# **City of Portland**

**Reviewed for code compliance** 

### Date: 09/12/22

#### ect #: 21-097939-000-00-RS

### **PROJECT INFORMATION**

OWNER	BRENNER RESIDENCE 6343 N MICHIGAN AVE PORTLAND, OR 97217 (503) 807-1583
BUILDING DATA	SINGLE FAMILY RESIDENTIAL
APPLICABLE CODES	2019 OREGON STRUCTURAL SPECIALTY CODE (2019 OSSC 101)
SYSTEM	REC 400W 10 MODULES 10 X 400W = 4.0 kW 10 ENPHASE IQ8M-72-2-US MICROINVERTERS
MODULE	REC400AA PURE BLACK (L) 71.7" X (W) 40.1" X (H) 1.2" WEIGHT = 45 LBS COMBINED WEIGHT OF MODULES AND RACKING = < 4.5 PSF.
CONTRACTOR	SUNBRIDGE SOLAR 421 C ST, UNIT 5A WASHOUGAL, WA 98671 CONTACT: GARRET LITTLE PHONE: (360) 313-7190
ROOF SPECS	ASPHALT COMPOSITION SHINGLE ROOF 2X4 AND 2X6 RAFTERS SPACED @ 16" O.C. TILT: 39° AZIMUTH: 90°
	AREA OF ROOF (PLAN VIEW) = 1,320 SF AREA OF NEW SOLAR ARRAY = 200 SF (ARRAY < 25% OF ROOF AREA)

SERVICE AMP RATING: 200A SERVICE MAIN DISCONNECT TYPE: BREAKER INTERCONNECTION TYPE: BREAKER PROVIDER: PORTLAND GENERAL ELECTRIC MAIN PANEL BRAND: SIEMENS

### **PROJECT NOTES**

- 1. PV SYSTEMS AND SUPPORTING STRUCTURE SHALL COMPLY WITH REQUIREMENTS OF 2014 OREGON STRUCTURAL SPECIALTY CODE (SECTION 3111)
- 2. 3111.3.2 PV RACKING AND ATTACHMENTS SHALL BE UL 1703 CERTIFIED.
- 3. 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.
- 4. 3111.4.3 3111.4.7- PV LAYOUT SHALL NOT RESTRICT EGRESS, LIGHT VENTILATION, OR ROOF DRAINAGE REQUIREMENTS.
- 5. 3111.4.8.1 GENERAL PATHWAY REQUIREMENTS: ALL PV INSTALLATIONS SHALL INCLUDE A 36 INCH WIDE PATHWAY MAINTAINED ALONG THREE SIDES OF THE SOLAR ROOF.
- EXCEPTION 1: 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.
- EXCEPTION 1.1: 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.

- EXCEPTION 1.2: WHERE THE SOLAR AR RAY 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 PATHWAY ALONG EA. SIDE OF ANY HORIZONTAL RIDGE.
- 6. ROOF STRUCTURE IS CONVENTIONAL LIGHT FRAMED WOOD CONSTRUCTION WITH 2X4 AND 2X6 RAFTERS AT 16" O.C. REFER TO ALLOWABLE SPAN REQUIREMENT IN TABLE 305.4.1.
- 7. 3111.4.8.5.1 DISCONNECTS, J-BOXES, COMBINER BOXES OR GUTTERS SHALL NOT BE PLACED IN ANY REQUIRED PATHWAY OR CUTOUT.
- 8. 3111.5.3.1 TOTAL SYSTEM WEIGHT SHALL NOT EXCEED 4.5 PSF. PV MODULES AND RACKING SHALL BE DIRECTLY ATTACHED TO ROOF FRAMINGS AS SHOWN IN CONNECTION DETAIL #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.
- 9. 3111.5.4 MAX MODULE HEIGHT < 18" OFF ROOF SURFACE.



EXPIRES: 6-30-23

### 21-097939RS **SUBMITTED 6.28.22**



421 C St. Unit 5A Washougal, WA 98671

TEL: (360) 313-7190 CCB (OR): 198787

PROJECT NAME BRENNER, ALLETTA SITE ADDRESS 6343 N MICHIGAN AVE PORTLAND, OR 97217

DATE 6-10-2022 **PV-0.1** COVER







PROJECT NAME BRENNER, ALLETTA SITE ADDRESS 6343 N MICHIGAN AVE PORTLAND, OR 97217 **DATE** 6-10-2022 **PV-2.0** ROOF PLAN





PROJECT NAME BRENNER, ALLETTA SITE ADDRESS 6343 N MICHIGAN AVE PORTLAND, OR 97217 PV-3.0 SECTION CUT 1



421 C St, Unit 5A Washougal, WA 98671 TEL: (360) 313-7190 CCB (OR): 198787 PROJECT NAME BRENNER, ALLETTA

SITE ADDRESS 6343 N MICHIGAN AVE PORTLAND, OR 97217 DATE 6-10-2022 **City of Portland** 

## 2. CONNECTION DETAIL

SCALE: NTS





EXPIRES: 6-30-23

3. CONNECTION DETAIL SCALE: NTS



21-097939RS SUBMITTED 6.28.22



PROJECT NAME BRENNER, ALLETTA SITE ADDRESS 6343 N MICHIGAN AVE PORTLAND, OR 97217 PV-4.0

CONNECTION DETAIL

City of Portland Reviewed for code compliance Date: 09/12/22 Project #: 21-097939-000-00-RS



### PV SYSTEM CONDUCTOR SCHEDULE

CIRCUIT	COND. ID	CONDUCTOR TYPE	COND. IN CONDUIT	CONDUIT	MIN. EGC/GEC SIZE	CONT. CURRENT	MAX CURRENT	DERATED AMP.	LENGTH	VOLT. DROP
MICROINVERTERS OUTPUT		10 AWG PV WIRE, CU	4	FREE AIR	6 AWG BARE, COPPER	10.89A	13.61A	30.72A	5 FT	0.06%
JUNCTION BOX TO IQ COMBINER	2	10 AWG THWN-2, CU	4	1/2" EMT	14 AWG BARE, COPPER	10.89A	13.61A	30.72A	40 FT	0.45%
IQ COMBINER TO ENPOWER	3	10 AWG THWN-2, CU	2	1/2" EMT	10 AWG BARE, COPPER	18.15A	22.69A	38.40A	10 FT	0.19%
ENCHARGE TO ENPOWER	4	10 AWG THWN-2, CU	2	1/2" EMT	12 AWG BARE, COPPER	5.30A	6.63A	38.40A	5 FT	0.03%
BACKUP LOADS PANEL TO ENPOWER	5	8 AWG THWN-2, CU	3	3/4" EMT	10 AWG BARE, COPPER	23.45A	29.31A	52.80A	10 FT	0.15%
ENPOWER TO MAIN SERVICE PANEL	6	8 AWG THWN-2, CU	3	3/4" EMT	10 AWG BARE, COPPER	23.45A	29.31A	52.80A	10 FT	0.15%

INTERNAL VOLTAGE DROP WITHIN CABLING = 0.13%

DATE

10-5-2021

TOTAL AC VOLTAGE DROP = 1.16%

SINGLE LINE DIAGRAM SCALE: NTS

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% Vdrop = 0.2\*(10 ft)\*(23.45 A)\*(0.778 ohms/kft)/(240 V) = 0.15% AC VOLTAGE DROP PV SYSTEM EQUIPMENT SUMMARY

4.43 KW

5.70 KW

(15) IQ7PLUS-72-2-US

(15) SIL-380 BK

(1) ENCHARGE 3

240V SPLIT PHASE

Sunbridge

AC SYSTEM SIZE:

DC SYSTEM SIZE:

INTERCONNECTION VOLTAGE:

INVERTER(S):

MODULES:

BATTERY:

### **NEC PV LABELING REQUIREMENTS**

### STICKERS

(A) COMBINER BOX / CIRCUITS / CONDUIT COMBINER BOX / ENCLOSURES / EMT ENCLOSURES / AC DISCONNECT / BREAKER / POINTS OF CONNECTION / BREAKER PANEL / PULL BOXES / MAIN SERVICE DISCONNECT (NEC 690.13(B))
WARNING: ELECTRICAL SHOCK HAZARD TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
D EMT / CONDUIT RACEWAYS [EVERY 10 LINEAR FEET] (NEC 690.31(G)(3)(4))
WARNING: PHOTOVOLTAIC POWER SOURCE
PRODUCTION METER / NET METER (NEC 705.12(D)(3) A NEC 690.59)
WARNING DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM
(F) AC DISCONNECT / BREAKER / POINTS OF CONNECTION (NEC 690.13(B))
PHOTOVOLTAIC AC DISCONNECT
BREAKER PANEL / PULL BOXES (NEC 690.13(F) & NEC 705.12(D)(3-4) & NEC 690.59)
CAUTION PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED
H BREAKER PANEL / PULL BOXES (NEC 705.12(B)(3-4) & NEC 690.59)
WARNING: DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

(I) BREAKER PANEL / PULL BOXES (NEC 705.12(B)(2)(c))

### WARNING

POWER SOURCE OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE.

J AC DISCONNECT (NEC 690.56(C)(3))

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

© PROTECTED LOADS PANEL

SOLAR PV BACKUP LOAD PANEL

### PLACARDS

AC DISCONNECT / BREAK	ER / POINTS OF CO	NNECTION				
NOMINAL OPERATING AC NOMINAL OPERATING AC MAXIMUM AC POWER MAXIMUM AC CURRENT	NOMINAL OPERATING AC VOLTAGE   24     NOMINAL OPERATING AC FREQUENCY   60     MAXIMUM AC POWER   4.     MAXIMUM AC CURRENT   23					
AC DISCONNECT / BREAK (NEC 690.54)	ER / POINTS OF CO	NNECTION				
PHOTOVOLTAIC AC DISCO	NNECT					
RATED AC OUTPUT CURRENOMINAL OPERATING AC	RATED AC OUTPUT CURRENT NOMINAL OPERATING AC VOLTAGE					
AC DISCONNECT / BREAK	ER / POINTS OF CO	NNECTION				
SOLAR PV SYS WITH RAPID	TEM EQUI	PPED VN				
TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY	RAPID SHUTDOW					
PV SYSTEM CHARACTERISTICS 5.70 KW SOLAR ELECTRIC SYSTEM 15 SILFAB SIL-380 BK 380W SOLAR MODULES 15 ENPHASE IQ7PLUS-72-2-US MICROINVERTERS 1 ENCHARGE 3 BATTERY						
BATTERY (NEC 690.55)						
MAXIMUM OPERATING VOLT	AGE	240V				



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