RIX RESIDENCE

21.38 kW PV SYSTEM

553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

PROJECT DESCRIPTION:

57x375 LG NEON2: LG375N1C-A6 (375) MODULES
ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES

SYSTEM SIZE: 21.375 kW DC STC
ARRAY AREA #1: 253.55 SQ. FT.
ARRAY AREA #2: 195.03 SQ. FT.
ARRAY AREA #3: 175.53 SQ. FT.
ARRAY AREA #4: 351.06 SQ. FT.
ARRAY AREA #5: 136.52 SQ. FT.

EQUIPMENT SUMMARY
57 LG NEON2: LG375N1C-A6 (375) MODULES
57 ENPHASE: IQ7PLUS-72-2-US MICROINVERTERS

RACKING: UNIRAC LIGHT RAIL
ATTACHMENT: UNIRAC FLASHLOC

DESIGN CRITERIA:
WIND SPEED (ULT): 130 MPH
WIND SPEED (ASD): 101 MPH
RISK CATEGORY: II
EXPOSURE: B

CODES AND STANDARDS

GOVERNING CODES :
FLORIDA RESIDENTIAL CODE, 7TH EDITION 2020 (FRC)
FLORIDA PLUMBING CODE, 7TH EDITION 2020 (FPC)
FLORIDA BUILDING CODE, 7TH EDITION 2020 (FBC)
FLORIDA MECHANICAL CODE, 7TH EDITION 2020 (FMC)
NATIONAL ELECTRICAL CODE 2017 (NEC)
ASCE 7-16

OWNER

RIX, JUSTIN

INSTALLER

SUNPRO SOLAR
4492 Eagle Falls Place,
Tampa, FL 33619
PH: (866) 450-1012

ENGINEER

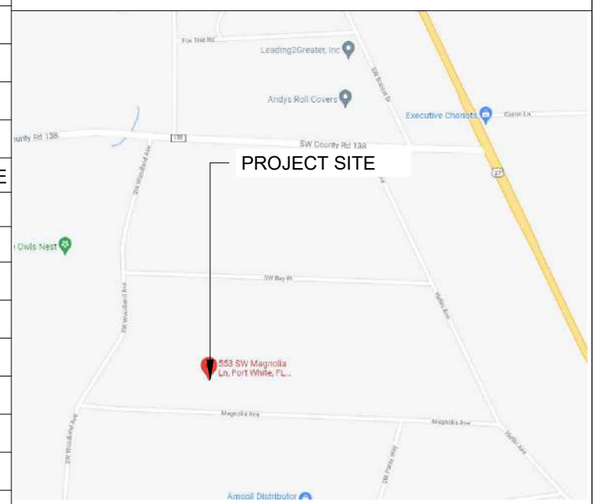
Castillo Engineering Services LLC
620 N. Wymore Road, Suite 250, Maitland, FL 32751
TEL: (407) 289-2575
Ermocrates E. Castillo
License#: FL PE 52590

HOUSE PHOTO

SHEET INDEX

SHEET #	SHEET DESCRIPTION
G-01	COVER SHEET
A-00	NOTES AND DESCRIPTION
A-01	ROOF PLAN
S-01	MODULE LAYOUT
S-01.1	PARTIAL PRESSURE AND MODULES EXPOSURE
S-02	ATTACHMENT DETAIL
S-02.1	STRUCTURE CALCULATION
S-02.2	STRUCTURE CALCULATION
S-02.3	STRUCTURE CALCULATION
E-01	ELECTRICAL LINE DIAGRAM
E-02	WIRING CALCULATIONS
E-03	SYSTEM LABELING
DS-01-07	DATA SHEETS

VICINITY MAP



STRUCTURAL CERTIFICATION:

I ERMOCRATES CASTILLO PE# 52590 AN ENGINEER LICENSED PURSUANT TO CHAPTER 471, CERTIFY THAT THE INSTALLATION OF THE MODULES IS IN COMPLIANCE WITH FBC: RESIDENTIAL 2020 7th ED., CHAPTER 3. BUILDING STRUCTURE WILL SAFELY ACCOMMODATE WIND LATERAL AND UPLIFT FORCES, AND EQUIPMENT DEAD LOADS.

ELECTRICAL CERTIFICATION:

I ERMOCRATES CASTILLO PE# 52590 AN ENGINEER LICENSED PURSUANT TO CHAPTER 471, CERTIFY THAT THE PV ELECTRICAL SYSTEM AND ELECTRICAL COMPONENTS ARE DESIGNED AND APPROVED USING THE STANDARDS CONTAINED IN THE MOST RECENT VERSION OF THE FLORIDA BUILDING CODE. FBC 107, THE NEC 2017, AND THOSE SET FORTH BY THE FLORIDA SOLAR ENERGY CENTER CERTIFICATION.

Castillo Engineering
SOLAR DONE RIGHT®

CASTILLO ENGINEERING SERVICES, LLC
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620 N. WYMORE ROAD,
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TEL: (407) 289-2575
ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

SUNPRO

ERMOCRATES E. CASTILLO LICENSE No. 52590 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally Signature with Seal
Signed by: Ermocrates E Castillo
Date: 2021.10.27 14:55:47

PROJECT NAME

RIX RESIDENCE
553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

SHEET NAME
COVER SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
G-01

Symbols:

Section..... X / X-XX — Sheet where section is located

Elevation ..... X / X-XX — Detail ID Letter; Sheet where section is located

Detail ..... X / X-XX — Detail ID Letter; Sheet where section is located

Detail ..... (Enlarged Plan) X / X-XX — Detail ID Letter; Area to be enlarged; Sheet where section is located

Keyed Notes ..... 1 — Keyed note designation on applicable sheet

Ground Terminal .....

Grounding Point/rod....

Solar Panel ..... or 00 — Module with Source Circuit number

Combiner Box ..... CB

AC Disconnect ..... ACD

Main Distribution Panel ..... MDP

Fuse .....

Overcurrent Breaker ..

Inverter .....

Transformer .....

Automatic ..... Transfer Switch ATS

Vent, Attic fan (Roof obstruction)

PV Roof Attachment

Trusses

Conduit

Fire Access

Abbreviations:

AC	Alternating Current
ACD	AC Disconnect
APPROX	Approximate
AWG	American Wire Gauge
BAT	Battery
CB	Combiner Box
DC	Direct Current
DISC	Disconnect
(E)	Existing
EL	Elevation
EQ	Equal
GP	Generation Panel
JB	Junction Box
MCB	Main Combiner Box
MFR	Manufacturer
MID	Microgrid Interconnect Device
MIN	Minimum
MISC	Miscellaneous
MDP	Main Distribution Panel
(N)	New
NAVD	North American Vertical datum
OCPD	OverCurrent Protection Device
POCC	Point Of Common Coupling
PV	Photovoltaic
SF	Squarefoot/feet
STC	Standard Test Conditions
SD	Soladeck
TBD	To Be Determined
TYP	Typical
UNO	Unless Noted Otherwise
UM	Utility meter
VIF	Verify In Field
WP	Weather Proof

System Description

This system is a grid-tied, PV system, with PV generation consisting of 57x375 LG NEON2: LG375N1C-A6 (375W) Modules with a combined STC rated dc output power of 21,375W. The modules are connected into 57 Enphase: IQ7PLUS-72-2-US microinverters. The inverter has electronic maximum power point tracking to maximize energy captured by the PV modules. The inverter also has an internal ground fault detection and interruption device that is set to disconnect the array in the event that a ground fault that exceeds one ampere should occur. The inverter has DC and AC disconnect integrated system and labels are provided as required by the *National Electrical Code.*

When the sun is shining, power from the PV array is fed into the inverter, where it is converted from DC to AC. The inverter output is then used to contribute to the power requirements of the occupancy. If PV power meets the requirements of the loads of the occupancy, any remaining PV power is sold back to the utility. When utility power is available, but PV power is not available, building loads are supplied by the utility.

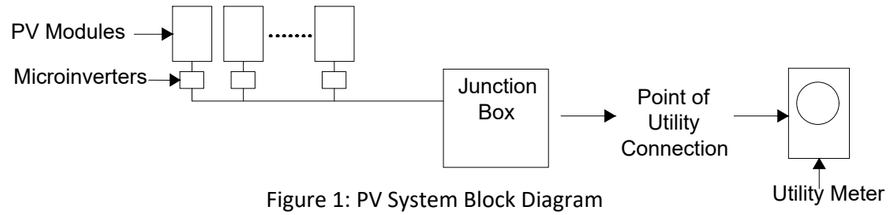


Figure 1: PV System Block Diagram

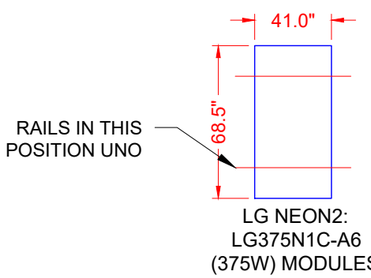
The inverter meets the requirements of IEEE 1547 and UL 1741.

FALL PROTECTION:
ANCHORAGES USED FOR ATTACHMENT OF PERSONAL FALL ARREST EQUIPMENT MUST BE INDEPENDENT OF ANY ANCHORAGE BEING USED TO SUPPORT OR SUSPEND PLATFORMS, AND CAPABLE OF SUPPORTING AT LEAST 5,000 POUNDS PER EMPLOYEE ATTACHED, OR MUST BE DESIGNED AND USED AS FOLLOWS:

- AS PART OF A COMPLETE PERSONAL FALL ARREST SYSTEM WHICH MAINTAINS A SAFETY FACTOR OF AT LEAST TWO.
- UNDER THE SUPERVISION OF A QUALIFIED PERSON

ADDITIONAL INFORMATION

- 29 CFR 1926 SUBPART M, FALL PROTECTION. OSHA STANDARD.
- 1926.502, FALL PROTECTION SYSTEMS CRITERIA AND PRACTICES
  - 1926.502(D)(15)



LG NEON2:
LG375N1C-A6
(375W) MODULES

ALLOWABLE/DESIGN PRESSURE	PSF
DOWN PRESSURE	126
UPLIFT PRESSURE, 2 RAILS	89

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REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

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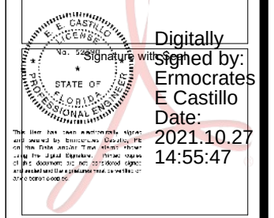


PROJECT NAME

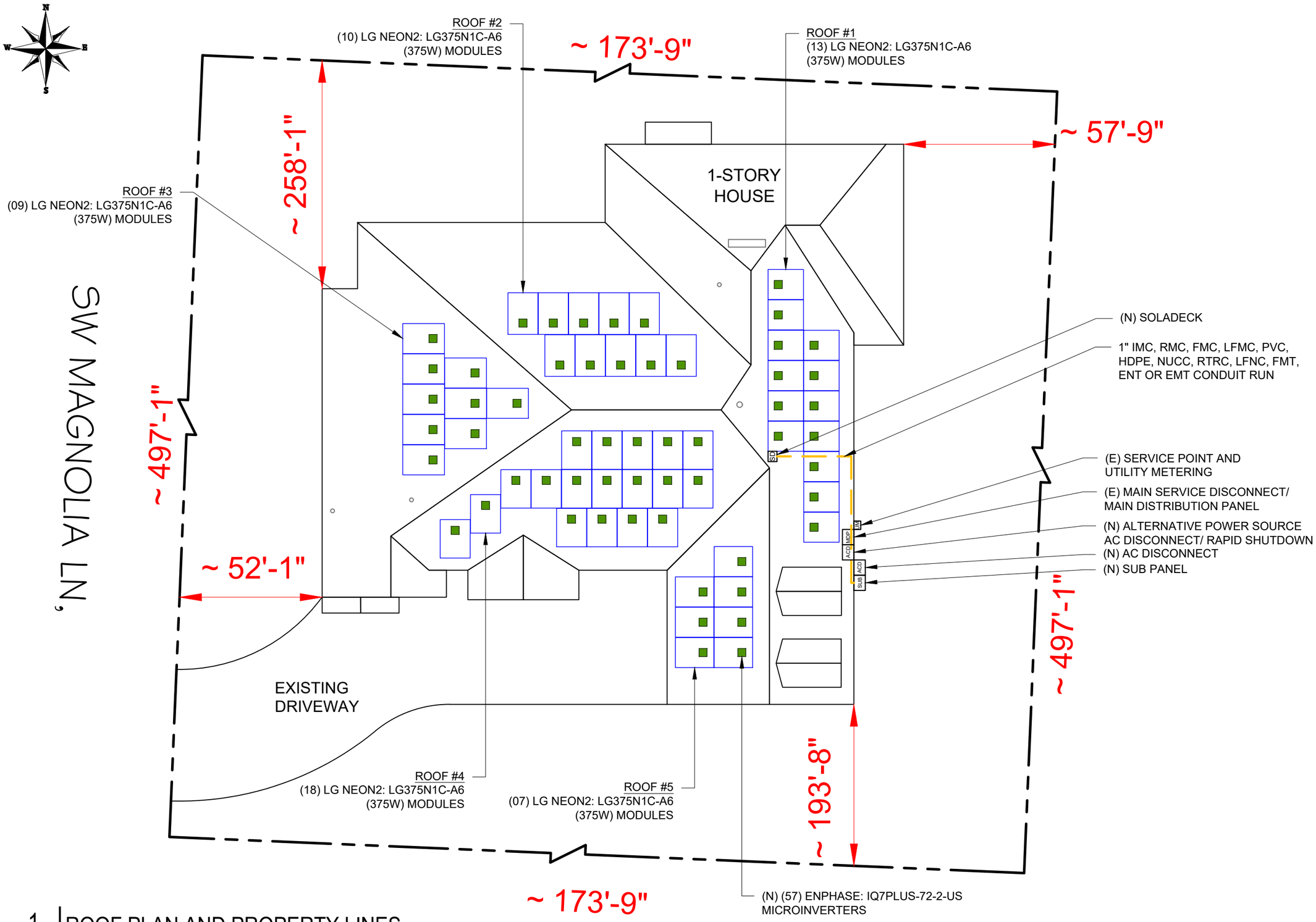
RIX RESIDENCE

553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

SHEET NAME
NOTES AND DESCRIPTION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
A-00



1 ROOF PLAN AND PROPERTY LINES
A-01
SCALE: 3/32" = 1'-0"

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ERMOCRATES E. CASTILLO LICENSE No. 52590 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally Signature with Seal
Signed by: Ermocrates E Castillo
Date: 2021.10.27 14:55:48

PROJECT NAME

RIX RESIDENCE
553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

SHEET NAME
ROOF PLAN

SHEET SIZE
ANSI B
11" X 17"

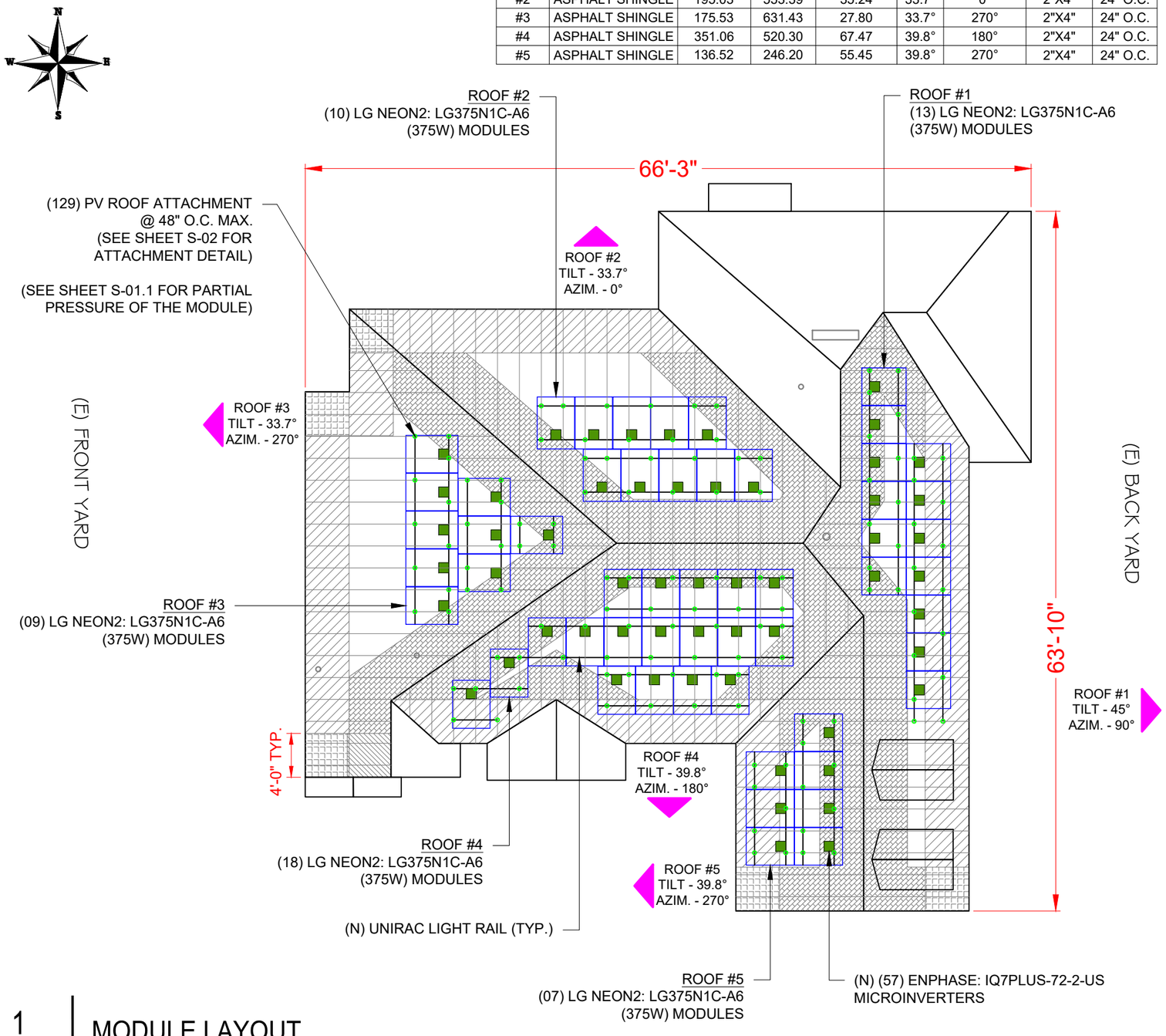
SHEET NUMBER
A-01

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 57 MODULES
MODULE TYPE = LG NEON2: LG375N1C-A6 (375W) MODULES
MODULE WEIGHT = 41.01 LBS / 18.6 KG.
MODULE DIMENSIONS = 68.5" x 41.0" = 19.50 SF
UNIT WEIGHT OF ARRAY = 2.10 PSF

ARRAY AREA & ROOF AREA CALC'S

ROOF	ROOF TYPE	ARRAY AREA (sq.Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)	TILT	AZIMUTH	TRUSS SIZE	TRUSS SPACING
#1	ASPHALT SHINGLE	253.55	460.468	55.06	45°	90°	2"X4"	24" O.C.
#2	ASPHALT SHINGLE	195.03	553.39	35.24	33.7°	0°	2"X4"	24" O.C.
#3	ASPHALT SHINGLE	175.53	631.43	27.80	33.7°	270°	2"X4"	24" O.C.
#4	ASPHALT SHINGLE	351.06	520.30	67.47	39.8°	180°	2"X4"	24" O.C.
#5	ASPHALT SHINGLE	136.52	246.20	55.45	39.8°	270°	2"X4"	24" O.C.



1 MODULE LAYOUT
S-01 SCALE: 3/32" = 1'-0"

GENERAL INSTALLATION PLAN NOTES:

1) ROOF ATTACHMENTS TO SYP TRUSSES SHALL BE INSTALLED AS SHOWN IN SHEET S-02 AND AS FOLLOWS FOR EACH WIND ZONE:

FOR TILT- 45°, 33.7° & 39.8°

WIND ZONES	NON-EXPOSED MODULES		EDGE / EXPOSED MODULES	
	SPAN	CANTILEVER	SPAN	CANTILEVER
ZONE 1	4' - 0"	1' - 4"	4' - 0"	1' - 4"
ZONE 1'	X	X	X	X
ZONE 2e	4' - 0"	1' - 4"	4' - 0"	1' - 4"
ZONE 2n	X	X	X	X
ZONE 2r	4' - 0"	1' - 4"	4' - 0"	1' - 4"
ZONE 3e	4' - 0"	1' - 4"	2' - 0"	0' - 8"
ZONE 3r	X	X	X	X

SEE SHEET S-02.1, S-02.2 & S-02.3 FOR SUPPORTING CALCULATIONS.

2) EXISTING RESIDENTIAL BUILDING IS AN ASPHALT SHINGLE ROOF WITH MEAN ROOF HEIGHT IS 15 FT AND SYP 2"X4" ROOF TRUSSES SPACED 24" O.C. EXISTING ROOF SLOPE FOR SOLAR SYSTEM RETROFIT IS 45, 39.8 & 33.7 DEGREES. CONTRACTOR TO FIELD VERIFY AND SHALL REPORT TO THE ENGINEER IF ANY DISCREPANCIES EXIST BETWEEN PLANS AND IN FIELD CONDITIONS.

3) FIRE SETBACK TO BE 3' FROM RIDGE AND EDGES, AND 18" EACH WAY FROM HIPS AND VALLEYS PER NFPA 11.12.2

* I CERTIFY THAT THE INSTALLATION OF THE MODULES IS IN COMPLIANCE WITH FBC: RESIDENTIAL 2020 7th ED. CHAPTER 3. BUILDING STRUCTURE WILL SAFELY ACCOMMODATE WIND LATERAL AND UPLIFT FORCES AND EQUIPMENT DEAD LOADS. *

LEGEND

- WIND ZONE 1 (TYP)
- WIND ZONE 2e (TYP)
- WIND ZONE 2n (TYP)
- WIND ZONE 2r (TYP)
- WIND ZONE 3r (TYP)
- WIND ZONE 3e (TYP)

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ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

SUNPRO

PROJECT NAME

RIX RESIDENCE
553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

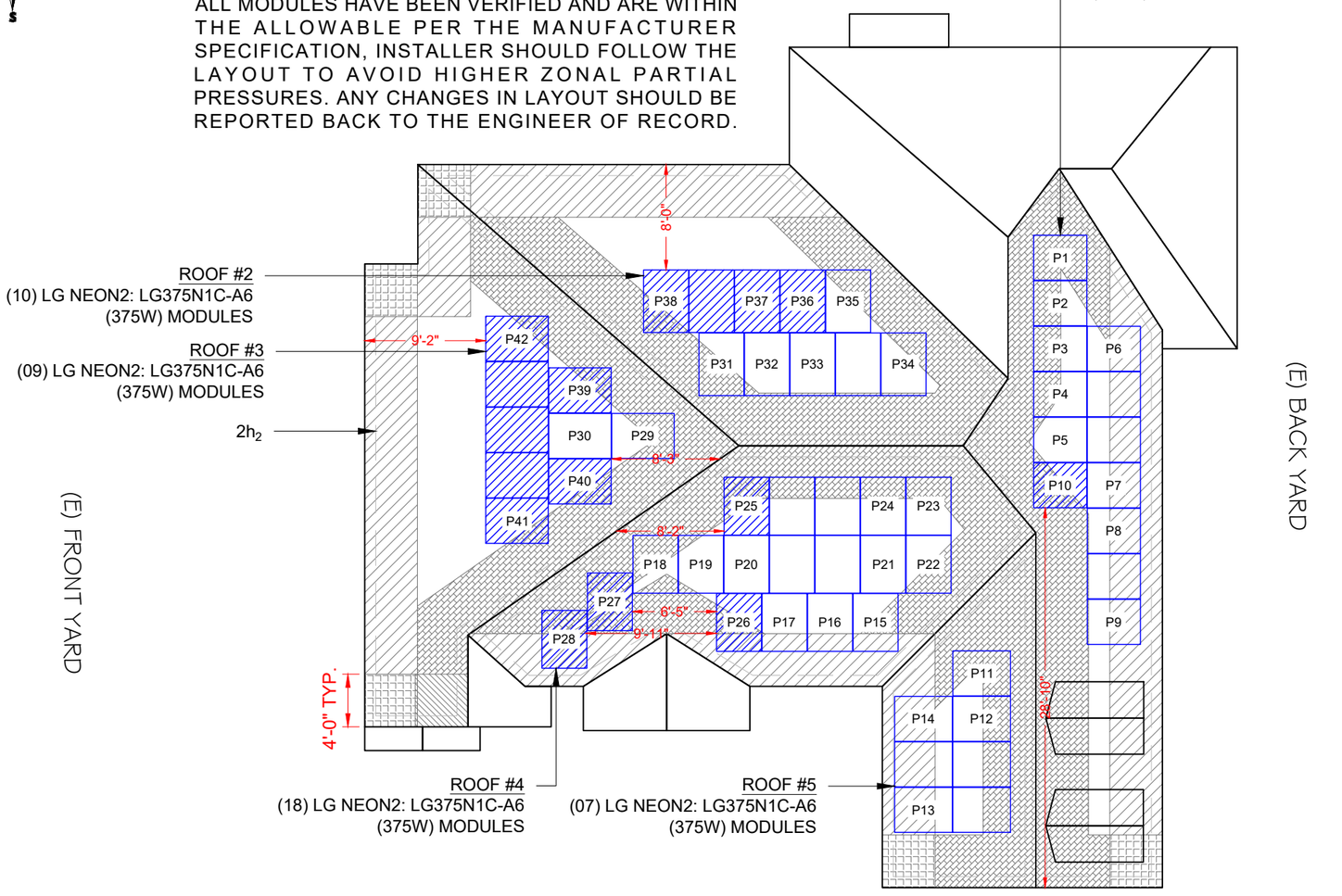
SHEET NAME
MODULE LAYOUT

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
S-01

$2h_2$ DISTANCE : 0' - 10"
0.5h DISTANCE : 7' - 6"

NOTE: PARTIAL PRESSURES OF THE WIND ZONES ON ALL MODULES HAVE BEEN VERIFIED AND ARE WITHIN THE ALLOWABLE PER THE MANUFACTURER SPECIFICATION, INSTALLER SHOULD FOLLOW THE LAYOUT TO AVOID HIGHER ZONAL PARTIAL PRESSURES. ANY CHANGES IN LAYOUT SHOULD BE REPORTED BACK TO THE ENGINEER OF RECORD.



FOR TILT- 45° FOR NON - EXPOSED MODULES

1	1'	2e	2n	2r	3e	3r
16	0	22.1	0	23.1	28.9	0

Module Size	19.50	Sq. ft.

	Non-Exposed modules							Partial
	1	1'	2e	2n	2r	3e	3r	Pressure
P1	0.34	0	0	0	19.16	0	0	22.98
P2	7.41	0	0	0	12.09	0	0	20.40
P3	9.57	0	0	0	9.93	0	0	19.61
P4	10.94	0	0	0	8.56	0	0	19.11
P5	17.96	0	0	0	1.54	0	0	16.56
P6	7.31	0	11.23	0	0.96	0	0	19.86
P7	8.26	0	11.24	0	0	0	0	19.52
P8	7.85	0	11.23	0	0.42	0	0	19.67
P9	7.79	0	11.23	0	0.48	0	0	19.69

FOR TILT- 45° FOR EXPOSED MODULES

1	1'	2e	2n	2r	3e	3r
20	0	33.2	0	34.7	43.3	0

Module Size	19.50	Sq. ft.

	Exposed modules							Partial
	1	1'	2e	2n	2r	3e	3r	Pressure
P10	8.09	0	0	0	11.41	0	0	28.60

ALLOWABLE MODULE UPLIFT PRESSURE 2 RAILS : 89 PSF

FOR TILT- 39.8° FOR EXPOSED MODULES

1	1'	2e	2n	2r	3e	3r
20	0	33.2	0	34.7	43.3	0

Module Size	19.50	Sq. ft.

	Exposed modules							Partial
	1	1'	2e	2n	2r	3e	3r	Pressure
P25	9.74	0	0	0	9.76	0	0	27.36
P26	8.28	0	5.95	0	5.27	0	0	28.00
P27	2.85	0	0	0	16.65	0	0	32.55
P28	0.87	0	11.64	0	6.99	0	0	33.15

ALLOWABLE MODULE UPLIFT PRESSURE 2 RAILS : 89 PSF

FOR TILT- 33.7° FOR NON- EXPOSED MODULES

1	1'	2e	2n	2r	3e	3r
16	0	22.1	0	23.1	28.9	0

Module Size	19.50	Sq. ft.

	Non-Exposed modules							Partial
	1	1'	2e	2n	2r	3e	3r	Pressure
P29	8.57	0	0	0	10.93	0	0	19.98
P30	19.50	0	0	0	0	0	0	16.00
P31	8.56	0	0	0	10.94	0	0	19.98
P32	18.14	0	0	0	1.36	0	0	16.49
P33	18.75	0	0	0	0.75	0	0	16.27
P34	13.39	0	0	0	6.11	0	0	18.22
P35	11.48	0	0	0	8.02	0	0	18.92

ALLOWABLE MODULE UPLIFT PRESSURE 2 RAILS : 89 PSF

FOR TILT- 33.7° FOR EXPOSED MODULES

1	1'	2e	2n	2r	3e	3r
20	0	33.2	0	34.7	43.3	0

Module Size	19.50	Sq. ft.

	Exposed modules							Partial
	1	1'	2e	2n	2r	3e	3r	Pressure
P36	19.46	0	0	0	0.04	0	0	20.03
P37	19.50	0	0	0	0	0	0	20.00
P38	13.07	0	0	0	6.43	0	0	24.85
P39	14.35	0	0	0	5.15	0	0	23.88
P40	14.04	0	0	0	5.46	0	0	24.11
P41	15.45	0	0	0	4.05	0	0	23.05
P42	15.32	0	0	0	4.18	0	0	23.15

ALLOWABLE MODULE UPLIFT PRESSURE 2 RAILS : 89 PSF

FOR TILT- 39.8° FOR NON - EXPOSED MODULES

1	1'	2e	2n	2r	3e	3r
16	0	22.1	0	23.1	28.9	0

Module Size	19.50	Sq. ft.

	Non-Exposed modules							Partial
	1	1'	2e	2n	2r	3e	3r	Pressure
P11	4.70	0	0	0	14.80	0	0	21.39
P12	10.26	0	0	0	9.24	0	0	19.37
P13	5.87	0	13.63	0	0	0	0	20.26
P14	5.35	0	13.63	0	0.52	0	0	20.45
P15	8.25	0	5.95	0	5.30	0	0	19.79
P16	13.55	0	5.95	0	0	0	0	17.86
P17	13.53	0	5.95	0	0.03	0	0	17.87
P18	4.80	0	0	0	14.70	0	0	21.35
P19	17.10	0	0	0	2.40	0	0	16.87
P20	19.50	0	0	0	0	0	0	16.00
P21	19.42	0	0	0	0.08	0	0	16.03
P22	10.19	0	0	0	9.31	0	0	19.39
P23	11.64	0	0	0	7.86	0	0	18.86
P24	12.34	0	0	0	7.16	0	0	18.61

ALLOWABLE MODULE UPLIFT PRESSURE 2 RAILS : 89 PSF

LEGEND

- EXPOSED MODULE
- EDGE MODULE
- NON- EXPOSED MODULE
- MISSING MODULE
- MIN. MODULE EDGE DISTANCE LINE
- MODULE EXPOSURE LINE
- WIND ZONE 1 (TYP)
- WIND ZONE 2e (TYP)
- WIND ZONE 2n (TYP)
- WIND ZONE 2r (TYP)
- WIND ZONE 3r (TYP)
- WIND ZONE 3e (TYP)

1 PARTIAL PRESSURE AND MODULES EXPOSURE

S-01.1

SCALE: 3/32" = 1'-0"

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ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

SUNPR

ERMOCRATES E. CASTILLO No. 52590 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally Signature with Seal Signed by: Ermocrates E Castillo Date: 2021.10.27 14:55:49

PROJECT NAME

RIX RESIDENCE

553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

SHEET NAME

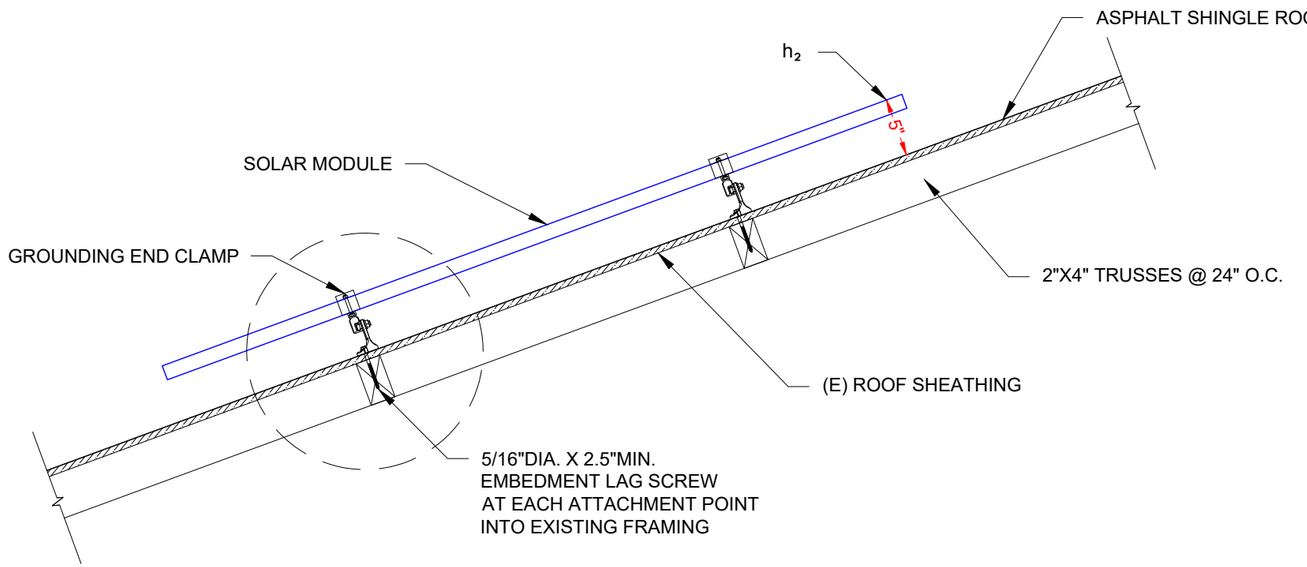
PARTIAL PRESSURE AND MODULES EXPOSURE

SHEET SIZE

ANSI B
11" X 17"

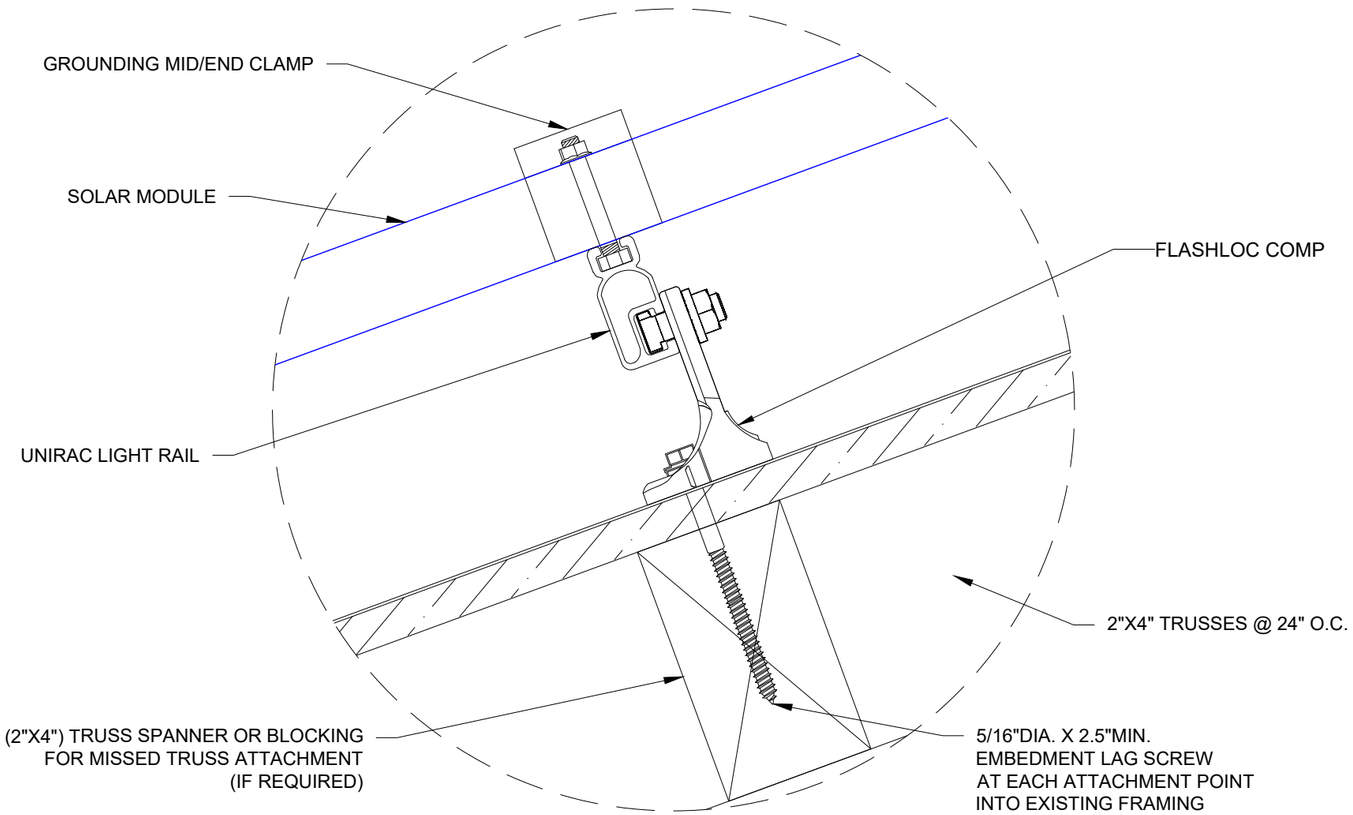
SHEET NUMBER

S-01.1



1 ATTACHMENT DETAIL

S-02 SCALE: 1" = 1'-0""



2 ATTACHMENT DETAIL (ENLARGED VIEW)

S-02 SCALE: 1"=2"

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ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

SUNPRO

E. CASTILLO LICENSE No. 52590 STATE OF FLORIDA PROFESSIONAL ENGINEER

Signature with Seal

Digitally Signed by: Ermocrates E Castillo
Date: 2021.10.27 14:55:49

PROJECT NAME

RIX RESIDENCE

553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

SHEET NAME

ATTACHMENT DETAIL

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

S-02

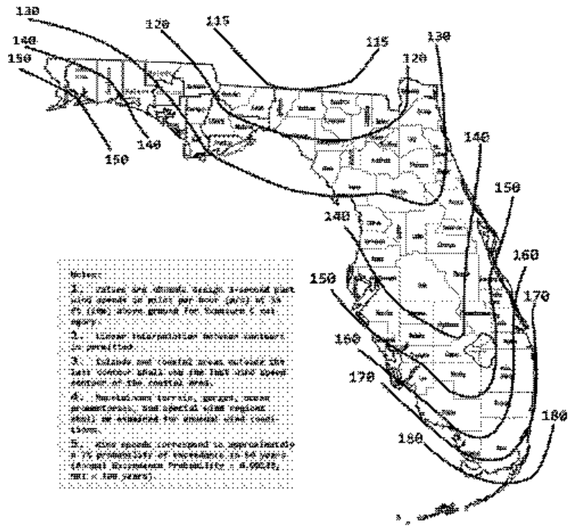

FIGURE 1609.3(1)
ULTIMATE DESIGN WIND SPEEDS, V_{ULT}, FOR RISK CATEGORY II BUILDINGS AND OTHER STRUCTURES

FOR TILT- 45°

WIND LOAD CALCULATIONS FOR MODULES INSTALLED ON ROOFS WITH A HEIGHT LESS THAN 60'

SITE INFORMATION				
FBC VERSION	2020	RISK CATEGORY	II	
MEAN ROOF HEIGHT (ft)	15.0	EXPOSURE CATEGORY	B	
ROOF LENGTH (ft)	66.3	ROOF SLOPE	12 /12	
ROOF WIDTH (ft)	63.1	ROOF SLOPE (°)	45.0	
PARAPET HEIGHT (ft)	0.0	ROOF TYPE	HIP	
MODULE LENGTH (in)	68.5	ULTIMATE WIND SPEED	130	mph
MODULE WIDTH (in)	41.00	NOMINAL WIND SPEED	101	mph
MODULE ORIENTATION	PORTRAIT	EXPOSURE FACTOR (C_e)	1.000	
MODULE AREA (sq. ft.)	19.50	TEMPERATURE FACTOR (C_t)	1.000	
GROUND SNOW LOAD (psf)	0.0	IMPORTANCE FACTOR (I_s)	1.000	
DEAD LOAD (psf)	3.0	SLOPE FACTOR (C_s)	0.385	
SLOPED ROOF SNOW LOAD (psf)	0.0	K_D	0.850	
EFFECTIVE WIND AREA (ft^2)	19.5	K_{ZT}	1.000	
GROUND ELEVATION (ft)	54.0	K_h	0.998	
HVHZ	NO	K_z	0.575	

DESIGN CALCULATIONS

VELOCITY PRESSURE (q) = $.00256*K_E K_Z K_{ZT} K_D V^2$
VELOCITY PRESSURE(ASD) 12.7 psf

WIDTH OF PRESSURE COEFFICIENT	63.1' * 10%	=	6.31'	ZONE WIDTH A	4 FT
	15' * 40%	=	6'	ZONE 2 WIDTH	N/A (FOR (°) < 7°)
				ZONE 3 WIDTH	N/A (FOR (°) < 7°)

EXTERNAL PRESSURE COEFFICIENT	ZONE 1	0.580	-1.363
	ZONE 1'	0.580	X
	ZONE 2e	0.580	-2.376
	ZONE 2n	0.580	X
	ZONE 2r	0.580	-2.493
	ZONE 3e	0.580	-3.156
	ZONE 3r	0.580	X

INTERNAL PRESSURE COEFFICIENT (+/-) 0.18

DESIGN PRESSURES

ROOF ZONE	DOWN	UP				
1	16.0	-19.5	psf			
1'	16.0	X	psf			
2e	16.0	-32.3	psf	Module allowable uplift pressure	89	psf
2n	16.0	X	psf	Module allowable down pressure	126	psf
2r	16.0	-33.8	psf			
3e	16.0	-42.2	psf			
3r	16.0	X	psf			

ARRAY FACTORS

ARRAY EDGE FACTOR (EXPOSED)	1.5	SOLAR PANEL PRESSURE EQUALIZATION FACTOR	0.68396
ARRAY EDGE FACTOR (NON-EXPOSED)	1		

ADJUSTED DESIGN PRESSURES

ROOF ZONE	DOWN	UP (Exposed)	UP (N. Exposed)	
1	16.0	-20.0	-16.0	psf
1'	16.0	X	X	psf
2e	16.0	-33.2	-22.1	psf
2n	16.0	X	X	psf
2r	16.0	-34.7	-23.1	psf
3e	16.0	-43.3	-28.9	psf
3r	16.0	X	X	psf

ATTACHMENTS USED

ATTACHMENT MODEL	Unirac Flashloc	
ATTACHMENT STRENGTH	476	lbs

MAX DESIGN LOADS ALLOWABLE

LIMIT MAX SPAN TO	48	in			
RAFTER/SEAM SPACING	24	in	NO. OF RAILS	Exposed: 2	Non. Exp: 2

ROOF ZONE	DOWN	UP (Exposed)	UP (N. Exposed)		SPANS (E)	SPANS (N.E)
1	182.7	226.8	182.7	lbs	48 in	48 in
1'	0.0	X	X	lbs	X in	X in
2e	182.7	378.8	252.6	lbs	48 in	48 in
2n	0.0	X	X	lbs	X in	X in
2r	182.7	396.2	264.1	lbs	48 in	48 in
3e	182.7	247.3	329.7	lbs	24 in	48 in
3r	0.0	X	X	lbs	X in	X in

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620 N. WYMORE ROAD,
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MAITLAND, FL 32751
TEL: (407) 289-2575
ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

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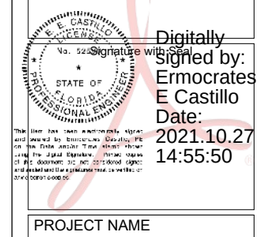

Digitally Signed by: Ermocrates E Castillo
Date: 2021.10.27 14:55:50

PROJECT NAME

RIX RESIDENCE
553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

SHEET NAME
STRUCTURE CALCULATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
S-02.1

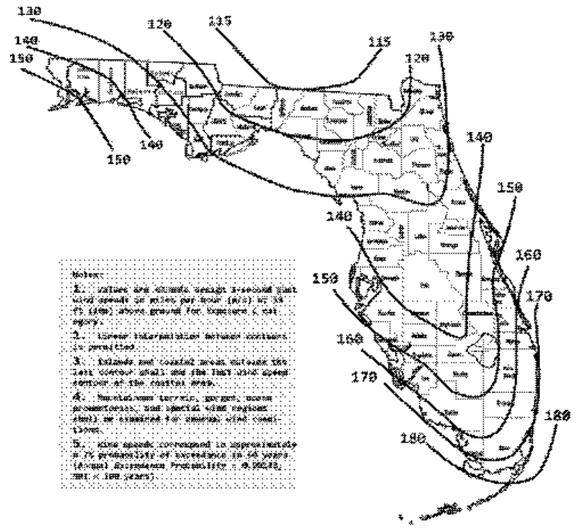

FIGURE 1609.3(1)
ULTIMATE DESIGN WIND SPEEDS, V_{ULT}, FOR RISK CATEGORY II BUILDINGS AND OTHER STRUCTURES

FOR TILT- 39.8°

WIND LOAD CALCULATIONS FOR MODULES INSTALLED ON ROOFS WITH A HEIGHT LESS THAN 60'

SITE INFORMATION

FBC VERSION	2020	RISK CATEGORY	II	
MEAN ROOF HEIGHT (ft)	15.0	EXPOSURE CATEGORY	B	
ROOF LENGTH (ft)	66.3	ROOF SLOPE	10 /12	
ROOF WIDTH (ft)	63.1	ROOF SLOPE (°)	39.8	
PARAPET HEIGHT (ft)	0.0	ROOF TYPE	HIP	
MODULE LENGTH (in)	68.5	ULTIMATE WIND SPEED	130	mph
MODULE WIDTH (in)	41.00	NOMINAL WIND SPEED	101	mph
MODULE ORIENTATION	PORTRAIT	EXPOSURE FACTOR (C_e)	1.000	
MODULE AREA (sq. ft.)	19.50	TEMPERATURE FACTOR (C_t)	1.000	
GROUND SNOW LOAD (psf)	0.0	IMPORTANCE FACTOR (I_s)	1.000	
DEAD LOAD (psf)	3.0	SLOPE FACTOR (C_s)	0.465	
SLOPED ROOF SNOW LOAD (psf)	0.0	K_D	0.850	
EFFECTIVE WIND AREA (ft^2)	19.5	K_{ZT}	1.000	
GROUND ELEVATION (ft)	54.0	K_h	0.998	
HVHZ	NO	K_z	0.575	

DESIGN CALCULATIONS

VELOCITY PRESSURE (q) = $.00256*K_E K_Z K_{ZT} K_D V^2$
VELOCITY PRESSURE(ASD) 12.7 psf

WIDTH OF PRESSURE COEFFICIENT	63.1' * 10%	=	6.31'	ZONE WIDTH A	4 FT
	15' * 40%	=	6'	ZONE 2 WIDTH	N/A (FOR (°) < 7°)
				ZONE 3 WIDTH	N/A (FOR (°) < 7°)

EXTERNAL PRESSURE COEFFICIENT	ZONE 1	0.580	-1.363
	ZONE 1'	0.580	X
	ZONE 2e	0.580	-2.376
	ZONE 2n	0.580	X
	ZONE 2r	0.580	-2.493
	ZONE 3e	0.580	-3.156
	ZONE 3r	0.580	X
INTERNAL PRESSURE COEFFICIENT (+/-)		0.18	

DESIGN PRESSURES

ROOF ZONE	DOWN	UP				
1	16.0	-19.5	psf			
1'	16.0	X	psf			
2e	16.0	-32.3	psf	Module allowable uplift pressure	89	psf
2n	16.0	X	psf	Module allowable down pressure	126	psf
2r	16.0	-33.8	psf			
3e	16.0	-42.2	psf			
3r	16.0	X	psf			

ARRAY FACTORS

ARRAY EDGE FACTOR (EXPOSED)	1.5	SOLAR PANEL PRESSURE EQUALIZATION FACTOR	0.68396
ARRAY EDGE FACTOR (NON-EXPOSED)	1		

ADJUSTED DESIGN PRESSURES

ROOF ZONE	DOWN	UP (Exposed)	UP (N. Exposed)	
1	16.0	-20.0	-16.0	psf
1'	16.0	X	X	psf
2e	16.0	-33.2	-22.1	psf
2n	16.0	X	X	psf
2r	16.0	-34.7	-23.1	psf
3e	16.0	-43.3	-28.9	psf
3r	16.0	X	X	psf

ATTACHMENTS USED

ATTACHMENT MODEL	Unirac Flashloc	
ATTACHMENT STRENGTH	476	lbs

MAX DESIGN LOADS ALLOWABLE

LIMIT MAX SPAN TO		**48**	**in**			
RAFTER/SEAM SPACING		**24**	**in**	**NO. OF RAILS**	**Exposed: 2**	**Non. Exp: 2**
ROOF ZONE	DOWN	UP (Exposed)	UP (N. Exposed)		SPANS (E)	SPANS (N.E)
1	182.7	228.8	182.7	lbs	48 in	48 in
1'	0.0	X	X	lbs	X in	X in
2e	182.7	378.8	252.6	lbs	48 in	48 in
2n	0.0	X	X	lbs	X in	X in
2r	182.7	396.2	264.1	lbs	48 in	48 in
3e	182.7	247.3	329.7	lbs	24 in	48 in
3r	0.0	X	X	lbs	X in	X in

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MAITLAND, FL 32751
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ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

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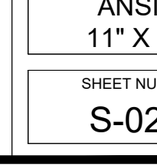

Digitally Signature with Seal
Signed by: Ermocrates E Castillo
Date: 2021.10.27 14:55:50

PROJECT NAME

RIX RESIDENCE
553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

SHEET NAME
STRUCTURE CALCULATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
S-02.2

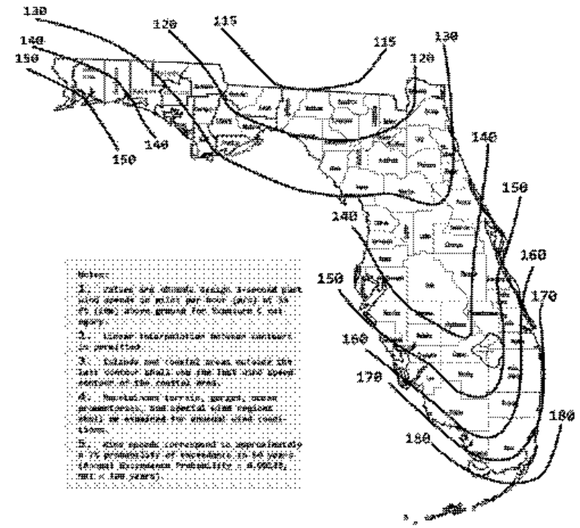

FIGURE 1609.3(1)
ULTIMATE DESIGN WIND SPEEDS, V_{ULT}, FOR RISK CATEGORY II BUILDINGS AND OTHER STRUCTURES

FOR TILT- 33.7°

WIND LOAD CALCULATIONS FOR MODULES INSTALLED ON ROOFS WITH A HEIGHT LESS THAN 60'

SITE INFORMATION

FBC VERSION	2020	RISK CATEGORY	II
MEAN ROOF HEIGHT (ft)	15.0	EXPOSURE CATEGORY	B
ROOF LENGTH (ft)	66.3	ROOF SLOPE	8 /12
ROOF WIDTH (ft)	63.1	ROOF SLOPE (°)	33.7
PARAPET HEIGHT (ft)	0.0	ROOF TYPE	HIP
MODULE LENGTH (in)	68.5	ULTIMATE WIND SPEED	130 mph
MODULE WIDTH (in)	41.00	NOMINAL WIND SPEED	101 mph
MODULE ORIENTATION	PORTRAIT	EXPOSURE FACTOR (C_a)	1.000
MODULE AREA (sq. ft.)	19.50	TEMPERATURE FACTOR (C_t)	1.000
GROUND SNOW LOAD (psf)	0.0	IMPORTANCE FACTOR (I_s)	1.000
DEAD LOAD (psf)	3.0	SLOPE FACTOR (C_s)	0.559
SLOPED ROOF SNOW LOAD (psf)	0.0	K_D	0.850
EFFECTIVE WIND AREA (ft^2)	19.5	K_{ZT}	1.000
GROUND ELEVATION (ft)	54.0	K_e	0.998
HVHZ	NO	K_z	0.575

DESIGN CALCULATIONS

VELOCITY PRESSURE (q) = $.00256*K_E K_Z K_{ZT} K_D V^2$
VELOCITY PRESSURE(ASD) 12.7 psf

WIDTH OF PRESSURE COEFFICIENT	63.1' * 10%	=	6.31'	ZONE WIDTH A	4 FT
	15' * 40%	=	6'	ZONE 2 WIDTH	N/A (FOR (°) < 7°)
				ZONE 3 WIDTH	N/A (FOR (°) < 7°)

EXTERNAL PRESSURE COEFFICIENT	ZONE 1	0.580	-1.363
	ZONE 1'	0.580	X
	ZONE 2e	0.580	-2.376
	ZONE 2n	0.580	X
	ZONE 2r	0.580	-2.493
	ZONE 3e	0.580	-3.156
	ZONE 3r	0.580	X
INTERNAL PRESSURE COEFFICIENT (+/-)		0.18	

DESIGN PRESSURES

ROOF ZONE	DOWN	UP				
1	16.0	-19.5	psf			
1'	16.0	X	psf			
2e	16.0	-32.3	psf	Module allowable uplift pressure	89	psf
2n	16.0	X	psf	Module allowable down pressure	126	psf
2r	16.0	-33.8	psf			
3e	16.0	-42.2	psf			
3r	16.0	X	psf			

ARRAY FACTORS

ARRAY EDGE FACTOR (EXPOSED)	1.5	SOLAR PANEL PRESSURE EQUALIZATION FACTOR	0.68396
ARRAY EDGE FACTOR (NON-EXPOSED)	1		

ADJUSTED DESIGN PRESSURES

ROOF ZONE	DOWN	UP (Exposed)	UP (N. Exposed)	
1	16.0	-20.0	-16.0	psf
1'	16.0	X	X	psf
2e	16.0	-33.2	-22.1	psf
2n	16.0	X	X	psf
2r	16.0	-34.7	-23.1	psf
3e	16.0	-43.3	-28.9	psf
3r	16.0	X	X	psf

ATTACHMENTS USED

ATTACHMENT MODEL	Unirac Flashloc	
ATTACHMENT STRENGTH	476	lbs

MAX DESIGN LOADS ALLOWABLE

LIMIT MAX SPAN TO		**48**	**in**				
RAFTER/SEAM SPACING		**24**	**in**	**NO. OF RAILS**	**Exposed: 2**	**Non. Exp: 2**	
ROOF ZONE	DOWN	UP (Exposed)	UP (N. Exposed)		SPANS (E)	SPANS (N.E)	
1	182.7	228.8	182.7	lbs	48 in	48 in	
1'	0.0	X	X	lbs	X in	X in	
2e	182.7	378.8	252.6	lbs	48 in	48 in	
2n	0.0	X	X	lbs	X in	X in	
2r	182.7	396.2	264.1	lbs	48 in	48 in	
3e	182.7	247.3	329.7	lbs	24 in	48 in	
3r	0.0	X	X	lbs	X in	X in	

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SUITE 250,
MAITLAND, FL 32751
TEL: (407) 289-2575
ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

SUNPRO

E. CASTILLO LICENSE No. 52590 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally Signature with Seal
Signed by: Ermocrates E Castillo
Date: 2021.10.27 14:55:51

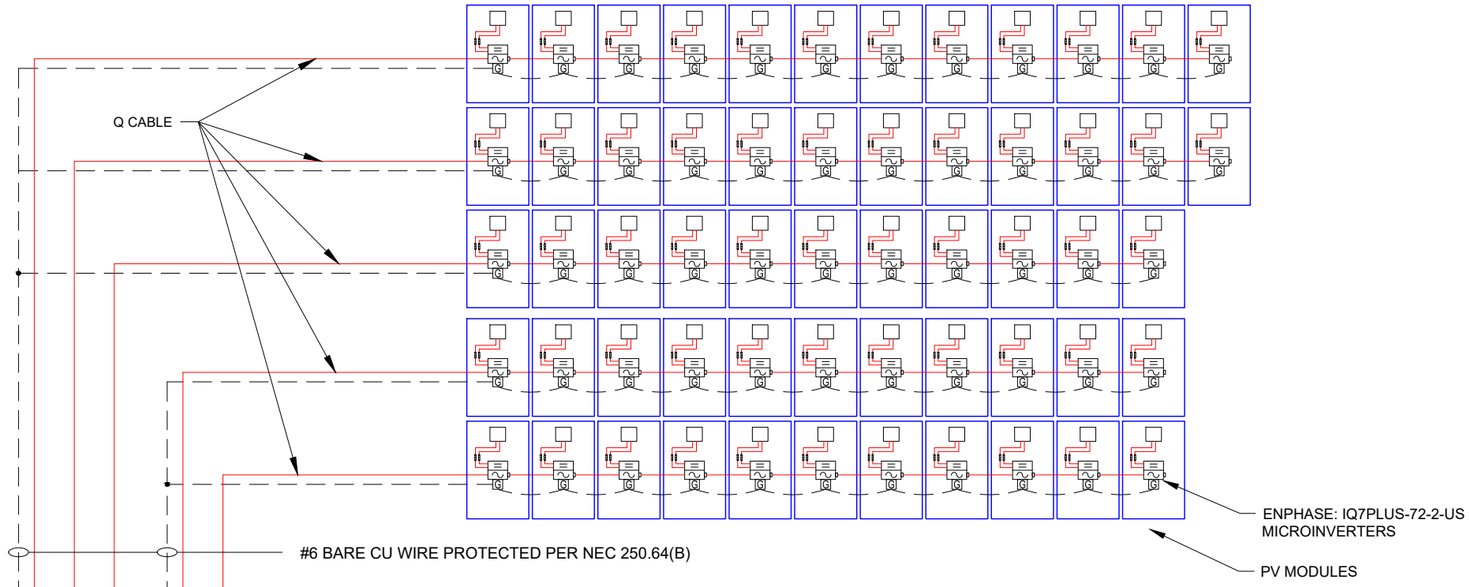
PROJECT NAME

RIX RESIDENCE
553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

SHEET NAME
STRUCTURE CALCULATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
S-02.3

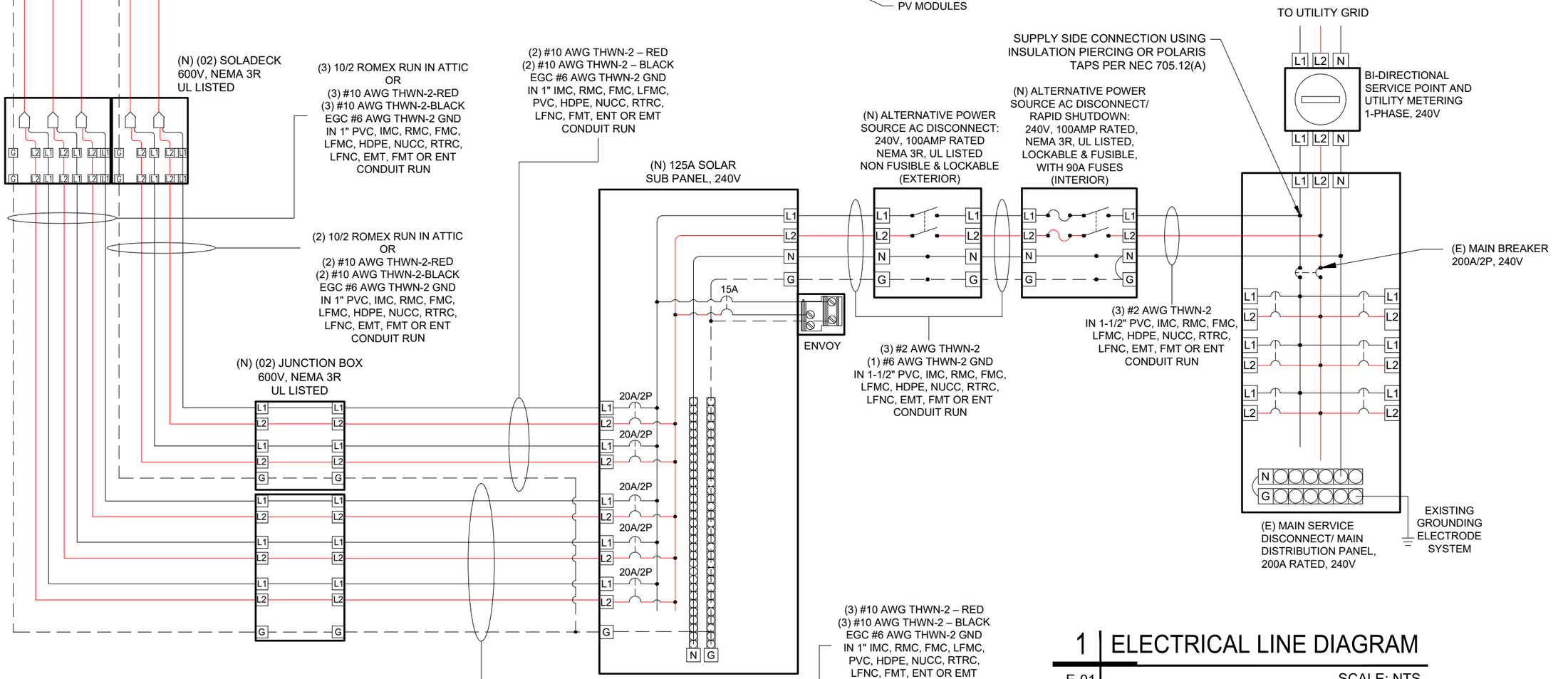


SOLAR ARRAY (21.375 kW-DC STC)

(57) LG NEON2: LG375N1C-A6 (375W) MODULES
(02) BRANCH OF 12 MODULES &
(03) BRANCH OF 11 MODULES

NOTE:

1. SUBJECT PV SYSTEMS HAS BEEN DESIGNED TO MEET THE REQUIREMENTS OF THE NEC 2017, INCLUDING MAXIMUM NUMBER OF MODULE STRINGS, MAXIMUM NUMBER OF MODULES PER STRING, MAXIMUM OUTPUT, MODULE MANUFACTURER AND MODEL NUMBER, INVERTER MANUFACTURER AND MODEL NUMBER, AS APPLICABLE.
2. PROVIDE TAP BOX IN COMPLIANCE WITH NEC 312.8 IF PANEL GUTTER SPACE IS INADEQUATE.
3. IF THE FUSED AC DISCONNECT WIRE RUN EXCEEDS 10 FT FROM THE POINT OF INTERCONNECTION, CABLE LIMITERS OR CURRENT-LIMITED CIRCUIT BREAKERS MUST BE INSTALLED FOR EACH UNGROUNDED CONDUCTOR PER NEC 705.31.
4. REFER SHEET NUMBERS DS-07 FOR LOAD CALCULATION.



1 | ELECTRICAL LINE DIAGRAM

E-01 | SCALE: NTS

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REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

SUNPRO

PROJECT NAME

RIX RESIDENCE
553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

SHEET NAME
ELECTRICAL LINE DIAGRAM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-01

ELECTRICAL CALCULATION

Module Manufacturer	LG
Module Model	LG375N1C-A6
Inverter Manufacturer	Enphase
Inverter Model	Enphase IQ 7 Plus
Modules/Branch Circuit 1	12
Modules/Branch Circuit 2	12
Modules/Branch Circuit 3	11
Modules/Branch Circuit 4	11
Modules/Branch Circuit 5	11
Total Array Power (kW)	21.38
System AC Voltage	240V 1-Phase

Module Properties			
Voc	41.8	Isc	11.35
Vmpp	35.3	Imp	10.63
TC Voc	-0.26%/ °C	TC Vmp	-0.34%/ °C
Pmp	375.0	NOCT	45 °C

Design Temperature	
Min. Ambient Temp. °F	32
Max. Ambient Temp. °F	117
Calculated Max. Voc	45
Calculated Min Vmp	28
Conduit Fill	
Number of conduits	2

Inverter Properties	
Output Voltage	240 L-L 1-PH
Max Input DC Voltage	60 Vdc
Operating Range	16 - 60 Vdc
MPPT Voltage Range	27 - 45 Vdc
Start Voltage	22 Vdc
Max Input Power	440 Wdc
Continuous AC Power	290 VA

Ampacity Calculations

Circuit	Max Amps	1.25 x Max Amps	AWG	90 °C Ampacity	Ambientt emp °F	Temp Derate	Conduit Fill	Fill Derate	Derated Ampacity	Maximum Circuit Breaker
Circuit 1	14.5	18.1	#10	40	130	0.76	6	0.8	24.32	20 A
Circuit 2	14.5	18.1	#10	40	130	0.76	6	0.8	24.32	20 A
Circuit 3	13.3	16.6	#10	40	130	0.76	6	0.8	24.32	20 A
Circuit 4	13.3	16.6	#10	40	130	0.76	4	0.8	24.32	20 A
Circuit 5	13.3	16.6	#10	40	130	0.76	4	0.8	24.32	20 A
Sub Panel Output	68.97	86.2	#2	130	95	0.96	3	1	124.8	90 A

Maximum Circuit Voltage Drop	2%

Voltage Drop Calculations

Circuit	AWG	Circular Mills	I	V	Max Length
Circuit 1	#10	10380	14.5	240	133 Feet
Circuit 2	#10	10380	14.5	240	133 Feet
Circuit 3	#10	10380	13.3	240	145 Feet
Circuit 4	#10	10380	13.3	240	145 Feet
Circuit 5	#10	10380	13.3	240	145 Feet
Sub Panel Output	#2	66360	69.0	240	179 Feet

Notes

	Temp derate based on NEC Table 310.15(B)(2)(A)
	Conduit fill derate based on NEC Table 310.15(B)(3)(A)
	Maximum Voc calculated using module manufacture temperature coefficients per NEC 690.7(A)
	Unless otherwise specified, all wiring must be THHN or THWN-2 Copper
	All wire sizes listed are the minimum allowable
	In any cell indicates that the system is safe and complies with NEC requirements
	In any cell indicates a potentially unsafe condition
	Information input by system designer
	Informaton obtained from manufacturer datasheets

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. THE TERMINALS ARE RATED FOR 75 DEGREE C.
3. THE WIRES ARE SIZED ACCORDING TO NEC 110.14.
4. 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.
5. WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
6. DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
7. WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
8. ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
9. MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
10. MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
11. THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE .
12. UTILITY HAS 24-HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC SYSTEM COMPONENTS LOCATED AT THE SERVICE ENTRANCE.
13. MODULES CONFORM TO AND ARE LISTED UNDER UL 1703.
14. RACKING CONFORMS TO AND IS LISTED UNDER UL 2703.
15. CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC ARTICLE 300.6 (C) (1) AND ARTICLE 310.10 (D).
16. CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC ARTICLE 310.10 (C).
17. THIS SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN OF PV CONDUCTORS IN COMPLIANCE WITH NEC 690.12.
18. LABELING IN COMPLIANCE WITH NEC 690.12 AND 690.56(C) IS SHOWN ON SHEET E-03.
19. ALL CONDUITS TO BE INSTALLED A MIN OF 7/8" ABOVE THE ROOF SURFACE.

I ERMOCRATES CASTILLO PE# 52590 AN ENGINEER LICENSED PURSUANT TO CHAPTER 471, CERTIFY THAT THE PV ELECTRICAL SYSTEM AND ELECTRICAL COMPONENTS ARE DESIGNED AND APPROVED USING THE STANDARDS CONTAINED IN THE MOST RECENT VERSION OF THE FLORIDA BUILDING CODE. FBC 107, THE NEC 2017, AND THOSE SET FORTH BY THE FLORIDA SOLAR ENERGY CENTER CERTIFICATION.

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SUITE 250,
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TEL: (407) 289-2575
ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

SUNPRO

E. CASTILLO LICENSE No. 52590 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally Signature with Seal
Signed by: Ermocrates E Castillo
Date: 2021.10.27 14:55:52

PROJECT NAME

RIX RESIDENCE
553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

SHEET NAME
WIRING CALCULATIONS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-02

⚠ WARNING

ELECTRIC SHOCK HAZARD
TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC 690.13(B))

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

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

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL LOCATION:
AC DISCONNECT
(PER CODE: NEC 690.56(C)(3))

ADHESIVE FASTENED SIGNS:

- THE LABEL SHALL BE VISIBLE, REFLECTIVE, AND SUITABLE FOR THE ENVIRONMENT WHERE IT IS INSTALLED [NFPA 11.12.2.1].
- WHERE REQUIRED ELSEWHERE IN THIS CODE, ALL FIELD APPLIED LABELS, WARNINGS, AND MARKINGS SHOULD COMPLY WITH ANSI Z535.4 [NEC 110.21(B) FIELD MARKING].
- ADHESIVE FASTENED SIGNS MAY BE ACCEPTABLE IF PROPERLY ADHERED. VINYL SIGNS SHALL BE WEATHER RESISTANT [IFC 605.11.1.3]

21.38 kW SOLAR DISCONNECT LOCATED

LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC690.54)

AC COMBINER BOX

LABEL LOCATION:
COMBINER BOX
(PER CODE: NEC 690.52)

PHOTOVOLTAIC SYSTEM MICROINVERTERS LOCATED UNDER EACH PV MODULE IN ROOF TOP ARRAY

LABEL LOCATION:
INVERTER
(PER CODE: NEC 690.52)

AC DISCONNECT

LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC 690.54)

PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED AC OPERATING CURRENT 68.97 AMPS
AC NOMINAL OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC 690.54)

WARNING
INVERTER OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE

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

DATA PER PANEL

NOMINAL OPERATING AC VOLTAGE -	240	V
NOMINAL OPERATING AC FREQUENCY-	60	Hz
MAXIMUM AC POWER-	290	VA
MAXIMUM AC CURRENT-	1.21	A
MAXIMUM OVERCURRENT DEVICE RATING FOR AC MODULE PROTECTION PER CIRCUIT-	20	A

LABEL LOCATION:
COMBINER BOX
(PER CODE: NEC 690.52)

WARNING
IN CASE OF EMERGENCY, CONTACT:
SUNPRO SOLAR
PH. NO. : (866) 450-1012

LABEL LOCATION:
MAIN DISCONNECT
(PER CODE: NFPA 11.12.2.1.5)

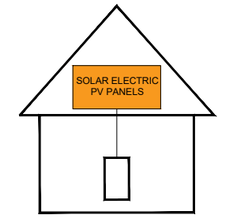
EMERGENCY RESPONDER:
THIS SOLAR PV SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN.

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN ENTIRE PV SYSTEM

LABEL LOCATION:
MAIN SERVICE DISCONNECT / MAIN DISTRIBUTION PANEL, PV DISCONNECT
(TEXT HEIGHT SHOULD BE A MINIMUM OF 3/8")
(PER CODE: NFPA 1, 11.12.2.1)

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

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



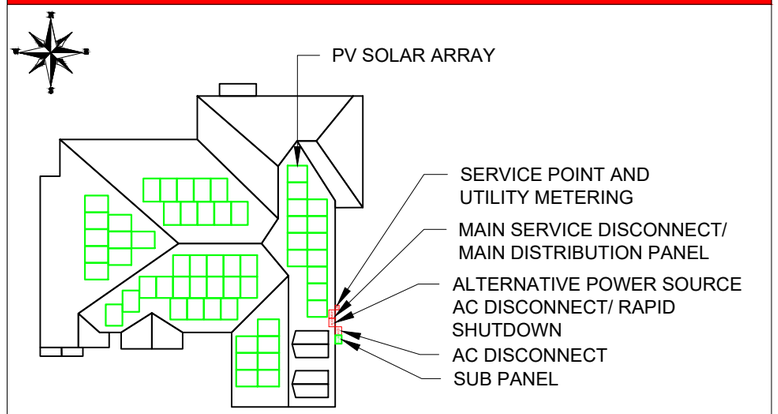
LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC 690.56(C)(1)(a), IFC 605.11.3.1(1)

SOLAR CONNECTION LINE SIDE TAP

LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: NEC 705.12(A))

CAUTION:

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



LABEL LOCATION:
MAIN SERVICE DISCONNECT / MAIN DISTRIBUTION PANEL, PV DISCONNECT
(TEXT HEIGHT SHOULD BE A MINIMUM OF 3/8")
(PER CODE: NEC 690.56(B) AND NEC 705.10)

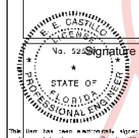
Castillo Engineering
SOLAR DONE RIGHT®
CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
620 N. WYMORE ROAD,
SUITE 250,
MAITLAND, FL 32751
TEL: (407) 289-2575
ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

SUNPRO



Digitally Signature with Seal
Signed by: Ermocrates E Castillo
Date: 2021.10.27 14:55:52

PROJECT NAME

RIX RESIDENCE
553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

SHEET NAME
SYSTEM LABELING

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-03

LG NeON®2

LG375N1C-A6

60

375W

The LG NeON® 2 is LG's best selling solar module and one of the most powerful and versatile modules on the market today. The cells are designed to appear all-black at a distance, and the performance warranty guarantees 90.6% of labeled power output at 25 years.

25 YEAR PRODUCT · PERFORMANCE · LABOR WARRANTY

c UL us

Made in USA From Imported Parts

Features

Enhanced Performance Warranty

LG NeON® 2 has an enhanced performance warranty. After 25 years, LG NeON® 2 is guaranteed at least 90.6% of initial performance.

25-Year Limited Product Warranty

The NeON® 2 is covered by a 25-year limited product warranty. In addition, up to $450 of labor costs will be covered in the rare case that a module needs to be repaired or replaced.

Solid Performance on Hot Days

LG NeON® 2 performs well on hot days due to its low temperature coefficient.

Roof Aesthetics

LG NeON® 2 has been designed with aesthetics in mind using thinner wires that appear all black at a distance.

When you go solar, ask for the brand you can trust: LG Solar

About LG Electronics USA, Inc.

LG Electronics is a global leader in electronic products in the clean energy markets by offering solar PV panels and energy storage systems. The company first embarked on a solar energy source research program in 1985, supported by LG Group's vast experience in the semi-conductor, LCD, chemistry and materials industries. In 2010, LG Solar successfully released its first MonoX® series to the market, which is now available in 32 countries. The NeON® (previous MonoX® NeON), NeON®2, NeON®2 BiFacial won the "Intersolar AWARD" in 2013, 2015 and 2016, which demonstrates LG's leadership and innovation in the solar industry.

LG Life's Good

LG NeON®2

Made in USA

LG375N1C-A6

General Data

Cell Properties (Material/Type)	Monocrystalline/N-type
Cell Maker	LG
Cell Configuration	60 Cells (6 x 10)
Module Dimensions (L x W x H)	1,740mm x 1,042mm x 40mm
Weight	18.6 kg
Glass (Material)	Tempered Glass with AR Coating
Backsheet (Color)	White
Frame (Material)	Anodized Aluminium
Junction Box (Protection Degree)	IP 68 with 3 Bypass Diodes
Cables (Length)	1,100mm x 2EA
Connector (Type/Maker)	MC 4/MC

Certifications and Warranty

Certifications*	IEC 61215-1/-1-1/-2 : 2016, IEC 61730-1/2 : 2016, UL 61730-1 : 2017, UL 61730-2 : 2017
	ISO 9001, ISO 14001, ISO 50001
	OHSAS 18001
Salt Mist Corrosion Test	IEC 61701:2012 Severity 6
Ammonia Corrosion Test	IEC 62716 : 2013
Module Fire Performance	Type 1 (UL 61730)
Fire Rating	Class C (UL 790, ULC/ORD C 1703)
Solar Module Product Warranty	25 Year Limited
Solar Module Output Warranty	Linear Warranty*

*Improved: 1st year 98.5%, from 2-24th year: 0.33%/year down, 90.6% at year 25

Temperature Characteristics

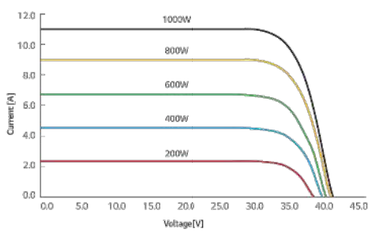
NMOT*	[°C]	42 ± 3
Pmax	[%/°C]	-0.34
Voc	[%/°C]	-0.26
Isc	[%/°C]	0.03

*NMOT (Nominal Module Operating Temperature): Irradiance 800 W/m², Ambient temperature 20°C, Wind speed 1 m/s, Spectrum AM 1.5

Electrical Properties (NMOT)

Model		LG375N1C-A6
Maximum Power (Pmax)	[W]	281
MPP Voltage (Vmpp)	[V]	33.2
MPP Current (Impp)	[A]	8.48
Open Circuit Voltage (Voc)	[V]	39.4
Short Circuit Current (Isc)	[A]	9.13

I-V Curves



Electrical Properties (STC*)

Model		LG375N1C-A6
Maximum Power (Pmax)	[W]	375
MPP Voltage (Vmpp)	[V]	35.3
MPP Current (Impp)	[A]	10.63
Open Circuit Voltage (Voc, ± 5%)	[V]	41.8
Short Circuit Current (Isc, ± 5%)	[A]	11.35
Module Efficiency	[%]	20.7
Bifaciality Coefficient of Power	[%]	10
Power Tolerance	[%]	0 ~ +3

*STC (Standard Test Condition): Irradiance 1000 W/m², cell temperature 25°C, AM 1.5

Operating Conditions

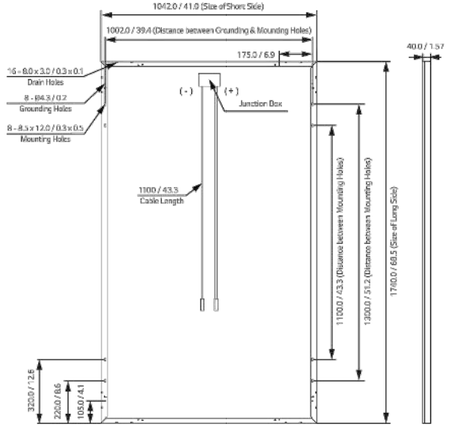
Operating Temperature	[°C]	-40 ~+85
Maximum System Voltage	[V]	1,000
Maximum Series Fuse Rating	[A]	20
Mechanical Test Load* (Front)	[Pa/psf]	5,400
Mechanical Test Load* (Rear)	[Pa/psf]	4,000

*Based on IEC 61215-2 : 2016 (Test Load = Design Load x Safety Factor (1.5))
Mechanical Test Loads 6,000Pa / 5,400Pa based on IEC 61215 : 2005

Packaging Configuration

Number of Modules per Pallet	[EA]	25
Number of Modules per 40' Container	[EA]	650
Number of Modules per 53' Container	[EA]	850
Packaging Box Dimensions (L x W x H)	[mm]	1,790 x 1,120 x 1,213
Packaging Box Dimensions (L x W x H)	[in]	70.5 x 44.1 x 47.8
Packaging Box Gross Weight	[kg]	500
Packaging Box Gross Weight	[lb]	1,102

Dimensions (mm/inch)



LG Electronics USA, Inc.
Solar Business Division
2000 Millbrook Drive
Lincolnshire, IL 60069
www.lg-solar.com

Product specifications are subject to change without notice.
LG375N1C-A6_AUS.pdf
012221

Castillo Engineering
SOLAR DONE RIGHT®

CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
620 N. WYMORE ROAD,
SUITE 250,
MAITLAND, FL 32751
TEL: (407) 289-2575
ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

SUNPRO

ERMOCRATES E. CASTILLO LICENSE No. 52590 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally Signature with Seal
Signed by: Ermocrates E Castillo
Date: 2021.10.27 14:55:53

PROJECT NAME

RIX RESIDENCE

553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

SHEET NAME

DATA SHEET

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

DS-01

LG Electronics U.S.A., Inc.
111 Sylvan Avenue
Englewood Cliffs, NJ 07632
201.816.2000

Friday, February 5, 2021

RE: Mechanical Load Testing to Determine Structural Performance under Uniform Static Pressure

To: Castillo Engineering,

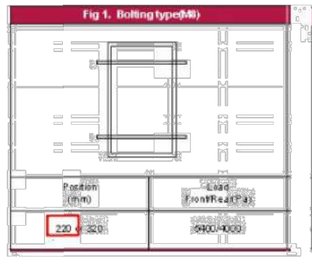
Upon your request we have conducted in house tests to determine the structural performance of the LG Module frames listed below. Our test results meet the requirements you presented in our conference call on January 29th. We will present the test criteria, results, and product limitations that may result from these test conditions in this letter.

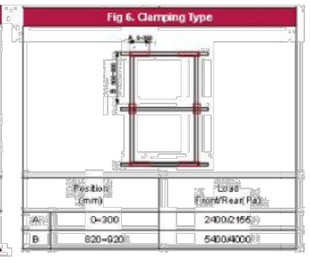
The specifications and conditions presented in this letter apply retroactively to the following LG module(s);

	2 Rails	3 Rails
Front	9,000Pa	9,000Pa
Rear	6,350Pa	9,000Pa
Model	LGxxxN1C(K)-N5(L5), LGxxxN1C(K)-A6(B6) LGxxxQ1C(K)-V5, LGxxxQ1C(K)-A6	

***The result is based on test load.**

Our R&D department has tested these modules to determine the structural performance of under uniform static loading to represent the effects of a wind load on the module. This test was designed only to determine structural performance; the revised specifications apply only to the mechanical performance of the module. *A safety factor of 1.5 should be applied to these test loads for obtaining design loads. It is not recommend designing any system to the full test load.*





The scope of this test does not include electrical functionality or performance testing. Subjecting the module to these pressures may result in power degradation or total power loss. The electrical function and power generation warranties and specifications of these products are not altered by this document.

If you have any additional questions or concerns about this letter or the test protocol, contact your LG Solar Sales Representative.

Castillo Engineering
SOLAR DONE RIGHT®
CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
620 N. WYMORE ROAD,
SUITE 250,
MAITLAND, FL 32751
TEL: (407) 289-2575
ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

SUNPRO

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Signed by: Ermocrates E Castillo
Date: 2021.10.27 14:55:53

PROJECT NAME

RIX RESIDENCE
553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

SHEET NAME
DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-02

Data Sheet
Enphase Microinverters
Region: US

Enphase IQ 7 and IQ 7+ Microinverters

The high-powered smart grid-ready **Enphase IQ 7 Micro™** and **Enphase IQ 7+ Micro™** dramatically simplify the installation process while achieving the highest system efficiency.

Part of the Enphase IQ System, the IQ 7 and IQ 7+ Microinverters integrate seamlessly with the Enphase IQ Envoy™, Enphase Q Aggregator™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.

Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014 & 2017)

Productive and Reliable

- Optimized for high powered 60-cell and 72-cell* modules
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

* The IQ 7+ Micro is required to support 72-cell modules.

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

Enphase IQ 7 and IQ 7+ Microinverters

INPUT DATA (DC)	IQ7-60-2-US	IQ7PLUS-72-2-US
Commonly used module pairings[1]	235 W - 350 W +	235 W - 440 W +
Module compatibility	60-cell PV modules only	60-cell and 72-cell PV modules
Maximum input DC voltage	48 V	60 V
Peak power tracking voltage	27 V - 37 V	27 V - 45 V
Operating range	16 V - 48 V	16 V - 60 V
Min/Max start voltage	22 V / 48 V	22 V / 60 V
Max DC short circuit current (module Isc)	15 A	15 A
Overvoltage class DC port	II	II
DC port backfeed current	0 A	0 A
PV array configuration	1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	

OUTPUT DATA (AC)	IQ 7 Microinverter		IQ 7+ Microinverter	
Peak output power	250 VA		295 VA	
Maximum continuous output power	240 VA		290 VA	
Nominal (L-L) voltage/range[2]	240 V / 211-264 V	208 V / 183-229 V	240 V / 211-264 V	208 V / 183-229 V
Maximum continuous output current	1.0 A	1.15 A	1.21 A	1.39 A
Nominal frequency	60 Hz		60 Hz	
Extended frequency range	47 - 68 Hz		47 - 68 Hz	
AC short circuit fault current over 3 cycles	5.8 Arms		5.8 Arms	
Maximum units per 20 A (L-L) branch circuit[3]	16 (240 VAC) 13 (208 VAC)		13 (240 VAC) 11 (208 VAC)	
Overvoltage class AC port	III		III	
AC port backfeed current	0 A		0 A	
Power factor setting	1.0		1.0	
Power factor (adjustable)	0.7 leading ... 0.7 lagging		0.7 leading ... 0.7 lagging	

EFFICIENCY	@240 V	@208 V	@240 V	@208 V
Peak CEC efficiency	97.6 %	97.6 %	97.5 %	97.3 %
CEC weighted efficiency	97.0 %	97.0 %	97.0 %	97.0 %

MECHANICAL DATA	IQ 7 Microinverter
Ambient temperature range	-40°C to +65°C
Relative humidity range	4% to 100% (condensing)
Connector type	MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)
Dimensions (WxHxD)	212 mm x 175 mm x 30.2 mm (without bracket)
Weight	1.08 kg (2.38 lbs)
Cooling	Natural convection - No fans
Approved for wet locations	Yes
Pollution degree	PD3
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure
Environmental category / UV exposure rating	NEMA Type 6 / outdoor

FEATURES	
Communication	Power Line Communication (PLC)
Monitoring	Enlighten Manager and MyEnlighten monitoring options. Both options require installation of an Enphase IQ Envoy.
Disconnecting means	The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690.
Compliance	CA Rule 21 (UL 1741-SA) UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC-2014 and NEC-2017 section 690.12 and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer's instructions.

1. No enforced DC/AC ratio. See the compatibility calculator at https://enphase.com/en-us/support/module-compatibility.
2. Nominal voltage range can be extended beyond nominal if required by the utility.
3. Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

2018-02-08

Castillo Engineering
SOLAR DONE RIGHT®
CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
620 N. WYMORE ROAD,
SUITE 250,
MAITLAND, FL 32751
TEL: (407) 289-2575
ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

SUNPRO

E. CASTILLO LICENSE No. 52590 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally Signature with Seal
Signed by: Ermocrates E Castillo
Date: 2021.10.27 14:55:54

PROJECT NAME

RIX RESIDENCE
553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

SHEET NAME
DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-03

Enphase IQ Envoy

The **Enphase IQ Envoy™** communications gateway delivers solar production and energy consumption data to Enphase Enlighten™ monitoring and analysis software for comprehensive, remote maintenance and management of the Enphase IQ System.

With integrated revenue grade production metering and optional consumption monitoring, Envoy IQ is the platform for total energy management and integrates with the Enphase Ensemble™and the Enphase IQ Battery™.

Smart

- Enables web-based monitoring and control
- Bidirectional communications for remote upgrades
- Supports power export limiting and zeroexport applications

Simple

- Easy system configuration using Enphase Installer Toolkit™ mobile app
- Flexible networking with Wi-Fi, Ethernet, or cellular

Reliable

- Designed for installation indoors or outdoors
- Five-year warranty

CERTIFIED

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

Enphase IQ Envoy

MODEL NUMBERS	
Enphase IQ Envoy™ ENV-IQ-AM1-240	Enphase IQ Envoy communications gateway with integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and optional consumption monitoring (+/- 2.5%). Includes one 200A continuous rated production CT (current transformer).
ACCESORIES (Order Seperately)	
Enphase Mobile Connect™ CELLM0DEM-M1 (4G based LTE-M/5-year data plan) CELLM0DEM-M1-B (4G-based LTE-M1/5-year data plan)	Plug and play industrial grade cellular modem with data plan for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.)
Consumption Monitoring CT CT-200-SPLIT	Split-core consumption CTs enable whole home metering.
Ensemble Communications Kit COMMS-KIT-01	Installed at the IQ Envoy. For communications with Enphase Encharge™ storage and Enphase Enpower™ smart switch. Includes USB cable for connection to IQ Envoy or Enphase IQ Combiner™ and allows wireless communication with Encharge and Enpower.
POWER REQUIREMENTS	
Power requirements	120/240 VAC split-phase. Max 20 A overcurrent protection required.
Typical Power Consumption	5W
CAPACITY	
Number of microinverters polled	Up to 600
MECHANICAL DATA	
Dimensions (WxHxD)	21.3 x 12.6 x 4.5 cm (8.4" x 5" x 1.8")
Weight	17.6 oz (498 g)
Ambien: temperature range	-40° to 65° C (-40° to 149° F) -40° to 46° C (-40° to 115° F) if installed in an enclosure
Environmental rating	IP30. For installation indoors or in an NRTL-certified, NEMA type 3R enclosure.
Altitude	To 2000 meters (6,560 feet)
Production CT	- Limited to 200A of continuous current / 250A OCPD – 72kW AC - Internal aperture measures 19.36mm to support 250MCM THWN conductors (max) - UL2808 certified for revenue grade metering
Consumption CT	- For electrical services to 250A with parallel runs up to 500A - Internal aperture measures 0.84" x 0.96" (21.33mm x 24.38mm) to support 3/0 THWN conductor - UL2808 certified, for use at service entrance for services up to 250Vac
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Etherne:	802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
Mobile	CELLMODEM-M1 (4G) or CELLMODEM-M1-B (4G). Not included. Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
COMPLIANCE	
Compliance	UL 61010-1 CAN/CSA C22.2 No. 61010-1 47 CFR, Part 15, Class B, ICES 003 IEC/EN 61010-1:2010, EN50065-1, EN61000-4-5, EN61000-6-1, EN61000-6-2 Metering: ANSI C12.20 accuracy class 0.5 (3V production only)

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

Castillo Engineering
SOLAR DONE RIGHT®
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ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

SUNPRO

E. CASTILLO LICENSE No. 52590 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally Signature with Seal
Signed by: Ermocrates E Castillo
Date: 2021.10.27 14:55:55

PROJECT NAME

RIX RESIDENCE
553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

SHEET NAME
DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-04

SOLARMOUNT

UNIRAC

SOLARMOUNT defined the standard in solar racking. Features are designed to get installers off the roof faster. Our grounding & bonding process eliminates copper wire and grounding straps to reduce costs. Systems can be configured with standard or light rail to meet your design requirements at the lowest cost possible. The superior aesthetics package provides a streamlined clean edge for enhanced curb appeal, with no special brackets required for installation.

Now Featuring:

THE NEW FACE OF SOLAR RACKING

Superior Aesthetics Package

LOSE ALL OF THE COPPER & LUGS

System grounding through Enphase microinverters and trunk cables

SMALL IS THE NEXT NEW BIG THING

Light Rail is Fully Compatible with all SM Components

ENHANCED DESIGN & LAYOUT TOOLS

Featuring Google Map Capabilities within U-Builder

FAST INSTALLATION. SUPERIOR AESTHETICS

OPTIMIZED COMPONENTS • VERSATILITY • DESIGN TOOLS • QUALITY PROVIDER

SOLARMOUNT

UNIRAC

OPTIMIZED COMPONENTS

INTEGRATED BONDING & PRE-ASSEMBLED PARTS

Components are pre-assembled and optimized to reduce installation steps and save labor time. Our new grounding & bonding process eliminates copper wire and grounding straps or bonding jumpers to reduce costs. Utilize the microinverter mount with a wire management clip for an easier installation.

VERSATILITY

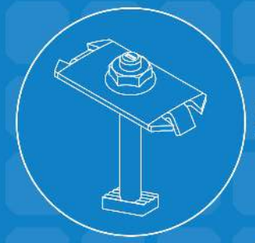
ONE PRODUCT - MANY APPLICATIONS

Quickly set modules flush to the roof or at a desired tilt angle. Change module orientation to portrait or landscape while securing a large variety of framed modules on flat, low slope or steep pitched roofs. Available in mill, clear and dark anodized finishes to outperform your projects financial and aesthetic aspirations.

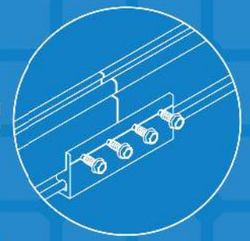
AUTOMATED DESIGN TOOL

DESIGN PLATFORM AT YOUR SERVICE

Creating a bill of materials is just a few clicks away with U-Builder, a powerful online tool that streamlines the process of designing a code compliant solar mounting system. Save time by creating a user profile, and recall preferences and projects automatically when you log in. You will enjoy the ability to share projects with customers: there's no need to print results and send to a distributor, just click and share.

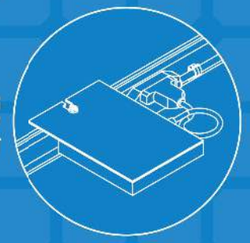


INTEGRATED BONDING MIDCLAMP



INTEGRATED BONDING SPLICE BAR

INTEGRATED BONDING L-FOOT w/ T-BOLT



INTEGRATED BONDING MICROINVERTER MOUNT w/ WIRE MANAGEMENT

LISTED **UL2703** BONDING & GROUNDING MECHANICAL LOADING SYSTEM FIRE CLASSIFICATION

UNIRAC CUSTOMER SERVICE MEANS THE HIGHEST LEVEL OF PRODUCT SUPPORT

UNMATCHED EXPERIENCE | CERTIFIED QUALITY | ENGINEERING EXCELLENCE | BANKABLE WARRANTY | DESIGN TOOLS | PERMIT DOCUMENTATION

TECHNICAL SUPPORT

Unirac's technical support team is dedicated to answering questions & addressing issues in real time. An online library of documents including engineering reports, stamped letters and technical data sheets greatly simplifies your permitting and project planning process.

CERTIFIED QUALITY PROVIDER

Unirac is the only PV mounting vendor with ISO certifications for 9001:2015, 14001:2015 and OHSAS 18001:2007, which means we deliver the highest standards for fit, form, and function. These certifications demonstrate our excellence and commitment to first class business practices.

BANKABLE WARRANTY

Don't leave your project to chance. Unirac has the financial strength to back our products and reduce your risk. Have peace of mind knowing you are receiving products of exceptional quality. SOLARMOUNT is covered by a twenty five (25) year limited product warranty and a five (5) year limited finish warranty.

PROTECT YOUR REPUTATION WITH QUALITY RACKING SOLUTIONS BACKED BY ENGINEERING EXCELLENCE AND A SUPERIOR SUPPLY CHAIN

PUB20171128-PRINTED

Castillo Engineering
SOLAR DONE RIGHT®

CASTILLO ENGINEERING SERVICES, LLC
COA # 28345
620 N. WYMORE ROAD,
SUITE 250,
MAITLAND, FL 32751
TEL: (407) 289-2575
ERMOCRATES E. CASTILLO - FL PE 52590

REVISIONS

DESCRIPTION	DATE	REV

PROJECT INSTALLER

SUNPRO

ERMOCRATES E. CASTILLO LICENSE No. 52590 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally Signature with Seal
Signed by: Ermocrates E Castillo
Date: 2021.10.27 14:55:55

PROJECT NAME

RIX RESIDENCE
553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

SHEET NAME

DATA SHEET

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

DS-05

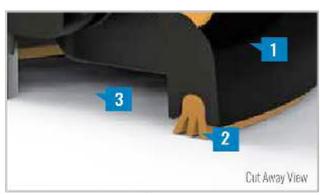
FLASH LOC

UNIRAC
BETTER SOLAR STARTS HERE

FLASHLOC is the ultimate attachment for composition shingle and rolled comp roofs. The all-in-one mount installs fast — no kneeling on hot roofs to install flashing, no prying or cutting shingles, no pulling nails. Simply drive the lag bolt and inject sealant into the base. **FLASH**LOC's patented TRIPLE SEAL technology preserves the roof and protects the penetration with a permanent pressure seal. Kitted with lag bolts, sealant, and hardware for maximum convenience. Don't just divert water, **LOC it out!**

PROTECT THE ROOF

Install a high-strength waterproof attachment without lifting, prying or damaging shingles.



LOC OUT WATER

With an outer shield 1 contour-conforming gasket 2 and pressurized sealant chamber 3 the Triple Seal technology delivers a 100% waterproof connection.

HIGH-SPEED INSTALL

Simply drive lag bolt and inject sealant into the port 4 to create a permanent pressure seal.

FASTER INSTALLATION. 25-YEAR WARRANTY.

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

FLASH LOC

INSTALLATION GUIDE

UNIRAC
BETTER SOLAR STARTS HERE

PRE-INSTALL

Snap chalk lines for attachment rows. On shingle roofs, snap lines 1-3/4" below upslope edge of shingle course. Locate rafters and mark attachment locations.

At each location, drill a 7/32" pilot hole. Clean roof surface of dirt, debris, snow, and ice. Next, BACKFILL ALL PILOT HOLES WITH SEALANT.

NOTE: Space mounts per racking system install specifications.

STEP 1: SECURE

Place **FLASH**LOC over pilot hole with lag on down-slope side. Align indicator marks on sides of mount with chalk line. Pass included lag bolt and sealing washer through **FLASH**LOC into pilot hole. Drive lag bolt until mount is held firmly in place.

NOTE: The EPDM in the sealing washer will expand beyond the edge of the metal washer when proper torque is applied.

STEP 2: SEAL

Insert tip of UNIRAC provided sealant into port. Inject until sealant exits both vents.

Continue array installation, attaching rails to mounts with provided T-bolts.

NOTE: When **FLASH**LOC is installed over gap between shingle tabs or vertical joints, fill gap/joint with sealant between mount and upslope edge of shingle course.

NOTE: When installing included rail attachment hardware, torque nut to 30 ft/lbs.

USE ONLY UNIRAC APPROVED SEALANTS: Chemlink Duralink 50 (included in kit) or Chemlink M-1

FASTER INSTALLATION. 25-YEAR WARRANTY.

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E. CASTILLO LICENSE No. 52590 STATE OF FLORIDA PROFESSIONAL ENGINEER

Signature with Seal

Digitally Signed by: Ermocrates E Castillo
Date: 2021.10.27 14:55:56

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RIX RESIDENCE
553 SW MAGNOLIA LN,
FORT WHITE, FL 32038

SHEET NAME

DATA SHEET

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

DS-06

Residential Standard Calculation

by: John Sokolik — 25-09-1997 — Version 2011 L

Job Name

Marc Jones Construction, LLC Sunpro Solar

0
0
0

27-10-2021 16:53

STEP 1 Article 220.42 & 220.52

sq. ft	2571	General Lighting load	7,713 VA	
	4	Small Appliance	6,000 VA	
	1	Laundry circuit	1,500 VA	
		Gen.Lgt, Sm App.& Laun. Load	15,213 VA	
		3,000 VA @ 100%=	3,000 VA	
		12,213 VA @ 35% =	4,275 VA	
		VA @ 25% =	VA	

General Lighting Demand Load — **7,275 VA**

STEP 2 Article 220.50 & 220.51

A/C Condenser & Fixed Electric Space Heating

						QTY
5 ton	7,130 VA	AHU 1	9.6kW	10,800 VA		1
A/C #2	VA	AHU 2	Select	VA		Qty
A/C #3	VA	AHU 3	Select	VA		Qty
A/C #4	VA	AHU 4	Select	VA		Qty
A/C #5	VA	AHU 5	Select	VA		Qty

Total 1

Heating Load 10,800 VA
CU Load 8,330 VA

Greater of Heat @ 100% vs.A/C @ 100% — **10,800 VA**

STEP 3 Article 220.53

Select	Qty	Item	Load
4,500 VA	1	Water Heater	4,500 VA
1,400 VA	1	Refrigerator	1,400 VA
600 VA	2	Freezer	1,200 VA
1,030 VA	1	Dishwasher	1,030 VA
690 VA		Disposal	VA
400 VA		R / Hood	VA
1,630 VA	1	Microwave	1,630 VA
4,000 VA		Microwave	VA
170 VA		Mini Refrig	VA
400 VA		Wine Clr	VA
5,000 VA		Insta Hot	VA
1,500 VA		Ironing Center	VA
1/3 hp		Jacuzzi Tub	828 VA
select		Sprinkler Pump	VA
1/2 hp		Well Pump	1,127 VA
select		Fountain Pump	VA
select		Elevator	VA
		Pool Equip. Panel	VA 100% Demand
		GATES	VA No Demand
		Other load	VA No Demand

Appliance Demand Load	**8,786 VA**
Dryer Demand Load	**5,000 VA**
Range Demand Load	**8,000 VA**
Service Demand	**39,861 VA**
Demand Load	**166 A**
Neutral Demand	**85 A**
Min.Service Req.	**175 A**
Min. Feeder size	**1/0**
Min. Neutral size	**4**
Eq. Grding Cond.	**6**
	Copper

Total Appliance Load **11,715 VA**
4 or more demand @ 75% plus 100% demand loads **8,786 VA**

STEP 4 Article 220.54
Electric Clothes Dryers **5,000 VA**

STEP 5 Article 220.55
Electric Ranges **10,000 W** Col C demand **8000**
or Number of appliances

Check Box for Gas Range

Cooktop	Col B demand
Cooktop	Col B demand
Oven(s)	Col B demand
Oven(s)	Col B demand

Number of appliances **0** Dem. Factor **0%**
Cooktop & Oven Demand Load **W**

jmp1jds@comcast.net

>>><<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Pool Panel Feeder Calculation		(See Note)	A	B	N
Continuous Motors	0	......	0	0	0
Non-continuous	0	......	0	0	0
Spa heater 11 kVA		......	0	0	
Pool heater 3.5 ton		......	0	0	
Pool heater 5 ton		......	0	0	
Pool Light select	0		0	0	0
Blower select	0	240v	0	0	0
other load	0	240v	0	0	0
other load	0	240v	0	0	0
Min.Copper Pool Feeder		AWG	A	A	A
Minimum Panel Rating		A	Phase Amperes		Neut. load

Continuous Motors		Non-continuous Motors	
select	240v	select	240v
select	240v	select	240v
select	240v	select	240v
select	240v	select	240v
select	240v	select	240v

0.0 Motor Neutral Load

Max.Unbalanced Neutral Load

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Date: 2021.10.27 14:55:56

This item has been electronically signed and sealed by Ermocrates Castillo, PE on the Date and/or Time stamp shown using the digital Signature. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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