NOTICE OF NSA
OPPORTUNITY TO COMMENT

www.multco.us/landuse ▪ Email: land.use.planning@multco.us ▪ Phone: (503) 988-3043

Application for National Scenic Area Site Review

CASE FILE: T2-2024-0097 **APPLICANT**: Peter Bruha

LOCATION: 2705 NE Park Street, Corbett **Property ID #** R202195

Map, Tax lot: 1N5E29BD-1000 **Alt. Acct. #** R475801450

BASE ZONE: Gorge Special Residential (GSR)

OVERLAYS: None

KEY VIEWING AREAS: Historic Columbia River Highway, Interstate – 84, Larch Mountain Road, State Route – 14

LANDSCAPE SETTING: Residential

PROPOSAL: Request for a National Scenic Area Site Review to install a 8.4 kW DC & 5.8 kW AC roof mounted PV system on the existing dwelling.

- **COMMENT PERIOD**: Neighbors are invited to submit written comments for the proposal described above. Comments should be directed toward the approval criteria listed below. Any neighbor that submits comments will receive the County's complete decision. Written comments will be accepted at LUP-comments@multco.us if received by **4:00 pm on Tuesday, March 25, 2025.** Comments regarding Cultural Resources will be accepted until **4:00 pm on April 04, 2025**. **If you do not wish to submit comments, no response is necessary**.

  Further information regarding this application is available by contacting LUP-comments@multco.us. Paper copies of these materials may be purchased for $0.46/per page.

- **APPLICABLE APPROVAL CRITERIA** [Multnomah County Code (MCC)]:

  General Provisions: MCC 38.0560 Code Compliance and Applications, MCC 38.0015 Definitions – Parcel, MCC 38.0110 Tribal Treaty Rights and Consultation

  Gorge Special Residential (GSR): MCC 38.3025(B)(14) – Review Uses – Roof Solar

  NSA Site Review Criteria: MCC 38.7015 Application for NSA Site Review, MCC 38.7040 SMA Scenic Review Criteria, MCC 38.7050 SMA Cultural Resource Review Criteria, MCC 38.7075 SMA Natural Resource Review Criteria, MCC 38.7085 SMA Recreation Resource Review Criteria

  Copies of the referenced Multnomah County Code sections can be obtained by visiting our website at https://multco.us/landuse/zoning-codes/ under the link **Chapter 38 – Columbia River Gorge National Scenic Area** or by contacting our office at (503) 988-3043.

Vicinity Map **N↑**

- **DECISION MAKING PROCESS**: The Planning Director will render a decision on this application after the comment period expires. Notice of the Director's decision will be mailed to the applicant, those who submitted written comment during the comment period, those who requested the decision in writing, and the Gorge Commission. The Planning Director's decision can be appealed. An explanation of the requirements for filing an appeal will be included in the notice of decision.

- **IMPORTANT NOTE**: Failure to raise an issue before the close of the public record in sufficient detail to afford the County and all parties an opportunity to respond may preclude appeal on that issue to the Columbia River Gorge Commission.

- **ENCLOSURES**:

  Site Plan

Notice to Mortgagee, Lien Holder, Vendor, or Seller:
ORS chapter 215 requires that if you receive this notice, it must promptly be forwarded to the purchaser.

AERIAL SITE VIEW

SCOPE OF WORK

INSTALLATION OF UTILITY INTERACTIVE PHOTOVOLTAIC SOLAR SYSTEM

8.4 kW DC & 5.8 kW AC PHOTOVOLTAIC SOLAR ARRAY

PV MODULES: (20) SILFAB SOLAR SIL-420 HC+

INVERTER(S): (20) ENPHASE IQ8PLUS-72-2-US

ROOF TYPE: TRAPEZOIDAL METAL

PV MOUNTING HARDWARE: ECOFASTEN CLICKFIT STANDARD

SHEET LIST

G-1	COVER SHEET
V-2	SITE PLAN (AD. LIB)
S-3	ROOF PLAN
S-4	STRUCTURAL DETAILS
S-5	STRUCTURAL CALCULATIONS & NOTES
E-6	ELECTRICAL DETAILS (LINE DIAGRAM)
E-7	ELECTRICAL CALCULATIONS & NOTES
E-8	ELECTRICAL LOAD CALCULATIONS (AD. LIB)
E-9	ELECTRICAL LABELS & LOCATIONS
E-10	ELECTRICAL DIRECTORY PLACARD (AD. LIB)

JURISDICTION CODES AND STANDARDS

GOVERNING CODES

1. ALL WORK SHALL COMPLY WITH:

2021 OREGON ELECTRICAL SPECIALTY CODE (OESC)

2022 OREGON STRUCTURAL SPECIALTY CODE (OSSC)

2021 OREGON RESIDENTIAL SPECIALTY CODE (ORSC)

2018 INTERNATIONAL FIRE CODE (IFC)

2021 OREGON PLUMBING SPECIALTY CODE

AND ALL STATE AND LOCAL BUILDING, ELECTRICAL, AND PLUMBING CODES.

SITE CLASSIFICATION NOTES, OSHA REGULATION

OCCUPANCY CLASS: SFR

CONSTRUCTION CLASS: V-B

ZONING TYPE: RESIDENTIAL

1. A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.

2. MODULES HAVE AN ANTI-REFLECTIVE COATING TO PREVENT GLARE
3. FOR PROJECTS SUBMITTED FOR PRESCRIPTIVE REVIEW, ROOF ATTACHMENTS SHALL BE SPACED NO GREATER THAN 24" ON CENTER IN ANY DIRECTION WHERE LOCATED WITHIN 3' OF A ROOF EDGE, HIP, EAVE, OR RIDGE OSSC 3111.3.5.3 ITEM 3.2
JUNCTION BOXES UNDER PV ARRAY SHALL BE INSTALLED TO BE CONSIDERED ACCESSIBLE BY OESC 690.34

ELECTRICAL CRITERIA, NOTES

TEMPERATURE SOURCE: ASHRAE

WEATHER STATION: PORTLAND INTL AP

EXTREME MIN. TEMPERATURE: -6

ASHRAE 0.4% HIGH TEMP: 36

1. DRAWINGS HAVE BEEN DETAILED ACCORDING TO UL LISTING REQUIREMENTS.

2. TERMINALS AND LUGS WILL BE TIGHTENED TO MANUFACTURER TORQUE SPECIFICATIONS (WHEN PROVIDED) IN ACCORDANCE WITH NEC 110.14(D) ON ALL ELECTRICAL.

3. PV MODULE CERTIFICATIONS WILL INCLUDE UL1703, IEC61646, IEC61730.

4. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS.

5. PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION [NEC 110.26].

6. WHERE PV CABLES ON ROOFTOP WOULD OTHERWISE BE EXPOSED TO PHYSICAL DAMAGE, 3/4" EMT SHALL BE USED TO PROTECT CABLES

STRUCTURAL CRITERIA, NOTES

DESIGN LOAD STANDARD: ASCE 7-16

WIND EXPOSURE CATEGORY: C

WIND SPEED (3-SEC GUST): 90 MPH

GROUND SNOW LOAD: 36 PSF

DESIGN ROOF SNOW LOAD: 26 PSF

SEISMIC DESIGN CATEGORY: D

SEISMIC RISK FACTOR: II

REGISTERED PROFESSIONAL ENGINEER
98950PE
OREGON
JAN 11, 2022
ALAN ROWLEY
04/04/2024
EXPIRES: 12/31/24

NABCEP BOARD CERTIFIED
PV INSTALLATION PROFESSIONAL
SCOTT A. GURNEY
#PV-011719-015865
EXP. 3-17-2025

ION DEVELOPER LLC
DAVID STANLEY CONRAD
C - ELECTRICAL CONTRACTOR
CI524

ION SOLAR
44 E 800 N
OREM, UTAH 84057
888.781.7074

PROJECT ID
00BQIE

SITE OWNER
ROSE W MCCORMICK & PETER A BRUHA

SITE ADDRESS
2705 NORTHEAST PARK STREET
CORBETT, OREGON 97019

EQUIP.
(20) SILFAB SOLAR SIL-420 HC+
(20) ENPHASE IQ8PLUS-72-2-US

SYSTEM SIZE
8.4KW DC
5.8KW STC-AC, 7.496KW CEC-AC

PROJECT DESIGNER
ALEX PALOU

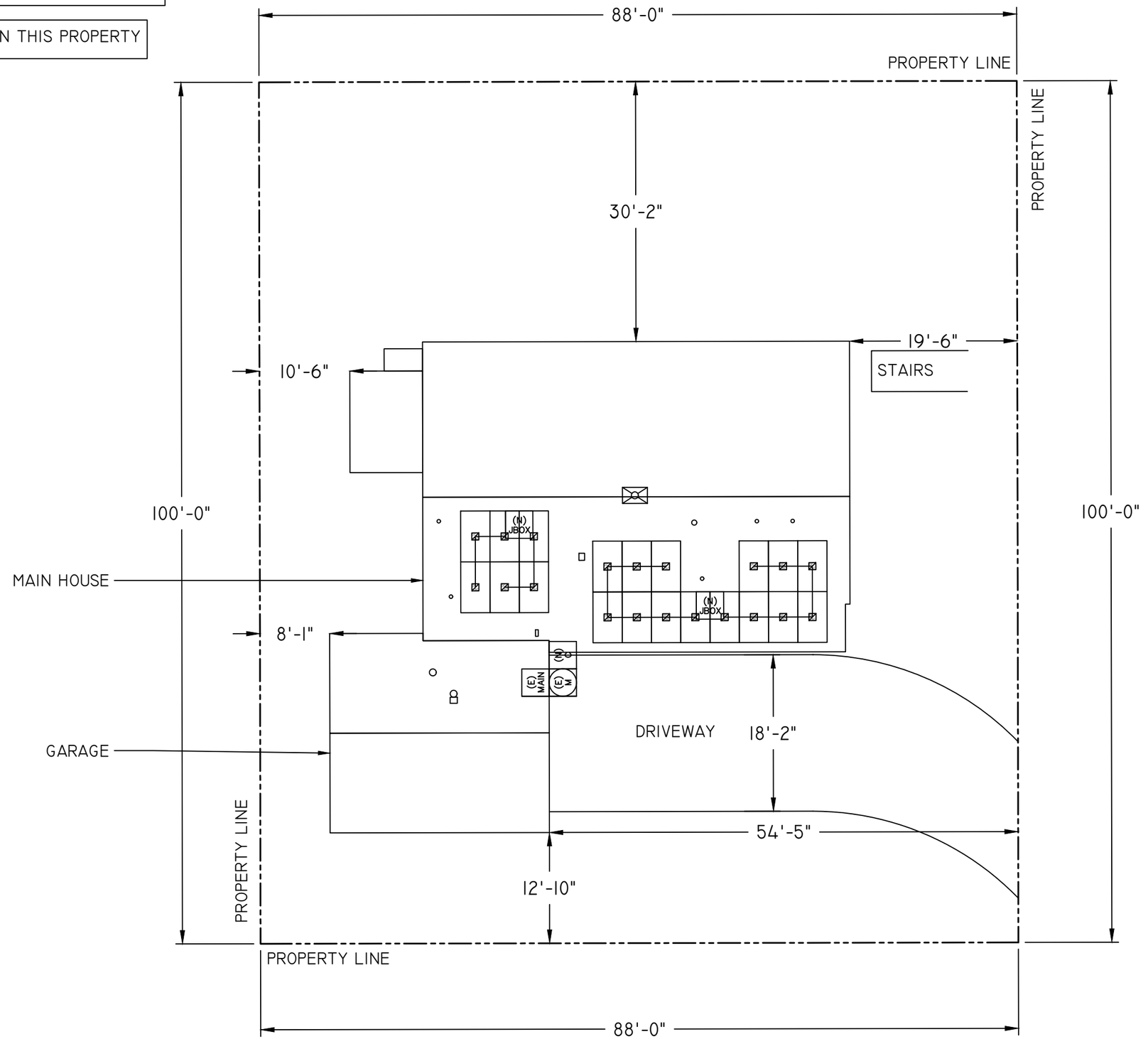
DATE
05-APR-2024

SHEET NAME
COVER SHEET

SHEET #	REV
G-1	0

SQUARE FOOTAGE- 8712 SQ. FT.

NO TREES IN THIS PROPERTY



2705 NORTHEAST PARK STREET

FRONT OF HOME

SCALE: 1:150

0' 3'-1 1/2 6'-3" 12'-6" 25'

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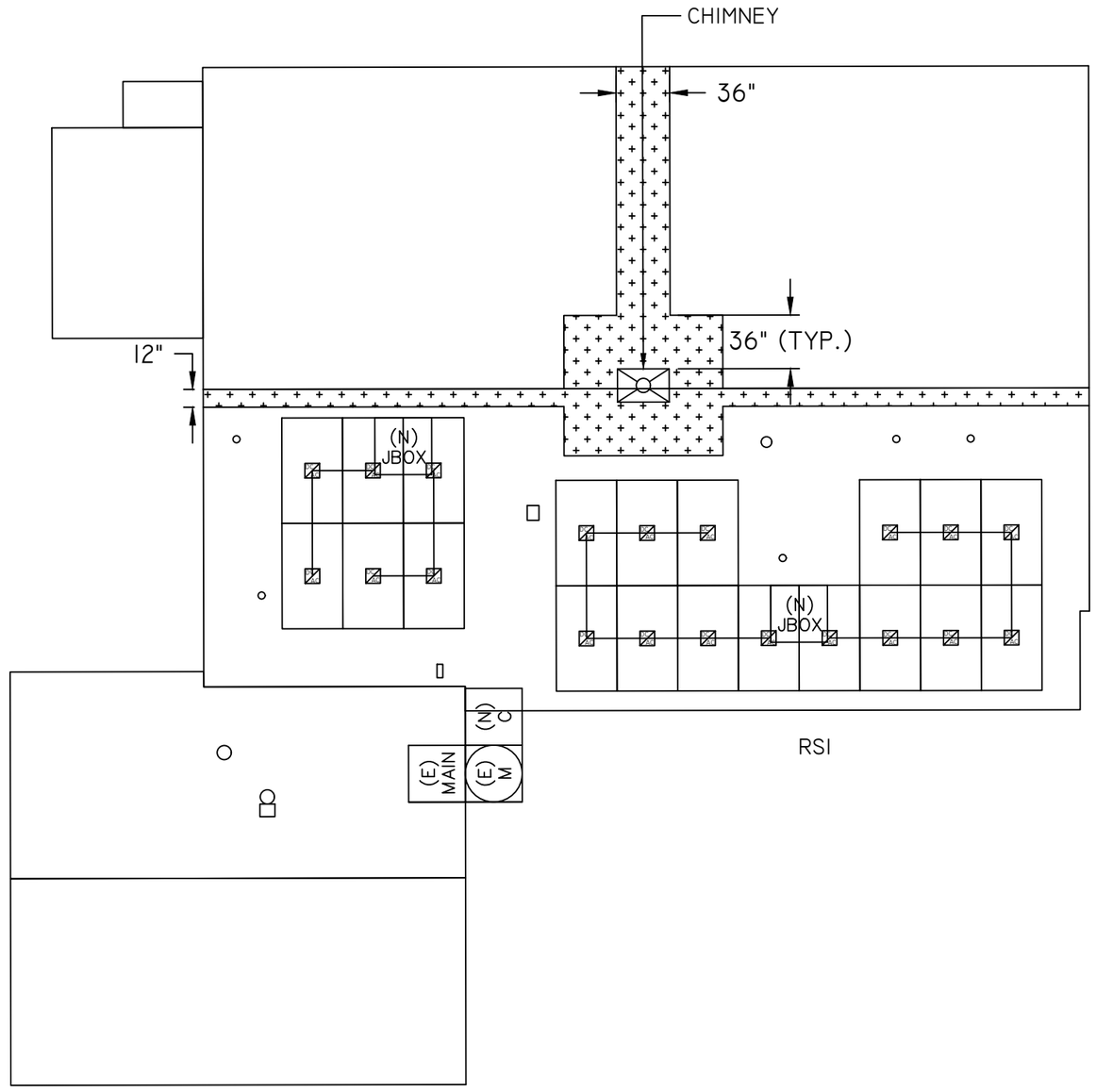
PROJECT ID	00BQIE
SITE OWNER	ROSE W MCCORMICK & PETER A BRUHA
SITE ADDRESS	2705 NORTHEAST PARK STREET CORBETT, OREGON 97019
EQUIP.	(20) SILFAB SOLAR SIL-420 HC+ (20) ENPHASE IQ8PLUS-72-2-US
SYSTEM SIZE	8.4KW DC 5.8KW STC-AC, 7.496KW CEC-AC
PROJECT DESIGNER	ALEX PALOU
DATE	05-APR-2024
SHEET NAME	SITE PLAN
SHEET #	V-2
REV	0

SITE NOTES:

FOR PROJECTS SUBMITTED FOR PRESCRIPTIVE REVIEW, ROOF ATTACHMENTS SHALL BE SPACED NO GREATER THAN 24" ON CENTER IN ANY DIRECTION WHERE LOCATED WITHIN 3' OF A ROOF EDGE, HIP, EAVE, OR RIDGE OSSC 3III.3.5.3 ITEM 3.2
JUNCTION BOXES UNDER PV ARRAY SHALL BE INSTALLED TO BE CONSIDERED ACCESSIBLE BY OESC 690.34
FOR ANY METER UPGRADES, ENSURE THAT THE UTILITY METER IS LOCATED WITHIN I0FT OF THE FRONT/STREET-SIDE OF THE HOUSE. PLEASE ADD A LABEL SHOWING THE DISTANCE FROM THE FRONT CORNER OF THE HOUSE.



FRONT OF HOME
2705 NORTHEAST PARK STREET

SCALE: I/8" = I'-0"
0' 2' 4' 8' 16'

SYSTEM LEGEND

(E) M	(E) UTILITY METER / MAIN SERVICE PANEL	(N) C	(N) PV COMBINER PANEL	(N) JBOX	(N) JUNCTION BOX
(E) MAIN	(E) MAIN SERVICE PANEL	(N) LC	(N) PV LOAD CENTER	(N) ACD	(N) AC DISCONNECT (VISIBLE-OPEN LOCKABLE LABELED DISCONNECT)
(E) SUB	(E) SUBPANEL	(N) PVM	(N) PV PRODUCTION METER	DC/AC	(N) MICROINVERTER
		(N) I	(N) DC-DC / STRING INVERTER	(N) DCD	(N) DC DISCONNECT

S# SUNEYE LOCATION
FIRE SETBACK
(N) PV MODULE
STRUCTURALLY DISQUALIFIED

ROOF SECTION CRITERIA AND SPECIFICATIONS

ROOF SECTION	PV MODULE QTY	AZIMUTH	PITCH	TSRF
RSI	20	I80	20	92%

N

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PROJECT ID
00BQIE

SITE OWNER
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SITE ADDRESS
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CORBETT, OREGON 97019

EQUIP.
(20) SILFAB SOLAR SIL-420 HC+
(20) ENPHASE IQ8PLUS-72-2-US

SYSTEM SIZE
8.4KW DC
5.8KW STC-AC, 7.496KW CEC-AC

PROJECT DESIGNER
ALEX PALOU

DATE
05-Apr-2024

SHEET NAME
ROOF PLAN

SHEET # S-3
REV 0

STRUCTURAL INSTALLATION SCHEDULE AND CRITERIA

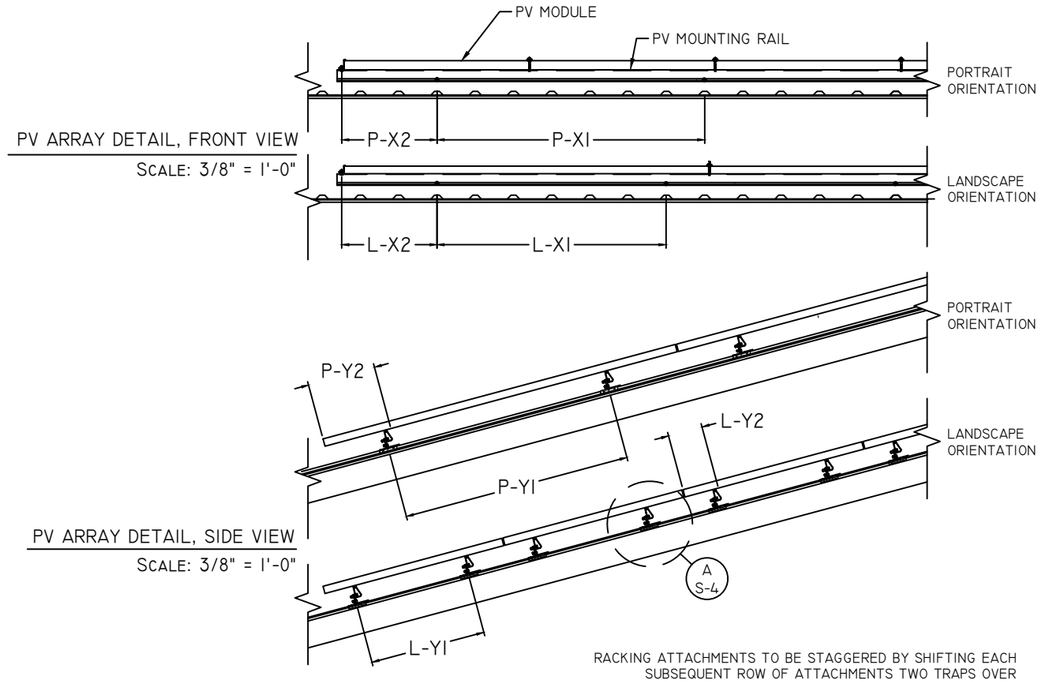
ROOF MEMBRANE	
ROOF TYPE:	TRAPEZOIDAL METAL
ROOF SHEATHING TYPE:	1/2" PLYWOOD

ARRAY PARAMETERS	
TOTAL ROOF AREA (SQ. FT.)	1878
TOTAL PV MODULE AREA (SQ. FT.)	426
% PV MODULE ROOF COVERAGE	22.68%

PV RACKING	
RACKING:	ECOFASTEN CLICKFIT STANDARD
RACKING TYPE:	RAIL
STANDOFF:	ECOFASTEN CORRUSLIDE BRACKET
STANDOFF TYPE:	CLAMP
FASTENER:	#14 X 3/4" SELF TAP. SCREWS – 18.8 SS

SPAN AREA	TAG	SPAN
RAIL - PORTRAIT - MODULE ORIENTATION		
X- SPACING	P-X1	60 IN. O.C. MAX.
X-CANTILEVER	P-X2	15 IN. MAX.
Y- SPACING	P-Y1	41.3 IN. MIN. - 45.3 IN. MAX.
Y-CANTILEVER	P-Y2	15 IN. MIN. - 17 IN. MAX.
RAIL - LANDSCAPE - MODULE ORIENTATION		
X- SPACING	L-X1	72 IN. O.C. MAX.
X-CANTILEVER	L-X2	15 IN. MAX.
Y- SPACING	L-Y1	21.1 IN. MIN. - 25.1 IN. MAX.
Y-CANTILEVER	L-Y2	7.9 IN. MIN. - 9.8 IN. MAX.

STRUCTURAL FRAMING					
ROOF SECTION	*STRUCTURE TYPE*	*RAFTER / TC SIZE (IN)*	*RAFTER / TC SPACING (IN)*	*STRUCTURAL UPGRADE*	*UPGRADE SIZE & LENGTH (FT)*
RSI	CONVENTIONAL FRAMING	2x6	16	NONE - SINGLE PLY (1x)	NONE



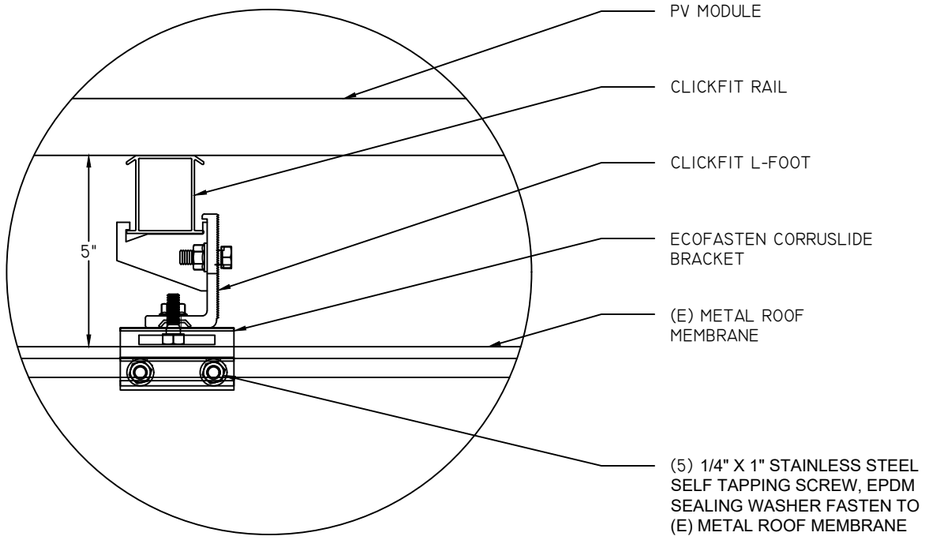
PV ARRAY DETAIL, FRONT VIEW

SCALE: 3/8" = 1'-0"

PV ARRAY DETAIL, SIDE VIEW

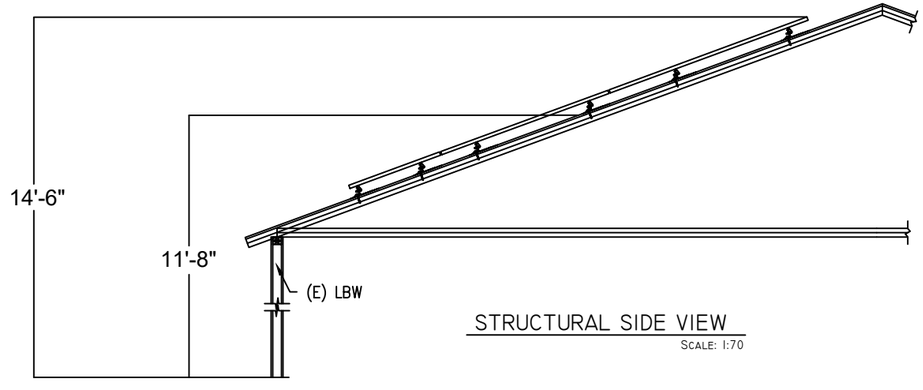
SCALE: 3/8" = 1'-0"

RACKING ATTACHMENTS TO BE STAGGERED BY SHIFTING EACH SUBSEQUENT ROW OF ATTACHMENTS TWO TRAPS OVER TO DISTRIBUTE LOAD ACROSS ALL FRAMING MEMBERS UNDER PV ARRAY.



A TRAPEZOIDAL METAL - CLICKFIT - CORRUSLIDE - STANDOFF DETAIL

SCALE: 3" = 1'-0"



STRUCTURAL SIDE VIEW

SCALE: 1:70

REGISTERED PROFESSIONAL ENGINEER
98950PE
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JAN 11, 2022
ALAN ROWLEY
04/04/2024
EXPIRES: 12/31/24

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PROJECT ID	00BQIE
SITE OWNER	ROSE W MCCORMICK & PETER A BRUHA
SITE ADDRESS	2705 NORTHEAST PARK STREET CORBETT, OREGON 97019
EQUIP.	(20) SILFAB SOLAR SIL-420 HC+ (20) ENPHASE IQ8PLUS-72-2-US
SYSTEM SIZE	8.4KW DC 5.8KW STC-AC, 7.496KW CEC-AC
PROJECT DESIGNER	ALEX PALOU
DATE	05-APR-2024
SHEET NAME	STRUCTURAL DETAILS
SHEET #	S-4
REV	0

PV SYSTEM STRUCTURAL SPECIFICATIONS AND CALCULATIONS

DESIGN LOCATION AND SITE SPECIFICATIONS

JURISDICTION	CITY OF GRESHAM
STATE	OREGON
ADOPTED LOAD STANDARD	ASCE 7-16
OCCUPANCY / RISK CATEGORY	II
BASIC WIND SPEED (MPH (3-SEC GUST))	90
WIND EXPOSURE CATEGORY	C
GROUND SNOW LOAD (PSF) (Pg)	36
BASE ELEVATION (FT)	313

PV SYSTEM STRUCTURAL SPECIFICATIONS

STRUCTURE TYPE - ROOF SHAPE	INHABITED - GABLE / FLAT ROOF
MIN. ROOF SLOPE (DEG.)	20
MEAN ROOF HEIGHT (FT.)	II
PORTRAIT ATT. SPACING (IN. O.C.)	60
LANDSCAPE ATT. SPACING (IN. O.C.)	72
# OF ATTACHMENT POINTS	52
MAX. POINT LOAD (LBS / ATT.)	56.6
MAX. TOTAL PV DEAD LOAD TO RAFTER (LBS)	113.2

PV SYSTEM EQUIPMENT SPECIFICATIONS

MODULE MANUFACTURER / TYPE	SILFAB SOLAR SIL-420 HC+
SOLAR MODULE WEIGHT (LBS)	47
SOLAR MODULE LENGTH (IN.)	75.3
SOLAR MODULE WIDTH (IN.)	40.8
SOLAR MODULE AREA (SQ. FT)	21.3
PV RACKING	ECOFASTEN CLICKFIT STANDARD
PV RACKING TYPE	RAIL
PV ROOF ATTACHMENT	ECOFASTEN CORRUSLIDE BRACKET
PV ROOF ATTACHMENT FASTENER	#14 X 3/4" SELF TAP. SCREWS – 18.8 SS
RACKING DEAD LOAD (PSF)	0.8
SOLAR MODULE DEAD LOAD (PSF)	2.21
TOTAL PV ARRAY DEAD LOAD (PSF)	3.01

GRAVITY LOAD / FRAMING CALCULATIONS

DEAD LOAD (PSF)		RSI
ROOF MEMBRANE	TRAPEZOIDAL METAL	1.5
SHEATHING	1/2" PLYWOOD	1.7
PITCH (DEG)	20	
FRAMING	CONVENTIONAL FRAMING - NONE - SINGLE PLY (IX) - RAFTER 2X6 @ 16 IN. O.C. - DF #2 @ 10.6 FT. MAX SPAN	2.0
TOTAL ROOF DEAD LOAD (PSF)	5.2	
ADJUSTED TO SLOPED ROOF (PSF)	5.5	
PV ARRAY ADJ. TO ROOF SLOPE (PSF)	3.2	
ROOF LIVE LOAD < ROOF SNOW LOAD (PSF)	26.0	
TOTAL LOAD (PSF)	34.7	

RAFTER / TOP CHORD MEMBER PROPERITES	DF #2 - 2x6 - NONE - SINGLE PLY (Ix)
SECTION MODULUS (S)(IN^3)	7.56
MOMENT OF INERTIA (I)(IN^4)	20.80
TOTAL LOAD ON MEMBER (W) (PLF)	46.3
MAX. MEMBER SPAN (L) (FT)	10.6
MODULUS OF ELASTICITY (E) (PSI)	1600000
SHEAR (Fv) (PSI)	180
AREA (A) (IN^2)	8.25

MAX BENDING STRESS CHECK	(Fb)(Cd)(Cf)(Cr)	
BENDING (Fb) (PSI)	900	
LOAD DURATION FACTOR (Cd)	1.15	
SIZE FACTOR (Cf)	1.30	
REPETITIVE MEMBER FACTOR (Cr)	1.15	
ALLOWABLE BENDING STRESS (PSI)	1547.3	
ACTUAL BENDING STRESS (PSI) = (WL^2)/(8(S))	1031.9	
	67%	OK

MAX DEFLECTION CHECK - TOTAL LOAD	UNIFORM DISTRIBUTED	
ALLOWABLE DEFLECTION	L / 180	
	0.707	IN.
ACTUAL MAX DEFLECTION	(W)(L)^4 / 185(E)(I)	
	0.164	IN.
	23%	OK
MAX DEFLECTION CHECK - LIVE LOAD	L / 240	
ALLOWABLE DEFLECTION	0.53	IN.
	(W)(L)^4 / 185(E)(I)	
ACTUAL MAX DEFLECTION	0.136	IN.
	26%	OK
MAX SHEAR CHECK	Fv (A)	
ALLOWABLE SHEAR	1485	LBS.
	(W)(L)/2	
ACTUAL MAX SHEAR	245	LBS.
	17%	OK

DESIGNED ROOF SNOW LOAD CALCULATIONS — ASCE 7-16 (C&C)

SLOPED ROOF SNOW LOAD (PSF) = Ps = (Cs)(0.7)(Ce)(Ct)(Is)(Pg) — EQN. 7.4-1

EXPOSURE FACTOR (Ce) =	1.0	TABLE 7.3-1
THERMAL FACTOR (Ct) =	1.0	TABLE 7.3-2
IMPORTANCE FACTOR (Is) =	1.0	TABLE 1.5-2
SLOPE FACTOR (Cs) =	1.0	FIG. 7.4-1
Ps (PSF) =	26	OK

DESIGN WIND PRESSURE CALCULATIONS — ASCE 7-16 (C&C)

DESIGN WIND PRESSURE (PSF) = P = qH(GCp)(γE)(γA) — EQN. 26.10-1

VELOCITY PRESSURE (PSF) = qH = 0.00256(KH)(Kzt)(KD)(KE)(V^2) — TABLE 26.13-1

TERRAIN EXPO. CONSTANT (α) =	9.5	TABLE 26.11-1
TERRAIN EXPO. CONSTANT (Zg)(FT) =	900	TABLE 26.11-1
VP EXPOSURE COEFF.(KH) =	0.80	EQN. C26.10-1
TOPOGRAPHIC FACTOR (Kzt) =	1.0	EQN. 26.8-1
WIND DIRECTIONALITY FACTOR (KD) =	0.85	TABLE 26.6-1
ARRAY EDGE FACTOR (γE) =	1	EQN. 29.4-7
qH (PSF) =	14.02	FIG. 29.4-8
		EQN. 26.10-1

RAIL - COMPRESSION / UPLIFT

ECOFASTEN CLICKFIT STANDARD — CONTINOUS SPAN BM = (WL^2)/(8(S))

MAXIMUM HORIZONTAL RAIL SPAN (FT.) = 5.0

MAXIMUM VERTICAL SPACING BETWEEN RAILS (FT.) = 3.8

	COMPRESSION	UPLIFT
TOTAL LOAD (PSF) =	27.8	12.2
TOTAL LOAD (W)(LB. / FT.) =	105.0	46.1
ALLOWABLE MANU. BENDING MOMENT (LB. / FT.) =	422	517
ACTUAL MAX. BENDING STRESS (LB / FT.) =	328.0	144.1
	OK	OK

CONNECTIONS - UPLIFT / DOWNWARD

GABLE ROOF 7° < Ø ≤ 20° — FIGURE 30.3-2B

RAIL - PORTRAIT MODULE ORIENTATION	ZONE 1	UPLIFT ZONE 2R	ZONE 2E	DOWNWARD ALL ZONES
	60 IN. O.C.	*48 IN. O.C.*	*48 IN. O.C.*	*60 IN. O.C.*
SOLAR PANEL PRESSURE EQ. FACTOR (YA) =	0.80	0.80	0.80	0.80
EXTERNAL PRESSURE COEFF. (GCp) =	-2.0	-3.0	-3.6	0.7
ASD PRESSURE (0.6P)(PSF) =	-13.46	-20.18	-24.22	13.08
TRIBUTARY AREA (SQ. FT) =	15.7	12.6	9.4	
MAX. UPLIFT (0.6D+0.6P) (LBS) =	-182.8	-230.7	-211.0	
RAIL - LANDSCAPE MODULE ORIENTATION				
	72 IN. O.C.	*72 IN. O.C.*	*72 IN. O.C.*	*72 IN. O.C.*
SOLAR PANEL PRESSURE EQ. FACTOR (YA) =	0.80	0.80	0.80	0.80
EXTERNAL PRESSURE COEFF. (GCp) =	-2.0	-3.0	-3.6	0.7
ASD PRESSURE (0.6P)(PSF) =	-13.46	-20.18	-24.22	13.08
TRIBUTARY AREA (SQ. FT) =	10.20	10.20	5.10	
MAX. UPLIFT (0.6D+0.6P) (LBS) =	-118.8	-156.2	-114.3	

ROOF ATTACHMENT / FASTENER CHECK — NDS 12.2

ECOFASTEN CORRUSLIDE BRACKET - #14 X 3/4" SELF TAP. SCREWS – 18.8 SS

ROOF ATTACHMENT FASTENER (D) (IN.) =	1/4	TABLE 2.3.2
FASTENER QTY PER ATTACHMENT =	5	TABLE 12.3.3A
FASTENER EMBEDMENT DEPTH (IN.) =	--	
LUMBER SPECIFIC GRAVITY (G) =	--	
LOAD DURATION FACTOR (Cd) =	--	
PRYING COEFFICIENT =	--	
WITHDRAWAL DESIGN VALUE(W)(LBS / IN.) =	--	
LAG SCREW WITHDRAWL CAPACITY (LBS) =	--	
MANUFACTURER MAX. UPLIFT CAPACITY (LBS) =	233.0	
MAX. ATT. WITHDRAWAL CAPACITY (LBS) =	233.0	
MAX. ATT. WITHDRAWL STRESS (LBS) =	230.7	OK

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OREM, UTAH 84057
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PROJECT ID
00BQIE

SITE OWNER
ROSE W MCCORMICK & PETER A BRUHA

SITE ADDRESS
2705 NORTHEAST PARK STREET
CORBETT, OREGON 97019

EQUIP.
(20) SILFAB SOLAR SIL-420 HC+
(20) ENPHASE IQ8PLUS-72-2-US

SYSTEM SIZE
8.4KW DC
5.8KW STC-AC, 7.496KW CEC-AC

PROJECT DESIGNER
ALEX PALOU

DATE
05-APR-2024

SHEET NAME
STRUCTURAL CALCULATIONS

SHEET #	REV
S-5	0

CONDUCTOR AND RACEWAY SCHEDULE

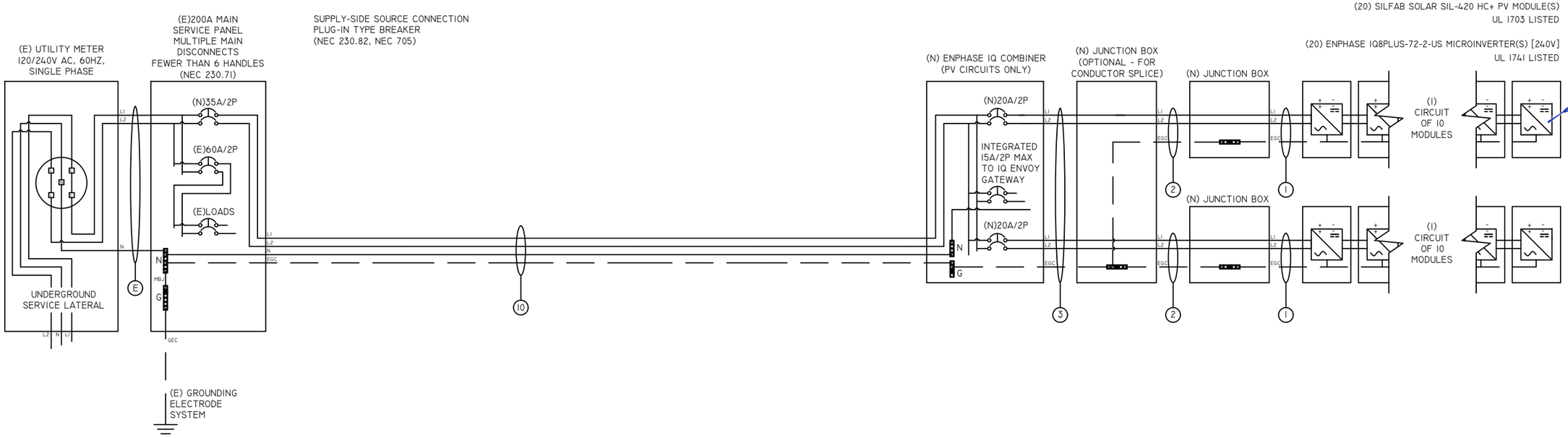
TAG	QTY	SIZE - #	TYPE	DESIGNATOR	I / V
10	(1)	8 AWG	THHN / THWN-2, CU.	BLACK (L1)	24.2 A AC (MAX)
	(1)	8 AWG	THHN / THWN-2, CU.	RED (L2)	240 V AC
	(1)	10 AWG	THHN / THWN-2, CU.	WHITE (N)	
	(1)	10 AWG	THHN / THWN-2, CU.	GREEN (EGC)	
	(1)	3/4 IN.	EMT	(RACEWAY)	EXTERIOR

TAG	QTY	SIZE - #	TYPE	DESIGNATOR	I / V
3	(2)	10 AWG	THHN / THWN-2, CU.	BLACK (L1)	12.1 A AC (MAX)
	(2)	10 AWG	THHN / THWN-2, CU.	RED (L2)	240 V AC
	(1)	10 AWG	THHN / THWN-2, CU.	GREEN (EGC)	
	(1)	3/4 IN.	EMT	(RACEWAY)	EXTERIOR

TAG	QTY	SIZE - #	TYPE	DESIGNATOR	I / V
2	(1)	10 AWG	2C, NM-B W/G, CU.	(L1, L2, EGC)	12.1 A AC (MAX)
			(CABLE)		240 V AC
					INTERIOR

TAG	QTY	SIZE - #	TYPE	DESIGNATOR	I / V
1	(1)	12 AWG	2C, TC-ER, CU.	(L1, L2)	12.1 A AC (MAX)
	(1)	6 AWG	SOLID BARE CU.	(EGC)	240 V AC
					EXTERIOR

ELECTRICAL LINE DIAGRAM



ELECTRICAL LINE DIAGRAM NOTES

REGISTERED PROFESSIONAL ENGINEER
99698PE
OREGON
MARCH 08, 2022
GREGORY THOMAS ELVESTAD
Expires 12/31/2025
Signed 4/04/2024

NABCEP BOARD CERTIFIED
PV INSTALLATION PROFESSIONAL
SCOTT A. GURNEY
#PV-011719-015865
EXP. 3-17-2025

ION DEVELOPER LLC
DAVID STANLEY CONRAD
C - ELECTRICAL CONTRACTOR
CI524

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5.8KW STC-AC, 7.496KW CEC-AC

PROJECT DESIGNER
ALEX PALOU

DATE
05-APR-2024

SHEET NAME
ELECTRICAL LINE DIAGRAM

SHEET #	REV
E-6	0

PV SYSTEM ELECTRICAL SPECIFCATIONS AND CALCULATIONS

DESIGN LOCATION AND TEMPERATURES	
TEMPERATURE DATA SOURCE	ASHRAE
STATE	OREGON
JURISDICTION	CITY OF GRESHAM
WEATHER STATION	PORTLAND INTL AP
ASHRAE EXTREME LOW TEMP (°C)	-6
ASHRAE 0.4% HIGH TEMP (°C)	36
DESIGNED MAX. SYSTEM VDROP / VRISE	4.00%

PV MODULE SPECIFICATIONS	SILFAB SOLAR SIL-420 HC+
RATED POWER (PMAX) (W)	420
MAXIMUM POWER VOLTAGE (VMP)	39.19
MAXIMUM POWER CURRENT (IMP)	10.72
OPEN CIRCUIT VOLTAGE (VOC)	45.67
SHORT CIRCUIT CURRENT (ISC)	11.46
PMP/VMP TEMP. COEFFICIENT	-0.36
VOC TEMP. COEFFICIENT	-0.28
SERIES FUSE RATING	20
ADJ. MODULE VOC @ ASHRAE LOW TEMP	49.6
ADJ. MODULE VMP @ ASHRAE 2% AVG. HIGH TEMP	33.1

INVERTER SPECIFICATIONS	ENPHASE IQ8PLUS-72-2-US
TYPE	MICROINVERTER
MAX. OR RECOMMENDED MODULE POWER (W)	440
MAXIMUM INPUT DC OPEN-CIRCUIT VOLTAGE (VOC)	60
MINIMUM START VOLTAGE (V)	30
MAXIMUM START VOLTAGE(V)	58
MAXIMUM INPUT CURRENT (ISC) (A)	15
MAX CONTINUOUS OUTPUT POWER (VA)	290
MAX. CONTINUOUS OUTPUT CURRENT (A)	1.21
NOMINAL (L-L) OUTPUT VOLTAGE	240
CEC WEIGHTED EFFICIENCY (%)	97.0%

SYSTEM ELECTRICAL SPECIFICATIONS	CIR 1	CIR 2
NUMBER OF MODULES PER CIRCUIT	10	10
DC POWER RATING PER CIRCUIT (STC)(W DC)	4200	4200
TOTAL MODULE QUANTITY	20 PV MODULES	
STC DC POWER RATING OF ARRAY	8400W DC	
INVERTER OUTPUT CIRCUIT CURRENT(A AC)	12.1	12.1
125% INVERTER OUTPUT CIRCUIT CURRENT(A AC)	15.13	15.13
CIRCUIT OCPD RATING (A)	20	20
COMBINED INVERTER CONTINUOUS OUTPUT CURRENT	24.2A AC	
PV POWER PRODUCTION SYSTEM OCPD RATING (X125%)	35A	
MAX. ARRAY STC-AC POWER (W)	5800W AC (STC)	
MAX. ARRAY CEC-AC POWER (W)	7496W AC (CEC)	

AC VOLTAGE RISE CALCULATIONS	DIST (FT)	COND.	VRISE(V)	VEND(V)	%VRISE	
VRISE SEC. 1 (MICRO TO JBOX) *	28.8	12 Cu.	1.4	241.4	0.58%	
VRISE SEC. 2 (JBOX TO COMBINER BOX)	40	10 Cu.	1.2	241.2	0.48%	
VRISE SEC. 3 (COMBINER BOX TO POI)	10	8 Cu.	0.4	240.4	0.16%	
TOTAL VRISE			2.9	242.9	1.22%	OK

* 8 MICROINVERTER MAX SUB-BRANCH CIRCUIT SIZE TO COMPLY WITH VRISE CALCULATIONS.

RACEWAY / CONDUCTOR CALCULATIONS

MICROINV. TO JUNCTION BOX (1)

MAX INVERTER OUTPUT CIRCUIT CURRENT =	12.1 A AC	
CONDUCTOR SIZE / INSULATION / TYPE =	12 AWG	2C, TC-ER, CU.
CONDUCTOR AMP. RATING @ 90°C =	30 A	
PER NEC 690.8(B)(1)(W/OUT CORRECTION FACTORS)		
MAX INVERTER OUTPUT CURRENT X125%=	15.0 A AC	
PER NEC 690.8(B)(2)(WITH CORRECTION FACTORS)		
AMB. TEMP. AMP. CORRECTION =	0.91	
# OF CONDUCTORS IN RACEWAY CORRECTION =	1.0	
ADJUSTED CONDUCTOR AMPACITY (A) =	27.3 A AC	
LARGER AMPACITY OF 690.8(B)(1) OR (B)(2) =	15.0 < 27.3	
	(B)(1) - W/OUT CORRECTION FACTORS	
LARGER AMPACITY COMPLIANCE =	30.0 > 15.0	OK
RACEWAY SIZE / TYPE =	3/4 IN.	EMT OR NO RACEWAY
CONDUCTOR(S) / CABLE(S) CROSS-SECTION AREA (IN.^2) =	0.142 IN.2	
CROSS-SECTIONAL AREA OF RACEWAY(IN.^2) =	0.533 IN.2	
% ALLOWABLE RACEWAY FILL (NEC CH. 9, TBL I) =	53% > 27%	OK

JUNCTION BOX TO JUNCTION BOX (2)

MAX INVERTER OUTPUT CIRCUIT CURRENT =	12.1 A AC	
CONDUCTOR SIZE / INSULATION / TYPE =	10 AWG	2C, NM-B W/G, CU.
CONDUCTOR AMP. RATING @60°C =	30 A	
PER NEC 690.8(B)(1)(W/OUT CORRECTION FACTORS)		
MAX INVERTER OUTPUT CURRENT X125%=	15.0 A AC	
PER NEC 690.8(B)(2)(WITH CORRECTION FACTORS)		
AMB. TEMP. AMP. CORRECTION =	0.82	
# OF CONDUCTORS IN RACEWAY CORRECTION =	1.0	
ADJUSTED CONDUCTOR AMPACITY (A) =	24.6 A AC	
LARGER AMPACITY OF 690.8(B)(1) OR (B)(2) =	15.0 < 24.6	
	(B)(1) - W/OUT CORRECTION FACTORS	
LARGER AMPACITY COMPLIANCE =	30.0 > 15.0	OK
RACEWAY SIZE / TYPE =		NO RACEWAY

JUNCTION BOX TO COMBINER BOX (3)

MAX INVERTER OUTPUT CIRCUIT CURRENT =	12.1 A AC	
CONDUCTOR SIZE / INSULATION / TYPE =	10 AWG	THHN / THWN-2, CU.
CONDUCTOR AMP. RATING @75°C =	30 A	
PER NEC 690.8(B)(1)(W/OUT CORRECTION FACTORS)		
MAX INVERTER OUTPUT CURRENT X125%=	15.0 A AC	
PER NEC 690.8(B)(2)(WITH CORRECTION FACTORS)		
AMB. TEMP. AMP. CORRECTION =	0.88	
# OF CONDUCTORS IN RACEWAY CORRECTION =	0.8	
ADJUSTED CONDUCTOR AMPACITY (A) =	21.12 A AC	
LARGER AMPACITY OF 690.8(B)(1) OR (B)(2) =	15.0 < 21.1	
	(B)(1) - W/OUT CORRECTION FACTORS	
LARGER AMPACITY COMPLIANCE =	30.0 > 15.0	OK
RACEWAY SIZE / TYPE =	3/4 IN.	EMT
CONDUCTOR(S) / CABLE(S) CROSS-SECTION AREA (IN.^2) =	0.106 IN.^2	
CROSS-SECTIONAL AREA OF RACEWAY(IN.^2) =	0.533 IN.^2	
% ALLOWABLE RACEWAY FILL (NEC CH. 9, TBL I) =	40% > 20%	OK

COMBINER BOX TO MAIN PV OCPD (10)

COMBINED INVERTER CONTINUOUS OUTPUT CURRENT =	24.2 A AC	
CONDUCTOR SIZE / INSULATION / TYPE =	8 AWG	THHN / THWN-2, CU.
CONDUCTOR AMP. RATING @75°C =	50 A	
PER NEC 690.8(B)(1)(W/OUT CORRECTION FACTORS)		
MAX COMBINED INVERTER CONTINUOUS OUTPUT CURRENT X125% =	30.0 A AC	
PER NEC 690.8(B)(2)(WITH CORRECTION FACTORS)		
AMB. TEMP. AMP. CORRECTION =	0.88	
# OF CONDUCTORS IN RACEWAY CORRECTION =	1.0	
ADJUSTED CONDUCTOR AMPACITY (A) =	44 A AC	
LARGER AMPACITY OF 690.8(B)(1) OR (B)(2) =	30.0 < 44.0	
	(B)(1) - W/OUT CORRECTION FACTORS	
LARGER AMPACITY COMPLIANCE =	50.0 > 30.0	OK
RACEWAY SIZE / TYPE =	3/4 IN.	EMT
CONDUCTOR(S) / CABLE(S) CROSS-SECTION AREA (IN.^2) =	0.146 IN.^2	
CROSS-SECTIONAL AREA OF RACEWAY(IN.^2) =	0.533 IN.^2	
% ALLOWABLE RACEWAY FILL (NEC CH. 9, TBL I) =	40% > 27%	OK

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5.8KW STC-AC, 7.496KW CEC-AC

PROJECT DESIGNER
ALEX PALOU

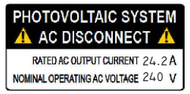
DATE
05-APR-2024

SHEET NAME
ELECTRICAL CALCULATIONS

SHEET # E-7

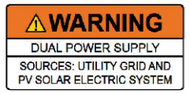
REV 0

ELECTRICAL FIELD-APPLIED HAZARD MARKINGS



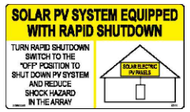
E — AT EACH PV SYSTEM DISCONNECTING MEANS. [OESC 690.54, OESC 690.13(B)]

F — FOR PV DISCONNECTING MEANS WHERE ALL TERMINALS OF THE DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION. [OESC 690.13(B), OESC 705.22]



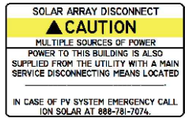
G — AT EQUIPMENT CONTAINING OVERCURRENT DEVICES IN CIRCUITS SUPPLYING POWER TO A BUSBAR OR CONDUCTOR SUPPLIED FROM MULTIPLE SOURCES. [OESC 705.12(C)]

B — PLACED ADJACENT TO PV SYSTEM PLUG-IN TYPE BREAKER TO A BUSBAR FOR A LOAD SIDE CONNECTION. [OESC 705.12(B)(3)(2)]

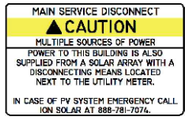


C — SIGN LOCATED ON OR NO MORE THAN 3 FT FROM THE RAPID SHUT DOWN DISCONNECT SWITCH(S). IF MORE THAN ONE PV RSD IS IN AN ENCLOSURE, EACH SHALL BE LABELED. [OESC 690.56(C), OESC 690.12(C)]

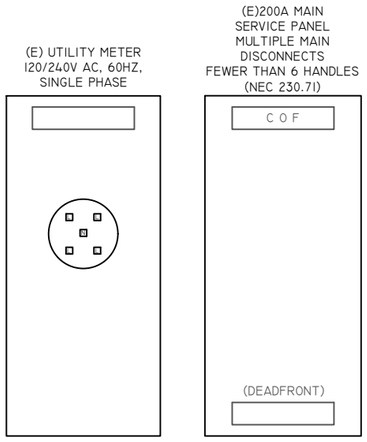
D — FOR RAPID SHUTDOWN SWITCH INITIATION DEVICE LOCATED AT A READILY ACCESSIBLE OUTDOOR LOCATION. [OESC 690.12]

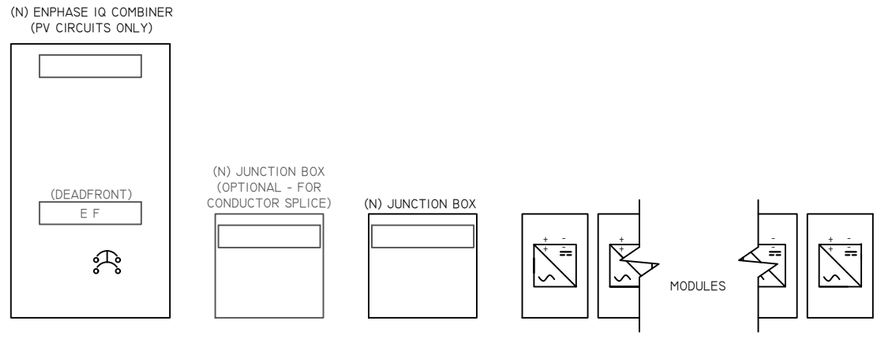


N — PERMANENT DIRECTORY TO BE LOCATED AT MAIN SERVICE EQUIPMENT LOCATION IF ALL ELECTRICAL POWER SOURCE DISCONNECTING MEANS (SOLAR ARRAY RAPID SHUTDOWN SWITCH) ARE GROUPED AND IN LINE OF SITE OF MAIN SERVICE DISCONNECTING MEANS. [OESC 690.56(C) & OESC 705.10].



P — PERMANENT DIRECTORY TO BE LOCATED AT SOLAR ARRAY RAPID SHUTDOWN SWITCH DENOTING THE LOCATION OF THE SERVICE EQUIPMENT LOCATION IF SOLAR ARRAY RAPID SHUT DOWN DISCONNECT SWITCH IS NOT GROUPED AND WITHIN LINE OF SITE OF MAIN SERVICE DISCONNECTING MEANS. [OESC 705.10]





ALL CAUTION, WARNING, OR DANGER SIGNS OR LABELS SHALL:
1. COMPLY WITH ANSI Z535.4-2011 STANDARDS.
2. BE PERMANENTLY AFFIXED TO THE EQUIPMENT OR WIRING METHOD AND SHALL NOT BE HANDWRITTEN.
3. SHALL BE OF SUFFICEINT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
4. UNLESS OTHERS SPECIFIED MINIMUM TEXT HEIGHT TO BE $\frac{1}{8}$" (3MM).

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5.8KW STC-AC, 7.496KW CEC-AC

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DATE
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SHEET NAME
ELECTRICAL LABELS

SHEET # E-9

REV 0