CONTRACTOR

PURELIGHT POWER NEWCO LLC

3521 AVION DRIVE SUITE #200,
MEDFORD, OR 97504

PHONE - (541) 816-4047
LIC. NO. - 226333

NEW PHOTOVOLTAIC ROOF MOUNTED SYSTEM
3.870 KW DC/3.800 KW AC
1824 SE 56 AVE, PORTLAND, OR 97215
24-099752-RS

AHJ STAMP

City of Portland
Reviewed for
Code Compliance
Date: 12/2/2024
Permit #: 24-099752-000-00-RS

DESIGN CRITERIA

1. ROOF PITCH:	37°, 45°
2. AZIMUTH:	269°, 179°
3. MODULE:	(09) SILFAB SOLAR SIL-430 QD
4. INVERTER:	(01) TESLA 3.8 KW INVERTER (240V)
5. RSD:	(03) TESLA MCI-2 RSD
6. NOMINAL AMPERAGE:	16.00 AMPS
7. ROOF AREA:	1225 FT²
8. PV ARRAY AREA:	188.99 FT²
9. PV ARRAY WEIGHT:	416.70 LBS
10. ROOF SURFACE TYPE:	COMPOSITE SHINGLE
11. ROOF STRUCTURE:	2"X4" RAFTER @ 24" OC
12. BUILDING STORY:	TWO STORY
13. SNOW LOAD:	20 PSF
14. WIND SPEED:	98 MPH
15. WIND EXPOSURE:	B
16. RISK CATEGORY:	II
17. DEADLOAD:	2.70 PSF

NEW PV SYSTEM SPECIFICATIONS
SYSTEM SIZE: DC SIZE: 3.870 KW DC-(STC)
AC SIZE: 3.800 KW AC

PROJECT NOTES
1.1.1 THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE RELEVANT YEAR OF THE NATIONAL ELECTRIC CODE (NEC), ALL MANUFACTURER'S LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION'S (AHJ) APPLICABLE CODES.
1.1.2 THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND THE PV SYSTEM MUST BE INSPECTED PRIOR TO OPERATION
1.1.3 ALL PV SYSTEM COMPONENTS; MODULES, UTILITY-INTERACTIVE INVERTERS, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEMS AS REQUIRED BY NEC AND OTHER GOVERNING CODES
1.1.4 ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC AND AHJ.

APPLICABLE CODES
ALL WORK SHALL CONFORM TO THE FOLLOWING CODES:
2022 OREGON SPECIALTY STRUCTURAL CODE (OSSC)
2023 OREGON RESIDENTIAL SPECIALTY CODE (ORSC)
2022 OREGON FIRE CODE (OFC)
2023 OREGON SPECIALTY ELECTRICAL CODE (OSEC)
AS ADOPTED BY CITY OF PORTLAND

SCOPE OF WORK
1.2.1 CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC SYSTEM. THE CONTRACTOR WILL BE RESPONSIBLE FOR COLLECTION OF EXISTING ONSITE CONDITIONS TO DESIGN, SPECIFY, AND INSTALL THE ROOF-MOUNTED PHOTOVOLTAIC SYSTEM DETAILED IN THIS DOCUMENT

GENERAL NOTES

SITE NOTES
2.1.1 A LADDER WILL BE IN PLACE FOR INSPECTION IN ACCORDANCE WITH OSHA REGULATIONS.
2.1.2 THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.
2.1.3 THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
2.1.4 PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED IN ACCORDANCE WITH SECTION NEC 110.26.
2.1.5 ROOF COVERINGS SHALL BE DESIGNED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THIS CODE AND THE APPROVED MANUFACTURER'S INSTRUCTIONS SUCH THAT THE ROOF COVERING SERVES TO PROTECT THE BUILDING OR STRUCTURE.

EQUIPMENT LOCATIONS
2.2.1 ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS IN ACCORDANCE WITH NEC 110.26.
2.2.2 WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY NEC 690.31 (A),(C) AND NEC TABLES 310.15 (B)(2)(A) AND 310.15 (B)(3)(C).
2.2.3 JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES IN ACCORDANCE WITH NEC 690.34.
2.2.4 ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT. 2.2.5 ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL IN ACCORDANCE WITH NEC APPLICABLE CODES.
2.2.6 ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.

STRUCTURAL NOTES
2.3.1 RACKING SYSTEM & PV ARRAY WILL BE INSTALLED IN ACCORDANCE WITH THE CODE-COMPLIANT INSTALLATION MANUAL. TOP CLAMPS REQUIRE A DESIGNATED SPACE BETWEEN MODULES, AND RAILS MUST ALSO EXTEND A MINIMUM DISTANCE BEYOND EITHER EDGE OF THE ARRAY/SUBARRAY, IN ACCORDANCE WITH RAIL MANUFACTURER'S INSTALLATION PRACTICES.
2.3.2 JUNCTION BOX WILL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. IF ROOF-PENETRATING TYPE, IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS.

STRUCTURAL NOTES (CONT.)
2.3.3 ROOFTOP PENETRATIONS FOR PV RACEWAY WILL BE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.
2.3.4 ALL PV RELATED ROOF ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER OR PROFESSIONAL ENGINEERING GUIDANCE.
2.3.5 WHEN POSSIBLE, ALL PV RELATED RACKING ATTACHMENTS WILL BE STAGGERED AMONGST THE ROOF FRAMING MEMBERS.

WIRING & CONDUIT NOTES
2.4.1 ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.
2.4.2 CONDUCTORS SIZED IN ACCORDANCE WITH THE NEC
2.4.3 AC CONDUCTORS TO BE COLORED OR MARKED PER NEC
2.4.4 LISTED OR LABELED EQUIPMENT SHALL BE INSTALLED AND USED IN ACCORDANCE WITH ANY INSTRUCTIONS INCLUDED IN THE LISTING OR LABELING PER NEC

GROUNDING NOTES
2.5.1 GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.
2.5.2 PV EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH NEC 690.43 AND NEC TABLE 250.122.
2.5.3 METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURES CONSIDERED GROUNDED IN ACCORDANCE WITH NEC 250.134 AND 250.136(A).
2.5.4 EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH NEC 690.45 AND INVERTER MANUFACTURER'S INSTALLATION PRACTICES
2.5.5 EACH MODULE WILL BE GROUNDED AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ. 2.5.6 THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.
2.5.7 GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER PER NEC 250.119
2.5.8 THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH NEC 690.47 AND NEC 250.50 THROUGH 250.106. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A GROUNDING ELECTRODE SYSTEM PROVIDED IN ACCORDANCE WITH NEC 250, NEC 690.47 AND THE AHJ.
2.5.9 GROUND-FAULT DETECTION SHALL COMPLY WITH NEC 690.41(B)(1) AND (2) TO REDUCE FIRE HAZARDS

DISCONNECTION AND OVERCURRENT PROTECTION NOTES
2.6.1 DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).
2.6.2 DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH
2.6.3 PV SYSTEM CIRCUITS INSTALLED ON OR IN HABITABLE BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION TO REDUCE SHOCK HAZARD FOR EMERGENCY RESPONDERS IN ACCORDANCE WITH 690.12
2.6.4 ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690.8, 690.9, AND 240.
2.6.5 INVERTER ON-GRID BRANCHES SHALL BE CONNECTED TO A SINGLE BREAKER OR GROUPED FUSE DISCONNECT(S) IN ACCORDANCE WITH NEC 110.3(B).
2.6.6 IF REQUIRED BY THE AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION IN ACCORDANCE WITH NEC 690.11 AND UL1699B.

INTERCONNECTION NOTES
2.7.1 LOAD SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH NEC 705.12.
2.7.2 THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS OUTPUT MAY NOT EXCEED 120 PERCENT OF BUSBAR RATING PER NEC 705.12.
2.7.3 THE SUM OF 125 PERCENT OF THE POWER SOURCE(S) OUTPUT CIRCUIT CURRENT AND THE RATING OF THE OVERCURRENT DEVICE PROTECTING THE BUSBAR SHALL NOT EXCEED 120 PERCENT OF THE AMPACITY OF THE BUSBAR, PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE OCPD IN ACCORDANCE WITH NEC 705.12.
2.7.4 AT MULTIPLE ELECTRIC POWER SOURCES OUTPUT COMBINER PANEL, TOTAL RATING OF ALL OVERCURRENT PROTECTION DEVICES SHALL NOT EXCEED AMPACITY OF BUSBAR. HOWEVER, THE MAIN OVERCURRENT PROTECTION DEVICE MAY BE EXCLUDED IN ACCORDANCE WITH NEC 705.12.
2.7.5 FEEDER TAP INTERCONNECTION (LOAD SIDE) IN ACCORDANCE WITH NEC 705.12.
2.7.6 SUPPLY SIDE TAP INTERCONNECTION IN ACCORDANCE WITH TO NEC 705.11 WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH NEC 230.42.
2.7.7 BACKFEEDING BREAKER FOR ELECTRIC POWER SOURCES OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING PER NEC 705.12.

SHEET INDEX

VICINITY MAP

SATELLITE MAP

STRUCTURAL STAMP

REGISTERED PROFESSIONAL ENGINEER
96102PE
OREGON
JAN 12, 2021
TREVOR JONES

EXPIRES: 06/30/25
11/20/2024
STRUCTURAL ONLY

PROJECT NAME
SUZANNE WASHINGTON
(503) 351-4941
WASHSAR@GMAIL.COM
1824 SE 56 AVE,
PORTLAND, OR 97215
APN #: R268791
AHJ: CITY OF PORTLAND
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REVISIONS

REV	DESCRIPTION	DATE

SHEET TITLE

COVER PAGE

DRAWN DATE	11/19/2024
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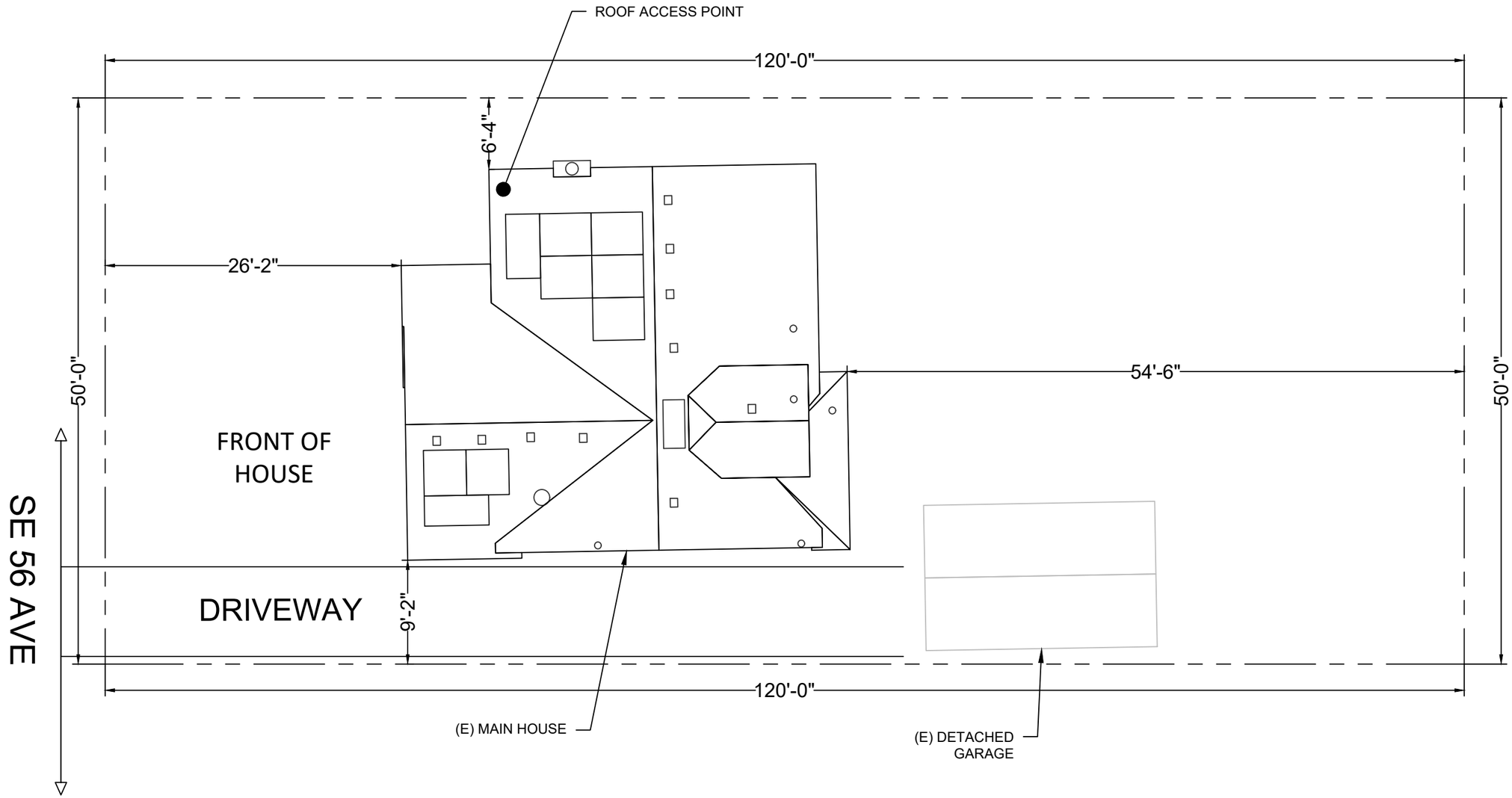
SHEET NUMBER

PV-00

LEGEND

- PROPERTY LINE
- FENCE LINE



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1 PV-01 SITE PLAN

SCALE:1"-10'-0"

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WASHSAR@GMAIL.COM
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SITE PLAN

DRAWN DATE	11/19/2024
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PV-01

NOTES:

1. ROOF ACCESS POINT SHALL NOT BE LOCATED IN AREAS THAT 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.

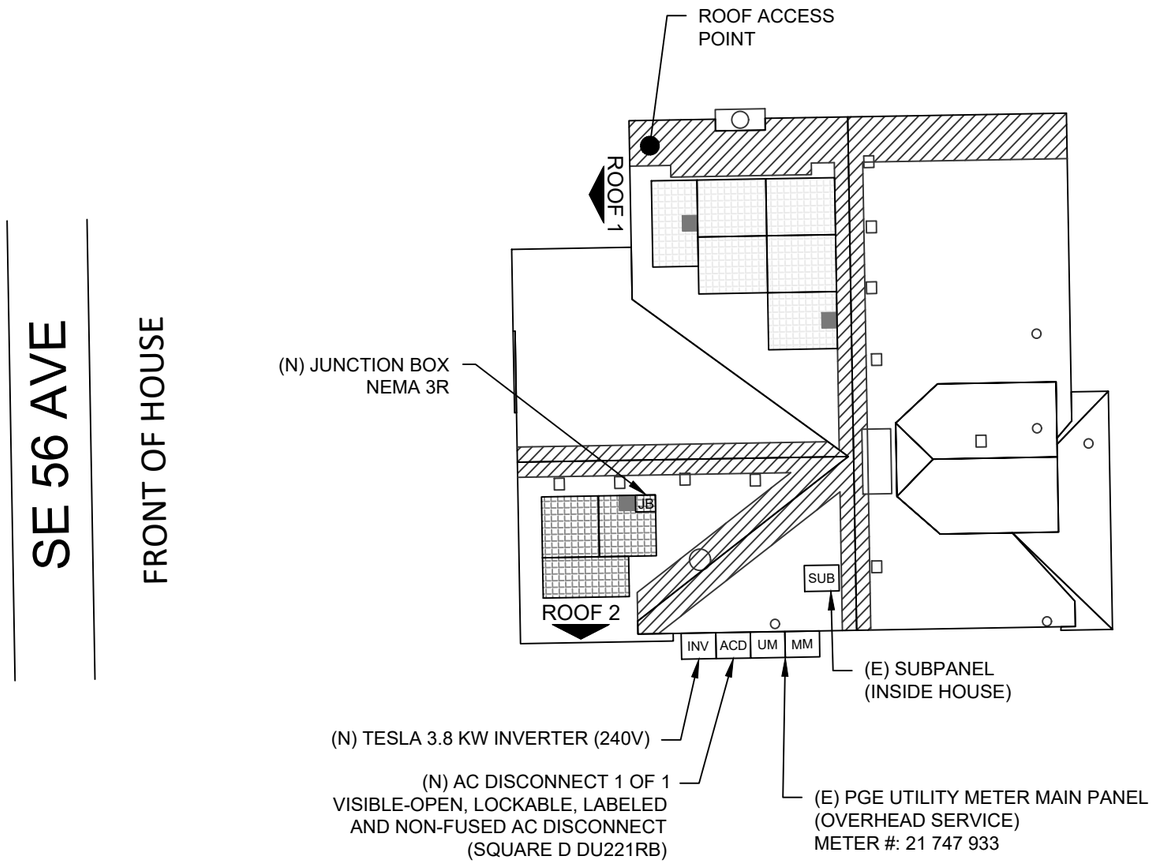
2. STRUCTURES, PATIO COVERS, AND/OR ADDITIONS BUILT WITHOUT PERMITS TO BE RESOLVED BY A SEPARATE PERMIT.

AC DISCONNECT 1 OF 1 TO BE LOCATED WITHIN 10FT OF THE PGE UTILITY METER

PLAN VIEW TOTAL ROOF AREA:	1225 FT²
TOTAL PV ARRAY AREA:	188.99 FT²
TOTAL % OF ROOF COVERED BY PV:	15.43%

STRING COUNT:

STRING #1 - 06 MODULES
STRING #2 - 03 MODULES



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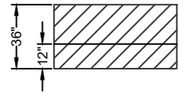
1 ENLARGED VIEW
PV-02
SCALE:1"-10'-0"

LEGEND



OREGON FIRE SETBACKS

= MECHANICAL VENT

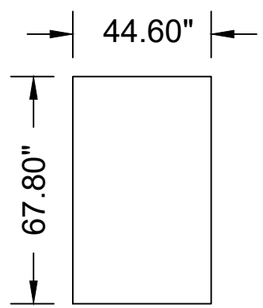
= FLUE / PLUMBING VENT

= TESLA MCI-2 RSD (1 PER 3 MODULES)

= STRING 1

= STRING 2

ROOF 1	SLOPE	- 37°
	AZIMUTH	- 269°
	MODULE QTY	- 06
	RAFTER	- 2"X4" @ 24" O.C.
	SURFACE TYPE	- COMPOSITE SHINGLE
ROOF 2	SLOPE	- 45°
	AZIMUTH	- 179°
	MODULE QTY	- 03
	RAFTER	- 2"X4" @ 24" O.C.
	SURFACE TYPE	- COMPOSITE SHINGLE



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WASHSAR@GMAIL.COM
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REV	DESCRIPTION	DATE

SHEET TITLE
ENLARGED VIEW

DRAWN DATE	11/19/2024
DRAWN BY	TSD

SHEET NUMBER
PV-02

DISTRIBUTED LOAD CALCULATIONS	
MODULE	SILFAB SOLAR SIL-430 QD
MODULE WEIGHT	46.30 LBS
MODULE DIMENSIONS (L" x W")	67.80" x 44.60"
TOTAL QTY. OF MODULES	09
TOTAL WEIGHT OF MODULES	416.70 LBS
TYPE OF RACKING	CHIKO CK-FT-R537B2 RAIL
TYPE OF ATTACHMENT	IRONRIDGE L-MOUNT
DISTRIBUTED WEIGHT OF RACKING	0.5 PSF
TOTAL WEIGHT OF ARRAY	511.20 LBS
AREA OF MODULE	21.00 SQFT.
TOTAL ARRAY AREA	188.99 SQFT.
DISTRIBUTED LOAD	2.70 PSF

LEGEND

- ATTACHMENT POINTS
- RAIL
- STRUCTURAL MEMBER

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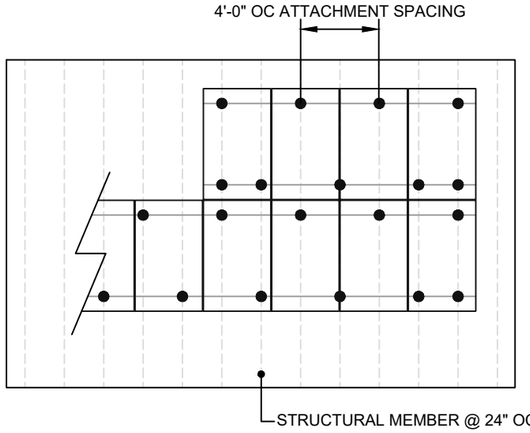
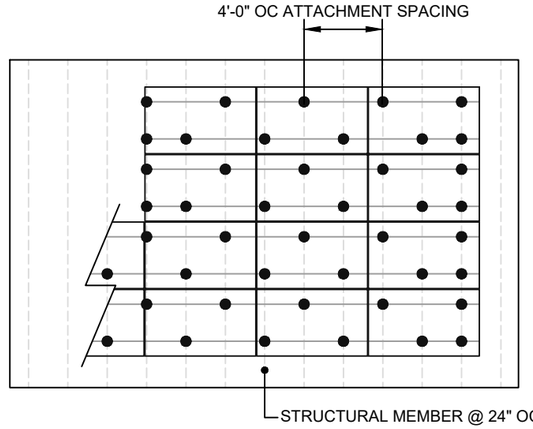
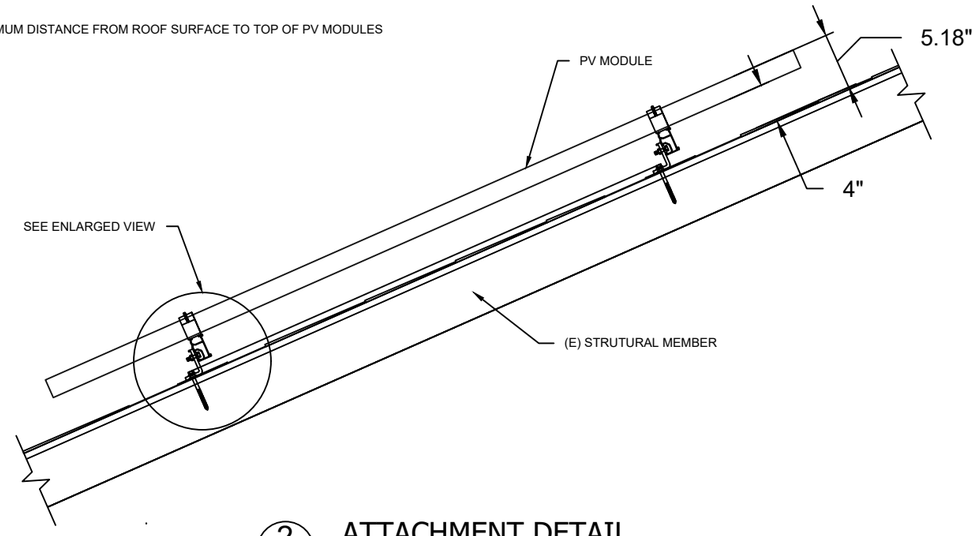


1.0 PV-03 TYPICAL ATTACHMENT PLAN (PORTRAIT)
SCALE: NTS

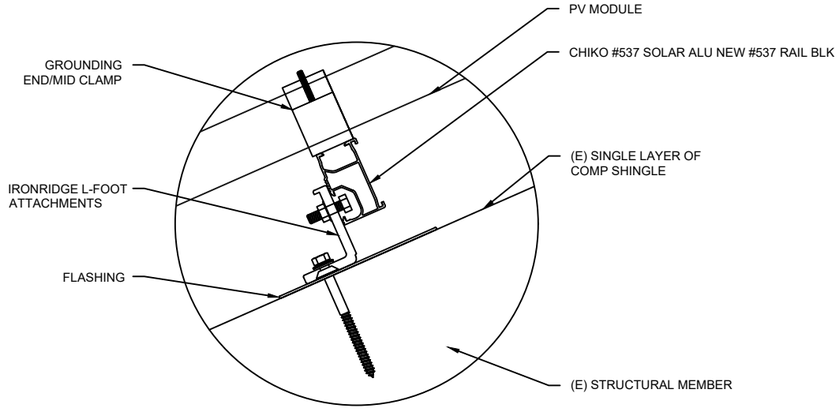


1.1 PV-03 TYPICAL ATTACHMENT PLAN (LANDSCAPE)
SCALE: NTS

NOTE: 6" MAXIMUM DISTANCE FROM ROOF SURFACE TO TOP OF PV MODULES



2 PV-03 ATTACHMENT DETAIL
Scale: NTS



3 PV-03 ENLARGED VIEW
Scale: NTS

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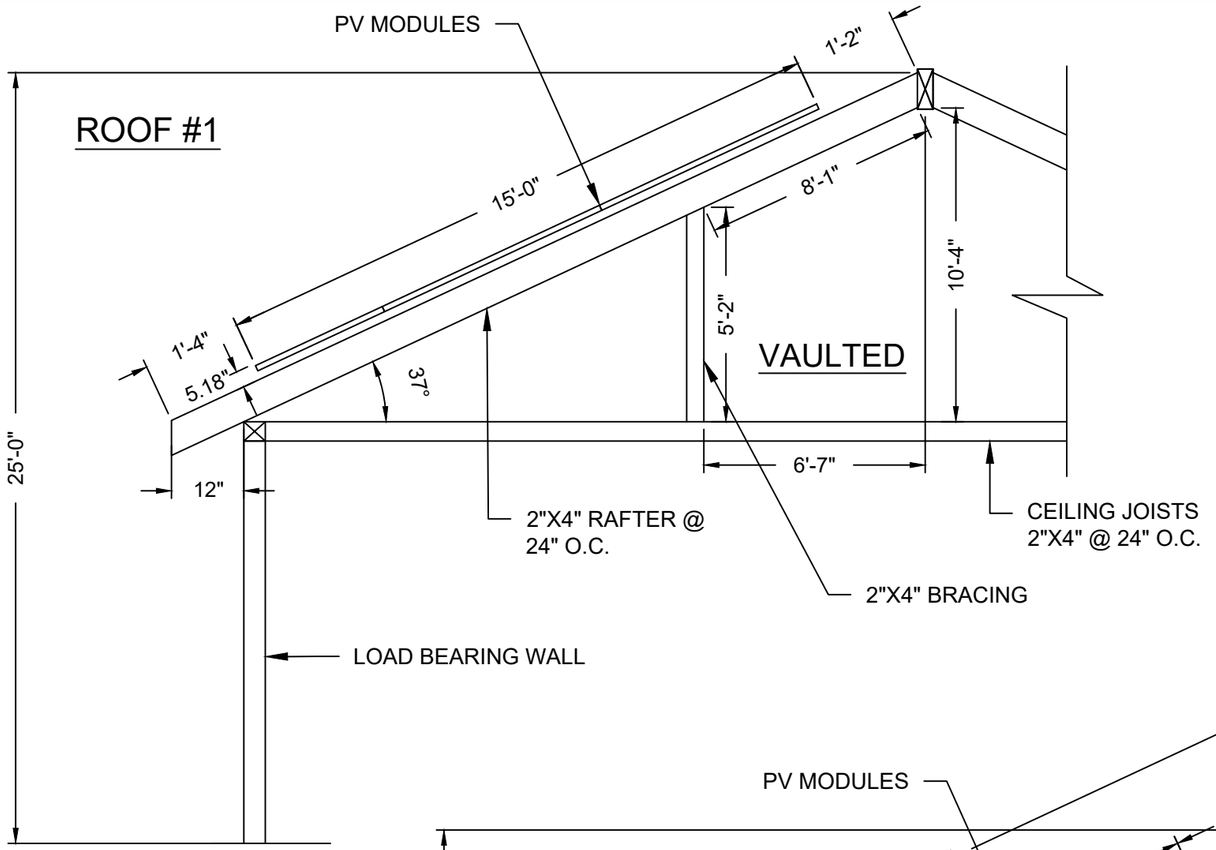
ATTACHMENT PLAN & DETAILS

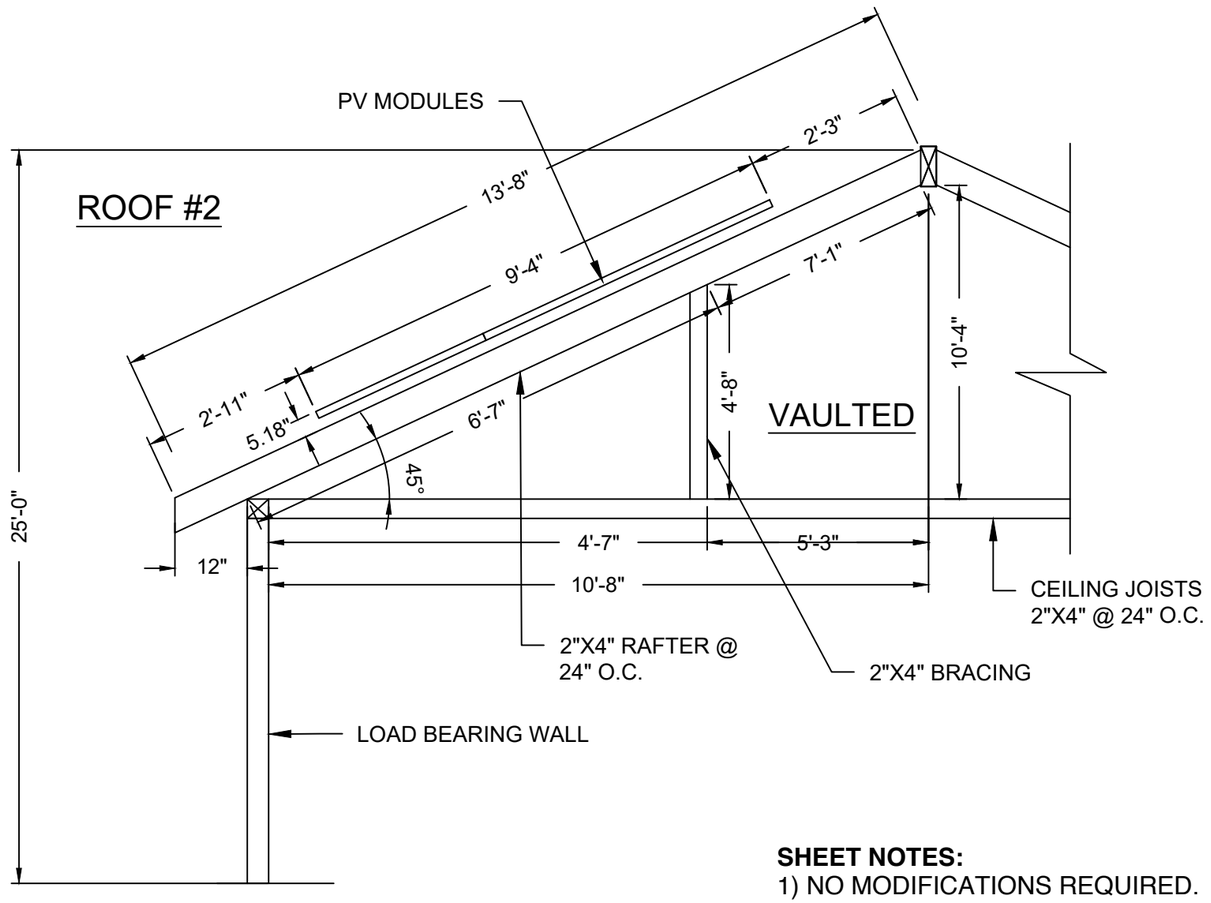
DRAWN DATE	11/19/2024
DRAWN BY	TSD

SHEET NUMBER
PV-03

ROOF 1	SLOPE	- 37°
	AZIMUTH	- 269°
	MODULE QTY	- 06
	RAFTER	- 2"X4" @ 24" O.C.
	SURFACE TYPE	- COMPOSITE SHINGLE

ROOF 2	SLOPE	- 45°
	AZIMUTH	- 179°
	MODULE QTY	- 03
	RAFTER	- 2"X4" @ 24" O.C.
	SURFACE TYPE	- COMPOSITE SHINGLE





1 PV-03.1 FRAMING DETAIL

SCALE: NTS

SHEET NOTES:

1) NO MODIFICATIONS REQUIRED.

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FRAMING DETAIL

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PV-03.1

7/8" MINIMUM CONDUIT HEIGHT ABOVE ROOF SURFACE

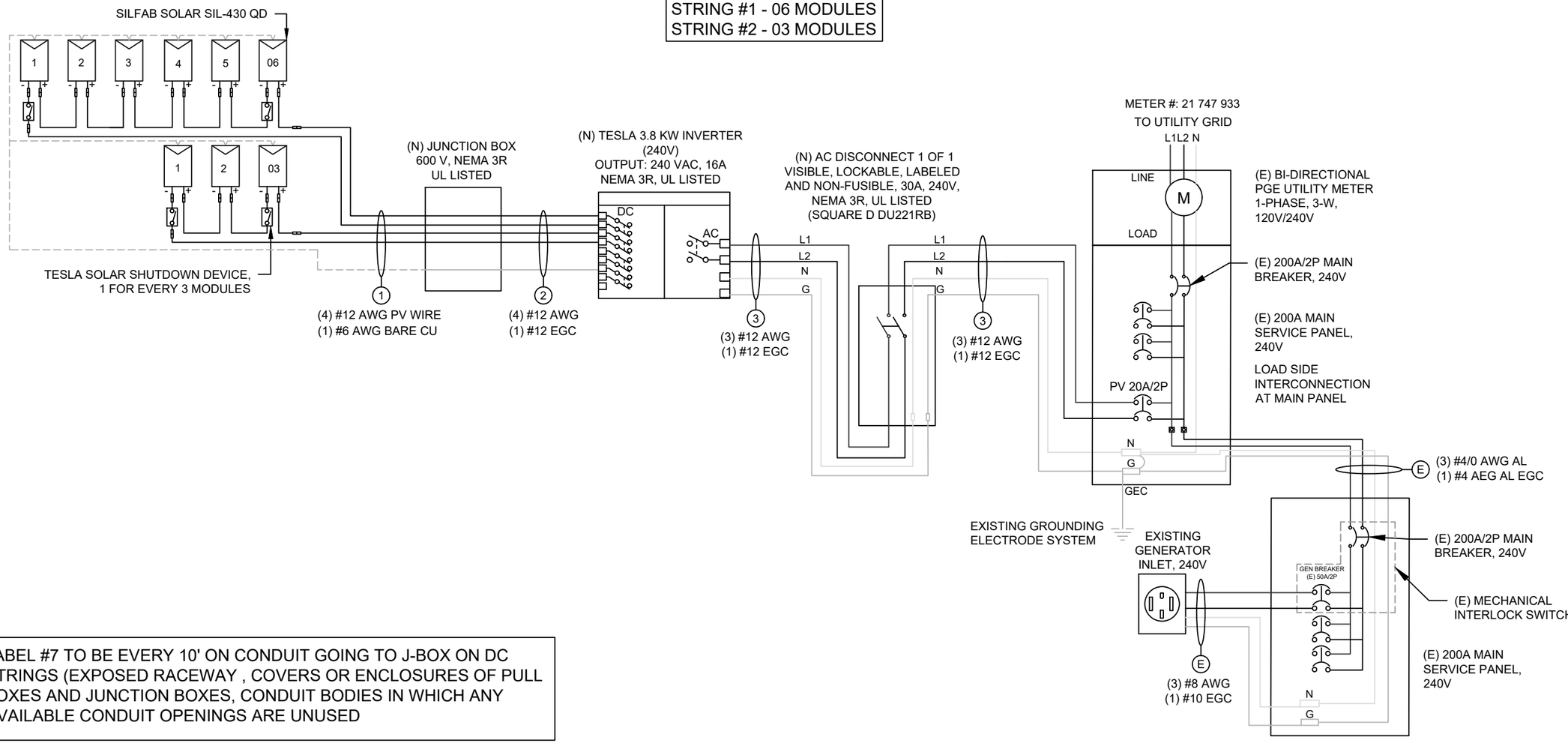
AC DISCONNECT 1 OF 1 TO BE LOCATED WITHIN 10FT OF THE PGE UTILITY METER

MINIMUM WIRE SIZES CALLED OUT. USE OF LARGER WIRE IS ACCEPTABLE.

METAL CONDUIT REQUIRED FOR DC CONDUCTORS THAT ARE RAN INTERIOR OF BUILDING

STRING COUNT:

STRING #1 - 06 MODULES
STRING #2 - 03 MODULES



LABEL #7 TO BE EVERY 10' ON CONDUIT GOING TO J-BOX ON DC STRINGS (EXPOSED RACEWAY , COVERS OR ENCLOSURES OF PULL BOXES AND JUNCTION BOXES, CONDUIT BODIES IN WHICH ANY AVAILABLE CONDUIT OPENINGS ARE UNUSED

DESCRIPTION	FORMULA	RESULT
PV OVERCURRENT PROTECTION NEC 690.9(B)	TOTAL INVERTER OUTPUT CURRENT x 1.25 = (01 x 16)A x 1.25	20.00A (SELECTED PV BREAKER = 20A)
120% RULE FOR BACKFEED BREAKER NEC 705.12	BUS BAR RATING x 1.2 - MCB RATING = MAX ALLOWABLE PV BREAKER 200A x 1.2 - 200A = 40A	SELECTED PV BREAKER <= MAX ALLOWABLE PV BREAKER 20A <= 40A

DC WIRE CACLULATION

WIRE ID	EXPECTED WIRE TEMP (°C)	TEMP DERATE (90 °C)	QTY OF CURRENT CARRYING CONDUCTORS	CONDUIT FILL DERATE	MINIMUM CONDUIT SIZE (TBD ON SITE)	WIRE GAUGE & TYPE	CONDUCTOR AMPACITY @ 90°C (A)	CONDUCTOR AMPACITY @ 75°C (A)	REQUIRED CIRCUIT CONDUCTOR AMPACITY (A)	ADJUSTED CONDUCTOR AMPACITY @ 90 °C (A)	NEUTRAL CONDUCTOR SIZE & TYPE	GROUND WIRE SIZE & TYPE
1	32	0.96	4	IN AIR	N/A	#12 AWG PV WIRE	30	25	21.67	28.80	NONE	#6 AWG BARE Cu
2	32	0.96	4	0.8	3/4"	#12 THWN-2	30	25	21.67	23.04	NONE	#12 THWN-2

AC WIRE CACLULATION

3	32	0.96	3	1	3/4"	#12 THWN-2	30	25	20.00	28.80	#12 THWN-2	#12 THWN-2

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ELECTRICAL STAMP

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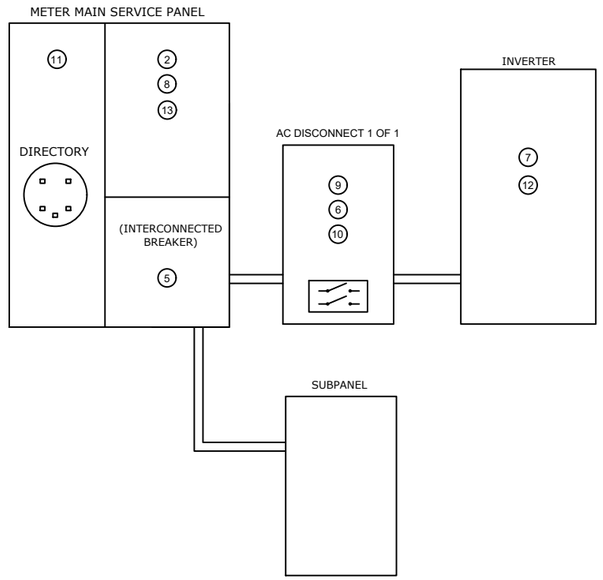
REV	DESCRIPTION	DATE

SHEET TITLE
ELECTRICAL DIAGRAM

DRAWN DATE	11/19/2024
DRAWN BY	TSD

SHEET NUMBER
PV-04

LABELING DIAGRAM:



LABEL #7 TO BE EVERY 10' ON CONDUIT GOING TO J-BOX ON DC STRINGS (EXPOSED RACEWAY , COVERS OR ENCLOSURES OF PULL BOXES AND JUNCTION BOXES, CONDUIT BODIES IN WHICH ANY AVAILABLE CONDUIT OPENINGS ARE UNUSED

1 **⚠ WARNING**

ELECTRICAL SHOCK HAZARD

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

2 **⚠ WARNING** DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

3 **⚠ WARNING**

THIS EQUIPMENT FED BY MULTIPLE SOURCES TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING MAIN POWER SUPPLY SHALL NOT EXCEED AMPACITY OF BUSBAR

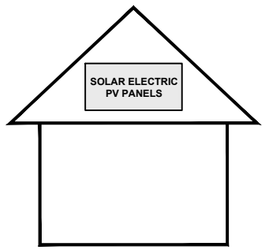
5 **WARNING**
POWER SOURCE OUTPUT CONNECTION
DO NOT RELOCATE THIS OVERCURRENT DEVICE

6 PHOTOVOLTAIC AC DISCONNECT 1 OF 1
MAXIMUM AC OPERATING CURRENT: 16.00 AMPS
NOMINAL OPERATING AC VOLTAGE: 240 VAC

7 PHOTOVOLTAIC POWER SOURCE

8 **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.



9 MAIN PHOTOVOLTAIC SYSTEM DISCONNECT 1 OF 1

10 **RAPID SHUTDOWN FOR SOLAR PV SYSTEM**

11 PARALLEL GENERATION ON SITE

12 **MAXIMUM DC VOLTAGE**
235.56V
OF PV SYSTEM

13 **EMERGENCY DISCONNECT SERVICE DISCONNECT**

AHJ STAMP

PROJECT NAME
SUZANNE WASHINGTON
(503) 351-4941
WASHSAR@GMAIL.COM
1824 SE 56 AVE,
PORTLAND, OR 97215
APN #: R268791
AHJ: CITY OF PORTLAND
UTILITY: PORTLAND GENERAL ELECTRIC

REVISIONS

REV	DESCRIPTION	DATE

SHEET TITLE
WARNING LABELS

DRAWN DATE	11/19/2024
DRAWN BY	TSD

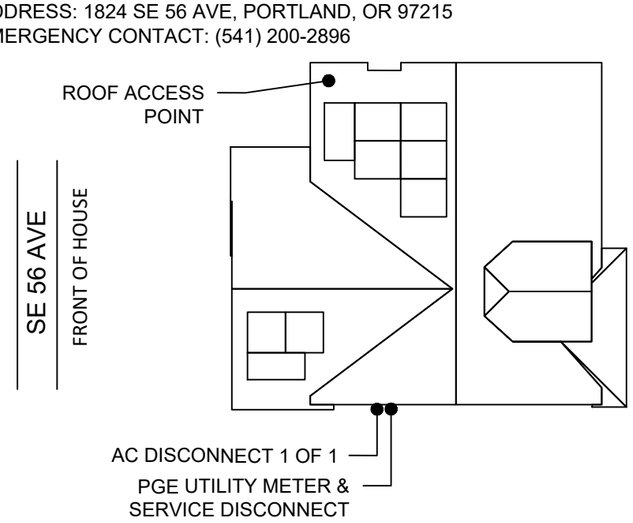
SHEET NUMBER
PV-05

DIRECTORY PLACARD:

CAUTION

MULTIPLE SOURCES OF POWER.
POWER TO THIS BUILDING IS ALSO SUPPLIED
FROM THE FOLLOWING SOURCES WITH
DISCONNECTS LOCATED AS SHOWN:

ADDRESS: 1824 SE 56 AVE, PORTLAND, OR 97215
EMERGENCY CONTACT: (541) 200-2896



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REVISIONS

REV	DESCRIPTION	DATE

SHEET TITLE
DIRECTORY PLACARD

DRAWN DATE	11/19/2024
DRAWN BY	TSD

SHEET NUMBER
PV-05.1

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	TESLA 3.8 KW INVERTER (240V)
POWER RATING	3800W
MAX CONT. OUTPUT CURRENT	16A
MAX CURRENT PER MPPT (IMP)	13A[2]
MAX DC VOLTAGE	600V
MAX SHORT CIRCUIT CURRENT PER MPPT (ISC)	17A[2]

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	SILFAB SOLAR SIL-430 QD
VMP	33.25 V
IMP	12.93 A
VOC	38.91 V
ISC	13.87 A
TEMP. COEFF. VOC	-0.29 %/°C

SOLAR SHUTDOWN DEVICE	
MANUFACTURER / MODEL #	TESLA MCI-2 RSD
NOMINAL INPUT DC CURRENT RATING (IMP)	13A
NOMINAL INPUT SHORT CIRCUIT CURRENT (ISC)	17A
MAXIMUM SYSTEM VOLTAGE	1000VDC

VMAX = VOC + ((TLOW - TSTC) X (VOCCOEF X VOC/100))
VMAX = 38.91+ (-6-25) x (-0.29 x 38.91/100)
VMAX = 38.91+ (-31) x (-0.0113)
VMAX = 38.91+ (-31) x (-0.0113)
VMAX = 38.91+ 0.3498
VMAX = 39.26 V
VMAX FOR 06 MODULES = 235.56V
DC SYSTEM VOLTAGE OF INVERTER = 600V
600/39.26 = 15.28

AHJ STAMP

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AHJ: CITY OF PORTLAND
UTILITY: PORTLAND GENERAL ELECTRIC

REVISIONS

REV	DESCRIPTION	DATE

SHEET TITLE
EQUIPMENT SPECIFICATIONS

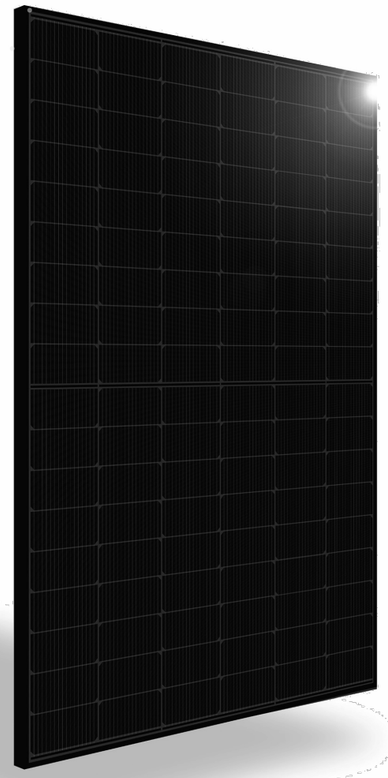
DRAWN DATE	11/19/2024
DRAWN BY	TSD

SHEET NUMBER
PV-06

SILFAB PRIME NTC

SIL-430 QD

SILFAB SOLAR®



INTRODUCING NEXT-GENERATION N-TYPE CELL TECHNOLOGY

- Improved Shade Tolerance
- Improved Low-Light Performance
- Increased Performance in High Temperatures
- Enhanced Durability
- Reduced Degradation Rate
- Industry-Leading Warranty

SILFABSOLAR.COM

ELECTRICAL SPECIFICATIONS		430	
Test Conditions		STC	NOCT
Module Power (Pmax)	Wp	430	321
Maximum power voltage (Vpmax)	V	33.25	31.02
Maximum power current (Ipmax)	A	12.93	10.33
Open circuit voltage (Voc)	V	38.91	36.58
Short circuit current (Isc)	A	13.87	11.15
Module efficiency	%	22.1%	20.6%
Maximum system voltage (VDC)	V	1000	
Series fuse rating	A	25	
Power Tolerance	Wp	0 to +10	

Measurement conditions: STC 1000 W/m² • AM 1.5 • Temperature 25 °C • NOCT 800 W/m² • AM 1.5 • Measurement uncertainty ≤ 3%
Sun simulator calibration reference modules from Fraunhofer Institute. Electrical characteristics may vary by ±5% and power by 0 to +10 W.

MECHANICAL PROPERTIES / COMPONENTS	METRIC	IMPERIAL
Module weight	21 kg ± 0.2 kg	46.3 lbs ± 0.4 lbs
Dimensions (H x L x D)	1721 mm x 1133 mm x 35 mm	67.8 in x 44.6 in x 1.37 in
Maximum surface load (wind/snow)*	4000 Pa rear load / 5400 Pa front load	83.5 lb/ft² rear load / 112.8 lb/ft² front load
Hail impact resistance	ø 25 mm at 83 km/h	ø 1 in at 51.6 mph
Cells	108 Half cells - N-Type Silicon solar cell 182 mm x 91 mm	108 Half cells - N-Type Silicon solar cell 7.16 in x 3.58 in
Glass	3.2 mm high transmittance, tempered, antireflective coating	0.126 in high transmittance, tempered, antireflective coating
Cables and connectors (refer to installation manual)	1350 mm, ø 5.7 mm, MC4 from Staubli	53.1 in, ø 0.22 in (12 AWG), MC4 from Staubli
Backsheet	High durability, superior hydrolysis and UV resistance, multi-layer dielectric film, fluorine-free PV backsheet	
Frame	Anodized aluminum (Black)	
Junction Box	UL 3730 Certified, IEC 62790 Certified, IP68 rated, 3 diodes	

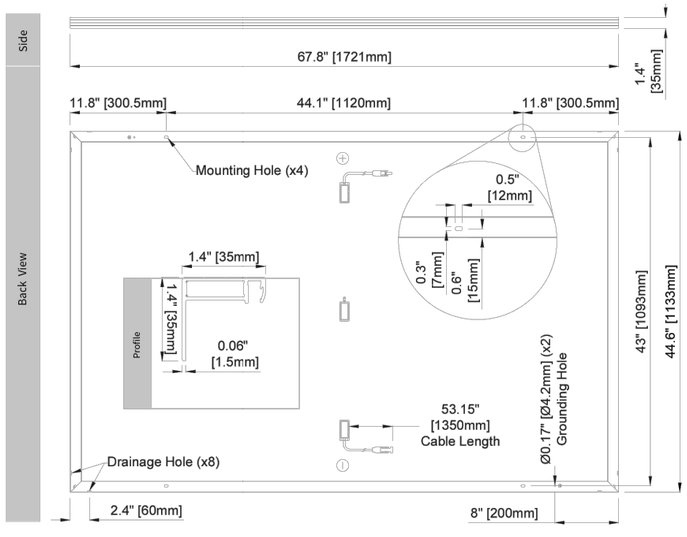
TEMPERATURE RATINGS	
Temperature Coefficient Isc	0.04 %/°C
Temperature Coefficient Voc	-0.24 %/°C
Temperature Coefficient Pmax	-0.29 %/°C
NOCT (± 2 °C)	45 °C
Operating temperature	-40/+85 °C

WARRANTIES	
Module product workmanship warranty	25 years**
Linear power performance guarantee	30 years
	≥ 98% end 1st yr ≥ 94.7% end 12th yr ≥ 90.8% end 25th yr ≥ 89.3% end 30th yr

CERTIFICATIONS	
Product	UL 61215, UL 61730, CSA C22.2#61730, IEC 61215, IEC 61730, IEC 61701 (Salt Mist Corrosion), IEC 62716 (Ammonia Corrosion), CEC Listed, UL Fire Rating: Type 2
Factory	ISO9001:2015

SHIPPING SPECS	
Modules Per Pallet:	26 or 26 (California)
Pallets Per Truck	32 or 30 (California)
Modules Per Truck	832 or 780 (California)

* ⚠ Warning. Read the Safety and Installation Manual for mounting specifications and before handling, installing and operating modules.
** 12 year extendable to 25 years subject to registration and conditions outlined under "Warranty" at silfabsolar.com.
PAN files generated from 3rd party performance data are available for download at: silfabsolar.com/downloads.



SILFAB SOLAR INC.

1770 Port Drive
Burlington WA 98233 USA
T +1 360.569.4733
info@silfabsolar.com
SILFABSOLAR.COM

7149 Logistics Lane
Fort Mill SC 29715 USA
T +1 839.400.4338

240 Courtneypark Drive East
Mississauga ON L5T 2Y3 Canada
T +1 905.255.2501
F +1 905.696.0267

Silfab - SIL-430-QD-20240227

Tesla Solar Inverter
with Site Controller

—

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

KEY FEATURES

- Built on Powerwall technology for exceptional efficiency and reliability
- Wi-Fi, Ethernet, and cellular connectivity with easy over-the-air updates
- Designed to integrate with Tesla Powerwall and Tesla App
- 0.5% revenue-grade metering for Solar Renewable Energy Credit (SREC) programs included

Tesla Solar Inverter Technical Specifications

Electrical Specifications: Output (AC)

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

Electrical Specifications: Input (DC)

MPPT	4
Input Connectors per MPPT	1-2-1-2
Maximum Input Voltage	600 VDC
DC Input Voltage Range	60 - 550 VDC
DC MPPT Voltage Range	60 - 480 VDC[1]
Maximum Current per MPPT (I_{MP})	13 A[2]
Maximum Short Circuit Current per MPPT (I_{SC})	17 A[2]

[1]Maximum current.

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

Performance Specifications

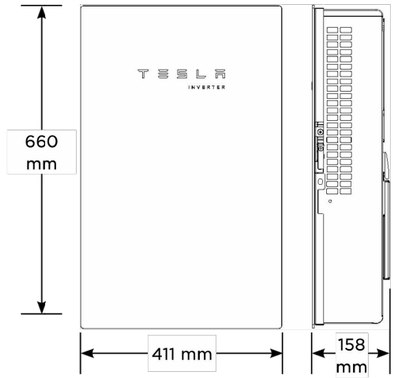
Peak Efficiency	98.6% at 240 V
CEC Efficiency	98.0% at 240 V
Allowable DC/AC Ratio	1.7
Customer Interface	Tesla Mobile App
Internet Connectivity	Wi-Fi (2.4 GHz, 802.11 b/g/n), Ethernet, Cellular (LTE/4G)[3]
Revenue Grade Meter	Revenue Accurate (+/- 0.5%)
AC Remote Metering Support	Wi-Fi (2.4 GHz, 802.11 b/g/n)
Protections	Integrated arc fault circuit interrupter (AFCI), Rapid Shutdown
Supported Grid Types	60 Hz, 240 V Split Phase
Warranty	12.5 years

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

Tesla Solar Inverter Technical Specifications

Mechanical Specifications

Dimensions	660 mm x 411 mm x 158 mm (26 in x 16 in x 6 in)



Weight	52 lb[4]
Mounting Options	Wall mount (bracket)

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

Environmental Specifications

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

[5]Performance may be de-rated to 6.2 kW at 240 V when operating at temperatures greater than 45°C.

Compliance Information

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

Solar Shutdown Device Technical Specifications

—

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

Electrical Specifications

Model	**MCI-1**	**MCI-2**
Nominal Input DC Current Rating (I_{MP})	13 A	13 A
Maximum Input Short Circuit Current (I_{SC})	19 A	17 A
Maximum System Voltage (PVHCS)	600 V DC	1000 V DC[6]

[6]Maximum System Voltage is limited by Tesla Solar Inverter 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	PV System AC Breaker or Switch

UL 3741 PV Hazard Control (and PVRSA) Compatibility

See Tesla Solar Inverter Installation Manual

#537 RAIL

CHIKO 537R aluminum rail is designed for roof mounting system,it could be applied on all roof mount system.A variety of lengths can help to reduce unnecessary cut.

ADVANTAGES

- Easy installation
- Highclass anodized
- Tilt- in nut
- Universal on roof mount system

WARRANTY

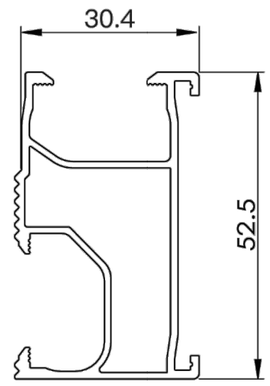
PRODUCT LINE

Item	Product Name
CK-FT-R537B2-2400	CHIKO 537 Black Rail 2400mm
CK-FT-R537B2-3500	CHIKO 537 Black Rail 3500mm
CK-FT-R537B2-4700	CHIKO 537 Black Rail 4700mm

TECHNICAL DATA

Main Material	AL 6005-T5
Wind Velocity	Up to 60 M/S

Xi=31918.082 mm4
Yi=81501.592 mm4



COMPONENT LIST

MATERIAL	QTY
Aluminium Rail	01

ORDERING SPECIFICS

Standard Packaging	8pcs/unit 320/384/504 pcs per pallet
Dimensions	2400/3500/4700 mm
Weight	14/20/26 kg

CHIKO Solar Mounting Solutions
www.chikolar.com/www.chikosolar.com

#537 RAIL SPLICE KIT

CHIKO aluminum rail splice kit is designed for 537R rail connection from back to position. Move easily and economically to install the rails.

ADVANTAGES

- Easy installation
- Highclass anodized

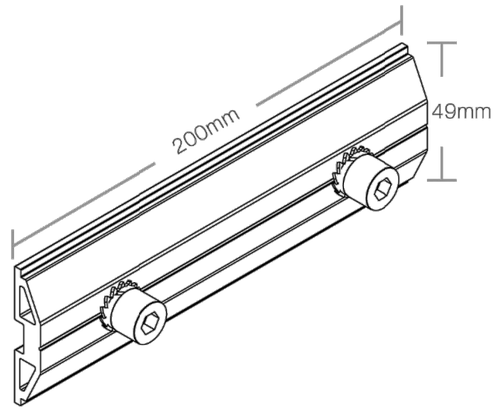
WARRANTY

PRODUCT LINE

Item	Product Name
CK-637-1-200	CHIKO 537 Rail Splice Kit

TECHNICAL DATA

Main Material	AL 6005-T5
Wind Load	Up to 60 M/S
Snow Load	1.4 KM/M²



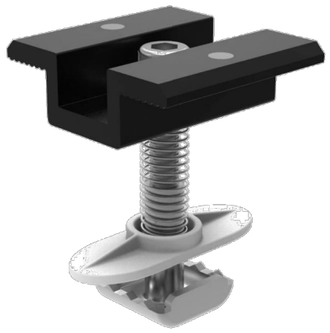
COMPONENT LIST

MATERIAL	QTY
Aluminium Rail Splice Kit	01
SUS304 Inner Hexagon M8*12	02
SUS304 Star Washer M8	02
SUS304 Hexagon Thin Nut M8	02

ORDERING SPECIFICS

Standard Packaging	50PCS/BOX 200PCS/CTN
Dimensions	50*38*20CM
Weight	30kg

Phone:86-21-59972267-801 Fax:86-21-59972938



Universal Grounding Mid Clamp

CHIKO Universal Grounding Mid Clamp is designed for 537R Black Rail, available for solar panels with thickness from 30-50mm.

ADVANTAGES

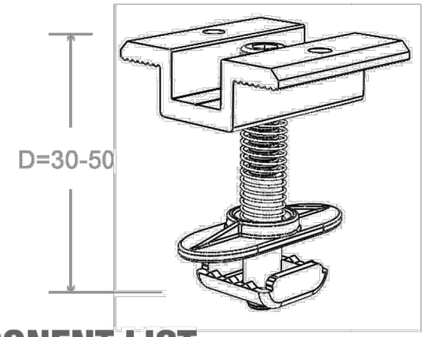
- Intergated Grounding
- Easy installation
- High class anodized
- Tilt- in nut
- Adjustable range 30-50mm

PRODUCT LINE

Item	Product Name
CK-777R537-KS(30-45)D-40	CHIKO Grounding Universal Black Mid Clamp 30-50mm For 537R

TECHNICAL DATA

Main Material AL 6005-T5



COMPONENT LIST

MATERIAL	QTY
Black Mid Clamp	01
SUS304 Bolt M6	01
SUS304 069 Nut	01
Rivet	02
Spring	01
Plastic Plate	01

ORDERING SPECIFICS

Standard Packaging	80PCS/BOX 320PCS/CTN
Dimensions	50*38*20CM
Weight	24kg

CHIKO Solar Mounting Solutions
www.chikolar.com/www.chikousa.com

Universal Grounding End Clamp

CHIKO End Clamp is designed base on 537R rail to fix module on the end of rail,have founction of intergated grounding,30mm to 42mm thickness module are available.

ADVANTAGES

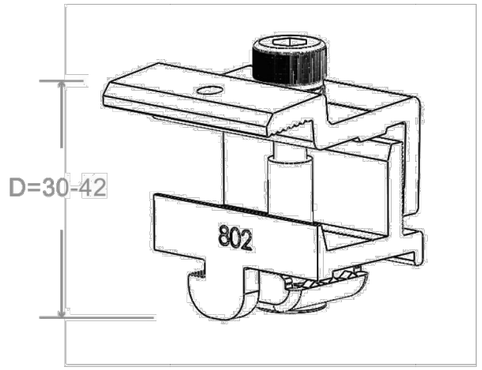
- Intergated Grounding
- Easy installation
- High class anodized
- Tilt- in nut
- Adjustable range 30-42mm

PRODUCT LINE

Item	Product Name
CK-750R537-30/42-0301-40	CHIKO Intergated Grounding Black End Clamp Universal 30-42mm

TECHNICAL DATA

Main Material AL 6005-T5



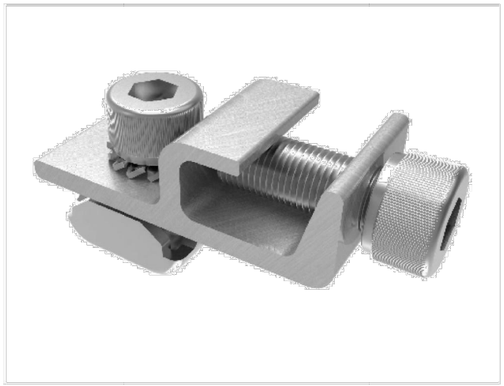
COMPONENT LIST

MATERIAL	QTY
End Clamp A|B	01
SUS 304 Bolt M6	01
SUS304 Nut	01
SUS304 Spring Washer M6	01
SUS304 Washer M8	01
Rivet	01

ORDERING SPECIFICS

Standard Packaging	80PCS/BOX 320PCS/CTN
Dimensions	50*38*20CM
Weight	32kg

Phone:86-21-59972267-801 Fax:86-21-59972938



Grounding Lug

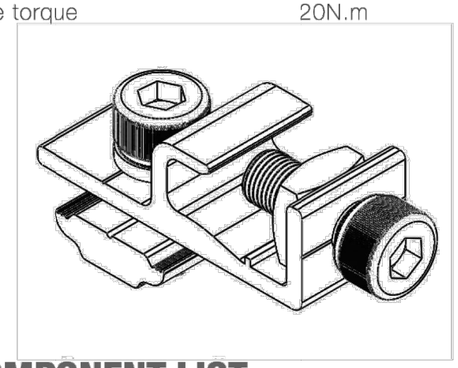
CHIKO grounding lug is designed for fixing grounding cable going through smoothly between each rails.

PRODUCT LINE

Item	Product Name
CK-592R537-1-120	CHIKO Grounding Lug For #537 Rail

TECHNICAL DATA

Main Material	AL 6005-T5
Tighten torque	15N.m
Safe torque	20N.m



ADVANTAGES

- Easy installation
- High class anodized
- Tilt- in nut

COMPONENT LIST

MATERIAL	QTY
Grounding Lug	01
SUS304 Inner Hex Bolts M8*20	02
SUS304 554 Nut	01
SUS304 Star Washer	01
SUS304 Inner Hex Bolts M8*25	01
SUS304 Spring Washer	01
SUS Square Nut M8	01

WARRANTY

ORDERING SPECIFICS

Standard Packaging	140PCS/BOX 560PCS/CTN
Dimensions	50*38*20CM
Weight	29kg

IRONRIDGE

QuickMount™ L-Mount®

Roof Protection without Compromise

The L-Mount® attachment, featuring an open-slotted L-Foot, is designed for cost-effective, single-bolt installation onto existing composition (asphalt) shingle roofs. The patented Elevated Water Seal Technology® has been integrated into the open-slotted L-Foot and flashing for fast installation, to provide maximum waterproofing.

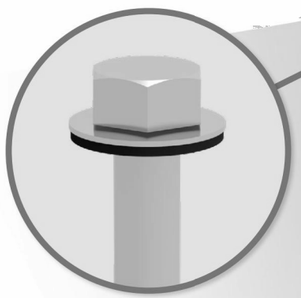
To maximize versatility, the mount is available with a lag bolt or structural screw option for the strength you depend on. Both hardware options come with an installed EPDM bonded washer to seal and prevent water entry.

L-Mount features a 9x12" aluminum flashing with alignment guides and rounded corners, to easily slide under shingles and speed up installation on the roof. The kit is available in both mill and black finishes.

This component is part of the QuickMount™ product line.

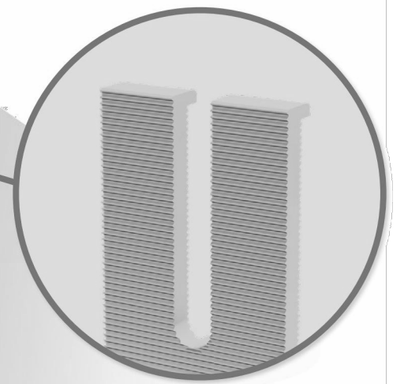
Elevated Water Seal Technology®

This proprietary flashing design cleverly places the roof penetration seal onto an aluminum flute fused into the flashing, above the bolt hole. The secondary EPDM rubber seal keeps water out—raised above the path of rain water and out of harm's way.



Pre-Installed Sealing Washer

Harware options include a lag bolt or structural screw. The EPDM washer arrives already attached.



Open-Slotted L-Foot

The redesigned L-Foot can rotate 360 degrees for optimal adjustability and positioning of the rail, while the open slot allows the rail hardware to quickly drop-in and be compatible with any side-mounted racking on the market.

Intertek

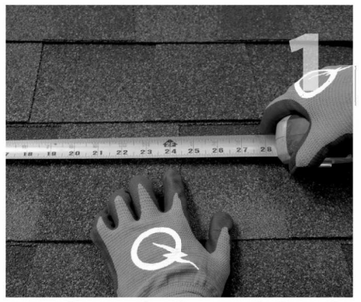
25-Year Warranty

Product guaranteed free of impairing defects.

Tech Brief

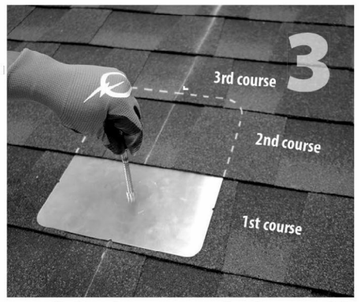
L-Mount® Installation Instructions

Installation Tools Required: tape measure, roofing bar, chalk line, stud finder, caulking gun, sealant compatible with roofing materials, drill with 7/32" or 1/8" bit, drill or impact gun with 1/2" socket.



Locate, choose, and mark centers of rafters to be mounted. Select the courses of shingles where mounts will be placed.

Carefully lift composition roof shingle with roofing bar, just above placement of mount. Remove nails as required and backfill holes with aproved sealant. See "Proper Flashing Placement" on next page.

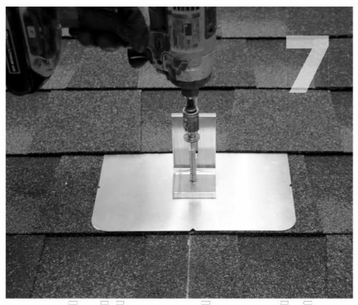


Insert flashing between 1st and 2nd course. Slide up so top edge of flashing is at least ¾" higher than the butt-edge of the 3rd course and lower flashing edge is above the butt-edge of 1st course. Mark center for drilling.

If attaching with lag bolt use a 7/32" bit (Lag). Use a 1/8" bit (ST) for attaching with the structural screw. Drill pilot hole into roof and rafter, taking care to drill square to the roof. Do not use mount as a drill guide. Drill a 2" deep hole into rafter.

Clean off any sawdust, and fill hole with sealant compatible with roofing materials.

Place L-foot onto elevated flute and rotate L-foot to desired orientation.



Prepare lag bolt or structural screw with sealing washer. Using a ½-inch socket on an impact gun, drive prepared lag bolt through L-foot until L-foot can no longer easily rotate. **DO NOT over-torque.** NOTE: Structural screw can be driven with T-30 hex head bit.

You are now ready for the rack of your choice. Follow all the directions of the rack manufacturer as well as the module manufacturer. NOTE: Make sure top of L-Foot makes solid contact with racking.

All roofing manufacturers' written instructions must also be followed by anyone modifying a roof system. Consult the roof manufacturer's specs and instructions prior to working on the roof.

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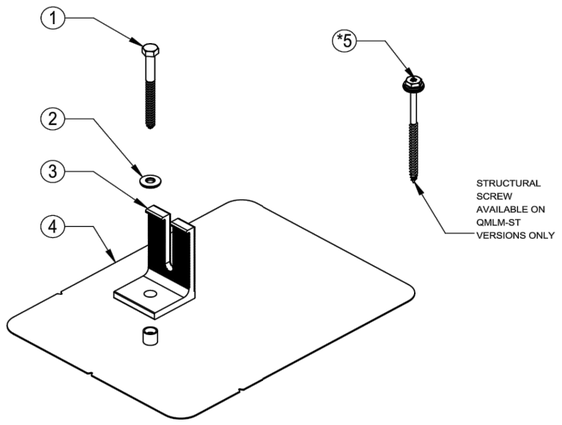

ITEM NO	DESCRIPTION	QTY IN KIT
1	LAG SCREW, 5/16" X 4"	1
2	WASHER, SEALING, EPDM BONDED SS	1
3	OPEN SLOTTED L-FOOT, MILL/BLACK	1
4	FLAHING, ROUNDED CORNERS, MILL/BLACK	1
5	STRUCTURAL SCREW, T-30 HEX WASHER HEAD, 5/16" X 4-1/2	1

PART NUMBER	DESCRIPTION
QM-LM-01-M1	L-MOUNT®, OPEN SLOT
QM-LM-01-B1	L-MOUNT®, OPEN SLOT, BLACK
QM-LMST-01-M1	L-MOUNT®, OPEN SLOT, STRUCTURAL SCREW
QM-LMST-01-B1	L-MOUNT®, OPEN SLOT, STRUCTURAL SCREW, BLACK

Cut Sheet

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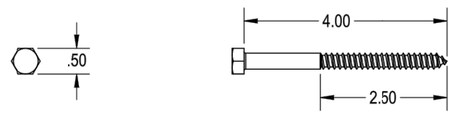
1) LAG SCREW

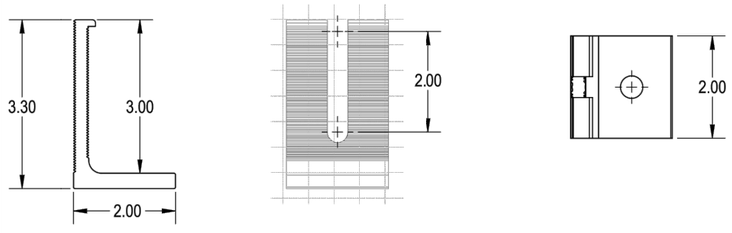


Property	Value
Material	300 Series Stainless Steel
Finish	Clear

2) WASHER, SEALING, EPDM BONDED SS

Property	Value
Material	300 Series Stainless Steel
Finish	Clear

3) OPEN SLOTTED L-FOOT, MILL/BLACK



Property	Value
Material	6000 Series Aluminum
Finish	Mill

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QM-LM-01-M1
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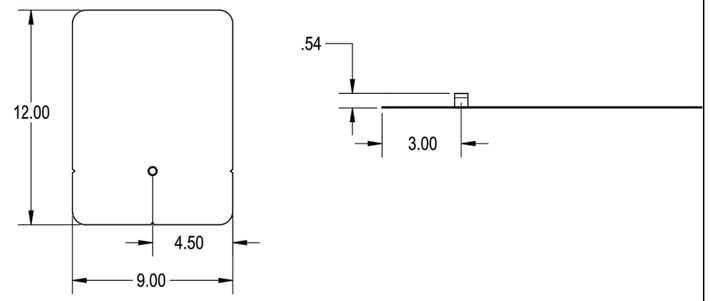
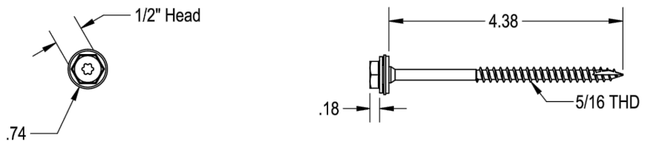
4) FLASHING, ROUNDED CORNERS, MILL/BLACK



Property	Value
Material	6000 Series Aluminum
Finish	Mill

5) STRUCTURAL SCREW



Property	Value
Material	300 Series Stainless Steel
Finish	Clear

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