

# NEW PHOTOVOLTAIC SYSTEM 7.20 KW DC

## 2425 WEST MCKINLEY AVENUE, MILWAUKEE, WI 53205, USA

### GENERAL NOTES

**1.1.1 PROJECT NOTES:**  
 1.1.2 THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (NEC) ARTICLE 690, ALL MANUFACTURERS LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION'S (AHJ) APPLICABLE CODES.  
 1.1.3 THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION.  
 1.1.4 ARC FAULT PROTECTION (AFCI) AND PHOTOVOLTAIC RAPID SHUTDOWN SYSTEM (PVRSS) IS INTEGRATED WITH THE POWER OPTIMIZER IN ACCORDANCE WITH NEC 210.12 & 690.12 RESPECTIVELY.  
 1.1.5 GROUND FAULT DETECTION AND INTERRUPTION (GFDI) DEVICE IS INTEGRATED WITH THE INVERTER IN ACCORDANCE WITH NEC 690.41(B)  
 1.1.6 ALL PV SYSTEM COMPONENTS; MODULES, UTILITY-INTERACTIVE INVERTERS, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEMS AS REQUIRED BY NEC 690.4: PV MODULES: UL1703, IEC61730, AND IEC61215, AND NFPA 70 CLASS C FIRE INVERTERS: UL 1741 CERTIFIED, IEEE 1547, 929, 519 COMBINER BOX(ES): UL 1703 OR UL 1741 ACCESSORY  
 1.1.7 MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC. IF UNAVAILABLE, MAX DC VOLTAGE CALCULATED ACCORDING TO NEC 690.7.  
 1.1.8 ALL INVERTERS, PHOTOVOLTAIC MODULES, PHOTOVOLTAIC PANELS, AND SOURCE CIRCUIT COMBINERS INTENDED FOR USE IN A PHOTOVOLTAIC POWER SYSTEM WILL BE IDENTIFIED AND LISTED FOR THE APPLICATION PER 690.4 (D). SHALL BE INSTALLED ACCORDING TO ANY INSTRUCTIONS FROM LISTING OR LABELING [NEC 110.3].  
 1.1.9 ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC AND AHJ.

**1.2.1 SCOPE OF WORK:**  
 1.2.2 PRIME CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC SYSTEM RETROFIT. PRIME CONTRACTOR WILL BE RESPONSIBLE FOR COLLECTING EXISTING ONSITE REQUIREMENTS TO DESIGN, SPECIFY, AND INSTALL THE EXTERIOR ROOF-MOUNTED PORTION OF THE PHOTOVOLTAIC SYSTEMS DETAILED IN THIS DOCUMENT

**1.3.1 WORK INCLUDES:**  
 1.3.2 PV RACKING SYSTEM INSTALLATION - QUICK MOUNT PV  
 1.3.3 PV MODULE AND INVERTER INSTALLATION - HANWHA QCELL Q.PEAK DUO BLK ML-G10+ 400W / SOLAREEDGE SE5000H-US / SOLAREEDGE POWER OPTIMIZER P401  
 1.3.4 PV EQUIPMENT ROOF MOUNT  
 1.3.5 PV SYSTEM WIRING TO A ROOF-MOUNTED JUNCTION BOX  
 1.3.6 PV LOAD CENTERS (IF INCLUDED)  
 1.3.7 PV METERING/MONITORING (IF INCLUDED)  
 1.3.8 PV DISCONNECTS  
 1.3.9 PV GROUNDING ELECTRODE & BONDING TO (E) GEC  
 1.3.10 PV FINAL COMMISSIONING  
 1.3.11 (E) ELECTRICAL EQUIPMENT RETROFIT FOR PV  
 1.3.12 SIGNAGE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE

### PROJECT INFORMATION

**OWNER**  
 NAME: MOISES DE LOS SANTOS  
 PHONE: (414) 403-7688

**CONTRACTOR INFORMATION:**  
 CONTRACTOR NAME: PALMETTO  
 CONTRACTOR ADDRESS: 1505 KING ST,  
 CHARLESTON, SC 29405  
 CONTRACTOR PHONE: (855) 339-1831  
 CONTRACTOR LICENSE NUMBER: DC 121901196  
 ELECTRICAL LICENSE NUMBER: 1494916

**SCOPE OF WORK:**  
 SYSTEM SIZE : STC : 18 X 400W = 7.20 kW DC  
 PTC : 18 x 376.55W = 6.78 kW DC  
 AC SIZE: 5.0 kW AC  
 (18) HANWHA QCELL Q.PEAK DUO BLK ML-G10+ 400W  
 (1) SOLAREEDGE SE5000H-US  
 (18) SOLAREEDGE POWER OPTIMIZER P401

**ATTACHMENT TYPE:** ROOF MOUNT  
**MSP UPGRADE:** NO

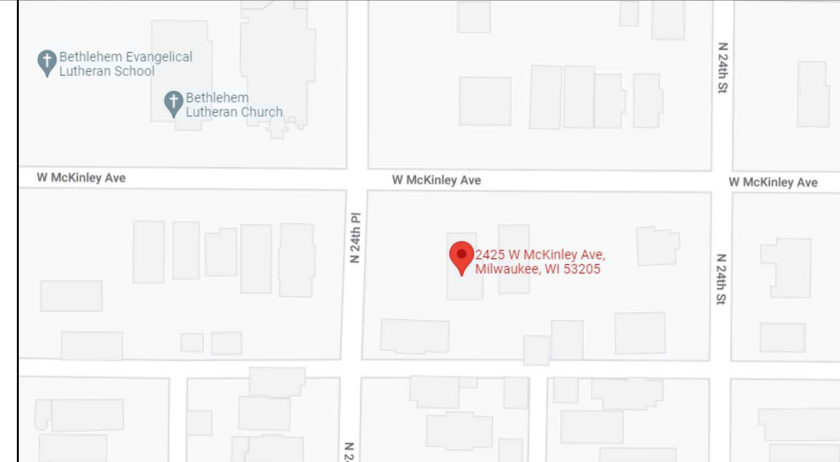
**AUTHORITIES HAVING JURISDICTION:**  
 BUILDING : CITY OF MILWAUKEE  
 ZONING : CITY OF MILWAUKEE  
 UTILITY : WISCONSIN ELECTRIC POWER CO

**DESIGN SPECIFICATION:**  
 OCCUPANCY: R3/SINGLE FAMILY RESIDENTIAL  
 CONSTRUCTION TYPE / FIRE RATING: 5-B  
 GROUND SNOW LOAD (LOCAL) : 30 PSF  
 WIND EXPOSURE : B  
 WIND SPEED (STATE) : 115 MPH

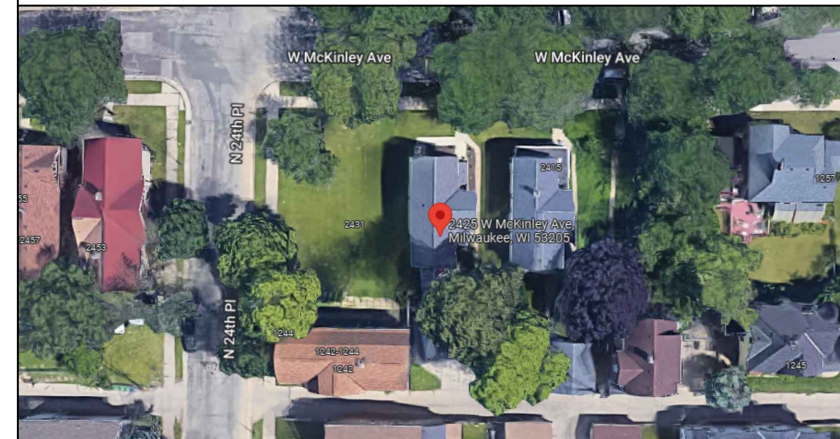
**APPLICABLE CODES & STANDARDS:**  
 BUILDING : IBC/IEBC 2015 IRC 2015  
 ELECTRICAL : NEC 2017  
 FIRE (STATE) : IFC 2015  
 OTHER : WISCONSIN UNIFORM DWELLING CODE



### VICINITY MAP



### SATELLITE VIEW



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**PROJECT NAME & ADDRESS**  
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**2425 WEST**  
**MCKINLEY AVENUE,**  
**MILWAUKEE, WI**  
**53205, USA**

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		DATE	DATE

SHEET TITLE  
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DRAWN DATE : 12/17/22  
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T-001

**2.1.1 SITE NOTES:**

2.1.2 A LADDER WILL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.  
 2.1.3 THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY INTERACTIVE SYSTEM WITHOUT STORAGE BATTERIES.  
 2.1.4 THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.  
 2.1.5 PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION NEC 110.26.  
 2.1.6 ROOF COVERINGS SHALL BE DESIGNED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THIS CODE AND THE APPROVED MANUFACTURER'S INSTRUCTIONS SUCH THAT THE ROOF COVERING SERVES TO PROTECT THE BUILDING OR STRUCTURE.

**2.2.1 EQUIPMENT LOCATIONS:**

2.2.2 ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY NEC 110.26.  
 2.2.3 WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY NEC 690.31 (A),(C) AND NEC TABLES 310.15 (B)(2)(A) AND 310.15 (B)(3)(C).  
 2.2.4 JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES ACCORDING TO NEC 690.34.  
 2.2.5 ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT.  
 2.2.6 ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.  
 2.2.7 ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.

**2.3.1 STRUCTURAL NOTES:**

2.3.2 RACKING SYSTEM & PV ARRAY WILL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL. TOP CLAMPS REQUIRE A DESIGNATED SPACE BETWEEN MODULES, AND RAILS MUST ALSO EXTEND A MINIMUM DISTANCE BEYOND EITHER EDGE OF THE ARRAY/SUBARRAY, ACCORDING TO RAI MANUFACTURER'S INSTRUCTIONS.  
 2.3.3 JUNCTION BOX WILL BE INSTALLED PER MANUFACTURERS' SPECIFICATIONS. IF ROOF-PENETRATING TYPE, IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS.  
 2.3.4 ROOFTOP PENETRATIONS FOR PV RACEWAY WILL BE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.  
 2.3.5 ALL PV RELATED ROOF ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER.  
 2.3.6 WHEN POSSIBLE, ALL PV RELATED RACKING ATTACHMENTS WILL BE STAGGERED AMONGST THE ROOF FRAMING MEMBERS.

**2.4.1 WIRING & CONDUIT NOTES:**

2.4.2 ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.  
 2.4.3 CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7.  
 2.4.4 VOLTAGE DROP LIMITED TO 3.0%.  
 2.4.5 DC WIRING LIMITED TO INVERTER FOOTPRINT. OPTIMIZER WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY W/ SUITABLE WIRING CLIPS.  
 2.4.6 AC CONDUCTORS COLORED OR MARKED AS FOLLOWS: PHASE A OR L1- BLACK PHASE B OR L2- RED, OR OTHER CONVENTION IF THREE PHASE PHASE C OR L3- BLUE, YELLOW, ORANGE\*\*, OR OTHER CONVENTION NEUTRAL- WHITE OR GREY IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH HIGHER VOLTAGE TO BE MARKED ORANGE [NEC 110.15].

**2.5.1 GROUNDING NOTES:**

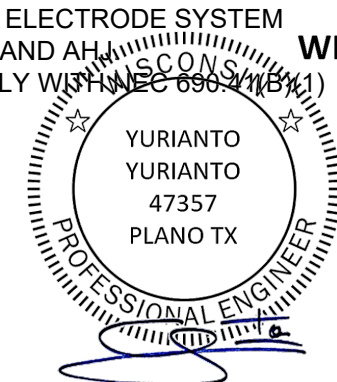
2.5.2 GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.  
 2.5.3 PV EQUIPMENT SHALL BE GROUNDED ACCORDING TO NEC 690.43 AND MINIMUM NEC TABLE 250.122.  
 2.5.4 METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURES CONSIDERED GROUNDED IN ACCORD WITH 250.134 AND 250.136(A).  
 2.5.5 EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC 690.45 AND INVERTER MANUFACTURERS INSTRUCTIONS.  
 2.5.6 EACH MODULE WILL BE GROUNDED USING WEEB GROUNDING CLIPS AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ. IF WEEBS ARE NOT USED, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE SPECIFIED GROUNDING LUG HOLES PER THE MANUFACTURER INSTALLATION REQUIREMENTS.  
 2.5.7 THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.  
 2.5.8 GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER [NEC 250.119]  
 2.5.9 THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH NEC 690.47 AND NEC 250.50 THROUGH 250.106. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A GROUNDING ELECTRODE SYSTEM PROVIDED ACCORDING TO NEC 250, NEC 690.47 AND AHJ.  
 2.5.10 GROUND-FAULT DETECTION SHALL COMPLY WITH NEC 690.41(B)(1) AND (2) TO REDUCE FIRE HAZARDS

**2.6.1 DISCONNECTION AND OVER-CURRENT PROTECTION NOTES:**

2.6.2 DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).  
 2.6.3 DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH  
 2.6.4 PV SYSTEM CIRCUITS INSTALLED ON OR IN BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION TO REDUCE SHOCK HAZARD FOR EMERGENCY RESPONDERS IN ACCORDANCE WITH 690.12(A) THROUGH (D).  
 2.6.5 ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690.8, 690.9, AND 240.  
 2.6.6 OPTIMIZER BRANCHES CONNECTED TO A SINGLE BREAKER OR GROUPED FUSES IN ACCORDANCE WITH NEC 110.3(B).  
 2.6.7 IF REQUIRED BY AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION ACCORDING TO NEC 690.11 AND UL1699B.

**2.7.1 INTERCONNECTION NOTES:**

2.7.2 LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH [NEC 705.12 (B)]  
 2.7.3 THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS OUTPUT MAY NOT EXCEED 120% OF BUSBAR RATING [NEC 705.12(B)(2)(3)(b)].  
 2.7.4 THE SUM OF 125 PERCENT OF THE POWER SOURCE(S) OUTPUT CIRCUIT CURRENT AND THE RATING OF THE OVERCURRENT DEVICE PROTECTING THE BUSBAR SHALL NOT EXCEED 120 PERCENT OF THE AMPACITY OF THE BUSBAR, PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE OCPD [NEC 705.12(B)(2)(3)].  
 2.7.5 AT MULTIPLE ELECTRIC POWER SOURCES OUTPUT COMBINER PANEL, TOTAL RATING OF ALL OVERCURRENT DEVICES SHALL NOT EXCEED AMPACITY OF BUSBAR. HOWEVER, THE COMBINED OVERCURRENT DEVICE MAY BE EXCLUDED ACCORDING TO NEC 705.12 (B)(2)(3)(C).  
 2.7.6 FEEDER TAP INTERCONNECTION (LOAD SIDE) ACCORDING TO NEC 705.12 (B)(2)(1)  
 2.7.7 SUPPLY SIDE TAP INTERCONNECTION ACCORDING TO NEC 705.12 (A) WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH NEC 230.42  
 2.7.8 BACKFEEDING BREAKER FOR ELECTRIC POWER SOURCES OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING [NEC 705.12 (B)(5)].



By Yuri at 11:02:39 AM, 12/19/2022

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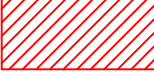






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**NOTES**

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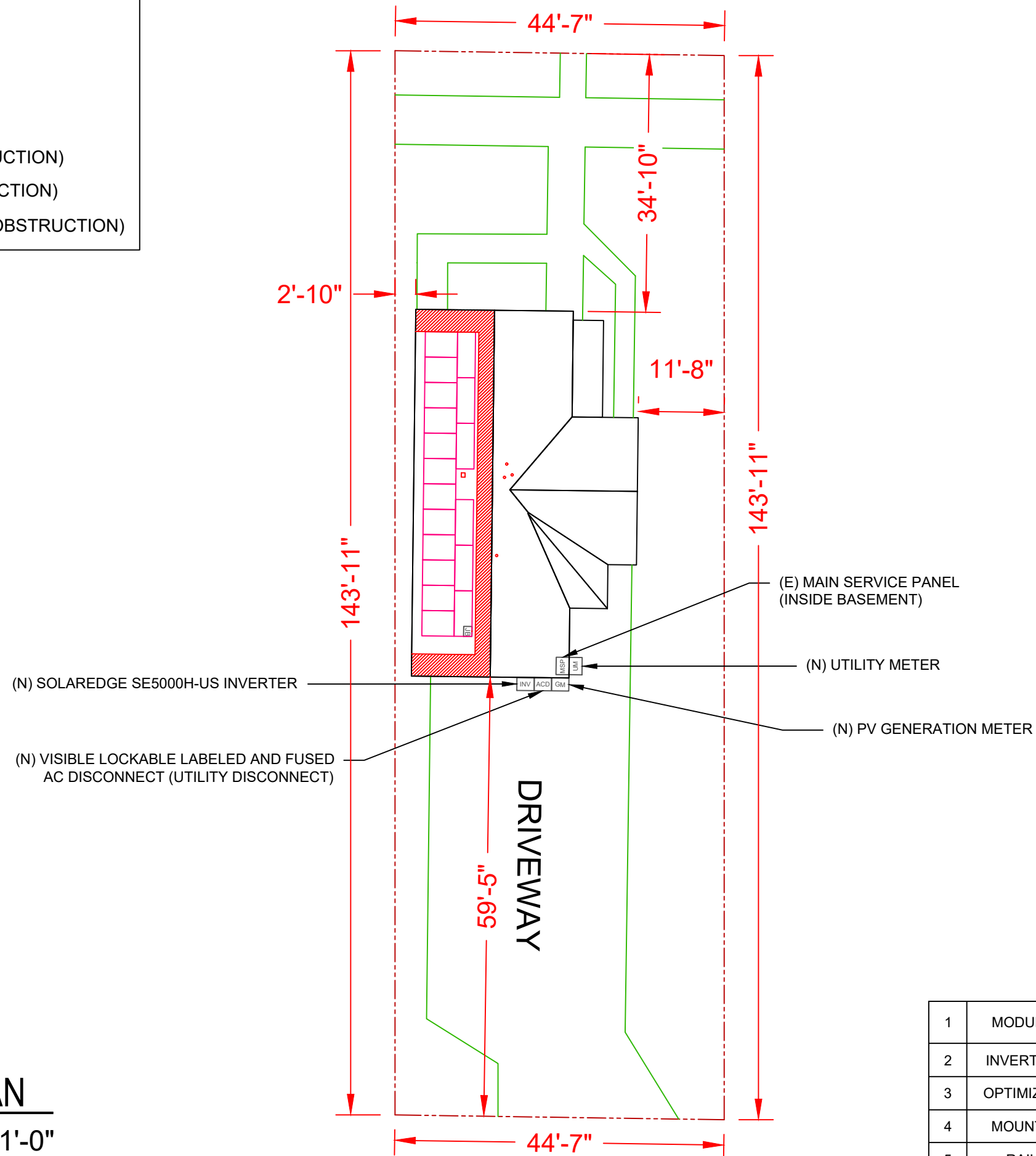
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**G-001**



**LEGEND**

-  - FIRE SETBACK
-  - PROPERTY LINE
-  - FENCE
-  - JUNCTION BOX
-  - SKYLIGHT (ROOF OBSTRUCTION)
-  - CHIMNEY (ROOF OBSTRUCTION)
-  - VENT, ATTIC FAN (ROOF OBSTRUCTION)

**WEST MCKINLEY AVENUE**



ARRAY AREA & ROOF AREA CALC'S				
ROOF #1	# OF MODULES	ARRAY AREA (SQ. FT.)	ROOF AREA (SQ. FT.)	ROOF AREA COVERED BY ARRAY (%)
#1	18	380.34	747.659	50.87



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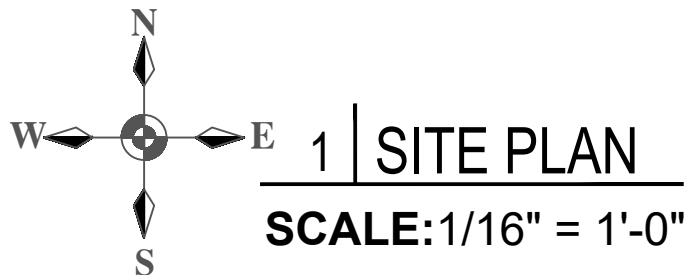
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SHEET TITLE  
**SITE PLAN**

DRAWN DATE: 12/17/22  
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SHEET NUMBER  
**A-101**

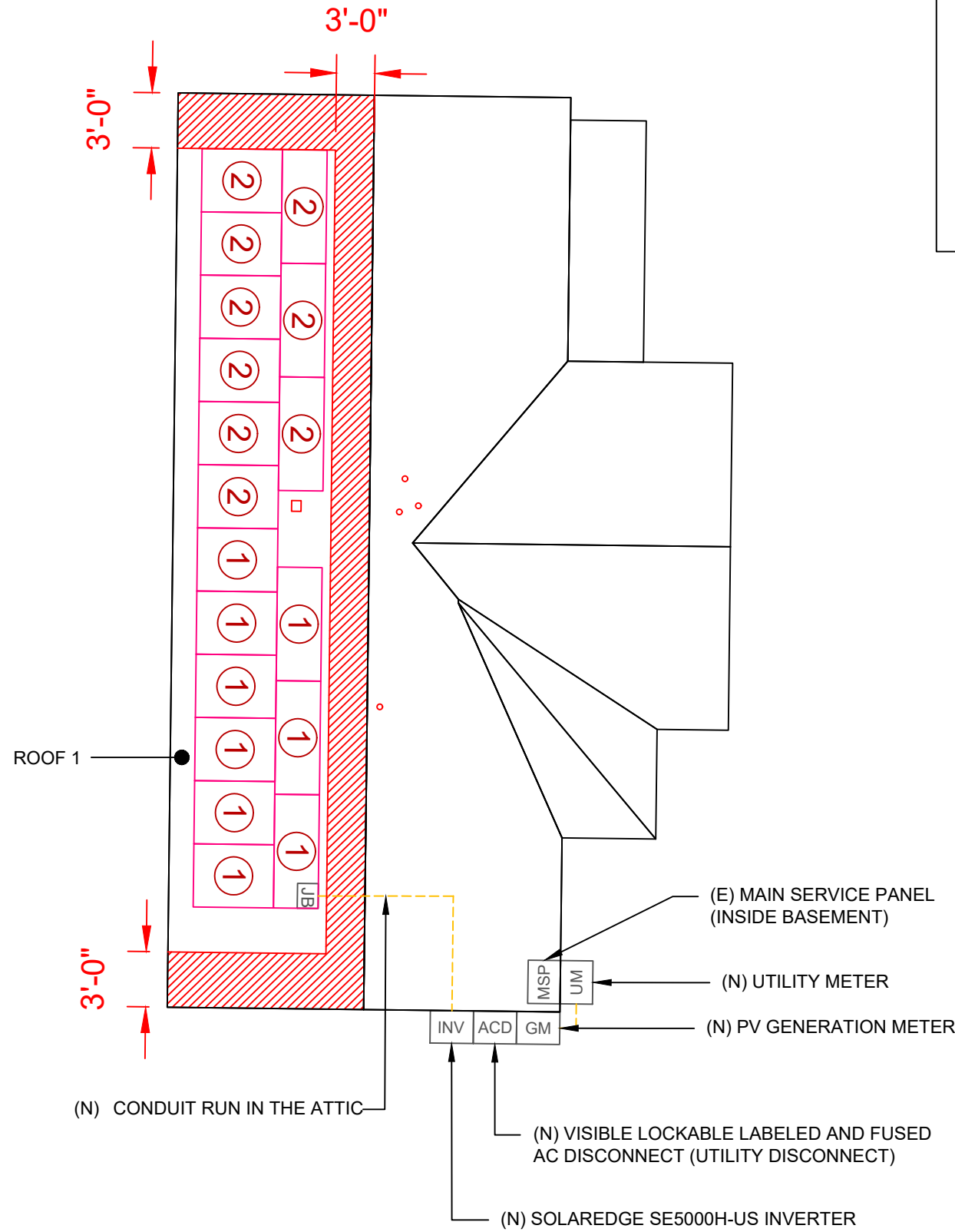


1	MODULE	HANWHA QCELL Q.PEAK DUO BLK ML-G10+ 400W
2	INVERTER	SOLAREEDGE SE5000H-US
3	OPTIMIZER	SOLAREEDGE POWER OPTIMIZER P401
4	MOUNTS	QMLM-B-12, L-MOUNT ATTACHMENT
5	RAIL	IRON RIDGE XR-10-168M, XR10 RAIL

# ROOF SECTION(S)

ROOF 1	TILT - 45° AZIMUTH - 271° MODULE - 18
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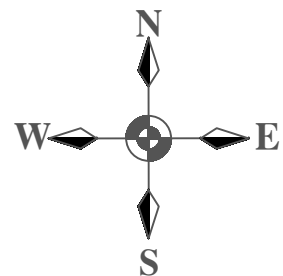
- ① - MODULE STRING
- ② - MODULE STRING



## LEGEND

- FIRE SETBACK
- PROPERTY LINE
- FENCE
- JUNCTION BOX
- SKYLIGHT (ROOF OBSTRUCTION)
- CHIMNEY (ROOF OBSTRUCTION)
- VENT, ATTIC FAN (ROOF OBSTRUCTION)

1	MODULE	HANWHA QCELL Q.PEAK DUO BLK ML-G10+ 400W
2	INVERTER	SOLAREEDGE SE5000H-US
3	OPTIMIZER	SOLAREEDGE POWER OPTIMIZER P401
4	MOUNTS	QMLM-B-12, L-MOUNT ATTACHMENT
5	RAIL	IRON RIDGE XR-10-168M, XR10 RAIL



# 1 | ELECTRICAL PLAN

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

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**ELECTRICAL PLAN**

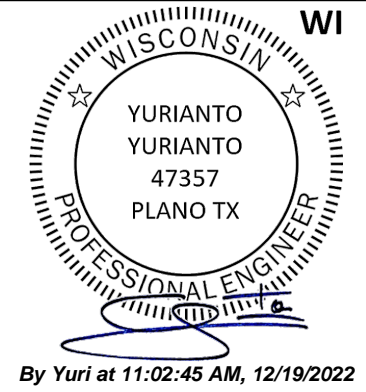
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**A-102**

**ROOF SECTION(S)**

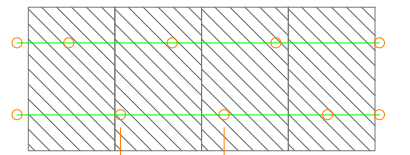
ROOF 1	ROOF MATERIAL - COMPOSITE SHINGLE RAFTER SIZE - 2"X4" O.C. SPACING - 16"
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**TOTAL NUMBER OF MOUNTS - 47**



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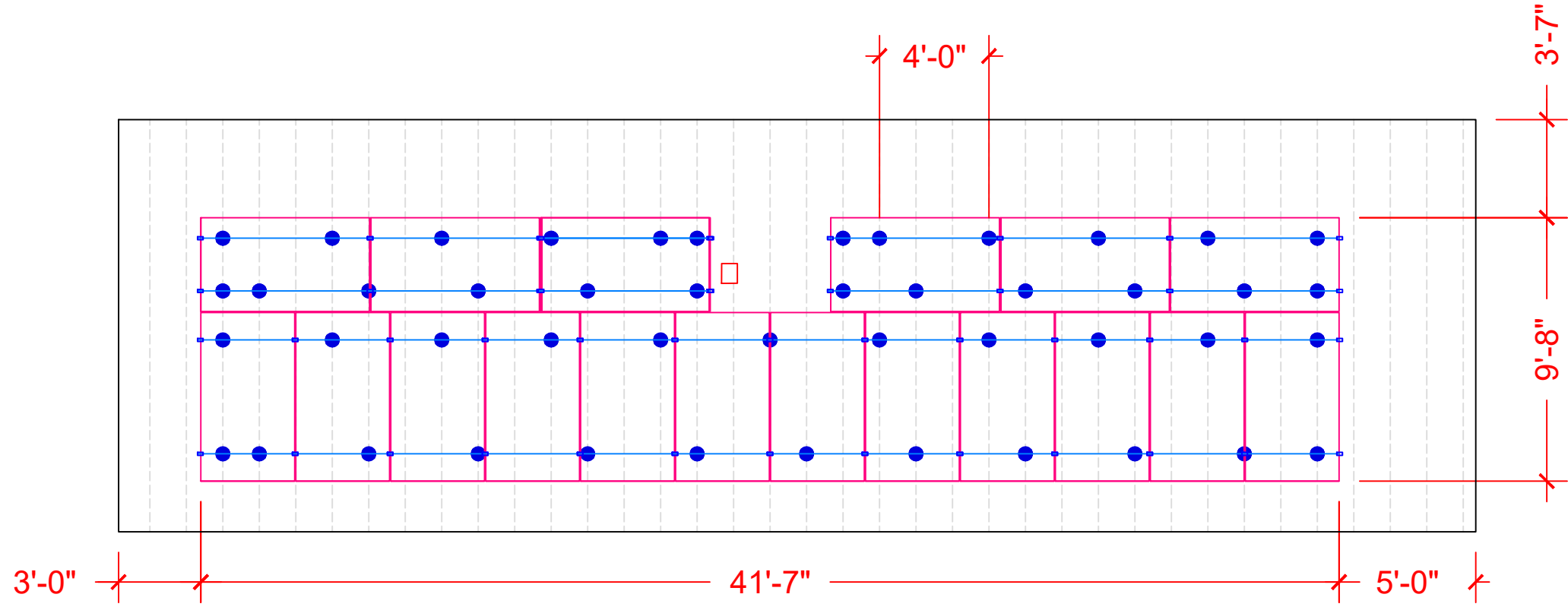
**MOUNTING PATTERN SAMPLE**



MAX. 48"  
MAXIMUM MOUNT SPACING: 48"  
MOUNT PATTERN: STAGGERED

ALL HARDWARE, INCLUDING MOUNTING AND RACKING, TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS.

- CLAMP
- MODULE MOUNT
- RAIL
- RAFTER



ROOF 1  
TILT- 45 DEG  
AZIMUTH - 271 DEG

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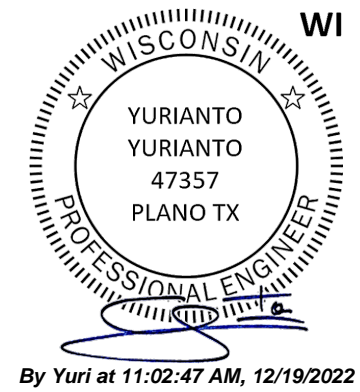
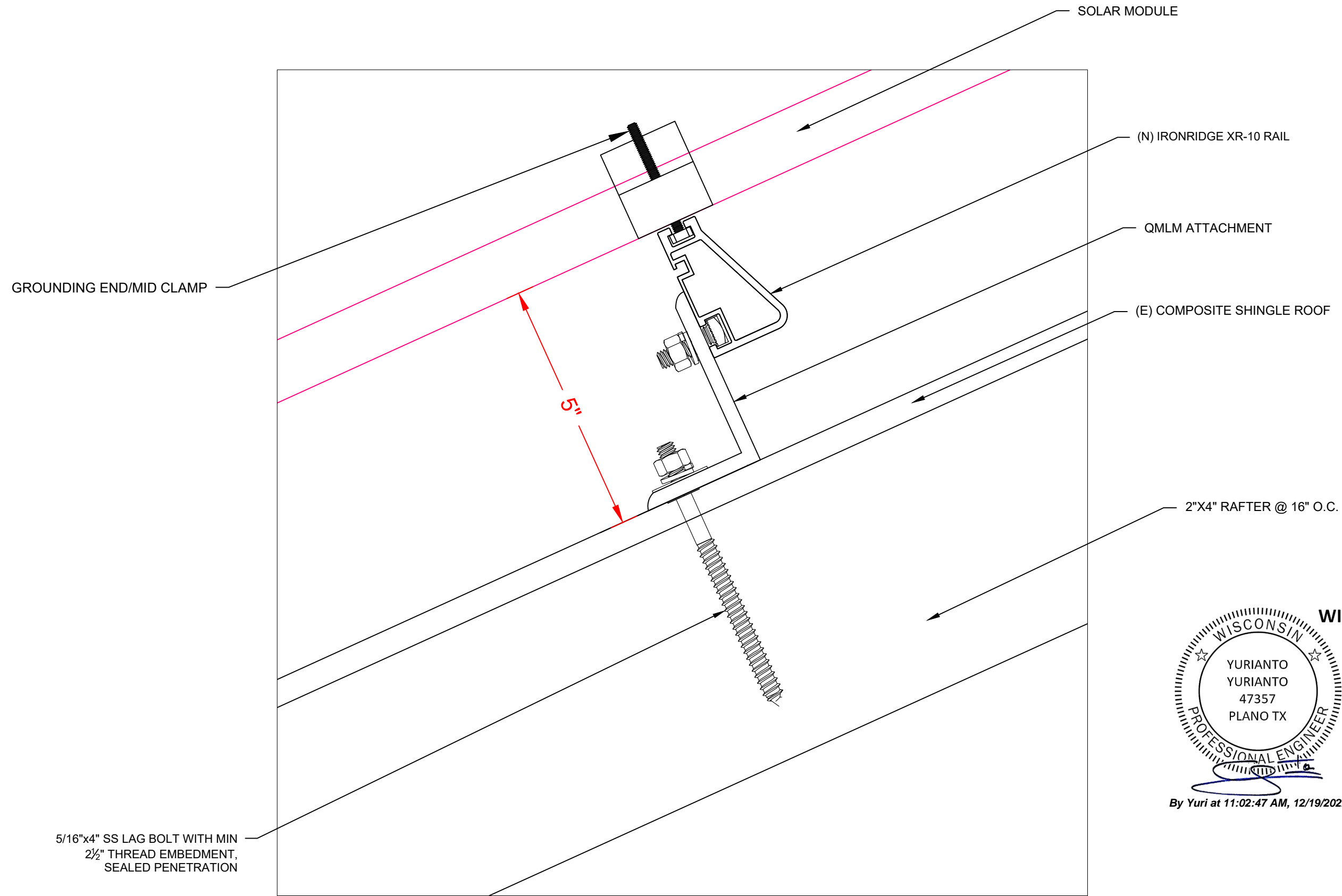
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SHEET TITLE  
**ATTACHMENT PLAN**

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**A-103**

**1 | ATTACHMENT PLAN**  
**SCALE: 3/16" = 1'-0"**



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SHEET TITLE  
**MOUNTING DETAILS**

DRAWN DATE	12/17/22
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**A-104**

**1 | MOUNTING DETAILS**

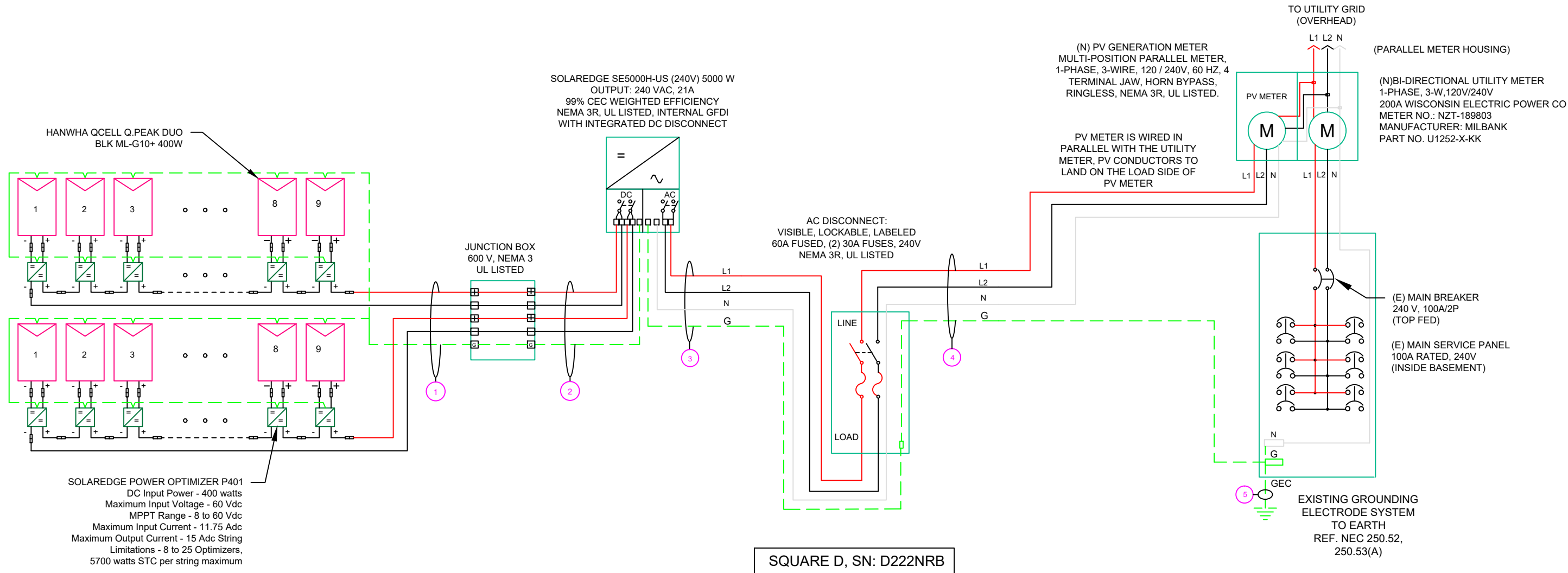
DC SYSTEM SIZE: 7.20 kW DC  
AC SYSTEM SIZE: 5.0 kW AC

(18) HANWHA QCELL Q.PEAK DUO BLK ML-G10+ 400W MODULES  
(2) STRINGS OF 9 MODULES CONNECTED IN SERIES

	PHASE CONDUCTOR QTY, SIZE AND TYPE PER CONDUIT			NEUTRAL		GROUND CONDUCTOR QTY, SIZE AND TYPE PER CONDUIT			CONDUIT SIZE	CONDUIT TYPE
1	4	AWG #10	PV-WIRE/USE-2, COPPER		N/A	1	AWG #6	BARE, COPPER EGC	N/A	FREE AIR
2	4	AWG #10	THWN-2, COPPER		N/A	1	AWG #10	THWN-2, COPPER EGC	3/4"	EMT
3	2	AWG #10	THWN-2, COPPER	1	AWG #10	1	AWG #10	THWN-2, COPPER EGC	3/4"	EMT
4	2	AWG #6	THWN-2, COPPER	1	AWG #6	1	AWG #10	THWN-2, COPPER EGC	3/4"	EMT
5						1	AWG #6	BARE, COPPER	N/A	FREE AIR

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53205, USA



SQUARE D, SN: D222NRB

MASTER ELECTRICIAN # : 1494916

CONTRACTOR LICENSE # : DC 121901196

REV	DESCRIPTION	DATE

1	MODULE	HANWHA QCELL Q.PEAK DUO BLK ML-G10+ 400W
2	INVERTER	SOLAREEDGE SE5000H-US
3	OPTIMIZER	SOLAREEDGE POWER OPTIMIZER P401
4	MOUNTS	QMLM-B-12, L-MOUNT ATTACHMENT
5	RAIL	IRON RIDGE XR-10-168M, XR10 RAIL

SHEET TITLE  
**LINE DIAGRAM**

DRAWN DATE: 12/17/22  
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**E-601**

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	HANWHA QCELL Q.PEAK DUO BLK ML-G10+ 400W
VMP	37.59V
IMP	10.64A
VOC	45.06V
ISC	11.16A
TEMP. COEFF. VOC	-0.27%/°C
PTC RATING	376.55W
MODULE DIMENSION	73.97"L x 41.14W x 1.25"D (In Inch)

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	SOLAREEDGE SE5000H-US
NOMINAL AC POWER	5000 W
NOMINAL OUTPUT VOLTAGE	240 VAC
NOMINAL OUTPUT CURRENT	21

POWER OPTIMIZER (OPTIMIZER P401)	
MAXIMUM INPUT POWER	400W
MINIMUM INPUT VOLTAGE	8 VDC
MAXIMUM INPUT VOLTAGE	60 VDC
MAXIMUM MODULE ISC	11.75 ADC
MAXIMUM OUTPUT CURRENT	15 ADC

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
0.80	4-6
0.70	7-9
0.50	10-20

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-22°
AMBIENT TEMP (HIGH TEMP 2%)	35°
CONDUIT HEIGHT	0.5"
ROOF TOP TEMP	57°
CONDUCTOR TEMPERATURE RATE	90°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.27%/°C

### DC CONDUCTOR AMPACITY CALCULATIONS: ARRAY TO JUNCTION BOX :

EXPECTED WIRE TEMP (In Celsius)	57°
TEMP. CORRECTION PER TABLE (310.16)	0.71
NO. OF CURRENT CARRYING CONDUCTORS	4
CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a)	1
CIRCUIT CONDUCTOR SIZE	10 AWG
CIRCUIT CONDUCTOR AMPACITY	40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B)	18.75A
1.25 X Isc	
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.16	
TEMP. CORRECTION PER TABLE (310.16) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a) X CIRCUIT CONDUCTOR AMPACITY	28.40A
RESULT SHOULD BE GREATER THAN (18.75A) OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY	

### DC CONDUCTOR AMPACITY CALCULATIONS: FROM JUNCTION BOX TO INVERTER:

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT PER NEC 310.15(B)(2)(c)	22°
EXPECTED WIRE TEMP (In Celsius)	35°+22° = 57°
TEMP. CORRECTION PER TABLE (310.16)	0.71
NO. OF CURRENT CARRYING CONDUCTORS	4
CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a)	0.8
CIRCUIT CONDUCTOR SIZE	10 AWG
CIRCUIT CONDUCTOR AMPACITY	40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B)	18.75A
1.25 X Isc	
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.16	
TEMP. CORRECTION PER TABLE (310.16) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a) X CIRCUIT CONDUCTOR AMPACITY	22.72A
RESULT SHOULD BE GREATER THAN (18.75A) OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY	

### AC CONDUCTOR AMPACITY CALCULATIONS:

NO. OF INVERTER	1
EXPECTED WIRE TEMP (In Celsius)	35°
TEMP. CORRECTION PER TABLE (310.16)	0.96
NO. OF CURRENT CARRYING CONDUCTORS	3
CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a)	1
CIRCUIT CONDUCTOR SIZE	10 AWG
CIRCUIT CONDUCTOR AMPACITY	35A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B)	26.25A
1.25 X MAX INVERTER OUTPUT CURRENT	
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.16	
TEMP. CORRECTION PER TABLE (310.16) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a) X CIRCUIT CONDUCTOR AMPACITY	33.60A
RESULT SHOULD BE GREATER THAN (26.25A) OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY	

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REVISIONS	DESCRIPTION	REV	DATE	

SHEET TITLE  
**ELECTRICAL  
CALCULATIONS**

DRAWN DATE	12/17/22
DRAWN BY	MAK
REVIEWED BY	-

SHEET NUMBER  
**E-602**



**WARNING:  
PHOTOVOLTAIC  
POWER SOURCE**

**LABEL 1**  
ON ALL CONDUITS SPACED AT MAX 10FT

**PHOTOVOLTAIC  
AC DISCONNECT**

**LABEL 6**  
AT EACH AC DISCONNECT

**PHOTOVOLTAIC AC DISCONNECT SWITCH**  
RATED OUTPUT CURRENT: 21 AMPS  
NOMINAL OPERATING VOLTAGE: 240 VOLTS

**LABEL 11**  
AT AC DISCONNECT

**INTERCONNECTION  
DISCONNECT SWITCH**

**! CAUTION !  
SOLAR ELECTRIC  
SYSTEM CONNECTED  
AND ENERGIZED**

**LABEL 2**  
AT INVERTER

**! WARNING !  
DUAL POWER SOURCES  
SECOND SOURCE IS PV SYSTEM**

**LABEL 7**  
AT MEP

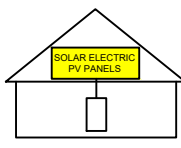
**MAXIMUM VOLTAGE** 480 V  
**MAXIMUM CIRCUIT CURRENT** 30 A  
**MAX RATED OUTPUT CURRENT  
OF THE CHARGE CONTROLLER  
OR DC-TO-DC CONVERTER  
(IF INSTALLED)** 15 A

**LABEL 12**  
AT INVERTER

**EMERGENCY CONTACT  
INFORMATION**  
**CONTRACTOR: PALMETTO**  
**PHONE: (855) 339- 1831**

**SOLAR PV SYSTEM EQUIPPED  
WITH RAPID SHUTDOWN**

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



**LABEL 3**  
AT INVERTER

**! WARNING !  
SOLAR SYSTEM CONNECTED  
AND ENERGIZED**

**LABEL 8**  
AT MEP

**PHOTOVOLTAIC  
DC DISCONNECT**

**LABEL 4**  
AT DC DISCONNECT

**! CAUTION !  
SOLAR POINT OF  
INTERCONNECTION**

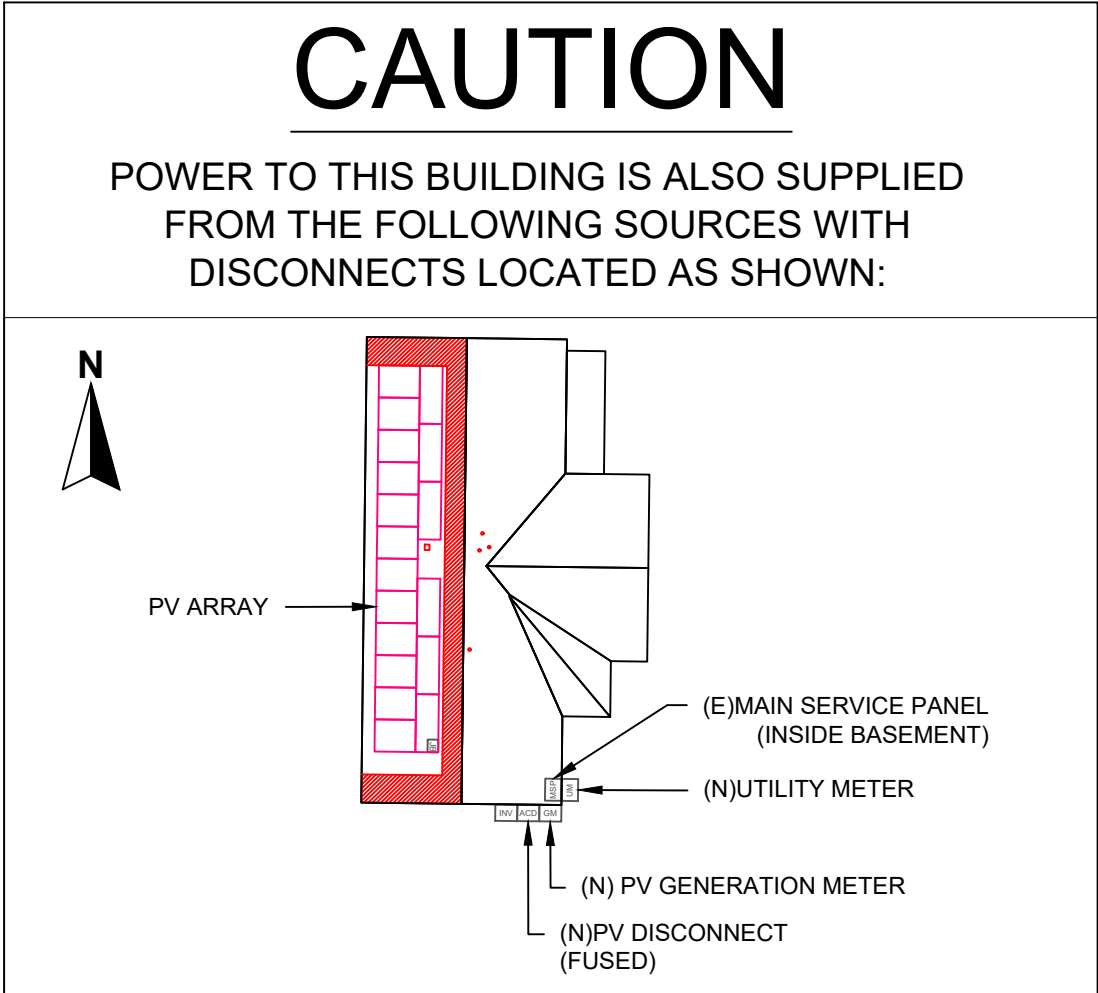
**LABEL 9**  
AT UTILITY METER

**! WARNING !  
ELECTRIC SHOCK HAZARD  
DO NOT TOUCH TERMINALS.  
TERMINALS ON BOTH LINE AND LOAD SIDES  
MAY BE ENERGIZED IN THE OPEN POSITION**

**LABEL 5**  
AT EACH AC DISCONNECT

**! WARNING !  
THE SERVICE METER IS ALSO SERVED  
BY A PHOTOVOLTAIC SYSTEM**

**LABEL 10**  
AT UTILITY METER



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			DATE	DATE

**SHEET TITLE**  
**PLACARDS**

<b>DRAWN DATE</b>	12/17/22
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<b>REVIEWED BY</b>	-

**SHEET NUMBER**  
**E-603**

## SOLAR PANEL DEAD WEIGHT LOADING CALCULATION

**System:**

Solar panel consists of 18 solar modules  
 Mounting system has 47 points of connection with the roof

**Panel Weight Calculation:**

Solar Module Weight = 48.5 lbs.  
 Mounting System Weight = 100 lbs.

Total Panel Weight = ((# of modules)x(module wt.))+ (mounting system wt. =  $(18 \times 48.5) + 100 = 973$  lbs.

**Point Load Calculation:**

Point Load =  $\frac{\text{total panel wt.}}{\text{\# of points of connection}}$  =  $\frac{973}{47} = 20.70$  lbs.

**Distributed Load Calculation:**

Solar Module Area =  $\frac{\text{length" x width"}}{144}$  =  $\frac{73.98 \times 41.14}{144} = 21.14$  ft<sup>2</sup>

Total Solar Module Area = (# of modules) x (solar mod. area) =  $18 \times 21.14 = 380.52$  ft<sup>2</sup>

Inter-module Spacing = .25 in.

Total Spacing Area =  $\frac{(\# \text{ spaces bet. modules}) \times (\text{inter-mod spacing}) \times (\text{panel length or width})}{144}$  =  $\frac{4 \times .25 \times 73.98}{144} = 0.52$  ft<sup>2</sup>

Total Panel Area = (total solar modular area) + (total spacing area) =  $380.52 + 0.52 = 381.04$  ft<sup>2</sup>

Distributed Load =  $\frac{\text{total panel wt.}}{\text{total panel area}}$  =  $\frac{973}{381.04} = 2.55$  lbs./ft<sup>2</sup>

*The point loading and distributed loading should be below building department requirements for structural analysis.  
 Distributed loading - Max. 5 lbs/ft<sup>2</sup>*

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SHEET TITLE <b>DEAD LOAD CALCULATIONS</b>	
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SHEET NUMBER <b>E-604</b>	



# Q.PEAK DUO ML-G10+ 395-415

ENDURING HIGH PERFORMANCE



### BREAKING THE 21% EFFICIENCY BARRIER

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 21.4%.



### THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY

Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.



### INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behaviour.



### ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID Technology, Anti PID Technology<sup>1</sup>, Hot-Spot Protect and Traceable Quality Tra.Q™.



### EXTREME WEATHER RATING

High-tech aluminium alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).



### A RELIABLE INVESTMENT

Inclusive 25-year product warranty and 25-year linear performance warranty<sup>2</sup>.

<sup>1</sup> APT test conditions according to IEC/TS 62804-1:2015, method A (-1500V, 96h)

<sup>2</sup> See data sheet on rear for further information.

### THE IDEAL SOLUTION FOR:



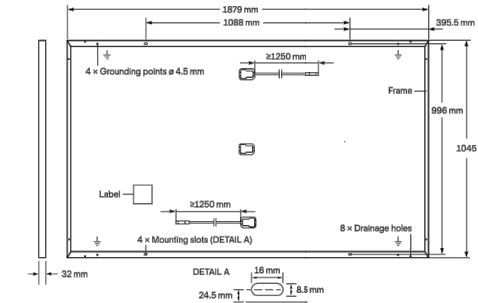
Rooftop arrays on residential buildings

Engineered in Germany



Format	1879 mm × 1045 mm × 32 mm (including frame)
Weight	22.0 kg
Front Cover	3.2 mm thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 22 monocrystalline Q.ANTUM solar half cells
Junction box	53-101 mm × 32-60 mm × 15-18 mm Protection class IP67, with bypass diodes
Cable	4 mm <sup>2</sup> Solar cable; (+) ≥ 1250 mm, (-) ≥ 1250 mm
Connector	Stäubli MC4; IP68

### MECHANICAL SPECIFICATION

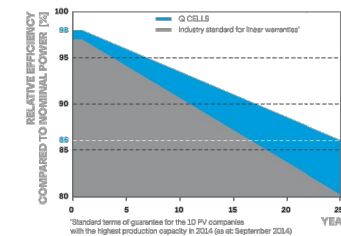


### ELECTRICAL CHARACTERISTICS

POWER CLASS		395	400	405	410	415
<b>MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC<sup>1</sup> (POWER TOLERANCE +5W / -0W)</b>						
Power at MPP <sup>2</sup>	P <sub>MPP</sub> [W]	395	400	405	410	415
Short Circuit Current <sup>4</sup>	I <sub>SC</sub> [A]	11.13	11.16	11.19	11.22	11.26
Open Circuit Voltage <sup>4</sup>	V <sub>OC</sub> [V]	45.03	45.06	45.09	45.13	45.16
Current at MPP	I <sub>MPP</sub> [A]	10.58	10.64	10.70	10.76	10.82
Voltage at MPP	V <sub>MPP</sub> [V]	37.32	37.59	37.85	38.11	38.37
Efficiency <sup>4</sup>	η [%]	≥ 20.1	≥ 20.4	≥ 20.6	≥ 20.9	≥ 21.1
<b>MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT<sup>2</sup></b>						
Power at MPP	P <sub>MPP</sub> [W]	296.4	300.1	303.9	307.6	311.4
Short Circuit Current	I <sub>SC</sub> [A]	8.97	8.99	9.02	9.04	9.07
Open Circuit Voltage	V <sub>OC</sub> [V]	42.46	42.49	42.52	42.56	42.59
Current at MPP	I <sub>MPP</sub> [A]	8.33	8.38	8.43	8.48	8.53
Voltage at MPP	V <sub>MPP</sub> [V]	35.59	35.82	36.04	36.27	36.49

<sup>1</sup> Measurement tolerances P<sub>MPP</sub> ± 3%; I<sub>SC</sub>, V<sub>OC</sub> ± 5% at STC: 1000 W/m<sup>2</sup>, 25 ± 2 °C, AM 1.5 according to IEC 60904-3 • <sup>2</sup> 800 W/m<sup>2</sup>, NMOT, spectrum AM 1.5

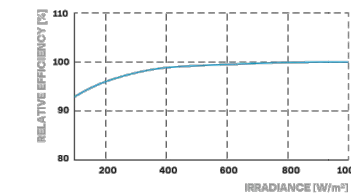
### Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

### PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m<sup>2</sup>)

### TEMPERATURE COEFFICIENTS

Temperature Coefficient of I <sub>SC</sub>	α [%/K]	+0.04	Temperature Coefficient of V <sub>OC</sub>	β [%/K]	-0.27
Temperature Coefficient of P <sub>MPP</sub>	γ [%/K]	-0.34	Nominal Module Operating Temperature	NMOT [°C]	43 ± 3

### PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage	V <sub>SYS</sub> [V]	1000	PV module classification	Class II
Maximum Reverse Current	I <sub>R</sub> [A]	20	Fire Rating based on ANSI / UL 61730	C / TYPE 2
Max. Design Load, Push / Pull	[Pa]	3600 / 2660	Permitted Module Temperature on Continuous Duty	-40 °C - +85 °C
Max. Test Load, Push / Pull	[Pa]	5400 / 4000		

### QUALIFICATIONS AND CERTIFICATES

Quality Controlled PV - TÜV Rheinland; IEC 61215:2016; IEC 61730:2016. This data sheet complies with DIN EN 50380. QCPV Certification ongoing.



### PACKAGING INFORMATION

Horizontal packaging	1940mm	1100mm	1220mm	751kg	28 pallets	24 pallets	32 modules
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**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 GmbH

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### SHEET TITLE RESOURCE DOCUMENT

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**R-001**

Specifications subject to technical changes © Q CELLS Q.PEAK DUO ML-G10+ 395-415 2021-05 Rev.01\_EN



# Single Phase Inverter with HD-Wave Technology

for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US



INVERTERS

## Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking efficiency
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Extremely small
- Built-in module-level monitoring
- Outdoor and indoor installation
- Optional: Revenue grade data, ANSI C12.20 Class 0.5 (0.5% accuracy)

[solaredge.com](http://solaredge.com)



## Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US

	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US		
<b>OUTPUT</b>									
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA	
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA	
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	✓	Vac	
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac	
AC Frequency (Nominal)	59.3 - 60 - 60.5 <sup>1)</sup>							Hz	
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A	
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A	
GFDI Threshold	1							A	
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes								
<b>INPUT</b>									
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W	
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W	
Transformer-less, Ungrounded	Yes								
Maximum Input Voltage	480							Vdc	
Nominal DC Input Voltage	380							Vdc	
Maximum Input Current @240V <sup>2)</sup>	8.5	10.5	13.5	16.5	20	27	30.5	Adc	
Maximum Input Current @208V <sup>2)</sup>	-	9	-	13.5	-	-	27	Adc	
Max. Input Short Circuit Current	45							Adc	
Reverse-Polarity Protection	Yes								
Ground-Fault Isolation Detection	600k $\Omega$ Sensitivity								
Maximum Inverter Efficiency	99	99.2						%	
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%	
Nighttime Power Consumption	< 2.5							W	
<b>ADDITIONAL FEATURES</b>									
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)								
Revenue Grade Data, ANSI C12.20	Optional <sup>3)</sup>								
Rapid Shutdown - NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect								
<b>STANDARD COMPLIANCE</b>									
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07								
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)								
Emissions	FCC Part 15 Class B								
<b>INSTALLATION SPECIFICATIONS</b>									
AC Output Conduit Size / AWG Range	3/4" minimum / 14-6 AWG				3/4" minimum / 14-4 AWG				
DC Input Conduit Size / # of Strings / AWG Range	3/4" minimum / 1-2 strings / 14-6 AWG				3/4" minimum / 1-3 strings / 14-6 AWG				
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174				21.3 x 14.6 x 7.3 / 540 x 370 x 185				in / mm
Weight with Safety Switch	22 / 10	25.1 / 11.4	26.2 / 11.9	38.8 / 17.6				lb / kg	
Noise	< 25				< 50				dBA
Cooling	Natural Convection								
Operating Temperature Range	-40 to +140 / -25 to +60 <sup>4)</sup> (-40°F / -40°C option) <sup>5)</sup>							°F / °C	
Protection Rating	NEMA 4X (Inverter with Safety Switch)								

<sup>1)</sup> For other regional settings please contact SolarEdge support.  
<sup>2)</sup> A higher current source may be used; the inverter will limit its input current to the values stated.  
<sup>3)</sup> Revenue grade inverter P/N: SExxxxH-US000NHC2.  
<sup>4)</sup> For power de-rating information refer to: <https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf>  
<sup>5)</sup> -40 version P/N: SExxxxH-US000NNU4

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**R-002**



# Power Optimizer

For North America

P320 / P340 / P370 / P400 / P401 / P405 / P485 / P505



POWER OPTIMIZER

## PV power optimization at the module-level

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- Flexible system design for maximum space utilization
- Fast installation with a single bolt
- Next generation maintenance with module-level monitoring
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- Module-level voltage shutdown for installer and firefighter safety

solaredge.com



# Power Optimizer For North America

P320 / P340 / P370 / P400 / **P401** / P405 / P485 / P505

Optimizer model (typical module compatibility)	P320 (for 60-cell modules)	P340 (for high-power 60-cell modules)	P370 (for higher-power 60 and 72-cell modules)	P400 (for 72 & 96-cell modules)	P401 (for high power 60 and 72 cell modules)	P405 (for high-voltage modules)	P485 (for high-voltage modules)	P505 (for higher current modules)	
<b>INPUT</b>									
Rated Input DC Power <sup>(1)</sup>	320	340	370	400	405	485	505	W	
Absolute Maximum Input Voltage (Voc at lowest temperature)	48		60	80	60	125 <sup>(2)</sup>	83 <sup>(2)</sup>	Vdc	
MPPT Operating Range	8 - 48		8 - 60	8 - 80	8-60	12.5 - 105	12.5 - 83	Vdc	
Maximum Short Circuit Current (Isc)		11		10.1	11.75	11	14	Adc	
Maximum DC Input Current		13.75		12.5	14.65	12.5	17.5	Adc	
Maximum Efficiency					99.5			%	
Weighted Efficiency				98.8				98.6	%
Overvoltage Category					II				
<b>OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREEDGE INVERTER)</b>									
Maximum Output Current				15				Adc	
Maximum Output Voltage			60			85		Vdc	
<b>OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREEDGE INVERTER OR SOLAREEDGE INVERTER OFF)</b>									
Safety Output Voltage per Power Optimizer				1 ± 0.1				Vdc	
<b>STANDARD COMPLIANCE</b>									
EMC	FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3								
Safety	IEC62109-1 (class II safety), UL1741								
Material	UL94 V-0, UV Resistant								
RoHS	Yes								
<b>INSTALLATION SPECIFICATIONS</b>									
Maximum Allowed System Voltage	1000								
Compatible inverters	All SolarEdge Single Phase and Three Phase inverters								
Dimensions (W x L x H)	129 x 153 x 27.5 / 5.1 x 6 x 1.1	129 x 153 x 33.5 / 5.1 x 6 x 1.3	129 x 153 x 29.5 / 5.1 x 6 x 1.16	129 x 159 x 49.5 / 5.1 x 6.3 x 1.9	129 x 162 x 59 / 5.1 x 6.4 x 2.3			mm / in	
Weight (including cables)	630 / 1.4	750 / 1.7	655 / 1.5	845 / 1.9	1064 / 2.3			gr / lb	
Input Connector	MC4 <sup>(3)</sup>				Single or dual MC4 <sup>(3)(4)</sup>	MC4 <sup>(3)</sup>			
Input Wire Length	0.16 / 0.52								
Output Wire Type / Connector	Double Insulated / MC4								
Output Wire Length	0.9 / 2.95				1.2 / 3.9				
Operating Temperature Range <sup>(5)</sup>	-40 - +85 / -40 - +185								
Protection Rating	IP68 / NEMA6P								
Relative Humidity	0 - 100								

(1) Rated power of the module at STC will not exceed the optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.  
 (2) NEC 2017 requires max input voltage be not more than 80V  
 (3) For other connector types please contact SolarEdge  
 (4) For dual version for parallel connection of two modules use P485-4NMDMRM. In the case of an odd number of PV modules in one string, installing one P485 dual version power optimizer connected to one PV module. When connecting a single module seal the unused input connectors with the supplied pair of seals.  
 (5) For ambient temperature above +85°C / +185°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details.

PV System Design Using a SolarEdge Inverter <sup>(6)(7)</sup>	Single Phase HD-Wave	Single phase	Three Phase for 208V grid	Three Phase for 277/480V grid	
Minimum String Length (Power Optimizers)	P320, P340, P370, P400, P401	8	10	18	
	P405, P485, P505	6	8	14	
Maximum String Length (Power Optimizers)		25	25	50 <sup>(8)</sup>	
Maximum Power per String	5700 (6000 with SE7600-US - SE11400-US)	5250	6000 <sup>(9)</sup>	12750 <sup>(10)</sup>	W
Parallel Strings of Different Lengths or Orientations	Yes				

(6) For detailed string sizing information refer to: [http://www.solaredge.com/sites/default/files/string\\_sizing\\_na.pdf](http://www.solaredge.com/sites/default/files/string_sizing_na.pdf)  
 (7) It is not allowed to mix P405/P485/P505 with P320/P340/P370/P400/P401 in one string  
 (8) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement  
 (9) For 208V grid: it is allowed to install up to 6,500W per string when the maximum power difference between each string is 1,000W  
 (10) For 277/480V grid: it is allowed to install up to 15,000W per string when the maximum power difference between each string is 2,000W

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MCKINLEY AVENUE,  
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53205, USA

SIGNATURE WITH SEAL

REV	DESCRIPTION	DATE	REVISIONS	
			REV	DESCRIPTION

SHEET TITLE  
**RESOURCE DOCUMENT**

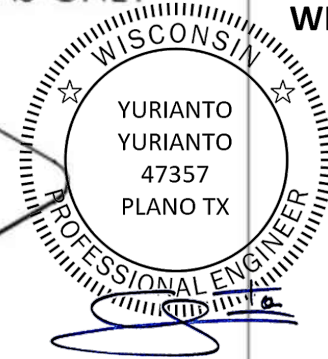
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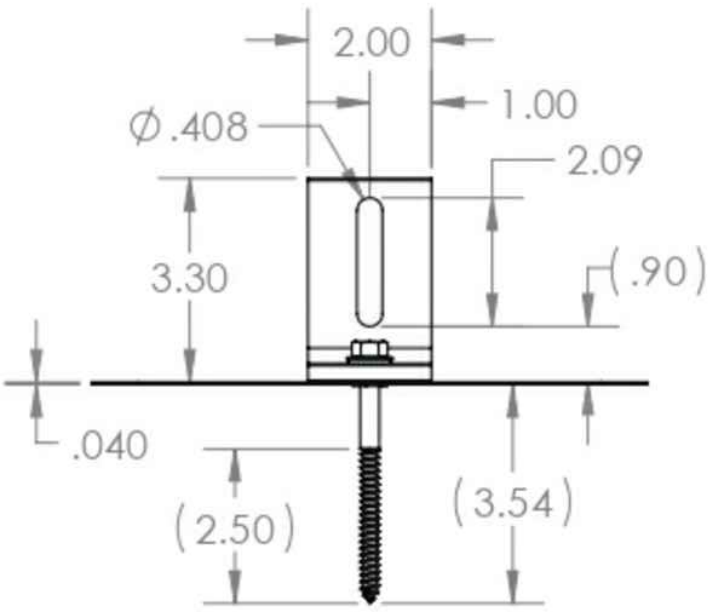
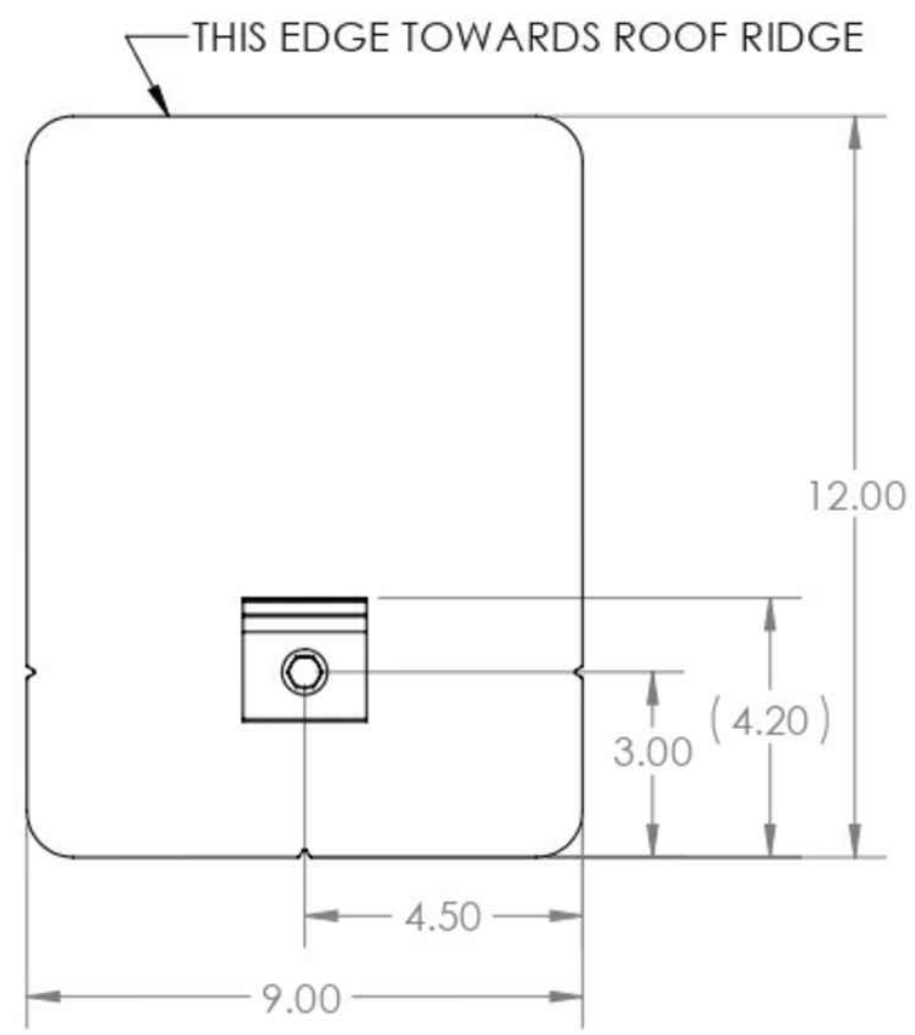
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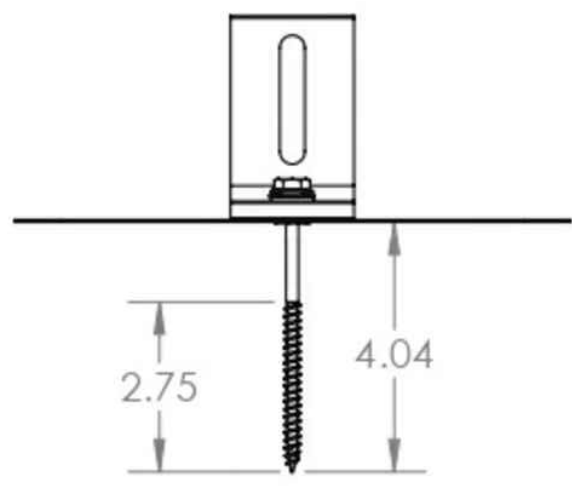


By Yuri at 11:02:57 AM, 12/19/2022

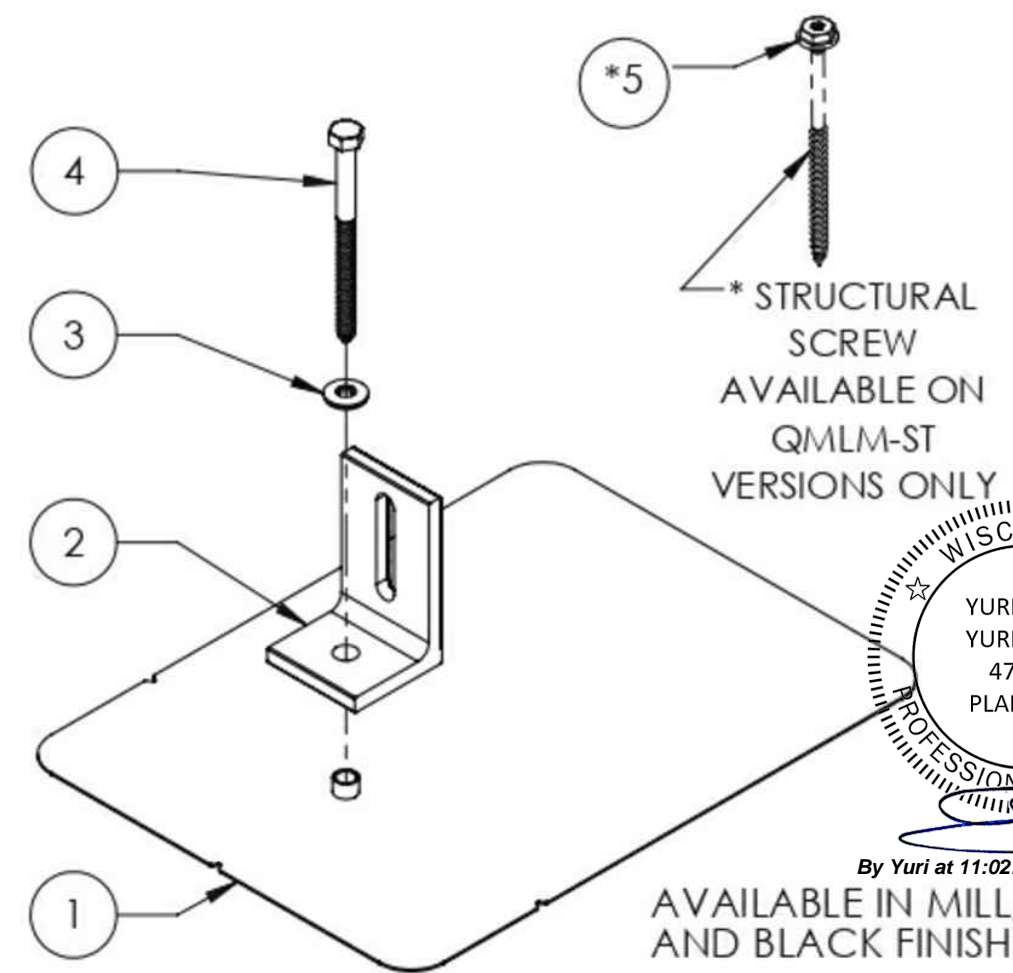
ITEM NO.	DESCRIPTION	QTY.
1	FLASHING, ROUNDED CORNERS, 9" X 12" X .040", .438" HOLE, 5052, MILL	1
2	L-FOOT, 2" X 3.30" FOR .438" O.D. FASTENER, 2-1/16" SLOT, 6061-T6/6005A-T61, MILL	1
3	WASHER, SEALING, 5/16" ID X 3/4" OD, EPDM BONDED SS	1
4	LAG SCREW, HEX HEAD, 5/16" x 4", 18-8 SS	1
*5	STRUCTURAL SCREW, QMPV, T-30 HEX WASHER HEAD, 5/16" X 4-1/2", 18-8SS	1



**QMLM**



**QMLM-ST**



**Quick Mount PV<sup>®</sup>**

TITLE:  
**QMLM & QMLM-ST: L-MOUNT, 2-1/16" SLOT**

UNLESS OTHERWISE SPECIFIED:	SIZE	DRAWN BY: AAP	REV
DIMENSIONS ARE IN INCHES	<b>A</b>	DATE: 4/4/2019	<b>11</b>
TOLERANCES:			
FRACTIONAL ± 1/8 TWO PLACE DECIMAL ± .19 THREE PLACE DECIMAL ± .094		SCALE: 1:4	

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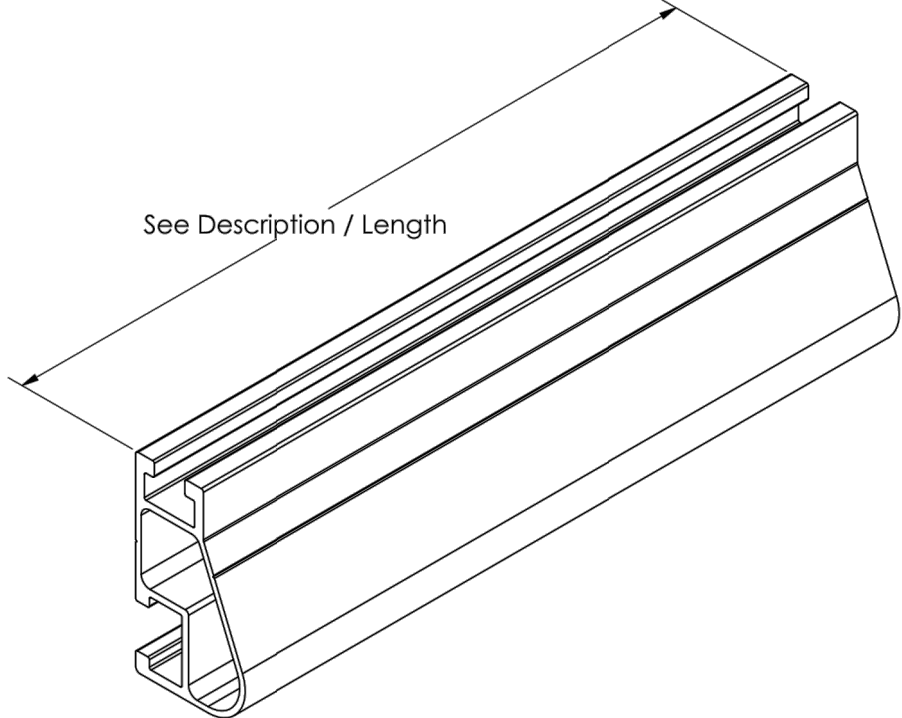
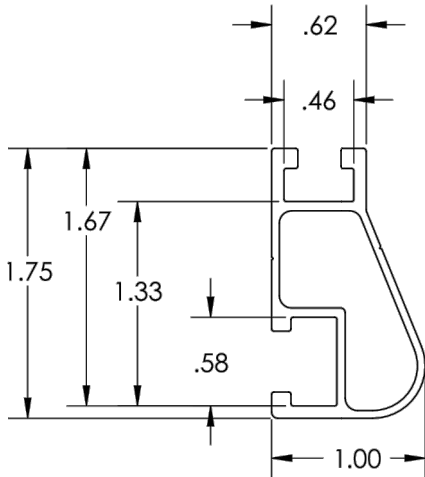
SHEET NUMBER  
**R-004**





Cut Sheet

# XR10 Rail

Rail Section Properties	
Property	Value
Total Cross-Sectional Area	0.363 in <sup>2</sup>
Section Modulus (X-axis)	0.136 in <sup>3</sup>
Moment of Inertia (X-axis)	0.124 in <sup>4</sup>
Moment of Inertia (Y-axis)	0.032 in <sup>4</sup>
Torsional Constant	0.076 in <sup>3</sup>
Polar Moment of Inertia	0.033 in <sup>4</sup>

Clear Part Number	Black Part Number	Description / Length	Material	Weight
XR-10-132A	XR-10-132B	XR10, Rail 132" (11 Feet)	6000-Series Aluminum	4.67 lbs.
XR-10-168A	XR-10-168B	XR10, Rail 168" (14 Feet)		5.95 lbs.
XR-10-204A	XR-10-204B	XR10, Rail 204" (17 Feet)		7.22 lbs.

v1.0



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