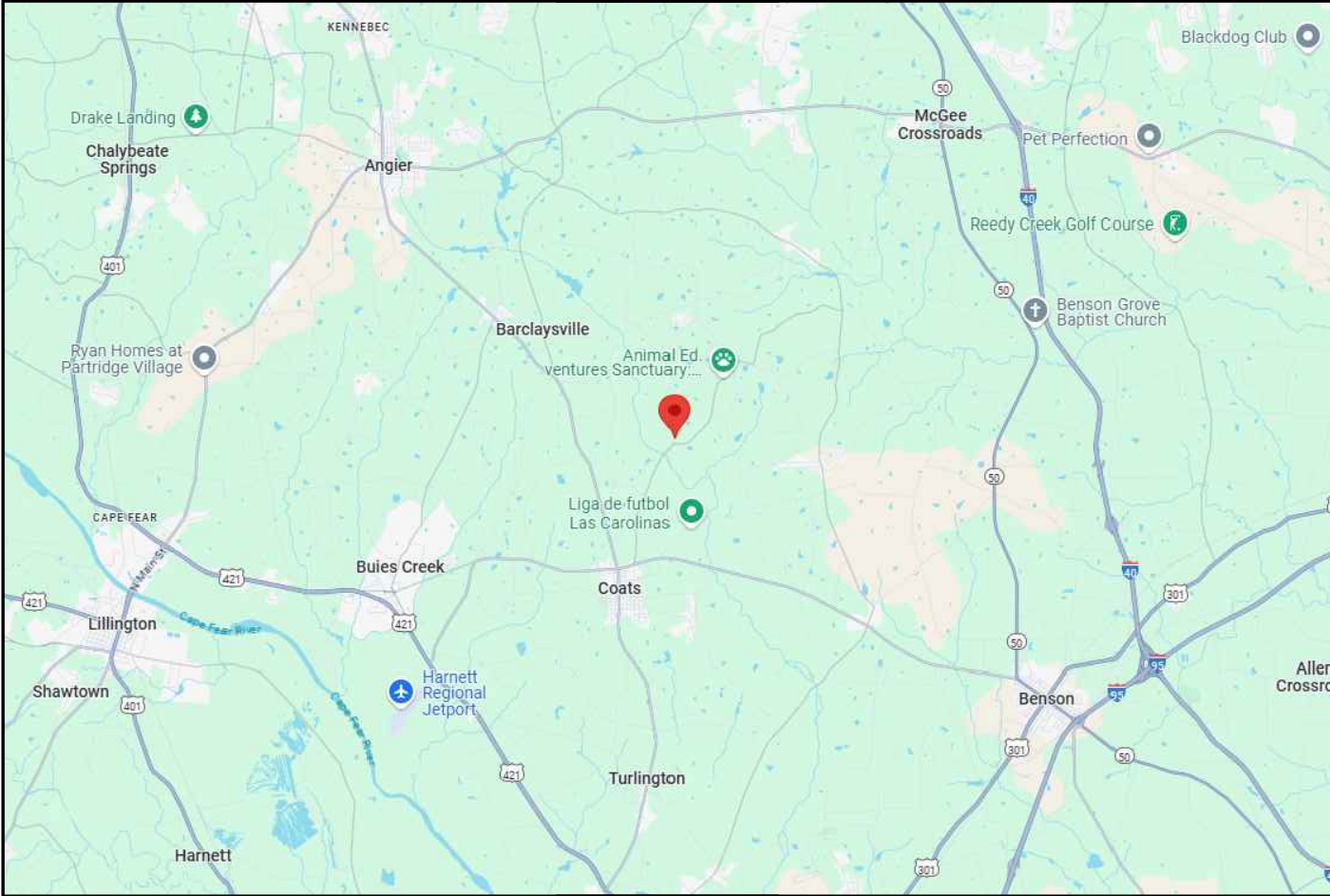



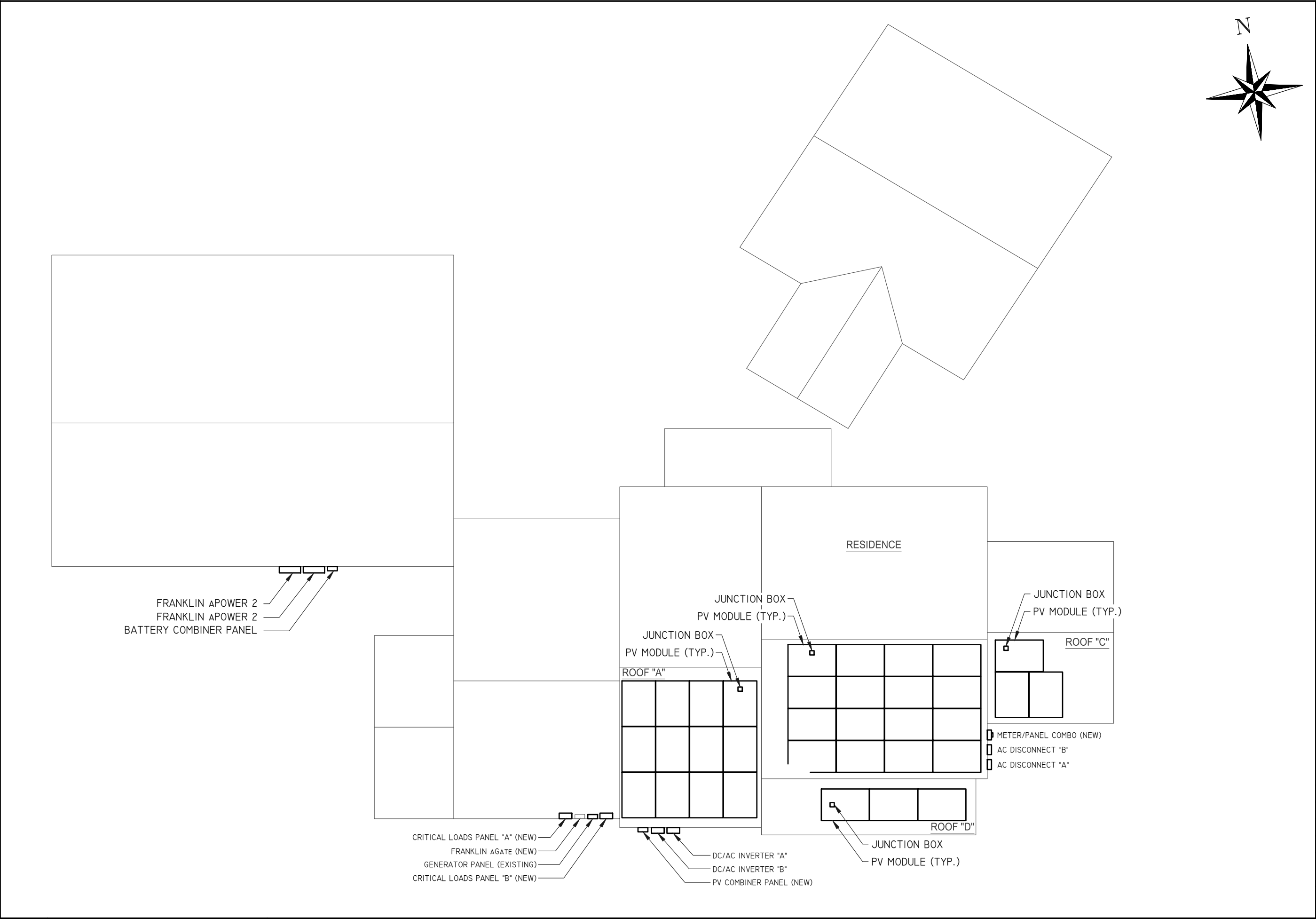



VICINITY MAP		PROPERTY MAP		SEAL:	
					
				ENGINEER:	
				MODEL ENERGY 300 FAYETTEVILLE ST. #1430 RALEIGH, NC 27602 919-274-9905 MODELENERGY.COM P-1194	
				JOB TITLE:	
				NEW SOLAR PV SYSTEM 15.300 kW DC INPUT 15.200 kW AC EXPORT TYLER HEISHMAN 2603 ABATTOIR ROAD COATS, NC 27521	
CONSTRUCTION NOTES		ABBREVIATIONS		CODE REFERENCES	
<div><div><div>1. ALL WORK AND EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST NATIONAL, STATE, AND LOCAL CODES AND ORDINANCES</div><div>2. FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS, BEST PRACTICES, AND SPECIFICATIONS</div><div>3. WIRES SHALL BE RATED AND LABELED "SUNLIGHT RESISTANT" WHERE EXPOSED TO AMBIENT CONDITIONS</div><div>4. THE PHOTOVOLTAIC SYSTEM SHALL NOT EXCEED 600 VOLTS OR 800 AMPS</div><div>5. EACH ELECTRICAL APPLIANCE SHALL BE PROVIDED WITH A NAMEPLATE GIVING THE IDENTIFYING NAME AND THE RATING IN VOLTS AND AMPERES, OR VOLTS AND WATTS. IF THE APPLIANCE IS TO BE USED ON A SPECIFIC FREQUENCY OR FREQUENCIES, IT SHALL BE SO MARKED. WHERE MOTOR OVERLOAD PROTECTION EXTERNAL TO THE APPLIANCES IS REQUIRED, THE APPLIANCE SHALL BE SO MARKED</div><div>6. WHERE APPLICABLE, GROUNDING ELECTRODE CONDUCTOR TO BE CONTINUOUS. GROUNDING CRIMPS TO BE IRREVERSIBLE</div><div>7. IN ONE- AND TWO-FAMILY DWELLINGS, LIVE PARTS IN PHOTOVOLTAIC SOURCE CIRCUITS AND PHOTOVOLTAIC OUTPUT CIRCUITS OVER 150 VOLTS TO GROUND, SHALL ONLY BE ACCESSIBLE TO QUALIFIED PERSONS WHILE ENERGIZED.</div><div>8. PHOTOVOLTAIC SYSTEMS SHALL BE PERMANENTLY MARKED AT VARIOUS EQUIPMENT LOCATIONS TO IDENTIFY THAT A PHOTOVOLTAIC SYSTEM IS INSTALLED AND THAT VARIOUS DANGERS ARE PRESENT.</div><div>9. EACH PHOTOVOLTAIC SYSTEM DISCONNECTING MEANS SHALL BE PERMANENTLY MARKED TO IDENTIFY IT AS A PHOTOVOLTAIC SYSTEM DISCONNECT</div><div>10. WHERE ALL TERMINALS OF A DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION, A WARNING SIGN SHALL BE MOUNTED ON OR ADJACENT TO THE DISCONNECT</div><div>11. A PERMANENT LABEL FOR THE DIRECT-CURRENT PHOTOVOLTAIC POWER SOURCE SHALL BE PROVIDED BY THE INSTALLED AT THE DC DISCONNECT MEANS</div><div>12. A PERMANENT PLAQUE OR DIRECTORY, DENOTING ALL ELECTRIC POWER SOURCES SERVING THE PREMISES, SHALL BE INSTALLED AT EACH SERVICE EQUIPMENT LOCATION AND AT LOCATIONS OF ALL POWER PRODUCTION SOURCES.</div><div>13. A PERMANENT PLAQUE OR DIRECTORY SHALL BE PROVIDED DENOTING THE LOCATIONS OF THE SERVICE DISCONNECT MEANS AND THE PHOTOVOLTAIC SYSTEM DISCONNECT MEANS IF THEY ARE NOT LOCATED AT THE SAME LOCATION.</div><div>14. ALL MODULE GROUND CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH NEC SECTION 690.4 (C)</div></div></div> <div><div><div>NOTICE TO CONTRACTOR: All construction must comply with current NC Building Codes and is subject to field inspection and verification.</div><div>APPROVED Limited liability only review Permit holder responsible for full compliance with the code</div><div>06/11/2025</div><div> Tyler Heishman HARNETT COUNTY NORTH CAROLINA</div></div></div>		<div><div>A AMPERE</div><div>AC ALTERNATING CURRENT</div><div>DC DIRECT CURRENT</div><div>EGC EQUIPMENT GROUNDING CONDUCTOR</div><div>EMT ELECTRICAL METAL TUBING</div><div>GALV GALVANIZED</div><div>GEC GROUNDING ELECTRODE CONDUCTOR</div><div>GND GROUND</div><div>I CURRENT</div><div>IMP CURRENT AT MAXIMUM POWER</div><div>ISC SHORT-CIRCUIT CURRENT</div><div>KVA KILOVOLT AMPERE</div><div>KW KILOWATT</div><div>MAX MAXIMUM</div><div>MIN MINIMUM</div><div>MCB MAIN CIRCUIT BREAKER</div><div>MLO MAIN LUG ONLY</div><div>NOM NOMINAL</div><div>NTS NOT TO SCALE</div><div>PNOM NOMINAL POWER</div><div>PV PHOTOVOLTAIC</div><div>PVC POLYVINYL CHLORIDE</div><div>SN SOLAR NOON</div><div>STC STANDARD TEST CONDITIONS</div><div>TYP TYPICAL</div><div>V VOLT</div><div>VMP VOLTAGE AT MAXIMUM POWER</div><div>Voc OPEN-CIRCUIT VOLTAGE</div><div>W WATT</div></div>			

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SEAL:



ENGINEER:

MODEL ENERGY

300 FAYETTEVILLE ST.
#1430
RALEIGH, NC 27602
919-274-9905
MODELENERGY.COM


P-1194

JOB TITLE:

NEW SOLAR PV SYSTEM
15.300 kW DC INPUT
15.200 kW AC EXPORT

TYLER HEISHMAN
2603 ABATTOIR ROAD
COATS, NC 27521

CLIENT:



SOUTHERN
ENERGY
MANAGEMENT
ENERGY EFFICIENCY & SOLAR POWER

ISSUED FOR:	DATE:
CONSTRUCTION	05/27/25

SITE INFORMATION

PV2.1

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ROOF LOADING	
GROUND SNOW LOAD:	15 LBS./SQFT.
LIVE LOAD:	20 LBS./SQFT.
DEAD LOAD:	
ROOFING	3.9 LBS./SQFT.
PV ARRAY	2.7 LBS./SQFT.
TOTAL	6.6 LBS./SQFT.
WIND LOAD:	
UPLIFT ZONE 1	-23.0 LBS./SQFT.
UPLIFT ZONE 2	-38.0 LBS./SQFT.
UPLIFT ZONE 3	-57.1 LBS./SQFT.
DOWNWARD	13.6 LBS./SQFT.
FASTENER LOAD:	
UPLIFT ZONE 1	-147 LBS.
UPLIFT ZONE 2	-162 LBS.
UPLIFT ZONE 3	-121 LBS.
DOWNWARD	87 LBS.

ROOF MOUNT & FASTENER	
ROOF MOUNT:	
MAKE	S-5!
MODEL	SOLARFOOT
MATERIAL	ALUMINUM
FASTENER	
MAKE	S-5!
MODEL	TYPE 17-AB MILLED
MATERIAL	ZINC/STEEL
SIZE	1/4"-14 X 1 1/2"
GENERAL	
WEIGHT	0.5 LBS
FASTENERS PER MOUNT	4 PER MOUNT
MAX. PULL-OUT FORCE	356 LBS.
SAFETY FACTOR	2
DESIGN PULL-OUT FORCE	178 LBS.

- FASTENERS EMBEDDED FULLY INTO 1/2" OF OSB SHEATHING

ARRAY SUMMARY	
# MODULES	12
# ROOF MOUNTS	67
RAIL LENGTH	96 FT.
ARRAY AREA	269 SQFT.
ARRAY WEIGHT	727 LBS.
AZIMUTH @ SN	187°
TILT ANGLE	19°

PV MODULES	
MAKE	REC
MODEL	REC450AA PURE-RX
WIDTH	47.44"
LENGTH	68.03"
THICKNESS	1.18"
WEIGHT	51.6 LBS

ROOF SUMMARY	
STRUCTURE:	
TYPE	TRUSSES
MATERIAL	SOUTHERN PINE #2
SIZE	2" X 4"
SPACING	24" O.C.
EFF. SPAN	12'-0"
PITCH	4 / 12
DENSITY	30 LBS./CU.FT.
DECKING:	
TYPE	OSB
MATERIAL	WOOD COMPOSITE
THICKNESS	3/8"
WEIGHT	1.6 LBS./SQFT.
ROOFING:	
TYPE	CORRUGATED
MATERIAL	METAL
WEIGHT	2.3 LBS./SQFT.

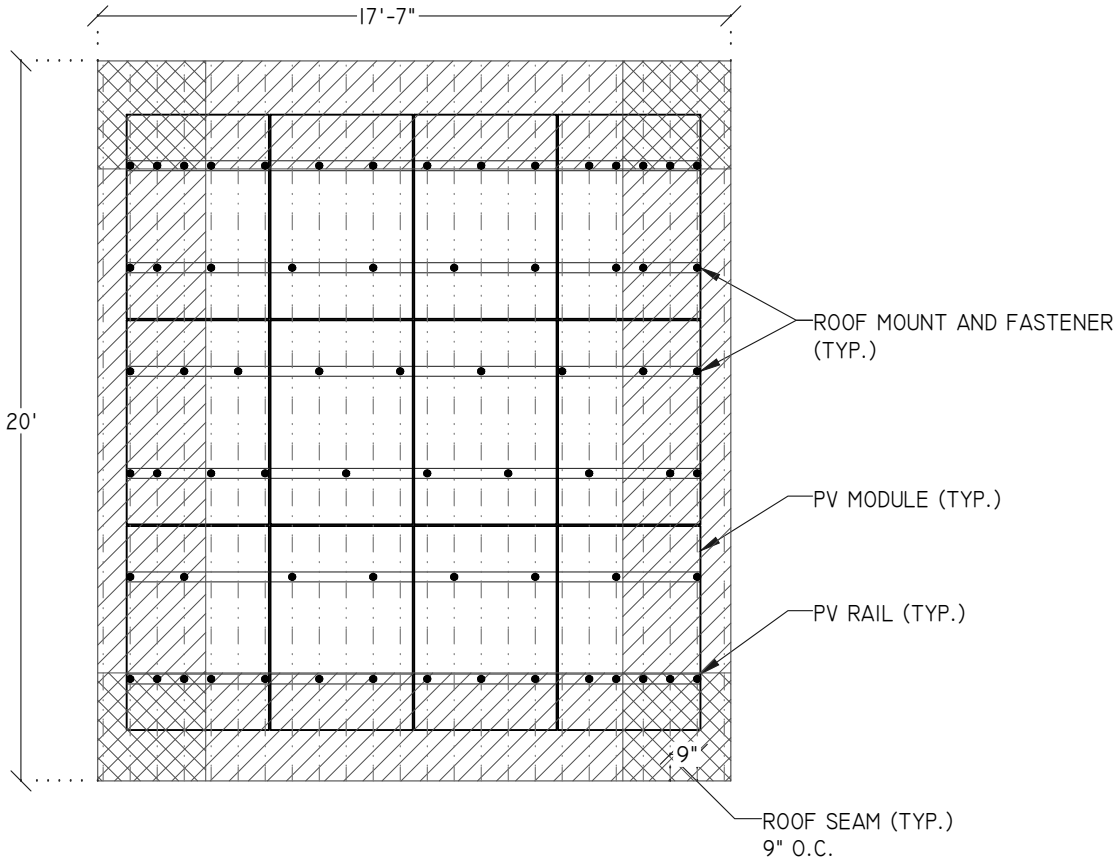
STATEMENT OF STRUCTURAL COMPLIANCE

THE EXISTING ROOF STRUCTURE HAS BEEN DESIGNED TO SUPPORT THE ADDITIONAL LOADS OF THE PROPOSED PV SYSTEM. IN ADDITION, THE RACKING AND FASTENING SYSTEM SHALL BE CAPABLE OF SECURING THE SYSTEM TO THE STRUCTURE UNDER DESIGN CONDITIONS WHEN INSTALLED PROPERLY AND IN ACCORDANCE WITH THE RACKING AND FASTENING ARRANGEMENT DETAILED WITHIN THESE DRAWINGS.

NAME: ANDREW W. KING, PE
TITLE: PROFESSIONAL ENGINEER

ROOF ZONES:

ALL ZONES MAX. RAIL OVERHANG = 6"
☐ ZONE 1 MAX. FASTENER SPAN ZONE 1 = 27"
▨ ZONE 2 MAX. FASTENER SPAN ZONE 2 = 18"
▩ ZONE 3 MAX. FASTENER SPAN ZONE 3 = 9"



SEAL:

ENGINEER:

MODEL ENERGY

300 FAYETTEVILLE ST.
#1430
RALEIGH, NC 27602
919-274-9905
MODELENERGY.COM

P1194

JOB TITLE:

NEW SOLAR PV SYSTEM
15.300 kW DC INPUT
15.200 kW AC EXPORT

TYLER HEISHMAN
2603 ABATTOIR ROAD
COATS, NC 27521

CLIENT:

SOUTHERN ENERGY
MANAGEMENT
ENERGY EFFICIENCY & SOLAR POWER

ISSUED FOR: CONSTRUCTION

DATE: 05/27/25

STRUCTURAL INFORMATION

PV3.1

ROOF LOADING	
GROUND SNOW LOAD:	15 LBS./SQFT.
LIVE LOAD:	20 LBS./SQFT.
DEAD LOAD:	
ROOFING	3.9 LBS./SQFT.
PV ARRAY	2.8 LBS./SQFT.
TOTAL	6.7 LBS./SQFT.
WIND LOAD:	
UPLIFT ZONE 1	-23.0 LBS./SQFT.
UPLIFT ZONE 2	-38.0 LBS./SQFT.
UPLIFT ZONE 3	-57.1 LBS./SQFT.
DOWNWARD	13.6 LBS./SQFT.
FASTENER LOAD:	
UPLIFT ZONE 1	-170 LBS.
UPLIFT ZONE 2	-113 LBS.
UPLIFT ZONE 3	-85 LBS.
DOWNWARD	101 LBS.

- FASTENERS EMBEDDED FULLY INTO 1/2" OF OSB SHEATHING

ROOF MOUNT & FASTENER	
ROOF MOUNT:	
MAKE	S-5!
MODEL	SOLARFOOT
MATERIAL	ALUMINUM
FASTENER	
MAKE	S-5!
MODEL	TYPE 17-AB MILLED
MATERIAL	ZINC/STEEL
SIZE	1/4"-14 X 1 1/2"
GENERAL	
WEIGHT	0.5 LBS
FASTENERS PER MOUNT	4 PER MOUNT
MAX. PULL-OUT FORCE	356 LBS.
SAFETY FACTOR	2
DESIGN PULL-OUT FORCE	178 LBS.

ARRAY SUMMARY	
# MODULES	16
# ROOF MOUNTS	92
RAIL LENGTH	183 FT.
ARRAY AREA	359 SQFT.
ARRAY WEIGHT	995 LBS.
AZIMUTH @ SN	187°
TILT ANGLE	19°

PV MODULES	
MAKE	REC
MODEL	REC450AA PURE-RX
WIDTH	47.44"
LENGTH	68.03"
THICKNESS	1.18"
WEIGHT	51.6 LBS

ROOF SUMMARY	
STRUCTURE:	
TYPE	TRUSSES
MATERIAL	SOUTHERN PINE #2
SIZE	2" X 4"
SPACING	24" O.C.
EFF. SPAN	12'-0"
PITCH	4 / 12
DENSITY	30 LBS./CU.FT.
DECKING:	
TYPE	OSB
MATERIAL	WOOD COMPOSITE
THICKNESS	3/8"
WEIGHT	1.6 LBS./SQFT.
ROOFING:	
TYPE	CORRUGATED
MATERIAL	METAL
WEIGHT	2.3 LBS./SQFT.

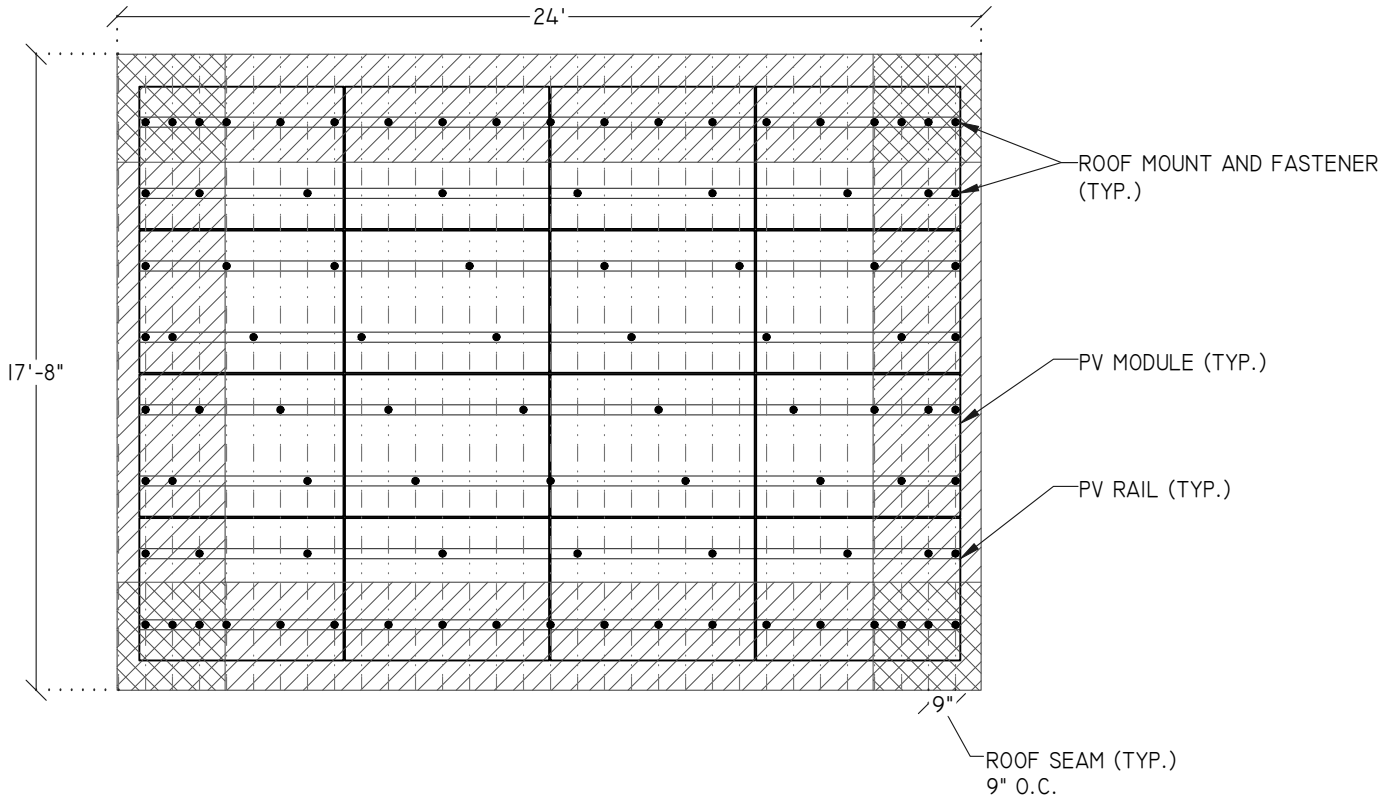
STATEMENT OF STRUCTURAL COMPLIANCE

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NAME: ANDREW W. KING, PE
TITLE: PROFESSIONAL ENGINEER

ROOF ZONES:

ALL ZONES MAX. RAIL OVERHANG = 6"
☐ ZONE 1 MAX. FASTENER SPAN ZONE 1 = 45"
▨ ZONE 2 MAX. FASTENER SPAN ZONE 2 = 18"
▩ ZONE 3 MAX. FASTENER SPAN ZONE 3 = 9"



SEAL:

ENGINEER:

MODEL ENERGY

300 FAYETTEVILLE ST.
#1430
RALEIGH, NC 27602
919-274-9905
MODELENERGY.COM

P1194

JOB TITLE:

NEW SOLAR PV SYSTEM
15.300 kW DC INPUT
15.200 kW AC EXPORT
TYLER HEISHMAN
2603 ABATTOIR ROAD
COATS, NC 27521

CLIENT:

SOUTHERN ENERGY
MANAGEMENT
ENERGY EFFICIENCY & SOLAR POWER

ISSUED FOR:	DATE:
CONSTRUCTION	05/27/25

STRUCTURAL
INFORMATION

PV3.2

ROOF LOADING	
GROUND SNOW LOAD:	15 LBS./SQFT.
LIVE LOAD:	20 LBS./SQFT.
DEAD LOAD:	
ROOFING	3.9 LBS./SQFT.
PV ARRAY	2.8 LBS./SQFT.
TOTAL	6.7 LBS./SQFT.
WIND LOAD:	
UPLIFT ZONE 1	-23.0 LBS./SQFT.
UPLIFT ZONE 2	-38.0 LBS./SQFT.
UPLIFT ZONE 3	-57.1 LBS./SQFT.
DOWNWARD	13.6 LBS./SQFT.
FASTENER LOAD:	
UPLIFT ZONE 1	-147 LBS.
UPLIFT ZONE 2	-162 LBS.
UPLIFT ZONE 3	-121 LBS.
DOWNWARD	87 LBS.

ROOF MOUNT & FASTENER	
ROOF MOUNT:	
MAKE	S-5!
MODEL	SOLARFOOT
MATERIAL	ALUMINUM
FASTENER	
MAKE	S-5!
MODEL	TYPE 17-AB MILLED
MATERIAL	ZINC/STEEL
SIZE	1/4"-14 X 1 1/2"
GENERAL	
WEIGHT	0.5 LBS
FASTENERS PER MOUNT	4 PER MOUNT
MAX. PULL-OUT FORCE	356 LBS.
SAFETY FACTOR	2
DESIGN PULL-OUT FORCE	178 LBS.

- FASTENERS EMBEDDED FULLY INTO 1/2" OF OSB SHEATHING

ARRAY SUMMARY	
# MODULES	3
# ROOF MOUNTS	24
RAIL LENGTH	28 FT.
ARRAY AREA	67 SQFT.
ARRAY WEIGHT	189 LBS.
AZIMUTH @ SN	187°
TILT ANGLE	19°

PV MODULES	
MAKE	REC
MODEL	REC450AA PURE-RX
WIDTH	47.44"
LENGTH	68.03"
THICKNESS	1.18"
WEIGHT	51.6 LBS

ROOF SUMMARY	
STRUCTURE:	
TYPE	TRUSSES
MATERIAL	SOUTHERN PINE #2
SIZE	2" X 4"
SPACING	24" O.C.
EFF. SPAN	9'-0"
PITCH	4 / 12
DENSITY	30 LBS./CU.FT.
DECKING:	
TYPE	OSB
MATERIAL	WOOD COMPOSITE
THICKNESS	3/8"
WEIGHT	1.6 LBS./SQFT.
ROOFING:	
TYPE	CORRUGATED
MATERIAL	METAL
WEIGHT	2.3 LBS./SQFT.

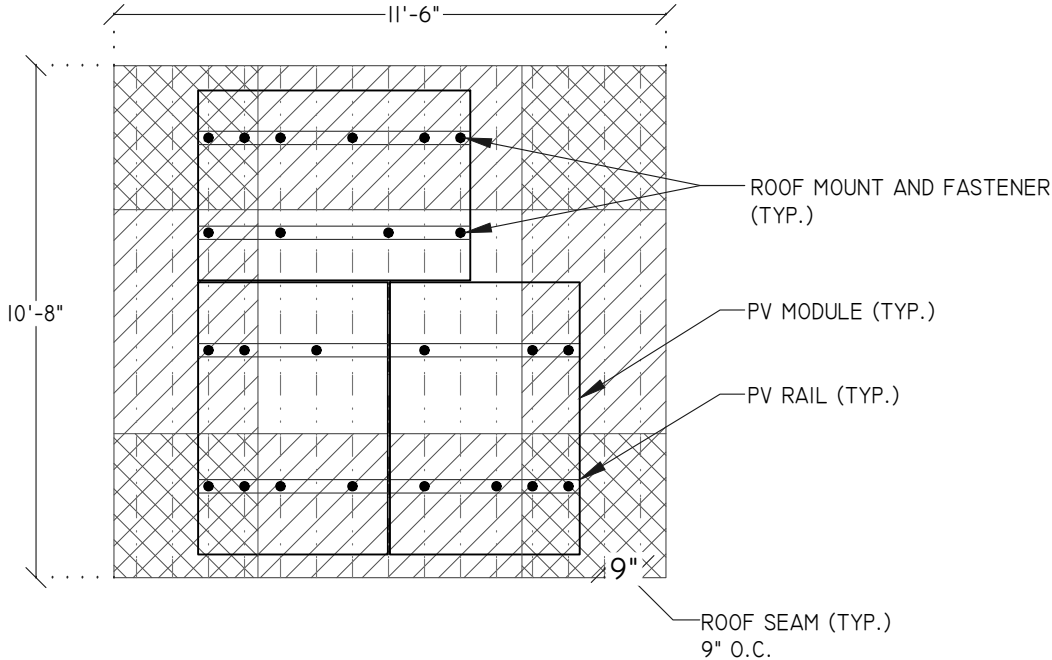
STATEMENT OF STRUCTURAL COMPLIANCE

THE EXISTING ROOF STRUCTURE HAS BEEN DESIGNED TO SUPPORT THE ADDITIONAL LOADS OF THE PROPOSED PV SYSTEM. IN ADDITION, THE RACKING AND FASTENING SYSTEM SHALL BE CAPABLE OF SECURING THE SYSTEM TO THE STRUCTURE UNDER DESIGN CONDITIONS WHEN INSTALLED PROPERLY AND IN ACCORDANCE WITH THE RACKING AND FASTENING ARRANGEMENT DETAILED WITHIN THESE DRAWINGS.

NAME: ANDREW W. KING, PE
TITLE: PROFESSIONAL ENGINEER

ROOF ZONES:

ALL ZONES	MAX. RAIL OVERHANG = 6"
☐ ZONE 1	MAX. FASTENER SPAN ZONE 1 = 27"
▨ ZONE 2	MAX. FASTENER SPAN ZONE 2 = 18"
▩ ZONE 3	MAX. FASTENER SPAN ZONE 3 = 9"



SEAL:

ENGINEER:

MODEL ENERGY

300 FAYETTEVILLE ST.
#1430
RALEIGH, NC 27602
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P1194

JOB TITLE:

NEW SOLAR PV SYSTEM
15.300 kW DC INPUT
15.200 kW AC EXPORT
TYLER HEISHMAN
2603 ABATTOIR ROAD
COATS, NC 27521

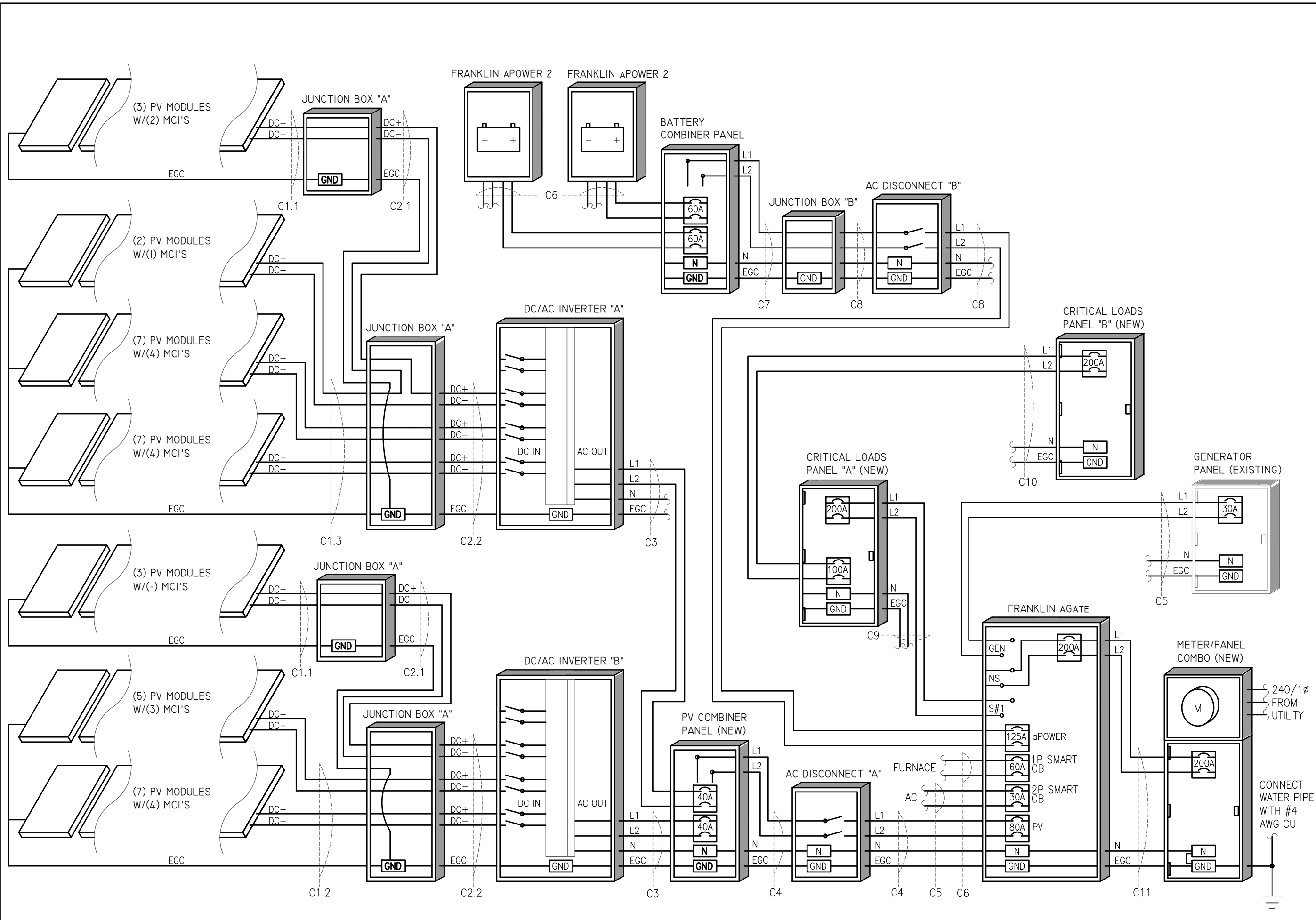
CLIENT:

SOUTHERN ENERGY
MANAGEMENT
ENERGY EFFICIENCY & SOLAR POWER

ISSUED FOR:	DATE:
CONSTRUCTION	05/27/25

STRUCTURAL
INFORMATION

PV3.3



1 PV SYSTEM ELECTRICAL WIRING SCHEMATIC

SCALE : NTS

SEAL:

ENGINEER:

MODEL ENERGY
300 FAYETTEVILLE ST.
#1430
RALEIGH, NC 27602
919-274-9905
MODELENERGY.COM
P1194

JOB TITLE:

NEW SOLAR PV SYSTEM
15.300 kW DC INPUT
15.200 kW AC EXPORT

TYLER HEISHMAN
2603 ABATTOIR ROAD
COATS, NC 27521

CLIENT:

ISSUED FOR: CONSTRUCTION

DATE: 05/27/25

ELECTRICAL INFORMATION

PV4.1

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PV MODULES	
MAKE	REC
MODEL	REC450AA PURE-RX
TECHNOLOGY	BIFACIAL
NOM. POWER (Pnom)	450 WATTS
NOM. VOLT. (Vmp)	54.30 VOLTS
O.C. VOLT. (Voc)	65.10 VOLTS
MAX. SYS. VOLT.	1000 V (UL)
TEMP. COEF. (Vtc)	-0.24 %/°C
NOM. CURR. (Imp)	8.29 AMPS
S.C. CURR. (Isc)	8.81 AMPS
MAX. SERIES FUSE	25 AMPS

MID-CIRCUIT INTERRUPTER (NEW)	
MAKE	TESLA
MODEL	MCI-2
NOMINAL DC INPUT CURRENT	13 AMPS
MAX DC INPUT Isc	17 AMPS
MAX DC VOLTAGE	1000 VOLTS
MAX DEVICES PER STRING	5
CONNECTOR	MC4
ENCLOSURE RATING	NEMA 4

JUNCTION BOX "A" (NEW)	
MAKE	SOLADECK
MODEL	0783-3R
PRO. RATING	NEMA 3R
VOLT. RATING	600 VOLTS
AMP RATING	120 AMPS
UL LISTING	UL 50

JUNCTION BOX "B" (NEW)	
MAKE	GENERIC
MODEL	N/A
PRO. RATING	NEMA 3R
VOLT. RATING	600 VOLTS
AMP RATING	120 AMPS
UL LISTING	UL 50

CRITICAL LOADS PANEL "A" (NEW)	
MAKE	N/A
MODEL	N/A
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
BUS RATING	200 AMPS
UL LIST. (Y/N)	YES
MAIN BREAKER (Y/N)	YES
BREAKER RATING	200 AMPS

NOTES:

- PROVIDE (1) 100 AMP BREAKER FOR CRITICAL LOADS PANEL "B" CIRCUIT
- PROVIDE WITH PERMANENT LABEL THAT READS, "FED BY MULTIPLE POWER SOURCES".

DC/AC INVERTER "A" & "B" (NEW)	
MAKE	TESLA
MODEL	I538000-XX-Y
TECHNOLOGY	TRANS-LESS
DC INPUT:	
MAX. POWER	12920 WATTS
MAX. VOLT	600 VOLTS
NOM. VOLT.	400 VOLTS
MAX. CURRENT	13 AMPS
MAX. SCC	17 AMPS
STRINGS INPUTS	4 STRINGS
AC OUTPUT:	
RATED POWER	7600 WATTS
MAX. POWER	7680 WATTS
NOM. VOLT.	240 VOLTS
MAX. CURR.	32 AMPS
GFP (Y/N)	YES
RPP (Y/N)	YES
GFCI (Y/N)	YES
AFCI (Y/N)	YES
DC DISC. (Y/N)	YES
RAPID SHUTDOWN	AUTOMATIC
PROTECT. RATING	NEMA 4X

FRANKLIN aPOWER (NEW)	
MAKE	FRANKLIN WH
MODEL #	aPOWER 2
NOMINAL BATTERY ENERGY	15.0 KWH
AC OUTPUT:	
NOMINAL VOLTAGE	240 VOLTS
NOMINAL OUTPUT CURRENT	42 AMPS
MAX CONT. OUTPUT CURRENT	48 AMPS
AC INPUT:	
NOMINAL AC INPUT CURRENT	34 AMPS
MAX CONT. INPUT CURRENT	38 AMPS
MAX OCP CIRCUIT BREAKER	60 AMPS
GFP (Y/N)	YES
RPP (Y/N)	YES
GFCI (Y/N)	YES
AFCI (Y/N)	YES
DC DISC. (Y/N)	YES
RAPID SHUTDOWN	AUTOMATIC
PROTECT. RATING	NEMA 4X

CRITICAL LOADS PANEL "B" (NEW)	
MAKE	N/A
MODEL	N/A
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
BUS RATING	200 AMPS
UL LIST. (Y/N)	YES
MAIN BREAKER (Y/N)	YES
BREAKER RATING	200 AMPS

CONDUCTOR SCHEDULE													
TAG	CURRENT CARRYING CONDUCTORS				GROUNDING CONDUCTORS				CONDUIT/RACEWAY				NOTES
	QTY.	SIZE	MATERIAL	INSULATION	QTY.	SIZE	MATERIAL	INSULATION	QTY.	SIZE	MATERIAL	LOCATION	
CI.1	2	10 AWG	COPPER	THWN	1	6 AWG	COPPER	BARE	-	-	-	FREE AIR	2,4,5
CI.2	6	10 AWG	COPPER	THWN	1	6 AWG	COPPER	BARE	-	-	-	FREE AIR	2,4,5
C2.1	2	10 AWG	COPPER	THHN	1	10 AWG	COPPER	THHN	1	3/4"	FMC	INT	2,4,5
C2.2	4	10 AWG	COPPER	THHN	1	10 AWG	COPPER	THHN	1	3/4"	FMC	INT	2,4,5
C2.3	6	10 AWG	COPPER	THHN	1	10 AWG	COPPER	THHN	1	3/4"	FMC	INT	2,4,5
C3	3	8 AWG	COPPER	THHN	1	10 AWG	COPPER	THHN	1	8/3	NMC	INT/EXT	2,4,5
C4	3	2 AWG	COPPER	THWN	1	4 AWG	COPPER	THWN	1	1"	NOTE 5	INT/EXT	2,4,5
C5	2	10 AWG	COPPER	THWN	1	10 AWG	COPPER	THWN	1	10/2	NMC	INT	2,4,5
C6	3	4 AWG	ALUMINUM	THHN	1	4 AWG	ALUMINUM	THHN	1	4/4/4	SEU	EXT	2,4,5
C7	3	1 AWG	COPPER	THWN	1	6 AWG	COPPER	THWN	1	1-1/4"	NOTE 5	INT/EXT	-
C8	3	2/0	ALUMINUM	THHN	1	1 AWG	ALUMINUM	THHN	1	%,%,%1	SER	INT/EXT	2,4,5
C9	3	3/0	COPPER	THWN	1	6 AWG	COPPER	THWN	1	2"	NOTE 5	INT/EXT	2,4,5
C10	3	1 AWG	ALUMINUM	THHN	1	3 AWG	ALUMINUM	THHN	1	1,1,1,3	SER	INT/EXT	2,4,5
C11	3	4/0	ALUMINUM	THHN	1	-	-	-	1	%,%,%4	SER	INT/EXT	2,4,5
XC	-	-	-	-	-	-	-	-	-	-	-	-	3

NOTES:

1. MANUFACTURER PROVIDED, UL LISTED WIRING HARNESS FOR USE ON EXPOSED ROOFS
2. CONDUIT SIZE SHOWN IS CODE MINIMUM. LARGER SIZES ARE ALLOWED.
3. EXISTING CONDUCTORS, FIELD VERIFY
4. EQUIPMENT TERMINAL RATING SHALL BE A MINIMUM OF 75°C AT BOTH END OF CONDUCTOR
5. PVC, EMT, ROMEX, LFNMC & FMC ARE ACCEPTABLE WHEN USED IN ACCORDANCE WITH ARTICLES 330, 334, 348, 350, 352, 356, & 358 OF THE 2017 NEC

FRANKLIN aGATE (NEW)	
MAKE	FRANKLIN WH
MODEL #	AGATE
GRID TERMINAL AC OUTPUT:	
MAX CONT. AC OUTPUT:	38.4 KWATTS
NOM. VOLT.	240 VOLTS
MAX OCP CIRCUIT BREAKER	200 AMPS
GENERATOR/NON-BACKUP/ BACK-UP TERMINALS RATINGS	
NOM. AC INPUT CURRENT (A)	160 AMPS
NOM. AC INPUT POWER (kW)	38.4 kW
PV INVERTER INPUT:	
NOM. AC INPUT CURRENT (A)	64 AMPS
NOM. AC INPUT POWER (kW)	15.36 kW
MAX OCP CIRCUIT BREAKER	80 AMPS
SMART CIRCUIT 1 & 2	
MAX OCP CIRCUIT BREAKER	
SINGLE POLE	40 AMPS
DOUBLE POLE	50 AMPS
BUSBAR MAX AC CURRENT (A)	280 AMPS
GFP (Y/N)	YES
PROTECT. RATING	NEMA 3R

NOTES:

- CONNECT CRITICAL LOADS PANEL VIA FRANKLIN OUTPUTS.
- PROVIDE (1) 200A MAIN BREAKER.
- BACK-FEED PV COMBINER OUTPUT VIA 70A BREAKER IN FRANKLIN aGATE PANEL.
- PROVIDE (1) 125 AMP BREAKER FOR aPOWER
- PROVIDE (1) 60 AMP BREAKER FOR FURNACE
- PROVIDE (1) 30 AMP BREAKER FOR A/C
- PCS IN AGATE SET TO NO EXPORT OF BATTERY POWER.

AC DISCONNECT "A" (NEW)	
MAKE	EATON
MODEL	N/A
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
AMP RATING	100 AMPS
UL LIST. (Y/N)	YES
FUSED (Y/N)	NO
FUSE RATING	N/A

NOTES:

- LOAD-BREAK RATED
- VISIBLE OPEN
- LOCKABLE IN OPEN POSITION
- INSTALL ADJACENT TO METER
- DISCONNECT TO BE READILY ACCESSIBLE TO UTILITY COMPANY PERSONNEL AT ALL TIMES

PV COMBINER PANEL (NEW)	
MAKE	N/A
MODEL	N/A
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
BUS RATING	125 AMPS
UL LIST. (Y/N)	YES
MAIN BREAKER (Y/N)	NO
BREAKER RATING	N/A

NOTES:

- BACK-FEED INVERTER "A" & "B" OUTPUT VIA (2) 40 AMP BREAKERS AT THE OPPOSITE END OF THE BUS BAR FROM THE INCOMING FEEDERS.
- PROVIDE WITH PERMANENT LABEL THAT READS, "FED BY MULTIPLE POWER SOURCES".

AC DISCONNECT "B" (NEW)	
MAKE	EATON
MODEL	N/A
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
AMP RATING	200 AMPS
UL LIST. (Y/N)	YES
FUSED (Y/N)	NO
FUSE RATING	N/A

NOTES:


- LOAD-BREAK RATED
- VISIBLE OPEN
- LOCKABLE IN OPEN POSITION
- INSTALL ADJACENT TO METER
- DISCONNECT TO BE READILY ACCESSIBLE TO UTILITY COMPANY PERSONNEL AT ALL TIMES

BATTERY COMBINER PANEL (NEW)	
MAKE	N/A
MODEL	N/A
ENCL. RATING	NEMA 3R
VOLT. RATING	240 VOLTS
BUS RATING	125 AMPS
UL LIST. (Y/N)	YES
MAIN BREAKER (Y/N)	NO
BREAKER RATING	N/A

NOTES:

- BACK-FEED BATTERY OUTPUT VIA (2) 60 AMP BREAKER AT THE OPPOSITE END OF THE BUS BAR FROM THE INCOMING FEEDERS.
- PROVIDE WITH PERMANENT LABEL THAT READS, "FED BY MULTIPLE POWER SOURCES".

SEAL:



ENGINEER:

MODEL ENERGY

300 FAYETTEVILLE ST.
#1430
RALEIGH, NC 27602
919-274-9905
MODELENERGY.COM


P1194

JOB TITLE:

NEW SOLAR PV SYSTEM
15.300 kW DC INPUT
15.200 kW AC EXPORT

TYLER HEISHMAN
2603 ABATTOIR ROAD
COATS, NC 27521

CLIENT:



ISSUED FOR:

DATE:

CONSTRUCTION

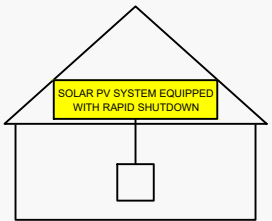
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ELECTRICAL INFORMATION

PV4.2

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



NEC 690.56 (C)(1)(a)
PLACE WITHIN 3FT OF SERVICE DISCONNECTING MEANS TO WHICH THE PV SYSTEMS ARE CONNECTED AND SHALL INDICATE THE LOCATIONS OF RAPID SHUTDOWN SWITCHES

WARNING: PHOTOVOLTAIC POWER SOURCE

NEC 690.31 (G)(3)&(4)
PLACE ON ALL JUNCTION BOXES, EXPOSED RACEWAYS, AND OTHER WIRING METHODS EVERY 10' AND ON EVERY SECTION SEPARATED BY ENCLOSURES, WALLS, PARTITIONS, CEILINGS, OR FLOORS.

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

NEC 690.56 (C)(3)
PLACE ON RAPID SHUTDOWN SWITCH OR EQUIPMENT WITH INTEGRATED RAPID SHUTDOWN *REFLECTIVE*

WARNING

MULTIPLE POWER SOURCES ONSITE
UTILITY SERVICE DISCONNECT LOCATED

NEC 705.10
PLACE AT SERVICE EQUIPMENT AND PV SYSTEM DISCONNECT MEANS

PV SYSTEM DISCONNECT

NEC 690.13 (B)
PLACE ON PV SYSTEM DISCONNECTING MEANS.

WARNING
THREE POWER SUPPLY SOURCES: UTILITY GRID, BATTERY, AND PV SOLAR ELECTRIC SYSTEM

NEC 705.12 (B)(3)
PLACE ON ALL EQUIPMENT THAT IS SUPPLIED BY BOTH POWER SOURCES

PCS CONTROLLED CURRENT SETTING: 200 AMPS

THE MAXIMUM OUTPUT CURRENT FROM THIS SYSTEM TOWARDS THE MAIN PANEL IS CONTROLLED ELECTRICALLY. REFER TO THE MANUFACTURER'S INSTRUCTIONS FOR MORE INFORMATION.

NEC 705.13
PLACE ON PANELS CONNECTED TO GATEWAY

WARNING

FED BY MULTIPLE POWER SOURCES

TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING UTILITY OVERCURRENT DEVICE SHALL NOT EXCEED AMPACITY OF BUSBAR

NEC 705.12 (B)(2)(3)(c)
PLACE ADJACENT TO BACK-FED BREAKER

EQUIPMENT LABEL NOTES

- LABELS SHOWN ARE 1/2 THEIR ACTUAL REQUIRED SIZE.
- LABEL MATERIAL SHALL BE SUITABLE FOR THE EQUIPMENT ENVIRONMENT.
- CONDUIT SHALL BE MARKED WITH REQUIRED LABEL EVERY 10 FEET.

WARNING

ELECTRIC SHOCK HAZARD
TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

NEC 690.13 (B)
PLACE ON PV SYSTEM DISCONNECTING MEANS.

WARNING

POWER SOURCE OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE

NEC 705.12 (B)(2)(3)(b)
PLACE ADJACENT TO BACK-FED BREAKER

DIRECT CURRENT PHOTOVOLTAIC POWER SOURCE

MAXIMUM VOLTAGE 600 VDC
MAX CIR. CURRENT 26.5 AMPS

NEC 690.53
PLACE ON ALL DC DISCONNECTING MEANS

PHOTOVOLTAIC POWER SOURCE

OPERATING AC VOLT. 240 VAC
MAXIMUM OPERATING AC OUTPUT CURRENT 64.0 AMPS

NEC 690.54
PLACE ON INTERCONNECTION DISCONNECTING MEANS

SEAL:



ENGINEER:

MODEL ENERGY

300 FAYETTEVILLE ST.
#1430
RALEIGH, NC 27602
919-274-9905
MODELENERGY.COM

P-1194

JOB TITLE:

NEW SOLAR PV SYSTEM
15.300 kW DC INPUT
15.200 kW AC EXPORT
TYLER HEISHMAN
2603 ABATTOIR ROAD
COATS, NC 27521

CLIENT:



ISSUED FOR:

DATE:

CONSTRUCTION

05/27/25

EQUIPMENT LABELS

PV5.1

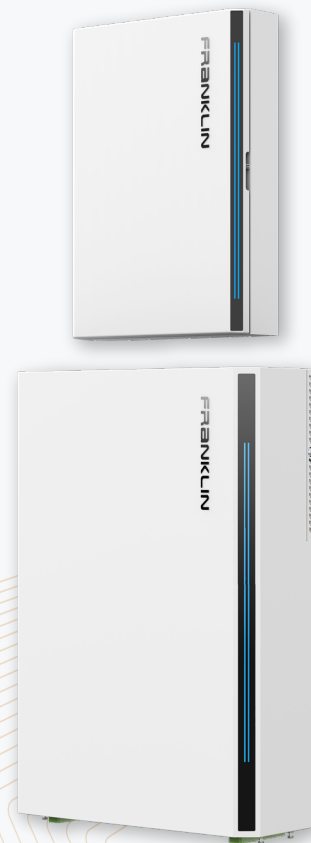
Franklin Home Power

The Franklin Home Power (FHP) system integrates the grid, solar generation, batteries and even generators, into a robust energy control system that is managed via a simple mobile app. The FHP provides real time monitoring and control for a home's day-to-day energy usage, and supplies energy from multiple power sources during grid outages.

The FHP's energy management is provided by the aGate X, an intelligent controller that integrates all power sources and automatically detects grid outages to seamlessly transition a home to backup power within 16ms.

An aGate X Smart Circuits Module is available for controlling of and automated load shedding for heavy energy loads during an outage. It provides custom scheduling of unique loads for more efficient use. A Generator Module can also be added to the aGate X for standby generator integration, providing maximum energy resilience and independence. The FHP is designed for daily cycling and emergency backup power. The aGate X complies with NEC 2017, NEC 2020, and UL1741 PCS Certification for main panel upgrade (MPU) avoidance.

The FHP system pairs the aGate X with the aPower X, a lithium iron phosphate (LFP) battery designed by FranklinWH. A single battery has large 13.6kWh capacity with continuous power of 5kW, and its peak power 10kW can last for 10s. Up to 15 aPower X batteries can be connected to a single aGate X.



One aGate X															
aPower X Units	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Capacity(kWh)	13.6	27.2	40.8	54.4	68	81.6	95.2	108.8	122.4	136	149.6	163.2	176.8	190.4	204
Cont. power(kW)	5	10	15	20	25	30	35	38.4	38.4	38.4	38.4	38.4	38.4	38.4	38.4
Peak power(kW)	10	20	30	40	50	60	70	76.8	76.8	76.8	76.8	76.8	76.8	76.8	76.8

For FHP system >8 units, please reach out to info@franklinwh.com

Safe

- Lithium iron phosphate battery
- Automotive grade lithium cells
- Advanced Battery Management System (BMS) with State of Health (SOH) pro-active battery technology.

Scalable

- Up to 15 aPower X units can be used with a single aGate X
- Usable energy expandable from 13.6kWh to 204kWh
- Continuous output power ranges from 5kW to 38.4kW

Intelligent

- Micro-grid interconnect device (MID) functionality
- Auto-detect grid outages, seamless power transfer
- Black-start functionality; daily PV restart capabilities

Easy & Flexible

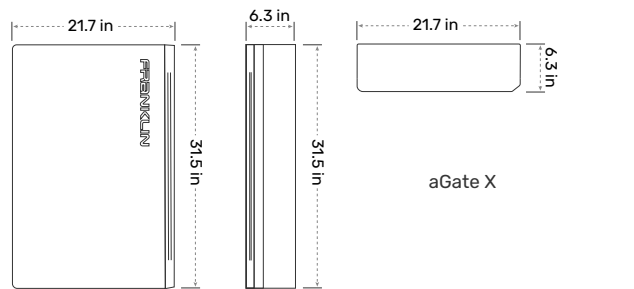
- Compatible with any solar inverter/standby generator
- Generator monitoring and controls via the FranklinWH app
- Pre-assembled, indoor/outdoor/wall/floor installation
- Multiple conduit entries
- App-based, remote commissioning

Reliable

- 12-year warranty
- NEMA 3R enclosure
- Corrosion-proof

The **aGate X** is available with two optional accessories that can be added to customize the homeowner's FHP experience:

- **Smart Circuits Module:** manual and scheduled control for unique electric circuits, via the FranklinWH app.
- **Generator Module:** standby generator integration, redundant power source to the aPower X.



Performance

Switch Over Time (grid to micro-grid)	< 16ms
User Interface	FranklinWH app
Warranty	12 years
Maximum Supply Fault Current	20 kA
Communications	Ethernet / 4G / Wifi

Electrical Connections

aPower Over Current Protection Device	100A Max
Solar Input Over Current Protection Device	80A Max
Backup Load Port Over Current Protection Device	200A Max
Generator Over Current Protection Device ¹	200A Max
Smart Circuits Over Current Protection Device ²	Option A: (1) × 80A Max @240V & (2) × 50A Max @120V Option B: (1) × 80A Max @240V & (1) × 50A Max @240V

Electrical Interface

Coupling	AC Coupled
Feed-in Phase	Split Phase
Split Phase	L1 / L2 / N / PE

Mechanical

Dimensions (W*H*D)	aGate X: 21.7 x 31.5 x 6.3 in (550 x 800 x 160 mm)
Weight	aGate X: 50 lb (23 Kg)
Installation	Wall mount

Compliance & Certificates

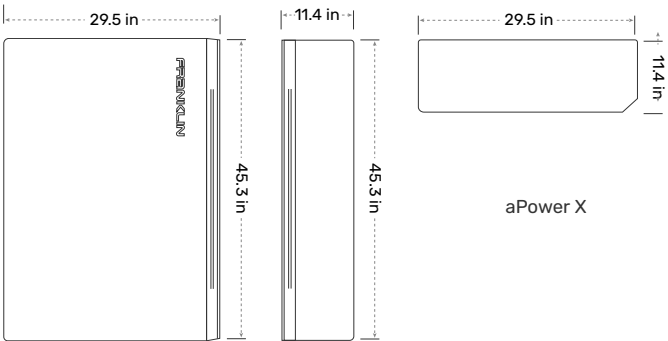
aGate X	UL1741 PCS, UL 67 ³ , UL 869A ³ , UL 916 ³
Seismic	AC156, OSHPD, IEEE 693-2005 (high)
Environmental	California Proposition 65 RoHS Directive 2011 / EU
Emissions	FCC Part 15 Class B, ICES 003

Environmental

Operating Temperature	-4°F to 122°F (-20°C to 50°C)
Operating Humidity (RH)	Up to 100% RH, condensing
Altitude	Maximum 9,843 ft (3,000 m)
Storage Condition	14°F to 113°F (-10°C to 45°C) Up to 95% RH, non-condensing
Enclosure Type	NEMA 3R
Environment	Indoor and outdoor rated

1: Generator Module is optional.
2: Smart Circuit Module is optional.
3: Sections from these standards were used during the safety evaluation and included in the UL 1741 listing.

The **aPower X** is a lithium iron phosphate (LFP), AC-coupled battery that is proprietary to the FHP system. With an all-in-one form factor, the aPower X battery is self-contained with battery cells, a battery management system, and an AC inverter.



Performance

Battery Chemistry	Lithium Iron Phosphate (LFP)
Usable System Energy	13.6 kWh per unit, scalable up to 15 units ⁴
Warranted Energy Throughput (12yrs)	43 MWh
Inverter Topology	Isolated
Nominal AC Voltage	120V / 240V, 60 Hz
Maximum Continuous / Peak Discharge Power (10 s)	5 kW / 10 kW
Round Trip Efficiency	89% ⁵
Noise Emission (optimal)	< 30 dB (A)
User Interface	FranklinWH app
Warranty	12 years

Electrical Interface

Coupling	AC-Coupled
Feed-in Phase	Split Phase
Split Phase	L1 / L2 / N / PE

Application Mode Programming

Self-Consumption
Load Shifting
Backup Standby

Mechanical

Dimensions(W*H*D)	aPower X:29.5 x 45.3 x 11.4 in (750 x 1150 x 290mm)
Weight	aPower X: 408 lb (185 Kg)
Installation	Wall mount or floor mount

Compliance & Certificates

aPower X	UL 9540, UL 1741SA, UL 1741SB, UL 1973, UL 9540A, IEEE 1547, IEEE 1547.1, UN 38.3
Seismic	AC156, OSHPD, IEEE 693-2005 (high)
Environmental	California Proposition 65 RoHS Directive 2011 / EU
Emissions	FCC Part 15 Class B, ICES 003

Environmental

Operating Temperature	-4°F to 122°F (-20°C to 50°C)
Operating Humidity (RH)	Up to 100% RH, condensing
Altitude	Maximum 9,843 ft (3,000 m)
Ingress Rating	IP67 (Battery and power converter system) IP56 (Wiring compartment)
Storage Condition	14°F to 113°F (-10°C to 45°C) Up to 95% RH, non-condensing
Enclosure Type	NEMA 3R
Environment	Indoor and outdoor rated

4: Please contact us for solution design support if you have large capacity requirements.
5: At beginning of life, AC to battery to AC, 50% power rating.

The FranklinWH app allows remote monitoring and management of your whole home energy management system at any time, from anywhere. Homeowners can see historical and real-time energy usage and patterns, can set and choose personalized energy-saving plans for family, and enjoy life with the help of our robust features. Installers can use it for a rapid commissioning and faster debugging.



Smart Energy Management

- Use energy per homeowner’s discretion:
 - Self-consumption
 - Backup Standby
 - Load Shifting
- Fully visibility into energy production and consumption
- Remotely control household’s energy from anywhere at any time
- Heavy load shedding/controls via Smart Circuits to manage backup energy supply
- Local & remote debugging supported

Simple & Reliable

- Intuitive, easy to use
- Real-time and historic energy activity
- One app to monitor and control all power generation
- Multiple comms: Ethernet/Wifi/4G

APP Features

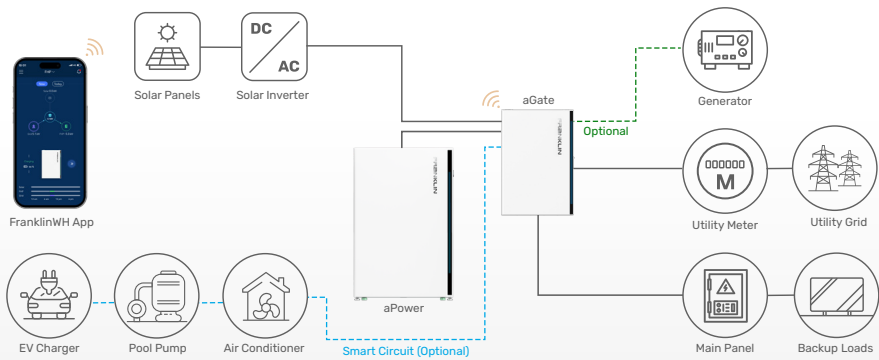
Functionality

Operating System	Android & iOS
Generator Output Setting	Power, current, voltage frequency, time plan
Smart Circuit Setting	Time plan, manual switch, circuits merge, SOC threshold
Emergency Backup Setting	Enable & Disable
SOC Setting	Self-consumption, load shifting
LED Strip Setting	Switch on/off, time plan
Access Point Setting	Modify name and password
Power Sources Monitor	Working status, current flow
Backup Remaining Display	Duration
History Data	Daily, monthly, yearly
Summary Report	Daily, monthly, yearly
Downtime Maintenance	Keep home powered during aPower X maintenance
Grid Compliance	HECO SRD V2.0, CA UL 1741 SA, User Defined
Grid Program	NEM+ / CSS / CGS / CGS+ / NEM 2.0 / BB & NEM / BB & CSS / BB & CGS+ / Smart export
Account Security	Password verification support

Application Mode Programming

Self-Consumption
Load Shifting
Backup Standby

FranklinWH’s solution for Whole Home backup



Address: 1731 Technology Dr. Suite 530 San Jose , CA 95110
Telephone: +1 888-837-2655
Email: info@franklinwh.com
Website: www.franklinwh.com

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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



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.

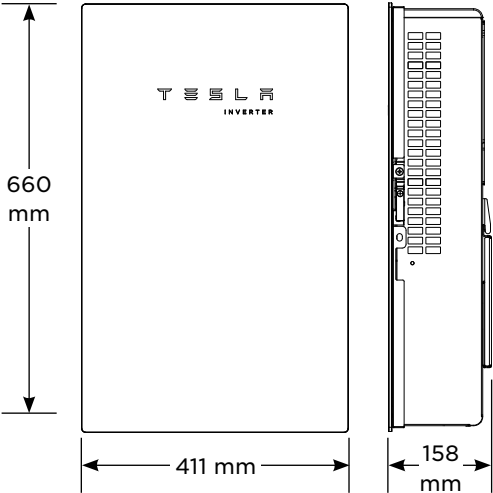
²Where the DC input current exceeds an MPPT rating, jumpers can be used to allow a single MPPT to intake additional DC current up to 26 A I_{MP} / 34 A I_{SC} .

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), RS-485
	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.

Tesla Solar Inverter Technical Specifications

Mechanical Specifications

Dimensions	660 mm x 411 mm x 158 mm (26 in x 16 in x 6 in)
	
Weight	52 lb ⁴
Mounting Options	Wall mount (bracket)
⁴ Door 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 part of the PV system rapid shutdown (RSD) function in accordance with Article 690 of the applicable NEC. When paired with Tesla Solar Inverter, solar array shutdown is initiated by any loss of AC power.

Electrical Specifications	Model	MCI-1	MCI-2
	Nominal Input DC Current Rating (I_{MP})	12 A	13 A
	Maximum Input Short Circuit Current (I_{SC})	19 A	17 A
	Maximum System Voltage (PVHCS)	600 V DC	1000 V DC ⁶
⁶ Maximum System Voltage is limited by Tesla Solar Inverter to 600 V DC.			
RSD Module Performance	Maximum Number of Devices per String	5	5
	Control	Power Line Excitation	Power Line Excitation
	Passive State	Normally Open	Normally Open
	Maximum Power Consumption	7 W	7 W
	Warranty	25 years	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	NEMA 4X / IP65
Mechanical Specifications	Electrical Connections	MC4 Connector	MC4 Connector
	Housing	Plastic	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	PV System AC Breaker or Switch	

UL 3741 PV Hazard Control (and PVRSA) Compatibility

The following categories of solar module meet the UL 3741 PVHCS listing when installed with Tesla Solar Inverter and Solar Shutdown Devices.

Tesla Solar Roof

[PV Hazard Control System: BIPV compliance document](#)

Tesla or Hanwha (Q.Peak Duo BLK or BLK-G6+)
Modules certified for use with ZEP racking

[PV Hazard Control System: ZS PVHCS compliance document](#)

Other module and racking combinations

[PV Hazard Control System: Generic PV Array compliance document](#)

SOLAR'S MOST TRUSTED



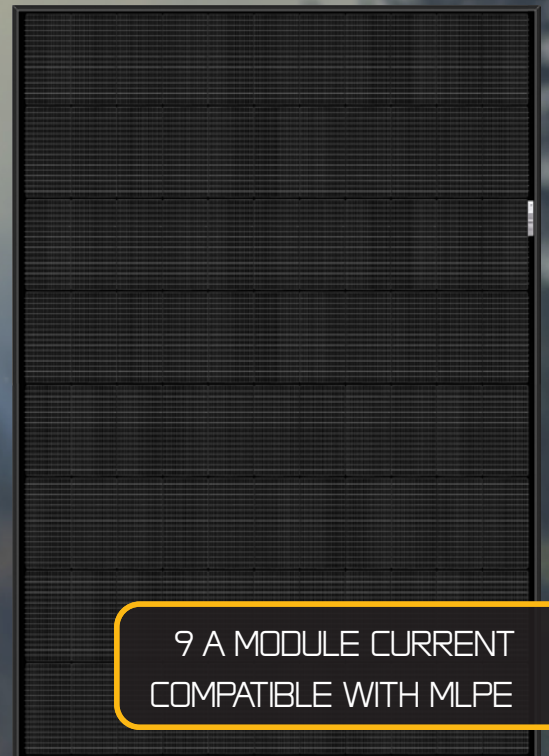
REC ALPHA[®] PURE-RX SERIES

DATASHEET

470 W_P

22.6% EFFICIENCY

226 W/M²



9 A MODULE CURRENT
COMPATIBLE WITH MLPE



ELIGIBLE

EXPERIENCE



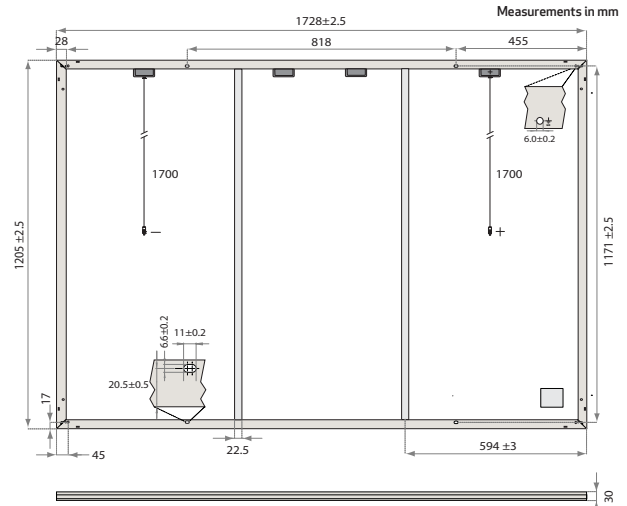
PERFORMANCE

REC ALPHA[®] PURE-RX SERIES

DATASHEET

GENERAL DATA

Cell Type	88 half-cut bifacial REC heterojunction cells, with gapless technology
Glass	3.2 mm solar glass with anti-reflective surface treatment in accordance with EN12150
Backsheet	Highly resistant polymer (Black)
Frame	Anodized aluminum (Black)
Junction Box	4-part, 4 bypass diodes, IP68 rated, in accordance with IEC 62790
Connectors	Stäubli MC4 PV-KBT4/KST4 (4 mm ²) in accordance with IEC 62852, IP68 only when connected
Cable	4 mm ² solar cable, 1.7 m + 1.7 m in accordance with EN50618
Dimensions	1728 x 1205 x 30 mm (2.08 m ²)
Weight	22.7 kg
Origin	Made in Singapore



ELECTRICAL DATA

PRODUCT CODE*: RECxxxAA Pure-RX

Power Output - P _{MAX} (W _p)	450	460	470
Watt Class Sorting - (W)	0/+10	0/+10	0/+10
Nominal Power Voltage - V _{MPP} (V)	54.3	54.9	55.4
Nominal Power Current - I _{MPP} (A)	8.29	8.38	8.49
Open Circuit Voltage - V _{OC} (V)	65.1	65.3	65.6
Short Circuit Current - I _{SC} (A)	8.81	8.88	8.95
Power Density (W/m ²)	216	221	226
Panel Efficiency (%)	21.6	22.1	22.6

Power Output - P _{MAX} (W _p)	343	350	358
Nominal Power Voltage - V _{MPP} (V)	51.2	51.7	52.2
Nominal Power Current - I _{MPP} (A)	6.70	6.77	6.86
Open Circuit Voltage - V _{OC} (V)	61.3	61.6	61.8
Short Circuit Current - I _{SC} (A)	7.11	7.17	7.23

Values at standard test conditions (STC: air mass AM1.5, irradiance 1000 W/m², temperature 25°C), based on a production spread with a tolerance of P_{MAX}, V_{OC} & I_{SC} ±3% within one watt class. Nominal module operating temperature (NMOT: air mass AM1.5, irradiance 800 W/m², temperature 20°C, windspeed 1 m/s). * Where xxx indicates the nominal power class (P_{MAX}) at STC above.

MAXIMUM RATINGS*

Operational Temperature	-40 °C - 85 °C
System Voltage	1000 V
Maximum Test Load (front)	+7000 Pa (713 kg/m ²)
Maximum Test Load (rear)	-4000 Pa (407 kg/m ²)
Max Series Fuse Rating	25 A
Max Reverse Current	25 A

* See installation manual for mounting instructions.
Design load = Test load / 1.5 (safety factor)

TEMPERATURE RATINGS*

Nominal Module Operating Temperature	44 °C ± 2 °C
Temperature coefficient of P _{MAX}	-0.24% / °C
Temperature coefficient of V _{OC}	-0.24% / °C
Temperature coefficient of I _{SC}	0.04% / °C

*The temperature coefficients stated are linear values

DELIVERY INFORMATION

Panels per Pallet	33
Panels per 40 ft GP/high cube container	594 (18 Pallets)
Panels per 13.6 m truck	660 (20 Pallets)

CERTIFICATIONS

IEC 61215:2021; IEC 61730:2016; UL 61730
ISO 11925-2 Ignitability (EN 13501-1 Class E)
IEC 62716 Ammonia Resistance
IEC 61701 Salt Mist (SM6)
IEC 61215:2016 Hailstone (35 mm)
UL 61730 Fire Type 2
ISO 14001; ISO 9001; IEC 45001; IEC 62941



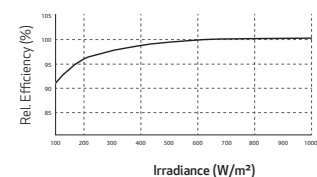
WARRANTY

	Standard	REC ProTrust	
Installed by an REC Certified Professional	No	Yes	Yes
System Size	All	<25 kW	25-500 kW
Product Warranty (yrs)	20	25	25
Power Warranty (yrs)	25	25	25
Labor Warranty (yrs)	0	25	10
Power in Year 1	98%	98%	98%
Annual Degradation	0.25%	0.25%	0.25%
Power in Year 25	92%	92%	92%

The REC ProTrust Warranty is only available on panels purchased through an REC Certified Solar Professional installer. Warranty conditions apply. See www.recgroup.com for more details

LOW LIGHT BEHAVIOUR

Typical low irradiance performance of module at STC:



Available from:

Founded in 1996, REC Group is an international pioneering solar energy company dedicated to empowering consumers with clean, affordable solar power. As Solar's Most Trusted, REC is committed to high quality, innovation, and a low carbon footprint in the solar materials and solar panels it manufactures. Headquartered in Norway with operational headquarters in Singapore, REC also has regional hubs in North America, Europe, and Asia-Pacific.

REC Solar PTE. LTD.
20 Tuas South Ave. 14
Singapore 637312
post@recgroup.com
www.recgroup.com

aPower 2

AC-coupled battery

Store solar generated power while the sun is shining. Use the stored energy when needed to lower electric bills. Run heavy loads such as air conditioners and water heaters as usual even during grid outages. Provide homeowner peace of mind by fully charging before severe weather events.

The system is off-grid ready, designed to operate independently from the main power grid to deliver reliable energy in any situation.

- ✓ 10 kW continuous / 15 kW peak for 10s
- ✓ 8 kW charge power
- ✓ 15 kWh AC¹ per unit, up to 225 kWh (15 units) per aGate
- ✓ 60 MWh warranty throughput

PERFORMANCE SPECIFICATIONS

SKU	APR-10K15V2-US				
Model Number	aPower 2				
Nameplate / Certification	aPower X-20				
CEC Listing Name	aPower Xyyy				
Battery Chemistry	Lithium Iron Phosphate (LFP)				
Usable System Energy	15 kWh AC ¹ per unit, up to 15 units per aGate				
Aggregate Throughput	60 MWh				
Real Power (charge)	8 kW continuous				
Nominal Output Power (AC)	2.5 kW	5 kW	6.7 kW	8.4 kW	10 kW ²
Maximum Apparent Power	2.9 kVA	5.8 kVA	7.7 kVA	9.6 kVA	11.5 kVA
Maximum Continuous Current	12 A	24 A	32 A	40 A	48 A
Nominal AC Voltage	120 / 240 V, 120 / 208 V (single phase), 60 Hz				
Coupling	AC-coupled				
Phase	2 W+N+PE				
Round Trip Efficiency	90% ¹				
Maximum Short-Circuit Current Rating	10 kA				
Load Start Capability	Up to a 5-ton air conditioner				
Work Modes	Self-Consumption Time of Use Emergency Backup				
Noise Emission	30 dB(A) Typical / 45 dB(A) Maximum				
Flood Resistance	Up to 29" from the aPower 2 base				
User Interface	FranklinWH App				
Warranty	15 years ³				

COMPLIANCE INFORMATION

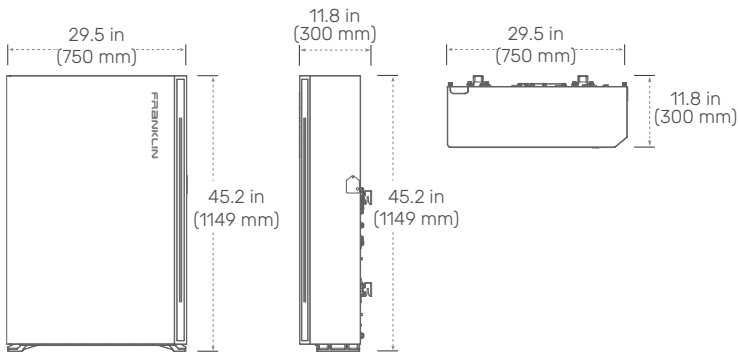
Certifications	UL 9540, UL 9540A, UL 1973, UL 1741, UL1741 SB, UL 1741 PCS, UL 60730-1, IEEE 1547, IEEE 1547.1, UN 38.3, CSA C22.2 No. 107.1
Seismic	AC 156, OSHPD, IEEE 693-2005 (high)
Environmental	California Proposition 65 RoHS Directive 2011 / EU
Emissions	FCC Part 15 Class B, ICES 003

1. At beginning of life, 3 kW charge/discharge power, 77 °F (25 °C).
2. Refer to the installation manual and commissioning guide for proper wire and OCPD sizes.
3. For more details, please refer to the FranklinWH System Limited Warranty for End Users available in the Documentation Center on the FranklinWH website.



MECHANICAL SPECIFICATIONS

Dimensions (H × W × D)	45.2 in × 29.5 in × 11.8 in (1149 mm × 750 mm × 300 mm)
Weight, aPower 2 Complete	357 lb. (162 kg)
Weight, without Cover	335 lb. (152 kg)
Weight, Cover	22 lb. (10 kg)
Mounting	Wall or floor mount
Cooling	Natural air-cooled design



ENVIRONMENTAL SPECIFICATIONS

Enclosure Type	Type 3R
Ingress Protection	IP56 (Wiring) IP67 (Battery Pack & Inverter)
Operating Temperature	-4 °F to 122 °F (-20 °C to 50 °C) Operates up to 131 °F (55 °C) at 5kW derated output
Operating Humidity (RH)	Up to 100% RH, condensing
Altitude	Maximum 9,843 ft (3,000 m)
Environment	Indoor and outdoor rated

Compatibility Notice: At launch, the aPower 2 is compatible with the aGate 1.3 only. Compatibility with earlier aGate and aPower versions is anticipated in Q2 2025.