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D

E

WARREN &
ANGELA
MARLOWE

3217 PINEMOUNT RD
LAKE CITY, FL 32604

THIS IS AN EXPANSION OF AN
EXISTING PHOTOVOLTAIC ARRAY
WITH BATTERY BACKUP. WE
WILL BE ADDING 1X TELS
POWERWALL 2 BATTERY. NO
OTHER CHANGES TO BE MADE
TO THE EXISTING SYSTEM SIZE
OR ELECTRICAL
INFRASTRUCTURE.

G01: GENERAL NOTES
A01: EQUIP. LOCATIONS
E01: LINE DIAGRAM
E02: ELECTRICAL CALCS
E03: TESLA SPECS

SOLAR CONTRACTOR:
SOLAR IMPACT, INC
4509 NW 23RD AVE., SUITE 20
GAINESVILLE, FL 32606
352.338.8221
WWW.SOLARIMPACT.COM

SOLAR CONTRACTOR LICENSE:
CVC56761
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ENGINEER OF RECORD:
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PE#51402
SOLAR IMPACT, INC
352.338.8221
BARRY@SOLARIMPACT.COM

CLIENT:
WARREN & ANGELA MARLOWE

GENERAL CONTRACTOR:
N/A

AUTHORITY HAVING JURISDICTION:
COLUMBIA COUNTY BUILDING DEPARTMENT

UTILITY:
FLORIDA POWER AND LIGHT (FP&L)

2023 8TH EDITION FLORIDA BUILDING CODE :
BUILDING

2023 8TH EDITION FLORIDA BUILDING CODE :
RESIDENTIAL

2023 8TH EDITION FLORIDA BUILDING CODE :
MECHANICAL

2023 8TH EDITION FLORIDA BUILDING CODE :
PLUMBING

2023 8TH EDITION FLORIDA BUILDING CODE :
FUEL GAS

2023 8TH EDITION FLORIDA BUILDING CODE :
ENERGY CONSERVATION

2023 8TH EDITION FLORIDA BUILDING CODE :
EXISTING BUILDING

2023 8TH EDITION FLORIDA BUILDING CODE :
ACCESSIBILITY

2023 8TH EDITION FLORIDA FIRE PREVENTION
CODE (NFPA)

2020 NATIONAL ELECTRIC CODE (NEC)

50'

100'

200'

400'

1":200'

DOCUMENTS SIZED FOR 11"X17" PAPER

SUMMARY

PAGE INDEX

CODE REFERENCES

SITE LOCATION

1

2

3

4

5

6

7

Designed By:

solar
impact

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BARRY M JACOBSON

LICENSE
No 51402

STATE OF
FLORIDA

PROFESSIONAL ENGINEER

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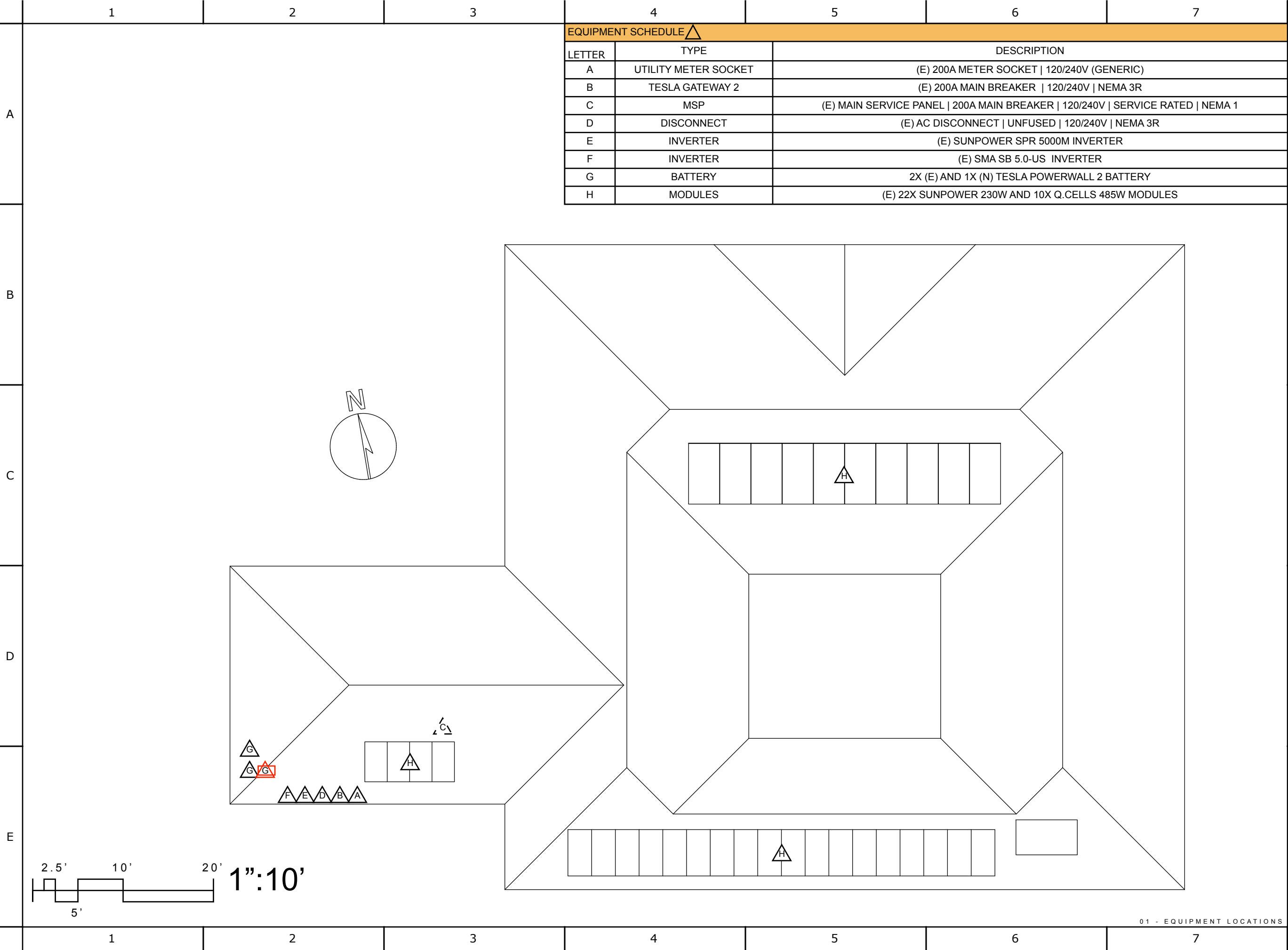
REV#	DATE	REVISION NOTES


Project Name:
WARREN &
ANGELA MARLOWE

Project Address:
3217 PINEMOUNT RD
LAKE CITY, FL 32604

PAGE TITLE:
GENERAL
NOTES

PAGE # :
G01

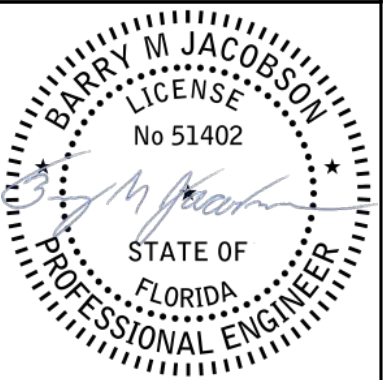


EQUIPMENT SCHEDULE 		
LETTER	TYPE	DESCRIPTION
A	UTILITY METER SOCKET	(E) 200A METER SOCKET 120/240V (GENERIC)
B	TESLA GATEWAY 2	(E) 200A MAIN BREAKER 120/240V NEMA 3R
C	MSP	(E) MAIN SERVICE PANEL 200A MAIN BREAKER 120/240V SERVICE RATED NEMA 1
D	DISCONNECT	(E) AC DISCONNECT UNFUSED 120/240V NEMA 3R
E	INVERTER	(E) SUNPOWER SPR 5000M INVERTER
F	INVERTER	(E) SMA SB 5.0-US INVERTER
G	BATTERY	2X (E) AND 1X (N) TESLA POWERWALL 2 BATTERY
H	MODULES	(E) 22X SUNPOWER 230W AND 10X Q.CELLS 485W MODULES

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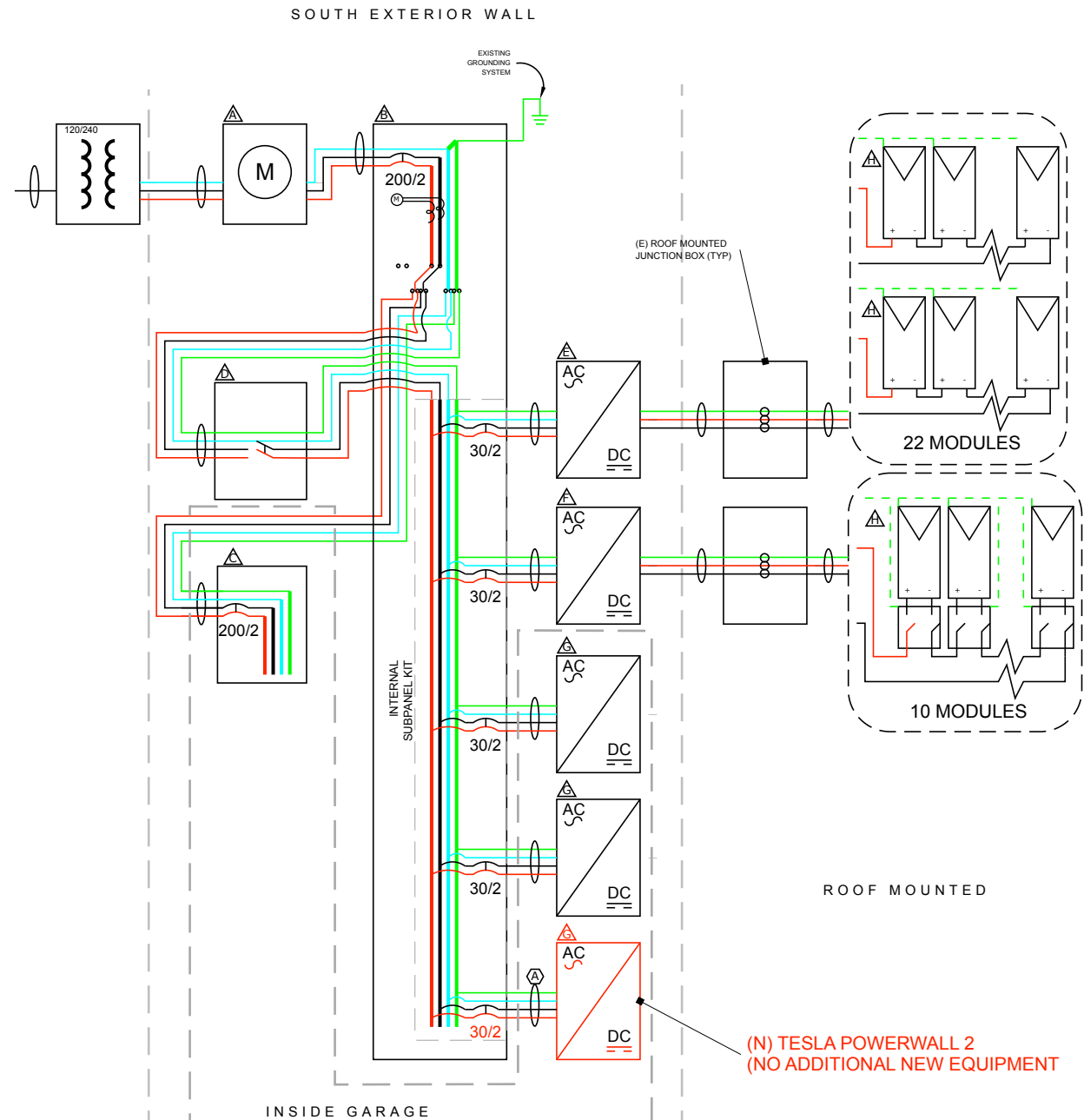
Project Name:

WARREN & ANGELA MARLOWE

Project Address:

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LAKE CITY, FL 32604

	1	2	3	4	5	6	7
A	EQUIPMENT SCHEDULE 				CONDUCTOR SIZES 		
	LETTER	TYPE	DESCRIPTION		A (1 SET) 2X #10 CU + 1X #10 CU NTRL + 1X #10 CU GRD IN 0.75" EMT		
	A	UTILITY METER SOCKET	(E) 200A METER SOCKET 120/240V (GENERIC)				
	B	TESLA GATEWAY 2	(E) 200A MAIN BREAKER 120/240V NEMA 3R				
	C	MSP	(E) MAIN SERVICE PANEL 200A MAIN BREAKER 120/240V SERVICE RATED NEMA 1				
	D	DISCONNECT	(E) AC DISCONNECT UNFUSED 120/240V NEMA 3R				
	E	INVERTER	(E) SUNPOWER SPR 5000M INVERTER				
	F	INVERTER	(E) SMA SB 5.0-US INVERTER				
	G	BATTERY	2X (E) AND 1X (N) TESLA POWERWALL 2 BATTERY				
	H	MODULES	(E) 22X SUNPOWER 230W AND 10X Q.CELLS 485W MODULES				



ELECTRICAL NOTES

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

ADDITIONAL NOTES:

1. EACH MODULE TO BE GROUNDED USING THE SUPPLIED CONNECTION POINT PER MANUFACTURER'S REQUIREMENTS. ALL SOLAR MODULES, EQUIPMENT, AND METALLIC COMPONENTS ARE TO BE BONDED. IF THE EXISTING GROUNDING ELECTRODE SYSTEM CAN NOT BE VERIFIED OR IS ONLY METALLIC WATER PIPING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE.
2. ALL PLAQUES AND SIGNAGE REQUIRED BY THE LATEST EDITION OF NATIONAL ELECTRICAL CODE. LABEL SHALL BE METALLIC OR PLASTIC, ENGRAVED OR MACHINE PRINTED IN A CONTRASTING COLOR TO THE PLAQUE. PLAQUE SHALL BE UV RESISTANT IF EXPOSED TO SUNLIGHT.
3. DC CONDUCTORS SHALL BE RUN IN EMT AND SHALL BE LABELED, "CAUTION DC CIRCUIT" OR EQUIV. EVERY 5 FT.
4. EXPOSED NON-CURRENT CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.136(A).
5. CONFIRM LINE SIDE VOLTAGE AT ELECTRIC UTILITY SERVICE PRIOR TO CONNECTING INVERTER. VERIFY SERVICE VOLTAGE IS WITHIN INVERTER VOLTAGE OPERATIONAL RANGE.
6. OUTDOOR EQUIPMENT SHALL BE NEMA-3R RATED OR BETTER.
7. ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT EXPANSION JOINTS AND ANCHOR CONDUIT RUNS AS REQUIRED PER NEC.
8. ALL WIRING MUST BE PROPERLY SUPPORTED BY DEVICES OR MECHANICAL MEANS DESIGNED AND LISTED FOR SUCH USE, AND FOR ROOF-MOUNTED SYSTEMS. WIRING MUST BE PERMANENTLY AND COMPLETELY HELD OFF OF THE ROOF SURFACE. NEC 110.2 - 110.4 / 300.4

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Project Address: 3217 PINEMOUNT RD
LAKE CITY, FL 32604

PAGE TITLE:	PAGE #:
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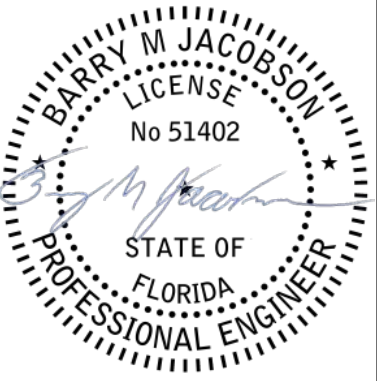
LINE DIAGRAM

	1	2	3	4	5	6	7
A	LOCATION INFORMATION			CONDUCTOR, CONDUIT, & OCD SIZES 310.10(H)			
	Location	Jacksonville AP	Conductor ID in Oneline			A	
	Temp, Ambient High (ASHRAE 2%)	34.0 C	Current-carrying Conductor			#10	
	Temp, Ambient Low (ASHRAE Extreme)	-5.0 C	Insulation Type			THWN-2	
	Temp, Module Test	25.0 C	Side of Service			Load	
	Temp, Delta Low	-30.0 C	Insulation Temp Rating			90 C	
	Temp, Below Ground	25.0 C	Conductor Material			CU	
			Neutral Sizing			Current-Carry	
			Over-current Device Type			Breaker	
B	MODULE SPECIFICATIONS AND CALCULATIONS			CURRENT SOURCE			
	ITEM	MODULE 1	Current Type			AC	
	Module Manufacturer	Q Cells	Current Source			Inverter 1	
	Module Model	Q.Peak Duo XL-G10.3 BFG/485	Parallel Sources Combined			Not Combined	
	Module Power STC	485 W	# Parallel Sources			1	
	Module Operating Volt	45.63 VDC	# Sets of Conductors			1	
	Module Open-circuit Volt	53.63 VDC	# Conduits			1	
	Module Coeff Volt/Temp	-0.27 %/C	# Sets Conductors per OCD			1	
	Module Max Volt (Voc*(1+Td*VTCcoef))	57.97 VDC	# Conductors per Conduit			4	
C	Module Operating Current	10.63 A	# Current-Carrying Conductors per Conduit			2	
	Module Short-Circuit Current	11.16 A	# Grounds per Conduit			1	
	Module Max-Current (Isc*125%)	13.95 A	# Neutrals per Conduit			1	
			# Sources per Conductor			1	
			Source Maximum Current			24.0 A	
			Conductor Maximum Current			24.0 A	
			CONDITIONS OF USE CALCULATION 310.15 690.8(B)(2)(b)				
			Bottom of Conduit Distance Above Roof (or Below Ground)			N/A	
			Temperature Ambient High			34.0 C	
D			Temperature Adjustment (roof/sun)			0.0 C	
			Total Temperature			1.0 C	
			Derate for Temp			96%	
			Derate for Fill / Bundled			100%	
			Conductor Ampacity, w/o derates			40.0 A	
			Min Ampacity required >= I _{max} conductor*125% 690.8(B)(1)			30.0 A	
			Conductor Ampacity, with derates and 240.4(D)			30.0 A	
			Min Ampacity required >= I _{max} conductor 690.8(B)(2)			24.0 A	
			TERMINAL CALCULATION 110.14 310.15 690.8(B)(2)(a)				
E			Terminal Temp Rating			75 C	
			Conductor Ampacity at terminals			30.0 A	
			Min Ampacity required >= I _{max} conductor*1.25 690.8(B)(1)			30.0 A	
			OVER-CURRENT 690.8, 690.9, 240.4B				
			# of Parallel Sources per OCD			1	
			Min Ampacity required >= # parallel sources*I _{max} source x 1.25			30.0 A	
			Over-current Device			30.0 A	
			CONDUIT ANNEX C, CHAPTER 9 TABLE 1, 376.22				
			Conduit Type			EMT	
		Nipple (less than or equal to 24-inches)			Not Nipple		
		Conduit diameter			0.75"		
		Max Allowable Conduit Fill			40%		
		Conduit Fill			16%		
		VOLTAGE DROP (WORST CASE), CHAPTER 9, TABLES 8 & 9					
		Conductor Length One-Way			25.6'		
		Power Factor			1		
		Resistance			1.2 ohm/kft		
		Reactance			0.063 ohm/kft		
		Impedance			1.2 ohm/kft		
		Source Operating Current			24.0 A		
		Conductor Operating Current,			24.0 A		
		Nominal Operating Voltage			240.0 V		
		Voltage Drop, total			1.47 V		
		Voltage Drop, percentage			0.61%		
	1	2	3	4	5	6	7

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PAGE TITLE:
ELECTRICAL CALCULATIONS

PAGE #:
E02

[illegible]

PAGE TITLE:	PAGE #:
TESLA SPECS	E03

Powerwall's electrical interface provides a simple connection to any home or building. Its revolutionary compact design achieves market-leading energy density and is easy to install, enabling owners to quickly realize the benefits of reliable, clean power.



The Backup Gateway 2 communicates directly with Powerwall, allowing you to monitor energy use and manage backup energy reserves from any mobile device with the Tesla app.



TESLA

⁶Performance may be de-rated at operating temperatures below 10°C (50°F) or greater than 43°C (109°F).

TESLA.COM/ENERGY

Certifications	UL 67, UL 869A, UL 916, UL 1741 PCS CSA 22.2 0.19, CSA 22.2 205
Emissions	FCC Part 15, ICES 003

TESLA

NA 2020-05-23

TESLA.COM/ENERGY

Technical drawing of the TESSLA 1500W power supply unit. The front view shows a rectangular unit with the brand name "TESSLA" in the center. The dimensions are 660 mm in height and 411 mm in width. The side view shows the unit's profile with a height of 149 mm.

Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Operating Humidity (RH)	Up to 100%, condensing
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Type	NEMA 3R