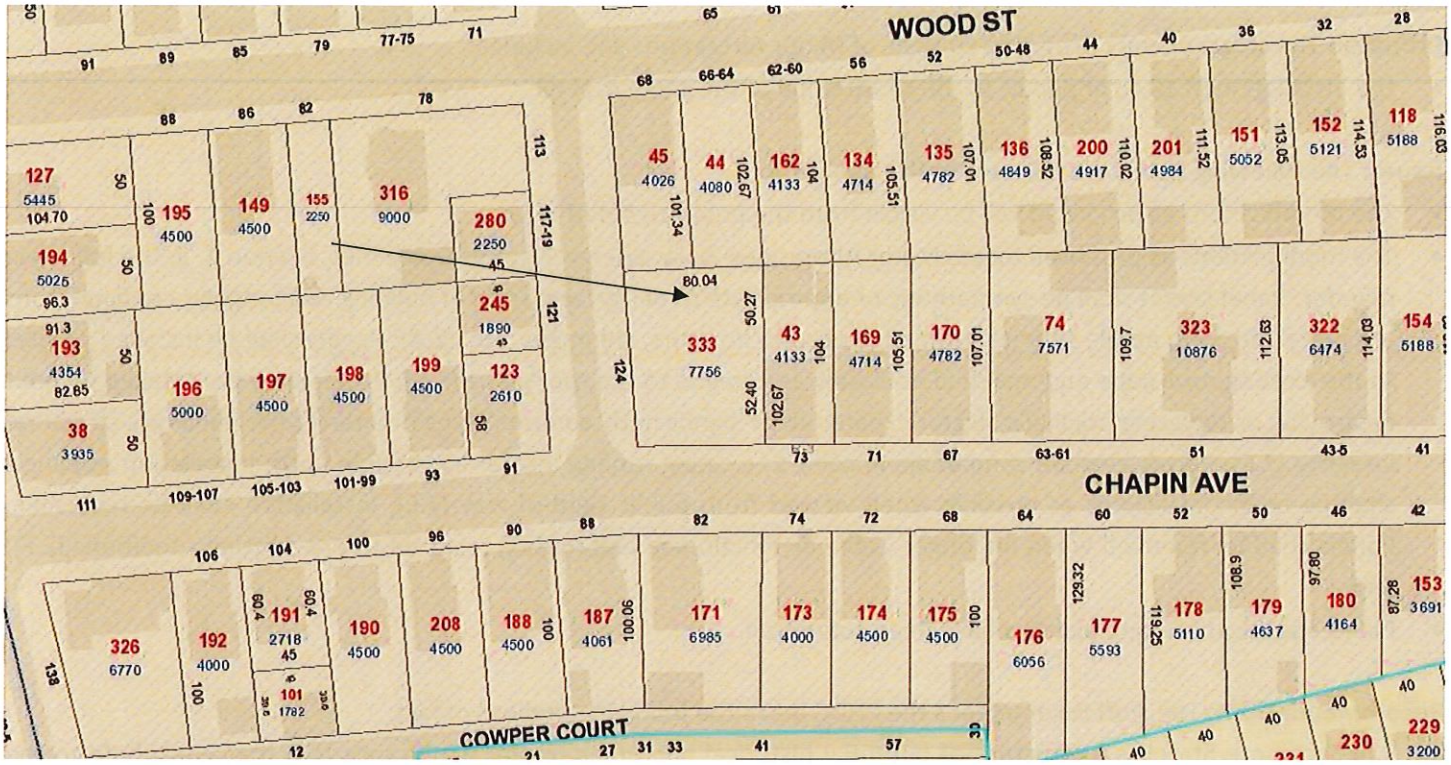
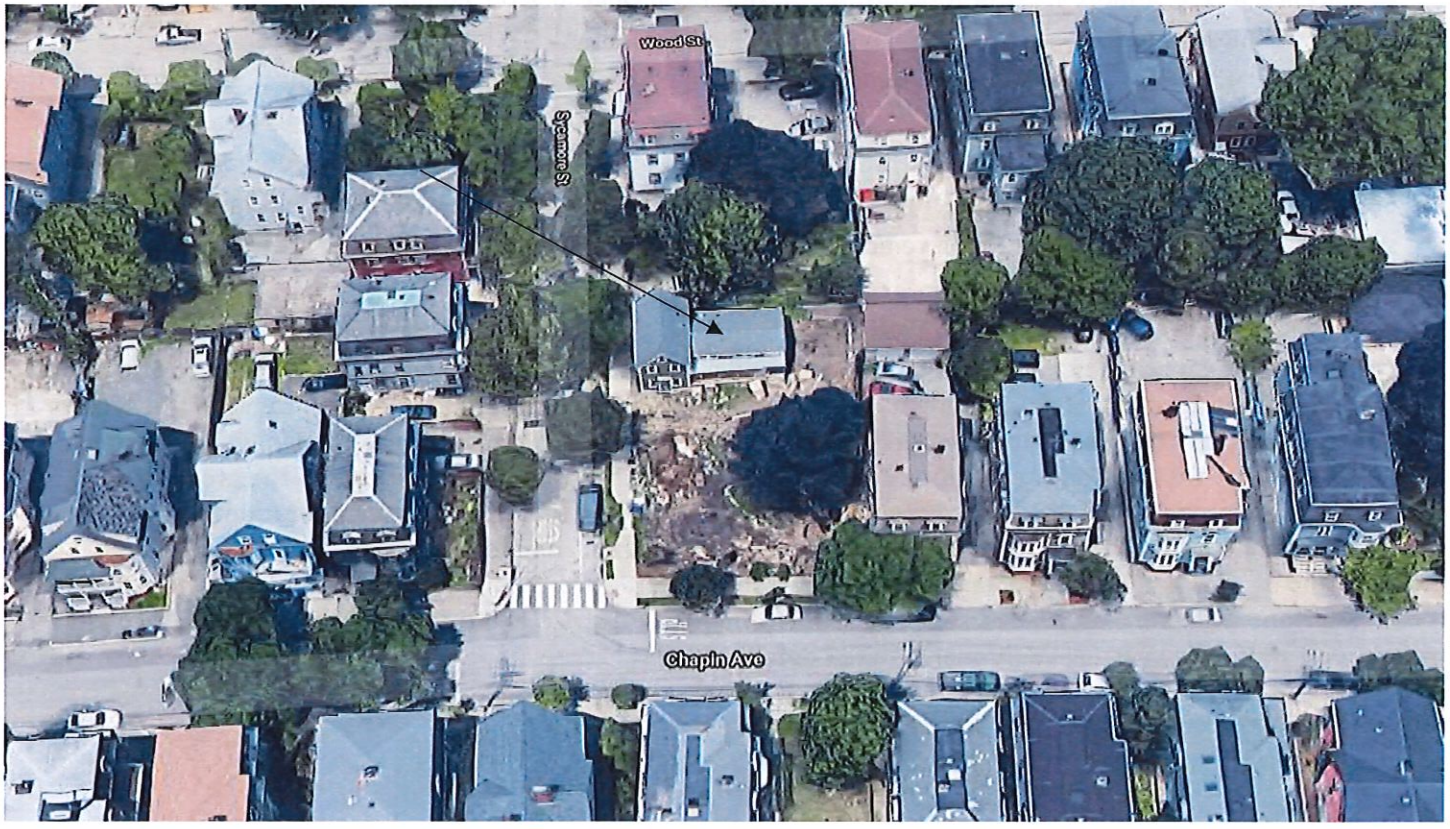
5. CASE 21.125, 124 SYCAMORE STREET, House, 2017 (ARMORY)

NON-CONTRIBUTING to Broadway/Armory National Register Historic District



Arrow indicates 124 Sycamore Street



Arrow indicates project location, looking north.


124 Sycamore St
10 Panel
Solar Array
Sycamore St


New conduit run from bottom of soffit to meter, run as discretely as possible
New exterior disconnect for utility and first responders

VECTOR ENGINEERS
651 W. GALENA PARK BLVD. STE. 101
DRAPER, UTAH 84020
PHONE (801) 990-1775
WWW.VECTORSE.COM

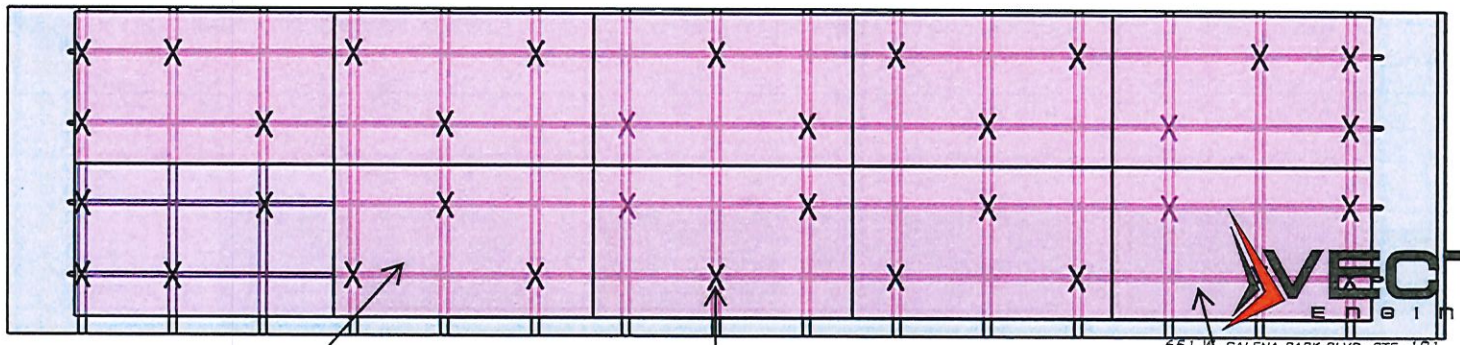
VSE Project Number: U3946.0117.211

Vector Structural Engineering has reviewed the existing structure with loading from the solar array and screw connections to the existing framing. The design of the racking system, racking connections, and all other structural is by others. Mechanical, architectural, and all other nonstructural aspects of the design are by others. Electrical is by others, unless stamped by Dean Levorsen.

JACOB S. PROCTOR
STATE OF RHODE ISLAND
No. 13119
HOPE
REGISTERED PROFESSIONAL ENGINEER

09/22/2021

SolPower	Site Location: Katherine Brown 124 Sycamore St Providence, RI 02909	Structural Layout Drawing Created By: Abel Collins Date: 9/20/2021	Sol Power 11 Almy Street Providence, RI. 02909



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Hanwha 340 Watt solar panels (40mm frame)

3 x 5/16 Lag Bolts into Rafters IronRidge Flashings

IronRidge XR100 Rails

Array area (square ft): 195.8
Hurricane ties present: Yes
Flush Roof Mount PV Array
Roof Type: Asphalt Shingle
Roof Rafters: 2x10" rafters 24" OC
Roof Pitch: 23 degrees
Roof Orientation: 176
Mean Roof Height: 16'

JACOB S. PROCTOR
STATE OF RHODE ISLAND
No. 13119
REGISTERED PROFESSIONAL ENGINEER
09/22/2021

Loading, 120mph wind, 30 psf snow:
Total Weight (lbs): 605.9
Weight/Attachment (lbs): 17.8
Distributed Weight (psf): 3.1
Max Downforce at Attachment (lbs): 129
Max Uplift at Attachment (lbs): -196
Lateral Reaction at Attachment (lbs): 46
Max Cantilever: 1'7"
Max attachment span: 4'
Total # of Attachments: 34

SolPower

Site Location: Katherine Brown
124 Sycamore St
Providence, RI 02909

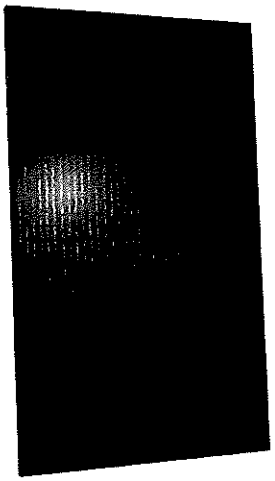
Structural Layout Drawing
Created By: Abel Collins
Date: 9/20/2021

Sol Power
11 Almy Street
Providence, RI. 02909

powered by Q.ANTUM DUO

Q.PEAK DUO BLK-G6+
330-345

ENDURING HIGH PERFORMANCE



Q.ANTUM TECHNOLOGY: LOW LEVELISED COST OF ELECTRICITY
Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 19.5%.

INNOVATIVE ALL-WEATHER TECHNOLOGY
Optimal yields, whatever the weather with excellent low-light and temperature behaviour.

ENDURING HIGH PERFORMANCE
Long-term yield security with Anti LID Technology, Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

EXTREME WEATHER RATING
High-tech aluminium alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).

A RELIABLE INVESTMENT
Inclusive 25-year product warranty and 25-year linear performance warranty[2].

STATE OF THE ART MODULE TECHNOLOGY
Q.ANTUM DUO combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology.

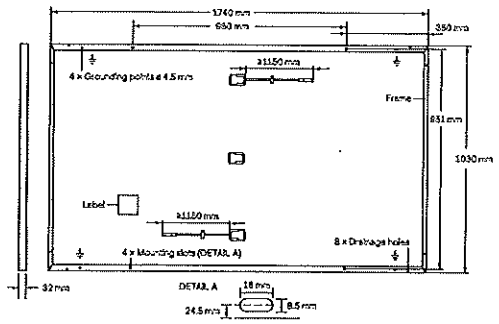
[1] APT test conditions according to IEC/TS 62804-1:2015, method B (-1500V, 168h)
[2] See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:
Rooftop arrays on residential buildings

Engineered in Germany

MECHANICAL SPECIFICATION

Format	1740 mm × 1030 mm × 32 mm (including frame)
Weight	19.9 kg
Front Cover	3.2 mm thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 20 monocrystalline Q.ANTUM solar half cells
Junction box	53-101 mm × 32-60 mm × 15-18 mm Protection class IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥1150 mm, (–) ≥1150 mm
Connector	Stäubli MC4; IP68

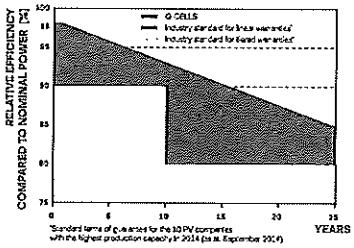


ELECTRICAL CHARACTERISTICS

POWER CLASS				330	335	340	345
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / −0 W)							
Minimum	Power at MPP[1]	P_{MPP}	[W]	330	335	340	345
	Short Circuit Current[1]	I_{SC}	[A]	10.41	10.47	10.52	10.58
	Open Circuit Voltage[1]	V_{OC}	[V]	40.15	40.41	40.66	40.92
	Current at MPP	I_{MPP}	[A]	9.91	9.97	10.02	10.07
	Voltage at MPP	V_{MPP}	[V]	33.29	33.62	33.94	34.25
	Efficiency[1]	η	[%]	≥18.4	≥18.7	≥19.0	≥19.3
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]							
Minimum	Power at MPP	P_{MPP}	[W]	247.0	250.7	254.5	258.2
	Short Circuit Current	I_{SC}	[A]	8.39	8.43	8.48	8.52
	Open Circuit Voltage	V_{OC}	[V]	37.86	38.10	38.34	38.59
	Current at MPP	I_{MPP}	[A]	7.80	7.84	7.89	7.93
	Voltage at MPP	V_{MPP}	[V]	31.66	31.97	32.27	32.57

[1] Measurement tolerances P_{MPP} ±3%; I_{SC}; V_{OC} ±5% at STC: 1000 W/m², 25±2 °C, AM 1.5 according to IEC 60904-3 • [2] 800 W/m², NMOT, spectrum AM 1.5

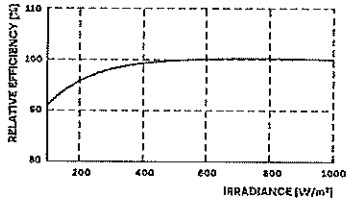
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.54% degradation per year. At least 93.1% of nominal power up to 10 years. At least 85% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²).

TEMPERATURE COEFFICIENTS							
Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	Temperature Coefficient of V_{OC}	β	[%/K]	−0.27
Temperature Coefficient of P_{MPP}	γ	[%/K]	−0.36	Normal Module Operating Temperature	NMOT	[°C]	43±3

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage	V_{SYS}	[V]	1000	Safety Class	II
Maximum Reverse Current	I_R	[A]	20	Fire Rating based on ANSI / UL 1703	C
Max. Design Load, Push / Pull		[Pa]	3600 / 2667	Permitted Module Temperature on Continuous Duty	−40 °C - +85 °C
Max. Test Load, Push / Pull		[Pa]	5400 / 4000		

QUALIFICATIONS AND CERTIFICATES

VDE Quality Tested, IEC 61215:2016; IEC 61730:2016, Application Class II; This data sheet complies with DIN EN 50380.

PACKAGING INFORMATION

Number of Modules per Pallet	32
Number of Pallets per Trailer (24 t)	28
Number of Pallets per 40' HC-Container (26 t)	24
Pallet Dimensions (L × W × H)	1815 × 1150 × 1220 mm
Pallet Weight	683 kg

Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS GmbH
Sonnenallee 17-21, 06766 Bitterfeld-Wolfen, Germany | **TEL** +49 (0)3494 66 99-23444 | **FAX** +49 (0)3494 66 99-23000 | **EMAIL** sales@q-cells.com | **WEB** www.q-cells.com

Engineered in Germany