

PROJECT DESCRIPTION:

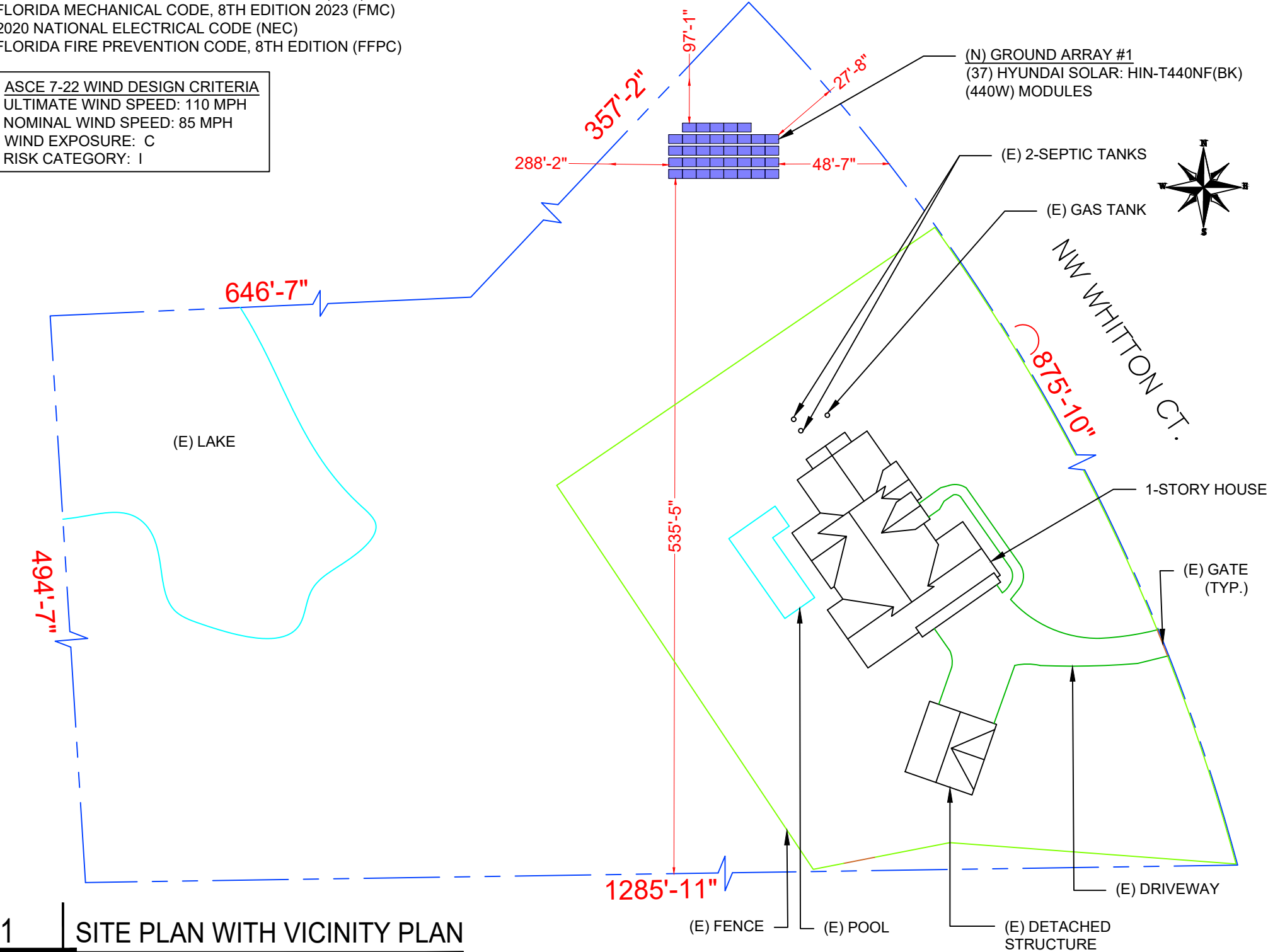
37 x 440 HYUNDAI SOLAR: HIN-T440NF(BK) (440W) MODULES
GROUND MOUNTED SOLAR PHOTOVOLTAIC MODULES

DC SYSTEM SIZE: 16.280 kW DC STC
AC SYSTEM SIZE: 15.200 kW AC

EQUIPMENT SUMMARY
37 HYUNDAI SOLAR: HIN-T440NF(BK) (440W) MODULES
02 TESLA 1538000-XX-Y (7.6kW) INVERTERS
13 TESLA MCI-2 RAPID SHUTDOWNS (HIGH CURRENT)

GOVERNING CODES:
FLORIDA RESIDENTIAL CODE, 8TH EDITION 2023 (FRC)
FLORIDA PLUMBING CODE, 8TH EDITION 2023 (FPC)
FLORIDA BUILDING CODE, 8TH EDITION 2023 (FBC)
FLORIDA MECHANICAL CODE, 8TH EDITION 2023 (FMC)
2020 NATIONAL ELECTRICAL CODE (NEC)
FLORIDA FIRE PREVENTION CODE, 8TH EDITION (FFPC)

ASCE 7-22 WIND DESIGN CRITERIA
ULTIMATE WIND SPEED: 110 MPH
NOMINAL WIND SPEED: 85 MPH
WIND EXPOSURE: C
RISK CATEGORY: I

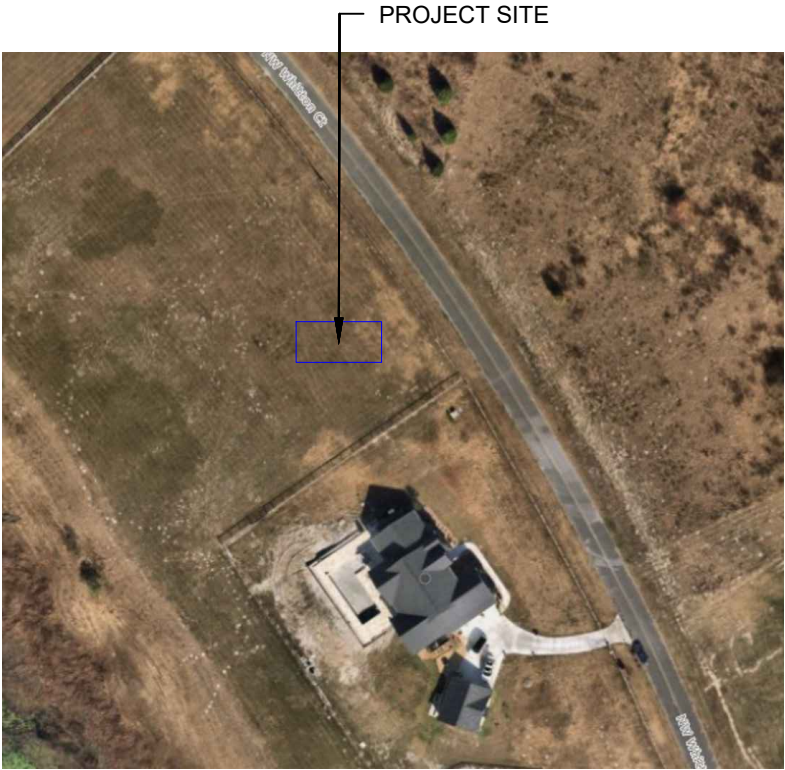


1 SITE PLAN WITH VICINITY PLAN

A-00 SCALE: 1"=50'-0"

SHEET INDEX	
A-00	SITE PLAN WITH VICINITY PLAN
S-01	GROUND PLAN & MODULES
S-02	MOUNTING DETAIL
E-01	ELECTRICAL SITE PLAN & BOM
E-02	ELECTRICAL LINE DIAGRAM
E-03	WIRING CALCULATIONS
E-04	SYSTEM LABELING
DS-01	MODULE DATA SHEET
DS-02	INVERTER DATA SHEET
DS-03	INVERTER & RSD DATA SHEET
DS-04	BALLAST DATASHEET
DS-05	BALLAST REPORT
DS-06	BALLAST REPORT

DISCLAIMER:
THE SET OF PLANS FOR THIS PROJECT IS INTENDED FOR DESIGNING THE PROJECT IN COMPLIANCE WITH APPLICABLE BUILDING CODES. THIS DOES NOT EXPRESS OR IMPLY ANY PERFORMANCE GUARANTEE OF ANY KIND. THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING AND APPROVING THE LAYOUT WITH THE END USER PRIOR TO INSTALLATION.
ALL DIMENSIONS AND CONDITIONS SHOWN IN THE PLANS ARE BASED ON THE BEST AVAILABLE INFORMATION. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL SITE CONDITIONS IN THE FIELD PRIOR TO INSTALLATION AND ACCEPTS FULL RESPONSIBILITY.



2 HOUSE PHOTO

A-00 SCALE: NTS



3 VICINITY MAP

A-00 SCALE: NTS

PPM.SOLAR

POWER PRODUCTION
MANAGEMENT INC
625 NW 8TH AVE.,
GAINESVILLE, FL 32601

REVISIONS		
DESCRIPTION	DATE	REV
DATE: 09/16/2026		

PROJECT NAME
CALIENDO RESIDENCE
260 NW WHITTON CT.,
LAKE CITY, FL 32055

SHEET NAME
SITE PLAN &
VICINITY MAP

SHEET SIZE
ANSI B
11" X 17"

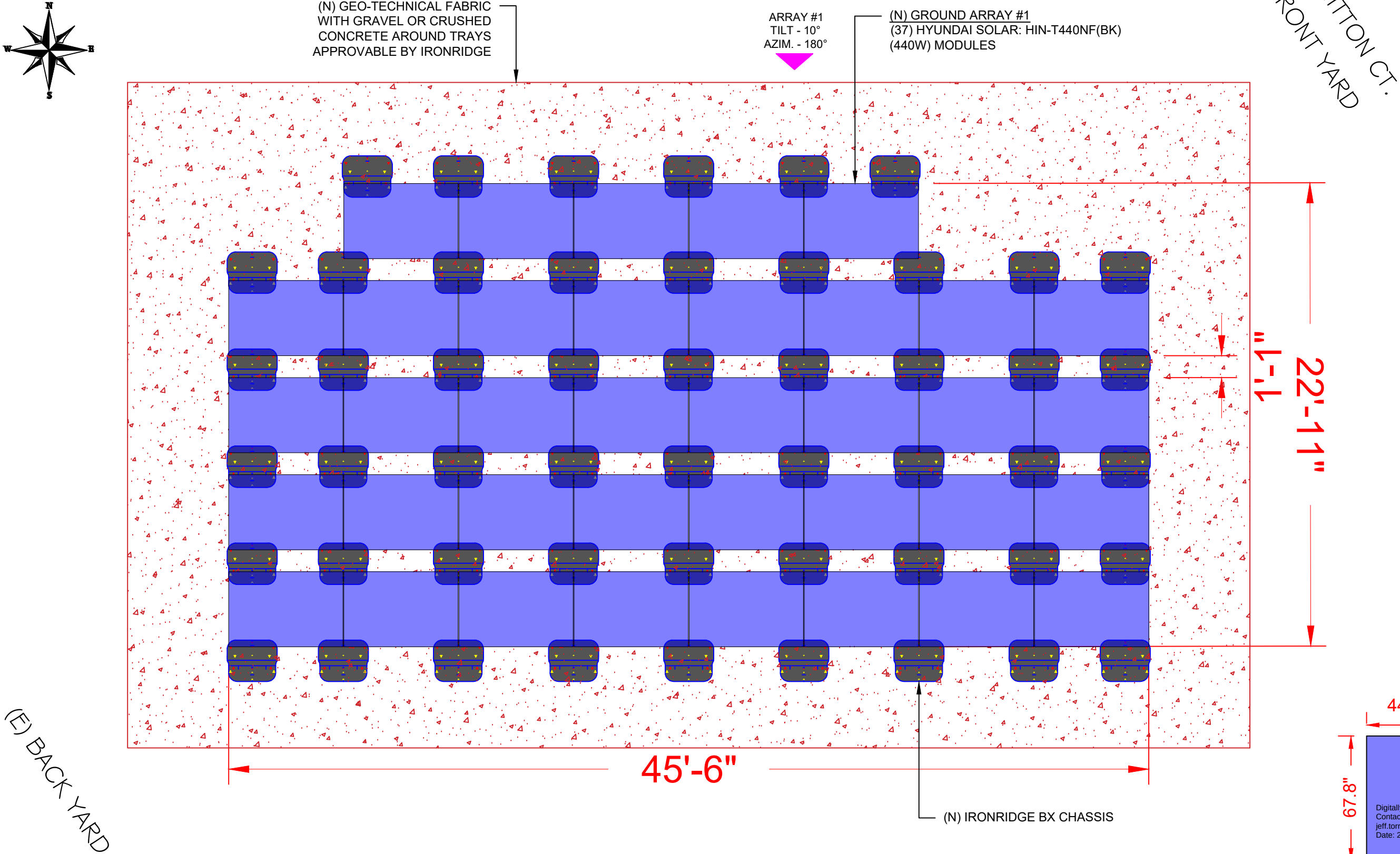
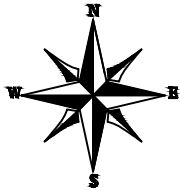
SHEET NUMBER
A-00

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MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 37 MODULES
MODULE TYPE = HYUNDAI SOLAR: HIN-T440NF(BK) (440W) MODULES
WEIGHT = 50.01 LBS / 24.5 KG.
MODULE DIMENSIONS = 67.8" x 44.6" = 21.00 SF



(E) BACK YARD

1 GROUND PLAN & MODULES

S-01 SCALE: 1"=5'-0"



POWER PRODUCTION
MANAGEMENT INC
625 NW 8TH AVE.,
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PROJECT NAME

CALIENDO RESIDENCE

260 NW WHITTON CT.,
LAKE CITY, FL 32055

SHEET NAME

GROUND PLAN & MODULES

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

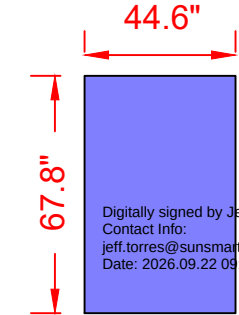
S-01

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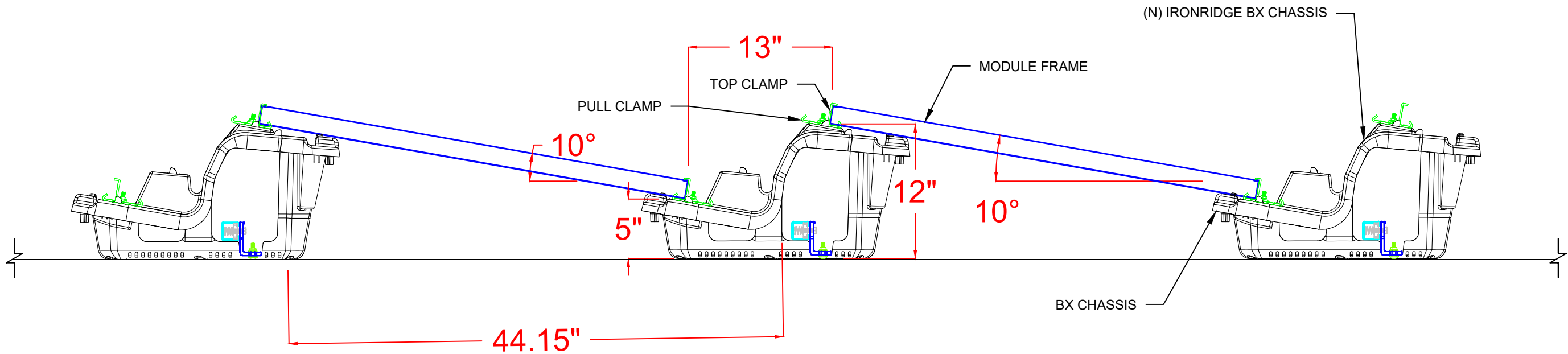
Digitally signed by Jeffrey A Torres
Contact Info:
jeff.torres@sunsmaengineering.com
Date: 2026.09.22 09:47:07-04'00'

JEFFREY A. TORRES
"LICENSE"
No. 80379
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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HYUNDAI SOLAR:
HIN-T440NF(BK)
(440W) MODULE



PPM.SOLAR

POWER PRODUCTION
MANAGEMENT INC
625 NW 8TH AVE.,
GAINESVILLE, FL 32601

REVISIONS		
DESCRIPTION	DATE	REV
DATE: 09/16/2026		

PROJECT NAME

CALIENDO RESIDENCE

260 NW WHITTON CT.,
LAKE CITY, FL 32055

SHEET NAME

MOUNTING
DETAIL

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

S-02

Signature with Seal

JEFFREY A. TORRES

FLORIDA

PROFESSIONAL ENGINEER

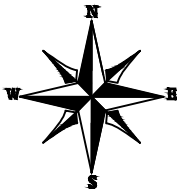
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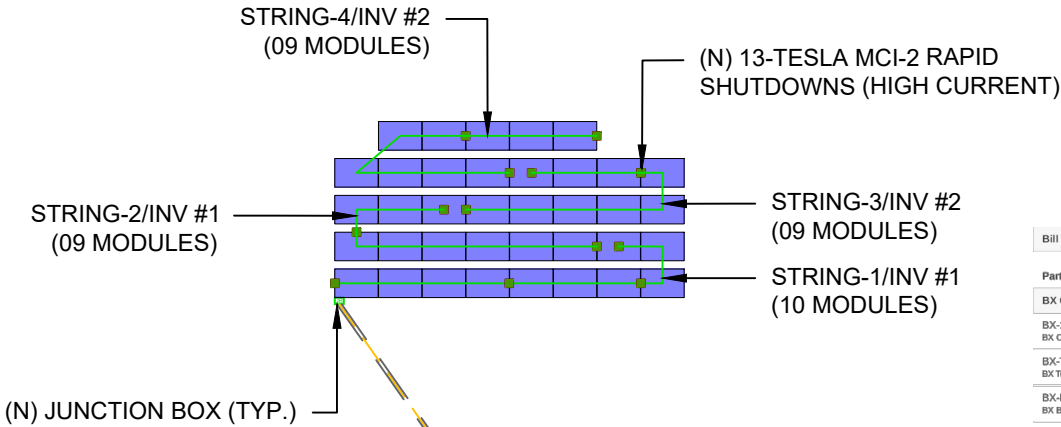
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Date: 2026.09.22 09:47:07-04'00'

DC SYSTEM SIZE: 16.280 kW DC STC
AC SYSTEM SIZE: 15.200 kW AC
(37) HYUNDAI SOLAR: HIN-T440NF(BK) (440W) MODULES

(03) STRINGS OF 09 MODULES &
(01) STRING OF 10 MODULES

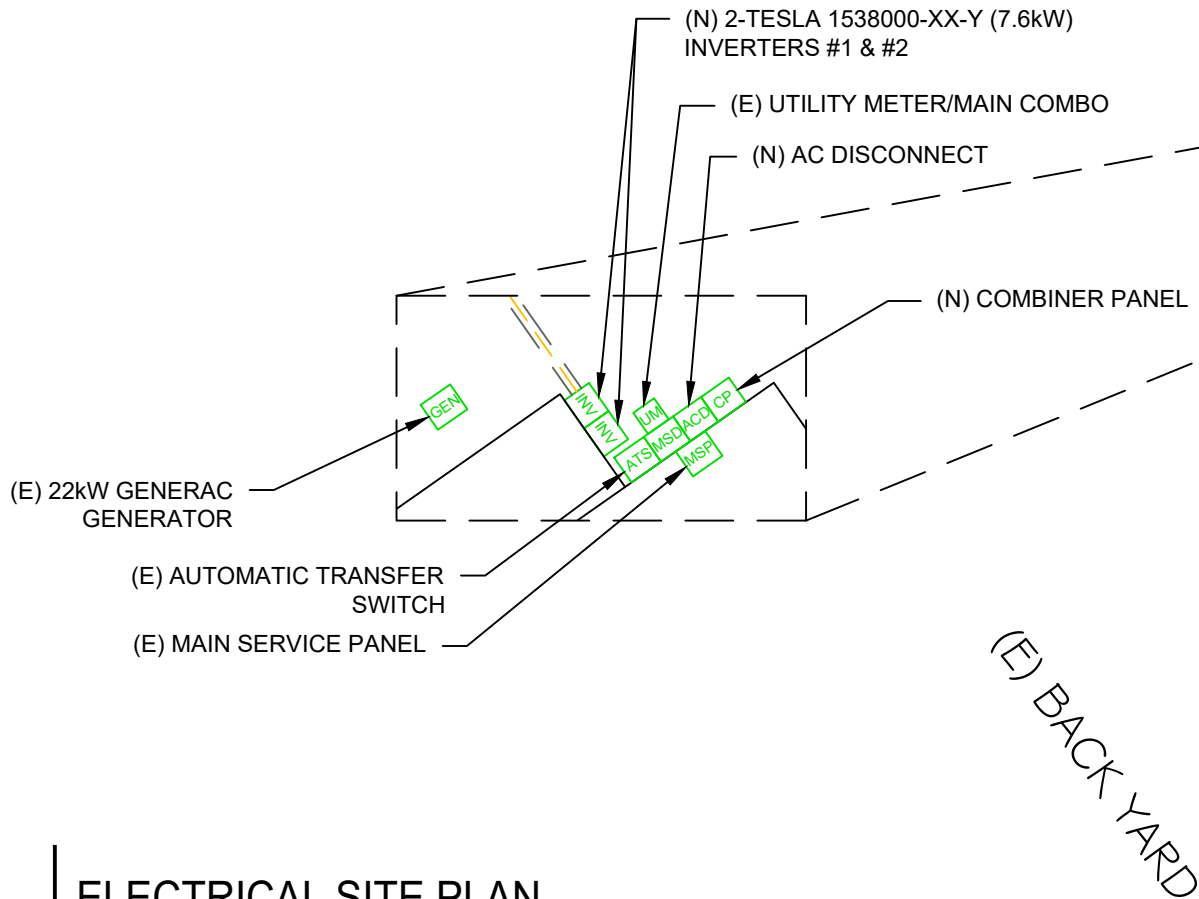


ELECTRICAL CERTIFICATION STATEMENT:
THE SUBJECT PV SYSTEM HAS BEEN DESIGNED TO MEET THE REQUIREMENTS OF THE 2020 NEC AND/OR THOSE SET FORTH BY THE FSEC CERTIFICATION, INCLUDING (AS APPLICABLE): THE MAXIMUM NUMBER OF MODULE STRINGS, THE MAXIMUM NUMBER OF MODULES PER STRING, MAXIMUM OUTPUT, MODULE MANUFACTURER AND MODEL NUMBER, AND INVERTER MANUFACTURER AND MODEL NUMBER. HB1021, WHICH AMENDED F.S. 377.705 IN 2017, REMOVED THE REQUIREMENT FOR DESIGNERS TO HAVE THEIR SYSTEM DESIGNS CERTIFIED BY FSEC. THE LANGUAGE:
"... UNLESS OTHERWISE CERTIFIED BY AN ENGINEER LICENSED PURSUANT TO CHAPTER 471 USING THE STANDARDS CONTAINED IN THE MOST RECENT VERSION OF THE FLORIDA BUILDING CODE," ALLOWS LICENSED ENGINEERS TO DESIGN PV SYSTEMS INDEPENDENTLY, AS THEY DO IN ALL OTHER TRADES.



Bill of Materials		
Part	Spares	Qty
BX Components		
BX-10D-P1 BX Chassis 10 deg	0	51
BX-TCL-30MM-M1 BX Top Clamp, 30mm, Mill	0	166
BX-BCL-M1 BX Bottom Clamp w/ Hardware	0	166
BX-RB39-M1 3/8" Row Bonding Jumper	0	4
PV-LUG-02-A1 PV Module Grounding Lug	0	1
BX-MB8-M1 8" Module Bonding Jumper	0	32
BX-CT-EC-P1 Cable Tie And Edge Clip	0	37
BX-CT-UV-P1 Black Cable Tie With UV	0	19

BILL OF MATERIALS		
EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	37	HYUNDAI SOLAR: HIN-T440NF(BK) (440W) MODULES
INVERTER	02	TESLA 1538000-XX-Y (7.6kW) INVERTERS
JUNCTION BOX	2	JUNCTION BOX 600V, NEMA 3R UL LISTED
RAPID SHUTDOWN	13	TESLA MCI-2 RAPID SHUTDOWNS (HIGH CURRENT)
AC DISCONNECT	1	100A RATED FUSED AC DISCONNECT WITH 80A FUSES
COMBINER PANEL	1	100A RATED COMBINER PANEL
BREAKER	2	40A/2P BREAKER



LEGEND	
GEN	- GENERATOR
ATS	- AUTOMATIC TRANSFER SWITCH
CP	- COMBINER PANEL
MSP	- MAIN SERVICE PANEL
INV	- INVERTER
UM	- UTILITY METER/MAIN COMBO
MSD	- AC DISCONNECT
ACD	- AC DISCONNECT
JB	- JUNCTION BOX
■	- RAPID SHUTDOWN
○ □	- ROOF OBSTRUCTION
===	- TRENCH
---	- CONDUIT



POWER PRODUCTION
MANAGEMENT INC
625 NW 8TH AVE.,
GAINESVILLE, FL 32601

REVISIONS

DESCRIPTION	DATE	REV

DATE: 09/16/2026

PROJECT NAME

CALIENDO RESIDENCE

260 NW WHITTON CT.,
LAKE CITY, FL 32055

SHEET NAME

ELECTRICAL
SITE PLAN & BOM

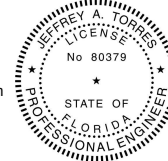
SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

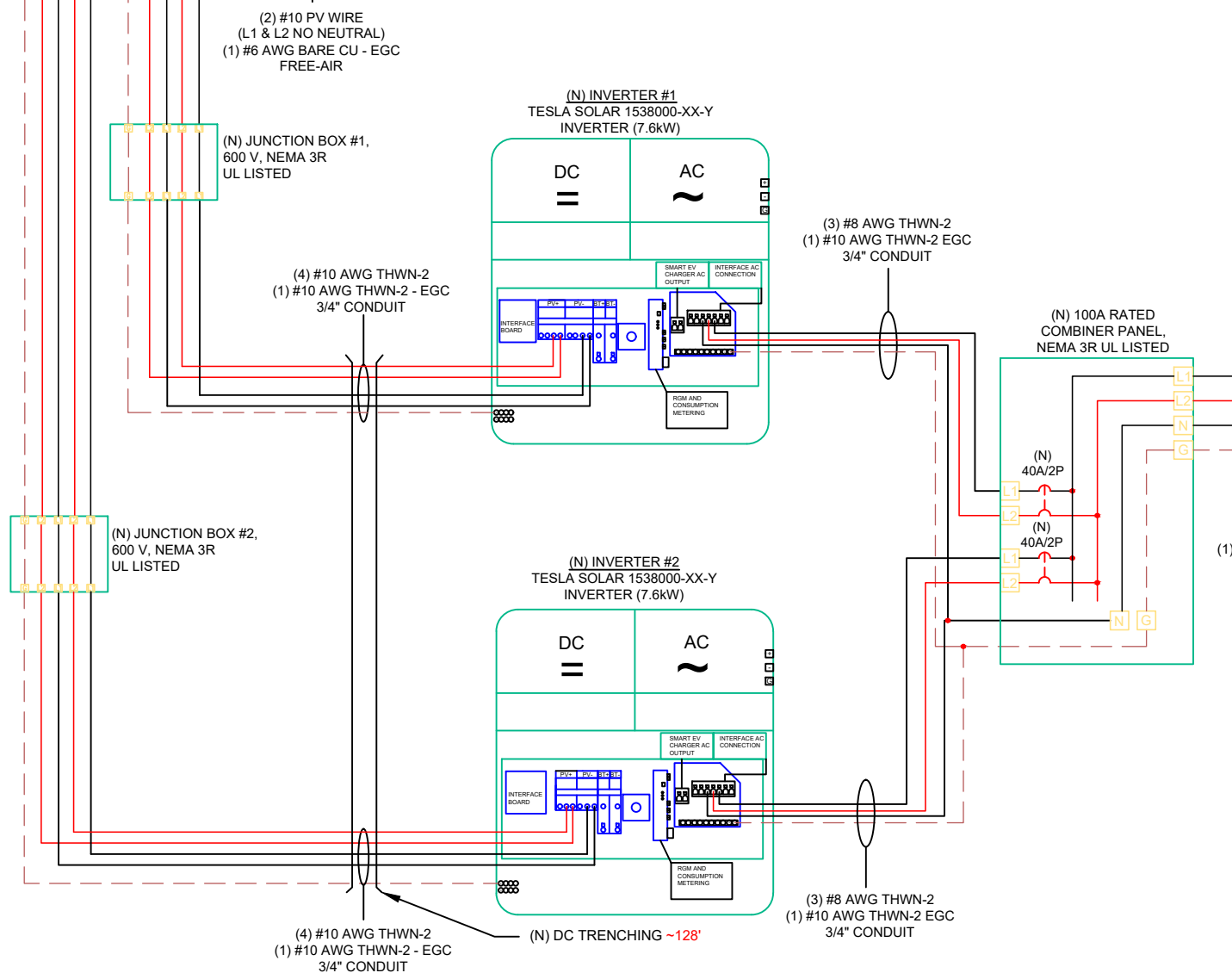
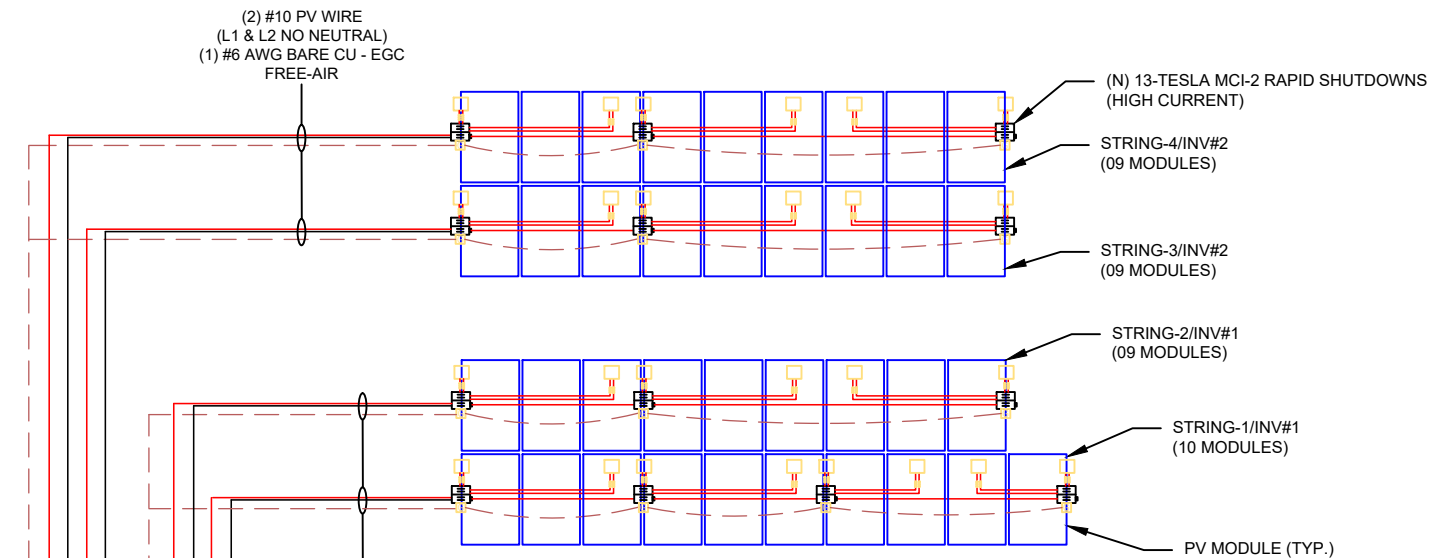
E-01

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Date: 2026.09.22 09:47:08 -0400

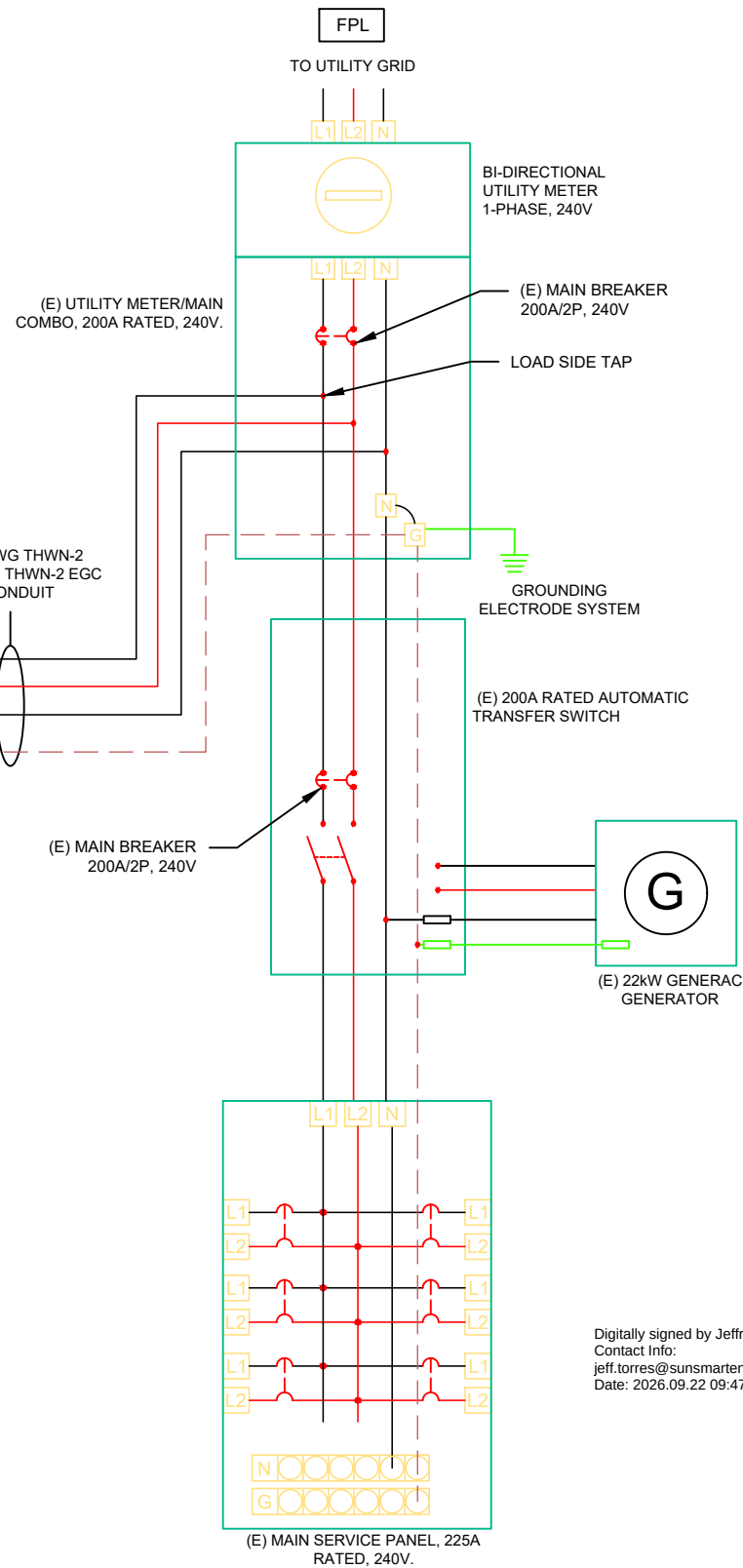


(N) UTILITY ACCESSIBLE
AC DISCONNECT
240V, 100AMP
NEMA 3R, UL LISTED,
VISIBLE, LABELED, LOCKABLE
AND FUSIBLE WITH 80A FUSES

NOTE: THE SOLAR ONLY DISCONNECT
SHALL BE INSTALLED NEXT TO THE
POWER METER, IN DIRECT LINE OF
SIGHT OF THE FPL METER, AND
ACCESSIBLE 24/7 BY FPL PERSONNEL

DC SYSTEM SIZE: 16.280 kW DC STC
AC SYSTEM SIZE: 15.200 kW AC
(37) HYUNDAI SOLAR: HIN-T440NF(BK) (440W) MODULES

(03) STRINGS OF 09 MODULES &
(01) STRING OF 10 MODULES



1 ELECTRICAL LINE DIAGRAM

E-02

SCALE: NTS



**POWER PRODUCTION
MANAGEMENT INC**
625 NW 8TH AVE.,
GAINESVILLE, FL 32601

REVISIONS		
DESCRIPTION	DATE	REV
DATE: 09/16/2026		

PROJECT NAME

CALIENDO RESIDENCE

260 NW WHITTON CT.,
LAKE CITY, FL 32055

SHEET NAME
**ELECTRICAL
LINE DIAGRAM**

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

SHEET NUMBER
E-02

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Date: 2026.09.22 09:47:08-04'00'

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	HYUNDAI SOLAR: HIN-T440NF(BK) (440W) MODULES
VMP	32.3V
IMP	13.63A
VOC	38.8V
ISC	14.39A
MODULE DIMENSION	67.8"L x 44.6"W x 1.2"D (In Inches)

INVERTER #1 & #2 SPECIFICATIONS	
MANUFACTURER / MODEL #	TESLA 1538000-XX-Y (7.6kW) INVERTERS
NOMINAL AC POWER	7600W
NOMINAL OUTPUT VOLTAGE	240VAC
NOMINAL OUTPUT CURRENT	32A

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-5°
AMBIENT TEMP (HIGH TEMP 2%)	30°
CONDUIT MINIMUM HEIGHT FROM ROOF	0.5"
CONDUCTOR TEMPERATURE RATING	90°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.25%/K

DC CONDUCTOR AMPACITY CALCULATIONS:
FROM ARRAY TO JUNCTION BOX #1 & #2

EXPECTED WIRE TEMP (In Celsius)	30°
TEMP. CORRECTION PER TABLE (310.15)(B)(1)	1.00
NO. OF CURRENT CARRYING CONDUCTORS	2
CONDUIT FILL CORRECTION PER NEC 310.15(C)(1)	1.00
CIRCUIT CONDUCTOR SIZE	10AWG
CIRCUIT CONDUCTOR AMPACITY	35A
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A) & (B)	17.99A
1.25 x ISC OF MODULE	
DERATED CIRCUIT CONDUCTOR AMPACITY	40.00A
Result should be greater than (17.99A)	

ELECTRICAL NOTES

- 1.) ALL EQUIPMENT SHALL BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- 2.) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90°C WET ENVIRONMENT.
- 3.) WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
- 4.) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- 5.) DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEM. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO MEET APPLICABLE CODES AND STANDARDS.
- 6.) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- 7.) ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND ACCESSIBLE.
- 8.) INSTALL MODULE AND RACKING GROUNDING HARDWARE PER MANUFACTURER'S INSTRUCTION.

DC CONDUCTOR AMPACITY CALCULATIONS:
FROM JUNCTION BOX #1 & #2 TO INVERTER #1 & #2

EXPECTED WIRE TEMP (In Celsius)	30°
TEMP. CORRECTION PER TABLE (310.15)(B)(1)	1.00
NO. OF CURRENT CARRYING CONDUCTORS	4
CONDUIT FILL CORRECTION PER NEC 310.15(C)(1)	0.80
CIRCUIT CONDUCTOR SIZE	10AWG
CIRCUIT CONDUCTOR AMPACITY	35A
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A) & (B)	17.99A
1.25 x ISC OF MODULE	
DERATED CIRCUIT CONDUCTOR AMPACITY	32.00A
Result should be greater than (17.99A)	

AC CONDUCTOR AMPACITY CALCULATIONS:
FROM INVERTER #1 & #2 TO COMBINER PANEL

EXPECTED WIRE TEMP (In Celsius)	30°
TEMP. CORRECTION PER TABLE (310.15)(B)(1)	1.00
NO. OF CURRENT CARRYING CONDUCTORS	3
CONDUIT FILL CORRECTION PER NEC 310.15(C)(1)	1.00
CIRCUIT CONDUCTOR SIZE	8AWG
CIRCUIT CONDUCTOR AMPACITY	50A
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A) & (B)	40.00A
1.25 x INVERTER OUTPUT CURRENT	
DERATED CIRCUIT CONDUCTOR AMPACITY	55.00A
Result should be greater than (40.00A)	

AC CONDUCTOR AMPACITY CALCULATIONS:
FROM COMBINER PANEL TO ACD

EXPECTED WIRE TEMP (In Celsius)	30°
TEMP. CORRECTION PER TABLE (310.15)(B)(1)	1.00
NO. OF CURRENT CARRYING CONDUCTORS	3
CONDUIT FILL CORRECTION PER NEC 310.15(C)(1)	1.00
CIRCUIT CONDUCTOR SIZE	4AWG
CIRCUIT CONDUCTOR AMPACITY	85A
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A) & (B)	80.00A
1.25 X INVERTER OUTPUT CURRENT X NO. OF INVERTERS	
DERATED CIRCUIT CONDUCTOR AMPACITY	95.00A
Result should be greater than (80.00A)	

AC CONDUCTOR AMPACITY CALCULATIONS:
FROM ACD TO POI

EXPECTED WIRE TEMP (In Celsius)	30°
TEMP. CORRECTION PER TABLE (310.15)(B)(1)	1.00
NO. OF CURRENT CARRYING CONDUCTORS	3
CONDUIT FILL CORRECTION PER NEC 310.15(C)(1)	1.00
CIRCUIT CONDUCTOR SIZE	4AWG
CIRCUIT CONDUCTOR AMPACITY	85A
REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A) & (B)	80.00A
1.25 X INVERTER OUTPUT CURRENT X NO. OF INVERTERS	
DERATED CIRCUIT CONDUCTOR AMPACITY	95.00A
Result should be greater than (80.00A)	



POWER PRODUCTION
MANAGEMENT INC
625 NW 8TH AVE.,
GAINESVILLE, FL 32601

REVISIONS		
DESCRIPTION	DATE	REV
DATE: 09/16/2026		

PROJECT NAME

CALIENDO RESIDENCE

260 NW WHITTON CT.,
LAKE CITY, FL 32055

SHEET NAME
WIRING
CALCULATIONS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-03

Signature with Seal

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Contact Info:
jeff.torres@sunsmartengineering.com
Date: 2026.09.22 09:47:08-04'00'

PHOTOVOLTAIC
240V
AC DISCONNECT

LABEL LOCATION:
AC DISCONNECT
CODE REF: NEC 690.13(B), 690.15, 705.20

MAXIMUM DC VOLTAGE
600V
OF PV SYSTEM

CODE REF: NEC 690.53
Roll: 596-01001 / 10-Pk: 596-01009

SOLAR PV DC CIRCUIT

LABEL LOCATION:
EMT/CONDUIT RACEWAY
SOLADECK/JUNCTION BOX
CODE REF: NEC 690.31(D)(2)
Roll: 596-00998 / 10-Pk: 596-01006

PHOTOVOLTAIC
POWER SOURCE

LABEL LOCATION:
EMT/CONDUIT RACEWAY
SOLADECK/JUNCTION BOX
CODE REF : NEC 690.31(D)(2) / Roll: 596-00999 / 10-Pk: 596-01007

⚠

WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON BOTH LINE AND
LOAD SIDES MAY BE ENERGIZED
IN THE OPEN POSITION
NEC 690.13(B) & NEC 690.15(C)

LABEL LOCATION:
WHERE ALL TERMINALS OF THE DISCONNECTING MEANS
MAY BE ENERGIZED IN THE OPEN POSITION, A WARNING
SIGN SHALL BE MOUNTED ON OR ADJACENT TO THE
DISCONNECTING MEANS.
NEC 690.13(B) & NEC 690.15(C)

⚠

WARNING

THIS EQUIPMENT FED BY MULTIPLE SOURCES.
TOTAL RATING OF ALL OVERCURRENT DEVICES,
EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE,
SHALL NOT EXCEED AMPACITY OF BUSBAR.

LABEL LOCATION:
POINT OF INTERCONNECTION
CODE REF: NEC 705.12(B)(3)(3)

MAIN PHOTOVOLTAIC
SYSTEM DISCONNECT

LABEL LOCATION:
MAIN SERVICE DISCONNECT
CODE REF: NEC 690.13(B)
Roll: 596-00243 / 10-Pk: 596-00675

RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM

LABEL LOCATION:
AC DISCONNECT
CODE REF: NEC 690.12(D)(2)
Roll: 596-01003 / 10-Pk: 596-01040

PHOTOVOLTAIC AC DISCONNECT

NOMINAL OPERATING AC VOLTAGE

240 V

RATED AC OUTPUT CURRENT

64 A

LABEL LOCATION:
AC DISCONNECT
CODE REF: NEC 690.54

EMERGENCY CONTACT
PPM SOLAR
(352) 309-7727

GENERATION SYSTEM AC DISCONNECT
MAXIMUM AC OPERATING CURRENT 64.0 AMPS
MAXIMUM AC OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION:
AC DISCONNECT

EMERGENCY
DISCONNECT
SERVICE
DISCONNECT

LABEL LOCATION :
UTILITY METER/MAIN COMBO

PHOTOVOLTAIC SYSTEM
DC DISCONNECT

OPERATING VOLTAGE

480

VDC

MPPT OPERATING CURRENT

13

A

MAX SYSTEM VOLTAGE

600

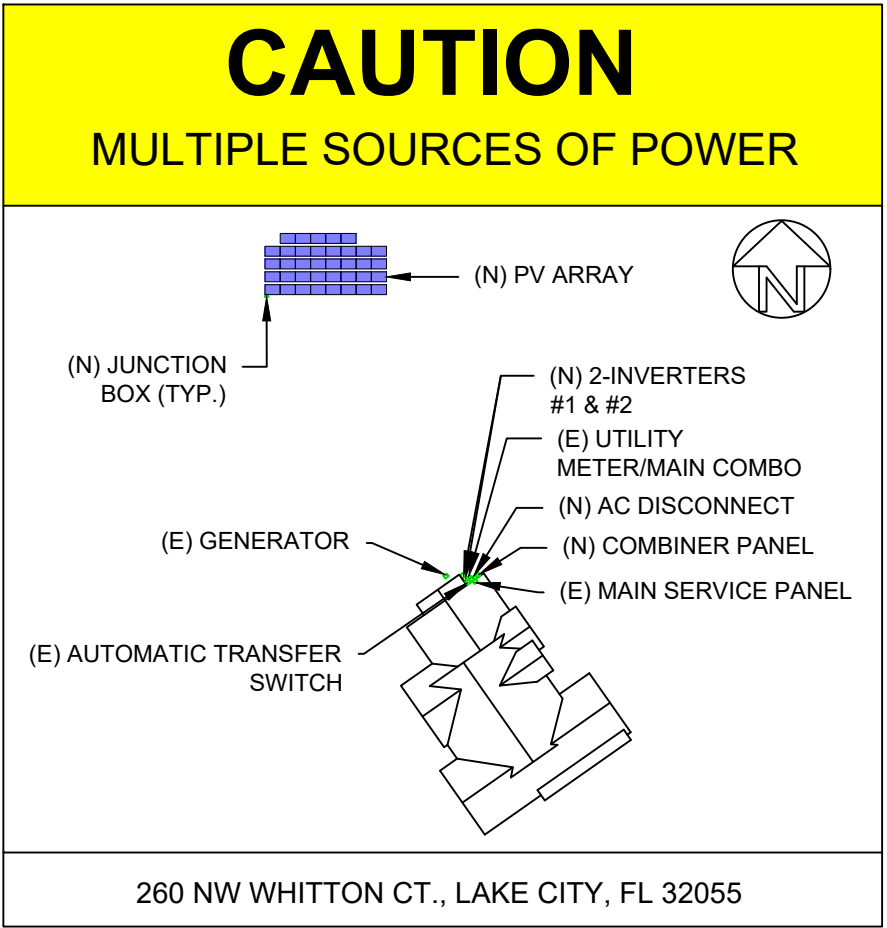
VDC

SHORT CIRCUIT CURRENT

17

A

LABEL LOCATION:
DC DISCONNECT, INVERTER #1 & #2
FOR MAKING DC BACKUP SYSTEM
/ROLL: 596-00240



LABEL LOCATION:
MAIN SERVICE DISCONNECT / MAIN DISTRIBUTION PANEL, PV
DISCONNECT LOCATION NO MORE THAN 1 M (3 FT) FROM THE SERVICE
DISCONNECT PER CODE NEC 705.10 & NEC 710.10
ROLL: 558-00358 OR 558-00346

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.

SOLAR
ELECTRIC PV
PANELS

Digitally signed by Jeffrey A Torres
Contact Info:
jeff.torres@sunsmartengineering.com
Date: 2026.09.22 09:47:09-0400

LABEL LOCATION:
ON OR NO MORE THAN 1 M (3 FT) FROM THE SERVICE DISCONNECTING
MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED.
PER CODE: IFC 605.11.3.1(1) & 690.12(D)
Roll: 596-00885 / 10-Pk: 596-00888

POWER PRODUCTION
MANAGEMENT INC
625 NW 8TH AVE.,
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PROJECT NAME

CALIENDO RESIDENCE

260 NW WHITTON CT.,
LAKE CITY, FL 32055

SHEET NAME
SYSTEM
LABELING

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
E-04

Signature with Seal

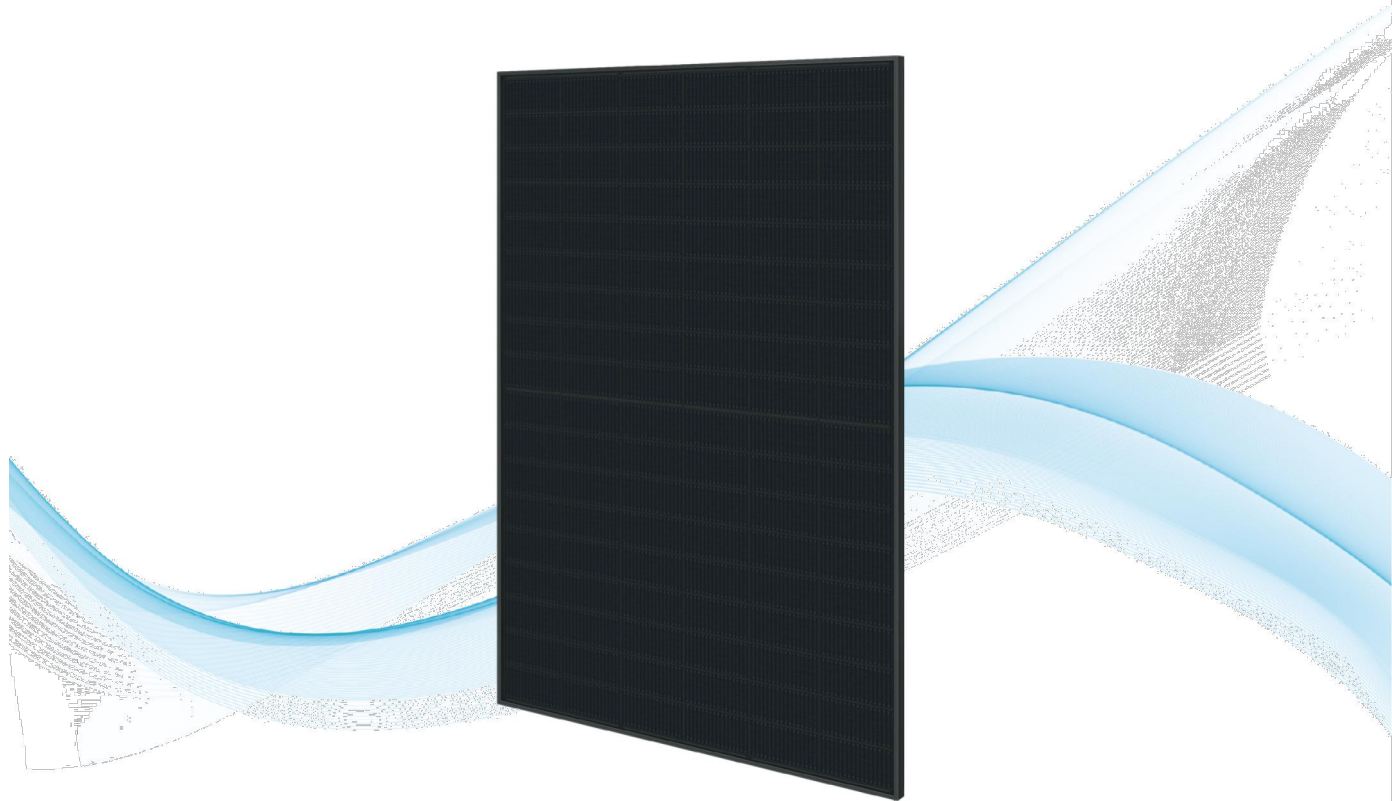
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HD HYUNDAI SOLAR MODULE

NF(BK) Series

Premium N-Type TOPCon Module

HiN-T430NF(BK) | HiN-T435NF(BK) | HiN-T440NF(BK)



22.53%
High Efficiency



High-End
TOPCon
Technology



Higher
Bifaciality



Long-Term
Reliability



Compatible
with Carport
Applications



For Residential
(Full Black Design)

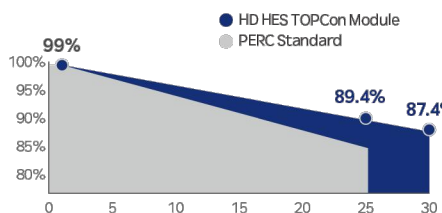
HD Hyundai's Warranty Provisions

25
YEARS

- 25-Year Product Warranty
- Materials and workmanship

30
YEARS

- 30-Year Performance Warranty
- First year degradation: 1%
- Linear warranty after initial year: with 0.4%p annual degradation, 87.4% is guaranteed up to 30years



*Refer to HD HES standard warranty for details.

Certification



- ISO 9001 : Quality management systems
- ISO 14001 : Environmental management systems
- ISO 45001 : Occupational health and safety management systems
- UL 61730: Photovoltaic (PV) module safety qualification (CSA)
- IEC 61701: Salt mist corrosion testing
- IEC 62716: Ammonia corrosion testing
- IEC 62804: Potential Induced Degradation (PID) testing
- IEC 60068-2-68: Sand and dust testing for environmental durability

Electrical Characteristics

HiN-TxxxNF (BK)		HiN-T430NF (BK)		HiN-T435NF (BK)		HiN-T440NF (BK)	
Item	Unit	BNPI		BNPI		BNPI	
Nominal output (Pmax)	W	430	476	435	482	440	488
Open circuit voltage (Voc)	V	38.4	38.4	38.6	38.6	38.8	38.8
Short circuit current (Isc)	A	14.25	15.79	14.32	15.87	14.39	15.94
Voltage at Pmax (Vmpp)	V	31.9	31.9	32.1	32.1	32.3	32.3
Current at Pmax (Impp)	A	13.48	14.94	13.56	15.01	13.63	15.10
Module efficiency	%	22.02	24.40	22.28	24.68	22.53	25.00
Power Class Sorting	W	0 ~ +5					
Temperature coefficient of Pmax	%/K	-0.30					
Temperature coefficient of Voc	%/K	-0.25					
Temperature coefficient of Isc	%/K	0.046					
Bifaciality	%	80%±10%					

*STC : Irradiance 1,000 W/m², cell temperature 25°C, AM=1.5 / Test uncertainty for Pmax ±3%; Voc ±3%; Isc ±3%
**The electrical properties of BNPI are measured under the irradiance corresponding to 1000 W/m² on the module front and 135 W/m² on the module rear.

Additional Power Gain from rear side					
Pmpp gain	Pmpp[W]	Vmpp[V]	Impp[A]	Voc[V]	Isc[A]
5%	458	32.30	14.18	38.80	14.97
15%	493	32.30	15.27	38.80	16.12
25%	528	32.40	16.36	38.90	17.27

*Electrical characteristics with different rear power gain (reference to 440W)

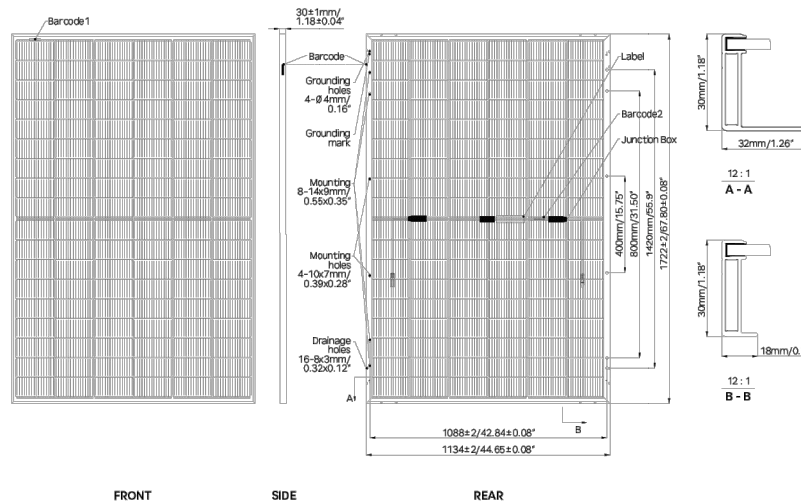
Mechanical Characteristics

Dimensions	1,722mm (L) x 1,134mm (W) x 30mm (H) (67.8in x 44.6in x 1.2in)
Weight	24.5 kg (50.0lbs)
Solar Cells	N-Type TOPCon, 108 (6x18) monocrystalline 16BB half-cut bifacial cells
Output Cables	Cable : (+)1,200mm(47.2in), (-)1,200mm(47.2in) / Customized length available Connector : Stäubli MC4 genuine Connector / Compatible, IP68
Junction Box	3-part, 3 bypass diodes, IP68 rated
Construction	Front : 2.0mm(0.08in) semi-tempered solar glass with high transmittance and anti-reflective coating Rear : 2.0mm(0.08in) semi-tempered solar glass
Frame	Anodized aluminum alloy

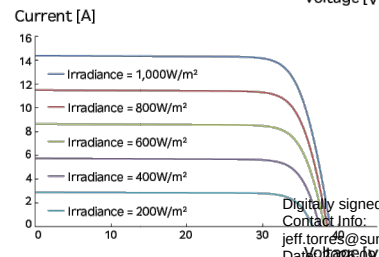
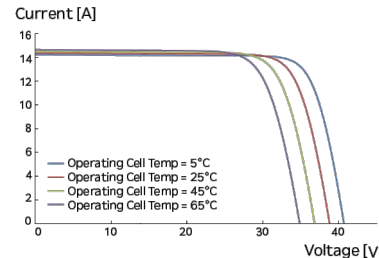
Shipping Configurations

Packing Direction	Vertical	Packing pallet weight (kg)	912
Container Size (HC)	40'	Modules Per Pallet (pcs)	36
Pallets Per Container	26	Modules Per Container (pcs)	936

Module Diagram (unit : mm)



I-V Curves (HiN-T440NF(BK))



Sales & Marketing
hes.sales@hd.com

HD Hyundai Energy Solutions reserves the right to update or modify the specifications and features listed in this datasheet without prior notice. Always check the latest version of the datasheet for accurate information. Before using the product, please refer to the Installation and Operation Manual and Warranty. We retain the right of final interpretation.

REVISIONS

DESCRIPTION	DATE	REV

DATE: 09/16/2026

PROJECT NAME

CALIENDO RESIDENCE

260 NW WHITTON CT.,
LAKE CITY, FL 32055

SHEET NAME

MODULE
DATA SHEET

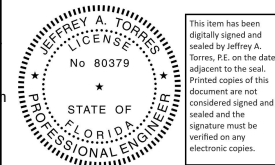
SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

DS-01

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Tesla Solar Inverter with Site Controller

Tesla Solar Inverter completes the Tesla home solar system, converting DC power from solar to AC power for home consumption. Tesla's renowned expertise in power electronics has been combined with robust safety features and a simple installation process to produce an outstanding solar inverter that is compatible with both Solar Roof and traditional solar panels. Once installed, homeowners use the Tesla mobile app to manage their solar system and monitor energy consumption, resulting in a truly unique ecosystem experience.

KEY FEATURES

- Built on Powerwall technology for exceptional efficiency and reliability
- Wi-Fi, Ethernet, and cellular connectivity with easy over-the-air updates
- Designed to integrate with Tesla Powerwall and Tesla App
- 0.5% revenue-grade metering for Solar Renewable Energy Credit (SREC) programs included



March 17, 2024

Tesla Solar Inverter Technical Specifications

Electrical Specifications: Output (AC)	Model Number	1538000-xx-y			
	Output (AC) ¹	3.8 kW	5 kW	5.7 kW	7.6 kW
	Nominal Power	3,800 W	5,000 W	5,700 W	7,600 W
	Maximum Apparent Power	3,840 VA	5,040 VA	6,000 VA	7,680 VA
	Maximum Continuous Current	16 A	21 A	24 A	32 A
	Breaker (Overcurrent Protection)	20 A	30 A	30 A	40 A
	Nominal Power Factor	1 - 0.9 (leading / lagging			
	THD (at Nominal Power)	<5%			

Electrical Specifications: Input (DC)	MPPT	4
	Input Connectors per MPPT	1-2-1-2
	Maximum Input Voltage	600 VDC
	DC Input Voltage Range	60 - 550 VDC
	DC MPPT Voltage Range	60 - 480 VDC ¹
	Maximum Current per MPPT (I _{MP})	13 A ²
	Maximum Short Circuit Current per MPPT (I _{SC})	17 A ²

¹Maximum current.
²Where the DC input current exceeds an MPPT rating, jumpers can be used to allow a single MPPT to intake additional DC current up to 26 A I_{MP} / 34 A I_{SC}.

Performance Specifications	Peak Efficiency	98.6% at 240 V
	CEC Efficiency	98.0% at 240 V
	Allowable DC/AC Ratio	1.7
	Customer Interface	Tesla Mobile App
	Internet Connectivity	Wi-Fi (2.4 GHz, 802.11 b/g/n), Ethernet, Cellular (LTE/4G) ³
	Revenue Grade Meter	Revenue Accurate (+/- 0.5%)
	AC Remote Metering Support	Wi-Fi (2.4 GHz, 802.11 b/g/n)
	Protections	Integrated arc fault circuit interrupter (AFCI), Rapid Shutdown
	Supported Grid Types	60 Hz, 240 V Split Phase
	Warranty	12.5 years

³Cellular connectivity subject to network operator service coverage and signal strength.



POWER PRODUCTION
MANAGEMENT INC
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GAINESVILLE, FL 32601

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PROJECT NAME

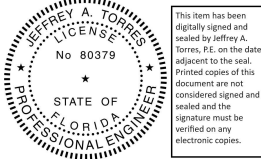
CALIENDO RESIDENCE
260 NW WHITTON CT.,
LAKE CITY, FL 32055

SHEET NAME
INVERTER
DATA SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-02

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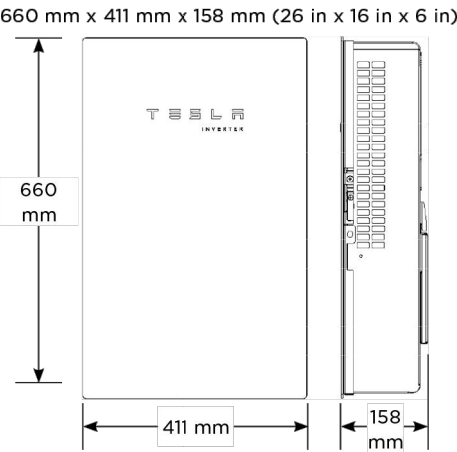
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Tesla Solar Inverter Technical Specifications

Mechanical Specifications

Dimensions



Weight 52 lb⁴
Mounting Options Wall mount (bracket)
⁴Door and bracket can be removed for a mounting weight of 37 lb.

Environmental Specifications

Operating Temperature	-30°C to 45°C (-22°F to 113°F) ⁵
Operating Humidity (RH)	Up to 100%, condensing
Storage Temperature	-30°C to 70°C (-22°F to 158°F)
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Rating	Type 3R
Ingress Rating	IP55 (Wiring compartment)
Pollution Rating	PD2 for power electronics and terminal wiring compartment, PD3 for all other components
Operating Noise @ 1 m	< 40 db(A) nominal, < 50 db(A) maximum
⁵ Performance may be de-rated to 6.2 kW at 240 V when operating at temperatures greater than 45°C.	

Compliance Information

Grid Certifications	UL 1741, UL 1741 SA, UL 1741 SB, UL 1741 PCS, IEEE 1547-2018, IEEE 1547.1
Safety Certifications	UL 1741 PVRSS, UL 1699B, UL 1998 (US), UL 3741
Emissions	EN 61000-6-3 (Residential), FCC 47CFR15.109 (a)

Solar Shutdown Device Technical Specifications

The Solar Shutdown Device is a Mid-Circuit Interrupter (MCI) and is integral to the rapid shutdown (RSD) function required for rooftop PV systems in accordance with Article 690 of the NEC. When paired with Powerwall 3, solar array shutdown is initiated by an External System Shutdown Switch or the On/Off Enable switch located on Powerwall 3. Systems not subject to rapid shutdown requirements must still install one or more MCIs for functional purposes; see the Powerwall 3 installation manual for details.

Electrical Specifications

Model	MCI-1	MCI-2	MCI-2 High Current
Nominal Input DC Current Rating (I_{MP})	13 A	13 A	15 A
Maximum Input Short Circuit Current (I_{SC})	19 A	17 A	19 A
Maximum System Voltage	600 V DC	1000 V DC ¹⁵	1000 V DC ¹⁵
Maximum Disconnect Voltage ¹⁶	600 V DC	165 V DC	165 V DC

¹⁵ Maximum System Voltage is limited by Powerwall to 600 V DC.
¹⁶ Maximum Disconnect Voltage is the maximum voltage allowed across each MCI in the open position (Rapid Shutdown Initiated). An individual MCI-2 has a voltage rating of 165V but in combination (connected in the same string) their voltage ratings are additive.

RSD Module Performance

Maximum Number of Devices per String	5
Control	Power Line Excitation
Passive State	Normally Open
Maximum Power Consumption	7 W
Warranty	25 years

Environmental Specifications

Operating Temperature	-40°C to 50°C (-40°F to 122°F)	-45°C to 70°C (-49°F to 158°F)
Storage Temperature	-30°C to 70°C (-22°F to 158°F)	-30°C to 70°C (-22°F to 158°F)
Enclosure Rating	NEMA 4X / IP65	

Mechanical Specifications

Electrical Connections	MC4 Connector	
Housing	Plastic	
Dimensions	125 x 150 x 22 mm (5 x 6 x 1 in)	173 x 45 x 22 mm (6.8 x 1.8 x 1 in)
Weight	350 g (0.77 lb)	120 g (0.26 lb)
Mounting Options	ZEP Home Run Clip M4 Screw (#10) M8 Bolt (5/16") Nail / Wood screw	Wire Clip

Compliance Information

Certifications	UL 1741 PVRSE, UL 3741, PVRSA (Photovoltaic Rapid Shutdown Array)
RSD Initiation Method	External System Shutdown Switch or Powerwall 3 Enable Switch

UL 3741 PV Hazard Control (and PVRSA) Compatibility

See [UL 3741 Application Addendum](#)

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POWER PRODUCTION
MANAGEMENT INC
625 NW 8TH AVE.,
GAINESVILLE, FL 32601

REVISIONS

DESCRIPTION	DATE	REV

DATE: 09/16/2026

PROJECT NAME

CALIENDO RESIDENCE
260 NW WHITTON CT.,
LAKE CITY, FL 32055

SHEET NAME

INVERTER & RSD
DATA SHEET

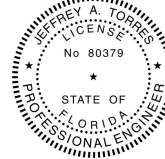
SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

DS-03

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BX System

Datasheet



Uniquely shaped for flat roofs.

IronRidge BX delivers superior power density and design flexibility to flat roof solar arrays. Made of a glass-reinforced composite, the BX Chassis is engineered for extreme structural loading, yet is also shaped to be roof-friendly and easy to install.

Certified BX plan sets can be obtained instantly through an online Design Assistant or by contacting IronRidge Commercial Services.



Glass-Reinforced Composite

Corrosion-free and engineered for long-term structural performance.



Class A Fire Rating

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



UL 2703 Listed System

Entire system and components meet newest effective UL 2703 standard.



Commercial Services

Engineering support to optimize system design.



Design Assistant

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



25-Year Warranty

Products guaranteed to be free of impairing defects.

Chassis

5° Chassis



Ballasted mounting for 5 degree tilt angle.

- Max load spreading design
- Fully encloses ballast
- 360 degree drainage

10° Chassis



Ballasted mounting for 10 degree tilt angle.

- Max load spreading design
- Fully encloses ballast
- 360 degree drainage

Top Clamp



Combines with Bottom Clamp for top-bottom module grip.

- Secures above module
- One-tool attachment
- Mill aluminum 6000 series

Bottom Clamp

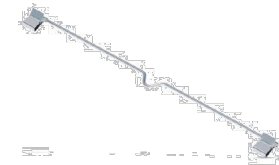


Combines with Top Clamp to up structural connection.

- Secures below module
- One-tool attachment
- Mill aluminum 6000 series

Grounding

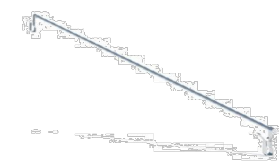
8" Mod Bonding Jumper



Bond adjacent modules in the array.

- Press-on installation
- Tin-plate copper wire
- Factory crimped connection

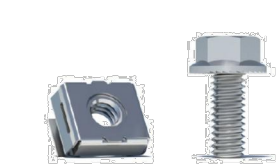
38" Row Bonding Jumper



Complete row-to-row bonding in the array.

- Press-on installation
- Tin-plate copper wire
- Factory crimped connection

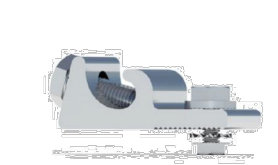
MLPE Mounting Hardware



Optional mounting hardware for MLPE devices.

- Cap screw and cage nut
- 5/16" socket install
- Stainless steel 300 series

PV Mod Grounding Lug

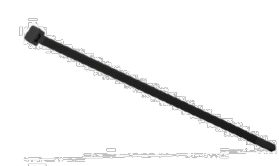


Connect arrays to equipment ground.

- Low profile
- Mounts to module frame
- One per continuous array

Accessories

Cable Tie



Complete wire management with weatherproof ties.

- UV stabilized polyamide
- 12" length, bundle of 100
- Black finish

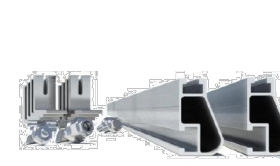
Edge Clip Cable Tie



Manage wires underneath module and Chassis flange.

- Clips to module & Chassis
- UV stabilized polyamide
- Black finish

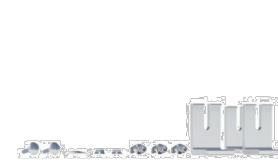
String Inverter Mount Kit



Create mounting platform for inverters.

- Chassis, XR10 rail, hdw
- Up to 4' inverter base
- Raises inverter off deck

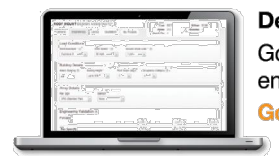
Flat Roof Attachment Kit



Add anchors to ballasted system.

- Includes hardware
- For ballast-attached hybrid
- Uses locally-sourced strut

Resources



Design Assistant

Go from rough layout to fully engineered system in minutes.

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



Chassis Display #7 Recycle Label

Like most glass-filled nylons, it is 100% recyclable—usually living on in furniture.

Find more info at [epa.gov/recycle](https://www.epa.gov/recycle)

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**POWER PRODUCTION
MANAGEMENT INC**
625 NW 8TH AVE.,
GAINESVILLE, FL 32601

REVISIONS

DESCRIPTION	DATE	REV

DATE: 09/16/2026

PROJECT NAME

CALIENDO RESIDENCE

260 NW WHITTON CT.,
LAKE CITY, FL 32055

SHEET NAME

**BALLAST
DATASHEET**

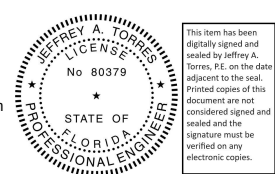
SHEET SIZE

**ANSI B
11" X 17"**

SHEET NUMBER

DS-04

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Project Details			
Name	Michael Caliendo	Date	09/17/2026
Location	260 Northwest Whitton Court, Lake City, FL 32055	Total modules	37
Module	Hyundai HIN-T440NF(BK) (30mm)	Total watts	16,280
Dimensions	67.8" x 44.85" x 1.18" (1722.0mm x 1134.0mm x 30.0mm)	ASCE code	7-22
Module weight	54.01lbs (24.5kg)		

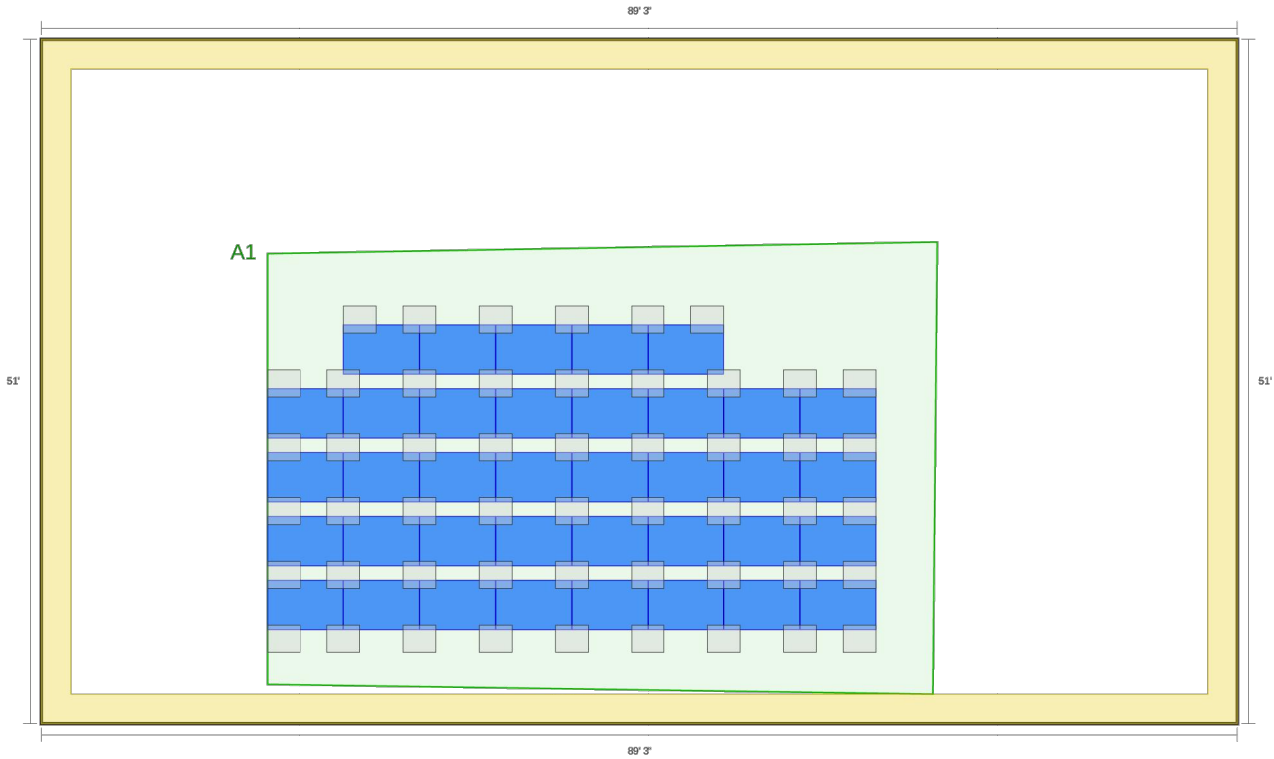


Load Conditions			
Risk category	I	Ground snow load	0 psf
Wind speed	110 mph	Wind exposure	C

Building Information			
Maximum roof plane height	10.0 ft	Least horizontal dimension	ft
Elevation	130.0 ft		

BX Parameters			
Tilt angle	10 °	Actual angle	8.57 °
Topographical factor (K _{z1})	1.00		
Block size	Half	Block weight	15.50 lbs
Maximum Blocks per Tray	8		
Spectral Acceleration (S _{DS})	0.110	Seismic Design Category	B
Ballast Relocation	Yes		
Anchor uplift strength	525.0	Anchor sliding strength	392.0
Time limit for wind engineering	25 yrs		

Project Overall



Project: Ballast and Anchors					
Module count	37	Chassis count	51	Block count	275
Wind Anchors	0	Seismic Anchors	n/a	Anchors needed	0
Block weight	4,262.50 lbs	Components weight	2,259.78 lbs	Total weight	6,522.28 lbs
Area	1,091.90 sq. ft			Ground Coverage Ratio	0.71
Avg dist dead load	5.97 psf	Max compressive load	405.89 lbs	Max chassis weight (Incl. 1 Module)	183.24 lbs

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MANAGEMENT INC**
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REVISIONS		
DESCRIPTION	DATE	REV
DATE: 09/16/2026		

PROJECT NAME

CALINDO RESIDENCE

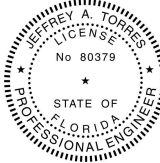
260 NW WHITTON CT.,
LAKE CITY, FL 32055

SHEET NAME
**BALLAST
REPORT**

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

SHEET NUMBER
DS-05

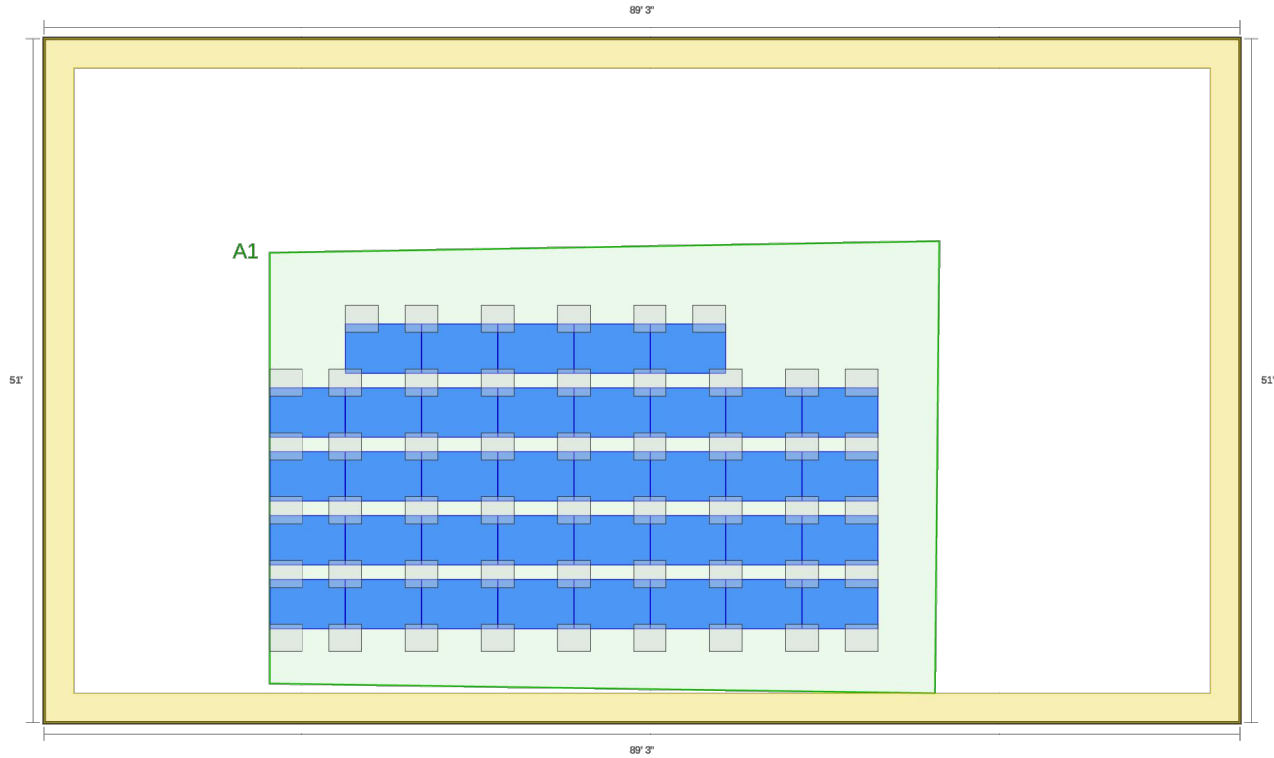
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Roof Plane A			
Height	10.0 ft	Roof slope	1 °
Parapet height	0.0 in	Fire setback	0.0 ft
Parapet thickness	N/A		
Seismic design	Prescriptive Method	Setback	2.2 ft
Supplemental chassis	Yes		
Roofing information	None available		

Prescriptive Method Setbacks			
Between Arrays	3"	Array to Fixed Object	6"
		Array to Roof Edge	9"



Roof Plane A: Ballast and Anchors					
Module count	37	Chassis count	51	Block count	275
Wind Anchors	0	Seismic Anchors	n/a	Anchors needed	0
Block weight	4,282.50 lbs	Components weight	2,259.78 lbs	Total weight	6,522.28 lbs
Area	1,091.90 sq. ft			Ground Coverage Ratio	0.71
Avg dist dead load	5.97 psf	Max compressive load	405.89 lbs	Max chassis weight (Incl. 1 Module)	183.24 lbs

Roof Section A1							
-----------------	--	--	--	--	--	--	--

Panels: 37 Chassis: 51 Blocks: 275 Anchors: 0

1 2 3 4 5 6 7 8

1

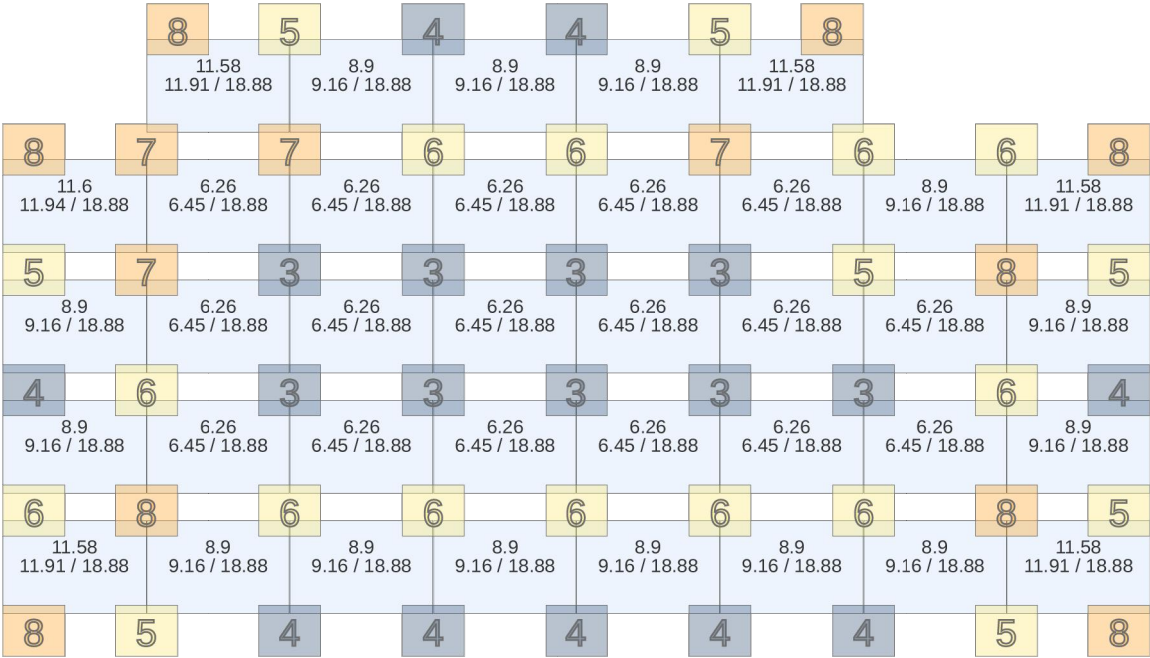
2

3

4

5

6



* If any changes are made to panel placement or location relative to roof edges, the ballast plan must be recalculated.



POWER PRODUCTION
MANAGEMENT INC
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REVISIONS		
DESCRIPTION	DATE	REV
DATE: 09/16/2026		

PROJECT NAME

CALINDO RESIDENCE

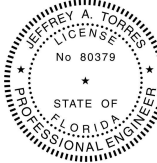
260 NW WHITTON CT.,
LAKE CITY, FL 32055

SHEET NAME
BALLAST
REPORT

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
DS-06

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