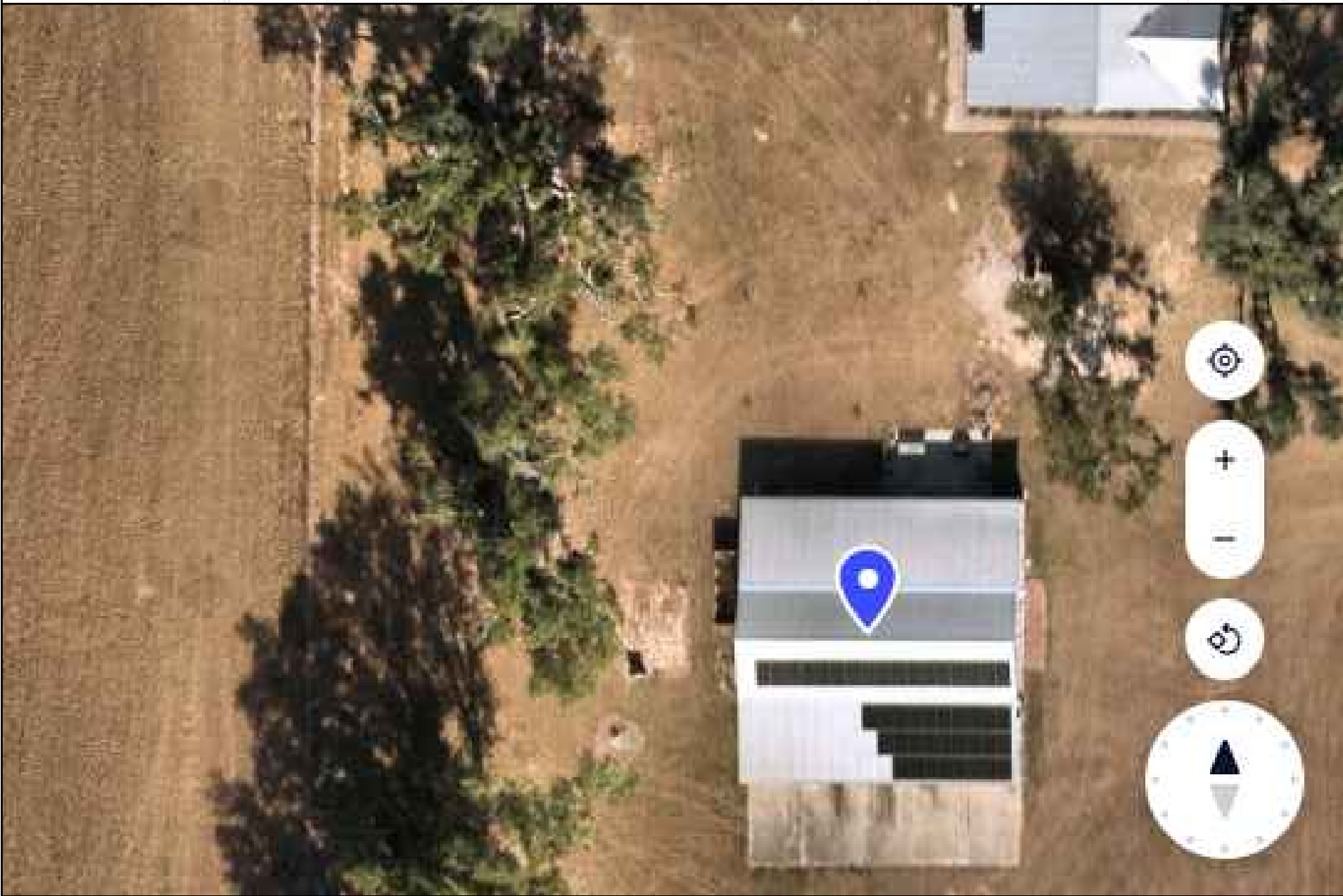
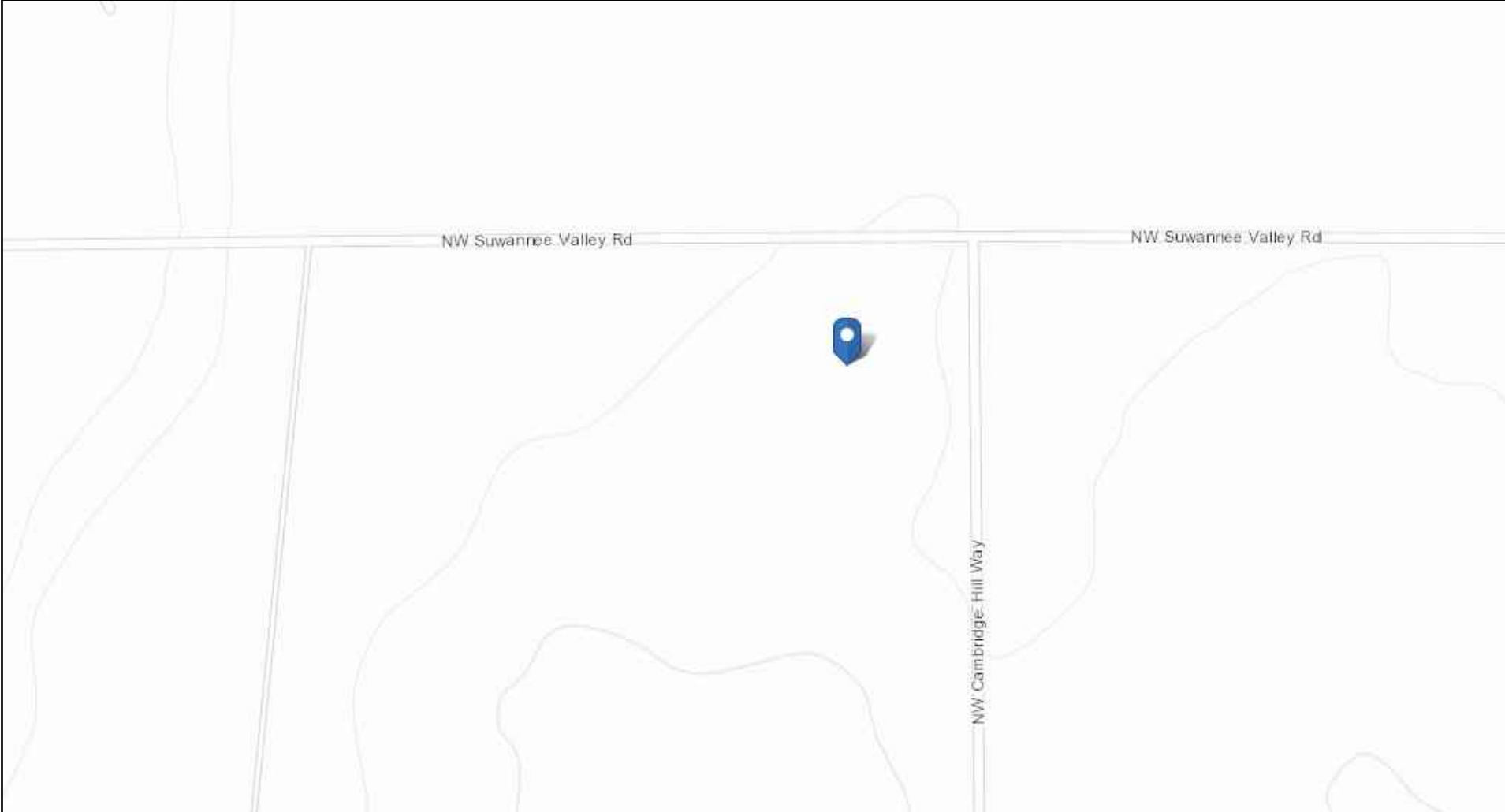


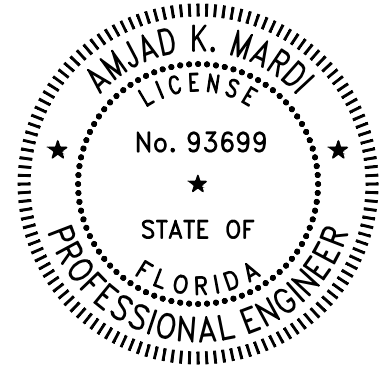
SCOPE of WORK	
This set of plans details the installation of a new grid-interactive solar photovoltaic-and-energy storage system.	
PV SYSTEM DETAILS	
PV Module Type	LG LG355N1C-N5
PV Module Quantity	44
Solar PV DC System Rating (kWdc)	15.62
Solar PV AC System Rating (kWac)	13.277
Solar Gross Power Rating (KWac)	15.2
Inverter Type	Tesla Powerwall 3 Integrated Inverter
Inverter Quantity	2
Battery Type	Tesla Powerwall 3 & Expansion Unit
Battery Quantity	3
Mounting Location (Roof/Ground/Pergola)	Roof
Mounting Attachments Type	S-5 Protea Bracket
Racking & Rails Type	Unirac Light Rail
SITE DETAILS	
Property Owner Name	Vrastil William
Site Coordinates	30.292517, -82.743595
Property Address	176 NW Cambridge Hill Way, Lake City, FL 32055
Utility Company	Clay Electric Cooperative
EXPOSURE NOTES	
Wind Exposure Category	B
Design Wind Speed (mph)	140
Risk Category/Structure Type	II/Enclosed
NAVD Flood Elevation	N/A (Not in a Flood Zone)
GOVERNING CODES	
Structural Codes	2021 IBC/IEBC/IRC, FBC 2023 (ASCE 7-22)
Electrical Codes	2020 NEC, 2020 IEC, FBC 2023
Fire Safety Codes	2023 FFPC (8th/ Edition), NFPA 1 (2021 Ed.) Section 11.12 (With Local AHJ Amendments, if applicable) (All markings shall comply with Florida Fire Prevention Code 8th/ Edition NFPA-1 11.12)
STRUCTURAL & ELECTRICAL AFFIDAVITS/CERTIFICATIONS	
Structural Certification	I, AMJAD MARDI, PE (FL93699), AN ENGINEER LICENSED PURSUANT TO CHAPTER 471, CERTIFY THAT THE INSTALLATION OF THE SOLAR MODULES IS IN COMPLIANCE WITH FBC 2023 8TH EDITION, CHAPTER 3. BUILDING STRUCTURE WILL SAFELY ACCOMMODATE WIND LATERAL AND UPLIFT FORCES, AND EQUIPMENT DEAD LOADS.
Electrical Certification	PURSUANT TO FLORIDA STATUE 377.705 (REVISED 7/1/2017) I, AMJAD MARDI, PE (FL93699), AN ENGINEER LICENSED PURSUANT TO CHAPTER 471, CERTIFY THAT THE SOLAR PHOTOVOLTAIC ELECTRICAL SYSTEM AND COMPONENTS ARE DESIGNED AND APPROVED USING THE CODE REQUIREMENTS AND STANDARDS CONTAINED IN THE MOST RECENT VERSION OF THE FLORIDA BUILDING CODE.

LEGEND			
ACD	AC DISCONNECT		FIRE SETBACK
GP	GENERATION PANEL		ROOF ZONE 1
M	METER		ROOF ZONE 2
P	PANEL		ROOF ZONE 3
PW	TESLA POWERWALL		MCI-2
TEG	TESLA ENERGY GATEWAY		
#	# OF PLANE		
			RAILS
			5V METAL
			ATTACHMENT
			EXPOSED MODULE
			EXISTING MODULE

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S3	ATTACHMENT DETAIL & ARRAY LAYOUT	0
S4	MOUNTING & FLASHING DETAILS	0
E1	ELECTRICAL RISER DIAGRAM	0
E2	ELECTRICAL NOTES & EQUIPMENT SPECIFICATIONS	0
E3	SOLAR PV LABELS	0
E4	ELECTRICAL ELEVATION DRAWINGS	0
APP.1	SOLAR MODULE SPECIFICATIONS	0
APP.2	INVERTER SPECIFICATIONS	0
APP.3	GATEWAY III SPECIFICATIONS	0
APP.4	TESLA EXPANSION UNIT SPECIFICATIONS	0
APP.5	GABLE ROOF WIND SIMULATION	0
APP.6	FLAT ROOF WIND SIMULATION	0



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Digitally signed by Amjad Mardi
Date: 2026.08.05 15:25:31 -04'00'

PROJECT NAME:
VRASTIL WILLIAM RESIDENCE

PROJECT ADDRESS:
176 NW Cambridge Hill Way
Lake City, FL 32055

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

DRAWING SCALE:
N.T.S.

SHEET NAME:
COVER PAGE

SHEET NUMBER:
G1

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

±475'

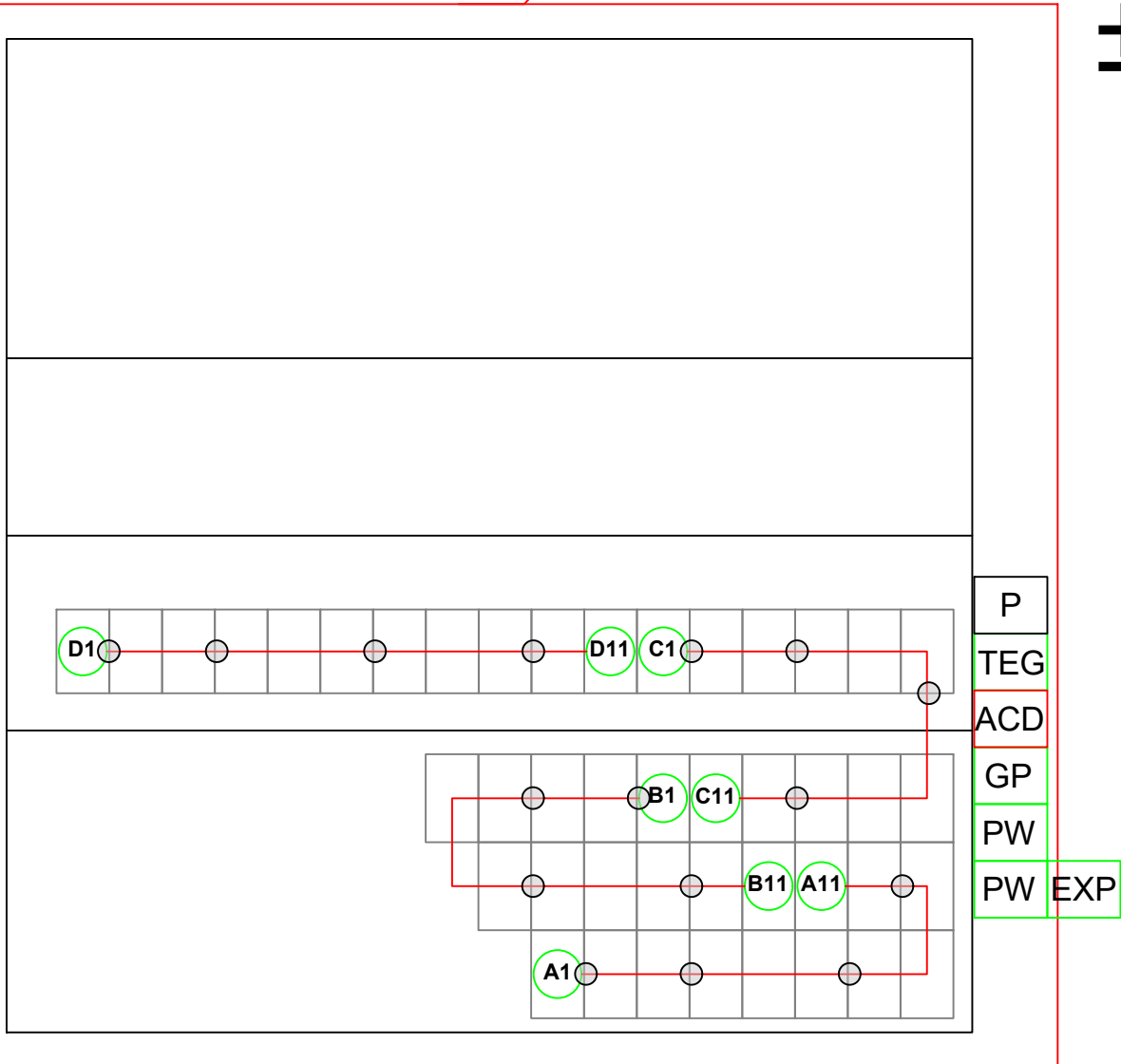


±190'-0"

±190'-0"

±80'-0"

±438'



LEGEND

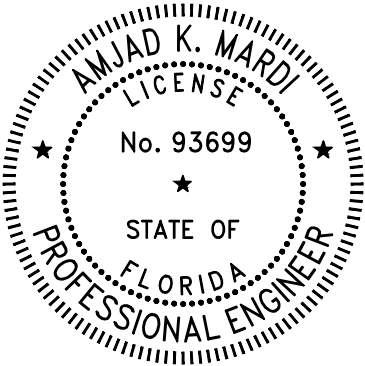
- | | |
|-----|--------------------------------|
| ACD | AC DISCONNECT |
| GP | GENERATION PANEL |
| M | METER |
| P | PANEL |
| PW | TESLA POWERWALL |
| EXP | TESLA POWERWALL EXPANSION UNIT |
| TEG | TESLA ENERGY GATEWAY |
| ○ | MCI-2 |
| # | STRING NUMBER |
| | EXISTING MODULE |



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VRASTIL WILLIAM
RESIDENCE

PROJECT ADDRESS:

176 NW Cambridge Hill Way
Lake City, FL 32055

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

DRAWING SCALE:

N.T.S.

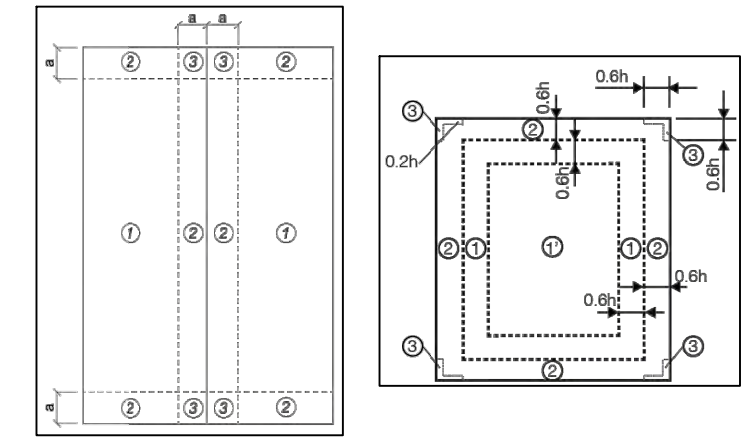
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SITE & ELECTRICAL PLAN

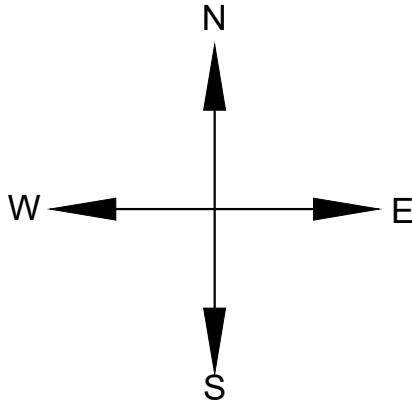
SHEET NUMBER:

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)		
Gable		
	EXPOSED (DOWNWARD/ UPLIFT)	NOT EXPOSED (DOWNWARD/ UPLIFT)
1	NONE	4.89/-15.7
2	NONE	4.89/-21.35
3	NONE	4.89/-28.32
1_OH	NONE	NONE
2_OH	NONE	0.00/-30.01
3_OH	NONE	0.00/-36.98
Flat		
	EXPOSED (DOWNWARD/ UPLIFT)	NOT EXPOSED (DOWNWARD/ UPLIFT)
1	NONE	NONE
1'	2.48/-21.64	2.48/-14.43
2	2.48/-29.38	2.48/-19.58
3	2.48/-39.69	2.48/-26.46
Existing Structure & Limiting Factors		
Roof Type	Gable	Flat
Roof Material	5V Metal	5V Metal
Sheathing	Plywood	
Metal Crimps/Truss Spacing	9" O.C.	9" O.C.
Fire Rating	Class A	
Roof Slope	4:12	1:12
Mean Roof Height (h) [ft]	±15.0833	±10
Overhang (OH) [ft]	1.5	0
Dead Load [psf]	18.4	18.4
Live Load [psf]	20	20
a = Width for Zone 2 and 3 determination (per C&C figure) [ft]	6.0333	2 & 6
h/2 = Width used to determine if exposed [ft]	7.54	5.00
h1 = Distance from roof to lower panel edge: Min (hny,hnp) [ft]	0.27	0.27
h2 = Distance from roof to upper panel edge: Max (hny,hnp) [ft]	0.27	0.27
d1 = limit for adjacent panels [ft]	0.58	0.58
Minimum height above roof edge [ft]	0.54	0.54



PV Module Data		
Chord length [ft]	5.577	
Width [ft]	3.333	
Area [sqft]	18.59	
Thickness [ft]	0.131	
Weight [lbs]	39.68	
Module Dead Load	2.13	
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	-55.69
Worst Case Pressure [psf]	4.89	-39.69
Worst Case Roof Zone	1 (Non-Exposed)	3_OH (Non-Exposed)
Net Load Pressure [psf]	7.02	-37.56
Margin [psf]	68.16	-18.13
Safety Factor (OK IF OVER 1.0)	10.70	1.48
Total Array Calculations		
Roof Type	Gable	Flat
Minimum Number of Attachments	41	71
Number of Fasteners per Attachment	4	4
Total Array Weight [lbs]	674.56	1071.36
Total Array Area [sqft]	316.01	501.90
Total Roof Area [sqft]	3828.22	
Percentage of Total Occupied Roof Area [%]	21.37	
Total Array Uplift [lbs]	-7265.10	-10163.48
Force per Attachment [lbs]	-177.20	-143.15
Force Per Fastener [lbs]	-44.30	-35.79
Max Allowed Force Per Fastener [lbs]	69.5	69.5
Safety Factor (OK if over 1.50)	1.57	1.94



LEGEND

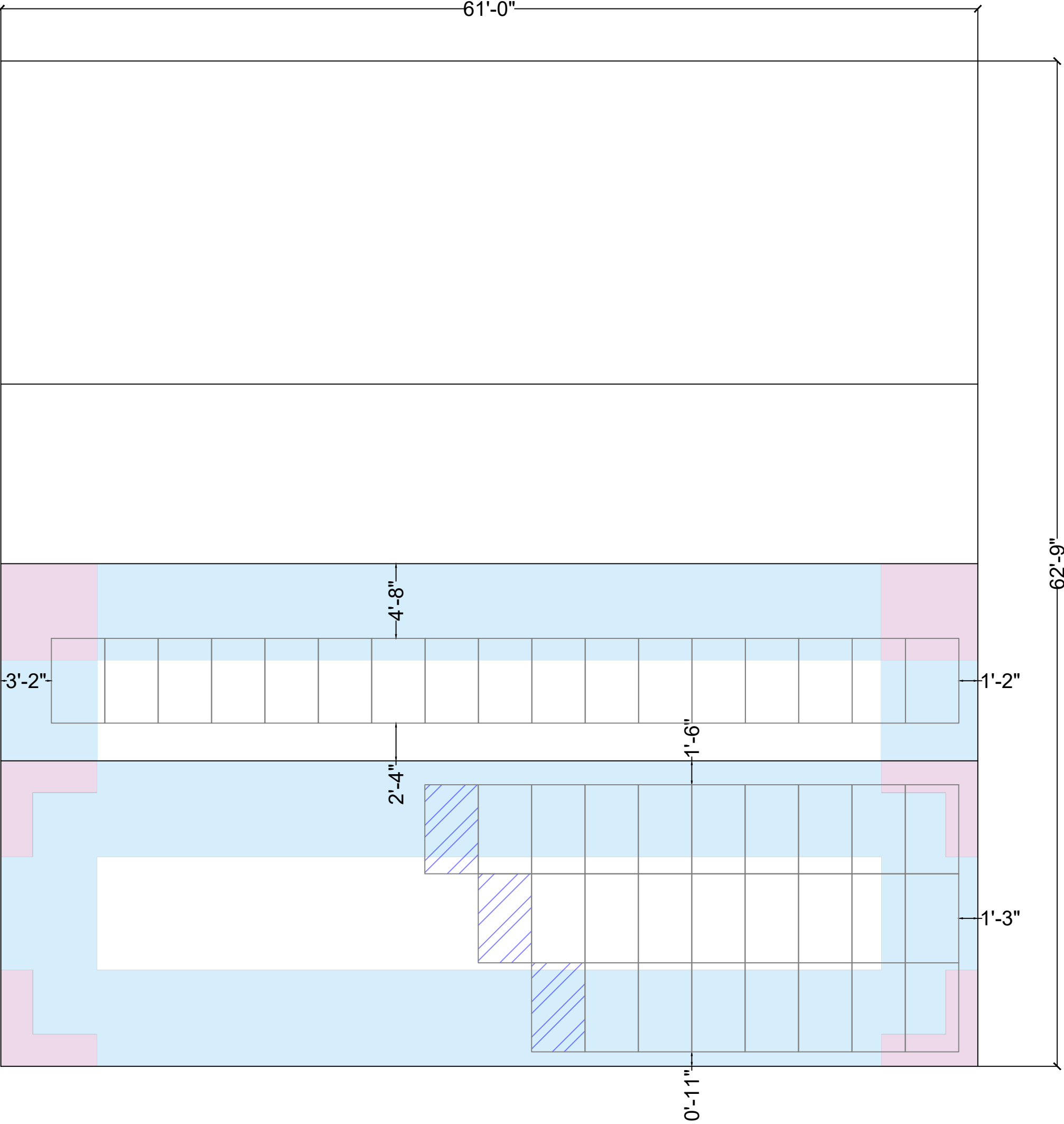
ROOF ZONE 1

ROOF ZONE 2

ROOF ZONE 3

EXPOSED MODULE

EXISTING MODULE



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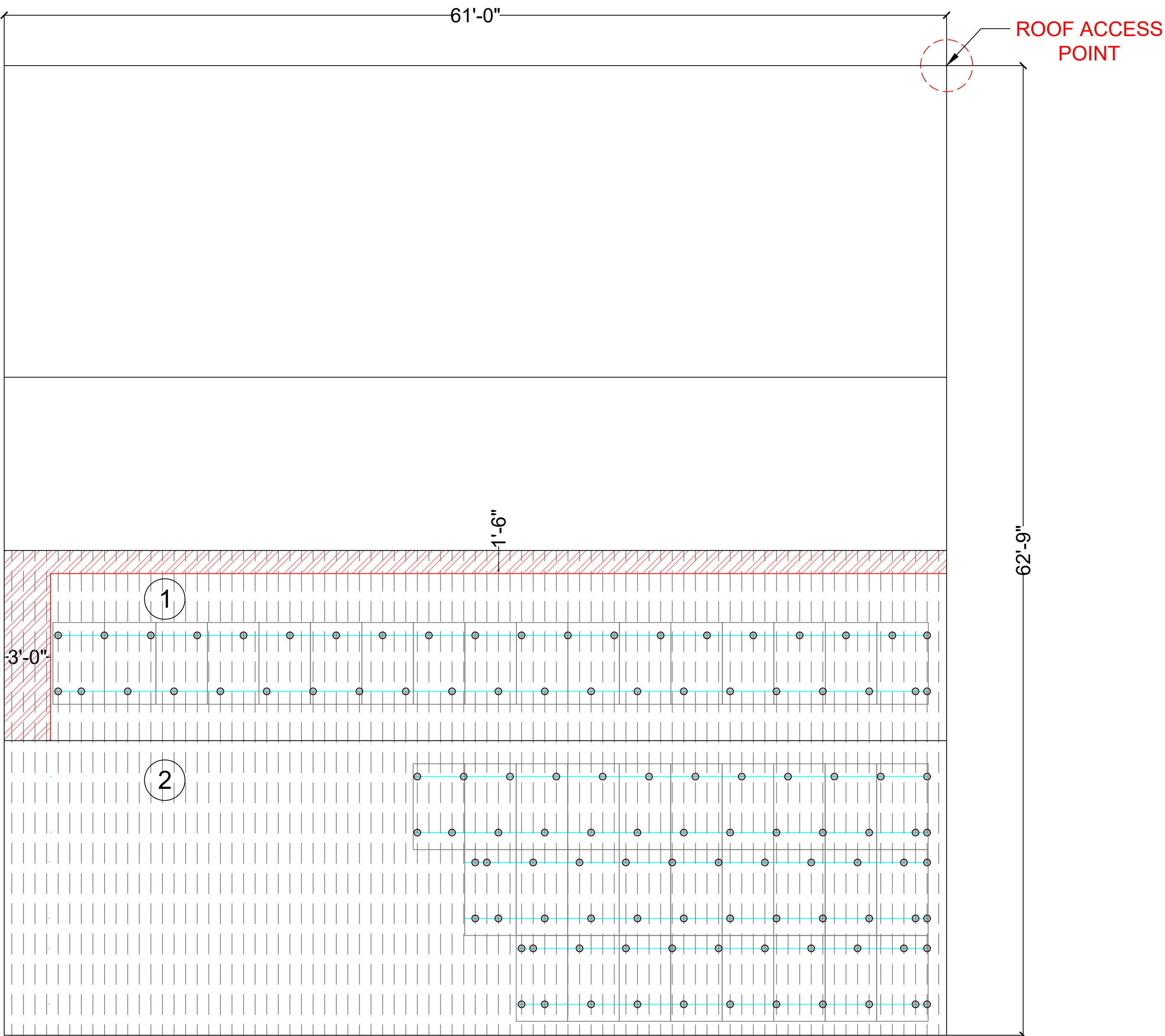
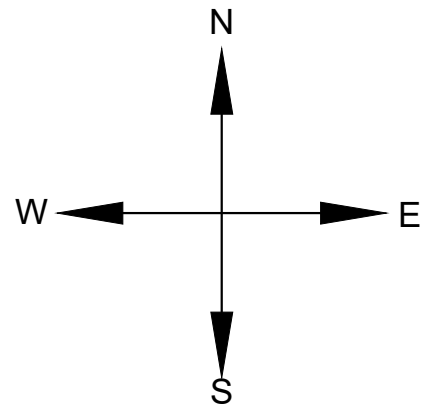
PROJECT ADDRESS:
176 NW Cambridge Hill Way
Lake City, FL 32055

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

DRAWING SCALE:
N.T.S.

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	17	0	180	4:12	18.43
2	27	0	180	1:12	4.76

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:

SINCE ROOF SLOPE IS LESS THAN 2:12, FIRE SETBACKS SHALL NOT BE APPLICABLE, PURSUANT TO R324.6 - EXCEPTION (3)

LEGEND

FIRE SETBACK

RAILS

5V METAL

ATTACHMENT

ROOF PLANE #

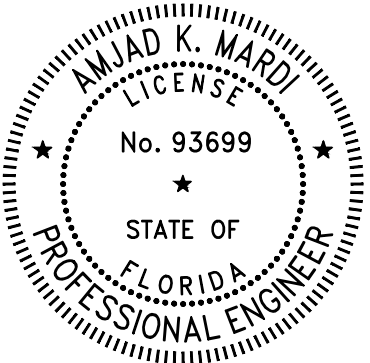
EXISTING MODULE



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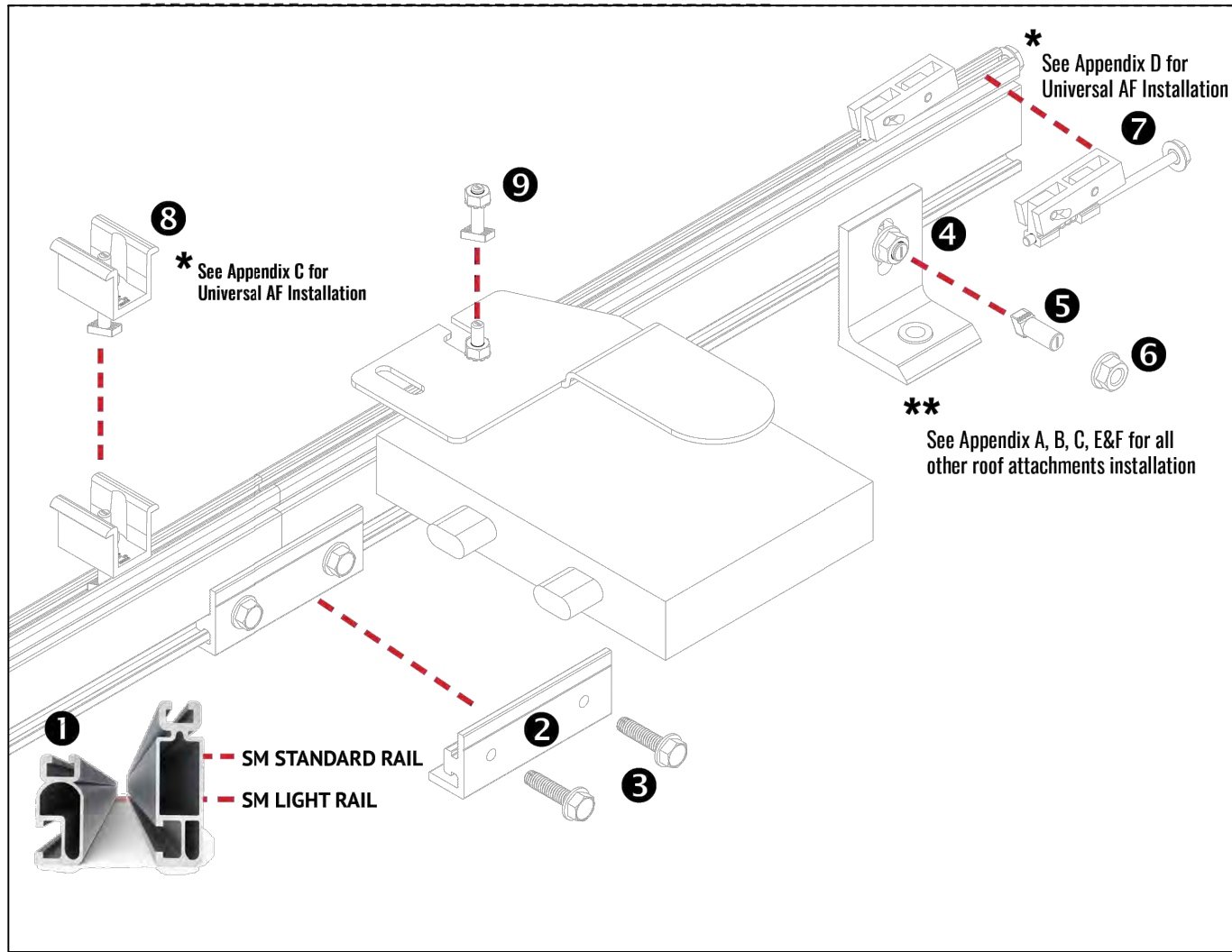
SHEET NAME:

ATTACHMENT DETAIL & ARRAY LAYOUT

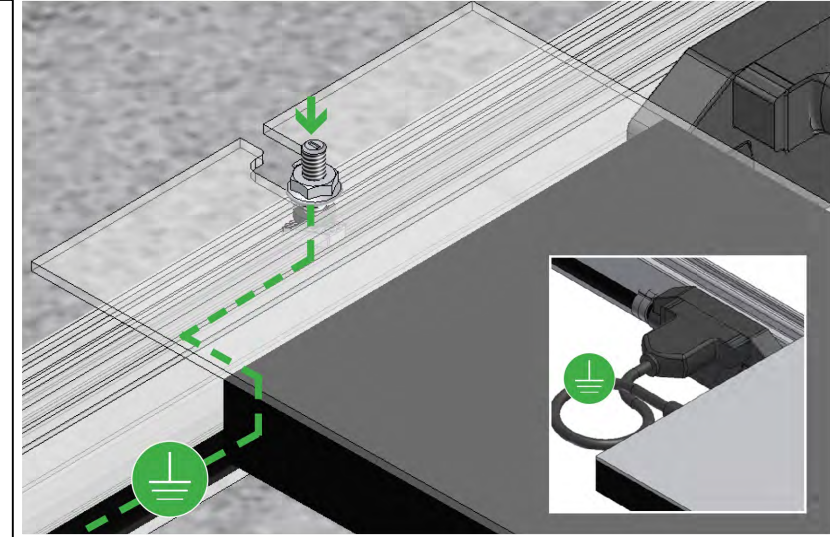
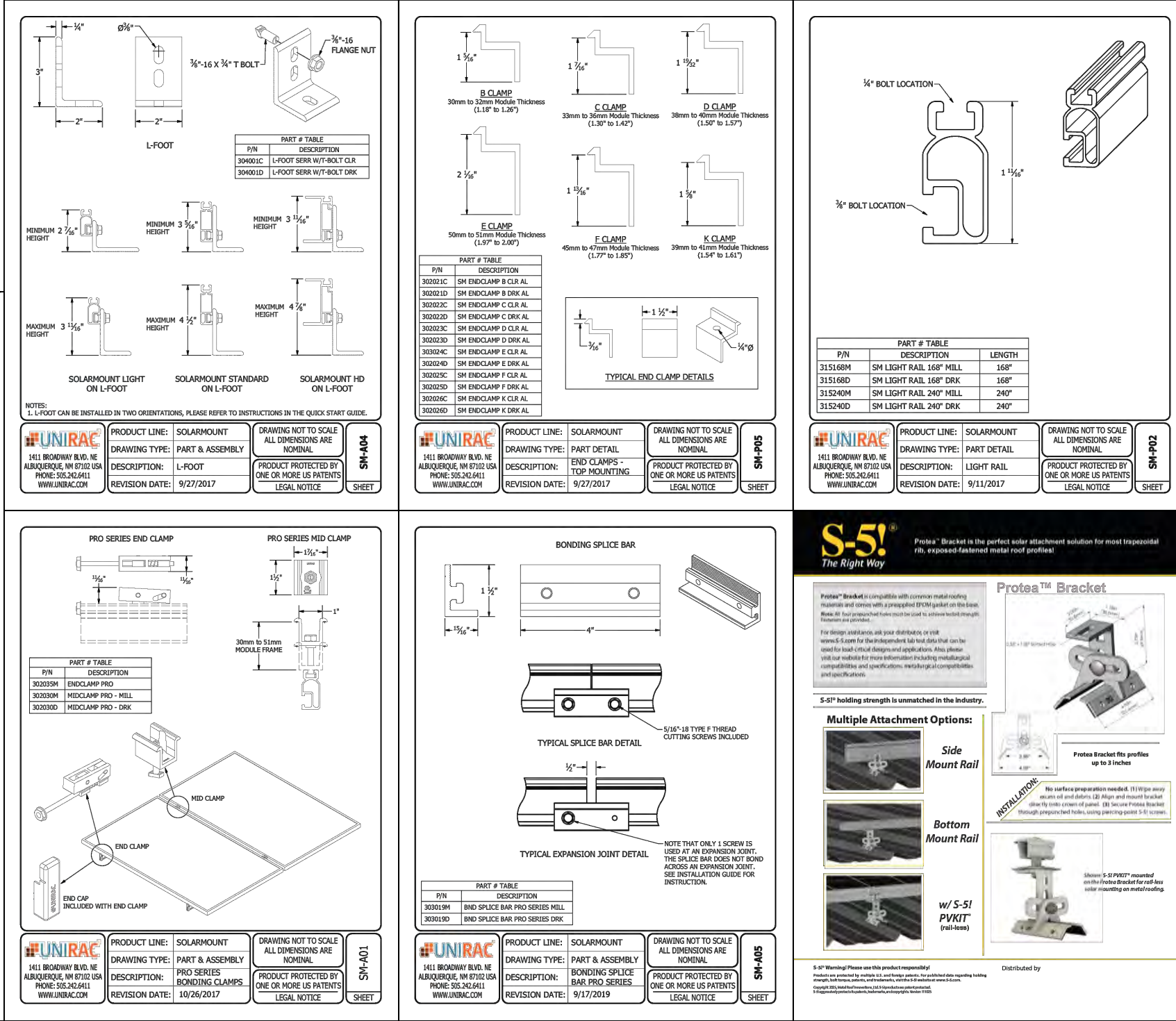
SHEET NUMBER:

S3

Structural plans certified as provided in Section 106.1.4.1 of the D.C. Construction Codes.



RACKING & MOUNTING SPECIFICATIONS



SM EQUIPMENT GROUNDING THROUGH ENPHASE MICROINVERTERS

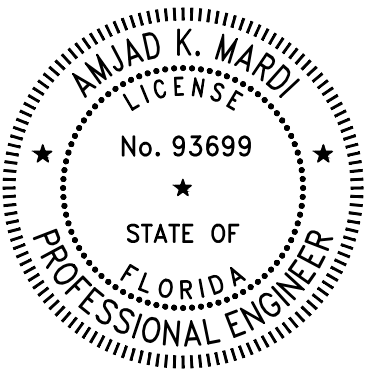
The Enphase M215 and M250 microinverters have integrated grounding capabilities built in. In this case, the DC circuit is isolated from the AC circuit, and the AC equipment grounding conductor (EGC) is built into the Enphase Engage integrated grounding (IG) cabling. In order to ground the SOLARMOUNT racking system through the Enphase microinverter and Engage cable assembly, there must be a minimum of three PV modules connected to the same trunk cable within a continuous row. Continuous row is defined as a grouping of modules installed and bonded per the requirements of this installation guide sharing the same two rails. The microinverters are bonded to the SOLARMOUNT rail via the mounting hardware. Complete equipment grounding is achieved through the Enphase Engage cabling with integrated grounding (IG). No additional EGC grounding cables are required, as all fault current is carried to ground through the Engage cable.



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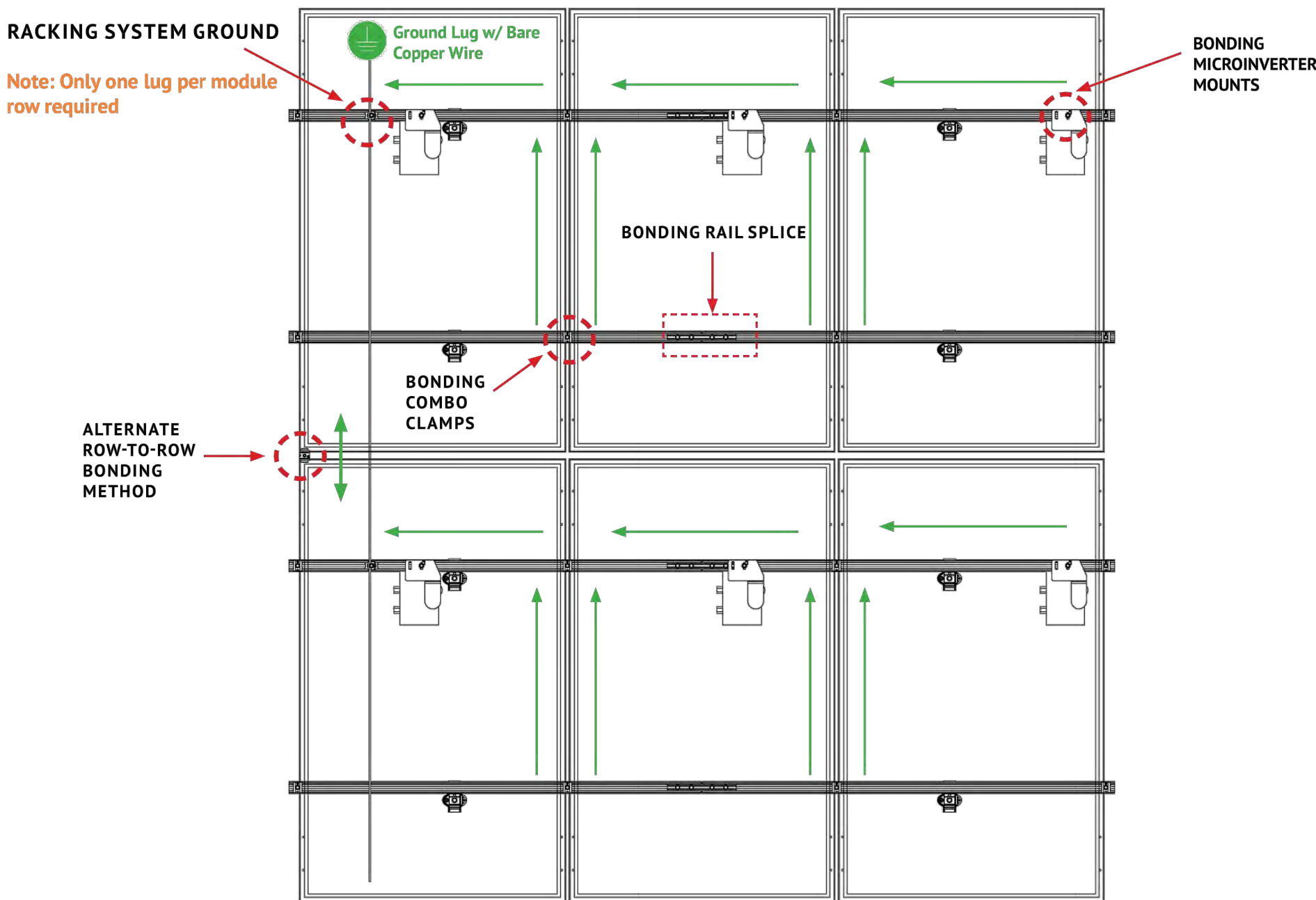
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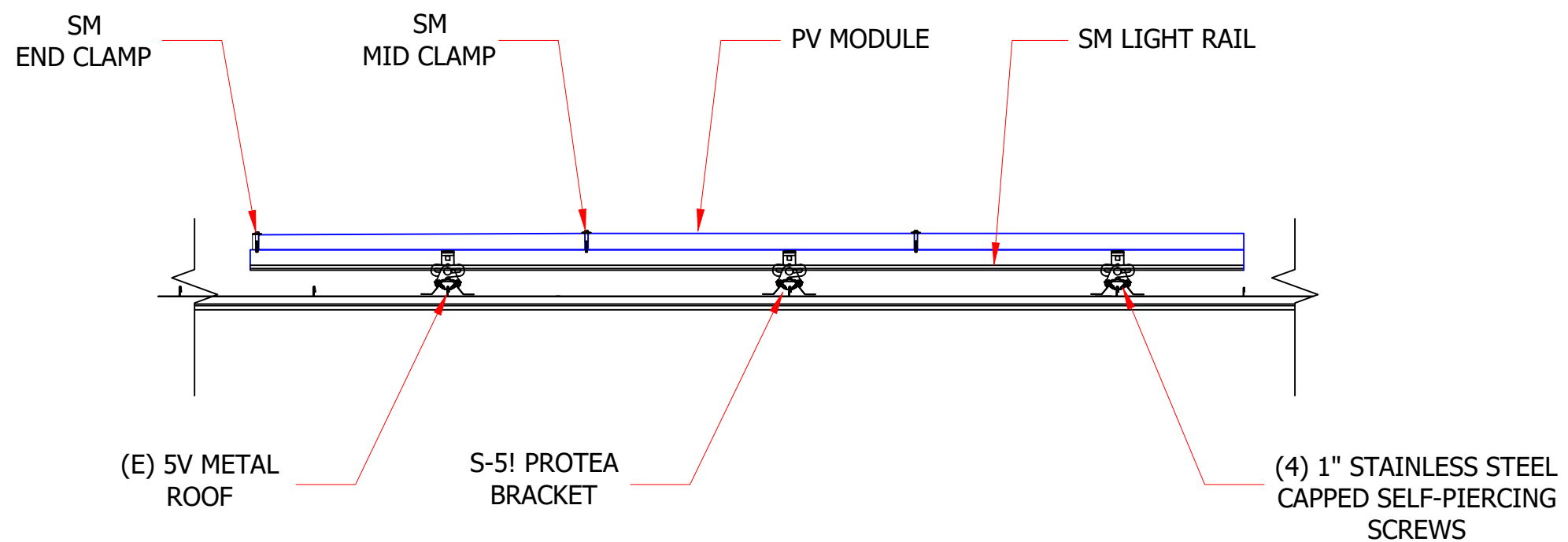
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GROUNDING



INSTALLATION DETAIL



PROJECT NAME:

VRASTIL WILLIAM RESIDENCE

PROJECT ADDRESS:

176 NW Cambridge Hill Way
Lake City, FL 32055

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

DRAWING SCALE:

N.T.S.

SHEET NAME:

MOUNTING & FLASHING
DETAIL

SHEET NUMBER:

S4

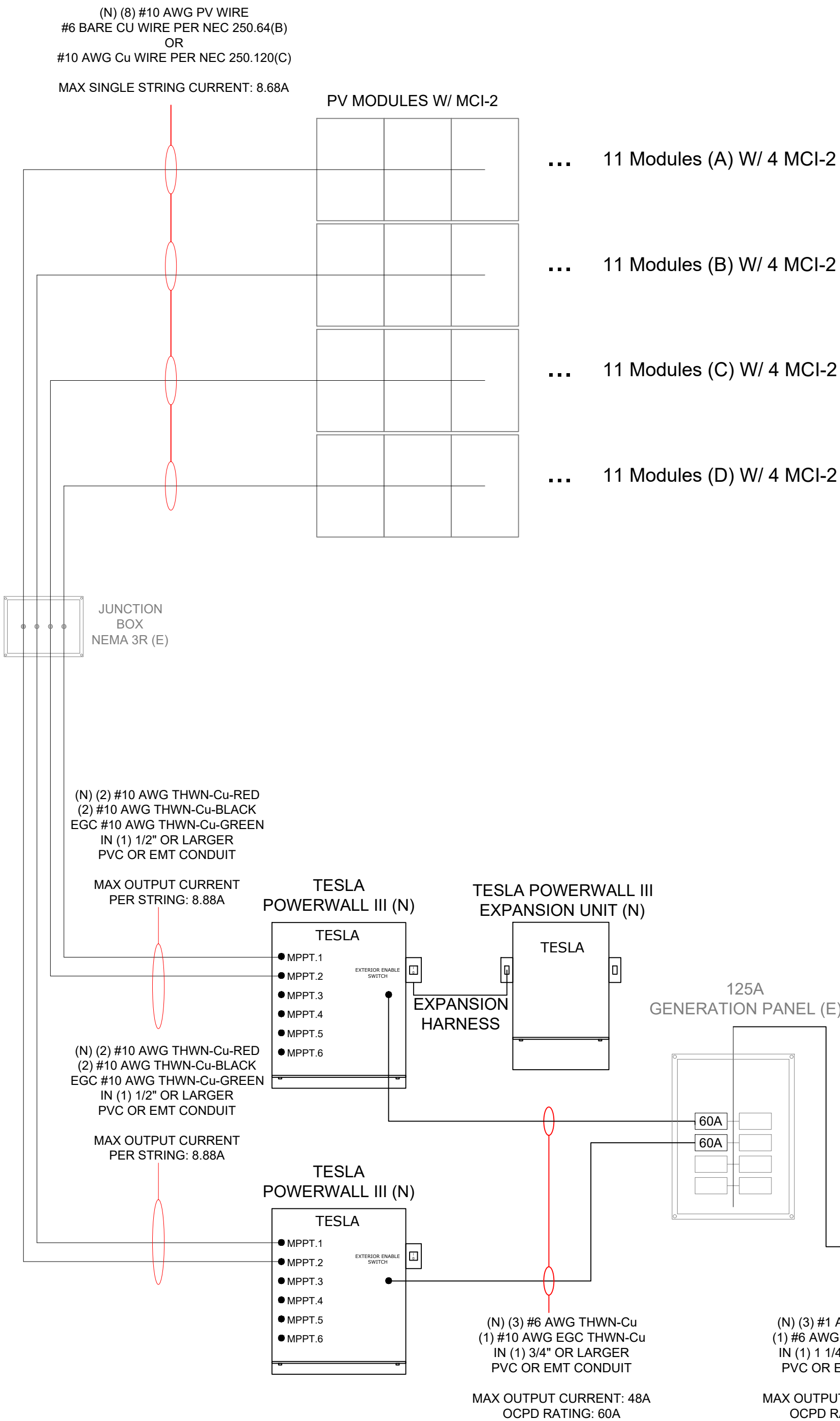
LEGEND

N

NEW

E

EXISTING



SYSTEM DETAILS	
PV Module Type	LG LG355N1C-N5
PV Module Quantity	44
Solar PV DC System Rating (kWdc)	15.62
Solar PV AC System Rating (kWac)	13.277
Solar Gross Power Rating (KWac)	15.2
Inverter Type	Tesla Powerwall 3 Integrated Inverter
Inverter Quantity	2
Battery Type	Tesla Powerwall 3 & Expansion Unit

TESLA SOLAR SHUTDOWN DEVICE NOTE:

1 TESLA SOLAR SHUTDOWN DEVICE IS REQUIRED FOR EVERY 3 MODULES MAX.

NOTE:

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

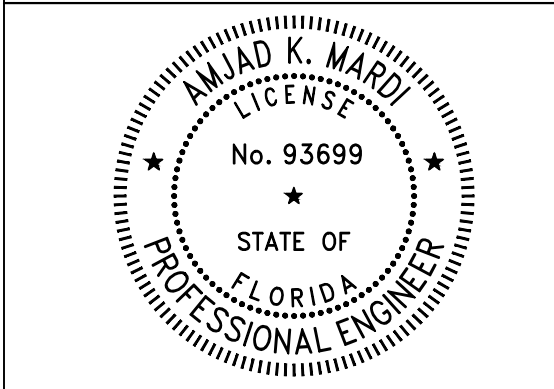
EXPECTED VOLTAGE PER STRING			
STRING	NUMBER OF MODULES	VOLTAGE (VMP)	VOLTAGE (VOC)
1	11	358.6	430.1
2	11	358.6	430.1
3	11	358.6	430.1
4	11	358.6	430.1



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REVISION HISTORY	

DRAWING SCALE:

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

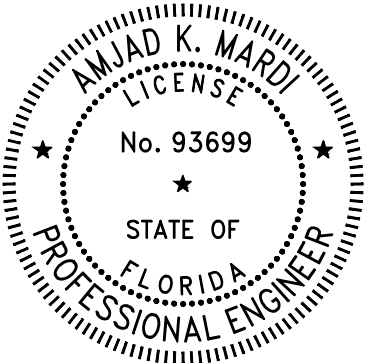
Temperature Adjusted Conductor Ampacity - Assuming 45 °C						
Conductor Size (AWG)	Ampacity at 75 °C	Temp. Adjusted Ampacity (0.82 Adjustment Factor at 45 °C)	Temp. Adjusted Ampacity (4-6 Current-Carrying Conductors - 0.80 Adjustment Factor)	Ampacity at 90 °C	Temp. Adjusted Ampacity (0.87 Adjustment 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			LG			
Model Number			LG355N1C-N5			
Temperature Coefficient - Voltage			-0.26% / oC			
Temperature Coefficient - Current			0.03% / oC			
Temperature Coefficient - Power			-0.34% / oC			
Specifications at STC						
Maximum Power - Pmp			355 W			
Maximum Power Voltage - Vmp			32.6 V			
Maximum Power Current - Imp			8.17 A			
Open Circuit Voltage - Voc			39.1 V			
Short Circuit Current - Isc			8.68 A			
Temperature Adjusted						
Vmp Min			30.9 V			
Voc Max			40.62 V			
Inverter Specifications						
Manufacturer			TESLA			
Model Number			1707000-xx-y			
MPPT Voltage Range			150-480 V			
Operating Voltage Range			60-550 V			
Maximum Input Voltage			550 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)			#1			
Max PV OCPD Rating (Amps)			125			
Max Circuit Distance (ft)			30			
Voltage Drop Percentage From Rooftop Junction Box to Inverter (%)			0.54			
Voltage Drop Percentage From Inverter to ACD & ACD to Point of Interconnection (%)			0.45			



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VRASTIL WILLIAM
RESIDENCE

PROJECT ADDRESS:

176 NW Cambridge Hill Way
Lake City, FL 32055

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:

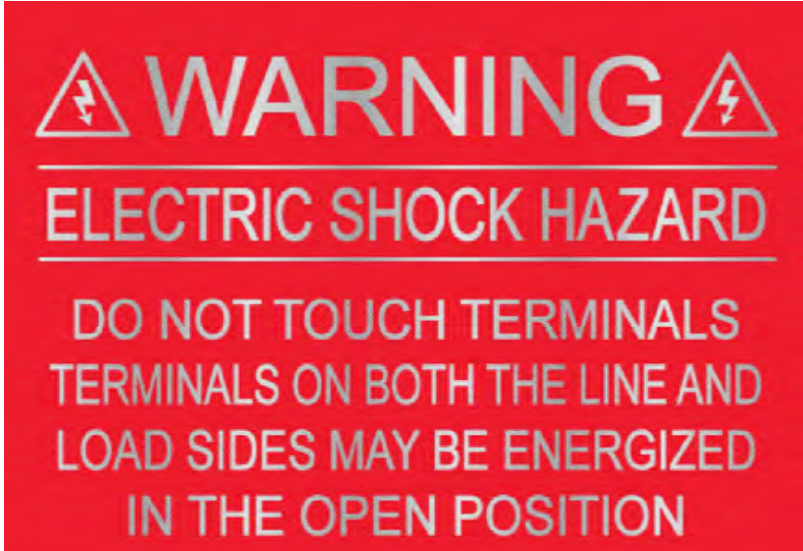
E2



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.



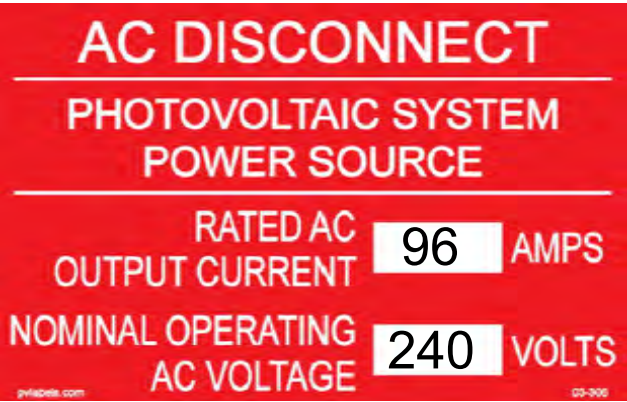
NEC 690.56(C)(2) label is required at the rapid shut down switch for the system. Typically, that is going to be the AC disconnect.



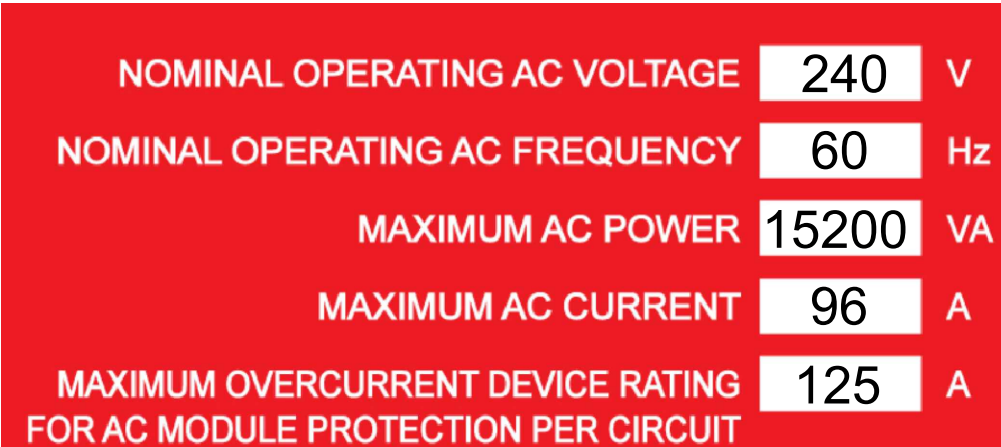
NEC 705.12(C) label is required at the main service equipment.



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



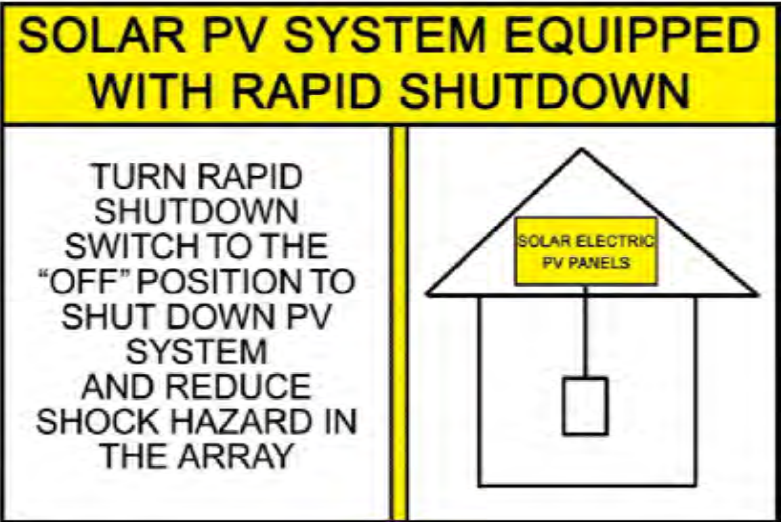
NEC 690.54 label is required at the AC disconnecting means



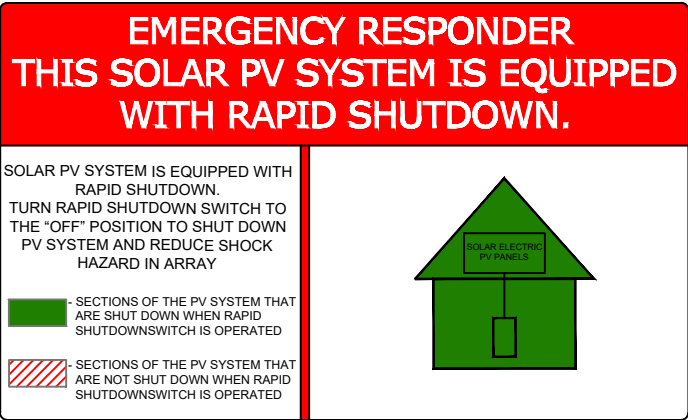
NEC 690.56(B) or NEC 705.10 label is required at every power source disconnecting means denoting location(s) of other power source(s) disconnecting means.



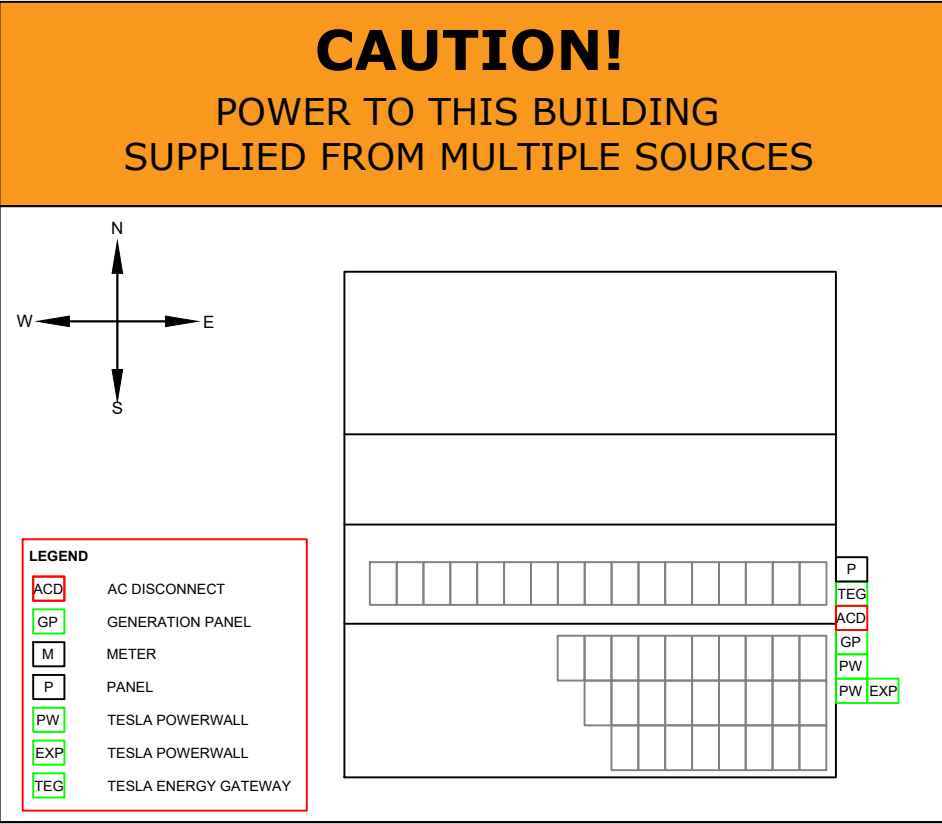
NEC 705.12(C) label is required at the main service equipment.



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")

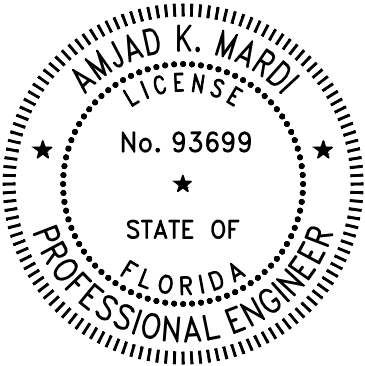


NFPA - 1, 11.12.2.1.5:
THIS LABEL IS REQUIRED AT MAIN DISCONNECT



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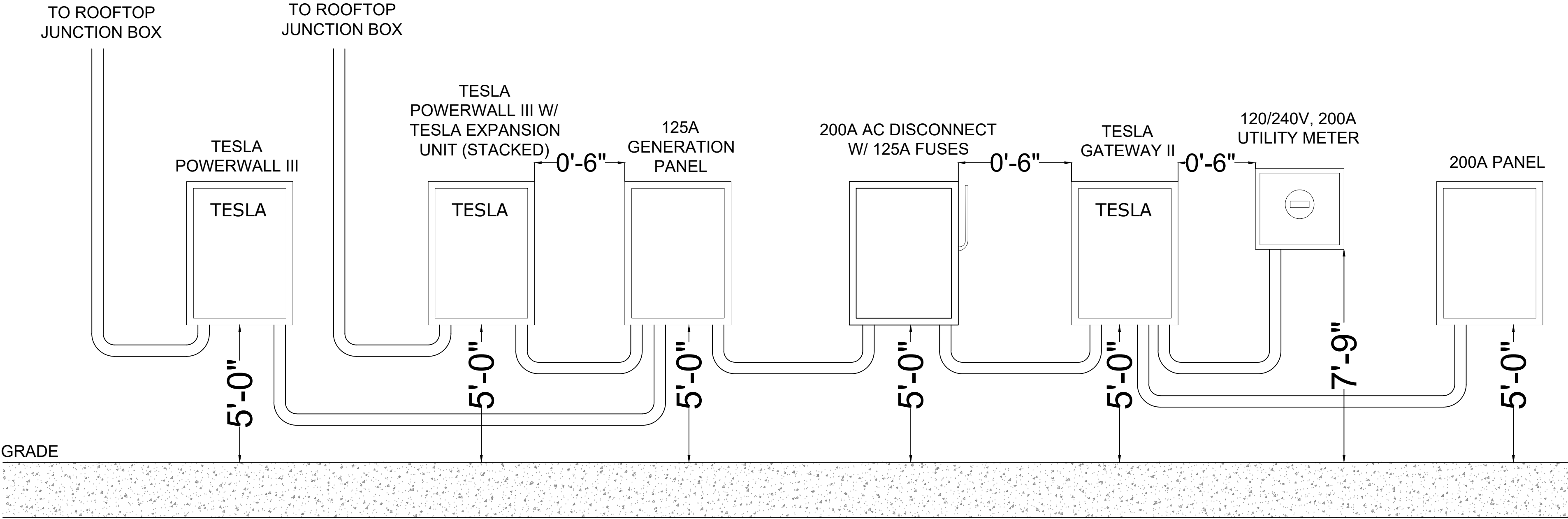
SHEET NAME:

SOLAR PV LABELS

SHEET NUMBER:

E3

EXTERIOR EAST WALL



NOTE:

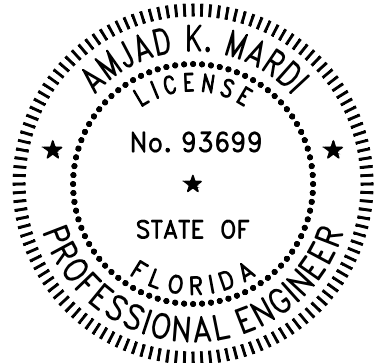
- TESLA POWERWALL 3 IS UL 9540 LISTED AND UL 9540A TESTED. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE TESLA POWERWALL 3 AND GATEWAY 3 INSTALLATION MANUALS AND ALL APPLICABLE STATE AND LOCAL BUILDING, FIRE, AND ELECTRICAL CODES.
- POWERWALL 3 SHALL BE WALL-MOUNTED PLUMB (MAX SLOPE $\pm 2^\circ$ SIDE-TO-SIDE) ON A WALL CAPABLE OF SUPPORTING THE FULL WEIGHT OF THE UNIT, WITH A MINIMUM LATERAL WALL SPACE OF 32 IN. (808 mm) AND MAXIMUM HEIGHT OF 45 IN. (1140 mm) FROM GROUND TO BOTTOM OF FEET.
- MAINTAIN THE FOLLOWING MINIMUM POWERWALL 3 CLEARANCES PER MANUFACTURER: 4 IN. (100 mm) LEFT SIDE, 4 IN. (100 mm) RIGHT SIDE, 2 IN. (50 mm) ABOVE, 0.8 IN. (20 mm) BELOW (FEET INSTALLED), AND 12 IN. (300 mm) IN FRONT FOR AIRFLOW.
- WHERE UNITS ARE INSTALLED SIDE-BY-SIDE, MAINTAIN A MINIMUM 4 IN. (100 mm) BETWEEN UNITS; 6 IN. (150 mm) RECOMMENDED FOR WIRING AND ON/OFF SWITCH ACCESS.
- MAINTAIN A MINIMUM 36 IN. (914 mm) WORKING CLEARANCE IN FRONT OF POWERWALL 3 AND ALL ELECTRICAL EQUIPMENT PER NEC 110.26. THIS SUPERSEDES THE 12 IN. AIRFLOW MINIMUM.
- MAINTAIN CODE-REQUIRED SEPARATION FROM DOORS AND WINDOWS ENTERING LIVING/CONDITIONED SPACE (TYPICALLY 3 FT / 914 mm), SUBJECT TO AHJ AND ADOPTED CODE EDITION. POWERWALL 3 IS NOT INTENDED FOR INSTALLATION IN HABITABLE OR LIVING SPACES.
- WHERE INSTALLED INDOORS, PROVIDE A MINIMUM ROOM VOLUME EQUIVALENT TO $5.25 \times 5.25 \times 8$ FT ($1.6 \times 1.6 \times 2.4$ m) PER UL 9540 / UL 9540A, REGARDLESS OF UNIT QUANTITY.



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N.T.S.

SHEET NAME:

ELECTRICAL ELEVATION
DRAWINGS

SHEET NUMBER:

E4

LG NeON[®]2

360W | 355W | 350W

The LG NeON[®] 2 is one of the most powerful and versatile modules on the market today. Featuring LG's Cello Technology in monocrystalline n-type solar cells, the LG NeON[®] 2 increases power output. Now includes a 25 years product and 90.1% performance warranty for higher performance and reliability. The new LG NeON[®] 2 has been designed with aesthetics in mind using new cell design.



Feature



Enhanced Performance Warranty

LG NeON[®] 2 has an enhanced performance warranty. After 25 years, LG NeON[®] 2 is guaranteed to perform at minimum 90.1% of initial performance.



Enhanced Product warranty

LG has extended the warranty of the NeON[®] 2 to 25 years, which is among the top of industry standards.

About LG Electronics

LG Electronics is a global big player, committed to expanding its operations with the solar market. The company first embarked on a solar energy source research program in 1985, supported by LG Group's vast experience in the semi-conductor, LCD, chemistry and materials industries. In 2010, LG Solar successfully released its first Mono[®] series to the market, which is now available in 32 countries. The NeON[®] (previous Mono[®] NeON), NeON[®]2, NeON[®]2 BiFacial won the "Intersolar AWARD" in 2013, 2015 and 2016, which demonstrates LG Solar's lead, innovation and commitment to the industry.



LG NeON[®]2

LG360N1C-N5 | LG355N1C-N5 | LG350N1C-N5

General Data

Cell Properties/Material / Type	Monocrystalline / N-type
Cell Maker	LG
Cell Configuration	60 Cells (6 × 10)
Number of Bypass	12EA
Module Dimensions (L × W × H)	1,700mm × 1,016mm × 40 mm
Weight	18.0 kg
Glass/Material	Tempered Glass with AR Coating
Backsheet(Color)	White
Frame(Material)	Anodized Aluminium
Junction Box(Protection Degree)	IP 68 with 3 Bypass Diodes
Cables(Length)	1,000 mm × 2EA
Connector(Type / Maker)	MC 4 / MC

Certifications and Warranty

Certifications	IEC 61215-1/-1-1/-2:2016, IEC 61730-1/2:2016 ISO 9001, ISO 14001, ISO 50001 OHSAS 18001
Salt Mist Corrosion Test	IEC 61701:2012 Severity 6
Ammonia Corrosion Test	IEC 62716 : 2013
Hail Test	25mm (1") diameter at 23 m/s (52 mph)
Fire Rating	Class C (UL 790)
Solar Module Product Warranty	25 Years
Solar Module Output Warranty	Linear Warranty*

* 1) First year : 98% 2) After 1st year : 0.33% annual degradation, 3) 90.1% for 25 years

Temperature Characteristics

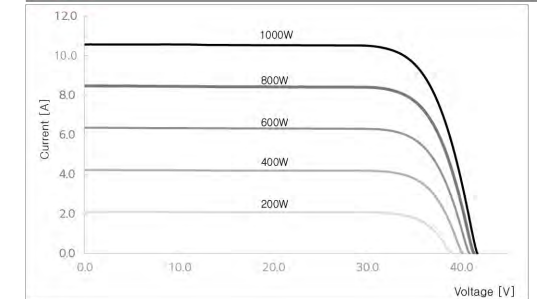
TMOT [†]	[°C]	42±3
P _{max}	[%/°C]	-0.34
V _{oc}	[%/°C]	-0.26
I _{sc}	[%/°C]	0.03

[†] TMOT (Nominal Module Operating Temperature) Irradiance 800 W/m², Ambient temperature 20 °C, Wind speed 1 m/s, Spectrum AM 1.5

Electrical Properties (NMOT)

Model		LG360N1C-N5	LG355N1C-N5	LG350N1C-N5
Maximum Power (Pmax)	[W]	270	266	263
MPP Voltage (Vmpp)	[V]	33.0	32.6	32.2
MPP Current (Impp)	[A]	8.20	8.17	8.15
Open Circuit Voltage (Voc)	[V]	39.2	39.1	39.0
Short Circuit Current (Isc)	[A]	8.71	8.68	8.64

I-V Curves



LG Electronics Inc.
Energy Business Division
LG Twin Towers, 128 Yeou-daem, Yeongdeungpo-gu, Seoul
07336, Korea
www.lg-solar.com

Product specifications are subject to change without notice.
DS-N5-60-C-G-F-EN-200507
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Electrical Properties (STC*)

Model		LG360N1C-N5	LG355N1C-N5	LG350N1C-N5
Maximum Power (Pmax)	[W]	360	355	350
MPP Voltage (Vmpp)	[V]	35.1	34.7	34.3
MPP Current (Impp)	[A]	10.28	10.25	10.22
Open Circuit Voltage(Voc, ± 5%)	[V]	41.6	41.5	41.4
Short Circuit Current(Isc, ± 5%)	[A]	10.84	10.80	10.76
Module Efficiency	[%]	20.8	20.6	20.3
Power Tolerance	[%]	0 ~ +3		

* STC (Standard Test Condition) Irradiance 1000 W/m², Cell temperature 25 °C, AM 1.5, Measurement Tolerance of P_{max} : ± 3%

Operating Conditions

Operating Temperature	[°C]	-40 ~ +90
Maximum System Voltage	[V]	1000(IEC)
Maximum Series Fuse Rating	[A]	20
Mechanical Test Load [†] (Front)	[Pa / psf]	5,400 / 113
Mechanical Test Load [†] (Rear)	[Pa / psf]	4,000 / 84

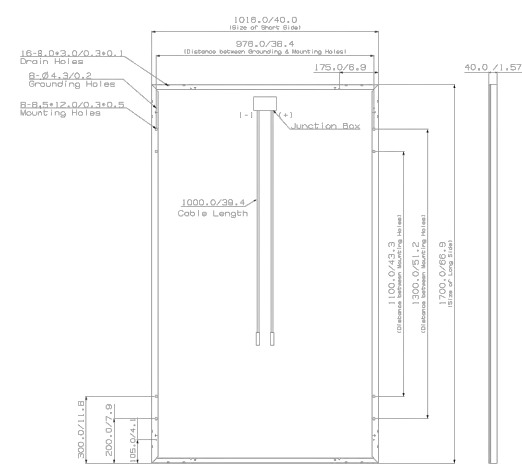
[†] Based on IEC 61215-2 : 2016 (Test Load = Design Load × Safety Factor(1.5))

[‡] Mechanical Test Loads 6,000Pa / 5,400Pa based on IEC 61215:2005

Packaging Configuration

Number of Modules per Pallet	[EA]	25
Number of Modules per 40ft HQ Container	[EA]	650
Packaging Box Dimensions (L × W × H)	[mm]	1,750 × 1,120 × 1,221
Packaging Box Gross Weight	[kg]	464

Dimensions (mm / inch)



Module Mounting Instructions

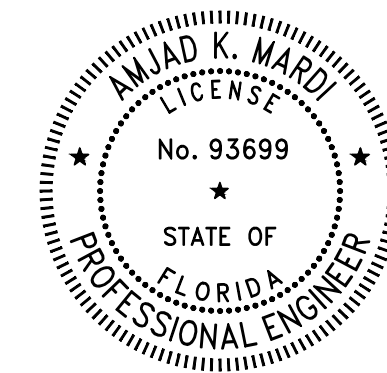
Fig 1. Bolting type(M8)		Fig 2. Clamping Type	
Position (mm)	Load Front/Rear(Pa)	Position (mm)	Load Front/Rear(Pa)
200 or 300	5400/4000	200 ~ 400	5400/4000
Fig 3. Clamping Type		Fig 4. Clamping Type	
Position (mm)	Load Front/Rear(Pa)	Position (mm)	Load Front/Rear(Pa)
A 0~50	2400/2400	200 ~ 400	5400/4000
B 0~650			



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REVISION HISTORY	

DRAWING SCALE:

N.T.S.

SHEET NAME:

SOLAR MODULE SPECIFICATIONS

SHEET NUMBER:

APP.1

Powerwall 3 Technical Specifications

System Technical Specifications

Model Number	1707000-xx-y			
Nominal Grid Voltage (Input & Output)	120/240 VAC			
Grid Type	Split phase			
Frequency	60 Hz			
Nominal Battery Energy	13.5 kWh AC ¹			
Nominal Output Power (AC)	5.8 kW	7.6 kW	10 kW	11.5 kW
Maximum Apparent Power	5,800 VA	7,600 VA	10,000 VA	11,500 VA
Maximum Continuous Current	24 A	31.7 A	41.7 A	48 A
Overcurrent Protection Device ²	30 A	40 A	60 A	60 A
Maximum Continuous Charge Current / Power (Powerwall 3 only)	20.8 A AC / 5 kW			
Maximum Continuous Charge Current / Power (Powerwall 3 with up to (3) Expansion units)	33.3 A AC / 8 kW			
Output Power Factor Rating	0 - 1 (Grid Code configurable)			
Maximum Output Fault Current (1 s)	160 A			
Maximum Short-Circuit Current Rating	10 kA			
Load Start Capability	185 LRA			
Solar to Battery to Home/Grid Efficiency	89% ^{1,3}			
Solar to Home/Grid Efficiency	97.5% ⁴			
Power Scalability	Up to 4 Powerwall 3 units supported			
Energy Scalability	Up to 3 Expansion units (for a maximum total of 7 units)			
Supported Islanding Devices	Gateway 3, Backup Switch, Backup Gateway 2			
Connectivity	Wi-Fi (2.4 and 5 GHz), Ethernet, Cellular (LTE/4G ⁵)			
Hardware Interface	Dry contact relay, Rapid Shutdown (RSD) certified switch and 2-pin connector, RS-485 for meters			
AC Metering	Revenue Grade (+/- 0.5%, ANSI C12.20)			
Protections	Integrated arc fault circuit interrupter (AFCI), Isolation Monitor Interrupter (IMI), PV Rapid Shutdown (RSD) using Tesla Mid-Circuit Interrupters			
Customer Interface	Tesla Mobile App			
Warranty	10 years			

¹ Values provided for 25°C (77°F), at beginning of life. 3.3 kW charge/discharge power.
² See [Powerwall 3 Installation Manual](#) for fuse requirements if using fuse for overcurrent protection.
³ Typical solar shifting use case.
⁴ Tested using CEC weighted efficiency methodology.
⁵ The customer is expected to provide internet connectivity for Powerwall 3; cellular should not be used as the primary mode of connectivity. Cellular connectivity subject to network operator service coverage and signal strength.

Powerwall 3 Technical Specifications

Solar Technical Specifications

Maximum Solar STC Input	20 kW
Withstand Voltage	600 V DC
PV DC Input Voltage Range	60 — 550 V DC
PV DC MPPT Voltage Range	60 — 480 V DC
MPPTs	6
Maximum Current per MPPT (I _{mp})	13 A ⁶
Maximum Short Circuit Current per MPPT (I _{sc})	15 A ⁶

⁶ Where the DC input current exceeds the MPPT rating, a jumper can be used to combine two MPPTs into a single input to intake DC current up to 26 A I_{mp} / 30 A I_{sc}.

Environmental Specifications

Operating Temperature	–20°C to 50°C (–4°F to 122°F) ⁷
Operating Humidity (RH)	Up to 100%, condensing
Storage Temperature	–20°C to 30°C (–4°F to 86°F), up to 95% RH, non-condensing, State of Energy (SOE): 25% initial
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Rating	NEMA 3R
Ingress Rating	IP67 (Battery & Power Electronics) IP55 (Wiring Compartment)
Pollution Rating	PD3
Operating Noise @ 1 m	< 50 db(A) typical < 62 db(A) maximum

⁷ Performance may be de-rated at operating temperatures above 40°C (104°F).

Compliance Information

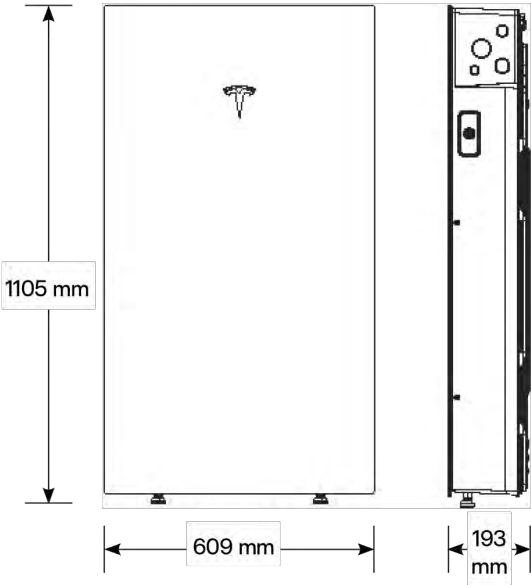
Certifications	UL 1741, UL 9540, UL 9540A, UL 3741, UL 1741 PCS, UL 1741 SA, UL 1741 SB, UL 1973, UL 1699B, UL 1998, CSA C22.2 No. 0.8, CSA C22.2 No. 1071, CSA C22.2 No. 330, CSA 22.3 No. 9, IEEE 1547, IEEE 1547A, IEEE 15471, CA Rule No.21
Grid Connection	United States and Canada
Emissions	FCC Part 15 Class B, ICES 003
Environmental	RoHS Directive 2011/65/EU
Seismic	AC156, IEEE 693-2005 (high)
Fire Testing	Meets the unit level performance criteria of UL 9540A

Powerwall 3 Technical Specifications

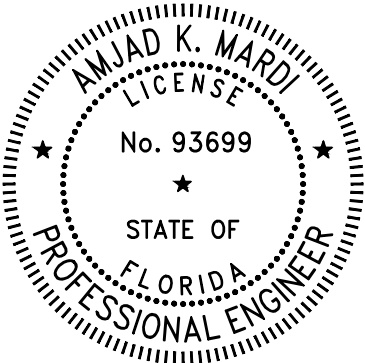
Mechanical Specifications

Dimensions	1105 x 609 x 193 mm (43.5 x 24 x 7.6 in) ⁸
Total Weight of Installed Unit	132 kg (291.2 lb)
Weight of Powerwall 3	124 kg (272.5 lb)
Weight of Glass Front Cover	6.5 kg (14.5 lb)
Weight of Wall Bracket	1.9 kg (4.2 lb)
Mounting Options	Floor or wall mount

⁸ These dimensions include the glass front cover being installed on Powerwall 3.



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PROJECT NAME:

VRASTIL WILLIAM RESIDENCE

PROJECT ADDRESS:

176 NW Cambridge Hill Way
Lake City, FL 32055

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

DRAWING SCALE:

N.T.S.

SHEET NAME:

INVERTER SPECIFICATIONS

SHEET NUMBER:

APP.2

Gateway 3

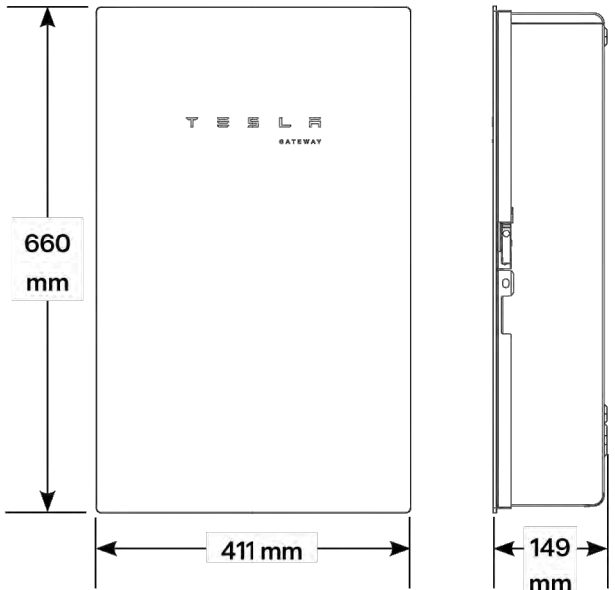
Tesla Gateway 3 controls connection to the grid in a Powerwall system, automatically detecting outages and providing seamless transition to backup power. It provides energy monitoring that is used by Powerwall for solar self-consumption, time-based control, and backup operation.

Performance Specifications	Model Number	1841000-01-y	AC Meter	Revenue accurate (+/- 0.5%)
	Nominal Grid Voltage	120/240 V AC	Communication	CAN
	Grid Configuration	Split phase	User Interface	Tesla App
	Grid Frequency	60 Hz	Backup Transition	Automatic disconnect for seamless backup
	Continuous Current Rating	200 A	Overcurrent Protection Device	100–200 A Service entrance rated Eaton CSR, BWH, or BW, or Square D QOM breakers
	Maximum Supply Short Circuit Current	22 kA with Square D or Eaton main breaker 25 kA with Eaton main breaker ¹		
	IEC Protective Class	Class I	Internal Panelboard	200 A 8-space/16 circuit breakers Eaton BR, Siemens QP, or Square D HOM breakers rated to 10–125A
	Overvoltage Category	Category IV	Warranty	10 years
¹ Only Eaton CSR or BWH main breakers are 25 kA rated				

Environmental Specifications	Operating Temperature	–20°C to 50°C (–4°F to 122°F)
	Operating Humidity (RH)	Up to 100%, condensing
	Maximum Elevation	3000 m (9843 ft)
	Environment	Indoor and outdoor rated
	Enclosure Type	NEMA 3R

Compliance Information	Certifications	UL 67, UL 869A, UL 916, UL 1741 PCS, CSA 22.2 107.1, CSA 22.2 29
	Emissions	FCC Part 15, ICES 003

Mechanical Specifications	Dimensions	660 x 411 x 149 mm (26 x 16 x 6 in)
	Weight	16.3 kg (36 lb)
	Mounting options	Wall mount



Solar Shutdown Device Technical Specifications

The Solar Shutdown Device is a Mid-Circuit Interrupter (MCI) and is part of the PV system rapid shutdown (RSD) function in accordance with Article 690 of the applicable NEC. When paired with Powerwall 3, solar array shutdown is initiated by any loss of AC power.

Electrical Specifications	Model	MCI-1	MCI-2
	Nominal Input DC Current Rating (I _{MP})	12 A	13 A
	Maximum Input Short Circuit Current (I _{SC})	19 A	17 A
	Maximum System Voltage (PVHCS)	600 V DC	1000 V DC ⁷
RSD Module Performance	⁷ Maximum System Voltage is limited by Powerwall to 600 V DC.		
	Maximum Number of Devices per String	5	5
	Control	Power Line Excitation	Power Line Excitation
	Passive State	Normally Open	Normally Open
	Maximum Power Consumption	7 W	7 W
	Warranty	25 years	25 years

Environmental Specifications	Operating Temperature	-40°C to 50°C (-40°F to 122°F)	-45°C to 70°C (-49°F to 158°F)
	Storage Temperature	-30°C to 70°C (-22°F to 158°F)	-30°C to 70°C (-22°F to 158°F)
	Enclosure Rating	NEMA 4X / IP65	NEMA 4X / IP65

Mechanical Specifications	Electrical Connections	MC4 Connector	MC4 Connector
	Housing	Plastic	Plastic
	Dimensions	125 x 150 x 22 mm (5 x 6 x 1 in)	173 x 45 x 22 mm (6.8 x 1.8 x 1 in)
	Weight	350 g (0.77 lb)	120 g (0.26 lb)
	Mounting Options	ZEP Home Run Clip M4 Screw (#10) M8 Bolt (5/16") Nail / Wood screw	Wire Clip

Compliance Information	Certifications	UL 1741 PVRSE, UL 3741, PVRSA (Photovoltaic Rapid Shutdown Array)
	RSD Initiation Method	External System Shutdown Switch or Powerwall 3 Enable Switch

UL 3741 PV Hazard Control (and PVRSA) Compatibility

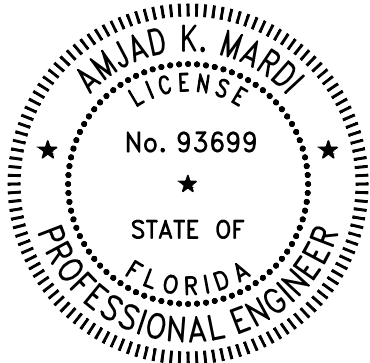
The following categories of solar module meet the UL 3741 PVHCS listing when installed with Powerwall 3 and Solar Shutdown Devices.

Tesla Solar Roof	PV Hazard Control System: BIPV compliance document
Tesla or Hanwha (Q.Peak Duo BLK or BLK-G6+) Modules certified for use with ZEP racking	PV Hazard Control System: ZS PVHCS compliance document
Other module and racking combinations	PV Hazard Control System: Generic PV Array compliance document



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Reviewed by:	AKM
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N.T.S.

SHEET NAME:

GATEWAY III SPECIFICATIONS

SHEET NUMBER:

APP.3

Powerwall 3 Expansion Technical Specifications

Battery Technical Specifications

Model Number	1807000-xx-y
Nominal Battery Energy	13.5 kWh
Voltage Range	52 – 92 V DC ⁹

⁹ Powerwall 3 Expansion units are connected in parallel and are not field serviceable.

Environmental Specifications

Operating Temperature	–20°C to 50°C (–4°F to 122°F) ¹⁰
Operating Humidity (RH)	Up to 100%, condensing
Storage Temperature	–20°C to 30°C (–4°F to 86°F), up to 95% RH, non-condensing, State of Energy (SOE): 25% initial
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Rating	NEMA 3R
Ingress Rating	IP67
Pollution Rating	PD3

¹⁰ Performance may be de-rated at operating temperatures above 40°C (104°F).

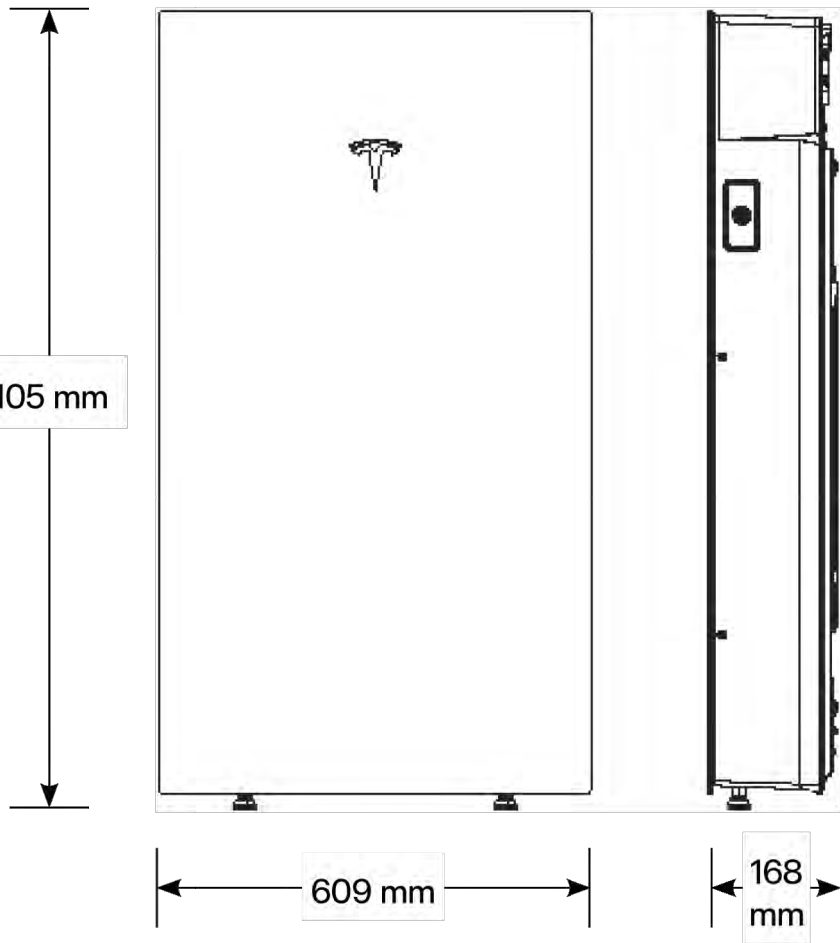
Compliance Information

Certifications	UL 1973, UL 9540
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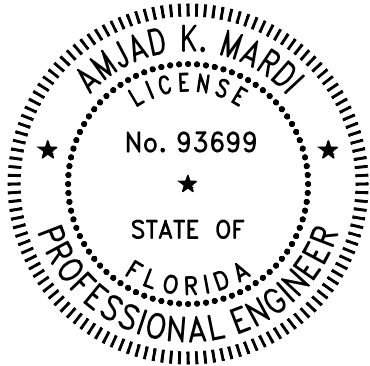
Mechanical Specifications

Dimensions	1105 x 609 x 168 mm (43.5 x 24 x 6.6 in) ¹¹
Total Weight of Wall-Mounted Expansion Unit	118.5 kg (261.2 lb)
Weight of Expansion Unit	110 kg (242.5 lb)
Weight of Glass Front Cover	6.5 kg (14.5 lb)
Weight of Wall Bracket	1.9 kg (4.2 lb)
Weight of Expansion Accessories	0.7 kg (1.5 lb)
Mounting Options	Floor or wall mount
Stacking Capability (Floor Mount Only)	Up to (3) Expansion units behind a Powerwall 3
Compatibility with Other Systems	Only compatible with Powerwall 3
Connection to Powerwall 3 or Expansions	Powerwall 3 Expansion harness ¹²

¹¹ These dimensions include the glass front cover being installed on Powerwall 3 Expansion.
¹² The Powerwall 3 Expansion harness is a listed component of the UL 9540 certification.



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SHEET NAME:

TESLA EXPANSION UNIT SPECIFICATIONS

SHEET NUMBER:

APP.4

MecaWind v2556

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Calculations Prepared by:

Date: Aug 04, 2026
File Location: C:\Users\user\OneDrive - mardiengineering.com\Engineering Folder\
Solar Impact\Vrastil William\MW.wnd

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
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 = 66.9200 in
W_p = Panel Chord Width = 40.0000 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 = 61.0000 ft
L = Building Length = 62.7500 ft R_{ht} = Ridge Height = 20.167 ft
E_{ht} = Eave Height = 10.000 ft Pitch = Pitch of Roof = 4.0 :12
θ = Slope of Roof = 18.43 ° OH = Overhang Configuration = All Overhang
Z₁ = Highest Opening Elevation = 0.0000 ft HT_{over} = Override Mean Roof Height = False
Ht_{man} = Mean Roof Height = 15.083 ft RA_{over} = Override Roof Area = False
GC_{pi_o} = Override GC_{pi} 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 = 61.0000 ft
Q_a = (B+h)/L_{zm} = 0.245
Q = [1/(1+0.63•Q_a^{0.63})]^{0.5} E:26.11-8 = 0.891
G_{2a} = 1+1.7•g_r•I_{zm} = 2.762
G₂ = 0.925•[(1+1.7•g_q•I_{zm}•Q)/G_{2a}] E:26.11-6 = 0.861
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 = 15.083 ft K_h = 2.41•(Z/z_g)^{2/α} T:26.10-1 = 0.574
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•V²•LF E:26.10-1 = 17.27 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_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 = 61.0000 ft
Q_a = (B+h)/L_{zm} = 0.245
Q = [1/(1+0.63•Q_a^{0.63})]^{0.5} E:26.11-8 = 0.891
G_{2a} = 1+1.7•g_r•I_{zm} = 2.762
G₂ = 0.925•[(1+1.7•g_q•I_{zm}•Q)/G_{2a}] E:26.11-6 = 0.861
Gust Factor Used in Analysis
G = Gust Factor: Min(G₁, G₂) = 0.850

Wind Loads on Solar Panel(s) Per §29.4.4

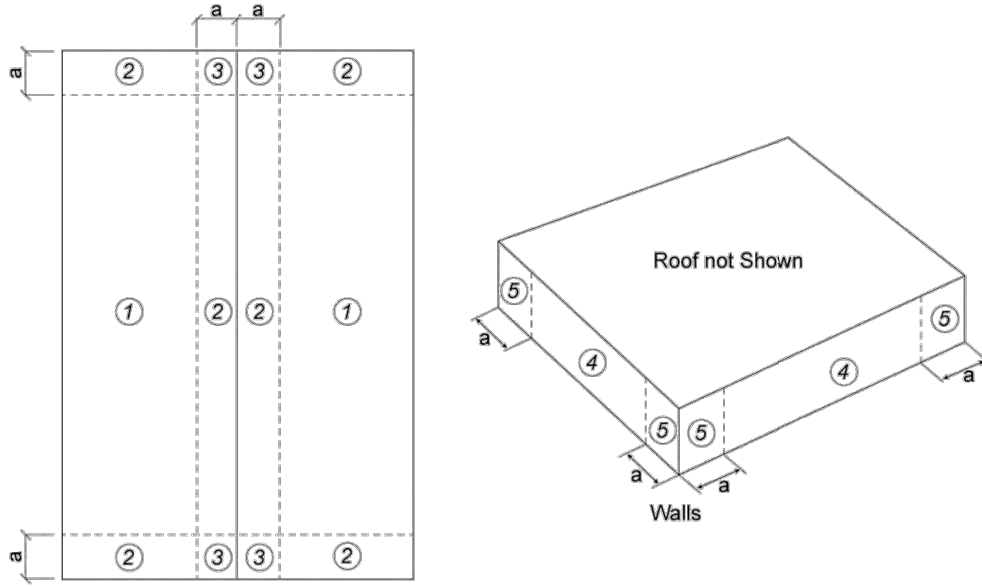
h = Mean Roof Height = 15.0833 ft
a = Width for Zone 2 and 3 determination (Per C&C Figure) = 6.0333 ft
h/2 = Width used to determine if Exposed: h/2 = 7.5417 ft
h₁ = Dist from Roof to Lower Panel Edge: Min(h_{ny}, h_{py}) = 3.6000 in
h₂ = Dist from Roof to Upper Panel Edge: Max(h_{ny}, h_{py}) = 3.6000 in
d_{1,limit} = d₁ 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 = 8.3650 ft
q_h = 0.00256•K_h•K_{zt}•K_e•V²•LF E:26.10-1 = 17.27 psf
LF = ASD Load Factor = 0.60
θ = Roof Slope = 18.43 °
A = Area of One Panel: L_p•W_p = 18.59 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] = 0.692
Y_{aH2} = Solar Panel Press Equalization Factor for H2 [F:29.4-8] = 0.546
Y_a = Solar Panel Press Equalization Factor [F:29.4-8] = 0.619

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 _p Uplift	GC _p Down	P _{uplift} psf	P _{down} psf
1	Yes	1.500	1.000	F:30.3-2B	-1.727	0.538	-23.55	4.89
2	Yes	1.500	1.000	F:30.3-2B	-2.348	0.538	-32.02	4.89
3	Yes	1.500	1.000	F:30.3-2B	-3.115	0.538	-42.48	4.89
1_OH	Yes	1.500	1.000	F:30.3-2B/F:30.3-1	-2.679	0.000	-36.53	0.00
2_OH	Yes	1.500	1.000	F:30.3-2B/F:30.3-1	-3.301	0.000	-45.01	0.00
3_OH	Yes	1.500	1.000	F:30.3-2B/F:30.3-1	-4.068	0.000	-55.47	0.00
1	No	1.000	1.000	F:30.3-2B	-1.727	0.538	-15.70	4.89
2	No	1.000	1.000	F:30.3-2B	-2.348	0.538	-21.35	4.89
3	No	1.000	1.000	F:30.3-2B	-3.115	0.538	-28.32	4.89
1_OH	No	1.000	1.000	F:30.3-2B/F:30.3-1	-2.679	0.000	-24.36	0.00
2_OH	No	1.000	1.000	F:30.3-2B/F:30.3-1	-3.301	0.000	-30.01	0.00
3_OH	No	1.000	1.000	F:30.3-2B/F:30.3-1	-4.068	0.000	-36.98	0.00

Notes:
Zone = Zone based upon 'GCP Fig'
Y_{exp} = Uplift Factor per E:29.4-7
GC_p = Nominal press coeff per 'GCP Fig'
P_{down} = Wind Pressure: q_s•K_e•GC_pDown•Y_a E:29.4-7
+Press = Pressure Acting Toward Surface
• Origin of X/Y system is at the geometric center of the building
• The array shall be located 2•h₂ (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.

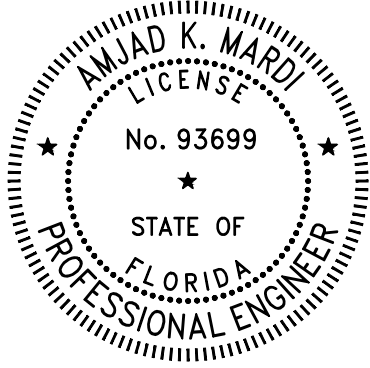
Exposed = Exposed panel per E:29.4-7
Y_{edown} = Down force Factor per E:29.4-7
P_{uplift} = Wind Pressure: q_s•K_e•GC_pUplift•Y_a E:29.4-7
Area = Zone Area based upon one panel: 18.59 ft²
-Press = Pressure Acting Away from Surface



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N.T.S.

SHEET NAME:

GABLE ROOF WIND
SIMULATION

SHEET NUMBER:

APP.5

MecaWind v2556

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Calculations Prepared by:

Date: Aug 04, 2026

File Location: C:\Users\user\OneDrive - mardiengineering.com\Engineering Folder\
Solar Impact\Vrastil William\MW.wnd

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 = 66.9200 in
W_p = Panel Chord Width = 40.0000 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
â = Reciprocal of α T:26.11-1 = 0.133
α_m = Mean Hourly Exponent T:26.11-1 = 0.222
c = Turbulence Intensity T:26.11-1 = 0.300
z_g = Nominal Boundary Layer Ht T:26.11-1 = 3,280 ft
b = 3 sec gust speed factor T:26.11-1 = 0.840
b_m = Mean Hourly Factor T:26.11-1 = 0.470
ε = Integral Length Exponent T:26.11-1 = 0.3333

Building:

Roof = Roof Type = Flat Encl = Enclosure Classification = Enclosed
IsCust = Custom Roof = False RfHt = Roof Height = 10.000 ft
W = Building Width = 61.0000 ft L = Building Length = 62.7500 ft
OH = Overhang Configuration = All None z₁ = Highest Opening Elevation = 0.0000 ft
HT_{over} = Override Mean Roof Height = False Ht_{man} = Mean Roof Height = 10.000 ft
RA_{over} = Override Roof Area = False GC_{pl_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 = 61.0000 ft
Q_a = (B+h)/L_{zm} = 0.229
Q = [1/(1+0.63•Q_a^{0.63})]^{0.5} E:26.11-8 = 0.895
G_{2a} = 1+1.7•g_v•I_{zm} = 2.762
G₂ = 0.925•[(1+1.7•g_v•I_{zm}•Q)/G_{2a}] E:26.11-6 = 0.863

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

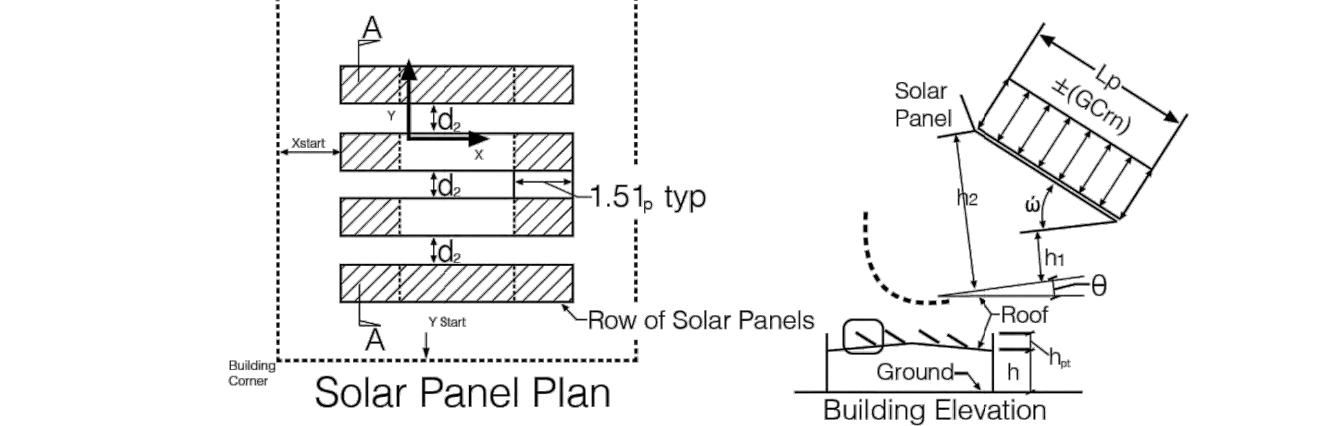
h = Mean structure height = 10.000 ft
K_{zt} = No Topographic Feature = 1.000
LF = ASD Load Factor = 0.60
q_n = .00256•K_n•K_{zt}•K_e•V²•LF E:26.10-1 = 17.25 psf
K_n = 2.41•(15/z_g)^{2/α} T:26.10-1 = 0.573
K_d = Directionality Factor T:26.6-1 = 0.85
K_e = Ground Elev Factor T:26.10-1 = 1.000

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 = 61.0000 ft
Q_a = (B+h)/L_{zm} = 0.229
Q = [1/(1+0.63•Q_a^{0.63})]^{0.5} E:26.11-8 = 0.895
G_{2a} = 1+1.7•g_v•I_{zm} = 2.762
G₂ = 0.925•[(1+1.7•g_v•I_{zm}•Q)/G_{2a}] E:26.11-6 = 0.863
Gust Factor Used in Analysis
G = Gust Factor: Min(G₁, G₂) = 0.850

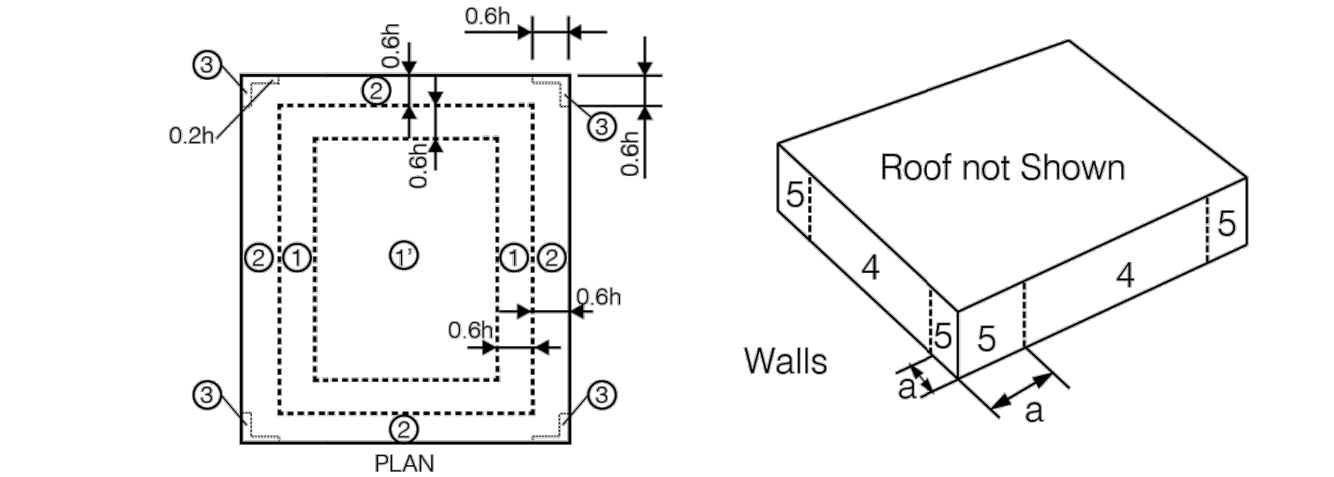
Wind Loads on Solar Panel(s) Per §29.4.4



h = Mean Roof Height = 10.0000 ft
2h = Width for Zone 2 and 3 determination: 2•h = 20.0000 ft
h/2 = Width used to determine if Exposed: h/2 = 5.0000 ft
h₁ = Dist from Roof to Lower Panel Edge: Min(h_{ny}, h_{py}) = 3.6000 in
h₂ = Dist from Roof to Upper Panel Edge: Max(h_{ny}, h_{py}) = 3.6000 in
d_{1limit} = d₁ limit for adjacent panels: 4 ft [1.2 m] = 4.0000 ft
h_{px} = 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 = 8.3650 ft
q_n = 0.00256•K_n•K_{zt}•K_e•V²•LF E:26.10-1 = 17.25 psf
LF = ASD Load Factor = 0.60
θ = Roof Slope = 0.00 °
A = Area of One Panel: L_p•W_p = 18.59 ft²
Gap = Min(S_r, S_c) [S_r=0.2500 in, S_c=0.2500 in] = 0.2500 in
Y_{aGap} = Solar Panel Press Equalization Factor for Gap [F:29.4-8] = 0.692
Y_{aH2} = Solar Panel Press Equalization Factor for H2 [F:29.4-8] = 0.546
Y_a = Solar Panel Press Equalization Factor [F:29.4-8] = 0.619
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 _{up}	Y _{down}	GC _p Fig	GC _p Uplift	GC _p Down	P _{up} psf	P _{down} psf
1'	Yes	1.500	1.000	F:30.3-2A	-0.900	0.273	-12.26	2.48
1	Yes	1.500	1.000	F:30.3-2A	-1.589	0.273	-21.64	2.48
2	Yes	1.500	1.000	F:30.3-2A	-2.157	0.273	-29.38	2.48
3	Yes	1.500	1.000	F:30.3-2A	-2.915	0.273	-39.69	2.48
1'	No	1.000	1.000	F:30.3-2A	-0.900	0.273	-8.17	2.48
1	No	1.000	1.000	F:30.3-2A	-1.589	0.273	-14.43	2.48
2	No	1.000	1.000	F:30.3-2A	-2.157	0.273	-19.58	2.48
3	No	1.000	1.000	F:30.3-2A	-2.915	0.273	-26.46	2.48

Notes:

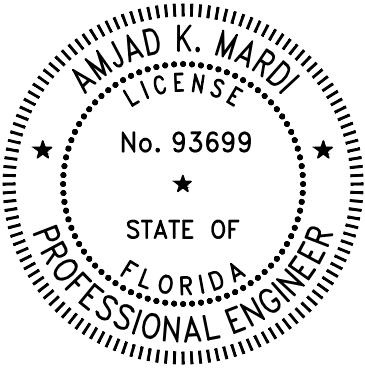
Zone = Zone based upon 'GCP Fig'
Y_{up} = Uplift Factor per E:29.4-7
GC_p = Nominal press coeff per 'GCP Fig'
P_{down} = Wind Pressure: q_n•K_e•GC_p•Y_{down}•Ga E:29.4-7
+Press = Pressure Acting Toward Surface
• Origin of X/Y system is at the geometric center of the building
• The array shall be located 2•h₂ (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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Designed By:	SST
Reviewed by:	AKM
REVISION HISTORY	

DRAWING SCALE:

N.T.S.

SHEET NAME:

FLAT ROOF WIND
SIMULATION

SHEET NUMBER:

APP.6