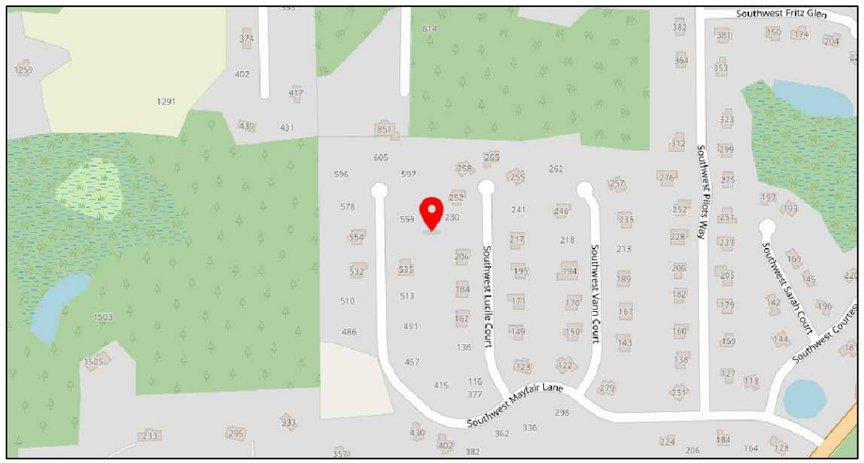
2.025kW DC ROOF MOUNT PHOTOVOLTAIC SYSTEM

CODES:

THIS PROPOSED INSTALLATION COMPLIES WITH THE FOLLOWING:
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)
AS ADOPTED BY COUNTY OF COLUMBIA

VICINITY MAP:



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PV-5	CONDUCTOR CALCULATIONS
PV-6	EQUIPMENT & SERVICE LIST
PV-7	LABELS
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APPENDIX	MANUFACTURER SPECIFICATION SHEETS

CONSTRUCTION NOTES:

CONDUIT AND CONDUCTOR SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS.
ALL SOLAR ENERGY SYSTEM EQUIPMENT SHALL BE SCREENED TO THE MAXIMUM EXTENT POSSIBLE AND SHALL BE PAINTED A COLOR SIMILAR TO THE SURFACE UPON WHICH THEY ARE MOUNTED.
MODULES SHALL BE TESTED , LISTED AND INDENTIFIED WITH FIRE CLASSIFICATION IN ACCORDANCE WITH UL 2703. SMOKE AND CARBON MONOXIDE ALARMS ARE REQUIRED PER SECTION R314 AND 315 TO BE VERIFIED AND INSPECTED BY INSPECTOR IN THE FIELD.
DIG ALERT (811) TO BE CONTACTED AND COMPLIANCE WITH EXCAVATION SAFETY PRIOR TO ANY EXCAVATION TAKING PLACE
SOLAR PHOTOVOLTAIC SYSTEM EQUIPMENT WILL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF ART. 690 OF THE 2020 NEC
CONDUIT ABOVE ROOF SHALL BE NO LESS THAN 1 INCH FROM TOP OF THE ROOF TO BOTTOM OF RACEWAY. TABLE NEC 310.15(B)(3)(C)
UTILITY COMPANY WILL BE NOTIFIED PRIOR TO ACTIVATION OF THE SOLAR PV SYSTEM
TERMINALS OF THE DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION
INSTALL CREW TO VERIFY ROOF STRUCTURE PRIOR TO COMMENCING WORK. EMT CONDUIT ATTACHED TO THE ROOF USING CONDUIT MOUNT.

This item has been electronically signed and sealed by Robert Smythe on the date and/or time stamp shown using a digital signature. Printed copies of this document are not considered signed and sealed and the signature must be verified by a 3rd Party Certificate Authority on any electronic copy
FAC 61G15-23.004

Robert Smythe

Digitally signed by Robert Smythe
DN: CN=Robert Smythe, E=robert@rightangleeng.com, G=Robert, SN=Smythe, C=US
Date: 2025.04.03 16:21:24-06'00'

THIS SYSTEM DESIGNED WITH:
WIND SPEED: 120
WIND EXPOSURE: C
SNOW LOAD: 0
SEISMIC CATEGORY: D1

SYSTEM SIZE

SYSTEM (AC): 11.5kW @ 240V
BATTERY SYSTEM: 13.5kWh

CLIENT DETAILS

GEORGE SMITH
559 SOUTHWEST MAYFAIR LANE, LAKE CITY, FL 32024
AHJ: COUNTY OF COLUMBIA
UTILITY: "CLAY ELECTRIC COOPERATIVE, INC. "
METER: 190876620
APN: 11-4S-16-02911-337
EMAIL: GS79FXEHD@YAHOO.COM
FINANCE: CASH

SYSTEM DETAILS

INVERTER 1: TESLA TESLA POWERWALL 3 INTEGRATED (PART/SKU: TESLA POWERWALL 3 INTEGRATED)
BATTERY: 1 X TESLA: POWERWALL 3

EXISTING SYSTEM:
SYSTEM SIZE (DC): 10 X 410 = 4.100 kW
SYSTEM SIZE (AC): 2.900 kW @ 240V

REVISIONS

NO.	REVISED BY	DATE
-	-	-
-	-	-
-	-	-

FREEDOM FOREVER "FLORIDA, LLC"
43445 BUSINESS PARK DRIVE SUITE 110, TEMECULA, CA 92590
Tel: (888) 557-6431

GREG ALBRIGHT

CONTRACTOR LICENSE:
CERTIFIED ELECTRICAL CONTRACTOR
EC13008056

PROJECT DETAILS

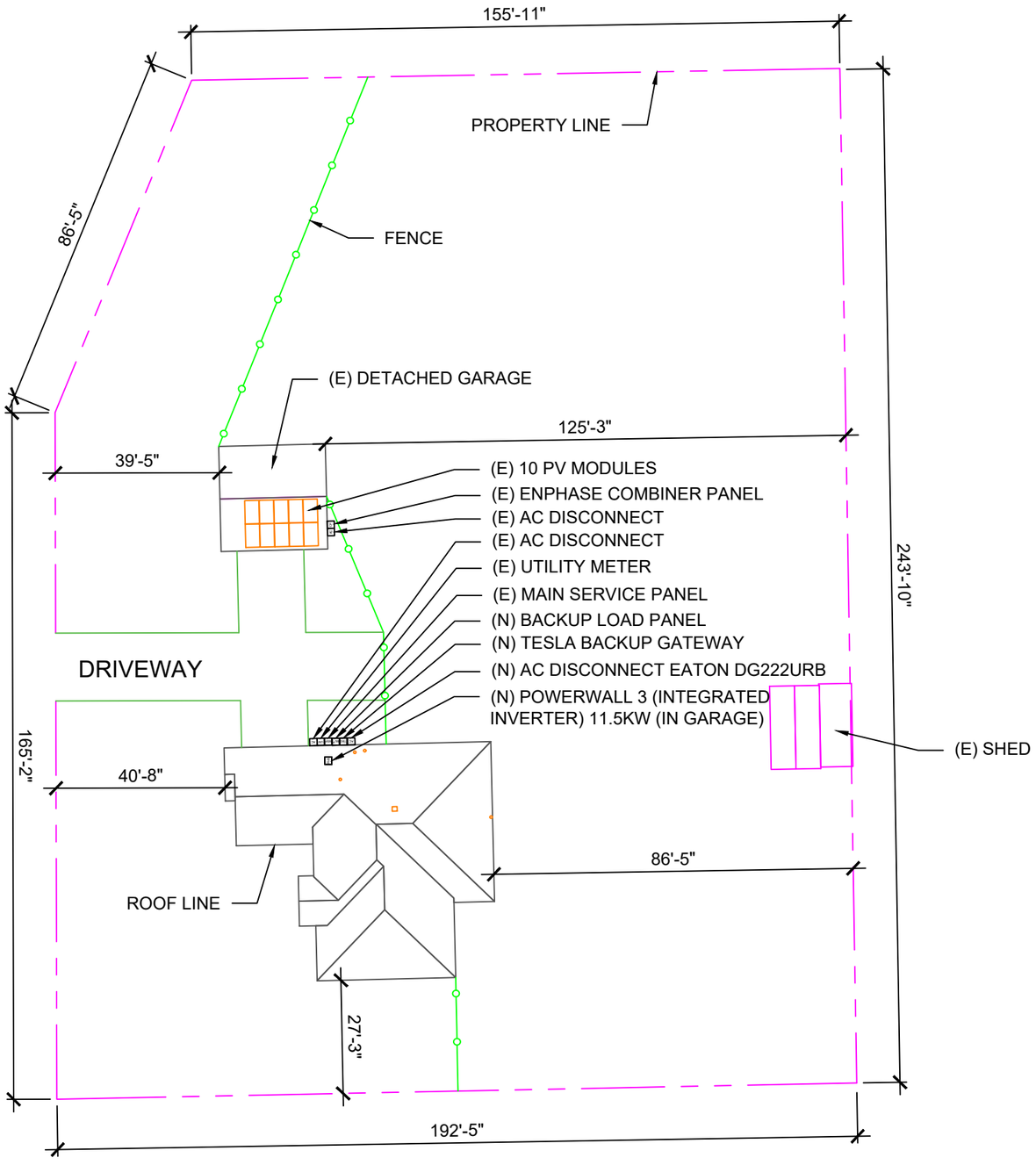
JOB NO:	DATE:	DESIGNED BY:	SHEET:
549066	4/3/2025	A.M.	PV-1

LEGEND:

- OBSTRUCTION
- PIPE VENT
- MODULES
- CONDUIT
- SETBACK
- AC — AC DISCONNECT
- MSP — MSP
- JB — JUNCTION BOX
- INV — INVERTER
- PM — PRODUCTION METER

BOS WILL BE AS CLOSE AS POSSIBLE TO MSP WITHIN 10'

THIS SYSTEM DESIGNED WITH:
WIND SPEED: 120
WIND EXPOSURE: C
SNOW LOAD: 0



SITE PLAN
SCALE: 1/32" = 1'-0"

1

SYSTEM SIZE

SYSTEM (AC): 11.5kW @ 240V
BATTERY SYSTEM: 13.5kWh

CLIENT DETAILS

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559 SOUTHWEST MAYFAIR LANE, LAKE CITY, FL 32024
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EC13008056

SITE PLAN

JOB NO:	DATE:	DESIGNED BY:	SHEET:
549066	4/3/2025	A.M.	PV-2

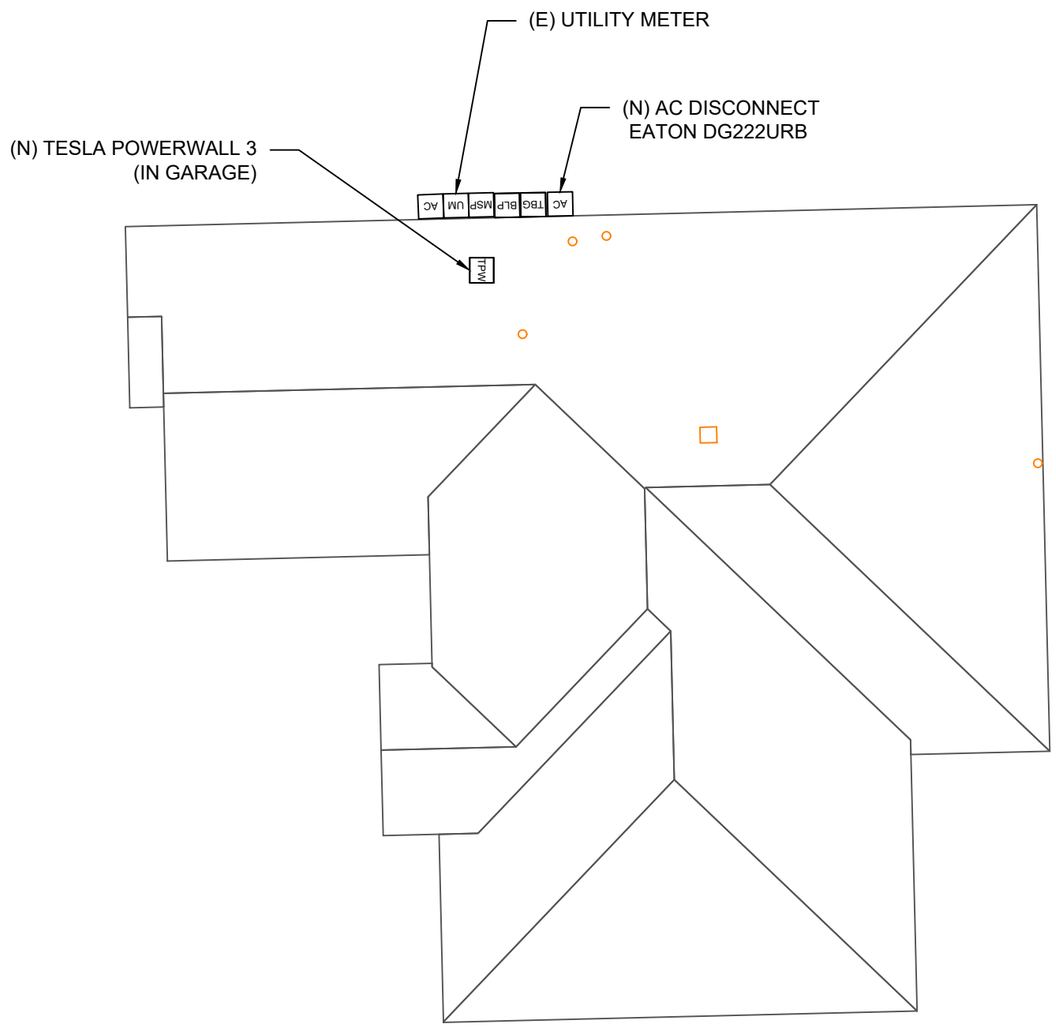
LEGEND:

- OBSTRUCTION
- PIPE VENT
- MODULES
- CONDUIT
- SETBACK
- AC — AC DISCONNECT
- MSP — MSP
- JB — JUNCTION BOX
- INV — INVERTER
- PM — PRODUCTION METER

BOS WILL BE AS CLOSE AS POSSIBLE TO MSP WITHIN 10'

THIS SYSTEM DESIGNED WITH:
WIND SPEED: 120
WIND EXPOSURE: C
SNOW LOAD: 0

BATTAERY-ONLY PROJECT. NO NEW MODULES INSTALLED



NOTES:
1. EMT CONDUIT ATTACHED TO THE ROOF USING CONDUIT MOUNTS
2. ATTACHED CLAMPS AT 25% FROM THE EDGE AND 50% FROM THE CENTER OF THE MODULES
3. JUNCTION BOX IS MOUNTED TO THE RAIL.

ROOF PLAN
SCALE: 3/32" = 1'-0"

1

SYSTEM SIZE

SYSTEM (AC): 11.5kW @ 240V
BATTERY SYSTEM: 13.5kWh

CLIENT DETAILS

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559 SOUTHWEST MAYFAIR LANE, LAKE CITY, FL 32024
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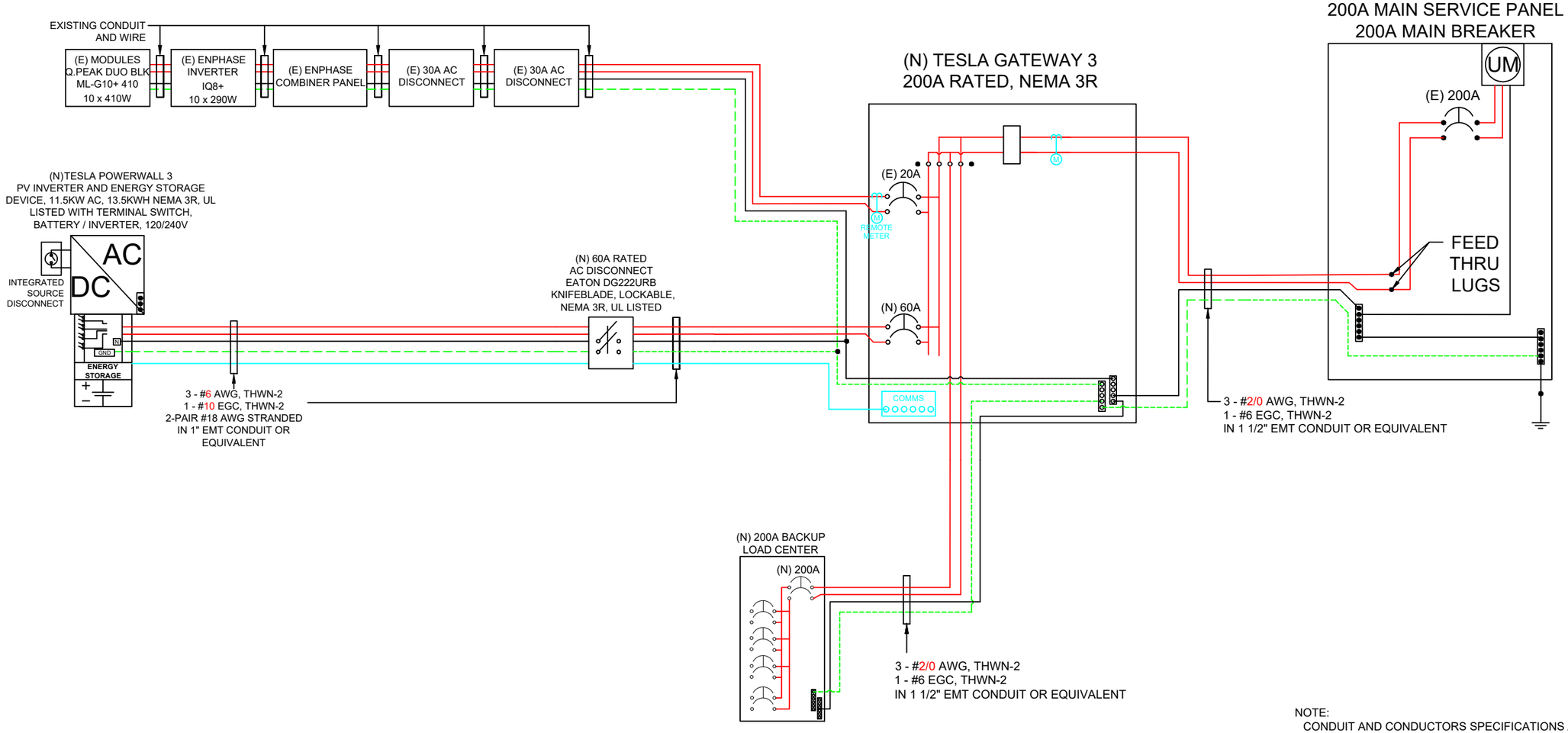
EC13008056

ROOF PLAN WITH MODULES LAYOUT

JOB NO:	DATE:	DESIGNED BY:	SHEET:
549066	4/3/2025	A.M.	PV-2A

BACKFEED BREAKER SIZING					
MAX. CONTINUOUS OUTPUT 48.00A @ 240V					
48.00	X	1.25	=	60AMPS	80A BREAKER - OK



NOTE:
CONDUIT AND CONDUCTORS SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS

ROBERT SMYTHE
LICENSE
NO. 89045
04/03/25
STATE OF FLORIDA
PROFESSIONAL ENGINEER

SYSTEM SIZE

SYSTEM (AC): 11.5kW @ 240V
BATTERY SYSTEM: 13.5kWh

CLIENT DETAILS

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GREG ALBRIGHT
CONTRACTOR LICENSE:
CERTIFIED ELECTRICAL CONTRACTOR
EC13008056

THREE LINE DIAGRAM

JOB NO:	DATE:	DESIGNED BY:	SHEET:
549066	4/3/2025	A.M.	PV-4

MODULE INFO

MAKE/MODEL: JA SOLAR: JAM54S31-405/MR
Voc: 35.12 V
Vmp: 29.47 V
Isc: 11.1 A
Imp: 10.38 A
STC RATING: 405 W
PTC RATING: 415 W

MAX DC CURRENT: Imax = 1.25 X (OPTIMIZER OUTPUT CURRENT) = 1.25 X 15 = 18.75A
MAX AC CURRENT: Imax = 1.25 X (SUM OF MAX CONTINUOUS OUTPUT CURRENT FROM INVERTERS)
= 1.25 X (48.00) = 60.00A

WIRE SCHEDULE

RACEWAY #	EQUIPMENT				CONDUCTOR QTY.	AWG WIRE SIZE	STARTING ALLOWABLE AMPACITY @ 90°C 310.15(B)(16)	STARTING CURRENT APPLIED TO CONDUCTORS IN RACEWAY	TEMPERATURE CORRECTION FACTOR 310.15(B)(2)(a)	ADJUSTMENT FACTOR FOR MORE THAN 3 CONDUCTORS 310.15(B)(3)(a)	ADJUSTED CONDUCTOR AMPACITY @ 90°C	MAXIMUM CURRENT APPLIED TO CONDUCTORS IN RACEWAY
1	AC	EXISTING SYSTEM	TO	POI	3	10	40	12.08	0.96	1	38.40	15.10
2	AC	TPW3	TO	AC DISCONNECT	3	6	75	48.00	0.96	1	72.00	60.00
3	AC	AC DISCONNECT	TO	TESLA BACKUP GATEWAY 3	3	6	75	48.00	0.96	1	72.00	60.00
4	AC	TESLA BACKUP GATEWAY 3	TO	BACKUP LOAD PANEL	3	2/0	195	125.00	0.96	1	187.20	156.25
5	AC	TESLA BACKUP GATEWAY 3	TO	MSP	3	2/0	195	125.00	0.96	1	187.20	156.25

CONDUCTOR AMPACITY CALCULATIONS IN ACCORDANCE WITH NEC 690.8.

ROBERT SMYTHE LICENSE NO. 89045 PROFESSIONAL ENGINEER STATE OF FLORIDA
04/03/25

SYSTEM SIZE

SYSTEM (AC): 11.5kW @ 240V
BATTERY SYSTEM: 13.5kWh

CLIENT DETAILS

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GREG ALBRIGHT

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CERTIFIED ELECTRICAL CONTRACTOR
EC13008056

CONDUCTOR CALCULATIONS

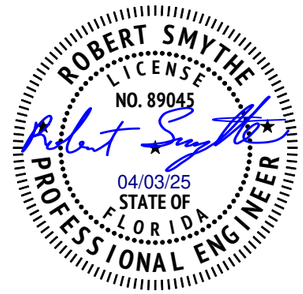
JOB NO:	DATE:	DESIGNED BY:	SHEET:
549066	4/3/2025	A.M.	PV-5

OCPD SIZES:

60A BREAKER
20A BREAKER

SERVICE LIST:

NONE



MATERIAL LIST:

PART_TYPE	PART_NUMBER	SKU	PART_DESCRIPTION	QUANTITY
160 - Equipment Accessories	EA-161-061	1879359-00-B	MFG: Tesla, MCI-2, 1,000V, 15A - 19A, ISC EVO2, MFG SKU: 1879359-15-B	2
320 - Disconnects	EE-321-060	DG222URB	MFG: Eaton, Disconnect, General Duty, 2P, 240V, 60A, Non Fusible, Nema 3R, MFG SKU: DG222URB	1
140 - Batteries	BAT-141-005	1707000-11-J	MFG: Tesla, Powerwall 3.0, AC 13.5KW Battery, MFG SKU: 1707000-11-J	1
160 - Equipment Accessories	EA-161-074	1841000-01-C	MFG: Tesla, Back-up Gateway 3, MFG SKU: 1841000-01-C	1
350 - Electrical Accessories	EA-350-338	Various	Toggle Switch, 15A, #14-10 AWG, 120/277V, Single Pole, Back & Side	1
350 - Electrical Accessories	EA-350-339	E98TSCN	MFG: Carlon, Toggle Switch Box Cover, Gray, Non-Metallic, 4.75" X 3", MFG SKU: E98TSCN	1
350 - Electrical Accessories	EA-350-340	Various	Outlet Box, (3) 3/4" Outlets, Single Gang, Weatherproof, Aluminum, Gray, 4.5" X 2.75"	1
350 - Electrical Accessories	EA-350-585	SGB-4	MFG: Ilsco, Ground Lug, MFG SKU: SGB-4	1

SYSTEM SIZE

SYSTEM (AC): 11.5kW @ 240V
BATTERY SYSTEM: 13.5kWh

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Tel: (888) 557-6431

GREG ALBRIGHT

CONTRACTOR LICENSE:
CERTIFIED ELECTRICAL CONTRACTOR
EC13008056

EQUIPMENT & SERVICE LIST

JOB NO:	DATE:	DESIGNED BY:	SHEET:
549066	4/3/2025	A.M.	PV-6

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

690.13(B)

DO NOT DISCONNECT UNDER LOAD

NEC 690.15 (B) & NEC 690.33(D)(2)

⚠ WARNING

SINGLE 120-VOLT SUPPLY
DO NOT CONNECT
MULTIWIRE BRANCH CIRCUITS

NEC 710.15(C) & 692.9 (C)

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

NEC 705.12(D) & NEC 690.59

⚠ WARNING

TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL

NEC 110.27(C) & OSHA 1910.145(F)(7)

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

706.15(C)(4) & 690.13(B)

⚠ WARNING

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

NEC 705.12(B)(3)(3)

⚠ WARNING

THE DISCONNECTION OF THE GROUNDED CONDUCTOR(S) MAY RESULT IN OVERVOLTAGE ON THE EQUIPMENT

NEC 690.31(E)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

690.56(C)(3)

If you have any questions about your system, please call our Customer Support Team at

888.557.6431

or visit freedomforever.com/customer-service

This solar PV system was installed by

freedom FOREVER

*Freedom Forever is a licensed contractor in all states it operates in. For more information visit freedomforever.com/licenses

M

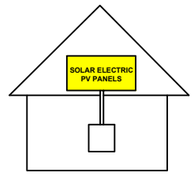
AC

PM

INVERTER

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



IFC 605.11.3.1(1) & 690.56(C)

⚠ CAUTION
PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

NEC 705.12(D) & NEC 690.59

⚠ WARNING
POWER SOURCE OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE.

NEC 705.12(C) & NEC 690.59

⚠ WARNING
ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

24 INCH FLASH HAZARD BOUNDARY
3 CAL/CM^2 FLASH HAZARD AT 18 INCHES
480 VAC SHOCK HAZARD WHEN COVER IS REMOVED
42 INCH LIMITED APPROACH
12 INCH RESTRICTED APPROACH - 500 V CLASS 00 GLOVES
1 INCH PROHIBITED APPROACH - 500 V CLASS 00 GLOVES

LOCATION: 559 SOUTHWEST MAYFAIR LANE LAKE CITY, FL 32024

NEC 706.15(C) AND NEC 110.16

PHOTOVOLTAIC AC DISCONNECT

NEC 690.13(B)

PHOTOVOLTAIC AC DISCONNECT

RATED AC OUTPUT CURRENT: 48.00A
NOMINAL OPERATING AC VOLTAGE: 240V

NEC 690.54

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

NEC 705.12(D) & NEC 690.59

SOLAR PV DC CIRCUIT

EVERY 10' ON CONDUIT AND ENCLOSURES
NEC 690.31

PHOTOVOLTAIC POWER SOURCE

EVERY 10' ON CONDUIT AND ENCLOSURES
NEC 690.31(D)(2)

MAXIMUM VOLTAGE	480	V
MAXIMUM CIRCUIT CURRENT	13	A
MAX DC-DC CONVERTER OUTPUT CURRENT	15	A

DC

J/B

PHOTOVOLTAIC DC DISCONNECT

NEC 690.13(B)

MAXIMUM DC VOLTAGE OF PV SYSTEM

NEC 690.53

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT

706.15(C)(4) & 690.13(B)

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

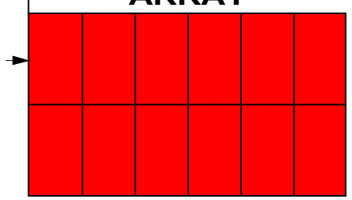
706.15(C)(4) & 690.13(B)

⚠ WARNING

TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL

NEC 110.27(C) & OSHA 1910.145(F)(7)

ARRAY



NEC 690.31(G)(3) & (4)

NOTES:

1. NEC ARTICLES 690 AND 705 AND IRC SECTION R324 MARKINGS SHOWN HEREON.
2. ALL MARKING SHALL CONSIST OF THE FOLLOWING:
   - A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING.
   - B. RED BACKGROUND COLOR WHITE TEXT AND LINE WORK.
   - C. ARIAL FONT.
3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATIONS SPECIFIED. SIGNAGE CANNOT BE HAND-WRITTEN.
4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT WITH POP-RIVETS OR SCREWS

ROBERT SMYTHE LICENSE NO. 89045 PROFESSIONAL ENGINEER STATE OF FLORIDA
04/03/25

SYSTEM SIZE

SYSTEM (AC): 11.5kW @ 240V
BATTERY SYSTEM: 13.5kWh

CLIENT DETAILS

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freedom FOREVER

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Tel: (888) 557-6431

GREG ALBRIGHT

CONTRACTOR LICENSE:
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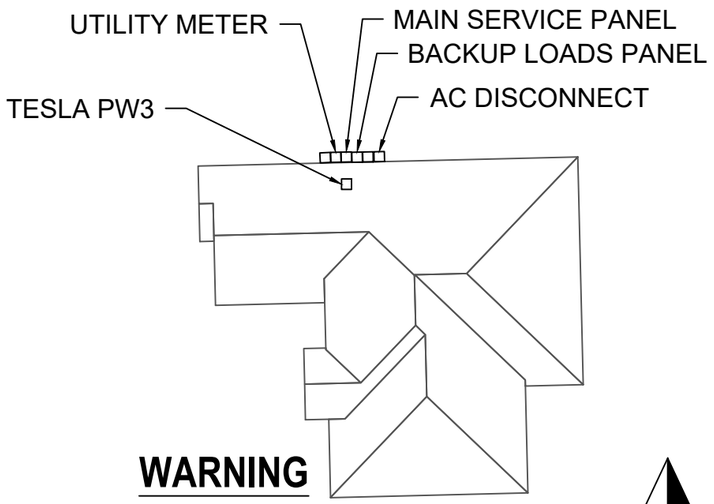
EC13008056

LABELS

JOB NO:	DATE:	DESIGNED BY:	SHEET:
549066	4/3/2025	A.M.	PV-7

CAUTION:

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS AS SHOWN



WARNING

TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL

NOTES:

1. NEC ARTICLES 690 AND 705 AND IRC SECTION R324 MARKINGS SHOWN HEREON.
2. ALL MARKING SHALL CONSIST OF THE FOLLOWING:
   - A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING.
   - B. RED BACKGROUND COLOR WHITE TEXT AND LINE WORK.
   - C. AERIAL FONT.
3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATIONS SPECIFIED. SIGNAGE CANNOT BE HAND-WRITTEN.
4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT WITH POP-RIVETS OR SCREWS.

ROBERT SMYTHE LICENSE NO. 89045 PROFESSIONAL ENGINEER STATE OF FLORIDA 04/03/25

SYSTEM SIZE

SYSTEM (AC): 11.5kW @ 240V
BATTERY SYSTEM: 13.5kWh

CLIENT DETAILS

GEORGE SMITH
559 SOUTHWEST MAYFAIR LANE, LAKE CITY, FL 32024
AHJ: COUNTY OF COLUMBIA
UTILITY: "CLAY ELECTRIC COOPERATIVE, INC. "
METER: 190876620
APN: 11-4S-16-02911-337
EMAIL: GS79FXEHD@YAHOO.COM
FINANCE: CASH

SYSTEM DETAILS

INVERTER 1: TESLA TESLA POWERWALL 3 INTEGRATED (PART/SKU: TESLA POWERWALL 3 INTEGRATED)
BATTERY: 1 X TESLA: POWERWALL 3

EXISTING SYSTEM:
SYSTEM SIZE (DC): 10 X 410 = 4.100 kW
SYSTEM SIZE (AC): 2.900 kW @ 240V

REVISIONS

NO.	REVISED BY	DATE
-	-	-
-	-	-
-	-	-

FREEDOM FOREVER "FLORIDA, LLC"
43445 BUSINESS PARK DRIVE SUITE 110, TEMECULA, CA 92590
Tel: (888) 557-6431

GREG ALBRIGHT

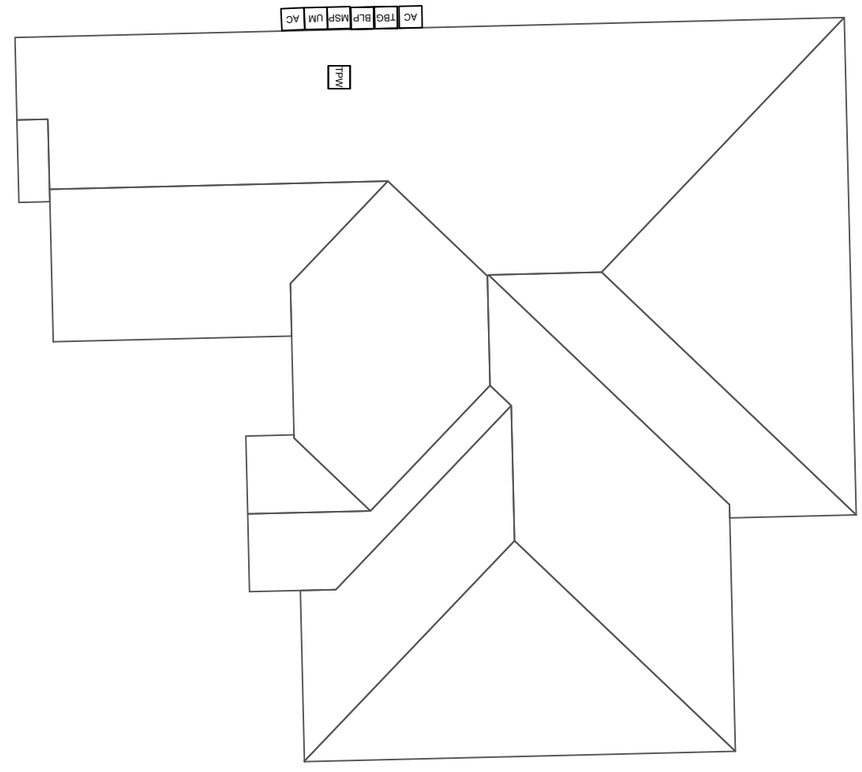
CONTRACTOR LICENSE:
CERTIFIED ELECTRICAL CONTRACTOR
EC13008056

SITE PLACARD

JOB NO:	DATE:	DESIGNED BY:	SHEET:
549066	4/3/2025	A.M.	PV-7A

	1-10	11-20	21-30	31-40	41-50	51-60
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

TESLA MCI CHART



SYSTEM SIZE

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BATTERY SYSTEM: 13.5kWh

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-	-	-
-	-	-

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Tel: (888) 557-6431

GREG ALBRIGHT

CONTRACTOR LICENSE:
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EC13008056

MCI CHART

JOB NO:	DATE:	DESIGNED BY:	SHEET:
549066	4/3/2025	A.M.	PV-8

SAFETY PLAN

INSTRUCTIONS:

1. USE SYMBOLS IN KEY TO MARK UP THIS SHEET.
2. SAFETY PLAN MUST BE MARKED BEFORE JOB STARTS AS PART OF THE PRE-PLAN
3. DOCUMENT ALL ADDITIONAL HAZARDS ON THIS PAGE & MAKE NOTES ON THE JHA SHEET

INCIDENT REPORTING:

INJURIES - CALL INJURY HOTLINE

(855) 400-7233

**If injury is life threatening, call 911 first THEN the Injury Hotline*

NON-INJURIES - USE MOBILE INCIDENT REPORTING
(Auto, Property Damage, Near Miss)

NEAREST OCCUPATIONAL/INDUSTRIAL CLINIC:

NAME: _____

ADDRESS: _____

NEAREST HOSPITAL:

NAME: _____

ADDRESS: _____

SAFETY COACH CONTACT INFORMATION:

NAME: _____

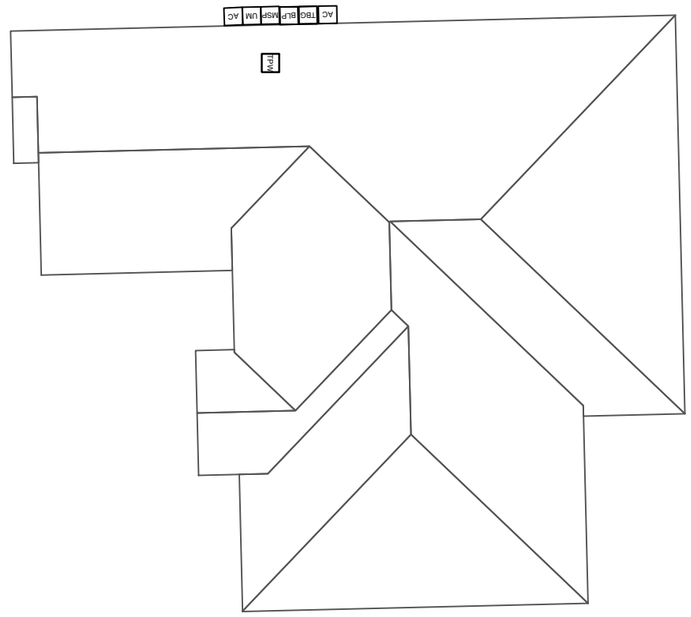
PHONE NUMBER: _____

ALL EMPLOYEES ON SITE SHALL BE MADE AWARE OF THE SAFETY PLAN AND SIGN INDICATING THAT THEY ARE AWARE OF THE HAZARDS ON-SITE AND THE PLAN FOR WORKING SAFELY.

NAME	SIGNATURE

DATE: _____ TIME: _____

SOUTHWEST MAYFAIR LANE



MARK UP KEY

- (P) PERMANENT ANCHOR
- (T) TEMPORARY ANCHOR
- (IL) INSTALLER LADDER
- (B) JUNCTION / COMBINER BOX
- (S) STUB-OUT
- SKYLIGHT
- NO LADDER ACCESS (STEEP GRADE OR GROUND LEVEL OBSTRUCTIONS)
- RESTRICTED ACCESS
- CONDUIT
- (GAS) GAS SHUT OFF
- (H_2O) WATER SHUT OFF
- (7) SERVICE DROP
- (Z) POWER LINES

BREAK AND WATER LOG

THIS LOG IS TO BE FILLED OUT ANY TIME THE TEMP EXCEEDS **90** DEGREES. THE CREW LEAD AND ROOF LEAD ARE RESPONSIBLE FOR ENSURING THIS IS COMPLETED AND UPLOADED AT THE END OF EVERYDAY WHEN TEMPS EXCEED **90** DEGREES

NAME	0800HRS	0900HRS	1000HRS	1100HRS	1200HRS	1300HRS	1400HRS	1500HRS	1600HRS

POLICIES

INSTRUCTIONS:

1. SCAN QR LINK BELOW TO ACCESS ALL FREEDOM FOREVER SAFETY POLICIES AND PROGRAMS.

SYSTEM SIZE

SYSTEM (AC): 11.5kW @ 240V
BATTERY SYSTEM: 13.5kWh

CLIENT DETAILS

GEORGE SMITH
559 SOUTHWEST MAYFAIR LANE, LAKE CITY, FL 32024
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REVISIONS

NO.	REVISED BY	DATE
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-	-	-
-	-	-

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GREG ALBRIGHT

CONTRACTOR LICENSE:
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EC13008056

SAFETY PLAN

JOB NO:	DATE:	DESIGNED BY:	SHEET:
549066	4/3/2025	A.M.	PV-9

JOB HAZARD ANALYSIS

Crew leader to fill out all sections below, hold a pre-job safety meeting with all personnel, and upload this completed document and the Safety Plan to Site Capture

Ladder Access
- Ladders must be inspected before each use.
- Extension ladders must be set up on a firm and level surface at a 4-to-1 rise to run angle (or 75 degrees) and the top must be secured to the structure. Extension style ladders placed on uneven, loose or slippery surfaces must additionally have the base firmly anchored or lashed so the base will not slip out.
- Extension ladders must be used with walk-through devices or the ladder must extend 36" above the stepping off point.
- A-frame ladders must only be climbed with the ladder spreader bars locked in the open position; A-frame ladders shall not be climbed while in the closed position (ex, closed and used while leaned against a structure).
- Additional notes:

Mobile Equipment
- Only Qualified operators will operate equipment; operators must maintain a certification on their person for the equipment being operated.
- Type(s) of mobile equipment (Type/Make/Model):
- Qualified operator(s):

Material Handling and Storage
- Materials will be staged/stored in a way that does not present a hazard to client, personnel or public. Materials stored on the roof will be physically protect from failing or sliding off.

Fall Protection
- A site-specific plan for fall prevention and protection is required prior to starting work and must remain onsite at all times until work is complete; a fall rescue plan must be outlined and discussed among the crew prior to work start.
- First-person-Up (FPU) must install their anchor and connect before any other task, including installing other anchors. The Last-Person-Down (LPD) must be the only person on a roof uninstalling fall protection.
- FPCP (name and title):
- FPU and LPD (name and title):

Electrical Safety
- The Electrical Qualified Person (EQP) is required onsite to perform electrical work.
- All electrical work will be performed with equipment in an electrically safe condition (de-energized) unless approval has been granted prior to work.
- Service drops and overhead electrical hazards will be indentified and protected from contact, as neccessary.
- EQP (name and tile):

Public Protection
- The safety of the Client and Public must be maintained at all times.
- The Client and the Public shall be prevented from entering the work zone through the use of barriers and/or signage, as required.
- Company, Client and Public property shall be protected from falling objects.
- Pets (including dogs) shall be secured by their owners prior to work start.
- The Client should not leave pets, family members, or others in charge or care of Employees, Contractors, or Temporary Workers.
- Crew leader responsible for communication with the client:
- Client and public is excluded from work area by barricades (N/A, Yes, No):

Training and Pre-Job Safety Briefing
- All employees onsite shall be made aware of the specific hazards of this project and review this HJA during a pre-job briefing, and their signature indicates awareness of site conditions and the plan to eliminate any hazards identified prior to and during the project.

- Crew leader (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):

Airborne Contaminants:
- Asbestos-containing (Transite) piping (ACP) - Do not disturb (move, drill, cut fracture, etc.)
- Asbestos-containing thermal insulation (ACI) and Asbestos-containing duct wrapping (ACW) - do not disturb, no attic or crawlspace access is allowed if work to be performed could cause exposure to personnel, client or public.

- If yes, list specific tasks and protection in place:

Weather and Environment
- The site supervisor shall forecast the weather conditions at the job site, prior to crew arrival, in order to mitigate any hazards associated with inclement weather (heat, cold, wind, rain, etc.)
- The site supervisor will utilized a portable wind meter (anemometer) to verify actual onsite wind conditions, by checking at the ground and on any elevated work surface (ex, rooftop) prior to work start, at midday and prior to solar panel staging on a roof.
- Elevated work involving the moving or maneuvering of solar panels shall cease at 25mph (sustained wind) until wind subsides.
- Forecasted weather maximum temp (degrees f):

Heat Related Illness Prevention
- Employees shall have access to potable drinking water that is fresh, pure, and suitably cool. The water shall be located as close as practicable to the areas where employees are working. Water shall be supplied in sufficient quantity at the beginning of the work shift to provide at least one quart per employee per hour for drinking for the entire shift. Employees may begin the shift with smaller quantities of water if they identify the location and have effective means for replenishment during the shift to allow employees to drink on quart or more per hour. The frequent drinking of water shall be encouraged.
- Shade shall be present when temperature exceeds 80 degrees Fahrenheit. When the outdoor temperature in the work exceeds 80 degrees Fahrenheit, employees shall have and maintain one or more areas with shade at all times.
- New employees must be acclimatized. New employees will be monitored by their Crew Leader (site supervisor) for the first two (2) weeks of employment or longer when necessary.
- Employees will be allowed and encouraged to implement scheduled breaks during each shift. Employees must take cool-down breaks in the shade any time they feel the need to do so to protect them from overheating. Supervisors are REQUIRED to allow employees any break period they need during high heat conditions.
- Cool Vests are encouraged for all employees at all times during periods of high heat.
- Identify the location of the closet Occupational/Industrial Clinic or Hospital in case a crew member becomes ill.

What is the specific plan to provide and replenish sufficient water for all employees on site?
- If offsite replenish is necessary, where will you go to replenish water (location/address):
- Who will replenish the drinking water (name):

Restroom facilities
- Employees shall have access to restroom facilities with hand-washing stations. Use of onsite restroom is at the client's discretion (location is annotated below). If client does not give permission, location of suitable restroom facilities with hand-washing stations offsite will be provided. The onsite supervisor will identify location and make arrangements to ensure all employees have access at any point.
- Restroom facilities will be (circle one): Onsite - Offsite
- If Offsite, add location name and address:

Incident Reporting Procedure
- Contact your Site Supervisor
  - Name:
  - Phone:
- Contact your Manager
  - Name:
  - Phone:
- Contact your Site Supervisor
  - Name:
  - Phone:

With: Your full name, phone number, office location, brief description of what happen and when.

NOTE ADDITIONAL HAZARDS NOT ADDRESSED ABOVE
(add as many as necessary by using additional sheets)

Define the Hazard:	Method/steps to prevent incident:
Define the Hazard:	Method/steps to prevent incident:
Define the Hazard:	Method/steps to prevent incident:

SYSTEM SIZE

SYSTEM (AC): 11.5kW @ 240V
BATTERY SYSTEM: 13.5kWh

CLIENT DETAILS

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GREG ALBRIGHT

CONTRACTOR LICENSE:
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EC13008056

SAFETY PLAN

JOB NO:	DATE:	DESIGNED BY:	SHEET:
549066	4/3/2025	A.M.	PV-10

FOR INSTALLATION REFERENCE ONLY

SCAN QR CODE TO ACCESS REFERENCE LINK

FREEDOM REFERENCES

INSTALL HOTLINE

PV INSTALLATION REFERENCES

ENPHASE

SOLAREDGE

TESLA

BATTERY INSTALLATION REFERENCES

Enphase Storage Systems

SOLAREDGE Storage Systems

TESLA Storage Systems

NON-BACKUP Battery Systems

Misc. Quick Guide

V1.4

Eaton DG222URB

Catalog Number: DG222URB

Eaton General duty non-fusible safety switch, single-throw, 60 A, NEMA 3R, Rainproof, Painted galvanized steel, Two-pole, Two-wire, 240 V

General specifications

Product Name Eaton general duty non-fusible safety switch	Catalog Number DG222URB
	UPC 782113144238
Product Length/Depth 7.38 in	Product Height 14.38 in
Product Width 8.69 in	Product Weight 9 lb
Warranty Eaton Selling Policy 25-000, one (1) year from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.	Certifications UL Listed
	Catalog Notes WARNING! Switch is not approved for service entrance unless a neutral kit is installed.

Product specifications

Product Category
General duty safety switch

Enclosure material
Painted galvanized steel

Type
Non-fusible, single-throw

Fuse configuration
Non-fusible

Number of wires
2

Enclosure
NEMA 3R

Voltage rating
240V

Amperage Rating
60A

Number Of Poles
Two-pole

Resources

Catalogs

Eaton's Volume 2—Commercial Distribution

Multimedia

Double Up on Safety

Switching Devices Flex Center

Specifications and datasheets

Eaton Specification Sheet - DG222URB

Warranty guides

Selling Policy 25-000 - Distribution and Control Products and Services

Eaton Corporation plc
Eaton House
30 Pembroke Road
Dublin 4, Ireland
Eaton.com

Eaton.com/socialmedia

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.

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% [3]
Supported Islanding Devices	Backup Gateway 2, Backup Switch
Connectivity	Wi-Fi (2.4 and 5 GHz), Dual-port switched Ethernet, Cellular (LTE/4G [4])
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 [5]
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}.

Powerwall 3 Technical Specifications

Environmental Specifications

Operating Temperature	-20°C to 50°C (-4°F to 122°F)[6]
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

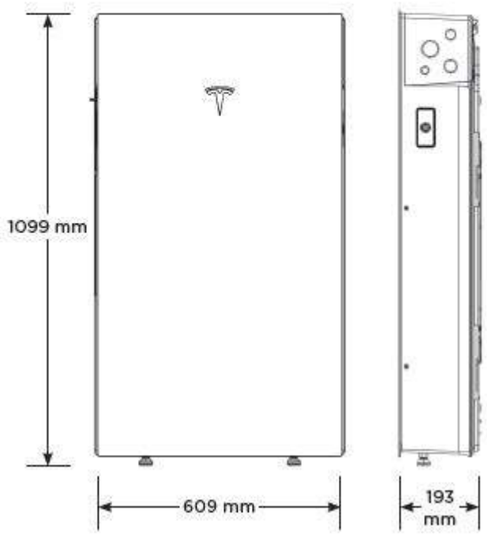
[6] Performance may be de-rated at operating temperatures above 40°C (104°F).

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



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 Powerwall 3, 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[7]

[7] Maximum System Voltage is limited by Powerwall 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	External System Shutdown Switch or Powerwall 3 Enable Switch

UL 3741 PV Hazard Control (and PVRSA) Compatibility

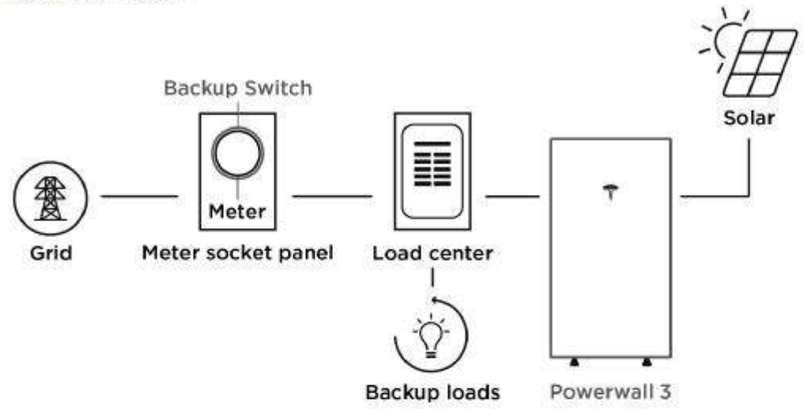
The following categories of solar module meet the UL 3741 PVHCS listing when installed with Powerwall 3 and Solar Shutdown Devices.

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

Powerwall 3 Example System Configurations

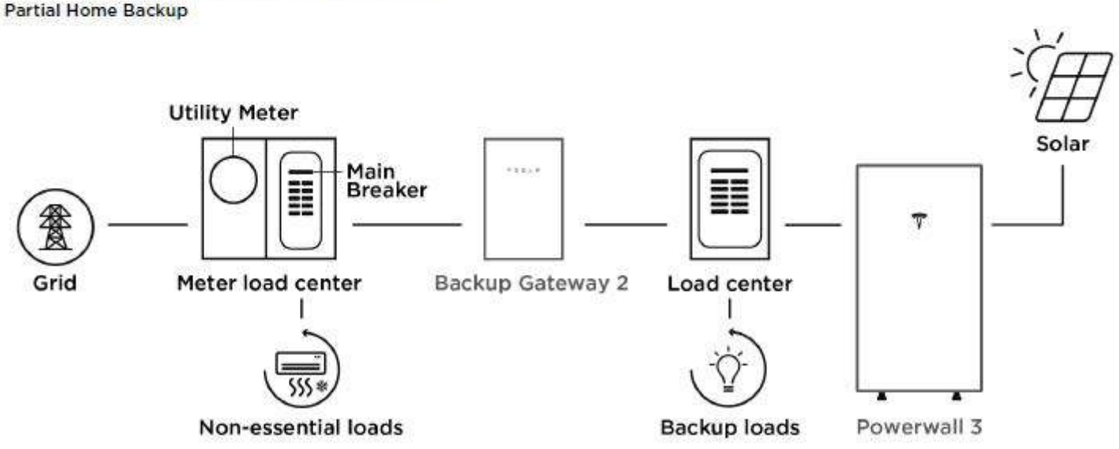
Powerwall 3 with Backup Switch

Whole Home Backup



Powerwall 3 with Backup Gateway 2

Partial Home Backup



Gateway 3

—

Tesla Gateway 3 controls connection to the grid in a Powerwall system, automatically detecting outages and providing seamless transition to backup power. It provides energy monitoring that is used by Powerwall for solar self-consumption, time-based control, and backup operation.

Performance Specifications

Model Number	1841000-x1-y
Nominal Grid Voltage	120/240 V AC
Grid Configuration	Split phase
Grid Frequency	60 Hz
Continuous Current Rating	200 A
Maximum Supply Short Circuit Current	22 kA with Square D or Eaton main breaker 25 kA with Eaton main breaker[1]
IEC Protective Class	Class I
Overvoltage Category	Category IV

[1]Only Eaton CSR or BWH main breakers are 25 kA rated

AC Meter	+/- 0.5%
Communication	CAN
User Interface	Tesla App
Backup Transition	Automatic disconnect for seamless backup
Overcurrent Protection Device	100–200 A Service entrance rated Eaton CSR, BWH, or BW, or Square D QOM breakers
Internal Panelboard	200 A 8-space/16 circuit breakers Eaton BR, Siemens QP, or Square D HOM breakers rated to 10–125A
Warranty	10 years

Environmental Specifications

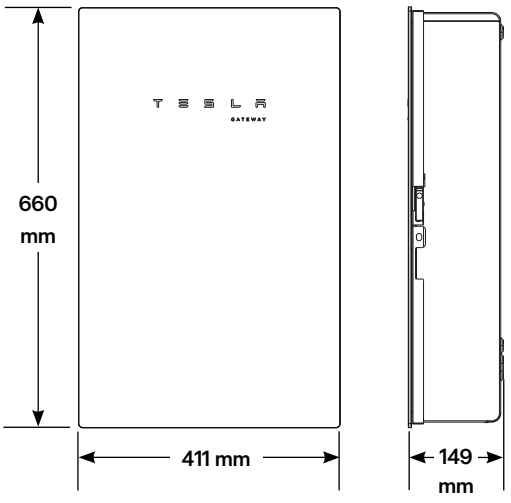
Operating Temperature	–20°C to 50°C (–4°F to 122°F)
Operating Humidity (RH)	Up to 100%, condensing
Maximum Elevation	3000 m (9843 ft)
Environment	Indoor and outdoor rated
Enclosure Type	NEMA 3R

Compliance Information

Certifications	UL 67, UL 869A, UL 916, UL 1741 PCS, CSA 22.2 107.1, CSA 22.2 29
Emmissions	FCC Part 15, Class B, ICES 003

Mechanical Specifications

Dimensions	660 x 411 x 149 mm (26 x 16 x 6 in)
Weight	16.3 kg (36 lb)
Mounting options	Wall mount



DIGITALLY SIGNED

PAUL K. ZACHER LICENSE No. 73522 STATE OF FLORIDA PROFESSIONAL ENGINEER EXP. 02/28/2025

04/25/2024

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY PAUL K. ZACHER, PE ON 04/25/2024 USING A SHA-1 AUTHENTICATION CODE.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SHA-1 AUTHENTICATION CODE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

April 25, 2024

SnapNrack
775 Fiero Lane, Ste. 200
San Luis Obispo, CA 93401
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Attn.: SnapNrack - Engineering Department

Re: SnapNrack pre-engineered PV racking systems:

- RL Universal System (Report # 2019-02916A.01 and B.01)
- UR40 Railed System (Report # 2017-03227.11)
- UR60 Railed System (Report # 2018-11940.03)
- Topspeed Rail-less System (Report # 2022-02141)
- MightyMount Comp-S System (Report # 2022-05713)
- MightyMount Metal-T System (Report # 2022-11268)

Subject: Conversion of existing racking tables to apply to ASCE 7-22.

Introduction: PZSE has provided SnapNrack span tables for the ASCE 7-16 code cycle. Until the Mnfr. updates span tables or migrates to a site-specific calculator, a need for 7-22 compliant engineering exists. This letter provides guidance on how to convert the existing ASCE 7-16 tables to be applicable for an ASCE 7-22 design for internal purposes. The Florida Building Code (FBC) 2023 utilizes ASCE 7-22 for calculating environmental loads. So long as the guidance in this letter is followed for the above listed systems the ASCE 7-16 listed spans will comply with the requirements of the FBC 2023.

Systems that are not applicable: The S200 Ground Mount system is not a candidate to convert the existing span tables to apply to 7-22 due to the new analysis requirements for ground mount PV systems.

Systems that are applicable: Roof Mounted PV racking systems. Both Flush and tilt-kit systems are candidates to convert existing span tables to apply to ASCE 7-22.

Snow - Under ASCE 7-22 most PV systems will require a thermal factor C_t of 1.2, where previously defaulted to a factor of 1.1. For snow loads under 55 psf ground snow - use an increased snow load of at least 5 psf on the existing tables, to capture the increased snow load. For snow loads of 55 psf ground snow and over – use an increased snow load of at least 10 psf on the existing tables, to capture the increased snow load.

Wind – Both flush mounted and tilt-kit systems (Roof Mounted systems) for wind design are directly comparable. The 'GC' coefficients for wind design in ASCE 7-16 either match or exceed the zone requirements for ASCE 7-22. **Refer to the worst-case zone** in ASCE 7-16 tables, when designing for an equivalent zone in ASCE 7-22.

Please refer to the system specific Engineering Certification Reports (listed above) for system specific design criteria and limitations.

If you have any questions on the above, do not hesitate to call.

Prepared by:
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