BUILDING SERVICES
451 S. State Room 215
Salt Lake City, Utah 84114
(Monday - Friday 8:00am - 5:00pm
(801) 535-7155
www.slcpermits.com

SOLAR PV PERMIT PROCESS

Project Information

Contact Name

Phone

E-mail

Site Address:

State License #

Size of System (kW):

Date

BLD #

Total Valuation

Electrical Valuation

Permit Type ◯ Commercial ◯ Residential

Comments:

Mounted To:
◯ Roof
◯ Ground

Located on:
◯ Primary Structure
◯ Accessory Structure

Type Of System:
◯ A/C Module
◯ Micro-Inverter
◯ Standard String

Required Information

Site plan showing location of major components on the property. This drawing need not be exactly to scale, but it should represent relative location of components at site (see supplied example site plan).

Electrical diagram showing PV array configuration, wiring system, over current protection, inverter, disconnects, required labels, and A/C connection to building. See supplied standard electrical diagram on Page 7 of this application.

This permit becomes null and void if work or construction authorized is not commenced within 180 days, or if construction or work is suspended or abandoned for a period of 180 days at any time after work is commenced. I hereby certify that I have read and examined this application and know the same to be true and correct. All provisions of laws and ordinances governing this type of work will be complied with whether specified herein or not. The granting of a permit does not presume to give authority to violate or cancel the provisions of any other state or local law regulating construction and that I make this statement under penalty of perjury.

Signature & Date: _____

☐ Owner ☐ Contractor ☐ Other:_____

Step 1 - Code Review of PV Array System

Roof Information

Is the array to be mounted on a code compliant roof structure? *If No, submit a completed Structure Worksheet* ◯ Yes ◯ No

Is the roofing type lightweight (composition, metal, light masonry, etc.)? ◯ Yes ◯ No

Does the roof have a single roof covering? ◯ Yes ◯ No

Are roof penetrations weatherproofed with mechanical flashing? ◯ Yes ◯ No

Does the PV installation require any roof vents (B-vents, plumbing vents, attic vents, etc.) to be modified or relocated? ◯ Yes ◯ No

Mounting System Information

Is the mounting structure an engineered product designed to mount PV modules? ◯ Yes ◯ No

For manufactured mounting systems, fill out information on the mounting system below:

a. Mounting system manufacturer

Product Name and Model #

b. Total Weight of PV modules and rails (lbs)

c. Total number of attachment points

d. Weight per attachment point (b/c)
If greater than 45 lbs, see structure worksheet

e. Maximum spacing between attachment points on a rail.
See product manual for maximum spacing allowed

f. Total surface area of PV modules (square feet)

g. Distributed weight of PV module on roof (b/f) (lbs/sqft)

If distributed weight of the PV system is greater than 5 lbs/sqft, see the structure worksheet

Snow and Wind Information

Have professional structural engineering and calculations been provided? *If Yes, skip to Step 2* ◯ Yes ◯ No

*Please refer to the Design Criteria for Salt Lake City, found **here**.*

What is the ground snow load at the system location?

What is the designed wind load of the system?

For rooftop systems, does the top chord have sufficient capacity to hold point loads produced by the ground, snow and wind loads combined with the dead loads of the system and roofing material? ◯ Yes ◯ No

Structure Worksheet

If array is roof mounted:

This section is for evaluating roof structural members that are site built. This includes rafter systems and site built trusses. Manufactured truss and roof joist systems, when installed with proper spacing, meet the roof structure requirements covered in item 2 below.

Roof Construction

◯ Rafters

◯ Trusses

◯ Other _____

Describe site-built rafter or site-built truss system:

Rafter Size: _____ Inches x _____ Inches

Rafter spacing: _____ Inches

Maximum unsupported span: Feet, inches _____

Are the rafters over-spanned? ◯ Yes ◯ No
If Yes, complete the rest of this section

If the roof system has

a. Over-spanned rafters or trusses
b. The array is over 5 lbs/sqft on any roof construction, or
c. The attachments with a dead load exceeds 45 lbs per attachment, or
d. Excess capacity after the sum of dead loads, with snow and wind loads is less than IRC requirements for live loads;

Please provide one of the following:

i. A framing plan that shows details for how you will strengthen the rafters,
ii. Confirmation certified by a design professional that the existing roof structure will support the array

If array is ground mounted:

Show array supports, framing members, foundation posts, and footings,

Provide information on mounting structure(s) construction. If the mounting structure is unfamiliar to the local jurisdiction and is more than six (6) feet above grade, it may require engineering calculations certified by a design professional.

Show detail on module attachment method to mounting structure.

Step 2: Electrical Review (Calculations for Electrical Diagram)

In order for a PV system to be considered for a permit, the following must apply:

1. PV modules, utility-interactive inverters, and combiner boxes are UL listed and identified for the application.
2. The PV array is composed of 4 series strings or less per inverter, and 15 kW or less.
3. The total inverter capacity has a continuous ac power output 13,440 Watts or less
4. The ac interconnection point is on the load side of service disconnecting means
5. A supplied, standard electrical diagram can be used to accurately represent the PV system.

Fill out a standard electrical diagram completely. Sample standard electrical diagrams can be found on Page 7 of this application.

Step 3: Zoning Review

Ground Mounted Small Solar Energy Collection System:

1. Subject to height restrictions for accessory buildings in the district
2. Must be located 6 feet from a property line and adjacent structures
3. Cannot remove or encroach upon required parking and loading areas
4. Ground coverage must be included when calculating the allowable building coverage of the zoning district.

Roof Mounted Small Solar Energy Collection System:

1. May be located on an accessory structure located less than 6 feet from a property line
2. Pursuant to the Zoning District, shall not extend more than 3 feet above the maximum building height of the structure the system is located on , or more than 12 feet above the roof line, whichever is less.
3. Shall not exceed 90% of the total roof area of the building.

Local Historic Districts and Landmark Sites:

1. Must obtain a Certificate of Appropriateness prior to obtaining a permit
2. In a location that is least visible or obtrusive and in a manner that causes the least impact to the integrity and character of the building.
3. Location restrictions will be reviewed based on the following hierarchy:
   - **Not Visible from a public right of way:**
     - Rear yard
     - On an accessory building
     - In a side yard
     - On the principal building
   - **Visible from the public right of way:**
     - On the principal building but not on the front façade
     - On the front façade in a location most compatible with the character defining features of the structure.

Does the property have zoning restrictions due to its location (i.e: Historic District, Historic Home, etc)? ◯ Yes ◯ No

If Yes, please explain the restrictions and the circumstances that will allow the system to receive a variance:

Are there any private covenants (for example, Homeowners Associations), that can claim jurisdiction over the property? ◯ Yes ◯ No

Note: It is the responsibility of the owner to obtain approval from the governing body of the covenant for the system that is to be installed.

Step 4: Fire Review

In order for a PV system to be considered for a permit, the following must apply:

Does the provided Site Plan show a clearly dimensioned pathway and a clearly dimensioned access path to and around the panels? Code requires that arrays occupying 33% or less of the total viewable roof area, an 18“ setback is required on both sides of a horizontal ridge. For arrays occupying more than 33%, a 36” setback is required on both sides of a horizontal ridge.

◯ Yes ◯ No

The Fire Code Official must be able to determine that a rational approach has been used and any reductions in clear area from those required by code are warranted.

◯ Yes ◯ No

Are all system disconnects located in the same location as the utility disconnects?

◯ Yes ◯ No

Do you agree to provide weather resistant, permanently affixed labels to all equipment, conduits, raceways, and junction boxes every 10 feet?

◯ Yes ◯ No

Do you agree to provide clearly labeled metal conduits, or MC cable until the first readily accessible disconnect is reached, when conduits containing DC current conductors are under the roof deck or in the attic space?

All metal parts of all modules, modules supports, system equipment, and conductor enclosures shall be bonded together and connected to the grounding system. The bonding shall also be to the electrical utility.

◯ Yes ◯ No

Do you agree to provide?

Bipolar source and output circuit equipment shall be labeled as follows:
"Warning: Bipolar Photovoltaic Array. Disconnection of neutral or grounded conductors may result in overvoltage on array inverter"

◯ Yes ◯ No

Do you agree to provide?

For Standard String Systems only:

Disconnection of photovoltaic equipment shall be labeled as follows:
"Warning: ELECTRIC SHOCK HAZZARD. Do not touch terminals. Terminals on both the line and load sides may be energized in the open position."

◯ Yes ◯ No ◯ N/A

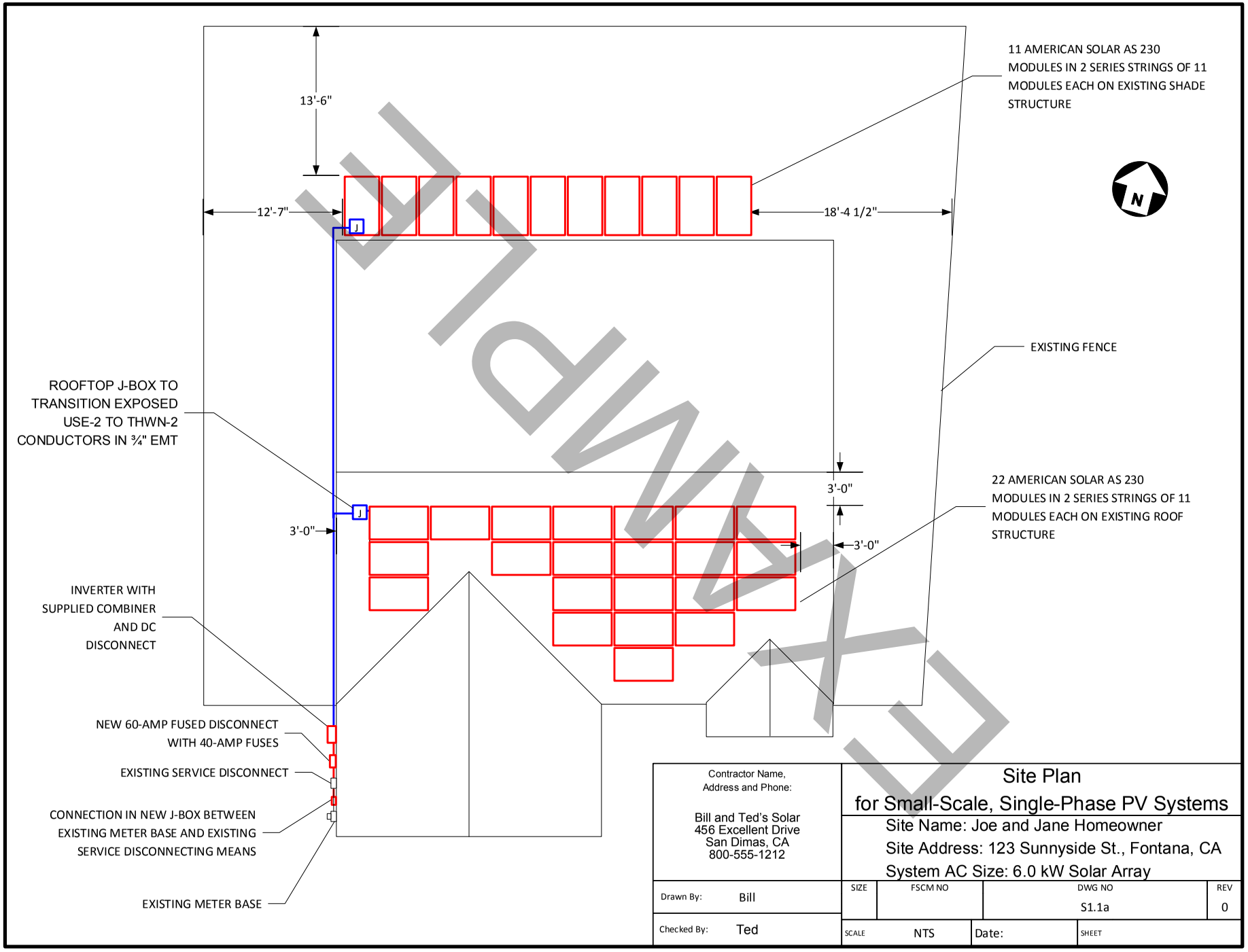
Do you agree to provide?

Underground photovoltaic power systems shall be labeled as follows:
"Warning: ELECTRIC SHOCK HAZZARD. The DC conductors of this photovoltaic system are underground and may be energized."
Do you agree to provide?

◯ Yes ◯ No ◯ N/A

Do you agree to provide?

SITE PlAN SAMPLE



NOTE FOR STANDARD STRING SYSTEM ELECTRICAL DIAGRAM

PV MODULE RATINGS @ STC (Guide Section 5)

MODULE MAKE	
MODULE MODEL	
MAX POWER-POINT CURRENT (I_{MP})	A
MAX POWER-POINT VOLTAGE (V_{MP})	V
OPEN-CIRCUIT VOLTAGE (V_{OC})	V
SHORT-CIRCUIT CURRENT (I_{SC})	A
MAX SERIES FUSE (OCPD)	A
MAXIMUM POWER (P_{MAX})	W
MAX VOLTAGE (TYP 600V_{DC})	V
VOC TEMP COEFF (mV/ºC ☐ or %/ºC ☐)	
IF COEFF SUPPLIED, CIRCLE UNITS	

NOTES FOR ALL DRAWINGS:

OCPD = OVERCURRENT PROTECTION DEVICE

NATIONAL ELECTRICAL CODE® REFERENCES SHOWN AS *(NEC XXX.XX)*

INVERTER RATINGS (Guide Section 4)

INVERTER MAKE	
INVERTER MODEL	
MAX DC VOLT RATING	V
MAX POWER @ 40ºC	W
NOMINAL AC VOLTAGE	V
MAX AC CURRENT	A
MAX OCPD RATING	A

SIGNS–SEE GUIDE SECTION 7

SIGN FOR DC DISCONNECT

PHOTOVOLTAIC POWER SOURCE	
RATED MPP CURRENT	A
RATED MPP VOLTAGE	V
MAX SYSTEM VOLTAGE	V
MAX CIRCUIT CURRENT	A

WARNING: ELECTRICAL SHOCK HAZARD–LINE AND LOAD MAY BE ENERGIZED IN OPEN POSITION

SIGN FOR INVERTER OCPD AND AC DISCONNECT (IF USED)

SOLAR PV SYSTEM AC POINT OF CONNECTION	
AC OUTPUT CURRENT	A
NOMINAL AC VOLTAGE	V

THIS PANEL FED BY MULTIPLE SOURCES (UTILITY AND SOLAR)

NOTES FOR ARRAY CIRCUIT WIRING (Guide Section 6 and 8 and Appendix D):

1.) LOWEST EXPECT AMBIENT TEMPERATURE BASED ON ASHRAE MINIMUM MEAN EXTREME DRY BULB TEMPERATURE FOR ASHRAE LOCATION MOST SIMILAR TO INSTALLATION LOCATION. LOWEST EXPECTED AMBIENT TEMP _____ºC

2.) HIGHEST CONTINUOUS AMBIENT TEMPERATURE BASED ON ASHRAE HIGHEST MONTH 2% DRY BULB TEMPERATURE FOR ASHRAE LOCATION MOST SIMILAR TO INSTALLATION LOCATION. HIGHEST CONTINUOUS TEMPERATURE _____ºC

2.) 2005 ASHRAE FUNDEMENTALS 2% DESIGN TEMPERATURES DO NOT EXCEED 47ºC IN THE UNITED STATES (PALM SPRINGS, CA IS 44.1ºC). FOR LESS THAN 9 CURRENT-CARRYING CONDUCTORS IN ROOF-MOUNTED SUNLIT CONDUIT AT LEAST 0.5" ABOVE ROOF AND USING THE OUTDOOR DESIGN TEMPERATURE OF 47ºC OR LESS (ALL OF UNITED STATES),

a) 12 AWG, 90ºC CONDUCTORS ARE GENERALLY ACCEPTABLE FOR MODULES WITH Isc OF 7.68 AMPS OR LESS WHEN PROTECTED BY A 12-AMP OR SMALLER FUSE.
b) 10 AWG, 90ºC CONDUCTORS ARE GENERALLY ACCEPTABLE FOR MODULES WITH Isc OF 9.6 AMPS OR LESS WHEN PROTECTED BY A 15-AMP OR SMALLER FUSE.

NOTES FOR INVERTER CIRCUITS (Guide Section 8 and 9):

1) IF UTILITY REQUIRES A VISIBLE-BREAK SWITCH, DOES THIS SWITCH MEET THE REQUIREMENT? YES ☐ NO ☐ N/A ☐

2) IF GENERATION METER REQUIRED, DOES THIS METER SOCKET MEET THE REQUIREMENT? YES ☐ NO ☐ N/A ☐

3) SIZE PHOTOVOLTAIC POWER SOURCE (DC) CONDUCTORS BASED ON MAX CURRENT ON NEC 690.53 SIGN OR OCPD RATING AT DISCONNECT

4) SIZE INVERTER OUTPUT CIRCUIT (AC) CONDUCTORS ACCORDING TO INVERTER OCPD AMPERE RATING. (See Guide Section 9)

5) TOTAL OF _____ INVERTER OCPD(s), ONE FOR EACH INVERTER. DOES TOTAL SUPPLY BREAKERS COMPLY WITH 120% BUSBAR EXCEPTION IN 690.64(B)(2)(a)? YES ☐ NO ☐

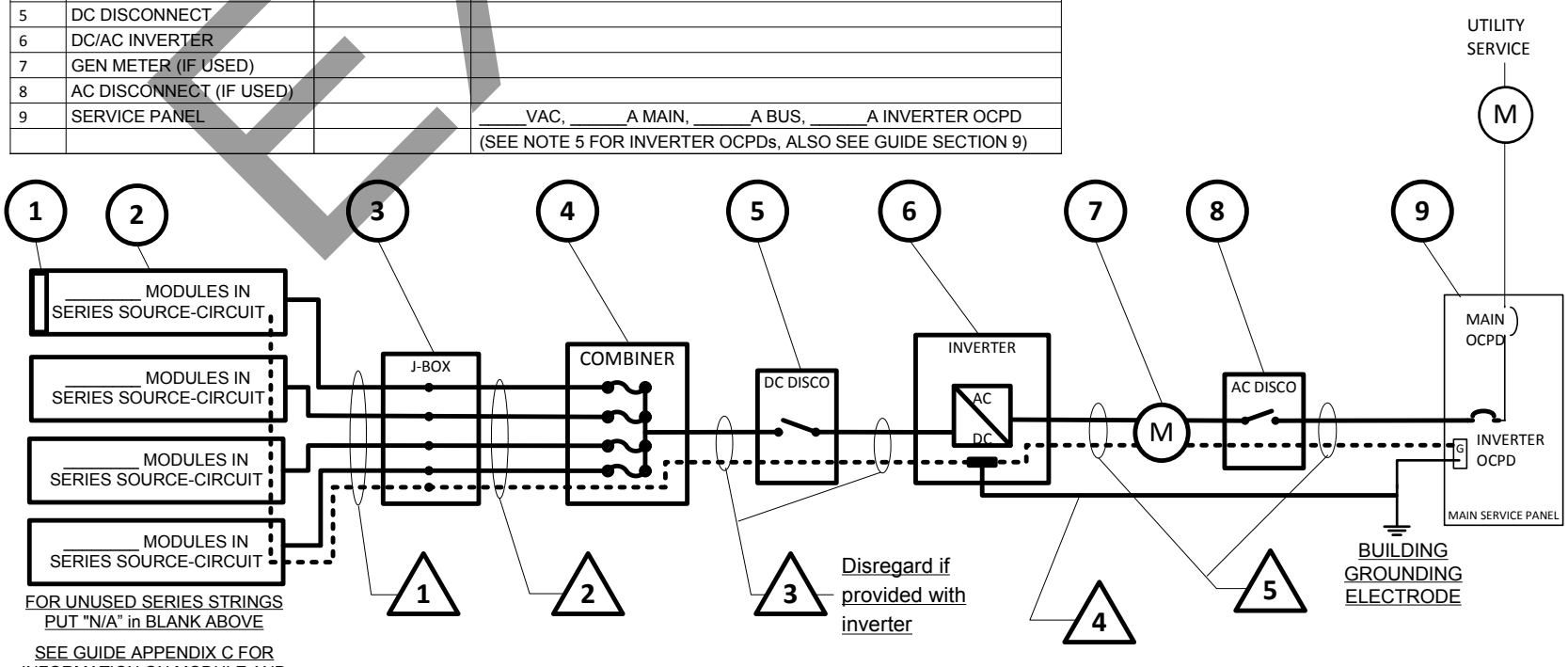
Contractor Name, Address and Phone: _____	Notes for One-Line Standard Electrical Diagram for Single-Phase PV Systems			
	Site Name: _____			
	Site Address: _____			
	System AC Size: _____			
Drawn By:	SIZE	FSCM NO	DWG NO	REV
Checked By:	SCALE NTS	Date:	SHEET	

EXAMPLE

STANDARD STRING SYSTEM ELECTRICAL DIAGRAM

EQUIPMENT SCHEDULE

TAG	DESCRIPTION	PART NUMBER	NOTES
1	SOLAR PV MODULE		
2	PV ARRAY		
3	J-BOX (IF USED)		
4	COMBINER (IF USED)		
5	DC DISCONNECT		
6	DC/AC INVERTER		
7	GEN METER (IF USED)		
8	AC DISCONNECT (IF USED)		
9	SERVICE PANEL		_____VAC, _____A MAIN, _____A BUS, _____A INVERTER OCPD
			(SEE NOTE 5 FOR INVERTER OCPDs, ALSO SEE GUIDE SECTION 9)



CONDUIT AND CONDUCTOR SCHEDULE

TAG	DESCRIPTION OR CONDUCTOR TYPE	COND. GAUGE	NUMBER OF CONDUCTORS	CONDUIT TYPE	CONDUIT SIZE
1	USE-2 ☐ or PV WIRE ☐			N/A	N/A
	BARE COPPER EQ. GRD. COND. (EGC)			N/A	N/A
2	THWN-2 ☐ or XHHW-2 ☐ or RHW-2 ☐				
3	THWN-2 ☐ or XHHW-2 ☐ or RHW-2 ☐				
	INSULATED EGC				
4	DC GROUNDING ELECTRODE COND.				
5	THWN-2 ☐ or XHHW-2 ☐ or RHW-2 ☐				
	INSULATED EGC				

Contractor Name, Address and Phone: _____	One-Line Standard Electrical Diagram for Small-Scale, Single-Phase PV Systems			
	Site Name: _____			
	Site Address: _____			
	System AC Size: _____			
Drawn By:	SIZE	FSCM NO	DWG NO	REV
Checked By:	SCALE NTS	Date:	SHEET	