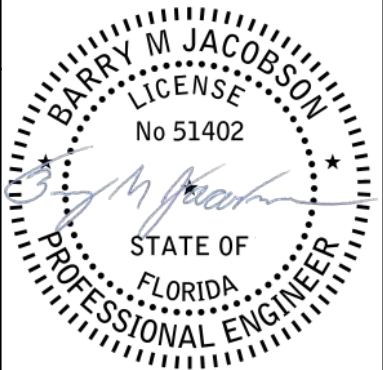


	1	2	3	4	5	6	7
A	KAREN ZETROUER 1262 SW BLUFF DR FORT WHITE FL 32038			SOLAR CONTRACTOR: SOLAR IMPACT, INC 4509 NW 23RD AVE., STUITE 20 GAINESVILLE, FL 32606 352.338.8221 WWW.SOLARIMPACT.COM SOLAR CONTRACTOR LICENSE: CVC56761 EC13012442 PROJECT MANAGER: NINA ALBINO 352.727.0022 NINA.ALBINO@SOLARIMPACT.COM 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	CLIENT: KAREN ZETROUER GENERAL CONTRACTOR: N/A AUTHORITY HAVING JURISDICTION: COLUMBIA COUNTY BUILDING DEPARTMENT UTILITY: CLAY ELECTRIC COOPERATIVE (CEC)		
B	DC:	11.64 KW-DC MODULE STC RATING		PARTICIPANTS			
	AC:	9.894 kW-AC GROSS POWER RATING					
	AC:	23 kW-AC INVERTER					
C	THIS SYSTEM CONSISTS OF 11.64 KW OF NEW MODULES. THE 6 NEW Q.PEAK DUO XL-G10.3 BFG/485 GULFLOK ROOF MOUNTED MODULES HAVE NEW IRONRIDGE XR10 RACKING WITH THE MODULES TILTED FROM THE SURFACE AT 34.0° AND THE SURFACE FACING NORTH AND THE MODULE FACING SOUTH. THE 18 NEW Q.PEAK DUO XL-G10.3 BFG/485 GULFLOK ROOF MOUNTED MODULES HAVE NEW IRONRIDGE XR10 RACKING WITH THE MODULES PARALLEL TO THE SURFACE AND THE SURFACE AND MODULE FACING SOUTH. THE SYSTEM HAS 2 NEW TESLA POWERWALL 3 INVERTER/BATTERIES AND 12 NEW TESLA SSDS.		G01: GENERAL NOTES A01: EQUIP. LOCATIONS A02: ELECTRICAL RISER A03: FIRE SAFETY E01: LINE DIAGRAM E02: PLACARDS E03: ELECTRICAL CALCS E04: MODULE DATA E05: RSD DATA E06: INVERTER DATA S01: ROOF ZONES S02: ROOF CALCS S03: ATTACHMENT DATA S04: RACKING DATA	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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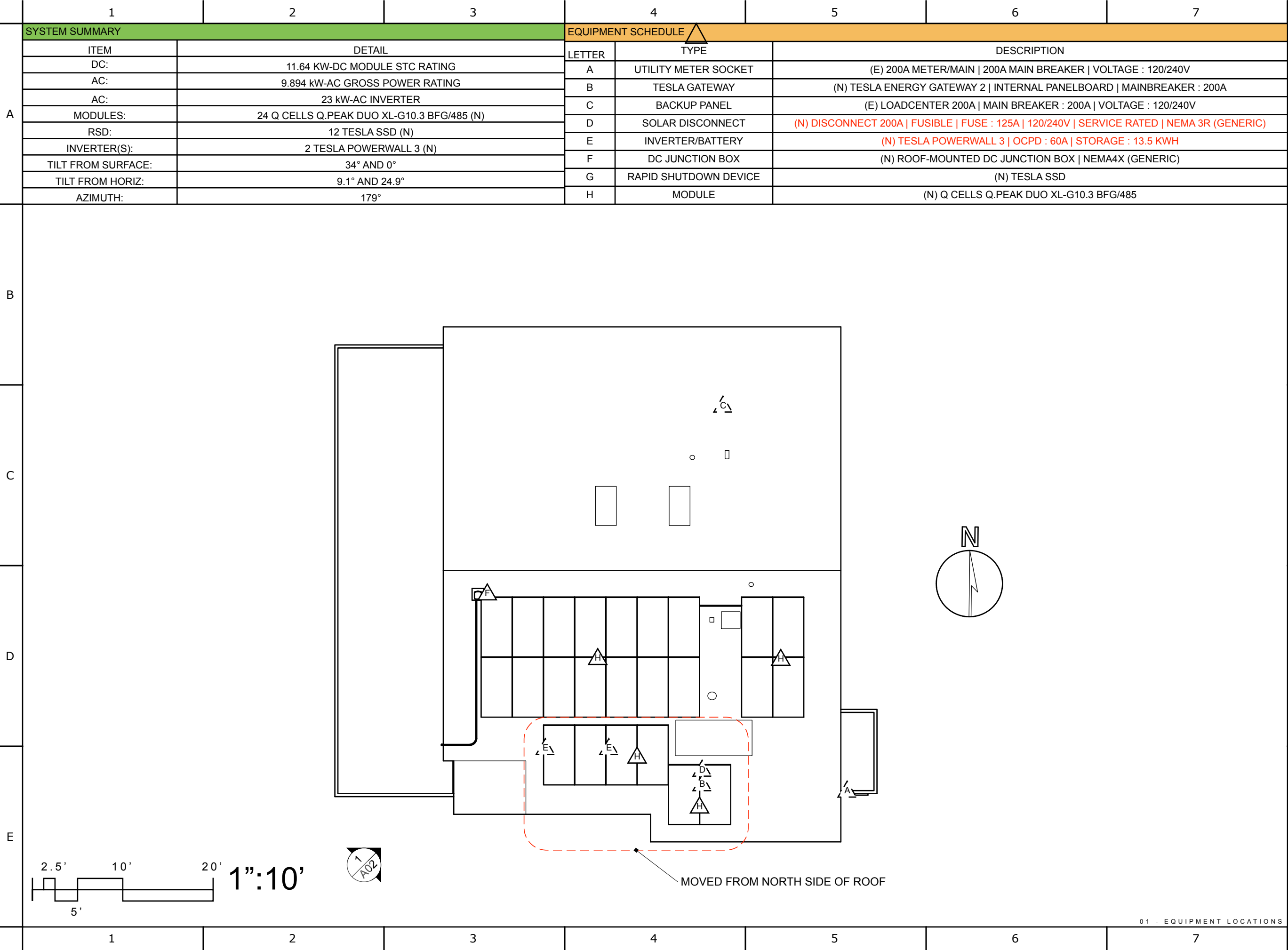
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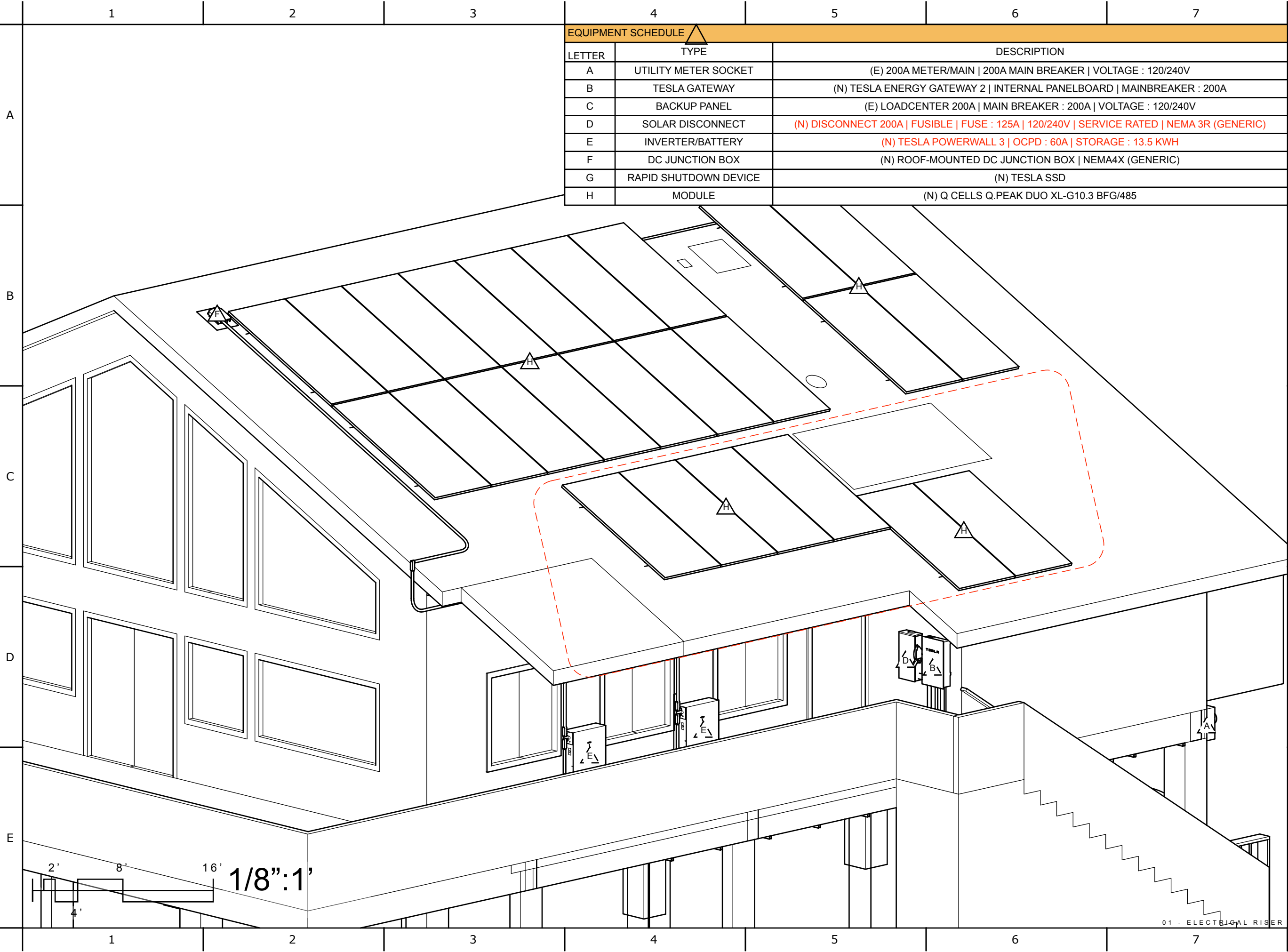
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PAGE TITLE:
GENERAL NOTES

PAGE # :
G01



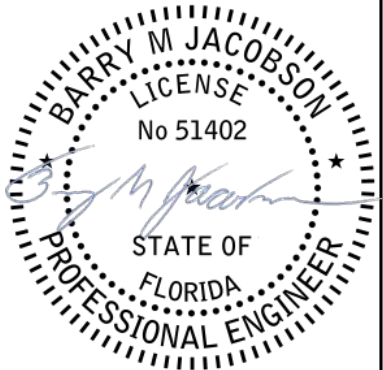


EQUIPMENT SCHEDULE		
LETTER	TYPE	DESCRIPTION
A	UTILITY METER SOCKET	(E) 200A METER/MAIN 200A MAIN BREAKER VOLTAGE : 120/240V
B	TESLA GATEWAY	(N) TESLA ENERGY GATEWAY 2 INTERNAL PANELBOARD MAINBREAKER : 200A
C	BACKUP PANEL	(E) LOADCENTER 200A MAIN BREAKER : 200A VOLTAGE : 120/240V
D	SOLAR DISCONNECT	(N) DISCONNECT 200A FUSIBLE FUSE : 125A 120/240V SERVICE RATED NEMA 3R (GENERIC)
E	INVERTER/BATTERY	(N) TESLA POWERWALL 3 OCPD : 60A STORAGE : 13.5 KWH
F	DC JUNCTION BOX	(N) ROOF-MOUNTED DC JUNCTION BOX NEMA4X (GENERIC)
G	RAPID SHUTDOWN DEVICE	(N) TESLA SSD
H	MODULE	(N) Q CELLS Q.PEAK DUO XL-G10.3 BFG/485

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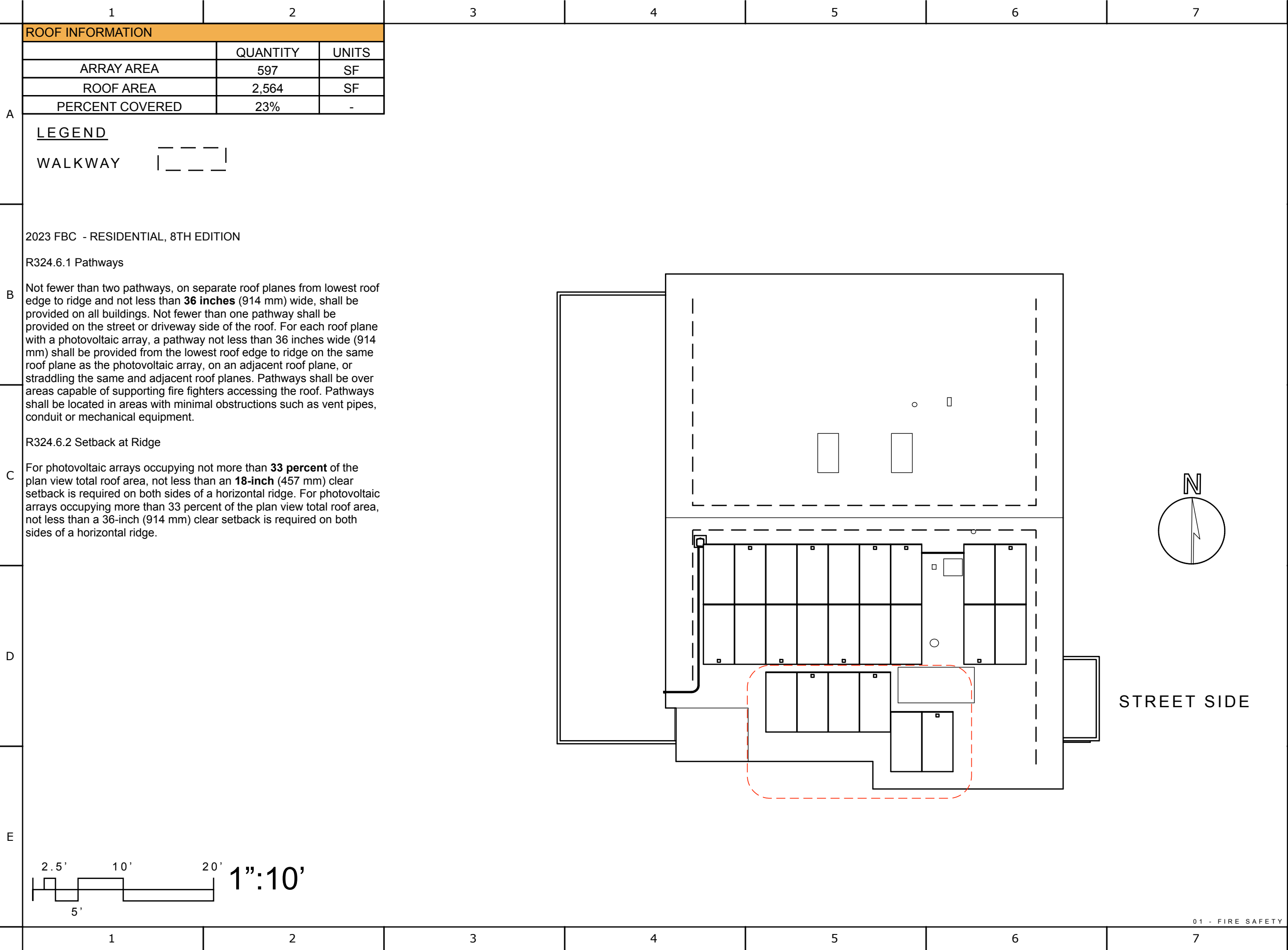
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PAGE TITLE:

ELECTRICAL RISER

PAGE #:

A02



ROOF INFORMATION		
	QUANTITY	UNITS
ARRAY AREA	597	SF
ROOF AREA	2,564	SF
PERCENT COVERED	23%	-

LEGEND

WALKWAY

2023 FBC - RESIDENTIAL, 8TH EDITION

R324.6.1 Pathways

Not fewer than two pathways, on separate roof planes from lowest roof edge to ridge and not less than **36 inches** (914 mm) wide, shall be provided on all buildings. Not fewer than one pathway shall be provided on the street or driveway side of the roof. For each roof plane with a photovoltaic array, a pathway not less than 36 inches wide (914 mm) shall be provided from the lowest roof edge to ridge on the same roof plane as the photovoltaic array, on an adjacent roof plane, or straddling the same and adjacent roof planes. Pathways shall be over areas capable of supporting fire fighters accessing the roof. Pathways shall be located in areas with minimal obstructions such as vent pipes, conduit or mechanical equipment.

R324.6.2 Setback at Ridge

For photovoltaic arrays occupying not more than **33 percent** of the plan view total roof area, not less than an **18-inch** (457 mm) clear setback is required on both sides of a horizontal ridge. For photovoltaic arrays occupying more than 33 percent of the plan view total roof area, not less than a 36-inch (914 mm) clear setback is required on both sides of a horizontal ridge.

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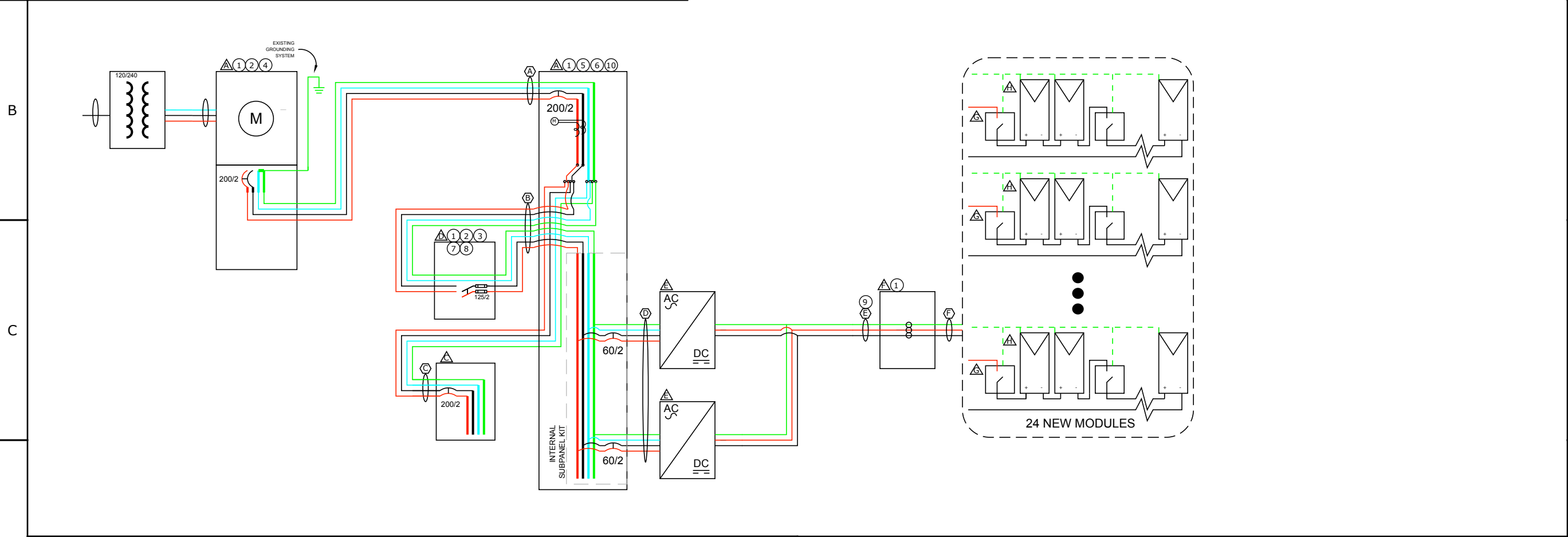
PAGE TITLE:

FIRE SAFETY

PAGE #:

A03

	1		2		3		4		5		6		7	
A	EQUIPMENT SCHEDULE 						CONDUCTOR SIZES 						FIELD APPLIED PLACARDS 	
	LETTER	TYPE	DESCRIPTION				A	(1 SET) 2X #3/0 CU + 1X #3/0 CU NTRL + 1X #6 CU GRD IN 2" PVC SCH 40/HPDE					1	SEE PLACARDS PAGE FOR DETAILS
	A	UTILITY METER SOCKET	(E) 200A METER/MAIN 200A MAIN BREAKER VOLTAGE : 120/240V				B	(1 SET) 2X #1 CU + 1X #1 CU NTRL + 1X #6 CU GRD IN 1.5" PVC SCH 40/HPDE					*Note: NEC 705.95(B) says "Neutral Conductor for Instrumentation, Voltage Detection or Phase Detection. A conductor used solely for instrumentation, voltage detection, or phase detection and connected to a single-phase or 3-phase utility-interactive inverter, shall be permitted to be sized at less than the ampacity of the other current-carrying conductors and shall be sized equal to or larger than the equipment grounding conductor."	
	B	TESLA GATEWAY	(N) TESLA ENERGY GATEWAY 2 INTERNAL PANELBOARD MAINBREAKER : 200A				C	(1 SET) 2X #3/0 CU + 1X #3/0 CU NTRL + 1X #6 CU GRD IN 2" PVC SCH 40/HPDE						
	C	BACKUP PANEL	(E) LOADCENTER 200A MAIN BREAKER : 200A VOLTAGE : 120/240V				D	(1 SET) 4X #6 CU + 2X #6 CU NTRL + 1X #10 CU GRD IN 1.25" EMT						
	D	SOLAR DISCONNECT	(N) DISCONNECT 200A FUSIBLE FUSE : 125A 120/240V SERVICE RATED NEMA 3R (GENERIC)				E	(1 SET) 8X #10 CU + 2X #10 CU GRD IN 1" EMT						
	E	INVERTER/BATTERY	(N) TESLA POWERWALL 3 OCPD : 60A STORAGE : 13.5 KWH				F	(1 SET) 8X #10 CU + 1X #4 CU GRD IN FREE AIR						
	F	DC JUNCTION BOX	(N) ROOF-MOUNTED DC JUNCTION BOX NEMA4X (GENERIC)											
	G	RAPID SHUTDOWN DEVICE	(N) TESLA SSD											
	H	MODULE	(N) Q CELLS Q.PEAK DUO XL-G10.3 BFG/485											



D	SOLAR SCHEDULE							
	INVERTER	MODEL	MODULE	RSD	STRING # 1		STRING # 2	
					MODULE	RSD	MODULE	RSD
	1	TESLA POWERWALL 3	Q Cells 485 W	Tesla SSD	6	3	6	3
	2	TESLA POWERWALL 3	Q Cells 485 W	Tesla SSD	6	3	6	3

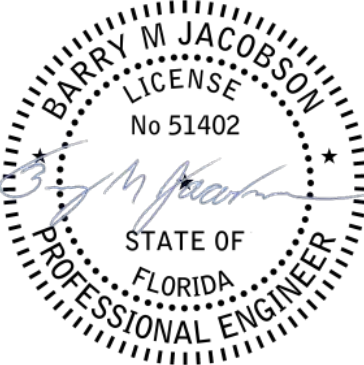
E	ELECTRICAL NOTES			
	1.) ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION. 2.) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT. 3.) WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE 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 HELP OFF OF THE ROOF SURFACE. NEC 110.2 - 110.4 / 300.4			
01 - LINE DIAGRAM			

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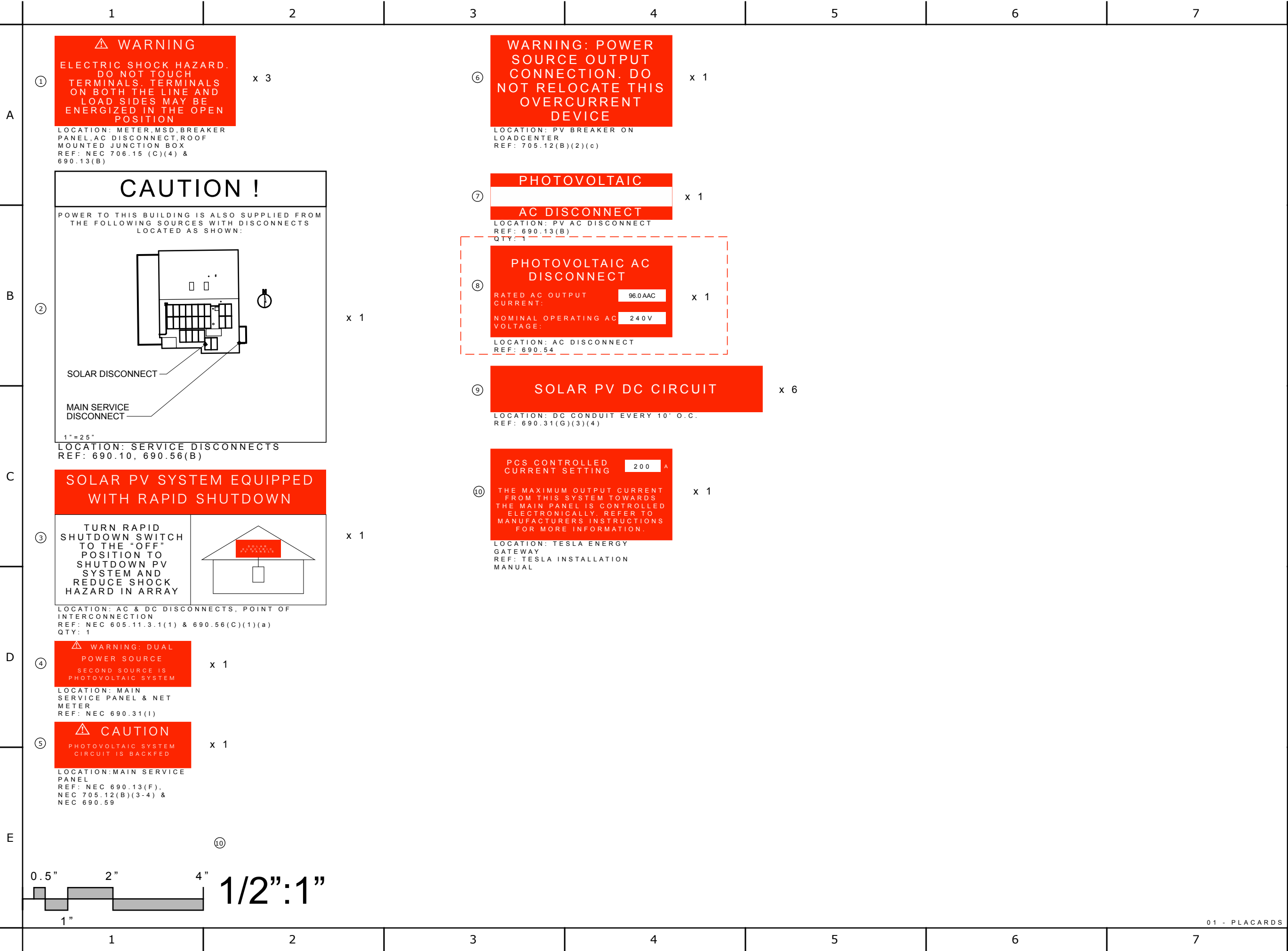
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LINE DIAGRAM

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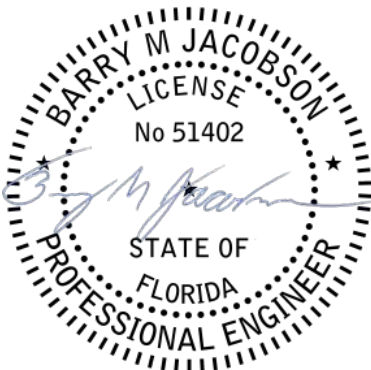
E01



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PAGE TITLE:

PLACARDS

PAGE #:

E02

	1	2	3	4	5	6	7
A	LOCATION INFORMATION		CONDUCTOR, CONDUIT, & OCD SIZES 310.10(H)				
	Location	Gainesville AP	Conductor ID in Oneline	A	B	C	D
	Temp, Ambient High (ASHRAE 2%)	34.0 C	Current-carrying Conductor	#3/0	#1	#3/0	#6
	Temp, Ambient Low (ASHRAE Extreme)	-5.0 C	Insulation Type	THWN-2	THWN-2	THWN-2	THWN-2
	Temp, Module Test	25.0 C	Side of Service	Load	Load	Load	Load
	Temp, Delta Low	-30.0 C	Insulation Temp Rating	90 C	90 C	90 C	90 C
	Temp, Below Ground	25.0 C	Conductor Material	CU	CU	CU	CU
			Neutral Sizing	Current-Carry	Current-Carry	Current-Carry	Current-Carry
			Over-current Device Type	Breaker	Breaker	Breaker	Breaker
B	MODULE SPECIFICATIONS AND CALCULATIONS		CURRENT SOURCE				
	ITEM	MODULE 1	Current Type	AC	AC	AC	DC
	Module Manufacturer	Q Cells	Current Source	Loads	Inverters	Loads	Inverter 1
	Module Model	Q.Peak Duo XL-G10.3 BFG/485	Parallel Sources Combined	Not Combined	Not Combined	Not Combined	Not Combined
	Module Power STC	485 W	# Parallel Sources	1	1	1	2
	Module Operating Volt	45.63 VDC	# Sets of Conductors	1	1	1	2
	Module Open-circuit Volt	53.63 VDC	# Conduits	1	1	1	1
	Module Coeff Volt/Temp	-0.27 %/C	# Sets Conductors per OCD	1	1	1	1
	Module Max Volt (Voc*(1+Td*VTCoeff))	57.97 VDC	# Conductors per Conduit	4	4	4	7
C	Module Operating Current	10.63 A	# Current-Carrying Conductors per Conduit	2	2	2	4
	Module Short-Circuit Current	11.16 A	# Grounds per Conduit	1	1	1	1
	Module Max-Current (Isc*125%)	13.95 A	# Neutrals per Conduit	1	1	1	2
	INVERTER SPECIFICATIONS AND CALCULATIONS		# Sources per Conductor	1	1	1	1
	ITEM	INVERTER 1	Source Maximum Current	191.0 A	96.0 A	191.0 A	48.0 A
	Inverter Make	TESLA	Conductor Maximum Current	191.0 A	96.0 A	191.0 A	48.0 A
	Inverter Model	Powerwall 3	CONDITIONS OF USE CALCULATION 310.15 690.8(B)(2)(b)				
	Inverter Qnty	2	Bottom of Conduit Distance Above Roof (or Below Ground)	#N/A	#N/A	#N/A	#N/A
	Inverter Power	11,500 W	Temperature Ambient High	34.0 C	34.0 C	34.0 C	34.0 C
D	Inverter Input Voltage, Max DC	600	Temperature Adjustment (roof/sun)	0.0 C	0.0 C	0.0 C	0.0 C
	Inverter Input Voltage, Nominal DC	60-550	Total Temperature	34.0 C	34.0 C	34.0 C	34.0 C
	Inverter Output Voltage, AC	240 VAC	Derate for Temp	96%	96%	96%	96%
	Inverter Input Current, Max DC	13.0 ADC	Derate for Fill / Bundled	100%	100%	100%	80%
	Inverter Output Current, AC	48.0 AAC	Conductor Ampacity, w/o derates	271.0 A	145.0 A	271.0 A	75.0 A
	Inverter Output Frequency	60 Hz	Min Ampacity required >= Imax conductor*125% 690.8(B)(1)	191.0 A	120.0 A	191.0 A	60.0 A
	Inverter Phase Qnty	1 Phase	Conductor Ampacity, with derates and 240.4(D)	260.2 A	139.2 A	260.2 A	57.6 A
	Inverter UL Listing	UL1741	Min Ampacity required >= Imax conductor 690.8(B)(2)	191.0 A	96.0 A	191.0 A	48.0 A
	Inverter Grounding	Ungrounded	TERMINAL CALCULATION 110.14 310.15 690.8(B)(2)(a)				
E	Modules in Series	6	Terminal Temp Rating	75 C	75 C	75 C	75 C
	String Max Open Circuit Voltage	348 VDC	Conductor Ampacity at terminals	240.9 A	130.0 A	240.9 A	65.0 A
			Min Ampacity required >= Imax conductor*1.25 690.8(B)(1)	238.7 A	125.0 A	238.7 A	60.0 A
			OVER-CURRENT 690.8, 690.9, 240.4B				
			# of Parallel Sources per OCD	1	1	1	1
			Min Ampacity required >= # parallel sources*Imax source x 1.25	191.0 A	120.0 A	191.0 A	60.0 A
			Over-current Device	200.0 A	125.0 A	200.0 A	60.0 A
			CONDUIT ANNEX C, CHAPTER 9 TABLE 1, 376.22				
			Conduit Type	PVC Sch 40/HPDE	PVC Sch 40/HPDE	PVC Sch 40/HPDE	EMT
			Nipple (less than or equal to 24-inches)	Not Nipple	Nipple	Not Nipple	Not Nipple
			Conduit diameter	2"	1.5"	2"	1.25"
			Max Allowable Conduit Fill	40%	60%	40%	40%
			Conduit Fill	23%	22%	23%	23%
			VOLTAGE DROP (WORST CASE), CHAPTER 9, TABLES 8 & 9				
			Conductor Length One-Way	25.3'	7.2'	111.1'	36.0'
			Power Factor	1	1	1	1
			Resistance	0.077 ohm/kft	0.15 ohm/kft	0.077 ohm/kft	0.49 ohm/kft
			Reactance	0.042 ohm/kft	0.046 ohm/kft	0.042 ohm/kft	0.064 ohm/kft
			Impedance	0.077 ohm/kft	0.15 ohm/kft	0.077 ohm/kft	0.49 ohm/kft
			Source Operating Current	191.0 A	96.0 A	191.0 A	48.0 A
			Conductor Operating Current,	191.0 A	96.0 A	191.0 A	48.0 A
			Nominal Operating Voltage	240.0 V	240.0 V	240.0 V	240.0 V
			Voltage Drop, total	0.74 V	0.20 V	3.27 V	1.69 V
			Voltage Drop, percentage	0.31%	0.08%	1.36%	0.70%

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Project Address:

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PAGE TITLE:

ELECTRICAL CALCULATIONS

PAGE #:

E03



**BIFACIAL DOUBLE GLASS MODULE
WITH EXCELLENT RELIABILITY
AND ADDITIONAL YIELD**



Bifacial Q ANTUM solar cells with zero-gap cell layout make efficient use of light shining on the module rear-side for radically improved LCOE.



Q ANTUM DUO Z combines cutting edge cell separation and innovative wiring with Q ANTUM Technology for higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 21.2%.



Optimal yields, whatever the weather with excellent low-light and temperature behavior.



Long-term yield security with Anti LID and Anti PID Technology²,
Hot Spot Protect and Traceable Quality TraQ™.



High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400Pa) and wind loads (2400Pa).



Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty².

^d See data sheet on rear for further information.

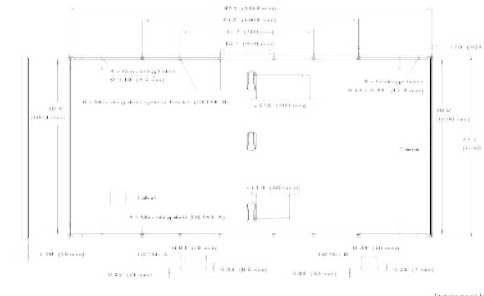
² See data sheet on rear for further information.

 Ground-mounted solar power plants

Engineered in Germany



Formal	87.2in × 41.1in × 1.45in (including frame) (2216mm × 1045mm × 37mm)
Weight	64.2lbs (29.1kg)
Front Cover	0.003in (2.0mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.003in (2.0mm) semi-tempered glass
Frame	Anodized aluminum
Cell	6 × 26 mono-crystalline Q-ANTUM solar half cells
Junction Box	2.09 × 3.98in (1.26 × 2.36m × 0.54 × 0.71in) (53.101mm × 32.60mm × 15.13mm), IP67, with bypass diodes
Cable	4mm ² Solar cable, (1) ≥ 27.6in (700mm), (2) ≥ 13.8in (350mm)
Connector	Standard MC4, 1-wire, 14mm/14.5mm Q-CELLS P6AC4, IP68

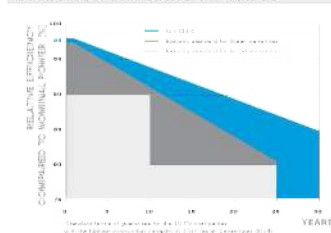


POWER CLASS			470	475	480	485
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, 5T/C ¹ AND B5T/C ¹ (POWER TOLERANCE ±5W/-0W)						
			B5T/C ¹		B5T/C ¹	
Minimum	Power at MPP ¹	P _{MPP} [W]	470	475	480	485
	Short Circuit Current ¹	I _{sc} [A]	11.04	11.08	11.12	11.16
	Open Circuit Voltage ¹	V _{oc} [V]	52.91	53.15	53.39	53.63
	Current at MPP	I _{MPP} [A]	10.51	10.55	10.59	10.63
	Voltage at MPP	V _{MPP} [V]	44.73	45.03	45.33	45.63
	Efficiency ¹	η [%]	±20.3	±22.2	±20.5	±22.2

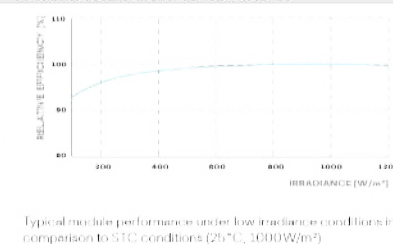
Figure 1 is a line graph showing the relative efficiency compared to nominal power (%) on the y-axis (ranging from 75 to 100) against the year on the x-axis (ranging from 0 to 30). Three scenarios are plotted:

- No CO₂ E** (Blue line): Starts at 100% in year 0 and decreases linearly to approximately 85% by year 30.
- Reduced emissions for the power generation** (Grey area): Starts at 100% in year 0 and decreases linearly to approximately 75% by year 30.
- Reduced emissions for the power generation and the building** (Red line): Starts at 100% in year 0 and decreases linearly to approximately 65% by year 30.

The legend indicates that the grey area represents the difference between the 'No CO₂ E' and 'Reduced emissions for the power generation' scenarios, and the red line represents the difference between the 'No CO₂ E' and 'Reduced emissions for the power generation and the building' scenarios.



Typical module performance under low irradiance conditions is compared to STC conditions (25°C, 1000 W/m²).



Temperature Coefficient of I_{sc}	α	[%/K]	+0.04	Temperature Coefficient of V_{oc}	β	[%/K]	-0.2
Temperature Coefficient of P_{max}	γ	[%/K]	-0.34	Nominal Module Operating Temperature	NMOT	[°F]	108 ± 5.4 (42 ± 3)

Maximum System Voltage V_{sys}	[V]	1500	PV module classification	Class
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI/UL 61730	TYPE 2
Max. Design Load, Push/Pull ¹	[lbs/ft ²]	75 (3600Pa) / 33 (1600Pa)	Permitted Module Temperature on Continuous Duty	-40°F up to +185°F (-40°C up to +85°C)
Max. Test Load, Push/Pull ¹	[lbs/ft ²]	113 (5400Pa) / 50 (2400Pa)		

³See Installation Manual

^a New Type is similar to Type 3 but with metallic frame

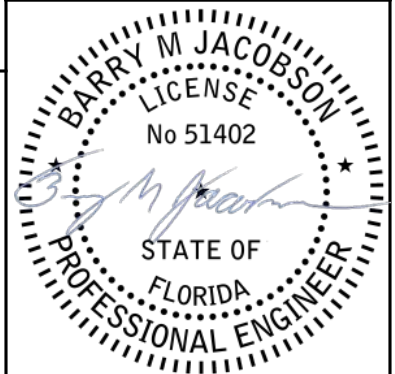
UL 61730, CE compliant,
IEC 61215:2016, IEC 61730:2016,
U.S. Patent No. 9,993,215
(solar cells).
Certification in process.

Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.
400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | TEL: +1 949 748 59 96 | EMAIL: inquiry@us.q-cells.com | WEB: www.q-cells.us



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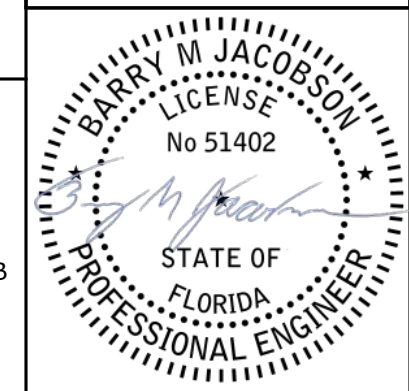
Project Name: KAREN ZETROUER

Project Address: 11262 SW BLUFF DR
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PAGE TITLE:	PAGE #:
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MODULE DATA

E04



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PAGE TITLE:	PAGE #:
TESLA RSD / GATEWAY	E05

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

1

2

3

4

5

6

7

Powerwall 3

Power Everything

Powerwall 3 is a fully integrated solar and battery system, designed to accelerate the transition to sustainable energy. Customers can receive whole home backup, cost savings, and energy independence by producing and consuming their own energy while participating in grid services. Once installed, customers can manage their system using the Tesla App to customize system behavior to meet their energy goals.

Powerwall 3 achieves this by supporting up to 20 kW DC of solar and providing 11.5 kW AC of continuous power per unit. It has the ability to start heavy loads up to 150 A LRA, meaning a single unit can support the power needs of most homes. Powerwall 3 is designed for mass production, fast and efficient installations, easy system expansion, and simple connection to any electrical service.



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Powerwall 3 Technical Specifications

System Technical Specifications	Model Number	1707000-xx-y
	Nominal Grid Voltage (Input & Output)	120/240 VAC
	Grid Type	Split phase
	Frequency	60 Hz
	Overcurrent Protection Device	Configurable up to 60 A
	Solar to Battery to Grid Round Trip Efficiency	89% ^{1,2}
	Solar to Grid Efficiency	97% ¹
	Supported Islanding Devices	Backup Gateway 2, Backup Switch
	Connectivity	Wi-Fi (2.4 and 5 GHz), Dual-port switched Ethernet, Cellular (LTE/4G ³)
	Hardware Interface	Dry contact relay, Rapid Shutdown (RSD) certified switch and 2-pin connector, RS-485 for meters
AC Metering	Revenue Grade (+/- 0.5%)	
Protections	Integrated arc fault circuit interrupter (AFCI), Isolation Monitor Interrupter (IMI), PV Rapid Shutdown (RSD) using Tesla Mid-Circuit Interrupters	
Customer Interface	Tesla Mobile App	
Warranty	10 years	

Solar Technical Specifications	Maximum Solar STC Input	20 kW
	Withstand Voltage	600 V DC
	PV DC Input Voltage Range	60 — 550 V DC
	PV DC MPPT Voltage Range	150 — 480 V DC
	MPPTs	6
	Maximum Current per MPPT (I _{mp})	13 A ⁴
	Maximum Short Circuit Current per MPPT (I _{sc})	15 A ⁵

Battery Technical Specifications	Nominal Battery Energy	13.5 kWh AC ²
	Maximum Continuous Discharge Power	11.5 kW AC
	Maximum Continuous Charge Power	5 kW AC
	Output Power Factor Rating	0 - 1 (Grid Code configurable)
	Maximum Continuous Current	48 A
	Maximum Output Fault Current	10 kA
	Load Start Capability (1 s)	150 A LRA
Power Scalability	Up to 4 Powerwall 3 units supported	

¹ Typical solar shifting use case.

² Values provided for 25°C (77°F), at beginning of life, 3.3 kW charge/discharge power.

³ Tested using CEC weighted efficiency methodology.

⁴ Cellular connectivity subject to network service coverage and signal strength.

⁵ Where the DC input current exceeds the MPPT rating, a jumper can be used to combine two MPPTs into a single input to intake DC current up to 26 A I_{mp} / 30 A I_{sc}.

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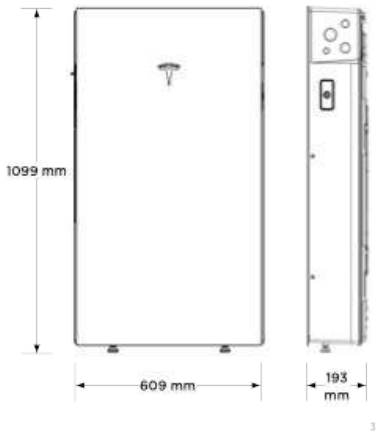
2023

Powerwall 3 Technical Specifications

Environmental Specifications	Operating Temperature	-20°C to 50°C (-4°F to 122°F) ¹
	Operating Humidity (RH)	Up to 100%, condensing
	Storage Temperature	-20°C to 30°C (-4°F to 86°F), up to 95% RH, non-condensing, State of Energy (SOE): 25% initial
	Maximum Elevation	3000 m (9843 ft)
	Environment	Indoor and outdoor rated
	Enclosure Rating	NEMA 3R
	Ingress Rating	IPX7 (Battery & Power Electronics) IPX5 (Wiring Compartment)
	Pollution Rating	PD3
	Operating Noise @ 1 m	< 50 db(A) typical < 62 db(A) maximum
	¹ Performance may be de-rated at operating temperatures above 40°C (104°F).	

Compliance Information	Certifications	UL 1642, UL 1699B, UL 1741, UL 1741 SA, UL 1741 SB, UL 3741, UL 1973, UL 1998, UL 9540, IEEE 1547-2018, IEEE 1547.1, UN 38.3
	Grid Connection	United States
	Emissions	FCC Part 15 Class B
	Environmental	RoHS Directive 2011/65/EU
	Seismic	AC156, IEEE 693-2005 (high)
Fire Testing	Meets the unit level performance criteria of UL 9540A	

Mechanical Specifications	Dimensions	1099 x 609 x 193 mm (43.25 x 24 x 7.6 in)
	Weight	130 kg (287 lb)
	Mounting Options	Floor or wall mount



1099 mm

609 mm

193 mm

2023

2023

2023

01 - TESLA POWERWALL 3

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KAREN ZETROUER

Project Address:

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FORT WHITE FL 32038

PAGE TITLE:

TESLA POWERWALL 3

PAGE #:

E06



REV#	DATE	REVISION NOTES
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Project Name: KAREN ZETROUER

Project Address: 1262 SW BLUFF DR
FORT WHITE FL 32038

PAGE TITLE:	PAGE #:
ROOF ZONES	S01

01 - ROOF ZONES

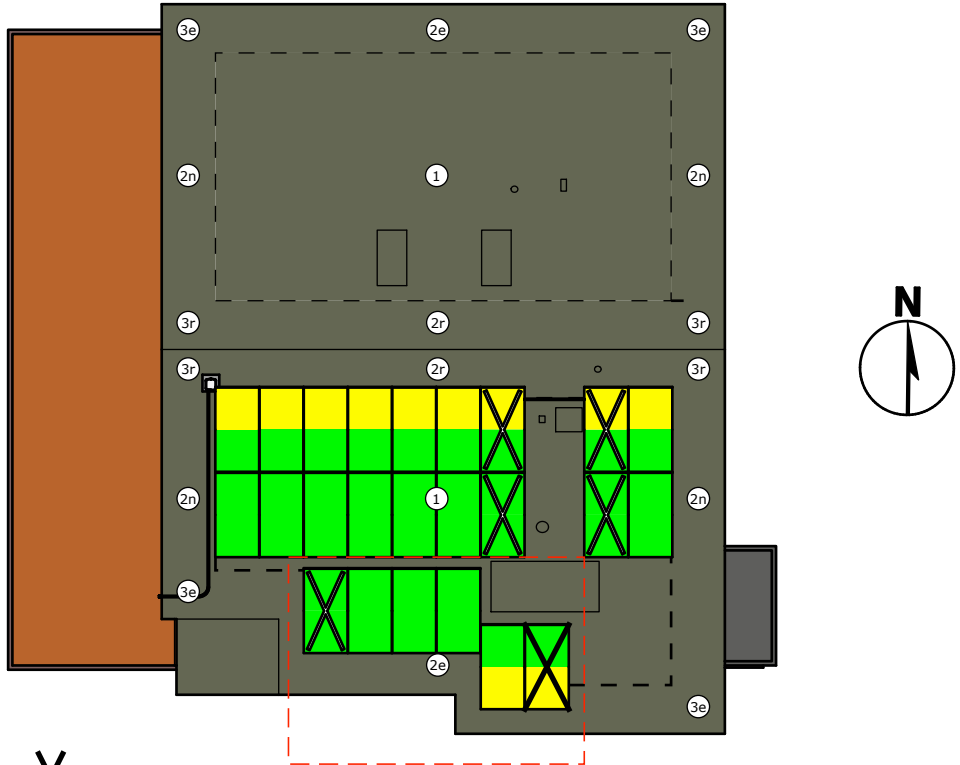
Roof section with 5.6:12 slope and flush mounted non-exposed solar modules with XR10 rails

Roof Zone	Max Force (psf)	Attachment Spacing (in)	Nominal Attachment Spacing (in)	Max Cantilever	# Rails per Module	Module Area per Attachment	Uplift (lb)
1/2e	-22.50	57 in	48 in	23 in	2 in	17.1	386.0
2n/2r/ 3e	-32.14	40 in	24 in	16 in	2 in	12.0	386.0
3r	-35.81	36 in	24 in	14 in	2 in	10.7	386.0

Roof section with 5.6:12 slope and flush mounted exposed solar modules with XR10 rails

Roof Zone	Max Force (psf)	Attachment Spacing (in)	Nominal Attachment Spacing (in)	Max Cantilever	# Rails per Module	Module Area per Attachment	Uplift (lb)
1/2e	-33.75	38 in	24 in	15 in	2 in	11.4	386.0
2n/2r/3e	-48.22	26 in	24 in	11 in	2 in	8.0	386.0
3r	-53.71	24 in	0 in	9 in	2 in	7.1	386.0

Roof zone #1 is the interior area of the roof that is not within the other zones. Roof zone #2e is the area that is not within zone #3 and is within 4 ft 2 in of the roof eave. Roof zone #2n is the area that is not within zone #3 and is within 4 ft 2 in of the roof rake. Roof zone #2r is the area that is not within zone #3 and is within 4 ft 2 in of the roof ridge. Roof zone #3e is a 4 ft 2 in x 4 ft 2 in square at the lower corners of the roof. Roof zone #3r is a 4 ft 2 in x 4 ft 2 in square at the upper corners of the roof.



a = 4 ft 2 in ~~X~~ - EXPOSED MODULES

Installation Requirements

Use S-5N attachments using two set screws. Install the attachment into the 26 ga steel. Alternately, use Zilla Double Stud-XL attachments using eight 0.25-inch x 1.5-inch lag screws. Install the attachment into the 0.5-inch OSB or plywood decking.

Use IronRidge XR10 rails. Additional manufacturers and models may be used with written confirmation from the engineer of record.

Solar modules shall not be cantilevered more than the maximum allowable cantilever provided by the rail manufacturer and half the allowable support spacing for that zone.

Attachments between solar modules and racks must be between 11 3/4 in and 21 5/8 in from the end of the solar modules.

Solar modules shall not be installed within 7 in of the roof edge or change in roof slope.

Nuts and screws for IronRidge components shall be torqued to the settings in the torque table.

	1	2	3	4	5	6	7
A	IronRidge socket and torque settings		Wind Speed	V	130 mph		
	Item	Socket	Torque	Roof Type	RoofType	Gabled	
	Bonded Splice Screws	5/16"	20 in-lbs	Roof Material	RoofMat	GulfLok	
	UFO Clamp	7/16"	80 in-lbs	Attachment	Attach	S-5N	
	Rail Grounding Lug Nut	7/16"	80 in-lbs	Substrate	Substrate	hidden fastener roof	
	Grounding Lug Terminal Screw	7/16"	20 in-lbs	Substrate Material	SubstrateMat	26 ga steel	
	Expansion Joint Nut	7/16"	80 in-lbs	Fastener Type	FastenType	set screws	
	Microinverter Kit Nut	7/16"	80 in-lbs	Fastener Qty	FastenQty	two	
B	External Pressure Coefficients, (GC), for Enclosed and Partially Enclosed Buildings (Figure 30.3-2B to 30.3-2H and 29.4-7)		Eave Height	Eht	19.084248 ft		
			Building Width Perpendicular to Ridge	W	41.8 ft		
			Building Length Parallel to Ridge	L	50.0 ft		
			Soffit Width	OH	24 in		
			Slope of Roof	Slope	5.6:12		
			Exposure Category	EC	B		
			Module Model	ModModel	Q.Peak Duo XL-G10.3 BFG/485		
			Min Attachment Spacing	MinAS	24 in		
C	Roof Zone	GCp min		Max Attachment Spacing	MaxAS	72 in	
	1/2e	-1.443		Module Orientation	Orient	Portrait	
	2n/2r/3e	-2.062		Low Module Height Above Roof	H1	3.5 in	
	3r	-2.297		Module Tilt from Roof	omega	0	
			Parapet Height	hpt	0 ft		
			Rail Selection	rail	XR10		
			Safety Factor	SafetyFactor	2		
			Design Attachment Uplift	AttachUp	386 lbs		
D			Module Length	Lp	87.2 in		
			Module Width	Wp	41.1 in		
			Cell Count	CellCount	72		
			Min Strike Zone Distance	StrikeMin	11.8 in		
			Max Strike Zone Distance	StrikeMax	21.6 in		
			Roof Angle	Theta	25.0		
			Roof Slope Category	lowSlope	FALSE		
			Ridge Height	RHt	29.7 ft		
E			Roof Height Reference	RoofHtRef	mean roof height above grade		
			Roof Height	h	24.4 ft		
			Half Roof Height	rh2	12.2 ft		
			Area of Solar Module	Asm	24.88 ft2		
			Solar Module Pressure Equalization Factor	Ga	0.641	Figure 29.4-8	
			Width for Zone 2 and 3 Determination	a	4.18 ft	a=max(3,0.04*h,min(0.4*h,0.1*W,0.1*L))	
			Least Building Horiz Dist	B	41.87 ft	B=min(W,L)	
			Mean Roof Height : Least Building Horiz Dist	h/B	0.58		
			Load Factor Based on Strength Design	LF	1		
			Topographic Factor	Kzt	1	Topographic Factor is 1 since no topographic feature specified	
			Wind Directionality Factor	Kd	0.85	Table 26.6-1 kd=0.85 for buildings	
			Ground Elevation Factor	Ke	1	Table 26.9-1. Value of 1.0 is permissible for all elevations	
			Velocity Pressure Exposure Coefficient	Kh	0.660	Table 26.10-1 if h<15 then Kh=2.01*(15/zg)^(2/alpha) elseif h<=zg then Kh=2.01*(h/zg)^(2/alpha))	
			Velocity Pressure at Mean Roof Height	qh	24.2 psf	26.10.2 qh = (0.00256 * Kh * Kzt * Kd * Ke * V^2) * LF	
			Exposure Category Coefficient alpha	alpha	7.0	Table 26.11-1	
			Exposure Category Coefficient zg	zg	1,200 ft	Table 26.11-1	
			Parapet Height Factor	Gp	0.9 psf	Eqn 29.4-6 Gp = min(1.2,0.9+hpt/h)	
			Panel Cord Factor	Gc	1.03	Eqn 29.4-6 Gc=max(0.6+0.06*Lp/12,0.8)	
			Normalized wind area	An	110.61	Figure 29.4-7 An=1000/max(Lb,15)^2*Asm	
			Normalized Building Length	Lb	13.98	Figure 29.4-7 Lb=min(0.4*(h*max(W,L))^0.5,h,B)	
			High Module Height Above Roof	H2	3.50 in		
			Limit for Adjacent Modules	d1_limit	4.00 ft	d1_limit=max(4*h2, 4 ft)	
			Min Horiz Dist Between Modules & Roof Edge	d_minHoriz	0.58 ft	d_minHoriz=2*h2	
	1	2	3	4	5	6	7

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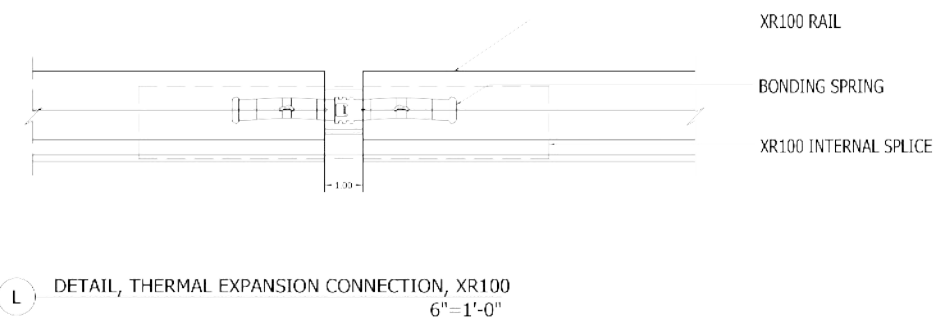
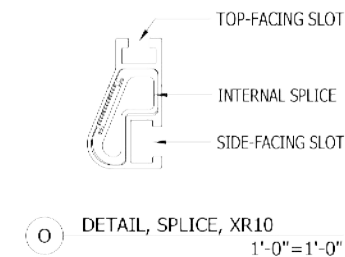
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PAGE TITLE:

ROOF ZONE CALCS

PAGE #:

S02





1495 ZEPHYR AVE HAYWARD CA 94544
800.227.9523 IRONRIDGE.COM

IRONRIDGE			
CLIENT NAME		SLOPED ROOF MOUNT SYSTEM	
PROJECT NAME		PROJECT ADDRESS	
WIND SPEED MPH		RISK CAT	
SNOW LOAD PSF		MODULE TYPE	
EXPOSURE CAT		MODULE W DC	
RISK CAT		MODULE QTY	
SYSTEM KW DC			

NOT FOR CONSTRUCTION

DATE: 12/18/2018

TIME: 10:00 AM

LOCATION: 1495 ZEPHYR AVE HAYWARD CA 94544

PROJECT: SLOPED ROOF PV SYSTEM

DETAILS: S 5 U ASSEMBLY

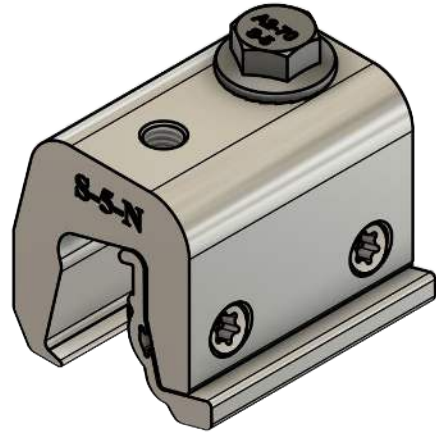
WIND: 3.1 SR

DATE: DEC 2018

PRICE: IR 9.4

PRICE: 243.06

PAGE TITLE:	PAGE #:
ATTACHMENT DATA	S03



(2x) M8-1.25 Threaded Hole

1.50 [38.10]

0.50 [12.70]

Top

0.84 [21.35]

Back

1.77 [44.90]

2.00 [50.80]

Front

S-5-N

0.31 [7.95]

1.57 [39.90]

Right

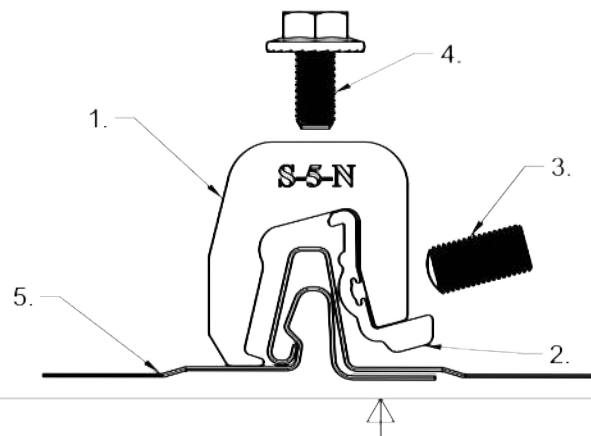
(2x) 3/8-24
Threaded Hole

0.38 [9.53]

1.25 [31.75]

General Notes:

1. S-5-N Clamp
2. S-5-N Insert
3. 0.9" 3/8-24 T30 Drive Setscrew
4. M8-1.25 16 mm Bolt
5. Example Roof

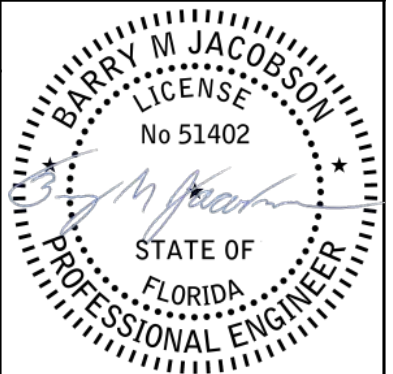


MATERIAL: 6000 Series Al				METAL ROOF INNOVATIONS, LTD. 8750 WALKER RD COLORADO SPRINGS, CO 80908 719-495-0518 719-495-0045 (FAX)
EST ASSEMBLY WT: .4065 lbs				
HARDWARE: M13.5 (1/2) x 3.75 (3/8) T30 Drive	TITLE S-5-N [CCD]			
	DRAWING NO NG73-A-0-D	DRAWN BY SNLR	DATE 3/8/2022	
	SCALE 1:1	FILE NAME NG73-A-0-D (S-5-N) [CCD]		
	S-5® PRODUCTS ARE PROTECTED BY MULTIPLE U.S. AND FOREIGN PATENTS. VISIT OUR WEBSITE AT WWW.S-5.COM FOR COMPLETE INFORMATION ON PATENTS AND TRADEMARKS			

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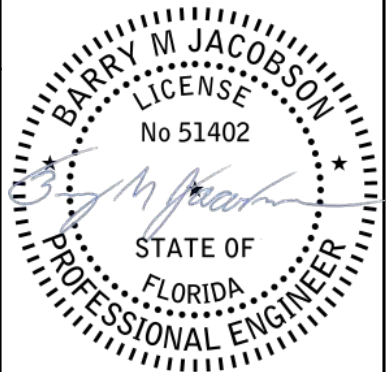


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ZETROUER**

Project Address: **1262 SW BLUFF DR
FORT WHITE FL 32038**

PAGE TITLE:	PAGE #:
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RACKING DATA S04

