PHOTOVOLTAIC ROOF MOUNT SYSTEM

35 MODULES-ROOF MOUNTED - 15.75 kWDC, 15.20 kWAC

1250 NW DALIAN LN, LAKE CITY, FL 32055 USA

SYSTEM SUMMARY:

(N) 35 - LONGI SOLAR LR4-72HBD-450M (450W) MODULES
(N) 02 - TESLA SOLAR POWERWALL+ 7.6 KW INVERTER & BATTERY
(N) 18 - TESLA SOLAR SHUTDOWN DEVICE
(N) 03 - JUNCTION BOX
(N) 200A SUB PANEL WITH (N) 200A MAIN BREAKER
(E) 100A SUB PANEL WITH (E) 100A MAIN BREAKER
(N) NEMA 14-50 OUTLET (UNDER CARPORT)
(N) 100A FUSED AC DISCONNECT
(N) TESLA BACKUP GATEWAY-2 W/200 A, NEMA 3R, UL LISTED (DUAL LUGGED)
(N) 100A SOLAR / BATTERY SUB PANEL

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

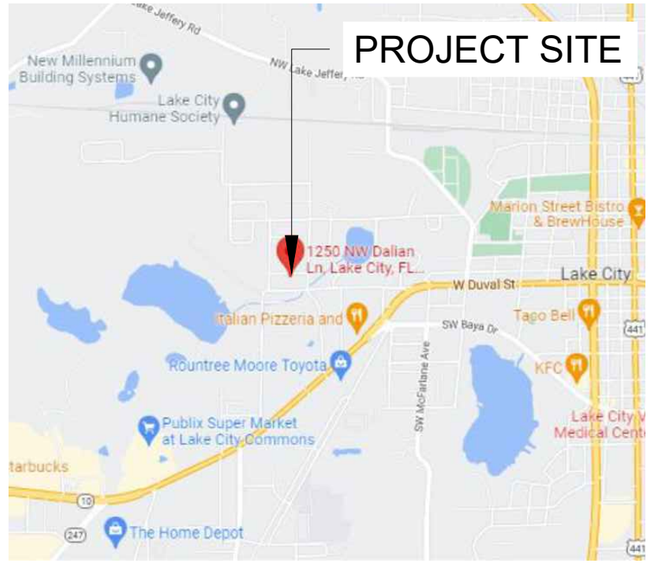
PV-0	COVER SHEET
PV-1	SITE PLAN WITH ROOF PLAN
PV-2	ROOF PLAN WITH MODULES
PV-2.1	ROOF ZONE DETAILS
PV-3	ATTACHMENT DETAILS
PV-3.1	ATTACHMENT DETAILS
PV-4	STRING LAYOUT
PV-5	ELECTRICAL LINE DIAGRAM
PV-6	ELECTRICAL CALCULATION
PV-6.1	VOLTAGE DROP CALCULATION
PV-7	WARNING LABELS
PV-8	ADDITIONAL NOTES
PV-9	TESLA SOLAR SHUTDOWN DEVICE
PV-10+	EQUIPMENT SPEC SHEETS

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 SOUTHER 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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TEL: (352)281-5946
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REVISIONS

DESCRIPTION	DATE	REV
INITIAL RELEASE	06/14/2022	UR

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2022.05.13 16:33:03 -04'00'

PROJECT NAME

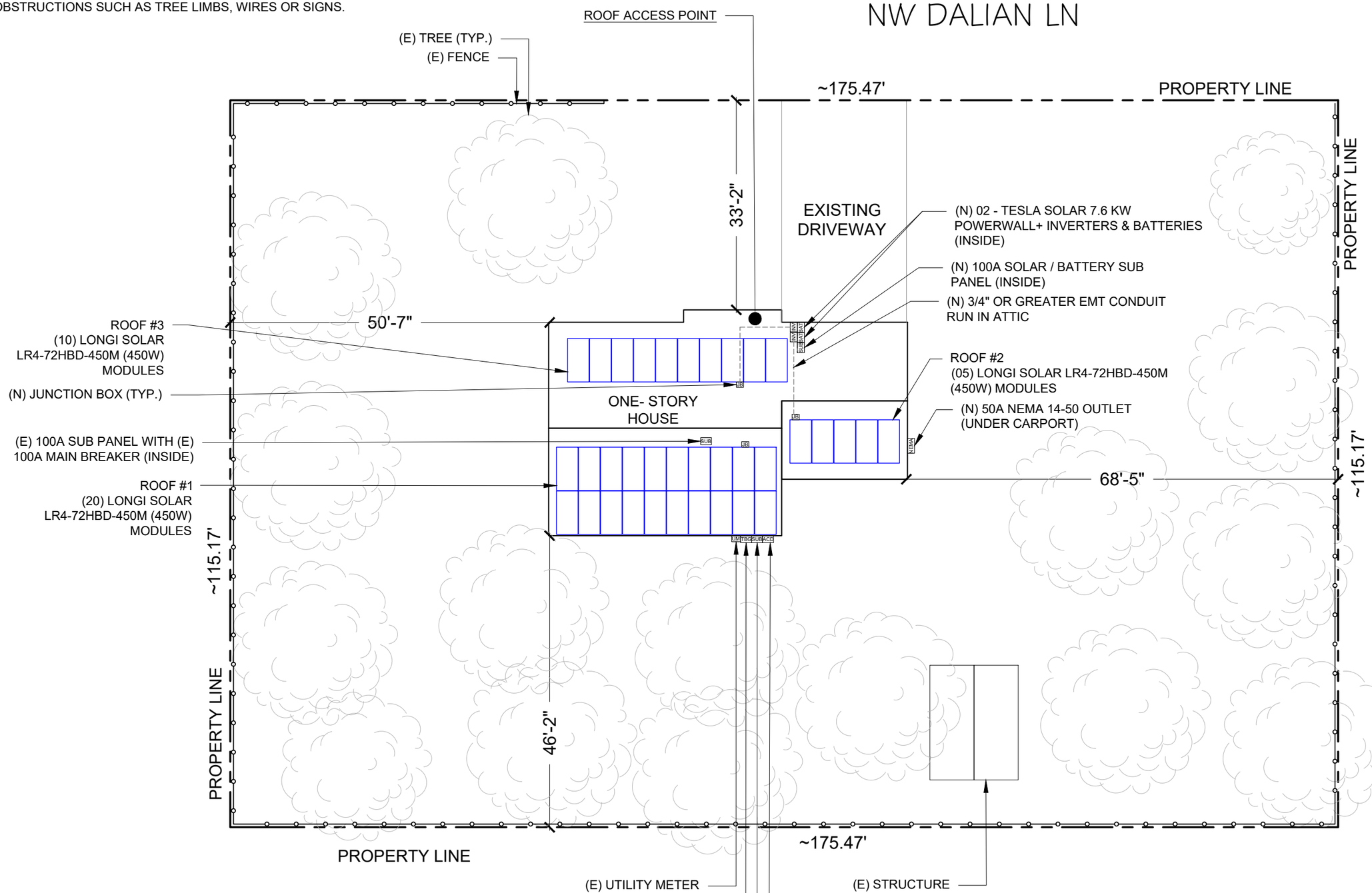
THOMAS COLLINS
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 31S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

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

DESCRIPTION	DATE	REV
INITIAL RELEASE	10/26/2022	UR

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2022.05.13 16:33:27 -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
SITE PLAN WITH ROOF PLAN

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-1

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 35 MODULES
MODULE TYPE = LONGI SOLAR LR4-72HBD-450M (450W) MODULES
MODULE WEIGHT = 60.63 LBS / 27.6 KG.
MODULE DIMENSIONS = 82.44"X 40.86" = 23.39 SF
UNIT WEIGHT OF ARRAY = 2.59 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:
82.44"X 40.86" (PANEL DIMENSIONS)
82.44"X 40.86" = 23.39 sqft (PER PANEL)
23.39 $^{sqft}/_{panel}$ X 35 panels = 818.73 sqft (TOTAL PANEL AREA)

PERCENTAGE OF TOTAL ROOF AREA:
(818.73 sqft / 1752.66 sqft)(100)= 46.71%

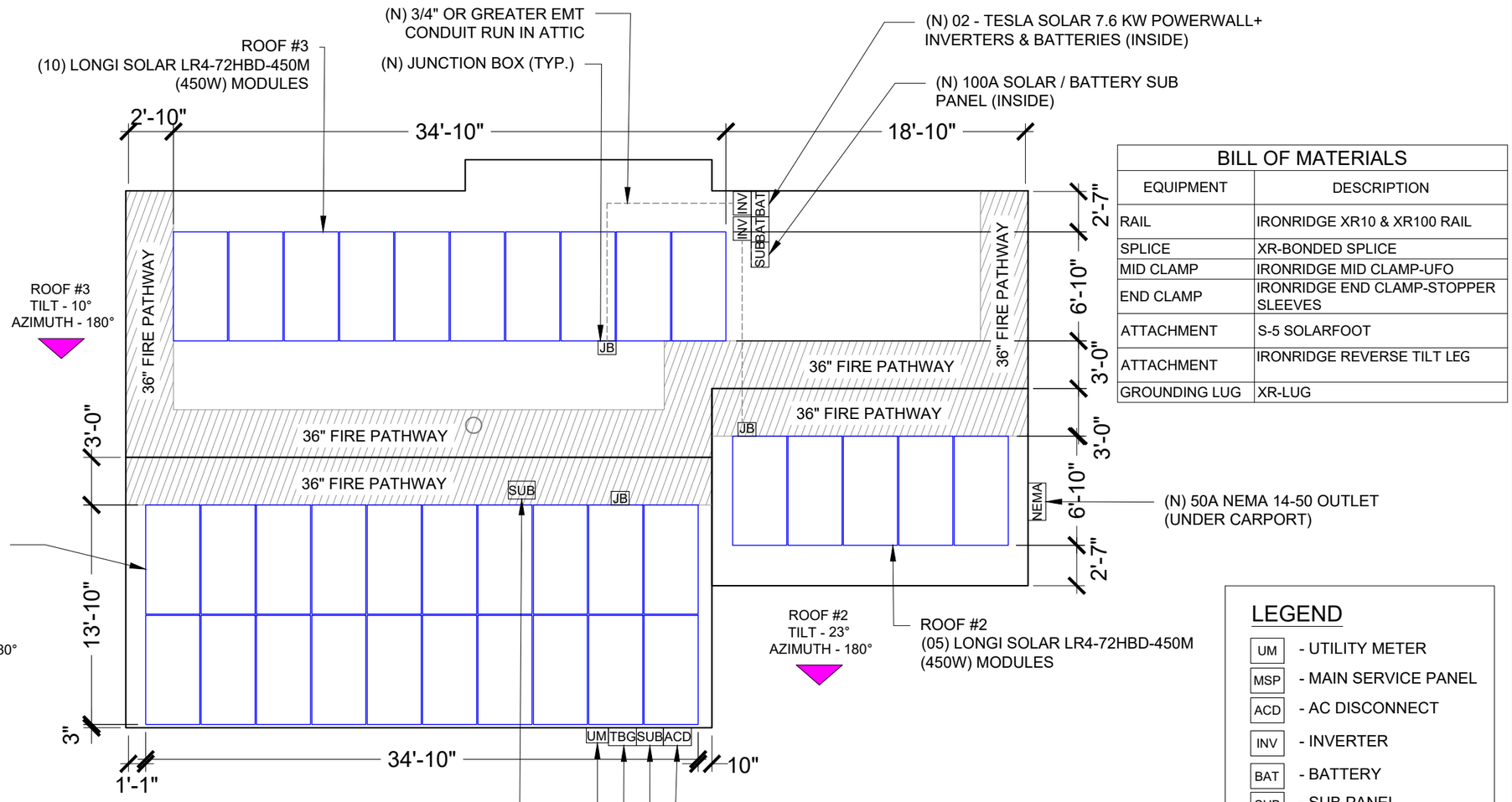
THE PANELS USE 46.71% OF THE TOTAL ROOF AREA

ARRAY AREA & ROOF AREA CALC'S

ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	20	467.85	628.81	74.40
#2	05	116.96	247.29	47.30
#3	10	233.92	898.25	26.04

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	10°	180°	2"x4"	12" O.C.	24" O.C.



BILL OF MATERIALS

EQUIPMENT	DESCRIPTION
RAIL	IRONRIDGE XR10 & XR100 RAIL
SPLICE	XR-BONDED SPLICE
MID CLAMP	IRONRIDGE MID CLAMP-UFO
END CLAMP	IRONRIDGE END CLAMP-STOPPER SLEEVES
ATTACHMENT	S-5 SOLARFOOT
ATTACHMENT	IRONRIDGE REVERSE TILT LEG
GROUNDING LUG	XR-LUG

LEGEND

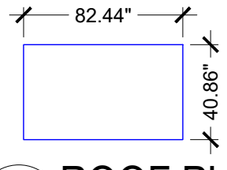
- UM - UTILITY METER
- MSP - MAIN SERVICE PANEL
- ACD - AC DISCONNECT
- INV - INVERTER
- BAT - BATTERY
- SUB - SUB PANEL
- NEMA - NEMA 14-50 OUTLET
- TBG - TESLA BACKUP GATEWAY-2
- JB - JUNCTION BOX
- - VENT, ATTIC FAN (ROOF OBSTRUCTION)
- - ROOF ATTACHMENT
- - RAFTERS
- - CONDUIT
- - FIRE PATHWAY

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

PHOTOVOLTAIC MODULES
LONGI SOLAR
LR4-72HBD-450M (450W)



1 ROOF PLAN WITH MODULES

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

N

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REVISIONS

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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
ROOF PLAN WITH MODULES

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-2

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 35 MODULES
MODULE TYPE = LONGI SOLAR LR4-72HBD-450M (450W) MODULES
MODULE WEIGHT = 60.63 LBS / 27.6 KG.
MODULE DIMENSIONS = 82.44"X 40.86" = 23.39 SF
UNIT WEIGHT OF ARRAY = 2.59 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 A7° 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.

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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.

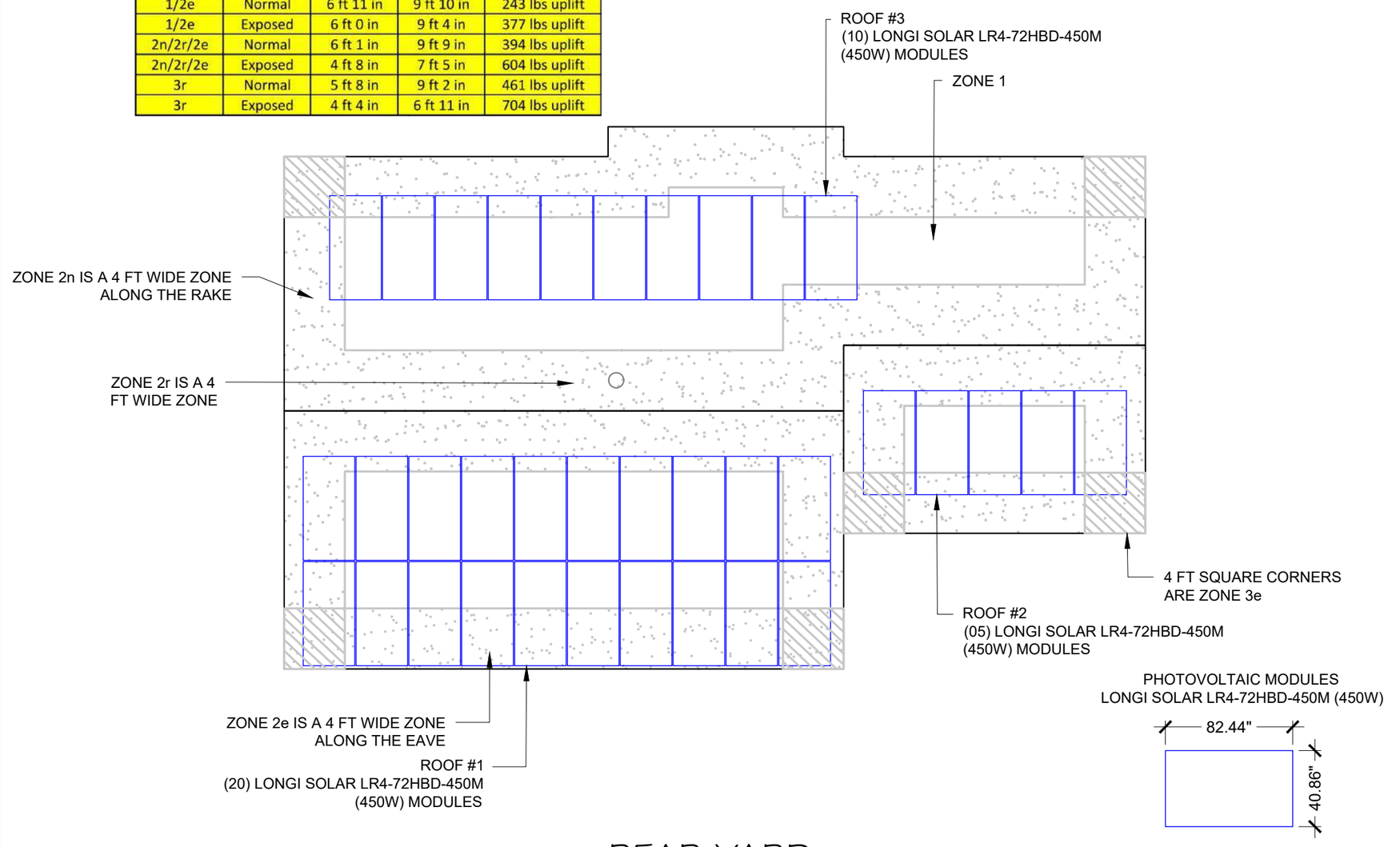
Use following span and cantilever limits for this installation. Attachment spacing limited by max allo of lbs max allowable uplift per attachment lbs and rail tolerances

		XR10	XR100	XR10	XR100	XR10
Zone	Type	Span Limits		Cantilever Limits		Up
1/2e	Normal	6 ft 2 in	6 ft 2 in	2 ft 6 in	2 ft 6 in	267 lb
1/2e	Exposed	3 ft 11 in	3 ft 11 in	1 ft 7 in	1 ft 7 in	267 lb
2n/2r/2e	Normal	3 ft 9 in	3 ft 9 in	1 ft 6 in	1 ft 6 in	267 lb
2n/2r/2e	Exposed	2 ft 5 in	2 ft 5 in	0 ft 12 in	0 ft 12 in	267 lb
3r	Normal	3 ft 2 in	3 ft 2 in	1 ft 3 in	1 ft 3 in	267 lb
3r	Exposed	2 ft 1 in	2 ft 1 in	0 ft 10 in	0 ft 10 in	267 lb

IronRidge website info used for span and cantilever calculations

		XR10	XR100	Reaction Forces
Zone	Type	Span Limits		for 4' span
1/2e	Normal	6 ft 11 in	9 ft 10 in	243 lbs uplift
1/2e	Exposed	6 ft 0 in	9 ft 4 in	377 lbs uplift
2n/2r/2e	Normal	6 ft 1 in	9 ft 9 in	394 lbs uplift
2n/2r/2e	Exposed	4 ft 8 in	7 ft 5 in	604 lbs uplift
3r	Normal	5 ft 8 in	9 ft 2 in	461 lbs uplift
3r	Exposed	4 ft 4 in	6 ft 11 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



1 ROOF ZONING DETAILS

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

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REVISIONS

DESCRIPTION	DATE	REV
INITIAL RELEASE	04/26/2022	UR

PROJECT NAME

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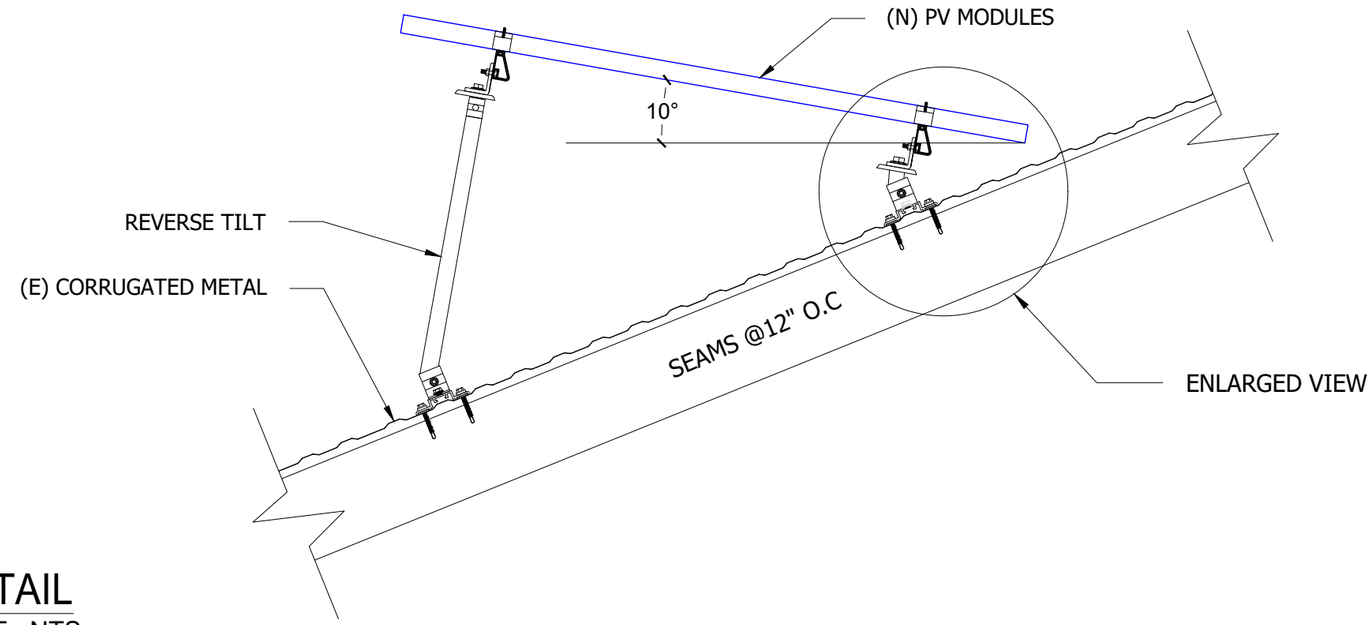
1250 NW DALIAN LN,
LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
ROOF ZONING DETAILS

SHEET SIZE
ANSI B
11" X 17"

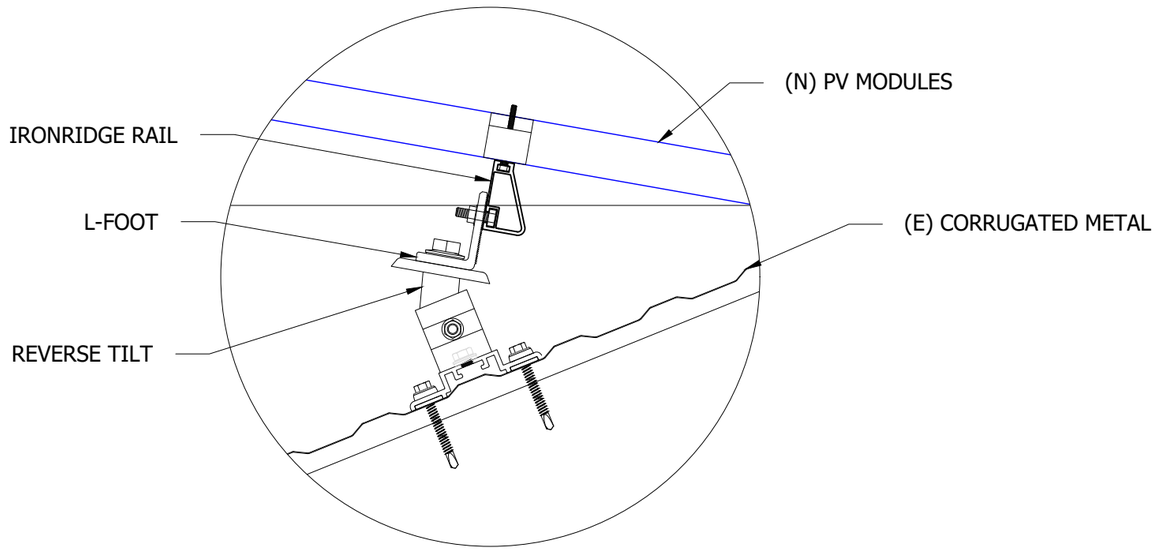
SHEET NUMBER
PV-2.1

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



1 ATTACHMENT DETAIL

SCALE: NTS



2 ATTACHMENT DETAIL (ENLARGED VIEW)

SCALE: NTS

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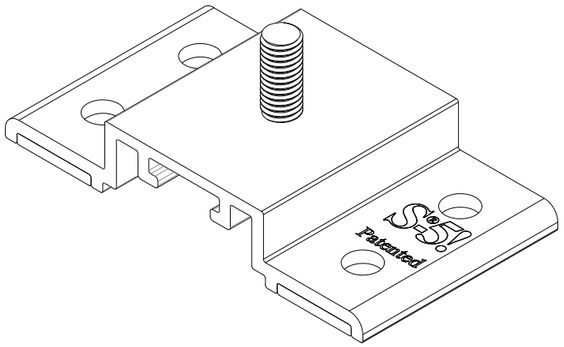
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME
ATTACHMENT DETAILS

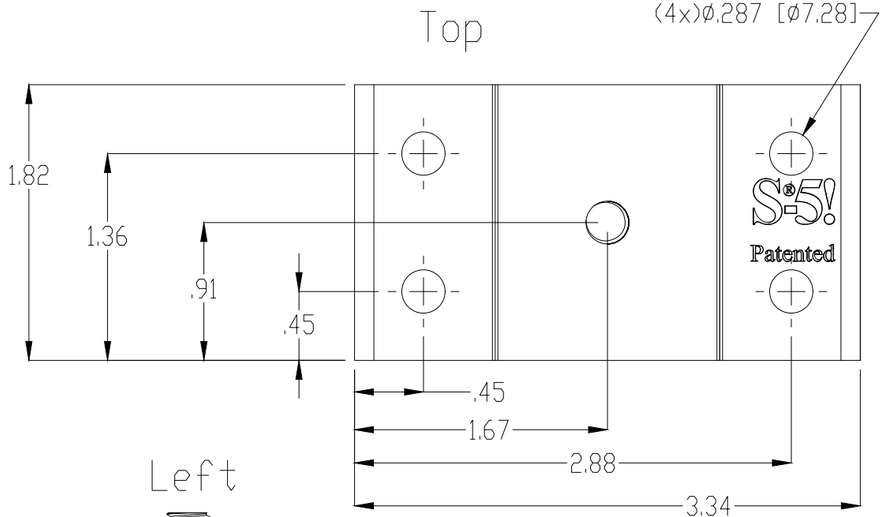
SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-3

SolarFoot



Top



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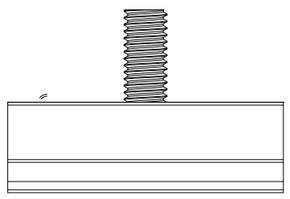
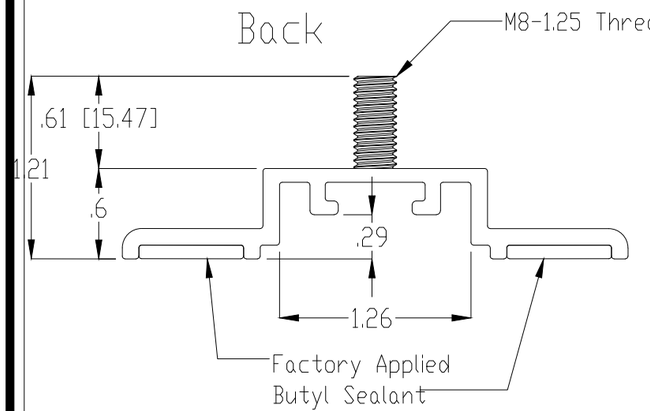


Back



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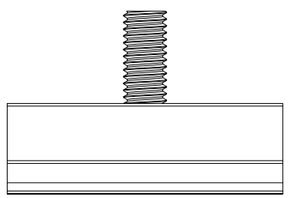

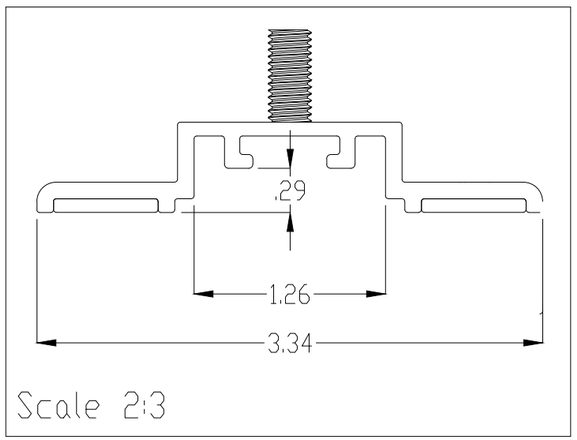

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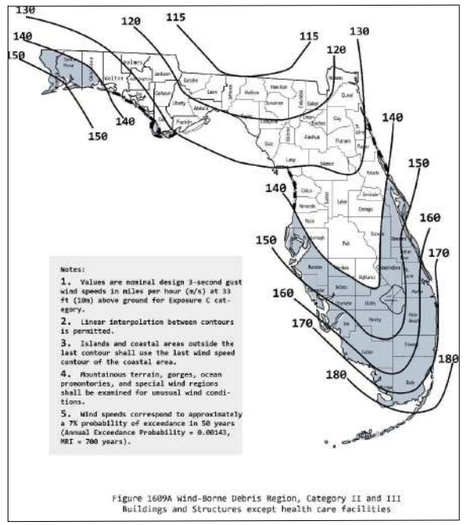
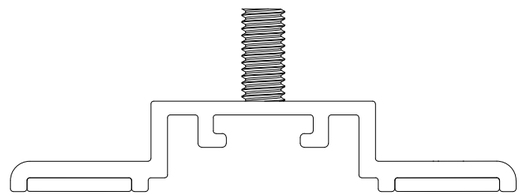
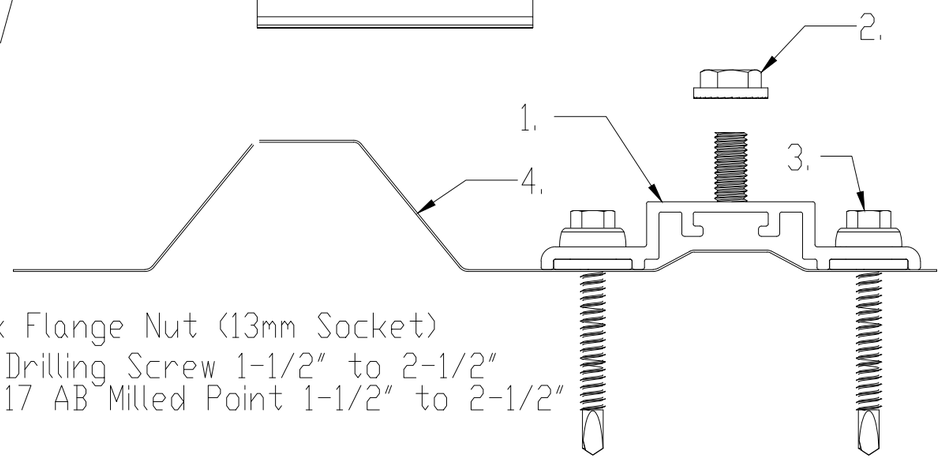


Figure 1609A Wind-Borne Debris Region, Category II and III
Buildings and Structures except health care facilities

Front





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

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

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		
SUPPLIED HARDWARE: M8-1.25 Hex Flange Nut	TITLE: SolarFoot [CCD]	
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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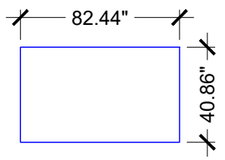
SHEET NAME
ATTACHMENT DETAILS

SHEET SIZE
ANSI B
11" X 17"

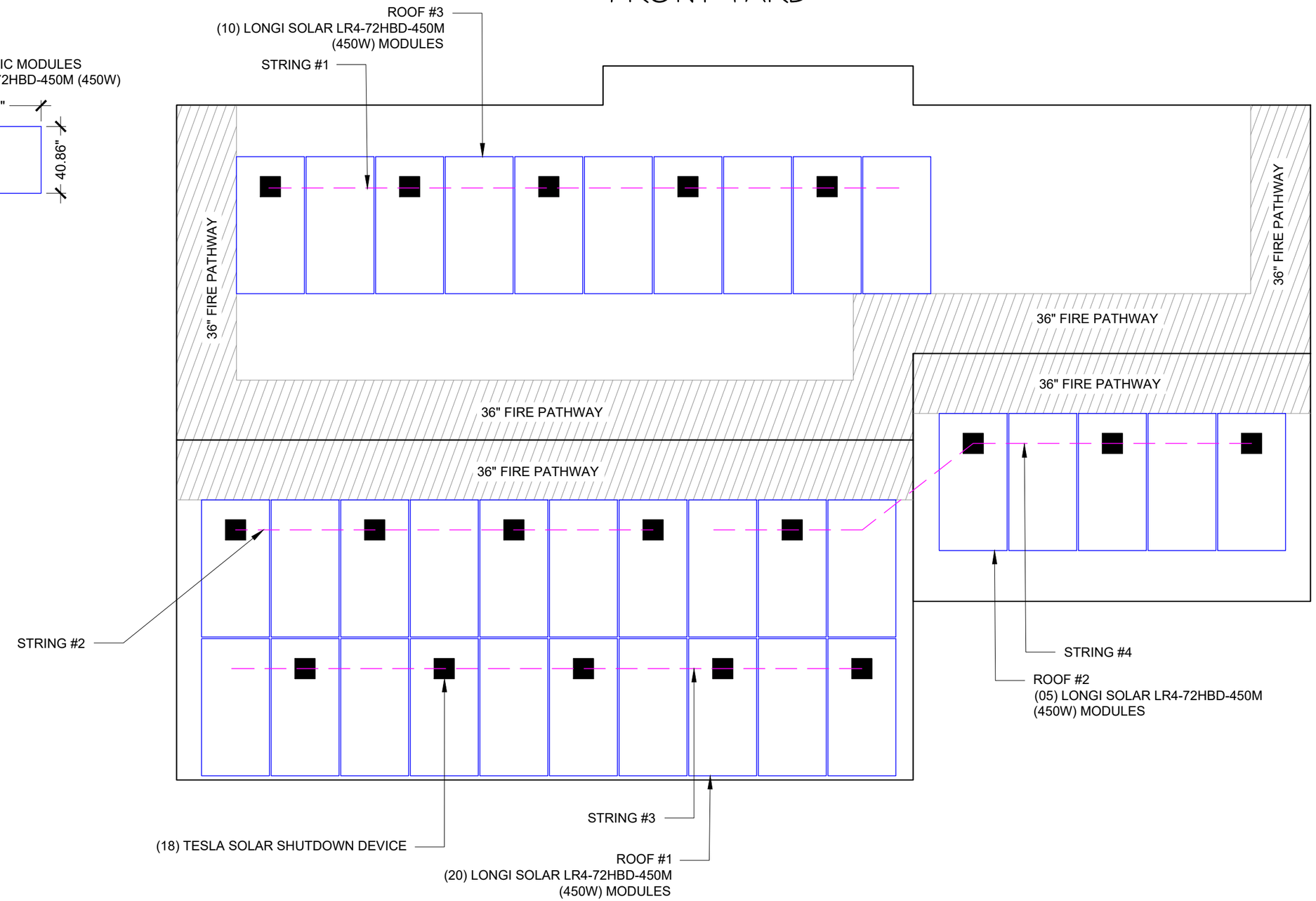
SHEET NUMBER
PV-3.1

(35) LONGI SOLAR LR4-72HBD-450M (450W) MODULES
(18) TESLA SOLAR SHUTDOWN DEVICE
(02) STRINGS OF 10 MODULES
(01) STRING OF 08 MODULES &
(01) STRING OF 07 MODULES CONNECTED IN SERIES

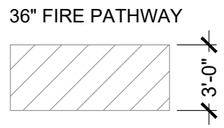
PHOTOVOLTAIC MODULES
LONGI SOLAR LR4-72HBD-450M (450W)



NW DALIAN LN
FRONT YARD



36" FIRE PATHWAY



REAR YARD

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

N

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CSLB # : CVC56761
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REVISIONS

DESCRIPTION	DATE	REV
INITIAL RELEASE	04/26/2022	UR

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"

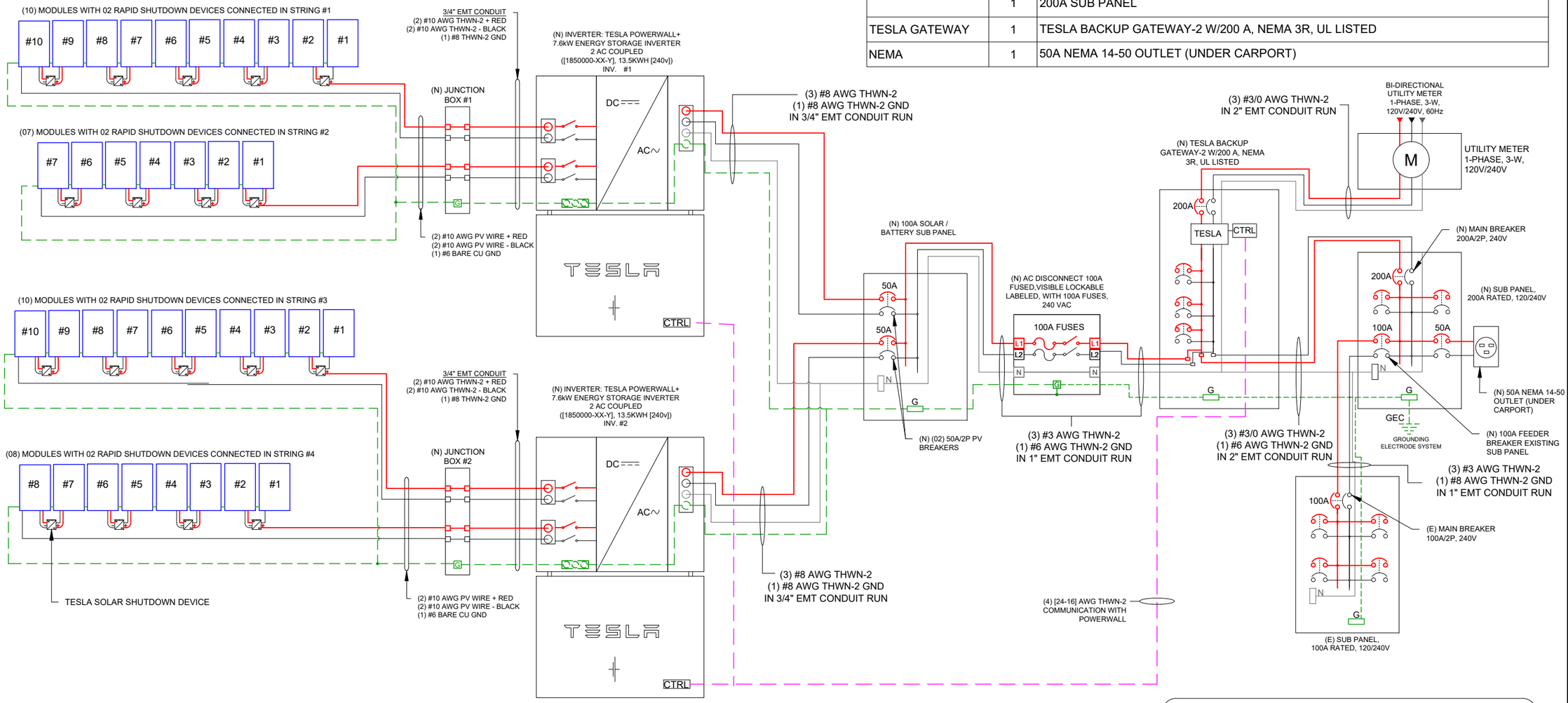
SHEET NUMBER
PV-4

(35) LONGI SOLAR LR4-72HBD-450M (450W) MODULES
(18) TESLA SOLAR SHUTDOWN DEVICE
(02) STRINGS OF 10 MODULES
(01) STRING OF 08 MODULES &
(01) STRING OF 07 MODULES CONNECTED IN SERIES

SYSTEM SIZE:- 35 x 450W = 15.75 kWDC
SYSTEM SIZE:- (7600+7600)/1000 = 15.20 kWAC

BILL OF MATERIALS

EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	35	LONGI SOLAR LR4-72HBD-450M (450W) MODULES
INVERTER	02	02 - TESLA SOLAR POWERWALL+ 7.6 KW INVERTERS & BATTERY (TYP.)
OPTIMIZER (RSD)	18	TESLA SOLAR SHUTDOWN DEVICE
JUNCTION BOX	3	JUNCTION BOX
AC DISCONNECT	1	AC DISCONNECT 100A FUSED,VISIBLE LOCKABLE LABELED, WITH 100A FUSES, 240 VAC
SUB PANEL	1	100A SOLAR / BATTERY SUB PANEL
	1	200A SUB PANEL
TESLA GATEWAY	1	TESLA BACKUP GATEWAY-2 W/200 A, NEMA 3R, UL LISTED
NEMA	1	50A NEMA 14-50 OUTLET (UNDER CARPORT)



SERVICE INFO.

UTILITY PROVIDER:	FPL
MAIN SERVICE VOLTAGE:	240V
MAIN PANEL BRAND:	EATON
MAIN SERVICE PANEL:	(N) 200A
MAIN CIRCUIT BREAKER RATING:	(N) 200A
MAIN SERVICE LOCATION:	SOUTH
SERVICE FEED SOURCE:	OVERHEAD

1 ELECTRICAL LINE DIAGRAM

SCALE: NTS

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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
ELECTRICAL LINE DIAGRAM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-5

SOLAR MODULE SPECIFICATIONS

MANUFACTURER / MODEL #	LONGI SOLAR LR4-72HBD-450M (450W)MODULES
VMP	41.4
IMP	10.87
VOC	49.6
ISC	11.58
MODULE DIMENSION	82.44"L x 40.86"W x 1.37"D (In Inch)

INVERTER SPECIFICATIONS

MANUFACTURER / MODEL #	TESLA SOLAR 7.6 KW
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	0.5"
ROOF TOP TEMP	34°
CONDUCTOR TEMPERATURE RATE	90°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.284%/°C

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 SOLAR / BATTERY 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	75A
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)	72.00A
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 (40.00A) OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY	

AC CONDUCTOR AMPACITY CALCULATIONS: SOLAR / BATTERY 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	3AWG
CIRCUIT CONDUCTOR AMPACITY	115A
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B)	80.00A
1.25 X INVERTER OUTPUT CURRENT	
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC 310.15(B)(2)(a)	110.40A
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 (80.00A) OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY	

AC CONDUCTOR AMPACITY CALCULATIONS: SOLAR / BATTERY SUB PANEL 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)	80.00A
1.25 X INVERTER OUTPUT CURRENT	
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 (80.00A) 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

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 CALCULATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-6

VOLTAGE DROP CALCULATIONS							
WIRE RUN	# OF (RSD)	V (VOLTS)	I (AMPS)	L (FT)	VD (%)	WIRE SIZE*	RACEWAY
STRING #1 (MODULE) TO PASS THRU J. BOX	3	240	15.00	50	0.74%	10 AWG	FREE AIR
STRING #2 (MODULE) TO PASS THRU J. BOX	1	240	15.00	30	0.45%	10 AWG	FREE AIR
STRING #3 (MODULE) TO PASS THRU J. BOX	1	240	15.00	30	0.45%	10 AWG	FREE AIR
STRING #4 (MODULE) TO PASS THRU J. BOX	1	240	15.00	30	0.45%	10 AWG	FREE AIR
PASS THRU J. BOX TO INVERTER (MAX STRING)	1	240	15.00	16	0.24%	10 AWG	3/4" EMT
INVERTER TO SOLAR (BATTERY SUB PANEL)	1	240	40.00	10	0.32%	8 AWG	3/4" EMT
INVERTER TO INTERCONNECTION	1	240	80.00	10	0.20%	4 AWG	3/4" EMT
		MAX VOLTAGE DROP: 1.5%					

1 VOLTAGE DROP CALCULATION

SCALE: NTS

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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)

⚠ CAUTION

PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LABEL LOCATION:
MSP
(PER CODE: NEC 690.13 (F), NEC 705.12(B)(3-4) & NEC 690.59)

PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED AC OPERATING CURRENT 64 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)

PHOTOVOLTAIC
AC DISCONNECT

LABEL LOCATION:
AC DISCONNECT
NEC 690.13(B)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

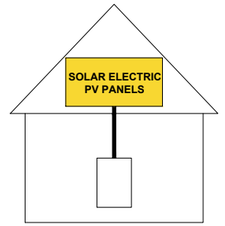
LABEL LOCATION:
RAPID SHUTDOWN
(PER CODE: NEC 690.56(C)(3)

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

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

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

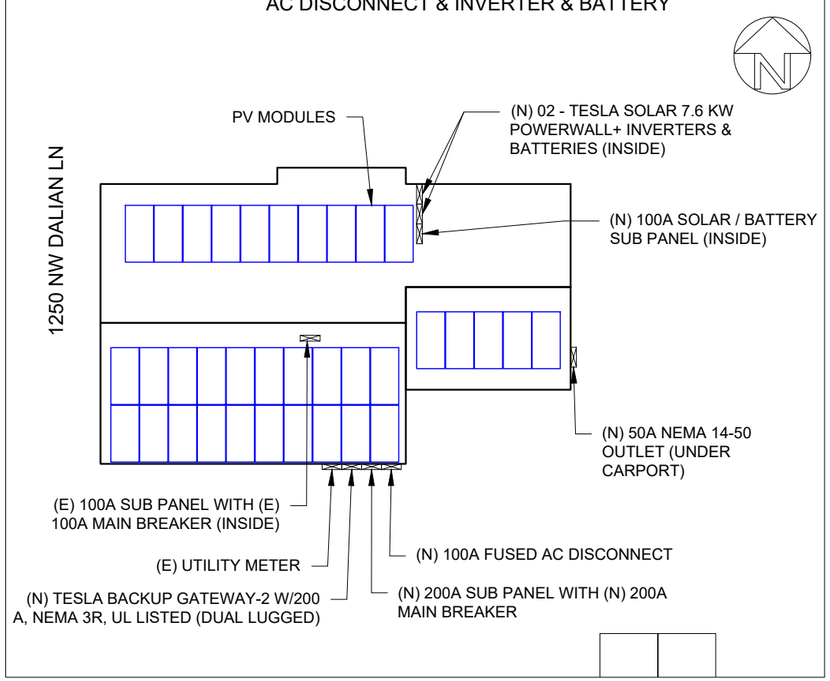


LABEL LOCATION:
AC DISCONNECT, DC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: 605.11.3.1(1) & 690.56(C)(1)(a))

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



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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 5 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

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APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME

ADDITIONAL NOTES

SHEET SIZE

ANSI B
11" X 17"

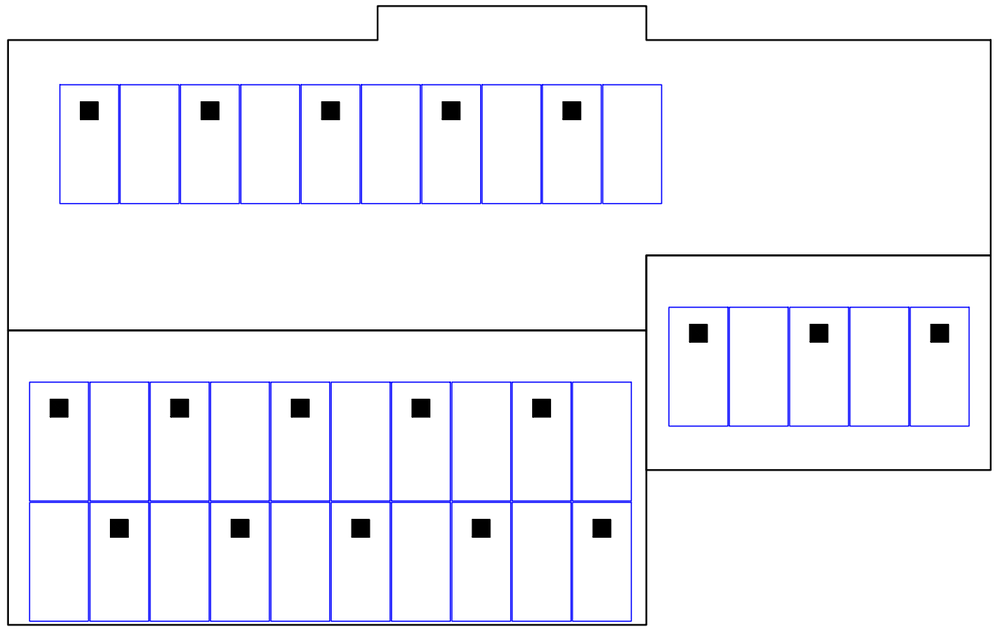
SHEET NUMBER

PV-8

	1-10	11-20	21-30	31-40	41-50	51-60
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

TESLA SOLAR SHUTDOWN DEVICE

NW DALIAN LN



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LAKE CITY, FL 32055 USA
APN# 313S1706127001
UTILITY: FPL
AHJ: CITY OF LAKE CITY

SHEET NAME

TESLA SOLAR
SHUTDOWN DEVICE

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

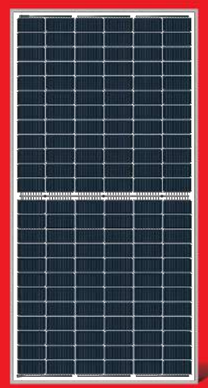
PV-9

LR4-72HBD 425~455M

Hi-MO 4

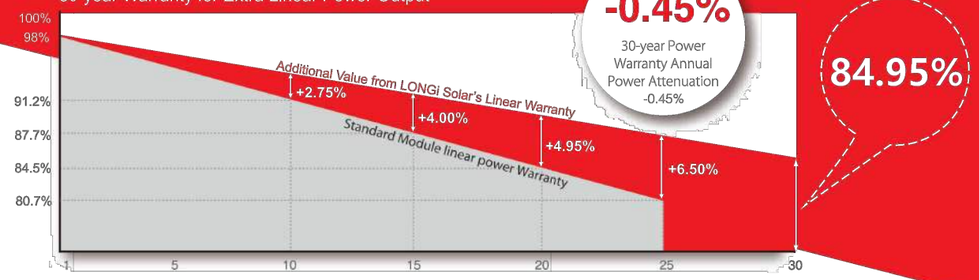
NEW

High Efficiency
Low LID Bifacial PERC with
Half-cut Technology



*Both 6BB & 9BB are available

12-year Warranty for Materials and Processing;
30-year Warranty for Extra Linear Power Output



-0.45%
30-year Power Warranty Annual Power Attenuation -0.45%

84.95%

Complete System and Product Certifications

IEC 61215, IEC 61730, UL 61730

ISO 9001:2008: ISO Quality Management System

ISO 14001: 2004: ISO Environment Management System

TS62941: Guideline for module design qualification and type approval

OHSAS 18001: 2007 Occupational Health and Safety

* Specifications subject to technical changes and tests. LONGi Solar reserves the right of interpretation.

Front side performance equivalent to conventional low LID mono PERC:
- High module conversion efficiency (up to 20.9%)
- Better energy yield with excellent low irradiance performance and temperature coefficient
- First year power degradation <2%

Bifacial technology enables additional energy harvesting from rear side (up to 25%)

Glass/glass lamination ensures 30 year product lifetime, with annual power degradation < 0.45%, 1500V compatible to reduce BOS cost

Solid PID resistance ensured by solar cell process optimization and careful module BOM selection

Reduced resistive loss with lower operating current

Higher energy yield with lower operating temperature

Reduced hot spot risk with optimized electrical design and lower operating current

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Tel: +86-21-80162606 E-mail: module@longi-silicon.com Facebook: www.facebook.com/LONGi Solar

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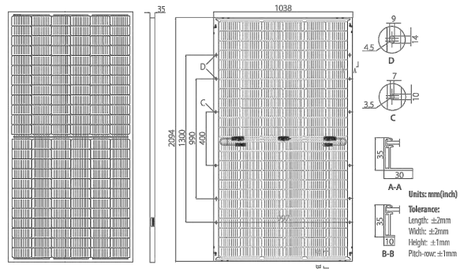
LR4-72HBD 425~455M

Design (mm)



Mechanical Parameters

Cell Orientation: 144 (6×24)
Junction Box: IP68, three diodes
Output Cable: 4mm², 300mm in length, length can be customized
Glass: Dual glass 2.0mm coated tempered glass
Frame: Anodized aluminum alloy frame
Weight: 27.5kg
Dimension: 2094×1038×35mm
Packaging: 30pcs per pallet
150pcs per 20'GP
660pcs per 40'HC

Operating Parameters

Operational Temperature: -40℃~+85℃
Power Output Tolerance: 0~+5 W
Voc and Isc Tolerance: ±3%
Maximum System Voltage: DC1500V (IEC/UL)
Maximum Series Fuse Rating: 25A
Nominal Operating Cell Temperature: 45±2℃
Safety Class: Class II
Fire Rating: UL type 3
Bifaciality: Glazing 70±5%

Electrical Characteristics

Test uncertainty for Pmax: ±3%

Model Number	LR4-72HBD-425M		LR4-72HBD-430M		LR4-72HBD-435M		LR4-72HBD-440M		LR4-72HBD-445M		LR4-72HBD-450M		LR4-72HBD-455M	
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax/W)	425	317.4	430	321.1	435	324.9	440	328.6	445	332.3	450	336.1	455	339.8
Open Circuit Voltage (Voc/V)	48.7	45.6	48.9	45.8	49.1	45.9	49.2	46.0	49.4	46.2	49.6	46.4	49.8	46.6
Short Circuit Current (Isc/A)	11.22	9.06	11.30	9.13	11.36	9.18	11.45	9.25	11.52	9.30	11.58	9.36	11.65	9.41
Voltage at Maximum Power (Vmp/V)	40.4	37.7	40.6	37.9	40.8	38.0	41.0	38.2	41.2	38.4	41.4	38.6	41.6	38.8
Current at Maximum Power (Imp/A)	10.52	8.42	10.60	8.49	10.66	8.54	10.73	8.60	10.80	8.65	10.87	8.70	10.93	8.76
Module Efficiency(%)	19.6		19.8		20.0		20.2		20.5		20.7		20.9	

STC (Standard Testing Conditions): Irradiance 1000W/m², Cell Temperature 25℃, Spectra at AM1.5

NOCT (Nominal Operating Cell Temperature): Irradiance 800W/m², Ambient Temperature 20℃, Spectra at AM1.5, Wind at 1m/S

Electrical characteristics with different rear side power gain (reference to 445W front)

Pmax /W	Voc/V	Isc /A	Vmp/V	Imp /A	Pmax gain
467	49.4	12.09	41.2	11.34	5%
490	49.4	12.67	41.2	11.88	10%
512	49.5	13.24	41.3	12.42	15%
534	49.5	13.82	41.3	12.96	20%
556	49.5	14.40	41.3	13.50	25%

Temperature Ratings (STC)

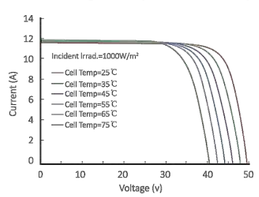
Temperature Coefficient of Isc	+0.050%/℃
Temperature Coefficient of Voc	-0.284%/℃
Temperature Coefficient of Pmax	-0.350%/℃

Mechanical Loading

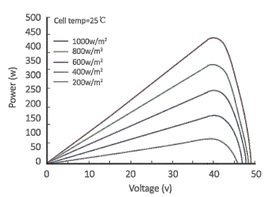
Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25mm Hailstone at the speed of 23m/s

I-V Curve

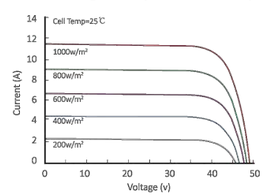
Current-Voltage Curve (LR4-72HBD-440M)



Power-Voltage Curve (LR4-72HBD-440M)



Current-Voltage Curve (LR4-72HBD-440M)



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These Modules are not offered, distributed or supplied to Germany by the LONGi Group.
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20200401V11

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REVISIONS

DESCRIPTION	DATE	REV
INITIAL RELEASE	04/26/2022	UR

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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-10

SOLAR INVERTER

3.8 kW | 7.6 kW

Tesla Solar Inverter completes the Tesla home solar system, converting DC power from solar to AC power for home consumption. Tesla's renowned expertise in power electronics has been combined with robust safety features and a simple installation process to produce an outstanding solar inverter that is compatible with both Solar Roof and traditional solar panels. Once installed, homeowners use the Tesla mobile app to manage their solar system and monitor energy consumption, resulting in a truly unique ecosystem experience.

KEY FEATURES

- Built on Powerwall 2 technology for exceptional efficiency and reliability
- Wi-Fi, Ethernet, and cellular connectivity with easy over-the-air updates
- Designed to integrate with Tesla Powerwall and Tesla App
- 3.8 kW and 7.6 kW models available

SOLAR INVERTER

Tesla Solar Inverter provides DC to AC conversion and integrates with the Tesla ecosystem, including Solar Panels, Solar Roof, Powerwall, and vehicle charging, to provide a seamless sustainable energy experience.

KEY FEATURES

- Integrated rapid shutdown, arc fault, and ground fault protection
- No neutral wire simplifies installation
- 2x the standard number of MPPTs for high production on complex roofs

ELECTRICAL SPECIFICATIONS

OUTPUT (AC)	3.8 kW	7.6 kW
Nominal Power	3,800 W	7,600 W
Maximum Apparent Power	3,328 VA at 208 V 3,840 VA at 240 V	6,656 VA at 208 V 7,680 VA at 240 V
Maximum Continuous Current	16 A	32 A
Breaker (Overcurrent Protection)	20 A	40 A
Nominal Power Factor	1 - 0.85 (leading / lagging)	
THD (at Nominal Power)	<5%	
INPUT (DC)		
MPPT	2	4
Input Connectors per MPPT	1-2	1-2-1-2
Maximum Input Voltage	600 VDC	
DC Input Voltage Range	60 - 550 VDC	
DC MPPT Voltage Range[1]	60 - 480 VDC	
Maximum Current per MPPT (I_{mp})	11 A	
Maximum Short Circuit Current per MPPT (I_{sc})	15 A	

PERFORMANCE SPECIFICATIONS

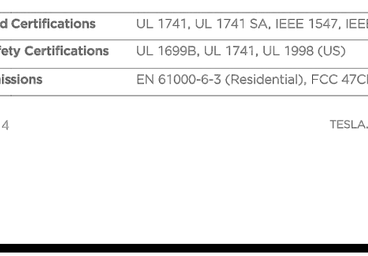
Peak Efficiency[2]	97.5%	98.0%
CEC Efficiency[2]	97.5%	
Allowable DC/AC Ratio	1.4	
Customer Interface	Tesla Mobile App	
Internet Connectivity	Wi-Fi (2.4 GHz, 802.11 b/g/n), Ethernet, Cellular (LTE/4G)[3]	
AC Remote Metering Support	Wi-Fi (2.4 GHz, 802.11 b/g/n), RS-485	
Protections	Integrated arc fault circuit interrupter (AFCI), Rapid Shutdown	
Supported Grid Types	60 Hz, 240 V Split Phase 60 Hz, 208 V Wye	
Required Number of Tesla Solar Shutdown Devices per Solar Module	See *Solar Shutdown Device Requirements per Module* on page 3	
Warranty	12.5 years	

[1] Maximum current.
[2] Expected efficiency pending final CEC listing.
[3] Cellular connectivity subject to network operator service coverage and signal strength.

MECHANICAL SPECIFICATIONS

Dimensions	660 mm x 411 mm x 158 mm (26 in x 16 in x 6 in)
Weight	52 lb[4]
Mounting options	Wall mount (bracket)

[4] Door and bracket can be removed for a mounting weight of 37 lb.



ENVIRONMENTAL SPECIFICATIONS

Operating Temperature[5]	–30°C to 45°C (–22°F to 113°F)
Operating Humidity (RH)	Up to 100%, condensing
Storage Temperature	–30°C to 70°C (–22°F to 158°F)
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Rating	Type 3R
Ingress Rating	IP55 (Wiring compartment)
Pollution Rating	PD2 for power electronics and terminal wiring compartment, PD3 for all other components
Operating Noise @ 1 m	< 40 db(A) nominal, < 50 db(A) maximum

[5] For the 7.6 kW Solar Inverter, performance may be de-rated to 6.2 kW at 240 V or 5.37 kW at 208 V when operating at temperatures greater than 45°C.

COMPLIANCE INFORMATION

Grid Certifications	UL 1741, UL 1741 SA, IEEE 1547, IEEE 1547.1
Safety Certifications	UL 1699B, UL 1741, UL 1998 (US)
Emissions	EN 61000-6-3 (Residential), FCC 47CFR15.109 (a)

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REVISIONS

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PROJECT NAME

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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

SOLAR SHUTDOWN DEVICE

The Tesla Solar Shutdown Device is part of the PV system rapid shutdown (RSD) function in accordance with Article 690 of the applicable NEC. When paired with the Tesla Solar Inverter, the PVRSS is initiated by any loss of AC power.

ELECTRICAL SPECIFICATIONS

Nominal Input DC Current Rating (I_{MP})	12 A
Maximum Input Short Circuit Current (I_{SC})	15 A
Maximum System Voltage	600 V DC

RSD MODULE PERFORMANCE

Maximum Number of Devices per String	5
Control	Power Line Excitation
Passive State	Normally open
Maximum Power Consumption	7 W
Warranty	25 years

COMPLIANCE INFORMATION

Certifications	UL 1741 PVRSS PVRSA (Photovoltaic Rapid Shutdown Array)

PVRSS

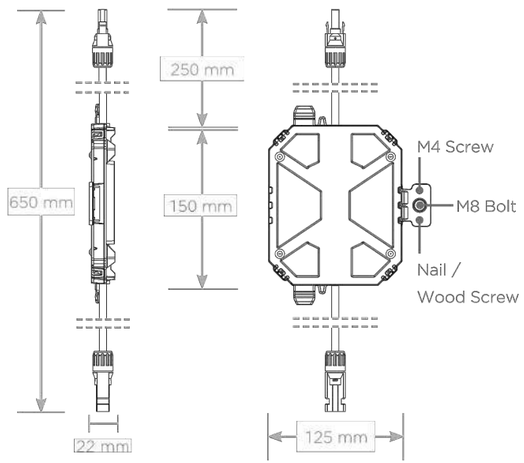
RSD Initiation Method	Loss of AC power
Compatible Equipment	Tesla Solar Inverter

ENVIRONMENTAL SPECIFICATIONS

Ambient Temperature	-40°C to 50°C (-40°F to 122°F)
Storage Temperature	–30°C to 70°C (–22°F to 158°F)
Enclosure Rating	NEMA 4 / IP65

MECHANICAL SPECIFICATIONS

Electrical Connections	MC4 Connector
Housing	Plastic
Dimensions	125 mm x 150 mm x 22 mm (5 in x 6 in x 1 in)
Weight	350 g (0.77 lb)
Mounting Options	ZEP Home Run Clip M4 Screw (#10) M8 Bolt (5/16") Nail / Wood screw



SOLAR SHUTDOWN DEVICE REQUIREMENTS PER MODULE

The following modules have been certified as part of a PV Rapid Shutdown Array (PVRSA) when installed together with the Tesla Solar Inverter and Tesla Solar Shutdown Devices. See the Tesla Solar Inverter Installation Manual for guidance on installing Tesla Solar Inverter and Solar Shutdown Devices with other modules.

Brand	Model	Required Solar Shutdown Devices
Tesla	Solar Roof V3	1 Solar Shutdown Device per 10 modules
Hanwha	Q.PEAK DUO BLK-G5	1 Solar Shutdown Device per 3 modules
Hanwha	Q.PEAK DUO BLK-G6+	1 Solar Shutdown Device per 3 modules

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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+

Powerwall+ is an integrated solar battery system that stores energy from solar production. Its integrated design and streamlined installation allow for simple connection to any home, and improved surge power capability brings whole home backup in a smaller package. Smart system controls enable owners to customize system behavior to suit their renewable energy needs.

KEY FEATURES

- Integrated battery, inverter, and system controller for a more compact install
- A suite of application modes, including self-powered, time-based control, and backup modes
- Wi-Fi, Ethernet, and LTE connectivity with easy over-the-air updates

NA 2021-07-15

POWERWALL+

PHOTOVOLTAIC (PV) AND BATTERY ENERGY STORAGE SYSTEM (BESS) SPECIFICATIONS

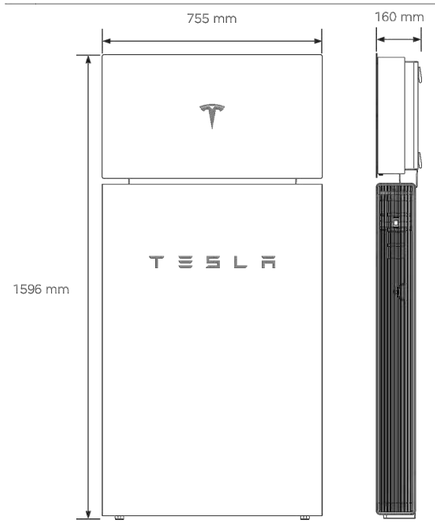
Nominal Battery Energy	13.5 kWh
Nominal Grid Voltage (Input / Output)	120/240 VAC
Grid Voltage Range	211.2 - 264 VAC
Frequency	60 Hz
Phase	240 VAC: 2W+N+GND
Maximum Continuous Power On-Grid	7.6 kW full sun / 5.8 kW no sun[1]
Maximum Continuous Power Off-Grid	9.6 kW full sun / 7 kW no sun[1]
Peak Off-Grid Power (10 s)	22 kW full sun / 10 kW no sun[1]
Maximum Continuous Current On-Grid	32 A output
Maximum Continuous Current Off-Grid	40 A output
Load Start Capability	118 A LRA
PV Maximum Input Voltage	600 VDC
PV DC Input Voltage Range	60 - 550 VDC
PV DC MPPT Voltage Range	60 - 480 VDC
MPPTs	4
Input Connectors per MPPT	1-2-1-2
Maximum Current per MPPT (I_{mp})	13 A
Maximum Short Circuit Current per MPPT (I_{sc})	15 A
Allowable DC/AC Ratio	1.7
Overcurrent Protection Device	50 A breaker
Maximum Supply Fault Current	10 kA
Output Power Factor Rating	+/- 0.9 to 1
Round Trip Efficiency	90%[2]
Solar Generation CEC Efficiency	97.5% at 208 V 98.0% at 240 V
Customer Interface	Tesla Mobile App
Internet Connectivity	Wi-Fi, Ethernet, Cellular LTE/4G)[3]
PV AC Metering	Revenue grade (+/-0.5%)
Protections	Integrated arc fault circuit interrupter (AFCI), Rapid Shutdown (RSD)
Warranty	10 years

COMPLIANCE INFORMATION

PV Certifications	UL 1699B, UL 1741, UL 1741 SA, UL 1998 (US), IEEE 1547, IEEE 1547.1
Battery Energy Storage System Certifications	UL 1642, UL 1741, UL 1741 PCS, UL 1741 SA, UL 1973, UL 9540, IEEE 1547, IEEE 1547.1, UN 38.3
Grid Connection	United States
Emissions	FCC Part 15 Class B
Environmental	RoHS Directive 2011/65/EU
Seismic	AC156, IEEE 693-2005 (high)

MECHANICAL SPECIFICATIONS

Dimensions	1596 x 755 x 160 mm (62.8 x 29.7 x 6.3 in)
Total Weight	140 kg (310 lb)[4]
Battery Assembly	118 kg (261 lb)
Solar Assembly	22 kg (49 lb)
Mounting options	Floor or wall mount



ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-20°C to 50°C (-4°F to 122°F)[5]
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	Type 3R
Noise Level @ 1 m	< 40 db(A) optimal, < 50 db(A) maximum

[1]Values provided for 25°C (77°F).

[2]AC to battery to AC, at beginning of life.

[3]Cellular connectivity subject to network service coverage and signal strength.

[4]The total weight does not include the Powerwall+ bracket, which weighs an additional 9 kg (20 lb).

[5]Performance may be de-rated at operating temperatures below 10°C (50°F) or greater than 43°C (109°F).

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SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-13

Tech Brief

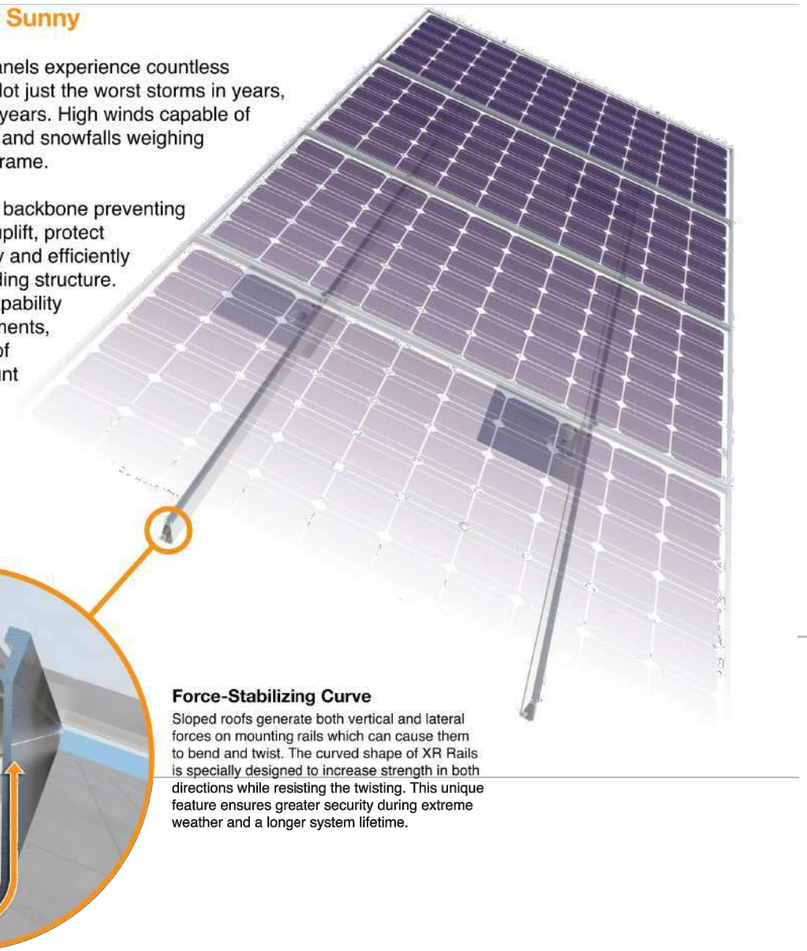
IRONRIDGE

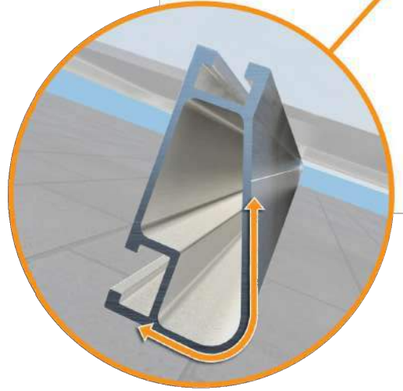
XR Rail Family

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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SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-14

Tech Brief

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.

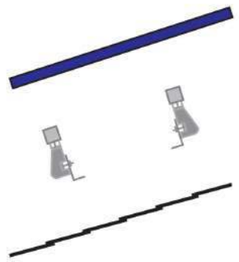
Fire Testing Process

Test Setup

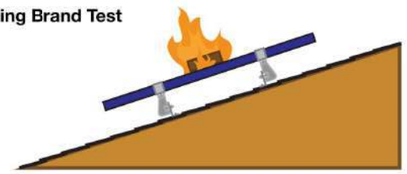
Solar Modules
Solar modules are given a Type classification based on their materials and construction.

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.

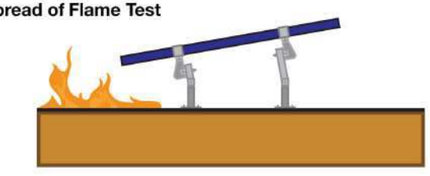


Burning Brand Test



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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REVISIONS

DESCRIPTION	DATE	REV
INITIAL RELEASE	04/26/2022	UR

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

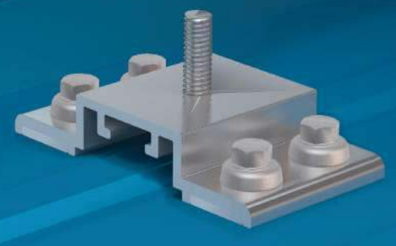
S-5!®

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:

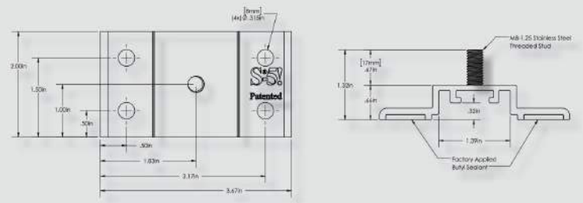
- Manufactured in the U.S.A. from certified raw material
- Fabricated in our own ISO 9001:2015 certified factory
- All aluminum and stainless components
- 25yr limited warranty
- Compatible with all commercial L-Foot products on the market
- Factory applied 40-year isobutylene/ isoprene crosslink polymer 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 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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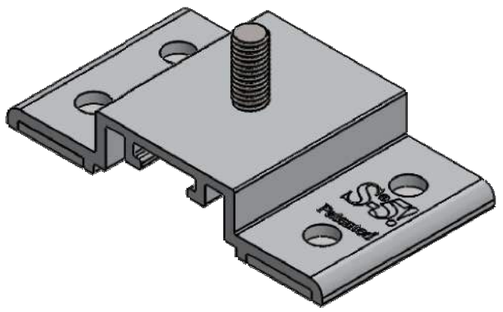
AHJ: CITY OF LAKE CITY

SHEET NAME
SPEC SHEETS

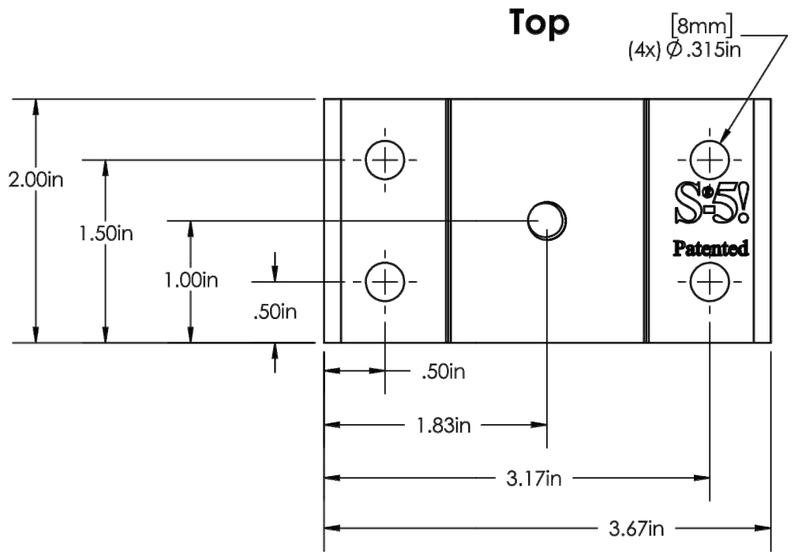
SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-16

SolarFoot

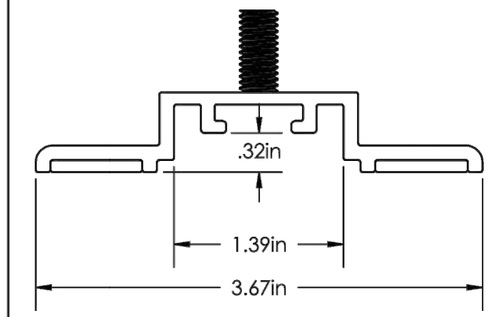


Back



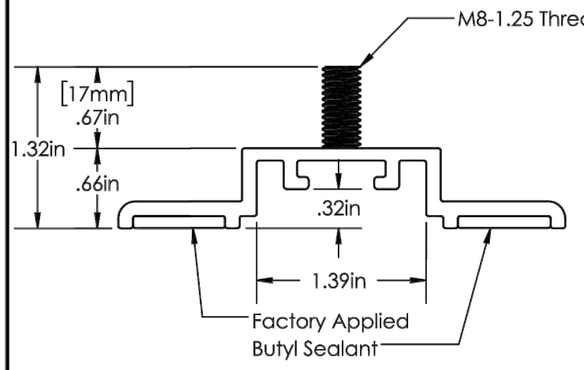
Left

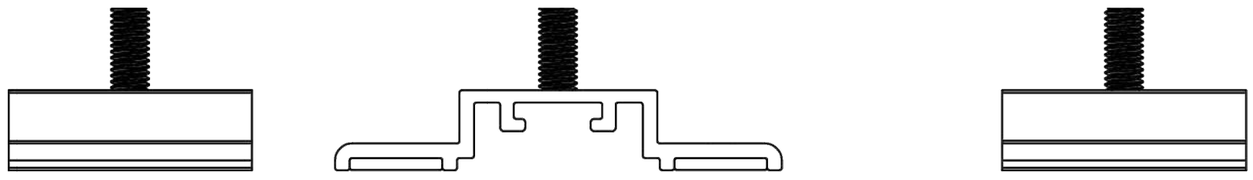
Front

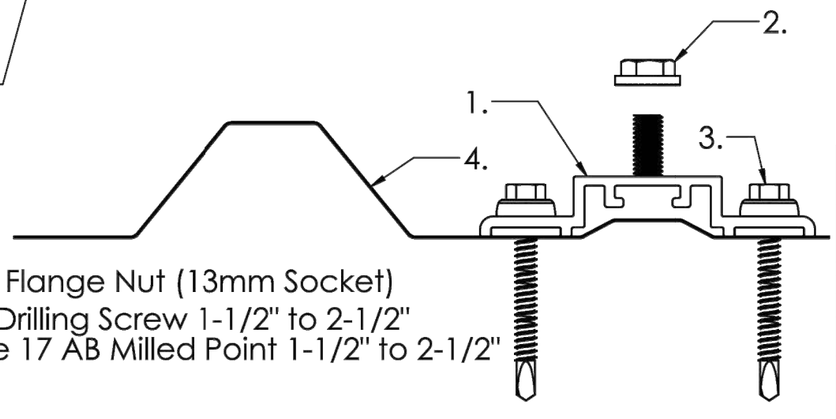


Scale 2:3

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.		

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SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-17

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

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

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

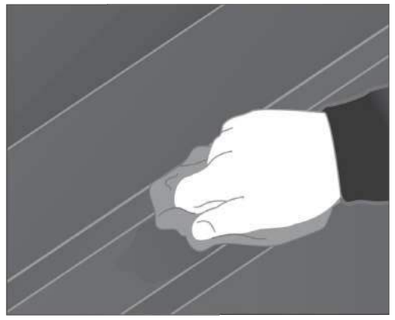
SolarFoot Installation Instructions

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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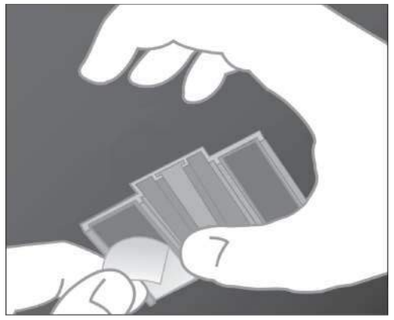

3

4

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.

LP66-V1.0_08/17

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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

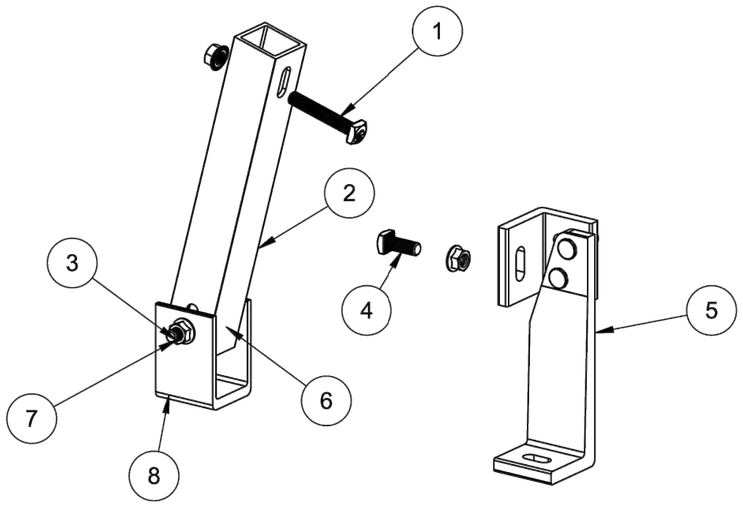
SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-18

Cut Sheet

IRONRIDGE

Tilt Leg



ITEM NO	DESCRIPTION	QTY IN KIT
1	BOLT, BONDING 3/8-16 SQ HEAD, 2.25"	1
2	NORTH TILT LEG, 1.5" SQ, LENGTH VARIES	1
3	NUT, FLANGE HEX 3/8-16 SS	3
4	BOLT, BONDING 3/8-16 SQ HEAD, 1.0"	1
5	PRE-ASSEMBLED SOUTH TILT LEG	1
6	WASHER, FLAT 3/8 SS	1
7	BOLT, 3/8-16 X 2.5" CS SST	1
8	U-FOOT	1

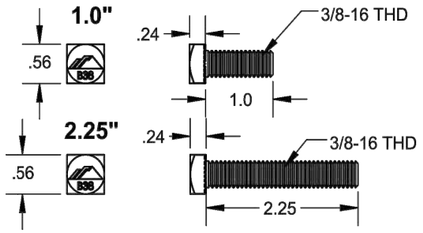
TILT MOUNT KIT OPTIONS

PART NUMBER	DESCRIPTION	NORTH TILT LEG LENGTH
TM-FTL-010	Kit, Fixed Tilt Leg, 10", Mill	10"
TM-FTL-015	Kit, Fixed Tilt Leg, 15", Mill	15"
TM-FTL-020	Kit, Fixed Tilt Leg, 20", Mill	20"
TM-FTL-025	Kit, Fixed Tilt Leg, 25", Mill	25"
TM-FTL-030	Kit, Fixed Tilt Leg, 30", Mill	30"

v1.1

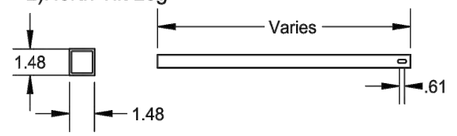
Cut Sheet

1,4) Bolt, Bonding 3/8-16 Sq Head



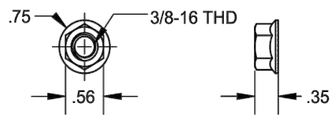
Property	Value
Material	Stainless Steel
Finish	Clear

2)North Tilt Leg



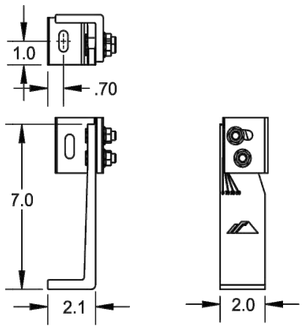
Property	Value
Material	Aluminum
Finish	Mill

3) Nut, Flange Hex 3/8-16 SS



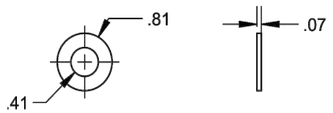
Property	Value
Material	Stainless Steel
Finish	Clear

5)Pre-assembled South Tilt Leg



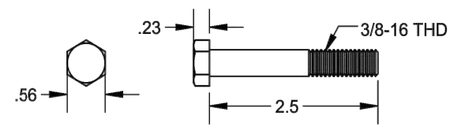
Property	Value
Material	Aluminum
Finish	Mill

6) Washer, Flat 3/8 SS



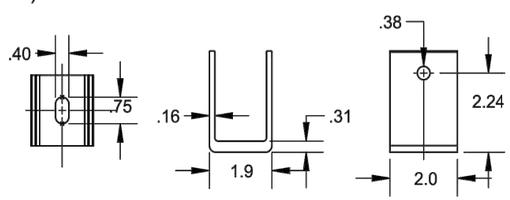
Property	Value
Material	Stainless Steel
Finish	Clear

7) Bolt, 3/8-16 X 2.5" CS SS



Property	Value
Material	Stainless Steel
Finish	Clear

8) U-Foot



Property	Value
Material	Aluminum
Finish	Mill

v1.1

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AHJ: CITY OF LAKE CITY

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-19

Datasheet

IRONRIDGE

Tilt Mount System

Trust your system at every angle.

The IronRidge Tilt Mount System supports a wide range of solar module tilting angles, while also resisting the extreme wind and snow forces experienced over a building's lifetime.

Every component has been carefully engineered and rigorously tested, and the entire system uses only aluminum and stainless steel materials to resist corrosion.

Roof Friendly
Lightweight and compatible with industry-standard attachments.

PE Certified
Pre-stamped engineering letters available in most states.

Strength Tested
All components evaluated for superior structural performance.

Design Assistant
Online software makes it simple to create, share, and price projects.

UL 2703 Listed System
Meets newest effective UL 2703 standard.

25-Year Warranty
Products guaranteed to be free of impairing defects.

Datasheet

XR Rails & Tilt Legs

XR Rails

Attach directly to Tilt Legs. Available in three targeted sizes to support specific wind and snow loads.

- Unique curved profile
- Spanning capabilities up to 12'
- Clear and black finish

Tilt Legs

Tilt assembly to desired angle, up to 30 degrees. Kits include South and North Tilt Leg and all hardware.

- Available in multiple lengths for a wide angle range
- Assembled South Tilt Legs include angle indicators
- Legs are electrically bonded to rails

Grounding Clamps

UFOs

Universal Fastening Objects secure and bond modules to rails.

- Fully assembled and lubricated
- Single, universal size
- Clear and black finish

Stopper Sleeves

Snap onto the UFO to transform into a bonded end clamp.

- Bonds modules to rails
- Sized to match modules
- Clear and black finish

CAMO

Bond modules to rails while staying completely hidden.

- Universal end-cam clamp
- Tool-less installation
- Fully assembled

Accessories

BOSS™ Bonded Splices

Bonded Structural Splices connect and bond XR Rails together.

- Integrated bonding
- No tools or hardware
- Self-centering stop tab

Grounding Lugs

Connects Tilt Mount system to equipment ground.

- Low profile
- Single tool installation
- Mounts in any direction

Ends Caps & Wire Clips

Provide a finished look and organize electrical wires.

- Simple snap-in installations
- Clips hold up to ten 5mm wires
- UV-stabilized polymer

Resources

Design Assistant
Go from rough layout to fully engineered system. For free.
Go to IronRidge.com/design

NABCEP Certified Training
Earn free continuing education credits, while learning more about our systems.
Go to IronRidge.com/training

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