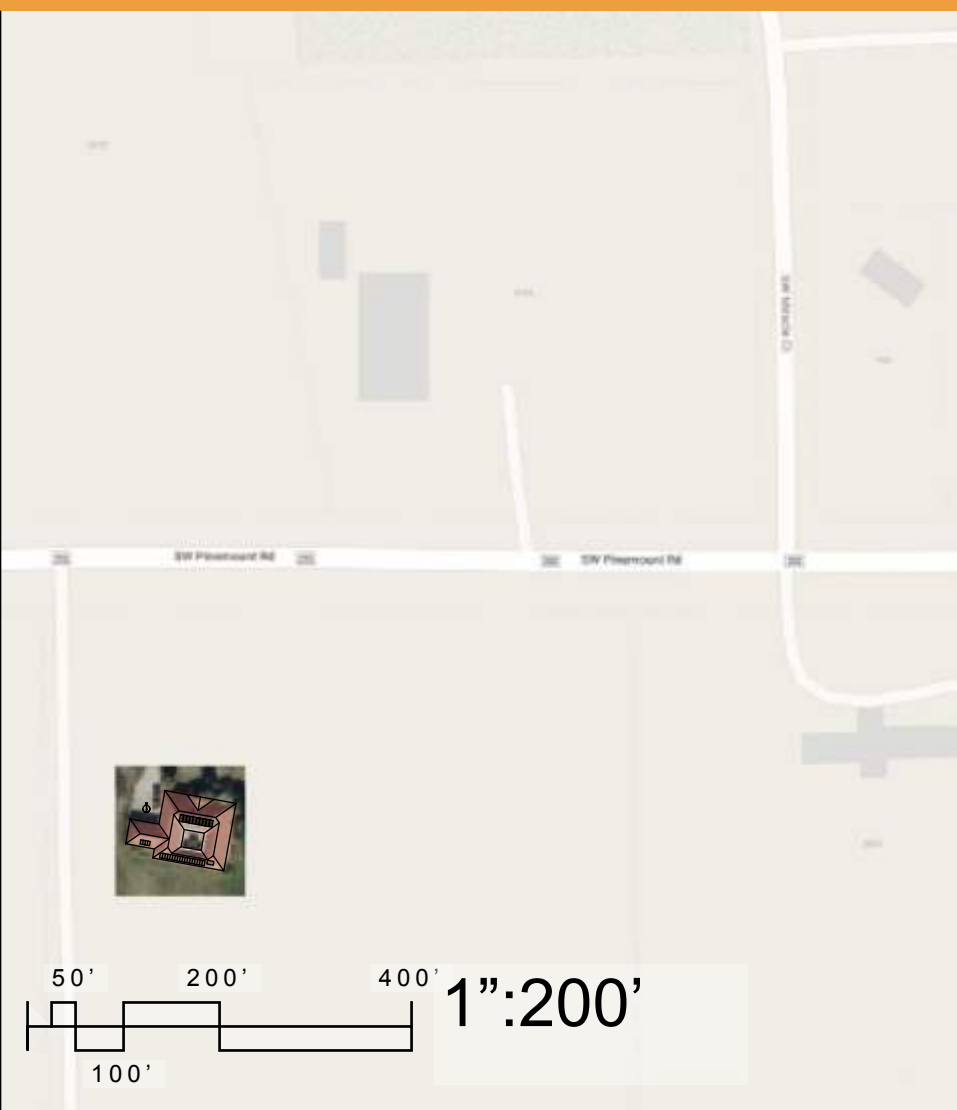


	1	2	3	4	5	6	7
A	WARREN & ANGELA MARLOWE			SOLAR CONTRACTOR: SOLAR IMPACT, INC 4509 NW 23RD AVE., STUITE 20 GAINESVILLE, FL 32606 352.338.8221 WWW.SOLARIMPACT.COM	CLIENT: WARREN & ANGELA MARLOWE GENERAL CONTRACTOR: N/A AUTHORITY HAVING JURISDICTION: COLUMBIA COUNTY BUILDING DEPARTMENT UTILITY: FLORIDA POWER AND LIGHT (FP&L)		
B				SOLAR CONTRACTOR LICENSE: CVC56761 EC13012442 PROJECT MANAGER: NINA ALBINO 352.727.0022 NINA.ALBINO@SOLARIMPACT.COM PROJECT DESIGNER: RICHIE WILHOIT 352.226.7271 RICHIE.WILHOIT@SOLARIMPACT.COM ENGINEER OF RECORD: BARRY M. JACOBSON PE#51402 SOLAR IMPACT, INC 352.338.8221 BARRY@SOLARIMPACT.COM			
3217 PINEMOUNT RD LAKE CITY, FL 32604				PARTICIPANTS			
C	THIS IS AN EXPANSION OF AN EXISTING PHOTOVOLTAIC ARRAY WITH BATTERY BACKUP. WE WILL BE ADDING 1X TELSAPOWERWALL 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	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)				
D							
E							
DOCUMENTS SIZED FOR 11"X17" PAPER							
SUMMARY		PAGE INDEX		CODE REFERENCES		SITE LOCATION	
	1	2	3	4	5	6	7

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impact

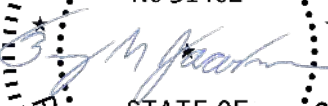


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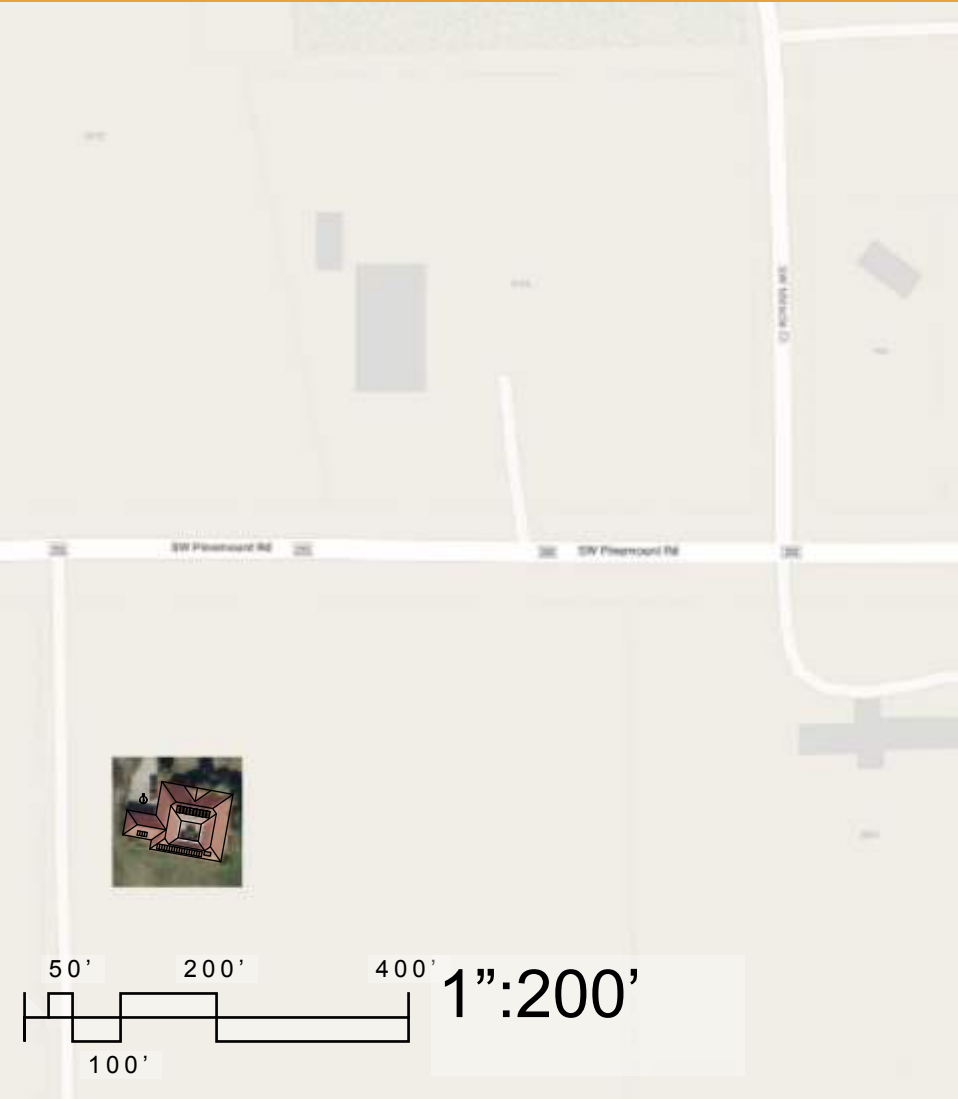
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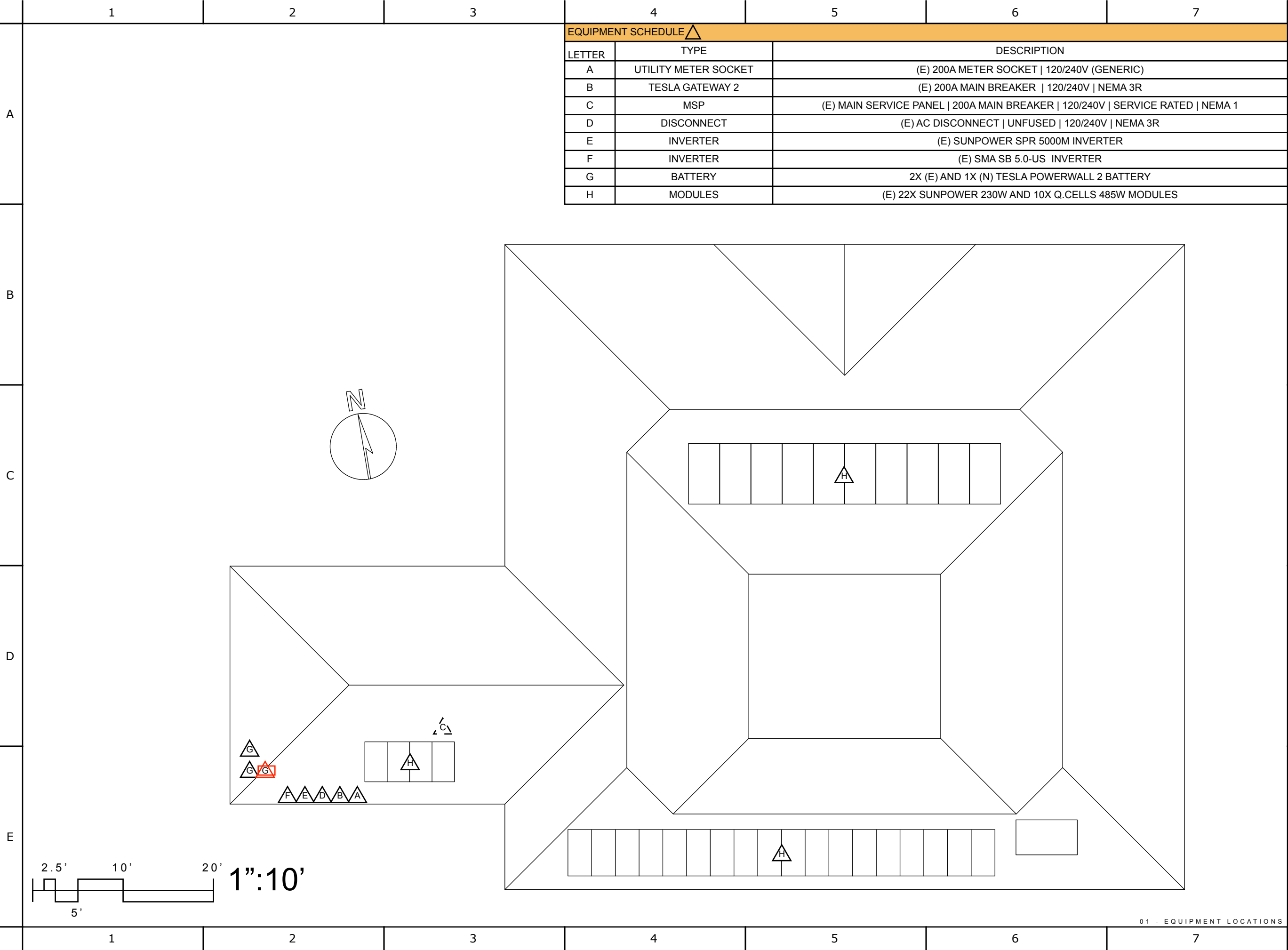
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PAGE TITLE:
GENERAL NOTES

PAGE # :
G01



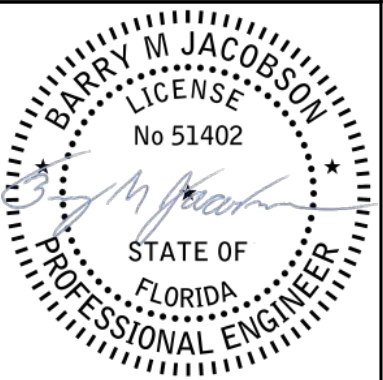


EQUIPMENT SCHEDULE 		
LETTER	TYPE	DESCRIPTION
A	UTILITY METER SOCKET	(E) 200A METER SOCKET 120/240V (GENERIC)
B	TESLA GATEWAY 2	(E) 200A MAIN BREAKER 120/240V NEMA 3R
C	MSP	(E) MAIN SERVICE PANEL 200A MAIN BREAKER 120/240V SERVICE RATED NEMA 1
D	DISCONNECT	(E) AC DISCONNECT UNFUSED 120/240V NEMA 3R
E	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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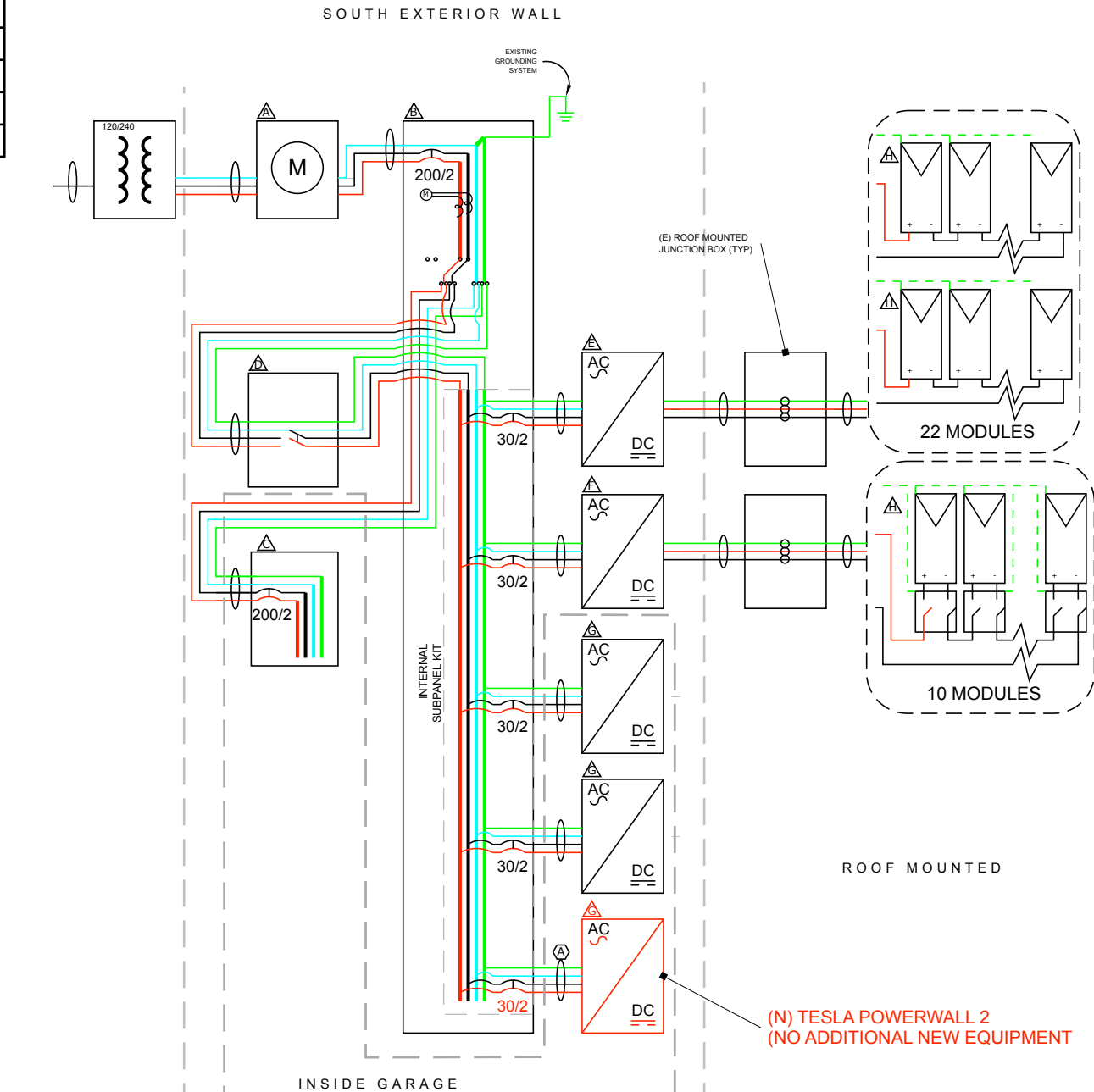
REV#	DATE	REVISION NOTES

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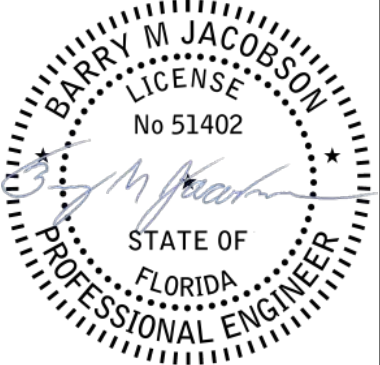
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	1	2	3	4	5	6	7
A	EQUIPMENT SCHEDULE ⚠				CONDUCTOR SIZES ⬡		
	LETTER	TYPE	DESCRIPTION		A (1 SET) 2X #10 CU + 1X #10 CU NTRL + 1X #10 CU GRD IN 0.75" EMT		
	A	UTILITY METER SOCKET	(E) 200A METER SOCKET 120/240V (GENERIC)				
	B	TESLA GATEWAY 2	(E) 200A 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					
E	ELECTRICAL NOTES				ADDITIONAL 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				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 HELP OFF OF THE ROOF SURFACE. NEC 110.2 - 110.4 / 300.4		
	1	2	3	4	5	6	7

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Project Address:
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PAGE TITLE:

LINE DIAGRAM

PAGE #:

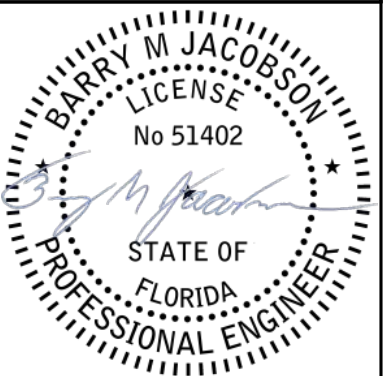
E01

	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*VTCoeff))	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%	

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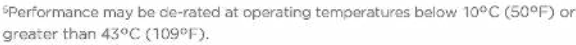
Project Name: **WARREN & ANGELA MARLOWE**
Project Address: **3217 PINEMOUNT RD
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A circular professional engineer seal for Barry M Jacobson. The outer ring contains the text "BARRY M JACOBSON" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by dots. Inside the ring, the word "LICENSE" is at the top, "No 51402" is in the center, and "STATE OF FLORIDA" is at the bottom, all separated by dots. A blue ink signature, "Barry M Jacobson", is written across the center of the seal.

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PAGE TITLE: TESLA SPECS	PAGE #: E03
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TESLA.COM/ENERGY

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