

NOTICE OF NSA EXPEDITED DECISION



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

Case File:	T2-2025-0037	Issue Date:	October 14, 2025
Permit:	National Scenic Area (NSA) Expedited Review		
Proposal:	NSA Expedited Review to install a photovoltaic system on the roof of the existing single-family dwelling.		

Location:	Address: 32040 NE Mershon Rd., Troutdale Tax Account #: R053504370	Map, Tax lot: 1N4E32A -03600 Property ID #: R111656
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Base Zone: Gorge General Residential (GGR-10)

Overlays: Geologic Hazards (GH)

Key Viewing Areas: Historic Columbia River Highway, Larch Mountain Road, Portland Women's Forum

Landscape Setting: Rural Residential in Pastoral

Applicant(s): Alec Sommer

Owner(s): Aaron McKay & Matthew McCarthy

Preliminary Decision: **Approved with Conditions**

The Planning Director is granting preliminary approval of the development. You have 14 days from the date of this decision to provide comments. If no comments are received, the decision shall become final at the close of business on the 14th day. If substantive written comments are submitted, the Planning Director may modify the decision to address the comments and re-issue it for a 14-day appeal period. Comments must be directed to the applicable approval criteria. *Failure to provide comments during this comment period will preclude a right to appeal.*

This decision is final and effective at the close of the comment period, unless comments are received. The deadline for providing comments is Tuesday, October 28, 2025 at 4:00 pm.

Opportunity to Review the Record: The complete case file, including all evidence associated with this application, is available for review by visiting <https://www.multco.us/landuse/public-notices>.

Notice to Mortgagee, Lien Holder, Vendor, or Seller:

ORS Chapter 215 requires that if you receive this notice it must be promptly forwarded to the purchaser.

Conditions of Approval

1. If, during construction, cultural or historic resources are discovered, the applicant/owner shall immediately cease development activities and inform the Multnomah County Land Use Planning Division, Columbia River Gorge Commission, and the U.S. Forest Service of any discovery pursuant to MCC 38.7045(L) & (M), or MCC 38.7050(H) as applicable. Once halted, construction activities shall not resume until these standards have been satisfied.
2. Approval of this land use permit is based upon the statements made in this application and attached materials. No work shall occur under this permit other than that which is specified in these documents.
3. This permit shall expire if the construction of the development has not commenced within two years of the date of the final decision. Commencement shall have the meaning described in MCC 38.0690(B)(3). The construction of the development and/or structure shall be completed within 2 years of the date of commencement and all conditions of approval met.

Note: The property owner may request an extension as provided in MCC 38.0700. The request for extension of the time frames listed in MCC 38.0700(D)(1), (D)(2) and (E) shall be submitted in writing before the applicable expiration date.

Applicable Approval Criteria:

Multnomah County Code (MCC): MCC 38.0560 Code Compliance and Applications, MCC 38.1010(A)(24), MCC 38.3023 GGR Expedited Uses, MCC 38.7100 Expedited Development Review Criteria, MCC 38.7390 Renewable Energy Production

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

Findings of Fact

FINDINGS: Written findings are contained herein. The Multnomah County Code (MCC) criteria and Comprehensive Plan Policies are in **bold** font. Staff analysis and comments are identified as ‘**Staff:**’ and address the applicable criteria. Staff comments may include a conclusionary statement in *italic*.

1.0 Project Description:

Staff: The applicant requests an Expedited National Scenic Area Site Review to install a roof-mounted photovoltaic system on the existing single-family dwelling.

2.0 Property Description & History:

Staff: The subject property is zoned Gorge General Residential (GGR) and located within the Key Viewing Areas of the Historic Columbia River Highway, Larch Mountain Road, and the Portland Women’s Forum. According to the County’s records, the subject property is developed with a single-family dwelling which was approved under permit no. 802700.

3.0 Code Compliance and Applications Criteria:

3.1 MCC 38.0560 Code Compliance and Applications

Except as provided in subsection (A), the County shall not make a land use decision approving development, including land divisions and property line adjustments, or issue a

building permit or zoning review approval of development or any other approvals authorized by this code for any property that is not in full compliance with all applicable provisions of the Multnomah County Code and/or any permit approvals previously issued by the County.

(A) A permit or other approval, including building permit applications, may be authorized if:

(1) It results in the property coming into full compliance with all applicable provisions of the Multnomah County Code. This includes sequencing of permits or other approvals as part of a voluntary compliance agreement; or

(2) It is necessary to protect public safety; or

(3) It is for work related to and within a valid easement over, on or under an affected property.

(4) It brings a non-conforming structure or non-conforming use into compliance with current regulations; or

(5) The Planning Director determines the development qualifies as a minor project. For purposes of this provision, a minor project is defined as small in scale, located outside a Flood Hazard zone or Geologic Hazard overlay, intended for the primary benefit of the residents, farm uses, or natural habitat on the subject property and will meet all other applicable zoning and building regulations. A minor project shall qualify under at least one of the following categories:

(a) Request for trade permits (such as electrical, mechanical and/or plumbing) that does not change the use of a structure or property; or

(b) Free standing renewable energy and heating systems including, but not limited to solar (including solar panels), geothermal and wind generated systems; or

(c) Roof mounted solar renewable energy (including solar panels) and solar heating systems not exceeding the size of a structure's roof area, or roof height; or

(d) Mechanical equipment such as heating and air conditioning units, heat pumps, ventilation and air filtration systems, electrical boxes, back-up power generators, energy storage systems, water pumps, and similar equipment; or

(e) Heating oil, propane and similar tanks; or

(f) Development requests to protect or enhance natural resources, such as but not limited to water quality or wildlife habitat.

(B) For the purposes of this section, Public Safety means the actions authorized by the permit would cause abatement of conditions found to exist on the property that endanger the life, health, personal property, or safety of the residents or public. Examples of that situation include but are not limited to issuance of permits to replace faulty electrical wiring; repair or install furnace equipment; roof repairs; replace or repair compromised utility infrastructure for water, sewer, fuel, or power; and actions necessary to stop earth slope failures.

Staff: This standard provides that the County shall not make a land use decision approving development for a property that is not in full compliance with County Code or previously issued County approvals, except in the following instances: approval will result in the property coming into full compliance, approval is necessary to protect public safety, or the approval is for work related to or within a valid easement.

This standard was originally codified in the chapter related to land use application procedures and, by its terms, expressly applies to the application review process. Although now codified in the administration and procedures part of the Columbia River Gorge National Scenic Area Code this standard remains applicable to the application review process and not to the post-permit-approval enforcement process.

Importantly, a finding of satisfaction of this standard does not mean that a property is in full compliance with the Zoning Code and all prior permit approvals (and, accordingly, does not preclude future enforcement actions relating to uses and structures existing at the time the finding is made). Instead, a finding of satisfaction of this standard simply means that there is not substantial evidence in the record affirmatively establishing one or more specific instances of noncompliance.

For purposes of the current application, staff is not aware of any open compliance cases on the subject properties, and there is no evidence in the record of any specific instances of noncompliance on the subject properties. *This criterion is met.*

4.0 Expedited Development Review Approval Criteria:

4.1 MCC 38.7100 Expedited Development Review Criteria

(A) Proposed developments reviewed using the expedited review process shall comply with the following resource protection guidelines:

(1) Scenic

(a) In the General Management Area, the scenic resource protection provisions MCC 38.7100 (A)(1)(b) through (f) shall not apply to woven-wire fences for agricultural use that would enclose 80 acres or less.

Staff: The applicant is not proposing woven-wire fences as part of this proposal. MCC 38.7100(A)(1)(b) through (f) is applicable and addressed in the findings below.

(b) Except signs, the colors of structures topographically visible from key viewing areas shall be dark earth-tones found at the specific site or the surrounding landscape. The specific colors approved by the reviewing agency shall be included as a condition of approval. This guideline shall not apply to additions to existing buildings smaller in total square area than the existing building, which may be the same color as the existing building.

(c) Except signs, structures topographically visible from key viewing areas shall use low or non-reflective building materials, including roofing, gutters, vents, and chimneys.

Staff: The applicant is proposing to install a roof-mounted photovoltaic system on the existing dwelling. This specific location was identified within the Larch Mountain Road Key Viewing Area but it does not appear to be visible from Larch Mountain Road due to the topography and distance between the subject property and the Key Viewing Area. The closest section of Larch Mountain Road to the subject property is more than 3.5 miles to the east. In addition, a dense cover of vegetation borders the northern, eastern and western property boundaries. To further ensure the proposed development will not be visible from

the Key Viewing Area, the proposed solar panels are non-reflective, black, and does not exceed the overall roof height of the dwelling (Exhibits A.2 & A.6). *These criteria are met.*

(d) Any exterior lighting shall be directed downward and sited, limited to no more than 1,000 lumens per fixture, hooded, and shielded in a manner that prevents lights from being highly visible from key viewing areas and from noticeably contrasting with the surrounding landscape setting, except for road lighting necessary for safety purposes. Shielding and hooding materials shall be composed of non-reflective, opaque materials.

(e) Signs shall comply with the applicable sign provisions of MCC 38.0080.

Staff: The applicant is not proposing any new exterior lighting or signs as part of this proposal.

(f) Structures within ½-mile of a key viewing area and topographically visible from the key viewing area shall be sited, screened and designed to achieve the applicable scenic standard (e.g., visual subordination, not visually evident).

“Visually Subordinate”: ...A description of the relative visibility of a development, structure or use where that development, structure or use does not noticeably contrast with the defining landscape setting characteristics, as viewed from a specified vantage point (generally a key viewing area, for the Management Plan), and the setting appears only slightly altered (distinctive characteristics of that setting remain dominant). As opposed to development, structures or uses that are fully screened, structures that are visually subordinate may be partially visible but would be difficult to discern to the common viewer. Visually subordinate development, structures, or uses as well as forest practices in the SMAs shall repeat form, line, color, or texture common to the natural landscape, while changes in their qualities of scale, proportion, intensity, direction, pattern, etc., shall not dominate the natural landscape setting.”

“Not Visually Evident (SMA only)”: ...A description of the relative visibility of a development, structure or use that provides for developments, structures or uses that are not visually noticeable to the casual visitor and the defining landscape setting characteristics appear intact. Deviations may be present but must repeat form, line, color, texture and pattern common to the natural landscape setting so completely and at such scale, proportion intensity, direction, pattern, etc., that it not be noticeable.” [MCC 38.0015]

Staff: As stated in a prior finding, the closest section of Larch Mountain Road is more than 3.5 miles to the east of the subject property and the proposed roof-mounted photovoltaic system will not be visible from the Key Viewing Area. *This criterion is met.*

(2) Cultural

(a) The expedited development review process shall only be used to review proposed development that does not require a reconnaissance survey or historic survey. The GMA Cultural Resources Reconnaissance Survey Criteria in MCC 38.7045(A)(1) – (4) shall be used to determine if a reconnaissance or historic survey is required for a proposed development.

(b) The GMA provisions that protect cultural resources in MCC 38.7045(L) and human remains discovered during construction in MCC 38.7045(M) shall be applied as conditions of approval for all development approved under the expedited development review process.

Staff: The proposed development meets the cultural review exception of MCC 38.7045(A)(1)(a) and (b), as the roof-mounted photovoltaic system is a modification of the existing single-family dwelling and the installation does not require ground disturbance. GMA provisions protecting cultural resources are a condition of approval complying with (b) above. *These criteria are met.*

(3) Recreation

The development shall not detract from the use and enjoyment of established recreation sites on adjacent parcels.

Staff: The proposed roof-mounted photovoltaic system is considered accessory to the existing residential use and will not impact adjacent recreational uses. *This criterion is met.*

(4) Natural

(a) Water Resources (Wetlands, Streams, Ponds, Lakes, and Riparian Areas)

The development is outside water resources and their buffer. This guideline shall not apply to lot line adjustments or development located inside road, utility or railroad rights-of-way or easements that have been previously disturbed and regularly maintained.

Staff: The proposed roof-mounted photovoltaic system is outside water resources and buffer areas. *This criterion is met.*

(b) Sensitive Wildlife and Sensitive Plants

1. The development meets one of the following:

- a. **The development is at least 1,000 feet from known Priority Habitats or sensitive wildlife sites (excluding sensitive aquatic species, and deer and elk winter range) and known rare plants; or**
- b. **The development does not disturb the ground or is inside road, utility or railroad rights-of-way or easements or other areas that have been previously disturbed and regularly maintained; or**
- c. **For sensitive wildlife, the development is within 1,000 feet of known Priority Habitats or sensitive wildlife sites (excluding sensitive aquatic species, and deer and elk winter range), but an appropriate federal or state wildlife agency deter-mines:**
 - 1) **the Priority Habitat or sensitive wildlife site is not active; or,**
 - 2) **the proposed development would not compromise the integrity of the Priority Habitat or sensitive wildlife site or occur during the time of the year when wildlife species are sensitive to disturbance.**

For rare plants, the development is within 1,000 feet of known rare plants, but the Oregon Biodiversity In-formation Center or a per-son with recognized expertise in botany or plant ecology hired by the applicant has determined that the development would be at least 200 feet from the rare plants.

2. Development eligible for expedited review shall be exempt from the field surveys for sensitive wildlife in MCC 38.7065 (A) or sensitive plants in MCC 38.7070 (A).

Staff: The proposed development complies with b.1.a. above, as the proposed development is located at least 1,000 feet from known priority habitats or sensitive wildlife sites as shown on 1993 US Forest Service maps documenting sensitive wildlife and plants (Exhibits B.3 and B.4). *Criteria met.*

(B) Proposed developments reviewed using the expedited review process shall comply with the following treaty rights protection guidelines:

(1) Proposed developments shall not adversely affect treaty or other rights of any Indian tribe.

(2) The expedited development review process shall cease and the proposed development shall be reviewed using the full development review process if an Indian tribe submits substantive written comments during the comment period that identify the treaty rights that exist in the project vicinity and explain how they would be affected or modified by the proposed development.

(3) Except as provided in MCC 38.7100(B)(2) above, the GMA and SMA treaty rights, and the consultation process discussed in MCC 38.0110 shall not apply to proposed developments reviewed under the expedited review process.

Staff: The proposed roof-mounted photovoltaic system will be located on the existing single-family dwelling. During the Expedited Review Notice Period, the tribes will be notified of the proposal, and if any substantive written comments are received, the expedited development review process will cease and the proposal will be subject to a full development review. *This criterion is met.*

5.0 Renewable Energy Production:

4.1 MCC 38.7390 Renewable Energy Production

(A) Renewable energy production qualifying for review as an Expedited Use shall be subject to (A)(1)-(6) below, in addition to any other applicable provisions of Chapter 38. Renewable energy production qualifying for review as either a Review Use or Conditional Use shall be subject to (A)(1)-(7) below, in addition to any other applicable provisions of Chapter 38.

(1) Renewable energy production equipment attached to an existing structure shall be considered an addition to the structure on which it is located. Free-standing renewable energy production equipment shall be considered a new accessory structure.

Staff: The applicant is proposing to install a roof-mounted photovoltaic system on the existing single-family dwelling which is considered an addition to the dwelling. *This criterion is met.*

(2) Production of electrical power, including, but not limited to wind and solar production, for commercial purposes is considered an industrial use and is prohibited. Solar, wind and other renewable energy power generation that is accessory to a primary structure or allowed use is not considered an industrial use and may be permitted.

Staff: The proposed roof-mounted photovoltaic system is accessory to the existing residential use on the subject property. *This criterion is met.*

(3) The panels and hardware are nonreflective black or dark earth tone colors.

Staff: The applicant is proposing non-reflective, black solar panels. *This criterion is met.*

(4) The panels and hardware do not increase the overall roof height.

Staff: The roof-mounted photovoltaic system does not exceed the overall roof height (Exhibits A.2 & A.3). *This criterion is met.*

- (5) **The generating equipment may serve only the parcel on which it is located, or an adjacent parcel in the same ownership and used in conjunction with the subject parcel.**

Staff: The applicant has confirmed that the proposed roof-mounted photovoltaic system will only service the subject property (Exhibit A.2). *This criterion is met.*

- (6) **Sale of power back to the electrical grid is permitted, provided that it is an occasional event, not ongoing over the course of the year.**

Staff: The applicant states that the proposed system offsets approximately 75% of the total annual projection and net metering is considered an occasional event (Exhibits A.2). *This criterion is met.*

- (7) **The capacity for power generation is limited to the expected annual electrical power need of the structure or use.**

Staff: The applicant provided an energy usage report that confirms that the proposed system will not generate more than the expected annual electrical power need of the existing residential use (Exhibit A.6). *This criterion is met.*

Issued by:



Izze Liu, Planner

For: Megan Gibb, Planning Director

Date: October 14, 2025

5.0 Exhibits

‘A’ Applicant’s Exhibits

‘B’ Staff Exhibits

‘C’ Procedural Exhibits

All exhibits are available for review in Case File T2-2025-0037 by contacting Izze Liu via email at isabella.liu@multco.us.

Exhibit #	# of Pages	Description of Exhibit	Date Received / Submitted
A.1	3	NSA Application Form	08.13.2025
A.2	3	Narrative	08.13.2025
A.3	11	Site Plan	08.13.2025
A.4	37	Exterior Lighting	08.13.2025
A.5	12	Specifications	08.13.2025
A.6	1	Energy Usage Report	10.07.2025
‘B’	#	Staff Exhibits	Date

B.1	5	Assessment and Taxation Property Information for 1N4E32A -03600 (Alt Acct # R053504370/ Property ID # R111656	08.13.2025
B.2	1	Current Tax Map for 2N6E36AD -00100	08.13.2025
B.3	1	US Forest Service Sensitive Plants Map	08.13.2025
B.4	1	US Forest Service Sensitive Wildlife Map	08.13.2025
‘C’	#	Administration & Procedures	Date
C.1	9	Preliminary Decision	10.14.2025

Hello NSA Commission,

This application is for Aaron McKay, who is under contract for a solar system installation with Elemental Energy LLC. His system is a 16.75kwac prescriptive roof mount pv solar system with 1 battery. He is on the border of the Columbia River Scenic Area, thus the need for the Commission's approval for his solar system. Please accept this letter as our Project Narrative.

General Provisions:

MCC 38.0560 Code Compliance and Violations: This property does have an active parcel. You will notice that there is a detached building that was built in 1986 and now has the opportunity for Accessory Building Registration, something that is out of the scope of this project and the homeowner can decide. This information has been disclosed to the homeowner.

The solar system will be on the existing single-family dwelling unit that received initial permitting, meaning it can be reviewed without a Parcel Determination Requirement per Planning Director Interpretation of MCC 38.0560(A)(5)(c)

MCC 38.0045 Review and CU Application Submittal Requirements:

This Project has a map of KVA through the site plan of our design that includes all the necessary proponents within this code that are applicable. Most of this code deals with grading and this does not apply to this application. There are also no water bodies or pathways that relate to this project.

Project Specific Requirements:

MCC 38.7390 Renewable Energy Production: Within this rule, there are stipulations that a solar system is an addition to an existing structure and needs to meet to be approved that this build adheres to. Stipulations included that this will not be used for commercial power, the system is roof mounted and the overall height does not exceed the roof. Within our design, you will find many technical terms that show accordance with MCC 38.7390 as well as the shared specification sheets for the equipment that will be installed showing that it is non-reflective black colors and that it only serves the purpose of the sole parcel. It does not exceed the overall roof height. This rule also stipulates the sale of power back to the electrical grid. Since the system only offsets roughly 75% of the total annual projection (please see contract for reference), net metering is considered an Occasional event. Lastly, this solar system only is usable by the main house, not any other structure on the parcel.



MCC 38.7390 CONTINUED: The Key Viewing Area for this project is minimal since the solar is on the opposite side of the house facing the gorge. The addition of the electrical work does count as a Key Viewing Area, however, it has clear visual obstruction due to the lining of existing trees that block its view. All material that is within the KVA, however, is composed of material with low reflectivity that is not textured flat coating. The electrical portion is screened and does not affect the KVA. This is with the understanding that the KVAs are from Larch Mountain Road and The Columbia River Highway (including the Historic Columbia River Highway State Trail).

Within the Design, there is a lightning map that shows the locations of his lights. Attached to the application, you will find the brand of lights that he has along with photos of the lights. All meet the parameters for outdoor lighting of either facing downwards or has a hooded light frame.

GMA Scenic Review

MCC 38.7035: This project does affect the topography of this parcel because it is on top of the house, but it is not viewable by a KVA. The solar does not protrude past the side of the house and follows all rules and regulations provided by the parcels specific AHJ. There are no new buildings being added so 38.7035(A) does not apply. When looking at 38.7035(B)(1), we can notice that there is no ground disturbance. When we discuss the Key Viewing Areas, since the house is on elevated and facing away from the KVA, this system does not directly affect major KVA. The solar arrays are below the crest of the house. The only KVA that is slightly affected is the electrical equipment on the side of the house, but they are directly covered by a layer of tall trees. There will be specifications submitted for the major parts of this project.

MCC 38.7035(C)(4)(b): Although this is considered a rural residential pastoral setting, there is no disturbance created towards trees or landscape within the area as the solar only affects the roof top. This means that the tree cover screening from KVA shall be retained, vegetative landscaping will not be affected, and no new plants will be planted.

MCC 38.7053: Water resources are not affected by the construction of this project. There will be no water disturbances since there are no bodies of water around nor does this affect any other type of water

MCC 7065: This solar build does not affect wildlife in the area as it is directly on top of the roof and attached to the house. There is no wildlife infringement that is directly affected including animals, trees, or waterways, endangered or threatened species.

MCC 7070: This solar system does not affect any rare or endangered plants since it is going to be built on the roof of a house. The electrical equipment does not affect any rare or endangered plants since it is directly attached to the side of the house and not obstructing any wildlife or vegetation.



MCC 7075: Since there are no waterways near or within the property, the SMA criteria is not met and this rule does not affect this application, meaning there is no need to review for buffer zones or any water way that disrupts the scenery.

MCC 7080: The house the solar will be attached to is far enough back on the parcel that it does not participate in a social, physical, or managerial setting. If fact, no other person besides the homeowner shall have engagement with this system for safety reasons. If there is an issue with the system, us or a contractor, or a warranty company will be contacted to interact with the system. This is not recreational equipment and should not be treated as such.

Please accept this document as a Project Narrative for this solar system project and contact me if you have any further questions.

Alec Sommer
Senior Account Manager
Elemental Energy LLC
(920) 392-9884
permits@elementalenergy.net

elementalenergy.net | hello@elementalenergy.net

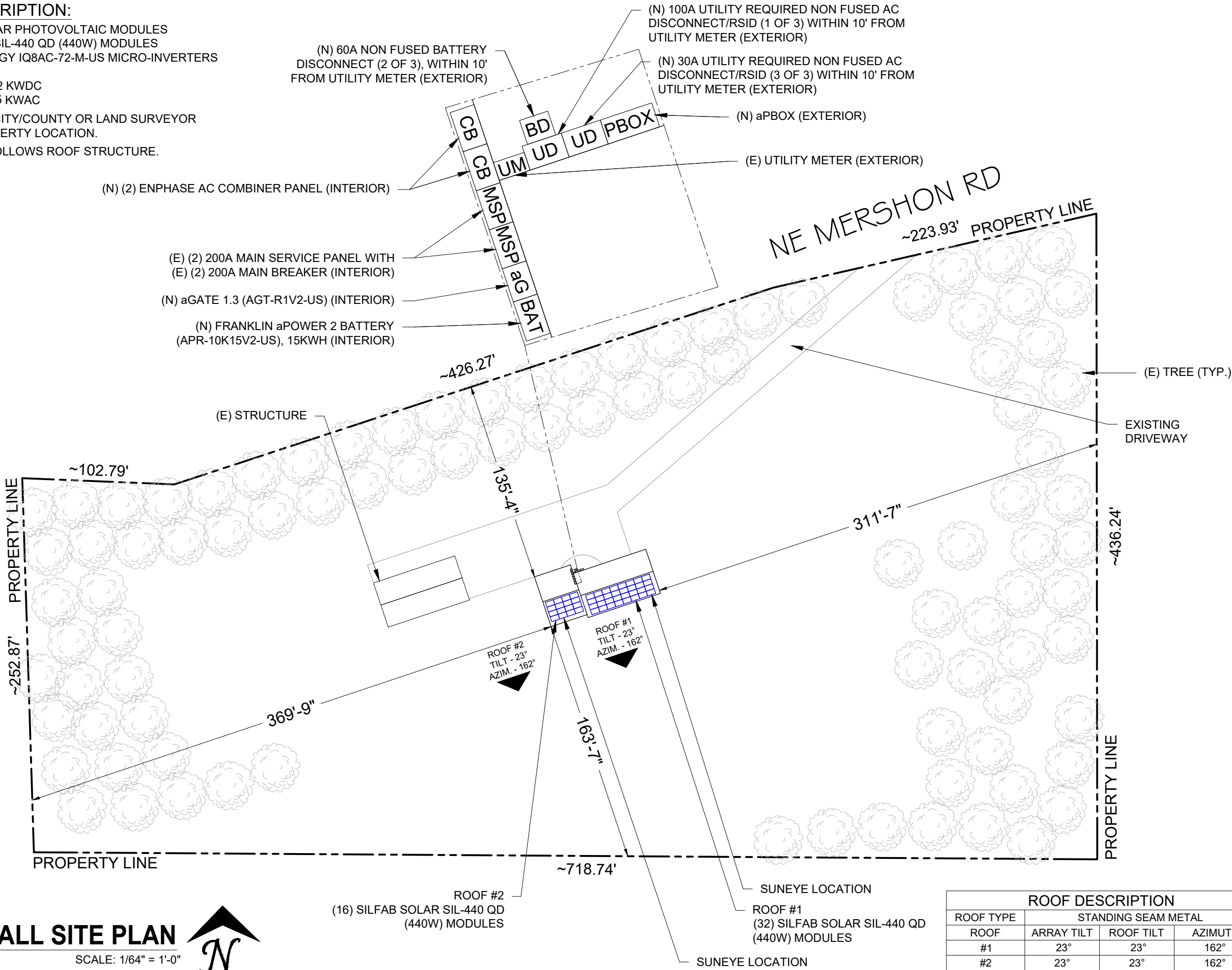


PROJECT DESCRIPTION:

- ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES
48 SILFAB SOLAR SIL-440 QD (440W) MODULES
48 ENPHASE ENERGY IQ8AC-72-M-US MICRO-INVERTERS

SYSTEM SIZE: 21.12 KWDC
16.75 KWAC

NOTE: *CHECK WITH CITY/COUNTY OR LAND SURVEYOR
FOR ACCURATE PROPERTY LOCATION.
NOTE: *ARRAY TILT FOLLOWS ROOF STRUCTURE.



ROOF DESCRIPTION			
STANDING SEAM METAL			
ROOF TYPE	ARRAY TILT	ROOF TILT	AZIMUTH
#1	23°	23°	162°
#2	23°	23°	162°



ELEMENTAL
ENERGY

6800 NE 59TH PLACE,
PORTLAND, OR 97218
Phone - (541) 316-5786
Contractor# OR CCB#: 195141

REVISIONS	
DESCRIPTION	DATE

ELECTRICAL CONTRACTOR

PROJECT NAME

AARON MCKAY RESIDENCE
32040 NE MERSHON RD,
TROUTDALE, OR 97060 USA
APN# R111656
UTILITY #: PGE

PROJECT
N/A

SHEET NAME
OVERALL SITE PLAN

SHEET SIZE
ANSI B

SHEET NUMBER
PV-1



6800 NE 59TH PLACE,
PORTLAND, OR 97218
Phone - (541) 316-5786
Contractor# OR CCB#: 195141

REVISIONS	
DESCRIPTION	DATE

ELECTRICAL CONTRACTOR

PROJECT NAME

AARON MCKAY RESIDENCE
32040 NE MERSHON RD,
TROUTDALE, OR 97060 USA
APN# R111656
UTILITY #: PGE

PROJECT

N/A

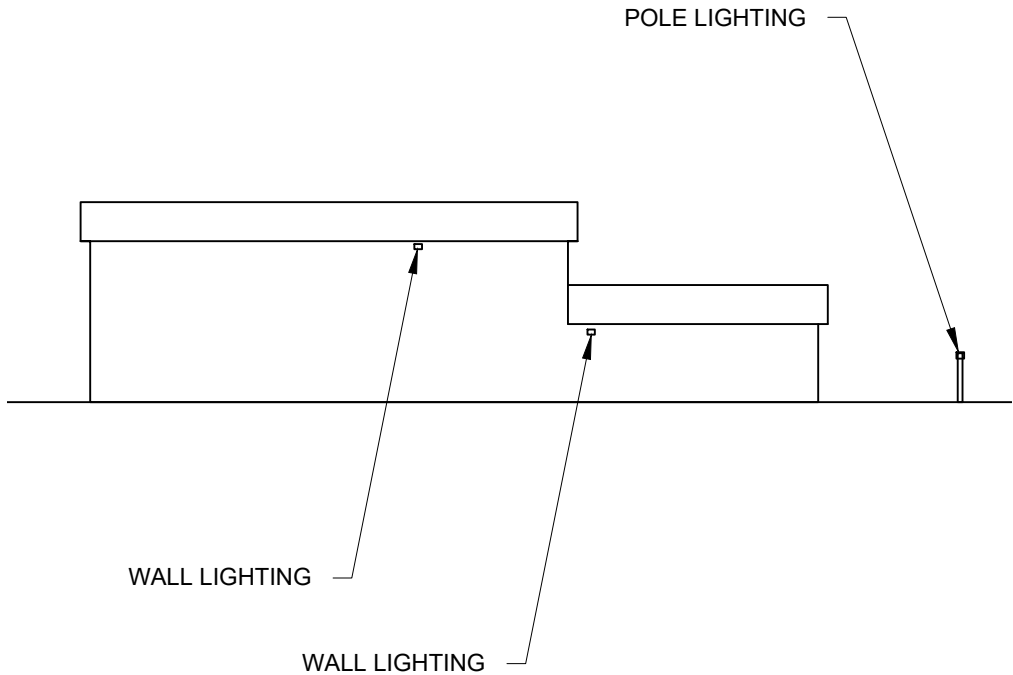
SHEET NAME

LIGHTING
ELEVATIONS

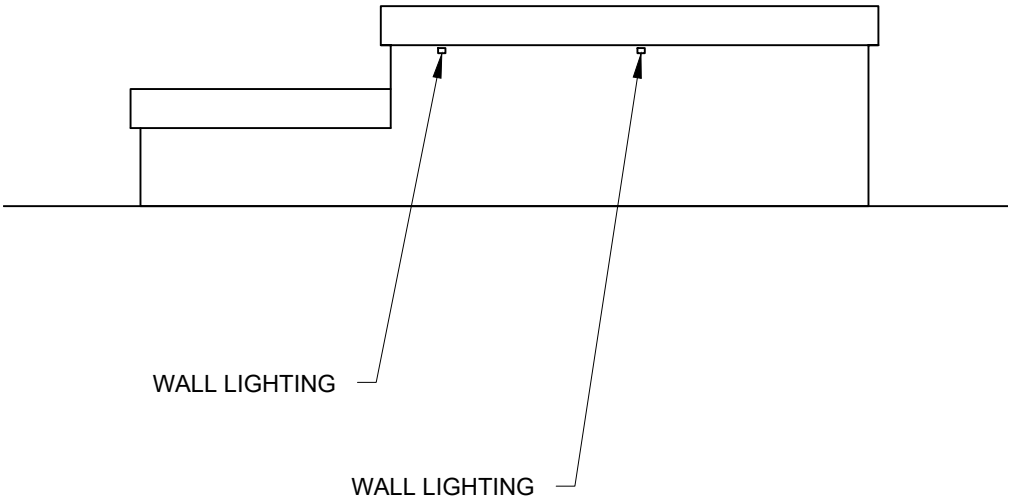
SHEET SIZE
ANSI B

SHEET NUMBER

PV-1.1



1 FRONT ELEVATION
SCALE: NTS



2 BACK ELEVATION
SCALE: NTS

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 48 MODULES
MODULE TYPE = SILFAB SOLAR SIL-440 QD (440W) MODULES
MODULE WEIGHT = 46.3 LBS / 21.0 KG.
MODULE DIMENSIONS = 67.8"X 44.6" = 21.00 SF
UNIT WEIGHT OF ARRAY = 2.20 PSF

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

NE MERSHON RD
(E) FRONT OF RESIDENCE

ROOF DESCRIPTION			
ROOF TYPE			STANDING SEAM METAL
ROOF	ROOF TILT	AZIMUTH	PRE-ENGINEERED TRUSSES SPACING
#1	23°	162°	24" O.C.
#2	23°	162°	24" O.C.

BILL OF MATERIALS		
EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	48	SILFAB SOLAR SIL-440 QD (440W) MODULES
INVERTER	48	ENPHASE ENERGY IQ8AC-72-M-US MICRO-INVERTERS
COMBINER PANEL	2	ENPHASE AC COMBINER PANEL
PV BREAKER	2	70A AND 30A 2 POLE PV BREAKER
Q DROPS	48	PORTRAIT Q CABLE DROPS
TERMINATOR	06	ENPHASE Q CABLE TERMINATOR CAPS
BATTERY	1	FRANKLIN aPOWER 2 BATTERY (APR-10K15V2-US), 15KWH
aGATE	1	aGATE 1.3 (AGT-R1V2-US)
DISCONNECT	2	100A AND 30A UTILITY REQUIRED NON FUSED PV AC DISCONNECT/RSID
DISCONNECT	1	60A NON FUSED BATTERY AC DISCONNECT
BREAKER	1	60A/2P BATTERY BREAKER
JAYBOX	2	WETBOX
MICROBOLTS	48	IRONRIDGE MICROBOLTS (BHW-MI-01-A1)
AIR DOCK	157	IRONRIDGE AIRE DOCK (AE-DOCK-01-B1)
RAIL	40	IRONRIDGE AIRE A1 RACKING-170" SECTION
RAIL SPLICE	32	SPLICE KIT (AE-A1-TIE-01-M1)
MID CLAMP	85	MID CLAMPS (AE-MID-01-B1)
END CLAMP	39	END CLAMPS (AE-END-01-B1)
ATTACHMENT	157	S-5! S-5-N CLAMPS ATTACHMENT
GROUNDING LUG	8	IRONRIDGE GROUNDING LUG (XR-LUG-03-A1)
aPBOX	1	FRANKLINWH aPBOX



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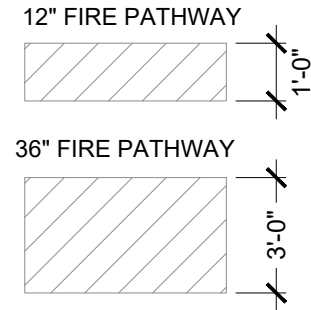
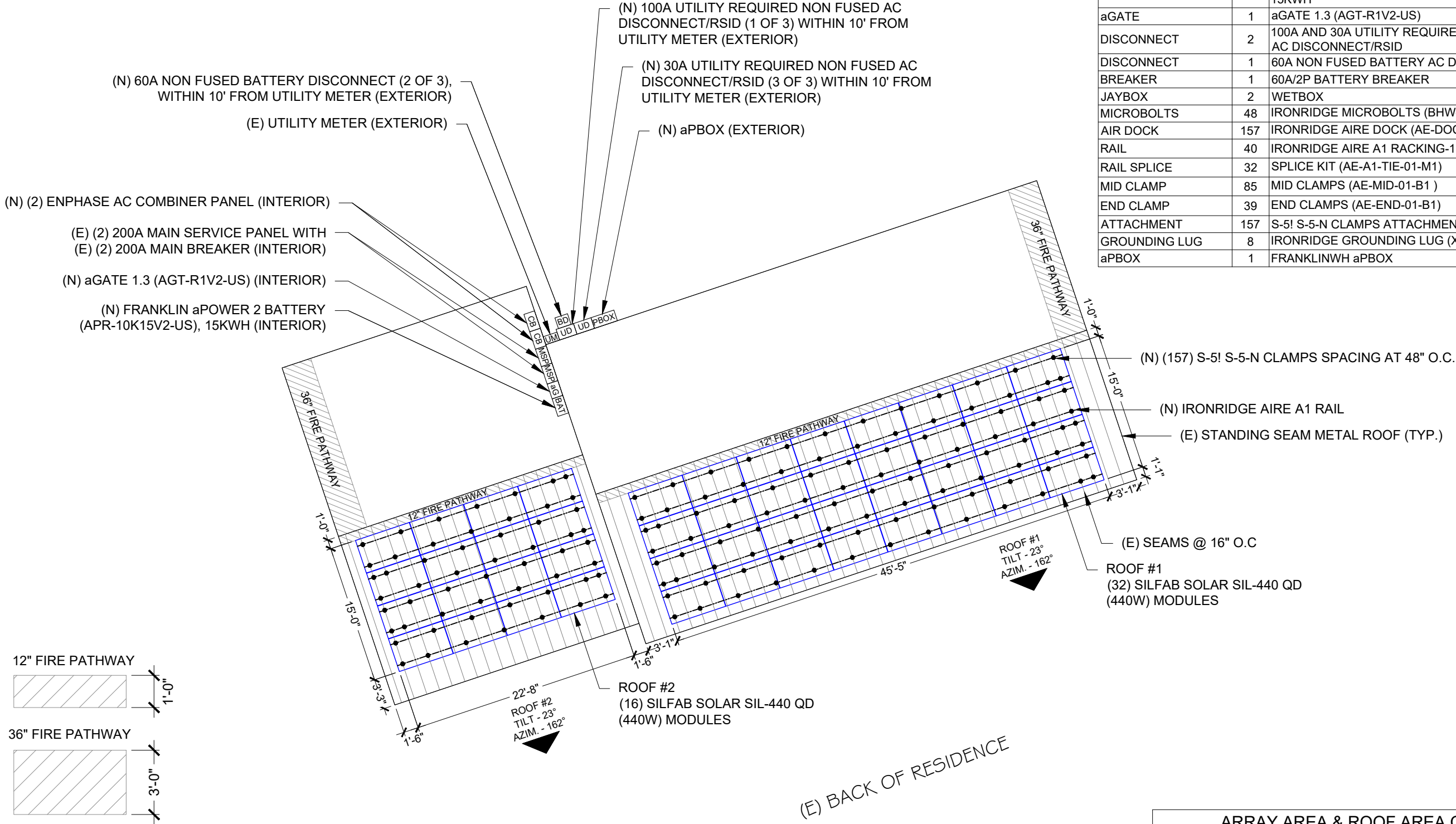
REVISIONS	
DESCRIPTION	DATE

ELECTRICAL CONTRACTOR

PROJECT NAME

AARON MCKAY RESIDENCE
32040 NE MERSHON RD,
TROUTDALE, OR 97060 USA
APN# R111656
UTILITY #: PGE

PROJECT
N/A
SHEET NAME
ROOF PLAN WITH MODULES
SHEET SIZE
ANSI B
SHEET NUMBER
PV-2

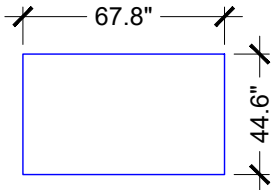


1 ROOF PLAN WITH MODULES
SCALE: 3/32" = 1'-0"



ARRAY AREA & ROOF AREA CALC'S					
ARRAY	# OF MODULES	ARRAY AREA (SQFT)	ROOF AREA (SQFT)	ROOF AREA COVERED BY ARRAY (%)	
#1	32	671.97	2500	26.88	>25%
#2	16	337.93	2500	13.52	<25%

INVERTER SPECIFICATIONS			
MANUFACTURER /MODEL #	QUANTITY	NOMINAL OUTPUT VOLTAGE	NOMINAL OUTPUT CURRENT
ENPHASE ENERGY IQ8AC-72-M-US	48	240 VAC	1.45



PHOTOVOLTAIC MODULES
SILFAB SOLAR SIL-440 QD
(440W) MODULES

- (48) SILFAB SOLAR SIL-440 QD MODULES
- (48) ENPHASE ENERGY IQ8AC-72-M-US MICRO-INVERTERS
- (02) BRANCHES OF 09 MODULES,
- (02) BRANCHES OF 08 MODULES &
- (02) BRANCHES OF 07 MODULES CONNECTED IN PARALLEL PER BRANCH

 **ELEMENTAL
ENERGY**

6800 NE 59TH PLACE,
PORTLAND, OR 97218
Phone - (541) 316-5786
Contractor# OR CCB#: 195141

REVISIONS	
DESCRIPTION	DATE

ELECTRICAL CONTRACTOR

PROJECT NAME

AARON MCKAY RESIDENCE
32040 NE MERSHON RD,
TROUTDALE, OR 97060 USA
APN# R111656
UTILITY #: PGE

PROJECT

N/A

SHEET NAME

BRANCH LAYOUT

SHEET SIZE

ANSI B

SHEET NUMBER

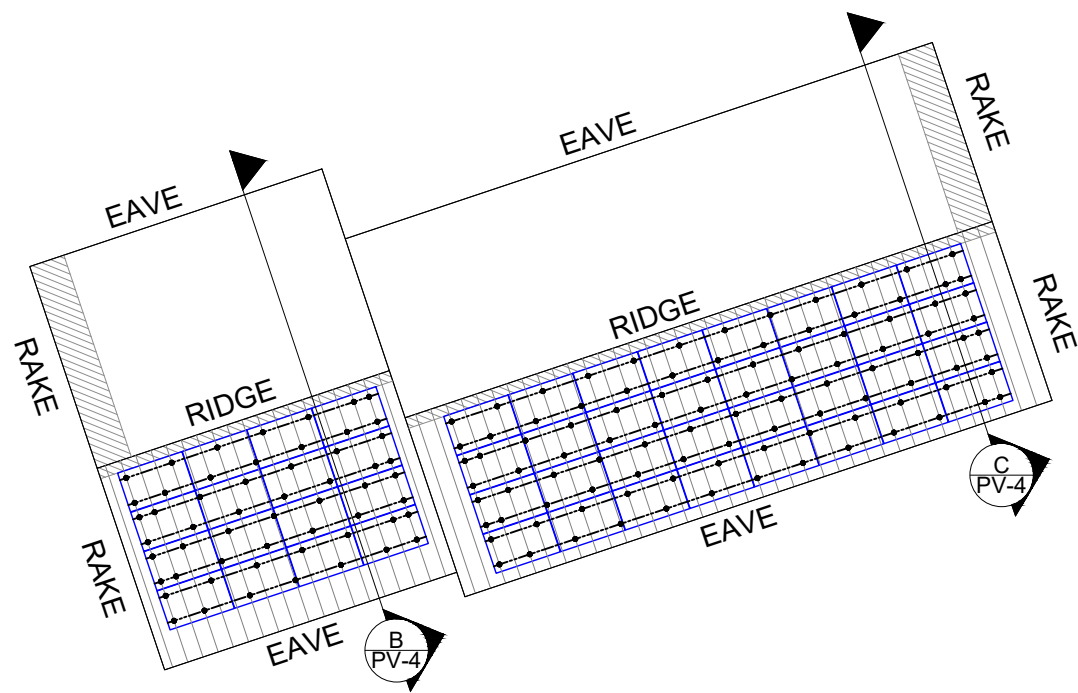
PV-3



A
PV-4

FRAMING PLAN

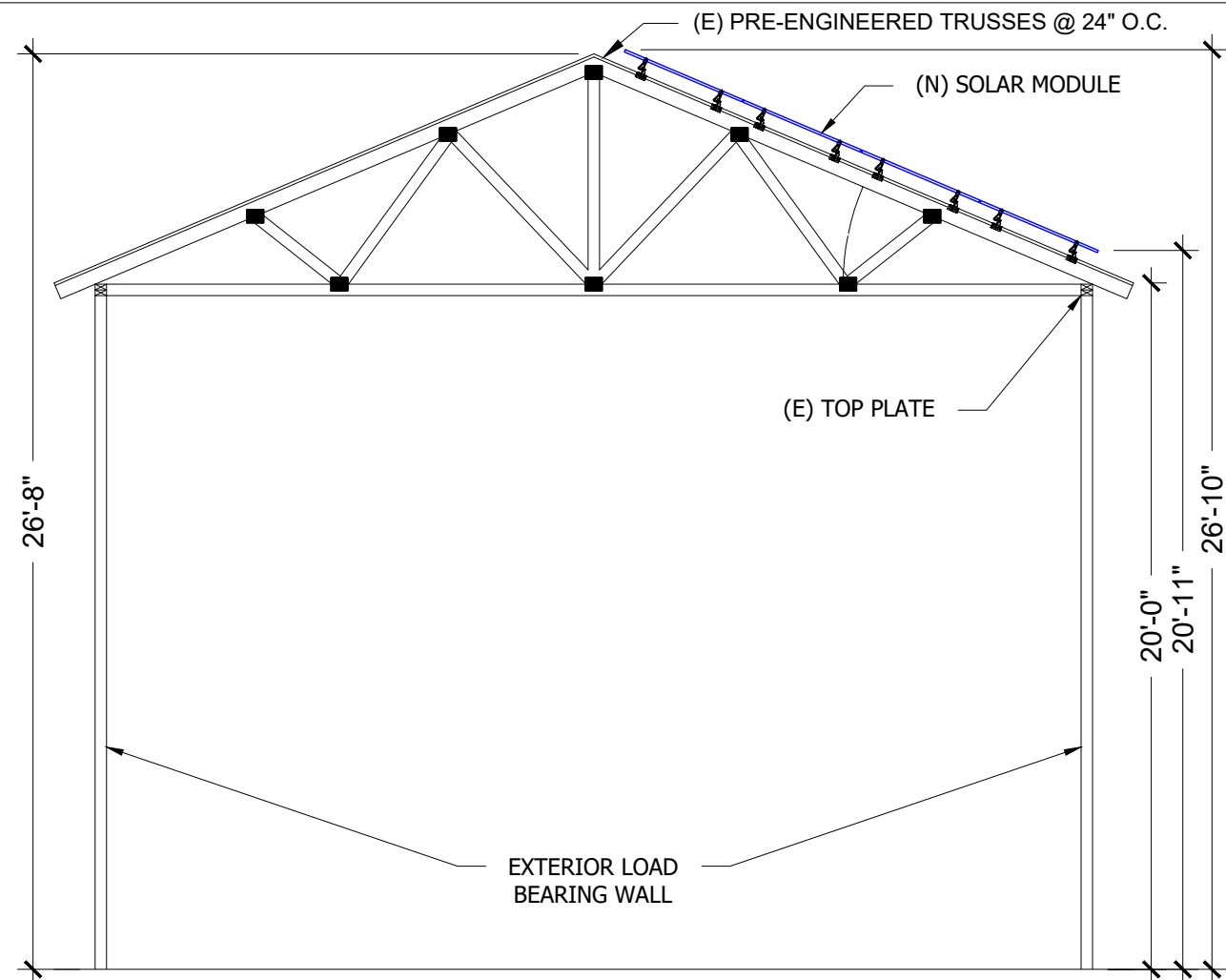
SCALE: 1/16" = 1'



C
PV-4

SECTION DETAIL

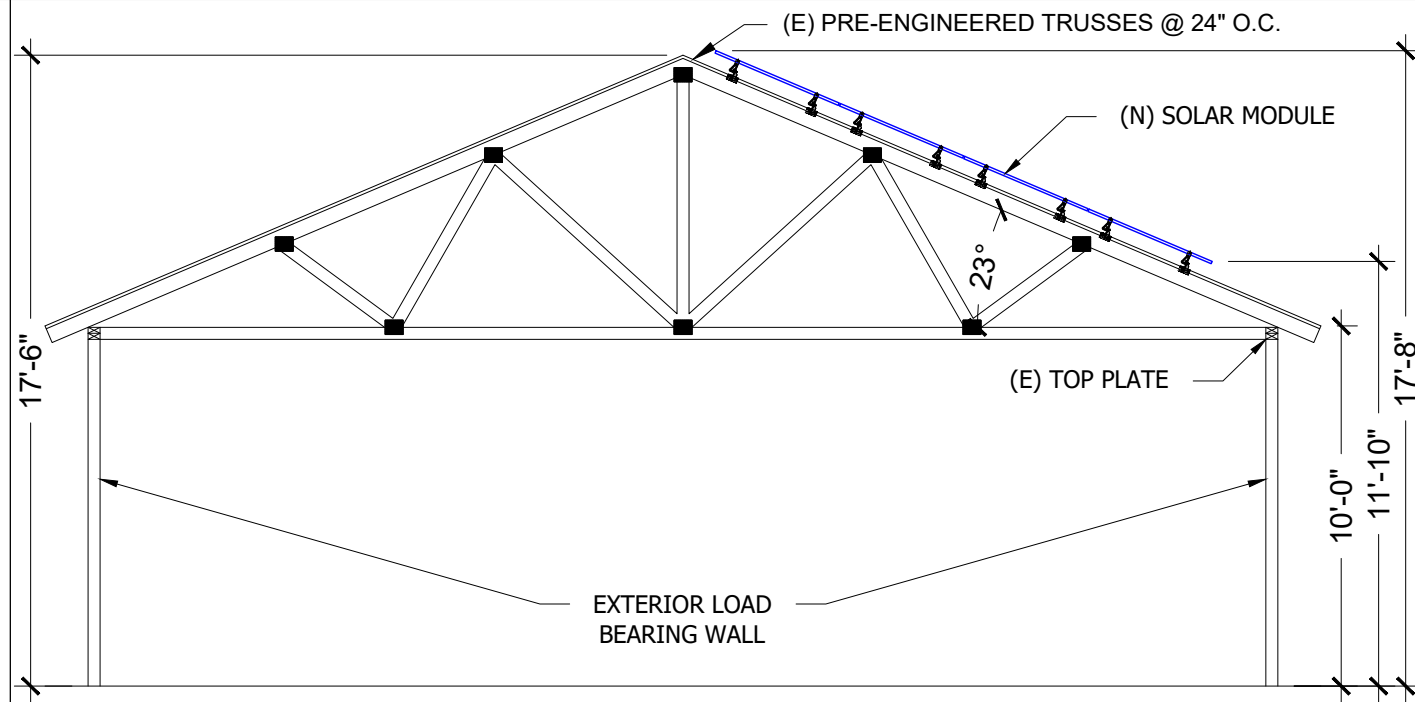
SCALE: 3/16" = 1'-0"



B
PV-4

SECTION DETAIL

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



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REVISIONS

DESCRIPTION	DATE

ELECTRICAL CONTRACTOR

PROJECT NAME

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32040 NE MERSHON RD,
TROUTDALE, OR 97060 USA
APN# R111656
UTILITY #: PGE

PROJECT

N/A

SHEET NAME

FRAMING PLAN
DETAIL

SHEET SIZE

ANSI B

SHEET NUMBER

PV-4

REVISIONS

DESCRIPTION	DATE

ELECTRICAL CONTRACTOR

PROJECT NAME

AARON MCKAY RESIDENCE
32040 NE MERSHON RD,
TROUTDALE, OR 97060 USA
APN# R111656
UTILITY #: PGE

PROJECT

N/A

SHEET NAME

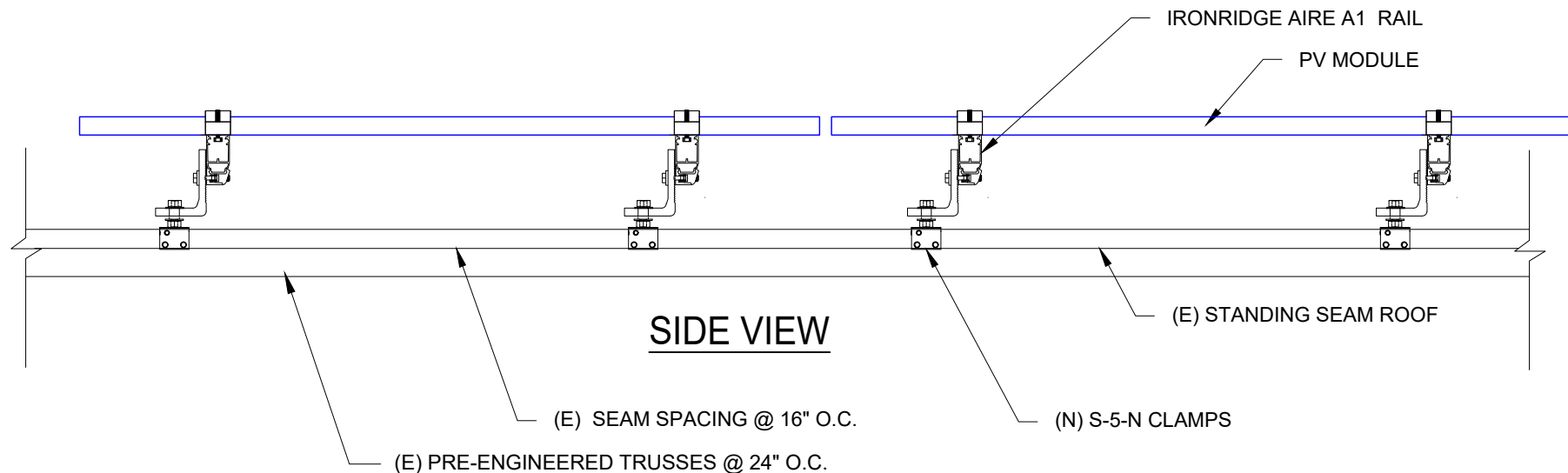
ATTACHMENT
DETAIL & CLAMPING
METHOD

SHEET SIZE

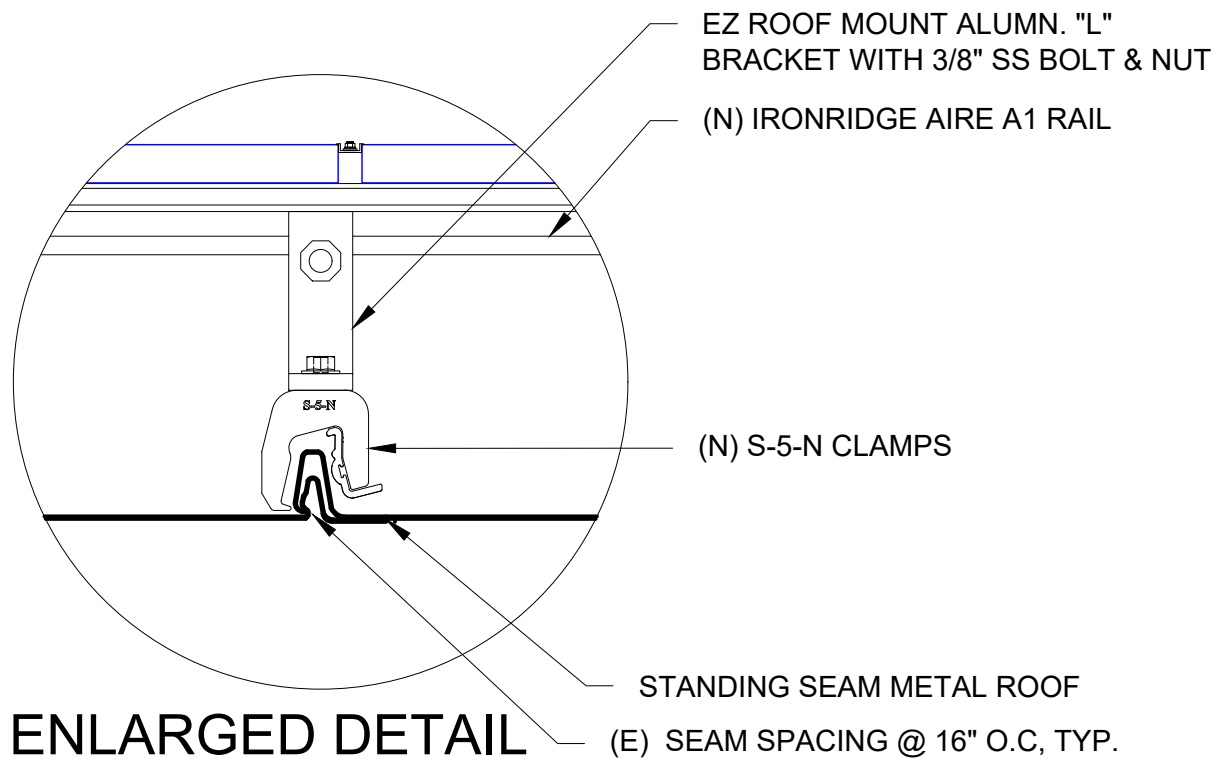
ANSI B

SHEET NUMBER

PV-4.1



1 ATTACHMENT DETAIL
SCALE: NTS.



ENLARGED DETAIL

2 ENLARGED VIEW
SCALE: NTS

Allowed positions for fixing the **SIL QD** module using mounting clamps.

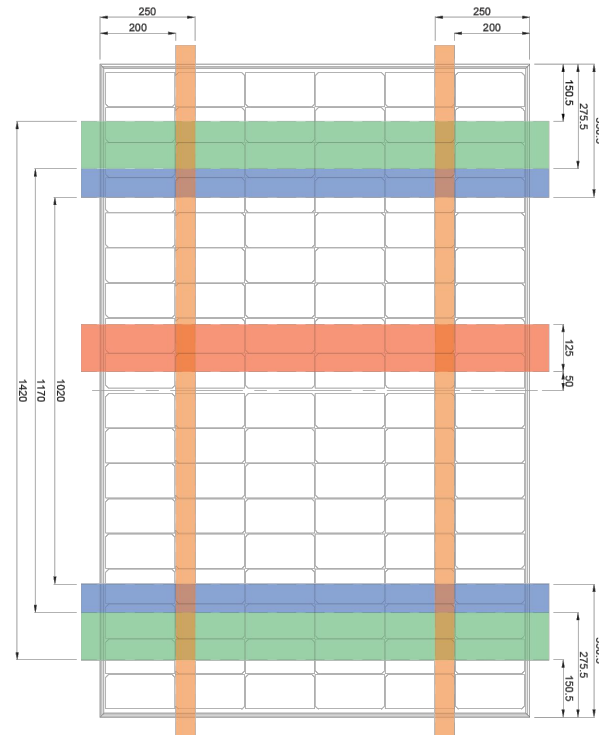
Mounting must stay **WITHIN** the coloured areas.

- Long Edge Primary Mounting Zone
- Long Edge Secondary Mounting Zone
- Long Edge Third Mounting Zone
- Short Edge Mounting Zone



ATTENTION:

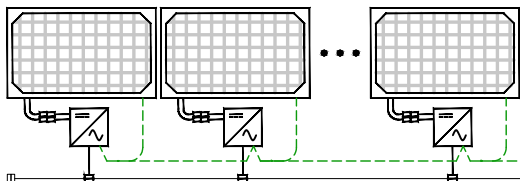
In the case of installation with modules in the portrait configuration, install the modules with the junction boxes at the top in their "upright" position. This will reduce the risk of moisture ingress into the junction box.



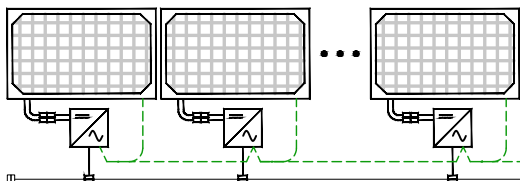
SIL QD				
MOUNTING TYPE	MOUNTING POSITION	MOUNTING ZONE	DESIGN LOAD RATING*	TEST LOAD RATING
Clamp	Long Edge Primary	275.5mm-350.5mm	+3600Pa/ -2667Pa	+5400Pa/ -4000Pa
Clamp	Long Edge Secondary	150.5mm-275.5mm	+2667Pa /-2400Pa	+4000Pa /-3600Pa
Clamp	Long Edge Three Rails	150.5mm-350.5mm and red zone	+3600Pa/ -3600Pa	+5400Pa/ -5400Pa
Clamp	Short Edge	200mm-250mm	+1600Pa/ -1600Pa	+2400Pa/ -2400Pa

3 CLAMPING METHOD
SCALE: NTS.

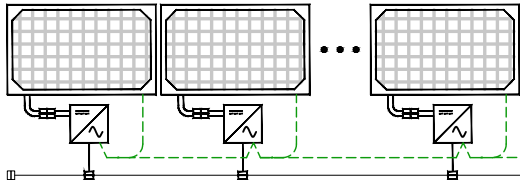
09 MICRO-INVERTERS IN BRANCH #1



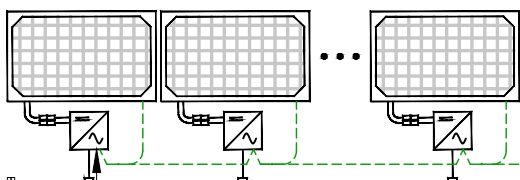
09 MICRO-INVERTERS IN BRANCH #2



08 MICRO-INVERTERS IN BRANCH #3

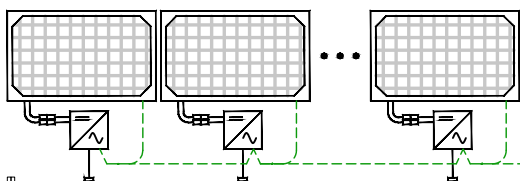


08 MICRO-INVERTERS IN BRANCH #4

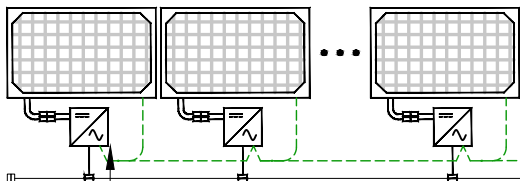


(34) ENPHASE ENERGY IQ8AC-72-M-US MICROINVERTERS (240V) (LOCATED UNDER EACH PANEL)
TERMINATOR CAP ON LAST CABLE CONNECTOR Q- CABLE (TYP)

07 MICRO-INVERTERS IN BRANCH #5



07 MICRO-INVERTERS IN BRANCH #6



(14) ENPHASE ENERGY IQ8AC-72-M-US MICROINVERTERS (240V) (LOCATED UNDER EACH PANEL)
TERMINATOR CAP ON LAST CABLE CONNECTOR Q- CABLE (TYP)

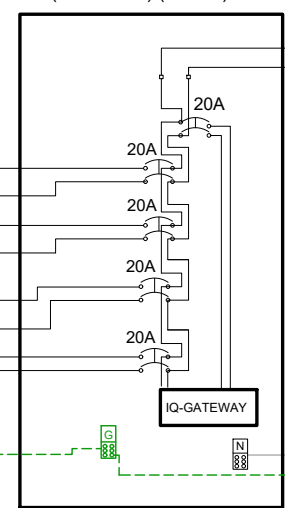
AC1
(1) Q-CABLE
(2) 12 AWG TRUNK CABLE
(1) 6AWG BARE CU GND

(N) WETBOX

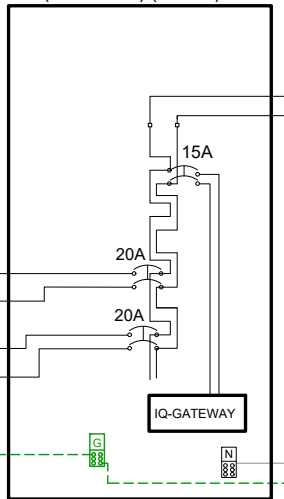
AC2
(8) #10 AWG THWN
(1) #10 AWG THWN GND
IN 3/4" EMT CONDUIT RUN

(N) WETBOX

(N) ENPHASE AC COMBINER PANEL (INTERIOR) (1 OF 2)

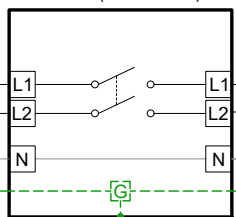


(N) ENPHASE AC COMBINER PANEL (INTERIOR) (2 OF 2)

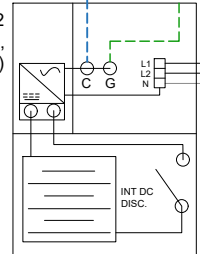


AC3
(2) 4 AWG THWN
(1) 4 AWG THWN NEUTRAL
(1) 8 AWG THWN GND
IN 1" EMT CONDUIT

(N) 100A UTILITY REQUIRED NON FUSED PV AC DISCONNECT/RSID,(1 OF 3) LOAD-BREAK, KNIFE-BLADE, WITHIN 10' FROM UTILITY METER ACCESSIBLE 24/7(EXTERIOR)



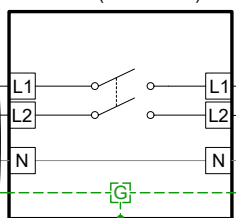
(N) COMMUNICATION WIRE 300V SHIELDED



(N) FRANKLIN aPOWER 2 BATTERY (APR-10K15V2-US), 15KWH (INTERIOR)

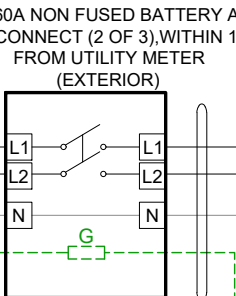
AC4
(2) 6 AWG THWN
(1) 6 AWG THWN NEUTRAL
(1) 10 AWG THWN GND
IN 3/4" EMT CONDUIT

(N) 30A UTILITY REQUIRED NON FUSED PV AC DISCONNECT/RSID,(3 OF 3) LOAD-BREAK, KNIFE-BLADE, WITHIN 10' FROM UTILITY METER ACCESSIBLE 24/7(EXTERIOR)



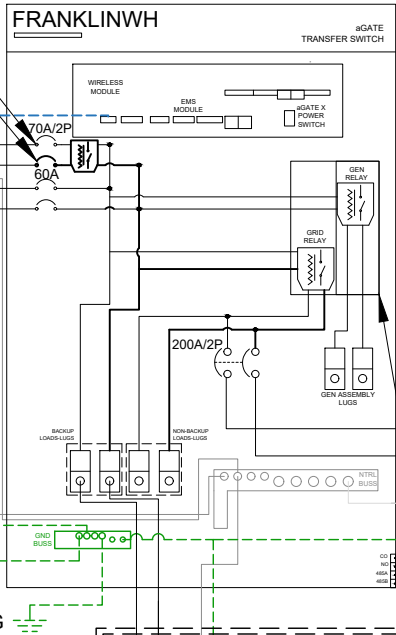
AC7
(2) 10 AWG THWN
(1) 10 AWG THWN NEUTRAL
(1) 10 AWG THWN GND
IN 3/4" EMT CONDUIT

(N) 70A/2P PV BREAKER
(N) 60A/2P BATTERY BREAKER



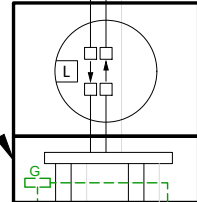
AC5
(2) 3/0 AWG THWN
(1) 3/0 AWG THWN NEUTRAL
(1) 6 AWG THWN GND
IN 2" EMT CONDUIT

(N) aGATE X (AGT-R1V2-US) (INTERIOR)



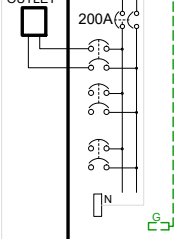
(E) 400A METER ENCLOSURE (EXTERIOR)

BI-DIRECTIONAL UTILITY METER METER 1-PHASE, 3-W, 120V/240V, 60Hz



EXISTING WIRES

240V EV OUTLET



(E) 200A MAIN SERVICE PANEL "B" WITH (E) 200A MAIN BREAKER (INTERIOR)

(N) GENERATOR MODULE ACCY-GENV2-US 240V

AC6
(2) 3/0 AWG THWN
(1) 3/0 AWG THWN NEUTRAL
(1) 6 AWG THWN GND
IN 2" EMT CONDUIT

(E) 200A MAIN BREAKER

(E) 200A MAIN SERVICE PANEL "A" WITH (E) 200A MAIN BREAKER (INTERIOR)

(N) 30A/2P PV BREAKER

GENERAL NOTES:

1. CONTRACTOR RESPONSIBLE FOR COMPLYING WITH ALL LOCAL OR NATIONAL CODE REQUIREMENTS AND EQUIPMENT INSTALLATION INSTRUCTIONS.
2. SEE PV-6 FOR LABELING REQUIREMENTS
3. 200A CONTACTOR ISOLTES BACKUP POWER SYSTEM FROM GRID UPON LOSS OF GRID VOLTAGE.



6800 NE 59TH PLACE,
PORTLAND, OR 97218
Phone - (541) 316-5786
Contractor# OR CCB#: 195141

REVISIONS

DESCRIPTION	DATE

ELECTRICAL CONTRACTOR

PROJECT NAME

AARON MCKAY RESIDENCE
32040 NE MERSHON RD,
TROUTDALE, OR 97060 USA
APN# R111656
UTILITY #: PGE

PROJECT

N/A

SHEET NAME

ELECTRICAL LINE
DIAGRAM

SHEET SIZE
ANSI B

SHEET NUMBER

PV-5

1

ELECTRICAL LINE DIAGRAM

SCALE: NTS



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TROUTDALE, OR 97060 USA
APN# R111656
UTILITY #: PGE

PROJECT

N/A

SHEET NAME

ELECTRICAL
CALCULATION

SHEET SIZE

ANSI B

SHEET NUMBER

PV-5.1

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 WETBOX	BRANCH	4	09	1.45	16.31	240	1	2	12 AWG	Q-CABLE	CU	25	0.94	1	23.50	40	0.70%	N/A	N/A	6 AWG	FREE AIR	N/A
AC2	WETBOX TO COMBINER BOX	WETBOX	4	09	1.45	16.31	240	4	8	10 AWG	THWN	CU	35	0.94	0.7	23.03	75	0.86%	20	N/A	10 AWG	EMT	3/4"
AC2.1	WETBOX TO COMBINER BOX	WETBOX	2	7	1.45	12.69	240	2	4	10 AWG	THWN	CU	35	0.94	0.8	26.32	75	0.67%	20	N/A	10 AWG	EMT	3/4"
AC3	COMBINER BOX TO aGATE X	COMBINER BOX	N/A	34	1.45	61.63	240	1	2	4 AWG	THWN	CU	85	1.00	1	85.00	10	0.12%	70	4 AWG	8 AWG	EMT	1"
AC4	BATTERY TO aGATE	BATTERY	N/A	-	-	60.00	240	1	2	6 AWG	THWN	CU	65	1.00	1	65.00	10	0.18%	60	6 AWG	10 AWG	EMT	3/4"
AC5	aGATE TO POINT OF INTERCONNECTION	aGATE X	N/A	-	-	200.00	240	1	2	3/0 AWG	THWN	CU	200	1.00	1	200.00	10	0.15%	200	3/0 AWG	6 AWG	EMT	2"
AC6	aGATE X TO MAIN SERVICE PANEL	aGATE X	N/A	-	-	200.00	240	1	2	3/0 AWG	THWN	CU	200	1.00	1	200.00	5	0.07%	200	3/0 AWG	6 AWG	EMT	2"
AC7	COMBINER TO MAIN SERVICE PANEL	COMBINER BOX	N/A	14	1.45	25.38	240	1	2	10 AWG	THWN	CU	35	1.00	1	35.00	10	0.18%	30	10 AWG	10 AWG	EMT	3/4"

MAX VOLTAGE DROP: 1.83%



ELECTRICAL CALCULATION

SCALE: NTS

PHOTOVOLTAIC SYSTEM
AC DISCONNECT

OPERATING VOLTAGE 240 VOLTS
OPERATING CURRENT 49.30 AMPS

LOCATION: AC DISCONNECT (1 OF 3) AND COMBINER PANEL (1 OF 2) QUANTITY:2

PHOTOVOLTAIC SYSTEM
AC DISCONNECT

OPERATING VOLTAGE 240 VOLTS
OPERATING CURRENT 20.30 AMPS

LOCATION: AC DISCONNECT (3 OF 3) AND COMBINER PANEL (2 OF 2) QUANTITY:2

AUTOMATIC
TRANSFER SWITCH

LOCATION: aGATE QUANTITY:1

WARNING: MULTIPLE POWER SOURCES PRESENT.
21120 WATT PHOTOVOLTAIC ARRAY LOCATED ON ROOF.
MAIN SERVICE DISCONNECT LOCATED INSIDE AT HOUSE MAIN
SERVICE PANEL. AC DISCONNECT AND RAPID SHUTDOWN
INITIATION DEVICE LOCATED OUTSIDE NEXT TO THE METER.

LOCATION: METER QUANTITY:1

BATTERY DISCONNECT LOCATED
INSIDE NEXT TO BATTERY

LOCATION: BATTERY QUANTITY:1

RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM

LOCATION: RSD INITIATION DEVICE QUANTITY:2

MULTIPLE POWER SOURCES PRESENT. SECOND
SOURCE IS A PV ARRAY. THIRD SOURCE IS AN
ENERGY STORAGE SYSTEM. MAIN SERVICE
DISCONNECT LOCATED IN THIS PANEL. AC
DISCONNECT AND RAPID SHUTDOWN INITIATION
DEVICE LOCATED OUTSIDE NEXT TO METER.

LOCATION: INTERCONNECTION PANEL QUANTITY:1

BRANCH #6
DISCONNECT
240VAC 10.15 AAC

LOCATION: COMBINER PANEL(2 OF 2) QUANTITY:1

BATTERY BACKUP
AC DISCONNECT
240VAC 48 AAC

LOCATION: BATTERY DISCONNECT QUANTITY:1

! WARNING

THREE POWER SOURCES

SOURCE: UTILITY GRID, BATTERY
AND PV SOLAR ELECTRIC SYSTEM

LOCATION: AC DISCONNECT QUANTITY:1

BRANCH #1
DISCONNECT
240VAC 13.05 AAC

LOCATION: COMBINER PANEL(1 OF 2) QUANTITY:1

BRANCH #2
DISCONNECT
240VAC 13.05 AAC

LOCATION: COMBINER PANEL(1 OF 2) QUANTITY:1

BRANCH #3
DISCONNECT
240VAC 11.60 AAC

LOCATION: COMBINER PANEL(1 OF 2) QUANTITY:1

BRANCH #4
DISCONNECT
240VAC 11.60 AAC

LOCATION: COMBINER PANEL(1 OF 2) QUANTITY:1

BRANCH #5
DISCONNECT
240VAC 10.15 AAC

LOCATION: COMBINER PANEL(2 OF 2) QUANTITY:1

CAUTION

THIS PANEL HAS SPLICED FEED
THROUGH CONDUCTORS
LOCATION OF DISCONNECT AT
BATTERY BACK UP LOAD PANEL

LOCATION: aGATE QUANTITY:1

! WARNING

PHOTOVOLTAIC SYSTEM
COMBINER PANEL

DO NOT ADD LOADS

LOCATION: COMBINER PANEL QUANTITY:2

ELEMENTAL
ENERGY

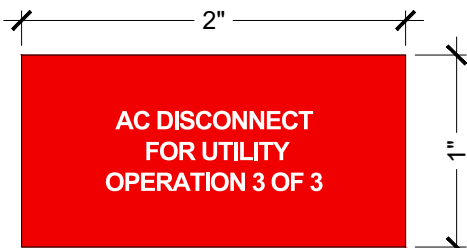
6800 NE 59TH PLACE,
PORTLAND, OR 97218
Phone - (541) 316-5786
Contractor# OR CCB#: 195141

REVISIONS	
DESCRIPTION	DATE

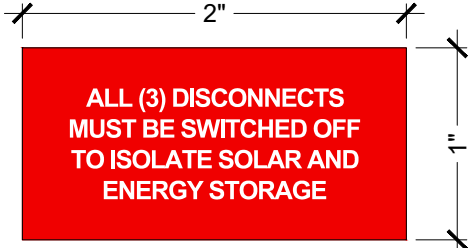
ELECTRICAL CONTRACTOR

PROJECT NAME
AARON MCKAY RESIDENCE
32040 NE MERSHON RD,
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APN# R111656
UTILITY #: PGE

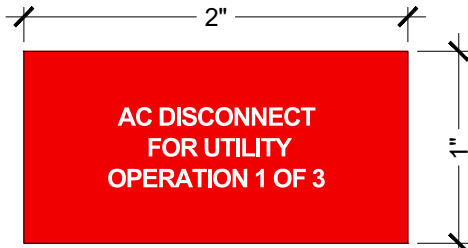
PROJECT
N/A
SHEET NAME
WARNING LABELS
SHEET SIZE
ANSI B
SHEET NUMBER
PV-6



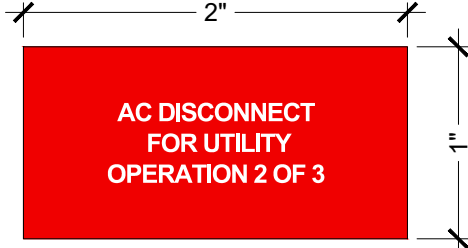
LOCATION: PV AC DISCONNECT (3 OF 3) QUANTITY:1



LOCATION: METER QUANTITY:1



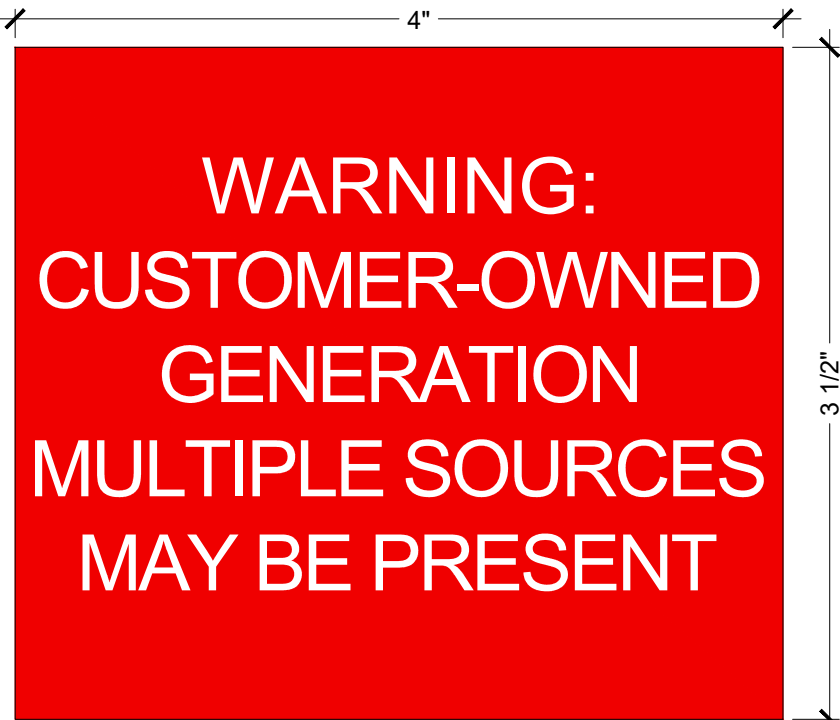
LOCATION: PV AC DISCONNECT (1 OF 3) QUANTITY:1



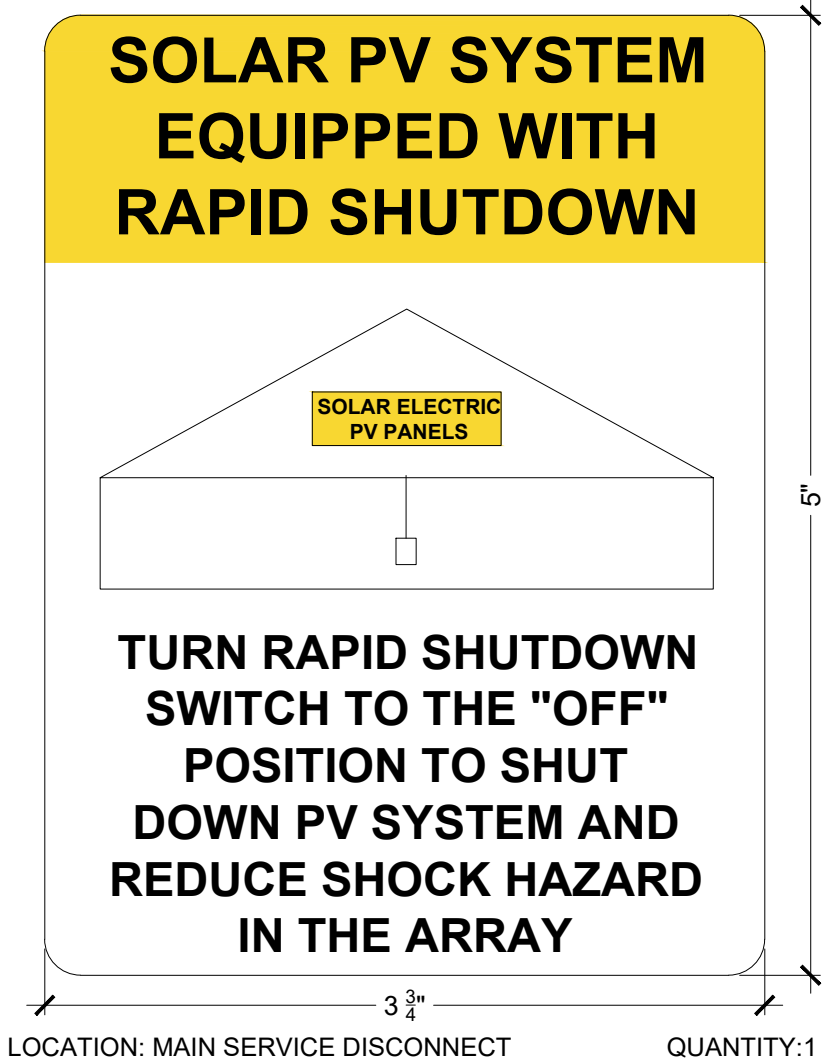
LOCATION: BATTERY DISCONNECT (2 OF 3) QUANTITY:1



LOCATION: AC DISCONNECT QUANTITY:1



LOCATION: METER BASE QUANTITY:1



LOCATION: MAIN SERVICE DISCONNECT QUANTITY:1

REVISIONS	
DESCRIPTION	DATE

ELECTRICAL CONTRACTOR

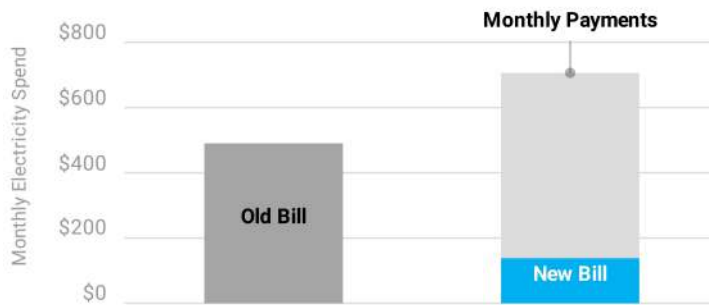
PROJECT NAME

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32040 NE MERSHON RD,
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APN# R111656
UTILITY #: PGE

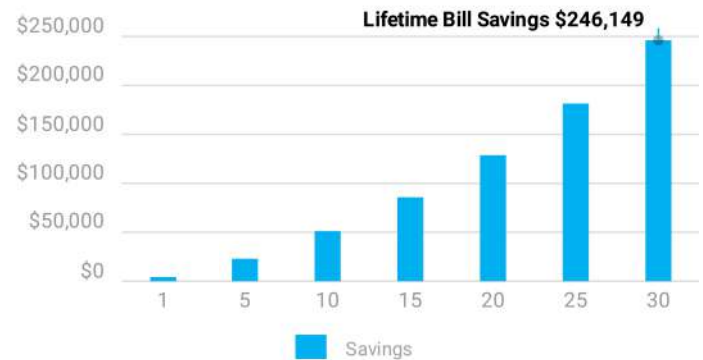
PROJECT
N/A
SHEET NAME
WARNING LABELS
SHEET SIZE
ANSI B
SHEET NUMBER
PV-6.1

Electricity Bill Savings

First Year Monthly Bill Savings



Cumulative Bill Savings



Month	Solar Generation (kWh)	Electricity Consumption before solar (kWh)	Electricity Consumption after solar (kWh)	Utility Bill before solar (\$)	Utility Bill after solar (\$)	Cumulative Energy Credit (\$)	Estimated Savings (\$)
Jan	1,196	2,770	825	552	174	0	378
Feb	1,304	3,275	1097	650	226	0	424
Mar	1,520	2,805	762	559	161	0	397
Apr	2,263	2,225	550	446	120	0	326
May	2,400	2,150	346	431	80	0	351
Jun	2,351	1,865	319	376	75	0	301
Jul	3,178	2,500	453	499	101	0	398
Aug	2,717	2,040	347	410	80	0	329
Sep	2,024	2,140	526	429	115	0	314
Oct	1,541	1,930	493	388	109	0	280
Nov	1,157	2,300	677	460	145	0	316
Dec	493	3,435	1329	681	272	0	410

Rate not specified specified, using Residential Service (Single-Family Home) based on location.

Your projected energy cost is calculated by considering a 4.5% increase in energy cost each year, due to trends in the raising cost of energy. This estimate is based on your selected preferences, current energy costs and the position and orientation of your roof to calculate the efficiency of the system. Projections are based on estimated usage of 29435 kWh per year, assuming Residential Service (Single-Family Home)