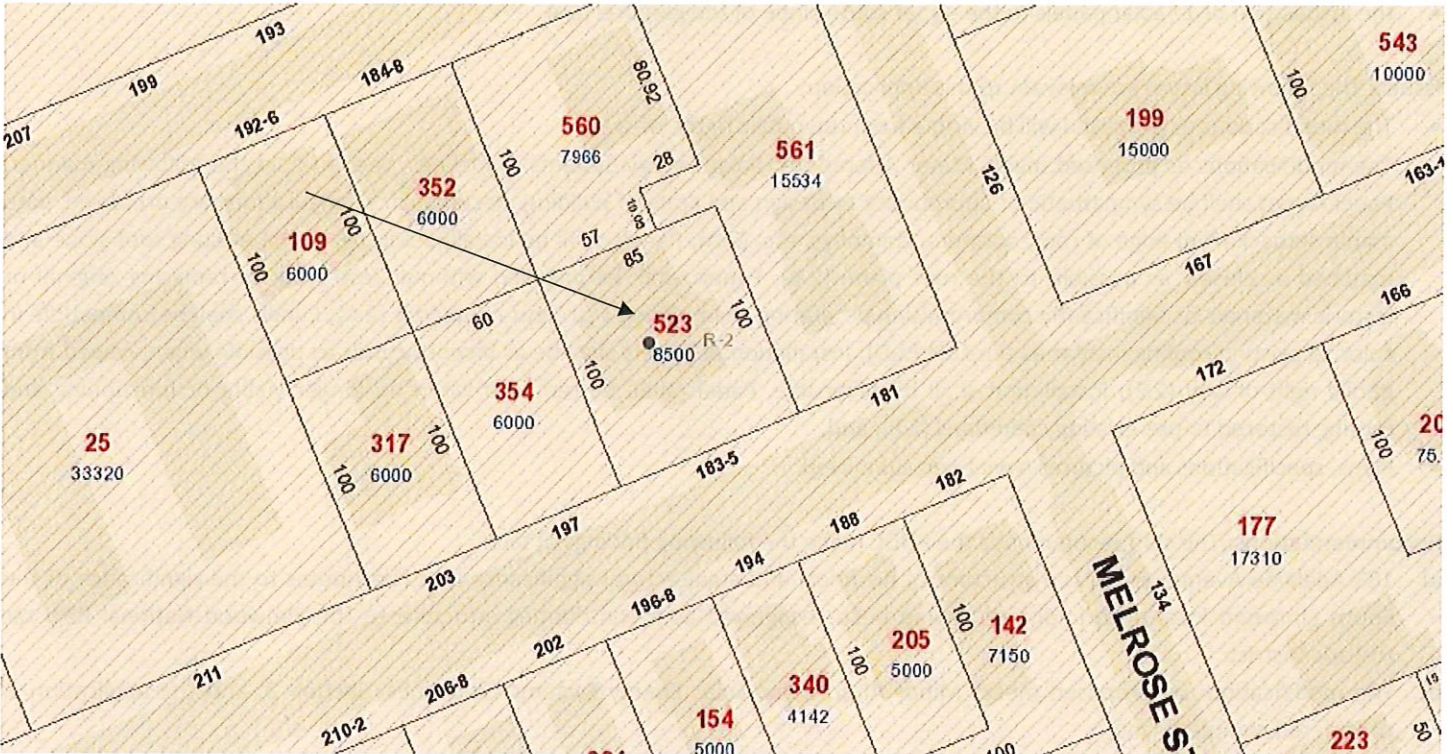


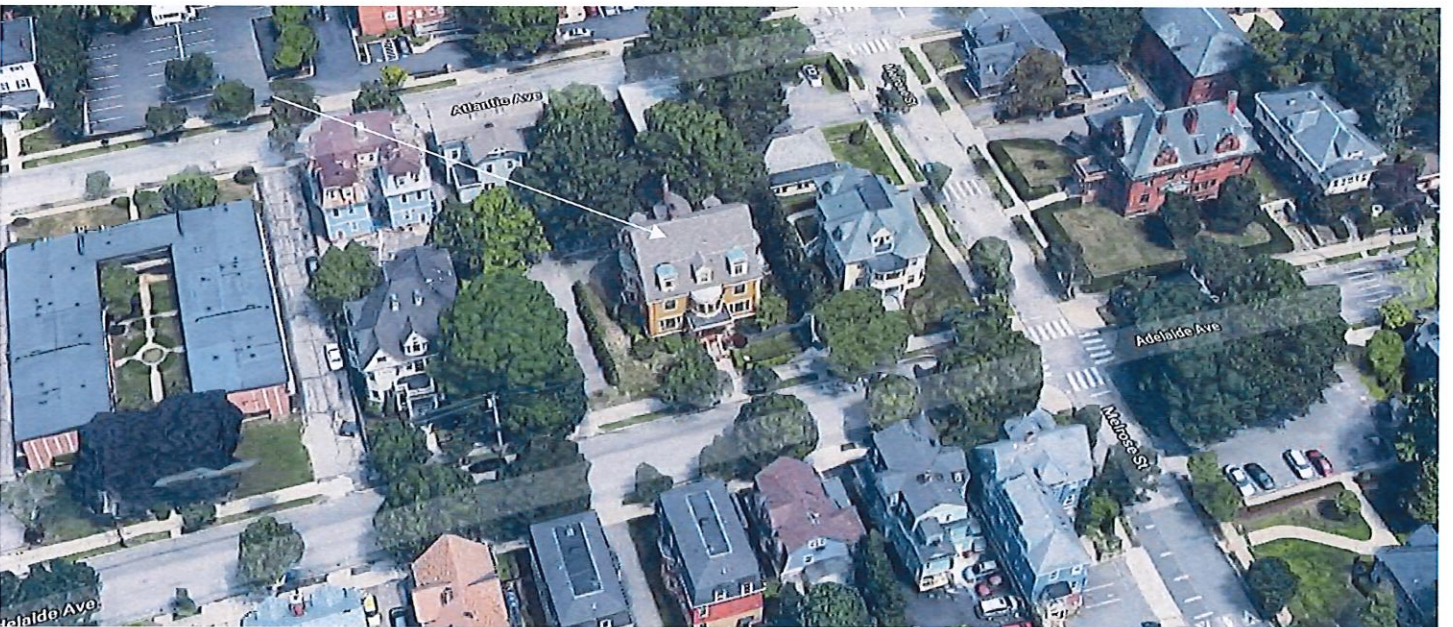
4. **CASE 22.021, 183 ADELAIDE AVENUE, Julia P.A. Anthony House, c1906 (SOUTH ELMWOOD)**

Reserved and symmetrical, three-bay, 2½-story flank-gambrel dwelling, with segmental-arched and pedimented dormers and a paired-Tuscan-column entrance porch supporting a second-story bay window.

CONTRIBUTING



Arrow indicates 183 Adelaide Avenue.



Arrow indicates project location, looking north.

Applicant/Contractor: Rebekah Hahn, SmartGreen Solar, 33 Broad Street, Ste 300, Providence, RI 02903

Owner: Ryan Loiselle, 183 Adelaide Avenue, Providence, RI 02907

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

- the installation of 17 solar panels to the upper south slope of the gambrel roof.

Issues: The following issues are relevant to this application:

- The modifications as proposed will 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) 183 Adelaide Avenue Street is a structure of historical and architectural significance that contributes to the significance of the South Elmwood local historic district having been recognized as a contributing structure to the Elmwood 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; 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. 183 Adelaide Avenue Street is a structure of historical and architectural significance that contributes to the significance of the South Elmwood local historic district having been recognized as a contributing structure to the Elmwood 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 as 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, and the recommendations in the staff report, with staff to review any additional required details.

SCOPE OF WORK:
 TO INSTALL A ROOF MOUNTED SOLAR PHOTOVOLTAIC SYSTEM AT THE OWNER RESIDENCE LOCATED AT 183 ADELAIDE AVE, PROVIDENCE, RI 02907
 THE POWER GENERATED BY THE PV SYSTEM WILL BE INTERCONNECTED WITH THE UTILITY GRID THROUGH THE EXISTING ELECTRICAL SERVICE EQUIPMENT.
 THE PV SYSTEM DOES NOT INCLUDE STORAGE BATTERIES

EQUIPMENT SUMMARY

18 HANVWA Q CELLS Q.PEAK DUO BLK ML-G9-380W MODULES
18 ENPHASE IQ7 PLUS-72-2-US (240V) MICROINVERTERS

GENERAL NOTES:
 THESE CONSTRUCTION DOCUMENTS HAVE BEEN BASED ON FIELD INSPECTIONS AND OTHER INFORMATION AVAILABLE AT THE TIME. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS IN CONSTRUCTION DETAILS.
 ARCHITECT HAS NOT BEEN RETAINED TO SUPERVISE ANY CONSTRUCTION OR INSTALLATION OF ANY EQUIPMENT AT SITE.
 CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, EQUIPMENT, TOOLS, OBTAINS ALL PERMITS, LICENSES AND PAY ALL REQUIRED FEES AND COMPLETE INSTALLATION.
 CONTRACTOR HAS THE FULL RESPONSIBILITY TO CHECK AND VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK. ANY WORK STARTED BEFORE CONSULTATION AND ACCEPTANCE BY THE ENGINEER SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBJECT TO CORRECTION BY THEM WITHOUT ADDITIONAL COMPENSATION.
 DAMAGE CAUSED TO THE EXISTING STRUCTURE, PIPES, DUCTS, WINDOWS, WALL, FLOORS, ETC. SHALL BE REPAIRED TO THE ORIGINAL CONDITION OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST.
 THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE PROPER INSTALLATION AND COMPLETION OF THE WORK WITH APPROVED MATERIALS.
 NO CHANGES ARE TO BE MADE WITHOUT THE CONSULTATION AND APPROVAL OF THE ARCHITECT.
 CONTRACTOR SHALL OBTAIN BUILDING PERMIT. NO WORK TO START UNLESS BUILDING PERMIT IS PROPERLY DISPLAYED.
 ALL WORKMANSHIP AND MATERIALS SHALL BE OF FIRST QUALITY AND IN COMPLIANCE WITH THE REQUIREMENTS OF THE RI BUILDING CODE. THE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ALL PERTINENT AGENCIES.
 IT IS ESSENTIAL THAT ALL WORK PROCEED WITH THE MAXIMUM COOPERATION OF ALL PARTIES AND WITH MINIMUM INTERFERENCE TO THE OCCUPANTS WITHIN THE BUILDING. THE OWNERS DIRECTIONS IN THIS REGARD SHALL BE FULLY COMPLIED WITH.
 ALL EXPOSED PIPING, HVAC, ELECTRICAL DUCTWORK, PIPING AND CONDUITS ARE TO BE PAINTED BY GENERAL CONTRACTOR.
 THE CONTRACTOR SHALL PERFORM THE WORK IN STRICT CONFORMANCE WITH THE LOCAL LAWS, REGULATIONS AND THE NATIONAL ELECTRIC CODE.
 THE CONTRACTOR SHALL OBTAIN ALL PERMITS, APPROVALS, AFFIDAVITS, CERTIFICATIONS, ETC. AND PAY ALL FEES AS REQUIRED BY THE LOCAL AUTHORITIES.
 CONTRACTORS SHALL OBTAIN FIRE CERTIF. UPON COMPLETION OF WORK.

ELECTRICAL NOTES:
 THE EQUIPMENT AND ALL ASSOCIATED WIRING AND INTERCONNECTION SHALL BE INSTALLED ONLY BY QUALIFIED PEOPLE. A QUALIFIED PERSON IS ONE WHO HAS SKILLS AND KNOWLEDGE RELATED TO THE CONSTRUCTION AND OPERATION OF THE ELECTRICAL EQUIPMENT AND INSTALLATIONS AND HAS RECEIVED SAFETY TRAINING TO RECOGNIZE AND AVOID THE HAZARDS INVOLVED. (NEC 690.4(E) AND 705.6)
 LOCAL UTILITY PROVIDER SHALL BE NOTIFIED PRIOR TO USE AND ACTIVATION OF ANY SOLAR PHOTOVOLTAIC INSTALLATION. FOR A LINE SIDE TAP NEW CONDUIT ROUTING SHOWN IS ESSENTIALLY WELL IN ADVANCE TO COORDINATE BUILDING ELECTRICAL SHUT OFF.
 COORDINATION REQUIREMENTS OF OTHER TRADES.
 ARRAY WIRING SHOULD NOT BE READILY ACCESSIBLE EXCEPT TO QUALIFIED PERSONNEL.
 ALL EXTERIOR CONDUIT, FITTINGS, AND BOXES SHALL BE WATER TIGHT AND APPROVED FOR USE IN WET LOCATIONS. (NEC 314.15A).
 WIRING METHODS FOR PV SYSTEM CONDUCTIONS ARE NOT PERMITTED WITHIN 10 IN. OF THE ROOF DECKING OR SHEATHING EXCEPT WHERE LOCATED DIRECTLY BELOW THE ROOF SURFACE THAT'S COVERED BY PV MODULES AND ASSOCIATED EQUIPMENT WIRING.
 BACK-FED BREAKER MUST BE AT THE OPPOSITE END OF BUS BAR FROM THE MAIN BREAKER OR MAIN LUG SUPPLYING CURRENT FROM THE UTILITIES.
 ALL CONDUCTORS AND WIRE TIES EXPOSED TO SUNLIGHT ARE LISTED AS UV RESISTANT.
 CONTRACTOR SHALL FOLLOW ALL ELECTRICAL EQUIPMENT LABELING REQUIREMENTS IN NEC 690 AND IFC 2015.
 PV SOURCE OUTPUT AND INVERTER CIRCUITS SHALL BE IDENTIFIED AT ALL POINTS OF TERMINATION, CONNECTION, AND SPLICES. THE MEANS OF ID CAN BE SEPARATE COLOR CODING, MARKING TAPE, TAGGING ETC. (NEC 690.4j).
 MEASURE THE LINE-TO-LINE AND LINE-TO-NEUTRAL VOLTAGE OF ALL SERVICE ENTRANCE CONDUCTORS PRIOR TO INSTALLING ANY SOLAR EQUIPMENT. THE VOLTAGES FOR THE 240VAC RATED.

GOVERNING CODES

2015 INTERNATIONAL RESIDENTIAL CODE
2015 INTERNATIONAL FIRE CODE
2017 NATIONAL ELECTRICAL CODE
2015 INTERNATIONAL BUILDING CODE
2019 RHODE ISLAND STATE BUILDING CODE

WIRING AND CONDUIT NOTES:
 ALL CONDUIT SIZES AND TYPES SHALL BE LISTED FOR ITS PURPOSE AND APPROVED FOR THE SITE APPLICATIONS.
 ALL PV CABLES AND HOMERUN WIRES BE #10AWG USE-2, PV WIRE, OR PROPRIETARY SOLAR CABLING SPECIFIED BY MFR, OR EQUIVALENT, ROUTED TO SOURCE CIRCUIT COMBINER BOXES AS REQUIRED.
 ALL CONDUCTORS AND OCCP SIZES AND TYPES SPECIFIED ACCORDING TO (NEC 690.8 (A)(1) & (B)(1)), (NEC 240) (NEC 690.7) FOR MULTIPLE CONDUCTORS
 ALL PV DC CONDUCTORS IN CONDUIT EXPOSED TO SUNLIGHT SHALL BE DERATED ACCORDING TO INEC TABLE 310.15 (B)(2)(C) BLACK ONLY.
 EXPOSED ROOF PV DC CONDUCTORS SHALL BE USE-2, 90°C RATED, WET AND UV RESISTANT, AND UL LISTED RATED FOR 600V, UV RATED SPIRAL WRAP SHALL BE USED TO PROTECT WIRE FROM SHARP EDGES.
 PHASE AND NEUTRAL CONDUCTORS SHALL BE DUAL RATED THHN/THWN-2 INSULATED, 90°C RATED, WET AND UV RESISTANT, RATED FOR 600V PER NEC 2008 OR 1000V PER NEC 2011.
 4 WIRE DELTA CONNECTED SYSTEMS HAVE THE PHASE WITH IDENTIFIED BY OTHER EFFECTIVE MARK ORANGE OR IDENTIFIED BY OTHER EFFECTIVE MARKS
 ALL SOURCE CIRCUITS SHALL HAVE INDIVIDUAL SOURCE CIRCUIT PROTECTION
 VOLTAGE DROP LIMITED TO 2%
 NEGATIVE GROUNDING SYSTEMS DC CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS: DC POSITIVE - RED (OR MARKED RED), DC NEGATIVE - GREY (OR MARKED GREY)
 POSITIVE GROUNDING SYSTEMS DC CONDUCTORS COLOR CODED: DC POSITIVE - GREY (OR MARKED GREY), DC NEGATIVE - BLACK (OR MARKED BLACK)
 AC CONDUCTORS - AWG COLOR CODED OR MARKED: PHASE A OR L1 - BLACK, PHASE B OR L2 - RED, PHASE C OR L3 - BLUE, NEUTRAL - WHITE/GRAY

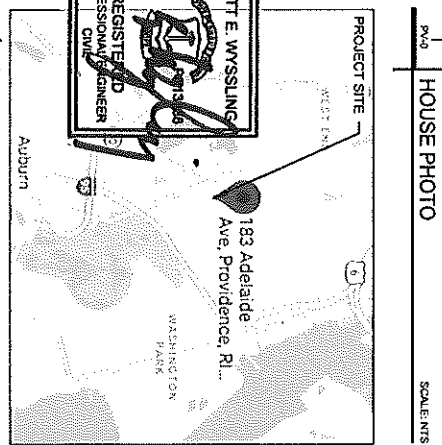
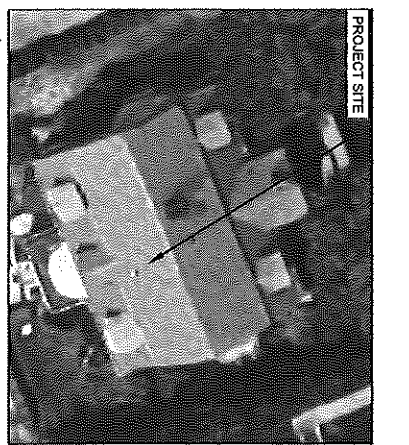
THE HIGHER VOLTAGE TO GROUND MEANS OR IDENTIFIED BY OTHER EFFECTIVE MARKS
 ALL SOURCE CIRCUITS SHALL HAVE INDIVIDUAL SOURCE CIRCUIT PROTECTION
 VOLTAGE DROP LIMITED TO 2%
 NEGATIVE GROUNDING SYSTEMS DC CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS: DC POSITIVE - RED (OR MARKED RED), DC NEGATIVE - GREY (OR MARKED GREY)
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 AC CONDUCTORS - AWG COLOR CODED OR MARKED: PHASE A OR L1 - BLACK, PHASE B OR L2 - RED, PHASE C OR L3 - BLUE, NEUTRAL - WHITE/GRAY

SYSTEM RATING

6.84 kWDC
5.31 kWAC

SHEET INDEX

PV-0	COVER PAGE
PV-1	SITE PLAN
PV-2	ROOF PLAN & MODULES
PV-2A	STRING LAYOUT & BOM
PV-3	ATTACHMENT DETAIL
PV-4	ELECTRICAL LINE DIAGRAM & CALCS.
PV-4A	SPECIFICATIONS & CALCULATION
PV-5	SIGNAGE
PV-6+	EQUIPMENT SPECIFICATIONS



1
VICINITY MAP

SMART GREEN, INC.
 33 BROAD STREET, STE 300,
 PROVIDENCE, RI 02903
 (401) 375-5949
 CONTRACTOR LIC#: 45612

SYSTEM INFO

(30P) HANVWA Q CELLS Q.PEAK DUO BLK ML-G9-380W
(18) ENPHASE IQ7 PLUS-72-2-US (240V)
DC SYSTEM SIZE: 6.84 KWDC
AC SYSTEM SIZE: 5.31 KWAC

REVISIONS

DESCRIPTION	DATE	REV

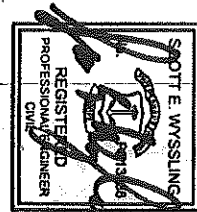
Signature with Seal

DATE: 08/27/2021
 PROJECT NAME & ADDRESS

RYAN LOISELLE
RESIDENCE
 183 ADELAIDE AVE.
 PROVIDENCE, RI 02907
 PH.# : (508) 847-2343
 Email: ryanclouelle@gmail.com

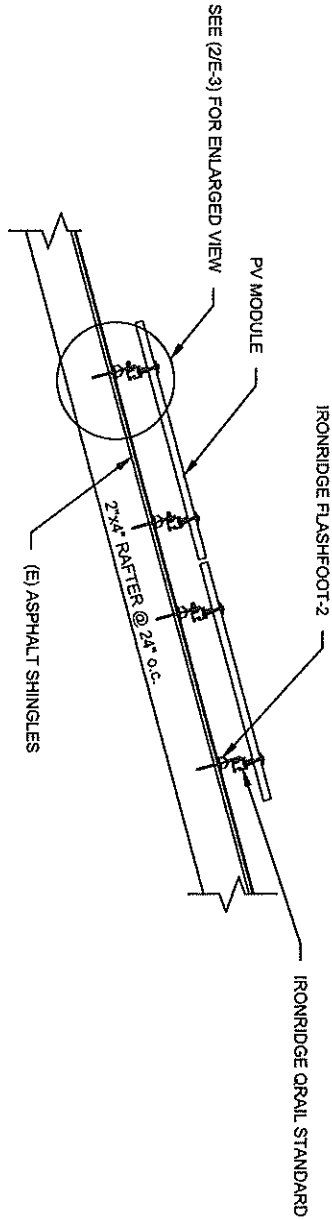
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SHEET NAME
 SHEET SIZE
 ANSI B
 11" X 17"
 SHEET NUMBER
 PV-0

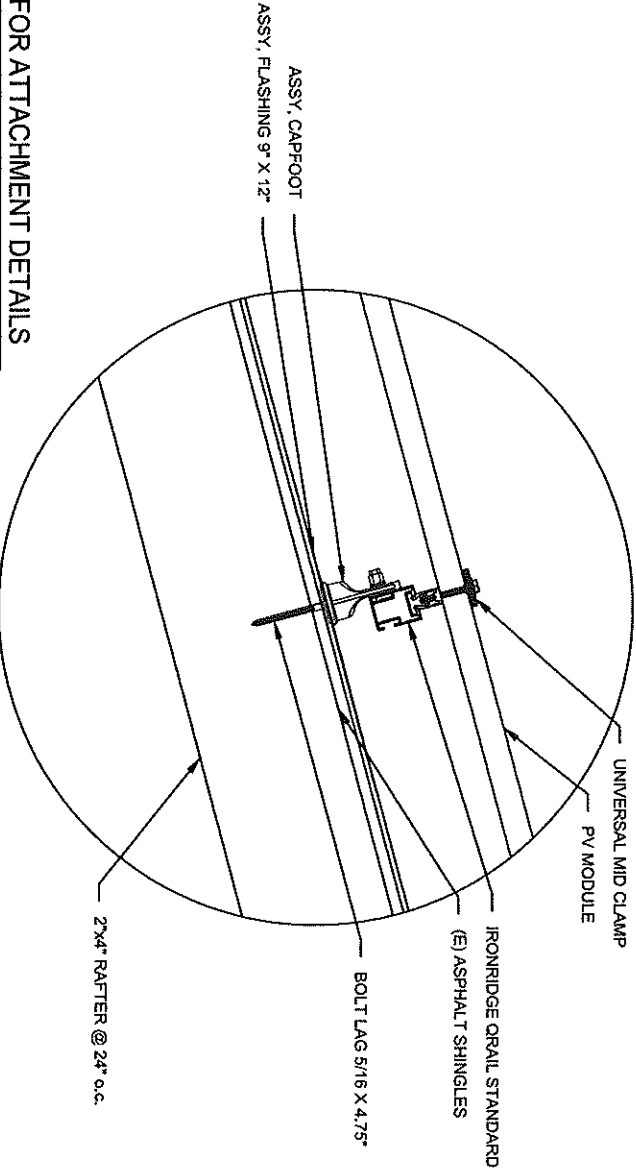


1 ATTACHMENT DETAILS

PV-3



SEE (2/E-3) FOR ENLARGED VIEW



2 ENLARGED VIEW FOR ATTACHMENT DETAILS

PV-3

SCALE: NTS



SMART GREEN, INC.
33 BROAD STREET, STE 300,
PROVIDENCE, RI 02903
(401) 375-5949
CONTRACTOR LIC# : 45612

SYSTEM INFO.

(1) MANUFACTURER: SMART GREEN, INC.
(2) PROJECT NO: 705272-045 (2021)
AC SYSTEM SIZE: 5.91 KWAC

REVISIONS

DESCRIPTION	DATE	REV

Signature with Seal

DATE: 09/27/2021

PROJECT NAME & ADDRESS

RYAN LOISELLE
RESIDENCE
183 ADELAIDE AVE.
PROVIDENCE, RI 02907
PH.# : (508) 847-2343
Email: ryanloiselle@gmail.com

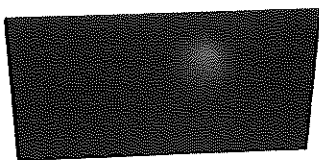
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ATTACHMENT
DETAIL

SHEET SIZE
11" X 17"

SHEET NUMBER
PV-3

Q.PEAK DUO BLK ML-G9+

365-385 ENDURING HIGH PERFORMANCE



THE IDEAL SOLUTION FOR:
 Residential
 Commercial
 Utility

Engineered in Germany

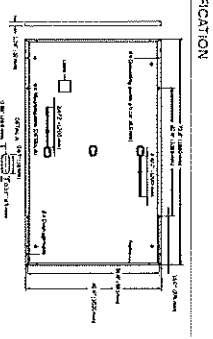
Q CELLS

- BEATING THE 20% EFFICIENCY BARRIER**
Q ANTUM DUO Z technology with zero gap cell layout boosts module efficiency up to 20.6 %
- INNOVATIVE ALL-WEATHER TECHNOLOGY**
Optimal yields, whatever the weather with excellent low-light and temperature behavior.
- ENDURING HIGH PERFORMANCE**
Long-term yield security with Anti-UD Technology, Anti PID Technology, Hot-Spot Protect and Traceable Quality Pro Q™.
- EXTREME WEATHER RATING**
High-strength aluminum alloy frame, certified for high snow (6000Pa) and wind loads (6000Pa).
- A RELIABLE INVESTMENT**
Inclusive 25-year product warranty and 25-year linear performance warranty.
- STATE OF THE ART MODULE TECHNOLOGY**
Q ANTUM DUO Z comprises cutting-edge cell separation and innovative 12-busbar design with Q ANTUM technology.

*LIFE and conditions according to IEC 61215-1:2016, Annex G (1-2016) and IEC 61215-2:2016, Annex G (1-2016)

MECHANICAL SPECIFICATION

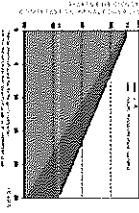
Height	72.7mm ± 0.05mm ± 1.5mm (including frame)
Weight	4.00kg ± 0.05kg
Weight Class	0.15m x 0.67m (standardly) / 0.20m x 0.7m (optional)
Back Sheet	polyethylene terephthalate (PET) with anti-reflective coating
Front Cover	Corrosion free
Frame	Black anodized aluminum
Cell	6.1mm mono-crystalline Q ANTUM solar cell cells
Module Size	2096.2mm x 1130.0mm x 0.50mm ± 0.2mm
Cell Size	150.0mm x 75.0mm x 0.18mm ± 0.01mm
Cell Pitch	4mm Solar cells (P) x 2.2mm (S) (0.50mm) (P) x 2.2mm (S) (0.50mm)
Connectors	3-pin MC4 (MCC100)



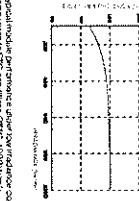
ELECTRICAL CHARACTERISTICS

POWER CLASS	365		370		375		380		385	
	P _{max}	I _{sc}	P _{max}	I _{sc}	P _{max}	I _{sc}	P _{max}	I _{sc}	P _{max}	I _{sc}
Power at STC	365	9.00	370	9.10	375	9.20	380	9.30	385	9.40
Short-Circuit Current	9.60	10.40	9.60	10.40	9.60	10.40	9.60	10.40	9.60	10.40
Open-Circuit Voltage	44.50	44.50	44.50	44.50	44.50	44.50	44.50	44.50	44.50	44.50
Temperature Coefficient	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40
Temperature Coefficient (P _{max})	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40
Temperature Coefficient (I _{sc})	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Temperature Coefficient (V _{oc})	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40

Standard test conditions: AM1.5 Global, 1000 W/m², 25°C, 1 Air Mass 1.5 spectrum (IEC 60904-2:2006), 1000 h spectral irradiance (IEC 60904-2:2006), 1.5 Air Mass 1.5 spectrum (IEC 60904-2:2006), 1000 h spectral irradiance (IEC 60904-2:2006)



At 25°C when irradiance is 1000 W/m², the power output of the module is 365 W for power class 365, 370 W for power class 370, 375 W for power class 375, 380 W for power class 380, and 385 W for power class 385.



At 25°C, the open-circuit voltage of the module is 44.50 V for all power classes.

TEMPERATURE COEFFICIENTS

Temperature Coefficient of P _{max}	Temperature Coefficient of I _{sc}	Temperature Coefficient of V _{oc}
-0.40	0.03	-0.40

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage (V _{max})	1000 VDC (IEC 61730-1)
Maximum System Current (I _{max})	10 A (IEC 61730-1)
Maximum System Power (P _{max})	385 W (IEC 61730-1)
Maximum System Voltage (V _{max})	1000 VDC (IEC 61730-1)
Maximum System Current (I _{max})	10 A (IEC 61730-1)
Maximum System Power (P _{max})	385 W (IEC 61730-1)

QUALIFICATIONS AND CERTIFICATES

CE	IEC 61730-1	IEC 61730-2	UL 1709	UL 1741	UL 61730	UL 6174
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PACKAGING AND TRANSPORT INFORMATION

Module Weight	4.00 kg
Module Dimensions (L x W x H)	2096.2 mm x 1130.0 mm x 0.50 mm
Module Area	2.366 m²
Module Efficiency	20.6%

Make it safe when installation must be performed. See the installation and operating manual or contact our technical service department for further information on approval and use of this product.

Q CELLS America, Inc.
 4073 Hamilton Center Drive, Suite 4000 Irvine, CA 92618, USA | Tel: +1 949 248 0975 | Email: inquiry@q-cells.com | Web: www.q-cells.com

SYSTEM INFO:
 Q CELLS Q.PEAK DUO BLK ML-G9+
 365-385 WATT
 6.1mm Mono-crystalline Silicon
 150mm x 75mm x 0.18mm

REVISIONS	DATE	REV

Signature with Seal

DATE: 08/27/2021
 PROJECT NAME & ADDRESS

RYAN LOISELLE
 RESIDENCE
 183 ADELAIDE AVE.
 PROVIDENCE, RI 02907
 PH.# : (508) 847-2343
 Email: ryanloiselle@gmail.com

SHEET NAME
 EQUIPMENT
 SPECIFICATION
 SHEET SIZE
 ANSI B
 11" X 17"
 SHEET NUMBER
 PV-6



197 Adelaide Ave
Providence, Rhode Island
Google
Street View - Jul 2019



Google

