

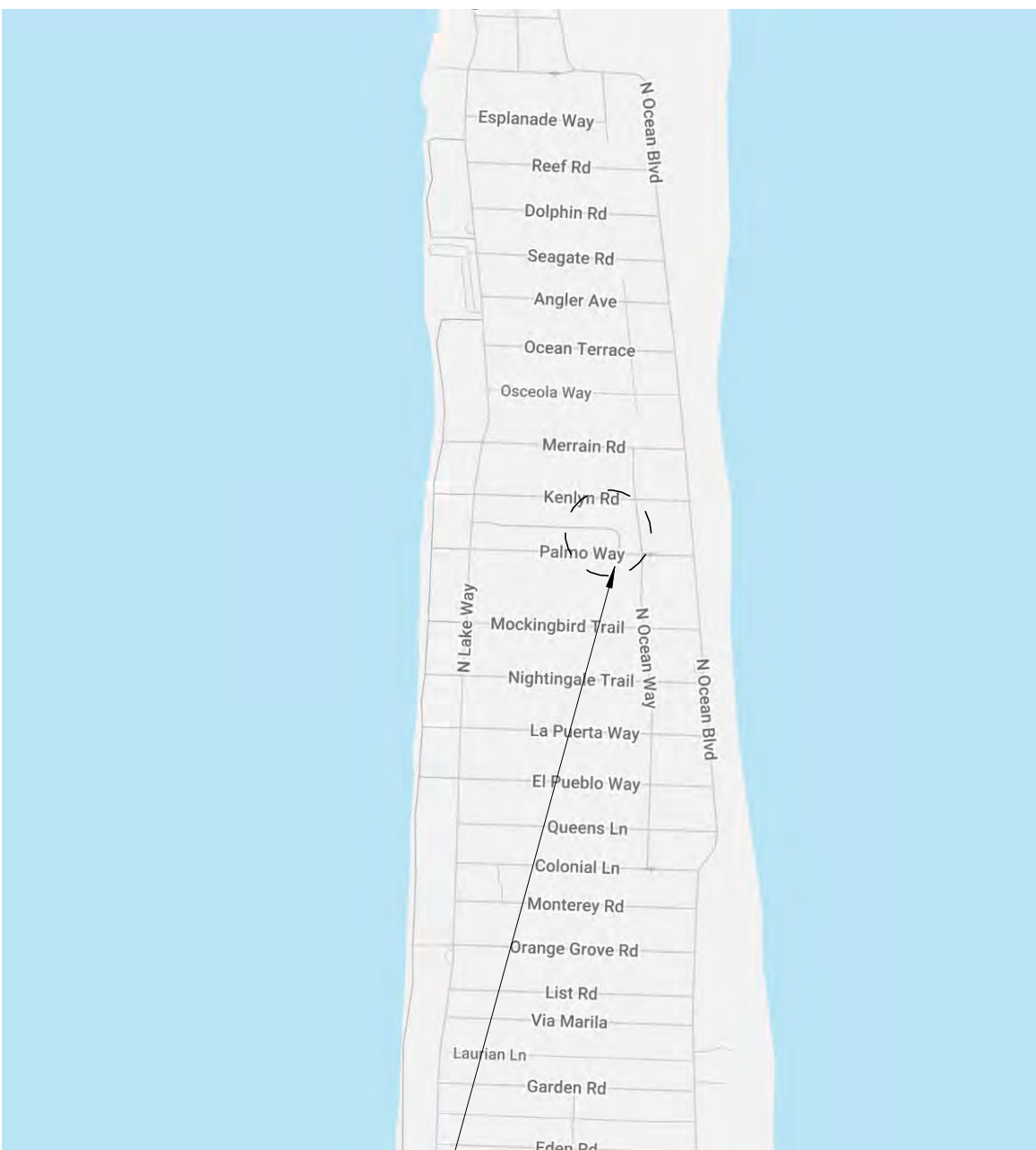
SOLAR PANELS FOR:

COLLIER RESIDENCE

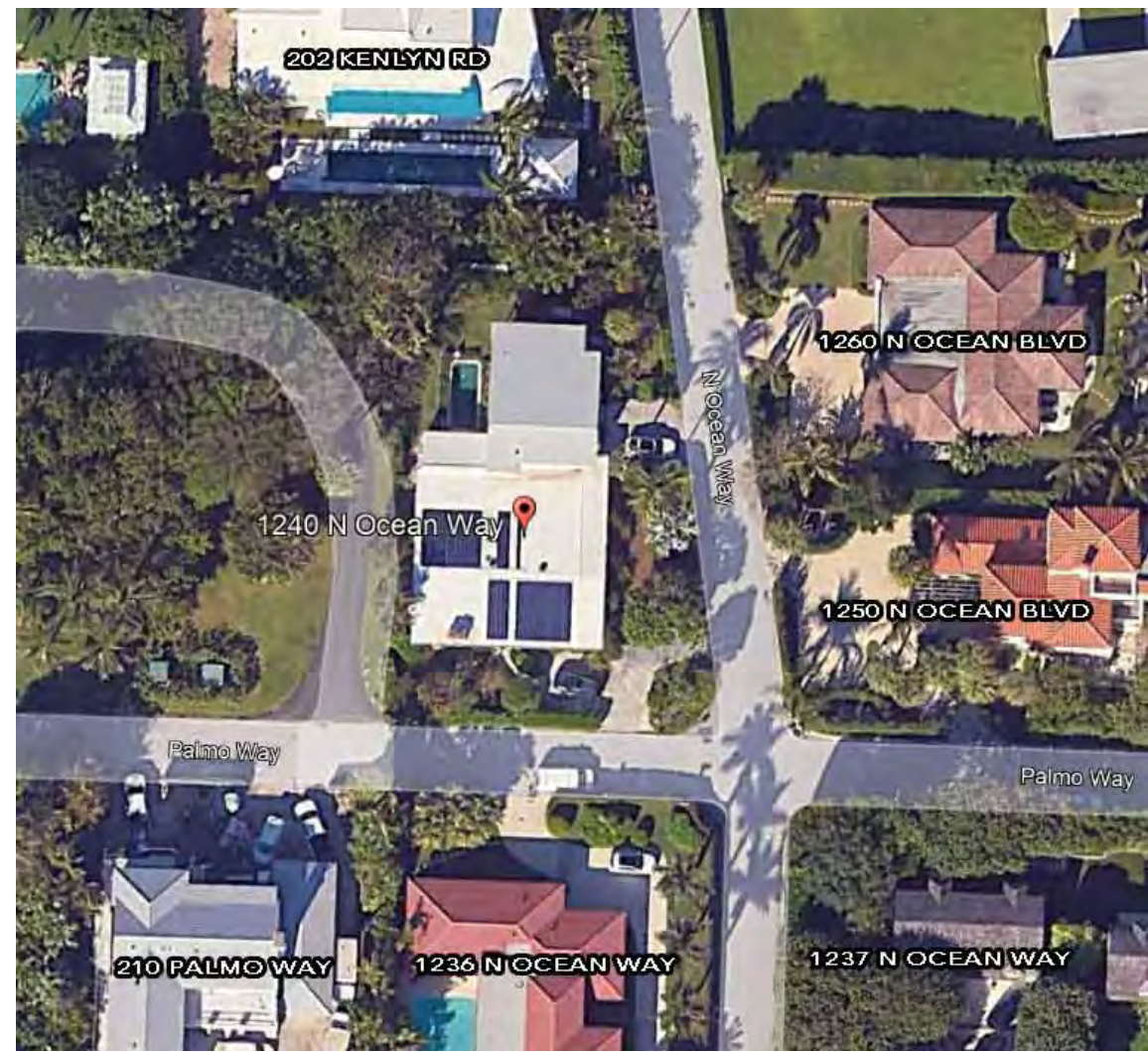
1240 N OCEAN WAY PALM BEACH, FL 33480



VICINITY LOCATION MAP



LOCATION PLAN



SCOPE OF WORK

NEW GRID INTERACTIVE PHOTOVOLTAIC SYSTEM (28.00 KW) ROOF MOUNTED WITH NEW WHOLE HOME BATTERY BACKUP ENERGY STORAGE SYSTEM

SHEET INDEX

| SHEET | NAME | REV 1 | REV 2 | REV 3 |
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| ARCHITECTURAL | | | | |
| A001.AR | COVER SHEET | * | * | |
| A002.AR | EXISTING BUILDING PHOTOS | * | * | * |
| A101.AR | SITE PLAN | * | * | * |
| A102.AR | ROOF PLAN | * | * | * |
| A103.AR | EXTERIOR ELEVATIONS | * | * | * |
| A104.AR | COLOR ELEVATIONS | * | * | |
| SOLAR | | | | |
| PV-1 | COVER PAGE | | * | |
| PV-2 | FIRE SAFETY PLAN | | * | |
| PV-3 | ELECTRICAL DIAGRAM | | * | |
| PV-3.1 | ELECTRICAL DIAGRAM | | * | |
| PV-4 | ELECTRICAL CALCULATIONS | | * | |
| PV-5 | LABELS | | * | |
| PV-6 | RACKING LAYOUT | | * | |
| PV-7 | STRUCTURAL DETAILS | | * | |
| PV-8 | WIND LOAD CALCULATIONS | | * | |
| PV-8.1 | WIND LOAD CALCULATIONS | | * | |
| PV-8.2 | WIND LOAD CALCULATIONS | | * | |
| PV-9 | MODULE DATASHEET | | * | |
| PV-10 | INVERTER DATASHEET | | * | |
| PV-11 | BATTERY DATASHEET | | * | |
| PV-12 | COMBINER PANEL DATASHEET | | * | |
| PV-13 | RACKING DATASHEET | | * | |
| PV-14 | ATTACHMENT DATASHEET | | * | |
| PV-15 | SEALANT DATASHEET | | * | |
| PV-16 | GROUNDING & BONDING DATASHEET | | * | |

| | | |
|---|-------|------------|
| 1 | ARCOM | 2024-09-23 |
| 2 | ARCOM | 2024-10-07 |

| | |
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| revisions. | |
| north. | |
| drawn by. | PD/JK/FF |
| project no. | 21001 |
| date. | 09.23.2024 |

phase. ARCOM SUBMITTAL

sheet. COVER SHEET

ARCOM SUBMITTAL 09.23.2024



SOUTH SIDE VIEW



SOUTH EAST SIDE VIEW



EAST SIDE VIEW



EAST SIDE GARAGE VIEW



NORTH SIDE VIEW



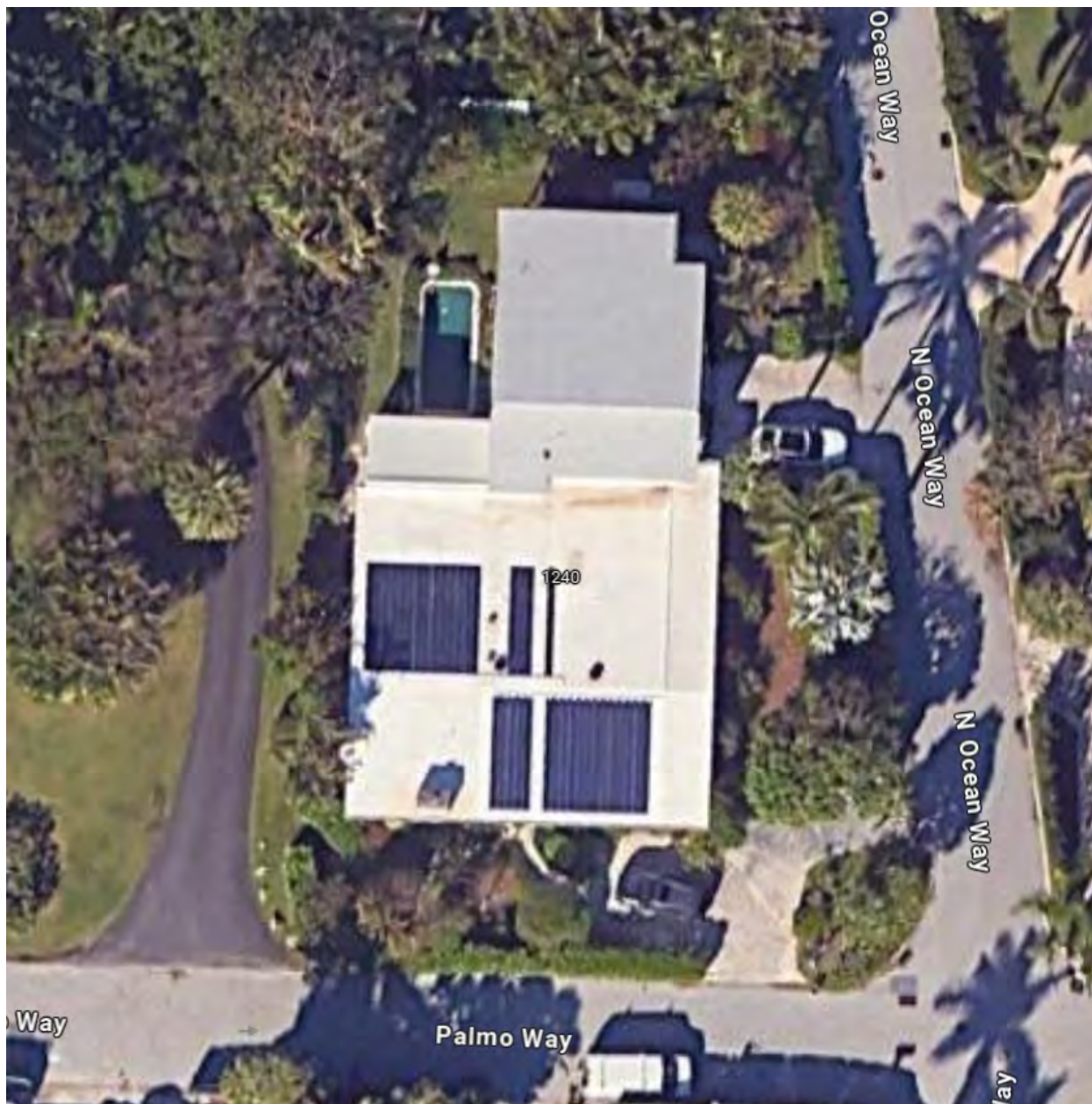
NORTH SIDE VIEW



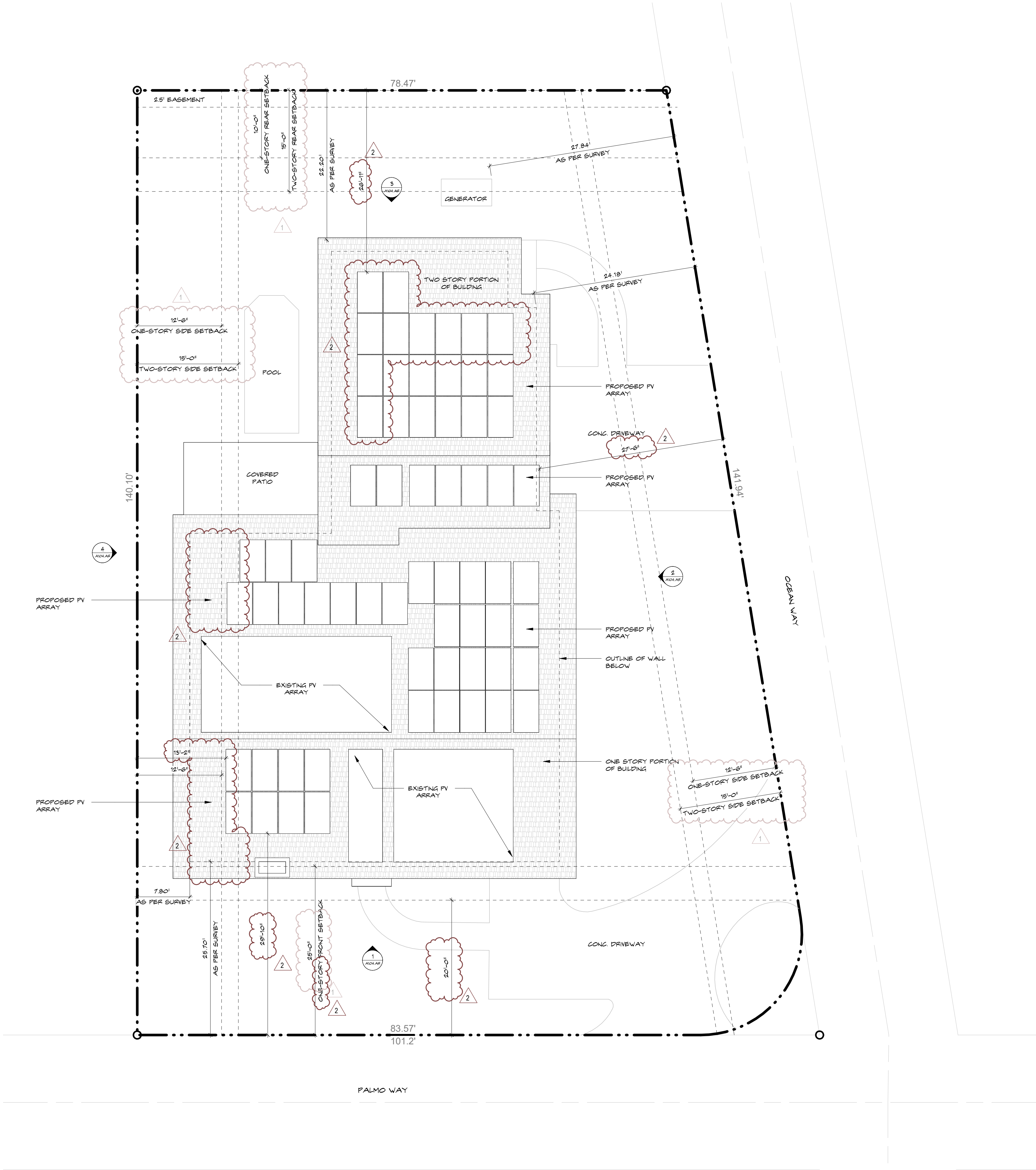
WEST SIDE VIEW



WEST SIDE SCREENED PORCH VIEW



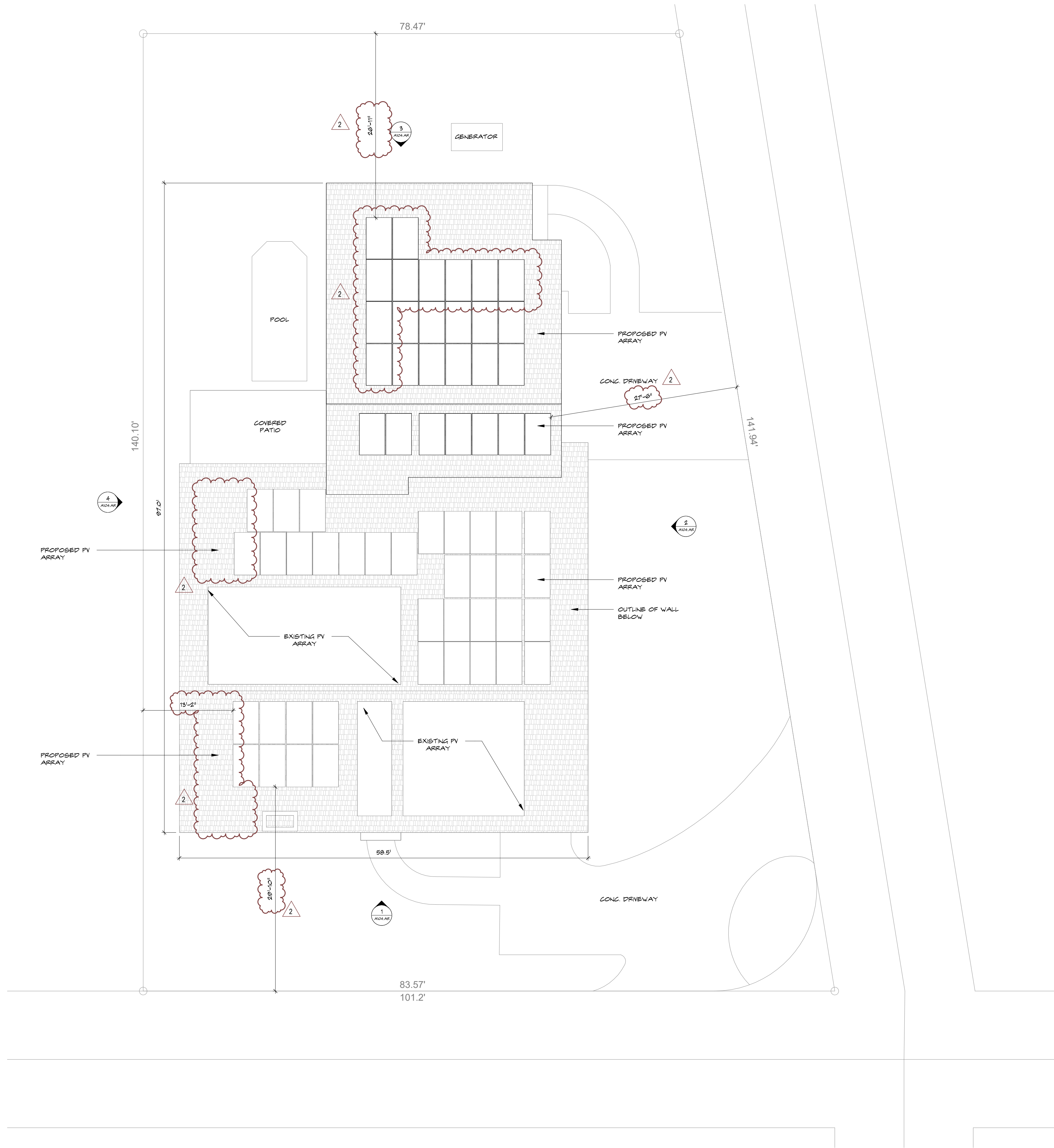
TOP VIEW



1 EXISTING SITE PLAN W/ PROPOSED PV ARRAY
SCALE: 1/8" = 1'-0"

SITE INFORMATION

| | | | | |
|---|--------------------------------------|--------------------|--------------------|----------|
| APPLICABLE CODES | | | | |
| 2023 FLORIDA BUILDING CODE, EXISTING BUILDING, EIGHT EDITION | | | | |
| 2023 FLORIDA BUILDING CODE, BUILDING, EIGHT EDITION | | | | |
| 2023 FLORIDA FIRE PREVENTION CODE, EIGHT EDITION | | | | |
| LEGAL DESCRIPTION | | | | |
| ALTO LIDO LT 24 | | | | |
| GENERAL PARCEL INFORMATION | | | | |
| ADDRESS: 1240 N OCEAN WAY, PALM BEACH, FL 33480 | | | | |
| ZONING DISTRICT: R-B-LOW DENSITY RESIDENTIAL (50'-PALM BEACH) , | | | | |
| SUBDIVISION: ALTO LIDO | | | | |
| TOTAL LOT AREA: 12,532 SF (0.2877 ACRES) | | | | |
| PCN: 50-43-43-03-08-000-0240 | | | | |
| SQUARE FOOTAGE | | | | |
| RESIDENCE | | | | |
| LOCATION | EXISTING | ADDED | REMOVED | PROPOSED |
| FIRST FLOOR | 3,694 SF | 0 SF | 0 SF | 3,694 SF |
| 1ST FL COVERED PORCH (W/ ROOF, OPEN 2+ SIDES) | 200 SF | 0 SF | 0 SF | 200 SF |
| SECOND FLOOR | 918 SF | 0 SF | 0 SF | 918 SF |
| 2ND FL COVERED PORCH (W/ ROOF, OPEN 2+ SIDES) | 200 SF | 0 SF | 0 SF | 200 SF |
| BUILDING SETBACKS | | | | |
| SIDE | ALLOWED | EXISTING | PROPOSED | |
| FRONT YARD (SOUTH) | 25' | 25.7' | 25.7' | |
| SIDE (WEST) | 12.5' (ONE STORY) 15' (TWO STORY) | 7.80' @ ONE STORY | 7.80' @ ONE STORY | |
| SIDE (EAST) | 12.5' (ONE STORY) 15' (TWO STORY) | 24.78' @ TWO STORY | 24.78' @ TWO STORY | |
| REAR (NORTH) | 10' (ONE STORY) 15' (TWO STORY) | 22.2' @ TWO STORY | 22.2' @ TWO STORY | |
| LOT COVERAGE | | | | |
| | ALLOWED | EXISTING | PROPOSED | |
| TWO STORY BUILDING | 30% | 40.0% | 40.0% | |
| BUILDING HEIGHT | | | | |
| | ALLOWED | EXISTING | PROPOSED | |
| TWO STORY | 30' | 21.1' | 21.1' | |



1 ROOF PLAN
SCALE: 1/8" = 1'-0"

ARC-24-0093
SECOND SUBMITTAL
PROJECTED DATE OF HEARING 11/22/2024

SOLAR PANELS FOR:
COLLIER RESIDENCE
1240 N OCEAN WAY
PALM BEACH, FL 33480

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| 1 | ARCOM | 2024-09-23 |
| 2 | ARCOM | 2024-10-07 |

revisions.

north.

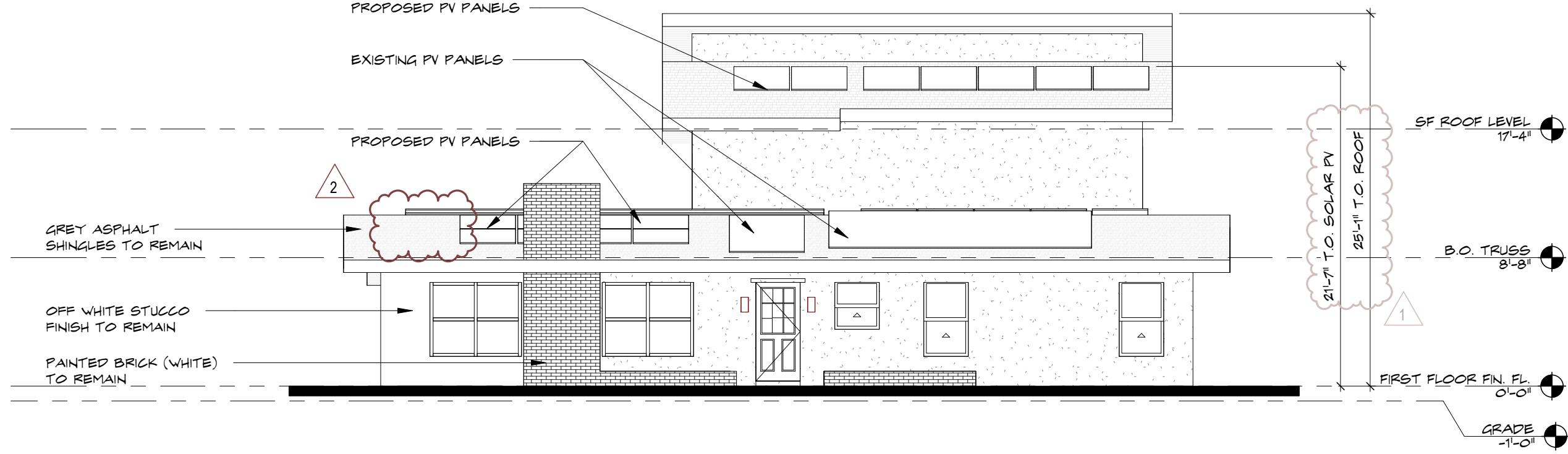
drawn by. PD/JK/FF

project no. 21001

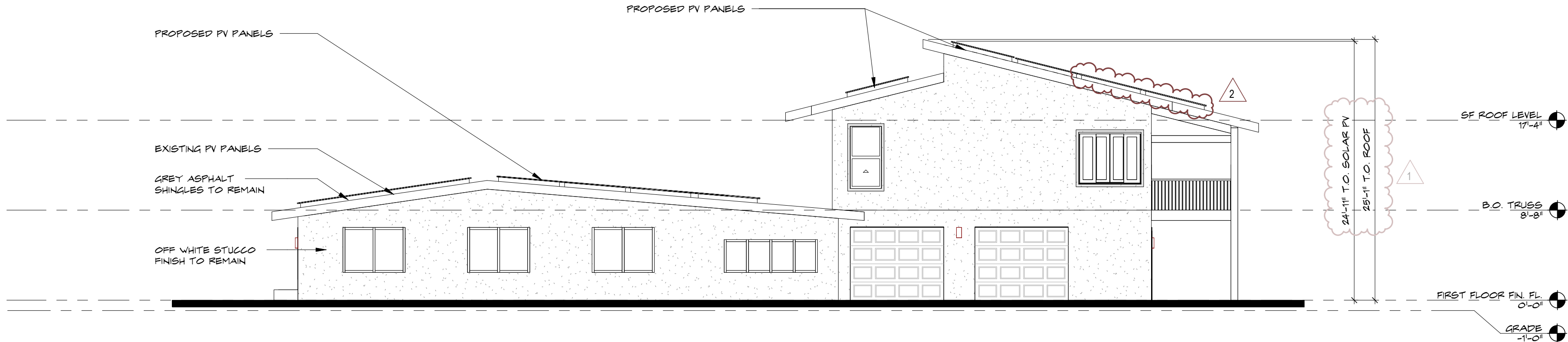
date. 09.23.2024

phase. ARCOM SUBMITTAL

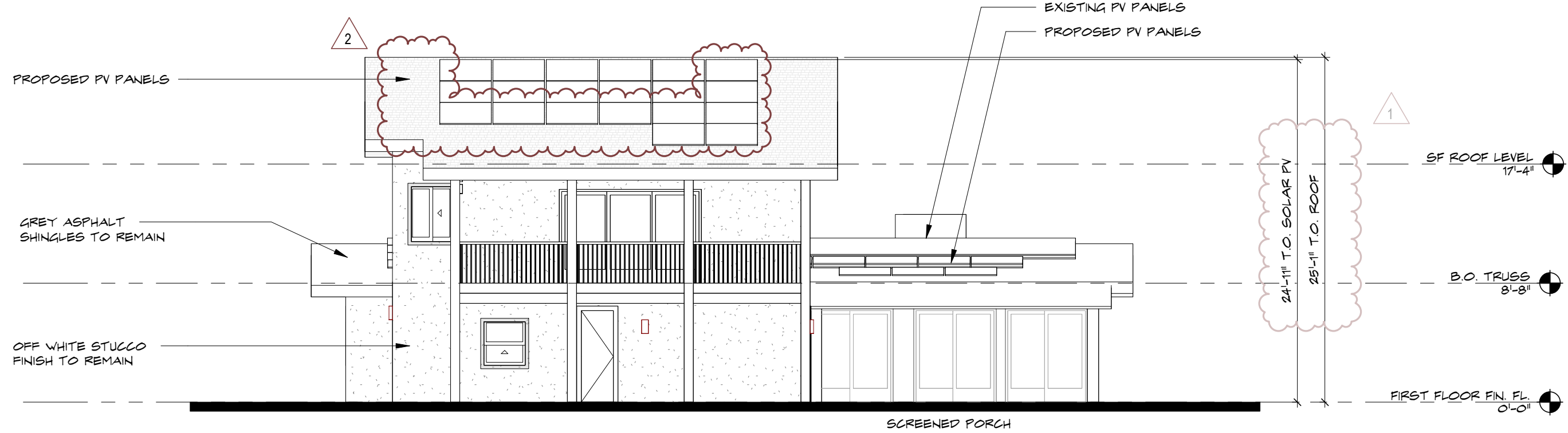
sheet. ROOF PLAN



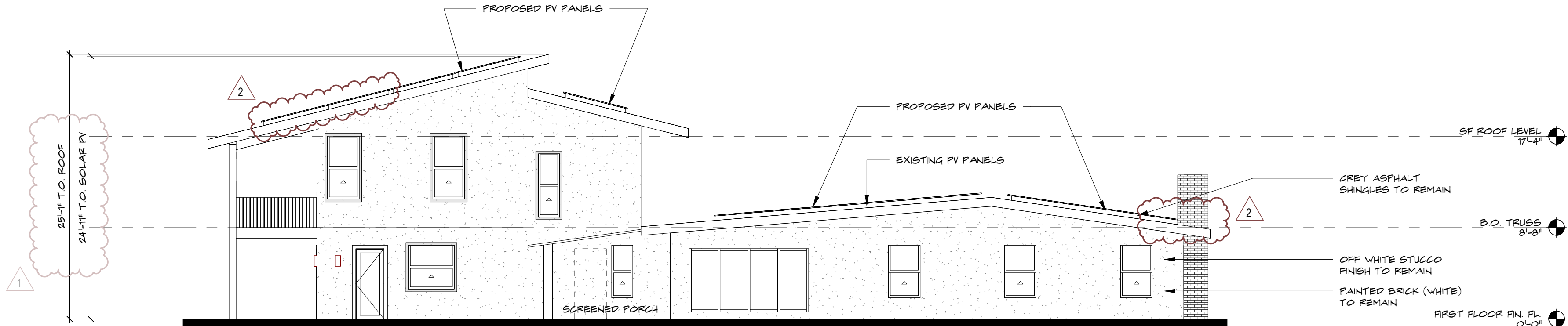
1 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



2 EAST ELEVATION
SCALE: 1/8" = 1'-0"



3 NORTH ELEVATION
SCALE: 1/8" = 1'-0"



4 WEST ELEVATION
SCALE: 1/8" = 1'-0"

ARC-24-0093
FINAL SUBMITTAL

PROJECTED DATE OF HEARING 11/22/2024

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY KIMANDY LAWRENCE, PE ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

COLLIER, TERRY

NEW GRID-INTERACTIVE PHOTOVOLTAIC SYSTEM

WITH NEW WHOLE HOME BACKUP BATTERY ENERGY STORAGE SYSTEM

DC SYSTEM SIZE (28.60KW)

REVISION NOTE: 10/4/2024

THERE IS A CHANGE IN THE SYSTEM SIZE. THE TOTAL COUNT OF THE PANELS HAVE BEEN UPDATED TO 65.

GENERAL NOTES

SCOPE OF WORK

1. THE PROJECT IS NEW PHOTOVOLTAIC SYSTEM CONSISTING OF SOLAR ARRAY(S) AND ASSOCIATED POWER CONDITIONING EQUIPMENT WITH BATTERY BACKUP SYSTEM.
2. ALL CONSTRUCTION SHALL COMPLY WITH THE ADOPTED EDITION OF THE FLORIDA BUILDING CODE AND NATIONAL ELECTRICAL CODE AS SPECIFIED IN THE PROJECT-SPECIFIC NOTES. ALL CONSTRUCTION SHALL ALSO COMPLY WITH ALL APPLICABLE CITY, COUNTY, STATE AND LOCAL ELECTRICAL UTILITY CODES, RULES AND REGULATIONS.
3. THE SYSTEM WILL BE INTERCONNECTED TO THE ELECTRICAL UTILITY GRID IN ACCORDANCE WITH THE REQUIREMENTS OF THE ADOPTED ELECTRIC AND THE ELECTRICAL UTILITY COMPANY.
4. THE CONTRACTOR SHALL PROVIDE LABOR FOR CONSTRUCTION OF THE ARRAY AND INSTALLATION OF ALL ELECTRICAL EQUIPMENT. THE CONTRACTOR WILL PROVIDE COMPETENT SUPERVISION FOR THE WORK TO BE ACCOMPLISHED. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL BY OWNER AS REQUESTED.
5. THERE WILL BE NO SUBMISSION FOR ANY EQUIPMENT WITH THE VENDOR PART NUMBER ON THE DRAWING WITHOUT WRITTEN APPROVAL OF THE PROFESSIONAL ENGINEER. COMMON ITEMS SUCH AS CONDUITS, WIRE, FITTINGS, ETC. ARE NOT SPECIFIED BY VENDOR BUT THE SIZES CANNOT BE REDUCED.
6. THE CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS AGREE THAT IN ACCORDANCE WITH THE GENERALLY ACCEPTED CONSTRUCTION PRACTICES CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE SAFETY OF ALL PERSON AND PROPERTY, AND THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND IS NOT LIMITED TO NORMAL WORKING HOURS.
7. CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS FURTHER AGREE TO DEFEND, INDEMNIFY AND HOLD HARMLESS THE DESIGN PROFESSIONAL FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPT LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PERSONNEL.
8. CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS WILL BE REQUIRE TO REPAIR ANY DAMAGE DONE TO BUILDINGS, GROUNDS OR UTILITIES AT NO ADDITIONAL COST TO THE CUSTOMER. DEFECTIVE MATERIAL OR WORKMANSHIP WILL NOT BE ALLOWED ON THIS PROJECT. REASONABLE HOUSEKEEPING AND CLEAN UP SHALL BE CONDUCTED BOTH DURING THE EXECUTION OF AND AT THE CONCLUSION OF THE PROJECT.
9. CONTRACTOR SHALL LOCATE ALL POST TENSION CABLES ON CONCRETE ROOFS AND SHALL VERIFY THAT SUCH CABLES DO NOT INTERFERE WITH THE LOCATIONS OF FASTENERS AS SHOWN IN THE ATTACHMENT DETAILS.

GENERAL

1. THE ACTUAL SYSTEM EQUIPMENT SPECIFICATIONS FOR THE PHOTOVOLTAIC SYSTEM ARE INCLUDED IN THE PV SYSTEM SPECIFICATION ON THE TITLE PAGE AND THROUGHOUT THE DRAWING AS NECESSARY FOR CLARITY. IN ADDITION THE ACTUAL VENDOR SPECIFICATION DATA SHEETS WILL BE INCLUDED AS PART OF THE PERMIT SUBMITTAL.
2. ONLY NEW MATERIAL WILL BE INSTALLED AS PART OF THE PROJECT. ALL NEW INSTALLED EQUIPMENT WILL BE APPROPRIATELY LISTED AND NEMA RATED. ALL NEW EQUIPMENT SHALL HAVE PERMANENT PLASTIC ENGRAVED IDENTIFICATION TAGS INSTALLED.
3. ALL CUTTING AND PATCHING REQUIRED FOR INSTALLATION OF NEW RACEWAYS AND EQUIPMENT SHALL BE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. ALL WORK SHALL BE PERFORMED BY TRADESMAN EXPERIENCED IN WORK REQUIRED. ALL FINISHES SHALL MATCH THE EXISTING ADJACENT FINISHES. OPENING IN FIRE RATED WALLS WILL BE PATCHED IN A MANNER MAINTAINING THE ORIGINAL FIRE AND SMOKE RATING.
4. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND CANNOT SHOW EVERY CONNECTION, JUNCTION BOX, WIRE, CONDUIT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A COMPLETE AND FUNCTIONAL ELECTRICAL SYSTEM.
5. CONTRACTOR SHALL COORDINATE ALL POWER OUTAGES WITH THE OWNER'S REPRESENTATIVE IN ADVANCE.
6. PANEL DESIGNATIONS SHOWN ON THESE DRAWINGS ARE GIVEN FOR CLARIFICATION OF THE CIRCUITING ONLY AND MAY NOT CORRESPOND TO THE DESIGNATIONS FOUND IN THE FIELD.
7. ELECTRICAL TESTING SHALL BE IN COMPLIANCE WITH NFPA 70E.
8. SMOKE ALARMS SHALL BE INSTALLED INSIDE ALL SLEEPING ROOMS AND OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF BEDROOMS. ADDITIONALLY, EACH STORY WITHIN THE DWELLING, INCLUDING BASEMENTS AND HABITABLE ATTICS, SHALL CONTAIN A SMOKE ALARM. SMOKE ALARMS SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTIVATION OF ONE ALARM WILL ACTIVATE ALL OF THE ALARMS IN THE INDIVIDUAL UNIT. PHYSICAL INTERCONNECTION OF SMOKE ALARMS SHALL NOT BE REQUIRED WHERE LISTED WIRELESS ALARMS ARE INSTALLED AND ALL ALARMS SOUND UPON ACTIVATION OF ONE ALARM. INSTALL CARBON MONOXIDE ALARMS WITHIN 10 FEET OF EACH ROOM USED FOR SLEEPING PURPOSES WHEN THE HOME CONTAINS AN ATTACHED GARAGE OR FUEL-BURNING APPLIANCES. SMOKE ALARMS AND CARBON MONOXIDE ALARMS THAT ARE NOT HARDWIRED SHALL BE POWERED BY 10-YEAR, NON-REMOVABLE BATTERIES. FBCR 314.3, FBCR 314.6 [EXCEPTION 2], FBCR 315.1.

CONDUIT AND WIRE

1. ALL EXISTING CONDUIT RUNS ARE NOT SHOWN. CONTRACTOR SHALL VERIFY EXISTING CONDUIT LOCATIONS IN FIELD.
2. ALL CONDUCTORS SHALL BE INSTALLED IN A RACEWAY AS SPECIFIED IN THE DRAWINGS. THE EXCEPTION IS PV SOURCE CIRCUIT CONDUCTORS MADE OF PV WIRE CABLE. THESE CONDUCTORS MAY BE EXPOSED WITHIN THE PV ARRAY.
3. INDOOR EMT FITTINGS MAY BE COMPRESSION TYPE OR STEEL SET SCREW TYPE. OUTDOOR EMT FITTINGS MUST BE COMPRESSION RAIN TIGHT TYPE.
4. A PULL ROPE SHALL BE INSTALLED IN ALL EMPTY CONDUITS.
5. CONDUCTORS MATERIAL, EITHER COPPER OR ALUMINUM IN SPECIFIED IN THE DRAWINGS. CONDUCTOR INSULATION TYPE SHALL BE THWN - 2 UNLESS OTHERWISE NOTED.

EQUIPMENT

1. ALL ELECTRICAL COMPONENTS INSTALLED OUTDOORS, EXPOSED TO WEATHER OR IN DAMP LOCATIONS SHALL BE RATED FOR NEMA 3R OR GREATER. INSTALLATION OF THESE COMPONENTS MUST COMPLY WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. ALL RACEWAYS, CABINETS, BOXES, FIXTURES SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN AN APPROVED MANNER.
3. AT THE COMPLETION OF THE PROJECT NEATLY TYPED ACCURATE PANEL BOARD DIRECTORIES INDICATING ALL BRANCH CIRCUITS AND SPARES WILL BE PROVIDED. ALL SPARES SHALL BE LEFT IN THE OFF POSITION.
4. ALL SAFETY SWITCHES SHALL BE HEAVY DUTY TYPE WITH COVER INTERLOCK AND HANDLE LOCK OFF PROVISIONS. SWITCHES SHALL BE MANUFACTURED BY A COMPANY CONSISTENT WITH OTHER INSTALLED EQUIPMENT WHENEVER POSSIBLE. PART NUMBERS, RATING AND FUSING SHALL BE AS SHOWN ON THE DRAWINGS.
5. CONTRACTOR SHALL ENSURE ALL NEC AND MAINTENANCE CLEARANCE REQUIREMENTS ARE MET FOR NEW EQUIPMENT AND MAINTAINED FOR EXISTING EQUIPMENT.
6. CONTRACTOR SHALL FIELD VERIFY EQUIPMENT CLEARANCE AND PLACEMENTS WHILE COORDINATING LOCATORS WITH OTHER TRADES, CONSTRUCTION MANAGERS, AND SITE SUPERVISORS PRIOR TO PURCHASING AND INSTALLING EQUIPMENT.
7. EVERY STRUCTURE AND PORTION THEREOF, INCLUDING NONSTRUCTURAL COMPONENTS THAT ARE PERMANENTLY ATTACHED TO STRUCTURES AND THEIR SUPPORTS AND ATTACHMENTS, SHALL BE DESIGNED AND CONSTRUCTED TO RESIST THE EFFECTS OF EARTHQUAKE MOTIONS IN ACCORDANCE WITH ASCE 7, EXCLUDING CHAPTER 14 AND APPENDIX 11A. THE SEISMIC DESIGN CATEGORY FOR A STRUCTURE IS PERMITTED TO BE DETERMINED IN ACCORDANCE WITH SECTION 1613 OR ASCE 7.
8. ALL CONTROLS AND SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF THE ROOM OR AREA TO CONTROL LIGHTING AND RECEPTACLE OUTLETS, APPLIANCE AND COOLING, HEATING AND VENTILATING EQUIPMENT, SHALL BE LOCATED NO MORE THAN 48 INCHES MEASURED FROM THE TOP OF THE JUNCTION OR DEVICE BOX NOR LESS THAN 15 INCHES MEASURED TO THE BOTTOM OF THE JUNCTION OR DEVICE BOX ABOVE THE FINISHED FLOOR.
9. ALL RECEPTACLE OUTLETS ON BRANCH CIRCUITS OF 30-AMPERES OR LESS AND COMMUNICATION SYSTEM RECEPTACLES SHALL BE LOCATED NO MORE THAN 48 INCHES MEASURED FROM THE TOP OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING NOR LESS THAN 15 INCHES MEASURED TO THE BOTTOM OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING ABOVE FINISHED FLOOR.

GROUNDING

1. THE GROUNDING SYSTEM SHALL MEET THE REQUIREMENTS OF THE NEC AND THE LOCAL ADOPTED CODE. ALL ELECTRICAL EQUIPMENT AND RACEWAYS SHALL BE PROPERLY GROUNDED.
2. AN INSULATED EQUIPMENT GROUNDING CONDUCTOR, IN ACCORDANCE WITH NEC CODE, SHALL BE PROVIDED IN ALL CONDUITS WITH CURRENT CARRYING CONDUCTORS. ALL LUGS AND CONNECTORS SHALL BE RATED FOR THE CONDUCTOR MATERIAL AND THE CONDITIONS OF USE.
3. THE GROUNDING RESISTIVITY WILL BE TESTED AFTER INSTALLATION TO CONFIRM 5 OHM OR LESS RESISTANCE FROM RACKING TO GROUND. IF GROUND RESISTANCE IS GREATER THAN 5 OHMS ADDITIONAL GROUNDING WILL BE INSTALLED UNTIL RESISTANCE IS LESS THAN 5 OHMS.

WIRING DEVICES

1. RECEPTACLES SHALL BE AS DESIGNED ON THE DRAWINGS AND SHOULD BE A BRAND CONSISTENT WITH OTHERS IN THE VICINITY WHENEVER POSSIBLE.
2. ALL WIRING DEVICES SHALL BE PROVIDED WITH APPROPRIATE COVER-PLATES. ANY EMPTY BOXES SHALL HAVE BLANK COVER PLATES. COVER-PLATES SHALL BE LEXAN, PLASTIC OR STAINLESS STEEL IN FINISHED AREA. GALVANIZED COVER-PLATES MAY BE USED IN EQUIPMENT ROOMS.

LABELING AND PHASING

1. FOR LABELING USE NUMBERED UV RATED LABELS TO INDICATE STRING NUMBER.
2. AS A SUBSTITUTE FOR LABELS YELLOW TAPE MAY BE USED FOR PHASING
3. EACH METHOD DESCRIBED ABOVE WILL NEED TO BE PERFORMED ON BOTH POSITIVE AND NEGATIVE AT POINTS WHERE CONDUCTORS ARE TERMINATED

SYSTEM DETAILS

| | |
|-----------------------------|--|
| DESCRIPTION | NEW GRID-INTERACTIVE PHOTOVOLTAIC SYSTEM WITH NEW WHOLE HOME BACKUP BATTERY ENERGY STORAGE SYSTEM. |
| DC RATING OF SYSTEM | SYSTEM SIZE : 28.60KW DC STC |
| AC RATING OF SYSTEM | 18.850KW |
| MAX. AC OUT. CURRENT | 78.65 A |
| NO. OF MODULES | (65) DNA-120-BF10-440W (440W) APTOS SOLAR |
| NO. OF INVERTERS | (65) ENPHASE IQ8PLUS-72-2-US MICROINVERTERS |
| ARRAY STRINGING | (2) BRANCHES OF 12 MODULES, (1) BRANCHES OF 11 MODULES, (3) BRANCHES OF 10 MODULES |
| NO. OF BATTERIES | (5) FRANKLIN A POWER X |
| UTILITY COMPANY | FPL (FLORIDA POWER & LIGHT) |
| AC GROSS POWER RATING (GPR) | 24.31 KW |
| PV SYSTEM TIER | II (10 KW AC < GPR ≤ 100 KW AC) |

SITE DETAILS

| | |
|------------------------|---------------------|
| ASHRAE EXTREME LOW | 3°C |
| ASHRAE 2% HIGH | 33°C |
| GROUND SNOW LOAD | 3 PSF |
| WIND SPEED | 170 MPH (ASCE 7-22) |
| RISK CATEGORY | II |
| WIND EXPOSURE CATEGORY | D |

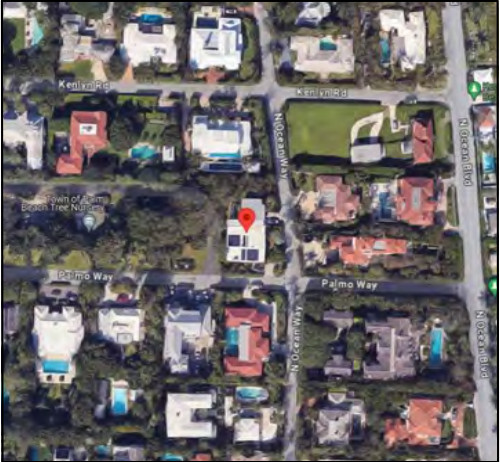
GOVERNING CODES

| |
|---|
| FLORIDA RESIDENTIAL CODE, 8TH EDITION 2023 (FRC) |
| FLORIDA BUILDING CODE, 8TH EDITION 2023 (FBC) |
| FLORIDA FIRE PREVENTION CODE, 8TH EDITION 2023 (FFPC) |
| NATIONAL ELECTRICAL CODE, NEC 2020 CODE BOOK |

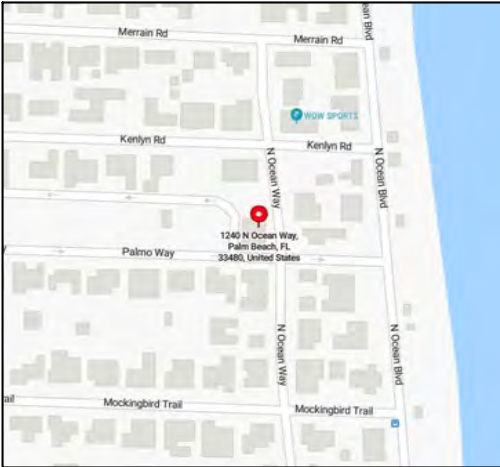
SHEET INDEX

| | |
|--------------|-------------------------------|
| SHEET NO. | SHEET NAME |
| PV-1 | COVER PAGE |
| PV-2 | FIRE SAFETY PLAN |
| PV-3,3.1 | ELECTRICAL DIAGRAM |
| PV-4 | ELECTRICAL CALCULATIONS |
| PV-5 | LABELS |
| PV-6 | RACKING LAYOUT |
| PV-7 | STRUCTURAL DETAILS |
| PV-8,8.1,8.2 | WIND LOAD CALCULATIONS |
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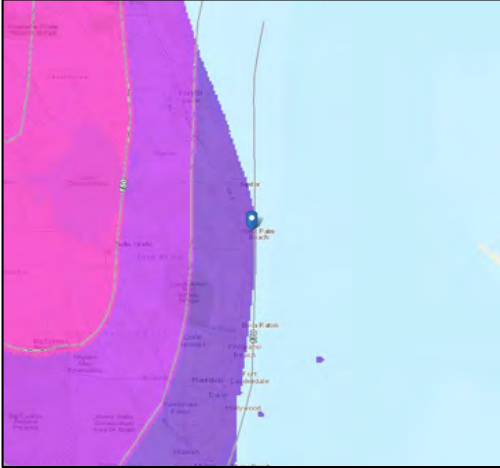
SITE MAP (N.T.S)



VICINITY MAP



WIND FLOW MAP



BUILDING DEPARTMENT SEAL STAMP



CONTACT: (561) 660-5200
6801 LAKE WORTH ROAD SUITE 302
LAKE WORTH, FL 33467
FLORIDA REGISTRY# 33809

SOLARSCOT

CONTACT: (561) 312-7774
527 UPLAND ROAD
WEST PALM BEACH, FL, 33401
LIC NO: CVC57015

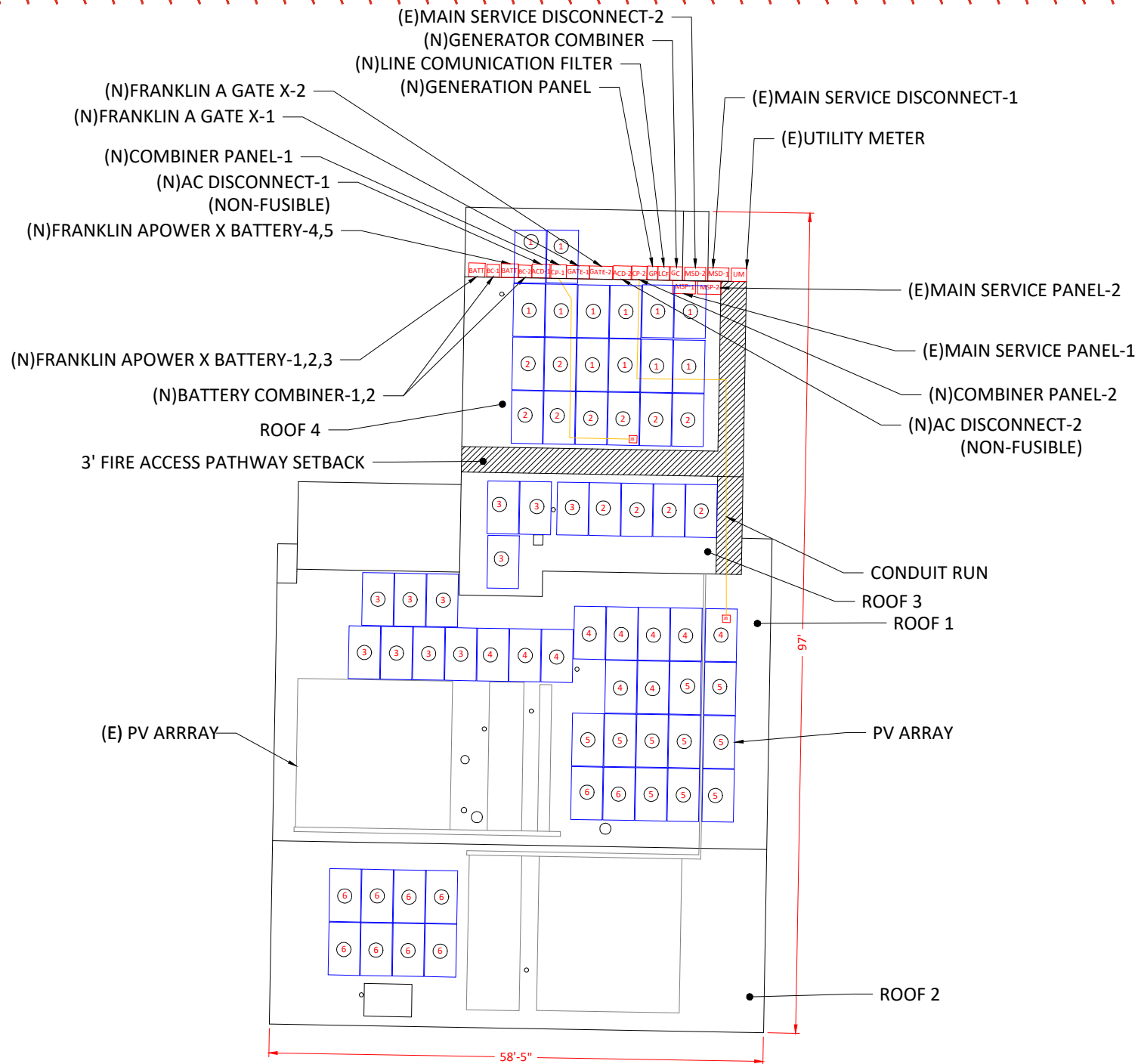
COLLIER, TERRY

1240 N OCEAN WAY
PALM BEACH, FL 33480
26.758117, -80.037891

SIGNATURE WITH SEAL

COVER PAGE

PV-1



REVISION NOTE: 10/4/2024
THERE IS A CHANGE IN THE SYSTEM SIZE. THE TOTAL COUNT OF THE PANELS HAVE BEEN UPDATED TO 65. THE NUMBER OF PANELS ON ROOF 1, PANELS ON THE ALL THE ROOFS HAVE BEEN CHANGED. THE NUMBER OF ATTACHMENTS ON THE RESPECTIVE ROOFS HAS ALSO CHANGED.

| EQUIPMENT SPECIFICATIONS | | |
|---------------------------|--|----------|
| EQUIPMENT | DESCRIPTION | QUANTITY |
| MODULE | DNA-120-BF10-440W (440W) APTOS SOLAR | 65 |
| INVERTER | ENPHASE IQ8PLUS-72-2-US MICROINVERTERS | 65 |
| JUNCTION BOX | 600 V,NEMA 3R UL LISTED | 2 |
| COMBINER PANEL | 80A ENPHASE IQ COMBINER 5C | 1 |
| AC DISCONNECT-1 | AC DISCONNECT 240V, 60 AMP, NON-FUSED, NEMA 3R, UL LISTED | 1 |
| AC DISCONNECT-2 | AC DISCONNECT 240V, 100 AMP, NON-FUSED, NEMA 3R, UL LISTED | 1 |
| ATTACHMENT FOR SLOPE ROOF | IRONRIDGE QUICKMOUNT (HALO ULTRA GRIP) | 70 |
| ATTACHMENT FOR FLAT ROOF | QUICKMOUNT (QMLSH) | 89 |
| RACKING SYSTEM | IRONRIDGE (XR100) RAILS | - |

| ROOF SPECIFICATIONS | |
|---------------------|-----------------|
| ROOF MATERIAL | ASPHALT SHINGLE |
| ROOF CONDITION | GOOD |
| RAFTERS | 2"X 6"@24"OC |

| ROOF SPECIFICATIONS | |
|---------------------|------------------|
| ROOF MATERIAL | MODIFIED BITUMEN |
| ROOF CONDITION | GOOD |
| TRUSSES | 2"X 6"@24"OC |

| ROOF INFORMATION | | | |
|------------------|----------|--------------|---------|
| ROOF | QUANTITY | SLOPE | AZIMUTH |
| ROOF 1 | 29 | 4.8°(1/12) | 2° |
| ROOF 2 | 08 | 4.8°(1/12) | 272° |
| ROOF 3 | 8 | 14.04°(3/12) | 272° |
| ROOF 4 | 20 | 18.4°(4/12) | 2° |

| SYSTEM INFORMATION | |
|--------------------|---------|
| DC SYSTEM SIZE | 28.60KW |
| AC SYSTEM SIZE | 18.85KW |

NOTES:
1. LOCATION OF JUNCTION BOX(ES), AC DISCONNECTS(S), AC COMBINER PANEL(S), AND OTHER ELECTRICAL EQUIPMENT(S) RELEVANT TO PV INSTALLATION SUBJECT TO CHANGE BASED ON SITE CONDITIONS.
2. SETBACKS AT RIDGES MUST BE 36 INCHES IN COMPLIANCE WITH FBC R 324.6.2:
TOTAL PLAN VIEW AREA = 4768.31 SQFT
TOTAL PV AREA = 60(74.9 IN)(44.6 IN)/(144 IN^2) = 1391.89 SQFT
(1391.89 SQFT/4768.31 SQFT)100 = 29.19 %
TOTAL PV AREA POPULATES 29.19 % OF TOTAL PLAN VIEW AREA AND IS NOT WITHIN THE 33% REQUIREMENT.

| LEGENDS | |
|---------|----------------------------|
| UM | - UTILITY METER |
| MSD | - MAIN SERVICE DISCONNECT |
| MSP | - MAIN SERVICE PANEL |
| JB | - JUNCTION BOX |
| GATE | - FRANKLIN AGATEX |
| CP | - COMBINER PANEL |
| GP | - GENERATION PANEL |
| GC | - GENERATOR COMBINER |
| BC | - BATTERY COMBINER |
| BAT | - FRANKLIN APOWER X |
| LCF | - LINE COMUNICATION FILTER |
| ACD | - AC DISCONNECT |
| RAP | - ROOF ACCESS POINT |
| ① | - STRING TAG |
| — | - CONDUIT RUN |
| ▨ | - FIRE SETBACK |
| ○ □ | - ROOF OBSTRUCTION |

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SIGNATURE WITH SEAL

FIRE SAFETY PLAN

PV-2

| CONDUCTOR AND CONDUIT SCHEDULE | | |
|--------------------------------|---|------------------------|
| SR. NO. | DESCRIPTION | CONDUIT SIZE |
| A | ENPHASE Q CABLES, (1) #10 AWG THWN-2 (G) | |
| 1 | (3) #10 AWG THWN-2 (L1) ,(3) #10 AWG THWN-2 (L2) , (1) #10 AWG THWN-2 (G) | IN 3/4" CONDUIT RUN |
| 2 | (3) #8 AWG THWN-2 (L1,L2,N) , (1) #10 AWG THWN-2 (G) | IN 3/4" CONDUIT RUN |
| 2.1 | (3) #4 AWG THWN-2 (L1,L2,N) , (1) #8 AWG THWN-2 (G) | IN 1-1/4" CONDUIT RUN |
| 3 | (3) #6 AWG THWN-2 (L1,L2,N) , (1) #10 AWG THWN-2 (G) | IN 1" CONDUIT RUN |
| 3.1 | (3) #4 AWG THWN-2 (L1,L2,N) , (1) #8 AWG THWN-2 (G) | IN 1-1/4" CONDUIT RUN |
| 4 | (3) #10 AWG THWN-2 (L1) , (1) #10 AWG THWN-2 (G) | IN 3/4" CONDUIT RUN |
| 5 | (3) #3 AWG THWN-2 (L1) , (1) #8 AWG THWN-2 (G) | IN 1-1/4" CONDUIT RUN |
| 5.1 | (3) #6 AWG THWN-2 (L1) , (1) #10 AWG THWN-2 (G) | IN 1" CONDUIT RUN |
| 6 | (3) 3/0 AWG THWN-2 (L1) , (1) #6 AWG THWN-2 (G) | IN 2" CONDUIT RUN |
| 7 | (E) (3) 3/0 AWG THWN-2 (L1) | EXISTING CONDUIT RUN |
| 8 | (3) #3 AWG THWN-2 (L1), (1) #8 AWG THWN-2 (G) | IN 1-1/4"" CONDUIT RUN |

| MODULE SPECIFICATION | |
|-----------------------------|-------------------|
| MANUFACTURER | APTOS SOLAR |
| MODEL NO. | DNA-120-BF10-440W |
| PEAK POWER (Pmpp) | 440 W |
| PEAK VOLTAGE (Vmpp) | 34.71 V |
| PEAK CURRENT (Impp) | 12.68 A |
| OPEN CIRCUIT VOLTAGE (Voc) | 49.9 V |
| SHORT CIRCUIT CURRENT (Isc) | 11.33 A |
| TOTAL QUANTITY | 65 |

| INVERTER SPECIFICATION | |
|---------------------------|-----------------|
| MANUFACTURER | ENPHASE |
| MODEL NO. | IQ8PLUS-72-2-US |
| MAX. DC INPUT VOLTAGE | 60 V |
| MAX. CONT. OUTPUT POWER | 290 VA |
| NOMINAL AC OUTPUT VOLTAGE | 240V |
| MAX. CONT. OUTPUT CURRENT | 1.21 A |
| TOTAL QUANTITY | 65 |

| BATTERY SPECIFICATION | |
|---------------------------|--------------------|
| MANUFACTURER | FRANKLIN |
| MODEL NO. | FRANKLIN A POWER X |
| CAPACITY | 13.6 KWH |
| MAX. CONT. POWER OUTPUT | 5 KVA |
| NOMINAL OPERATING VOLTAGE | 240 V |
| TOTAL QUANTITY | 5 |

| ARRAY DETAILS | |
|--------------------------|---------------------|
| DC SYSTEM SIZE | 28.60KW |
| AC SYSTEM SIZE | 18.85KW |
| TOTAL NO. OF MODULES | 65 |
| NO. OF MODULE PER STRING | 02@12, 01@11, 03@10 |
| NO. OF STRING | 06 |

| FRANKLINE GATE X | |
|------------------|------------------------|
| MANUFACTURER | FRANKLINWH |
| MODEL NO. | AGATE X |
| VOLTAGE RATING | 120/240V, SINGLE PHASE |
| BUSBAR RATING | 200 A |
| TOTAL QUANTITY | 2 |

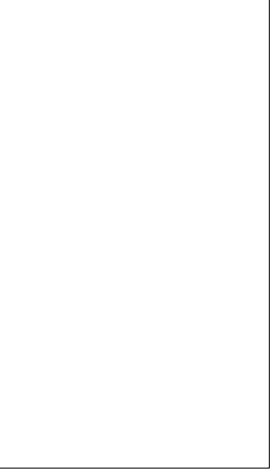
REVISION NOTE: 10/4/2024
THERE IS A CHANGE IN THE SYSTEM SIZE. THE TOTAL COUNT OF THE PANELS HAVE BEEN UPDATED TO 65.

THE WIRE BETWEEN IQ COMBINER 1 AND AGATE 1 HAS BEEN CHANGED, SEE PV-4 FOR CALCULATION. IT HAS BEEN DENOTED AS TAG #3

- NOTE:
1.CONDUIT RUN - EMT, PVC, IMC, RMC, FMC, LFMC OR EQUIVALENT AS PER NEC.
2. ALL EQUIPMENT GROUNDING CONDUCTORS SMALLER THAN #6 AWG SHALL RUN BENEATH THE ARRAY(S) OR IN A CONDUIT RUN TO PROTECT FROM PHYSICAL DAMAGE PER NEC 690.46 AND NEC 250.120(C).
3. LEGEND: (E) = EXISTING, (N) = NEW; APPLICABLE TO CONDUCTORS, CONDUITS, ELECTRICAL ENCLOSURES, ETC.
4.VOLTAGE DROP CALCULAIONS SHALL BE PROVIDED FOR TRENCHED CONDUIT RUNS OF 75 FEET OR GREATER.
5.SOLAR CONTRACTOR SHALL ENSURE TRENCHED CONDUIT(S) MEET NEC TABLE 300.5 MINIMUM COVER REQUIREMENTS RESPECTIVE TO TYPE OF CONDUIT TRENCHED AND LOCATION OF TRENCHED CONDUIT.
6.SERVICE SUPPLYING DWELLING UNIT SHALL BE PROVIDED WITH SURGE-PROTECTIVE DEVICE (SPD) PER NEC 230.67.

- ENERGY STORAGE SYSTEM NOTES:
1. THE OVERCURRENT PROTECTION DEVICE OF ANY INDIVIDUAL LOAD FED BY THE ENERGY STORAGE SYSTEM SHALL NOT EXCEED AN AMPACITY OF 60A OR A NAMEPLATE POWER RATING OF 11.52KW.
2. IF THE UTILITY IS DOWN, THE FRANKLIN AGATE ISOLATES THE PV ENERGY STORAGE AND UNINTERRUPTIBLE LOADS.
3. IF THE UTILITY IS DOWN, THE BACKUP SYSTEM OPERATES AS A STAND-ALONE SYSTEM UNDER THE CONDITIONS OF NEC ARTICLES 706 AND 710.
4. ALL METAL ENCLOSURES, RACEWAYS, CABLES AND EXPOSED NON-CURRENT-CARRYING METAL PARTS EQUIPMENT SHALL BE GROUNDED TO EARTH AS REQUIRED BY NEC 250.
5. EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC 690.45.
6. PV SYSTEM INTERCONNECTED ON THE LOAD SIDE OF MAIN DISCONNECTING MEANS PER NEC 705.12(B).
7. BATTERIES SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S INSTUCTIONS AND PROVIDE THE MINIMUM FRONT AND SIDE CLEARANCE REQUIREMENTS AS WELL AS THE MINIMUM FLOOR, ADJACENT BATTERY (VERTICAL OR HORIZONTAL) AND CEILING SETBACK REQUIREMENTS, AS APPLICABLE TO INSTALLATION LOCATION.
8. BATTERIES INSTALLED IN THE PATH OF MOTOR VEHICLES SHALL BE PROTECTED FROM DAMAGE BY FOLLOWING MANUFACTURER'S

INSTRUCTIONS FOR MINIMUM DISTANCE FROM FLOOR OR BY INSTALLATION OF BOLLARDS.



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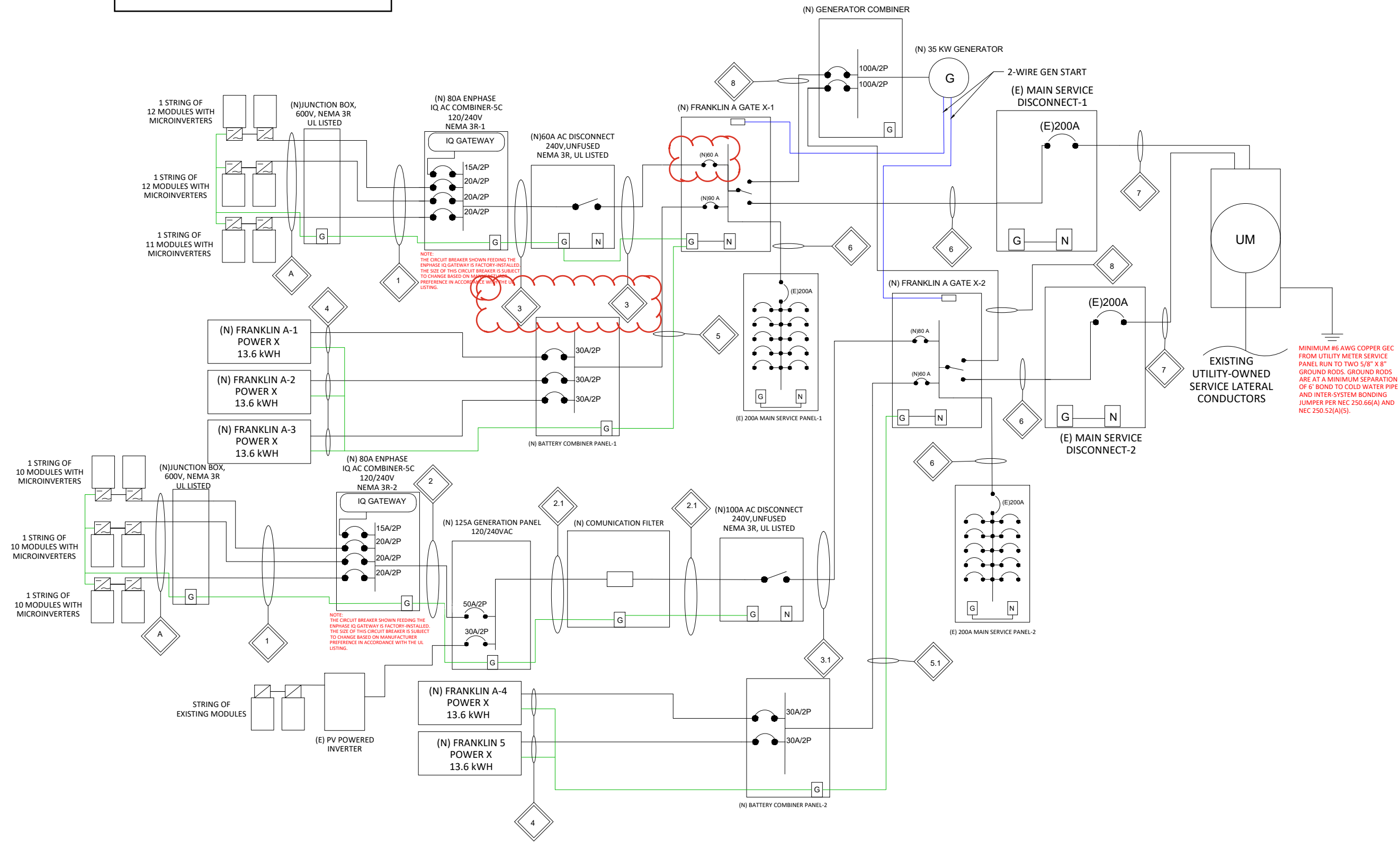
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ELECTRICAL LINE DIAGRAM

PV-3

PER FL. STATUE 377.705 (REVISED 7/1/2017) I, KIMANDY LAWRENCE PE#83317, AN ENGINEER LICENSED PURSUANT TO CHAPTER 471, CERTIFY THAT THE PV ELECTRICAL SYSTEM AND ELECTRICAL COMPONENTS ARE DESIGNED AND APPROVED USING THE STANDARDS CONTAINED IN THE MOST RECENT VERSION OF THE FLORIDA BUILDING CODE.

REVISION NOTE: 10/4/2024
THE STRING COUNT FOR IQ COMBINER #1 HAS
BEEN CHANGED. THE BREAKER PROTECTING
PLACED IN AGATE-1 HAS ALSO BEEN CHANGED.



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ELECTRICAL LINE DIAGRAM

PV-3.1

ELECTRICAL CALCULATIONS :

1. CURRENT CARRYING CONDUCTOR

(A) BEFORE IQ COMBINER PANEL :

AMBIENT TEMPERATURE = 33°C
CONDUIT INSTALLED AT MINIMUM DISTANCE OF 7/8 INCHES ABOVE ROOFNEC 310.15(B)(2)

TEMPERATURE DERATE FACTOR - (0.96)NEC 310.15(B)(1)
GROUPING FACTOR - (0.8)NEC 310.15(C)(1)

CONDUCTOR AMPACITY:

= (INV O/P CURRENT) x 1.25 / A.T.F / G.F ...NEC 690.8(B)
= [(12 x 1.21) x 1.25] / 0.96 / 0.8
= 23.63 A

SELECTED CONDUCTOR - #10 THWN-2 ...NEC 310.16

(B) AFTER IQ COMBINER PANEL 1 :

TEMPERATURE DERATE FACTOR - (0.96)

GROUPING FACTOR - (1)

CONDUCTOR AMPACITY

= (TOTAL INV O/P CURRENT) x 1.25 / 0.96 / 1 ...NEC 690.8(B)
= [(35 x 1.21) x 1.25] / 0.96 / 1
= 55.14 A

SELECTED CONDUCTOR - #6 THWN-2 ...NEC 310.16

2. PV OVER CURRENT PROTECTION ...NEC 690.9(B)

= TOTAL INVERTER O/P CURRENT x 1.25
= (35 x 1.21) x 1.25 = 52.93 A
SELECTED OCPD IS 60 A

SELECTED EQUIPMENT GROUNDING CONDUCTOR (EGC) = #10 THWN-2 ...NEC 250.122

(C) AFTER IQ COMBINER PANEL 2 :

TEMPERATURE DERATE FACTOR - (0.96)

GROUPING FACTOR - (1)

CONDUCTOR AMPACITY

= (TOTAL INV O/P CURRENT) x 1.25 / 0.96 / 1 ...NEC 690.8(B)
= [(30 x 1.21) x 1.25] / 0.96 / 1
= 47.27 A

SELECTED CONDUCTOR - #8 THWN-2 ...NEC 310.16

2. PV OVER CURRENT PROTECTION ...NEC 690.9(B)

= TOTAL INVERTER O/P CURRENT x 1.25
= (30 x 1.21) x 1.25 = 45.38 A
SELECTED OCPD IS 50 A

SELECTED EQUIPMENT GROUNDING CONDUCTOR (EGC) = #10 THWN-2 ...NEC 250.122

3. INDIVIDUAL BATTERY BACKUP OVER CURRENT PROTECTION ...NEC 690.9(B)

= TOTAL BATTERY O/P CURRENT X 1.25
= (20.8)X 1.25 = 26.00 A
SELECTED OCPD IS 30 A.

SELECTED CONDUCTOR - #10 THWN-2 ... NEC 310.16

SELECTED EQUIPMENT GROUNDING CONDUCTOR (EGC) = #10 THWN-2 ...NEC 250.122 4.

REVISION NOTE: 10/4/2024
THE CALCULATION HAS BEEN REVISED TO ADD
THE CALCULATION FOR COMBINER #1 AS THE
NUMBER OF PANELS CONNECTED TO
COMBINER #1 HAS BEEN CHANGED FROM 30
TO 35.
THE CALCULATION FOR SINGLE STRING HAS
ALSO BEEN CHANGED FROM 10
MICORINVERTERS TO 12 MICROINVERTERS.

(D) AFTER GENERATION PANEL (NEW PV AND EXISTING PV)

TEMPERATURE DERATE FACTOR - (0.96)

GROUPING FACTOR - (1) CONDUCTOR AMPACITY

= (TOTAL INV O/P CURRENT) x 1.25 / 0.96 / 1 ...NEC 690.8(B)
= [{(30 x 1.21) x 1.25} + 30A] / 0.96 / 1
= 78.51 A

SELECTED CONDUCTOR - #4 THWN-2 ...NEC 310.16

4. PV OVER CURRENT PROTECTION ...NEC 690.9(B)

= TOTAL INVERTER O/P CURRENT x 1.25
= { (30 x 1.21) +30A } x 1.25 = 78.51 A
SELECTED OCPD IS 80 A

SELECTED EQUIPMENT GROUNDING CONDUCTOR (EGC) = #8 THWN-2 ...NEC 250.122

GENERAL ELECTRICAL NOTES:

1. THE DC AND AC CONNECTORS OF THE ENPHASE IQ8PLUS-72-2-US MICROINVERTERS ARE LISTED TO MEET REQUIREMENTS AN EQUIPMENT DISCONNECTING MEANS SHALL BE PERMITTED TO BE REMOTE FROM THE EQUIPMENT WHERE THE EQUIPMENT DISCONNECTING MEANS CAN BE REMOTELY OPERATED FROM WITHIN 3 M (10 FT) OF THE EQUIPMENT BY NEC 690.15(A).
2. MICROINVERTER BRANCH CIRCUIT CONDUCTORS ARE MANUFACTURED ENPHASE Q CABLES LISTED FOR USE IN 20A OR LESS CIRCUITS OF ENPHASE IQ MICROINVERTERS. THEY ARE ROHS, OIL RESISTANT, AND UV RESISTANT. THEY CONTAIN AWG CONDUCTORS OF TYPE THHN/THWN-2 DRY/WET AND CERTIFIED TO UL3003 AND UL 9703. THE CABLE'S DOUBLE INSULATED RATING REQUIRES NO NEUTRAL OR GROUNDED CONDUCTOR.
3. ALL METAL ENCLOSURES, RACEWAYS, CABLES AND EXPOSED NONCURRENT-CARRYING METAL PARTS OF EQUIPMENT SHALL BE GROUNDED TO EARTH AS REQUIRED BY NEC 250.4(B) AND PART III OF NEC ARTICLE 250 AND EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC 690.45. THE GROUNDING ELECTRODE SYSTEM SHALL ADHERE TO 690.47(A).
4. PV SYSTEM DISCONNECT SHALL BE READILY ACCESSIBLE.
5. POINT-OF-CONNECTION SHALL BE MADE IN COMPLIANCE WITH NEC 705.11 or 705.12
6. UTILITY HAS 24-HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC SYSTEM COMPONENTS LOCATED AT THE SERVICE ENTRANCE.
7. MODULES CONFORM TO AND ARE LISTED UNDER UL 1703, UL 61730 , 61730-1 AND 61730-2. MICROINVERTERS CONFORM TO AND ARE LISTED UNDER UL 1741 AND IEEE 1547 - 2018.
8. CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC ARTICLE 300.6(C)(1) AND ARTICLE 310.10 (D).
9. CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC ARTICLE 310.10 (C).
10. LINE SIDE TAP DISCONNECTS MUST BE LOCATED NO MORE THAN 10 FEET FROM THE TAP POINT PER NEC 690.15(A)
11. ALL PHOTOVOLTAIC SYSTEM DC CIRCUITS RAN INSIDE OR ON ALL BUILDINGS AND STRUCTURES SHALL BE ENCLOSED IN METALLIC CONDUIT IN COMPLIANCE WITH NEC 690.31(D). THIS REQUIREMENT SHALL APPLY TO OPTIMIZER-BASED SYSTEMS, BUT SHALL NOT APPLY TO MICROINVERTER-BASED SYSTEMS.
12. A 10 AWG COPPER EQUIPMENT GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH NEC 690.45 SHALL BE USED TO BOND RAILS AND OTHER ROOFTOP EQUIPMENT. THE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE IN ACCORDANCE WITH NEC 250.120(C) BY RUNNING WITHIN THE HOLLOW SPACE BENEATH THE SOLAR STRUCTURE OR BY RUNNING WITHIN AN IDENTIFIED RACEWAY OR CABLE ARMOR. IF THE EQUIPMENT GROUNDING CONDUCTOR IS UNPROTECTED FROM PHYSICAL DAMAGE AT ANY POINT IN ITS CONDUCTOR RUN THE CONDUCTOR SHALL BE INCREASED TO A MINIMUM OF 6 AWG COPPER IN ACCORDANCE WITH NEC 250.120(C).

GROUNDING NOTES:

PV MODULE AND RACKING GROUNDING AS PER APPROVED INSTALLATION PRACTICE AND IN LINE WITH MANUFACTURE'S GUIDELINES.

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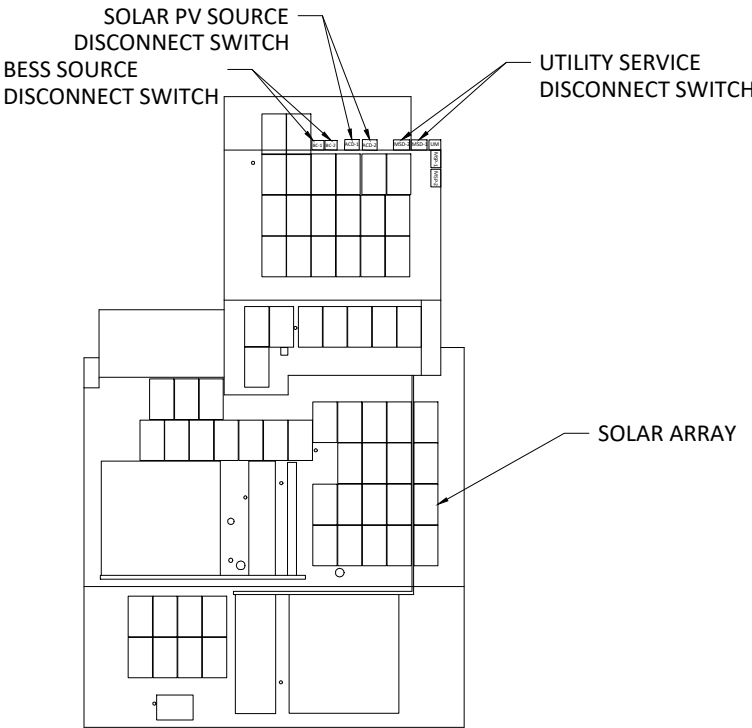
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ELECTRICAL CALCULATIONS

PV-4

CAUTION:MULTIPLE SOURCES OF POWER

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



SITE-SPECIFIC DIRECTORY PLACARD(S) SHALL BE INSTALLED AT THE FOLLOWING LOCATION(S):
UTILITY SERVICE DISCONNECT SWITCH (MSP) AND SOLAR PV SOURCE DISCONNECT SWITCH (ACD)
NEC 2020 EDITION 705.10

REVISION NOTE: 10/4/2024
THERE IS A CHANGE IN THE SYSTEM SIZE. THE TOTAL COUNT OF THE PANELS HAVE BEEN UPDATED TO 65. THE DIRECTORY LABEL HAS BEEN UPDATED TO SHOW 65 PANELS. THE LABEL FOR MAX CURRENT FOR BOTH COMBINER HAS CHANGED AS THE NUMBER OF PANELS CONNECTED TO COMBINER #1 HAS CHANGED.

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LABELS

PV-5

SOLAR AC DISCONNECT

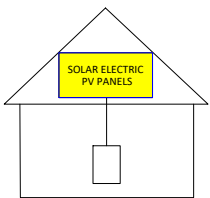
NOTICE

RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM

NEC 2020 EDITION 690.56 (C)(2)

SOLAR PV SYSTEM IS EQUIPPED
WITH RAPID SHUTDOWN

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



NEC 2020 EDITION 690.56 (C)

FRANKLIN A GATE

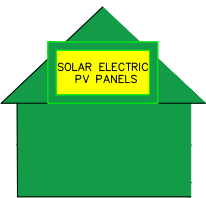
WARNING

ELECTRIC SHOCK HAZARD
TERMINALS ON THE LINE AND
LOAD SIDES MAY BE ENERGIZED
IN THE OPEN POSITION

YOUSURELLA.COM

EMERGENCY RESPONDER:
THIS SOLAR PV SYSTEM IS EQUIPPED WITH
RAPID SHUTDOWN

TURN RAPID SHUTDOWN
SWITCH TO THE "OFF"
POSITION TO SHUTDOWN
ENTIRE PV SYSTEM.



FLORIDA FIRE PREVENTION CODE EIGHTH EDITION 11.12.2.1.1.1.1
NFPA 1 2021 EDITION 11.12.2.1.1.1 AND FIGURE A.11.12.2.1.1.1.1(a)

AC COMBINER PANEL

NOTICE

AC COMBINER PANEL AND DATA ACQUISITION
FOR SOLAR PV SYSTEM ONLY.
DO NOT ADD LOADS.

COMBINER #2

WARNING

AC VOLTAGE : 240V
MAX. CURRENT: 36.3 A

EMERGENCY CONTACT

SOLAR SCOT
561-312-7774

FLORIDA FIRE PREVENTION CODE EIGHTH EDITION 11.12.2.1.5

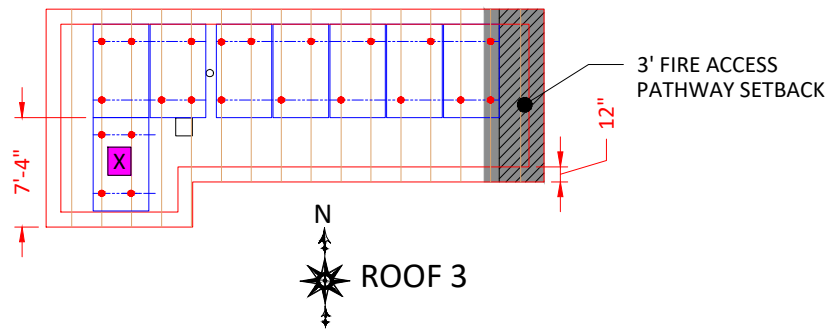
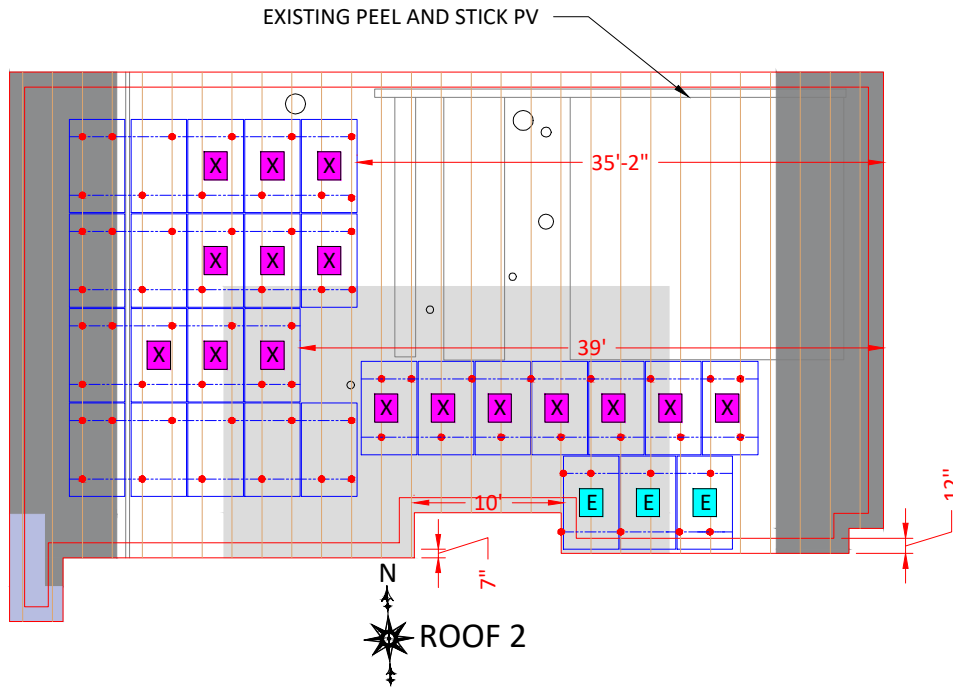
COMBINER #1

WARNING

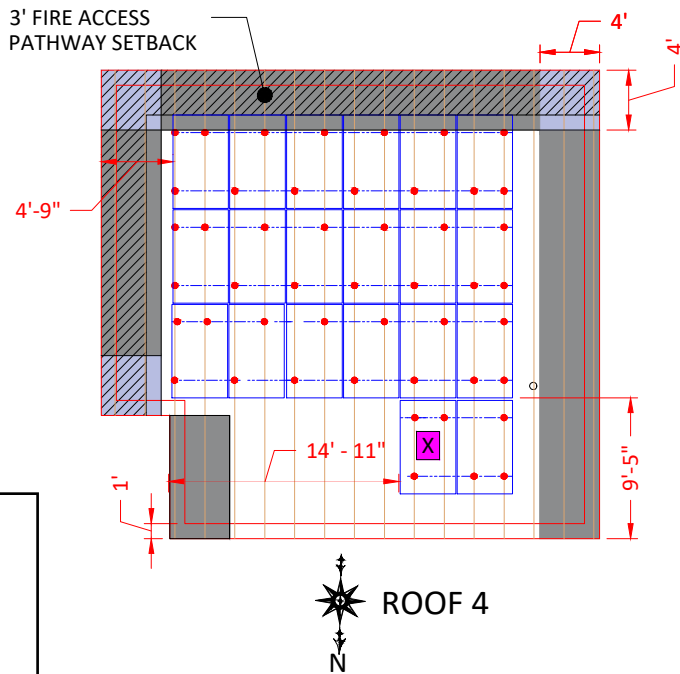
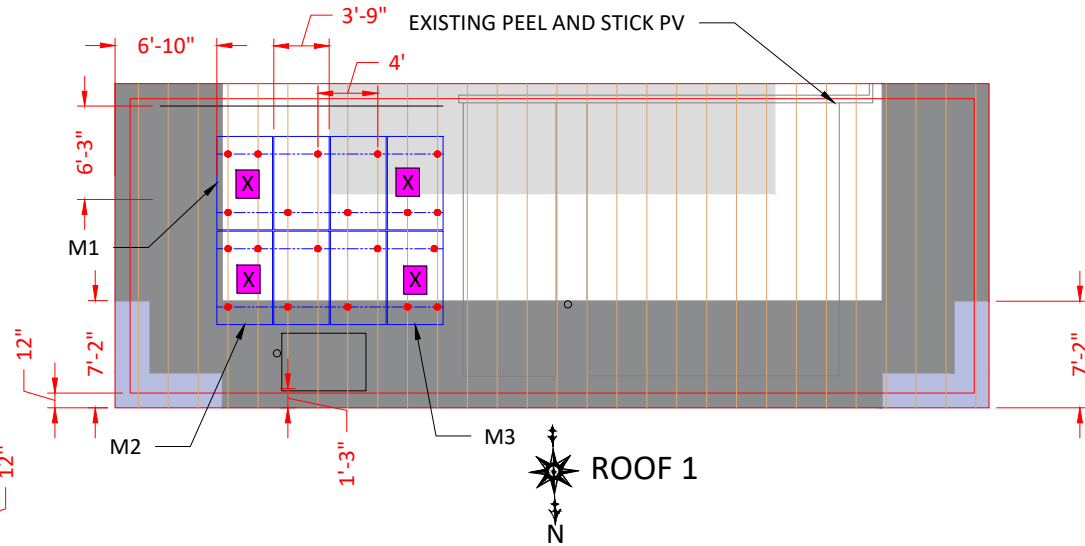
AC VOLTAGE : 240V
MAX. CURRENT: 42.35 A

NOTES:

1.THE MATERIAL USED FOR THE PHOTOVOLTAIC SYSTEM LABELS SHALL BE REFLECTIVE, WEATHER RESISTANT, AND CONSTRUCTED OF DURABLE ADHESIVE MATERIAL OR ANOTHER APPROVED MATERIAL SUITABLE FOR THE ENVIRONMENT IN COMPLIANCE WITH NFPA 1-11.12.
2. FONT, TEXT HEIGHT , CAPITALIZATION , FONT COLOR(S), BACKGROUND COLOR(S), DIAGRAM COLOR(S)AND CONTEXT OF PHOTOVOLTAIC SYSTEMS LABELS SHALL COMPLY WITH NFPA 1-11.12 AND NEC 2020 690.56 AS APPLICABLE FOR THE PHOTOVOLTAIC SYSTEM TO BE INSTALLED.



REVISION NOTE: 10/4/2024
THERE IS A CHANGE IN THE LAYOUT. THE
NUMBER OF PANELS ON ALL THE ROOF
PLANES HAVE CHANGED. THE NUMBER OF
ATTACHMENTS ON THE RESPECTIVE ROOFS
HAS ALSO CHANGED.



- LEGENDS**
- WIND ZONE 1
 - WIND ZONE 1'
 - WIND ZONE 2
 - WIND ZONE (2)
 - WIND ZONE 3
 - WIND ZONE (3)

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: 170 MPH
EXPOSURE CATEGORY: D
RISK CATEGORY: II
MEAN ROOF HEIGHT: 12FT
ROOF SLOPE: 0°-7°

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: 170 MPH
EXPOSURE CATEGORY: D
RISK CATEGORY: II
MEAN ROOF HEIGHT: 22 FT
ROOF SLOPE: 7°-20

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: 170 MPH
EXPOSURE CATEGORY: D
RISK CATEGORY: II
MEAN ROOF HEIGHT: 25 FT
ROOF SLOPE: 7°-20

BUILDING DEPARTMENT SEAL STAMP

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SIGNATURE WITH SEAL

RACKING LAYOUT

PV-6

| EQUIPMENT SPECIFICATIONS | | |
|------------------------------------|--|----------|
| EQUIPMENT | DESCRIPTION | QUANTITY |
| MODULE | DNA-120-BF10-440W (440W) APTOS SOLAR | 65 |
| INVERTER | ENPHASE IQ8PLUS-72-2-US MICROINVERTERS | 65 |
| JUNCTION BOX | 600 V,NEMA 3R UL LISTED | 3 |
| COMBINER PANEL | 80A ENPHASE IQ COMBINER 5C | 2 |
| AC DISCONNECT-1 | AC DISCONNECT 240V, 60 AMP, NON-FUSED, NEMA 3R, UL LISTED | 1 |
| AC DISCONNECT-2 | AC DISCONNECT 240V, 100 AMP, NON-FUSED, NEMA 3R, UL LISTED | 1 |
| ATTACHMENT FOR SV CRIMP METAL | IRONRIDGE QUICKMOUNT (HALO ULTRA GRIP) | 70 |
| ATTACHMENT FOR STANDING SEAM METAL | QUICKMOUNT (QMLSH) | 89 |
| RACKING SYSTEM | IRONRIDGE (XR100) RAILS | - |

| ROOF SPECIFICATIONS | |
|---------------------|-----------------|
| ROOF MATERIAL | ASPHALT SHINGLE |
| ROOF CONDITION | GOOD |
| RAFTERS | 2"X 6"@24"OC |

| ROOF SPECIFICATIONS | |
|---------------------|------------------|
| ROOF MATERIAL | MODIFIED BITUMEN |
| ROOF CONDITION | GOOD |
| TRUSSES | 2"X 6"@24"OC |

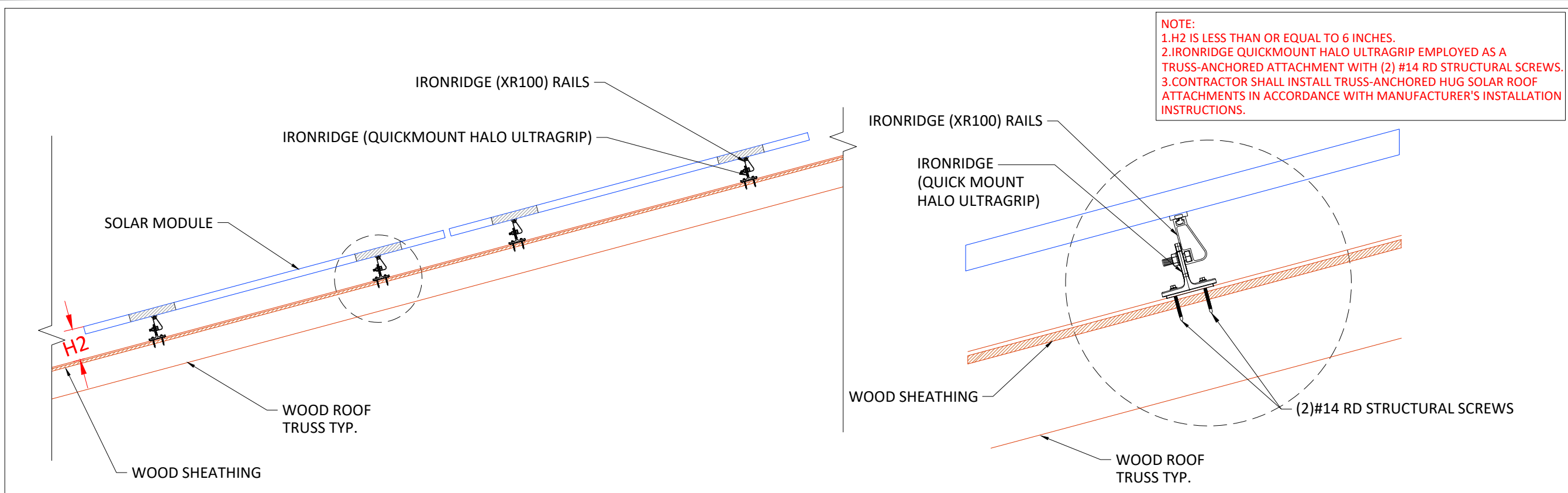
| ROOF INFORMATION | | | |
|------------------|----------|--------------|---------|
| ROOF | QUANTITY | SLOPE | AZIMUTH |
| ROOF 1 | 29 | 4.8°(1/12) | 2° |
| ROOF 2 | 08 | 4.8°(1/12) | 272° |
| ROOF 3 | 8 | 14.04°(3/12) | 272° |
| ROOF 4 | 20 | 18.4°(4/12) | 2° |

| SYSTEM INFORMATION | |
|--------------------|---------|
| DC SYSTEM SIZE | 28.60KW |
| AC SYSTEM SIZE | 18.85KW |

NOTES:

- LOCATION OF JUNCTION BOX(ES), AC DISCONNECTS(S), AC COMBINER PANEL(S), AND OTHER ELECTRICAL EQUIPMENT(S) RELEVANT TO PV INSTALLATION SUBJECT TO CHANGE BASED ON SITE CONDITIONS.
- TRUSS 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"
- PROPOSED PHOTOVOLTAIC LAYOUT IN COMPLIANCE WITH NFPA 1,2021 EDITION

- LEGENDS**
- PV ROOF ATTACHMENT
 - RAILS
 - RAFTERS/TRUSSES
 - STANDING SEAMS
 - ROOF OBSTRUCTION
 - JUNCTION BOX
 - FIRE SETBACK
 - EXPOSED MODULE
 - EDGE MODULES

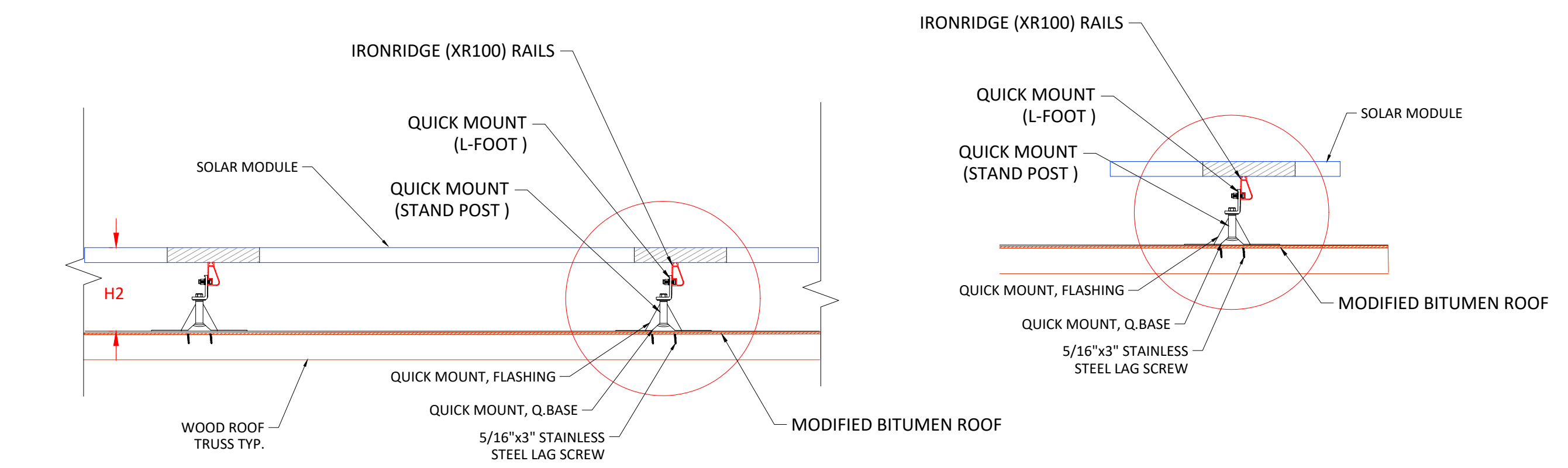


NOTE:

1. QUICKMOUNT (QMLSH) IS SEALED USING A 3-COURSE METHOD CONSISTING OF PG500 AND ROOFING FABRIC.

2. H2 IS EQUAL OR LESS THAN 6 INCHES.

I CERTIFY THAT THE EXISTING ROOF AND BUILDING STRUCTURE CAN WITHSTAND ALL DEAD LOADS IMPOSED BY THE PHOTOVOLTAIC SYSTEM AND ALL WIND LOADS OF SPECIFIED INTENSITY IN ACCORDANCE WITH THE FLORIDA BUILDING CODE.



BUILDING DEPARTMENT SEAL STAMP

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26.758117, -80.037891

SIGNATURE WITH SEAL

WIND LOAD CALCULATIONS FOR MODULES INSTALLED ON ROOFS WITH A HEIGHT LESS THAN 60'
BASED ON ASCE 7-22

| SITE INFORMATION | | | | |
|--|----------------------------|---------------------|------------|-----------------|
| BUILDING CODE VERSION | 2023 FLORIDA BUILDING CODE | RISK CATEGORY | II | PITCH 1 / 12 |
| MEAN ROOF HEIGHT (ft) | 12 | EXPOSURE CATEGORY | D | |
| LEAST HORIZONTAL DIMENSION (ft) | 58 | ROOF SLOPE (°) | 4.8 | |
| PARAPET HEIGHT (ft) | 0 | ROOF TYPE | LOW SLOPE | |
| MODULE | APTOS DNA-120-BF10-xxxW | ULTIMATE WIND SPEED | 170 mph | |
| MODULE LENGTH (in) | 74.90 | NOMINAL WIND SPEED | 132 mph | |
| MODULE WIDTH (in) | 44.60 | K _D | 0.85 | |
| MODULE DEPTH (mm) | 35 | K _{ZT} | 1.00 | |
| MODULE DEPTH (in) | 1.38 | K _z | 1.03 | |
| MODULE VERTICAL AREA = A _v (ft ²) | 23.20 | K _e | 1.00 | |
| MODULE HORIZONTAL AREA = A _h (ft ²) | 0.72 | Y _E | 1.0 OR 1.5 | |
| HIGH VELOCITY HURRICANE ZONE? | NO | Y _a | 0.66 | |
| RACKING SYSTEM | IRONRIDGE: XR100 | | | |
| MIN. MODULE SPACING (in) | 0.37 | | | |

| DESIGN CALCULATIONS PER ASCE 7-22 SECTION 29.4.4 | | | | |
|---|---------|------|---|--|
| VELOCITY PRESSURE (q _h) = .00256*K _z K _{zT} K _D V ² | | | VELOCITY PRESSURE (ASD) = 38.9 psf | |
| EXTERNAL PRESSURE COEFFICIENT | | | | |
| | Zone 1' | 0.55 | -0.9 | |
| | Zone 1 | 0.55 | -1.55 | |
| | Zone 2 | 0.55 | -2.11 | |
| | Zone 3 | 0.55 | -2.81 | |

| DESIGN PRESSURES | | | | |
|---------------------------|--------------------------|----------|-----------|-----------------|
| | EDGE OR EXPOSED MODULES? | DOWN | UP NORMAL | UP EDGE/EXPOSED |
| Zone 1' | YES | 21.5 | -22.9 | -34.4 (psf) |
| Zone 1 | YES | 21.5 | -39.5 | -59.2 (psf) |
| Zone 2 | YES | 21.5 | -53.7 | -80.5 (psf) |
| Zone 3 | NO | 21.5 | -71.7 | -71.7 (psf) |
| MODULE ALLOWABLE PRESSURE | | 75.0 psf | | |

| RAILS | | | |
|------------------------------|---------------|-------|--|
| RAILS PER MODULE | 2-RAIL SYSTEM | | |
| RAIL ORIENTATION | PORTRAIT | | |
| PV SYSTEM TOTAL WEIGHT | 4226.95 | (lb) | |
| PV SYSTEM DISTRIBUTED WEIGHT | 2.5 | (psf) | |

| ATTACHMENTS | | | |
|--|---------------------------------|----------------------|---|
| ATTACHMENT TYPE | QUICKMOUNT QBASE LOW SLOPE POST | | |
| ROOF DECK | CONCRETE | | |
| | NORMAL MODULES | EDGE/EXPOSED MODULES | |
| MAX DISTANCE BETWEEN ATTACHMENTS ZONE 1' | 48.0 | 48.0 | (in) |
| MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 1' | 286.4 | 429.6 | (lb) |
| MAX DISTANCE BETWEEN ATTACHMENTS ZONE 1 | 48.0 | 48.0 | (in) |
| MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 1 | 493.0 | 739.6 | (lb) |
| MAX DISTANCE BETWEEN ATTACHMENTS ZONE 2 | 48.0 | 48.0 | (in) |
| MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 2 | 670.3 | 1005.4 | (lb) |
| MAX DISTANCE BETWEEN ATTACHMENTS ZONE 3 | 48.0 | 48.0 | (in) |
| MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 3 | 895.1 | 895.1 | (lb) |
| ALLOWABLE UPLIFT FORCE PER ATTACHMENT | 1010.0 | (lb) | |
| MIN. LAG PENETRATION INTO TRUSS | 2.50 | (in) | |
| SCREW WITHDRAWAL RESISTANCE | 1384 | (lb) | WITHDRAWAL = 8100*G^(3/2)*D^(3/4)*L |
| MAX LATERAL FORCE PER ATTACHMENT | 53 | (lb) | G = Specific gravity of wood (0.55 for Southern Pine) |
| ALLOWABLE LATERAL FORCE PER ATTACHMENT | 657 | (lb) | L = Depth of penetration |
| ALLOWABLE UPLIFT PER MID/END CLAMP | 945.5 | (lb) | D = Diameter of lag screw |

NOTES

1. MODULE ALLOWABLE WIND PRESSURE OBTAINED FROM MANUFACTURER DATASHEET.
2. SEE ATTACHMENT PLAN FOR ACTUAL ATTACHMENT SPACING IN EACH ZONE
3. HVHZ DEFINED AS MIAMI-DADE AND BROWARD COUNTIES
4. LAG SCREW WITHDRAWAL RESISTANCE OBTAINED FROM THE USDA WOOD HANDBOOK, WOOD AS AN ENGINEERING MATERIAL.
5. ROOF TRUSSES ARE #2 SOUTHERN YELLOW PINE
6. USE INCLUDED 5/16" x 3" LAG SCREWS TO SECURE MOUNT TO CENTER OF EACH TRUSS. MINIMUM SCREW PENETRATION ITO TRUSS IS 2.5" USE TWO SCREWS PER ATTACHMENT.
7. RAIL SPANS OBTAINED FROM MANUFACTURER'S PUBLISHED DATA.
8. ANY EDGE AND/OR EXPOSED MODULES PRESENT IN PROPOSED INSTALLATION WHERE ANY WIND ZONE'S DESIGN PRESSURE EXCEEDS THE MODULE ALLOWABLE PRESSURE SHALL BE VERIFIED WITH WEIGHTED AVERAGE PRESSURE CALCULATIONS RESPECTIVE TO EACH MODULE CASE, AS APPLICABLE.

ROOF 1, & 2

REVISION NOTE: 10/4/2024
THE WEIGHTED AVERAGE PRESSURE OF THE MODULE HAS BEEN UPDATED AS THE MODULE LOCATION HAS CHANGED AFTER THE LAYOUT CHANGED . SEE PV-6 FOR MODULE LOCATION.

| MODULE SURFACE AREA IN RESPECTIVE WIND ZONE(S) (SQFT) | | | | | |
|---|------|-------|------|------|--------------|
| MODULE | 1' | 1 | 2 | 3 | TOTAL (SQFT) |
| M1 | 0.00 | 20.89 | 2.31 | 0.00 | 23.20 |
| M2 | 0.00 | 15.61 | 7.59 | 0.00 | 23.20 |
| M3 | 0.00 | 16.65 | 6.55 | 0.00 | 23.20 |
| TOTAL MODULE SURFACE AREA = 23.2 SQFT | | | | | |

| DESIGN PRESSURE BY WIND ZONE (PSF) | | | | |
|------------------------------------|------|------|------|------|
| | 1' | 1 | 2 | 3 |
| NORMAL | 22.9 | 39.5 | 53.7 | 71.7 |
| E/X | 22.9 | 59.2 | 80.5 | 71.7 |

| DESIGN PRESSURE IN RESPECTIVE WIND ZONE(S) (PSF) | | | | | |
|--|------|---------|--------|------|------------------|
| MODULE ALLOWABLE PRESSURE = 75 PSF | | | | | |
| MODULE | 1' | 1 | 2 | 3 | WEIGHTED AVERAGE |
| M1 | 0.00 | 1237.62 | 186.29 | 0.00 | 61.38 |
| M2 | 0.00 | 924.81 | 611.15 | 0.00 | 66.20 |
| M3 | 0.00 | 986.42 | 527.55 | 0.00 | 65.26 |
| WIND ZONE VALUES = SQFT OF MODULE IN WIND ZONE * WIND ZONE DESIGN PRESSURE | | | | | |
| WEIGHTED AVERAGE = SUM OF ALL WIND ZONE DESIGN PRESSURES / TOTAL MODULE SURFACE AREA | | | | | |

| MODULE WEIGHTED AVERAGE PRESSURE | |
|--|-------|
| 75 psf = MODULE ALLOWABLE PRESSURE | |
| MODULE WEIGHTED AVERAGE PRESSURE (PSF) | |
| M1 | 61.38 |
| M2 | 66.20 |
| M3 | 65.26 |

BUILDING DEPARTMENT SEAL STAMP



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SIGNATURE WITH SEAL

WIND LOAD CALCULATIONS

PV-8

WIND LOAD CALCULATIONS FOR MODULES INSTALLED ON ROOFS WITH A HEIGHT LESS THAN 60'
BASED ON ASCE 7-22

| SITE INFORMATION | | | | |
|--|----------------------------|---------------------|------------|-----------------|
| BUILDING CODE VERSION | 2023 FLORIDA BUILDING CODE | RISK CATEGORY | II | PITCH 4 / 12 |
| MEAN ROOF HEIGHT (ft) | 22 | EXPOSURE CATEGORY | D | |
| LEAST HORIZONTAL DIMENSION (ft) | 58 | ROOF SLOPE (°) | 18.4 | |
| PARAPET HEIGHT (ft) | 0 | ROOF TYPE | GABLE | |
| MODULE | APTOS DNA-120-BF10-xxxW | ULTIMATE WIND SPEED | 170 mph | |
| MODULE LENGTH (in) | 74.90 | NOMINAL WIND SPEED | 132 mph | |
| MODULE WIDTH (in) | 44.60 | K _D | 0.85 | |
| MODULE DEPTH (mm) | 35 | K _{ZT} | 1.00 | |
| MODULE DEPTH (in) | 1.38 | K _z | 1.10 | |
| MODULE VERTICAL AREA = A _r (ft ²) | 23.20 | K _e | 1.00 | |
| MODULE HORIZONTAL AREA = A _r (ft ²) | 0.72 | Y _E | 1.0 OR 1.5 | |
| HIGH VELOCITY HURRICANE ZONE? | NO | Y _a | 0.66 | |
| RACKING SYSTEM | IRONRIDGE: XR100 | | | |
| MIN. MODULE SPACING (in) | 0.37 | | | |

| DESIGN CALCULATIONS PER ASCE 7-22 SECTION 29.4.4 | | | | |
|---|--------|------|---------------------------------------|--|
| VELOCITY PRESSURE (q _h) = .00256*K _z K _{zT} K _D V ² | | | VELOCITY PRESSURE (ASD) = 41.5 psf | |
| EXTERNAL PRESSURE COEFFICIENT | | | | |
| | Zone 1 | 0.52 | -1.63 | |
| | Zone 2 | 0.52 | -2.22 | |
| | Zone 3 | 0.52 | -2.94 | |

| DESIGN PRESSURES | | | | |
|---------------------------|--------------------------|----------|-----------|-----------------|
| | EDGE OR EXPOSED MODULES? | DOWN | UP NORMAL | UP EDGE/EXPOSED |
| Zone 1 | YES | 21.4 | -44.4 | -66.6 (psf) |
| Zone 2 | NO | 21.4 | -60.6 | -60.6 (psf) |
| Zone 3 | NO | 21.4 | -80.2 | -80.2 (psf) |
| MODULE ALLOWABLE PRESSURE | | 75.0 psf | | |

| RAILS | | |
|------------------------------|---------------|-------|
| RAILS PER MODULE | 2-RAIL SYSTEM | |
| RAIL ORIENTATION | PORTRAIT | |
| PV SYSTEM TOTAL WEIGHT | 2172.43 | (lb) |
| PV SYSTEM DISTRIBUTED WEIGHT | 2.5 | (psf) |

| ATTACHMENTS | | | |
|---|---------------------------------|----------------------|---|
| ATTACHMENT TYPE | QUICKMOUNT HUG (TRUSS-ANCHORED) | | |
| NOMINAL RAFTER SPACING | 24" O.C. | | |
| | NORMAL MODULES | EDGE/EXPOSED MODULES | |
| MAX DISTANCE BETWEEN ATTACHMENTS ZONE 1 | 48.0 | 48.0 | (in) |
| MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 1 | 554.0 | 831.0 | (lb) |
| MAX DISTANCE BETWEEN ATTACHMENTS ZONE 2 | 48.0 | 48.0 | (in) |
| MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 2 | 756.0 | 756.0 | (lb) |
| MAX DISTANCE BETWEEN ATTACHMENTS ZONE 3 | 24.0 | 24.0 | (in) |
| MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 3 | 500.4 | 500.4 | (lb) |
| ALLOWABLE UPLIFT FORCE PER ATTACHMENT | 1004.0 | (lb) | |
| MIN. LAG PENETRATION INTO TRUSS | 1.25 | (in) | WITHDRAWAL = 8100*G^(3/2)*D^(3/4)*L |
| SCREW WITHDRAWAL RESISTANCE | 950 | (lb) | G = Specific gravity of wood (0.55 for Southern Pine) |
| MAX LATERAL FORCE PER ATTACHMENT | 57 | (lb) | L = Depth of penetration |
| ALLOWABLE LATERAL FORCE PER ATTACHMENT | 240 | (lb) | D = Diameter of lag screw |
| ALLOWABLE UPLIFT PER MID/END CLAMP | 945.5 | (lb) | |

NOTES

1. MODULE ALLOWABLE WIND PRESSURE OBTAINED FROM MANUFACTURER DATASHEET.
2. SEE ATTACHMENT PLAN FOR ACTUAL ATTACHMENT SPACING IN EACH ZONE
3. HVHZ DEFINED AS MIAMI-DADE AND BROWARD COUNTIES
4. LAG SCREW WITHDRAWAL RESISTANCE OBTAINED FROM THE USDA WOOD HANDBOOK, WOOD AS AN ENGINEERING MATERIAL.
5. ROOF TRUSSES ARE #2 SOUTHERN YELLOW PINE
6. USE TWO #14 X 3" WOOD SCREWS TO SECURE MOUNT TO THE CENTER OF EACH TRUSS. SCREWS SHALL FULLY EMBED INTO THE CENTER OF THE TRUSS.
7. RAIL SPANS OBTAINED FROM MANUFACTURER'S PUBLISHED DATA.
8. ANY EDGE AND/OR EXPOSED MODULES PRESENT IN PROPOSED INSTALLATION WHERE ANY WIND ZONE'S DESIGN PRESSURE EXCEEDS THE MODULE ALLOWABLE PRESSURE SHALL BE VERIFIED WITH WEIGHTED AVERAGE PRESSURE CALCULATIONS RESPECTIVE TO EACH MODULE CASE, AS APPLICABLE.

ROOF 3

BUILDING DEPARTMENT SEAL STAMP



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LIC NO: CVC57015

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SIGNATURE WITH SEAL

REVISION NOTE: 10/4/2024
THE WIND LOAD CALCULATION FOR ROOF 3
HAS BEEN UPDATED AS THE ONE PANEL HAS
BEEN ADDED AND IT IS EXPOSED ON ZONE 1
PLEASE SEE PV-6

WIND LOAD CALCULATIONS

PV-8.1

WIND LOAD CALCULATIONS FOR MODULES INSTALLED ON ROOFS WITH A HEIGHT LESS THAN 60'
BASED ON ASCE 7-22

SITE INFORMATION

| | | | | |
|--|----------------------------|---------------------|------------|--------|
| BUILDING CODE VERSION | 2023 FLORIDA BUILDING CODE | RISK CATEGORY | II | |
| MEAN ROOF HEIGHT (ft) | 25 | EXPOSURE CATEGORY | D | PITCH |
| LEAST HORIZONTAL DIMENSION (ft) | 58 | ROOF SLOPE (°) | 18.4 | 4 / 12 |
| PARAPET HEIGHT (ft) | 0 | ROOF TYPE | GABLE | |
| MODULE | APTOS DNA-120-BF10-xxxW | ULTIMATE WIND SPEED | 170 mph | |
| MODULE LENGTH (in) | 74.90 | NOMINAL WIND SPEED | 132 mph | |
| MODULE WIDTH (in) | 44.60 | K _D | 0.85 | |
| MODULE DEPTH (mm) | 35 | K _{ZT} | 1.00 | |
| MODULE DEPTH (in) | 1.38 | K _z | 1.13 | |
| MODULE VERTICAL AREA = A _r (ft ²) | 23.20 | K _e | 1.00 | |
| MODULE HORIZONTAL AREA = A _r (ft ²) | 0.72 | V _E | 1.0 OR 1.5 | |
| HIGH VELOCITY HURRICANE ZONE? | NO | V _a | 0.66 | |
| RACKING SYSTEM | IRONRIDGE: XR100 | | | |
| MIN. MODULE SPACING (in) | 0.37 | | | |

DESIGN CALCULATIONS PER ASCE 7-22 SECTION 29.4.4

VELOCITY PRESSURE (q_h) = .00256*K_ZK_{ZT}K_DV² VELOCITY PRESSURE (ASD) = 42.5 psf

| | | | | | |
|-------------------------------|-----------|------|-------|---------------------------|-----|
| WIDTH OF PRESSURE COEFFICIENT | 58' * 10% | = | 5.8' | ZONE WIDTH 'a' | 4FT |
| | 25' * 40% | = | 10' | a = 4ft per FBC R301.2(7) | |
| EXTERNAL PRESSURE COEFFICIENT | | | | | |
| | Zone 1 | 0.52 | -1.63 | | |
| | Zone 2 | 0.52 | -2.22 | | |
| | Zone 3 | 0.52 | -2.94 | | |

DESIGN PRESSURES

| | EDGE OR EXPOSED MODULES? | DOWN | UP NORMAL | UP EDGE/EXPOSED | |
|--------|--------------------------|------|-----------|-----------------|-------|
| Zone 1 | YES | 21.9 | -45.4 | -68.1 | (psf) |
| Zone 2 | NO | 21.9 | -61.9 | -61.9 | (psf) |
| Zone 3 | NO | 21.9 | -82.0 | -82.0 | (psf) |

MODULE ALLOWABLE PRESSURE 75.0 psf

RAILS

| | | |
|------------------------------|---------------|-------|
| RAILS PER MODULE | 2-RAIL SYSTEM | |
| RAIL ORIENTATION | PORTRAIT | |
| PV SYSTEM TOTAL WEIGHT | 704.92 | (lb) |
| PV SYSTEM DISTRIBUTED WEIGHT | 2.5 | (psf) |

ATTACHMENTS

| | | | |
|---|---------------------------------|----------------------|---|
| ATTACHMENT TYPE | QUICKMOUNT HUG (TRUSS-ANCHORED) | | |
| NOMINAL RAFTER SPACING | 24" O.C. | | |
| | NORMAL MODULES | EDGE/EXPOSED MODULES | |
| MAX DISTANCE BETWEEN ATTACHMENTS ZONE 1 | 48.0 | 48.0 | (in) |
| MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 1 | 566.5 | 849.7 | (lb) |
| MAX DISTANCE BETWEEN ATTACHMENTS ZONE 2 | 48.0 | 48.0 | (in) |
| MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 2 | 773.0 | 773.0 | (lb) |
| MAX DISTANCE BETWEEN ATTACHMENTS ZONE 3 | 24.0 | 24.0 | (in) |
| MAX UPLIFT FORCE PER ATTACHMENT IN ZONE 3 | 511.6 | 511.6 | (lb) |
| ALLOWABLE UPLIFT FORCE PER ATTACHMENT | 1004.0 | (lb) | |
| MIN. LAG PENETRATION INTO TRUSS | 1.25 | (in) | WITHDRAWAL = 8100*G^(3/2)*D^(3/4)*L |
| SCREW WITHDRAWAL RESISTANCE | 571 | (lb) | G = Specific gravity of wood (0.55 for Southern Pine) |
| MAX LATERAL FORCE PER ATTACHMENT | 58 | (lb) | L = Depth of penetration |
| ALLOWABLE LATERAL FORCE PER ATTACHMENT | 240 | (lb) | D = Diameter of lag screw |
| ALLOWABLE UPLIFT PER MID/END CLAMP | 945.5 | (lb) | |

NOTES

1. MODULE ALLOWABLE WIND PRESSURE OBTAINED FROM MANUFACTURER DATASHEET.
2. SEE ATTACHMENT PLAN FOR ACTUAL ATTACHMENT SPACING IN EACH ZONE
3. HVHZ DEFINED AS MIAMI-DADE AND BROWARD COUNTIES
4. LAG SCREW WITHDRAWAL RESISTANCE OBTAINED FROM THE USDA WOOD HANDBOOK, WOOD AS AN ENGINEERING MATERIAL.
5. ROOF TRUSSES ARE #2 SOUTHERN YELLOW PINE
6. USE TWO #14 X 3" WOOD SCREWS TO SECURE MOUNT TO THE CENTER OF EACH TRUSS. SCREWS SHALL FULLY EMBED INTO THE CENTER OF THE TRUSS.
7. RAIL SPANS OBTAINED FROM MANUFACTURER'S PUBLISHED DATA.
8. ANY EDGE AND/OR EXPOSED MODULES PRESENT IN PROPOSED INSTALLATION WHERE ANY WIND ZONE'S DESIGN PRESSURE EXCEEDS THE MODULE ALLOWABLE PRESSURE SHALL BE VERIFIED WITH WEIGHTED AVERAGE PRESSURE CALCULATIONS RESPECTIVE TO EACH MODULE CASE, AS APPLICABLE.

ROOF 4

BUILDING DEPARTMENT SEAL STAMP

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SIGNATURE WITH SEAL

WIND LOAD CALCULATIONS

PV-8.2



DNA™ 120-Bifacial

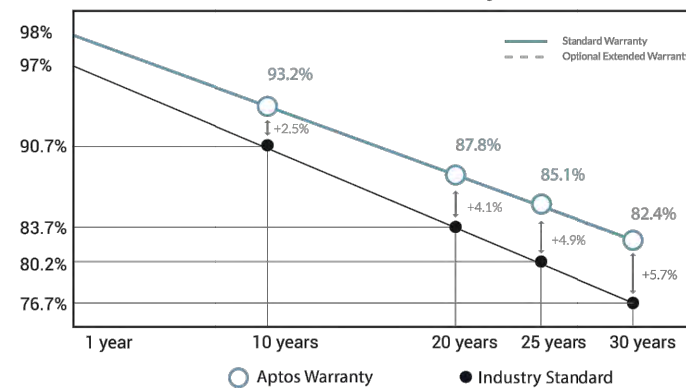
Solar for Innovators

DNA-120-BF10-440W

Residential | Commercial

Our DNA Split Cell Series uses advanced selective emitter PERC technology with thin film layers to improve heat tolerance, maximize energy harvest, minimize resistive loss, and use 5% more of the available active area for optimal power performance.

Linear Performance Warranty



440W | 445W | 450W



Designed & Engineered In Silicon Valley

Key Features



Advanced Technology

Patented DNA™ technology boosts power performance & module efficiency.



Aesthetics

All black design with advanced split cell technology features 10 ultra-thin busbars that allow for less resistance and greater energy harvest.



Miami-Dade Approved

Miami-Dade County wind load certified to withstand up to 5400 Pa.



Awards

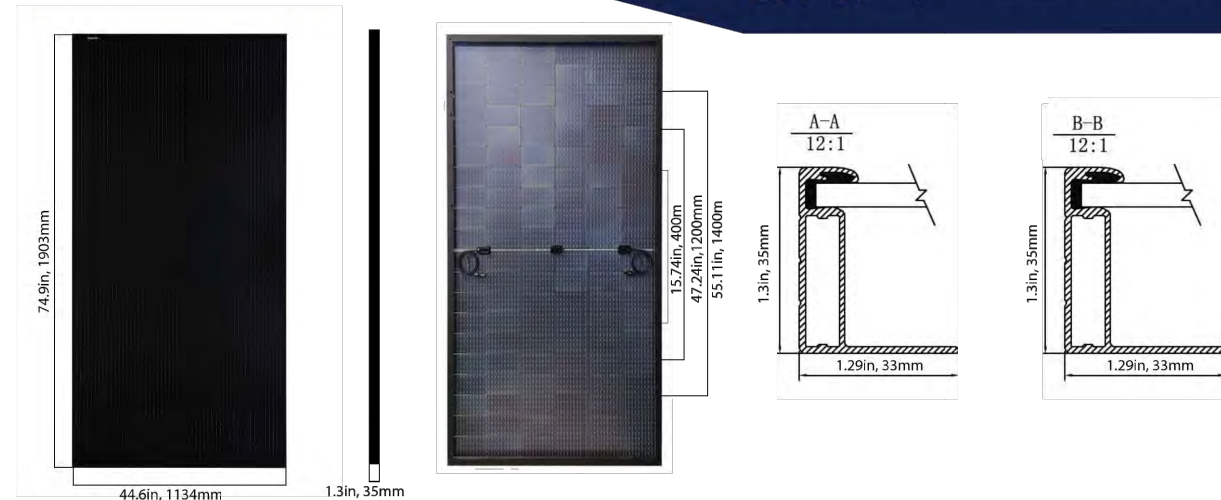
Winners of the Leadership in Solar Energy award for three consecutive years and listed as one of the Top Solar Products from 2021-2022.



Bankable Investment

Comprehensive warranty that covers both 30-year product and 30-year power performance.

DNA™ 120 Bifacial



Electrical Specifications

| | DNA-120-BF10-440W | DNA-120-BF10-445W | DNA-120-BF10-450W |
|---|-------------------|-------------------|-------------------|
| STC Rated Output P _{mpp} (W) | 440W | 445W | 450W |
| Module Efficiency | 20.39% | 20.62% | 20.85% |
| Open Circuit Voltage V _{oc} (V) | 41.51 | 41.73 | 41.96 |
| Short Circuit Current I _{sc} (A) | 12.88 | 12.94 | 13.00 |
| Rated Voltage V _{mp} (V) | 34.71 | 34.93 | 35.16 |
| Rated Voltage I _{mp} (A) | 12.68 | 12.74 | 12.80 |

Standard Test Conditions for front-face of panel: 1000 W/m², 25°C, measurement uncertainty <3%

Bifacial Output-Rearside Power Gain

| | | | |
|---------------------------------------|--------|--------|--------|
| 5%-Maximum Power (P _{max}) | 462W | 467W | 473W |
| 5%-Module Efficiency STC(%) | 21.40% | 21.65% | 21.90% |
| 15%-Maximum Power (P _{max}) | 506W | 512W | 518W |
| 15%-Module Efficiency STC(%) | 23.45% | 23.71% | 23.98% |
| 25%-Maximum Power (P _{max}) | 550W | 556W | 563W |
| 25%-Module Efficiency STC(%) | 25.49% | 25.78% | 25.07% |

Test Operating Conditions

| | |
|-------------------------------------|---------------------------------------|
| Maximum Series Fuse | 30A |
| Maximum System Voltage | 1,500 VDC (UL&IEC) |
| Maximum Load Capacity (Per UL 1703) | 5400 PA Snow Load / 5400 Pa Wind Load |
| Fire Performance Class | Class C/Type 4 |

Temperature Coefficients

| | |
|---|-----------|
| Temperature Coefficients P _{mpp} | -0.32%/°C |
| Temperature Coefficients I _{sc} | +0.03%/°C |
| Temperature Coefficients V _{oc} | -0.24%/°C |
| Normal Operating Cell Temperature (NOCT) | 45°C±2°C |

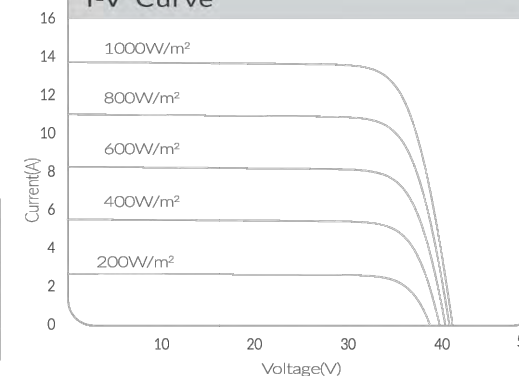
Packaging Configuration

| | |
|-----------------------------|-----------------------|
| Modules per Pallet | 31 |
| Pallets per 40ft. Container | 24 |
| Pallet Dimensions | 1938 X 1130 X 1264 mm |
| Pallet Weight (lbs) | 1556.2 |
| Modules per 40ft. Container | 744 |

Mechanical Properties

| | |
|----------------|---|
| Cell Type | SE-PERC |
| Glass | 3.2mm, anti-reflection coating, high transmission, low iron, tempered glass |
| Frame | Anodized Aluminum Alloy |
| Junction Box | IP68 |
| Dimensions | 74.9 X 44.6 X 1.3 in, 1903 X 1134 X 35 mm |
| Weight | 50.2 lbs |
| Output Cable | 4mm2 (EU)12AWG,39.37in.(1200mm) |
| Cable Length | 47.2in, 1200mm |
| Connector Type | Staubli EVO2 |

I-V Curve



Certifications



Ref_04.1B.24

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LIC NO: CVC57015

COLLIER, TERRY

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SIGNATURE WITH SEAL

MODULE DATASHEET

PV-9



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San Antonio, Texas 78230
www.aptosolar.com | sales@aptossolar.com

Aptos Solar Technology reserves the right to make specification changes without notice.



DATA SHEET



IQ8 and IQ8+ Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.



Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.



Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.



IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.



IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

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IQ8SP-DS-0002-01-EN-US-2022-03-17

Easy to install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Microgrid-forming

- Complies with the latest advanced grid support**
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements

* Only when installed with IQ System Controller 2, meets UL 1741.

** IQ8 and IQ8Plus supports split phase, 240V installations only.

IQ8 and IQ8+ Microinverters

| INPUT DATA (DC) | | IQ8-60-2-US | IQ8PLUS-72-2-US |
|--|---|---|--|
| Commonly used module pairings ¹ | W | 235 – 350 | 235 – 440 |
| Module compatibility | | 60-cell/120 half-cell | 60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell |
| MPPT voltage range | V | 27 – 37 | 29 – 45 |
| Operating range | V | 25 – 48 | 25 – 58 |
| Min/max start voltage | V | 30 / 48 | 30 / 58 |
| Max input DC voltage | V | 50 | 60 |
| Max DC current ² [module Isc] | A | | 15 |
| Overtoltage class DC port | | | II |
| DC port backfeed current | mA | | 0 |
| PV array configuration | | 1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit | |
| OUTPUT DATA (AC) | | IQ8-60-2-US | IQ8PLUS-72-2-US |
| Peak output power | VA | 245 | 300 |
| Max continuous output power | VA | 240 | 290 |
| Nominal (L-L) voltage/range ³ | V | | 240 / 211 – 264 |
| Max continuous output current | A | 1.0 | 1.21 |
| Nominal frequency | Hz | | 60 |
| Extended frequency range | Hz | | 50 – 68 |
| AC short circuit fault current over 3 cycles | Arms | | 2 |
| Max units per 20 A (L-L) branch circuit ⁴ | | 16 | 13 |
| Total harmonic distortion | | | <5% |
| Overtoltage class AC port | | | III |
| AC port backfeed current | mA | | 30 |
| Power factor setting | | | 1.0 |
| Grid-tied power factor (adjustable) | | 0.85 leading – 0.85 lagging | |
| Peak efficiency | % | 97.5 | 97.6 |
| CEC weighted efficiency | % | 97 | 97 |
| Night-time power consumption | mW | | 60 |
| MECHANICAL DATA | | | |
| Ambient temperature range | | -40°C to +60°C (-40°F to +140°F) | |
| Relative humidity range | | 4% to 100% (condensing) | |
| DC Connector type | | MC4 | |
| Dimensions (HxWxD) | | 212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2") | |
| Weight | | 1.08 kg (2.38 lbs) | |
| Cooling | | Natural convection – no fans | |
| Approved for wet locations | | Yes | |
| Pollution degree | | PD3 | |
| Enclosure | | Class II double-insulated, corrosion resistant polymeric enclosure | |
| Environ. category / UV exposure rating | | NEMA Type 6 / outdoor | |
| COMPLIANCE | | | |
| CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 | | | |
| Certifications | This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions. | | |

(1) No enforced DC/AC ratio. See the compatibility calculator at <https://link.enphase.com/module-compatibility>

(2) Maximum continuous input DC current is 10.6A (3) Nominal voltage range can be extended beyond nominal if required by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

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INVERTER DATASHEET

PV-10

Franklin Home Power

The Franklin Home Power (FHP) system integrates the grid, solar generation, batteries and even generators, into a robust energy control system that is managed via a simple mobile app. The FHP provides real time monitoring and control for a home’s day-to-day energy usage, and supplies energy from multiple power sources during grid outages.

The FHP’s energy management is provided by the aGate X, an intelligent controller that integrates all power sources and automatically detects grid outages to seamlessly transition a home to backup power within 16ms.

An aGate X Smart Circuits Module is available for controlling of and automated load shedding for heavy energy loads during an outage. It provides custom scheduling of unique loads for more efficient use. A Generator Module can also be added to the aGate X for standby generator integration, providing maximum energy resilience and independence. The FHP is designed for daily cycling and emergency backup power. The aGate X complies with NEC 2017, NEC 2020, and UL1741 PCS Certification for main panel upgrade (MPU) avoidance.

The FHP system pairs the aGate X with the aPower X, a lithium iron phosphate (LFP) battery designed by FranklinWH. A single battery has large 13.6kWh capacity with continuous power of 5kW, and its peak power 10kW can last for 10s. Up to 15 aPower X batteries can be connected to a single aGate X.



| One aGate X | | | | | | | | | | | | | | | |
|-----------------|------|------|------|------|----|------|------|-------|-------|------|-------|-------|-------|-------|------|
| aPower X Units | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| Capacity(kWh) | 13.6 | 27.2 | 40.8 | 54.4 | 68 | 81.6 | 95.2 | 108.8 | 122.4 | 136 | 149.6 | 163.2 | 176.8 | 190.4 | 204 |
| Cont. power(kW) | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 38.4 | 38.4 | 38.4 | 38.4 | 38.4 | 38.4 | 38.4 | 38.4 |
| Peak power(kW) | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 76.8 | 76.8 | 76.8 | 76.8 | 76.8 | 76.8 | 76.8 | 76.8 |

For FHP system >8 units, please reach out to info@franklinwh.com

Safe

- Lithium iron phosphate battery
- Automotive grade lithium cells
- Advanced Battery Management System (BMS) with Sate of Health (SOH) pro-active battery technology.

Scalable

- Up to 15 aPower X units can be used with a single aGate X
- Usable energy expandable from 13.6kWh to 204kWh
- Continuous output power ranges from 5kW to 38.4kW

Intelligent

- Micro-grid interconnect device (MID) functionality
- Auto-detect grid outages, seamless power transfer
- Black-start functionality; daily PV restart capabilities

Easy & Flexible

- Compatible with any solar inverter/standby generator
- Generator monitoring and controls via the FranklinWH app
- Pre-assembled, indoor/outdoor/wall/floor installation
- Multiple conduit entries
- App-based, remote commissioning

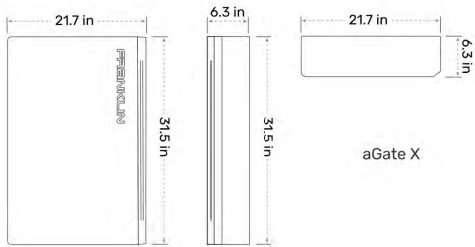
Reliable

- 12-year warranty
- NEMA 3R enclosure
- Corrosion-proof

AGATE X DATASHEET

The **aGate X** is available with two optional accessories that can be added to customize the homeowner’s FHP experience:

- **Smart Circuits Module:** manual and scheduled control for unique electric circuits, via the FranklinWH app.
- **Generator Module:** standby generator integration, redundant power source to the aPower X.



Performance

| | |
|---------------------------------------|----------------------|
| Switch Over Time (grid to micro-grid) | <16ms |
| User Interface | FranklinWH app |
| Maximum Supply Fault Current | 20 kA |
| Communications | Ethernet / 4G / Wifi |

Electrical Connections

| | |
|--|--|
| aPower Over Current Protection Device | 100A Max |
| Solar Input Over Current Protection Device | 80A Max |
| Backup Load Port Over Current Protection Device | 200A Max |
| Generator Over Current Protection Device ¹ | 200A Max |
| Smart Circuits Over Current Protection Device ² | Option A: (1) × 80A Max @240V & (2) × 50A Max @120V Option B: (1) × 8CA Max @240V & (1) × 50A Max @240V |

Electrical Interface

| | |
|---------------|------------------|
| Coupling | AC Coupled |
| Feed-in Phase | Split Phase |
| Split Phase | L1 / L2 / N / PE |

Mechanical

| | |
|------------------------|--|
| Dimensions (H × W × D) | aGate X: 31.5 × 21.7 × 6.3 in (800 × 550 × 160 mm) |
| Weight | aGate X: 50 lb (23 kg) |
| Installation | Wall mount |

Compliance & Certificates

| | |
|---------------|--|
| aGate X | UL1741 PCS, UL 67 ³ , UL 869A ³ , UL 916 ³ , CAN/CSA C22.2 No. 107.1-16 |
| Seismic | AC156, OSHPD, IEEE 693-2005 (high) |
| Environmental | California Proposition 65 RoHS Directive 2011 / EU |
| Emissions | FCC Part 15 Class B, ICES 003 |

Environmental

| | |
|-------------------------|--|
| Operating Temperature | -4°F to 122°F (-20°C to 50°C) |
| Operating Humidity (RH) | Up to 100% RH, condensing |
| Altitude | Maximum 9,843 ft (3,000 m) |
| Storage Condition | 14°F to 113°F (-10°C to 45°C) Up to 95% RH, non-condensing |
| Enclosure Type | NEMA 3R |
| Environment | Indoor and outdoor rated |

1: Generator Module is optional.
2: Smart Circuit Module is optional.
3: Sections from these standards were used during the safety evaluation and included in the UL 1741 listing.

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BATTERY DATASHEET

PV-11



DATASHEET



X-IQ-AM1-240-5
X-IQ-AM1-240-5C

IQ Combiner 5/5C

The IQ Combiner 5/5C consolidates interconnection equipment into a single enclosure and streamlines IQ Series Microinverters and IQ Gateway installation by providing a consistent, pre-wired solution for residential applications. IQ Combiner 5/5C uses wired control communication and is compatible with IQ System Controller 3/3G and IQ Battery 5P.

The IQ Combiner 5/5C, along with IQ Series Microinverters, IQ System Controller 3/3G, and IQ Battery 5P provides you with a complete grid-agnostic Enphase Energy System.



IQ Series Microinverters
The high-powered smart grid-ready IQ Series Microinverters (IQ6, IQ7, and IQ8 Series) dramatically simplify the installation process



IQ System Controller 3/3G
Provides microgrid interconnection device (MID) functionality by automatically detecting grid failures and seamlessly transitioning the home energy system from grid power to backup power



IQ Battery 5P
Fully integrated AC battery system. Includes six field-replaceable IQ8D-BAT Microinverters



IQ Load Controller
Helps prioritize essential appliances during a grid outage to optimize energy consumption and prolong battery life



5-year
limited
warranty



LISTED

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IQC-5-5C-DSH-00007-2.0-EN-US-2023-09-27

IQ Combiner 5/5C

| MODEL NUMBER | |
|--|--|
| IQ Combiner 5 (X-IQ-AM1-240-5) | IQ Combiner 5 with IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 ±0.5%), consumption monitoring (± 2.5%) and IQ Battery monitoring (±2.5%). Includes a silver solar shield to deflect heat |
| IQ Combiner 5C (X-IQ-AM1-240-5C) | IQ Combiner 5C with IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 ±0.5%), consumption monitoring (±2.5%) and IQ Battery monitoring (±2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05) ¹ . Includes a silver solar shield to deflect heat |
| WHAT'S IN THE BOX | |
| IQ Gateway printed circuit board | IQ Gateway is the platform for total energy management for comprehensive, remote maintenance and management of the Enphase IQ System |
| Busbar | 125A busbar with support for 1 x IQ Gateway breaker and 4 x 20A breaker for installing IQ Series Microinverters and IQ Battery 5P |
| IQ Gateway breaker | Circuit breaker, 2-pole, 10 A/15 A |
| Production CT | Prewired revenue-grade solid core CT, accurate up to 0.5% |
| Consumption CT | Two consumption metering clamp CTs, shipped with the box, accurate up to 2.5% |
| IQ Battery CT | One battery metering clamp CT, shipped with the box, accurate up to 2.5% |
| CTRL board | Control board for wired communication with IQ System Controller 3/3G and the IQ Battery 5P |
| Enphase Mobile Connect (only with IQ Combiner 5C) | 4G-based LTE-M cellular modem (CELLMODEM-M1-06-SP-05) with a 5-year T-Mobile data plan |
| Accessories kit | Spare control headers for CTRL board |
| ACCESSORIES AND REPLACEMENT PARTS (NOT INCLUDED, ORDER SEPARATELY) | |
| CELLMODEM-M1-06-SP-05 | 4G-based LTE-M1 cellular modem with a 5-year T-Mobile data plan |
| CELLMODEM-M1-06-AT-05 | 4G-based LTE-M1 cellular modem with a 5-year AT&T data plan |
| Circuit breakers (off-the-shelf) | Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Supports Eaton BR220B, BR230B, and BR240B circuit breakers compatible with hold-down kit |
| Circuit breakers (provided by Enphase) | BRK-10A-2-240V, BRK-15A-2-240V, BRK-20A-2P-240V, BRK-15A-2P-240V-B, and BRK-20A-2P-240V-B (More details in "Accessories" section) |
| XA-SOLARSHIELD-ES | Replacement solar shield for IQ Combiner 5/5C |
| XA-ENV2-PCBA-5 | IQ Gateway replacement printed circuit board (PCB) for Combiner 5/5C |
| X-IQ-NA-HD-125A | Hold-down kit compatible with Eaton BR-B series circuit breakers (with screws) |
| ELECTRICAL SPECIFICATIONS | |
| Rating | 80 A |
| System voltage | 120/240 VAC, 60 Hz |
| Busbar rating | 125 A |
| Fault current rating | 10 kAIC |
| Maximum continuous current rating (input from PV/storage) | 64 A |
| Branch circuits (solar and/or storage) | Up to four 2-pole Eaton BR series distributed generation (DG) breakers only (not included) |
| Maximum total branch circuit breaker rating (input) | 80 A of distributed generation/95 A with IQ Gateway breaker included |
| IQ Gateway breaker | 10 A or 15 A rating GE/Siemens/Eaton included |
| Production metering CT | 200 A solid core pre-installed and wired to IQ Gateway |
| Consumption monitoring CT (CT-200-CLAMP) | A pair of 200 A clamp-style current transformers is included with the box |
| IQ Battery metering CT | 200 A clamp-style current transformer for IQ Battery metering, included with the box |

¹ A plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.)

IQC-5-5C-DSH-00007-2.0-EN-US-2023-09-27

| MECHANICAL DATA | |
|---|---|
| Dimensions (WxHxD) | 37.5 cm x 49.5 cm x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) with mounting brackets |
| Weight | 7.5 kg (16.5 lbs) |
| Ambient temperature range | -40°C to 46°C (-40°F to 115°F) |
| Cooling | Natural convection, plus heat shield |
| Enclosure environmental rating | Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction |
| Wire sizes | <ul style="list-style-type: none">20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors60 A breaker branch input: 4 to 1/0 AWG copper conductorsMain lug combined output: 10 to 2/0 AWG copper conductorsNeutral and ground: 14 to 1/0 copper conductorsAlways follow local code requirements for conductor sizing |
| Communication (in-premise connectivity) | Built-in CTRL board for wired communication with IQ Battery 5P and IQ System Controller 3/3G. Integrated Power Line Communication for IQ Series Microinverters |
| Altitude | Up to 2,600 meters (8,530 feet) |
| COMMUNICATION INTERFACES | |
| Integrated Wi-Fi | 802.11b/g/n (dual band 2.4 GHz/5 GHz), for connecting the Enphase cloud via the internet |
| Wi-Fi range (recommended) | 10 m |
| Bluetooth | BLE4.2, 10 m range to configure Wi-Fi SSID |
| Ethernet | Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included), for connecting to the Enphase Cloud via the internet |
| Mobile Connect | CELLMODEM-M1-06-SP-05 or CELLMODEM-M1-06-AT-05 (included with IQ Combiner 5C) |
| Digital I/O | Digital input/output for grid operator control |
| USB 2.0 | For Mobile Connect |
| Access point (AP) mode | For connection between the IQ Gateway and a mobile device running the Enphase Installer App |
| Metering ports | Up to two Consumption CTs, one IQ Battery CT, and one Production CT |
| Power line communication | 90-110 kHz |
| Web API | Refer to https://developer-v4.enphase.com |
| Local API | Refer to guide for local API |
| COMPLIANCE | |
| IQ Combiner | UL 1741, CAN/CSA C22.2 No. 107.1, Title 47 CFR, Part 15, Class B, ICES 003 |
| IQ Gateway | UL 80601-1/CANCSA 22.2 No. 61010-1, IEEE 1547: 2018 (UL 1741-SB, 3 rd Ed.) IEEE 2030.5/CSIP Compliant Production metering: ANSI C12.20 accuracy class 0.5 (PV production) |
| COMPATIBILITY | |
| IQ System Controller 3/3G | SC200D111C240US01, SC200G111C240US01 |
| IQ Battery 5P | IQBATTERY-5P-IP-NA |
| Microinverter ¹ | IQ6, IQ7, and IQ8 Series Microinverters |

IQC-5-5C-DSH-00007-2.0-EN-US-2023-09-27

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COMBINER DATASHEET

PV-12



Roof Mount System



Built for solar's toughest roofs.

IronRidge builds the strongest roof mounting system in solar. Every component has been tested to the limit and proven in extreme environments.

Our rigorous approach has led to unique structural features, such as curved rails and reinforced flashings, and is also why our products are fully certified, code compliant and backed by a 20-year warranty.

Strength Tested
All components evaluated for superior structural performance.

PE Certified
Pre-stamped engineering letters available in most states.

Class A Fire Rating
Certified to maintain the fire resistance rating of the existing roof.

Design Software
Online tool generates a complete bill of materials in minutes.

Integrated Grounding
UL 2703 system eliminates separate module grounding components.

20 Year Warranty
Twice the protection offered by competitors.

XR Rails

XR10 Rail



A low-profile mounting rail for regions with light snow.

- 6' spanning capability
- Moderate load capability
- Clear & black anod. finish

XR100 Rail



The ultimate residential solar mounting rail.

- 8' spanning capability
- Heavy load capability
- Clear & black anod. finish

XR1000 Rail



A heavyweight mounting rail for commercial projects.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish

Internal Splices



All rails use internal splices for seamless connections.

- Self-tapping screws
- Varying versions for rails
- Grounding Straps offered

Attachments

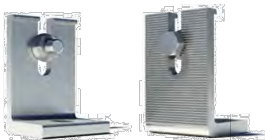
FlashFoot



Anchor, flash, and mount with all-in-one attachments.

- Ships with all hardware
- IBC & IRC compliant
- Certified with XR Rails

Slotted L-Feet



Drop-in design for rapid rail attachment.

- High-friction serrated face
- Heavy-duty profile shape
- Clear & black anod. finish

Standoffs



Raise flush or tilted systems to various heights.

- Works with vent flashing
- Ships pre-assembled
- 4" and 7" Lengths

Tilt Legs



Tilt assembly to desired angle, up to 45 degrees.

- Attaches directly to rail
- Ships with all hardware
- Fixed and adjustable

Clamps & Grounding

End Clamps



Slide in clamps and secure modules at ends of rails.

- Mill finish & black anod.
- Sizes from 1.22" to 2.3"
- Optional Under Clamps

Grounding Mid Clamps



Attach and ground modules in the middle of the rail.

- Parallel bonding T-bolt
- Reusable up to 10 times
- Mill & black stainless

T-Bolt Grounding Lugs



Ground system using the rail's top slot.

- Easy top-slot mounting
- Eliminates pre-drilling
- Swivels in any direction

Accessories



Provide a finished and organized look for rails.

- Snap-in Wire Clips
- Perfected End Caps
- UV-protected polymer

Free Resources



Design Assistant
Go from rough layout to fully engineered system. For free.
Go to IronRidge.com/rm



NABCEP Certified Training
Earn free continuing education credits, while learning more about our systems.
Go to IronRidge.com/training

Datasheet

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RACKING DATASHEET

PV-13



Tech Brief



The Respect Your Roof Deserves

When integrating with a home, solar attachments must be dependable for the lifetime of the rooftop. Due to recent innovations, many asphalt shingles have bonded courses. A mount that protects without the need to pry shingles can really speed things up.

Halo UltraGrip™ (HUG™) is here to respect the roof. Its Halo is a cast-aluminum barrier that encases the UltraGrip, our industrial-grade, foam-and-mastic seal. This allows HUG to accelerate the installation process and provide the utmost in waterproofing protection. Give your roof a HUG.™

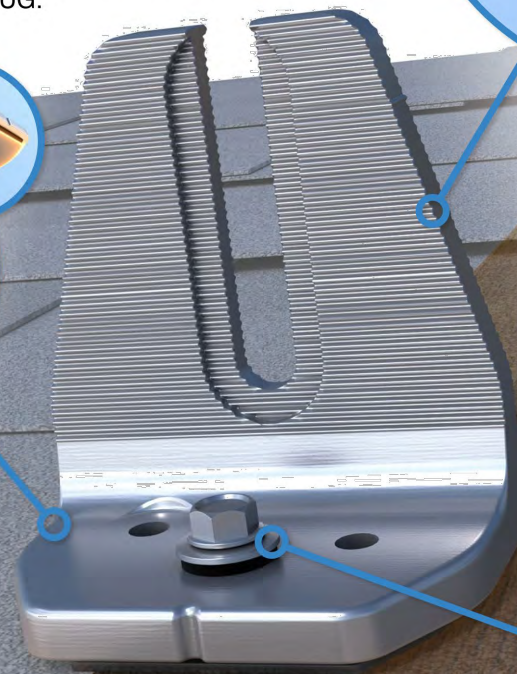


Multi-Tiered Waterproofing
HUG utilizes a multi-tiered stack of components to provide revolutionary waterproofing protection. The Halo cast-aluminum, raised-perimeter foundation surrounds the UltraGrip base—a foam-backed mastic seal combination that prevents water intrusion by adhering and sealing with the shingle surface.

Q Halo UltraGrip™ is part of the QuickMount® product line.

UltraGrip™ Seal Technology

HUG UltraGrip utilizes a state-of-the-art seal design that uses a unique, foam-and-mastic combination. The foam-backed adhesive provides an entirely new flashing system that conforms and adheres to every nook and cranny of composition shingles, filling gaps and shingle step-downs (up to 1/8" in height).



Rafter Mount



Deck Mount



Rafter & Deck Mounting Options

Mount HUG to the roof rafters, the roof deck, or both with our custom-engineered RD (rafter-or-deck) Structural Screw. The RD Structural Screw anchors HUG to the roof with an EPDM sealing washer, completing the stack of waterproofing barriers. See backside for more installation information.



Triple Rated & Certified to Respect the Roof™
UL 2703, 441 (27)
TAS 100(A)-95

Adaptive, Rafter-Friendly Installation

Tech Brief



Hit the rafter? Good to go!

When you find a rafter, you can move on. Only 2 RD Structural Screws are needed.



Miss the rafter? Try it again.

Place another screw to the left or right. If rafter is found, install 3rd and final screw.



Still no luck? Install the rest.

If more than 3 screws miss the rafter, secure six screws to deck mount it.

Trusted Strength & Less Hassle



25-Year Warranty
Product guaranteed free of impairing defects.

Structural capacities of HUG™ were reviewed in many load directions, with racking rail running cross-slope or up-slope in relation to roof pitch.

For further details, see the HUG certification letters for attaching to rafters and decking.

IronRidge designed the HUG, in combination with the RD Structural Screw to streamline installs, which means the following:

- No prying shingles
- No roof nail interference
- No pilot holes necessary
- No sealant (in most cases)
- No butyl shims needed

Attachment Loading



The rafter-mounted HUG has been tested and rated to support 1004 (lbs) of uplift and 368 (lbs) of lateral load.

Structural Design



Parts are designed and certified for compliance with the International Building Code & ASCE/SEI-7.

Water Seal Ratings



HUG passed both the UL 441 Section 27 "Rain Test" and TAS 100(A)-95 "Wind Driven Rain Test" by Intertek.

UL 2703 System



Systems conform to UL 2703 mechanical and bonding requirements. See Flush Mount Manual for more info.

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COLLIER, TERRY

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PALM BEACH, FL 33480
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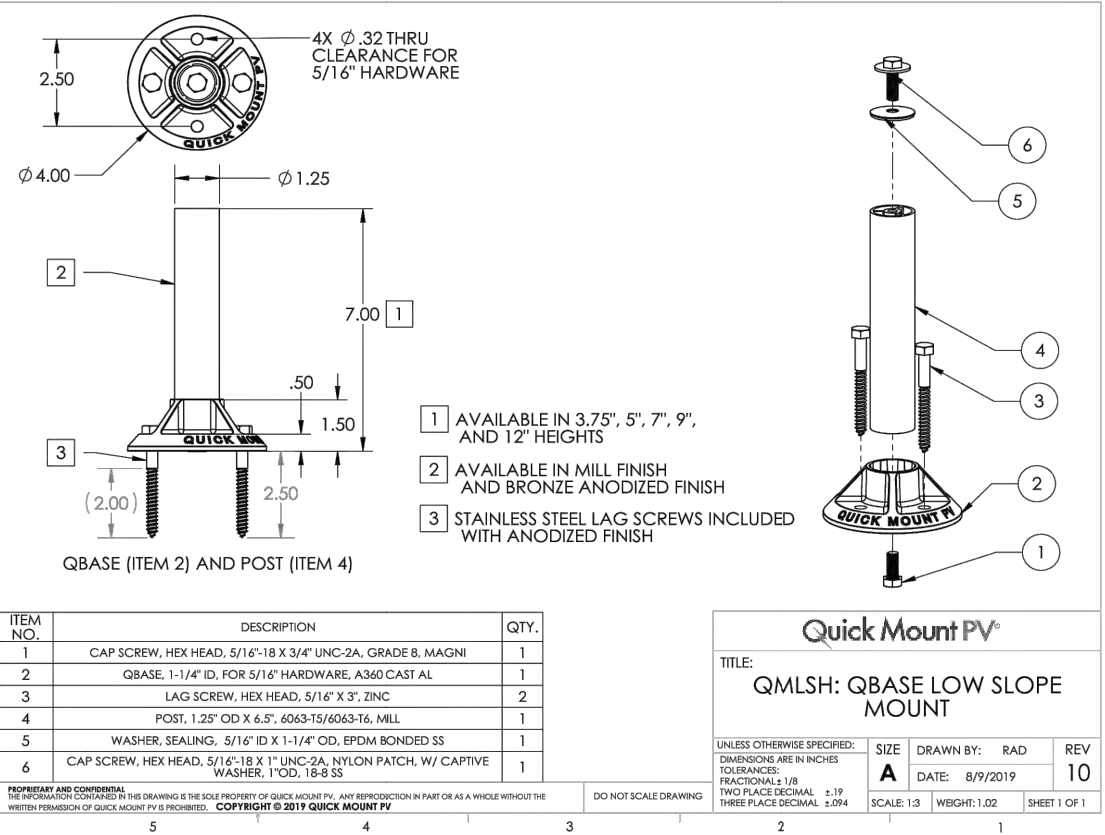
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ATTACHMENT DATASHEET

PV-14

FLAT ROOF ATTACHMENT

QBase Low Slope Mount | QMLSH



| Lag pull-out (withdrawal) capacities (lbs) in typical lumber: | | | |
|---|-------------------------|--|---------------------------------|
| | Lag Bolt Specifications | | |
| | Specific Gravity | 2/ea 5/16" shaft per 2.5" thread depth | 5/16" shaft per 1" thread depth |
| Douglas Fir, Larch | .50 | 1330 | 266 |
| Douglas Fir, South | .46 | 1175 | 235 |
| Engelmann Spruce, Lodgepole Pine (MSR 1650 f & higher) | .46 | 1175 | 235 |
| Hem, Fir | .43 | 1060 | 212 |
| Hem, Fir (North) | .46 | 1175 | 235 |
| Southern Pine | .55 | 1535 | 307 |
| Spruce, Pine, Fir | .42 | 1025 | 205 |
| Spruce, Pine, Fir (E of 2 million psi and higher grades of MSR and MEL) | .50 | 1330 | 266 |

Sources: American Wood Council, NDS 2005, Table 11.2 A, 11.3.2 A

Notes:

- 1) Thread must be embedded in a rafter or other structural roof member.
2) See IBC for required edge distances.



BI 7.2.3-5

Aug-2019, Rev 10

QBase Low Slope Mount Instructions

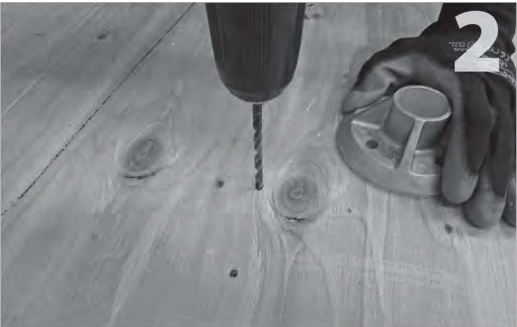
WARNING: Quick Mount PV products are NOT designed and should NOT be used to anchor fall protection equipment.

Installation Tools Required: Drill with 7/32" bit, impact gun with 1/2" socket, 1 tube of sealant compatible with roofing materials, pencil, chalk line

CAUTION: Prior to installation, check that proper screw embedment will be achieved for the necessary site load and roofing configurations.



Locate the desired mount placement over a rafter (or custom wood blocking). Using the base as a template, mark the two penetration points with either a pen or light drilling. Use two opposing holes on the base plate, parallel to the structural member.



Drill both pilot holes with a 7/32-inch bit. Make sure to hold the drill square to the rafter. The lag bolts must be anchored into a structural member, so it is very important to hit the center of the rafter with your pilot holes. Fill the pilot holes with a sealant compatible with roofing materials.



Prior to attaching the base to the roof, place the grade-8 hex bolt (item 1) in the bottom of the base (item 2) and screw the post (item 4) in. This is easier than adding the post after securing the base to the roof. Attach the base/post assembly to the roof with two lag bolts (item 3).



Attach the hardware (items 5-8) to the top of the post. (Be sure to seal off the post from weather exposure with the sealing washer (item 5), in the interim before racks are installed.) You are now ready to flash the mount, roof around it, and attach racking. Aluminum flashings for built-up roofs are available from Quick Mount PV in 4" and 8" cones (sold separately). For membrane roofs, be sure to use manufacturer-specified flashing and utilize the services of a certified roofer.

LA RESEARCH REPORTS (LARR): Approved for use in the City of Los Angeles per LARR #26194



925-478-8269 | www.quickmountpv.com | tech@quickmountpv.com
2700 Mitchell Dr. | Walnut Creek, CA 94598

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Aug-2019, Rev10

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ATTACHMENT DATASHEET

PV-14.1

PG 500

MODIFIED CEMENT

PRODUCT DESCRIPTION

PG 500 is a high quality formulation suitable for use as a cold-applied bonding agent for SBS roofing systems as well as various other membrane systems. PG 500 has a heavy, "trowel-grade" consistency which makes it ideal for flashing details, attachment of membrane to steep slopes and parapet walls and a variety of waterproofing repairs. Its flexibility and elasticity make it superior to standard plastic cements especially where there are moving joints.

USES

- For applying SBS modified bitumen membrane flashing to parapet walls, curbs and roof penetrations
- For sealing lap seams and perimeter edges of SBS modified bitumen membranes
- This product may be used as a topical application on smooth or granule APP products for roofing repairs only
- For repairing splits, breaks and small holes in asphalt-based roofings and flashings
- For installing metal edge flanges and other metal joints
- Positive-side damp proofing of concrete, masonry walls and foundations
- Not recommended for use with thermoplastic or thermoset membranes

FEATURES AND BENEFITS

- High flexibility to accommodate temperature-related expansion and contraction of the roof system
- Great bonding strength
- Provides exceptional weathering characteristics over a wide range of challenging temperatures and weather conditions. Will not mudcrack and will remain highly flexible, resilient and durable through all seasons
- Eliminates the need for kettles and torches
- Interlocking fiber matrix assures uniform, excellent adhesion
- When used on a vertical surface at high temperatures, exhibits excellent flow resistance
- Non-destructive to asphalt based roofing membranes
- Asbestos free – 100% recycled cellulose fibers

TYPICAL PHYSICAL PROPERTIES

| TEST PROPERTY | TEST VALUE | TEST PROCEDURE |
|------------------------|------------|----------------|
| Weight/gal (lb) | 9.0 – 9.5 | ASTM D1475 |
| Cone Penetration (dmm) | 245 – 330 | ASTM D312 |
| Flash Point (°F) | > 105 | PMCC |
| VOC (gm/l) | < 300 | Calculated |
| Pliability @ 32°F | pass | ASTM D6511 |
| Sag @ 140°F | pass | ASTM D6511 |
| Solids Weight (%) | > 70 | ASTM D1644 |



APPLICABLE STANDARDS

- Meets or exceeds the requirements of ASTM D4586 Asphalt Roof Cement, Type I and ASTM D3409 Class I and Class II (adhesion to wet surfaces)
- Florida Building Code
- Miami-Dade County Product Control Approved



PACKAGING

- 10.1 oz (0.3 Liters) Cartridge
- 4.75 Gallon (17.9 Liters) Pail



www.polyglass.us

PG 500

MODIFIED CEMENT

APPLICATION INSTRUCTIONS

Surface Preparation:

- Surfaces to receive coating must be clean, dry and free from any foreign matter such as dirt, oils, grease or other debris that could inhibit the adhesion capabilities of the newly installed products. Priming is recommended when adhering to questionable conditions.
- On existing roofs, inspect roof substrate condition. Blisters, buckles, and raised edges should be cut out and repaired for a smooth surface.
- Check all flashings, edges, drains, valleys and vents and repair as needed.
- Do not use on wet or damp surfaces, directly over wood or on surfaces previously covered with coal tar based products.

Application:

- *Application Rate:* Apply 1/8" coat (approximately eight gallons per square) depending on ambient temperature, surface porosity, as well as applicator and/or application technique.
- *Application Method:* Use pointed trowel or wide-edged putty knife to apply cement evenly and in equal amounts to substrate and flashing. Coat should be 1/8" thick, without gaps, dry areas or bubbles.
- *Membrane Flashing:* Coat underside of membrane with cement at rate indicated. No cure time required before flashing installation, simply press into place with even pressure, smoothing out wrinkles and bubbles. Roll all side and end laps, making sure a sufficient amount of product is applied to the laps so that a bead is visible at all lap edges. Mechanically fasten membrane flashings to parapet walls to avoid membrane slippage.
- *Coursing:* Apply cement to surface and install fabric or webbing into cement, then apply a final course of cement.
- *Metal:* Set metal flashings in full 1/8" bead. Apply product between joints and apply pressure so that bead is visible at joint edge.
- *Sealing/Repairs:* Apply cement at a thickness of 1/8" to 1/4" working the product into the opening or crack and spread two inches beyond repair area at minimum. Embed glass or cotton fabric into the cement for added reinforcement, then cover with additional cement.
- Best suited when ambient temperatures are 45°F and rising. Cold weather will cause product to stiffen, making application more difficult.
- Do not heat exterior of container or attempt to thin this product. Not recommended for application on substrates that exceed 140°F.
- To greatly extend the life of the roof cement, it is recommended that the applicator apply a Polyglass Aluminum roof coating after a minimum of 30 days cure time.

Limitations:

- Do not use on TPO, EPDM, PVC, or other single ply membranes.
- Not to be installed over or under polystyrene insulation.
- Do not use this product under any APP or any torch products with burn off film.

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Edition Date: 03/19 • Doc# PG 500

Storage and Cleaning:

- Shelf life is 24 months if stored in original unopened containers.
- All containers should be sealed when not in use.
- Store between 40°F and 100°F.
- If temperatures are cold, store product in a heated area overnight.
- DO NOT HEAT WITH AN OPEN FLAME.
- Observe normal safeguards for storing and handling of this product prior to and during application.
- Clean equipment and overspray with water.
- Clean hands with waterless hand cleaner.
- Application tools and equipment can be cleaned with odorless mineral spirits solvent. Recirculate through lines and spray equipment guns until residual coating is removed.
- DO NOT USE WATER OR RECLAIMED SOLVENTS.

For Professional Use Only - Keep out of the reach of children.

MANUFACTURING FACILITIES

- Fernley, NV
- Hazleton, PA
- Phoenix, AZ
- Waco, TX
- Winter Haven, FL

CORPORATE HEADQUARTERS

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(954) 233-1330

Customer Service: (800) 222-9782
Technical Service: (866) 802-8017

Questions? technical@polyglass.com

Product Disclaimer: Unless otherwise incorporated into or part of a supplemental manufacturer's warranty, Polyglass warrants its product(s) against manufacturing defects that result in the material not complying with product specifications for a period of 12 months.

Refer to safety data sheet (SDS) for specific data and handling of our products. All data furnished refers to standard production and is given in good faith within the applicable manufacturing and testing tolerances. The product user, and not Polyglass, is responsible for determining the suitability and compatibility of our products for the user's intended use.

For the most current product data and warranty information, visit www.polyglass.us



www.polyglass.us

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SEALANT DATASHEET

PV-15



UFO® Family of Components

Tech Brief

Simplified Grounding for Every Application

The UFO® family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge® XR Rails®. All system types that feature the UFO® family—Flush Mount®, Tilt Mount® and Ground Mount®—are fully listed to the UL 2703 standard.

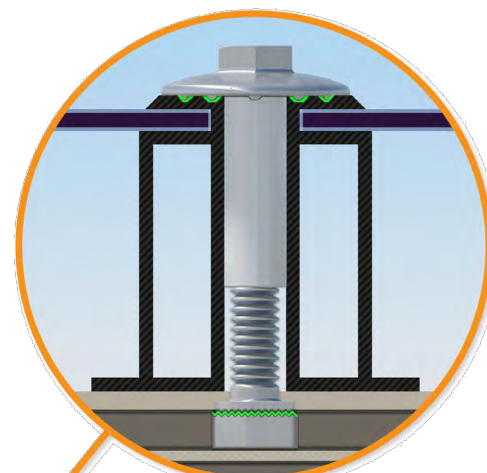
UFO® hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.

Only for installation and use with IronRidge products in accord with written instructions. See [IronRidge.com/UFO](https://www.ironridge.com/UFO)



Stopper Sleeve

The Stopper Sleeve snaps onto the UFO®, converting it into a bonded end clamp.



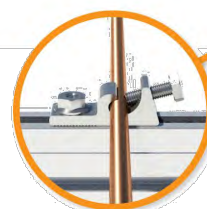
Universal Fastening Object (UFO®)

The UFO® securely bonds solar modules to XR Rails®. It comes assembled and lubricated, and can fit a wide range of module heights.



BOSS® Splice

Bonded Structural Splice connects rails with built-in bonding teeth. No tools or hardware needed.



Grounding Lug

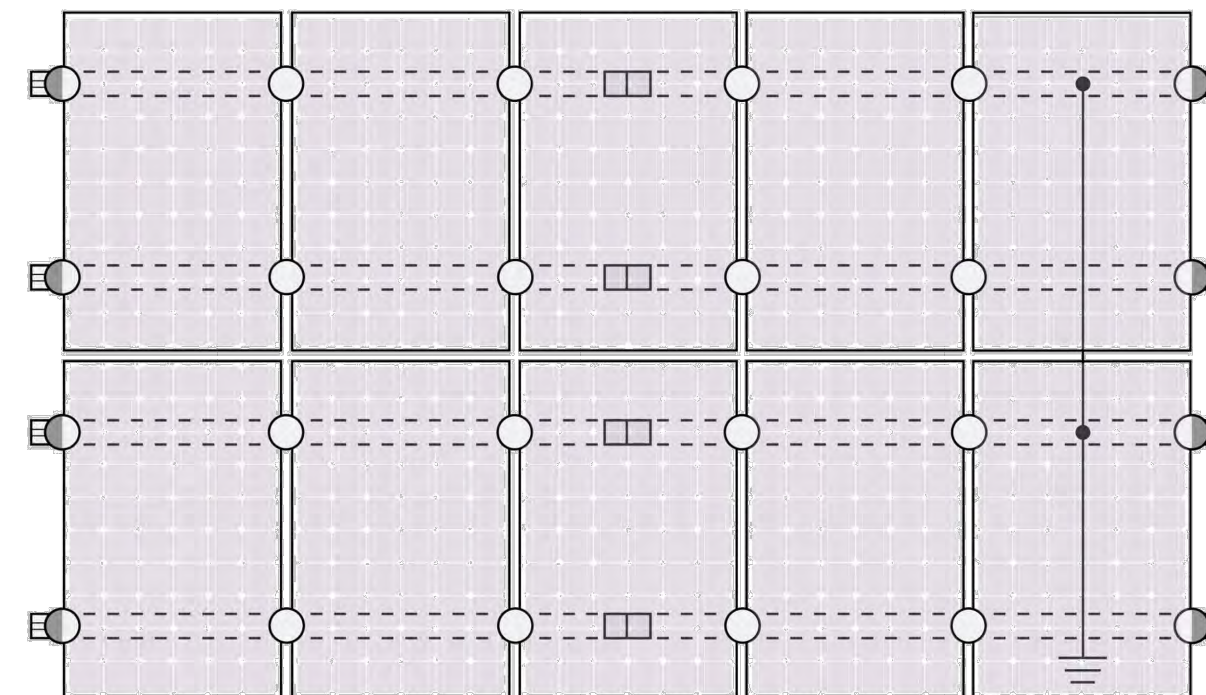
A single Grounding Lug connects an entire row of PV modules to the grounding conductor.



Bonded Attachments

The bonding bolt attaches and bonds the L-foot® to the rail. It is installed with the same socket as the rest of the system.

System Diagram



○ UFO ◐ Stopper Sleeve ● Grounding Lug □ BOSS® Splice — Ground Wire

⚠ Approved Enphase microinverters can provide equipment grounding of IronRidge systems, eliminating the need for grounding lugs and field installed equipment ground conductors (EGC). A minimum of two microinverters mounted to the same rail and connected to the same Engage cable is required. Refer to installation manuals for additional details.

UL Certification

The IronRidge® Flush Mount®, Tilt Mount®, and Ground Mount Systems have been listed to UL 2703 by Intertek Group plc.

UL 2703 is the standard for evaluating solar mounting systems. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments.

[Go to IronRidge.com/UFO](https://www.ironridge.com/UFO)

Cross-System Compatibility

| Feature | Flush Mount | Tilt Mount | Ground Mount |
|-----------------------------------|--|------------|----------------|
| XR Rails® | ✓ | ✓ | XR100 & XR1000 |
| UFO®/Stopper | ✓ | ✓ | ✓ |
| BOSS® Splice | ✓ | ✓ | N/A |
| Grounding Lugs | 1 per Row | 1 per Row | 1 per Array |
| Microinverters & Power Optimizers | Compatible with most MLPE manufacturers. Refer to system installation manual. | | |
| Fire Rating | Class A | Class A | N/A |
| Modules | Tested or Evaluated with over 400 Framed Modules. Refer to installation manuals for a detailed list. | | |

Tech Brief

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PV-16