PV Electrical Data				
	Module	Strings	Inverter Data	System Total
Manufacturer	Waaree Energies Pvt. Ltd.	-	SMA	
Cell Type / Rating	WS - 300	-	SB 7000-TL-US	1 Inverter
No. Modules / Strings	Crystalline Silicon cells	13 Mod/String	2.0 Strings /	26 Modules
Open Circuit Voltage (VOC)	43.00 V DC	559 V DC	600.0 V DC Max	-
Coeff of Voc	-0.123			-
Maximum Power Voltage (VPM)	35.00 V DC	455.0 V DC	345.0 - 480	-
Short Circuit Current (ISC)	9.3 A DC	9.3 A DC	18.6 A DC	-
Maximum Power Current (PM)	8.57 A DC	8.57 A DC	17.14 A DC	-
Maximum Power (PMAX)	300 W	3900 W	7.8 Kw	-
Vmp	35.00 V DC	455.0 V DC	-	-
Voc Max (tc)	44.53 V DC	578.94 V DC	600.0 V DC	-
System Wattage CEC Rating	265.2 W	3.45 Kw	6.90 Kw	6.90 Kw CEC
Efficiency Rating		-	98%	7.64 Kw Eff
System Wattage Max	300 W	3.9 Kw	7.0 Kw	7.8 Kw DC
Series Fuse Rating	15 A	15 A	21.1	-
Type of output Terminal	# 10 AWG/MC Connector			-
Mounting	Roof		Wall	-
Mounting Weight	63.93 LBS w/o Mtg		78.0 LBS Each	1662.29 LBS Total

# Voc Maximum Calculation (At Min Temperature) 43 Voc from Module Data 44 Minimum Temperature C -0.123 Coff of Voc from Data 44.53 Voc + (Min. temp - 25 stc\*Cof Voc) 44.53 Per Module 578.94 Per String

# Voc Minimum Calculation (At Max Temperature) 43 Voc from Module Data 41 Minimum Temperature C -0.123 Corf of Voc from Data 42.15 Voc + (Min. temp-25 stc\*Cof Voc) 42.15 Per Module 548.00 Per String

PV Down Wire Sizing 9.3 Rating of Single Module 2.33 (+25% NEC 690.8(a)(1)) 2.91 (+25% NEC 690.8(b)(1)) 14.53 A Min for sizing Wire Derating 0.58 Temp correction 150 to 158 dec 0.8 Multiple wires in conduit 04-06 07-09 0.70 10-20 21-30 0.45 31-40 0.40 41 0.3 40 Wire Ampacity THWN-2 #10 404 Tbl 310 1 #8 55A Ampacity check 18.56 #WireAmp\*Mupl\*Temp 14.53 Min Requirement Voltage Drop Wire Data Thi 9 1.2 size Rest / 1K #10 #8

0.42 Ohms = Ft/1K \* Rest / 1K 6.10 V = Voltage Drop = Amps \* Ohms 5.30% % of Module Voc 0.60% % of String Voc 62.5 Watts system wide

350 Estimated Wire Run

Reference Weights Module SF

Module SF 20.91 SF = 6' - 5" X 3' - 3.1'
Module Weight 30.90 Lb5
Module Loading 3.06 LB5/SF
Mounting Weight 1 LB5 approx.
Total Weight 4.06 LB5/SF
Code Limit 4LB5/SF

Site Data Module Home 26

#### CUSTOMER VICINITY MAP

#### VICINITY MAP

#### STORM WATER PREVENTION NOTES:

STORM WATER POLLITION PREVENTION DEVICES AND PRACTICES SHALL BE INSTALLED AND/OR INSTITUTED AS NECESSARY TO ENSURE COMPLIANCE WITH THE CITY WATER QUALITY STANDARDS CONTAINED IN LOCAL REQULATIONS, FEDERAL REGULATIONS AND ANY EROSON CONTROL PLAN ASSOCIATED WITH THIS PROJECT. ALL SUCH DEVICES AND PRACTICES SHALL BE MAINTAINED, INSPECTED AND/OR MONTORED TO ENSURE ADEQUACY AND PROPER FUNCTION THROUGHOUT THE DURATION OF THE CONSTRUCTION OF THE CONSTRUCTION PROPERTY.

COMPLIANCE WITH THE WATER QUALITY STANDARDS AND ANY EROSION CONTROL PLAN ASSOCIATED WITH THIS PROJECT INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:

VISABILITY FROM

ADJACENT

PROPERTY:

1. ALL POLUTRANTS SHALL BE, RETAINED ON SITE UNIL PROPERLY
DISPOSED OF, AND MAY NOT BE TRANSPORTED FROM THE SITE VA
SHEET FLOW, SWALES, AREA DRAINS, NATURAL DRAINAGE COURSES OR
WIND.

2. STOCKPILES OF CONSTRUCTION—RELATED MATERIALS SHALL BE

THE SOLAR PANELS MAY BE

VISIBLE FORM ADJACENT PROPERTIES.
PAINT ALL STRUCTURAL ELEMENTS TO

MATCH THE EXISTING ROOFING.

LBS

1662.29

 STOCKPILES OF CONSTRUCTION—RELATED MATERIALS SHALL BE PROTECTED FROM BEING TRANSPORTED FROM THE SITE BY FORCES OF WIND OR WATER FLOW.

3. TRASH AND CONSTRUCTION SOLID WASTES SHALL BE DEPOSITED INTO COVERED RECEPTACLE TO PREVENT CONTAMINATION OF RAINWATER AND DISPERSAL BY WIND

#### ELECTRICAL CONSTRUCTION GENERAL NOTES:

- 1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NEC (NATIONAL ELECTRIC CODE), NFPA (NATIONAL FIRE PROTECTION ASSOCIATION), AND ALL APPLICABLE LOCAL, STATE AND FEDERAL CODES, LAWS AND REGULATIONS.
- 2. ALL WORK SHALL CONFORM TO APPLICABLE STATE AND FEDERAL SAFETY CODES INCLUDING OSHA AND CAL OSHA. NO 'HOT' WORK IS AUTHORIZED. ALL 'HOT WORK SHALL BE APPROVED IN WRITING WITH THE GENERAL CONTRACTOR AND OWNER.
- 3. WORK UNDER THIS CONTRACT SHALL INCLUDE, BUT NOT BE LIMITED TO, FURNISHING, INSTALLING AND CONNECTION OF ALL ELECTRICAL EQUIPMENT AND TESTING OF ALL SYSTEMS AND SUB-SYSTEMS WITHIN THE SCOPE OF THIS CONTRACT. ANY ERRORS, OMISSION, OR UNCERTAINTY SHALL BE BROUGHT TO THE ATTENTION OF THE PRIME CONTRACTOR AND OR OWNER PRIOR TO CONSTRUCTION.
- COORDINATE ALL WORK WITH ARCHITECTURAL, MECHANICAL AND STRUCTURAL DRAWINGS. INSTALL ALL WORK TO CLEAR NEW AND EXISTING ARCHITECTURAL AND STRUCTURAL MEMBERS. NO ITEM SUCH AS PIPE, DUCT. ETC. SHALL BE IN CONTACT WITH ANY ELECTRICAL EQUIPMENT.
- 5. CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY AND SECURITY OF THE WORKSITE. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
- 6. DO NOT SCALE DRAWINGS. LARGER SCALE DRAWINGS HAVE PRECEDENCE OVER SMALL SCALE DRAWINGS. SPECIFICATIONS HAVE PRECEDENCE OVER DRAWINGS. NOTIFY THE PRIME CONTRACTOR IMMEDIATELY AFTER DISCOVERY OF ANY DISCREPANCY BETWEEN DRAWINGS, SPECIFICATIONS OR FIELD CONDITIONS
- 7. NOTIFY THE PRIME CONTRACTOR OR OWNER IMMEDIATELY AFTER DISCOVERING ANY HAZARDOUS MATERIAL.
- 8. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED. VERIFY THE EXACT LOCATIONS AND CONDITIONS OF ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS PRIOR TO ANY WORK. LOCATIONS FOR EQUIPMENT SHALL BE TAKEN FROM THE OTHER SHEETS WHERE THEY OCCUR. EXTEND WIRING FROM ALL JUNCTION BOXES, CONTROL PANELS, PUMPS, RECEPTACLES, SWITCHES, ETC. AND MAKE ALL FINAL CONNECTIONS TO FOULIPMENT AS REQUIRED.
- 9. THE INTENT OF THESE DRAWINGS IS FOR A COMPLETE ELECTRICAL SYSTEM. ANY ERRORS OR UNCERTAINTY SHALL BE BROUGHT TO THE ATTENTION OF THE PRIME CONTRACTOR AND ENGINEER AS SOON AS FOUND.
- 10. THE COMPLETE ELECTRICAL INSTALLATION SHALL BE TESTED AS A COMPLETE WORKING SYSTEM.
- 11. RESTORE ALL DAMAGES RESULTING FROM WORK AND LEAVE PREMISES IN CLEAN CONDITION WHEN FINISHED WITH WORK.
- 12. ALL TYPES OF SWITCHES, RECEPTACLES, WALL PLATES AND LIGHTING FIXTURES SHALL BE AS APPROVED BY PRIME CONTRACTOR OR OWNER. VERIFY MATERIALS AND COLOR AND LOCATIONS, SUBMIT CATALOG CUTS OR SHOP DRAWINGS FOR ALL MATERIALS AND EQUIPMENT.
- 13. ALL ITEMS ARE NEW UNLESS NOTED AS EXISTING (E).
- 14. REMOVE ALL INDICATED ITEMS. REMOVE ALL EXPOSED CONDUITS. REMOVE WIRES TO NEAREST CONCEALED JUNCTION BOX OR PANEL. ABANDON IN PLACE EXISTING UNUSED CONCEALED CONDUITS NOT EXPOSED BY CONSTRUCTION.
- 15. ALL EQUIPMENT SHALL BE SECURED IN ACCORDANCE WITH GOVERNING SEISMIC REGULATIONS. PROVIDE EXPANSION AND DEFLECTION FITTINGS IN CONDUITS REQUIRED BY CEC (CALIFORNIA ELECTRIC CODE).
- 16. FIRE STOP ALL PENETRATIONS THROUGH FIRE RATED SURFACES. SEE DETAIL D/E5.
- 17. PROVIDE GROUND ROD, GROUNDING ELECTRODE AND BONDING FOR ALL SERVICE ENTRANCE EQUIPMENT, BUILDING STRUCTURAL STEEL, COLD WATER PIPE AND TRANSFORMER PER CEC (CALIFORNIA ELECTRIC CODE).
- 18. ALL NEW CIRCUIT BREAKER SHALL BE RATED 10,000 AIC OR HIGHER UNO.
- 19. ALL CONDUITS SHALL BE EMT, INTERMEDIATE METAL CONDUIT, OR RIGID STEEL. MINIMUM SIZE SHALL BE 1/2\*. ALL CONDUIT, BOXES AND ELECTRICAL FITTINGS SHALL BE STEEL.
- 20. DO NOT USE THE WORKING SPACE WITHIN ANY EXIT SIGN OR ASSOCIATED JUNCTION BOX FOR ANY OTHER CIRCUIT.
- 21. PROVIDE EXPANSION AND DEFLECTION FITTINGS IN CONDUITS CROSSING BUILDING EXPANSION AND SEISMIC JOINTS. SEE DETAIL E/E5.
- 22. PROVIDE JUNCTION AND/OR PULL BOXES WHEN NECESSARY OR REQUIRED BY CEC.
- 23. ALL CONDUCTORS SHALL BE COPPER, THHN, #12 AWG MINIMUM. UNLESS IN A WET LOCATION IN WHICH CASE THWN SHALL BE USED.
- 24. INSTALL GREEN INSULATED GROUND WIRE IN ALL CIRCUITS. SIZE PER NEC REQUIREMENTS OR THE SAME AS PHASE CONDUCTORS WHICH EVER IS LARGER.
- 25. ALL NEW WIRING, CONDUIT, AND JUNCTION BOXES SHALL BE CONCEALED WITHIN NEW WALLS, CEILINGS OR FLOOR SPACES. SURFACE MOUNT CONDUIT ON OLD WALLS AND CEILINGS. RUN ALL SURFACE RACEWAY TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES.
- 26. PAINT ALL EXPOSED ELECTRICAL CONDUITS AND BOXES, PATCH AND PAINT ALL SCUFF MARKS AND/OR DAMAGE RESULTING FROM CONSTRUCTION. SELECT NEW PAINT COLOR TO MATCH EXISTING PAINT COLOR.
- 27. NO FOREIGN EQUIPMENT SHALL BE LOCATED WITHIN THE SPACE ABOVE OR BELOW ELECTRIC PANELS
- 28. PROVIDE SIGNAGE ON ALL ELECTRIC PANELS TO KEEP THE SPACE 36" IN FRONT OF THE PANELS FREE OF OBSTRUCTIONS.
- 29. PROVIDE WARNING LABEL ON ALL PANELS "WARNING, ELECTRICAL ARC FLASH HAZARD, PERSONAL PROTECTION, EQUIPMENT REQUIRED, FAILURE TO COMPLY CAN RESULT, IN INJURY OR DEATH, REFER TO NFPA 70E."
- 30. UPDATE PANELBOARD DIRECTORY AS CIRCUITS ARE INSTALLED. PREPARE NEW TYPE WRITTEN PANEL SCHEDULES.
- 30. OPDATE PARELDOWND DIRECTORY AS CIRCUITS ARE INSTALLED. PREPARE NEW 11TH WRITTEN PAREL SCREDULES.

  31. ALL EXTERIOR EQUIPMENT SHALL BE IN WEATHERPROOF (NEMS 3R) ENCLOSURES. ALL NEW WIRING SHALL BE IN CONDUIT, SUITABLE FOR SUN EXPOSURE AND WET LOCATIONS. FIELD APPLIED COATING ARE NOT ACCEPTABLE.
- 32. DC SOLAR POWER SHALL BE NEGATIVELY GROUNDED.
- 33. ALL MARKING SHALL BE PER CODE REQUIREMENTS.
- 34. INVERTERS MUST COMPLY WITH UL 1741 TO PREVENT ISLANDING ON POWER FAILURE. THE INVERTER SHALL PUT NOT POWER ON TO THE GRID IF THE GRID IS OFF-LINE.
- 35. NOTHING IN THESE PLANS SHALL BE CONSTRUED TO CONTRADICT NEC, UL OR LOCAL CODES.
- 36. ALL SYSTEM COMPONENTS (MODULES AND INVERTERS ETC) SHALL BE UL LISTED.
- 37. MOUNT TO ROOF USING UL APPROVED MOUNTING HARDWARE. FOLLOWING MANUFACTURERS DIRECTIONS. MOUNTING HARDWARE EVERY 4' ON CENTER LINESS OTHERWISE NOTED.
- 38. MARK ALL DC CONDUIT "CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED", MARK ALL DISCONNECTS INCLUDING DISCONNECTS INCLUDED IN INVERTERS WITH "CAUTION: SOLAR CIRCUIT DISCONNECT". MARK THE MAIN SERVICE WITH "CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED". USE DURABLE MARKING WITH 3/8" WHITE LETTERS ON RED BACKGROUND.
- 39. MARK THE NEC REQUIRED CLEAR SPACE ON THE FLOOR IN FRONT OF ALL DEVICES BEING INSTALLED.
- 40. SUPPORT ALL ROOF MOUNTED CONDUIT WITH FOAM 'SLEEPERS' IN UL APPROVED SYSTEM.
- 41. OBTAIN THE BEST INFORMATION ON UNDERGROUND UTILITIES IN AREAS BEING TRENCHED. USE 'DIG ALERT' OR OTHER LOCATING SERVICE BEFORE DIGGING.
- 42. SOLAR PANELS SHALL NOT BE INSTALLED OVER ANY PLUMBING OR MECHANICAL VENTS, EXHAUSTS OR CHIMNEYS.
- 43. REMOVAL OF INVERTER, METER OR OTHER EQUIPMENT SHALL NOT DISCONNECT THE BONDING CONNECTION BETWEEN THE GROUNDING ELECTRODE CONDUCTOR AND THE PHOTOVOLTAIC SOURCE AND/OR OUTPUT CIRCUIT GROUNDED CONDUCTOR.
- 44. AII PV MODULES AND ASSOCIATED EQUIPMENT SHALL BE POTECTED FROM ANY PHYSICAL DAMAGE, AND ACCESS BY UNQUALIFIED PERSONS.

1 OF 5 SHEETS

## SEC. 5. MARKINGS, LABELS, AND WARNING SIGNS. Purpose: Provides emergency responders with appropriate warning and guidance with respect to isolating the solar electrical system. this can facilitate identifying energized electrical lines that connect the solar panels to the inverter, as theses should not be cut when venting for smoke removal. WATER PROOF ELECTRIC CONDUIT MOUNT PER MANUFACTURE INSTRUCTIONS B. Main Service Disconnect : LOCATION OF EXISTING & LOCAL CODES. LABEL PER DETAIL C/E3 ELECTRIC SERVICE 1. Residential Buildings - the marking may be placed within the main service disconnect. The marking shall be placed on the outside cover if the main service disconnect is operable with the service panel PROPOSED LOCATION OF INVERTER & AC DISCONNECT 2) Commercial Buildings — the marking shall be placed adjacent to the main service disconnect clearly visible from the location where the leveris operated. PROPOSED COMBINER BOX LOCATION 3) Markings: Verbiage, Format, and Type of Material. STRING - 2 (300W MODULES) a. Verbigge: CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED. 13 NO'S IN SERIES) (1) While lettering on a red background. STRING - 1 (300W MODULES 3 NO'S IN SERIES) (2) Minimum 3/8 Inches letter height. (3) All Letters shall be capitalized. (4) Arial or similar font, non-bold. c. Meterial : (1) Reflective, weather resistant material suitable for the environment (Use UL-696 as standard for weather rating). Durable adhesive materials meet this requirement. C. Marking Requirements on DC Conduit, Raceways, Enclosures, Cable Assemblies, DC Combiners and Junction Boxes. 1. Markings: Placement, Verbiage, Formate, and Type of Material. a. Placement: Markings shall be placed every 10 feet on all interior and exterior DC conduits, raceways, enclosures, and cable assemblies, at turns, above and/or below penetrations. all DC combiners, and junction boxes. b. Veriage: CAUTION: SOLAR CIRCUIT Note: The Formate and type of Material shall adhere to "V.B-3b,c" of this requirement. D. Inverters — Are Not Required to Have caution Markings. CUSTOMER SITE PHOTO ELECTRICAL ROOF PLAN SCALE: 1/8" = 1'-0"JOB NO. SCALE AS SHOWN LEGEND

PHOTO OF SITE

NEW DEVICE

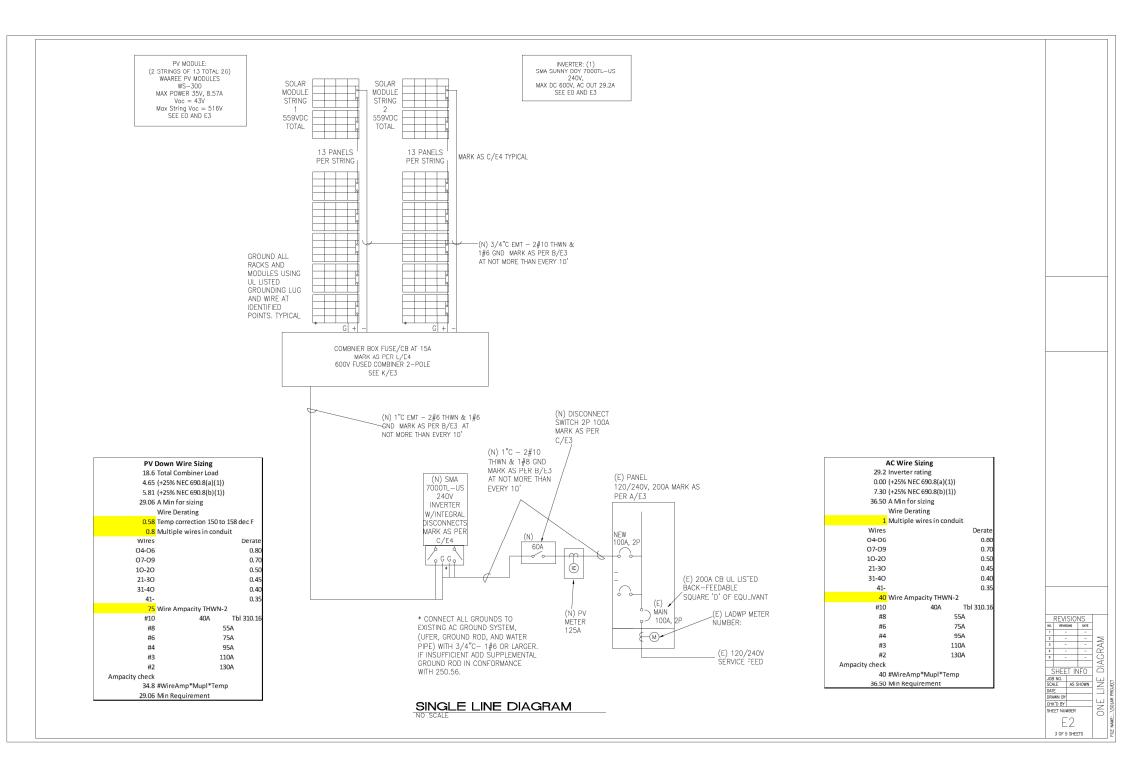
EXISTING DEVICE

SOLAR MODULE 6'-4 7/8X3'-3"

SHFFT NUMBER

E1

2 OF 5 SHEETS



MOUNT ACCORDING TO MOUNTING

MOUNT 4' ON CENTER UNLESS

MFG INSTRUCTIONS AND CIVIL /STRUCTURAL DIRECTIONS

NOT USED

TYPICAL BUILDING EXTERIOR EXPANSION/DEFLECTION FITTING W.P.

CONDUIT SEAL AT HAZARDOUS BOUNDRYS

WARNING: THIS SERVICE IS FED BY MULTIPLE POWER SOURCES. DISCONNECT ALL SOURCES PRIOR TO SERVICING THIS EQUIPMENT. GENERATION SYSTEM AC DISCONNECT SWITCH IS LOCATED AT RIGHT.

RED BACKGROUND WHITE LETTERING MIN 3/8" LETTERS ALL CAPITALS LETTERS REFLECTIVE MATERIAL WEATHER RESISTANT CONFORM TO UL 969

SWITCHBOARD MARKING REQUIREMENTS

NO SCALE

NO SCALE

WARNING - ELECTIC SHOCK HAZARD. THE CURRENT CIRCUIT CONDUCTORS OF THIS PHOTOVOLTAIC POWER SYSTEM ARE UNGROUNDED BUT MAY BE ENERGIZED WITH RESPECT TO GROUND DUE TO LEAKAGE PATHS AND/OR GROUND FAULTS.

WARNING - ELECTRIC SHOCK HAZARD, DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.

RED BACKGROUND MIN 3/8" LETTERS WEATHER RESISTANT

ARIAI FONT

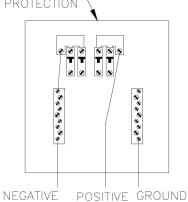
WHITE LETTERING ALL CAPITALS LETTERS REFLECTIVE MATERIAL CONFORM TO UL 969

SWITCHBOARD MARKING REQUIREMENTS

OTHERWISE NOTED OR REQUIRED TO CONNECT TO STRUCTURAL GROUND MODULES MEMBERS. SEE SOLARWEDGE USING UL GROUND CATALOG SHEETS ON E4 LUG DIRECTLY TO MODULE. ECURE WITH CLIPS BETWEEN EACH MODULE AND AT EDGE OF MODULES, USE FASTNERS SUITABLE TO SURFACE BEING ATTACHED. LAGSCREWS FOR WOOD, NUTS (LOCKING) AND BOLTS FOR METAL STRUCTURES. PV MODULE / STRING MOUNTING

CONNECT PV PANELS THRU CIRCUIT PROTECTION

NO SCALE



2 POLE COMBINER BOX

### CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED

RED BACKGROUND MIN 3/8" LETTERS ALL CAPITALS LETTERS REFLECTIVE MATERIAL ARIAL FONT WEATHER RESISTANT CONFORM TO UL 969

MAIN SERVICE MARKING REQUIREMENTS

NO SCALE

CAUTION: SOLAR CIRCUIT

RED BACKGROUND MIN 3/8" LETTERS WEATHER RESISTANT

ALL CAPITALS LETTERS REFLECTIVE MATERIAL CONFORM TO UL 969

DC CIRCUIT MARKING REQUIREMENTS

NO SCALE

CAUTION: SOLAR CIRCUIT DISCONNECT

RED BACKGROUND WHITE LETTERING MIN 3/8" LETTERS ALL CAPITALS LETTERS ARIAI FONT REFLECTIVE MATERIAL WEATHER RESISTANT CONFORM TO UL 969

SOLAR DISCONNECT MARKING REQUIREMENTS

NO SCALE

WARNING: THIS SERVICE IS FED BY MULTIPLE POWER SOURCES, DISCONNECT ALL SOURCES PRIOR TO SERVICING THIS EQUIPMENT. GENERATION SYSTEM AC DISCONNECT SWITCH IS LOCATED AT RIGHT.

RED BACKGROUND MIN 3/8" LETTERS ARIAI FONT WEATHER RESISTANT

WHITE LETTERING ALL CAPITALS LETTERS REELECTIVE MATERIAL CONFORM TO UL 969

SWITCHBOARD MARKING REQUIREMENTS

NO SCALE

REVISIONS SHEET INFO JOB NO. SCALE AS SHOWN DRAWN BY CHK'D BY SHEET NUMBER 4 OF 5 SHEETS

NO SCALE

NO SCALE