PROPOSED 13.12 KW DC SYSTEM (STC) AT 242 APPLETON WAY, SANFORD NC 27332

ID# TSP38799

Plot Plan & Photovoltaic Layout	PV-1.0
Project Notes & Vicinity Map	PV-1.1
Racking Layout	PV-2.0
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Fire Labels & Equipment Elevation	PV-3.0
Conduit Run & Grounding Details	PV-4.0
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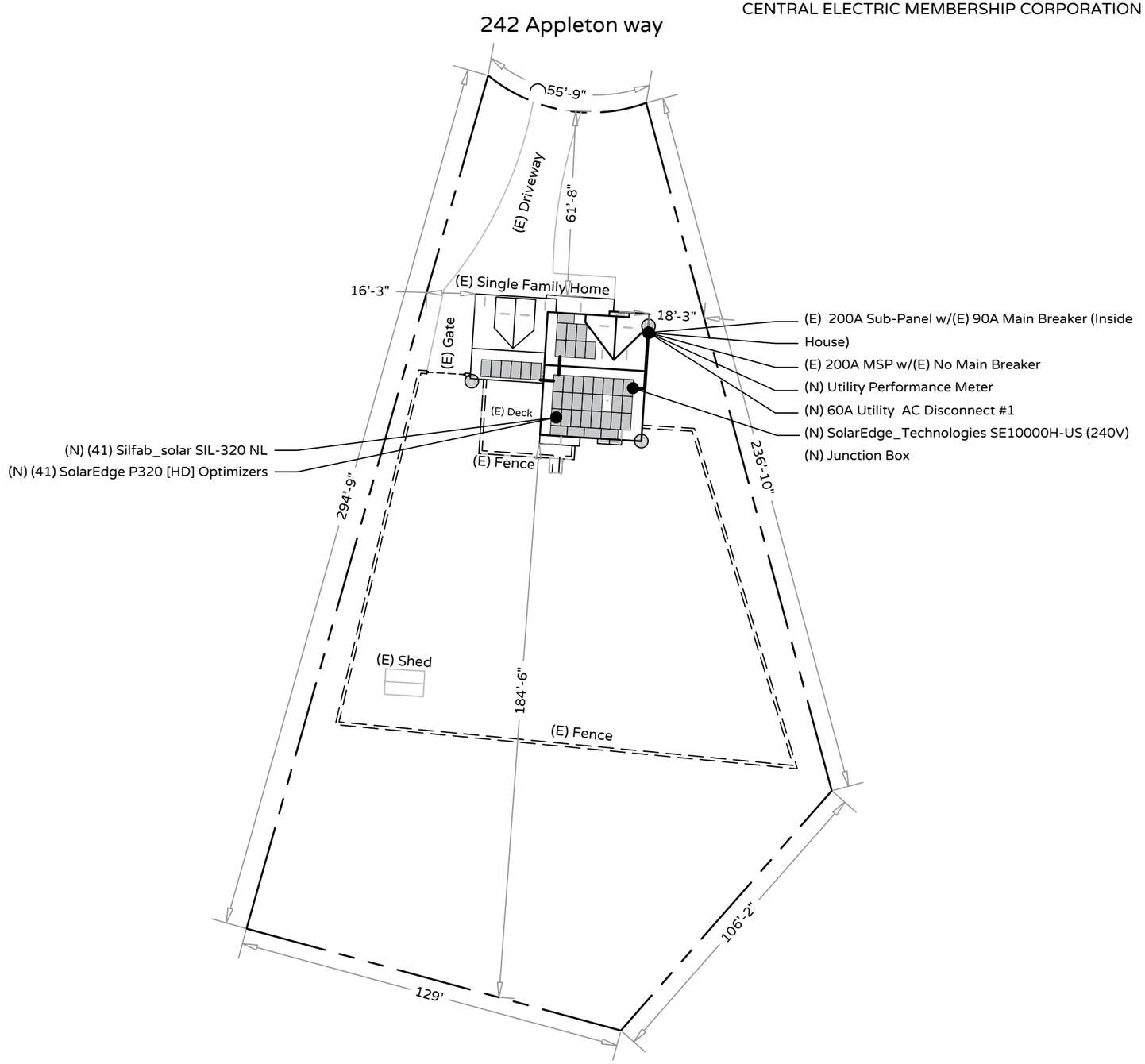
Safety Placard	PV-5.0
Manufacture Spec. Sheets	Attached

OCCUPANCY GROUP: R-3
TYPE OF CONSTRUCTION: TYPE V-B
AUTHORITY HAVING JURISDICTION: HARNETT COUNTY
ASSESSORS PARCEL NUMBER: #039589 1015 52
NUMBER OF STORIES: 2-Story
ROOF PITCH: 18°

1 Sheet Index & Site Information
Scale: NTS

CENTRAL ELECTRIC MEMBERSHIP CORPORATION UTILITY



2 AHJ Notes
Scale: NTS

3 Plot Plan
Scale: 1" = 40'

CONTRACTOR INFORMATION

TITAN SOLAR POWER

Titan Solar Power NC Inc
525 W. Baseline Rd
Mesa, AZ 85210
(480) 830-9290
#U.33714

SYSTEM INFORMATION

13.12 kW DC System (STC)
10.0 kW AC System
(41) Silfab_solar SIL-320 NL
(41) SolarEdge P320 [HD] Optimizers
SolarEdge_Technologies SE10000H-US (240V)

PROJECT INFO.

Amanda Preciado
242 Appleton way
Sanford NC 27332
(919) 343-1367
APN #039589 1015 52

REVISION BLOCK

DESCRIPTION	DATE
Initial Draft of Plans	3/18/20

Design By: CNG SOLAR ENGINEERING, INC.

NABCEP CERTIFIED PV INSTALLATION PROFESSIONAL

SHEET PV-1.0

2017 NATIONAL ELECTRICAL CODE
2018 NC BUILDING CODE (BASED ON 2015 IBC)
2015 INTERNATIONAL FIRE CODE
2015 INTERNATIONAL RESIDENTIAL CODE

1 Applicable Codes
Scale: NTS

CODE BOOK:	2017 NEC®
BREAKER SIZES:	NEC 240.6(A)
WIRE AMPACITY TABLE:	NEC 310.15(B)(16)
MAX SYSTEM VOLTAGE CORRECTION:	NEC 690.7(A)
NUMBER OF CONDUCTORS CORRECTION:	NEC 310.15(B)(3)(A)
AMBIENT TEMPERATURE CORRECTION:	NEC 310.15(B)(2)(A)
AMBIENT TEMPERATURE ADJUSTMENT:	NEC 310.15(B)(3)(C)
DC GROUNDING ELECTRODE CONDUCTOR:	UNGROUNDED DC SYSTEM
AC GROUNDING ELECTRODE CONDUCTOR:	NEC 250.50
RACK GROUNDING ELECTRODE CONDUCTOR:	NEC 690.47(B)
MAXIMUM OCPD (120% RULE):	NEC 705.12

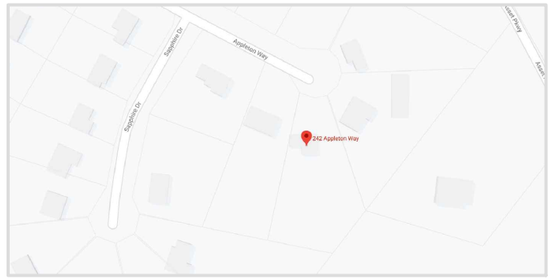
2 Electrical Code References
Scale: NTS

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

3 Equipment Location
Scale: NTS

1. LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH NEC 705.12(B).
2. THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS INPUT MAY NOT EXCEED 120% OF BUSBAR RATING NEC 705.12(D)(2)(3).
3. WHEN SUM OF THE PV SOURCES EQUALS >100% OF BUSBAR RATING, PV DEDICATED BACKFFED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE OCPD NEC 705.12(D)(2)(3).
4. AT MULTIPLE PV OUTPUT COMBINER PANEL, TOTAL RATING OF ALL OVER CURRENT DEVICES SHALL NOT EXCEED AMPACITY OF BUSBAR. HOWEVER, THE COMBINED OVER CURRENT DEVICE MAY BE EXCLUDED ACCORDING TO NEC 705.12(D)(2)(3)(C) .
5. FEEDER TAP INTER CONNECTION (LOAD SIDE) ACCORDING TO NEC 705.12(D)(2)(1) .
6. SUPPLY SIDE TAP INTERCONNECTION ACCORDING TO NEC 705.12(A) WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH NEC 230.42 BACK FEEDING BREAKER FOR UTILITY-INTERACTIVE INVERTER OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING NEC 705.12(D)(5).

4 Interconnection Notes
Scale: NTS



5 Vicinity Map
Scale: NTS

1. MODULES ARE LISTED UNDER UL 1703 AND CONFORM TO THE STANDARDS.
2. INVERTERS ARE LISTED UNDER UL 1741 AND CONFORM TO THE STANDARDS.
3. DRAWINGS ARE DIAGRAMMATIC, INDICATING GENERAL ARRANGEMENT OF THE PV SYSTEM AND THE ACTUAL SITE CONDITION MIGHT VARY.
4. WORKING CLEARANCES AROUND THE NEW PV ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.
5. ALL GROUND WIRING CONNECTED TO THE MAIN SERVICE GROUNDING IN MAIN SERVICE PANEL/ SERVICE EQUIPMENT.
6. ALL CONDUCTORS SHALL BE 600V, 75°C STANDARD COPPER UNLESS OTHERWISE NOTED.
7. WHEN REQUIRED, A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
8. THE SYSTEM WILL NOT BE INTERCONNECTED BY THE CONTRACTOR UNTIL APPROVAL FROM THE LOCAL JURISDICTION AND/OR THE UTILITY.
9. ROOF ACCESS POINT SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREES, WIRES OR SIGNS.
10. PV ARRAY COMBINER/JUNCTION BOX PROVIDES TRANSITION FROM ARRAY WIRING TO CONDUIT WIRING

6 General Notes
Scale: NTS

1. GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVISES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.
2. PV EQUIPMENT SHALL BE GROUNDED ACCORDING TO NEC 690.43 AND MINIMUM NEC TABLE 250.122 METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURES CONSIDERED GROUNDED IN ACCORD WITH NEC 250.134 AND 250.136(A).
3. EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO NEC 690.45 AND MICRO INVERTER MANUFACTURER'S INSTRUCTIONS.
4. 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.
5. 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.
6. GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER NEC 250.119
7. THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH NEC 690.47 AND 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.
8. GROUND-FAULT DETECTION SHALL COMPLY WITH NEC 690.41(B) AND NEC 690.41(B)(1) SPECIFICALLY.

7 Grounding Notes
Scale: NTS

8 Aerial Map
Scale: NTS

1. RACKING SYSTEM & PV ARRAY WILL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION 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 RAIL MANUFACTURER'S INSTRUCTIONS.
2. JUNCTION BOX WILL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. IF ROOF-PENETRATING TYPE, IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS.
3. ROOFTOP PENETRATIONS FOR PV RACEWAY WILL BE COMPLETED AND SEALED WITH APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.
4. ALL PV RELATED ROOF ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER.
5. WHEN POSSIBLE, ALL PV RELATED RACKING ATTACHMENTS WILL BE STAGGERED AMONGST THE ROOF FRAMING MEMBERS.

9 Structural Notes
Scale: NTS

1. 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. CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7.
3. DC WIRING LIMITED TO MODULE FOOTPRINT. MICRO INVERTER WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY WITH SUITABLE WIRING CLIPS.
4. 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.

10 Wiring & Conduit Notes
Scale: NTS

1. DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).
2. DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH
3. 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.
4. ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690.8, NEC 690.9 AND 240.
5. MICRO INVERTER BRANCHES CONNECTED TO A SINGLE BREAKER OR GROUPED FUSES IN ACCORDANCE WITH NEC 110.3(B).
6. IF REQUIRED BY AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION ACCORDING TO NEC 690.11 AND UL1699B.

11 Disconnection & OCPD Notes
Scale: NTS

ID# TSP38799

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Titan Solar Power NC Inc
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Mesa, AZ 85210
(480) 830-9290
#U.33714

SYSTEM INFORMATION

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10.0 kW AC System
(41) Silfab_solar SIL-320 NL
(41) SolarEdge P320 [HD] Optimizers
SolarEdge_Technologies SE10000H-US (240V)

PROJECT INFO.

Amanda Preciado
242 Appleton way
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(919) 343-1367
APN #039589 1015 52

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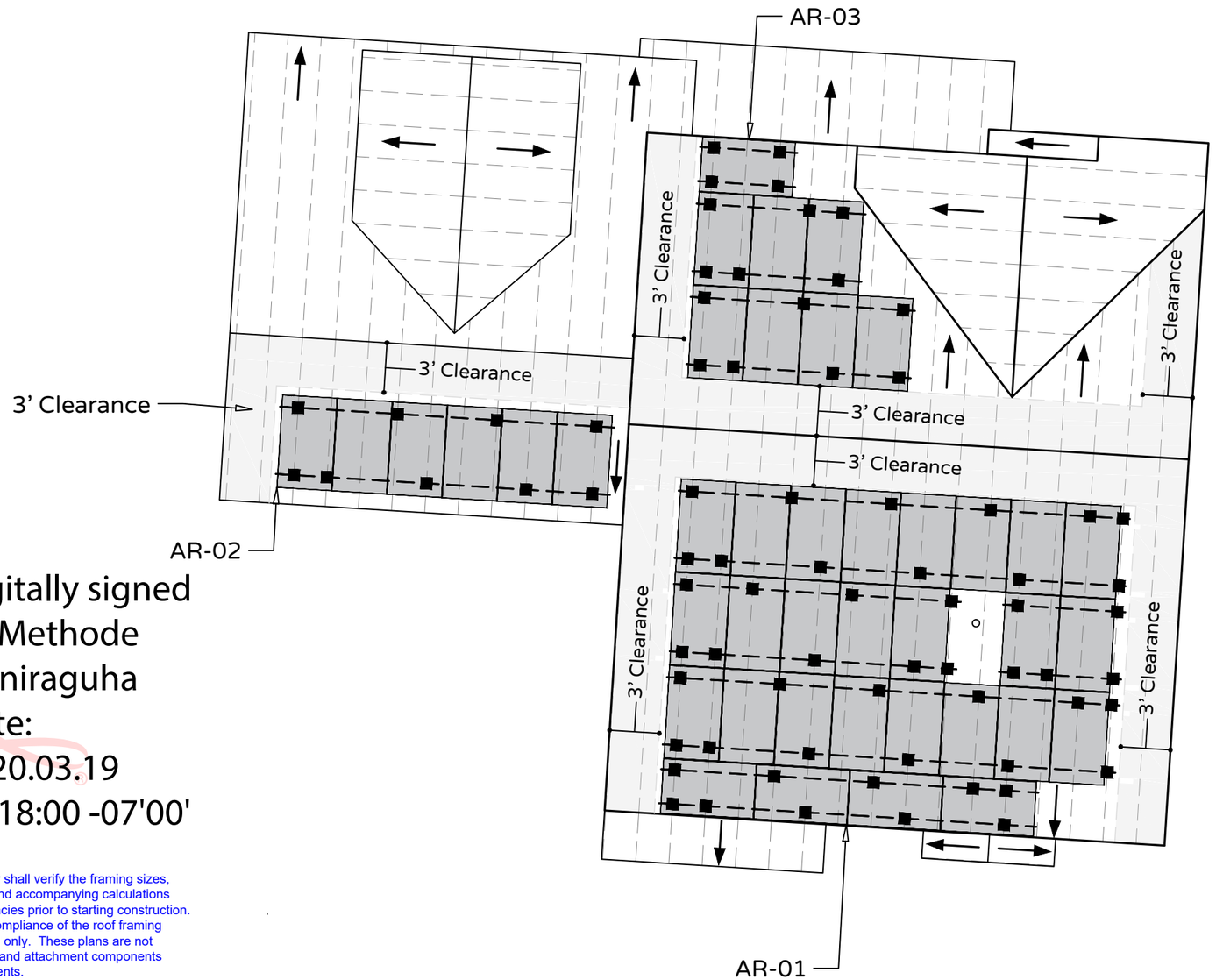
NABCEP CERTIFIED PV INSTALLATION PROFESSIONAL

SHEET
PV-1.1

Array	Quantity	Mounting Type	Array Tilt	Azimuth	Att. Spacing	Roof Type
AR-01	27	Flush Mounted	18°	184	72"	Comp. Shingle**
AR-02	6	Flush Mounted	18°	184	72"	Comp. Shingle**
AR-03	8	Flush Mounted	18°	4	72"	Comp. Shingle**

**(See PV-2.1 for Additional Information & Details)

Modules | Fire Clearance | Obstructions | Attachments | Rafters | Rails



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Date: 2020.03.19 14:18:00 -07'00'

1. Prior to commencement of work, the contractor shall verify the framing sizes, spacings, and spans noted in the stamped plans and accompanying calculations and notify the Engineer of Record of any discrepancies prior to starting construction.
2. These plans are stamped for structural code compliance of the roof framing supporting the proposed PV installation referenced only. These plans are not stamped for water leakage. PV modules, racking, and attachment components must follow manufacturer guidelines and requirements.
3. Please see accompanying Structural Calculations report for details regarding calculations as well as limits of scope of work and liability.
4. Attachments to be installed in a staggered orientation to properly distribute loads.

1 PV Racking & Roof Framing Plan
Scale: 1/8" = 1'-0"

N

ID# TSP38799

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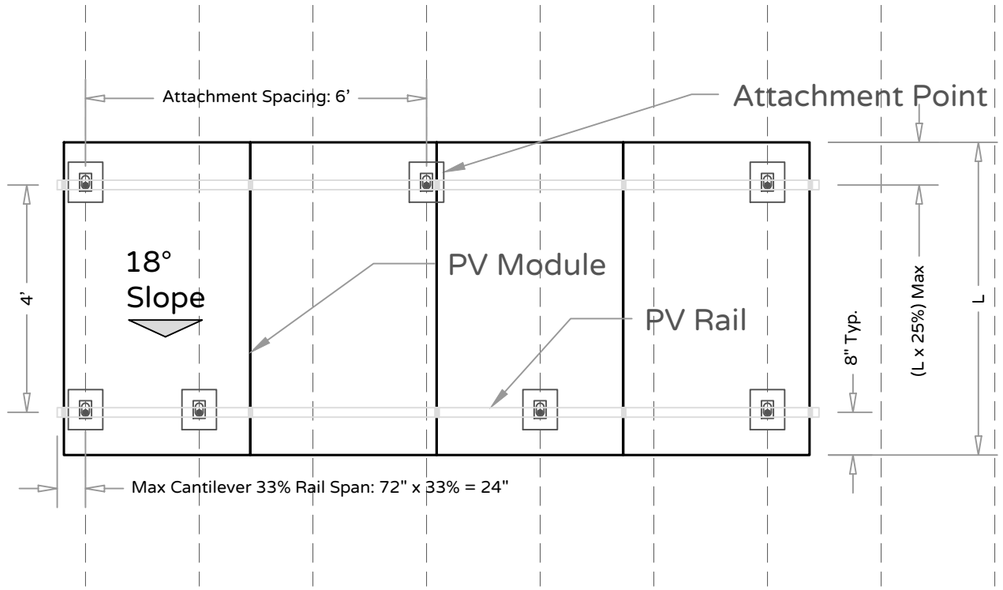
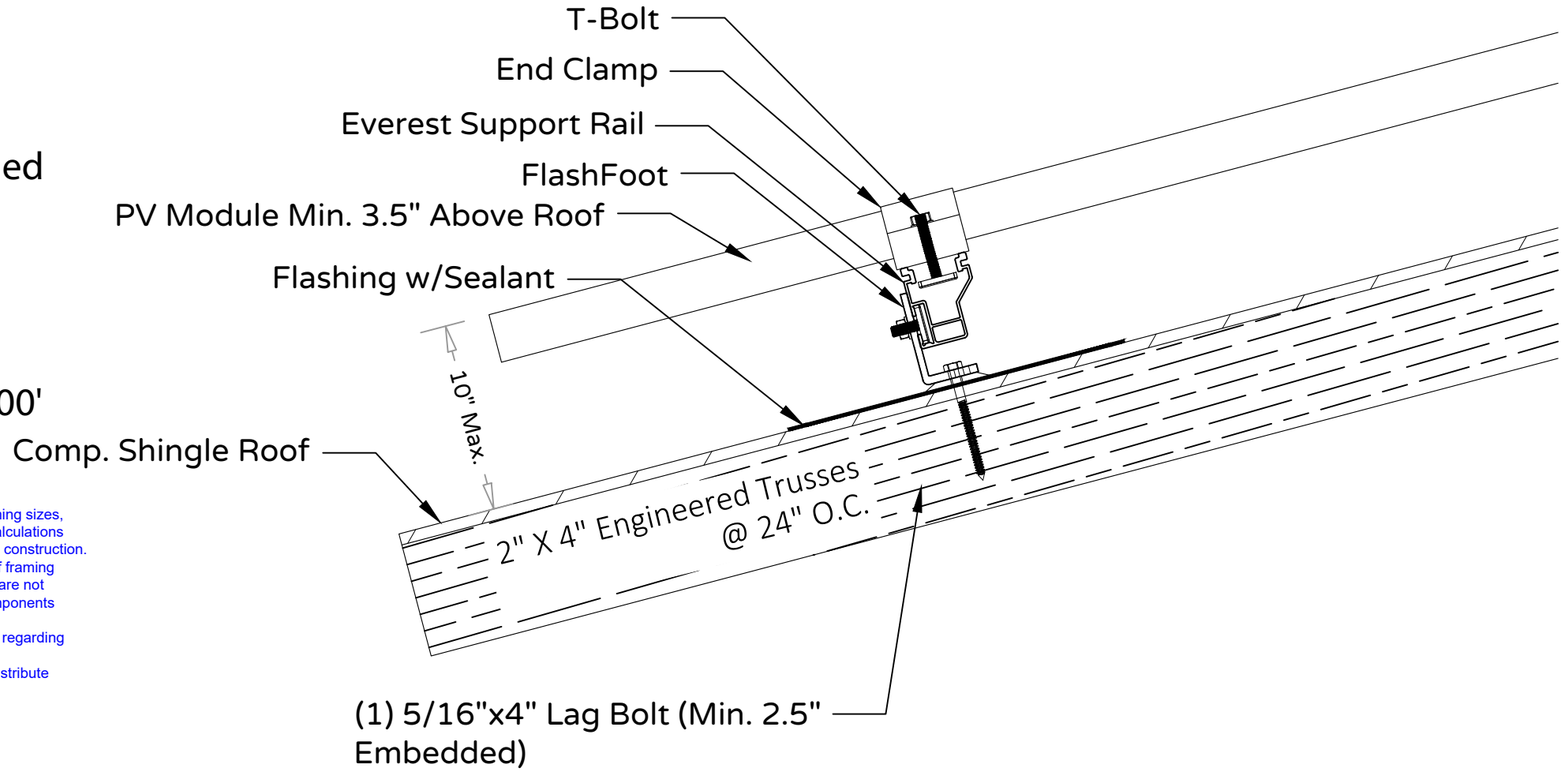


2 Roof 1 Attachment Spacing Detail
Scale: NTS

Roof Information	
Roof Material:	Comp. Shingle.
Roof Framing:	Engineered Trusses.
Framing Size & Spacing:	2" x 4", 24" O.C.
Framing Span & Roof Pitch:	8'-0", 18° Pitch
Framing Species & Grade:	Douglas Fir Larch #2.
Racking Information	
Racking / Rail Manufacture:	Everest Crossrail 48-X 14 Ft. Rails
Attachment Manufacture:	IronRidge FlashFoot.
Number of Attachments:	74 Attachments
Racking Weight:	3.56 Lbs. / Module
Module Information	
Modules:	(41) Silfab_solar SIL-320 NL
Module Dimensions:	66.93" x 39.37" x 1.5"
Module Weight & Sq.Ft. :	41.89 Lbs. , 18.3 Sq.Ft.
Array Sq.Ft. :	750.3 Sq.Ft.
Weight Calculations	
Weight w/Racking & Add Ons:	1945.45 Lbs.
Weight (Lbs.) / Attachment:	26.29 Lbs. / Attachment.
Distributed Weight on Roof:	2.59 Lbs. / Square Foot.

3 Roof 1 Calculations
Scale: NTS



NORTH CAROLINA PROFESSIONAL SEAL 047345 Exp. 12/31/2020 ENGINEER METHODE MANIRAGUHA

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Date: 2020.03.19 14:17:47 -07'00'

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1 Roof 1 Attachment Detail
Scale: NTS

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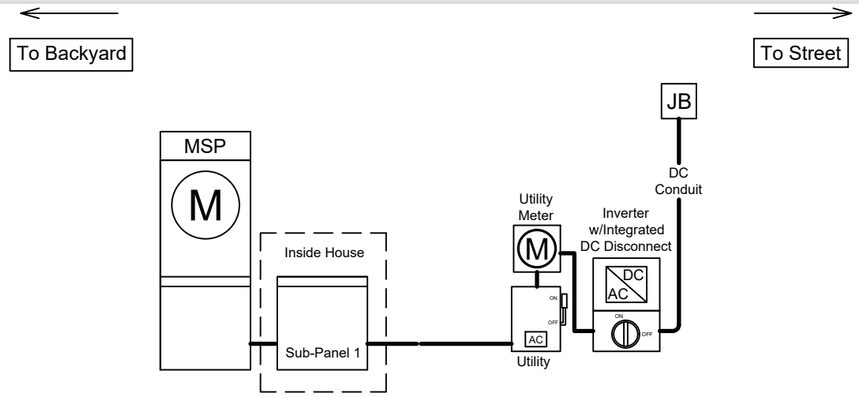
SHEET
PV-2.1

LABEL PLACEMENT	LABELS
JUNCTION BOX	6, 12
DC CONDUIT	12
INVERTER	6, 9, 10
AC DISCONNECT	4, 6, 15, 16
PERFORMANCE METER	7
SUB PANEL	8, 10, 16
MAIN SERVICE PANEL	1, 2, 4, 5, 11, 13, 14, 16, 17



1 PV Equipment Location & Fire Label Placement Table

Scale: NTS

(1) **CAUTION**
PHOTOVOLTAIC SYSTEM CIRCUITS IS BACKRED
LOCATION : BACKFED BREAKER
CODE REF. : NEC 705.12(4)

(2) **WARNING**
INVERTER OUTPUT CONNECTION:
DO NOT RELOCATE THIS
OVERCURRENT DEVICE
LOCATION : BACKFED BREAKER
CODE REF. : 2017 NEC 705.12(2)(3)(B)

(3) **WARNING**
A GENERATION SCOURCE IS CONNECTED TO THE SUPPLY (UTILITY) SIDE OF THE MAIN SERVICE DISCONNECT.FOLLOW THE PROPER LOCK-OUT PROCEDURES TO ENSURE THE PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH IS OPENED PRIOR TO PERFORMING WORK ON THIS DEVICE
LOCATION : (IF APPLICABLE) SUPPLY SIDE TAP LOAD PANEL
CODE REF. : UTILITY

(4) PHOTOVOLTAIC AC DISCONNECT SWITCH
RATED OUTPUT CURRENT: 42A
NOMINAL OPERATING VOLTAGE: 240V
LOCATION : MAIN PANEL AC DISCONNECT(S)
CODE REF. : NEC 690.54

(5) **RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM**
LOCATION : MAIN PANEL
CODE REF. : NEC 690.12

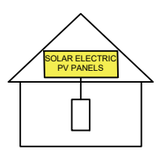
(6) **WARNING**
ELECTRIC SHOCK HAZARD
TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
LOCATION : PV SYSTEM DISCONNECT
AC DISCONNECT SWITCH
JUNCTION BOX
INVERTER
CODE REF. : NEC 690.17
UTILITY AND AHJ REQUIREMENTS

(7) PHOTOVOLTAIC SYSTEM METER
LOCATION : DEDICATE KWH METER
CODE REF. : NEC 690.4(B) UTILITY

(8) **WARNING**
PHOTOVOLTAIC SYSTEM COMBINER PANEL
DO NOT ADD LOADS
LOCATION : AC COMBINER PANEL
CODE REF. : NEC 690.13(B)

(9)
MAXIMUM VOLTAGE: 480V
MAXIMUM CIRCUIT CURRENT: 15A
MAX RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER OR DC-TO-DC CONVERTER (IF INSTALLED): 15A
LOCATION : DC DISCONNECT
INVERTER
CODE REF. : UTILITY

(10) **WARNING**
ELECTRICAL SHOCK HAZARD
TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT
LOCATION : DC DISCONNECT
COMBINER PANEL
INVERTER
CODE REF. : NEC 690.13(B)

(11) 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


LOCATION : MAIN SERVICE
CODE REF. : NEC 690.12
NEC 690.56(C)(I)(A)

(12) **WARNING: PHOTOVOLTAIC POWER SOURCE**
LOCATION : DC CONDUIT
JUNCTION BOX(NO MORE THAN 10FT)
CODE REF. : NEC 690.13(B)

(13) **CAUTION**
DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC
LOCATION : SERVICE METER MAIN PANEL
CODE REF. : UTILITY

(14) **WARNING**
INVERTER OUTPUT CONNECTION:
DO NOT RELOCATE THIS
OVERCURRENT DEVICE
LOCATION : (IF APPLICABLE) SERVICE PANEL
CODE REF. : NEC 705.12(D)(7)

(15) PHOTOVOLTAIC SYSTEM
UTILITY DISCONNECT SWITCH
LOCATION : AC DISCONNECT
CODE REF : UTILITY

(16) **WARNING**
ELECTRIC SHOCK HAZARD
IF A GROUND FAULT IS INDICATED NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED
LOCATION :AC DISCONNECT,COMBINER PANEL
SERVICE METER
CODE REF. : NEC 690.5(C)

(17) PV SOLAR BREAKER
DO NOT RELOCATE THIS
OVERCURRENT DEVICE
LOCATION : MAIN PANEL,DEAD FRONT
CODE REF : NEC 705.12(B)(2)(3)(B)

2 Fire Labels

Scale: NTS

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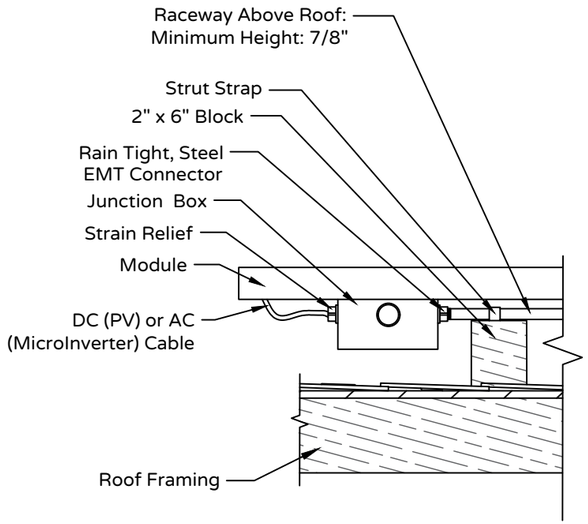
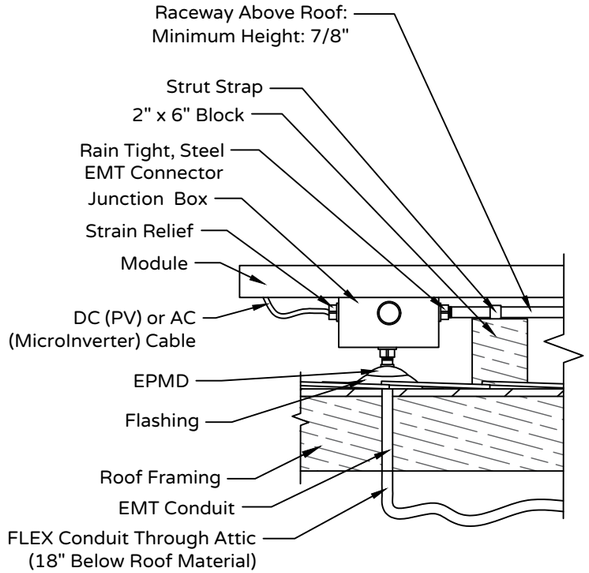
SHEET
PV-3.0

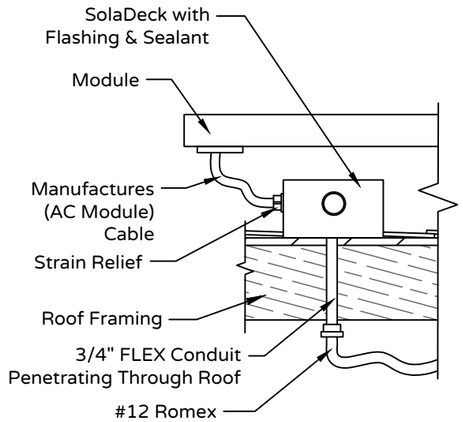
CONDUIT RUN ABOVE ROOF



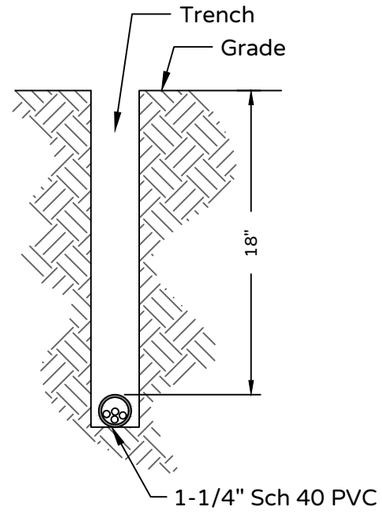
CONDUIT RUN THROUGH ATTIC



CONDUIT RUN THROUGH ATTIC WITH SOLADECK



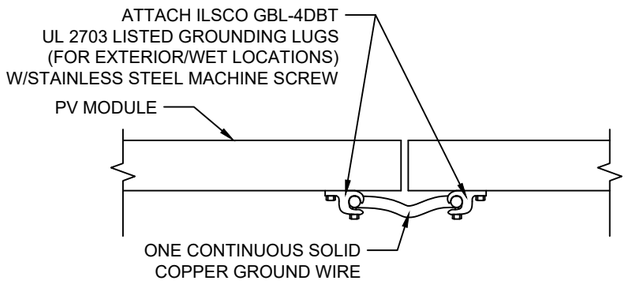
CONDUIT RUN THROUGH TRENCH



1 Conduit Run Details

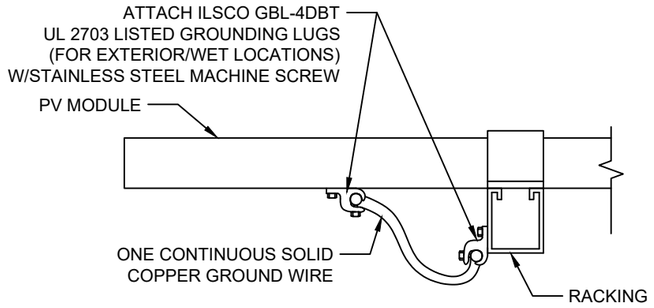
Scale: NTS

Module to Module



NTS REMOVAL OF ONE PIECE OF EQUIPMENT SHALL NOT DISCONNECT THE BONDING CONNECTION BETWEEN ANY OTHER PIECES.

Module to Rail



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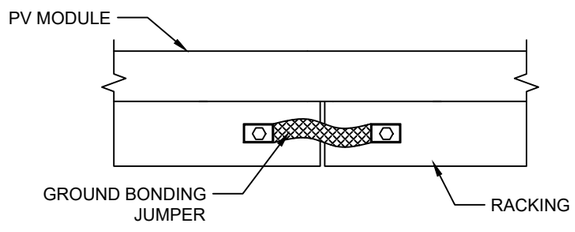
Rail to Rail



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2 Grounding Details

Scale: NTS

ID# TSP38799

CONTRACTOR INFORMATION

TITAN SOLAR POWER

Titan Solar Power NC Inc
525 W. Baseline Rd
Mesa, AZ 85210
(480) 830-9290
#U.33714

SYSTEM INFORMATION

13.12 kW DC System (STC)
10.0 kW AC System
(41) Silfab_solar SIL-320 NL
(41) SolarEdge P320 [HD] Optimizers
SolarEdge_Technologies SE10000H-US (240V)

PROJECT INFO.

Amanda Preciado
242 Appleton way
Sanford NC 27332
(919) 343-1367
APN #039589 1015 52

REVISION BLOCK

DESCRIPTION	DATE
Initial Draft of Plans	3/18/20

Design By: CNG SOLAR ENGINEERING, INC.

NABCEP CERTIFIED PV INSTALLATION PROFESSIONAL

SHEET

PV-4.0

Wire Tag	Conductor Qty. Size & Type	Neutral Qty. Size & Type	Ground Qty., Size & Type	Raceway Size & Type	Raceway Location	Raceway Height Above Roof	Output Current	125% of Output Current	Min. OCPD	Wire De-Rate Calculation: Wire Rating	Ambient Temp	# of Cond.	Final Ampacity	Dist. (Ft)	Voltage	Voltage Drop %	Conduit Fill %
DC.1	(6) #10 AWG PV Wire		(1) #10 AWG Bare Copper	Not Applicable	Under Array	1"	15A	18.8A	20A	40A	X 0.96	X 1	= 38.4A	10 Ft.	400V	0.09%	
DC.2	(6) #10 AWG THWN-2		(1) #10 AWG THWN-2	3/4" EMT Conduit	Above Roof	1"	15A	18.8A	20A	40A	X 0.96	X 0.8	= 30.7A	20 Ft.	400V	0.19%	27.8%
AC.1	(2) #6 AWG THWN-2	(1) #6 AWG THWN-2	(1) #8 AWG THWN-2	3/4" EMT Conduit	Exterior Wall	"N/A"	42A	52.5A	60A	75A	X 0.96	X 1	= 72A	5 Ft.	240V	0.09%	35.5%

PV Module 1
(41) Silfab_solar
SIL-320 NL
Power at STC: 320W
Power at PTC: 290.4W
V-oc: 40.1V V-mp: 32.88V
I-sc: 10.32A I-mp: 9.74A
V-oc Temp Coefficient: -0.28%/°C
Output (I-sc x 1.25 x 1.25): 16.1A

PV Optimizer 1
(41)SolarEdge P320 [HD]
Max I-sc Input: 11A
Max V-oc Input: 48V
Max Power Per String: 6000W
Inverter 1 (4480W/400V) = 11.2A

Inverter 1
SolarEdge_Technologies SE10000H-US (240V)
Max Output Current: 42A
Safety Rating: (42A x 1.25) = 52.5A
Minimum OCPD: 55A
Max Number of Strings: 3
Number of MPPT's: 1
Maximum Input Voltage: 480V
Transformerless (Y/N): Yes

Operating Current:	11.2A
Operating Voltage:	400V
Maximum System Voltage:	480V
Short Circuit Current:	15A

Performance Meter 1
Utility Performance Meter
2 Pole, Feeder Entrance: Standard
EATON 011 600V, 125A 4T, A RING TYPE, FORM 2S W/ISOLATED NEUTRAL OR EQUIVALENT

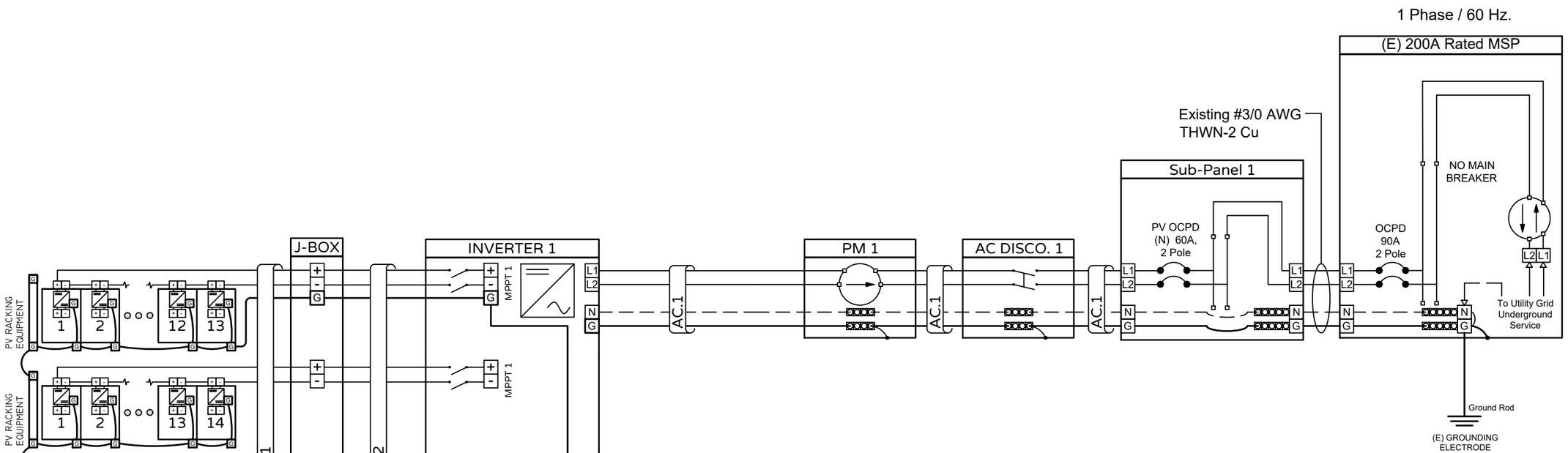
Sub-Panel 1

Existing or New:	(E)
Rating:	200A Sub-Panel, Main-Lug Only
PV Breaker 1	(N) 60A, 2 Pole
Total	60A

AC Disconnect #1
60A Utility AC Disconnect #1,
2 Pole, Knife-Blade Type,
NON-FUSED VISIBLE OPEN
60A/240V 2P 10KAIC EATON
CAT# DG222URB OR EQUIV.

Main Service Panel 1
Existing 200A MSP, No
1Ø, 3W, 120/240V
Utility: Central Electric Membership Corporation
Interconnection: Existing Sub-Panel
Main Breaker De-Rated:No

CENTRAL ELECTRIC MEMBERSHIP CORPORATION UTILITY



Bus Bar Rating:	200A
Main Breaker Rating:	90A
PV OCPD:	60A
Interconnection Calculation: 120% Rule	
(60A + 90A) = 150A (<=) 240A	

Ambient Temperature Information	
Extreme Min Temp:	-13°C
Ambient Temp:	34°C
Ambient Temp. Adjustments	
0" to 7/8" Above Roof:	67°C
Voltage Drop Information	
DC Voltage Drop:	0.28%
AC Voltage Drop:	0.09%
Total System Voltage Drop:	0.37%

1 Three Line Diagram
Scale: NTS

ID# TSP38799

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Mesa, AZ 85210
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DESCRIPTION	DATE
Initial Draft of Plans	3/18/20

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NABCEP CERTIFIED PV INSTALLATION PROFESSIONAL

SHEET
PV-4.1

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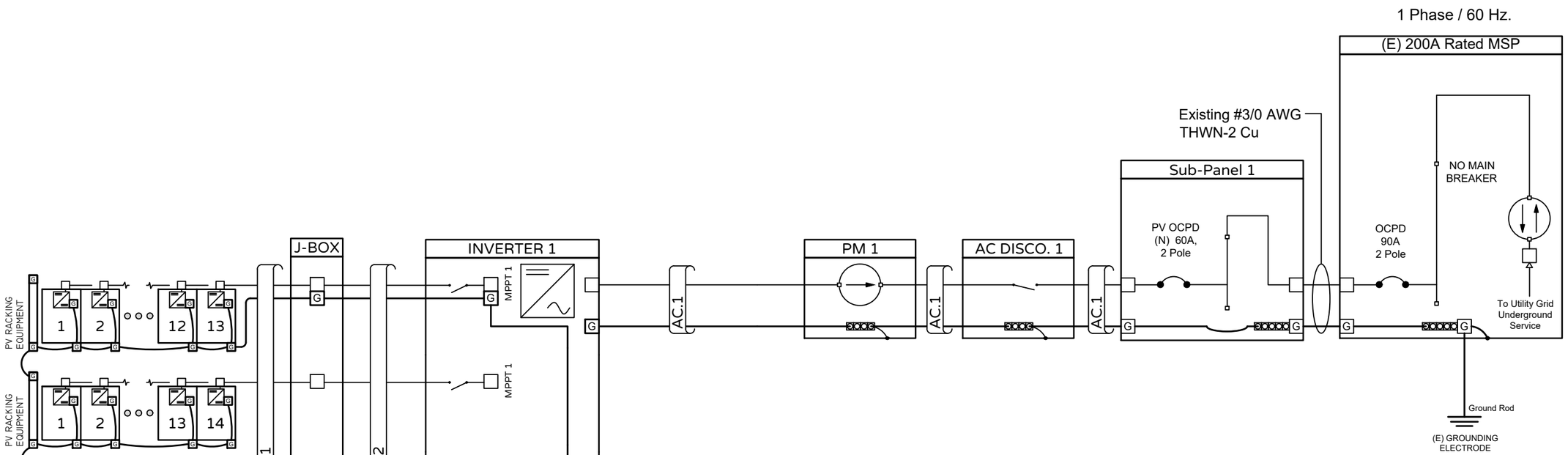
Interconnection: Existing Sub-Panel
Main Breaker De-Rated:No

CENTRAL ELECTRIC MEMBERSHIP CORPORATION UTILITY



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1 One Line Diagram
Scale: NTS

ID# TSP38799

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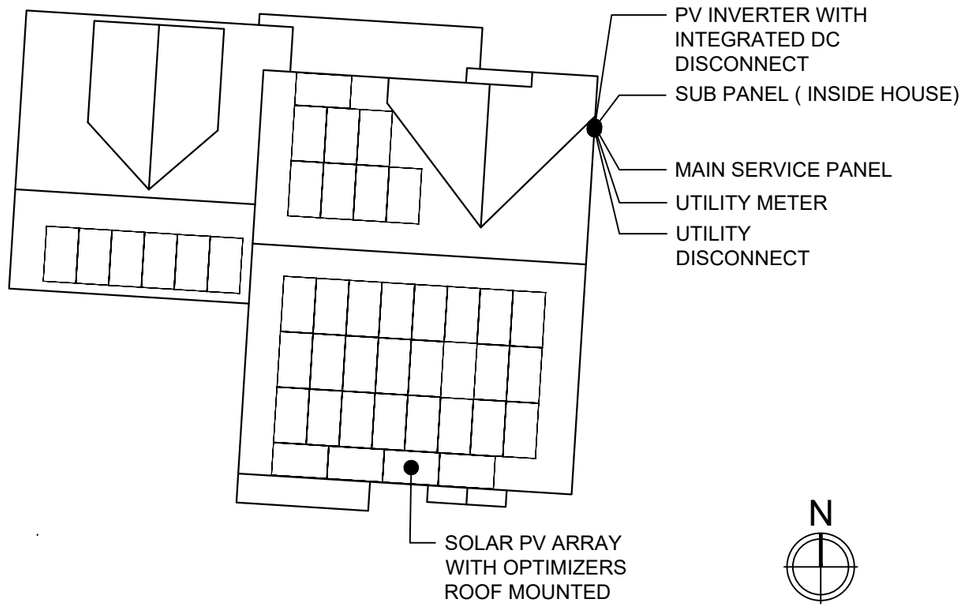
NABCEP CERTIFIED PV INSTALLATION PROFESSIONAL

SHEET
PV-4.2

NOTES: INSTALLERS SHALL DRAW IN DESIGNATED SAFETY AREA AROUND HOME. INSTALLERS SHALL UPDATE NAME, ADDRESS, AND PHONE NUMBER OF NEAREST URGENT CARE FACILITY RELATIVE TO THE SITE BEFORE STARTING WORK.

242 Appleton way



LOCATION OF NEAREST URGENT CARE FACILITY

NAME:
ADDRESS:
PHONE NUMBER:

1 Safety Placard
Scale: NTS

ID# TSP38799

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NABCEP CERTIFIED PV INSTALLATION PROFESSIONAL

SHEET
PV-5.0

SIL-320 NL

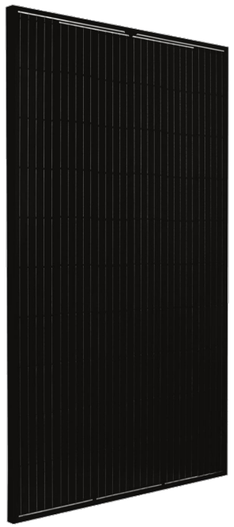
Silfab SOLAR

BAA ARRA · 25 YEAR PRODUCT WARRANTY · AUTOMATED MANUFACTURING · JUST-IN-TIME · PVEL DNV-GL TOP PERFORMER · TIER 1 BANKABLE $$$ · HIGH EFFICIENCY

60 Cell
Monocrystalline PV Module

CE · Intertek · Intertek · IEC · CEC LISTED · FSEC · Fraunhofer ISE

CHUBB*
* Chubb provides error and omission insurance to Silfab Solar Inc.



INDUSTRY LEADING WARRANTY
All our products include an industry leading 25-year product workmanship and 30-year performance warranty.

35+ YEARS OF SOLAR INNOVATION
Leveraging over 35+ years of worldwide experience in the solar industry, Silfab is dedicated to superior manufacturing processes and innovations such as Bifacial and Back Contact technologies, to ensure our partners have the latest in solar innovation.

NORTH AMERICAN QUALITY
Silfab is the largest and most automated solar manufacturer in North America. Utilizing premium quality materials and strict quality control management to deliver the highest efficiency, premium quality PV modules 100% made in North America.

BAA / ARRA COMPLIANT
Silfab panels are designed and manufactured to meet Buy American Act Compliance. The US State Department, US Military and FAA have all entrusted Silfab panels in their solar installations.

LIGHT AND DURABLE
Engineered to accommodate low load bearing structures up to 5400Pa. The light-weight frame is exclusively designed for wide-ranging racking compatibility and durability.

LOWEST DEFECT RATE
Total automation ensures strict quality controls during the entire manufacturing process at our ISO certified facilities. 48.18 ppm as per December 2018.

DOMESTIC PRODUCTION
Silfab is 100% North American which means our customer service is direct, efficient and local. Your solar panels can be delivered anywhere in the Continental USA within days.

AESTHETICALLY PLEASING
All black sleek design doesn't compromise on quality.

PID RESISTANT
PID Resistant due to advanced cell technology and material selection. In accordance to IEC 62804-1

Electrical Specifications		SIL-320 NL mono PERC	
Test Conditions		STC	NOCT
Module Power (Pmax)	Wp	320	242
Maximum power voltage (Vpmax)	V	32.88	29.59
Maximum power current (Ipmax)	A	9.74	8.18
Open circuit voltage (Voc)	V	40.10	37.09
Short circuit current (Isc)	A	10.32	8.46
Module efficiency	%	18.8	17.8
Maximum system voltage (VDC)	V	1000	
Series fuse rating	A	20	
Power Tolerance	Wp	-0/+10	

Measurement conditions: STC 1000 W/m2 • AM 1.5 • Temperature 25 °C • NOCT 800 W/m² • AM 1.5 • Measurement uncertainty ≤ 3%
• Sun simulator calibration reference modules from Fraunhofer Institute. Electrical characteristics may vary by ±5% and power by -0/+10W .

Temperature Ratings		SIL-320 NL mono PERC
Temperature Coefficient Isc	%/oC	0.064
Temperature Coefficient Voc	%/oC	-0.28
Temperature Coefficient Pmax	%/oC	-0.36
NOCT (± 2°C)	°C	45
Operating temperature	°C	-40/+85

Mechanical Properties and Components		SIL-320 NL mono PERC
Module weight (± 1 kg)	kg	19
Dimensions (H x L x D; ± 1mm)	mm	1700 x 1000 x 38 mm
Maximum surface load (wind/snow)*	N/m²	4000 Pa rear load / 5400 Pa front load
Hail impact resistance		ø 25 mm at 83 km/h
Cells		60 - Si mono-PERC - 5 busbar - 158.75 x 158.75 mm
Glass		3.2 mm high transmittance, tempered, DSM anti-reflective coating
Backsheet		High durability, superior hydrolysis resistance, multi-layer dielectric film
Frame		Anodized Al (Black)
Bypass diodes		3 diodes, 20SQ040 (45V/20A)
Cables and connectors (See installation manual)		1200 mm ø 5.7 mm (4 mm2), MC4 compatible (refer to installation manual)
Junction Box		UL 3730 Certified, IP67 rated

Warranties		SIL-320 NL mono PERC
Module product workmanship warranty		25 years**
Linear power performance guarantee		30 years ≥ 97% end of 1st year ≥ 90% end of 12th year ≥ 82% end of 25th year ≥ 80% end of 30th year

Certifications		SIL-320 NL mono PERC
Product		ULC ORD C1703, UL 1703, IEC 61215, IEC 61730-1 and IEC 61730-2 Certified. FSEC and CEC listed. IEC 62716 Ammonia Corrosion, IEC 61701:2011 Salt Mist Corrosion Certified UL Fire Rating: Type 2
Factory		ISO9001:2015

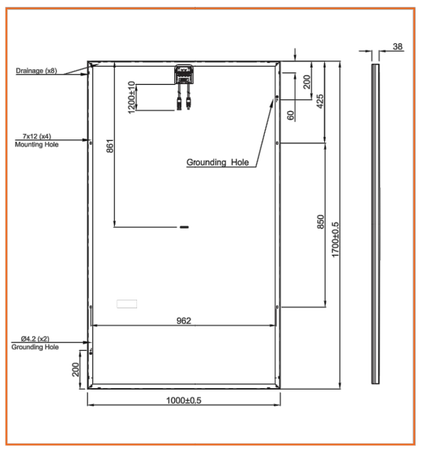
*Please refer to the Safety and Installation Manual for mounting specifications.
**12 year extendable to 25 years subject to registration and conditions outlined under "Warranty" at www.silfabsolar.com.

⚠ Warning: Read the installation and User Manual before handling, installing and operating modules.

Third-party generated pan files from Fraunhofer-Institute for Solar Energy Systems ISE are available for download at: www.silfabsolar.com/downloads

2019 TOP PERFORMER PVEL DNV-GL PV MODULE RELIABILITY SCORECARD

- Modules Per Pallet: 26
- Pallets Per Truck: 36
- Modules Per Truck: 936



Silfab Solar Inc.
240 Courtneypark Drive East
Mississauga ON L5T 2Y3 Canada
Tel +1 905-255-2501 | Fax +1 905-696-0267
info@silfabsolar.com | www.silfabsolar.com

Silfab Solar Inc.
800 Cornwall Ave
Bellingham WA 98225 USA
Tel +1 360-569-4733

1 Module Data Sheets
Scale: NTS

ID# TSP38799

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NABCEP CERTIFIED PV INSTALLATION PROFESSIONAL

DATA SHEET

INVERTERS

Single Phase Inverter with HD-Wave Technology

for North America

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

12-25 YEAR WARRANTY

Optimized installation with HD-Wave technology

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

solaredge.com

solaredge

Single Phase Inverter with HD-Wave Technology for North America

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

	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
OUTPUT								
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	✓	Vac
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac
AC Frequency (Nominal)	59.3 - 60 - 60.5[1]							Hz
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A
GFDI Threshold	1							A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							
INPUT								
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W
Transformer-less, Ungrounded	Yes							
Maximum Input Voltage	480							Vdc
Nominal DC Input Voltage	380				400			Vdc
Maximum Input Current @240V[2]	8.5	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V[2]	-	9	-	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45							Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600kΩ Sensitivity							
Maximum Inverter Efficiency	99	99.2						%
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption	< 2.5							W
ADDITIONAL FEATURES								
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)							
Revenue Grade Data, ANSI C12.20	Optional[3]							
Rapid Shutdown - NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect							
STANDARD COMPLIANCE								
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07							
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)							
Emissions	FCC Part 15 Class B							
INSTALLATION SPECIFICATIONS								
AC Output Conduit Size / AWG Range	3/4" minimum / 14-6 AWG					3/4" minimum /14-4 AWG		
DC Input Conduit Size / # of Strings / AWG Range	3/4" minimum / 1-2 strings / 14-6 AWG					3/4" minimum / 1-3 strings / 14-6 AWG		
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174					21.3 x 14.6 x 7.3 / 540 x 370 x 185		in / mm
Weight with Safety Switch	22 / 10		25.1 / 11.4	26.2 / 11.9		38.8 / 17.6		lb / kg
Noise	< 25				<50			dBA
Cooling	Natural Convection							
Operating Temperature Range	-40 to +140 / -25 to +60[4] (-40°F / -40°C option)[5]							°F / °C
Protection Rating	NEMA 4X (Inverter with Safety Switch)							

(1) For other regional settings please contact SolarEdge support
(2) A higher current source may be used; the inverter will limit its input current to the values stated
(3) Revenue grade inverter P/N: SExxxxH-US000NNC2
(4) For power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf
(5) -40 version P/N: SExxxxH-US000NNU4

RoHS

1 Inverter Data Sheets
Scale: NTS

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DATA SHEET

Power Optimizer

For North America

P320 / P340 / P370 / P400 / P405 / P505

POWER OPTIMIZER

PV power optimization at the module-level

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

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Power Optimizer

For North America

P320 / P340 / P370 / P400 / P405 / P505

Optimizer model (typical module compatibility)	P320 (for 60-cell modules)	P340 (for high-power 60-cell modules)	P370 (for higher-power 60 and 72-cell modules)	P400 (for 72 & 96-cell modules)	P405 (for thin film modules)	P505 (for higher current modules)	
INPUT							
Rated Input DC Power[1]	320	340	370	400	405	505	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	48		60	80	125[2]	83[2]	Vdc
MPPT Operating Range	8 - 48		8 - 60	8 - 80	12.5 - 105	12.5 - 83	Vdc
Maximum Short Circuit Current (Isc)	11			10.1		14	Adc
Maximum DC Input Current	13.75			12.63		17.5	Adc
Maximum Efficiency	99.5						%
Weighted Efficiency	98.8					98.6	%
Overvoltage Category	II						
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)							
Maximum Output Current	15						Adc
Maximum Output Voltage	60				85		Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)							
Safety Output Voltage per Power Optimizer	1 ± 0.1						Vdc
STANDARD COMPLIANCE							
EMC	FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3						
Safety	IEC62109-1 (class II safety), UL1741						
RoHS	Yes						
INSTALLATION SPECIFICATIONS							
Maximum Allowed System Voltage	1000						Vdc
Compatible inverters	All SolarEdge Single Phase and Three Phase inverters						
Dimensions (W x L x H)	129 x 153 x 27.5 / 5.1 x 6 x 1.1			129 x 153 x 33.5 / 5.1 x 6 x 1.3	129 x 159 x 49.5 / 5.1 x 6.3 x 1.9	129 x 162 x 59 / 5.1 x 6.4 x 2.3	mm / in
Weight (including cables)	630 / 1.4			750 / 1.7	845 / 1.9	1064 / 2.3	gr / lb
Input Connector	MC4[3]						
Output Wire Type / Connector	Double Insulated; MC4						
Output Wire Length	0.95 / 3.0		1.2 / 3.9				m / ft
Input Wire Length	0.16 / 0.52						m / ft
Operating Temperature Range	-40 - +85 / -40 - +185						°C / °F
Protection Rating	IP68 / NEMA6P						
Relative Humidity	0 - 100						%

[1] Rated STC power of the module. Module of up to +5% power tolerance allowed
[2] NEC 2017 requires max input voltage be not more than 80V
[3] For other connector types please contact SolarEdge

PV System Design Using a SolarEdge Inverter[4][5]		Single Phase HD-Wave	Single phase	Three Phase 208V	Three Phase 480V	
Minimum String Length (Power Optimizers)	P320, P340, P370, P400	8		10	18	
	P405 / P505	6		8	14	
Maximum String Length (Power Optimizers)		25		25	50[6]	
Maximum Power per String		5700 (6000 with SE7600-US - SE11400-US)	5250	6000[7]	12750[8]	W
Parallel Strings of Different Lengths or Orientations		Yes				

[4] For detailed string sizing information refer to: http://www.solaredge.com/sites/default/files/string_sizing_na.pdf
[5] It is not allowed to mix P405/P505 with P320/P340/P370/P400 in one string
[6] A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement
[7] For SE14.4KUS/SE43.2KUS: It is allowed to install up to 6,500W per string when 3 strings are connected to the inverter (3 strings per unit for SE43.2KUS) and when the maximum power difference between the strings is up to 1,000W
[8] For SE30KUS/SE33.3KUS/SE66.6KUS/SE100KUS: It is allowed to install up to 15,000W per string when 3 strings are connected to the inverter (3 strings per unit for SE66.6KUS/SE100KUS) and when the maximum power difference between the strings is up to 2,000W

CE RoHS

1 Optimizer Data Sheets
Scale: NTS

ID# TSP38799

CONTRACTOR INFORMATION

TITAN SOLAR POWER

Titan Solar Power NC Inc
525 W. Baseline Rd
Mesa, AZ 85210
(480) 830-9290
#U.33714

SYSTEM INFORMATION

13.12 kW DC System (STC)
10.0 kW AC System
(41) Silfab_solar SIL-320 NL
(41) SolarEdge P320 [HD] Optimizers
SolarEdge_Technologies SE10000H-US (240V)

PROJECT INFO.

Amanda Preciado
242 Appleton way
Sanford NC 27332
(919) 343-1367
APN #039589 1015 52

REVISION BLOCK

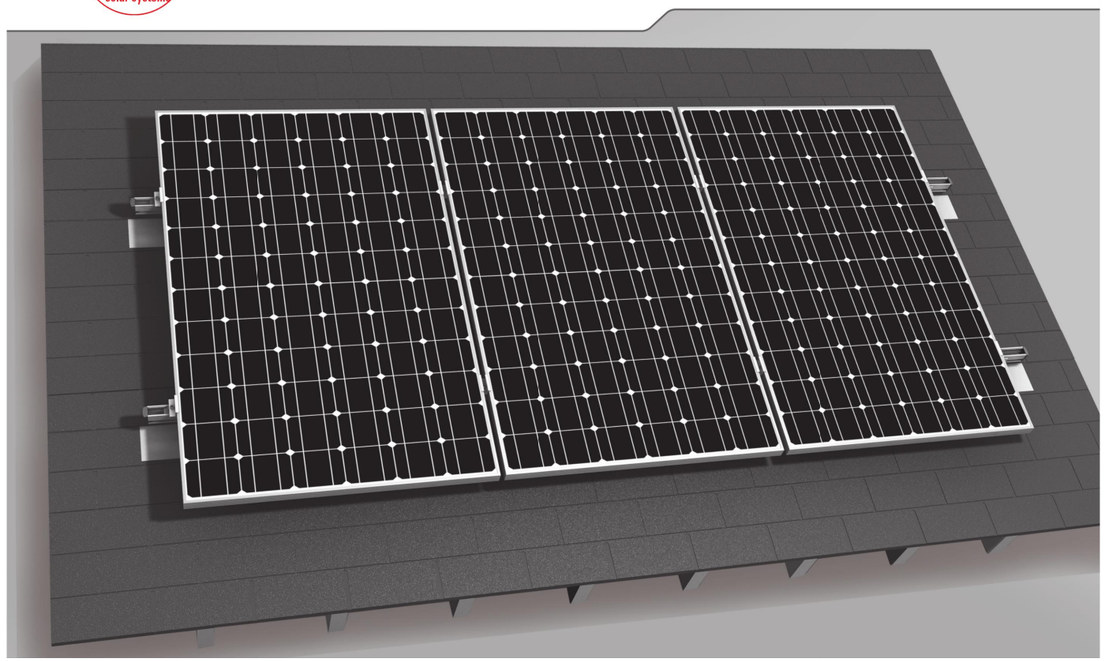
DESCRIPTION	DATE
Initial Draft of Plans	3/18/20

Design By: CNG SOLAR ENGINEERING, INC.

NABCEP CERTIFIED PV INSTALLATION PROFESSIONAL

DATA SHEET

CrossRail System



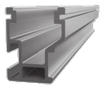
- High qualtiy, German-engineered system optimized for residential installation
- MK3 mounting hardware simplifies module installation - fast, easy and secure
- L-Foot provides adjustability and compatibility with common roof types
- 100% code compliant, structural validation for all solar states
- 3 rail sizes available to suit all structural conditions
- Fast installation with minimal component count result in low total installed cost
- Simple to design using our code compliant Everest Online Design Tool
- Use 2 innovative components to turn this system into Shared Rail or Tilt Up

Product warranty 25 years in system alliance

Components

CrossRail 48-X

Part Number	Description
4000662	CrossRail 48-X 166'', Mill
4000663	CrossRail 48-X 166'', Dark
4000675	CrossRail 48-X 175'', Mill



CrossRail 48-XL

Part Number	Description
4000695	CrossRail 48-XL 166'', Mvill
4000705	CrossRail 48-XL 166'', Dark

CrossRail 80

Part Number	Description
4000508	CrossRail 80 168" Rail Mill

CrossRail Mid Clamp

Part Number	Description
4000601	CR MC Silver, 30-47mm, Shared RL 30-42mm
4000602	CR MC Dark, 30-47mm, Shared RL 30-42mm
4000001	Shared Rail MC+ Silver, SS 43-50mm
4000002	Shared Rail MC+ Dark, SS 43-50mm

CrossRail End Clamp

Part Number	Description
4000429	CR EC Silver, 30-50mm, Shared RL 30-45mm
4000430	CR EC Dark, 30-50mm, Shared RL 30-45mm
4000003	Shared Rail EC Silver, SS 46-50mm
4000004	Shared Rail EC Dark, SS 46-50mm

Yeti Clamp

Part Number	Description
4000050	Yeti Hidden EC for CR, Mill

Aluminum End Clamp

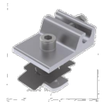
Part Number	Description
4005344	CrossRail EC Silver, AL 32-33mm
4005169	CrossRail EC Silver, AL 34-36mm
4005290	CrossRail EC Silver, AL 37-38mm
4005170	CrossRail EC Silver, AL 39-41mm
4005291	CrossRail EC Silver, AL 42-44mm
4005171	CrossRail EC Silver, AL 45-47mm
4005292	CrossRail EC Silver, AL 48mm
4005172	CrossRail EC Silver, AL 49-50mm

CrossRail Structural Rail Connector

Part Number	Description
4000385	RailConn CR 48-X,48-XL Struct Set, Mill
4000386	RailConn CR 48-X,48-XL Struct Set, Dark

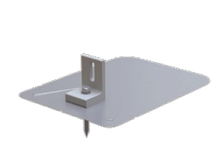
L-Foot Slotted Set

Part Number	Description
4000630	L-Foot Slotted Set, Mill
4000631	L-Foot Slotted Set, Dark



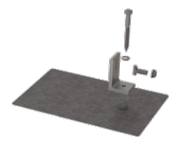
Everest Ground Lug

Part Number	Description
4000006	Everest Ground Lug Set



EverFlash XP Comp

Part Number	Description
4000054	EverFlash XP Slider Kit, Mill
4000055	EverFlash XP Slider Kit, Dark
4000057	EverFlash XP Kit, Mill LF, Dark Flash
4000060	EverFlash XP Comp Kit, Dark
4000061	EverFlash XP Comp Kit, Mill



EverFlash eComp

Part Number	Description
4000015	EverFlash eComp + SRS Slide Kit, Mill
4000366	EverFlash eComp Kit, Black
4000679	EverFlash eComp Kit, Mill LF, Dark Flash
4000367	EverFlash eComp Kit, Silver
4000027	EverFlash eComp+SR Slide Kit, Dark
4000029	EverFlash eComp+SR Slide, LF Mill, Dark

Flat Tile Hook

Part Number	Description
4000034	Flat Tile Hook, Set, W/ lags

SingleHook

Part Number	Description
4000521	SingleHook 5.5" Base TB&Nut Set, No Lags

Tile Hook 3S

Part Number	Description
4000034	Flat Tile Hook, Set, W/ lags

1 Rail Data Sheets
Scale: NTS

ID# TSP38799

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DATA SHEET

Tech Brief

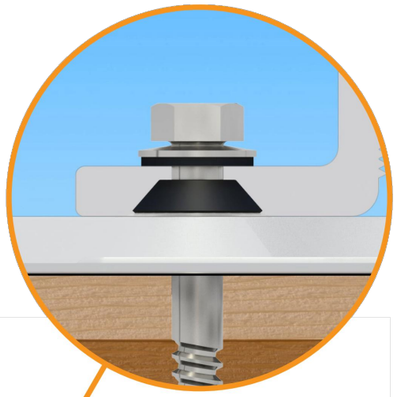
IRONRIDGE

FlashFoot™

Rapid & Secure Solar Attachments

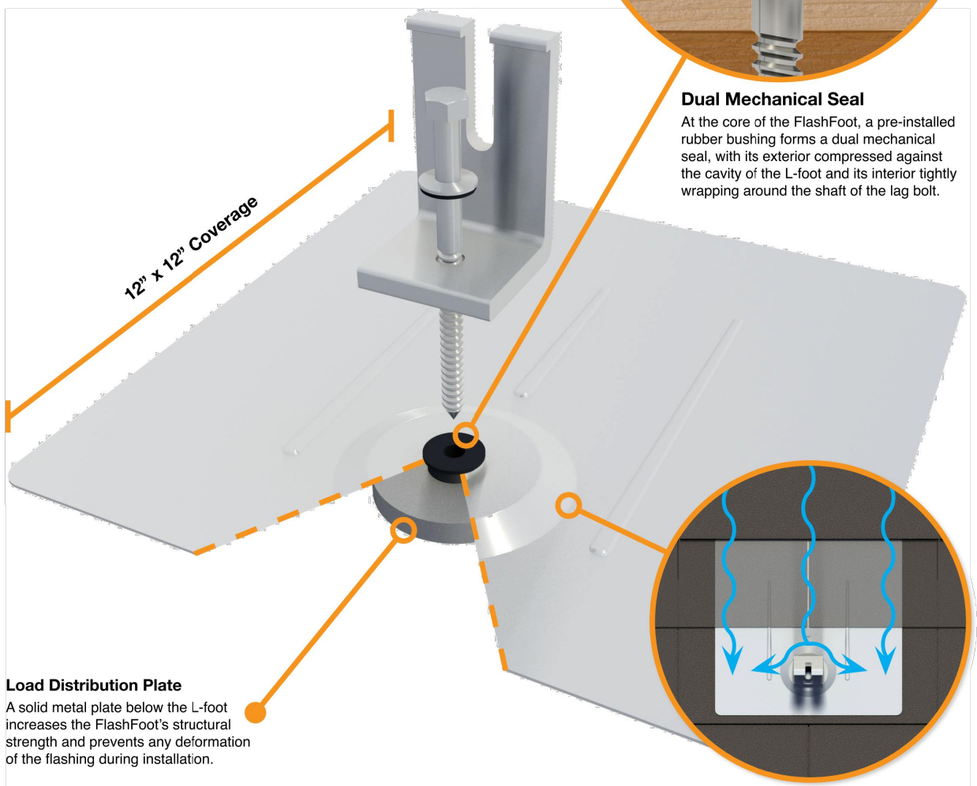
IronRidge FlashFoot™ is an all-in-one solar mounting product for composition shingle roofs that eliminates the need for separate standoffs, flashings, and L-feet.

FlashFoot incorporates a number of structural and waterproofing features to securely attach IronRidge Rails to roof structures, while also protecting against water intrusion and weather damage.



Dual Mechanical Seal

At the core of the FlashFoot, a pre-installed rubber bushing forms a dual mechanical seal, with its exterior compressed against the cavity of the L-foot and its interior tightly wrapping around the shaft of the lag bolt.



Load Distribution Plate

A solid metal plate below the L-foot increases the FlashFoot's structural strength and prevents any deformation of the flashing during installation.

Water Shedding Design

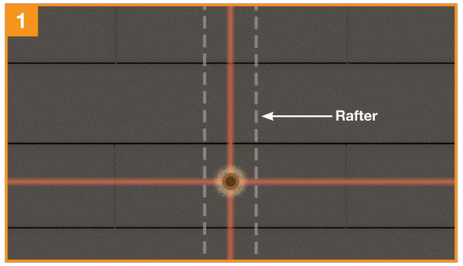
A wide flashing layer combined with an elevated sealing platform maximizes the FlashFoot's water shedding ability.

Certified compliant with IBC and IRC.

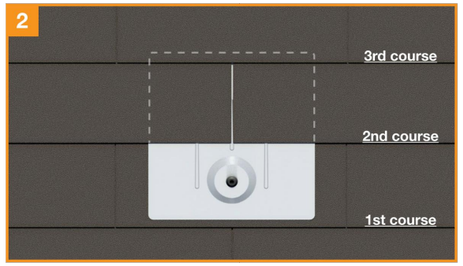
Tech Brief

Installation Overview

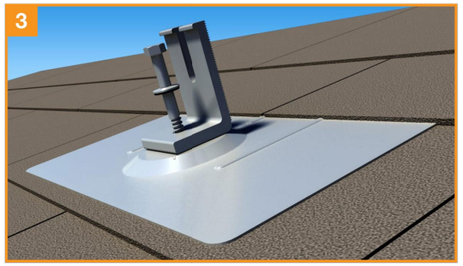
Tools Required: tape measure, chalk line, stud finder, roofing bar, caulking gun with an approved sealant, drill with 1/4" bit and 1/2" socket.



Locate rafters and snap vertical and horizontal lines to mark locations of flashings. Drill 1/4" pilot holes, then backfill with an approved sealant.



Slide flashing, between 1st and 2nd course, so the top is at least 3/4" above the edge of the 3rd course and the bottom is above the edge of the 1st course.



Line up pilot hole with flashing hole and insert lag bolt through bonded washer, L-Foot, and flashing. Tighten lag bolt until fully seated.

The FlashFoot is now installed and ready for IronRidge Rails. With provided L-foot fasteners pre-loaded into rails, drop rails into open L-foot slots.

Testing & Certification

FlashFoot is certified for compliance with the International Building Codes (IBC) & International Residential Codes (IRC) by IAPMO-ES. Mechanical testing conformed to the standard for Testing and Analysis of Joist Hangers and Miscellaneous Connectors (EC002-2011), and rain testing conformed to the Underwriters Laboratory Standard for Gas Vents (UL 441-96 Section 25).

Lag pull-out (withdrawal) capacities (lbs) in typical roof lumber (ASD)	Specific Gravity	5/16" Shaft, 3" Thread Depth
Douglas Fir, Larch	.50	798
Douglas Fir, South	.46	705
Engelmann Spruce, Lodgepole Pine (MSR 1650 f & higher)	.46	705
Hem, Fir	.43	636
Hem, Fir (North)	.46	705
Southern Pine	.55	921
Spruce, Pine, Fir	.42	615
Spruce, Pine, Fir (E of 2 million psi and higher grades of MSR and MEL)	.50	798

Sources: American Wood Council, NDS 2005, Table 11.2A, 11.3.2A; Notes: i) Thread must be embedded in a rafter or other structural roof member. ii) See IBC for required edge distances.

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