

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

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



2- #10 CU USE-2
1- #10 CU USE-2
GROUND NOT IN CONDUIT

PHOTOVOLTAIC ARRAY DC DISCONNECT SWITCH
[SPECIFY MAKE & MODEL #]
3-POLE, 30A, 600VDC

4 - #10 CU THWN-2
2 - #10 CU THWN-2 GROUND
2 - 1/2" EMT CONDUIT

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

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

FAULT CALCS:

F1: AVAIL = 20,955 AIC
d = 5 feet
f = .560
m = 0.641
Isc = 13,432 AIC

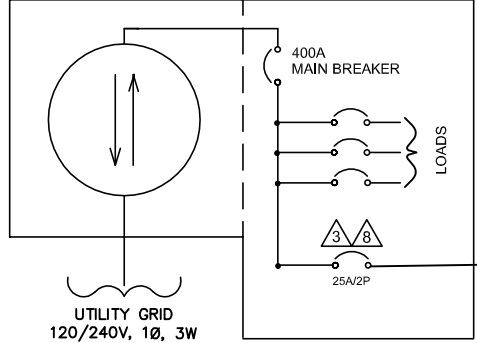
F2: AVAIL = 13,432 AIC
d = 5 feet
f = .359
m = 0.736
Isc = 9,883 AIC

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 BUSSMAN
SPD MANUAL, REV 2009.
CALCULATIONS IN ACCORDANCE
WITH NEC ART 110.9 & 110.10.

ELECTRICAL SERVICE ENTRANCE AND LOAD
BI-DIRECTIONAL CENTER [SPECIFY MAKE & MODEL #]
UTILITY METER
120/240V, 1Ø, 400A BUS



UTILITY GRID
120/240V, 1Ø, 3W
MAX ISC PER APS ESRM 800.2-1 IS 20,955A

PHOTOVOLTAIC SYSTEM DISCONNECT SWITCH
[SPECIFY MAKE & MODEL #, FUSE TYPE]
2-POLE, 30A, 240 VAC

UTILITY DISCONNECT SWITCH
(VISIBLE OPEN, NO FUSES)
[SPECIFY MAKE & MODEL #]
2-POLE, 30A, 240 VAC

DEDICATED PHOTOVOLTAIC SYSTEM COMBINER PANEL
[SPECIFY MAKE, MODEL #, VOLTAGE AND AMP RATING]

2- #8 CU THWN-2
1- #8 CU THWN-2 NEUTRAL
1- #10 CU THWN-2 GROUND
1- 1" EMT CONDUIT

UNI-DIRECTIONAL 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]

- NOTES:**
- ⚠ 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.
 - ⚠ BI-DIRECTIONAL UTILITY METER INSTALLED BY UTILITY COMPANY.
 - ⚠ 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.
 - ⚠ LABEL "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.
 - ⚠ 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. [SHOW SWITCH INTERNAL WIRING CONFIGURATION PER MANUFACTURER'S REQUIREMENTS.]
 - ⚠ LABEL "UNI-DIRECTIONAL METER." METER ENCLOSURE AND SOCKET PROVIDED AND INSTALLED BY CUSTOMER PER APS ESRM. METER PROVIDED BY CUSTOMER (AS REQUIRED).
 - ⚠ 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."
 - ⚠ 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).
 - ⚠ METALLIC CONDUIT SHALL BE USED WITHIN BUILDING PER NEC 690.31(E)
 - ⚠ LABEL "DEDICATED PHOTOVOLTAIC SYSTEM COMBINER PANEL" AND "DO NOT ADD LOADS TO THIS PANEL."
 - ⚠ GEC TO BE INSTALLED AS REQUIRED BY MANUFACTURER INSTRUCTIONS AND NEC 690.47.
 - ⚠ EQUIPMENT SHALL BE LISTED, TESTED AND MARKED TO WITHSTAND THE AVAILABLE SHORT CIRCUIT CURRENT.
 - ⚠ INSTALL AS REQUIRED TO ENSURE PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH AND PRODUCTION METER AFC RATINGS ARE NOT EXCEEDED. LABEL "PHOTOVOLTAIC SYSTEM DISCONNECT SWITCH". SWITCH COVER TO BE LOCKED BY CUSTOMER AT ALL TIMES, AND COMPLY WITH NEC 705.22.

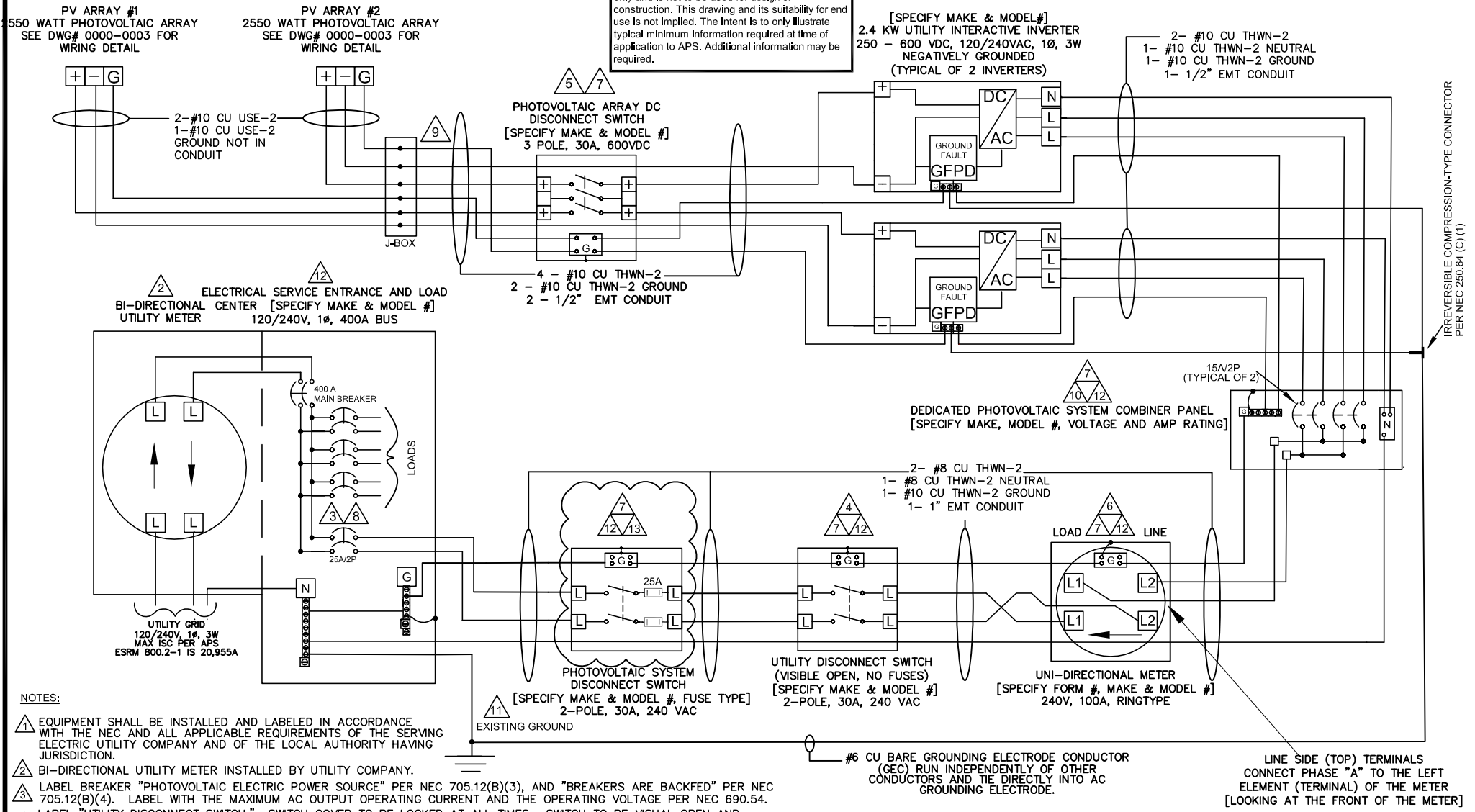
**NOTE: SYSTEM DESIGNED
IN ACCORDANCE WITH THE
2017 N.E.C.**

This Sample Drawing is for illustration purposes only and is not to be used for design or construction. This drawing and its suitability for end use is not implied. The intent is to only illustrate typical minimum information required at time of application to APS. Additional information may be required.

SAMPLE LOAD SIDE CONNECTION ONE - LINE DIAGRAM

1234 South Main Street Any City, Arizona 85123 Tel: 602-555-5555		ABC SOLAR COMPANY, INC.	
APPROVALS		DATE	
DRAWN ABC		1-26-17	
CHECKED			
ENGINEER			
REV.			
ABC PROJECT #1111-9999		SIZE B	DRAWING NO. 0000-0001
SCALE NA		REV.	SHEET 1 OF 5

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

- 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.
 - 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 "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. [SHOW SWITCH INTERNAL WIRING CONFIGURATION PER MANUFACTURER'S REQUIREMENTS.]
 - 6. LABEL "UNI-DIRECTIONAL METER." METER ENCLOSURE AND SOCKET PROVIDED AND INSTALLED BY CUSTOMER PER APS ESRM. METER PROVIDED BY CUSTOMER (AS REQUIRED).
 - 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. INSTALL AS REQUIRED TO ENSURE PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH AND PRODUCTION METER AFC RATINGS ARE NOT EXCEEDED. 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.

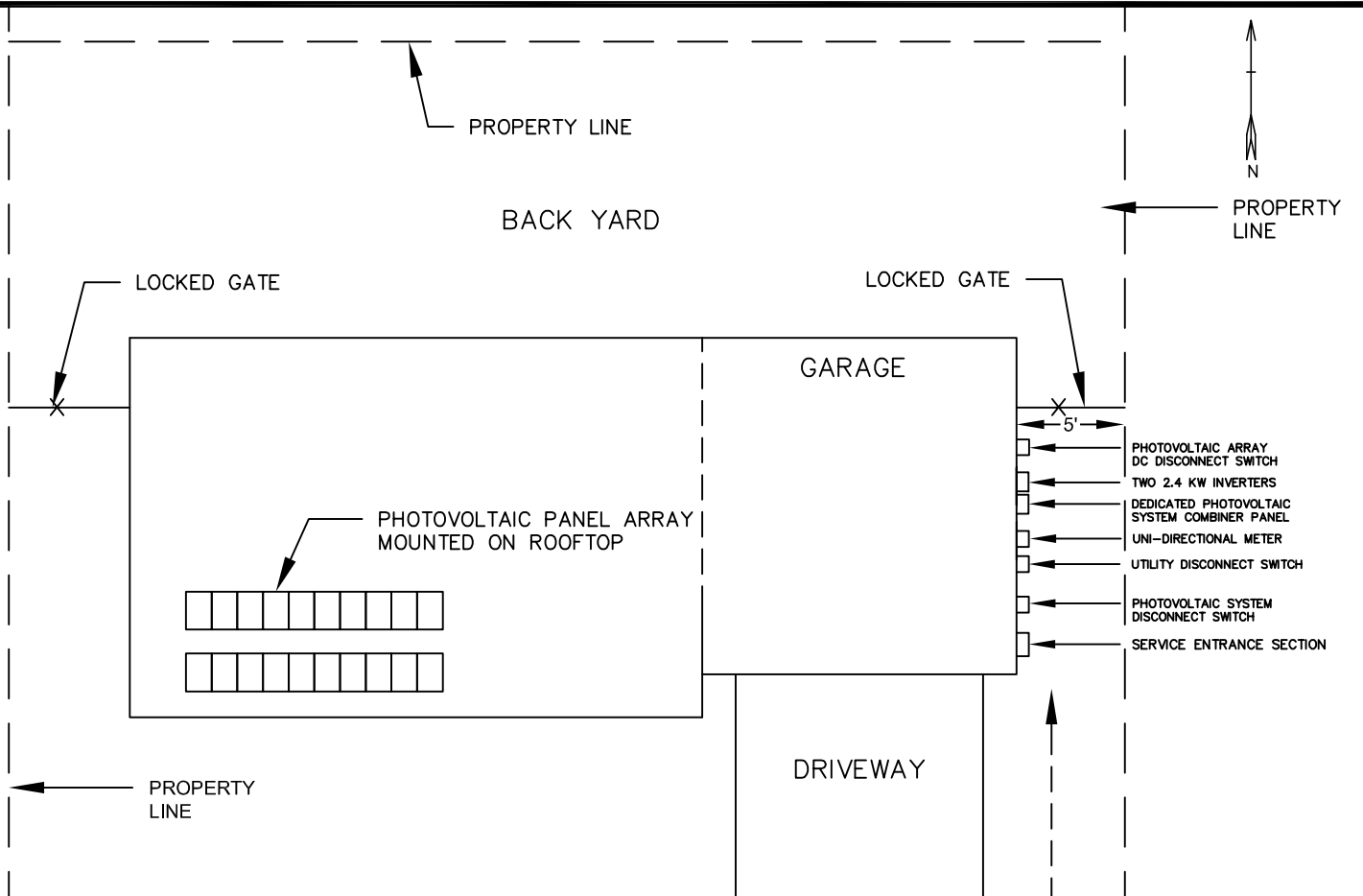
SAMPLE LOAD SIDE CONNECTION THREE-LINE DIAGRAM

1234 South Main Street Any City, Arizona 85123 Tel: 602-555-5555		ABC SOLAR COMPANY, INC.	
THREE-LINE ELECTRICAL DIAGRAM 4.8 KW AC PHOTOVOLTAIC SYSTEM 333 E. CACTUS BIRD RD. ANY CITY, AZ 85123			
APPROVALS	DATE	SIZE	DRAWING NO.
DRAWN ABC	1-26-17	B	0000-0002
CHECKED		SCALE	REV.
ENGINEER		NA	
REV.			
ABC PROJECT #1111-9999		SHEET 2 OF 5	

NOTE: UTILITY HAS 24-HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC SYSTEM COMPONENTS 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.

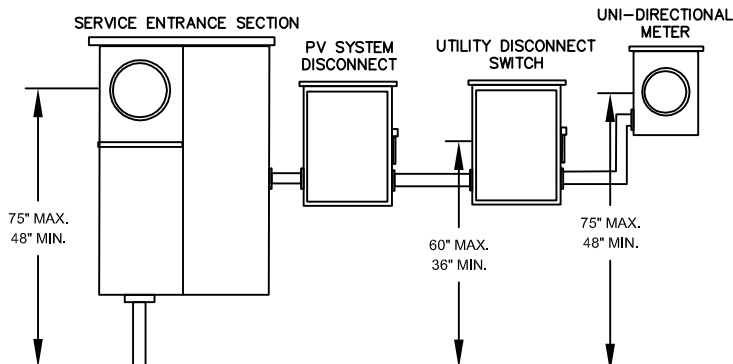


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E. CACTUS BIRD RD.

APS 24-HR ACCESS

ELEVATION VIEW



SAMPLE LOAD SIDE CONNECTION SITE PLAN

1234 South Main Street Any City, Arizona 85123 Tel: 602-555-5555		ABC SOLAR COMPANY, INC.	
		SITE PLAN	
		4.8 KW AC PHOTOVOLTAIC SYSTEM	
		333 E. CACTUS BIRD RD.	
		ANY CITY, AZ 85123	
APPROVALS	DATE	SIZE	DRAWING NO.
DRAWN ABC	1-26-17	B	0000-0005
CHECKED			
ENGINEER			
REV.			
ABC PROJECT #1111-9999		SCALE NA	REV.
			SHEET 5 OF 5