



State of New Hampshire
Board of Electricians

Authorized as
Electrician Master

Issued to: Corey P Garneau

License #: 15005
Issue Date: 09/29/2021
Expiration Date: 10/31/2025

Active

Master & Journeyman licenses will be invalid if the NEC update is not completed within one year from January 1st after the publication of the NEC. Apprentices & HMV Trainees must be directly supervised at all times. Journeyman must be employed and supervised by a Master.

OPLC Pocket Card; Cut on dotted lines and fold in half; text **MUST** be present on the back

For Electricians' Board Licensees:

You are now required to have a government issued photo identification available at all times while you are working. You may be subject to disciplinary action for failure to produce photo identification upon request of a State Electrical Inspector per RSA 319-C:5.



Scott E. Wyssling, PE
Coleman D. Larsen, SE, PE
Gregory T. Elvestad, PE

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Alpine, UT 84004
office (201) 874-3483
swyssling@wysslingconsulting.com

May 16, 2023

Illumine Industries
39111 Paseo Padre Parkway Suite 313
Fremont, CA 94538

Re: Engineering Services
Lagare Residence
147 Main Street, Meriden NH
8.910 kW System

To Whom It May Concern:

We have received information regarding solar panel installation on the roof of the above referenced structure. Our evaluation of the structure is to verify the existing capacity of the roof system and its ability to support the additional loads imposed by the proposed solar system.

A. Site Assessment Information

1. Site visit documentation identifying attic information including size and spacing of framing for the existing roof structure.
2. Design drawings of the proposed system including a site plan, roof plan and connection details for the solar panels. This information will be utilized for approval and construction of the proposed system.

B. Description of Structure:

Roof Framing: Prefabricated wood trusses at 24" on center. The top truss members are constructed of 2x6 dimensional lumber and all other members of 2x4 dimensional lumber.
Roof Material: Composite Asphalt Shingles
Roof Slopes: 18 degrees
Attic Access: Accessible
Foundation: Permanent

C. Loading Criteria Used

- **Dead Load**
 - Existing Roofing and framing = 7 psf
 - New Solar Panels and Racking = 3 psf
 - TOTAL = 10 PSF
- **Live Load** = 20 psf (reducible) – 0 psf at locations of solar panels
- **Ground Snow Load** = 65 psf
- **Wind Load** based on ASCE 7-16
 - Ultimate Wind Speed = 109 mph (based on Risk Category II)
 - Exposure Category C

Analysis performed of the existing roof structure utilizing the above loading criteria is in accordance with the 2018 IRC, including provisions allowing existing structures to not require strengthening if the new loads do not exceed existing design loads by 105% for gravity elements and 110% for seismic elements. This analysis indicates that the existing framing will support the additional panel loading without damage, if installed correctly.

D. Solar Panel Anchorage

1. The solar panels shall be mounted in accordance with the most recent Ironridge installation manual. If during solar panel installation, the roof framing members appear unstable or defect non-uniformly, our office should be notified before proceeding with the installation.
2. The maximum allowable withdrawal force for a $5/16$ " lag screw is 229 lbs per inch of penetration as identified in the National Design Standards (NDS) of timber construction specifications. Based on a minimum penetration depth of $2\frac{1}{2}$ ", the allowable capacity per connection is greater than the design withdrawal force (demand). Considering the variable factors for the existing roof framing and installation tolerances, the connection using one $5/16$ " diameter lag screw with a minimum of $2\frac{1}{2}$ " embedment will be adequate and will include a sufficient factor of safety.
3. Considering the wind speed, roof slopes, size and spacing of framing members, and condition of the roof, the panel supports shall be placed no greater than 48" on center.

Based on the above evaluation, this office certifies that with the racking and mounting specified, the existing roof system will adequately support the additional loading imposed by the solar system. This evaluation is in conformance with the 2018 IRC, current industry standards and practice, and is based on information supplied to us at the time of this report.

Should you have any questions regarding the above or if you require further information do not hesitate to contact me.

Very truly yours,



Scott E. Wyssling, PE
New Hampshire License No. 16425
New Hampshire COA #02808



Wyssling Consulting, PLLC
76 N Meadowbrook Drive Alpine UT 84004
New Hampshire COA # 02808

Date Signed 5/16/2023

CATHERINE GARFIELD LAGARE - 8.910kW DC, 6.380kW AC

VICINITY MAP



AERIAL MAP



HOUSE VIEW



SHEET CATALOG

SHEET	REVISION	DESCRIPTION
CS-01	A	COVER SHEET
CS-02	A	GENERAL NOTES
E-01	A	SITE PLAN-01
E-01.1	A	SITE PLAN-02
S-01	A	MOUNTING DETAILS
S-02	A	STRUCTURAL DETAILS
E-02	A	SINGLE LINE DIAGRAM
E-03	A	ELECTRICAL CALCULATIONS
PL-01	A	PLACARDS
SS	A	SPEC SHEET(S)

ROOF AREA CALCULATION
 TOTAL ARRAY AREA = 464.66 sq.ft
 TOTAL ROOF AREA = 1141 sq.ft
 % ARRAY AREA IN ROOF = 40.72 %

DESIGN CRITERIA

BASIC WIND SPEED = 109 MPH @ 3-SEC GUST
 GROUND SNOW LOAD = 65 PSF
 RISK CATEGORY: II
 PROJECT WINDSPEED DETERMINED USING THE
 ASCE 7 STANDARD UNLESS DIRECTED OTHERWISE
 BY LOCAL JURISDICTION AMENDMENTS

SCOPE OF WORK

SYSTEM SIZE: 8910W DC, 6380W AC
MODULES: (22) HANWHA Q CELLS Q-PEAK DUO BULK ML-G10+ 405 (405W)
INVERTER: (22) ENPHASE IQ8PLUS-72-2-US (240V)

BRANCH DETAILS:
 1X11, 1X11 ENPHASE BRANCHES

EXISTING ENERGY STORAGE SYSTEM INFORMATION:
 (2) TESLA POWERWALL 2
 (1) TESLA POWERWALL BACKUP GATEWAY 2



Wysyng Consulting, PLLC
 76 Haddamtsirk Drive Albany, NH 04904
 New Hampshire, 030, & 07/2023

APPLICABLE CODES

- ELECTRIC CODE: NEC 2020
- FIRE CODE: NFPA 2018
- BUILDING CODE: IBC 2018
- RESIDENTIAL CODE: IRC 2018

CONTRACTOR INFORMATION

NAME: CATHERINE GARFIELD LAGARE
 ADDRESS: 147 MAIN ST, MERIDEN, NH 03770
 43.549505, -72.264458
 APN: 101/5-132-00018-00
 UTILITY: LIBERTY UTILITIES
 AHJ: NH-COUNTY SULLIVAN

DRAWING INFORMATION

PRN NUMBER: SYS-77884 REV: A
 DRAFTED BY: B.PATIL
 QC BY: H.ABHI
 SCALE: AS NOTED
 PAPER SIZE: 17 'X11'

ILLUMINE I
 COVER SHEET
 DATE: 05/16/2023
 SHEET: CS-01

ENGINEERING SCOPE OF WORK

- ILLUMINE INDUSTRIES, INC. HAS ONLY PROVIDED DRAFTING SERVICES FOR THE PERMIT DRAWINGS. NO ACTUAL ENGINEERING WORK, ENGINEERING REVIEW OR ENGINEERING APPROVAL HAS BEEN CONDUCTED BY ILLUMINE INDUSTRIES INC UNLESS NOTED OTHERWISE.
- WHEN A PROFESSIONAL ENGINEER APPROVES AND SEALS THE DESIGN FOR COMPONENTS OF THEIR RESPECTIVE DISCIPLINE (STRUCTURAL/ELECTRICAL) SHOWN ON THESE PERMIT DRAWINGS, THE PROFESSIONAL ENGINEER
 - TAKES FULL DIRECT CONTROL OF THE ENGINEERED DESIGN
 - IS GIVEN ACCESS TO PERSONALLY SUPERVISE AND RECTIFY ANY ASPECT OF THE ENGINEERED DESIGN
 - HAS FULLY ACCEPTED RESPONSIBILITY FOR THE ENGINEERED DESIGN

GENERAL NOTES

- MODULES ARE LISTED UNDER UL 61730 AND CONFORM TO THE STANDARDS.
- INVERTERS ARE LISTED UNDER UL 1741 AND CONFORM TO THE STANDARDS.
- DRAWINGS ARE DIAGRAMMATIC, INDICATING GENERAL ARRANGEMENT OF THE PV SYSTEM AND THE ACTUAL SITE CONDITION MIGHT VARY.
- WORKING CLEARANCES AROUND THE NEW PV ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.
- ALL GROUND WIRING CONNECTED TO THE MAIN SERVICE GROUNDING IN MAIN SERVICE PANEL SERVICE EQUIPMENT, ALL CONDUCTORS SHALL BE 600V, 90°C STANDARD COPPER UNLESS OTHERWISE NOTED.
- WHEN REQUIRED, A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
- THE SYSTEM WILL NOT BE INTERCONNECTED BY THE CONTRACTOR UNTIL APPROVAL FROM THE LOCAL JURISDICTION AND/OR THE UTILITY.
- ROOF ACCESS POINT SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREES, WIRES OR SIGNS.
- PV ARRAY COMBINER/JUNCTION BOX PROVIDES TRANSITION FROM ARRAY WIRING TO CONDUIT WIRING

INSTALLATION NOTES:

1. STRUCTURAL ROOF MEMBER LOCATIONS ARE ESTIMATED AND SHOULD BE LOCATED AND VERIFIED BY THE CONTRACTOR WHEN LAG BOLT PENETRATION OR MECHANICAL ATTACHMENT TO THE STRUCTURE IS REQUIRED.
2. ROOFTOP PENETRATIONS FOR SOLAR RACKING WILL BE COMPLETED AND SEALED WITH APPROVED SEALANT PER CODE BY A LICENSED CONTRACTOR.
3. LAGS MUST HAVE A MINIMUM 2.5" THREAD EMBEDMENT INTO THE STRUCTURAL MEMBER.
4. ALL PV RACKING ATTACHMENTS SHALL BE STAGGERED BY ROW BETWEEN THE ROOF FRAMING MEMBERS AS NECESSARY.
5. ROOF MOUNTED STANDARD RAIL REQUIRES ONE THERMAL EXPANSION GAP FOR EVERY RUN OF RAIL GREATER THAN 40'.
6. ALL CONDUCTORS AND CONDUITS ON THE ROOF SHALL BE MINIMUM 7/8" ABOVE THE ROOF SURFACE (INCLUDING CABLES UNDERNEATH MODULES AND RACKING).
7. THE PV INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL OR BUILDING ROOF VENTS.
8. ALL SOLAR PANEL ARRAY COMPONENTS SHALL BE INSTALLED PER THE MANUFACTURER'S APPROVED INSTALLATION SPECIFICATIONS.
9. THE EXISTING BUILDINGS STRUCTURE SHALL BE VERIFIED AS PROPERLY CONSTRUCTED AND MAINTAINED IN GOOD CONDITION. NO ALLOWANCE HAS BEEN MADE IN THESE DRAWINGS FOR ANY EXISTING DEFICIENCY IN DESIGN, MATERIAL, CONSTRUCTION, OR LACK OF MAINTENANCE FOR THE EXISTING STRUCTURE OR PROPOSED EQUIPMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING EXISTING CONDITIONS, PROPER FIT, AND CLEARANCES IN THE FIELD.
10. WATERPROOFING AROUND THE ROOF PENETRATIONS IS THE RESPONSIBILITY OF OTHERS.
11. MISCELLANEOUS ITEMS NOT EXPLICITLY LISTED OR IDENTIFIED IN THESE DRAWINGS HAVE NOT BEEN DESIGNED. IT IS RECOMMENDED THAT MATERIAL OF SUITABLE SIZE STRENGTH TO BE OBTAINED FROM A REPUTABLE MANUFACTURER FOR MISCELLANEOUS ITEMS.
12. IF PROJECT IS STAMPED AND SEALED BY AN ILLUMINE-1 STRUCTURAL ENGINEER, SEE ASSOCIATED ILLUMINE-1 STRUCTURAL REPORT FOR FULL COMPREHENSIVE SCOPE OF STRUCTURAL ENGINEERING INVESTIGATION AND APPROVAL.
13. IF ANY CONDITION THROUGHOUT THE ASSOCIATED REPORT OR PERMIT DRAWINGS IS NOT ALSO REPRESENTED ON-SITE, CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD OF ANY DISCREPANCIES AND RECEIVE WRITTEN APPROVAL FROM THE ENGINEER OF RECORD BEFORE PROCEEDING WITH INSTALLATION.
14. CONTRACTOR TO PROVIDE MINIMUM 1/4" GAP BETWEEN ALL SOLAR PANELS.

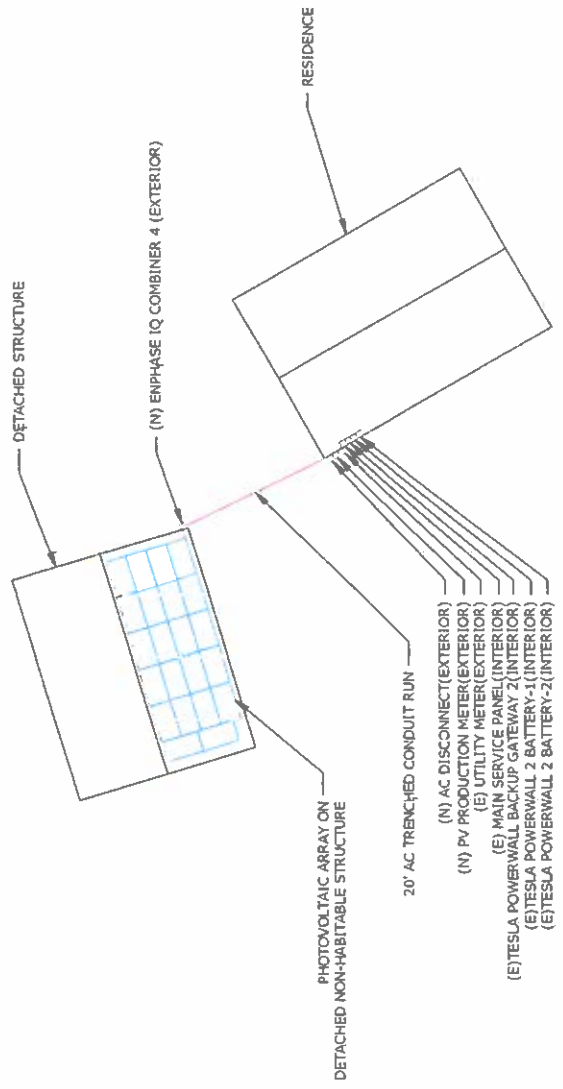


Wyasting Consulting, PLLC
 14 H Macomber Drive, Alpine, NH 03044
 New Hampshire C.O.E. # 02886
 Signed 5/19/2023

CUSTOMER INFORMATION	CONTRACTOR INFORMATION
NAME: CATHERINE GARFIELD LAGARE ADDRESS: 147 MAIN ST, MERIDEN, NH 03770 43.549505, -72.264458 APN: 10175-102-00018-00 UTILITY: LIBERTY UTILITIES AHP: NH-COUNTY SULLIVAN	PRN NUMBER: SYS-77984 REV: A DRAFTED BY: B.PATIL QC'D BY: H.ABHI SCALE: AS NOTED PAPER SIZE: 17"x11"
DRAWING INFORMATION	
ILLUMINE GENERAL NOTES DATE: 05/16/2023 SHEET: CS-02	

CATHERINE GARFIELD LAGARE - 8.910kW DC, 6.380kW AC

NOTE: PV SYSTEM TO BE INSTALLED ON
DETACHED NON-HABITABLE STRUCTURE.
NOTE: NO GATE OR FENCE



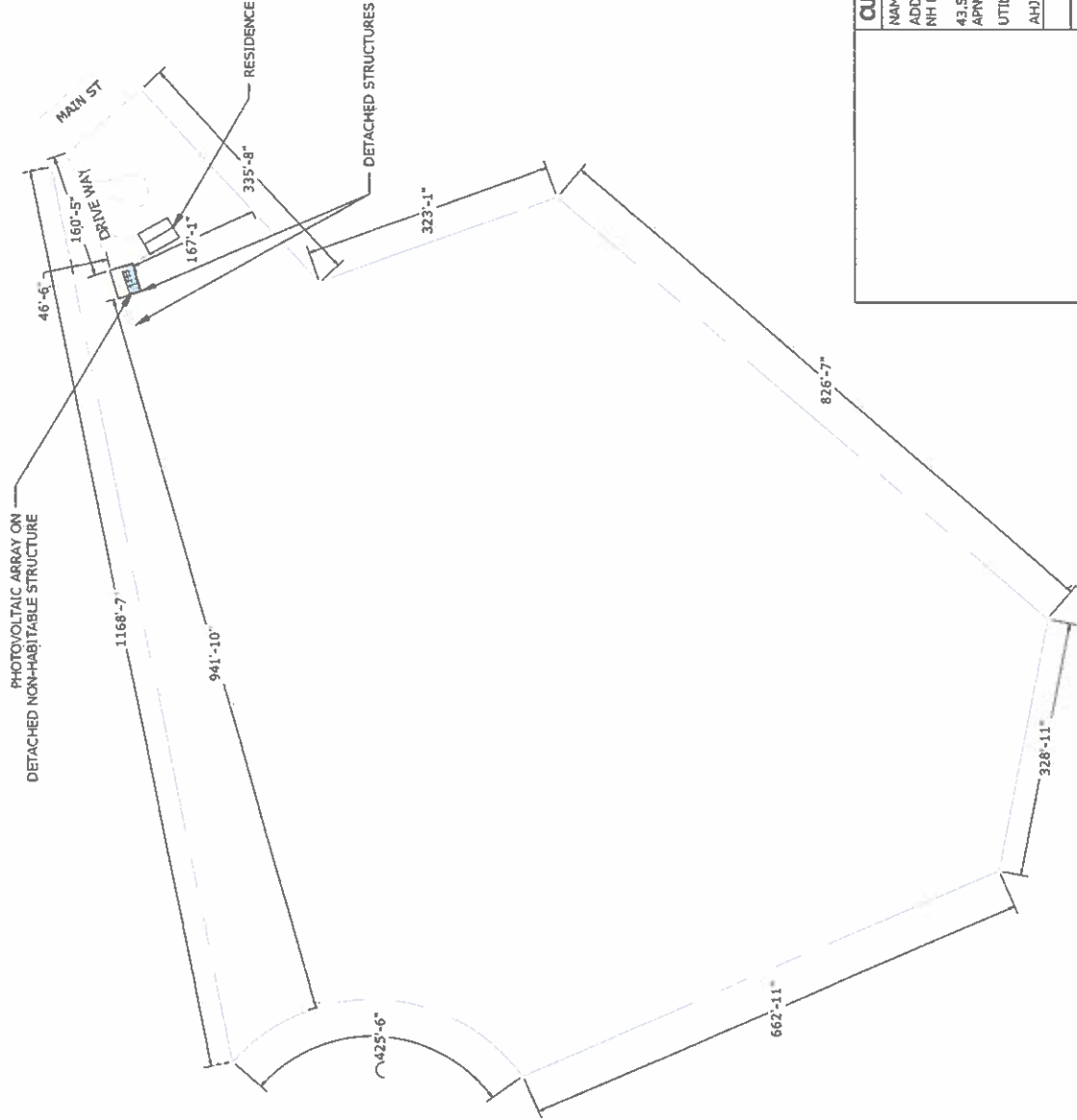
CUSTOMER INFORMATION		CONTRACTOR INFORMATION	
NAME: CATHERINE GARFIELD LAGARE	ADDRESS: 147 MAIN ST, MERIDEN, NH 03770	43.549505, -72.264458	APN: 10175-102-00018-00
UTILITY: LIBERTY UTILITIES		AHD: NH-COUNTY SULLIVAN	
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PRN NUMBER: SYS-77884	REV: A	DRAFTED BY: B.PATIL	
QC'ED BY: H.ABHI		SCALE: AS NOTED	
PAPER SIZE: 17"x11"		SHEET: E-01	



SCALE: 1" = 20'-0"

CATHERINE GARFIELD LAGARE - 8.910kW DC, 6.380kW AC

NOTE: PV SYSTEM TO BE INSTALLED ON
DETACHED NON-HABITABLE STRUCTURE.
NOTE: NO GATE OR FENCE



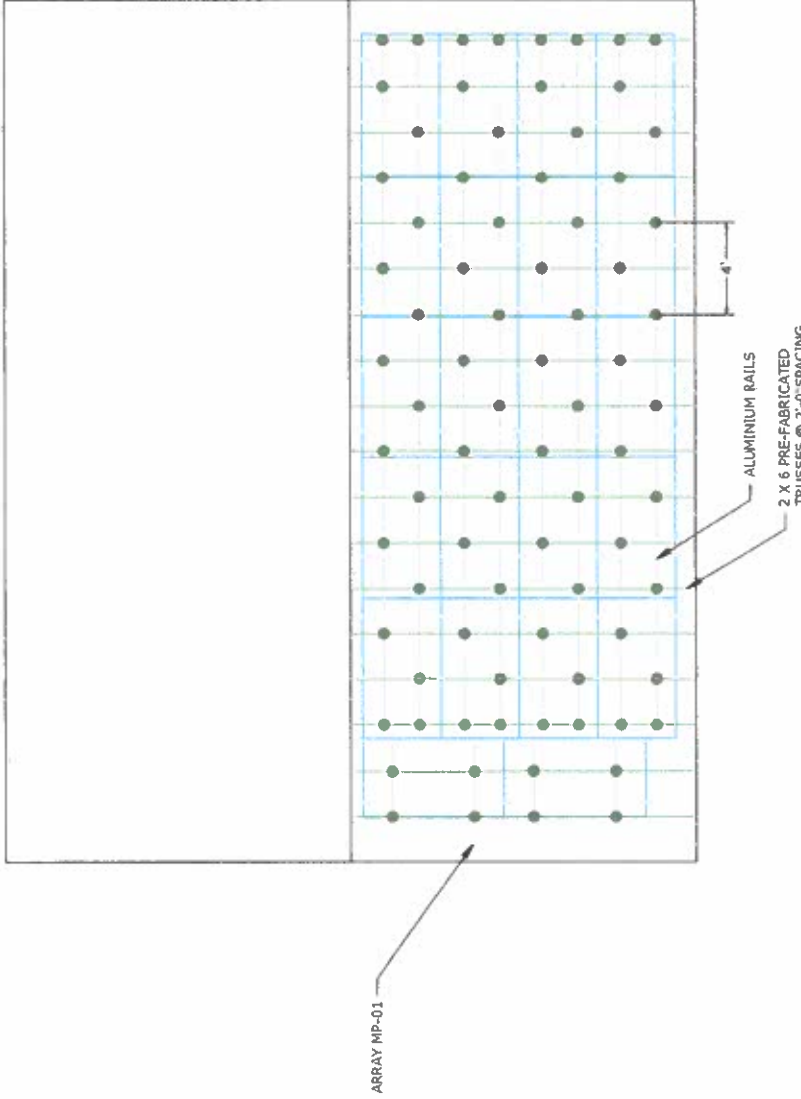
Wyssling Consulting, PLLC
78 H Madawaska Drive Alpine UT 84004
New Hampshire CE# 8 872028
Signed 5/16/2023

CUSTOMER INFORMATION		CONTRACTOR INFORMATION	
NAME: CATHERINE GARFIELD LAGARE	ADDRESS: 147 MAIN ST, MERIDEN, NH 03770	PRJ NUMBER: SYS-77884	REV: A
43.549505, -72.264456	APN: 10175-102-00018-00	DRAFTED BY: B.PATIL	QC'ED BY: H.ABHI
UTILITY: LIBERTY UTILITIES	AHD: NH-COUNTY SULLIVAN	SCALE: AS NOTED	PAPER SIZE: 17"x11"
DRAWING INFORMATION		SITE PLAN-02	
DATE: 05/16/2023		SHEET: E-01.1	



SCALE: 1" = 150'-0"

NOTE: PENETRATIONS ARE STAGGERED



SCALE: 3/16" = 1'-0"





 WYSSLING CONSULTING, PLLC
 70 N Main Street, Meriden, NH 03770
 New Hampshire CEI # 182233
 Signed 5/16/2023

SITE INFORMATION

S.NO	AZIMUTH	PITCH	NO. OF MODULES	ARRAY AREA (SQ. FT.)	ROOF TYPE	ATTACHMENT	ROOF EXPOSURE	FRAME TYPE	FRAME SIZE	FRAME SPACING	MAX RAIL SPAN	OVER HANG
MP-01	162°	18°	22	464.66	COMPOSITION SHINGLE	FLASHFOOT2	EXPOSED	PRE-FABRICATED TRUSSES	2 X 6	2'-0"	4'-0"	1'-6"

CONTRACTOR INFORMATION

NAME: CATHERINE GARFIELD LAGARE
 ADDRESS: 147 MAIN ST, MERIDEN, NH 03770
 43.549505, -72.264458
 APN: 1.0175-102-00018-00
 UTILITY: LIBERTY UTILITIES
 AHD: NH-COUNTY SULLIVAN

DRAWING INFORMATION

PRJ NUMBER: SYS-778B4 REV: A
 DRAFTED BY: B.PATIL
 QC'D BY: H.ABHI
 SCALE: AS NOTED
 PAPER SIZE: 17 X11"

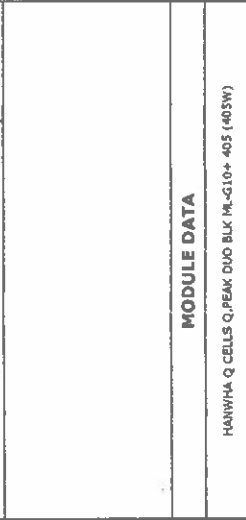
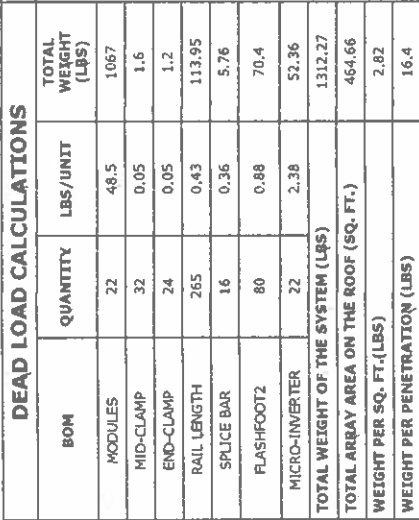
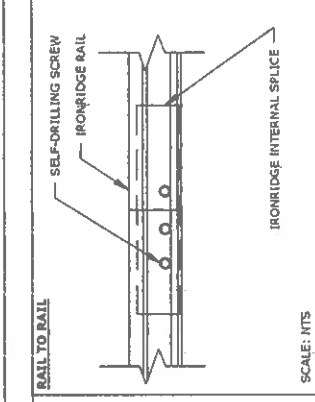
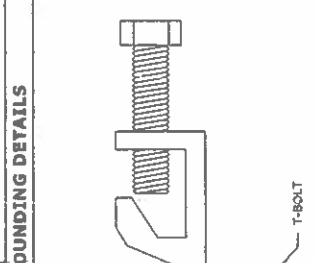
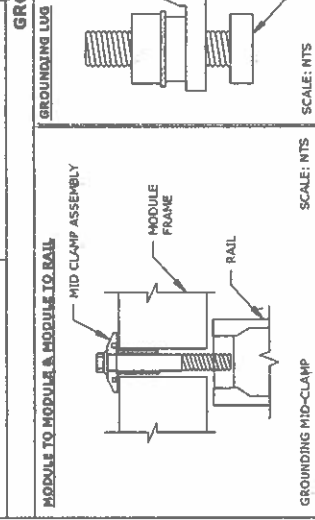
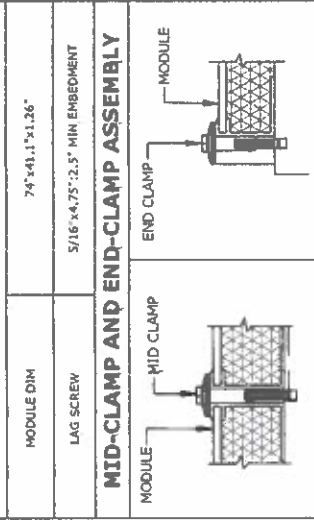


MOUNTING DETAILS
 DATE: 05/16/2023
 SHEET: S-01

ATTACHMENT DETAIL - FLASHFOOT2

DEAD LOAD CALCULATIONS			
BOM	QUANTITY	LBS./UNIT	TOTAL WEIGHT (LBS)
MODULES	22	48.5	1067
MID-CLAMP	32	0.05	1.6
END-CLAMP	24	0.05	1.2
RAIL LENGTH	265	0.43	113.95
SPLICE BAR	16	0.36	5.76
FLASHFOOT2	80	0.88	70.4
MICRO-INVERTER	22	2.38	52.36
TOTAL WEIGHT OF THE SYSTEM (LBS)			1312.27
TOTAL ARRAY AREA ON THE ROOF (SQ. FT.)			464.66
WEIGHT PER SQ. FT. (LBS)			2.82
WEIGHT PER PENETRATION (LBS)			16.4

MODULE DATA	
HANWHA Q CELLS Q-PEAK DUO BLK ML-G10+ 405 (#05W)	
MODULE DIM	74" x 41.1" x 1.26"
LAG SCREW	5/16" x 4.75" : 2.5" MIN EMBEDMENT



SCOTT WYSSING
REGISTERED PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE
LICENSE NO. 425

Wyssing Consulting, PLLC
16 H Woodbrook Drive, Dover, NH 03804
New Hampshire O.A. # 02280
Signed 5/16/2023

SCALE: NTS

CUSTOMER INFORMATION		CONTRACTOR INFORMATION	
NAME: CATHERINE GARFIELD LAGARE	ADDRESS: 147 MAIN ST, MERIDEN, NH 03770	NAME: WYSSING CONSULTING, PLLC	ADDRESS: 16 H WOODBROOK DRIVE, DOVER, NH 03804
APN: 43.549505, -72.264456	UTILITY: LIBERTY UTILITIES	AHJ: NH-COUNTY SULLIVAN	

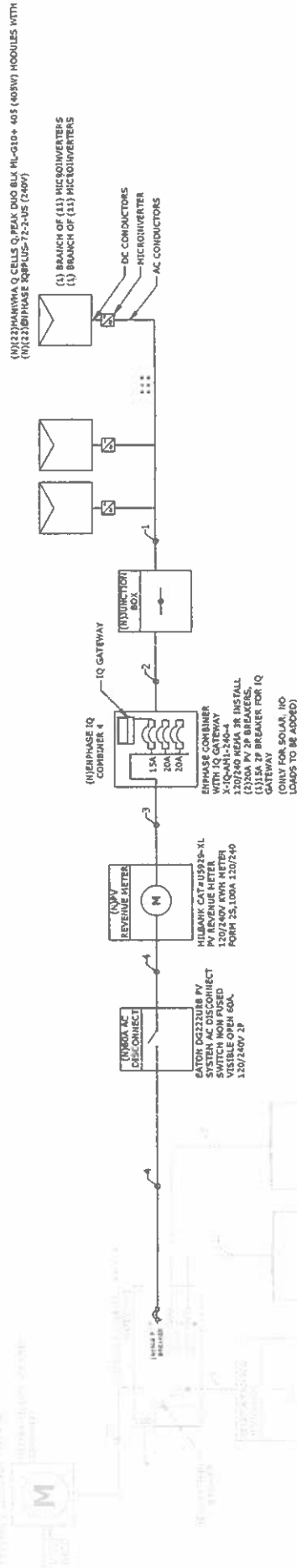
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ILLUMINE I

STRUCTURAL DETAILS
DATE: 05/16/2023
SHEET: S-02

DC SYSTEM SIZE- 8910W, AC SYSTEM SIZE - 6380W

NOTE:
EACH MICRO INVERTER IS RAPID SHUTDOWN COMPLIANT



CONDUCTOR AND CONDUIT SCHEDULE				
TAG ID	CONDUIT SIZE	CONDUCTOR	NEUTRAL	GROUND
1	NONE	(2) 12 AWG EMPHASE Q CABLE PER BRANCH CIRCUIT	NONE	(1) 10 AWG BARE COPPER
2	3/4" EMT	(4) 10 AWG THHN/THWN-2	NONE	(1) 10 AWG THHN/THWN-2
3	3/4" SCH 40 PVC (BELOW GROUND) 3/4" SCH 80 PVC (ABOVE GROUND)	(2) 8 AWG THHN/THWN-2	(1) 8 AWG THHN/THWN-2	(1) 10 AWG THHN/THWN-2
4	3/4" EMT	(2) 8 AWG THHN/THWN-2	(1) 8 AWG THHN/THWN-2	(1) 10 AWG THHN/THWN-2

CUSTOMER INFORMATION		CONTRACTOR INFORMATION	
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 DRAFTED BY: B.PATIL
 CHECKED BY: H.ABH
 SCALE: AS NOTED
 PAPER SIZE: 17"X11"
ILLUMINEI
 SINGLE LINE DIAGRAM
 DATE: 05/16/2023
 SHEET: E-02

DC SYSTEM SIZE- 8910W, AC SYSTEM SIZE - 6380W

MODULE SPECIFICATION	
MODEL	HANWRA Q CELLS Q PEAK DUO BLK ML-G10+ 405 (405W)
MODULE POWER @ STC	405 W
OPEN CIRCUIT VOLTAGE:V _{oc}	45.34 V
MAX POWER VOLTAGE:V _{mp}	37.35 V
SHORT CIRCUIT CURRENT:I _{sc}	11.17 A
MAX POWER CURRENT:I _{mp}	10.83 A
MICRO INVERTER SPECIFICATIONS	
MODEL	ENPHASE IQ8PLUS-72-3-US (240V)
POWER RATING	280W
MAX OUTPUT CURRENT	1.21A
CEC WEIGHTED EFFICIENCY	97%
MAX NO OF MICRO INVERTERS/BRANCH	13
MAX DC VOLTAGE	60V

VOLTAGE DROP CALCULATIONS

Select Material	Cu
Select Wire Size	8
Select Conduit Type	PVC
Select Voltage & Phase	240 1-phase
Enter Distance to Load (ft)	20
Enter Load (Amps)	26.62
Voltage Drop (Volts)	0.83
% Voltage Drop	0.35

OUTPUTS

Phase Factor	2
K	12.9
Q-Factor	1
Circular Mills	16510

VARIABLES

Phase Factor	2
K	12.9
Q-Factor	1
Circular Mills	16510

- ELECTRICAL NOTES**
- CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC 310.10(D).
 - CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC 310.10(C).
 - MAXIMUM DC/AC VOLTAGE DROP SHALL BE NO MORE THAN 2%.
 - ALL CONDUCTORS SHALL BE IN CONDUIT UNLESS OTHERWISE NOTED.
 - BREAKER/FUSE SIZES PER NEC 240.
 - AC EQUIPMENT GROUNDING CONDUCTOR SIZED PER NEC 250.122.
 - THE AMBIENT TEMPERATURE CORRECTION FACTOR IS BASED ON NEC 690.31(A).
 - THE AMBIENT TEMPERATURE ADJUSTMENT FACTOR IS BASED ON NEC 310.15(B)(1).
 - MAX SYSTEM VOLTAGE CORRECTION IS PER NEC 690.7.
 - CONDUCTORS ARE SIZED PER NEC TABLE 310.16.

MODULE SPECIFICATION	
MODEL	HANWRA Q CELLS Q PEAK DUO BLK ML-G10+ 405 (405W)
MODULE POWER @ STC	405 W
OPEN CIRCUIT VOLTAGE:V _{oc}	45.34 V
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MAX OUTPUT CURRENT	1.21A
CEC WEIGHTED EFFICIENCY	97%
MAX NO OF MICRO INVERTERS/BRANCH	13
MAX DC VOLTAGE	60V

WIRE SIZE CALCULATIONS

TAG 1: (AC)	REQUIRED CONDUCTOR AMPACITY(1.21 x 11 x 1.25)	= 16.64 A
	CORRECTED AMPACITY CALCULATION(0.87 x 1 x 30)	= 26.1 A
TAG 2: (AC)	REQUIRED CONDUCTOR AMPACITY(1.21 x 11 x 1.25)	= 16.64 A
	CORRECTED AMPACITY CALCULATION(0.87 x 0.8 x 40)	= 27.84 A
TAG 3 & 4: (AC)	REQUIRED CONDUCTOR AMPACITY(1.21 x 22 x 1.25)	= 33.27 A
	CORRECTED AMPACITY CALCULATION(0.87 x 1 x 55)	= 47.85 A

AC WIRE SIZING CALCULATIONS BASED ON FOLLOWING EQUATIONS

REQUIRED CONDUCTOR AMPACITY:
 INVERTER OUTPUT CURRENT * #OF INVERTERS = MAX CURRENT PER 690.8(A)(1)&(e) * 125%
 = MAX CURRENT PER 690.8(B)(1)

CORRECTED AMPACITY CALCULATIONS:
 DERATED CONDUCTOR AMPACITY PER 690.8(B)(2) = AMPACITY * TEMPERATURE DERATE FACTOR * CONDUIT FILL DERATE

DERATED CONDUCTOR AMPACITY CHECK: MAX CURRENT PER 690.8(B)(1) < DERATED CONDUCTOR AMPACITY

CUSTOMER INFORMATION	CONTRACTOR INFORMATION
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DRAWING INFORMATION

ALLOWABLE BACKFEED:
 MAIN PANEL RATING = 200 A
 MAIN BREAKER RATING = 200 A

INVERTER OVERCURRENT PROTECTION:
 INVERTER OVERCURRENT PROTECTION = (MICROINVERTER O/P CURRENT * # OF MICROINVERTER) * CONTINUOUS LOAD(1.25)
 = (1.21 * 22 * 1.25)
 = 33.28 A
 PV BREAKER SIZE / FUSE SIZE = 40 A ≥ 33.28 A

TOTAL REQUIRED PV BREAKER SIZE / FUSE SIZE = 40 A PV BREAKER



WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON BOTH LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION

INSTALLED ON: AC DISCONNECT, LOAD CENTERS, COMBINER PANELS, POINT OF INTERCONNECTION APPLICABLE CODE(S): NEC 690.13(B)

DEDICATED PHOTOVOLTAIC SYSTEM COMBINER PANEL. NO LOAD SHALL BE ADDED TO THIS PANEL

INSTALLED ON: COMBINER PANEL

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

INSTALLED ON: WITHIN 3 FT OF SERVICE DISCONNECTING MEANS. MIN 3/8" BLACK TEXT ON YELLOW BACKGROUND & 3/16" BLACK TEXT ON WHITE BACKGROUND.

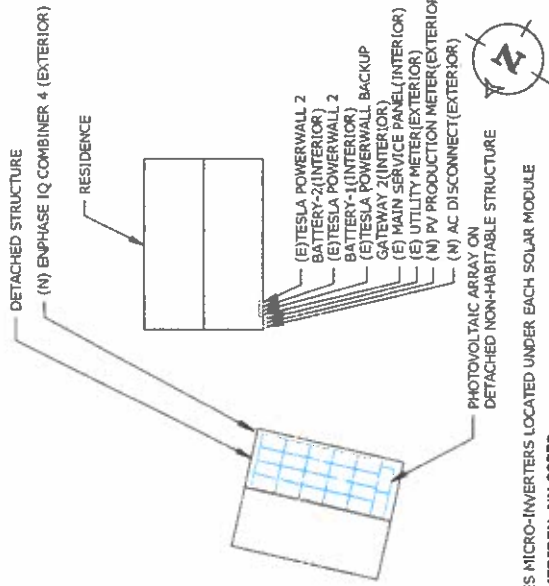
APPLICABLE CODE(S): NEC 690.56(C)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

INSTALLED ON: RAPID SHUTDOWN SWITCH APPLICABLE CODE(S): NEC 690.56(C)(2)

CAUTION: MULTIPLE SOURCES OF POWER

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



SYSTEM UTILIZES MICRO-INVERTERS LOCATED UNDER EACH SOLAR MODULE
147 MAIN ST, MERIDEN, NH 03770

LABEL LOCATION SERVICE PANEL PER CODE: NEC 705.10

NOTES

1. PLACARDS SHALL MEET THE REQUIREMENTS OF ARTICLES 690 AND 705, UNLESS OTHERWISE SPECIFIED PER LOCAL AHJ REQUIREMENTS.
2. PLACARDS SHALL MEET THE REQUIREMENTS OF SECTION 110.21(B) AS REQUIRED AND SHALL COMPLY WITH ANSI Z535.4-2011, PRODUCT SAFETY SIGNS AND LABELS.
3. PLACARDS SHALL BE PERMANENTLY AFFIXED TO THE EQUIPMENT OR WIRING METHOD.
4. PLACARDS SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED AND SHALL BE HANDWRITTEN.
5. PLACARDS SHALL NOT COVER EXISTING MANUFACTURER LABELS.

CUSTOMER INFORMATION

NAME: CATHERINE GARFIELD LAGARE
ADDRESS: 147 MAIN ST, MERIDEN, NH 03770
43.549505, -72.264458
APN: 1 0175-102-00018-00
UTILITY: LIBERTY UTILITIES
AHD: NH-COUNTY SULLIVAN

CONTRACTOR INFORMATION

PRN NUMBER: SYS-77884 REV: A
DRAFTED BY: B.PATIL
CHECKED BY: H.ABHI
SCALE: AS NOTED
PAPER SIZE: 17"x11"

DRAWING INFORMATION

ILLUMINE I
PLACARDS
DATE: 05/16/2023
SHEET: PL-01

