

SCOPE OF WORK:
TO INSTALL A ROOF MOUNTED SOLAR PHOTOVOLTAIC SYSTEM AT THE OWNER RESIDENCE LOCATED AT 1000 BAPTIST GROVE RD, FUQUAY VARINA, NC 27526 THE POWER GENERATED BY THE PV SYSTEM WILL BE INTERCONNECTED WITH THE UTILITY GRID THROUGH THE EXISTING ELECTRICAL SERVICE EQUIPMENT.
THE PV SYSTEM DOES NOT INCLUDE STORAGE BATTERIES

EQUIPMENT SUMMARY
26 LONGI 405S LONGI LR5-54HPB-405M MODULES
09 TESLA SOLAR SHUTDOWN DEVICE MCI-2 HIGH CURRENT
01 TESLA 7.6 KW 1538000-XX-Y [240V] [SI1-SB] INVERTER

SYSTEM RATING
10.530 KWDC
7.600 KWAC

- GENERAL NOTES:**
- THESE CONSTRUCTION DOCUMENTS HAVE BEEN BASED ON FIELD INSPECTIONS AND OTHER INFORMATION AVAILABLE AT THE TIME. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS IN CONSTRUCTION DETAILS.
 - ARCHITECT HAS NOT BEEN RETAINED TO SUPERVISE ANY CONSTRUCTION OR INSTALLATION OF ANY EQUIPMENT AT SITE.
 - CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, EQUIPMENT, TOOLS, OBTAINS ALL PERMITS, LICENSES AND PAY ALL REQUIRED FEES AND COMPLETE INSTALLATION.
 - CONTRACTOR HAS THE FULL RESPONSIBILITY TO CHECK AND VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK. ANY WORK STARTED BEFORE CONSULTATION AND ACCEPTANCE BY THE ENGINEER SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBJECT TO CORRECTION BY THEM WITHOUT ADDITIONAL COMPENSATION.
 - DAMAGE CAUSED TO THE EXISTING STRUCTURE, PIPES, DUCTS, WINDOWS, WALL, FLOORS, ETC. SHALL BE REPAIRED TO THE ORIGINAL CONDITION OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST.
 - THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE PROPER INSTALLATION AND COMPLETION OF THE WORK WITH APPROVED MATERIALS.
 - NO CHANGES ARE TO BE MADE WITHOUT THE CONSULTATION AND APPROVAL OF THE ARCHITECT.
 - CONTRACTOR SHALL OBTAIN BULDING PERMIT. NO WORK TO START UNLESS BUILDING PERMIT IS PROPERLY DISPLAYED.
 - ALL WORKMANSHIP AND MATERIALS SHALL BE OF FIRST QUALITY AND IN COMPLIANCE WITH THE REQUIREMENTS OF THE NC BUILDING CODE, THE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ALL PERTINENT AGENCIES.
 - IT IS ESSENTIAL THAT ALL WORK PROCEED WITH THE MAXIMUM COOPERATION OF ALL PARTIES AND WITH MINIMUM INTERFERENCE TO THE OCCUPANTS WITHIN THE BUILDING. THE OWNER'S DIRECTIONS IN THIS REGARD SHALL BE FULLY COMPLIED WITH.
 - ALL EXPOSED PLUMBING, HVAC, ELECTRICAL DUCTWORK, PIPING AND CONDUITS ARE TO BE PAINTED BY GENERAL CONTRACTOR.
 - THE CONTRACTOR SHALL PERFORM THE WORK IN STRICT CONFORMANCE WITH THE LOCAL LAWS, REGULATIONS AND THE NATIONAL ELECTRIC CODE.
 - THE CONTRACTOR SHALL OBTAIN ALL PERMITS, APPROVALS, AFFIDAVITS, CERTIFICATIONS, ETC. AND PAY ALL FEES AS REQUIRED BY THE LOCAL AUTHORITIES.
 - CONTRACTORS SHALL OBTAIN FIRE CERTIF. UPON COMPLETION OF WORK.

- ELECTRICAL NOTES:**
- ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
 - ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
 - 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.
 - WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
 - WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
 - ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
 - MODULE GROUNDING (UFO) FASTENER TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE (UFO) FASTENER MANUFACTURE'S INSTRUCTION.

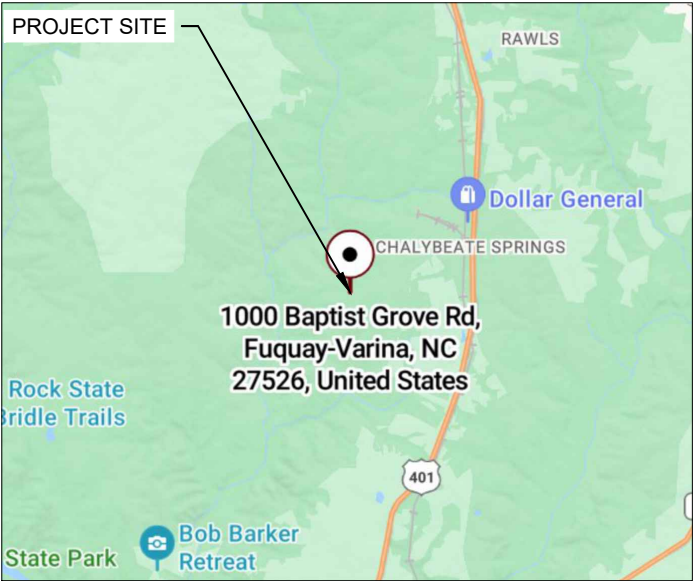
GOVERNING CODES
2018 INTERNATIONAL FIRE CODE 2018 INTERNATIONAL BUILDING CODE 2018 INTERNATIONAL RESIDENTIAL CODE 2018 NORTH CAROLINA STATE BUILDING CODE 2017 NATIONAL ELECTRICAL CODE
AUTHORITY HAVING JURISDICTION (AHJ) : HARNETT COUNTY

- WIRING AND CONDUIT NOTES:**
- ALL CONDUIT SIZES AND TYPES, SHALL BE LISTED FOR ITS PURPOSE AND APPROVED FOR THE SITE APPLICATIONS.
 - ALL PV CABLES AND HOME RUN WIRES BE #10AWG *USE-2, PV WIRE, OR PROPRIETARY SOLAR CABLING SPECIFIED BY MFR, OR EQUIVALENT; ROUTED TO SOURCE CIRCUIT COMBINER BOXES AS REQUIRED.
 - ALL CONDUCTORS AND OCPD SIZES AND TYPES SPECIFIED ACCORDING TO [NEC 690.8 (A)(1) & (B)(1)], [NEC 240] [NEC 690.7] FOR MULTIPLE CONDUCTORS.
 - ALL PV DC CONDUCTORS IN CONDUIT EXPOSED TO SUNLIGHT SHALL BE DERATED ACCORDING TO [NEC TABLE 310.15 (B)(2)(C)] BLACK ONLY**
 - EXPOSED ROOF PV DC CONDUCTORS SHALL BE USE-2, 90°C RATED, WET AND UV RESISTANT, AND UL LISTED RATED FOR 600V, UV RATED SPIRAL WRAP SHALL BE USED TO PROTECT WIRE FROM SHARP EDGES.
 - PHASE AND NEUTRAL CONDUCTORS SHALL BE DUAL RATED THHN/THWN-2 INSULATED, 90°C RATED, WET AND UV RESISTANT, RATED FOR 600V PER NEC 2008 OR 1000V PER NEC 2011.
 - 4-WIRE DELTA CONNECTED SYSTEMS HAVE THE PHASE WITH THE HIGHER VOLTAGE TO GROUND MARKED ORANGE OR IDENTIFIED BY OTHER EFFECTIVE MEANS.
 - ALL SOURCE CIRCUITS SHALL HAVE INDIVIDUAL SOURCE CIRCUIT PROTECTION.
 - VOLTAGE DROP LIMITED TO 2%
 - AC CONDUCTORS >4AWG COLOR CODED OR MARKED: PHASE A OR L1- BLACK, PHASE B OR L2- RED, PHASE C OR L3- BLUE, NEUTRAL- WHITE/GRAY.

SHEET INDEX	
PV-0	COVER PAGE
PV-1	SITE PLAN
PV-2	ROOF PLAN & MODULES
PV-3	ATTACHMENT DETAIL
PV-4	ELECTRICAL LINE DIAGRAM & CALCS.
PV-5	ELECTRICAL PHOTOS
PV-6	SPECIFICATIONS & CALCS.
PV-7	LABLE & PLACARDS
PV-8+	EQUIPMENT SPECIFICATIONS



1 PV-0 HOUSE PHOTO SCALE: NTS



1 PV-0 VICINITY MAP SCALE: NTS



CAROLINA CONNECTIONS
422 HUFFMAN MILL ROAD,
SUITE 105, BURLINGTON,
NC 27215, UNITED STATES
PHONE: (336) 585-1314

SYSTEM INFO.		
(26) LONGI 405S LONGI LR5-54HPB-405M		
(01) TESLA 7.6 KW 1538000-XX-Y [240V] [SI1-SB]		
DC SYSTEM SIZE: 10.530 KWDC		
AC SYSTEM SIZE: 7.600 KWAC		

REVISIONS		
DESCRIPTION	DATE	REV



STAMPED : 10/09/2025

PROJECT NAME & ADDRESS

NANCY SMITH WINTERS
RESIDENCE
1000 BAPTIST GROVE RD,
FUQUAY VARINA, NC 27526
PH.# : (919) 710-1061
Email: Dgwinters@embarqmail.com

DATE: 09/22/2025
SHEET NAME COVER PAGE
SHEET SIZE ANSI B 11" X 17"
SHEET NUMBER PV-0

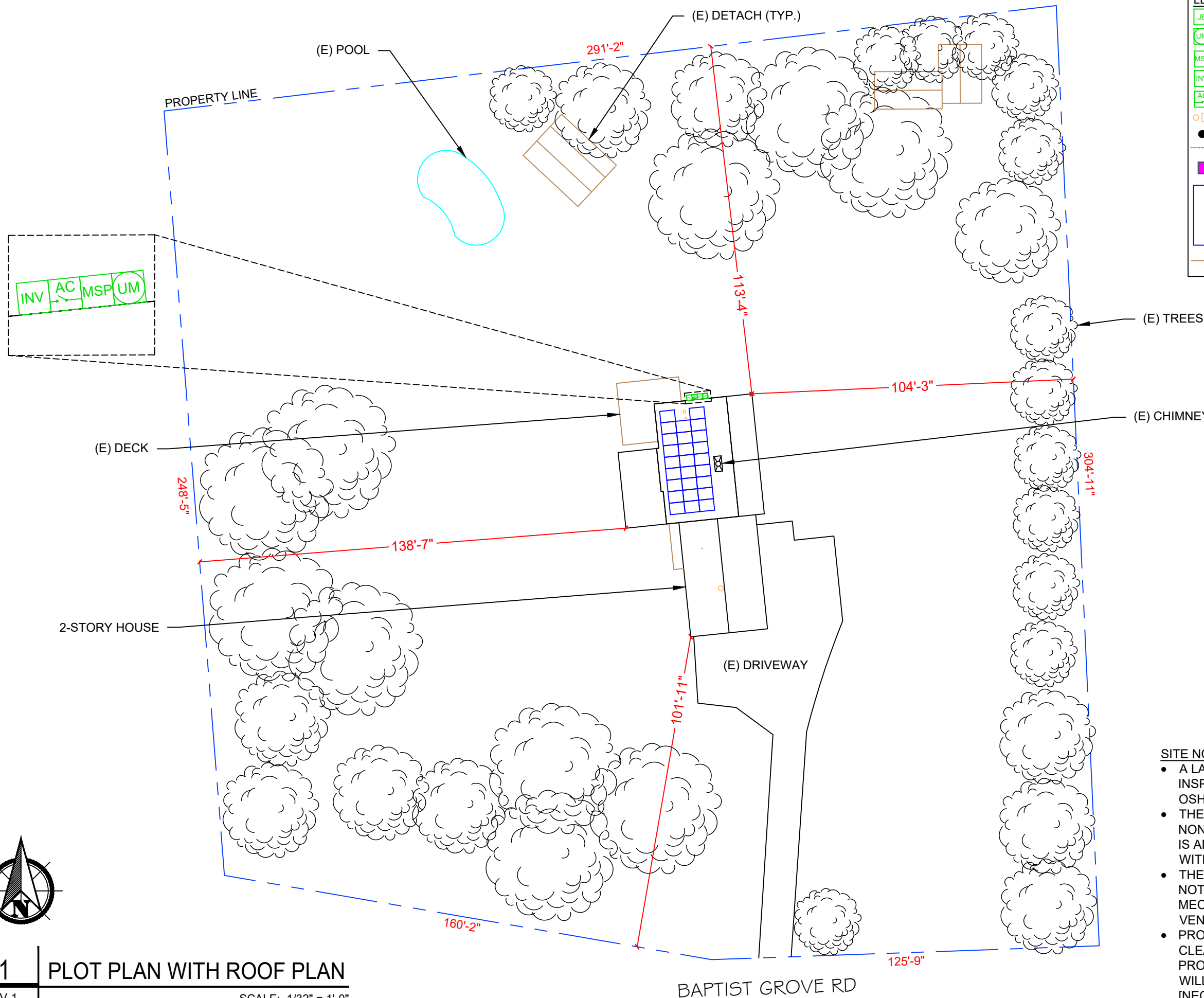


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PLOT PLAN WITH ROOF PLAN

PV-1

SCALE: 1/32" = 1'-0"



SITE NOTES:

- A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
- THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS AN UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.
- THE SOLAR PV INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
- PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION [NEC 110.26]



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DESCRIPTION	DATE	REV

Signature with Seal

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DATE: 09/22/2025

SHEET NAME

SITE PLAN

SHEET SIZE

**ANSI B
11" X 17"**

SHEET NUMBER

PV-1

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL	TESLA 7.6 KW 1538000-XX-Y [240V] [SI1-SB]
MAX DC SHORT CIRCUIT CURRENT	34.0A
CONTINUOUS OUTPUT CURRENT	32.0A (240V)

MODULE TYPE, DIMENSIONS & WEIGHT	
NUMBER OF MODULES:	26 MODULES
MODULE TYPE:	LONGI 405S LONGI LR5-54HPB-405M
MODULE WEIGHT:	45.85 LBS/20.8 KG
MODULE DIMENSIONS:	67.79" x 44.64" = 21.04SF
UNIT WEIGHT OF ARRAY:	2.18 PSF

ROOF DESCRIPTION						
ROOF	ROOF TILT	AZIMUTH	TRUSS SIZE	TRUSS SPACING	SEAM SPACING	ROOF MATERIAL
#1	32°	274°	2" X 4"	24" O.C.	12" O.C.	STANDING SEAM METAL

ARRAY AREA & ROOF AREA CALC'S		
ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)
#1	26	466.83
(TOTAL ARRAY AREA/TOTAL ROOF AREA) X 100%		
(466.83/2501.26) X 100% = 18.66%		

DESIGN SPECIFICATION	
RISK CATEGORY:	II
CONSTRUCTION:	SFD
ZONING:	RESIDENTIAL
SNOW LOAD (ASCE 7-10):	15 PSF
EXPOSURE CATEGORY:	B
WIND SPEED (ASCE 7-10):	116 MPH



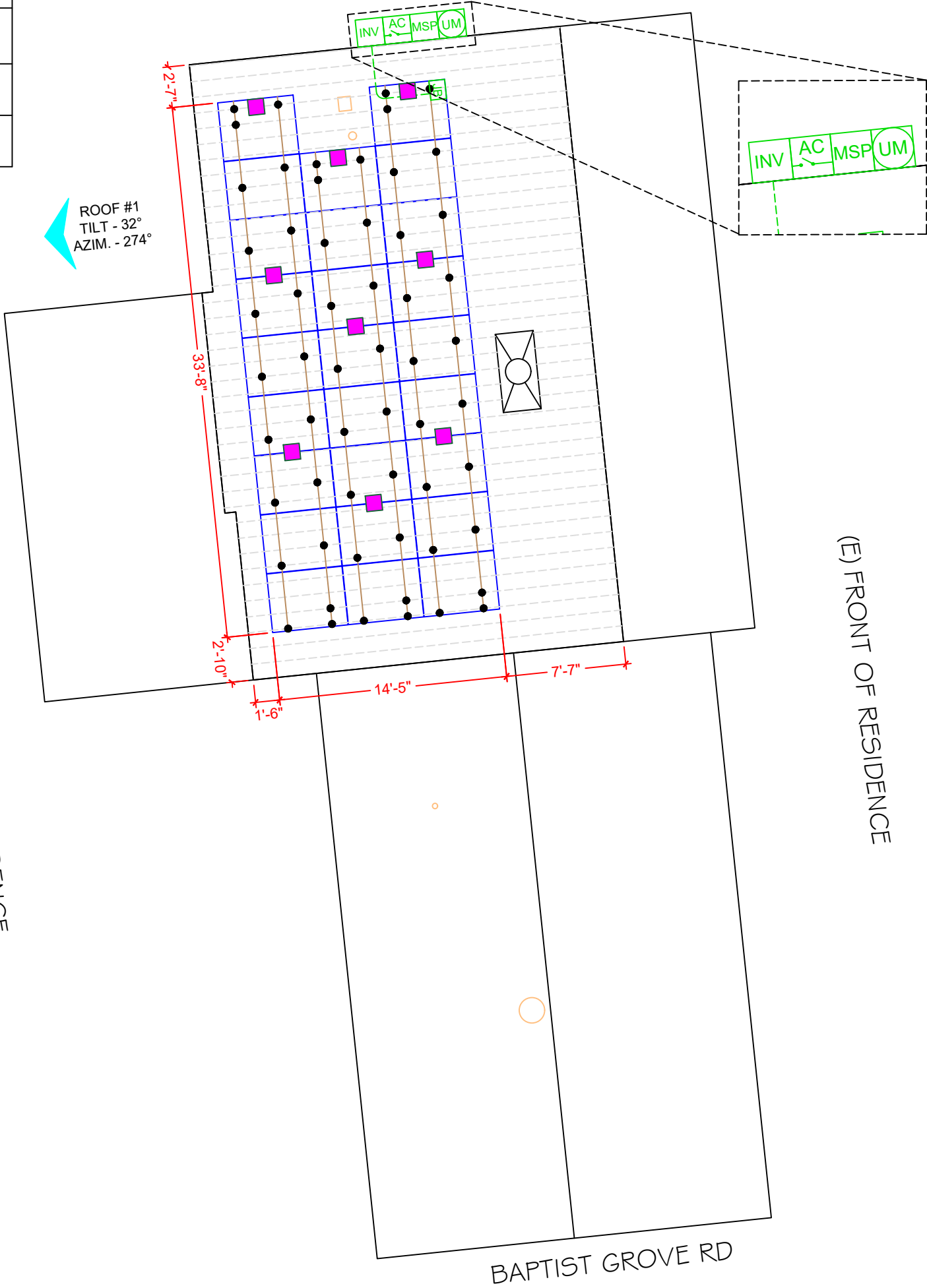
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ROOF PLAN & MODULES

PV-2

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

(E) BACK OF RESIDENCE



LEGEND	
	(N) JUNCTION BOX
	(E) UTILITY METER
	(E) MAIN SERVICE PANEL
	(N) TESLA 7.6 KW 1538000-XX-Y [240V] [SI1-SB] INVERTER
	(N) NON-FUSED AC DISCONNECT
	- VENT, ATTIC FAN (ROOF OBSTRUCTION)
	- ROOF ATTACHMENT
	- CONDUIT
	- TESLA SOLAR SHUTDOWN DEVICE MCI-2 HIGH CURRENT
	- LONGI 405S LONGI LR5-54HPB-405M MODULE
	- PEGASUS RAIL

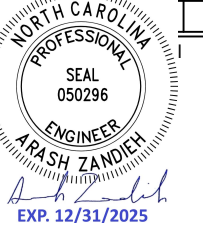
PANEL HEIGHT OFF ROOF 6"



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(01) TESLA 7.6 KW 1538000-XX-Y [240V] [SI1-SB]		
DC SYSTEM SIZE: 10.530 KWDC		
AC SYSTEM SIZE: 7.600 KWAC		

REVISIONS		
DESCRIPTION	DATE	REV



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EXP. 12/31/2025

10/8/2025

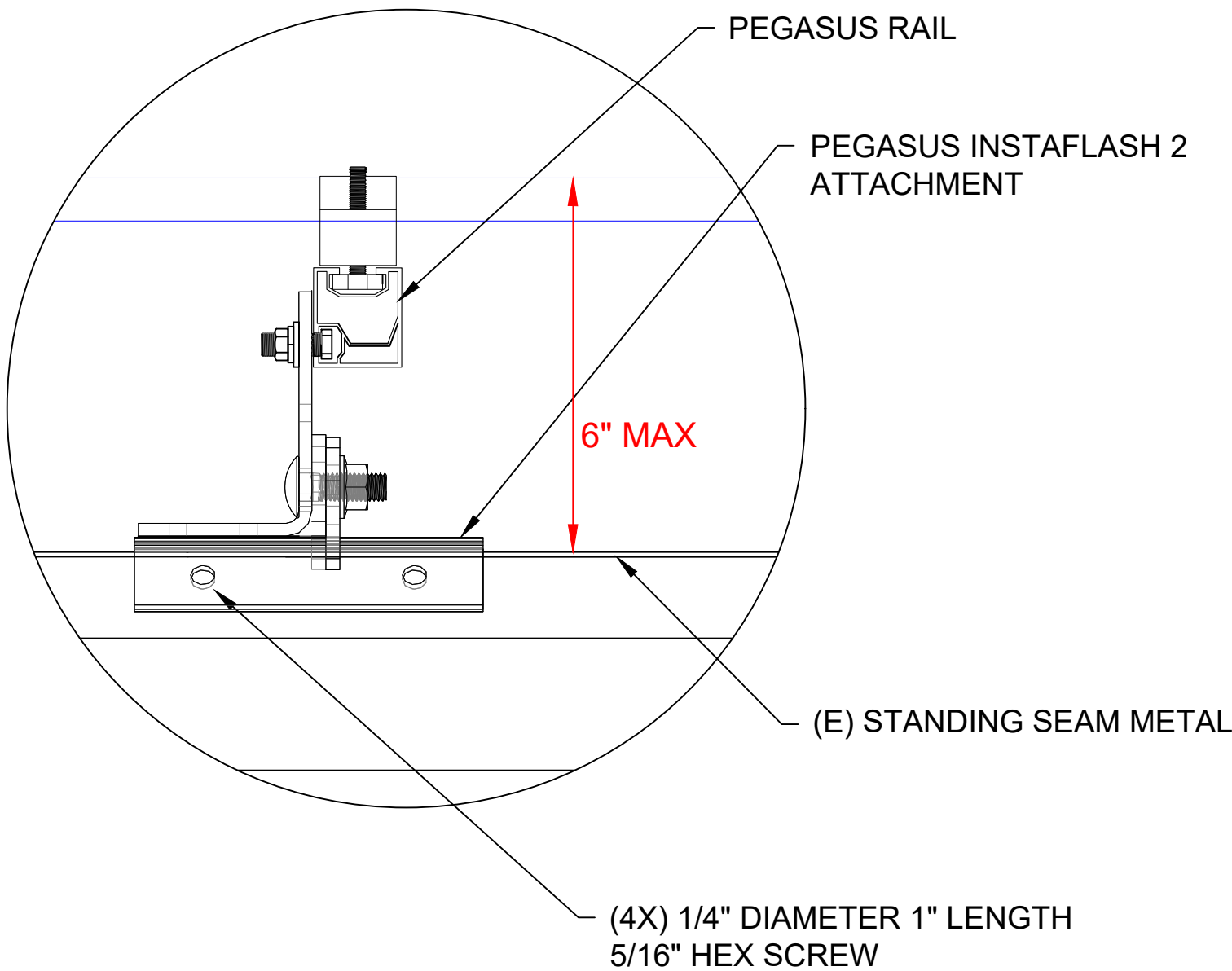
PROJECT NAME & ADDRESS

NANCY SMITH WINTERS
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FUQUAY VARINA, NC 27526
PH.# : (919) 710-1061
Email: Dgwinters@embarqmail.com

DATE: 09/22/2025
SHEET NAME ROOF PLAN & MODULES
SHEET SIZE ANSI B 11" X 17"
SHEET NUMBER PV-2

METER NO : 328 453 694

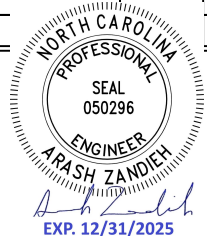
ROOF ATTACHMENT DETAIL



CAROLINA CONNECTIONS
422 HUFFMAN MILL ROAD,
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PHONE: (336) 585-1314

SYSTEM INFO.		
{26} LONGI 4055 LONGI LR5-54HPB-405M		
{01} TESLA 7.6 KW 1538000-XX-Y [240V] [S11-SB]		
DC SYSTEM SIZE: 10.530 KWDC		
AC SYSTEM SIZE: 7.600 KWAC		

REVISIONS		
DESCRIPTION	DATE	REV



10/8/2025
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DATE: 09/22/2025

SHEET NAME
**ATTACHMENT
DETAIL**

SHEET SIZE
**ANSI B
11" X 17"**

SHEET NUMBER
PV-3

ID	TYPICAL	INITIAL CONDUCTOR LOCATION	FINAL CONDUCTOR LOCATION	CONDUCTOR			CONDUIT	# OF PARALLEL CIRCUITS	CURRENT-CARRYING CONDUCTORS IN CONDUIT	CONDUIT FILL PERCENT	OCPD	EGC		TEMP. CORR. FACTOR		CONDUIT FILL FACTOR	CONT. CURRENT	MAX. CURRENT	BASE AMP.	DERATED AMP.	TERM. TEMP. RATING	LENGTH	VOLTAGE DROP
1	3	ARRAY	JUNCTION BOX	10 AWG	PV WIRE	-	-	1	2	N/A	N/A	6 AWG	BARE COPPER	0.71	(58°C)	N/A	10.45A	13.06A	N/A	N/A	90°C	30FT	0.29%
2	1	JUNCTION BOX	INVERTER	10 AWG	THWN-2	COPPER	MIN 0.75" Dia	3	6	26.72%	N/A	10 AWG	THWN-2, COPPER	0.91	(36°C)	0.8	10.45A	13.06A	40A	29.1A	75°C	27FT	0.26%
3	1	INVERTER	NON-FUSED AC DISCONNECT	8 AWG	THWN-2	COPPER	MIN 0.75" Dia	1	3	23.86%	N/A	10 AWG	THWN-2, COPPER	0.91	(36°C)	1	32.00A	40.00A	55A	50.1A	75°C	5FT	0.10%
4	1	NON-FUSED AC DISCONNECT	MAIN SERVICE PANEL	8 AWG	THWN-2	COPPER	MIN 0.75" Dia	1	3	23.86%	40A	10 AWG	THWN-2, COPPER	0.91	(36°C)	1	32.00A	40.00A	55A	50.1A	75°C	5FT	0.10%



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422 HUFFMAN MILL ROAD,
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SYSTEM INFO.		
(26) LONGI 405S LONGI LR5-54HPB-405M		
(01) TESLA 7.6 KW 1538000-XX-Y [240V] [SI1-SB]		
DC SYSTEM SIZE: 10.530 KWDC		
AC SYSTEM SIZE: 7.600 KWAC		

REVISIONS		
DESCRIPTION	DATE	REV



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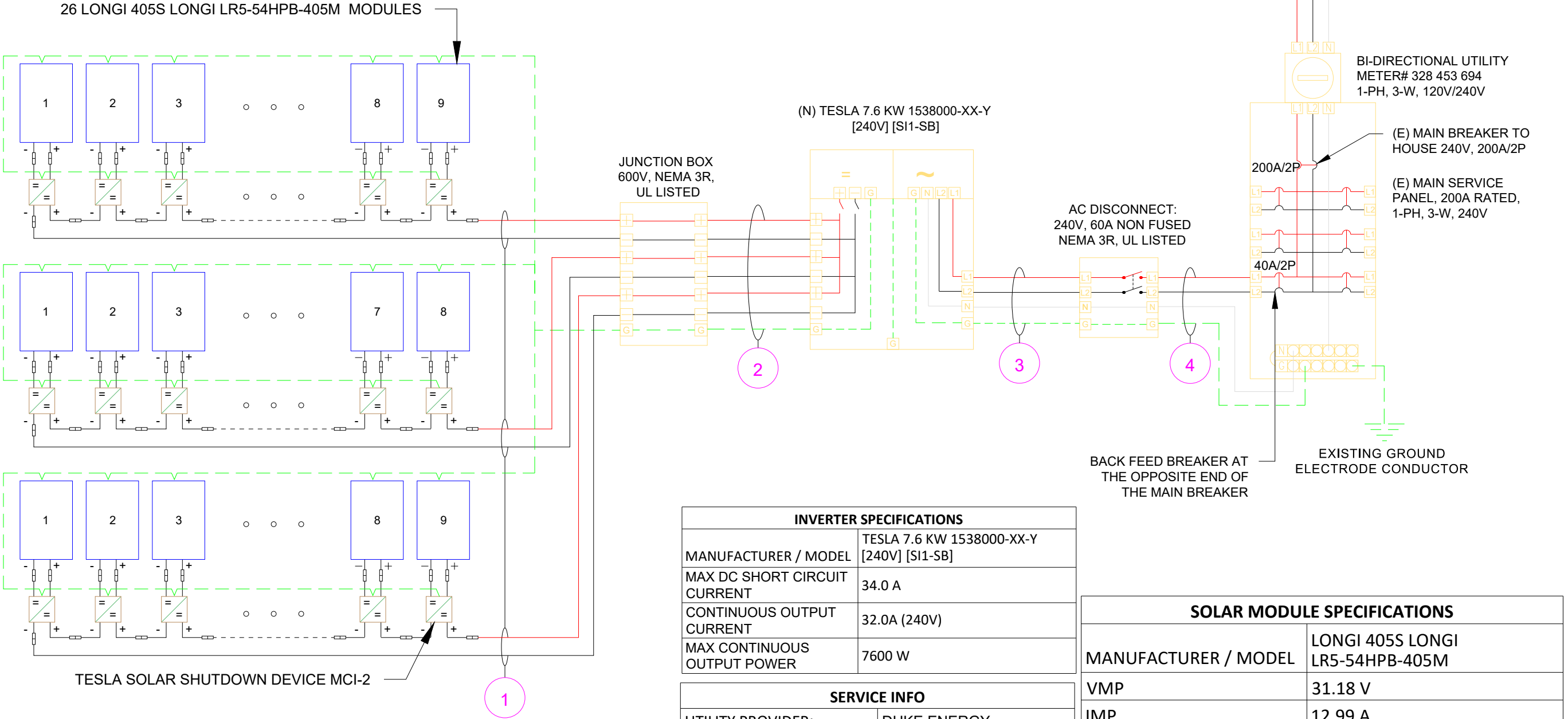
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Email: Dgwinters@embarqmail.com

DATE: 09/22/2025

SHEET NAME
ELECTRICAL LINE & CALCS.

SHEET SIZE
**ANSI B
11" X 17"**

SHEET NUMBER
PV-4



INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL	TESLA 7.6 KW 1538000-XX-Y [240V] [SI1-SB]
MAX DC SHORT CIRCUIT CURRENT	34.0 A
CONTINUOUS OUTPUT CURRENT	32.0A (240V)
MAX CONTINUOUS OUTPUT POWER	7600 W

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL	LONGI 405S LONGI LR5-54HPB-405M
VMP	31.18 V
IMP	12.99 A
VOC	37.15 V
ISC	13.78 A
TEMP. COEFF. VOC	-0.265%/°C
MODULE DIMENSION	67.79" (L) x 44.64" (W)
PANEL WATTAGE	405W

SERVICE INFO	
UTILITY PROVIDER:	DUKE ENERGY
AHJ NAME:	HARNETT COUNTY
MAIN PANEL BRAND:	EATON
MAIN SERVICE PANEL:	200A
MAIN PANEL LOCATION:	NORTH
SERVICE FEED SOURCE:	UNDERGROUND

INTERCONNECTION 120% RULE - NEC 705.12(B)(2)(3)(b)
UTILITY FEED + SOLAR BACKFEED 200A + 40A = 240A
BUS RATING X 120% 200A x 120% = 240A



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SYSTEM INFO.		
(26)	LONGI 405S LONGI	
	LR5-54HPB-405M	
(01)	TESLA 7.6 KW 1538000-XX-Y	
	[240V] [S11-SB]	
DC SYSTEM SIZE: 10.530 KWDC		
AC SYSTEM SIZE: 7.600 KWAC		

REVISIONS		
DESCRIPTION	DATE	REV



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PH.# : (919) 710-1061
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DATE: 09/22/2025

SHEET NAME
ELECTRICAL
PHOTOS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-5

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL	LONGI 405S LONGI LR5-54HPB-405M
VMP	31.18 V
IMP	12.99 A
VOC	37.15 V
ISC	13.78 A
TEMP. COEFF. VOC	-0.265%/°C
MODULE DIMENSION	67.79" (L) x 44.64" (W)
PANEL WATTAGE	405W

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL	TESLA 7.6 KW 1538000-XX-Y [240V] [SI1-SB]
MAX DC SHORT CIRCUIT CURRENT	34.0 A
CONTINUOUS OUTPUT CURRENT	32.0A (240V)

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-10°C
AMBIENT TEMP (HIGH TEMP 2%)	36°C
CONDUIT HEIGHT	7/8"
ROOF TOP TEMP	90°C
CONDUCTOR TEMPERATURE RATE	58°C
MODULE TEMPERATURE COEFFICIENT OF VOC	-0.265%/C

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
0.80	4-6
0.70	7-9
0.50	10-20



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(01) TESLA 7.6 KW 1538000-XX-Y [240V] [SI1-SB]		
DC SYSTEM SIZE: 10.530 KWDC		
AC SYSTEM SIZE: 7.600 KWAC		

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal



STAMPED : 10/09/2025

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PH.# : (919) 710-1061
Email: Dgwinters@embarqmail.com

DATE: 09/22/2025

SHEET NAME SPECIFICATIONS & CALC.

SHEET SIZE ANSI B 11" X 17"

SHEET NUMBER PV-6

1



WARNING

ELECTRIC SHOCK HAZARD

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

LABEL LOCATION:
MAIN SERVICE PANEL/AC DISCONNECT/AC COMBINER
(PER CODE: NEC 2017 690.13(B))

2

WARNING: PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION:
DC CONDUIT
EVERY 10' AND ON CONDUIT BODIES WHEN EXPOSED
(PER CODE: NEC2017 690.31(G)(3)(4))

3

PHOTOVOLTAIC SYSTEM AC DISCONNECT

RATED AC OUTPUT CURRENT 32.00 AMPS

NOMINAL OPERATING AC VOLTAGE 240 VOLTS

LABEL LOCATION:
MAIN SERVICE PANEL/AC DISCONNECT
NEC2017, 690.53

4

**RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM**

LABEL LOCATION:
INVERTER
AT OR WITHIN 3' OF THE AC/DC COMBINER SWITCH
PER CODE: NEC 690.58(C)(3)

5



CAUTION

DUAL POWER SOURCE

SECOND SOURCE IS

PHOTOVOLTAIC SYSTEM

LABEL LOCATION:
MAIN SERVICE PANEL/AC DISCONNECT/AC
COMBINER/REVENUE METER
2017 NEC 705.12(B)(3)

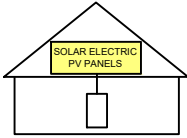
ADHESIVE FASTENED SIGNS:

- ANSI Z535.4-2011 PRODUCT SAFETY SIGNS AND LABELS, PROVIDES GUIDELINES FOR SUITABLE FONT SIZES, WORDS, COLORS, SYMBOLS, AND LOCATION REQUIREMENTS FOR LABELS. NEC 110.21(B)(1).
- THE LABEL SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED. NEC 110.21(B)(3).
- ADHESIVE FASTENED SIGNS MAY BE ACCEPTABLE IF PROPERLY ADHERED. VINYL SIGNS SHALL BE WEATHER RESISTANT.

6

**SOLAR PV SYSTEM EQUIPPED
WITH RAPID SHUTDOWN**

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



MAIN SERVICE PANEL
IF MSD IS OUTSIDE PLACE IT THERE / IF
MSD IS INSIDE PLACE ON THE AC DISCONNECT
PER CODE: NEC 690.56(C)(1)

7

**PHOTOVOLTAIC SYSTEM
UTILITY DISCONNECT SWITCH**

LABEL LOCATION:
AC DISCONNECT
2017 NEC 690.56(C)(3)

8

PV SOLAR BREAKER

**DO NOT RELOCATE THIS
OVERCURRENT DEVICE**

LABEL LOCATION:
MAIN SERVICE PANEL
2017 NEC 705.12(B)(2)(3)(B)

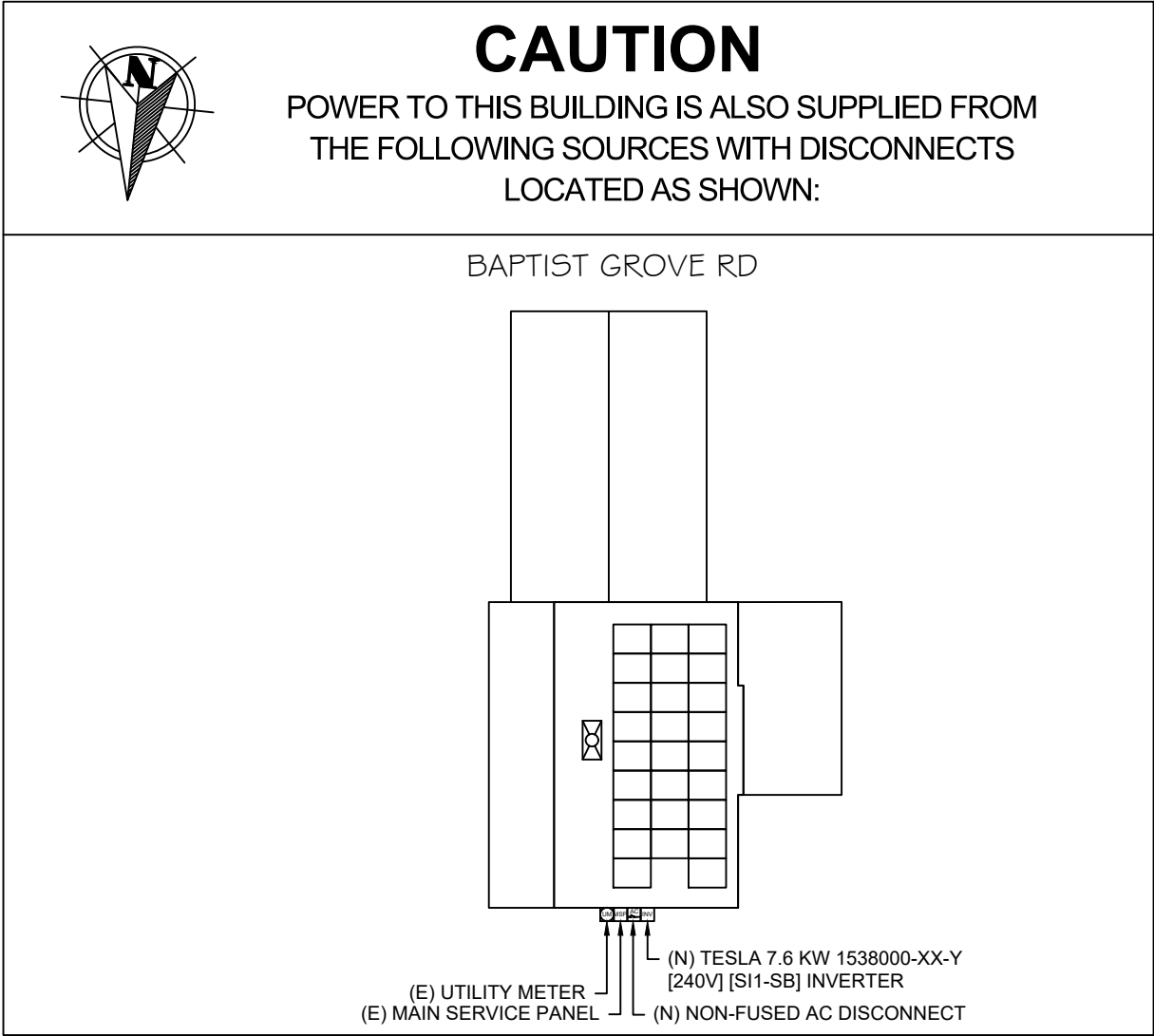
9

SERVICE DISCONNECT

**SECTIONNEUR
PRINCIPALE**

**SERVICIO DE
DESCONEXION**

LABEL LOCATION:
AC DISCONNECT
2017 NEC 230.66



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AC SYSTEM SIZE: 7.600 KWAC		

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SHEET NAME
SIGNAGE

SHEET SIZE
**ANSI B
11" X 17"**

SHEET NUMBER
PV-7

Hi-MO 5m

(V4&V5)

LR5-54HPB

400~420M

- Suitable for distributed projects
- Advanced module technology delivers superior module efficiency
- Excellent outdoor power generation performance
- Aesthetic appearance with all black module design

- 25

25-year Warranty for Materials and Processing
- 25

25-year Warranty for Extra Linear Power Output

Complete System and Product Certifications

IEC 61215, IEC 61730, UL 61730

ISO9001:2015: ISO Quality Management System

ISO14001: 2015: ISO Environment Management System

ISO45001: 2018: Occupational Health and Safety

IEC62941: Guideline for module design qualification and type approval

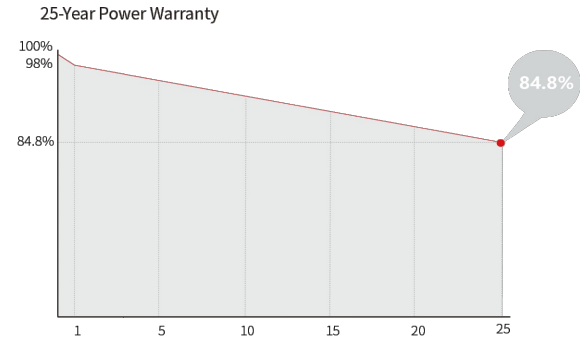
LONGI



Hi-MO 5m

21.5% MAX MODULE EFFICIENCY	0~3% POWER TOLERANCE	<2% FIRST YEAR POWER DEGRADATION	0.55% YEAR 2-25 POWER DEGRADATION	HALF-CELL Lower operating temperature
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Additional Value



Mechanical Parameters

Cell Orientation	108 (6×18)
Junction Box	IP68
Connector Type	MC4
Output Cable	4mm², ±1200mm, length can be customized
Glass	single glass, 3.2mm coated tempered glass
Frame	Anodized aluminum alloy frame
Weight	20.8kg
Dimension	1722×1134×30mm
Packaging	36pcs per pallet / 216pcs per 20' GP 936pcs per 40' HC 864pcs(only for USA)

Electrical Characteristics	STC : AM1.5 1000W/m² 25°C		NOCT : AM1.5 800W/m² 20°C 1m/s		Test uncertainty for Pmax: ±3%					
	LR5-54HPB-400M		LR5-54HPB-405M		LR5-54HPB-410M		LR5-54HPB-415M		LR5-54HPB-420M	
Module Type	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax/W)	400	299.0	405	302.7	410	306.5	415	310.2	420	313.9
Open Circuit Voltage (Voc/V)	36.90	34.70	37.15	34.93	37.40	35.17	37.65	35.40	37.89	35.63
Short Circuit Current (Isc/A)	13.72	11.09	13.78	11.14	13.84	11.19	13.91	11.24	13.97	11.30
Voltage at Maximum Power (Vmp/V)	30.94	28.74	31.18	28.96	31.42	29.19	31.66	29.41	31.90	29.63
Current at Maximum Power (Imp/A)	12.93	10.40	12.99	10.45	13.05	10.50	13.11	10.55	13.17	10.59
Module Efficiency(%)	20.5		20.7		21.0		21.3		21.5	

Operating Parameters

Operational Temperature	-40°C ~ +85°C
Power Output Tolerance	0 ~ 3%
Maximum System Voltage	DC1000V (IEC/UL)
Maximum Series Fuse Rating	25A
Nominal Operating Cell Temperature	45±2°C
Protection Class	Class II
Fire Rating	UL type 1 or 2 IEC Class C

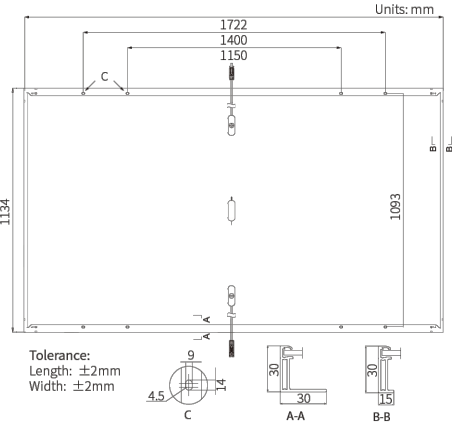
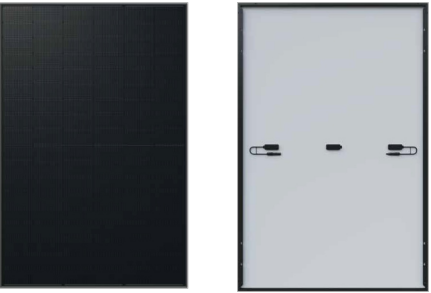
Mechanical Loading

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

Temperature Ratings (STC)

Temperature Coefficient of Isc	+0.050%/°C
Temperature Coefficient of Voc	-0.265%/°C
Temperature Coefficient of Pmax	-0.340%/°C

Specifications included in this datasheet are subject to change without notice. LONGI reserves the right of final interpretation. (20231207V18) DG



CAROLINA CONNECTIONS
422 HUFFMAN MILL ROAD,
SUITE 105, BURLINGTON,
NC 27215, UNITED STATES
PHONE: (336) 585-1314

SYSTEM INFO.

(26) LONGI 405S LONGI
LR5-54HPB-405M
(01) TESLA 7.6 KW 1538000-XX-Y
[240V] [SI1-SB]
DC SYSTEM SIZE: 10.530 KWDC
AC SYSTEM SIZE: 7.600 KWAC

REVISIONS

DESCRIPTION	DATE	REV

Signature with Seal

PROJECT NAME & ADDRESS

NANCY SMITH WINTERS
RESIDENCE
1000 BAPTIST GROVE RD,
FUQUAY VARINA, NC 27526
PH.# : (919) 710-1061
Email: Dgwinters@embarqmail.com

DATE: 09/22/2025

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-8

Tesla Solar Inverter Technical Specifications

Electrical Specifications: Output (AC)	Model Number	1538000-xx-y			
	Output (AC) ¹	3.8 kW	5 kW	5.7 kW	7.6 kW
	Nominal Power	3,800 W	5,000 W	5,700 W	7,600 W
	Maximum Apparent Power	3,840 VA	5,040 VA	6,000 VA	7,680 VA
	Maximum Continuous Current	16 A	21 A	24 A	32 A
	Breaker (Overcurrent Protection)	20 A	30 A	30 A	40 A
	Nominal Power Factor	1 - 0.9 (leading / lagging			
	THD (at Nominal Power)	<5%			

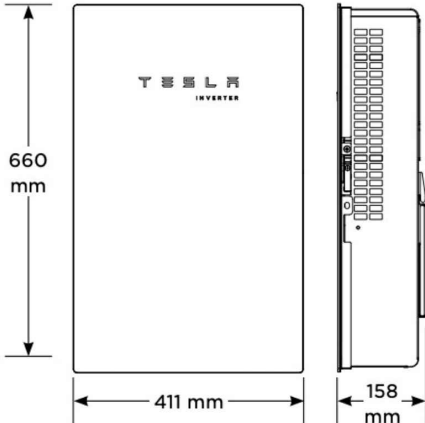
Electrical Specifications: Input (DC)	MPPT	4
	Input Connectors per MPPT	1-2-1-2
	Maximum Input Voltage	600 VDC
	DC Input Voltage Range	60 - 550 VDC
	DC MPPT Voltage Range	60 - 480 VDC ¹
	Maximum Current per MPPT (I _{MP})	13 A ²
	Maximum Short Circuit Current per MPPT (I _{SC})	17 A ²

¹Maximum current.
²Where the DC input current exceeds an MPPT rating, jumpers can be used to allow a single MPPT to intake additional DC current up to 26 A I_{MP} / 34 A I_{SC}.

Performance Specifications	Peak Efficiency	98.6% at 240 V
	CEC Efficiency	98.0% at 240 V
	Allowable DC/AC Ratio	1.7
	Customer Interface	Tesla Mobile App
	Internet Connectivity	Wi-Fi (2.4 GHz, 802.11 b/g/n), Ethernet, Cellular (LTE/4G) ³
	Revenue Grade Meter	Revenue Accurate (+/- 0.5%)
	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
	Warranty	12.5 years

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

Tesla Solar Inverter Technical Specifications

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	-30°C to 45°C (-22°F to 113°F) ⁵
	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 Performance may be de-rated to 6.2 kW at 240 V when operating at temperatures greater than 45°C.

Compliance Information	Grid Certifications	UL 1741, UL 1741 SA, UL 1741 SB, UL 1741 PCS, IEEE 1547-2018, IEEE 1547.1
	Safety Certifications	UL 1741 PVRSS, UL 1699B, UL 1998 (US), UL 3741
	Emissions	EN 61000-6-3 (Residential), FCC 47CFR15.109 (a)



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(01) TESLA 7.6 KW 1538000-XX-Y [240V] [SI1-SB]		
DC SYSTEM SIZE: 10.530 KWDC		
AC SYSTEM SIZE: 7.600 KWAC		

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

PROJECT NAME & ADDRESS

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DATE: 09/22/2025
SHEET NAME EQUIPMENT SPECIFICATION
SHEET SIZE ANSI B 11" X 17"
SHEET NUMBER PV-9

Solar Shutdown Device Technical Specifications

The Solar Shutdown Device is a Mid-Circuit Interrupter (MCI) and is part of the PV system rapid shutdown (RSD) function in accordance with Article 690 of the applicable NEC. When paired with Tesla Solar Inverter, solar array shutdown is initiated by any loss of AC power.

Electrical Specifications	Model	MCI-1	MCI-2	MCI-2 High Current
	Nominal Input DC Current Rating (I _{MP})	13 A	13 A	15 A
	Maximum Input Short Circuit Current (I _{SC})	19 A	17 A	19 A
	Maximum System Voltage (PVHCS)	600 V DC	1000 V DC ^a	1000 V DC ^a
	Maximum Disconnect Voltage ⁷	600 V DC	165 V DC	165 V DC

^a Maximum System Voltage is limited by Tesla Solar Inverter to 600 V DC.

⁷ Maximum Disconnect Voltage is the maximum voltage allowed across each MCI in the open position (Rapid Shutdown Initiated). An individual MCI-2 has a voltage rating of 165V but in combination (connected in the same string) their voltage ratings are additive.

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	

Environmental Specifications	Operating Temperature	-40°C to 50°C (-40°F to 122°F)	-45°C to 70°C (-49°F to 158°F)
	Storage Temperature	-30°C to 70°C (-22°F to 158°F)	-30°C to 70°C (-22°F to 158°F)
	Enclosure Rating	NEMA 4X / IP65	NEMA 4X / IP65

Mechanical Specifications	Electrical Connections	MC4 Connector	MC4 Connector
	Housing	Plastic	Plastic
	Dimensions	125 x 150 x 22 mm (5 x 6 x 1 in)	173 x 45 x 22 mm (6.8 x 1.8 x 1 in)
	Weight	350 g (0.77 lb)	120 g (0.26 lb)
	Mounting Options	ZEP Home Run Clip M4 Screw (#10) M8 Bolt (5/16") Nail / Wood screw	Wire Clip

Compliance Information	Certifications	UL 1741 PVRSE, UL 3741, PVRSA (Photovoltaic Rapid Shutdown Array)
	RSD Initiation Method	PV System AC Breaker or Switch

UL 3741 PV Hazard Control (and PVRSA) Compatibility

See [UL 3741 Application Addendum](#)

PV HAZARD CONTROL SYSTEM | GENERIC PV ARRAY

UL 3741 REPORT DATE 4-06-22 Tesla Inverter Based PVHCS, Consisting of Tesla Inverters, Tesla MCI and other PV RAPID SHUTDOWN ARRAY listed components to create the system

WARNING: To reduce the risk of injury, read all instructions.

PV HAZARD CONTROL EQUIPMENT AND COMPONENTS

Function	Manufacturer	Model No.	Firmware Versions	Certification Standard
Inverter or Powerwall+	Tesla	7.6 kW: 1538000' 3.8 kW: 1534000' 7.6 kW: 1850000'	V4, CEA4F802 V4, FF7BE4E1 V4, CEA4F802	UL 1741, UL 1998, PVRSS/PVRSE
Mid Circuit Interrupter (MCI)	Tesla	MCI-1, MCI-2	N/A	UL 1741 PVRSE
PV Modules	The PVHC PV modules must be listed by a NRTL to UL 1703 and/or UL 61730-1 and UL 61730-2 (excluding Class 0 and Class I).			
PV Mounting System	The PV mounting system must comply with one of the following: - Listed by NRTL to UL 2703 and rated for use with the specific PV modules noted above. - The non-certified combinations of mounting and PV modules shall be evaluated for loading, mounting and grounding per the NEC and other applicable installation codes.			
PV Connectors	The following PV connectors may be used to connect to the Tesla MCIs: - Staubli type PV-KST4/6II-UR or type PV-KST4-EVO2 (male), - Staubli type PV-KBT4/6II-UR or PV-KBT4-EVO2 (female), - Staubli Branch Socket PV-AZB4 and Branch Plug PV-AZS4, - Connectors evaluated by an NRTL for intermatibility with the connectors above.			
PVHCS Initiator: (PV Inverter)	Dedicated PV system AC circuit breaker or AC disconnect switch, labeled per NEC 690.12 requirements.			N/A
PVHCS Initiator: (Powerwall+)	Emergency stop device (NISD)- Listed "Emergency Stop Button" or "Emergency Stop Device" or "Emergency Stop Unit".			UL 508 or UL 60947 Parts 1, 5-1 and 5-5.

¹ Applies to variations of this part number with suffix of two numbers and one letter.
Note: PVHCS installation requirements may reduce the effective equipment and component ratings below the individual equipment and component PVRSE ratings in order to achieve PVHCS shock hazard reduction requirements.

PVHCS INSTALLATION REQUIREMENTS	
Max System Voltage	600 Vdc
PVHCS Maximum Circuit Voltage (Array Internal Voltage After Actuation)	165 Vdc (cold weather open circuit)

OTHER INSTALLATION INSTRUCTIONS

1. An MCI must be connected to one end of each series string or mounting plane sub-array string.
2. MCIs shall be installed between series connected module combinations such that the PVHC Maximum Circuit Voltage after actuation is no greater than 165V under any circumstances. The installation location coldest anticipated operating ambient temperature shall be used to calculate the PV maximum voltage in accordance with NEC 690.7.
3. Verification that the MCIs are installed in accordance with 1) and 2) shall be documented for inspection, by voltage measurement logs and/or as-built string layout diagrams.
4. For PV Inverter: The PVHCS initiator (AC breaker or switch) shall be sized and installed in accordance with NEC requirements. The specific part shall be identified on the as-built system drawings.
5. For Powerwall+: The PVHCS emergency stop initiator shall have the following minimum ratings: Outdoor (Type 3R or higher), 12V, 1A, and shall be installed in accordance with NEC requirements. The specific part shall be identified on the as-built system drawings. Refer to the Powerwall+ installation manual for further details.



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(01) TESLA 7.6 kW 1538000-XX-Y [240V] [SI1-SB]		
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AC SYSTEM SIZE: 7.600 KWAC		

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

PROJECT NAME & ADDRESS

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RESIDENCE
1000 BAPTIST GROVE RD,
FUQUAY VARINA, NC 27526
PH.# : (919) 710-1061
Email: Dgwinters@embarqmail.com

DATE: 09/22/2025
SHEET NAME EQUIPMENT SPECIFICATION
SHEET SIZE ANSI B 11" X 17"
SHEET NUMBER PV-10

RAIL SYSTEM

One Clamp Anywhere

The Multi-Clamp works as mid- or end-clamp, and fits standard 30-40mm frames.

Instant Bonding

The N-S Bonding Jumper bonds row to row with no tools.

Lifetime Wire Management

Open rail channel holds and protects wires. Clamps won't pinch wires after tightening.

Bonding Structural Splice

Connect rails instantly, without tools, interference or limitations.

Next-Level Solar Mounting

A complete system for hassle-free rooftop installation, from watertight mounts to lifetime wire management.



Simplicity

1/2" socket for everything.
One clamp for mid or end.
No tool splicing and bonding.
Easy wire management.



Code Compliant

UL 2703 listed
LTR-AE-001-2012 listed
Class A fire rating for any slope
ASCE 7-16 PE Certified



Premium Aesthetics

The narrowest panel gap available. Optional Hidden End Clamps and End Caps provide a flush look on the edge of the array.

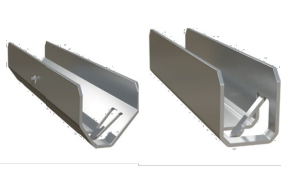
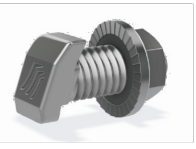


Watertight for Life

Secured on industry-leading Pegasus Mounts, for composite shingle and tile roofs. Backed by a 25-year warranty.

Pegasus Solar Inc | 506 West Ohio Avenue, Richmond, CA 94804 | T: 510.210.3797 | www.pegassussolar.com

RAIL SYSTEM

			
Pegasus Rail Available in 14' and 7' lengths for easy layout and shipping. Open-channel design holds MC4 connectors, PV wire and trunk cables. Black and Mill finish	Pegasus Max Rail Maximum-strength design. Meets specifications for high snow-load and hurricane zones. Black and Mill finish	Splice and Max Splice Installs by hand. Works over mounts. Structurally connects and bonds rails automatically; UL2703 listed as reusable.	Dovetail T-bolt Dovetail shape for extra strength. Uses 1/2" socket.
			
Multi-Clamp Fits 30-40mm PV frames, as mid- or end-clamp. Twist-locks into position; doesn't pinch wires in rail. Bonds modules to rail; UL2703 listed as reusable	Hidden End Clamp Offers premium edge appearance. Preinstalled pull-tab grips rail edge, allowing easy, one-hand installation. Tucks away for reuse.	Ground Lug Holds 6 or 8 AWG wire. Mounts on top or side of rail. Assembled on MLPE Mount. UL2703 listed as reusable.	N-S Bonding Jumper Installs by hand, eliminates row-to-row copper wire. UL2703 listed as reusable only with Pegasus Rail.
			
MLPE Mount Secures and bonds most micro-inverters and optimizers to rail. Connectors and wires easily route underneath after installation. UL2703 listed as reusable.	Cable Grip Secures four PV wires or two trunk cables. Stainless-steel backing provides durable grip. Eliminates sagging wires.	Wire Clip Hand operable. Holds wires in channel. Won't slip.	End Cap and Max End Cap Fits flush to PV module and hides raw or angled cuts. Hidden drain quickly clears water from rail.

Certifications:
• UL 2703, Edition 1
• LTR-AE-001-2012
• ASCE 7-16 PE certified
• Class A fire rating for any slope roof



FREE
PEGASUS SOLAR
Design Tool

Quickly calculate the most efficient layout, spans and materials needed to suit your job. Visit the Pegasus Customer Portal. pegassussolar.com/portal

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LOAD		SPAN			
SNOW (PSF)	WIND (MPH)	32"	4'	6'	8'
0	120				
	160				
	190				
15	140				
	160				
30	190				
	160				
45	190				
70	190				
110	190				

For reference only. Spans above are calculated using ASCE 7-16 for a Gable Roof, Exposure Category B, 7-20deg roof angle, 30ft mean roof height with non-exposed modules. For PE certified span tables, visit www.pegassussolar.com/spans.

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PHONE: (336) 585-1314

SYSTEM INFO.

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LR5-54HPB-405M
(01) TESLA 7.6 KW 1538000-XX-Y
[240V] [S1-SB]
DC SYSTEM SIZE: 10.530 KWDC
AC SYSTEM SIZE: 7.600 KWAC

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DATE: 09/22/2025

SHEET NAME
**EQUIPMENT
SPECIFICATION**

SHEET SIZE

**ANSI B
11" X 17"**

SHEET NUMBER

PV-11

The right way to attach almost anything to metal roofs!

S-5!®

The Right Way

ProteaBracket™

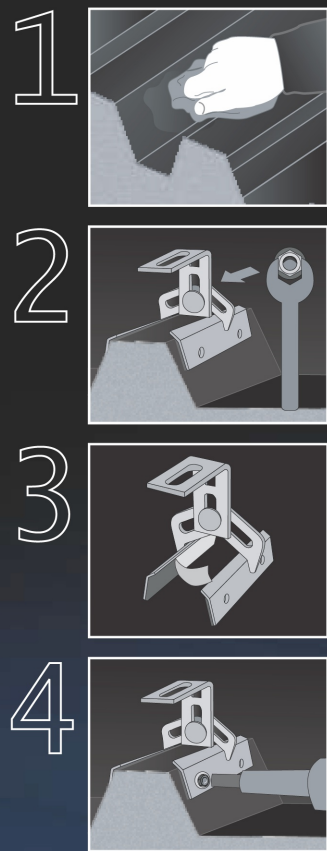
ProteaBracket™ is the most versatile attachment solution on the market, fitting most metal trapezoidal sheet profiles with and without intermediate insulation. It features an adjustable attachment base and multiple solar module attachment options (illustrated on back) to accommodate varying widths and heights. There are no messy sealants to apply and no chance for leaks; the ProteaBracket comes with factory-applied, adhesive rubber sealant to ensure quick installation and a weather-proof fit.

The ProteaBracket is mounted directly onto the crown of the panel, straddling the profile. No surface preparation is necessary; simply wipe away excess oil and debris, align, and apply. Secure ProteaBracket through all 6 pre-punched holes.

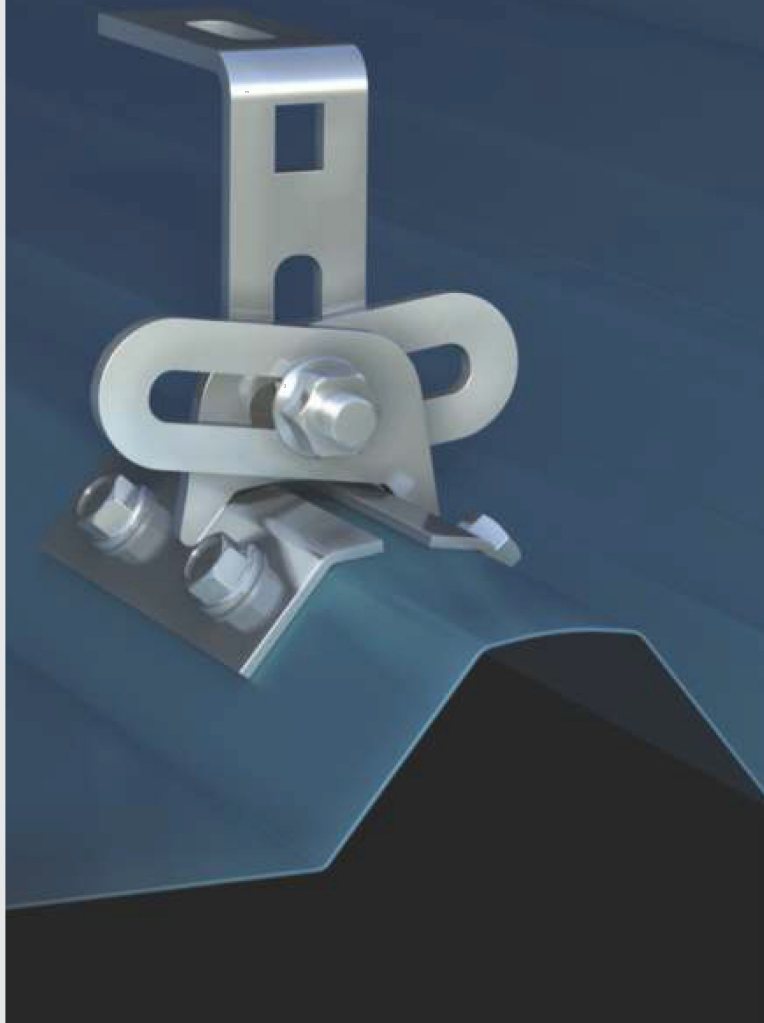
ProteaBracket is the perfect match for the S-5-PV Kit, for a solar attachment solution that is both economical and easy to use.

S-5!® ProteaBracket™ is a versatile bracket that adjusts easily to most trapezoidal roof profiles.

S-5! PV kits have an M8 bolt and are suitable for use with all S-5! clamps.



ProteaBracket™



S-5!®

The Right Way

ProteaBracket™ is the perfect solar attachment solution for most trapezoidal exposed-fastened metal roof profiles. No messy sealants to apply: the factory-applied adhesive rubber sealant weather-proofs and makes installation easy.

S-5!® holding strength is unmatched in the industry.

Each ProteaBracket™ comes with a factory-applied, adhesive rubber sealant on the base. A structural A2 stainless steel bimetal attachment bracket, ProteaBracket is compatible with most common metal roofing materials.

All four pre-punched holes must be used to achieve tested strength. For design assistance, contact Safintra South Africa (and see our website www.safintra.co.za), or visit www.S-5.com for the independent lab test data that can be used for load-critical designs and applications. Also, please visit S-5! website for more information including metallurgical compatibilities and specifications.

Multiple Attachment Options:

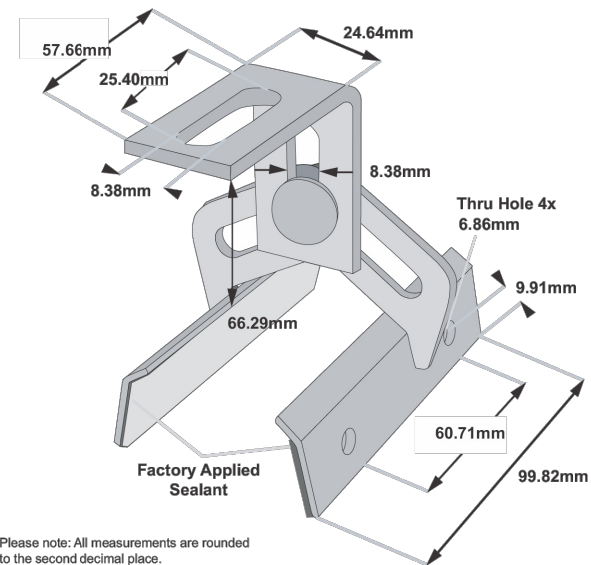
ProteaBracket™ with Top Rail option for PV attachment



ProteaBracket™ with S-5-PV Kit option (if not using a rail)



ProteaBracket™



Please note: All measurements are rounded to the second decimal place.

FLUTELINE



VERSATILE



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

S-5! Brackets and clamps are not tested for performance as part of a Fall Arrest or Personal Safety system. These applications need to be tested as a dynamic system and warranties or test results must be issued by the system provider. Safintra, Safal Group and its subsidiaries provide no warranties or any assurances in this application, and will accept no claims of any nature whatsoever arising out of any such applications.

Products are protected by multiple international patents. For published data regarding holding strength, bolt torque, patents and trademarks visit the S-5! website at www.S-5.com.

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