

ABBREVIATIONS	ELECTRICAL NOTES	JURISDICTION NOTES
<p>A AMPERE AC ALTERNATING CURRENT BLDG BUILDING CONC CONCRETE DC DIRECT CURRENT EGC EQUIPMENT GROUNDING CONDUCTOR (E) EXISTING EMT ELECTRICAL METALLIC TUBING FSB FIRE SET-BACK GALV GALVANIZED GEC GROUNDING ELECTRODE CONDUCTOR GND GROUND HDG HOT DIPPED GALVANIZED I CURRENT Imp CURRENT AT MAX POWER Isc SHORT CIRCUIT CURRENT kVA KILOVOLT AMPERE kW KILOWATT LBW LOAD BEARING WALL MIN MINIMUM (N) NEW NEUT NEUTRAL NTS NOT TO SCALE OC ON CENTER PL PROPERTY LINE POI POINT OF INTERCONNECTION PV PHOTOVOLTAIC SCH SCHEDULE S STAINLESS STEEL STC STANDARD TESTING CONDITIONS TYP TYPICAL UPS UNINTERRUPTIBLE POWER SUPPLY V VOLT Vmp VOLTAGE AT MAX POWER Voc VOLTAGE AT OPEN CIRCUIT W WATT 3R NEMA 3R, RAIN TIGHT</p>	<p>1. THIS SYSTEM IS GRID-INTERTIED VIA A UL-LISTED POWER-CONDITIONING INVERTER.  2. A NATIONALLY - RECOGNIZED TESTING LABORATORY SHALL LIST ALL EQUIPMENT IN COMPLIANCE WITH ART. 110.3.  3. WHERE ALL TERMINALS OF THE DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION, A SIGN WILL BE PROVIDED WARNING OF THE HAZARDS PER ART. 690.17.  4. EACH UNGROUNDED CONDUCTOR OF THE MULTIWIRED BRANCH CIRCUIT WILL BE IDENTIFIED BY PHASE AND SYSTEM PER ART. 210.5.  5. CIRCUITS OVER 250V TO GROUND SHALL COMPLY WITH ART. 250.97, 250.92(B).  6. DC CONDUCTORS EITHER DO NOT ENTER BUILDING OR ARE RUN IN METALLIC RACEWAYS OR ENCLOSURES TO THE FIRST ACCESSIBLE DC DISCONNECTING MEANS PER ART. 690.31(E).  7. ALL WIRES SHALL BE PROVIDED WITH STRAIN RELIEF AT ALL ENTRY INTO BOXES AS REQUIRED BY UL LISTING.  8. MODULE FRAMES SHALL BE GROUNDED AT THE UL - LISTED LOCATION PROVIDED BY THE MANUFACTURER USING UL LISTED GROUNDING HARDWARE.  9. MODULE FRAMES, RAIL, AND POSTS SHALL BE BONDED WITH EQUIPMENT GROUND CONDUCTORS.</p>	<p>PV ARRAY IN COMPLIANCE WITH OPEN SPACE CRITERIA.</p> <p>1. EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE NEC AND ALL APPLICABLE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.  2. GROUND WIRE MUST BE CONTINUOUS AND INSTALLED TO ALLOW FOR PANEL REMOVAL WITHOUT DISRUPTING CONTINUITY. ALL MODULE GROUND CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH NEC 690.4(C)  3. FOLLOW MANUFACTURERS SUGGESTED INSTALLATION PRACTICES AND WIRING SPECIFICATIONS.  4. WIRES SHALL BE RATED AND LABELED "SUNLIGHT RESISTANT" WHERE EXPOSED TO AMBIENT CONDITIONS.</p> <p>Project narrative - 7026 N 66th St</p> <p>This solar photovoltaic system installation at 7026 N 66th St consists of (16) Tesla # T425S modules across (4) arrays on the existing roof structure. The following is a brief breakdown of the mounting planes (MP) utilized as well as the respective quantity of arrays and azimuths:</p> <p>MP 1: (3) Photovoltaic arrays at 54' azimuth  MP 2: (1) Photovoltaic array at 54' azimuth</p> <p>The ZS ramp mounting hardware will be used and will be painted black to match the module frames. Panels will not be visible from the front or side of the home. All parapets are existing, and all arrays will be at or below the height of the parapets. (1) solar photovoltaic inverters will be utilized and installed near to the main service panel. The photovoltaic production meter, AC disconnects, and load center will be painted to match the color of the home (tan, 65% LRV).</p>

LICENSE	GENERAL NOTES
<p>BLDG CL KB-01: ROC243771  ELEC CL K-11: ROC 245450</p>	<p>1. ALL WORK SHALL COMPLY WITH THE 2015 IBC AND 2015 IRC. 2. ALL ELECTRICAL WORK SHALL COMPLY WITH THE 2014 NATIONAL ELECTRIC CODE.</p>
<p>MODULE GROUNDING METHOD: ZEP SOLAR</p>	
<p>AHJ: Paradise Valley</p>	
<p>UTILITY: Arizona Public Service Company</p>	



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Sheet 10	PROPERTY PHOTOS II
Sheet 11	THREE LINE DIAGRAM
Sheet 12	THREE LINE DIAGRAM II
Cutsheets Attached	

REV BY DATE COMMENTS			
REV A	NAME	DATE	COMMENTS
*	*	*	*
*	*	*	*
*	*	*	*
*	*	*	*

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JOB NUMBER: JB-85216086 00
MOUNTING SYSTEM: ZS Ramp Foot
MODULES: (16) Tesla # T425S
INVERTER: Tesla Powerwall 3 [240V] # 1707000-XX-Y 11.5 kW / 13.5 kWh

<p>CUSTOMER: Satish Nandapurkar  7026 N 66th St  Paradise Valley, AZ 85253</p> <p>4808685224</p>
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<p>DESCRIPTION: 6.8 KW DC ROOF MOUNT PV ARRAY  23 KW (AC NAMEPLATE) PV ARRAY  40.5 KWH ENERGY STORAGE SYSTEM</p> <p>PAGE NAME: COVER SHEET</p>
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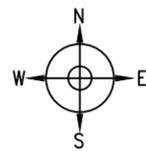
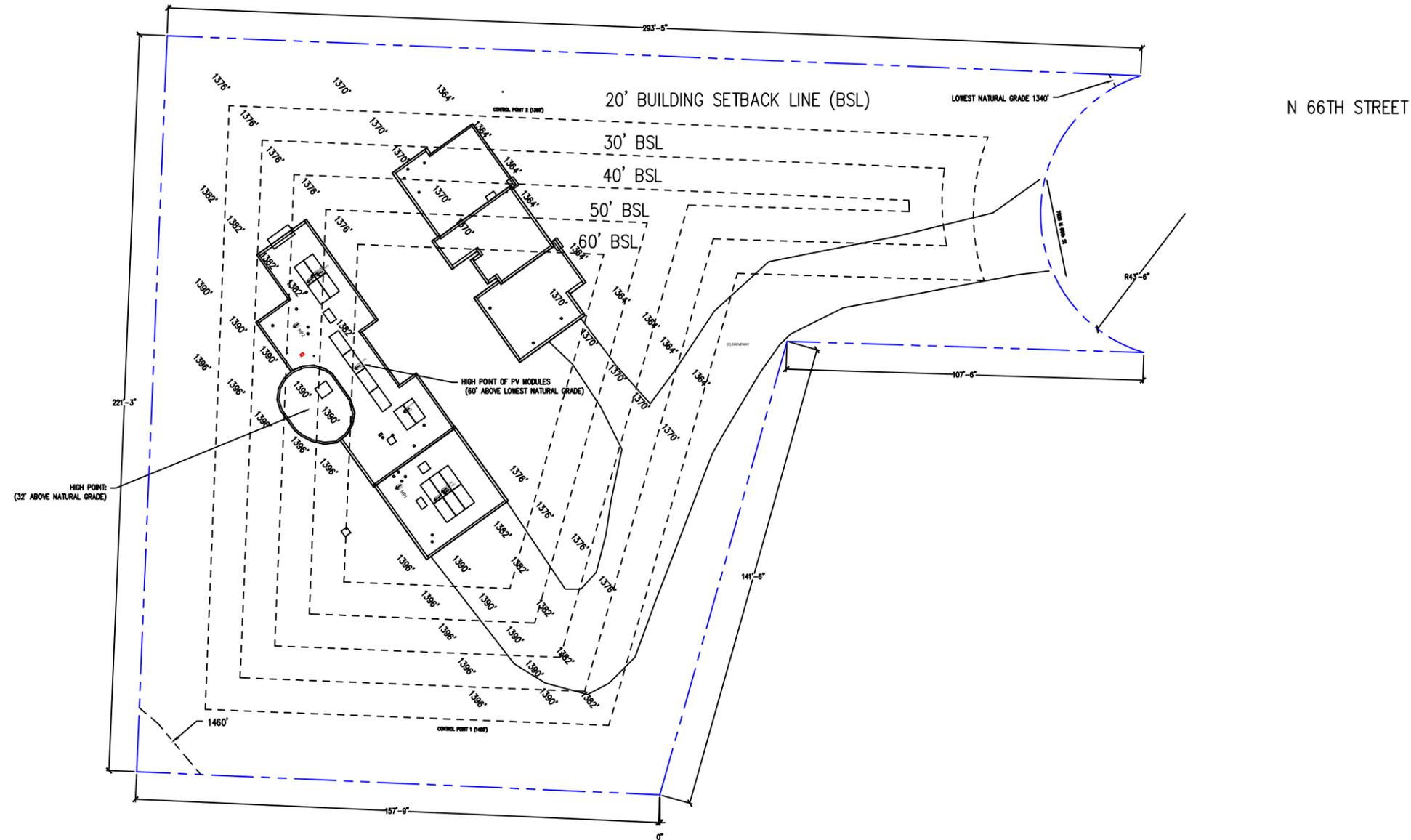
<p>DESIGN: Colton Livingston</p> <p>SHEET: 1 REV: DATE: 6/10/2025</p>
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LOT #: 2  
 Parcel #: 174-52-008  
 Address: 7026 N 66TH ST PARADISE VALLEY 85253  
 Jurisdiction: Paradise Valley

MAX BUILDING HEIGHT IS 1410.0' ( LOWEST NATURAL GRADE 1390.0' + 30'). HEIGHT OF PV MODULES WILL NOT EXCEED  
 MAX ALLOWABLE BUILDING HEIGHT AT EACH BUILDING SETBACK  
 LINE (BSL).

MP1	PITCH: 1° (0:12) AZIMUTH: 54 MATERIAL: MOD BIT	ARRAY PITCH: 1° (0:12) ARRAY AZIMUTH: 54 STORY: 2 STORIES
MP2	PITCH: 1° (0:12) AZIMUTH: 54 MATERIAL: MOD BIT	ARRAY PITCH: 1° (0:12) ARRAY AZIMUTH: 54 STORY: 2 STORIES



**PROPERTY PLAN**

Scale: 1" = 40'-0"

0 40' 80'

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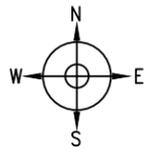
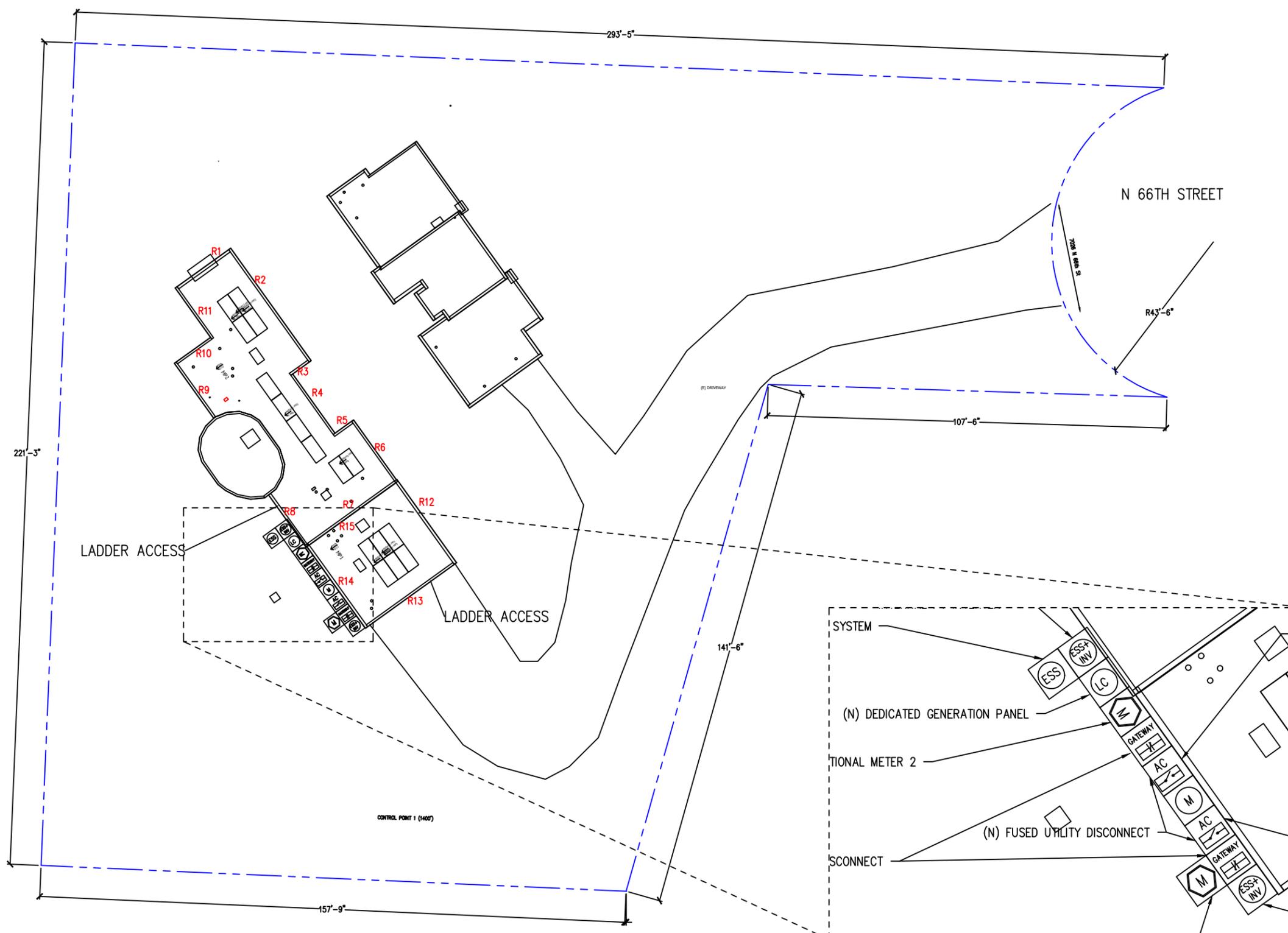
DESIGN:  
Colton Livingston

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REV: 6/10/2025  
DATE:



LOT NUMBER: 2

- MP1 PARAPET HEIGHT:  
 R1-14"  
 R2-22"  
 R3-21"  
 R4-18.5"  
 R5-21"  
 R6-22"  
 R7-17"  
 R8-11"  
 R9-12"  
 R10-12.5"  
 R11-15"
- MP2 PARAPET HEIGHT:  
 R12-18.5"  
 R13-19.5"  
 R14-13"  
 R15-14.75"



MP1	PITCH: 1° (0:12) ARRAY PITCH: 1° (0:12) AZIMUTH: 54 ARRAY AZIMUTH: 54 MATERIAL: MOD BIT STORY: 2 STORIES
MP2	PITCH: 1° (0:12) ARRAY PITCH: 1° (0:12) AZIMUTH: 54 ARRAY AZIMUTH: 54 MATERIAL: MOD BIT STORY: 2 STORIES

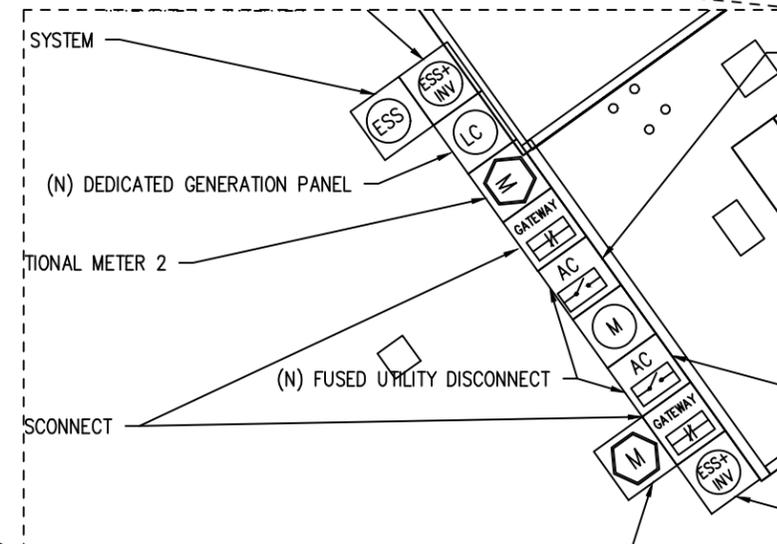
UTILITY PANEL TO MATCH HOUSE COLOR



LEGEND

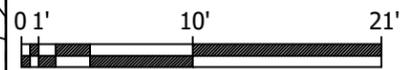
- (E) UTILITY SERVICE METER
- AC DISCONNECT
- SOLAR / STORAGE PRODUCTION METER
- GATEWAY
- ENERGY STORAGE SYSTEM W/ SOLAR INVERTER

- WARNING LABELS PROVIDED AT APPLICABLE EQUIPMENT
- STANDOFF LOCATIONS
  - CONDUIT RUN
  - GATE/FENCE
  - HEAT PRODUCING VENTS ARE RED
  - INTERIOR EQUIPMENT / CONDUIT IS DASHED



SITE PLAN

Scale: 3/32" = 1'



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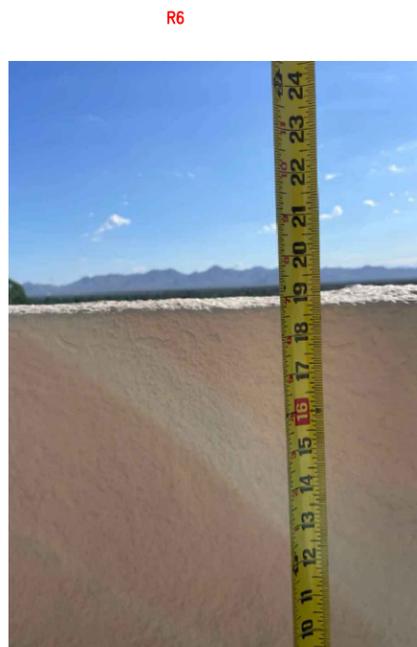
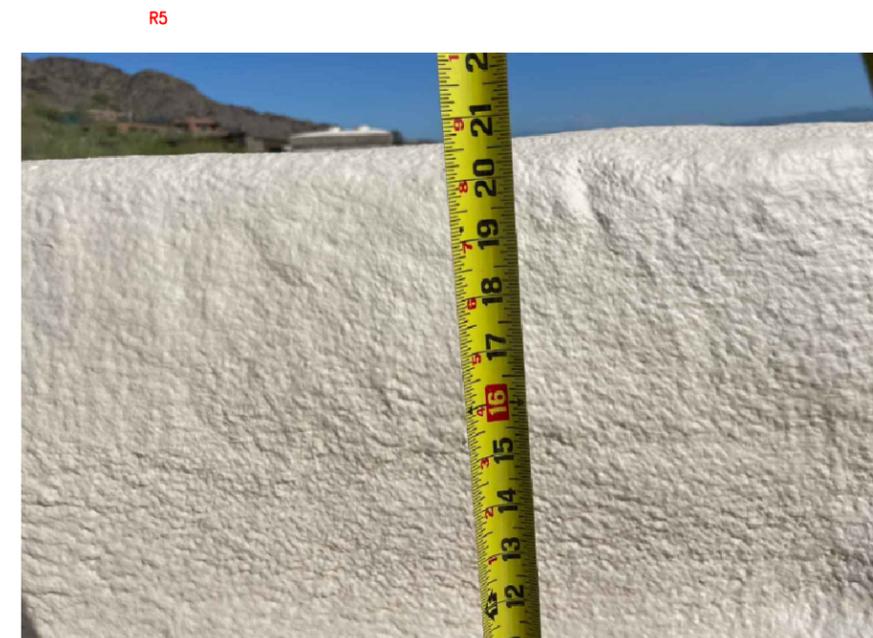
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 Paradise Valley, AZ 85253  
 4808685224

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 PAGE NAME: SITE PLAN

DESIGN: Colton Livingston  
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PAGE NAME:  
ROOF PHOTOS MP1

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R12



R13



R14



R15



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PAGE NAME:  
ROOF PHOTOS – MP2

DESIGN:  
Colton Livingston

SHEET: 5 REV: DATE: 6/10/2025



PANELS NOT VISIBLE FROM FRONT OF HOME VIEW  
RACK SYSTEM COLOR: BLACK

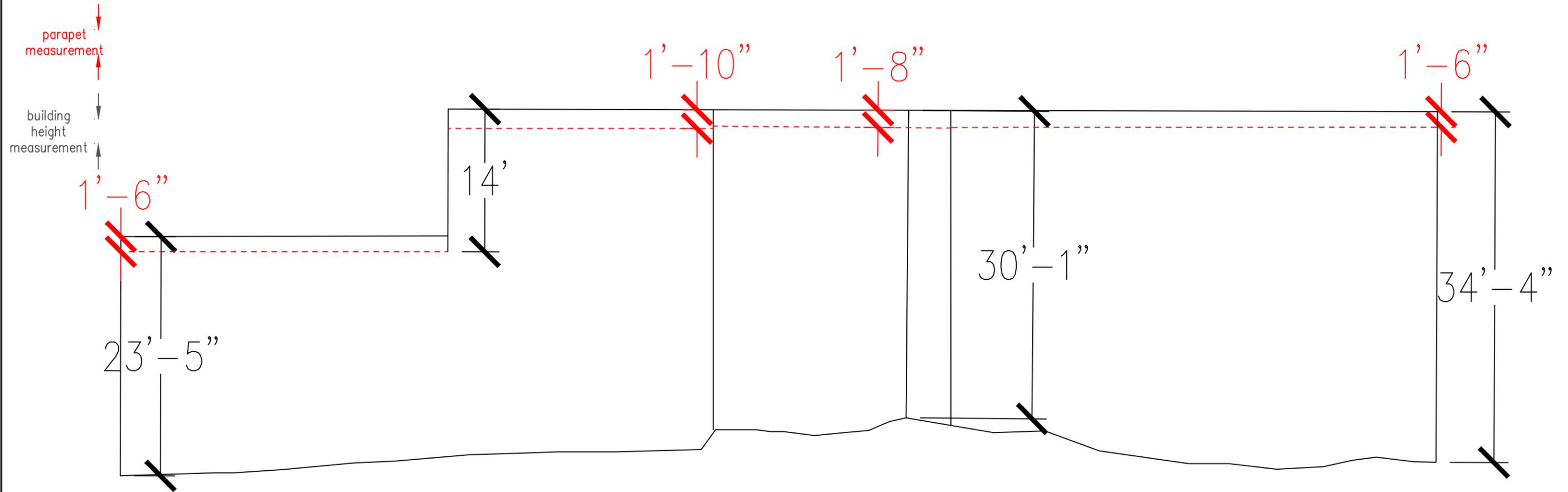
SOLAR MODULES TO BE INSTALLED ON FOAM ROOF  
USING ZS RAMP MOUNTING HARDWARE

SOLAR ARRAYS WILL NOT BE VISIBLE IN ELEVATION  
VIEWS. ALL PARAPET WALL HEIGHTS ARE GREATER  
THAN MAX ARRAY HEIGHT FROM ROOF SURFACE -  
SEE NOTE IN ELEVATION VIEW

NOTE: PHOTOVOLTAIC METER WILL BE PAINTED TO MATCH THE HOUSE  
PAINT COLOR: TAN  
LRV: 65%

SOLAR PANEL COLOR: BLACK WITH BLACK FRAME

PV ARRAYS NOT VISIBLE IN ELEVATION VIEW



**E1** ELEVATION EAST SIDE (EXTERIOR)  
1"=10'

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ELEVATION

DESIGN:  
Colton Livingston  
SHEET: 6 REV: DATE:  
6/10/2025

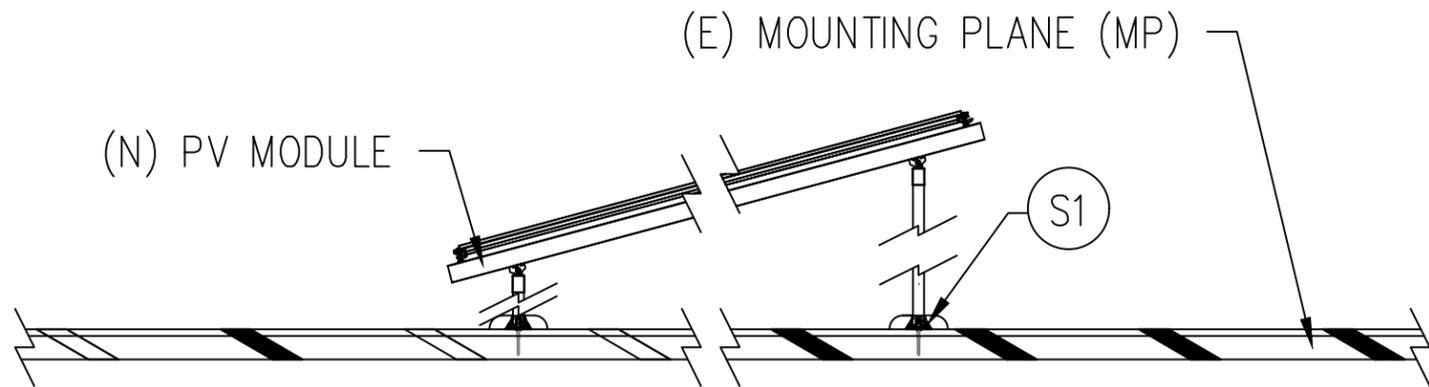


# UPLIFT CALCULATIONS

Jobsite Specific Design Criteria			
Design Code		ASCE 7-10	
Risk Category		II	Table 1.5-1
Ultimate Wind Speed	V-Ult	105	Fig. 1609A
Exposure Category		C	Section 26.7
Ground Snow Load	pg	0	Table 7-1

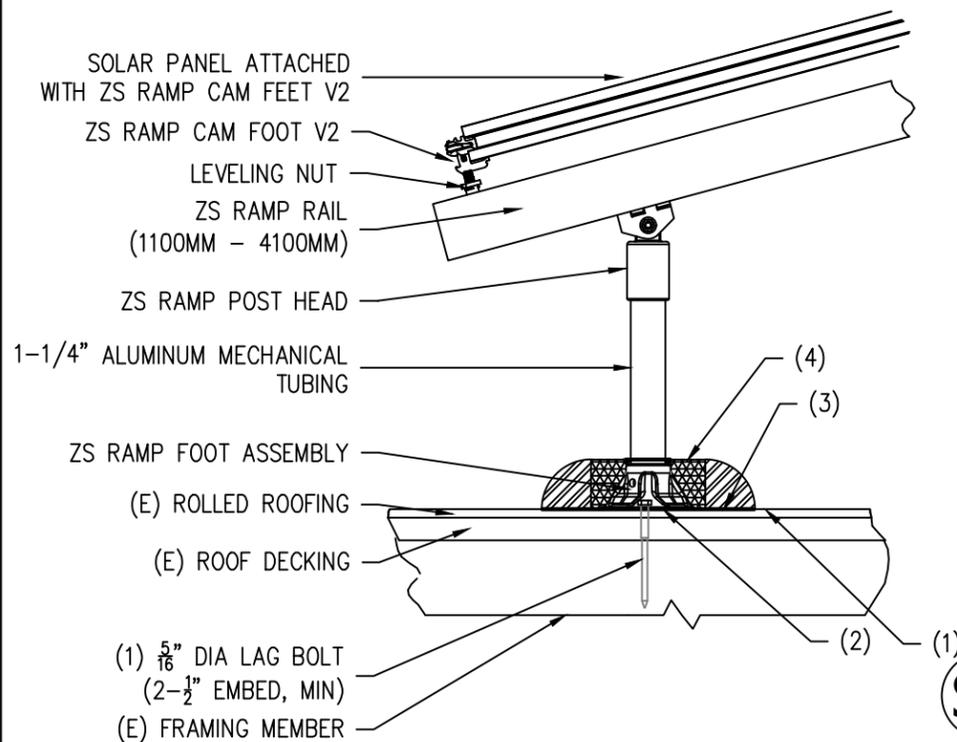
MP Specific Design Information		
MP Name	MP1	MP2
Roofing	Mod Bit	Mod Bit
Standoff	ZS Ramp Foot	ZS Ramp Foot
Pitch	1	1
SL/RLL: PV	0.0	0.0
SL/RLL: Non-PV	20.0	20.0
Edge Zone Width	4 ft	4 ft
Azimuth	54	54
Stories	2	2
Rafter Size/Spacing	2x10 @12" OC	2x10 @12" OC
CJ Size/Spacing		
Standoff Spacing and Layout		
MP Name	MP1	MP2
Applied Wind Zones <sub>2</sub>	All	All
Wind Pressure	-11.34	-9.60
Landscape X-Spacing	72	72
Landscape X-Cantilever	24	24
Landscape Y-Spacing	72	72
Landscape Y-Cantilever	24	24
Portrait X-Spacing	48	48
Portrait X-Cantilever	16	16
Portrait Y-Spacing	72	72
Portrait Y-Cantilever	24	24
Layout	Not Staggered	Not Staggered
<p>Notes:</p> <p>1. X and Y are maximums that are always relative to the structure framing that supports the PV. X is across rafters and Y is along rafters.</p> <p>2. Hatching in Applied Wind Zone rows corresponds to hatching on Site Plan.</p> <p>3. Table lists consistent conservative standoff specifications and layout requirements across all wind zones to comply with the maximum wind pressure of any zone.</p>		

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**SV** **TYPICAL PV SIDE VIEW**  
NTS

**S1**



- INSTALLATION ORDER**
- (1) CLEAN ROOF DECK.
  - (2) APPLY M1 SEALANT BENEATH FOOT ASSEMBLY AND ON PIPE CONNECTION TO FOOT ASSEMBLY. MOUNT FOOT WITH LAG, INSTALL VERTICAL PIPE, AND POST HEAD.
  - (3) M-1 STRUCTURAL SEALANT AT BASE OF SEALING RINGS AND AROUND PENETRATION.
  - (4) 1 PART POURABLE SEALANT.

**S1** **STANDOFF**  
Scale: 1 1/2" = 1'

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PAGE NAME: STRUCTURAL VIEWS

DESIGN: Colton Livingston

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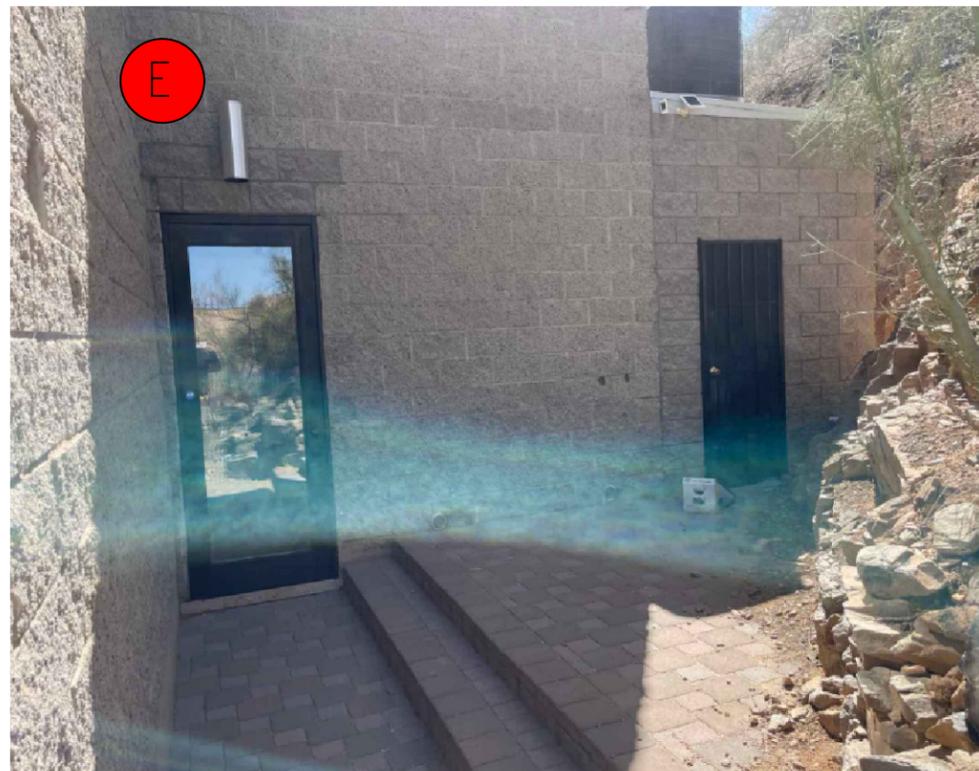
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PROPERTY PHOTOS I

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TESLA



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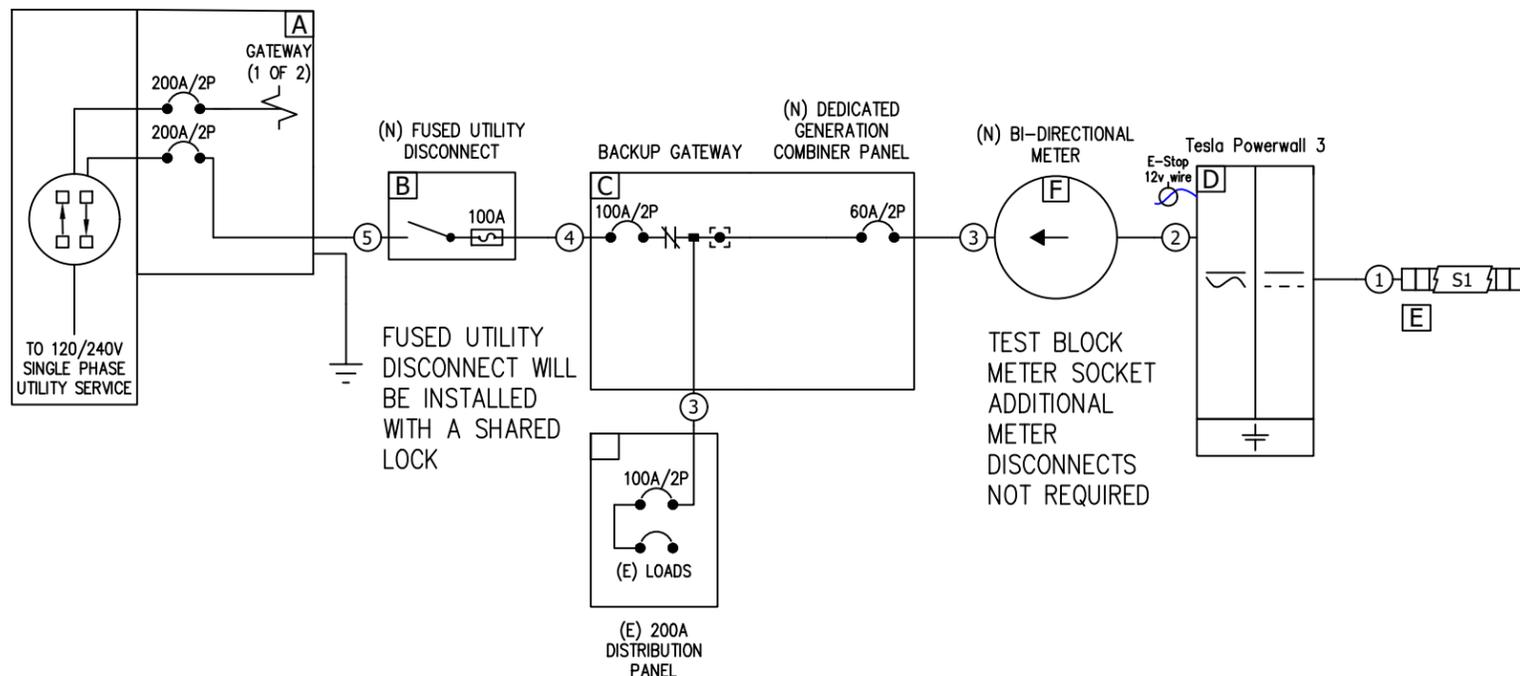
PAGE NAME:  
PROPERTY PHOTOS II

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TESLA

(E) 400A MAIN SERVICE PANEL  
(E) 2x 200A MAIN CIRCUIT BREAKERS



- GROUND ROD TO BE PROVIDED IF UFER IS NOT PRESENT.
1. PROPER GROUNDING ESTABLISHED AND NEUTRAL PULLED THROUGH ALL METERING ENCLOSURES REQUIRED BY THE APS INTERCONNECTION REQUIREMENTS.
  2. PROPER GROUNDING IS ESTABLISHED TO PROVIDE A SAFE WORKING ENVIRONMENT PER APPLICABLE NEC SECTIONS AT ALL VISUAL OPEN DISCONNECTS REQUIRED BY THE APS INTERCONNECTION REQUIREMENTS.
  3. GROUND-NEUTRAL BOND ESTABLISHED IN THE SERVICE DISCONNECT ENCLOSURE PER APPLICABLE NEC SECTIONS.
  4. DESIGN OF THIS SYSTEM ARE IN COMPLIANCE WITH ALL APPLICABLE NEC SECTIONS SUBJECT TO THE LATEST NEC AS ADOPTED BY LOCAL AHJ.
  5. ALL EQUIPMENT MUST BE UTILIZED IN ACCORDANCE WITH THE MANUFACTURER'S INTENDED USE AND DESIGN SPECIFICATIONS.

NEUTRAL-GROUND BONDING JUMPER WILL BE SIZED IN ACCORDANCE WITH NEC 250.66

GROUND BUSHINGS WILL BE USED ON ALL RMC CONNECTIONS AS REQUIRED

ALL AC EQUIPMENT IS 2P; OPERATING AT 240V

PRODUCTION METER FORM 2S

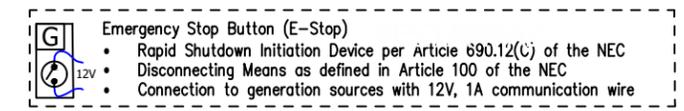
POWERWALL OCPD IN THE DEDICATED GENERATION COMBINER PANEL WILL INCLUDE LOCKING PROVISIONS PER OSHA LOTO REQUIREMENTS, IF THE DESIGN DEEMS NECESSARY.

MAIN SERVICE PANEL IS COMPLIANT WITH NEC 705.12(D)(2)(3)(c)

705.12 Sum of Handles Rule:  
Total breaker ratings remaining in main do not exceed panel rating.  
Main Panel Rating: 200A  
New Breaker = 200A/2P  
Existing Breakers = N/A

COMPLIANT WITH 705.12 SUM OF HANDLES

1. CONDUIT RUNS MAY BE CONDENSED DUE TO SITE CONDITIONS AND/OR INSTALLATION EASE. ALL CONDUIT FILL DERATES AND PROPER CALCULATIONS HAVE BEEN COMPLETED PER NEC CHAPTER 9, TABLE 4.
2. SOLAR SHUTDOWN DEVICE TO BE INSTALLED FOR SYSTEM RAPID SHUTDOWN (RSD) IN ACCORDANCE WITH ARTICLE 690 OF THE APPLICABLE NEC.
3. CONDUIT TYPE CAN CHANGE DUE TO SITE CONDITIONS AND WILL FOLLOW THE NEC REQUIREMENTS FOR THAT CONDUIT TYPE.

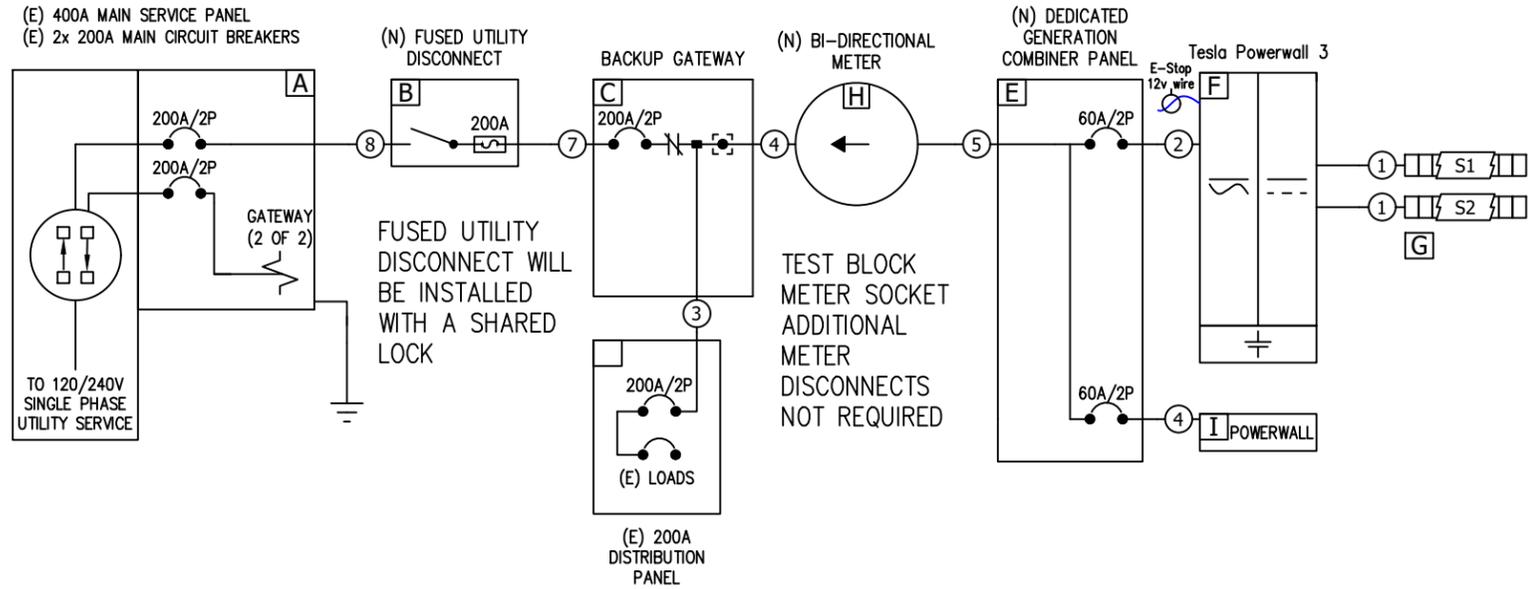


PARTS				DC CONDUCTOR TABLE							STRING TABLE								
Ref	Qty	Description		Ref	Type	Qty	Size (AWG, Cu)	EGC (AWG, Cu)	Conduit	Isc (ADC)	Imp (ADC)	Product Ref	String Ref	Module per String	MCI per String	Voc* (VDC)	Vmp (VDC)	Mounting Plane	
B	1	CUTLER-HAMMER # DG223NRB: Disconnect; 100A, 240Vac, Fusible, NEMA 3R: 2P, 3W, Lockable		1	PV Wire	2	#10	#10	3/4" EMT	11.24	10.36	D	S1	8	1	421.81	328.40	MP2	
B	1	CUTLER-HAMMER # DG100NB: Ground/Neutral Kit; 60-100A, General Duty (DG)																	
B	2	FERRAZ SHAWMUT # TR100R: Fuse; 100A, 250V, Class RK5: Time Delay, 200kA I.R.																	
B	1	CUTLER-HAMMER # DG100RB: Class R Fuse Kit: Use with 100A, DG Disconnects only																	
C	1	CUTLER-HAMMER # BR260: Breaker; 60A/2P, 2 Spaces		Ref	Type	Qty	Size (AWG) (Cu) (Al)	Min EGC (AWG, Cu)	Conduit (Cu) (Al)	Length (ft)	Imp (AAC)	Vmp (VAC)							
C	1	Eaton # CSR2100N: 100A MB; 2-Pole, 240V, 25kAIC, For Convertible Load Centers		2	THWN-2	3	#06 #04	#10	PVC Jacketed MC	1" EMT	5ft	48	240						
C	1	Tesla # 1841000-XX-Y: Back-up Gateway 3.0 NA for PW		3	THWN-2	3	#03 #01	#08	1" EMT	2" PVC	2ft	-	240						
D	1	Tesla Powerwall 3 [240V] # 1707000-XX-Y 11.5 kW / 13.5 kWh		4	THWN-2	3	#03 #01	#08	1" EMT	2" PVC	2ft	-	240						
E	1	Tesla MCI, 650V, 12A		5	THWN-2	3	#03 #01	#08	1" EMT	2" PVC	5ft	-	240						
F	1	100A Meter Socket with Safety Bypass; Ringed, EUSERC, 4-Jaw, Single Phase, OH, Surface																	
F	2	AW CAP; B-Line : Meter Socket Accessory																	
G	1	UL 508 Emergency Stop Device - NEMA 4X																	

LICENSE		BLDG CL KB-01: ROC243771 ELEC CL K-11: ROC 245450	
SITE SPECIFICATIONS		MODULE SPECIFICATIONS	
Main Panel Rating	(E) 400A	Qty	8
Main Breaker Rating	(E) 200A	Voc	48.65
General Notes	DC Ungrounded Inverters	Vmp	41.05
Panel Number	426-2-UG-100KR	Isc and Imp are in the DC Conductor Table	
Meter Number	EP5871		
Service Entrance	Underground		

CONFIDENTIAL - THE INFORMATION HEREIN CONTAINED SHALL NOT BE USED FOR THE BENEFIT OF ANYONE EXCEPT TESLA INC., NOR SHALL IT BE DISCLOSED IN WHOLE OR IN PART TO OTHERS OUTSIDE THE RECIPIENT'S ORGANIZATION, EXCEPT IN CONNECTION WITH THE SALE AND USE OF THE RESPECTIVE TESLA EQUIPMENT, WITHOUT THE WRITTEN PERMISSION OF TESLA INC.	JOB NUMBER: JB-85216086 00	CUSTOMER: Satish Nandapurkar 7026 N 66th St Paradise Valley, AZ 85253	DESCRIPTION: 6.8 KW DC ROOF MOUNT PV ARRAY 23 KW (AC NAMEPLATE) PV ARRAY 40.5 KWH ENERGY STORAGE SYSTEM	DESIGN: Colton Livingston	
	MOUNTING SYSTEM: ZS Ramp Foot		PAGE NAME: THREE LINE DIAGRAM	SHEET: 11	
	MODULES: (16) Tesla # T425S INVERTER: Tesla Powerwall 3 [240V] # 1707000-XX-Y 11.5 kW / 13.5 kWh	4808685224	REV: 6/10/2025	DATE: 6/10/2025	

GROUND ROD TO BE PROVIDED IF UFER IS NOT PRESENT.



1. PROPER GROUNDING ESTABLISHED AND NEUTRAL PULLED THROUGH ALL METERING ENCLOSURES REQUIRED BY THE APS INTERCONNECTION REQUIREMENTS.
2. PROPER GROUNDING IS ESTABLISHED TO PROVIDE A SAFE WORKING ENVIRONMENT PER APPLICABLE NEC SECTIONS AT ALL VISUAL OPEN DISCONNECTS REQUIRED BY THE APS INTERCONNECTION REQUIREMENTS.
3. GROUND-NEUTRAL BOND ESTABLISHED IN THE SERVICE DISCONNECT ENCLOSURE PER APPLICABLE NEC SECTIONS.
4. DESIGN OF THIS SYSTEM ARE IN COMPLIANCE WITH ALL APPLICABLE NEC SECTIONS SUBJECT TO THE LATEST NEC AS ADOPTED BY LOCAL AHJ.
5. ALL EQUIPMENT MUST BE UTILIZED IN ACCORDANCE WITH THE MANUFACTURER'S INTENDED USE AND DESIGN SPECIFICATIONS.

NEUTRAL-GROUND BONDING JUMPER WILL BE SIZED IN ACCORDANCE WITH NEC 250.66

GROUND BUSHINGS WILL BE USED ON ALL RMC CONNECTIONS AS REQUIRED

ALL AC EQUIPMENT IS 2P; OPERATING AT 240V

PRODUCTION METER FORM 2S

POWERWALL OCPD IN THE DEDICATED GENERATION COMBINER PANEL WILL INCLUDE LOCKING PROVISIONS PER OSHA LOTO REQUIREMENTS, IF THE DESIGN DEEMS NECESSARY.

MAIN SERVICE PANEL IS COMPLIANT WITH NEC 705.12(D)(2)(3)(c)

705.12 Sum of Handles Rule:  
 Total breaker ratings remaining in main do not exceed panel rating.  
 Main Panel Rating: 200A  
 New Breaker = 200A/2P  
 Existing Breakers = N/A

1. CONDUIT RUNS MAY BE CONDENSED DUE TO SITE CONDITIONS AND/OR INSTALLATION EASE. ALL CONDUIT FILL DERATES AND PROPER CALCULATIONS HAVE BEEN COMPLETED PER NEC CHAPTER 9, TABLE 4.
2. SOLAR SHUTDOWN DEVICE TO BE INSTALLED FOR SYSTEM RAPID SHUTDOWN (RSD) IN ACCORDANCE WITH ARTICLE 690 OF THE APPLICABLE NEC.
3. CONDUIT TYPE CAN CHANGE DUE TO SITE CONDITIONS AND WILL FOLLOW THE NEC REQUIREMENTS FOR THAT CONDUIT TYPE.

**J** Emergency Stop Button (E-Stop)

- Rapid Shutdown Initiation Device per Article 690.12(C) of the NEC
- Disconnecting Means as defined in Article 100 of the NEC
- Connection to generation sources with 12V, 1A communication wire

DC CONDUCTOR TABLE							
Ref	Type	Qty	Size (AWG, Cu)	EGC (AWG, Cu)	Conduit	Isc (ADC)	Imp (ADC)
1	PV Wire	2	#10	#10	3/4" EMT	11.24	10.36

AC CONDUCTOR TABLE										
Ref	Type	Qty	Size (AWG)		Min EGC (AWG, Cu)	Conduit		Length (ft)	Imp (AAC)	Vmp (VAC)
			(Cu)	(Al)		(Cu)	(Al)			
2	THWN-2	3	#06	#04	#10	PVC Jacketed MC	2" PVC	5ft	48	240
3	THWN-2	3	#3/0	250 KCMIL	#06	2" PVC	2" PVC	2ft	-	240
4	THWN-2	3	#06	#04	#10	PVC Jacketed MC	2" PVC	2ft	-	240
5	THWN-2	3	#01	#2/0	#06	2" PVC	2" PVC	2ft	-	240
6	THWN-2	3	#01	#2/0	#06	2" PVC	2" PVC	5ft	-	240
7	THWN-2	3	#3/0	250 KCMIL	#06	2" PVC	2" PVC	2ft	-	240
8	THWN-2	3	#3/0	250 KCMIL	#06	2" PVC	2" PVC	5ft	-	240

STRING TABLE						
Product Ref	String Ref	Module per String	MCI per String	Voc* (VDC)	Vmp (VDC)	Mounting Plane
F	S2	6	1	316.35	246.30	MP1
	S1	2	1	105.45	82.10	MP2

PARTS		
Ref	Qty	Description
B	1	CUTLER-HAMMER # DG224NRKV-00LL: Disconnect; 200A, 240Vac, Fusible, NEMA 3R: 2P, 3W, Lockable
	1	CUTLER-HAMMER # DG200NK: Ground/Neutral Kit; 200A General, Heavy Duty (DG, DH), NEMA 1, 3R
	2	FERRAZ SHAWMUT # TR200R: Fuse; 200A, 250V, Class RK5: Time Delay, 200kA I.R.
C	1	CUTLER-HAMMER # DS46FK: Class R Fuse Kit
	1	Eaton # CSR2200N: 200A MB ONLY; 2-Pole, 120V/240V, 25kAIC, Bolt On
E	1	Tesla # 1841000-XX-Y: Back-up Gateway 3.0 NA for PW
	2	CUTLER-HAMMER # BR260: Breaker; 60A/2P, 2 Spaces
F	1	Eaton # BRP12NC125R: Load Center (BR Convertible), 125A, NEMA 3R, 10 kAIC, 1P, 12 spaces, 120/240 V
	1	Eaton # BRSF125: Sub-Feed Lug Block; 125A, 2P, CLIP ON BR FRAME
G	2	Tesla Powerwall 3 [240V] # 1707000-XX-Y 11.5 kW / 13.5 kWh
H	2	Tesla MCI, 650V, 12A
I	1	200A Meter Socket with Safety Bypass; Ringed,EUSERC,4-Jaw, Single Phase, OH/UG, Surface
	2	AW CAP; B-Line : Meter Socket Accessory
J	1	Tesla Powerwall 3 [240V] # 1707000-XX-Y 11.5 kW / 13.5 kWh
K	1	UL 508 Emergency Stop Device - NEMA 4X

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JOB NUMBER: JB-85216086 00  
 MOUNTING SYSTEM: ZS Ramp Foot  
 MODULES: (16) Tesla # T425S  
 INVERTER: Tesla Powerwall 3 [240V] # 1707000-XX-Y 11.5 kW / 13.5 kWh

CUSTOMER: Satish Nandapurkar  
 7026 N 66th St  
 Paradise Valley, AZ 85253  
 4808685224

DESCRIPTION: 6.8 KW DC ROOF MOUNT PV ARRAY  
 23 KW (AC NAMEPLATE) PV ARRAY  
 40.5 KWH ENERGY STORAGE SYSTEM  
 SHEET NAME: THREE LINE DIAGRAM II

DESIGN: Colton Livingston  
 SHEET: 12 REV: 6/10/2025 DATE:



WARNING: PHOTOVOLTAIC POWER SOURCE

Label Location:  
(C)  
Per Code:  
2012 IFC

### WARNING

ELECTRIC SHOCK HAZARD  
DO NOT TOUCH TERMINALS  
TERMINALS ON BOTH LINE  
AND LOAD SIDES MAY BE  
ENERGIZED IN THE OFF POSITION

Label Location:  
(AC) (POI)

### WARNING

A GENERATION SOURCE IS  
CONNECTED TO THE SUPPLY  
(UTILITY) SIDE OF THE MAIN  
SERVICE DISCONNECT. FOLLOW  
PROPER LOCK-OUT/TAG-OUT  
PROCEDURES TO ENSURE  
THE PHOTOVOLTAIC SYSTEM  
UTILITY DISCONNECT SWITCH IS  
OPENED PRIOR TO PERFORMING  
WORK ON THIS DEVICE

Label Location:  
(D)

**NOTICE**  
PV SYSTEM COMBINER PANEL  
DO NOT ADD LOADS  
TO THIS PANEL

Label Location:  
(D) (POI)

### WARNING

ELECTRIC SHOCK HAZARD  
NO USER SERVICABLE  
PARTS INSIDE  
CONTACT AUTHORIZED  
SERVICER FOR ASSISTANCE

Label Location:  
(CB)

### CAUTION

SOLAR PV SYSTEM INSTALLED  
WHEN POWER IS DISCONNECTED  
SOLAR PANELS AND WIRING IN  
CONDUIT TO INVERTER MAY  
REMAIN ENERGIZED DURING  
DAYLIGHT HOURS

Label Location:  
(D)

PHOTOVOLTAIC  
SYSTEM DEDICATED  
KWH METER

Label Location:  
(AC)

PV COMBINER BOX  
WARNING: ELECTRIC SHOCK  
HAZARD

Label Location:  
(CB)  
Per Code:  
NEC 690.14.C.2

### DC PHOTOVOLTAIC DISCONNECT

Label Location:  
(DC) (INV)  
Per Code:  
NEC 690.14.C.2

PHOTOVOLTAIC POINT OF  
INTERCONNECTION  
WARNING: ELECTRIC SHOCK  
HAZARD. DO NOT TOUCH  
TERMINALS. TERMINALS ON  
BOTH THE LINE AND LOAD SIDE  
MAY BE ENERGIZED IN THE OPEN  
POSITION. FOR SERVICE  
DE-ENERGIZE BOTH SOURCE  
AND MAIN BREAKER.  
PV POWER SOURCE

Label Location:  
(POI)  
Per Code:  
CEC 690.13.B

PHOTOVOLTAIC SYSTEM  
UTILITY  
DISCONNECT SWITCH

Label Location:  
(AC)

MAXIMUM POWER-  
POINT CURRENT (I<sub>mp</sub>)  A  
MAXIMUM POWER-  
POINT VOLTAGE (V<sub>mp</sub>)  V  
MAXIMUM SYSTEM  
VOLTAGE (V<sub>oc</sub>)  V  
SHORT-CIRCUIT  
CURRENT (I<sub>sc</sub>)  A

Label Location:  
(DC) (INV)  
Per Code:  
NEC 690.53

MAXIMUM AC  A  
OPERATING CURRENT  
MAXIMUM AC  V  
OPERATING VOLTAGE

PHOTOVOLTAIC POWER  
SOURCE BREAKERS  
ARE BACKFEEDING

Label Location:  
(POI)

### AC PHOTOVOLTAIC DISCONNECT

Label Location:  
(AC) (POI)  
Per Code:  
NEC 690.14.C.2

### CAUTION

DUAL POWER SOURCE  
SECOND SOURCE IS  
PHOTOVOLTAIC SYSTEM

Label Location:  
(POI)  
Per Code:  
NEC 705.12.B.3

BREAKER HAS  
BEEN DE-RATED  
PER NEC 690.64(B)(2)

Label Location:  
(D)

MAXIMUM AC  A  
OPERATING CURRENT  
MAXIMUM AC  V  
OPERATING VOLTAGE

Label Location:  
(AC) (POI)  
Per Code:  
NEC 690.54

### WARNING

INVERTER OUTPUT  
CONNECTION  
DO NOT RELOCATE  
THIS OVERCURRENT  
DEVICE

Label Location:  
(POI)  
Per Code:  
NEC 705.12.B.2.3.b

### NOTICE

INVERTER AND DISCONNECT  
LOCATED IN GARAGE

Label Location:  
(D)

(AC): AC Disconnect  
(C): Conduit  
(CB): Combiner Box  
(D): Distribution Panel  
(DC): DC Disconnect  
(IC): Interior Run Conduit  
(INV): Inverter With Integrated DC Disconnect  
(LC): Load Center  
(M): Utility Meter  
(POI): Point of Interconnection

**BACKUP LOAD CENTER**

Label Location:  
(BLC)  
Per Code:  
NEC 408.4

**CAUTION**  
TRI POWER SOURCE  
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM  
THIRD SOURCE IS ENERGY STORAGE SYSTEM

Label Location:  
(MSP)  
Per Code:  
NEC 705.12(B)(3)

**CAUTION**  
DO NOT ADD NEW LOADS

Label Location:  
(BLC)  
Per Code:  
NEC 220

**WARNING**  
THIS EQUIPMENT FED BY  
MULTIPLE SOURCES. TOTAL  
RATING OF ALL OVER CURRENT  
DEVICES, EXCLUDING MAIN  
SUPPLY OVERCURRENT DEVICE,  
SHALL NOT EXCEED AMPACITY  
OF BUSBAR.

Label Location:  
(MSP)  
Per Code:  
NEC 705.12.B.2.3.c

**CAUTION**  
THIS PANEL HAS SPLICED FEED-  
THROUGH CONDUCTORS.  
LOCATION OF DISCONNECT AT ENERGY  
STORAGE BACKUP LOAD PANEL

Label Location:  
(MSP)  
Per Code:  
NEC 312.8.A(3)

**NOMINAL ESS VOLTAGE: 120/240V**  
**MAX AVAILABLE SHORT-  
CIRCUIT FROM ESS: 32A**  
**ARC FAULT CLEARING  
TIME FROM ESS: 67ms**  
**DATE OF  
CALCULATION:**

Label Location:  
(MSP)  
Per Code:  
Per 706.7(D) label to be marked in field

**CAUTION**  
DUAL POWER SOURCE  
SECOND SOURCE IS  
ENERGY STORAGE SYSTEM

Label Location:  
(MSP)  
Per Code:  
NEC 705.12(B)(3)

**ENERGY STORAGE SYSTEM ON SITE  
LOCATED WITHIN LINE OF SIGHT**

Label Location:  
(MSP)  
Per Code:

**ENERGY STORAGE SYSTEM ON SITE  
LOCATED ON ADJACENT WALL**

Label Location:  
(MSP)  
Per Code:

**ENERGY STORAGE SYSTEM ON SITE  
LOCATED ON OPPOSITE WALL**

Label Location:  
(MSP)  
Per Code:

**ENERGY STORAGE SYSTEM ON SITE  
LOCATED INSIDE**

Label Location:  
(MSP)  
Per Code:

(AC): AC Disconnect  
(BLC): Backup Load Center  
(MSP): Main Service Panel

# Solar Shutdown Device 2 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+ or Tesla Solar Inverter, solar array shutdown is initiated by any loss of AC power.

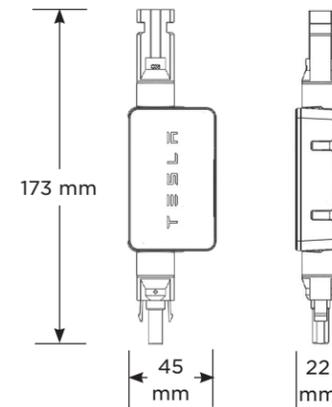
Electrical Specifications	Nominal Input DC Current Rating ( $I_{MP}$ )	13 A
	Maximum Input Short Circuit Current ( $I_{SC}$ )	17 A
	Maximum System Voltage (PVHCS)	1000 V DC

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

Environmental Specifications	Ambient Temperature	-45°C to 70°C (-49°F to 158°F)
	Enclosure Rating	NEMA 4X / IP65

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

Mechanical Specifications	Model Number	MCI-2
	Electrical Connections	MC4 Connector
	Housing	Plastic
	Dimensions	173 x 45 x 22 mm (6.8 x 1.8 x 0.9 in)
	Weight	120 g (0.26 lb)



## UL 3741 PV Hazard Control (and PVRSA) Compatibility

Tesla Solar Roof and Tesla/Zep ZS Arrays using the following modules are certified to UL 3741 and UL 1741 PVRSA when installed with Powerwall+ or Tesla Solar Inverter and Solar Shutdown Devices. See [Powerwall+ / Tesla Solar Inverter Rapid Shutdown: Module Selection Based on PV Hazard Control System Listing](#) for guidance on installing other modules.

Brand	Model	Required Solar Shutdown Devices
Tesla	Solar Roof V3	1 Solar Shutdown Device per 10 modules
Tesla	Tesla TxxxS (where xxx = 405 to 450 W, increments of 5) Tesla TxxxH (where xxx = 395 to 415 W, increments of 5)	1 Solar Shutdown Device per 3 modules <sup>1</sup>
Hanwha	Q.PEAK DUO BLK-G5 or Q.PEAK DUO BLK-G6+	1 Solar Shutdown Device per 3 modules

<sup>1</sup>Exception: Tesla solar modules installed in locations where the max Voc for three modules at low design temperatures exceeds 165 V shall be limited to two modules between Solar Shutdown Devices.

# Gateway 3

Tesla Gateway 3 controls connection to the grid in a Powerwall system, automatically detecting outages and providing seamless transition to backup power. It provides energy monitoring that is used by Powerwall for solar self-consumption, time-based control, and backup operation.

## Performance Specifications

<b>Model Number</b>	1841000-01-y	<b>AC Meter</b>	Revenue accurate (+/- 0.5%)
<b>Nominal Grid Voltage</b>	120/240 V AC	<b>Communication</b>	CAN
<b>Grid Configuration</b>	Split phase	<b>User Interface</b>	Tesla App
<b>Grid Frequency</b>	60 Hz	<b>Backup Transition</b>	Automatic disconnect for seamless backup
<b>Continuous Current Rating</b>	200 A	<b>Overcurrent Protection Device</b>	100-200 A Service entrance rated Eaton CSR, BWH, or BW, or Square D QOM breakers
<b>Maximum Supply Short Circuit Current</b>	22 kA with Square D or Eaton main breaker 25 kA with Eaton main breaker <sup>1</sup>	<b>Internal Panelboard</b>	200 A 8-space/16 circuit breakers Eaton BR, Siemens QP, or Square D HOM breakers rated to 10-125A
<b>IEC Protective Class</b>	Class I	<b>Warranty</b>	10 years
<b>Overvoltage Category</b>	Category IV		

<sup>1</sup>Only Eaton CSR or BWH main breakers are 25 kA rated

## Environmental Specifications

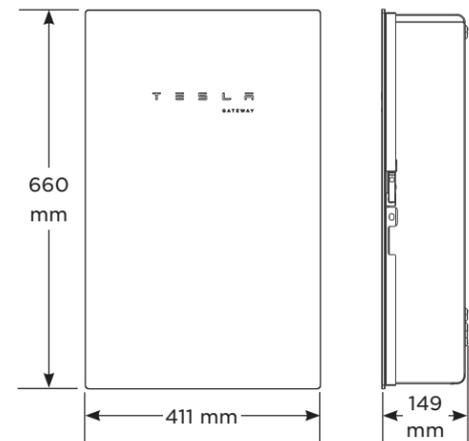
<b>Operating Temperature</b>	-20°C to 50°C (-4°F to 122°F)
<b>Operating Humidity (RH)</b>	Up to 100%, condensing
<b>Maximum Elevation</b>	3000 m (9843 ft)
<b>Environment</b>	Indoor and outdoor rated
<b>Enclosure Type</b>	NEMA 3R

## Compliance Information

<b>Certifications</b>	UL 67, UL 869A, UL 916, UL 1741 PCS, CSA 22.2 107.1, CSA 22.2 29
<b>Emmissions</b>	FCC Part 15, ICES 003

## Mechanical Specifications

<b>Dimensions</b>	660 x 411 x 149 mm (26 x 16 x 6 in)
<b>Weight</b>	16.4 kg (36 lb)
<b>Mounting options</b>	Wall mount



# 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 <sub>1</sub>			
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 <sub>2</sub>	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 <sub>3</sub>			
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% <sup>14</sup>			
Solar to Home/Grid Efficiency	97.5% <sup>5</sup>			
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 <sub>e</sub> )			
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			

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

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

<sup>3</sup> If enabling the 15.4 kW off-grid maximum continuous discharge power, Powerwall 3 must be installed with an 80 A breaker and appropriately sized conductors.

<sup>4</sup> Typical solar shifting use case.

<sup>5</sup> Tested using CEC weighted efficiency methodology.

<sup>6</sup> The 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.

# 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 ( $I_{mp}$ )	13 A <sup>7</sup>
Maximum Short Circuit Current per MPPT ( $I_{sc}$ )	15 A <sup>7</sup>

<sup>7</sup>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  $26 A I_{MP} / 30 A I_{SC}$ .

## Environmental Specifications

Operating Temperature	-20°C to 50°C (-4°F to 122°F) <sup>8</sup>
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

<sup>8</sup>Performance may be de-rated at operating temperatures above 40°C (104°F).

## Compliance Information

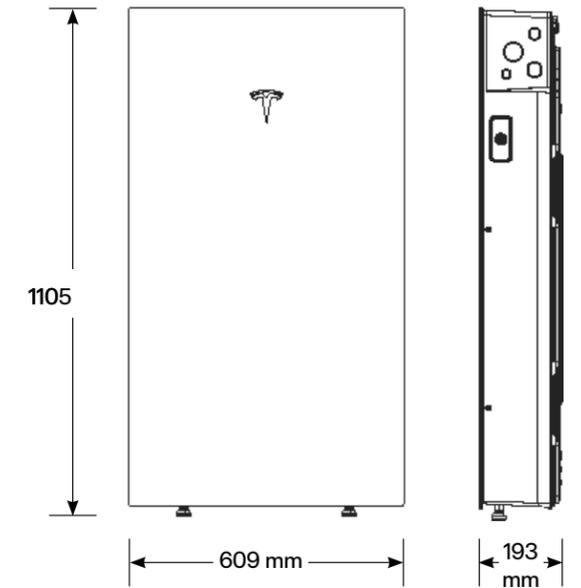
Certifications	UL 1741, UL 9540, UL 9540A, UL 3741, UL 1741 PCS, UL 1741 SA, UL 1741 SB, UL 1973, UL 1699B, UL 1998, CSA C22.2 No. 0.8, CSA C22.2 No. 107.1, CSA C22.2 No. 330, CSA 22.3 No. 9, IEEE 1547, IEEE 1547A, IEEE 1547.1, CA Rule No.21
Grid Connection	United States and Canada
Emissions	FCC Part 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) <sub>g</sub>
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

<sup>g</sup>These dimensions include the glass front cover being installed on Powerwall 3.



# Powerwall 3 Expansion Technical Specifications

## Battery Technical Specifications

Model Number	1807000-xx-y
Nominal Battery Energy	13.5 kWh
Voltage Range	52 - 92 V DC <sup>11</sup>

<sup>11</sup>Powerwall 3 Expansion units are connected in parallel and are not field serviceable.

## Environmental Specifications

Operating Temperature	-20°C to 50°C (-4°F to 122°F) <sup>12</sup>
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
Pollution Rating	PD3

<sup>12</sup>Performance may be de-rated at operating temperatures above 40°C (104°F).

## Compliance Information

Certifications	UL 1973, UL 9540
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## Mechanical Specifications

Dimensions	1105 x 609 x 168 mm (43.5 x 24 x 6.6 in) <sup>13</sup>	
Total Weight of Wall-Mounted Expansion Unit	118.5 kg (261.2 lb)	
Weight of Expansion Unit	110 kg (242.5 lb)	
Weight of Glass Front Cover	6.5 kg (14.5 lb)	
Weight of Wall Bracket	1.9 kg (4.2 lb)	
Weight of Expansion Accessories	0.7 kg (1.5 lb)	
Mounting Options	Floor or wall mount	
Stacking Capability (Floor Mount Only)	Up to (3) Expansion units behind a Powerwall 3	
Compatibility with Other Systems	Only compatible with Powerwall 3	
Connection to Powerwall 3 or Expansions	Powerwall 3 Expansion harness <sup>14</sup>	

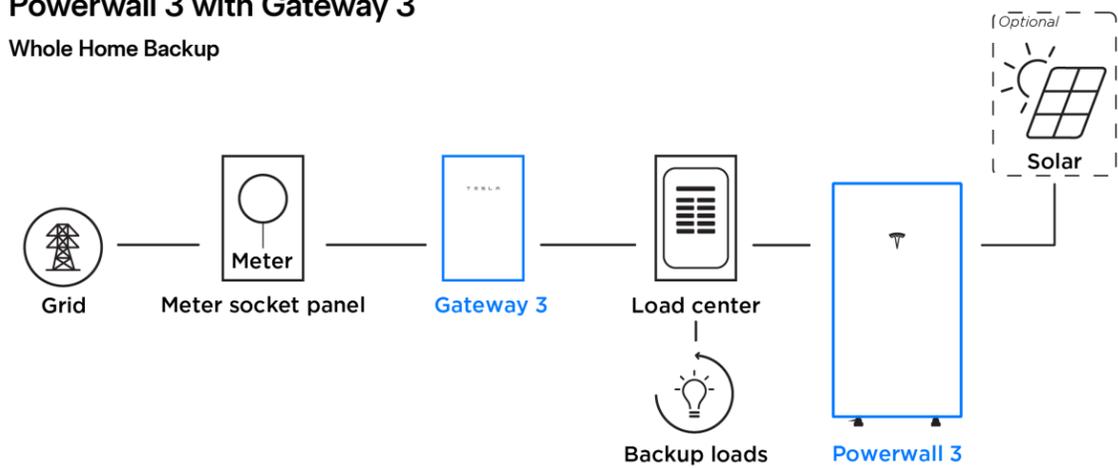
<sup>13</sup>These dimensions include the glass front cover being installed on Powerwall 3 Expansion.

<sup>14</sup>The Powerwall 3 Expansion harness is a listed component of the UL 9540 certification.

# Powerwall 3 Example System Configurations

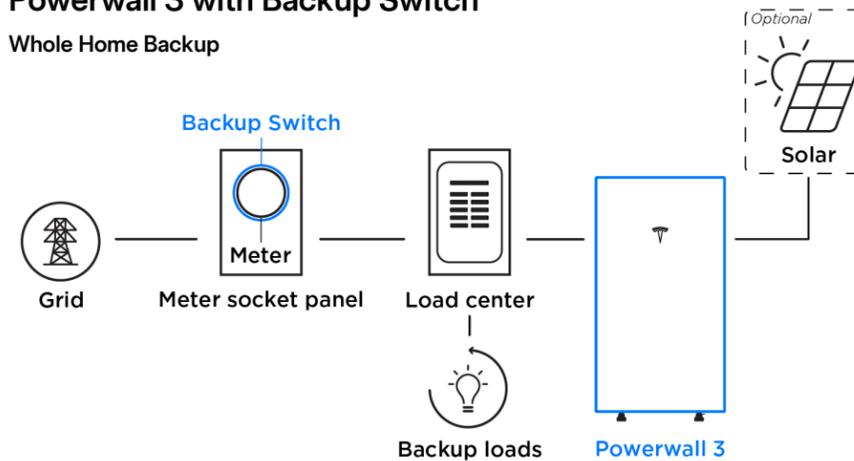
## Powerwall 3 with Gateway 3

Whole Home Backup



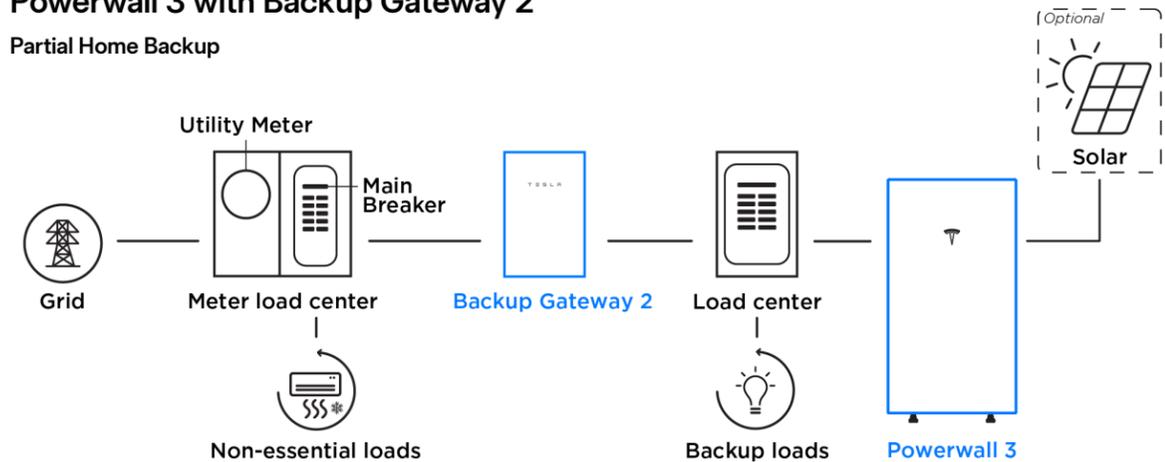
## Powerwall 3 with Backup Switch

Whole Home Backup



## Powerwall 3 with Backup Gateway 2

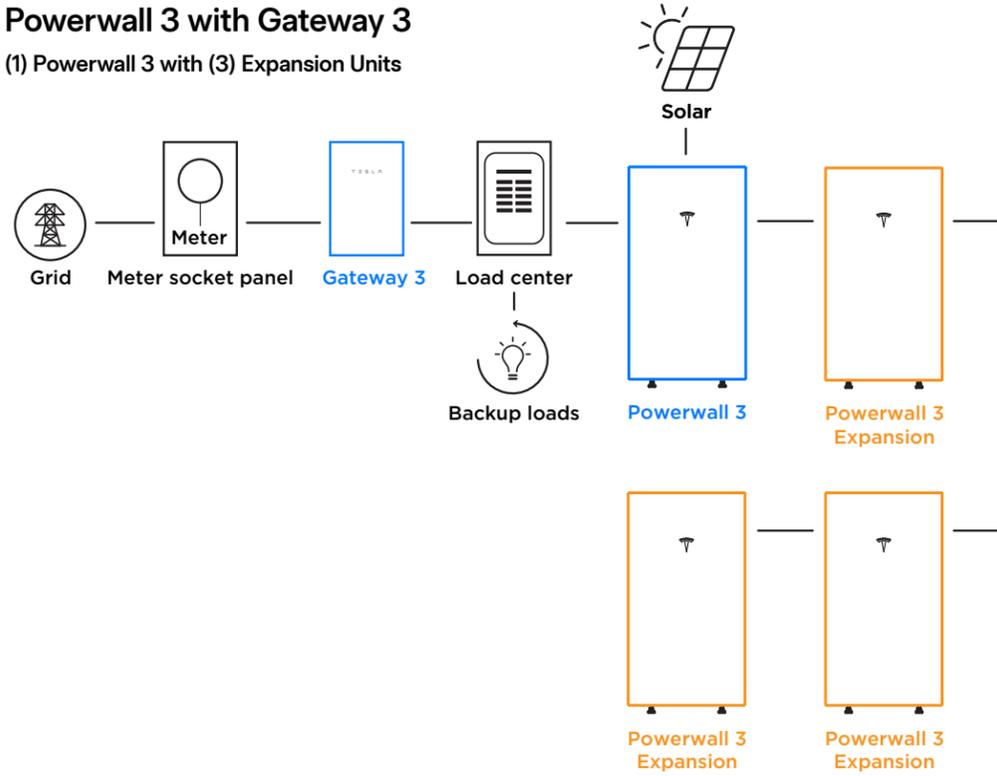
Partial Home Backup



# Powerwall 3 Example System Configurations

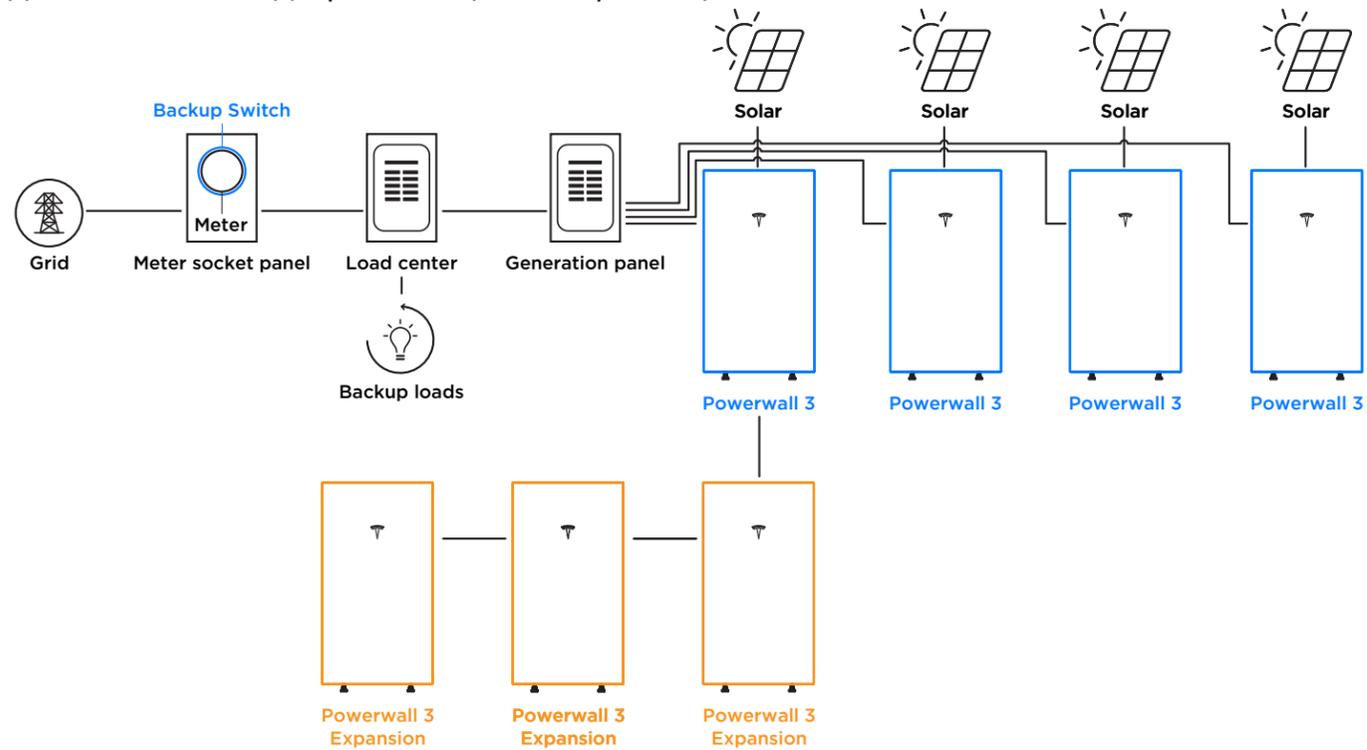
## Powerwall 3 with Gateway 3

(1) Powerwall 3 with (3) Expansion Units

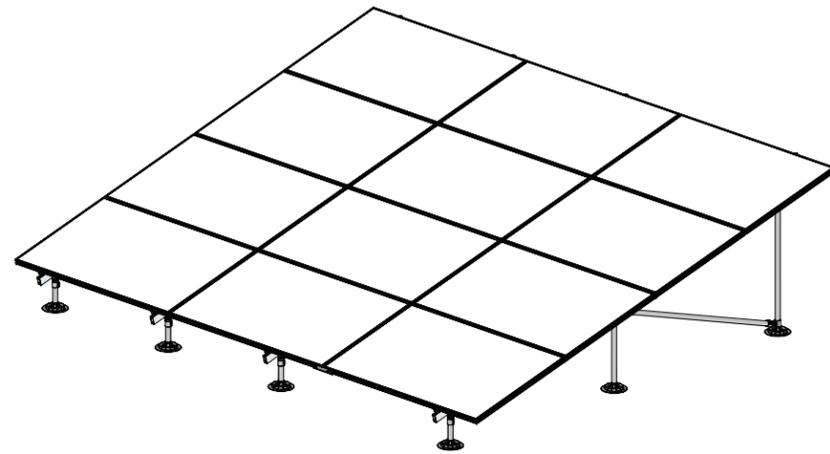


## Powerwall 3 with Backup Switch

(4) Powerwall 3 Units with (3) Expansion Units (Maximum System Size)



**ZS Ramp**  
for residential low-slope roofs



ZS Ramp Array



**Description**

- PV Mounting Solution for Residential Low-Slope Roofs

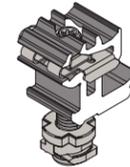
**Specifications**

- Tilt Angle: 0-15 degrees
- Designed for low slope roofs
- Corrosion resistant materials (Aluminum, Stainless Steel)
- ZS Ramp has a UL 1703 Class "A" system level fire rating when installed with modules from any manufacturer with a Type 1 or Type 2 fire classification.
- UL listed to UL 2703

This document does not create any express warranty by Zep Solar or about its products or services. Zep Solar's sole warranty is contained in the written product warranty for each product. The end-user documentation shipped with Zep Solar's products constitutes the sole specifications referred to in the product warranty. The customer is solely responsible for verifying the suitability of Zep Solar's products for each use. Specifications are subject to change without notice. Patents and Apps: zspats.com.

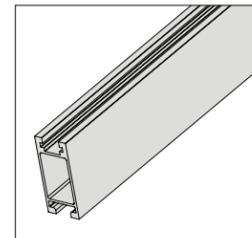
**Components**

**Cam Foot V2**



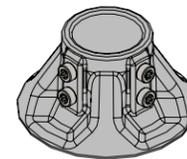
Part No. 850-1564  
UL listed to UL 2703

**Rail**



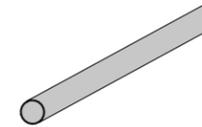
Part No. 850-1568  
850-1567  
850-1566  
and 850-1565  
UL listed to UL 2703

**Base Foot**



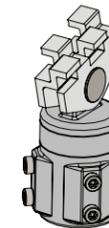
Part No. 850-1563  
UL listed to UL 2703

**Mechanical Tubing (MT)**



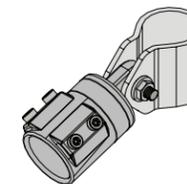
Part No. 850-1583  
UL listed to UL 2703  
1.51" Outer Diameter

**Post Mount**



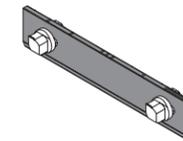
Part No. 850-1561  
UL listed to UL 2703

**Cross Brace Assembly**



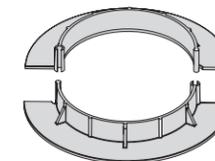
Part No. 850-1636  
UL listed to UL 2703

**Interlock**



Part No. 850-1388 or 850-1613  
UL listed to UL 2703

**Sealant Ring**



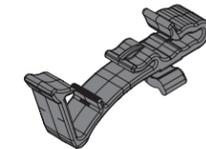
Part No. 850-1638

**Splice Assembly, Ramp**



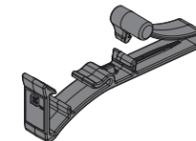
Part No. 850-1635  
UL listed to UL 2703

**DC Wire Clip**



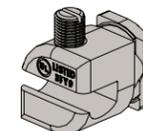
Part No. 850-1509  
UL listed to UL 1565

**Home Run Wire Clip**



Part No. 850-1510  
UL listed to UL 1565

**Ground Zep**



Part No. 850-1511  
UL listed to UL 467 and  
UL 2703

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# MCI WIRING DETAIL

## GENERAL NOTES

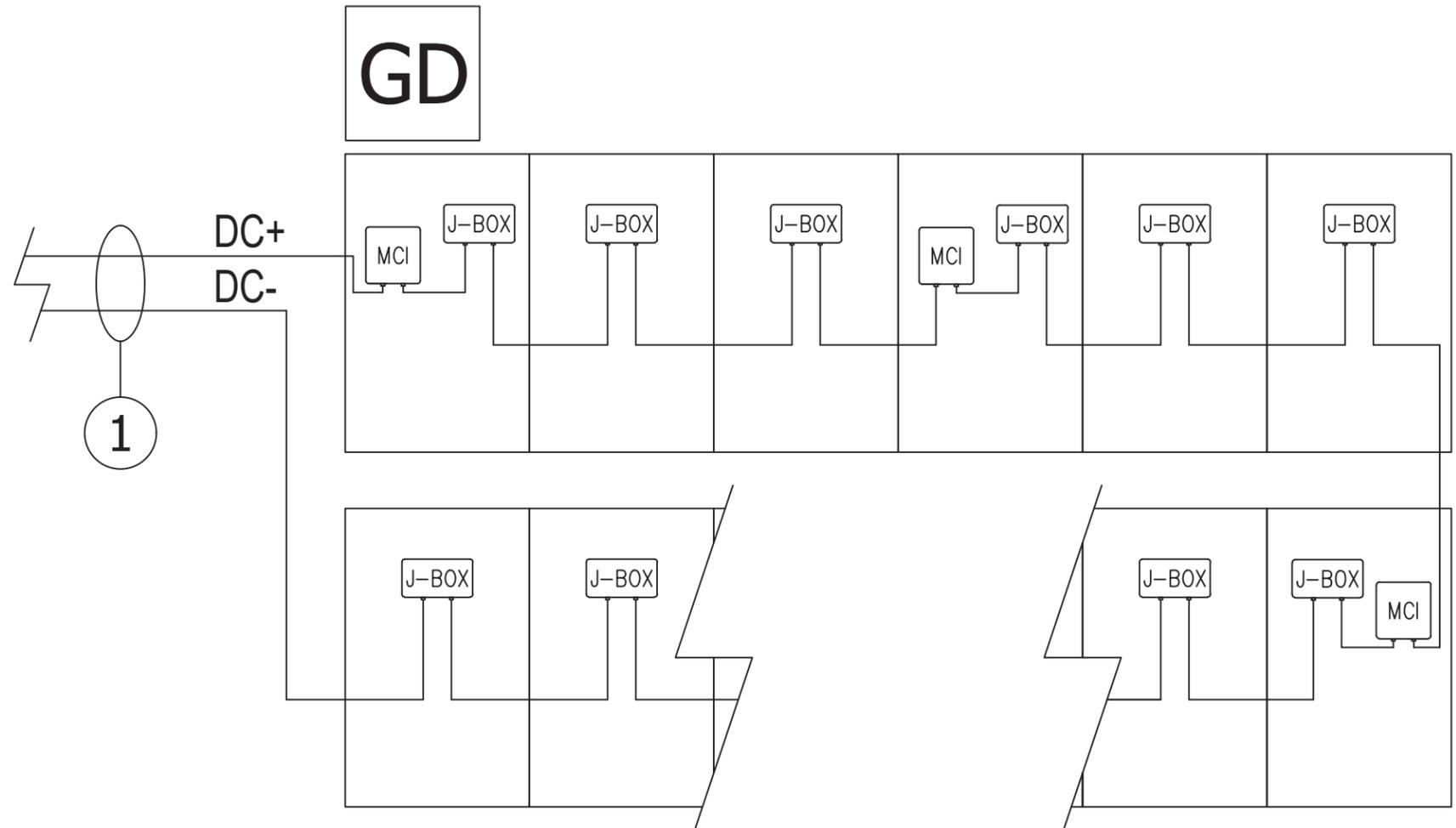
- DRAWING OF STANDARD MCI WIRING DETAIL FOR ANY GIVEN STRING LENGTH
- IF INITIATED, RAPID SHUTDOWN OCCURS WITHIN 30 SECONDS OF ACTIVATION AND LIMITS VOLTAGE ON THE ROOF TO NO GREATER THAN 165V (690.12.B.2.1)
- MID CIRCUIT INTERRUPTER (MCI) IS A UL 1741 PVRSE CERTIFIED RAPID SHUTDOWN DEVICE (RSD)

## RETROFIT PV MODULES

- MCIS ARE LOCATED AT ROOF LEVEL, JUST UNDER THE PV MODULES IN ACCORDANCE WITH 690.12 REQUIREMENTS
- THE QUANTITY OF MCIS PER STRING IS DETERMINED BY STRING LENGTH
  - NUMBER OF MODULES BETWEEN MCI UNITS = 0-3
  - MAXIMUM NUMBER OF MODULES PER MCI UNIT = 3
  - MINIMUM NUMBER MCI UNITS = MODULE COUNT/3

\*Exception: Tesla (Longi) modules installed in locations where the max Voc for 3 modules at low design temperature exceeds 165V shall be limited to 2 modules between MCIs.

PLEASE REFER TO MCI CUTSHEET AND PVRSA INSERT FOR MORE INFORMATION



① — (2)AWG, PV Wire, 600V, Black

DC

# Tesla Photovoltaic Module

T420S, T425S, and T430S

## Maximum Power

The Tesla module is one of the most powerful residential photovoltaic modules available. Our system requires up to 20 percent fewer modules to achieve the same power as a standard system. The module boasts a high conversion efficiency and a half-cell architecture that improves shade tolerance.

## Beautiful Solar

Featuring our proprietary Zep Groove design, the all-black module connects easily with Tesla ZS components to keep panels close to your roof and close to each other for a blended aesthetic with simple drop-in and precision quarter-turn connections.

## Reliability

Tesla modules are subject to automotive-grade engineering scrutiny and quality assurance, far exceeding industry standards. Modules are certified to IEC / UL 61730 - 1, IEC / UL 61730 - 2 and IEC 61215.



## Module Specifications

### Electrical Characteristics

Power Class	T420S		T425S		T430S	
	STC	NOCT	STC	NOCT	STC	NOCT
Test Method	STC	NOCT	STC	NOCT	STC	NOCT
Max Power, P <sub>MAX</sub> (W)	420	313.7	425	317.4	430	321.1
Open Circuit Voltage, V <sub>OC</sub> (V)	48.5	45.47	48.65	45.61	48.8	45.75
Short Circuit Current, I <sub>SC</sub> (A)	11.16	9.02	11.24	9.09	11.32	9.15
Max Power Voltage, V <sub>MP</sub> (V)	40.90	38.08	41.05	38.22	41.20	38.36
Max Power Current, I <sub>MP</sub> (A)	10.27	8.24	10.36	8.3	10.44	8.37
Module Efficiency (%)	19.3		19.6		19.8	
STC	1000 W/m <sup>2</sup> , 25°C, AM1.5					
NOCT	800 W/m <sup>2</sup> , 20°C, AM1.5, wind speed 1m/s					

### Mechanical Loading

Front Side Test Load	6120 Pa   128 lb/ft <sup>2</sup>
Rear Side Test Load	5190 Pa   108 lb/ft <sup>2</sup>
Front Side Design Load	4080 Pa   85 lb/ft <sup>2</sup>
Rear Side Design Load	3460 Pa   72 lb/ft <sup>2</sup>
Hailstone Test	25 mm Hailstone at 23 m/s

### Mechanical Parameters

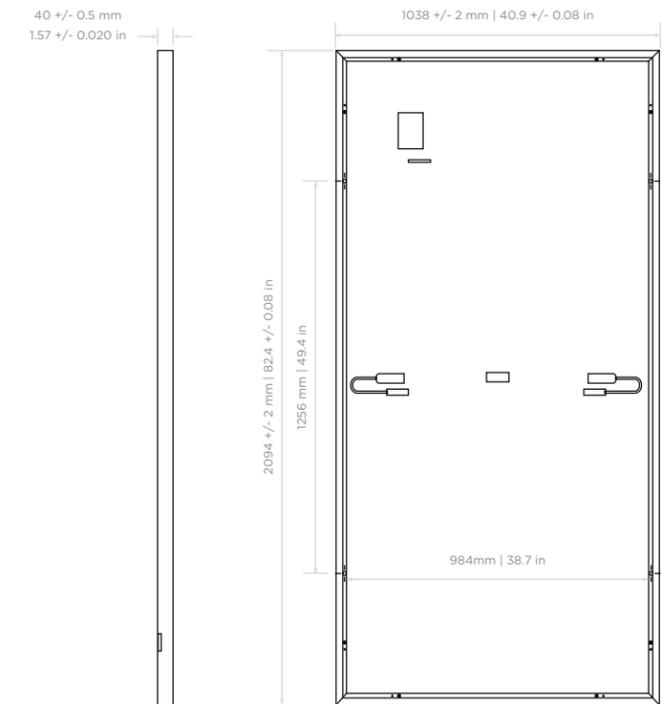
Cell Orientation	144 (6 x 24)
Junction Box	IP68, 3 diodes
Cable	4 mm <sup>2</sup>   12 AWG, 1400 mm   55.1 in. Length
Connector	Staubli MC4 or EVO2
Glass	3.2 mm ARC Glass
Frame	Black Anodized Aluminum Alloy
Weight	25.3 kg   55.8 lb
Dimension	2094 mm x 1038 mm x 40 mm 82.4 in x 40.9 in x 1.57 in

### Operation Parameters

Operational Temperature	-40°C up to +85°C
Power Output Tolerance	-0 /+5 W
V <sub>OC</sub> & I <sub>SC</sub> Tolerance	+/- 3%
Max System Voltage	DC 1000 V (IEC/UL)
Max Series Fuse Rating	20 A
NOCT	45.7 +/- 2°C
Safety Class	Class II
Fire Rating	UL Type 1 or 2

### Temperature Rating (STC)

Temperature Coefficient of I <sub>SC</sub>	+0.040% / °C
Temperature Coefficient of V <sub>OC</sub>	-0.260% / °C
Temperature Coefficient of P <sub>MAX</sub> (W)	-0.331% / °C



## Limited Warranty

Materials and Processing	25 years
Extra Linear Power Output	25 years

The maximum P<sub>max</sub> degradation is 2% in the 1st year and 0.54% annually from the 2nd to 25th year.

## Linear Power Warranty

