City of Campbell

Building Inspection Division
Phone: (408) 866-2130

70 North First Street
Campbell, CA 95008

GENERAL INFORMATION

This submittal checklist can be used to determine and verify completeness of a photovoltaic permit application per the CRC Section 908 and CEC Section 690. Upon verification of a complete submittal package, please submit four sets of plans and supporting documents to the Building Department for review and approval.

PLANS / DOCUMENTATION INFORMATION

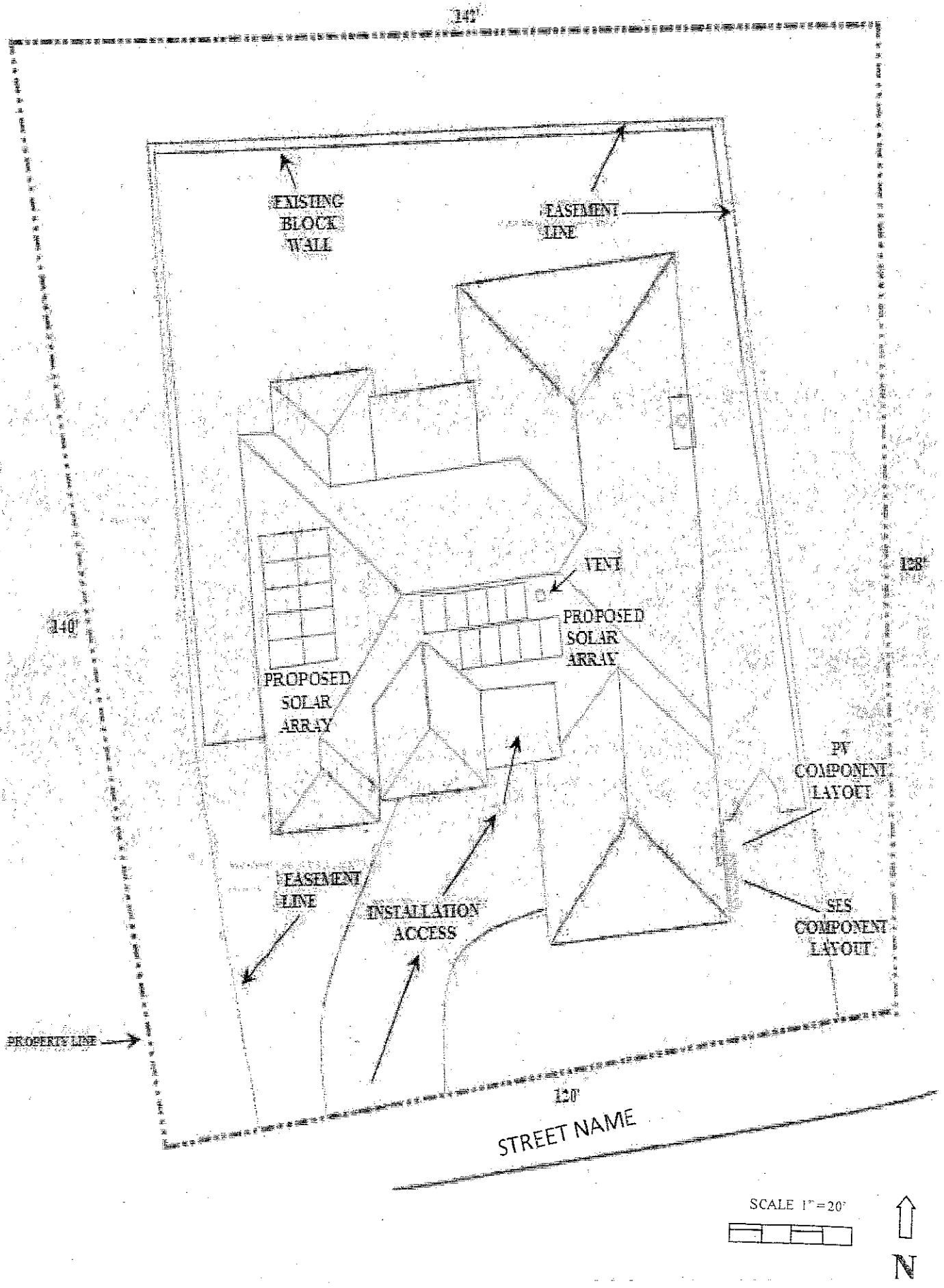
	APPLICATION SUBMITTAL INFORMATION	COMPLETED BY STAFF	
		Required (check)	Provided (check)
SUPPORTING DOCUMENTS	Documented cost estimate to establish valuation.	☐	☐
	Provide two copies structural calculations, prepared by a registered California design professional for roof mounted systems if the total weight of the PV system is over five pounds per square foot or if the maximum height above the roof surface exceeds 18 inches; or if the total height of the PV system exceeds five feet in height for ground mounted systems	☐	☐
	Manufacturer's Specifications for all equipment.	☐	☐
	Provide Manufacturer's Installation Instructions for all PV modules, mounting systems, combiner boxes (if used), inverters, and disconnects.	☐	☐
COVER SHEET	Name of property owner	☐	☐
	Address of property owner	☐	☐
	Scope of work documented on the plans	☐	☐
	Project Data (including assessor's parcel number, use of building, etc.)	☐	☐
SITE PLAN	Site plan including property boundaries and north arrow clearly identifying the location of the PV installation.	☐	☐
	Site Plan shall indicate location of electrical service, combiner box, inverter, a/c & d/c disconnects, junction boxes and battery banks.	☐	☐
	Site Plan for Ground mounted systems shall identify all structures on property, topography of site, driveway access from street, easements, site utilities, septic system with leach lines, etc.	☐	☐
CONSTRUCTION PLANS	**Roof Mount:**		
	Provide Roof Plan indicating location and total coverage (area) of PV array. Roof plan shall show adequate access and pathways based on the Solar Voltaic Installation Guide by the State Fire Marshal's Office and CalFire: (http://osfm.fire.ca.gov/pdf/reports/solarphotovoltaicguideline.pdf)	☐	☐
	Provide Partial Roof Framing Plan identifying size and spans of members that support the PV system	☐	☐
	Provide details indicating attachment of PV modules to roof framing. Verify method of waterproofing and flashing.	☐	☐
	Ground Mount:		
	Foundation Plan with foundation details referenced to applicable details.	☐	☐

ELECTRICAL PLANS	Electrical single-line diagram clearly identifying all devices installed in the PV system and indicating total kVA rating of system. 1) Array wiring identified 2) Combiner/junction box identified 3) Equipment grounding specified 4) Disconnect specified 5) Inverter specified 6) System grounding specified	☐	☐
	Clearly identify the point of interconnection with the utility supplied wiring system and provide details on main breaker, PV breaker and rating of bussing.	☐	☐
	Indicate type and size of all conduit and conductors throughout the PV system	☐	☐
	Provide typical detail of signage. Signage shall be green or red plastic engraved with 1/2" high white letters, permanently mounted on or immediately next to the panel door.	☐	☐
	Identify location of service disconnecting means and PV system disconnect (for PV systems connected to utility services). Plans shall indicate that the inverter disconnects are to be a separate component and serviceable. And, if applicable, plans shall identify the building or area to be served.	☐	☐
	Identify DC array solar panel Voc and Isc rating on plans.	☐	☐
GENERAL NOTES (ADD NOTES TO PLANS)	The installation of the PV system shall conform to the requirements of the 2013 California Building Code and the 2013 California Electrical Code, Article 690 and any other applicable articles or standards."	☐	☐
	Installation shall be provided by a California Licensed Contractor (B, C-46 or C-10).	☐	☐
	Buildings with stand alone systems shall have a placard indicating that it is a standalone system and shall show the location of the disconnecting means. or Buildings with utility services and a PV system shall have a plaque or directory indicating the location of the service disconnecting means and the PV system disconnecting means.	☐	☐
	Any solar structure that requires variation from the setback or height restriction of the R1 Ordinance may be allowed with a minor Residential Permit (per Section 19.28.090). Solar installations may not result in privacy impacts, shadowing, intrusive noise or other adverse impacts to the surrounding area.	☐	☐

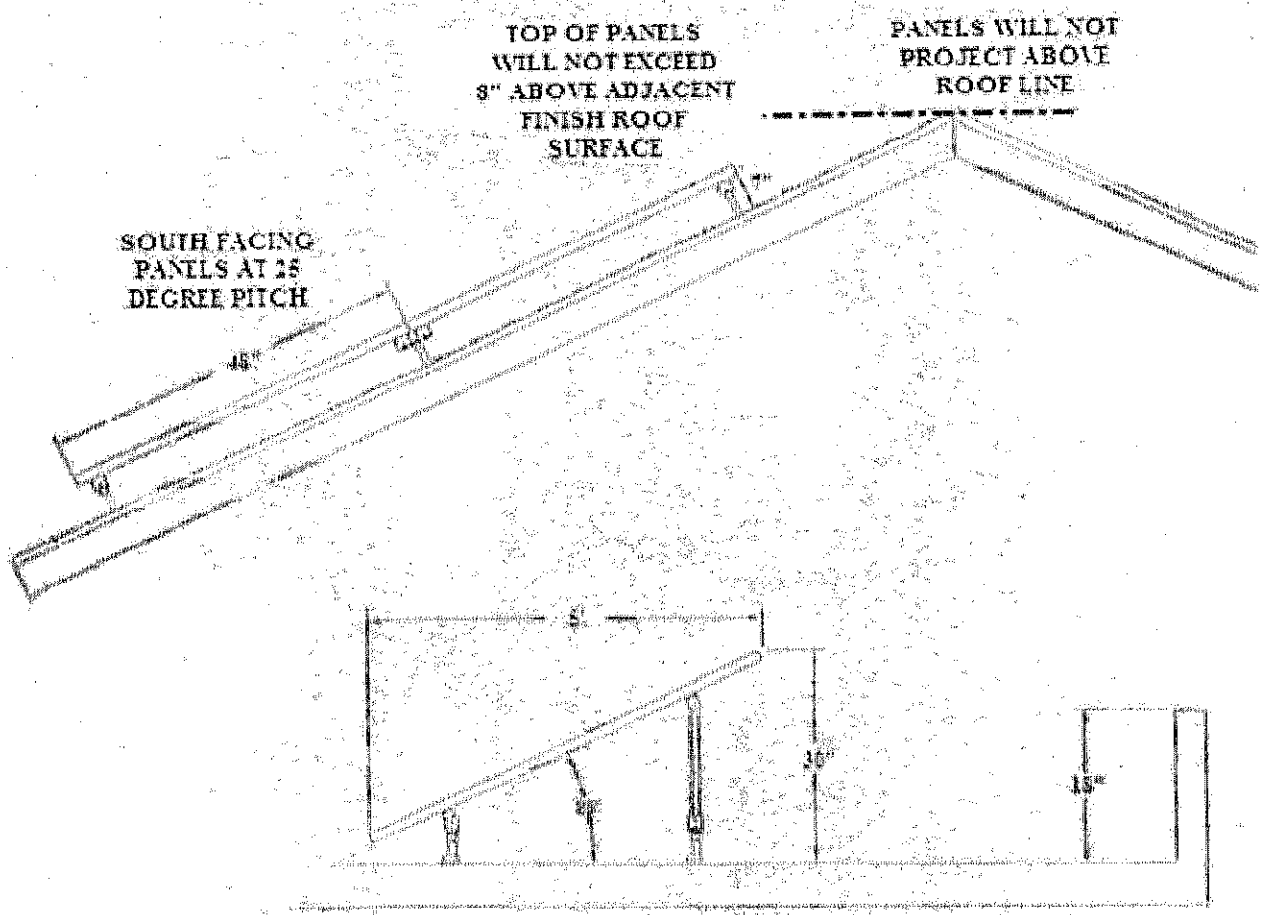
NOTE: All drawings must be signed by the person preparing them. All work shall comply with the 2013 California Building Code and the 2013 California Electrical Code, Article 690.

PROJECT INFORMATION

SITE ADDRESS	APN	DATE
OWNER NAME	OWNER PHONE	


142'
EXISTING BLOCK WALL
EASEMENT LINE
VENT
128'
140'
PROPOSED SOLAR ARRAY
PROPOSED SOLAR ARRAY
PV COMPONENT LAYOUT
EASEMENT LINE
INSTALLATION ACCESS
SES COMPONENT LAYOUT
PROPERTY LINE
120'
STREET NAME
SCALE 1" = 20'
N

SOLAR ELEVATION EXAMPLE

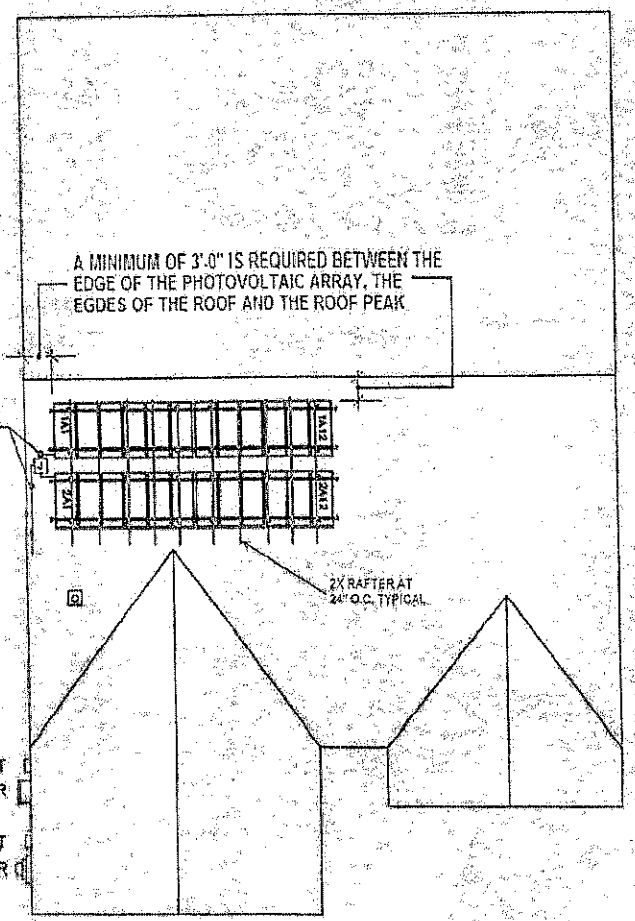


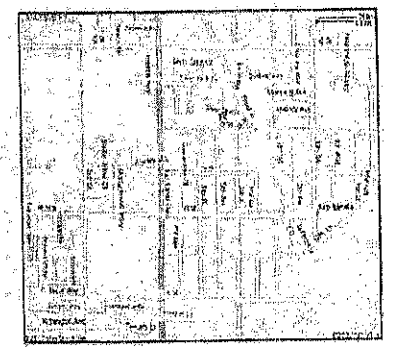
MOUNTING NOTES

1. PANELS MOUNTED ON ALUMINUM RACKING
2. PV ARRAY MOUNTED TO ROOF STRUCTURE WITH 5/16" LAGS EMBEDDED 2.5" INTO RAFTERS OR SEE NOTE #5 BELOW
3. PV PANELS ARE ANCHOR AT 48" O.C.; TRUSS/ RAFTERS ARE AT 24" O.C. OR SEE NOTE #5 BELOW
4. WEIGHT OF PV MODULES AND ASSEMBLY SHALL BE LESS THAN 5 LBS PER SQUARE FOOT
5. ALL INSTALLATION MUST COMPLY WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS

ARRAY CONDUIT & WIRING ARRANGEMENT

SEE STANDARD ELECTRICAL DIAGRAM ON NEXT DRAWINGS FOR ARRAY CONDUIT AND WIRING ARRANGEMENT





SITE MAP

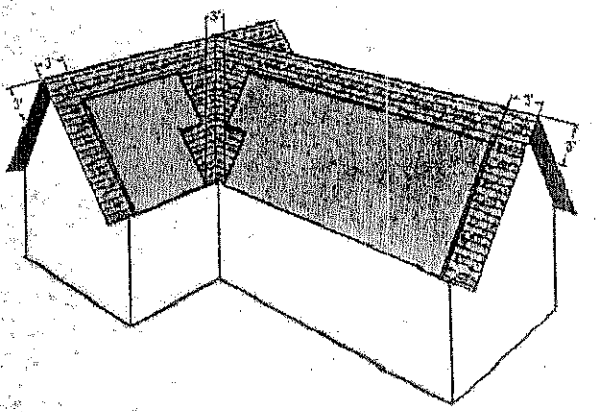
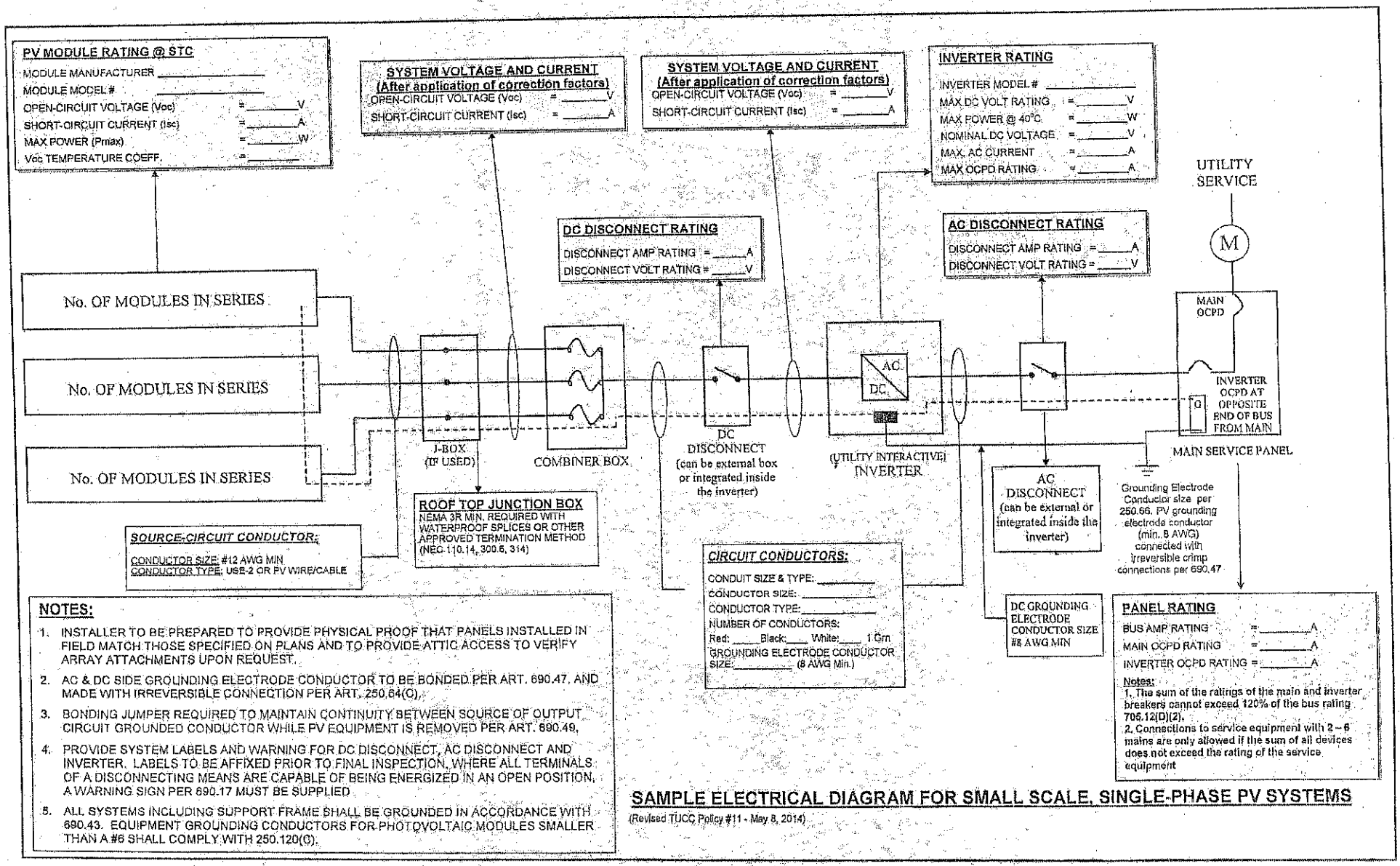


DIAGRAM: REQUIRED CLEAR ACCESS PATHWAYS

PV ARRAY LAYOUT & WIRING PLAN

N
W E
S

CUSTOMER NAME			
ADDRESS			
DRAWN BY		CHECK BY	
SCALE	NTS	DATE DRAWN	
COMPANY LOGO		COMPANY NAME ADDRESS	


PV MODULE RATING @ STC
MODULE MANUFACTURER
MODULE MODEL #
OPEN-CIRCUIT VOLTAGE (Voc) = V
SHORT-CIRCUIT CURRENT (Isc) = A
MAX POWER (Pmax) = W
Voc TEMPERATURE COEFF. =
SYSTEM VOLTAGE AND CURRENT
(After application of correction factors)
OPEN-CIRCUIT VOLTAGE (Voc) = V
SHORT-CIRCUIT CURRENT (Isc) = A
SYSTEM VOLTAGE AND CURRENT
(After application of correction factors)
OPEN-CIRCUIT VOLTAGE (Voc) = V
SHORT-CIRCUIT CURRENT (Isc) = A
INVERTER RATING
INVERTER MODEL #
MAX DC VOLT RATING = V
MAX POWER @ 40°C = W
NOMINAL DC VOLTAGE = V
MAX. AC CURRENT = A
MAX OCPD RATING = A
UTILITY SERVICE
M
DC DISCONNECT RATING
DISCONNECT AMP RATING = A
DISCONNECT VOLT RATING = V
AC DISCONNECT RATING
DISCONNECT AMP RATING = A
DISCONNECT VOLT RATING = V
MAIN OCPD
No. OF MODULES IN SERIES
No. OF MODULES IN SERIES
No. OF MODULES IN SERIES
AC
DC
INVERTER OCPD AT OPPOSITE END OF BUS FROM MAIN
G
J-BOX (IF USED)
COMBINER BOX
DC DISCONNECT (can be external box or integrated inside the inverter)
(UTILITY INTERACTIVE) INVERTER
MAIN SERVICE PANEL
ROOF TOP JUNCTION BOX
NEMA 3R MIN. REQUIRED WITH WATERPROOF SPLICES OR OTHER APPROVED TERMINATION METHOD (NEC 110.14, 300.6, 314)
AC DISCONNECT (can be external or integrated inside the inverter)
Grounding Electrode Conductor size per 250.66. PV grounding electrode conductor (min. 8 AWG) connected with irreversible crimp connections per 690.47
SOURCE-CIRCUIT CONDUCTOR:
CONDUCTOR SIZE: #12 AWG MIN
CONDUCTOR TYPE: USE-2 OR PV WIRE/CABLE
CIRCUIT CONDUCTORS:
CONDUIT SIZE & TYPE:
CONDUCTOR SIZE:
CONDUCTOR TYPE:
NUMBER OF CONDUCTORS:
Red: Black: White: 1 Grn
GROUNDING ELECTRODE CONDUCTOR SIZE: (8 AWG Min.)
DC GROUNDING ELECTRODE CONDUCTOR SIZE #8 AWG MIN
PANEL RATING
BUS AMP RATING = A
MAIN OCPD RATING = A
INVERTER OCPD RATING = A
Notes:
1. The sum of the ratings of the main and inverter breakers cannot exceed 120% of the bus rating 705.12(D)(2).
2. Connections to service equipment with 2 – 6 mains are only allowed if the sum of all devices does not exceed the rating of the service equipment
NOTES:
1. INSTALLER TO BE PREPARED TO PROVIDE PHYSICAL PROOF THAT PANELS INSTALLED IN FIELD MATCH THOSE SPECIFIED ON PLANS AND TO PROVIDE ATTIC ACCESS TO VERIFY ARRAY ATTACHMENTS UPON REQUEST.
2. AC & DC SIDE GROUNDING ELECTRODE CONDUCTOR TO BE BONDED PER ART. 690.47, AND MADE WITH IRREVERSIBLE CONNECTION PER ART. 250.64(C).
3. BONDING JUMPER REQUIRED TO MAINTAIN CONTINUITY BETWEEN SOURCE OF OUTPUT CIRCUIT GROUNDED CONDUCTOR WHILE PV EQUIPMENT IS REMOVED PER ART. 690.49.
4. PROVIDE SYSTEM LABELS AND WARNING FOR DC DISCONNECT, AC DISCONNECT AND INVERTER. LABELS TO BE AFFIXED PRIOR TO FINAL INSPECTION, WHERE ALL TERMINALS OF A DISCONNECTING MEANS ARE CAPABLE OF BEING ENERGIZED IN AN OPEN POSITION, A WARNING SIGN PER 690.17 MUST BE SUPPLIED.
5. ALL SYSTEMS INCLUDING SUPPORT FRAME SHALL BE GROUNDED IN ACCORDANCE WITH 690.43. EQUIPMENT GROUNDING CONDUCTORS FOR PHOTOVOLTAIC MODULES SMALLER THAN A #6 SHALL COMPLY WITH 250.120(C).
SAMPLE ELECTRICAL DIAGRAM FOR SMALL SCALE, SINGLE-PHASE PV SYSTEMS
(Revised TUCC Policy #11 - May 8, 2014)