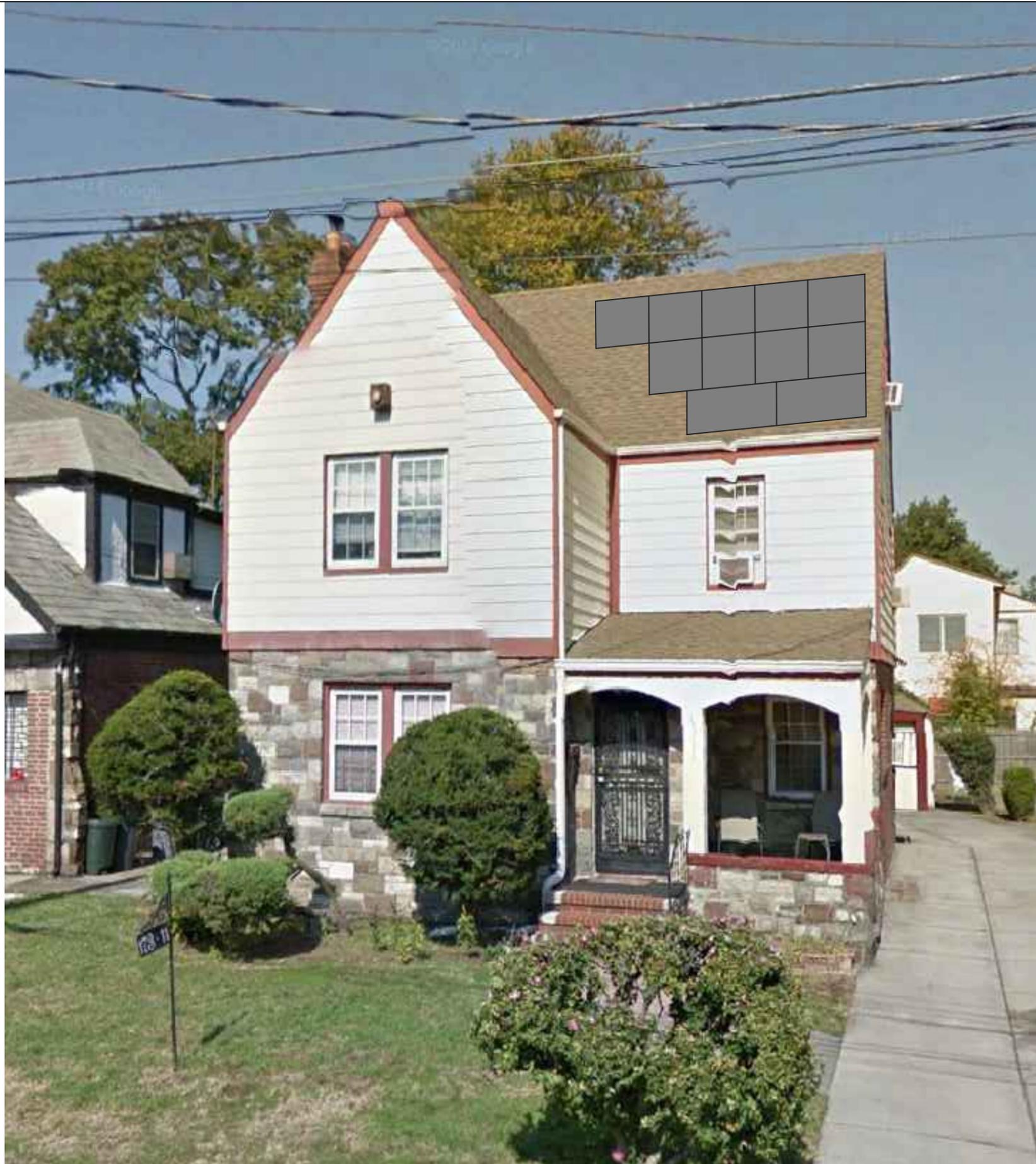


A PRESENTATION TO THE NYC LANDMARK  
 PRESEVERATION COMMISSION"  
 FOR THE PROPOSED SOLAR PROJECT AT: 173-11 113<sup>TH</sup>  
 AVENUE, JAMAICA, NY 11433  
 LPC # 187798



#	REVISION DESCRIPTION:	DATE	BY				
OWNER:		ROCHELLE JONES 173-11 113 AVE JAMAICA, NY 11433 (917) 862-0430					
CONTRACTOR:		1ST LIGHT ENERGY INC 129 MCKINLEY STREET SOUTH PLAINFIELD, NJ 07080 T: (908) 668-9040 F: (908) 668-9042 1STLIGHTENERGY.COM					
		 <i>Elaine Huang</i>					
		TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT, THIS APPLICATION IS IN COMPLIANCE WITH THE NYCECC2014					
		PAGE NAME: COVER PAGE					
		DWG NO:	INSTALL NO:				
		C-100.00	006010				
		DESIGNER:	FLOOR NO:				
		CAD	ROOF				
		DATE:	PAGE NO:				
		05/24/2016					



VIEW FROM FRONT OF HOME:  
STREET LEVEL  
(VIEW 1)

DATE	BY	REVISION DESCRIPTION:	#
<p>OWNER:</p> <p>ROCHELLE JONES 173-11 113 AVE JAMAICA, NY 11433 (917) 862-0430</p>			
<p>CONTRACTOR:</p> <p>1ST LIGHT ENERGY INC 129 MCKINLEY STREET SOUTH PLAINFIELD, NJ 07080 T: (908) 668-9040 F: (908) 668-9042 1STLIGHTENERGY.COM</p>			
<p>TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT, THIS APPLICATION IS IN COMPLIANCE WITH THE NYCECC2014</p>			
PAGE NAME:			
ENERGY TABLE			
DWG NO:	INSTALL NO:		
E-106.00	006010		
DESIGNER:	FLOOR NO:		
CAD	ROOF		
DATE:	PAGE NO:		
05/24/2016			



MOCK UP FROM NEIGHBOR VIEW  
(STREET LEVEL)  
(VIEW 2)

#	REVISION DESCRIPTION:	DATE	BY				
OWNER: ROCHELLE JONES 173-11 113 AVE JAMAICA, NY 11433 (917) 862-0430							
CONTRACTOR: 1ST LIGHT ENERGY INC 129 MCKINLEY STREET SOUTH PLAINFIELD, NJ 07080 T: (908) 668-9040 F: (908) 668-9042 1STLIGHTENERGY.COM							
							
TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT, THIS APPLICATION IS IN COMPLIANCE WITH THE NYCECC2014							
PAGE NAME: ENERGY TABLE							
DWG NO: E-106.00		INSTALL NO: 006010					
DESIGNER: CAD		FLOOR NO: ROOF					
DATE: 05/24/2016		PAGE NO:					



VIEW FROM CORNER OF STREET  
 (STREET LEVEL)  
 (MOCK UP NOT AVAILABLE)  
 (VIEW 3)

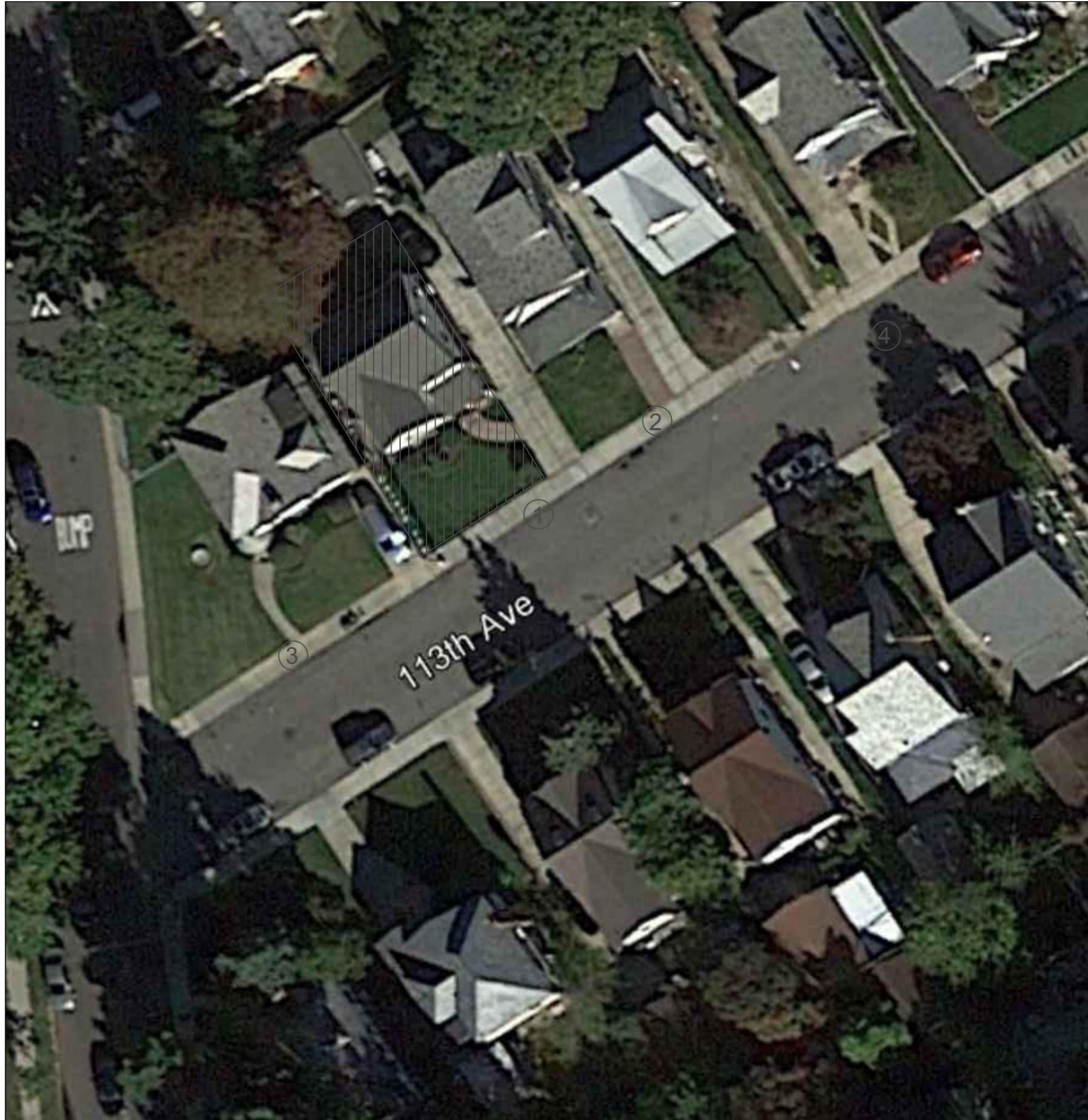
DATE		REVISION DESCRIPTION:	#
BY			
OWNER: ROCHELLE JONES 173-11 113 AVE JAMAICA, NY 11433 (917) 862-0430			
CONTRACTOR: 1ST LIGHT ENERGY INC 129 MCKINLEY STREET SOUTH PLAINFIELD, NJ 07080 T: (908) 668-9040 F: (908) 668-9042 1STLIGHTENERGY.COM			
 <i>Elaine Huang</i>			
TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT, THIS APPLICATION IS IN COMPLIANCE WITH THE NYCECC2014			
PAGE NAME: ENERGY TABLE			
DWG NO: E-106.00	INSTALL NO: 006010		
DESIGNER: CAD	FLOOR NO: ROOF		
DATE: 05/24/2016	PAGE NO:		





PHOTO OF PROPOSED ROOF SURFACE  
(SOUTH FACING)

DATE		REVISION DESCRIPTION:	#	OWNER: ROCHELLE JONES 173-11 113 AVE JAMAICA, NY 11433 (917) 862-0430	CONTRACTOR: 1ST LIGHT ENERGY INC 129 MCKINLEY STREET SOUTH PLAINFIELD, NJ 07080 T. (908) 668-9040 F. (908) 668-9042 1STLIGHTENERGY.COM		<p>TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT, THIS APPLICATION IS IN COMPLIANCE WITH THE NYCECC2014</p>	PAGE NAME: ENERGY TABLE	
BY								DWG NO: E-106.00	INSTALL NO: 006010
								DESIGNER: CAD	FLOOR NO: ROOF
								DATE: 05/24/2016	PAGE NO:



MAPPING OF VIEWS  
(AERIAL)

DATE		REVISION DESCRIPTION:	#	OWNER:	CONTRACTOR:		<p>TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT, THIS APPLICATION IS IN COMPLIANCE WITH THE NYCECC2014</p>	PAGE NAME:	
BY								ENERGY TABLE	
				<p>ROCHELLE JONES 173-11 113 AVE JAMAICA, NY 11433 (917) 862-0430</p>	<p>1ST LIGHT ENERGY INC 129 MCKINLEY STREET SOUTH PLAINFIELD, NJ 07080 T: (908) 668-9040 F: (908) 668-9042 1STLIGHTENERGY.COM</p>			DWG NO:	INSTALL NO:
								E-106.00	006010
								DESIGNER:	FLOOR NO:
								CAD	ROOF
								DATE:	PAGE NO:
								05/24/2016	

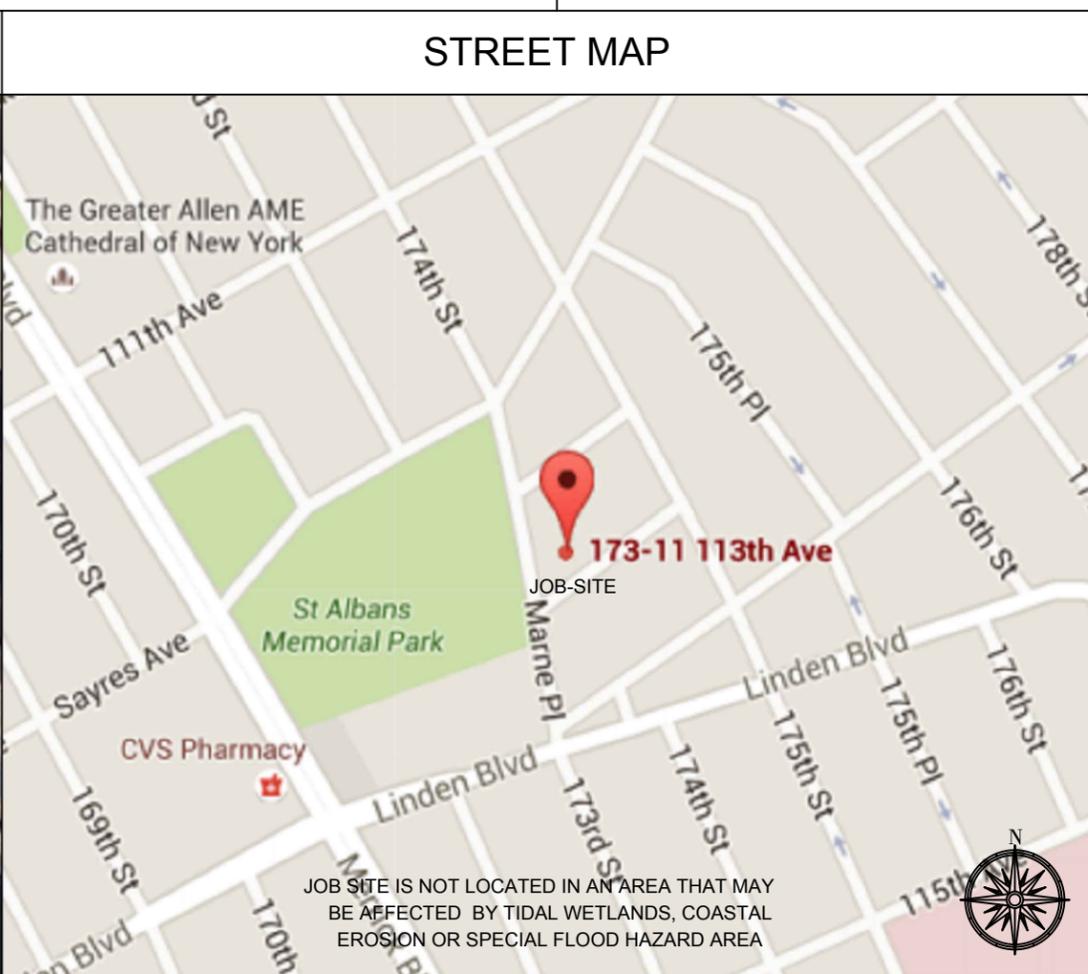


3-D MODEL REPRESENTATION

DATE	BY	REVISION DESCRIPTION:	#
<p>OWNER:            ROCHELLE JONES            173-11 113 AVE            JAMAICA, NY 11433            (917) 862-0430</p>			
<p>CONTRACTOR:            1ST LIGHT ENERGY INC            129 MCKINLEY STREET            SOUTH PLAINFIELD, NJ 07080            T. (908) 668-9040 F. (908) 668-9042            1STLIGHTENERGY.COM</p>			
<p>TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT, THIS APPLICATION IS IN COMPLIANCE WITH THE NYCECC2014</p>			
PAGE NAME: ENERGY TABLE			
DWG NO: E-106.00		INSTALL NO: 006010	
DESIGNER: CAD		FLOOR NO: ROOF	
DATE: 05/24/2016		PAGE NO:	

INDEX		ABBREVIATIONS		ABBREVIATIONS (CONT)		LEGEND		PLANNING NOTES		DATE	BY				
T-101	TITLE SHEET	A	AMPERE	MIN	MINIMUM		(E) UTILITY METER & WARNING LABEL	1. INSTALLATION OF 2.86 KW ROOF MOUNTED PHOTOVOLTAIC SYSTEM. 2. THIS PHOTOVOLTAIC SYSTEM INSTALLATION IS SUBJECT TO INSPECTION BY THE AHJ & 1ST LIGHT ENERGY INC. 3. THIS PROJECT SHALL CONFORM TO THE FOLLOWING CODE VERSIONS. -2011 NATIONAL ELECTRICAL CODE -2014 NYC ENERGY CONSERVATION CODE 4. ANY CONDUIT THAT RUNS THROUGH ANY FIRE DEPT. ACCESS AREA WILL BE COLOR CODED 5. SCOPE OF WORK IS SOLELY FOR THE INSTALLATION OF THE SOLAR ELECTRONIC GENERATING SYSTEM. ALL OTHER WORK IS NOT TO BE RELIED UPON AS BEING APPROVED AND/OR PERMITTED BY THE BUILDING DEPARTMENT. 6. NO TREES, UTILITY POLES OR LINES COULD COME IN CONTACT WITH PV ARRAY IF THEY WERE TO FALL. 7. ROOF HAS BEEN STRUCTURALLY EXAMINED AND ANALYZED; AND CAN ADEQUATELY SUPPORT ADDITIONAL LOADS IMPOSED BY SOLAR MODULES. 8. HOME WILL BE UNOCCUPIED DURING CONSTRUCTION, NO TENANT SAFETY PLAN IS PROVIDED. 9. I CERTIFY, TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, ALL WORK UNDER THIS APPLICATION IS INSTALLED ABOVE THE DESIGN FLOOD ELEVATION IN ACCORDANCE WITH APPENDIX G OF THE NYC BUILDING CODE EXCEPT FOR THE AC DISCONNECT AND CONDUIT TO THE AC DISCONNECT.							
E-102	SITE PLAN	AC	ALTERNATING CURRENT	(N)	NEW		INVERTER & WARNING LABELS								
E-103	ELEVATIONS	DC	DIRECT CURRENT	NEC	NATIONAL ELECTRICAL CODE		DC DISCONNECT & WARNING LABELS								
E-104	THREE LINE DIAGRAM	EGC	EQUIPMENT GROUNDING CONDUCTOR	PV	PHOTOVOLTAIC		AC DISCONNECT & WARNING LABELS								
E-105	DETAILS & LABELS	(E)	EXISTING	SFR	SINGLE FAMILY RESIDENCE		JUNCTION BOX & WARNING LABEL								
E-106	ENERGY TABLE	EMT	ELECTRICAL METALLIC TUBING	TYP	TYPICAL		DC COMBINER BOX & WARNING LABEL								
CUTSHEETS ATTACHED		GEC	GROUNDING ELECTRODE CONDUCTOR	V	VOLT		MAIN SERVICE PANEL & WARNING LABEL								
		I	CURRENT	Vmp	VOLTAGE AT MAX POWER		LOAD CENTER & WARNING LABELS								
		Imp	CURRENT AT MAX POWER	Voc	VOLTAGE AT OPEN CURRENT		DEDICATED PV SYSTEM METER								
		Isc	SHORT CIRCUIT CURRENT	W	WATT										
		kW	KILOWATT	3R	NEMA 3R, RAIN TIGHT										

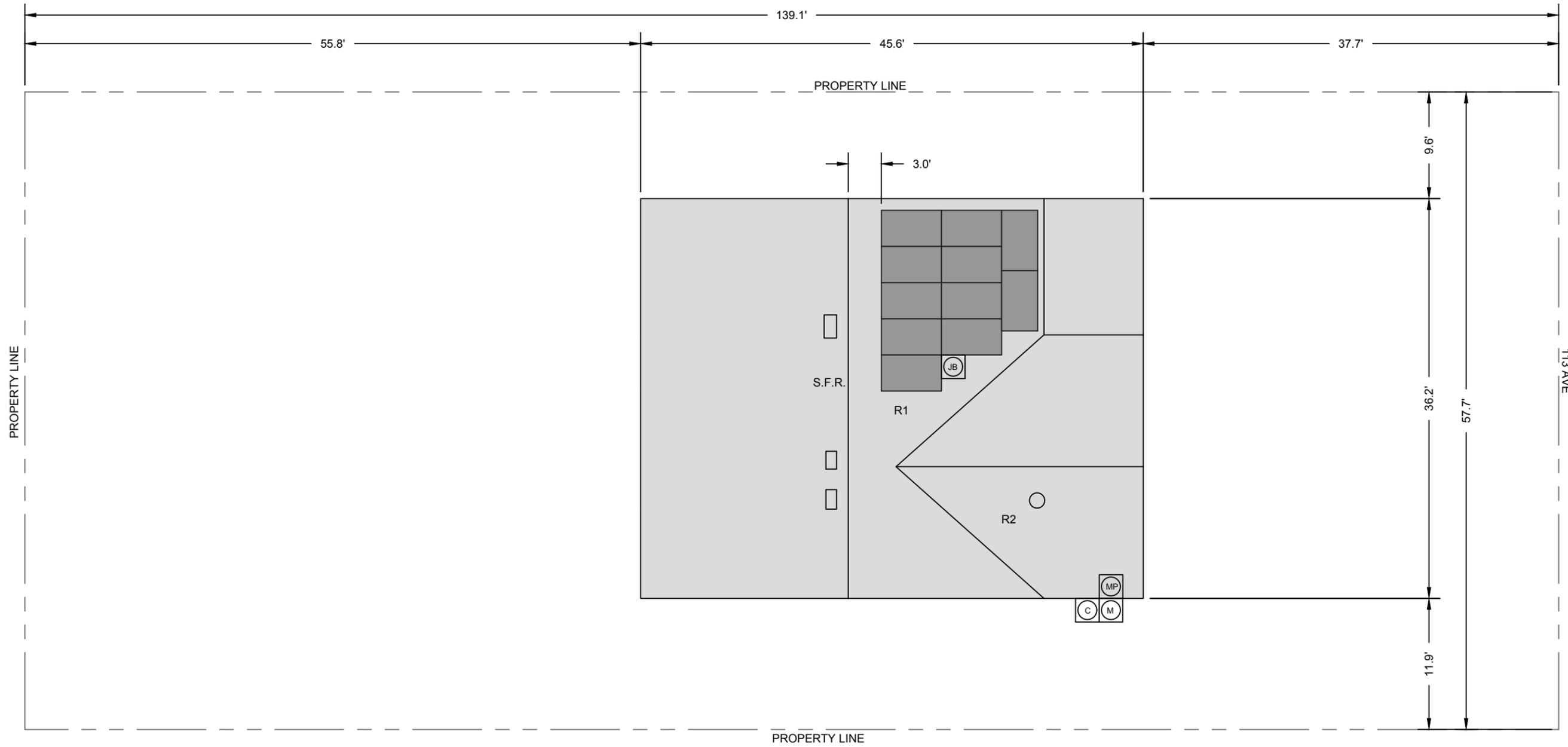
ENERGY ANALYSIS AND PROGRESS INSPECTIONS FOR RESIDENTIAL PROPERTY TAX ABATEMENT				
APPLICATION TYPE: ALT-2		SCOPE OF WORK: INSTALLATION OF SOLAR ENERGY SYSTEM		
CLIMATE ZONE: 4A		NYCECC 2014 CHAPTER 4 (RESIDENTIAL ENERGY EFFICIENCY)		
TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, ALL WORK UNDER THIS APPLICATION IS IN COMPLIANCE WITH THE NYCECC.				
ITEM DESCRIPTION	PROPOSED VALUE	PRESCRIPTIVE VALUE & CITATION	SUPPORTING DOCUMENTATION	PROGRESS INSPECTION NUMBER AND DESCRIPTION
ANCHOR SOLAR ELECTRIC SUPPORTING STRUCTURE TO BUILDING STRUCTURE BY SYSTEM AS SHOWN ON DRAWINGS. ALL PENETRATIONS ARE TO BE SEALED	SEALING ALL OPENINGS AND PENETRATIONS AS PRESCRIBED IN SECTION ECC 402.4.2	CAULKING, GASKET, WHEATHER STRIPPING OR OTHER MATERIAL IN ACCORDANCE WITH SECTION ECC 402.4.1	TR-1 & TR-8	OPENINGS AND PENETRATIONS IN THE BUILDING ENEVELOPE, INCLUDING SITE-BUILT FENESTRATION AND DOORS, SHALL BE VISUALLY INSPECTED TO VERIFY THAT THEY ARE PROPERLY SEALED, IN ACCORDANCE WITH TABLE 402.4.2.
IA6	<b>AIR SEALING AND INSULATION - VISUAL INSPECTION OPTION:</b> OPENINGS AND PENETRATIONS IN THE BUILDING ENEVELOPE, INCLUDING SITE-BUILT FENESTRATION AND DOORS, SHALL BE VISUALLY INSPECTED TO VERIFY THAT THEY ARE PROPERLY SEALED, IN ACCORDANCE WITH TABLE 402.4.2.	AS REQUIRED DURING ENVELOPE CONSTRUCTION	APPROVED CONSTRUCTION DOCUMENTS; ASTM E283, ASTM E84, RCNYS	402.4.1, 402.4.2.2, 402.4.3



REVISION DESCRIPTION:					
#					
OWNER:	ROCHELLE JONES 173-11 113 AVE JAMAICA, NY 11433 (917) 862-0430				
CONTRACTOR:	1ST LIGHT ENERGY INC 129 MCKINLEY STREET SOUTH PLAINFIELD, NJ 07080 T. (908) 668-9040 F. (908) 668-9042 1STLIGHTENERGY.COM				

<b>SPECIAL INSPECTIONS</b>	
1.	STRUCTURAL STABILITY - BC 1704.20.1
2.	FIRE-RESISTANT PENETRATIONS AND JOINTS - BC 1704.27
3.	AIR SEALING AND INSULATION (IA6)
4.	FINAL - BC 109.5

<b>ZONING</b>	
1.	TAX BLOCK: 10288
2.	TAX LOT: 38
3.	ZONING MAP: 15b
4.	ZONE: R2
TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT, THIS APPLICATION IS IN COMPLIANCE WITH THE NYCECC2014	
PAGE NAME: TITLE SHEET	
DWG NO: T-101.00	INSTALL NO: 006010
DESIGNER: CAD	FLOOR NO: ROOF
DATE: 05/24/2016	PAGE NO: 1 OF 6



PROPERTY LINE

PROPERTY LINE

PROPERTY LINE

113 AVE

R1  
 PROPOSED 11 MODULES MOUNTED TO  
 COMP ROOF USING SNAPRACK RAIL &  
 FLASHED L-FEET (SEE DETAIL 1)  
 AZIMUTH: 154°, ROOF PITCH: 45°

ARRAY SQFT AND WEIGHT CALCS	
AREA OF ARRAY	197.74 SQFT
ARRAY TOTAL WEIGHT	518.45 LBS
POUNDS PER SQFT	2.62 LBS
POUNDS PER MOUNT	23.57 LBS

**SITE PLAN**

SCALE: 1.2" = 1'-0"



DATE	BY

REVISION DESCRIPTION:

#

OWNER:  
 ROCHELLE JONES  
 173-11 113 AVE  
 JAMAICA, NY 11433  
 (917) 862-0430

CONTRACTOR:  
 1ST LIGHT ENERGY INC  
 129 MCKINLEY STREET  
 SOUTH PLAINFIELD, NJ 07080  
 T. (908) 668-9040 F. (908) 668-9042  
 1STLIGHTENERGY.COM



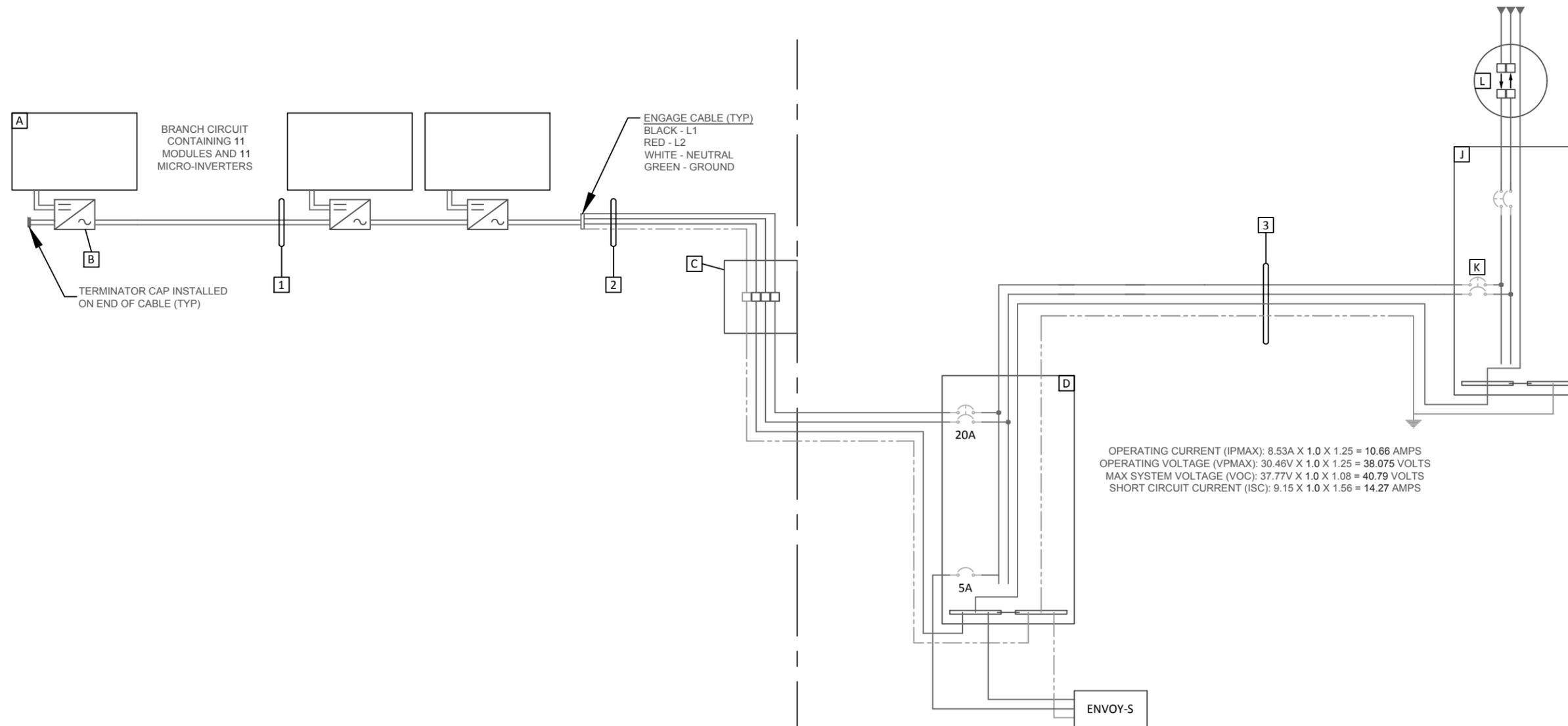
TO THE BEST OF MY  
 KNOWLEDGE, BELIEF, AND  
 PROFESSIONAL JUDGEMENT,  
 THIS APPLICATION IS IN  
 COMPLIANCE WITH THE  
 NYCECC2014

PAGE NAME: <b>SITE PLAN</b>	
DWG NO: E-102.00	INSTALL NO: 006010
DESIGNER: CAD	FLOOR NO: ROOF
DATE: 05/24/2016	PAGE NO: 2 OF 6



EQUIPMENT SCHEDULE			
TAG	DESCRIPTION	MANUFACTURER	NOTES
A	SOLAR PHOTOVOLTAIC MODULE	HANWHA Q CELLS	(N) Q.PRO BFR G4.260, 11 MODULES, 2.86KW
B	INVERTER	ENPHASE	(N) 11 MICRO-INVERTERS, M250-60-2LL-S22 (240V)
C	JUNCTION BOX	SOLAR BOS	(N) C6SK-1-4XP, 1000V, UL-1741, (MOUNTED ON ROOF FOR WIRE & CONDUIT TRANSITION)
D	AC COMBINER BOX, METERED	ENPHASE	(N) XAM1-120, W/ ENVOY-S MONITOR, NEMA 3R, UL-1741, W/ CELLMODEM-01
J	SERVICE PANEL	CUTLER HAMMER	(E) 100A MAIN SERVICE PANEL W/ (E) 100A MAIN BREAKER
K	SOLAR BREAKER	CUTLER HAMMER	(N) BR215, 2-POLE, 15A BACKFED BREAKER
L	UTILITY METER	CON EDISON	(E) METER #1371848, ACCOUNT #26-6554-0311-0003-4

CONDUIT AND CONDUCTOR SCHEDULE					
TAG	CONDUCTOR TYPE & CALCULATION	SIZE AWG OR kcmil	NUMBER OF CONDUCTORS	CONDUIT TYPE	CONDUIT SIZE
1	AC INTERCONNECT CABLE	#12 AWG	4	ENGAGE CABLE	ENGAGE CABLE
	INTEGRATED GROUND				
2	THWN-2 <input checked="" type="checkbox"/> or PV WIRE <input type="checkbox"/>	#10 AWG	3	EMT OR PVC	3/4"
	EQUIPMENT GROUND CONDUCTOR	#8 AWG	1		
3	THWN-2 <input checked="" type="checkbox"/> or THHN <input type="checkbox"/>	#10 AWG	3	EMT OR PVC	3/4"
	EQUIPMENT GROUND CONDUCTOR	#8 AWG	1		



NOTES:  
 ALL CONDUITS AND PIPING INSTALLATIONS SHALL BE COLOR CODED PER FC 504.4.7  
 HIGH VOLTAGE WIRING IS RED  
 LOW VOLTAGE WIRING IS ORANGE

LOCATED ON BUILDING ROOFTOP ↕ ↕ LOCATED AT GROUND LEVEL

DATE	BY				
REVISION DESCRIPTION:					
#					
OWNER: ROCHELLE JONES 173-11 113 AVE JAMAICA, NY 11433 (917) 862-0430					
CONTRACTOR: 1ST LIGHT ENERGY INC 129 MCKINLEY STREET SOUTH PLAINFIELD, NJ 07080 T: (908) 668-9040 F: (908) 668-9042 1STLIGHTENERGY.COM					
TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT, THIS APPLICATION IS IN COMPLIANCE WITH THE NYCECC2014					
PAGE NAME: THREE LINE					
DWG NO: E-104.00		INSTALL NO: 006010			
DESIGNER: CAD		FLOOR NO: ROOF			
DATE: 05/24/2016		PAGE NO: 4 OF 6			

**SYSTEM LABELS:**

**WARNING - DUAL POWER SOURCE**  
SECOND SOURCE IS PV SYSTEM

LABEL LOCATION: (MP)  
PER CODE: NEC 705(D)(3)(4)

ITEM #596-00231

**PHOTOVOLTAIC AC DISCONNECT**

MAXIMUM AC OPERATING CURRENT: 11.00 A

NOMINAL OPERATING AC VOLTAGE: 240 V

LABEL LOCATION: (ACD)  
PER CODE: NEC 690.54

ITEM #596-00239

**WARNING: PHOTOVOLTAIC**  
**POWER SOURCE**

LABEL LOCATION: (C) EVERY 10'  
PER CODE: NEC 690.31(E)(3)

ITEM #596-00206

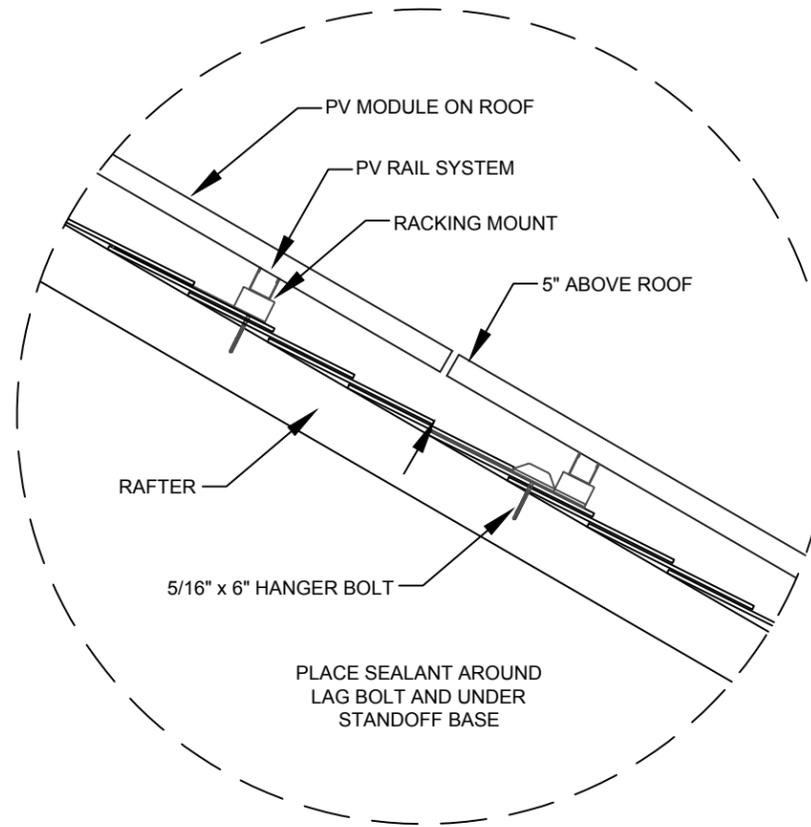
**⚠ WARNING**  
INVERTER OUTPUT CONNECTION. DO  
NOT  
RELOCATE THIS OVERCURRENT DEVICE.

LABEL LOCATION: (POI)  
PER CODE: NEC 705.12(D)(3)(4)

ITEM #596-00589

**DETAIL 2:**  
ROOF SECTION

COMP ROOF ATTACHMENT DETAIL



DATE	BY				

REVISION DESCRIPTION:

#

OWNER:  
ROCHELLE JONES  
173-11 113 AVE  
JAMAICA, NY 11433  
(917) 862-0430

CONTRACTOR:  
1ST LIGHT ENERGY INC  
129 MCKINLEY STREET  
SOUTH PLAINFIELD, NJ 07080  
T: (908) 668-9040 F: (908) 668-9042  
1STLIGHTENERGY.COM



TO THE BEST OF MY  
KNOWLEDGE, BELIEF, AND  
PROFESSIONAL JUDGEMENT,  
THIS APPLICATION IS IN  
COMPLIANCE WITH THE  
NYCECC2014

PAGE NAME:  
DETAILS & LABELS

DWG NO: E-105.00	INSTALL NO: 006010
DESIGNER: CAD	FLOOR NO: ROOF
DATE: 05/24/2016	PAGE NO: 5 OF 6

NOTES:  
ALL CONDUITS AND PIPING INSTALLATIONS SHALL BE COLOR CODED PER FC 504.4.7

NYCECC CITATION	PROVISION	ITEM DESCRIPTION	DESIGN VALUE	CODE PRESCRIPTION	SUPPORTING DOCS	DATE	BY				
402.4.1	BUILDING THERMAL ENVELOPE	BUILDING THERMAL ENVELOPE TO BE SEALED TO LIMIT INFILTRATION	BUILDING THERMAL ENVELOPE SEALED AS PER CODE	THE BUILDING THERMAL ENVELOPE SHALL BE DURABLY SEALED TO LIMIT INFILTRATION. THE SEALING METHODS BETWEEN DISSIMILAR MATERIALS SHALL ALLOW FOR DIFFERENTIAL EXPANSION AND CONTRACTION. THE FOLLOWING SHALL BE CAULKED, GASKETED, OR OTHERWISE SEALED WITH AN AIR BARRIER MATERIAL, SUITABLE FILM OR SOLID MATERIAL.	E-102, E-105, TR-1 & TR-8	REVISION DESCRIPTION:					
402.4.2, AS WELL AS SECTIONS 402.4.2.1 or 402.4.2.2.	AIR SEALING AND INSULATION	ENVELOPE AIR SEALING REQUIREMENT	ENVELOPE AIR SEALED AND TESTING SCHEDULE TBD	BUILDING ENVELOPE AIR TIGHTNESS AND INSULATION INSTALLATION SHALL BE DEMONSTRATED TO COMPLY WITH ONE OF THE FOLLOWING OPTIONS GIVEN BY SECTION 402.4.2.1 OR 402.4.2.2.	E-102, E-105, TR-1 & TR-8		#				
402.4.2.1	TESTING OPTION	TESTING BUILDING ENVELOPE TIGHTNESS AND INSULATION	INSTRUCTION TO PROGRESS INSPECTOR TO TEST TO 1RCNY5000-01 TABLE IA7	LESS THAT 7 ACH	E-102, E-105, TR-1 & TR-8	OWNER:	ROCHELLE JONES 173-11 113 AVE JAMAICA, NY 11433 (917) 862-0430				
402.4.2.2 AND TABLE 402.4.2	VISUAL INSPECTION OPTION	FIELD VERIFICATION REQUIRED	FIELD VERIFICATION SCHEDULE TBD	THE BUILDING ENVELOPE TIGHTNESS AND INSULATION SHALL BE CONSIDERED ACCEPTABLE WHEN THE ITEMS LISTED IN TABLE 402.4.2, APPLICABLE TO THE METHOD OF CONSTRUCTION, ARE FIELD VERIFIED. PROGRESS INSPECTION SHALL BE IN ACCORDANCE WITH 1RCNY5000-01 TABLE 1A6	E-102, E-105, TR-1 & TR-8						
						CONTRACTOR:	1ST LIGHT ENERGY INC 129 MCKINLEY STREET SOUTH PLAINFIELD, NJ 07080 T: (908) 668-9040 F: (908) 668-9042 1STLIGHTENERGY.COM				
											
						<p>TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT, THIS APPLICATION IS IN COMPLIANCE WITH THE NYCECC2014</p>					
						PAGE NAME:		ENERGY TABLE			
						DWG NO:		E-106.00		INSTALL NO: 006010	
						DESIGNER:		CAD		FLOOR NO: ROOF	
						DATE:		05/24/2016		PAGE NO: 6 OF 6	



# Q.PRO-G4 255-265

## POLYCRYSTALLINE SOLAR MODULE

The new **Q.PRO-G4** is the result of the continued evolution of our **Q.PRO** family. Thanks to improved power yield, excellent reliability, and high-level operational safety, the new **Q.PRO-G4** generates electricity at a low cost (LCOE) and is suitable for a wide range of applications.



**LOW LEVELIZED COST OF ELECTRICITY**  
Higher yield per surface area and lower BOS costs thanks to higher power classes and an efficiency rate of up to 16.2 %.



**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-PID Technology<sup>1</sup>, Hot-Spot-Protect and Traceable Quality Tra.Q™.



**LIGHT-WEIGHT QUALITY FRAME**  
High-tech aluminium alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).



**MAXIMUM COST REDUCTIONS**  
Up to 10 % lower logistics costs due to higher module capacity per box.



**SAFE ELECTRONICS**  
Protection against short circuits and thermally induced power losses due to breathable junction box and welded cables.



**A RELIABLE INVESTMENT**  
Inclusive 12-year product warranty and 25-year linear performance guarantee<sup>2</sup>.



<sup>1</sup> APT test conditions: Cells at -1000V against grounded, with conductive metal foil covered module surface, 25 °C, 168 h  
<sup>2</sup> See data sheet on rear for further information.

### THE IDEAL SOLUTION FOR:

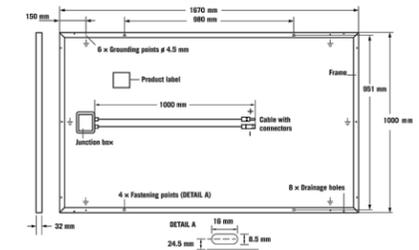


Engineered in **Germany**



### MECHANICAL SPECIFICATION

<b>Format</b>	1670mm × 1000mm × 32mm (including frame)
<b>Weight</b>	18.8kg
<b>Front Cover</b>	3.2mm thermally pre-stressed glass with anti-reflection technology
<b>Back Cover</b>	Composite film
<b>Frame</b>	Anodised aluminium
<b>Cell</b>	6 × 10 polycrystalline solar cells
<b>Junction Box</b>	110mm × 115mm × 23mm Protection class IP67, with bypass diodes
<b>Cable</b>	4mm <sup>2</sup> Solar cable; (+) ≥ 1000mm, (-) ≥ 1000mm
<b>Connector</b>	Tyco Solarlok PV4, IP68

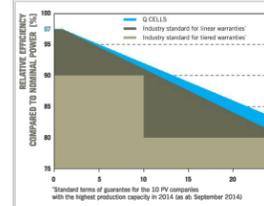


### ELECTRICAL CHARACTERISTICS

POWER CLASS		255	260	265	
<b>MINIMUM PERFORMANCE AT STANDARD TESTING CONDITIONS, STC<sup>1</sup> (POWER TOLERANCE +5W / -0W)</b>					
Minimum	<b>Power at MPP<sup>2</sup></b>	<b>P<sub>MPP</sub> [W]</b>	255	260	265
	<b>Short Circuit Current<sup>3</sup></b>	<b>I<sub>sc</sub> [A]</b>	9.07	9.15	9.23
	<b>Open Circuit Voltage<sup>4</sup></b>	<b>V<sub>oc</sub> [V]</b>	37.54	37.77	38.01
	<b>Current at MPP<sup>5</sup></b>	<b>I<sub>MPP</sub> [A]</b>	8.45	8.53	8.62
	<b>Voltage at MPP<sup>6</sup></b>	<b>V<sub>MPP</sub> [V]</b>	30.18	30.46	30.75
	<b>Efficiency<sup>7</sup></b>	<b>η [%]</b>	≥15.3	≥15.6	≥15.9
<b>MINIMUM PERFORMANCE AT NOMING OPERATING CONDITIONS, NOC<sup>3</sup></b>					
Minimum	<b>Power at MPP<sup>2</sup></b>	<b>P<sub>MPP</sub> [W]</b>	188.3	192.0	195.7
	<b>Short Circuit Current<sup>3</sup></b>	<b>I<sub>sc</sub> [A]</b>	7.31	7.38	7.44
	<b>Open Circuit Voltage<sup>4</sup></b>	<b>V<sub>oc</sub> [V]</b>	34.95	35.16	35.38
	<b>Current at MPP<sup>5</sup></b>	<b>I<sub>MPP</sub> [A]</b>	6.61	6.68	6.75
	<b>Voltage at MPP<sup>6</sup></b>	<b>V<sub>MPP</sub> [V]</b>	28.48	28.75	29.01

<sup>1</sup> 1000 W/m<sup>2</sup>, 25 °C, spectrum AM 1.5 G <sup>2</sup> Measurement tolerances STC ± 3 %; NOC ± 5 % <sup>3</sup> 800 W/m<sup>2</sup>, NOCT, spectrum AM 1.5 G <sup>4</sup> typical values, actual values may differ

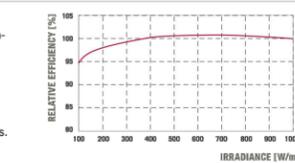
### Q CELLS PERFORMANCE WARRANTY



At least 97 % of nominal power during first year. Thereafter max. 0.6 % degradation per year.  
At least 92 % of nominal power after 10 years.  
At least 83 % of nominal power after 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



The typical change in module efficiency at an irradiance of 200 W/m<sup>2</sup> in relation to 1000 W/m<sup>2</sup> (both at 25 °C and AM 1.5 G spectrum) is -2 % (relative).

### TEMPERATURE COEFFICIENTS

<b>Temperature Coefficient of I<sub>sc</sub></b>	<b>α</b>	<b>[%/K]</b>	+0.04	<b>Temperature Coefficient of V<sub>oc</sub></b>	<b>β</b>	<b>[%/K]</b>	-0.30
<b>Temperature Coefficient of P<sub>MPP</sub></b>	<b>γ</b>	<b>[%/K]</b>	-0.41	<b>Normal Operating Cell Temperature</b>	<b>NOCT</b>	<b>[°C]</b>	45

### PROPERTIES FOR SYSTEM DESIGN

<b>Maximum System Voltage</b>	<b>V<sub>sys</sub> [V]</b>	1000	<b>Safety Class</b>	II
<b>Maximum Reverse Current</b>	<b>I<sub>r</sub> [A]</b>	20	<b>Fire Rating</b>	C
<b>Wind/Snow Load (in accordance with IEC 61215)</b>	<b>[Pa]</b>	4000/5400	<b>Permitted Module Temperature On Continuous Duty</b>	-40 °C up to +85 °C

### QUALIFICATIONS AND CERTIFICATES

VDE Quality Tested, IEC 61215 (Ed.2); IEC 61730 (Ed.1), Application class A  
This data sheet complies with DIN EN 50380.



**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**



Enphase® Microinverters

# Enphase® M250



The **Enphase® M250 Microinverter** delivers increased energy harvest and reduces design and installation complexity with its all-AC approach. With the M250, the DC circuit is isolated and insulated from ground, so **no Ground Electrode Conductor (GEC) is required for the microinverter**. This further simplifies installation, enhances safety, and saves on labor and materials costs.

The Enphase M250 integrates seamlessly with the Engage® Cable, the Envoy® Communications Gateway™, and Enlighten®, Enphase's monitoring and analysis software.

### PRODUCTIVE

- Optimized for higher-power modules
- Maximizes energy production
- Minimizes impact of shading, dust, and debris

### SIMPLE

- No GEC needed for microinverter
- No DC design or string calculation required
- Easy installation with Engage Cable

### RELIABLE

- 4th-generation product
- More than 1 million hours of testing and 3 million units shipped
- Industry-leading warranty, up to 25 years



## Enphase® M250 Microinverter // DATA

INPUT DATA (DC)	M250-60-2LL-S22/S23/S24	
Recommended input power (STC)	210 - 300 W	
Maximum input DC voltage	48 V	
Peak power tracking voltage	27 V - 39 V	
Operating range	16 V - 48 V	
Min/Max start voltage	22 V / 48 V	
Max DC short circuit current	15 A	
Max input current	9.8 A	
OUTPUT DATA (AC)	@208 VAC	@240 VAC
Peak output power	250 W	250 W
Rated (continuous) output power	240 W	240 W
Nominal output current	1.15 A (A rms at nominal duration)	1.0 A (A rms at nominal duration)
Nominal voltage/range	208 V / 183-229 V	240 V / 211-264 V
Nominal frequency/range	60.0 / 57-61 Hz	60.0 / 57-61 Hz
Extended frequency range*	57-62.5 Hz	57-62.5 Hz
Power factor	>0.95	>0.95
Maximum units per 20 A branch circuit	24 (three phase)	16 (single phase)
Maximum output fault current	850 mA rms for 6 cycles	850 mA rms for 6 cycles
EFFICIENCY		
CEC weighted efficiency, 240 VAC	96.5%	
CEC weighted efficiency, 208 VAC	96.0%	
Peak inverter efficiency	96.5%	
Static MPPT efficiency (weighted, reference EN50530)	99.4 %	
Night time power consumption	65 mW max	
MECHANICAL DATA		
Ambient temperature range	-40°C to +65°C	
Operating temperature range (internal)	-40°C to +85°C	
Dimensions (WxHxD)	171 mm x 173 mm x 30 mm (without mounting bracket)	
Weight	2.0 kg	
Cooling	Natural convection - No fans	
Enclosure environmental rating	Outdoor - NEMA 6	
FEATURES		
Compatibility	Compatible with 60-cell PV modules.	
Communication	Power line	
Integrated ground	The DC circuit meets the requirements for ungrounded PV arrays in NEC 690.35. Equipment ground is provided in the Engage Cable. No additional GEC or ground is required.	
Monitoring	Free lifetime monitoring via Enlighten software	
Compliance	UL1741/IEEE1547, FCC Part 15 Class B, CAN/CSA-C22.2 NO. 0-M91, 0.4-04, and 107.1-01	
* Frequency ranges can be extended beyond nominal if required by the utility		

To learn more about Enphase Microinverter technology, visit [enphase.com](http://enphase.com)



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# SERIES 100 ROOF MOUNT SYSTEM

SnapNrack Residential PV Mounting Systems

The SnapNrack line of solar mounting systems is designed to reduce total installation costs. The system features technical innovations proven on more than 100MW of solar projects to simplify installation and reduce costs.

### Pitched Roof Arrays Simplified

The SnapNrack Series 100 Roof Mount System is an efficient, visually appealing, photovoltaic (PV) module installation system. Series 100 was developed in the field by a team of veteran solar engineers and installers. Their goal was to ensure a quick, efficient installation. Series 100 has been tested on megawatts of real-world residential and commercial installations. Industry leading installation times are achieved with unique Snap-in fasteners and fully adjustable components that make installation of roof mounted solar arrays easy while achieving lower installation costs.

- Up to 3" of height adjustability at roof connection
- Waterproof full-metal flashing at each roof penetration
- Works on virtually all composition and tile roofs
- Single wrench size for all system hardware
- Configures easily as low profile or tilt (0-60 Degrees)
- Rail channels provide excellent wire management

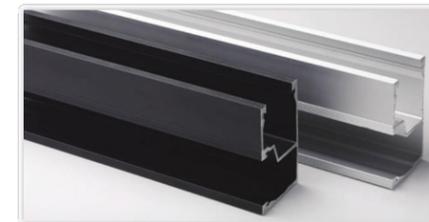


### Roof System in 4 Simple Steps:

- 1) Identify Site Conditions (Array Tilt, Building Height, Roof Type, Wind and Snow Loads)
- 2) Determine Footing Span from Engineering Tables (download at [www.snapnrack.com](http://www.snapnrack.com))
- 3) Choose color (Clear or Black) and roof attachment type
- 4) Place Order with your distributor. Purchase material for a single project or order in bulk for additional savings
  - Rail & Module Clamps
  - Roof Attachments
  - Array Accessories

**SnapNrack™**  
PV Mounting Systems

Patent Pending



### Simple

- Quick assembly and clean aesthetic finish
- One wrench fits every bolt in the system
- Low profile installation on any roof

### Adaptable

- Compatible with virtually all 60 and 72 cell modules
- Unique "snap-in" channel nuts can be installed anywhere on the rail
- Rail channels provide improved wire management



### Strong

- Excellent seismic, wind, and snow-loading protection
- Vertical and horizontal adjustments ensure superior fit
- Rain-tight metal flashing ensures waterproofing

### Innovative Universal End Clamps

- One size fits any standard L frame module
- Clean look - nothing extends beyond module frames
- Less waste - rail lengths match most modules



### SnapNrack Series 100 Technical Data Patent Pending

Materials	<ul style="list-style-type: none"> <li>• 6000 Series aluminum</li> <li>• Stainless steel</li> <li>• Galvanized steel</li> </ul>
Material Finish	<ul style="list-style-type: none"> <li>• Clear and black anodized aluminum</li> </ul>
Installation	<ul style="list-style-type: none"> <li>• Quick and efficient mounting</li> <li>• Adjustable hardware to ensure clean and level finish</li> <li>• Worry-free waterproof flashing</li> </ul>
Calcs. & Certifications	<ul style="list-style-type: none"> <li>• Wind speeds up to 150 MPH and snow loads to 120 PSF</li> </ul>
Grounding	<ul style="list-style-type: none"> <li>• Washer, Electrical Equipment Bond (WEEB) or lay-In lugs</li> </ul>
Warranty	<ul style="list-style-type: none"> <li>• 10 Year material and workmanship (download full details at <a href="http://snapnrack.com">snapnrack.com</a>)</li> </ul>

**SnapNrack™**  
PV Mounting Systems

(877) 732-2860 [www.SnapNrack.com](http://www.SnapNrack.com)

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# SERIES 100 FLASHED L FOOT KIT

SnapNrack Residential PV Mounting Systems

The SnapNrack line of solar mounting systems is designed to reduce total installation costs. The system features technical innovations proven on more than 200MW of solar projects to simplify installation and reduce costs.

## Flashed L Foot Simplified

SnapNrack Series 100 Flashed L Foot Kit is an innovative solution to provide a long lasting watertight seal over the life of the system. The Flashed L Foot provides a single fastener flashed to an attachment composition shingle roof with no required cutting of shingles. The L Foot is engineered for maximum adjustability for a clean level installation.

- 1" slotted bolt connection
- 1" spacers available for increased adjustability
- Clear or Black anodized aluminum components (both available with black flashing)
- No Cutting of shingles



## Flashed L Foot in 3 Simple Steps:

- 1) Locate the rafter and drill the pilot hole
- 2) Prep and attach the base
- 3) Set the flashing and attach the L Foot

Place order through your SnapNrack distributor, which can be found at [www.snapnrack.com/contact](http://www.snapnrack.com/contact)

**SnapNrack**  
PV Mounting Systems

Patent Pending

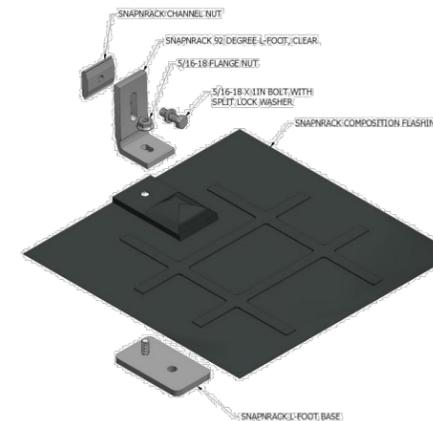


Flashed L Foot Kit Assembled (1" spacer sold separately)

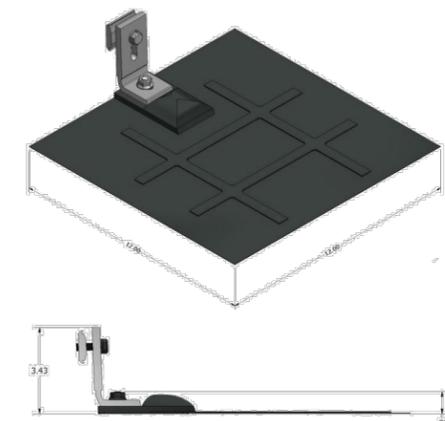


Flashed L Foot Kit Parts (1" spacer sold separately)

## Flashed L Foot Kit Assembly



## Flashed L Foot Kit Dimensions



## SnapNrack Flashed L Foot Technical Data Patent Pending

Materials	<ul style="list-style-type: none"> <li>• 6000 Series Aluminum L Foot &amp; Base</li> <li>• Stainless Steel Hardware</li> <li>• Galvanized Steel Flashing</li> </ul>
Material Finish	• Clear and black anodized aluminum
Weight	• 0.16 lbs
Design Uplift Load	• 200 lbs Uplift
Design Ultimate Load	• 1,000 lbs Uplift
Warranty	• 10 Year material and workmanship

**SnapNrack**  
PV Mounting Systems

(877) 732-2860 [www.SnapNrack.com](http://www.SnapNrack.com)

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Technical Data Guide Polyether Technology CSI Section No. 07 92 13

**CHEM LINK**

**Construction & Maintenance**

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 Schoolcraft, MI 49087  
[www.chemlink.com](http://www.chemlink.com)

Last Revision: 06/23/15  
 Document No. L1270

**Product Description**

M-1® is a moisture curing, polyether adhesive sealant designed for applications in damp, dry, or cold climates. M-1® is solvent free and contains no isocyanates. M-1® will not shrink upon curing, will not discolor when exposed to UV light, and can not "out-gas", or bubble on damp surfaces as urethane sealants often do. M-1® is capable of joint movement in excess of 25% in both compression and extension. M-1® can be used effectively in many difficult construction site conditions such as wet or dry climates and at temperatures as low as 32°F (0°C).



**Applicable Performance Standards**

- ASTM C920, Type S, Grade NS, Class 25  
 Uses NT, T<sub>1</sub>, M, G, A & O
- Federal Specification TT-S-00230-C Type II, Class B
- Corps of Engineers CRD-C-541, Type II, Class B
- Canadian Standards Board CAN 19, 13-M82

**Advantages**

- Solvent free, 100% solids will not shrink
- Non-slump, applies vertically and overhead
- 20 minute skin over
- No outgassing on damp surfaces
- Good color stability, will not suntan
- Paintable within 24 hours (See limitations)
- Gun grade, no special tools or mixing required
- Application at temperatures as low as 32°F (0°C)

**Regulatory Compliance**

- Conforms to OTC Rule for Sealants and Caulks
- Meets requirements of California Regs: CARB, BAAQMD and SCAQMD
- Conforms to California Proposition 65
- Conforms to USDA Requirements for Non-food Contact

Colors		
White	Gray	Limestone
Black	Tan	

\* Color matching is available in batch quantity only

**Packaging**

- **5 oz Squeeze Tube (148 ml)**  
 36 tubes/carton, 40 cartons/pallet
- **10.1 oz (300 ml)**  
 24 cartridges/carton, 45 cartons/pallet
- **20 oz (600 ml)**  
 12 sausages/carton, 40 cartons/pallet
- **28 oz (825 ml)**  
 12 cartridges/carton, 40 cartons/pallet  
 White only - Other colors available by special order
- **2 and 5 gallon pails or 50 gallon drums available by special order**

**Green Standards:**

- LEED 2.2 for New Construction and Major Renovations: Low Emitting Materials (Section 4.1) 1 Point
- NAHB Model Green Home Building Guidelines: 5 Global Impact Points
- VOC Content: less than 20 grams / liter ASTM D2369 EPA Method 24 (tested at 240°F / 115°C)

**Joint Preparation**

Joint surfaces should be clean, dry and free from all contamination including: dirt, oils, grease, tar, wax, rust and any other substance that may inhibit the sealant's performance.

**Joint Design**

Install all joint applications per ASTM and SWRI recommendations and guidelines. Joints shall be designed with a depth to width ratio of 1:2 (joint depth one-half the width). Control the depth of the sealant by using a polyethylene backer rod that is 25% larger than the joint opening at standard temperature. To prevent three-point adhesion use a backer rod or bond breaker tape to ensure proper joint movement and a long lasting weatherproof seal. Where the joint configuration will not permit a backer rod, CHEM LINK recommends that an alternative bond breaker be used.

Joint Width Inches (mm)	Joint Depth Inches (mm)
1/4 - 1/2 (6-13)	1/4 (6)
1/2 - 3/4 (13-19)	1/4 - 3/8 (6-10)
3/4 - 1 (19-25)	3/8 - 1/2 (10-13)

CHEM LINK recommends an appropriate substrate primer to be used on high moving joints or dissimilar substrates which require increased adhesion properties.

**Compatible Substrates\***

EPDM and SBS Mod Bit
Aluminum and Galvanized Metal
Stainless Steel
Engineered Plastics, PVC
Glass
Fiberglass FRP
Wood
Block and Brick
EPS Foam
Concrete and Stone

\*Test and evaluate to ensure adequate adhesion. Page 2

**Typical Physical Properties**

Gun Grade	Zero Slump	
Viscosity	1,200,000 cp +/- 400,000 cp	Brookfield RVF TF Spindle, 4 RPM, 73°F (23°C)
Density	11.8 +/- 0.2 lbs per gallon	ASTM D1475
Tack Free Time	20 min +/- 10 min	45 +/- 5 % R.H.
Elongation at Break	290%	ASTM D412
Hardness Shore A	45	ASTM C661
Tensile Strength	330 psi	ASTM D412
Shear Strength	380 psi	ASTM D1002
Low temp. flex	Pass -10°F (-23°C) 1/4 inch mandrel	ASTM D816
Shrinkage	No visible shrinkage after 14 days	
Service Temperature	-40°F to 200°F (-40°C to 93°C)	

**Basic Uses**

Expansion joints
Pre-cast concrete
Block and Masonry
Window and door frames
Siding
Parapets
Cove Joints
Transportation
Weather Sealing

# SOLAR PANEL INSTALLATION

NYC Department of Buildings



# Zoning Requirements

## **Zone Green:** Solar PV As A Permitted Obstruction On Pitched Roofs

- On slopes greater than 20 degrees, solar panel height shall be limited to 18" measured perpendicular to roof surface

