WYSSLING CONSULTING
CORPORATE EXPERIENCE WITH SMALL BUSINESS VALUE
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February 6, 2024
Revised May 14, 2024

Scott Wyssling, PE

Digitally signed by Scott Wyssling, PE
DN: C=US, S=Utah, L=Alpine, O=Wyssling Consulting, OU=Engineering, CN="Scott Wyssling, PE", E=swyssling@wysslingconsulting.com
Reason: I am the author of this document
Location:
Date: 2024.05.14 17:09:51-06'00'
Foxit PDF Editor Version: 13.0.1

BYLD Better
1213 W Moorehead Street Suite 500
Charlotte, NC 28208

Re: Engineering Services
Coats Residence
115 Sherman Pines Drive, Fuquay-Varina, NC
11.500 kW System

To Whom It May Concern:

We have received information regarding solar panel installation on the roof of the above referenced structure. Our evaluation of the structure is to verify the existing capacity of the roof system and its ability to support the additional loads imposed by the proposed solar system.

A. Site Assessment Information

1. Site visit documentation identifying attic information including size and spacing of framing for the existing roof structure.
2. Design drawings of the proposed system including a site plan, roof plan and connection details for the solar panels. This information will be utilized for approval and construction of the proposed system.

B. Description of Structure:

Roof Framing:	2x6 dimensional lumber at 24" on center with knee wall supports.
Roof Material:	Composite Asphalt Shingles
Roof Slope:	45 degrees
Attic Access:	Accessible
Foundation:	Permanent

C. Loading Criteria Used

- **Dead Load**
  - Existing Roofing and framing = 7 psf
  - New Solar Panels and Racking = 3 psf
  - TOTAL = 10 PSF
- **Live Load** = 20 psf (reducible) – 0 psf at locations of solar panels
- **Ground Snow Load** = 15 psf
- **Wind Load** based on ASCE 7-10
  - Ultimate Wind Speed = 120 mph (based on Risk Category II)
  - Exposure Category C

Analysis performed of the existing roof structure utilizing the above loading criteria is in accordance with the 2018 North Carolina Residential Code, including provisions allowing existing structures to not require strengthening if the new loads do not exceed existing design loads by 105% for gravity elements and 110% for seismic elements. This analysis indicates that the existing framing will support the additional panel loading without damage, if installed correctly.

D. Solar Panel Anchorage

1. The solar panels shall be mounted in accordance with the most recent Pegasus installation manual. If during solar panel installation, the roof framing members appear unstable or deflect non-uniformly, our office should be notified before proceeding with the installation.
2. The system utilizes the Pegasus SkipRail racking system. Please reference the stamped plan set for rail and mounting locations.
3. The maximum allowable withdrawal force for a 5/16" lag screw is 229 lbs per inch of penetration as identified in the National Design Standards (NDS) of timber construction specifications. Based on a minimum penetration depth of 2½", the allowable capacity per connection is greater than the design withdrawal force (demand). Considering the variable factors for the existing roof framing and installation tolerances, the connection using one 5/16" diameter lag screws with a minimum of 2½" embedment will be adequate and will include a sufficient factor of safety.
4. Considering the wind speed, roof slopes, size and spacing of framing members, and condition of the roof, the panel supports shall be placed no greater than 48" on center.

Based on the above evaluation, this office certifies that with the racking and mounting specified, the existing roof system will adequately support the additional loading imposed by the solar system. This evaluation is in conformance with the 2018 North Carolina Residential Code, current industry standards, and is based on information supplied to us at the time of this report.

Should you have any questions regarding the above or if you require further information do not hesitate to contact me.

Very truly yours,

Scott E. Wyssling, PE
North Carolina License No. 46546
North Carolina COA P-2308

NORTH CAROLINA PROFESSIONAL SEAL 046546 ENGINEER SCOTT E. WYSSLING

Wyssling Consulting, PLLC
76 N Meadowbrook Drive Alpine UT 84004
North Carolina COA # P-2308

Signed 5/14/2024

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Project information

Installer	-	Project Name	**Van Coats**
		Project Number	-
Project Address	**115 Sherman Pines Drive, Fuquay-Varina, NC 27526 USA**	AHJ/ASCE	**Harnett County/7-16**
		Wind / Exp. Cat. / Snow	**120.0mph / C / 15 psf**

Equipment Type

Module	**Mission Solar MSE395SX9R**
Inverter	**SolarEdge Technologies Ltd. SE7600H-US [240V]**
Battery	**--**

Summary

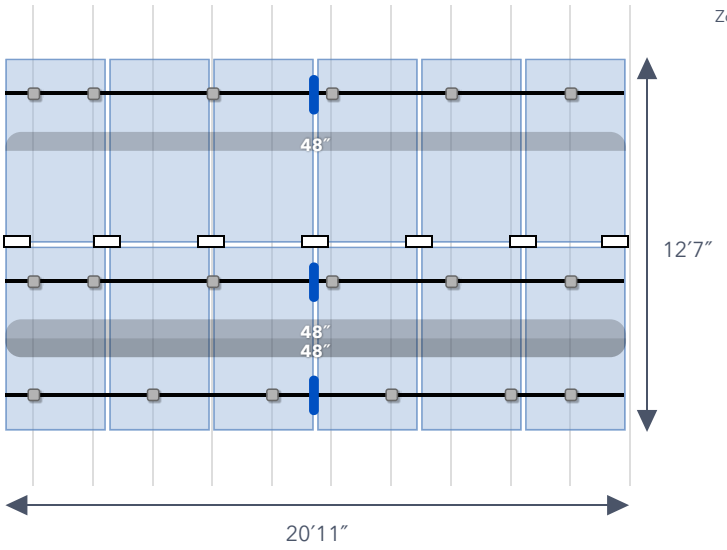
Total modules	**12**
Total watts	**4740 W**
Total Attachments	**18**

Location preview

Arrays

Array 1	Roof Type: **Hip** Roof Material: **Comp**	SkipRail: **Yes** Roof Slope: **45°**

Array 1 SkipRail



Zones:

1

2

3

Details

Roof Type: **45° Comp Hip**

Rafter Spacing: **24.0"**

SkipRail: **Yes**

Use Scrap Rail: **Yes**

Hidden End Clamp: **Yes**

Attachment Type: **Instaflash**

Rail: **5 x 14ft**

Layout

Panels: **12**

Panel Size: **75.08″ x 41.5″ x 33mm**

Design Notes

System Weight: **661.3 lbs**

Attachments: **18**

System Weight/Attachment: **36.7 lbs**

Total Area: **260 sqft**

Engineering

Max span values for SkipRail system are displayed on the diagram

Maximum Rail Cantilever

Attachment Span	Max Rail Cantilever
72"	**28"**
64"	**25"**
48"	**19"**
32"	**12"**
24"	**9"**
Other	**40% of attachment span**

Bill of Materials

Part Info	Array 1	Spares	Total QTY
PSR-B168 | Pegasus Rail - Black 168"	5	-	5
PSR-SPLS | Pegasus - Bonded Structural Splice	3	-	3
PSR-MCB | Pegasus - Multi-Clamp - Mid/End 30-40mm - Full Black	15	-	15
PSR-HEC | Pegasus - Hidden End Clamp	6	-	6
PSR-SRC | Pegasus - SkipRail Clamp	7	-	7
PSR-MLP | Pegasus - MLPE Mount	12	-	12
PSR-LUG | Pegasus - Ground Lug	1	-	1
PSR-WMC | Pegasus - Wire Management Clip	18	-	18
PSR-CBG | Pegasus - Cable Grip	2	-	2
PSR-CAP | Pegasus - End Cap	6	-	6
PIF-RBDT | Pegasus InstaFlash - Black - Dovetail T-bolt	18	-	18

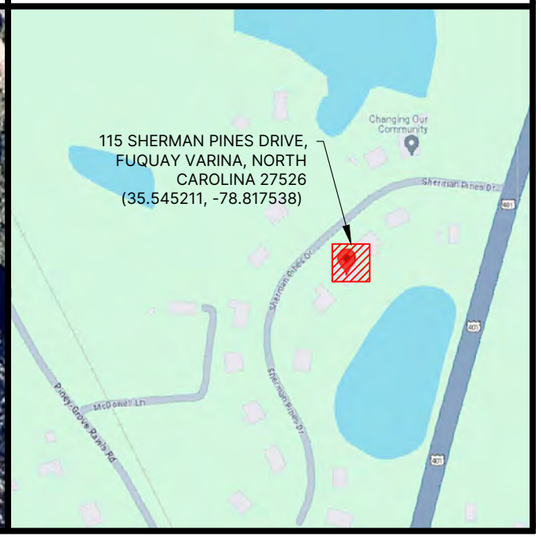
NEW PV ROOFTOP & BATTERY SYSTEM DESIGN

12 MODULES - 4.740 KW DC & 11.500 KW AC SYSTEM SIZE

VAN COATS RESIDENCE - 115 SHERMAN PINES DRIVE, FUQUAY VARINA, NORTH CAROLINA 27526

AERIAL MAP

VICINITY MAP



SHEET INDEX

SCOPE OF WORK

INSTALL 4.740 KW DC ROOF MOUNTED
PV SYSTEM UTILIZING
(12) MISSION SOLAR PERC 66 MSE395SX9R
(4) TESLA OPTIMIZERS
(1) TESLA BACKUP GATEWAY
(2) TESLA POWERWALL 3
(1) 200A UTILITY AC DISCONNECT
PEGASUS RAIL WITH SKIPRAIL CLAMP RACKING WITH
PEGASUS INSTAFLASH WITH SKIPRAIL MOUNTS
EXISTING 200 A BUSBAR WITH 200 A MAIN BREAKER
INTERCONNECTION METHOD: LOAD SIDE BREAKER, WHOLE HOME BACKUP
ROOF TYPE: COMP SHINGLE
NUMBER OF STORIES: 1

CONTRACTOR

BYLD BETTER
1213 W MOOREHEAD STREET SUITE 500
CHARLOTTE, NC 28208

CODE REFERENCE

AHJ: HARNETT COUNTY

2017 NATIONAL ELECTRIC CODE
2018 NORTH CAROLINA BUILDING CODE
2018 NORTH CAROLINA RESIDENTIAL CODE

DESIGN CRITERIA

ASCE 7-10 WIND SPEED: 120 MPH
EXPOSURE CATEGORY C
GROUND SNOW LOAD: 15 PSF

GENERAL NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND REVIEW ALL MANUFACTURER INSTALLATION DOCUMENTS PRIOR TO INITIATING CONSTRUCTION.
2. ALL COMPONENTS SHALL BE NEW AND LISTED BY A RECOGNIZED ELECTRICAL TESTING LABORATORY AND LISTED FOR THEIR SPECIFIC APPLICATION.
3. OUTDOOR EQUIPMENT SHALL BE NEMA 3R RATED OR BETTER.
4. ACCESS TO ELECTRICAL COMPONENTS OVER 150 VOLTS TO GROUND SHALL BE RESTRICTED TO QUALIFIED PERSONNEL.
5. CONTRACTOR SHALL OBTAIN ELECTRICAL PERMITS PRIOR TO INSTALLATION AND SHALL COORDINATE ALL INSPECTIONS, TESTING COMMISSIONING, AND ACCEPTANCE WITH THE CLIENT, UTILITY CO. AND CITY INSPECTORS AS NEEDED.
6. EACH MODULE TO BE GROUNDED USING THE SUPPLIED CONNECTION POINT PER THE MANUFACTURER'S REQUIREMENTS. ALL PV MODULES, EQUIPMENT, AND METALLIC COMPONENTS ARE TO BE BONDED. IF THE EXISTING GROUNDING ELECTRODE SYSTEM CANNOT BE VERIFIED OR IS ONLY METALLIC WATER PIPING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE.
7. DC CONDUCTORS SHALL BE RUN IN EMT AND/OR MC (METAL CLAD CABLE) AND SHALL BE LABELED. ALL DC CONDUCTORS RUN INSIDE OF THE STRUCTURE SHALL BE INSTALLED A MINIMUM OF 18" BELOW THE ROOF DECK.
8. EXPOSED NON-CURRENT CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH APPLICABLE NEC.
9. CONFIRM LINE SIDE VOLTAGE AT THE ELECTRIC UTILITY SERVICE PRIOR TO CONNECTING INVERTER. VERIFY SERVICE VOLTAGE IS WITHIN INVERTER VOLTAGE OPERATIONAL RANGE.
10. ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT EXPANSION JOINTS AND ANCHOR CONDUIT RUNS AS REQUIRED PER CODE.
11. 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 HELD OFF OF THE ROOF SURFACE.
12. ALL ROOF PENETRATIONS MUST BE SEALED OR FLASHED.
13. EQUIPMENT MAY BE SUBSTITUTED FOR SIMILAR EQUIPMENT BASED ON AVAILABILITY. SUBSTITUTED EQUIPMENT SHALL COMPLY WITH DESIGN CRITERIA.
14. REMOVAL OF AN INTERACTIVE INVERTER OR OTHER EQUIPMENT SHALL NOT DISCONNECT THE BONDING CONNECTION BETWEEN THE GROUNDING ELECTRODE CONDUCTOR AND THE PHOTOVOLTAIC SOURCE AND/OR OUTPUT CIRCUIT GROUNDED CONDUCTORS.
15. WHENEVER A DISCREPANCY IN THE QUALITY OF EQUIPMENT ARISES ON THE DRAWING OR SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL MATERIAL AND SERVICES REQUIRED BY THE STRICTEST CONDITIONS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS TO ENSURE COMPLETE COMPLIANCE AND LONGEVITY OF THE OPERABLE SYSTEM REQUIRED BY THE ENGINEERS.

ENGINEERED PLANS COMPLETED BY ENGINEERS IN THE USA

DESIGN ENGINEER

WYSSLING CONSULTING
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76 N. MEADOWBROOK DRIVE
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swyssling@wysslingconsulting.com
(201) 874-3483

NORTH CAROLINA COA NO. P-2308

SOLAR COMPANY/CLIENT

BYLD BETTER

BYLD BETTER
1213 W MOOREHEAD STREET SUITE 500
CHARLOTTE, NC 28208

COATS, VAN
115 SHERMAN PINES DRIVE
FUQUAY-VARINA, NC 27526
4.740 KW DC 11.500 KW AC

REVISIONS

NO	DATE:	COMMENTS
1	05/03/2024	POWERWALL 3
2	05/14/2024	ELD & PANEL LAYOUT

COVER SHEET

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Signed 5/14/2024

SCOTT E. WYSSLING, P.E.

NORTH CAROLINA LICENSE NO. 46546

DATE:	5/14/2024
DRAWN BY:	FBM
REVIEWED BY:	ATF

PV-1

SITE PLAN LEGEND

UTILITY METER	UM
MAIN SERVICE PANEL	MSP
GAS METER	GM
AC DISCONNECT	AC
DC DISCONNECT	DC
AC COMBINER PANEL	COM
INVERTER	INV
IQ SYSTEM CONTROLLER	IQ
BACKUP INTERFACE	BI
BATTERY	B
PRODUCTION METER	PM
SUBPANEL	SUB
JUNCTION BOX	JB
FIRE PATHWAY	
SATELLITE DISH	
PROPERTY LINE	
ATTIC RUN CONDUIT	
EXTERNAL CONDUIT	
CHIMNEY	
ROOF OBSTRUCTION (TYP.)	
ROOF VENT (TYP.)	

UTILITY: DUKE

MODULE SPEC AND ROOF INFO:

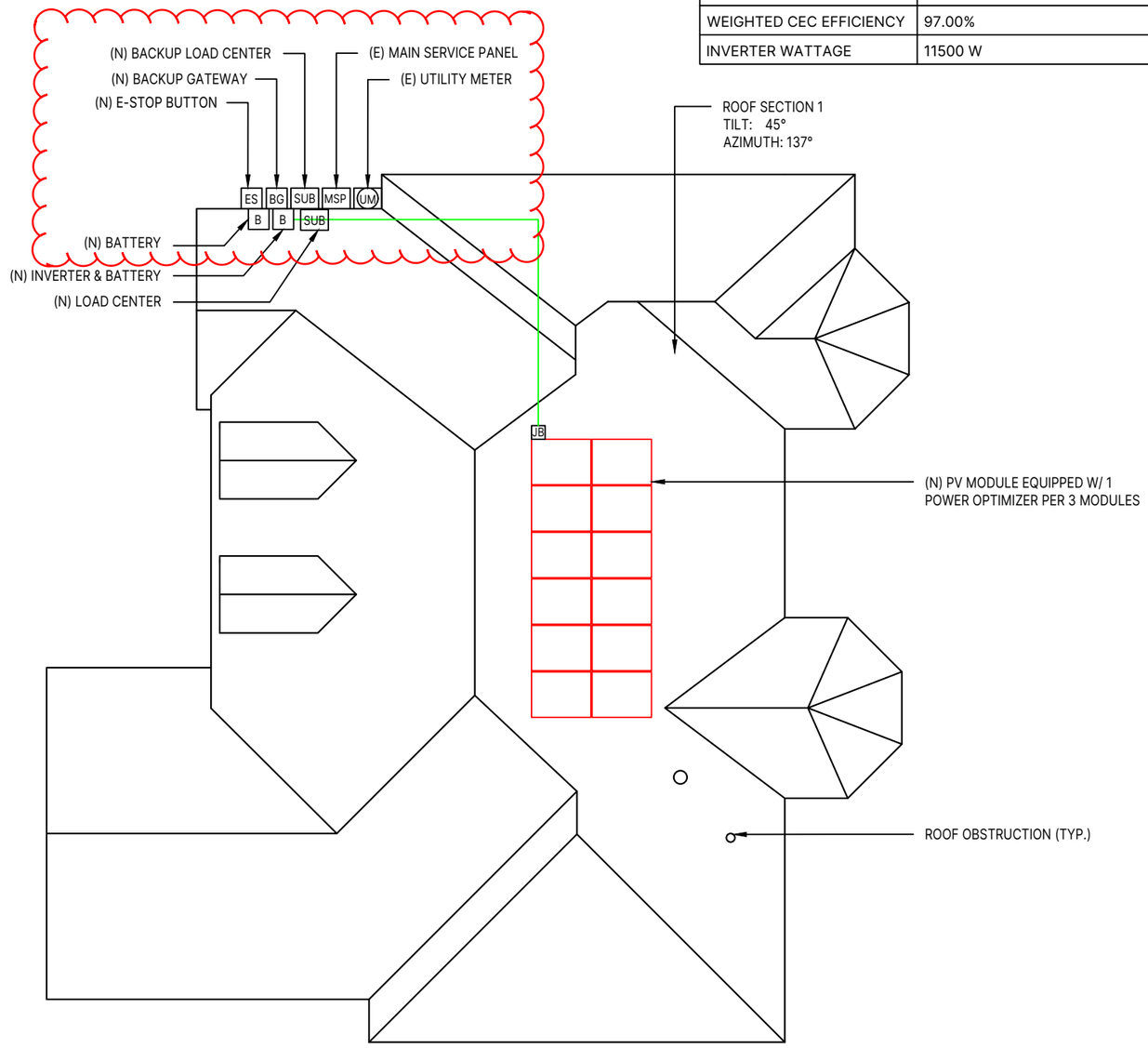
PV MODULE TYPE - MISSION SOLAR PERC 66 MSE395SX9R (395W)
WEIGHT OF INDIVIDUAL PANEL - 48.50 LBS
INDIVIDUAL SOLAR PANEL AREA - 21.64 SQ FT
ROOF AREA - 3356 SQ FT
ROOF COVERAGE - 7.7%

EQUIPMENT LIST:

(N) (12) MISSION SOLAR PERC 66 MSE395SX9R
(N) (4) TESLA OPTIMIZERS
(1) TESLA BACKUP GATEWAY
(N) (2) TESLA POWERWALL 3
(N) (1) 200A UTILITY AC DISCONNECT
PEGASUS RAIL WITH SKIPRAIL CLAMP RACKING WITH
PEGASUS INSTAFLASH WITH SKIPRAIL MOUNTS

SITE PLAN NOTES:

1. VERIFY ALL OBSTRUCTIONS AND DIMENSIONS IN THE FIELD.
2. PROVIDE RAIL SPLICES AS REQUIRED BY MANUFACTURER'S GUIDELINES.
3. NO SIGNIFICANT SHADING WILL RESULT FROM EXISTING ROOF OBSTRUCTIONS.
4. PV MODULES CANNOT BE INSTALLED OVER OR BLOCK ATTIC, PLUMBING, FURNACE OR WATER HEATER VENTS
5. AC DISCONNECT SHALL BE VISIBLE-OPEN TYPE, LOCKABLE AND READILY ACCESSIBLE. TO BE WITHIN 10' OF THE UTILITY METER
6. 3/4" OR GREATER CONDUIT RUN (7/8" ABOVE ROOF SURFACE)
7. ROOF ACCESS POINTS 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.



INVERTER	
MANUFACTURER/ MODEL	TESLA POWERWALL 3
MAX AC OUTPUT	48 A
AC OUTPUT VOLTAGE	240 V
MAX DC INPUT VOLTAGE	600 V
MAX INPUT CURRENT	13 A
WEIGHTED CEC EFFICIENCY	97.00%
INVERTER WATTAGE	11500 W

SCALE: 3/32" = 1'-0"

ENGINEERED PLANS COMPLETED BY ENGINEERS IN THE USA

DESIGN ENGINEER
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4.740 KW DC 11.500 KW AC

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NORTH CAROLINA PROFESSIONAL SEAL 046546 ENGINEER SCOTT E. WYSSLING

Signed 5/14/2024

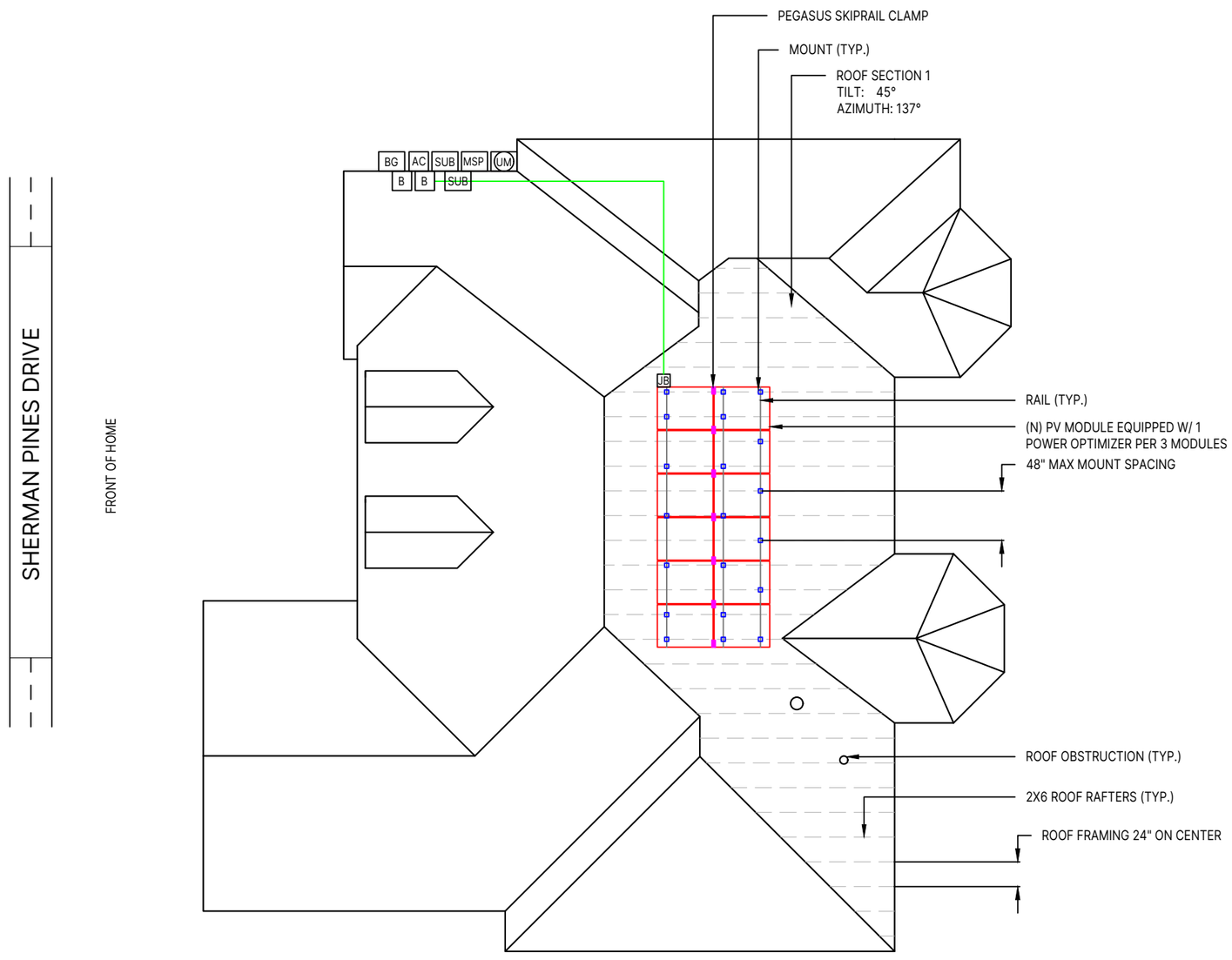
SCOTT E. WYSSLING, P.E.
NORTH CAROLINA LICENSE NO. 46546

DATE:	5/14/2024
DRAWN BY:	FBM
REVIEWED BY:	ATF

PV-2

MOUNTING PLAN LEGEND

UTILITY METER	UM
MAIN SERVICE PANEL	MSP
GAS METER	GM
AC DISCONNECT	AC
DC DISCONNECT	DC
AC COMBINER PANEL	COM
INVERTER	INV
IQ SYSTEM CONTROLLER	IQ
BACKUP INTERFACE	BI
BATTERY	B
PRODUCTION METER	PM
SUBPANEL	SUB
JUNCTION BOX	JB
SATELLITE DISH	
PROPERTY LINE	
ATTIC RUN CONDUIT	
EXTERNAL CONDUIT	
RAIL	
MOUNT	
ROOF FRAMING	
CHIMNEY	
ROOF OBSTRUCTION (TYP.)	
ROOF VENT (TYP.)	



MOUNTING PLAN NOTES:

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2. PROVIDE RAIL SPLICES AS REQUIRED BY MANUFACTURER'S GUIDELINES.
3. NO SIGNIFICANT SHADING WILL RESULT FROM EXISTING ROOF OBSTRUCTIONS.
4. PV MODULES CANNOT BE INSTALLED OVER OR BLOCK ATTIC, PLUMBING, FURNACE OR WATER HEATER VENTS
5. ACTUAL ROOF CONDITIONS AND ROOF FRAMING (OR SEAM)LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S)INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

MOUNT QUANTITY:

1. (20) PEGASUS INSTAFLASH WITH SKIPRAIL ATTACHMENTS
DISTRIBUTED LOAD - (ARRAY) WEIGHT/AREA = 2.24 lbs/ ft²
TOTAL WEIGHT OF SYSTEM - 582 lbs

	TILT	AZIMUTH	# OF MODULES	ROOF FRAMING	FRAMING SPACING	ROOF TYPE	MAX MOUNT SPACING	MOUNT TYPE
ROOF SECTION 1	45°	137°	12	2X6 - RAFTERS	24"	COMP SHINGLE	48"	PEGASUS INSTAFLASH WITH SKIPRAIL

SCALE: 3/32" = 1'-0"

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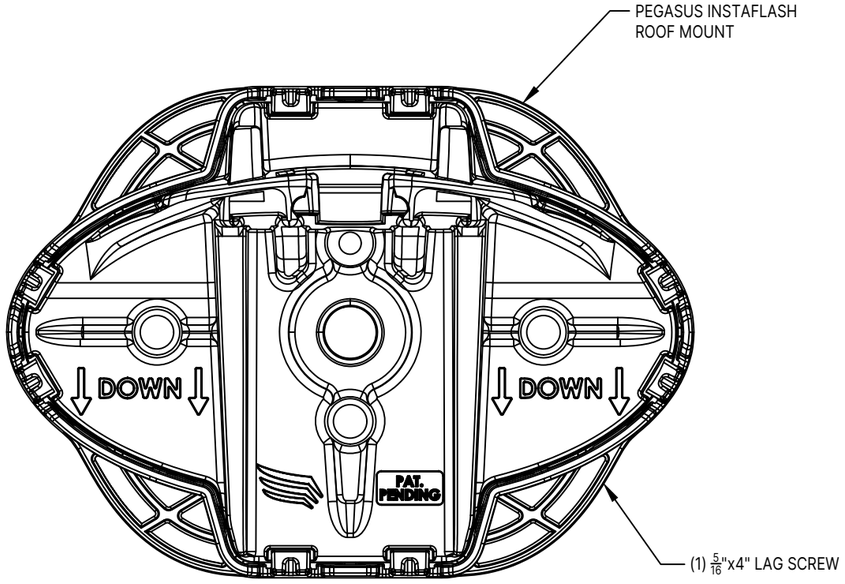
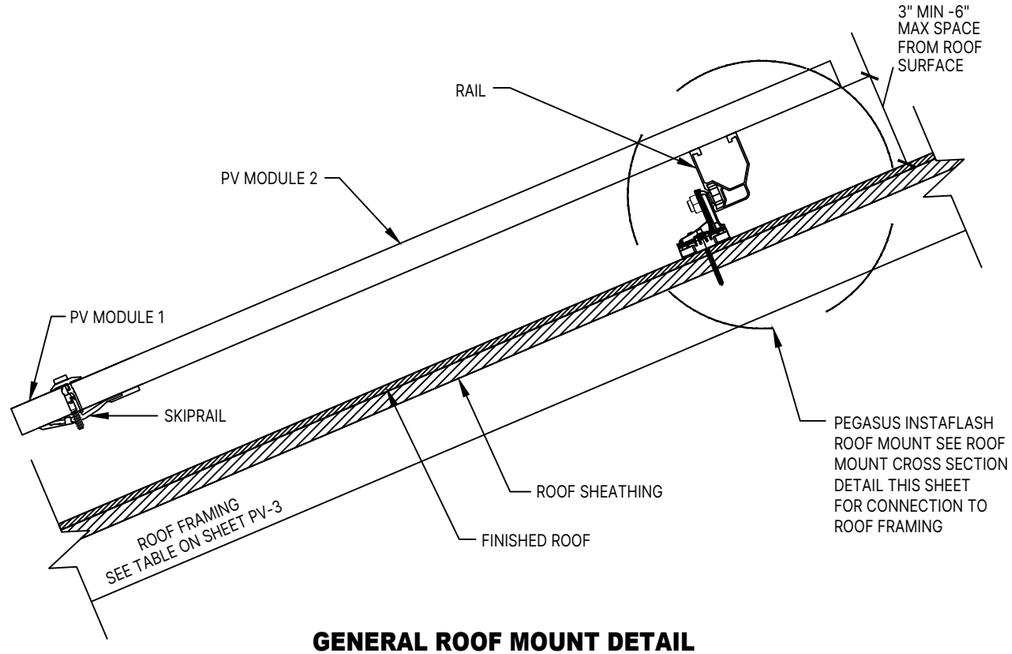
PV-3



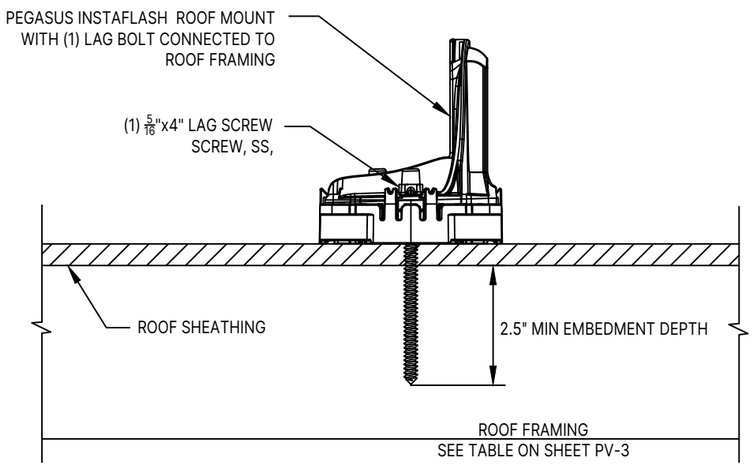
ROOF MOUNT PLAN VIEW DETAIL

NTS



GENERAL ROOF MOUNT DETAIL

NTS



ROOF MOUNT CROSS SECTION DETAIL

NTS

MOUNT INSTALLATION NOTES

1. CONTRACTOR IS TO FOLLOW THE PLAN FOR INSTALLING ROOF MOUNTS.
2. IF THE CONTRACTOR IDENTIFIES THE ROOF FRAMING IS DIFFERENT FROM WHAT IS IDENTIFIED ON THIS PLAN, CONTRACTOR SHALL NOTIFY THE ENGINEER BEFORE PROCEEDING WITH INSTALLATION.
3. CONTRACTOR IS TO LOCATE THE ROOF FRAMING BY UTILIZING A HAMMER.
4. WHEN THE ROOF FRAMING IS LOCATED, CONTRACTOR IS TO DRILL A PILOT HOLE TO CONFIRM CENTER OF ROOF FRAMING. IF THE ROOF FRAMING IS MISSED, AND A NEW PILOT HOLE IS TO BE DRILLED, CONTRACTOR TO UTILIZE SILICON/CAULK TO SEAL THE ORIGINAL PILOT HOLE.
5. DIRECT TO DECK MOUNTS ARE ONLY TO BE USED WITH APPROVED DESIGN BY THE ENGINEER. DIRECT TO DECK MOUNT INSTALLATION IS NOT A SUBSTITUTION FOR LAG SCREWS INTO ROOF FRAMING.
6. CONTRACTOR TO FOLLOW MANUFACTURERS SPECIFICATIONS FOR INSTALLATION AND REQUIRED SCREWS.

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STRUCTURAL DETAILS

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S-1

CONDUCTOR SCHEDULE

	CONDUCTORS				GROUND		CONDUIT
TAG ID	WIRES IN CONDUIT	WIRE AWG	TYPE, MATERIAL	AMPACITY	SIZE	TYPE, MATERIAL	
1	3	#10 AWG	PV CABLE	30	#6 AWG	BARE, CU	
2	3	#10 AWG	THWN-2, CU	30	#10 AWG	THHW, CU	3/4" CONDUIT
3	4	#6 AWG	THWN-2, CU	65	#10 AWG	THHW, CU	3/4" CONDUIT
4	4	#4/0 AWG	THWN-2, CU	230	#2/0 AWG	THHW, CU	2" CONDUIT

EQUIPMENT LIST:

(N) (12) MISSION SOLAR PERC 66 MSE395SX9R
(N) (4) TESLA OPTIMIZERS
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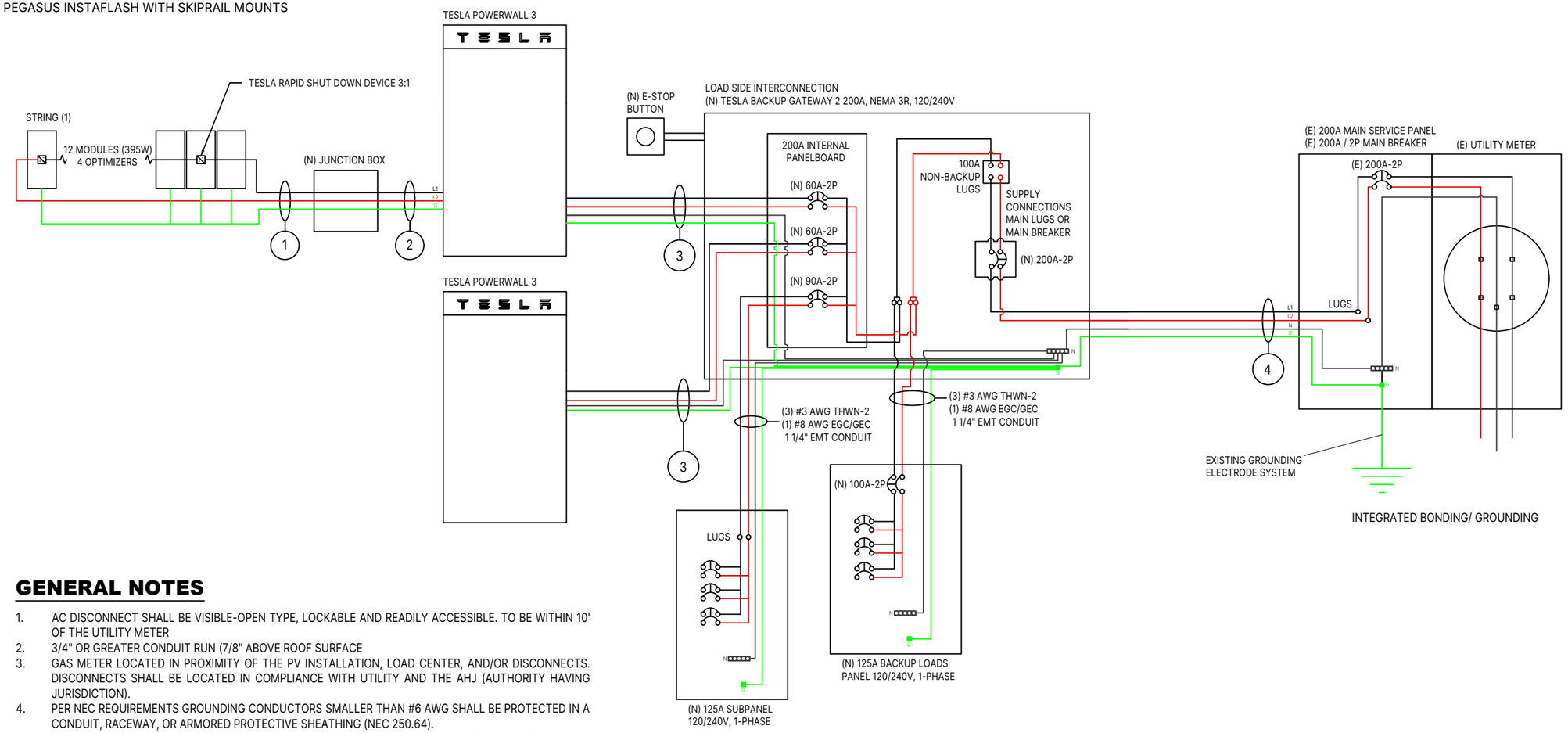

GENERAL NOTES

1. AC DISCONNECT SHALL BE VISIBLE-OPEN TYPE, LOCKABLE AND READILY ACCESSIBLE. TO BE WITHIN 10' OF THE UTILITY METER
2. 3/4" OR GREATER CONDUIT RUN (7/8" ABOVE ROOF SURFACE
3. GAS METER LOCATED IN PROXIMITY OF THE PV INSTALLATION, LOAD CENTER, AND/OR DISCONNECTS. DISCONNECTS SHALL BE LOCATED IN COMPLIANCE WITH UTILITY AND THE AHJ (AUTHORITY HAVING JURISDICTION).
4. PER NEC REQUIREMENTS GROUNDING CONDUCTORS SMALLER THAN #6 AWG SHALL BE PROTECTED IN A CONDUIT, RACEWAY, OR ARMORED PROTECTIVE SHEATHING (NEC 250.64).
5. THE WORKING CLEARANCES AROUND THE EXISTING ELECTRICAL EQUIPMENT AS WELL AS THE NEW ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.
6. ANY CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT. (NEC300.6 C1, 310.8 D).
7. ROOM FOR EQUIPMENT WITHIN 5 FEET FROM MSP.

ENGINEERED PLANS COMPLETED BY ENGINEERS IN THE USA

DESIGN ENGINEER
WYSSLING CONSULTING
76 N. MEADOWBROOK DRIVE
ALPINE, UTAH 84004
swyssling@wysslingconsulting.com
(201) 874-3483
NORTH CAROLINA COA NO. P-2308

SOLAR COMPANY/CLIENT

BYLD BETTER
1213 W MOOREHEAD STREET SUITE 500
CHARLOTTE, NC 28208

COATS, VAN
115 SHERMAN PINES DRIVE
FUQUAY-VARINA, NC 27526
4.740 KW DC 11.500 KW AC

REVISIONS

NO	DATE:	COMMENTS
1	05/03/2024	POWERWALL 3
2	05/14/2024	ELD & PANEL LAYOUT

ELECTRICAL DIAGRAM

DATE:	5/14/2024
DRAWN BY:	FBM
REVIEWED BY:	ATF

E-1

INTERCONNECTION CALCULATIONS

ITEM	UNIT	PANEL
BUS RATING	AMPS	200A
MAIN OCPD	AMPS	200A
ALLOWED PV PER NEC	AMPS	40A

CONDUCTOR CALCULATIONS

TAG 1 (SEE E-1)	TAG 2 (SEE E-1)	TAG 3 (SEE E-1)	TAG 4 (SEE E-1)
UNDER MODULES, NOT IN CONDUIT	#10 AWG MAX CURRENT = 30A	#6 AWG MAX CURRENT = 65A	#4/0 AWG MAX CURRENT = 230A
#10 AWG MAX CURRENT = 30A			
		TESLA POWERWALL 3 MAX OUTPUT = 48 A	TESLA POWERWALL 3 MAX OUTPUT = 48 A
TESLA POWERWALL 3 MAX CIRCUIT CURRENT	TESLA POWERWALL 3 MAX CIRCUIT CURRENT	48 A * 1.25 A = 60	48 A * 1.25 A = 60
15 A FOR CIRCUIT 2	15 A FOR CIRCUIT 2	RECOMMENDED OCPD = 60	RECOMMENDED OCPD = 60
			48 A * 1.25 A = 60 + 60
			RECOMMENDED OCPD = 120

EQUIPMENT INFORMATION

MODULE	
MANUFACTURER/ MODEL	MISSION SOLAR PERC 66 MSE395SX9R
PMAX	395 W
VOC	45.18 V
VMP	36.99 V
IMP	10.68 A
ISC	11.24 A
TEMPERATURE COOEFFICIENT OF PMAX	-0.367 %/°C
TEMPERATURE COEFFICIENT OF VOC	-0.259 %/°C

INVERTER	
MANUFACTURER/ MODEL	TESLA POWERWALL 3
MAX AC OUTPUT	48 A
AC OUTPUT VOLTAGE	240 V
MAX DC INPUT VOLTAGE	600 V
MAX INPUT CURRENT	13 A
WEIGHTED CEC EFFICIENCY	97.00%
INVERTER WATTAGE	11500 W

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EQUIPMENT INFORMATION

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E-2

PHOTOVOLTAIC AC DISCONNECT
MAXIMUM AC OPERATING CURRENT: 96
NOMINAL OPERATING AC VOLTAGE: 240

AT POINT OF INTERCONNECTION, MARKED AT DISCONNECTING MEANS [NEC 690.54]

⚠WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHTOVOLTAIC SYSTEM

AT POINT OF INTERCONNECTION. [NEC 705.12(C), 690.59]

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

EACH PV SYSTEM DISCONNECTING MEANS SHALL PLAINLY INDICATE WHETHER IN THE OPEN (OFF) OR CLOSED (ON) POSITION AND BE PERMANENTLY MARKED [NEC. 690.13(B)]

PHOTOVOLTAIC
DC DISCONNECT

AT EACH DC DISCONNECTING MEANS [NEC 690.13(B)]

PHOTOVOLTAIC
AC DISCONNECT

AT EACH AC DISCONNECTING MEANS [NEC 690.13(B)]

WARNING: PHOTOVOLTAIC POWER SOURCE

AT EXPOSED RACEWAYS, CABLE TRAYS, AND OTHER WIRING METHODS; SPACED AT MAXIMUM 10FT SECTION OR WHERE SEPARATED BY ENCLOSURES, WALLS, PARTITIONS, CEILINGS, OR FLOORS [NEC 690.31(D)(2)]

⚠WARNING
ELECTRICAL SHOCK HAZARD
DO NO TOUCH TERMINALS
TERMINALS ON BOTH LINE AND LOAD SIDES
MAY BE ENERGIZED IN THE OPEN POSITION

AT BUILDING OR STRUCTURE MAIN DISCONNECTING MEANS. [NEC 690.12(E), NEC 690.13(B)]

⚠WARNING
THE EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES, EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE, SHALL NOT EXCEED AMPACITY OF BUSBAR

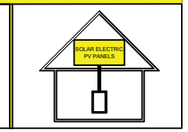
PERMANENT WARNING LABELS SHALL BE APPLIED TO DISTRIBUTION EQUIPMENT

⚠WARNING
INVERTER OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE

A PERMANENT WARNING LABEL SHALL BE APPLIED TO THE DISTRIBUTION EQUIPMENT ADJACENT TO THE BACK-FED BREAKER FROM THE INVERTER.
[NEC 705.12(B)(3)(2)]

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



FOR PV SYSTEMS THAT SHUT DOWN THE ARRAY AND CONDUCTORS LEAVING THE ARRAY: THE TITLE "SOLAR PV SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN" SHALL UTILIZE CAPITALIZED CHARACTERS WITH A MINIMUM HEIGHT OF 3/8 IN. IN BLACK ON YELLOW BACKGROUND, AND THE REMAINING CHARACTERS SHALL BE CAPITALIZED WITH A MINIMUM HEIGHT OF 3/16 IN. IN BLACK ON WHITE BACKGROUND. [NEC 690.56(C)(1)(A)]

RAPID SHUTDOWN SWITCH FOR SOLAR PV

A RAPID SHUTDOWN SWITCH SHALL HAVE A LABEL LOCATED ON OR NO MORE THAN 3 FT FROM THE SWITCH THAT INCLUDES THIS WORDING. THE LABEL SHALL BE REFLECTIVE, WITH ALL LETTERS CAPITALIZED AND HAVING A MINIMUM HEIGHT OF 3/8 IN., IN WHITE ON RED BACKGROUND.[NEC 690.56(C)(2)]

CAUTION
TRI POWER SOURCE SECOND SOURCE IS BATTERY THIRD SOURCE IS PHOTOVOLTAIC SYSTEM

AT EXTERNAL LOCATION NEAR METER AND UTILITY SERVICE DISCONNECT

ENERGY STORAGE SYSTEM ON SITE LOCATED INSIDE

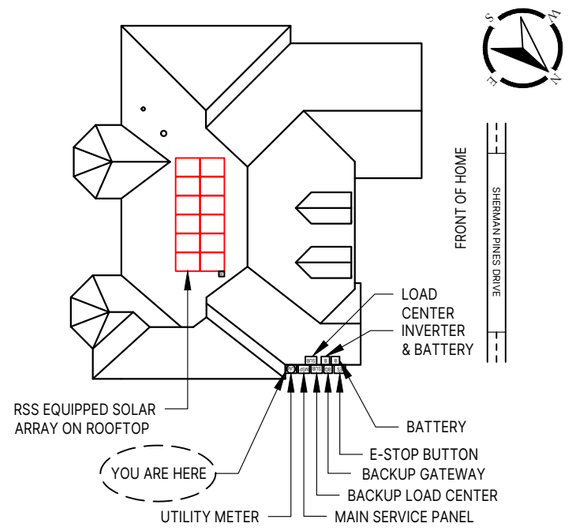
PLACE LABEL EXTERNAL AT MAIN SERVICE DISCONNECT

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

PLACE ESS LABELS AT BATTERY AND/OR CONTROLLER

CAUTION

MULTIPLE SOURCES OF POWER



115 SHERMAN PINES DRIVE, FUQUAY VARINA, NORTH CAROLINA 27526

LABEL LOCATION: MSP CODE REF: NEC 2017 - 705.10

LABELING NOTES:

1. LABELING REQUIREMENTS BASED ON THE 2020 NATIONAL ELECTRIC CODE, OSHA STANDARD 19010.145, ANSI Z535.
2. MATERIAL BASED ON THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
3. LABELS TO BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED [NEC 110.21]
4. LABELS TO BE A MINIMUM LETTER HEIGHT OF 3/8", WHITE ON RED BACKGROUND; REFLECTIVE, AND PERMANENTLY AFFIXED [IFC 605.11.1.1]

ENGINEERED PLANS COMPLETED BY ENGINEERS IN THE USA

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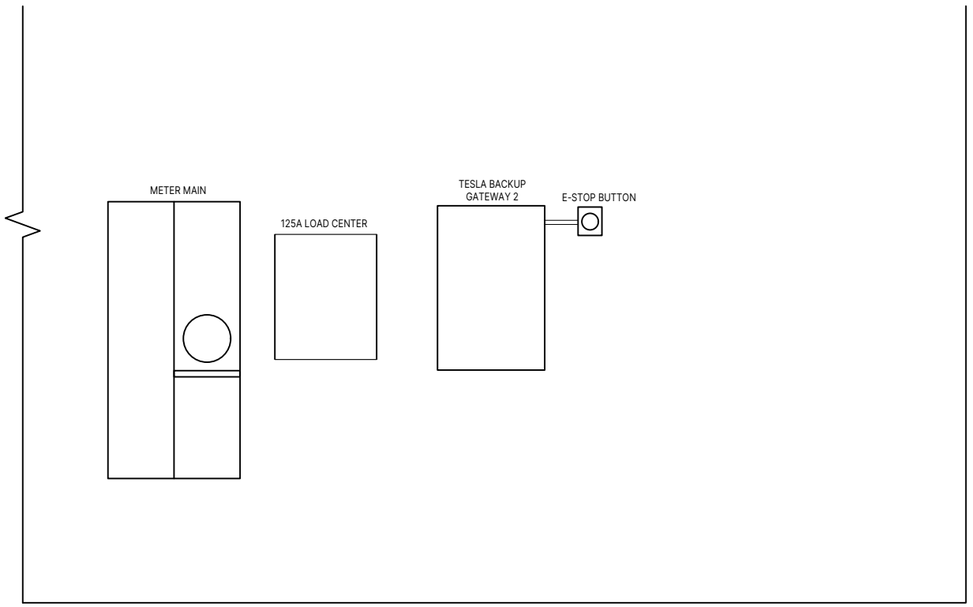
PV LABELS

DATE:	5/14/2024
DRAWN BY:	FBM
REVIEWED BY:	ATF

E-3

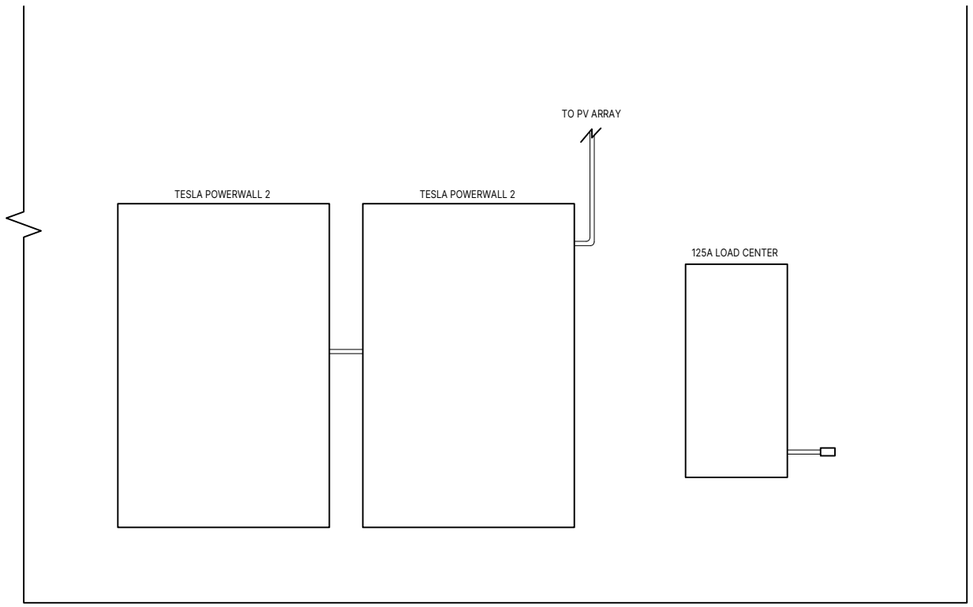
NOTES

1. REQUIPMENT SHALL BE A MINIMUM OF 3' X 3' ACCESSIBLE WORKSPACE, FLAT, AND CLEAR OF DEBRIS AND OBSTACLES (TREES, BUSHES, PLANTS, ETC.)



NORTHEAST EXTERIOR ELEVATION DETAIL

SCALE:NTS



INTERIOR ELEVATION DETAIL

SCALE:NTS

ENGINEERED PLANS COMPLETED BY ENGINEERS IN THE USA 🇺🇸

DESIGN ENGINEER

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ELEVATION DETAIL

DATE:	5/14/2024
DRAWN BY:	FBM
REVIEWED BY:	ATF

E-4

ENGINEERED PLANS COMPLETED BY ENGINEERS IN THE USA

DESIGN ENGINEER

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REVISIONS

NO	DATE:	COMMENTS
1	05/03/2024	POWERWALL 3
2	05/14/2024	ELD & PANEL LAYOUT

SITE PHOTOS

DATE:	5/14/2024
DRAWN BY:	FBM
REVIEWED BY:	ATF

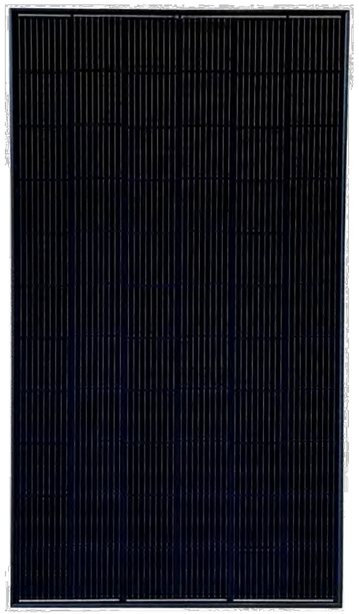
PV-4

MSE PERC 66

MISSION SOLAR ENERGY

395W Positive Power Tolerance

Class leading power output -0 to +3%



True American Quality
True American Brand

Mission Solar Energy is headquartered in San Antonio, Texas where we manufacture our modules. We produce American, high-quality solar modules ensuring the highest-in-class power output and best-in-class reliability. Our product line is tailored for residential, commercial and utility applications. Every Mission Solar Energy solar module is certified and surpasses industry standard regulations, proving excellent performance over the long term.

Demand the best. Demand Mission Solar Energy.

Certified Reliability
- Tested to UL 61730 & IEC Standards
- PID resistant
- Resistance to salt mist corrosion

Advanced Technology
- 9 Busbar
- Passivated Emitter Rear Contact
- Ideal for all applications

Extreme Weather Resilience
- Up to 5,400 Pa front load & 3,600 Pa back load
- Tested load to UL 61730
- 40 mm frame

BAA Compliant for Government Projects
- Buy American Act
- American Recovery & Reinvestment Act

MODULES ASSEMBLED AND ENGINEERED IN THE USA OF U.S. AND WORLD PARTS

25 YEAR FRAME-TO-FRAME WARRANTY

FRAME-TO-FRAME WARRANTY

Degradation guaranteed not to exceed 2% in year one and 0.58% annually from years two to 30 with 84.08% capacity guaranteed in year 25.
For more information, visit www.missionsolar.com/warranty

CERTIFICATIONS

CEC TÜV SÜD c UL us LISTED

UL 61730 / IEC 61215 / IEC 61730 / IEC 61701

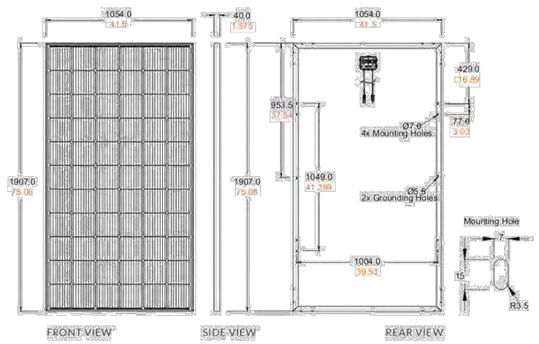
If you have questions or concerns about certification of our products in your area, please contact Mission Solar Energy.

Class Leading
390-400W

MSE PERC 66

BASIC DIMENSIONS

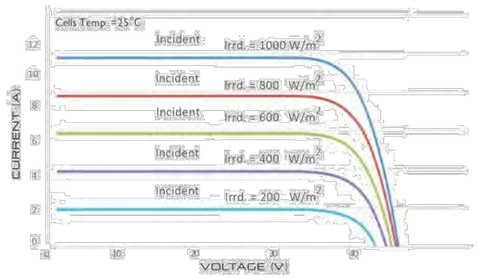
[UNITS: MM/IN]



CURRENT-VOLTAGE CURVE

MSE385SX9R: 385WP, 66 CELL SOLAR MODULE

Current-voltage characteristics with dependence on irradiance and module temperature



CERTIFICATIONS AND TESTS

IEC	61215, 61730, 61701
UL	61730

TÜV SÜD CEC c UL us LISTED

Mission Solar Energy
8303 S. New Braunfels Ave., San Antonio, Texas 78235
www.missionsolar.com | info@missionsolar.com

Mission Solar Energy reserves the right to make specification changes without notice.

MSE PERC 66

ELECTRICAL SPECIFICATION

PRODUCT TYPE	MSE xxx SX9R (xxx = P_{max})				
Power Output	P_{max}	W_p	390	395	400
Module Efficiency		%	19.4	19.7	19.9
Tolerance		%	0/+3	0/+3	0/+3
Short Circuit Current	I_{sc}	A	11.19	11.24	11.31
Open Circuit Voltage	V_{OC}	V	45.04	45.18	45.33
Rated Current	I_{mp}	A	10.63	10.68	10.79
Rated Voltage	V_{mp}	V	36.68	36.99	37.07
Fuse Rating		A	20	20	20
System Voltage		V	1,000	1,000	1,000

TEMPERATURE COEFFICIENTS

Normal Operating Cell Temperature (NOCT)	43.75°C (±3.7%)
Temperature Coefficient of Pmax	-0.367%/°C
Temperature Coefficient of Voc	-0.259%/°C
Temperature Coefficient of Isc	0.033%/°C

OPERATING CONDITIONS

Maximum System Voltage	1,000Vdc
Operating Temperature Range	-40°F to 185°F (-40°C to +85°C)
Maximum Series Fuse Rating	20A
Fire Safety Classification	Type 1*
Front & Back Load (UL Standard)	Up to 5,400 Pa front and 3,600 Pa back load, Tested to UL 61730
Hail Safety Impact Velocity	25mm at 23 m/s

*Mission Solar Energy uses quality sourced materials that result in a Type 1 fire rating. Please note, the Fire Class Rating is designated for the fully installed PV system, which includes, but is not limited to, the module, the type of mounting used, pitch and roof composition.

MECHANICAL DATA

Solar Cells	P-type mono-crystalline silicon
Cell Orientation	66 cells (6x11)
Module Dimension	1,907mm x 1,054mm x 40mm
Weight	48.5 lbs. (22 kg)
Front Glass	3.2mm tempered, low-iron, anti-reflective
Frame	40mm Anodized
Encapsulant	Ethylene vinyl acetate (EVA)
Junction Box	Protection class IP67 with 3 bypass-diodes
Cable	1.2m, Wire 4mm2 (12AWG)
Connector	Staubli PV-KBT4/6II-UR and PV-KST4/6II-UR; MC4, Renhe 05-8

SHIPPING INFORMATION

Container Feet	Ship To	Pallet	Panels	390W Bin
53'	Most States	30	780	304.20 kW
Double Stack	CA	26	676	263.64 kW

PALLET [26 PANELS]

Weight	Height	Width	Length
1,300 lbs. (572 kg)	47.56 in (120.80 cm)	46 in (116.84 cm)	77 in (195.58 cm)

DESIGN ENGINEER

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MODULE SPEC SHEET

DATE:	5/14/2024
DRAWN BY:	FBM
REVIEWED BY:	ATF

SPECS-1

ENGINEERED PLANS COMPLETED BY ENGINEERS IN THE USA

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

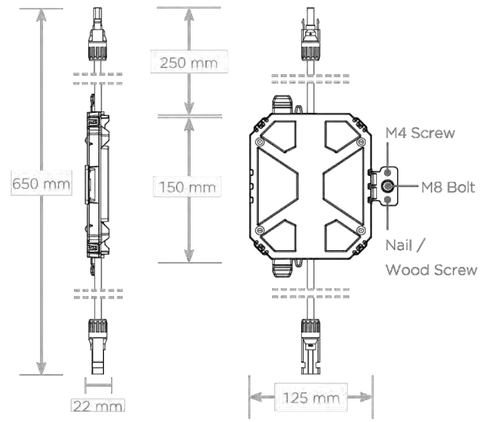
RSD Initiation Method	Loss of AC power
Compatible Equipment	Tesla Solar Inverter

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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RSD SPEC SHEET

DATE:	5/14/2024
DRAWN BY:	FBM
REVIEWED BY:	ATF

ENGINEERED PLANS COMPLETED BY ENGINEERS IN THE USA

SPECS-2

Powerwall 3

Power Everything

—

Powerwall 3 is a fully integrated solar and battery system, designed to accelerate the transition to sustainable energy. Customers can receive whole home backup, cost savings, and energy independence by producing and consuming their own energy while participating in grid services. Once installed, customers can manage their system using the Tesla App to customize system behavior to meet their energy goals.

Powerwall 3 achieves this by supporting up to 20 kW DC of solar and providing 11.5 kW AC of continuous power per unit. It has the ability to start heavy loads up to 150 A LRA, meaning a single unit can support the power needs of most homes. Powerwall 3 is designed for mass production, fast and efficient installations, easy system expansion, and simple connection to any electrical service.

2023

Powerwall 3 Technical Specifications

System Technical Specifications

Model Number	1707000-xx-y
Nominal Grid Voltage (Input & Output)	120/240 VAC
Grid Type	Split phase
Frequency	60 Hz
Overcurrent Protection Device	Configurable up to 60 A
Solar to Battery to Grid Round Trip Efficiency	89% [1,2]
Solar to Grid Efficiency	97% [3]
Supported Islanding Devices	Backup Gateway 2, Backup Switch
Connectivity	Wi-Fi (2.4 and 5 GHz), Dual-port switched Ethernet, Cellular (LTE/4G [4])
Hardware Interface	Dry contact relay, Rapid Shutdown (RSD) certified switch and 2-pin connector, RS-485 for meters
AC Metering	Revenue Grade (+/- 0.5%)
Protections	Integrated arc fault circuit interrupter (AFCI), Isolation Monitor Interrupter (IMI), PV Rapid Shutdown (RSD) using Tesla Mid-Circuit Interrupters
Customer Interface	Tesla Mobile App
Warranty	10 years

Solar Technical Specifications

Maximum Solar STC Input	20 kW
Withstand Voltage	600 V DC
PV DC Input Voltage Range	60 — 550 V DC
PV DC MPPT Voltage Range	150 — 480 V DC
MPPTs	6
Maximum Current per MPPT (I_{mp})	13 A [5]
Maximum Short Circuit Current per MPPT (I_{sc})	15 A [5]

Battery Technical Specifications

Nominal Battery Energy	13.5 kWh AC [2]
Maximum Continuous Discharge Power	11.5 kW AC
Maximum Continuous Charge Power	5 kW AC
Output Power Factor Rating	0 - 1 (Grid Code configurable)
Maximum Continuous Current	48 A
Maximum Output Fault Current	10 kA
Load Start Capability (1 s)	150 A LRA
Power Scalability	Up to 4 Powerwall 3 units supported

[1] Typical solar shifting use case.
[2] Values provided for 25°C (77°F), at beginning of life. 3.3 kW charge/discharge power.
[3] Tested using CEC weighted efficiency methodology.
[4] Cellular connectivity subject to network service coverage and signal strength.
[5] Where the DC input current exceeds the MPPT rating, a jumper can be used to combine two MPPTs into a single input to intake DC current up to 26 A I_{MP} / 30 A I_{sc}.

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NO	DATE:	COMMENTS
1	05/03/2024	POWERWALL 3
2	05/14/2024	ELD & PANEL LAYOUT

BATTERY SPEC SHEET 1

DATE:	5/14/2024
DRAWN BY:	FBM
REVIEWED BY:	ATF

SPECS-3

Powerwall 3 Technical Specifications

Environmental Specifications

Operating Temperature	-20°C to 50°C (-4°F to 122°F) [6]
Operating Humidity (RH)	Up to 100%, condensing
Storage Temperature	-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 Rating	NEMA 3R
Ingress Rating	IPX7 (Battery & Power Electronics) IPX5 (Wiring Compartment)
Pollution Rating	PD3
Operating Noise @ 1 m	< 50 db(A) typical <62 db(A) maximum

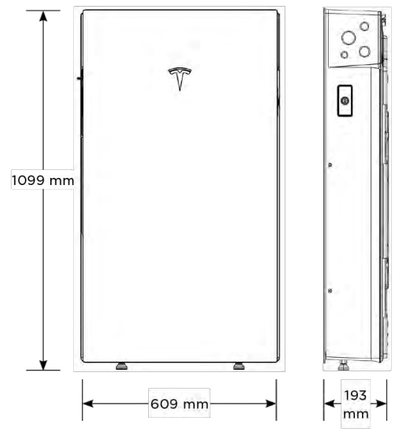
[6] Performance may be de-rated at operating temperatures above 40°C (104°F).

Compliance Information

Certifications	UL 1642, UL 1699B, UL 1741, UL 1741 SA, UL 1741 SB, UL 3741, UL 1973, UL 1998, UL 9540, IEEE 1547-2018, 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)
Fire Testing	Meets the unit level performance criteria of UL 9540A

Mechanical Specifications

Dimensions	1099 x 609 x 193 mm (43.25 x 24 x 7.6 in)
Weight	130 kg (287 lb)
Mounting Options	Floor or wall mount



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 Powerwall 3, solar array shutdown is initiated by any loss of AC power.

Electrical Specifications

Model	**MCI-1**	**MCI-2**
Nominal Input DC Current Rating (I_{MP})	12 A	13 A
Maximum Input Short Circuit Current (I_{SC})	19 A	17 A
Maximum System Voltage (PVHCS)	600 V DC	1000 V DC [7]

[7] Maximum System Voltage is limited by Powerwall to 600 V DC.

RSD Module Performance

Maximum Number of Devices per String	5	5
Control	Power Line Excitation	Power Line Excitation
Passive State	Normally Open	Normally Open
Maximum Power Consumption	7 W	7 W
Warranty	25 years	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	External System Shutdown Switch or Powerwall 3 Enable Switch

UL 3741 PV Hazard Control (and PVRSA) Compatibility

The following categories of solar module meet the UL 3741 PVHCS listing when installed with Powerwall 3 and Solar Shutdown Devices.

Tesla Solar Roof	PV Hazard Control System: BIPV compliance document
Tesla or Hanwha (Q.Peak Duo BLK or BLK-G6+) Modules certified for use with ZEP racking	PV Hazard Control System: ZS PVHCS compliance document
Other module and racking combinations	PV Hazard Control System: Generic PV Array compliance document

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NORTH CAROLINA COA NO. P-2308

SOLAR COMPANY/CLIENT

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CHARLOTTE, NC 28208

COATS, VAN
115 SHERMAN PINES DRIVE
FUQUAY-VARINA, NC 27526
4.740 KW DC 11.500 KW AC

REVISIONS

NO	DATE:	COMMENTS
1	05/03/2024	POWERWALL 3
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BATTERY SPEC SHEET 2

DATE:	5/14/2024
DRAWN BY:	FBM
REVIEWED BY:	ATF

SPECS-4

POWERWALL
Backup Gateway 2

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

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

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

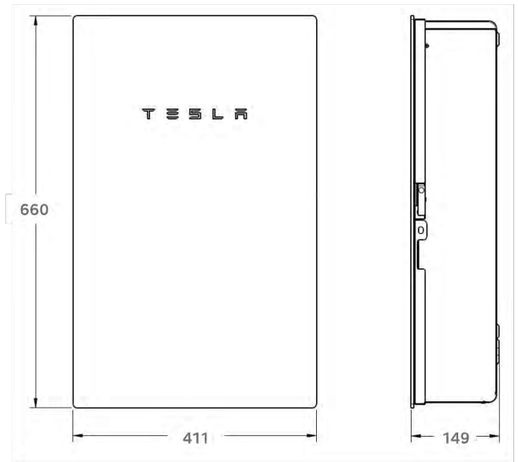
PERFORMANCE SPECIFICATIONS

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

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

MECHANICAL SPECIFICATIONS

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



COMPLIANCE INFORMATION

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

ENVIRONMENTAL SPECIFICATIONS

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

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REVISIONS

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2	05/14/2024	ELD & PANEL LAYOUT

BACKUP GATEWAY SPEC SHEET

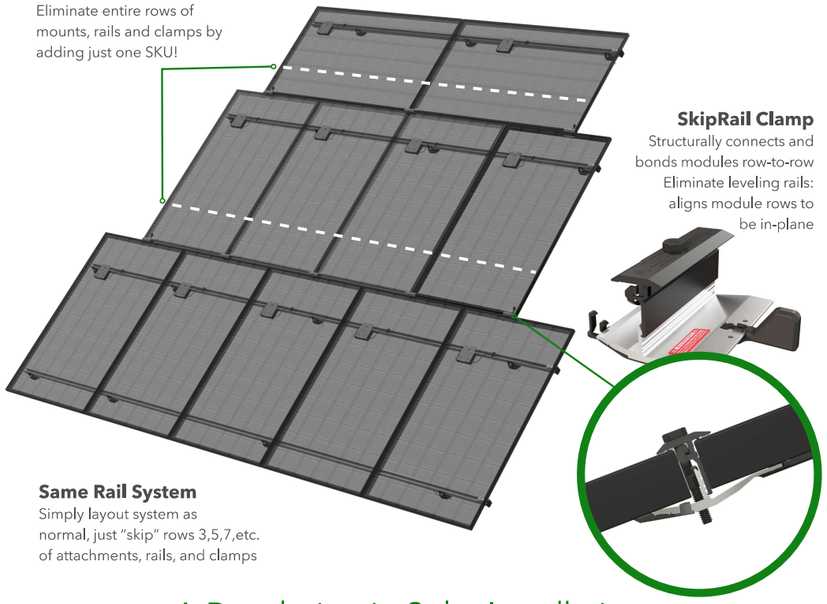
DATE:	5/14/2024
DRAWN BY:	FBM
REVIEWED BY:	ATF

SPECS-5

PEGASUS

SK•PRAIL

Skip Rows!
Eliminate entire rows of mounts, rails and clamps by adding just one SKU!



SkipRail Clamp
Structurally connects and bonds modules row-to-row
Eliminate leveling rails: aligns module rows to be in-plane

Same Rail System
Simply layout system as normal, just "skip" rows 3,5,7,etc. of attachments, rails, and clamps

A Revolution in Solar Installations

Lower your costs and provide your crews a faster system by eliminating entire rows of mounts, rails and clamps with just one SKU.

Dramatically Lower Costs
25% fewer rails and clamps
15% fewer roof penetrations
3500 lbs less per MW to ship, warehouse, pack, and load

Recruit the Best Crews
Less work = happier crews
300 lbs less per week to haul
Faster install
Auto-levels modules

Easy to Implement
Minimal to no training
Same layout as standard rail
Same open-channel wire management

Universal to Any Roof
Comp, Tile, Metal, other.
Low slow, steep slopes
Easily work around roof obstructions
Mixed portrait / landscape

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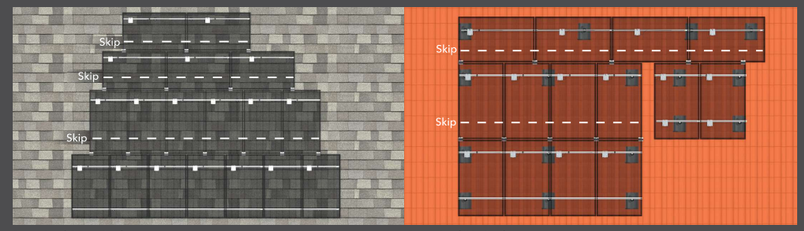
PEGASUS SK•PRAIL

SkipRail SAVINGS | 18% fewer attachments • 32% fewer feet of rails
22% fewer pounds to ship & warehouse

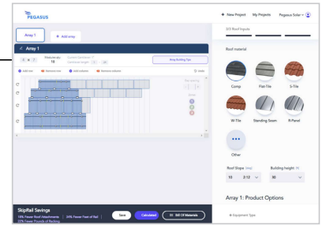
SkipRail SAVINGS | 21% fewer attachments • 30% fewer feet of rails
21% fewer pounds to ship & warehouse



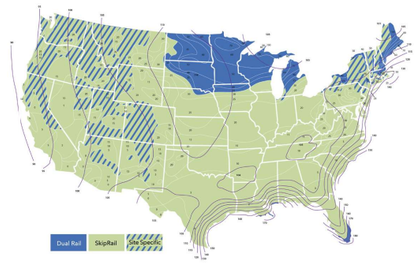
Example of Comp Roof Array

Example of Tile Roof Array

Free Design Tool:
pegasussolar.com/portal



Where SkipRail Works



Specifications	SkipRail Kits	
SKU	PSR-SRC	PSR-SRCK
Type	Floating Clamp	Extra support with Kickstand
Finish	Black	
PV module frames	30, 32, 35, 40mm	
Certifications	ASCE 7-16, IBC, CBC, UL2703	
Applicable Roof Types	Any	
Compatible Rail Systems	Pegasus Rail System	
Kit Contents	Pegasus SkipRail Clamp	Pegasus SkipRail Clamp with Kickstand
Kit Quantity	20	30

SCAN FOR VIDEO

SCAN FOR FREE TRIAL

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REVISIONS

NO	DATE:	COMMENTS
1	05/03/2024	POWERWALL 3
2	05/14/2024	ELD & PANEL LAYOUT

RAIL SPEC SHEET

DATE:	5/14/2024
DRAWN BY:	FBM
REVIEWED BY:	ATF

SPECS-6

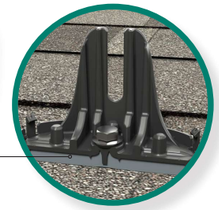
PEGASUS

INSTAFLASH™

Never Deal With Caulking Again!
Factory-installed, non-hardening sealant

Protective Cage
Prevents sealant from getting on hands or roof. Collapses upon lag installation.

Before **InstaFlash Installed:**
Sealant is contained above roof surface by a protective cage.



After **InstaFlash Installed:**
Sealant is compressed to fill all holes and voids.

Effortless Lifetime Roof Protection

The non-hardening sealant completely fills any missed pilot holes, shingle rips, voids, or other potential water ingress points under the entire footprint of the 4.6" wide base.

25-Year Warranty
Manufactured with advanced materials and coatings to outlast the roof itself

Code Compliant
Fully IBC/CBC Code Compliant
Exceeds ASCE 7-16 Standards
FL Cert of Approval FL41396
UL2703 Certified

Self-Healing
The proprietary non-hardening sealant will flex and reseal over years of thermal expansion and contraction

Larger Spans
The extra-large L-foot and proprietary lag screw result in larger spans between mounts

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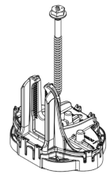
PEGASUS INSTAFLASH™

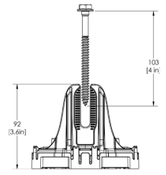
1
Drill pilot hole in the center of the rafter using a 7/32" bit.

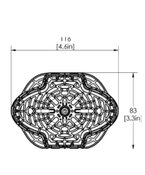
2
Place the InstaFlash over the pilot hole.
Note: the direction of the InstaFlash Down arrows should point down the roof.

3
Insert the lag screw through the center hole into the pilot hole.

4
Drive the lag until the InstaFlash is fully seated to the roof.







SPECIFICATIONS	INSTAFLASH KITS				
	PIF-RB0	PIF-RBDT	PIF-RBSH	PIF-RM0	PIF-RMDT
Finish	Black			Mill	
Kit Contents	Black InstaFlash, 5/16" x 4.0" SS Lag	Black InstaFlash, 5/16" x 4.0" SS Lag, Dovetail T-bolt w/ Nut	Black InstaFlash, 5/16" x 4.0" SS Lag, M10 Hex Bolt w/ Nut	Mill Insta-Flash, 5/16" x 4.0" SS Lag	Mill InstaFlash, 5/16" x 4.0" SS Lag, Dovetail T-bolt w/ Nut
Attachment Type	Rafter Attached				
Roof Type	Sloped Roof: Composition Shingle, Rolled Asphalt | Flat roof: Modified Bitumen Roof, Built-Up Roof				
Sealant Application	Factory Installed				
Installation Temperature	0°F to 170° F				
Cure Time	Instantly Waterproof; Non-hardening				
Service Temperature	-40°F to 195° F				
Certifications	IBC, ASCE/SEI 7-16, FL Cert of Approval FL41396, TAS 100(A), UL2703				
Install Application	Most Railed Systems, Pegasus Tilt Leg Kit				
Kit Quantity	24				
Boxes per Pallet	36				

SCAN FOR INSTALLATION VIDEO

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MOUNTING SPEC SHEET

DATE:	5/14/2024
DRAWN BY:	FBM
REVIEWED BY:	ATF

SPECS-7