



COMMUNITY DEVELOPMENT

333 Broadalbin Street SW, PO Box 490, Albany, Oregon 97321-0144 | BUILDING & PLANNING 541-917-7550

March 22, 2024

Dustin Davidson
44 E 800 N
Orem, UT 84057

Re: City of Albany Historic Review Application (File No. HI-03-24)
Property Address: 414 12th Avenue SW
Linn County Assessor's Map No. 11S-03W-07CB; Tax Lot 00600

Dear Dustin Davidson:

The Community Development Director **APPROVED** the application for Historic Review of Exterior Alterations (HI-03-24) to install solar panels on the south facing roof of the historic home located at 414 12th Avenue SW. The City based its decision on the project's conformance with the review criteria listed in the Albany Development Code (ADC). The following findings are in support of the decision to approve this application. For more information or questions, please contact Alyssa Schrems, project planner.

REVIEW CRITERIA (ADC 7.120)

The Director will approve residential alteration requests if one of the following criteria is met:

- a. There is no change in historic character, appearance, or material composition from the existing structure.*
- b. The proposed alteration materially duplicates the affected exterior building features as determined from an early photograph, original building plans, or other evidence of original building features.*
- c. The proposed alteration is not visible from the street.*

FINDINGS OF FACT

1. The residential structure located at 414 12th Avenue SW is identified as contributing within the Monteith National Register Historic District. The subject property measures about 5,000 square feet and is located on the south side of 12th Avenue SW. The property is within the Hackleman Monteith (HM) zoning district (Attachment A). Per the Albany Historic Resource Survey, the house was constructed circa 1859 in the Colonial style. Identified features include three pedimented gable dormers on the front façade, paneled corner boards with capitals, a pedimented porch and sidelights around the front door (Attachment B).
2. On the southern roof (not visible from 12th Avenue SW, the applicant proposes to install solar panels for power generation. No part of the solar panels or associated hardware will be visible from the street.
3. Application materials include written findings and a site plan showing the proposed location of the solar panels (Attachment C).

CONCLUSION

1. Only one of the review criteria in ADC 7.120(1) must be met for the proposed alterations to be approved.
2. The proposed alteration is not visible from the street.
3. This application satisfies the review criteria for a director-level decision based on compliance with ADC 7.120(1) and is approved with the following conditions.

CONDITIONS

- Condition 1* The proposed work will not deviate from the approved plan.
- Condition 2* All work shall be completed in accordance with the applicable building code requirements. Building permits may be required, please reach out to Building Inspection at 541-917-7550 for further assistance.
- Condition 3* A final historic inspection is required to verify that the work has been done according to this application. Please call the historic planner (541-791-0176) a day or two in advance to schedule.

Sincerely,

Signature on file

Alyssa Schrems, Planner II

541-791-0176

alyssa.schrems@albanyoregon.gov

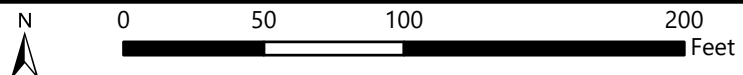
Attachments

- A – Location Map
- B – Albany Historic Resource Survey
- C – Site Plan

c: Johnathan Balkema, Building Official Manager (via email)
George Larson (via mail)
File: HI-03-24



\\con.cityofalbany.net\home\$analysis\Desktop\Notice Map Template.mxd



414 12th Ave SW

OREGON INVENTORY OF HISTORIC PROPERTIES
HISTORIC RESOURCE SURVEY - ALBANY
HISTORIC DISTRICT

Attachment B.1

COUNTY: Linn

HISTORIC NAME: Lamberty House	ORIGINAL USE: Residence
COMMON NAME: None	CURRENT USE: Residence
ADDRESS: 414 12th Ave. SW	CONDITION: Good
ADDITIONAL ADDRESS: NONE	INTEGRITY: Good MOVED? Y 1920
CITY: Albany	DATE OF CONSTRUCTION: 1859/1920
OWNER: Ernest & Karen Young	THEME 19th Century Architecture
CATAGORY: Building	STYLE: Colonial
LOCATION Monteith Historic District	ARCHITECT UNKNOWN
MAP NO: 11S03W07CB TAX LOT: 00600	BUILDER: UNKNOWN
BLOCK: 1 LOT N/A	QUADRANGLE Albany ASSESSMENT: N 1981
ADDITION NAME: Central Addition	ORIGINAL RATING: Secondary
PIN NO: 11S03W07CB00600 ZONING HM	CURRENT RATING: Historic Contributing

PLAN TYPE/SHAPE: Rectangle	NO. OF STORIES: 1.5
FOUNDATION MAT.: Concrete	BASEMENT Y
ROOF FORM/MAT.: Side gable	PORCH: Gable
STRUCTURAL FRAMING: Wood	
PRIMARY WINDOW TYPE: 6/6 double hung	

EXTERIOR SURFACING MATERIALS: Lap siding

DECORATIVE FEATURES:

3 pedimented gable dormers front facade, paneled corner boards with capitals, pedimented porch, sidelights around front door

EXTERIOR ALTERATIONS/ADDITIONS:

Carport E. side, widened gable roof on rear, exterior chimney, shutters, dormer, addition in rear

NOTEWORTHY LANDSCAPE FEATURES:

None

ADDITIONAL INFO:

Moved to this site c.1920 & remodeled to look Colonial at that time

INTERIOR FEATURES:

None

LOCAL INVENTORY NO.: M.219

SHPO INVENTORY NO.: None

CASE FILE NUMBER: None

**OREGON INVENTORY OF HISTORIC PROPERTIES
HISTORIC RESOURCE SURVEY -ALBANY
MONTEITH HISTORIC DISTRICT -PAGE TWO**

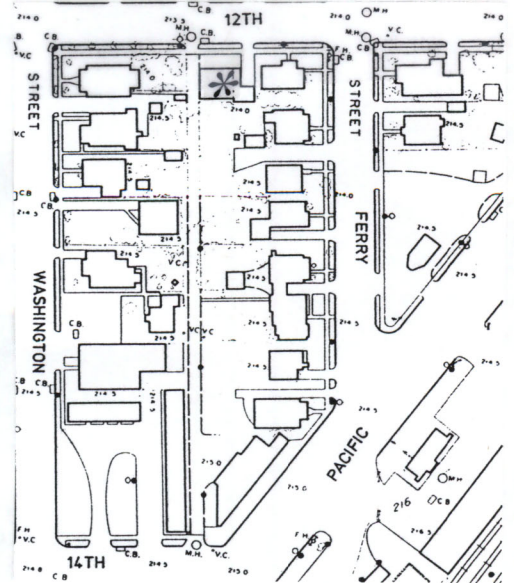
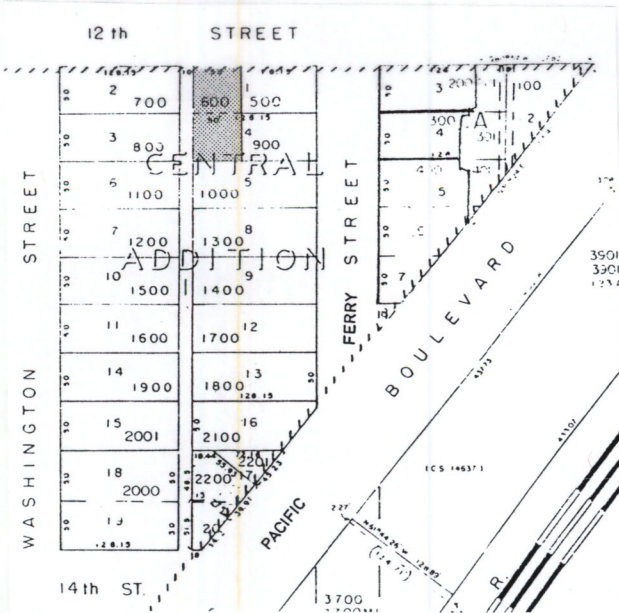
NAME: Ernest & Karen Young
ADDRESS: 414 Twelfth Ave. S.W.
QUADRANGLE: Albany

T/R/S: T11-R3W-S07
MAP NO.: 11-3W-7CB
TAX LOT: 600



NEGATIVE NO.: O-13

SLIDE NO.: MS.219



GRAPHIC & PHOTO SOURCES: Albany Community Development Planning Division & Tanya Neel.

Linn County Tax Data File

Tax lot #..... 11S03W07CB00600
Tax acct #..... 0094520
Site address.. 414 12TH AVE SW

In-City? Y

Owner..... YOUNG, A ERNEST
Address-1..... YOUNG, KAREN L
Address-2..... 414 12TH AVE SW
Address-3..... ALBANY, OR 97321-2515
Address-4.....
Address-5.....

Property class... 0041 Tax Code #1...0801
Stat class..... 540 Tax Code #2...0000

Land market value... 8,500
Imp. market value... 53,150

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

FOR NPS USE ONLY	Attachment B.4
RECEIVED	
DATE ENTERED	

**NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY -- NOMINATION FORM**

CONTINUATION SHEET

ITEM NUMBER 7

PAGE Block #59, Block #60 Page 161

362. 414 Twelfth Avenue SW
Significance: Secondary
Use: Residence
Date: c. 1900

Present Owner: Jeffrey Grant
414 Twelfth Avenue SW
Tax Lot: 11-3W-7CB-600

Description:

Two story wood frame residence with three wall dormers on front elevation, gable roof, two end chimneys (one exterior, one interior), chimney on side elevation appears to be original. Paneled corner pilaster, with simple capitals. Boxed cornices, rake board, gable end wall dormer with boxed cornices and six over six light double-hung sash windows. Classically molded window heads on first floor front elevation, windows with six light over six with double hung sash; pedimented porch on front elevation with square corner posts and simple capitals. Transom and side lights surround six light door; lap siding.

Remarks: Style is Rural Vernacular and condition is good.

363. 1204 Ferry SW
Significance: Compatible
Use: Residence

Present Owner: Steve Byrd
1204 Ferry SW
Tax Lot: 11-3W-7CB-500

Description:

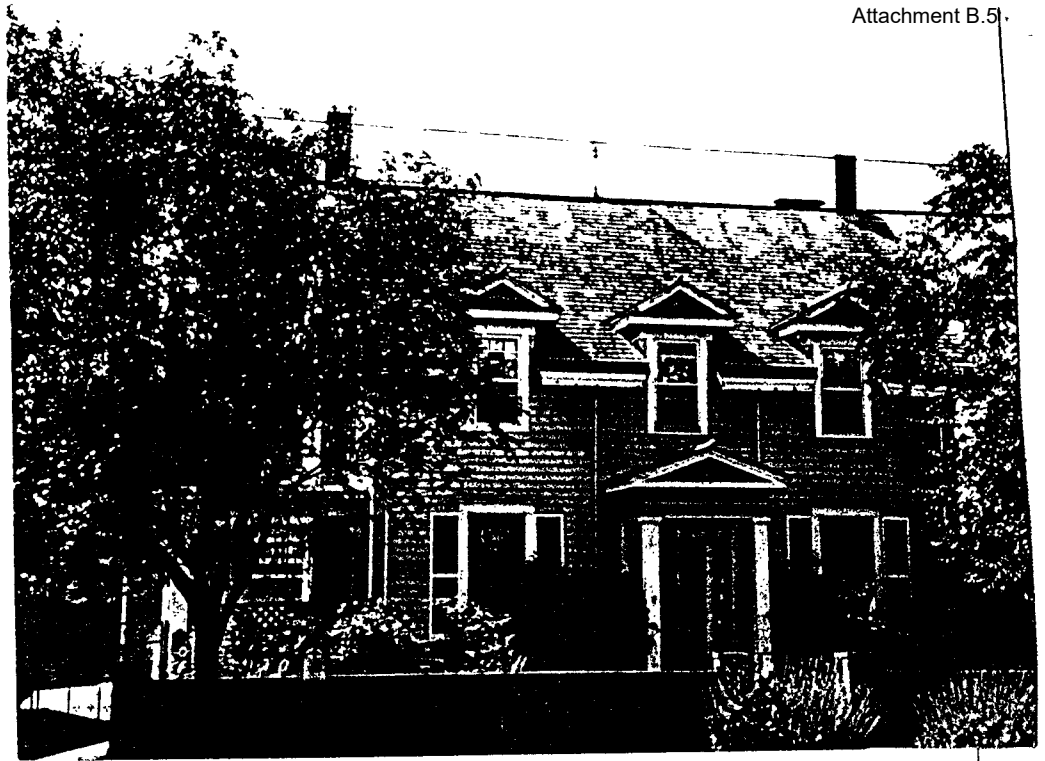
Two story structure with daylight basement; wood frame with gable roof and brackets; shingle siding on upper level and thin lap siding on lower level; recessed porch with gable trim over entrance.

364. 1212 Ferry SW
Significance: Compatible
Use: Residence

Present Owner: Jeffrey C. Grant
414 Twelfth SW
Tax Lot: 11-3W-7CB-900

Description:

Two story residence with gable roof; three-window dormer facing the street and interior chimney; porch runs entire length of front elevation; two big windows on front elevation with fourteen over one lights.



414 12th Lamberty
Federal Style c 1859
Moved from 4th + Washington Meyer

DETERMINATION OF ELIGIBILITY FOR SPECIAL ASSESSMENT OF HISTORIC PROPERTY

DATE 1-30-81

Linn County Tax Assessor ✓
Linn County Courthouse
Albany, OR 97321

In accordance with Oregon Laws 1975, Chapter 514 (Special Assessment of Historic Property), the following action is taken on the application of:

Jeffrey C. Grant
414 SW 12th Ave.
Albany, OR 97321
967-7761

for the property identified as:

County Linn County

Code and Account Numbers 94520 8-1

Historic Nature Secondary Structure #362 Monteith Historic District

Location _____

Property is certified for special assessment in its condition this date for the reason(s) noted below. Alterations, improvements and repairs to the property will be made in accordance with the Administrative Rules for Oregon Laws 1975, Chapter 514.

Certification for special assessment is denied.

Comment: Property is a Secondary structure within the Monteith Historic District entered in the National Register of Historic Places on February 29, 1980. Special assessment for this property shall begin with assessments as of January 1, 1981.

Applicant

David G. Talbot
David G. Talbot
State Historic Preservation Officer

Attached is a copy of the administrative rules for ORS 358.475-358.545. If there are any questions regarding this determination, contact John M. Tess, Program Manager, State Historic Preservation Office 373-3353.

LAMBERTY
Lomberty House c. 1859/1920

414 12th
Attachment B.7

This house was moved to this site from about
4th and Washington in 1911 about the 1920s.

Note: 3 pedimented dormers
6 over 6 double hung windows
weatherboard siding

414 12th
w. face R
0-14



414 12th
E. face L
0-12



ALBANY HISTORIC INTERIOR TOUR
 JULY 27, 1985

Attachment B.10

OFFICIAL TICKET



- | | |
|--|--|
| 1. Monteith House, 1849
518 S.W. Second Avenue | 7. Victorian Theme Garden
8th and Ellsworth |
| 2. Albany Regional Museum, 1914
302 S.W. Ferry St. | 8. William and Clara Hand House, 1886
319 S.E. Seventh Avenue |
| 3. United Presbyterian Church, 1913
330 S.W. Fifth Avenue | 9. John and Marcia Lamberty House, 1860
414 S.W. Twelfth Avenue |
| 4. Albany Engine Company No. 1
120 S.E. 34th Avenue | 10. William and Minnie Jackson House, 1884
906 S.W. Sixth Avenue |
| 5. St. Mary's Catholic Church, 1898
822 Ellsworth | 11. John and Adriana Conner House, 1859/1900
914 S.W. Fifth Avenue |
| 6. St. Mary's Hall
Next to St. Mary's Church | 12. Rufus and Addie Thompson House, 1863/1889
839 S.W. Fifth Avenue |

Tour Committee Members: Susanne Bagley, 1985 Chairperson, Lynda Cook, Jeannie Fauth, Mollie Frey, Sally Gaines, Nancy Gillam, Marilyn Hill, Nancy King, Roz Clark Keeney, Jody Kruse, Carol Morgan, Pam Sibernagel, Helen Snyder, Pam Strawn, Karen Vetter, Alison Warmann, Jan Marie Mader.

Artist
Ginny Biebrich

Photographer
David King



Albany, Oregon is located at the confluence of the Calapooia and Willamette Rivers and was originally the home of the Calapooia Indians. The city was established in 1848, when Walter and Thomas Monteith bought the squatters rights to a claim previously held by Abner Hackleman and Hiram Smead. The Monteith brothers named the town for their eastern home, Albany, New York.

There are approximately 350 historic buildings concentrated in the areas homesteaded by the Monteiths and Hacklemans. The Monteith Historic District, listed on the National Register of Historic Places, lies west of Lyon Street. The Hackleman District, also listed on the National Register, lies to the east.

For those who love the charm and character of an age gone by, Albany offers an excellent opportunity to view many of the styles of the Victorian Era.

Schedule of Events

Homes, Churches, Museums Open 11:00 a.m. - 5:00 p.m.
 Early American Antique Show and Sale 9:00 a.m. - 6:00 p.m.
 Cafe Luncheon 11:00 a.m. - 4:00 p.m.

1. **Monteith House, 518 S.W. Second (1849, Classic Revival Style)**

The oldest frame house in Albany, built by its founders, Walter and Thomas Monteith. It served as a home, a church and a store and was Albany's "Community Center" in its early years. Placed on the National Register of Historic Places in 1975, it is one of the most authentic restorations of a pioneer building in the state of Oregon.

2. **Albany Regional Museum, 302 S.W. Ferry St. (1914, American Renaissance Style)**

Located in the basement of the Albany Downtown Library, the Albany Regional Museum is dedicated to preserving Albany's history by presenting exhibits, workshops and events. This summer's exhibit features Historic Architecture, one of Albany's major historic resources. Photographs and architectural elements of the various architectural styles will be on display to increase understanding and awareness of historic architecture. The museum will also have a special open house in conjunction with today's tour to provide information and advise about restoration and preservation of historic buildings. If you have questions about a historic building be sure to come to the museum.

3. **United Presbyterian Church, 330 S.W. Fifth Avenue (1913, Gothic Revival Style)**

The design of the church is roughly based on an English Gothic Cathedral and features a large circular room flanked by two square towers. The stone was quarried in Idaho and laid by Italian stone masons. The stained glass was imported from England and France and the figures were hand-painted and fired like fine china.

4. **Albany Engine Company No. 1, 120 S.E. 34th Avenue**

This museum of fire-fighting memorabilia is a project of the Albany Muster Team. The building is a replica of an old fire station and contains vintage fire engines, historic photos, alarm boxes, fire hats, and much more. The museum may be reached by traveling north on Pacific Blvd. (99 E) until you reach the 34th street intersection traffic light. Turn left and the museum is up the street on the right.

5. **St. Mary's Catholic Church, 822 Ellsworth (1898, Gothic Revival Style)**

This beautiful building started as an abandoned one-room schoolhouse that was moved to this site in 1875. The building was enlarged over the years and major remodeling was under taken in the 1890's under the direction of Rev. Louis Metayer, the first priest. The result is a reproduction in wood of an abbey in France. The interior fir wood work featuring moldings with a pressed poppy, thistle, and leaf pattern was manufactured at the Albany Planning Mill.

6. **St. Mary's Hall, 822 Ellsworth (Next to St. Mary's Church)**

Early American Antique Show and Sale, 9:00 a.m. to 6:00 p.m. Saturday and Sunday \$1.00 donation. Cafe Luncheon featuring sandwiches, pie and refreshments, 11:00 a.m. to 4:00 p.m. Saturday, 11:00 a.m. to 3:00 p.m. on Sunday.

7. **Victorian Theme Garden and Information Center, 8th and Ellsworth (across from St. Mary's Church)**

The Victorian Theme Garden is the result of the 1984-85 beautification/preservation project of the Historic Interior Tour Committee. The garden is filled with plant varieties available in the 19th century with a special emphasis on historic roses. This is its first year and it will take a few years for it to mature but, already it is a pleasurable spot to stop and rest and enjoy the beauty and fragrance of a time gone by. A rose known to exist in the gardens of Pompei as well as an example of each type of rose that led to the development of the first hybrid tea in 1867 has been planted. Other plants include an English lavender hedge, fragrant lilies, iris, carnations, heliotrope, phlox, mock orange, lilac and edgings of scented herbs, plus hundreds of annuals.



12. **Rufus and Addie Thompson House
 839 S.W. Fifth Avenue
 c. 1863/1887, Oregon Farmhouse
 Owners: Karen and Ed Vetter**

According to the Abstract of Title, the Thompson House started evolving in about 1863 when John Barry improved the property raising its value from \$150.00 to \$950.00. Between 1865 and 1871 it was sold three times and then purchased by Judge S. A. Johns. The Johns' again improved the property raising its value from \$1,000 to \$2,000 by 1876 when they sold it to Leon and Celia Lewis. While the Lewis' owned the property it dropped in value to \$800.00. In 1887 Rufus and Addie Thompson bought the house. The Thompsons probably made the improvements to the house that gave it the appearance it has today. This evolution of the house was and still is a common occurrence with owner-built houses which are added on to or improved by each new owner.

By 1975 the house was said to be "ready for the wrecker's ball," but thanks to the Pope and Vetter families it has been brought back to life and is again one of Albany's architectural treasures.



11. **John and Adriana Conner House**
 914 S.W. Fifth Avenue
 c. 1859/1900, Colonial Revival Style
 Owners: Alison and Mark Warmann

John Conner opened Albany's 1st bank and ran it for about 35 years. He helped to establish Albany College in 1866 (which later moved to Portland and became Lewis and Clark College) and was one of its largest financial contributors. Two of his daughters, Jane and Kate were in the second graduation class of 1874.

The Conners moved in 1887 and sold the house to Anson H. Marshall, owner of a livery stable. The Marshalls extensively remodeled the house in 1900, giving it its Colonial Revival styling.

The original house had a two-story wing, where the garage is now and looked more like the Thompson house (No. 12 on the tour) across the street. It was raised to provide a basement and the east half of the house was added. The large classical ballustrated portico with modified Doric columns was also added at this time. While you are touring the house be sure to admire the marble fireplaces made from Albany Marble.

Lemonade and ice water will be served in the back yard between 12:00 and 4:00 p.m.



8. **William and Clara Hand House**
 319 S.E. Seventh Avenue
 c. 1886, French Second Empire Style
 Owners: Frank and Susan Leskody

William R. Hand, Jr. was one of Albany's architect/builders during the Victorian era. He may have designed and built this house and probably planned its "Colonial" porch face lift when it was moved to this location in about 1910. Besides helping to create many of the historic buildings for which Albany is now famous, he also served as a city council member, fire chief and building superintendent.

The Second Empire Style was popularized by Napoleon III when he rebuilt the City of Paris in the 1850's. Its hallmark is a mansard roof with cut shingles and projecting dormer windows. Albany with only six examples has the largest collection in the state. The interior of the house has been altered throughout the years but still retains its original elegance. The curved stairway in the entry is one of the most spectacular stairways in Albany.



9. **John and Marcia Lamberty House**
 414 S.W. Twelfth Avenue
 c. 1860, Federal Style
 Owners: Karen and Ernie Young

This 125 year old house has lived two lives. One as a vernacular pioneer house at about Fifth and Washington (during its first 65 years) and then as a impressive Federal Style house at its current location.

Its original owners are not known, but its second family was the Lambertys. John Lamberty owned and operated Albany's first supermarket called the Grocerveteria (located in what is now Lovelace Flowers on 2nd Avenue) during the 1920's and 30's. The house has several interesting pre-victorian architectural features worth noting including: the six over six double hung windows (like those found in the 1849 Monteith House), a transom and side light surrounding the entry door, hand hewn interior beams and a beautiful newell post and stair railing.

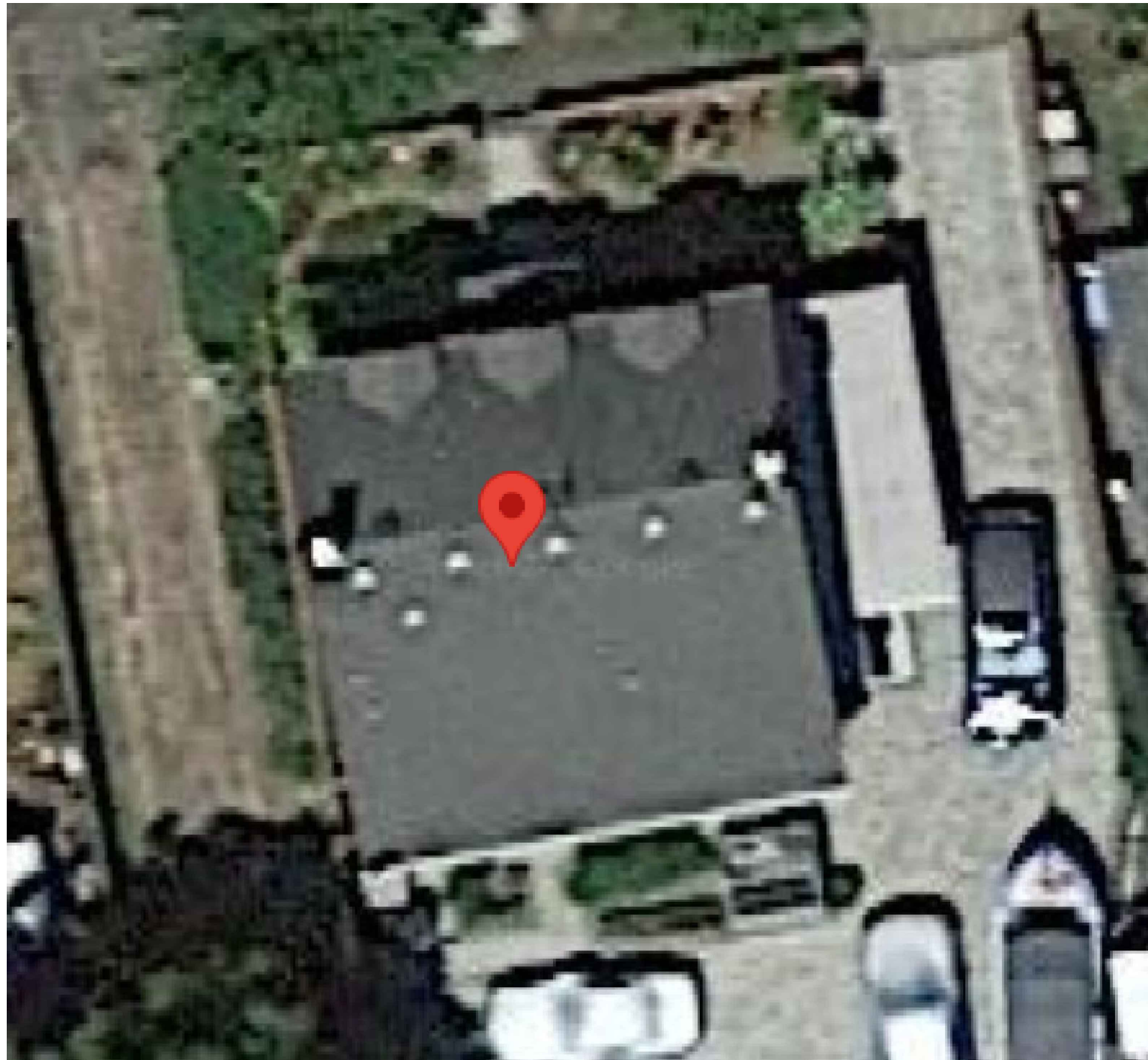


10. **William and Minnie Jackson House**
 906 S.W. Sixth Avenue
 c. 1884, Italianate Style
 Owners: Lynda and George Cook

This Italianate Style house has had only two owners in its 101 year life. Built as a wedding present for Minnie and William Jackson by Mrs. Peery (Minnie's mother) it is now the family home of Lynda, George, Darrickson, Shonda and Justin Cook. Mr. Jackson taught school in Brownsville for several years then was elected County Superintendent of Schools from about 1900 to 1918. In 1919 he and his partner, R.R. Cronise bought the Albany Democrat (which merged with the Herald to form the Albany Democrat Herald in 1925) and published the paper until his death in 1949. Minnie and William raised two children, Glenn and Olga, in this house. In 1973 Mrs. Jackson died at the age of 100.

The Cooks, who have lived here since 1974, have done much to make the house show off its original splendor both inside and out by stripping paint, replastering walls and ceilings and adding a kitchen bay window. You are welcome to walk around the garden and enjoy the many old fashioned fragrant flowers and shrubs including a 75 year old fragrant azalea tree and a 45 year old pink dogwood.

AERIAL SITE VIEW



SCOPE OF WORK

INSTALLATION OF UTILITY INTERACTIVE PHOTOVOLTAIC SOLAR SYSTEM

5.88 kW DC & 4.06 kW AC PHOTOVOLTAIC SOLAR ARRAY

PV MODULES: (14) SILFAB SOLAR SIL-420 HC+

INVERTER(S): (14) ENPHASE IQ8PLUS-72-2-US

ROOF TYPE: COMPOSITION SHINGLE - 1 LAYER(S)

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

- I. 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

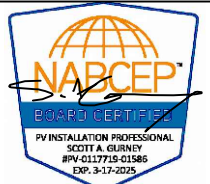
TEMPERATURE SOURCE: ASHRAE
 WEATHER STATION: CORVALLIS MUNI
 EXTREME MIN. TEMPERATURE: -8
 ASHRAE 0.4% HIGH TEMP: 38

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: B
 WIND SPEED (3-SEC GUST): 96 MPH
 GROUND SNOW LOAD: 36 PSF
 DESIGN ROOF SNOW LOAD: 25 PSF
 SEISMIC DESIGN CATEGORY: D
 SEISMIC RISK FACTOR: II

Attachment C.1



ION DEVELOPER LLC
 DAVID STANLEY CONRAD
 C - ELECTRICAL CONTRACTOR
 CI524



ION SOLAR
 44 E 800 N
 OREM, UTAH 84057
 888.781.7074

PROJECT ID	00BXJ9
SITE OWNER	GEORGE LARSON
SITE ADDRESS	414 12TH AVENUE SOUTHWEST ALBANY, OREGON 97321
EQUIP.	(14) SILFAB SOLAR SIL-420 HC+ (14) ENPHASE IQ8PLUS-72-2-US
SYSTEM SIZE	5.88KW DC 4.06KW STC-AC, 5.247KW CEC-AC
PROJECT DESIGNER	KYLE LARSON
DATE	09-FEB-2024
SHEET NAME	COVER SHEET
SHEET #	REV
G-1	0

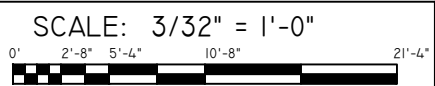
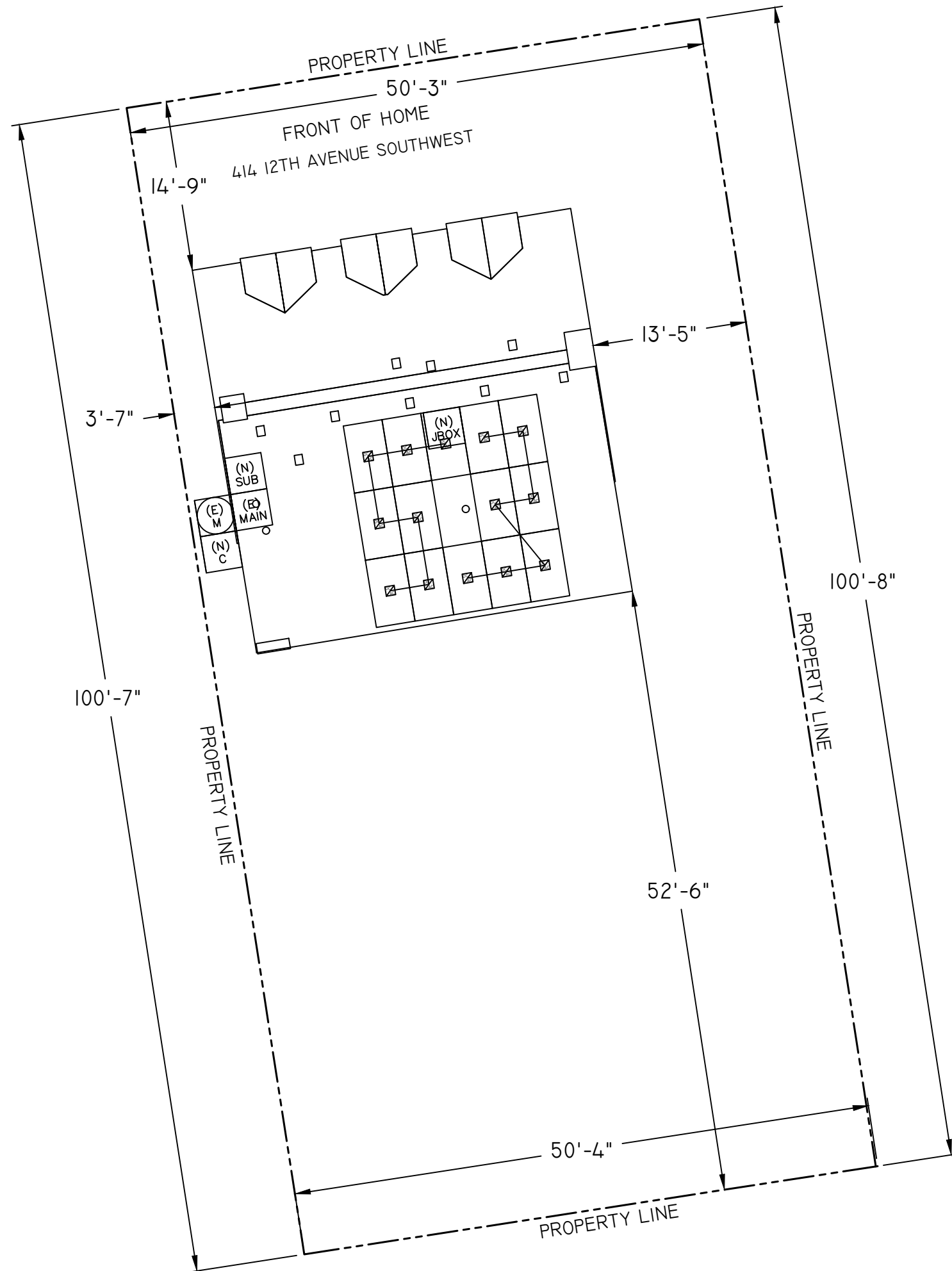


ION DEVELOPER LLC
 DAVID STANLEY CONRAD
 C - ELECTRICAL CONTRACTOR
 CI524



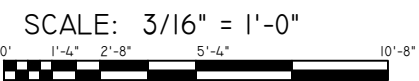
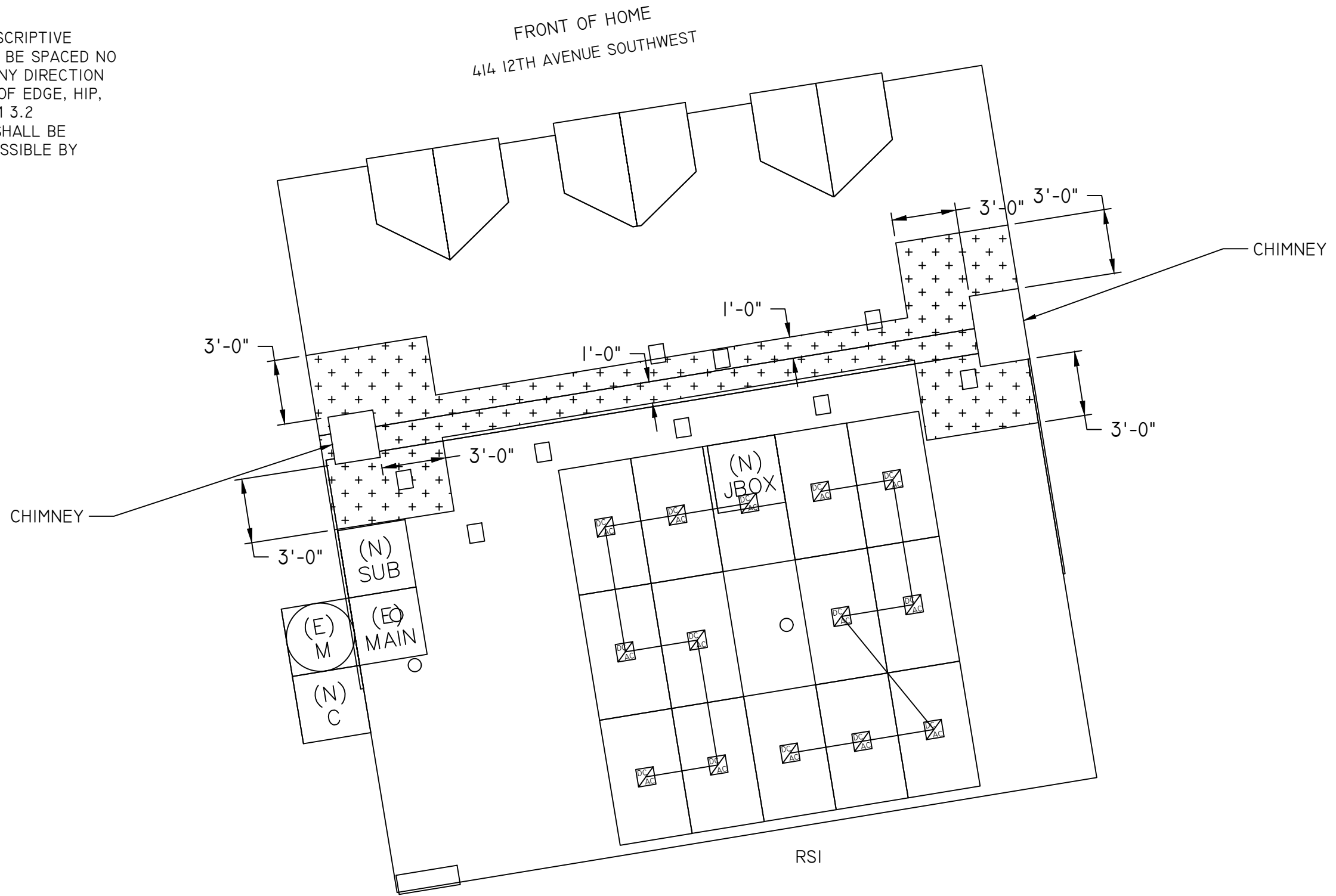
ION SOLAR
 44 E 800 N
 OREM, UTAH 84057
 888.781.7074

PROJECT ID	00BXJ9
SITE OWNER	GEORGE LARSON
SITE ADDRESS	414 12TH AVENUE SOUTHWEST ALBANY, OREGON 97321
EQUIP.	(14) SILFAB SOLAR SIL-420 HC+ (14) ENPHASE IQ8PLUS-72-2-US
SYSTEM SIZE	5.88KW DC 4.06KW STC-AC, 5.247KW CEC-AC
PROJECT DESIGNER	KYLE LARSON
DATE	09-FEB-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



SYSTEM LEGEND

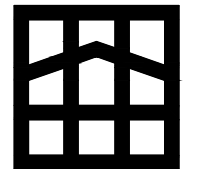
- | | | | | | |
|--|--|--|--|--|---------------------------|
| | (E) UTILITY METER / MAIN SERVICE PANEL | | (N) PV COMBINER PANEL | | SUNEYE LOCATION |
| | (E) MAIN SERVICE PANEL | | (N) PV LOAD CENTER | | FIRE SETBACK |
| | (E) SUBPANEL | | (N) PV PRODUCTION METER | | (N) PV MODULE |
| | | | (N) DC-DC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

ROOF SECTION CRITERIA AND SPECIFICATIONS

ROOF SECTION	PV MODULE QTY	AZIMUTH	PITCH	TSRF
RSI	14	171	20	96%



ION DEVELOPER LLC
DAVID STANLEY CONRAD
C - ELECTRICAL CONTRACTOR
CI524



ION SOLAR
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888.781.7074

PROJECT ID
00BXJ9

SITE OWNER
GEORGE LARSON

SITE ADDRESS 414 12TH AVENUE SOUTHWEST
ALBANY, OREGON 97321

EQUIP. (14) SILFAB SOLAR SIL-420 HC+
(14) ENPHASE IQ8PLUS-72-2-US

SYSTEM SIZE 5.88KW DC
4.06KW STC-AC, 5.247KW CEC-AC

PROJECT DESIGNER
KYLE LARSON

DATE
09-FEB-2024

SHEET NAME
ROOF PLAN

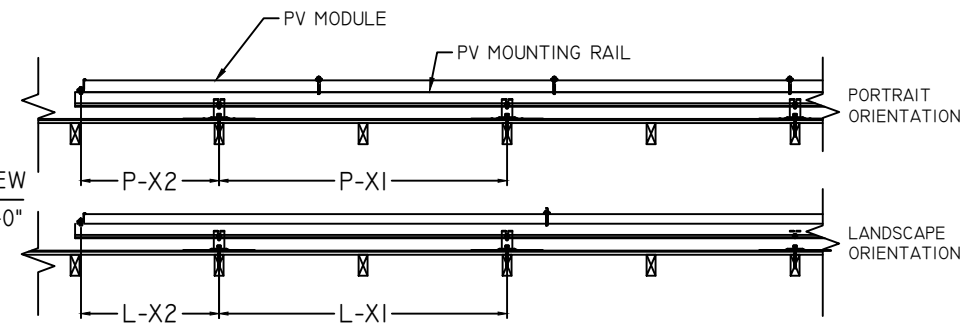
SHEET # S-3
REV 0

STRUCTURAL INSTALLATION SCHEDULE AND CRITERIA

ROOF MEMBRANE		SPAN AREA	TAG	SPAN	
ROOF TYPE:	COMPOSITION SHINGLE	RAIL - PORTRAIT - MODULE ORIENTATION			
ROOF SHEATHING TYPE:	LUMBER AND PLYWOOD	X- SPACING	P-X1	48 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.	
ARRAY PARAMETERS		RAIL - LANDSCAPE - MODULE ORIENTATION			
TOTAL ROOF AREA (SQ. FT.)	1258	X- SPACING	L-X1	48 IN. O.C. MAX.	
TOTAL PV MODULE AREA (SQ. FT.)	298.2	X-CANTILEVER	L-X2	15 IN. MAX.	
% PV MODULE ROOF COVERAGE	23.70%	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 RACKING					
RACKING:	ECOFASTEN CLICKFIT STANDARD				
RACKING TYPE:	RAIL				
STANDOFF:	ECOFASTEN CF UNIV L-FOOT				
STANDOFF TYPE:	MILL 3"				
FASTENER:	L-FOOT & FLASHING				
	5/16" X 3-1/2" ZINC PLATED				
	STEEL LAG SCREW				
STRUCTURAL FRAMING					
ROOF SECTION	STRUCTURE TYPE	RAFTER / TC SIZE (IN)	RAFTER / TC SPACING (IN)	STRUCTURAL UPGRADE	UPGRADE SIZE & LENGTH (FT)
RS1	CONVENTIONAL FRAMING	2x4	16	NONE - SINGLE PLY (1X)	NONE

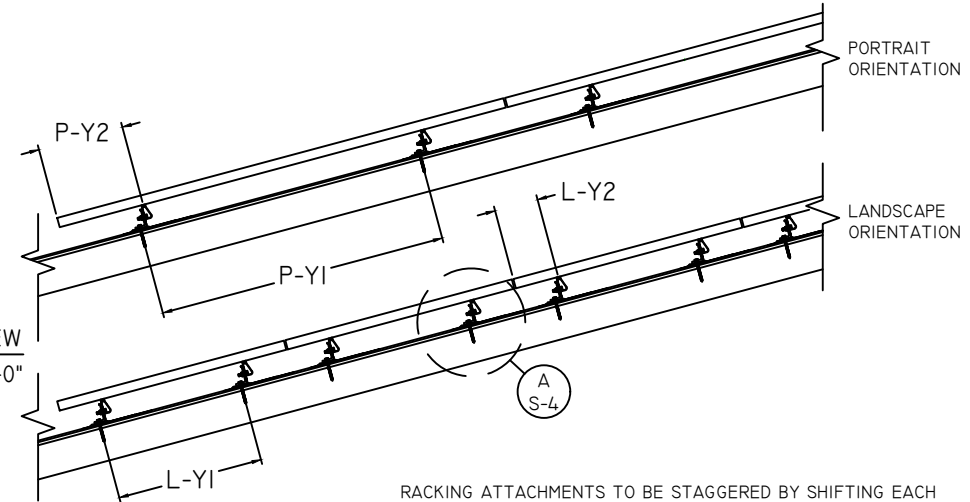
PV ARRAY DETAIL, FRONT VIEW

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



PV ARRAY DETAIL, SIDE VIEW

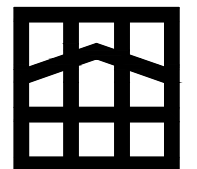
SCALE: 3/8" = 1'-0"



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



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(14) ENPHASE IQ8PLUS-72-2-US

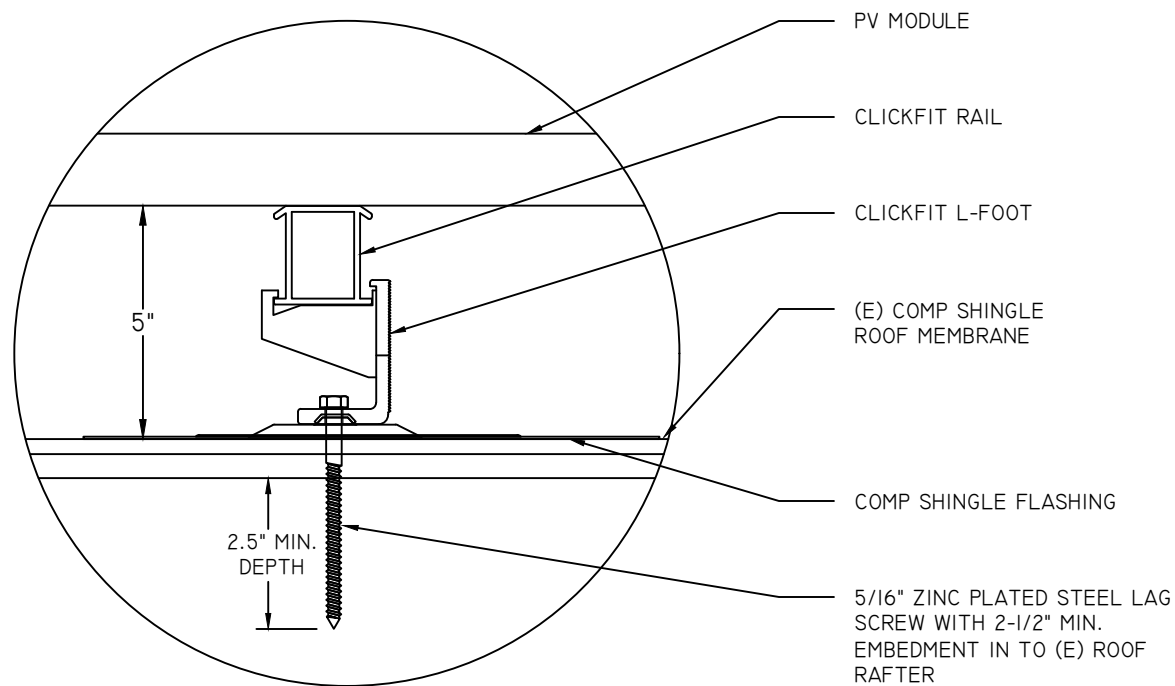
SYSTEM SIZE 5.88KW DC
4.06KW STC-AC, 5.247KW CEC-AC

PROJECT DESIGNER
KYLE LARSON

DATE
09-FEB-2024

SHEET NAME
STRUCTURAL DETAILS

SHEET # REV
S-4 0



A COMP SHINGLE - CLICKFIT LFOOT / FLASHING - STANDOFF DETAIL
SCALE: 3" = 1'-0"

PV SYSTEM STRUCTURAL SPECIFICATIONS AND CALCULATIONS

DESIGN LOCATION AND SITE SPECIFICATIONS

JURISDICTION	CITY OF ALBANY
STATE	OREGON
ADOPTED LOAD STANDARD	ASCE 7-16
OCCUPANCY / RISK CATEGORY	II
BASIC WIND SPEED (MPH (3-SEC GUST))	96
WIND EXPOSURE CATEGORY	B
GROUND SNOW LOAD (PSF) (Pg)	36
BASE ELEVATION (FT)	214

PV SYSTEM STRUCTURAL SPECIFICATIONS

STRUCTURE TYPE - ROOF SHAPE	INHABITED - GABLE / FLAT ROOF
MIN. ROOF SLOPE (DEG.)	20
MEAN ROOF HEIGHT (FT.)	20
PORTRAIT ATT. SPACING (IN. O.C.)	48
LANDSCAPE ATT. SPACING (IN. O.C.)	48
# OF ATTACHMENT POINTS	32
MAX. POINT LOAD (LBS / ATT.)	37.7
MAX. TOTAL PV DEAD LOAD TO RAFTER (LBS)	37.7

PV SYSTEM EQUIPMENT SPECIFICATIONS

MODULE MANUFACTURER / TYPE	SILFAB SOLAR SIL-420 HC+
SOLAR MODULE WEIGHT (LBS)	4.7
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 CF UNIV L-FOOT MILL 3"
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)	2.21
TOTAL PV ARRAY DEAD LOAD (PSF)	3.01

GRAVITY LOAD / FRAMING CALCULATIONS

DEAD LOAD (PSF)	RSI
ROOF MEMBRANE	COMPOSITION SHINGLE 4.0
SHEATHING	LUMBER AND PLYWOOD 4
PITCH (DEG)	20
FRAMING	CONVENTIONAL FRAMING - NONE - SINGLE PLY (IX) - RAFTER 2x4 @ 16 IN. O.C. - DF #2 @ 7.9 FT. MAX SPAN 1.4
TOTAL ROOF DEAD LOAD (PSF)	9.4
ADJUSTED TO SLOPED ROOF (PSF)	10.0
PV ARRAY ADJ. TO ROOF SLOPE (PSF)	3.2
ROOF LIVE LOAD < ROOF SNOW LOAD (PSF)	25.0
TOTAL LOAD (PSF)	38.1

RAFTER / TOP CHORD MEMBER PROPERTIES	DF #2 - 2x4 - NONE - SINGLE PLY (IX)
SECTION MODULUS (S)(IN ³)	2.86
MOMENT OF INERTIA (I)(IN ⁴)	5.00
TOTAL LOAD ON MEMBER (W) (PLF)	50.9
MAX. MEMBER SPAN (L) (FT)	7.9
MODULUS OF ELASTICITY (E) (PSI)	1600000
SHEAR (Fv) (PSI)	180
AREA (A) (IN ²)	4.9

MAX BENDING STRESS CHECK	(Fb)(Cd)(Cf)(Cr)
BENDING (Fb) (PSI)	900
LOAD DURATION FACTOR (Cd)	1.15
SIZE FACTOR (Cf)	1.40
REPETITIVE MEMBER FACTOR (Cr)	1.15
ALLOWABLE BENDING STRESS (PSI)	1666.4
ACTUAL BENDING STRESS (PSI) = (WL ²)/(8(S))	1665.4
	100% OK

MAX DEFLECTION CHECK - TOTAL LOAD	UNIFORM DISTRIBUTED
ALLOWABLE DEFLECTION	L / 180
ACTUAL MAX DEFLECTION	0.527 IN.
	(W(L) ⁴ / 185(E)(I))
	0.231 IN.
	44% OK

MAX DEFLECTION CHECK - LIVE LOAD	L / 240
ALLOWABLE DEFLECTION	0.395 IN.
ACTUAL MAX DEFLECTION	0.201 IN.
	51% OK

MAX SHEAR CHECK	Fv (A)
ALLOWABLE SHEAR	882 LBS.
	(W(L))/2
ACTUAL MAX SHEAR	201 LBS.
	23% OK

DESIGNED ROOF SNOW LOAD CALCULATIONS

SLOPED ROOF SNOW LOAD (PSF)	= Ps = (Cs)(0.7)(Ce)(Ct)(Is)(Pg)	ASCE 7-16 (C8C)	EQN. 7.4-1
EXPOSURE FACTOR (Ce)	=	TABLE 7.3-1	
THERMAL FACTOR (Ct)	=	TABLE 7.3-2	
IMPORTANCE FACTOR (Is)	=	TABLE 1.5-2	
SLOPE FACTOR (Cs)	=	FIG. 7.4-1	
Ps (PSF)	= 25	OK	

DESIGN WIND PRESSURE CALCULATIONS

DESIGN WIND PRESSURE (PSF) = P	= qh(GCp)(ye)(ya)	ASCE 7-16 (C8C)	EQN. 26.10-1
VELOCITY PRESSURE (PSF) = qh	= 0.00256(Kh)(Kzt)(Kd)(Ke)(V ²)	TABLE 26.13-1	
TERRAIN EXPO. CONSTANT (A)	= 7	TABLE 26.11-1	
TERRAIN EXPO. CONSTANT (Zg)(FT)	= 1200	TABLE 26.11-1	
VP EXPOSURE COEFF.(Kh)	= 0.70	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 (ye)	= 1	EQN. 29.4-7	
qh (PSF)	= 14.04	FIG. 29.4-8	
		EQN. 26.10-1	

RAIL - COMPRESSION / UPLIFT

ECOFASTEN CLICKFIT STANDARD	CONTINUOUS SPAN BM = (WL ²)/(8(S))
MAXIMUM HORIZONTAL RAIL SPAN (FT.) =	4.0
MAXIMUM VERTICAL SPACING BETWEEN RAILS (FT.) =	3.8
	COMPRESSION UPLIFT
TOTAL LOAD (PSF) =	26.8 12.2
TOTAL LOAD ADJ. TO ROOF SLOPE (W)(LB. / FT.) =	18.6 46.2
ALLOWABLE MANU. BENDING MOMENT (LB. / FT.) =	422 517
ACTUAL MAX. BENDING STRESS (LB / FT.) =	37.2 92.4
	OK OK

CONNECTIONS - UPLIFT / DOWNWARD

GABLE ROOF 7° < θ ≤ 20°	FIGURE 30.3-2B			
	UPLIFT	DOWNWARD	ALL ZONES	
	ZONE 1	ZONE 2R	ZONE 2E	48 IN. O.C.
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)	-2.0	-3.0	-3.6	0.7
ASD PRESSURE (0.6P)(PSF)	-13.48	-20.21	-24.26	13.10
TRIBUTARY AREA (SQ. FT)	12.6	12.6	9.4	
MAX. UPLIFT (0.6D+0.6P) (LBS)	-146.5	-231.1	-211.3	
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)	-2.0	-3.0	-3.6	0.7
ASD PRESSURE (0.6P)(PSF)	-13.48	-20.21	-24.26	13.10
TRIBUTARY AREA (SQ. FT)	6.80	6.80	5.10	
MAX. UPLIFT (0.6D+0.6P) (LBS)	-79.4	-125.2	-114.5	

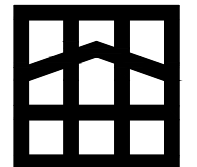
ROOF ATTACHMENT / FASTENER CHECK

ECOFASTEN CF UNIV L-FOOT MILL 3" - 5/16" X 3-1/2" ZINC PLATED STEEL LAG SCREW	NDS 12.2
LAG SCREW WITHDRAWAL DESIGN VALUE (LBS) = W = 1800(G ^{3/2})(D ^{3/4})	12.2.1
ROOF ATTACHMENT FASTENER (D) (IN.) =	5/16 TABLE 2.3.2
FASTENER QTY PER ATTACHMENT =	1 TABLE 12.3.3A
FASTENER EMBEDMENT DEPTH (IN.) =	2.5
LUMBER SPECIFIC GRAVITY (G)	0.5
LOAD DURATION FACTOR (Cd)	1.6
PRYING COEFFICIENT =	1.4
WITHDRAWAL DESIGN VALUE(W)(LBS / IN.) =	266.0
LAG SCREW WITHDRAWAL CAPACITY (LBS) =	760.0
MANUFACTURER MAX. UPLIFT CAPACITY (LBS) =	895.0
MAX. ATT. WITHDRAWAL CAPACITY (LBS) =	760.0
MAX. ATT. WITHDRAWAL STRESS (LBS) =	231.1 OK

Attachment C.5



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PROJECT ID
00BXJ9

SITE OWNER
GEORGE LARSON

SITE ADDRESS
414 12TH AVENUE SOUTHWEST
ALBANY, OREGON 97321

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

SYSTEM SIZE
5.88KW DC
4.06KW STC-AC, 5.247KW CEC-AC

PROJECT DESIGNER
KYLE LARSON

DATE
09-FEB-2024

SHEET NAME
STRUCTURAL CALCULATIONS

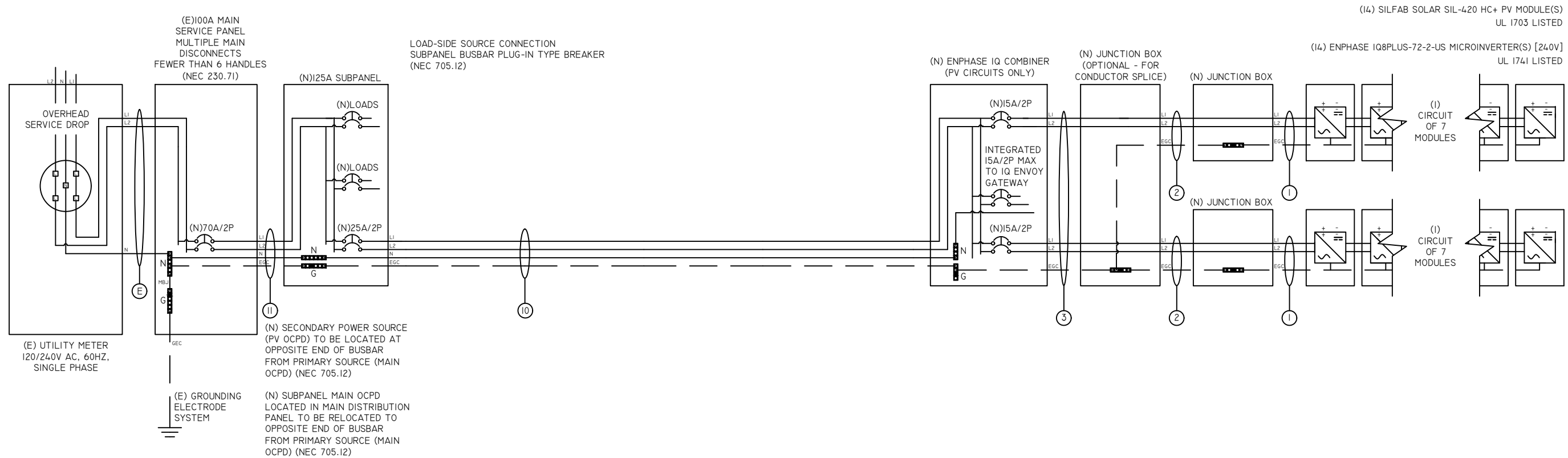
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S-5

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CONDUCTOR AND RACEWAY SCHEDULE

TAG QTY	SIZE - #	TYPE	DESIGNATOR	I / V	TAG QTY	SIZE - #	TYPE	DESIGNATOR	I / V	TAG QTY	SIZE - #	TYPE	DESIGNATOR	I / V	TAG QTY	SIZE - #	TYPE	DESIGNATOR	I / V
10	(1)	10 AWG THHN / THWN-2, CU.	BLACK (L1)	16.9 A AC (MAX)	3	(2)	10 AWG THHN / THWN-2, CU.	BLACK (L1)	8.5 A AC (MAX)	2	(1)	10 AWG 2C, NM-B W/G, CU.	(L1, L2, EGC)	8.5 A AC (MAX)	1	(1)	12 AWG 2C, TC-ER, CU.	(L1, L2)	8.47 A AC (MAX)
	(1)	10 AWG THHN / THWN-2, CU.	RED (L2)	240 V AC		(2)	10 AWG THHN / THWN-2, CU.	RED (L2)	240 V AC					240 V AC		(1)	6 AWG SOLID BARE CU.	(EGC)	240 V AC
	(1)	10 AWG THHN / THWN-2, CU.	WHITE (N)			(1)	10 AWG THHN / THWN-2, CU.	GREEN (EGC)											
	(1)	10 AWG THHN / THWN-2, CU.	GREEN (EGC)			(1)	3/4 IN. EMT	(RACEWAY)	EXTERIOR					EXTERIOR					EXTERIOR
	(1)	3/4 IN. EMT	(RACEWAY)	EXTERIOR										INTERIOR					
11	(1)	4 AWG 3C, SE-R, CU.	(L1, L2, N, EGC)	16.9 A AC (MAX)															
				240 V AC															
	(1)	--												INTERIOR					

ELECTRICAL LINE DIAGRAM

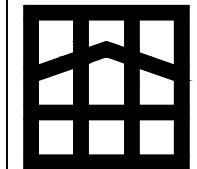


ELECTRICAL LINE DIAGRAM NOTES

- (E)100A MAIN SERVICE PANEL MULTIPLE MAIN DISCONNECTS FEWER THAN 6 HANDLES (NEC 230.71)
- LOAD-SIDE SOURCE CONNECTION SUBPANEL BUSBAR PLUG-IN TYPE BREAKER (NEC 705.12)
- (N)25A SUBPANEL
- (N) ENPHASE IQ COMBINER (PV CIRCUITS ONLY)
- (N) JUNCTION BOX (OPTIONAL - FOR CONDUCTOR SPLICE)
- (I4) SILFAB SOLAR SIL-420 HC+ PV MODULE(S) UL 1703 LISTED
- (I4) ENPHASE IQ8PLUS-72-2-US MICROINVERTER(S) [240V] UL 1741 LISTED
- (I) CIRCUIT OF 7 MODULES
- (E) UTILITY METER 120/240V AC, 60HZ, SINGLE PHASE
- (E) GROUNDING ELECTRODE SYSTEM
- (N) SECONDARY POWER SOURCE (PV OCPD) TO BE LOCATED AT OPPOSITE END OF BUSBAR FROM PRIMARY SOURCE (MAIN OCPD) (NEC 705.12)
- (N) SUBPANEL MAIN OCPD LOCATED IN MAIN DISTRIBUTION PANEL TO BE RELOCATED TO OPPOSITE END OF BUSBAR FROM PRIMARY SOURCE (MAIN OCPD) (NEC 705.12)



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SITE ADDRESS	414 12TH AVENUE SOUTHWEST ALBANY, OREGON 97321
EQUIP.	(I4) SILFAB SOLAR SIL-420 HC+ (I4) ENPHASE IQ8PLUS-72-2-US
SYSTEM SIZE	5.88KW DC 4.06KW STC-AC, 5.247KW CEC-AC
PROJECT DESIGNER	KYLE LARSON
DATE	09-FEB-2024
SHEET NAME	ELECTRICAL LINE DIAGRAM
SHEET #	E-6
REV	0

PV SYSTEM ELECTRICAL SPECIFICATIONS AND CALCULATIONS

DESIGN LOCATION AND TEMPERATURES

TEMPERATURE DATA SOURCE	ASHRAE
STATE	OREGON
JURISDICTION	CITY OF ALBANY
WEATHER STATION	CORVALLIS MUNI
ASHRAE EXTREME LOW TEMP (°C)	-8
ASHRAE 0.4% HIGH TEMP (°C)	38
DESIGNED MAX. SYSTEM VDROD / VRISE	4.00%

PV MODULE SPECIFICATIONS

SILFAB SOLAR SIL-420 HC+	
RATED POWER (P _{MAX}) (W)	420
MAXIMUM POWER VOLTAGE (V _{MP})	39.19
MAXIMUM POWER CURRENT (I _{MP})	10.72
OPEN CIRCUIT VOLTAGE (V _{OC})	45.67
SHORT CIRCUIT CURRENT (I _{SC})	11.46
PMP/VMP TEMP. COEFFICIENT	-0.36
VOC TEMP. COEFFICIENT	-0.28
SERIES FUSE RATING	20
ADJ. MODULE VOC @ ASHRAE LOW TEMP	49.9
ADJ. MODULE VMP @ ASHRAE 2% AVG. HIGH TEMP	32.8

INVERTER SPECIFICATIONS

ENPHASE IQ8PLUS-72-2-US	
TYPE	MICROINVERTER
MAX. OR RECOMMENDED MODULE POWER (W)	440
MAXIMUM INPUT DC OPEN-CIRCUIT VOLTAGE (V _{OC})	60
MINIMUM START VOLTAGE (V)	30
MAXIMUM START VOLTAGE(V)	58
MAXIMUM INPUT CURRENT (I _{SC}) (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	7
DC POWER RATING PER CIRCUIT (STC)(W DC)	2940
TOTAL MODULE QUANTITY	14 PV MODULES
STC DC POWER RATING OF ARRAY	5880W DC
INVERTER OUTPUT CIRCUIT CURRENT(A AC)	8.47
125% INVERTER OUTPUT CIRCUIT CURRENT(A AC)	10.59
CIRCUIT OCPD RATING (A)	15
COMBINED INVERTER CONTINUOUS OUTPUT CURRENT	16.94A
PV POWER PRODUCTION SYSTEM OCPD RATING (X125%)	AC
MAX. ARRAY STC-AC POWER (W)	25A
MAX. ARRAY CEC-AC POWER (W)	4060W AC (STC)
	5247W AC (CEC)

AC VOLTAGE RISE CALCULATIONS

DIST (FT)	COND.	VRISE(V)	VEND(V)	%VRISE	
VRISE SEC. 1 (MICRO TO JBOX) *	28.8	12 Cu.	1.0	241.0	0.41%
VRISE SEC. 2 (JBOX TO COMBINER BOX)	55	10 Cu.	1.1	241.1	0.47%
VRISE SEC. 3 (COMBINER BOX TO POI)	15	10 Cu.	0.6	240.6	0.25%
TOTAL VRISE			2.7	242.7	1.13% 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 =	8.5 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%=	11.0 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) =	11.0 < 27.3	
(B)(1) - W/OUT CORRECTION FACTORS		
LARGER AMPACITY COMPLIANCE =	30.0 > 11.0	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 1) =	53% > 27%	OK

JUNCTION BOX TO JUNCTION BOX (2)

MAX INVERTER OUTPUT CIRCUIT CURRENT =	8.5 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%=	11.0 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) =	11.0 < 24.6	
(B)(1) - W/OUT CORRECTION FACTORS		
LARGER AMPACITY COMPLIANCE =	30.0 > 11.0	OK
RACEWAY SIZE / TYPE =		NO RACEWAY

JUNCTION BOX TO COMBINER BOX (3)

MAX INVERTER OUTPUT CIRCUIT CURRENT =	8.5 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%=	11.0 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) =	11.0 < 21.1	
(B)(1) - W/OUT CORRECTION FACTORS		
LARGER AMPACITY COMPLIANCE =	30.0 > 11.0	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 1) =	40% > 20%	OK

COMBINER BOX TO MAIN PV OCPD (10)

COMBINED INVERTER CONTINUOUS OUTPUT CURRENT =	16.9 A AC	
CONDUCTOR SIZE / INSULATION / TYPE =	10 AWG	THHN / THWN-2, CU.
CONDUCTOR AMP. RATING @75°C =	35 A	
PER NEC 690.8(B)(1)(W/OUT CORRECTION FACTORS)		
MAX COMBINED INVERTER CONTINUOUS OUTPUT CURRENT X125% =	21.0 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) =	30.8 A AC	
LARGER AMPACITY OF 690.8(B)(1) OR (B)(2) =	21.0 < 30.8	
(B)(1) - W/OUT CORRECTION FACTORS		
LARGER AMPACITY COMPLIANCE =	35.0 > 21.0	OK
RACEWAY SIZE / TYPE =	3/4 IN.	EMT
CONDUCTOR(S) / CABLE(S) CROSS-SECTION AREA (IN. ²) =	0.084 IN. ²	
CROSS-SECTIONAL AREA OF RACEWAY(IN. ²) =	0.533 IN. ²	
% ALLOWABLE RACEWAY FILL (NEC CH. 9, TBL 1) =	40% > 16%	OK

Attachment C.7



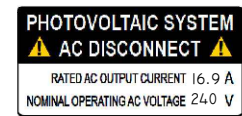
ION DEVELOPER LLC
DAVID STANLEY CONRAD
C - ELECTRICAL CONTRACTOR
CI524



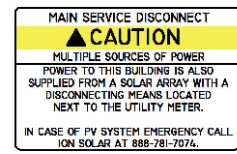
ION SOLAR
44 E 800 N
OREM, UTAH 84057
888.781.7074

PROJECT ID	00BXJ9
SITE OWNER	GEORGE LARSON
SITE ADDRESS	414 12TH AVENUE SOUTHWEST ALBANY, OREGON 97321
EQUIP.	(14) SILFAB SOLAR SIL-420 HC+ (14) ENPHASE IQ8PLUS-72-2-US
SYSTEM SIZE	5.88KW DC 4.06KW STC-AC, 5.247KW CEC-AC
PROJECT DESIGNER	KYLE LARSON
DATE	09-FEB-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)]



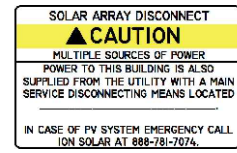
N PERMANENT DIRECTORY TO BE LOCATED AT MAIN SERVICE EQUIPMENT LOCATION IF ALL ELECTRICAL POWER SOURCE DISCONNECTING MEANS (SOLAR ARRAY RAPID SHUTDOWN SWITCH) ARE GROUPED AND IN LINE OF SITE OF MAIN SERVICE DISCONNECTING MEANS. [OESC 690.56(C) & OESC 705.10].



T LOCATED ON OR NEXT TO AC KNIFE DISCONNECT. MUST BE ENGRAVED. [UTILITY SPECIFIC LABEL]



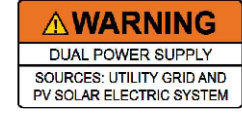
F FOR PV DISCONNECTING MEANS WHERE ALL TERMINALS OF THE DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION. [OESC 690.13(B), OESC 705.22]



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]



U LOCATED ON EXTERIOR, NON-REMOVEABLE PORTION OF THE EXISTING UTILITY METER SOCKET. MUST BE ENGRAVED. [UTILITY SPECIFIC LABEL]



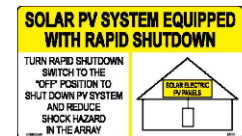
G AT EQUIPMENT CONTAINING OVERCURRENT DEVICES IN CIRCUITS SUPPLYING POWER TO A BUSBAR OR CONDUCTOR SUPPLIED FROM MULTIPLE SOURCES. [OESC 705.12(C)]



V LOCATED ON BATTERY DISCONNECT (BATTERY SYSTEMS ONLY). MUST BE ENGRAVED. [UTILITY SPECIFIC LABEL]



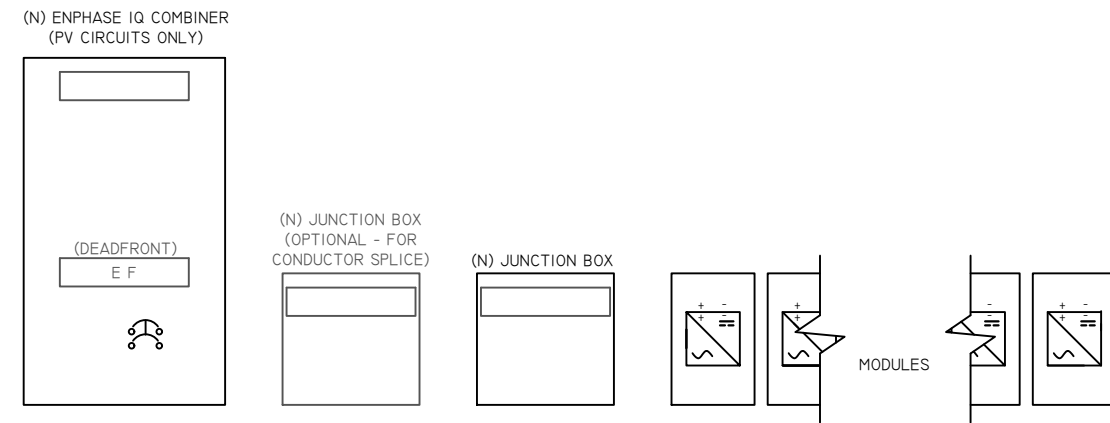
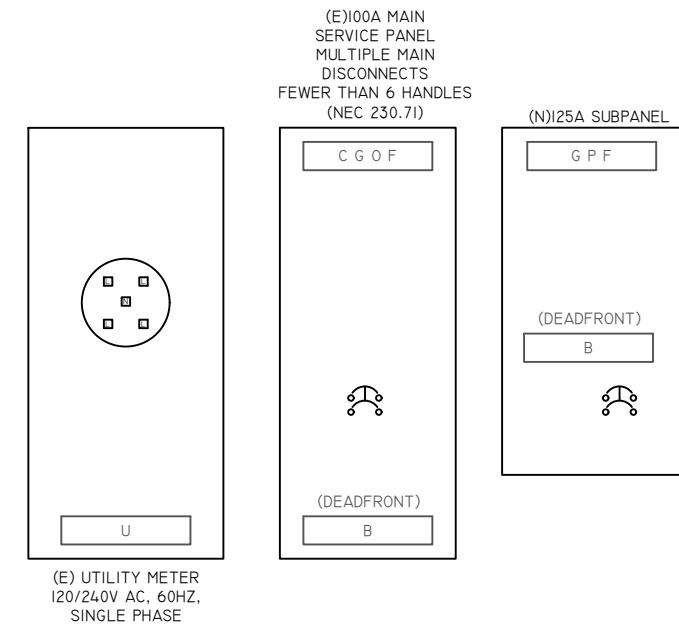
B PLACED ADJACENT TO PV SYSTEM PLUG-IN TYPE BREAKER TO A BUSBAR FOR A LOAD SIDE CONNECTION. [OESC 705.12(B)(3)(2)]



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)]



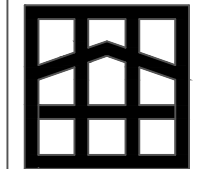
D FOR RAPID SHUTDOWN SWITCH INITIATION DEVICE LOCATED AT A READILY ACCESSIBLE OUTDOOR LOCATION. [OESC 690.12]



- 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 1/8" (3MM).



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DATE 09-FEB-2024

SHEET NAME ELECTRICAL LABELS

SHEET # E-9 REV 0