

Township Archives
Township of Brick, NJ
401 Chambers Bridge Rd, Brick, NJ 08723

***This File Contains Personal Identifiable
Information of Private Citizen(s).***

Certain information contained in this file is ***Exempt from Release*** under the Open Public Records Act (OPRA) (Public Law 2001, CHAPTER 404 (N.J.S.A. 47:1A-1 et seq.)) and Executive Orders issued by the Governor of New Jersey. The following information ***MUST*** be redacted prior to release:

- Social Security Numbers
- Drivers' License Numbers
- Unlisted Phone Numbers,
- Credit Card Numbers
- Bank Account Numbers and Balances

For further information, consult with the Township Clerk, Township Archivist or Township Attorney prior to release.

A handwritten signature in black ink, appearing to read "Bryan J. Dickerson".

Bryan J. Dickerson, CA, CMR
Township Archivist

Issued: 8 January 2020

BLOCK 701.24

LOT 8

QUALIFICATION CODE

ADDRESS (SITE)

247 SPRUCEWOOD DR

PERMIT NO.

20-2872



CONSTRUCTION PERMIT APPLICATION

C-20-003549

Applicant Completes: Sections I, II, III (optional), IV, VI, and VII

I. IDENTIFICATION

1. Proposed Work Site at: 247 SPRUCEWOOD DR, BRICK, NJ 08723

2. Name of Owner in Fee: Ryan Enevold

Tel. _____ e-mail _____

Address 247 SPRUCEWOOD DR, BRICK, NJ 08723

3. Ownership in Fee: Public _____ Private ☒ Municipality _____ zip code _____

4. Principal Contractor: Freedom Forever Tel. 774-265-9056

Address 201 Commerce Drive, Moorestown, NJ 08057 e-mail kwright@freedomforever.com

License No. OR, if new home, Builder Reg. No. 13VH11080100 Exp. Date 03/31/2021

Home Improvement Contractor Registration No. or Exemption Reason _____

Federal Emp. ID No. 81-3208857 FAX: _____

5. Architect or Engineer Freedom Forever Contact Kaitlyn Wright

Address 43445 Business Park Dr, Ste 110, Temecula, CA 92590 e-mail kwright@freedomforever.com

Tel. 774-265-9056 FAX: _____

6. Responsible Person in Charge once Work has Begun Kaitlyn Wright

Tel. 774-265-9056 FAX: _____

V. FEE SUMMARY (for office use only)

		Update	Update
1. Building	\$ <u>217</u>	☒	
2. Electrical	\$ <u>200</u>	☒	
3. Plumbing			
4. Fire Protection			
5. Elevator Devices			
6. Subtotal			
7. Less 20% for State Plan Review	\$		
8. Subtotal	\$ <u>41</u>		
9. State Permit Surcharge Fee	\$ <u>15</u>		
10. Subtotal	\$ <u>56</u>		
11. Cert. of Occupancy			
12. Other			
13. TOTAL	\$ <u>56</u>		

VI. BUILDING/SITE CHARACTERISTICS

	(office use only)
1. Number of Stories	<u>10.730 kw</u>
2. Height of Structure	_____ ft.
3. Area — Largest Floor	_____ sq. ft.
4. New Building Area	_____ sq. ft.
5. Volume of New Structure	_____ cu. ft.
6. Max. Live Load	_____
7. Max. Occupancy Load	_____
8. If Industrialized Building: State Approved _____ HUD _____	
9. Total Land Area Disturbed	_____ sq. ft.
10. Flood Hazard Zone	_____
11. Base Flood Elevation	_____ ft.
12. Wetlands yes _____ no _____	

IIa. PROPOSED WORK

- ☐ Minor Work ☐ New Building ☐ Addition ☐ Demolition
- ☐ Repair ☒ Alteration ☐ Renovation ☐ Reconstruction
- ☐ Asbestos Abat. -Subdn. 8 ☐ Lead Hazard Abatement ☐ Radon Remediation ☐ Annual Permit

IIb. SUBCODES

(Check all that apply)

- ☒ Building
- ☒ Electrical
- ☐ Plumbing
- ☐ Fire Protection
- ☐ Elevator

FOR OFFICE USE ONLY (Optional)

Est. Cost	Plans Rec'd by	Date Rec'd	Rejection Date	Approval Date	Re-viewer	Resubmission Dates Approval	Rejection	Re-viewer
\$ 4,399.30	<u>CW</u>	<u>10/14/20</u>		<u>11-25-20</u>	<u>CE</u>			
\$ 17,597.20				<u>11-2-20</u>	<u>AM</u>			
	<u>Eng. Exempt</u>	<u>10/21/2020</u>			<u>ecc</u>			

TOTAL COST \$ 21,996.50

VII. DESCRIPTION OF BUILDING USE

A. RESIDENTIAL (primary use)

1. State Specific Use: Residential
2. Use Group, Proposed: No change in use
3. Change in Use Group, Indicate Present: _____
4. No. of dwelling units: Total Units Income-restricted
- Gained, Sale _____
- Gained, Rental _____
- Lost, Sale _____
- Lost, Rental _____

B. NON-RESIDENTIAL (primary use)

1. State Specific Use: _____
2. Use Group, Proposed: _____
3. Change in Use Group, Indicate Present: _____

C. MIXED USE -List secondary use(s):

D. Construct. Classification: Present

Proposed _____

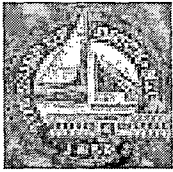
III. PLAN REVIEW (optional)

DO YOU WANT:

1. ☐ Partial Releases
2. ☐ Prototype Processing

IV. DOES OR WILL YOUR BUILDING CONTAIN ANY OF THE FOLLOWING?

1. ☐ Elevators/Escalators/Lifts/ Dumbwaiters/Moving Walks
2. ☐ High Pressure Boilers
3. ☐ Pressure Vessels
4. ☐ Refrigeration Systems
5. ☐ Cross-Connections/Backflow Preventers
6. ☐ Hazardous Uses/Places of Assembly
7. ☐ Sprinklers/Standpipes
8. ☐ Smoke Control Systems in Open Wells
9. ☐ Underground Storage Tanks
10. ☐ Swimming Pools, Spas and Hot Tubs
11. ☐ LPGas Tanks
12. ☐ Fire Alarm



Brick Township
401 Chambersbridge Rd
Brick, NJ 08723

Date Issued 01/27/2021
Control Number C-20-003549
Permit Number 20-2872
Permit Issue Date 12/02/2020
Certificate Number 20-2872

Certificate

Construction Code Division
(Certificate of Approval)

Identification

Work Site Location: 247 SPRUCEWOOD DR Brick Township, NJ Block: 701.24 Lot: 8 Qual: _____
Owner in Fee: ENEVOLD, RYAN & BURO, KORI
Owner Address: 247 SPRUCEWOOD DRIVE BRICK NJ 08723
Telephone: _____
Contractor: FREEDOM FOREVER NJ
Address: 201 COMMERCE DR MOORESTOWN NJ 08057
Telephone: (774) 265-9056 Fax: _____ Federal Emp. Number: 813208857
License Number or Builders Registration Number: _____
Home Warranty Number: _____ Type of Warranty Plan: ☐ State ☐ Private
Use Group: R-5 Construction Classification: _____
Maximum Live Load: 0 Maximum Occupancy Load: 0
Description of Work/Use: SOLAR PANELS - ...INSTALL 10.73 kw ROOF MOUNT PHOTOVOLTAIC SOLAR SYSTEM

Certificate Comments:

☐ **Certificate of Occupancy**

This serves notice that said building or structure has been constructed in accordance with the New Jersey Uniform Construction Code and is approved for occupancy.

☒ **Certificate of Approval**

This serves notice that the work completed has been constructed or installed in accordance with the New Jersey Uniform Construction Code and is approved. If the permit was issued for minor work, this certificate was based upon what was visible at the time of inspection.

☐ **Certificate of Continued Occupancy**

This serves notice that based on a general inspection of the visible parts of the building there are no imminent hazards and the building is approved for continued occupancy.

☐ **Temporary Certificate of Compliance**

The following conditions must be met no later than or the owner will be subject to fine or order to vacate:
This certificate has an expiration date of:
Conditions to be met:

☐ **Certificate of Clearance - Lead Abatement 5:17**

This serves notice that based on written certification, lead abatement was performed as per NJAC5:17 to the following extent.

- ☐ Total removal of lead-based paint hazards in scope of work
☐ Partial or limited time period (years); see file

☐ **Certificate of Clearance - Asbestos Abatement**

This serves notice that based on written certification, asbestos abatement was performed to the following extent.

- ☐ Total removal of asbestos hazards in scope of work
☐ Partial or limited time period (years); see file

☐ **Certificate of Compliance**

This serves notice that said potentially hazardous equipment has been installed and/or maintained in accordance with the New Jersey Uniform Construction Code and is approved for use until

☐ **Temporary Certificate of Occupancy**

The following conditions must be met no later than: or the owner will be subject to fine or order to vacate:
This certificate has an expiration date of:
Conditions to be met:

David Newman Jr

Construction Official

Date Printed: 01/27/2021

U.C.C. F260 (rev. 08/05)

Fee: \$0.00
Check Number: _____
Collected By: _____

Page 1

CERTIFICATION IN LIEU OF OATH

I. OWNER SECTION (to be completed if the applicant is the owner in fee)

I hereby certify that I am the owner in fee of the property listed on Page 1.

Mark the following applicable boxes:

- A. ☐ I further certify that a new home (private residence) will be constructed on this property for my own use and occupancy. This dwelling is to be occupied by myself and is not to be used for any purpose other than single family residential use. I attest that all construction, plumbing, or electrical work will be done, in whole or in part, by me or by subcontractors under my supervision, in accordance with all applicable laws; and, I further acknowledge that said new home is not covered under the New Home Warranty and Builders Registration Act (N.J.S.A. 46:3B-1 et seq.) and that such fact shall be disclosed to any person purchasing this property within ten years of the date of issuance of a certificate of occupancy.

I UNDERSTAND THAT IN MARKING BOX A, I ACKNOWLEDGE THAT I AM ASSUMING RESPONSIBILITY FOR THE WORK DONE ON SAID PROPERTY, THE CONDITION OF THE PROPERTY PRIOR TO, DURING, AND AFTER ANY WORK PERFORMED, AND FOR THE PERFORMANCE OF THE SUBCONTRACTORS I HIRE, EMPLOY, OR OTHERWISE CONTRACT OR WITH WHOM I MAKE AGREEMENTS TO PERFORM WORK. I AM VOLUNTARILY AND KNOWINGLY ASSUMING THIS RESPONSIBILITY.

- B. ☐ I further certify the following as required by the New Jersey Uniform Construction Code, N.J.A.C. 5:23-2.15(f)1.ix:

I personally prepared the plans submitted for: 1) the new home referred to in A.; or, 2) an addition, alteration, renovation, or repair to an existing single family residence owned and occupied by myself and located on the property listed on Page 1; or, 3) a new structure that will be physically separate from, but that will be deemed part of, an existing single family residence that is owned and occupied by myself and located on the property listed on Page 1.

- C. ☐ I further certify that I will perform or supervise the following work:

C.1. ☐ Building C.2. ☐ Fire Protection

I further certify that I will perform the following work:

C.3. ☐ Electrical C.4. ☐ Plumbing

- D. ☐ I agree to advise all contractors on this project that they are required to be registered with the New Jersey Division of Taxation and to comply with all New Jersey tax laws.

I further certify the following as required by the Uniform Construction Code, N.J.A.C. 5:23-2.15(a)5: All required State, county, and local prior approvals, including such certification as the construction official may require, have been given or will be given prior to permit issuance.

I understand that if any of the above statements are willfully false, I am subject to punishment.

Signature _____ Date _____

II. AGENT SECTION (to be completed if the applicant is not the owner in fee)

I hereby certify the following as required by the Uniform Construction Code, N.J.A.C. 5:23-2.15(d): the proposed work is authorized by the owner in fee; and I have been authorized by the owner in fee to make this application as his agent.

I further certify the following as required by the Uniform Construction Code, N.J.A.C. 5:23-2.15(a)5: All required State, county, and local prior approvals, including such certification as the construction official may require, have been given or will be given prior to permit issuance.

I agree to advise all contractors on this project that they are required to be registered with the New Jersey Division of Taxation and to comply with all New Jersey tax laws.

I understand that if any of the above statements are willfully false, I am subject to punishment.

☐ Check if contractor.

Agent Name Kaitlyn Wright (Freedom Forever)

Address 201 Commerce Drive, Moorestown, NJ 08057

Telephone 774-265-9056

Signature Kaitlyn Wright

- III. ☐ LEAD HAZARD ABATEMENT: Include Homeowner or Building Owner Affidavit as per N.J.A.C. 5:23-2.15(b)4.

- IV. ☐ HOME ELEVATION: Include Home Elevation Contractor Certification as per N.J.S.A. 52:27D-123.16.



ELECTRICAL SUBCODE TECHNICAL SECTION



A. IDENTIFICATION—APPLICANT: COMPLETE ALL APPLICABLE INFORMATION. WHEN CHANGING CONTRACTORS, NOTIFY THIS OFFICE. CALL UTILITY DIG NO: 1-800-272-1000.

Block 701.24 Lot 8 Qualification Code _____
Work Site Location 247 SPRUCEWOOD DR, BRICK, NJ 08723

Owner in Fee: Ryan Enevold

Tel. (____) _____ e-mail _____

Address 247 SPRUCEWOOD DR, BRICK, NJ 08723

Contractor: Freedom Forever Tel. (____) 774-265-9056

Address 201 Commerce Drive, Moorestown, NJ 08057 e-mail kwright@freedomforever.com

Contractor License No. 34EB01838900 Exp. Date 06/24/2021

Home Improvement Contractor Registration No. or Exemption Reason (if applicable): _____

Federal Emp. ID No. 81-3208857 FAX: (____) _____

B. ELECTRICAL CHARACTERISTICS

Use Group Present _____ Proposed _____

[] Pole/Pad # _____ [] Temporary [] Other _____

Building Occupied as _____ Utility Co. JERSEY CENTRAL POWER

Est. Cost of Elec. Work \$ 17,597.20

JOB SUMMARY (Office Use Only)		INSPECTIONS		Dates (Month/Day)		
PLAN REVIEW		Type:	Failure	Failure	Approval	Initial
[] No Plans Required		Rough				
[] Partial -Underslab Utilities Approved		Barrier-Free				
Date: _____ Approved by: _____		Trench				
[X] Electric Plans Approved		Temp. Serv.				
Date: <u>11-2-2020</u> Approved by: <u>WV</u>		Constr. Serv.				
Joint Plan Review Required:		TCO				
[] Bldg. [] Plumb. [] Fire. [] Elev.		Other				
SUBCODE APPROVAL for PERMIT		Service				
Date: <u>11-2-2020</u>		Final				
Approved by: <u>WV</u>		Barrier-Free				
SUBCODE APPROVAL for CERTIFICATE		Temp. Cut-in-Card Date Issued				
[] CO [] CCO [] CA		Final Cut-in-Card Date Issued				
Date: <u>1-16-21</u>		Annual Pool Inspection				
Approved by: <u>WV</u>		Date of Grounding and Bonding Certification				

C. CERTIFICATION IN LIEU OF OATH

I hereby certify that I am the (agent of) owner of record and am authorized to make this application and perform the work listed on this application.

Applicant sign/Contractor sign and seal here: _____

Print name here: Sean DeBlasio

[] Licensed Elec. Contractor [] Certifd Landscape Irrigation Contr'r [] Exempt Applicant

D. TECHNICAL SITE DATA

DESCRIPTION OF WORK:

Installation of 37 solar panels mounted flush to SFD.

QTY.	SIZE	ITEMS	FEE (Office Use Only)
_____	_____	Lighting Fixtures	_____
_____	_____	Receptacles	_____
_____	_____	Switches	_____
_____	_____	Detectors	_____
_____	_____	Light Poles	_____
_____	_____	Motors—Fract. HP	_____
_____	_____	Emergency & Exit Lights	_____
_____	_____	Communications Points	_____
_____	_____	Alarm Devices/F.A.C. Panel	_____
_____	_____	TOTAL NUMBERS	\$ _____
_____	_____	Pool Permit/with UW Lights	_____
_____	_____	Storable Pool/Spa/Hot Tub	_____
_____	_____	KW Elec. Range/Receptacle KW	_____
_____	_____	Oven/Surface Unit	_____
_____	_____	KW Elec. Water Heater	_____
_____	_____	KW Elec. Dryer/Receptacle	_____
_____	_____	KW Dishwasher	_____
_____	_____	HP Garbage Disposal	_____
_____	_____	KW Central A/C Unit	_____
_____	_____	HP/KW Space Heater/Air Handler	_____
_____	_____	KW Baseboard Heat	_____
_____	_____	AMP Service	_____
_____	_____	AMP Subpanel	_____
_____	_____	AMP Disconnect	_____
_____	_____	Watt Inverter	_____
_____	_____	Watt Solar Panels	_____
_____	_____	KW PV System	_____
<u>1</u>	<u>60</u>		
<u>1</u>	<u>10000</u>		
<u>37</u>	<u>290</u>		
<u>1</u>	<u>10.730</u>	<u>KW PV</u>	

Administrative Surcharge \$ _____
Minimum Fee \$ _____
State Permit Surcharge Fee \$ _____
TOTAL FEE \$ _____



CONSTRUCTION PERMIT

Date Issued 12/2/20
Control # C-20-003549
Permit # 38-2671

IDENTIFICATION Block: 701.24 Lot: 8 Qualifier _____
Work Site Location: 247 SPRUCEWOOD DR Brick Township, NJ Contractor FREEDOM FOREVER NJ
Address 201 COMMERCE DR. MOORESTOWN NJ 08057
Owner in Fee ENEVOLD, RYAN & BURO, KORI
247 SPRUCEWOOD DRIVE BRICK NJ 08723 Telephone: (774) 265-9056
Lic. No. or Bldrs. Reg. No. 13VH11080100 34EB01838900
Federal Employee No. 813208857

Is hereby granted permission to perform the following work:

- ☒ BUILDING ☐ PLUMBING ☐ LEAD HAZARD ABATEMENT
☒ ELECTRICAL ☐ FIRE PROTECTION ☐ DEMOLITION
☐ ELEVATOR DEVICES ☐ ASBESTOS ABATEMENT (Subchapter 8 only) ☐ OTHER

DESCRIPTION OF WORK:

SOLAR PANELS...INSTALL 10.73 kw ROOF MOUNT PHOTOVOLTAIC SOLAR SYSTEM

Note: If construction does not commence within one (1) year of date of issuance, or if construction ceases for a period of six (6) months, this permit is void.

Estimated Cost of Work \$21,936

Construction Official [Signature]

Date 11/30/20

U.C.C. F170
equiv (rev 1/04)

1 WHITE - INSPECTOR

2 CANARY - OFFICE

3 PINK - TAX ASSESSOR

4 GOLD - APPLICANT

PAYMENTS (Office Use Only)

Building	\$217
Electrical	\$200
Plumbing	\$0
Fire Protection	\$0
Elevator Devices	\$0
Other	\$0.00
DCA Training Fee	\$41
CO Fee	
Other	\$0
Total	\$458
Check No.	<u>2791</u>
Cash	\$0
Credit	\$0
Collected By	<u>CW</u>

175
333

REQUIRED INSPECTIONS

Construction work must be inspected in accordance with the State Uniform Construction Code Regulations N.J.A.C. 5:23-2.18. This agency will carry out such periodic inspections during the progress of work as are necessary to insure that the work installed conforms with the requirements of the Uniform Construction Code.

The owner or other responsible person in charge of work must notify this agency when work is ready for any required inspections specified below. Requests for inspections must be made at least 24 hours prior to the time the inspection is desired. Inspections will be performed within three business days of the time for which they are requested. The work must not proceed in a manner which will preclude the inspection until it has been made and approval granted.

☒ Required inspections for all subcodes for one- and two-family dwellings are as follows:

- The bottom of footing trenches before placement of footings, except that in cases of pile foundations, inspections shall be made in accordance with the requirements of the building subcode.
- Foundations and all walls up to grade level prior to back filling.
- All structural framing, connections, wall and roof sheathing and insulation; electrical rough wiring, panel and service installation; rough plumbing. The framing inspection shall take place after the rough electrical and plumbing inspections and after the installation of the heating, ventilation and /or air conditioning duct system. The insulation inspection shall be performed after all other subcode rough inspections and prior to the installation of any interior finish material.
- Installation of all finished materials, sealings of exterior joints, plumbing piping, trim and fixtures; electrical wiring, devices and fixtures; mechanical systems equipment.

INSPECTIONS SHALL BE MADE IN \$843.00
BUILDING \$217.00
ELECTRICAL \$200.00
PLUMBING \$0.00
FIRE \$0.00
TOTAL \$417.00

Additional required inspections for all subcodes of construction, for other than one- and two-family dwellings, are fire suppression systems, heat producing devices and Barrier Free subcode accessibility, if applicable.

☐ Required special inspections. The applicant by accepting the permit will be deemed to have consented to these requirements:

- ☒ A final inspection is required for each applicable subcode area before a final Certificate of Occupancy or Approval may be issued. The final inspections include the installation of all interior and exterior finish materials, sealing of exterior joints, mechanical system and other required equipment; electrical wiring, devices and fixtures; plumbing pipes, trim and fixtures; tests required by any provision of the adopted subcodes, Barrier Free accessibility, if applicable; and verification of compliance with NJAC 5:23-3.5, "Posting structures".

- ☒ A complete copy of released plans must be kept on the job site.

If you do not understand any of this information, please ask.

RECEIVING CLERK OWDATE REC'D 10/14/20

ZONING PERMIT APPLICATION

PERMIT # 12/2/20DATE ISSUED 12/2/20BLOCK: 701-24 LOT: 8 QUALIFIER: — SITE ADDRESS: 247 Sprucewood Drive

IDENTIFICATION:

1. NAME OF OWNER IN FEE: Ryan Enevold
COMPLETE ADDRESS: 247 Sprucewood Drive Brick NJ 08723PHONE # — EMAIL: —2. NAME OF APPLICANT: Freedom Forever NS LLC
APPLICANT ADDRESS: 201 Commerce Drive Moorestown
NJ 08057
PHONE # 774-265-9090 EMAIL: kwright@freedomforever.com3. RESPONSIBLE PERSON FOR WORK: Kaitlyn Wright
PHONE # 774-265-9090 FAX# —4. SIGNATURE OF APPLICANT: KWright

FOR OFFICE USE ONLY

FEE SUMMARY:

APPLICATION FEE: \$ 75-OTHER: \$ —TOTAL: \$ 75-

REQUIRED BY APPLICANT

RESIDENTIAL: ☒COMMERCIAL: —EXISTING USE: SFDPROPOSED USE: SFDBOARD APPROVAL: — PB — ZB —RESOLUTION#: —APPROVAL DATE: —

PROJECT DESCRIPTION: (PLEASE CHECK APPLICABLE WORK & DESCRIBE)

*NEW BUILDING: — *ADDITION — *ALTERATION ☒ *PORCH — *DECK —POOL: ABOVE GROUND — IN GROUND — FENCE: HEIGHT — TYPE — MATERIAL —HEIGHT: — (*IF APPLICABLE)OTHER —DESCRIPTION: Install of 37 solar panels mounted flush to roof of existing sfd. Mounting system is rail-less

ZONING REVIEW:

DATE REVIEWED: 10-27-20DATE DENIED: —DATE APPROVED: 10-27-20INTLS: —

(SEE BACK PAGE)



Brick Township
401 Chambers Bridge Rd.
Brick, NJ 08723
(732) 262-1041

Date Issued: _____
Application Number: ZA-20-01394
Application Date: 10/20/2020
Project Number: _____
Permit Number: _____
Fee: \$75.00

Zoning Permit

Worksite **247 SPRUCEWOOD DR**
Location: **Brick Township, NJ 08723**

Owner: **ENEVOLD, RYAN & BURO, KORI**
Address: **247 SPRUCEWOOD DRIVE**
BRICK, NJ 08723

Applicant: **FREEDOM FOREVER NJ**
Address: **201 COMMERCE DR**
MOORESTOWN, NJ 08057

Block: 701.24 Lot: 8 Qualifier: _____ Zone: R-7.5

This Certifies that an application for the issuance of a Zoning Permit has been examined.

Present Use: Single-Family Residential

☐ Non Conforming Use

☐ Non Conforming Structure

Proposed Use: Single-Family Residential

Work Description:

Solar Energy System - 37- 290W Hanwha Solar, 10.730kW SolarEdge inverter, mounted on the roof of the house.

Additional Zoning Permit is required for additional work.

Application Approved Date: 10/27/2020

Upon review it was determined that the Zoning Permit:

☒ Permitted by Ordinance

☐ Permitted by Variance approved on: _____

☐ Approved with Conditions

☐ Valid Nonconforming Use/Structure is established by

☐ Zoning Board of Adjustment

☐ Zoning Officer

Christopher J. Romano, Zoning Officer

10/27/2020

Date

ENGINEERING PERMIT APPLICATION

RECEIVING CLERK _____

PERMIT # _____

BLOCK 701.24LOT 8ADDRESS 847 Sprucewood drive**IDENTIFICATION:**

1. WORK SITE ADDRESS 847 Sprucewood dr, Brick NJ 08723
2. APPLICANT Freedom Forever NS LLC
3. NAME OF OWNER IN FEE Ryan Enevold
ADDRESS 247 Sprucewood dr
PHONE _____ EMAIL _____
4. PRINCIPAL CONTRACTOR Freedom forever
ADDRESS 201 commerce drive Moorestown NJ 08057
PHONE 774-265-9056 EMAIL kwright@freedomforever.com
5. ARCHITECT OR ENGINEER Freedom Forever
ADDRESS 43445 Business Park Dr #110 Temecula CA 92590
PHONE 774-265-9056 EMAIL kwright@freedomforever.com
6. RESPONSIBLE PERSON FOR WORK Kaitlyn Wright
ADDRESS 201 commerce drive Moorestown NJ 08057
PHONE 774-265-9056 EMAIL kwright@freedomforever.com

FEE SUMMARY:

APPLICATION FEE	\$ _____
REVIEW FEE	\$ _____
INSPECTION FEE	\$ _____
OTHER	\$ _____
BOND(S)	\$ _____
TOTAL	\$ _____

SPECIAL CONDITIONS:

OCEAN COUNTY SOILS _____

DRAINAGE EASEMENTS _____

UTILITY EASEMENTS _____

CONSERVATION EASEMENTS _____

FEMA REQUIREMENTS _____

D.E.P. PERMITS _____

BOARD APPROVAL: ☐ PB ☐ ZB

APPLICATION NUMBER _____

APPROVED DATE _____

PROJECT DESCRIPTION:

- | | | |
|---|--|--|
| ☐ GRADING/CLEARING | ☐ ROAD OPENING | ☐ SOIL REMOVAL / FILL |
| ☐ RETAINING WALL | ☐ POOL | ☐ BULKHEAD / DOCK |
| ☐ TREE REMOVAL | ☐ COMMERCIAL SITE MAINTENANCE | ☐ DWELLING |
- ☒ DESCRIPTION SOLAR

ENGINEERING REVIEW:

DATE RECEIVED _____ DATE REJECTED _____ DATE APPROVED _____ INITIALS _____

BARUN CORP

October 8, 2020

RE:

CERTIFICATION LETTER

Project Address:

Enevold Residence
247 Sprucewood Dr
Brick Township, NJ 08723

Design Criteria:

- Applicable Codes = 2018 IEBC/IBC, 2018 IRC, ASCE 7-16, and 2018 NDS
- Risk Category = II
- Wind Speed = 120 mph, Exposure Category C, Partially/Fully Enclosed Method
- Ground Snow Load = 20 psf
- Roof 1: 2x6 @ 16" OC, Roof DL = 8 psf, Roof LL/SL = 20 psf (Non-PV), Roof LL/SL = 13.3 psf (PV)
- Roof 2: 2x6 @ 16" OC, Roof DL = 8 psf, Roof LL/SL = 20 psf (Non-PV), Roof LL/SL = 13.3 psf (PV)

To Whom It May Concern,

A jobsite survey of the existing framing system of the address indicated above was provided. All structural evaluation is based on the site inspection observations and the design criteria listed above. The evaluation is only valid when provided information is true and accurate.

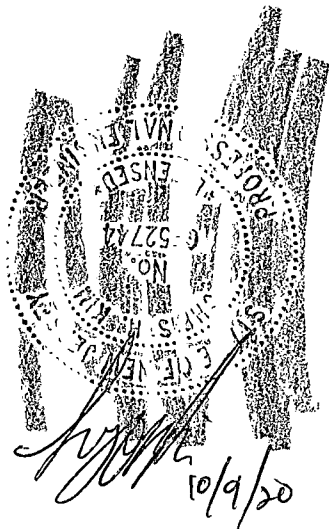
Existing roof structural framing has been reviewed for additional loading due to installation of PV Solar System on the roof. The structural review applies to the sections of roof that is directly supporting the solar PV system.

Based on this evaluation, I certify that the alteration to the existing structure by installation of the PV system meets the requirements of the applicable existing building and/or new building provisions adopted/referenced above.

Additionally, the PV module assembly including attachment hardware has been reviewed to be in accordance with the manufacturer's specifications and to meet and/or exceed the requirements set forth by the referenced codes.

Sincerely,

Chris H. Kim, P.E.



FILE COPY

Roof 1

PV System Dead Load (PV-DL)		
PV module weight		2.5 psf
Hardware assembly weight		0.5 psf
	PV-DL	3 psf

Roof Dead Load (R-DL)		
	Material	Panel Area
Existing Roofing Material	Comp Roof 1 layers	2.5 psf
Underlayment		0.5 psf
Plywood Sheathing		1.5 psf
Rafter Size and Spacing	2 x 6 @ 16 in. O.C.	1.72 psf
Vaulted ceiling	No	0 psf
Miscellaneous		1.5 psf
Total Roof Dead Load	R-DL	8 psf

Reduced Roof Live Load (Lr)		
	Expression	Value
Roof Live Load	L_o	20.0 psf
Member Tributary Area	A_t	< 200 sf
Roof 1 Roof Pitch		4/12 or 18°
Trubutary Area Reduction	R_1	1
Slope Roof Reduction	R_2	1
Reduced Roof Live Load	$L_r = L_o (R_1) (R_2)$	20.0 psf

Snow Load		
	Value	
Ground Snow Load	P_g	20
Effective Roof Slope		18°
Snow Importance Factor	I_s	1.0
Snow Exposure Factor	C_e	1.0
Snow Thermal Factor	C_t	1.1
Minimum Flat Roof Snow Load	$P_{f,min}$	20
Flat Roof Snow Load	P_f	15.4

Slope Roof Snow Load on Roof		
	(All other surfaces)	
Roof Slope Factor	C_{s-roof}	1.00
	P_{s-roof}	15.40

Sloped Roof Snow Load on PV		
	(Unobstructed slippery surfaces)	
Roof Slope Factor	C_{s-pv}	0.87
	P_{s-pv}	13.30

Roof Dead Load

Comp Shingle Roof	2.50 psf
Insulation	0.50 psf
1/2" plywood	1.50 psf
Framing	1.72 psf
Miscellaneous	1.50 psf
Sum	7.72 psf
PV DL	3 psf

Roof Live Load 20 psf

Roof Live Load (PV) 0 psf

	Existing	With PV
Bending Stress (psi) =	1767.00	1550.00

Load Increase (%) -12.28% OK

IBC Provision 2018

*The requirements of Section 806.2 of the 2018 IEBC are met and the structure is permitted to remain unaltered.

Roof 2

PV System Dead Load (PV-DL)		
PV module weight		2.5 psf
Hardware assembly weight		0.5 psf
	PV-DL	3 psf

Roof Dead Load (R-DL)		
Existing Roofing Material	Comp Roof	1 layers
Underlayment		
Plywood Sheathing		
Rafter Size and Spacing	2 x 6	@ 16 in. O.C.
Vaulted ceiling		No
Miscellaneous		
Total Roof Dead Load	R-DL	8 psf

Reduced Roof Live Load (Lr)		
Roof Live Load	L_o	20.0 psf
Member Tributary Area	A_t	< 200 sf
Roof 2 Roof Pitch		4/12 or 18°
Trubutary Area Reduction	R_1	1
Slope Roof Reduction	R_2	1
Reduced Roof Live Load	$L_r = L_o (R_1) (R_2)$	20.0 psf

Snow Load		
Ground Snow Load	P_g	20
Effective Roof Slope		18°
Snow Importance Factor	I_s	1.0
Snow Exposure Factor	C_e	1.0
Snow Thermal Factor	C_t	1.1
Minimum Flat Roof Snow Load	P_{f-min}	20
Flat Roof Snow Load	P_f	15.4

Slope Roof Snow Load on Roof		
	(All other surfaces)	
Roof Slope Factor	C_{s-roof}	1.00
	P_{s-roof}	15.40

Sloped Roof Snow Load on PV		
	(Unobstructed slippery surfaces)	
Roof Slope Factor	C_{s-pv}	0.87
	P_{s-pv}	13.30



WoodWorks®
SOFTWARE FOR WOOD DESIGN

COMPANY

PROJECT

Oct. 8, 2020 19:46

Roof 2

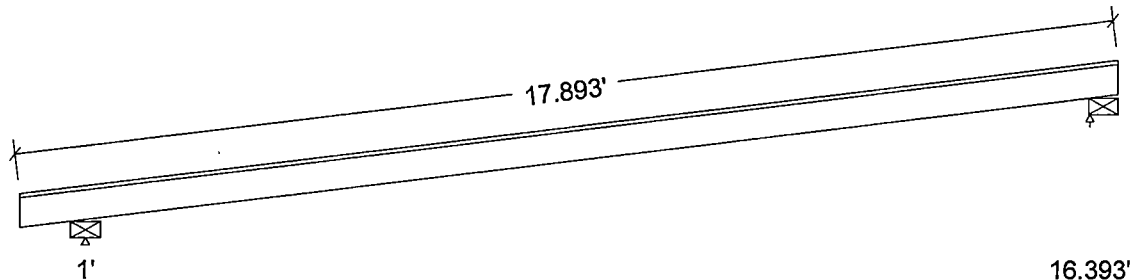
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 1)

Loads:

Load	Type	Distribution	Pat- tern	Location [ft]		Magnitude	Unit
				Start	End	Start End	
DL	Dead	Full Area	No			8.00 (16.0")	psf
DL-PL1	Dead	Partial Area	No	1.42	13.98	3.00 (16.0")	psf
SL-PL	Snow	Partial Area	No	1.42	13.98	13.30 (16.0")	psf
LL	Roof live	Partial Area	No	0.00	1.42	20.00 (16.0")	psf
LL2	Roof live	Partial Area	No	13.98	16.83	20.00 (16.0")	psf

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:				
Dead		128		114
Snow		126		97
Roof Live		44		70
Factored:				
Total		254		211
Bearing:				
F'theta		457		457
Capacity				
Joist		4031		3773
Support		6445		6445
Des ratio				
Joist		0.06		0.06
Support		0.04		0.03
Load comb		#3		#3
Length		5.50		5.50
Min req'd		0.50*		0.50*
Cb		1.07		1.00
Cb min		1.75		1.00
Cb support		1.25		1.25
Fcp sup		625		625

*Minimum bearing length setting used: 1/2" for end supports

Roof 2

Lumber n-ply, S-P-F, No.1/No.2, 2x6, 1-ply (1-1/2"x5-1/2")

Supports: All - Timber-soft Beam, D.Fir-L No.2

Roof joist spaced at 16.0" c/c; Total length: 17.89'; Clear span: 0.813', 15.962'; Volume = 1.0 cu.ft.; Pitch: 4/12

Lateral support: top = continuous, bottom = at supports; Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	$f_v = 40$	$F_v' = 155$	psi	$f_v/F_v' = 0.26$
Bending(+)	$f_b = 1504$	$F_b' = 1504$	psi	$f_b/F_b' = 1.00$
Bending(-)	$f_b = 30$	$F_b' = 785$	psi	$f_b/F_b' = 0.04$
Live Defl'n	$0.80 = L/242$	$1.62 = L/120$	in	0.50
Total Defl'n	$1.90 = L/102$	$1.95 = L/100$	in	0.97

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	Cn	LC#
F_v'	135	1.15	1.00	1.00	-	-	-	-	1.00	1.00	1.00	3
$F_b'+$	875	1.15	1.00	1.00	1.000	1.300	-	1.15	1.00	1.00	-	3
$F_b'-$	875	1.00	1.00	1.00	0.600	1.300	-	1.15	1.00	1.00	-	2
F_{cp}'	425	-	1.00	1.00	-	-	-	-	1.00	1.00	-	-
E'	1.4 million	1.00	1.00	-	-	-	-	-	1.00	1.00	-	3
E_{min}'	0.51 million	1.00	1.00	-	-	-	-	-	1.00	1.00	-	3

CRITICAL LOAD COMBINATIONS:

Shear : LC #3 = D+S

Bending(+): LC #3 = D+S

Bending(-): LC #2 = D+Lr

Deflection: LC #3 = D+S (live)

LC #3 = D+S (total)

Bearing : Support 1 - LC #3 = D+S

Support 2 - LC #3 = D+S

D=dead L=live S=snow W=wind I=impact Lr=roof live Lc=concentrated E=earthquake

All LC's are listed in the Analysis output

Load combinations: ASD Basic from ASCE 7-16 2.4 / IBC 2018 1605.3.2

CALCULATIONS: $V_{max} = 230$, $V_{design} = 219$ lbs; $M(+)$ = 948 lbs-ft; $M(-)$ = 19 lbs-ft $EI = 29.12e06$ lb-in²

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Total deflection = 1.5 dead + "live"

Bearing: Allowable bearing at an angle $F'\theta$ calculated for each support as per NDS 3.10.3Lateral stability(-): $L_u = 16.25'$ $L_e = 24.75'$ $RB = 26.9$; L_u based on full span**Design Notes:**

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2018), the National Design Specification (NDS 2018), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Continuous or Cantilevered Beams: NDS Clause 4.2.5.5 requires that normal grading provisions be extended to the middle 2/3 of 2 span beams and to the full length of cantilevers and other spans.
4. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.
5. SLOPED BEAMS: level bearing is required for all sloped beams.
6. FIRE RATING: Joists, wall studs, and multi-ply members are not rated for fire endurance.
7. The critical deflection value has been determined using maximum back-span deflection. Cantilever deflections do not govern design.



NEW JERSEY DIVISION OF CONSUMER AFFAIRS

Paul R. Rodríguez
Acting Director
[Read Bio](#)



License Information

Accurate as of August 19, 2020 12:07 PM

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Documents

No Public Documents

Name: FREEDOM FOREVER NEW JERSEY LLC
Owner Name: Gregory & Melissa Albright, Bretty & Brandy Bouchy
Address: 43445 Business Park Drive, Ste #110
Temecula, CA 92590

Doing Business As:

Profession: Home Improvement Contractors
License Type: Home Improvement Contractor
License No: 13VH11080100

License Status: Active
Issue Date: 7/15/2020

Status Change Reason:
Expiration Date:
License Issuance: 3/31/2021

For Contractors needing information regarding registration contact the New Jersey Home Improvement Contractors registration section (973) 424-8150 prompt #2. For consumers requiring information concerning Contractor complaints contact the New Jersey Home Improvement Contractors complaints section (973) 424-8150 prompt #6.

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Governor

SHEILA Y. OLIVER
Lt. Governor

New Jersey Office of the Attorney General

Division of Consumer Affairs
Board of Examiners of Electrical Contractors
124 Halsey Street, 6th Floor, Newark NJ 07102

August 21, 2020



GURBIR S. GREWAL
Attorney General

PAUL R. RODRIGUEZ
Acting Director

Mailing Address:
P.O. Box 45006
Newark, NJ 07101
(973) 504-6410
(973) 504-6534

TO WHOM IT MAY CONCERN

Our records indicate that the holder of License and Business Permit No. 34EB01838900 has applied to the Board of Electrical Contractors for a pressure seal which has not yet been issued to him/her by the vendor.

Please accept this sealed letter as an interim device pending the furnishing of a seal to:

SEAN M DEBLASIO
FREEDOM FOREVER NEW JERSEY LLC
43445 Business Park Drive
Suite 110
Temecula CA 92590

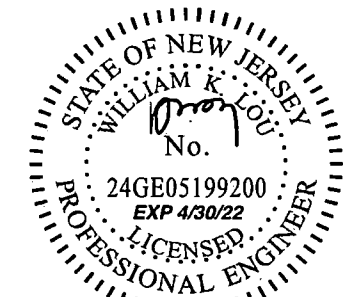
This letter will be rendered invalid **300 days** after the date of its issuance.

Sincerely,

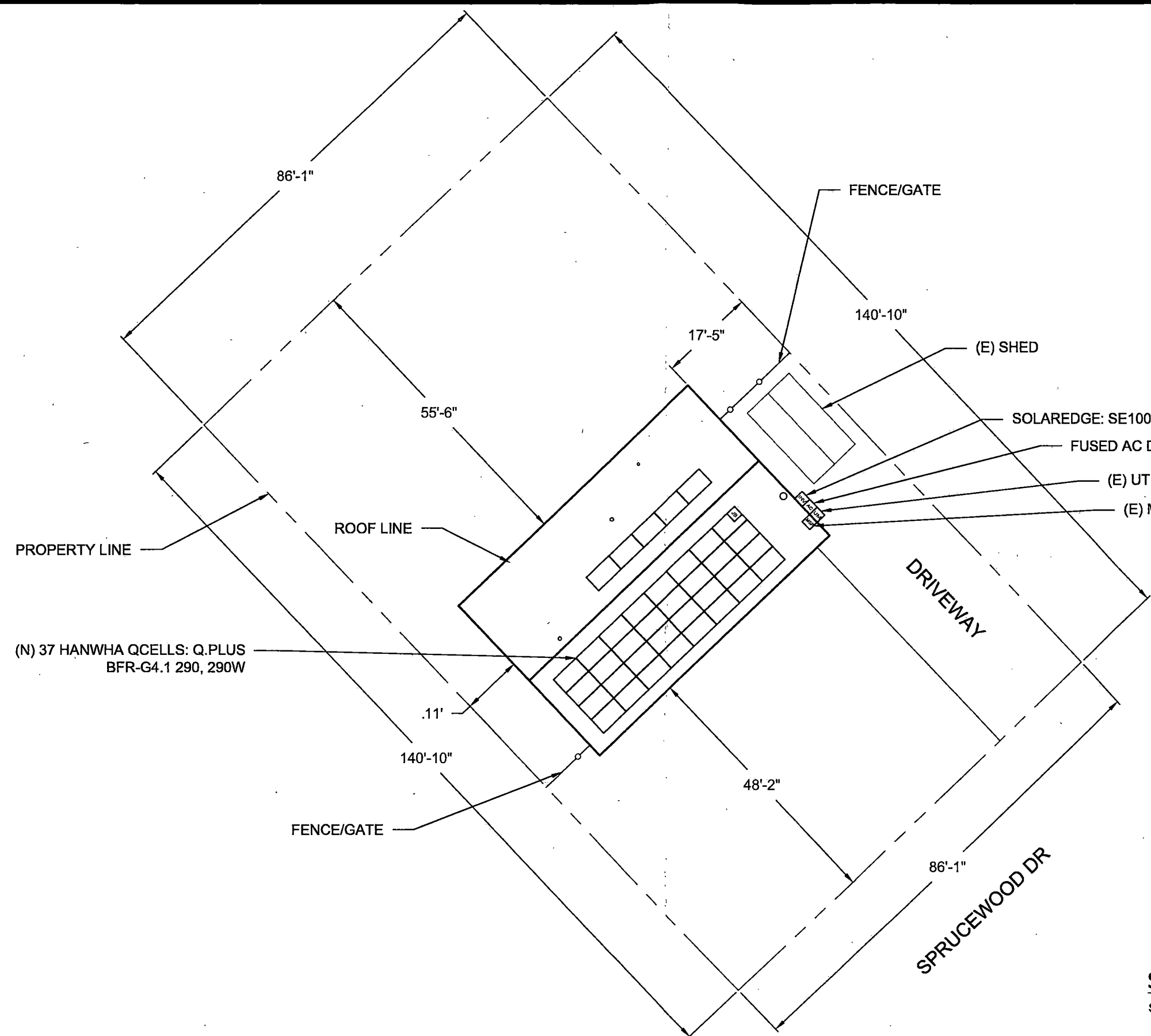
Philameana L. Tucker
Executive Director

PLT:gkb

ROOF AREA : 2078.45 SQ FT



Bill Lou
Digitally signed by Bill Lou
Date: 2020.10.08 23:53:13
-07'00'



APPROVED FOR ZONING
10-27-20 Scler
CHRIS ROMANO, ZONING OFFICER

SITE PLAN
SCALE: 1"=20'

1



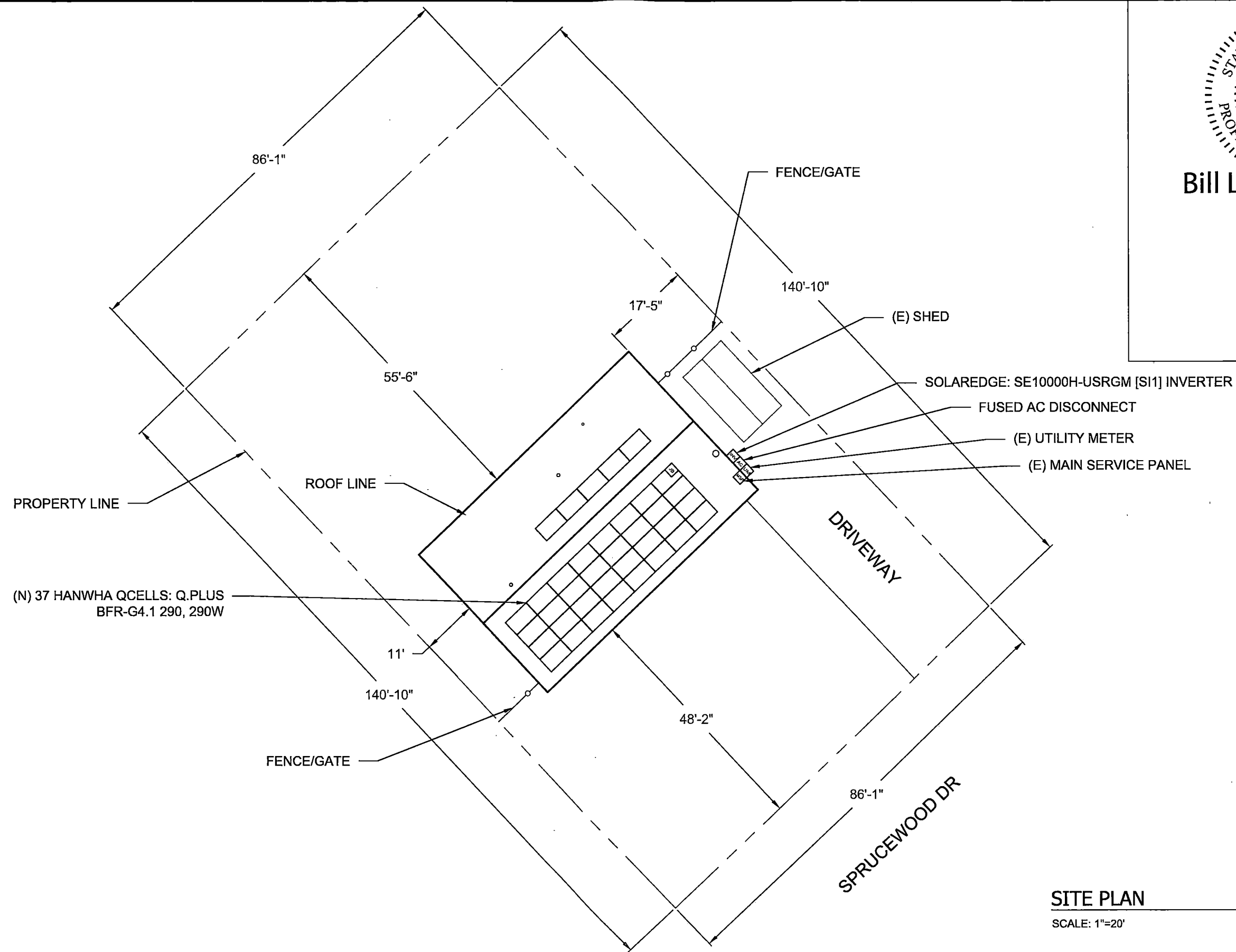
REVISIONS:		
DESCRIPTION	DATE	REVISION

DATE:	10/8/2020
DESIGN BY:	MFS
JOB NO:	F064140

ROOF AREA : 2078.45 SQ FT



Bill Lou
Digitally signed by Bill Lou
Date: 2020.10.08 23:53:13
-07'00'



SITE PLAN

SCALE: 1"=20'

1

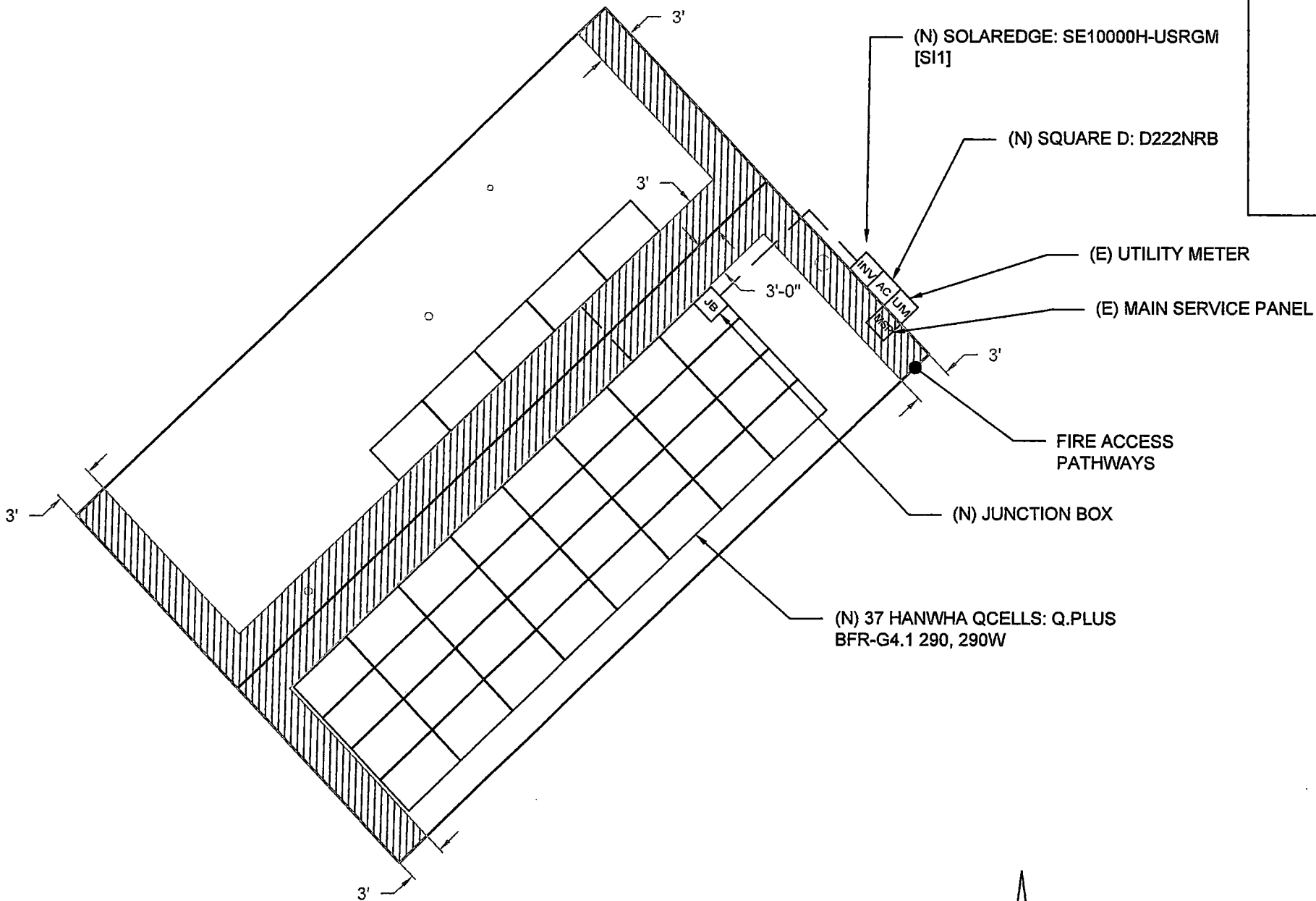
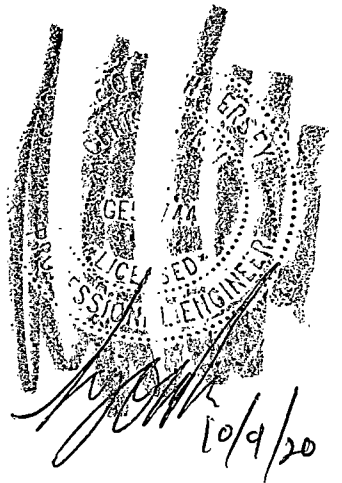


REVISIONS:		
DESCRIPTION	DATE	REVISION

DATE:	10/8/2020
DESIGN BY:	MFS
JOB NO.:	F064140

ROOF AREA : 2078.45 SQ FT

ROOF AREA STATEMENT							
ROOF	MODULES QTY	PITCH	AZIMUTH	ROOF AREA	ARRAY AREA	ARRAY COVERAGE %	SYSTEM DISTRIBUTED WEIGHT
1	5	18°	317°	1039.23 SQ FT	89.88 SQ FT	32.00%	2.50 LBS
2	32	18°	136°	1039.23 SQ FT	575.22 SQ FT		



LEGEND:	
	OBSTRUCTION
	PIPE VENT
	MODULES
	CONDUIT
	SETBACK
	FUSED AC DISCONNECT
	MSP
	JUNCTION BOX
	INVERTER
	UTILITY METER

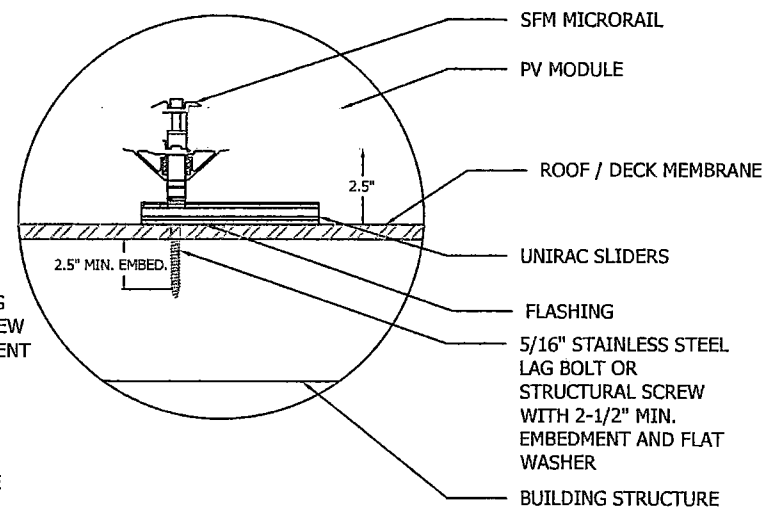
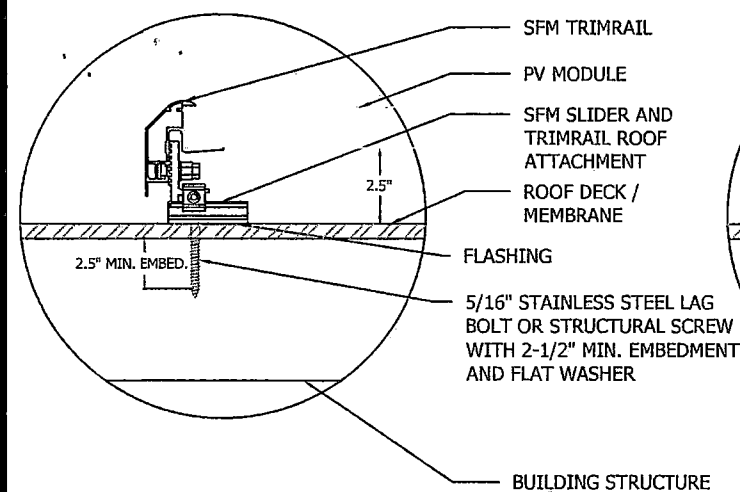
- NOTES:
1. EMT CONDUIT ATTACHED TO THE ROOF USING CONDUIT MOUNTS
 2. ATTACHED CLAMPS AT 25% FROM THE EDGE AND 50% FROM THE CENTER OF THE MODULES
 3. JUNCTION BOX IS MOUNTED TO THE RAIL.



ROOF PLAN WITH MODULES LAYOUT

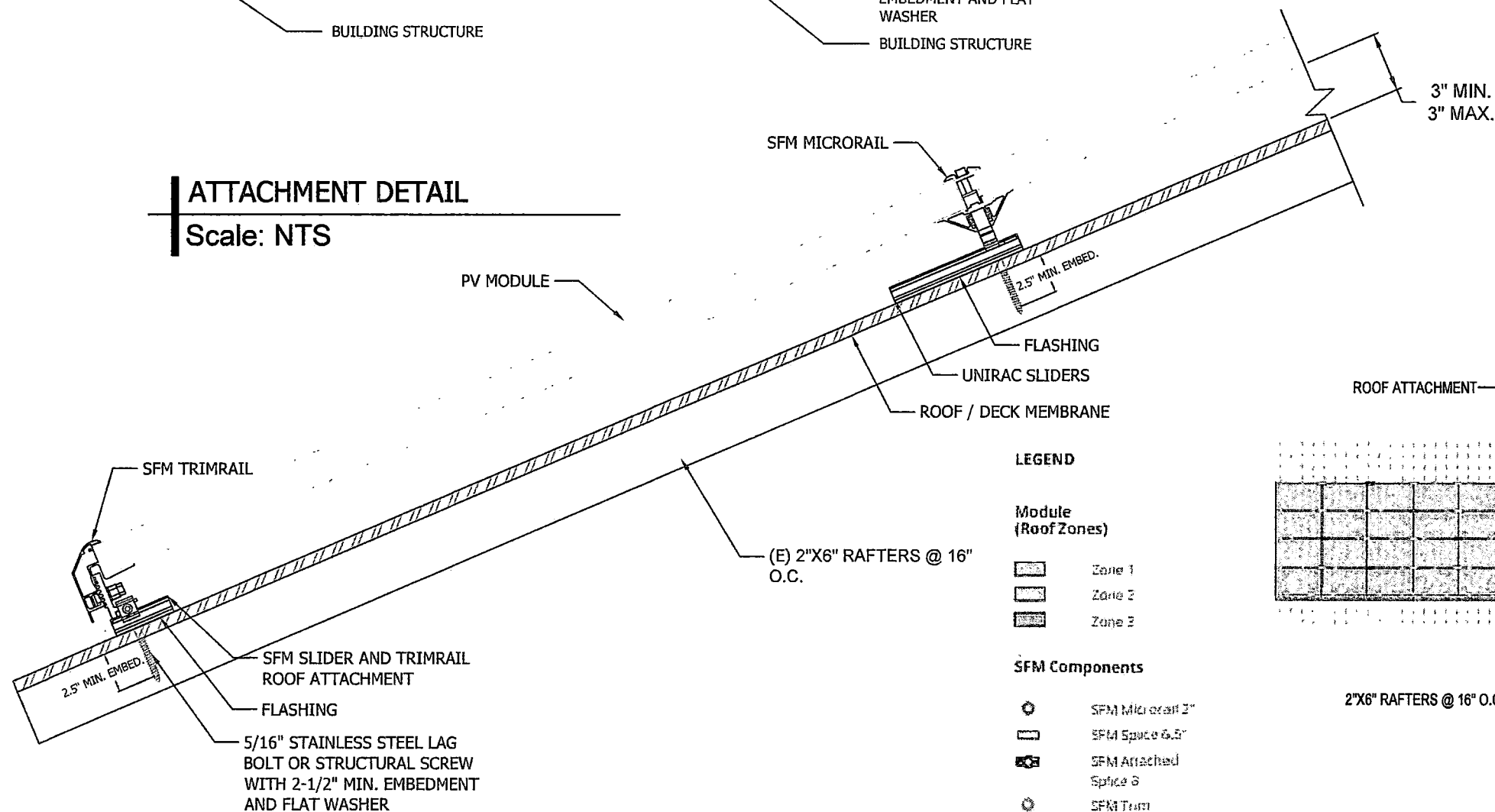
SCALE: 3/32" = 1'-0"

1



ATTACHMENT DETAIL

Scale: NTS



MOUNTING DETAILS

Scale: NTS

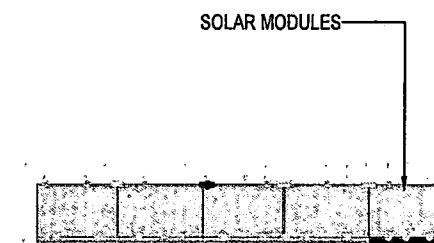
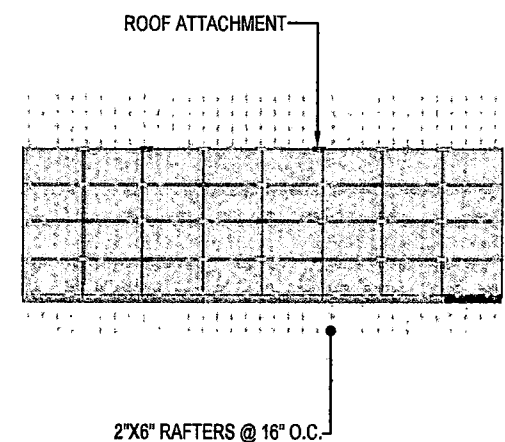
LEGEND

Module (Roof Zones)

- Zone 1
- Zone 2
- Zone 3

SFM Components

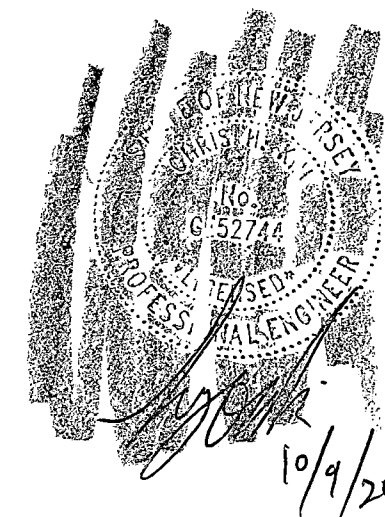
- SFM Microrail 2"
- SFM Space 0.5"
- SFM Attached Splice S
- SFM Trim Attachment
- SFM Trim Unw Clip
- Full Trim Section
- Cut Trim Section



MAX ATTACHMENT SPAN -48" STAGGERED

SAMPLE ROOF FRAMING PLAN

Scale: 1/4"-1'-0"



DESCRIPTION	DATE	REVISION

BACKFEED FUSE SIZING			
MAX. CONTINUOUS OUTPUT 42.0A @ 240V			
42.0	X	1.25	= 52.50AMPS 60A FUSES - OK

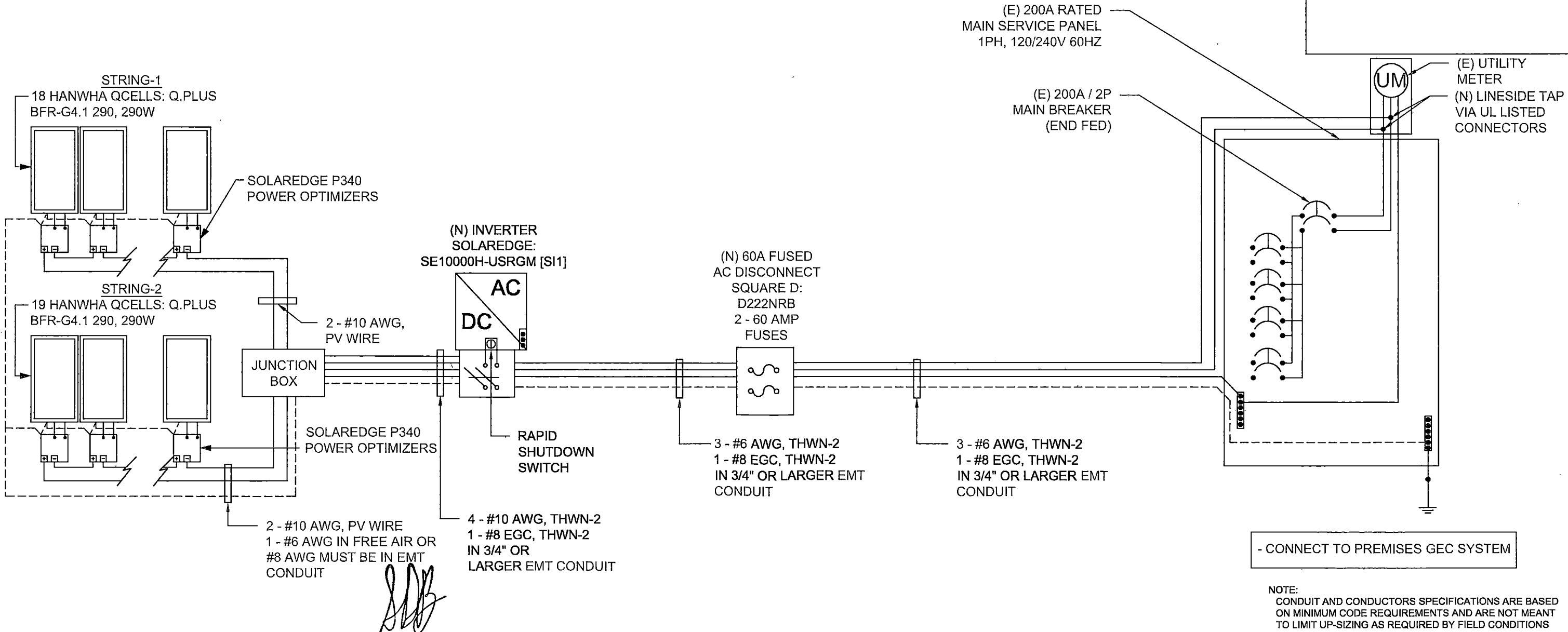
PV SYSTEM
10.730 kW-DC
10.000 kW-AC

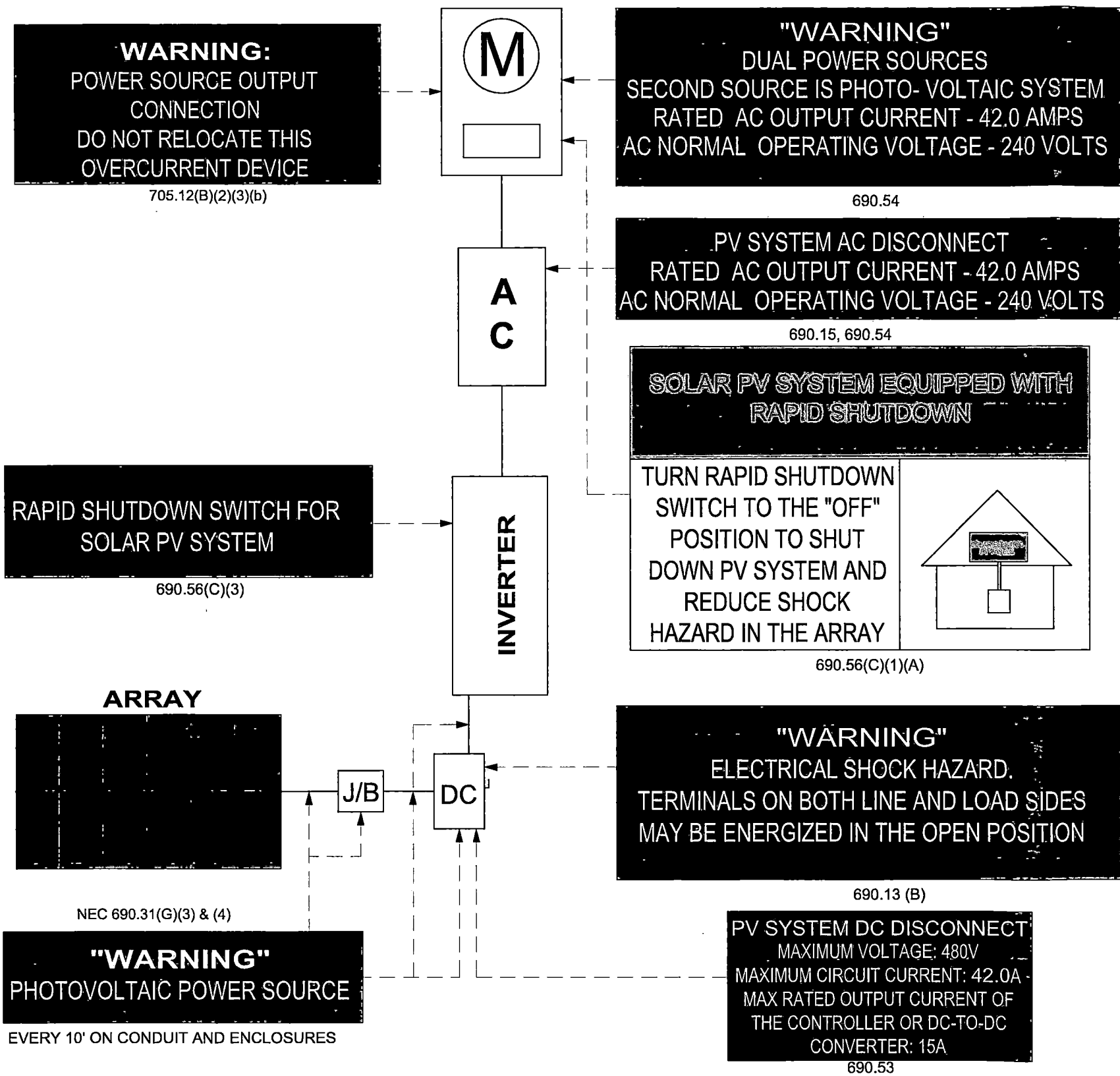
CONDUCTOR AMPACITY DE-RATE CALCULATION							
	Wire Location	CONDUCTOR QUANTITY	Circuit Conductor Size	NEC Factors Table 310.15(B)(16) Allowable Ampacity	NEC Factors Table 310.15(B)(2)(a) Ambient Temperature Correction	Adj. Conductor Ampacity @ 90°C	Conduit Fill Correction Per 310.15(B)(3)(a)
INVERTER TO AC DISCONNECT	WALL	3	6	75	0.96	72.00	1.00
AC DISCONNECT TO POI	WALL	3	6	75	0.96	72.00	1.00

STATE OF NEW JERSEY
WILLIAM K. LOU
No.
24GE05199200
EXP 4/30/22
LICENSED PROFESSIONAL ENGINEER

Bill Lou

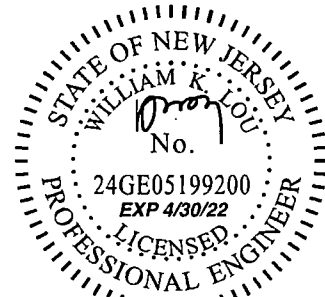
Digitally signed by Bill Lou
Date: 2020.10.08 23:52:46 -07'00'





NOTES:

1. NEC ARTICLES 690 AND 705 AND IRC SECTION R324 MARKINGS SHOWN HEREON
2. ALL MARKING SHALL CONSIST OF THE FOLLOWING:
 - A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING.
 - B. RED BACKGROUND COLOR WHITE TEXT AND LINE WORK.
 - C. AERIAL FONT.
3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATIONS SPECIFIED. SIGNAGE CANNOT BE HAND-WRITTEN.
4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT WITH POP-RIVETS OR SCREWS.



Bill Lou
Digitally signed by Bill Lou
Date: 2020.10.08 23:51:57 -07'00'

JOB HAZARD ANALYSIS

Crew leader to fill out all sections below, hold a pre-job safety meeting with all personnel, and upload this completed document and the Safety Plan to Site Capture

adder Access

Ladders must be inspected before each use.
Extension ladders must be set up on a firm and level surface at a 4-to-1 rise to run angle (or 75 degrees) and the top must be secured to the structure. Extension style ladders placed on uneven, loose or slippery surfaces must additionally have the base firmly anchored or lashed so the base will not slip out. Extension ladders must be used with walk-through devices or the ladder must extend 36" above the stepping off point. A-frame ladders must only be climbed with the ladder spreader bars locked in the open position; A-frame ladders shall not be climbed while in the closed position (ex, closed and used while leaned against a structure).

Additional notes:

Mobile Equipment

Only Qualified operators will operate equipment; operators must maintain a certification on their person for the equipment being operated.
Type(s) of mobile equipment (Type/Make/Model):

Qualified operator(s):

Material Handling and Storage

Materials will be staged/stored in a way that does not present a hazard to client, personnel or public. Materials stored on the roof will be physically protect from failing or sliding off.

Fall Protection

A site-specific plan for fall prevention and protection is required prior to starting work and must remain onsite at all times until work is complete; a fall rescue plan must be outlined and discussed among the crew prior to work start.
First-person-Up (FPU) must install their anchor and connect before any other task, including installing other anchors. The Last-Person-Down (LPD) must be the only person on a roof uninstalling fall protection.

FPCP (name and title):

FPU and LPD (name and title):

Electrical Safety

The Electrical Qualified Person (EQP) is required onsite-to perform electrical work.
All electrical work will be performed with equipment in an electrically safe condition (de-energized) unless approval has been granted prior to work.
Service drops and overhead electrical hazards will be indentified and protected from contact, as neccessary.

EQP (name and tile):

Public Protection

- The safety of the Client and the Public must be maintained at all times.
- The Client and the Public shall be prevented from entering the work zone through the use of barriers and/or signage, as required.
- Company, Client and Public property shall be protect from falling objects.
- Pets (including dogs) shall be secured by their owners prior to work start.
- The client should not leave pets, family members, or others in the charge or care of Employees, Contractors, or Temporary Workers.

Crew leader responsible for communication with the client:

Client and public is excluded from work area by barricades (N/A, Yes, No):

Training and Pre-Job Safety Briefing

- All employees onsite shall be made aware of the specific hazards of this project and review this HJA during a pre-job briefing, and their signature indicates awareness of site conditions and the plan to eliminate any hazards identified prior to and during the project.

Crew leader (name/title):

Crew member (name/title):

Crew member (name/title):

Crew member (name/title):

Crew member (name/title):

Crew member (name/title):

Airborne Contaminants:

- Asbestos-containing (Transite) piping (ACP) - Do not disturb (move, drill, cut fracture, etc.)
- Asbestos-containing thermal insulation (ACI) and Asbestos-containing duct wrapping (ACW) - do not disturb, no attic or crawlspace access is allowed if work to be performed could cause exposure to personnel, client or public.

If yes, list specific tasks and protection in place:

Weather and Environment

- The site supervisor shall forecast the weather conditions at the job site, prior to crew arrival, in order to mitigate any hazards associated with inclement weather (heat, cold, wind, rain, etc.)
- The site supervisor will utilized a portable wind meter (anemometer) to verify actual onsite wind conditions, by checking at the ground and on any elevated work surface (ex, rooftop) prior to work start, at midday and prior to solar panel staging on a roof.
- Elevated work involving the moving or maneuvering of solar panels shall cease at 25mph (sustained wind) until wind subsides.

Forecasted weather maximum temp (degrees F):

Heat Related Illness Prevention

- Employees shall have access to potable drinking water that is fresh, pure, and suitably cool. The water shall be located as close as practicable to the areas where employees are working. Water shall be supplied in sufficient quantity at the beginning of the work shift to provide at least one quart per employee per hour for drinking for the entire shift. Employees may begin the shift with smaller quantities of water if they identify the location and have effective means for replenishment during the shift to allow employees to drink on quart or more per hour. The frequent drinking of water shall be encouraged.
- Shade shall be present when temperature exceeds 80 degrees Fahrenheit. When the outdoor temperature in the work exceeds 80 degrees Fahrenheit, employees shall have and maintain one or more areas with shade at all times.
- New employees must be acclimatized. New employees will be monitored by their Crew Leader (site supervisor) for the first two (2) weeks of employment or longer when necessary.
- Employees will be allowed and encouraged to implement scheduled breaks during each shift. Employees must take cool-down breaks in the shade any time they feel the need to do so to protect them from overheating. Supervisors are REQUIRED to allow employees any break period they need during high heat conditions.
- Cool Vests are encouraged for all employees at all times during periods of high heat.
- Identify the location of the closet Occupational/Industrial Clinic or Hospital in case a crew member becomes ill.

What is the specific plan to provide and replenish sufficient water for all employees on site?

If offsite replenish is necessary, where will you go to replenish water (location/address):

Who will replenish the drinking water (name):

Restroom facilities

- Employees shall have access to restroom facilities with hand-washing stations. Use of onsite restroom is at the client's discretion (location is annotated below). If client does not give permission, location of suitable restroom facilities with hand-washing stations offsite will be provided. The onsite supervisor will identify location and make arrangements to ensure all employees have access at any point.

Restroom facilities will be (circle one): Onsite - Offsite

If Offsite, add location name and address:

Incident Reporting Procedure

Contact your Site Supervisor

Name:

Phone:

Contact your Manager

Name:

Phone:

Contact your Site Supervisor

Name:

Phone:

With: Your full name, phone number, office location, brief description of what happen and when.

NOTE ADDITIONAL HAZARDS NOT ADDRESSED ABOVE
(add as many as necessary by using additional sheets)

Define the Hazard:	Method/steps to prevent incident:
Define the Hazard:	Method/steps to prevent incident:
Define the Hazard:	Method/steps to prevent incident:
Define the Hazard:	Method/steps to prevent incident:



The new high-performance module Q.PLUS BFR-G4.1 is the ideal solution for all applications thanks to its innovative cell technology Q.ANTUM. The world-record cell design was developed to achieve the best performance under real conditions – even with low radiation intensity and on clear, hot summer days.



LOW ELECTRICITY GENERATION COSTS

Higher yield per surface area and lower BOS costs thanks to higher power classes and an efficiency rate of up to 17.7%.



INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behavior.



ENDURING HIGH PERFORMANCE

Long-term yield security with Anti-PID Technology¹, Hot-Spot-Protect and Traceable Quality Tra.Q™.



EXTREME WEATHER RATING

High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa) regarding IEC.



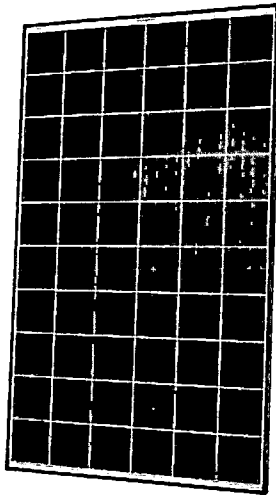
MAXIMUM COST REDUCTIONS

Up to 10% lower logistics costs due to higher module capacity per box.

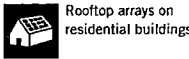


A RELIABLE INVESTMENT

Inclusive 12-year product warranty and 25-year linear performance guarantee².



THE IDEAL SOLUTION FOR:



Rooftop arrays on residential buildings



Rooftop arrays on commercial/industrial buildings

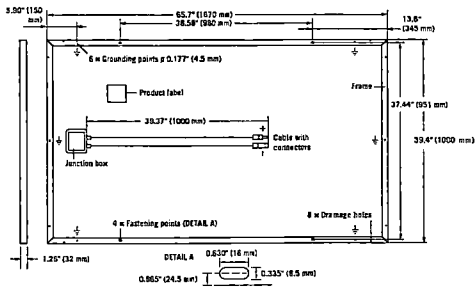
¹ APT test conditions: Cells at -1500V against grounded, with conductive metal foil covered module surface, 25°C, 168h

² See data sheet on rear for further information.

Q CELLS

MECHANICAL SPECIFICATION

Format	65.7 in × 39.4 in × 1.26 in (including frame) (1670 mm × 1000 mm × 32 mm)
Weight	41.45 lbs (18.8 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 10 Q.ANTUM solar cells
Junction box	3.54-4.33 in × 2.99-3.03 in × 0.59-0.75 in (90-110 × 76-77 × 15-19 mm), Protection class IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 39.37 in (1000 mm), (-) ≥ 39.37 in (1000 mm)
Connector	MC4, IP68

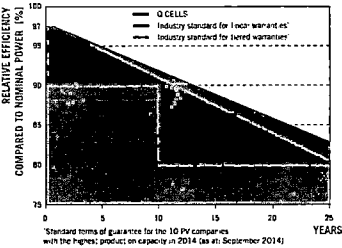


ELECTRICAL CHARACTERISTICS

POWER CLASS			280	285	290
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5 W / -0 W)					
Minimum	Power at MPP ²	P _{MPP} [W]	280	285	290
	Short Circuit Current*	I _{SC} [A]	9.41	9.46	9.52
	Open Circuit Voltage*	V _{OC} [V]	38.97	39.22	39.48
	Current at MPP*	I _{MPP} [A]	8.84	8.91	8.98
	Voltage at MPP*	V _{MPP} [V]	31.67	31.99	32.29
	Efficiency ²	η [%]	≥ 16.8	≥ 17.1	≥ 17.4
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NOC ³					
Minimum	Power at MPP ²	P _{MPP} [W]	207.0	210.7	214.4
	Short Circuit Current*	I _{SC} [A]	7.58	7.63	7.68
	Open Circuit Voltage*	V _{OC} [V]	36.37	36.61	36.84
	Current at MPP*	I _{MPP} [A]	6.93	6.99	7.05
	Voltage at MPP*	V _{MPP} [V]	29.87	30.15	30.42

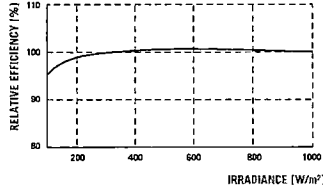
¹ 1000 W/m², 25 °C, spectrum AM 1.5 G ² Measurement tolerances STC ± 3%; NOC ± 5% ³ 800 W/m², NOCT, spectrum AM 1.5 G * typical values, actual values may differ

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 up to 10 years.
At least 83 % of nominal power up to 25 years.
All data within measurement tolerances.
Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



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

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I _{SC}	α	[%/K]	+0.04	Temperature Coefficient of V _{OC}	β	[%/K]	-0.29
Temperature Coefficient of P _{MPP}	γ	[%/K]	-0.40	Normal Operating Cell Temperature	NOCT	[°F]	113 ± 5.4 (45 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V _{sys}	[V]	1000 (IEC) / 1000 (UL)	Safety Class	II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating	C (IEC) / TYPE 1 (UL)
Design load, push (UL) ²	[lbs/ft ²]	75 (3600 Pa)	Permitted module temperature on continuous duty	-40 °F up to +185 °F (-40 °C up to +85 °C)
Design load, pull (UL) ²	[lbs/ft ²]	55.6 (2666 Pa)	² see installation manual	

QUALIFICATIONS AND CERTIFICATES

UL 1703; VDE Quality Tested; CE-compliant;
IEC 61215 (Ed.2); IEC 61730 (Ed.1) application class A



PACKAGING INFORMATION

Number of Modules per Pallet	32
Number of Pallets per 53' Container	30
Number of Pallets per 40' Container	26
Pallet Dimensions (L × W × H)	68.7 in × 45.3 in × 46.1 in (1745 × 1150 × 1170 mm)
Pallet Weight	1435 lbs (651 kg)

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

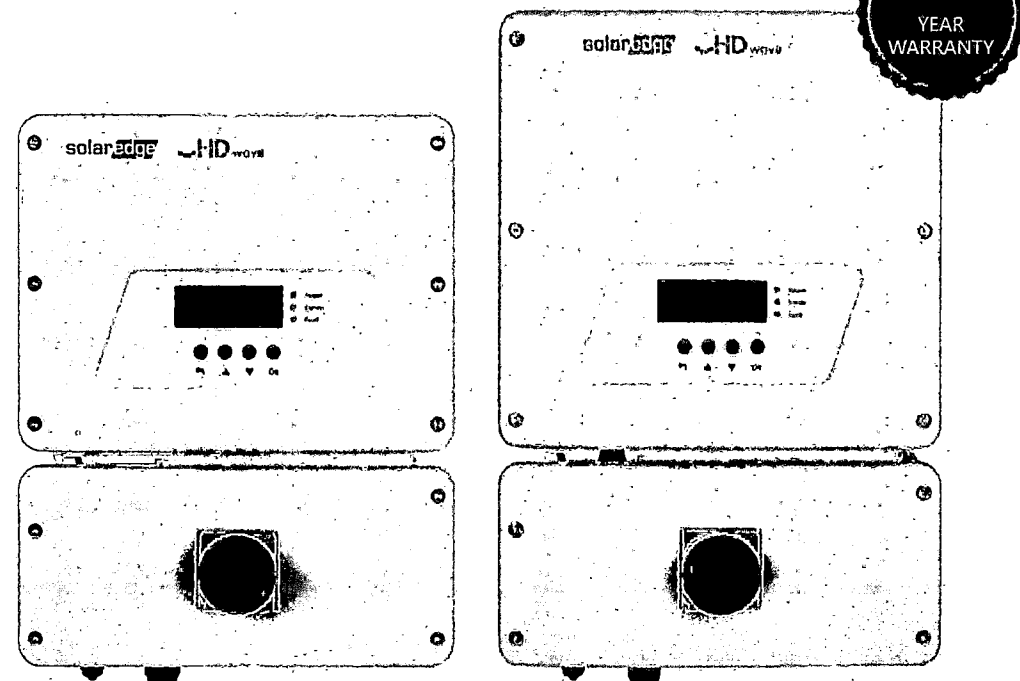
Hanwha Q CELLS America Inc.
300 Spectrum Center Drive, Suite 1250, Irvine, CA 92618, USA | TEL +1 949 748 59 96 | EMAIL inquiry@us.q-cells.com | WEB www.q-cells.us

Specifications subject to technical changes © Hanwha Q CELLS Q.PLUS BFR-G4.1_280-290_2016-08_Rev01_NA

Single Phase Inverter with HD-Wave Technology

for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US /
SE7600H-US / SE10000H-US / SE11400H-US



INVERTERS

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 shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Extremely small
- Built-in module-level monitoring
- Outdoor and indoor installation
- Optional: Revenue grade data, ANSI C12.20 Class 0.5 (0.5% accuracy)

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/ Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US /
SE7600H-US / SE10000H-US / SE11400H-US

SE3000H-US									SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US
OUTPUT														
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA						
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA						
AC Output Voltage Min.-Nom.-Max. (211 – 240 – 264)	✓	✓	✓	✓	✓	✓	✓	Vac						
AC Output Voltage Min.-Nom.-Max. (183 – 208 – 229)	-	✓	-	✓	-	-	✓	Vac						
AC Frequency (Nominal)	59.3 – 60 – 60.5 ^①							Hz						
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A						
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A						
GFDI Threshold	1							A						
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes													
INPUT														
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W						
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W						
Transformer-less, Ungrounded	Yes													
Maximum Input Voltage	480							Vdc						
Nominal DC Input Voltage	380					400		Vdc						
Maximum Input Current @240V ^②	8.5	10.5	13.5	16.5	20	27	30.5	Adc						
Maximum Input Current @208V ^②	-	9	-	13.5	-	-	27	Adc						
Max. Input Short Circuit Current	45							Adc						
Reverse-Polarity Protection	Yes													
Ground-Fault Isolation Detection	600k Ω Sensitivity													
Maximum Inverter Efficiency	99	99.2						%						
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%						
Nighttime Power Consumption	< 2.5							W						
ADDITIONAL FEATURES														
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)													
Revenue Grade Data, ANSI C12.20	Optional ^③													
Rapid Shutdown - NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect													
STANDARD COMPLIANCE														
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07													
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (H)													
Emissions	FCC Part 15 Class B													
INSTALLATION SPECIFICATIONS														
AC Output Conduit Size / AWG Range	3/4" minimum / 14-6 AWG					3/4" minimum /14-4 AWG								
DC Input Conduit Size / # of Strings / AWG Range	3/4" minimum / 1-2 strings / 14-6 AWG					3/4" minimum / 1-3 strings / 14-6 AWG								
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174					21.3 x 14.6 x 7.3 / 540 x 370 x 185			in / mm					
Weight with Safety Switch	22 / 10	25.1 / 11.4	26.2 / 11.9		38.8 / 17.6			lb / kg						
Noise	< 25				<50				dBA					
Cooling	Natural Convection													
Operating Temperature Range	-40 to +140 / -25 to +60 ^④ (-40°F / -40°C option) ^⑤							°F / °C						
Protection Rating	NEMA 4X (Inverter with Safety Switch)													

^① For other regional settings please contact SolarEdge support

^② A higher current source may be used; the inverter will limit its input current to the values stated

^③ Revenue grade inverter P/N: SExxxxH-US000NNC2

^④ For power de-rating information refer to: <https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf>

^⑤ -40 version P/N: SExxxxH-US000NNU4

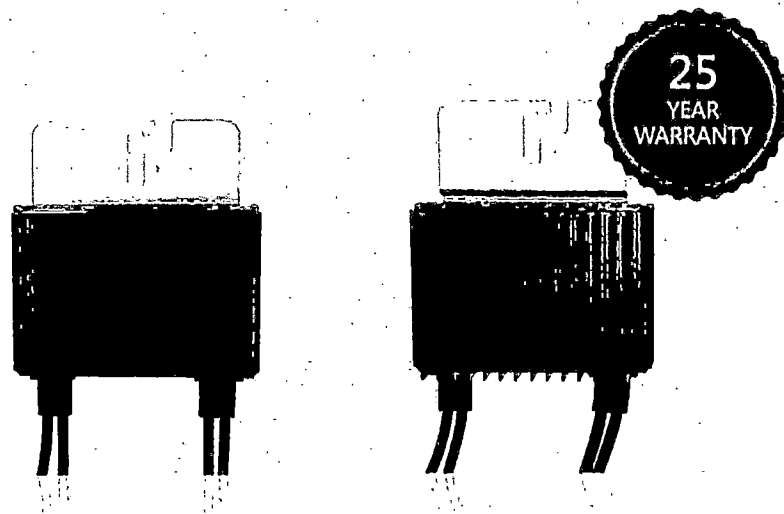
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RoHS

Power Optimizer

For North America

P320 / P340 / P370 / P400 / P405 / P505



POWER OPTIMIZER

PV power optimization at the module-level

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- Flexible system design for maximum space utilization
- Fast installation with a single bolt
- Next generation maintenance with module-level monitoring
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- Module-level voltage shutdown for installer and firefighter safety

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/ Power Optimizer

For North America

P320 / P340 / P370 / P400 / P405 / P505

Optimizer model (typical module compatibility)	P320 (for 60-cell modules)	P340 (for high- power 60-cell modules)	P370 (for higher- power 60 and 72-cell modules)	P400 (for 72 & 96- cell modules)	P405 (for thin film modules)	P505 (for higher current modules)	
INPUT							
Rated Input DC Power ^a	320	340	370	400	405	505	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	48		60	80	125 ^a	83 ^a	Vdc
MPPT Operating Range	8 - 48		8 - 60	8 - 80	12.5 - 105	12.5 - 83	Vdc
Maximum Short Circuit Current (Isc)	11			10.1		14	Adc
Maximum DC Input Current	13.75			12.63		17.5	Adc
Maximum Efficiency	99.5						%
Weighted Efficiency	98.8					98.6	%
Overvoltage Category	II						
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREEDGE INVERTER)							
Maximum Output Current	15						Adc
Maximum Output Voltage	60				85		Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREEDGE INVERTER OR SOLAREEDGE INVERTER OFF)							
Safety Output Voltage per Power Optimizer	1 ± 0.1						Vdc
STANDARD COMPLIANCE							
EMC	FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3						
Safety	IEC62109-1 (class II safety), UL1741						
RoHS	Yes						
INSTALLATION SPECIFICATIONS							
Maximum Allowed System Voltage	1000						Vdc
Compatible inverters	All SolarEdge Single Phase and Three Phase inverters						
Dimensions (W x L x H)	129 x 153 x 27.5 / 5.1 x 6 x 1.1			129 x 153 x 33.5 / 5.1 x 6 x 1.3	129 x 159 x 49.5 / 5.1 x 6.3 x 1.9	129 x 162 x 59 / 5.1 x 6.4 x 2.3	mm / in
Weight (including cables)	630 / 1.4			750 / 1.7	845 / 1.9	1064 / 2.3	gr / lb
Input Connector	MC4 ^a						
Output Wire Type / Connector	Double Insulated; MC4						
Output Wire Length	0.95 / 3.0		1.2 / 3.9				m / ft
Input Wire Length	0.16 / 0.52						m / ft
Operating Temperature Range	-40 - +85 / -40 - +185						°C / °F
Protection Rating	IP68 / NEMA6P						
Relative Humidity	0 - 100						%

^{1a} Rated STC power of the module. Module of up to +5% power tolerance allowed

^{2a} NEC 2017 requires max input voltage be not more than 80V

^{3a} For other connector types please contact SolarEdge

PV System Design Using a SolarEdge Inverter ^{1a)}	Single Phase HD-Wave	Single phase	Three Phase 208V	Three Phase 480V	
Minimum String Length (Power Optimizers)	P320, P340, P370, P400 P405 / P505	8	10	18	
Maximum String Length (Power Optimizers)		6	8	14	
		25	25	50 ^{2a}	
Maximum Power per String	5700 (6000 with SE7600-US - SE11400-US)	5250	6000 ^{2a}	12750 ^{2a}	W
Parallel Strings of Different Lengths or Orientations	Yes				

^{1a} For detailed string sizing information refer to: http://www.solaredge.com/sites/default/files/string_sizing_na.pdf

^{2a} It is not allowed to mix P405/P505 with P320/P340/P370/P400 in one string

^{3a} A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement

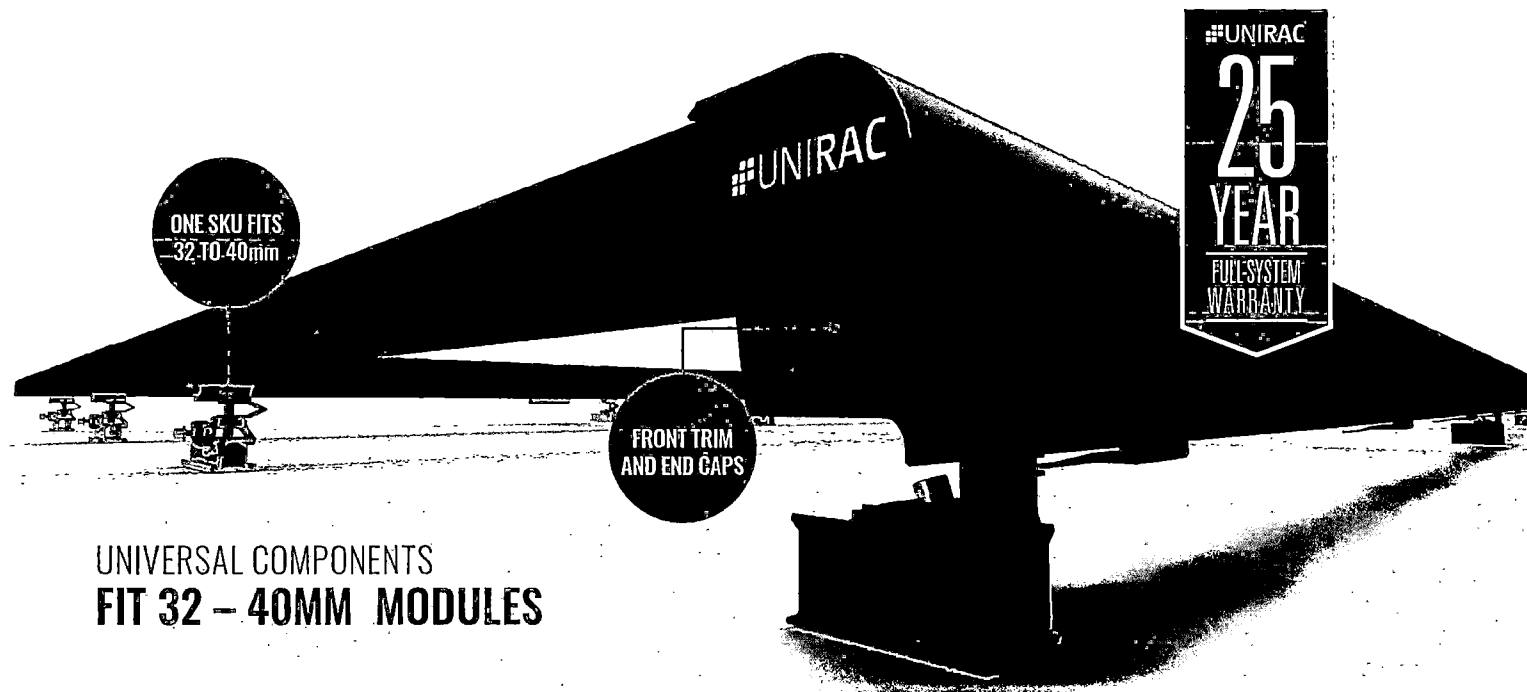
^{4a} For SE14.4KUS/SE43.2KUS: It is allowed to install up to 6,500W per string when 3 strings are connected to the inverter (3 strings per unit for SE43.2KUS) and when the maximum power difference between the strings is up to 1,000W

^{5a} For SE30KUS/SE33.3KUS/SE66.6KUS/SE100KUS: It is allowed to install up to 15,000W per string when 3 strings are connected to the inverter (3 strings per unit for SE66.6KUS/SE100KUS) and when the maximum power difference between the strings is up to 2,000W

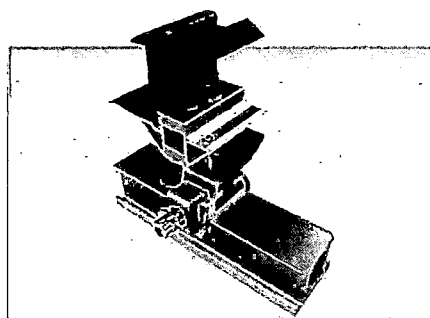
SFM INFINITY

UNIRAC
BETTER SOLAR STARTS HERE

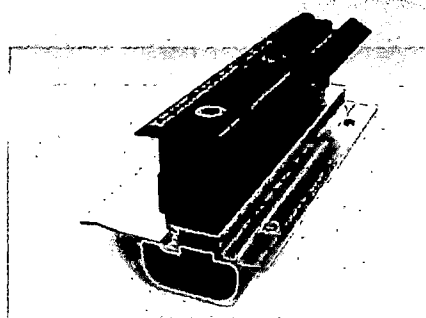
Take your business to the next level with **SFM INFINITY**, UNIRAC's rail-less PV mounting system for flush mount installations on comp shingle and tile roofs. An advanced 3rd generation product platform in use by top solar contractors nationwide, **SFM INFINITY** optimizes your operations on and off the roof, with approximately 40% less labor, 30% logistics savings, and 20% fewer roof attachments than traditional solar racking. Plus, 87% of homeowners prefer **SFM INFINITY**'s aesthetics.



UNIVERSAL COMPONENTS
FIT 32 – 40MM MODULES



SUPERIOR PERFORMANCE
Enhance your business with two installs per day and 30% less cost.



EASY INSTALLATION
Pre-assembled components, 20% fewer roof attachments, and level array in seconds with post height adjustment.



HOMEOWNER PREFERRED
More than 4 out of 5 homeowners prefer **SFM INFINITY**'s aesthetics over a leading rail brand.

REVOLUTIONIZING ROOFTOP SOLAR

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

SFM INFINITY

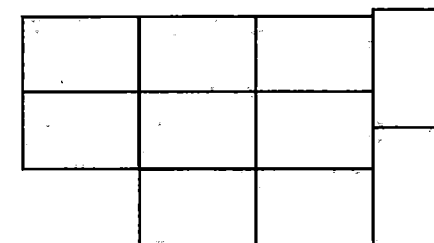
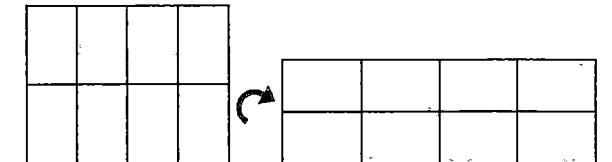
DESIGN GUIDELINES

UNIRAC
BETTER SOLAR STARTS HERE

While you will see advantages simply from switching to **SFM INFINITY**, the following guidelines will help you to maximize its benefits.

DEFAULT TO LANDSCAPE

When possible, design in landscape orientation in order to fit more modules on the roof and minimize roof attachments.



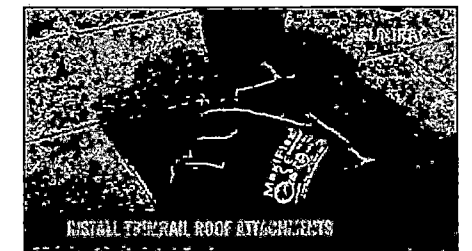
MIX MODULE ORIENTATIONS

SFM INFINITY is easily configured in mixed array shapes and module orientations to maximize array density and to avoid vent pipes and other obstacles. Because mounting locations are not constrained by rails, **SFM INFINITY** has unmatched flexibility to enhance your projects.

CONSULT THE QUICK TIPS VIDEOS

Visit UNIRAC's mobile-friendly library of short, topic-specific videos which answer common questions and demonstrate how simple it is to install **SFM INFINITY**.

Quick Tips Videos: <https://unirac.com/SFM-Infinity/>



DESIGN IN U-BUILDER

Layout your arrays in **U-Builder**, UNIRAC's free solar design software, to optimize **SFM INFINITY**'s capabilities, including mixing module orientations and minimizing roof attachments. Quickly create layouts on Google or Bing Maps and generate project documents.

U-Builder: <https://design.unirac.com/>

REVOLUTIONIZING ROOFTOP SOLAR

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

2.0 Product Description	
Product	Photovoltaic Mounting System, Sun Frame Microrail - Installed Using Unirac Installation Guide, Rev PUB2019MAR01 with Annex North Row Extension Installation Guide Rev PUB2019FEB20
Brand name	Unirac
Description	The product covered by this report is the Sun Frame Micro Rail roof mounted Photovoltaic Rack Mounting System. This system is designed to provide bonding and grounding to photovoltaic modules. The mounting system employs anodized or mill finish aluminum brackets that are roof mounted using the slider, outlined in section 4 of this report. There are no rails within this product, whereas the 3" Micro Rail, Floating Splice, and 9" Attached Splice electrically bond the modules together forming the path to ground. The Micro Rails are installed onto the module frame by using a stainless steel bolt anodized with black oxide with a stainless type 300 bonding pin, torqued to 20 ft-lbs, retaining the modules to the bracket. The bonding pin of the Micro Rail when bolted and torqued, penetrate the anodized coating of the photovoltaic module frame to contact the metal, creating a bonded connection from module to module. The grounding of the entire system is intended to be in accordance with the latest edition of the National Electrical Code, including NEC 250: Grounding and Bonding, and NEC 690: Solar Photovoltaic Systems. Any local electrical codes must be adhered in addition to the national electrical codes. The Grounding Lug is secured to the photovoltaic module, torqued in accordance with the installation manual provided in this document. Other optional grounding includes the use of the Enphase UL2703 certified grounding system, which requires a minimum of 2 micro-inverters mounted to the same rail, and using the same engage cable.
Models	Unirac SFM

2.0 Product Description	
Model Similarity	NA
Ratings	Fuse Rating: 30A Module Orientation: Portrait or Landscape Maximum Module Size: 17.98 ft² UL2703 Design Load Rating: 33 PSF Downward, 33 PSF Upward, 10 PSF Down-Slope Tested Loads - 50 psf/2400Pa Downward, 50psf/2400Pa Uplift, 15psf/720Pa Down Slope Trina TSM-255PD05.08 and Sunpower SPR-E20-327 used for Mechanical Loading Increased size ML test: Maximum Module Size: 22.3 ft² UL2703 Design Load Rating: 113 PSF Downward, 50 PSF Upward, 30 PSF Down-Slope LG355S2W-A5 used for Mechanical Loading test. Mounting configuration: Four mountings on each long side of panel with the longest span of 24" UL2703 Design Load Rating: 46.9 PSF Downward, 40 PSF Upward, 10 PSF Down-Slope LG395N2W-A5, LG360S2W-A5 and LG355S2W-A5 used for used for Mechanical Loading test. Mounting configuration: Six mountings for two modules used with the maximum span of 74.5" Fire Class Resistance Rating: - Class A for Steep Slope Applications when using Type 1 Modules. Can be installed at any interstitial gap. Installations must include Trim Rail. - Class A for Steep Slope Applications when using Type 2 Modules. Can be installed at any interstitial gap. Installations must include Trim Rail. - Class A Fire Rated for Low Slope applications with Type 1 or 2 listed photovoltaic modules. This system was evaluated with a 5" gap between the bottom of the module and the roof's surface <i>See section 7.0 illustration # 1 and 1a for a complete list of PV modules evaluated with these racking systems</i>
Other Ratings	NA

This authorizes the application of the Certification Mark(s) shown below to the models described in the Product(s) Covered section when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This authorization also applies to multiple listee model(s) identified on the correlation page of the Listing Report.

This document is the property of Intertek Testing Services and is not transferable. The certification mark(s) may be applied only at the location of the Party Authorized To Apply Mark.

Applicant:	Unirac, Inc	Manufacturer:	Cixi Emeka Aluminum Co. Ltd
Address:	1411 Broadway Blvd NE Albuquerque, NM 87102	Address:	No. 688 ChaoSheng Road Cixi City Zhejiang Province 315311
Country:	USA	Country:	China
Contact:	Klaus Nicolaedis Tom Young	Contact:	Jia Liu Robin Luo
Phone:	505-462-2190 505-843-1418	Phone:	+86-15267030962 +86-13621785753
FAX:	NA klaus.nicolaedis@unirac.com	FAX:	NA
Email:	toddg@unirac.com	Email:	jia.liu@cxymj.com buwan.luo@cxymj.com

Party Authorized To Apply Mark:

Report Issuing Office:

Control Number:

5003705

Authorized by:

for Dean Davidson, Certification Manager

Same as Manufacturer
Lake Forest, CA U.S.A.



This document supersedes all previous Authorizations to Mark for the noted Report Number.

This Authorization to Mark is for the exclusive use of Intertek's Client and is provided pursuant to the Certification agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Authorization to Mark. Only the Client is authorized to permit copying or distribution of this Authorization to Mark and then only in its entirety. Use of Intertek's Certification mark is restricted to the conditions laid out in the agreement and in this Authorization to Mark. Any further use of the Intertek name for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. Initial Factory Assessments and Follow up Services are for the purpose of assuring appropriate usage of the Certification mark in accordance with the agreement, they are not for the purposes of production quality control and do not relieve the Client of their obligations in this respect.

Intertek Testing Services NA Inc.
545 East Algonquin Road, Arlington Heights, IL 60005
Telephone 800-345-3851 or 847-439-5667 Fax 312-283-1672

Standard(s):	Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels [UL 2703: 2015 Ed.1]
Product:	Photovoltaic Mounting System, Sun Frame Microrail - Installed Using Unirac Installation Guide, Rev PUB2019MAR01 with Annex North Row Extension Installation Guide Rev PUB2019FEB20
Brand Name:	Unirac
Models:	Unirac SFM

Subject: ETL Evaluation of SolarEdge Products to NEC 2017 Rapid Shutdown Requirements

To, whom it may concern

This letter represents the testing results of the below listed products to the requirements contained in the following standards:

National Electric Code, 2017, Section 690.12 requirement for rapid shutdown.

UL 1741, UL 1741 CRD for rapid shutdown

The evaluation was done on the PV Rapid Shutdown System (PVRSS), and covers installations consisting of optimizers and inverters with part numbers listed below.

The testing done has verified that controlled conductors are limited to:

- Not more than 30 volts and 240 voltamperes within 30 seconds of rapid shutdown initiation outside the array.
- Not more than 80 volts and 240 voltamperes within 30 seconds of rapid shutdown initiation inside the array.

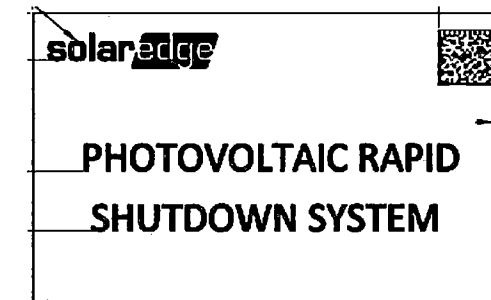
The rapid shutdown initiation is performed by either disconnecting the AC feed to the inverter, or – if the inverter DC Safety switch is readily accessible – by turning off the DC Safety switch.

Applicable products:

- Power optimizers:
 - PB followed by 001 to 350; followed by -AOB or -TFI.
 - OP followed by 001 to 500; followed by -LV, -MV, -IV or -EV.
 - P followed by 001 to 850.
 - SP followed by 001 to 350.
 - *When optimizers are connected to 2 or more modules in series, the max input voltage may exceed 80V. Following the implementation of the NEC 2017 rapid shutdown value of 80V max inside of the array at the beginning of 2019 , modules exceeding this combined input max voltage will be required to use optimizers with parallel inputs.
- 1-ph Inverters:

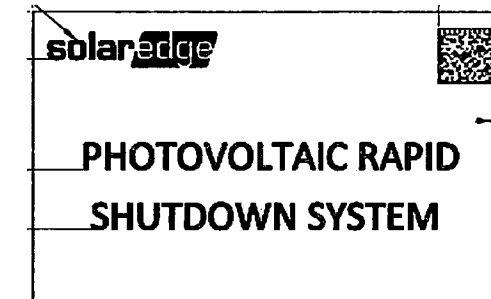
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- SE3000A-US / SE3800A-US / SE5000A-US / SE6000A-US / SE7600A-US / SE10000A-US / SE11400A-US / SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US when the following label is labeled on the side of the inverter:



Inverter part number may be followed by a suffix

- 3-ph Inverters:
 - SE9KUS / SE10KUS / SE14.4KUS / SE20KUS / SE30KUS / SE33.3KUS / SE43.2KUS / SE66.6KUS / SE100KUS ; when the following label is labeled on the side of the inverter:



Inverter part number may be followed by a suffix

If there are any questions regarding the results contained in this report, or any of the other services offered by Intertek, please do not hesitate to contact the undersigned.

This information is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense, or damage occasioned by the use of this information. Any observations and results in this report are relevant only to the sample evaluated. Only the Client is authorized to copy and distribute this information and only then in its entirety.

Certificate



Certificate no.

US 82160015 01

License Holder:

Unirac Inc.
1411 Broadway NE
Albuquerque NM 87102
USA

Manufacturing Plant:

Unirac Inc.
1411 Broadway NE
Albuquerque NM 87102
USA

Test report no.: USA- 31440029 005

Client Reference: Tom Young

Tested to: UL 2703:2015

Certified Product: Module Rack Mounting System

License Fee - Units

Model Designation: SolarMount (SM)

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Max System Voltage of PV Module: 1000 VDC

Max Size of PV Module: 20.8 sq.ft. surface area

Max Overcurrent Protection Rating of PV Module:

30 A when using the qualified grounding lugs;

20 A when using the Enphase micro inverter EGC.

Fire Rating: Class A when installed with

Type 1, Type 2, Type3, or Type 10 fire rated modules.

(continued)

Appendix: 1,1-5

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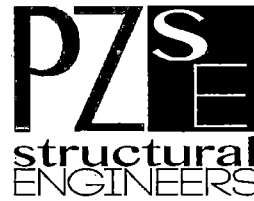
Licensed Test mark:



Date of Issue

(day/mo/yr)

27/07/2016



July 30, 2020

Unirac
1411 Broadway Blvd. NE
Albuquerque, NM 87102

Attn.: Unirac - Engineering Department

Re: Engineering Certification for the Unirac Sunframe Microrail, SFM Infinity U-builder Software Version 1.0

PZSE, Inc. - Structural Engineers has reviewed the Unirac's Sunframe Microrail, proprietary mounting system constructed from modular parts which is intended for rooftop installation of solar photovoltaic (PV) panels; and has reviewed the U-builder Online tool. This U-Builder software includes analysis for the 2" Microrail, 8" Attached Splice, 6" splice, and front trimrail. All information, data and analysis contained within are based on, and comply with the following codes and typical specifications:

1. Minimum Design Loads for Buildings and other Structures, ASCE/SEI 7-05, ASCE/SEI 7-10, ASCE/SEI 7-16
2. 2018 International Building Code/2018 NJ edition
3. 2006-2018 International Building Code, by International Code Council, Inc. w/ Provisions from SEAOC PV-2 2017.
4. 2006-2018 International Residential Code, by International Code Council, Inc. w/ Provisions from SEAOC PV-2 2017.
5. AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Panels, November 1, 2012 by ICC-ES.

Following are typical specifications to meet the above code requirements:

Design Criteria:	Ground Snow Load = 0 - 100 (psf) Basic Wind Speed = 90 - 180 (mph) Roof Mean Height = 0 - 30 (ft) Roof Pitch = 0 - 45 (degrees) Exposure Category = B, C & D
Attachment Spacing:	Per U-builder Engineering report.
Cantilever:	Per U-builder Engineering report.
Clearance:	2" to 10" clear from top of roof to top of PV panel.
Tolerance(s):	1.0" tolerance for any specified dimension in this report is allowed for installation.
Installation Orientation:	See SFM Installation Guide. Landscape - PV Panel long dimension is parallel to ridge/eave line of roof and the PV panel is mounted on the long side. Portrait - PV Panel short dimension is parallel to ridge/eave line of roof and the PV panel is mounted on the short side. Attachment shall be staggered where ground snow load exceeds 10 PSF.

Testing: Values were based on UTR-299 testing provided by Unirac.

Components and Cladding Roof Zones:

The Components and Cladding Roof Zones shall be determined based on ASCE 7-05, ASCE 7-10 & 7-16 Component and Cladding design.

Notes:

- 1) U-builder Online tool analysis is only for Unirac SFM Sunframe Microrail system only and do not include roof capacity check.
- 2) Risk Category II per ASCE 7-16.
- 3) Topographic factor, k_{zt} is 1.0.
- 4) Array Edge Factor $Y_E = 1.5$
- 5) Average parapet height is 0.0 ft.
- 6) Wind speeds are LRFD values.
- 7) Attachment spacing(s) apply to a seismic design category E or less.

Design Responsibility:

The U-Builder design software is intended to be used under the responsible charge of a registered design professional where required by the authority having jurisdiction. In all cases, this U-builder software should be used under the direction of a design professional with sufficient structural engineering knowledge and experience to be able to:

- Evaluate whether the U-Builder Software is applicable to the project, and
- Understand and determine the appropriate values for all input parameters of the U-Builder software.

This letter certifies that the Unirac SFM Sunframe Microrail, when installed according to the U-Builder engineering report and the manufacture specifications, is in compliance with the above codes and loading criteria.

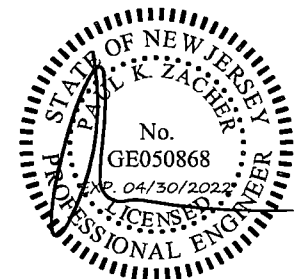
This certification excludes evaluation of the following components:

- 1) The structure to support the loads imposed on the building by the array; including, but not limited to: strength and deflection of structural framing members, fastening and/or strength of roofing materials, and/or the effects of snow accumulation on the structure.
- 2) The attachment of the SFM 2" Microrail or 8" Attached Splice to the existing structure.
- 3) The capacity of the solar module frame to resist the loads.

This requires additional knowledge of the building and is outside the scope of the certification of this racking system.

If you have any questions on the above, do not hesitate to call.

Prepared by:
PZSE, Inc. – Structural Engineers
Roseville, CA



07/30/2020