



MOUNT VERNON
HISTORICAL REVIEW COMMISSION
MINUTES • AUGUST 11, 2022

Regular Meeting

Council Chambers

4:00 PM

40 Public Square, Mount Vernon, OH 43050

I. CALL TO ORDER

Attendee Name	Title	Status
Eric Diehl	Alt. Member	Excused
Robert Drews	Member	Present
Richard Dzik	Safety-Service Director	Present
Lacey Filkins	Member	Present
Todd Hawkins	Alt. Member	Excused
Sibley Poland	Member	Excused
Matthew T. Starr	Mayor, Chairman	Present
Austin Swallow	Member	Excused
Julia Warga	Member	Present

Others in attendance: City Engineer, Brian Ball; City Development Services Manager, Lacie Blankenhorn; City Law Director, P. Rob. Broeren; Deborah Riedmiller; Sarah Wagner; Jerry Baker; Inge Krajenski; Jeff Gottke; Susan Kahrl; Sam Filkins

II. MINUTES APPROVAL

1. Historical Review Commission - Regular Meeting - Apr 14, 2022 4:00 PM

RESULT:	ACCEPTED [UNANIMOUS]
MOVER:	Lacey Filkins, Member
SECONDER:	Robert Drews, Member
AYES:	Drews, Dzik, Filkins, Starr, Warga
EXCUSED:	Diehl, Hawkins, Poland, Swallow

III. HRC-ITEM NUMBERS

1. 2022-HRC-24 - 607 E High ST - Solar Panels

Blankenhorn introduced the case.

Riedmiller (sworn in) detailed the background of her obtaining solar panels for her home earlier this year, stating the ideal location and perhaps the only viable location on her home is on the south side, High Street facing roof. The company determined she would need 13 panels. She chose to purchase an additional panel to even out the layout and be more aesthetically attractive. The roof is black. The solar panels are black. The company told her they obtained permissions from the City for the installation. There is no documentation. The solar panels were installed on May 27. She received a letter from Dzik about not obtaining a Certificate of Appropriateness. The company then submitted an application. The solar panels will be removed in order for a new roof to be put on the home. She asked for the Commission to find the solar panels to be attractive and not objectionable.

Starr asked if the backside of the roof was not a possibility. Riedmiller said no. Over the garage there is room for approximately 4. As a patchwork, no more than 9 could be located on the other roof lines not facing High Street.

Wagner (sworn in) owns the property directly across the street from the subject property. She does not find

the solar panels to be objectionable as they are currently installed.

Kahrl (sworn in) lives next door to the applicant. She knows the front of the house is where you will get the most sun. The back of the homes are shady areas and would not be an appropriate place for solar panels. She does not find anything objectionable about the solar panels. She thinks they are good for the neighborhood and the City.

There were no communications pertaining to the application submitted through the Development Services Manager.

Ball did not have any engineering concerns with the site. He spoke about the possibility that the installation company could have spoken with anyone at City Hall and didn't clarify that the proposed property is in a Historic District.

Broeren said the section of Code pertinent to this application is 1172.05A. It states: The Historical Review Commission in deciding whether to issue a certificate of appropriateness, shall determine A: the application under consideration promotes, preserves and enhances the distinctive historical character of the community and B: would not be at variance with existing structures within that portion of the district in which the structure is or is proposed to be located as to be detrimental to the interests of the Districts as set forth in Section 1172.01. 1172.01 says, by regulating the exterior historical characteristics of structures throughout the hereinafter defined Historical District. It is the further purpose of this chapter to recognize and preserve the distinctive historical and architectural character of the community. Those are the standards this commission must determine whether or not the solar panels do that for the historical nature of the structure and in the district. This is one of three districts in the City.

Dzik asked, since this is the first request for solar panels in a historic district in the City, if this is a precedence setting decision. Broeren said no. This group does not have strict precedential value. However, people will reference it as being allowed.

Filkins made a motion to approve. Warga seconded.

Dzik explained his thought process about this request, going back and forth. He discussed it with the zoning staff. Solar is coming and is important for the community. Generally, the City is supportive of it. His concern is what should a historic district look like and where this makes it not look historic. The strategic plan speaks about keeping a historic feel.

Starr researched historic districts nationwide, noting they are very special creatures. They have certain protection levels. The National Alliance of Preservation Commission's guidelines for solar systems in historic districts states all solar panel installations should conform to the Secretary of the Interior's Standards for Rehabilitation. The applicable standards are #2 the historic character of a property shall be retained and preserved. The removal of historic materials or alterations of features and spaces that characterize a property shall be avoided. #9 new additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with massing, size, scale, and architectural features to protect the historic integrity of the property and environment. Under primary elevations, the solar panels should be positioned behind existing architectural features such as parapets, dormers, and chimneys to limit their visibility. Also, use solar panels and mounting systems that are compatible in color to established roof materials. Mechanical equipment associated with the photovoltaic system should be treated to be as unobtrusive as possible. Panels installed on rear slopes or other locations not easily visible from the public right of way. Another source on historic preservation says the impacts need to be balanced with the economics and energy savings of a given project. When locating solar panels on the side of a historic resource, if possible, use a ground mounted solar panel array. Consider solutions that respect the buildings historic setting, locating solar panel arrays in an inconspicuous location, such as a rear or side yard, low to the ground and sensitively screened to further limit visibility.

Warga believes Riedmiller did approach this project thoughtfully and respectfully to the roofline, considering dark tiles, dark panels. Driving down the street daily, she did not know the panels were there until she read the meeting agenda. She doesn't feel like they are taking away from anything. It is still a beautiful historic boulevard. She is being thoughtful and looking ahead to the future of energy savings.

Filkins agreed with Warga. She believes one of the spirits of the group is to maintain the historic district and in order to do that we have to look ahead to what people will want to move into. These homes are notoriously inefficient. Her eyes are drawn to the columns and windows, not the roof. She doesn't think the solar panels

hurt the look of the home.

Starr said most of the guidance asks if this is a prominent feature. In case-by-case studies there were some instances where the roofs did not have as significant of a pitch as this home.

Warga understands the siting of the home dictates where the solar panels need to be placed to direct sun exposure.

Drews believes the vote would be the same whether or not the application for appropriateness came before the panels were placed initially. Drews believes we have to progress and appreciate the investment people are making. He doesn't believe the roof is an architectural feature of the home.

Ball said solar manufacturers are adapting. His research shows there are solar panels that can match tile roofs. More work has gone into matching colors. The first versions of solar panels had aluminum frames that practically glow. This installation conceals the fasteners and everything is the same color.

Riedmiller reemphasized she did really want to respect the aesthetics and discussed that at length with the solar company representative. That is why she chose to purchase an additional panel, to aesthetically balance. She did ask the company if there was any way possible to locate the panels in other locations that are less visible but still of benefit energy wise and production wise. The back side has dormers. She also spoke of other exterior work she has done on the home, not knowing she needed a Certificate of Appropriateness.

Starr said he appreciates the investment and energy savings. He is still torn because it is in an historic district and he knows what the Secretary of the Interior's standards are about prominent features of the home.

Riedmiller said fire code limits the number of panels along the roof line to 12. She proposed to move the 2 drop downs to a rear roof line behind the garage.

Dzik said he thinks what catches his attention is the 2 panels on the bottom. If there is a way to have a single strip or 2 equal strips, he thinks it will be much less noticeable.

Riedmiller said the 2 drop downs can be relocated. She is willing to purchase additional panels to obtain the same volume collected.

Dzik made a motion to amend the standing motion to approve a single strip of solar panels near the peak of the front roof line. The additional panels can be located at the back of the property. Warga seconded the amendment.

Warga thinks that is a good compromise.

RESULT:	ACCEPT AS MODIFIED [UNANIMOUS]
MOVER:	Lacey Filkins, Member
SECONDER:	Julia Warga, Member
AYES:	Drews, Dzik, Filkins, Starr, Warga
EXCUSED:	Diehl, Hawkins, Poland, Swallow

2. amend motion

RESULT:	ADOPTED [UNANIMOUS]
MOVER:	Richard Dzik, Safety-Service Director
SECONDER:	Julia Warga, Member
AYES:	Drews, Dzik, Filkins, Starr, Warga
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IV. ADJOURNMENT

1. Adjourn Motion

Drews made a motion to adjourn the meeting, Warga seconded and the meeting was adjourned at 4:37 PM

RESULT:	ADOPTED [UNANIMOUS]
MOVER:	Robert Drews, Member
SECONDER:	Julia Warga, Member
AYES:	Drews, Dzik, Filkins, Starr, Warga
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Historical Review Commission
40 Public Square
Mount Vernon, OH 43050

Meeting: 08/11/22 4:00 PM
Dept: Historical Review Commission

SCHEDULED

Category: N/A
Prepared By: Lacie Blankenhorn
Initiator: Lacie Blankenhorn

HRC-ITEM NUMBER (ID # 3611)

DOC ID: 3611

2022-HRC-24 - 607 E HIGH ST - SOLAR PANELS

Per Code Section 1172.03 an application for a Certificate of Appropriateness has been applied for to install solar panels.

COMMENTS - Current Meeting:

Blankenhorn introduced the case.

Riedmiller (sworn in) detailed the background of her obtaining solar panels for her home earlier this year, stating the ideal location and perhaps the only viable location on her home is on the south side, High Street facing roof. The company determined she would need 13 panels. She chose to purchase an additional panel to even out the layout and be more aesthetically attractive. The roof is black. The solar panels are black. The company told her they obtained permissions from the City for the installation. There is no documentation. The solar panels were installed on May 27. She received a letter from Dzik about not obtaining a Certificate of Appropriateness. The company then submitted an application. The solar panels will be removed in order for a new roof to be put on the home. She asked for the Commission to find the solar panels to be attractive and not objectionable.

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EXCUSED: Eric Diehl, Todd Hawkins, Sibley Poland, Austin Swallow



City of Mount Vernon, Ohio
Historic Review Commission

Application for Certificate of Appropriateness

Applicant:

Name: ADT Solar

Address: 4777 Roberts Rd. Columbus, OH 43228

Telephone: 985-438-3252 Fax: _____

Site Information:

Address: 607 E High St, Mount Vernon, OH 43050

Legal Description: 607 E High St, Mount Vernon, OH 43050

Parcel Number: 66-02277.000 Deed Volume and Page: _____

Zoning District: _____

Owner: Deborah Riedmiller

Address: 607 E High St, Mount Vernon, OH 43050

Project Description: Installation of 14 roof mounted QCELL 360 PV solar panels on existing residential home

Site plans, building elevations, renderings, and any other drawings, as well as the detailed narrative statements must be attached to this application.

A deposit of \$50.00 is required to be submitted at the time of filing. Applicant will be billed for any costs which exceed the deposit.

Applicant hereby certifies that the information submitted on this application and on any sketches, drawings or other documents required to be submitted with the application are true and exact.

Phillip Maguire
Signature of Applicant

7/29/2022
Date

FOR OFFICIAL USE ONLY

Case No.: _____

NEW PHOTOVOLTAIC SYSTEM 5.04 KW DC

607 E HIGH ST, MT VERNON, OH 43050

CONTRACT 3.1.b



22171 MCH RD
MANDEVILLE, LA 7047
PHONE: 9152011490

PROJECT NAME & ADDRESS

DEBORAH RIEDMILLER

**607 E HIGH ST,
MT VERNON,
OH 43050**

COUNTY:-KNOX COUNTY

SYSTEM SIZE

DC SIZE: 5.040 KW DC-(STC)
AC SIZE: 4.060 KW AC

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'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 MICRO-INVERTER 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 APPLICATION PER 690.4. 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 - QCELLS Q.PEAK DUO BLK-G10+ 360 / ENPHASE IQ7PLUS-72-2-US 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
 1.3.12 SIGNAGE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE

PROJECT INFORMATION

OWNER
NAME: DEBORAH RIEDMILLER

PROJECT MANAGER
NAME: SHAHIN HAYNES
PHONE: 8665071461

CONTRACTOR NAME
ADT SOLAR LLC
PHONE: 5052180838

SCOPE OF WORK
 SYSTEM SIZE: STC:14 X 360W= 5.04 kW DC
 PTC: 14 x 338.77W = 4.74 kW DC
 (14) QCELLS Q.PEAK DUO BLK-G10+ 360
 (14) ENPHASE IQ7PLUS-72-2-US

ATTACHMENT TYPE: ROOF MOUNT
 MSP UPGRADE: NO
 UTILITY METER UPGRADE: NO

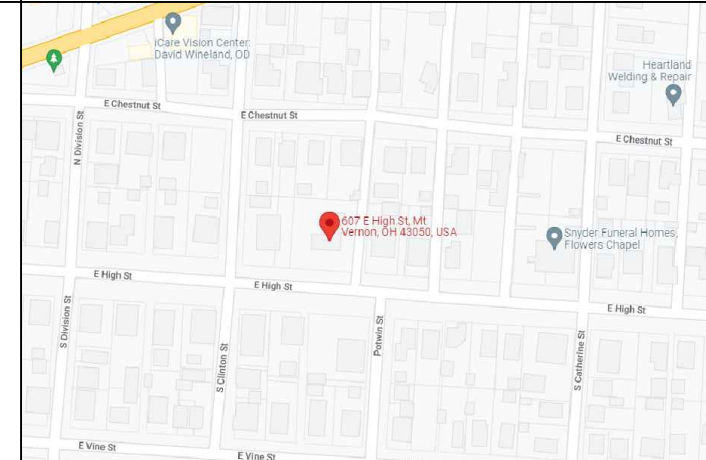
AUTHORITIES HAVING JURISDICTION
 BUILDING: CITY OF MOUNT VERNON
 ZONING: CITY OF MOUNT VERNON
 UTILITY: AMERICAN ELECTRIC POWER - AEP (OH)
 METER NO: 882963514

DESIGN SPECIFICATION
 OCCUPANCY: II
 CONSTRUCTION: SINGLE-FAMILY
 ZONING: RESIDENTIAL
 GROUND SNOW LOAD: REFER STRUCTURAL LETTER
 WIND EXPOSURE: REFER STRUCTURAL LETTER
 WIND SPEED: REFER STRUCTURAL LETTER

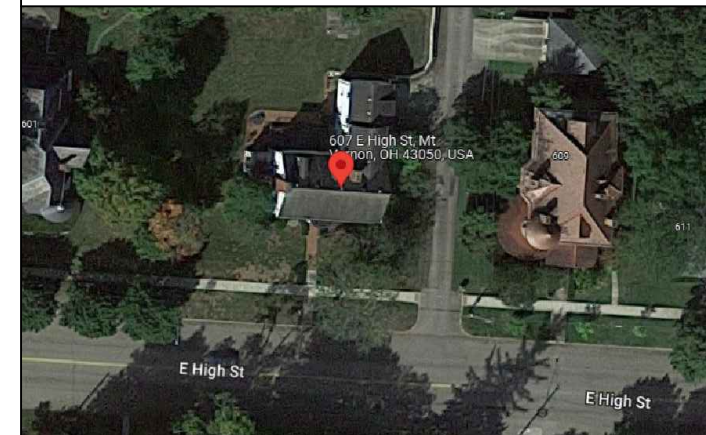
APPLICABLE CODES & STANDARDS

FIRE: IFC 2009

VICINITY MAP



SATELLITE VIEW



SHEET INDEX

G-001	COVER PAGE
G-002	NOTES
A-101	SITE PLAN
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A-104	STRUCTURAL 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

SHEET TITLE

COVER PAGE

DRAWN DATE 5/18/2022

DRAWN BY RK

SHEET NUMBER

G-001

Attachment: CAD-Riedmiller Deborah 5.19.22 (1) (3611 : 2022-Hrc-24)



22171 MCH RD
MANDEVILLE, LA 7047

PHONE: 9152011490

PROJECT NAME & ADDRESS

DEBORAH RIEDMILLER

**607 E HIGH ST,
MT VERNON,
OH 43050**

COUNTY:-KNOX COUNTY

SYSTEM SIZE

DC SIZE: 5.040 KW DC-(STC)
AC SIZE: 4.060 KW AC

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 WITH NO 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 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 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 MICROINVERTER 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 MANUFACTURERS' 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 RECONNECTED 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(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 (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
2.7.8 BACKFEEDING BREAKER FOR ELECTRIC POWER SOURCES OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING [NEC 705.12 (B)(5)].

SHEET TITLE

NOTES

DRAWN DATE 5/18/2022

DRAWN BY RK

SHEET NUMBER

G-002

(14) QCELLS Q.PEAK DUO BLK-G10+ 360
 (14) ENPHASE IQ7PLUS-72-2-US

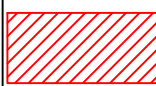





ADDRESS : 607 E HIGH ST
 CITY ZIP : MT VERNON, OH 43050
 METER NO: 882963514

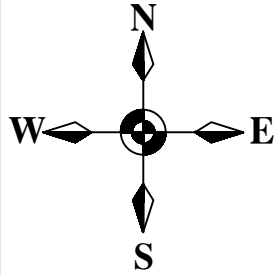
DC SIZE 14 X 360W = 5.040 kW DC-STC
 AC SIZE 14X 290W = 4.060 kW AC

TOTAL HOME SQUARE FOOTAGE IS: 2606.72 FT²
 TOTAL ARRAY SQUARE FOOTAGE IS: 270.34 FT²
 % COVERED BY SOLAR IS: 10.37%

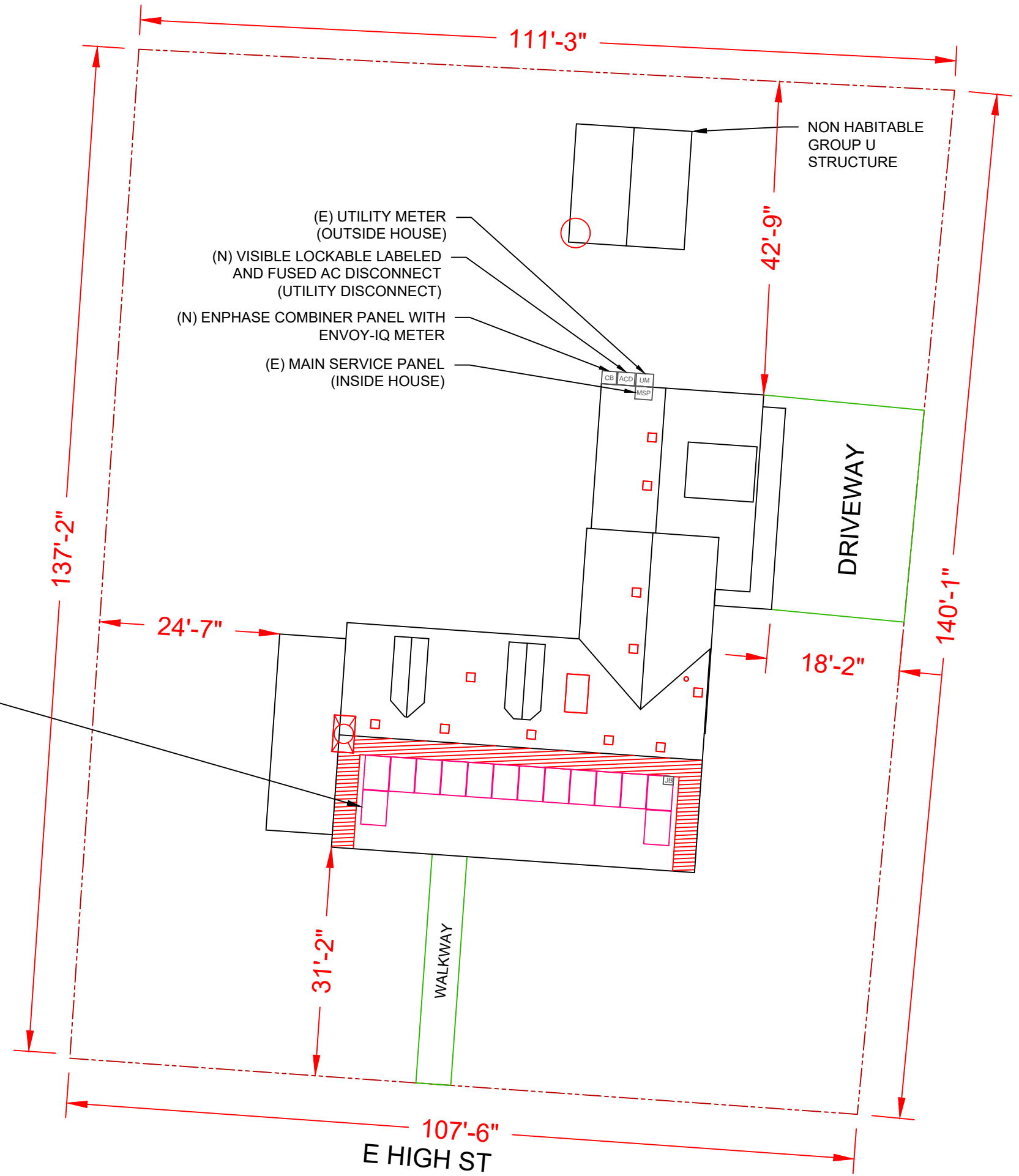
14 QCELLS Q.PEAK DUO BLK-G10+ 360
 MODULES WITH
 ENPHASE IQ7PLUS-72-2-US
 MICROINVERTERS UNDER EACH
 MODULE (240V)

LEGEND

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



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



CONTRACT 3.1.b



22171 MCH RD
 MANDEVILLE, LA 7047
 PHONE: 9152011490

PROJECT NAME & ADDRESS
 DEBORAH RIEDMILLER

**607 E HIGH ST,
 MT VERNON,
 OH 43050**

COUNTY: KNOX COUNTY

SYSTEM SIZE
 DC SIZE: 5.040 KW DC-(STC)
 AC SIZE: 4.060 KW AC

SHEET TITLE
SITE PLAN

DRAWN DATE 5/18/2022
 DRAWN BY RK

SHEET NUMBER
A-101

Attachment: CAD-Riedmiller Deborah 5.19.22 (1) (3611 : 2022-Hrc-24)



22171 MCH RD
 MANDEVILLE, LA 7047
 PHONE: 9152011490

PROJECT NAME & ADDRESS
 DEBORAH RIEDMILLER

607 E HIGH ST,
 MT VERNON,
 OH 43050

COUNTY:-KNOX COUNTY

SYSTEM SIZE
 DC SIZE: 5.040 KW DC-(STC)
 AC SIZE: 4.060 KW AC

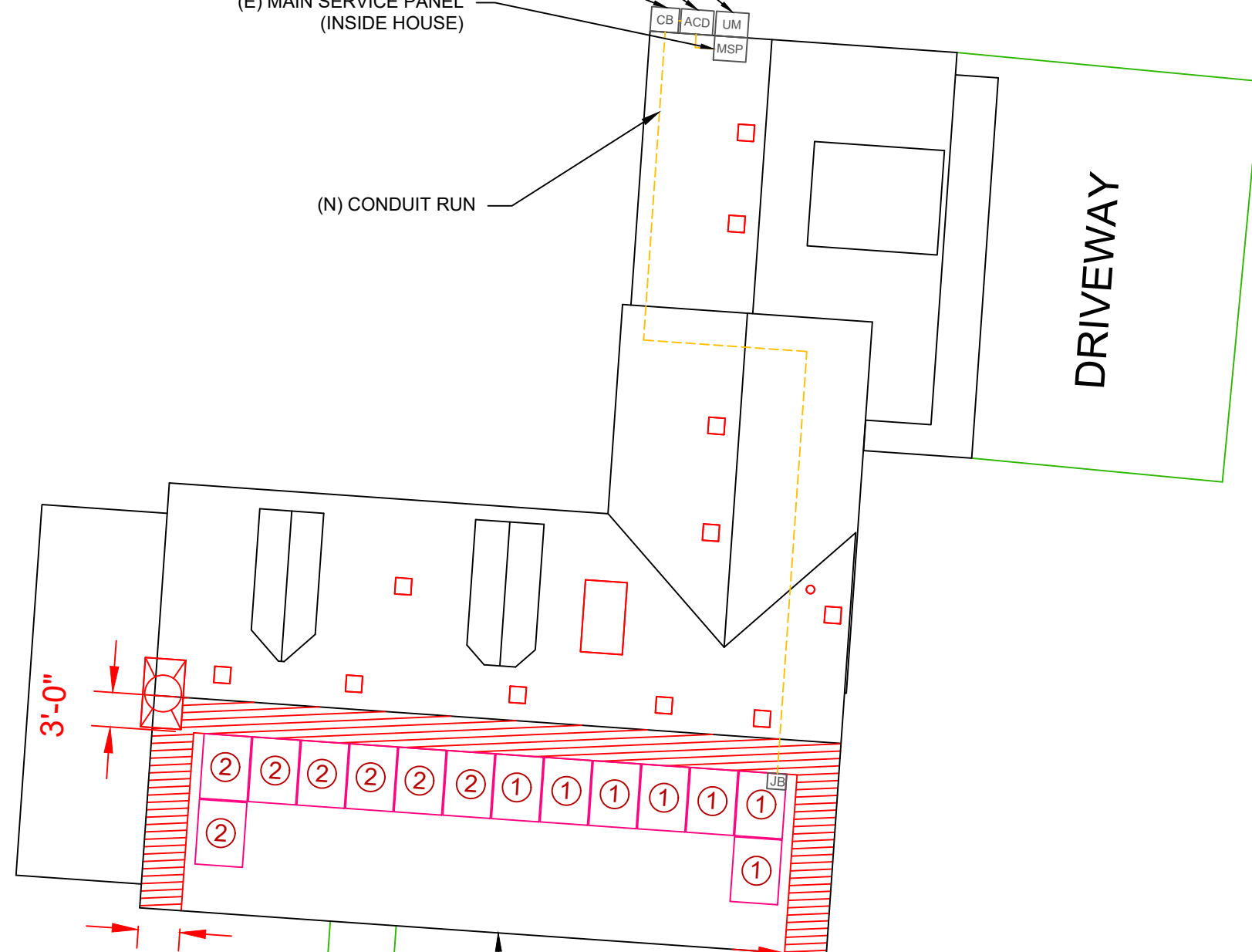
Attachment: CAD-Riedmiller Deborah 5.19.22 (1) (3611 : 2022-Hrc-24)

ROOF SECTION(S)

ROOF 1	TILT - 34° AZIMUTH - 184° MODULE - 14 SYSTEM SIZE (KW)- 5.04
--------	---

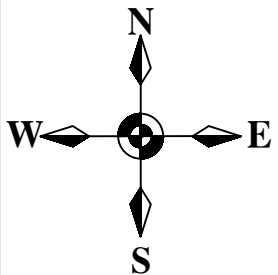
- ① - MODULE STRING
- ② - MODULE STRING

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



LEGEND

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



1 | ELECTRICAL PLAN
 SCALE: 3/32" = 1'-0"

SHEET TITLE
ELECTRICAL PLA

DRAWN DATE 5/18/2022
 DRAWN BY RK

SHEET NUMBER
A-102



22171 MCH RD
MANDEVILLE, LA 7047
PHONE: 9152011490





PROJECT NAME & ADDRESS
DEBORAH RIEDMILLER

607 E HIGH ST,
MT VERNON,
OH 43050

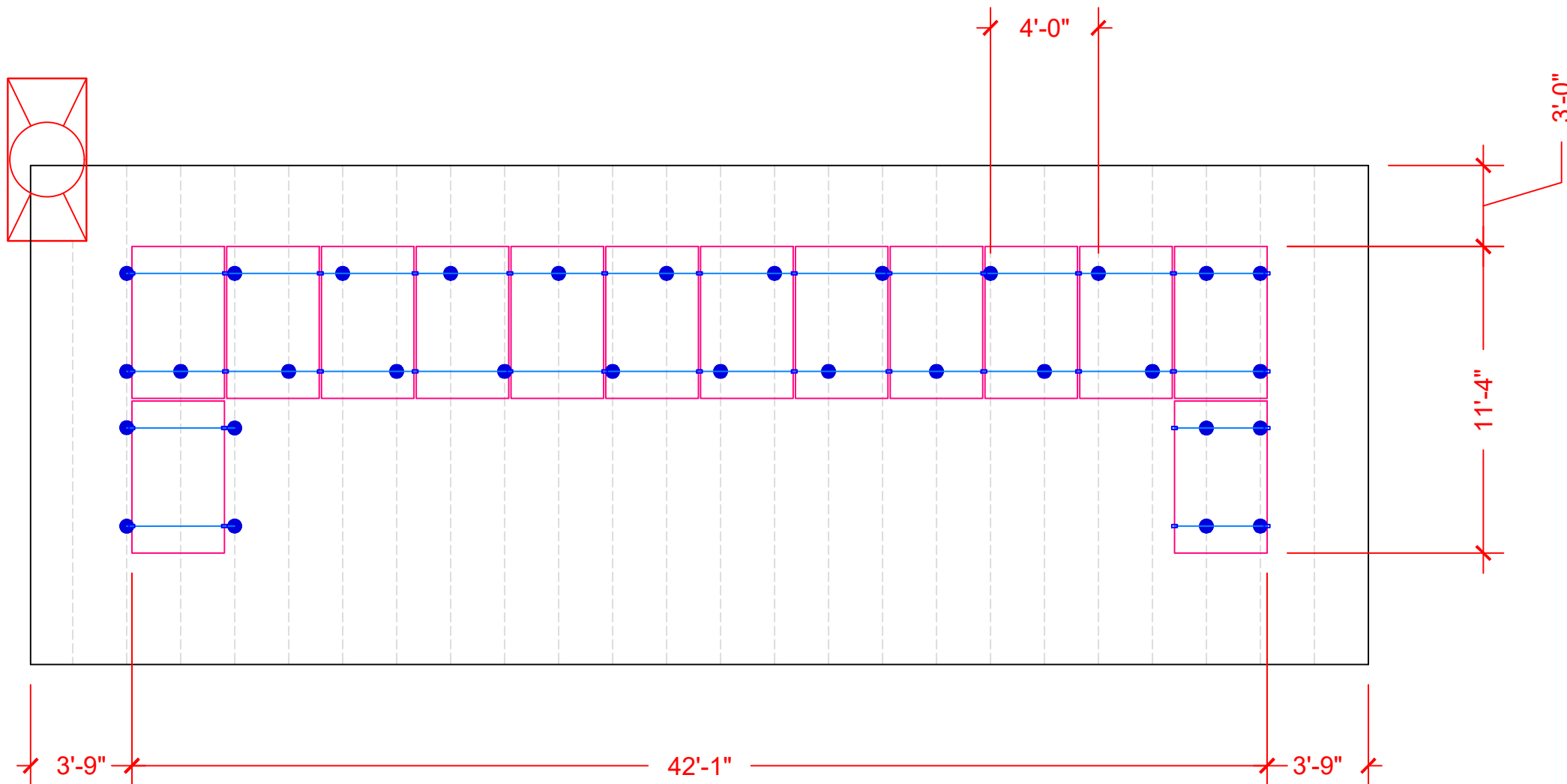
COUNTY:-KNOX COUNTY

SYSTEM SIZE
DC SIZE: 5.040 KW DC-(STC)
AC SIZE: 4.060 KW AC

Attachment: CAD-Riedmiller Deborah 5.19.22 (1) (3611 : 2022-Hrc-24)

-  - CLAMP
-  - UNIRAC FLASHLOC
-  - RAIL
-  - RAFTER

32 - TOTAL MOUNT



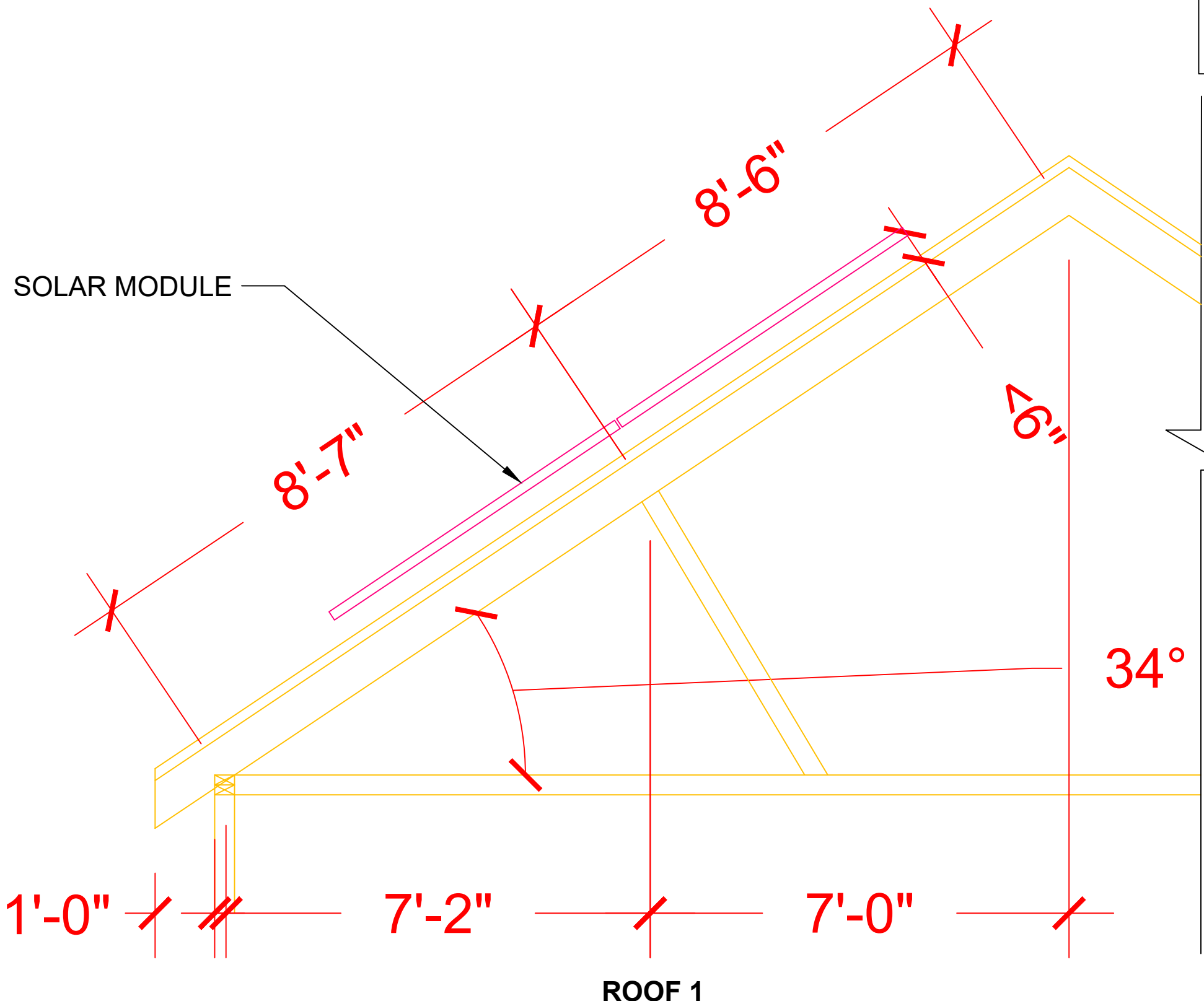
ARRAY 1
TILT- 34 DEG
AZIMUTH - 184 DEG

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

SHEET TITLE
ATTACHMENT PLA

DRAWN DATE	5/18/2022
DRAWN BY	RK

SHEET NUMBER
A-103



ROOF SECTION(S)

ROOF 1	ROOF MATERIAL - COMPOSITE SHINGLE RAFTERS SIZE - 2"X6" O.C. SPACING - 24"
--------	--

CONTRACT	3.1.b
22171 MCH RD MANDEVILLE, LA 7047 PHONE: 9152011490	
PROJECT NAME & ADDRESS DEBORAH RIEDMILLER	
607 E HIGH ST, MT VERNON, OH 43050	
COUNTY:-KNOX COUNTY	
SYSTEM SIZE DC SIZE: 5.040 KW DC-(STC) AC SIZE: 4.060 KW AC	

Attachment: CAD-Riedmiller Deborah 5.19.22 (1) (3611 : 2022-Hrc-24)

SHEET TITLE	
STRUCTURAL PLAI	
DRAWN DATE	5/18/2022
DRAWN BY	RK
SHEET NUMBER	
A-104	

1 | STRUCTURAL PLAN
SCALE: 1/2"=1'-0"

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	QCELLS Q.PEAK DUO BLK-G10+ 360
VMP	34.31V
IMP	10.49A
VOC	41.18V
ISC	11.04A
TEMP. COEFF. VOC	-0.27%/K
MODULE DIMENSION	67.59"L x 41.02"W x 1.25"D (In Inch)


INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	ENPHASE IQ7PLUS-72-2-US 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	(2) #12/2 ROMEX IN ATTIC/(4) #12 THWN-2 ON EXTERIOR & (1)#6 THWN -2 / (GN)
2	(3)#6 THWN-2 / (1)#6 THWN-2 GROUND / (GN)
3	(3)#6 THWN-2 / (GN)
4	(1)#6 BARE GROUND

DC SIZE 14 X 360W = 5.040 kW DC-STC
AC SIZE 14X 290W = 4.060 kW AC

(GN) GENERAL CONDUIT NOTE :
CONDUIT TO BE UL LISTED FOR WET LOCATIONS AND UV PROTECTED (EX. -EMT,SCH 80 PVC OR RMC)*FMC MAYBE USED IN INDOOR APPLICATIONS WHERE PERMITTED BY NEC ART .348

CONTRACT 3.1.b



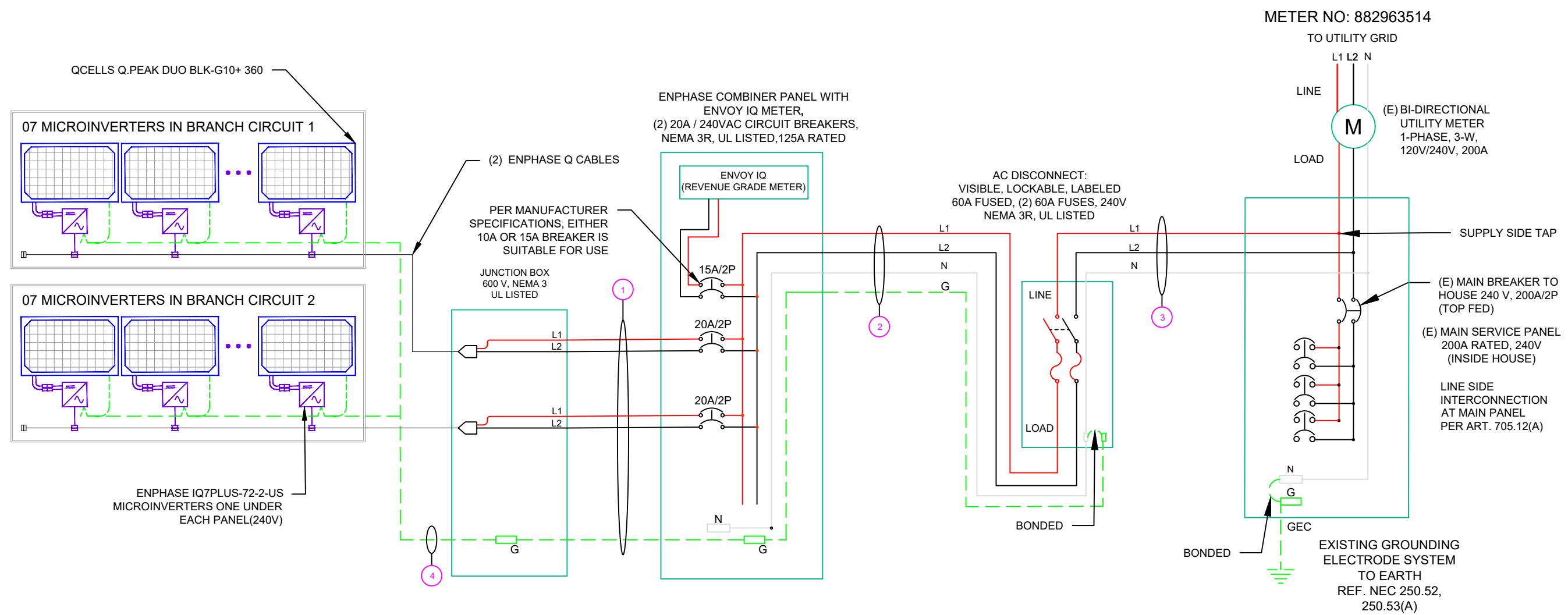
22171 MCH RD
MANDEVILLE, LA 7047
PHONE: 9152011490

PROJECT NAME & ADDRESS
DEBORAH RIEDMILLER

**607 E HIGH ST,
MT VERNON,
OH 43050**

COUNTY:-KNOX COUNTY

SYSTEM SIZE
DC SIZE: 5.040 KW DC-(STC)
AC SIZE: 4.060 KW AC



SHEET TITLE
LINE DIAGRAM

DRAWN DATE	5/18/2022
DRAWN BY	RK

SHEET NUMBER
E-601

Attachment: CAD-Riedmiller Deborah 5.19.22 (1) (3611 : 2022-Hrc-24)

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-20°
AMBIENT TEMP (HIGH TEMP 2%)	32°
CONDUIT HEIGHT	0.5"
CONDUCTOR TEMPERATURE RATE	90°

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 - (32)°C ...NEC 310.15(B)(3)(c)
 TEMPERATURE DERATE FACTOR - 0.96 ...NEC 310.15(B)(2)(a)
 GROUPING FACTOR - 0.8...NEC 310.15(B)(3)(a)

CONDUCTOR AMPACITY

= (INV O/P CURRENT) x 1.25 / A.T.F / G.F ...NEC 690.8(B)

= [(07 x 1.21) x 1.25] / [0.96 x 0.8]

= 13.79A

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)

= [(14 x 1.21) x 1.25] / [0.96 x 1]

= 22.06 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

= (14 x 1.21) x 1.25 = 21.18 A

CONTRACT 3.1.b



22171 MCH RD
 MANDEVILLE, LA 7047

PHONE: 9152011490

PROJECT NAME & ADDRESS

DEBORAH RIEDMILLER

607 E HIGH ST,
 MT VERNON,
 OH 43050

COUNTY:-KNOX COUNTY

SYSTEM SIZE

DC SIZE: 5.040 KW DC-(STC)

AC SIZE: 4.060 KW AC

Attachment: CAD-Riedmiller Deborah 5.19.22 (1) (3611 : 2022-Hrc-24)

SHEET TITLE
**ELECTRICAL
 CALCULATIONS**

DRAWN DATE 5/18/2022

DRAWN BY RK

SHEET NUMBER

E-602

Packet Pg. 17



22171 MCH RD
MANDEVILLE, LA 7047
PHONE: 9152011490

PROJECT NAME & ADDRESS
DEBORAH RIEDMILLER

607 E HIGH ST,
MT VERNON,
OH 43050

COUNTY:-KNOX COUNTY

SYSTEM SIZE
DC SIZE: 5.040 KW DC-(STC)
AC SIZE: 4.060 KW AC

Attachment: CAD-Riedmiller Deborah 5.19.22 (1) (3611 : 2022-Hrc-24)

SHEET TITLE

PLACARD

DRAWN DATE 5/18/2022

DRAWN BY RK

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

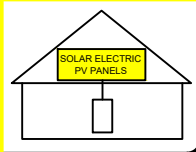
! WARNING !

THE SERVICE METER IS ALSO SERVED
BY A PHOTOVOLTAIC SYSTEM

LABEL 10
AT UTILITY METER

**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 !

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

LABEL 7
AT MEP

**PHOTOVOLTAIC
DC DISCONNECT**

LABEL 4
AT DC DISCONNECT

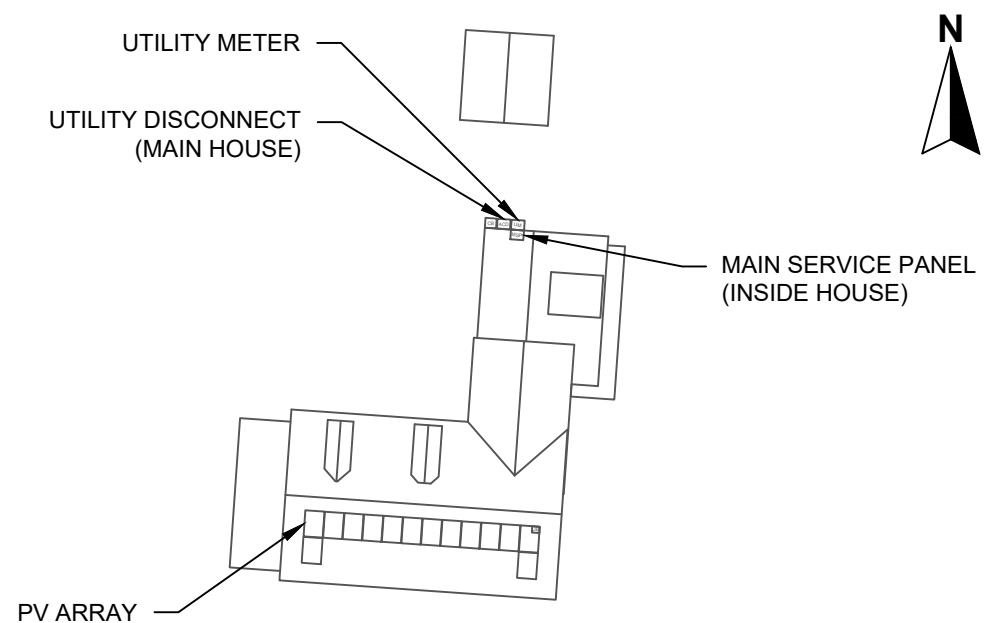
! WARNING !

**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:



powered by
Q.ANTUM DUO Z

PRELIMINARY

Q.PEAK DUO BLK-G10+

350-370

ENDURING HIGH PERFORMANCE



BREAKING THE 20% EFFICIENCY BARRIER

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9%.



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 Technology¹, Hot-Spot Protect and Traceable Quality Tra.Q™.



EXTREME WEATHER RATING

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



A RELIABLE INVESTMENT

Inclusive 25-year product warranty and 25-year linear performance warranty².

¹ APT test conditions according to IEC/TS 62804-1:2015, method A (-1500V, 96h)
² See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:

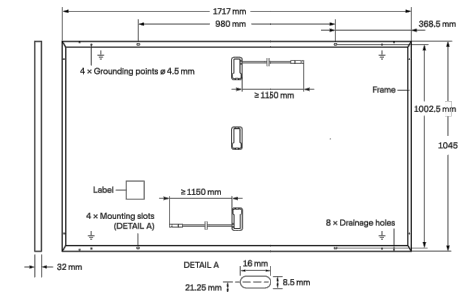


Engineered in Germany



MECHANICAL SPECIFICATION

Format	1717 mm × 1045 mm × 32 mm (including frame)
Weight	19.9kg
Front Cover	3.2 mm thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 20 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 ² Solar cable; (+) ≥ 1150 mm, (-) ≥ 1150 mm
Connector	Stäubli MC4; IP68

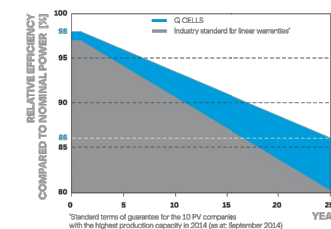


ELECTRICAL CHARACTERISTICS

POWER CLASS	350	355	360	365	370	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC¹ (POWER TOLERANCE +5 W / -0 W)						
Power at MPP ¹	P _{MPP} [W]	350	355	360	365	370
Short Circuit Current ¹	I _{SC} [A]	10.97	11.00	11.04	11.07	11.10
Open Circuit Voltage ¹	V _{OC} [V]	41.11	41.14	41.18	41.21	41.24
Current at MPP	I _{MPP} [A]	10.37	10.43	10.49	10.56	10.62
Voltage at MPP	V _{MPP} [V]	33.76	34.03	34.31	34.58	34.84
Efficiency ¹	η [%]	≥ 19.5	≥ 19.8	≥ 20.1	≥ 20.3	≥ 20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT²						
Power at MPP	P _{MPP} [W]	262.6	266.3	270.1	273.8	277.6
Short Circuit Current	I _{SC} [A]	8.84	8.87	8.89	8.92	8.95
Open Circuit Voltage	V _{OC} [V]	38.77	38.80	38.83	38.86	38.90
Current at MPP	I _{MPP} [A]	8.14	8.20	8.26	8.31	8.37
Voltage at MPP	V _{MPP} [V]	32.24	32.48	32.71	32.94	33.17

¹ Measurement tolerances P_{MPP} ± 3%; I_{SC}, V_{OC} ± 5% at STC: 1000 W/m², 25 ± 2°C, AM 1.5 according to IEC 60904-3 • 800 W/m², NMOT, spectrum AM 1.5

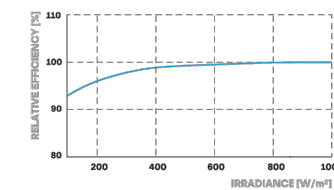
Q CELLS PERFORMANCE WARRANTY



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/m²).

TEMPERATURE COEFFICIENTS

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

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage	V _{SYS} [V]	1000	PV module classification	Class II
Maximum Reverse Current	I _R [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.
QC PV Certification ongoing.



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

Sonnenallee 17-21, 06766 Bitterfeld-Wolfen, Germany | TEL +49 (0)3494 66 99-23444 | FAX +49 (0)3494 66 99-23000 | EMAIL sales@q-cells.com | WEB www.q-cells.com

Engineered in Germany



CONTRACT 3.1.b



22171 MCH RD
MANDEVILLE, LA 7047
PHONE: 9152011490

PROJECT NAME & ADDRESS
DEBORAH RIEDMILLER

607 E HIGH ST,
MT VERNON,
OH 43050

COUNTY: KNOX COUNTY

SYSTEM SIZE
DC SIZE: 5.040 KW DC-(STC)
AC SIZE: 4.060 KW AC

SHEET TITLE
RESOURCE DOCUMENT

DRAWN DATE 5/18/2022

DRAWN BY RK

SHEET NUMBER

R-001

Packet Pg. 19

Specifications subject to technical changes © Q CELLS Q.PEAK DUO BLK-G10+-350-370_2021-08_Rev01_EN

Attachment: CAD-Riedmiller Deborah 5.19.22 (1) (3611 : 2022-Hrc-24)



22171 MCH RD
MANDEVILLE, LA 7047
PHONE: 9152011490

PROJECT NAME & ADDRESS
DEBORAH RIEDMILLER

607 E HIGH ST,
MT VERNON,
OH 43050

COUNTY:-KNOX COUNTY

SYSTEM SIZE
DC SIZE: 5.040 KW DC-(STC)
AC SIZE: 4.060 KW AC

Attachment: CAD-Riedmiller Deborah 5.19.22 (1) (3611 : 2022-Hrc-24)

Data Sheet
Enphase Microinverters
Region: AMERICAS

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 with the Enphase IQ Envoy™, 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.

Enphase IQ 7 and IQ 7+ Microinverters

INPUT DATA (DC)	IQ7-60-2-US		IQ7PLUS-72-2-US	
Commonly used module pairings ¹	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/range ²	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 (240 V)	1.15 A (208 V)	1.21 A (240 V)	1.39 A (208 V)
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 ³	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)	0.85 leading ... 0.85 lagging		0.85 leading ... 0.85 lagging	
EFFICIENCY	@240 V	@208 V	@240 V	@208 V
Peak efficiency	97.6 %	97.6 %	97.5 %	97.3 %
CEC weighted efficiency	97.0 %	97.0 %	97.0 %	97.0 %
MECHANICAL DATA				
Ambient temperature range	-40°C to +65°C			
Relative humidity range	4% to 100% (condensing)			
Connector type (IQ7-60-2-US & IQ7PLUS-72-2-US)	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, corrosion resistant polymeric enclosure			
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.
3. Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

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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.



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SHEET TITLE RESOURCE DOCUMENT

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DRAWN BY RK

SHEET NUMBER

R-002

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
- Supports Ensemble Communications Kit for communication with Enphase Encharge™ storage and Enphase Enpower™ smart switch

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 limited warranty
- UL listed



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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%).
* Consumption monitoring is required for Enphase Storage Systems	
Ensemble Communications Kit COMMS-KIT-01	Installed at the IQ Envoy. For communications with Enphase Encharge™ storage and Enphase Enpower™ smart switch. Includes USB cable for connection to IQ Envoy or Enphase IQ Combiner™ and allows wireless communication with Encharge and Enpower.
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 - one pair
XA-SOLARSHIELD-ES	Replace the default solar shield with this Ensemble Combiner Solar Shield to match the look and feel of the Enphase Enpower™ smart switch and the Enphase Encharge™ storage system
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)	80 A of distributed generation / 95 A with IQ Envoy breaker included
Envoy breaker	10A or 15A rating GE Q-line/Siemens Type QP /Eaton BR series 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	<ul style="list-style-type: none"> • 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	CELLMODEM-M1 4G based LTE-M cellular modem (not included). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.

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

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22171 MCH RD
MANDEVILLE, LA 7047

PHONE: 9152011490

PROJECT NAME & ADDRESS

DEBORAH RIEDMILLER

607 E HIGH ST,
MT VERNON,
OH 43050

COUNTY:-KNOX COUNTY

SYSTEM SIZE

DC SIZE: 5.040 KW DC-(STC)
AC SIZE: 4.060 KW AC

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SHEET NUMBER

R-003



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MANDEVILLE, LA 7047
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PROJECT NAME & ADDRESS
DEBORAH RIEDMILLER

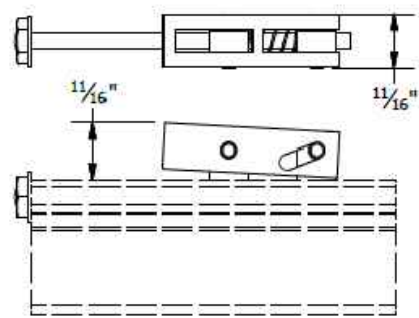
607 E HIGH ST,
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OH 43050

COUNTY:-KNOX COUNTY

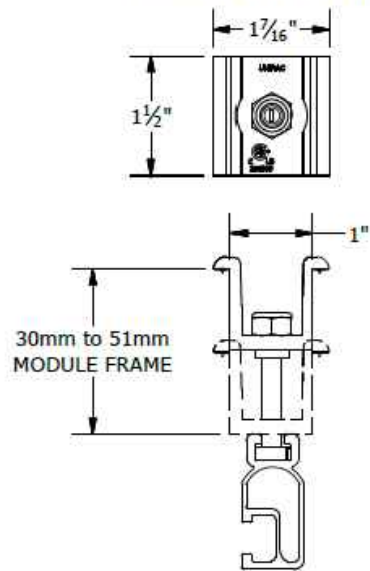
SYSTEM SIZE
DC SIZE: 5.040 KW DC-(STC)
AC SIZE: 4.060 KW AC

Attachment: CAD-Riedmiller Deborah 5.19.22 (1) (3611 : 2022-Hrc-24)

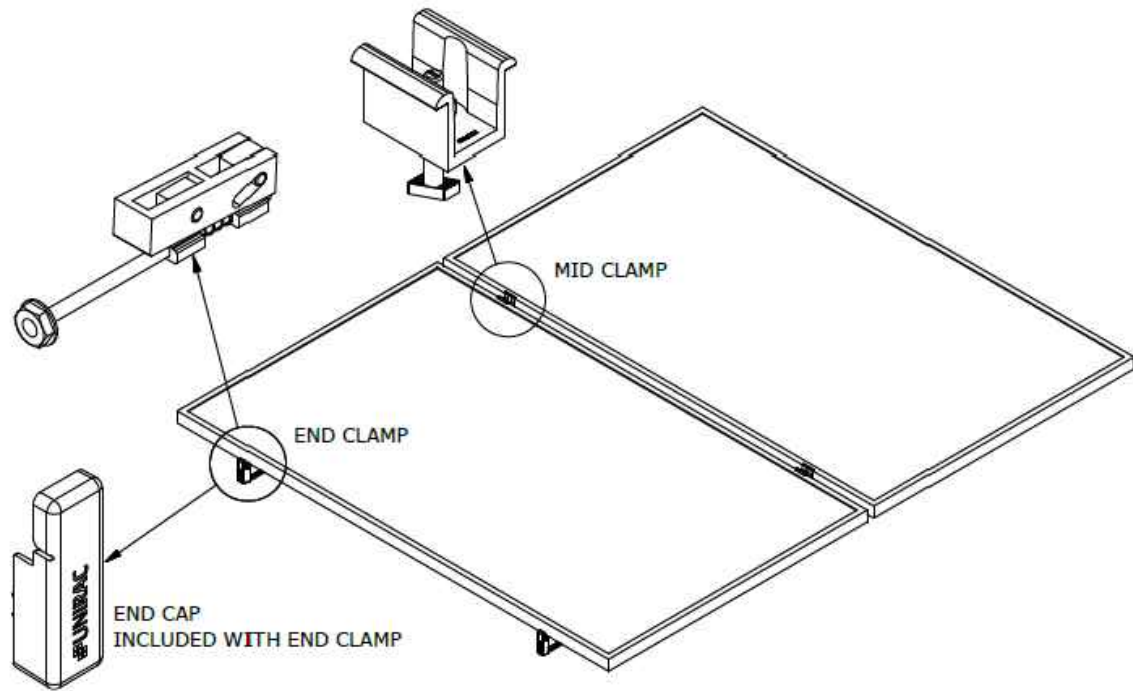
PRO SERIES END CLAMP



PRO SERIES MID CLAMP



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



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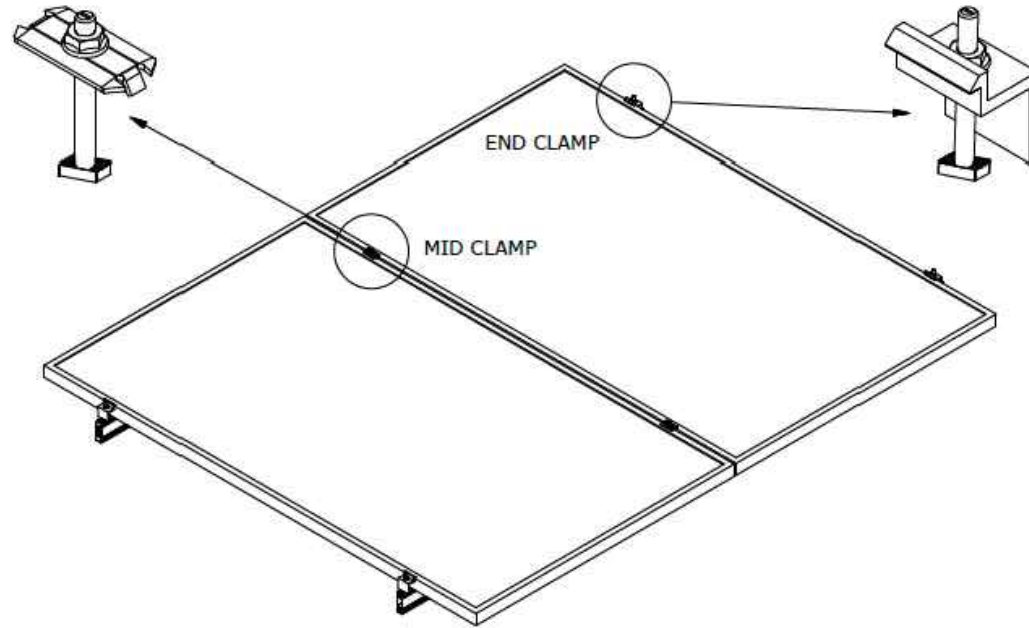
PRODUCT LINE:	SOLARMOUNT
DRAWING TYPE:	PART & ASSEMBLY
DESCRIPTION:	PRO SERIES BONDING CLAMPS
REVISION DATE:	10/26/2017

DRAWING NOT TO SCALE
ALL DIMENSIONS ARE NOMINAL

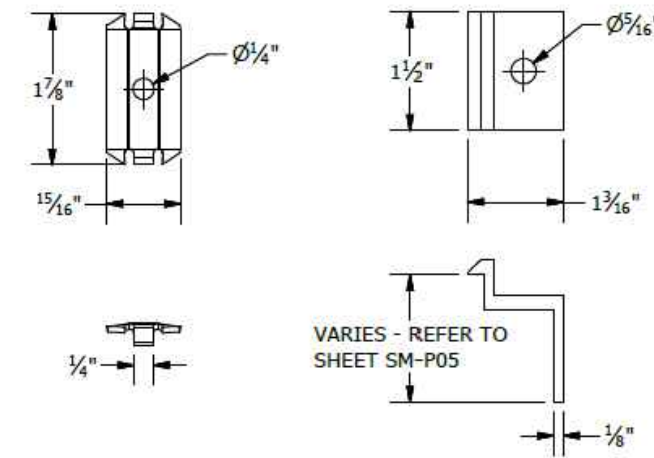
PRODUCT PROTECTED BY
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SM-A01
SHEET



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

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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

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SM-A01A
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SHEET TITLE
RESOURCE DOCUMENT

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SHEET NUMBER

R-004



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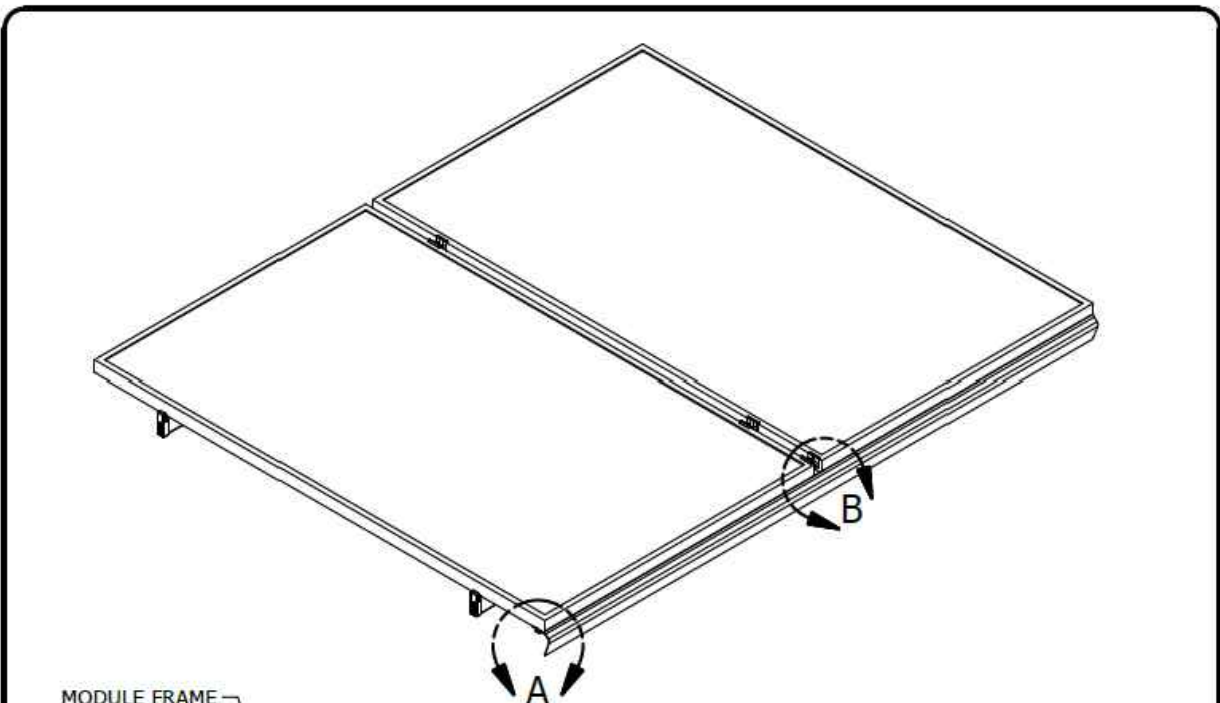
PROJECT NAME & ADDRESS
 DEBORAH RIEDMILLER

607 E HIGH ST,
 MT VERNON,
 OH 43050

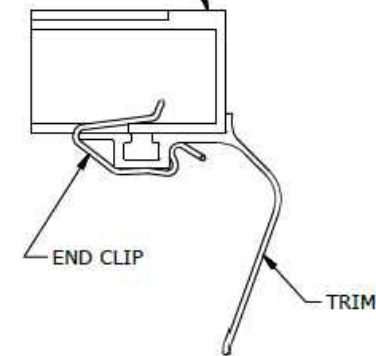
COUNTY:-KNOX COUNTY

SYSTEM SIZE
 DC SIZE: 5.040 KW DC-(STC)
 AC SIZE: 4.060 KW AC

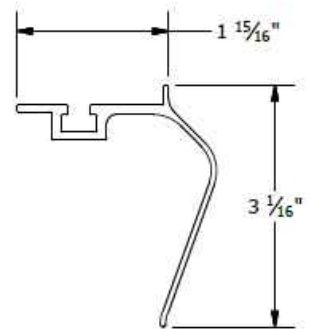
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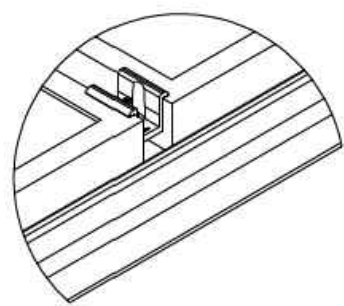
MODULE FRAME



DETAIL A
 TRIM END CLIP



TRIM



DETAIL B
 MID CLAMP TRIM CONNECTION

PART # TABLE		
P/N	DESCRIPTION	LENGTH
206072D-B	SM TRIM DRK	168"
008025S	SM TRIM END CLIP	-

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 PHONE: 505.242.6411
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PRODUCT LINE:	SOLARMOUNT
DRAWING TYPE:	PART & ASSEMBLY
DESCRIPTION:	SM TRIM END CLIP
REVISION DATE:	9/27/2017

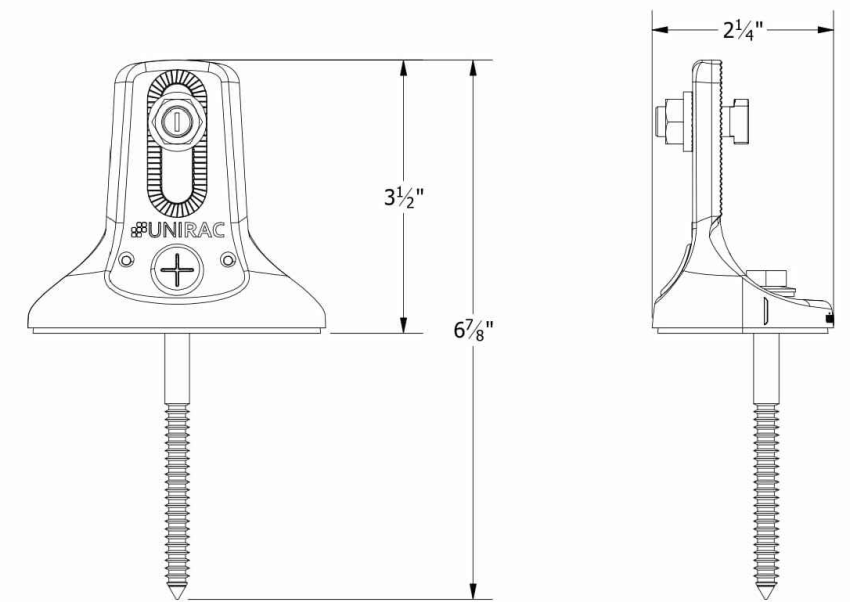
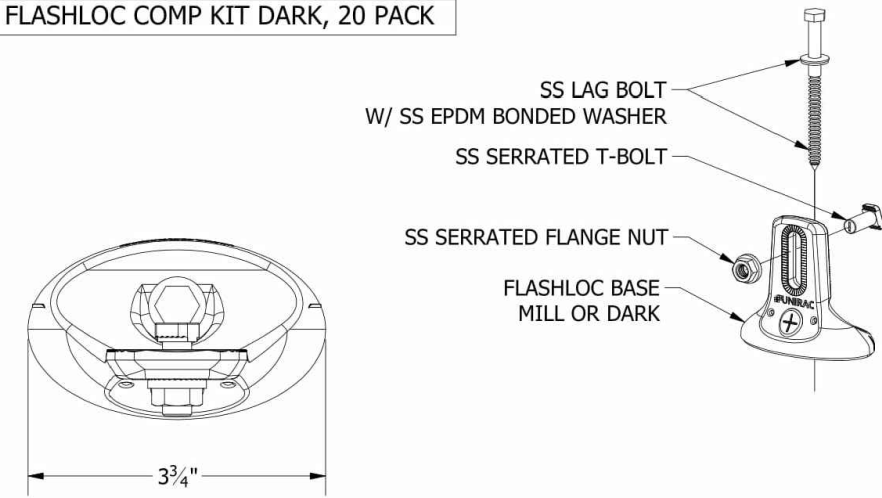
DRAWING NOT TO SCALE
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PART TABLE	
P/N	DESCRIPTION
004085M	FLASHLOC COMP KIT MILL, 20 PACK
004085D	FLASHLOC COMP KIT DARK, 20 PACK



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 ALBUQUERQUE, NM 87102 USA
 PHONE: 505.242.6411
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PRODUCT LINE:	SOLARMOUNT
DRAWING TYPE:	PART DRAWING
DESCRIPTION:	FLASHLOC COMP KIT
REVISION DATE:	10/3/2019

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FL-A01
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RESOURCE DOCUMENT

DRAWN DATE	5/18/2022
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SHEET NUMBER

R-005



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PROJECT NAME & ADDRESS
DEBORAH RIEDMILLER

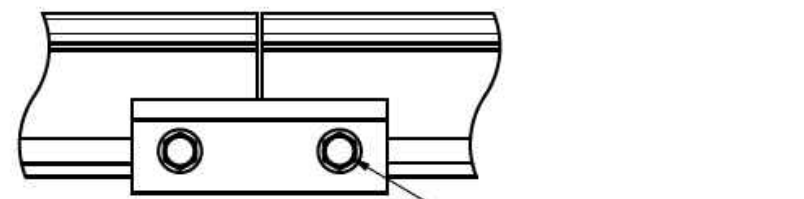
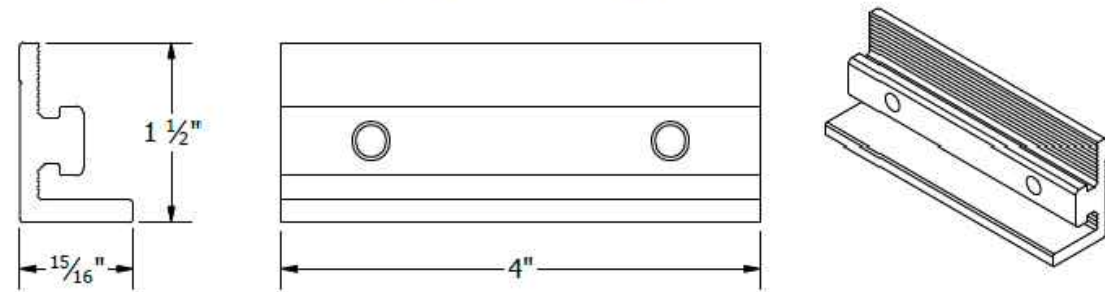
607 E HIGH ST,
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OH 43050

COUNTY:-KNOX COUNTY

SYSTEM SIZE
DC SIZE: 5.040 KW DC-(STC)
AC SIZE: 4.060 KW AC

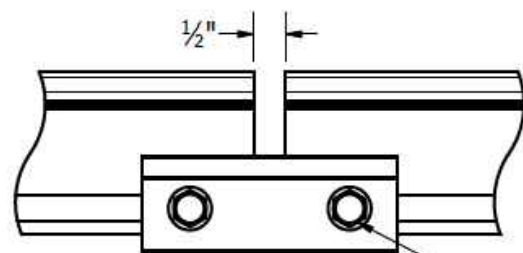
Attachment: CAD-Riedmiller Deborah 5.19.22 (1) (3611 : 2022-Hrc-24)

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

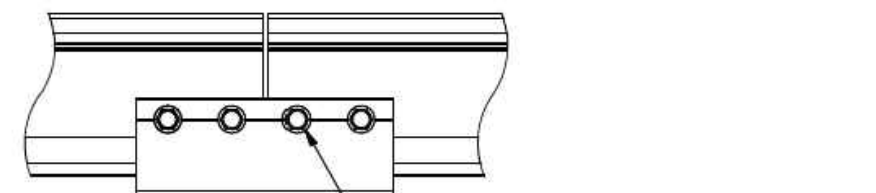
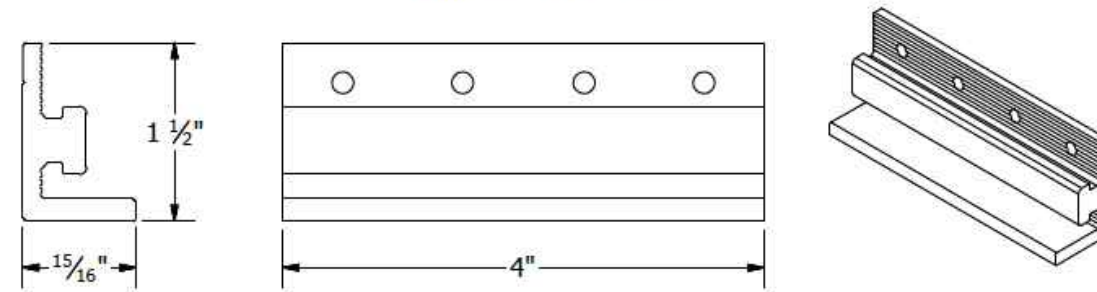
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1411 BROADWAY BLVD. NE
ALBUQUERQUE, NM 87102 USA
PHONE: 505.242.6411
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PRODUCT LINE: SOLARMOUNT
DRAWING TYPE: PART & ASSEMBLY
DESCRIPTION: BONDING SPLICE BAR PRO SERIES
REVISION DATE: 8/23/2018

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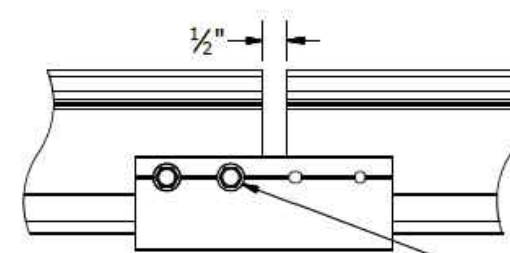
SM-A05
SHEET

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

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

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SM-A05
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SHEET TITLE
RESOURCE DOCUMENT

DRAWN DATE: 5/18/2022
DRAWN BY: RK

SHEET NUMBER

R-006



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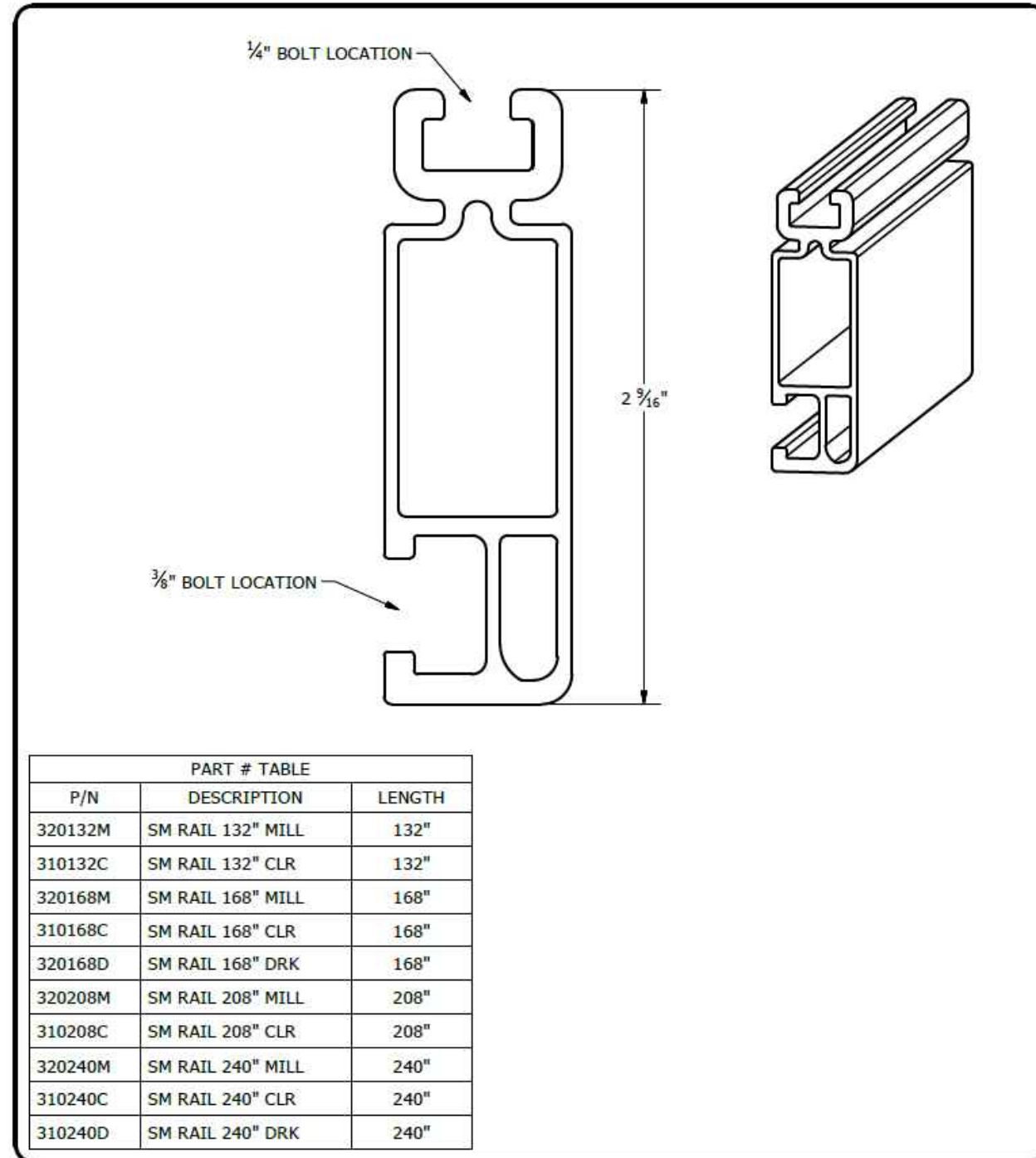
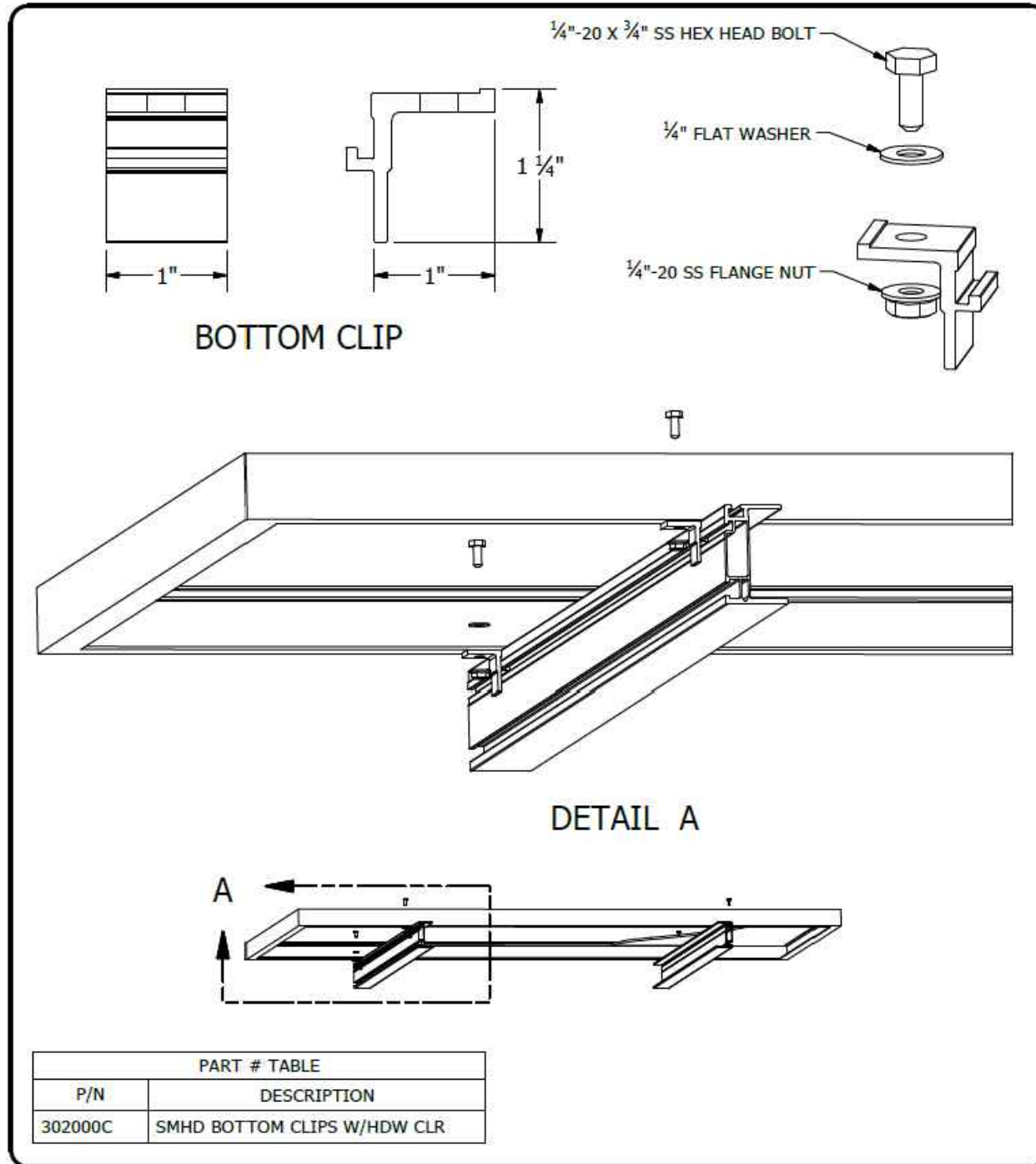
PROJECT NAME & ADDRESS
DEBORAH RIEDMILLER

607 E HIGH ST,
MT VERNON,
OH 43050

COUNTY: KNOX COUNTY

SYSTEM SIZE
DC SIZE: 5.040 KW DC-(STC)
AC SIZE: 4.060 KW AC

Attachment: CAD-Riedmiller Deborah 5.19.22 (1) (3611 : 2022-Hrc-24)



<p>1411 BROADWAY BLVD. NE ALBUQUERQUE, NM 87102 USA PHONE: 505.242.6411 WWW.UNIRAC.COM</p>	PRODUCT LINE:	SOLARMOUNT HD	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL	SM-A10
	DRAWING TYPE:	PART & ASSEMBLY		
	DESCRIPTION:	BOTTOM CLIP		
	REVISION DATE:	9/27/2017		
			PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	SHEET

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	DRAWING TYPE:	PART DETAIL		
	DESCRIPTION:	STANDARD RAIL		
	REVISION DATE:	9/11/2017		
			PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	SHEET

SHEET TITLE
RESOURCE DOCUMENT

DRAWN DATE: 5/18/2022
DRAWN BY: RK

SHEET NUMBER
R-007



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MANDEVILLE, LA 7047
PHONE: 9152011490

PROJECT NAME & ADDRESS
DEBORAH RIEDMILLER

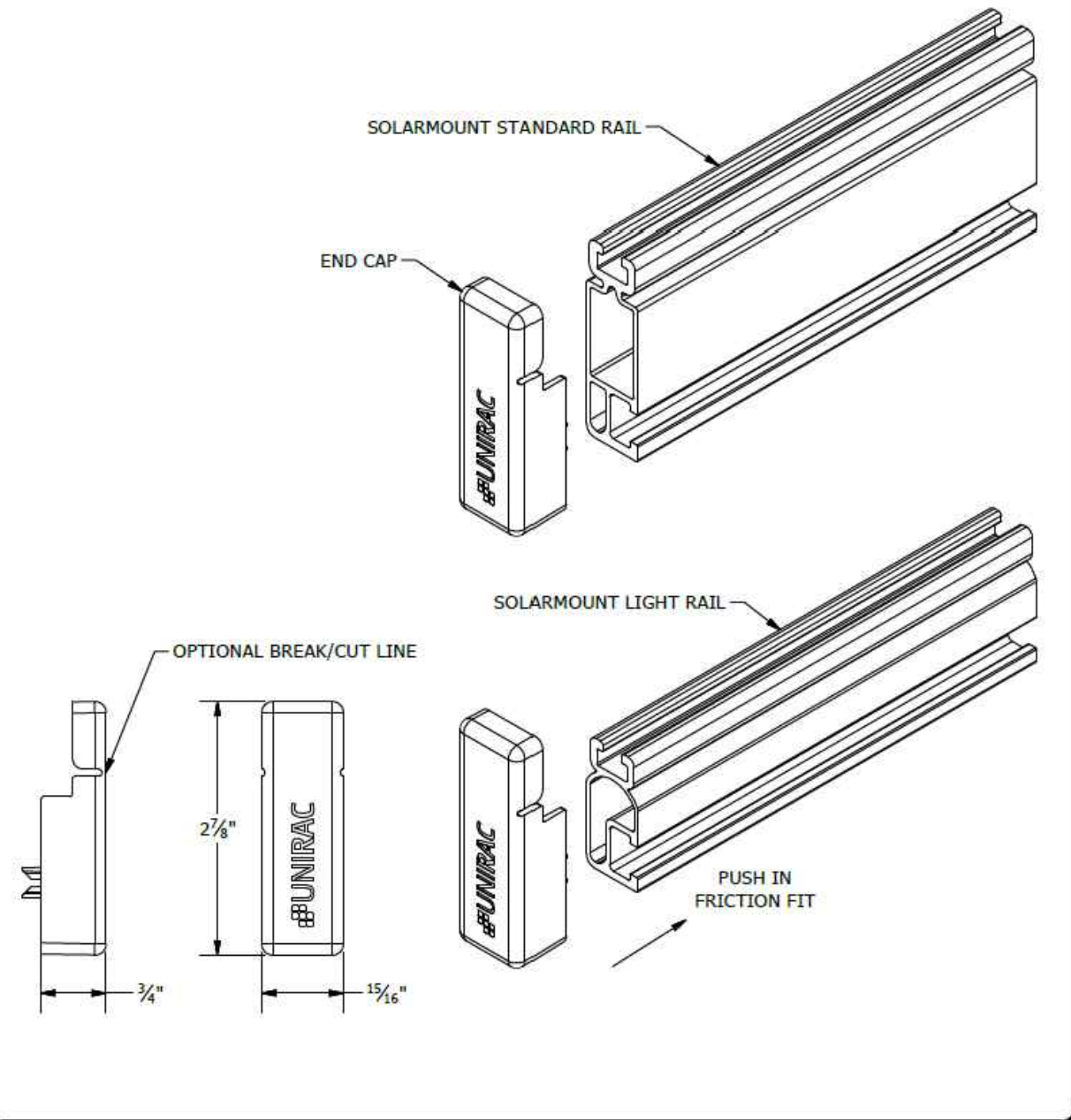
607 E HIGH ST,
MT VERNON,
OH 43050

COUNTY:-KNOX COUNTY

SYSTEM SIZE
DC SIZE: 5.040 KW DC-(STC)
AC SIZE: 4.060 KW AC

Attachment: CAD-Riedmiller Deborah 5.19.22 (1) (3611 : 2022-Hrc-24)

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



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ALBUQUERQUE, NM 87102 USA
PHONE: 505.242.6411
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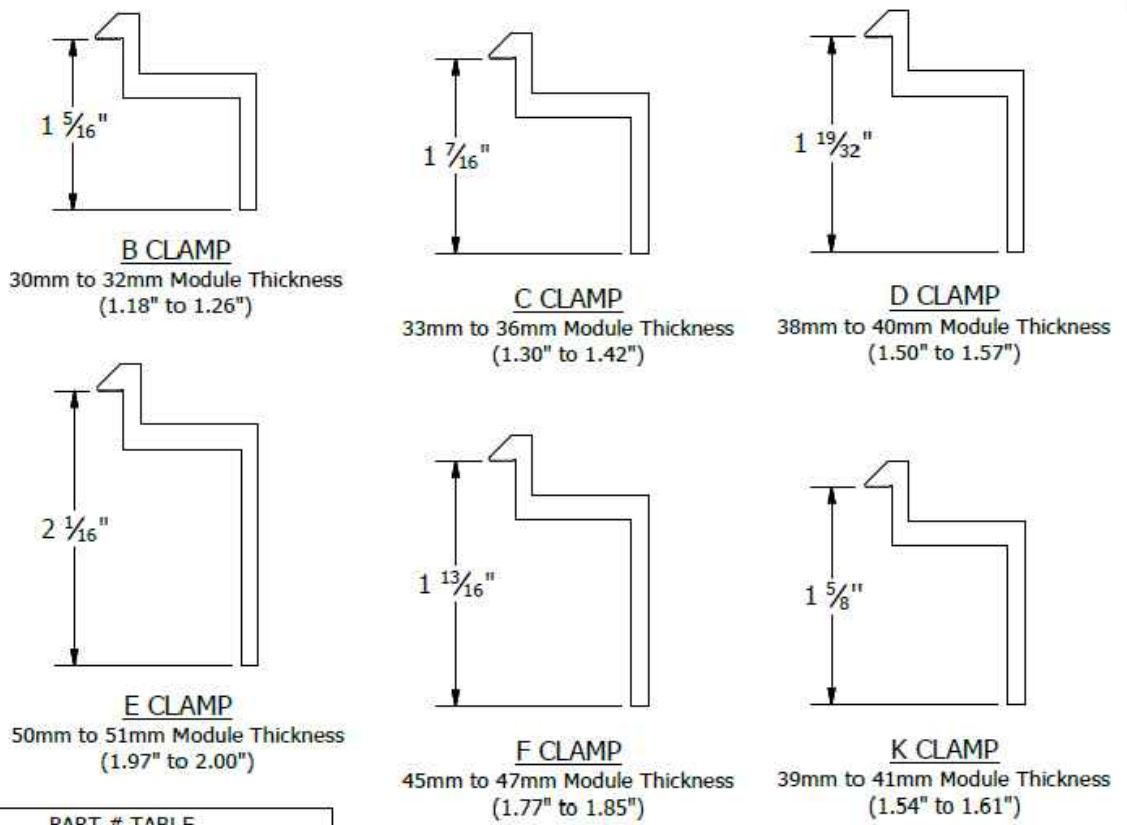
PRODUCT LINE:	SOLARMOUNT
DRAWING TYPE:	PART DETAIL
DESCRIPTION:	END CAPS
REVISION DATE:	9/27/2017

DRAWING NOT TO SCALE
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NOMINAL

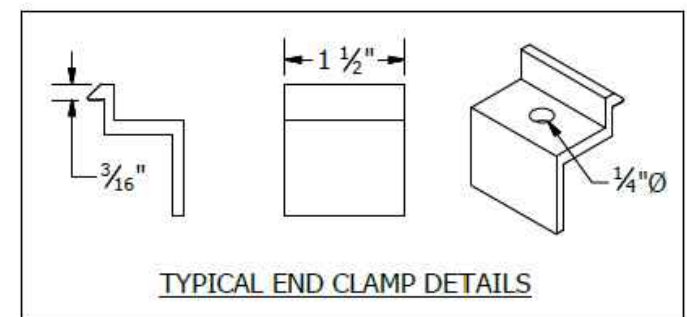
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SM-P04
SHEET



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



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ALBUQUERQUE, NM 87102 USA
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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

SHEET TITLE
**RESOURCE
DOCUMENT**

DRAWN DATE 5/18/2022
DRAWN BY RK

SHEET NUMBER
R-008



Attachment: before picture (3611 : 2022-Hrc-24)

3.1.d

Attachment:

Packet Pg. 28

