

CITY OF ORANGE HISTORIC PRESERVATION COMMISSION
ORANGE CITY HALL
29 North Day Street, Orange, New Jersey 07050
PHONE (973) 266-4025 - FAX (973) 672-6643

CITY OF ORANGE PRESERVATION COMMISSION
APPLICATION FOR CERTIFICATION OF APPROPRIATENESS

DATE RECEIVED 12/6/21 APPLICATION # _____

APPLICANT(S):

Name of Applicant(s): Bright Planet Solar

Address: 220 W. Pkwy #12 Pompton Plains Email: newjerseypermitting@brightplanetsolar.com

Tele. #: (Day) (862) 377-0076 (Eve) _____ (Fax) (973) 248-6164

Relationship of Applicant to Property owner:

Owner(s) Lessee Prop. Under Contract Other (Specify)

Explanation if Other: _____

OWNER(S), IF DIFFERENT THAN APPLICANT:

Name(s) of Owner(s): Mary Mitchell Finney

Address: 678 Berkeley Ave. Email: _____

Telephone Number: (Day) (973) 342-1362 (Eve) _____

Street Address of the Property that is subject of Application: 678 Berkeley Ave.
Orange, NJ 07050

Tax Block: 6501 Lot: 1

Name of Historic District in which Property lies: _____

Existing use of the Property: _____

Existing zoning of the Property: _____

Describe in detail the proposed work to be done at the Property.

Rooftop solar panel installation.

Explain how you plan to prevent, minimize and mitigate any adverse effects to this Property, to nearby historically significant properties, and to the Historic District?

Each Application must be accompanied by sketches, drawings, photographs, descriptions or other information sufficient to show the proposed alterations, additions, changes or new construction. The Commission may require the subsequent submission of such additional materials as it reasonably requires to make an informed decision. A submission shall include:

- A photograph of each elevation of the structure.
- Ten (10) copies of drawings, photographs, material brochures, samples, specifications or information that may be necessary to assist the Commission. Copies may be submitted electronically, or by CD or flash drive.
- Ten (10) copies of a survey, or if applicable, a site plan showing the location of new and existing structures on the site and their location with respect to the building line, property line, and the front of those buildings or structures immediately adjacent to each side of the lot to be built upon.
- Ten (10) copies of façade elevation(s), if applicable, of the proposed work in sufficient detail to identify the limits and location of the proposed work, and existing and proposed materials to be used.
- \$70.00 Application fee (check or money order made to the City of Orange).

By signing this Application, I hereby certify that the owner of record authorizes the proposed work and I have been authorized by the owner to make this Application as his/her authorized agent. By signing this Application, the owner hereby grants authorization to the Commission members, and its professional and support staff to enter the Property in question for inspection purposes. By signing this application I further agree that the attorney's and professional staff's review of my application is chargeable to me and that I agree to pay for such review separately from the application fee, by depositing an escrow payment of \$_____.

Signature of Applicant(s) *Yasi Barbera*
(Print Name) Yasi Barbera

Date 12/6/21

Signature of Owner(s) (if different than Applicant) *Mary Mitchell Finney*
(Print Name) Mary Mitchell Finney

Date 12/6/21

Submittal of this Application form-properly signed, with the indicated copies of documents and the Application fee will constitute a complete Application. Upon receipt of a complete Application, the Board Secretary will schedule the Application with the Commission. The Applicant delays his/her own Application if all of these required items are not submitted. The Commission shall reach a decision on the Application within forty-five (45) days of submission of a complete Application. The Applicant must appear in front of the Commission in order to present the Application during the public hearing on the scheduled date.

Telephone: _____ Fax: _____ Website: _____



AllPaid
7820 Innovation Boulevard Suite 250
Indianapolis, IN 46278
24hr. Customer Service #: 888-604-7888

Clerk Payment Confirmation (Ref #: 33433653)

PLC: City Of Orange
A003JJ 29 North Day Street
Orange, New Jersey 07050
For: Clerk

Date: 12/06/2021 12:46 EST

TRANSACTION INFORMATION

Name: Mary Mitchellfinney
Address: 678 Berkeley Ave
Orange, Nj 07050
Description: Historic District Application Fee(rooftop Solar)
E-mail: Yaxsandrab@brightplanetsolar.com

Transaction Reference #: 33433653
Transaction Date/Time: 12/06/2021 12:46 EST

BILLING INFORMATION

Name: Yasi Barrera
Address: Bright Planet Solar
220 W Parkway #12
Pompton Plains, NJ 07444
Phone #: (862)377-0076
Card #: xxxx-xxxx-xxxx-5722

PAYMENT INFORMATION

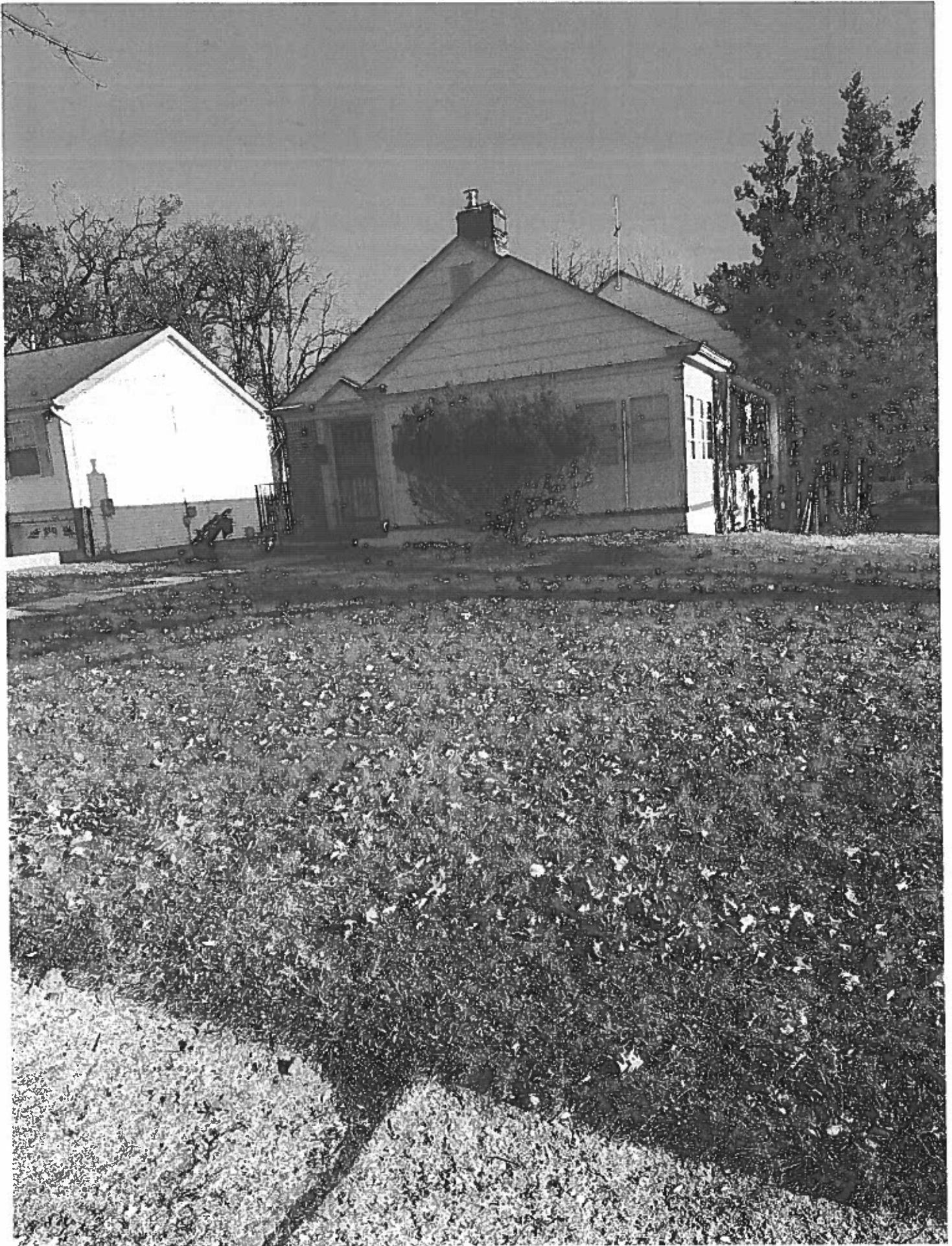
Approval #: 014601
Payment Amount: \$70.00
Service Fee: \$1.40
Total Amount: \$71.40

The service fee is not refundable.

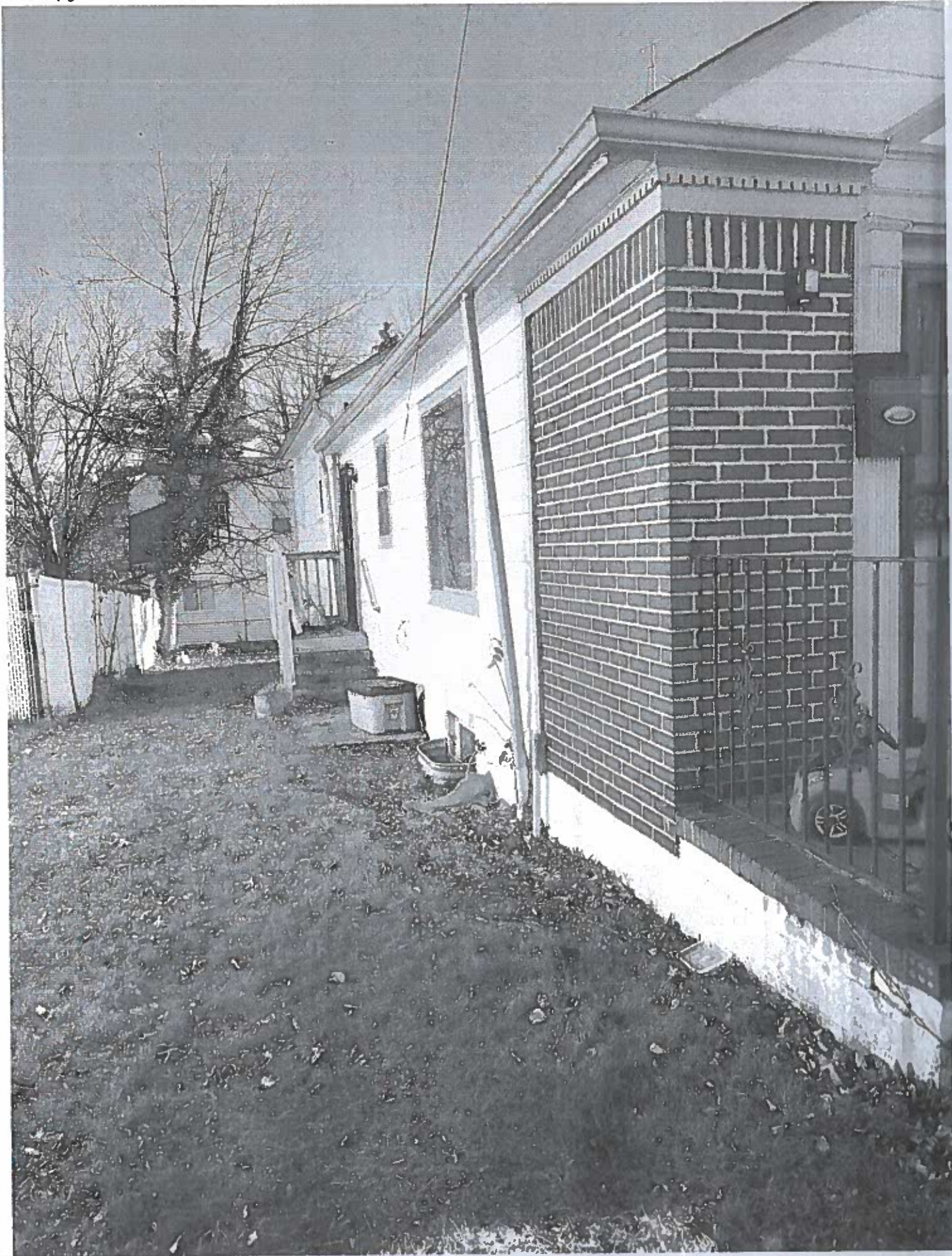
ATTENTION CARDHOLDER
If you have questions about the processing of your payment, please call AllPaid at 888-604-7888.

Thank you for using AllPaid

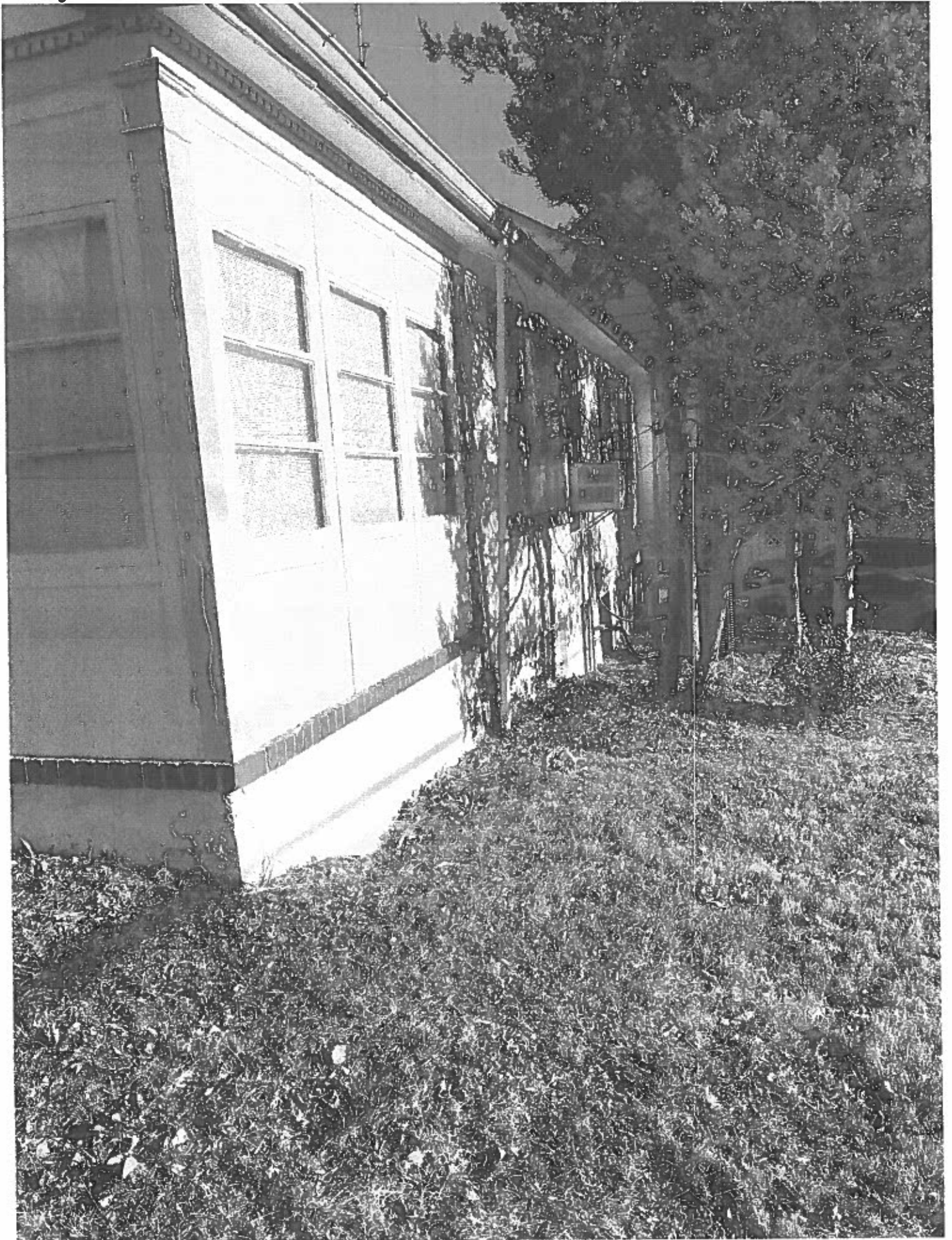
front



left



right



AZIMUTH AND TILT ANGLE

| DESCRIPTION | A | B | C | D | E | F |
|-----------------|------|---|---|---|---|---|
| TIFF ANGLE | 212° | | | | | |
| SLOPE ANGLE | 17° | | | | | |
| TOTAL COUNT: 18 | | | | | | |

| SHEET INDEX | AZIMUTH | TILT ANGLE |
|-------------|---------|------------|
| 01 | | |
| 02 | | |
| 03 | | |
| 04 | | |
| 05 | | |
| 06 | | |
| 07 | | |

APPLICABLE CODES
 2023 INTERNATIONAL ELECTRICAL CODE (IEC) (AS AMENDED)
 2023 INTERNATIONAL RESIDENTIAL CODE (IRC) (AS AMENDED)



481 W. MARKET STREET, FLOOR 101 PHILADELPHIA, PA 19106-3350
 TEL: 215-578-3000 FAX: 215-578-3001
 WWW.VECTORENGINEERING.COM

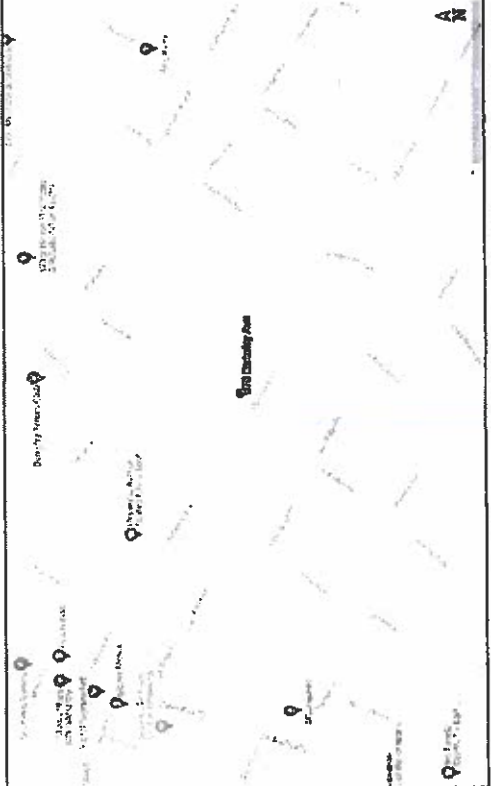
Vector Electrical Engineering has reviewed the existing structure with the intent to ensure proper installation of solar panels. The structure will be used for the solar array and will be subject to the same requirements as other structural members of the building and all other requirements shall apply. Structural steel is by other, fabricated, uncoated, and all other details shall be as shown on the drawings. Structural steel is by other, fabricated, uncoated, and all other details shall be as shown on the drawings. Structural steel is by other, fabricated, uncoated, and all other details shall be as shown on the drawings. Structural steel is by other, fabricated, uncoated, and all other details shall be as shown on the drawings.

OCCUPANCY & CONSTRUCTION TYPE
 OCCUPANCY - 03
 CONSTRUCTION - 18

CONSTRUCTION NOTES

- A. ALUMINUM SHALL BE IN PLACE ON ANY INSPECTIONS IN COMPLIANCE WITH OSHA REGULATIONS.
- B. PV MODULES ARE NON-COMBUSTIBLE IN NATURE.
- C. THIS SYSTEM IS A UTILITY INTERACTIVE (GRID CONNECTED) SYSTEM AND DOES NOT HAVE STORAGE BATTERIES (UNLESS SPECIFICALLY INDICATED ON SHEET P10 & P11-1).
- D. A GROUNDING SYSTEM SHALL BE PROVIDED IN ACCORDANCE WITH NEC 680.47 & 250.30. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- E. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- F. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- G. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- H. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- I. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- J. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- K. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- L. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- M. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- N. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- O. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- P. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- Q. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- R. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- S. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- T. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- U. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- V. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- W. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- X. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- Y. THE GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

VICINITY MAP



BRIGHT PLANET SOLAR
 103A MILLBURY ST.
 AUBURN MA 01501
 888-807-4469

PROJECT # BR-0228
 SYSTEM SIZE 8.623MPTC
 DATE 11/30/2021 10:21:48 PM
 CONTRACTOR LICENSE E-PAVAS

DATE: 11/30/2021 10:21:48 PM
 DATE: 11/30/2021 10:21:48 PM

FINNEY MITCHELL
 678 BERKELEY AVE.
 CITY OF ORANGE, NJ 07050

TITLE SHEET
 PV1



431 W. GARDEN PLACE SUITE 101 | PRINCETON, NJ 08542-4400
 PH: 609-520-1778 | WWW.VECTORNJ.COM

Vector Structural Engineering has reviewed the existing structure with respect to the proposed solar panel installation. The design of the racking system, including connections, and all other structural elements, including, but not limited to, foundation, and all other components shall be the design responsibility of the contractor. Electricals by others. Electricals by others. Electricals by others.

Jacob S. Proctor, P.E.
 NJ License: 24 GE 05571900 Expires: 2022-04-30
 Firm License: COA - 24 GA 28120600
 VSE Project: U1932-4350-211

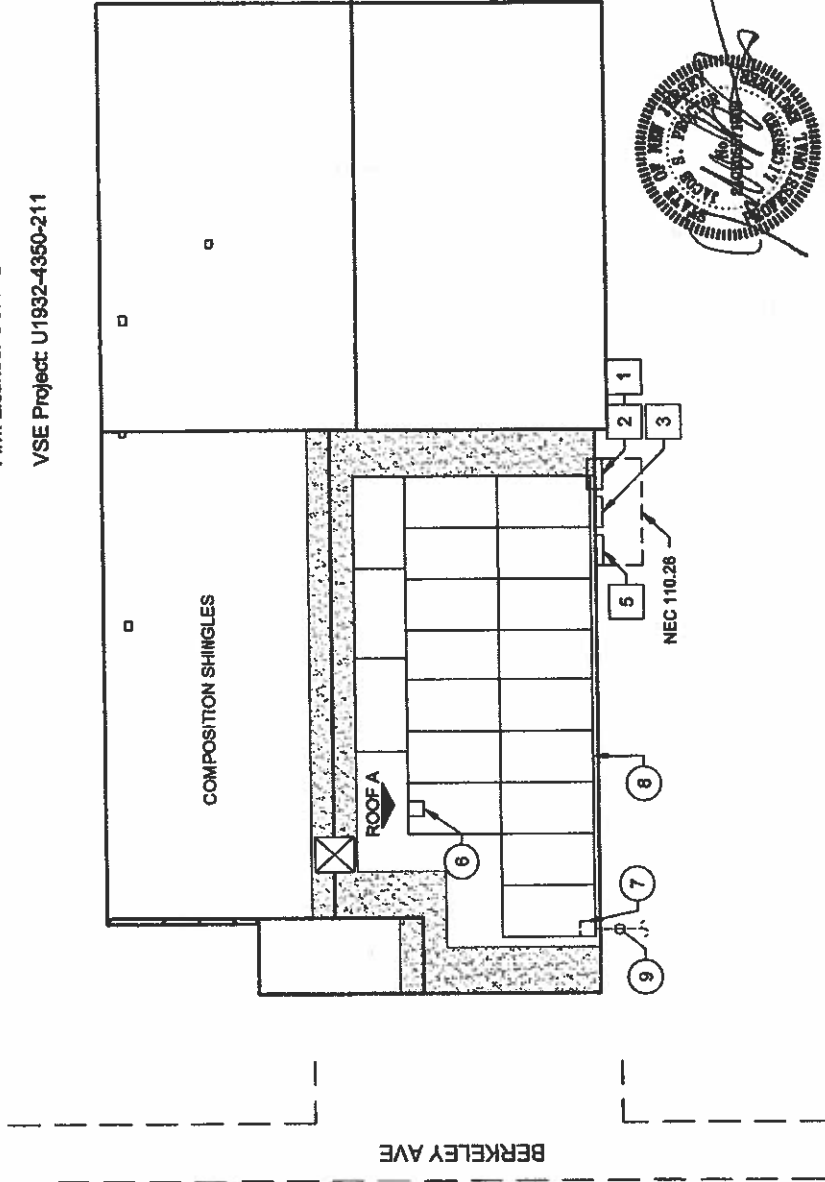
| AZIMUTH AND TILT ANGLE | | | | | | | | | |
|------------------------|------|---|---|---|---|---|--|--|--|
| | A | B | C | D | E | F | | | |
| NUMBER | 212 | | | | | | | | |
| TILT ANGLE | 7/12 | | | | | | | | |
| MODULE COUNT | 18 | | | | | | | | |
| SOLAR ACCESS | | | | | | | | | |
| USFA AVERAGE | | | | | | | | | |
| IMPORTERS | | | | | | | | | |
| OPTIMIZER | | | | | | | | | |
| SOLAR EDGE (MM) | | | | | | | | | |
| SOLAR EDGE (MM) | | | | | | | | | |
| COMP. UT-6000P-3004 | | | | | | | | | |
| COUNT: | 12 | | | | | | | | |
| MODULES: | | | | | | | | | |
| TOTAL COUNT: | 12 | | | | | | | | |

NEW JERSEY FIRE CODE SETBACKS



SYMBOL LEGEND
 □ = MECHANICAL VENT
 ○ = FLUE / PLUMBING VENT

- 1 MAIN SERVICE PANEL
- 2 UTILITY METER
- 3 AC DISCONNECT
- 4 NOT USED
- 5 INVERTER & INTEGRATED DC DISCONNECT
- 5.1 NOT USED
- 6 OPTIMIZER (TYPICAL FOR EACH MODULE)
- 7 JUNCTION BOX ROOF SIZED DETERMINED IN FIELD
- 8 PV MODULES
- 9 CONDUIT RUN IS SURFACE MOUNTED (ACTUAL CONDUIT RUNS TO BE DETERMINED IN THE FIELD)
- 10 NOT USED



11/30/2021



| PROJECT # | DESCRIPTION | REV | DATE | PROJECT # | DESCRIPTION | REV | DATE |
|------------------------|-------------|-----|------|------------------------|-------------|-----|------|
| BPS10284 | | | | BPS10284 | | | |
| 6.80XWDC | | | | 6.80XWDC | | | |
| 11/29/2021 10:21:49 PM | | | | 11/29/2021 10:21:49 PM | | | |
| DESIGNER: E. RIVAS | | | | DESIGNER: E. RIVAS | | | |

| | |
|--|--|
| BRIGHT PLANET SOLAR 103A MILLBURY ST AUBURN MA 01501 888-987-4469 | FINNEY MITCHELL 678 BERKELEY AVE, CITY OF ORANGE, NJ 07060 |
| SIGNATURE: CONTRACTOR LICENSE: DATE: 11/29/2021 10:21:49 PM | ROOF/SITE PLAN SHEET: PV2 |

NOTE: PLAQUES SHALL BE ATTACHED TO THE SERVICE EQUIPMENT WITH NON CORROSIVE, POP-RIVETS, SCREWS, OR APPROVED ADHESIVE

1 LOCATION: MAIN SERVICE PANEL & AC DISCONNECT

⚠ WARNING

ELECTRIC SHOCK HAZARD
DO NOT TOUCH TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

PROWIRING WORKS SHALL BE PERFORMED BY LICENSED ELECTRICIANS WHOSE LICENSE IS CURRENT AND VALID

2 LOCATION: MAIN SERVICE PANEL PV BACK-FED BREAKER

⚠ WARNING

INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS OVERCURRENT DEVICE

3 LOCATION: MAIN SERVICE PANEL PV BACK-FED BREAKER

⚠ WARNING

DUAL POWER SUPPLY
SOURCE: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

4 LOCATION: UTILITY METER

⚠ WARNING

THIS SERVICE METER IS ALSO SERVED BY A PHOTOVOLTAIC SYSTEM

5 LOCATION: PV SUB PANEL (IF USED)

⚠ WARNING

PHOTOVOLTAIC SYSTEM COMBINER PANEL
DO NOT ADD LOADS

6 CONDUIT, RACEWAYS & ENCLOSURES

WARNING: PHOTOVOLTAIC POWER SOURCE

7 LOCATION: DC DISCONNECT/INVERTER #1

| | |
|---|--------|
| WARNING: PHOTOVOLTAIC POWER SOURCE | |
| MAXIMUM CIRCUIT CAPACITY: | 33.5 A |
| MAXIMUM SYSTEM VOLTAGE: | 480 V |
| MAXIMUM PERMITTED CURRENT OF THE SOURCE CONDUIT OR RACEWAY: | 35 A |

8 LOCATION: MAIN SERVICE PANEL

| | |
|---|--------------------------|
| PV SYSTEM POINT OF CONNECTION | |
| SOLAR PV SYSTEM AC POINT OF CONNECTION | |
| DO NOT REMOVE THIS LABEL | DO NOT REMOVE THIS LABEL |
| MAXIMUM PERMITTED CURRENT OF THE SOURCE CONDUIT OR RACEWAY: | 35 A |

9 LOCATION: MAIN SERVICE PANEL

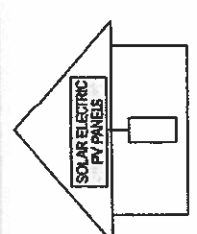
PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

10 LOCATION: INVERTER

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY

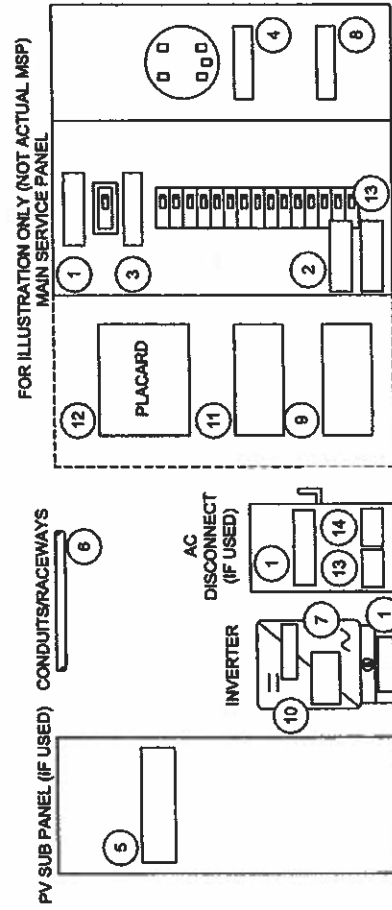


13 LOCATION: MAIN SERVICE PANEL / AC DISCONNECT

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

14 LOCATION: AC DISCONNECT

PHOTOVOLTAIC AC DISCONNECT



FOR ILLUSTRATION ONLY (NOT ACTUAL MSP) MAIN SERVICE PANEL

BRIGHT PLANET SOLAR
103A MILLBURY ST
AUBURN MA 01501
888-997-4468

PROJECT # BPS10204
SYSTEM SIZE 6.6kWDC
DATE: 11/29/2021 10:22:04 PM
DESIGNER: E. RIVAS

REV DATE DESCRIPTION

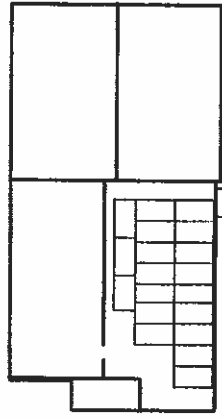
FINNEY MITCHELL
678 BERKELEY AVE,
CITY OF ORANGE, NJ 07050

12 PLACARD

CAUTION

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

BERKELEY AVE



EXISTING MAIN SERVICE ENTRANCE

SOLAR INVERTER & DC DISCONNECT

UTILITY AC DISCO

BRIGHT PLANET SOLAR
 103A MILLBURY ST.
 ALBURN MA 01501
 888-697-4469

SIGNATURE

 DATE: 11/26/2011 10:22:03 PM

PROJECT # 8510204
 SYSTEM SIZE 4.65kWDC
 DATE 11/26/2011 10:22:05 PM

DESIGNER E. ANNAS

REV
 DATE

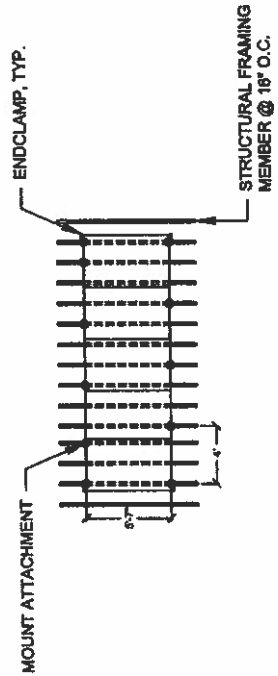
DESCRIPTION

FINNEY MITCHELL
 678 BERKELEY AVE
 CITY OF ORANGE, NJ 07060

PLACARD
 PV4.1



- MOUNT ATTACHMENT LOCATION
- MAXIMUM OVERHANG (CANTILEVER) IS 18"
- MAXIMUM SPACING OF ANCHORS (FOOTINGS) IS 48 IN. O.C.
- FIELD VERIFY EXACT LOCATION OF STRUCTURE MEMBERS.



ROOF A
ELECTROSTATIC DEAD LOAD STATEMENT
 TOTAL AREA OF ARRAY = 344.64 SQ. FT.
 ARRAY GROSS WEIGHT = 888.06 LBS
 DEAD LOAD RATING = 2.6 LBS/SQ.FT.
 EXISTING STRUCTURAL FRAMING = 2x6 @ 16 IN. O.C.



441 W. Madison Ave. 4th Fl. New York, NY 10017
 Tel: (212) 904-1778
 www.vectorny.com

Vector Structural Engineering has reviewed the building structure with respect to the proposed solar array and has determined that the existing structure is adequate to support the array. The design of the mounting system, including connections, and all other structural aspects of the design are by others. Electrical is by others. Unless stamped by Jason Lencioni.



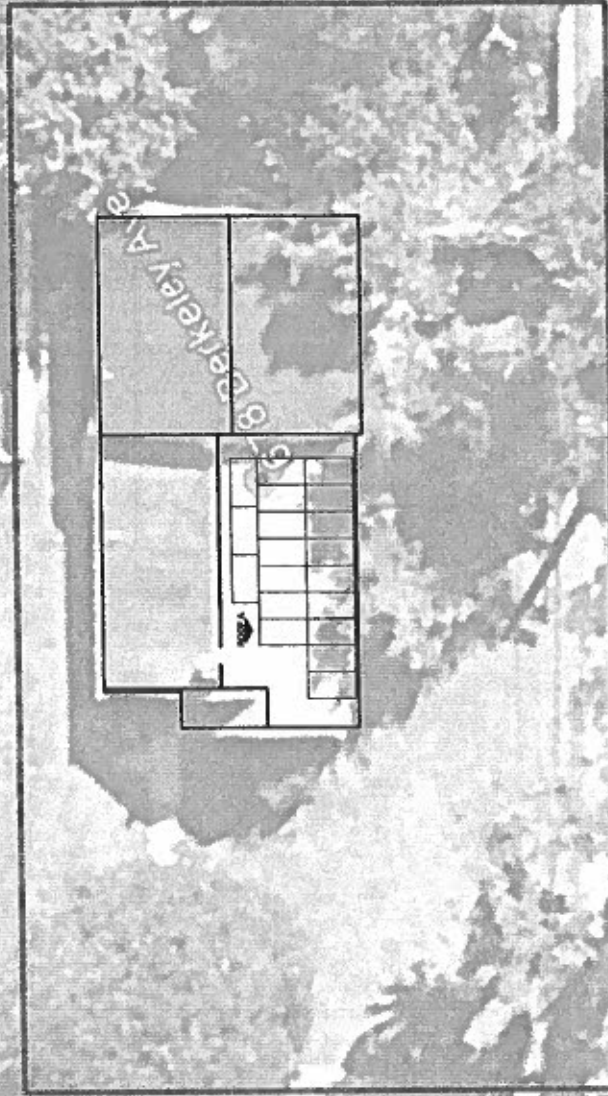
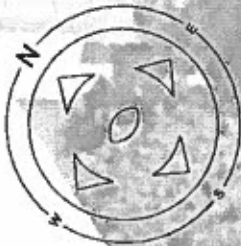
11/30/2021

Jacob S. Proctor, P.E.
 NJ License: 24 GE 05571900 Expires: 2022-04-30
 Firm License: COA - 24 GA 28120800

VSE Project: U1932-4350-211

| | | | | | | | | | | | | | |
|--|---|--|--|--|-----------------------------------|--|--|--|-------------|--|-------------|--|--|
| | BRIGHT PLANET SOLAR 103A MILLBURY ST AUBURN MA 01501 888-997-4488 | | SIGNATURE: CONTRACTOR LICENSE DATE: 11/29/2021 10:22:08 PM | | PROJECT # SYSTEM SIZE DATE: | | 8PS10224 6.68KWDC 11/29/2021 10:22:08 PM | | REV DATE | | DESCRIPTION | | SHEET TITLE ATTACHMENT PLAN |
| | | | DESIGNER: E. RIVAS | | | | | | | | | | PERIT PV5 |

FINNEY MITCHELL
 678 BERKELEY AVE
 CITY OF ORANGE, NJ 07050



681 W. GARDNER ROAD, SUITE 101, PROCTOR AVE (1.990) 1778
 OAKLAND, ILLINOIS 60452 www.vectoreng.com

Vector Structural Engineering has reviewed the existing structure with
 bearing from the ground and the existing system, including connections, and all
 other structural & by others, Mechanical, architectural, and all other
 non-structural aspects of the design are by others. Electrical is by others.
 unless stamped by Jason Lambert.



11/30/2021

Jacob S. Proctor, P.E.

NJ License: 24 GE 05571900 Expires: 2022-04-30

Firm License: COA - 24 GA 28120600

VSE Project: U1932-4350-211

SIGNATURE:
 CONTRACTOR LICENSE:
 DATE: 11/29/2021 10:22:09 PM

BRIGHT PLANET SOLAR
 103A MILLBURY ST
 AUBURN MA 01501
 888-897-4469



DESCRIPTION

DATE

REV

SF'S 10224

SYSTEM SIZE

DESIGNER:

DATE: 11/29/2021 10:22:09 PM

PROPERTY LINES

PV7

FINNEY MITCHELL
 678 BERKELEY AVE.
 CITY OF ORANGE, NJ 07060

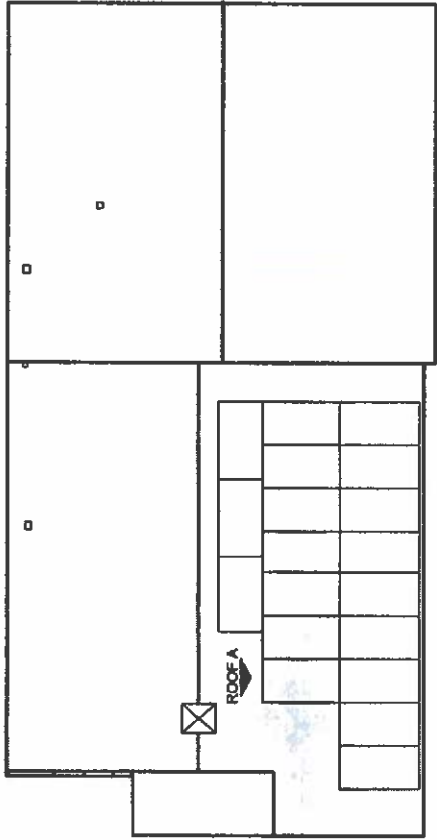
MAPPING INSTRUCTIONS:

1. REMOVE THE 'SQUARE' OPTIMIZER STICKER AND PLACE NEATLY ON THE APPROPRIATE NUMBERED SPACE.
2. WRITE THE CORRESPONDING NUMBER ON THE APPROPRIATE MODULE WITHIN THE ARRAY.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

| | | | | | | | | | | |
|-------------------------|------------------------|---|---|---|---|---|---|---|---|----|
| ADMINISTRATIVE TO ARRAY | | | | | | | | | | |
| PROJECT # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| SYSTEM SIZE | | | | | | | | | | |
| DATE | | | | | | | | | | |
| DESIGNER | E. 1060.3 | | | | | | | | | |
| DATE | 11/25/2021 12:22:09 PM | | | | | | | | | |
| PROJECT # | 05182284 | | | | | | | | | |
| SYSTEM SIZE | 6.65KWDC | | | | | | | | | |
| DATE | 11/25/2021 12:22:09 PM | | | | | | | | | |
| DESIGNER | E. 1060.3 | | | | | | | | | |

INVERTER(S) SERIAL NUMBERS



BRIGHT PLANET SOLAR
 103A MILLBURY ST.
 AUBURN MA 01501
 888-697-4669



PROJECT # 05182284
 SYSTEM SIZE 6.65KWDC
 DATE 11/25/2021 12:22:09 PM
 DESIGNER E. 1060.3


REV _____
 DATE _____
 DESCRIPTION _____

FINNEY MITCHELL
 678 BERKELEY AVE
 CITY OF ORANGE, NJ 07050

OPTIMIZER TRACKING
 PV8

JOB HAZARD ANALYSIS

LEGEND

 EXCLUSION ZONE

XXXXXXXXXXXXXXXXXX
ELECTRICAL ZONE

L LADDER

A ANCHOR

 ANCHOR WORK ANGLES

V VEHICLES

 HAZARD NUMBER & EXPLAIN

 TREE

E HOME ENTRANCES

SITE NOTES (INCLUDE ANY HAZARD, NUMBERED AND EXPLAINED):

CLOSEST URGENT CARE / MEDICAL FACILITY:

PUBLIC PROTECTION:
 EXCLUSION ZONES
 MARKED ENTRYWAYS

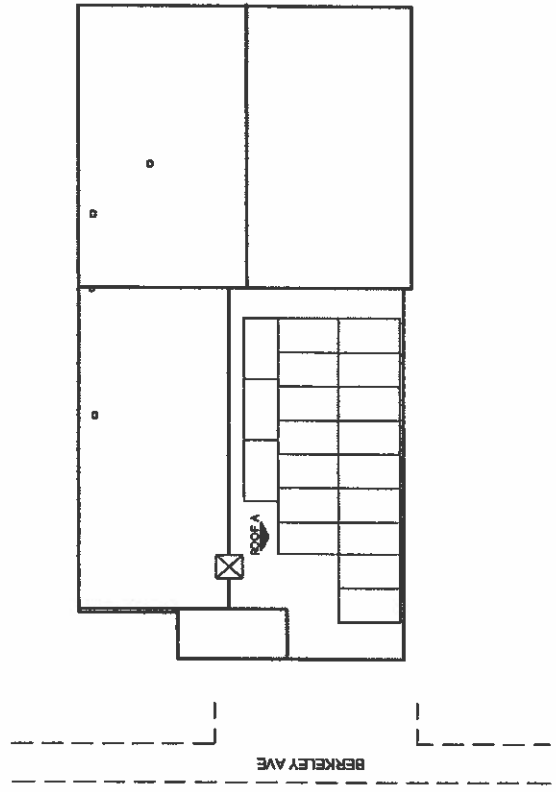
FALL PROTECTION:
 ANCHORS
 ROPES / CARABINERS & ROPE GRAB
 HARNESS
 LANYARDS

PPE:
 SAFETY GLASSES
 GLOVES
 HARD HATS
 ARC FLASH SUIT / HOT GLOVES
 FIRST AID KIT
 COVID-19 PPE ON SITE
 CREW ADHERING TO BPS COVID-19 PLAN

DATE:

CREW LEAD:

CREW MEMBERS:



PROJECT #
 SYSTEM SIZE
 DATE: 11/29/2021 10:22:10 PM
 DESIGNER: E. RIVAS

FINNEY MITCHELL
 678 BERKELEY AVE.
 CITY OF ORANGE, NJ 07050

DESCRIPTION

DATE

REV

BPS10284
 E. RIVAS
 11/29/2021 10:22:10 PM
 E. RIVAS

PROJECT #
 SYSTEM SIZE
 DATE: 11/29/2021 10:22:10 PM
 DESIGNER: E. RIVAS

SIGNATURE
 CONTRACTOR LICENSE
 DATE: 11/29/2021 10:22:10 PM

BRIGHT PLANET SOLAR
 103A MILLBURY ST
 AUBURN MA 01501
 888-997-4469



BOM SHEET

| ITEM | DESCRIPTION | MANUFACTURER | ELECTRICAL EQUIPMENT | PART NUMBER | QUANTITY NEEDED | PARTS PULLED | PARTS RECEIVED |
|-----------------------------------|--|--------------------------|--------------------------|---------------------------|-----------------|--------------|----------------|
| 1 | SOLAR PV MODULE #1 | LONGI LR4-60HPB-350M | LONGI LR4-60HPB-350M | LONGI LR4-60HPB-350M | 19 | | |
| 2 | INVERTER #1 | SOLAR EDGE SE5000H-USRGM | SOLAR EDGE SE5000H-USRGM | SOLAR EDGE SE5000H-USRGM | 1 | | |
| 3 | OPTIMIZER | SOLAR EDGE P401 | SOLAR EDGE P401 | | 19 | | |
| 4 | AC (UTILITY) DISCONNECT #1 | SQUARE D OR EQUAL | SQUARE D OR EQUAL | D222RB, 240V, 60A, 2P, 3R | 1 | | |
| 5 | EXISTING MAIN SERVICE PANEL | EATON/CUTLER HAMMER | EATON/CUTLER HAMMER | | | | |
| 6 | MAIN SERVICE PANEL ADDITIONAL PARTS | | | | | | |
| 7 | NOT USED | | | | | | |
| 7.1 | NOT USED | | | | | | |
| 7.2 | NOT USED | | | | | | |
| 7.3 | NOT USED | | | | | | |
| 8 | REVENUE METER | SOLAR EDGE | SOLAR EDGE | US000NNR2 | 1 | | |
| 9 | MAIN BREAKER | EATON/CUTLER HAMMER | EATON/CUTLER HAMMER | 200A-2P | | | |
| 10 | PV BREAKER (TIE IN) | EATON/CUTLER HAMMER | EATON/CUTLER HAMMER | 30A-2P | 1 | | |
| RACKING/ MOUNTING HARDWARE | | | | | | | |
| 11 | STANDOFF (L FEET/HOOKS/SLIDER & MOUNT) | | | | 48 | | |
| 12 | FLASHING | | | | 48 | | |
| 13 | LAG BOLT | | | | 48/96 | | |
| 14 | GROUND LIGGS | | | | 5 | | |
| 15 | RAIL | | | | 16 | | |
| 16 | SPICES OR SKIRTS | | | | 16 | | |
| 17 | OPTIMIZER MOUNT | | | | 19 | | |
| 18 | MID CLAMPS | | | | 38 | | |
| 19 | END CLAMPS OR RL LINK | | | | 19 | | |
| 20 | J BOX | | | | | | |
| 21 | ADDITIONAL KITS REQUIRED | | | | PULL AS NEEDED | | |

PICKED BY: _____

RECEIVED BY: _____



BRIGHT PLANET SOLAR
100A MILLEBURY ST.
ALBURN MA 01501
888-387-4469

SIGNATURE: *[Signature]*
DATE: 11/29/2021 10:22:11 PM

PROJECT # 0910224
SYSTEM SIZE 50KW
DATE: 11/29/2021 10:22:11 PM
PERSONNEL E. ROMA

DESCRIPTION

FINNEY MITCHELL
678 BERKELEY AVE.
CITY OF ORANGE, NJ 07060

BOM SHEET
PV10



VSE Project Number: U1932.4350.211

November 30, 2021

Bright Planet Solar
ATTENTION: Mikey Heinz
103A Millbury St.
Auburn, MA 01501

REFERENCE: Mitchell Finney Residence: 678 Berkeley Avenue, City of Orange, NJ 07050
Bright Planet Solar Project: BPS102284
Solar Array Installation

To Whom It May Concern:

Per your request, we have reviewed the existing structure at the above referenced site. The purpose of our review was to determine the adequacy of the existing structure to support the proposed installation of solar panels on the roof as shown on the panel layout plan.

Based upon our review, we conclude that the existing structure is adequate to support the proposed solar panel installation.

Design Parameters

Code: International Building Code, 2018 New Jersey Edition
Risk Category: II
Design wind speed, Vult: 113 mph (3-sec gust)
Wind exposure category: C
Ground snow load, Pg: 25 psf

Existing Roof Structure

Roof structure: 2x6 rafters @ 16" o.c.
Roofing material: composite shingles
Roof pitch: 7:12

Connection to Roof

Mounting connection: (1) 5/16" lag screw w/ min. 2.5" threaded embedment into framing at max. 48" o.c. (portrait and landscape) at panel seams
This installation uses a rail-less system. Panel Orientation: Mixture of portrait and landscape.
Maximum panel dimension: 72.5x40 in

Conclusions

Based upon our review, we conclude that the existing structure is adequate to support the proposed solar panel installation. In the area of the solar array, other live loads will not be present or will be greatly reduced (2018 IBC, Section 1607.13.5). The glass surface of the solar panels allows for a lower slope factor per ASCE 7, resulting in reduced design snow load on the panels. The gravity loads, and thus the stresses of the structural elements, in the area of the solar array are either decreased or increased by no more than 5%. Stress decreases or increases of no more than 5% are considered acceptable. Therefore, the structure is permitted to remain unaltered.



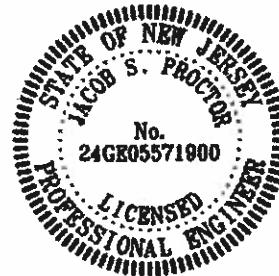
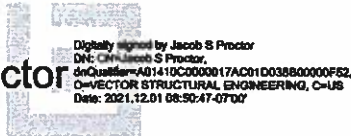
The solar array will be flush-mounted (no more than 10" above the roof surface) and parallel to the roof surface. Thus, we conclude that any additional wind loading on the structure related to the addition of the proposed solar array is negligible. The attached calculations verify the capacity of the connections of the solar array to the existing roof against wind (uplift), the governing load case. Increases in lateral forces less than 10% are considered acceptable. Thus the existing lateral force resisting system is permitted to remain unaltered.

Limitations

Installation of the solar panels must be performed in accordance with manufacturer recommendations. All work performed must be in accordance with accepted industry-wide methods and applicable safety standards. The contractor must notify Vector Structural Engineering, LLC should any damage, deterioration or discrepancies between the as-built condition of the structure and the condition described in this letter be found. Connections to existing roof framing must be staggered, except at array ends, so as not to overload any existing structural member. The use of solar panel support span tables provided by others is allowed only where the building type, site conditions, site-specific design parameters, and solar panel configuration match the description of the span tables. The design of the solar panel racking (mounts, rails, etc.) and electrical engineering is the responsibility of others. Waterproofing around the roof penetrations is the responsibility of others. Vector Structural Engineering assumes no responsibility for improper installation of the solar array.

VECTOR STRUCTURAL ENGINEERING, LLC
NJ Firm License: COA - 24 GA 28120600

Jacob S Proctor



11/30/2021

Jacob Proctor, P.E.
NJ License: 24GE05571900 - Expires: 04/30/2022
Project Engineer

Enclosures

JSP/rs1



JOB NO.: U1932.4350.211
 SUBJECT: WIND PRESSURE

PROJECT: Mitchell Finney Residence

Components and Cladding Wind Calculations

Label: Solar Panel Array

Note: Calculations per ASCE 7-16

SITE-SPECIFIC WIND PARAMETERS:

Basic Wind Speed [mph]: 113
 Exposure Category: C
 Risk Category: II

Notes:
 [Redacted]

ADDITIONAL INPUT & CALCULATIONS:

Height of Roof, h [ft]: 15 (Approximate)
 Comp/Cladding Location: Gable Roofs $27^\circ < \theta \leq 45^\circ$
 Enclosure Classification: Enclosed Buildings

| | | | | | |
|---------------------|------|-------------------|-----------------------------|------|-------------|
| Zone 1, 2e, 2r GCp: | 1.42 | Figure 30.3-2D | Zone 1, 2e, 2r γ_a : | 0.65 | Fig. 29.4-8 |
| Zone 2n, 3r GCp: | 1.94 | (negative coeff.) | Zone 2n, 3r γ_a : | 0.77 | |
| Zone 3e GCp: | 2.41 | | Zone 3e γ_a : | 0.77 | |

α : 9.5 Table 26.11-1
 z_g [ft]: 900 Table 26.11-1
 K_h : 0.85 Table 26.10-1
 K_o : 0.99 Table 26.9-1
 K_{zt} : 1 Equation 26.8-1
 K_d : 0.85 Table 26.6-1
 Velocity Pressure, q_h [psf]: 23.4 Equation 26.10-1
 γ_E : 1.50 Section 29.4.4

WIND PRESSURES: Equation 29.4-7 $p = q_h (GC_p) (\gamma_E) (\gamma_a)$

Zone 1, 2e, 2r, p [psf]: 32.1 psf (1.0 W)
 Zone 2n, 3r, p [psf]: 52.0 psf (1.0 W)
 Zone 3e, p [psf]: 64.7 psf (1.0 W)

(a = 3 ft)



JOB NO.: U1932.4350.211
SUBJECT: CONNECTION

PROJECT: Mitchell Finney Residence

Calculate Uplift Forces on Connection

| | Pressure (0.6 Dead -0.6 Wind) (psf) | Max Trib. Width ¹ (ft) | Max Trib. Area ² (ft ²) | Max Uplift Force (lbs) |
|----------------|---|--------------------------------------|--|------------------------------|
| Zone 1, 2e, 2r | 17.4 | 4.0 | 24.2 | 421 |
| Zone 2n, 3r | 29.4 | 4.0 | 12.1 | 355 |
| Zone 3e | 37.0 | 4.0 | 12.1 | 447 |

Calculate Connection Capacity

| | | |
|------------------------------|----------------|-----------------|
| Lag Screw Size [in]: | 5/16 | |
| C _d : | 1.6 | NDS Table 2.3.2 |
| Embedment ³ [in]: | 2.5 | |
| Grade: | SPF (G = 0.42) | |
| Nominal Capacity [lbs/in]: | 205 | NDS Table 12.2A |
| Number of Screws: | 1 | |
| Prying Coefficient: | 1.4 | |
| Total Capacity [lbs]: | 586 | |

Determine Result

| | |
|---------------------------|-----|
| Maximum Demand [lbs]: | 447 |
| Lag Screw Capacity [lbs]: | 586 |

Result: Capacity > Demand. Connection is adequate.

Notes

1. 'Max Trib. Width' is the width along the panel seams tributary to the connection.
2. 'Max Trib Area' is the product of the 'Max. Trib Width' and the panel width/height perpendicular to the direction of the connection spacing. Tributary area on connections at array edges are reduced by 50% as they
3. Embedment is measured from the top of the framing member to the beginning of the tapered tip of the lag screw. Embedment in sheathing or other material is not effective. The length of the tapered tip is not part of the embedment length.



JOB NO.: U1932.4350.211
SUBJECT: GRAVITY LOADS

PROJECT: Mitchell Finney Residence

GRAVITY LOADS

Roof Pitch: :12

| ROOF DEAD LOAD (D) | Design material weight [psf] | Increase due to pitch | Material weight [psf] |
|---------------------------|------------------------------|-----------------------|-----------------------|
| Composite Shingles | 2.3 | 1.16 | 2.0 |
| 1/2" Plywood | 1.2 | 1.16 | 1.0 |
| Framing | 3.0 | | 3.0 |
| Insulation | 0.0 | | 0.0 |
| 1/2" Gypsum Clg. | 0.0 | 1.16 | 0.0 |
| M, E & Misc | 0.0 | | 0.0 |
| Total Existing Roof DL | 6.5 | | |
| PV Array DL | 3.5 | 1.16 | 3 |

ROOF LIVE LOAD (Lr)

| | | |
|--------------------------------------|---------------------------------|-----------------------------|
| Existing Design Roof Live Load [psf] | <input type="text" value="20"/> | ASCE 7-16 Table 4.3-1 |
| Roof Live Load With PV Array [psf] | <input type="text" value="0"/> | 2018 IBC, Section 1607.13.5 |

SNOW LOAD (S):

Existing w/ Solar Array

| | | | |
|--------------------------------------|--|--|---------------------------|
| Roof Slope [x:12]: | <input type="text" value="7.0"/> | <input type="text" value="7.0"/> | |
| Roof Slope [°]: | <input type="text" value="30"/> | <input type="text" value="30"/> | |
| Ground Snow Load, p_g [psf]: | <input type="text" value="25"/> | <input type="text" value="25"/> | ASCE 7-16, Section 7.2 |
| Terrain Category: | <input type="text" value="C"/> | <input type="text" value="C"/> | ASCE 7-16, Table 7.3-1 |
| Exposure of Roof: | <input type="text" value="Fully Exposed"/> | <input type="text" value="Fully Exposed"/> | ASCE 7-16, Table 7.3-1 |
| Exposure Factor, C_e : | <input type="text" value="0.9"/> | <input type="text" value="0.9"/> | ASCE 7-16, Table 7.3-1 |
| Thermal Factor, C_t : | <input type="text" value="1.1"/> | <input type="text" value="1.1"/> | ASCE 7-16, Table 7.3-2 |
| Risk Category: | <input type="text" value="II"/> | <input type="text" value="II"/> | ASCE 7-16, Table 1.5-1 |
| Importance Factor, I_s : | <input type="text" value="1.0"/> | <input type="text" value="1.0"/> | ASCE 7-16, Table 1.5-2 |
| Flat Roof Snow Load, p_f [psf]: | <input type="text" value="17"/> | <input type="text" value="17"/> | ASCE 7-16, Equation 7.3-1 |
| Minimum Roof Snow Load, p_m [psf]: | <input type="text" value="0"/> | <input type="text" value="0"/> | ASCE 7-16, Section 7.3.4 |
| Unobstructed Slippery Surface? | <input type="text" value="No"/> | <input type="text" value="Yes"/> | ASCE 7-16, Section 7.4 |
| Slope Factor Figure: | <input type="text" value="Figure 7-2b"/> | <input type="text" value="Figure 7-2b"/> | ASCE 7-16, Section 7.4 |
| Roof Slope Factor, C_s : | <input type="text" value="1.00"/> | <input type="text" value="0.66"/> | ASCE 7-16, Figure 7.4-1 |
| Sloped Roof Snow Load, p_s [psf]: | <input type="text" value="17"/> | <input type="text" value="11"/> | ASCE 7-16, Equation 7.4-1 |
| Design Snow Load, S [psf]: | <input type="text" value="17"/> | <input type="text" value="11"/> | |



PROJECT: Mitchell Finney Residence

Summary of Loads

| | Existing | With PV Array |
|----------|----------|---------------|
| D [psf] | 6 | 10 |
| Lr [psf] | 20 | 0 |
| S [psf] | 17 | 11 |

Maximum Gravity Loads:

| | Existing | With PV Array | |
|---------------------|----------|---------------|--------------------------|
| (D + Lr) / Cd [psf] | 21 | 11 | ASCE 7-16, Section 2.4.1 |
| (D + S) / Cd [psf] | 21 | 19 | ASCE 7-16, Section 2.4.1 |

(Cd = Load Duration Factor = 0.9 for D, 1.15 for S, and 1.25 for Lr)

| | | |
|-----------------------------|----|----|
| Maximum Gravity Load [psf]: | 21 | 19 |
|-----------------------------|----|----|

Ratio Proposed Loading to Current Loading:

| |
|-----|
| 88% |
|-----|

 OK

The gravity loads, and thus the stresses of the structural elements, in the area of the solar array are either decreased or increased by no more than 5%. Stress decreases or increases of no more than 5% are considered acceptable. Therefore, the structure is permitted to remain unaltered.