

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

Owner: Owen Johnson, 68 Hudson Street, Providence, RI 02909

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

- installation of 39 solar panels to the mansard roof.

Issues: The following issues are relevant to this application:

- 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:

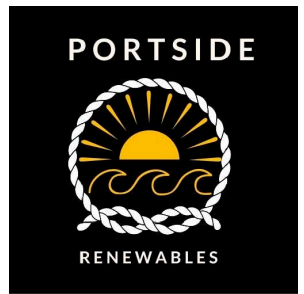
- a) 68 Hudson Street is a structure of historical and architectural significance that contributes to the significance of the Armory local historic district, having been recognized as a contributing structure to the Broadway/Armory National Register Historic District;
- b) The modifications as proposed 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 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. 68 Hudson 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 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.

GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS
2. ITEMS BELOW MAY NOT BE ON THIS PAGE

--- PROPERTY LINE



CONTRACTOR

PORTSIDE RENEWABLES, LLC

PHONE: 508-470-1467
ADDRESS: 77 N.WATER ST, NEW BEDFORD, MA 02740

LIC. NO.: GC-48542
HIC. NO.:
ELE. NO.:

UNAUTHORIZED USE OF THIS DRAWING SET WITHOUT WRITTEN PERMISSION FROM CONTRACTOR IS IN VIOLATION OF U.S. COPYRIGHT LAWS AND WILL BE SUBJECT TO CIVIL DAMAGES AND PROSECUTIONS.

NEW PV SYSTEM: 17.940 kWp

JOHNSON RESIDENCE

88 HUDSON ST,
PROVIDENCE,
RI 02909

APN: 360203

ENGINEER OF RECORD

PAPER SIZE: 11" x 17" (ANSI B)

SITE PLAN

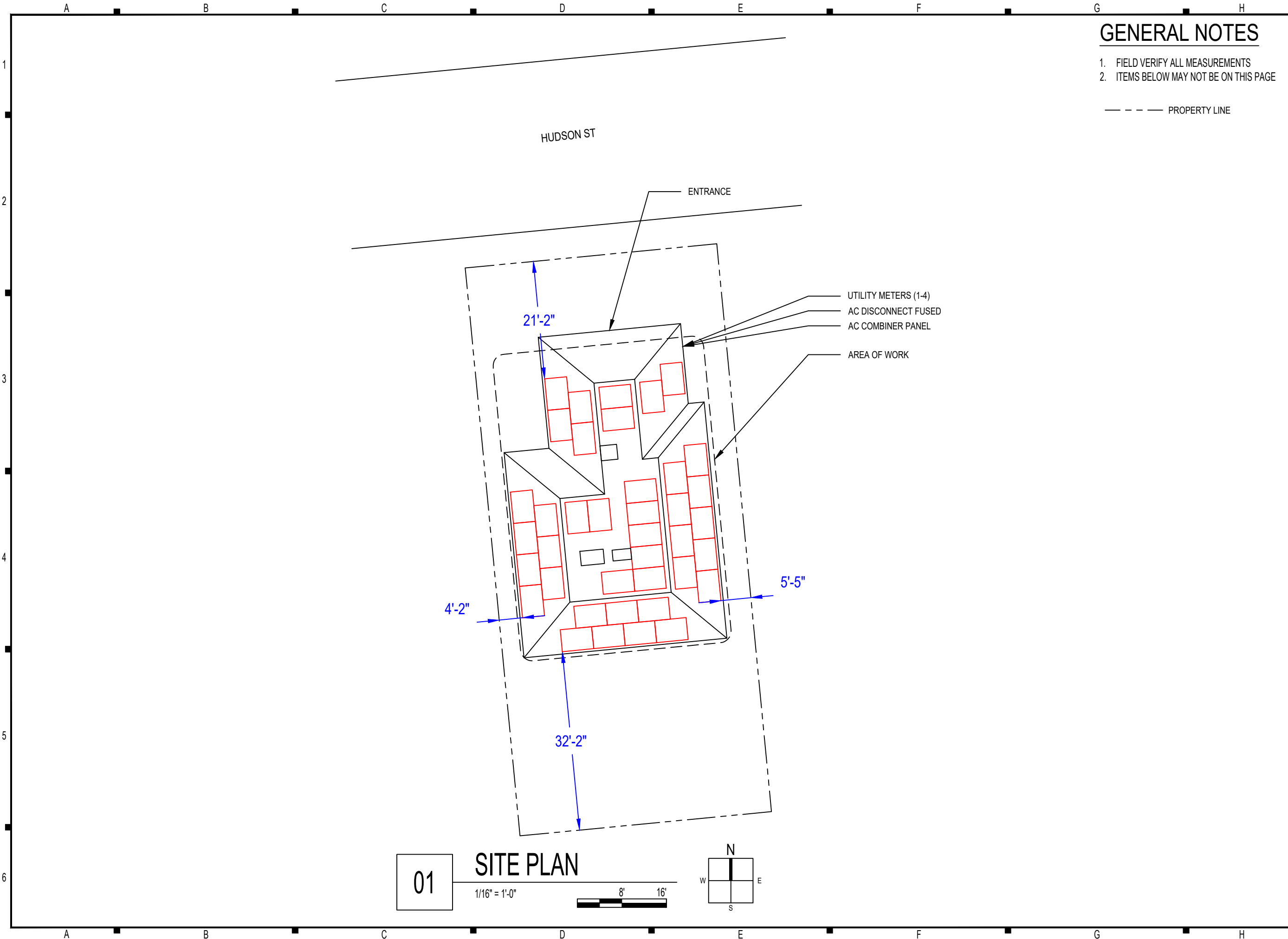
DATE: 09.25.2024

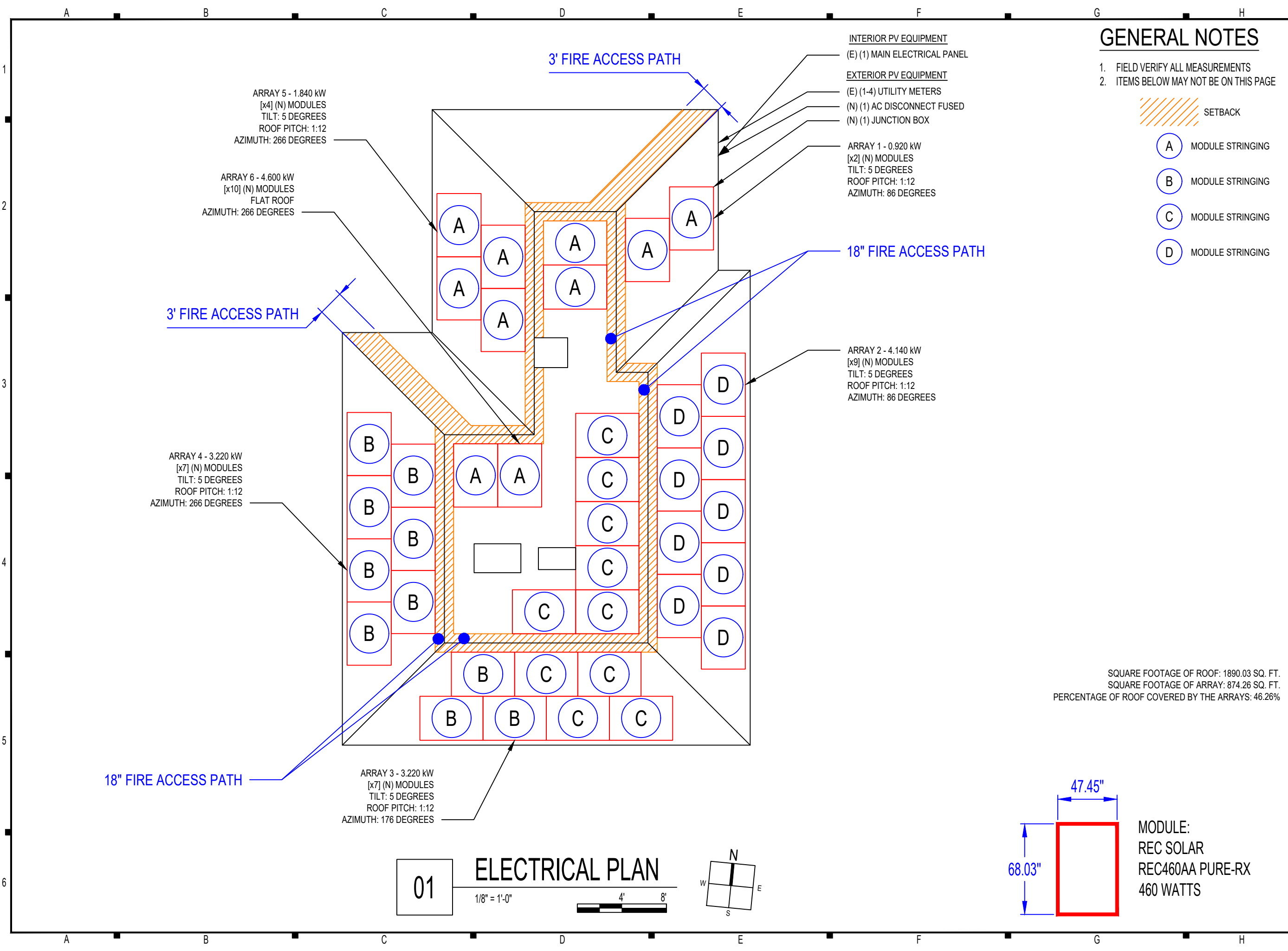
DESIGN BY: V.G.

CHECKED BY: M.M.

REVISIONS

A-101.00





- INTERIOR PV EQUIPMENT**
 (E) (1) MAIN ELECTRICAL PANEL
- EXTERIOR PV EQUIPMENT**
 (E) (1-4) UTILITY METERS
 (N) (1) AC DISCONNECT FUSED
 (N) (1) JUNCTION BOX

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- SETBACK
- MODULE STRINGING
- MODULE STRINGING
- MODULE STRINGING
- MODULE STRINGING

ARRAY 5 - 1.840 kW
 [x4] (N) MODULES
 TILT: 5 DEGREES
 ROOF PITCH: 1:12
 AZIMUTH: 266 DEGREES

ARRAY 6 - 4.600 kW
 [x10] (N) MODULES
 FLAT ROOF
 AZIMUTH: 266 DEGREES

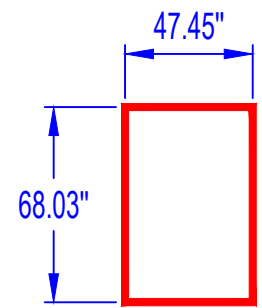
ARRAY 1 - 0.920 kW
 [x2] (N) MODULES
 TILT: 5 DEGREES
 ROOF PITCH: 1:12
 AZIMUTH: 86 DEGREES

ARRAY 2 - 4.140 kW
 [x9] (N) MODULES
 TILT: 5 DEGREES
 ROOF PITCH: 1:12
 AZIMUTH: 86 DEGREES

ARRAY 4 - 3.220 kW
 [x7] (N) MODULES
 TILT: 5 DEGREES
 ROOF PITCH: 1:12
 AZIMUTH: 266 DEGREES

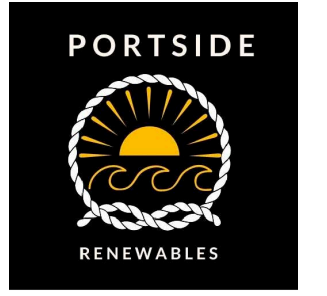
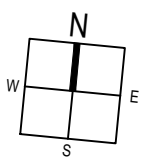
ARRAY 3 - 3.220 kW
 [x7] (N) MODULES
 TILT: 5 DEGREES
 ROOF PITCH: 1:12
 AZIMUTH: 176 DEGREES

SQUARE FOOTAGE OF ROOF: 1890.03 SQ. FT.
 SQUARE FOOTAGE OF ARRAY: 874.26 SQ. FT.
 PERCENTAGE OF ROOF COVERED BY THE ARRAYS: 46.26%



MODULE:
 REC SOLAR
 REC460AA PURE-RX
 460 WATTS

01 ELECTRICAL PLAN
 1/8" = 1'-0"



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ELECTRICAL PLAN

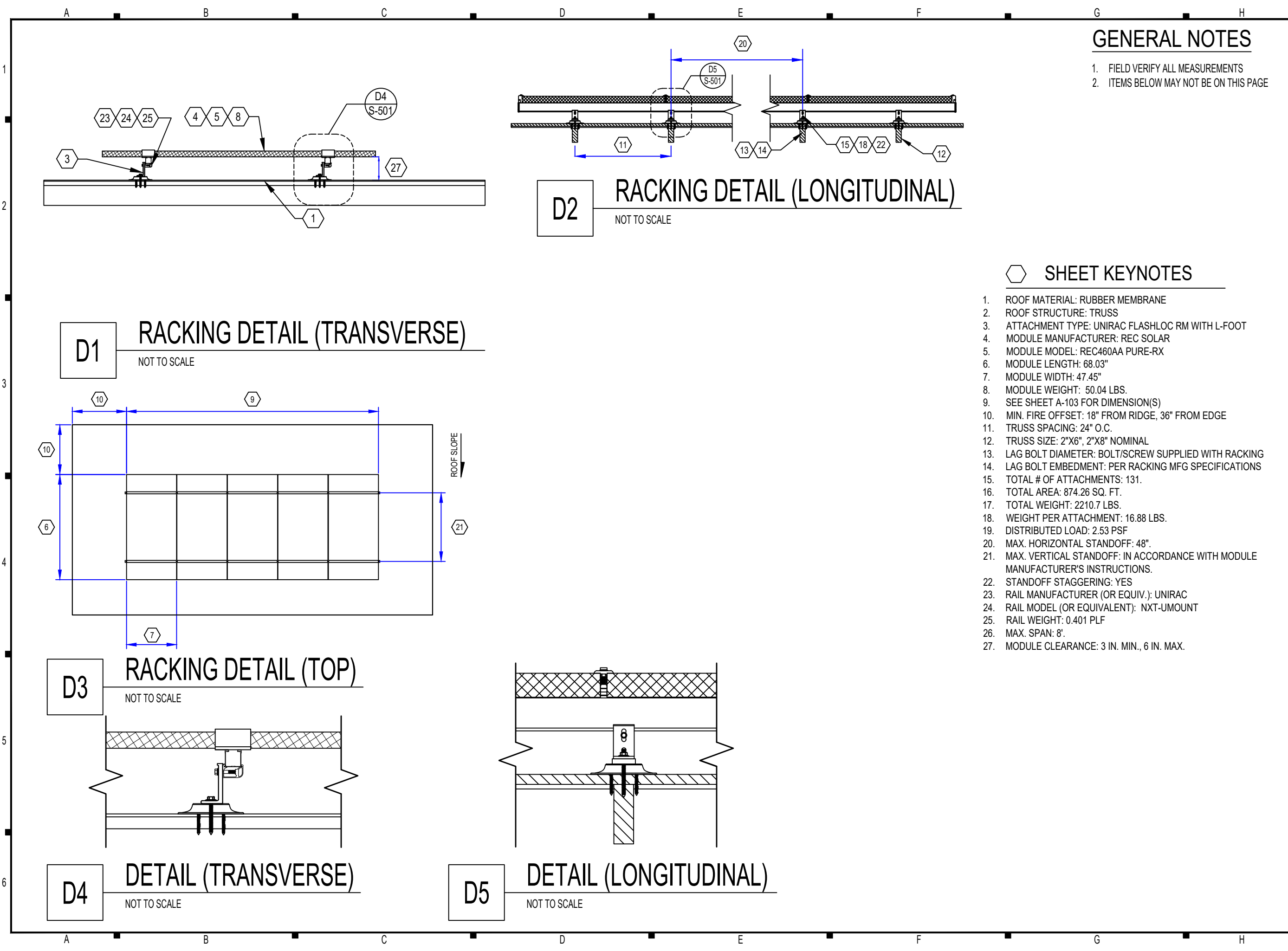
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CHECKED BY: M.M.

REVISIONS

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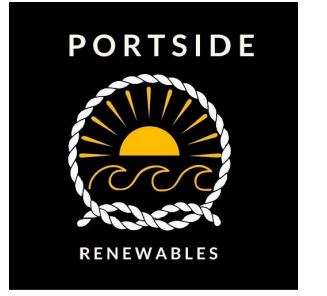


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SHEET KEYNOTES

- 1. ROOF MATERIAL: RUBBER MEMBRANE
- 2. ROOF STRUCTURE: TRUSS
- 3. ATTACHMENT TYPE: UNIRAC FLASHLOC RM WITH L-FOOT
- 4. MODULE MANUFACTURER: REC SOLAR
- 5. MODULE MODEL: REC460AA PURE-RX
- 6. MODULE LENGTH: 68.03"
- 7. MODULE WIDTH: 47.45"
- 8. MODULE WEIGHT: 50.04 LBS.
- 9. SEE SHEET A-103 FOR DIMENSION(S)
- 10. MIN. FIRE OFFSET: 18" FROM RIDGE, 36" FROM EDGE
- 11. TRUSS SPACING: 24" O.C.
- 12. TRUSS SIZE: 2"x6", 2"x8" NOMINAL
- 13. LAG BOLT DIAMETER: BOLT/SCREW SUPPLIED WITH RACKING
- 14. LAG BOLT EMBEDMENT: PER RACKING MFG SPECIFICATIONS
- 15. TOTAL # OF ATTACHMENTS: 131.
- 16. TOTAL AREA: 874.26 SQ. FT.
- 17. TOTAL WEIGHT: 2210.7 LBS.
- 18. WEIGHT PER ATTACHMENT: 16.88 LBS.
- 19. DISTRIBUTED LOAD: 2.53 PSF
- 20. MAX. HORIZONTAL STANDOFF: 48".
- 21. MAX. VERTICAL STANDOFF: IN ACCORDANCE WITH MODULE MANUFACTURER'S INSTRUCTIONS.
- 22. STANDOFF STAGGERING: YES
- 23. RAIL MANUFACTURER (OR EQUIV.): UNIRAC
- 24. RAIL MODEL (OR EQUIVALENT): NXT-UMOUNT
- 25. RAIL WEIGHT: 0.401 PLF
- 26. MAX. SPAN: 8'.
- 27. MODULE CLEARANCE: 3 IN. MIN., 6 IN. MAX.



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ASSEMBLY DETAILS

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REVISIONS

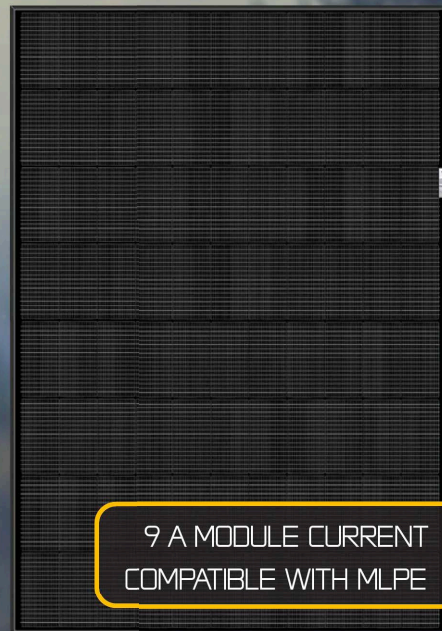
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REC ALPHA[®] PURE-RX SERIES

DATASHEET

470 W_P
22.6% EFFICIENCY
226 W/M²

SOLAR'S MOST TRUSTED 



9 A MODULE CURRENT
COMPATIBLE WITH MLPE



ELIGIBLE

EXPERIENCE

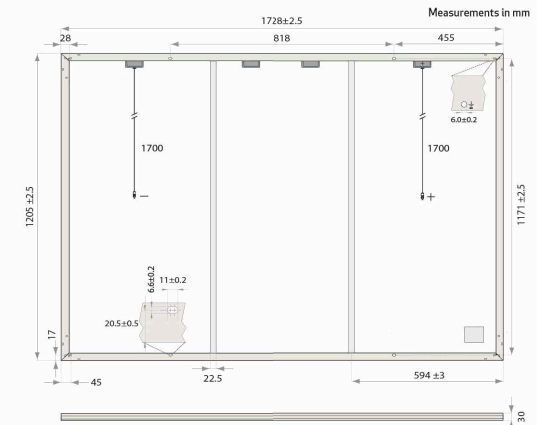
PERFORMANCE

REC ALPHA[®] PURE-RX SERIES DATASHEET

 **REC**
SOLAR'S MOST TRUSTED

GENERAL DATA

Cell Type	88 half-cut bifacial REC heterojunction cells, with gapless technology
Glass	3.2 mm solar glass with anti-reflective surface treatment in accordance with EN12150
Backsheet	Highly resistant polymer (Black)
Frame	Anodized aluminum (Black)
Junction Box	4-part, 4 bypass diodes, IP68 rated, in accordance with IEC 62790
Connectors	Stäubli MC4 PV-KBT4/KST4 (4 mm ²) in accordance with IEC 62852, IP68 only when connected
Cable	4 mm ² solar cable, 1.7 m + 1.7 m in accordance with EN50618
Dimensions	1728 x 1205 x 30 mm (2.08 m ²)
Weight	22.7 kg
Origin	Made in Singapore



ELECTRICAL DATA

PRODUCT CODE*: RECxxxAA Pure-RX

STC

NMOT

Parameter	450	460	470
Power Output - P _{MAX} (W _P)	450	460	470
Watt Class Sorting - (W)	0/+10	0/+10	0/+10
Nominal Power Voltage - V _{MPP} (V)	54.3	54.9	55.4
Nominal Power Current - I _{MPP} (A)	8.29	8.38	8.49
Open Circuit Voltage - V _{OC} (V)	65.1	65.3	65.6
Short Circuit Current - I _{SC} (A)	8.81	8.88	8.95
Power Density (W/m ²)	216	221	226
Panel Efficiency (%)	21.6	22.1	22.6
Power Output - P _{MAX} (W _P)	343	350	358
Nominal Power Voltage - V _{MPP} (V)	51.2	51.7	52.2
Nominal Power Current - I _{MPP} (A)	6.70	6.77	6.86
Open Circuit Voltage - V _{OC} (V)	61.3	61.6	61.8
Short Circuit Current - I _{SC} (A)	7.11	7.17	7.23

Values at standard test conditions (STC: air mass AM1.5, irradiance 1000 W/m², temperature 25°C), based on a production spread with a tolerance of P_{MAX}, V_{OC} & I_{SC} ±3% within one watt class. Nominal module operating temperature (NMOT: air mass AM1.5, irradiance 600 W/m², temperature 20°C, wind speed 1 m/s). *Where xxx indicates the nominal power class (P_{MAX}) at STC above.

MAXIMUM RATINGS*

Operational Temperature	-40 °C - 85 °C
System Voltage	1000 V
Maximum Test Load (front)	+7000 Pa (713 kg/m ²)
Maximum Test Load (rear)	-4000 Pa (407 kg/m ²)
Max Series Fuse Rating	25 A
Max Reverse Current	25 A

* See installation manual for mounting instructions. Design load = Test load /1.5 (safety factor)

TEMPERATURE RATINGS*

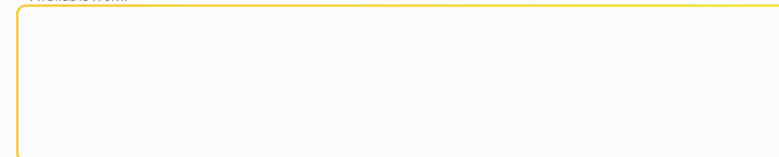
Nominal Module Operating Temperature	44 °C ± 2°C
Temperature coefficient of P _{MAX}	-0.24% / °C
Temperature coefficient of V _{OC}	-0.24% / °C
Temperature coefficient of I _{SC}	0.04% / °C

*The temperature coefficients stated are linear values

DELIVERY INFORMATION

Panels per Pallet	33
Panels per 40 ft GP/high cube container	594 (18 Pallets)
Panels per 13.6 m truck	660 (20 Pallets)

Available from:



Founded in 1996, REC Group is an international pioneering solar energy company dedicated to empowering consumers with clean, affordable solar power. As Solar's Most Trusted, REC is committed to high quality, innovation, and a low carbon footprint in the solar materials and solar panels it manufactures. Headquartered in Norway with operational headquarters in Singapore, REC also has regional hubs in North America, Europe, and Asia-Pacific.

CERTIFICATIONS

IEC 61215:2021; IEC 61730:2016; UL61730
ISO 11925-2 Ignitability (EN 13501-1 Class E)
IEC 62716 Ammonia Resistance
IEC 61701 Salt Mist (SM6)
IEC 61215:2016 Hailstone (35 mm)
UL 61730 Fire Type 2
ISO 14001; ISO9001; IEC45001; IEC62941



Specifications subject to change without notice.

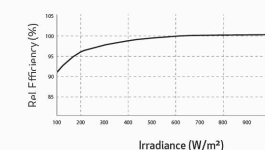
WARRANTY

Installed by an REC Certified Professional	Standard			REC ProTrust		
	No	Yes	Yes	No	Yes	Yes
System Size	All	<25 kW	25-500 kW			
Product Warranty (yrs)	20	25	25			
Power Warranty (yrs)	25	25	25			
Labor Warranty (yrs)	0	25	10			
Power in Year 1	98%	98%	98%			
Annual Degradation	0.25%	0.25%	0.25%			
Power in Year 25	92%	92%	92%			

The REC ProTrust Warranty is only available on panels purchased through an REC Certified Solar Professional installer. Warranty conditions apply. See www.recgroup.com for more details

LOW LIGHT BEHAVIOUR

Typical low irradiance performance of module at STC:

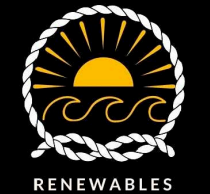


Ref: PM-D5-12-06-Rev-4.15.2024

REC Solar PTE. LTD.
20 Tuas South Ave. 14
Singapore 637312
post@recgroup.com
www.recgroup.com



PORTSIDE



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RESOURCE DOCUMENT

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REVISIONS

R-001.00

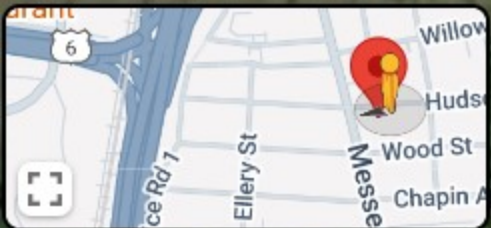
Close

85 Hudson St

Providence, Rhode Island

Google Street View

Jul 2019 See more dates



Google

92 Hudson St

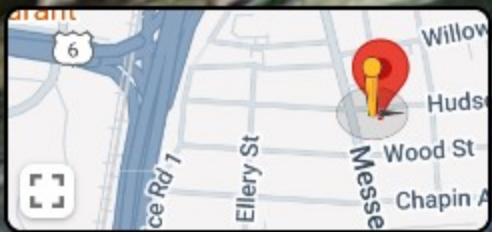
Providence, Rhode Island



Google Street View

Jul 2019

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Hudson St

Google







RE/MAX
Call: 202.258.1234
www.remax.com



Small white sign on the green house with illegible text.