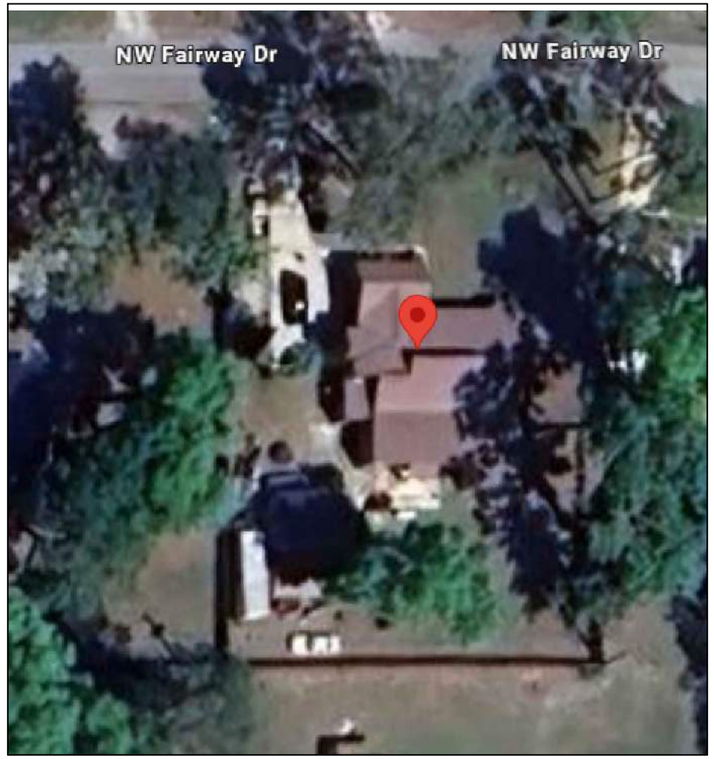
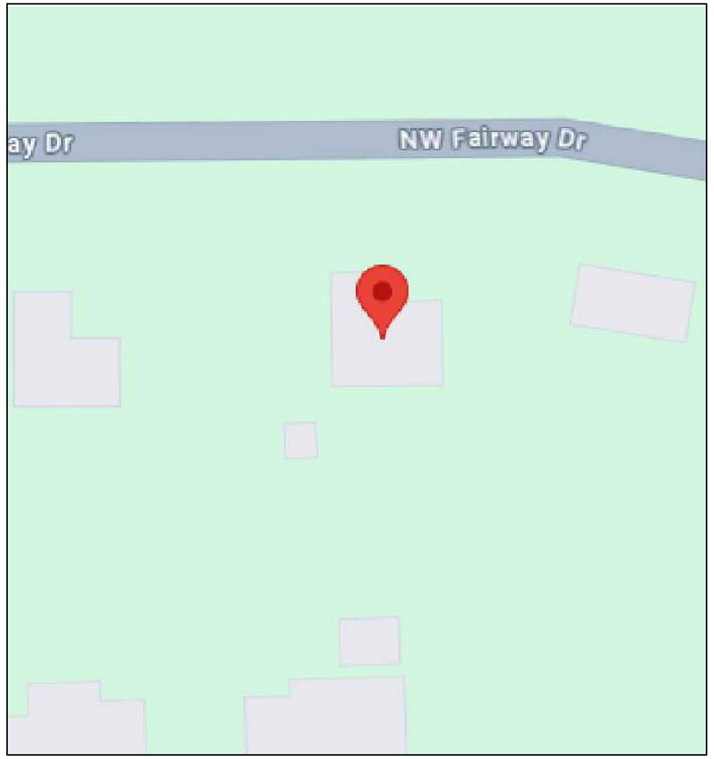
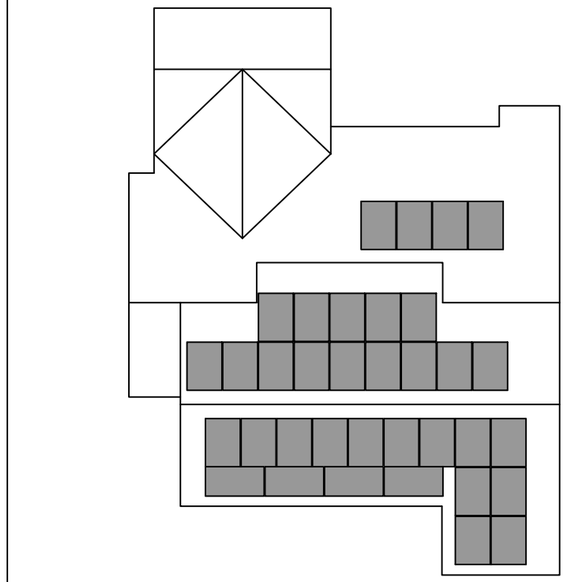
LOCATION MAP



SATELLITE VIEW



INSTALLATION PREVIEW



GENERAL NOTES:

(1) The contractor shall verify all existing conditions which will affect the installation of all new work. If discrepancies are discovered, engineer must be notified before proceeding with any modification to the approved documents.
(2) Installer shall assume full responsibility and liability for compliance with regulations per federal OSHA and local regulations pertaining to work practices, protection of workers and visitors to the site.
(3) All construction shall comply with all state, county, and local codes on their latest edition.
(4) All materials shall be in new and unused condition.
(5) Inverter/s must be listed to UL-1741 "Utility interactive"
(6) Manufacturer's material equipment, etc. Shall be installed per manufacturer's recommendations and instructions.
(7) The contractor is responsible for the adequate bracing of all structural and nonstructural components during construction.
(8) Any battery system installed in a location where they are subject to vehicle damage needs to be protected by approved barriers (safety bollards).
(9) Do not scale drawings, written dimensions take precedence over drawings. If scale or written dimensions do not exist, which are necessary for construction, the contractor must contact the engineer to obtain the latest and most correct documents.
(10) Information for the basic layout of this drawings was based on existing field dimensions, contractor must verify in field the actual conditions and notify engineer of any discrepancies.
(11) The contractor is solely responsible for the means and methods of construction and the safety of construction workers.
(12) All work shall be performed by contractors possessing valid certifications of competency and occupational licenses recognized and accepted by the local government having jurisdiction or by owner.
(13) To the best of my knowledge, the plans and specifications submitted herewith comply to all existing interpretations and provisions of the applicable building codes at the time of the plans perpetration. No warranty either expressed or implied is herewith given.
(14) Contractor / owner shall verify all dimensions related to any part of construction prior to beginning work or ordering fabricated materials required for construction.
(15) Solar contractor is responsible for all installations. Engineer retained on the project is responsible for design only. In case of leans, uplifts, wind damage, incorrect installation or otherwise; Engineer is not responsible for any and all damages to the owner's property.
(16) Solar contractor will be responsible of sealing the penetrations to the roof substrate. Engineer is not responsible of any property damage caused by water leaking.
(17) Installation by solar contractor shall be in compliance with Florida Fire Prevention Code (FFPC) 8th Edition, NFPA 1 & NFPA 101 (2021 edition).
(18) Per NFPA 1 (11.12.1) Photovoltaic systems shall be in accordance with Section 11.12 and NFPA 70.
(19) This permit is only for solar panels as shown herein. All other site improvements or structures shown in the approved plans, including portions of the structure where the solar panels are being installed is not a part of the scope of this permit and this permit does not evidence the legal or permitted status of the same. Approval of this part shall not be construed as evidence that any portion of the structure(s)/roof, except for the solar panels permitted by this permit (but including any portion of the structure below) is legally permitted or legally permitted by this permit.
(20) The contractor is obliged to furnish the field inspector with the latest photographs that illustrate the Fire pathway clearance on the roof. These images should distinctly demonstrate compliance with the relevant code regulations, inclusive of appropriate measurements.
(21) The contractor shall provide onsite an electric meter [amp-multimeter] to demonstrate with the field inspector that the rapid shutdown functions properly.

SHEET INDEX

SCOPE OF WORK

SYSTEM SIZE: DC SIZE : 13.825 KW DC
AC SIZE : 12.960 KW AC

(N) (35) MISSION SOLAR MSE395SX9R (395W) PV MODULES
(N) (9) HOYMILES HMS-1600-4T-NA MICROINVERTERS
(N) (1) 125A LOAD CENTER

S-5! SOLARFOOT MOUNTS WITH UNIRAC RAILS

DESIGN SPECIFICATION

OCCUPANCY:	II
CONSTRUCTION:	SFR
ZONING:	RESIDENTIAL
GROUND SNOW LOAD:	4 psf
WIND EXPOSURE:	2
WIND SPEED:	119 mph

AUTHORITIES HAVING JURISDICTION

BUILDING: COLUMBIA COUNTY
ZONING: COLUMBIA COUNTY
UTILITY: FPL

APPLICABLE CODES & STANDARDS

FLORIDA RESIDENTIAL CODE, 8TH EDITION 2023 (FRC)
FLORIDA BUILDING CODE, 8TH EDITION 2023 (FBC)
FLORIDA FIRE PREVENTION CODE, 8TH EDITION 2023 (FFPC)
FLORIDA EXISTING BUILDING CODE, 8TH EDITION 2023 (FBC EX)
NATIONAL ELECTRICAL CODE, NEC 2023 CODE BOOK, NFPA 70

AMERICAN SOLAR INSTALLATION COMPANY
3241 NW 38th St. Miami, FL 33142

PROJECT NAME & ADDRESS
YVONNE JACKSON
776 NW FAIRWAY DRIVE,
LAKE CITY, FL 32055

AHJ STAMP

MATTHEW R. CRAIG LICENSE No. 72335 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally signed by Matthew R Craig
Reason: I am approving this document.
Date: 2025.03.12 05:30:42-04'00'

SYSTEM SIZE
(N) 13.825 KW DC
(N) 12.960 KW AC

REVISIONS	DATE	DESCRIPTION	REV

SHEET TITLE
COVER PAGE

DRAWN DATE	03/11/2025
DRAWN BY	JC
REVIEWED BY	-

SHEET TITLE
PV - 1

NOTES:

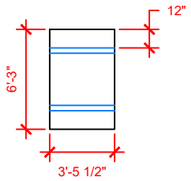
1. ALL CONSTRUCTION / INSTALLATION IS TO COMPLY WITH THE FOLLOWING: ALL DIMENSIONS ARE APPROXIMATE.

2. ROOF VENTS, SKYLIGHTS, WILL NOT BE COVERED UPON PV INSTALLATION.

3. AC DISCONNECT IS LOCATED WITHIN 10FT FROM THE UTILITY METER.

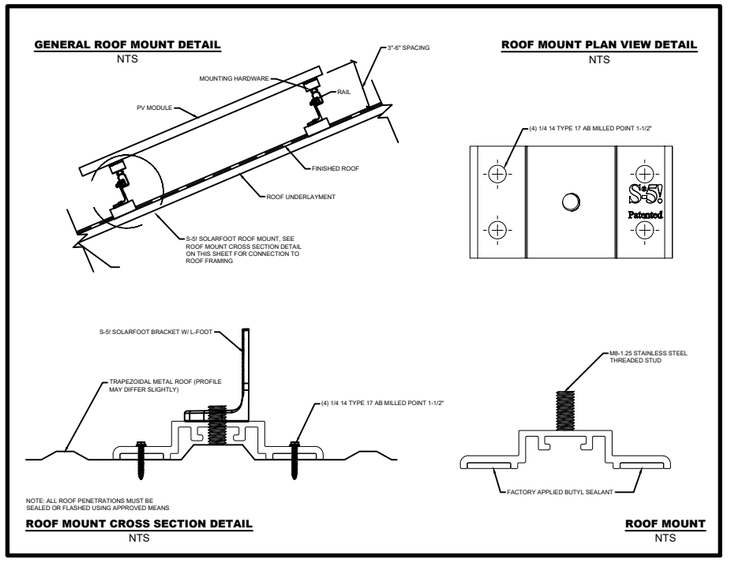
NOTES:
1. LOCATION OF JUNCTION BOX(ES), AC DISCONNECT(S), AC COMBINER PANEL(S), AND OTHER ELECTRICAL EQUIPMENT RELEVANT TO PV INSTALLATION SUBJECT TO CHANGE BASED ON SITE CONDITIONS.
2. SETBACKS AT RIDGES CAN BE REDUCED TO 18 INCHES IF TOTAL PV AREA IS WITHIN 33% OF TOTAL ROOF AREA IN COMPLIANCE WITH IBC 2023:
TOTAL ROOF AREA = 2117 SQFT
TOTAL PV AREA = 35(75.08" X 41.5")/(144 IN^2)
= 757.40 SQFT
(757.40 SQFT/2117 SQFT)100 = 35.78%
TOTAL PV AREA POPULATES 35.78% OF TOTAL ROOF AREA

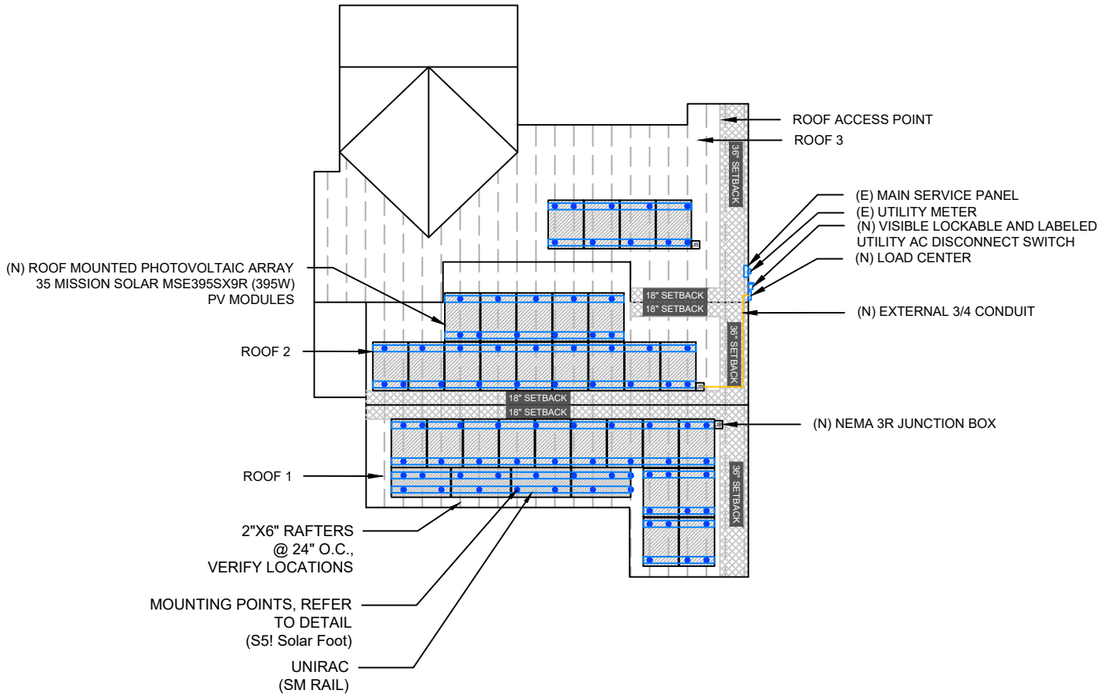
TRUSS/RAFTERS LOCATIONS ARE APPROXIMATE. ACTUAL LOCATIONS MAY DIFFER AND CONTRACTOR MAY NEED TO ADJUST MOUNT LOCATIONS. IN NO CASE SHALL THE MOUNT SPACING EXCEED "MAX. MOUNT SPACING"



- MOUNTS
- RAIL
- TRUSS / RAFTER

ROOF SECTION(S)			
	MODULE	TILT	AZIMUTH
ROOF 1	17	25°	180°
ROOF 2	14	25°	360°
ROOF 3	4	25°	360°





SITE PLAN
SCALE: 1/16" = 1'-0"

MODULE TYPE, DIMENSIONS & WEIGHT:

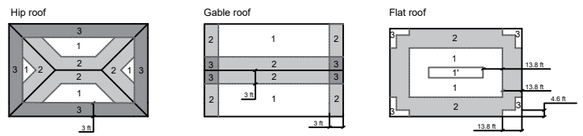
NUMBER OF PANELS IN ARRAY = 35 MODULES
MODULE TYPE = MISSION SOLAR MSE395SX9R PV MODULES
NUMBER OF CONNECTIONS TO ROOF = 121
WEIGHT OF INDIVIDUAL PANEL = 48.5 LBS / 22.00 KG
MOUNTING SYSTEM WEIGHT: 1.5 LBS PER MODULE
TOTAL WEIGHT OF ARRAY: 1697.50 LBS
WEIGHT AT EACH CONNECTION: 1697.50 LBS / 121 = 14.03 LBS
SOLAR PANEL AREA = 75.08" X 41.5" = 21.64 SQFT
TOTAL ARRAY AREA = 35X21.64 = 757.40 SQFT
DISTRIBUTED LOAD = 1697.50/757.40 = 2.24 PSF

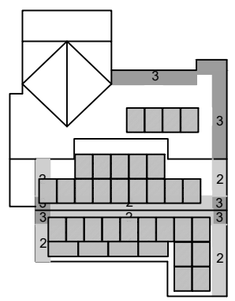
PHOTOVOLTAIC MODULE GENERAL NOTES

1. APPLICABLE CODE: 2023 FLORIDA BUILDING CODE 8th ED. & ASCE 7-22 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES
2. BOLT DIAMETER AND EMBEDMENT LENGTHS ARE DESIGNED PER NDS(2023) REQUIREMENTS. ALL BOLT CAPACITIES ARE BASED ON A WOOD ROOF RAFTER AS EMBEDMENT MATERIAL
3. ALL WIND DESIGN CRITERIA AND PARAMETERS ARE FOR HIP AND GABLE RESIDENTIAL ROOFS, CONSIDERING FROM A 7° TO A MAXIMUM 27° (2/12 TO A MAXIMUM 6/12 PITCH) ROOF IN SCHEDULE. ALL RESIDENTIAL ROOFS SHALL NOT EXCEED 30'-0" MEAN ROOF HEIGHT.
4. ROOF SEALANTS SHALL CONFORM TO ASTM C920 AND ASTM 6511.
5. THIS SHEET REFLECTS STRUCTURAL CONNECTIONS ONLY. REFER TO MANUFACTURER'S MANUAL FOR ALL ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND SOLAR SPECS.
6. ALL ALUMINUM COMPONENTS SHALL BE ANODIZED ALUMINUM 6105-T5 UNLESS OTHERWISE NOTED.
7. LAG BOLTS SHALL BE ASTM A276 STAINLESS STEEL UNLESS OTHERWISE NOTED.
8. ALL RAILING AND MODULES SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS.
9. I CERTIFY THAT THE INSTALLATION OF THE MODULES IS IN COMPLIANCE WITH FBC: BUILDING CHAPTER 16 AND FBC: RESIDENTIAL CHAPTER 3. BUILDING STRUCTURE WILL SAFELY ACCOMMODATE CALCULATED WIND LATERAL AND UPLIFT FORCES, AND EQUIPMENT DEAD LOADS.

WIND LOAD INFORMATION:
THIS SYSTEM HAS BEEN DESIGN TO MEET THE REQUIREMENTS OF THE 8TH EDITION OF THE FLORIDA BUILDING CODE AND USED THE FOLLOWING DESIGN PARAMETERS:
ULTIMATE WIND SPEED: 119 MPH
EXPOSURE CATEGORY: 2
RISK CATEGORY: II
MEAN ROOF HEIGHT: 15

- WIND ZONE 1
- WIND ZONE 2
- WIND ZONE 3





Roof Wind Zones and module exposure as per ASCE 7-22 Figure 30.3-2A to 2I and ASCE 7-22 29.4.4

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

AMERICAN SOLAR INSTALLATION COMPANY
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Date: 2025.03.12 05:30:42-04'00'

SYSTEM SIZE
(N) 13.825 KW DC
(N) 12.960 KW AC

REVISIONS	DATE	DESCRIPTION	REV

SHEET TITLE
STRUCTUAL PLAN

DRAWN DATE	03/11/2025
DRAWN BY	JC
REVIEWED BY	-

SHEET TITLE
PV - 2

"ALL EXPOSED PV ROOFTOP CONDUCTORS THAT ARE NOT LOCATED UNDER THE ARRAY MODULES, SHALL INCLUDE LISTED JUNCTION BOXES AT BOTH ENDS OF THE RACEWAY TO TRANSITION FROM EXPOSED CONDUCTORS TO THE LISTED RACEWAYS."

PHOTOVOLTAIC INSTALLATION ELECTRICAL DIAGRAM
RATED 13,825 DC WATTS UNDER (STC)

(2) BRANCHED CIRCUITS OF 12 MODULES
(1) BRANCHED CIRCUITS OF 11 MODULES

ADDITIONAL NOTES:
MARKING IS REQUIRED ON ALL INTERIOR AND EXTERIOR DC CONDUIT, RACEWAYS, ENCLOSURES, CABLE ASSEMBLIES, AND JUNCTION BOXES TO ALERT THE FIRE SERVICE TO AVOID CUTTING THEM. MARKING SHOULD BE PLACED ON ALL INTERIOR AND EXTERIOR DC CONDUIT, RACEWAYS, ENCLOSURES, AND CABLE ASSEMBLIES, AT A MINIMUM OF EVERY 10 FEET, AT TURNS AND ABOVE AND OR BELOW PENETRATIONS AND ALL DC COMBINER AND JUNCTION BOXES

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	35°
AMBIENT TEMP (HIGH TEMP 2%)	37°
CONDUCTOR HEIGHT	0.5"
CONDUCTOR TEMPERATURE RATE	90°

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
.80	4-6
.70	7-9
.50	10-20

NOTE:
1. SUBJECT PV SYSTEM HAS BEEN DESIGNED TO MEET THE REQUIREMENT OF THE NEC 2023, NFPA 70 AND THOSE SET FORTH BY THE FLORIDA SOLAR ENERGY CENTER CERTIFICATION, INCLUDING MAXIMUM NUMBER OF MODULE STRINGS, MAXIMUM NUMBER OF MODULES PER STRING, MAXIMUM OUTPUT, MODULE MANUFACTURER AND MODEL NUMBER, INVERTER MANUFACTURER AND MODEL NUMBER, AS APPLICABLE.
2. PROVIDE TAP BOX IN COMPLIANCE WITH 312.8 IF PANEL GUTTER SPACE IS INADEQUATE.

GROUNDING & GENERAL NOTES

1. PV INVERTER IS UNGROUNDED, TRANSFORMER-LESS TYPE
2. DC EGC AND AC EGC TO BE SPLICED TO EXISTING ELECTRODE
3. ANY EXISTING WIRING INVOLVED WITH PV SYSTEM CONNECTION THAT IS FOUND TO BE INADEQUATE PER CODE SHALL BE CORRECTED PRIOR TO FINAL INSPECTION
4. JUNCTION BOX QUANTITIES, AND PLACEMENT SUBJECT TO CHANGE IN THE FIELD - JUNCTION BOXES DEPICTED ON ELECTRICAL DIAGRAM REPRESENT WIRE TYPE TRANSITIONS
5. AC DISCONNECT NOTED IN EQUIPMENT SCHEDULE OPTIONAL IF OTHER AC DISCONNECTING MEANS IS LOCATED WITHIN 10' OF SERVICE DISCONNECT
6. SIZING OF OVERCURRENT PROTECTION DEVICES ARE ROUNDED TO THE NEAREST WHOLE AMPERE WITH DECIMAL FRACTIONS SMALLER THAN 0.5 DROPPED ACCORDING TO 220.5(B)

INTERCONNECTION NOTES

1. INTERCONNECTION SIZING, LIMITATIONS AND COMPLIANCE DETERMINED IN ACCORDANCE WITH [NEC 705.12]
2. GROUND FAULT PROTECTION IN ACCORDANCE WITH [NEC 215.9], [NEC 230.95] AND [NEC 690.41]
3. ALL EQUIPMENT TO BERATED FOR BACKFEEDING
4. PV BREAKER TO BE POSITIONED AT THE OPPOSITE END OF THE BUSBAR RELATED TO THE MAIN BREAKER

DISCONNECT NOTES

1. DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING LIVE ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS)
2. AC DISCONNECT MUST BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH

WIRE SCHEDULE

TAG	CONDUCTOR DETAILS	GROUND DETAILS	CONDUIT SIZE	CONDUCTOR RATING	AMBIENT TEMP	DEGREE COLUMN	TEMP DERATE	# OF CONDUCTOR DERATE	CONDUCTOR RATING W/ DERATES	CONDUIT FILL
#	(2) #12 PV CABLE CU	(1) #6 AWG BARE CU	FREE AIR	30 A	37°C	90°C	0.91	1	27.3 A	FREE AIR
2	(6) #10 AWG THHN/THWN-2, CU	(1) #8 AWG THWN-2, CU	3/4" EMT OR PVC	40 A	37°C	90°C	0.91	0.8	29.12 A	29.6%
3	(3) #4 AWG THWN-2, CU	(1) #8 AWG THWN-2, CU	1" EMT OR PVC	95 A	37°C	90°C	0.91	1	86.45 A	31.7%

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL	MISSION SOLAR MSE395SX9R (395W) PV MODULES
VMP	36.99 V
IMP	10.68 A
VOC	45.18 V
ISC	11.24 A
DIMENSION	75.08" L X 41.5"W X 1.57" D

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL	HOYMILES HMS-1600-4T-NA MICROINVERTERS
MAXIMUM OUTPUT POWER	1440 W
NOMINAL VOLTAGE	240 A
NOMINAL OUTPUT CURRENT	6 A
INVERTER QUANTITY	9

PV OVERCURRENT PROTECTION ...NEC 690.9(B)
= TOTAL INVERTER O/P CURRENT x 1.25
= (9 x 6) x 1.25 = 67.50 A

SELECTED OCPD = 70 A ...NEC 240.6

WARNING LABELS

LABEL LOCATION : COMBINER BOX / CIRCUITS / CONDUIT COMBINER BOX / ENCLOSURES / EMT ENCLOSURES

WARNING
ELECTRICAL SHOCK HAZARD
TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
NEC 705.20(7) & NEC 690.13(B)

WARNING
TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL
NEC 110.27(C) & OSHA 1910.145(f)(7)

LABEL LOCATION : BUILDING / STRUCTURE
THIS EQUIPMENT SUITABLE FOR ATTACHMENT TO FLOATING STRUCTURES, OR ATTACHED TO STRUCTURES FLOATING ON BODIES OF WATER.
NEC 690.4(G)

LABEL LOCATION : MAIN SERVICE DISCONNECT / UTILITY METER
MAIN PHOTOVOLTAIC SYSTEM DISCONNECT
NEC 690.13(B)

LABEL LOCATION : MAIN SERVICE DISCONNECT

WARNING
POWER SOURCE OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE
NEC 705.12(B)(2)

WARNING
ELECTRICAL SHOCK HAZARD
TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
NEC 705.20(7) & NEC 690.13(B)

LABEL LOCATION : EMT / CONDUIT RACEWAYS

PHOTOVOLTAIC POWER SOURCE
NEC 690.31(D)(2)

DO NOT DISCONNECT UNDER LOAD
NEC 690.15(B) & NEC 690.33(D)(2)

LABEL LOCATION : AC DISCONNECT / BREAKER / POINTS OF CONNECTION

WARNING
ELECTRICAL SHOCK HAZARD
TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
NEC 705.20(7) & NEC 690.13(B)

WARNING
ELECTRICAL SHOCK HAZARD
THIS EQUIPMENT FED BY MULTIPLE SOURCES: TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING MAIN POWER SUPPLY SHALL NOT EXCEED AMPACITY OF BUSBAR
NEC 705.12(B)(3)

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN
TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN ARRAY
SOLAR ELECTRIC PV PANELS
IFC 605.11.3.1(1) & 690.12(D)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM
NEC 690.12(D)(2)

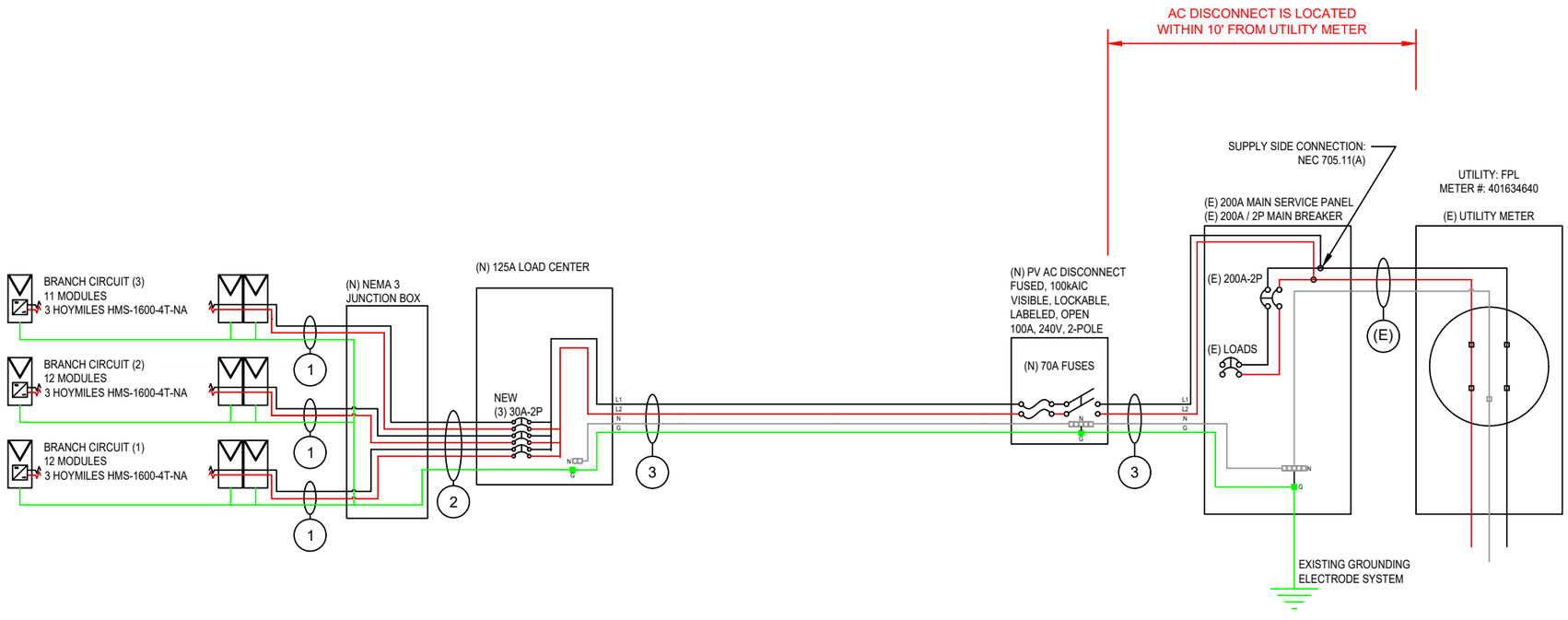
CAUTION
PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

INTERACTIVE PHOTOVOLTAIC POWER FLOWING THROUGH THIS PANEL
AC OPERATING CURRENT 67.5 AAC
AC OPERATING VOLTAGE 240 VAC

WARNING
TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL
NEC 705.82 & NEC 710.15(C)

WARNING
SINGLE 120-VOLT SUPPLY DO NOT CONNECT MULTIWIRE BRANCH CIRCUITS
NEC 705.82 & NEC 710.15(C)

WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM
NEC 705.30(C) & NEC 690.59



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(N) 12.960 KW AC

REVISIONS

REV	DESCRIPTION	DATE

SHEET TITLE
ELECTRICAL DIAGRAM AND LABELS

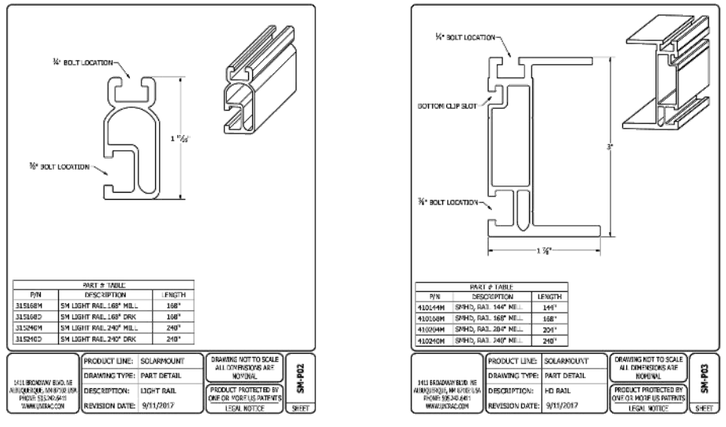
DRAWN DATE	03/11/2025
DRAWN BY	JC
REVIEWED BY	-

SHEET TITLE
PV - 3

PV MODULE

INVERTER

RACKING RAILS



ROOF ATTACHMENT

AMERICAN SOLAR INSTALLATION COMPANY
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LAKE CITY, FL 32055

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REVISIONS

REV	DESCRIPTION	DATE

SHEET TITLE
DATA SHEETS

DRAWN DATE	03/11/2025
DRAWN BY	JC
REVIEWED BY	-

SHEET TITLE
PV - 4