

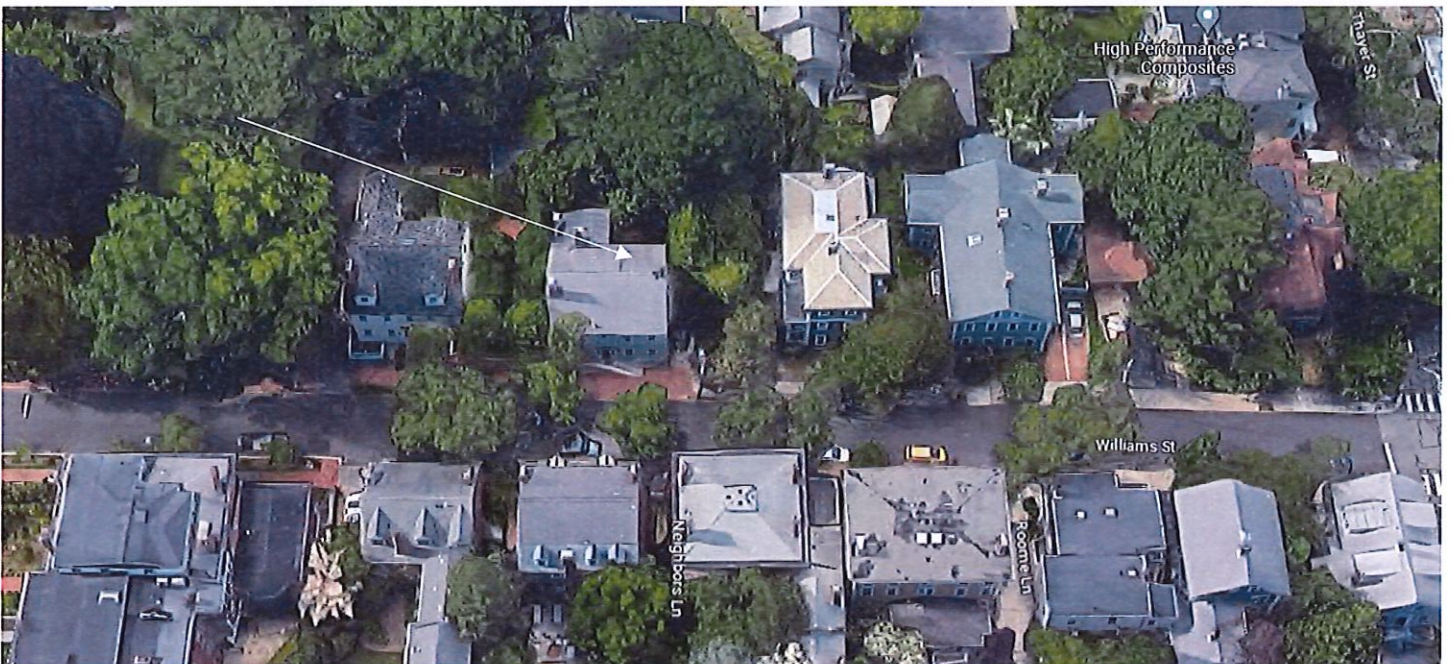
PROJECT REVIEW

1. CASE 24.002, 92 WILLIAMS STREET, Caleb Roffe House, 1824 (COLLEGE HILL)

Federal; 2½-stories, clapboard, gable roof; Five-bay facade; central capped doorway reached by a double flight of wooden steps.
CONTRIBUTING



Arrow indicates 92 Williams Street.



Arrow indicates project location, looking north.

Applicant/Contractor: Rooftop Power, Dan Fisher, 275 West Natick Rd, Suite 800, Warwick, RI 02886

Owner: David Keefe, 92 Williams Street, Providence, RI 02906

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

- the installation of 10 solar panels to the front (South) slope of the side-gable roof.

Issues: The following issues are relevant to this application:

- This is a new filing. This application was heard by the Commission at the April 25, 2022 meeting. At that meeting the Commission denied the application as submitted. The application has changed substantially and may be reheard by the Commission. The application as submitted will not be visible from the public rights-of-way;
- 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) 72 Williams Street is a structure of historical and architectural significance that contributes to the significance of the College Hill local historic district, having been recognized as a contributing structure to the College Hill National Historic Landmarks 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 not be 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. 72 Williams Street is a structure of historical and architectural significance that contributes to the significance of the College Hill local historic district, having been recognized as a contributing structure to the College Hill National Historic Landmarks 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 are not on the primary elevation and will not be 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.

Providence, Rhode Island

Google Street View

Nov 2022

See more dates

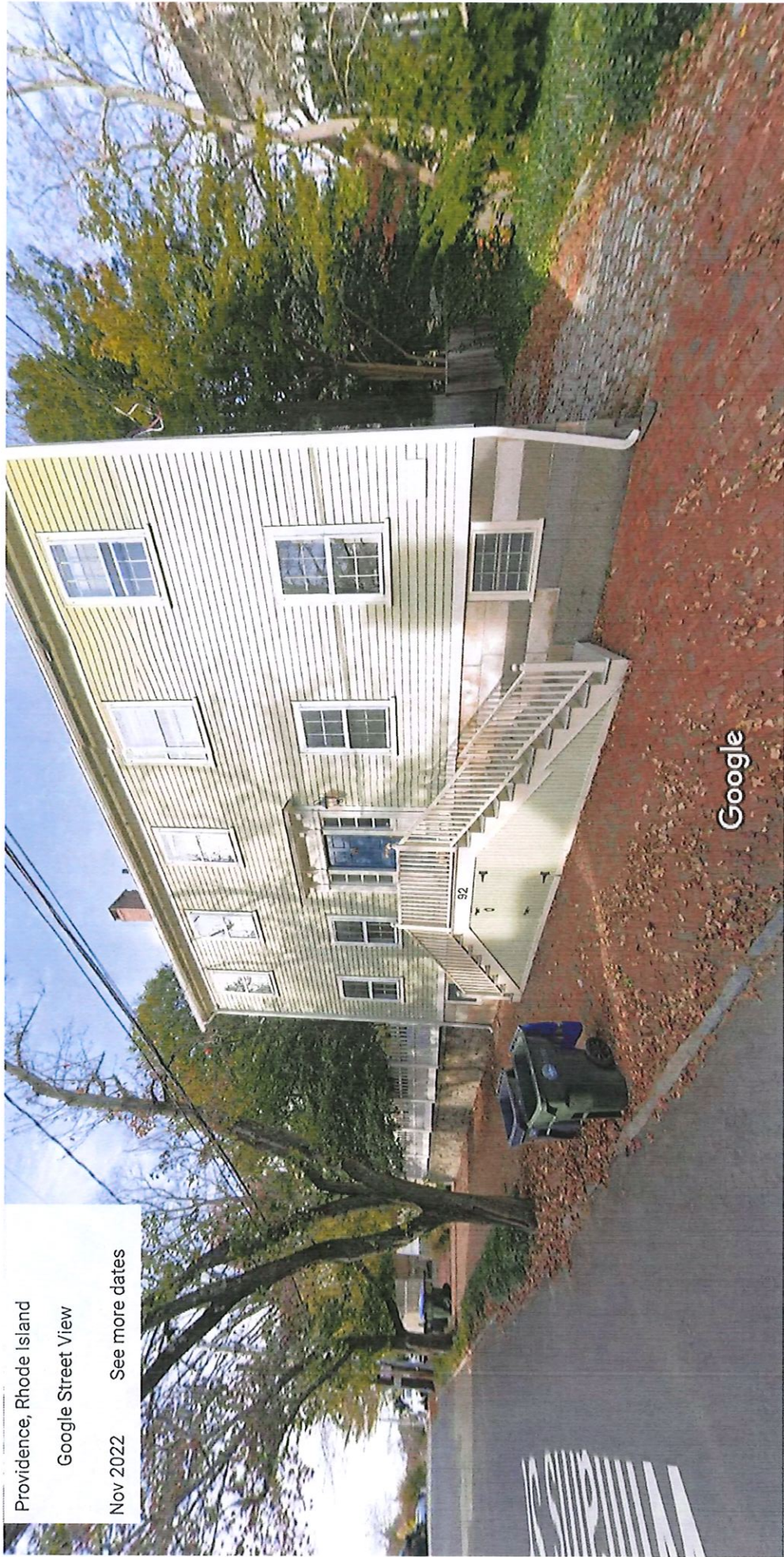
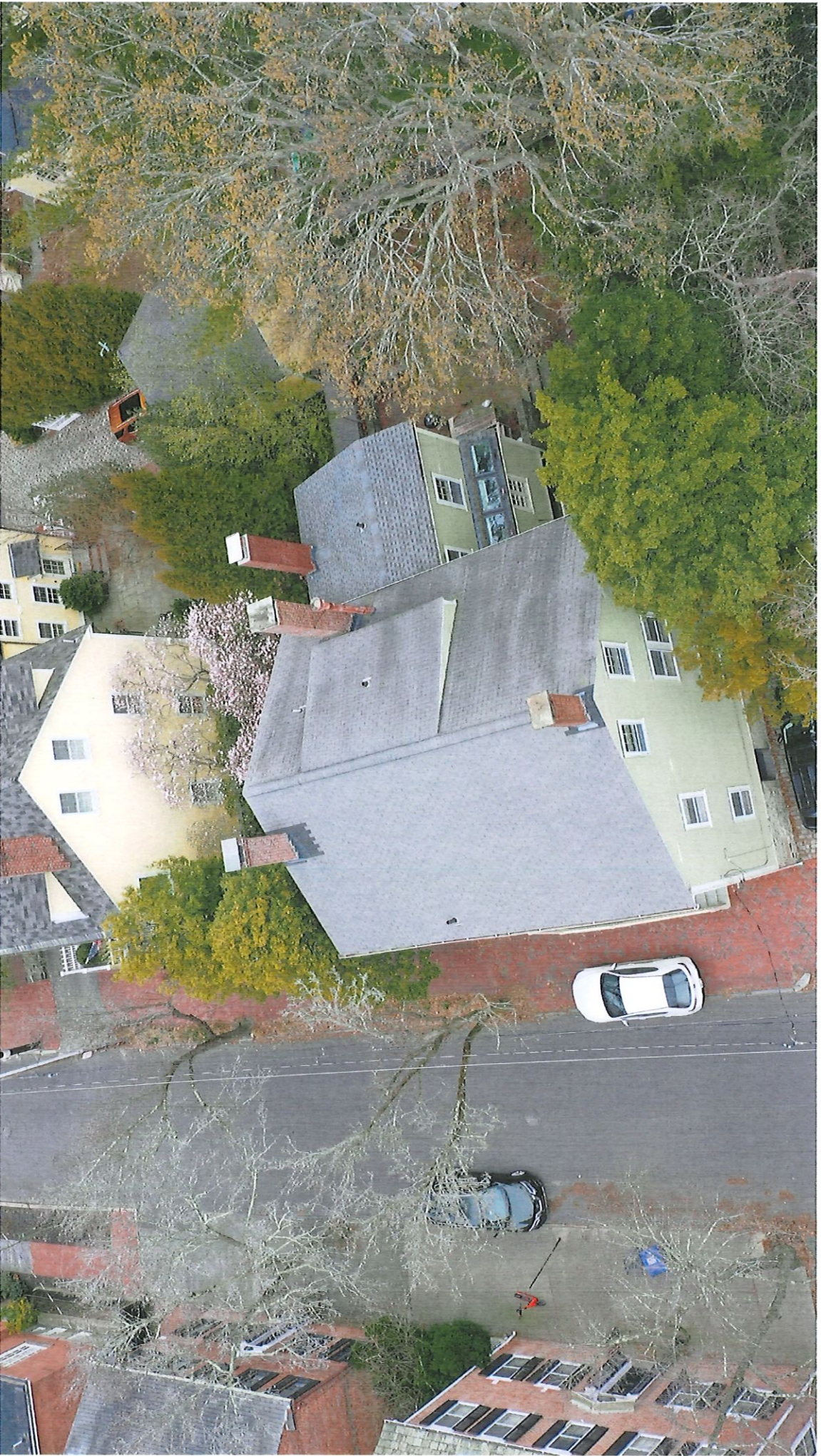


Image capture: Nov 2022 © 2023 Google









PHOTOVOLTAIC ROOF MOUNT SYSTEM

10 MODULES-ROOF MOUNTED - 3.95 KWDC, 2.90 KWAC
92 WILLIAMS ST APT 1, PROVIDENCE, RI 02906 USA

SYSTEM SUMMARY:

- (N) 10 - JA SOLAR JAM6S61-395(MR) (395W) MODULES
- (N) 10 - ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
- (N) JUNCTION BOX
- (E) 200A MAIN SERVICE PANEL WITH (E) 200A MAIN BREAKER
- (N) 60A FUSED AC DISCONNECT
- (E) 30A NON-FUSED AC DISCONNECT
- (N) ENPHASE IQ COMBINER BOX 4

DESIGN CRITERIA:

ROOF TYPE: - COMP SHINGLE
NUMBER OF LAYERS: - 01
ROOF FRAME: - 4"x5" RAFTERS @39" O.C.
STORY: - TWO STORY
SNOW LOAD: - 30 PSF
WIND SPEED: - 125 MPH
WIND EXPOSURE: - C
RISK CATEGORY: - II
COORDINATE: - 41.822439, -71.401054

GOVERNING CODES:

- 2020 NATIONAL ELECTRICAL CODE (NEC)
- 2018 INTERNATIONAL BUILDING CODE (IBC)
- 2018 INTERNATIONAL MECHANICAL CODE (IMC)
- 2018 INTERNATIONAL RESIDENTIAL CODE (IRC)
- 2018 INTERNATIONAL PLUMBING CODE (IPC)

SHEET INDEX

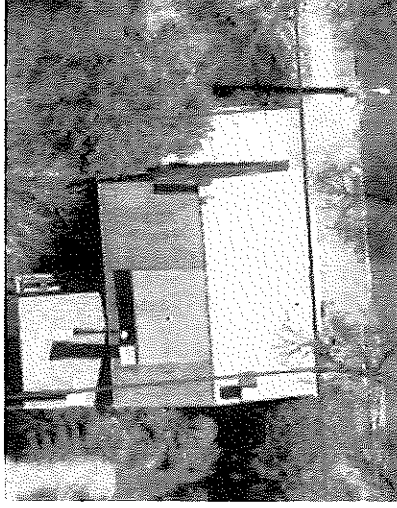
- PV-0 COVER SHEET
- PV-1 SITE PLAN WITH ROOF PLAN
- PV-2 ROOF PLAN WITH MODULES
- PV-3 ATTACHMENT DETAILS
- PV-4 ELECTRICAL LINE DIAGRAM
- PV-5 WARNING LABEL
- PV-6+ EQUIPMENT SPEC SHEETS

CONSTRUCTION NOTE:

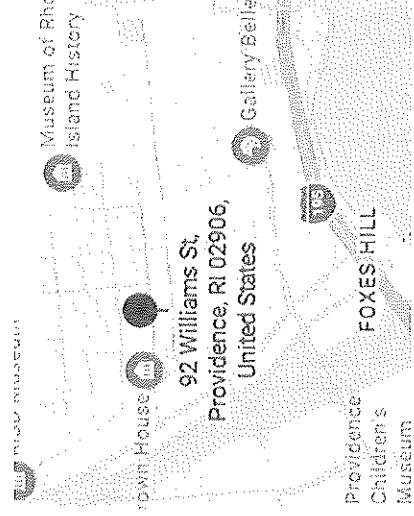
- A LADDER SHALL BE IN PLACE FOR INSPECTION THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY GRID INTERACTIVE SYSTEM
- A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH NEC 690-47 AND 250-50 THROUGH 60.250-185 SHALL BE PROVIDED PER NEC.
- GROUNDING ELECTRODE SYSTEM OF EXISTING BUILDING MAY BE USED AND BONDED TO AT THE SERVICE ENTRANCE. IF EXISTING SYSTEM IS INADEQUATE, OR INADEQUATE, OR IS ONLY METALLIC WATER PIPING, A SUPPLEMENTAL GROUNDING ELECTRODE WILL BE USED AT THE INVERTER LOCATION CONSISTING OF A UL LISTED 8 FT GROUND ROD WITH AGORN CLAMP. GROUNDING ELECTRODE CONDUCTORS SHALL BE NO LESS THAN #8 AWG AND NO GREATER THAN #8 AWG COPPER AND BONDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE OR A COMPLETE GROUND.
- EACH MODULE WILL BE GROUNDING USING THE SUPPLIED GROUNDING CONDUCTOR AND BE THE MANUFACTURER'S RECOMMENDED METAL PARTS OF MODULE FRAMES, EQUIPMENT AND CONDUCTOR ENCLOSURES SHALL BE GROUND, REGARDLESS OF VOLTAGE.
- PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED.
- ALL SIGNAGE WILL BE INSTALLED AS REQUIRED BY AND 2020 NEC.
- HEIGHT OF INTEGRATED AC/DC DISCONNECT SHALL NOT EXCEED 8' 7" FROM PHYSICAL ELECTRODE CONDUCTOR SHALL BE PROTECTED AND THE PANEL (OR INVERTER) IF SMALLER THAN #6 AWG COPPER WIRE.
- THE GROUNDING ELECTRODE CONDUCTOR WILL BE CONTINUOUS, EXCEPT FOR SPLICES OR JOINTS AT BUSBARS WITHIN LISTED EQUIPMENT.
- ALL EXTERIOR CONDUIT SHALL BE PAINTED TO MATCH ADJACENT SURFACES.
- THE PV CONNECTION IN THE PANEL BOARD SHALL BE POSITIONED AT THE OPPOSITE (LOAD) END FROM THE INPUT FEEDER LOCATION OR MAIN CIRCUIT LOCATION.
- SITE CONDITIONS SHALL PREVAIL IF NO SCALE IS GIVEN. DRAWINGS ARE NOT NECESSARILY TO SCALE. ALL DIMENSIONS SHALL BE VERIFIED BY SUBCONTRACTOR UPON COMMENCEMENT OF CONSTRUCTION.

ELECTRICAL NOTES

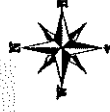
- ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL AND LABELED FOR ITS APPLICATION.
- ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
- WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST GROUND RIG OR VOLET.
- WORKING CLEARANCES SHALL BE MAINTAINED.
- EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
- WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
- MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
- MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEER LUG OR ILS CO GEL-ADH LAY-IN LUG.
- THE POLARITY OF THE GROUNDING CONDUCTORS IS NEGATIVE.



1 AERIAL PHOTO
PV-0 SCALE: NTS



2 VICINITY MAP
PV-0 SCALE: NTS



41.822439, -71.401054



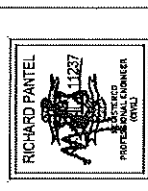
Reviewed and approved
Richard Pantel, P.E.
DESCRIPTION: PV SYSTEM
INITIAL RELEASE: 04/07/2020 UR

Richard Pantel
PROJECT NAME
92 WILLIAMS ST APT 1,
PROVIDENCE, RI 02906 USA
UTILITY: RHODE ISLAND ENERGY
AHJ: CITY OF PROVIDENCE

SHEET NAME
COVER SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-0



Reviewed and approved
 RICHARD PANTEL, P.E.
 DESCRIPTION DATE: 11/23/20
 INITIAL RELEASE: 04/07/2023 JRT

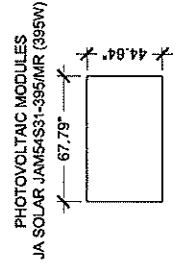
PROJECT NAME
 DAVID J KEEFE
 92 WILLIAMS ST APT 1,
 PROVIDENCE, RI 02906 USA
 APN# PROV161203
 UTILITY: RHODE ISLAND ENERGY
 AHJ: CITY OF PROVIDENCE

SHEET NAME
 SITE PLAN WITH
 ROOF PLAN

SHEET SIZE
 ANSI B
 11" X 17"

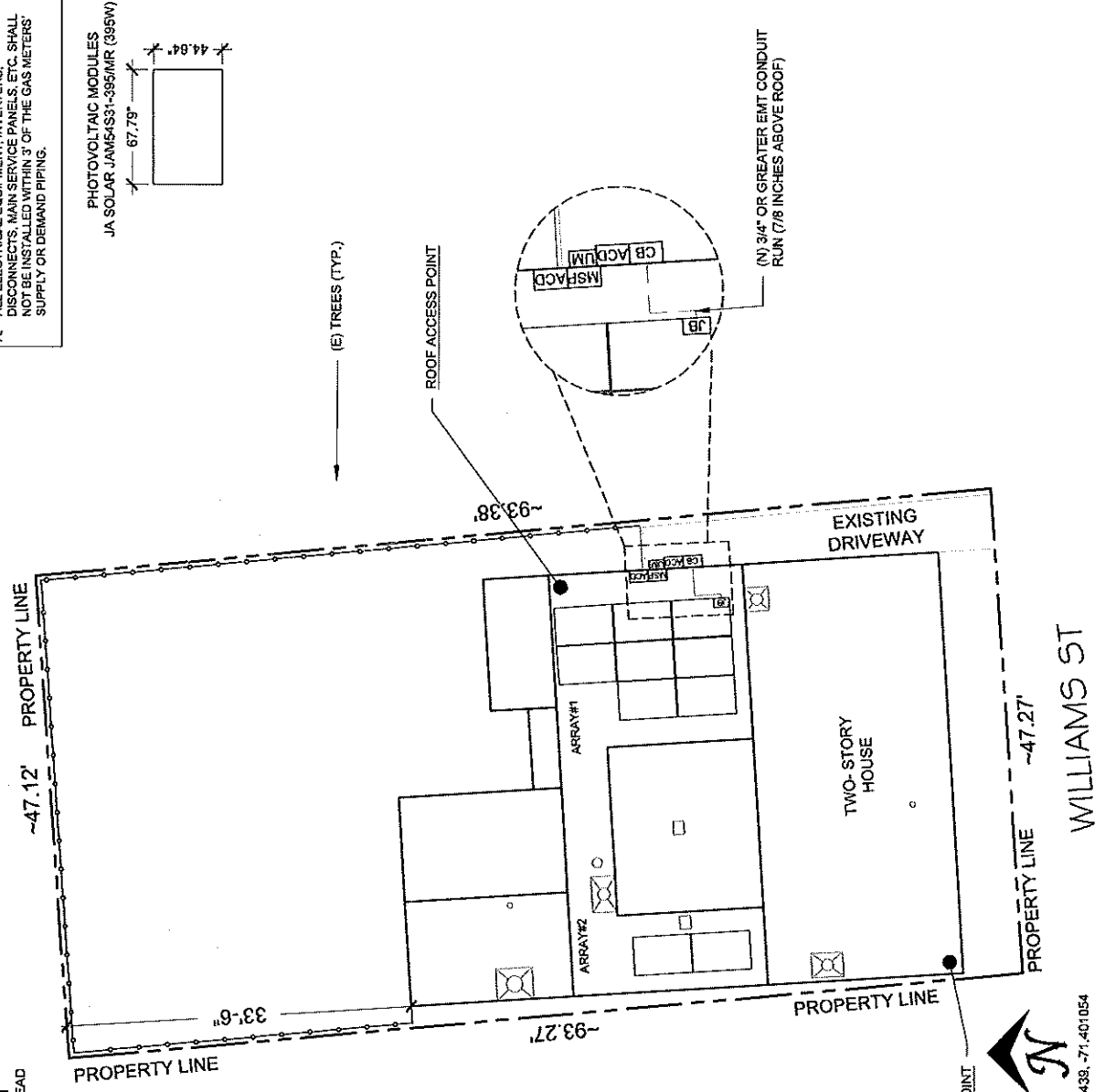
SHEET NUMBER
 PV-1

NOTE:
 A. ALL ELECTRICAL EQUIPMENT, INVERTERS, DISCONNECTS, MAIN SERVICE PANELS, ETC. SHALL NOT BE INSTALLED WITHIN 3' OF THE GAS METERS' SUPPLY OR DEMAND PIPING.

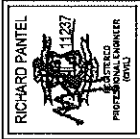


● ROOF ACCESS POINT SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR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

LEGEND	
URM	UTILITY METER
MSFP	MAIN SERVICE PANEL
FACD	FUSED AC DISCONNECT
ACB	NON-FUSED AC DISCONNECT
CB	EN-PHASE IQ COMBINER 4
JB	JUNCTION BOX
---	PROPERTY
---	CONDUIT
---	GATE
---	FENCE
---	TREES



1 SITE PLAN WITH ROOF PLAN
 SCALE: 3/32" = 1'-0" 41.822438, -71.401054

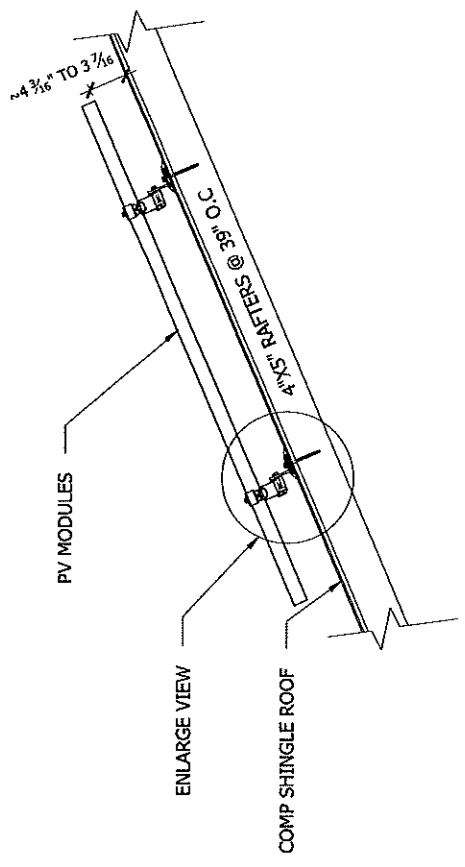


Reviewed and approved
 RICHARD PANTEL, P.E.
 DEGREE: M.S. CIVIL ENGINEERING
 INITIAL RELEASE: 04/07/2020 UR

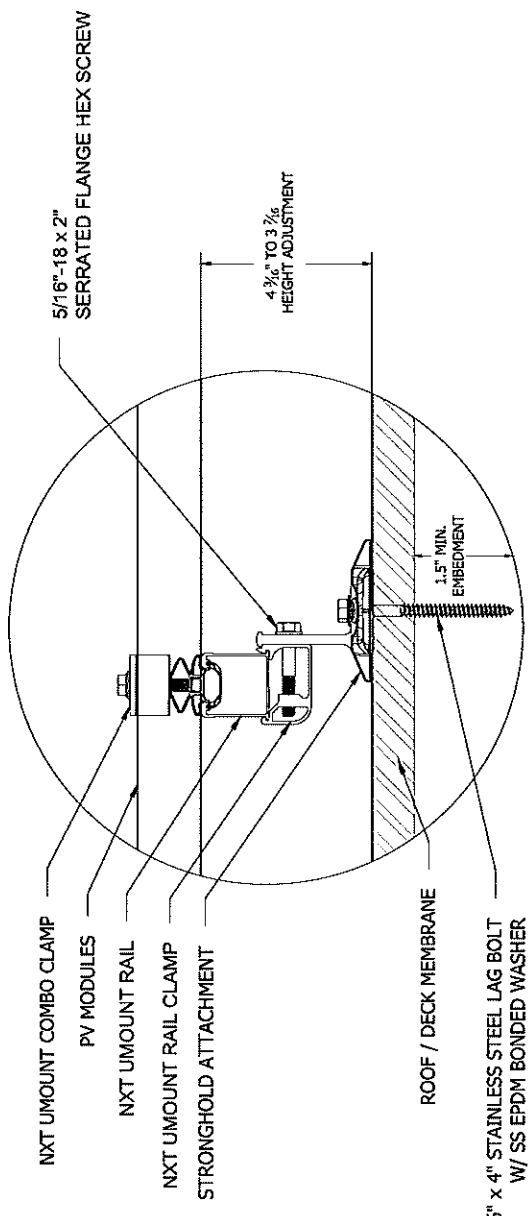
PROJECT NAME
 DAVID J KEEFE
 92 WILLIAMS ST APT 1,
 PROVIDENCE, RI 02906 USA
 APN# PROV161203
 UTILITY: RHODE ISLAND ENERGY
 AHJ: CITY OF PROVIDENCE

SHEET NAME
 ATTACHMENT
 DETAIL
 SHEET SIZE
 ANSI B
 11" X 17"
 SHEET NUMBER
 PV-3

NOTE: ACTUAL ROOF CONDITIONS AND RAFTERS (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEER SPANS FOR ATTACHMENTS

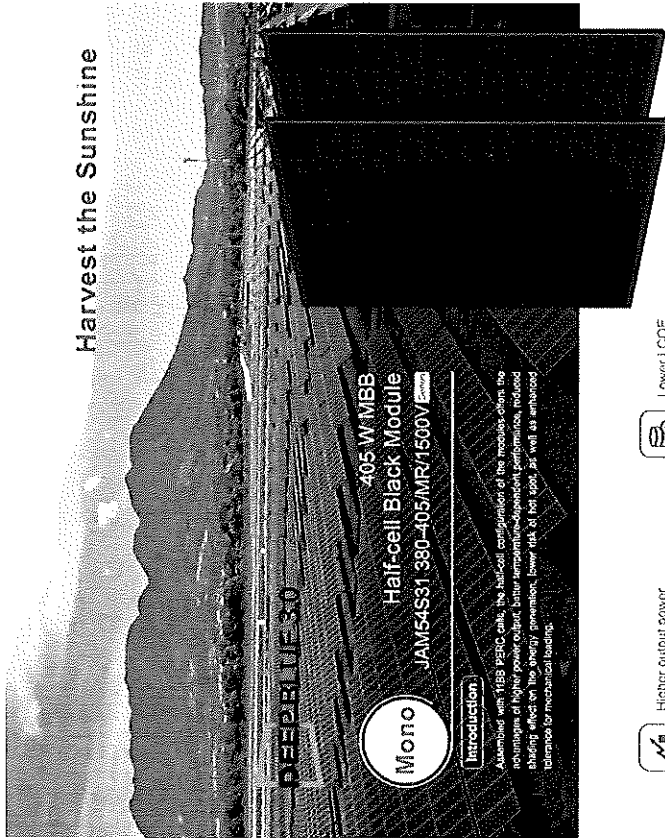


1 ATTACHMENT DETAIL
 SCALE: NTS



2 ATTACHMENT DETAIL (ENLARGED VIEW)
 SCALE: NTS

Harvest the Sunshine



DEEPLIFE 3.0

405 W MBB
Half-cell Black Module

Mono JAM54S31 380-405/MR/1500V

Introduction

Assembled with 11BB PERC cells, the balanced configuration of the modules offers the advantages of higher power output, better temperature-coefficient performance, reduced shading effect on the string, generation lower Idk at low light, as well as enhanced tolerance for mechanical loading.



Higher output power



Lower LCOE



Less shading and lower resistive loss



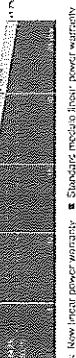
Better mechanical loading tolerance

Superior Warranty

- 12-year product warranty
- 25-year linear power output warranty

Comprehensive Certificates

- IEC 61215, IEC 61730
- ISO 9001: 2015 Quality management systems
- ISO 14001: 2015 Environmental management systems
- ISO 45001: 2018 Occupational health and safety management systems



• New linear power warranty ■ Standards receive their power warranty

JASOLAR

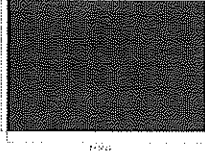


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 and the most advanced technology.

JASOLAR

JAM54S31 380-405/MR/1500V

MECHANICAL DIAGRAMS



SPECIFICATIONS

Cells	Mono
Weight	19.4kg (43.1kg)
Dimensions	1722mm x 1042mm x 20mm
Crack Energy (Joule/m)	Amv - IEC - 17.1MJ/DP-1
No. of Cells	108 (6x18)
Interdigitated Back Contact	IPBC, 3.6μm
Construction	Single MBB (1/2)
Cell Size	156.75mm x 156.75mm
Cell Type	PERC, 156.75mm x 156.75mm
Front Glass	2mm or 3mm

ELECTRICAL PARAMETERS AT STC

TYPE	JAM54S31 -405/MR/1500V	JAM54S31 -405/MR/1500V	JAM54S31 -405/MR/1500V	JAM54S31 -405/MR/1500V	JAM54S31 -405/MR/1500V
Rated Maximum Power (P _{max}) [W]	380	380	380	460	460
Open Circuit Voltage (V _{oc}) [V]	34.73	34.73	34.73	37.27	37.27
Maximum Power Voltage (V _{mp}) [V]	32.78	32.78	32.78	35.27	35.27
Short Circuit Current (I _{sc}) [A]	11.44	11.44	11.44	12.89	12.89
Maximum Power Current (I _{mp}) [A]	11.75	11.75	11.75	13.29	13.29
Module Efficiency (%)	19.3	19.3	19.3	20.2	20.2

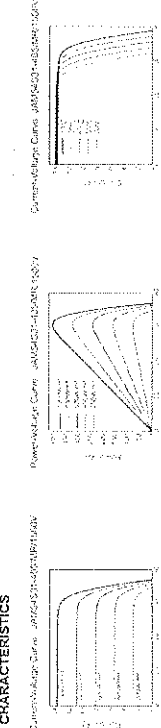
Electrical Parameters at NOCT

TYPE	JAM54S31 -405/MR/1500V	JAM54S31 -405/MR/1500V	JAM54S31 -405/MR/1500V	JAM54S31 -405/MR/1500V	JAM54S31 -405/MR/1500V
Rated Power (P _{max}) [W]	329	329	329	386	386
Open Circuit Voltage (V _{oc}) [V]	34.46	34.46	34.46	37.15	37.15
Maximum Power Voltage (V _{mp}) [V]	32.48	32.48	32.48	34.97	34.97
Short Circuit Current (I _{sc}) [A]	11.74	11.74	11.74	13.19	13.19
Maximum Power Current (I _{mp}) [A]	12.11	12.11	12.11	13.58	13.58

Operating Conditions

TYPE	JAM54S31 -405/MR/1500V	JAM54S31 -405/MR/1500V	JAM54S31 -405/MR/1500V	JAM54S31 -405/MR/1500V
Operating Temperature	-40 ~ +85°C	-40 ~ +85°C	-40 ~ +85°C	-40 ~ +85°C
Maximum Snow Load [kg/m ²]	2.4	2.4	2.4	2.4
Maximum Wind Load [kg/m ²]	10.0	10.0	10.0	10.0
Maximum Hail Load [kg/m ²]	0.05	0.05	0.05	0.05
Class	Class 1	Class 1	Class 1	Class 1
Fire Rating	Fire Retardant	Fire Retardant	Fire Retardant	Fire Retardant

CHARACTERISTICS



Premium Cells - Premium Modules

Model No. JAM54S31



Reviewed and approved
Richard Pantel, P.E.
 DESIGNER: RFP, 17227
 INITIAL RELEASE: 04/07/2023 UR

PROJECT NAME

DAVID J KEEFE
 92 WILLIAMS ST APT 1,
 PROVIDENCE, RI 02906 USA
 APN# PROV16L203
 UTILITY: RHODE ISLAND ENERGY
 AHJ: CITY OF PROVIDENCE

SHEET NAME
 SPEC SHEETS

SHEET SIZE
 ANSI B
 11" X 17"

SHEET NUMBER
 PV-6