



**FARMERSVILLE CITY COUNCIL
SITTING AS THE
FARMERSVILLE ZONING BOARD OF ADJUSTMENT
May 28, 2019, 5:30 P.M.
Council Chambers, City Hall
205 S. Main Street**

I. PRELIMINARY MATTERS

Call to order, roll call

II. PUBLIC HEARING

Public Hearing to consider a request for a variance from the requirements of:

- (1) Subparagraph (8) of Paragraph (c), "Height and Yard Requirements," of Section 77-66, "Accessory Building Regulations," of the Farmersville Code to eliminate the requirement to construct a six-foot solid fence or wall along the length of the side lot line to screen the building from view save an except at the point of entry into the carport; and
- (2) Subparagraph (6), "Roof Pitch," and Subparagraph (12) of Paragraph (e), "Roofing Requirements," of Section 77-67, "Exterior Construction Standards for Structures," of the Farmersville Code to reduce the required roof pitch for a detached garage, sheds, portico or accessory structure on the same lot as a single-family or two-family dwelling from a minimum pitch of 6:12 to a minimum pitch of 0.25:12; and
- (3) Subparagraph (6) and Subparagraph b of Subparagraph (7), "Residential Parking Standards," of Paragraph (d), "Special Off-Street Parking Regulations," Section 77-70, "Off-Street Parking, Stacking and Loading," of the Farmersville Code to eliminate the requirement that a concrete pad be provided under the carport;

to allow one carport to be built on an existing tract of land that is being used for a single-family dwelling, which tract of land is platted and zoned for C-Commercial District uses, provided that all other requirements of the Farmersville Code are met. The property is generally located at 501 McKinney Street, Farmersville, Texas 75442.

III. ADJOURNMENT

The City Council reserves the right to adjourn into Executive Session at any time during the course of this meeting to discuss any matters listed on the agenda, as authorized by the Texas Government Code, including, but not limited to, Sections 551.071 (Consultation with Attorney), 551.072 (Deliberations about Real Property), 551.073 (Deliberations about Gifts and Donations), 551.074 (Personnel Matters), 551.076 (Deliberations about Security Devices), 551.087 (Economic Development), 418.175-183 (Deliberations about Homeland Security Issues) and as authorized by the Texas Tax Code, including, but not limited to, Section 321.3022 (Sales Tax Information).

Persons with disabilities who plan to attend this meeting and who may need assistance should contact the City Secretary at 972-782-6151 or Fax 972-782-6604 at least two (2) working days prior to the meeting so that appropriate arrangements can be made. Handicap Parking is available in the front and rear parking lot of the building.

I, the undersigned authority, do hereby certify that this Notice of Meeting was posted in the regular posting place of the City Hall building for Farmersville, Texas, in a place and manner convenient and readily accessible to the general public at all times, and said Notice was posted May 23, 2019 by 5:30 P.M. and remained so posted continuously at least 72 hours proceeding the scheduled time of said meeting.



Sandra Green, City Secretary





Farmersville
DISCOVER A TEXAS TREASURE

Board of Adjustment Application

Board of Adjustment:	The Farmersville City Council sits as the BOA.
Meeting Date:	2 nd or 4 th Tuesday of the month at 5:30 p.m., depending on when application was received and publication and notice was provided
Location:	City Hall Council Chambers at 205 S. Main Street
Application Fee:	Actual cost of publication, actual cost of notifications + administrative fee based on time for processing (Invoiced after request is heard by the BOA)
Items Required at Time of Submittal:	<ol style="list-style-type: none">1. Completed Application2. Exhibit showing plot plan, site, elevations, or other support paperwork

Note: Only complete application submittals will be placed on the Board of Adjustment's agenda.

In accordance with the provisions of the Texas Local Government Code §§ 211.008, *et seq.* and the City of Farmersville's Code of Ordinances, the Board of Adjustment is only authorized to consider request for variances and appeals after public hearing and notice to owners of property within 200 feet of the subject property as well as newspaper publication of the time, date and location of the hearing on the request based on the following Ordinance:

"2.5 BOARD OF ADJUSTMENT

2.5.1 ORGANIZATION

As the city is a Type A general law municipality of the state, the city councilmembers are hereby granted the authority to act as a board of adjustment under V.T.C.A., Local Government Code Ch. 211.

2.5.2 PROCEDURE

The board shall adopt rules to govern its proceedings; provided, however, that such rules are not inconsistent with this article or state statutes. Meetings of the board shall be held at the call of the chairman, and at such other times as the board may determine. The

chairman, or in his absence, the acting chairman, may administer oaths and compel the attendance of witnesses. All meetings of the board shall be open to the public. The board shall keep minutes of its proceedings, showing the vote of each member upon each question, or if absent or failing to vote, indicate such fact, and shall keep records of its examinations and other official actions, all of which shall be immediately filed in the office of the board and shall be public record.

2.5.3 APPEALS

- 1) Appeals to the board of adjustment can be taken by any person aggrieved, or by an officer, department, or board of the municipality affected, by a decision of the City Manager under this ordinance. Such appeal shall be taken within 15 days after the decision has been rendered by the City Manager, by filing with the officer from whom the appeal is taken and with the board of adjustment, a notice of appeal specifying the grounds thereof. The officer from whom the appeal is taken shall forthwith transmit to the board all the papers constituting the record upon which the action appealed from was taken.
- 2) An appeal shall stay all proceedings of the action appealed from unless the officer from whom the appeal is taken certifies to the board of adjustment, after the notice of appeal shall have been filed with him that by reason of facts stated in the certificate, a stay would, in his opinion, cause imminent peril to life or property. In such case, proceedings shall not be stayed otherwise than by a restraining order which may be granted by the board of adjustment or by a court of record on application and notice to the officer from whom the appeal is taken and on due cause shown. The board of adjustment shall fix a reasonable time for the hearing of an appeal, give the public notice thereof by posting such notice in the mail addressed to all owners of real property located within 200 feet of the property to which the appeal applies and by publishing notice of such hearing in a newspaper of general circulation in the city. Both the posted and published notice shall be given at least ten days prior to the date set for the hearing. At the hearing, any party may appear in person or by attorney or by agent.

2.5.4 JURISDICTION

When in its judgment, the public convenience and welfare will be substantially served and the appropriate use of the neighboring property will not be substantially or permanently injured, the board of adjustment may, in specific cases, after public notice and public hearing, and subject to appropriate conditions and safeguards, authorize the following special exception to the regulations herein established.

- 1) Permit the reconstruction, extension or enlargement of a building occupied by a nonconforming use of the lot or tract occupied by such building, provided such reconstruction does not prevent the return of such property to a conforming use.
- 2) Permit such modifications of the height, yard, area, coverage, and parking regulations as may be necessary to secure appropriate development of a parcel of land which differs from other parcels in the district by being of such restricted area, shape, or slope that it cannot be appropriately developed without such modification.
- 3) Require the discontinuance of nonconforming uses of land or structure under any plan whereby the full value of the structure and facilities can be amortized within a definite period of time, taking into consideration the general character of the neighborhood and the necessity for all property to conform to the regulations of this article. All actions to discontinue a nonconforming use of land and structure shall be taken with due regard for the property rights of the persons affected when considered in the light of the public welfare and the character of the area surrounding the designated nonconforming use and the conservation and preservation of property. The board shall, from time to time on its own motion or upon cause presented by interested property owners, inquire into the existence, continuation or maintenance of any nonconforming use within the city.
- 4) To bring about the discontinuance of a nonconforming use under a plan whereby the owner's actual investment in the structures on the property prior to the time that the use became nonconforming can be amortized within a definite time period.

2.5.5 ACTION OF THE BOARD OF ADJUSTMENT

- 1) In exercising its powers the board may, in conformity with the provisions of V.T.C.A., Local Government Code Ch. 211, as amended, revise or reform, wholly or partly, or may modify the order, requirement, decisions, or determination appealed from and make such order, requirement, decisions, or determination as ought to be made and shall have all the powers of the officer from whom the appeal is taken, including the power to impose reasonable conditions to be complied with by the applicant.
- 2) The concurring vote of four members of the board shall be necessary to revise any order, requirements, decision or determination of the City Manager, or to decide in favor of the applicant on any matter upon which it is required to pass under the ordinance from which this section is derived or to affect any variance in such ordinance.

31) Any persons, jointly or severally, aggrieved by any decision of the board of adjustment or any tax payer or any officer, department or board of the municipality may present to a court of record a petition, duly verified, setting forth that such decision is illegal, in whole or part, specifying the grounds of the illegality. Such petition shall be presented to the court within ten days after the filing of the decision in the office of the board and not thereafter."

[Remainder of page intentionally left blank.]



Board of Adjustment Application

Variance

Appeal

Today's Date: _____

Contact Information			
Property Location: <u>501 Mckinney St. Farmersville, TX 75442</u> <small>(street address)</small>			
Subdivision: _____		Lot: _____	Block: _____
Property Owner: <u>Minerva Jernigan</u> <u>501 Mckinney St. Farmersville, TX 75442</u> <small>(Name) (Address) (City, State, & Zip Code)</small>			
Property Owner is giving <u>Josh Tabor</u> authority to represent him/her at meeting. <small>(Applicant Name)</small>			
Property Owner Printed Name: <u>Minerva Jernigan</u> Property Owner Signature: _____			
Applicant: <u>Josh Tabor</u> <u>3914 Sandshell Dr. Fort Worth, TX 76137</u> <small>(Name) (Address) (City, State, & Zip Code)</small>			
<u>josh@circlesolar.com</u> <small>(Email)</small>		<u>817-945-2011</u> <small>(Phone)</small>	

REQUEST			
Please list types requested:			
Description	Ordinance Requirements	Requested Dimensions	Variance from Ordinance
Lot Size			
Lot Width			
Lot Depth			
Side Yard			
Side at Corner			
Front Yard			
Rear Yard			
Driveway			
Exterior Construction			
Other			
PLEASE DESCRIBE THE REASON(S) YOU ARE REQUESTING TO BE HEARD BY THE BOARD OF ADJUSTMENT. YOU ARE REQUIRED TO ATTACH INFORMATION TO SUPPORT YOUR REQUEST.			
<p>(1) Subparagraph (8) of Paragraph (c), "Height and Yard Requirements," of Section 77-66, "Accessory Building Regulations," of the Farmersville Code to eliminate the requirement to construct a six-foot solid fence or wall along the length of the side lot line to screen the building from view save an except at the point of entry into the carport; and</p> <p>(2) Subparagraph (6), "Roof Pitch," and Subparagraph (12) of Paragraph (e), "Roofing Requirements," of Section 77-67, "Exterior Construction Standards for Structures," of the Farmersville Code to reduce the required roof pitch for a detached garage, sheds, portico or accessory structure on the same lot as a single-family or two-family dwelling</p>			

from a minimum pitch of 0.25:12; and

(3) Subparagraph (6) and Subparagraph b of Subparagraph (7), "Residential Parking Standards," of Paragraph (d), "Special Off-Street Parking Regulations," Section 77-70, "Off-Street Parking, Stacking and Loading," of the Farmersville Code to eliminate the requirement that a concrete pad and/or an all-weather parking surface (concrete, asphalt, paving stones or other hard surfaced durable all-weather material approved by the building official) be provided under the carport

Empty lines for additional text or notes.

Items Submitted: Completed Application Exhibit showing plot plan, site, elevations, or other paperwork

I hereby certify that the above states are true and correct to the best of my knowledge.

Property Owner Signature (if different from applicant) _____

Applicant's Signature _____

STATE OF TEXAS

COUNTY OF _____

Subscribed and sworn to before me this _____ day of _____, 20 _____

Notary Public _____

(seal)

My Commission expires: _____

NOTICE: This publication can be made available upon request in alternative formats, such as, Braille, large print, audiolaps or computer disk. Requests can be made by calling 972-782-6151 (Voice) or email s.green@farmersvilletx.com. Please allow at least 48 hours for your request to be processed.

****OFFICE USE ONLY****

Seeking a variance from Farmersville Zoning Ordinance, Section No:

BOA Number:

Received stamp:

Large empty box for received stamp.

GENERAL NOTES:

- 1.1.1 PROJECT NOTES:
- 1.1.2 THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (NEC), ARTICLE 690, ALL MANUFACTURERS LISTING AND INSTALLATION INSTRUCTIONS AND THE RELEVANT CODES AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION'S (AHD) APPLICABLE CODES.
- 1.1.3 GROUND FAULT DETECTION AND INTERRUPTION (GFDI) DEVICES IS INTEGRATED WITH THE INVERTER IN ACCORDANCE WITH (NEC 690-11(B))
- 1.1.4 THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION
- 1.1.5 LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH (NEC 705.12 (A))
- 1.1.6 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)
- 1.1.7 PV MODULES UL1703 CERTIFIED, NFPA 70 CLASS C FIRE INVERTER(S) UL 1741 CERTIFIED, IEEE 1547, 928, 319 COMBINER BOX(S); UL 1703 OR UL 1741 ACCESSORY
- 1.2 SCOPE OF WORK:
- 1.2.1 PRIME CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC SYSTEM RETROFIT.
- 1.2.2 PRIME CONTRACTOR WILL BE RESPONSIBLE FOR COLLECTING EXISTING ON-SITE REQUIREMENTS TO DESIGN, SPECIFY, AND INSTALL THE EXTERIOR ROOF-MOUNTED PORTION OF THE PHOTOVOLTAIC SYSTEMS DETAILED IN THIS DOCUMENT
- 1.3.1 WORK INCLUDES:
- 1.3.2 PV ROOF ATTACHMENTS
- 1.3.3 PV RACKING SYSTEM INSTALLATION
- 1.3.4 PV MODULE AND INVERTER INSTALLATION
- 1.3.5 PV EQUIPMENT GROUNDING
- 1.3.6 PV SYSTEM WIRING TO A ROOF-MOUNTED JUNCTION BOX
- 1.3.7 PV INSTALLING SYSTEM MONITORING EQUIPMENT (IF APPLICABLE)
- 1.3.8 PV LOAD CENTERS (IF NECESSARY)
- 1.3.9 PV METERING (IF NECESSARY)
- 1.3.10 PV DISCONNECTS
- 1.3.11 PV GROUNDING ELECTRODE & BONDING TO (E) GEC
- 1.3.12 PV FINAL COMMISSIONING
- 1.3.13 (E) ELECTRICAL EQUIPMENT RETROFIT FOR PV

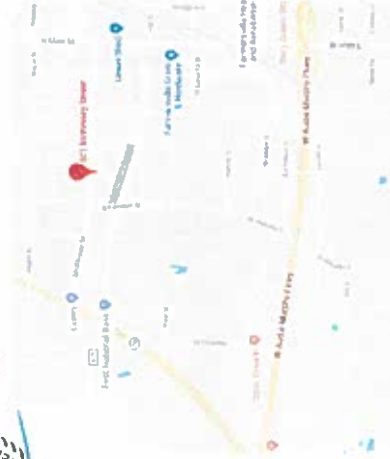
NEW PV SYSTEM: 15.860 kWp

JERNIGAN RESIDENCE

501 MCKINNEY STREET
FARMERSVILLE, TX 75442



A AERIAL PHOTO
T-001 NOT TO SCALE



B VICINITY MAP
T-001 NOT TO SCALE

SYSTEM SUMMARY		
BRANCH #1	BRANCH #2	BRANCH #3
24	20	8
32A	37A	
7.320W	6.100W	2.400W
15.650W		
13.938W		
80A		
19.200W		
19.000W		
DESIGN TEMPERATURES		
ASHRAE EXTREME LOW -11.7°C (10.94°F), SOURCE: DFW INTERNATIONAL (KDFW) 32.9°, -97.017°		
ASHRAE 2% HIGH 40°C (104°F), SOURCE: DFW INTERNATIONAL (KDFW) 32.9°, -97.017°		

SHEET INDEX

SHEET NUMBER	SHEET TITLE
T-001	COVER PAGE
G-001	NOTES
A-101	SITE PLAN
A-102	ELECTRICAL PLAN
A-103	SOLAR ATTACHMENT PLAN
E-601	LINE DIAGRAM
E-602	PLACARDS
E-603	CARPENT DETAILS
S-501	ASSEMBLY DETAILS
R-001	RESOURCE DOCUMENT
R-002	RESOURCE DOCUMENT
R-003	RESOURCE DOCUMENT
R-004	RESOURCE DOCUMENT
R-005	RESOURCE DOCUMENT
R-006	RESOURCE DOCUMENT
R-007	RESOURCE DOCUMENT

PROJECT INFORMATION

OWNER
NAME: MINERVA JERNIGAN
PHONE: (469) 525-6240

PROJECT MANAGER
NAME: KRISTAL MANNING
PHONE: (817) 945-2011 x7014

CONTRACTOR
NAME: CIRCLE L SOLAR LLC
PHONE: 817-945-2011

AUTHORITIES HAVING JURISDICTION
BUILDING: COLLIN COUNTY (FARMERSVILLE CITY)
ZONING: COLLIN COUNTY (FARMERSVILLE CITY)
UTILITY: TXU

DESIGN SPECIFICATIONS
OCCUPANCY: II SINGLE-FAMILY RESIDENTIAL
CONSTRUCTION: RESIDENTIAL
ZONING: RESIDENTIAL
GROUND SNOW LOAD: 5 PSF
WIND EXPOSURE: C
WIND SPEED: 115 MPH

APPLICABLE CODES & STANDARDS
BUILDING: IBC 2015/IRC 2015
ELECTRICAL: NEC 2017
FIRE: IFC 2015
ENERGY: IECC 2015

SCOPE OF WORK
SYSTEM SIZE: STC: 52 x 308 = 15.86 kW
PTC: 52 x 288 = 13.936 kW
(52) MISSION SOLAR: MS605SQB1
(2) SOLAR EDGE INVERTER SE7600H-US

ROOF MATERIAL: COMPOSITE SHINGLES
ATTACHMENT TYPE: IRON RIDGE
MSP UPGRADE: NO



CONTRACTOR
CIRCLE L SOLAR, INC.

PHONE: 817-945-2011
ADDRESS: 3914 SAUNDERSHILL DRIVE
FORT WORTH, TX 76137
E.C. NO. PVA-052717-017793
INC. NO.
ELE. NO. 32667

NEW PV SYSTEM: 15.860 kWp
JERNIGAN RESIDENCE
501 MCKINNEY STREET
FARMERSVILLE, TX 75442

ENGINEER OF RECORD

PAPER SIZE: 11" x 17" (ANSI B)
COVER PAGE

DATE: 04.26.2019
DESIGN BY: FDA
CHECKED BY: JT
REVISIONS:

T-001.00



CONTRACTOR
CIRCLE 1 SOLAR, INC.

PHONE: 817-912-2011
ADDRESS: 3914 SANDSHILL DRIVE
FORT WORTH, TX 76137
LIC. NO.: PVA-052717-017793
ELE. NO.: 32897

NEW PV SYSTEM: 15,860 W/6
**JERNIGAN
RESIDENCE**
501 KACIKNEY STREET
FARMERSVILLE, TX 75442

**ENGINEER OF
RECORD**

PAPER SIZE: 11" x 17" (ANSI B)

NOTES

DATE: 04/26/2019
DESIGN BY: FDA
CHECKED BY: JT
REVISIONS:

G-001.00

- 2.7.4 PV SYSTEM SHALL BE GROUNDED IN ACCORDANCE TO (NEC 250.211), (NEC TABLE 250.122), AND ALL METAL PARTS OR MODULE FRAMES ACCORDING TO (NEC 690.43).
- 2.7.5 MODULE SOURCE CIRCUITS SHALL BE GROUNDED IN ACCORDANCE TO (NEC 690.42).
- 2.7.6 THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.
- 2.7.7 EACH MODULE WILL BE GROUNDED USING WEBB GROUNDING CLIPS THE SUPPLIED CONNECTION POINTS IDENTIFIED IN THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- 2.7.8 AC CONDUCTORS >#4AWG COLOR CODED OR MARKED: PHASE A OR L1-BLACK PHASE B OR L2-RED NEUTRAL- WHITE/GRAY AND MAY BE USED INSIDE
- 2.7.9 *USE 2 IS NOT INDOOR RATED BUT PV CABLE IS RATED THWN/THWN-2
- 2.7.10 GROUNDING AND BONDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR DIRECT BURIAL.
- 2.7.11 EQUIPMENT GROUNDING CONDUCTORS SHALL BE COPPER, SOLID OR STRANDED, AND BARE WHEN EXPOSED.
- 2.7.12 (NEC 690.45) AND BE A MINIMUM OF #10AWG WHEN NOT EXPOSED TO DAMAGE (#6AWG SHALL BE USED WHEN EXPOSED TO DAMAGE).
- 2.7.13 GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLOR CODED GREEN (OR MARKED GREEN IF #4 AWG OR LARGER).
- 2.7.14 ALL CONDUIT BETWEEN THE UTILITY AC DISCONNECT AND THE POINT OF CONNECTION SHALL HAVE GROUNDED BUSHINGS AT BOTH ENDS.
- 2.7.15 AC SYSTEM GEC SIZED ACCORDING TO (NEC 690.47), (NEC TABLE 250.66), DC SYSTEM GEC SIZED ACCORDING TO (NEC 705.12)(1), MINIMUM #8AWG WHEN INSULATED, #6AWG WHEN EXPOSED TO DAMAGE.
- 2.8.1 EXPOSED NON-CURRENT CARRYING METAL PARTS OF MODULE FRAMES, EQUIPMENTS, AND CONDUCTOR ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.136(A) REGARDLESS OF VOLTAGE.
- 2.8.2 DISCONNECT NOTES:
2.8.2 SWITCH IS OPERATED THE CONDUCTORS REMAINING LIVE ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS)
- 2.8.3 AC DISCONNECT MUST BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH.



04/26/2019

- 2.4.1 WIRING & CONDUIT NOTES:
- 2.4.2 ALL CONDUIT SIZES AND TYPES, SHALL BE LISTED FOR ITS PURPOSE AND APPROVED FOR THE SITE APPLICATIONS.
- 2.4.3 ALL CONDUCTORS AND OCPD SIZES AND TYPES SPECIFIED ACCORDING TO (NEC 690.8 (A)(1) & (A)(2)), (NEC 240) (NEC 701) FOR MULTIPLE CONDUCTORS
- 2.4.4 PHASE AND NEUTRAL CONDUCTORS SHALL BE DUAL RATED THHN/THWN-2 INSULATED, 90°C RATED, WET AND UV RESISTANT, RATED FOR 600V PER NEC 2008 OR 1000V PER NEC 2011.
- 2.4.5 VOLTAGE DROP LIMITED TO 2% FOR DC CIRCUITS AND 1% FOR AC CIRCUITS
- 2.4.6 AC CONDUCTORS >#4AWG COLOR CODED OR MARKED: PHASE A OR L1-BLACK PHASE B OR L2-RED NEUTRAL- WHITE/GRAY AND MAY BE USED INSIDE
- 2.4.7 *USE 2 IS AVAILABLE AS UV WHITE
- 2.5.1 STRUCTURAL NOTES:
- 2.5.2 RACKING SYSTEM & PV ARRAY SHALL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL.
- 2.5.3 ROOF-MOUNTED STANDARD RAIL REQUIRES ONE THERMAL EXPANSION GAP FOR EVERY RUN OF RAIL GREATER THAN 40"
- 2.5.4 PV ARRAY SHALL BE A MIN. HEIGHT OF 3" ABOVE THE COMPOSITION ROOF.
- 2.5.5 JUNCTION BOX SHALL BE INSTALLED PER MANUFACTURER'S REQUIREMENTS. IT SHALL BE FLASHED & SEALED PER LOCAL ROOFING PENETRATIONS PERTAINING TO SOLAR RACKING WILL BE COMPLETED AND SEALED W/APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.
- 2.5.7 ALL PV RELATED RACKING ATTACHMENTS WILL BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER OR SUPPLIER. ATTACHMENT LOCATIONS MAY BE ADJUSTED IN THE FIELD AS NECESSARY.
- 2.5.8 ALL PV RELATED RACKING ATTACHMENTS SHALL BE STAGGERED BY ROW AMONGST THE ROOF FRAMING MEMBERS.
- 2.6.1 INTERCONNECTION NOTES:
- 2.6.2 PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED AT THE OPPOSITE END OF THE BUS FROM THE MAIN SERVICE BREAKER OR TRANSFORMER INPUT FEEDER.
- 2.6.3 SUM OF BREAKER RATINGS SUPPLYING THE BUS MAY NOT EXCEED 120% OF THE BUSBAR RATING PER (NEC 705.12)(D)(1).
- 2.6.4 SUPPLY SIDE INTERCONNECTION ACCORDING TO (NEC 705.12)(A) WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH (NEC 230.42)(B) MICROINVERTER BRANCHES SHALL BE CONNECTED TO A SINGLE BREAKER OCPD IN ACCORDANCE WITH (NEC.110.3)(B).
- 2.7.1 GROUNDING NOTES:
- 2.7.2 A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH (NEC 690-47) AND (NEC 250-50) THROUGH (NEC 60-250-166) SHALL BE PROVIDED. PER NEC, GROUNDING ELECTRODE SYSTEM OF EXISTING BUILDING MAY BE USED AND BONDDED TO AT THE SERVICE ENTRANCE. IF EXISTING SYSTEM IS INACADEQUATE, OR INADEQUATE, OR IS ONLY METALLIC WATER PIPING, A SUPPLEMENTAL GROUNDING ELECTRODE WILL BE USED AT THE INVERTER LOCATION CONSISTING OF A UL LISTED 8 FT. GROUND ROD WITH A CORON CLAMP. FOR ALL NEW GROUNDING, USE A MINIMUM OF 2 GROUNDING ELECTRODES. ANY ELECTRICAL SYSTEM SHALL BE NO LESS THAN #8 AWG COPPER OR #6 AWG ALUMINUM COPPER AND BONDDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE FOR A COMPLETE SYSTEM.
- 2.7.3 GROUNDING ELECTRODE SYSTEM SHALL BE NO LESS THAN #8 AWG COPPER OR #6 AWG ALUMINUM COPPER AND BONDDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE FOR A COMPLETE SYSTEM.

- 2.1.1 SITE NOTES:
- 2.1.2 A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
- 2.1.3 THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS AN UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.
- 2.1.4 THE SOLAR PV INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
- 2.1.5 PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION (NEC 110.26)
- 2.1.6 THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE BETWEEN THE GROUNDING ELECTRODE AND THE PANEL (OR INVERTER) IF SMALLER THAN #6 AWG COPPER WIRE PER NEC 250-64B FOR THE GROUNDING ELECTRODE CONDUCTOR WILL BE CONTINUOUS, EXCEPT FOR SPLICES OR JOINTS AT BUSBARS WITHIN LISTED EQUIPMENT PER (NEC 250.64C).
- 2.1.7 ROOF COVERINGS SHALL BE DESIGNED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THIS CODE AND THE APPROVED MANUFACTURER'S INSTRUCTIONS SUCH THAT THE ROOF COVERING SHALL SERVE TO PROTECT THE BUILDING OR STRUCTURE.
- 2.1.8 RIGID CONDUIT (AND/OR NIPPLES) MUST HAVE A PULL BUSHING TO PROTECT WIRES.
- 2.1.9 ANY CONNECTION ABOVE LIVE PARTS MUST BE WATER-TIGHT. REDUCING WASHERS DISALLOWED ABOVE LIVE PARTS. MEYERS HUBS RECOMMENDED.
- 2.2.1 SOLAR CONTRACTOR:
- 2.2.2 MODULE CERTIFICATIONS WILL INCLUDE UL1703, IEC61646, IEC61730
- 2.2.3 IF APPLICABLE, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE MARKED GROUNDING (LUG HOLES PER THE MANUFACTURER'S INSTALLATION REQUIREMENTS).
- 2.2.4 EACH MODULE WILL BE GROUNDED USING WEBB GROUNDING CLIPS THE SUPPLIED CONNECTION POINTS IDENTIFIED AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHI.
- 2.2.5 CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS.
- 2.2.6 CONDUIT POINT OF PENETRATION FROM EXTERIOR TO INTERIOR TO BE INSTALLED AND SEALED WITH A SUITABLE SEALING COMPOUND.
- 2.2.7 DC WIRING LIMITED TO MODULE FOOTPRINT WHEN PHASE AC SYSTEM.
- 2.2.8 ENPHASE WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY W/SUITABLE WIRING CLIPS.
- 2.2.9 MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC UNLESS NOT AVAILABLE.
- 2.2.10 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).
- 2.2.11 ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE.
- 2.3.1 EQUIPMENT LOCATIONS:
- 2.3.2 ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY (NEC 110.26)
- 2.3.3 EQUIPMENT INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY (NEC 690.31 (A)-(B)) AND (NEC TABLE 310.15 (B)(2)(C)).
- 2.3.4 ADDITIONAL AC DISCONNECTS SHALL BE PROVIDED WHERE THE INVERTER IS NOT ADJACENT TO THE UTILITY AC DISCONNECT OR NOT WITHIN SIGHT OF THE UTILITY AC DISCONNECT.
- 2.3.5 ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.
- 2.3.6 ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE, WHEN APPROPRIATE.



CONTRACTOR
CIRCLE I SOLAR, INC.

PHONE: 817-945-2011
ADDRESS: 3016 SANDSHILL DRIVE
FORT WORTH, TX 76137
LIC. NO.: PVA-052217-017793
PIC. NO.:
ELE. NO.: 32997

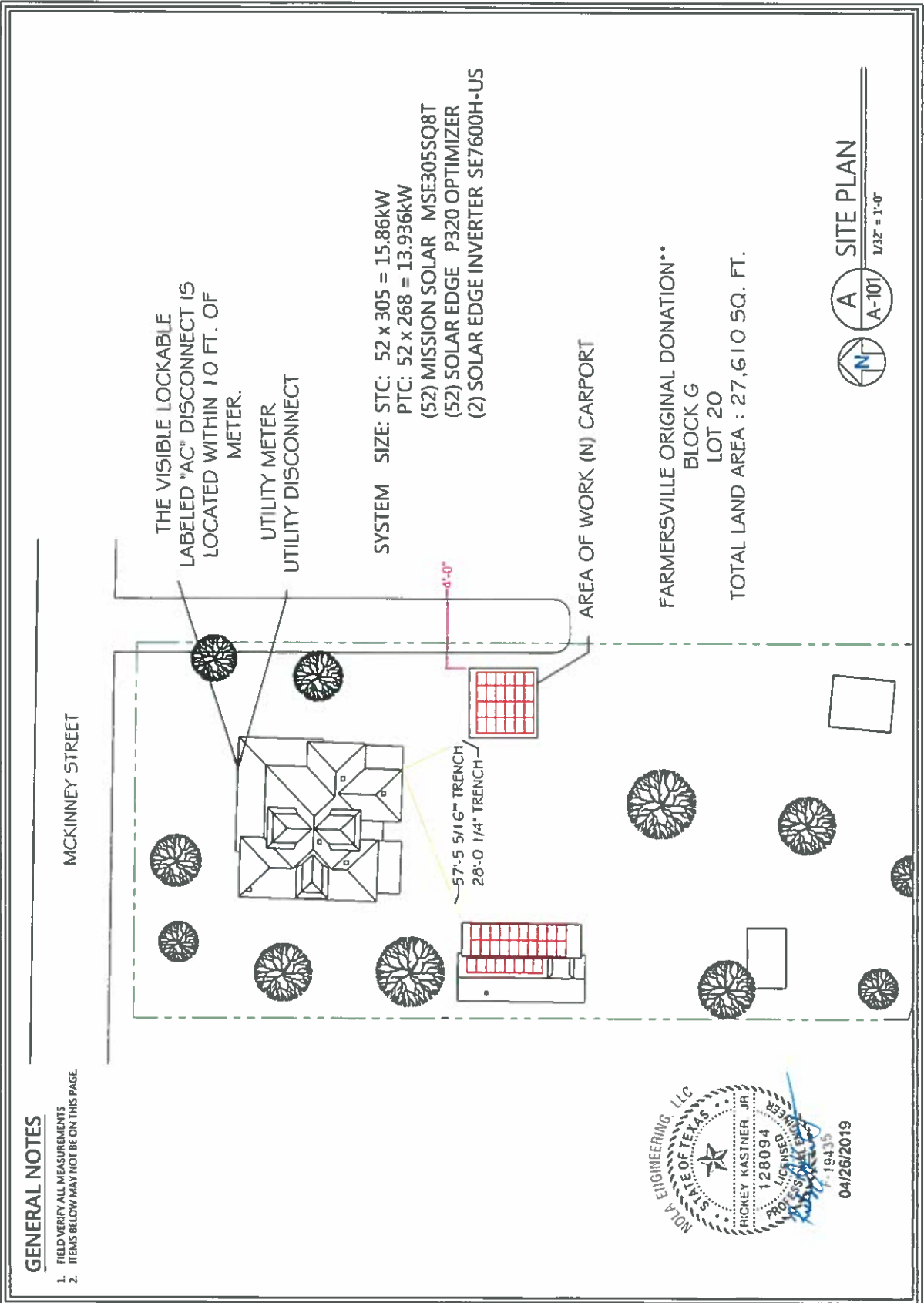
NEW PV SYSTEM: 15,860 WHP
**JERNIGAN
RESIDENCE**
501 MCKINNEY STREET
FARMERSVILLE, TX 75442

**ENGINEER OF
RECORD**

PAPER SIZE: 11" x 17" (ANSI B)
SITE PLAN

DATE: 04.26.2019
DESIGN BY: FDA
CHECKED BY: JT
REVISIONS:

A-101.00



GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS
2. ITEMS BELOW MAY NOT BE ON THIS PAGE.

THE VISIBLE LOCKABLE
LABELED "AC" DISCONNECT IS
LOCATED WITHIN 10 FT. OF
METER.

UTILITY METER
UTILITY DISCONNECT

SYSTEM SIZE: STC: 52 x 305 = 15.86kW
PTC: 52 x 268 = 13.936kW

- (52) MISSION SOLAR MSE305SQ8T
- (52) SOLAR EDGE P320 OPTIMIZER
- (2) SOLAR EDGE INVERTER SE7600H-US

AREA OF WORK (N) CARPORT

FARMERSVILLE ORIGINAL DONATION**
BLOCK G
LOT 20

TOTAL LAND AREA : 27,610 SQ. FT.



A
A-101
1/32" = 1'-0"





CONTRACTOR
 CIRCLE L SOLAR, INC.
 PHONE: 817-945-2011
 ADDRESS: 1814 SANDSHILL DRIVE
 FORT WORTH, TX 76117
 E.C. NO.: PVA-052217-037793
 E.L.E. NO.: 32887

NEW PV SYSTEM: 15,860 WWP
**JERNIGAN
 RESIDENCE**
 501 MCKINNEY STREET
 FARMERSVILLE, TX 75442

**ENGINEER OF
 RECORD**

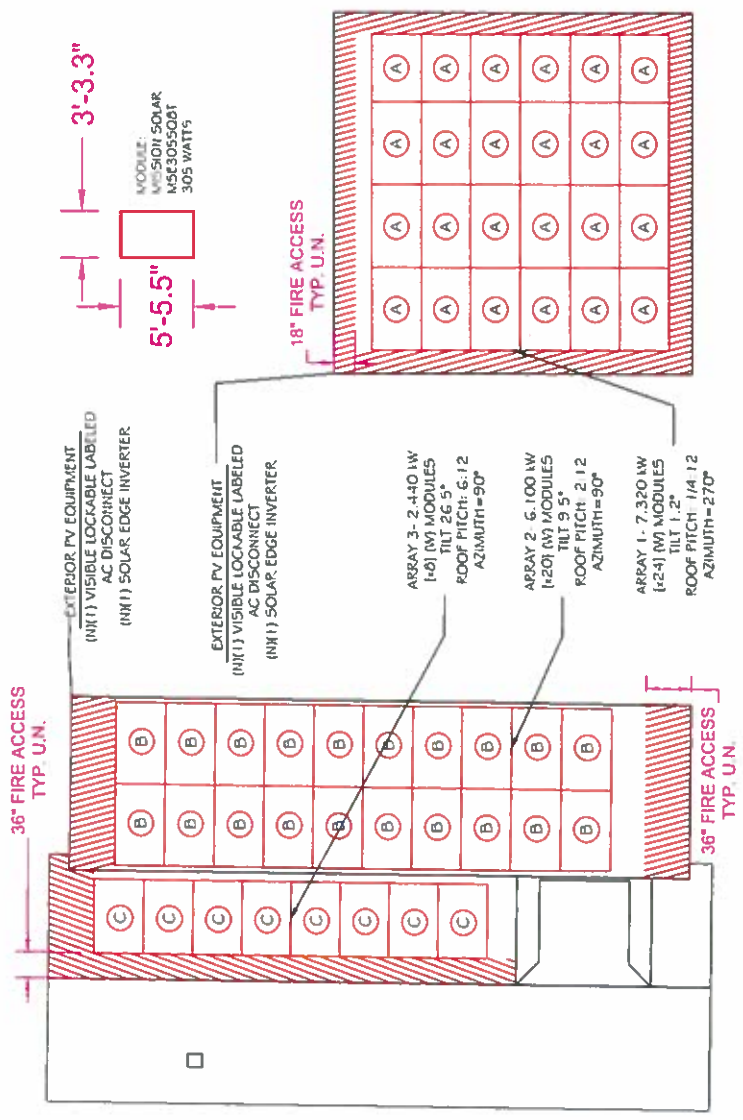
PAPER SIZE: 11" x 17" (ANSI B)
**ELECTRICAL
 PLAN**

DATE: 04/26/2019
 DESIGN BY: FDA
 CHECKED BY: JT
 REVISIONS:

A-102.00

GENERAL NOTES

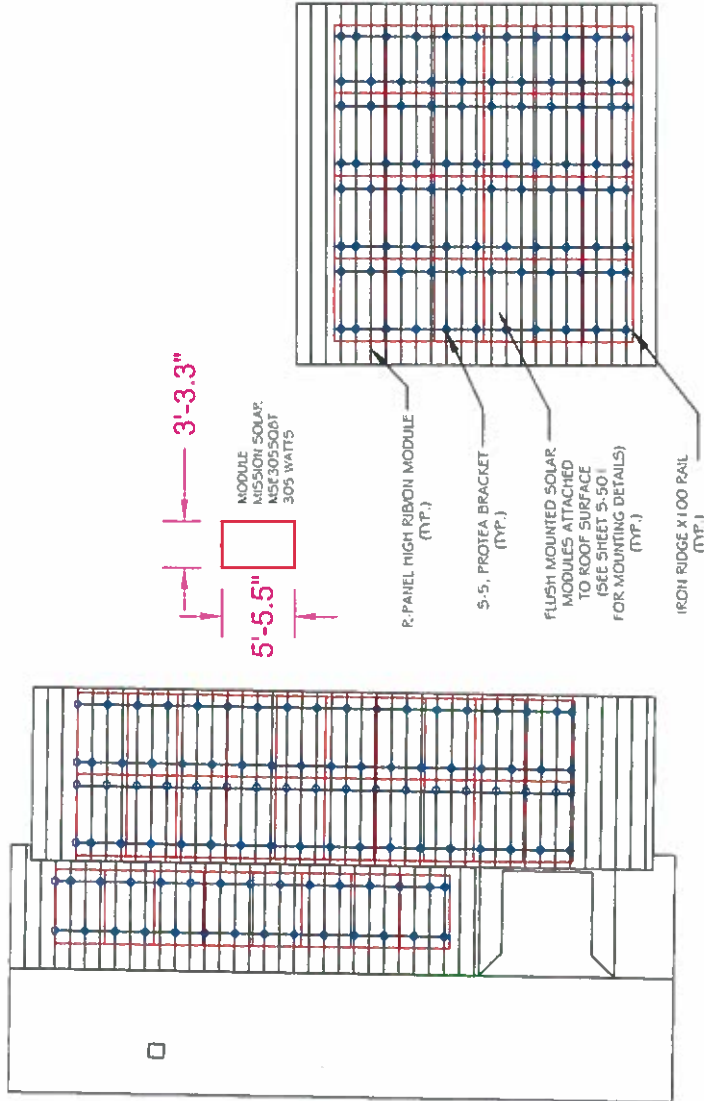
1. FIELD VERIFY ALL MEASUREMENTS
2. ITEMS BELOW MAY NOT BE ON THIS PAGE



ELECTRICAL PLAN
 1/8"=1'-0"

GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS
2. ITEMS BELOW MAY NOT BE ON THIS PAGE



CONTRACTOR
CIRCLE L SOLAR, INC.

PHONE: 817-945-2011
ADDRESS: 3814 SANDSHILL DRIVE
FORT WORTH, TX 76137

LIC. NO.: PVA-052217-017793
REC. NO.:
E.L.C. NO.: 33687

NEW PV SYSTEM: 15,860 KWp
**JERNIGAN
RESIDENCE**
501 MCCORMICK STREET
FARMERSVILLE, TX 75442

**ENGINEER OF
RECORD**

PAPER SIZE: 11" x 17" (ANSI B)
**SOLAR ATTACHMENT
PLAN**

DATE: 04.26.2019
DESIGN BY: FDA
CHECKED BY: JT
REVISIONS

A-103.00

A SOLAR ATTACHMENT PLAN
1/8" = 1'-0"



CONTRACTOR
CIRCLE L SOLAR, INC.

PHONE: 817-945-2011
ADDRESS: 3014 SANDSHILL DRIVE
FORT WORTH, TX 76137
E.C. NO.: PVA-052217-017793
E.E. NO.: 32897

NEW PV SYSTEM: 15.860 kW
**JERNIGAN
RESIDENCE**
501 MC DONNEY STREET
FARMERSVILLE, TX 75442

**ENGINEER OF
RECORD**

PAPER SIZE: 11" x 17" (ANSI B)
LINE DIAGRAM

DATE: 04.26.2019
DESIGN BY: FDA
CHECKED BY: JT
REVISIONS

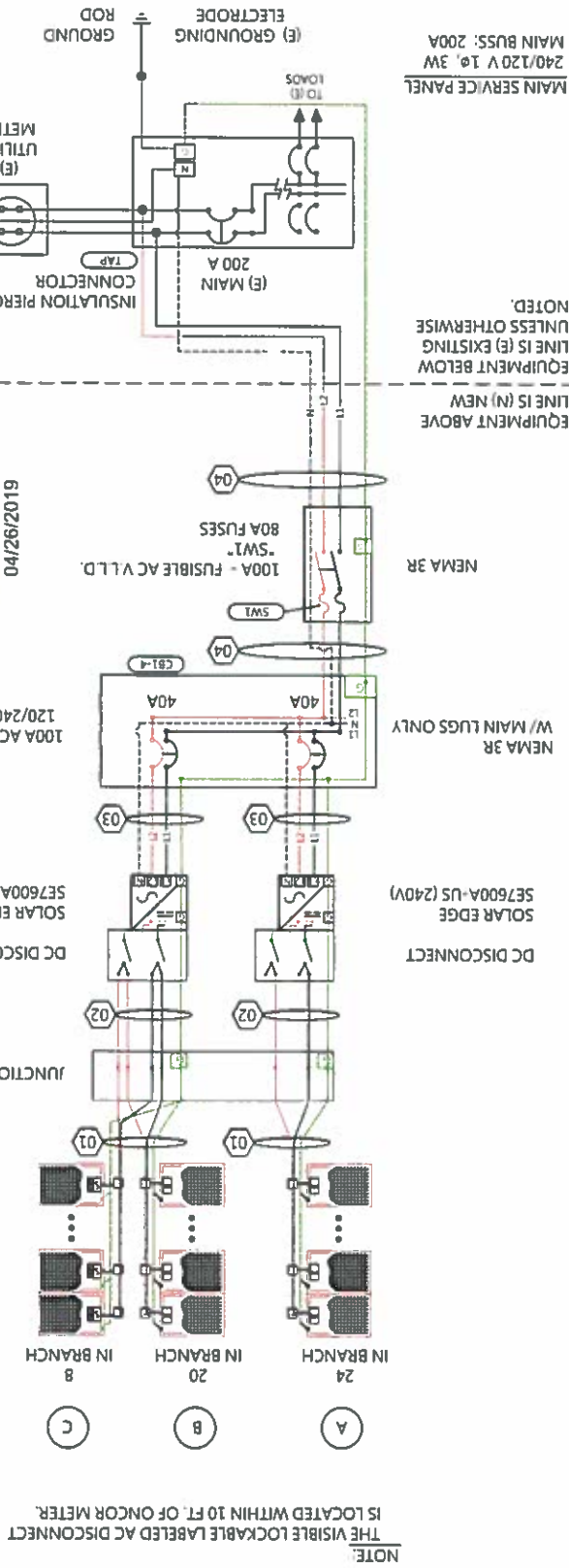
E-601.00

CONDUCTOR AND CONDUIT SCHEDULE W/ELECTRICAL CALCULATIONS

ID	CONDUCTOR	CONDUIT	CURRENT-CARRYING CONDUCTORS IN CONDUIT	DCPD	EGC	TEMP. CORR. FACTOR	CONT. CURRENT	MAX. CURRENT (125%)	TERM. TEMP. RATING
1	10 AWG PV WIRE, COPPER	0.75" DIA. EMT	2	N/A	10 AWG THHN-2, COPPER	0.71 (59°C)	12.08A	15.1A	75°C
2	10 AWG THHN-2, COPPER	0.75" DIA. EMT	2	N/A	10 AWG THHN-2, COPPER	0.91 (87°C)	12.08A	15.1A	75°C
3	8 AWG THHN-2, COPPER	0.75" DIA. EMT	3	40A	10 AWG THHN-2, COPPER	0.91 (87°C)	37A	40A	75°C
4	4 AWG THHN-2, COPPER	0.75" DIA. EMT	3	80A	8 AWG THHN-2, COPPER	0.91 (87°C)	64A	80A	75°C

A = MODULE STRINGING B = MODULE STRINGING C = MODULE STRINGING

SYSTEM SIZE: STC: 52 x 305 = 15.86kW
PTC: 52 x 268 = 13.936kW
(52) MISSION SOLAR MSE305SQ8T
(52) SOLAR EDGE P320 OPTIMIZER
(2) SOLAR EDGE INVERTER SE7600H-US





CONTRACTOR
CIRCLE L SOLAR, INC.

PHONE: 817-945-2011
ADDRESS: 3914 SANDSHELL DRIVE
FORT WORTH, TX 76137
LIC. NO. PVA 05217 (4/17/93)
E.L.E. NO. 32897

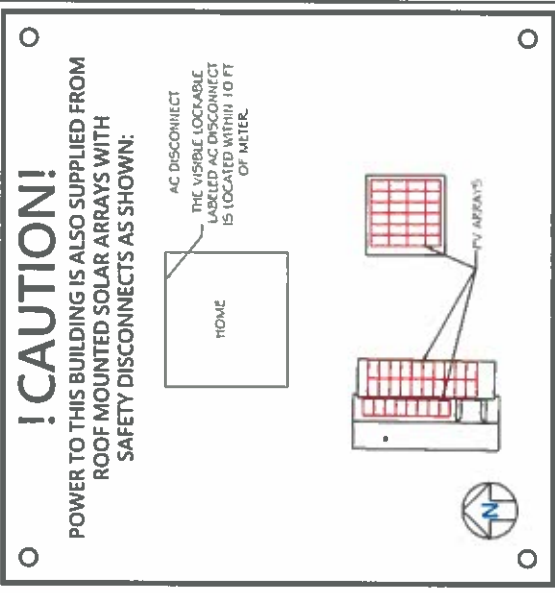
NEW PV SYSTEM: 15,860 WHP
**JERNIGAN
RESIDENCE**
501 MCUNNEY STREET
FARMERSVILLE, TX 75442

**ENGINEER OF
RECORD**

PAPER SIZE: 11" x 17" (ANSI B)
PLACARDS

DATE: 04/26/2019
DESIGN BY: FDA
CHECKED BY: JT
REVISIONS:

E-602.00



! CAUTION!
POWER TO THIS BUILDING IS ALSO SUPPLIED FROM
ROOF MOUNTED SOLAR ARRAYS WITH
SAFETY DISCONNECTS AS SHOWN:

DISCONNECTS

REF	QTY	MAKE AND MODEL	RATED CURRENT	MAX RATED VOLTAGE
SW1	1	EATON DQ32JURB OR EQUIV.	300A	240VAC

INTERACTIVE PHOTOVOLTAIC SYSTEM CONNECTED
PHOTOVOLTAIC SYSTEM DISCONNECT LOCATED EAST SIDE OF THE HOUSE

PLAQUE

! WARNING!
ELECTRICAL SHOCK HAZARD
IF A CABLE OR WIRE IS PUNCTURED, NORMALLY GROUNDED CONDUCTIONS MAY BE ENERGIZED AND ENERGIZED

LABEL 1
AT EACH INVERTER, TYPICALLY ONLY USED ON UNGROUNDED SYSTEMS (NEC 690.41(B))

! WARNING!
ELECTRICAL SHOCK HAZARD
IF EQUIPMENT IS ENERGIZED FROM MORE THAN ONE SOURCE, THE DISCONNECTING MEANS MUST BE GROUPED & IDENTIFIED WITHIN THE SAME SECTION FOR WHERE SEPARATED BY ENCLOSURES (NEC 690.31(B))

LABEL 2
AT EACH DISCONNECTING MEANS FOR PHOTOVOLTAIC EQUIPMENT (NEC 690.31)

! CAUTION!
PHOTOVOLTAIC SYSTEM CIRCUIT IS LATCHED

LABEL 3
EQUIPMENT CONTAINING OVER CURRENT PROTECTIVE DEVICES OR CIRCUITS SUPPLYING POWER TO BREAKER OR CONNECTION SUPPLIED FROM MULTIPLE SOURCES SHALL BE MARKED TO INDICATE THE PRESENCE OF ALL SOURCES. TYPICALLY USED ON THE BREAKER PANEL. INDIVIDUAL BREAKERS SHOULD ALSO BE MARKED. (NEC 705.12 (D)(3)(4) & NEC 690.53)

LABEL 4
IF EQUIPMENT IS ENERGIZED FROM MORE THAN ONE SOURCE, THE DISCONNECTING MEANS MUST BE GROUPED & IDENTIFIED WITHIN THE SAME SECTION FOR WHERE SEPARATED BY ENCLOSURES (NEC 690.31(B))

LABEL 5
FOR USE ON SHINGLED ROOFS WHERE CIRCUITS ARE EMBEDDED. (NEC 690.31(G)(1))

LABEL 6
IF EQUIPMENT IS ENERGIZED FROM MORE THAN ONE SOURCE, THE DISCONNECTING MEANS MUST BE GROUPED & IDENTIFIED WITHIN THE SAME SECTION FOR WHERE SEPARATED BY ENCLOSURES (NEC 690.31(B))

LABEL 7
INTERSECTION CURBTYPE A TYPE THAT INTERRUPTS THE USE OF A LOCK TO OPEN WILL BE MARKED "DO NOT DISCONNECT UNDER LOAD." (NEC 690.31(E)(4))

LABEL 8
ALL INTERACTIVE POINTS OF INTERCONNECTION WITH OTHER SOURCES SHALL BE MARKED AT AN AC OUTPUT CURRENT AND NOMINAL AC OPERATING VOLTAGE. (NEC 690.54)

LABEL 9
IF EQUIPMENT IS ENERGIZED FROM MORE THAN ONE SOURCE, THE DISCONNECTING MEANS MUST BE GROUPED & IDENTIFIED WITHIN THE SAME SECTION FOR WHERE SEPARATED BY ENCLOSURES (NEC 690.31(B))

LABEL 10
FOR USE ON SHINGLED ROOFS WHERE CIRCUITS ARE EMBEDDED. (NEC 690.31(G)(1))

LABEL 11
THE EMPHASIS "RISK" SYSTEM IS SUPPLIED BY MICRO-INVERTERS MOUNTED UNDER EACH MODULE AND GENERATES LOW-VOLTAGE AC POWER AT THE ARRAY (THIS SYSTEM IS COMPLIANT WITH NEC 2017 ARTICLE 705.12 (D)(3)(4) & CSA C22.2 No. 1071-1-3 (NEC 690.54)(C))

LABEL 12
AT EXPOSED RACEWAYS, CABLE TRAYS, AND OTHER WIRING METHODS, SPACED AT MAXIMUM 10 FT SECTION FOR WHERE SEPARATED BY ENCLOSURES (NEC 690.31(B))

LABEL 13
LETTERS AT LEAST 3/8 INCH WHITE ON RED BACKGROUND, REFLECTIVE (NEC 605.11.1.1)

LABEL 14
CLEARLY MARK CIRCUITS HIDDEN UNDER ROOFING MATERIALS THAT ARE NOT COVERED BY PV MODULES (NEC 690.31 (G)(1))

LABEL 15
THE EMPHASIS "RISK" SYSTEM IS SUPPLIED BY MICRO-INVERTERS MOUNTED UNDER EACH MODULE AND GENERATES LOW-VOLTAGE AC POWER AT THE ARRAY (THIS SYSTEM IS COMPLIANT WITH NEC 2017 ARTICLE 705.12 (D)(3)(4) & CSA C22.2 No. 1071-1-3 (NEC 690.54)(C))

LABELING NOTES:

1. LABELING REQUIREMENTS BASED ON THE 2017 NATIONAL ELECTRICAL CODE, INTERPRETATION 1910.145, 1902.253, STANDARD 1910.145, 1902.253.
2. MATERIAL BASED ON THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION TO WITHSTAND THE ENVIRONMENT INVOLVED.
3. LABELS TO BE A MINIMUM LETTER HEIGHT OF 3/8" AND PERMANENTLY AFFIXED.

LABEL 1
AT EACH INVERTER, TYPICALLY ONLY USED ON UNGROUNDED SYSTEMS (NEC 690.41(B))

LABEL 2
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LABEL 16
FOR USE ON SHINGLED ROOFS WHERE CIRCUITS ARE EMBEDDED. (NEC 690.31(G)(1))

LABEL 17
INTERSECTION CURBTYPE A TYPE THAT INTERRUPTS THE USE OF A LOCK TO OPEN WILL BE MARKED "DO NOT DISCONNECT UNDER LOAD." (NEC 690.31(E)(4))

LABEL 18
FOR USE ON SHINGLED ROOFS WHERE CIRCUITS ARE EMBEDDED. (NEC 690.31(G)(1))

LABEL 19
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LABEL 20
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LABEL 54
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FOR USE ON SHINGLED ROOFS WHERE CIRCUITS ARE EMBEDDED. (NEC 690.31(G)(1))

LABEL 97
FOR USE ON SHINGLED ROOFS WHERE CIRCUITS ARE EMBEDDED. (NEC 690.31(G)(1))

LABEL 98
FOR USE ON SHINGLED ROOFS WHERE CIRCUITS ARE EMBEDDED. (NEC 690.31(G)(1))

LABEL 99
FOR USE ON SHINGLED ROOFS WHERE CIRCUITS ARE EMBEDDED. (NEC 690.31(G)(1))

LABEL 100
FOR USE ON SHINGLED ROOFS WHERE CIRCUITS ARE EMBEDDED. (NEC 690.31(G)(1))



04/26/2019



CONTRACTOR
CIRCLE L SOLAR, INC.

PHONE: 817-945-2011
ADDRESS: 3914 SAUNDERS DRIVE
FORT WORTH, TX 76137

LIC. NO.: PVA 05217-037793
RHC NO.:
ELE. NO.: 32697

NEW PV SYSTEM: 15,860 WHP

**JERNIGAN
RESIDENCE**

501 MCKINNEY STREET
FARMERSVILLE, TX 75442

**ENGINEER OF
RECORD**

PAPER SIZE: 11" x 17" (ANSI B)

PLACARDS

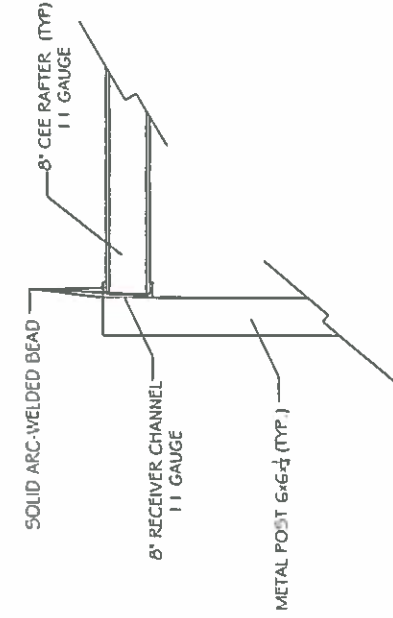
DATE: 04.26.2019

DESIGN BY: FDA

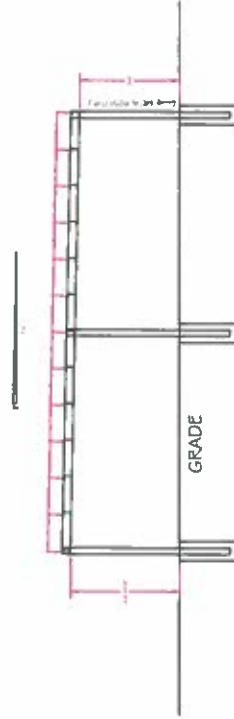
CHECKED BY: JT

REVISIONS:

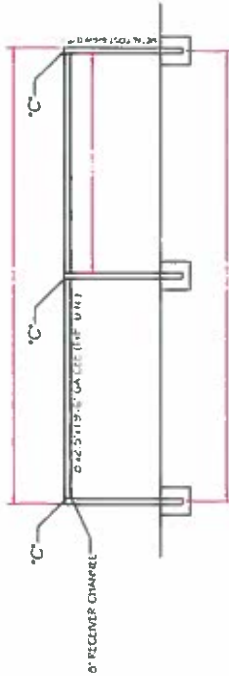
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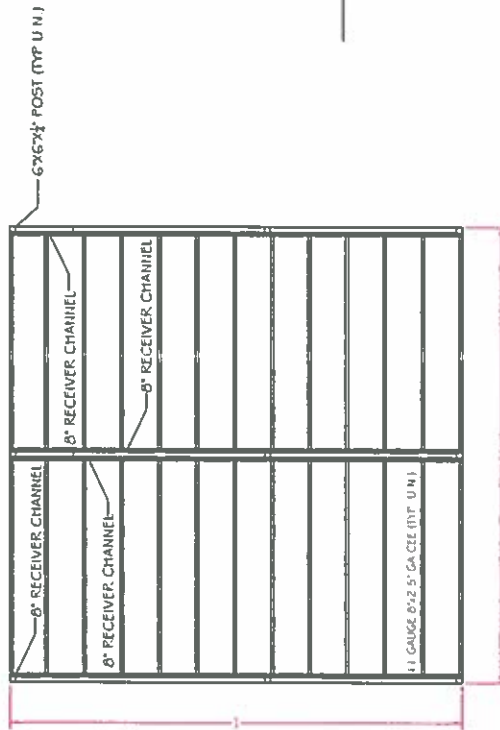
CONNECTION DETAIL 'C'



**(TYP.) CARPORT FRAME SECTION
SIDE VIEW NORTH**



X CARPORT FRONT FACE



Y CARPORT ROOF



CONTRACTOR
CIRCLE L SOLAR, INC.

PHONE: 817-941-2011
ADDRESS: 3914 SANDSHILL DRIVE
FORT WORTH, TX 76137
LIC. NO.: PVA-052117-017793
ELE. NO.: 32887

NEW PV SYSTEM: 15,000 kWp
**JERNIGAN
RESIDENCE**
501 LANCHEMY STREET
FARMERSVILLE, TX 75442

**ENGINEER OF
RECORD**

PAPER SIZE: 11" x 17" (ANSI B)

**ASSEMBLY
DETAILS**

DATE: 04.26.2019
DESIGN BY: FDA
CHECKED BY: JT
REVISIONS:

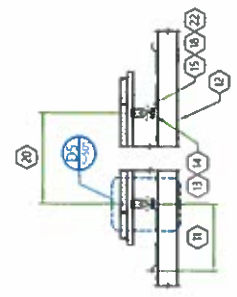
S-501.00

GENERAL NOTES

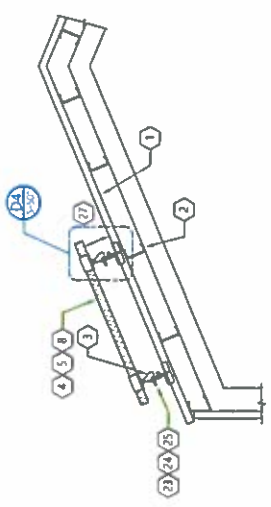
- FIELD VERIFY ALL MEASUREMENTS

SHEET KEYNOTES

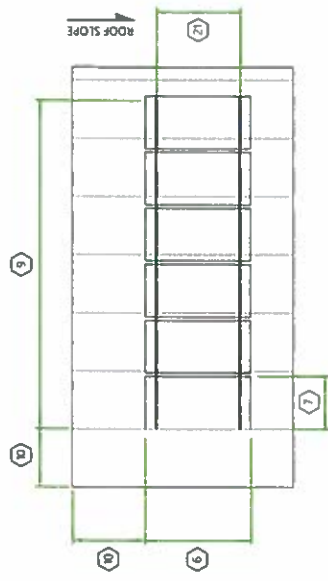
1. ROOF MATERIAL:	R-PANEL METAL ROOF
2. ROOF STRUCTURE:	CEE PURLINS
3. ATTACHMENT TYPE:	S-S PROTEA BRACKET
4. MODULE MANUFACTURER:	MISSION SOLAR
5. MODULE MODEL:	MSE305S08T
6. MODULE LENGTH:	65.51"
7. MODULE WIDTH:	39.33"
8. MODULE WEIGHT:	40.1#
9. SEE SHEET A-103 FOR DIMENSIONS)	
10. MIN. FIRE OFFSET:	N/A
11. ROOF PURLIN SPACING:	24" O.C. MAX.
12. PURLIN SIZE:	8" CEE, 12 GAGE MIN
13. BRACKET SCREW DIAMETER:	3/16"
14. BRACKET SCREW LENGTH:	1"
15. TOTAL # OF ATTACHMENTS:	189
16. TOTAL AREA:	948.56 SQ. FT.
17. TOTAL WEIGHT:	7,292.16#
18. WEIGHT PER ATTACHMENT:	12.128#
19. DISTRIBUTED LOAD:	2.316# PSF
20. MAX. HORIZONTAL STANDOFF:	65.5"
21. MAX. VERTICAL STANDOFF:	65.5"
LANDSCAPE	
PORTRAIT	N/A
22. STANDOFF STAGGERING:	YES
23. RAIL MANUFACTURER (OR EQUIV.):	IRON RIDGE
24. RAIL MODEL (OR EQUIV.):	XR100
25. RAIL WEIGHT:	0.60# P/LF
26. MODULE CLEARANCE:	3" MIN., 6" MAX.



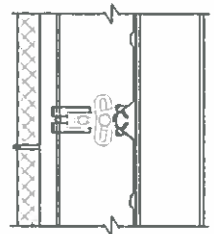
D2 RACKING DETAIL (LONGITUDINAL)
S-501 NOT TO SCALE



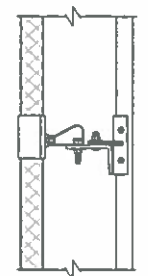
D1 RACKING DETAIL (TRANSVERSE)
S-501 NOT TO SCALE



D3 RACKING DETAIL (TOP)
S-501 NOT TO SCALE



D5 DETAIL (LONGITUDINAL)
S-501 NOT TO SCALE



D4 DETAIL (TRANSVERSE)
S-501 NOT TO SCALE



CONTRACTOR
CIRCLE SOLAR, INC.

PHONE: 817-945-2011
ADDRESS: 3914 SANDSHILL DRIVE
FORT WORTH, TX 76137
E.C. NO.: P/A-052317-017793
E.L.E. NO.: 33987

NEW PV SYSTEM: 15,860 kWp
**JERNIGAN
RESIDENCE**
501 MCKENNEY STREET
FARMERSVILLE, TX 75442

**ENGINEER OF
RECORD**

PAPER SIZE: 11" x 17" (ANSI B)
**RESOURCE
DOCUMENT**
DATE: 04-26-2019
DESIGN BY: FDA
CHECKED BY: JT
REVISIONS:

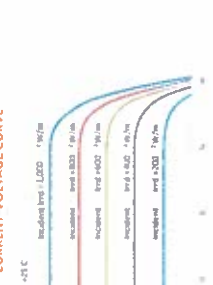
R-001.00

CLASS LEADING 300-310W

CERTIFICATIONS & TESTS

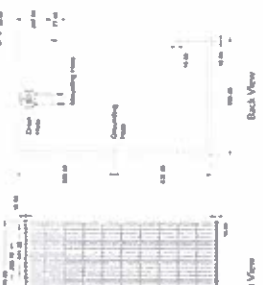
IEC	IEC 61215 / IEC 61730 / IEC 61701	UL
Module Type	300	310
Power Output	18.65	18.65
Module Efficiency	0 +3%	0 +3%
Tolerance	0 +3%	0 +3%
Short Circuit Current	9.664	9.760
Open Circuit Voltage	40.08	40.10
Rated Current	9.203	9.245
Rated Voltage	33.12	33.14
Fuse Rating	15	20

**MSE310SQBT 310WP 60CELL SOLAR MODULE
CURRENT VOLTAGE CURVE**



Current voltage characteristics with dependence on irradiance and module temperature

BASIC DESIGN (UNITS: mm)



PERC 60

ELECTRICAL SPECIFICATIONS

Parameter	PERC 60	PERC 60
Module Type <td>300</td> <td>310</td>	300	310
Power Output <td>18.65</td> <td>18.65</td>	18.65	18.65
Module Efficiency <td>0 +3%</td> <td>0 +3%</td>	0 +3%	0 +3%
Tolerance <td>0 +3%</td> <td>0 +3%</td>	0 +3%	0 +3%
Short Circuit Current <td>9.664</td> <td>9.760</td>	9.664	9.760
Open Circuit Voltage <td>40.08</td> <td>40.10</td>	40.08	40.10
Rated Current <td>9.203</td> <td>9.245</td>	9.203	9.245
Rated Voltage <td>33.12</td> <td>33.14</td>	33.12	33.14
Fuse Rating <td>15</td> <td>20</td>	15	20

TEMPERATURE COEFFICIENTS

Normal Operating Cell Temperature (NOCT)	44°C (111°F)
Temperature Coefficient of Pmax	-0.47%/°C
Temperature Coefficient of Voc	-0.318%/°C
Temperature Coefficient of Isc	0.042%/°C

OPERATING CONDITIONS

Maximum System Voltage	1,000VDC
Operating Temperature Range	-40°C (-40°F) to +90°C (194°F)
Maximum Junction Temperature	20A
Fire Safety Classification	Type 1, Class C
Front & Back Load (UL standard)	5400 Pa (117 psf)
Hail Safety Impact Velocity	25mm at 23 m/s

MECHANICAL DATA

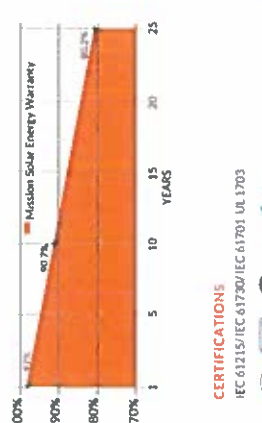
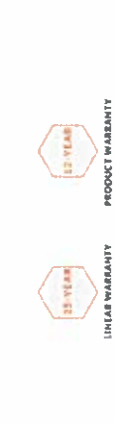
Solar Cells	P-Type Mono-crystalline Silicon (156.75mm)
Cell orientation	60 cells (6x10), 5 busbar
Module dimensions	1666mm x 999mm x 40mm (65.51 in. x 39.33 in. x 1.57 in.)
Weight	18.2 kg (40.1 lb)
Front Glass	3.2mm (0.126 in.) tempered, Low-Iron, Anti-reflective coating
Frame	Anodized aluminum alloy
Encapsulant	Ethylene vinyl acetate (EVA)
J-Box	Protection class IP67 with 2 bypass diodes
Cables	PV wire, 1m (32.81 ft.), 4mm ² / 12 AWG
Connector	MCA or compatible

SHIPPING INFORMATION

Cartons per FT	305
53"	36
40"	28
Panel 1	28
Panel 2	28
Panel 3	28
Panel 4	28
Panel 5	28
Panel 6	28
Panel 7	28
Panel 8	28
Panel 9	28
Panel 10	28
Panel 11	28
Panel 12	28
Panel 13	28
Panel 14	28
Panel 15	28
Panel 16	28
Panel 17	28
Panel 18	28
Panel 19	28
Panel 20	28
Panel 21	28
Panel 22	28
Panel 23	28
Panel 24	28
Panel 25	28
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Panel 28	28
Panel 29	28
Panel 30	28
Panel 31	28
Panel 32	28
Panel 33	28
Panel 34	28
Panel 35	28
Panel 36	28
Panel 37	28
Panel 38	28
Panel 39	28
Panel 40	28
Panel 41	28
Panel 42	28
Panel 43	28
Panel 44	28
Panel 45	28
Panel 46	28
Panel 47	28
Panel 48	28
Panel 49	28
Panel 50	28
Panel 51	28
Panel 52	28
Panel 53	28
Panel 54	28
Panel 55	28
Panel 56	28
Panel 57	28
Panel 58	28
Panel 59	28
Panel 60	28

MSE PERC 60
High Power PERC Rooftop Module
All back PERC with 5 busbar technology

- CERTIFIED RELIABILITY**
 - Tested to 3X IEC standards
 - PID Resistant
- SUPERIOR AESTHETICS**
 - Anti-back design coupled with outstanding power output
 - Ideal for residential & commercial applications
- EXTREME WEATHER RESILIENCE**
 - 5600 Pa snow load (117 psf)
 - 175 mph wind rating
- BAA COMPLIANT FOR GOVERNMENT PROJECTS**
 - Buy American Act
 - American Recovery & Reinvestment Act



CERTIFICATIONS
IEC 61215 / IEC 61730 / IEC 61701 / UL 1703



300-310W
CLASS LEADING POWER OUTPUT
18.65%
MAXIMUM EFFICIENCY
-0~+3%
POSITIVE POWER TOLERANCE

High-Power, American Quality
Mission Solar Energy is headquartered in San Antonio, TX, with module production and assembly facilities in Houston, TX. Our manufacturing process is designed for maximum efficiency and reliability. Our product line is well suited for residential, commercial and utility applications. Every Mission Solar Energy product is certified and surpasses industry standard regulations, proving excellent performance over the long term.
www.missionsolar.com | info@missionsolar.com



Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US/SE3800H-US/SE5000H-US/
SE6000H-US/SE7600H-US/SE10000H-US/SE14000H-US

PHONE: 817-945-2011
ADDRESS: 3914 SANDSHILL DR N
FORT WORTH, TX 76137
LIC. NO.: PVA 052117-017793
E.L.E. NO.: 33697

Model	Max. AC Power Output	Max. AC Power Output	Max. AC Power Output	Max. AC Power Output
SE3000	SE3800	SE5000	SE6000	SE7600
1800 @ 240V	2300 @ 240V	3000 @ 240V	3800 @ 240V	4800 @ 240V
1800 @ 208V	2300 @ 208V	3000 @ 208V	3800 @ 208V	4800 @ 208V
1800 @ 230V	2300 @ 230V	3000 @ 230V	3800 @ 230V	4800 @ 230V

Model	Max. AC Voltage (L-N)	Max. AC Voltage (L-L)	Max. AC Voltage (L-G)	Max. AC Voltage (L-L)
SE3000	SE3800	SE5000	SE6000	SE7600
240V	240V	240V	240V	240V
208V	208V	208V	208V	208V
230V	230V	230V	230V	230V



Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Reduced-biasing efficiency
- Field 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 71 grid compliance
- Extremely small
- High reliability without any electrolytic capacitors
- Built-in module-level monitoring
- Outdoor and indoor installation
- Optional: Reverse grade data, ANSI C12.20 Class 0.5 (0.5% accuracy)



www.solar-edge.us



CONTRACTOR
CIRCLE L SOLAR, INC.

PHONE: 817-945-2011
ADDRESS: 3914 SANDSHILL DR N
FORT WORTH, TX 76137
LIC. NO.: PVA 052117-017793
E.L.E. NO.: 33697

NEW PV SYSTEM: 15.860 kWp
JERNIGAN RESIDENCE
501 MCCORMICK STREET
FARMERSVILLE, TX 75442

ENGINEER OF RECORD

PAPER SIZE: 11" x 17" (ANSI B)

RESOURCE DOCUMENT

DATE: 04-26-2019
DESIGN BY: FDA
CHECKED BY: JT
REVISIONS

R-002.00



Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US/SE3800H-US/SE5000H-US/
SE6000H-US/SE7600H-US/SE10000H-US/SE14000H-US

PHONE: 817-945-2011
ADDRESS: 3914 SANDSHILL DR N
FORT WORTH, TX 76137
LIC. NO.: PVA 052117-017793
E.L.E. NO.: 33697

Model	Max. AC Power Output	Max. AC Power Output	Max. AC Power Output	Max. AC Power Output
SE3000	SE3800	SE5000	SE6000	SE7600
1800 @ 240V	2300 @ 240V	3000 @ 240V	3800 @ 240V	4800 @ 240V
1800 @ 208V	2300 @ 208V	3000 @ 208V	3800 @ 208V	4800 @ 208V
1800 @ 230V	2300 @ 230V	3000 @ 230V	3800 @ 230V	4800 @ 230V

Model	Max. AC Voltage (L-N)	Max. AC Voltage (L-L)	Max. AC Voltage (L-G)	Max. AC Voltage (L-L)
SE3000	SE3800	SE5000	SE6000	SE7600
240V	240V	240V	240V	240V
208V	208V	208V	208V	208V
230V	230V	230V	230V	230V



www.solar-edge.us



RoHS
This product is RoHS compliant. For more information, please visit www.solar-edge.com/rohs

Model	Max. AC Power Output	Max. AC Power Output	Max. AC Power Output	Max. AC Power Output
SE3000	SE3800	SE5000	SE6000	SE7600
1800 @ 240V	2300 @ 240V	3000 @ 240V	3800 @ 240V	4800 @ 240V
1800 @ 208V	2300 @ 208V	3000 @ 208V	3800 @ 208V	4800 @ 208V
1800 @ 230V	2300 @ 230V	3000 @ 230V	3800 @ 230V	4800 @ 230V

Model	Max. AC Voltage (L-N)	Max. AC Voltage (L-L)	Max. AC Voltage (L-G)	Max. AC Voltage (L-L)
SE3000	SE3800	SE5000	SE6000	SE7600
240V	240V	240V	240V	240V
208V	208V	208V	208V	208V
230V	230V	230V	230V	230V

SE3000 (3000W) / 14.4kWp
SE3800 (3800W) / 14.4kWp
SE5000 (5000W) / 14.4kWp
SE6000 (6000W) / 14.4kWp
SE7600 (7600W) / 14.4kWp

Model	Max. AC Voltage (L-N)	Max. AC Voltage (L-L)	Max. AC Voltage (L-G)	Max. AC Voltage (L-L)
SE3000	SE3800	SE5000	SE6000	SE7600
240V	240V	240V	240V	240V
208V	208V	208V	208V	208V
230V	230V	230V	230V	230V

SE3000 (3000W) / 14.4kWp
SE3800 (3800W) / 14.4kWp
SE5000 (5000W) / 14.4kWp
SE6000 (6000W) / 14.4kWp
SE7600 (7600W) / 14.4kWp

Model	Max. AC Power Output	Max. AC Power Output	Max. AC Power Output	Max. AC Power Output
SE3000	SE3800	SE5000	SE6000	SE7600
1800 @ 240V	2300 @ 240V	3000 @ 240V	3800 @ 240V	4800 @ 240V
1800 @ 208V	2300 @ 208V	3000 @ 208V	3800 @ 208V	4800 @ 208V
1800 @ 230V	2300 @ 230V	3000 @ 230V	3800 @ 230V	4800 @ 230V

Model	Max. AC Voltage (L-N)	Max. AC Voltage (L-L)	Max. AC Voltage (L-G)	Max. AC Voltage (L-L)
SE3000	SE3800	SE5000	SE6000	SE7600
240V	240V	240V	240V	240V
208V	208V	208V	208V	208V
230V	230V	230V	230V	230V

SE3000 (3000W) / 14.4kWp
SE3800 (3800W) / 14.4kWp
SE5000 (5000W) / 14.4kWp
SE6000 (6000W) / 14.4kWp
SE7600 (7600W) / 14.4kWp

Model	Max. AC Voltage (L-N)	Max. AC Voltage (L-L)	Max. AC Voltage (L-G)	Max. AC Voltage (L-L)
SE3000	SE3800	SE5000	SE6000	SE7600
240V	240V	240V	240V	240V
208V	208V	208V	208V	208V
230V	230V	230V	230V	230V

SE3000 (3000W) / 14.4kWp
SE3800 (3800W) / 14.4kWp
SE5000 (5000W) / 14.4kWp
SE6000 (6000W) / 14.4kWp
SE7600 (7600W) / 14.4kWp

Model	Max. AC Power Output	Max. AC Power Output	Max. AC Power Output	Max. AC Power Output
SE3000	SE3800	SE5000	SE6000	SE7600
1800 @ 240V	2300 @ 240V	3000 @ 240V	3800 @ 240V	4800 @ 240V
1800 @ 208V	2300 @ 208V	3000 @ 208V	3800 @ 208V	4800 @ 208V
1800 @ 230V	2300 @ 230V	3000 @ 230V	3800 @ 230V	4800 @ 230V

Model	Max. AC Voltage (L-N)	Max. AC Voltage (L-L)	Max. AC Voltage (L-G)	Max. AC Voltage (L-L)
SE3000	SE3800	SE5000	SE6000	SE7600
240V	240V	240V	240V	240V
208V	208V	208V	208V	208V
230V	230V	230V	230V	230V

SE3000 (3000W) / 14.4kWp
SE3800 (3800W) / 14.4kWp
SE5000 (5000W) / 14.4kWp
SE6000 (6000W) / 14.4kWp
SE7600 (7600W) / 14.4kWp

Model	Max. AC Power Output	Max. AC Power Output	Max. AC Power Output	Max. AC Power Output
SE3000	SE3800	SE5000	SE6000	SE7600
1800 @ 240V	2300 @ 240V	3000 @ 240V	3800 @ 240V	4800 @ 240V
1800 @ 208V	2300 @ 208V	3000 @ 208V	3800 @ 208V	4800 @ 208V
1800 @ 230V	2300 @ 230V	3000 @ 230V	3800 @ 230V	4800 @ 230V

Model	Max. AC Voltage (L-N)	Max. AC Voltage (L-L)	Max. AC Voltage (L-G)	Max. AC Voltage (L-L)
SE3000	SE3800	SE5000	SE6000	SE7600
240V	240V	240V	240V	240V
208V	208V	208V	208V	208V
230V	230V	230V	230V	230V



CONTRACTOR
CIRCLE L SOLAR, INC.

PHONE: 817-945-2011
ADDRESS: 3014 SANDSHILL DRIVE
FORT WORTH, TX 76137
E.C. NO. PVA-092317-017793
H.C. NO.
E.L.E. NO. 33087

NEW PV SYSTEM: 15,860 kWp
JERNIGAN
RESIDENCE
501 MACKENNEY STREET
FARMERSVILLE, TX 75442

ENGINEER OF
RECORD

PAPER SIZE: 11" x 17" (ANSI B)

RESOURCE
DOCUMENT

DATE: 04.26.2019
DESIGN BY: FDA
CHECKED BY: JT
REVISIONS:

R-003.00

solaredge Power Optimizer

P320 / P370 / P400 / P405 / P505

PARAMETER	P320 (For 100W modules)	P370 (For 125W modules)	P400 (For 150W modules)	P405 (For 150W modules)	P505 (For 150W modules)
Maximum DC Input Voltage	720	720	420	420	380
Maximum DC Input Current	8.4A	6.0A	8.0A	12.5A	8.7A
Maximum Start Current (ISC)	11	10.1	10.1	12.5	8.3
Maximum Output Current	11.7A	8.6A	9.5A	12.6A	17.5A
Efficiency (Typical)		98.6			98.6

OUTPUT DURING OPTIMIZATION: OPTIMIZER CONNECTS TO OPTIMIZING SOLAR MODULE INVERTER
 Maximum Output Voltage: 400V
 Maximum Output Current: 10A
 Maximum Output Power: 4000W

INSTALLATION SPECIFICATIONS
 Minimum Ambient System Voltage: 100V
 Maximum Ambient System Voltage: 150V
 Compatible Inverters: All SolarEdge Single-Phase and Three-Phase Inverters
 Dimensions (H x L x W): 128 x 152 x 36 / 128 x 151 x 30 / 51 x 97 x 147
 Weight (Including Cable): 0.65 / 0.60 / 0.61 / 0.62 / 0.61 / 0.62
 Output Wire Type / Connector: Double Insulated, NEC
 Operating Temperature Range: -40 °F to +115 °F
 Protection Rating: IP67 / NEMA 4

STANDARD COMPLIANCE
 IEC: IEC 61851-1, IEC 61851-2, IEC 61851-3
 UL: UL 1741, UL 1741E, UL 1741F
 FCC: FCC Part 15 Class B, FCC 47 CFR 15.107, 15.109, 15.111, 15.113, 15.115, 15.117, 15.119, 15.121, 15.123, 15.125, 15.127, 15.129, 15.131, 15.133, 15.135, 15.137, 15.139, 15.141, 15.143, 15.145, 15.147, 15.149, 15.151, 15.153, 15.155, 15.157, 15.159, 15.161, 15.163, 15.165, 15.167, 15.169, 15.171, 15.173, 15.175, 15.177, 15.179, 15.181, 15.183, 15.185, 15.187, 15.189, 15.191, 15.193, 15.195, 15.197, 15.199, 15.201, 15.203, 15.205, 15.207, 15.209, 15.211, 15.213, 15.215, 15.217, 15.219, 15.221, 15.223, 15.225, 15.227, 15.229, 15.231, 15.233, 15.235, 15.237, 15.239, 15.241, 15.243, 15.245, 15.247, 15.249, 15.251, 15.253, 15.255, 15.257, 15.259, 15.261, 15.263, 15.265, 15.267, 15.269, 15.271, 15.273, 15.275, 15.277, 15.279, 15.281, 15.283, 15.285, 15.287, 15.289, 15.291, 15.293, 15.295, 15.297, 15.299, 15.301, 15.303, 15.305, 15.307, 15.309, 15.311, 15.313, 15.315, 15.317, 15.319, 15.321, 15.323, 15.325, 15.327, 15.329, 15.331, 15.333, 15.335, 15.337, 15.339, 15.341, 15.343, 15.345, 15.347, 15.349, 15.351, 15.353, 15.355, 15.357, 15.359, 15.361, 15.363, 15.365, 15.367, 15.369, 15.371, 15.373, 15.375, 15.377, 15.379, 15.381, 15.383, 15.385, 15.387, 15.389, 15.391, 15.393, 15.395, 15.397, 15.399, 15.401, 15.403, 15.405, 15.407, 15.409, 15.411, 15.413, 15.415, 15.417, 15.419, 15.421, 15.423, 15.425, 15.427, 15.429, 15.431, 15.433, 15.435, 15.437, 15.439, 15.441, 15.443, 15.445, 15.447, 15.449, 15.451, 15.453, 15.455, 15.457, 15.459, 15.461, 15.463, 15.465, 15.467, 15.469, 15.471, 15.473, 15.475, 15.477, 15.479, 15.481, 15.483, 15.485, 15.487, 15.489, 15.491, 15.493, 15.495, 15.497, 15.499, 15.501, 15.503, 15.505, 15.507, 15.509, 15.511, 15.513, 15.515, 15.517, 15.519, 15.521, 15.523, 15.525, 15.527, 15.529, 15.531, 15.533, 15.535, 15.537, 15.539, 15.541, 15.543, 15.545, 15.547, 15.549, 15.551, 15.553, 15.555, 15.557, 15.559, 15.561, 15.563, 15.565, 15.567, 15.569, 15.571, 15.573, 15.575, 15.577, 15.579, 15.581, 15.583, 15.585, 15.587, 15.589, 15.591, 15.593, 15.595, 15.597, 15.599, 15.601, 15.603, 15.605, 15.607, 15.609, 15.611, 15.613, 15.615, 15.617, 15.619, 15.621, 15.623, 15.625, 15.627, 15.629, 15.631, 15.633, 15.635, 15.637, 15.639, 15.641, 15.643, 15.645, 15.647, 15.649, 15.651, 15.653, 15.655, 15.657, 15.659, 15.661, 15.663, 15.665, 15.667, 15.669, 15.671, 15.673, 15.675, 15.677, 15.679, 15.681, 15.683, 15.685, 15.687, 15.689, 15.691, 15.693, 15.695, 15.697, 15.699, 15.701, 15.703, 15.705, 15.707, 15.709, 15.711, 15.713, 15.715, 15.717, 15.719, 15.721, 15.723, 15.725, 15.727, 15.729, 15.731, 15.733, 15.735, 15.737, 15.739, 15.741, 15.743, 15.745, 15.747, 15.749, 15.751, 15.753, 15.755, 15.757, 15.759, 15.761, 15.763, 15.765, 15.767, 15.769, 15.771, 15.773, 15.775, 15.777, 15.779, 15.781, 15.783, 15.785, 15.787, 15.789, 15.791, 15.793, 15.795, 15.797, 15.799, 15.801, 15.803, 15.805, 15.807, 15.809, 15.811, 15.813, 15.815, 15.817, 15.819, 15.821, 15.823, 15.825, 15.827, 15.829, 15.831, 15.833, 15.835, 15.837, 15.839, 15.841, 15.843, 15.845, 15.847, 15.849, 15.851, 15.853, 15.855, 15.857, 15.859, 15.861, 15.863, 15.865, 15.867, 15.869, 15.871, 15.873, 15.875, 15.877, 15.879, 15.881, 15.883, 15.885, 15.887, 15.889, 15.891, 15.893, 15.895, 15.897, 15.899, 15.901, 15.903, 15.905, 15.907, 15.909, 15.911, 15.913, 15.915, 15.917, 15.919, 15.921, 15.923, 15.925, 15.927, 15.929, 15.931, 15.933, 15.935, 15.937, 15.939, 15.941, 15.943, 15.945, 15.947, 15.949, 15.951, 15.953, 15.955, 15.957, 15.959, 15.961, 15.963, 15.965, 15.967, 15.969, 15.971, 15.973, 15.975, 15.977, 15.979, 15.981, 15.983, 15.985, 15.987, 15.989, 15.991, 15.993, 15.995, 15.997, 15.999

PARAMETER	SINGLE PHASE P320 / P370 / P400 / P405 / P505	SINGLE PHASE THREE PHASE 200V	THREE PHASE 200V
Minimum String Length	1000	1000	1000
Maximum String Length	128 x 152 x 36 / 128 x 151 x 30 / 51 x 97 x 147	128 x 152 x 36 / 128 x 151 x 30 / 51 x 97 x 147	128 x 152 x 36 / 128 x 151 x 30 / 51 x 97 x 147
Weight (Including Cable)	0.65 / 0.60 / 0.61 / 0.62 / 0.61 / 0.62	0.65 / 0.60 / 0.61 / 0.62 / 0.61 / 0.62	0.65 / 0.60 / 0.61 / 0.62 / 0.61 / 0.62
Output Wire Type / Connector	Double Insulated, NEC	Double Insulated, NEC	Double Insulated, NEC
Operating Temperature Range	-40 °F to +115 °F	-40 °F to +115 °F	-40 °F to +115 °F
Protection Rating	IP67 / NEMA 4	IP67 / NEMA 4	IP67 / NEMA 4

SAFETY WARNING: This device is designed for use in conjunction with SolarEdge inverters. It is not intended for use in any other environment. For more information, please refer to the user manual. The manufacturer is not responsible for any damage or injury caused by the use of this device. © 2019 SolarEdge Technologies, Inc. All rights reserved.

POWER OPTIMIZER

solaredge

Power Optimizer

P320 / P370 / P400 / P405 / P505



- PV power optimization at the module-level**
- Specifically designed to work with SolarEdge inverters
 - Up to 35% 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 ITC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PRSS)
 - Module-level voltage shutdown for installer and firefighter safety

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CIRCLE L SOLAR, INC.

PHONE: 817-945-2011
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FORT WORTH, TX 76137
I.C. NO.: PVA-052317-017793
I.H.C. NO.:
E.L.E. NO.: 32687

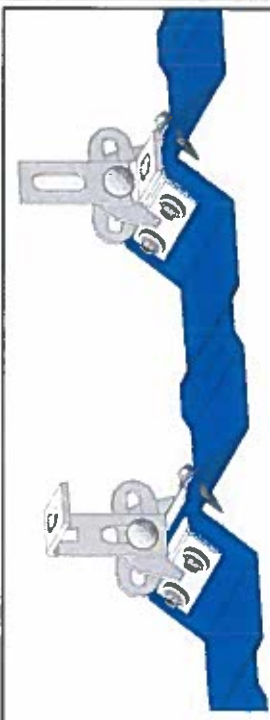
NEW PV SYSTEM: 15,860 kWp
**JERNIGAN
RESIDENCE**
501 MCCORMICK STREET
FARMERSVILLE, TX 75442

**ENGINEER OF
RECORD**

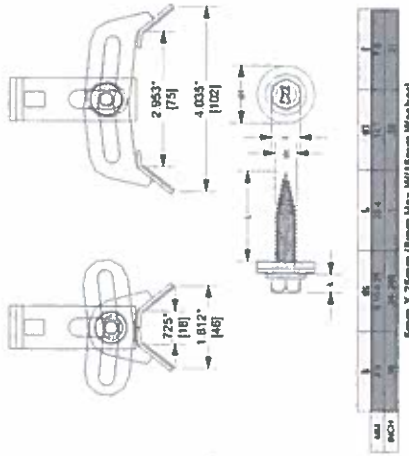
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DATE: 04.26.2019
DESIGN BY: FDA
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REVISIONS:

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ProteaBracket



**FOR STANDING SEAM SPECIFIC MECHANICAL LOAD TEST
INFORMATION AND CLAMP INSTALLATION INFORMATION
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The Right Way!

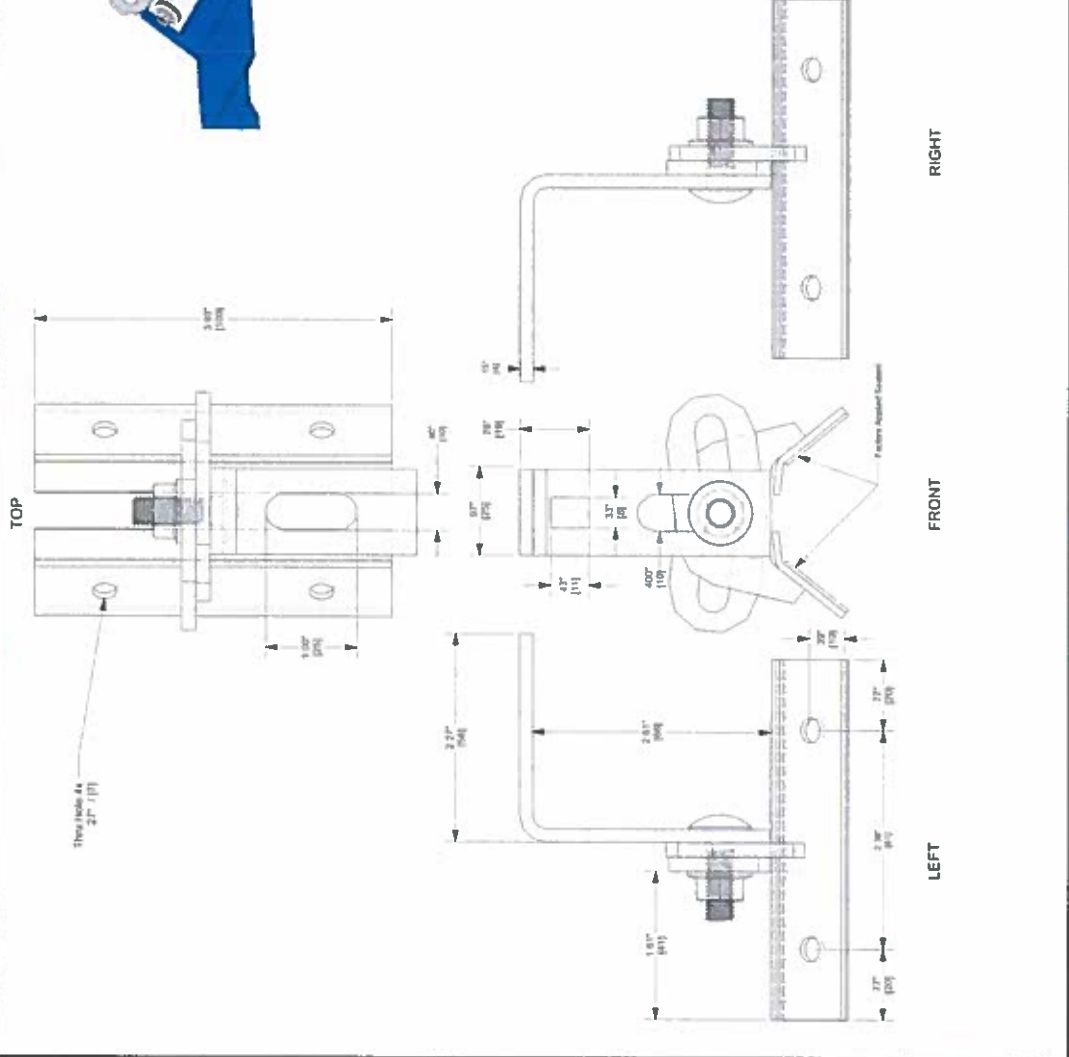
METAL ROOF INVESTMENTS, LTD.
10000 W. 11TH AVENUE, SUITE 100
CENTRO SPRINGS, CO 80908
719-495-2018
719-495-0485 (T.A.X.)

Part No.: A2 Brackets
EST. ASSEMBLY WEIGHT: .528 lbs
APPLIED WINDLOAD: 140 psf
SCALE: 1:1
DATE: 04/26/19

DESCRIPTION: ProteaBracket
REVISED: 05/2015

DESIGNED BY: J. T. Jernigan
CHECKED BY: J. T. Jernigan
DATE: 04/26/19

NOTES:
1. THE PROTEA BRACKET IS PROVIDED BY S-5! METAL ROOF INVESTMENTS, LTD. AND IS NOT TO BE USED ON ANY OTHER TYPE OF ROOFING SYSTEM. THE PROTEA BRACKET IS PROVIDED BY S-5! METAL ROOF INVESTMENTS, LTD. AND IS NOT TO BE USED ON ANY OTHER TYPE OF ROOFING SYSTEM.



TOP
FRONT
LEFT
RIGHT



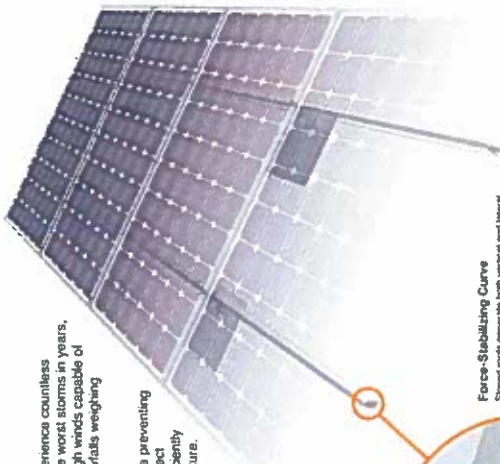
Solar Is Not Always Sunny

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.

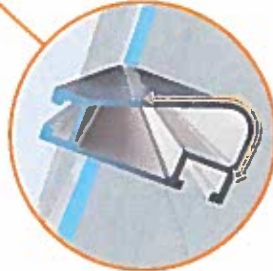
XR Rail Family

Tech Brief



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 maintains structural integrity during high winds and snowfalls while reducing the heating. The unique design ensures greater security during extreme weather and a longer system lifetime.



Compatible with Flat & Pitched Roofs



XR Rails are compatible with Flat/low and other pitched roof attachments.

Corrosion-Resistant Materials



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

XR Rail Family

Tech Brief

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 6 foot spans, while retaining light and economical.

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



XR100

XR100 is the ultimate economical mounting rail. It supports a range of wind and snow conditions, while also maintaining spans up to 8 feet.

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



XR1000

XR1000 is a heavyweight, strong solar mounting rail. It's built to handle extreme climates and spans 12 feet or more for commercial applications.

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

Rail Selection

The following table was prepared in compliance with applicable engineering codes and standards. Values are based on the following criteria: ASCE 7-10, Roof Zone 1, Exposure B, Roof Slope of 7 to 27 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed span tables and certifications.

Snow (PSF)	Wind (MPH)	Rail Span					
		4'	5' 4"	8'	10'	12'	
None	100	XR10	XR100	XR1000	XR1000	XR1000	XR1000
10-20	120						
	140						
	160						
	180						
	200						
	220						
	240						
	260						
	280						
	300						
	320						
	340						
	360						
	380						
	400						



CONTRACTOR
CIRCLE L SOLAR, INC.
PHONE: 817-945-2011
ADDRESS: 3914 SANDSHELL DRIVE
FORT WORTH, TX 76137
LIC. NO.: PVA-052217-017793
E.L.E. NO.: 32897

NEW PV SYSTEM: 15,660 AWP
JERNIGAN
RESIDENCE
501 MCKINNEY STREET
FARMERSVILLE, TX 75442

ENGINEER OF
RECORD

PAPER SIZE: 11" x 17" (ANSI B)
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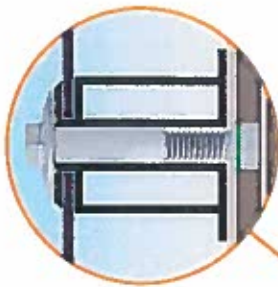
UFO Family of Components

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 Rafts. All system types that feature the UFO family—Flush Mount, Tilt Mount and Ground Mount—are fully listed to the UL 2703 standard.

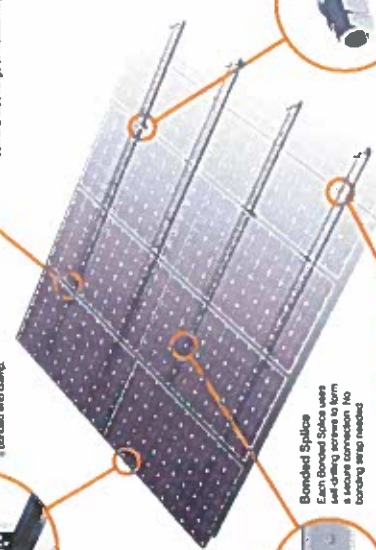
UFO hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.



Universal Fastening Object (UFO)
The UFO securely bonds solar modules to XR Rafts. The UFO family of components can be used in a wide range of module heights.



Stopper Sleeve
The Stopper Sleeve fits into the UFO, covering it up to prevent any damage.



Bonded Splice
Each Bonded Splice uses self-drilling screws to form a secure connection. No bonding strap needed.

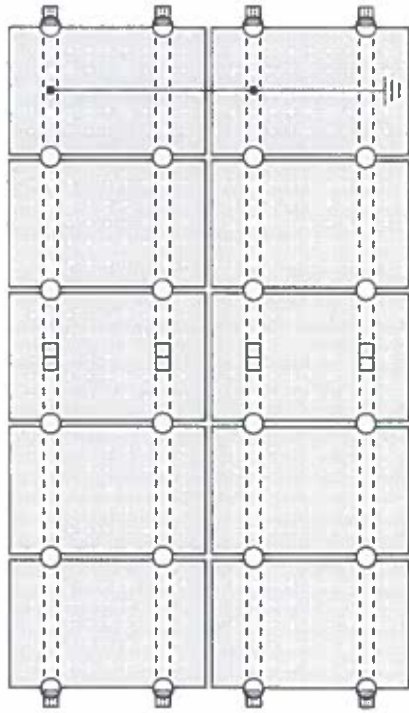


Grounding Lug
Single Grounding Lug connects the rail to the grounding conductor.



Bonded Attachments
The bonding bar screws and bolts the L-bracket to the rail. It is installed with the same screws as the rest of the system.

System Diagram



Tech Brief

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 Enphase 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

Feature	Cross-System Compatibility		
	Flush Mount	Tilt Mount	Ground Mount
XR Rails	✓	✓	XR1000 Only
UFOS/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 SolarEdge - P300, P400, P405, P600, P700, P730	Enphase - M250-72, M250-60, M215-60, C250-72 SolarEdge - P300, P400, P405, P600, P700, P730	Class A
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.		



CONTRACTOR
CIRCLE L SQUARE, INC.
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E.C. NO.: 3887

NEW PV SYSTEM: 15,660 kWp
**JERNIGAN
RESIDENCE**
501 MCIVERNEY STREET
FARMERSVILLE, TX 75442

**ENGINEER OF
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FORT WORTH, TX 76137
LIC. NO.: PVA-062217-017791
ME. NO.:
ELE. NO.: 32897

NEW PV SYSTEM, 15,860 kWp
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RESIDENCE
501 MCCORMICK STREET
FARMERSVILLE, TX 75442

ENGINEER OF
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CERTIFICATE OF COMPLIANCE

Certificate Number: 20171024-E336116
Report Reference: E336116-20110730
Issue Date: 2017-OCTOBER-24

Issued to:
METAL ROOF INNOVATIONS LTD
8655 TABLE BUTTE RD
COLORADO SPRINGS CO 80908-1224

This is to certify that
representative sample(s) of
MOUNTING SYSTEMS, MOUNTING DEVICES,
CLAMPING DEVICES AND GROUND LUGS FOR USE
WITH PHOTOVOLTAIC MODULES AND PANELS:

Models: S-5I PV KIT with roof clamp types S-5-U Mini, S-5-
S-Mini, S-5-T Mini, S-5-Z Mini, S-5-N Mini, S-5-E Mini, and
S-5-N, S-5-U, S-5-S, S-5-T, S-5-Z, S-5-E, S-5-V, S-5-H90.

Have been investigated by UL in accordance with the
Standard(s) indicated on this Certificate:

Standard(s) for Safety: UL 2703, Standard for Mounting Systems, Mounting
Devices, Clamping/Retention Devices, and Ground Lugs
For Use With Flat-Plate Photovoltaic Modules and Panels
Additional Information: See the UL Online® Certifications Directory at
www.ul.com/database for additional information.

Only those products bearing the UL Certification-Mark should be considered as being covered by UL's
Certification and Follow-Up Service.

Look for the UL Certification Mark on the product!

