

PROJECT DESCRIPTION:

20 X MISSION SOLAR ENERGY PERC 60 MSE295SQ5T MONO BLK
 ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES
 SYSTEM SIZE: 5.90 kW DC STC
 ARRAY AREA: ROOF #1- 357.8 SQ FT.

APPLICABLE CODES & STANDARDS
 BUILDING: IBC 2012 IRC 2012
 ELECTRICAL: NEC 2014

AUTHORITIES HAVING JURISDICTION
 BUILDING: HARNETT COUNTY
 ZONING: HARNETT COUNTY
 UTILITY: DUKE ENERGY

EQUIPMENT SUMMARY

20 MISSION SOLAR ENERGY PERC 60 MSE295SQ5T MONO BLK
 20 SOLAREEDGE POWER OPTIMIZER P300
 01 SOLAREEDGE SE5000H-US INVERTER

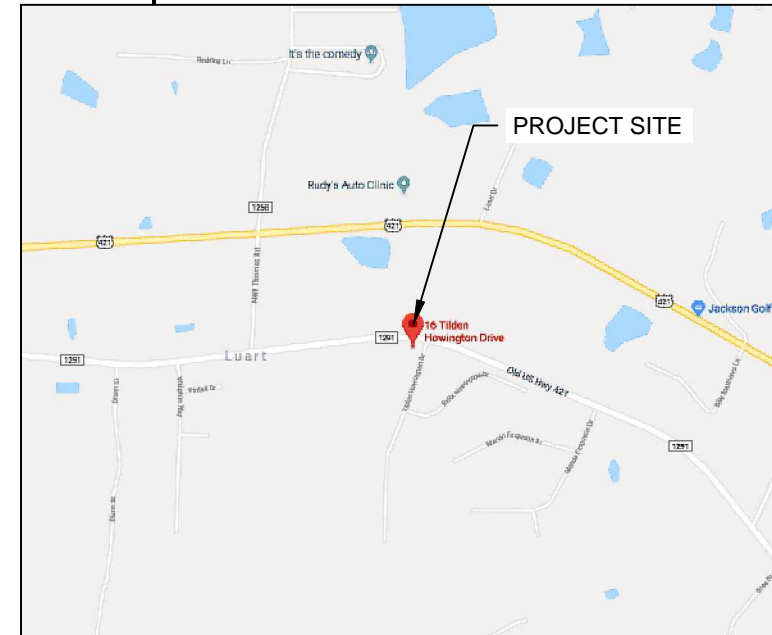
DESIGN SPECIFICATION

OCCUPANCY: II
 CONSTRUCTION: SINGLE-FAMILY
 ZONING: RESIDENTIAL
 GROUND SNOW LOAD: 20 PSF
 WIND EXPOSURE: B
 WIND SPEED: 120 MPH



2 HOUSE PHOTO

PV-1 SCALE: NTS

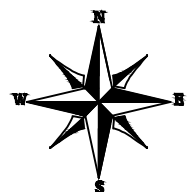
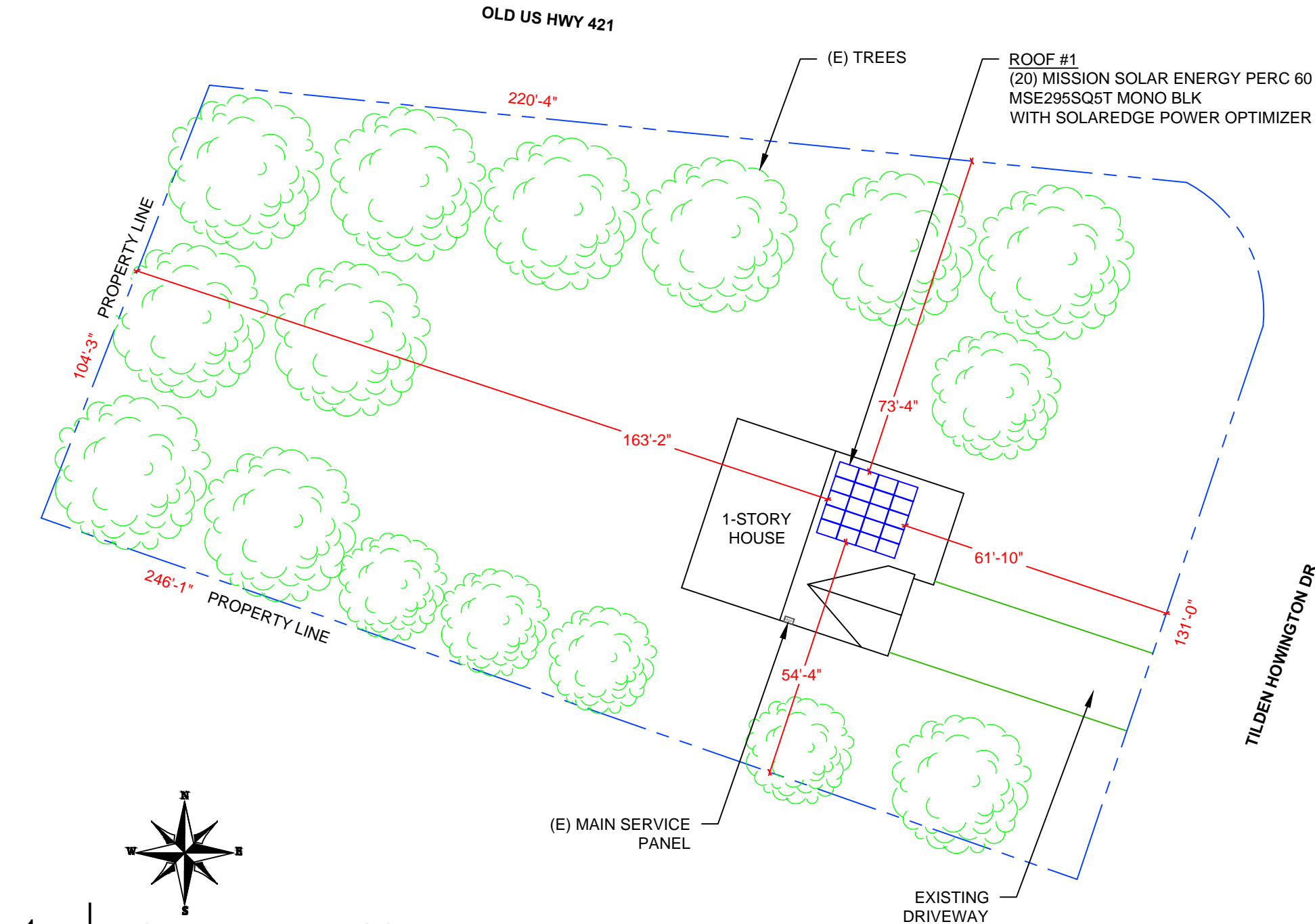


3 VICINITY MAP

PV-1 SCALE: NTS

SHEET INDEX

- PV-1 PLOT PLAN & VICINITY MAP
- PV-2 ROOF PLAN & MODULES
- PV-2A STRING LAYOUT
- PV-3 ATTACHMENT DETAIL
- PV-4 ELECTRICAL LINE DIAGRAM
- PV-5 WIRING CALCULATIONS
- PV-6 SOLAREEDGE OPTIMIZER CHART
- PV-7 to 12 EQUIPMENT SPECIFICATIONS



1 PLOT PLAN WITH ROOF PLAN

PV-1 SCALE: 0.002858

POWERHOME SOLAR & ROOFING
 POWER HOME SOLAR, LLC
 "POWER YOUR FUTURE"
 919 N. MAIN ST.
 MOORESVILLE, NC 28115
 Phone: 704-800-6591 (OFFICE)
 Email: info@powerhome.com
 Web: www.powerhome.com

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

DATE: 07/10/2018

PROJECT NAME & ADDRESS

ERICA BEST RESIDENCE
 16 TILDEN HOWINGTON DR.,
 LILLINGTON, NC 27546

DESIGNED BY

PHS

SHEET NAME

PLOT PLAN & VICINITY MAP

SHEET SIZE

**ANSI B
 11" X 17"**

SHEET NUMBER

PV-1

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 20 MODULES
 MODULE TYPE = MISSION SOLAR ENERGY PERC 60 MSE295SQ5T MONO BLK
 MODULE WEIGHT = 40.1 LBS / 18.2 KG.
 MODULE DIMENSIONS = 65.51"x 39.33" = 17.89 SF

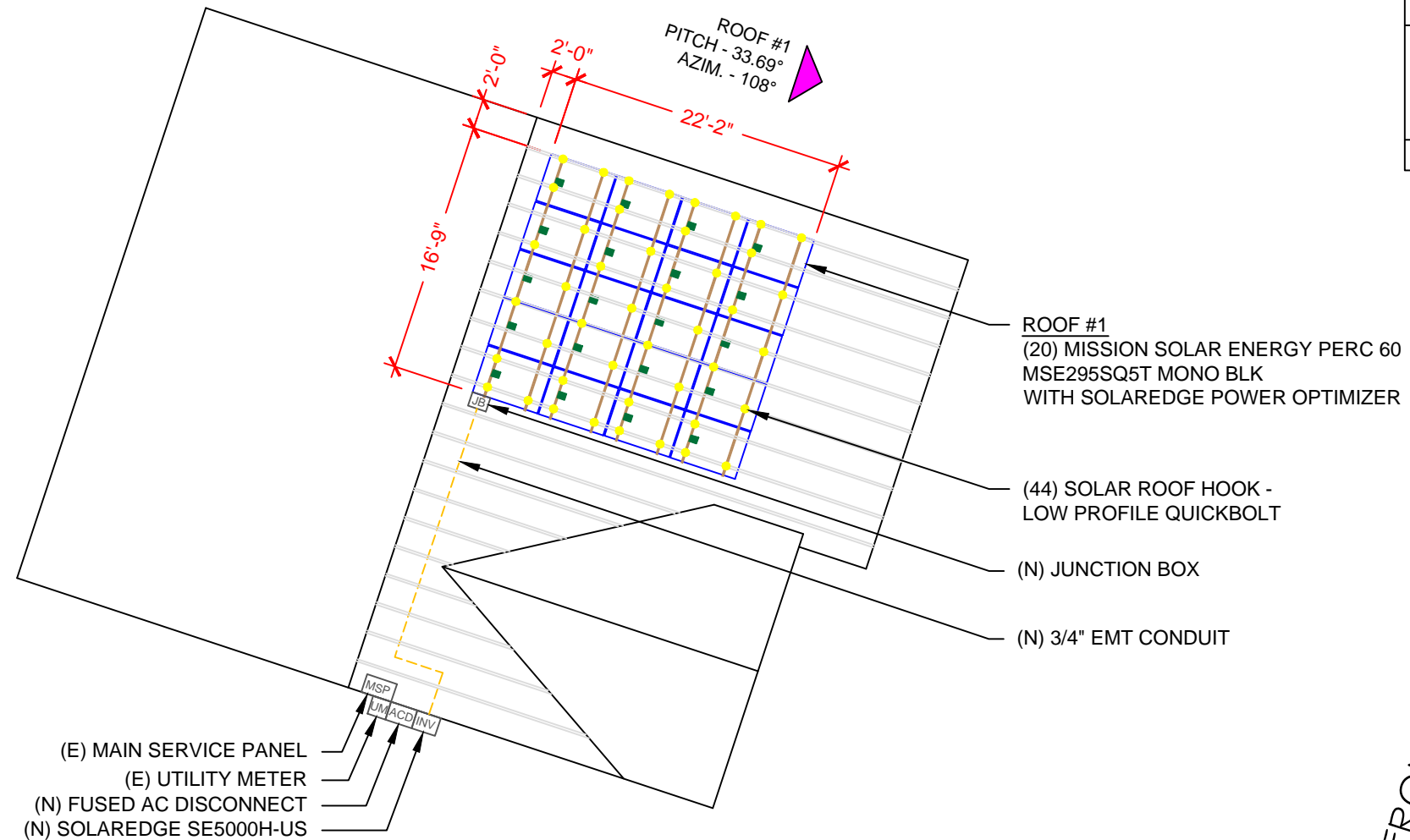
ROOF DESCRIPTION				
ROOF TYPE		COMPOSITE SHINGLE		
ROOF LAYER		1 LAYERS		
ROOF	ROOF PITCH	AZIMUTH	RAFTER SIZE	RAFTER SPACING
#1	33.69°	108°	2X4	24"

ARRAY AREA & ROOF AREA CALC'S				
ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	20	357.80	850.70	42

POWERHOME SOLAR & ROOFING
 POWER HOME SOLAR, LLC
 "POWER YOUR FUTURE"
 919 N. MAIN ST.
 MOORESVILLE, NC 28115
 Phone: 704-800-6591 (OFFICE)
 Email: info@powerhome.com
 Web: www.powerhome.com

REVISIONS		
DESCRIPTION	DATE	REV

(E) BACK OF RESIDENCE



(E) FRONT OF RESIDENCE

Signature with Seal
 DATE: 07/10/2018

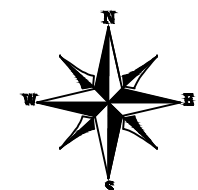
PROJECT NAME & ADDRESS
ERICA BEST RESIDENCE
 16 TILDEN HOWINGTON DR.,
 LILLINGTON, NC 27546

DESIGNED BY
PHS

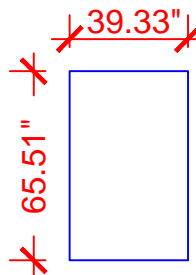
SHEET NAME
ROOF PLAN & MODULES

SHEET SIZE
**ANSI B
 11" X 17"**

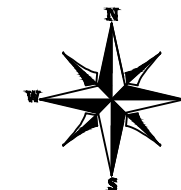
SHEET NUMBER
PV-2



MISSION SOLAR ENERGY
 PERC 60 MSE295SQ5T
 MONO BLKMODULES



LEGEND	
[JB]	- JUNCTION BOX
[INV]	- INVERTER
[DC]	- INTEGRATED DC DISCONNECT
[SLD]	- SOLAR LOAD CENTER
[PM]	- PRODUCTION METER
[MSP]	- MAIN SERVICE PANEL
[]	- VENT, ATTIC FAN (ROOF OBSTRUCTION)
[]	- ROOF ATTACHMENT
[]	- RAFTERS
[]	- CONDUIT
[CB]	- COMBINER BOX



POWERHOME SOLAR & ROOFING
 POWER HOME SOLAR, LLC
 "POWER YOUR FUTURE"
 919 N. MAIN ST.
 MOORESVILLE, NC 28115
 Phone: 704-800-6591 (OFFICE)
 Email: info@powerhome.com
 Web: www.powerhome.com

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

 DATE: 07/10/2018

PROJECT NAME & ADDRESS

ERICA BEST RESIDENCE
 16 TILDEN HOWINGTON DR.,
 LILLINGTON, NC 27546

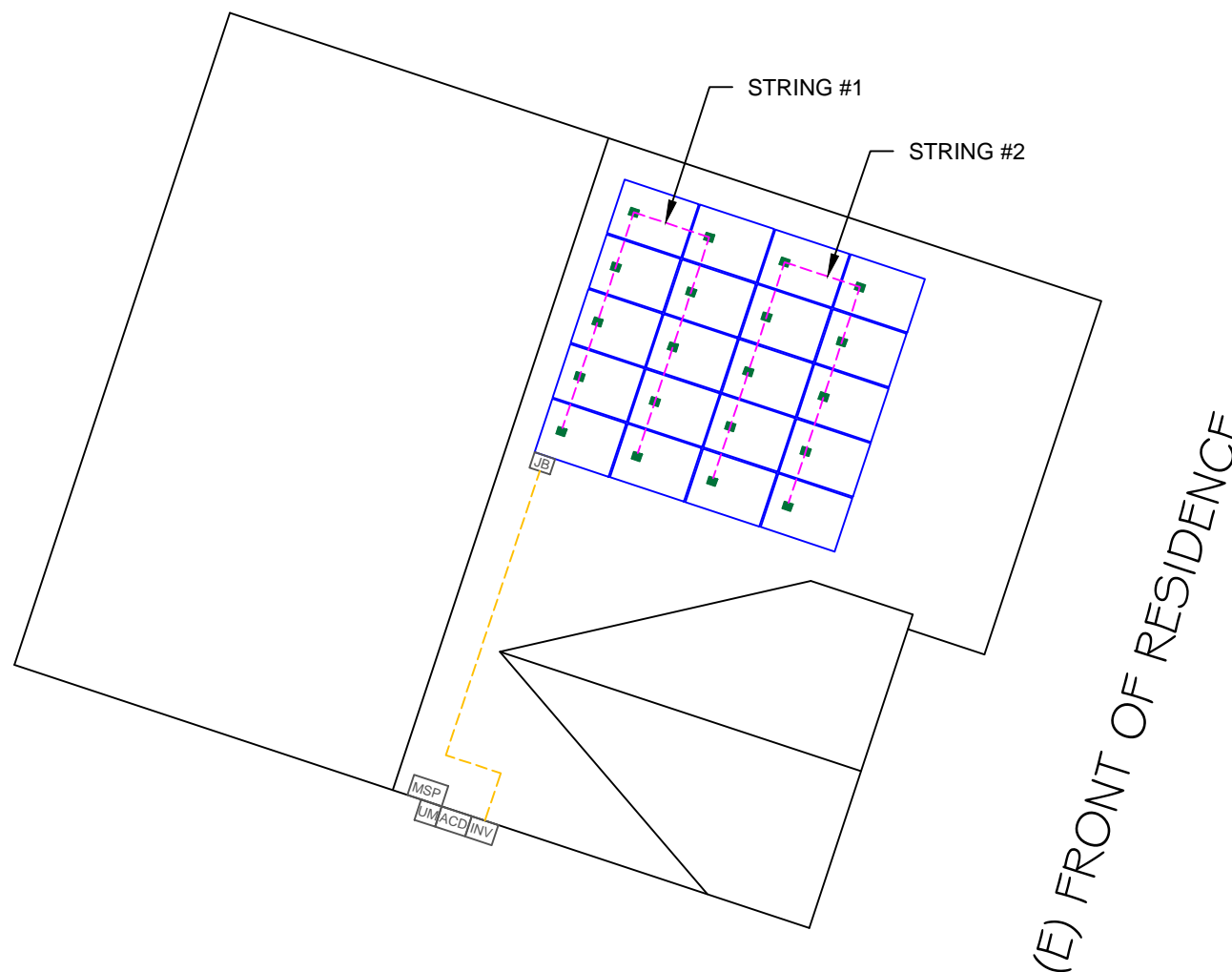
DESIGNED BY
PHS

SHEET NAME
STRING LAYOUT

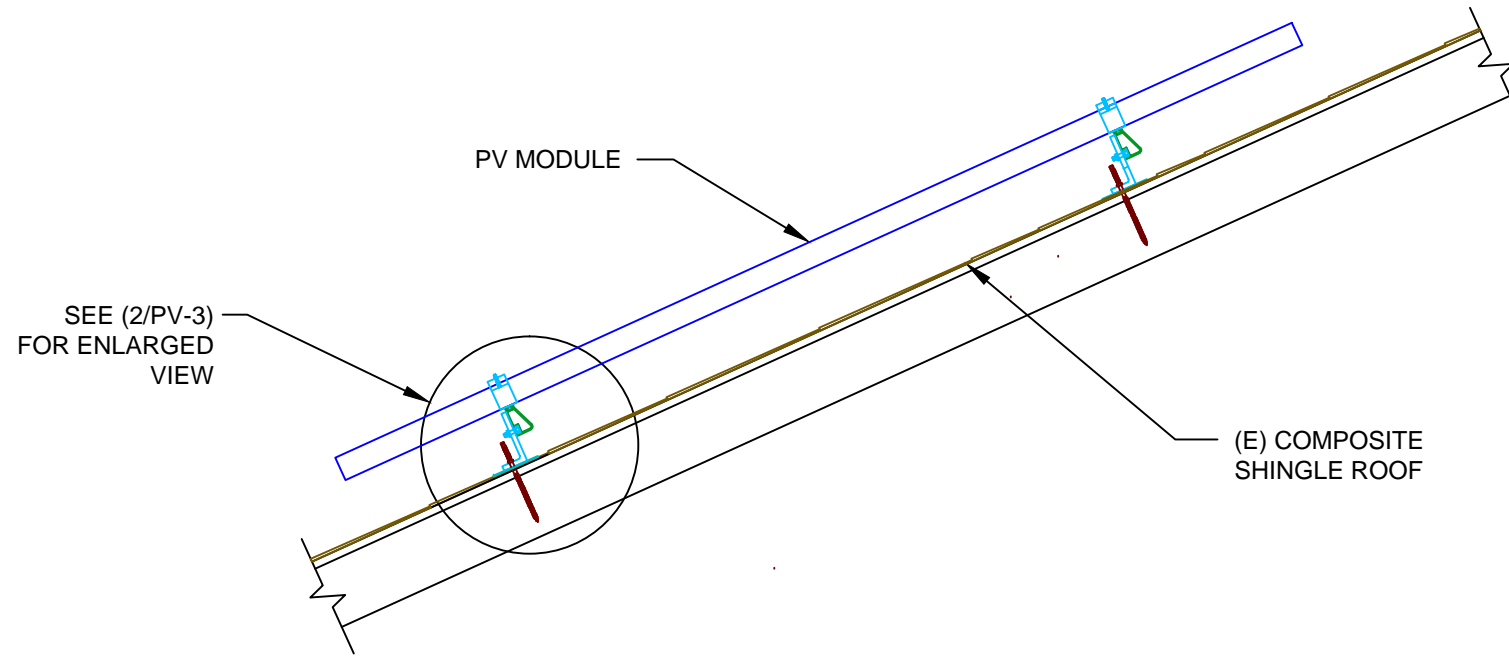
SHEET SIZE
**ANSI B
 11" X 17"**

SHEET NUMBER
PV-2A

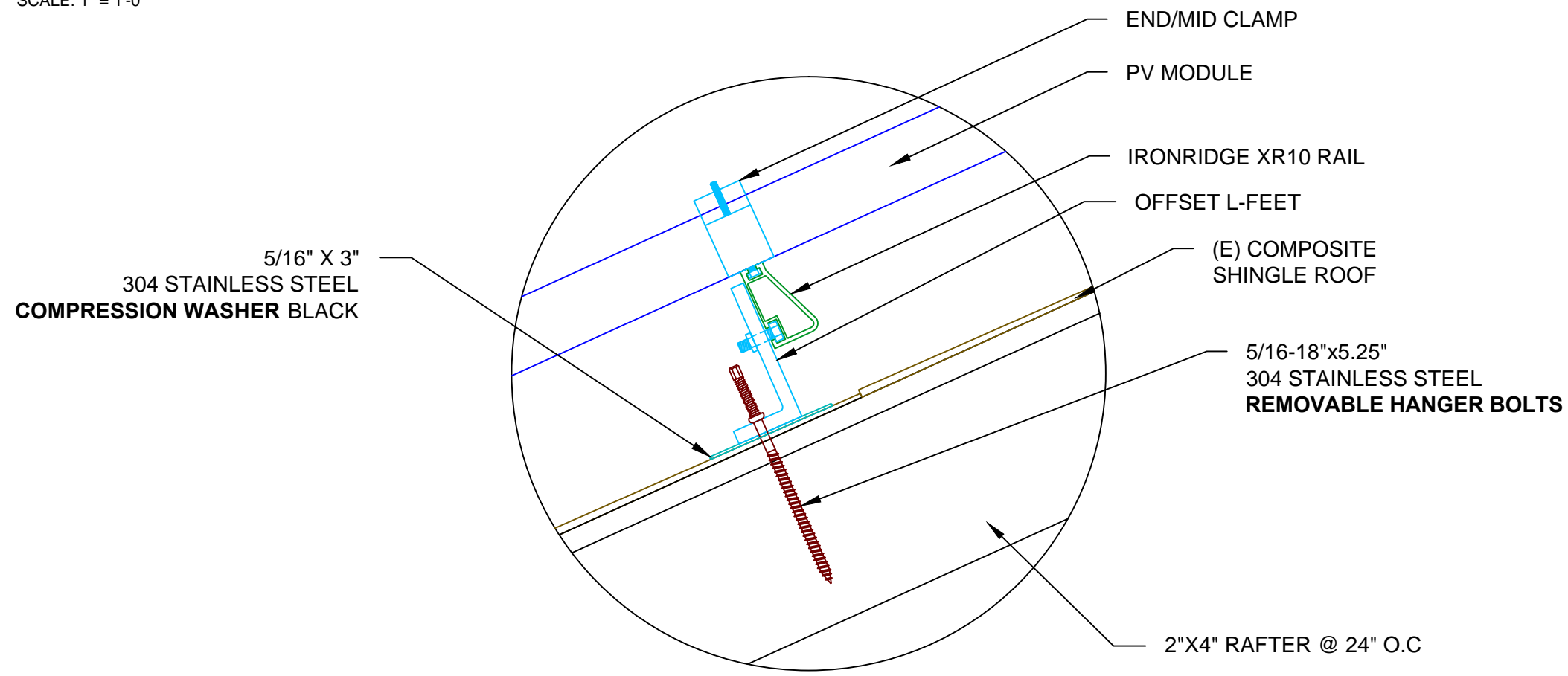
(E) BACK OF RESIDENCE



BILL OF MATERIALS		
EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	20	MISSION SOLAR ENERGY PERC 60 MSE295SQ5T MONO BLK
OPTIMIZER	20	SOLAREGE POWER OPTIMIZER P300
INVERTER	01	SOLAREGE SE5000H-US INVERTER
AC DISCONNECT	1	30A FUSED, (2) 30A FUSES, 240V, NEMA 3R, UL LISTED
SOLAR DECK	1	SOLAR DECKS
RAILS	16	IRONRIDGE XR10 RAIL 168" (14 FEET) BLACK
BONDED SPLICE	8	SPLICE KIT
MODULE CLAMPS	48	UNIVERSAL MODULE CLAMPS
GROUNDING LUG	4	IRONRIDGE GROUNDING LUG
END CLAMPS	16	END CLAMPS / STOPPER SLEEVE
ATTACHMENT	44	SRH LOW PROFILE QUICKBOLT
SQUARE-BOLT	44	SQUARE-BOLT BONDING ATTACHMENT HARDWARE



1 | ATTACHMENT DETAIL
SCALE: 1" = 1'-0"



2 | ATTACHMENT DETAIL (enlarged view)

POWERHOME SOLAR & ROOFING
POWER HOME SOLAR, LLC
"POWER YOUR FUTURE"
919 N. MAIN ST.
MOORESVILLE, NC 28115
Phone: 704-800-6591 (OFFICE)
Email: info@powerhome.com
Web: www.powerhome.com

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

DATE: 07/10/2018

PROJECT NAME & ADDRESS

ERICA BEST RESIDENCE

16 TILDEN HOWINGTON DR.,
LILLINGTON, NC 27546

DESIGNED BY
PHS

SHEET NAME
ATTACHMENT DETAIL

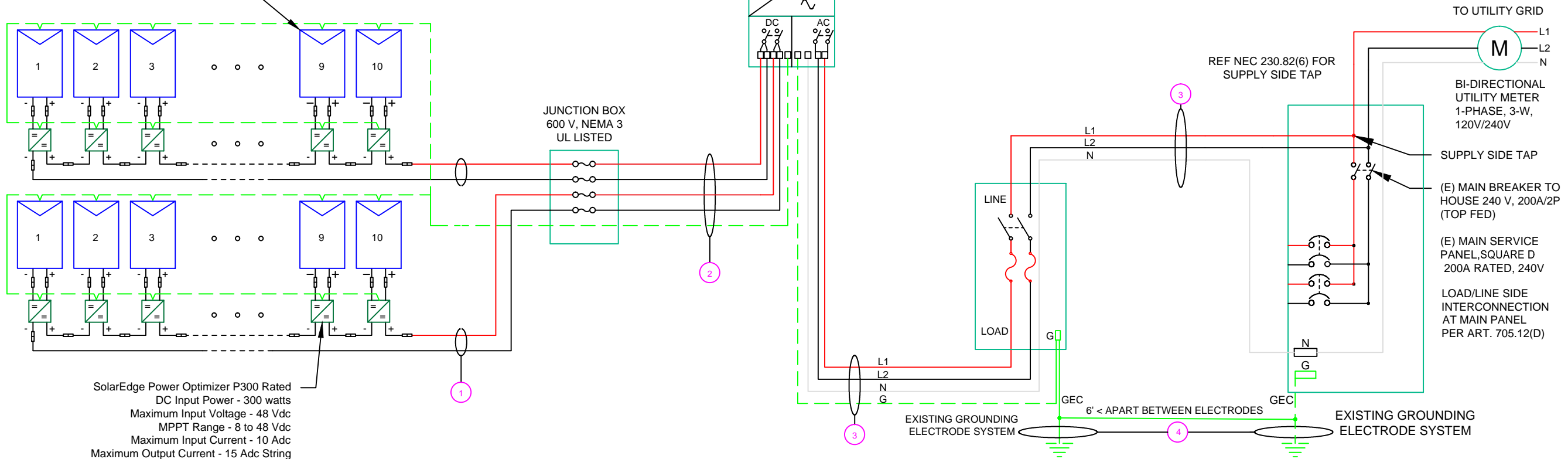
SHEET SIZE
**ANSI B
11" X 17"**

SHEET NUMBER
PV-3

(20) MISSION SOLAR ENERGY PERC 60 MSE295SQ5T MODULES
 (2) STRING OF 10 MODULES CONNECTED IN SERIES

SOLAREEDGE SE5000H-US (240V)
 OUTPUT: 240 VAC, 21A
 99% CEC WEIGHTED EFFICIENCY
 NEMA 3R, UL LISTED, INTERNAL GFDI WITH INTEGRATED DC DISCONNECT

MISSION SOLAR ENERGY PERC 60 MSE295SQ5T MONO BLK MODULES



SolarEdge Power Optimizer P300 Rated
 DC Input Power - 300 watts
 Maximum Input Voltage - 48 Vdc
 MPPT Range - 8 to 48 Vdc
 Maximum Input Current - 10 Adc
 Maximum Output Current - 15 Adc String
 Limitations - 8 to 25 Optimizers,
 5250 watts STC per string maximum

! WARNING !
 PHOTOVOLTAIC POWER SOURCE

LABEL 1
 ON ALL CONDUITS SPACED AT MAX 10FT

! CAUTION !
 SOLAR ELECTRIC SYSTEM CONNECTED AND ENERGIZED

LABEL 2
 AT INVERTER

! CAUTION !
 PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

LABEL 3
 AT INVERTER

PHOTOVOLTAIC DC DISCONNECT

LABEL 4
 AT EACH DC DISCONNECT

! WARNING !
 ELECTRIC SHOCK HAZARD DO NOT TOUCH TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED BY THE OPEN POSITION

LABEL 5
 AT EACH AC DISCONNECT

PHOTOVOLTAIC AC DISCONNECT

LABEL 6
 AT EACH AC DISCONNECT

! WARNING !
 DUAL POWER SOURCES SECOND SOURCE IS PV SYSTEM

LABEL 8
 AT MEP

! WARNING !
 SOLAR SYSTEM CONNECTED AND ENERGIZED

LABEL 9
 AT MEP

! CAUTION !
 SOLAR POINT OF INTERCONNECTION

LABEL 10
 AT UTILITY METER

! WARNING !
 THE SERVICE METER IS ALSO SERVED BY A PHOTOVOLTAIC SYSTEM

LABEL 11
 AT UTILITY METER

QTY	CONDUCTOR INFORMATION	CONDUIT TYPE	CONDUIT SIZE
① (4)	#10AWG - PV WIRE/USE-2	N/A	N/A
(1)	#6AWG - BARE COPPER IN FREE AIR	N/A	N/A
② (4)	#10AWG - THWN-2	PVC, EMT OR FLEX IN ATTIC	3/4"
(1)	#6AWG - THWN-2 GND		
③ (3)	#6AWG - THWN-2	EMT OR PVC	3/4"
(1)	#6AWG - THWN-2 GND		
④ (1)	EXISTING GROUNDING SYSTEM		

SERVICE INFO

UTILITY PROVIDER: DUKE ENERGY
 MAIN SERVICE VOLTAGE: 240V
 MAIN PANEL BRAND: SQUARE D
 MAIN SERVICE PANEL: 200A
 MAIN CIRCUIT BREAKER RATING: 200A
 MAIN SERVICE LOCATION: WEST
 SERVICE FEED SOURCE: OVERHEAD

POWERHOME SOLAR & ROOFING
 POWER HOME SOLAR, LLC
 "POWER YOUR FUTURE"
 919 N. MAIN ST.
 MOORESVILLE, NC 28115
 Phone: 704-800-6591 (OFFICE)
 Email: info@powerhome.com
 Web: www.powerhome.com

REVISIONS

DESCRIPTION	DATE	REV

Signature with Seal

DATE: 07/10/2018

PROJECT NAME & ADDRESS

ERICA BEST RESIDENCE
 16 TILDEN HOWINGTON DR.,
 LILLINGTON, NC 27546

DESIGNED BY
PHS

SHEET NAME
ELECTRICAL LINE DIAGRAM

SHEET SIZE
**ANSI B
 11" X 17"**

SHEET NUMBER
PV-4

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	MISSION SOLAR ENERGY PERC 60 MSE295SQ5T MONO BLK
VMP	32.72V
IMP	9.03A
VOC	40.11V
ISC	9.52A
TEMP. COEFF. VOC	-0.318%/°K
MODULE DIMENSION	65.51"L x 39.33"W x 1.57"D (In Inch)

INVERTER #1 SPECIFICATIONS	
MANUFACTURER / MODEL #	SOLAREEDGE SE5000H-US
NOMINAL AC POWER	5.0 KW
NOMINAL OUTPUT VOLTAGE	240 VAC
NOMINAL OUTPUT CURRENT	21A

POWER OPTIMIZER (OPTIMIZER P300-2NM4ARS)	
MAXIMUM INPUT POWER	300W
MINIMUM INPUT VOLTAGE	8 VDC
MAXIMUM INPUT VOLTAGE	48VDC
MAXIMUM MODULE ISC	10 ADC
MAXIMUM OUTPUT CURRENT	15 ADC

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

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-10°
AMBIENT TEMP (HIGH TEMP 2%)	35°
CONDUIT HEIGHT	0.5"
ROOF TOP TEMP	57°
CONDUCTOR TEMPERATURE RATE	90°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.318%/°K

ELECTRICAL NOTES

- 1.) ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- 2.) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
- 3.) WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
- 4.) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- 5.) DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
- 6.) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- 7.) ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
- 8.) MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
- 9.) MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
- 10.) THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE

DC CONDUCTOR AMPACITY CALCULATIONS: ARRAY TO JUNCTION BOX:

EXPECTED WIRE TEMP (In Celsius)	57°
TEMP. CORRECTION PER TABLE (310.16)	0.71
NO. OF CURRENT CARRYING CONDUCTORS	4
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a)	0.8
CIRCUIT CONDUCTOR SIZE	10 AWG
CIRCUIT CONDUCTOR AMPACITY	40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B)	14.88A
1.25 X 1.25 X Isc	
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.16	
TEMP. CORRECTION PER TABLE (310.16) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY	22.72A
Result should be greater than (14.88A) otherwise less the entry for circuit conductor size and ampacity	

DC CONDUCTOR AMPACITY CALCULATIONS: FROM JUNCTION BOX TO INVERTER:

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT PER NEC 310.15(B)(2)(c)	+22°
EXPECTED WIRE TEMP (In Celsius)	35° + 22° = 57°
TEMP. CORRECTION PER TABLE (310.16)	0.71
NO. OF CURRENT CARRYING CONDUCTORS	4
CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a)	0.8
CIRCUIT CONDUCTOR SIZE	10AWG
CIRCUIT CONDUCTOR AMPACITY	40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B)	14.88A
1.25 X 1.25 X Isc	
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.16	
TEMP. CORRECTION PER TABLE (310.16) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a) X CIRCUIT CONDUCTOR AMPACITY	22.72A
Result should be greater than (14.88A) otherwise less the entry for circuit conductor size and ampacity	

AC CONDUCTOR AMPACITY CALCULATIONS:

No. OF INVERTER	1
EXPECTED WIRE TEMP (In Celsius)	35°
TEMP. CORRECTION PER TABLE (310.16)	0.96
NO. OF CURRENT CARRYING CONDUCTORS	3
CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a)	1
CIRCUIT CONDUCTOR SIZE	6 AWG
CIRCUIT CONDUCTOR AMPACITY	75A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B)	26.25A
1.25 X MAX INVERTER OUTPUT CURRENT	
DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.16	
TEMP. CORRECTION PER TABLE (310.16) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(2)(a) X CIRCUIT CONDUCTOR AMPACITY	72A
Result should be greater than (26.25A) otherwise less the entry for circuit conductor size and ampacity	



REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

DATE: 07/10/2018

PROJECT NAME & ADDRESS

**ERICA BEST
RESIDENCE**

**16 TILDEN HOWINGTON DR.,
LILLINGTON, NC 27546**

DESIGNED BY
PHS

SHEET NAME
**WIRING
CALCULATIONS**

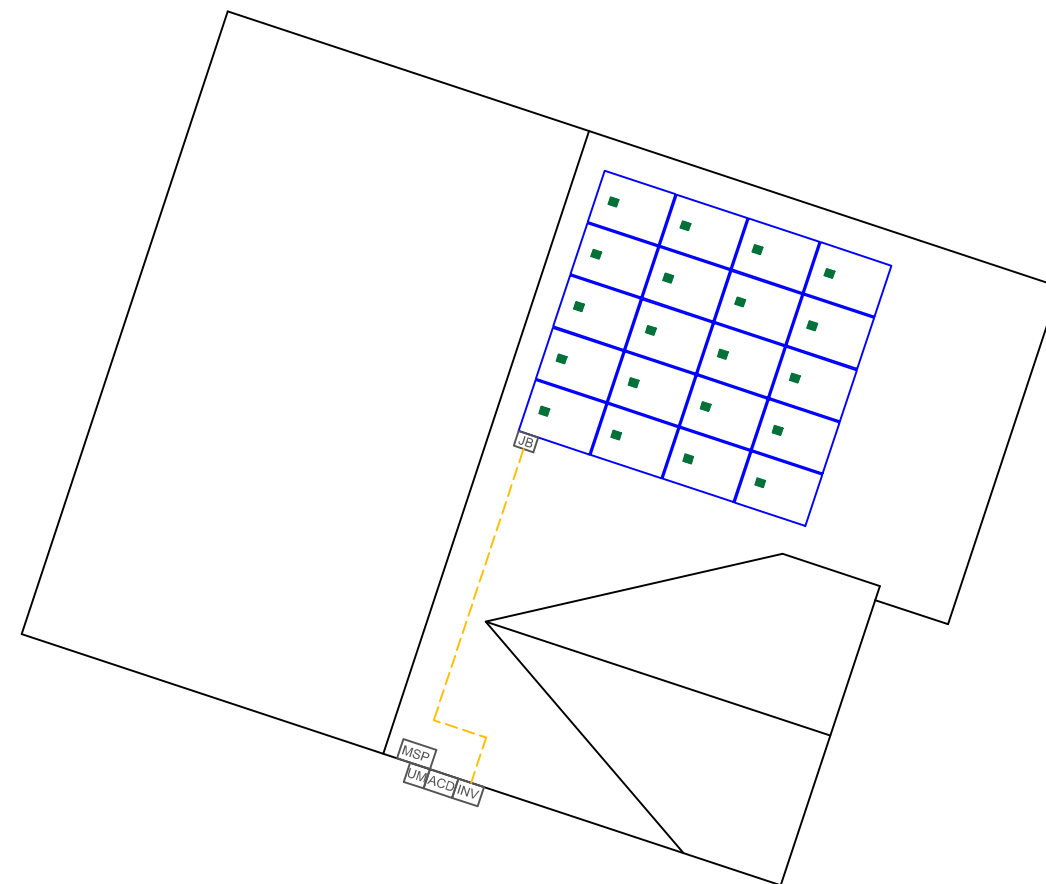
SHEET SIZE
**ANSI B
11" X 17"**

SHEET NUMBER
PV-5

1-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100 101-110 111-120 121-130

1														
2														
3														
4														
5														

SOLAREEDGE OPTIMIZER CHART



POWERHOME SOLAR & ROOFING
 POWER HOME SOLAR, LLC
 "POWER YOUR FUTURE"
 919 N. MAIN ST.
 MOORESVILLE, NC 28115
 Phone: 704-800-6591 (OFFICE)
 Email: info@powerhome.com
 Web: www.powerhome.com

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

DATE: 07/10/2018

PROJECT NAME & ADDRESS

ERICA BEST RESIDENCE
 16 TILDEN HOWINGTON DR.,
 LILLINGTON, NC 27546

DESIGNED BY
PHS

SHEET NAME
SOLAREEDGE OPTIMIZER CHART

SHEET SIZE
**ANSI B
 11" X 17"**

SHEET NUMBER
PV-6

MSE PERC 60

High Power PERC Rooftop Module



Class Leading Output:
300W power



Advanced Technology:
PERC and 4 busbars drive
>18% module efficiency



Superior Aesthetics:
All-black design coupled with
outstanding power output



Certified Reliability:
3X IEC, salt mist, ammonia



5600 Pa snow load **New!**
175 mph wind rating



Buy American Act



Proudly assembled in the USA

Mission Solar Energy is headquartered in San Antonio, TX with module facilities onsite. Our hardworking team calls Texas home and is devoted to producing high quality solar products and services. Our supply chain includes local and domestic vendors increasing our impact to the U.S. economy.



Assembled
in the USA

Superior Aesthetics

MSE PERC 60's slick all-black design coupled with outstanding power output makes it ideal for DG installations including commercial and rooftop systems.

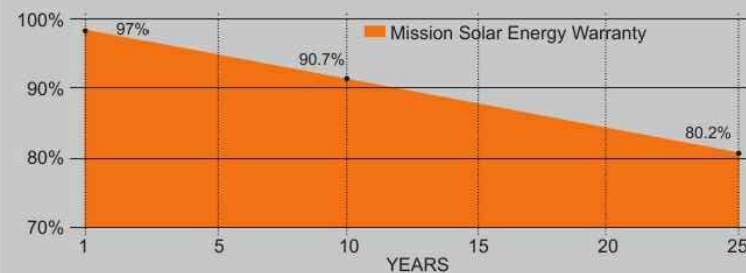
Outstanding performance with PERC

Passivated Emitter Rear Contact (PERC) technology provides excellent power output through advanced cell structure.

Best in class quality

Mission Solar Energy production lines are fully automated and include multiple quality checks throughout the production process.

25-YEAR LINEAR WARRANTY



CERTIFICATIONS

IEC 61215/ IEC 61730/ IEC 61701 UL 1703



*As there are different certification requirements in different markets, please contact your local Mission Solar Energy sales representative for the specific certificates applicable to the products in the region in which the products are to be used.

ELECTRICAL SPECIFICATIONS

Electrical parameters at Standard Test Condition (STC)

Module Type			MSE290SQ5T	MSE295SQ5T	MSE300SQ5T
Power Output	Pmax	Wp	290	295	300
Module Efficiency		%	17.45	17.75	18.05
Tolerance				0+3%	
Short-Circuit Current	Isc	A	9.44	9.52	9.61
Open Circuit Voltage	Voc	V	39.81	40.11	40.18
Rated Current	Imp	A	8.95	9.03	9.17
Rated Voltage	Vmp	V	32.54	32.72	32.80

STC: Irradiance 1000 W/m², Cell temperature of 25°C, AM 1.5

TEMPERATURE COEFFICIENTS

Normal Operating Cell Temperature (NOCT)	44°C (±2°C)
Temperature Coefficient of Pmax	-0.427%/°C
Temperature Coefficient of Voc	-0.318%/°C
Temperature Coefficient of Isc	0.042%/°C

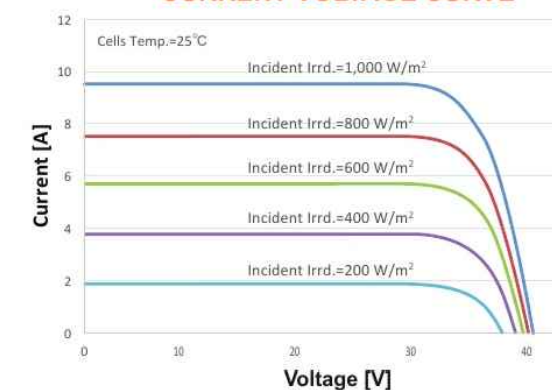
OPERATING CONDITIONS

Maximum System Voltage	1,000VDC
Operating Temperature Range	-40°C (-40°F) to +90°C (194°F)
Maximum Series Fuse Rating	15A
Fire Safety Classification	Type 1, Class C
Front & Back Load (UL standard)	5600 Pa (117 psf) New!
Hail Safety Impact Velocity	25mm at 23 m/s

MECHANICAL DATA

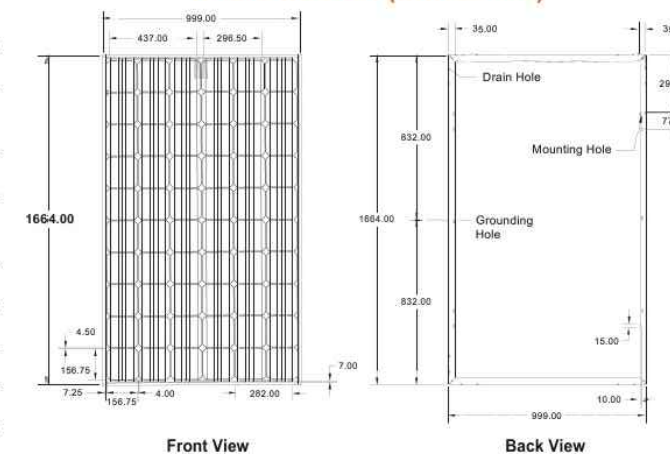
Solar Cells	P-type Mono-crystalline Silicon (156.75mm)
Cell orientation	60 cells (6x10), 4 busbar
Module dimension	1664mm x 999mm x 40mm (65.51 in. x 39.33 in. x 1.57 in.)
Weight	18.2 kg (40.1 lb)
Front Glass	3.2mm (0.126 in.) tempered, Low-iron, Anti-reflective coating
Frame	Anodized aluminum alloy
Encapsulant	Ethylene vinyl acetate (EVA)
J-Box	Protection class IP67 with 3 bypass-diodes
Cables	PV wire, 1m (39.37 in.), 4mm ² / 12 AWG
Connector	MC4 or compatible

MSE295SQ5T: 295WP, 60CELL SOLAR MODULE CURRENT-VOLTAGE CURVE



Current-voltage characteristics with dependence on irradiance and module temperature

BASIC DESIGN (UNITS: mm)



Mission Solar Energy reserves the right to make specification changes without notice.

Rev. 7.03

8303 South New Braunfels Ave. | San Antonio | TX | 78235 | missionsolar.com | info@missionsolar.com | (210) 531-8600



REVISIONS

DESCRIPTION	DATE	REV

Signature with Seal

DATE: 07/10/2018

PROJECT NAME & ADDRESS

ERICA BEST
RESIDENCE
16 TILDEN HOWINGTON DR.,
LILLINGTON, NC 27546

DESIGNED BY

PHS

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-7



SolarEdge Single Phase Inverters for North America

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



INVERTERS

Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking efficiency
- Integrated arc fault protection for NEC 2011 690.11 and integrated rapid shutdown for NEC 2014 690.12
- Extremely small
- High reliability without any electrolytic capacitors
- Built-in module-level monitoring
- Outdoor and indoor installation
- Optional: Revenue grade data, ANSI C12.20 Class 0.5 (0.5% accuracy)



USA-CANADA-GERMANY-ITALY-FRANCE-JAPAN-CHINA-AUSTRALIA-THE NETHERLANDS-UK-ISRAEL-TURKEY-SOUTH AFRICA-BULGARIA www.solaredge.us



Single Phase Inverters for North America

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

	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	
OUTPUT						
Rated AC Power Output	3000	3800	5000	6000	7600	VA
Max. AC Power Output	3000	3800	5000	6000	7600	VA
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	-	✓	-	-	Vac
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	Vac
AC Frequency (Nominal)	-	-	59.3 - 60 - 60.5 ⁽¹⁾	-	-	Hz
Maximum Continuous Output Current 208V	-	-	24	-	-	A
Maximum Continuous Output Current 240V	12.5	16	21	25	32	A
GFDI Threshold	-	-	1	-	-	A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes			-	-	
INPUT						
Maximum DC Power	4650	5900	7750	9300	11800	W
Transformer-less, Ungrounded	Yes			-	-	
Maximum Input Voltage	480			-	-	Vdc
Nominal DC Input Voltage	380			-	400	Vdc
Maximum Input Current 208V	15.5			-	-	Adc
Maximum Input Current 240V	8.5	10.5	13.5	16.5	20	Adc
Max. Input Short Circuit Current	45			-	-	Adc
Reverse-Polarity Protection	Yes			-	-	
Ground-Fault Isolation Detection	600k _Ω Sensitivity			-	-	
Maximum Inverter Efficiency	99	-	99.2	-	-	%
CEC Weighted Efficiency	99			-	-	%
Nighttime Power Consumption	< 2.5			-	-	W
SELF-SUSTAINING POWER OUTLET (OPTIONAL)						
Nominal Output Voltage	120			-	-	V
Maximum Output Power	1500 ⁽²⁾			-	-	W
External Outlet with GFDI	Yes			-	-	
ADDITIONAL FEATURES						
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)			-	-	
Revenue Grade Data, ANSI C12.20	Optional ⁽³⁾			-	-	
Rapid Shutdown - NEC 2014 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect			-	-	
STANDARD COMPLIANCE						
Safety	UL1741, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07			-	-	
Grid Connection Standards	IEEE1547, Rule 21, Rule14 (HI)			-	-	
Emissions	FCC Part 15 Class B			-	-	
INSTALLATION SPECIFICATIONS						
AC Output Conduit Size / AWG Range	0.75-1" Conduit / 14-6 AWG			-	-	
DC Input Conduit Size / # of Strings / AWG Range	0.75-1" Conduit / 1-2 strings / 14-6 AWG			-	-	
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174			-	-	in / mm
Weight with Safety Switch	25.3 / 11.5			-	-	lb / kg
Noise	< 25			-	-	dB(A)
Cooling	Natural Convection			-	-	
Operating Temperature Range	-13 to +140 / -25 to +60 ⁽⁴⁾ (-40°F / -40°C option) ⁽⁵⁾			-	-	°F / °C
Protection Rating	NEMA 3R (Inverter with Safety Switch)			-	-	

⁽¹⁾ For other regional settings please contact SolarEdge support.
⁽²⁾ Depends on PV availability.
⁽³⁾ Revenue grade inverter P/N: SExxxxH-US000NNC2.
⁽⁴⁾ Power de-rating from 50°C.
⁽⁵⁾ -40 version P/N: SExxxxH-US000NNU4.



© SolarEdge Technologies, Inc. All rights reserved. SOLAREEDGE, the SolarEdge logo, OPTIMIZED BY SOLAREEDGE are trademarks or registered trademarks of SolarEdge Technologies, Inc. All other trademarks mentioned herein are trademarks of their respective owners. Date: 01/2017, V.01. Subject to change without notice.



REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

DATE: 07/10/2018

PROJECT NAME & ADDRESS

ERICA BEST
RESIDENCE
16 TILDEN HOWINGTON DR.,
LILLINGTON, NC 27546

DESIGNED BY

PHS

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-8



SolarEdge Power Optimizer

Module Add-On For North America

P300 / P320 / P400 / P405



POWER OPTIMIZER

PV power optimization at the module-level

- 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
- Module-level voltage shutdown for installer and firefighter safety

USA - CANADA - GERMANY - ITALY - FRANCE - JAPAN - CHINA - AUSTRALIA - THE NETHERLANDS - UK - ISRAEL

www.solaredge.us



SolarEdge Power Optimizer

Module Add-On for North America

P300 / P320 / P400 / P405

	P300 (for 60-cell modules)	P320 (for high-power 60-cell modules)	P400 (for 72 & 96-cell modules)	P405 (for thin film modules)	
INPUT					
Rated Input DC Power ⁽¹⁾	300	320	400	405	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	48		80	125	Vdc
MPPT Operating Range	8 - 48		8 - 80	12.5 - 105	Vdc
Maximum Short Circuit Current (Isc)	10	11	10.1		Adc
Maximum DC Input Current	12.5	13.75	12.63		Adc
Maximum Efficiency	99.5				%
Weighted Efficiency	98.8				%
Overtolerance Category	II				
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREEDGE INVERTER)					
Maximum Output Current	15				Adc
Maximum Output Voltage	60		85		Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREEDGE INVERTER OR SOLAREEDGE INVERTER OFF)					
Safety Output Voltage per Power Optimizer	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)	128 x 152 x 27.5 / 5 x 5.97 x 1.08		128 x 152 x 35 / 5 x 5.97 x 1.37	128 x 152 x 50 / 5 x 5.97 x 1.96	mm / in
Weight (including cables)	760 / 1.7		830 / 1.8	1064 / 2.3	gr / lb
Input Connector	MC4 Compatible				
Output Wire Type / Connector	Double Insulated; MC4 Compatible				
Output Wire Length	0.95 / 3.0			1.2 / 3.9	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.

PV SYSTEM DESIGN USING A SOLAREEDGE INVERTER ⁽²⁾	SINGLE PHASE	THREE PHASE 208V	THREE PHASE 480V	
Minimum String Length (Power Optimizers)	8	10	18	
Maximum String Length (Power Optimizers)	25	25	50	
Maximum Power per String	5250	6000	12750	W
Parallel Strings of Different Lengths or Orientations	Yes			

⁽²⁾ It is not allowed to mix P405 with P300/P400/P600/P700 in one string.



© SolarEdge Technologies, Inc. All rights reserved. SOLAREEDGE, the SolarEdge logo, OPTIMIZED BY SOLAREEDGE are trademarks or registered trademarks of SolarEdge Technologies, Inc. All other trademarks mentioned herein are trademarks of their respective owners. Date: 12/2015 V.01. Subject to change without notice.



REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

DATE: 07/10/2018

PROJECT NAME & ADDRESS

ERICA BEST
RESIDENCE
16 TILDEN HOWINGTON DR.,
LILLINGTON, NC 27546

DESIGNED BY

PHS

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

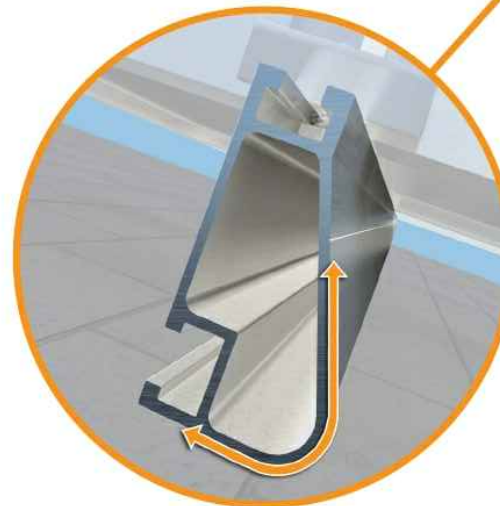
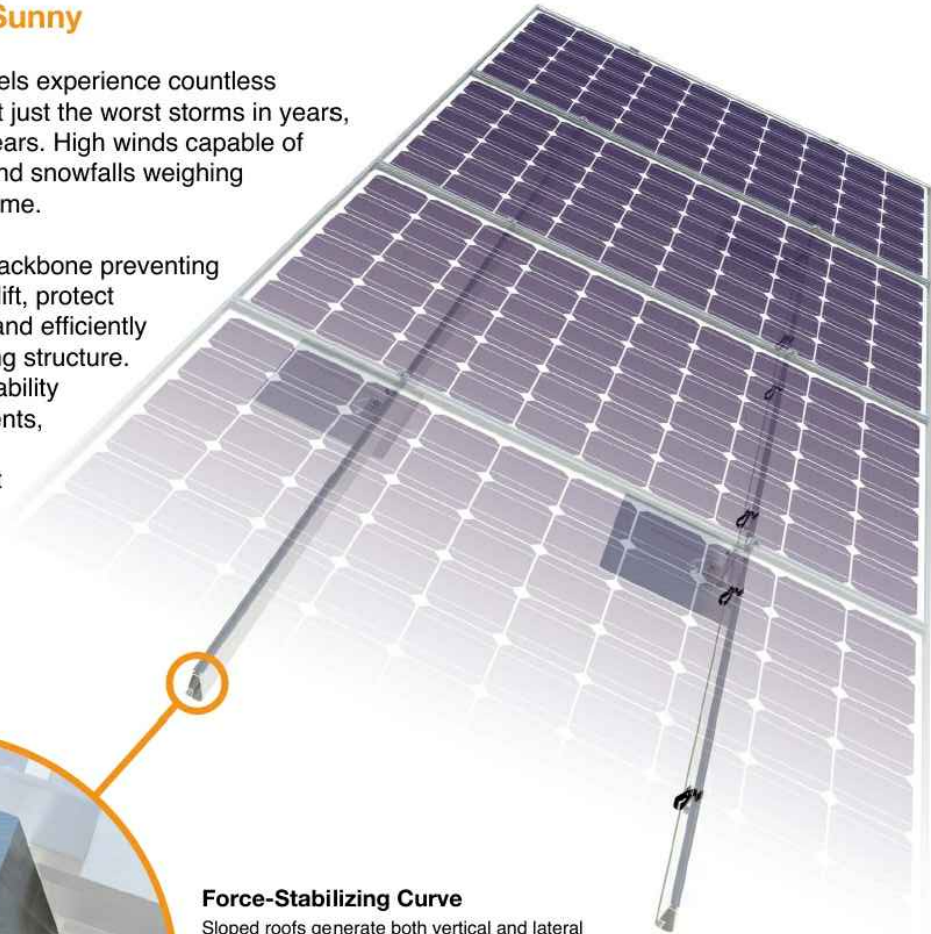
PV-9

XR Rail Family

Solar Is Not Always Sunny

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

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



Force-Stabilizing Curve

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

Compatible with Flat & Pitched Roofs

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

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

Corrosion-Resistant Materials

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

XR Rail Family

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



XR10

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

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



XR100

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

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



XR1000

XR1000 is a heavyweight among solar mounting rails. It's built to handle extreme climates and spans 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.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	100	XR10		XR100		XR1000	
	120						
	140						
	160						
10-20	100						
	120						
	140						
	160						
30	100						
	160						
40	100						
	160						
50-70	160						
80-90	160						

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

DATE: 07/10/2018

PROJECT NAME & ADDRESS

ERICA BEST RESIDENCE

16 TILDEN HOWINGTON DR.,
LILLINGTON, NC 27546

DESIGNED BY

PHS

SHEET NAME

EQUIPMENT SPECIFICATION

SHEET SIZE

**ANSI B
11" X 17"**

SHEET NUMBER

PV-10



UFO Family of Components

Simplified Grounding for Every Application

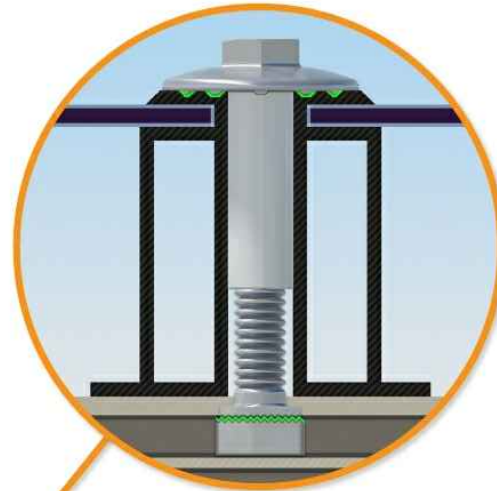
The UFO family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge XR Rails. All system types that feature the UFO family—Flush Mount, Tilt Mount and Ground Mount—are fully listed to the UL 2703 standard.

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



Stopper Sleeve

The Stopper Sleeve snaps onto the UFO, converting it into a bonded end clamp.



Universal Fastening Object (UFO)

The UFO securely bonds solar modules to XR Rails. It comes assembled and lubricated, and can fit a wide range of module heights.



Bonded Splice

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



Grounding Lug

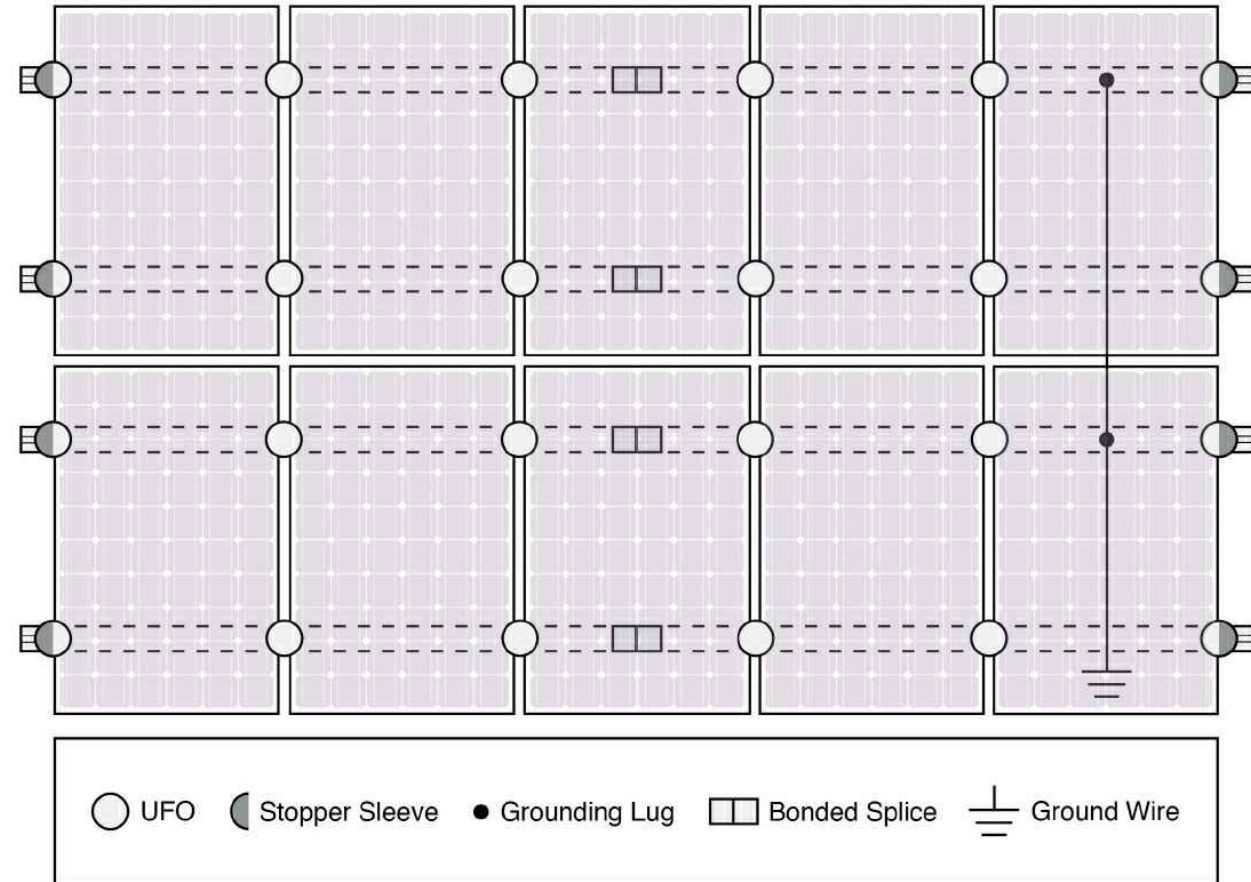
A single Grounding Lug connects an entire row of PV modules to the grounding conductor.



Bonded Attachments

The bonding bolt attaches and bonds the L-foot to the rail. It is installed with the same socket as the rest of the system.

System Diagram



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

UL Certification

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

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

Go to IronRidge.com/UFO

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



POWER HOME SOLAR, LLC
"POWER YOUR FUTURE"
919 N. MAIN ST.
MOORESVILLE, NC 28115
Phone: 704-800-6591 (OFFICE)
Email: info@powerhome.com
Web: www.powerhome.com

REVISIONS

DESCRIPTION	DATE	REV

Signature with Seal

DATE: 07/10/2018

PROJECT NAME & ADDRESS

ERICA BEST
RESIDENCE
16 TILDEN HOWINGTON DR.,
LILLINGTON, NC 27546

DESIGNED BY

PHS

SHEET NAME

EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-11

Low Profile QuickBOLT™



Part #	Box Quantity	Size
17667	10 Washers; 10 Bolts; 10 Offset L-Foot; 10 Serrated Hex Flange Nuts	5/16" x 3"; 5/16" x 5.25"; NA; 5/16"



LOW PROFILE QUICKBOLT™ INSTALLATION INSTRUCTIONS

RECOMMENDED MATERIALS

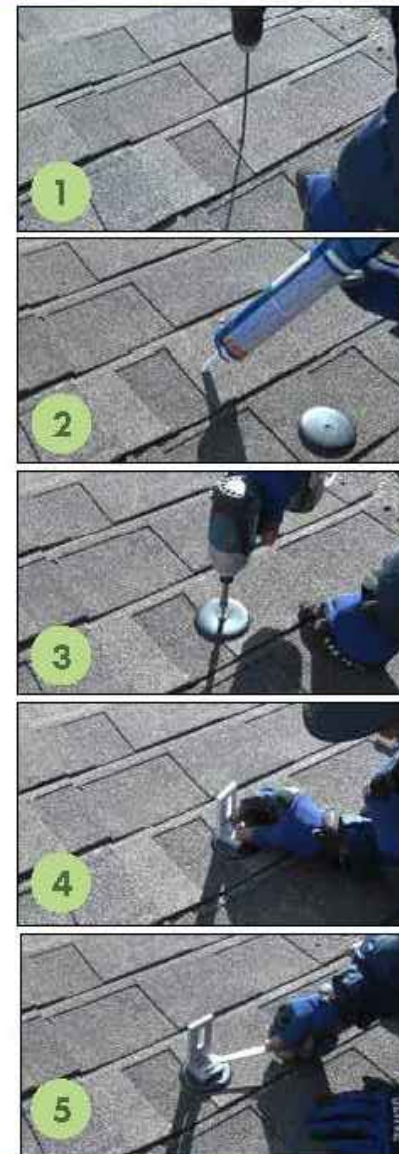
- Rafter locator
- Chalk or crayon
- 3/16" Drill Bit
- Roofing Manufacturer's approved sealant

INSTALLATION INSTRUCTIONS

1. Locate and mark the rafters.
2. Pre-drill the hole with the 3/16" Drill Bit.
3. Fill the pre-drilled hole with sealant.
*We also recommend creating a circle of sealant on the back of the washer.
4. Place the EPDM Washer & drive the Bolt until the Washer compresses to the roof.
5. Place the L-Foot & Nut.
6. Tighten the Nut until the L-Foot is secure.

WHERE IS MY FLASHING?

The Stainless Steel backed EPDM Washer is fully Code-Compliant and does not require additional Sheet Metal Flashing. The collar on the QuickBOLT™ compresses the washer down onto the roof, forming a 100% leak-proof seal.



5830 Las Positas Road, Livermore, California 94551 | 3948 Airway Drive, Rock Hill, South Carolina 29732
Phone: (844)-671-6045 | Fax: (800)-689-7975 | www.solarroofhook.com
SolarRoofHook is a division of Quickscrews International Corp.

INSTALLATION VIDEOS, SPEC SHEETS, & TEST RESULTS AVAILABLE ON
WWW.SOLARROOFHOOK.COM

POWERHOME SOLAR & ROOFING
POWER HOME SOLAR, LLC
"POWER YOUR FUTURE"
919 N. MAIN ST.
MOORESVILLE, NC 28115
Phone: 704-800-6591 (OFFICE)
Email: info@powerhome.com
Web: www.powerhome.com

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

DATE: 07/10/2018

PROJECT NAME & ADDRESS

ERICA BEST
RESIDENCE
16 TILDEN HOWINGTON DR.,
LILLINGTON, NC 27546

DESIGNED BY

PHS

SHEET NAME

EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-12