

CITY OF WASHINGTON

PLANNING & DEVELOPMENT DEPARTMENT

301 Walnut St. • Washington, IL 61571

Ph. 309-444-1135 • Fax 309-444-9779

<http://www.washington-illinois.org>

joliphant@ci.washington.il.us

MEMORANDUM

TO: Mayor Manier and City Council
FROM: Jon R. Oliphant, AICP, Planning & Development Director
SUBJECT: First Reading Ordinance – Lei Wernsman Special Use Request, 203 Hilldale Avenue
DATE: February 12, 2019

Summary: Lei Wernsman has submitted a special use application for the installation of a solar energy system on the detached garage at 203 Hilldale Avenue. The zoning code requires a special use be issued in order to install a roof-mount solar energy system on an accessory structure. It would be located on the detached garage on the northern portion of the property. Staff recommends approval of this request.

Background: The property is approximately 0.22 acres and is zoned R-1 (Single- and Two-Family Residential). A detached garage was constructed on the north side of the property concurrently with the house in 1940. A 13.2 KW solar photovoltaic array is proposed to be located on the west and east-facing garage roofs. The site plan submitted would be comprised of 44 300-watt panels and cover approximately 76.5% of the roof, which is more than the maximum allowable 50% coverage. Please note the applicant has indicated interest in seeking a variance for the increased coverage. Consideration of the special use would only allow for 50% coverage.

An attached letter submitted by the contractor (Green Solar Technologies) indicates the reason for placing the panels on the garage. While there were formerly two larger trees on the owner's property, a third large tree is on the eastern neighbor's property and the neighbor has indicated an unwillingness to have it trimmed or removed. This blocks the sun from reaching some of the south-facing roof during many hours of the day. The north-facing roof of the principal structure is not an option because there would not be enough energy production to justify the cost.

Green Solar Technologies has attested that the roof is capable of supporting the proposed array. The City's electrical inspector has reviewed the attachments and has consented to this construction if the special use is approved. While a building permit would need to be issued if the special use is approved, the submitted attachments are thus far in conformance with the solar energy regulations. It would be installed in accordance with the adopted 2012 International Building Code.

The proposed use would not appear to be detrimental to the public's health, safety, or general welfare nor would it diminish property values or the use and enjoyment of properties in the vicinity. Placing the array on the south-facing roof on the house does not appear to be worthwhile because of the limited sun that would produce the energy. Their placement on the east- and west-facing garage roofs would be a solid alternative that would allow the owner to take advantage of the cost savings from the solar generation. Based on all of these factors, staff would recommend that the special use request be approved up to 50% roof coverage.

The Planning and Zoning Commission held a public hearing on this request at its meeting on February 6 and unanimously recommended approval. This is scheduled for a first reading ordinance at the February 18 City Council meeting with a second reading to be scheduled for March 4.

Enclosures

ORDINANCE NO. _____

(Synopsis: Adoption of this ordinance would allow for a roof mount solar energy system to be installed on a garage at 203 Hilldale Avenue)

AN ORDINANCE GRANTING A SPECIAL USE TO ALLOW A ROOF MOUNT SOLAR ENERGY SYSTEM TO BE INSTALLED ON AN ACCESSORY STRUCTURE AT 203 HILLDALE AVENUE

WHEREAS, the City of Washington Zoning Ordinance adopted February 20, 1961, as amended, provides for a special use for the allowance of roof mount solar energy systems on accessory structures within §154.727 where conditions are met; and

WHEREAS, a petition has been filed with the City of Washington and referred to the Planning and Zoning Commission requesting such a special use for the installation of a roof mount solar energy system on an accessory structure at 203 Hilldale Avenue; and

WHEREAS, public notice in the form required by law was given of the public hearing, and the Planning and Zoning Commission held such a public hearing on February 6, 2019, and has recommended such a special use; and

WHEREAS, the Planning and Zoning Commission has made its findings and recommendations concerning the special use permit and the corporate authorities have duly considered said findings and recommendations and find that the special use procedures have complied with the Washington Zoning Code:

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF WASHINGTON, TAZEWELL COUNTY, ILLINOIS, that:

Section 1. The reports, findings, and recommendations of the Planning and Zoning Commission are herein incorporated by reference as the findings of the City Council, as completely as if fully recited herein at length. Also, all exhibits submitted at the public hearing are hereby incorporated by reference as fully as if attached hereto. The City Council further finds that the proposed special use is in the public good and in the best interest of the City and its residents and is consistent with and fosters the purposes and spirit of the City of Washington Zoning Code. The special use granted will not be detrimental to the public health, safety, morals, comfort and general welfare, nor shall it be injurious to the use and enjoyment of other properties in the vicinity, nor substantially diminish or impair property values within the neighborhood.

Section 2. That the following described property owned by Lei Wernsman be granted a special use permit for the installation of a roof mount solar energy system on an accessory structure and legally described as follows:

SEC 13 T26N R3W BROOKHILL ADDN LOT 10 SW 1/4

PIN: 02-02-13-304-013

Section 3. That the City Zoning Officer be directed to issue any permits to allow the installation on the above-described property in compliance with this special use ordinance.

Section 4. That the Zoning Map of the City of Washington, Tazewell County, Illinois, be amended so as to conform to the Special Use Permit granted herein.

Section 5. That this ordinance shall be in full force and effect from and after its passage, approval, and publication as required by law.

PASSED AND APPROVED this _____ day of _____, 2019.

AYES _____

NAYS _____

ATTEST:

Mayor

City Clerk

CITY OF WASHINGTON, ILLINOIS

APPLICATION FOR SPECIAL USE

To have a complete application for a special use, you must submit the following:

- Signed and completed application
- Plat showing subject property and all adjacent properties – See below for plat requirements
- Ownership documentation (lease, deed, mortgage, etc.)
- Accurate legal description obtained from the Warranty Deed
- Application fee of \$100 payable to the City of Washington

Address or location of property: 203 Hilldale Ave. Washington, IL 61571

Property Tax ID (PIN) number: 02 - 02 - 13 - 304 - 013

Current zoning classification of the property: R1

Current use of the property: Residential

What is the Special Use for? Solar install on stand alone garage

How will you meet other requirements of the zoning code (such as parking or landscaping, if applicable)?

Name of Applicant: Lei Weinsman Phone Number of Applicant: _____

Address of Applicant: 203 Hilldale Ave. Washington, IL 61571

Owner of Property: Lei Weinsman

Address of Owner: Same

I would like to receive correspondence by: ☐ Mail ☒ Email Email address: ~~tyler@zeller-clark.com~~ hbarth@zeller-clark.com

PLAT REQUIREMENTS: Your special use plat must show:

- Building or site plan layout and locations of proposed special uses, including square footage
- Adjacent properties, rights-of-way, streets, roads, railroads, waterways, and other physical features

PUBLIC HEARING: Your case will be referred with staff's recommendation to the next regularly scheduled Planning and Zoning Commission meeting for a public hearing. The Planning and Zoning Commission meets the first Wednesday of every month at 6:30 p.m. at the Washington District Library meeting room at 380 N. Wilmore Road. At the Planning and Zoning Commission meeting, you will present your request. A special use cannot be recommended by the Planning and Zoning Commission unless the Commission finds, based upon the application and evidence presented at the public hearing, that all of the following conditions have been met:

- 1) The special use will not be detrimental to or endanger the public health, safety, morals, comfort, or general welfare;
- 2) The special use will not be injurious to the use and enjoyment of other property in the immediate vicinity, or substantially diminish or impair property values;
- 3) The special use will not impede development of surrounding property;
- 4) Adequate utilities, access roads, drainage, or necessary facilities will be provided;
- 5) Adequate ingress and egress provided to minimize traffic congestion in public streets;
- 6) The special use will conform to all other application regulations of the zoning district; and
- 7) If the special use would not otherwise be acceptable, the Planning Commission may recommend certain conditions be met to make the use acceptable, such as, but not limited to: landscape screening or fencing, specific hours of operation, night lighting or lighting restrictions, parking area requirements, signage restraints, outdoor storage limitations.

Certification: To the best of my knowledge, the information contained herein, and on the attachments, is true, accurate, and correct, and substantially represents the existing features and proposed features. Any error, misstatement, or misrepresentation of material fact or expression of material fact, with or without intention, shall constitute sufficient grounds for the revocation or denial of the proposed Special Use.

[Signature]
Signature of Applicant

1/9/14
Date

Signature of Owner

Date

After receiving a completed application, the City Clerk will file notice of your request with the local newspaper and with the adjoining property owners. If you have any questions, please contact Jon Oliphant, Planning & Development Director at (309) 444-1135.

FOR OFFICE USE ONLY Case No.: _____
Plat Submitted? Y / N Date: _____
Documentation of Authority Submitted: _____
Commission Action: _____

Fee Paid? Y / N / N/A Amount: _____ Date: _____
Landscaping Plan Submitted? Y / N / N/A Date: _____
Date to go before the Planning and Zoning Commission: _____
Ordinance Review: (first reading) _____ (second reading) _____



Green Solar Technologies
6400 Laurel Canyon Blvd #400
North Hollywood, CA 91606

January 11, 2019

City of Washington
301 Walnut St.
Washington, IL 61571

To Whom It May Concern,

We are writing in reference to a roof mount solar installation being installed for our client, Lei Wernsman, at the address 203 Hilldale Ave. Washington, IL 61571.

We are applying for a Special Use permit to be approved to install her solar system on the roof of her garage. The reasons why her garage roof is the preferred location for her solar system is due to the obstructions caused by multiple trees along the south edge of her and her neighbor's property. These 3 large trees cause considerable shade to the roof of her home that would dramatically affect the production of her solar system. While she may be able to have the 2 trees on her property removed, the largest of the trees is on her neighbor's property and they are unwilling to have it trimmed or cut down.

The other reason her garage roof is the ideal location for her solar system is that we are unable to fit all the panels we plan to install on the south facing roof of her home. We are unable to install on north facing roofs due to the lack of production the panels will contribute.

I hope this explanation is sufficient for your review and please feel free to reach out myself for further clarification on this matter.

Best Regards,

Dennis Boyce
Senior Project Manager
Green Solar Technologies
pm15@greensoltech.com
Fax: 424.239.6400
Cell: 818.392.0668
Office: 424.253.9438

**CITY OF
WASHINGTON**
TAZEWELL COUNTY, ILLINOIS

LOCATION MAP

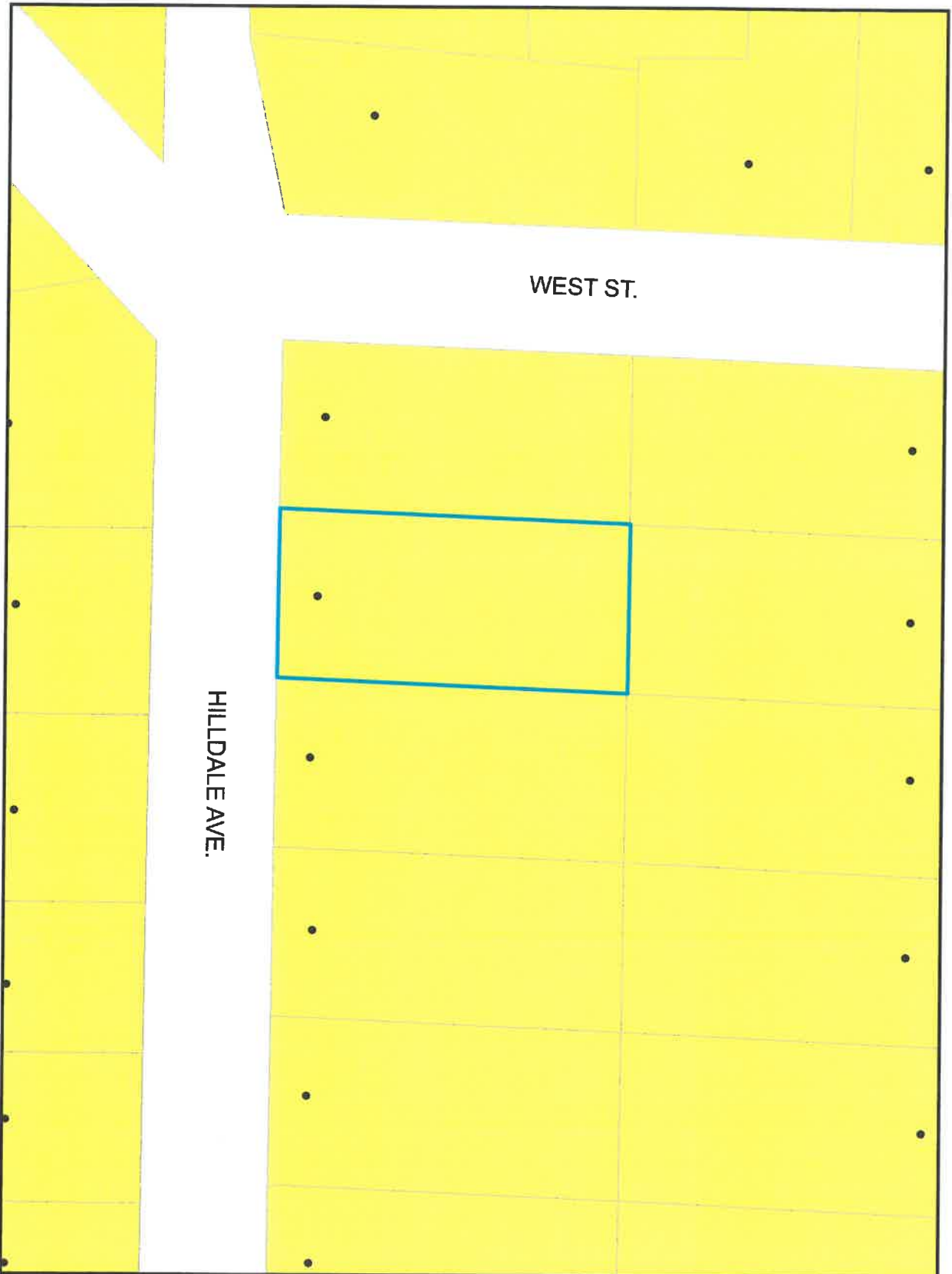


Legend

- AG-1 (Agriculture)
- CE (Country Estates)
- R-1A (Single Family Residential)
- R-1 (1-2 Family Residential)
- R-2 (Multifamily Residential)
- C-1 (Local Retail)
- C-2 (General Retail)
- C-3 (Service Retail)
- I-1 (Light Industrial)
- I-2 (Heavy Industrial)



Prepared by the City of Washington
Department of Planning and Development
Printed: January 28, 2019





**CITY OF
WASHINGTON**
TAZEWELL COUNTY, ILLINOIS

LOCATION MAP



Prepared by the City of Washington
Department of Planning and Development
Printed: January 28, 2019

GENERAL NOTES

1. ALL ELECTRICAL MATERIALS SHALL BE NEW AND LISTED BY RECOGNIZED ELECTRICAL TESTING LABORATORY. CUSTOM MADE EQUIPMENT SHALL HAVE COMPLETE TEST DATA SUBMITTED BY THE MANUFACTURER ATTESTING TO ITS SAFETY.
2. OUTDOOR EQUIPMENT SHALL BE AT LEAST NEMA 3R RATED
3. ALL METALLIC EQUIPMENT SHALL BE GROUNDED
4. ALL SPECIFIC WIRING IS BASED ON THE USE OF COPPER.
5. CONTRACTOR SHALL OBTAIN ELECTRICAL PERMITS PRIOR TO INSTALLATION AND SHALL COORDINATE ALL INSPECTIONS, TESTING, COMMISSIONING AND ACCEPTANCE WITH THE CLIENT, UTILITY CO., AND CITY INSPECTORS AS NEEDED.
6. THE ELECTRICAL CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS OF SERVICE POINTS AND SERVICE SIZES WITH THE SERVING UTILITY COMPANY AND COMPLY WITH ALL UTILITY COMPANIES REQUIREMENTS. IF THE SOLAR BACK FED BREAKER IS OVER THE BUSS SIZE 20% LIMIT, CONTRACTOR SHALL INCLUDE THE COST TO REPLACE MAIN BREAKER OR ENLARGE MAIN CAPACITY.
7. DRAWINGS ARE DIAGRAMMATIC ONLY. ROUTING OF RACEWAYS SHALL BE OPTION OF THE CONTRACTOR UNLESS OTHERWISE NOTED AND SHALL BE COORDINATED WITH OTHER TRADES.
8. IF THE ROOF MATERIAL OR ROOF STRUCTURE NOT ADEQUATE FOR PV INSTALLATION, CALL ENGINEER PRIOR TO INSTALL. THE CONTRACTOR IS RESPONSIBLE TO VERIFY THAT THE ROOF IS CAPABLE OF WITHSTANDING THE EXTRA WEIGHT.
9. IF THE DISTANCES FOR CABLE RUNS ARE DIFFERENT THAN SHOWN, THE CONTRACTOR SHALL NOTIFY THE ELECTRICAL ENGINEER TO VALIDATE THE SIRE SIZE. FINAL DRAWINGS WILL BE RED-LINED AND UPDATED AS APPROPRIATE.
10. WHENEVER A DISCREPANCY IN QUALITY OF EQUIPMENT ARISES ON THE DRAWING OR SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL MATERIAL AND SERVICES REQUIRED BY THE STRICTEST CONDITIONS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS TO ENSURE COMPLETE COMPLIANCE AND LONGEVITY OF THE OPERABLE SYSTEM REQUIRED BY THE ARCHITECT/ENGINEERS.
11. ALL BROCHURES, OPERATION MANUALS, CATALOGS, SHOP DRAWINGS, ETC., SHALL BE HANDED OVER TO OWNER'S REPRESENTATIVE AT THE COMPLETION OF WORK

PHOTOVOLTAIC NOTES:

1. ROOFTOP MOUNTED PHOTOVOLTAIC PANELS AND MODULES SHALL BE TESTED, LISTED AND IDENTIFIED UL 1703.
2. SOLAR SYSTEM SHALL NOT COVER ANY PLUMBING OR MECHANICAL VENTS
3. MODULES AND SUPPORT STRUCTURES SHALL BE GROUNDED.
4. SOLAR INVERTER MUST HAVE A MANUFACTURE INSTALLED DISCONNECTING MEANS THAT PREVENTS PARALLEL FEEDING UTILITY LINES DURING POWER OUTAGE.
5. REMOVAL OF AN INTERACTIVE INVERTER OR OTHER EQUIPMENT SHALL NOT DISCONNECT THE BONDING CONNECTION BETWEEN THE GROUNDING ELECTRODE CONDUCTOR AND THE PHOTOVOLTAIC SOURCE AND/OR OUTPUT CIRCUIT GROUNDED CONDUCTORS.

SHEET INDEX

1	ROOF PLAN
2	SINGLE LINE DIAGRAM
3	CODE REQUIRED SIGNAGE
4	SITE PLAN
5	ATTACHMENT LAYOUT
6	MODULE MAP
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8	INVERTER DATA SHEET
9	OPTIMIZER DATA SHEET
10	MODULE DATA SHEET
11	RACKING DATA SHEET
12	RACKING SPECS
13	RACKING CERTIFICATION
14	ATTACHMENT DATA SHEET
15	LINE SIDE TAP CONNECTOR

INSTALLER

Green Solar Tech



X

DESIGNER NAME:
MARREX A.

DATE: JANUARY 25, 2019

THE INSTALLATION OF SOLAR ARRAYS AND PHOTOVOLTAIC POWER SYSTEMS SHALL COMPLY WITH THE FOLLOWING CODES:

- 2009 (IBC) INTERNATIONAL BUILDING CODE
- 2009 (IMC) INTERNATIONAL MECHANICAL CODE
- 2009 (IPC) INTERNATIONAL PLUMBING CODE
- 2009 (IFC) INTERNATIONAL FIRE CODE
- 2009 (IRC) INTERNATIONAL RESIDENTIAL CODE
- 2009 (NEC) NATIONAL ELECTRIC CODE

ALL OTHER ORDINANCE ADOPTED BY THE LOCAL GOVERNING AGENCIES

PROJECT NAME: Lei Wernsman

ADDRESS: 203 Hilldale Ave Washington, IL 61571

PHOTOVOLTAIC SYSTEM SUMMARY

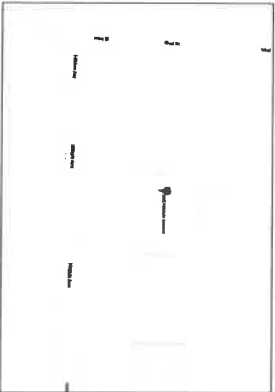
SYSTEM SIZE: DC STC: 13.20 KW
SYSTEM SIZE: AC CEC: 12.06 KW
SOLAR MODULES: (44) MISSION SOLAR MSE300S05T
OPTIMIZERS: (44) P320 POWER OPTIMIZERS
INVERTER(1) SOLAR EDGE SE10000H-US
MOUNTING SYSTEM: EVEREST SOLAR SYSTEMS

ELECTRICAL INFORMATION:

EXISTING
MAIN SERVICE PANEL BUS SIZE: 100A
MAIN SERVICE BREAKER SIZE: 100A

BUILDING INFORMATION:

ONE STORY GARAGE
CONSTRUCTION TYPE: V-B
OCCUPANCY: R
ROOF: COMPOSITION SHINGLE
RAFTERS: 2"x6" @ 24" O.C.



VICINITY MAP

SCALE: NTS



SATELLITE VIEW

SCALE: NTS

PHOTOVOLTAIC ARRAY

- (44) Mission Solar Energy 300W Solar Modules (MSE300SQ57)
- (1) Solar Edge 10.0KV Inverter (SE1000H-US)
- (44) Solar Edge P320 Power Optimizers

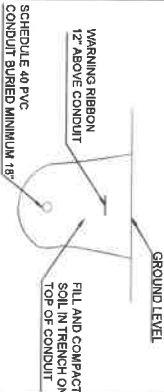
UNIT INDEX

- MSP (E) 100A Main Service Panel
- UM (E) Utility Meter
- INV (N) SE 10.0 Kw Inverter
- ACD1 (N) 80A Non-Fused Disconnect
- ACD2 (N) 80A Fused Disconnect
- J/B (N) Nema 3R Junction Box
- Solar Module
- Power Optimizer
- EMT Type Conduit

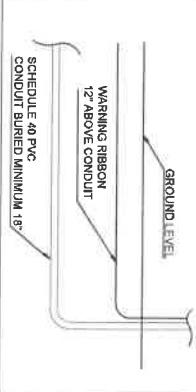
ROOF AREA CALCULATIONS
FIRE SHRINKERS - NO
TOTAL ROOF AREA (SQ.FT.) - 1,035
SOLAR AREA (SQ.FT.) - 792
% OF COVERED AREA - 76.5%

NOTE: PVC conduit and fittings directly buried
in earth at a depth not less than 18"

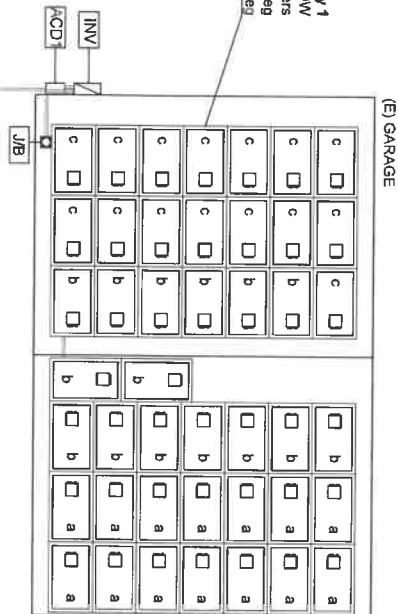
CONDUIT BURIAL DETAIL



CONDUIT BURIAL DETAIL

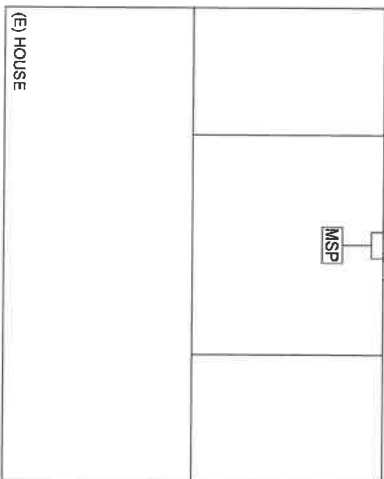


Solar Array 1
21 Mission Solar 300W
21 P320 Optimizers
Pitch: 18 Deg
Orientation: 270 Deg

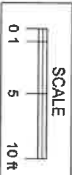


Solar Array 2
23 Mission Solar 300W
23 P320 Optimizers
Pitch: 18 Deg
Orientation: 90 Deg

SCH 40 PVC Conduit Through
Underground Trench - 40 feet



FROM JUNCTION BOX TO ROOF EAVE EMT TYPE CONDUIT WILL RUN OVER
THE ROOF AT 1 1/2" HEIGHT, THEN UNDER THE EAVE TO PV EQUIPMENT



Contract Notes

ROOF PLAN

Designer Name: Narek A.

Contractor Name: GreenSolar

Project Name: Hilldale Ave

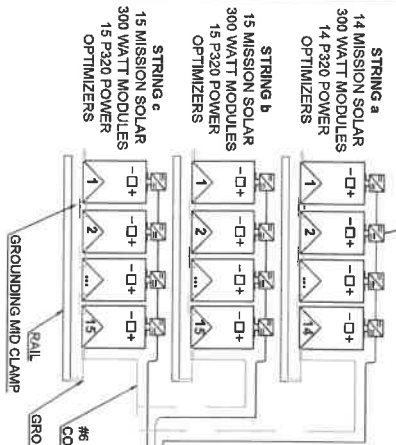
GreenSolar

X

Leti Weisman
203 Hilldale Ave
Washington, IL 61571

Date: JANUARY 23, 2019
Scale: AS INDICATED
Project: PV SYSTEM

Single-Line Power Optimizer
P320 DC Input Power - 320 Watts
P320 AC Output Power - 320 Watts
Maximum Input Voltage - 48 Vdc
MPPT Range - 8 to 48 Vdc
Maximum Output Current - 13.75 Ade
String Limitations - 8 to 25 Optimizers,
6,000 watts STC per string maximum



PV ARRAY INFORMATION

44 MISSION SOLAR ENERGY 300WATT MODULES
MODEL # MSE300SGST
1 SOLAR EDGE 10.0 KW INVERTER
MODEL # SE10000H-US
NUMBER OF STRINGS PER INVERTER: 3
NUMBER OF SERIES IN STRING a: 14
NUMBER OF SERIES IN STRINGS b,c: 15
MAX DC VOLTAGE: 15 * 300W = 4,500W <= 6,000W
MAX DC VOLTAGE: 480V

PV MODULE RATINGS # STC

SHORT CIRCUIT CURRENT I_{SC} = 9.61A
MAXIMUM POWER CURRENT I_{MP} = 9.17A
OPEN CIRCUIT VOLTAGE V_{OC} = 40.18V
MAXIMUM POWER VOLTAGE V_{MP} = 32.80V

INVERTER RATING

PEAK PMR TRACKING VOLTAGE = 400 V
CEC EFFICIENCY = 98 %
ENCLOSURE: NEMA 3R
MAXIMUM INPUT CURRENT = 27.0 A
MAXIMUM OUTPUT CURRENT = 42.0 A
MAXIMUM INPUT POWER = 15,500 W
MAXIMUM OUTPUT POWER = 10,000 W

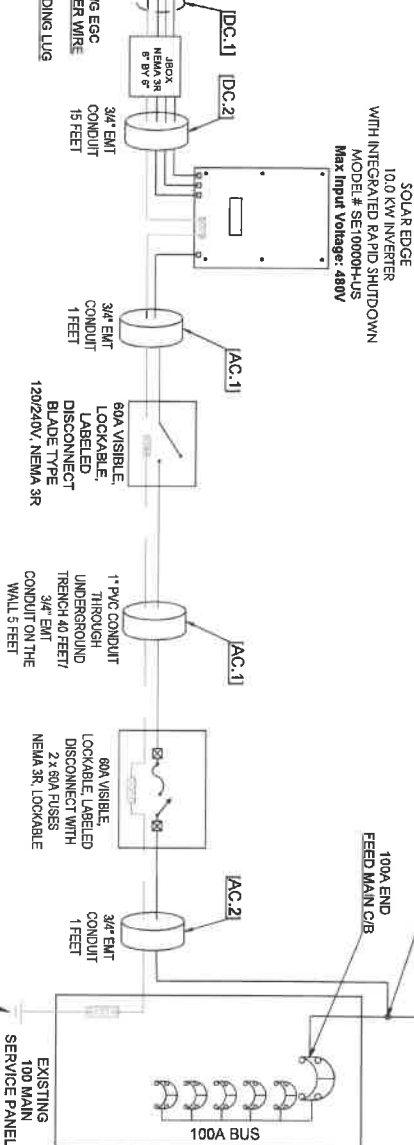
[DC.1] FROM PV MODULES TO J-BOX
(6) #10 AWG PV WIRE + (1) #6 AWG BARE CU EGC
FREE IN THE AIR, 3/4" EMT TYPE CONDUIT BETWEEN ARRAYS

[DC.2] FROM J-BOX TO INVERTER
(6) #10 AWG THWN-2 + (1) #8 AWG CU EGC
3/4" EMT TYPE CONDUIT

MAXIMUM CURRENT: 15 * 300W / 400V = 11.3 A
CONSIDERS CONTINUOUS: 11.3 A * 1.25 = 14.1 A
SHORT CIRCUIT CURRENT: 14.1 A * 1.25 = 17.6 A
RACEWAY HEIGHT FROM THE ROOF: 1 1/2" (TEMP - 39 + 22 = 61C)
TEMP. DERATE FACTOR: 17.6 A / 0.58 = 30.3 A
MORE THAN 3 CCC ADJUST. FACTOR (6 WIRES) - 0.8
ADJUSTED CONDUCTOR CAPACITY - 30.3 A / 0.8 = 37.9 A
WIRE SIZE FROM NEC TABLE 310.15(b)(16) - 10 AWG
AMBIENT TEM FACTOR 0.58 PER NEC 310.15(b)(2)(a)

[AC.1] FROM INVERTER TO FUSED DISCONNECT
(3) #6 AWG THWN-2 + (1) #8 AWG CU EGC
3/4" EMT CONDUIT / 1" PVC CONDUIT

MAXIMUM INVERTER OUTPUT CURRENT: 42.0 A
CONSIDERS CONTINUOUS: 42.0 A * 1.25 = 52.5 A
TEMPERATURE ADJUSTMENT - 52.5 A / 0.91 = 57.7 A
CONDUCTOR SIZE FROM NEC TABLE 310.15(b)(2)(a) - 5 AWG



SUPPLY SIDE TAP CONNECTION METHOD SHALL MEET 2014 NEC 240.21 ART
SUPPLY SIDE TAP CONNECTION SHALL BE MADE WITH MILBANK GREY CONNECTORS

SINGLE LINE DIAGRAM

Designer Name: Narek A.

Contractor

Green Solar Tech

GreenSolar

X

Output Name: Narek A.

Leif Weismann
203 Hilldale Ave
Washington, IL 61571

2

CODE REQUIRED SIGNAGE

Designer Name: Narek A.

No. Revision/Date Date

CONTRACTOR

Green Solar Tech



X

Let Weissman
203 Hilldale Ave
Washington, IL 61571
Date: JANUARY 25, 2019
Scale: AS INDICATED
Project: PV SYSTEM

3

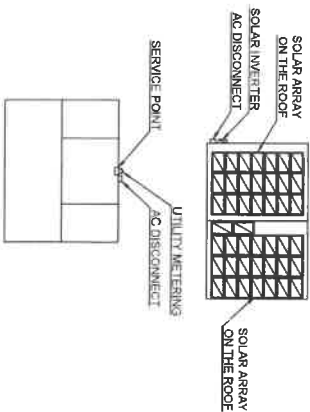
MARKINGS, LABELS AND WIRING SIGNS

- A. Purpose: Provide emergency responders with appropriate warning and guidance with respect to isolating solar electric system.
This can facilitate identifying energized electrical lines that connect solar panels to the inverter, as these should not be cut when venting for smoke removal.
B. Main Service Disconnected.
1. Residential buildings - The marking must be placed within the main service disconnect. The marking shall be placed outside cover if the main service disconnect is operable with the service panel closed.
2. Commercial buildings - The marking shall be placed adjacent to the main service disconnect clearly visible from the location where the level is operated.
3. Markings: Verbiage, Format and Type of Material.
a. Verbiage: CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED
b. Format: White lettering on a red background. Minimum 3/8 inches letter height. All letters shall be capitalized. Arial or similar font, non bold.
c. Material: Reflective, weather resistant material suitable for the environment (use UL - 969 as standard for weather rating). Durable adhesive materials meet this requirement.
C. Marking Requirements on DC conduit, raceways, enclosures, cable assemblies, DC combiners and junction boxes:
1. Markings: Verbiage, Format and Type of Material.
a. Placement: Markings shall be placed every 10 feet on all interior and exterior DC conduits, raceways, enclosures, and cable assemblies.
b. Verbiage: CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED
c. Markings shall adhere to "V, V-3B, c" of this requirement.
d. Inverters are not required to have caution markings.
e. Markings is required on all interior and exterior DC conduit raceways, enclosures, cable assemblies and junction boxes, combiner boxes and disconnects. IFC 605.11.1
2. The materials used for marking shall be reflective, weather resistant material suitable for the environment.
Minimum 3/8 "letter height, all upper case letters Arial or similar font. Red background with white lettering. IFC 605.11.1.1
3. Marking shall contain the words: **WARNING : PHOTOVOLTATIC POWER SOURCE**. IFC 605.11.1.2
4. Marking shall be placed adjacent to the main service disconnect in a location clearly visible from the location where the disconnect is operated IFC 605.11.1.3

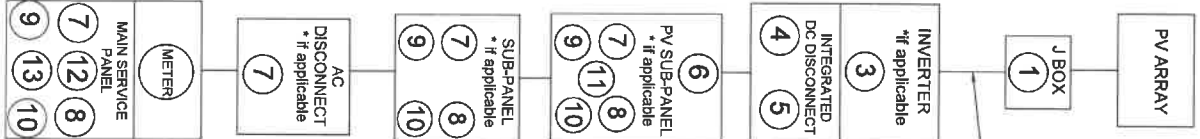
Only present if required by either the AHJ and/or utility company

CAUTION

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN:





Hilldale Ave

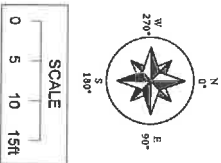
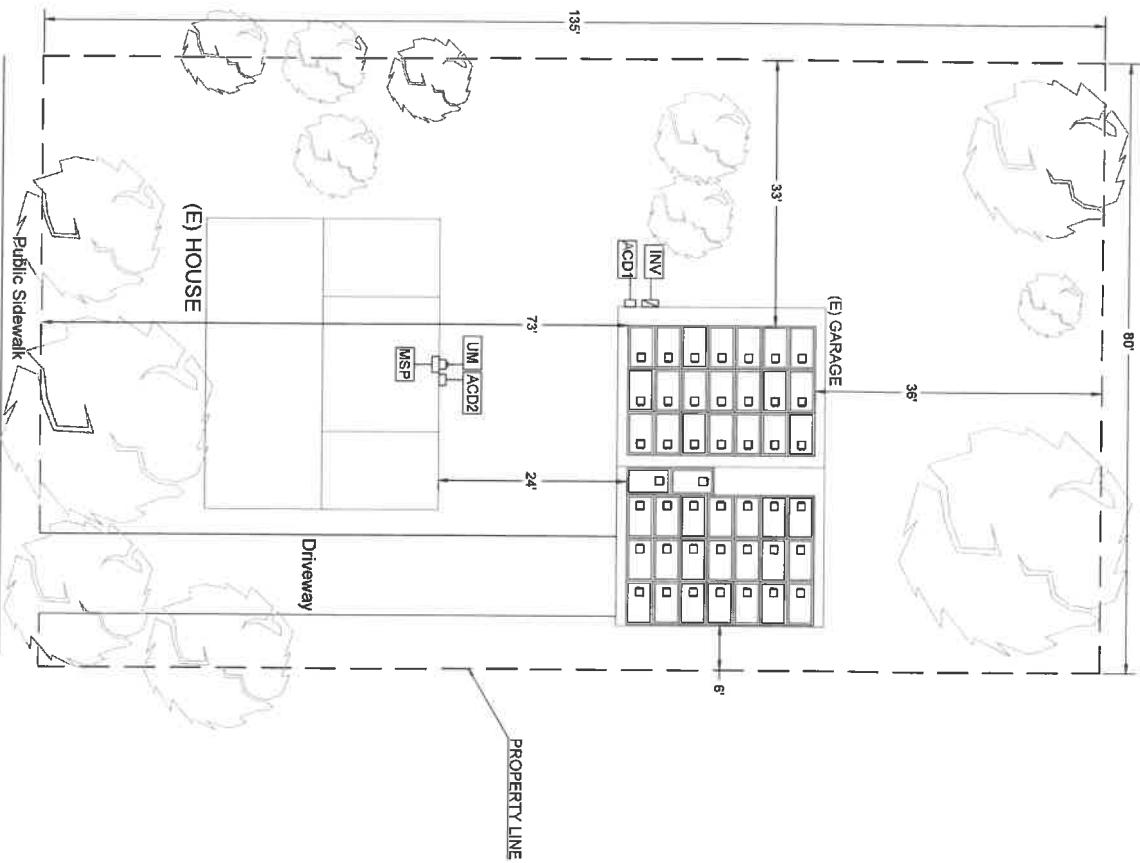


1. **CAUTION**
AUTHORIZED SOLAR PERSONNEL ONLY!
2. **CAUTION!**
SOLAR DC CURRENT PRESENT DURING DAYLIGHT HOURS
3. **WARNING!**
ELECTRIC SHOCK HAZARD. IF GROUND FAULT IS INDICATED, NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED.
4. **DC DISCONNECT**
DC PHOTOVOLTAIC POWER SOURCE
RATED MAX POWER POINT CURRENT: 5.17 AMPS
RATED MAX POWER POINT VOLTAGE: 400 VOLTS
MAXIMUM SYSTEM VOLTAGE: 140 VOLTS
SHORT CIRCUIT CURRENT: 17.8 AMPS
5. **WARNING!**
ELECTRIC SHOCK HAZARD. DO NOT TOUCH THE TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.
6. **PV SUB-PANEL ONLY**
(TO BE LOCATED ON SUB-PANEL ONLY WHEN SUB-PANEL IS DEDICATED FOR PV ONLY)
7. **AC DISCONNECT**
AC PHOTOVOLTAIC POWER SOURCE
RATED AC OUTPUT CURRENT: 42.0A MAX
NOMINAL AC OPERATING VOLTAGE: 240 Vac
8. **THIS PANEL FED BY MULTIPLE SOURCES (UTILITY & SOLAR)**
9. **SOLAR**
(STICKER LOCATED INSIDE PANEL NEXT TO SOLAR BREAKER)
10. **WARNING!**
INVERTER OUTPUT CONNECTION, DO NOT RELOCATE THIS OVERCURRENT DEVICE
11. **PV LOAD CENTER SIZED FOR PV BREAKERS ONLY ON RENDERED UNABLE TO ACCEPT ANY ADDITIONAL LOADS.**
(STICKER LOCATED ON THE PV SUB PANEL)
12. **PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUT DOWN**
(STICKER LOCATED ON THE MAIN SERVICE PANEL)

Permanent directory or plaque providing location of service disconnecting means and photovoltaic system disconnecting means, if not located at the same location. (Plaques shall be metal or plastic, with engraved or machine printed letters, or electro-photo plating, in a contrasting color to the plaque. Plaques shall be permanently attached to the equipment or in the required location using an approved method that is suitable to withstand the environment to which it is exposed. Plaques and signage shall meet legibility, detachment, exposure and adhesion requirements of Underwriters Laboratories marking and labeling system 969(UL 969).

Plaques will have red background & white lettering.

UNIT INDEX	
MSP	(E) Main Service Panel
UM	(E) Utility Meter
INV	(N) Inverter
ACD1	(N) Non-Fused Disconnect
ACD2	(N) Fused Disconnect
	Solar Module
	Power Optimizer



SITE PLAN

Designer Name: Narek A.

No. Revision/Date Date

CONTRACTOR

Green Solar Tech

GreenSolar

X

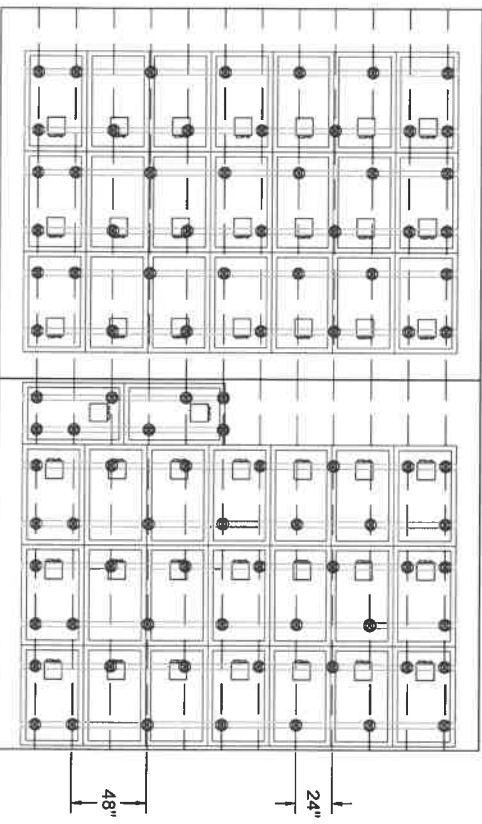
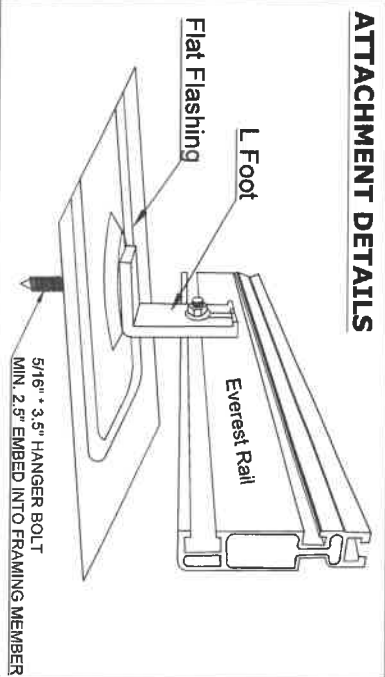
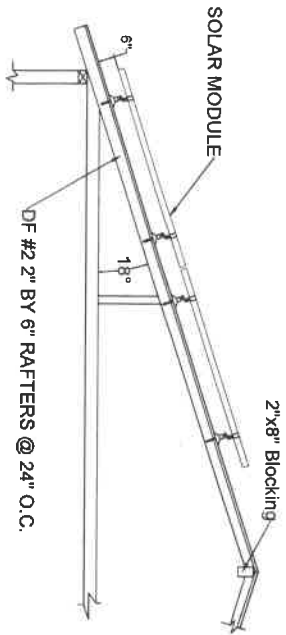
Let Wernsman
203 Hilldale Ave
Washington, IL 61571

Date: JANUARY 23, 2019
Scale: AS INDICATED
Project: PV SYSTEM

4

WEIGHT LOAD CALCULATION	
MODULE WEIGHT (lbs)	40.1
# OF MODULES	44
TOTAL MODULE WEIGHT (lbs)	1764
RACK WEIGHT (lbs)	353
OPTIMIZERS WEIGHT (lbs)	62
TOTAL SYSTEM WEIGHT (lbs)	2179
# OF STANDOFFS	92
MAX SPAN BETWEEN STANDOFFS (in)	48
LOADING PER STANDOFF (lbs)	23.7
TOTAL AREA (sq.ft.)	792
LOADING (PSF)	2.75

1. Everest Racking System
2. EverFlash Attachment
3. Racking loading calculations were performed for ASCE 7-10 wind speeds @ 115 mph for B and C exposure categories and ASCE 7-10 Seismic Design Category E. 0 psf Snow Load
4. Roof attachment hardware to be mounted to existing structure
5. (2"x6" @ 24" O.C. Rafters) at 48" O.C. rail spans or less.
6. Hanger bolts are 5/16" X 3.5" stainless steel with 2.5" minimum embedment into the framing member.
7. Roof sheathed with 1/2" plywood and upper surface is faced with felt paper.
8. Finished roof surface is One Layer of Composition Shingle. / Rolled Composition.
9. Mounts or/and mounting hardware will be sealed with Tremco Vulkem 116 Polyurethane Sealant or equivalent.



STRUCTURAL ENGINEERING STAMP
IF APPLICABLE*

MOUNTS ARE STAGGERED

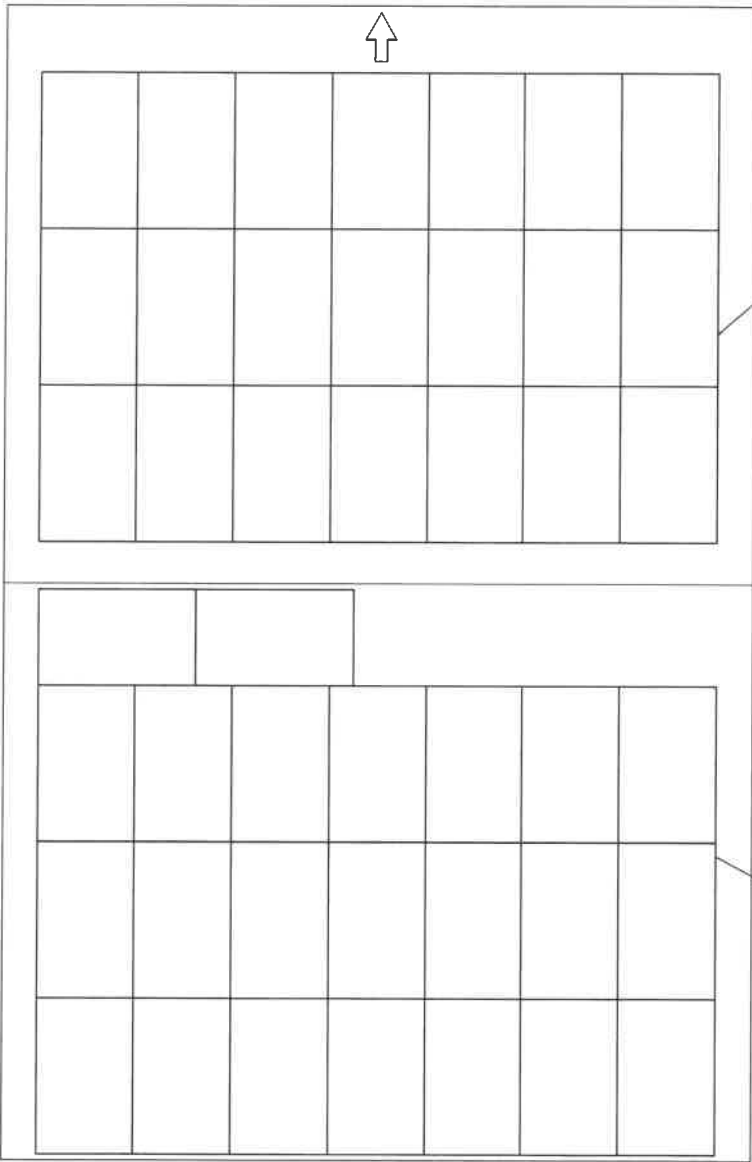
ATTACHMENT
RACKING RAIL
EXISTING 2" BY 6" @ 24" O.C. ROOF RAFTERS

ATTACHMENT LAYOUT Designer Name: Nurak A.		Project Name & Address Lei Wernsman 203 Hilldale Ave Washington, IL 61571
No. Revision/Issue Date	CONTRACTOR Project Name & Address Green Solar Tech	Date JANUARY 23, 2019 AS INDICATED PV SYSTEM
X		5

13.20 KW DC (STC)
44 MISSION SOLAR
ENERGY 300W MSE300SQ5T
MODULES &
44 P320 OPTIMIZERS
1 SE1000H-US
INVERTER

Solar Array 1
21 Mission Solar 300W
21 P320 Optimizers
Pitch: 18 Deg
Orientation: 270 Deg

Solar Array 2
23 Mission Solar 300W
23 P320 Optimizers
Pitch: 18 Deg
Orientation: 90 Deg



[FOR INSTALLER USE ONLY]

General Notes

MODULE MAP

Designer Name: Narek A.

No.	Revision/Date	Date

CONTRACTOR

Green Solar Tech



X

Project Name & Address
Lei Wernsman
203 Hilldale Ave
Washington, IL 61571

Date: JANUARY 23, 2019
Scale: AS INDICATED
Project: PV SYSTEM

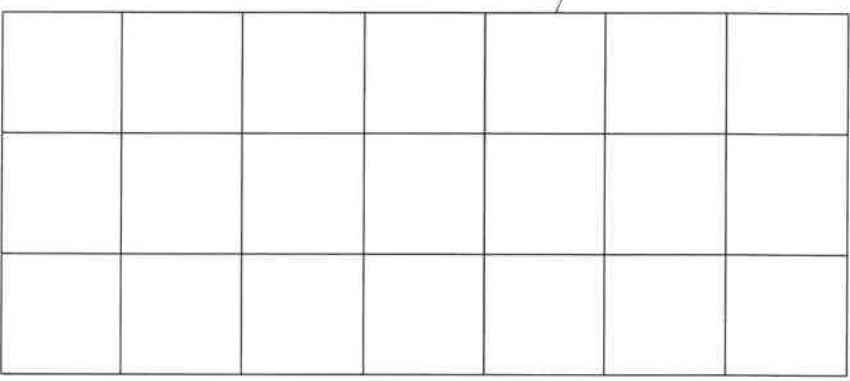
Panel: 6

13.20 KW DC (STC)
44 MISSION SOLAR
ENERGY 300W MSE300SQ5T
MODULES &
44 P320 OPTIMIZERS
1 SE1000H-US
INVERTER

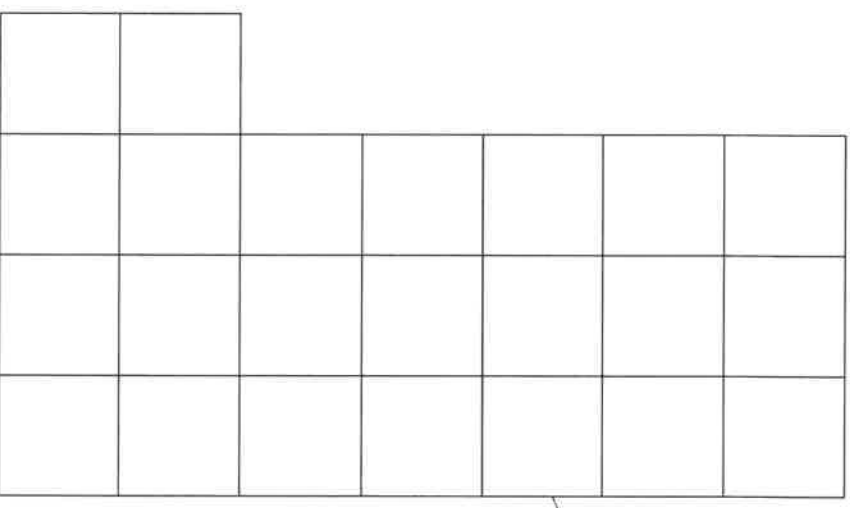
INVERTER



Solar Array 1
 21 Mission Solar 300W
 21 P320 Optimizers
 Pitch: 18 Deg
 Orientation: 270 Deg



Solar Array 2
 23 Mission Solar 300W
 23 P320 Optimizers
 Pitch: 18 Deg
 Orientation: 90 Deg



[FOR INSTALLER USE ONLY]

Designer Name: Narek A.

**INVERTER
MAP**

Designer Name: Narek A.

No.	Revision/Notes	Date

CONTRACTOR

For Name & Address
 Green Solar Tech



X

Leif Weisman
 203 Hilldale Ave
 Washington, IL 61571

Date	Final
2019 JANUARY 25, 2019	7
Notes	AS INDICATED
System	PV SYSTEM

Single Phase Inverter
with HD-Wave Technology
for North America



Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking efficiency
- Fixed voltage inverter for longer strings
- Integrated arc-fault protection and rapid shut-down for NEC 2014 and 2017, per article 690.11 and 690.12
- UL 743 SA certified for CPD, Rule 21 grid compliance
- Extremely small
- High reliability without any electrolytic capacitors
- Built-in module-level monitoring
- Outdoor and indoor installation
- Optional: Revenue grade data, ANSI C12.20 Class 0.5 (0.5% accuracy)



www.elsevier.com/locate/jmb

Single Phase Inverter
with HD-Wave Technology for North America
SE3000H-US / SE3800H-US / SE5000H-US /
SE6000H-US / SE7600H-US / SE10000H-US / SE1400H-US

[illegible]

RoHS

**INVERTER
DATA SHEET**

Designer Name: Narek A

CONTRACTOR

Green Solar Tech

GreenSolar

X

Lei Wernsmar

203 Hilldale Ave
Washington, IL 61571

DATE	JANUARY 25, 2019
STATUS	AS INDICATED
PROJECT	PV SYSTEM

8

P320 / P370 / P400 / P405 / P505



- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- Superior system design for maximum space utilization
- Fast installation with a single bolt
- Next generation maintenance with module-level monitoring
- Compliant with arc fault protection and rapid shutdown NEC requirements (when installed as part of the SolarEdge system)
- Module-level on-site shutdown for installer and firefighter safety

Power Optimizer
P320 / P370 / P400 / P405 / P505

[illegible]

PA SYSTEM DESIGN USING	SINGLE PHASE	SINGLE PHASE	THREE PHASE 208V	THREE PHASE 480V
Maximum String Length (Power, Optimum)	8 1,320, 1,370, 1,400 1,460, 1,550	8	12	14
Maximum String Length (Power, Optimum)	25 5,700, 6,000 with 5,700-US-3612400	6	15	16
Maximum Power per String	3350	25	3000	3750
Parallel Strings of Different Lengths	Yes	Yes	Yes	Yes



Designer Name: Narek A.

GreenSolar

X

Lei Wernsman
203 Hilldale Ave
Washington, IL 61571

Issue	Project
JANUARY 25, 2019	9
Book	
AS INDICATED	
Project	
PV SYSTEM	

MODULE DATA SHEET

Designer Name: Narek A.

CONTRACTOR
Green Solar Tech

GreenSolar

X

Let Wernsman
203 Hilldale Ave
Washington, IL 61571

10

MSE PERC 60

MISSION SOLAR ENERGY

High Power PERC Rooftop Module

- Class Leading Output:
300W power
- Advanced Technology:
PERC and 4 busbars drive
>18% module efficiency
- Superior Aesthetics:
All-black design coupled with
outstanding power output
- Certified Reliability:
3X IEC, salt mist, ammonia
- Buy American Act



Proudly assembled in the USA
Mission Solar Energy is headquartered in San Antonio, TX with module facilities onsite. Our hardworking team calls Texas home and is devoted to producing high quality solar products and services. Our supply chain includes local and domestic vendors increasing our impact to the U.S. economy.

CERTIFICATIONS
IEC 61215/ IEC 61700/ IEC 61701
UL 1708: CSA



100% American Assembled by Solar Buyer
PowerGround
100% American Assembled by Solar Buyer

25-YEAR LINEAR WARRANTY



Superior Aesthetics
MSE PERC 60's sleek all-black design coupled with outstanding power output makes it ideal for DC installers including commercial and rooftop systems.
Outstanding performance with PERC
Passivated Emitter Rear Cell (PERC) technology provides excellent power output through advanced cell structure.

Best in class quality
Mission Solar Energy production lines are fully automated and include multiple quality checks throughout the production process.

ELECTRICAL SPECIFICATIONS

Electrical parameters at Standard Test Condition (STC)

Module Type	MSE295SGT	MSE295SGT	MSE300SGT
Power Output	285	285	300
Module Efficiency	17.45	17.75	18.05
Open Circuit Voltage	44.1 V	44.1 V	44.1 V
Short-Circuit Current	6.44 A	6.44 A	6.81 A
Open Circuit Voltage	44.1 V	44.1 V	44.1 V
Rated Current	Imp	Imp	Imp
Rated Voltage	Vmp	Vmp	Vmp
STC: Irradiance 1000 W/m ² , Cell temperature at 25°C, AM 1.5			

TEMPERATURE COEFFICIENTS

Normal Operating Cell Temperature (NOCT)	44°C (112°F)
Temperature Coefficient of P _{max}	-0.37%/°C
Temperature Coefficient of V _{oc}	-0.31%/°C
Temperature Coefficient of I _{sc}	0.06%/°C

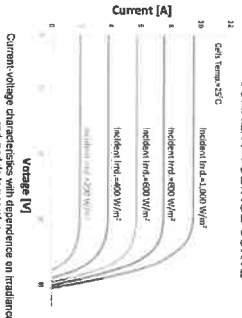
OPERATING CONDITIONS

Maximum System Voltage	1,000VDC
Operating Temperature Range	-40°C (-40°F) to +60°C (134°F)
Maximum Series Fuse Rating	15A
Fire Safety Classification	Type 1, Class C
Static Load Windstorm	2400psf/100Pa
Hot Spots Impact Velocity	25mm at 23 m/s

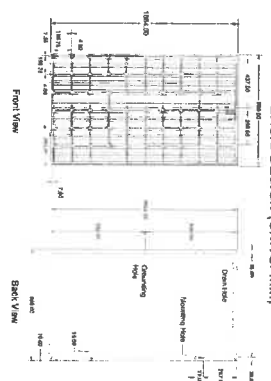
MECHANICAL DATA

Solar Cells	P-type Mono-crystalline Silicon (155.75mm)
Cell orientation	60 cells (6x10), 4 busbars
Module dimension	1654mm x 994mm x 40mm (65.11 in. x 39.53 in. x 1.57 in.)
Weight	18.2 kg (40.1 lb)
Front Glass	3.2mm (1/8") tempered, Low-iron, Anti-reflection coating
Frame	Anodized aluminum alloy
Encapsulation	Ethylene Vinyl acetate (EVA)
J-Box	Protection class IP67 with 3 bypass-diodes
Cables	PV wire, 1m (39.37 in.), 4mm ² / 12 AWG
Connector	MCC or compatible

MSE295SGT: 285WP, 60CELL SOLAR MODULE CURRENT-VOLTAGE CURVE



BASIC DESIGN (UNITS: mm)



MISSION SOLAR ENERGY

3400 South New Braunfels Ave., San Antonio, TX 78235
missionsolar.com | info@missionsolar.com | (210) 511-9800

Rev. 1/20

Mounting systems for solar technology



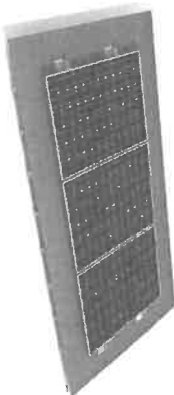
Everest Solar Systems Mounting Systems Solutions



NEW

New Tilt Kit for CrossRail (Page 3)
Enhanced D Dome System (Page 6)

Mounting systems for solar technology



CrossRail for Pitched Roof :

- Center mounting - oriented to the sun
- 18, 27 or 31° - optional pre-pitched roof
- Super tilt, super tilt all day
- 18, 27, 31, 36, 45, 54, 60, 66, 72, 78, 84, 90, 96, 102, 108, 114, 120, 126, 132, 138, 144, 150, 156, 162, 168, 174, 180, 186, 192, 198, 204, 210, 216, 222, 228, 234, 240, 246, 252, 258, 264, 270, 276, 282, 288, 294, 300, 306, 312, 318, 324, 330, 336, 342, 348, 354, 360, 366, 372, 378, 384, 390, 396, 402, 408, 414, 420, 426, 432, 438, 444, 450, 456, 462, 468, 474, 480, 486, 492, 498, 504, 510, 516, 522, 528, 534, 540, 546, 552, 558, 564, 570, 576, 582, 588, 594, 600, 606, 612, 618, 624, 630, 636, 642, 648, 654, 660, 666, 672, 678, 684, 690, 696, 702, 708, 714, 720, 726, 732, 738, 744, 750, 756, 762, 768, 774, 780, 786, 792, 798, 804, 810, 816, 822, 828, 834, 840, 846, 852, 858, 864, 870, 876, 882, 888, 894, 900, 906, 912, 918, 924, 930, 936, 942, 948, 954, 960, 966, 972, 978, 984, 990, 996, 1002, 1008, 1014, 1020, 1026, 1032, 1038, 1044, 1050, 1056, 1062, 1068, 1074, 1080, 1086, 1092, 1098, 1104, 1110, 1116, 1122, 1128, 1134, 1140, 1146, 1152, 1158, 1164, 1170, 1176, 1182, 1188, 1194, 1200, 1206, 1212, 1218, 1224, 1230, 1236, 1242, 1248, 1254, 1260, 1266, 1272, 1278, 1284, 1290, 1296, 1302, 1308, 1314, 1320, 1326, 1332, 1338, 1344, 1350, 1356, 1362, 1368, 1374, 1380, 1386, 1392, 1398, 1404, 1410, 1416, 1422, 1428, 1434, 1440, 1446, 1452, 1458, 1464, 1470, 1476, 1482, 1488, 1494, 1500, 1506, 1512, 1518, 1524, 1530, 1536, 1542, 1548, 1554, 1560, 1566, 1572, 1578, 1584, 1590, 1596, 1602, 1608, 1614, 1620, 1626, 1632, 1638, 1644, 1650, 1656, 1662, 1668, 1674, 1680, 1686, 1692, 1698, 1704, 1710, 1716, 1722, 1728, 1734, 1740, 1746, 1752, 1758, 1764, 1770, 1776, 1782, 1788, 1794, 1800, 1806, 1812, 1818, 1824, 1830, 1836, 1842, 1848, 1854, 1860, 1866, 1872, 1878, 1884, 1890, 1896, 1902, 1908, 1914, 1920, 1926, 1932, 1938, 1944, 1950, 1956, 1962, 1968, 1974, 1980, 1986, 1992, 1998, 2004, 2010, 2016, 2022, 2028, 2034, 2040, 2046, 2052, 2058, 2064, 2070, 2076, 2082, 2088, 2094, 2100, 2106, 2112, 2118, 2124, 2130, 2136, 2142, 2148, 2154, 2160, 2166, 2172, 2178, 2184, 2190, 2196, 2202, 2208, 2214, 2220, 2226, 2232, 2238, 2244, 2250, 2256, 2262, 2268, 2274, 2280, 2286, 2292, 2298, 2304, 2310, 2316, 2322, 2328, 2334, 2340, 2346, 2352, 2358, 2364, 2370, 2376, 2382, 2388, 2394, 2400, 2406, 2412, 2418, 2424, 2430, 2436, 2442, 2448, 2454, 2460, 2466, 2472, 2478, 2484, 2490, 2496, 2502, 2508, 2514, 2520, 2526, 2532, 2538, 2544, 2550, 2556, 2562, 2568, 2574, 2580, 2586, 2592, 2598, 2604, 2610, 2616, 2622, 2628, 2634, 2640, 2646, 2652, 2658, 2664, 2670, 2676, 2682, 2688, 2694, 2700, 2706, 2712, 2718, 2724, 2730, 2736, 2742, 2748, 2754, 2760, 2766, 2772, 2778, 2784, 2790, 2796, 2802, 2808, 2814, 2820, 2826, 2832, 2838, 2844, 2850, 2856, 2862, 2868, 2874, 2880, 2886, 2892, 2898, 2904, 2910, 2916, 2922, 2928, 2934, 2940, 2946, 2952, 2958, 2964, 2970, 2976, 2982, 2988, 2994, 3000, 3006, 3012, 3018, 3024, 3030, 3036, 3042, 3048, 3054, 3060, 3066, 3072, 3078, 3084, 3090, 3096, 3102, 3108, 3114, 3120, 3126, 3132, 3138, 3144, 3150, 3156, 3162, 3168, 3174, 3180, 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RACKING SPECS

Designer Name: Narek A.

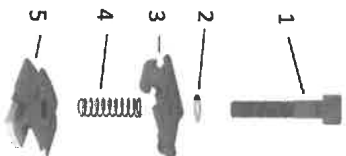
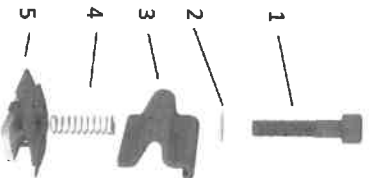
Everest Solar Systems Bonding End Clamp Spec Sheet



Everest Solar Systems Bonding Mid Clamp Spec Sheet



- Integrated bonding
- UL 2703 component
- Fast, simple installation
- Rugged design complies with a wide variety of module manufacturer's requirements
- Secured in place with MK2 for single-hand installation
- High strength, corrosion resistant stainless steel construction



End End Clamp Set

End End Clamp Set

Mid Mid Clamp Set

Mid Mid Clamp Set

- U900_A600033 End Clamp UL 2703 Set, Black, 30-40mm
1. Allen Bolt, Black
 2. Lock Washer
 3. Universal End Clamp, Black
 4. Clamp Spring
 5. MK2 Slot Nut
- U900_A600034 End Clamp UL 2703 SS, Black, Set 41-50mm
1. Allen Bolt, Black
 2. Lock Washer
 3. Universal End Clamp, Black
 4. Clamp Spring
 5. MK2 Slot Nut

- U900_A600035 End Clamp UL 2703 SS Set 30-40mm
1. Allen Bolt
 2. Lock Washer
 3. Universal End Clamp
 4. Clamp Spring
 5. MK2 Slot Nut
- U900_A600036 End Clamp UL 2703 SS Set 41-50mm
1. Allen Bolt
 2. Lock Washer
 3. Universal End Clamp
 4. Clamp Spring
 5. MK2 Slot Nut

- U900_A600040 Mid Clamp UL 2703 Set, Black, 30-40mm
1. Allen Bolt, Black
 2. Lock Washer
 3. Universal Mid Clamp, Black
 4. Clamp Spring
 5. MK2 Slot Nut
- U900_A600039 Mid Clamp UL 2703 SS, Black, Set 41-50mm
1. Allen Bolt, Black
 2. Lock Washer
 3. Universal Mid Clamp, Black
 4. Clamp Spring
 5. MK2 Slot Nut

- U900_A600047 Mid Clamp UL 2703 SS Set 30-40mm
1. Allen Bolt
 2. Lock Washer
 3. Universal Mid Clamp
 4. Clamp Spring
 5. MK2 Slot Nut
- U900_A600048 Mid Clamp UL 2703 SS Set 41-50mm
1. Allen Bolt
 2. Lock Washer
 3. Universal Mid Clamp
 4. Clamp Spring
 5. MK2 Slot Nut



20150428-02



20150428-03

No. Revision/Status Date

CONTRACTOR

Project Name & Address
Green Solar Tech

GreenSolar

X

Model PV SYSTEM

12

Lei Weirmann
203 Hilldale Ave
Washington, IL 61571

Date: JANUARY 23, 2019
Status: AS INDICATED

Certificate of Compliance

Order Number: 20150311-E467724
Report Number: E467724-2015-01-08
Issue Date: 2015 March 11

Page 1 of 1



Issued to:

EVEREST SOLAR SYSTEMS

3809 Ocean Ranch Blvd Suite 111
Oceanside, CA 92056

This is to certify that representative samples of

Mounting Systems for Use with Flat-Plate Photovoltaic Modules and Panels Everest CrossRail System utilizing CrossRail 48 rail

Have been investigated by UL LLC in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety:

UL 2703, Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels.

Additional Information:

See UL On-line Certification Directory at WWW.UL.COM for additional information.

The Everest CrossRail System achieved a system fire classification 'A' when tested in combination with UL1703 Listed PV modules with Type 1 and Type 2 module fire performance ratings. The system fire test method was in accordance with the Standard for Safety for Flat-Plate Photovoltaic Modules and Panels, UL 1703, 3rd Edition, dated November 26, 2014.

Look for the UL Listing Mark on the product

Only those products bearing the UL Listing Mark should be considered as being covered by UL's Listing and Follow-Up Service.

The UL Listing Mark specifically includes the following elements: the symbol UL in a circle, with the word "LISTED", a control number from the application(s) assigned by UL, and the product category name (product identifier) as indicated in the appropriate UL Directory.

William R. Carney

Director, North American Certification Programs

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any subsidiary licensee of UL LLC.
For questions, please contact a local UL Customer Service Representative at <http://www.ul.com/global/infrastructure/contacts>

General Notes

RACKING CERTIFICATION

Designer Name: Narek A.

No.	Particulars/Notes	Date

CONTRACTOR

Green Solar Tech

GreenSolar!

X

Project Name & Address	
Lei Weisman 203 Hilldale Ave Washington, IL 61571	
Total	13
AS INDICATED	
PV SYSTEM	

**ATTACHMENT
DATA SHEET**

Designer Name: Narek A.

No.	Revision/Name	Date

CONTRACTOR

For Use by Owner
Green Solar Tech

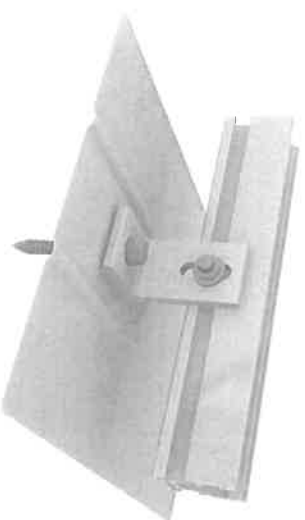
GreenSolar:

X

Date	14
Drawn	AS INDICATED
Project	PV SYSTEM

Let Wernsman
203 Hilldale Ave
Washington, IL 61571

Mounting systems for solar technology



EVEREST SOLAR SYSTEMS EverFlash COMP SHINGLE ROOF ATTACHMENT

4003657 EverFlash Comp Kit, 10X12" Kit
400366 EverFlash Comp Kit, 10X12" Black



EverFlash Flashing, 10" x 12"
Material: aluminum
Finish: mill, dark



EverFlash L-Foot and Hardware
Material: aluminum
Finish: mill, dark



5/16" Sealing Washer
Material: stainless steel, EPDM Insert

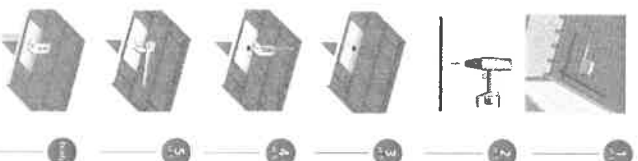


5/16" Lag Bolt
Material: stainless steel

GENERAL GUIDELINES

- ~ Always refer to roofing manufacturer's instructions prior to starting work.
- ~ Refer to the American Wood Council's guidelines for lag bolt capacities (NDS 2005, Table 11.2.3).
- ~ Everest Solar recommends consulting a professional roofer prior to beginning work.
- ~ Installer is responsible for verifying the structural integrity of the roof prior to installation.

ASSEMBLY STEP BY STEP



1. Locate the rafters and snap horizontal and vertical lines to mark the installation position for each EverFlash Flashing.

Materials required: Tape measure, string line

2. Drill a pilot hole (1/4" diameter) for the lag bolt. Remove any saw dust and fill the hole with the roofing manufacturer's recommended sealant.

Materials required: Drill

3. Insert the flashing so the top part is under the next row of shingles and protected by enough up slope to prevent water infiltration through vertical joint in shingles. The leading edge of flashing must butt against upper row of nails to prevent pulling when torqued.

Material is required: EverFlash Flashing

4. Line up pilot hole with EverFlash Flashing hole. Insert the lag bolt through the EPDM torqued washer, the L-foot, the gasketed hole in the flashing and into the rafter.

5. Torque: The torque is between 8.3 - 11.5 ft-lb depending on the type of wood and firm of wood. The visual indicator for proper torque is when the EPDM on the underside of the torqued washer begins to push out the sides as the washer compresses. If using an impact wrench to install the fastener be careful not to over torque the fastener. You may need to stop and use a ratchet to finish the install.

Install Everest Mounting System (refer to Crossrail 44750 Installation Manual)

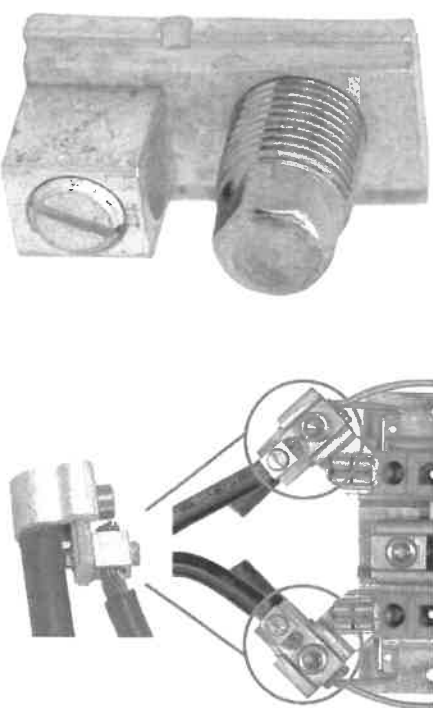
The EverFlash is simple and fast to install. Please contact us for further assistance.

SERVICE HOTLINE + 1 760.301.5300

Everest Solar Systems, LLC
3809 Ocean Ranch Blvd., Suite 111
Oceanside, CA 92056
Service Hotline +1 760.301.5300
info@everest-solarsystems.com
www.everest-solarsystems.com

Milbank Accessories

Tap Connectors



K4977-EXT

Specifications & Features

- #6-350 kcmil connectors with 100 amp #12-1/0 tap.
- Replaces the existing slide-in nut assembly on Milbank 200 amp sockets and allows for up to 100 amp tap connection in addition to the #6-350 kcmil connectors.
- Connectors designed for either line-side or load-side installation.
- Available with both internal and external hex set screws.
- Ideal for line-side connection when incorporating renewable energy net metering that utilizes two meters.
- Also perfect for load-side 100 amp feeds to outdoor lighting, water well pumps, hot tubs, outbuildings, whole house surge suppressors and swimming pools.
- Contact Milbank for additional applications and details.

Tap Connectors

Catalog Number	Description	VAC
K4977-INT	Set of 3 tap connectors with internal hex set screw	Under 300
K4977-EXT	Set of 3 tap connectors with external hex set screw	Under 300
K5022	Set of 3 tap connectors with internal hex set screw	Over 300

Utility requirements for this equipment may vary. Always consult the serving utility for their requirements before ordering or installing equipment.

Milbank Energy Group | 1401 Potomac Ave. | Washington, DC 20002 | 877-453-1111 | www.milbankenergy.com



General Notes

LINE SIDE TAP CONNECTOR

Designer Name: Narek A.

No.	Revision/Issue	Date

CONTRACTOR

Project Name & Location
Green Solar Tech

GreenSolar

X

Project Name & Location
Leif Wernsman
203 Hilldale Ave
Washington, IL 61571

Date	By
JANUARY 25, 2019	15
AS INDICATED	
FW SYSTEM	