener torque, patents, and trademarks, visit the S-5! website at www.S-5.com. Copyright 2017, Metal Roof Innovations, Ltd. S-5! products are patent protected.

Distributed by:

solar impact

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PROJECT NAME

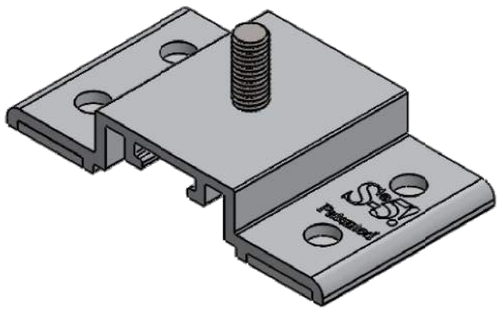
THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
SPEC SHEETS

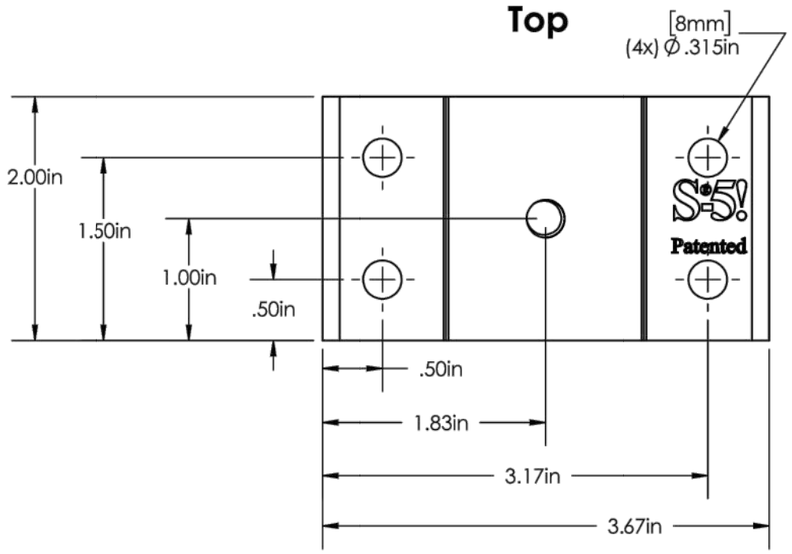
SHEET SIZE
ANSI B
11" X 17"

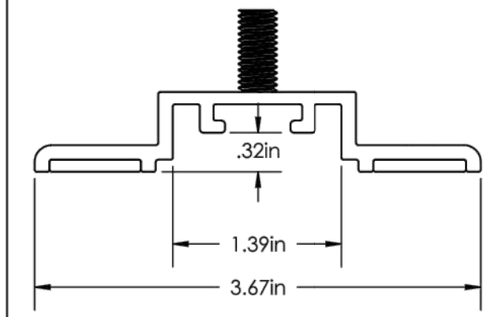
SHEET NUMBER
PV-17

SolarFoot



Top





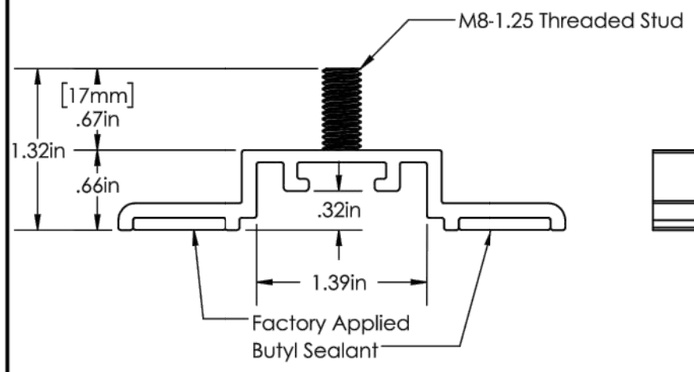
Scale 2:3

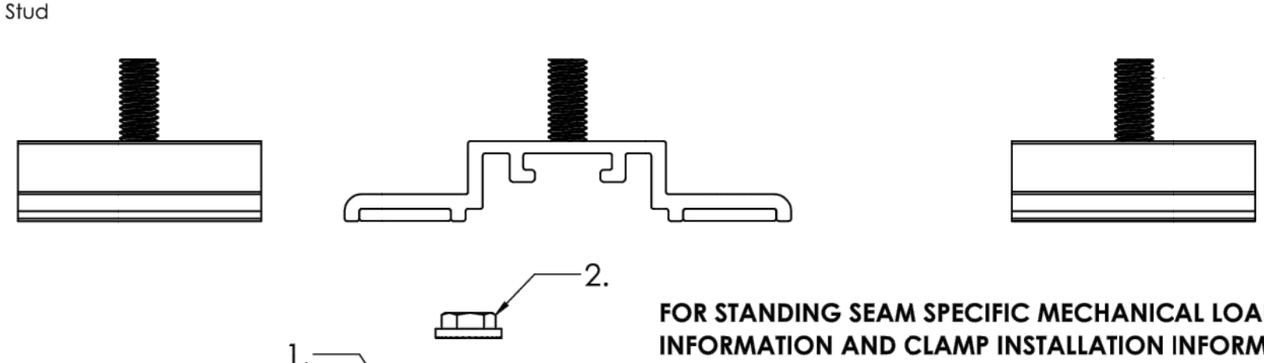
Back

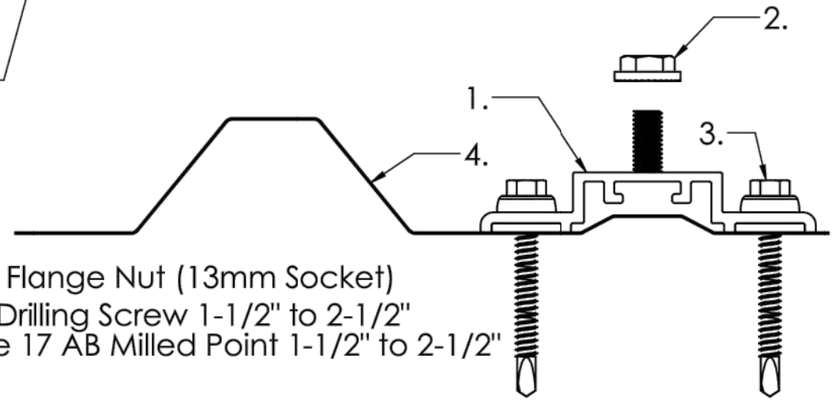
Left

Front

Right







FOR STANDING SEAM SPECIFIC MECHANICAL LOAD TEST INFORMATION AND CLAMP INSTALLATION INFORMATION PLEASE VISIT: WWW.S-5.COM

General Notes:

1. SolarFoot
2. M8-1.25 Stainless Steel Hex Flange Nut (13mm Socket)
3. Metal to Metal:1/4-14 Self Drilling Screw 1-1/2" to 2-1/2"
   Metal to Wood:1/4-14 Type 17 AB Milled Point 1-1/2" to 2-1/2"
4. Example roof

MATERIAL: 6005A T61 Al	S-5! The Right Way!	METAL ROOF INNOVATIONS, LTD. 8655 TABLE BUTTE RD COLORADO SPRINGS, CO 80908 719-495-0518 719-495-0045(FAX)
EST ASSEMBLY WEIGHT: 0.248 lbs	TITLE: SolarFoot [CCD]	
SUPPLIED HARDWARE: M8-1.25 Hex Flange Nut		
SCALE: 2:3	DRAWING NO. LP66-A-0-A	DRAWN BY Paul Leitch — DATE 09/20/2017
EST. WEIGHT: Bracket: 0.129 lbs Fastener: 0.026 lbs Nut: 0.015 lbs	S-5!® PRODUCTS ARE PROTECTED BY MULTIPLE U.S. AND FOREIGN PATENTS. VISIT OUR WEBSITE AT WWW.S-5.COM FOR COMPLETE INFORMATION ON PATENTS AND TRADEMARKS.	

solar impact

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UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-18

S-5!®

The right way to attach almost anything to metal roofs!

The Right Way!

Please read these install instructions in their entirety before beginning work.

Installation Instructions

S-5!® Warning! Please use these products responsibly! Visit our website or contact your S-5! distributor for available load test results. The user and/or installer of these parts is responsible for all necessary engineering and design to ensure the Solar Feet™ have been properly spaced and configured.

Notice to S-5! users: Due to the many variables involved with specific panel products, climates, wind loads, snow loads, and job particulars, the manufacturer cannot and does not express any opinions as to the suitability of any S-5! assembly for any specific application and assumes no liability with respect thereto. S-5! products are tested for ultimate holding strength on various profile types and materials. This information is available from the S-5! website: **www.S-5.com**.

These install instructions serve to illustrate the correct procedure for securing the SolarFoot to a roof. Proper layout and frequency will vary on a job specific basis and should be determined by a qualified professional. This document is an installation guide only and the photographs and drawings herein are for the purpose of illustrating installation, tools and techniques, not system designs.

The SolarFoot™ is made for exposed-fastened metal roofing. It provides an ideal, weatherproof mounting platform to attach the L-foot of a rail mounted solar system or other ancillaries to the roof.

Tools Needed

- Electric Screw Gun
- Rag
- String Line
- Tape Measure
- 3/8" Hex Socket Drive
- 13 mm (or 1/2") Hex Socket Drive

Placement Tip

The SolarFoot should be placed in the flat of the panel, between the ribs. It is designed to straddle striations or minor stiffening ribs when necessary. The SolarFoot must be mounted directly over and into the supporting structure of the roof, i.e. wood decking, wood or steel purlins, or trusses, NEVER into the metal roofing material alone.

Fastener Selection

Fastener selection will depend on whether the supporting structure of the roof is metal or wood. When relying upon tested load values one of the below fasteners MUST be used.

To source fasteners visit www.S-5.com

Not Provided

Metal to Metal Screw Specifications: 1/4-14 Self Drilling Screw - 1-1/2" to 2-1/2" Length - 3/8" Hex Washer Head - Zinc/Aluminum Cap

Not Provided

Metal to Wood Screw Specifications: 1/4-14 Type 17-AB Milled Point - 1-1/2" to 2-1/2" Length - 3/8" Hex Washer Head - Zinc/Aluminum Cap

S-5!® Warning! Please use this product responsibly!

These instructions are for use by those experienced in the trade. Always follow appropriate safety precautions and use appropriate tools.

SolarFoot™ Install

888-825-3432 | www.S-5.com | MADE IN USA

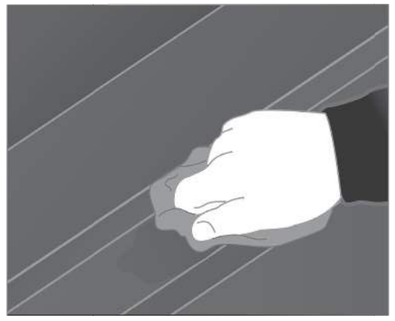
SolarFoot Installation Instructions

To Install SolarFoot™

1. Determine the location of the supporting structure of the roof. Wipe away excess oil and debris from the desired mounting location.
2. Peel the release paper from the base, align, and apply to roof surface so that fasteners will engage the structure below.
3. Install screws through the pre-punched holes in the SolarFoot into the structure below.
4. Install the L-Foot over the stud and secure in place with the provided M8-1.25 hex flange nut tightened to 160 inch pounds (13 ft lbs).

NOTE: Attachment frequency and spacing for PV arrays is the responsibility of the system designer. The makers of S-5! SolarFoot make no representations with respect to the variables involved in PV array design. Visit the S-5! website for load testing data.

1



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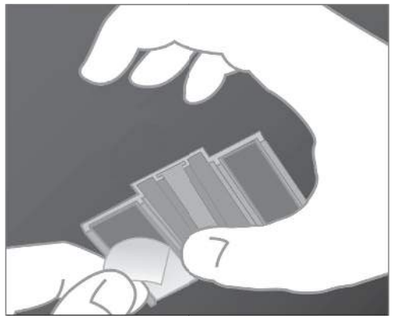

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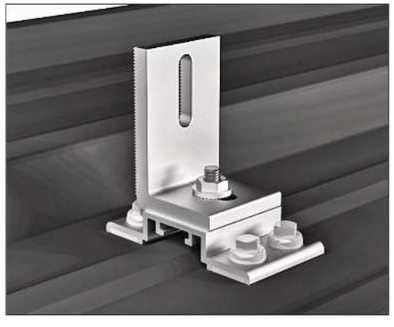

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LP66-V1.0_08/17

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REVISIONS		
DESCRIPTION	DATE	REV
INITIAL RELEASE	5/4/2022	UR

BARRY M. JACOBSON LICENSE STATE OF FLORIDA PROFESSIONAL ENGINEER

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2022.07.05 18:58:23 -04'00'

PROJECT NAME

THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-19