

REV.

DESCRIPTION

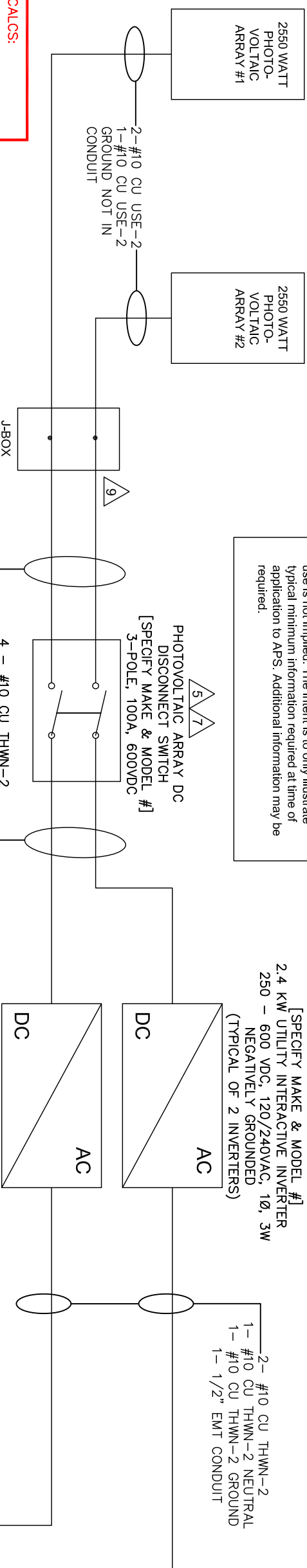
DATE

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[SPECIFY MAKE & MODEL #]  
 2.4 KW UTILITY INTERACTIVE INVERTER  
 250 - 600 VDC, 120/240VAC, 1Ø, 3W  
 NEGATIVELY GROUND  
 (TYPICAL OF 2 INVERTERS)

Voc=457VDC, Isc=7.28AMP  
 Vmp=376VDC, Imp=6.78AMPS

Voc=457VDC, Isc=7.28AMP  
 Vmp=376VDC, Imp=6.78AMPS



**FAULT CALCS:**

- F1: AVAIL = 20,955 AIC  
 d = 5 feet  
 f = .560  
 m = 0.641  
 Isc = 13,432 AIC
- F2: AVAIL = 13,432 AIC  
 d = 5 feet  
 f = .359  
 m = 0.736  
 Isc = 9,883 AIC
- F3: AVAIL = 9,883 AIC  
 d = 5 feet  
 f = .264  
 m = 0.791  
 Isc = 7,818 AIC
- F4: AVAIL = 7,818 AIC  
 d = 5 feet  
 f = .209  
 m = 0.827  
 Isc = 6,467 AIC

\* SOURCE: COOPER BRUSSMAN SPD MANUAL, REV 2009, CALCULATIONS IN ACCORDANCE WITH NEC ART 110.9 & 110.10.

MAX ISC PER APS ESRM 800.2-1 IS 20.955A

**NOTES:**

- 1 EQUIPMENT SHALL BE INSTALLED AND LABELED IN ACCORDANCE WITH THE NEC AND ALL APPLICABLE REQUIREMENTS OF THE SERVING ELECTRIC UTILITY COMPANY AND OF THE LOCAL AUTHORITY HAVING JURISDICTION.
- 2 BI-DIRECTIONAL UTILITY METER INSTALLED BY UTILITY COMPANY (AS REQUIRED).
- 3 LABEL BREAKER "PHOTOVOLTAIC ELECTRIC POWER SOURCE" PER NEC 705.12(B)(3), AND "BREAKERS ARE BACKFEED" PER NEC 705.12(B)(4) LABEL WITH THE MAXIMUM AC OUTPUT OPERATING CURRENT AND THE OPERATING VOLTAGE PER NEC 690.54.
- 4 LABEL "PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH." SWITCH COVER TO BE LOCKED AT ALL TIMES. SWITCH TO BE VISUAL OPEN AND ACCESSIBLE PER UTILITY REQUIREMENTS AND CONFORM TO NEC 705.22.
- 5 LABEL "PHOTOVOLTAIC ARRAY DC DISCONNECT DEVICE" PER NEC 690.13(B) NEC 690.53. SWITCH TO BE LOCKED.
- 6 LABEL "PHOTOVOLTAIC PRODUCTION METER (LINE SIDE VOLTAGE ON TOP LUGS)." METER ENCLOSURE AND SOCKET PROVIDED AND INSTALLED BY CUSTOMER PER APS ESRM. METER, CT'S AND TEST SWITCHES PROVIDED BY UTILITY COMPANY WHEN REQUIRED. NOTE 1: CUSTOMER TO SUBMIT SHOP DRAWINGS OF METERING CABINET TO APS METERSHOP FOR APPROVAL. NOTE 2: CT RATED PRODUCTION METERING ENCLOSURES SHALL HAVE THE BUS IDENTIFIED WITH REFERENCE TO THE GENERATION SOURCE SIDE PROR TO METERING INSTALLATION WITH A TEMPORARY TAG LABELED "GENERATION SOURCE."
- 7 PROVIDE WARNING SIGN PER NEC 690.13(B) READING "WARNING-ELECTRIC SHOCK HAZARD-DO NOT TOUCH TERMINALS-TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION."
- 8 LABEL "WARNING INVERTER OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE" AND LOCATE BREAKER AT OPPOSITE END OF BUS FROM MAIN BREAKER LOCATION PER NEC 705.12(B)(2)(3)(b).
- 9 METALLIC CONDUIT SHALL BE USED WITHIN BUILDING PER NEC 690.31(E).
- 10 LABEL "DEDICATED PHOTOVOLTAIC SYSTEM COMBINER PANEL" AND "DO NOT ADD LOADS TO THIS PANEL."
- 11 GFC TO BE INSTALLED AS REQUIRED BY MANUFACTURER INSTRUCTIONS AND NEC 690.47.
- 12 EQUIPMENT SHALL BE LISTED, TESTED AND MARKED TO WITHSTAND THE AVAILABLE SHORT CIRCUIT CURRENT.
- 13 LABEL "PHOTOVOLTAIC SYSTEM DISCONNECT SWITCH". SWITCH COVER TO BE LOCKED BY CUSTOMER AT ALL TIMES, AND COMPLY WITH NEC 705.22.

PHOTOVOLTAIC PRODUCTION METER  
 [SPECIFY FORM #, MAKE & MODEL #]  
 240V, 100A, RINGTYPE

LINE SIDE (TOP) TERMINALS CONNECT PHASE "A" TO THE LEFT ELEMENT (TERMINAL) OF THE METER  
 [LOOKING AT THE FRONT OF THE METER]

**SAMPLE LOAD SIDE TAP ONE - LINE DIAGRAM**

**ABC SOLAR COMPANY, INC.**

**ONE-LINE ELECTRICAL DIAGRAM**

**4.8 KW AC PHOTOVOLTAIC SYSTEM**

**333 E. CACTUS BIRD RD.**

**ANY CITY, AZ 85123**

1234 South Main Street  
 Any City, Arizona 85123  
 Tel: 602-555-5555

APPROVALS	DATE
DRAWN ABC	1-25-17
CHECKED	
ENGINEER	
REV.	

ABC PROJECT #1111-9999

SIZE	DRAWING NO.	SCALE	REV.	SHEET
B	0000-0001	NA	REV.	1 OF 5

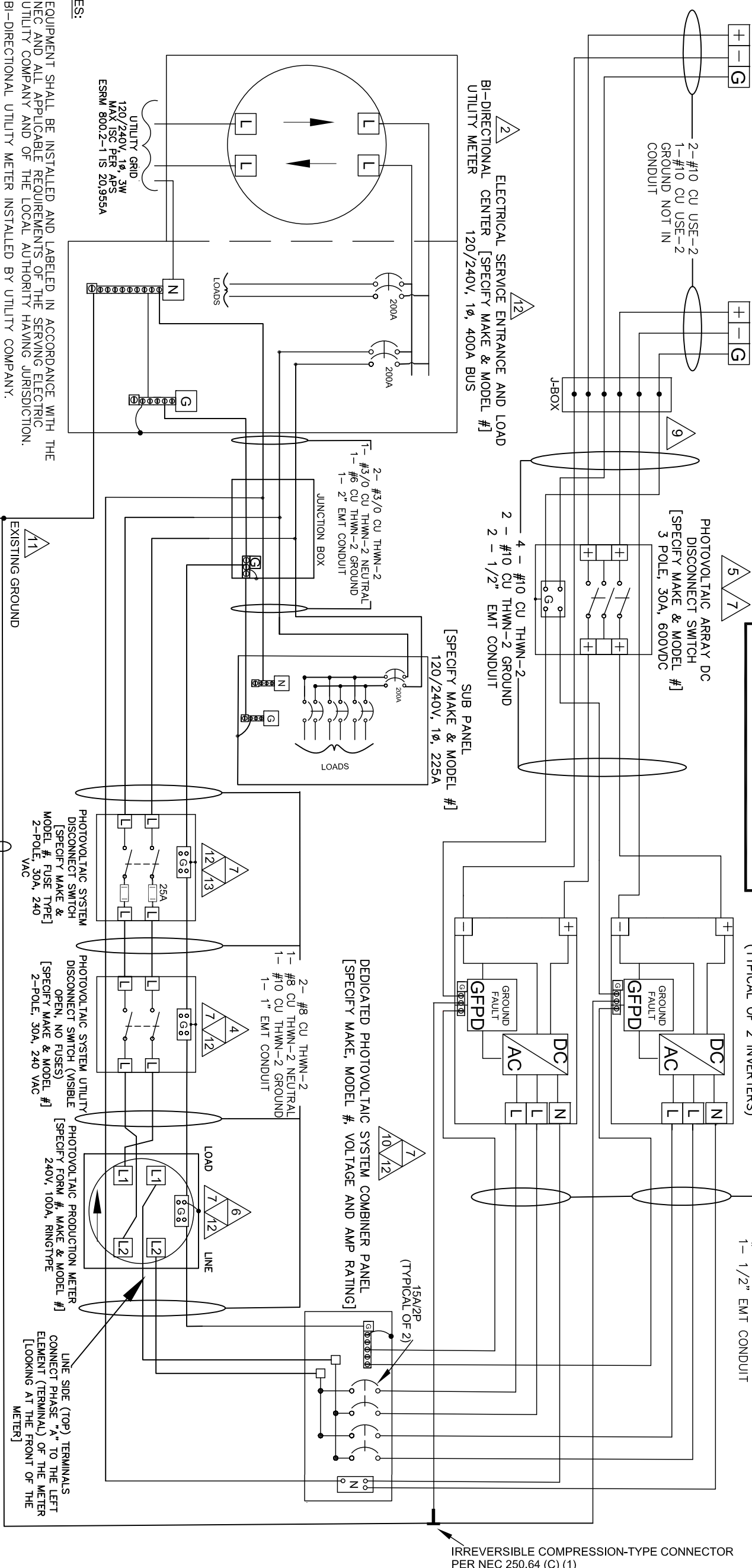
PV ARRAY #1 550 WATT PHOTOVOLTAIC ARRAY  
 SEE DWG# 0000-0003 FOR WIRING DETAIL

PV ARRAY #2 2550 WATT PHOTOVOLTAIC ARRAY  
 SEE DWG# 0000-0003 FOR WIRING DETAIL

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[SPECIFY MAKE & MODEL #]  
 2.4 KW UTILITY INTERACTIVE INVERTER  
 250 - 600 VDC, 120/240VAC, 1Ø, 3W  
 NEGATIVELY GROUNDED  
 (TYPICAL OF 2 INVERTERS)

2 - #10 CU THWN-2  
 1 - #10 CU THWN-2 NEUTRAL  
 1 - 1/2" EMT CONDUIT



IRREVERSIBLE COMPRESSION-TYPE CONNECTOR PER NEC 250.64 (C) (1)

**NOTES:**

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- 2 BI-DIRECTIONAL UTILITY METER INSTALLED BY UTILITY COMPANY.
- 3 LABEL BREAKER "PHOTOVOLTAIC ELECTRIC POWER SOURCE" PER NEC 705.12(B)(3), AND "BREAKERS ARE BACKFED" PER NEC 705.12(B)(4) LABEL WITH THE MAXIMUM AC OUTPUT OPERATING CURRENT AND THE OPERATING VOLTAGE PER NEC 690.54.
- 4 LABEL "PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH," SWITCH COVER TO BE LOCKED AT ALL TIMES. SWITCH TO BE VISUAL OPEN AND ACCESSIBLE PER UTILITY REQUIREMENTS AND CONFORM TO NEC 705.22.
- 5 LABEL "PHOTOVOLTAIC ARRAY DC DISCONNECT DEVICE" PER NEC 690.13(B) LABEL WITH MAXIMUM VOLTAGE, MAXIMUM CIRCUIT CURRENT AND MAXIMUM RATED OUTPUT CURRENT PER NEC 690.53. SWITCH TO BE LOCKED.
- 6 LABEL "PHOTOVOLTAIC PRODUCTION METER (LINE SIDE VOLTAGE ON TOP LUGS)," METER ENCLOSURE AND SOCKET PROVIDED AND INSTALLED BY CUSTOMER PER APS ESRM. METER, CTs AND TEST SWITCHES PROVIDED BY UTILITY COMPANY WHEN REQUIRED. NOTE 1: CUSTOMER TO SUBMIT SHOP DRAWINGS OF METERING CABINET TO APS METERSHOP FOR APPROVAL. NOTE 2: CT RATED PRODUCTION METERING ENCLOSURES SHALL HAVE THE BUS IDENTIFIED WITH REFERENCE TO THE GENERATION SOURCE SIDE PRIOR TO METERING INSTALLATION WITH A TEMPORARY TAG LABELED "GENERATION SOURCE."
- 7 PROVIDE WARNING SIGN PER NEC 690.13(B) READING "WARNING-ELECTRIC SHOCK HAZARD-DO NOT TOUCH TERMINALS-TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION."
- 8 LABEL "WARNING INVERTER OUTPUT CONNECTION, DO NOT RELOCATE THIS OVERCURRENT DEVICE" AND LOCATE BREAKER AT OPPOSITE END OF BUS FROM MAIN BREAKER LOCATION PER NEC 705.12(B)(2)(3)(b).
- 9 METALLIC CONDUIT SHALL BE USED WITHIN BUILDING PER NEC 690.31(E).
- 10 LABEL "DEDICATED PHOTOVOLTAIC SYSTEM COMBINER PANEL" AND "DO NOT ADD LOADS TO THIS PANEL."
- 11 GEC TO BE INSTALLED AS REQUIRED BY MANUFACTURER INSTRUCTIONS AND NEC 690.47.
- 12 EQUIPMENT SHALL BE LISTED, TESTED AND MARKED TO WITHSTAND THE AVAILABLE SHORT CIRCUIT CURRENT.
- 13 LABEL "PHOTOVOLTAIC SYSTEM DISCONNECT SWITCH". SWITCH COVER TO BE LOCKED BY CUSTOMER AT ALL TIMES, AND COMPLY WITH NEC 705.22.

**NOTE: SYSTEM DESIGNED IN ACCORDANCE WITH THE 2017 N.E.C.**

#6 CU BARE GROUNDING ELECTRODE CONDUCTOR (GEC) RUN INDEPENDENTLY OF OTHER CONDUCTORS AND BE DIRECTLY INTO AC GROUNDING ELECTRODE.

**SAMPLE LOAD SIDE TAP THREE-LINE DIAGRAM**

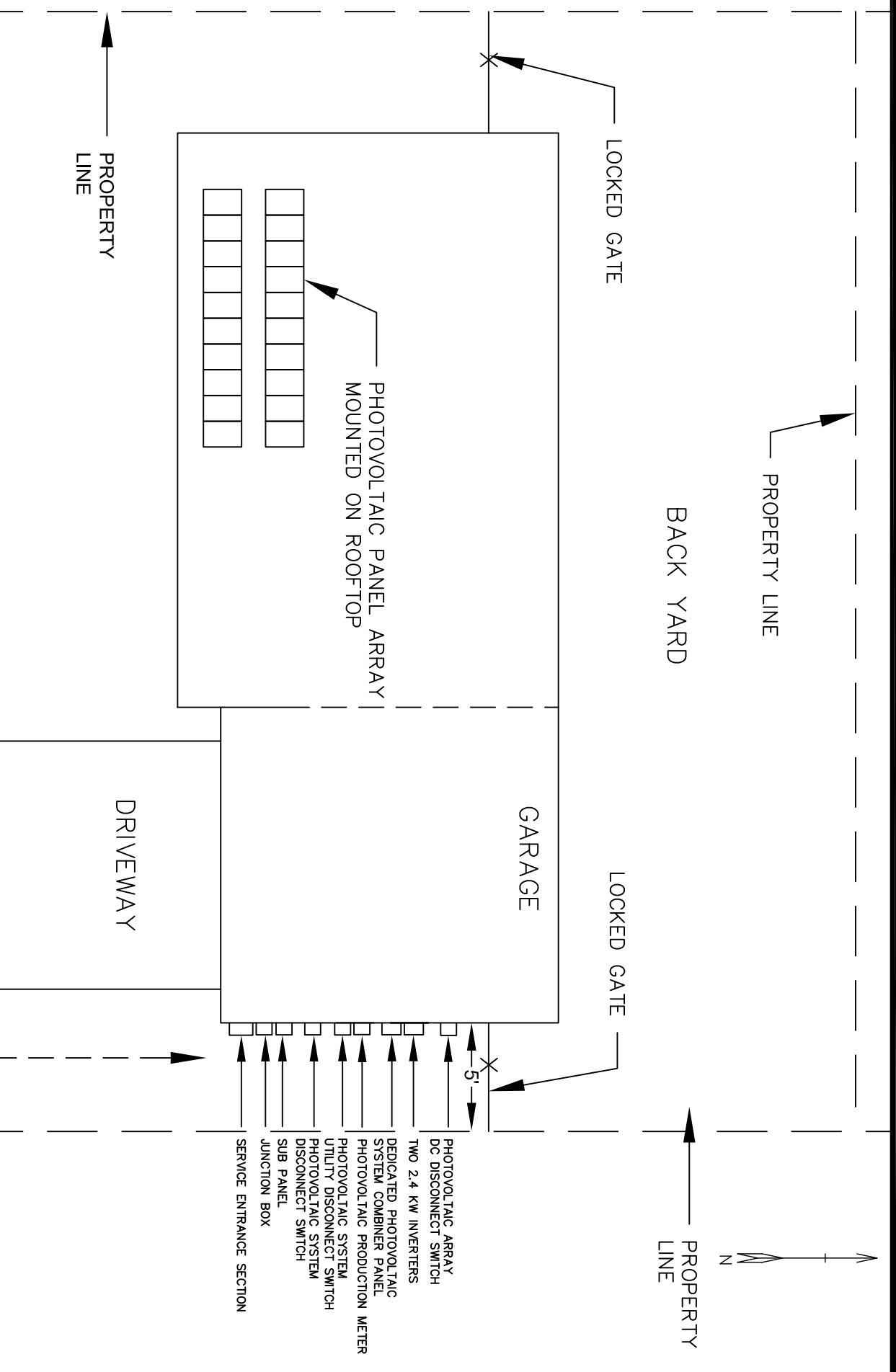
1234 South Main Street Any City, Arizona 85123 Tel: 602-555-5555		ABC SOLAR COMPANY, INC.	
APPROVALS	DATE	THREE-LINE ELECTRICAL DIAGRAM	
DRAWN ABC	1-23-17	4.8 KW AC PHOTOVOLTAIC SYSTEM	
CHECKED		333 E. CACTUS BIRD RD.	
ENGINEER		ANY CITY, AZ 85123	
REV.		SIZE B	DRAWING NO. 0000-0002
ABC PROJECT #11111-9999		SCALE NA	REV. REV. SHEET 2 OF 5

NOTE: UTILITY HAS 24-HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC SYSTEM COMPONENTS LOCATED AND SERVICE ENTRANCE.

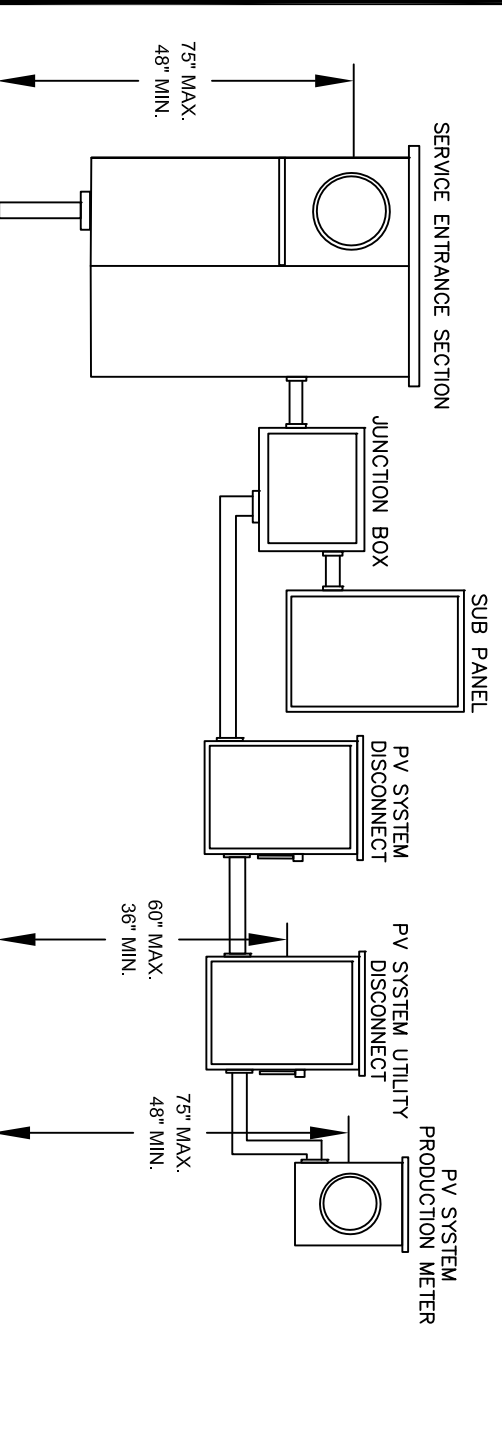
NOTE: REFERENCE SECTION 301.15 OF THE APS ESRM FOR ELECTRIC METER SEPARATION BETWEEN WATER AND GAS.

NOTE: WORKSPACE IN FRONT OF AC ELECTRICAL SYSTEM COMPONENTS SHALL BE IN ACCORDANCE WITH APS AND NEC REQUIREMENTS. FOR APS REQUIREMENTS, REFERENCE SECTION 300 OF THE APS ESRM AND SECTION 8.2 OF THE APS INTERCONNECTION REQUIREMENTS.

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ELEVATION VIEW



E. CACTUS BIRD RD.

SAMPLE LOAD SIDE TAP SITE PLAN

1234 South Main Street Any City, Arizona 85123 Tel: 602-555-5555		<b>ABC SOLAR COMPANY, INC.</b> SITE PLAN	
APPROVALS	DATE	4.8 KW AC PHOTOVOLTAIC SYSTEM	
DRAWN ABC	1-23-17	333 E. CACTUS BIRD RD.	
CHECKED		ANY CITY, AZ 85123	
ENGINEER		SIZE	DRAWING NO.
REV.		B	0000-0005
ABC PROJECT #1111-9999	SCALE	NA	REV.
			SHEET 5 OF 5