WYSSLING CONSULTING
CORPORATE EXPERIENCE WITH SMALL BUSINESS VALUE
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July 12, 2023

Complete Solar
3000 Executive Parkway, Ste 504
San Ramon, CA 94583

Scott Wyssling, PE

Digitally signed by Scott Wyssling, PE
DN: C=US, S=Utah, L=Alpine, O=Wyssling Consulting, OU=Engineering, CN="Scott Wyssling, PE", E=swyssling@wysslingconsulting.com
Reason: I am the author of this document
Location: your signing location here
Date: 2023.07.12 15:06:46-06'00'
Foxit PDF Editor Version: 11.1.0

Re: Engineering Services
Schmidt Residence
23 Hamilton Farm Circle, Fuquay-Varina NC
9.480 kW System

To Whom It May Concern:

We have received information regarding solar panel installation on the roof of the above referenced structure. Our evaluation of the structure is to verify the existing capacity of the roof system and its ability to support the additional loads imposed by the proposed solar system.

***A. Site Assessment Information***

1. Site visit documentation identifying attic information including size and spacing of framing for the existing roof structure.
2. Design drawings of the proposed system including a site plan, roof plan and connection details for the solar panels. This information will be utilized for approval and construction of the proposed system.

***B. Description of Structure:***

| | |
|---|---|
| ***Roof Framing:*** | 2x6 dimensional lumber at 16” on center. |
| ***Roof Material:*** | Composite Asphalt Shingles |
| ***Roof Slope:*** | 22 degrees |
| ***Attic Access:*** | Accessible |
| ***Foundation:*** | Permanent |

***C. Loading Criteria Used***

- **Dead Load**
  - Existing Roofing and framing = 7 psf
  - New Solar Panels and Racking = 3 psf
  - TOTAL = 10 PSF
- **Live Load** = 20 psf (reducible) – 0 psf at locations of solar panels
- **Ground Snow Load** = 15 psf
- **Wind Load** based on ASCE 7-10
  - Ultimate Wind Speed = 119 mph (based on Risk Category II)
  - Exposure Category C

*Analysis performed of the existing roof structure utilizing the above loading criteria is in accordance with the* 2018 North Carolina Residential Code*, including provisions allowing existing structures to not require strengthening if the new loads do not exceed existing design loads by 105% for gravity elements and 110% for seismic elements. This analysis indicates that the existing framing will support the additional panel loading without damage, if installed correctly.*

***D. Solar Panel Anchorage***

1. The solar panels shall be mounted in accordance with the most recent Ironridge installation manual. If during solar panel installation, the roof framing members appear unstable or deflect non-uniformly, our office should be notified before proceeding with the installation.
2. The maximum allowable withdrawal force for a $^{5}/_{16}$" lag screw is 229 lbs per inch of penetration as identified in the National Design Standards (NDS) of timber construction specifications. Based on a minimum penetration depth of 2½", the allowable capacity per connection is greater than the design withdrawal force (demand). Considering the variable factors for the existing roof framing and installation tolerances, the connection using one $^{5}/_{16}$" diameter lag screw with a minimum of 2½" embedment will be adequate and will include a sufficient factor of safety.
3. Considering the wind speed, roof slopes, size and spacing of framing members, and condition of the roof, the panel supports shall be placed no greater than 48" on center.

Based on the above evaluation, this office certifies that with the racking and mounting specified, the existing roof system will adequately support the additional loading imposed by the solar system. This evaluation is in conformance with the 2018 North Carolina Residential Code, current industry standards, and is based on information supplied to us at the time of this report.

Should you have any questions regarding the above or if you require further information do not hesitate to contact me.

Very truly yours,

Scott E. Wyssling, PE
North Carolina License No. 46546
North Carolina COA P-2308

NORTH CAROLINA PROFESSIONAL SEAL 046546 ENGINEER SCOTT E. WYSSLING

Wyssling Consulting, PLLC
76 N Meadowbrook Drive Alpine UT 84004
North Carolina COA # P-2308

Signed 7/12/2023

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# JOHN SCHMIDT RESIDENCE

## NEW PHOTOVOLTAIC SYSTEM
## PROJECT - 9.480 KW DC / 6.960 KW AC

| SHEET # | SHEET NAME |
|---|---|
| T-1 | COVER SHEET |
| T-2 | PLAN NOTES |
| PV-1 | SITE PLAN LAYOUT |
| PV-2 | ATTACHMENT DETAILS |
| PV-3 | MOUNTING DETAILS |
| E-1 | ELECTRICAL DIAGRAM |
| E-2 | WARNING LABELS |
| S-1 | SPEC SHEET |
| S-2 | SPEC SHEET |
| S-3 | SPEC SHEET |
| S-4 | SPEC SHEET |

## PROJECT INFORMATION

**PROPERTY OWNER**

NAME: JOHN SCHMIDT
PHONE: -

**CONTRACTOR**

NAME: BYLD
PHONE:

**DESIGN SPECIFICATIONS**

OCCUPANCY: R-3
CONSTRUCTION TYPE: SINGLE FAMILY RESIDENCE
ZONING: RESIDENTIAL
WIND EXPOSURE: C
AHJ : HARNETT COUNTY
UTILITY: DUKE ENERGY

**APPLICABLE CODES & STANDARDS**

INTERNATIONAL RESIDENTIAL CODE 2018 (IRC 2018)
INTERNATIONAL BUILDING CODE 2018 (IBC 2018)
INTERNATIONAL FIRE CODE 2018 (IFC 2018)
NATIONAL ELECTRICAL CODE, NEC 2020 CODE BOOK, NFPA 70

**TYPE OF INTERCONNECTION:** LINE SIDE TAP IN THE MSP

**SCOPE OF WORK**

SYSTEM SIZE: STC: 24 X 395W = 9.480kW
PTC: 24 X 372W = 8.928kW
(24) TRINA SOLAR TSM-395 DE09.05 (395W) [BLK] MODULES
(12) NORTHERN ELECTRIC BDM-600X(BDM-300X2X) MICROINVERTERS
(1) 60A FUSED AC DISCONNECT WITH 40A FUSES
(1) 100A PV LOAD CENTER

MSP UPGRADE: NO
MAIN BREAKER DERATE: NO

**RACKING & MOUNTING**

PV ATTACHMENT TYPE: IRONRIDGE FLASHVUE FOR COMP SHINGLE ROOF

RACKING TYPE: IRONRIDGE XR10 RAIL ROOF MOUNT RACKING HARDWARE

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**COORDINATES:**
**35.479282, -78.833908**

**AERIAL VIEW**


BYLD BETTER

**CONTRACTOR**

**BYLD**

**ADDRESS:1213W MOOREHEAD ST, STE500 CHARLOTTE, NC 28208**
**LICENSE #:**

**DESIGNER:** ORG

**JOHN SCHMIDT RESIDENCE**

23 HAMILTON FARM CIR,
FUQUAY-VARINA,
NC 27526

DATE:7/12/2023
APN:0806430050

DESIGN BY

CompleteSolar
A Brighter Way.

SHEET
T-1
COVER SHEET

**1.1. PROJECT NOTES:**

1.2. THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE (NEC) ARTICLE 690, ALL MANUFACTURER'S LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION'S (AHJ) APPLICABLE CODES.

1.3. THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION

1.4. GROUND FAULT DETECTION AND INTERRUPTION (GFDI) DEVICE IS INTEGRATED WITH THE MICROINVERTER IN ACCORDANCE WITH NEC 690.5(A)

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 & NEC 690.60: 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

1.6. MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC. IF UNAVAILABLE, MAX DC VOLTAGE CALCULATED ACCORDING TO NEC 690.7.

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 (D). SHALL BE INSTALLED ACCORDING TO ANY INSTRUCTIONS FROM LISTING OR LABELING [NEC 110.3].

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.

**1.9. SCOPE OF WORK:**

1.10. 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.

**1.11. WORK INCLUDES:**

1.12. PV ROOF ATTACHMENTS - IRONRIDGE FLASHVUE FOR COMP SHINGLE ROOF

1.13. PV RACKING SYSTEM INSTALLATION - IRONRIDGE XR10 RAIL ROOF MOUNT RACKING HARDWARE

1.14. PV MODULE AND INVERTER INSTALLATION - TRINA SOLAR TSM-395 DE09.05 (395W) [BLK] MODULES/ NORTHERN ELECTRIC BDM-600X(BDM-300X2X) MICROINVERTERS

1.15. PV EQUIPMENT GROUNDING

1.16. PV SYSTEM WIRING TO A ROOF-MOUNTED JUNCTION BOX

1.17. PV LOAD CENTERS (IF INCLUDED)

1.18. PV METERING/MONITORING (IF INCLUDED)

1.19. PV DISCONNECTS

1.20. PV GROUNDING ELECTRODE & BONDING TO (E) GEC

1.21. PV FINAL COMMISSIONING

1.22. (E) ELECTRICAL EQUIPMENT RETROFIT FOR PV

1.23. SIGNAGE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE

**1.24. SITE NOTES:**

1.25. A LADDER WILL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.

1.26. THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.

1.27. THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.

1.28. PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION NEC 110.26.

1.29. 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.

**1.30. EQUIPMENT LOCATIONS:**

1.31. ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY NEC 110.26.

1.32. 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)

1.33. JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES ACCORDING TO NEC 690.34.

1.34. ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT.

1.35. ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.

1.36. ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.

**1.37. STRUCTURAL NOTES:**

1.38. RACKING SYSTEM

1.39. PV ARRAY WILL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL. TOP CLAMPS REQUIRE A DESIGNATED SPACE BETWEEN MODULES, AND RAILS MUST ALSO EXTEND

1.40. A MINIMUM DISTANCE BEYOND EITHER EDGE OF THE ARRAY/SUBARRAY, ACCORDING TO RAI MANUFACTURER'S INSTRUCTIONS.

1.41. JUNCTION BOX WILL BE INSTALLED PER MANUFACTURERS' SPECIFICATIONS. IF ROOF-PENETRATING TYPE, IT SHALL BE FLASHED SEALED PER LOCAL REQUIREMENTS.

1.42. ROOFTOP PENETRATIONS FOR PV RACEWAY WILL BE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.

1.43. ALL PV RELATED ROOF ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER.

1.44. WHEN POSSIBLE, ALL PV RELATED RACKING ATTACHMENTS WILL BE STAGGERED AMONGST THE ROOF FRAMING MEMBERS.

**1.45. WIRING & CONDUIT NOTES:**

1.46. 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.

1.47. CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7.

1.48. VOLTAGE DROP LIMITED TO 1.5%.

1.49. DC WIRING LIMITED TO MODULE FOOTPRINT. MICROINVERTER WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY W/ SUITABLE WIRING CLIPS.

1.50. 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

**1.51. GROUNDING NOTES:**

1.52. GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVISES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.

1.53. PV EQUIPMENT SHALL BE GROUNDED ACCORDING TO NEC 690.43 AND MINIMUM NEC TABLE 250.122.

1.54. METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURES CONSIDERED GROUNDED IN ACCORD WITH 250.134 AND 250.136(A).

1.55. EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC 690.45 AND MICROINVERTER MANUFACTURER'S INSTRUCTIONS.

1.56. EACH MODULE WILL BE GROUNDED USING WEEB GROUNDING CLIPS AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ. IF WEEBS ARE NOT USED, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE SPECIFIED GROUNDING LUG HOLES PER THE MANUFACTURER'S INSTALLATION REQUIREMENTS.

1.57. 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.

1.58. GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER [NEC 250.119]

1.59. 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.

1.60. GROUND-FAULT DETECTION SHALL COMPLY WITH NEC 690.5 IN GENERAL AND NEC 690.5 (A)(1) SPECIFICALLY.

**1.61. DISCONNECTION AND OVER-CURRENT PROTECTION NOTES:**

1.62. DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).

1.63. DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH

1.64. RAPID SHUTDOWN OF ENERGIZED CONDUCTORS BEYOND 10 FT OF PV ARRAY OR 5 FT INSIDE A BUILDING WITHIN 10 SECONDS. CONTROLLED CONDUCTORS ≤30V AND ≤240VA [NEC 690.12]. LOCATION OF LABEL ACCORDING TO AHJ

1.65. ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690.8, 690.9, AND 240.

1.66. MICROINVERTER BRANCHES CONNECTED TO A SINGLE BREAKER OR GROUPED FUSES IN ACCORDANCE WITH NEC 110.3(B).

1.67. IF REQUIRED BY AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION ACCORDING TO NEC 690.11 AND UL1699B.

**1.68. INTERCONNECTION NOTES:**

1.69. LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH [NEC 690.64 (B)]

1.70. THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS INPUT MAY NOT EXCEED 120% OF BUSBAR RATING [NEC 705.12(D)(2)(3)].

1.71. WHEN SUM OF THE PV SOURCES EQUALS >100% OF BUSBAR RATING, PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE OCPD [NEC 705.12(D)(2)(3)].

1.72. AT MULTIPLE PV 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 (D)(2)(3)(C).

1.73. FEEDER TAP INTERCONNECTION (LOAD SIDE) ACCORDING TO NEC 705.12 (D)(2)(1)

1.74. SUPPLY SIDE TAP INTERCONNECTION ACCORDING TO NEC 705.12 (A) WITH SERVICE ENTRANCE CONDUCTORS AND EQUIPMENT WITH NEC 230.42

1.75. BACKFEEDING BREAKER FOR UTILITY-INTERACTIVE INVERTER OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING NEC 705.12

NORTH CAROLINA PROFESSIONAL SEAL 040546 ENGINEER SCOTT E. WYSSLING

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Signed 7/12/2023

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BYLD BETTER

CONTRACTOR

**BYLD**

**ADDRESS:1213W MOOREHEAD ST, STE500 CHARLOTTE, NC 28208**
**LICENSE #:**

**DESIGNER:** ORG

**JOHN SCHMIDT RESIDENCE**

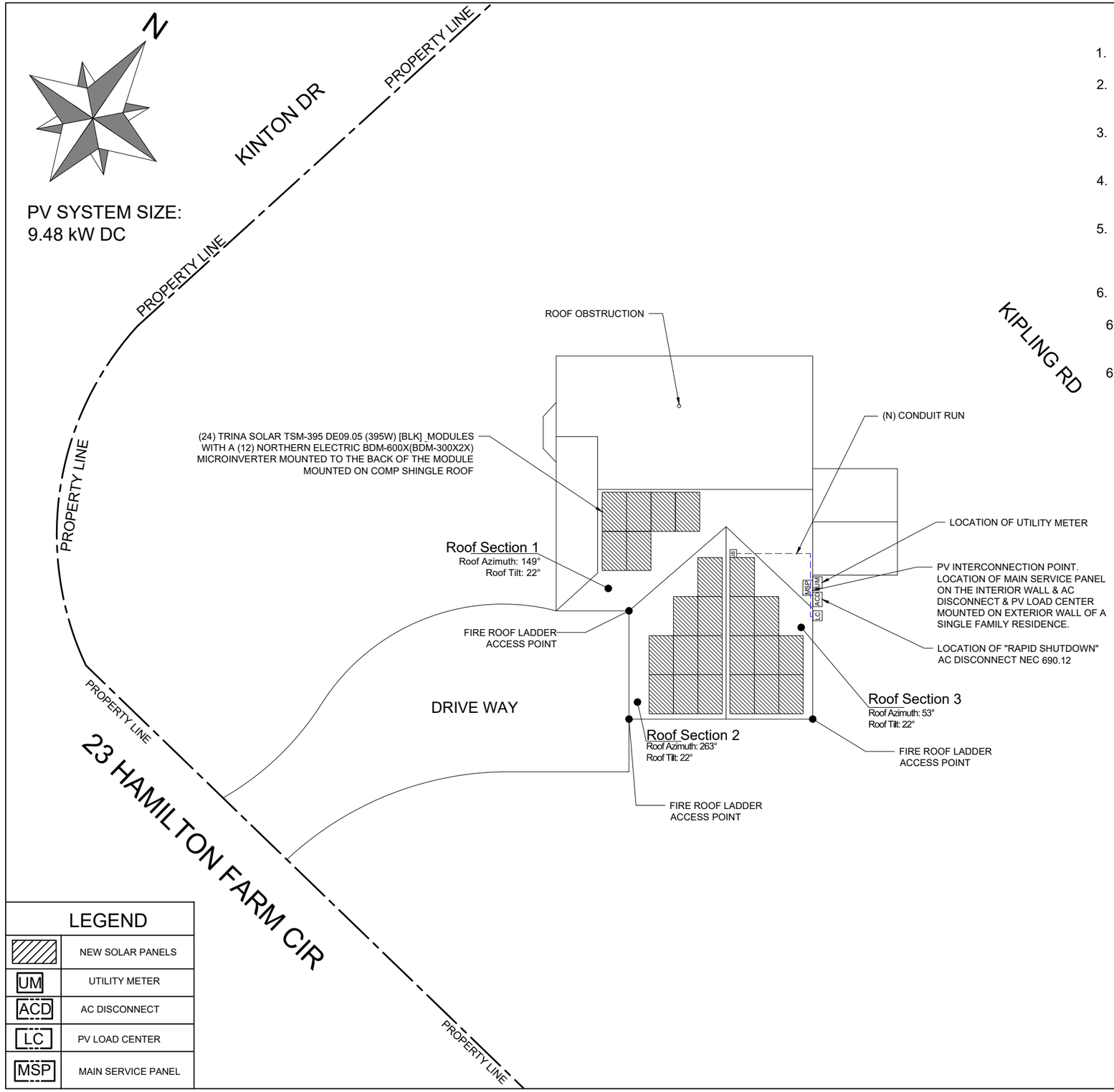
23 HAMILTON FARM CIR,
FUQUAY-VARINA,
NC 27526

DATE:7/12/2023
APN:0806430050

DESIGN BY

CompleteSolar
A Brighter Way.

SHEET
T-2
PLAN NOTES




## CONSTRUCTION NOTES

1. SOLAR PHOTOVOLTAIC SYSTEM TO BE INSTALLED ON RESIDENTIAL STRUCTURE.
2. THIS PROJECT HAS BEEN DESIGNED IN COMPLIANCE WITH THE IBC SECTION 1609 TO WITHSTAND A BASIC , WIND EXPOSURE B.
3. THE ROOF MEMBERS ARE 2"X6" RAFTERS AT 16" ON CENTER. CONNECTION TO STRUCTURE SHALL NOT BE WITHIN 11" OF NAILING PLATES.
4. THE SOLAR PHOTOVOLTAIC INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
5. ALL CONDUCTORS AND CONDUITS MOUNTED ON ROOF SHALL BE MINIMUM 7/8" ABOVE ROOF SURFACE (INCLUDING CABLES UNDERNEATH MODULES AND RACKING).
6. ROOF ACCESS POINTS SHALL BE PROVIDED PER THE FOLLOWING
   - 6.1. LOCATED IN AREAS NOT REQUIRING PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS DOORS OR WINDOWS.
   - 6.2. LOCATED AT STRONG POINTS OF CONSTRUCTION IN LOCATIONS WHERE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS: TREES, WIRES, OR SIGNS.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## PV SYSTEM SITE PLAN

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

BYLD BETTER

**CONTRACTOR**

**BYLD**

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**LICENSE #:**

**DESIGNER:** ORG

**JOHN SCHMIDT RESIDENCE**

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NC 27526

DATE:7/12/2023
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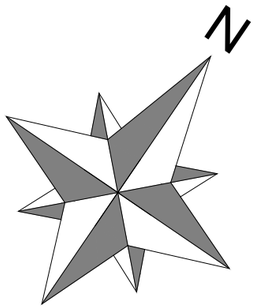
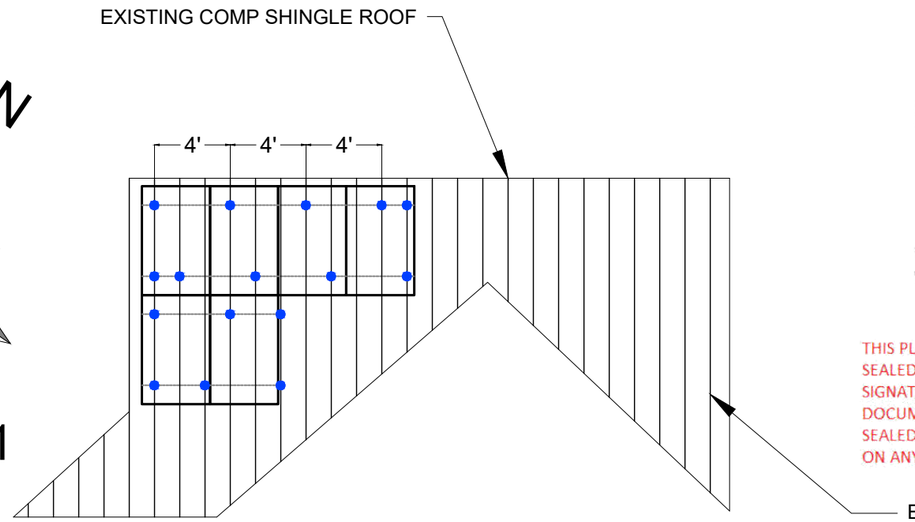
SHEET
PV-1
SITE PLAN LAYOUT




## Roof Section 1
Roof Azimuth: 149°
Roof Tilt: 22°





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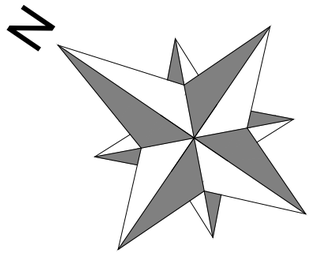
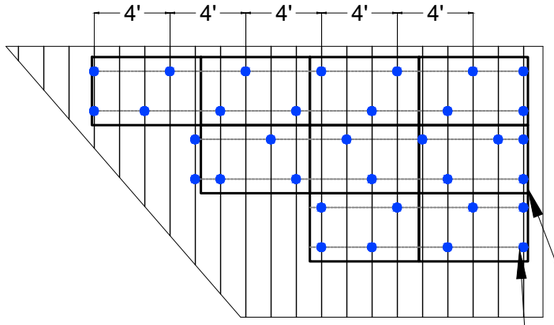
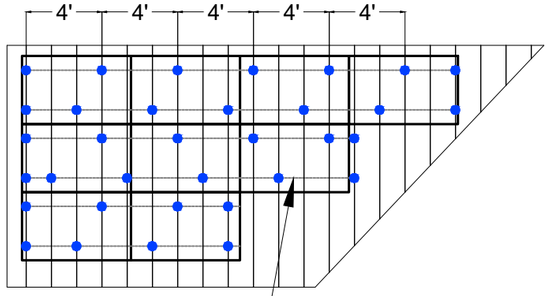
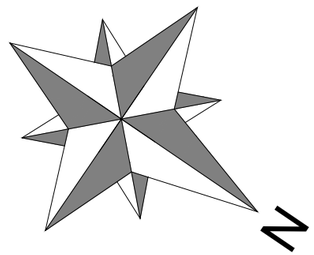



## Roof Section 2
Roof Azimuth: 263°
Roof Tilt: 22°




## Roof Section 3
Roof Azimuth: 53°
Roof Tilt: 22°

PV SYSTEM MOUNTING DETAILS

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

BYLD BETTER

**CONTRACTOR**

**BYLD**

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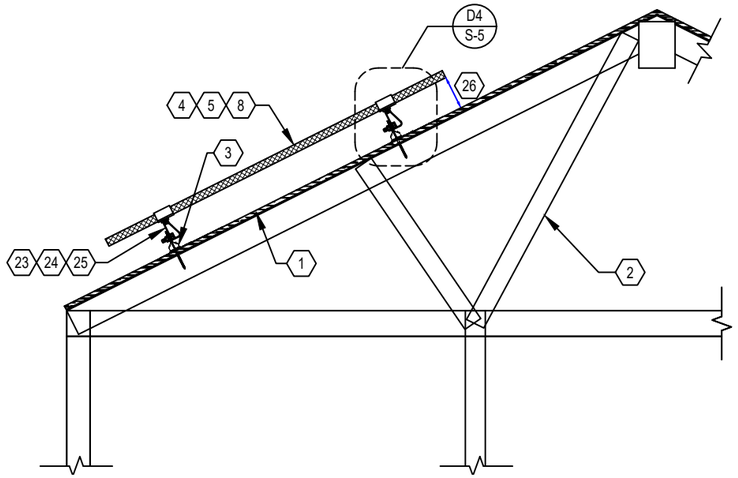
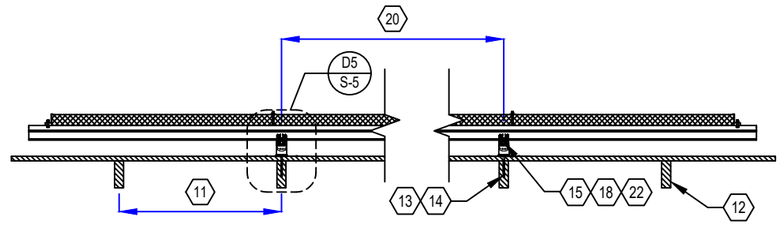
SHEET
PV-2
ATTACHMENT DETAILS



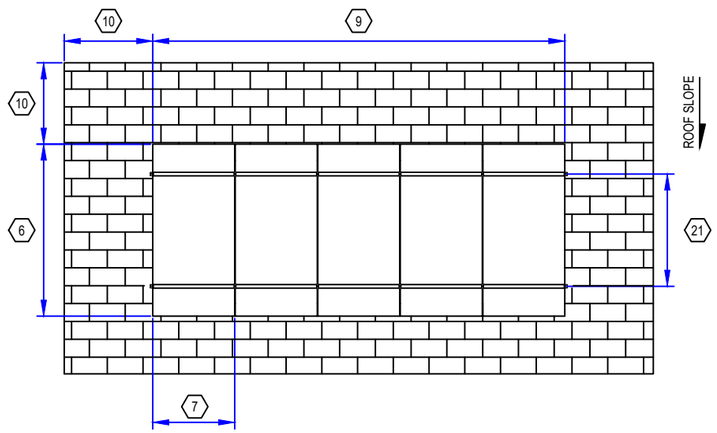

## D1 RACKING DETAIL (TRANSVERSE)

NOT TO SCALE



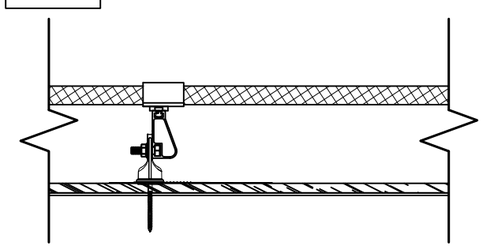

## D2 RACKING DETAIL (LONGITUDINAL)

NOT TO SCALE



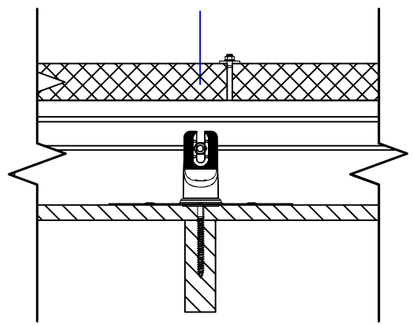

## D3 RACKING DETAIL (TOP)

NOT TO SCALE



## D4 DETAIL (TRANSVERSE)

NOT TO SCALE



## D5 DETAIL (LONGITUDINAL)

NOT TO SCALE


Wyssling Consulting, PLLC
76 N Meadowbrook Drive Alpine UT 84004
North Carolina COA # P-2308
Signed 7/12/2023

THIS PLAN HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY SCOTT WYSSLING, PE USING A DIGITAL SIGNATURE AND DATE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

1. ROOF MATERIAL: COMP SHINGLE
2. ROOF STRUCTURE: RAFTERS
3. ATTACHMENT TYPE: IRONRIDGE FLASHVUE
4. MODULE MANUFACTURER: TRINA SOLAR
5. MODULE MODEL: TSM-395 DE09.05 (395W) [BLK]
6. MODULE LENGTH: 69.05"
7. MODULE WIDTH: 43.14"
8. MODULE WEIGHT: 46.29 LBS.
9. SEE SHEET S-1 FOR DIMENSION(S)
10. MIN. FIRE OFFSET
11. RAFTERS SPACING: 16" O.C.
12. RAFTERS SIZE: 2"X6" NOMINAL
13. LAG BOLT DIAMETER: 5/16 IN.
14. LAG BOLT EMBEDMENT: 2.5 IN.
15. TOTAL # OF ATTACHMENTS: 84
16. TOTAL AREA: 496.47 SQ. FT.
17. TOTAL WEIGHT: 1110.96LBS.
18. WEIGHT PER ATTACHMENT: 13.23 LBS.
19. DISTRIBUTED LOAD: 2.24 PSF
20. MAX. HORIZONTAL STANDOFF: 48 IN.
21. MAX. VERTICAL STANDOFF: LANDSCAPE: 25 IN., PORTRAIT: 46 IN.
22. STANDOFF STAGGERING: YES
23. RAIL MANUFACTURER AND MODEL (OR EQUIV.):IRONRIDGE XR10 RAIL
24. RAIL WEIGHT: 0.436 PLF.
25. MAX. RAFTERS SPAN: 12 FT.
26. MODULE CLEARANCE: 3 IN. MIN., 6 IN. MAX.

BYLD BETTER

**CONTRACTOR**

**BYLD**

**ADDRESS:1213W MOOREHEAD ST, STE500 CHARLOTTE, NC 28208**
**LICENSE #:**

**DESIGNER:** ORG

**JOHN SCHMIDT RESIDENCE**

23 HAMILTON FARM CIR,
FUQUAY-VARINA,
NC 27526

DATE:7/12/2023
APN:0806430050

DESIGN BY

CompleteSolar
A Brighter Way.

SHEET
PV-3
MOUNTING DETAILS

## PV Module Ratings @ STC

| | |
|---|---|
| Module Make/Model | TRINA SOLAR TSM-395 DE09.05 (395W) [BLK] |
| Max Power-Point Current (Imp) | 11.62A |
| Max Power-Point Voltage (Vmp) | 34.0V |
| Open-Circuit Voltage (Voc) | 41.0V |
| Short-Circuit Current (Isc) | 12.21A |
| Max Series Fuse (OCPD) | 20A |
| Nominal Maximum Power at STC (Pmax) | 395W |
| Maximum System Voltage | 1500V |
| Voc Temperature Coefficient | -0.25 %/K |

## SYSTEM SUMMARY

| | BRANCH #1 | BRANCH #2 |
|---|---|---|
| INVERTERS PER BRANCH | 6 | 6 |
| MAX CONTINUOUS OUTPUT CURRENT | 14.52A | 14.52A |
| MAX CONTINUOUS OUTPUT POWER | 3480W | 3480W |
| ARRAY STC POWER | | 9480W |
| ARRAY PTC POWER | | 8928.0W |
| MAX CONTINUOUS OUTPUT CURRENT | | 29.04A |
| MAX CONTINUOUS OUTPUT POWER | | 6960W |
| DERATED (CEC) AC POWER | | 8526.24W |

## Inverter Ratings

| | |
|---|---|
| Inverter Make/Model | NORTHERN ELECTRIC BDM-600X(BDM-300X2X) |
| Max DC Volt Rating | 60V |
| Max Continuous Output Power | 580W |
| Max Nominal Voltage | 240V |
| Max Continuous Output Current Current | 2.42A |
| Max OCPD Rating | 20A |

## DESIGN TEMPERATURES

| | |
|---|---|
| ASHRAE EXTREME LOW | -12°C |
| ASHRAE 2% HIGH | 34°C |

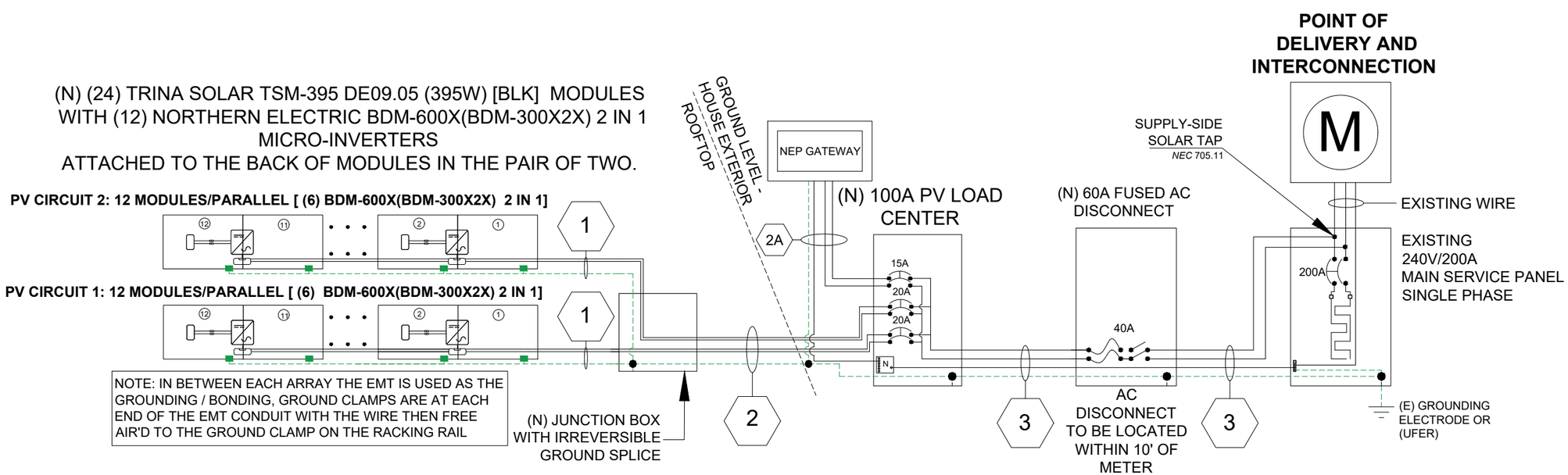
## Conduit and Conductor Schedule

| Tag | Description | Wire Gauge | # of Conductors | Conduit Type | Conduit Size |
|---|---|---|---|---|---|
| 1 | PV Cable | 10 AWG | 2 | N/A - Free Air | N/A - Free Air |
| 1 | Bare Copper Ground (EGC/GEC) | 6 AWG | 1 | N/A - Free Air | N/A - Free Air |
| 2 | THWN-2 | 10 AWG | 4 | EMT | 3/4" |
| 2 | THWN-2 - Ground | 10 AWG | 1 | EMT | 3/4" |
| 2A | THWN-2 | 14 AWG | 3 | N/A - Free Air | N/A - Free Air |
| 2A | THWN-2 - Ground | 14 AWG | 1 | N/A - Free Air | N/A - Free Air |
| 3 | THWN-2 | 8 AWG | 3 | EMT | 3/4" |
| 3 | THWN-2 - Ground | 10 AWG | 1 | EMT | 3/4" |

METER # 325332429

MAIN SERVICE PANEL
SUPPLY SIDE TAP
NEC 705. 11 SUPPLY SIDE.
POWER PRODUCTION SOURCES

(N) (24) TRINA SOLAR TSM-395 DE09.05 (395W) [BLK] MODULES
WITH (12) NORTHERN ELECTRIC BDM-600X(BDM-300X2X) 2 IN 1
MICRO-INVERTERS
ATTACHED TO THE BACK OF MODULES IN THE PAIR OF TWO.

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DATE:7/12/2023
APN:0806430050

DESIGN BY

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A Brighter Way.

SHEET
E-1
ELECTRICAL DIAGRAM

**⚠ WARNING**

ELECTRICAL SHOCK HAZARD

TERMINALS ON LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION:
INVERTER(S), AC DISCONNECT(S), AC COMBINER PANEL (IF APPLICABLE).
PER CODE(S): NEC : 690.13(B), NEC 2014: 690.17(E), NEC : 690.17(4)

**RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM**

LABEL LOCATION:
UTILITY SERVICE ENTRANCE/METER, INVERTER/DC DISCONNECT IF REQUIRED BY LOCAL AHJ, OR OTHER LOCATIONS AS REQUIRED BY LOCAL AHJ.
PER CODE(S): NEC : 690.56(C)(3), NEC : 690.12, NEC 690.56, IFC 2012: 605.11.1, IFC 2018: 1204.5.3

**⚠ WARNING**

POWER SOURCE OUTPUT CONNECTION

DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
ADJACENT TO PV BREAKER (IF APPLICABLE).
PER CODE(S): NEC : 705.12(B)(3)(2), NEC : 705.12(B)(2)(3)(b), NEC : 705.12(D)(2)(3)(b)

**⚠ WARNING**

THIS EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES, EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE, SHALL NOT EXCEED AMPACITY OF BUSBAR.

LABEL LOCATION:
AC DISCONNECT(S), PHOTOVOLTAIC SYSTEM POINT OF INTERCONNECTION.
PER CODE(S): NEC : 690.54, NEC : 690.54, NEC : 690.54

**MAIN PHOTOVOLTAIC SYSTEM DISCONNECT**

LABEL LOCATION: PV SYSTEM DISCONNECT
PER CODE(S): NEC 690.13(B)

**⚠ WARNING**

DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:
MAIN SERVICE PANEL (IF APPLICABLE).
PER CODE(S): NEC : 705.12(C) & 690.59

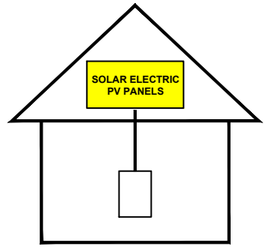
**GENERATION DISCONNECT SWITCH**

MAXIMUM AC OPERATING CURRENT: 29.04 AMPS
NOMINAL OPERATING AC VOLTAGE: 240.0 VAC

LABEL LOCATION:
AC DISCONNECT(S), PHOTOVOLTAIC SYSTEM POINT OF INTERCONNECTION.
PER CODE(S): NEC : 690.54

**SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN**

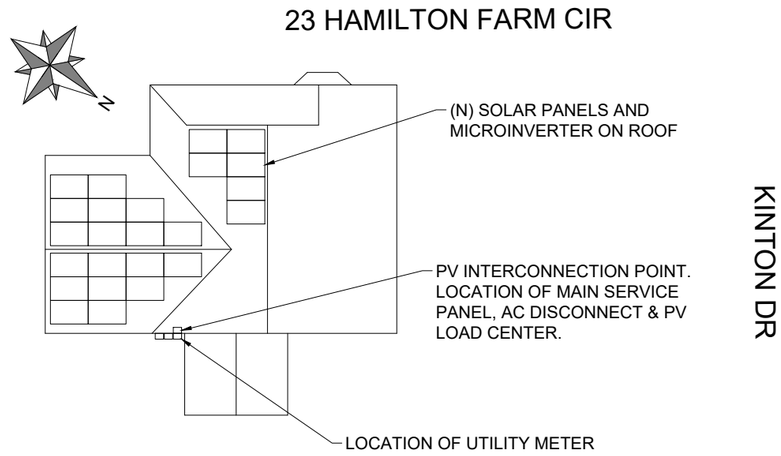
TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY.




LABEL LOCATION:
ON OR NO MORE THAT 3 M (10 FT) FROM THE SERVICE DISCONNECTING MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED.
PER CODE(S): NEC : 690.56(C)(1)(a)

# CAUTION:

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




PERMANENT SIGNAGE NOTES:

1. NOT ALL PLACARDS SHOWN MAY BE REQUIRED BY LOCAL AHJ. CONTRACTOR TO VERIFY PLACARD REQUIREMENTS WITH LOCAL AHJ BEFORE INSTALLATION.
2. ALL PLAQUES AND SIGNAGE REQUIRED BY THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE
3. ALTERNATE POWER SOURCE PLACARD SHALL BE METALLIC OR MACHINE PRINTED LETTERS IN A CONTRASTING COLOR TO THE PLAQUE. THIS PLAQUE WILL BE ATTCHED BY POP RIVETS OR SCREWS OR OTHER APPROVED METHOD.
4. DIRECTORY PLACARD MARKING CONTENT AND FORMAT: RED BACKGROUND, WHITE LETTERING, MINIMUM 3/8" LETTER HIEGHT, ALL CAPITAL LETTERS, ARIAL OR SIMILAR FONT, NON BOLD, REFLECTIVE WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT.

BYLD BETTER

**CONTRACTOR**

**BYLD**

**ADDRESS:1213W MOOREHEAD ST, STE500 CHARLOTTE, NC 28208**
**LICENSE #:**

**DESIGNER:** ORG

**JOHN SCHMIDT RESIDENCE**

23 HAMILTON FARM CIR,
FUQUAY-VARINA,
NC 27526

DATE:7/12/2023
APN:0806430050

DESIGN BY

CompleteSolar
A Brighter Way.

SHEET
E-2
WARNING LABELS

# Vertex S

**BACKSHEET MONOCRYSTALLINE MODULE**

PRODUCT: TSM-DE09.05
POWER RANGE: 380-395 W

| 395 W+ | 0/+5 W | 20.5 % |
|---|---|---|
| MAXIMUM POWER OUTPUT | POSITIVE POWER TOLERANCE | MAXIMUM EFFICIENCY |

### Outstanding Visual Appearance
- Designed with aesthetics in mind
- Ultra-thin, virtually invisible busbars
- Excellent cell color control by machine selection

### Small in size, big on power
- Generates up to 395 W, 20.5 % module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping, lower series resistance, improved current collection and enhanced reliability
- Excellent low light performance (IAM) with cell process and module material optimization

### Universal solution for residential and C&I rooftops
- Designed for compatibility with existing mainstream inverters, optimizers and mounting systems
- Perfect size and low weight for easy handling. Optimized transportation cost
- Reduces installation cost with higher power bin and efficiency
- Flexible installation solutions for system deployment

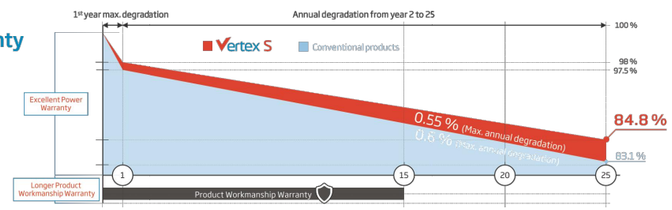
### High Reliability
- 6,000 Pa snow load (test load)
- 4,000 Pa wind load (test load)

## Extended Vertex S Warranty

**2 %**
1st year max. degradation

**0.55 %**
Max. annual degradation from year 2 to 25

**15 Years**
Product Workmanship Warranty



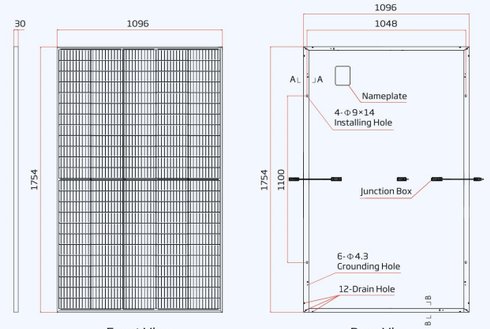

## Comprehensive Product and System Certificates

IEC61215/IEC61730/IEC61701/IEC62716
ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO14064: Greenhouse Gases Emissions Verification
ISO45001: Occupational Health and Safety Management System

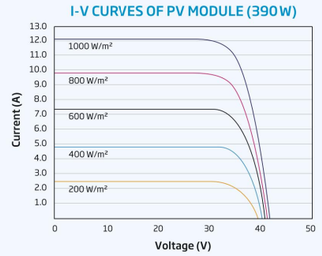
Trinasolar

# Vertex S

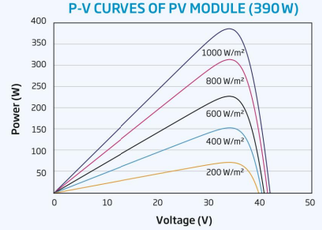
### DIMENSIONS OF PV MODULE (mm)




### I-V CURVES OF PV MODULE (390 W)




### P-V CURVES OF PV MODULE (390 W)




| ELECTRICAL DATA (STC) | TSM-380 DE09.05 | TSM-385 DE09.05 | TSM-390 DE09.05 | TSM-395 DE09.05 |
|---|---|---|---|---|
| Peak Power Watts-PMAX (Wp)* | 380 | 385 | 390 | 395 |
| Power Tolerance-PMAX (W) | 0/+5 | 0/+5 | 0/+5 | 0/+5 |
| Maximum Power Voltage-VMPP (V) | 33.4 | 33.6 | 33.8 | 34.0 |
| Maximum Power Current-IMPP (A) | 11.38 | 11.46 | 11.54 | 11.62 |
| Open Circuit Voltage-VOC (V) | 40.4 | 40.6 | 40.8 | 41.0 |
| Short Circuit Current-ISC (A) | 12.00 | 12.07 | 12.14 | 12.21 |
| Module Efficiency η m (%) | 19.8 | 20.0 | 20.3 | 20.5 |

STC: Irradiance 1000 W/m², Cell Temperature 25 °C, Air Mass AM1.5 *Measuring tolerance: ±3%

| ELECTRICAL DATA (NOCT) | TSM-380 DE09.05 | TSM-385 DE09.05 | TSM-390 DE09.05 | TSM-395 DE09.05 |
|---|---|---|---|---|
| Maximum Power-PMAX (Wp) | 286 | 290 | 294 | 298 |
| Maximum Power Voltage-VMPP (V) | 31.4 | 31.6 | 31.8 | 31.9 |
| Maximum Power Current-IMPP (A) | 9.12 | 9.18 | 9.24 | 9.32 |
| Open Circuit Voltage-VOC (V) | 38.0 | 38.2 | 38.4 | 38.6 |
| Short Circuit Current-ISC (A) | 9.67 | 9.73 | 9.78 | 9.84 |

NOCT: Irradiance at 800 W/m², Ambient Temperature 20 °C, Wind Speed 1 m/s.

### MECHANICAL DATA

| | |
|---|---|
| Solar Cells | Monocrystalline |
| No. of cells | 120 cells |
| Module Dimensions | 1754×1096×30 mm |
| Weight | 21.0 kg |
| Glass | 3.2 mm, High Transmission, AR Coated Heat Strengthened Glass |
| Encapsulant material | EVA/POE |
| Backsheet | Black-White |
| Frame | 30 mm Anodized Aluminium Alloy |
| J-Box | IP 68 rated |
| Cables | Photovoltaic Technology Cable 4.0 mm²<br>Landscape: 1100/1100 mm<br>Portrait: 280/280 mm* |
| Connector | TS4/MC4 EVO2* |

*Special order only

### TEMPERATURE RATINGS

| | |
|---|---|
| NOCT(Nominal Operating Cell Temperature) | 43 °C (±2 K) |
| Temperature Coefficient of PMAX | -0.34 %/K |
| Temperature Coefficient of VOC | -0.25 %/K |
| Temperature Coefficient of ISC | 0.04 %/K |

### MAXIMUM RATINGS

| | |
|---|---|
| Operational Temperature | -40 to +85 °C |
| Maximum System Voltage | 1500 V DC (IEC) |
| Max Series Fuse Rating | 20 A |

### WARRANTY

15 Year product workmanship warranty
25 Year power warranty
2 % First year degradation
0.55 % Annual power degradation

(Please refer to the applicable limited warranty for details)

### PACKAGING CONFIGURATION

| | |
|---|---|
| Modules per box | 36 pieces |
| Modules per 40' container | 936 pieces |

Trinasolar


Version number: TSM_EN_2021_B

www.trinasolar.com

BYLD BETTER

**CONTRACTOR**

**BYLD**

**ADDRESS:1213W MOOREHEAD ST, STE500 CHARLOTTE, NC 28208**
**LICENSE #:**

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23 HAMILTON FARM CIR,
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DATE:7/12/2023
APN:0806430050

DESIGN BY

CompleteSolar
A Brighter Way.

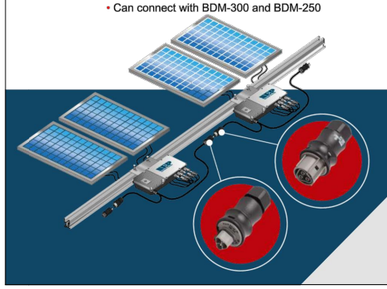
SHEET
S-1
SPEC SHEET

NORTHERN ELECTRIC

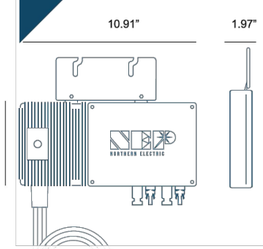
# BDM-600X (BDM-300X2X) MICROINVERTER

## Features

- Low cost $/watt micro inverter
- High continuos output power up to 580Wac, recommended for dua max 450W solar panel
- High efficiency with 95.5% CEC
- Globally certified for UL1741, SAA, TUV, VDE-AR-N 4105, VDE 0126, G83/2, CEL 021, IEC61727, EN50438
- Integrated grounding for easy installation
- NEMA-6/IP-66/IP-67 enclosure rating
- Integrated monitoring and power line communication with RDG-256 gateway
- Can connect with BDM-300 and BDM-250




northernep.com




c ETL us Intertek 4005622 CE TÜV SAA 152167

## Important product information

- NEP is committed to developing Clean, Affordable, Reliable and Efficient (CARE) products for our customers worldwide.
- NEP microinverters have an isolation transformer and basic isolation between the DC input and the AC output network.

NORTHERN ELECTRIC

# BDM-600X (BDM-300X2X) MICROINVERTER


* Grid parameters are configurable through a BDG-256 or BDG-256P3 gateway
* All NEC required adjustment factors have been considered for AC outputs. AC current outputs will not exceed stated values for Rated Output AC Current

COMPLIANCE
*NEC 2014 Section 690.11 DC Arc-Fault Circuit Protection
*NEC 2014 Section 690.12 Rapid Shutdown of PV Systems on Buildings
*NEC 2014 Section 705.12 Point of Connection (AC Arc-Fault Protection)

| | | | | |
|---|---|---|---|---|
| INPUT(DC) | Recommended Max PV Power (Wp) | 450 x 2 | | |
| | Max DC Open Circuit Voltage (Vdc) | 60 | | |
| | Max DC Input Current (Adc) | 14 x 2 | | |
| | MPPT Tracking Accuracy | >99.5% | | |
| | MPPT Tracking Range (Vdc) | 22-55 | | |
| | Isc PV (absolute maximum) (Adc) | 18 x 2 | | |
| | Maximum Inverter Backfeed Current to the Array (Adc) | 0 | | |
| OUTPUT (AC) | Peak AC Output Power (Wp) | 580(continuous) | | |
| | Rated AC Output Power (Wp) | 500 | | |
| | Nominal Power Grid Voltage (Vac) | 240 | 208 | 230 |
| | Allowable Power Grid Voltage (Vac) | 211-264* | 183-229* | configurable* |
| | Allowable Power Grid Frequency (Hz) | 59.3 a 60.5* | | configurable* |
| | THD | <3% (at rated power) | | |
| | Power Factor (cos phi, fixed) | >0.99 (at rated power) | | |
| | Rated Output Current (Aac) | 2.42 | 2.78 | 2.52 |
| | Current (inrush)(Peak and Duration) | 24A, 15us | | |
| | Nominal Frequency (Hz) | 60 | | 50 |
| | Maximum Output Fault Current (Aac) | 4.4A peak | | |
| | Maximum Output Overcurrent Protection (Aac) | 10 | | |
| | Maximum Number of Units Per Branch (20A) (All NEC adjustment factors have been considered) | 7 | 6 | 6 |
| SYSTEM EFFICIENCY | Weighted Averaged Efficiency (CEC) | 95.50% | | |
| | Night Time Tare Loss (Wp) | 0.11 | | |
| PROTECTION FUNCTIONS | Over/Under Voltage Protection | Yes | | |
| | Over/Under Frequency Protection | Yes | | |
| | Anti-Islanding Protection | Yes | | |
| | Over Current Protection | Yes | | |
| | Reverse DC Polarity Protection | Yes | | |
| | Overload Protection | Yes | | |
| | Protection Degree | NEMA-6 / IP-66 / IP-67 | | |
| | Ambient Temperature | -40°F to +149°F (-40°C to +65°C) | | |
| | Operating Temperature | -40°F to +185°F (-40°C to +85°C) | | |
| | Display | LED LIGHT | | |
| | Comunications | Power Line | | |
| | Dimension (W-H-D) | 10.91"x5.20"x1.97"(277x132x50 mm) | | |
| | Weight | 6.4 lbs. (2.9 kg) | | |
| | Environment Category | Indoor and outdoor | | |
| | Wet Location | Suitable | | |
| | Pollution Degree | PD 3 | | |
| | Overvoltage Category | II(PV), III (AC MAINS) | | |
| | Product Safety Compliance | UL 1741<br>CSA C22.2<br>No. 107.1 | IEC/EN 62109-1<br>IEC/EN 62109-2 | |
| | Grid Code Compliance* (Refer to the label for the detailed grid code compliance) | IEEE 1547 | VDE-AR-N 4105*<br>VDE V 0126-1-1/A1<br>G83/2, CEI 021<br>AS 4777.2 & AS 4777.3,EN50438 | |

BYLD BETTER

**CONTRACTOR**

**BYLD**

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**DESIGNER:** ORG

**JOHN SCHMIDT RESIDENCE**

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DATE:7/12/2023
APN:0806430050

DESIGN BY

CompleteSolar
A Brighter Way.

SHEET
S-2
SPEC SHEET

Tech Brief

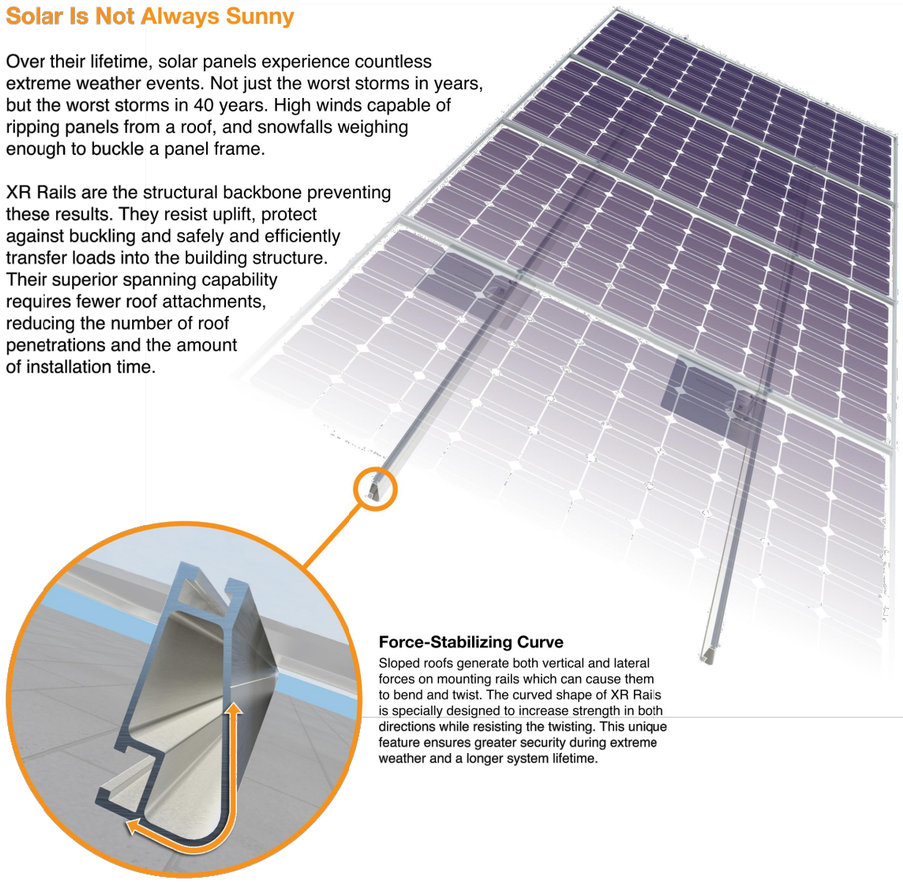
IRONRIDGE

# XR Rail Family

## Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.



**Force-Stabilizing Curve**

Sloped roofs generate both vertical and lateral forces on mounting rails which can cause them to bend and twist. The curved shape of XR Rails is specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

### Compatible with Flat & Pitched Roofs

XR Rails are compatible with FlashFoot and other pitched roof attachments.

IronRidge offers a range of tilt leg options for flat roof mounting applications.

### Corrosion-Resistant Materials

All XR Rails are made of 6000-series aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.

Tech Brief

## XR Rail Family

The XR Rail Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads, while minimizing material costs. Depending on your location, there is an XR Rail to match.

**XR10**

XR10 is a sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves spans up to 6 feet, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear & black anodized finish
- Internal splices available

**XR100**

XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 10 feet.

- 10' spanning capability
- Heavy load capability
- Clear & black anodized finish
- Internal splices available

**XR1000**

XR1000 is a heavyweight among solar mounting rails. It's built to handle extreme climates and spans up to 12 feet for commercial applications.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish
- Internal splices available

## Rail Selection

The table below was prepared in compliance with applicable engineering codes and standards.* Values are based on the following criteria: ASCE 7-16, Gable Roof Flush Mount, Roof Zones 1 & 2e, Exposure B, Roof Slope of 8 to 20 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed certification letters.

| Load | | Rail Span | | | | | |
|---|---|---|---|---|---|---|---|
| Snow (PSF) | Wind (MPH) | 4' | 5' 4" | 6' | 8' | 10' | 12' |
| None | 90 | XR10 | | XR100 | | XR1000 | |
| | 120 | | | | | | |
| | 140 | | | | | | |
| | 160 | | | | | | |
| 20 | 90 | | | | | | |
| | 120 | | | | | | |
| | 140 | | | | | | |
| | 160 | | | | | | |
| 30 | 90 | | | | | | |
| | 160 | | | | | | |
| 40 | 90 | | | | | | |
| | 160 | | | | | | |
| 80 | 160 | | | | | | |
| 120 | 160 | | | | | | |

*Table is meant to be a simplified span chart for conveying general rail capabilities. Use approved certification letters for actual design guidance.



BYLD BETTER

CONTRACTOR

**BYLD**

**ADDRESS:1213W MOOREHEAD ST, STE500 CHARLOTTE, NC 28208**
**LICENSE #:**

**DESIGNER:** ORG

**JOHN SCHMIDT RESIDENCE**

23 HAMILTON FARM CIR,
FUQUAY-VARINA,
NC 27526

DATE:7/12/2023
APN:0806430050

DESIGN BY

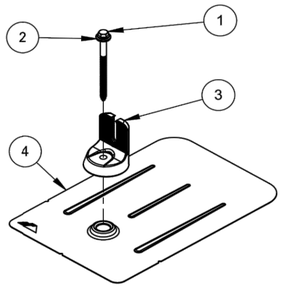
CompleteSolar
A Brighter Way.

SHEET
S-3
SPEC SHEET

Cut Sheet

IRONRIDGE

FlashVue

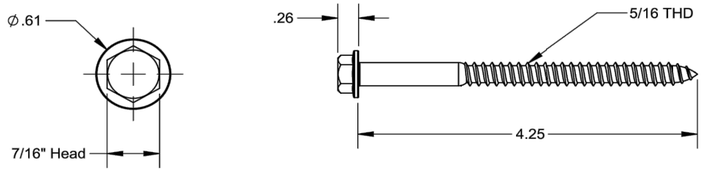



| ITEM NO | DESCRIPTION | QTY IN KIT |
|---|---|---|
| 1 | BOLT, LAG 5/16 X 4.25" | 1 |
| 2 | WASHER, EPDM BACKED | 1 |
| 3 | FM FLASHING, MILL OR BLACK | 1 |
| 4 | GRIP CAP, MILL OR BLACK | 1 |

**FLASHVUE**

| PART NUMBER | DESCRIPTION |
|---|---|
| FV-01-M1 | FLASHING, FLASHFOOT, MILL |
| FV-01-B1 | FLASHING, FLASHFOOT, BLACK |

1) BOLT, LAG 5/16 x 4.25"

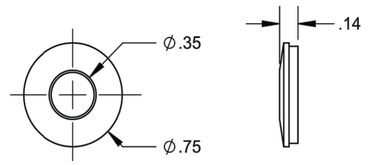



| Property | Value |
|---|---|
| Material | 300 Series Stainless Steel |
| Finish | Clear |

v1.0

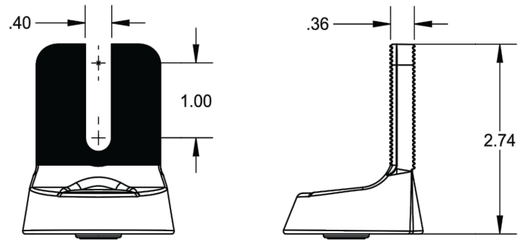
Cut Sheet

2) Washer, EPDM Backed



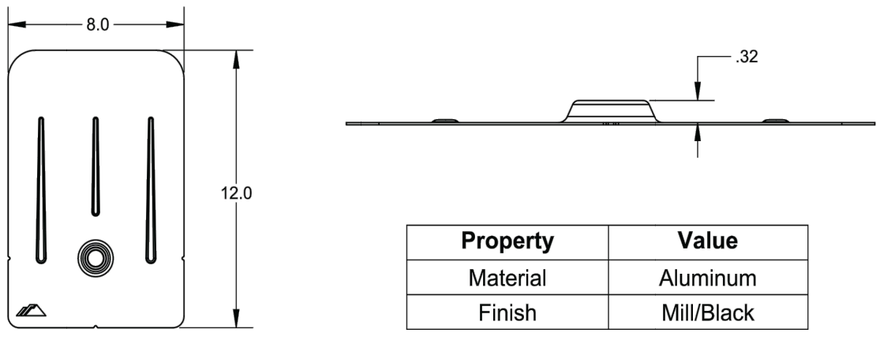

| Property | Value |
|---|---|
| Material | 300 Series Stainless Steel |
| Finish | Clear |

3) Grip Cap




| Property | Value |
|---|---|
| Material | Aluminum |
| Finish | Mill/Black |

4) FM Flashing




| Property | Value |
|---|---|
| Material | Aluminum |
| Finish | Mill/Black |

v1.0

BYLD BETTER

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SHEET
S-4
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