



CAMBRIDGE HISTORICAL COMMISSION

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E-mail: histcomm@cambridgema.gov URL: http://www.cambridgema.gov/Historic

RECEIVED

OCT 03 2016

APPLICATION FOR CERTIFICATE

CAMBRIDGE HISTORICAL COMMISSION

1. The undersigned hereby applies to the Cambridge Historical Commission for a Certificate of (check one box): Appropriateness, Nonapplicability, or Hardship, in accordance with Chapter 40C of the Massachusetts General Laws and/or Chapter 2.78 of the Municipal Code.

2. Address of property: 19 Follen Street, Cambridge, Massachusetts

3. Describe the proposed alteration(s), construction or demolition in the space provided below: (An additional page can be attached, if necessary).

Roof mount Grid Tied PV Solar Installation, 19-LG 315W Panels, 19-Enphase Micro Inverters

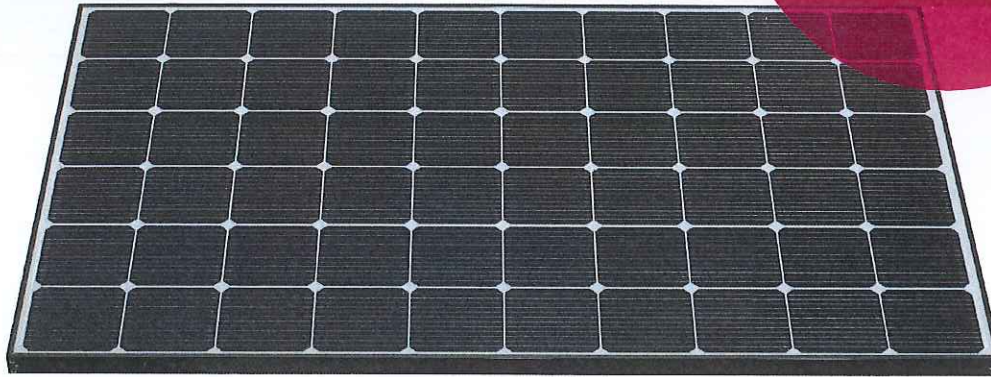
I certify that the information contained herein is true and accurate to the best of my knowledge and belief. The undersigned also attests that he/she has read the statements printed on the reverse.

Name of Property Owner of Record: Clark Abt
Mailing Address: 19 Follen Street Cambridge MA 02138
Telephone/Fax: 617-876-2835, 617-852-8524 **E-mail:** abt.clark@gmail.com
Signature of Property Owner of Record: *Clark Abt*
 (Required field; application will not be considered complete without property owner's signature)

Name of proponent, if not record owner: Jim Laskowski
Mailing Address: 288 Kidder Street Wilkes Barre PA 18702
Telephone/Fax: 570-820-5990 **E-mail:** jimlaskowski@endlessmntsolar.com

(for office use only):
Date Application Received: 10/3/16 **Case Number:** 3699 **Hearing Date:** 11/3/16
Type of Certificate Issued: _____ **Date Issued:** _____

Innovation for
a Better Life



LG NeON™ 2 LG315N1C-G4

60 cell

LG's new module, LG NeON™ 2, adopts Cello technology. Cello technology replaces 3 busbars with 12 thin wires to enhance power output and reliability. LG NeON™ 2 demonstrates LG's efforts to increase customer's values beyond efficiency. It features enhanced warranty, durability, performance under real environment, and aesthetic design suitable for roofs.



Enhanced Performance Warranty

LG NeON™ 2 has an enhanced performance warranty. The annual degradation has fallen from -0.7%/yr to -0.6%/yr. Even after 25 years, the cell guarantees 2.4% more output than the previous LG NeON™ modules.



High Power Output

Compared with previous models, the LG NeON™ 2 has been designed to significantly enhance its output efficiency, thereby making it efficient even in limited space.



Aesthetic Roof

LG NeON™ 2 has been designed with aesthetics in mind; thinner wires that appear all black at a distance. The product may help increase the value of a property with its modern design.



Outstanding Durability

With its newly reinforced frame design, LG has extended the warranty of the LG NeON™ 2 for an additional 2 years. Additionally, LG NeON™ 2 can endure a front load up to 6000 Pa, and a rear load up to 5400 Pa.



Better Performance on a Sunny Day

LG NeON™ 2 now performs better on sunny days thanks to its improved temperature coefficient.



Double-Sided Cell Structure

The rear of the cell used in LG NeON™ 2 will contribute to generation, just like the front; the light beam reflected from the rear of the module is reabsorbed to generate a great amount of additional power.

About LG Electronics

LG Electronics is a global player who has been committed to expanding its capacity, based on solar energy business as its future growth engine. We embarked on a solar energy source research program in 1985, supported by LG Group's rich experience in semi-conductor, LCD, chemistry, and materials industry. We successfully released the first Mono X® series to the market in 2010, which were exported to 32 countries in the following 2 years, thereafter. In 2013, LG NeON™ (previously known as Mono X® NeON) won "Intersolar Award", which proved LG is the leader of innovation in the industry.

Mechanical Properties

Cells	6 x 10
Cell Vendor	LG
Cell Type	Monocrystalline / N-type
Cell Dimensions	156.75 x 156.75 mm / 6 inches
# of Busbar	12 (Multi Wire Busbar)
Dimensions (L x W x H)	1640 x 1000 x 40 mm 64.57 x 39.37 x 1.57 inch
Front Load	6000 Pa / 125 psf
Rear Load	5400 Pa / 113 psf
Weight	17.0 ± 0.5 kg / 37.48 ± 1.1 lbs
Connector Type	MC4, MC4 Compatible, IP67
Junction Box	IP67 with 3 Bypass Diodes
Length of Cables	2 x 1000 mm / 2 x 39.37 inch
Glass	High Transmission Tempered Glass
Frame	Anodized Aluminum

Certifications and Warranty

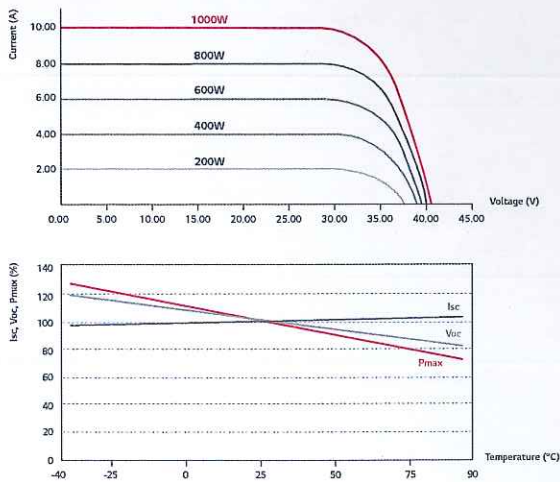
Certifications	IEC 61215, IEC 61730-1/-2 IEC 62716 (Ammonia Test) IEC 61701 (Salt Mist Corrosion Test) ISO 9001 UL 1703
Module Fire Performance (USA)	Type 2 (UL 1703)
Fire Rating (for CANADA)	Class C (ULC/ORD C1703)
Product Warranty	12 years
Output Warranty of Pmax	Linear warranty*

* 1) 1st year 98%, 2) After 2nd year 0.6%p annual degradation, 3) 83.6% for 25 years

Temperature Characteristics

NOCT	46 ± 3 °C
Pmpp	-0.38 %/°C
Voc	-0.28 %/°C
Isc	0.03 %/°C

Characteristic Curves



Electrical Properties (STC *)

Module Type	315 W
MPP Voltage (Vmpp)	33.2
MPP Current (Impp)	9.50
Open Circuit Voltage (Voc)	40.6
Short Circuit Current (Isc)	10.02
Module Efficiency (%)	19.2
Operating Temperature (°C)	-40 ~ +90
Maximum System Voltage (V)	1000
Maximum Series Fuse Rating (A)	20
Power Tolerance (%)	0 ~ +3

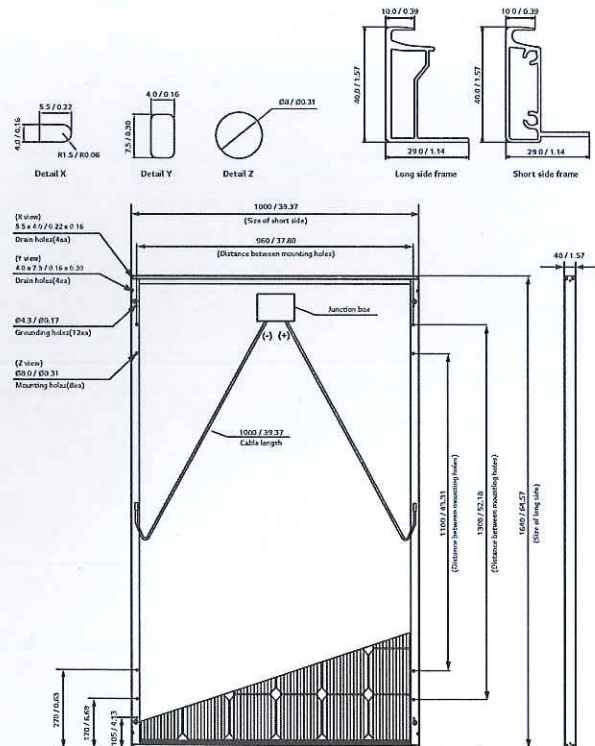
* STC (Standard Test Condition): Irradiance 1000 W/m², Module Temperature 25 °C, AM 1.5
* The nameplate power output is measured and determined by LG Electronics at its sole and absolute discretion.
* The typical change in module efficiency at 200 W/m² in relation to 1000 W/m² is -2.0%.

Electrical Properties (NOCT*)

Module Type	315 W
Maximum Power (Pmax)	230
MPP Voltage (Vmpp)	30.4
MPP Current (Impp)	7.58
Open Circuit Voltage (Voc)	37.6
Short Circuit Current (Isc)	8.08

* NOCT (Nominal Operating Cell Temperature): Irradiance 800 W/m², ambient temperature 20 °C, wind speed 1 m/s

Dimensions (mm/in)



* The distance between the center of the mounting/grounding holes.



North America Solar Business Team
LG Electronics U.S.A. Inc
1000 Sylvan Ave, Englewood Cliffs, NJ 07632

Contact: lg.solar@lge.com
www.lgsolarusa.com

Product specifications are subject to change without notice.
DS-N2-60-C-G-F-EN-50427

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01/04/2015

Innovation for a Better Life



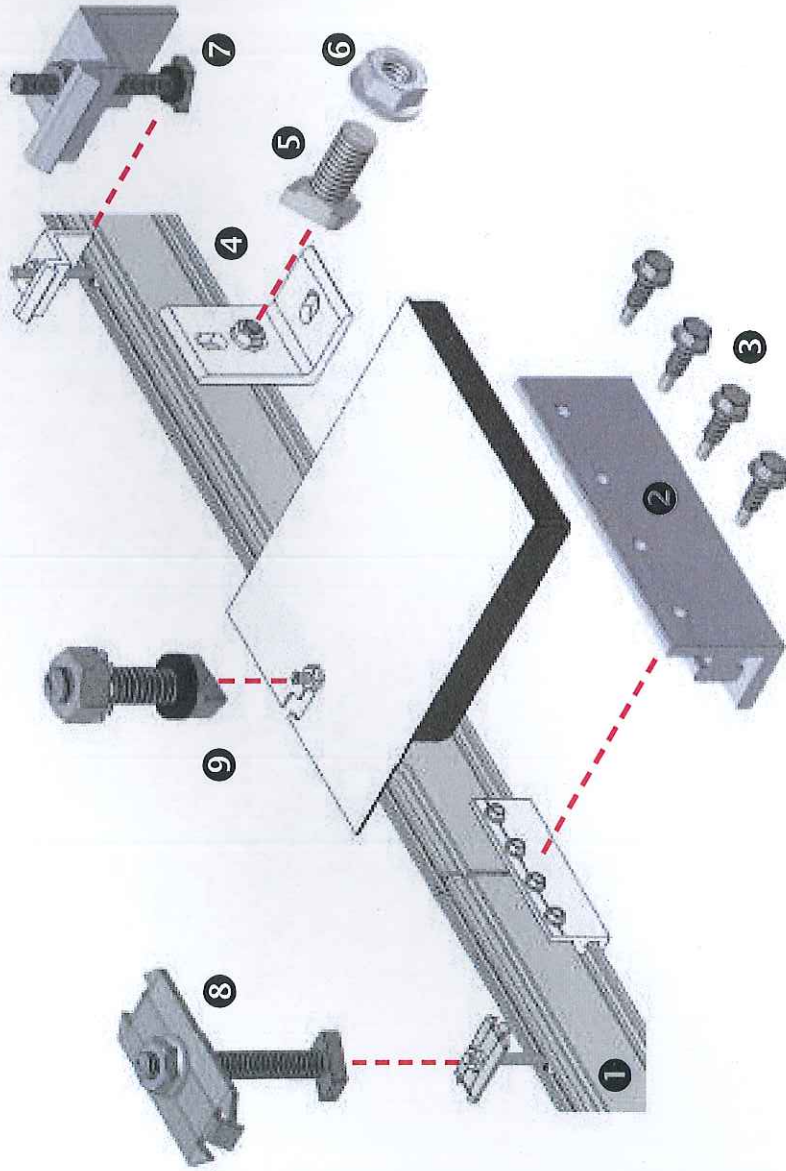


INSTALLATION GUIDE



PUB15MAY05

- ① **RAIL:** Supports PV modules. Use at least two per row of modules. Aluminum extrusion, available in mill, clear anodized, or dark anodized.
 - ② **RAIL SPLICE:** Non structural splice joins, aligns, and electrically bonds rail sections into single length of rail. Forms either a rigid or thermal expansion joint, 4 inches long, pre-drilled (see page F). Anodized aluminum extrusion available in clear or dark.
 - ③ **SELF-DRILLING SCREW:** (No. 12 x ¾") – Use 4 per rigid splice or 2 per expansion joint. Stainless steel. Supplied with splice. In combination with rigid splice, provides rail to rail bond.
 - ④ **L-FOOT:** Use to secure rails through roofing material to building structure. Refer to loading tables or U-Builder for spacing.
 - ⑤ **L-FOOT T-BOLT:** (3/8" x ¾") – Use one per L-foot to secure rail to L-foot. Stainless steel. Supplied with L-foot. In combination with flange nut, provides electrical bond between rail and L-foot.
 - ⑥ **SERRATED FLANGE NUT (3/8"):** Use one per L-foot to secure and bond rail to L-foot. Stainless steel. Supplied with L-foot.
 - ⑦ **MODULE ENDCLAMP:** Provides bond from rail to endclamp. Pre-assembled aluminum clamp available in clear or dark finish. Supplied washers keep clamp and bolt upright for ease of assembly.
 - ⑧ **MODULE MIDCLAMP:** Pre-assembled clamp provides module to module and module to rail bond. Stainless steel clamp and T-bolt. Available in clear or dark finish.
 - ⑨ **MICROINVERTER MOUNTING BOLT:** Pre-assembled bolt and nut attaches and bonds microinverter to rail. Washer at base keeps bolt upright for ease of assembly.
- NOTE - POSITION INDICATOR:** T-bolts have a slot in the hardware end corresponding to the direction of the T-Head.



Wrenches and Torque

Wrench Size	Recommended Torque (ft-lbs)
1/4" Hardware ●●●	*10
3/8" Hardware ●	*30
#12 Hardware ●	10

Torques are not designed for use with wood connectors
*w/Anti-Seize.

Anti-Seize*

Stainless steel hardware can seize up, a process called galling. To significantly reduce its likelihood:

1. Apply minimal lubricant to bolts, preferably Anti-Seize commonly found at auto parts stores
2. Shade hardware prior to installation, and
3. Avoid spinning stainless nuts onto bolts at high speed.

B SIZE
ENDCLAMP

Module Thickness
30mm to 32mm
1.18in to 1.26in

C SIZE
ENDCLAMP

Module Thickness
35mm to 36mm
1.50in to 1.42in

D SIZE
ENDCLAMP

Module Thickness
38mm to 40mm
1.50in to 1.57in

K SIZE
ENDCLAMP

Module Thickness
39mm to 41mm
1.54in to 1.61in

F SIZE
ENDCLAMP

Module Thickness
45mm to 47mm
1.77in to 1.85in

E SIZE
ENDCLAMP

Module Thickness
50mm to 52mm
1.97in to 2.05in



BC SIZE
MIDCLAMP
2in Long T-bolt



DK SIZE
MIDCLAMP
2.25in Long T-bolt



EF SIZE
MIDCLAMP
2.5in Long T-bolt

PLANNING YOUR SOLARMOUNT INSTALLATIONS

The installation can be laid out with rails parallel to the rafters or perpendicular to the rafters. Note that SOLARMOUNT rails make excellent straight edges for doing layouts.

Center the installation area over the structural members as much as possible.

Leave enough room to safely move around the array during installation. Some building codes and fire codes require minimum clearances around such installations, and the installer should check local building code requirements for compliance.

The length of the installation area is equal to:

- the total width of the modules,
- plus ¼" inch for each space between modules (for mid-clamp),
- plus approximately 3 inches (1½ inches for each EndClamp)

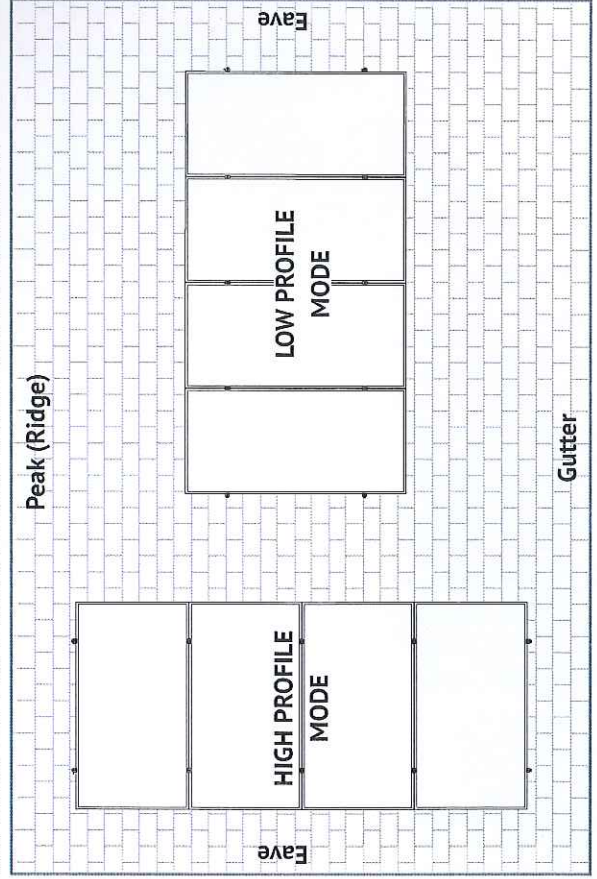
LAYING OUT L-FEET FOR TOP CLAMPS

L-feet, in conjunction with proper flashing equipment and techniques, can be used for attachment through existing roofing material, such as asphalt shingles, sheathing or sheet metal to the building structure.

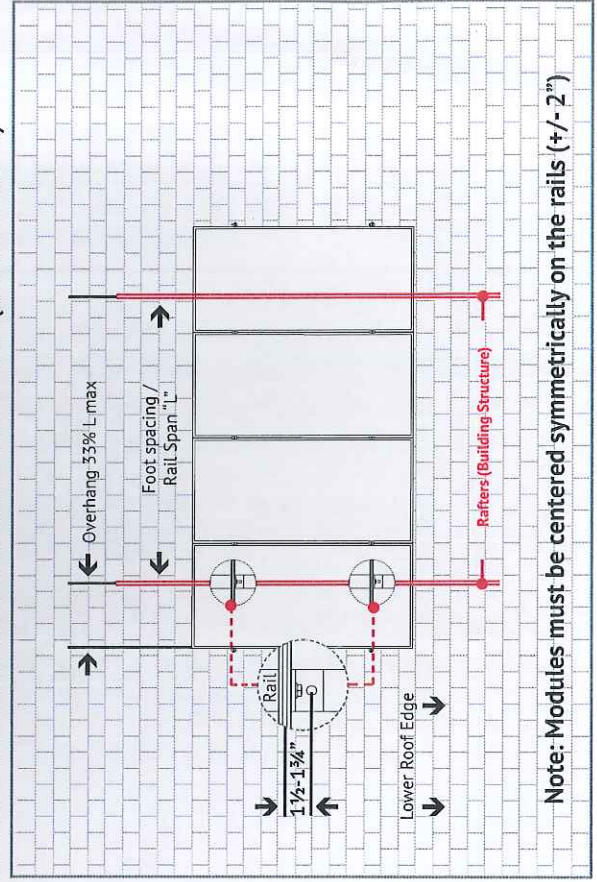
Locate and mark the position of the L-foot lag screw holes within the installation area as shown below. Follow manufacturer module guide for rail spacing based on appropriate mounting locations.

If multiple rows are to be installed adjacent to one another, it is not likely that each row will be centered above the rafters. Adjust as needed, following the guidelines below as closely as possible.

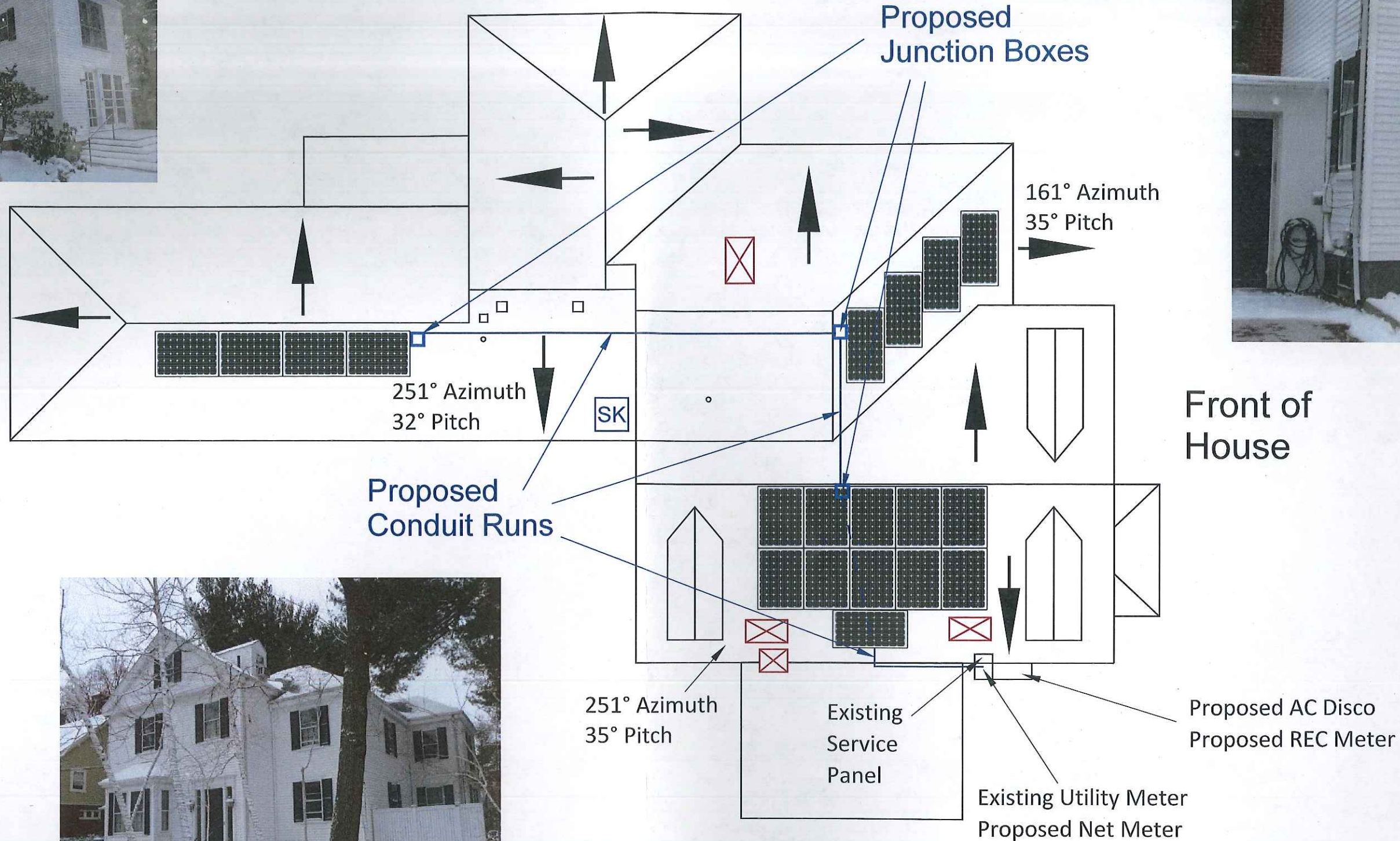
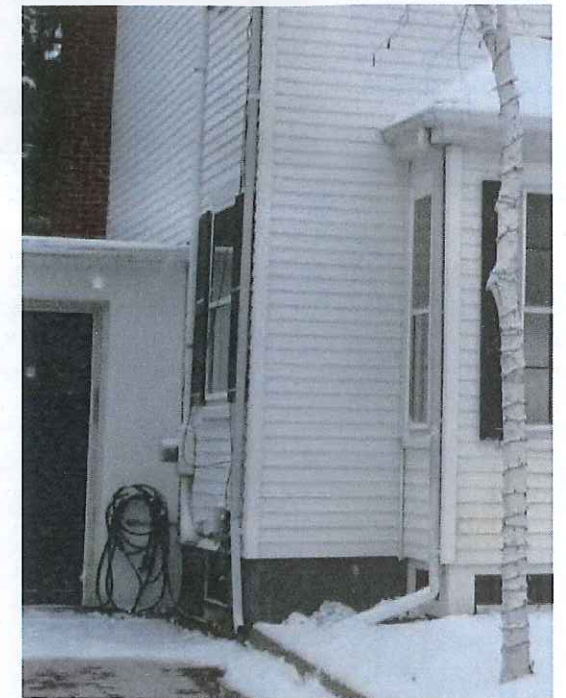
RAILS MAY BE PLACED PARALLEL OR PERPENDICULAR TO RAFTERS



LAYOUT WITH RAILS PERPENDICULAR TO RAFTERS (RECOMMENDED)



Note: Modules must be centered symmetrically on the rails (+/- 2")



Front of House



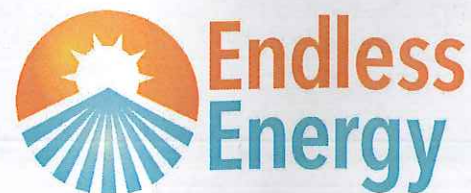
SYSTEM SPECIFICATIONS

- DC POWER (KW): 5.985
- AC POWER (KW): 4.75
- AC VOLTAGE (V): 240
- AC CURRENT (A): 19
- AC DISCONNECT SIZE: 60A
- MODULE TYPE / QTY: LG 315W / 19
- INVERTER TYPE / QTY: Enphase M250 / 19

CUSTOMER: CLARK ABT
 19 FOLLEN ST
 CAMBRIDGE, MA
 02138
 617-852-8524 Mobile

COMPANY: Endless Energy
 184 Cedar Hill St
 Marlborough, MA 01752

DRAWN BY: Shawn Corbley



SCALE:
 1/8" = 1' (1:96)
 (on 11x17 paper)

VIEW: TOP

Isometric Views Front of House



Proposed
Conduit Run



SYSTEM SPECIFICATIONS

DC POWER (KW): 5.985

AC POWER (KW): 4.75

AC VOLTAGE (V): 240

AC CURRENT (A): 19

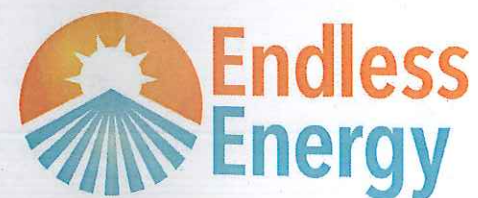
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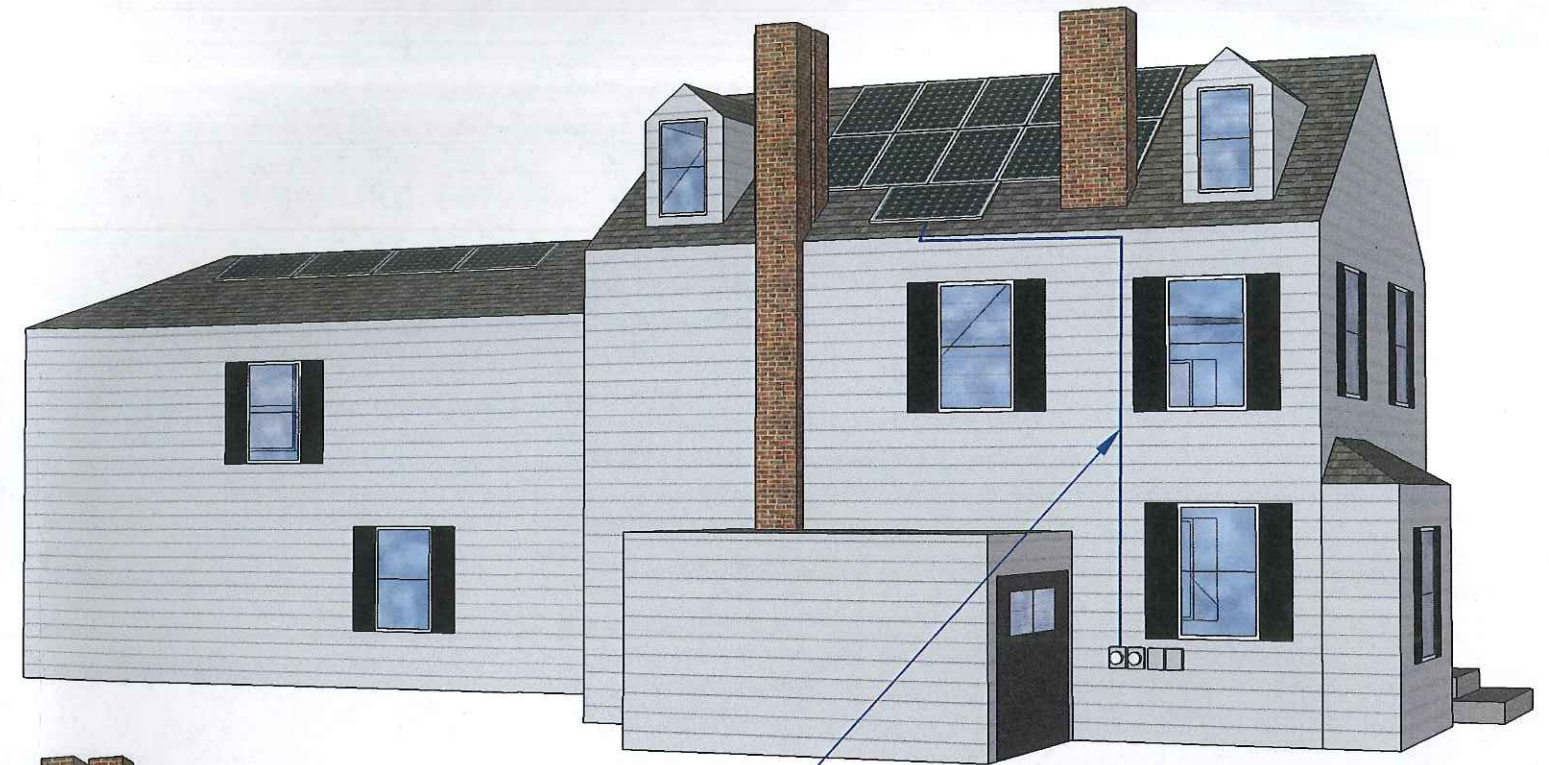
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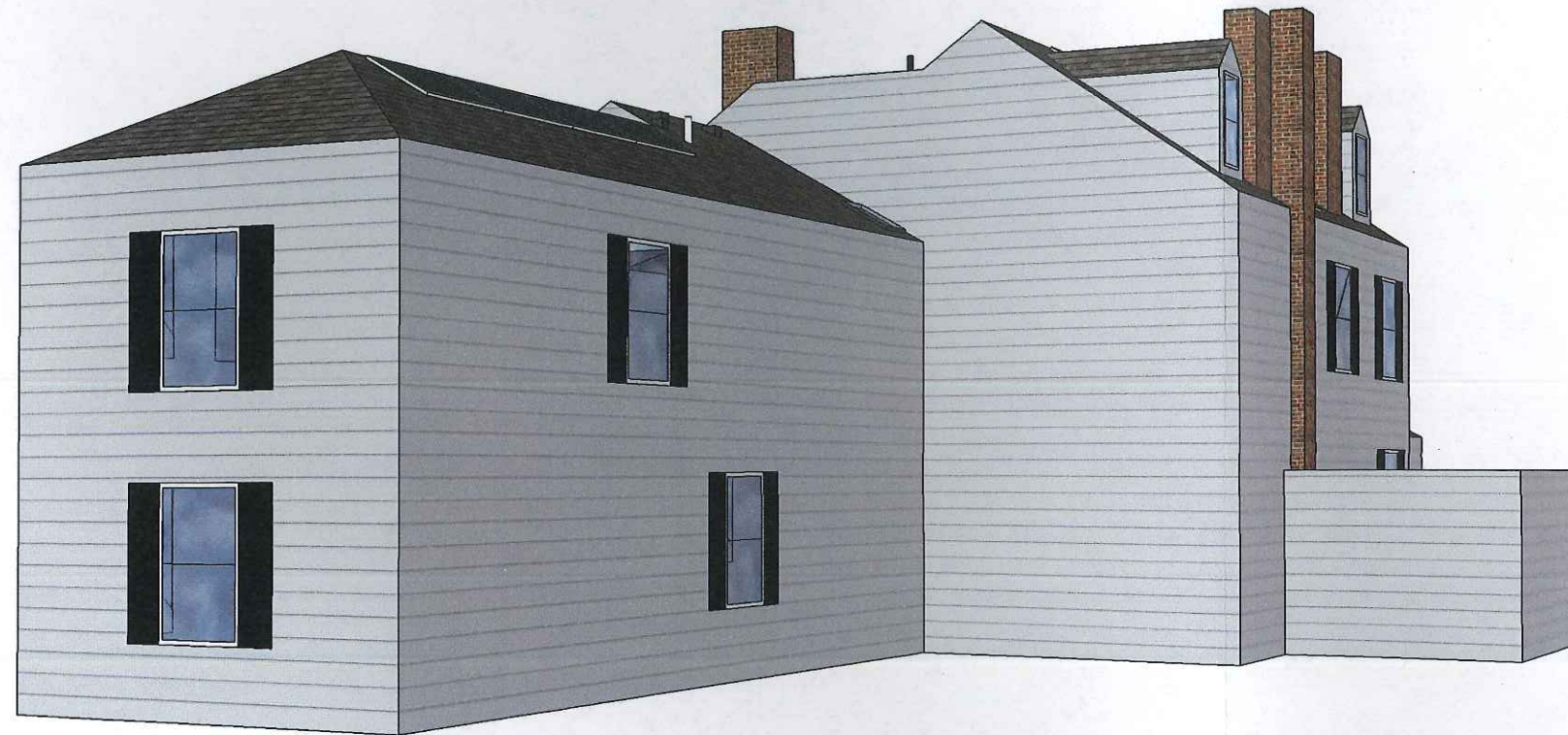
SCALE:
NA

VIEW: ISO

Isometric Views Back / Side of House



Proposed
Conduit Run



SYSTEM SPECIFICATIONS

DC POWER (KW): 5.985

AC POWER (KW): 4.75

AC VOLTAGE (V): 240

AC CURRENT (A): 19

AC DISCONNECT SIZE: 60A

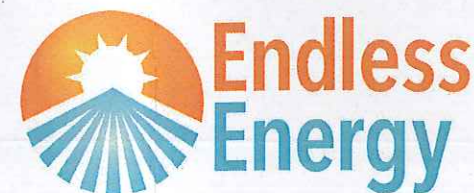
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SCALE:
NA

VIEW: ISO