

PROJECT DESCRIPTION:

28 x APTOS SOLAR:DNA-120-MF26 365W MONO MODULES
 ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES
 DC SYSTEM SIZE: 10.220kW DC
 AC SYSTEM SIZE: 10.000kW AC

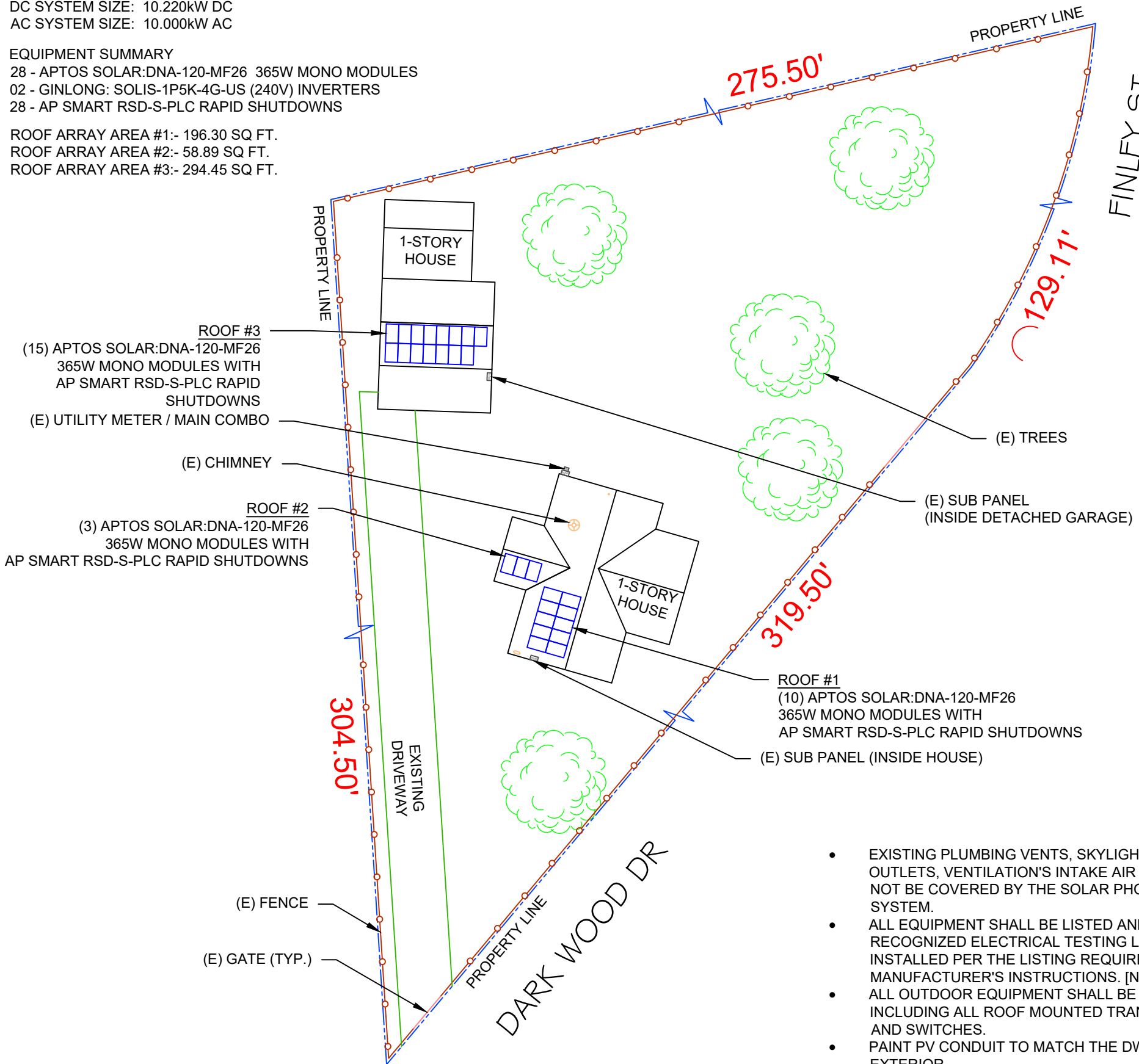
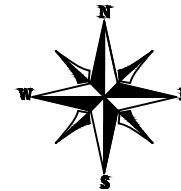
EQUIPMENT SUMMARY

28 - APTOS SOLAR:DNA-120-MF26 365W MONO MODULES
 02 - GINLONG: SOLIS-1P5K-4G-US (240V) INVERTERS
 28 - AP SMART RSD-S-PLC RAPID SHUTDOWNS

ROOF ARRAY AREA #1:- 196.30 SQ FT.
 ROOF ARRAY AREA #2:- 58.89 SQ FT.
 ROOF ARRAY AREA #3:- 294.45 SQ FT.

AUTHORITIES HAVING JURISDICTION
 BUILDING: HARNETT COUNTY
 ZONING: HARNETT COUNTY
 UTILITY: SOUTH RIVER EMC

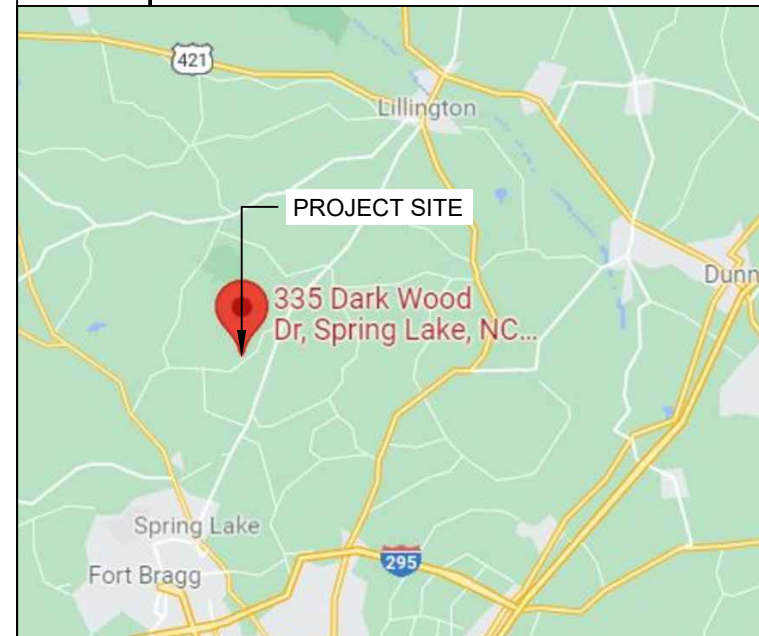
APPLICABLE CODES & STANDARDS
 NCBC 2018
 NEC 2017



- EXISTING PLUMBING VENTS, SKYLIGHTS, EXHAUST OUTLETS, VENTILATION'S INTAKE AIR OPENINGS SHALL NOT BE COVERED BY THE SOLAR PHOTOVOLTAIC SYSTEM.
- ALL EQUIPMENT SHALL BE LISTED AND LABELED BY A RECOGNIZED ELECTRICAL TESTING LABORATORY AND INSTALLED PER THE LISTING REQUIREMENTS AND THE MANUFACTURER'S INSTRUCTIONS. [NEC 690.4(D)]
- ALL OUTDOOR EQUIPMENT SHALL BE NEMA 3R RATED, INCLUDING ALL ROOF MOUNTED TRANSITION BOXES AND SWITCHES.
- PAINT PV CONDUIT TO MATCH THE DWELLING EXTERIOR.
- CONTACT THE SERVICING UTILITY BEFORE POWERING ON THE PHOTOVOLTAIC SYSTEM
- IFC SETBACKS ARE REQUIRED TO BE DISCUSSED WITH THE AHJ PRIOR TO CONSTRUCTION.



2 HOUSE PHOTO
 PV-1 | SCALE: NTS



3 VICINITY MAP
 PV-1 | SCALE: NTS

SHEET INDEX

PV-1	PLOT PLAN, HOUSE PHOTO & VICINITY MAP
PV-2	ROOF PLAN & MODULES
PV-2A	STRING LAYOUT
PV-3	ATTACHMENT DETAIL
PV-4	ELECTRICAL LINE DIAGRAM
PV-5	LABELS
PV-6	RAPID SHUTDOWN CHART
PV-7+	EQUIPMENT SPECIFICATIONS



LuminaSun Smart Home LLC
 114 Morlake Drive Suite 201,
 Mooresville, NC 28117

REVISIONS		
DESCRIPTION	DATE	REV
INITIAL	10/21/2021	
SUBPANEL LOCATION CHANGE	11/05/2021	A
ELECTRICAL CHANGE	11/30/2021	B

SIGNATURE WITH SEAL
 DATE:10/21/2021

PROJECT NAME & ADDRESS
THOMAS L SANDERS
335 DARK WOOD DR
SPRING LAKE, NC 28390

DC SIZE:10.220kW
 AC SIZE:10.000kW

DRAWN BY
ESR

SHEET NAME
PLOT PLAN & VICINITY MAP

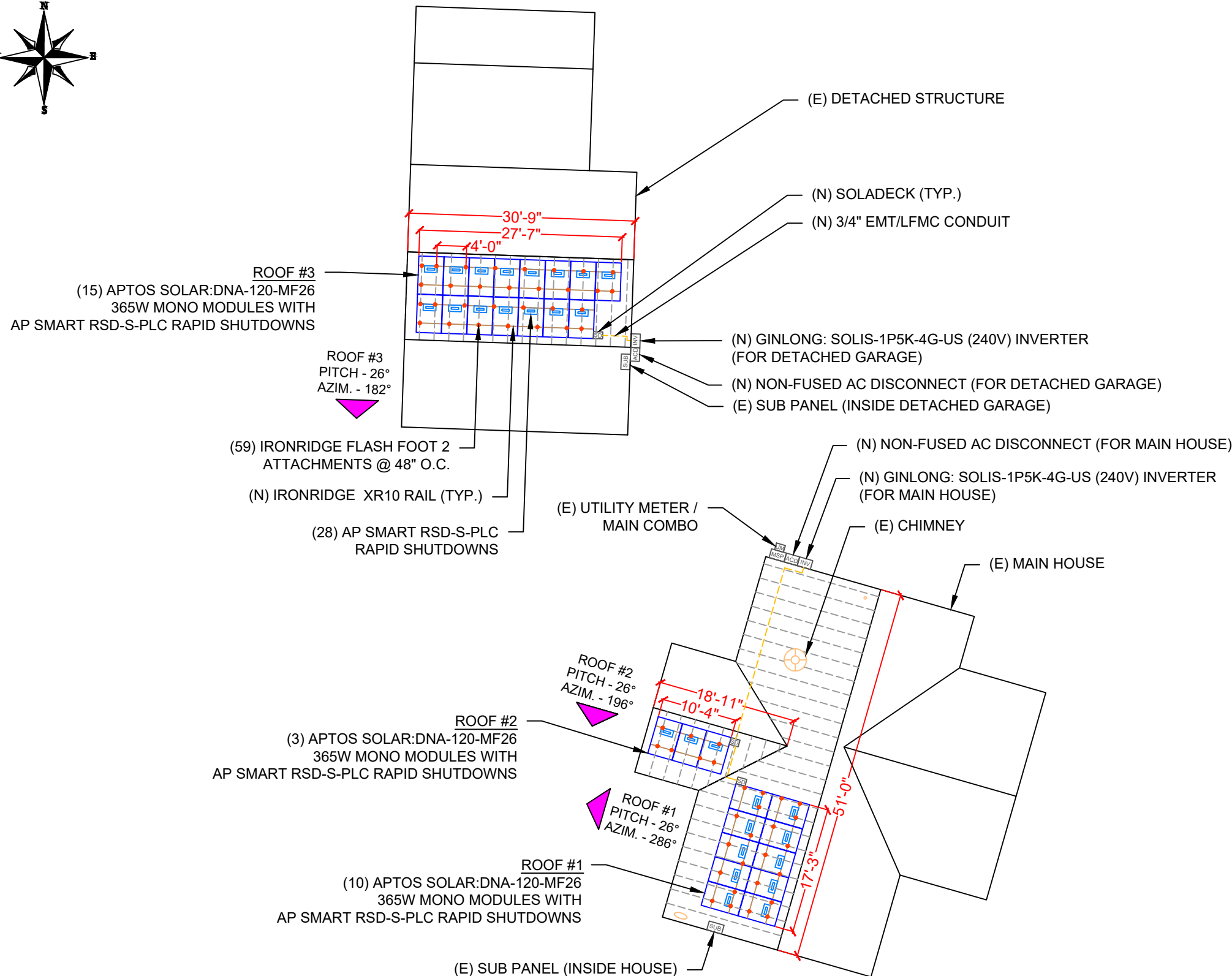
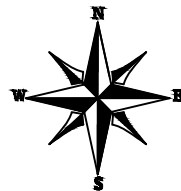
SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-1

1 PLOT PLAN WITH ROOF PLAN
 PV-1 | SCALE: 1/32" = 1'-0"

MODULES TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULE = 28 MODULES
 MODULE TYPE = APTOS SOLAR:DNA-120-MF26 365W MONO MODULES
 MODULE WEIGHT = 45.19 LBS / 20.5 KG.
 COMPONENT WEIGHT: 1.5 LBS. PER MODULE
 MODULE DIMENSIONS = 69.13"x 40.91" = 19.63 SF
 UNIT WEIGHT OF ARRAY = 2.30 PSF



ROOF DESCRIPTION				
ROOF TYPE		COMPOSITION SHINGLE		
ROOF LAYER		1 LAYER		
ROOF	ROOF TILT	AZIMUTH	TRUSS SIZE	TRUSS SPACING
#1	26°	286°	2X4	24"
#2	26°	196°	2X4	24"
#3	26°	182°	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	10	196.30	739.53	27
#2	3	58.89	127.79	46
#3	15	294.45	366.79	80

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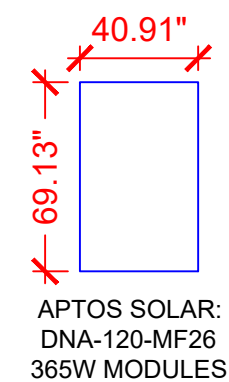
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LEGEND

- SD - SOLADECK
- INV - INVERTER
- CB - COMBINER BOX
- ACD - AC DISCONNECT
- SLD - SOLAR LOAD CENTER
- UM - UTILITY METER
- MSP - MAIN SERVICE PANEL
- VENT, ATTIC FAN (ROOF OBSTRUCTION)
- - ROOF ATTACHMENT
- - TRUSS
- - CONDUIT

DC SIZE:10.220kW
 AC SIZE:10.000kW

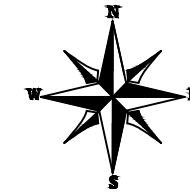
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ESR

SHEET NAME
ROOF PLAN & MODULES

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-2

STRING LEGENDS	
	STRING #1 / INV #1
	STRING #2 / INV #1
	STRING #1 / INV #2
	STRING #2 / INV #2



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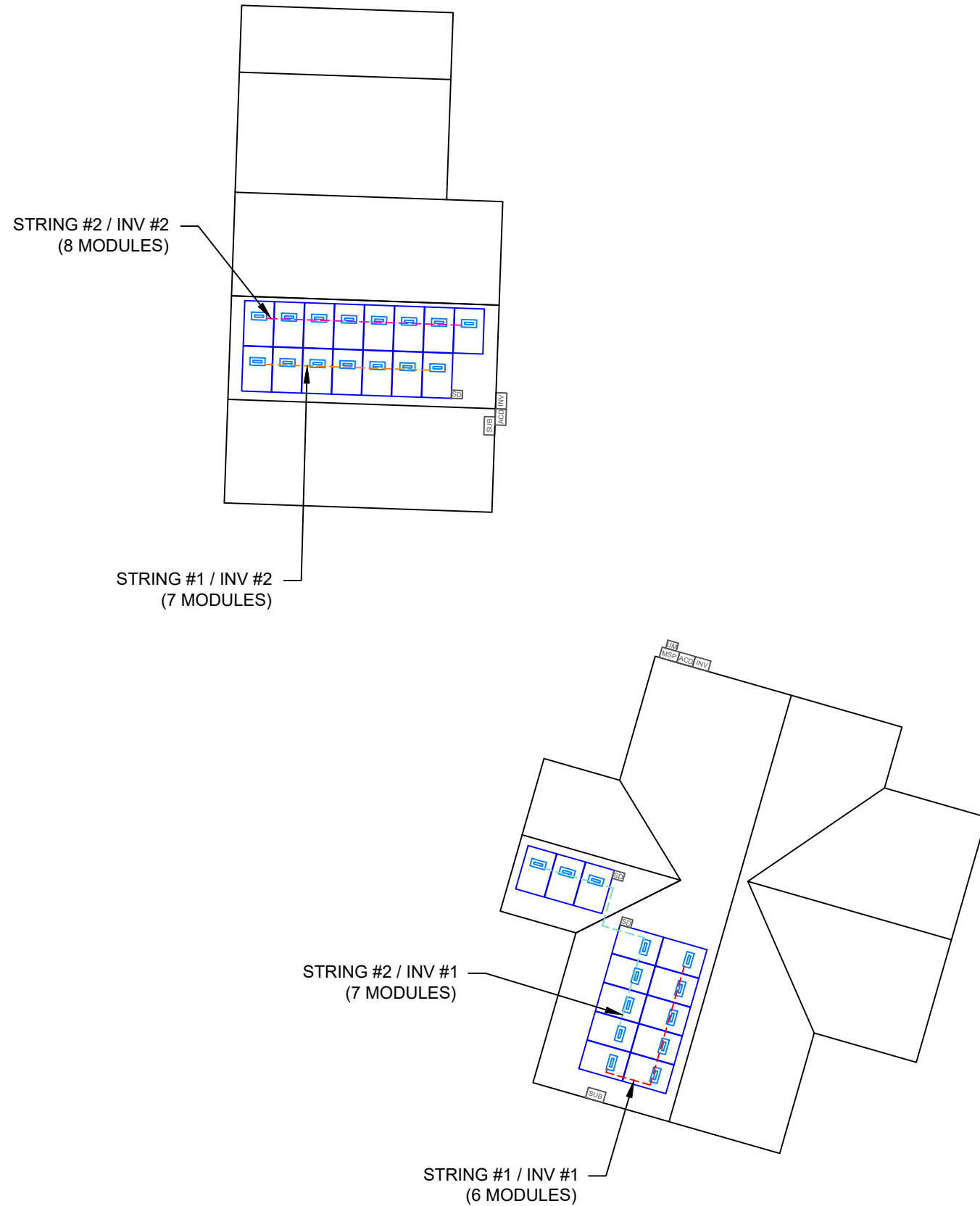
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AC SIZE: 10.000kW

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ESR

SHEET NAME
STRING LAYOUT

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

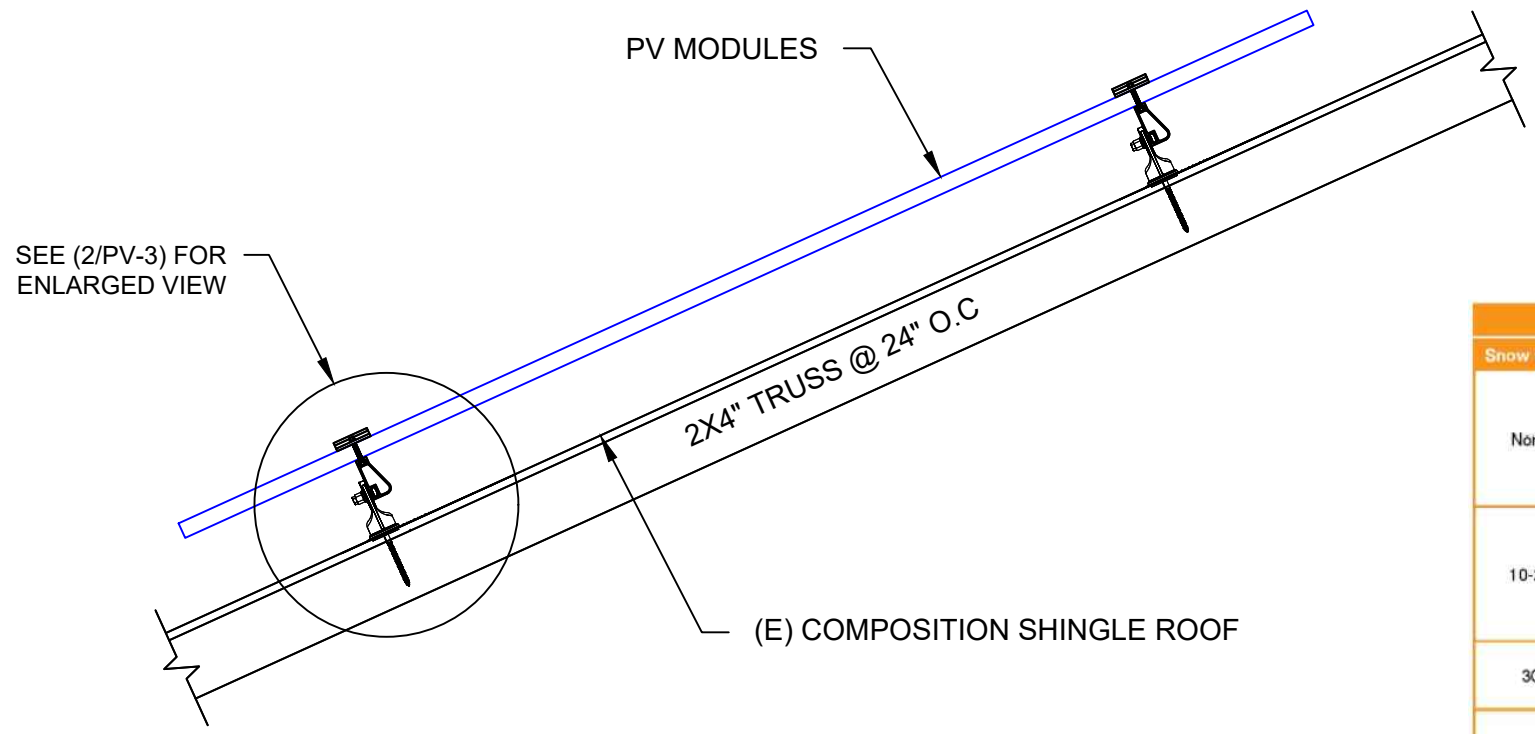
SHEET NUMBER
PV-2A



1 | **ARRAY PLAN WITH STRING LAYOUT**

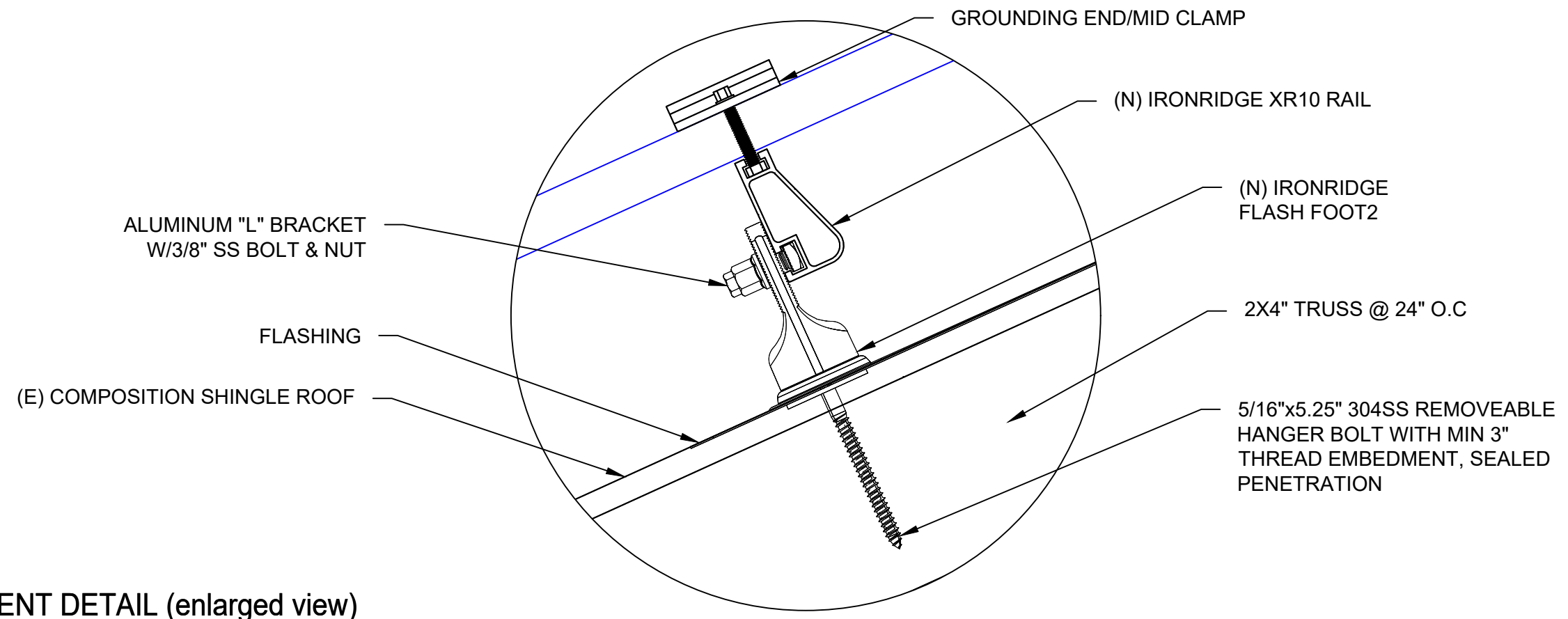
PV-2A

SCALE: 1/16" = 1'-0"



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

1 ATTACHMENT DETAIL
PV-3 SCALE: NTS



2 ATTACHMENT DETAIL (enlarged view)
PV-3 SCALE: NTS



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SHEET NAME
ATTACHMENT DETAIL

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

SHEET NUMBER
PV-3

DC SYSTEM SIZE: 10.220kW DC
AC SYSTEM SIZE: 10.000kW AC

(28) APTOS SOLAR:DNA-120-MF26 365W MONO MODULES
(1) STRING OF 6 MODULES,
(2) STRINGS OF 7 MODULES AND
(1) STRING OF 8 MODULES CONNECTED IN SERIES

NOTE:-

1. RACEWAYS AND CABLES EXPOSED TO SUNLIGHT ON ROOFTOPS SHOULD BE INSTALLED MORE THAN 7/8" ABOVE THE ROOF USING CONDUIT SUPPORTS.
2. TEMPERATURE RATINGS OF ALL CONDUCTORS, TERMINATIONS, BREAKERS, OR OTHER DEVICES ASSOCIATED WITH THE SOLAR PV SYSTEM SHALL BE RATED FOR AT LEAST 75 DEGREE C.
3. THE GINLONG SOLIS INVERTER MONITORS VOLTAGE BETWEEN THE L1 AND L2, THE NEUTRAL CONDUCTOR IS OPTIONAL WHEN TYING THE INVERTER TO A 240V GRID (240 3Y SYSTEM). GROUND MUST BE CONNECTED TO THE PE TERMINAL. (REF: SHEET PV-10 FOR INSTALLATION MANUAL)

RACKING NOTE:-

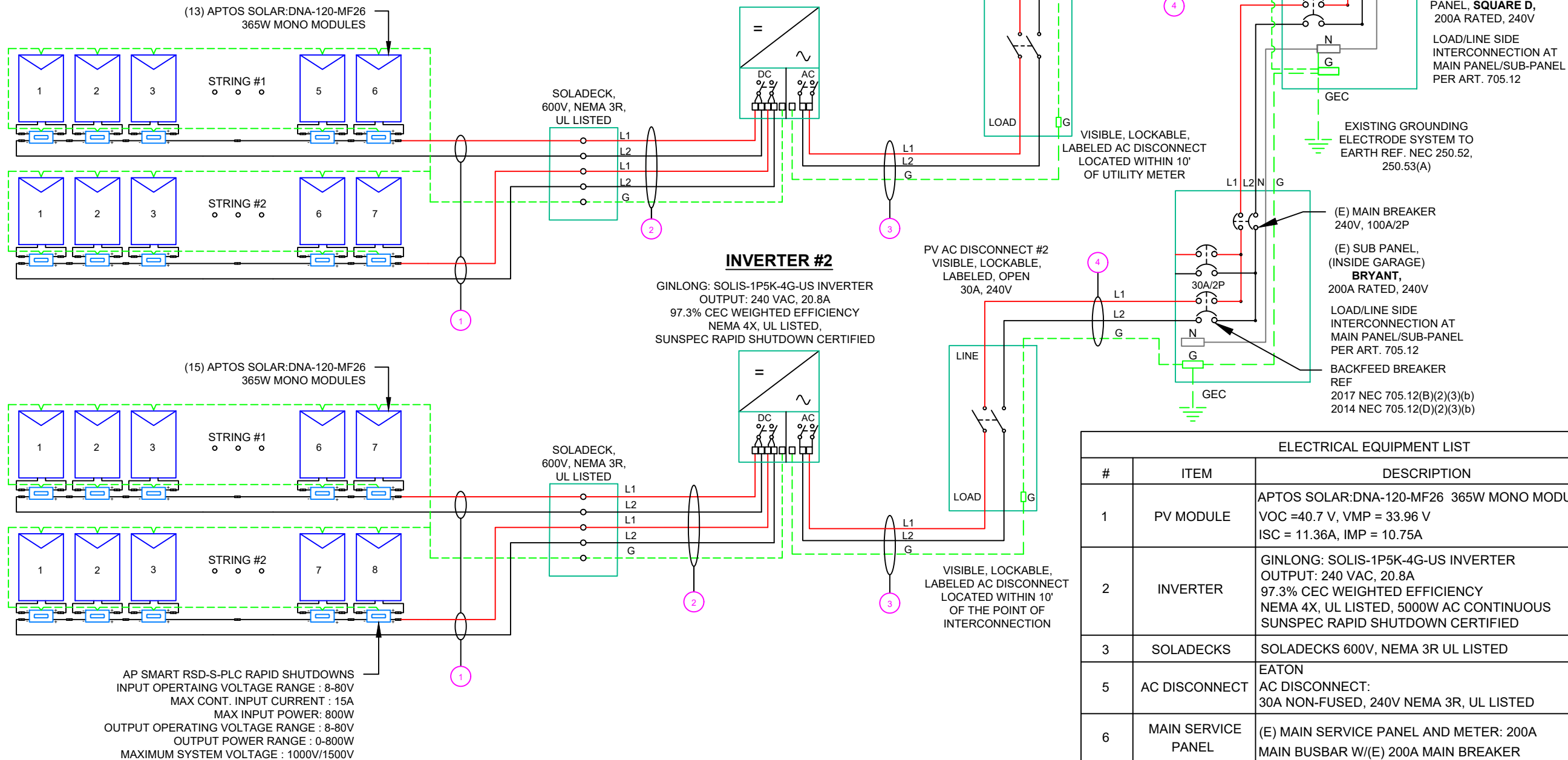
1. BOND EVERY RAIL WITH #6 BARE COPPER

INVERTER #1

GINLONG: SOLIS-1P5K-4G-US INVERTER
OUTPUT: 240 VAC, 20.8A
97.3% CEC WEIGHTED EFFICIENCY
NEMA 4X, UL LISTED,
SUNSPEC RAPID SHUTDOWN CERTIFIED

INVERTER #2

GINLONG: SOLIS-1P5K-4G-US INVERTER
OUTPUT: 240 VAC, 20.8A
97.3% CEC WEIGHTED EFFICIENCY
NEMA 4X, UL LISTED,
SUNSPEC RAPID SHUTDOWN CERTIFIED



AP SMART RSD-S-PLC RAPID SHUTDOWNS
INPUT OPERATING VOLTAGE RANGE : 8-80V
MAX CONT. INPUT CURRENT : 15A
MAX INPUT POWER: 800W
OUTPUT OPERATING VOLTAGE RANGE : 8-80V
OUTPUT POWER RANGE : 0-800W
MAXIMUM SYSTEM VOLTAGE : 1000V/1500V

QTY	CONDUCTOR INFORMATION	CONDUIT TYPE	CONDUIT SIZE
(4)	CU#10AWG - PV WIRE/USE-2	N/A	N/A
(1)	CU#6AWG - BARE COPPER IN FREE AIR	N/A	N/A
(4)	CU#10AWG - THWN-2 (L1,L2)	EMT OR LFMC IN ATTIC	3/4"
(1)	CU#10AWG - THWN-2 GND		
(2)	CU#10AWG - THWN-2 (L1,L2)	EMT, LFNC OR LFMC	3/4"
(1)	CU#10AWG - THWN-2 GND		
(2)	CU#10AWG - THWN-2 (L1,L2)	EMT, LFNC OR LFMC	3/4"
(1)	CU#10AWG - THWN-2 GND		

#	ITEM	DESCRIPTION	QTY
1	PV MODULE	APTOS SOLAR:DNA-120-MF26 365W MONO MODULES VOC =40.7 V, VMP = 33.96 V ISC = 11.36A, IMP = 10.75A	28
2	INVERTER	GINLONG: SOLIS-1P5K-4G-US INVERTER OUTPUT: 240 VAC, 20.8A 97.3% CEC WEIGHTED EFFICIENCY NEMA 4X, UL LISTED, 5000W AC CONTINUOUS SUNSPEC RAPID SHUTDOWN CERTIFIED	02
3	SOLADECKS	SOLADECKS 600V, NEMA 3R UL LISTED	03
5	AC DISCONNECT	EATON AC DISCONNECT: 30A NON-FUSED, 240V NEMA 3R, UL LISTED	02
6	MAIN SERVICE PANEL	(E) MAIN SERVICE PANEL AND METER: 200A MAIN BUSBAR W/(E) 200A MAIN BREAKER	01
7	PV METER	PV UTILITY METER KWH METER FORM 2S 100A/240V MILBANK CAT#U5929-XL OR EQUIV	0
8	RAPID SHUTDOWN	AP SMART RSD-S-PLC RAPID SHUTDOWNS INPUT OPERATING VOLTAGE RANGE : 8-80V MAX CONT. INPUT CURRENT : 15A MAX INPUT POWER: 800W OUTPUT OPERATING VOLTAGE RANGE : 8-80V OUTPUT POWER RANGE : 0-800W MAXIMUM SYSTEM VOLTAGE : 1000V/1500V	28



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SHEET NAME
ELECTRICAL LINE DIAGRAM

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

SHEET NUMBER
PV-4

LABEL 1

On all conduits spaced at Max 10ft

**WARNING: PHOTOVOLTAIC
POWER SOURCE**

LABEL 6

At each AC Disconnect

**PHOTOVOLTAIC SYSTEM
AC DISCONNECT**
OPERATING VOLTAGE **240.00** VOLTS
OPERATING CURRENT **41.60** AMPS

LABEL 2

At AC Disconnect AND MEP

**CAUTION: SOLAR ELECTRIC
SYSTEM CONNECTED**

LABEL 7

At AC Disconnect AND MEP

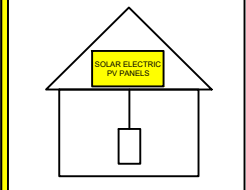
**WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM**

LABEL 3

At Inverter

**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 8

At Main Service Panel

WARNING
**TURN OFF PHOTOVOLTAIC
AC DISCONNECT PRIOR TO
WORKING INSIDE PANEL**

LABEL 4

At DC Disconnect

**PHOTOVOLTAIC
DC DISCONNECT**

LABEL 9

At Utility Meter

WARNING
**THIS SERVICE METER
IS ALSO SERVED BY A
PHOTOVOLTAIC SYSTEM**

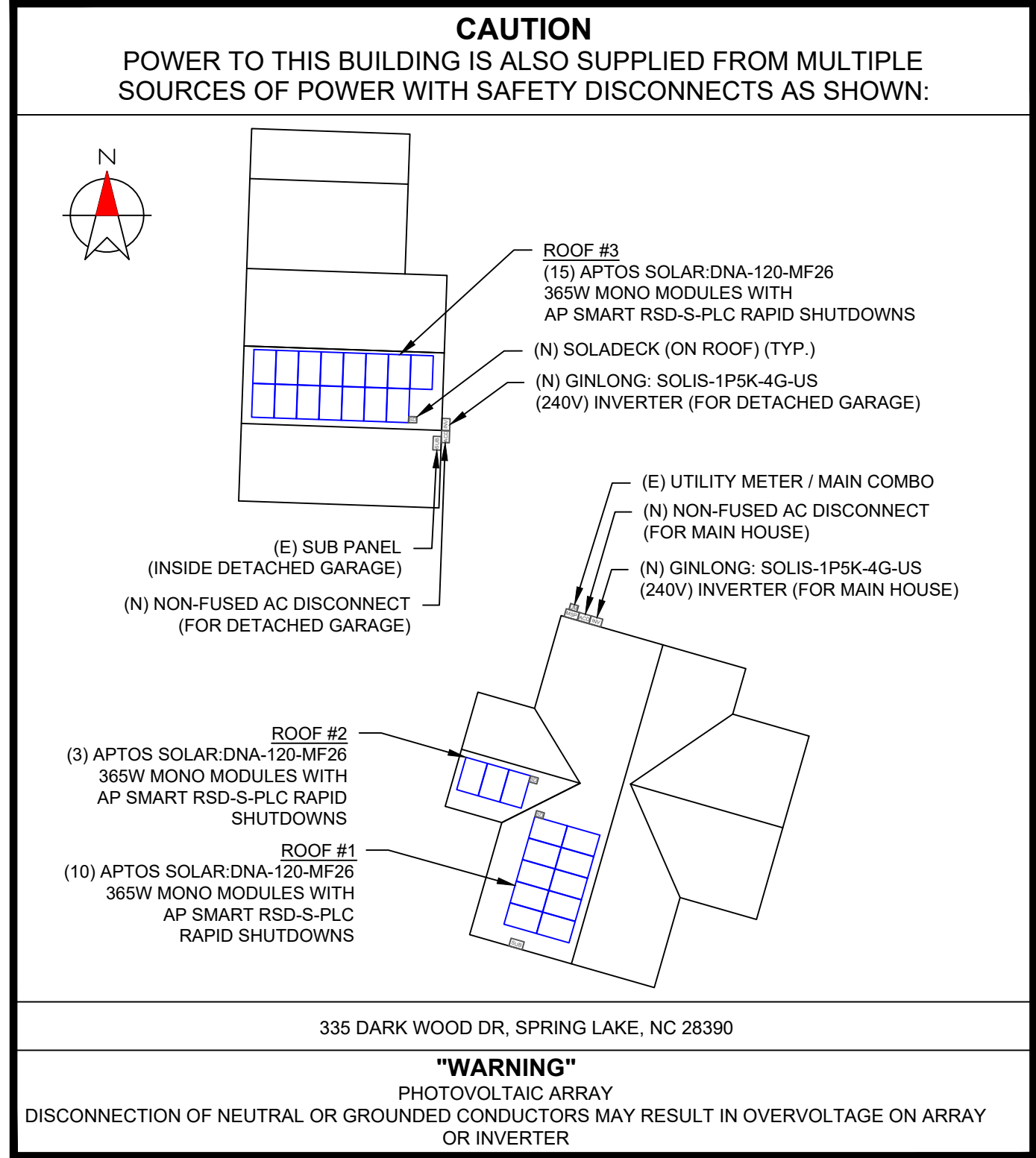
LABEL 5

At each AC Disconnect

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

NOTES

1. NEC ARTICLES 690 AND 705 AND CRC SECTION R324 MARKINGS SHOWN HEREON
2. ALL MARKINGS SHALL CONSIST OF THE FOLLOWING:
 - A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING
 - B. RED BACKGROUND COLOUR WITH WHITE TEXT AND LINE WORK
 - C. ARIAL FONT
3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATION SPECIFIED
4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT USING POP-RIVETS OR SCREW
5. PLACARD ONLY REQUIRED WHEN PV UTILITY DISCONNECT & METER ARE NOT CO-RELATED WITH SES



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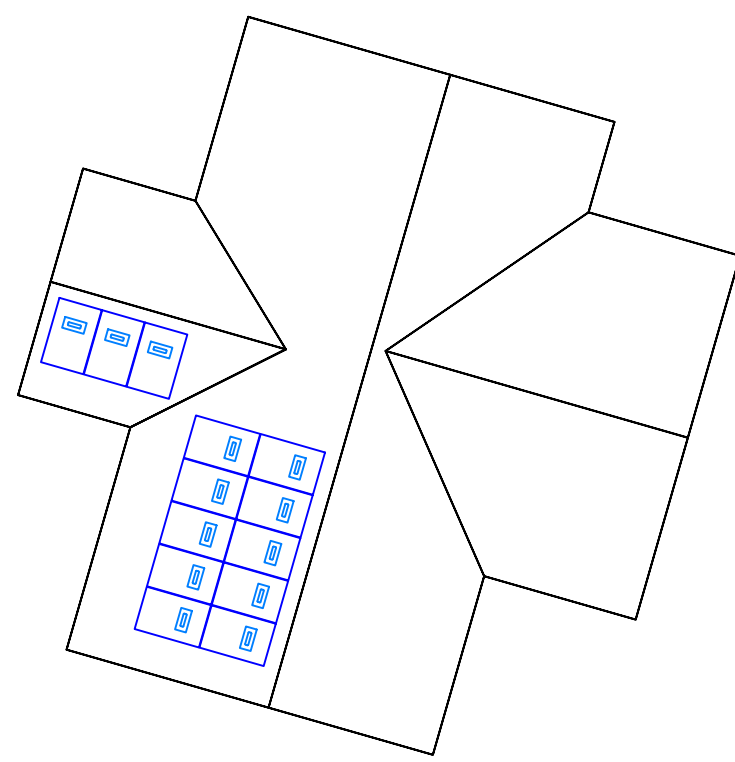
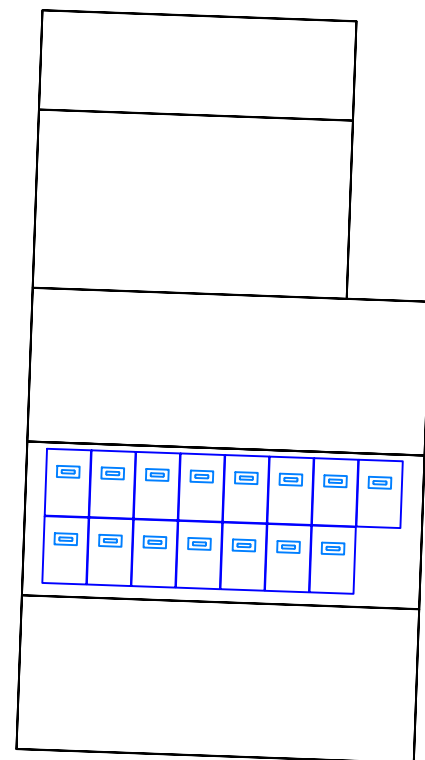
SHEET NAME
LABELS

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

SHEET NUMBER
PV-5

RAPID SHUTDOWN CHART

	1-10	11-20	21-30	31-40	41-50	51-60	61-70
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							



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RAPID SHUTDOWN CHART

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

SHEET NUMBER
PV-6

DNA™ 120

Solar for Innovators

DNA™ 120


Solar for Innovators

Residential | Commercial

Designed & Engineered in Silicon Valley 370W | 365W | 360W

Our DNA™ Split Cell Series impressively combines advanced solar technologies to maximize performance. Our patented Dual Nano Absorber (DNA™) Technology allows the panel to operate at high-efficiencies in extreme temperatures. Contact our sales team today to learn more about our line of high-efficiency solar panels.

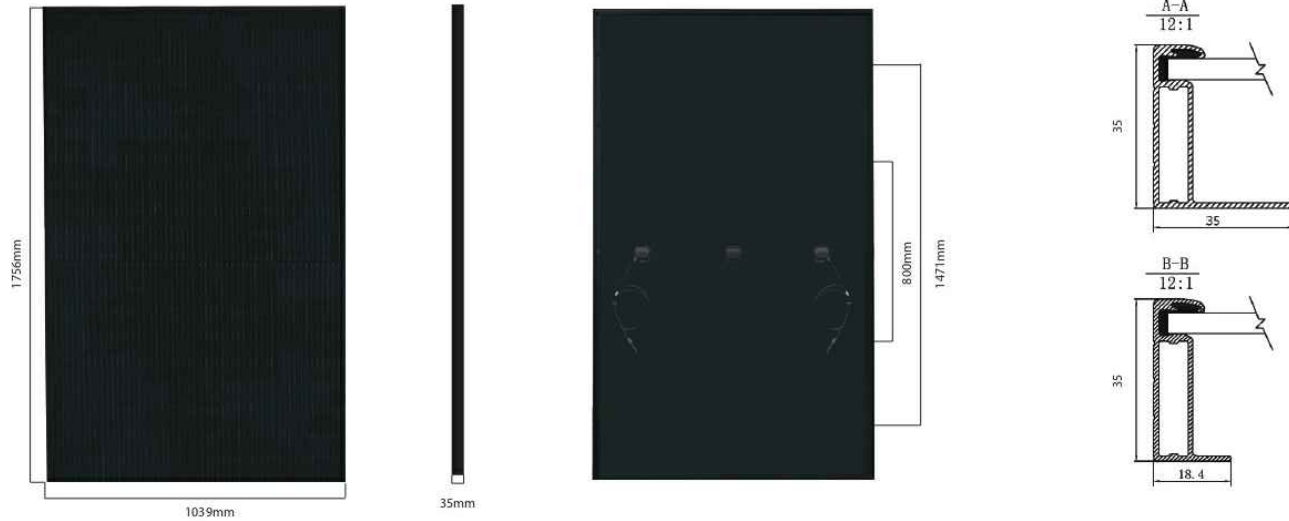
 Patented DNA™ technology boosts power performance & module efficiency

 Advanced split cell technology with 9 ultra-thin busbars allows for less resistance and more photon capture

 Ideal solution for applications affected by shading

 All-black design for pristine aesthetics
No excessive silver bussing or ribbons

 Robust product design is resilient in extreme weather. Up to 5400 Pa snow load and 210 mph wind speeds



Electrical Specifications	DNA-120-MF26-360W	DNA-120-MF26-365W	DNA-120-MF26-370W
STCrated Output P_{mpo} (W)	360W	365W	370W
Module Efficiency	19.73%	20.01%	20.29%
Open Circuit Voltage V_{oc} (V)	40.6	40.7	40.8
Short Circuit Current I_{sc} (A)	11.24	11.36	11.51
Rated Voltage V_{mpo} (V)	33.8	33.96	34.06
Rated Voltage I_{mpo} (A)	10.66	10.75	10.87

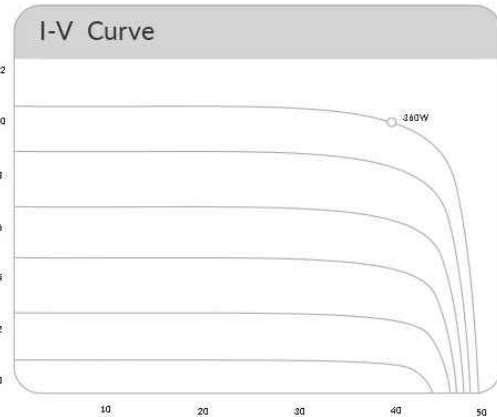
Standard Test Conditions for front-face of panel: 1000 W/m², 25°C, measurement uncertainty ±3%

Temperature Coefficients	
Temperature Coefficients P_{mpo}	-0.36%
Temperature Coefficients I_{sc}	+0.05%/°C
Temperature Coefficients V_{oc}	-0.29%/°C
Normal Operating Cell Temperature (NOCT)	44°C

Test Operating Conditions	
Maximum Series Fuse	20A
Maximum System Voltage	1,500 VDC (UL&IEC)
Maximum Load Capacity (Per UL 1703)	5400 PA Snow Load / 210mph Wind Rating
Fire Performance Class	Class C/Type 1

Packaging Configuration	
Number of Modules per Pallet	30
Number of Pallets per 40ft. Container	26
Pallet Dimensions	1740 X 1140 X 1165
Pallet Weight (kg)	640
Container Weight (kg)	16640

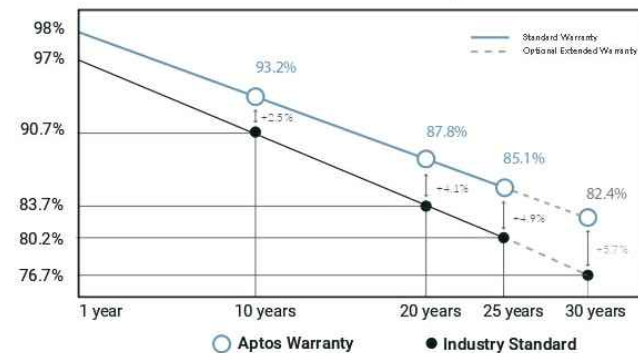
Mechanical Properties	
Cell Type	Monocrystalline
Glass	3.2mm, anti-reflection coating, high transmission, low iron, tempered glass
Frame	Anodized Aluminum Alloy
Junction Box	IP68
Dimensions	1756 X 1039 X 35mm
Output Cable	4mm ² (EU)12AWG.39.37in.(1200mm)
Weight	45.19lbs.(20.5kg)
Cable Length	1200mm
Encapsulant	POE



Certifications	
intertek	CE
UL61730-1, UL61730-2	



Linear Performance Warranty



30 Year Warranty

3X IEC Standards

RETc Top Performer



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Aptos Solar Technology reserves the right to make specification changes without notice



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AC SIZE:10.000kW

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SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-7



Raising the bar in innovative DC MLPE solar power systems



RSD-S-PLC

- Meets NEC 2017 (690.12) requirements
- Executes rapid shutdown of system when Transmitter-PLC signal is absent
- Meets SunSpec requirements

RSD-S-PLC Technical Data

Model	RSD-S-PLC
Input Data (DC)	
Input operating Voltage Range	8-80V
Maximum Cont. Input Current (Imax)	15A
Maximum Input Power	800W
Output Data (DC)	
Output operating Voltage Range	8-80V
Output Power Range	0-800W
Maximum System Voltage	1000V/1500V
Mechanical Data	
Operating Ambient Temperature Range	-40 °C to + 85 °C (-40 °F to +185 °F)
Dimensions (without cable&connectors)	5" x 1.2" x 0.6"(129 mm x 30 mm x 16 mm)
Cable length	Input 250mm/Output 1200mm
Module Connector	MC4
Enclosure Rating	Type 6P / IP68
Overtemperature protection	Yes
Features & Compliance	
Communication	PLC
Safety Compliance	NEC 2017 (690.12); UL1741; CSA C22.2 No. 330-17; IEC/EN62109-1; 2PFG2305
EMC Compliance	FCC Part15; ICES-003; IEC/EN61000-6-1/-2/-3/-4

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2020-03-17



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SHEET NUMBER

PV-8



Solis-1P(3.6-5)K-4G-US

Solis Single Phase US Inverters



Features:

- ▶ Max. efficiency 98.1% (CEC efficiency 97.3%)
- ▶ CARule 21 compliant and UL 1741 SA Certified
- ▶ Sunspec communication protocol with optional cellular and Wi-Fi interface
- ▶ Built-in Sunspec certified module level rapid shutdown transmitter
- ▶ Optional built-in revenue grade meter, ANSI C12.20-2010 compliance
- ▶ Fast and dynamic MPPTs and industry-leading DC voltage range
- ▶ Integrated Arc Fault Circuit Interrupt (AFCI)
- ▶ 10 years standard warranty with extension options

Model:

Solis-1P3.6K-4G-US
Solis-1P5K-4G-US

Ordering: Solis-1P(3.6-5)K-4G-US-AFCI

- SPRT (SunSpec MLRSD Transmitter)
- RGM-SPRT (Revenue Grade Meter and Transmitter)
- RSS (Tigo MLRSD Transmitter)
- RGM-RSS (Revenue Grade Meter and Tigo MLRSD Transmitter)



Datasheet

Model Name	Solis-1P3.6K-4G-US	Solis-1P5K-4G-US
Input DC		
Recommended max. PV power	4 kW	6 kW
Max. input voltage	600 V	
Rated voltage	330 V	
Start-up voltage	120 V	
MPPT voltage range	90-520 V	
Max. input current	11 A / 11 A	
Max. short circuit current	17.2 A / 17.2 A	
MPPT number/Max. input strings number	2/2	
Output AC		
Rated output power	3.6 kW	5 kW
Max. apparent output power	3.6 kVA	5 kVA
Max. output power	3.6 kW	5 kW
Rated grid voltage	1Φ/PE, 240 V / 208 V	
Rated grid frequency	60 Hz	
Max. output current for 240V grid	15.0 A	20.8 A
Max. output current for 208V grid	17.3 A	24.0 A
Power Factor	>0.99 (0.8 leading - 0.8 lagging)	
THDi	<3%	
Efficiency		
Max. efficiency	97.8%	98.1%
CEC efficiency	97.1%	97.3%
Protection		
DC reverse-polarity protection	Yes	
Ground fault monitoring	Yes	
Anti-islanding protection	Yes	
Integrated AFCI (DC arc-fault circuit protection)	Yes	
Integrated DC switch	Yes	
Rapid shutdown	Built-In Certified Sunspec or Tigo Transmitter	
Compliant MLRSD Products	TS4-A-F/2F, RSD-PFK, APsmart RSD-S-PLC	
General Data		
Dimensions (W*H*D)	13.9*31.9*6.5 in (353*810*165 mm)	
Weight	33.1 lbs (15 kgs)	
Topology	Transformerless	
Self consumption (night)	<1 W	
Relative humidity	0-100%	
Operating ambient temperature range	-13°F to 140°F (-25°C to 60°C)	
Storage environment	-13°F to 176°F (-25°C to 80°C)	
Ingress protection	TYPE 4X	
Cooling concept	Natural convection	
Max. operation altitude	13,120 ft (4000 m)	
Compliance	UL 1741, IEEE 1547, UL 1699B, UL 1998, FCC, UL 1741SA, California Rule 21, SRD-UL1741	
Features		
DC connection	1 knockout for 3/4" conduit at bottom, side and back, Screw clamp terminal	
AC connection	1 knockout for 3/4" conduit at bottom, side and back, OT terminal	
Display	LCD	
Communication	RS485, Optional: Cellular, Wi-Fi	



LuminaSun Smart Home LLC
114 Morlake Drive Suite 201,
Mooresville, NC 28117

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SIGNATURE WITH SEAL

DATE:10/21/2021

PROJECT NAME & ADDRESS

THOMAS L SANDERS
335 DARK WOOD DR
SPRING LAKE, NC 28390

DC SIZE:10.220kW

AC SIZE:10.000kW

DRAWN BY

ESR

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-9

4. Installation

Cable type	Cross section	
	Range	Recommended value
Industry generic PV cable (model:PV1-F)	4.0~6.0 (12~10AWG)	4.0 (12AWG)

▲ Table 4.1 DC cable size



Damage to the DC Disconnect due to enlarged knockouts.
Enlarged knockouts enable moisture to penetrate the DC Disconnect which could damage electronic components in the DC Disconnect.

Please refer to figure 4.9, The acceptable wire size range is from **12 AWG to 8 AWG**, copper conductors only; refer to local code for appropriate wire size.

4.3.3 Connect Grid Side of Inverter

The Ginlong Solis 6-10kW Single Phase inverters can be connected to a 208V or 240V grid.
The default setting is for a 240VAC single phase grid. Since the inverter monitors voltage between L1 and L2, the neutral conductor can be connected or not connected when tying the inverter to a 240V grid. Ground must be connect to the PE terminal.

Cable type	Cross section	
	Range	Recommended value
Industry generic grid cable	4~25mm ² (12~4AWG)	10-25mm ² (8-4AWG)

▲ Table 4.2 Grid cable size

There are two cable connection point for each phase, one for grid, one for AC power of RSD.

GRID STANDARD	208V~ 3PH-Δ-3W			240V~ SPLIT-PHASE		
	L1	L2	N	L1	L2	N
TERMINAL	L1	L2	N	L1	L2	N
Connection requirement	Yes	Yes	No	Yes	Yes	Optional

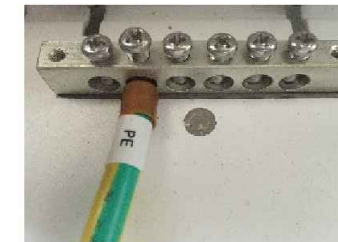
▲Table 4.3 Grid Terminal Connection

4. Installation

4.3.4 Ground Connection

Internal ground connection point

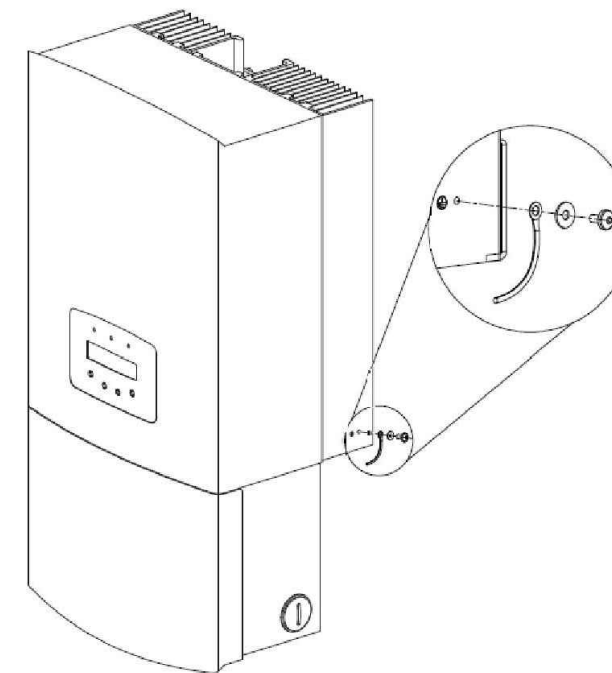
Please see figure 4.10. Both DC and AC ground cable can be connect to ground terminal Above DC switch. The acceptable wire size for ground is **12AWG to 4 AWG**. The torque is 26 in-lbs (3 Nm) .



▲ Figure 4.10 Grounding Terminal on Heat-Sink

External ground connection point

An external ground connection is provided at the right side of inverter.
Prepare OT terminals: M4. Use proper tooling to crimp the lug to the terminal.
Connect the OT terminal with ground cable to the right side of inverter. The torque is 20 in-lbs (2Nm).



▲ Figure4.11 Connect the External Grounding Conductor



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ESR

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11" X 17"

SHEET NUMBER

PV-10



Flush Mount System

Datasheet



Built for solar's toughest roofs.

IronRidge builds the strongest mounting system for pitched roofs in solar. Our components have been tested to the limit and proven in extreme environments, including Florida's high-velocity hurricane zones.

Our rigorous approach has led to unique structural features, such as curved rails and reinforced flashings, and is also why our products are fully certified, code compliant and backed by a 25-year warranty.



Strength Tested

All components evaluated for superior structural performance.



PE Certified

Pre-stamped engineering letters available in most states.



Class A Fire Rating

Certified to maintain the fire resistance rating of the existing roof.



Design Assistant

Online software makes it simple to create, share, and price projects.



UL 2703 Listed System

Entire system and components meet newest effective UL 2703 standard.



25-Year Warranty

Products guaranteed to be free of impairing defects.

XR Rails

XR10 Rail



A low-profile mounting rail for regions with light snow.

- 6' spanning capability
- Moderate load capability
- Clear and black finish

XR100 Rail



The ultimate residential solar mounting rail.

- 8' spanning capability
- Heavy load capability
- Clear and black finish

XR1000 Rail



A heavyweight mounting rail for commercial projects.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish

Bonded Splices



All rails use internal splices for seamless connections.

- Self-drilling screws
- Varying versions for rails
- Forms secure bonding

Clamps & Grounding

UFOs



Universal Fastening Objects bond modules to rails.

- Fully assembled & lubed
- Single, universal size
- Clear and black finish

Stopper Sleeves



Snap onto the UFO to turn into a bonded end clamp.

- Bonds modules to rails
- Sized to match modules
- Clear and black finish

CAMO



Bond modules to rails while staying completely hidden.

- Universal end-cam clamp
- Tool-less installation
- Fully assembled

Bonding Hardware



Bond and attach XR Rails to roof attachments.

- T & Square Bolt options
- Nut uses 7/16" socket
- Assembled and lubricated

Attachments

FlashFoot2



Flash and mount XR Rails with superior waterproofing.

- Twist-on Cap eases install
- Wind-driven rain tested
- Mill and black finish

Conduit Mount



Flash and mount conduit, strut, or junction boxes.

- Twist-on Cap eases install
- Wind-driven rain tested
- Secures 3/4" or 1" conduit

Knockout Tile



Replace tiles and ensure superior waterproofing.

- Flat, S, & W tile profiles
- Form-fit compression seal
- Single-lag universal base

All Tile Hook



Mount on tile roofs with a simple, adjustable hook.

- Works on flat, S, & W tiles
- Single-socket installation
- Optional deck flashing

Resources



Design Assistant

Go from rough layout to fully engineered system. For free.

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



Endorsed by FL Building Commission

Flush Mount is the first mounting system to receive Florida Product approval for 2017 Florida Building Code compliance.

[Learn More at bit.ly/floridacert](https://bit.ly/floridacert)



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ANSI B
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SHEET NUMBER

PV-11

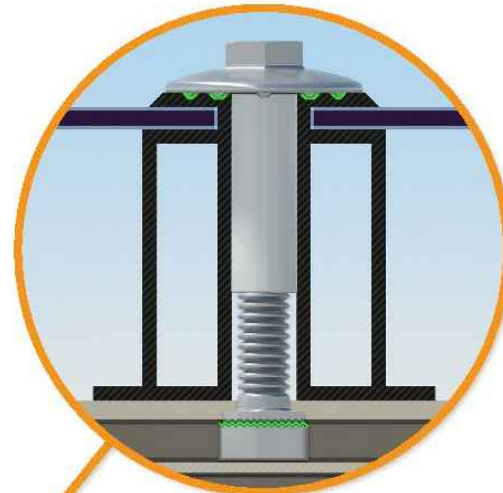


UFO Family of Components

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.

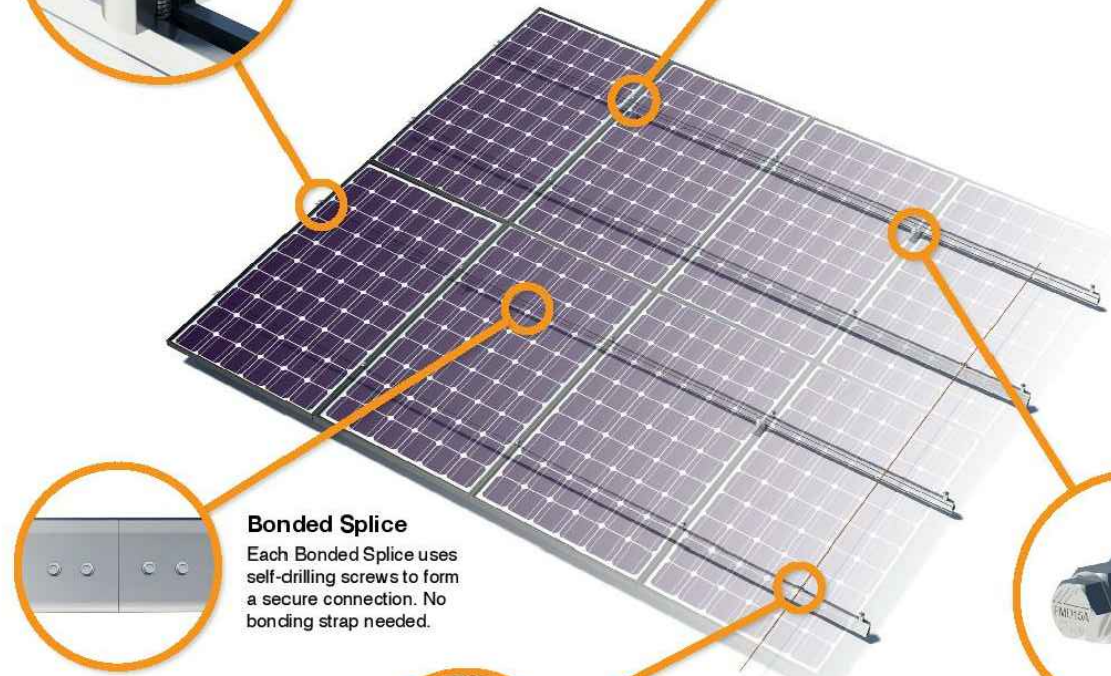
UFO hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.



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.



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



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

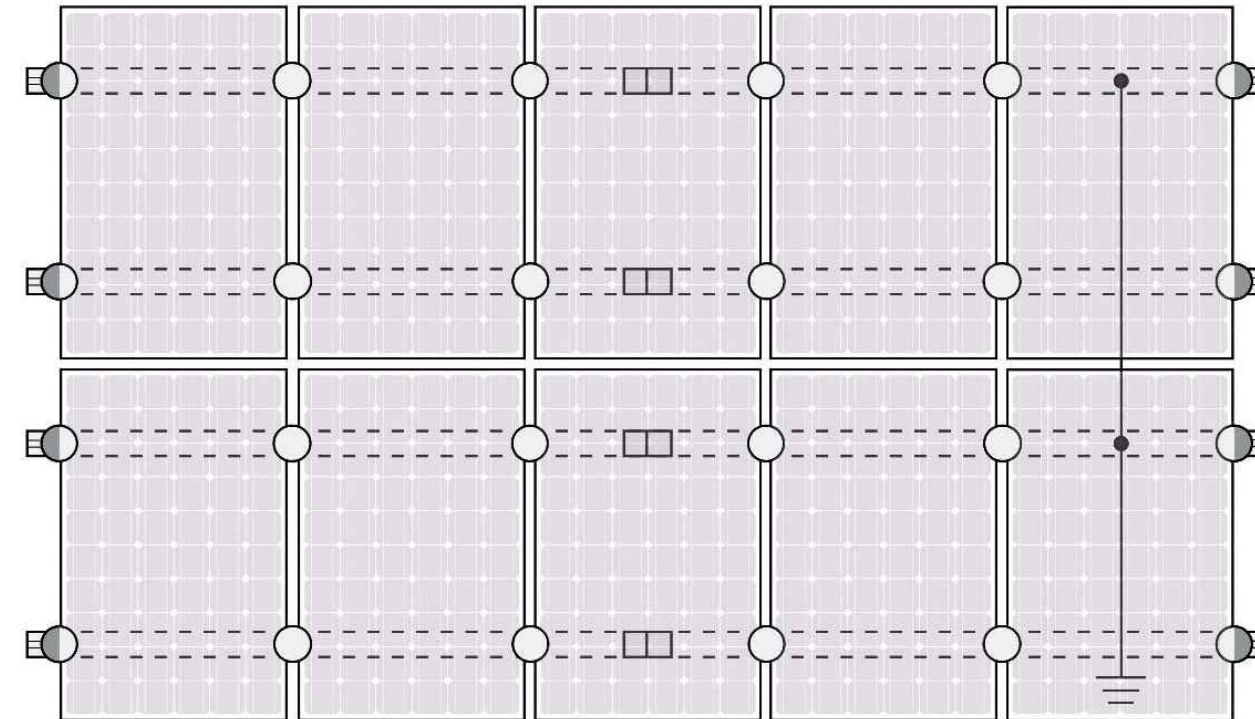


Grounding Lug
A single Grounding Lug connects an entire row of PV modules to the grounding conductor.



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



○ UFO ◐ Stopper Sleeve ● Grounding Lug □ Bonded Splice ≡ Ground Wire

⚠ 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

Cross-System Compatibility

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



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PV-12

SolaDeck

FLASHED PV ROOF-MOUNT COMBINER/ENCLOSURE

Basic Features

- Stamped Seamless Construction
- 18 Gauge Galvanized Steel
- Powder Coated Surfaces
- Flashes into the roof deck
- 3 Roof deck knockouts .5", .75", 1"
- 5 Centering dimples for entry/exit fittings or conduit
- 2 Position Ground lug installed
- Mounting Hardware Included



SolaDeck Model SD 0783



SolaDeck UL50 Type 3R Enclosures

Available Models:
 Model SD 0783 - (3" fixed Din Rail)
 Model SD 0786 - (6" slotted Din Rail)



SolaDeck UL 1741 Combiner/Enclosures

Models SD 0783-41 and SD 0786-41 are labeled and ETL listed UL STD 1741 according to the UL STD 1741 for photovoltaic combiner enclosures.
 Max Rated - 600VDC, 120AMPS

Model SD 0783-41 3" Fixed Din Rail fastened using Norlock System

****Typical System Configuration**
 4- Din Rail Mounted Fuse Holders 600VDC 30 AMP
 1- Power Distribution Block 600VDC 175AMP
 1- Bus Bar with UL lug

Model SD 0786-41 6" Slotted Din Rail fastened using steel studs

****Typical System Configuration**
 4- Din Rail Mounted Fuse Holders 600VDC 30 AMP
 4- Din Rail Mounted Terminal Blocks
 Bus Bars with UL lug

**Fuse holders and terminal blocks added in the field must be UL listed or recognized and meet 600 VDC 30 AMP 110C for fuse holders, 600V 50 AMP 90C for rail mounted terminal blocks and 600 V 175 AMP 90C for Power Distribution Blocks. Use Copper Wire Conductors.



Cover is trimmed to allow conduit or fittings, base is center dimpled for fitting locations.



Model SD 0783-41, wired with Din Rail mounted fuse holders, bus bar and power distribution block.



Model SD 0786-41, wired with Din Rail mounted fuse holders, terminal blocks and bus bars.

RSTC Enterprises, Inc • 2219 Heimstead Road • Eau Claire, WI 54703
 For product information call 1(866) 367-7782



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 SPRING LAKE, NC 28390

DC SIZE:10.220kW
 AC SIZE:10.000kW

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ESR

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 EQUIPMENT
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ANSI B
 11" X 17"

SHEET NUMBER

PV-13