# PHOTOVOLTAIC ROOF MOUNT SYSTEM

Date:6/13/2025

City of Portland

# Reviewed f

WIRE NUTZ ELECTRICAL SERVICES, LLC

PMB #264, VANCOUVER, WA 98686 PHONE: (360) 609 - 2714 WA - LICENSE #: WIRENNE892J6 OR - LICENSE #: 189913

## 13023 NE HWY 99 SUITE 7

EMAIL: solar@wirenutzelectric.com

VERSION				
DESCRIPTION	DATE	REV		
IITIAL RELEASE	03-14-2025	UR		

PROJECT NAME

SHEET NAME

**COVER SHEET** 

SHEET SIZE

**ANSI B** 11" X 17"

SHEET NUMBER

PV-0

30 MODULES-ROOF MOUNTED - 12.000 kWDC, 9.600 kWAC 25-022164 REV 01 RS 5820 SE PARDEE ST, PORTLAND, OR 97206, USA

### SYSTEM SUMMARY

(N) 30 - VSUN VSUN400-108BMH (400W) MODULES

(N) 15 - AP SYSTEM DS3-S MICRO-INVÉRTERS

(N) JUNCTION BOX

(N) 100A SOLAR LOAD CENTER

(E) 200A MAIN SERVICE PANEL WITH (E) 200A MAIN BREAKER (N) 60A FUSED KNIFE-BLADE TYPE LOCKABLE LOAD-BREAK

DISCONNECT WITH 50A FUSES [240V] (EATON DG222NRB)

## INTERCONNECTION METHOD: LINE SIDE TAP

**DESIGN CRITERIA** ROOF TYPE: ASPHALT SHINGLE NUMBER OF LAYERS: 1 ROOF FRAME: 2"X4" RAFTERS @ 24" O.C STORY: TWO STORY **GROUND SNOW LOAD: 20 PSF** WIND SPEED: 98 MPH WIND EXPOSURE: B RISK CATEGORY: II

COORDINATE: 45.489516, -122.603408

## **GOVERNING CODES:**

2021 OREGON ENERGY EFFICIENCY SPECIALTY CODE (OEESC)

2023 OREGON RESIDENTIAL SPECIALTY CODE (ORSC) 2023 OREGON ELECTRICAL SPECIALTY CODE (OESC) 2022 OREGON MECHANICAL SPECIALTY CODE (OMSC) 2023 OREGON PLUMBING SPECIALTY CODE (OPSC) 2022 OREGON STRUCTURAL SPECIALTY CODE (OSSC)

Sealed For Existing Roof & Attachment Only

## SHEET INDEX

PV-0 **COVER SHEET** PV-1 SITE PLAN WITH ROOF PLAN

PV-2 **ROOF PLAN WITH MODULES** 

PV-2.1 FRAMING PLAN PV-2.2 FRAMING PLAN

ATTACHMENT DETAIL PV-3 PV-4 **ELECTRICAL LINE DIAGRAM WITH** VOLTAGE AND ELECTRICAL WIRE

CALCULATIONS

PV-6 WARNING LABELS & PLACARD PV-7+ **EQUIPMENT SPEC SHEETS** 



DISTRIBUTED DEAD LOAD = 2.57 PSF MODULE WEIGHT = 1415.4 LBS Exp: 12/31/25 RACKING WEIGHT = 8.822 LBS TOTAL SYSTEM WEIGHT = 1654.99 LBS Digitally signed

NUMBER OF ATTACHMENTS = 105 by John Calvert AVERAGE ROOF POINT DEAD LOAD = 15.76 LBS Date: 2025.05.28

06:47:46 -06'00'

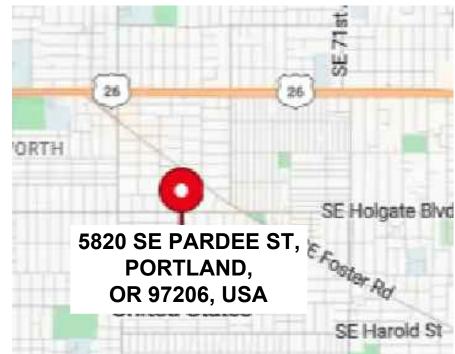
- PV SYSTEMS AND SUPPORTING STRUCTURE SHALL COMPLY WITH REQUIREMENTS OF 2023 OEESC & 2022 OSSC.
- 3111.3.2 PV RACKING AND ATTACHMENTS SHALL BE UL 1703 CERTIFIED.
- 3111.3.4 PV SYSTEM SHALL HAVE A FIRE CLASSIFICATION THAT IS EQUAL TO OR GREATER THAN THE ROOF ASSEMBLY REQUIRED BY OSSC SECTION 1505.1.
- 3111.4.3 3111.4.7- PV LAYOUT SHALL NOT RESTRICT EGRESS, LIGHT VENTILATION, OR ROOF DRAINAGE REQUIREMENTS.
- 3111.4.8.1 GENERAL PATHWAY REQUIREMENTS:
- 36" WIDE PATHWAY SHALL NOT BE REQUIRED ON STRUCTURES WITH A PV ARRAY AREA OF 1,000 SF OR LESS INSTALLED ON A ROOF WITH A SLOPE THAT EXCEEDS 2:12 AND WITH AN INTERSECTING ADJACENT ROOF AND WHERE NO SECTION IS LARGER THAN 150 FEET MEASURED IN LENGTH OR WIDTH.
- WHERE PV ARRAY DOES NOT EXCEED 25% AS MEASURED IN PLAN VIEW OF TOTAL ROOF AREA OF A STRUCTURE, A MINIMUM OF 12" UNOBSTRUCTED PATHWAY SHALL BE MAINTAINED ALONG EACH SIDE OF ANY HORIZONTAL RIDGE.
- WHERE THE SOLAR ARRAY EXCEEDS 25% AS MEASURED IN PLAN VIEW OF TOTAL ROOF AREA OF THE STRUCTURE, A MINIMUM OF ONE 36" UNOBSTRUCTED PATHWAY SHALL BE PROVIDED IN ADDITION TO A MINIMUM 12" UNOBSTRUCTED ALONG EA. SIDE OF ANY HORIZONTAL
- ROOF STRUCTURE IS CONVENTIONAL LIGHT FRAMED WOOD CONSTRUCTION WITH RAFTERS @ 24" O.C REFER TO ALLOWABLE SPAN REQUIREMENTS IN TABLE 305.4.1.
- 3111.4.8.5.1 DISCONNECTS, J-BOXES, COMBINER BOXES OR GUTTERS SHALL NOT BE PLACED IN ANY REQUIRED PATHWAY OR CUTOUT.
- PV MODULES AND RACKING SHALL BE DIRECTLY ATTACHED TO ROOF FRAMING AS SHOWN IN PV-2. WHEN ATTACHMENT LOCATED WITHIN 3' OF ROOF EDGE. HIP. EAVE. RIDGE SHALL BE 24" O.C. MAX.
- 3111.5.4 MAX MODULE HEIGHT < 18" OFF ROOF SURFACE

## **ELECTRICAL NOTES**

- ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 & 75 DEGREE C WET ENVIRONMENT.
- WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
- WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
- WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED. THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
- MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
- MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
- THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE



**AERIAL PHOTO** 



VICINITY MAP

•ROOF ACCESS POINT SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.

## NOTE:

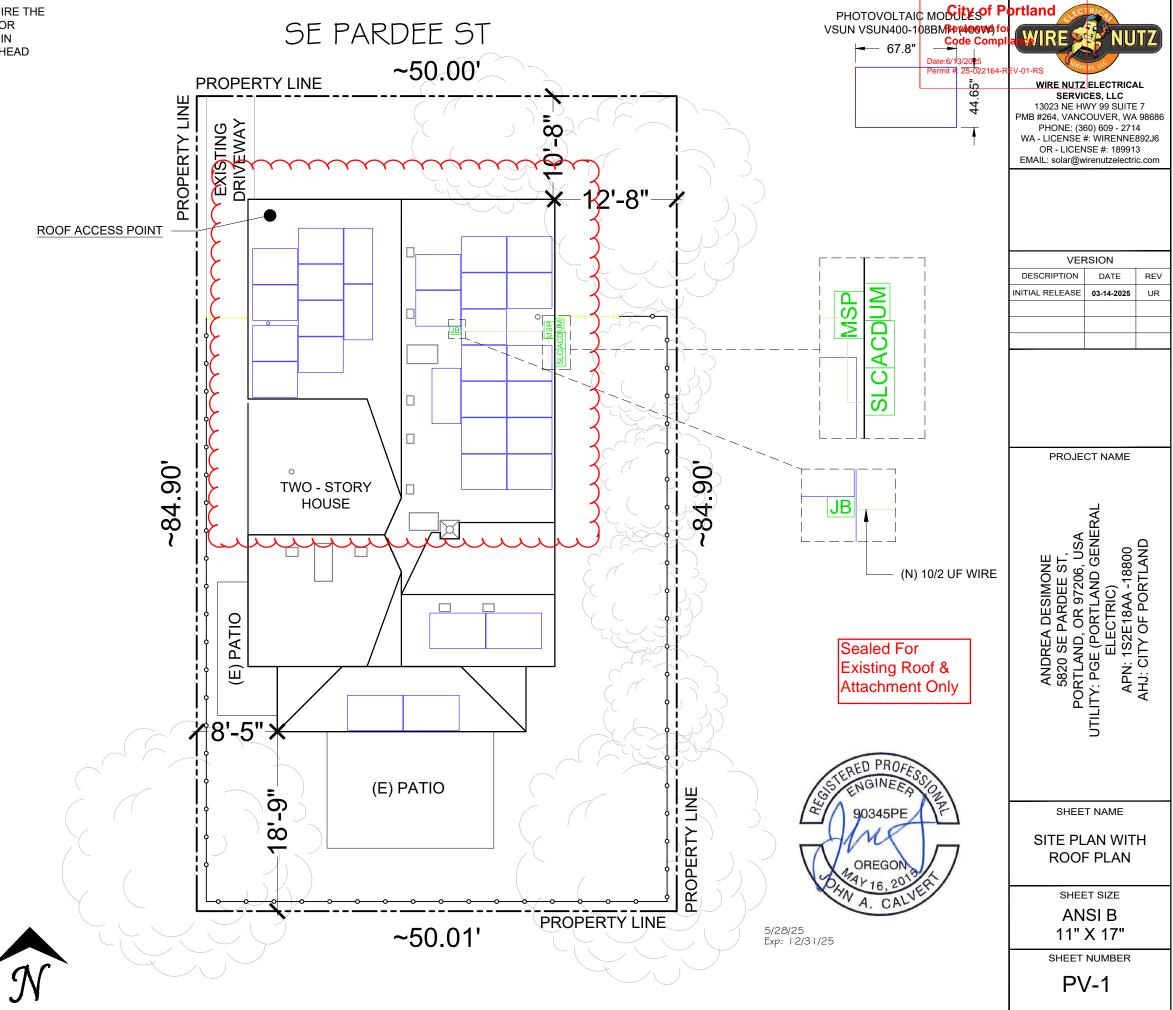
ALL ELECTRICAL EQUIPMENT, INVERTERS/COMBINER, DISCONNECTS, MAIN SERVICE PANELS, ETC. SHALL NOT BE INSTALLED WITHIN 3' OF THE GAS METERS' SUPPLY OR DEMAND PIPING.

NOTE: • 3/4" OR GREATER IMC, RMC, FMC, LFMC, PVC, HDPE, NUCC, RTRC, LFNC, FMT, ENT OR EMT CONDUIT RUN EXPOSED CONDUIT RUN SHALL BE MIN. 7/8" ABOVE ROOF. \* ROMEX RUN INSIDE ATTIC

LEGEND JUNCTION BOX JB SOLAR LOAD CENTER SLC UM UTILITY METER KNIFE-BLADE TYPE LOCKABLE ACD LOAD-BREAK DISCONNECT MAIN SERVICE PANEL MSP **FENCE GATE** PROPERTY LINE CONDUIT **TREES** VENT, ATTIC FAN (ROOF OBSTRUCTION) CHIMNEY

NOTE: 1.5" ABS ROOF VENT IS TO BE RELOCATED

SITE PLAN WITH ROOF PLAN



## MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 30 MODULES MODULE TYPE = VSUN VSUN400-108BMH (400W) MODULES MODULE WEIGHT = 47.18 LBS / 21.4 KG MODULE DIMENSIONS = 67.8" X 44.65" = 21.02 SF

UNIT WEIGHT OF ARRAY = 2.24 PSF

A. ALL ELECTRICAL EQUIPMENT, INVERTERS/COMBINER, DISCONNECTS, MAIN SERVICE PANELS, ETC. SHALL NOT BE INSTALLED WITHIN 3' OF THE GAS METERS' SUPPLY OR DEMAND PIPING.

NOTE: • 3/4" OR GREATER IMC. RMC. FMC. LFMC. PVC. HDPE, NUCC, RTRC, LFNC, FMT, ENT OR EMT CONDUIT RUN EXPOSED CONDUIT RUN SHALL BE MIN. 7/8" ABOVE ROOF. \* ROMEX RUN INSIDE ATTIC

ROOF #3

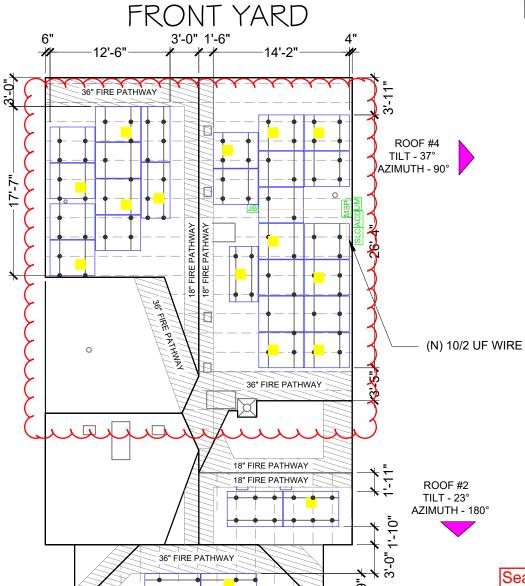
TILT - 37°

AZIMUTH - 270°

NOTE: ACTUAL ROOF CONDITIONS AND RAFTERS (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

PLUMBING VENTS, SKYLIGHTS AND MECHANICAL VENTS SHALL NOT BE COVERED, MOVED, RE-ROUTED OR RE-LOCATED.

## SE PARDEE ST



City of Portland ARRAY AREA & ROOF AREA CALC'S AREA OF ROOF (PLAN TOTAL ROOF AREA AREA OF NEW ARRAY (Sq. Ft.) COVERED BY ARRAY5% (Sq. Ft.) 630.68 1879 33.56% ROOF AREA (ARRAY<25% OF ROOF AREA) 34%

BILL OF MATERIALS			
EQUIPMENT	QTY	DESCRIPTION	
RAIL	22	UNIRAC NXT UMOUNT RAIL - 168" DARK	
RAIL SPLICE	8	NXT UMOUNT RAIL SPLICE	
UNIVERSAL CLAMP	80	NXT UMOUNT COMBO CLAMP - DARK	
RAIL CLAMP	96	STRONGHOLD RAIL CLAMP DRK	
ACCESSORIES	40	NXT UMOUNT RL & CLMP CAP KIT	
MLPE & GROUNDING	40	NXT UMOUNT MLPE & LUG CLAMP	
FLASHING	96	UNIRAC FLASHKIT PRO, MILL 10PK	

			1					
ROOF DESCRIPTION								
ROOF TYPE		ASPHALT SHINGLE						
ROOF	# OF MODULES	ROOF TILT	AZIMUTH	RAFTERS SIZE	RAFTERS SPACING			
#1	2	14°	180°	2" X 4"	24" O.C			
#2	2	23°	180°	2" X 4"	24" O.C			
#3	10	37°	270°	2" X 4"	24" O.C			
#4	16	37°	90°	2" X 4"	24" O.C	PROJE	CT NAME	

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REAR YARD



5/28/25 Exp: 12/31/25

ROOF #1 TILT - 14° AZIMUTH - 180°

	LEGEND
JB	JUNCTION BOX
SLC	SOLAR LOAD CENTER
UM	UTILITY METER
ACD	KNIFE-BLADE TYPE LOCKABLE LOAD-BREAK DISCONNECT
MSP	MAIN SERVICE PANEL
	AP SYSTEM DS3-S MICRO INVERTER
	CONDUIT
	UNIRAC NXT UMOUNT RAIL
•	ROOF ATTACHMENT - UNIRAC FLASHKIT PRO @48" & 24" O.C
0	VENT, ATTIC FAN (ROOF OBSTRUCTION)
	RAFTERS

CHIMNEY

ANDREA DESIMONE 5820 SE PARDEE ST, PORTLAND, OR 97206, USA UTILITY: PGE (PORTLAND GENERAL ELECTRIC) APN: 1S2E18AA -18800 AHJ: CITY OF PORTLAND SHEET NAME **ROOF PLAN WITH** 

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INITIAL RELEASE 03-14-2025

DATE

DESCRIPTION

EMAIL: solar@wirenutzelectric.com

MODULES

SHEET SIZE

**ANSI B** 11" X 17"

SHEET NUMBER PV-2



18" FIRE PATHWAY

36" FIRE PATHWAY





