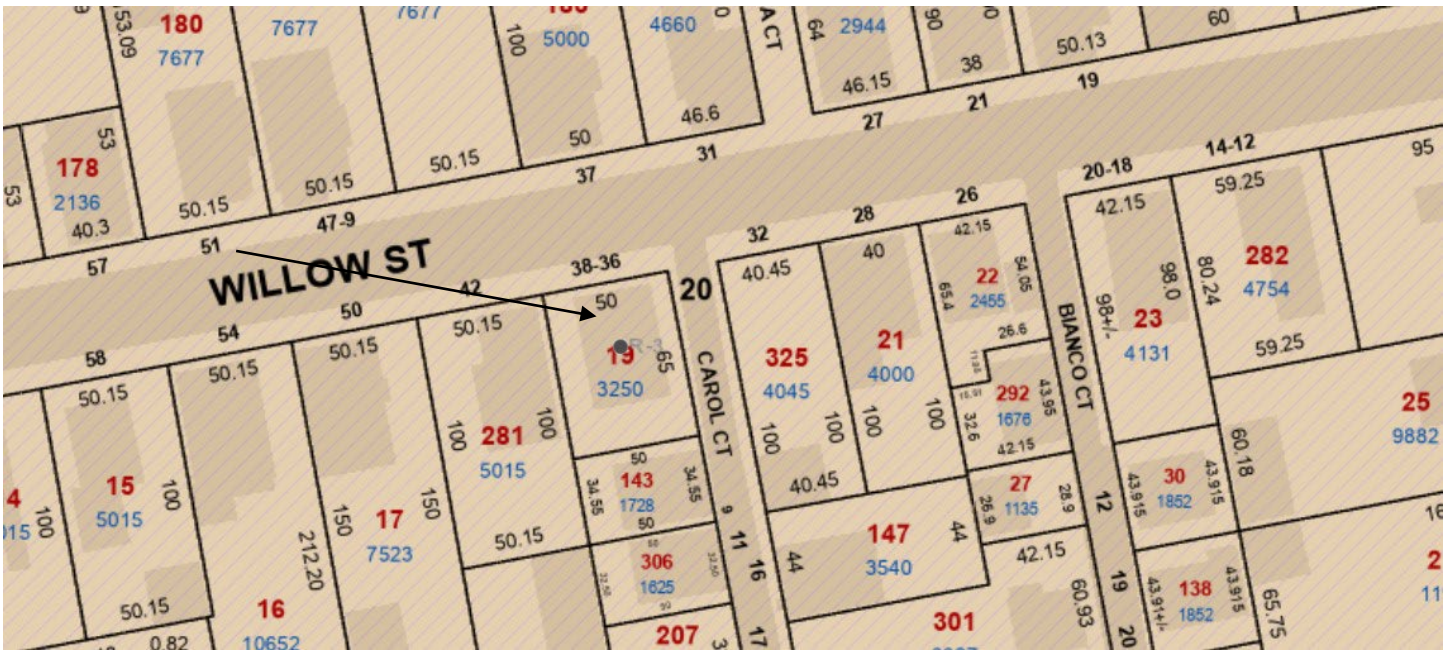


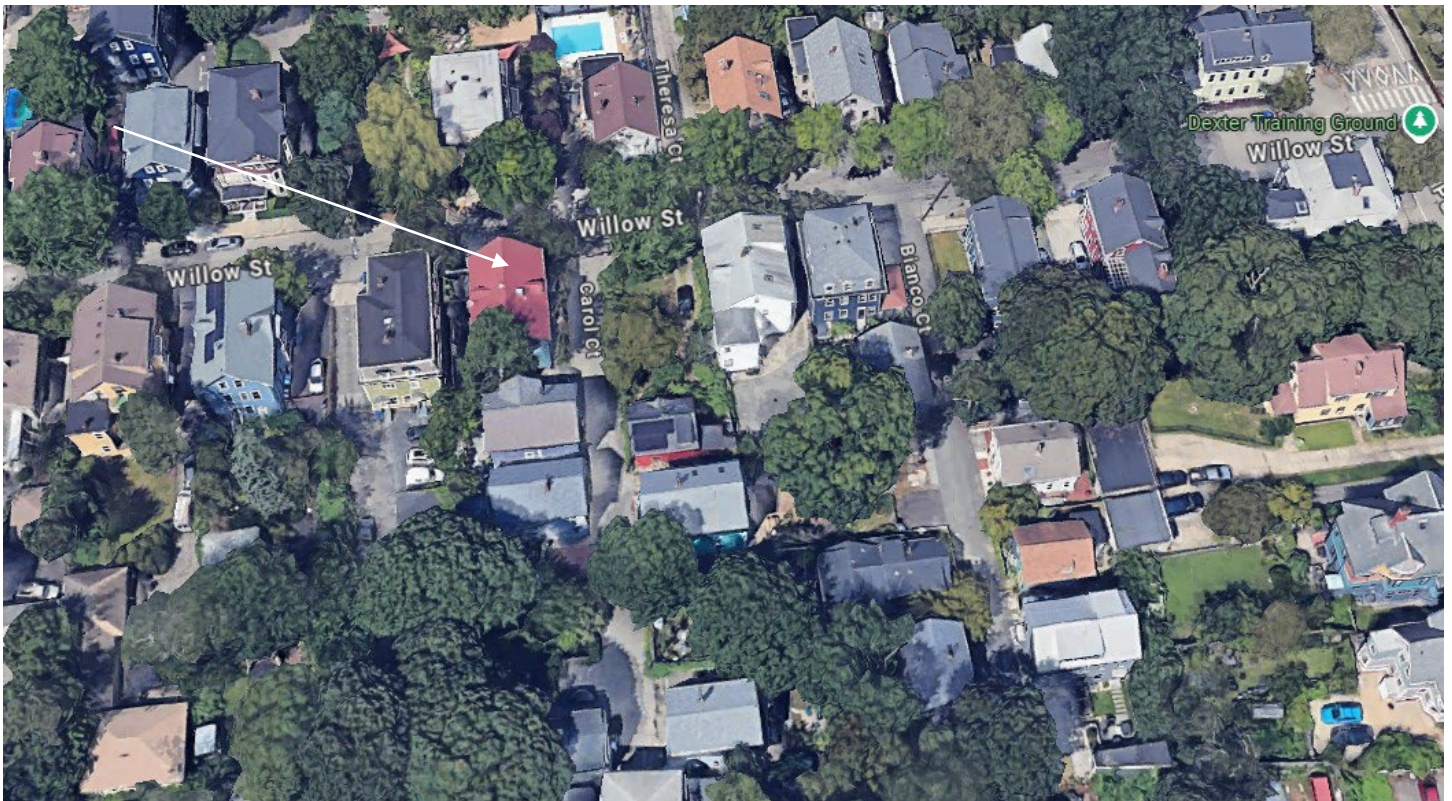
3. CASE 24.138, 38 WILLOW STREET, House, c1880 (ARMORY)

2½-story; end-gable; shingle dwelling; with two-story front bay, carved bargeboard, and double entrance at side under Queen Anne porch. Now has small one-story commercial building attached, right.

CONTRIBUTING



Arrow indicates 38 Willow Street.



Arrow indicates project location, looking north.

Applicant/Contractor: Kai R. Hadley, Portside Renewables, 77 N. Water St, New Bedford, MA 02740

Owner: Kari Lang, 38 Willow Street, Providence, RI 02909

Proposal: The scope of work proposed consists of Minor Alterations and includes:

- installation of 38 solar panels to the north and south slopes of the gable-end roof.

Issues: The following issues are relevant to this application:

- The application as submitted will be partially visible from the public rights-of-way;
- The applicants would like to keep the existing red roof. Typically, the Commission requests that when solar panels are being installed and roofs are being replaced that the new roof be charcoal in color so as to minimize the appearance of the solar panels;
- The modifications as proposed meets Minor Alterations: Solar Energy Systems Guidelines, Section 2, in the following manner: Panel layout shall be sympathetic or appropriate to design and scale of building. Rectangular configurations are preferred, with ample setback from edge of roof, dormers, chimneys, etc. (2.A); Panels shall be installed parallel to the existing roof slope and matched as closely as possible to the roof plane (2.B); Panels shall be installed without destroying or replacing original or historic materials or significantly compromising or altering the building's structural integrity (2.C); Panels shall be compatible in color to existing roofing insofar as possible (2.D); Installation of panels shall be as inconspicuous as possible when viewed from public right-of-way (2.E); Installation shall be reversible. Panels shall be removed when no longer viable or functioning and roofing restored to pre-existing conditions (2.F); and,
- Plans, specifications and pictures have been submitted.

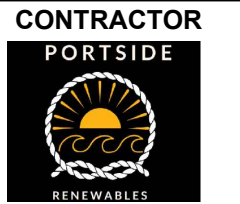
Recommendations: The staff recommends the PHDC make the following findings of fact:

- a) 38 Willow Street is a structure of historical and architectural significance that contributes to the significance of the Armory local historic district, having been recognized as a contributing structure to the Broadway/Armory National Register Historic District;
- b) The modifications as proposed meets Minor Alterations: Solar Energy Systems Guidelines, Section 2, and the application is considered complete; and,
- c) The work as proposed is in accord with PHDC Standards 8 & 9 as follows: 8) the work will be done so that it does not destroy the historic character of the property or the district as they are not on the primary elevation and will be minimally visible from the public rights-of-way; and, 9) Whenever possible... alterations to structures shall be done in such a manner that if removed in the future, the essential form and integrity of the structure and the site will be unimpaired.

Staff recommends a motion be made stating that: The application is considered complete. 38 Willow Street is a structure of historical and architectural significance that contributes to the significance of the Armory local historic district, having been recognized as a contributing structure to the Broadway/Armory National Register Historic District. The Commission grants Final Approval of the proposal as submitted as the proposed alteration is appropriate having determined that the proposed alteration does not destroy the historic character of the property or the district and are historically and architecturally compatible with the property and district. The proposed alteration meets Minor Alterations: Solar Energy Systems Guidelines, Section 2, is reversible and will not have an adverse effect on the property or district as they will be minimally visible from the public rights-of-way (Standards 8 & 9), and the recommendations in the staff report, with staff to review any additional required details.

NEW PHOTOVOLTAIC ROOF MOUNTED SYSTEM - 16.340 KW DC/12.350 KW AC

38 WILLOW ST, PROVIDENCE, RI 02909



CONTRACTOR
PORTSIDE
 RENEWABLES
 PORTSIDE RENEWABLES
 17 STUDLEY ST, FAIRHAVEN, MA 02719
 PHONE - (401) 215-7056
 LIC. NO. - 22342A

NEW PV SYSTEM SPECIFICATIONS
 SYSTEM SIZE: DC SIZE: 16.340 KW DC-(STC)
 AC SIZE: 12.350 KW AC
 MODULE: (38) SILFAB SOLAR SIL-430 QD (430W)
 INVERTER: (38) ENPHASE IQ8M-72-M-US (240V)

APPLICABLE CODES
 ALL WORK SHALL CONFORM TO THE FOLLOWING CODES:
 2021 RHODE ISLAND STATE BUILDING CODES (RISBC-2)
 2021 RHODE ISLAND STATE ONE AND TWO FAMILY DWELLINGS (IRC 2018)
 2018 RHODE ISLAND FIRE CODE (NFPA 1)
 2021 RHODE ISLAND ELECTRICAL CODE (NEC 2020)
 AS ADOPTED BY PROVIDENCE RI AHJ

DESIGN CRITERIA
 ROOF SURFACE TYPE: COMPOSITE SHINGLE
 ROOF FRAMING: 2"x6" RAFTER @ 32" OC
 BUILDING STORY: THREE STORY
 GROUND SNOW LOAD: 35 PSF
 WIND SPEED: 125 MPH
 WIND EXPOSURE: B
 RISK CATEGORY: II

PROJECT NOTES
 1.1.1 THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE RELEVANT YEAR OF THE NATIONAL ELECTRIC CODE (NEC), ALL MANUFACTURER'S LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION'S (AHJ) APPLICABLE CODES.
 1.1.2 THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND THE PV SYSTEM MUST BE INSPECTED PRIOR TO OPERATION
 1.1.3 ALL PV SYSTEM COMPONENTS; MODULES, UTILITY-INTERACTIVE INVERTERS, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEMS AS REQUIRED BY NEC AND OTHER GOVERNING CODES
 1.1.4 ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC AND AHJ.

SCOPE OF WORK
 1.2.1 CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC SYSTEM. THE CONTRACTOR WILL BE RESPONSIBLE FOR COLLECTION OF EXISTING ONSITE CONDITIONS TO DESIGN, SPECIFY, AND INSTALL THE ROOF-MOUNTED PHOTOVOLTAIC SYSTEM DETAILED IN THIS DOCUMENT

SHEET INDEX

| | |
|-------------------------------|---------------------------|
| PV-01 | COVER PAGE |
| PV-02 | SITE PLAN |
| PV-03 | ATTACHMENT PLAN & DETAILS |
| PV-04 | ELECTRICAL DIAGRAM |
| PV-05 | NOTES |
| PV-06 | WARNING LABELS |
| PV-07 | INSTALLATION RESOURCE |
| EQUIPMENT DATASHEETS ATTACHED | |

LEGEND

----- - PROPERTY LINE

PROJECT NAME & ADDRESS

KARI LANG
 38 WILLOW ST,
 PROVIDENCE, RI 02909
 APN #: 578-887
 AHJ: PROVIDENCE RI AHJ
 UTILITY: RI ENERGY

SYSTEM DETAILS

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 (38) SILFAB SOLAR SIL-430 QD (430W)
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REVISIONS

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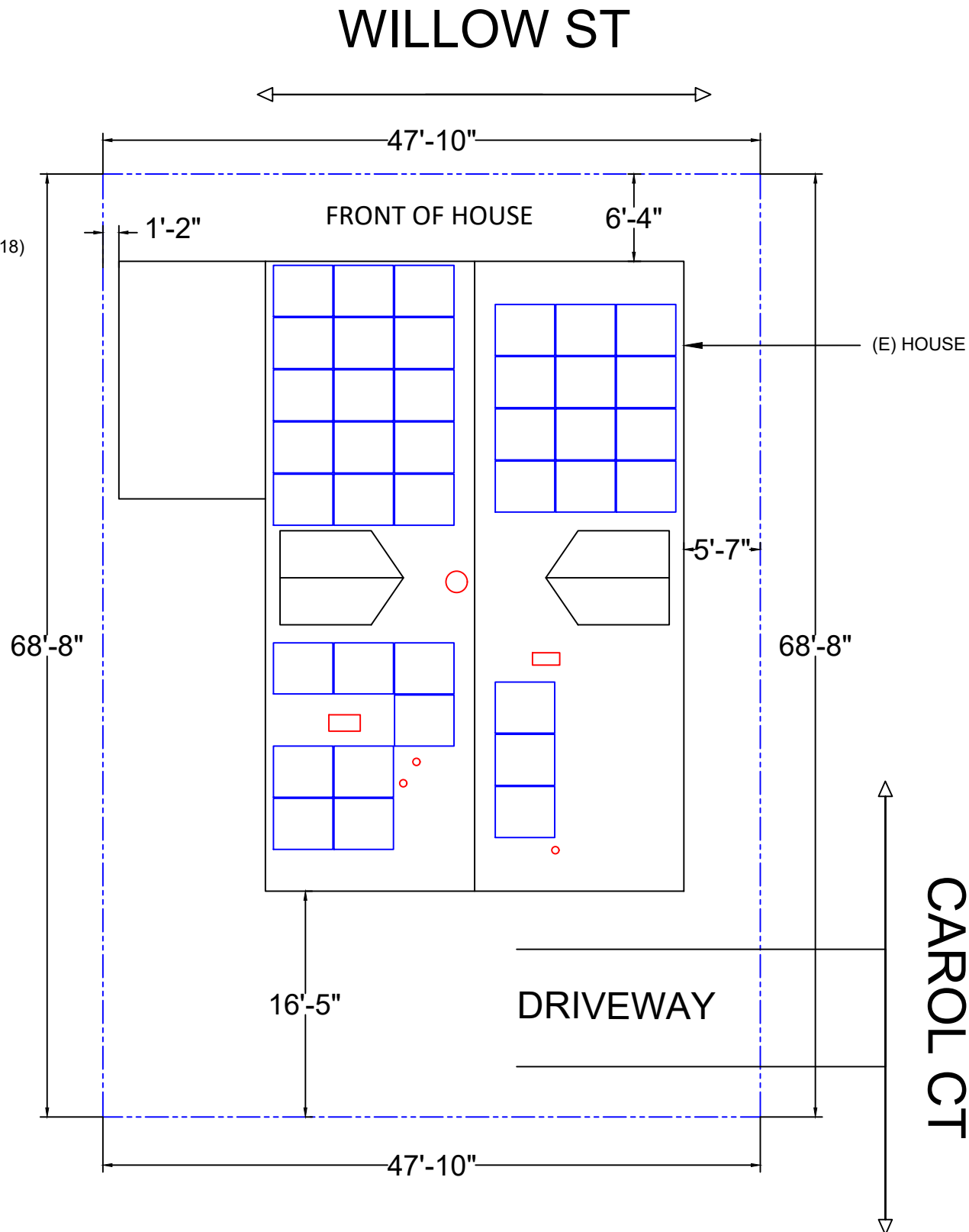
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COVER PAGE

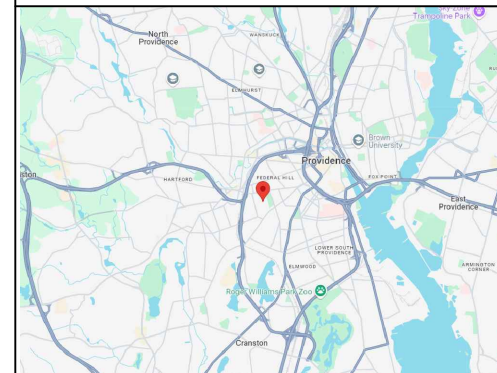
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 DRAWN BY: MSM

SHEET NUMBER

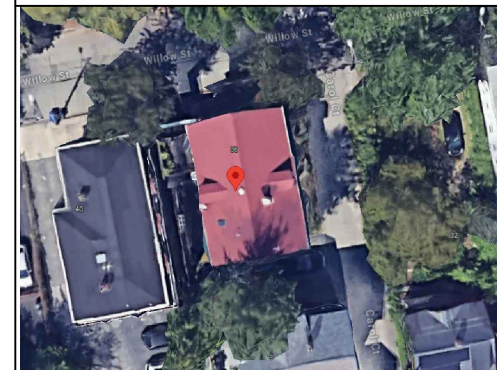
PV-01



VICINITY MAP



SATELLITE MAP



PROPERTY PLAN

SCALE: 3/32" = 1'-0"

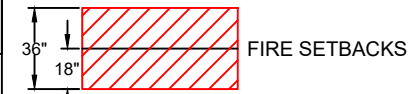
NOTES:

1. ROOF ACCESS POINT SHALL NOT BE LOCATED IN AREAS THAT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.

2. STRUCTURES, PATIO COVERS, AND/OR ADDITIONS BUILT WITHOUT PERMITS TO BE RESOLVED BY A SEPARATE PERMIT.

PLAN VIEW TOTAL ROOF AREA: 3570 FT²
 TOTAL PV ARRAY AREA: 797.97 FT²
 TOTAL % OF ROOF COVERED BY PV: 22.35%

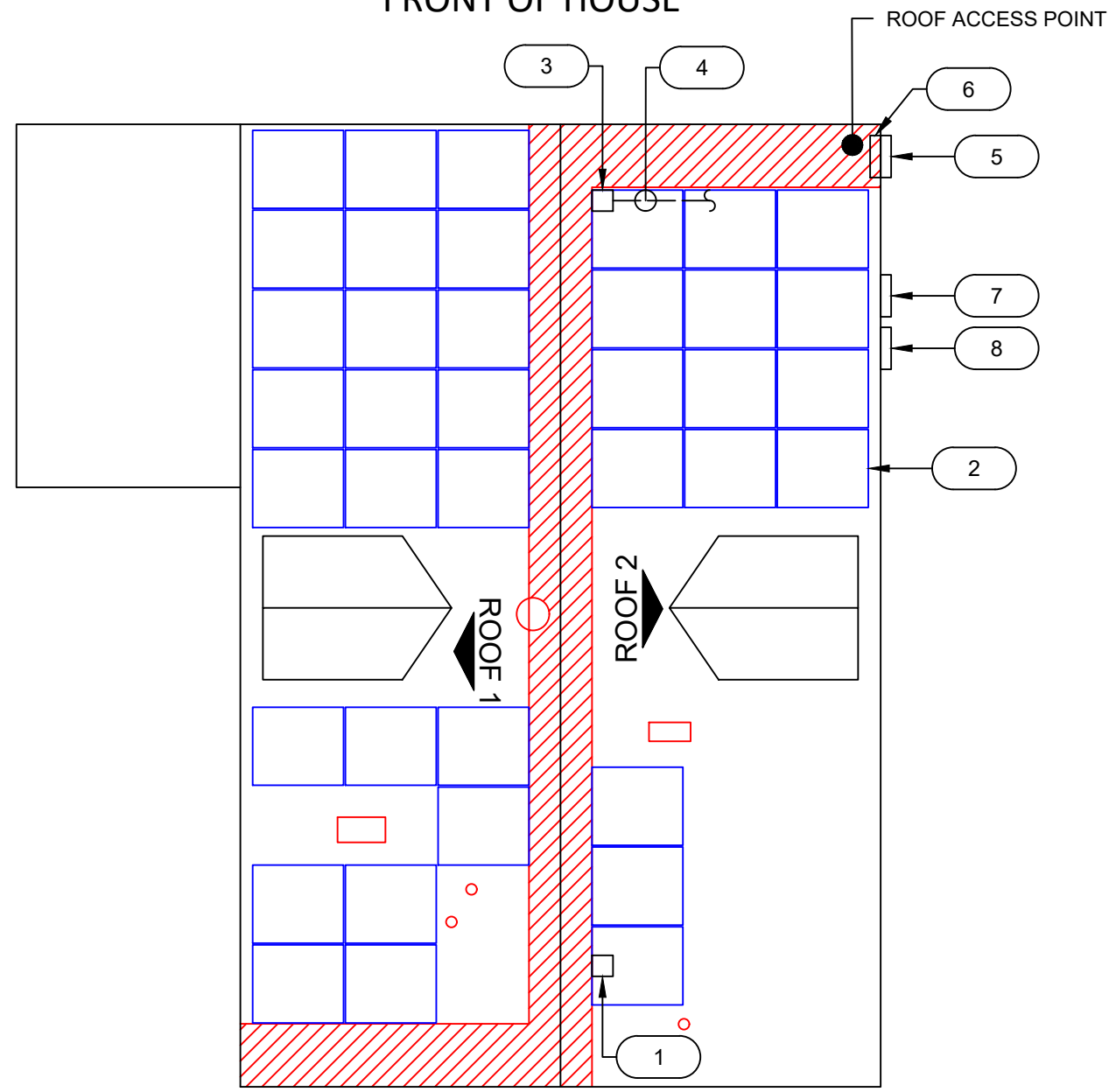
LEGEND



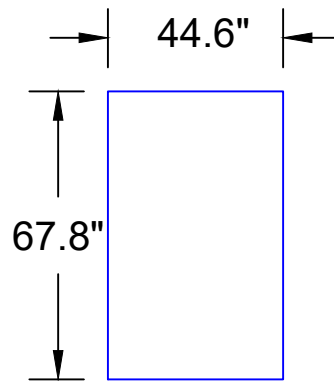
- = MECHANICAL VENT
- = FLUE / PLUMBING VENT

- MICROINVERTER (1 PER MODULE)
- (38) SILFAB SOLAR SIL-430 QD (430W) MODULES WITH ENPHASE IQ8M-72-M-US (240V) UNDER EACH MODULE
- (N) JUNCTION BOX (NEMA 3R)
- CONDUIT RUN; SURFACE MOUNTED (ACTUAL CONDUIT RUNS TO BE DETERMINED IN FIELD)
- (E) UTILITY METER (OVERHEAD SERVICE) METER #: 25032157
- (E) MAIN SERVICE PANEL
- (N) AC DISCONNECT
- (N) ENPHASE IQ COMBINER BOX 4/4C

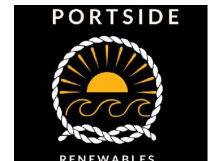
FRONT OF HOUSE



| | | |
|--------------------|------------|---------------------|
| ROOF 1 ▼ | SLOPE | - 40° |
| | AZIMUTH | - 259° |
| | MODULE QTY | - 23 |
| | RAFTER | - 2"X6" @ 32" O.C. |
| ROOF 2 ▼ | SLOPE | - 40° |
| | AZIMUTH | - 79° |
| | MODULE QTY | - 15 |
| | RAFTER | - 2"X6" @ 32" O.C. |
| SURFACE TYPE | | - COMPOSITE SHINGLE |



CONTRACTOR



PORTSIDE RENEWABLES

17 STUDLEY ST, FAIRHAVEN, MA 02719

PHONE - (401) 215-7056
 LIC. NO. - 22342A

PROJECT NAME & ADDRESS

KARI LANG

38 WILLOW ST,
 PROVIDENCE, RI 02909
 APN #: 578-887

AHJ: PROVIDENCE RI AHJ
 UTILITY: RI ENERGY

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REVISIONS

| REV | DESCRIPTION | DATE |
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| | | |

SHEET TITLE

SITE PLAN

DRAWN DATE 9/14/2024

DRAWN BY MSM

SHEET NUMBER

PV-02






SITE PLAN

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

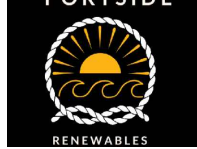
| DISTRIBUTED LOAD CALCULATIONS | |
|-------------------------------|---|
| MODULE | SILFAB SOLAR SIL-430 QD (430W) |
| MODULE WEIGHT | 46.3 LBS |
| MODULE DIMENSIONS (L" x W") | 67.8" x 44.6" |
| TOTAL QTY. OF MODULES | 38 |
| TOTAL WEIGHT OF MODULES | 1759.40 LBS |
| TYPE OF RACKING | UNIRAC NXT UMount RAIL (168RLD1) |
| TYPE OF ATTACHMENT | UNIRAC STRONGHOLD ATTACHMENT(SHBUTYLD2) |
| DISTRIBUTED WEIGHT OF RACKING | 0.5 PSF |
| TOTAL WEIGHT OF ARRAY | 2158.38 LBS |
| AREA OF MODULE | 21.00 SQFT. |
| TOTAL ARRAY AREA | 797.97 SQFT. |
| DISTRIBUTED LOAD | 2.70 PSF |

NOTE:

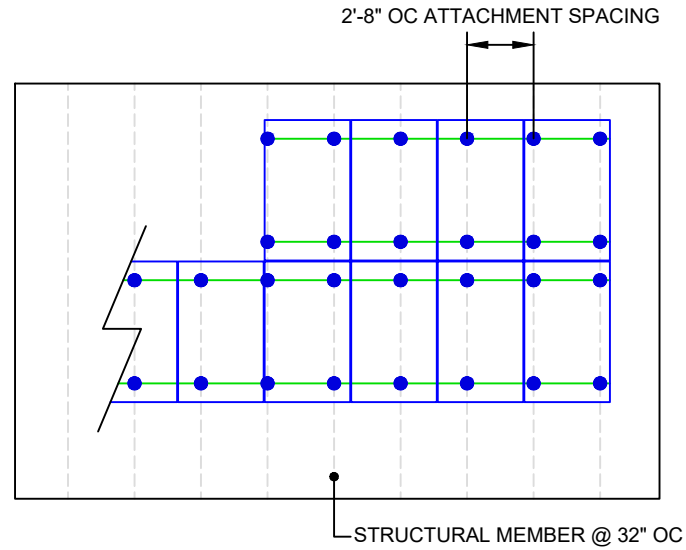
- CONTRACTOR/INSTALLER TO VERIFY COMPATIBILITY OF ANY BRANDS OR PRODUCTS SUBSTITUTED OR USED AS ALTERNATES WITHIN ANY BRAND-SPECIFIC SYSTEMS. CONTRACTOR SHALL SUPPLY AND PRESENT CERTIFICATES OF COMPATIBILITY TO THE BUILDING OFFICIAL UPON INSPECTION AS NEEDED.
- REFER TO PV MODULE MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR RAIL SPACING SPECIFICATIONS

| LEGEND | |
|---|---------------------|
|  | - ATTACHMENT POINTS |
|  | - RAIL |
|  | - STRUCTURAL MEMBER |

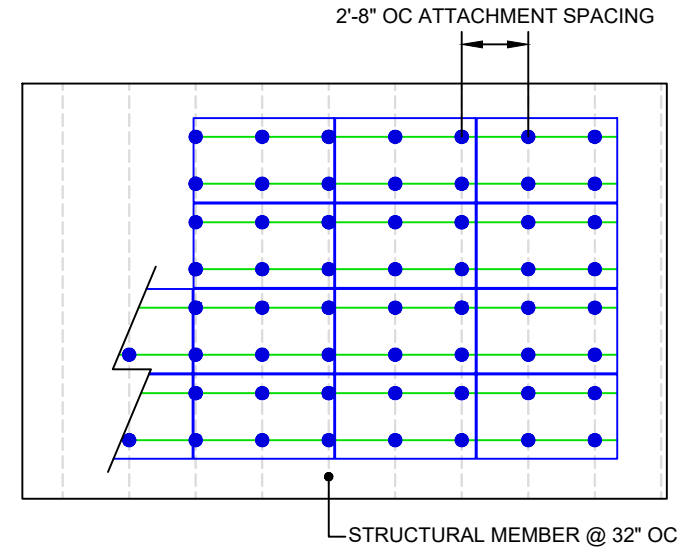
CONTRACTOR
PORTSIDE



PORTSIDE RENEWABLES
17 STUDLEY ST, FAIRHAVEN, MA 02719
PHONE - (401) 215-7056
LIC. NO. - 22342A



1.0 TYPICAL ATTACHMENT PLAN (PORTRAIT)
PV-03 SCALE: NTS



1.1 TYPICAL ATTACHMENT PLAN (LANDSCAPE)
PV-03 SCALE: NTS

PROJECT NAME & ADDRESS
KARI LANG
38 WILLOW ST,
PROVIDENCE, RI 02909
APN #: 578-887
AHJ: PROVIDENCE RI AHJ
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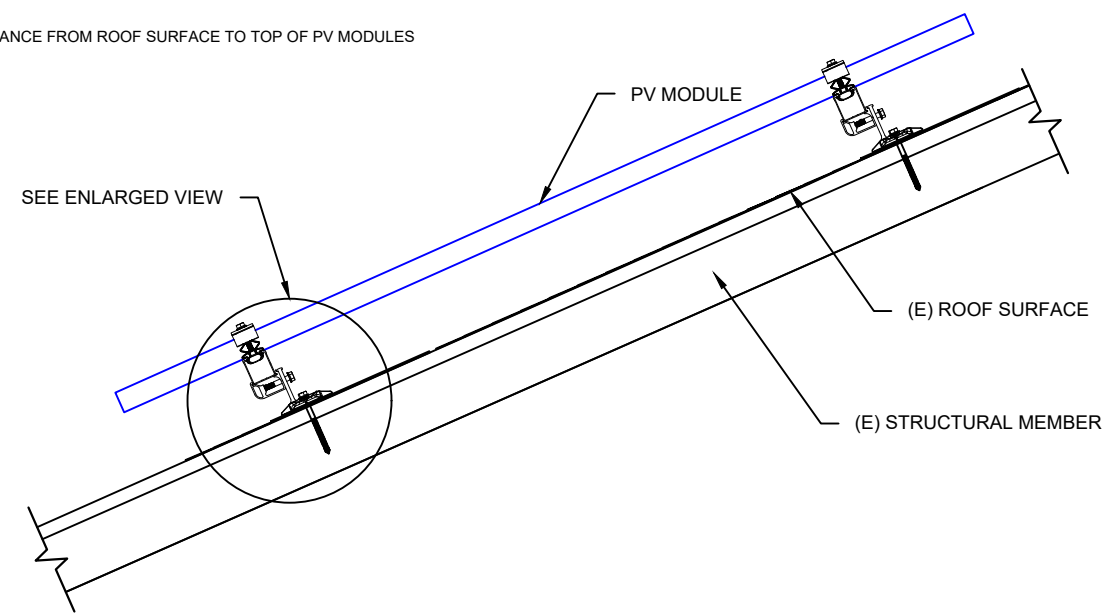
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SHEET TITLE
ATTACHMENT PLAN & DETAILS

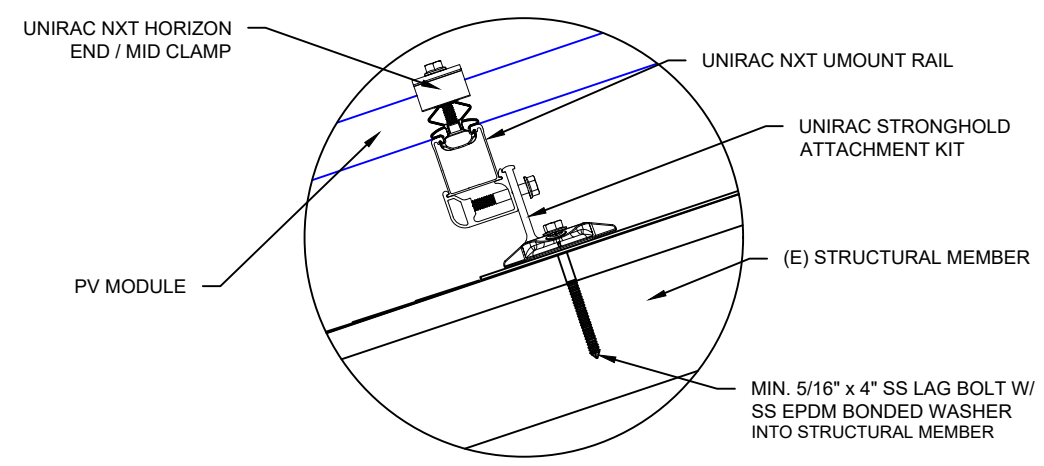
DRAWN DATE 9/14/2024
DRAWN BY MSM

SHEET NUMBER
PV-03

NOTE: 6" MAXIMUM DISTANCE FROM ROOF SURFACE TO TOP OF PV MODULES



2 ATTACHMENT DETAIL
PV-03 Scale: NTS



3 ENLARGED VIEW
PV-03 Scale: NTS

SILFAB PRIME NTC

SIL-430 QD



INTRODUCING NEXT-GENERATION N-TYPE CELL TECHNOLOGY

- Improved Shade Tolerance
- Improved Low-Light Performance
- Increased Performance in High Temperatures
- Enhanced Durability
- Reduced Degradation Rate
- Industry-Leading Warranty



SILFABSOLAR.COM



| ELECTRICAL SPECIFICATIONS | | 430 | |
|-------------------------------|----|-------|----------|
| Test Conditions | | STC | NOCT |
| Module Power (Pmax) | Wp | 430 | 321 |
| Maximum power voltage (Vpmax) | V | 33.25 | 31.02 |
| Maximum power current (Ipmax) | A | 12.93 | 10.33 |
| Open circuit voltage (Voc) | V | 38.91 | 36.58 |
| Short circuit current (Isc) | A | 13.87 | 11.15 |
| Module efficiency | % | 22.1% | 20.6% |
| Maximum system voltage (VDC) | V | | 1000 |
| Series fuse rating | A | | 25 |
| Power Tolerance | Wp | | 0 to +10 |

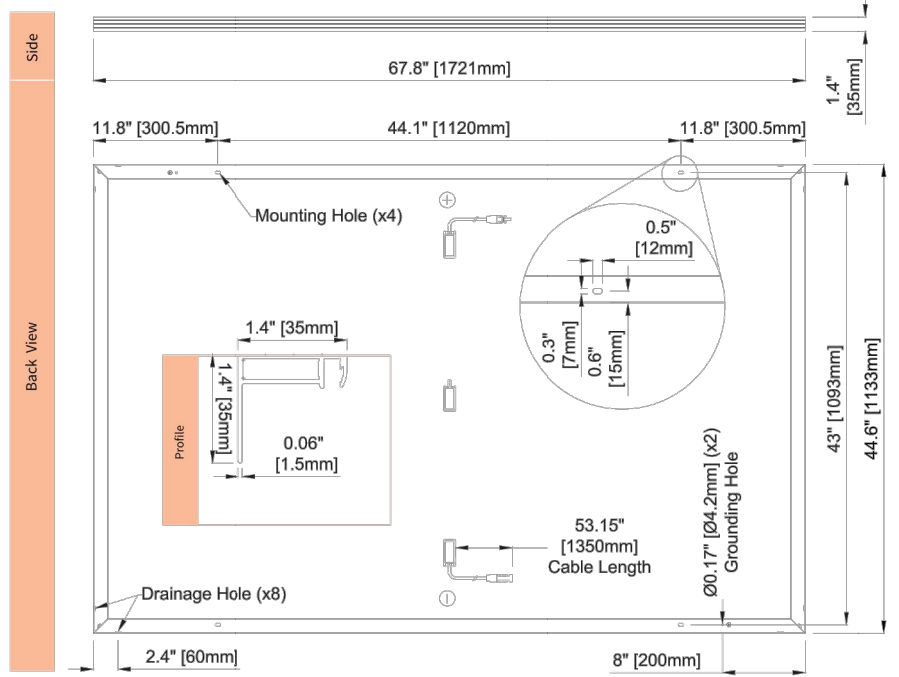
Measurement conditions: STC 1000 W/m² • AM 1.5 • Temperature 25 °C • NOCT 800 W/m² • AM 1.5 • Measurement uncertainty ≤ 3%
Sun simulator calibration reference modules from Fraunhofer Institute. Electrical characteristics may vary by ±5% and power by 0 to +10 W.

| MECHANICAL PROPERTIES / COMPONENTS | METRIC | IMPERIAL |
|--|---|---|
| Module weight | 21 kg ± 0.2 kg | 46.3 lbs ± 0.4 lbs |
| Dimensions (H x L x D) | 1721 mm x 1133 mm x 35 mm | 67.8 in x 44.6 in x 1.37 in |
| Maximum surface load (wind/snow)* | 4000 Pa rear load / 5400 Pa front load | 83.5 lb/ft ² rear load / 112.8 lb/ft ² front load |
| Hail impact resistance | Ø 25 mm at 83 km/h | Ø 1 in at 51.6 mph |
| Cells | 108 Half cells - N-Type Silicon solar cell 182 mm x 91 mm | 108 Half cells - N-Type Silicon solar cell 7.16 in x 3.58 in |
| Glass | 3.2 mm high transmittance, tempered, antireflective coating | 0.126 in high transmittance, tempered, antireflective coating |
| Cables and connectors (refer to installation manual) | 1350 mm, Ø 5.7 mm, MC4 from Staubli | 53.1 in, Ø 0.22 in (12 AWG), MC4 from Staubli |
| Backsheet | High durability, superior hydrolysis and UV resistance, multi-layer dielectric film, fluorine-free PV backsheet | |
| Frame | Anodized aluminum (Black) | |
| Junction Box | UL 3730 Certified, IEC 62790 Certified, IP68 rated, 3 diodes | |

| TEMPERATURE RATINGS | | WARRANTIES | |
|------------------------------|------------|-------------------------------------|---|
| Temperature Coefficient Isc | 0.04 %/°C | Module product workmanship warranty | 25 years** |
| Temperature Coefficient Voc | -0.24 %/°C | Linear power performance guarantee | 30 years |
| Temperature Coefficient Pmax | -0.29 %/°C | | ≥ 98% end 1st yr ≥ 94.7% end 12th yr ≥ 90.8% end 25th yr ≥ 89.3% end 30th yr |
| NOCT (± 2 °C) | 45 °C | | |
| Operating temperature | -40/+85 °C | | |

| CERTIFICATIONS | | SHIPPING SPECS | |
|----------------|---|---------------------|-------------------------|
| Product | UL 61215, UL 61730, CSA C22.2#61730, IEC 61215, IEC 61730, IEC 61701 (Salt Mist Corrosion), IEC 62716 (Ammonia Corrosion), CEC Listed, UL Fire Rating: Type 2 | Modules Per Pallet: | 26 or 26 (California) |
| Factory | ISO9001:2015 | Pallets Per Truck | 32 or 30 (California) |
| | | Modules Per Truck | 832 or 780 (California) |

* ⚠ Warning. Read the Safety and Installation Manual for mounting specifications and before handling, installing and operating modules.
** 12 year extendable to 25 years subject to registration and conditions outlined under "Warranty" at silfabsolar.com.
PAN files generated from 3rd party performance data are available for download at: silfabsolar.com/downloads.



SILFAB SOLAR INC.

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Mississauga ON L5T 2Y3 Canada
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F +1 905.696.0267

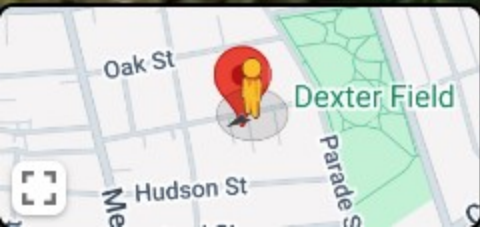
Silfab - SIL-430-QD-20240227
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31 Willow St

Providence, Rhode Island

Google Street View

Aug 2023 See more dates



Google

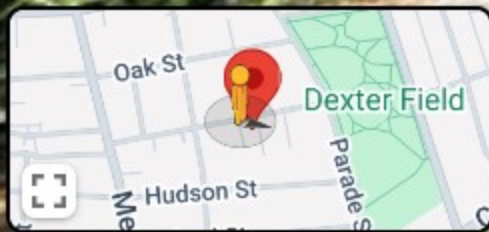


45 Willow St

Providence, Rhode Island

Google Street View

Aug 2023 See more dates



Google







Sam Bell
REAL ESTATE SALES
SAMBELLPVD.COM