

VICINITY MAP

AERIAL MAP

CONTRACTOR:	CLIENT:	COVER SHEET
REV: ---- 06/16/2026		PV-1

NOTES:

1. CONDUCTORS NORMALLY USED TO CARRY CURRENT SHALL BE OF COPPER. FOR ALUMINUM AND COPPER-CLAD ALUMINUM #6 AWG AND LARGER, SEE SEC. 310.15 CEC. EXCEPTION: ALUMINUM CONDUCTORS SMALLER THAN #6 AWG MAY BE USED PROVIDED THE METHOD OF CONNECTION IS APPROVED IN ADVANCE BY THE BUILDING OFFICIAL AND THE INSTALLATION IS MADE UNDER CONTINUOUS SPECIAL INSPECTION.

2. 250.53(A)(2). SUPPLEMENTAL ELECTRODE REQUIRED. A SINGLE ROD, PIPE, OR PLATE ELECTRODE SHALL BE SUPPLEMENTED BY AN ADDITIONAL ELECTRODE OF A TYPE SPECIFIED IN 250.52(A)(2) THROUGH (A)(8). THE SUPPLEMENTAL ELECTRODE SHALL BE PERMITTED TO BE BONDED LO ONE OF THE FOLLOWING:

A. ROD, PIPE, OR PLATE ELECTRODE

B. GROUNDING ELECTRODE CONDUCTOR

C. GROUNDED SERVICE-ENTRANCE CONDUCTOR

D. NONFLEXIBLE GROUNDED SERVICE RACEWAY

E. ANY GROUNDED SERVICE ENCLOSURE

EXCEPTION: IF A SINGLE ROD, PIPE, OR PLATE GROUNDING ELECTRODE HAS A RESISTANCE TO EARTH OF 25 OHM OR LESS THE SUPPLEMENTAL ELECTRODE SHALL NOT BE REQUIRED.

F. SUPPLEMENTAL ELECTRODE, IF MULTIPLE ROD, PIPE, OR PLATE ELECTRODES ARE INSTALLED TO MEET THE REQUIREMENTS OF THIS SECTION THEY SHALL NOT BE LESS THAN 1.8 M (6 FT) APART.

3.

A SMOKE DETECTOR, APPROVED AND LISTED BY THE STATE FIRE MARSHAL, SHALL BE INSTALLED IN EACH DWELLING WHEN A PERMIT FOR ALTERATIONS, REPAIRS OR ADDITIONS EXCEEDS \$1,000.00. A BATTERY POWERED SMOKE DETECTOR SATISFIES THE REQUIREMENTS FOR A SMOKE DETECTOR. (R314.6.2 CRC)

4. PROVIDE SMOKE ALARMS AT THE FOLLOWING LOCATIONS AND NOTE ON THE PLANS; (R314.3 CRC)

A. OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF BEDROOMS.

B. IN EACH ROOM USED FOR SLEEPING PURPOSES.

C. IN EACH STORY, INCLUDING BASEMENTS. IN SPLIT LEVEL UNITS WITHOUT AN INTERVENING DOOR BETWEEN ADJACENT

D. ALARMS SHALL BE INTERCONNECTED SUCH THAT THE ACTUATION OF ONE ALARM SHALL ACTIVATE ALL ALARMS.

E. ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING WITH BATTERY BACKUP.

F. APPROVED COMBINED SMOKE ALARMS AND CARBON DIOXIDE ALARMS SHALL BE ACCEPTABLE. LEVELS, A SMOKE ALARM INSTALLED ON THE UPPER LEVEL SHALL SUFFICE PROVIDED THAT THE LOWER LEVEL IS LESS THAN ONE FULL STORY BELOW THE UPPER LEVEL.

5. A CARBON MONOXIDE DETECTOR SHALL BE INSTALLED IN THE SPECIFIC EXISTING DWELLING UNIT THAT HAVE ATTACHED GARAGES OR FUEL-BURNING APPLIANCES FOR WHICH A PERMIT IS ISSUED FOR ALTERATIONS, REPAIRS OR ADDITIONS EXCEEDING \$1,000.00. LISTED SINGLE- OR MULTI-STATION CARBON MONOXIDE ALARMS SHALL BE INSTALLED OUTSIDE OF EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS AND ON EVERY LEVEL OF A DWELLING UNIT INCLUDING BASEMENTS. COMBINED SMOKE/CARBON MONOXIDE ALARMS MAY BE USED. THE ALARM SHALL RECEIVE ITS PRIMARY POWER FROM THE BUILDING WIRING EXCEPT IT IS PERMITTED TO BE SOLELY BATTERY OPERATED WHERE REPAIRS OR ALTERATIONS DO NOT RESULT IN THE REMOVAL OF WALL AND CEILING FINISHES OR THERE IS NO ACCESS BY MEANS OF AN ATTIC. SHOW ON THE PLANS. (R315 CRC)

6. APPLICATIONS FOR WHICH NO PERMIT IS ISSUED WITHIN 180 DAYS FOLLOWING THE DATE OF APPLICATION SHALL AUTOMATICALLY EXPIRE.

7. EVERY PERMIT ISSUED SHALL BECOME INVALID UNLESS WORK AUTHORIZED IS COMMENCED WITHIN 180 DAYS, A SUCCESSFUL INSPECTION IS NOT OBTAINED WITHIN 180 DAYS, OR IF WORK IS SUSPENDED OR ABANDONED FOR A PERIOD OF 180 DAYS. PERMITS WHICH HAVE BECOME INVALID SHALL PAY A RENEWAL FEE OF 50% OF THE ORIGINAL PERMIT FEE AMOUNT WHEN THE PERMIT HAS BEEN EXPIRED FOR UP TO ONE (1) YEAR. WHEN A PERMIT HAS BEEN EXPIRED FOR A PERIOD IN EXCESS OF ONE (1) YEAR, THE RENEWAL FEE SHALL BE 100% OF THE ORIGINAL PERMIT FEE.

8. THE CONTRACTOR SHALL PROVIDE A WRITTEN LETTER TO THE BUILDING INSPECTOR STATING THAT ALL INACCESSIBLE STRUCTURAL CONNECTIONS HAVE BEEN

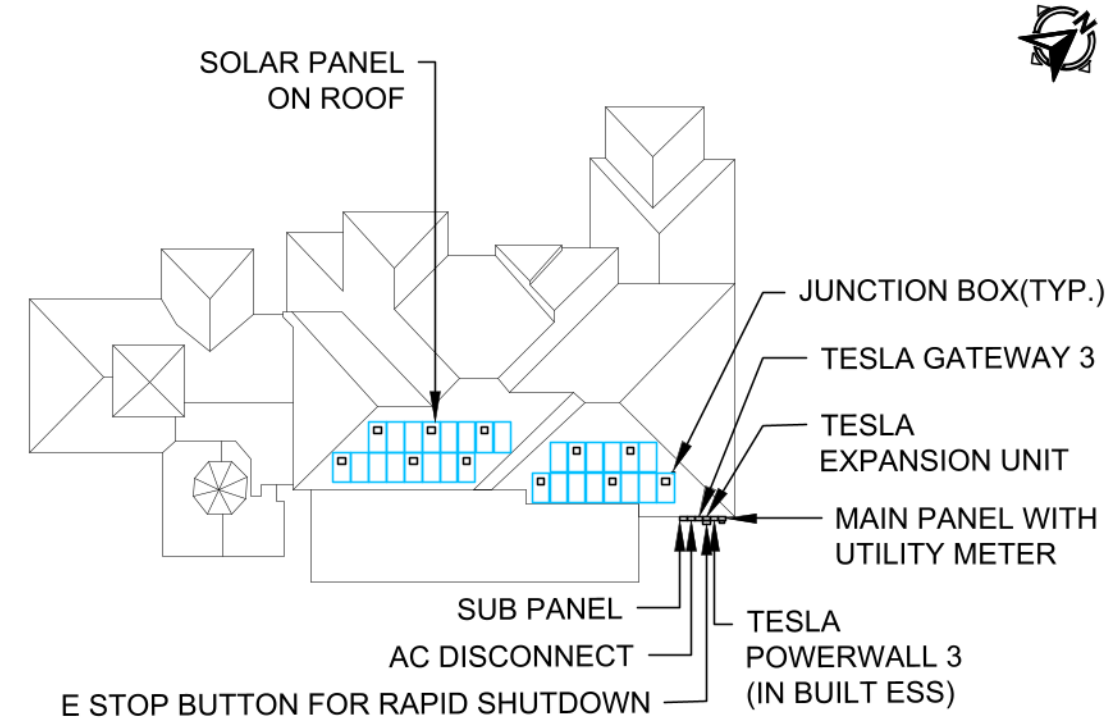
INSTALLED IN CONFORMANCE WITH THE REQUIREMENTS OF THE APPROVED PLANS

	CONTRACTOR:	CLIENT:	
		COVER SHEET	
		REV: ---- 06/16/2026	PV-1.1

- NOTES AND SPECIFICATIONS:
- SIGNS AND LABELS SHALL MEET THE REQUIREMENTS OF THE 2008 ARTICLE 110.21(B), UNLESS SPECIFIC INSTRUCTIONS ARE REQUIRED BY SECTION 690, OR IF REQUESTED BY THE LOCAL AHJ.
 - SIGNS AND LABELS SHALL ADEQUATELY WARN OF HAZARDS USING EFFECTIVE WORDS, COLORS AND SYMBOLS.
 - LABELS SHALL BE PERMANENTLY AFFIXED TO THE EQUIPMENT OR WIRING METHOD AND SHALL NOT BE HAND WRITTEN.
 - LABEL SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
 - SIGNS AND LABELS SHALL COMPLY WITH ANSI Z535.4-2011, PRODUCT SAFETY SIGNS AND LABELS, UNLESS OTHERWISE SPECIFIED.
 - DO NOT COVER EXISTING MANUFACTURER LABELS.

CAUTION:

MULTIPLE SOURCES OF POWER



WEATHER RESISTANT PLASTIC PLACARD
PLACEMENT: MAIN PANEL (COVER)
PER CODE: 110.21(B) [2025 CEC 705.10]

PHOTOVOLTAIC AC DISCONNECT
MAXIMUM AC OPERATING CURRENT: 48.00 AMPS
NOMINAL OPERATING AC VOLTAGE: 240.0 VAC

LABEL LOCATION:
AC DISCONNECT(S), PHOTOVOLTAIC SYSTEM POINT OF INTERCONNECTION.
PER CODE(S): NEC 2023: 690.13(B)

WARNING
ELECTRICAL SHOCK HAZARD

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

LABEL LOCATION:
COMBINER BOX.
PER CODE(S): NEC 2023: 705.20(7) & NEC 2023 690.13(B)

DO NOT ADD LOADS

REQ'D BY: NEC 705.10
LABEL LOCATION:
SUB PANEL OR BACKUP LOADS PANEL, BATTERY, INVERTER OUTPUT PANEL, MAIN SERVICE PANEL, METER/MAIN, AND PV AC DISCONNECT

PV SOLAR BREAKER
DO NOT RELOCATE THIS OVERCURRENT DEVICE

REQ'D BY: NEC 705.12(B)(2)(3)(b)
LABEL LOCATION:
PV BREAKERS

RAPID SHUTDOWN FOR SOLAR PV SYSTEM

LABEL LOCATION:
UTILITY SERVICE ENTRANCE/METER, IF REQUIRED BY LOCAL AHJ, OR OTHER LOCATIONS AS REQUIRED BY LOCAL AHJ.
PER CODE(S): NEC 2023: 690.12(D)(2)

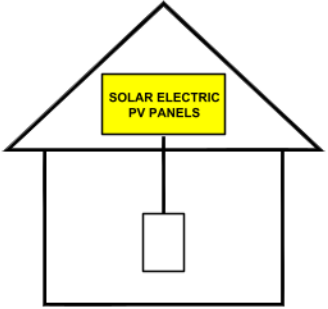
BATTERY DISCONNECT
DO NOT RELOCATE THIS OVERCURRENT DEVICE

REQ'D BY: NEC 705.12(B)(2)(3)(b)
LABEL LOCATION:
BATTERY BREAKERS

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.

LABEL LOCATION:
ON OR NO MORE THAT 3 M (10 FT) FROM THE SERVICE DISCONNECTING MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED.



PV SOLAR BREAKER
DO NOT RELOCATE THIS OVERCURRENT DEVICE

REQ'D BY: NEC 705.12(B)(2)(3)(b)
LABEL LOCATION:
PV BREAKERS

CAUTION-TRI POWER SOURCE
FIRST SOURCE IS UTILITY ELECTRICAL GRID
SECOND SOURCE IS AC BATTERY
THIRD SOURCE IS PV INVERTER

REQ'D BY: NEC 705.10
LABEL LOCATION:
SUB PANEL OR BACKUP LOADS PANEL, BATTERY, INVERTER OUTPUT PANEL, MAIN SERVICE PANEL, METER/MAIN, AND PV AC DISCONNECT

DO NOT ENERGIZE – UTILITY AND BATTERY SOURCES PRESENT

LABEL LOCATION:
LABEL SHALL BE PERMANENTLY AFFIXED AT THE ESS AC DISCONNECT LOCATION.

WARNING
PHOTOVOLTAIC SYSTEM COMBINER PANEL
DO NOT ADD LOADS

LABEL LOCATION:
MAIN SERVICE PANEL, COMBINER BOX.
PER CODE(S): NEC 2023: 690.34(A)

WARNING
THIS EQUIPEMNT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES, EXCLUDING MAIN SUPPLY OVERCURRENT DEVICES SHALL NOT EXCEED AMPACITY OF BUSBAR.

REQ'D BY: NEC 705.12(B)(2)(3)(c)

CAUTION: SOLAR CIRCUIT

LABEL LOCATION:
MARKINGS PLACED ON ALL INTERIOR AND EXTERIOR DC CONDUIT, RACEWAYS,ENCLOSURES, AND CABLE ASSEMBLIES AT LEAST EVERY 10 FT, AT TURNS AND ABOVE/BELOW PENETRATIONS AND ALL COMBINER/JUNCTION BOXES

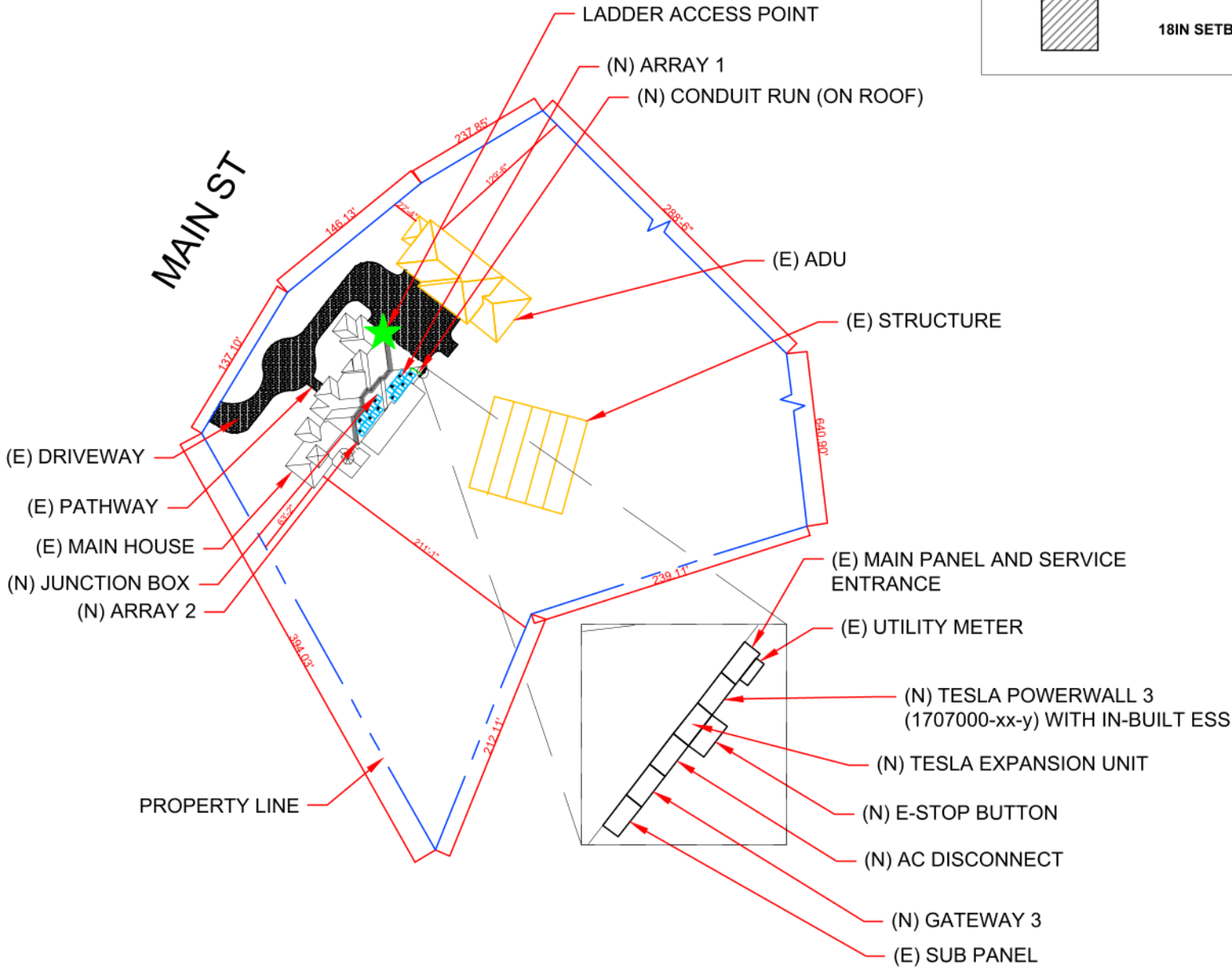
ENERGY STORAGE SYSTEM DISCONNECT

LABEL LOCATION:
LABEL SHALL BE PERMANENTLY AFFIXED AT THE ESS AC DISCONNECT LOCATION.
(PER CODE : CEC 706.15(C)).

	CONTRACTOR:	CLIENT:
	SIGNAGE	
	REV: ---- 06/16/2026	PV-2

SITE PLAN

SCALE: 1/128" = 1'-0"



	3FT SETBACK
	18IN SETBACK

	ROOF PITCH (DEG)	AZIMUTH (DEG)	PV AREA (SQ. FT)	NO. OF MODS
#1	18°	128°	288.80	14
#2	18°	128°	329.95	16

MODULE	SUNPLUS SR4-54HTB-445M MODULES
MODULE DIMENSIONS	69.37" X 44.64" X 1.18"
MODULE WEIGHT	47.39 LBS
TOTAL ARRAY AREA SQ.FT.	618.75
TOTAL ROOF AREA SQ.FT	8531.29
ROOF TYPE	CONCRETE TILE
NO. OF STORIES	2
%ROOF COVERAGE	7.25 %

BILL OF MATERIALS		
EQUIPMENT	QTY.	DESCRIPTION
SOLAR PV MODULE	30	SUNPLUS SR4-54HTB-445M
INVERTER	1	TESLA POWERWALL 3 (1707000-xx-y) 11.5 KW (240V) (IN-BUILT ESS)
MCI	11	TESLA MCI-2
JUNCTION BOX	1	4"X4"X4" JUNCTION BOX PVC JCT BOX W/CVR
INTERCONNECTION DEVICE	1	TESLA GATEWAY 3
EXPANSION UNIT	1	TESLA EXPANSION UNIT
RAPID SHUTDOWN SWITCH	1	E-STOP BUTTON
AC DISCONNECT	1	60A NON-FUSED AC DISCONNECT LOCKABLE,VISIBLE BLADE TYPE,NEMA 3R, 240V, 1Ø
ATTACHMENT	46	IRONRIDGE ALL TILE HOOK
RAILS	18	IRONRIDGE XR-100-168 RAIL 168"
RAIL SPLICE	14	RAIL SPLICE
MID CLAMPS	52	MID CLAMPS
END CLAMPS	16	END CLAMPS
GROUNDING LUG	4	WEB LUG

ESS DISCONNECT NOTE :
A lockable Energy Storage System disconnect shall be installed at a readily accessible exterior location within three (3) feet of the utility meter, in compliance with CEC 705.23 and 2022 CFC §1207.

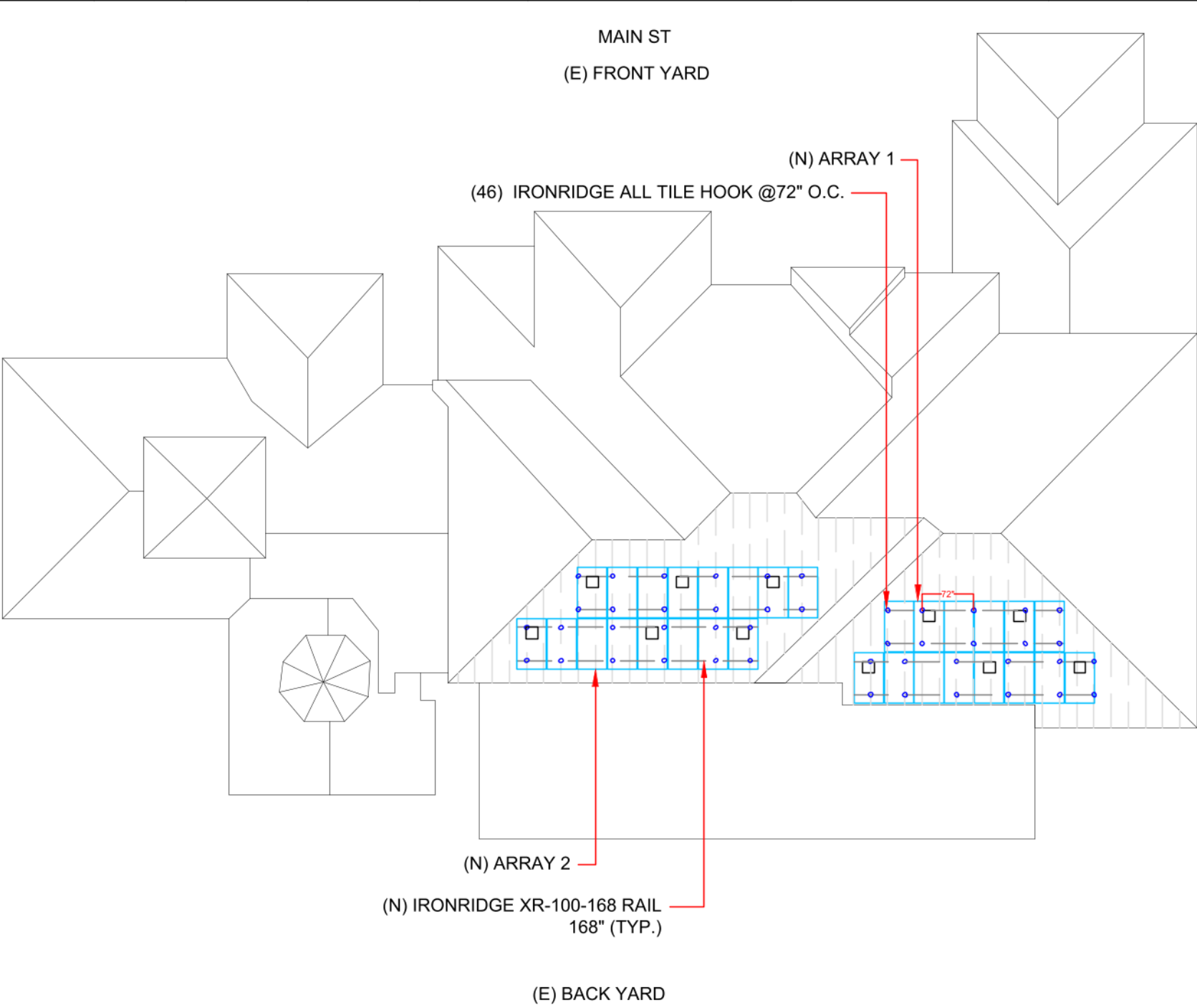
ESS CLEARANCE NOTE :
Energy Storage Systems shall be installed not less than three (3) feet from doors and windows directly entering the dwelling unit in accordance with 2022 CFC §1207.11.3.



CONDUIT NOTES	
CONDUIT TO BE RUN ON CONDUIT BLOCKS MIN. 1" ABOVE ROOF SURFACE AND UNDER EAVES; AND CLOSE TO RIDGELINES, LABELED AT MAX. 10' INTERVALS.	
CONDUIT TO BE PAINTED TO MATCH EXTERIOR/EXISTING BACKGROUND COLOR OF ITS LOCATION	

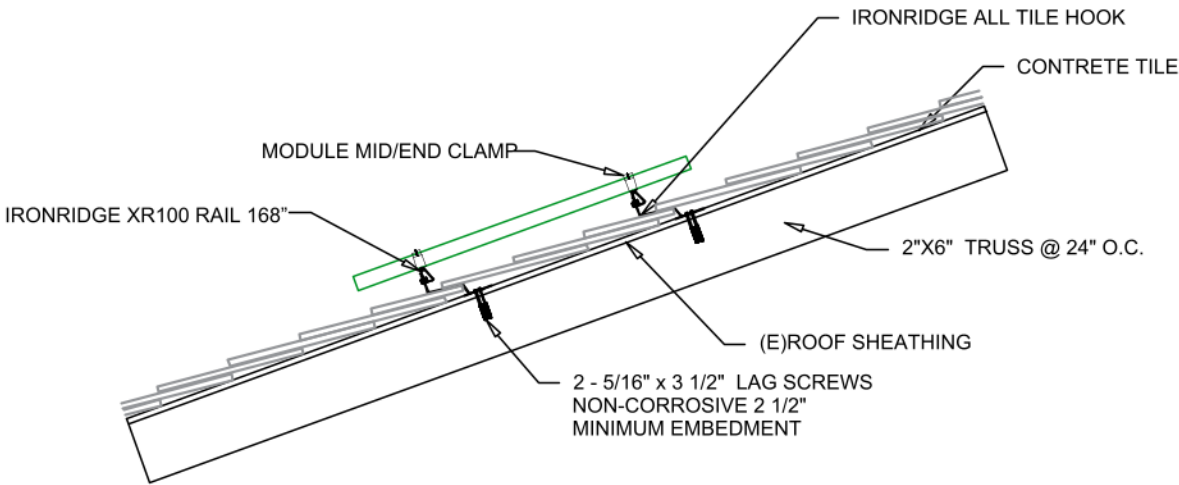
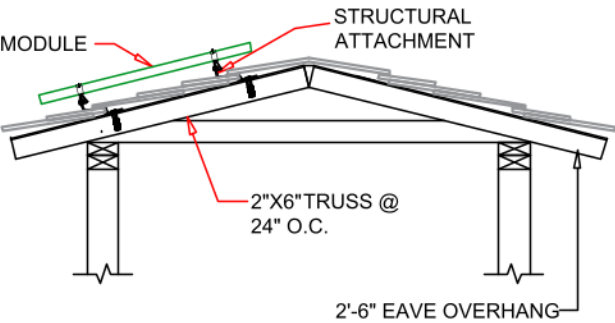
	CONTRACTOR:	CLIENT:
	SITE PLAN	
	REV: ---- 06/16/2026	PV-3

	ROOF PITCH (DEG)	AZIMUTH (DEG)	PV AREA (SQ. FT)	NO. OF MODS	ROOF TYPE	ROOF ATTACHMENT	ROOF HEIGHT	EXPOSURE	MATERIAL	CONSTRUCTION	RAFTER SIZE	RAFTER SPAN	RAIL ATTACHMENT SPACING	MAX CANTILEVER LENGTH
ARRAY 1	18°	128°	288.80	14	CONCRETE TILE	IRONRIDGE ALL TILE HOOK	2 - STORY	ATTIC	WOOD	TRUSS	2"X6"	24" O.C.	72" O.C.	2'-0"
ARRAY 2	18°	128°	329.95	16	CONCRETE TILE	IRONRIDGE ALL TILE HOOK	2 - STORY	ATTIC	WOOD	TRUSS	2"X6"	24" O.C.	72" O.C.	2'-0"



MODULE	SUNPLUS SR4-54HTB-445M
MODULE DIMENSIONS	69.37" X 44.64" X 1.18"
MODULE WEIGHT	47.39 LBS
TOTAL ARRAY AREA	618.75 SQ. FT.
TOTAL ROOF AREA	8531.29 SQ. FT.
ROOF TYPE	CONCRETE TILE
MAX DISTRIBUTED LOAD	3 PSF
SNOW LOAD (ASCE 7-22)	3 PSF
WIND SPEED (ASCE 7-22)	96 MPH, 3 SEC GUST
WIND EXPOSURE	C

ROOF FRAMING DETAIL - SCALE: NTS



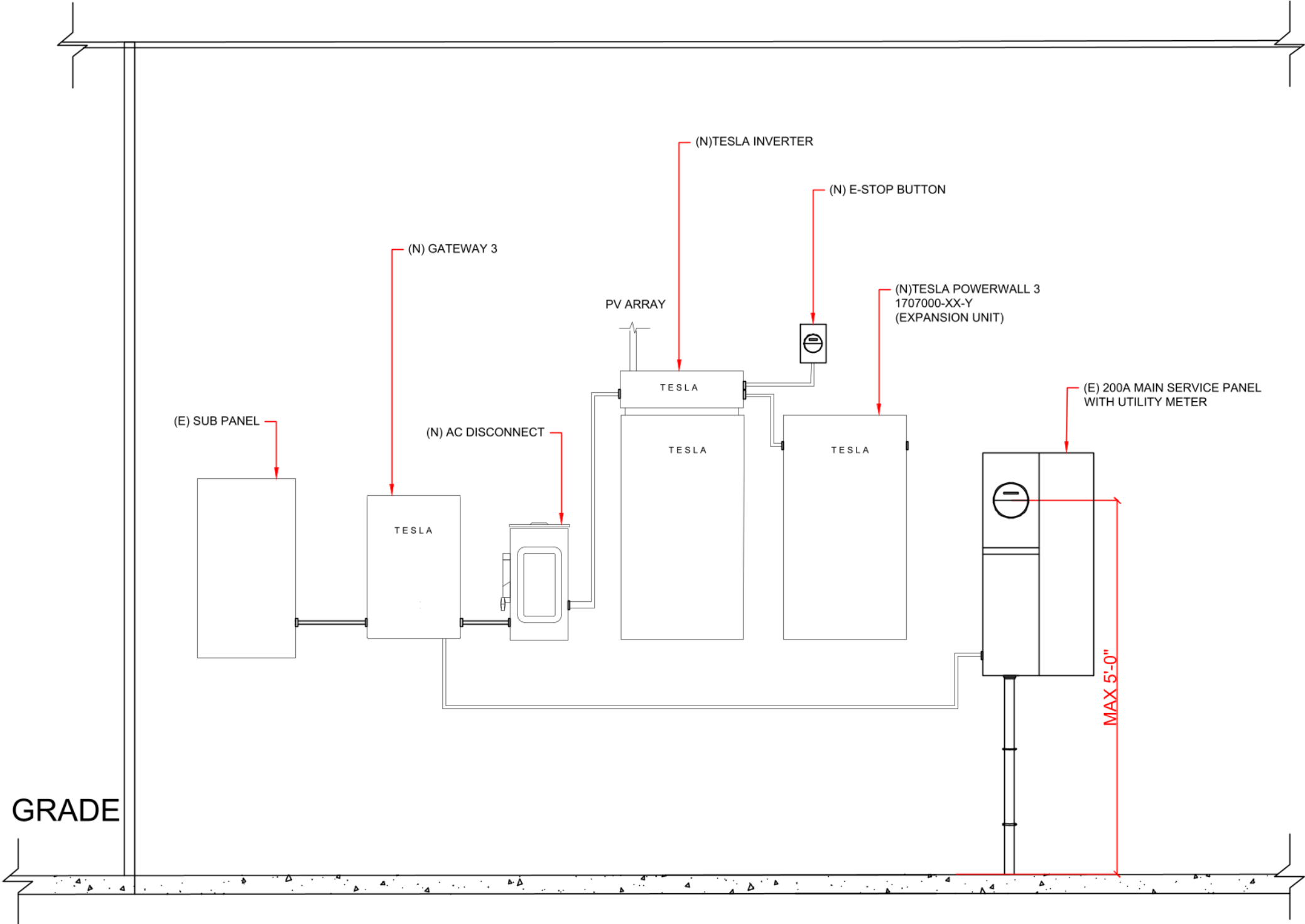
ROOF PLAN

SCALE: 1/16" = 1'-0"
PLUMBING AND OR MECHANICAL VENTS SHALL NOT BE COVERED,
OBSTRUCTED OR RE-ROUTED AROUND SOLAR MODULES.
ALL CONDUITS AND EQUIPMENT SHALL BE PAINTED TO MATCH THE EXISTING
BACKGROUND MATERIAL COLOR OF THEIR LOCATION.

	CONTRACTOR:	CLIENT:	
		ROOF PLAN	
		REV: ---- 06/16/2026	PV-4

ESS DISCONNECT NOTE :
A lockable Energy Storage System disconnect shall be installed at a readily accessible exterior location within three (3) feet of the utility meter, in compliance with CEC 705.23 and 2025 CFC §1207.

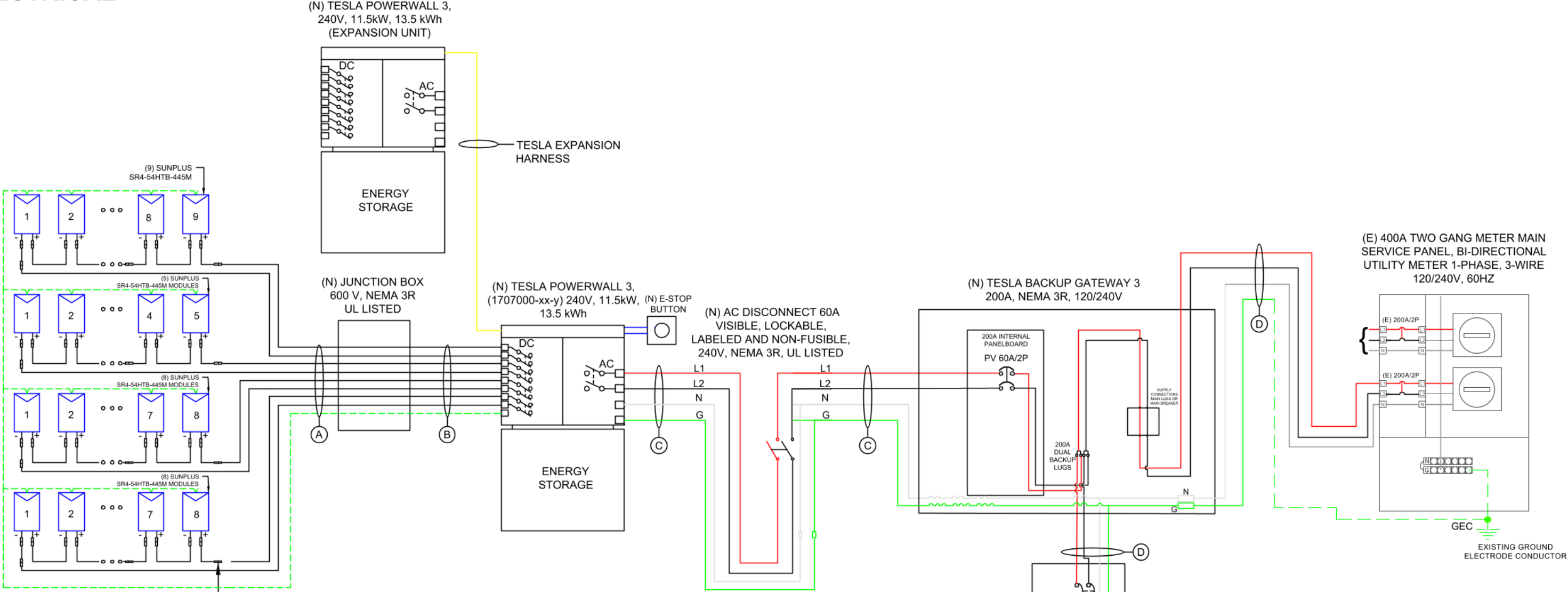
ESS CLEARANCE NOTE :
Energy Storage Systems shall be installed not less than three (3) feet from doors and windows directly entering the dwelling unit in accordance with 2025 CFC §1207.11.3.



EQUIPMENT ELEVATION
SCALE: NTS

	CONTRACTOR:	CLIENT:	
		EQUIPMENT ELEVATION	
		REV: ---- 06/16/2026	PV-5

ELECTRICAL



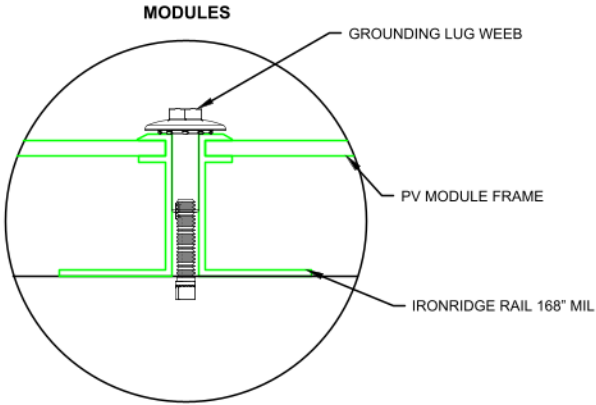
CONDUCTOR / CONDUIT SCHEDULE

Δ TAG	CONDUCTOR	CONDUCTOR SIZE	NUMBER OF CONDUCTORS	CONDUIT/CABLE TYPE	CONDUIT SIZE
A	PV WIRE	10 AWG	8	FREE AIR	N/A
	EGC/GEC: BARE COPPER	6 AWG	1		
B	LINE: THHN/THWN-2	10 AWG	8	EMT	3/4"
	EGC/GEC: THHN/THWN-2	8 AWG	1		
C	LINE: THHN/THWN-2	6 AWG	2	EMT	3/4"
	NEUTRAL: THHN/THWN-2	6 AWG	1		
	EGC/GEC: THHN/THWN-2	8 AWG	1	EMT	1.50"
D	LINE: THHN/THWN-2	3/0 AWG	2		
	NEUTRAL: THHN/THWN-2	3/0 AWG	1		
	EGC/GEC: THHN/THWN-2	6 AWG	1		

NOTE: PCS SHALL LIMIT CURRENT AND LOADING ON THE BUSBARS AND CONDUCTORS SUPPLIED BY PCS. PER NEC 705.13(B) (E)

GROUNDING DETAIL

SCALE: NTS



CONTRACTOR:

CLIENT:

ELECTRICAL

REV: ---- 06/16/2026

PV-6

MODULE CHARACTERISTICS - SUNPLUS SR4-54HTB-445M		
MAX POWER (P _{MAX}) @ STC	445	W
OPEN CIRCUIT VOLTAGE (V _{OC})	39.20	V
SHORT CIRCUIT CURRENT (I _{SC})	14.19	A
MAX POWER VOLTAGE (V _{MP})	33.22	V
MAX POWER CURRENT (I _{MP})	13.40	A
SERIES FUSE RATING	30	A

INVERTER CHARACTERSTICS - POWERWALL 3 (1707000-XX-Y)		
MAX OUTPUT POWER	11500	W
NOMINAL BATTERY ENERGY	13.5	kWh
NOMINAL VOLTAGE	240	V
MAXIMUM CONTINUOUS CURRENT	48.0	A
GRID EFFICIENCY	97.5	%

GATEWAY SPECIFICATION	
MODEL	TESLA GATEWAY 3
DISCONNECT CURRENT	200A
OVERCURRENT PROTECTION BREAKER	200A
NOMINAL VOLTAGE	240 V
AC METER	REVENUE GRADE

TEMPERATURE ADDERS		
CONDUIT TO BE INSTALLED MIN. OF 7⁄8" ABOVE ROOF		
HIGH TEMPERATURE	60	°C
LOW TEMPERATURE	-6	°C
TEMP ADDER FOR ROOF RUN	0	°C
TEMP ADDER FOR ATTIC RUN	7	°C

DC WIRE SIZING CALCULATIONS						
AT ARRAY	Max Optimizer Current = 15 A, Wire = 10 AWG, 40 A @ 90°C					
125% MAX CURRENT	(Max Optimizer Current) x (Continuous Load)[690.8(A)]	15 A X 1.25	18.75 A	Per 690.8(B)(1)	40 A	> 18.75 A
DERATED AMPACITY	(High Temp)[Table 310(B)(2)(A) x (Conductor Ampacity)[Table 310.15(B)(16)] x (Conduit Fill)[Table 310.15(B)(3)(a)]	0.82 X 40 A X 1	32.80 A	Per. 690.8(B)(2)	32.80 A	> 18.75 A
10 AWG PV WIRE OK						

DC WIRE SIZING CALCULATIONS						
AT JBOX	Max Optimizer Current = 15 A, Wire = 10 AWG, 40 A @ 90°C					
125% MAX CURRENT	(Max Optimizer Current) x (Continuous Load)[690.8(A)]	15 A X 1.25	18.75 A	Per 690.8(B)(1)	40 A	> 18.75 A
DERATED AMPACITY	(High Temp)[Table 310(B)(2)(A) x (Conductor Ampacity)[Table 310.15(B)(16)] x (Conduit Fill)[Table 310.15(B)(3)(a)]	1.00 X 40 A X 0.7	28.00 A	Per. 690.8(B)(2)	28.00 A	> 18.75 A
10 AWG PV WIRE OK						

AC WIRE SIZING CALCULATIONS			
AFTER INVERTER	Max Optimizer Current = 15 A, Wire = 6 AWG, 75 A @ 90°C		
MAX AC OUTPUT CURRENT	(Max Inverter Output) x (Continuous Load)[690.8(B)(1)]	48.0 A X 1.25	60.00 A
TOTAL AMPACITY	(High Temp)[Table 310(B)(2)(A) x (Conductor Ampacity)[Table 310.15(B)(16)] x (Conduit Fill)[Table 310.15(B)(3)(a)]	1.00 X 75 A X 1	75.00 A
60.00 A ---> 75.00 A Therefore 6 AWG OK			

MAX AC OUTPUT CURRENT	(Max Inverter Output) x (Continuous Load)[690.8(B)(1)]	48.0 A X 1.25	60.00 A
60.00 ---> 60 A Overcurrent Protection			

	CONTRACTOR:	CLIENT:
	CALCS	
	REV: ---- 06/16/2026	PV-7

Sun⁺

www.wesunplus.com

MAXIMUM EFFICIENCY %

22.3

POSITIVE POWER TOLERANCE WP

0~+5.00

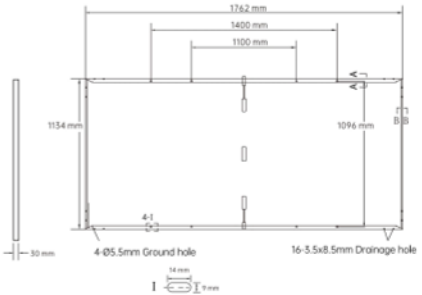
WATTAGE RANGE WP

425-445



■ Mechanical Specification

Dimension	1762x1134x30mm (69.37x44.64x1.18 in)
Weight	21.5kg(47.39 lb)
Front Cover	2.0 mm (0.08 in) tempered glass - Anti-Reflection Coated
Back Cover	White backsheet
Frame	Anodized Aluminium Alloy
Cell	N-Type Monocrystalline
Junction Box	Protection class IP68, with bypass diodes
Cable	4mm ² Solar Cable (+)≤13.7 in (350 mm) (-)≤9.8 in (250 mm)
Connector	MC 4 or MC 4 Compatible; -IP68

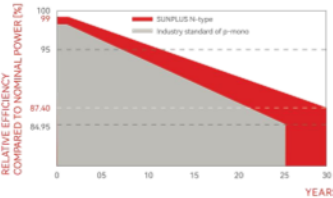


■ Electrical Characteristics

POWER CLASS			425	430	435	440	445
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5W / -0W)							
Minimum	Power at MPP ¹	P _{MPP} [W]	425	430	435	440	445
	Short Circuit Current ¹	I _{sc} [A]	13.84	13.92	14.01	14.10	14.19
	Open Circuit Voltage ¹	V _{oc} [V]	38.40	38.60	38.80	39.00	39.20
	Current at MPP	I _{MPP} [A]	13.07	13.15	13.23	13.31	13.40
	Voltage at MPP	V _{MPP} [V]	32.54	32.71	32.88	33.05	33.22
	Efficiency ¹	η [%]	≥21.3	≥21.5	≥21.7	≥22.0	≥22.3
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS NMOT ²							
Minimum	Power at MPP	P _{MPP} [W]	320	323	327	330	334
	Short Circuit Current	I _{sc} [A]	11.17	11.24	11.31	11.38	11.46
	Open Circuit Voltage	V _{oc} [V]	36.49	36.67	36.85	37.04	37.23
	Current at MPP	I _{MPP} [A]	10.43	10.50	10.57	10.64	10.70
	Voltage at MPP	V _{MPP} [V]	30.63	30.79	30.95	31.11	31.27

¹Measurement tolerances P_{MPP} ± 3 %; I_{sc}; Voc ± 5 % at STC: 1000 W/m², 25 ± 2 °C, AM 1.5 according to IEC 60904-3 • ²800 W/m², NMOT, spectrum AM 1.5

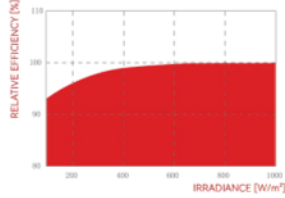
MODULE PERFORMANCE WARRANTY



At least 99 % of nominal power during first year. Thereafter max. 0.4% degradation per year. At least 95 % of nominal power up to 10 years. At least 87.40 % of nominal power up to 30 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the SUNPLUS sales organization of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²).

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I _{sc}	α	[% / K]	+0.043	Temperature Coefficient of V _{oc}	β	[% / K]	-0.25
Temperature Coefficient of P _{MPP}	γ	[% / K]	-0.29	Nominal Module Operating Temperature	NMOT	[°C]	43±3

■ Properties for system Design

Maximum System Voltage	V _{sys}	1500VDC (IEC)	PV module classification	Class II
Maximum Reverse Current	I _s	30A	Fire Rating based UL61730	Type 29
Max. Design Load, Push / Pull		5400 / 2400	Permitted Module Temperature	-40°C~+85°C
Max. Test Load, Push / Pull		8100 / 4000	on Continuous Duty	

■ Qualifications and Certificates

Quality Controlled PV -
CSA, TUV SUD;
UL 61730-1;
UL 61730-2;
IEC 61730;
IEC 61215.

Packaging Information

Vertical packaging	1780 mm	1105 mm	1254 mm	820 kg	28 pallets	26 pallets	36 modules
--------------------	---------	---------	---------	--------	------------	------------	------------

SUNPLUS pursues minimizing paper output in consideration of the global environment

SUNPLUS OPTIMUM INC 90 State Street, Suite 700, Albany, NY, 12207 | TEL +1 (209) 389-9861 | EMAIL info@wesunplus.com | WEB www.wesunplus.com

Specifications subject to changes. © SUNPLUS LVCHIEE_N_Serie_430_440_2025_04_REV02_EN

CONTRACTOR:

CLIENT:

SPEC. SHEETS

REV: ---- 06/16/2026

PV-8

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 up to 11.5 kW AC of continuous power per unit. It has the ability to start heavy loads rated up to 185 LRA, meaning a single unit can support the power needs of most homes. Powerwall 3 Expansions make it easier and more affordable to scale up customers' systems to meet their current or future needs. Powerwall 3 is designed for fast and efficient installations, modular system expansion, and simple connection to any electrical service.



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			
	Nominal Battery Energy	13.5 kWh AC ¹			
	Nominal Output Power (AC)	5.8 kW	7.6 kW	10 kW	11.5 kW
	Maximum Apparent Power	5,800 VA	7,600 VA	10,000 VA	11,500 VA
	Maximum Continuous Current	24 A	31.7 A	41.7 A	48 A
	Overcurrent Protection Device ²	30 A	40 A	60 A	60 A
	Configurable Maximum Continuous Discharge Power Off-Grid (PV Only, -20°C to 25°C)	15.4 kW ³			
	Maximum Continuous Charge Current / Power (Powerwall 3 only)	20.8 A AC / 5 kW			
	Maximum Continuous Charge Current / Power (Powerwall 3 with up to (3) Expansion units)	33.3 A AC / 8 kW			
	Output Power Factor Rating	0 - 1 (Grid Code configurable)			
	Maximum Output Fault Current (1 s)	160 A			
	Maximum Short-Circuit Current Rating	10 kA			
	Load Start Capability	185 LRA			
	Solar to Battery to Home/Grid Efficiency	89% ^{1,4}			
	Solar to Home/Grid Efficiency	97.5% ⁵			
	Power Scalability	Up to 4 Powerwall 3 units supported			
	Energy Scalability	Up to 3 Expansion units (for a maximum total of 7 units)			
	Supported Islanding Devices	Gateway 3, Backup Switch, Backup Gateway 2			
	Connectivity	Wi-Fi (2.4 and 5 GHz), Ethernet, Cellular (LTE/4G ⁶)			
	Hardware Interface	Dry contact relay, Rapid Shutdown (RSD) certified switch and 2-pin connector, RS-485 for meters			
	AC Metering	Revenue Grade (+/- 0.5%, ANSI C12.20)			
	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				

¹Values provided for 25°C (77°F), at beginning of life. 3.3 kW charge/discharge power.

²See [Powerwall 3 Installation Manual](#) for fuse requirements if using fuse for overcurrent protection.

³15.4kW off-grid maximum continuous discharge power is only available if on-grid rating is 11.5 kW. If enabled, Powerwall 3 must be installed with an 80 A breaker and appropriately sized conductors.

⁴Typical solar shifting use case.

⁵Tested using CEC weighted efficiency methodology.

⁶The customer is expected to provide internet connectivity for Powerwall 3; cellular should not be used as the primary mode of connectivity. Cellular connectivity subject to network operator service coverage and signal strength.

	CONTRACTOR:	CLIENT:
	SPEC. SHEETS	
	REV: ----	06/16/2026 PV-9

Powerwall 3 Technical Specifications

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	60 — 480 V DC
MPPTs	6
Maximum Current per MPPT (I_{mp})	15 A ^{7,8}
Maximum Short Circuit Current per MPPT (I_{sc})	19 A ⁸

⁷Only applicable to Powerwall 3 units with 15 A I_{mp} on the product label. Otherwise, Powerwall 3 has an I_{mp} of 13 A.

⁸When PV strings are combined on the roof and 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 30 A I_{mp} / 38 A I_{sc} (or 26 A I_{mp} / 30 A I_{sc} if Powerwall 3 is labeled with 13 A I_{mp} / 15 A I_{sc}).

Environmental Specifications

Operating Temperature	−20°C to 50°C (−4°F to 122°F) ⁹
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	IP67 (Battery & Power Electronics) IP55 (Wiring Compartment)
Pollution Rating	PD3
Operating Noise @ 1 m	< 50 db(A) typical < 62 db(A) maximum

⁹Performance may be de-rated at operating temperatures above 40°C (104°F).

Compliance Information

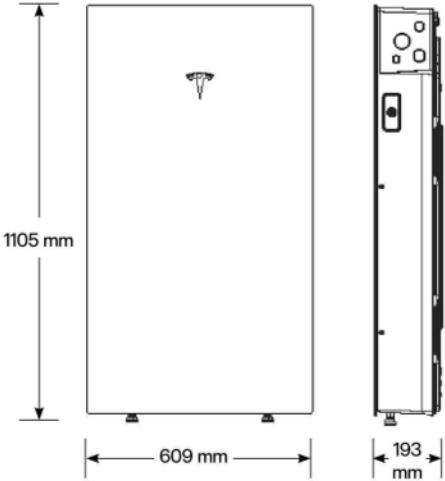
Certifications	UL 1741, UL 9540, UL 9540A, UL 3741, UL 1741 PCS, UL 1741 SA, UL 1741 SB, UL 1741 Multimode, UL 1973, UL 1699B, UL 1998, CSA C22.2 No. 0.8, CSA C22.2 No. 107.1, CSA C22.2 No. 330, CSA 22.3 No. 9, IEEE 1547, IEEE 1547A, IEEE 1547.1, CA Rule No.21
Grid Connection	United States and Canada
Emissions	FCC Part 15 Class B, ICES 003
Environmental	RoHS Directive 2011/65/EU
Seismic	AC156, IEEE 693-2005 (high)
Fire Testing	Meets the unit level performance criteria of UL 9540A

Powerwall 3 Technical Specifications

Mechanical Specifications

Dimensions	1105 x 609 x 193 mm (43.5 x 24 x 7.6 in) ¹⁰
Total Weight of Installed Unit	132 kg (291.2 lb)
Weight of Powerwall 3	124 kg (272.5 lb)
Weight of Glass Front Cover	6.5 kg (14.5 lb)
Weight of Wall Bracket	1.9 kg (4.2 lb)
Mounting Options	Floor or wall mount

¹⁰ These dimensions include the glass front cover being installed on Powerwall 3.



	CONTRACTOR:	CLIENT:
	SPEC. SHEETS	
	REV: ---- 06/16/2026	PV-10

Solar Shutdown Device Technical Specifications

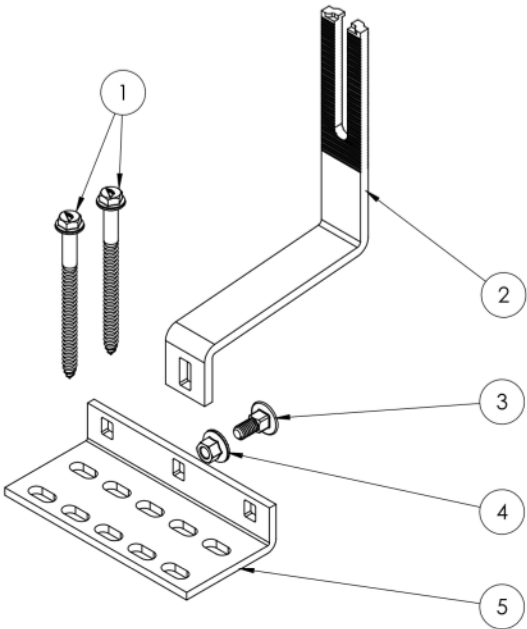
The Solar Shutdown Device is a Mid-Circuit Interrupter (MCI) and is integral to the rapid shutdown (RSD) function required for rooftop PV systems in accordance with Article 690 of the NEC. When paired with Powerwall 3, solar array shutdown is initiated by an External System Shutdown Switch or the On/Off Enable switch located on Powerwall 3. Systems not subject to rapid shutdown requirements must still install one or more MCIs for functional purposes; see the Powerwall 3 installation manual for details.

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	600 V DC	1000 V DC ¹⁵	1000 V DC ¹⁵
	Maximum Disconnect Voltage ¹⁶	600 V DC	165 V DC	165 V DC
¹⁵ Maximum System Voltage is limited by Powerwall to 600 V DC.				
¹⁶ 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		
Mechanical Specifications	Electrical Connections	MC4 Connector		
	Housing	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

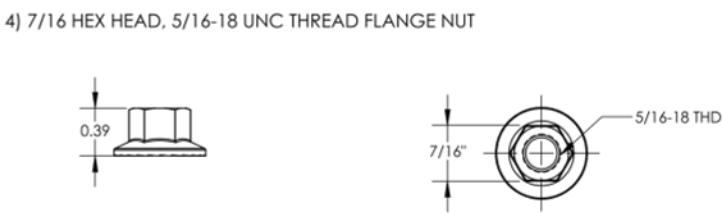
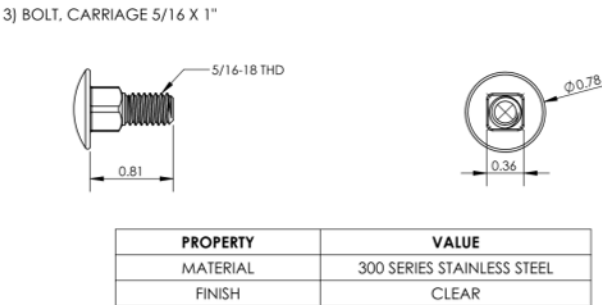
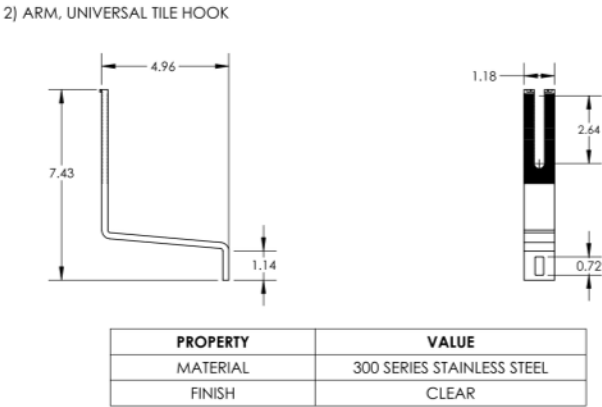
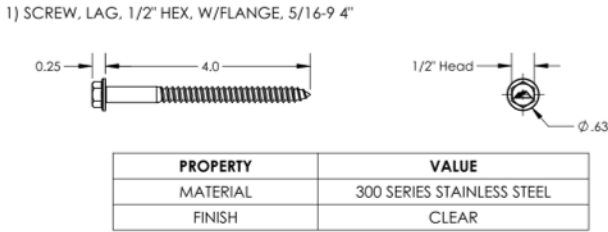
See [UL 3741 Application Addendum](#)

	CONTRACTOR:	CLIENT:
	SPEC. SHEETS	
	REV: ----	06/16/2026 PV-10.1

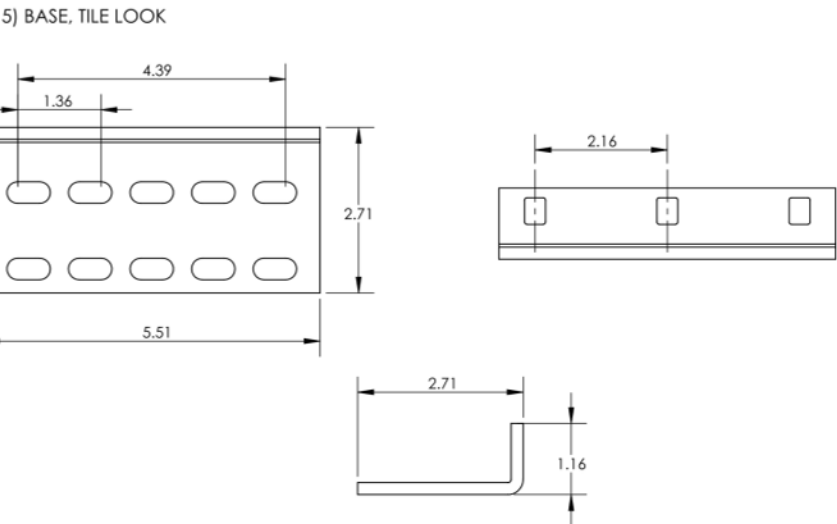


ITEM NO.	DESCRIPTION	QTY.
1	SCREW, LAG, 1/2" HEX, W/FLANGE, 5/16-9 4"	2
2	ARM, UNIVERSAL TILE HOOK	1
3	BOLT, CARRIAGE 5/16 X 1"	1
4	7/16 HEX HEAD, 5/16-18 UNC THREAD FLANGE NUT	1
5	BASE, TILE HOOK	1

PART NUMBER	DESCRIPTION
QM-ATH-02-M1	ALL TILE HOOK (INCL. 2 LAGS)



PROPERTY	VALUE
MATERIAL	300 SERIES STAINLESS STEEL
FINISH	CLEAR



PROPERTY	VALUE
MATERIAL	300 SERIES STAINLESS STEEL
FINISH	CLEAR



CONTRACTOR:

CLIENT:

SPEC. SHEETS

REV: ---- 06/16/2026 PV-11

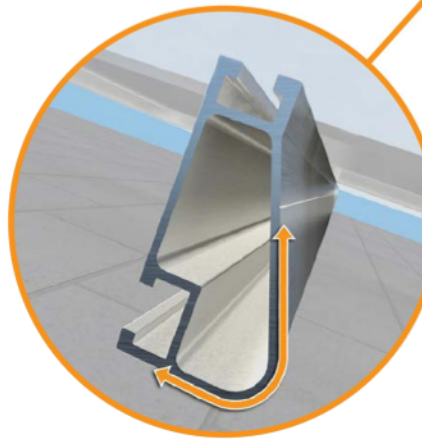
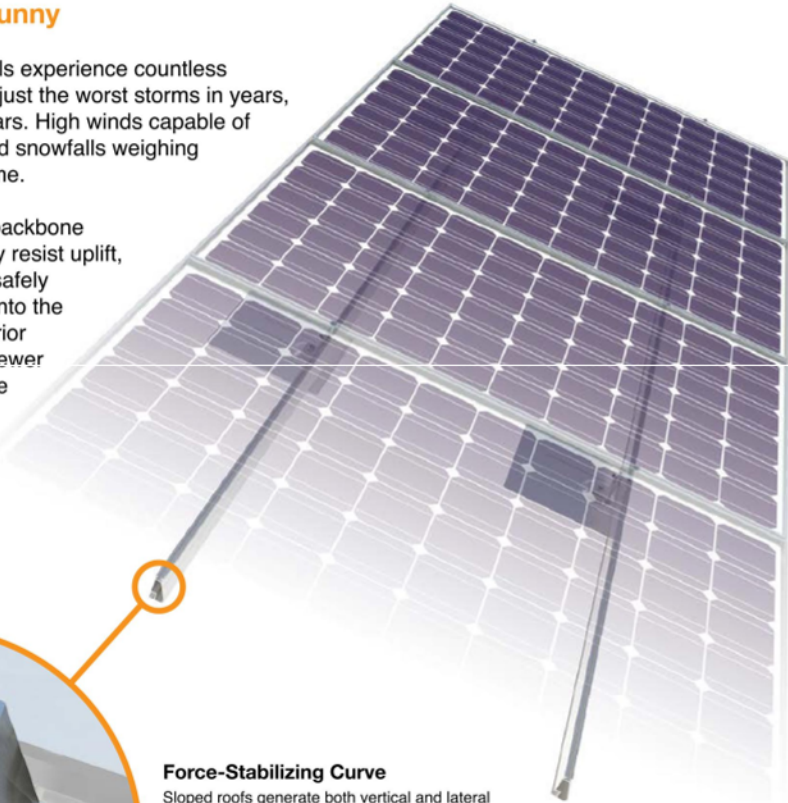


XR Rail® Family

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.

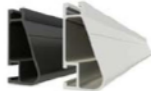
Compatible with Flat & Pitched Roofs

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

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

6000-Series Aluminum

All XR Rails® are made of 6000-series aluminum alloy, with anodized options. Anodizing prevents corrosion, while also providing a more attractive appearance. Available in mill and black-anodized finish.



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
- Mill & black-anodized finish
- Internal splices available



XR100

XR100 is a residential and commercial 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
- Mill & 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
- Mill, non-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.

Tech Brief

CONTRACTOR:

CLIENT:

SPEC. SHEETS

REV: ---- 06/16/2026

PV-12