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MAY 14 2018

CAMBRIDGE HISTORICAL COMMISSION



CAMBRIDGE HISTORICAL COMMISSION

831 Massachusetts Avenue, 2nd Fl., Cambridge, Massachusetts 02139

Telephone: 617 349 4683 TTY: 617 349 6112

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

APPLICATION FOR CERTIFICATE

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

Addition of 85 solar panels on the roof.

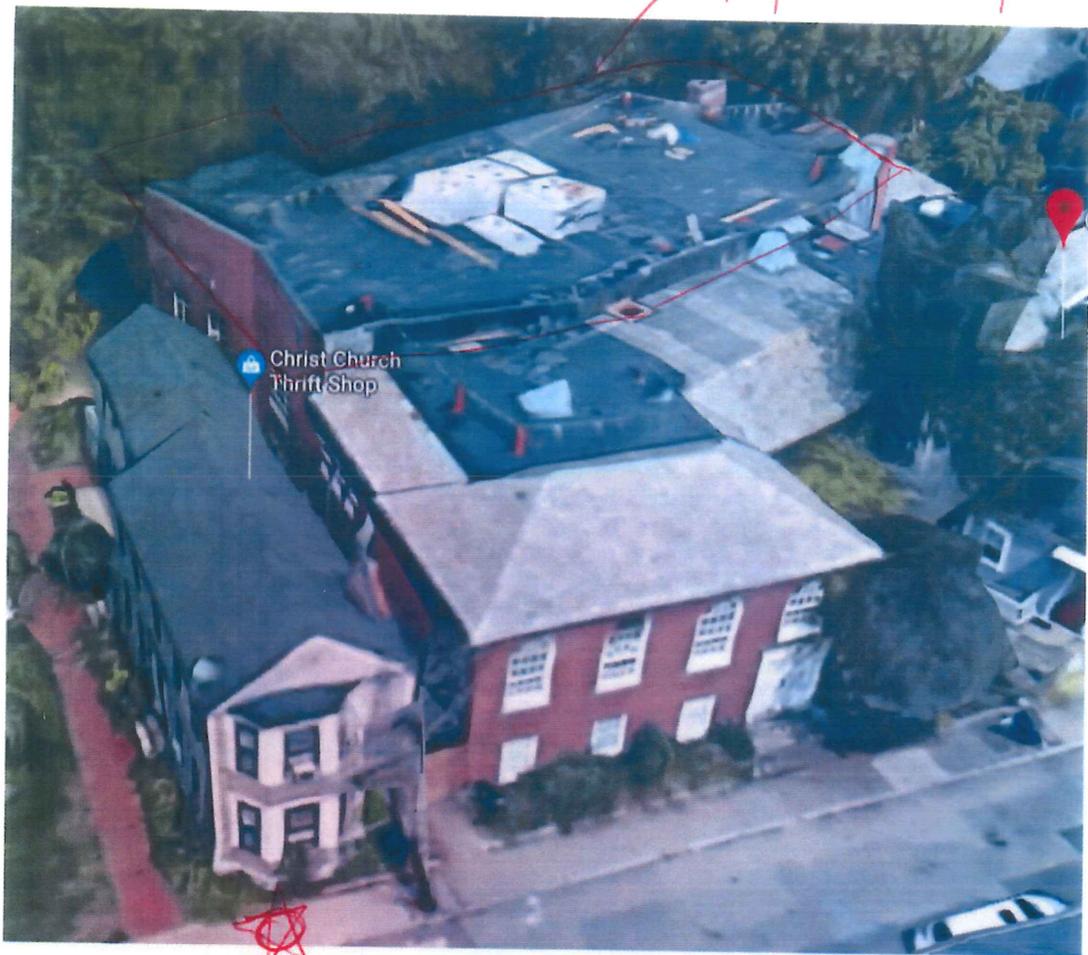
I certify that the information contained herein is true and accurate to the best of my knowledge and belief.
The undersigned also attests that he/she has read the statements printed on the reverse.

Name of Property Owner of Record: CHRIST CHURCH OF Cambridge
 Mailing Address: 0 Garden St. Cambridge, MA
 Telephone/Fax: 978-360-4063 E-mail: sven@invaleontech.com
 ⇒ Signature of Property Owner of Record: [Signature]
 (Required field; the application will not be considered complete without the property owner's signature)

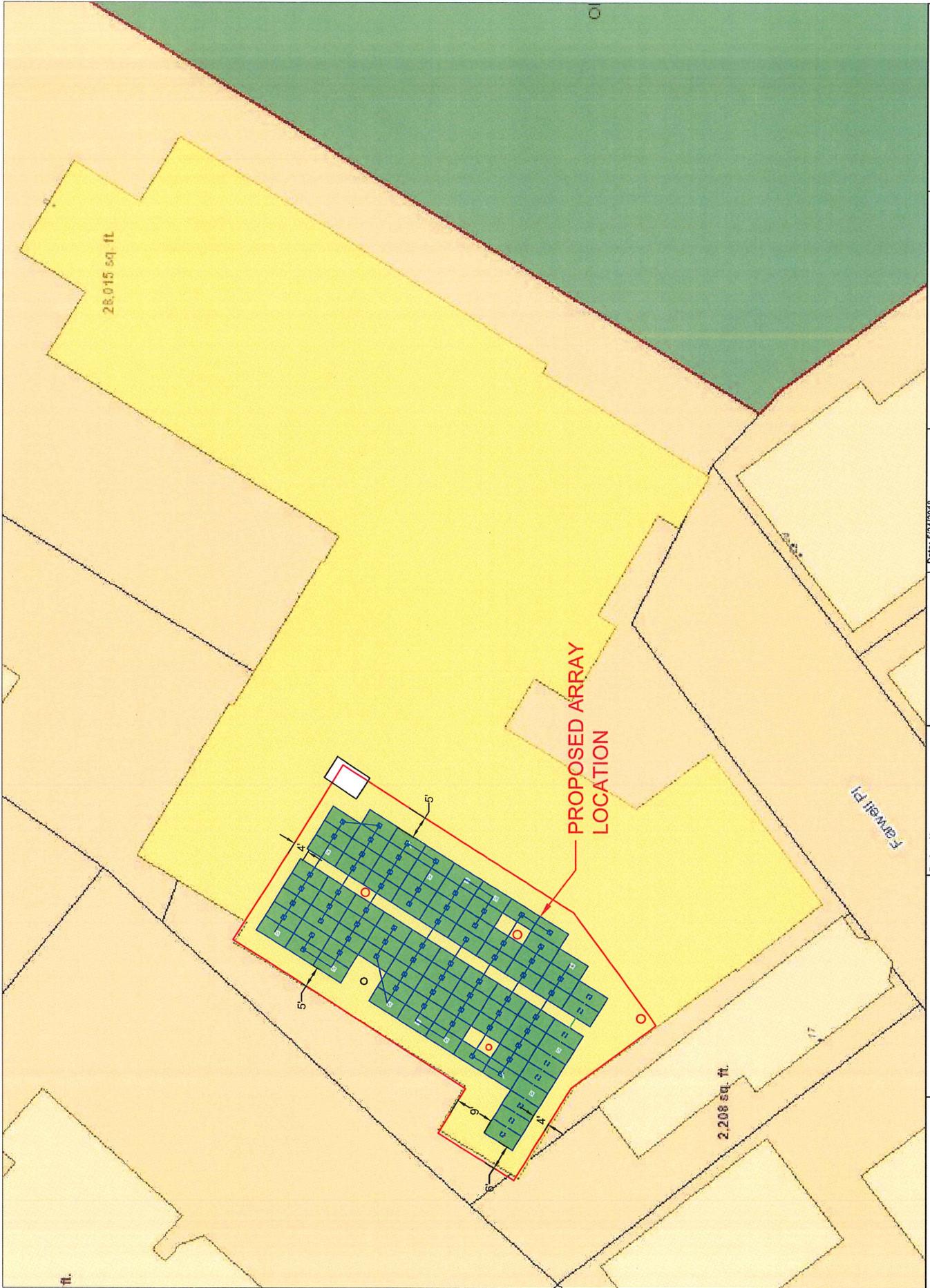
Name of proponent, if not record owner: Tom Wu
 Mailing Address: 26 Parkridge Rd. Haverhill, MA 01835
 Telephone/Fax: 978-809-8316 E-mail: dixiao@invaleontech.com

(for office use only):
 Date Application Received: 5/14/18 Case Number: 3942 Hearing Date: 6/7/18
 Type of Certificate Issued: _____ Date Issued: _____

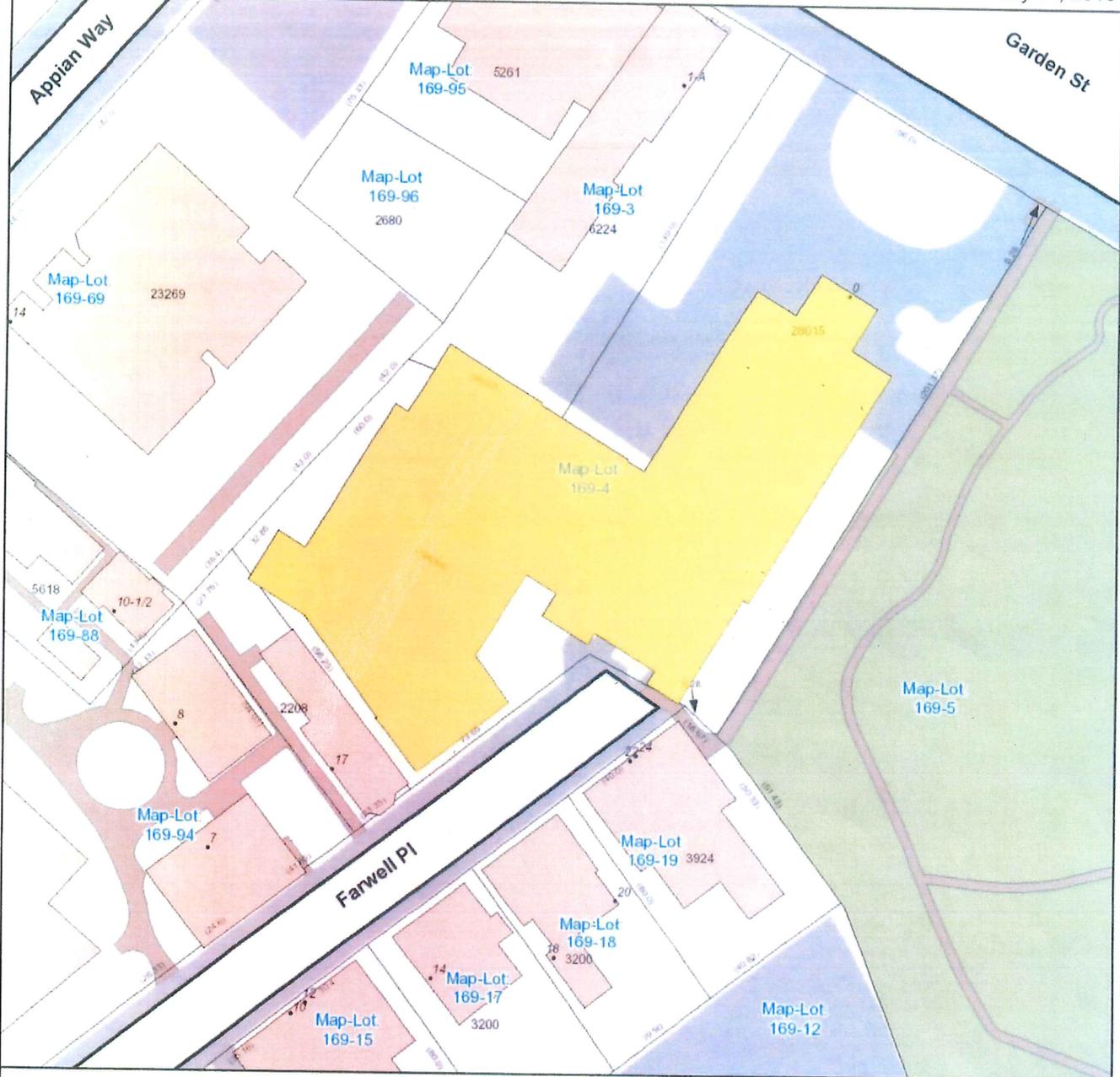
→ proposed solar panel location



View from 14 Farwell Pl



	<p>Invalcon Technologies Corporation 25 Parkridge Road, Suite 1B Haverhill, MA 01835 www.invalsolarsolar.com 978.809.8316 info@invalcontech.com</p>	<p>Project Name: Christ Church Commercial Site Address: 0 Garden St, Cambridge, MA 01746</p>	<p>NDTS</p>	<p>Date: 5/24/2018 Title: PV Layout Drawing: 1 Revision: 0</p>	<p>By: Dixiao Fan Description: Comments:</p>
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City of Cambridge
Massachusetts

1" = 48 ft

All data is provided for graphic representation only. The City of Cambridge expressly disclaims all warranties of any type, expressed or implied, including, but not limited to, any warranty as to the accuracy of the data, merchantability, or fitness for a particular purpose.

www.cambridgema.gov/gis

- Address
- Rail
- Building Footprints
- Parcels
- Paved Surfaces
 - Paved Roads
 - Bridges
 - Unpaved Roads
 - Unpaved Parking
 - Sidewalks
 - Driveways
 - Alleys
 - Other Paved Surface
 - Public Footpath



ROOF PHOTOS





Comments:

By: Daxiao Fan
 Description: Electrical 1-Line

Date: 6/11/2018
 Title: PV Layout
 Drawing: 1
 Revision: 0

NDTS
 Sheet 2 of 2

Project Name:
 Christ Church Commercial
 Site Address:
 10 Church St Cambridge, MA

Invalleon Technologies Corporation
 26 Parkridge Road, Suite 1B
 Haverhill, MA 01835
 www.invalleontechnologies.com
 978.896.8216 | info@invalleontechn.com

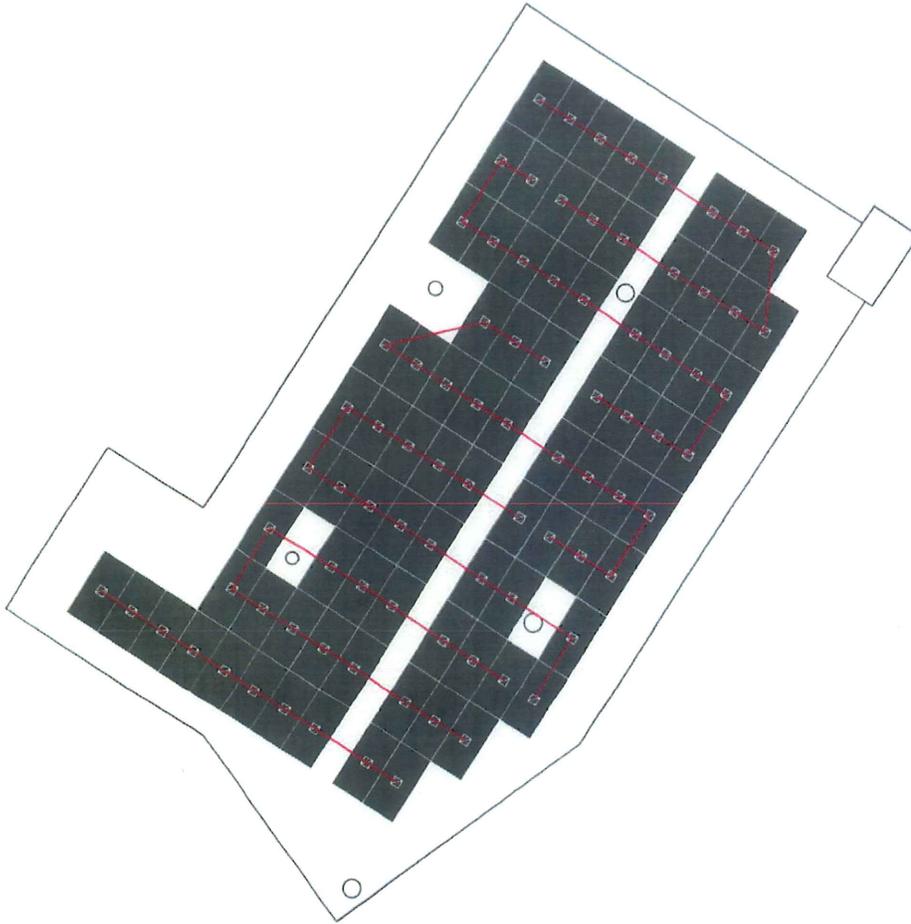




Customer: n/a n/a
Address: 1 Garden St, Cambridge, MA 02138, USA

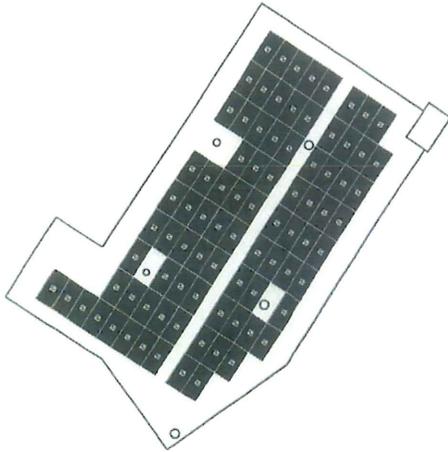
System size: 34 kW
Yr 1 Production: 38,371 kWh
Designer: Chris Sewell
Date: May 7th, 2018

Site Assessment



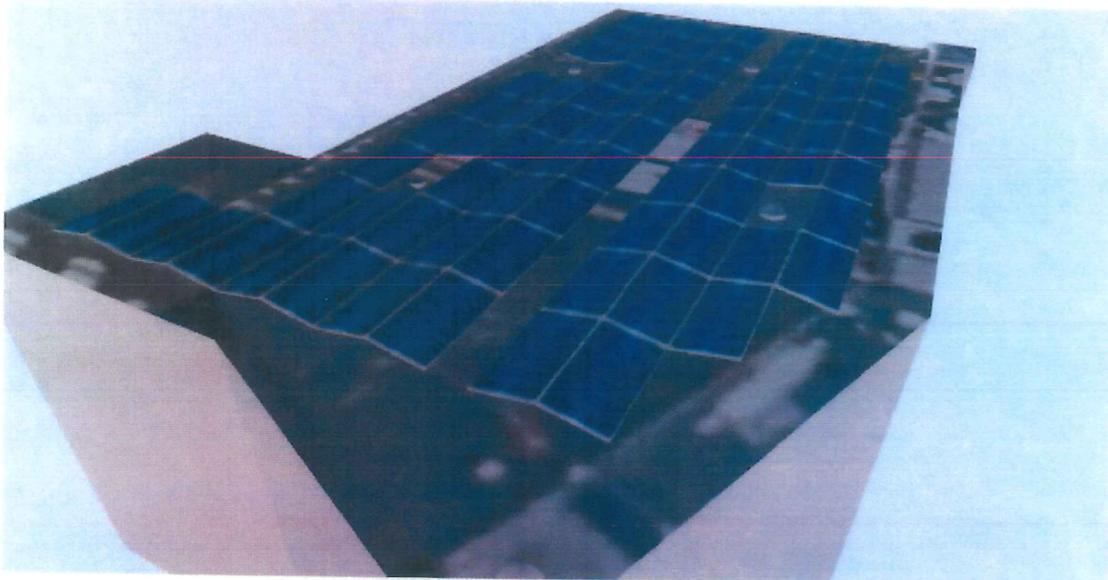
Site Assessment

Customer: n/a n/a
Address: 1 Garden St, Cambridge, MA 02138, USA



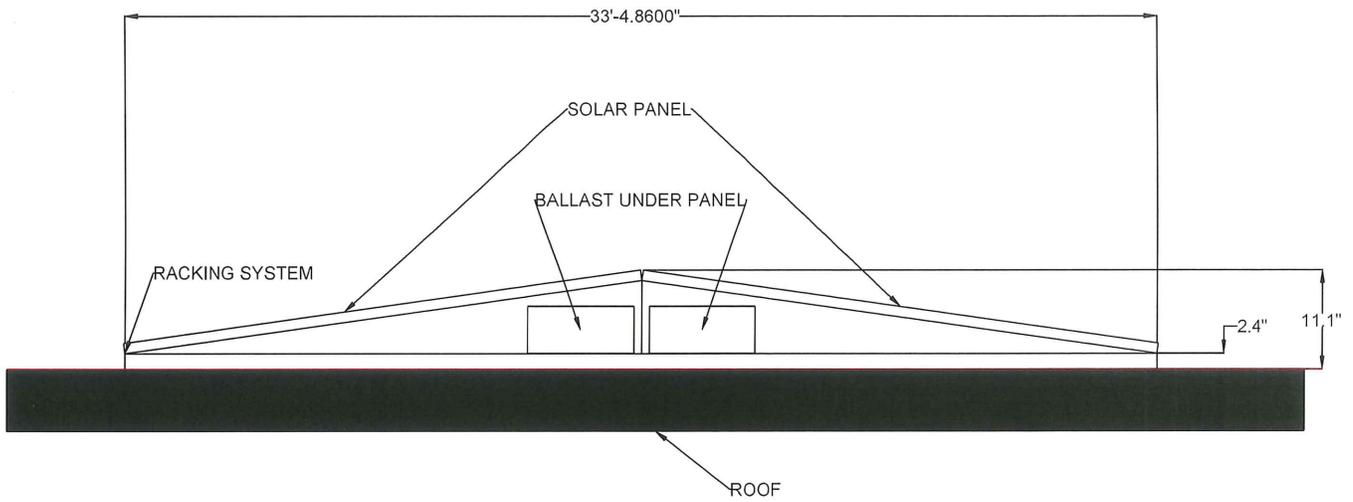
Component List

Manufacturer	Model	Quantity
LG Electronics Inc.	LG400N2W-A5	85
SolarEdge Technologies Inc.	P400	85
SolarEdge Technologies Inc.	SE14.4KUS (208V)	2



Notes:

VERTICAL SECTION VIEW



Invaleon Technologies Corporation
 26 Parkridge Road, Suite 1B
 Haverhill, MA 01835
 www.invaleonsolar.com
 978.805.8316 | info@invaleontech.com

Project Name:
 Christ Church Commercial
 Site Address:
 9 Garden St. Cambridge, MA

NDTS
 Sheet 2 of 2

Date: 5/14/2018
 Title: Vertical Section View
 Drawing: 1
 Revision: 0

By: Dixiao Fan
 Description:

Comments:



Innovation for a Better Life



LG NeON[®] 2 72cell

LG400N2W-A5

72 cell

LG's NeON[®] 2 module adopts Cello Technology™. Cello Technology™ replaces 3 busbars with 12 thin wires to enhance power output and reliability. The NeON[®] 2 72cell demonstrates LG's efforts to increase customer value through efficiency, enhanced warranties, durability and performance.



Enhanced Performance Warranty

LG NeON[®] 2 has an enhanced performance warranty. The annual degradation has fallen from -0.6%/yr to -0.5%/yr. Even after 25 years, the cell guarantees 2.4% more output than the previous LG NeON[®] 2 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.



Roof Aesthetics

LG NeON[®] 2 has been designed with aesthetics in mind, using thinner wires that appear all black at a distance.



Outstanding Durability

With its newly reinforced frame design, LG has extended the warranty of the LG NeON[®] 2 for an additional 3 years. Additionally, LG NeON[®] 2 can endure a front load up to 5400 Pa, and a rear load up to 4300 Pa.



Improved Performance on Sunny Days

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 the LG NeON[®] 2 contributes to generation, just like the front; the light beam reflected from the rear of the module is reabsorbed to generate additional power.

About LG Electronics

LG Electronics is a global player who has been committed to expanding its operations with the solar market. The company first embarked on a solar energy source research programs in 1985, supported by LG Group's vast experience in the semi-conductor, LCD, chemistry, and materials industries. In 2010, LG Solar successfully released its first Mono X[®] series to the market, which is now available in 32 countries. The LG NeON[®] (previously known as Mono X[®] NeON) and the LG NeON[®] 2 won the "Intersolar Award" in 2013 and 2015, which demonstrates LG Solar's lead, innovations and commitment to the industry.

Mechanical Properties

Cells	6 x 12
Cell Vendor	LG
Cell Type	Monocrystalline / N-type
Cell Dimensions	161.7 x 161.7 mm / 6 inches
# of Busbar	12 (Multi Wire Busbar)
Dimensions (L x W x H)	2024 x 1024 x 40 mm 79.69 x 40.31 x 1.57 inch
Front Load	5400Pa
Rear Load	4300Pa
Weight	21.7 kg
Connector Type	MC4
Junction Box	IP68 with 3 Bypass Diodes
Cables	1200 mm x 2 ea
Glass	Tempered Glass with AR Coating
Frame	Anodized Aluminium

Certifications and Warranty

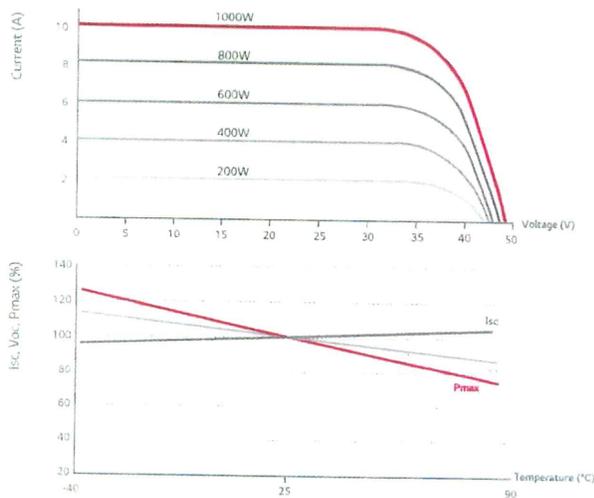
Certifications	IEC 61215, IEC 61730-1/-2 UL 1703 IEC 61701 (Salt mist corrosion test) IEC 62716 (Ammonia corrosion test) ISO 9001
Module Fire Performance (USA)	Type 1
Fire Rating (CANADA)	Class C (ULC / ORD C1703)
Product Warranty	15 years
Output Warranty of Pmax	Linear warranty**

** 1) 1st year - 98%, 2) After 1st year - 0.5% annual degradation, 3) 25 years - 86%

Temperature Characteristics

NOCT	45 ± 3 °C
Pmpp	-0.36%/°C
Voc	-0.26%/°C
Isc	-0.02%/°C

Characteristic Curves



Electrical Properties (STC *)

Module	400W
Maximum Power (Pmax)	400
MPP Voltage (Vmpp)	40.6
MPP Current (Impp)	9.86
Open Circuit Voltage (Voc)	49.3
Short Circuit Current (Isc)	10.47
Module Efficiency	19.3
Operating Temperature	-40 ~ +90
Maximum System Voltage	1500 (UL)
Maximum Series Fuse Rating	20
Power Tolerance (%)	0 ~ +3

* STC (Standard Test Condition): Irradiance 1,000 W/m², Cell Temperature 25 °C, AM 1.5

* The nameplate power output is measured and determined by LG Electronics at its sole and absolute discretion.

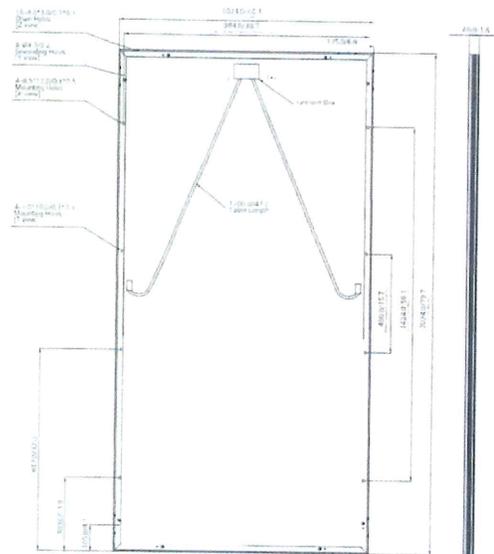
* The Typical change in module efficiency at 200W/m² in relation to 1000W/m² is -2.0%.

Electrical Properties (NOCT*)

Module	400W
Maximum Power (Pmax)	296
MPP Voltage (Vmpp)	37.6
MPP Current (Impp)	7.88
Open Circuit Voltage (Voc)	46.1
Short Circuit Current (Isc)	8.41

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

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01/01/2017

Innovation for a Better Life





Intertek

KB RACKING®
Simple solutions you can count on.

AERORACK 2.0

Flat Roof Mounting System

LIGHTWEIGHT - NON PENETRATING - EASY TO INSTALL

AERORACK is the next generation of rail-based mounting solutions. KB Racking has refined its rail based solution to provide customers with the same core elements of integrated wire management and simple installation, at a more economical price. The system offers customizable solutions with its flexibility in panel orientation, row spacing and tilt angle. AeroRack 2.0 features the same low ballast requirements and structural integrity as the original AeroRack, with a more aerodynamic design.



FEATURES

- Rail based design provides stiffness, reducing ballast requirements and roof loads
- Non-penetrating design prevents damage to your roof
- Aluminum components ensure long lasting performance
- Pre-attached rubber mats offer additional protection for the roof
- 10-year standard product warranty, extended warranty available
- Windshields include integrated press-fit nuts for a faster installation

ETL CLASSIFIED



Intertek

AERORACK 2.0

Flat Roof Mounting System

TECHNICAL

SPECIFICATIONS

Total System Weight	2 - 5 lbs/ft ²
Inclinations	3° - 25°
Wind Speed	Up to 180mph
Module Sizes	All standard 60, 72 & 96 cell panels
Grounding Method	ETL certified grounding clamps, grounded once per rail
Panel Orientation	Portrait and Landscape
Building Height	Up to 60' / 18.5 m (higher upon request)
Roof Type	All types of flat roofs
Roof Pitch	Up to 5°
Material	Aluminum
Ballast Weight	Customizable to wind zone and exposure category
Wind Tunnel Testing	Boundary layer wind tunnel tested by RWDI - based on ASCE 7-10, NBCC 2005, IBC 2012 & OBC 2012 standard



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