

PROJECT DESCRIPTION:

30 x 390 CANADIAN SOLAR CS3N390MS (390W) MODULES
ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES
SYSTEM SIZE: 11.7 kW DC STC

EQUIPMENT SUMMARY

(30) CANADIAN SOLAR CS3N390MS (390W) MODULES
(15) CHILICON POWER CP-720-60/72/96-208/240-MC4
MICRO-INVERTERS

GOVERNING CODES :

FLORIDA RESIDENTIAL CODE, 7TH EDITION 2020 (FRC)
FLORIDA PLUMBING CODE, 7TH EDITION 2020 (FPC)
FLORIDA BUILDING CODE, 7TH EDITION 2020 EDITION (FBC)
FLORIDA MECHANICAL CODE, 7TH EDITION 2020 (FMC)
2017 NATIONAL ELECTRICAL CODE
FLORIDA FIRE PREVENTION CODE, 7TH EDITION (FFPC)

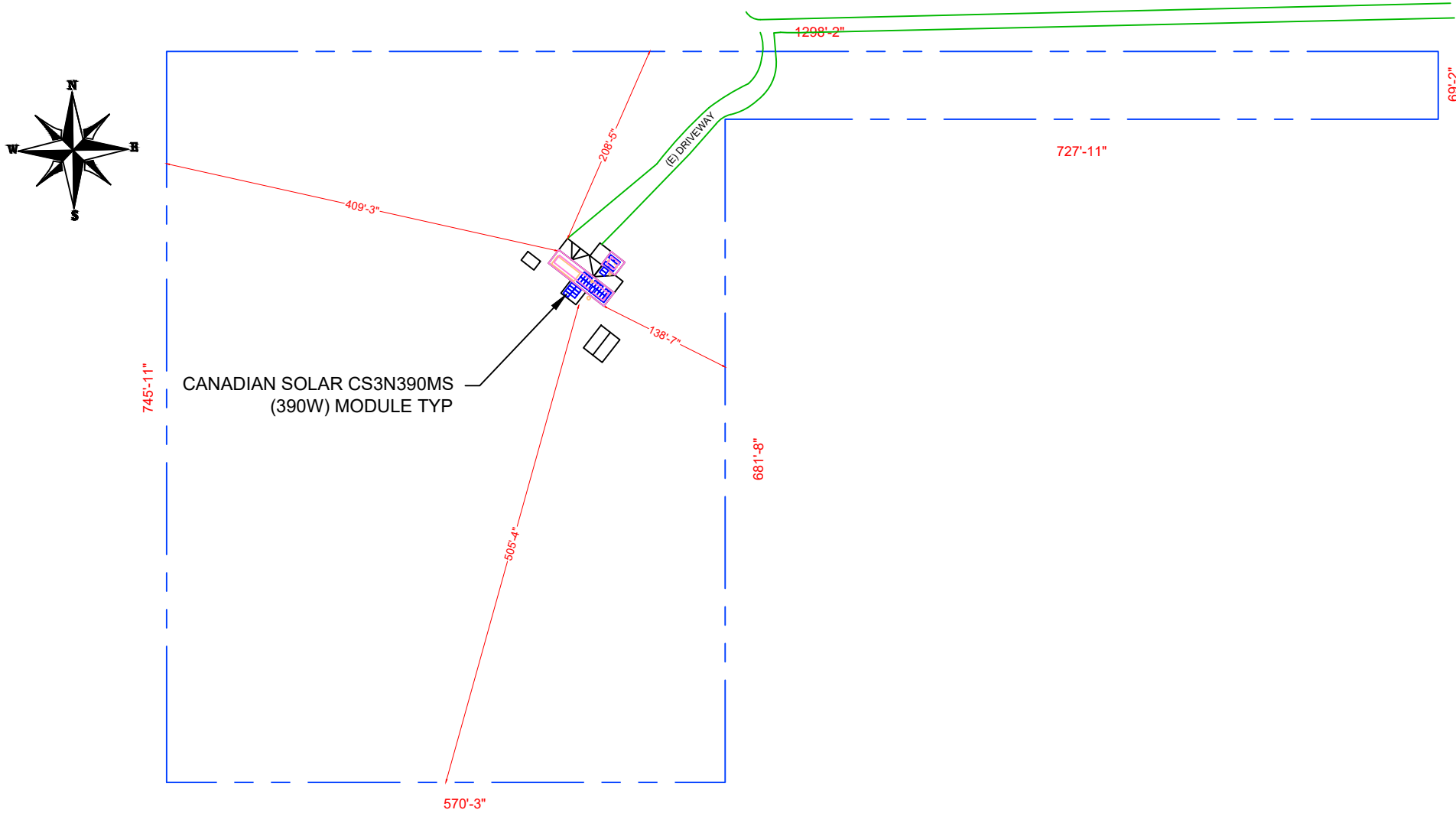
SHEET INDEX

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DISCLAIMER :
THE SET OF PLANS FOR THIS PROJECT IS FOR DESIGNING THE PROJECT FOR BUILDING CODE COMPLIANCE. THIS DOSE NOT EXPRESS OR IMPLY A PERFORMANCE GUARANTEE OF ANY KIND. CONTRACTOR RESPONSIBLE TO REVIEW AND APPROVE THE LAYOUT WITH THE END USER PRIOR TO INSTALLATION.

ALL DIMENSION AND CONDITION SHOWN ON THE SET OF PLANS IS BASED ON THE BEST POSSIBLE INFORMATION GIVEN. CONTRACTOR RESPONSIBLE TO FILED VERIFY ALL CONDITION IN THE FILED PRIOR TO INSTALLATION OR ACCEPTS FULL RESPONSIBLE

ASCE 7-16 WIND DESIGN CRITERIA
ULTIMATE WIND SPEED: 140 MPH
NOMINAL WIND SPEED: 109 MPH
WIND EXPOSURE: B
RISK CATEGORY: II



1 | PLOT PLAN WITH ROOF PLAN
A-00 | SCALE: 1"=190'-0"



2 | HOUSE PHOTO
A-00 | SCALE: NTS



3 | VICINITY MAP
A-00 | SCALE: NTS



SOLAR TREK INC.
3347 SW 7TH ST.
OCALA, FL 34474 USA

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	01-17-2023	01
LAYOUT	03-01-2023	02

PROJECT NAME

JOHN STANFIELD
524 SW OLD NIBLACK AVE
FORT WHITE, FL 32088

SHEET NAME
PLOT PLAN & VICINITY MAP

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
A-00

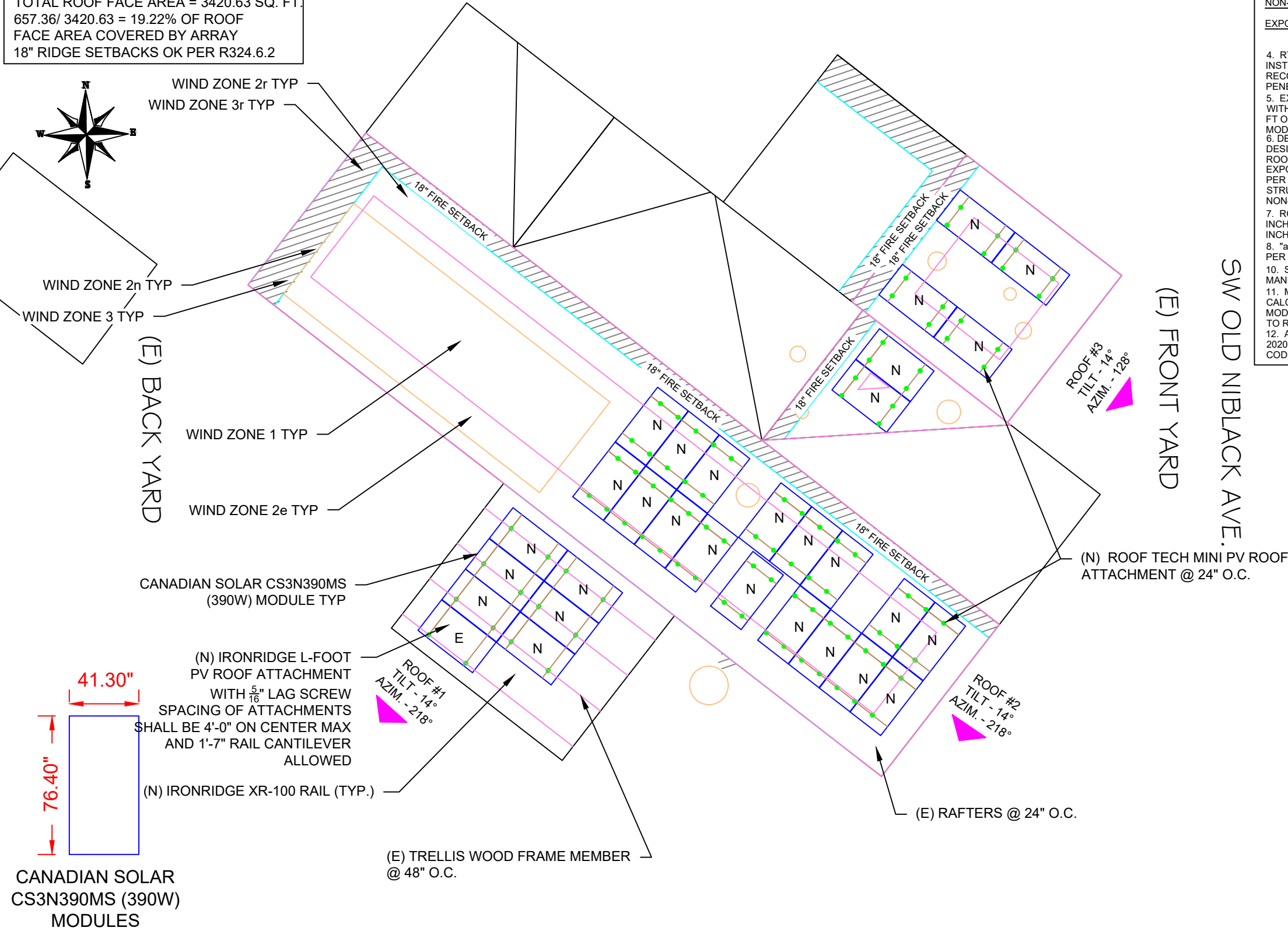
Digitally signed by Jeffrey A Torres
Date: 2023.03.01 16:10:52 -05'00'

JEFFREY A. TORRES, PE
FL PE #80379
SUNSMART ENGINEERING LLC
FL COA #35170
925 SUNSHINE LANE, STE 1010
ALTAMONTE SPRINGS, FL 32714
(407) 710-1147

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 30 MODULES
MODULE TYPE = CANADIAN SOLAR CS3N390MS (390W) MODULES
WEIGHT = 49.6 LBS / 22.00 KG.
MODULE DIMENSIONS = 76.40" x 41.30" = 21.91 SF

TOTAL ARRAY AREA = 657.36 SQ. FT.
TOTAL ROOF FACE AREA = 3420.63 SQ. FT.
657.36/ 3420.63 = 19.22% OF ROOF
FACE AREA COVERED BY ARRAY
18" RIDGE SETBACKS OK PER R324.6.2



GENERAL STRUCTURAL NOTES:

1. APPLICABLE CODE: 2020 FLORIDA RESIDENTIAL CODE (7TH EDITION) & ASCE 7-16 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.
2. ATTACHMENT STRENGTH OF RT MINI ATTACHMENTS ARE BASED OFF RT MINI'S PULL TEST DATA AND IRONRIDGE MANUFACTURERS SPECIFICATIONS AND IT IS ASSUMED THE EXISTING WOOD TRUSSES ARE SOUTHERN YELLOW PINE AND THE WOOD DECK IS 5/8" PLYWOOD/OSB MIN.
3. SPACING OF THE RT MINI ATTACHMENTS SHALL BE AS FOLLOWS:
NON-EXPOSED MODULES
*WIND ZONE 1, 2e, 2r, 3 = 2'-0" ON CENTER, 7" CANTILEVER
EXPOSED MODULES
*WIND ZONE 1, 2e, 2r, 3 = 2'-0" ON CENTER, 7" CANTILEVER
4. RT MINI ROOF ATTACHMENT SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS AND CONTRACTOR SHALL FOLLOW MANUFACTURER'S RECOMMENDATIONS TO WEATHER PROOF AND SEAL ALL ROOF PENETRATIONS.
5. EXISTING ROOF IS A TYPICAL GABLE FROM 7 DEGREES TO 20 DEGREES WITH A ROOF COVERING OF ASPHALT SHINGLES. MEAN ROOF HEIGHT = 15 FT OR LESS ABOVE GRADE WHERE MODULES ARE.
6. DESIGN PARAMETERS SHOWN ARE BASED ON ALLOWABLE STRESS DESIGN (ASD) NOMINAL WIND SPEED PRESSURES PER SECTION 29.4.4 FOR ROOFTOP SOLAR PANELS PARALLEL TO THE ROOF SURFACE WITH EXPOSURE "B", RISK CATEGORY II, ENCLOSED BUILDING AND h < 60'-0" PER ASCE 7-16 "MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES" AND 2020 F.B.C. (7TH EDITION). EXPOSED AND NON-EXPOSED MODULES ARE LABELED AS SHOWN.
7. ROOF SURFACE TO UNDERSIDE OF PANEL HEIGHT IS APPROXIMATELY 5 INCHES AND INCREASED UPLIFT ON THE PORTION OF MODULES WITHIN A 10 INCH CLEARANCE OF THE ROOF EDGES HAS BEEN CONSIDERED.
8. "a" DIMENSION AS DEFINED PER ASCE 7-16 SHALL BE 4 FT REGARDLESS PER THE 2020 FLORIDA RESIDENTIAL CODE (7TH EDITION).
10. SOLAR PANELS AND MOUNTING SYSTEM SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
11. MODULES SHALL BE LOCATED AS SHOWN FOR THE WIND LOAD CALCULATIONS ON SHEET S-03 TO BE VALID. ANY RELOCATION OF MODULES SHALL BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO RELOCATION OF MODULES.
12. ALL FIRE SETBACKS SHOWN COMPLY WITH THE REQUIREMENTS OF THE 2020 FLORIDA RESIDENTIAL CODE AND 2020 FLORIDA FIRE PREVENTION CODE.

LEGEND

- ED - EDGE MODULE
- E - EXPOSED MODULE
- N - NON-EXPOSED MODULE
- □ - ROOF OBSTRUCTION
- - PV ROOF ATTACHMENT
- - RAFTERS



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PROJECT NAME

JOHN STANFIELD
524 SW OLD NIBLACK AVE
FORT WHITE, FL 32088

SHEET NAME

ROOF PLAN &
MODULES

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

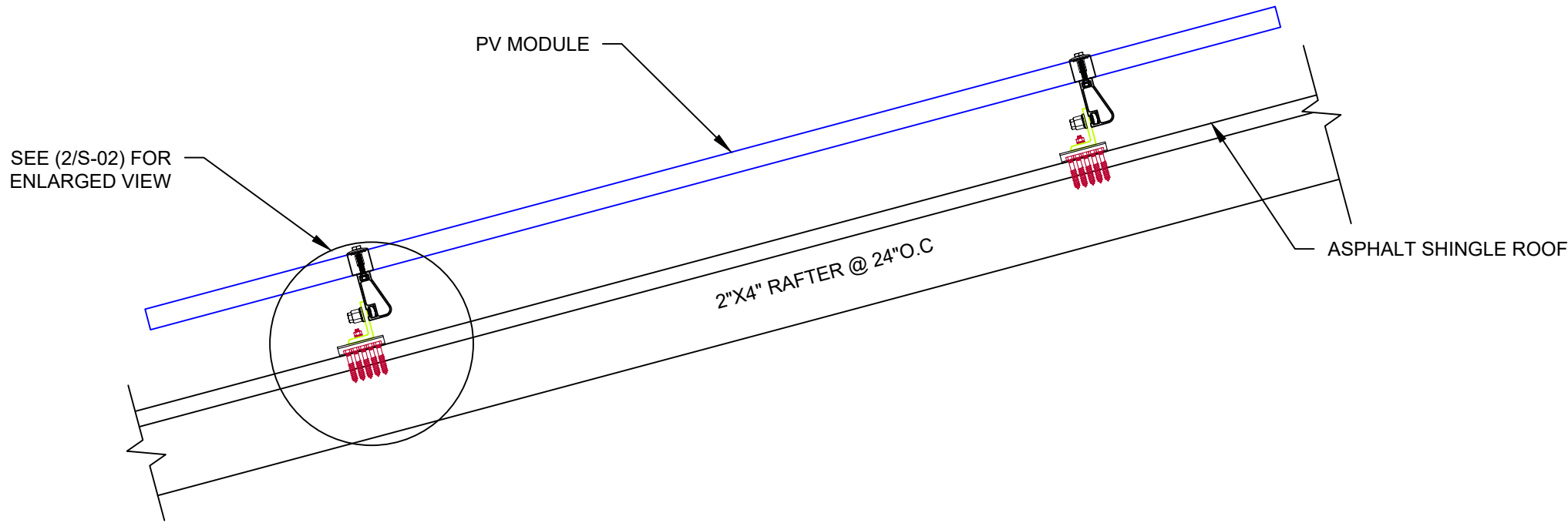
S-01

Signature with Seal

Digitally signed by Jeffrey A Torres
Date: 2023.03.01 16:11:06 -05'00'

JEFFREY A. TORRES, PE
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SUNSMART ENGINEERING LLC
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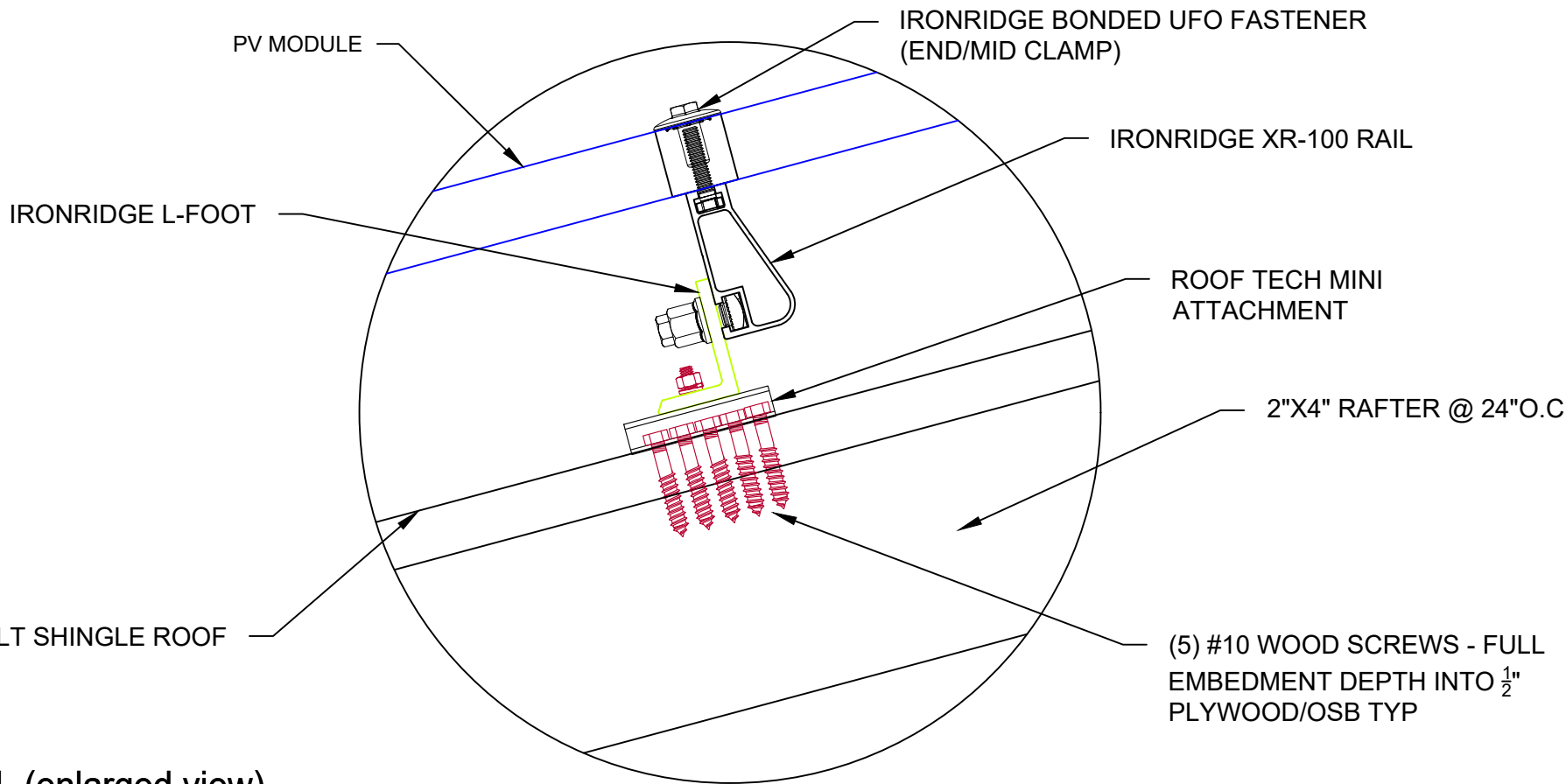
NOTE: 2X4 TRUSS ASSUMED TO BE NO. 2 SYP
AND SHALL BE VERIFIED IN THE FIELD.



1 ATTACHMENT DETAIL

S-02

SCALE: 1"=1'-0"



2 ATTACHMENT DETAIL (enlarged view)

S-02

SCALE: NTS



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JOHN STANFIELD
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FORT WHITE, FL 32088

SHEET NAME
ATTACHMENT
DETAILS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
S-02

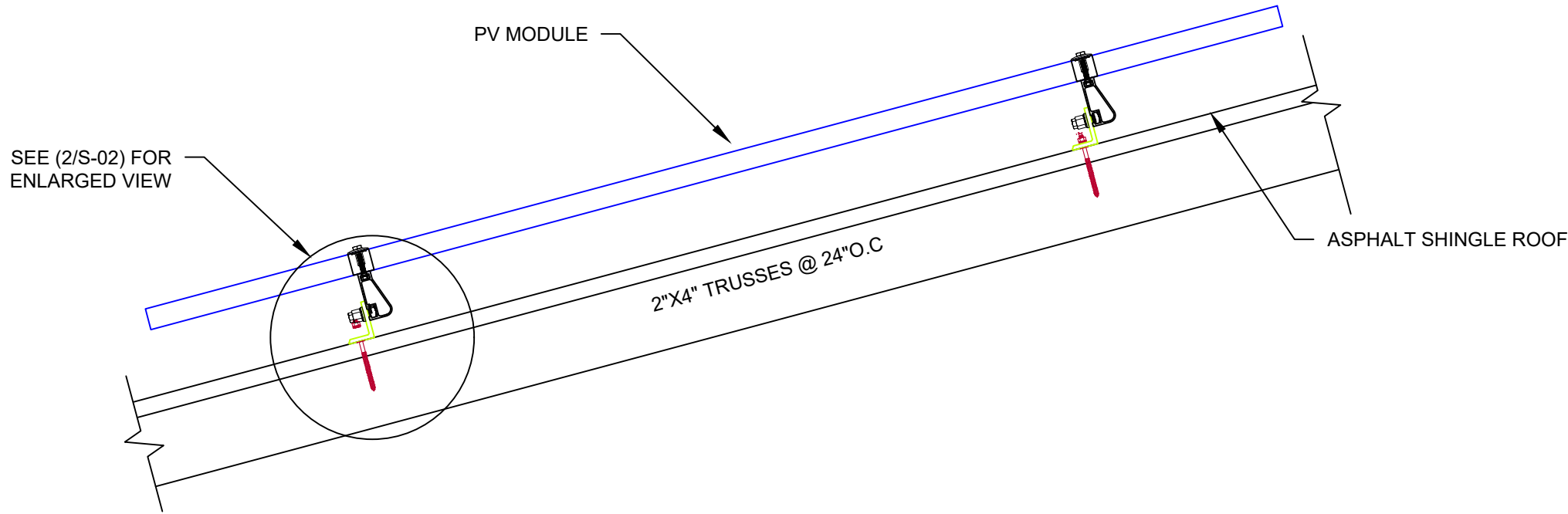
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by Jeffrey A
Torres
Date:
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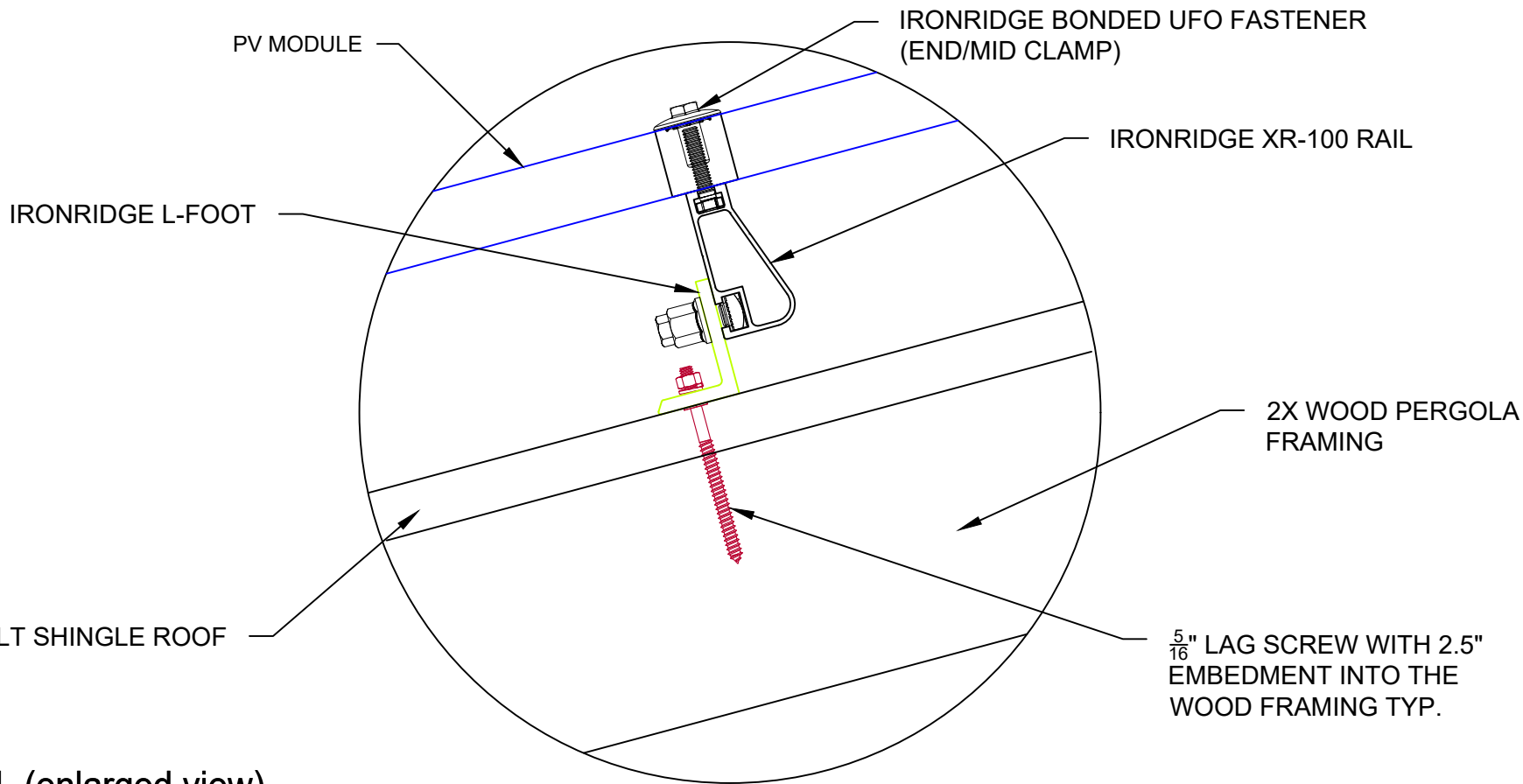


1

ATTACHMENT DETAIL

S-02

SCALE: 1"=1'-0"



2

ATTACHMENT DETAIL (enlarged view)

S-02

SCALE: NTS



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SHEET NAME
ATTACHMENT
DETAILS

SHEET SIZE
ANSI B
11" X 17"

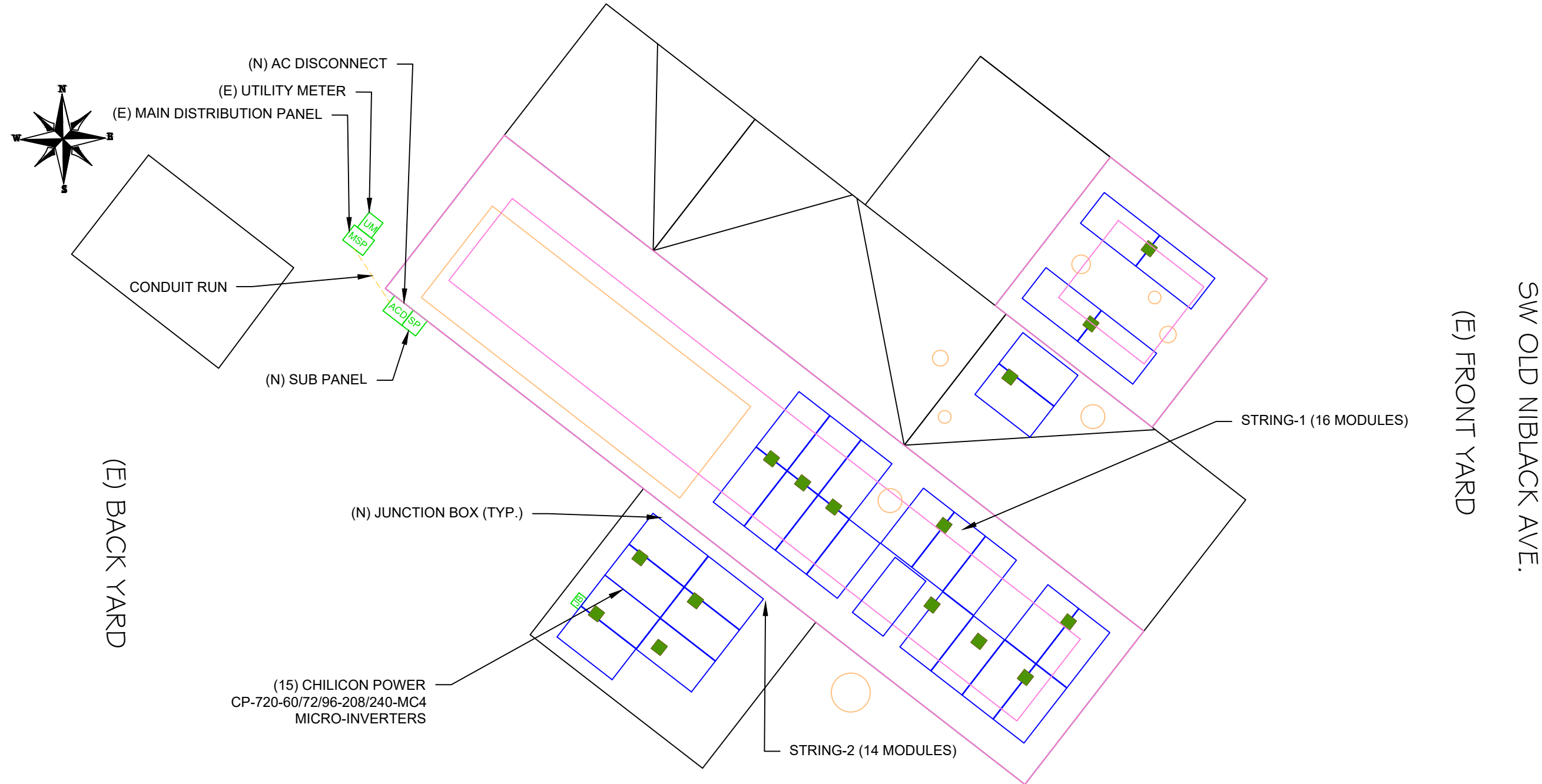
SHEET NUMBER
S-03



Signature with Seal
Digitally
signed by
Jeffrey A
Torres
Date:
2023.03.01
16:11:59
-05'00'

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SOLAR ARRAY 11.7 kW-DC STC
(30) CANADIAN SOLAR CS3N390MS (390W) MODULES
(01) STRING OF 16 MODULES
(01) STRING OF 14 MODULES



- LEGEND**
- UM - UTILITY METER/MAIN
 - SP - SUB PANEL
 - JB - JUNCTION BOX
 - MSP - MAIN SERVICE PANEL
 - □ - ROOF OBSTRUCTION
 - - CONDUIT



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PROJECT NAME

JOHN STANFIELD

524 SW OLD NIBLACK AVE
FORT WHITE, FL 32088

SHEET NAME

ELECTRICAL
SITE PLAN

SHEET SIZE

ANSI B
11" X 17"

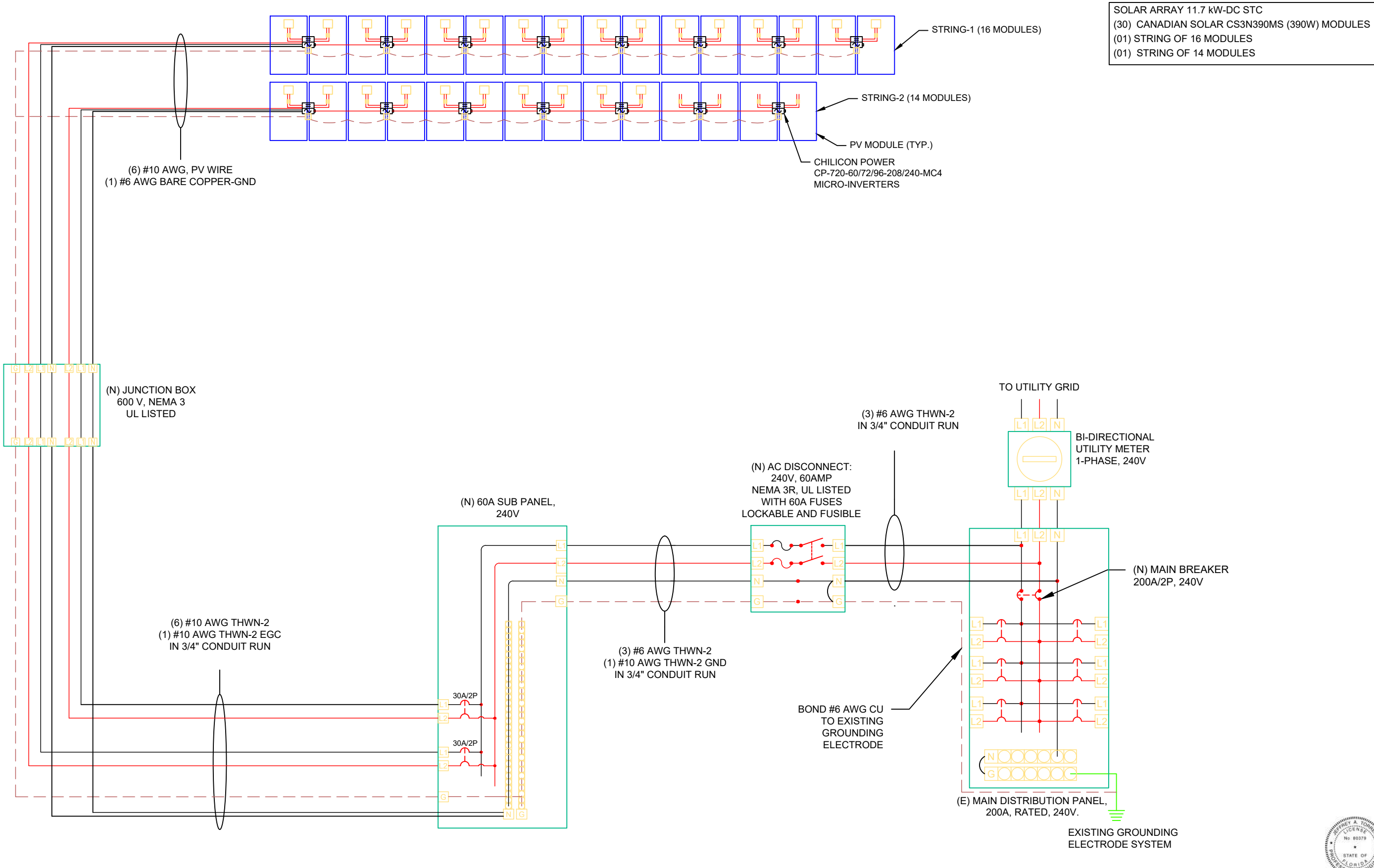
SHEET NUMBER

E-01

Signature with Seal

Digitally signed
by Jeffrey A
Torres
Date:
2023.03.01
16:12:07 -05'00'

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SOLAR ARRAY 11.7 kW-DC STC
(30) CANADIAN SOLAR CS3N390MS (390W) MODULES
(01) STRING OF 16 MODULES
(01) STRING OF 14 MODULES



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JOHN STANFIELD
524 SW OLD NIBLACK AVE
FORT WHITE, FL 32088

SHEET NAME
ELECTRICAL
LINE DIAGRAM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-02

Signature with Seal
Digitally signed
by Jeffrey A
Torres
Date:
2023.03.01
16:12:14 -05'00'



This form has been
electronically signed and
sealed by Jeffrey A. Torres,
P.E. using a Digital
Signature and date shown
to left of seal. Printed
copies of this document
are not considered signed
and sealed and the
signatures must be verified
on any electronic copies.

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SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	CANADIAN SOLAR CS3N390MS (390W) MODULES
VMP	36.8V
IMP	10.68A
VOC	44.30V
ISC	11.44A
MODULE DIMENSION	76.40"L x 41.30"W x 1.38"D (In Inch)

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	CHILICON POWER CP-720-60/72/96-208/240-MC4
MPPT VOLTAGE RANGE	56-82V
MAXIMUM INPUT VOLTAGE	120V
MAXIMUM INPUT CURRENT	13.5A
MAXIMUM OUTPUT CURRENT	3A
CEC WEIGHTED EFFICIENCY	96.1%

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-5°
AMBIENT TEMP (HIGH TEMP 2%)	34°
CONDUIT HEIGHT	0.5"
ROOF TOP TEMP	56°
CONDUCTOR TEMPERATURE RATE	90°
MODULE TEMPERATURE COEFFICIENT OF Voc	

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

AC CONDUCTOR AMPACITY CALCULATIONS:
FROM ROOF TOP JUNCTION BOX TO SUB PANELBOARD

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT
PER NEC 310.15(B)(16): + 22°
EXPECTED WIRE TEMP (°C): 34° + 22° = 56°
TEMP CORRECTION PER TABLE 310.16: 0.71
OF CURRENT CARRYING CONDUCTORS: 4
CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a): 0.80
CIRCUIT CONDUCTOR SIZE: 8 AWG
CIRCUIT CONDUCTOR AMPACITY: 55 A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B):
1.25 X MAX AC OUTPUT CURRENT X # OF INVERTERS PER STRING
1.25 X 3 X 8 = 30A

DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.16
TEMP CORR. PER NEC TABLE 310.16 X
CONDUIT FILL CORR. PER NEC 310.15(B)(2)(a) X
CIRCUIT CONDUCTOR AMPACITY =
0.71 X .80 X 55 = 31.24A

AC CONDUCTOR AMPACITY CALCULATIONS:
FROM AC PANEL BOARD TO MAIN SERVICE PANEL

EXPECTED WIRE TEMP (°C): 34°
TEMP CORRECTION PER NEC TABLE 310.16: 0.96
CIRCUIT CONDUCTOR SIZE: 6 AWG
CIRCUIT CONDUCTOR AMPACITY: 75A
OF CURRENT CARRYING CONDUCTORS: 3
CONDUIT FILL PER NEC 310.15(B)(2)(a): 1.0

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B):
1.25 X OUTPUT CURRENT OF MICROINVERTER
1.25 X 3 X 15 = 56.25A

DERATED AMPACITY OF CIRCUIT CONDUCTORS PER NEC TABLE 310.16:
TEMP CORR. PER NEC 310.16 X
CONDUIT FILL CORR. PER NEC 310.15(B)(2)(a) X
CIRCUIT CONDUCTOR AMPACITY =
0.96 X 1.0 X 55 = 72A

ELECTRICAL NOTES

- ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT. THE TERMINALS ARE RATED FOR 75 DEGREE C.
- THE WIRES ARE SIZED ACCORDING TO NEC 110.14.
- WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
- WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
- WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
- MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
- MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
- THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE .
- UTILITY HAS 24-HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC SYSTEM COMPONENTS LOCATED AT THE SERVICE ENTRANCE.
- MODULES CONFORM TO AND ARE LISTED UNDER UL 1703.
- RACKING CONFORMS TO AND IS LISTED UNDER UL 2703.
- CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC ARTICLE 300.6 (C) (1) AND ARTICLE 310.10 (D).
- CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC ARTICLE 310.10 (C).



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524 SW OLD NIBLACK AVE
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SHEET NAME
WIRING
CALCULATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-03

Signature with Seal
Digitally signed
by Jeffrey A
Torres
Date:
2023.03.01
16:12:22 -05'00'



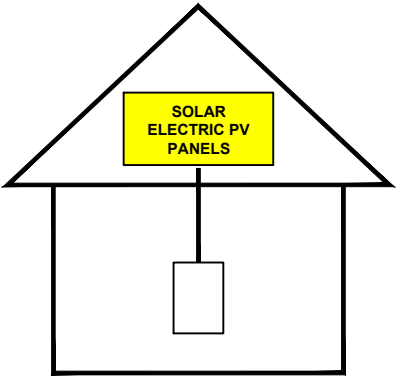
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PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED AC OPERATING CURRENT 45 AMPS
AC NOMINAL OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION:
AC DISCONNECT & INVERTER
(PER CODE: NEC690.54)

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:
AT SERVICE DISCONNECTING MEANS
PER NEC 690.56(C)(1)(a)

RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM

LABEL LOCATION:
RAPID SHUTDOWN INITIATION DEVICE
PER NEC 690.56(C)(3)

WARNING

POWER SOURCE OUTPUT CONNECTION

DO NOT RELOCATE THIS
OVERCURRENT DEVICE

LABEL LOCATION:
POINT OF INTERCONNECTION (WHEN APPLICABLE)
PER NEC 705.12(B)(2)(3)(b)



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SHEET NAME
SYSTEM
LABELING

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-04

Signature with Seal

Digitally
signed by
Jeffrey A Torres
Date:
2023.03.01
16:12:30 -05'00'



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HiKuBlack
BLACK FRAME ON BLACK BACKSHEET
MONO PERC MODULE
380 W ~ 400 W
CS3N-380 | 385 | 390 | 395 | 400MS

MORE POWER

- 400 W** Module power up to 400 W
Module efficiency up to 19.7%
- \$** Lower LCOE & BOS cost
- Graph** Comprehensive LID / LeTID mitigation technology, up to 50% lower degradation
- Calculator** Better shading tolerance

MORE RELIABLE

- Shield** Minimizes micro-crack impacts
- ***** Heavy snow load up to 5400 Pa, enhanced wind load up to 2400 Pa*

12 Years Enhanced Product Warranty on Materials and Workmanship*

25 Years Linear Power Performance Warranty*

1st year power degradation no more than 2%
Subsequent annual power degradation no more than 0.55%

*According to the applicable Canadian Solar Limited Warranty Statement.

MANAGEMENT SYSTEM CERTIFICATES*

ISO 9001: 2015 / Quality management system
ISO 14001: 2015 / Standards for environmental management system
ISO 45001: 2018 / International standards for occupational health & safety

PRODUCT CERTIFICATES*

IEC 61215 / IEC 61730 / CE
FSEC (US Florida)
UL 61730 / IEC 61701 / IEC 62716
UNT 9177 Reaction to Fire: Class 1 / Take-e-way



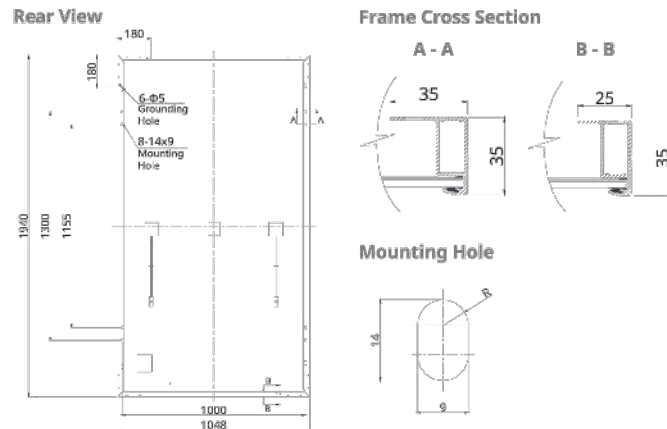
* The specific certificates applicable to different module types and markets will vary, and therefore not all of the certifications listed herein will simultaneously apply to the products you order or use. Please contact your local Canadian Solar sales representative to confirm the specific certificates available for your Product and applicable in the regions in which the products will be used.

Canadian Solar (USA) Inc. is committed to providing high quality solar products, solar system solutions and services to customers around the world. Canadian Solar was recognized as the No. 1 module supplier for quality and performance/price ratio in the IHS Module Customer Insight Survey, and is a leading PV project developer and manufacturer of solar modules, with over 52 GW deployed around the world since 2001.

* For detailed information, please refer to the Installation Manual.

Canadian Solar (USA) Inc.
3000 Oak Road, Suite 400, Walnut Creek, CA 94597, USA, www.csisolar.com/na, service.ca@csisolar.com

ENGINEERING DRAWING (mm)



ELECTRICAL DATA | STC*

CS3N	380MS	385MS	390MS	395MS	400MS
Nominal Max. Power (Pmax)	380 W	385 W	390 W	395 W	400 W
Opt. Operating Voltage (Vmp)	36.4 V	36.6 V	36.8 V	37.0 V	37.2 V
Opt. Operating Current (Imp)	10.44 A	10.52 A	10.60 A	10.68 A	10.76 A
Open Circuit Voltage (Voc)	43.7 V	43.9 V	44.1 V	44.3 V	44.5 V
Short Circuit Current (Isc)	11.26 A	11.32 A	11.38 A	11.44 A	11.50 A
Module Efficiency	18.7%	18.9%	19.2%	19.4%	19.7%
Operating Temperature	-40°C ~ +85°C				
Max. System Voltage	1000V (IEC/UL)				

Module Fire Performance	TYPE 1 (UL 61730 1500V) or TYPE 2 (UL 61730 1000V) or CLASS C (IEC 61730)
Max. Series Fuse Rating	20 A
Application Classification	Class A
Power Tolerance	0 ~ + 10 W

* Under Standard Test Conditions (STC) of irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C.

ELECTRICAL DATA | NMOT*

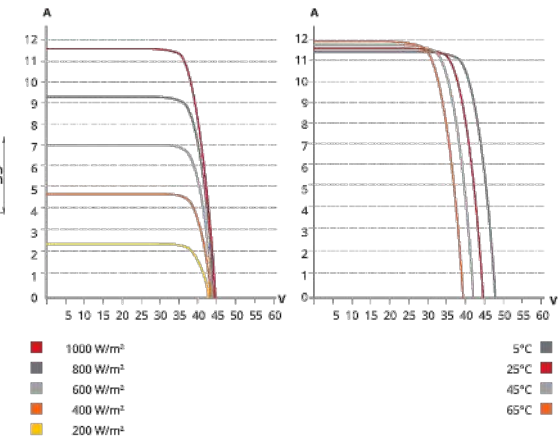
CS3N	380MS	385MS	390MS	395MS	400MS
Nominal Max. Power (Pmax)	285 W	289 W	293 W	296 W	300 W
Opt. Operating Voltage (Vmp)	34.1 V	34.3 V	34.5 V	34.7 V	34.9 V
Opt. Operating Current (Imp)	8.35 A	8.42 A	8.48 A	8.54 A	8.60 A
Open Circuit Voltage (Voc)	41.3 V	41.5 V	41.7 V	41.9 V	42.1 V
Short Circuit Current (Isc)	9.08 A	9.13 A	9.18 A	9.22 A	9.27 A

* Under Nominal Module Operating Temperature (NMOT), irradiance of 800 W/m² spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

* The specifications and key features contained in this datasheet may deviate slightly from our actual products due to the on-going innovation and product enhancement. CSI Solar Co., Ltd. reserves the right to make necessary adjustment to the information described herein at any time without further notice.
Please be kindly advised that PV modules should be handled and installed by qualified people who have professional skills and please carefully read the safety and installation instructions before using our PV modules.

Canadian Solar (USA) Inc. May 2021 | All rights reserved | Module Product Datasheet v2.7_F30_J2_NA

CS3N-400MS / I-V CURVES



MECHANICAL DATA

Specification	Data
Cell Type	Mono-crystalline
Cell Arrangement	132 [2 X (11 X 6)]
Dimensions	1940 X 1048 X 35 mm (76.4 X 41.3 X 1.38 in)
Weight	22.5 kg (49.6 lbs)
Front Cover	3.2 mm tempered glass
Frame	Anodized aluminium alloy
J-Box	IP68, 3 bypass diodes
Cable	4 mm ² (IEC), 12 AWG (UL)
Cable Length (Including Connector)	1650 mm (65.0 in) (-) / 1000 mm (39.4 in) (+)*
Connector	T4 series or MC4
Per Pallet	30 pieces
Per Container (40' HQ)	720 pieces

* For detailed information, please contact your local Canadian Solar sales and technical representatives.

TEMPERATURE CHARACTERISTICS

Specification	Data
Temperature Coefficient (Pmax)	-0.34 % / °C
Temperature Coefficient (Voc)	-0.26 % / °C
Temperature Coefficient (Isc)	0.05 % / °C
Nominal Module Operating Temperature	41 ± 3°C

PARTNER SECTION



SOLAR TREK INC.
3347 SW 7TH ST.
OCALA, FL 34474 USA

REVISIONS

DESCRIPTION	DATE	REV
INITIAL	01-17-2023	01
LAYOUT	03-01-2023	02

PROJECT NAME

JOHN STANFIELD
524 SW OLD NIBLACK AVE
FORT WHITE, FL 32088

SHEET NAME
MODULE
DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-01

Signature with Seal

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by Jeffrey A
Torres
Date:
2023.03.01
16:12:38 -05'00'



This document is electronically signed and sealed by Jeffrey A. Torres, P.E., using a digital signature and sealed with a seal of the State of Florida. The document is not valid unless the signature and seal are present.

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CHILICON POWER CP-720
Dual Panel Microinverter



CP-720™ Series Microinverters

The Chilicon CP-720 allows installers to maximize PV system production, while minimizing installation and operational costs. Microinverter based architectures offer the benefit of increased flexibility in panel deployment, while also providing per panel visibility to simplify system O&M. With its all-AC approach, integrated grounding, modular bus cabling, and ability to support up to 16 panels on a 30A branch circuit, the CP-720 simplifies both design and installation. Both freq-Watt and volt-Watt modes allow AC control by off-grid systems. Coupled with Chilicon's CP-100 gateway and cloud-based monitoring software, the CP-720 can form the energy management backbone of both residential and commercial PV systems.



www.chiliconpower.com

Performance

- Supports up to 840W with no clipping (or 2x420W)
- Maximizes energy production over life of system
- Minimizes losses due to shading and debris
- Eliminates single point of failure for system

Simplicity

- All AC design – No string calculations needed
- No GEC needed for microinverters
- Easy installation with standardized trunk cables

Versatility

- Compatible with most 60, 72, 96, 128 cell panels
- Single SKU 240V or 208V
- Allows for variable module placement
- Robust PLC communication protocol (500 ft range)
- Self supply mode (zero-export)
- Supports up to 30A branch circuits
- Up to 20 panels possible on one branch circuit

Reliability, Safety, & Compliance

- NEMA 6 rated construction
- 25 year warranty
- AC branch circuits will not support arc faults
- Quick disconnect circuit to mitigate grid instabilities
- NEC-2017 690.12 rapid shutdown compliant
- CA Rule 21 (UL 1741-SA) compliant



CP-720-60/72/96-208/240-MC4 Microinverter Specifications

INPUT DATA (DC)

Recommended input power (STC)	(190 - 420 W) x 2; (380 - 840 W) x 1	
Maximum DC input voltage	120 V ¹	
MPPT voltage tracking range	56 – 82 V (240V)	48.5 – 82 V (208V)
Operating range	47 – 82 V ¹	
Min./Max. start voltage	44 – 96 V ¹	
Max. DC input short circuit current	16 A	
Max. DC input current	13.5 A	
Ground fault protection	Transformer isolated 2000 Vrms input/output/chassis	

OUTPUT DATA (AC)

	@ 208 V	@ 240 V
Max. continuous output power	713 W	720 W
Max. continuous output current	3.43 A (can be current limited to 2.66 A)	3.0 A (can be current limited to 2.4 A)
Nominal output voltage / range	208 / 183 – 229 V	240 / 211 – 264 V
Extended output voltage range	133 / 150 / 166 – 250 V	153 / 173 / 192 – 288 V
Nominal frequency / range	60.0 / 59.3 – 60.5 Hz	
Extended frequency range	54.22 – 66.75 Hz ²	
Power factor	-0.6 to 0.6 programmable	
Maximum units per 30 A branch circuit	7 (14 modules)/9 ³ (18 modules)	8 (16 modules)/10 ³ (20 modules)
Maximum output overcurrent protection	6.3 A Fuse; 12A peak for 30 uSec	6.3 A Fuse; 12A peak for 30 uSec

EFFICIENCY

CEC weighted efficiency	96.1 %
Peak inverter efficiency	96.7 %
Static MPPT efficiency (EN 50530)	99.5 % - 99.8 %
Night time power consumption	100 mW; Standby Reactive Current < 200mA

MECHANICAL DATA

Ambient temperature range	-40° C to +65° C
Dimension (W x H x D) including connectors	12" x 8" x 1.8"
Weight	1.81 kg (4.0 lbs)
Enclosure rating	NEMA 6

FEATURES

Communication	Mesh Networked Power Line (130.2 kHz carrier)
Monitoring	Monitoring via CP-100 gateway and Online Cloud
Certifications	UL1741, IEEE std 1547, IEEE std C62.41.2, CSA C22.2 NO. 107.1
	CISPR 22 Class B; HECO Rule14H (Advanced Inverter), HECO Rule 22 (Self-Supply)
	Rule 21 / UL1741SA; Complies with NEC 690.12 Rapid Shutdown
Product Warranty 25 Years	

Compatibility (Single SKU)



- 2 x Series 60/72 Cell Mono or Poly PV modules
- 2 x Parallel HV Panasonic Modules; 2 x Parallel 96/128 Cell SunPower Modules
- ¹ Maximum DC exposed voltage equals single module Voc when in shutdown
- ² Supports 50Hz operating with extended range (45.2 – 55.7 Hz)
- ³ When current limited to 2.66A for 208V or 2.4A for 240V

To learn more about Chilicon Power microinverters, call (310) 800-1396 or visit chiliconpower.com



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REVISIONS

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INITIAL	01-17-2023	01
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PROJECT NAME

JOHN STANFIELD
524 SW OLD NIBLACK AVE
FORT WHITE, FL 32088

SHEET NAME

INVERTER
DATA SHEET

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

DS-02

Signature with Seal

Digitally signed
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Torres
Date:
2023.03.01
16:12:46 -05'00'

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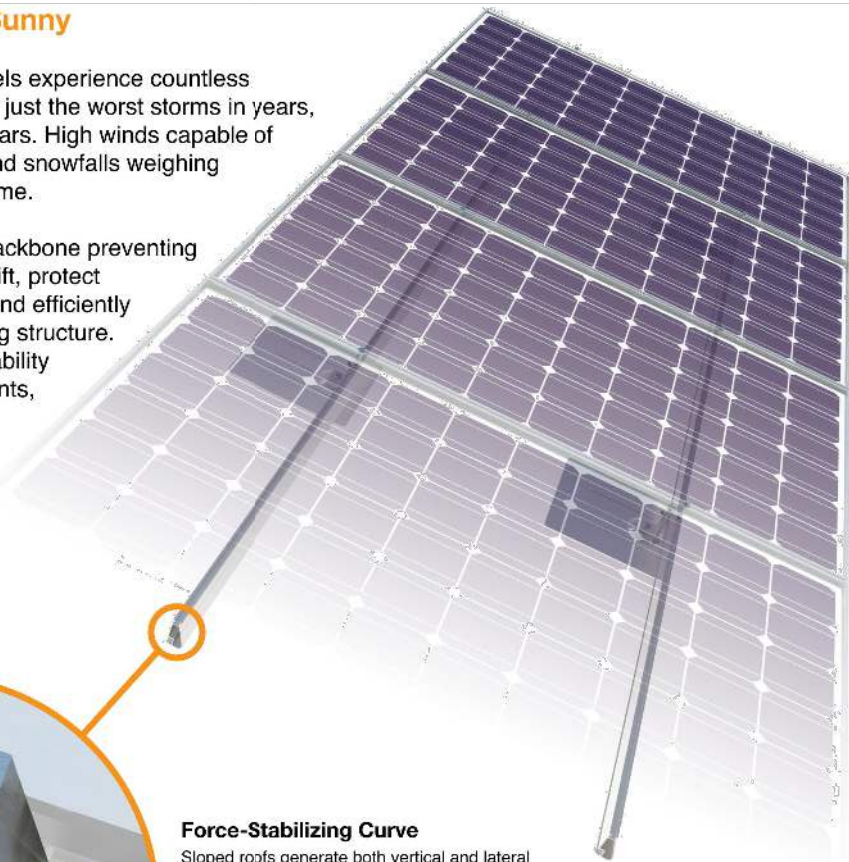
Tech Brief

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.



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.



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OCALA, FL 34474 USA

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PROJECT NAME

JOHN STANFIELD
524 SW OLD NIBLACK AVE
FORT WHITE, FL 32088

SHEET NAME

RAIL
DATA SHEET

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

DS-03

Signature with Seal

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Date:
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RT-MINI

Self-flashing base for asphalt & metal roof-top PV mounting systems

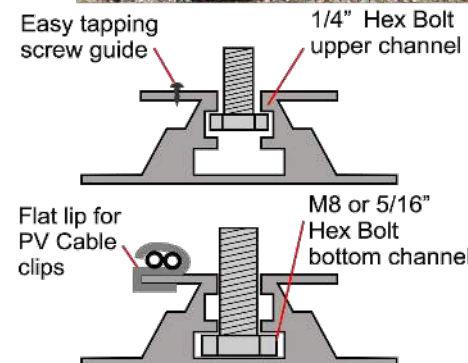
RT-MINI is suitable for mounting any rail system with a conventional L-Foot.



Dual bolt design: M8 or 5/16" for L-Foot & 1/4" for EMC



Installation Manual



Roof Tech
Smarter PV mounting solutions from top of roof to bottom line®
www.roof-tech.us info@roof-tech.us

RT-MINI

Flexible Flashing certified by the International Code Council (ICC)

Engineered to ASTM D 1761 (Standard Test Methods for Mechanical Fasteners in Wood)

Components

RT2-00-MINIBK



MINI base : 20 ea.
Screw : 40 ea.
Extra RT-Butyl : 10 ea.

Optional item

5 x 60mm Mounting screw (RT2-04-SD5-60) : 100 ea./Bag
5/16" Hex bolt, washer & nut set (RT-04-BN30SL-US) : 100 ea./Bag
RT-Butyl (RT2-04-BUTYLT) : 10 ea./Box

RT-Butyl is Roof Tech's flexible flashing used in one million residential PV systems for the last 26 years. It is the first PV mounting system with Flexible Flashing certified by the ICC. Engineered to withstand wind speeds up to 180 mph and ground snow up to 90 psf.

Metal Flashing Retrofit

Flexible Flashing



Shedding water?

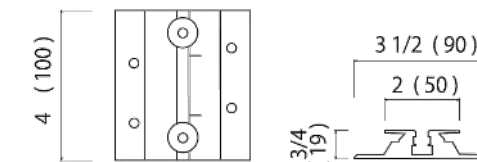


100% Waterproof

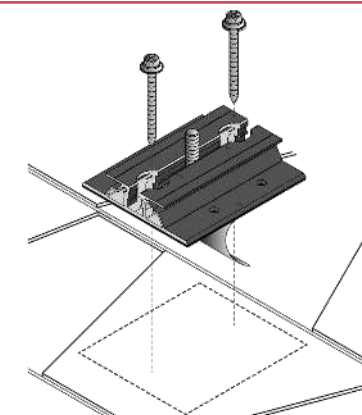
ICC ESR-3575 ASTM2140 testing UV testing (7500 hrs.)



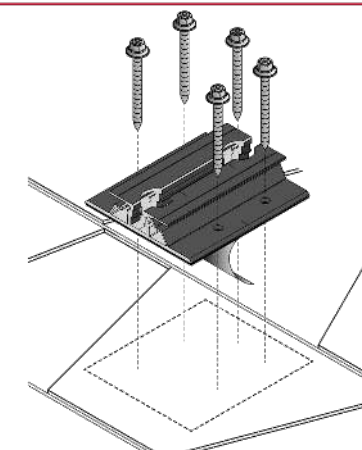
Dimensions in (mm)



Rafter installation



Deck installation



P.E. Stamped Letters available at www.roof-tech.us/support
TAS 100 A on metal and asphalt roof.

Roof Tech Inc.
www.roof-tech.us info@roof-tech.us
10620 Trenea Street, Suite 230, San Diego, CA 92131
858.935.6064



SOLAR TREK INC.
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PROJECT NAME

JOHN STANFIELD
524 SW OLD NIBLACK AVE
FORT WHITE, FL 32088

SHEET NAME

ATTACHMENT
DATA SHEET

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

DS-04

Signature with Seal

Digitally
signed by
Jeffrey A

Torres

Date:

2023.03.01

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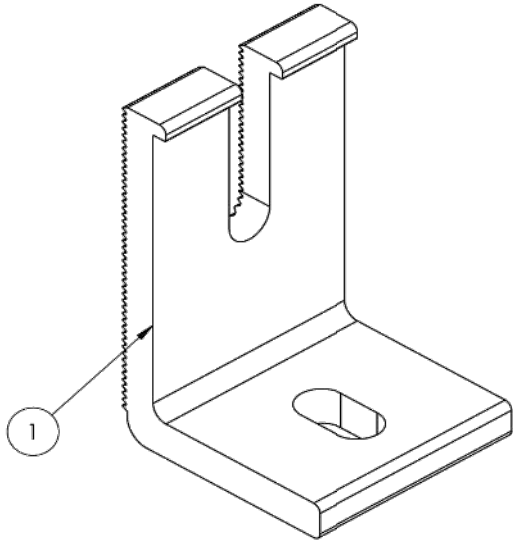
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Cut Sheet

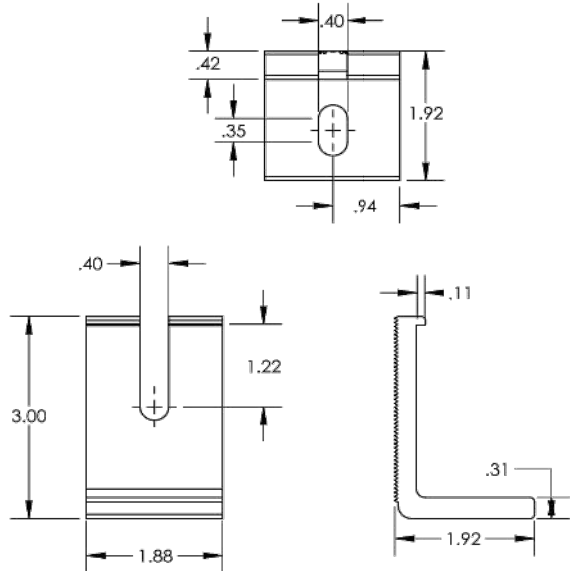
L-Foot



ITEM NO	DESCRIPTION	QTY IN KIT
1	FOOT, EXTRUDED L - SLOTTED	4

PART NUMBER	DESCRIPTION
FM-LFT-003	Kit, 4Pcs, Slotted L-Foot, Mill
FM-LFT-003-B	Kit, 4Pcs, Slotted L-Foot, Black

1) Foot, Extruded L - Slotted



v1.11



SOLAR TREK INC.
3347 SW 7TH ST.
OCALA, FL 34474 USA

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DESCRIPTION	DATE	REV
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PROJECT NAME

JOHN STANFIELD
524 SW OLD NIBLACK AVE
FORT WHITE, FL 32088

SHEET NAME
ATTACHMENT
DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-05

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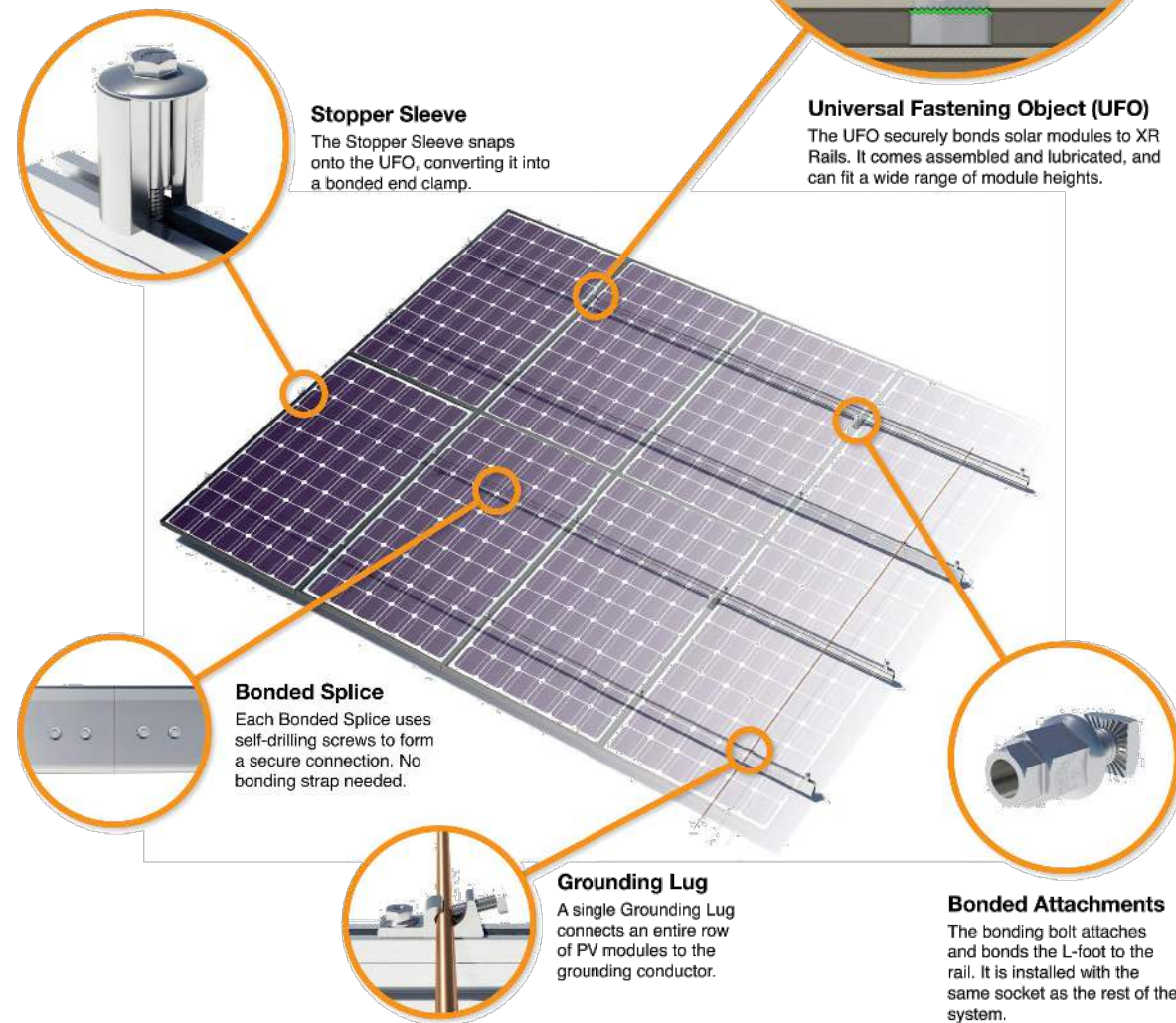
UFO Family of Components

Tech Brief

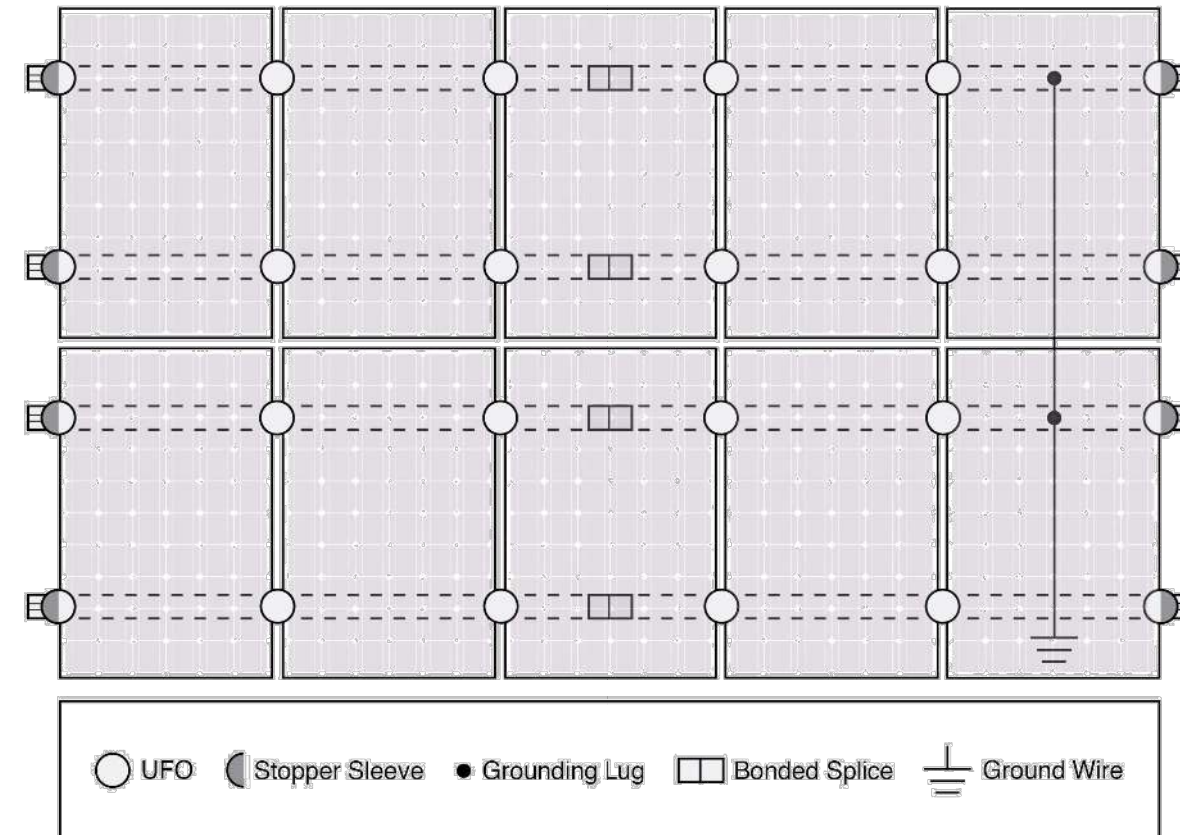
Simplified Grounding for Every Application

The UFO family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge XR Rails. All system types that feature the UFO family—Flush Mount, Tilt Mount and Ground Mount—are fully listed to the UL 2703 standard.

UFO hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.



System Diagram



⚠ Approved Enphase microinverters can provide equipment grounding of IronRidge systems, eliminating the need for grounding lugs and field installed equipment ground conductors (EGC). A minimum of two microinverters mounted to the same rail and connected to the same Engage cable is required. Refer to installation manuals for additional details.

UL Certification

The IronRidge Flush Mount, Tilt Mount, and Ground Mount Systems have been listed to UL 2703 by Intertek Group plc.

UL 2703 is the standard for evaluating solar mounting systems. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments.

Go to [IronRidge.com/UFO](https://www.ironridge.com/UFO)

Cross-System Compatibility

Feature	Flush Mount	Tilt Mount	Ground Mount
XR Rails	✓	✓	XR1000 Only
UFO/Stopper	✓	✓	✓
Bonded Splice	✓	✓	N/A
Grounding Lugs	1 per Row	1 per Row	1 per Array
Microinverters & Power Optimizers	Enphase - M250-72, M250-60, M215-60, C250-72 Darfon - MIG240, MIG300, G320, G640 SolarEdge - P300, P320, P400, P405, P600, P700, P730		
Fire Rating	Class A	Class A	N/A
Modules	Tested or Evaluated with over 400 Framed Modules Refer to installation manuals for a detailed list.		



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PROJECT NAME

JOHN STANFIELD
524 SW OLD NIBLACK AVE
FORT WHITE, FL 32088

SHEET NAME

GROUNDING
DATA SHEET

SHEET SIZE

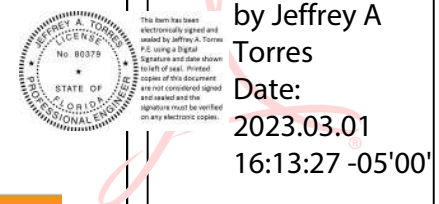
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DS-06

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