

PHOTOVOLTAIC ROOF MOUNT SYSTEM

14 MODULES-ROOF MOUNTED - 5.18 kWDC, 4.06 kWAC
3033 NE 44TH AVE, PORTLAND, OR 97213 USA



City of Portland

Reviewed for Code Compliance

PORTLAND, OR 97218

Phone - (541) 316-5786

Date: 11/10/22

Contractor# OR CCB#: 195141

REVISIONS

DESCRIPTION	DATE
21-097268-REV 01 RS	

PROJECT INFORMATION:

OWNER: STEVE ERICKSON
ADDRESS: 3033 NE 44TH AVE, PORTLAND, OR 97213
COUNTY: MULTNOMAH COUNTY
APN: R112748
COORDINATES: 45.54514, -122.61808
CUST. PHONE: N/A
BUILDING DATA: SINGLE FAMILY RESIDENTIAL
APPLICABLE CODES: 2021 OESC & 2019 OSSC
FINANCING: N/A
CLIMATE DATA SOURCE: PORTLAND INTERNATIONAL AP

GENERAL NOTES:

- PV SYSTEMS AND SUPPORTING STRUCTURE SHALL COMPLY WITH REQUIREMENTS OF 2021 OESC & 2019 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 RIDGE.
- ROOF STRUCTURE IS CONVENTIONAL LIGHT FRAMED WOOD CONSTRUCTION WITH 2X8 & 2X4 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.
- 3111.5.3.1 - TOTAL SYSTEM WEIGHT SHALL NOT EXCEED 4.5 PSF. PV MODULES AND RACKING SHALL BE DIRECTLY ATTACHED TO ROOF FRAMING AS SHOWN IN PV-2. ATTACHMENT SPACING WILL BE 48" O.C. MAX, AND 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.

SYSTEM SUMMARY:

SYSTEM SIZE : 5.18 KWDC
SYSTEM SIZE : 4.06 KWAC
(N) 14 - SOLARIA POWER XT 370R-PD (370W) MODULES
(N) 14 - ENPHASE IQ7PLUS-72-2-US MICRO-INVERTERS
(E) 200A METER MAIN PANEL WITH (E) 200A MAIN BREAKER, PACIFIC POWER
(N) 200A MAIN SERVICE PANEL (N) 200A MAIN BREAKER
(N) 30A NON-FUSED AC DISCONNECT@RSID

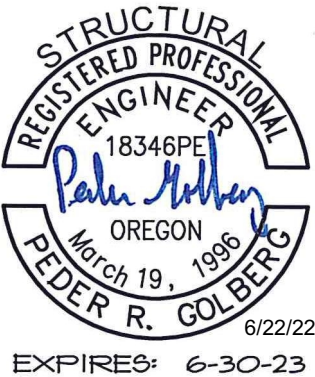
DESIGN CRITERIA:

WIND SPEED: 98 MPH (ASCE 7-16)
RISK CATEGORY: II
WIND EXPOSURE CATEGORY: B
ROOF SNOW LOAD: 25
ROOF TYPE: ASPHALT SHINGLE
NUMBER OF LAYERS: 01
ROOF FRAME: 2X8 & 2X4 RAFTERS @ 24" O.C.
STORY: THREE

GOVERNING CODES:

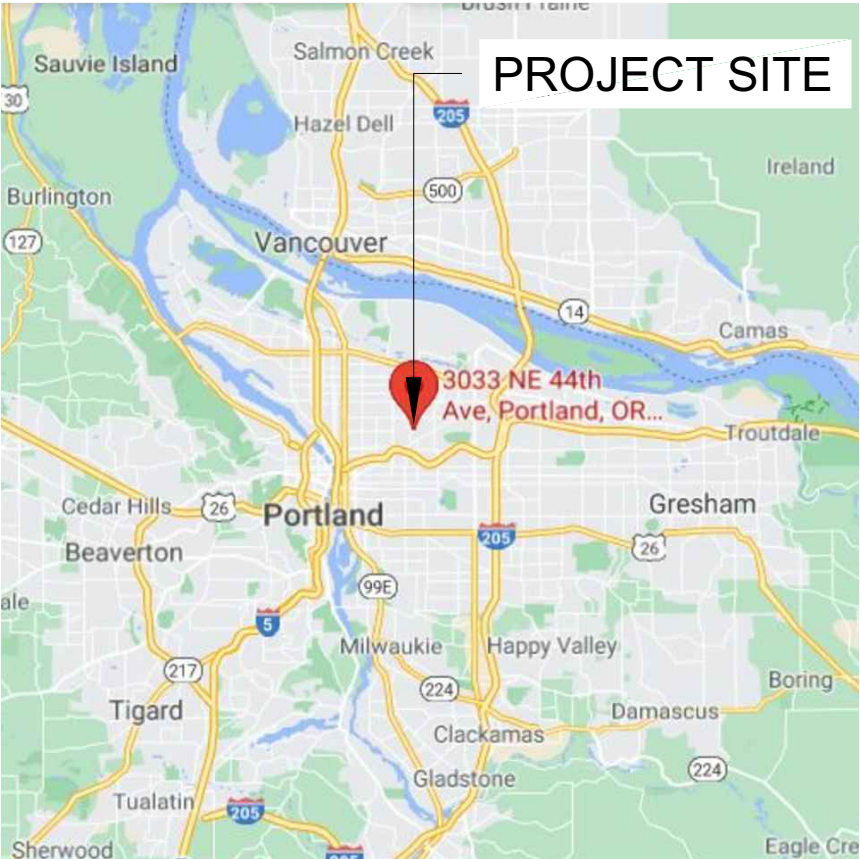
2020 NATIONAL ELECTRICAL CODE (NEC)
2019 OREGON FIRE CODE (OFC)
2019 OREGON STRUCTURAL SPECIALTY CODE (OSSC)

21-097268 REV 01 RS



SHEET INDEX

- | | |
|--------|-------------------------------------|
| PV-0 | COVER SHEET |
| PV-1 | OVERALL SITE PLAN |
| PV-2 | ROOF PLAN WITH MODULES |
| PV-3 | STRING LAYOUT |
| PV-4 | FRAMING PLAN |
| PV-4.1 | FRAMING PLAN |
| PV-4.2 | FRAMING PLAN |
| PV-4.3 | ATTACHMENT DETAIL & CLAMPING METHOD |
| PV-5 | ELECTRICAL LINE DIAGRAM |
| PV-6 | WARNING LABELS |



0

COVER SHEET

SCALE: NTS.

VICINITY MAP
SCALE: NTS



AERIAL VIEW
SCALE: NTS



ELECTRICAL CONTRACTOR

PROJECT NAME

STEVE ERICKSON RESIDENCE
3033 NE 44TH AVE,
PORTLAND, OR 97213
APN# R112748
UTILITY #: PACIFIC POWER

PROJECT

N/A

SHEET NAME

COVER SHEET

SHEET SIZE

ANSI B

SHEET NUMBER

PV-0

PROJECT DESCRIPTION:

ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES
14 SOLARIA POWER XT 370R-PD (370W) MODULES
14 ENPHASE IQ7PLUS-72-2-US MICRO-INVERTERS

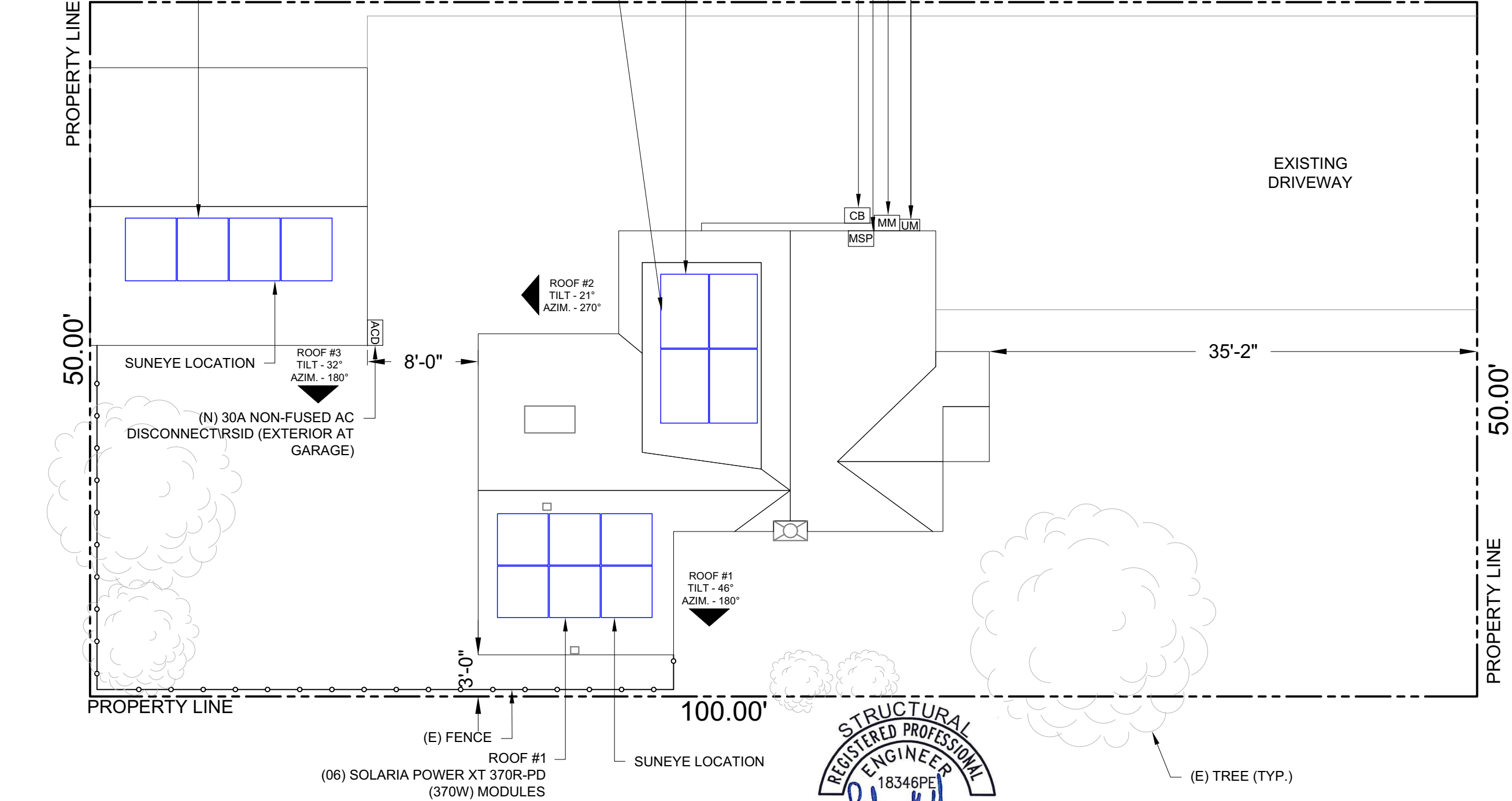
SYSTEM SIZE: 5.18 KWDC
4.06 KWAC

NOTE: *CHECK WITH CITY/COUNTY OR LAND SURVEYOR
FOR ACCURATE PROPERTY LOCATION.

NOTE: *ARRAY TILT FOLLOWS ROOF STRUCTURE.

ROOF #3
(04) SOLARIA POWER XT
370R-PD (370W) MODULES

ROOF #2
(04) SOLARIA POWER XT 370R-PD
(370W) MODULES



ROOF DESCRIPTION			
ROOF	ASPHALT SHINGLE		
	ARRAY TILT	ROOF TILT	AZIMUTH
#1	46°	46°	180°
#2	21°	21°	270°
#3	32°	32°	180°

City of Portland

Reviewed for Code Compliance

600 NE Commercial

PORTLAND, OR 97218

Phone - (541) 316-5786

Date: 11/10/22

Contractor# OR CCB#: 195141

REVISIONS

DESCRIPTION	DATE

ELECTRICAL CONTRACTOR

PROJECT NAME

STEVE ERICKSON RESIDENCE
3033 NE 44TH AVE,
PORTLAND, OR 97213
APN# R112748
UTILITY #: PACIFIC POWER

PROJECT

N/A

SHEET NAME

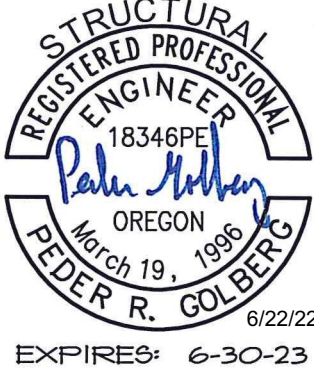
OVERALL SITE PLAN

SHEET SIZE

ANSI B

SHEET NUMBER

PV-1



EXPIRES: 6-30-23

NUMBER OF MODULES = 14 MODULES
MODULE TYPE = SOLARIA POWER XT 370R-PD (370W) MODULES
MODULE WEIGHT = 46.0 LBS / 20.9 KG.
MODULE DIMENSIONS = 63.8 "X 43.94" = 19.47 SF
UNIT WEIGHT OF ARRAY = .84 PSF

GENERAL NOTES:
1. CONDUIT IS DIAGRAMMATIC. FINAL ROUTING TO BE DETERMINED BY INSTALLER.

ARRAY AREA & ROOF AREA CALC'S		
AREA OF NEW ARRAY (Sq. Ft.)	AREA OF ROOF(PLAN VIEW) (Sq. Ft.)	TOTAL ROOF AREA COVERED BY ARRAY %
195	80	24%
24%	ROOF AREA (ARRAY <25% OF ROOF AREA)	

ROOF DESCRIPTION				
ROOF TYPE			ASPHALT SHINGLE	
ROOF	ROOF TILT	AZIMUTH	RAFTERS SIZE	RAFTERS SPACING
#1	46°	180°	X8	24" O.C.
#	21°	270°	X8	24" O.C.
#3	3 °	180°	X4	24" O.C.

ARRAY AREA & GARAGE AREA CALC'S		
AREA OF NEW ARRAY (Sq. Ft.)	AREA OF ROOF (PLAN VIEW) (Sq. Ft.)	TOTAL ROOF AREA COVERED BY ARRAY %
78	407	19%
19%	ROOF AREA (ARRAY >25% OF ROOF AREA)	

BILL OF MATERIALS		
EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	14	SOLARIA POWER XT 370R-PD (370W) MODULES
INVERTER	14	ENPHASE IQ7PLUS-72-2-US MICRO-INVERTERS
COMBINER PANEL	1	ENPHASE COMBINER PANEL/RSID
PV BREAKER	1	30AMP 2 POLE PV BREAKER
BREAKER	1	20A/20A 1 POLE TWIN BREAKER
JUNCTION BOX	3	Q BOX
DISCONNECT	1	30A NON-FUSED AC DISCONNECT/RSID
Q DROPS	14	PORTRAIT Q CABLE DROPS
TERMINATOR	3	ENPHASE Q CABLE TERMINATOR CAPS
MICROBOLTS	14	IRONRIDGE MICROBOLTS (BHW-MI-01-A1)
RAIL	9	IRONRIDGE XR100 RACKING-168" SECTION
MID CLAMP	23	MID CLAMPS (UFO-CL-01-B1)
END CLAMP	25	END CLAMPS (UFO-STP-40MM-B1)
ATTACHMENT	4	FLASHFOOT 2 ATTACHMENT
GROUNDING LUG	5	IRONRIDGE GROUNDING LUG (XR-LUG-03-A1)

Permit #:	REVISIONS	
21-097268-REV-01-RS	DESCRIPTION	DATE

[illegible]

ELECTRICAL CONTRACTOR

PROJECT NAME

STEVE ERICKSON RESIDENCE
3033 NE 44TH AVE,
PORTLAND, OR 97213
APN# R11 748
UTILITY #: PACIFIC POWER

PROJECT

N/A

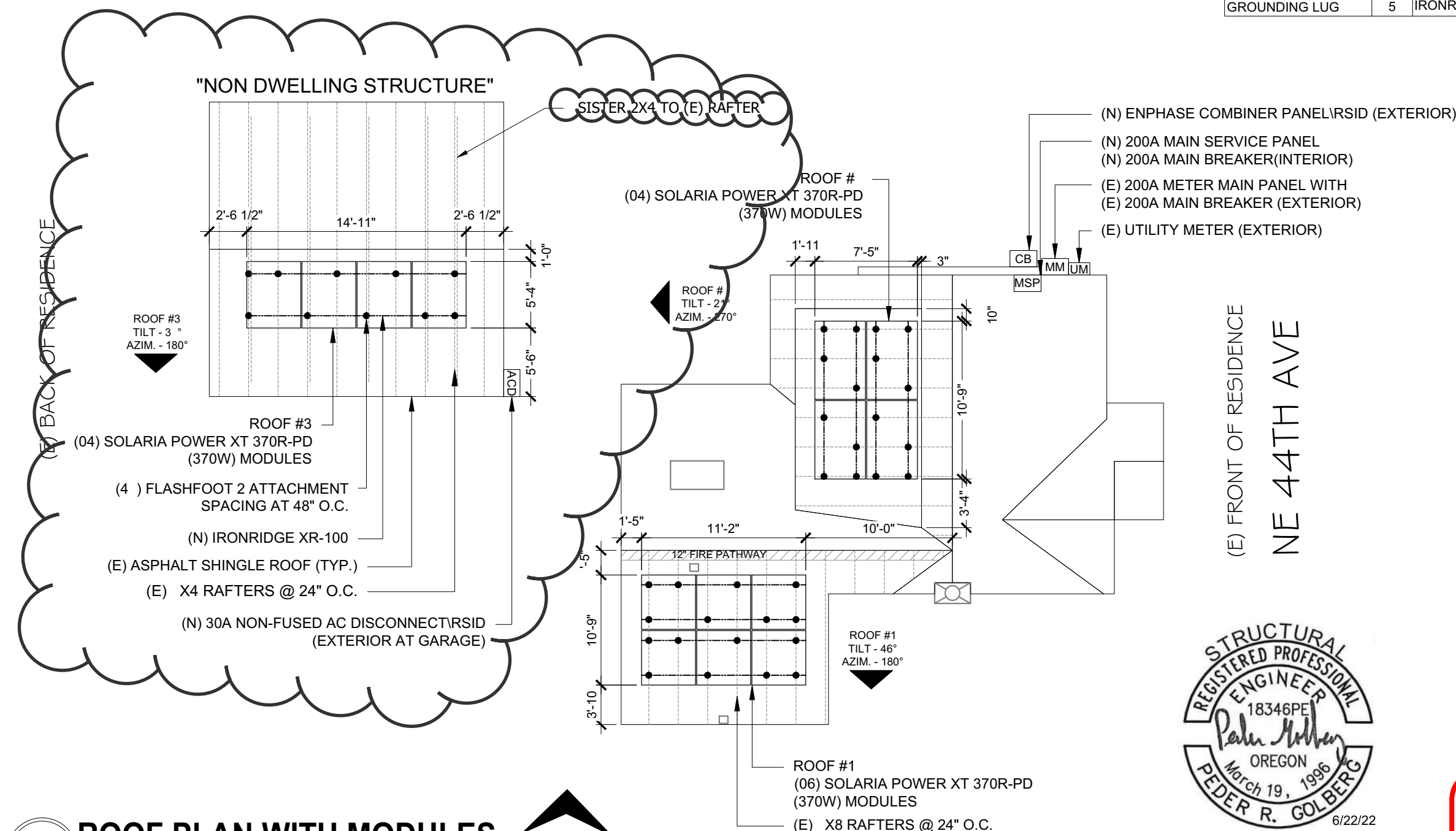
SHEET NAME

ROOF PLAN WITH MODULES

SHEET SIZE
ANSI B

SHEET NUMBER

PV-2



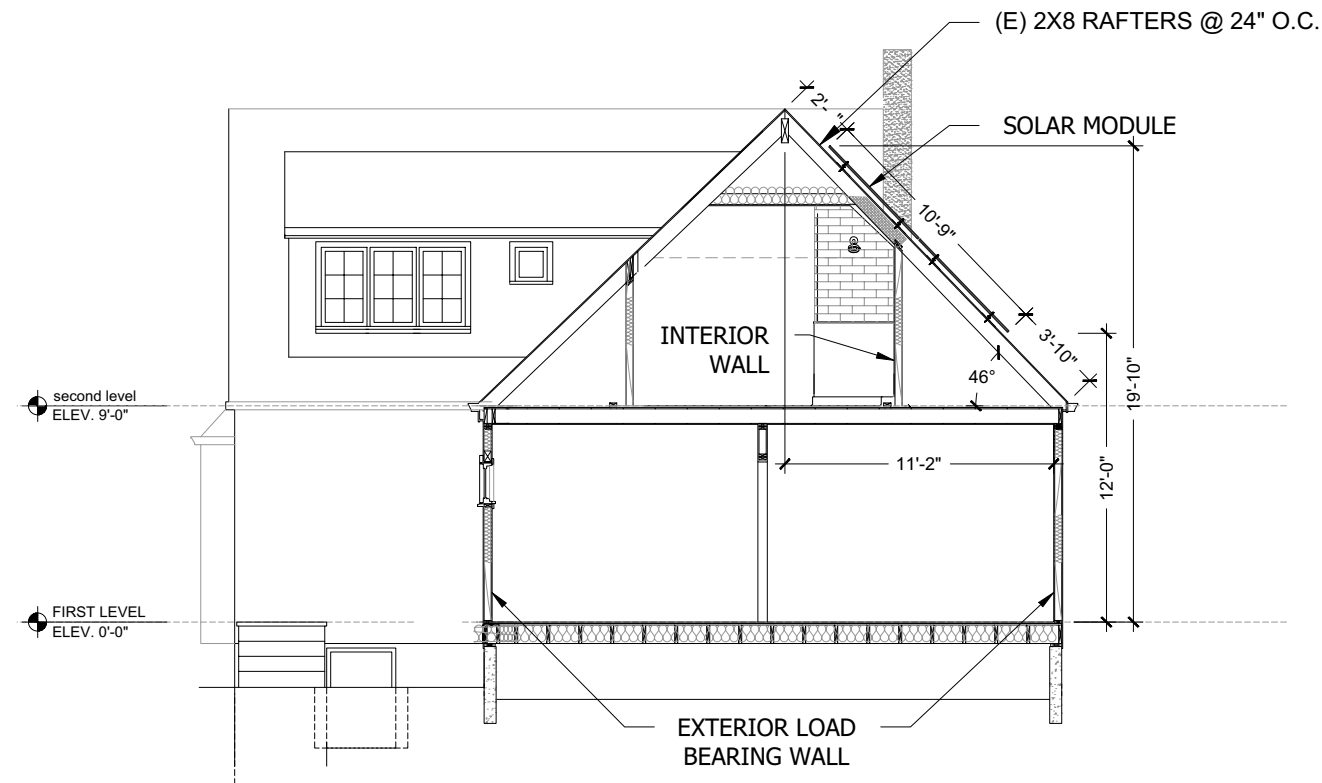
(E) FRONT OF RESIDENCE
NE 44TH AVE



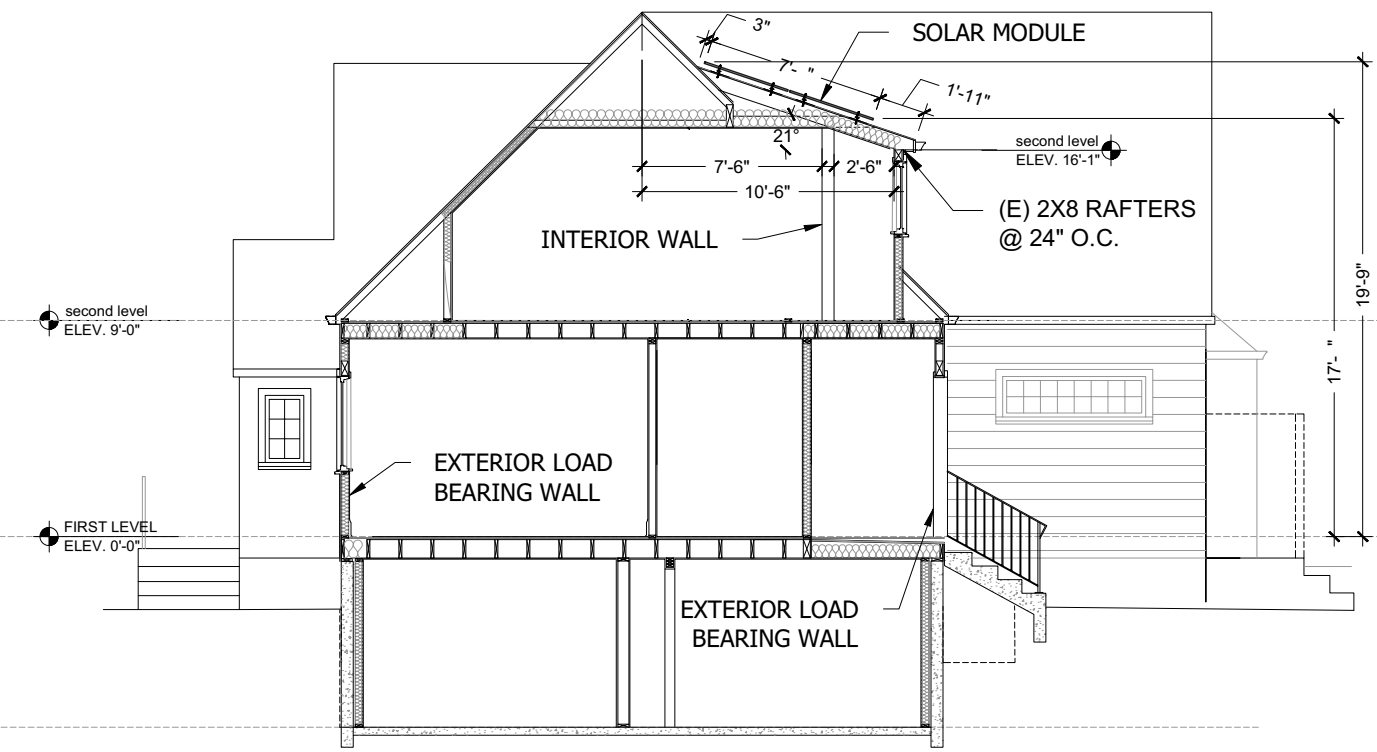
LEGEND	
	UTILITY METER
	200A METER MAIN PANEL WITH 200A MAIN BREAKER
	200A MAIN SERVICE PANEL 200A MAIN BREAKER
	NON-FUSED AC DISCONNECT/RSID
	ENPHASE COMBINER PANEL/RSID
	INVERTER
	Q-BOX
	CHIMNEY
	PIPE VENT
	ATTIC VENT
	CONDUIT RUN

SUBMITTED

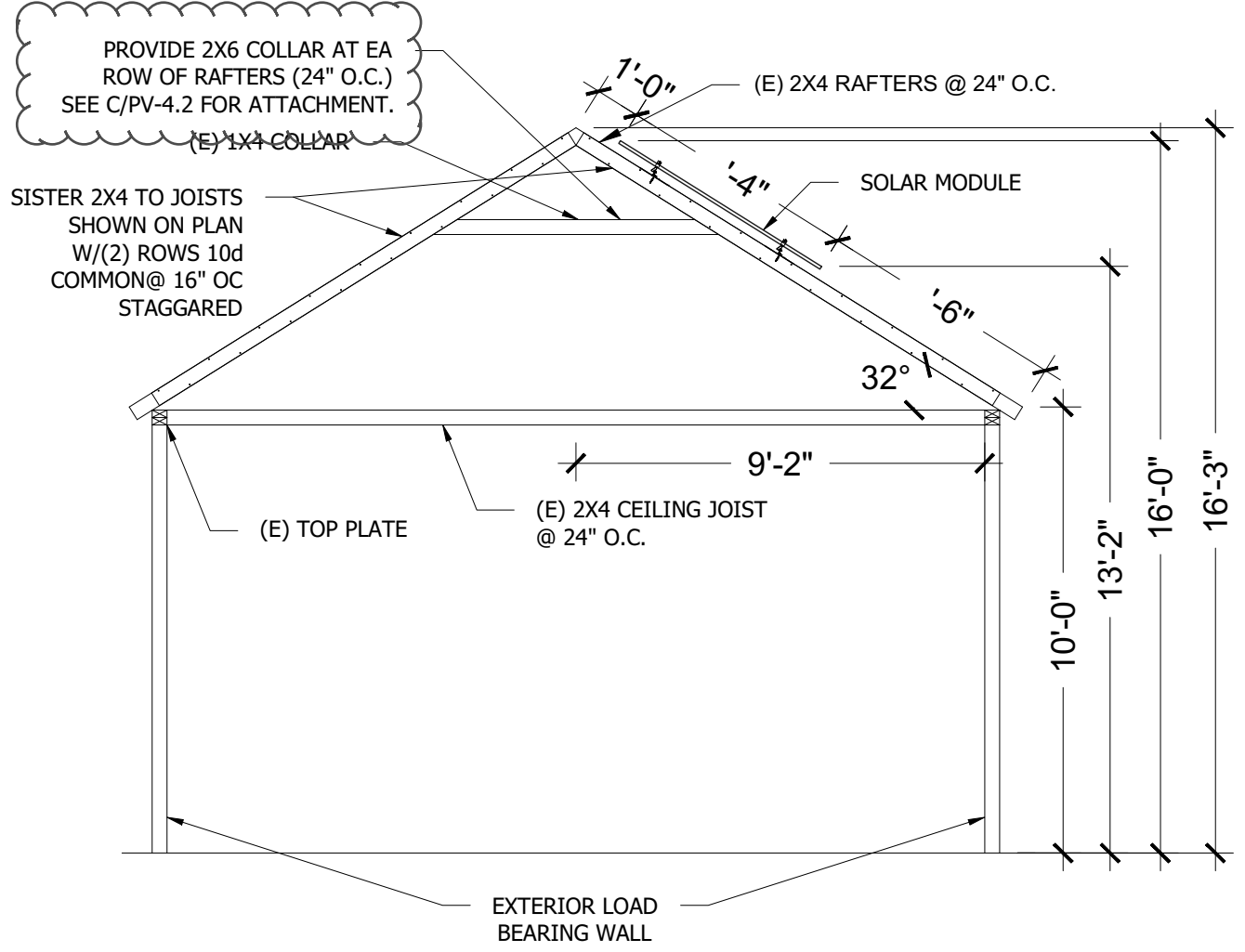
By mbeckel@elementalenergy.net at 5:34:30 PM, 9/28/20



B
PV-4
SECTION DETAIL
SCALE: 1/8" = 1'-0"

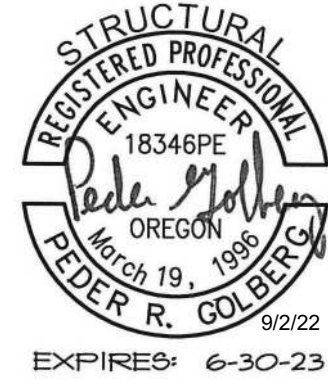


C
PV-4
SECTION DETAIL
SCALE: 1/8" = 1'-0"



D
PV-4
SECTION DETAIL
SCALE: 1/4" = 1'-0"

Application # : 21-097268-REV-01-RS



Review Date

City of Portland
Reviewed for Code Compliance
PORTLAND, OR 97218
Phone - (41) 316- 786
Date: 11/10/22
Contractor# OR CCB#: 195141

REVISIONS	
DESCRIPTION	DATE

ELECTRICAL CONTRACTOR

PROJECT NAME
STEVE ERICKSON RESIDENCE
3033 NE 44TH AVE,
PORTLAND, OR 97213
APN# R112748
UTILITY #: PACIFIC POWER

PROJECT
N/A
SHEET NAME
FRAMING PLAN DETAIL
SHEET SIZE
ANSI B
SHEET NUMBER
PV-4.1

SUBMITTED
By mbeckel@elementalenergy.net at 12:50:48 PM, 11/7/2022

- (14) SOLARIA POWER XT 370R-PD MODULES

(14) ENPHASE IQ7PLUS-72-2-US MICRO-INVERTERS
- (01) BRANCH OF 10 MODULES AND

(01) BRANCH OF 04 MODULES CONNECTED IN PARALLEL PER BRANCH

63.82"

43.94"

PHOTOVOLTAIC MODULES

SOLARIA POWER XT 370R-PD (370W) MODULES

12" FIRE PATHWAY

City of Portland

Reviewed for Code Compliance

Permit #: 21-097268-REV-01-RS

DATE: 11/10/22

REVISIONS

DESCRIPTION	DATE

ELECTRICAL CONTRACTOR

PROJECT NAME

STEVE ERICKSON RESIDENCE
3033 NE 44TH AVE,
PORTLAND, OR 97213
APN# R112748
UTILITY #: PACIFIC POWER

PROJECT
N/A

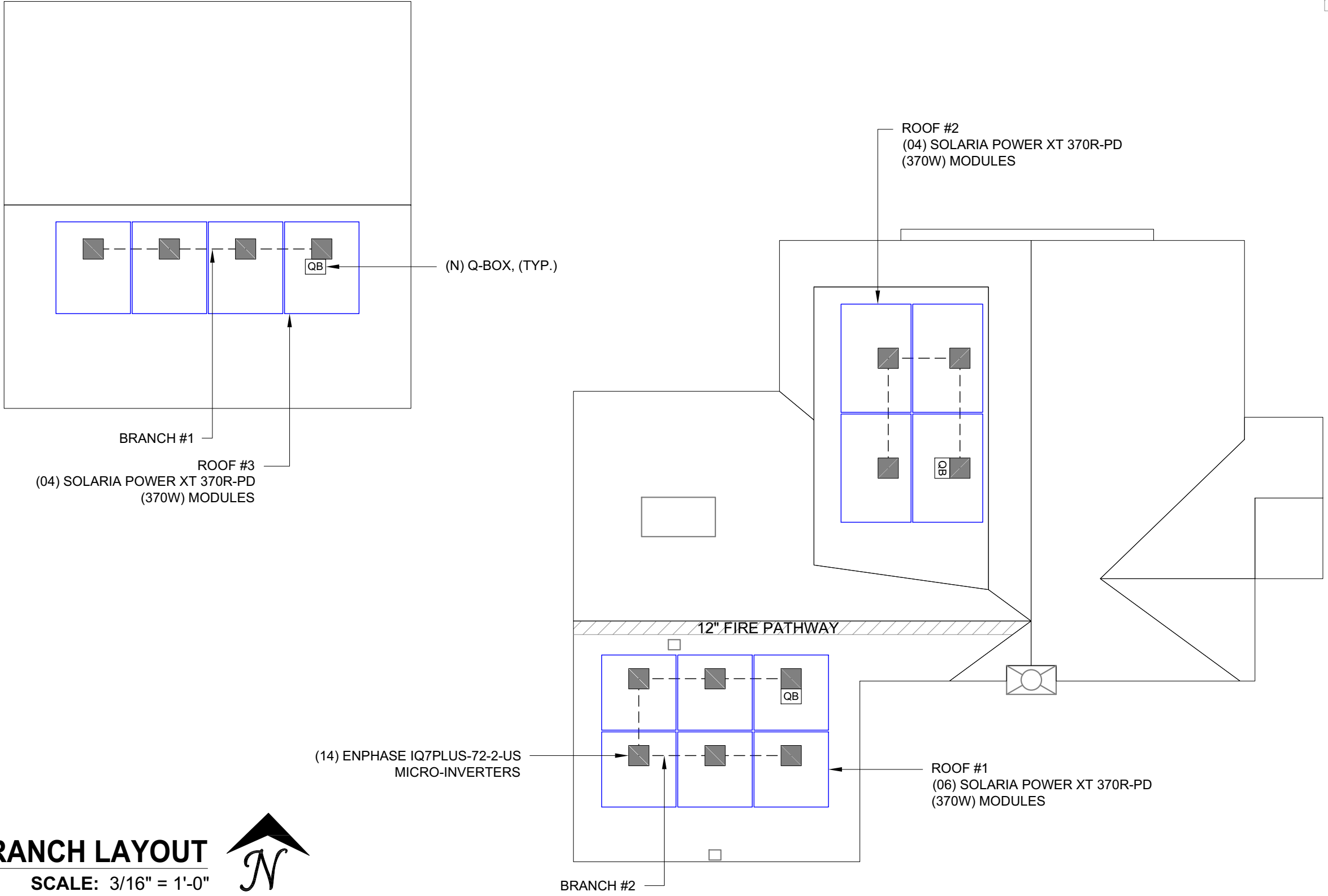
SHEET NAME
BRANCH LAYOUT

SHEET SIZE
ANSI B

SHEET NUMBER
PV-3

(E) BACK OF RESIDENCE

(E) FRONT OF RESIDENCE
NE 44TH AVE



City of Portland

Reviewed for Code Compliance

PORTLAND, OR 97218

Phone - (541) 316-5786

Date: 11/10/22

Permit #: 21-097268-REV.01, RS

REVISIONS

DESCRIPTION	DATE

ELECTRICAL CONTRACTOR

PROJECT NAME

STEVE ERICKSO RESIDE CE
3033 E 44TH AVE,
PORTLAND, OR 97213
AP # R112748
UTILITY #: PACIFIC POWER

PROJECT

/A

SHEET NAME

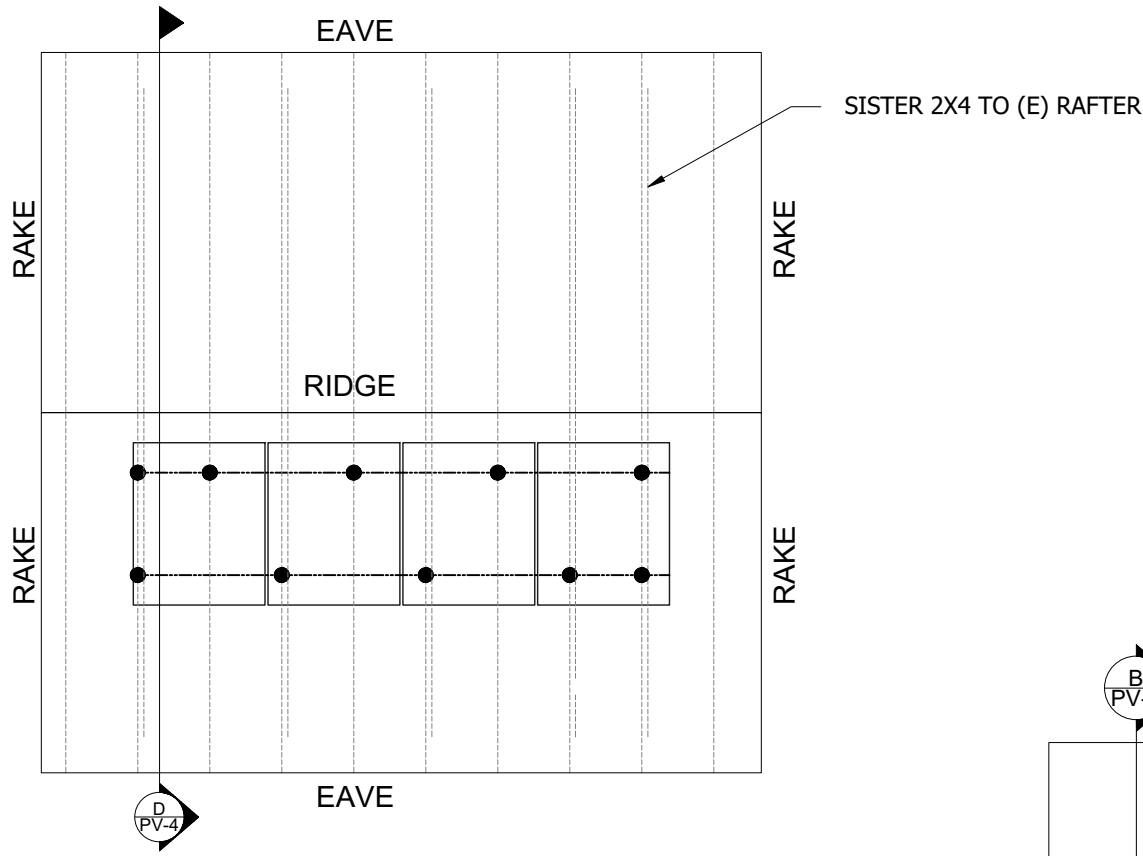
FRAMING PLAN
DETAIL

SHEET SIZE

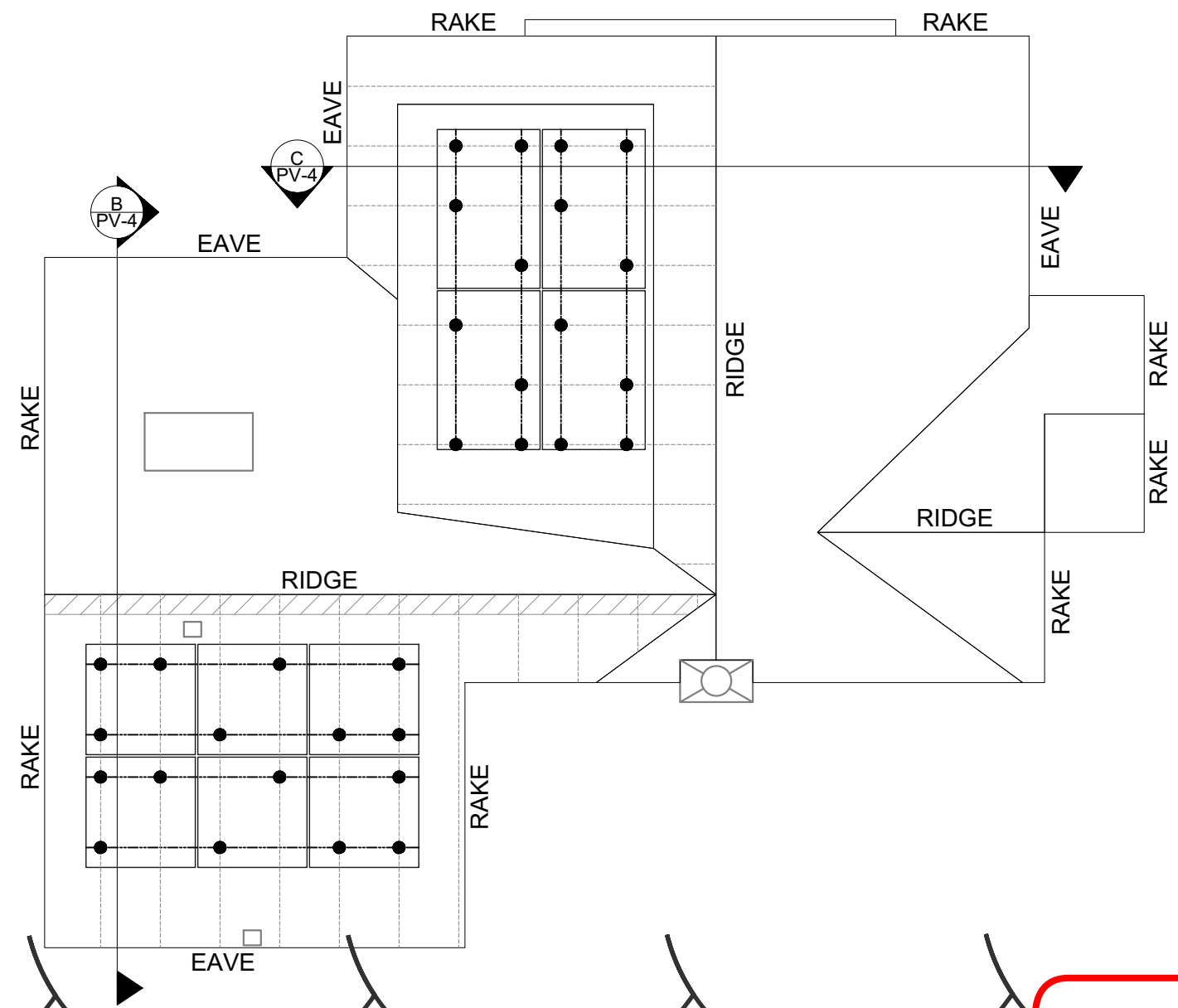
A SIB

SHEET NUMBER

PV-4



STRUCTURAL
REGISTERED PROFESSIONAL
ENGINEER
18346PE
Peder R. Golberg
OREGON
March 19, 1996
6/22/22
EXPIRES: 6-30-23



A
PV-4

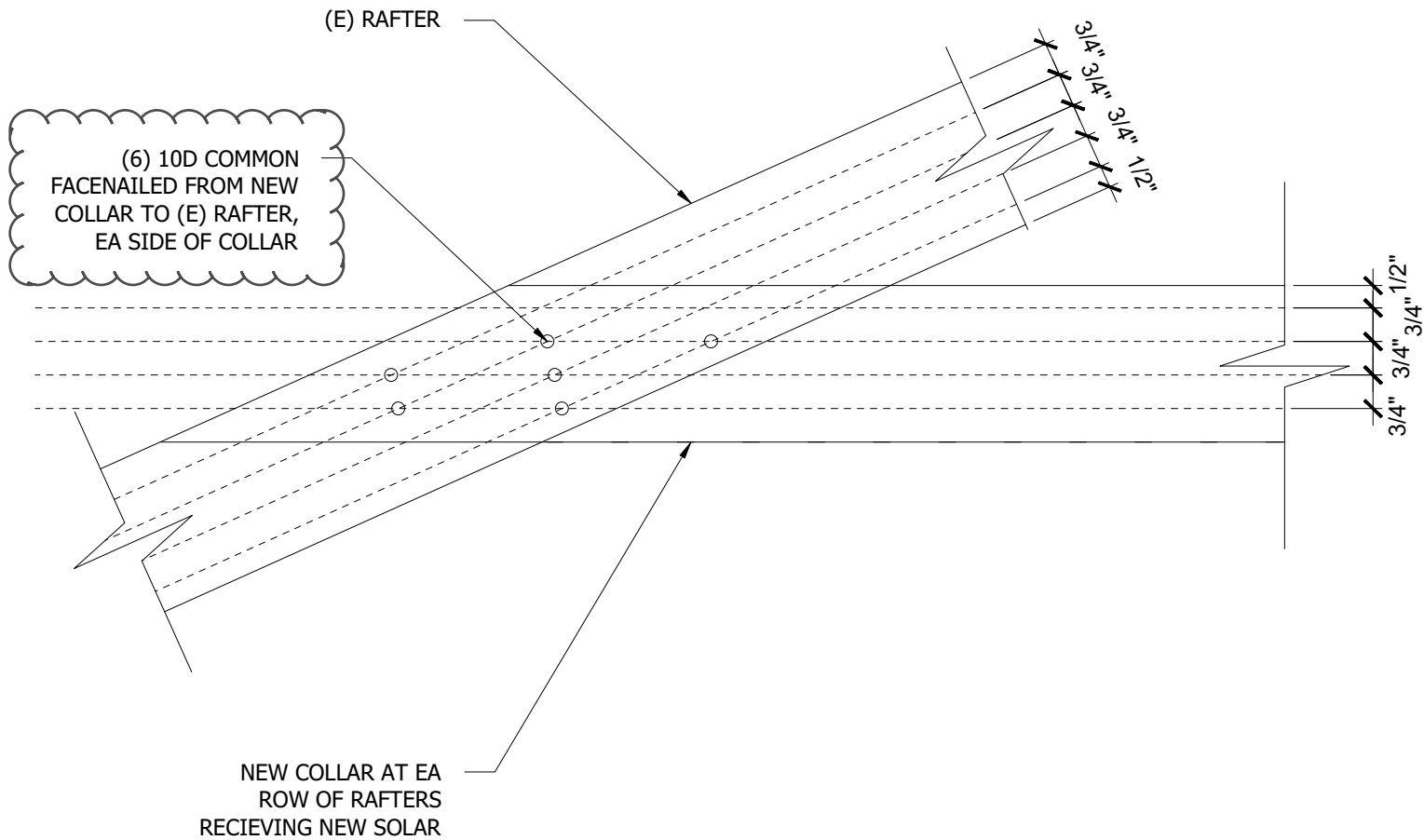
FRAMING PLAN

SCALE: 3/16" = 1'-0"

N

SUBMITTED

By mbeckel@elementalenergy.net at 5:34:33 PM, 9/28/2022



COLLAR DETAIL
SCALE: 1:4

SUBMITTED
By mbeckel@elementalenergy.net at 12:50:50 PM, 11/7/2022



City of Portland

Reviewed for Code Compliance
600 NE 8th Place
PORTLAND, OR 97218
Phone - (541) 316-5786
Date: 11/10/22
Contractor# OR CCB#: 195141

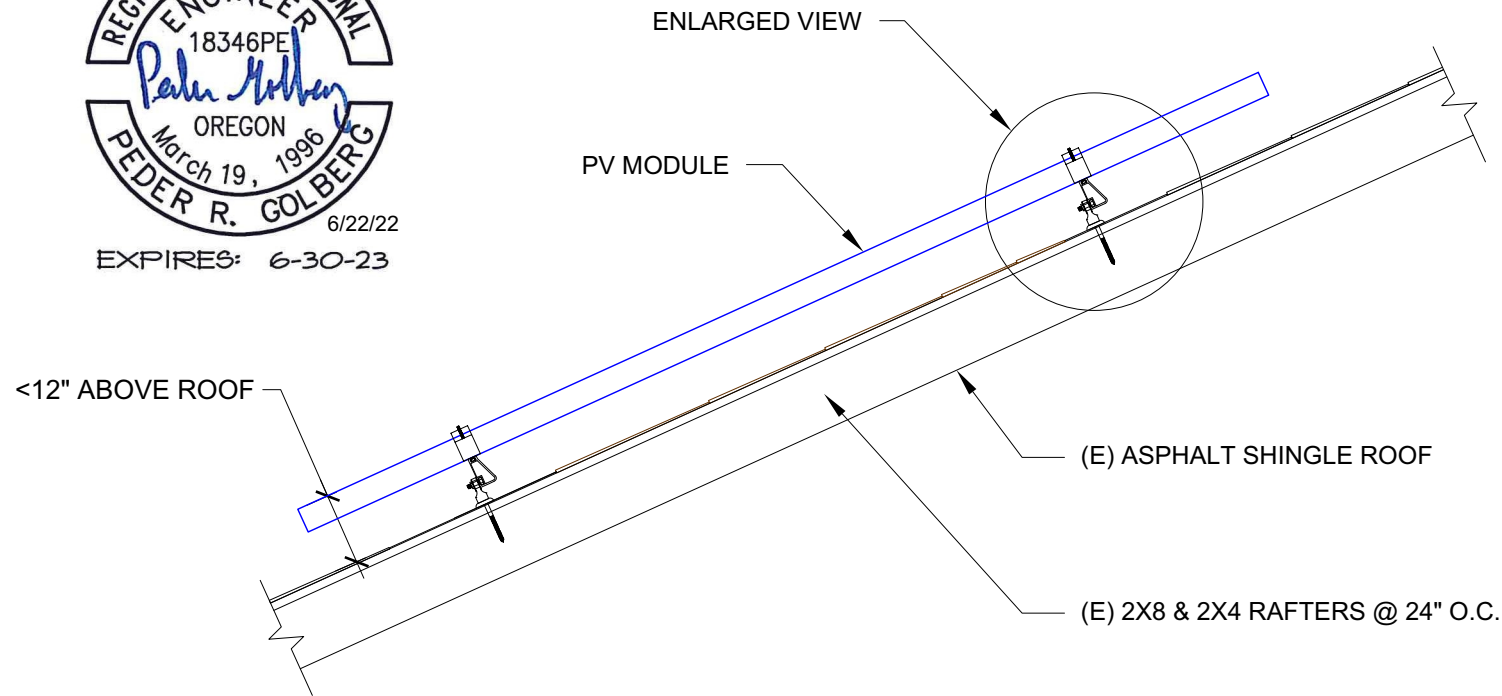
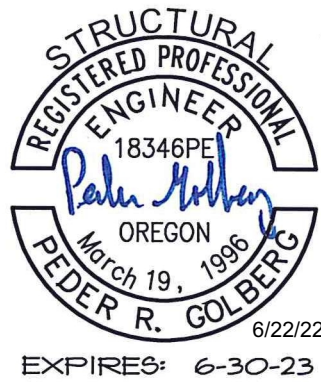
REVISIONS	
DESCRIPTION	DATE

ELECTRICAL CONTRACTOR

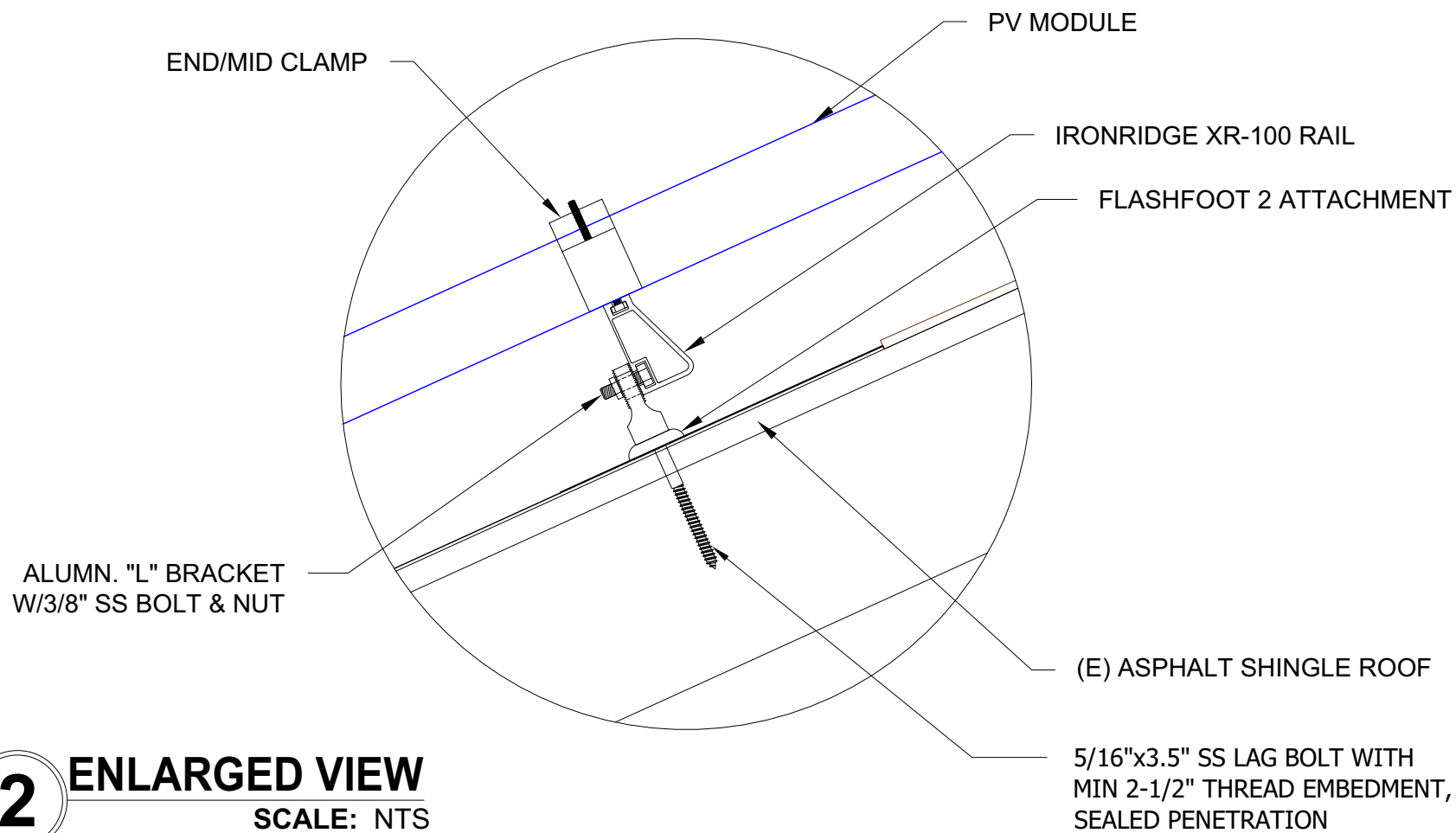
PROJECT NAME

STEVE ERICKSON RESIDENCE
3033 NE 44TH AVE,
PORTLAND, OR 97213
APN# R112748
UTILITY #: PACIFIC POWER

PROJECT
N/A
SHEET NAME
COLLAR DETAIL
SHEET SIZE
ANSI B
SHEET NUMBER
PV-4.2



1 ATTACHMENT DETAIL
SCALE: NTS



2 ENLARGED VIEW
SCALE: NTS

Method		2400 Pa	5400 Pa
Bolting	Long Bar		
	Long Bar		
	Short Bar		

Clamping

- :Clamping area
- :Additional support bar area
- :Additional Clamping area for slipping snow

※ Min. clamping width: 2"(50mm)

3 CLAMPING METHOD

City of Portland

Reviewed for Code Compliance

6800 NE Commercial

PORTLAND, OR 97218

Phone - (541) 316-5786

Date: 11/10/22

Contractor# OR CCB#: 195141

REVISIONS

DESCRIPTION	DATE
21-097268-REV-01-RS	

ELECTRICAL CONTRACTOR

PROJECT NAME

STEVE ERICKSON RESIDENCE
3033 NE 44TH AVE,
PORTLAND, OR 97213
APN# R112748
UTILITY #: PACIFIC POWER

PROJECT

N/A

SHEET NAME
ATTACHMENT
DETAIL & CLAMPING
METHOD

SHEET SIZE
ANSI B

SHEET NUMBER
PV-4.3

CONDUCTOR SCHEDULE AND CALCULATIONS

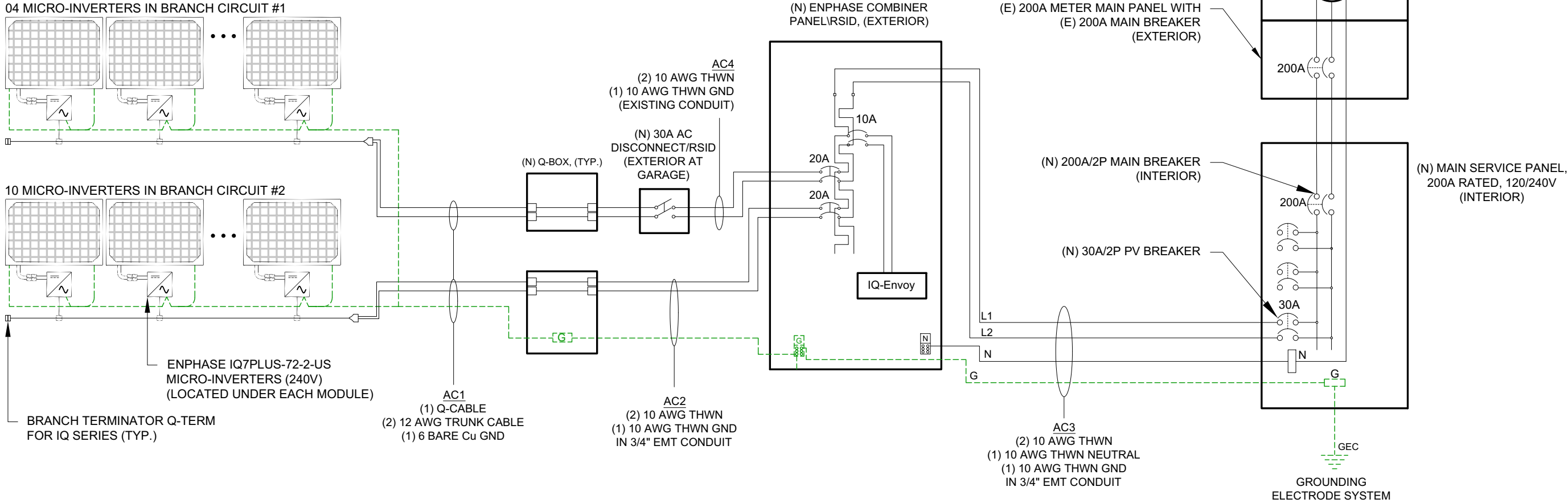
TAG	LOCATION DESCRIPTION	EQUIPMENT	# OF BRANCH	CURRENT (A)			STC	# PARALLEL	#C. CARRYING	WIRE	WIRE	COND.	COND.	AMBIENT	MULTI	DERATED	1-WAY	VD	OCPD	NEUTRAL	GROUND	CONDUIT	CONDUIT
WIRE RUN	FROM	HOME RUN ID	BRANCH	MAX. MOD. IN BRANCH LENGTH	INVERTER OUTPUT CURRENT	690.8(A)(1)	VOLTAGE (V)	RUNS	CONDUCTORS	SIZE	TYPE	MATERIAL	RATING (A)	TEMP	# COND.	(A)	L (FT.)	%	RATING	SIZE	SIZE	TYPE	SIZE
AC1	BRANCH TO Q-BOX	BRANCH	02	10	1.21	15.13	240	1	2	12 AWG	Q-CABLE	CU	25	0.94	1	23.50	40	0.47%	N/A	N/A	6 AWG	FREE AIR	N/A
AC2	Q-BOX TO COMBINER BOX	Q-BOX	02	10	1.21	15.13	240	1	2	10 AWG	THWN	CU	35	0.94	1	32.90	90	0.95%	20	N/A	10 AWG	EMT	3/4"
AC3	COMBINER BOX TO INTERCONNECTION	COMBINER BOX	N/A	-	-	21.18	240	1	2	10 AWG	THWN	CU	35	1.00	1	35.00	10	0.17%	30	10 AWG	10 AWG	EMT	3/4"
AC4	Q-BOX TO COMBINER BOX	Q-BOX	02	4	1.21	6.05	240	1	2	10 AWG	THWN	CU	35	0.94	1	32.90	80	0.34%	20	N/A	10 AWG	EXISTING	EXISTING

MAX VOLTAGE DROP: 1.59%

INTERCONNECTION
120% RULE - NEC 705.12(D)(2)(3)(b)

UTILITY FEED + SOLAR BACKFEED
200A + 30A = 230A

BUSS RATING x 120%
200A x 120% = 240A



GENERAL NOTES:

- CONTRACTOR RESPONSIBLE FOR COMPLYING WITH ALL LOCAL OR NATIONAL CODE REQUIREMENTS AND EQUIPMENT INSTALLATION INSTRUCTIONS.
- SEE PV-6 FOR LABELING REQUIREMENTS

City of Portland
Reviewed for 690.8(A)(1) COMPLIANCE
PORTLAND, OR 97218
Phone - (541) 316-5786
Permit #: 21-097268
Inspector: [Signature]
Contractor: [Signature] OR CCB#: 195141

REVISIONS

DESCRIPTION DATE

ELECTRICAL CONTRACTOR

PROJECT NAME

STEVE ERICKSON RESIDENCE
3033 NE 44TH AVE,
PORTLAND, OR 97213
APN# R112748
UTILITY #: PACIFIC POWER

PROJECT

N/A

SHEET NAME

ELECTRICAL LINE
DIAGRAM

SHEET SIZE

ANSI B

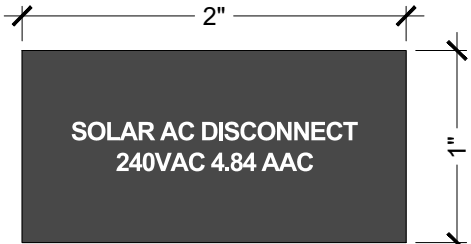
SHEET NUMBER

PV-5

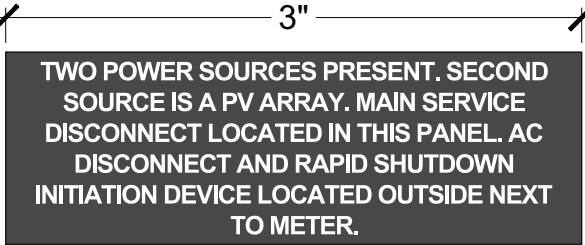
1

ELECTRICAL LINE DIAGRAM

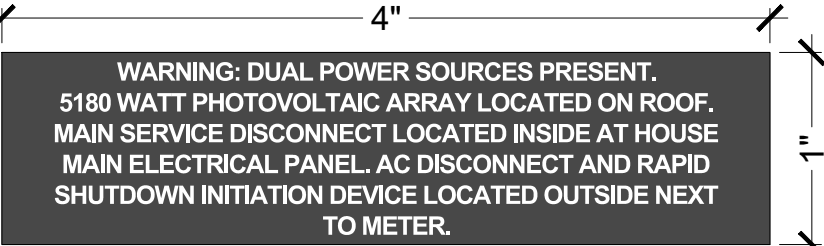
SCALE: NTS



LOCATIO : AC DISCO ECT QUA TITY:1



LOCATIO : I TERCO ECTIO PA EL QUA TITY:1



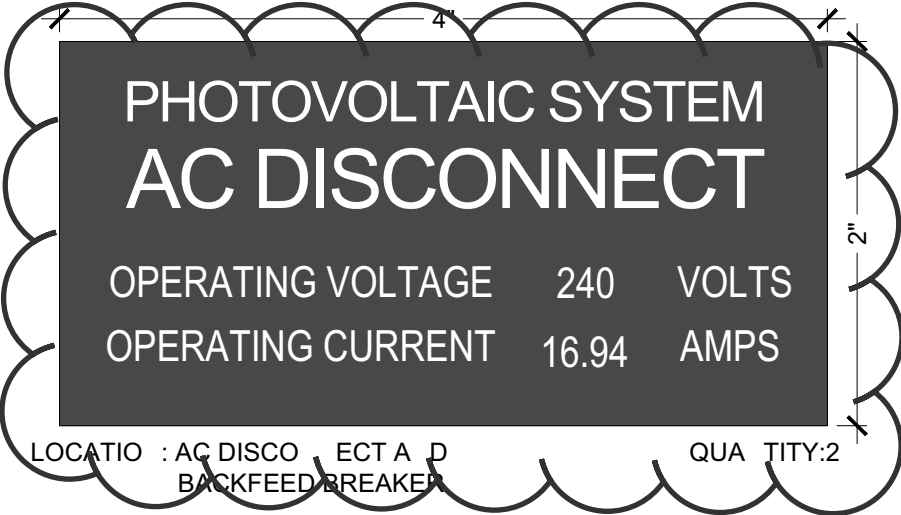
LOCATIO : METER QUA TITY:1



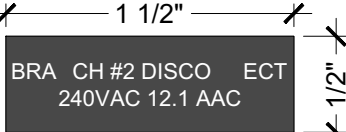
LOCATIO : RSD I ITIATIO DEVICE QUA TITY:1



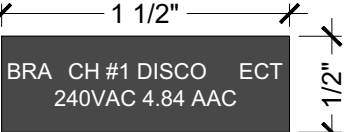
LOCATIO : EXT TO AC DISCO ECT QUA TITY:1



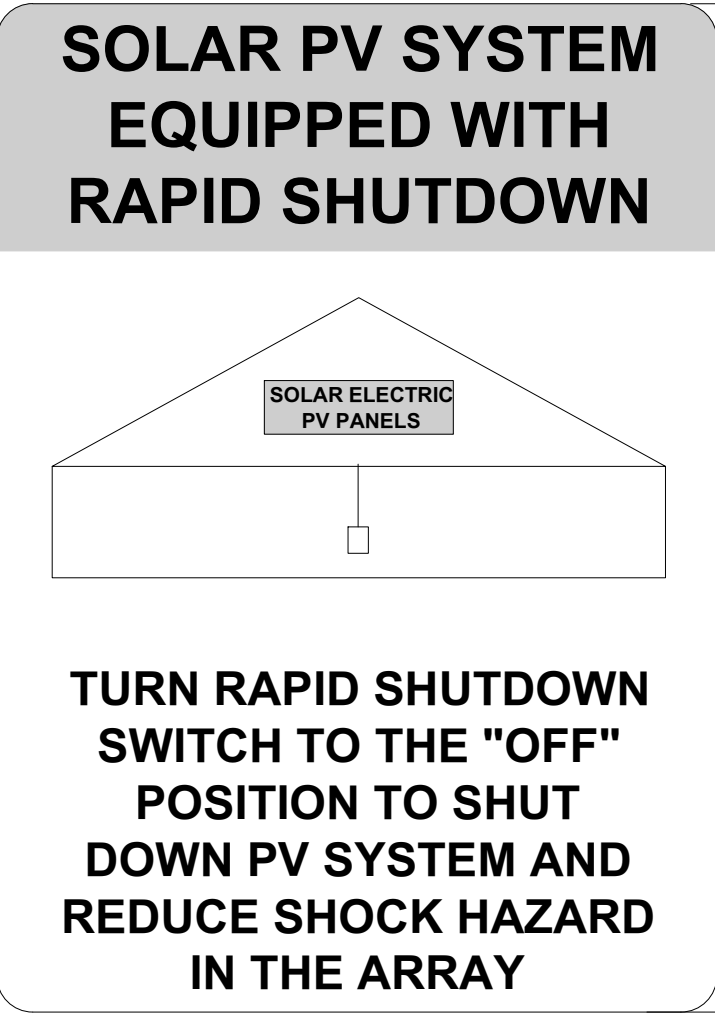
LOCATIO : AC DISCO ECT A D BACKFEED BREAKER QUA TITY:2



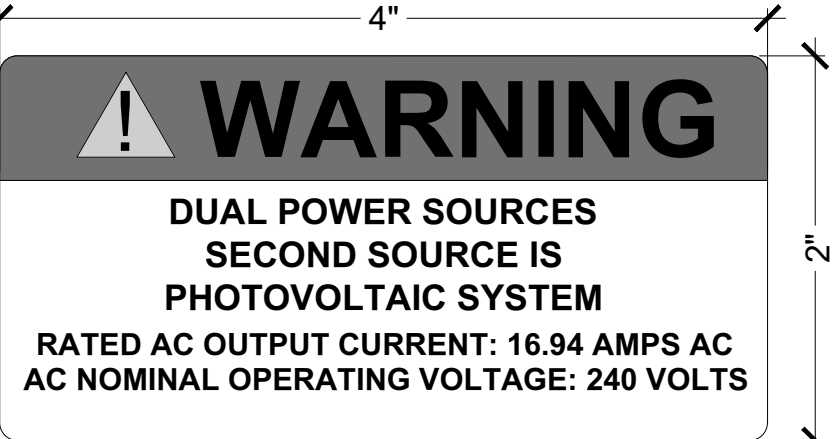
LOCATIO : COMBI ER PA EL QUA TITY:1



LOCATIO : COMBI ER PA EL QUA TITY:1



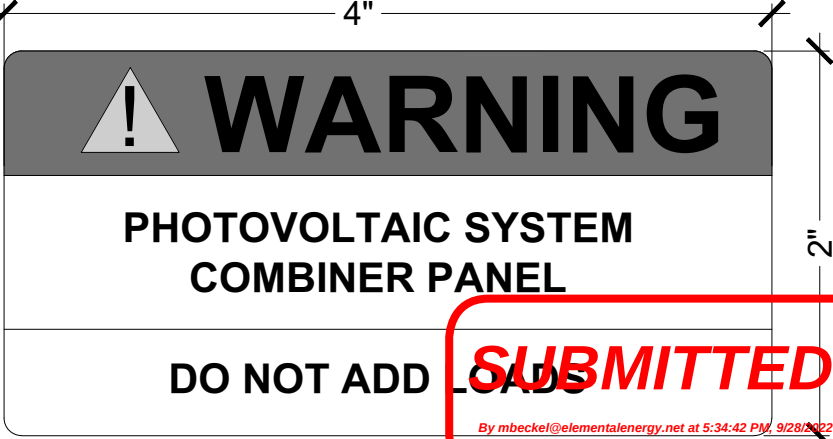
LOCATIO : MAI SERVICE DISCO ECT QUA TITY:1



LOCATIO : SOLAR AC DISCO ECT QUA TITY:1



LOCATIO : BACKFED BREAKER QUA TITY:1



LOCATIO : COMBI ER PA EL QUA TITY:1

City of Portland

Reviewed for Code Compliance

6000 E Commercial

PORTLAND, OR 97218

Phone - (541) 316-5786

Date: 11/10/22

Contractor# OR CCB#: 195141

REVISIONS

DESCRIPTION	DATE

Permit #:

21-097268-REV.01-RS

ELECTRICAL CONTRACTOR

PROJECT NAME

STEVE ERICKSO RESIDE CE

3033 E 44TH AVE,

PORTLAND, OR 97213

AP # R112748

UTILITY #: PACIFIC POWER

PROJECT

/A

SHEET NAME

WARNING LABELS

SHEET SIZE

A SI B

SHEET NUMBER

PV-6

By mbeckel@elementalenergy.net at 5:34:42 PM 9/28/2022

SUBMITTED