

GENERAL NOTES:

1. THE PROJECT IS DESIGNED IN GENERAL ACCORDANCE WITH 2023 FLORIDA BUILDING CODE AND OTHER REFERENCED CODES.
2. ABBREVIATIONS OTHER THAN AS PROVIDED ARE INDUSTRY STANDARD.
3. CONDITION AND CONSTRUCTION OF ROOF ASSEMBLY SHALL BE VERIFIED BY PHYSICAL INSPECTION AND ACCEPTED BY CONTRACTOR PRIOR TO COMMENCEMENT.
4. WORK TO BE COMPLETED SHALL BE VERIFIED BY INSTALLER AND ELECTRICIAN PRIOR TO COMMENCEMENT AND MATERIAL ORDER.
5. ALL CONTRACTORS AND SUB-CONTRACTORS SHALL BE LICENSED BY THE STATE OF FLORIDA AND AS REQUIRED BY PERMITTING AGENCY; NO UNLICENSED CONTRACTORS OR CONSTRUCTION AND TRADE WORKERS SHALL BE ALLOWED ON JOBSITE.
6. ALL CONTRACTORS AND SUB-CONTRACTORS SHALL INSPECT THE SITE AND ALL RESPECTIVE BUILDINGS IMMEDIATELY BEFORE PREPARING ANY BID AND BEFORE ORDERING ANY MATERIALS, AND SHALL PROVIDE CONTRACTOR WRITTEN NOTICE OF ANY DISCREPANCY BETWEEN FIELD CONDITIONS AND THE PLANS. AFTER VERIFICATION, MARDI ENGINEERING SHALL PREPARE ANY NECESSARY PLAN REVISION, GENERALLY WITHIN 72 HOURS OF SUCH NOTICE.
7. REQUIRED PLAN DIMENSIONS NOT PROVIDED SHALL BE CONFIRMED WITH ENGINEER OF RECORD. DIMENSIONS IN PARENTHESES ARE FOR ENGINEERING REFERENCE ONLY.
8. UNPLANNED ALTERATION OF STRUCTURAL ROOF OR WALL FRAMING SHALL REQUIRE WRITTEN APPROVAL BY THE EOR AND OWNER; PLANS SHALL BE SO REVISED.
9. FIRE PROTECTION PROCEDURES SHALL BE FOLLOWED IN ACCORDANCE WITH NEC 2020, Art. 690. 9. WORK SHALL BE INSPECTED PRIOR TO COVER BY BUILDING INSPECTOR, AND EOR UPON REQUEST.
10. BEST MANAGEMENT PRACTICES SHALL BE EXERCISED AT ALL TIMES TO MAINTAIN A SAFE AND CLEAN JOBSITE IN COORDINATION WITH PROPERTY OWNER AS APPLIES TO PARKING, TRASH REMOVAL, STORAGE, SOUND, UTILITIES AND TIMES OF WORK.
11. NO WORK SHALL BE PERFORMED IN RIGHT-OF-WAY OR EASEMENTS WITHOUT WRITTEN PERMISSION FROM THE APPROPRIATE PERMITTING AGENCY AND OWNER.
12. ALL MATERIALS NOT LISTED OR SPECIFIED HEREIN SHALL BE OBTAINED THROUGH CONTRACTOR-APPROVED VENDORS, GENERALLY NECESSARY TO COMPLETE TYPICAL SIMILAR CONSTRUCTION AND SHALL CONFORM TO CODE TABLE, INDUSTRY STANDARDS AND POLICIES OF THE PERMITTING AGENCY.
13. DETAILS OR SPECIFICATIONS ARE CALLED OUT BY LOCATION, ARRAY, ELEMENT OR AS OTHERWISE APPLIES.
14. IN THE EVENT OF WEATHER AND OTHER CIRCUMSTANCES THAT COULD MATERIALLY AFFECT BUILDING CONDITIONS OR INSTALLATION, CONTRACTOR SHALL PERFORM A RE-INSPECTION ALONG WITH OTHER CONTRACTORS AS REQUIRED THEN ADJUST PROJECT SCHEDULE TO INCLUDE RESPECTIVE PLAN REVISIONS.

ROOF FIRE SAFETY NOTES: (NFPA 11.12.2.2)

1. FIRE PROTECTION PROCEDURES SHALL BE FOLLOWED IN ACCORDANCE WITH NEC 2020, A. 690.9. WORK SHALL BE INSPECTED PRIOR TO COVER BY BUILDING INSPECTOR, OR EOR UPON REQUEST.
2. ACCESS POINT ARE LOCATED FOR FIRE DEPT. LADDER(S) CLEAR OF OPENINGS/OBSTRUCTIONS.
3. WORK SHALL BE PERFORMED IN ACCORDANCE WITH ROOF SAFETY RATING (CLASS A). (UL 790 / ASTM E108)

NOTE TO INSTALLER:

1. ALL PANELS SHALL BE ATTACHED TO EXISTING ROOF STRUCTURE USING THE REQUIRED NUMBER OF ATTACHMENTS IN THE PROPER CONFIGURATION AS DEFINED IN THIS PLAN SET.
2. ALL PANELS SHALL BE FULLY OUTSIDE OF ANY ROOF AREAS DEFINED AS "FIRE SETBACK" IN THIS SITE PLAN. FIRE SETBACKS ARE DEFINED BY THE DIMENSIONS IN RED AND ARE CONSIDERED ABSOLUTE.
3. ANY DIMENSIONS NOTED AS "MAX" SHALL BE BE UNDERSTOOD TO BE ABSOLUTE REQUIREMENTS WITH A TOLERANCE OF +0.0"
3. ANY DIMENSIONS NOTED AS "MIN" SHALL BE BE UNDERSTOOD TO BE ABSOLUTE REQUIREMENTS WITH A TOLERANCE OF -0.0"
4. STANDARD DIMENSIONS (NOT INCLUDING FIRE SETBACKS) SHALL BE UNDERSTOOD TO BE REQUIREMENTS WITH A TOLERANCE OF ±2.0"
5. ANY DIMENSIONS NOTED AS "APPROX" SHALL BE UNDERSTOOD TO BE APPROXIMATE IN NATURE AND SHOULD BE USED AS A GUIDE. EXACT PLACEMENT OF THE PANELS RELATIVE TO THESE DIMENSIONS ARE LEFT TO THE INSTALLERS DISCRETION ASSUMING THAT ALL OTHER DEFINED REQUIREMENTS ARE MET.
6. ANY DIMENSIONS IN PARENTHESES () ARE FOR ENGINEERING REFERENCE ONLY AND ARE NOT NEEDED FOR INSTALLATION.
7. IT IS THE CONTRACTOR RESPONSIBILITY TO INSTALL THE SYSTEM AND ITS SUPPORTS AS INDICATED IN THESE PLANS. THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD IF SITE CONDITIONS DIFFER FROM WHAT IS DEPICTED ON PLANS.

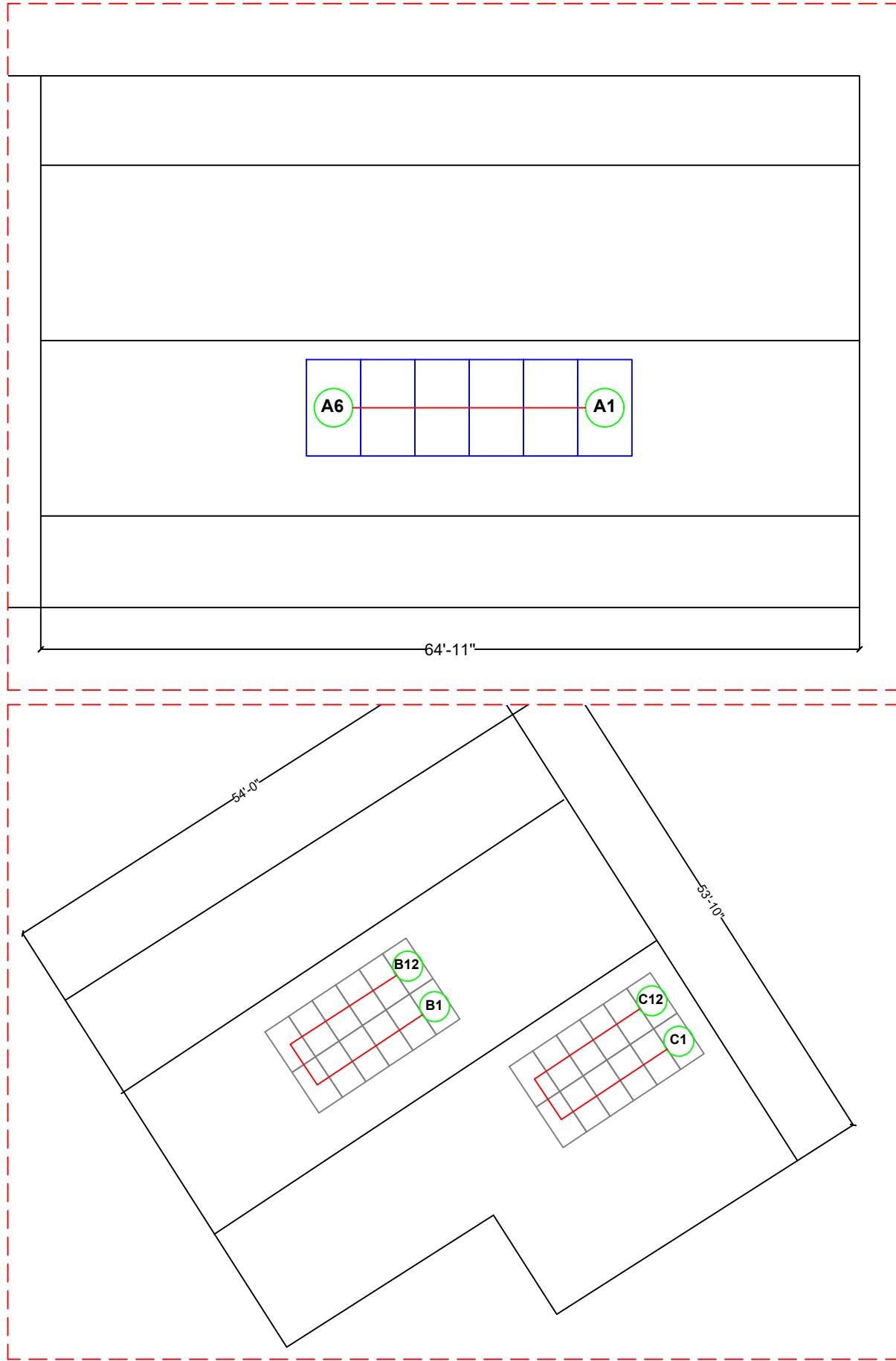
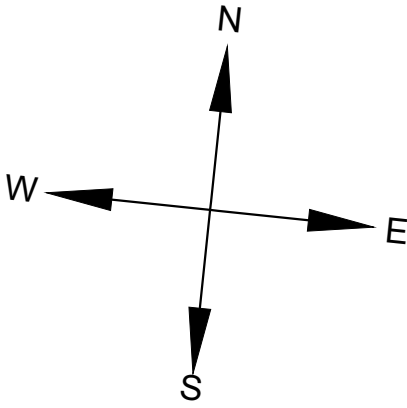
ATTACHMENT SYSTEM:

ATTACHMENT SYSTEM AND FLASHING METHOD SHALL BE CONSTRUCTED ACCORDING MANUFACTURER'S INSTALLATION MANUAL AND AS SPECIFIED BY EOR.

SUGGESTED ELECTRICAL EQUIPMENT MOUNTING

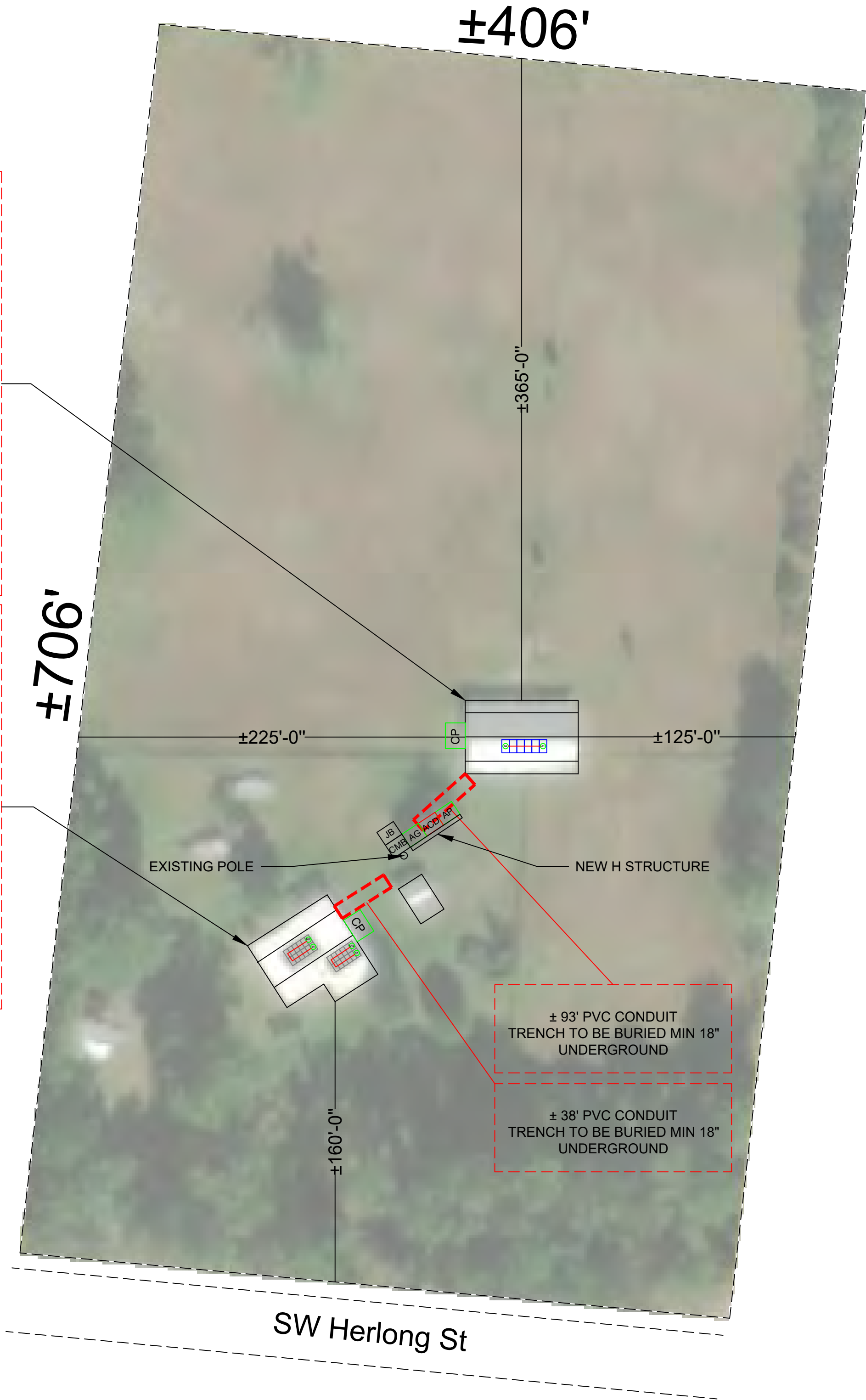
LOCATION

THE SUGGESTED EQUIPMENT MOUNTING LOCATION MAY BE ADJUSTED AT INSTALLER'S DISCRETION SO LONG AS LOCAL AHJ REQUIREMENTS ARE ADHERED TO



LEGEND

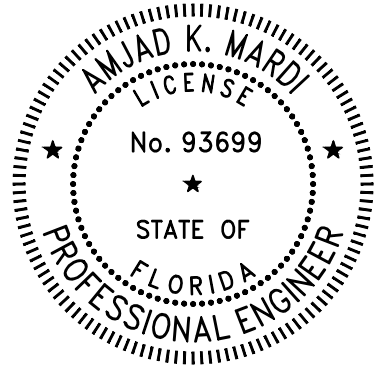
- | | |
|--------------------------------|-------------------|
| ACD | AC DISCONNECT |
| CP | COMBINER PANEL |
| CMB | COMBO METER/MAIN |
| P | PANEL |
| AP | FRANKLIN APOWER S |
| AG | FRANKLIN AGATE |
| JB | JUNCTION BOX |
| # | STRING NUMBER |
| 75.1 PSF
33.44 SF
7.822' | MODULE |



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PATRICIA HALEY
RESIDENCE

PROJECT ADDRESS:

7115 SW Herlong St
Fort White, FL 32038

Date:	SEE P.E. STAMP
Designed By:	SST
Reviewed by:	AKM
REVISION HISTORY	

DRAWING SCALE:

N.T.S.

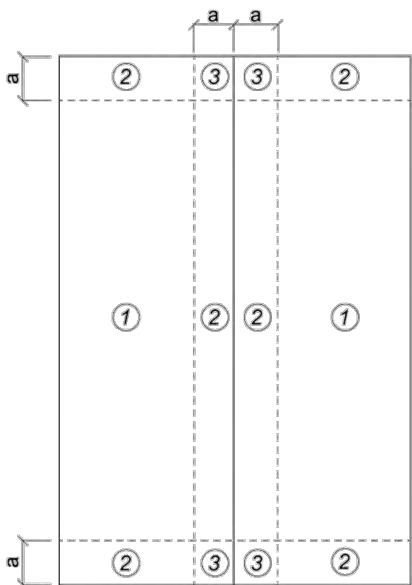
SHEET NAME:

SITE & ELECTRICAL PLAN

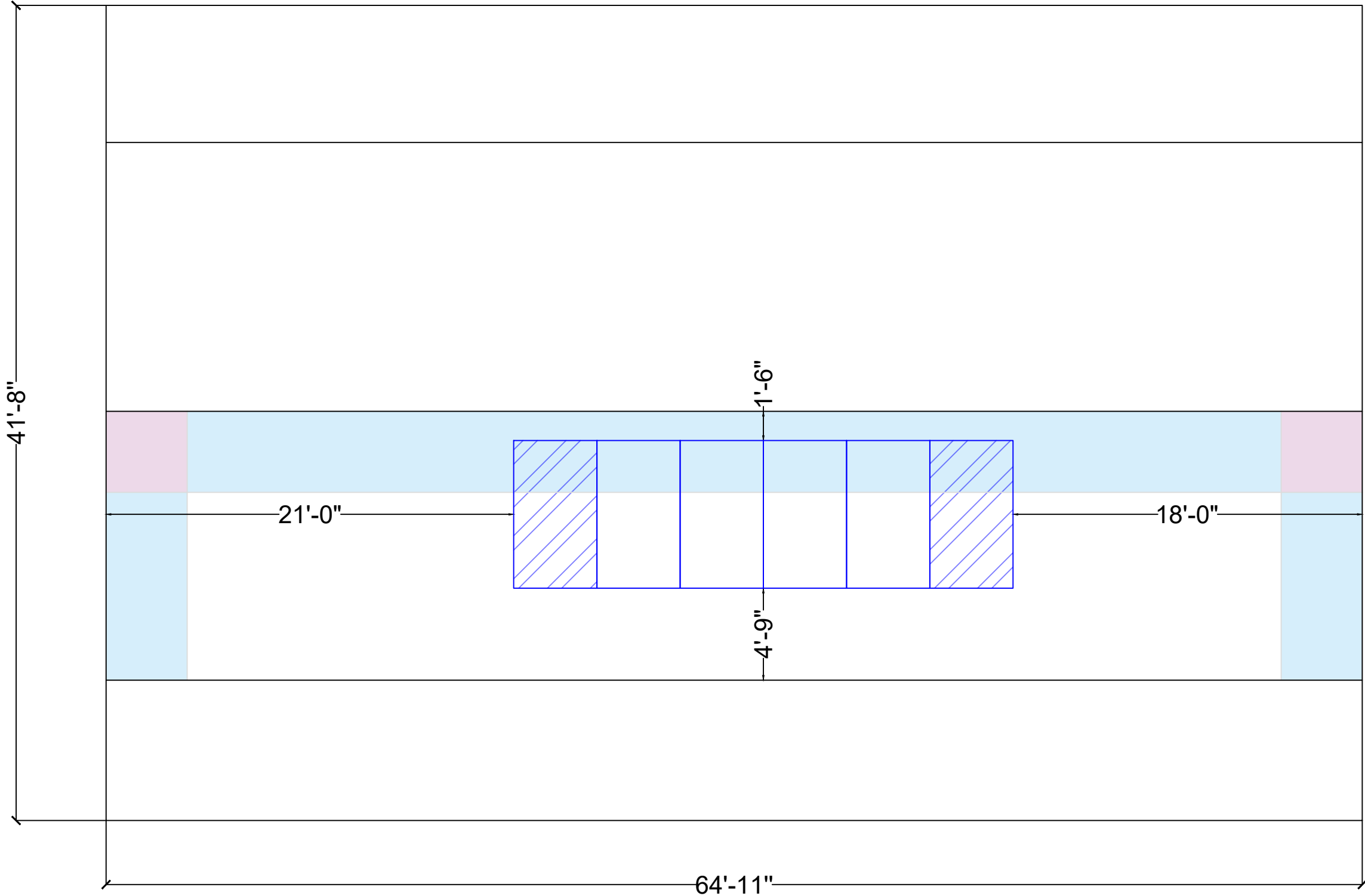
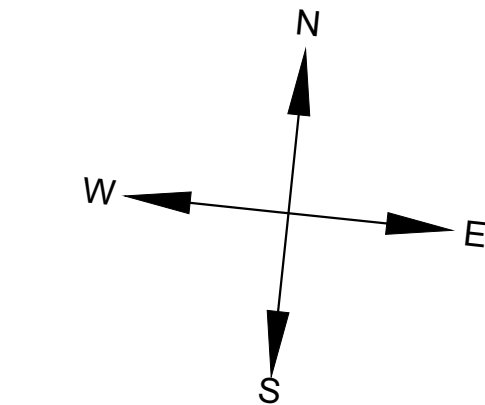
SHEET NUMBER:

S1

Wind Pressures (psf) where Solar Panels are to be installed per ASCE 7-22 Sec 29.4.4 (All wind pressures include a load factor of 0.6)		
	EXPOSED (DOWNWARD/ UPLIFT)	NOT EXPOSED (DOWNWARD/ UPLIFT)
1	3.81/-17.52	3.81/-11.68
2	3.81/-24.05	3.81/-16.03
3	NONE	NONE
1_OH	NONE	NONE
2_OH	NONE	NONE
3_OH	NONE	NONE
Existing Structure & Limiting Factors		
Roof Type	Gable	
Roof Material	5V Metal	
Sheathing	Plywood	
Framing	Wood Trusses, 24" O.C.	
Fire Rating	Class A	
Roof Slope	3:12	
Mean Roof Height (h) [ft]	±12.6042	
Overhang (OH) [ft]	1.5	
Dead Load [psf]	18.4	
Live Load [psf]	20	
a = Width for Zone 2 and 3 determination (per C&C figure) [ft]	4.1667	
h/2 = Width used to determine if exposed [ft]	6.30	
h1 = Distance from roof to lower panel edge: Min (hny,hnp) [ft]	0.29	
h2 = Distance from roof to upper panel edge: Max (hny,hnp) [ft]	0.29	
d1 = limit for adjacent panels [ft]	0.58	
Minimum height above roof edge [ft]	0.58	



PV Module Data		
Chord length [ft]	7.822	
Width [ft]	4.275	
Area [sqft]	33.44	
Thickness [ft]	0.115	
Weight [lbs]	84.88	
Module Dead Load	2.54	
Angle to Roof [degrees °]	0	
Environmental Data		
Design Wind Speed (V)	140	
Elevation Factor(Ke)	1.0	
Topographic factor (Kzt)	1.0	
pressure exposure (Kz)	0.9	
Velocity Pressure (qh)	42.65	
PV Module Loads		
	Downward	Uplift
Module Design Pressure [psf]	75.18	-33.41
Worst Case Pressure [psf]	3.81	-24.05
Worst Case Roof Zone	1 (Exposed)	2 (Exposed)
Net Load Pressure [psf]	6.35	-21.51
Margin [psf]	68.83	-11.90
Safety Factor (OK IF OVER 1.0)	11.84	1.55
Total Array Calculations		
Minimum Number of Attachments	11	
Number of Fasteners per Attachment	2	
Total Array Weight [lbs]	509.28	
Total Array Area [sqft]	200.63	
Total Roof Area [sqft]	2703.22	
Percentage of Total Occupied Roof Area [%]	7.42	
Total Array Uplift [lbs]	-2580.05	
Force per Attachment [lbs]	-234.55	
Force Per Fastener [lbs]	-117.27	
Max Allowed Force Per Fastener [lbs]	204.5	
Safety Factor (OK if over 1.50)	1.74	



LEGEND

ROOF ZONE 1

ROOF ZONE 2

ROOF ZONE 3

EXPOSED MODULE

MODULE

75.1 PSF

33.44 SF

7.822'

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DRAWING SCALE:

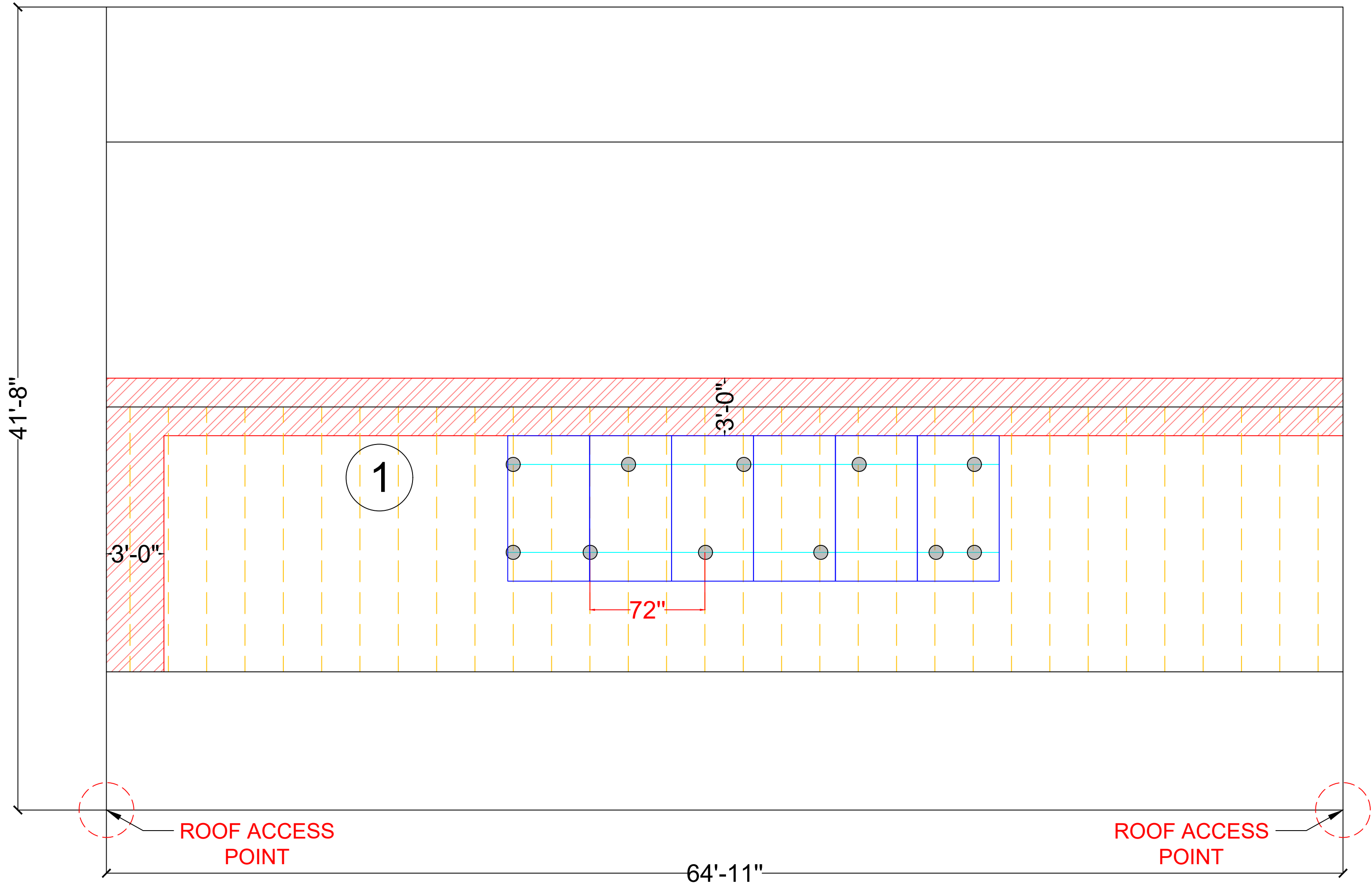
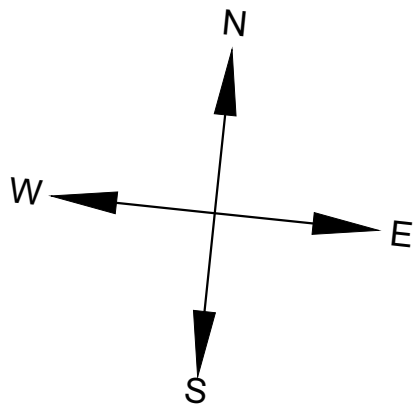
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SHEET NAME:

WIND CALCULATIONS & ARRAY LAYOUT

SHEET NUMBER:

S2



SYSTEM SUMMARY					
ROOF PLANE	NUMBER OF MODULES	ARRAY TILT (DEGREES)	AZIMUTH ANGLE (DEGREES)	ROOF SLOPE	ROOF SLOPE (DEGREES)
1	6	0	174	3:12	14.04

NOTE:

SINCE PHOTOVOLTAIC SYSTEM WILL NOT OCCUPY MORE THAN 33% OF THE ROOF (SEE SHEET S2 FOR CALCULATION), RIDGE SETBACKS SHALL BE PERMITTED TO BE 18" (R324.6.2).

NOTE:

MAX CANTILEVER: 1/3 OF ALLOWABLE SPAN

MAX ALLOWABLE SPAN: 72"

LEGEND

- FIRE SETBACK
- RAILS
- 5V METAL
- ATTACHMENT
- ROOF PLANE #
- 75.1 PSF
33.44 SF
7.822'
- EXISTING MODULE

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DRAWING SCALE:

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SHEET NAME:

ATTACHMENT DETAIL & ARRAY LAYOUT

SHEET NUMBER:

S3

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06/01/2021

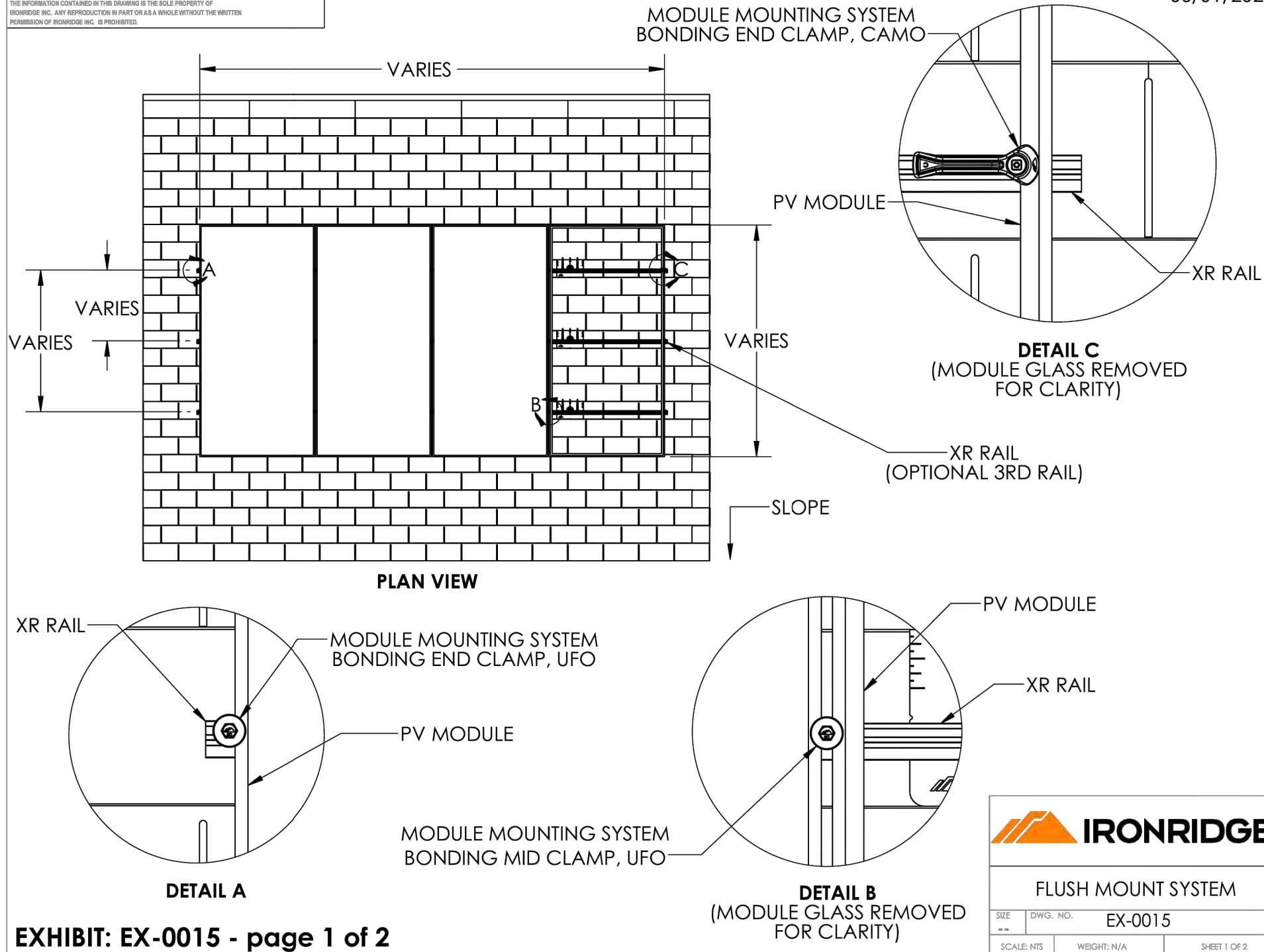
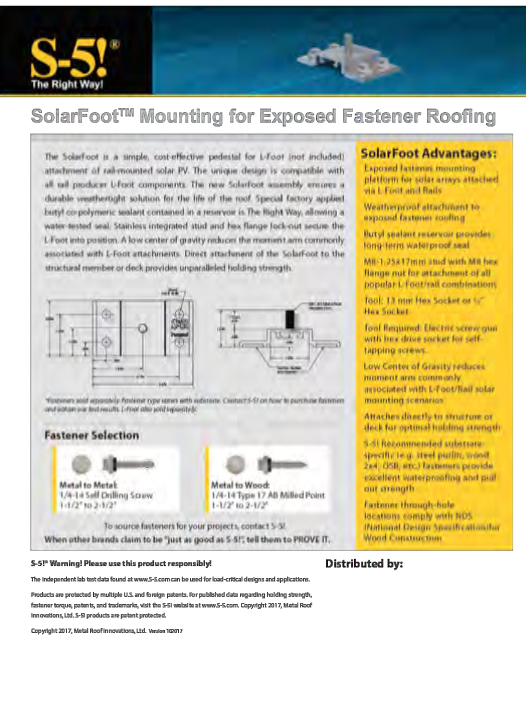
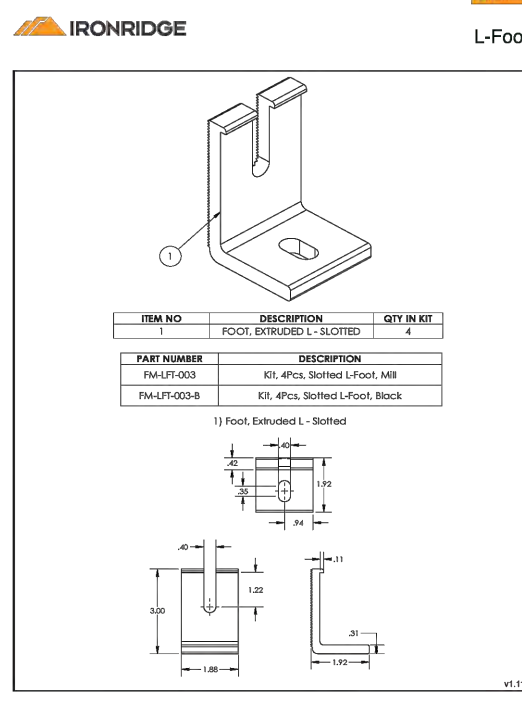
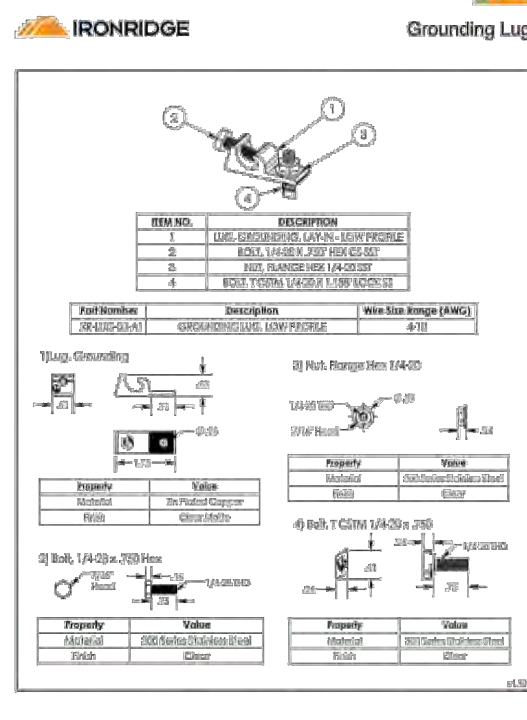
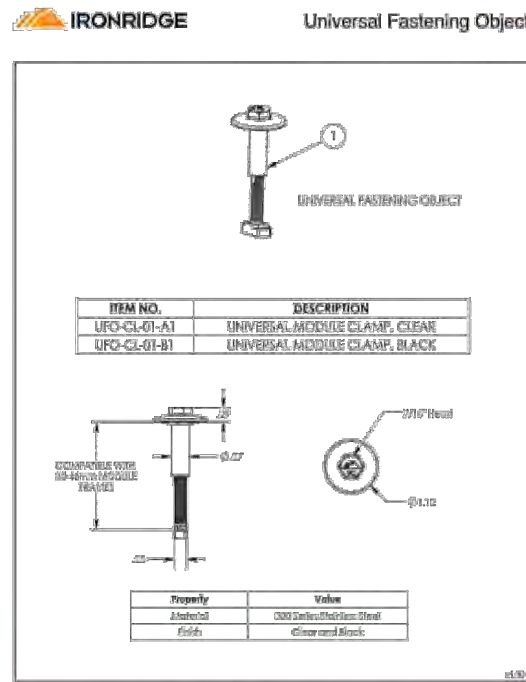
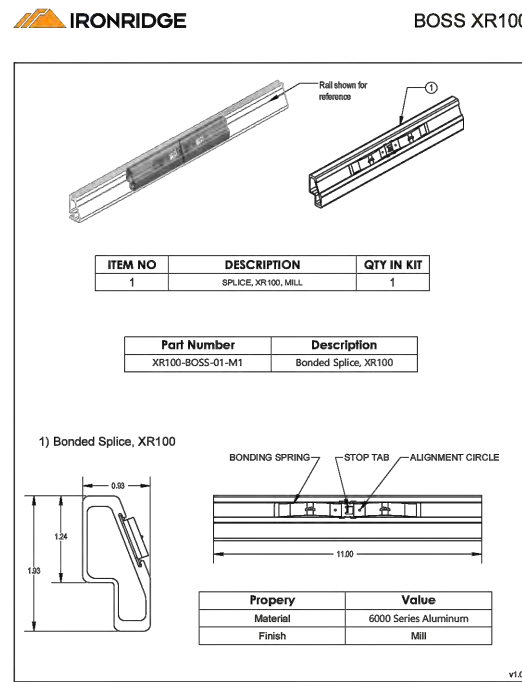
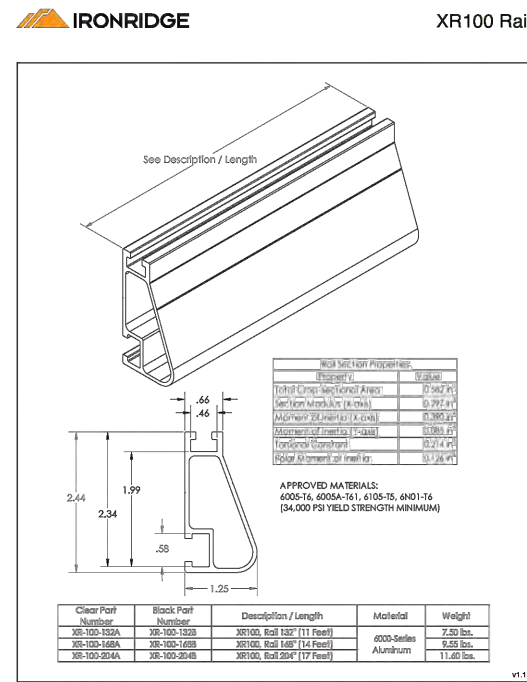


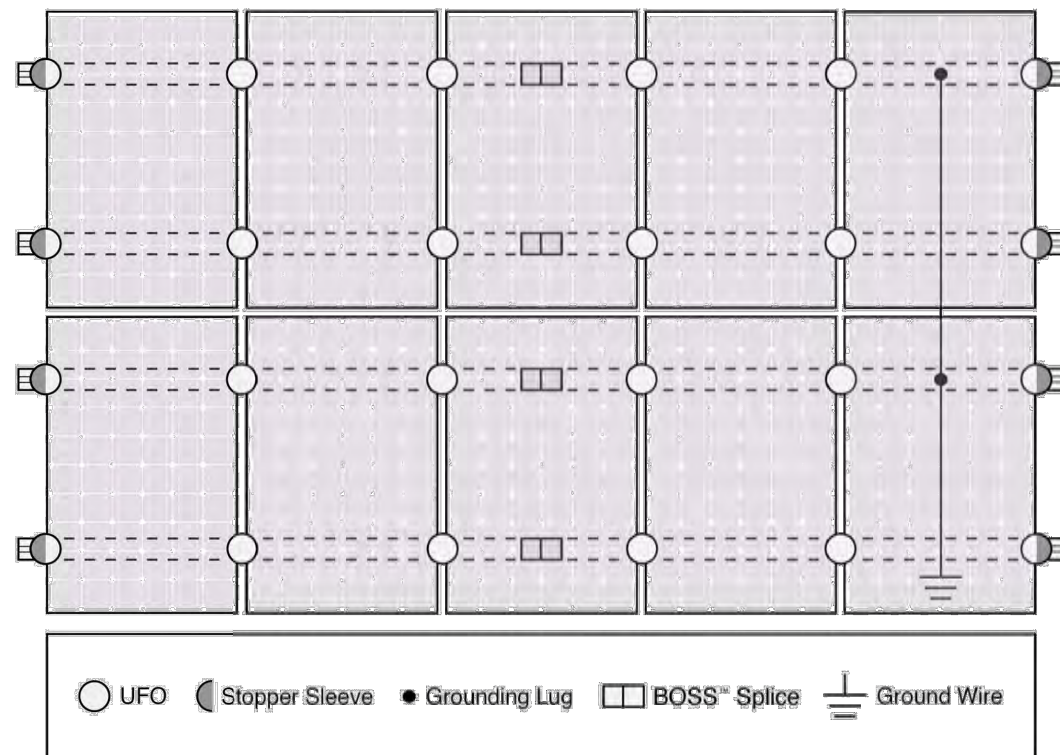
EXHIBIT: EX-0015 - page 1 of 2



GROUNDING

Tech Brief

System Diagram

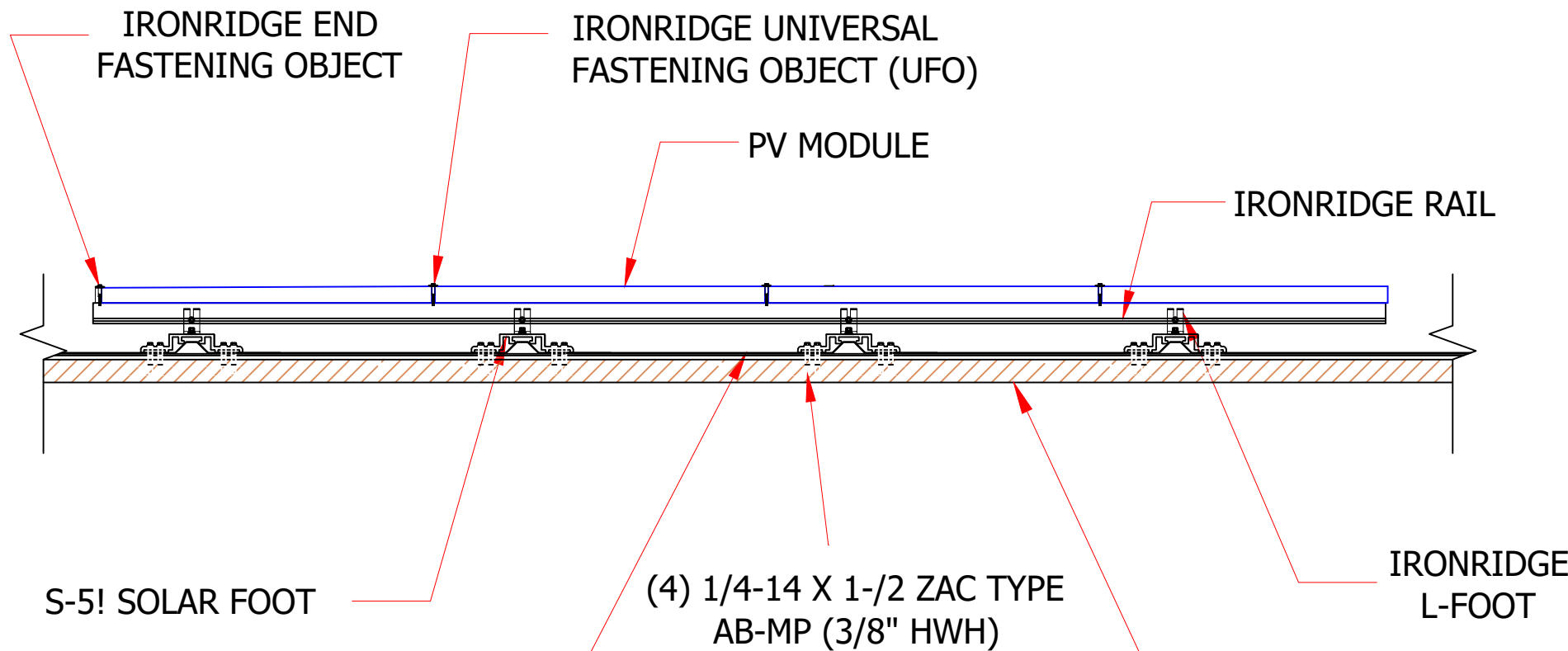


*ONE MODULE GROUNDING LUG OR RAIL GROUNDING LUG IS REQUIRED PER ROW OF A SYSTEM.

A ROW OF MODULES SHALL HAVE TWO RAILS AND ONLY ONE RAIL IS REQUIRED TO HAVE A GROUNDING LUG AS SHOWN IN THE IMAGE ABOVE.

THE UFO FAMILY OF COMPONENTS ELIMINATES THE NEED FOR SEPARATE GROUNDING HARDWARE BY BONDING SOLAR MODULES DIRECTLY TO IRONRIDGE AIR RAILS

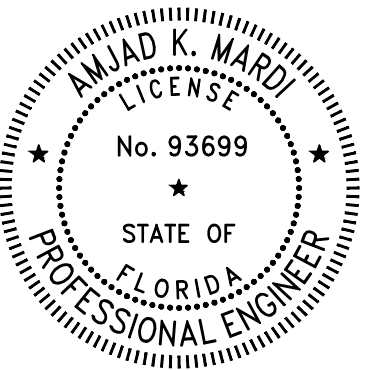
INSTALLATION DETAIL



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REVISION HISTORY	

DRAWING SCALE:

N.T.S.

SHEET NAME:

MOUNTING & FLASHING
DETAIL

SHEET NUMBER:

S4

LEGEND	
N	NEW
E	EXISTING

EXPECTED VOLTAGE PER STRING			
STRING	NUMBER OF MODULES	VOLTAGE (VMP)	VOLTAGE (VOC)
1	6	247.8	294.6
2	12	383.52	470.28
3	12	383.52	470.28

SYSTEM DETAILS			
	NEW SYSTEM	EXISTING SYSTEM	TOTAL
PV Module Type	ZNSHINE-ZXM8-720	QCELL Q.PEAK BLK-G4.1 290W	-
PV Module Quantity	6	24	-
Solar PV DC System Rating (kWdc)	4.32	6.96	11.28
Solar PV AC System Rating (kWac)	3.672	5.916	9.588
Solar Gross Power Rating (KWac)	11.5		
Inverter Type	FRANKLIN APOWER S		-
Inverter Quantity	1		-
Battery Type	FRANKLIN APOWER S		-
Battery Quantity	1		-

NOTE:

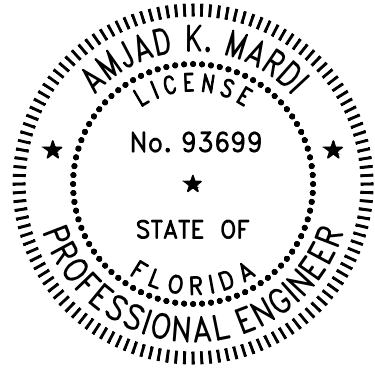
LARGEST SINGLE BACKUP LOAD MUST NOT EXCEED THE POWER AND/OR SURGE CAPACITY OF THE ESS PER NEC 710.15(A)



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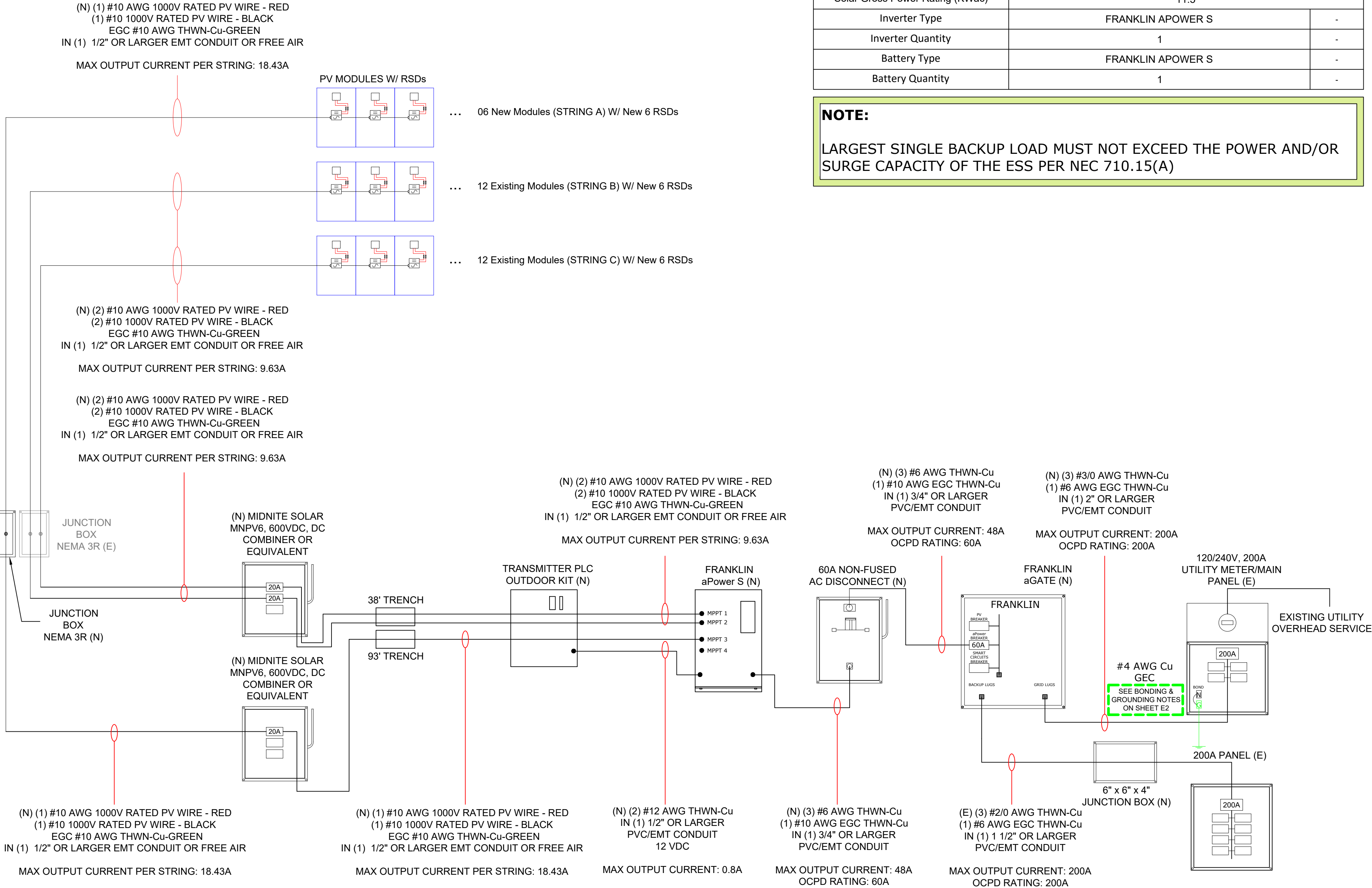
N.T.S.

SHEET NAME:

ELECTRICAL RISER
DIAGRAM

SHEET NUMBER:

E1



EQUIPMENT NOTES:

1. NEW EQUIPMENT CLEARANCES: 36" (FRONT), 30" (WORK AROUND), 6 FT (OH) (NEC 110.26)

2. NEW EQUIPMENT AND COMPONENTS SHALL BE CERTIFIED BY A NATIONAL LABORATORY.

3. LABEL READING, "WARNING: THIS EQUIPMENT FED BY MULTIPLE SOURCES" SHALL BE PROPERLY AFFIXED.

4. EQUIPMENT SHALL BE INSTALLED AND USED ACCORDING TO INSTALLATION MANUAL OR SPECIFICATIONS (NEC 110.3(B)), AND SHALL BE RATED FOR OUTDOOR USE IF INSTALLED OUTSIDE (NEMA 3-6P, TABLE 110.28)

GENERAL NOTES:

1. INSTALLER SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY FOR THE INSTALLATION OF A COMPLETE ELECTRICAL SYSTEM PURSUANT TO THE PLANS IN ACCORDANCE WITH THE FBC, NEC, FHPA, OSHA AND ALL OTHER APPLICABLE CODES AND ORDINANCES.

2. ELECTRICAL WORK AND RESPECTIVE PREPARATION WORK SHALL BE PERFORMED BY PROPERLY LICENSED SUBCONTRACTORS.

3. MATERIALS SHALL BE INCLUDED IN THE PLANS AND ANY NECESSARY EQUIVALENT SUBSTITUTIONS SHALL BE APPROVED BY THE EOR.

4. CONDUCTORS SHALL BE COPPER OF 98% CONDUCTIVITY. CABLES SHALL BE 600V-RATED, SINGLE-CONDUCTOR IN THERMOPLASTIC INSULATION SUITABLE FOR CONTINUOUS OPERATION AT 75° C. CONDUCTORS AND CABLE SHALL BE NEC-CLASS TYPE THW OR THWN, EXCEPT AWG SIZE #10 AND SMALLER MAY BE TW. INSULATION SHALL BE COLOR-CODED #6 AND SMALLER. COLOR-CODED TAPE SHALL BE USED ON #4 AND LARGER.

5. CONDUCTORS SHALL BE RUN IN CONDUIT WHEN NOT BENEATH MODULES. EXPOSED CONDUIT IS PERMITTED IN GARAGES OR OTHER AREAS ACCEPTABLE TO OWNER AND AS APPROVED BY EOR. CONDUIT SHALL BE PAINTED TO MATCH SURFACE AS REQUIRED BY OWNER.

6. FLEXIBLE CONDUIT SHALL BE USED FOR VIBRATING EQUIPMENT AND RECESSED, MOUNTED FIXTURES AND SHALL BE SEALED WITH LIQUID TIGHT IF EXPOSED TO WEATHER WITH GREEN BOND CONDUCTOR INSTALLED TOGETHER AT CIRCUIT CONDUCTORS. GALVANIZED EMT WITH SET-SCREW MAY BE USED FOR INTERIOR LOCATIONS. PVC WITH GREEN BOND CONDUCTOR (NEC 250) MAY BE USED IN UG LOCATIONS.

7. EXISTING AND CONNECTED ELECTRICAL PANELS, CIRCUIT BREAKERS AND SAFETY SWITCH SHALL BE SQUARE D OR EQUIV. LOAD SIDE SOLAR PV-SYSTEM CIRCUIT BREAKERS SHALL BE INSTALLED AT OPPOSITE END OF BUSBAR.

8.

8.1. FOR PIERCING TAPS, THE TOTAL AREA OF ALL CONDUCTORS, SPLICES, AND TAPS INSTALLED AT ANY CROSS SECTION OF THE WIRING SPACE SHALL NOT EXCEED 75 PERCENT OF THE CROSS-SECTIONAL AREA OF THAT SPACE (NEC 312.8.A).

8.2. SERVICE-ENTRANCE CONDUCTORS SHALL BE PERMITTED TO BE SPLICED OR TAPPED IN ACCORDANCE WITH NEC 110.14, 300.5(E), 300.13, AND 300.15 (NEC 230.46).

8.3. TAPPED ENCLOSURE SHALL BE LOCATED IN A READILY ACCESSIBLE LOCATION IN COMPLIANCE WITH NEC 230.70(A)(1).

8.4. AC DISCONNECT SHALL BE READILY ACESIBLE, OUTSIDE AND NO MORE THAN 10 FT FROM TAPPED CONDUCTORS.

8.5. PV AC DISCONNECT SHALL BE SERVICE ENTRANCE RATED (NEC 230.66), LOCKABLE (NEC 110.25) AND SHALL COMPLY WITH NEC 690.13(A-E).

8.6. ALL FUSES SHALL BE (R) RATED AND SHALL HAVE APPROPRIATE REJECTION CLIPS

9. CIRCUIT BREAKER DIRECTORY SHALL BE AFFIXED TO PANEL.

10. HVAC CONDUCTORS, CIRCUIT BREAKERS AD FUSES SHALL BE REPLACED AS NECESSARY TO COMPLY WITH MANUFACTURER'S RECOMMENDED OVER-CURRENT PROTECTION AT NO UP-CHARGE. CONDUIT AND BREAKERS SHALL BE COORDINATED WITH THE EQPT. NAMEPLATE. OTHER CIRCUITS PULLING 208-240V SHALL BE INSPECTED FOR COMPLIANCE WITH CONDUCTOR AND OVER-CURRENT PROTECTION REQUIREMENTS. REPLACEMENT SHALL BE THE RESPONSIBILITY OF THE OWNER AND PERFORMED BEFORE CONTRACTOR PERFORMS INITIAL SYSTEM TESTING.

CONDUIT NOTES:

PVC SCH 40 OR SCH 80 MAY BE USED AS REQUIRED FOR ADDITIONAL SAFETY OR FOR RUNS ≤ 3 FT WITH UPSIZE ACCORDING TO FILL TABLE.

ELECTRICAL METALLIC TUBING (EMT) NEC Art. 358:

1. EMT SHALL BE FASTENED EVERY 10 FT & FROM BOX, FITTING, TERMINAL POINT.

2. BENDS BETWEEN PULL POINTS SHALL COMBINE ≤ 360°.

3. CONNECTORS SHALL BE CORROSION RESISTANT.

4. GASKETS SHALL BE WATERTIGHT.

5. COUPLINGS AND CONNECTORS SHALL BE RAIN-TIGHT OR RAIN-TIGHT/INSULATED.

NEC FILL TABLES

RIGID PVC CONDUIT TABLE: SCHEDULE 80 - C10 / 40 - C11

FLEXIBLE METALLIC CONDUIT - TABLE C3

LIQUIDTIGHT FLEXIBLE CONDUIT TABLE- METALLIC C7 / NON-METALLIC (FNMC-B) - C5

ELECTRICIAN NOTES:

1. CONFIRM GROUND CONDUCTOR TO ELECTRODE

2. CONFIRM BUSBAR RATINGS & FEEDERS. IF ACTUAL CONDITIONS DIFFER, NOTIFY EOR.

3. CONDUCTORS MAY BE COMBINED USING RATED JUNCTIONS BOXES/CONDUIT UP-SIZE.

EXPANSION NOTE: FITTINGS SHALL BE INSTALLED BETWEEN SECURELY-MOUNTED ELBOWS AND TERMINATION POINTS (NOT INCL. WYES). IF JOINT IS VERTICAL, OPEN-END SHALL BE SECURELY FASTENED IN DOWN POSITION W/ COUPLING INSTALLED CLOSE TO TOP OF RUN W/ BARREL ALSO DOWN AND LOWER END SECURED AT BOTTOM TO ALLOW UPWARD MOVEMENT. (SEC. 352.44 NEC)

BONDING & GROUNDING NOTE:

1. MODULES SHALL BE BONDED BY BONDING MID-CLAMPS ACCORDING TO INSTALLATION MANUAL. MODULES WHICH CAN NOT BE FULLY BONDED SHALL BE PROPERLY GROUND USING GROUNDING LUG WIRED DIRECTLY TO SYSTEM GROUND WIRE. ALTERNATIVES REQUIRE A CUSTOMIZED PLAN FROM EOR.

2. (2) ROD AND PIPE ELECTRODES REQUIRED. ROD AND PIPE ELECTRODES SHALL NOT BE LESS THAN 2.44 M (8 FT) IN LENGTH AND SHALL CONSIST OF THE FOLLOWING MATERIALS: COPPER, GALVANIZED STEEL, STAINLESS STEEL.

3. GROUNDING ELECTRODES OF PIPE OR CONDUIT SHALL NOT BE SMALLER THAN METRIC DESIGNATOR 21 (TRADE SIZE 3/4) AND, WHERE OF STEEL, SHALL HAVE THE OUTER SURFACE GALVANIZED OR OTHERWISE METAL-COATED FOR CORROSION PROTECTION.

4. ROD-TYPE GROUNDING ELECTRODES OF STAINLESS STEEL AND COPPER OR ZINC-COATED STEEL SHALL BE AT LEAST 15.87 MM (5/8 IN.) IN DIAMETER, UNLESS LISTED. (2020 NEC)

5. THE METAL WATER PIPING SYSTEM SHALL BE BONDED AS REQUIRED PER NEC 250.104

6. INTERSYSTEM BONDING REQUIRED PER NEC 250.94

SMOKE ALARM NOTES:

INTERCONNECTED SMOKE ALARMS SHALL BE INSTALLED THROUGHOUT THE DWELLING, INCLUDING IN ROOMS, ATTACHED GARAGES, AND AREAS IN WHICH ESS ARE INSTALLED IN COMPLIANCE WITH LOCAL BUILDING CODE. WHERE ESS ARE INSTALLED IN AN ATTACHED GARAGE OR AREA IN WHICH SMOKE ALARMS CANNOT BE INSTALLED IN ACCORDANCE WITH THEIR LISTING, AN INTERCONNECTED LISTED HEAT ALARM SHALL BE INSTALLED AND BE CONNECTED TO THE SMOKE ALARM SYSTEM REQUIRED BY THE LOCAL BUILDING CODE PER NFPA 855 EDITION 2020 15.9.2.

ESS NOTES:

ESS SHALL BE PROTECTED FROM IMPACT FROM VEHICLE DAMAGE PER NFPA 855 EDITION 2020 15.10.

Surge Protection Notes:

WHERE SERVICE EQUIPMENT IS REPLACED, A SURGE PROTECTION DEVICE SHALL BE INSTALLED IN ACCORDANCE WITH NEC 230.67 & 242.12

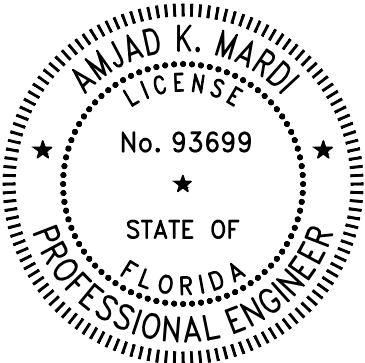
Temperature Adjusted Conductor Ampacity - Assuming 45 °C						
Conductor Size (AWG)	Ampacity at 75 °C	Temp. Adjusted Ampacity (0.82 Adjustment Factor at 45 °C)	Temp. Adjusted Ampacity (4-6 Current-Carrying Conductors - 0.80 Adjustment Factor)	Ampacity at 90 °C	Temp. Adjusted Ampacity (0.87 Adjustment Factor at 45 °C)	Temp. Adjusted Ampacity (4-6 Current-Carrying Conductors - 0.80 Adjustment Factor)
14	20	16.4	13.12	25	21.75	17.4
12	25	20.5	16.4	30	26.1	20.88
10	35	28.7	22.96	40	34.8	27.90
8	50	41	32.8	55	47.9	38.3
6	65	53.3	42.64	75	65.3	52.2
4	85	69.7	55.76	95	82.7	66.2
3	100	82	65.6	110	95.7	76.6
2	115	94.3	75.44	130	113.1	90.5
1	130	106.6	85.28	150	130.5	104.4
1/0	150	123	98.4	170	147.9	118.3
2/0	175	143.5	114.8	195	169.7	135.8
3/0	200	164	131.2	225	195.8	156.6
4/0	230	188.6	150.88	260	226.2	181.0
Site Condition Assumptions						
Interconnection Frequency			60 Hz			
Voltage - Line 1 to Neutral			120 V			
Voltage - Line 2 to Neutral			120 V			
Voltage Line 1 to Line 2			240 V			
Environmental Assumptions						
Minimum Annual Temperature			10 °C			
Maximum Annual Temperature			45 °C			
PV Module Specifications						
Manufacturer			ZNSHINE			
Model Number			ZXM8-720			
Temperature Coefficient - Voltage			-0.25% / oC			
Temperature Coefficient - Current			0.046% / oC			
Temperature Coefficient - Power			-0.3% / oC			
Specifications at STC						
Maximum Power - Pmp			720 W			
Maximum Power Voltage - Vmp			41.3 V			
Maximum Power Current - Imp			17.44 A			
Open Circuit Voltage - Voc			48.9 V			
Short Circuit Current - Isc			18.43 A			
Temperature Adjusted						
Vmp Min			39.24 V			
Voc Max			50.73 V			
Inverter Specifications						
Manufacturer			FRANKLIN			
Model Number			APRS-10K15V1-US			
MPPT Voltage Range			90-480 V			
Operating Voltage Range			60-600 V			
Maximum Input Voltage			600 V			
Max Continuous AC Output Power			11500 VA			
Max Continuous AC Output Current			48 A			
Conduit Fill Calculations for Raceways Containing More than 3 Current-Carrying Conductors						
Current-Carrying Conductor Sizes (AWG)			#10			
Conductor Cross Sectional Area (in2)			0.02036			
Number of Current-Carrying Conductors			4			
Total Cross Sectional Area of Conductors (in2)			0.081433223			
Total Conduit Size (in)			0.5			
Total Cross Area of Conduit (in2)			0.285			
Conduit Fill Percentage (%)			28.57			
Max Voltage Drop Percentage Calculation (%)						
From Rooftop Junction Box to Inverter Conductor Size (AWG)			#10			
Max String OCPD Rating (Amps)			20			
From Inverter to ACD & ACD to Point of Interconnection (AWG)			#6			
Max PV OCPD Rating (Amps)			60			
Max Circuit Distance (ft)			110			
Voltage Drop Percentage From Rooftop Junction Box to Inverter (%)			1.71			
Voltage Drop Percentage From Inverter to ACD & ACD to Point of Interconnection (%)			0.66			



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[\(772\) 643-3340](tel:7726433340)



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PROJECT NAME:

PATRICIA HALEY
RESIDENCE

PROJECT ADDRESS:

7115 SW Herlong St
Fort White, FL 32038

Date:	SEE P.E. STAMP
Designed By:	SST
Reviewed by:	AKM
REVISION HISTORY	

DRAWING SCALE:

N.T.S.

SHEET NAME:

ELECTRICAL NOTES &
EQUIPMENT SPECIFICATIONS

SHEET NUMBER:

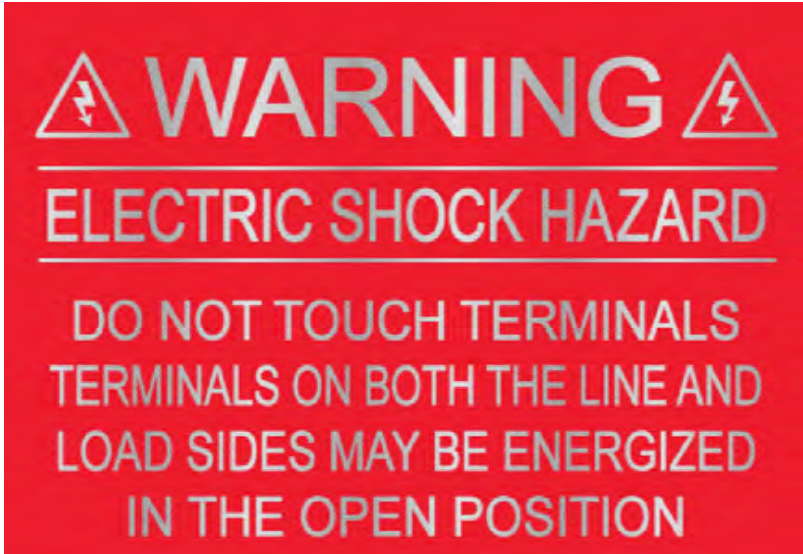
E2



NEC 690.13(B) label is required at each PV system disconnecting means. This will include combiner boxes, AC/DC switches & AC Disconnects.



NEC 690.31(D)(2) label is required at all areas where PV system conductors are enclosed including junction boxes, raceways, conduit bodies, pull boxes, etc.



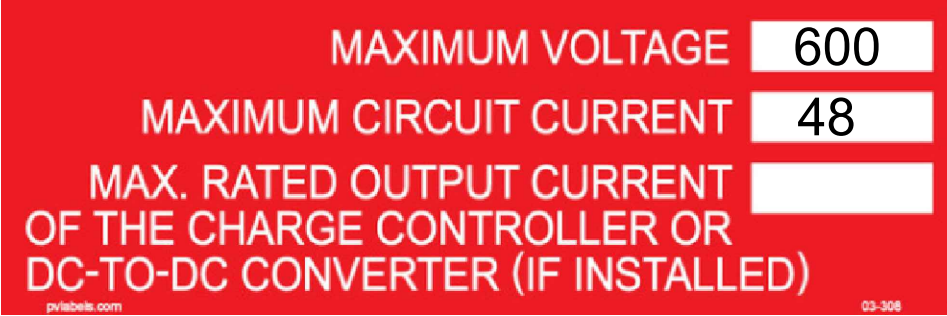
NEC 690.13(B) label is an optional addition to the previous label on systems where the line and load sides of the disconnect may be energized. This label is not required but “shall be permitted” by the NEC.



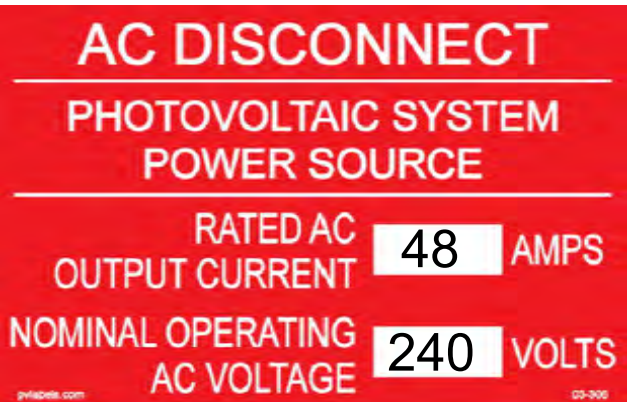
NEC 690.56(C)(2) label is required at the rapid shut down switch for the system. Typically, that is going to be the AC disconnect.



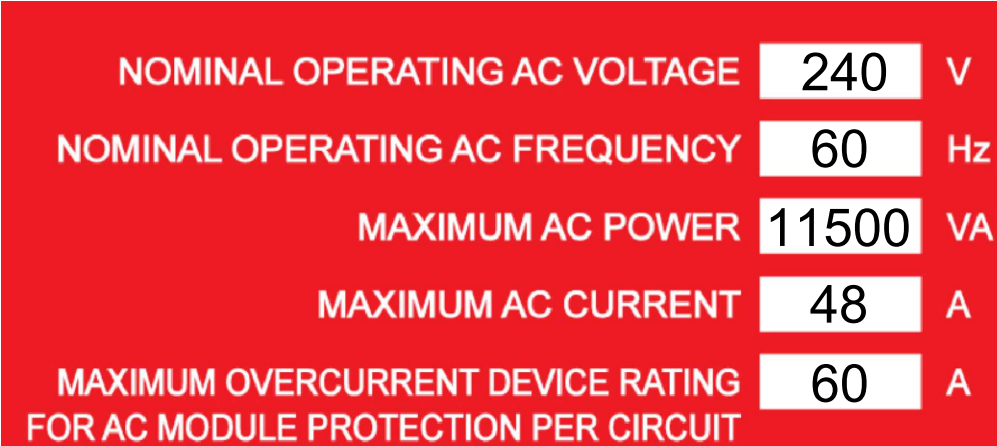
NEC 705.12 (B)(3)(2) label is required at the AC disconnecting means



NEC 690.54 label is required at the point of interconnection disconnecting means, i.e. the AC disconnect.



NEC 690.54 label is required at the AC disconnecting means



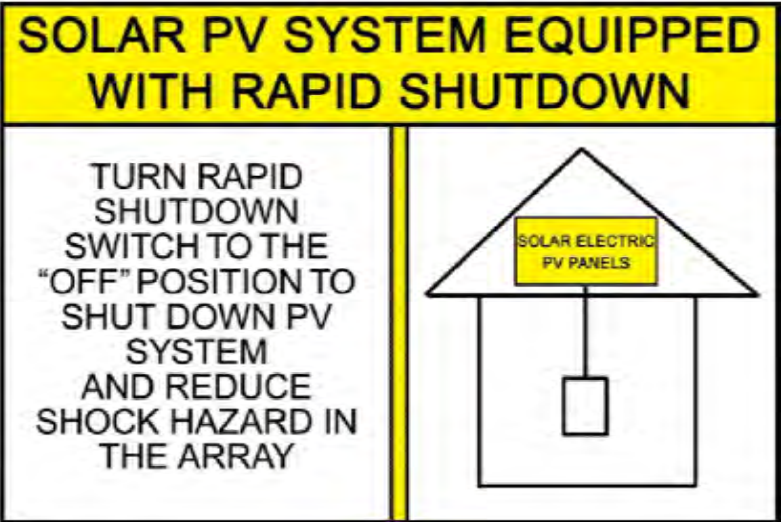
NEC 690.54 label is required at the AC disconnecting means



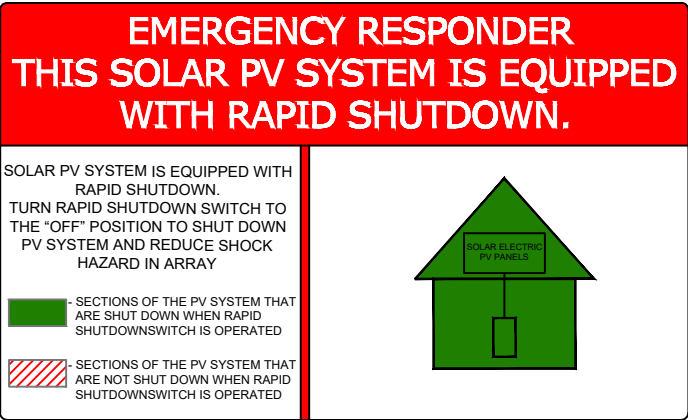
NEC 690.56(B) or NEC 705.10 label is required at every power source disconnecting means denoting location(s) of other power source(s) disconnecting means.



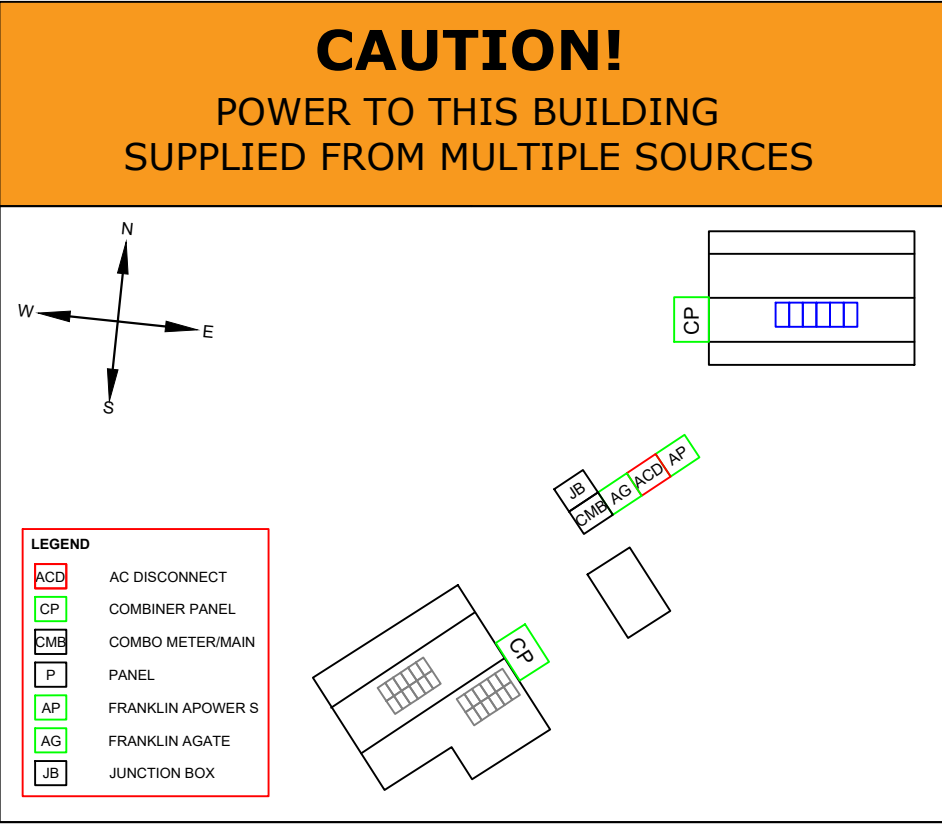
NEC 705.12(C) label is required at the main service equipment.



NEC 690.56(C) label is required at the service disconnecting means of the property.



NFPA 1.11.12.2.1.1 LABEL IS REQUIRED AT AC DISCONNECTING MEANS



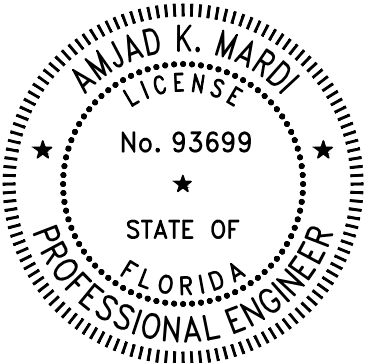
705.10 LABEL LOCATION:
MAIN SERVICE DISCONNECT / MAIN DISTRIBUTION PANEL,
PV DISCONNECT LOCATED NO MORE THAN 3FT (1M)
FROM THE SERVICE DISCONNECT
(TEXT HEIGHT SHOULD BE A MINIMUM OF 3/8")



NFPA - 1, 11.12.2.1.5:
THIS LABEL IS REQUIRED AT MAIN DISCONNECT



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PATRICIA HALEY RESIDENCE

PROJECT ADDRESS:
7115 SW Herlong St
Fort White, FL 32038

Date:	SEE P.E. STAMP
Designed By:	SST
Reviewed by:	AKM
REVISION HISTORY	

DRAWING SCALE:
N.T.S.

SHEET NAME:
SOLAR PV LABELS

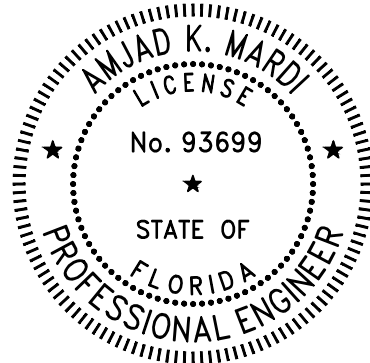
SHEET NUMBER:
E3

ELECTRICAL EQUIPMENT ELEVATION

- NOTE:**
- THE FRANKLIN APOWER S (11.5 kW, P/N APRS-10K15V1-US) IS UL 1741 LISTED. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE FRANKLIN APOWER S INVERTER INSTALLATION MANUAL AND ALL APPLICABLE STATE AND LOCAL BUILDING, FIRE, AND ELECTRICAL CODES.
 - MOUNT THE INVERTER ON A VERTICAL STRUCTURE CAPABLE OF SUPPORTING THE FULL WEIGHT OF THE UNIT, PROVIDING A MINIMUM LATERAL WALL SPACE OF 6 IN. (152.4 mm).
 - MAINTAIN THE FOLLOWING MINIMUM CLEARANCES FOR AIRFLOW PER THE INSTALLATION MANUAL: 4 IN. (101.6 mm) AT LEFT SIDE (AIR INTAKE), 4 IN. (101.6 mm) AT RIGHT SIDE (AIR EXHAUST), AND 6 IN. (152.4 mm) ABOVE THE INVERTER.
 - MAINTAIN A 3-FOOT (36 IN.) WORKING CLEARANCE IN FRONT OF ALL ELECTRICAL EQUIPMENT PER NEC 110.26.

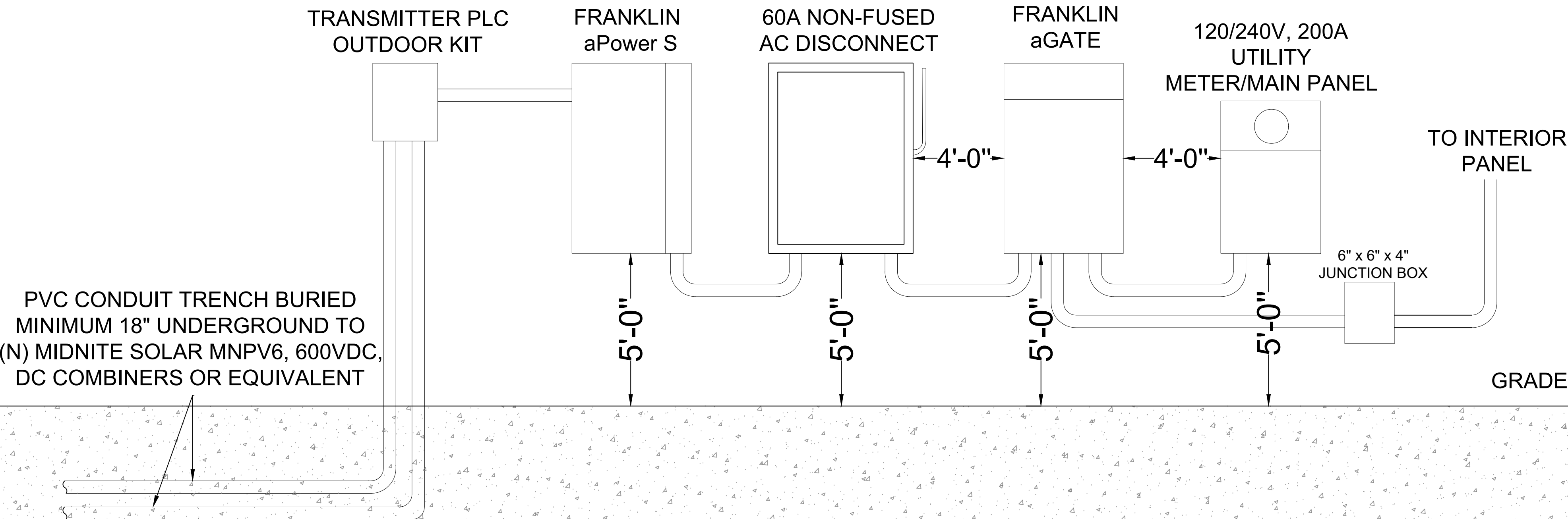


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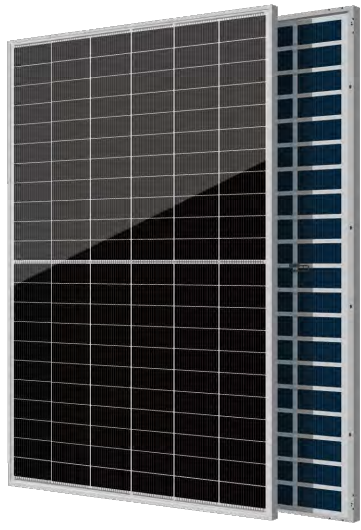
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Fort White, FL 32038

Date:	SEE P.E. STAMP
Designed By:	SST
Reviewed by:	AKM
REVISION HISTORY	

DRAWING SCALE:
N.T.S.

SHEET NAME:
ELECTRICAL ELEVATION
DRAWINGS

SHEET NUMBER:
E4

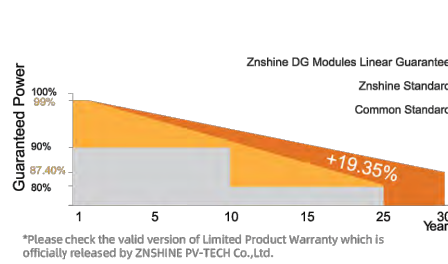


ZXM8-GPLDD132 Series

18BB HALF-CELL N-Type TOPCon Bifacial Double Glass
Monocrystalline PV Module

695-730W **23.50%** **0.40%**
POWER RANGE MAXIMUM EFFICIENCY YEARLY DEGRADATION

12 YEARS PRODUCT WARRANTY **30 YEARS OUTPUT GUARANTEE**



IEC 61215/IEC 61730/IEC 61701/IEC 62716/UL6 1730
ISO 14001: Environmental Management System
ISO 9001: Quality Management System
ISO45001: Occupational Health and Safety Management System

*As there are different certification requirements in different markets please contact your local znshine sales representative for the specific certificates applicable to the products in the region in which the products are to be used.

KEY FEATURES



Excellent Cells Efficiency

MBB technology reduce the distance between busbars and finger grid line which is benefit to power increase.



Anti PID

Ensured PID resistance through the quality control of cell manufacturing process and raw materials.



TIER 1

Global,Tier 1 bankable brand,with independently certified advanced automated manufacturing.



Bifacial Technology

Up to 25% additional power gain from back side depending on albedo.



Better Weak Illumination Response

More power output in weak light condition, such as haze, cloudy, and early morning.



Adapt To Harsh Outdoor Environment

Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity environment.



Excellent Quality Management System

Warranted reliability and stringent quality assurances well beyond certified requirements.

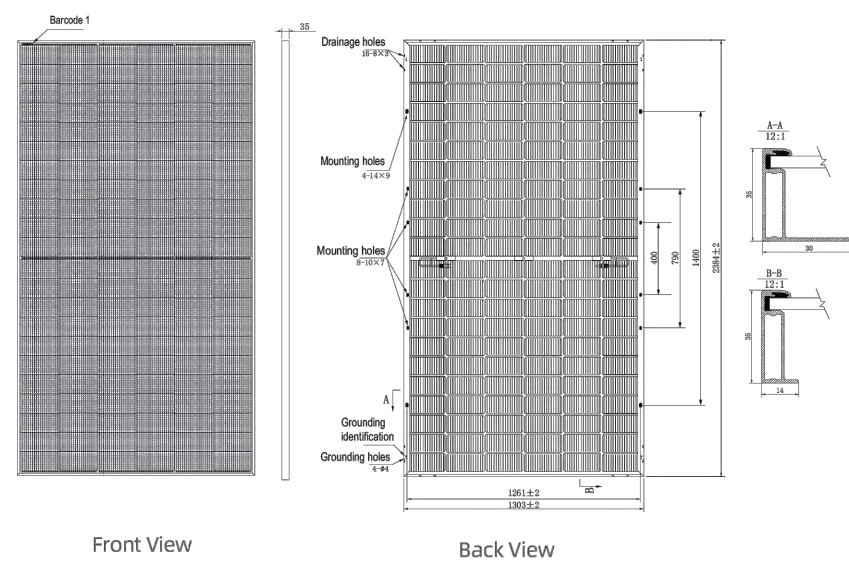
Founded in 1988, ZnShine solar is a world's leading high-tech PV module manufacturer. With the advanced production lines, the company boasts module capacity of 10 GW. Bloomberg has listed ZnShine as a global Tier 1 PV module maker. Today Znshine has distributed its sales to more than 60 countries around the globe.

www.znshinesolar.com

ZXM8-GPLDD132 Series 18BB HALF-CELL N-Type TOPCon Bifacial Double Glass
Monocrystalline PV Module

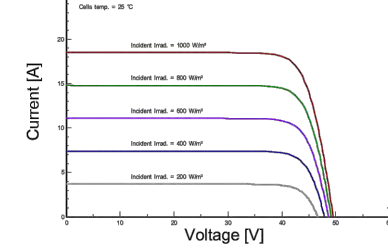


DIMENSIONS OF PV MODULE(mm)

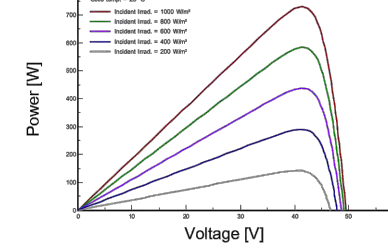


*Remark: customized frame color and cable length available upon request

I-V CURVES OF PV MODULE(730W)



P-V CURVES OF PV MODULE(730W)



ELECTRICAL CHARACTERISTICS | STC*

Nominal Power Watt Pmax(W)*	695	700	705	710	715	720	725	730
Maximum Power Voltage Vmp(V)	40.30	40.50	40.70	40.90	41.10	41.30	41.50	41.70
Maximum Power Current Imp(A)	17.25	17.29	17.33	17.37	17.40	17.44	17.47	17.51
Open Circuit Voltage Voc(V)	48.10	48.30	48.50	48.70	48.90	49.10	49.30	49.50
Short Circuit Current Isc(A)	18.23	18.27	18.31	18.35	18.39	18.43	18.47	18.51
Module Efficiency (%)	22.37	22.53	22.70	22.86	23.02	23.18	23.34	23.50

*The data above is for reference only and the actual data is in accordance with the practical testing
*STC (Standard Test Condition): Irradiance 1000W/m², Module Temperature 25±2°C, AM 1.5
*Measuring uncertainty: ±3%, all the electrical characteristics such as Power, Im, Vm and FF are within ±3% tolerance.

MECHANICAL DATA

Solar cells	N-Type Monocrystalline
Cells orientation	132 (6×22)
Module dimension	2384×1303×35 mm (With Frame)
Weight	38.5±1.0 kg
Glass	2.0 mm+2.0mm, High Transmission, AR Coated Heat Strengthened Glass
Junction box	IP 68, 3 diodes
Cables	4 mm ² , 750 mm(With Connectors)
Connectors*	MC4-EVO2

*Please refer to regional datasheet for specified connector

ELECTRICAL CHARACTERISTICS | NMOT*

Maximum Power Pmax(Wp)	527.80	531.50	533.50	537.30	542.60	546.40	550.00	553.80
Maximum Power Voltage Vmp(V)	37.80	38.00	38.20	38.40	38.60	38.80	39.00	39.20
Maximum Power Current Imp(A)	13.97	14.00	14.04	14.07	14.10	14.13	14.16	14.19
Open Circuit Voltage Voc(V)	45.50	45.70	45.80	45.90	46.00	46.10	46.20	46.30
Short Circuit Current Isc(A)	14.70	14.74	14.78	14.81	14.83	14.87	14.90	14.93

*NMOT: Irradiance 800W/m², Ambient Temperature 20°C, AM 1.5, Wind Speed 1m/s

TEMPERATURE RATINGS

NMOT	43°C ±2°C	Maximum system voltage	1500 V DC
Temperature coefficient of Pmax	-0.30±0.03%/°C	Operating temperature	-40°C~+85°C
Temperature coefficient of Voc	-0.25%/°C	Maximum series fuse	35 A
Temperature coefficient of Isc	0.046%/°C	Front Side Maximum Static Loading	Up to 5400Pa
Refer. Bifacial Factor	(80±10)%	Rear Side Maximum Static Loading	Up to 2400Pa

*Remark: Do not connect Fuse in Combiner Box with two or more strings in parallel connection

ELECTRICAL CHARACTERISTICS (REAR POWER GAIN)

Maximum Power: Pmax(W)	730	735	740	746	751	756	761	767
Module Efficiency(%)	23.49	23.66	23.83	24.00	24.17	24.34	24.51	24.68
Maximum Power: Pmax(W)	799	805	811	817	822	828	834	840
Module Efficiency(%)	25.73	25.91	26.10	26.28	26.47	26.66	26.84	27.03
Maximum Power: Pmax(W)	869	875	881	888	894	900	906	913
Module Efficiency(%)	27.97	28.17	28.37	28.57	28.77	28.97	29.17	29.38

PACKAGING CONFIGURATION*

Piece/Box	31
Piece/Container(40'HQ)	558

*Customized packaging is available upon request.
*Remark: Electrical data in the catalog do not refer to a single module and they are not part of the offer.
They only serve for comparison among different module types.
*Caution: Please be kindly advised that PV modules should be handled and installed by qualified people who have professional skills and please carefully read the safety and installation instructions before using our PV modules.

Address: No. 229 Tongda Avenue Suqian Economic and Technological Development Zone 223800 Suqian City, Jiangsu P.R. China
Tel: +86 519 6822 0233 E-mail: info@znshinesolar.com
Note: Specifications included in this datasheet are subject to change without notice. ZNSHINE reserves the right of final interpretation © ZNSHINE SOLAR 2024 | Version: ZXM8-GPLDD132 2404.E
No special undertaking or warranty for the suitability of special purpose or being installed in extraordinary surroundings is granted unless as otherwise specifically committed by manufacturer in contract document

Module Mounting Instructions

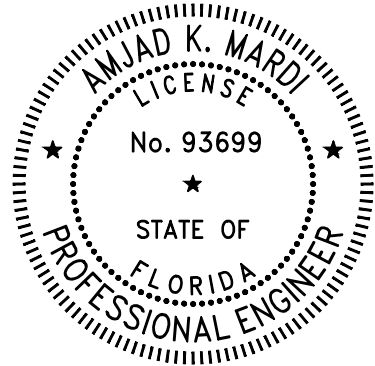
Module 组件	Test Load 测试载荷	Mounting Direction 安装图
组件长度 ≤ 2500mm 组件B面高度 ≥ 30mm Lengths ≤ 2500mm B side height ≥ 30mm	背面载荷 ≤ 2400Pa 正面载荷 ≤ 5400Pa Uplift load ≤ 2400Pa Down force load ≤ 5400Pa	L ≤ 1900mm : A=1/4L ± 50mm; C=10 ± 2mm 1900 < Length ≤ 2500mm : 1/5L ≤ A ≤ 1/4L L=Module length 1. The crossbeam is perpendicular to the long side. 横梁与长边垂直 2. The above described distance is from the module edge to the middle of the clamp. Clamps length ≥ 60mm. 所述距离为组件边缘到夹具中心的距离。夹具长度 ≥ 60mm 3. Need two support rails below the PV module to make sure the Mechanical load. 组件下面需要两个支撑轨，以确保机械载荷。



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Date:	SEE P.E. STAMP
Designed By:	SST
Reviewed by:	AKM
REVISION HISTORY	

DRAWING SCALE:

N.T.S.

SHEET NAME:

NEW SOLAR MODULE
SPECIFICATIONS

SHEET NUMBER:

APP.1



With its top performance and completely black design the new **Q. PEAK BLK-G4.1** is the ideal solution for all residential rooftop applications thanks to its innovative cell technology **Q.ANTUM**. The world-record cell design was developed to achieve the best performance under real conditions – even with low radiation intensity and on clear, hot summer days.

-
- LOW ELECTRICITY GENERATION COSTS**
Higher yield per surface area and lower BOS costs thanks to higher power classes and an efficiency rate of up to 18.3 %.
-
- INNOVATIVE ALL-WEATHER TECHNOLOGY**
Optimal yields, whatever the weather with excellent low-light and temperature behavior.
-
- ENDURING HIGH PERFORMANCE**
Long-term yield security with Anti-PID Technology¹, Hot-Spot-Protect and Traceable Quality Tra.Q™.
-
- EXTREME WEATHER RATING**
High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa) regarding IEC.
-
- MAXIMUM COST REDUCTIONS**
Up to 10 % lower logistics costs due to higher module capacity per box.
-
- A RELIABLE INVESTMENT**
Inclusive 12-year product warranty and 25-year linear performance guarantee².

THE IDEAL SOLUTION FOR:

Rooftop arrays on residential buildings

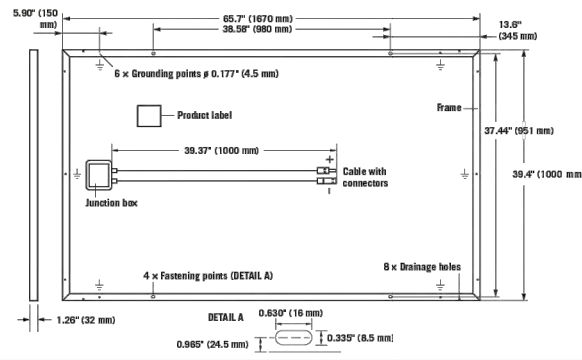
Engineered in **Germany**



¹ APT test conditions: Cells at -1500V against grounded, with conductive metal foil covered module surface, 25 °C, 168h
² See data sheet on rear for further information.

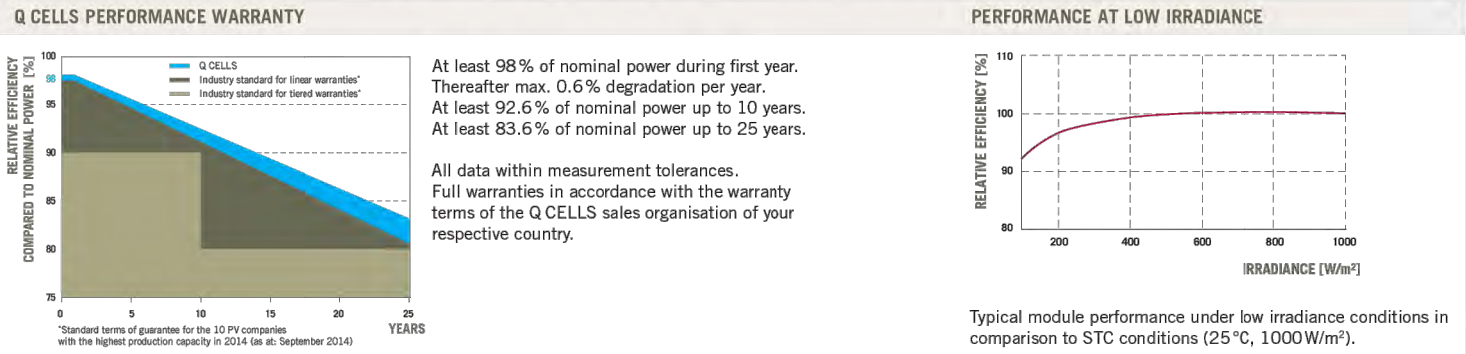


MECHANICAL SPECIFICATION	
Format	65.7 in x 39.4 in x 1.26 in (including frame) (1670 mm x 1000 mm x 32 mm)
Weight	41.45 lbs (18.8 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 x 10 monocrystalline Q.ANTUM solar cells
Junction box	2.60-3.03 in x 4.37-5.54 in x 0.59-0.75 in (66-77 mm x 111-90 mm x 15-19 mm), Protection class IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 39.37 in (1000 mm), (-) ≥ 39.37 in (1000 mm)
Connector	Multi-Contact MC4 or MC4 intermateable, IP68



ELECTRICAL CHARACTERISTICS										
POWER CLASS			290		295		300			
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5 W / -3 W)										
Minimum	Power at MPP ²		P _{MPP} [W]		290		295		300	
	Short Circuit Current [*]		I _{SC} [A]		9.63		9.70		9.77	
	Open Circuit Voltage [*]		V _{OC} [V]		39.19		39.48		39.76	
	Current at MPP [*]		I _{MPP} [A]		9.07		9.17		9.26	
	Voltage at MPP [*]		V _{MPP} [V]		31.96		32.19		32.41	
	Efficiency ³		η [%]		≥ 17.4		≥ 17.7		≥ 18.0	
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NOC ²										
Minimum	Power at MPP ²		P _{MPP} [W]		214.4		218.1		221.8	
	Short Circuit Current [*]		I _{SC} [A]		7.77		7.82		7.88	
	Open Circuit Voltage [*]		V _{OC} [V]		36.65		36.92		37.19	
	Current at MPP [*]		I _{MPP} [A]		7.12		7.20		7.27	
	Voltage at MPP [*]		V _{MPP} [V]		30.12		30.30		30.49	

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



TEMPERATURE COEFFICIENTS							
Temperature Coefficient of I_{sc}	α	[%/K]	+0.04	Temperature Coefficient of V_{oc}	β	[%/K]	-0.28
Temperature Coefficient of P_{MPP}	γ	[%/K]	-0.39	Normal Operating Cell Temperature	NOCT	[°F]	113 ± 5.4 (45 ± 3 °C)

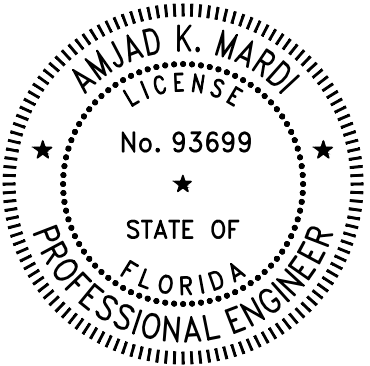
PROPERTIES FOR SYSTEM DESIGN				
Maximum System Voltage V _{sys}	[V]	1000 (IEC) / 1000 (UL)	Safety Class	II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating	C (IEC) / TYPE 1 (UL)
Design load, push (UL) ²	[lbs/ft ²]	75 (3600 Pa)	Permitted module temperature on continuous duty	-40°F up to +185°F (-40°C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

QUALIFICATIONS AND CERTIFICATES	PACKAGING INFORMATION
UL 1703; VDE Quality Tested; CE-compliant; IEC 61215 (Ed.2); IEC 61730 (Ed.1) application class A	Number of Modules per Pallet 32
	Number of Pallets per 53' Container 30
	Number of Pallets per 40' Container 26
	Pallet Dimensions (L x W x H) 68.7 in x 45.3 in x 46.1 in (1745 mm x 1150 mm x 1170 mm)
	Pallet Weight 1435 lbs (651 kg)

NOTE: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.
Hanwha Q CELLS America Inc.
300 Spectrum Center Drive, Suite 1250, Irvine, CA 92618, USA | TEL +1 949 748 59 96 | EMAIL inquiry@us.q-cells.com | WEB www.q-cells.us



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Designed By:	SST
Reviewed by:	AKM
REVISION HISTORY	

DRAWING SCALE:

N.T.S.

SHEET NAME:

EXISTING SOLAR MODULE
SPECIFICATIONS

SHEET NUMBER:

APP.2

FRANKLINWH

aPower S

Complete solar and battery system

The aPower S is a battery storage device with integrated inverters to support a direct connection to solar (PV) panels. The front wiring design makes installation easier and more efficient.

The aPower S also supports parallel AC-coupled connection with FranklinWH aPower 2 batteries to expand power and capacity for homes at the same time. It can be flexibly deployed according to customer requirements. Excellent load adaptability provides the best backup experience to users.

aPower S has a 15 kWh capacity, which can provide whole home backup with a single battery. It provides a 60 MWh throughput or 15-year warranty, helping users to easily achieve reliable energy independence and freedom over the long term.



- ✓ Four built-in MPPTs
- ✓ 15 A per MPPT
- ✓ RTE 90.5%
- ✓ Safer LFP battery cell chemistry
- ✓ Built-in hybrid inverter
- ✓ 15 kWh per unit, up to 225 kWh (15 units) per aGate

- ✓ Max 11.5 kW continuous / 15 kW peak for 10 seconds
- ✓ Built-in heating blanket ensures reliable cold-weather performance
- ✓ Stable operations in extreme 131° F (55° C)
- ✓ IP67 weather protection

PERFORMANCE SPECIFICATIONS

Name	aPower S
SKU	APRS-10K15V1-US
Nameplate Model	aPower S-10
Certification / CEC Listing Name	aPower Syyy
Battery Chemistry	Lithium Iron Phosphate (LFP)
Usable System Energy	15 kWh ¹ per unit, up to 15 units per aGate
Aggregate Warrantied Throughput	60 MWh
Max Real Power (Charge)	8 kW continuous ²
Max Real Power (Discharge)	
- With PV Input	11.5 kW continuous ²
- Battery Only	10 kW continuous ²
Nominal AC Voltage	120 / 240 V, 120 / 208 V, 60 Hz
Coupling	Hybrid-Coupled
Phase	2 W+N+PE
Round Trip Efficiency (Solar - Battery - Load)	90.5% ¹
Solar to Home / Grid - CEC Efficiency	97.5% ³
Maximum Short-Circuit Current Rating	10 kA
Work Modes	Self-Consumption Time of Use Emergency Backup

Noise Emission	30 dBA Typical 45 dBA Maximum
Flood Resistance (IP67)	Up to 29" from the aPower S base
AC Metering	Revenue Grade (+/- 0.5%, ANSI C12.20)
Safety Protections	Integrated arc fault circuit interrupter(AFCI), Isolation Monitor Interrupter
User Interface	FranklinWH App
Warranty ⁴	15 years or 60 MWh throughput

Solar Technical Specifications

Maximum Solar STC Input	20 kW
Withstand Voltage	600 Vdc
PV DC Input Voltage Range	60 - 600 Vdc
PV DC MPPT Voltage Range	90 - 480 Vdc
MPPTs	4
Maximum Current per MPPT (Imp)	15 A ⁵
Maximum Short Circuit Current per MPPT (Isc)	20 A
Maximum Power per MPPT	5 kW
Maximum Continuous Total MPPT Output	15 kW

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DATASHEET

PERFORMANCE SPECIFICATIONS

Power Rated					
Nominal Output Power (AC)	5 kW	7.6 kW	9.6 kW	10 kW	11.5 kW
Maximum Apparent Power	5 kVA	7.6 kVA	9.6 kVA	11.5 kVA	11.5 kVA
Maximum Continuous Current	21 A	32 A	40 A	48 A	48 A
Overcurrent Protection Device	30 A	40 A	50 A	60 A	60 A
Maximum Continuous Input Power	5 kW	7.6 kW	8 kW	8 kW	8 kW
Power Factor	±1	±1	±1	±0.87	±1

Off-Grid Specifications⁶

THDU	< 1%
Voltage Regulation Accuracy	±1%
Frequency Accuracy	±0.1 Hz
Max Half-Wave Load Capability	5 kW ⁷
Max Peak Output Power	15 kW @ 10 S ⁸
Max Transient load capacity	25 kW @ 1 S ⁸
Load Imbalance Ratio	100%
Load Start Capability	185 A LRA ⁸

COMPLIANCE INFORMATION

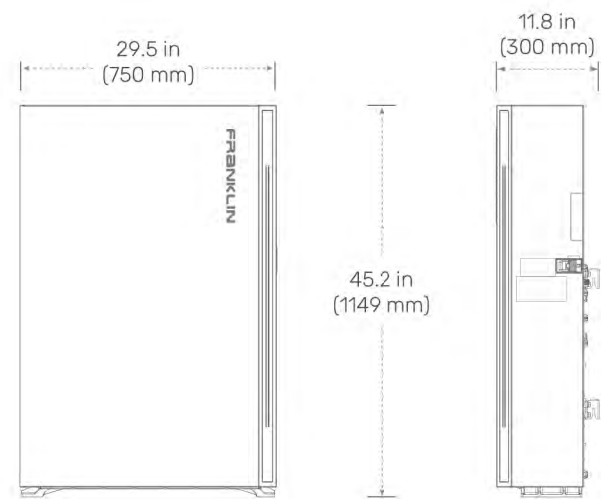
Certifications	UL9540; UL9540A; UL1973; UL1741; UL1741 SB; UL1741 PCS; UL1741 Multimode; UL1741 CRD; UL3141; UL1699B; UL1998; UN38.3; IEEE 1547; IEEE 1547.1; CSA 22.2 No.107.1;
Seismic	AC 156, OSHPD, IEEE 693-2005 (high)
Environmental	California Proposition 65
Emissions	FCC Part 15 Class B, ICES 003

ENVIRONMENTAL SPECIFICATIONS

Enclosure Type	Type 3R
Ingress Protection	IP67 (Battery Pack & Inverter) IP55 (Wiring)
Operating Temperature	-4 °F to 122 °F (-20 °C to 50 °C) Operates up to 131 °F (55 °C) derated output
Operating Humidity (RH)	Up to 100% RH, condensing
Altitude	Maximum 9,843 ft (3,000 m)
Environment	Indoor / Outdoor

MECHANICAL SPECIFICATIONS

Dimensions (H × W × D)	45.2 in × 29.5 in × 11.8 in (1149 mm × 750 mm × 300 mm)
Weight, aPower S complete	388 lbs (176 kg)
Weight, without Cover	365 lbs (166 kg)
Mounting	Wall or floor mount
Cooling	Natural



1. At beginning of life: 3 kW charge/discharge power, 77° F (25° C).
2. At rated power of 11.5 kW.
3. Tested in accordance with the CEC-weighted efficiency approach.
4. For more details, please refer to the FranklinWH System Limited Warranty for End Users available in the Documentation Center on the FranklinWH website.
5. If the selected PV module has an MPP exceeding 15 A, the MPPT will automatically limit the current to 15 A. The total open-circuit voltage must not exceed the maximum input voltage of 600 V.
6. The output performance is designed with reference to IEC 62040-3 (Uninterruptible Power Systems - Part 3: Method of specifying the performance and test requirements. A number of core indicators meet the requirements of high-performance UPS.

For aPower connection, use ONLY copper conductors, rated to a minimum of 194° F (90° C).

Note:

At launch, the aPower S will only be compatible with external RSD transmitter products. It is certified and listed as a Photovoltaic Rapid Shutdown System (PVRSS) when installed with approved equipment. For a list of compatible devices and installation requirements, please refer to the Documentation Center or contact engineering@franklinwh.com.

The aPower S (SKU: APRS-10K15V1-US) is available in the United States and Canada. For product availability in other regions, please visit our official website or contact a local authorized dealer.

Address: 1731 Technology Dr., Suite 530 San Jose, CA 95110 **Telephone:** +1 888-837-2655 **Email:** info@franklinwh.com **Website:** www.franklinwh.com

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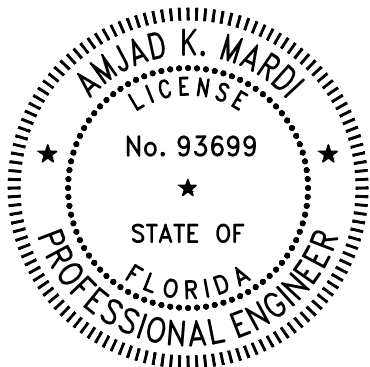
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Reviewed by:	AKM
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N.T.S.

SHEET NAME:

INVERTER
SPECIFICATIONS

SHEET NUMBER:

APP.3

FRANKLINWH

aGate

Intelligent energy management system

The aGate serves as the controller for all home power sources by interconnecting solar, grid, batteries, and a standby generator to supply electricity to the home. It seamlessly transitions the home supply from grid power to backup power so that always-on appliances, such as the refrigerator and network router, will not be affected when the grid goes down.

The aGate can be installed at the service entrance, connected to the main load center, or used as a load center.



Robust

- ✓ Micro-grid interconnect device (MID)
- ✓ EMS Integrated PV and grid metering
- ✓ UL1741 certified PCS function & 280A busbar to avoid Main Panel Upgrades
- ✓ 12-year limited warranty



Flexible

- ✓ Compatible with micro and string solar inverter
- ✓ Indoor and outdoor / wall-mounted



Hassle-free

- ✓ Precise control of electricity usage through Smart Circuits Module
- ✓ Standby generator integration via generator module
- ✓ Remarkable black start function ensures battery charge after a prolonged outage or extended trip
- ✓ Vehicle to loads (V2L) function to power essential home appliances during an emergency
- ✓ Commissioning through the aGate Wifi hotspot or Bluetooth



Easy installation

- ✓ Built-in design Smart Circuits and Generator Modules
- ✓ Conduit entry options from the bottom, left, or right



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DATASHEET

PERFORMANCE SPECIFICATIONS

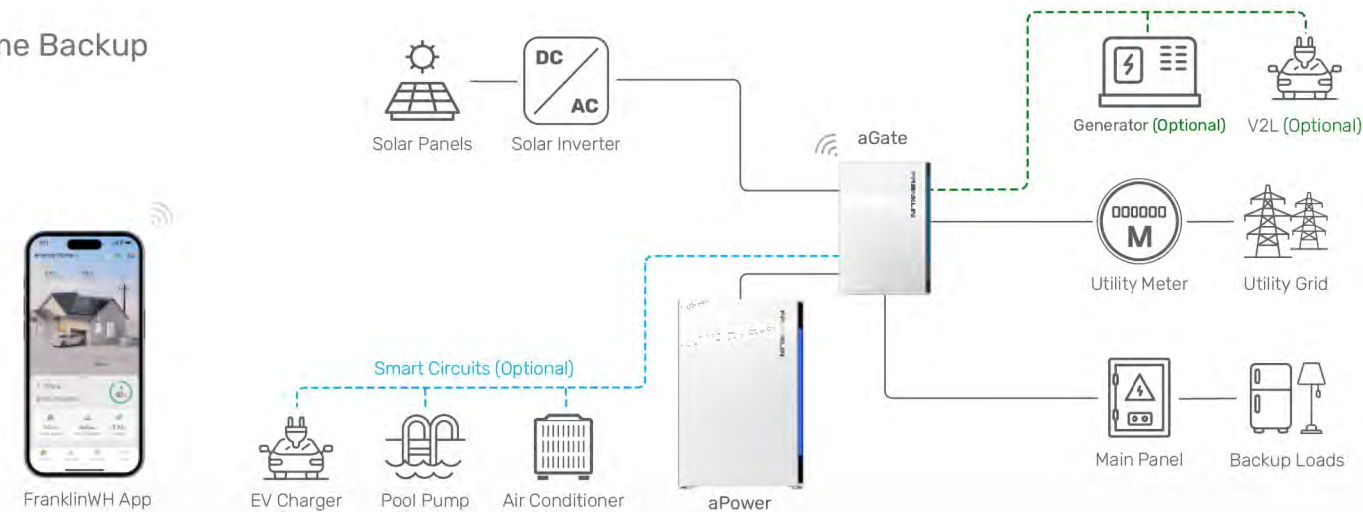
SKU	AGT-RIV3-US AGT-RIV3-CAN
Model Number	aGate X (US) aGate X 20 (CAN)
Coupling	AC-coupled
Nominal AC Voltage	120 / 208 V, 120 / 240 V, 60 Hz
Phase	2 W+N+PE
Grid Input Over Current Protection Device	200 A Max
aPower Over Current Protection Device	125 A Max
Solar Input Over Current Protection Device	80 A Max
Backup Load Port Over Current Protection Device	200 A Max
Non-backup Load Port Over Current Protection Device	200 A Max
Generator Over Current Protection Device ¹	200 A Max
Smart Circuits Over Current Protection Device ²	Opt. a 1 × 80 A Max @ 208 V / 240 V & 1 × 50 A Max @ 208 V / 240 V Opt. b 1 × 80 A Max @ 208 V / 240 V & 2 × 50 A Max @ 120 V
Maximum Supply Fault Current	22 kA
Busbar Rating	280 A
Work Modes	Self-Consumption, Time of Use, Emergency Backup
Communications	Ethernet / 4G / Wifi / Bluetooth
User Interface	FranklinWH App
Warranty	12-year limited
IEC Protective Class	Class I
Over voltage Category	Category II
AC Meter	+/- 0.5%

COMPLIANCE INFORMATION

Certifications	UL 1741, UL 1741 PCS, UL 67, UL B69A, UL 916, CAN / CSA C22.2 No. 107.1-16, CSA C22.2 No. 29, CSA C22.2 No. 0.19
Seismic	AC 156, OSHPD, IEEE 693-2005 (high)
Environmental	California Proposition 65 RoHS Directive 2011 / EU
Emissions	FCC Part 15 Class B, ICES 003

Franklin Home Power Solution

Whole Home Backup



The aGate X 1.3.1 (SKU: AGT-RIV3-US) is available in United States and Canada. For product availability in other regions, please visit our official website or contact a local authorized dealer.

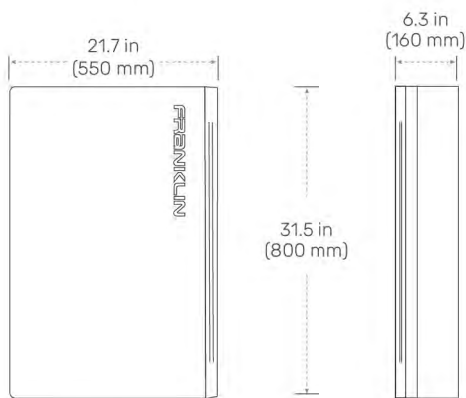
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FRANKLINWH

MECHANICAL SPECIFICATIONS

Dimensions (H × W × D)	31.5 in × 21.7 in × 6.3 in (800 mm × 550 mm × 160 mm)
Weight	38.6 lb (17.5 kg)
Mounting	Wall mount



1. Generator Module is optional.
2. Smart Circuit Module is optional.
For aGate connection, use copper or aluminum wire, rated to a minimum of 167° F (75° C).

ENVIRONMENTAL SPECIFICATIONS

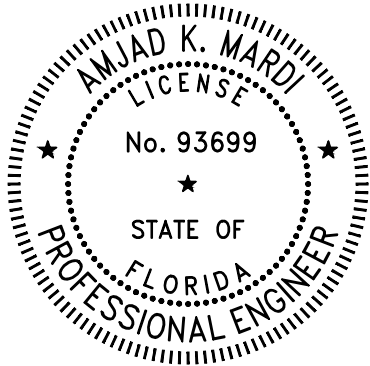
Enclosure Type	NEMA Type 3R
Operating Temperature	-4°F to 122°F (-20°C to 50°C)
Operating Humidity (RH)	Up to 100% RH, condensing
Altitude	Maximum 9,843 ft (3,000 m)
Environment	Indoor and outdoor rated



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FRANKLIN AGATE
SPECIFICATIONS

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APP.4



Raising the bar in innovative
DC MLPE solar power systems



RSD-D

- Meets NEC 2017 & 2020 (690.12) requirements
- Executes rapid shutdown of system when Transmitter-PLC signal is absent
- Meets SunSpec requirements
- Dual-input channel

RSD-D Technical Data

Model

RSD-D-15

RSD-D-20

Input Data (DC)

Input operating Voltage Range	8-80V Per Channel	
Maximum Cont. Input Current (Imax)	15A Per Channel	20A Per Channel

Output Data (DC)

Output operating Voltage Range	16-160V	
Maximum Cont. Output Current	15A	20A
Maximum System Voltage	1000V/1500V	

Mechanical Data

Operating Ambient Temperature Range	-40 °F to +167 °F (-40 °C to + 75 °C)
Dimensions (without cable & connectors)	5.5" x 2" x 0.8"(140 mm x 50.6 mm x 20 mm)
Cable Length	Input 500mm/Output 2200mm
Cable Cross Section Size	TUV:4mm ² /UL:12AWG
Connector	MC4 or Customize
Enclosure Rating	NEMA Type 6P/IP68
Over temperature protection	Yes

Features & Compliance

Communication Compliance	PLC
Safety Compliance	NEC 2017 & 2020 (690.12); UL1741; CSA C22.2 No. 330-17; IEC/EN62109-1
EMC Compliance	FCC Part15; ICES-003

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Rev1.3 2021-5-25

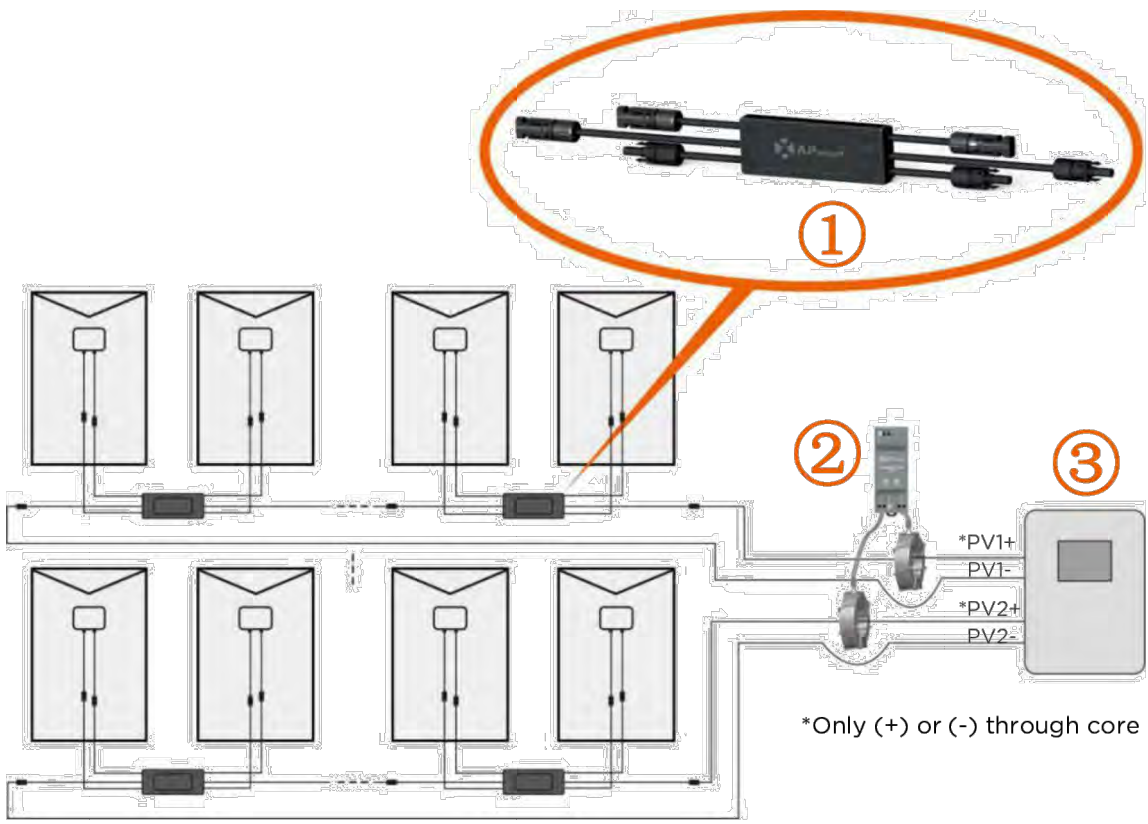


RSD-D meets SunSpec requirements, maintaining normal function by continually receiving a heartbeat signal from the APsmart Transmitter. The RSD-D executes rapid system shutdown when the Transmitter signal is absent. Users can manually execute rapid shutdown using Transmitter breaker switch.

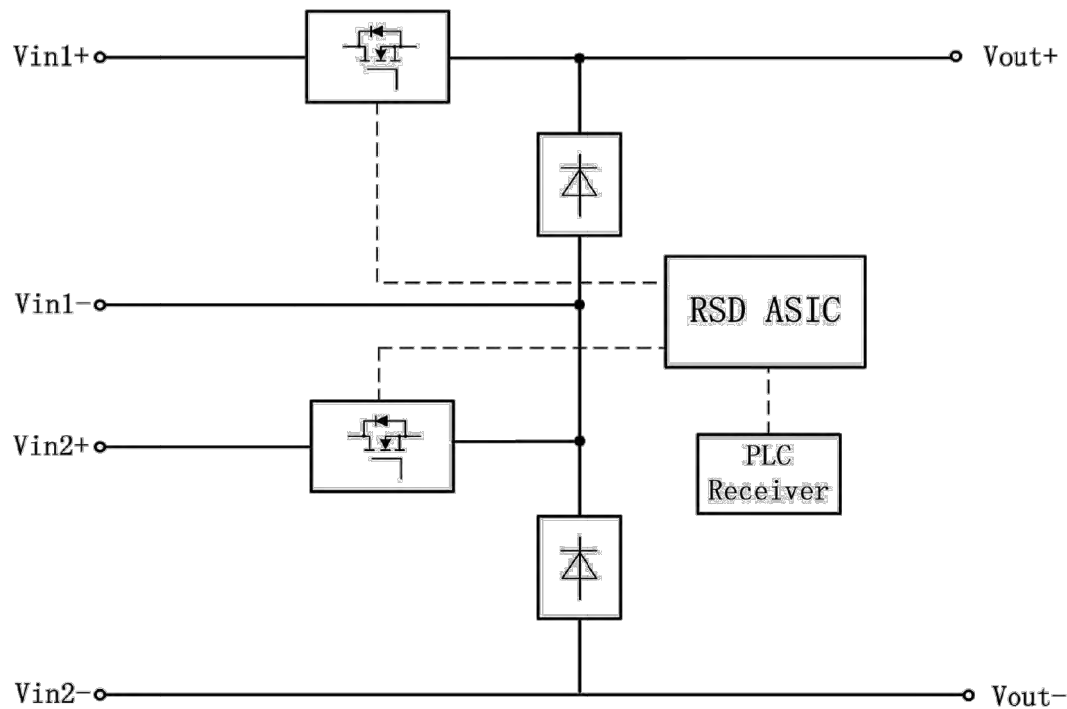
RSD-D Wiring Diagram

- ① RSD-D
- ② Transmitter-PLC
- ③ Inverter*

*If the inverter includes an integrated SunSpec-certified Rapid Shutdown Transmitter, remove the external transmitter-PLC in the wiring diagram.



Working Schematic Diagram



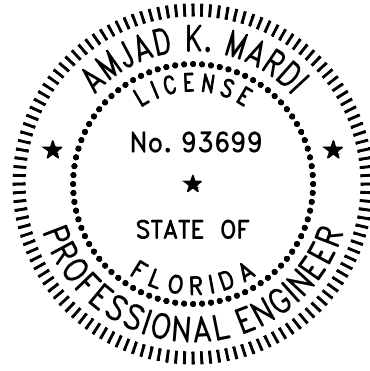
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SHEET NAME:

AP SMART RSD
SPECIFICATION

SHEET NUMBER:

APP.5



Raising the bar in innovative
DC MLPE solar power systems



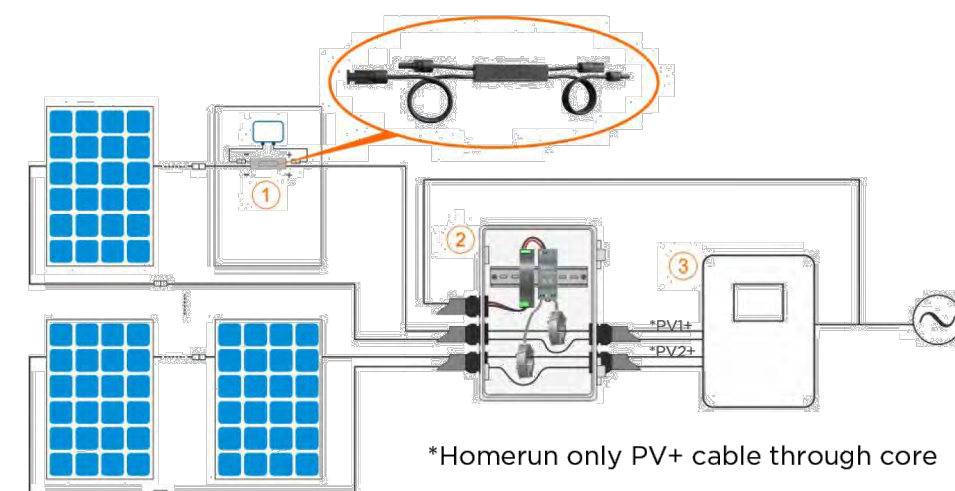
TRANSMITTER-PLC OUTDOOR KIT

- Meets NEC 2017, 2020&2023 (690.12) requirements
- Switching off Transmitter-PLC results in rapid shutdown of the output of PV modules
- Meets SunSpec requirements
- Equipped with single/dual core
- Optional 85-264VAC power supply
- Optional 180-550VAC power supply

The APsmart Rapid Shutdown System Transmitter-PLC is part of a rapid shutdown solution when paired with APsmart RSD, a PV module rapid shutdown unit. While powered on, the Transmitter-PLC sends a signal to the RSD units to keep their PV modules connected and supplying energy.

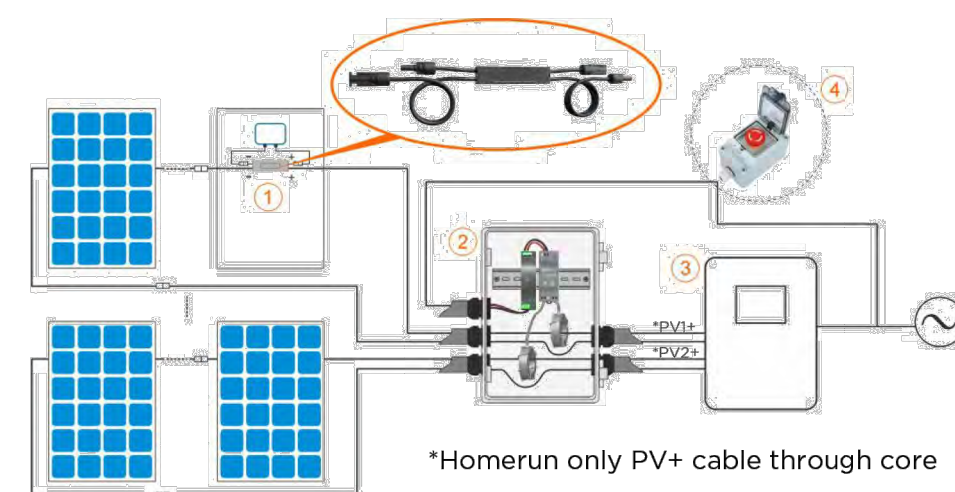
RSD units automatically enter rapid shutdown mode when the Transmitter-PLC is switched off and resume energy production when power is restored to the Transmitter-PLC. This solution complies with NEC 690.12 specifications for 2017, 2020&2023 and supports the SunSpec signaling for rapid shutdown.

Transmitter-PLC Outdoor Kit includes a Transmitter-PLC with one or two cores, outdoor enclosure, 85-264VAC or 180-550VAC power supply. It could be used in residential or commercial project.



*Homerun only PV+ cable through core

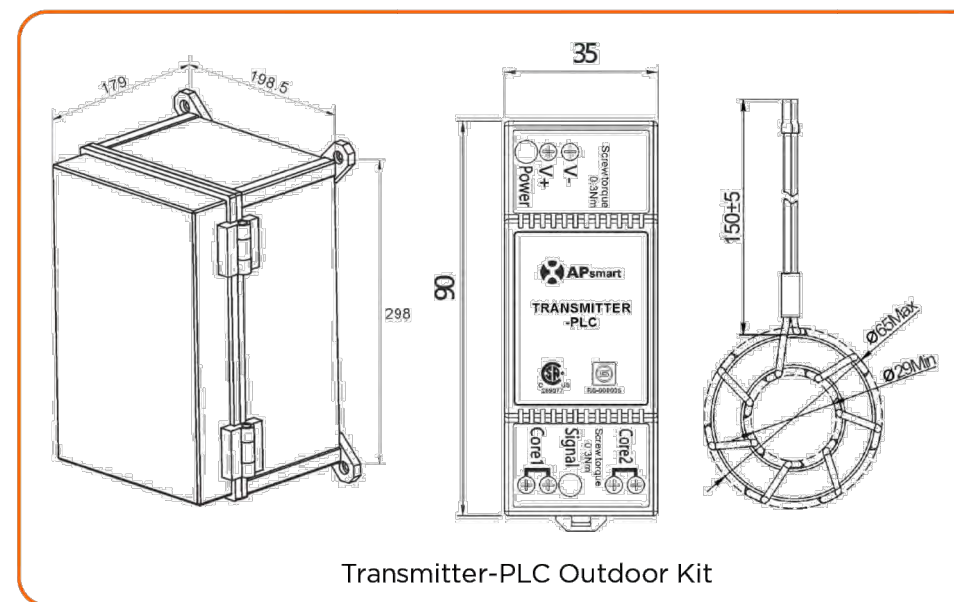
- ① RSD
- ② Transmitter-PLC Outdoor Kit
- ③ Inverter



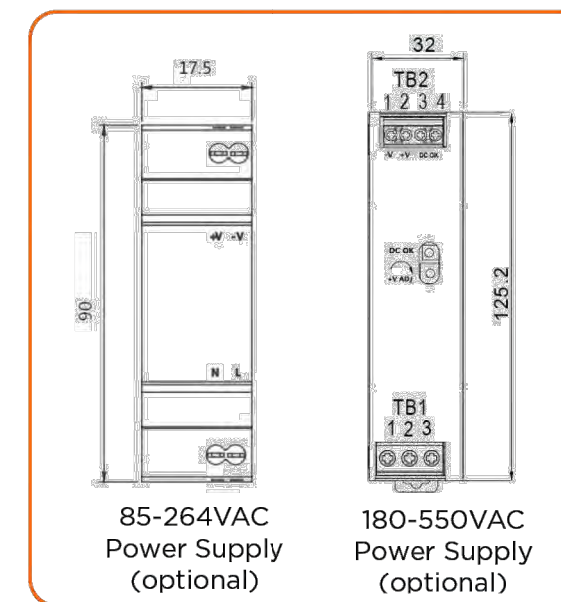
*Homerun only PV+ cable through core

- ① RSD
- ② Transmitter-PLC Outdoor Kit
- ③ Inverter
- ④ Emergency stop button box (optional): Press the emergency stop button, the transmitter AC power supply is disconnected, the RSD closes the output, and the system rapid shutdown.

Rev2.8 2023-10-07



Transmitter-PLC Outdoor Kit



85-264VAC
Power Supply
(optional)

180-550VAC
Power Supply
(optional)

Main electrical data

Input Voltage	12 VDC
Input Current	0.8A
Communication	PLC

Power Supply

Residential (optional)	85-264VAC Input, 12VDC Output, 90 mm x 17.5 mm x 58.4 mm
Commercial (optional)	180-550VAC Input, 12VDC Output, 125.2 mm x 32 mm x 102 mm

Core data

Max. Current	320A (160A*2)
Max. System Voltage	1500VDC
Internal Opening for Wires/Outside Dimensions	-29mm/65mm
Max. Supported PV Modules per String	30 modules

Max.Number Of Strings Per Core

DC Cable Diameter	Φ 5.9mm	Φ 6.35mm	Φ 7mm	Φ 8.6mm
Number Of Strings Per Core(without connector)	≤15	≤15	≤14	≤10

Environmental

Temperature	-40℃ ~ +60℃
-------------	-------------

Structure data

Dimensions (W x H x D)	198.5 mm x 298 mm x 179 mm
Enclosure Environmental Rating	IP65

Features & Compliance

Safety Compliance	NEC 2017, 2020&2023 (690.12); UL1741; CSA C22.2 No. 330-17
EMC Compliance	FCC Part15; ICES-003



ORDERING INFORMATION

408004	Single Core Transmitter-PLC-Outdoor Kit, 180-550VAC Power Supply
408005	Dual Core Transmitter-PLC-Outdoor Kit, 180-550VAC Power Supply
408006	Single Core Transmitter-PLC-Outdoor Kit, 85-264VAC Power Supply
408007	Dual Core Transmitter-PLC-Outdoor Kit, 85-264VAC Power Supply
408010	Single Core Transmitter-PLC-Outdoor Kit, 180-550VAC Power Supply, Emergency button
408011	Dual Core Transmitter-PLC-Outdoor Kit, 180-550VAC Power Supply, Emergency button
408012	Single Core Transmitter-PLC-Outdoor Kit, 85-264VAC Power Supply, Emergency button
408013	Dual Core Transmitter-PLC-Outdoor Kit, 85-264VAC Power Supply, Emergency button



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+1-866-374-8538 | support@APsmartGlobal.com | APsmartGlobal.com

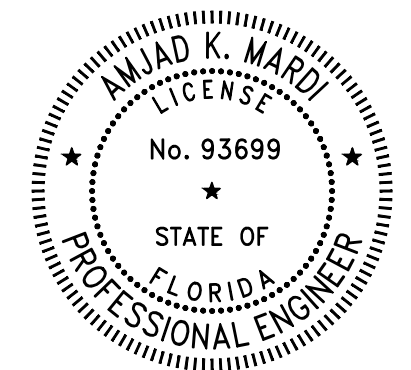
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SPECIFICATIONS

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APP.6

MecaWind v2556

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Calculations Prepared by:

Date: Jul 24, 2026

File Location: Current Project Not Saved

General:

Reference Abbreviations: T: Table, F: Figure, E: Equation, S: Section, ¶: Paragraph

Wind Load Standard	=	ASCE 7-22	Basic Wind Speed	=	140.0 mph
Exposure Classification	=	B	Risk Category	=	II
Structure Type	=	Solar Panels	Basis for Wind Pressures	=	ASD
		on Roof			
MWFRS Analysis Method	=	Ch 29	C&C Analysis Method	=	Ch 30 Pt 1
Dynamic Type of Structure	=	Rigid	Advanced Options	=	0

Solar Roof Panel Inputs

Section	=	MWFRS Section		=	29.4.4
h _{ny}	=	Gap between Panel & Roof (-Y)		=	3.6000 in
h _{py}	=	Gap between Panel & Roof (+Y)		=	3.6000 in
L _p	=	Panel Chord Length		=	93.8600 in
W _p	=	Panel Chord Width		=	51.3000 in
ω	=	Solar Panel Angle to Roof Surface		=	0.00 °
N _{rows}	=	Number of Rows		=	2
N _{cols}	=	Number of Columns		=	2
S _r	=	Spacing between Rows		=	0.2500 in
S _c	=	Spacing between Columns		=	0.2500 in
X _{start}	=	X Distance to Corner		=	1.0000 ft
Y _{start}	=	Y Distance to Corner		=	1.0000 ft

Exposure Constants T:26.11-1:

α = 3-s Gust-speed exponent	T:26.11-1	=	7.500	z _g = Nominal Boundary Layer Ht	T:26.11-1	=	3,280 ft
â = Reciprocal of α	T:26.11-1	=	0.133	b = 3 sec gust speed factor	T:26.11-1	=	0.840
α _m = Mean Hourly Exponent	T:26.11-1	=	0.222	b _m = Mean Hourly Factor	T:26.11-1	=	0.470
c = Turbulence Intensity	T:26.11-1	=	0.300	ε = Integral Length Exponent	T:26.11-1	=	0.3333

Building:

Roof	=	Roof Type	=	Gabled	Encl	=	Enclosure Classification	=	Enclosed
IsCust	=	Custom Roof	=	False	W	=	Building Width	=	41.6670 ft
L	=	Building Length	=	64.9170 ft	R _{ht}	=	Ridge Height	=	15.208 ft
E _{ht}	=	Eave Height	=	10.000 ft	Pitch	=	Pitch of Roof	=	3.0 :12
θ	=	Slope of Roof	=	14.04 °	OH	=	Overhang Configuration	=	All Overhang
z _i	=	Highest Opening Elevation	=	0.0000 ft	HT _{over}	=	Override Mean Roof Height	=	False
Ht _{man}	=	Mean Roof Height	=	12.604 ft	RA _{over}	=	Override Roof Area	=	False
GC _{p1,o}	=	Override GC _{pl} value	=	False	IsElev	=	Building is Elevated	=	False

Gust Factor Calculation for Wind:

Gust Factor Category I Rigid Structures - Simplified Method

G₁ = Simplified for Rigid Struc = 0.85

Gust Factor Category II Rigid Structures - Complete Analysis

Z _m	=	Equiv Ht: Max(0.6•h, z _{min})		=	30.0000 ft
I _{zm}	=	c•(33/Z _m) ^{1/6}	E:26.11-7	=	0.3048
L _{zm}	=	ℓ•(Z _m /33) ^ε	E:26.11-9	=	309.9934 ft
B	=	Avg Structure Width Normal to Wind Direction		=	41.6670 ft
Q _a	=	(B+h)/L _{zm}		=	0.175
Q	=	[1/(1+0.63•Q _a ^{0.63})] ^{0.5}	E:26.11-8	=	0.909
G _{2a}	=	1+1.7•g _v •I _{zm}		=	2.762
G ₂	=	0.925•[(1+1.7•g _q •I _{zm} •Q)/G _{2a}]	E:26.11-6	=	0.871

Gust Factor Used in Analysis

G = Gust Factor: Min(G₁, G₂) = 0.850

Main Wind Force Resisting System (MWFRS) Wind Calculations for Solar Panels on Roof per §29.4

h = Mean structure height	=	12.604 ft	K _h = 2.41•(15/z _q) ^{2/α}	T:26.10-1	=	0.573
K _{zt} = No Topographic Feature	=	1.000	K _d = Directionality Factor	T:26.6-1	=	0.85
LF = ASD Load Factor	=	0.60	K _e = Ground Elev Factor	T:26.10-1	=	1.000
q _h = .00256•K _h •K _{zt} •K _e •V ² •L _F	E:26.10-1	=	17.25 psf			

Gust Factor Calculation for Wind:

Gust Factor Category I Rigid Structures - Simplified Method

G₁ = Simplified for Rigid Struc = 0.85

Gust Factor Category II Rigid Structures - Complete Analysis

Z _a	=	Equiv Ht: Max(0.6•h, z _{min})		=	30.0000 ft
I _m	=	c•(33/Z _a) ^{1/6}	E:26.11-7	=	0.3048
L _m	=	ℓ•(Z _a /33) ^ε	E:26.11-9	=	309.9934 ft
B	=	Avg Structure Width Normal to Wind Direction		=	41.6670 ft
Q _a	=	(B+h)/L _m		=	0.175
Q	=	[1/(1+0.63•Q _a ^{0.63})] ^{0.5}	E:26.11-8	=	0.909
G _{2a}	=	1+1.7•g _v •I _m		=	2.762
G ₂	=	0.925•[(1+1.7•g _q •I _m •Q)/G _{2a}]	E:26.11-6	=	0.871

Gust Factor Used in Analysis

G = Gust Factor: Min(G₁, G₂) = 0.850

Wind Loads on Solar Panel(s) Per §29.4.4

h	=	Mean Roof Height		=	12.6042 ft
a	=	Width for Zone 2 and 3 determination (Per C&C Figure)		=	4.1667 ft
h/2	=	Width used to determine if Exposed: h/2		=	6.3021 ft
h ₁	=	Dist from Roof to Lower Panel Edge: Min(h _{nyr} , h _{pyr})		=	3.6000 in
h ₂	=	Dist from Roof to Upper Panel Edge: Max(h _{nyr} , h _{pyr})		=	3.6000 in
d _{1limit}	=	d ₁ limit for adjacent panels: 4 ft [1.2 m]		=	4.0000 ft
h _{pt}	=	Height of Parapet		=	0.0000 ft
ω	=	Solar Panel Angle to Roof Surface		=	0.00 °
1.5L _p	=	Distance from end considered exposed: 1.5•L _p		=	11.7325 ft
q _h	=	0.00256•K _h •K _{zt} •K _e •V ² •L _F	E:26.10-1	=	17.25 psf
LF	=	ASD Load Factor		=	0.60
θ	=	Roof Slope		=	14.04 °
A	=	Area of One Panel: L _p •W _p		=	33.44 ft²
Gap	=	Min(S _c , S _r) [S _c =0.2500 in, S _r =0.2500 in]		=	0.2500 in
Y _{agap}	=	Solar Panel Press Equalization Factor for Gap [F:29.4-8]		=	0.590
Y _{h2}	=	Solar Panel Press Equalization Factor for H2 [F:29.4-8]		=	0.495
Y _a	=	Solar Panel Press Equalization Factor [F:29.4-8]		=	0.543

The array shall be located 2•h₂ (0.6000 ft) from roof edge, a gable ridge, or a hip ridge.

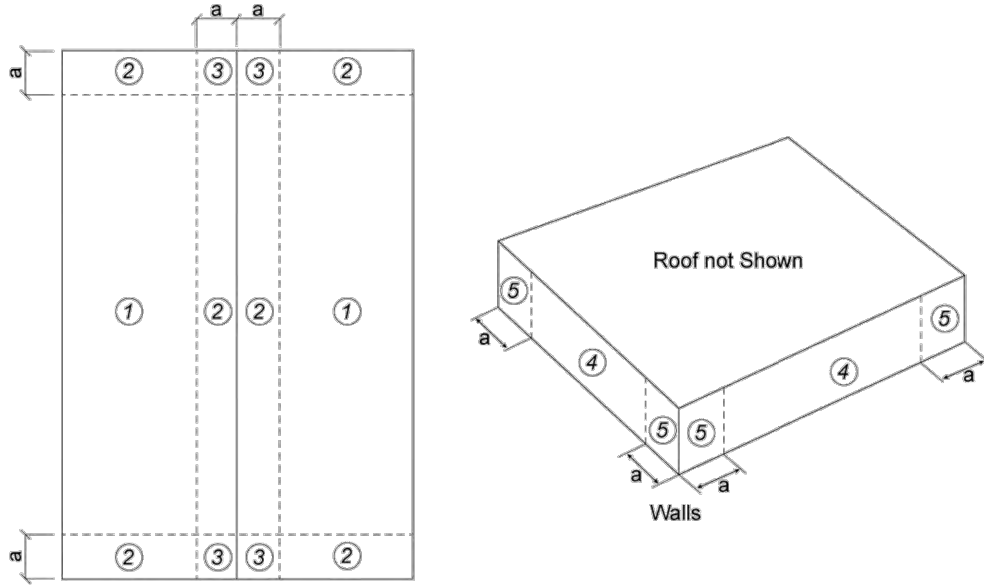
Solar Panel Exposure Criteria:

A panel is considered 'Exposed' if it meets the following criteria:

The distance d₁ to roof edge > 0.5h and at least one of these is met:

1) The distance to adjacent solar array d₁ is > 2•h₂

2) The distance to adjacent panel d₂ > 2•h₂



Wind Pressures For Solar Panel(s) §29.4.4 All wind pressures include a Load Factor (LF) of 0.6							
Zone	Exposed	Y _{exp}	Y _{edown}	GC _p Fig	GC _{puplift}	GC _{pdown}	
1	Yes	1.500	1.000	F:30.3-2B	-1.468	0.479	P _{uplift} psf
2	Yes	1.500	1.000	F:30.3-2B	-2.015	0.479	P _{down} psf
3	Yes	1.500	1.000	F:30.3-2B	-2.656	0.479	
1_OH	Yes	1.500	1.000	F:30.3-2B/F:30.3-1	-2.375	0.000	
2_OH	Yes	1.500	1.000	F:30.3-2B/F:30.3-1	-2.922	0.000	
3_OH	Yes	1.500	1.000	F:30.3-2B/F:30.3-1	-3.564	0.000	
1	No	1.000	1.000	F:30.3-2B	-1.468	0.479	
2	No	1.000	1.000	F:30.3-2B	-2.015	0.479	
3	No	1.000	1.000	F:30.3-2B	-2.656	0.479	
1_OH	No	1.000	1.000	F:30.3-2B/F:30.3-1	-2.375	0.000	
2_OH	No	1.000	1.000	F:30.3-2B/F:30.3-1	-2.922	0.000	
3_OH	No	1.000	1.000	F:30.3-2B/F:30.3-1	-3.564	0.000	

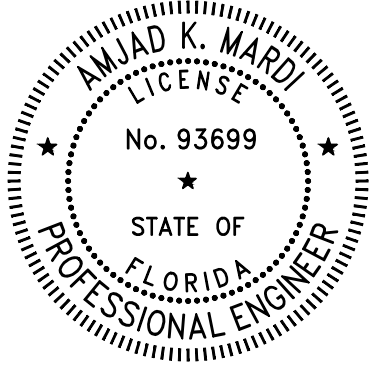
Notes:							
Zone	=	Zone based upon 'GCP Fig'	Exposed	=	Exposed panel per	E:29.4-7	
Y _{exp}	=	Uplift Factor per	E:29.4-7	Y _{edown}	=	Down force Factor per	E:29.4-7
GC _p	=	Nominal press coeff per 'GCP Fig'		P _{uplift}	=	Wind Pressure: q _s •K _e •GC _{puplift} •Y _{exp} •Ga	E:29.4-7
P _{down}	=	Wind Pressure: q _s •K _e •GC _{pdown} •Y _{edown} •Ga	E:29.4-7	Area	=	Zone Area based upon one panel: 33.44 ft²	
+Press	=	Pressure Acting Toward Surface		-Press	=	Pressure Acting Away from Surface	
• Origin of X/Y system is at the geometric center of the building							
• The array shall be located 2•h ₂ (0.6000 ft) from roof edge, a gable ridge, or a hip ridge.							
• The roof shall be designed for both of the following:							
1) The case where solar collectors are present. Solar panel loads applied simultaneously with roof wind pressures per normal roof design without those roof pressures applied to sections of the roof where solar panels are not covering roof.							
2) Case where solar arrays have been removed.							



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Date:	SEE P.E. STAMP
Designed By:	SST
Reviewed by:	AKM
REVISION HISTORY	

DRAWING SCALE:

N.T.S.

SHEET NAME:

WIND SIMULATION

SHEET NUMBER:

APP.7

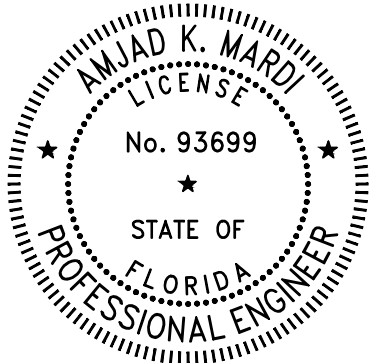
S-5! SOLAR FOOT LOAD TESTS

Bracket Name	Substrate	Material	Fastener Type	Fastener Qty	Ultimate Load (lbs)	Failure Mode	Allowable Load (lbs)	Bracket Orientation
SolarFoot™	Plywood	19/32" Plywood	1/4-14 x 1-1/2 ZAC TYPE AB-MP (3/8" HWH)	4	1116	B	372	N/A
SolarFoot™	Steel Deck	.055" Galvanized Steel	1/4-14 x 1-1/2 ZAC Self-Drill (3/8" HWH)	4	1560	C	520	N/A
SolarFoot™	Steel Deck	.055" Galvanized Steel	1/4-14 x 1-1/2 ZAC Self-Drill (3/8" HWH)	2	1268	C	422	N/A
SolarFoot™	Wood Purlin	2x4 Timber (2" Vertical Fasteners on opposite sides)	1/4-14 x 1-1/2 ZAC TYPE AB-MP (3/8" HWH)	2	1229	C, D	409	N/A
SolarFoot™	Wood Purlin	2x4 Timber (4" Horizontal)	1/4-14 x 1-1/2 ZAC TYPE AB-MP (3/8" HWH)	4	1554	C	518	N/A
SolarFoot™	Wood Deck	15/32" OSB	1/4-14 x 1-1/2 ZAC TYPE AB-MP (3/8" HWH)	4	535	B, D	178	N/A



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N.T.S.

SHEET NAME:

S5! SOLAR FOOT LOAD
TESTS

SHEET NUMBER:

APP.8