

NEW PHOTOVOLTAIC SYSTEM 4.62 KW DC  
1617 SW MERRYMAN DR, LEE'S SUMMIT, MO 64082,USA

GENERAL NOTES

1.1.1 PROJECT NOTES:  
1.1.2 THISPHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (NEC) ARTICLE 690, ALL MANUFACTURERS'S 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 GROUND FAULT DETECTION AND INTERRUPTION (GFDI) DEVICE IS INTEGRATED WITH THE MICROINVERTER IN ACCORDANCE WITH NEC 690.41(B)  
1.1.5 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  
1.1.6 MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC. IF UNAVAILABLE, MAX DC VOLTAGE CALCULATED ACCORDING TO NEC 690.7.  
1.1.7 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 APPLICATIONPER 690.4 (D). SHALL BE INSTALLED ACCORDING TO ANY INSTRUCTIONS FROM LISTING OR LABELING [NEC 110.3].  
1.1.8 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 - UNIRAC SOLAR  
1.3.3 PV MODULE AND INVERTER INSTALLATION - LG ELECTRONICS LG355N1C-N5 / ENPHASE INVERTER /  
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 1.3.13  
SIGNAGE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE

PROJECT INFORMATION

OWNER  
NAME: MASON MURSKI

PROJECT MANAGER  
NAME: MATTHEW WEBB  
PHONE: 5052180838

CONTRACTOR NAME  
MARC JONES CONSTRUCTION,  
LLC DBA SUNPRO SOLAR  
PHONE: 5052180838



12/18/2020

Firm License Number: 2011009604

VSE Project Number: U3573.3443.201

Vector Structural Engineering has reviewed the existing structure with loading from the solar array and lag screw connections to the existing framing. The design of the racking system, connections, and all other structure is by others. Mechanical, architectural, and all other nonstructural aspects of the design are by others. Electrical is by others, unless stamped by Dean Levorsen.

SCOPE OF WORK

SYSTEM SIZE: STC:13 X 355W= 4.62 kW DC  
PTC: 13 x 332.8W = 4.33 kW DC  
(13) LG ELECTRONICS LG355N1C-N5  
(13) ENPHASE IQ7PLUS-72-2-US

ATTACHMENT TYPE: ROOF MOUNT  
MSP UPGRADE: NO

AUTHORITIES HAVING JURISDICTION

BUILDING: LEE'S SUMMIT  
ZONING: LEE'S SUMMIT  
UTILITY: EVERGY-MO WEST

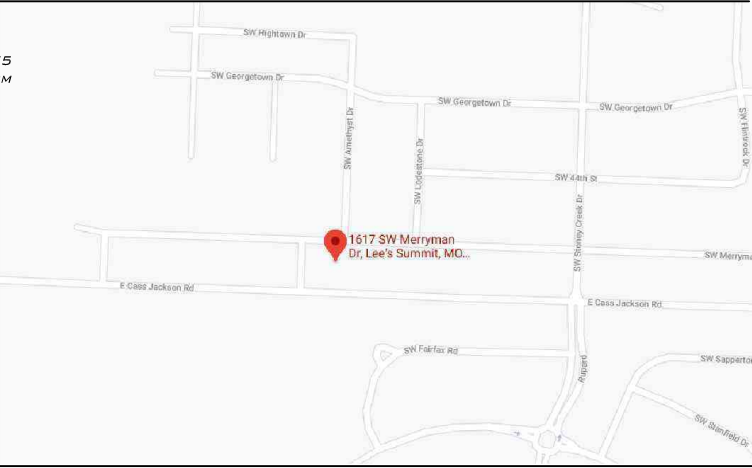
DESIGN SPECIFICATION

OCCUPANCY: II  
CONSTRUCTION: SINGLE-FAMILY  
ZONING: RESIDENTIAL  
GROUND SNOW LOAD: 20 psf  
WIND EXPOSURE: C  
WIND SPEED: 109 mph

APPLICABLE CODES & STANDARDS

BUILDING: IBC 2018 IRC 2018  
ELECTRICAL: NEC 2017  
FIRE: IFC 2018

VICINITY MAP



SATELLITE VIEW



SHEET INDEX

T-001	COVER PAGE
G-001	NOTES
A-101	SITE PLAN
A-102	ELECTRICAL PLAN
A-103	ATTACHMENT PLAN
A-104	STRUCTURAL PLAN
A-105	STANDOFF DETAILS
A-106	HOUSE ELEVATION PLAN
E-601	LINE DIAGRAM
E-602	ELECTRICAL CALCULATIONS
E-603	PLACARD
R-001	RESOURCE DOCUMENT
R-002	RESOURCE DOCUMENT
R-003	RESOURCE DOCUMENT
R-004	RESOURCE DOCUMENT
R-005	RESOURCE DOCUMENT
R-006	RESOURCE DOCUMENT
R-007	RESOURCE DOCUMENT
R-008	RESOURCE DOCUMENT



22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

MASON MURSKI  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

RELEASE FOR  
CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI

12/23/2020

REVISIONS	DATE			
	DESCRIPTION			
	REV			

SHEET TITLE  
COVER PAGE

DRAWN DATE	12/15/2020
DRAWN BY	VV
REVIEWED BY	-

SHEET NUMBER  
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 MODULESARECONSIDERED 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 PROPERACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PERSECTION 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 MUSTALSO 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 WILLBE 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 AREBASED 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 1.5%.  
2.4.5 DC WIRING LIMITED TO MODULE FOOTPRINT. MICROINVERTER 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 DEVISES 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 SHALLBE SIZED ACCORDING TO NEC 690.45 AND MICROINVERTER MANUFACTORERS' INSTRUCTIONS.  
2.5.6 EACH MODULE WILL BE GROUNDED USING WEEB GROUNDING CLIPS AS SHOWN IN MANUFACTURERDOCUMENTATION AND APPROVED BY THE AHJ. IF WEEBS ARE NOT USED, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE SPECIFIED GROUNDING LUG HOLES PER THE MANUFACTURERS' INSTALLATION REQUIREMENTS.  
2.5.7 THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OFA 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 WHENTHE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARECONNECTED 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 MICROINVERTER 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(D)(2)(3)].  
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 (LOADSIDE) 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 2.7.8BACKFEEDING BREAKER FOR ELECTRIC POWER SOURCES OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING [NEC 705.12 (B)(5)].



22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

MASON MURSKI  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

RELEASE FOR  
CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI

12/23/2020

Signature with Stamp

DATE: 12/15/2020

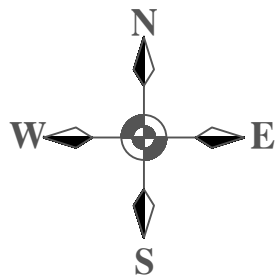
REVIEWS	DATE			
	DESCRIPTION			
REV				

SHEET TITLE  
NOTES

DRAWN DATE	12/15/2020
DRAWN BY	VV
REVIEWED BY	-

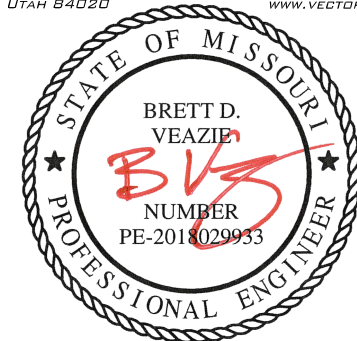
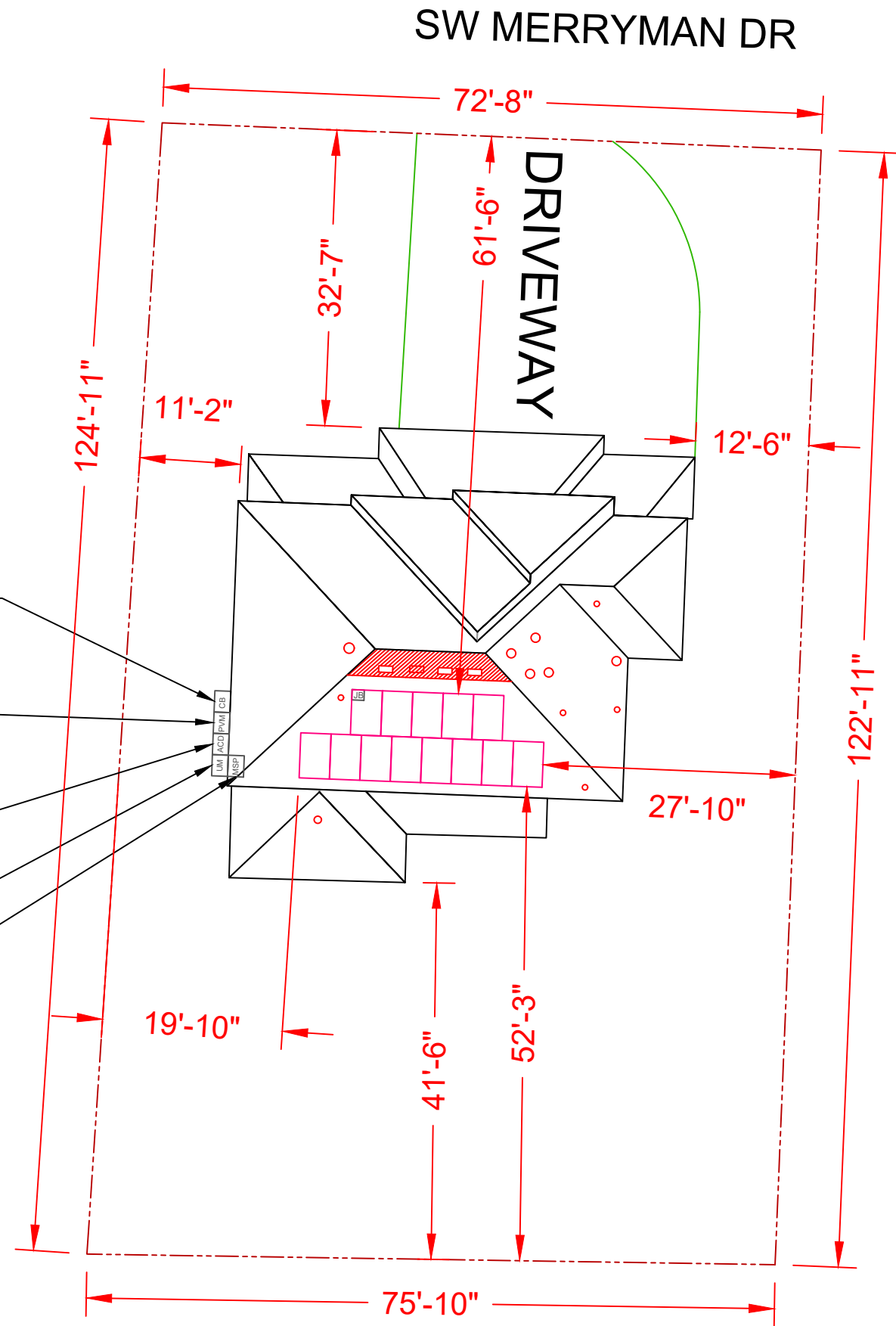
SHEET NUMBER  
G-001





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

- (N) ENPHASE COMBINER PANEL WITH ENVOY-IQ METER
- (N) PV PRODUCTION METER
- (N) VISIBLE LOCKABLE LABELED AND NON-FUSED AC DISCONNECT (UTILITY DISCONNECT)
- (E) UTILITY METER
- (E) MAIN SERVICE PANEL (INSIDE HOUSE)



12/18/2020

Firm License Number: 2011009604  
VSE Project Number: U3573.3443.201

Vector Structural Engineering has reviewed the existing structure with loading from the solar array and lag screw connections to the existing framing. The design of the racking system, connections, and all other structure is by others. Mechanical, architectural, and all other nonstructural aspects of the design are by others. Electrical is by others, unless stamped by Dean Levorsen.

LEGEND

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



22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

MASON MURSKI  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

RELEASE FOR  
CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI

Signature with  
12/23/2020

REV	DESCRIPTION	DATE			

SHEET TITLE  
SITE PLAN

DRAWN DATE	12/15/2020
DRAWN BY	VV
REVIEWED BY	-

SHEET NUMBER  
A-101

1 - MODULE STRING

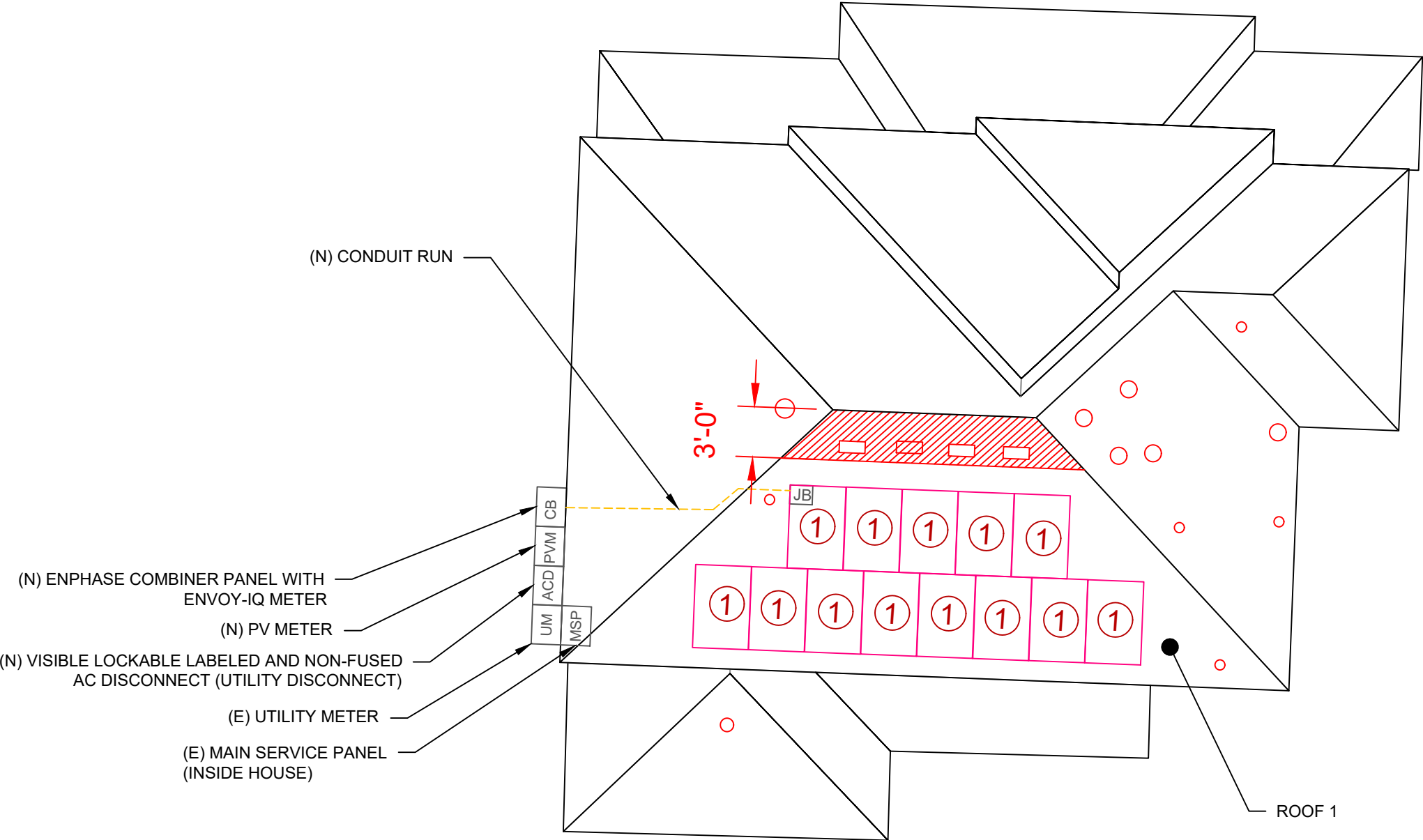
ROOF SECTION(S)	
ROOF 1	TILT - 27° AZIMUTH - 182° MODULE - 13 SYSTEM SIZE (KW) - 4.62

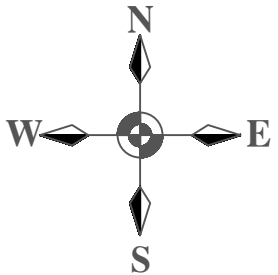


22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS  
**MASON MURSKI**  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA







**RELEASE FOR CONSTRUCTION**  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI  
12/23/2020





1 | **ELECTRICAL PLAN**  
**SCALE: 1/8" = 1'-0"**

**LEGEND**

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

REVISIONS		DATE			
REV	DESCRIPTION				
SHEET TITLE					
ELECTRICAL PLAN					
DRAWN DATE		12/15/2020			
DRAWN BY		VV			
REVIEWED BY		-			
SHEET NUMBER					
A-102					



22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

MASON MURSKI  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

RELEASE FOR  
CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI

12/23/2020

Signature with Seal

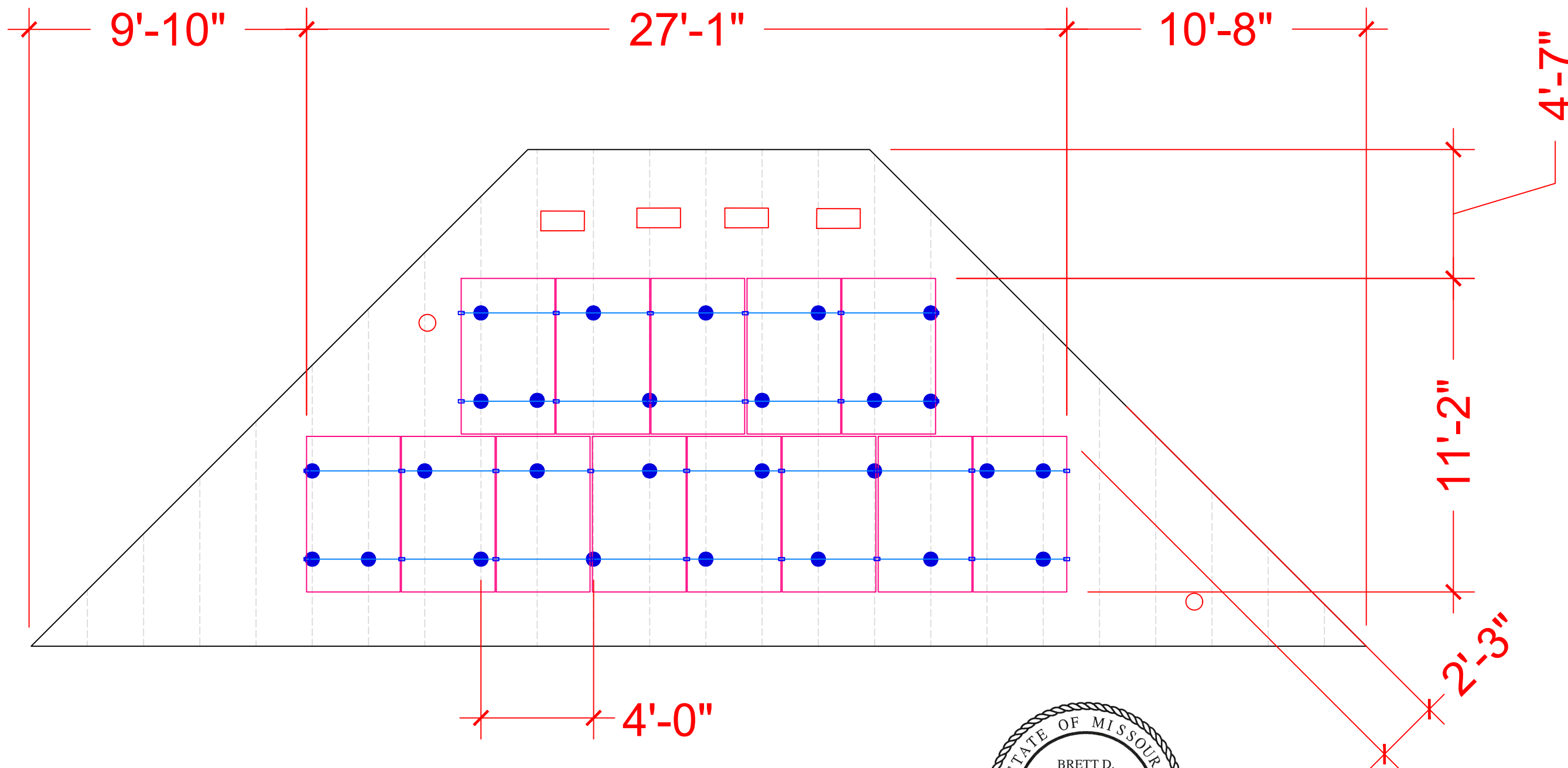
REV	DESCRIPTION	DATE

SHEET TITLE  
ATTACHMENT PLAN

DRAWN DATE	12/15/2020
DRAWN BY	VV
REVIEWED BY	-

SHEET NUMBER  
A-103

- CLAMP
- UNIRAC FLASHLOC
- RAIL
- RAFTER



ARRAY 1  
TILT- 27 DEG  
AZIMUTH - 182 DEG



12/18/2020  
Firm License Number: 2011009604  
VSE Project Number: U3573.3443.201

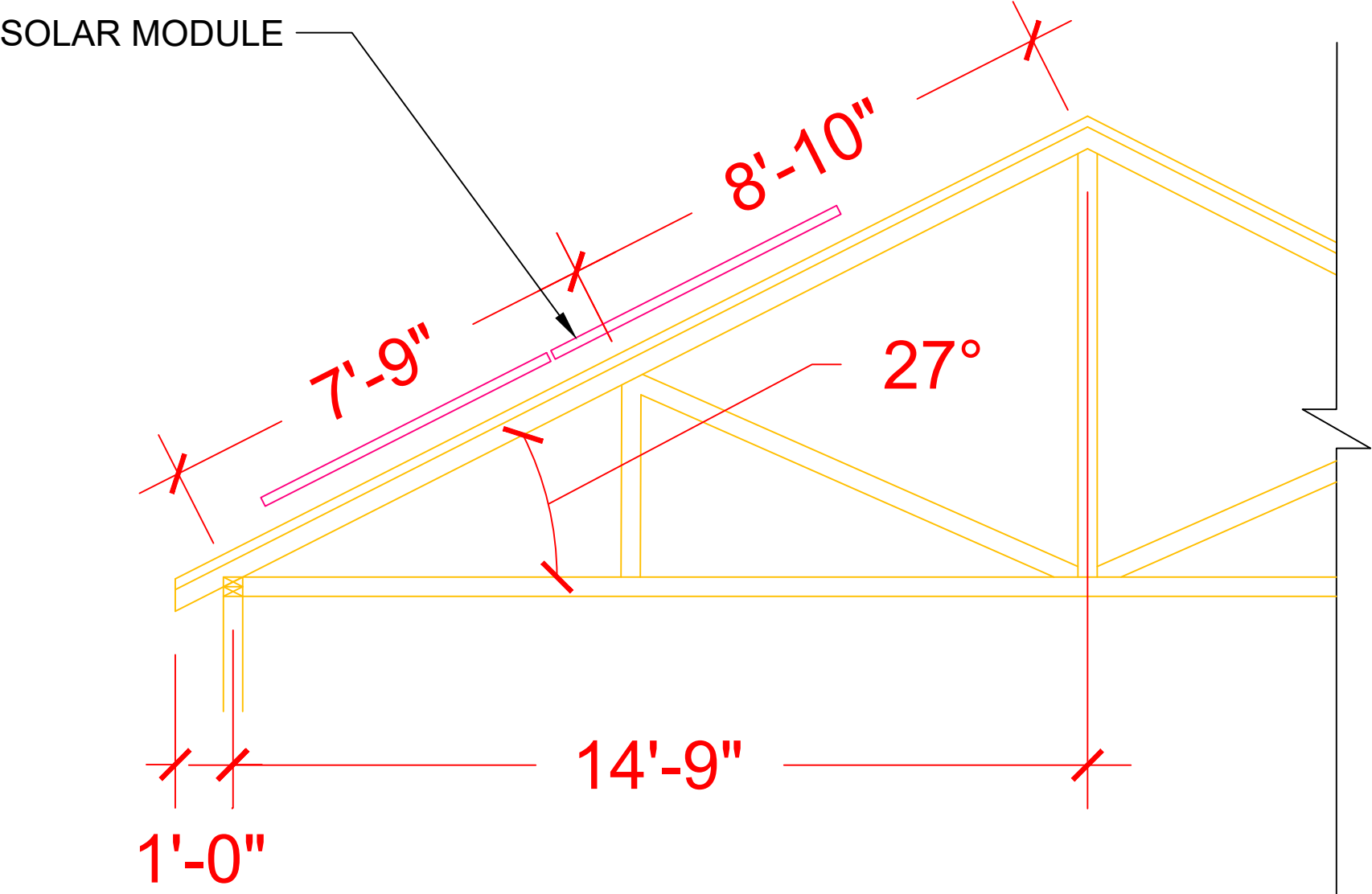


Vector Structural Engineering has reviewed the existing structure with loading from the solar array and lag screw connections to the existing framing. The design of the racking system, connections, and all other structure is by others. Mechanical, architectural, and all other nonstructural aspects of the design are by others. Electrical is by others, unless stamped by Dean Levorsen.

1 | ATTACHMENT PLAN  
SCALE: 1/4" = 1'-0"


1 | STRUCTURAL PLAN

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



ROOF 1

ROOF SECTION(S)	
ROOF 1	ROOF MATERIAL - COMPOSITE SHINGLE RAFTER SIZE - 2"X4" O.C. SPACING - 24"



22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

MASON MURSKI  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

RELEASE FOR CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI

Signature with Seal  
12/23/2020



651 W. GALENA PARK BLVD, STE. 101    PHONE (801) 990-1775  
DRAPER, UTAH 84020    WWW.VECTORSE.COM

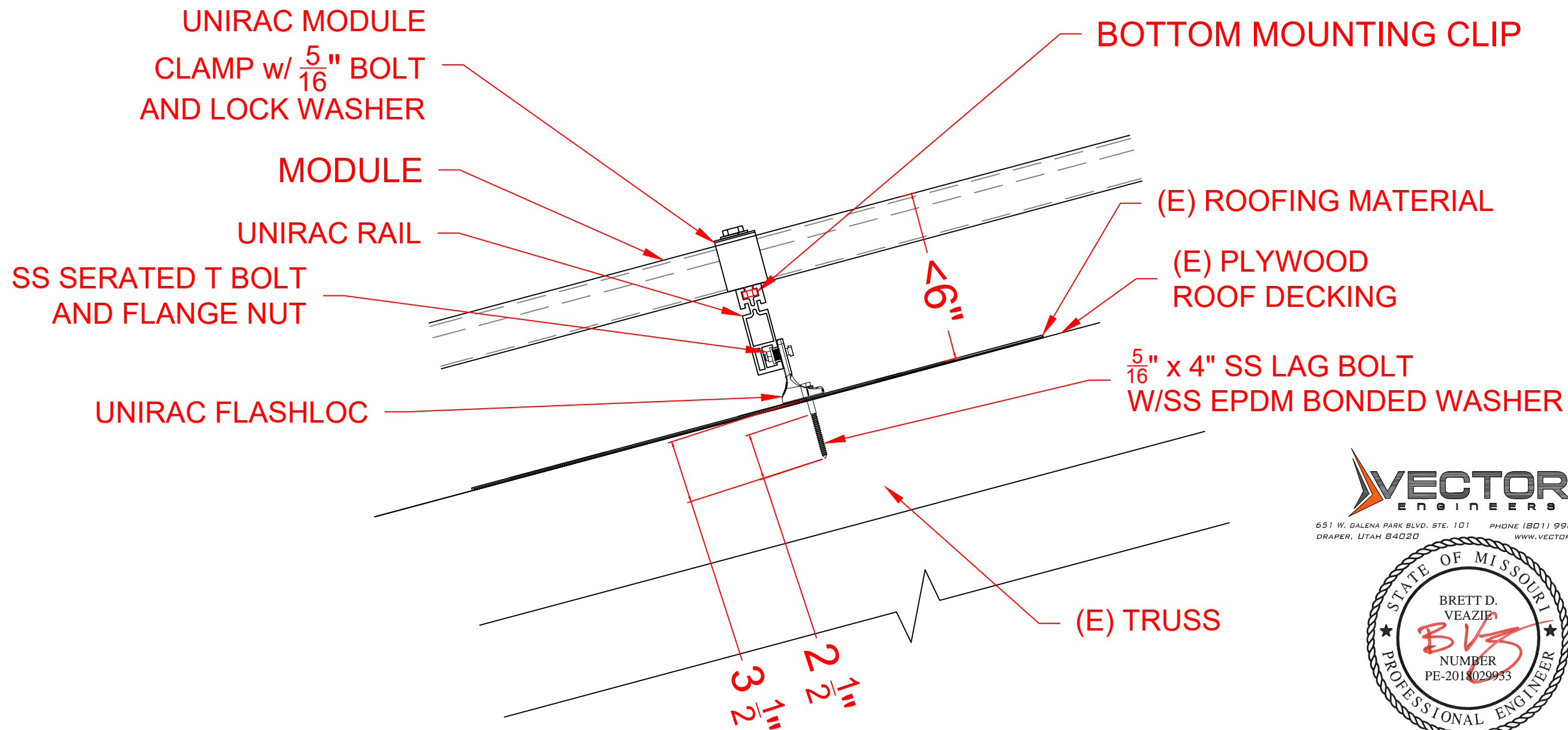


12/18/2020  
Firm License Number: 2011009604  
VSE Project Number: U3573.3443.201

Vector Structural Engineering has reviewed the existing structure with loading from the solar array and lag screw connections to the existing framing. The design of the racking system, connections, and all other structure is by others. Mechanical, architectural, and all other nonstructural aspects of the design are by others. Electrical is by others, unless stamped by Dean Levorsen.

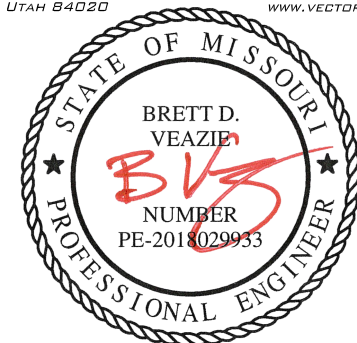
REV	DESCRIPTION	DATE	

SHEET TITLE	
STRUCTURAL PLAN	
DRAWN DATE	12/15/2020
DRAWN BY	VV
REVIEWED BY	-
SHEET NUMBER	
A-104	



1 | STANDOFF DETAILS  
SCALE:NTS

**VECTOR**  
ENGINEERS  
651 W. GALENA PARK BLVD. STE. 101 DRAPER, UTAH 84020  
PHONE (801) 990-1775  
WWW.VECTORSE.COM



12/18/2020

Firm License Number: 2011009604  
VSE Project Number: U3573.3443.201

Vector Structural Engineering has reviewed the existing structure with loading from the solar array and lag screw connections to the existing framing. The design of the racking system, connections, and all other structure is by others. Mechanical, architectural, and all other nonstructural aspects of the design are by others. Electrical is by others, unless stamped by Dean Levorsen.



22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

MASON MURSKI  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

RELEASE FOR  
CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI

12/23/2020

REVISIONS	REV	DESCRIPTION	DATE		

SHEET TITLE  
STANDOFF  
DETAILS

DRAWN DATE	12/15/2020
DRAWN BY	VV
REVIEWED BY	-

SHEET NUMBER  
A-105



22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

MASON MURSKI  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

RELEASE FOR  
CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI

12/23/2020

Signature with Seal

REVISIONS

DESCRIPTION

DATE

REV

SHEET TITLE  
HOUSE  
ELEVATION PLAN

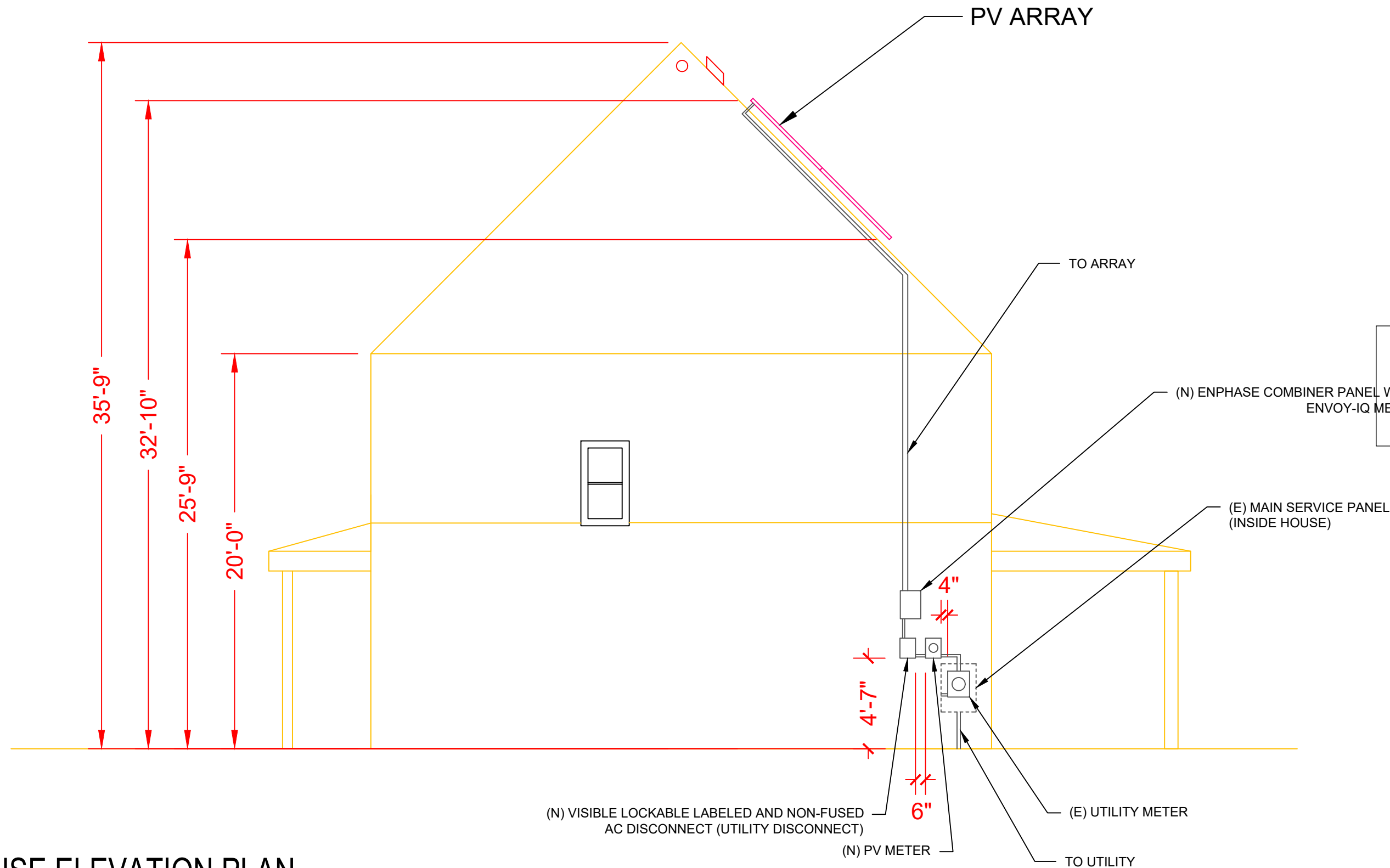
DRAWN DATE 12/15/2020

DRAWN BY VV

REVIEWED BY -

SHEET NUMBER

A-106



**RIGHT SIDE OF RESIDENCE**

1 | HOUSE ELEVATION PLAN

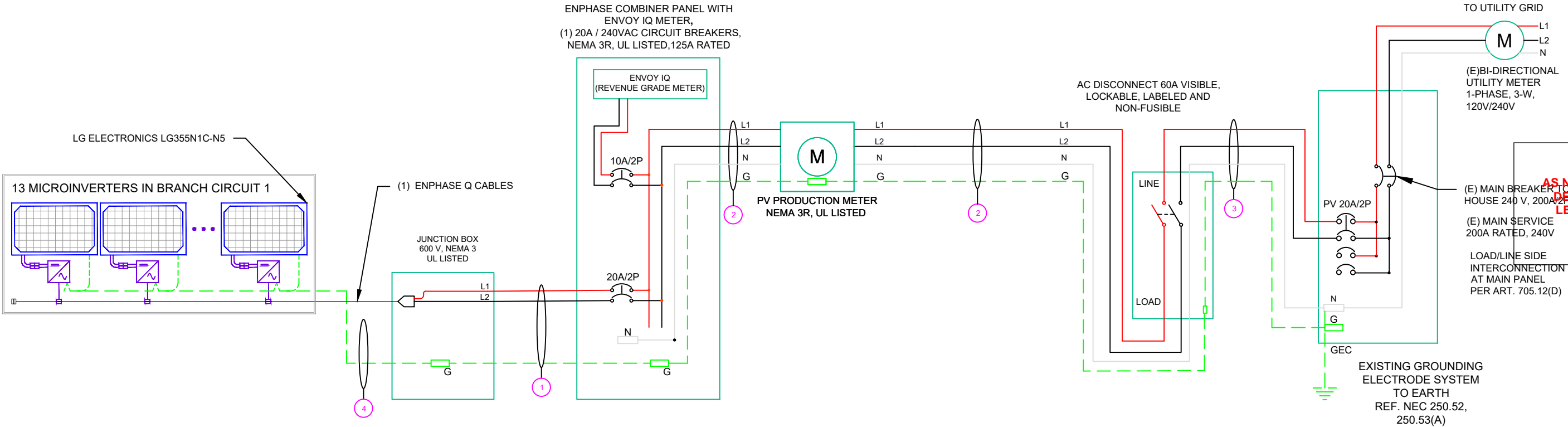
SCALE:3/16" = 1'-0"



SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	LG ELECTRONICS LG355N1C-N5
VMP	34.7V
IMP	10.25A
VOC	41.5V
ISC	10.8A
TEMP. COEFF. VOC	-0.26%/°C
MODULE DIMENSION	66.92"L x 40"W x 1.57"D (In Inch)

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	ENPHASE IQ 7+ MICROINVERTER
MIN/MAX DC VOLT RATING	22V MIN/ 60V MAX
MAX INPUT POWER	235W-440W
NOMINAL AC VOLTAGE RATING	240V/ 211-264V
MAX AC CURRENT	1.21A
MAX MODULES PER STRING	13 (SINGLE PHASE)
MAX OUTPUT POWER	290 VA

WIRE /CONDUIT SCHEDULE	
TAG	DESCRIPTION
1	#12 THWN-2 & (1)#6 THWN-2 GROUND / 1" EMT CONDUIT
2	#6 THWN-2 & (1)#6 THWN-2 GROUND /1" EMT CONDUIT
3	#6 THWN-2 & (1)#6 THWN-2 GROUND /1" EMT CONDUIT
4	(1)#6 BARE GROUND





22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

MASON MURSKI  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

RELEASE FOR  
CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI  
12/23/2020

REVISIONS	DATE			
	DESCRIPTION			
	REV			

SHEET TITLE  
LINE DIAGRAM

DRAWN DATE12/15/2020

DRAWN BYVV

REVIEWED BY-

SHEET NUMBER  
E-601

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-20°
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

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

CALCULATIONS:

1. CURRENT CARRYING CONDUCTOR

(A) BEFORE IQ COMBINER PANEL  
AMBIENT TEMPERATURE - (35)°C ...NEC 310.15(B)(3)(c)  
TEMPERATURE DERATE FACTOR - 0.96 ...NEC 310.15(B)(2)(a)  
GROUPING FACTOR - 1...NEC 310.15(B)(3)(a)

CONDUCTOR AMPACITY  
= (INV O/P CURRENT ) x 1.25 / A.T.F / G.F ...NEC 690.8(B)  
= [(13 x 1.21) x 1.25] / [0.96 x 1]  
= 20.48A  
SELECTED CONDUCTOR - #12 THWN-2 ...NEC 310.15(B)(16)

(B) AFTER IQ COMBINER PANEL  
TEMPERATURE DERATE FACTOR - 0.96  
GROUPING FACTOR - 1  
  
CONDUCTOR AMPACITY  
= (TOTAL INV O/P CURRENT) x 1.25 / 0.96 / 1 ...NEC 690.8(B)  
= [(13 x 1.21) x 1.25] / [0.96x 1]  
= 20.48 A  
SELECTED CONDUCTOR - #6 THWN-2 ...NEC 310.15(B)(16)

2. PV OVER CURRENT PROTECTION ...NEC 690.9(B)  
= TOTAL INVERTER O/P CURRENT x 1.25  
= (13 x 1.21) x 1.25 = 19.66 A  
SELECTED OCPD = 20 A ...NEC 240.6

3. 120% RULE FOR BACKFEED BREAKER  
...NEC 705.12(D)(2)(3)

MCB + PV BREAKER <= (1.2 x BUS BAR  
RATING RATING RATING)  
(200 + 20) <= 1.2 x 200A  
220.00 <= 240.00 HENCE OK



22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS  
MASON MURSKI  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

Signature with  
12/23/2020

REVISIONS

REV	DESCRIPTION	DATE

SHEET TITLE

ELECTRICAL  
CALCULATIONS

DRAWN DATE

12/15/2020

DRAWN BY

VV

REVIEWED BY

-

SHEET NUMBER

E-602

RELEASE FOR  
CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI



22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

MASON MURSKI  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

RELEASE FOR  
CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI

12/23/2020

Signature with Seal

REV	DESCRIPTION	DATE		
		REV	DATE	DATE

SHEET TITLE  
PLACARDS

DRAWN DATE	12/15/2020
DRAWN BY	VV
REVIEWED BY	-

SHEET NUMBER  
E-603

**WARNING:**  
**PHOTOVOLTAIC**  
**POWER SOURCE**

LABEL 1  
ON ALL CONDUITS SPACED AT MAX 10FT

**! 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

**! CAUTION !**  
**SOLAR POINT OF**  
**INTERCONNECTION**

LABEL 9  
AT UTILITY METER

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

LABEL 2  
AT INVERTER

**PHOTOVOLTAIC**  
**AC DISCONNECT**

LABEL 6  
AT EACH AC DISCONNECT

**! WARNING !**

THE SERVICE METER IS ALSO SERVED  
BY A PHOTOVOLTAIC SYSTEM

LABEL 10  
AT UTILITY METER

**! CAUTION !**  
**PHOTOVOLTAIC SYSTEM**  
**EQUIPPED WITH RAPID**  
**SHUTDOWN**

LABEL 3  
AT INVERTER

**! WARNING !**

DUAL POWER SOURCES  
SECOND SOURCE IS PV SYSTEM

LABEL 7  
AT MEP

**PHOTOVOLTAIC**  
**DC DISCONNECT**

LABEL 4  
AT DC DISCONNECT

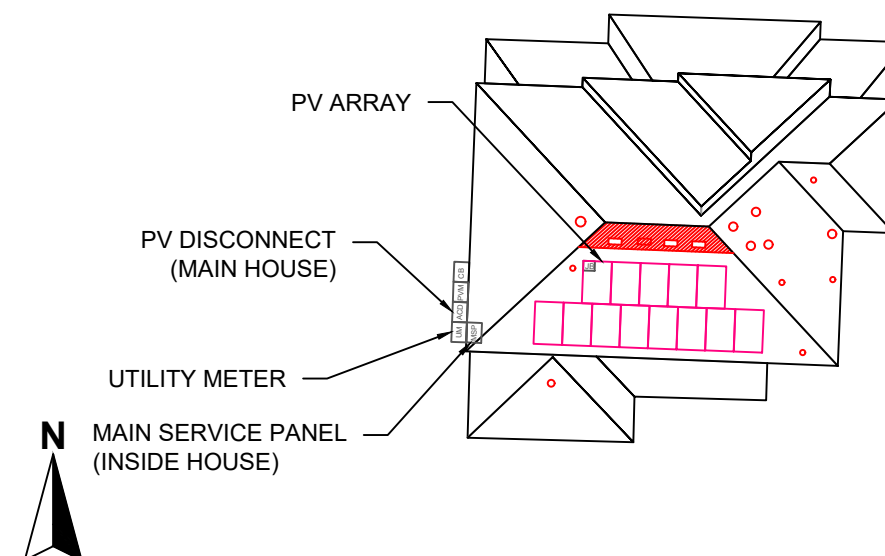
**! WARNING !**

SOLAR SYSTEM CONNECTED  
AND ENERGIZED

LABEL 8  
AT MEP

# CAUTION

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

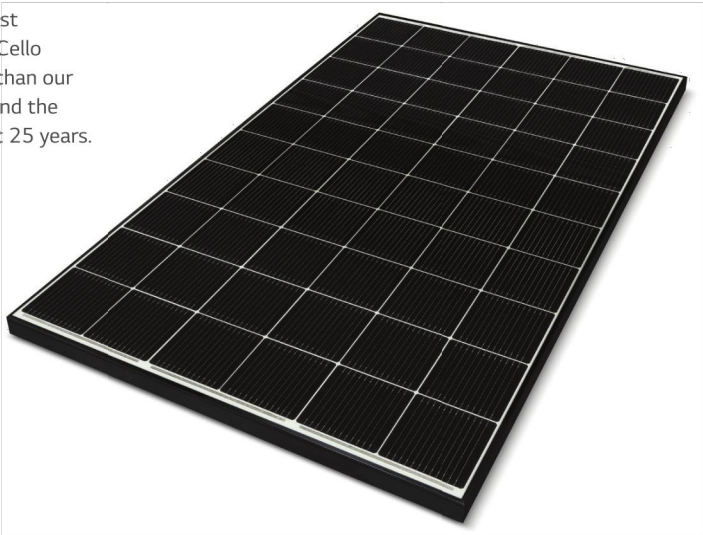


# LG NeON<sup>®</sup> 2

LG355N1C-N5

355W

The LG NeON<sup>®</sup> 2 is LG's best-selling solar module and one of the most powerful and versatile modules on the market today. Featuring LG's Cello Technology™, the LG NeON<sup>®</sup> 2 N5 provides 3% more power output than our V5 models. The cells are designed to appear all-black at a distance, and the performance warranty guarantees 90.1% of labeled power output at 25 years.



60

## LG NeON<sup>®</sup> 2

LG355N1C-N5

### General Data

Cell Properties (Material/Type)	Monocrystalline/N-type
Cell Maker	LG
Cell Configuration	60 Cells (6 x 10)
Number of Busbars	12EA
Module Dimensions (L x W x H)	1,700mm x 1,016mm x 40 mm
Weight	18.0 kg
Glass (Material)	2.8mm/Tempered Glass with High Transmission Anti-Reflective Coating
Backsheet (Color)	White
Frame (Material)	Anodized Aluminium
Junction Box (Protection Degree)	IP 68 with 3 Bypass Diodes
Cables (Length)	1,000mm x 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)
Module Fire Performance	Type 1 (UL1703)
Fire Rating	Class C (UL 790, ULC/ORD C 1703)
Solar Module Product Warranty	25 Year Limited
Solar Module Output Warranty	Linear Warranty*

\*Improved: 1st year 98%, from 2-24th year: 0.33%/year down, 90.1% at year 25

### Temperature Characteristics

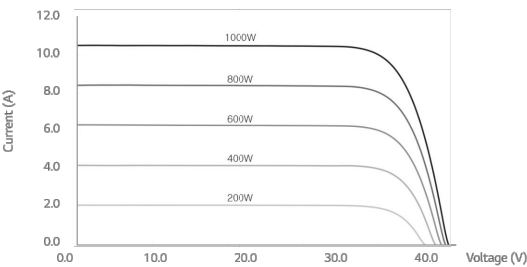
NMOT*	[°C]	42 ± 3
Pmax	[%/°C]	-0.34
Voc	[%/°C]	-0.26
Isc	[%/°C]	0.03

\*NMOT (Nominal Module Operating Temperature): Irradiance 800 W/m<sup>2</sup>, Ambient temperature 20°C, Wind speed 1 m/s, Spectrum AM 1.5

### Electrical Properties (NMOT)

Model		LG355N1C-N5
Maximum Power (Pmax)	[W]	266
MPP Voltage (Vmpp)	[V]	32.6
MPP Current (Impp)	[A]	8.17
Open Circuit Voltage (Voc)	[V]	39.1
Short Circuit Current (Isc)	[A]	8.68

### I-V Curves



### Electrical Properties (STC\*)

Model		LG355N1C-N5
Maximum Power (Pmax)	[W]	355
MPP Voltage (Vmpp)	[V]	34.7
MPP Current (Impp)	[A]	10.25
Open Circuit Voltage (Voc, ± 5%)	[V]	41.5
Short Circuit Current (Isc, ± 5%)	[A]	10.80
Module Efficiency	[%]	20.6
Power Tolerance	[%]	0 ~ +3

\*STC (Standard Test Condition): Irradiance 1000 W/m<sup>2</sup>, cell temperature 25°C, AM 1.5  
Measurement Tolerance of Pmax: ± 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

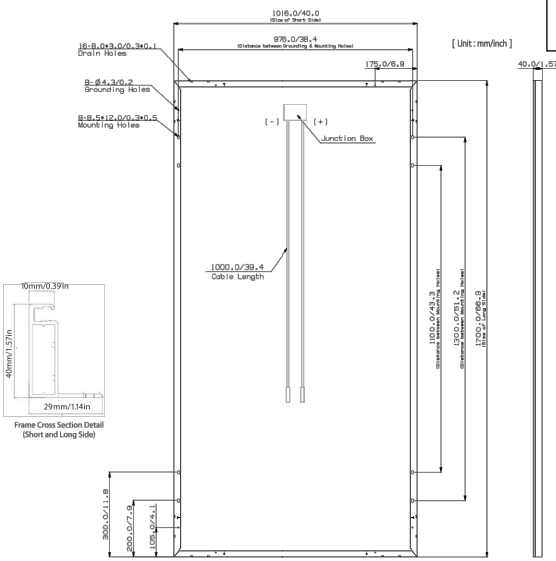
\*Based on IEC 61215-2:2016 (Test Load = Design Load x Safety Factor (1.5))

\*\*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 40' Container	[EA]	650
Number of Modules per 53' Container	[EA]	850
Packaging Box Dimensions (L x W x H)	[mm]	1750 x 1,120 x 1,221
Packaging Box Dimensions (L x W x H)	[in]	69 x 44.25 x 48.25
Packaging Box Gross Weight	[kg]	485
Packaging Box Gross Weight	[lb]	1,070

### Dimensions (mm/inch)



## Features



### Performance Warranty

LG NeON<sup>®</sup> 2 has a module performance warranty. At 25 years, the NeON<sup>®</sup> 2 is guaranteed to produce at least 90.1% of its labeled power output.



### 25-Year Limited Product Warranty

The NeON<sup>®</sup> 2 is covered by a 25-year limited product warranty. In addition, up to \$450 of labor costs will be covered in the rare case that a module needs to be repaired or replaced.



### Solid Performance on Hot Days

LG NeON<sup>®</sup> 2 performs well on hot days due to its low temperature coefficient.



### Roof Aesthetics

LG NeON<sup>®</sup> 2 has been designed with aesthetics in mind using thinner wires that appear all black at a distance.

When you go solar, ask for the brand you can trust: LG Solar

### About LG Electronics USA, Inc.

LG Electronics is a global leader in electronic products in the clean energy markets by offering solar PV panels and energy storage systems. 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 MonoX<sup>®</sup> series to the market, which is now available in 32 countries. The NeON<sup>®</sup> (previous MonoX<sup>®</sup> NeON), NeON<sup>®</sup>2, NeON<sup>®</sup>2 BiFacial won the "Intersolar AWARD" in 2013, 2015 and 2016, which demonstrates LG's leadership and innovation in the solar industry.



LG Electronics USA, Inc.  
Solar Business Division  
2000 Millbrook Drive  
Lincolnshire, IL 60069  
www.lg-solar.com

Product specifications are subject to change without notice.  
LG355N1C-N5.pdf  
050820

© 2020 LG Electronics USA, Inc. All rights reserved.



22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

MASON MURSKI  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

RELEASE FOR  
CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI

12/23/2020

Signature with Seal

REVISIONS	REV	DESCRIPTION	DATE		

SHEET TITLE  
RESOURCE  
DOCUMENT

DRAWN DATE	12/15/2020
DRAWN BY	VV
REVIEWED BY	-

SHEET NUMBER  
R-001



Enphase  
IQ 7 and IQ 7+  
Microinverters

The high-powered smart grid-ready **Enphase IQ 7 Micro™** and **Enphase IQ 7+ Micro™** dramatically simplify the installation process while achieving the highest system efficiency.

Part of the Enphase IQ System, the IQ 7 and IQ 7+ Microinverters integrate seamlessly with the Enphase IQ Envoy™, Enphase Q Aggregator™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.

Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014 & 2017)

Productive and Reliable

- Optimized for high powered 60-cell and 72-cell\* modules
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

\* The IQ 7+ Micro is required to support 72-cell modules.

Enphase IQ 7 and IQ 7+ Microinverters

INPUT DATA (DC)		IQ7-60-2-US		IQ7PLUS-72-2-US	
Commonly used module pairings¹		235 W - 350 W +		235 W - 440 W +	
Module compatibility		60-cell PV modules only		60-cell and 72-cell PV modules	
Maximum input DC voltage		48 V		60 V	
Peak power tracking voltage		27 V - 37 V		27 V - 45 V	
Operating range		16 V - 48 V		16 V - 60 V	
Min/Max start voltage		22 V / 48 V		22 V / 60 V	
Max DC short circuit current (module Isc)		15 A		15 A	
Overvoltage class DC port		II		II	
DC port backfeed current		0 A		0 A	
PV array configuration		1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit			
OUTPUT DATA (AC)		IQ 7 Microinverter		IQ 7+ Microinverter	
Peak output power		250 VA		295 VA	
Maximum continuous output power		240 VA		290 VA	
Nominal (L-L) voltage/range²		240 V / 211-264 V	208 V / 183-229 V	240 V / 211-264 V	208 V / 183-229 V
Maximum continuous output current		1.0 A	1.15 A	1.21 A	1.39 A
Nominal frequency		60 Hz		60 Hz	
Extended frequency range		47 - 68 Hz		47 - 68 Hz	
AC short circuit fault current over 3 cycles		5.8 Arms		5.8 Arms	
Maximum units per 20 A (L-L) branch circuit		16 (240 VAC) 13 (208 VAC)		13 (240 VAC) 11 (208 VAC)	
Overvoltage class AC port		III		III	
AC port backfeed current		0 A		0 A	
Power factor setting		1.0		1.0	
Power factor (adjustable)		0.7 leading ... 0.7 lagging		0.7 leading ... 0.7 lagging	
EFFICIENCY		@240 V	@208 V	@240	@208 V
CEC weighted efficiency		97.0 %	97.0 %	97.0 %	96.5 %
MECHANICAL DATA		IQ 7 Microinverter		IQ 7+ Microinverter	
Ambient temperature range		-40°C to +65°C		-40°C to +65°C	
Relative humidity range		4% to 100% (condensing)			
Connector type		MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)			
Dimensions (WxHxD)		212 mm x 175 mm x 30.2 mm (without bracket)			
Weight		1.08 kg (2.38 lbs)			
Cooling		Natural convection - No fans			
Approved for wet locations		Yes			
Pollution degree		PD3			
Enclosure		Class II double-insulated			
Environmental category / UV exposure rating		NEMA Type 6 / outdoor			
FEATURES					
Communication		Power Line Communication (PLC)			
Monitoring		Enlighten Manager and MyEnlighten monitoring options. Both options require installation of an Enphase IQ Envoy.			
Disconnecting means		The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690.			
Compliance		CA Rule 21 (UL 1741-SA) UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC-2014 and NEC-2017 section 690.12 and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer's instructions.			

1. No enforced DC/AC ratio. See the compatibility calculator at <https://enphase.com/en-us/support/module-compatibility>.  
2. Nominal voltage range can be extended beyond nominal if required by the utility.

To learn more about Enphase offerings, visit [enphase.com](https://enphase.com)

© 2018 Enphase Energy. All rights reserved. All trademarks or brands used are the property of Enphase Energy, Inc.  
2018-01-23



22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

MASON MURSKI  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

RELEASE FOR  
CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI

12/23/2020

REVISIONS	DATE	DESCRIPTION	REV		

SHEET TITLE  
RESOURCE  
DOCUMENT

DRAWN DATE	12/15/2020
DRAWN BY	VV
REVIEWED BY	-

SHEET NUMBER  
R-002

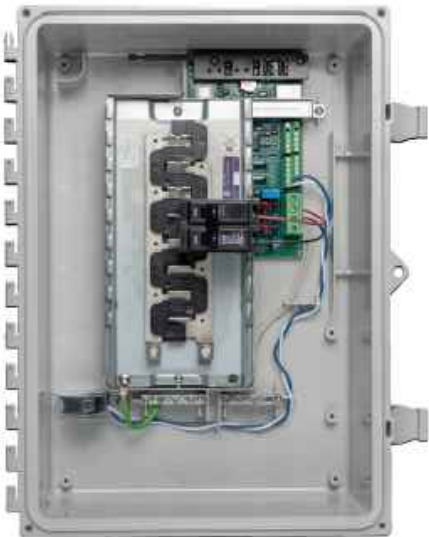


To learn more about Enphase offerings, visit [enphase.com](https://enphase.com)



# Enphase IQ Combiner 3 (X-IQ-AM1-240-3)

The **Enphase IQ Combiner 3™** with Enphase IQ Envoy™ consolidates interconnection equipment into a single enclosure and streamlines PV and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.



### Smart

- Includes IQ Envoy for communication and control
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and optional consumption monitoring

### Simple

- Reduced size from previous combiner
- Centered mounting brackets support single stud mounting
- Supports back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80 A total PV or storage branch circuits

### Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year warranty
- UL listed



## Enphase IQ Combiner 3

MODEL NUMBER	
IQ Combiner 3 X-IQ-AM1-240-3	
IQ Combiner 3 with Enphase IQ Envoy™ printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and optional* consumption monitoring (+/- 2.5%).	
ACCESSORIES and REPLACEMENT PARTS (not included, order separately)	
Enphase Mobile Connect™ CELLMODEM-03 (4G / 12-year data plan) CELLMODEM-01 (3G / 5-year data plan) CELLMODEM-M1 (4G based LTE-M / 5-year data plan)	Plug and play industrial grade cellular modem with data plan for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.)
Consumption Monitoring* CT CT-200-SPLIT	Split core current transformers enable whole home consumption metering (+/- 2.5%).
Circuit Breakers BRK-10A-2-240 BRK-15A-2-240 BRK-20A-2P-240	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220
EPLC-01	Power line carrier (communication bridge pair), quantity 2
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 3 (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Envoy printed circuit board (PCB) for Combiner 3
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating (output to grid)	65 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. continuous current rating (input from PV)	64 A
Max. total branch circuit breaker rating (input)	80A of distributed generation / 90A with IQ Envoy breaker included
Production Metering CT	200 A solid core pre-installed and wired to IQ Envoy
MECHANICAL DATA	
Dimensions (WxHxD)	49.5 x 37.5 x 16.8 cm (19.5" x 14.75" x 6.63"). Height is 21.06" (53.5 cm with mounting brackets).
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
Cellular	Optional, CELLMODEM-01 (3G) or CELLMODEM-03 (4G) or CELLMODEM-M1 (4G based LTE-M) (not included)
COMPLIANCE	
Compliance, Combiner	UL 1741 CAN/CSA C22.2 No. 107.1 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production)
Compliance, IQ Envoy	UL 60601-1/CANCSA 22.2 No. 61010-1

\* Consumption monitoring is required for Enphase Storage Systems.

To learn more about Enphase offerings, visit [enphase.com](https://enphase.com)

© 2018 Enphase Energy. All rights reserved. All trademarks or brands in this document are registered by their respective owner.  
2018-09-13



22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

MASON MURSKI  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

RELEASE FOR  
CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI

12/23/2020

REVISIONS	DESCRIPTION	DATE	REV		

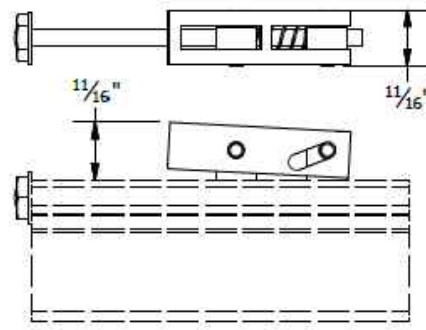
SHEET TITLE  
RESOURCE  
DOCUMENT

DRAWN DATE	12/15/2020
DRAWN BY	VV
REVIEWED BY	-

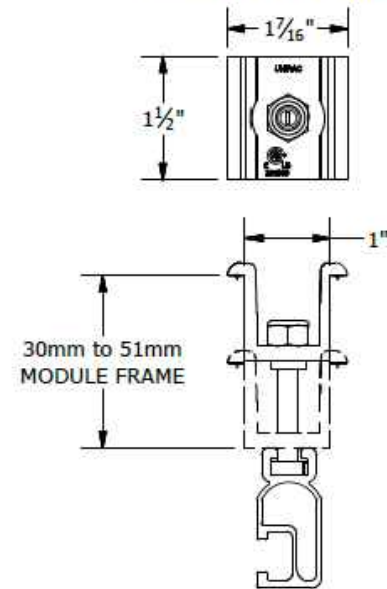
SHEET NUMBER  
R-003



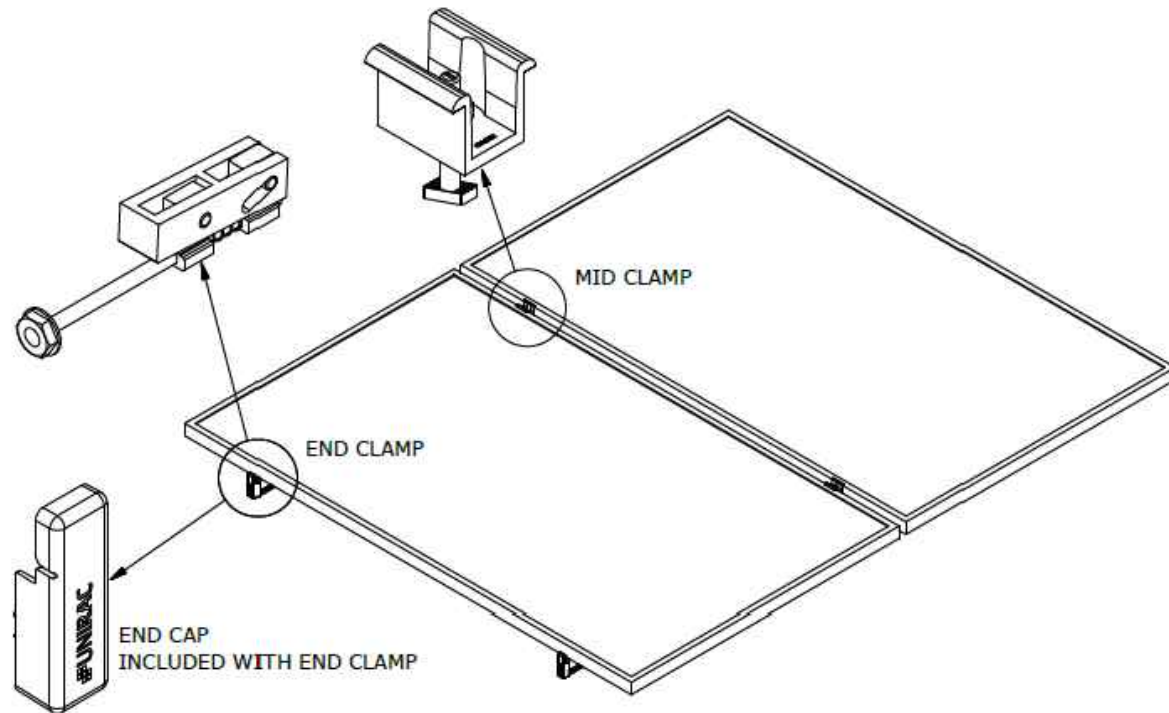
PRO SERIES END CLAMP



PRO SERIES MID CLAMP



PART # TABLE	
P/N	DESCRIPTION
302035M	ENDCLAMP PRO
302030M	MIDCLAMP PRO - MILL
302030D	MIDCLAMP PRO - DRK

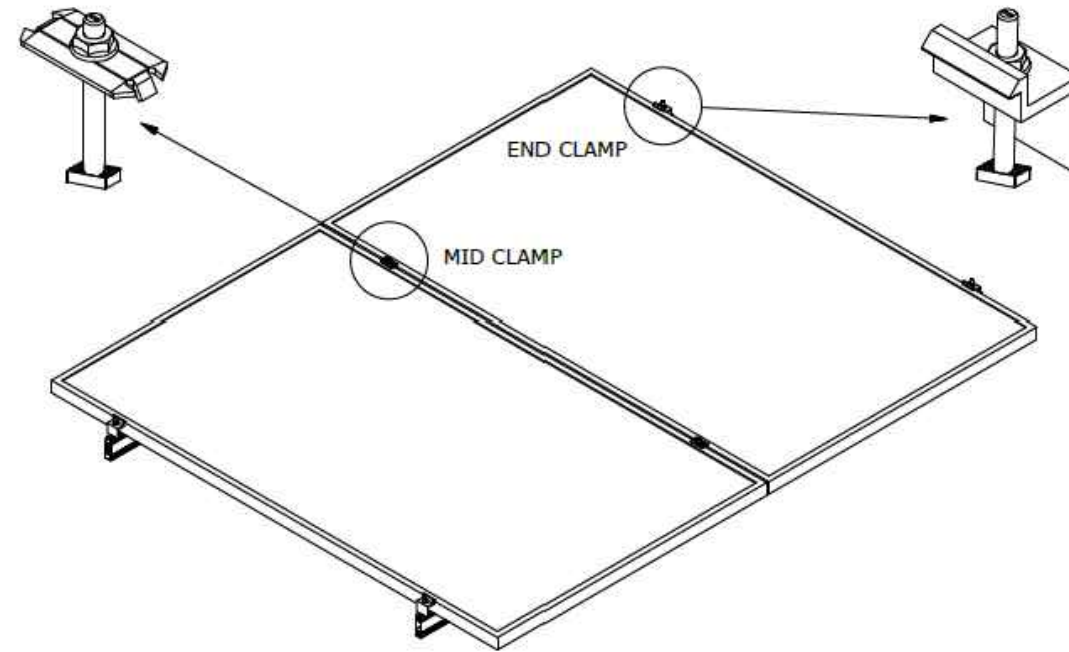


**UNIRAC**  
1411 BROADWAY BLVD. NE  
ALBUQUERQUE, NM 87102 USA  
PHONE: 505.242.6411  
WWW.UNIRAC.COM

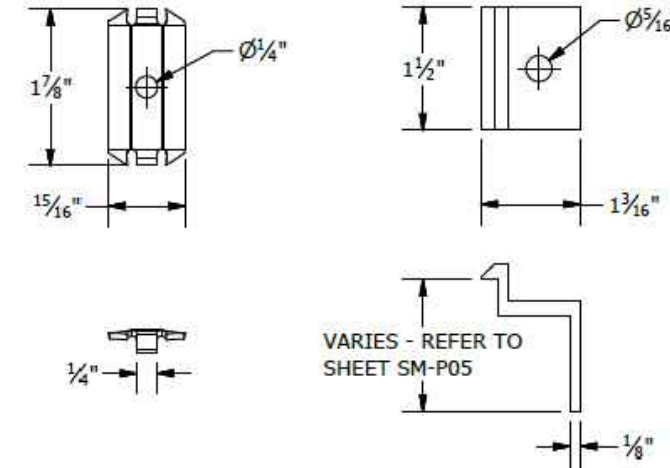
PRODUCT LINE: SOLARMOUNT  
DRAWING TYPE: PART & ASSEMBLY  
DESCRIPTION: PRO SERIES BONDING CLAMPS  
REVISION DATE: 10/26/2017

DRAWING NOT TO SCALE  
ALL DIMENSIONS ARE NOMINAL  
PRODUCT PROTECTED BY  
ONE OR MORE US PATENTS  
LEGAL NOTICE

SM-A01  
SHEET



PART # TABLE	
P/N	DESCRIPTION
302027C	SM BND MIDCLAMP BC SS
302027D	SM BND MIDCLAMP BC DRK SS
302028C	SM BND MIDCLAMP EF SS
302028D	SM BND MIDCLAMP EF DRK SS
302029C	SM BND MIDCLAMP DK SS
302029D	SM BND MIDCLAMP DK DRK SS
FOR BONDING END CLAMP REFER TO SHEET SM-P05	



BONDING SM MID CLAMP BONDING SM END CLAMP

**UNIRAC**  
1411 BROADWAY BLVD. NE  
ALBUQUERQUE, NM 87102 USA  
PHONE: 505.242.6411  
WWW.UNIRAC.COM

PRODUCT LINE: SOLARMOUNT  
DRAWING TYPE: PART & ASSEMBLY  
DESCRIPTION: BONDING TOP CLAMPS  
REVISION DATE: 10/26/2017

DRAWING NOT TO SCALE  
ALL DIMENSIONS ARE NOMINAL  
PRODUCT PROTECTED BY  
ONE OR MORE US PATENTS  
LEGAL NOTICE

SM-A01A  
SHEET

**SUNPRO**  
22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

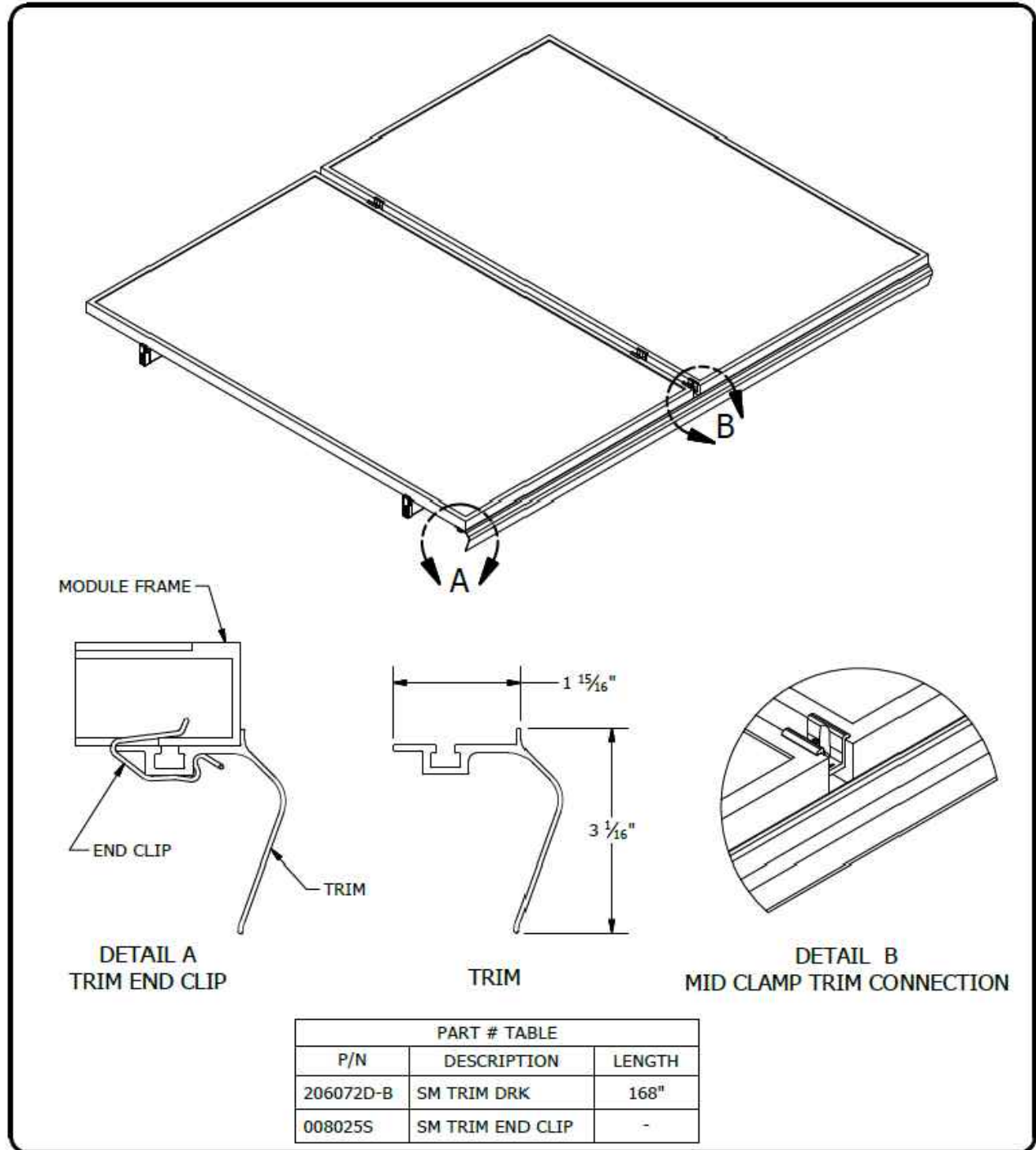
PROJECT NAME & ADDRESS  
**MASON MURSKI**  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

RELEASE FOR  
CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI  
12/23/2020

REVISIONS		DATE			
REV	DESCRIPTION				

SHEET TITLE  
**RESOURCE DOCUMENT**  
DRAWN DATE: 12/15/2020  
DRAWN BY: VV  
REVIEWED BY: -  
SHEET NUMBER  
**R-004**



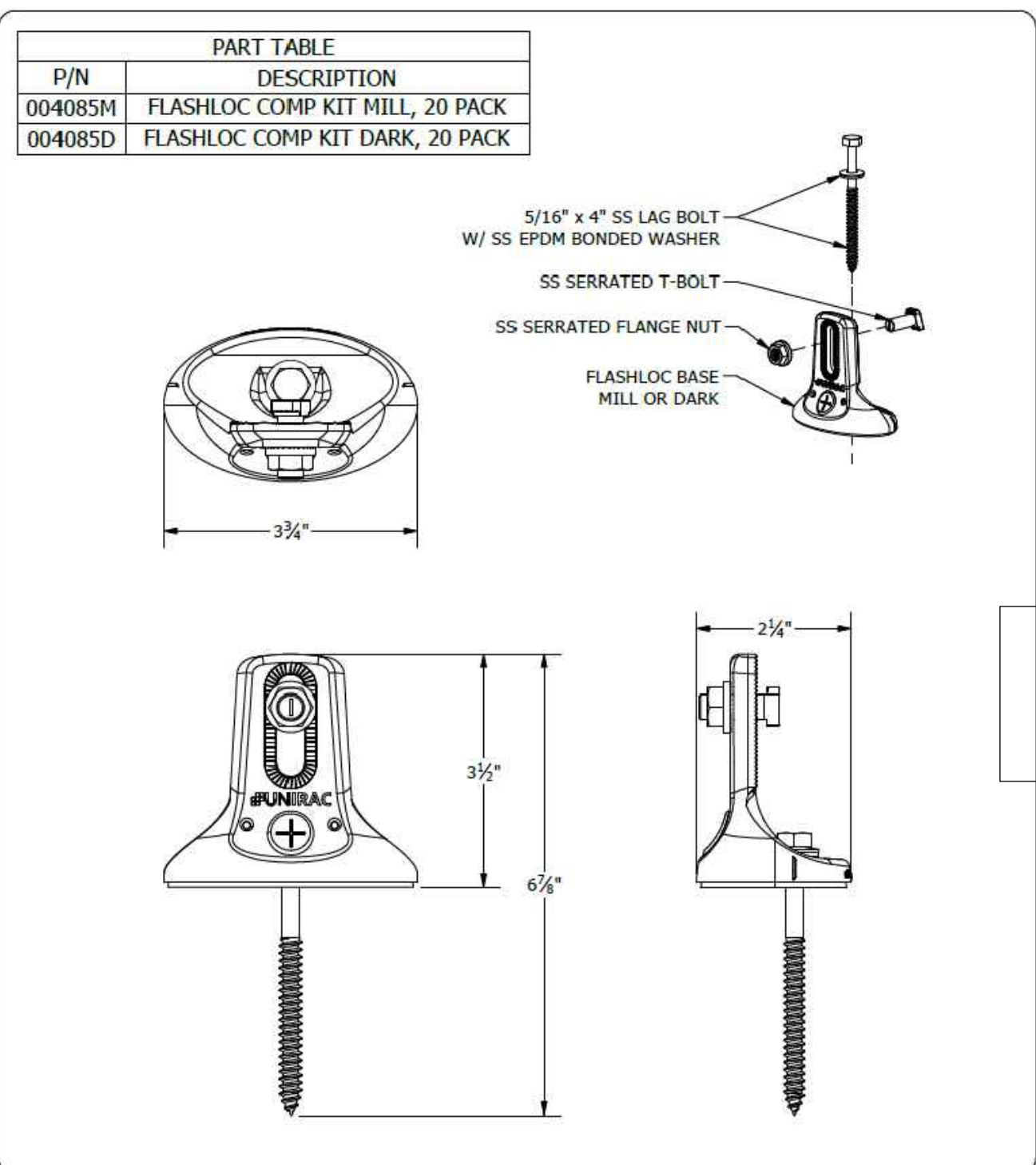


**UNIRAC**  
1411 BROADWAY BLVD. NE  
ALBUQUERQUE, NM 87102 USA  
PHONE: 505.242.6411  
WWW.UNIRAC.COM

PRODUCT LINE:	SOLARMOUNT
DRAWING TYPE:	PART & ASSEMBLY
DESCRIPTION:	SM TRIM END CLIP
REVISION DATE:	9/27/2017

DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL
PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE

**SM-A02**  
SHEET



**UNIRAC**  
1411 BROADWAY BLVD. NE  
ALBUQUERQUE, NM 87102 USA  
PHONE: 505.242.6411  
WWW.UNIRAC.COM

PRODUCT LINE:	SOLARMOUNT
DRAWING TYPE:	PART DRAWING
DESCRIPTION:	FLASHLOC COMP KIT
REVISION DATE:	4/28/2020

DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL
PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE

**FL-A01**  
SHEET

**SUNPRO**  
22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS  
**MASON MURSKI**  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

RELEASE FOR  
CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI  
12/23/2020

REVISIONS	DATE	REV	DESCRIPTION

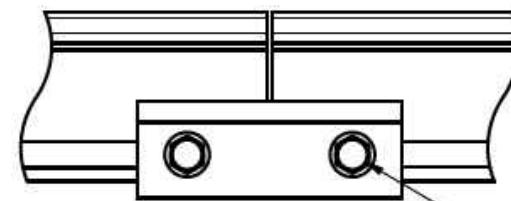
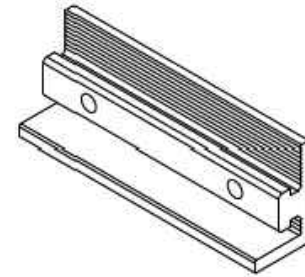
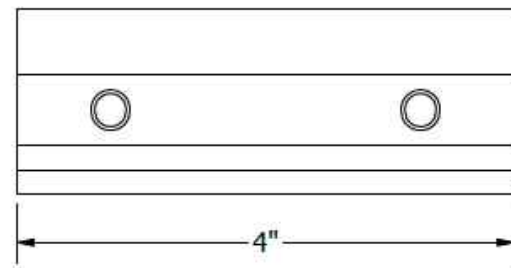
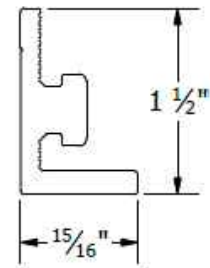
SHEET TITLE  
**RESOURCE  
DOCUMENT**

DRAWN DATE	12/15/2020
DRAWN BY	VV
REVIEWED BY	-

SHEET NUMBER  
**R-005**

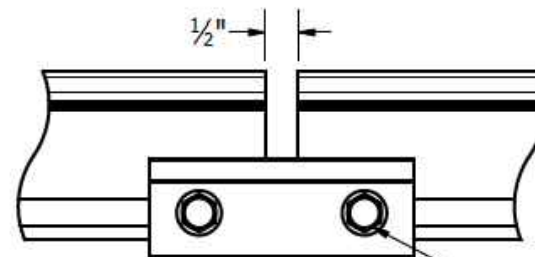


# BONDING SPLICE BAR



TYPICAL SPLICE BAR DETAIL

5/16"-18 TYPE F THREAD CUTTING SCREWS INCLUDED



TYPICAL EXPANSION JOINT DETAIL

NOTE THAT ONLY 2 SCREWS ARE USED AT AN EXPANSION JOINT. THE SPLICE BAR DOES NOT BOND ACROSS AN EXPANSION JOINT. SEE INSTALLATION GUIDE FOR INSTRUCTION.

## PART # TABLE

P/N	DESCRIPTION
303019M	BND SPLICE BAR PRO SERIES MILL
303019D	BND SPLICE BAR PRO SERIES DRK



1411 BROADWAY BLVD. NE  
ALBUQUERQUE, NM 87102 USA  
PHONE: 505.242.6411  
WWW.UNIRAC.COM

PRODUCT LINE:	SOLARMOUNT
DRAWING TYPE:	PART & ASSEMBLY
DESCRIPTION:	BONDING SPLICE BAR PRO SERIES
REVISION DATE:	8/23/2018

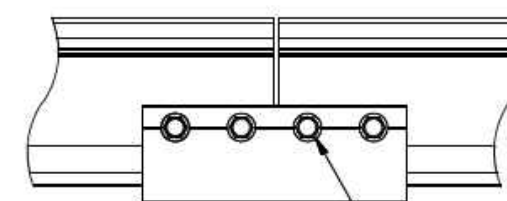
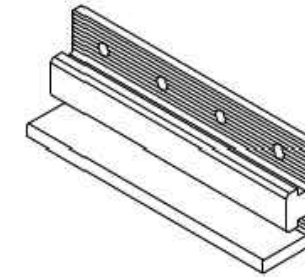
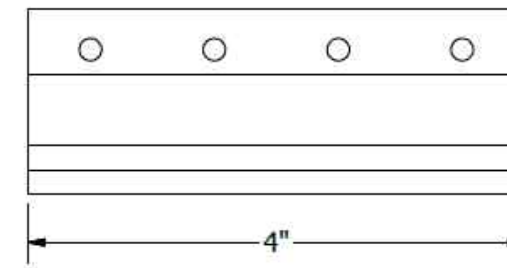
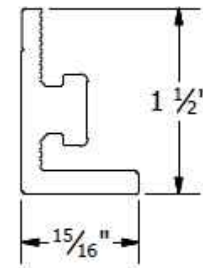
DRAWING NOT TO SCALE  
ALL DIMENSIONS ARE  
NOMINAL

PRODUCT PROTECTED BY  
ONE OR MORE US PATENTS  
LEGAL NOTICE

SM-A05

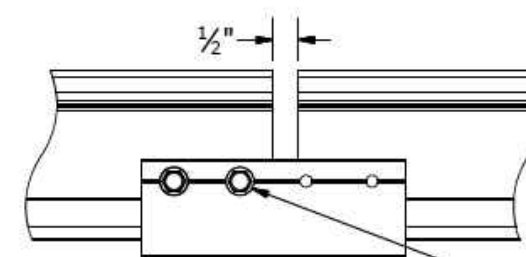
SHEET

# BONDING SPLICE BAR



TYPICAL SPLICE BAR DETAIL

#12 X 3/4" SELF DRILLING SS SCREWS INCLUDED



TYPICAL EXPANSION JOINT DETAIL

NOTE THAT ONLY 2 SCREWS ARE USED AT AN EXPANSION JOINT. THE SPLICE BAR DOES NOT BOND ACROSS AN EXPANSION JOINT. SEE INSTALLATION GUIDE FOR INSTRUCTION.

## PART # TABLE

P/N	DESCRIPTION
303018C	BND SPLICE BAR SERRATED CLR
303018D	BND SPLICE BAR SERRATED DRK



1411 BROADWAY BLVD. NE  
ALBUQUERQUE, NM 87102 USA  
PHONE: 505.242.6411  
WWW.UNIRAC.COM

PRODUCT LINE:	SOLARMOUNT
DRAWING TYPE:	PART & ASSEMBLY
DESCRIPTION:	BONDING SPLICE BAR
REVISION DATE:	9/27/2017

DRAWING NOT TO SCALE  
ALL DIMENSIONS ARE  
NOMINAL

PRODUCT PROTECTED BY  
ONE OR MORE US PATENTS  
LEGAL NOTICE

SM-A05

SHEET



22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

MASON MURSKI  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

RELEASE FOR  
CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI

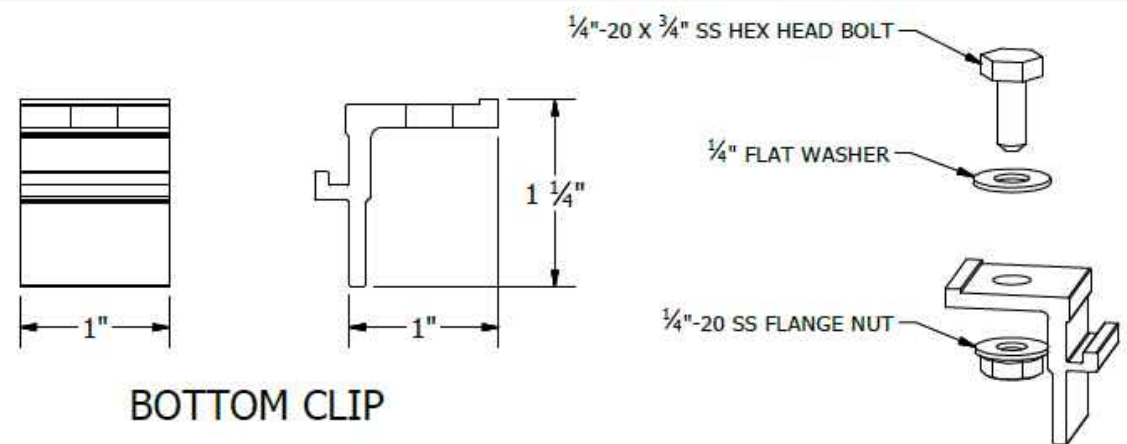
12/23/2020

REVISIONS	DATE	REV	DESCRIPTION

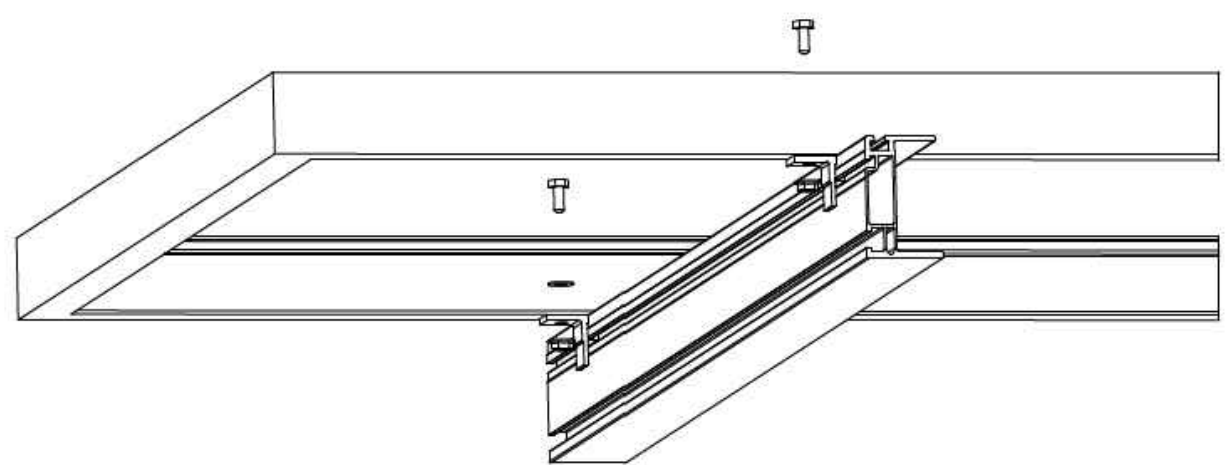
SHEET TITLE  
RESOURCE  
DOCUMENT

DRAWN DATE	12/15/2020
DRAWN BY	VV
REVIEWED BY	-

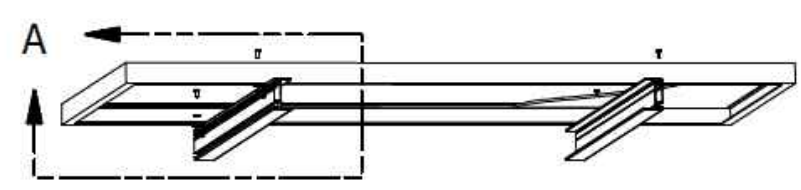
SHEET NUMBER  
R-006



BOTTOM CLIP



DETAIL A



PART # TABLE	
P/N	DESCRIPTION
302000C	SMHD BOTTOM CLIPS W/HDW CLR



1411 BROADWAY BLVD. NE  
ALBUQUERQUE, NM 87102 USA  
PHONE: 505.242.6411  
WWW.UNIRAC.COM

PRODUCT LINE:	SOLARMOUNT HD
DRAWING TYPE:	PART & ASSEMBLY
DESCRIPTION:	BOTTOM CLIP
REVISION DATE:	9/27/2017

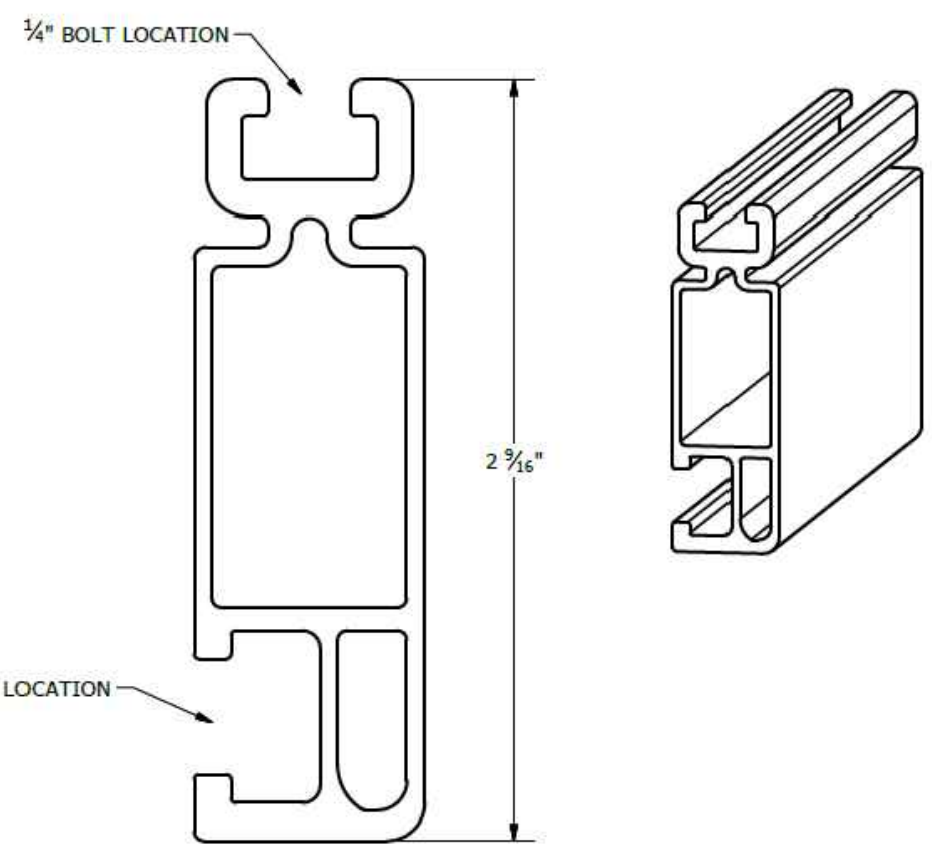
DRAWING NOT TO SCALE  
ALL DIMENSIONS ARE  
NOMINAL

PRODUCT PROTECTED BY  
ONE OR MORE US PATENTS

LEGAL NOTICE

**SM-A10**

SHEET



PART # TABLE		
P/N	DESCRIPTION	LENGTH
320132M	SM RAIL 132" MILL	132"
310132C	SM RAIL 132" CLR	132"
320168M	SM RAIL 168" MILL	168"
310168C	SM RAIL 168" CLR	168"
320168D	SM RAIL 168" DRK	168"
320208M	SM RAIL 208" MILL	208"
310208C	SM RAIL 208" CLR	208"
320240M	SM RAIL 240" MILL	240"
310240C	SM RAIL 240" CLR	240"
310240D	SM RAIL 240" DRK	240"



1411 BROADWAY BLVD. NE  
ALBUQUERQUE, NM 87102 USA  
PHONE: 505.242.6411  
WWW.UNIRAC.COM

PRODUCT LINE:	SOLARMOUNT
DRAWING TYPE:	PART DETAIL
DESCRIPTION:	STANDARD RAIL
REVISION DATE:	9/11/2017

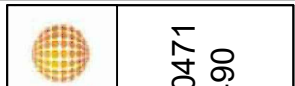
DRAWING NOT TO SCALE  
ALL DIMENSIONS ARE  
NOMINAL

PRODUCT PROTECTED BY  
ONE OR MORE US PATENTS

LEGAL NOTICE

**SM-P01**

SHEET



22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

**MASON MURSKI**  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

RELEASE FOR  
CONSTRUCTION  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI

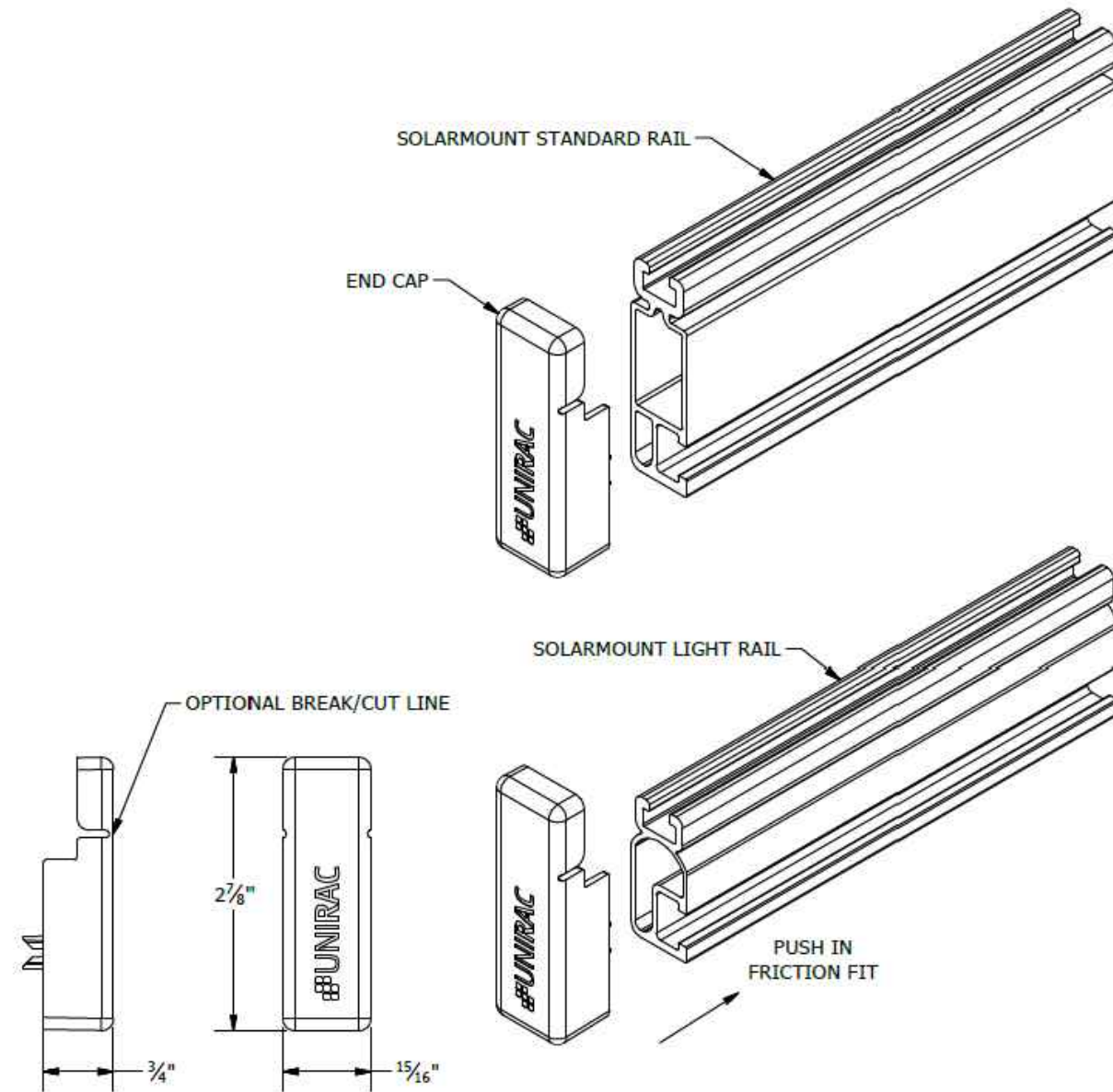
Signature with Date  
12/23/2020

REVISIONS	DATE			
	REV	DESCRIPTION		

SHEET TITLE	
RESOURCE DOCUMENT	
DRAWN DATE	12/15/2020
DRAWN BY	VV
REVIEWED BY	-
SHEET NUMBER	
R-007	



- NOTES:
1. END CAP INCLUDED WITH EVERY END CLAMP.
  2. END CAP FITS SOLARMOUNT LIGHT AND STANDARD RAIL PROFILES.



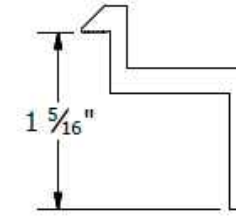
**UNIRAC**  
1411 BROADWAY BLVD. NE  
ALBUQUERQUE, NM 87102 USA  
PHONE: 505.242.6411  
WWW.UNIRAC.COM

PRODUCT LINE:	SOLARMOUNT
DRAWING TYPE:	PART DETAIL
DESCRIPTION:	END CAPS
REVISION DATE:	9/27/2017

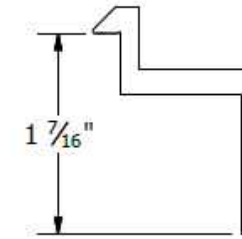
DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL
PRODUCT PROTECTED BY ONE OR MORE US PATENTS
LEGAL NOTICE

**SM-P04**

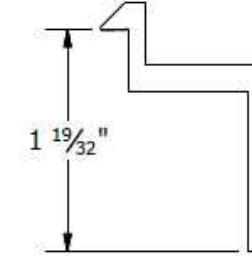
SHEET



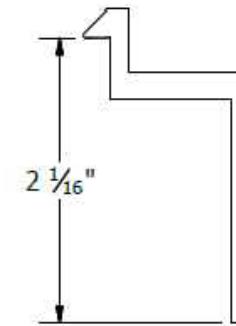
**B CLAMP**  
30mm to 32mm Module Thickness  
(1.18" to 1.26")



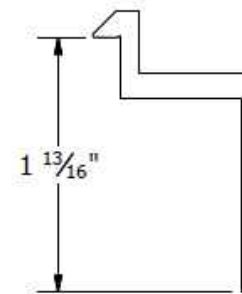
**C CLAMP**  
33mm to 36mm Module Thickness  
(1.30" to 1.42")



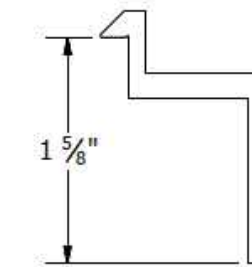
**D CLAMP**  
38mm to 40mm Module Thickness  
(1.50" to 1.57")



**E CLAMP**  
50mm to 51mm Module Thickness  
(1.97" to 2.00")

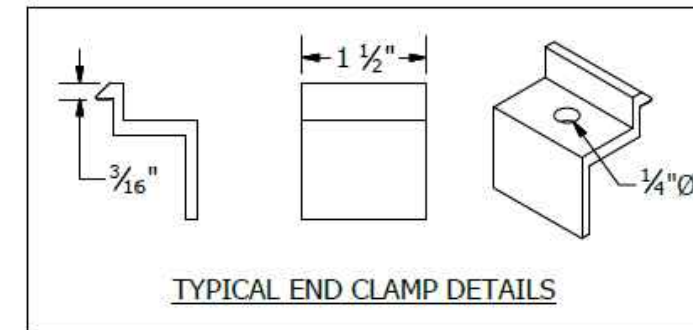


**F CLAMP**  
45mm to 47mm Module Thickness  
(1.77" to 1.85")



**K CLAMP**  
39mm to 41mm Module Thickness  
(1.54" to 1.61")

PART # TABLE	
P/N	DESCRIPTION
302021C	SM ENDCLAMP B CLR AL
302021D	SM ENDCLAMP B DRK AL
302022C	SM ENDCLAMP C CLR AL
302022D	SM ENDCLAMP C DRK AL
302023C	SM ENDCLAMP D CLR AL
302023D	SM ENDCLAMP D DRK AL
303024C	SM ENDCLAMP E CLR AL
302024D	SM ENDCLAMP E DRK AL
302025C	SM ENDCLAMP F CLR AL
302025D	SM ENDCLAMP F DRK AL
302026C	SM ENDCLAMP K CLR AL
302026D	SM ENDCLAMP K DRK AL



**TYPICAL END CLAMP DETAILS**

**UNIRAC**  
1411 BROADWAY BLVD. NE  
ALBUQUERQUE, NM 87102 USA  
PHONE: 505.242.6411  
WWW.UNIRAC.COM

PRODUCT LINE:	SOLARMOUNT
DRAWING TYPE:	PART DETAIL
DESCRIPTION:	END CLAMPS - TOP MOUNTING
REVISION DATE:	9/27/2017

DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL
PRODUCT PROTECTED BY ONE OR MORE US PATENTS
LEGAL NOTICE

**SM-P05**

SHEET

**SUNPR**

22171 MCH RD  
MANDEVILLE, LA 70471  
PHONE: 9152011490

PROJECT NAME & ADDRESS

**MASON MURSKI**  
1617 SW MERRYMAN  
DR, LEE'S SUMMIT, MO  
64082, USA

**RELEASE FOR  
CONSTRUCTION**  
AS NOTED ON PLANS REVIEW  
DEVELOPMENT SERVICES  
LEE'S SUMMIT, MISSOURI

12/23/2020

REV	DESCRIPTION	DATE			

**SHEET TITLE**  
**RESOURCE  
DOCUMENT**

DRAWN DATE	12/15/2020
DRAWN BY	VV
REVIEWED BY	-

**SHEET NUMBER**  
**R-008**