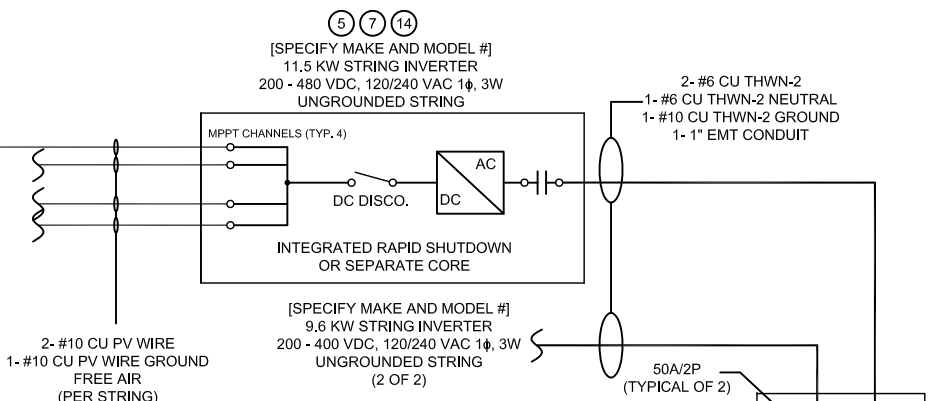
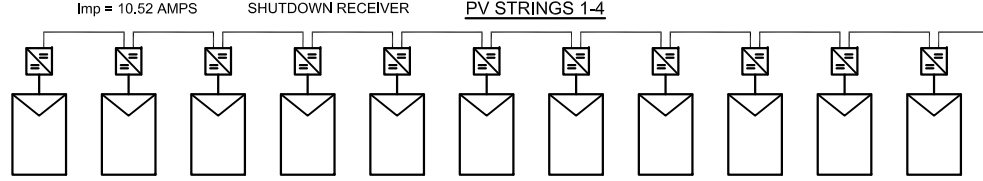


REV.	DESCRIPTION	DATE
C	FUSED DISCONNECT	1-26-17
D	2023 NEC SET INCORPORATING REVISED APS REQUIREMENTS	01-21-26

THESE RAPID SHUTDOWN COMPONENTS SHALL BE LISTED OR FIELD LABELED AS AN ASSEMBLY IN ACCORDANCE WITH 2023 NEC 690.12

Voc = 501.5 VDC  
Isc = 11.15 AMPS  
Vmp = 428.9 VDC  
Imp = 10.52 AMPS

4400 WATT PHOTO-VOLTAIC STRINGS WITH NEC 2023 RAPID SHUTDOWN RECEIVER



**FAULT CALCS:**

F1: AVAIL = 20,955 AIC  
d = 10 feet  
f = 0.377  
m = 0.726  
Isc = 15,219 AIC

F2: AVAIL = 15,219 AIC  
d = 5 feet  
f = 0.137  
m = 0.880  
Isc = 13,387 AIC

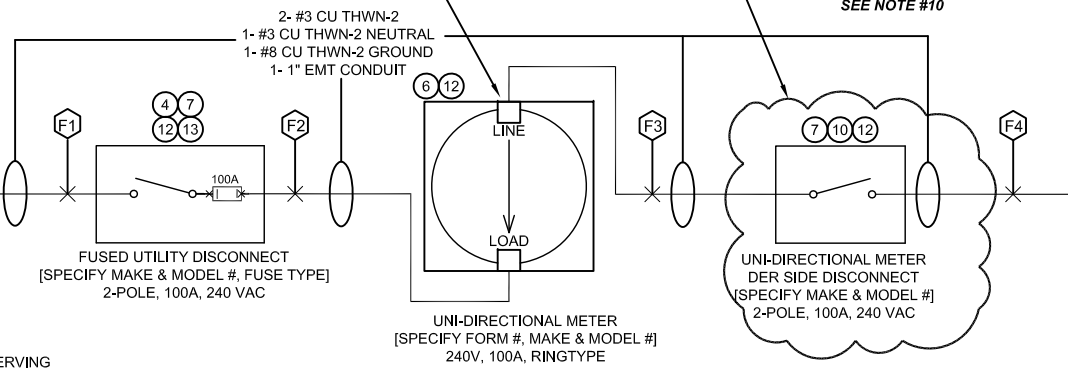
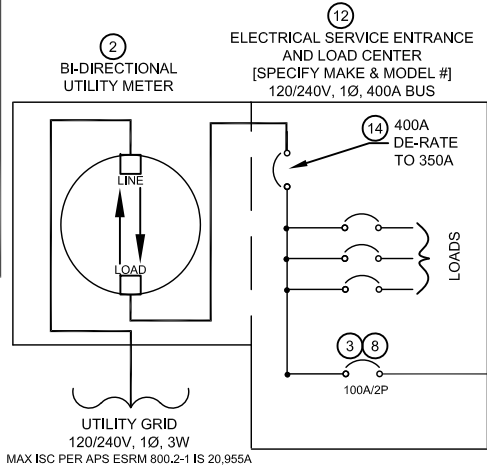
F3: AVAIL = 13,387 AIC  
d = 5 feet  
f = 0.120  
m = 0.892  
Isc = 11,948 AIC

F4: AVAIL = 11,948 AIC  
d = 5 feet  
f = 0.107  
m = 0.903  
Isc = 10,788 AIC

\*SOURCE: COOPER BUSSMAN SPD MANUAL, REV 2017. CALCULATIONS IN ACCORDANCE WITH NEC ART 110.9 & 110.10.

**NOTE:** FOR THE PRODUCTION METER TO BE RATED PROPERLY FOR THE AVAILABLE FAULT CURRENT, TAKE F4 ISC AND ADD TO THE FULL LOAD INVERTER FAULT AT 120%. IN THIS CASE SINCE WE HAVE ONE INVERTER, THE FAULT CONTRIBUTION FROM THE PV SYSTEM WILL BE THE TOTAL FAULT CONTRIBUTION FROM THE SINGLE INVERTER.

I.E. (100 A X 120%) = 120 A + 10,788 A = 10,908 A



- 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 "WARNING: EQUIPMENT IS FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING MAIN POWER SUPPLY OVERCURRENT DEVICE SHALL NOT EXCEED AMPACITY OF BUSBAR." PER NEC 705.12(B)(4).
  - LABEL "FUSED UTILITY DISCONNECT SWITCH." KEEP COVER LOCKED; SWITCH MUST SHOW VISIBLE OPEN. INSTALL PER UTILITY REQUIREMENTS AND NEC 705.20. ACCEPTABLE OPTIONS: (1) SWITCH WITH VIEWING WINDOW AND CUSTOMER-INSTALLED LOCK, (2) SHARED LOCK PER UTILITY, OR (3) UNFUSED SWITCH LOCATED FAR ENOUGH FROM SERVICE ENTRANCE FOR F1 <10,000 AIC.
  - LABEL "PV SYSTEM DISCONNECT" PER NEC 690.13(B). ENCLOSURE DOOR TO BE LOCKED/SECURED PER NEC 690.13(A)(2). (SHOW SWITCH INTERNAL WIRING CONFIGURATION PER MANUFACTURER'S REQUIREMENTS.). DISCONNECT SHALL BE ACCESSIBLE AND LABELED IN ACCORDANCE WITH NEC 690.12, RAPID SHUTDOWN OF PV SYSTEMS ON BUILDINGS.
  - LABEL "UNI-DIRECTIONAL METER." METER ENCLOSURE AND SOCKET PROVIDED AND INSTALLED BY CUSTOMER PER APS ESRM. METER PROVIDED BY APS. METERING EQUIPMENT SHALL BE INSTALLED PER NEC 110.3(B) AND MANUFACTURERS INSTRUCTIONS. PROVIDE WARNING "LINE AND LOAD TERMINALS MAY BE ENERGIZED IN THE OPEN POSITION."
  - 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: POWER SOURCE OUTPUT. DO NOT RELOCATE THIS OVERCURRENT DEVICE" AND LOCATE BREAKER AT OPPOSITE END OF BUS FROM MAIN BREAKER LOCATION PER NEC 705.12(B)(2).
  - METALLIC CONDUIT SHALL BE USED WITHIN BUILDING PER NEC 690.31(D)(1).
  - REQUIRED FOR GRID FORMING SYSTEMS. LABEL "UNI-DIRECTIONAL METER DER SIDE DISCONNECT SWITCH." SWITCH COVER TO BE LOCKED AT ALL TIMES, AND SHALL BE VISUAL OPEN AND ACCESSIBLE PER UTILITY REQUIREMENTS AND CONFORM TO NEC 705.20.
  - LABEL "DEDICATED DISTRIBUTED GENERATION COMBINER PANEL" AND "DO NOT ADD LOADS TO THIS PANEL."
  - EQUIPMENT SHALL BE LISTED, TESTED AND MARKED TO WITHSTAND THE AVAILABLE SHORT CIRCUIT CURRENT.
  - INSTALL AS REQUIRED TO ENSURE PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH, PRODUCTION METER AND UNI-DIRECTIONAL METER LINE SIDE DISCONNECT SWITCH AFC RATINGS ARE NOT EXCEEDED.
  - MAIN OCPD HAS BEEN DE-RATED IN ACCORDANCE WITH NEC 230.42(A)(1) BASED ON CALCULATED LOAD INCLUDING 125 PERCENT OF CONTINUOUS LOADS FOR COMPLIANCE WITH NEC 705.12(B)(4).

NOTE: SYSTEM DESIGNED IN ACCORDANCE WITH THE 2023 N.E.C.

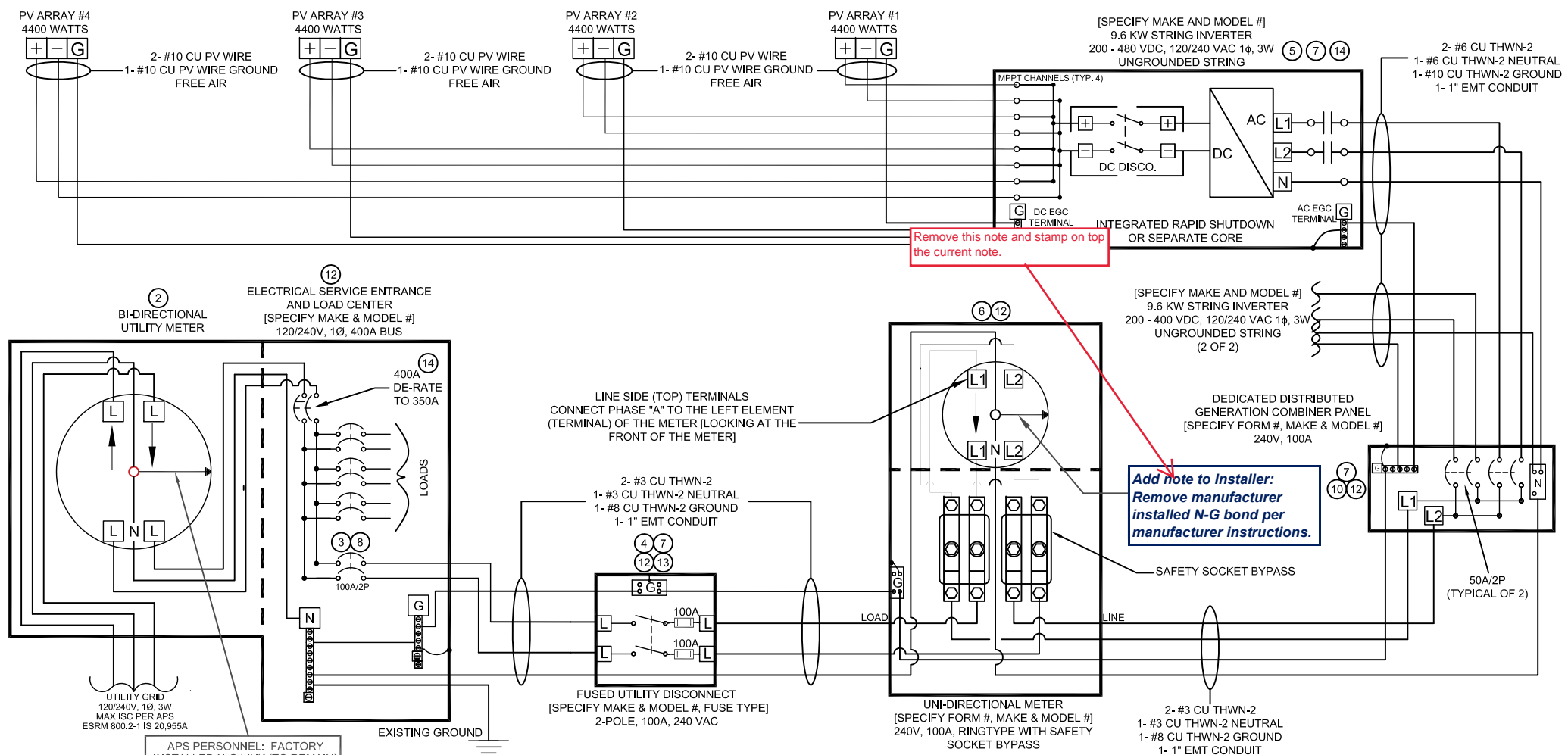
This Sample Drawing is for illustration purposes only and is not to be used for design or construction. This drawing and its suitability for end use is not implied. The intent is to only illustrate typical minimum information required at time of application to APS. Additional information may be required.

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

1234 South Main Street Any City, Arizona 85123 Tel: 602-555-5555		<b>ABC SOLAR COMPANY, INC.</b>	
APPROVALS		DATE	
DRAWN ABC		06-29-05	
CHECKED			
ENGINEER			
REV. D		01-21-26	
ABC PROJECT #1111-9999		SIZE <b>B</b>	DRAWING NO. <b>0000-0001</b>
		SCALE <b>NA</b>	REV. <b>D</b>
		SHEET <b>1</b> OF <b>3</b>	

**ONE-LINE ELECTRICAL DIAGRAM**  
11 KW AC PHOTOVOLTAIC SYSTEM  
333 E. CACTUS BIRD RD.  
ANY CITY, AZ 85123

REV.	DESCRIPTION:	DATE
C	FUSED DISCONNECT	1-26-17
D	2023 NEC SET INCORPORATING REVISED APS REQUIREMENTS	02-16-26



- 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 "WARNING: EQUIPMENT IS FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING MAIN POWER SUPPLY OVERCURRENT DEVICE SHALL NOT EXCEED AMPACITY OF BUSBAR." PER NEC 705.12(B)(4).
  - LABEL "FUSED UTILITY DISCONNECT." KEEP COVER LOCKED; SWITCH MUST SHOW VISIBLE OPEN. INSTALL PER UTILITY REQUIREMENTS AND NEC 705.20. ACCEPTABLE OPTIONS: (1) SWITCH WITH VIEWING WINDOW AND CUSTOMER-INSTALLED LOCK, (2) SHARED LOCK PER UTILITY, OR (3) UNFUSED SWITCH LOCATED FAR ENOUGH FROM SERVICE ENTRANCE FOR F1 <10,000 AIC.
  - LABEL "PV SYSTEM DISCONNECT" PER NEC 690.13(B). ENCLOSURE DOOR TO BE LOCKED/SECURED PER NEC 690.13(A)(2). [SHOW SWITCH INTERNAL WIRING CONFIGURATION PER MANUFACTURER'S REQUIREMENTS.]. DISCONNECT SHALL BE ACCESSIBLE AND LABELED IN ACCORDANCE WITH NEC 690.12, RAPID SHUTDOWN OF PV SYSTEMS ON BUILDINGS.
  - LABEL "UNI-DIRECTIONAL METER." METER ENCLOSURE AND SOCKET PROVIDED AND INSTALLED BY CUSTOMER PER APS ESRM. METER PROVIDED BY APS. METERING EQUIPMENT SHALL BE INSTALLED PER NEC 110.3(B) AND MANUFACTURERS INSTRUCTIONS. PROVIDE WARNING "LINE AND LOAD TERMINALS MAY BE ENERGIZED IN THE OPEN POSITION."
  - 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: POWER SOURCE OUTPUT. DO NOT RELOCATE THIS OVERCURRENT DEVICE" AND LOCATE BREAKER AT OPPOSITE END OF BUS FROM MAIN BREAKER LOCATION PER NEC 705.12(B)(2).
  - METALLIC CONDUIT SHALL BE USED WITHIN BUILDING PER NEC 690.31(D)(1).
  - LABEL "DEDICATED DISTRIBUTED GENERATION COMBINER PANEL" AND "DO NOT ADD LOADS TO THIS PANEL."
  - NOT USED
  - EQUIPMENT SHALL BE LISTED, TESTED AND MARKED TO WITHSTAND THE AVAILABLE SHORT CIRCUIT CURRENT.
  - INSTALL AS REQUIRED TO ENSURE UTILITY DISCONNECT AND UNI-DIRECTIONAL METER AFC RATINGS ARE NOT EXCEEDED.
  - MAIN OCPD HAS BEEN DE-RATED IN ACCORDANCE WITH NEC 230.42(A)(1) BASED ON CALCULATED LOAD INCLUDING 125 PERCENT OF CONTINUOUS LOADS FOR COMPLIANCE WITH NEC 705.12(B)(4).

NOTE: SYSTEM DESIGNED IN ACCORDANCE WITH THE 2023 N.E.C.

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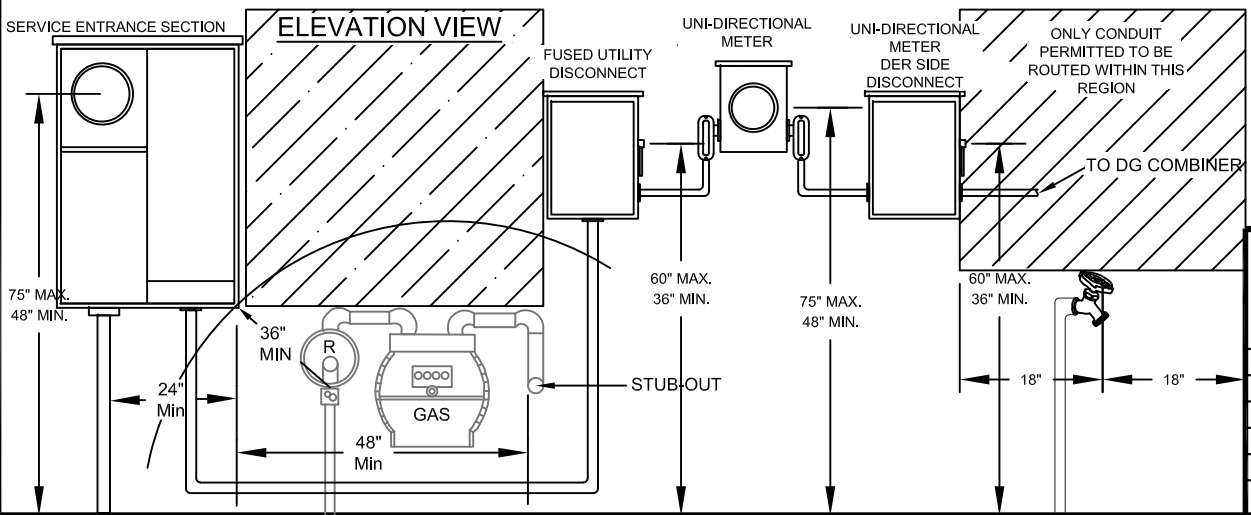
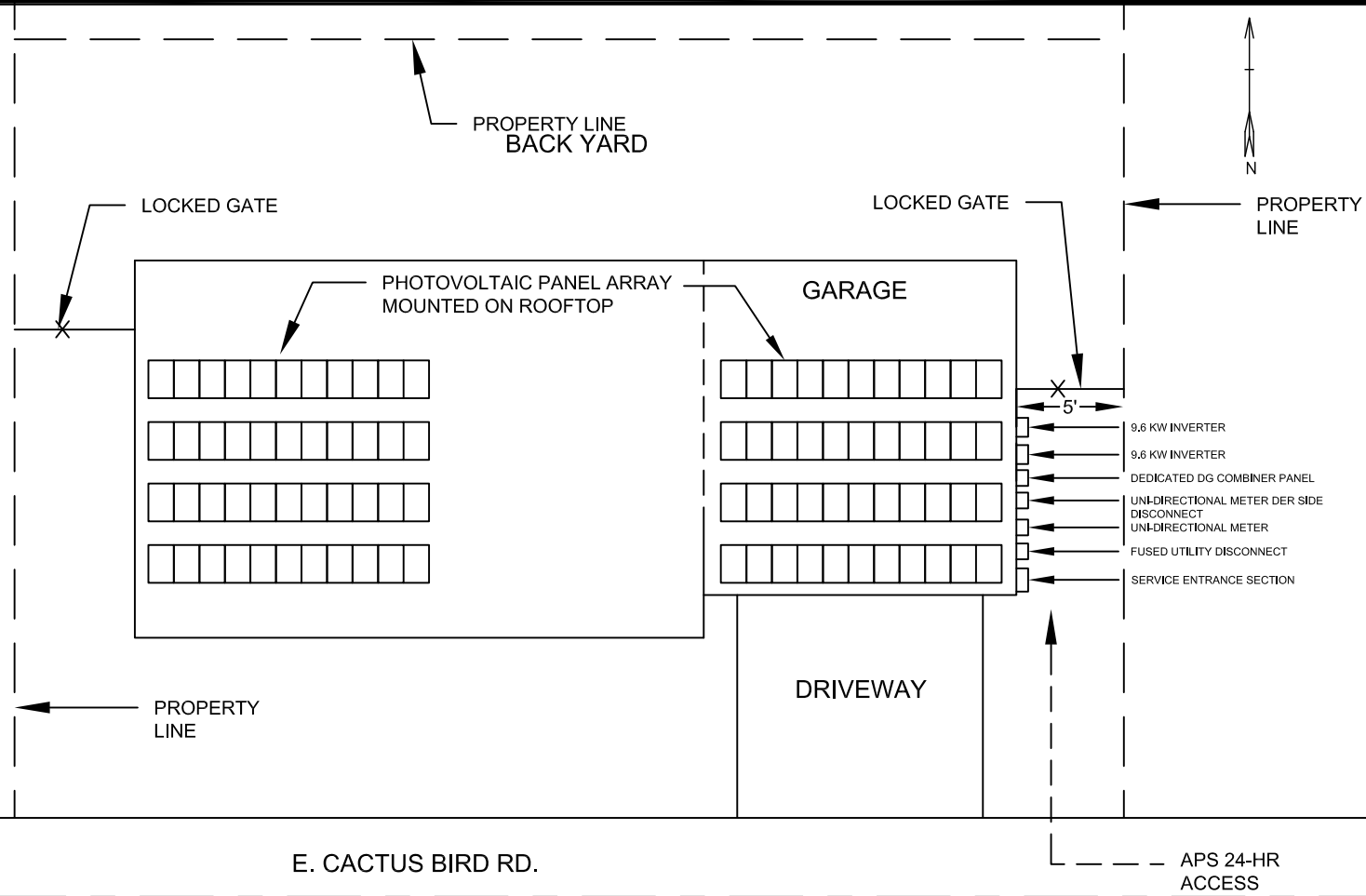
### SAMPLE LOAD SIDE CONNECTION THREE-LINE DIAGRAM

1234 South Main Street Any City, Arizona 85123 Tel: 602-555-5555		<b>ABC SOLAR COMPANY, INC.</b>	
THREE-LINE ELECTRICAL DIAGRAM 4.8 KW AC PHOTOVOLTAIC SYSTEM 333 E. CACTUS BIRD RD. ANY CITY, AZ 85123		SIZE <b>B</b>	DRAWING NO. <b>0000-0002</b>
APPROVALS	DATE	SCALE <b>NA</b>	REV. <b>D</b>
DRAWN ABC	6-29-05	SHEET <b>2</b> OF <b>3</b>	
CHECKED			
ENGINEER			
REV. D	02-16-26		
ABC PROJECT #1111-9999			

**NOTE: UTILITY PERSONNEL REQUIRE COORDINATED ACCESS TO ALL DER SYSTEM COMPONENTS, SERVICE DISCONNECTS, METERING, AND SERVICE EQUIPMENT FOR SCHEDULED MAINTENANCE AND SAFETY INSPECTIONS. CUSTOMERS ARE RESPONSIBLE FOR ENSURING THAT ACCESS IS AVAILABLE AND MAY BE CONTACTED BY THE UTILITY TO ARRANGE SITE VISITS WHEN EQUIPMENT IS LOCATED WITHIN FENCED OR SECURED AREAS. EMERGENCY ACCESS TO THIS EQUIPMENT MUST BE AVAILABLE AT ALL TIMES.**

**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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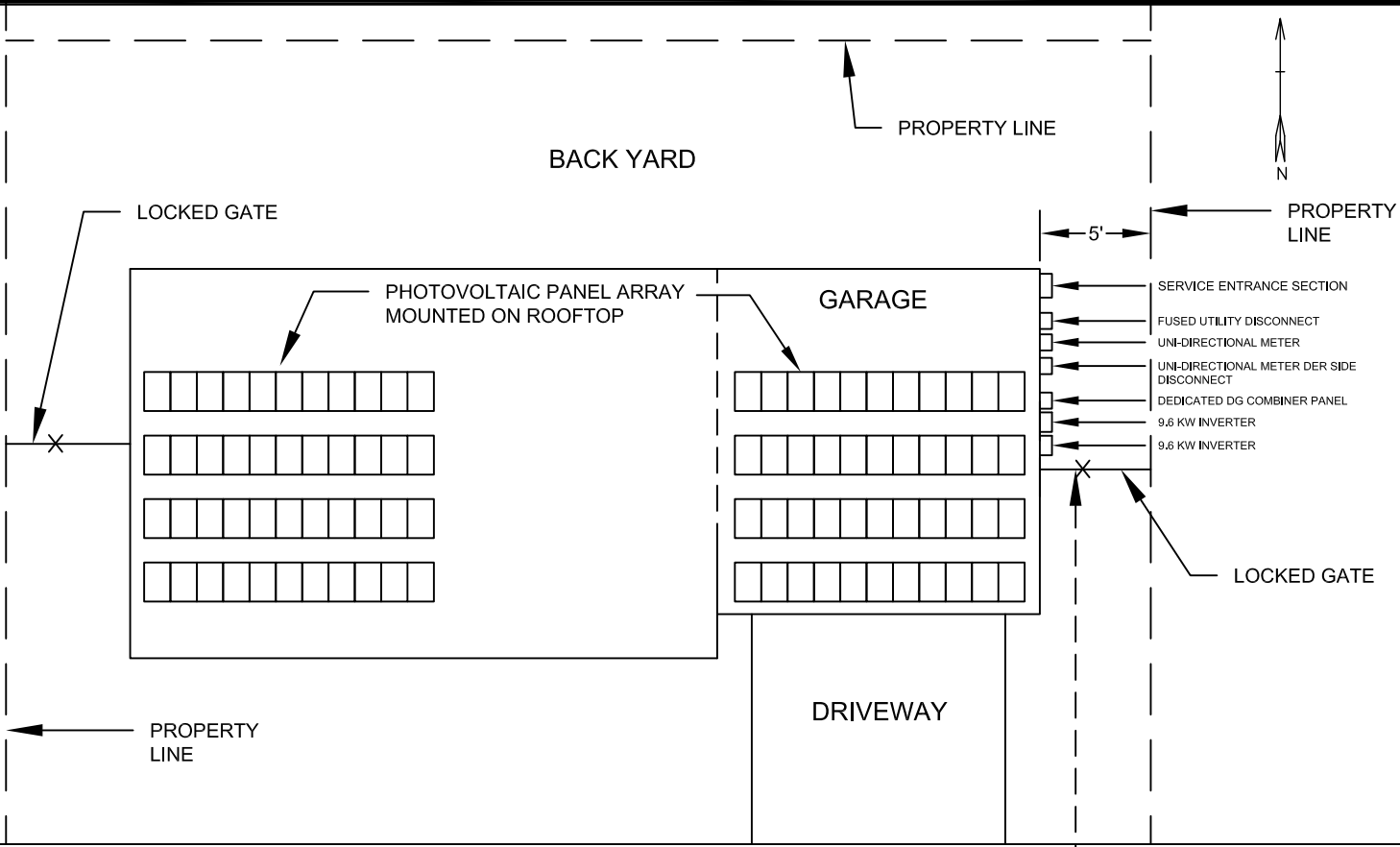
**SAMPLE LOAD SIDE CONNECTION SITE PLAN**

1234 South Main Street Any City, Arizona 85123 Tel: 602-555-5555		<b>ABC SOLAR COMPANY, INC.</b>	
		SITE PLAN	
		11 KW AC PHOTOVOLTAIC SYSTEM	
		333 E. CACTUS BIRD RD.	
		ANY CITY, AZ 85123	
APPROVALS	DATE	SIZE	DRAWING NO.
DRAWN F.JG	02-16-26	B	0000-0005
CHECKED		SCALE	REV.
ENGINEER		NA	
REV. A	02-16-26		
ABC PROJECT #1111-9999			SHEET 3 OF 3

**NOTE:** UTILITY PERSONNEL REQUIRE COORDINATED ACCESS TO ALL DER SYSTEM COMPONENTS, SERVICE DISCONNECTS, METERING, AND SERVICE EQUIPMENT FOR SCHEDULED MAINTENANCE AND SAFETY INSPECTIONS. CUSTOMERS ARE RESPONSIBLE FOR ENSURING THAT ACCESS IS AVAILABLE AND MAY BE CONTACTED BY THE UTILITY TO ARRANGE SITE VISITS WHEN EQUIPMENT IS LOCATED WITHIN FENCED OR SECURED AREAS. EMERGENCY ACCESS TO THIS EQUIPMENT MUST BE AVAILABLE AT ALL TIMES.

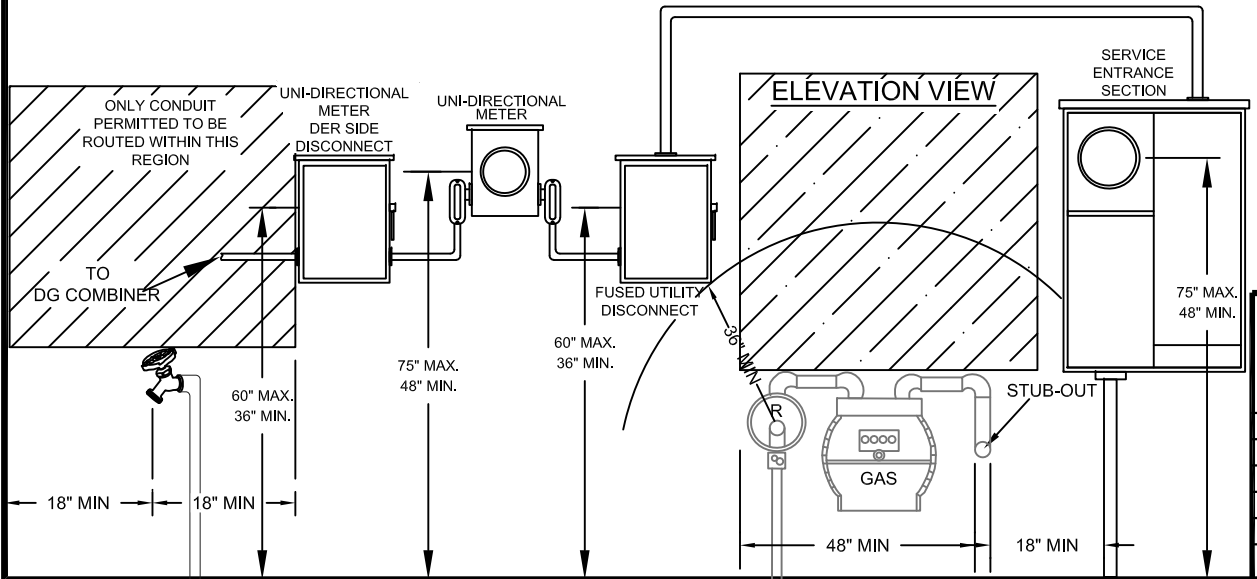
**NOTE:** REFERENCE SECTION 301.15 OF THE APS ESRM FOR ELECTRIC METER SEPARATION BETWEEN WATER AND GAS.

**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.



- E. CACTUS BIRD RD. -

APS ACCESS



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**SAMPLE LOAD SIDE CONNECTION SITE PLAN**

1234 South Main Street Any City, Arizona 85123 Tel: 602-555-5555		<b>ABC SOLAR COMPANY, INC.</b>	
		SITE PLAN	
		19.2 KW AC PHOTOVOLTAIC SYSTEM	
		333 E. CACTUS BIRD RD.	
		ANY CITY, AZ 85123	
APPROVALS	DATE	SIZE	DRAWING NO.
DRAWN F.J.G.	02-16-26	B	0000-0005
CHECKED			
ENGINEER			
REV. A	02-16-26		
ABC PROJECT #1111-9999		SCALE NA	REV.
			SHEET 5 OF 5