

AERIAL SITE VIEW



JURISDICTION CODES AND STANDARDS

GOVERNING CODES

1. ALL WORK SHALL COMPLY WITH:
2021 OREGON ELECTRICAL SPECIALTY CODE (OESC)
2019 OREGON STRUCTURAL SPECIALTY CODE (OSSC)
2021 OREGON RESIDENTIAL SPECIALTY CODE (ORSC)
2019 OREGON 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. THIS PROJECT HAS BEEN REVIEWED AND WILL NOT DIRECT CONCENTRATED SOLAR RADIATION OR GLARE ONTO NEARBY PROPERTIES OR ROADWAYS.
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

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].

STRUCTURAL CRITERIA, NOTES

DESIGN LOAD STANDARD: ASCE 7-16
WIND EXPOSURE CATEGORY: C
WIND SPEED (3-SEC GUST): 97 MPH
GROUND SNOW LOAD: 36 PSF
DESIGN ROOF SNOW LOAD: 26 PSF
SEISMIC DESIGN CATEGORY: D
SEISMIC RISK FACTOR: II

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**NABCEP
CERTIFIED**
**PV INSTALLATION
PROFESSIONAL**

Signature SCOTT A. GURNEY
#PV-0117719-015866

ION DEVELOPER, LLC
4801 N UNIVERSITY AVE #900 PROVO, UT 84604
888.781.7074

DAVID STANLEY CONRAD
C - ELECTRICAL CONTRACTOR
C1524

SITE INFORMATION:

ABRAHAM G RISSA
16235 SOUTHEAST CLINTON STREET
PORTLAND, OREGON 97236
(31) SILFAB SOLAR SIL-380 HC 20211101
(31) ENPHASE IQ7PLUS-72-2-US
11.78KW DC, 8.99KW STC-AC,
10.506KW CEC-AC

SCOPE OF WORK

INSTALLATION OF UTILITY INTERACTIVE PHOTOVOLTAIC SOLAR SYSTEM

11.78 kW DC & 8.99 kW AC PHOTOVOLTAIC SOLAR ARRAY

PV MODULES: (31) SILFAB SOLAR SIL-380 HC 20211101

INVERTER(S): (31) ENPHASE IQ7PLUS-72-2-US

ROOF TYPE: COMPOSITION SHINGLE - 2 LAYER(S)

PV MOUNTING HARDWARE: ECOFASTEN CLICKFIT

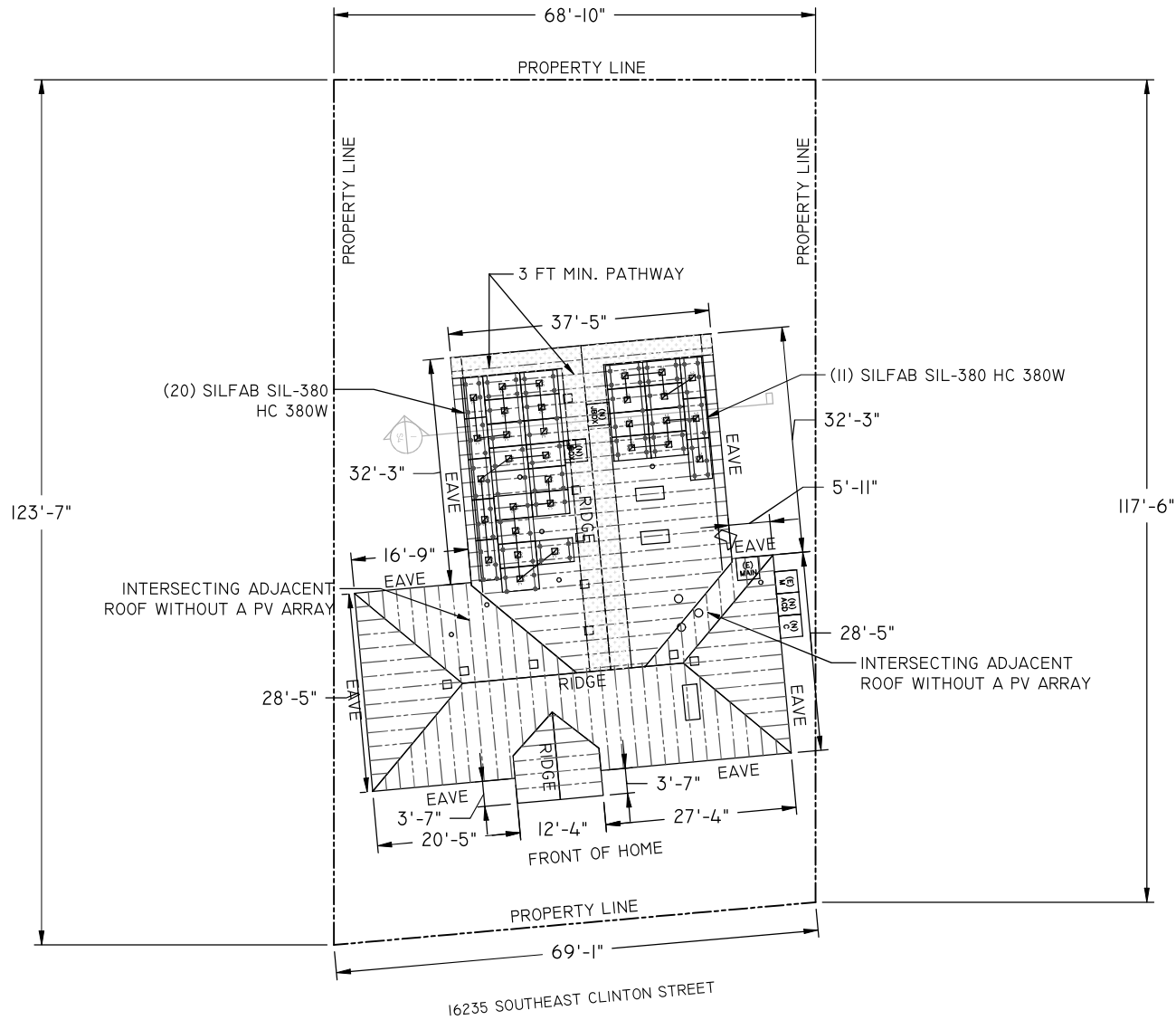
SHEET LIST

G-1	COVER SHEET
V-2	SITE PLAN
S-3	ROOF PLAN
S-4.1	STRUCTURAL DETAILS
S-4.2	STRUCTURAL DETAILS (CONT.)
S-5	STRUCTURAL CALCULATIONS & NOTES
E-6	ELECTRICAL DETAILS (LINE DIAGRAM)
E-7	ELECTRICAL CALCULATIONS & NOTES
E-9	ELECTRICAL LABELS & LOCATIONS

City of Portland
Reviewed for code compliance

Date: 10/05/22

Project #: 22-188219-000-00-RS



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10.506KW CEC-AC

DRAWING BY
DALLIN QUINTON

DATE
19-SEP-2022

PROJECT ID
007G2K

SHEET NAME
SITE PLAN

SHEET NUMBER
V-2

REVISION
0

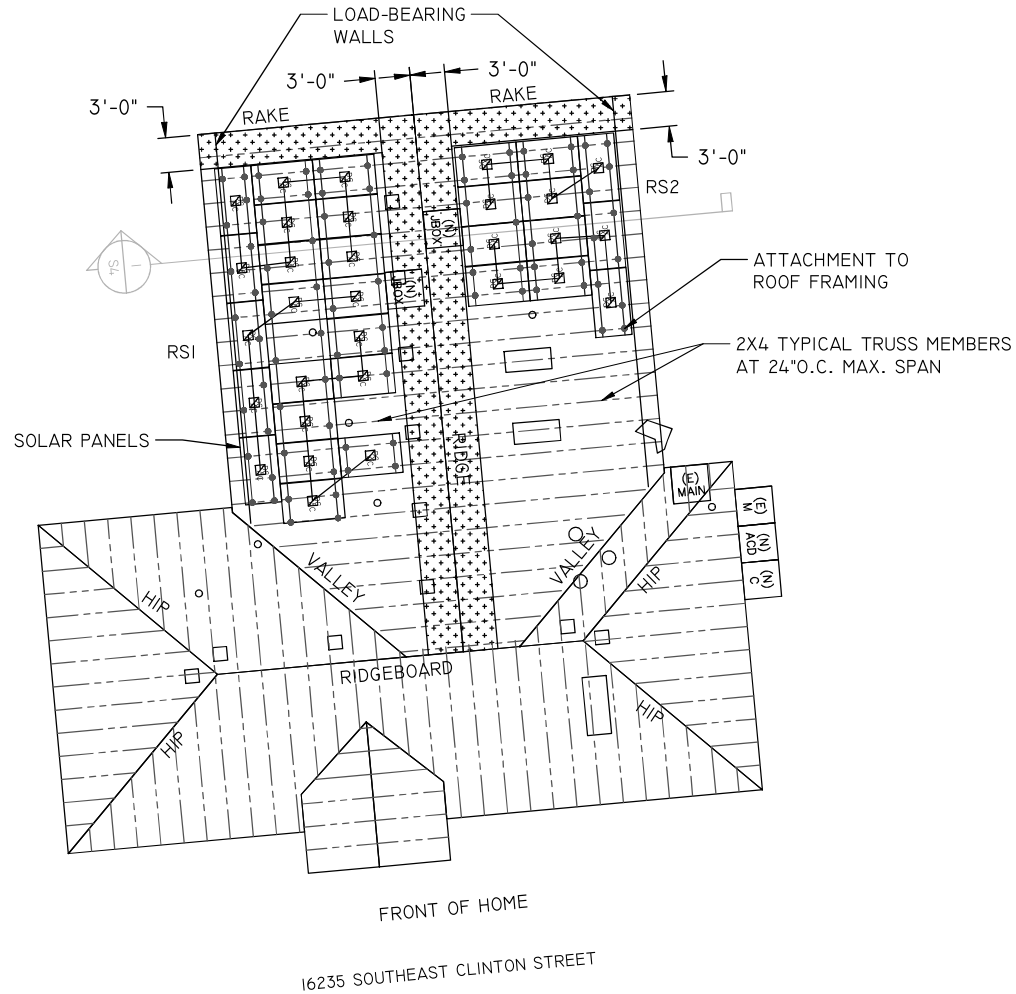
SCALE: 1/16" = 1'-0"

Date: 10/05/22

Project #: 22-188219-000-00-RS

SITE NOTES:

I. 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
FOR ANY METER UPGRADES, ENSURE THAT THE UTILITY METER IS LOCATED WITHIN 10FT OF THE FRONT/STREET-SIDE OF THE HOUSE. PLEASE ADD A LABEL SHOWING THE DISTANCE FROM THE FRONT CORNER OF THE HOUSE.



SCALE: 3/32" = 1'-0"
0 2'-0" 5'-0" 10'-0" 21'-0"

SYSTEM LEGEND

	(E) UTILITY METER / MAIN SERVICE PANEL		(N) PV COMBINER PANEL		(N) JUNCTION BOX		S# SUNEYE LOCATION
	(E) MAIN SERVICE PANEL		(N) PV LOAD CENTER		(N) AC DISCONNECT (VISIBLE-OPEN LOCKABLE LABELED DISCONNECT)		FIRE SETBACK
	(E) SUBPANEL		(N) PV PRODUCTION METER		(N) MICROINVERTER		(N) PV MODULE
			(N) DC-DC / STRING INVERTER		(N) DC DISCONNECT		

ROOF SECTION CRITERIA AND SPECIFICATIONS

ROOF SECTION	PV MODULE QTY	AZIMUTH	PITCH	TSRF
RS1	20	265	23	85%
RS2	11	85	23	81%



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DALLIN QUINTON

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PROJECT ID
007G2K

SHEET NAME
ROOF PLAN

SHEET NUMBER
S-3

REVISION
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RACKING INSTALLATION SCHEDULE AND STRUCTURAL CRITERIA

PV RACKING

RACKING:	ECOFASTEN CLICKFIT
RACKING TYPE:	RAIL
STANDOFF:	CLICKFIT L-FOOT
STANDOFF TYPE:	L-FOOT & FLASHING
FASTENER:	5/16" X 3-1/2" ZINC PLATED STEEL LAG SCREW

STRUCTURAL

ROOF TYPE:	COMPOSITION SHINGLE
ROOF SHEATHING TYPE:	1/2" PLYWOOD
STRUCTURE TYPE:	MANUFACTURED WOOD TRUSS
RAFTER SIZE:	2x4
RAFTER SPACING:	24

ARRAY PARAMETERS

TOTAL ROOF AREA (SQ. FT.)	1681
TOTAL PV MODULE AREA (SQ. FT.)	610.7
% PV MODULE ROOF COVERAGE	36%

SPAN AREA TAG SPAN

RAIL - PORTRAIT - MODULE ORIENTATION

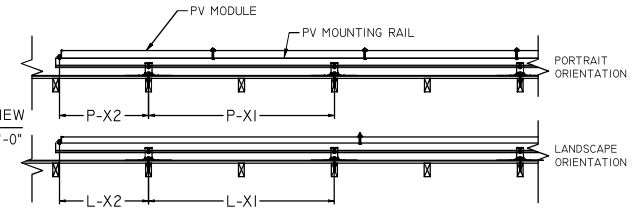
X- SPACING	P-X1	4.8 IN. O.C. MAX.
X-CANTILEVER	P-X2	16 IN. MAX.
Y- SPACING	P-Y1	37.4 IN. MIN. - 45.3 IN. MAX.
Y-CANTILEVER	P-Y2	12.1 IN. MIN. - 16 IN. MAX.

RAIL - LANDSCAPE - MODULE ORIENTATION

X- SPACING	L-X1	4.8 IN. O.C. MAX.
X-CANTILEVER	L-X2	16 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.

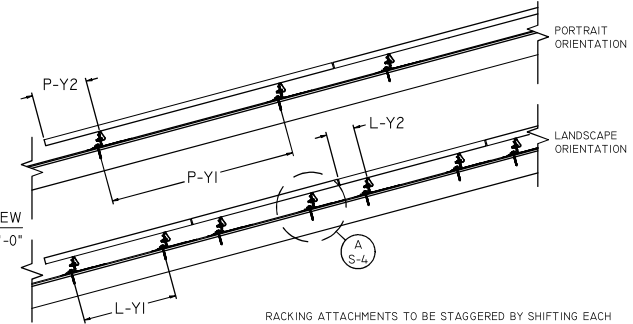
PV ARRAY DETAIL, FRONT VIEW

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

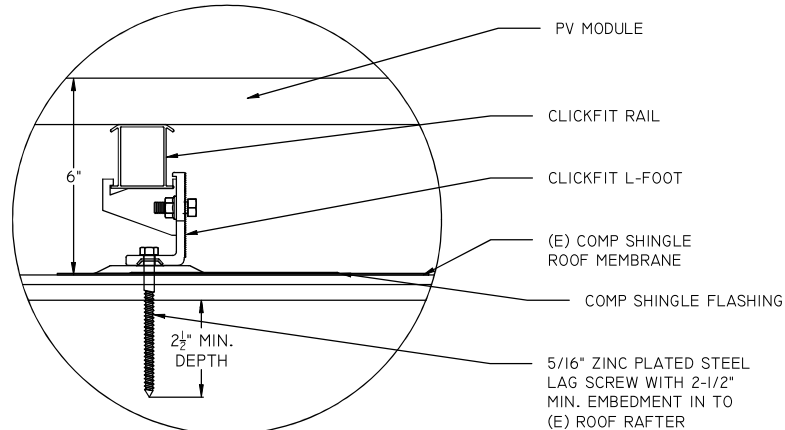


PV ARRAY DETAIL, SIDE VIEW

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



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



A STANDOFF DETAIL
SCALE: 3" = 1'-0"

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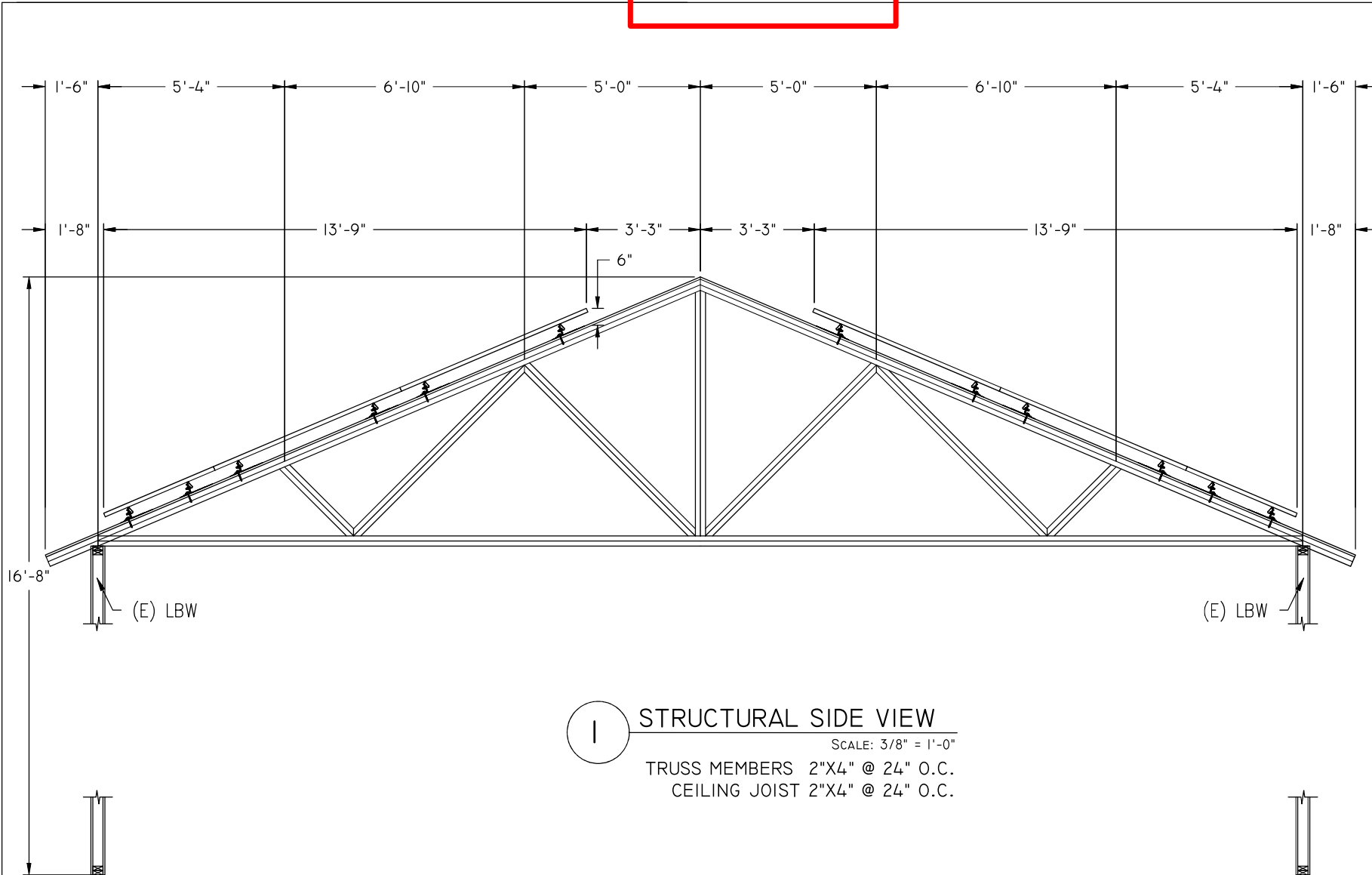
SHEET NAME
STRUCTURAL DETAILS

SHEET NUMBER
S-4.1

REVISION
0

Date: 10/05/22

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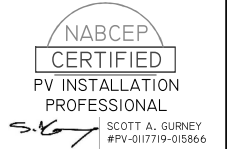
STRUCTURAL SIDE VIEW

SCALE: $\frac{3}{8}'' = 1'-0''$

TRUSS MEMBERS 2"X4" @ 24" O.C.
CEILING JOIST 2"X4" @ 24" O.C.

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PROJECT ID
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SHEET NAME
STRUCTURAL DETAILS

SHEET NUMBER
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REVISION
0

Date: 10/05/22

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PV SYSTEM STRUCTURAL SPECIFICATIONS AND CALCULATIONS

PV SYSTEM EQUIPMENT SPECIFICATIONS

MODULE MANUFACTURER / TYPE	SILFAB SOLAR SIL-380 HC 2021101
SOLAR MODULE WEIGHT (LBS)	43
SOLAR MODULE LENGTH (IN.)	69.4
SOLAR MODULE WIDTH (IN.)	40.8
SOLAR MODULE AREA (SQ. FT)	19.7
PV RACKING	ECOFASTEN CLICKFIT
PV RACKING TYPE	RAIL
PV ROOF ATTACHMENT	CLICKFIT L-FOOT
PV ROOF ATTACHMENT FASTENER	5/16" X 3-1/2" ZINC PLATED STEEL LAG SCREW
RACKING DEAD LOAD (PSF)	0.8
SOLAR MODULE DEAD LOAD (PSF)	2.18
TOTAL PV ARRAY DEAD LOAD (PSF)	2.98

PV SYSTEM STRUCTURAL SPECIFICATIONS

STRUCTURE TYPE - ROOF SHAPE	INHABITED - GABLE / FLAT ROOF
MIN. ROOF SLOPE (DEG.)	23
MEAN ROOF HEIGHT (FT.)	11
PORTRAIT ATT. SPACING (IN. O.C.)	48
LANDSCAPE ATT. SPACING (IN. O.C.)	48
# OF ATTACHMENT POINTS	89
MAX. POINT LOAD (LBS / ATT.)	12.7
MAX. TOTAL PV DEAD LOAD TO RAFTER (LBS)	25.5

DESIGN WIND PRESSURE AND CONNECTION UPLIFT CALCULATIONS

DESIGN WIND PRESSURE (PSF) = P = gh(GCp)(ye)(ya)	ASCE 7-16 (C8C)
VELOCITY PRESSURE (PSF) = qh = 0.00256(Kh)(Kzt)(Kd)(Ke)(V ²)	EQN. 29.4-7
TERRAIN EXPO. CONSTANT (a) = 9.5	TABLE 26.11-I
TERRAIN EXPO. CONSTANT (Zg)(FT) = 900	TABLE 26.11-I
VP EXPOSURE COEFF.(Kh) = 0.80	EQN. C26.10-I
TOPOGRAPHIC FACTOR (Kzt) = 1.0	EQN. 26.8-I
WIND DIRECTIONALITY FACTOR (Kd) = 0.85	TABLE 26.6-I
ARRAY EDGE FACTOR (Ye) = 1	TABLE 26.13-I
GROUND ELEVATION FACTOR (Ke) = 1.00	FIG. 29.4-8
QH (PSF) = 16.24	EQN. 26.10-I

GABLE ROOF 20° < θ ≤ 27°	UPLIFT		DOWNWARD	
	ZONE 1	ZONE 2R	ZONE 2E	ALL ZONES
RAIL - PORTRAIT MODULE ORIENTATION	48 IN. O.C.	48 IN. O.C.	48 IN. O.C.	48 IN. O.C.
SOLAR PANEL PRESSURE EQ. FACTOR (Ya) =	0.80	0.80	0.80	0.80
EXTERNAL PRESSURE COEFF. (GcP) =	-1.5	-2.5	-3.6	0.7
ASD PRESSURE (0.6P)(PSF) =	-11.70	-19.49	-28.07	15.16
TRIBUTARY AREA (SQ. FT) =	11.6	11.6	8.7	
MAX. UPLIFT (0.6D+0.6P) (LBS) =	-114.6	-204.8	-228.0	
RAIL - LANDSCAPE MODULE ORIENTATION	48 IN. O.C.	48 IN. O.C.	48 IN. O.C.	48 IN. O.C.
SOLAR PANEL PRESSURE EQ. FACTOR (Ya) =	0.80	0.80	0.80	0.80
EXTERNAL PRESSURE COEFF. (GcP) =	-1.5	-2.5	-3.6	0.7
ASD PRESSURE (0.6P)(PSF) =	-11.70	-19.49	-28.07	15.16
TRIBUTARY AREA (SQ. FT) =	6.80	6.80	5.10	
MAX. UPLIFT (0.6D+0.6P) (LBS) =	-67.4	-120.4	-134.0	

ROOF ATTACHMENT FASTENER CHECK

CLICKFIT L-FOOT - 5/16" X 3-1/2" ZINC PLATED STEEL LAG SCREW	NDS I2.2			
LAG SCREW WITHDRAWAL DESIGN VALUE (LBS) = W = 1800(G ³ /2)(D ³ /3/4)	MANUFACTURER MAX. UPLIFT CAPACITY = 359.6 LBS			
ROOF ATTACHMENT FASTENER (D) = 5/16 IN. LAG SCREW	I2.2.1			
FASTENER QTY PER ATTACHMENT = 1	TABLE 2.3.2			
FASTENER EMBEDMENT DEPTH (IN.) = 2.5	TABLE I2.3.3A			
WITHDRAWAL DESIGN VALUE(W)(LBS / IN.) = 266.0				
LAG SCREW WITHDRAWAL CAPACITY (LBS) = 760.0				
MAX. ATT. WITHDRAWAL CAPACITY (LBS) = 359.6	>	228.0	MAX UPLIFT DEMAND (LBS)	OK

DESIGN LOCATION AND SITE SPECIFICATIONS

JURISDICTION	CITY OF PORTLAND
STATE	OREGON
ADOPTED LOAD STANDARD	ASCE 7-16
OCCUPANCY / RISK CATEGORY	II
BASIC WIND SPEED (MPH (3-SEC GUST))	97
WIND EXPOSURE CATEGORY	C
GROUND SNOW LOAD (PSF) (Pg)	36
BASE ELEVATION (FT)	64

DESIGNED ROOF SNOW LOAD CALCULATIONS

SLOPED ROOF SNOW LOAD (PSF)	ASCE 7-16 (C8C)
= 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

GRAVITY LOAD / FRAMING CALCULATIONS

DEAD LOAD (PSF) ROOF MEMBRANE	RS1		RS2	
	COMPOSITION SHINGLE	4.0	COMPOSITION SHINGLE	4.0
SHEATHING	1/2" PLYWOOD	1.7	1/2" PLYWOOD	1.7
FRAMING	MANUFACTURED WOOD TRUSS - TOP CHORD 2X4 @ 24 IN. O.C. - DF #2 @ 6 FT. MAX SPAN	1.0	MANUFACTURED WOOD TRUSS - TOP CHORD 2X4 @ 24 IN. O.C. - DF #2 @ 6 FT. MAX SPAN	1.0

TOTAL ROOF DEAD LOAD (PSF)	6.7	6.7
ADJUSTED TO SLOPED ROOF (PSF)	7.3	7.3
PV ARRAY ADJ. TO ROOF SLOPE (PSF)	3.3	3.3
ROOF LIVE LOAD < ROOF SNOW LOAD (PSF)	26.0	26.0
TOTAL LOAD (PSF)	36.6	36.6

RAFTER / TOP CHORD MEMBER PROPERTIES

DF #2 - 2x4	DF #2 - 2x4
SECTION MODULUS (S)(IN ³)	3.06
MOMENT OF INERTIA (I)(IN ⁴)	5.36
TOTAL LOAD ON MEMBER (W) (PLF)	73.1
MAX. MEMBER SPAN (L) (FT)	6
MODULUS OF ELASTICITY (E) (PSI)	1600000
SHEAR (Fv) (PSI)	180
AREA (A) (IN ²)	5.25

MAX BENDING STRESS CHECK

(Fb)(Cd)(Cp)(Cr)	(Fb)(Cd)(Cp)(Cr)
BENDING (Fb) (PSI)	900
LOAD DURATION FACTOR (Cd)	1.15
SIZE FACTOR (Cp)	1.50
REPETITIVE MEMBER FACTOR (Cr)	1.15
ALLOWABLE BENDING STRESS (PSI)	1785.4

ACTUAL BENDING STRESS (PSI) = (WL ²)/(8(S))	1289.7	1289.7
	72% OK	72% OK

MAX DEFLECTION CHECK - TOTAL LOAD

UNIFORM DISTRIBUTED	UNIFORM DISTRIBUTED
L / 180	L / 180
0.400 IN.	0.400 IN.
(W)(L) ⁴ / 185(E)(I)	(W)(L) ⁴ / 185(E)(I)
0.103 IN.	0.103 IN.
26% OK	26% OK

MAX DEFLECTION CHECK - LIVE LOAD

L / 240	L / 240
0.3 IN.	0.3 IN.
(W)(L) ⁴ / 185(E)(I)	(W)(L) ⁴ / 185(E)(I)
0.086 IN.	0.086 IN.
29% OK	29% OK

MAX SHEAR CHECK

Fv (A)	Fv (A)
945 LBS.	945 LBS.
(W)(L)/2	(W)(L)/2
219 LBS.	219 LBS.
23% OK	23% OK

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DRAWING BY	DALLIN QUINTON
DATE	19-SEP-2022
PROJECT ID	007G2K
SHEET NAME	STRUCTURAL CALCS
SHEET NUMBER	S-5
REVISION	0

PV SYSTEM ELECTRICAL SPECIFCATIONS AND CALCULATIONS

DESIGN LOCATION AND TEMPERATURES	
TEMPERATURE DATA SOURCE	ASHRAE
STATE	OREGON
JURISDICTION	CITY OF PORTLAND
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	
RATED POWER (PMAX) (W)	380
MAXIMUM POWER VOLTAGE (VMP)	35.32
MAXIMUM POWER CURRENT (IMP)	10.77
OPEN CIRCUIT VOLTAGE (VOC)	42.17
SHORT CIRCUIT CURRENT (ISC)	11.36
PMP/VMP TEMP. COEFFICIENT	-0.36
VOC TEMP. COEFFICIENT	-0.28
SERIES FUSE RATING	20
ADJ. MODULE VOC @ ASHRAE LOW TEMP	45.8
ADJ. MODULE VMP @ ASHRAE 2% AVG. HIGH TEMP	29.9

INVERTER SPECIFICATIONS	
TYPE	MICROINVERTER
MAX. OR RECOMMENDED MODULE POWER (W)	440
MAXIMUM INPUT DC OPEN-CIRCUIT VOLTAGE (VOC)	60
MINIMUM START VOLTAGE (V)	22
MAXIMUM START VOLTAGE(V)	60
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	CIR 3
NUMBER OF MODULES PER CIRCUIT	10	10	11
DC POWER RATING PER CIRCUIT (STC)(W DC)	3800	3800	4180
TOTAL MODULE QUANTITY	31 PV MODULES		
STC DC POWER RATING OF ARRAY	11780W DC		
INVERTER OUTPUT CIRCUIT CURRENT(A AC)	12.1	12.1	13.31
125% INVERTER OUTPUT CIRCUIT CURRENT(A AC)	15.13	15.13	16.64
CIRCUIT OCPD RATING (A)	20	20	20
COMBINED INVERTER CONTINUOUS OUTPUT CURRENT	37.51A AC		
PV POWER PRODUCTION SYSTEM OCPD RATING (X125%)	50A		
MAX. ARRAY STC-AC POWER (W)	8990W AC (STC)		
MAX. ARRAY CEC-AC POWER (W)	10506W AC (CEC)		

AC VOLTAGE RISE CALCULATIONS					
VRISE SEC. 1 (MICRO TO JBOX) *	28.8	12 Cu.	1.5	241.5	0.64%
VRISE SEC. 2 (JBOX TO COMBINER BOX)	55	10 Cu.	1.8	241.8	0.73%
VRISE SEC. 3 (COMBINER BOX TO POI)	10	8 Cu.	0.6	240.6	0.24%
TOTAL VRISE			3.9	243.9	1.61% 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 =	13.3 A AC
MAX CURRENT X125%=	17.0 A AC
PER NEC 690.8(B)(1)(W/OUT CORRECTION FACTORS)	
CONDUCTOR SIZE / INSULATION / TYPE =	12 AWG 2C, TC-ER, CU.
CONDUCTOR AMP. RATING @ 90°C =	30 A
AMB. TEMP. AMP. CORRECTION =	NOT APPLIED
ADJUSTED AMPACITY COMPLIANCE (A) =	30 > 17.0 OK
RACEWAY SIZE / TYPE =	3/4 IN. EMT OR FREE AIR
CROSS-SECTIONAL AREA OF CONDUCTOR(S) / CABLE(S)(IN.^2) =	0.142 IN.^2
CROSS-SECTIONAL AREA OF RACEWAY(IN.^2) =	0.533 IN.^2
% ALLOWABLE RACEWAY FILL (NEC CHAPTER 9, TABLE 1) =	53% > 27% OK

JUNCTION BOX TO JUNCTION BOX (2)	
MAX INVERTER OUTPUT CIRCUIT CURRENT =	13.3 A AC
MAX CURRENT X125% =	17 A AC
PER NEC 690.8(B)(1)(W/OUT CORRECTION FACTORS)	
CONDUCTOR SIZE / INSULATION / TYPE =	10 AWG 2C, NM-B W/G, CU.
CONDUCTOR AMP. RATING @60°C =	30 A
# OF CONDUCTORS IN RACEWAY CORRECTION =	NOT APPLIED
AMB. TEMP. AMP. CORRECTION =	NOT APPLIED
ADJUSTED AMPACITY COMPLIANCE (A) =	30 > 17.0 OK
RACEWAY SIZE / TYPE =	FREE AIR

JUNCTION BOX TO COMBINER BOX (3)	
MAX INVERTER OUTPUT CIRCUIT CURRENT =	13.3 A AC
PER NEC 690.8(B)(2)(WITH CORRECTION FACTORS)	
CONDUCTOR SIZE / INSULATION / TYPE =	10 AWG THHN / THWN, CU.
CONDUCTOR AMP. RATING @60°C =	35 A
# OF CONDUCTORS IN RACEWAY CORRECTION =	0.8
AMB. TEMP. AMP. CORRECTION =	0.88
ADJUSTED AMPACITY COMPLIANCE (A) =	24.64 > 13.3 OK
RACEWAY SIZE / TYPE =	3/4 IN. EMT
CROSS-SECTIONAL AREA OF CONDUCTOR(S) / CABLE(S)(IN.^2) =	0.148 IN.^2
CROSS-SECTIONAL AREA OF RACEWAY(IN.^2) =	0.533 IN.^2
% ALLOWABLE RACEWAY FILL (NEC CHAPTER 9, TABLE 1) =	40% > 28% OK

COMBINER BOX TO MAIN PV OCPD (10)	
COMBINED INVERTER CONTINUOUS OUTPUT CURRENT =	37.5 A AC
MAX CURRENT X125% =	47.0 A AC
PER NEC 690.8(B)(1)(W/OUT CORRECTION FACTORS)	
CONDUCTOR SIZE / INSULATION / TYPE =	8 AWG THHN / THWN, CU.
CONDUCTOR AMP. RATING @75°C =	50 A
# OF CONDUCTORS IN RACEWAY CORRECTION =	NOT APPLIED
AMB. TEMP. AMP. CORRECTION =	NOT APPLIED
ADJUSTED AMPACITY COMPLIANCE (A) =	50.0 > 47.0 OK
RACEWAY SIZE / TYPE =	3/4 IN. EMT
CROSS-SECTIONAL AREA OF CONDUCTOR(S) / CABLE(S)(IN.^2) =	0.146 IN.^2
CROSS-SECTIONAL AREA OF RACEWAY(IN.^2) =	0.533 IN.^2
% ALLOWABLE RACEWAY FILL (NEC CHAPTER 9, TABLE 1) =	40% > 27% OK

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NABCEP

CERTIFIED

PV INSTALLATION

PROFESSIONAL



SCOTT A. GURNEY
#PV-011719-015866

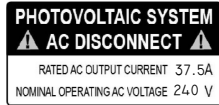
ION DEVELOPER, LLC
4801 N UNIVERSITY AVE #900 PROVO, UT 84604
888.781.7074

DAVID STANLEY CONRAD
C - ELECTRICAL CONTRACTOR
C1524

SITE INFORMATION:
ABRAHAM G RISSA
16235 SOUTHEAST CLINTON STREET
PORTLAND, OREGON 97236
(31) SILFAB SOLAR SIL-380 HC 20211101
(31) ENPHASE IQ7PLUS-72-2-US
111.78KW DC, 8.99KW STC-AC,
10.506KW CEC-AC

DRAWING BY DALLIN QUINTON	
DATE 19-SEP-2022	
PROJECT ID 007G2K	
SHEET NAME ELECTRICAL CALCS.	
SHEET NUMBER E-7	REVISION 0

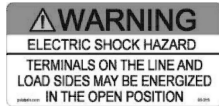
ELECTRICAL FIELD-APPLIED HAZARD MARKINGS



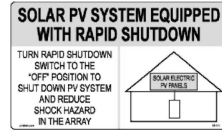
A AT EACH PV SYSTEM DISCONNECTING MEANS.
[NEC 690.54, NEC 690.13(B)]



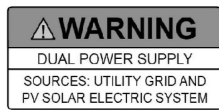
F SIGN LOCATED ON OR NO MORE THAN 3
FT FROM THE RAPID SHUT DOWN
DISCONNECT SWITCH [NEC 690.56(C)].



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



G FOR BUILDINGS WITH PV SYSTEMS. TO
BE LOCATED AT EACH SERVICE
EQUIPMENT LOCATION TO WHICH THE PV
SYSTEM IS CONNECTED. [NEC
690.56(C)]



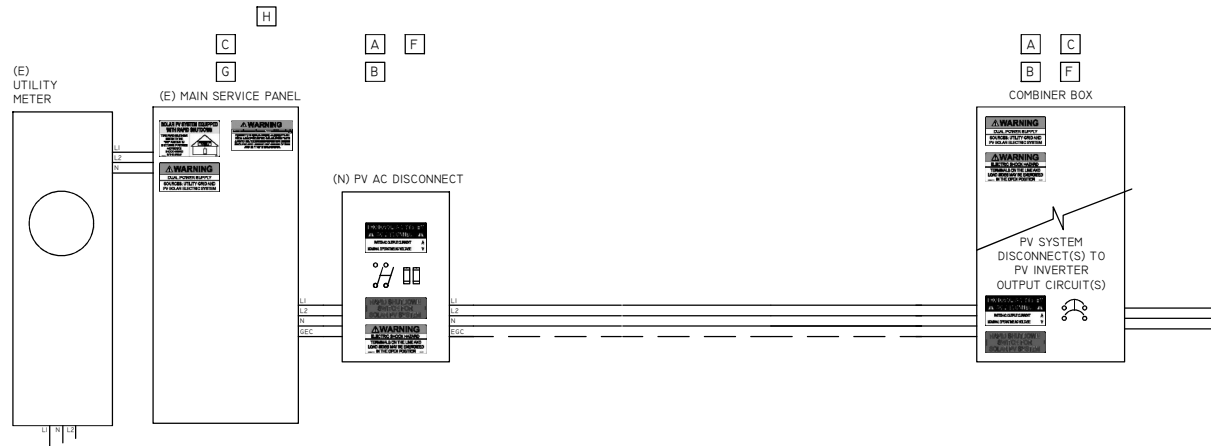
C AT EQUIPMENT CONTAINING OVERCURRENT
DEVICES IN CIRCUITS SUPPLYING POWER TO A
BUSBAR OR CONDUCTOR SUPPLIED FROM
MULTIPLE SOURCES. [NEC 705.12(C)]



H 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. [NEC 690.56(C) &
NEC 705.10].



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



- 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 SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
 4. UNLESS OTHERS SPECIFIED MINIMUM TEXT HEIGHT TO BE $\frac{5}{8}$ " (3MM).

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ELECTRICAL LABELS
SHEET NUMBER
E-9
REVISION
0