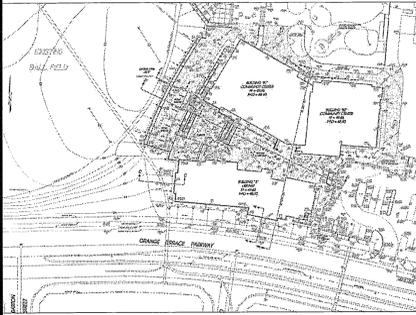
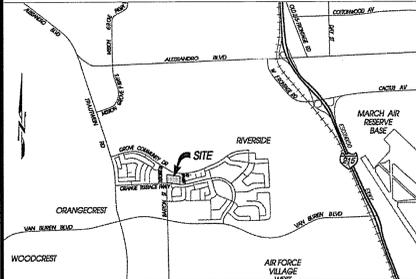


# ORANGE TERRACE LIBRARY

## 20010 ORANGE TERRACE PARKWAY, RIVERSIDE, CA

### SOLAR ELECTRIC SYSTEM PROJECT- 90.8 kW DC RATING

SITE MAP:	PROJECT SCOPE:	DRAWING INDEX:	PERMITTING AND PLANNING NOTES:
	<p><b>SOLAR ELECTRIC ROOFTOP SYSTEM:</b></p> <p><b>THE PROJECT ENTAILS THE INSTALLATION OF A 90.8 KILOWATT (KW) DC RATED SOLAR PHOTOVOLTAIC SYSTEM AT ORANGE TERRACE LIBRARY, IN RIVERSIDE, CA. THE SYSTEM IS DESIGNED TO OFFSET THE ELECTRIC POWER REQUIREMENTS FOR THE FACILITY. THIS SYSTEM WILL NOT BE A NET ELECTRICITY EXPORTER TO THE UTILITY GRID.</b></p> <p><b>THE INSTALLATION CONSISTS OF A SOLAR ARRAY LOCATED ON THE ROOFTOP OF BUILDING B, SEGMENT A; BUILDING INTERGRATED PHOTOVOLTAIC SKYLIGHTS IN BUILDING B; AND SOLAR ARRAYS ON TOP OF THE LUNCH CANOPIES. MULTIPLE INVERTERS AND RELATED ELECTRICAL SWITCHGEAR WILL BE INSTALLED AS REQUIRED BY APPLICABLE CODES AND BY THE ELECTRICAL UTILITY COMPANY.</b></p> <p><b>THE SYSTEMS WILL BE INTERCONNECTED TO AND WILL BE OPERATED IN PARALLEL WITH THE LOCAL UTILITIES ELECTRIC GRID PER THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.</b></p>	<p><b>T-100 TITLE SHEET</b>  <b>T-101 SYMBOLS &amp; NOTES</b></p> <p><b>A-100 EXISTING SITE</b>  <b>A-101 ARRAY LAYOUT</b></p> <p><b>S-101 ROOFTOP STRUCTURAL LAYOUT</b>  <b>S-102 LUNCH CANOPY STRUCTURAL DETAILS</b>  <b>S-200 ROOFTOP STRUCTURAL DETAILS</b></p> <p><b>E-100 ELECTRICAL WIRING</b>  <b>E-101 WIRING DIAGRAM - ROOFTOP</b>  <b>E-102 WIRING DIAGRAM - PV SKYLIGHTS</b>  <b>E-103 WIRING DIAGRAM - LUNCH CANOPIES</b>  <b>E-200 ELECTRICAL DETAILS</b>  <b>E-300 EQUIPMENT SPECIFICATIONS</b>  <b>E-301 EQUIPMENT SPECIFICATIONS</b></p>	<ol style="list-style-type: none"> <li>1. EI SOLUTIONS SHALL BE OBTAINING THE BUILDING PERMIT ONCE THE PLANS ARE APPROVED FOR CONSTRUCTION. EI SOLUTIONS SHALL PRESENT PROOF OF INSURANCE, PROOF OF CONTRACTING LICENSE AND WILL SUBMIT A CHECK IN EXCHANGE FOR THE CONSTRUCTION PERMIT.</li> <li>2. THIS PV SYSTEM INSTALLATION IS SUBJECT TO INSPECTION BY THE BUILDING OFFICIALS. EI SOLUTIONS, ORANGE TERRACE LIBRARY REPRESENTATIVES AND MULTIPLE OTHER STAKEHOLDERS IN THIS PROJECT.</li> <li>3. THIS PROJECT SHALL CONFORM TO THE FOLLOWING CODE VERSIONS:  1997 UBC - UNIFORM BUILDING CODE  2002 NEC - NATIONAL ELECTRICAL CODE</li> </ol>
<p><b>PROJECT ADDRESS:</b></p> <p><b>20010 ORANGE TERRACE PARKWAY</b>  <b>RIVERSIDE, CA 92508</b></p>	<p><b>PROJECT TEAM:</b></p> <p><b>SITE CONTACT:</b></p> <p><b>DIFFENBAUGH CONSTRUCTION</b>  <b>6865 AIRPORT DRIVE</b>  <b>RIVERSIDE, CA 92504</b>  <b>CONTACT: DENNIS POPE</b>  <b>TEL: (951) 351.6865</b>  <b>GENERAL CONTRACTOR # 181805</b></p> <p><b>PROJECT DEVELOPER:</b></p> <p><b>EI SOLUTIONS</b>  <b>2171 FRANCISCO BLVD</b>  <b>SUITE H</b>  <b>SAN RAFAEL, CA 94901</b>  <b>CONTACT: DAVID MacREADY</b>  <b>TEL: (626) 535.2863</b>  <b>GENERAL CONTRACTOR # 851879</b></p>		
			

REV. NO.	DESCRIPTION	DATE	BY
D	AS BUILT	09.02.08	JCN
A	FOR SUBMITTAL	02.29.08	JTC

Received  
SEP 25 2008  
Diffenbaugh



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PROJECT: SOLAR PHOTOVOLTAIC SYSTEM

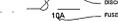
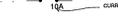
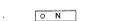
DRAWING: TITLE SHEET

PROJ. MGR. - PROJ. ENGR. - SCALE: AS NOTED

DRAWING NO. **T-100**

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SYMBOLS:	ABBREVIATIONS:	NOTES:
<p>SECTION . . . . . </p> <p>DETAIL . . . . . </p> <p>DETAIL (ENLARGED PLAN) . . . . . </p> <p>INTERIOR ELEVATION . . . . . </p> <p>CEILING HEIGHT . . . . . </p> <p>KEYED NOTES . . . . . </p> <p>REVISIONS . . . . . </p> <p>GROUND TERMINAL . . . . . </p> <p>GROUNDING POINT/ROD . . . . . </p> <p>SOLAR PANEL . . . . . </p> <p>SERIES INTERCONNECTION . . . . . </p> <p>COMBINER BOX . . . . . </p> <p>FUSE BOX . . . . . </p> <p>FUSED DISCONNECT . . . . . </p> <p>BLADE DISCONNECT . . . . . </p> <p>FUSIBLE DISCONNECT . . . . . </p> <p>OVERCURRENT BREAKER . . . . . </p> <p>DC TO AC INVERTER . . . . . </p> <p>ISOLATION TRANSFORMER . . . . . </p> <p>NEUTRAL BAR . . . . . </p>	<p>AC ALTERNATING CURRENT</p> <p>APPROX APPROXIMATE</p> <p>AWG AMERICAN WIRE GAUGE</p> <p>C/L CENTER LINE</p> <p>CB COMBINER BOX</p> <p>DC DIRECT CURRENT</p> <p>DCD DC DISCONNECT</p> <p>DI DROP INLET</p> <p>DISC DISCONNECT</p> <p>(E) EXISTING</p> <p>EL ELEVATION</p> <p>EQ EQUAL</p> <p>ID INSIDE DIAMETER</p> <p>JB JUNCTION BOX</p> <p>MCB MAIN COMBINER BOX</p> <p>MFR MANUFACTURER</p> <p>MIN MINIMUM</p> <p>MISC MISCELLANEOUS</p> <p>(N) NEW</p> <p>OAE OR APPROVED EQUAL</p> <p>OC ON CENTER</p> <p>OD OUTSIDE DIAMETER</p> <p>SD STORM DRAIN</p> <p>SF SQUARE FOOT/FEET</p> <p>SM SIMILAR</p> <p>TBD TO BE DETERMINED</p> <p>TOF TOP OF FOOTING</p> <p>TYP TYPICAL</p> <p>UN UNLESS OTHERWISE NOTED</p> <p>VF VERIFY IN FIELD</p> <p>XFMR TRANSFORMER</p>	<p style="text-align: center;"><b>PROCEDURAL NOTES:</b></p> <p>P1. PRIOR TO COMMENCEMENT OF ANY WORK, THE CONTRACTOR SHALL NOTIFY <b>EL SOLUTIONS</b> OF ANY DISCREPANCIES NOTED AMONG SITE CONDITIONS, MANUFACTURER RECOMMENDATIONS OR CODES, REGULATIONS OR RULES OF JURISDICTIONS HAVING AUTHORITY.</p> <p>P2. ALL DIMENSIONS OF EXISTING CONDITIONS MUST BE VERIFIED PRIOR TO COMMENCING WORK.</p> <p>P3. THE CONTRACTOR IS RESPONSIBLE FOR ALL BRACING AND SHORING OF EQUIPMENT DURING INSTALLATION.</p> <p>P4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS AND MEASURES ON SITE. THE ENGINEER HAS NO OVERALL SUPERVISORY AUTHORITY AND NO DIRECT RESPONSIBILITY FOR THE SPECIFIC WORKING CONDITIONS.</p> <p>P5. CONTRACTOR INITIATED CHANGES SHALL BE SUBMITTED IN WRITINGS TO THE ENGINEER FOR APPROVAL PRIOR TO MAKING ANY CHANGES. APPROVED CHANGES SHALL REQUIRE A DRAWING REVISION TO MAINTAIN CONTROL OVER THE ENGINEER APPROVED DESIGN. DEVIATION FROM THESE PLANS PRIOR TO ENGINEER APPROVAL PLACES THE CONTRACTOR AT RISK.</p> <p style="text-align: center;"><b>GENERAL NOTES:</b></p> <p>G1. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR INSTALLING ALL EQUIPMENT AND FOLLOWING ALL DIRECTIONS AND INSTRUCTIONS SHOWN HERE.</p> <p>G2. THE ELECTRICAL CONTRACTOR IS ADVISED THAT ALL DRAWINGS, COMPONENT MANUALS, ESPECIALLY THE INVERTER MANUALS, ARE TO BE READ AND UNDERSTOOD PRIOR TO INSTALLATION. THE CONTRACTOR IS ALSO ADVISED TO HAVE ALL COMPONENT SWITCHES IN THE OFF POSITION AND FUSES REMOVED PRIOR TO INSTALLATION OF FUSE-BEARING COMPONENTS.</p> <p>G3. INSTALLATION CREW IS TO HAVE A MINIMUM OF ONE ELECTRICIAN ON SITE AT ALL TIMES WHEN ELECTRICAL WORK IS BEING PERFORMED.</p> <p>G4. FOR SAFETY IT IS RECOMMENDED THE INSTALLATION CREW ALWAYS HAVE A MINIMUM OF TWO PEOPLE WORKING TOGETHER.</p> <p>G5. THIS SOLAR PHOTOVOLTAIC SYSTEM IS TO BE INSTALLED FOLLOWING THE CONVENTIONS OF THE NATIONAL ELECTRIC CODE. ANY LOCAL CODE WHICH MAY SUPERCEDE THE NEC SHALL GOVERN.</p> <p>G6. ALL COMPONENTS TO BE INSTALLED WITH THIS SYSTEM ARE TO BE "UL" LISTED. EQUIPMENT SHALL BE NEMA 3R OUTDOOR RATED OR BETTER, EVEN IF LOCATED INDOORS.</p> <p>G7. THE CONTRACTOR IS RESPONSIBLE FOR SELECTING AND PURCHASING EQUIPMENT THAT WILL LAST THE LIFETIME OF THE PV SYSTEM. ALL ENCLOSURES, CONDUIT, STRAPS, PAINTED METAL SURFACES, CONCRETE, GROUNDING EQUIPMENT AND OTHER PRODUCTS SHALL BE SELECTED TO LAST THE LIFETIME OF THE PV SYSTEM. THE ENGINEER SPECIFIES THE MINIMUM REQUIRED EQUIPMENT AND SPECIFICATIONS TO ACCOMPLISH THE PROJECT AND THE ELECTRICAL CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THESE SPECIFICATIONS ARE MET OR EXCEEDED WITH GOOD QUALITY EQUIPMENT, WORKMANSHIP AND SKILL.</p> <p>G8. DC VOLTAGE FROM THE ARRAY IS ALWAYS PRESENT AT THE DC DISCONNECT ENCLOSURE AND THE DC TERMINALS OF THE INVERTER DURING DAYLIGHT HOURS. ALL PERSONS WORKING ON OR INVOLVED WITH THIS PHOTOVOLTAIC SYSTEM ARE WARNED THAT THE SOLAR MODULES ARE ENERGIZED WHENEVER THEY ARE EXPOSED TO DAYLIGHT.</p> <p>G9. ALL PORTIONS OF THIS SOLAR ELECTRIC SYSTEM SHALL BE CLEARLY MARKED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE ARTICLE 690.</p> <p>G10. THE ELECTRICAL CONTRACTOR SHALL PERFORM INITIAL HARDWARE CHECKS AND PWRING CONDUCTIVITY CHECKS. ALL AC AND DC WIRE RUNS SHALL BE MEGGER TESTED TO DEMONSTRATE A MINIMUM OF 5 MEGAOHMS RESISTANCE TO GROUND. (WE REITERATE THIS POINT SEVERAL TIMES IN THESE DRAWINGS BECAUSE IT IS VERY IMPORTANT TO PREVENT EQUIPMENT DAMAGE)</p> <p>G11. FOR PROPER MAINTENANCE AND ISOLATION OF INVERTERS, REFER TO ISOLATION PROCEDURE IN INVERTER OPERATION MANUAL.</p> <p>G12. THIS PHOTOVOLTAIC SYSTEMS UTILITY INTERCONNECTION POINT SHALL MEET THE SPECIFIC REQUIREMENTS OF ARTICLE 690.64 NATIONAL ELECTRIC CODE (NEC). PLEASE FOLLOW THE SPECIFIC INSTRUCTIONS IN THIS DRAWING SET TO MEET THIS CODE REQUIREMENT.</p> <p>G13. THE GROUNDING OF THE PHOTOVOLTAIC SYSTEM SHALL COMPLY WITH NEC 690.45 AND NEC 690.47. IF THE REQUIREMENTS DESCRIBED IN THIS DRAWING SET ARE CLOSELY FOLLOWED, THE GROUNDING REQUIREMENT WILL BE MET.</p> <p>G14. THE ELECTRICAL CONTRACTOR IS <b>NOT</b> TO START THE PV OR INVERTER SYSTEM AT ANY TIME. <b>THIS WILL BE DONE BY EL SOLUTIONS.</b></p> <p>G15. THE CONTRACTOR IS RESPONSIBLE FOR MOUNTING ALL EQUIPMENT PER THE MANUFACTURER'S SPECIFICATIONS. IF SPECIFICATIONS ARE NOT APPARENT, THE CONTRACTOR SHALL USE DILIGENT EFFORTS TO MOUNT EQUIPMENT SUCH THAT IT WILL BE CLEAN, LEVEL AND SOLID IN ORDER TO LAST THE LIFETIME OF THIS SOLAR ELECTRIC SYSTEM.</p> <p>G16. ANY METAL SHAVINGS RESULTING FROM SITE WORK SHALL BE CLEANED FROM ENCLOSURE INTERIORS, TOP SURFACES OF ENCLOSURES, THE GROUND SURFACE AND ANY ADDITIONAL AREAS WHERE OXIDIZED OR CONDUCTIVE METAL SHAVINGS MAY CAUSE RUST, ELECTRICAL SHORT CIRCUITS OR OTHER DAMAGE.</p> <p>G17. THE ELECTRICAL CONTRACTOR SHALL CONSIDER THE WEATHERING OF EQUIPMENT OVER TIME AND ELIMINATE THE POSSIBILITY OF DEGRADATION OF EQUIPMENT DUE TO WATER ENTRY AND UV EXPOSURE. AS A RESULT, WE REQUIRE THE USE OF UNISTRUT® OR SIMILAR MOUNTING SYSTEMS TO MOUNT ENCLOSURES, PULL BOXES, LOAD CENTERS, FUSE BOXES OR OTHER EQUIPMENT TO ROOFTOPS AND WALLS TO PREVENT WATER BUILD-UP. WEEP HOLES SHALL BE PROVIDED IN ENCLOSURES WHERE CONDENSATION OR WATER BUILD-UP MAY OCCUR. SEALING CONDUIT WITH A FIRE RETARDANT FOAM OR CAULK AT ENCLOSURE ENTRY POINTS IS RECOMMENDED TO MINIMIZE CONDENSATION AND PESTS IN ENCLOSURES.</p> <p style="text-align: center;"><b>ELECTRICAL NOTES:</b></p> <p>E1. IN EVERY PULL BOX, TERMINAL BOX, AND AT ALL PLACES WHERE WIRES MAY NOT BE READILY IDENTIFIED BY NAMEPLATE MARKINGS ON THE EQUIPMENT TO WHICH THEY CONNECT, IDENTIFY EACH CIRCUIT WITH A PLASTIC LABEL OR TAG.</p> <p>E2. THE LAYOUT OF CONDUIT SHOWN IN THESE PLANS IS INDICATIVE ONLY. CONTRACTOR SHALL ROUTE &amp; LOCATE THE CONDUITS TO SUIT SITE CONDITIONS. CONTRACTOR WILL COORDINATE ALL CHANGES IN WIRING AND CONDUIT WITH THE ENGINEER.</p> <p>E3. WHERE WIRE AND CABLE ROUTING IS NOT SHOWN, AND DESTINATION ONLY IS INDICATED, CONTRACTOR SHALL DETERMINE EXACT ROUTING AND LENGTHS REQUIRED. A SHOP DRAWING OF PROPOSED INSTALLATION SHALL BE SUPPLIED TO <b>EL SOLUTIONS</b> PRIOR TO INSTALLATION.</p> <p>E4. UNDERGROUND CONDUIT SHALL BE UV RESISTANT OUTDOOR RATED PVC SCHEDULE 40. ROOFTOP CONDUIT SHALL BE IMC, ARC, GRC, OR ALTERNATE EQUAL. INDOOR CONDUIT MAY BE EMT OR ALTERNATE EQUAL. CONDUIT TYPES ARE ONLY RECOMMENDED ON THE ELECTRICAL DIAGRAMS. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO CONFORM TO THESE REQUIREMENTS.</p> <p>E5. BENDS SHALL NOT DAMAGE THE RACEWAY OR SIGNIFICANTLY CHANGE THE INTERNAL DIAMETER OF RACEWAYS (NO KINKS).</p> <p>E6. SUPPORT CONDUCTORS IN VERTICAL CONDUITS IN ACCORDANCE WITH NEC REQUIREMENTS.</p> <p>E7. INSTALL ALL WIRING MATERIALS IN A NEAT WORKMANLIKE MANNER. USE GOOD TRADE PRACTICES AS REQUIRED BY CHAPTER 3 OF THE NEC.</p> <p>E8. ARRANGE CONDUIT TO MAINTAIN HEADROOM AND IN A NEAT INCONSPICUOUS MANNER. RUN PARALLEL AND AT RIGHT ANGLES TO STRUCTURAL MEMBERS. PROVIDE BOXES, FITTINGS AND BENDS FOR CHANGE IN DIRECTION. FASTEN CONDUIT SECURELY IN PLACE.</p> <p>E9. SUPPORT CONDUIT USING STEEL OR MALLEABLE IRON STRAPS. LAY IN ADJUSTABLE HANGERS, CLEVIS HANGERS AND SPLIT-HANGERS. HANGER SPACING SHALL BE 10' MAXIMUM. USE APPROVED BEAM CLAMPS FOR CONNECTION TO STRUCTURAL MEMBERS.</p> <p>E10. PROVIDE PULL AND JUNCTION BOXES WHERE REQUIRED TO FACILITATE THE INSTALLATION OF WIRING IN ADDITION TO THOSE SHOWN ON THE DRAWINGS. BENDS IN CONDUITS BETWEEN PULL BOXES SHALL NOT EXCEED THE EQUIVALENT OF FOUR 90 DEGREE BENDS.</p> <p>E11. WHEN FIELD CUTTING IS REQUIRED, THE CONDUIT SHALL BE CUT SQUARE AND DEBURRED.</p> <p>E12. CONDUIT SIZES NOT SPECIFIED SHOULD CONFORM TO NEC SPECIFICATIONS. MINIMUM CONDUIT SIZE 3/4".</p> <p>E13. THE WIRING MINIMUM SIZE SHOULD BE #12 AWG.</p> <p>E14. SAFETY REGULATIONS (LOCK OUT - TAG OUT, ETC.) MUST BE OBSERVED BY THE CONTRACTOR DURING CONSTRUCTION.</p> <p>E15. THE WIRING SIZE IS BASED ON THE ESTIMATED CONDUIT ROUTING AS SHOWN IN THIS DRAWING PACKAGE. SHOULD THE CONDUITS LENGTH INCREASE DUE TO RELOCATION OF SOURCE AND/OR ROUTING, THE CONDUITS AND THE WIRE SIZE MAY NEED TO BE RESIZED. CONTACT THE ENGINEER PRIOR TO MAKING ANY FIELD CHANGES.</p> <p>E16. ALL WIRING SHALL BE THHN OR THWN-2 FOR 90°C APPLICATIONS. USE BARE COPPER FOR GROUND WHERE APPLICABLE.</p> <p>E17. INVERTER INTERCONNECTION VIA A BUS TAP IS ONLY LEGAL WHEN AN OVERCURRENT PROTECTION (FUSIBLE AC DISCONNECT) IS LOCATED WITHIN 10 FEET OF THE TAPPED CONDUCTORS. PER NEC 240.21, THE CONDUCTORS SHALL BE CRIMPED WITH A SINGLE HOLE CRIMP-ON LUG, MANUFACTURED BY ILSCO OR BURNDY. LUGS SHALL BE CONSTRUCTED OF PURE COPPER AND TIN PLATED FOR HIGH CONDUCTIVITY. THE LUGS MUST BE RATED FOR 600 VOLT DC APPLICATIONS. MINIMUM, THE CRIMP MUST BE MADE WITH THE MANUFACTURER'S APPROVED DEVICE TO ACHIEVE THE PROPER CRIMP CONNECTION. USE STAINLESS STEEL OR OTHER NON-CORROSIVE HARDWARE WITH THE FASTENER TORQUED TO MANUFACTURER'S RECOMMENDATIONS ON ALL THREE PHASES. THIS TORQUE LEVEL IS A REQUIREMENT. MINIMUM BEND RADIUS SHALL BE OBSERVED TO MAINTAIN GOOD CONDUCTOR QUALITY AND WIRE MANAGEMENT IN THE LOAD CENTER OR TRANSFORMER. IF THIS BEND RADIUS IS TOO CONSTRICTING, PLEASE CONSIDER USING A 90° CRIMP OFFERED BY ILSCO OR BURNDY. PLEASE ENSURE THAT ACCEPTABLE CLEARANCES FOR SAFE, CONTINUOUS OPERATION ARE ALLOWED WITH THIS BUS TAP.</p> <p>E18. ALL CONDUITS SHALL BE FREE OF ANY OBSTRUCTIONS BEFORE WIRE IS PULLED.</p> <p>E19. ELECTRICAL CONTRACTOR TO PROVIDE SIGNAGE PER NEC ARTICLE 690.</p> <p style="text-align: center;"><b>MODULE INSTALLATION NOTES:</b></p> <p>M1. REFER TO THE MODULE MANUAL FOR MORE DETAILS ON RIGGING, UNPACKING, HANDLING, PLANNING, AND INSTALLATION.</p> <p>M2. THE MODULES MAY BE SHIPPED WITH SEVERAL MODULES PER BOX. TAKE CARE WHEN OPENING THE BOX TO ENSURE THAT ALL MODULES ARE SECURELY HANDLED.</p> <p>M3. NEVER LEAVE A MODULE UNSUPPORTED OR UNSECURED.</p> <p style="text-align: center;"><b>SOLAR ARRAY COMMISSIONING:</b></p> <p>C1. BEFORE CLOSING DISCONNECTS OR ATTEMPTING TO ENERGIZE THE INVERTERS, THE FOLLOWING COMMISSIONING PROCEDURE SHALL BE COMPLETED:</p> <p>A. CHECK THE OPEN CIRCUIT VOLTAGE AND POLARITY OF EACH SOURCE CIRCUIT. RECORD THE VALUES ON THE COMMISSIONING RECORD SHEETS PROVIDED.</p> <p>B. CHECK THE SHORT CIRCUIT CURRENT FOR EACH SOURCE CIRCUIT. RECORD THE VALUES ON THE COMMISSIONING RECORD SHEETS PROVIDED.</p> <p>C. CHECK THAT ALL FUSES, DISCONNECTS AND OTHER BALANCE OF SYSTEM COMPONENTS ARE RATED FOR 600 VDC AND THE APPROPRIATE CURRENT CAPACITY.</p> <p>D. COMPLETE A VISUAL INSPECTION OF ALL THE MODULES TO CHECK FOR BROKEN GLASS, FRAYED WIRES, EXPOSED CONDUCTORS AND ANY OTHER PROBLEMS WHICH MAY CAUSE A FAULT.</p> <p style="text-align: center;"><b>INVERTER COMMISSIONING:</b></p> <p>IC1. BEFORE TURNING THE INVERTER ON, OR CLOSING ANY OF THE INVERTER DISCONNECTS, THE FOLLOWING COMMISSIONING PROCEDURE SHALL BE COMPLETED:</p> <p>A. CHECK THAT THE INVERTER IS PROPERLY GROUNDED, AS DESCRIBED BY THE MANUFACTURER AND THESE INSTRUCTIONS.</p> <p>B. MEGGER (INSULATION) TEST ALL CONDUCTORS FOR ACCEPTABLE INSULATION RESISTANCE TO 5 MEGOHMS BETWEEN THE TEST CONDUCTOR AND GROUND.</p> <p>C. CHECK THE INVERTER DC INPUT VOLTAGE FOR PROPER POLARITY INSIDE THE INVERTER CABINET.</p> <p>D. CHECK DC INPUT VOLTAGE IS WITHIN THE PROPER RANGE IN THE INVERTER CABINET, AS DEFINED BY THE INVERTER RATING LABEL AND ACCOMPANIED MANUAL.</p> <p>E. CHECK AC INPUT VOLTAGE IS IN THE PROPER PHASE SEQUENCE (CLOCKWISE) IF APPLICABLE.</p> <p>F. CHECK THAT THE AC GRID VOLTAGE, AT THE INVERTER AC TERMINALS, IS WITHIN THE PROPER RANGE AS DEFINED BY THE INVERTER RATING LABEL AND ACCOMPANIED MANUAL.</p>

D	AS BUILT	09.02.08	JCN		
A	FOR SUBMITTAL	02.29.08	JTC		
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PROJECT: SOLAR PHOTOVOLTAIC SYSTEM

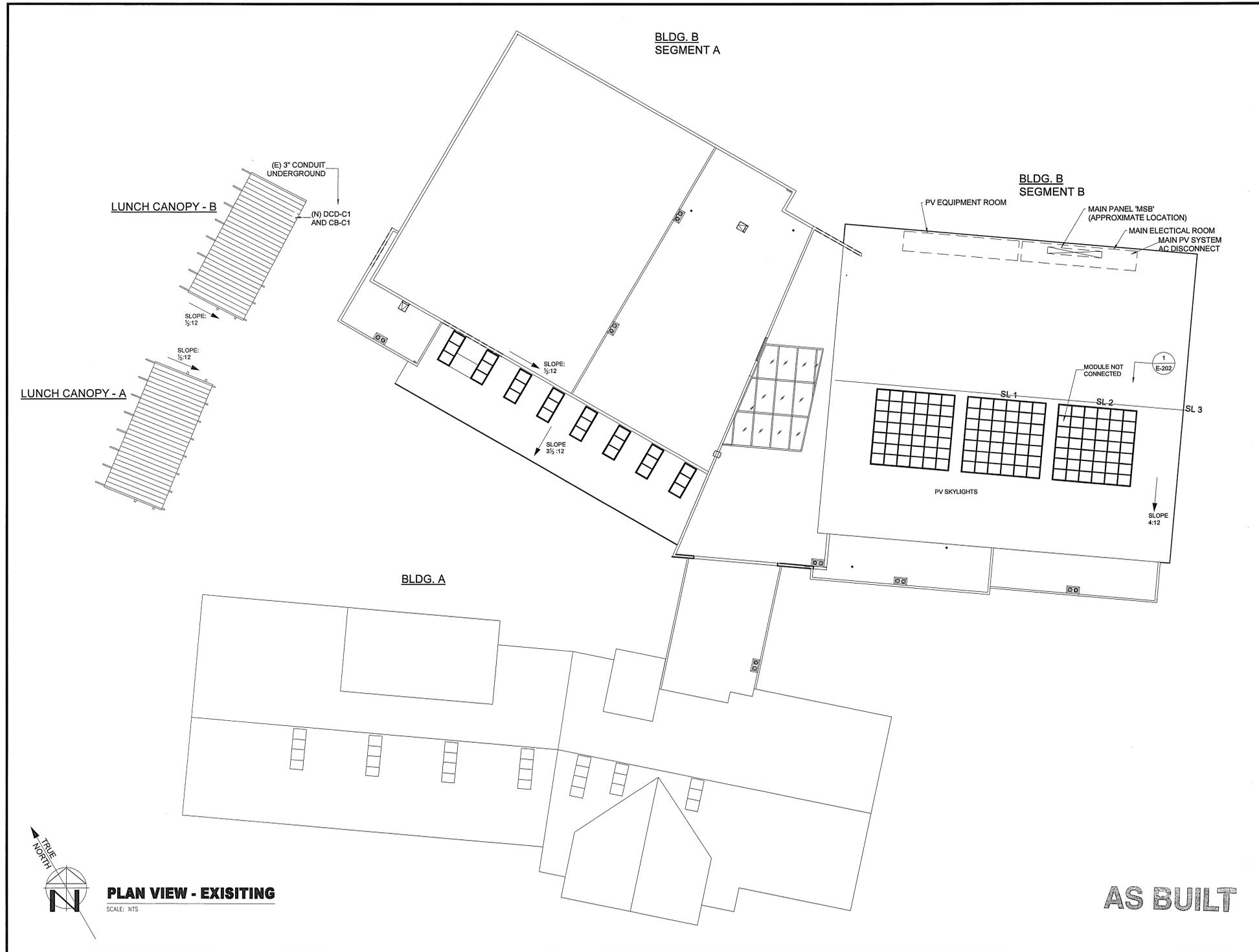
DRAWING: **SYMBOLS & NOTES**

PROJ. MGR. \_\_\_\_\_ PROJ. ENGR. \_\_\_\_\_ SCALE: AS NOTED

DRAWING NO. **T-101**

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AS BUILT



**NOTES:**  
1. NONE.

REV. NO.	DESCRIPTION	DATE	BY
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A	FOR SUBMITTAL	02.29.08	JTG

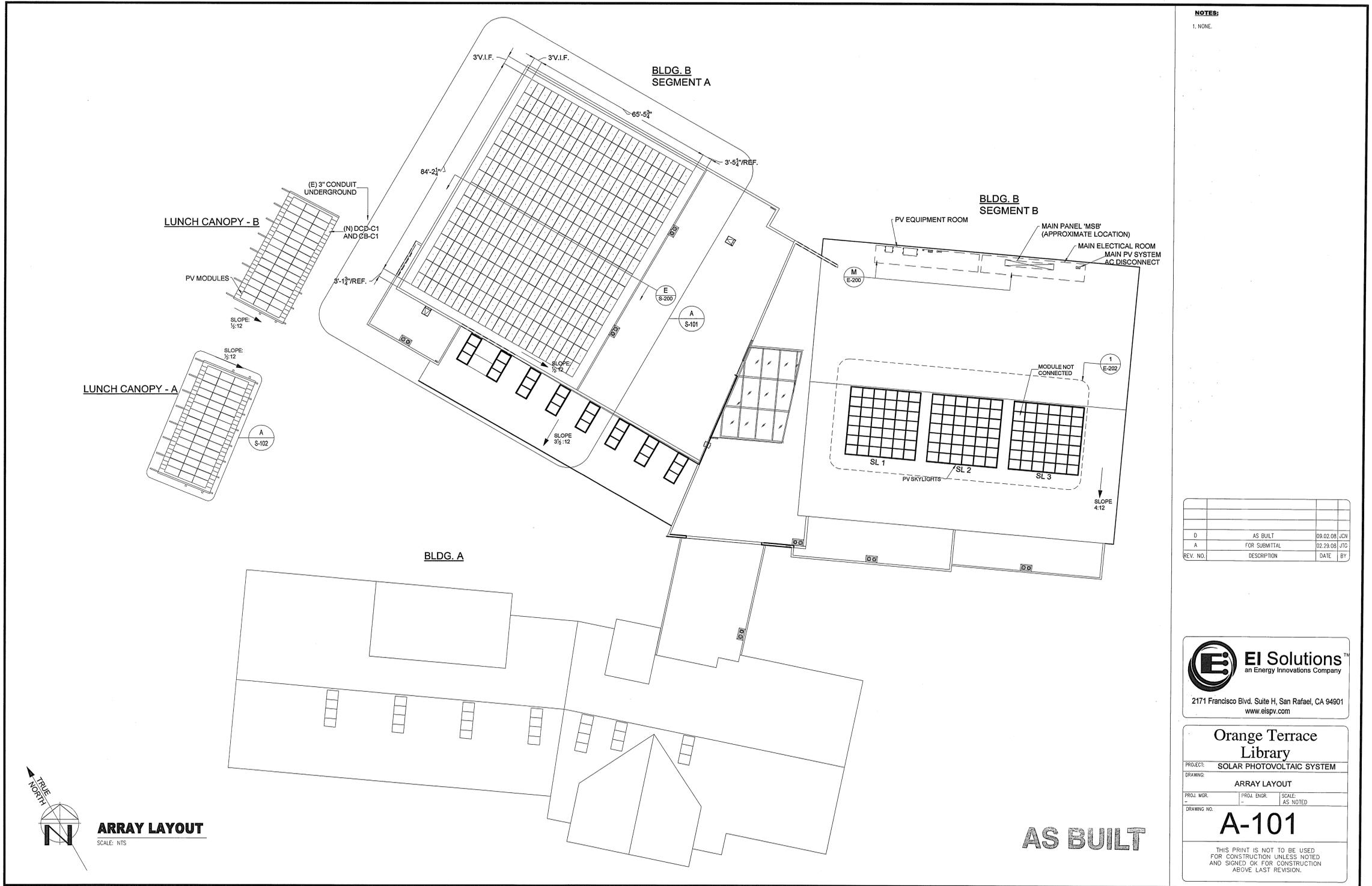
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**Orange Terrace Library**  
PROJECT: SOLAR PHOTOVOLTAIC SYSTEM  
DRAWING: EXISTING SITE  
PROJ. MGR. PROJ. ENGR. SCALE: AS NOTED  
DRAWING NO. **A-100**  
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**PLAN VIEW - EXISTING**  
SCALE: NTS

**AS BUILT**



**NOTES:**  
1. NONE.

REV. NO.	DESCRIPTION	DATE	BY
D	AS BUILT	09.02.08	JTC
A	FOR SUBMITTAL	02.29.08	JTC

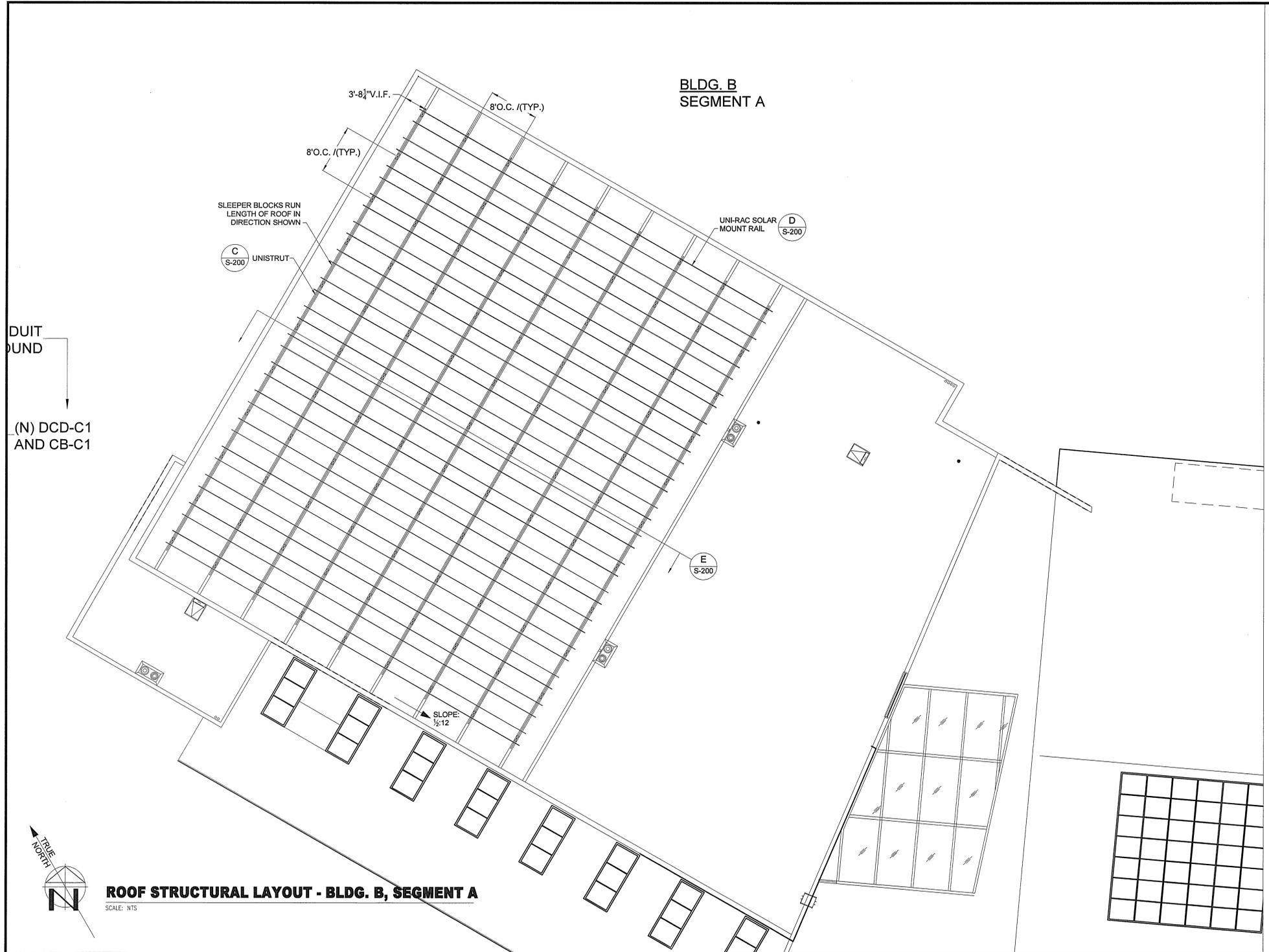
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**Orange Terrace Library**  
PROJECT: SOLAR PHOTOVOLTAIC SYSTEM  
DRAWING: ARRAY LAYOUT  
PROJ. MGR. SCALE: AS NOTED  
DRAWING NO. **A-101**  
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**ARRAY LAYOUT**  
SCALE: NTS

**AS BUILT**



**NOTES:**  
 1. 1 INCH MAXIMUM DEFLECTION UNDER DEAD LOAD CONDITIONS OF UNISTRUT AT MID-SPAN OF 8 FOOT SPAN.

**KEYED NOTES:**  
 (C) NONE.

**AS BUILT**

REV. NO.	DESCRIPTION	DATE	BY
D	AS BUILT	09.02.08	JCH
B	SECTION LINE ADDED	04.09.08	JTG
A	FOR SUBMITTAL	02.28.08	JTG

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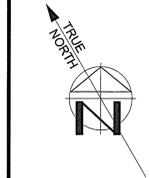
**Orange Terrace Library**

PROJECT: SOLAR PHOTOVOLTAIC SYSTEM  
 DRAWING: ROOFTOP STRUCTURAL LAYOUT

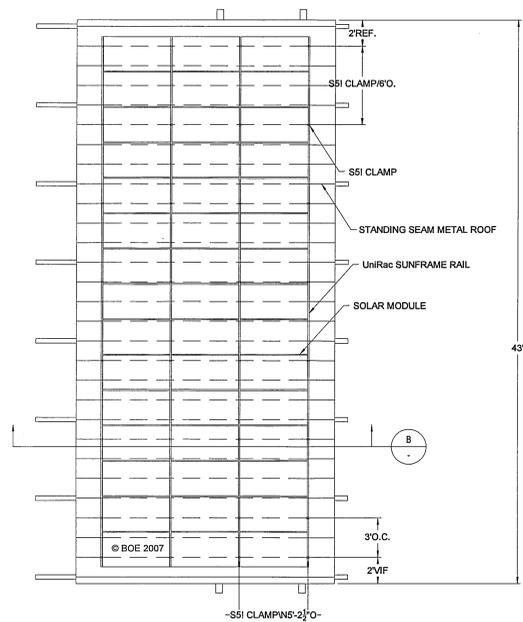
PROJ. MGR. PROJ. ENGR. SCALE: AS NOTED

**S-101**

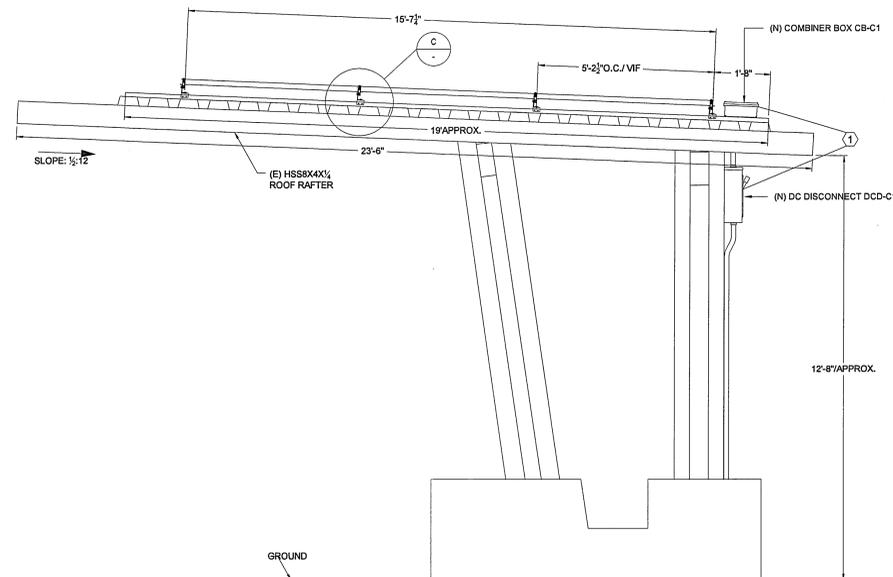
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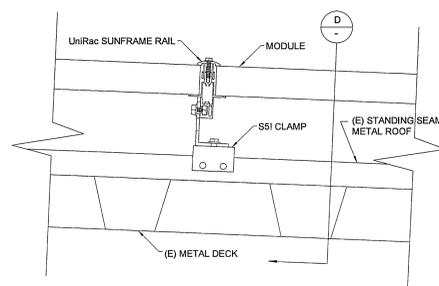
**ROOF STRUCTURAL LAYOUT - BLDG. B, SEGMENT A**  
 SCALE: NTS



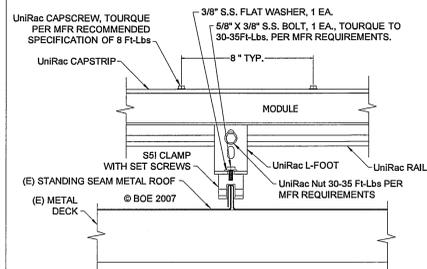
**A TOP VIEW - LUNCH CANOPY**  
SCALE: NTS



**B SIDE VIEW - LUNCH CANOPY**  
SCALE: NTS



**C LUNCH CANOPY - MOUNTING DETAIL**  
SCALE: NTS



**D LUNCH CANOPY - MOUNTING DETAIL**  
SCALE: NTS

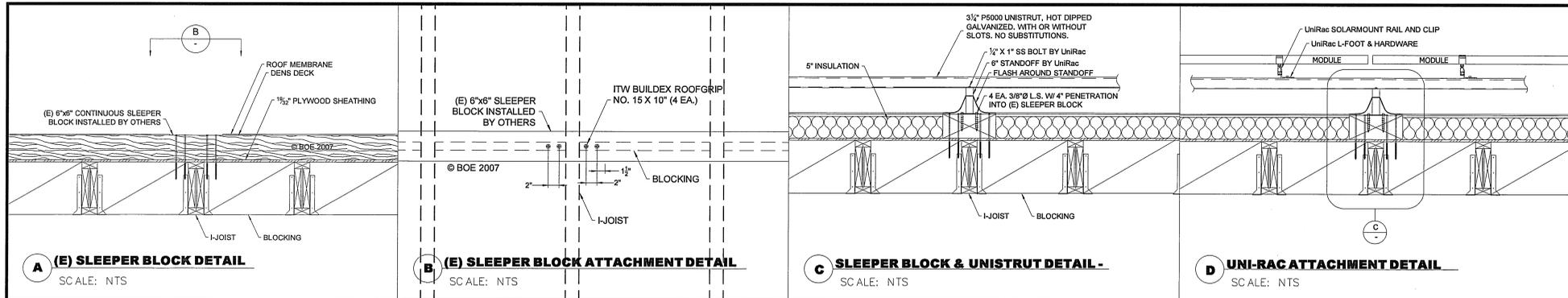
**NOTES:**  
1. DC DISCONNECT #C1 AND COMBINER BOX #C1 IS LOCATED ON THE NORTH CANOPY. SEE E-100.

**AS BUILT**

REV. NO.	DESCRIPTION	DATE	BY
D	AS BUILT	09.02.08	JCN
A	FOR SUBMITTAL	02.29.08	JTC

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www.eispy.com

**Orange Terrace Library**  
PROJECT: SOLAR PHOTOVOLTAIC SYSTEM  
DRAWING: LUNCH CANOPY STRUCTURAL DETAILS  
PROJ. MGR. PROJ. ENGR. SCALE: AS NOTED  
**S-102**  
THIS PRINT IS NOT TO BE USED FOR CONSTRUCTION UNLESS NOTED AND SIGNED OK FOR CONSTRUCTION ABOVE LAST REVISION.

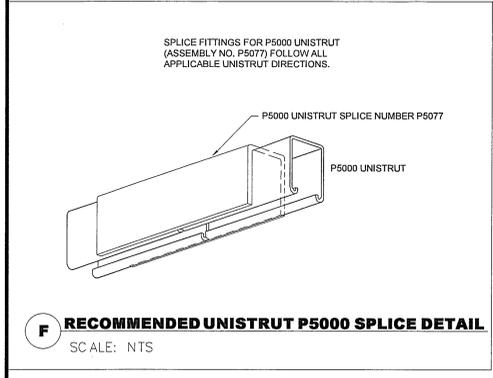
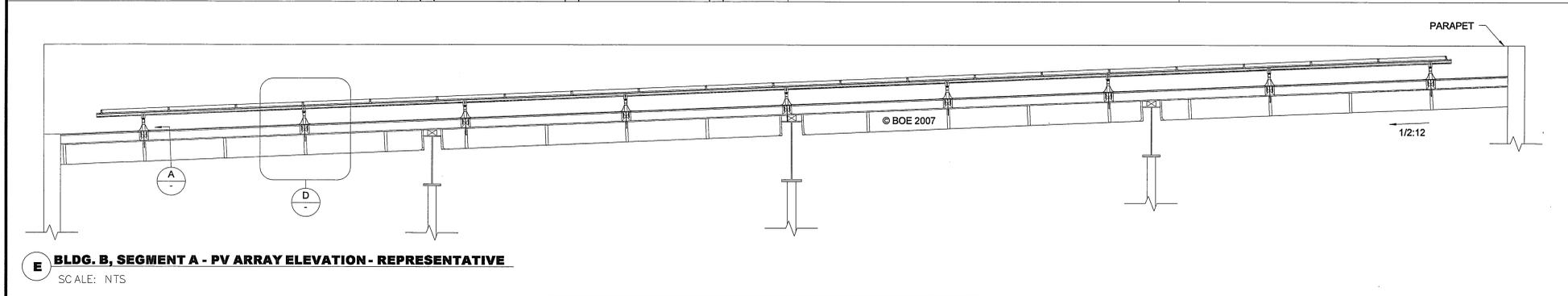


**NOTES:**

- ALL WOOD BLOCKS SHALL BE CAPABLE OF RESISTING A PULLOUT FORCE OF 400 LBS MINIMUM PER SCREW.
- INSTALLER TO ENSURE WOOD BLOCKS ARE ALIGNED AND INSTALLED SO THAT THE WOOD BLOCKS ARE ATTACHED TO THE 2" WOOD BLOCKING. USE THE DIMENSIONS IN SHEET S-101 AS GUIDE LINES.

**KEYED NOTES:**

NONE.



**AS BUILT**

REV. NO.	DESCRIPTION	DATE	BY
D	AS BUILT	09.02.08	JCN
B	UPDATED DETAILS-CORRECTED SECTION VIEWS	04.09.08	JTG
A	FOR SUBMITTAL	02.29.08	JTG

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**Orange Terrace Library**

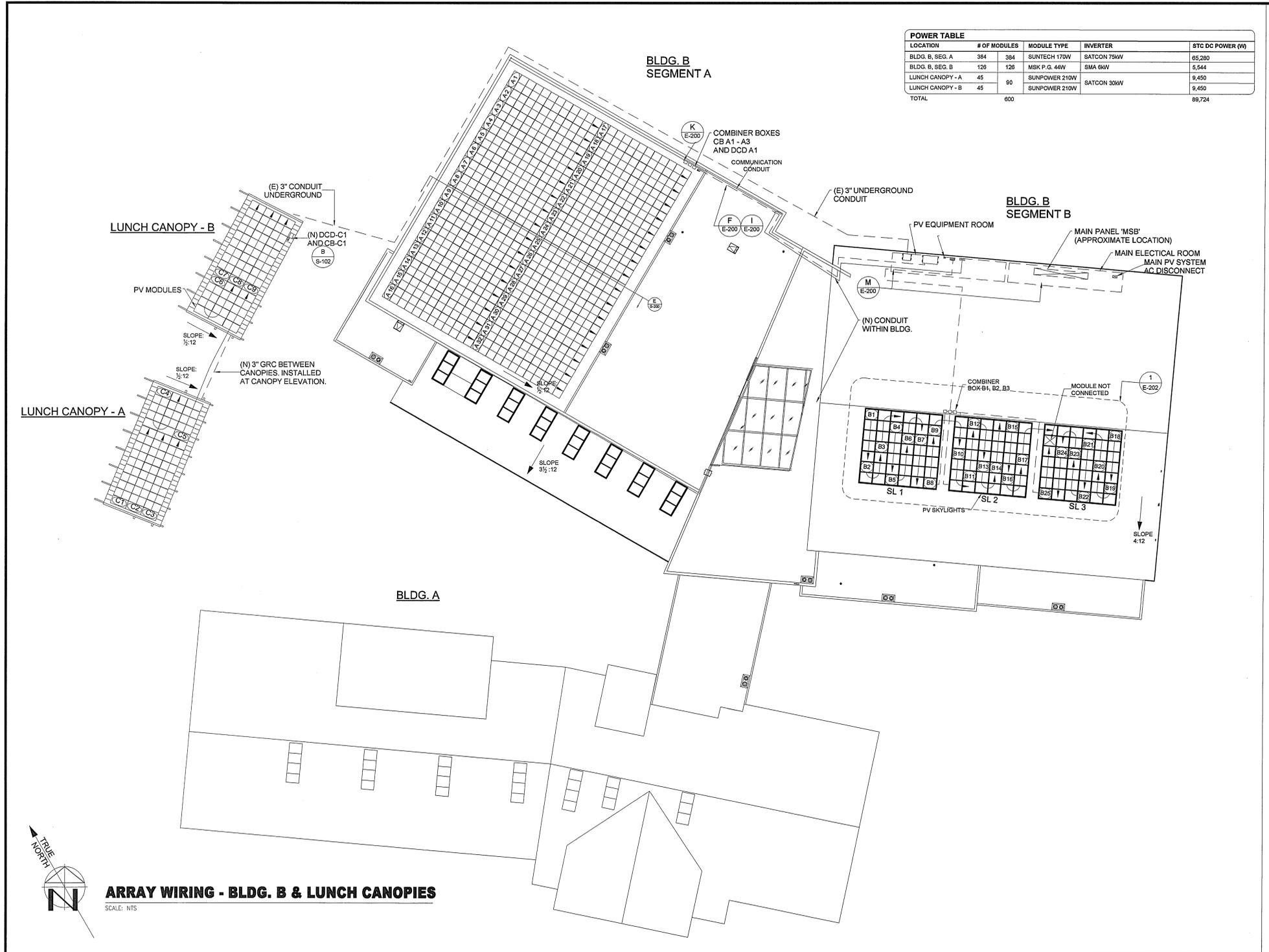
PROJECT: SOLAR PHOTOVOLTAIC SYSTEM

DRAWING: ROOFTOP STRUCTURAL DETAILS

PROJ. MGR. SCALE: AS NOTED

**S-200**

THIS PRINT IS NOT TO BE USED FOR CONSTRUCTION UNLESS NOTED AND SIGNED OK FOR CONSTRUCTION ABOVE LAST REVISION.



LOCATION	# OF MODULES	MODULE TYPE	INVERTER	STC DC POWER (W)
BLDG. B, SEG. A	384	SUNTECH 170W	SATCON 75kW	65,280
BLDG. B, SEG. B	126	MSK P.G. 44W	SMA 6kW	5,544
LUNCH CANOPY - A	45	SUNPOWER 210W	SATCON 30kW	9,450
LUNCH CANOPY - B	45	SUNPOWER 210W	SATCON 30kW	9,450
<b>TOTAL</b>	<b>600</b>			<b>89,724</b>

**NOTES:**  
 1. ALL CONDUIT, COMBINER BOX & DC DISCONNECT LOCATIONS ARE APPROXIMATE. THE FINAL LOCATIONS SHALL BE SELECTED BY THE INSTALLING CONTRACTOR.  
**KEYED NOTES:**  
 ① NONE.

**AS BUILT**

REV. NO.	DESCRIPTION	DATE	BY
D	AS BUILT	09.02.08	JCN
A	FOR SUBMITTAL	02.29.08	JTG

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**Orange Terrace Library**  
 PROJECT: SOLAR PHOTOVOLTAIC SYSTEM  
 DRAWING: ELECTRICAL WIRING  
 PROJ. MGR. PROJ. ENGR. SCALE: AS NOTED  
**E-100**  
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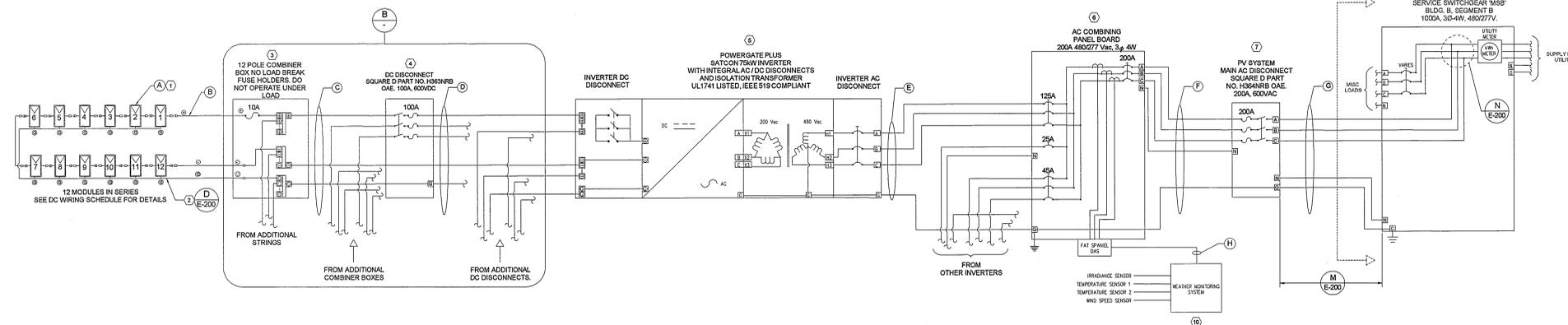
**ARRAY WIRING - BLDG. B & LUNCH CANOPIES**  
 SCALE: NTS

## DC WIRE AND CONDUIT SCHEDULE

DESCRIPTION	LOCATION ID	OPEN CIRCUIT VOLTAGE (VOC)	MAX POWER VOLTAGE (VMP)	SHORT CIRCUIT CURRENT (ISC)	MAX POWER CURRENT (IMP)	NOMINAL POWER RATING (W)	FUSE SIZE	MIN. DC WIRE SIZE AND TYPE	MIN. GROUND WIRE	MINIMUM CONDUIT SIZE AND TYPE	MAX ONE-WAY DISTANCE (FT)	MAX VOLTAGE DROP (%)	NOTES
PV MODULE: SUNTECH STP170S-24/Ab-1	TOTAL NUMBER OF MODULES	384	A	43.8	35.2	5.14	4.83	170	N/A	#12 AWG, USE-2	#12 AWG	N/A	N/A
SOURCE CIRCUIT	MODULES IN SERIES	12	B	525.6	422.4	5.14	4.83	2,040	10	#10 AWG, USE-2	#10 AWG	SEE DETAIL B	0.47%
12 POLE COMBINER BOX - CB-A1 TO -A3	MAX. STRINGS PER COMBINER	12	C	525.6	422.4	61.68	57.96	24,480	100	#1/0 AWG, THWN-2	#4 AWG	SEE DETAIL B	0.07%
DC DISCONNECT - DC A1	MAX NO. COMBINER BOXES PER DISCONNECT	3	D	525.6	422.4	61.68	57.96	24,480	N/A	#1/0 AWG, THWN-2	#4 AWG	SEE DETAIL B	100

## AC WIRE AND CONDUIT SCHEDULE

DESCRIPTION	LOCATION ID	MAXIMUM CURRENT PER WIRE (A)	NOMINAL VOLTAGE (VAC)	MINIMUM AC WIRE SIZE AND TYPE	CONDUCTORS PER PHASE	MINIMUM GROUND WIRE SIZE AND TYPE	MINIMUM CONDUIT SIZE AND TYPE	SO. WHAT'S IN THE CONDUIT?	MAX ONE-WAY DISTANCE (FT)	VOLTAGE DROP AT MAX DISTANCE (%)	NOTES
INVERTER	SATCON 75kW INVERTER	90	480 3 $\phi$ W	#2 AWG, THWN-2	1	#6 AWG THWN-2	1 1/2" EMT	3 AC WIRES AND 1 GND WIRE	40	0.25%	
AC COMBINER	FROM AC COMBINER "A" TO MAIN AC DISCONNECT	90 + 21.6 + 36 = 147.6	480 3 $\phi$ W	#3/0 AWG, THWN-2	1	#4 AWG THWN-2	2 1/2" EMT	3 AC WIRES, 1 NEUTRAL & 1 GND WIRE	100	0.40%	TEMP. DERATED FOR 45°C MAX. USE AC WIRE SIZE FOR NEUTRAL WIRE
INTERCONNECTION	FROM AC DISCONNECT TO INTERCONNECTION	147.6	480 3 $\phi$ W	#3/0 AWG, THWN-2	1	#4 AWG THWN-2	2 1/2" EMT	3 AC WIRES, 1 NEUTRAL & 1 GND WIRE	10	0.04%	
DAS	INV. DAS TO WEATHER MONITORING SYSTEM	-	-	CAT V	-	-	3/4" EMT	-	250	-	

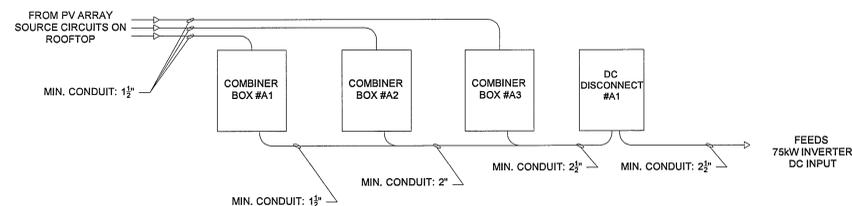


**A** THREE-LINE DIAGRAM - ROOFTOP  
SCALE: NTS

## DISCONNECT AND COMBINER SCHEDULE

DC DISCONNECT	CB-A1		
SWITCHED COMBINER BOXES	CB-A1	CB-A2	CB-A3
NUMBER OF STRINGS IN COMBINER	11	11	10
STRING NUMBERING	1 - 11	12 - 22	23 - 32

- NOTES:
- ALL CONDUIT AT GROUND LEVEL AND/OR ROUTED WITHIN BUILDING: IMC
  - CONDUIT IN THE GROUND: PVC SCH40
  - CONDUIT ON ROOF: EMT
  - ALL WIRE IS THWN-2



**B** CONDUIT DETAIL  
SCALE: NTS

**C** NOT USED  
SCALE: NTS

### NOTES:

- SEE GENERAL NOTES ON DRAWING T-101.
- 75kW SATCON INVERTER MODEL #: PVS-75-480; DIMENSIONS AND WEIGHT: (HxWxD) 78.5"x57"x30.8", 2,500 lbs.
- CONDUCTORS RUN OUTDOORS AND NOT WITHIN CONDUIT SHALL BE LISTED AS UV RESISTANT.

### KEYED NOTES:

- SUNTECH STP170S-24/Ab-1 MODULES, 12 EACH PANELS WIRED IN SERIES. EACH MODULE INCLUDES #12 AWG OUTDOOR RATED QUICK CONNECTS FOR MODULE INTERCONNECTION. DO NOT REMOVE THE QUICK CONNECTS, OTHERWISE THE MODULE WARRANTY AND THE UL LISTING MAY BE INVALIDATED.
- BARE COPPER GROUND WILL BE USED AS AN EQUIPMENT GROUND TO CONNECT THE MODULE FRAMES. USE THE MODULE INDICATED LOCATION ONLY OTHERWISE WARRANTY MAY BE INVALIDATED. SPECIFIC MODULE MOUNTING RACKS MAY BE PROVIDED WITH SIMPLIFIED GROUNDING ALTERNATIVES. PLEASE FOLLOW THE RACK MANUFACTURER'S INSTRUCTIONS ON GROUNDING.
- HOMERUN COMBINER BOX, SEE DETAIL B, THIS SHEET, FOR DETAILS. NEMA 3R OR NEMA 4X ENCLOSURE, RATED @ 600 VDC. COMBINER BOX SHALL BE MOUNTED TO PREVENT SHADING OF THE SOLAR ARRAY ALL YEAR. THIS PRODUCT MUST BE UL LISTED FOR SAFETY. CONTRACTOR SHALL SELECT THE EXACT MAKE AND MODEL.
- DC DISCONNECT, 100 AMP, 600 VDC, FUSED, SQUARE D MODEL H363NRB OR APPROVED EQUAL. THE 100 AMP SQUARE D DISCONNECT IS UL LISTED FOR BREAKING 600 VDC WITH A SINGLE POLE.
- INVERTER: POWERGATE PLUS 75kW SATCON POWER CONVERSION UNIT, UL1741 LISTED WITH INTEGRAL ANTI-ISLANDING AND GROUND FAULT PROTECTION. UL1741 LISTING INCLUDES COMPLIANCE WITH IEEE519 FOR POWER QUALITY, IEEE929 FOR INTERCONNECTION SAFETY AND THE NATIONAL ELECTRICAL CODE. THIS INVERTER IS PACKAGED IN A SINGLE ENCLOSURE WITH AC AND DC DISCONNECTS AND THE UTILITY REQUIRED ISOLATION TRANSFORMER.
- AC COMBINER PANEL BOARD: 200A, 480/277 VAC, 3 PHASE, 4 WIRE, 35KAIC, NF PANELBOARD, NEMA 1.
- A LOCKABLE, FUSED INVERTER AC DISCONNECT SHALL BE PROVIDED NEAR THE POINT OF COMMON COUPLING WITH THE ELECTRICAL SYSTEM.
- ALL EQUIPMENT BEYOND THE INVERTER AC DISCONNECT IS CUSTOMER INSTALLED, OWNED AND MAINTAINED. IT IS RECOMMENDED THAT THE CUSTOMER REVIEW EXISTING ELECTRICAL EQUIPMENT FOR BREAKER COORDINATION, LOAD SAFETY AND CODE COMPLIANCE.
- THE CONDUCTORS AND CONDUIT(S) THAT CONNECT THE MAIN AC DISCONNECT TO THE ELECTRICAL SYSTEM, VIA A BUS TAP, OR OTHER APPROVED METHOD, SHALL BE INSTALLED BY QUALIFIED PERSONNEL.
- FAT PANEL DAS SYSTEM WITH CTS AND PFS SHALL BE CONNECTED TO THE AC COMBINER PANEL BOARD. A WEATHER STATION AND MODEM WILL BE CONNECTED TO THE DAS VIA A CAT V CABLE.

REV. NO.	DESCRIPTION	DATE	BY
D	AS BUILT	09.02.08	JCN
A	FOR SUBMITTAL	02.29.08	JTG

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**Orange Terrace Library**  
PROJECT: SOLAR PHOTOVOLTAIC SYSTEM  
DRAWING: WIRING DIAGRAM ROOFTOP  
PROJ. MGR. PROJ. ENGR. SCALE: AS NOTED  
DRAWING NO. **E-101**  
THIS PRINT IS NOT TO BE USED FOR CONSTRUCTION UNLESS NOTED AND SIGNED OK FOR CONSTRUCTION ABOVE LAST REVISION.

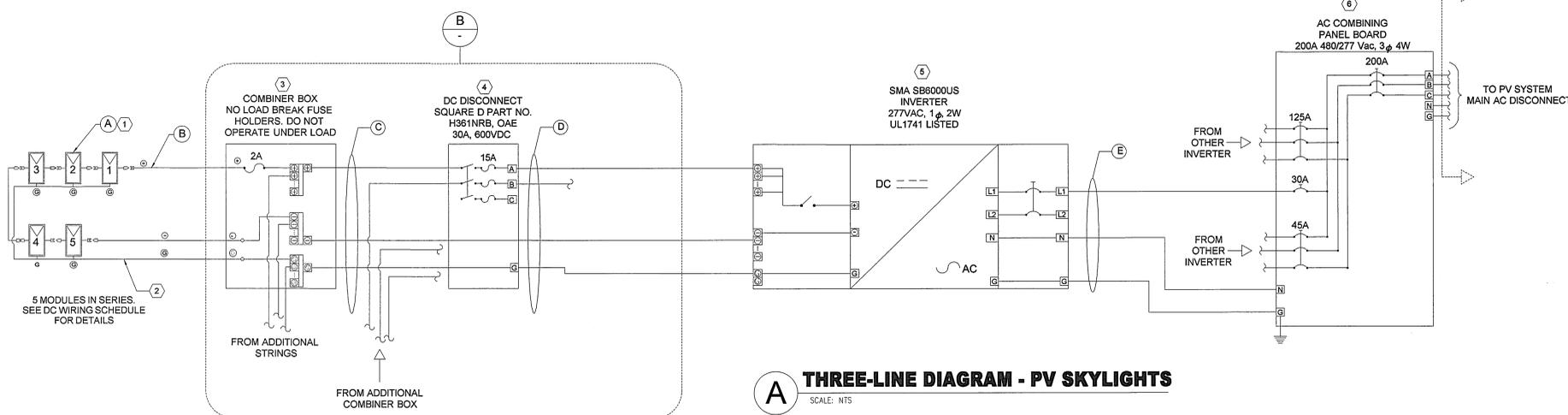
AS BUILT

## DC WIRE AND CONDUIT SCHEDULE

DESCRIPTION	LOCATION ID	OPEN CIRCUIT VOLTAGE (VOC)	MAX POWER VOLTAGE (VMP)	SHORT CIRCUIT CURRENT (ISC)	MAX POWER CURRENT (MP)	NOMINAL POWER RATING (W)	FUSE SIZE	MIN. DC WIRE SIZE AND TYPE	MIN. GROUND WIRE	MINIMUM CONDUIT SIZE AND TYPE	MAX ONE-WAY DISTANCE (FT)	MAX VOLTAGE DROP (%)	NOTES	
PV MODULE: MSK PHOTOVOL GLASS 19% TRANSMITTANCE	TOTAL NUMBER OF MODULES	126	A	91.8	59.6	0.97	0.74	44	N/A	#12 AWG, USE-2	#12 AWG	N/A	N/A	MODULE INTERCONNECTS PROVIDED WITH SOLAR MODULE. HOMERUN WIRES TO BE MADE ON SITE OR BY SUPPLIER WITH MC CONNECTORS. TEMP. DERATE FOR 55°C. WIRES UPSIZED FOR CONDUIT FILL. FIGURES SHOWN ARE PER WIRE.
SOURCE CIRCUIT	MODULES IN SERIES	5	B	459	298	0.97	0.74	220	2	#10 AWG, THWN-2	#12 AWG	SEE DETAIL B	200	0.16%
12-POLE COMBINER BOX (TYP OF 2)	MAX. STRINGS PER COMBINER	8	C	459	357.6	7.78	5.92	1,760	15	#10 AWG, THWN-2	#10 AWG	SEE DETAIL B	200	0.96%
12-POLE COMBINER BOX (TYP OF 1)	MAX. STRINGS PER COMBINER	9	C	459	357.6	8.73	6.66	1,980	15	#10 AWG, THWN-2	#10 AWG	SEE DETAIL B	200	0.96%
DC DISCONNECT	COMBINER BOXES PER DISCONNECT	3	D	550.8	357.6	8.73	6.66	1,880	N/A	#10 AWG, THWN-2	#10 AWG	SEE DETAIL B	15	0.14%

## AC WIRE AND CONDUIT SCHEDULE

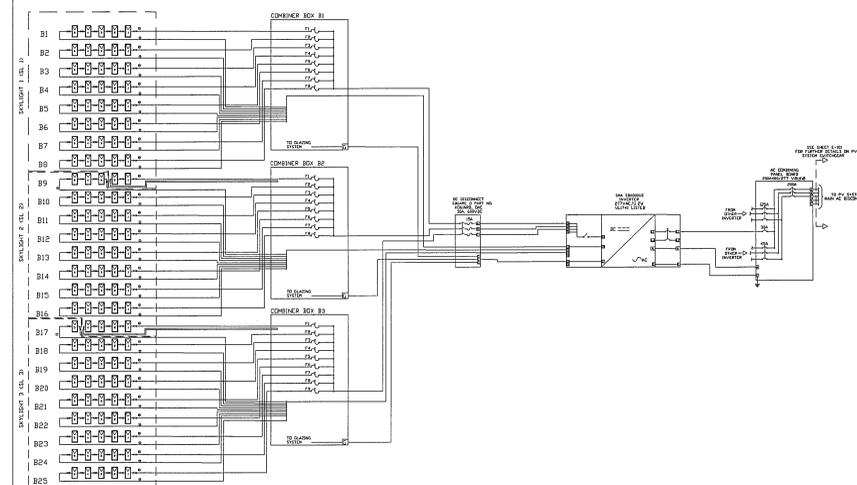
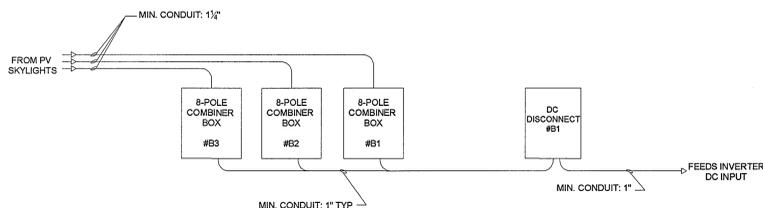
DESCRIPTION	LOCATION ID	MAXIMUM CURRENT PER WIRE (A)	NOMINAL VOLTAGE (VAC)	MINIMUM AC WIRE SIZE AND TYPE	CONDUCTORS PER PHASE	MINIMUM GROUND WIRE SIZE AND TYPE	MINIMUM CONDUIT SIZE AND TYPE	SO. WHAT'S IN THE CONDUIT?	MAX ONE-WAY DISTANCE (FT)	VOLTAGE DROP AT MAX DISTANCE (%)	NOTES	
INVERTER	SMA SB6000US	E	21.6	277 1 $\phi$ 2W	#10 AWG THWN-2	1	#10 AWG THWN-2	3/4" EMT	2 AC WIRES & 1 GND WIRE	15	0.06%	TEMP. DERATED FOR 45°C MAX.



## DISCONNECT AND COMBINER SCHEDULE

DC DISCONNECT	DCD B1		
SWITCHED COMBINER BOXES	CB-B1	CB-B2	CB-B3
NUMBER OF POLES PER COMBINER	12	12	12
NUMBER OF STRINGS IN COMBINER	8	8	9
STRING NUMBERING	B1 - B8	B9 - B16	B17 - B25

- NOTES:**
- ALL CONDUIT ROUTED WITHIN BUILDING, IMC
  - CONDUIT ON ROOF: EMT
  - ALL WIRE IS THWN-2



### NOTES:

- SEE GENERAL NOTES ON DRAWING T-101.
- 6KW SMA INVERTER MODEL #SB6000US; DIMENSIONS AND WEIGHT: (HxWxD) 24.1"x18.4"x9.5", 143 lbs.

### KEYED NOTES:

- MSK PHOTOVOL GLASS, 19% TRANSMITTANCE. 6 EACH PANELS WIRED IN SERIES. EACH MODULE INCLUDES QUICK CONNECTS FOR MODULE INTERCONNECTION. DO NOT REMOVE THE QUICK CONNECTS, OTHERWISE THE MODULE WARRANTY AND THE UL LISTING MAY BE INVALIDATED.
- BARE COPPER GROUND WILL BE USED AS AN EQUIPMENT GROUND TO CONNECT THE MODULE FRAMES. USE THE MODULE INDICATED LOCATION ONLY OTHERWISE WARRANTY MAY BE INVALIDATED. SPECIFIC MODULE MOUNTING RACKS MAY BE PROVIDED WITH SIMPLIFIED GROUNDING ALTERNATIVES. PLEASE FOLLOW THE RACK MANUFACTURER'S INSTRUCTIONS ON GROUNDING.
- HOMERUN COMBINER BOX, SEE DETAIL B, THIS SHEET, FOR DETAILS. NEMA-3R OR NEMA-4X ENCLOSURE, RATED @ 600 VDC. COMBINER BOX SHALL BE MOUNTED TO PREVENT SHADING OF THE SOLAR ARRAY ALL YEAR. THIS PRODUCT MUST BE UL LISTED FOR SAFETY. CONTRACTOR SHALL SELECT THE EXACT MAKE AND MODEL.
- DC DISCONNECT, 30 AMP, 600 VDC, FUSED, SQUARE D MODEL H361NRB OR APPROVED EQUAL. THE 30 AMP SQUARE D DISCONNECT IS UL LISTED FOR BREAKING 600 VDC WITH A SINGLE POLE.
- INVERTER: SMA SB6000US POWER CONVERSION UNIT, UL1741 LISTED WITH INTEGRAL ANTI-ISLANDING AND GROUND FAULT PROTECTION. UL1741 LISTING INCLUDES COMPLIANCE WITH IEEE519 FOR POWER QUALITY, IEEE929 FOR INTERCONNECTION SAFETY AND THE NATIONAL ELECTRICAL CODE. THIS INVERTER IS PACKAGED IN A SINGLE ENCLOSURE WITH AC AND DC DISCONNECTS AND THE UTILITY REQUIRED ISOLATION TRANSFORMER.
- SEE SHEET E-101 FOR FURTHER INFORMATION ON THIS PANELBOARD.

**AS BUILT**

REV. NO.	DESCRIPTION	DATE	BY
D	AS BUILT	09.02.08	JCN
A	FOR SUBMITTAL	02.29.08	JTG

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www.elspv.com

**Orange Terrace Library**

PROJECT: SOLAR PHOTOVOLTAIC SYSTEM  
DRAWING: WIRING DIAGRAM PV SKYLIGHTS

PROJ. MGR. SCALE: AS NOTED  
DRAWING NO. **E-102**

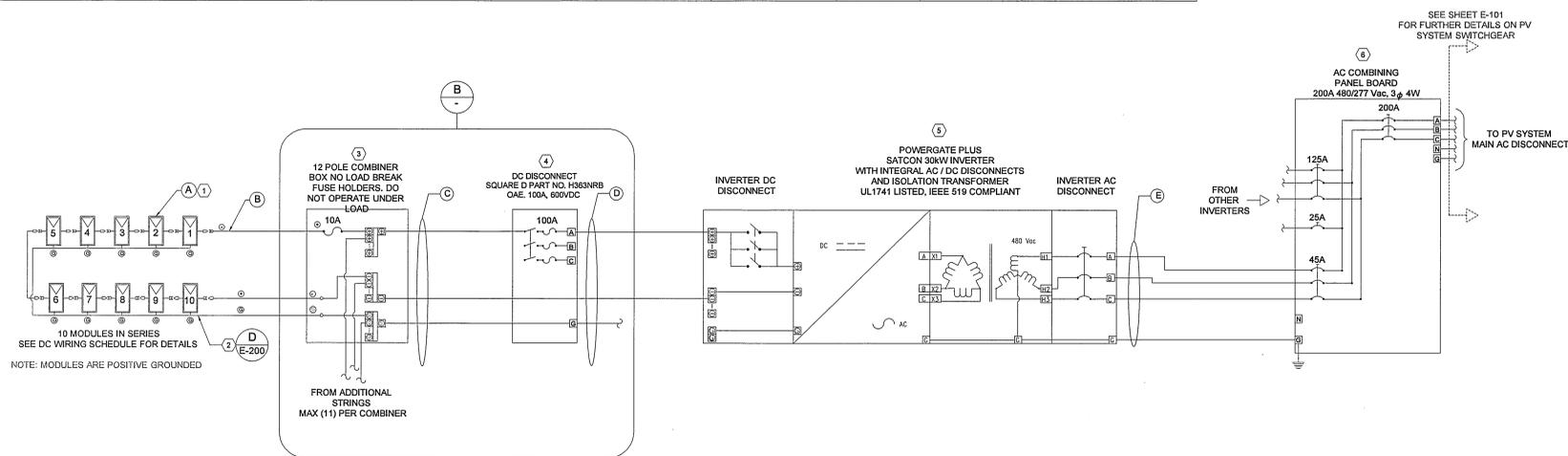
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## DC WIRE AND CONDUIT SCHEDULE

DESCRIPTION	LOCATION ID	OPEN CIRCUIT VOLTAGE (VOC)	MAX POWER VOLTAGE (VMP)	SHORT CIRCUIT CURRENT (ISC)	MAX POWER CURRENT (IMP)	NOMINAL POWER RATING (W)	FUSE SIZE	MIN. DC WIRE SIZE AND TYPE	MIN. GROUND WIRE	MINIMUM CONDUIT SIZE AND TYPE	MAX ONE-WAY DISTANCE (FT)	MAX VOLTAGE DROP (%)	NOTES
PV MODULE: SUNPOWER SPR210	A	47.8	40.0	5.65	5.25	210	N/A	#12 AWG, USE-2	#12 AWG	N/A	N/A	N/A	MODULE INTERCONNECTS PROVIDED WITH SOLAR MODULE. HOMERUN WIRES TO BE MADE ON SITE OR BY SUPPLIER WITH MC CONNECTORS. TEMP. DERATE FOR 55°C. WIRE UPSIZED DUE TO VOLTAGE DROP. FIGURES SHOWN ARE PER WIRE.
SOURCE CIRCUIT	B	478	400	5.65	5.25	2,100	10	#10 AWG, USE-2	#10 AWG	SEE DETAIL B	150	0.51%	
COMBINER BOX	C	478	400	50.85	47.25	18,900	100	#1 AWG, THWN-2	#6 AWG	SEE DETAIL B	20	0.08%	
DC DISCONNECT	D	478	400	50.85	47.25	18,900	N/A	#1 AWG, THWN-2	#6 AWG	SEE DETAIL B	300	1.13%	

## AC WIRE AND CONDUIT SCHEDULE

DESCRIPTION	LOCATION ID	MAXIMUM CURRENT PER WIRE (A)	NOMINAL VOLTAGE (VAC)	MINIMUM AC WIRE SIZE AND TYPE	CONDUCTORS PER PHASE	MINIMUM GROUND WIRE SIZE AND TYPE	SO. WHAT'S IN THE CONDUIT?	MAX ONE-WAY DISTANCE (FT)	VOLTAGE DROP AT MAX DISTANCE (%)	NOTES
INVERTER	E	36	480 3 $\phi$ W	#8 AWG, THWN-2	1	#10 AWG THWN-2	3 AC WIRES AND 1 GND WIRE	40	0.40%	TEMP. DERATED FOR 45°C MAX.



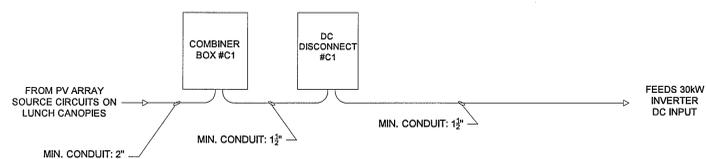
## A THREE-LINE DIAGRAM - LUNCH CANOPIES

SCALE: NTS

## DISCONNECT AND COMBINER SCHEDULE

DC DISCONNECT	DCC-C1
SWITCHED COMBINER BOXES	CB-C1
NUMBER OF STRINGS IN COMBINER	9
STRING NUMBERING	1 - 9

- NOTES:
- ALL CONDUIT AT GROUND LEVEL AND/OR ROUTED WITHIN BUILDING. IMC
  - CONDUIT IN THE GROUND: PVC SCH40



## B CONDUIT DETAIL

SCALE: NTS

## C NOT USED

SCALE: NTS

### NOTES:

- SEE GENERAL NOTES ON DRAWING T-101.
- 30KW SATCON INVERTER MODEL #: PVS-30-480; DIMENSIONS AND WEIGHT: (HxWxD) 74"x30"x25.5", 1204 lbs.
- CONDUCTORS RUN OUTDOORS AND NOT WITHIN CONDUIT SHALL BE LISTED AS UV RESISTANT.

### KEYED NOTES:

- SUNPOWER SPR210 MODULES. 10 EACH PANELS WIRED IN SERIES. EACH MODULE INCLUDES #12 AWG OUTDOOR RATED QUICK CONNECTS FOR MODULE INTERCONNECTION. DO NOT REMOVE THE QUICK CONNECTS, OTHERWISE THE MODULE WARRANTY AND THE UL LISTING MAY BE INVALIDATED. NOTE: THESE MODULES ARE POSITIVE GROUNDING.
- BARE COPPER GROUND WILL BE USED AS AN EQUIPMENT GROUND TO CONNECT THE MODULE FRAMES. USE THE MODULE INDICATED LOCATION ONLY OTHERWISE WARRANTY MAY BE INVALIDATED. SPECIFIC MODULE MOUNTING RACKS MAY BE PROVIDED WITH SIMPLIFIED GROUNDING ALTERNATIVES. PLEASE FOLLOW THE RACK MANUFACTURER'S INSTRUCTIONS ON GROUNDING.
- HOMERUN COMBINER BOX. SEE DETAIL B, THIS SHEET, FOR DETAILS. NEMA 3R OR NEMA 4X ENCLOSURE, RATED @ 600 VDC. COMBINER BOX SHALL BE MOUNTED TO PREVENT SHADING OF THE SOLAR ARRAY ALL YEAR. THIS PRODUCT MUST BE UL LISTED FOR SAFETY. CONTRACTOR SHALL SELECT THE EXACT MAKE AND MODEL.
- DC DISCONNECT, 100 AMP, 600 VDC, FUSED, SQUARE D MODEL HSS3NRB OR APPROVED EQUAL. THE 100 AMP SQUARE D DISCONNECT IS UL LISTED FOR BREAKING 600 VDC WITH A SINGLE POLE.
- INVERTER: POWERGATE PLUS 30KW SATCON POWER CONVERSION UNIT. UL1741 LISTED WITH INTEGRAL ANTI-ISLANDING AND GROUND FAULT PROTECTION. UL1741 LISTING INCLUDES COMPLIANCE WITH IEEE519 FOR POWER QUALITY, IEEE929 FOR INTERCONNECTION SAFETY AND THE NATIONAL ELECTRICAL CODE. THIS INVERTER IS PACKAGED IN A SINGLE ENCLOSURE WITH AC AND DC DISCONNECTS AND THE UTILITY REQUIRED ISOLATION TRANSFORMER.
- SEE SHEET E-101 FOR FURTHER INFORMATION ON THIS PANELBOARD.

AS BUILT

D	AS BUILT	09.02.08	JCN
A	FOR SUBMITTAL	02.29.08	JTC
REV. NO.	DESCRIPTION	DATE	BY

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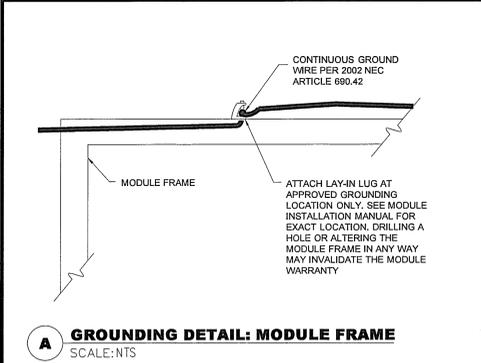
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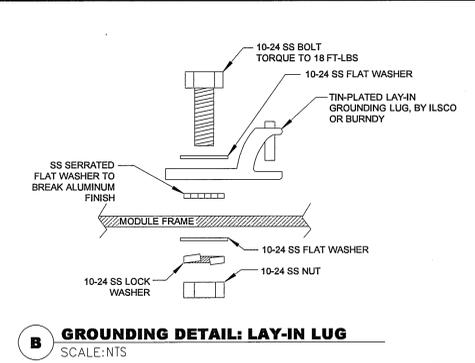
PROJECT:	SOLAR PHOTOVOLTAIC SYSTEM
DRAWING:	WIRING DIAGRAM LUNCH CANOPIES
PROJ. MGR.	PROJ. ENGR.
SCALE:	AS NOTED

DRAWING NO.  
**E-103**

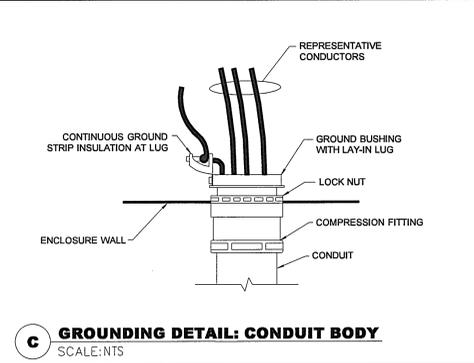
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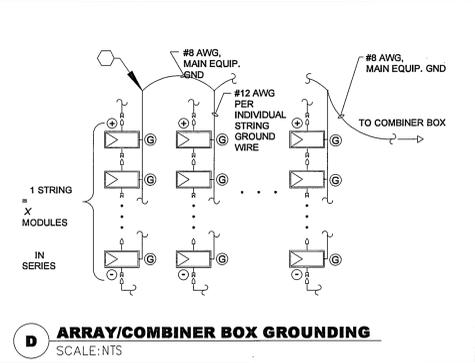
**A GROUNDING DETAIL: MODULE FRAME**  
SCALE: NTS



**B GROUNDING DETAIL: LAY-IN LUG**  
SCALE: NTS



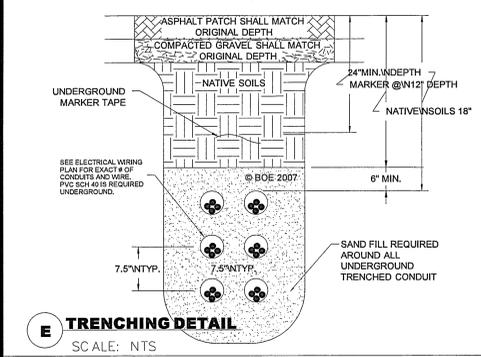
**C GROUNDING DETAIL: CONDUIT BODY**  
SCALE: NTS



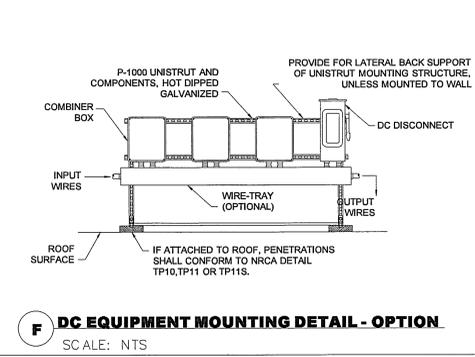
**D ARRAY/COMBINER BOX GROUNDING**  
SCALE: NTS

**NOTES:**  
1. SEE GENERAL NOTES ON DRAWING T-101.

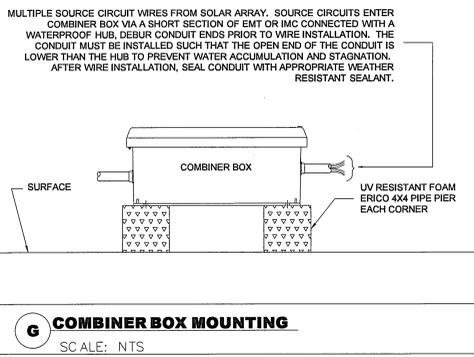
**KEYED NOTES:**  
 1. A MAXIMUM OF 11 SOURCE CIRCUITS MAY CONNECT TO A MAIN EQUIPMENT GROUND CONDUCTOR, AS SHOWN. THE INDIVIDUAL STRINGS MAY CONNECT TO THE MAIN #8AWG GROUND VIA A #12AWG GROUND OR DIRECTLY VIA THE #8AWG GROUND WITH A DASHY CHAIN TYPE ROUTING. ALL EQUIPMENT GROUNDING CONNECTIONS SHALL BE MADE IN COMPLIANCE WITH NEC ARTICLE 250.  
 2. EQUIPMENT PAD: USE STRUCTURAL CONCRETE, MINIMUM 3000 PSI COMPRESSIVE STRENGTH. THE CONCRETE PAD SHALL BE 4"X66"X36" (MIN.). THE PAD SHALL BE POURED DIRECTLY ON TOP OF THE EXISTING CONCRETE SURFACE. VERTICAL REBAR SHALL BE DRIVEN A MINIMUM OF 12" INTO THE EXISTING SURFACE AT PAD EDGES. REINFORCING BAR SHALL BE #4 EVERY 12" O.C. IN EACH DIRECTION. TIE ALL CROSSING REBAR WITH STEEL TIE WIRE. ANCHOR INVERTER PER PRODUCT SPECIFICATIONS.  
 3. EQUIPMENT PAD: USE STRUCTURAL CONCRETE, MINIMUM 3000 PSI COMPRESSIVE STRENGTH. THE CONCRETE PAD SHALL BE 4"X34"X30" (MIN.). THE PAD SHALL BE POURED DIRECTLY ON TOP OF THE EXISTING CONCRETE SURFACE. VERTICAL REBAR SHALL BE DRIVEN A MINIMUM OF 12" INTO THE EXISTING SURFACE AT PAD EDGES. REINFORCING BAR SHALL BE #4 EVERY 12" O.C. IN EACH DIRECTION. TIE ALL CROSSING REBAR WITH STEEL TIE WIRE. ANCHOR INVERTER PER PRODUCT SPECIFICATIONS.  
 4. THE PV SYSTEM MAIN AC DISCONNECT SHALL BE LOCATED SO THE TAP CONDUCTORS CONNECTING TO THE BUILDING EXISTING ELECTRICAL SWITCHGEAR SHALL BE 10" OR LESS, PER NEC 240.21(B)(1).



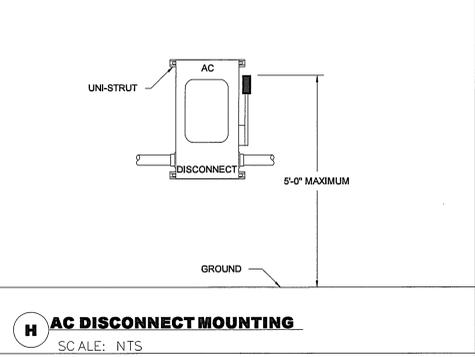
**E TRENCHING DETAIL**  
SCALE: NTS



**F DC EQUIPMENT MOUNTING DETAIL - OPTION**  
SCALE: NTS

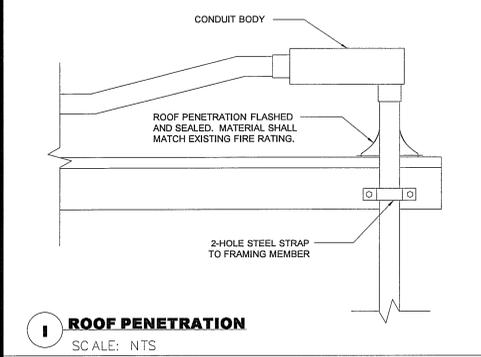


**G COMBINER BOX MOUNTING**  
SCALE: NTS

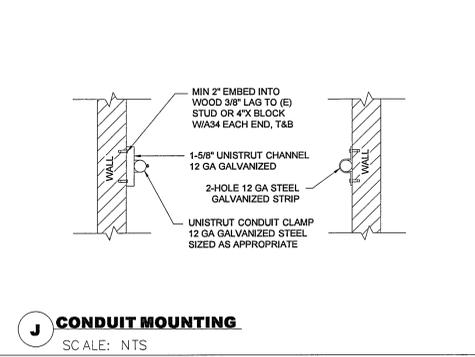


**H AC DISCONNECT MOUNTING**  
SCALE: NTS

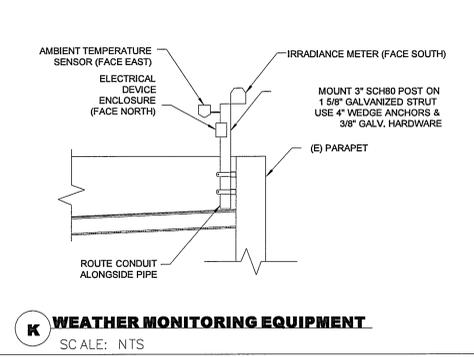
**AS BUILT**



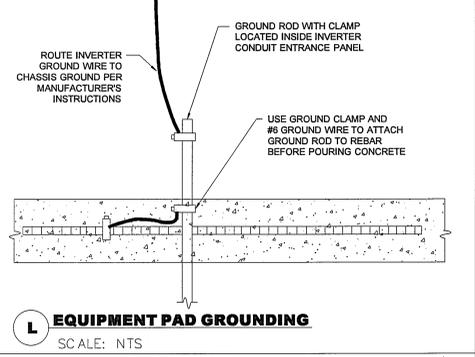
**I ROOF PENETRATION**  
SCALE: NTS



**J CONDUIT MOUNTING**  
SCALE: NTS

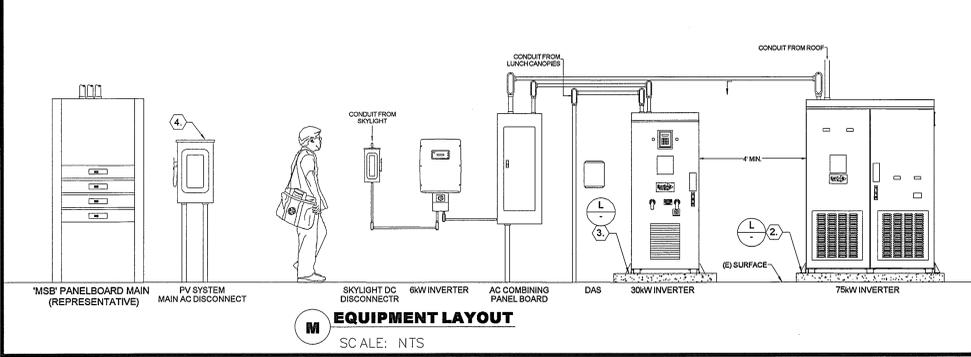


**K WEATHER MONITORING EQUIPMENT**  
SCALE: NTS

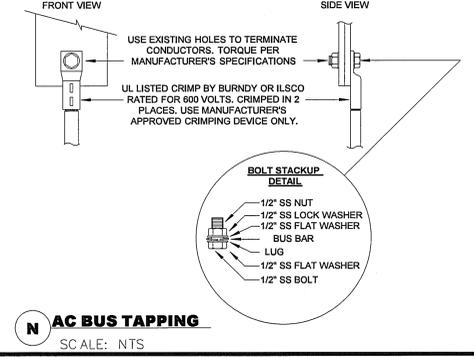


**L EQUIPMENT PAD GROUNDING**  
SCALE: NTS

REV. NO.	DESCRIPTION	DATE	BY
D	AS BUILT	09.02.08	JCN
A	FOR SUBMITTAL	02.29.08	JTG



**M EQUIPMENT LAYOUT**  
SCALE: NTS



**N AC BUS TAPPING**  
SCALE: NTS

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an Energy Innovations Company  
2171 Francisco Blvd, Suite H, San Rafael, CA 94901  
www.eisvp.com

**Orange Terrace Library**  
PROJECT: SOLAR PHOTOVOLTAIC SYSTEM  
DRAWING: ELECTRICAL DETAILS  
PROJ. MGR. SCALE: AS NOTED  
DRAWING NO. **E-200**  
THIS PRINT IS NOT TO BE USED FOR CONSTRUCTION UNLESS NOTED AND SIGNED OK FOR CONSTRUCTION ABOVE LAST REVISION.

SOLAR MODULE

**SUNTECH**

**STP170S-24/Ab-1**  
STP100S-24/Ab-1 STP165S-24/Ab-1  
STP175S-24/Ab-1 STP185S-24/Ab-1

High Efficiency, High Quality PV Module

**Electrical Characteristics**

Model	STP100S-24/Ab-1	STP165S-24/Ab-1	STP170S-24/Ab-1	STP175S-24/Ab-1	STP185S-24/Ab-1
Open-circuit voltage	38.0V	48.0V	48.0V	48.0V	48.0V
Short-circuit current	3.87A	4.87A	4.87A	4.87A	4.87A
Maximum power	146W	232W	232W	232W	232W
Maximum power current	3.80A	4.80A	4.80A	4.80A	4.80A
Maximum power voltage	38.4V	48.0V	48.0V	48.0V	48.0V
Operating temperature	-40°C to 85°C				

SOLAR MODULE

**SUNPOWER**

**SPR-210**  
HIGH EFFICIENCY PV MODULE

**FEATURES & BENEFITS**

- Unique all-back-contact solar cells with conversion efficiency up to 21.5%
- Low temperature coefficient enhances high-temperature operation
- Exceptional low-light performance and high sensitivity to light allows for extra solar spectrum available yearly energy delivery
- High quality, flame-thick, high-temperature tempered glass provides enhanced efficacy and longer lifetime
- Superconductive back contact cells with no front side gridlines and a black anodized frame
- Amorphous cell cell interconnects with in-glass strain relief provides extremely high reliability
- Advanced film encapsulation system with multi-layer backsheet meets the most stringent safety requirements for high-voltage operation
- A sturdy, black anodized aluminum frame allows modules to be easily and securely installed with a variety of standard mounting systems

**SPR-210 HIGH EFFICIENCY PV MODULE**  
Dimensional power density up to 200W/m<sup>2</sup> and exceptional energy production per peak kW.

BUILDING INTEGRATED PHOTOVOLTAIC

**PHOTOVOL GLASS**  
**MST-44T1010U/MST-44T1013U**

Two thicknesses are available: 10.5mm (Top, Bottom 6t annealed) and 13.5mm (Top: 5t annealed, Bottom: 8t tempered). Developed by MSK with Kanaka Corporation and the Japanese architects Toigo Kogyo. 20 year power output guarantee. IEC and UL certified.

**THERMAL DATA**

Solar heat gain coefficient	vertical	0.24
	at 45°	0.25
	horizontal	0.25
Shading coefficient	vertical	0.27
	at 45°	0.28
	horizontal	0.29
U-value (interior to interior)	vertical	6.0 W/m <sup>2</sup> /K
	at 45°	6.5 W/m <sup>2</sup> /K
	horizontal	6.5 W/m <sup>2</sup> /K
U-value (interior to exterior)	vertical	6.0 W/m <sup>2</sup> /K
	at 45°	6.6 W/m <sup>2</sup> /K
	horizontal	6.6 W/m <sup>2</sup> /K

**ELECTRICAL DATA**

Transmittance	10%	8%	1%
Output power	44.0W	60.0W	86.0W
Max power voltage	59.0V	64.0V	65.0V
Max power current	0.74A	0.78A	0.81A
Open circuit voltage	91.0V	91.0V	91.0V
Short circuit current	0.97A	1.02A	1.16A

**MECHANICAL DATA**

Length	960mm
Width	960mm
MST-44T1010U depth	10.5mm (float glass)
MST-44T1013U depth	13.5mm (tempered glass)
MST-44T1010U weight	23kg
MST-44T1013U weight	30kg
Series cells	108
Photodiode cells	1
Cell area	80.95cm <sup>2</sup>
Cell length	920mm
Cell width	870mm

**OPTICAL DATA**

visible light	transmitted	10.6%
	reflected	9.7%
total solar energy	transmitted	10.0%
	reflected	20.0%
	absorbed	70.0%
UV	rejected	98.9%

**NOTES:**  
1. NONE.

AS BUILT

D	AS BUILT	09.02.08	JCN
A	FOR SUBMITTAL	02.29.08	JTG
REV. NO.	DESCRIPTION	DATE	BY

**SUNTECH**

**Module Diagram**

**Specifications**

Model	STP170S-24/Ab-1
Power	232W
Open-circuit voltage	48.0V
Short-circuit current	4.87A
Maximum power	232W
Maximum power current	4.80A
Maximum power voltage	48.0V
Operating temperature	-40°C to 85°C

**Temperature Coefficients**

Open-circuit voltage	-0.35%/°C
Short-circuit current	0.05%/°C
Maximum power	-0.35%/°C
Power	0.05%/°C

**OUTPUT**

Class	AMC (CLASS)
Length	1080mm (Length)
Depth	100mm (Depth)

**Characteristics**  
Normalized I<sub>sc</sub>, V<sub>oc</sub>, P<sub>max</sub> vs. module temperature characteristics

**SUNPOWER**

**Electrical Characteristics at Standard Test Conditions (STC)**

Peak Power (P <sub>max</sub> )	210W
Open-circuit Voltage (V <sub>oc</sub> )	40.0V
Short-circuit Current (I <sub>sc</sub> )	5.52A
Clearance Voltage (V <sub>c</sub> )	47.8V
Short-circuit Current (I <sub>sc</sub> )	5.66A
Series Fuse Rating	15A
Maximum System Voltage	600V DC
Power	1000W (STC)
Temperature Coefficients	Power: -0.38%/°C
	Voltage: -0.36%/°C
	Current: -2.2%/°C
Module Efficiency	16.3%
IBC Rating	1000V

**IV CURVE**

**MECHANICAL SPECIFICATIONS**

Length (mm)	1550 ± 200
Width (mm)	46
Weight (kg)	1.6

**OUTPUT**

**EI Solutions™**  
an Energy Innovations Company

2171 Francisco Blvd., Suite H, San Rafael, CA 94901  
www.eisvp.com

**Orange Terrace Library**

PROJECT: SOLAR PHOTOVOLTAIC SYSTEM  
DRAWING: EQUIPMENT SPECIFICATIONS

PROJ. MGR. PROJ. ENGR. SCALE: AS NOTED

DRAWING NO. **E-301**

THIS PRINT IS NOT TO BE USED FOR CONSTRUCTION UNLESS NOTED AND SIGNED OK FOR CONSTRUCTION ABOVE LAST REVISION.

**INVERTER**

**SATCON** **POWERGATE<sup>®</sup> PLUS**  
North American 3kW Photovoltaic Inverter

PowerGate<sup>®</sup> Plus inverters are the next generation of PowerGate<sup>®</sup> inverters for commercial and large-scale grid connected photovoltaic power systems that have become recognized for their reliability, energy efficiency and ease-of-use. The 3kW PowerGate Plus inverter incorporates many of the features of the original PowerGate inverter plus several improvements that add further value to photovoltaic power systems.

Top drops down from front to rear

Enclosure rated NEMA 3R  
Exterior Finish: KAL-7332

**Extended Energy Harvesting**  
High efficiency low energy loss inverter design • Both AC and DC multistage to disconnect the inverter at night, minimizing standby losses • Losses • State of the art maximum power point tracking (MPPT) algorithm • Wide input voltage range • Intelligent wake-up routine.

**Durability**  
Librally rated for full power over MPPT voltage range • Proprietary NEMA 3R enclosure design constructed from long-life G300 galvanized steel • Sloped roof to direct rain water to the rear of the enclosure • Industrial grade design including conformal coated, IPC Class II electronic printed circuit boards with components rated 40° C to plus 80° C • Inverter fits operations with a 20-year design life • Power electronic components with a low temperature rise for long-life operation with minimal cycling by the photovoltaic power plant • Durable, cold weather, coated metal case humidity and harsh environment options • 40kV surge protector to minimize AC through current and potentially harmful grid disturbances.

**Easy Installation and Use**  
Single-enclosure solution with multiple cable access locations to minimize field wiring • Enclosure designed for handling by pallet jack, forklift or skid-steer • Optional PV Zone<sup>™</sup> integrated sub-array controller with current monitoring • Advanced human machine interface (HMI) with display visible in sunlight and membrane keypad for easy identification of power system status and trouble source • Central electronic ground fault detection/monitor (EGFD) eliminating the need to replace fuses in the event of nuisance ground faults in the photovoltaic power system; the EGFD also has a higher trip current further limiting current in the event of a ground fault • Transmitted to AC phase rotation • DC polarity detection and protection • 208/240VAC version connectable in field to either voltage.

**Safety and Standards**  
Integrated DC break disconnect switch to isolate the inverter (other than EGFD circuit) from the photovoltaic power system during inverter inspection or maintenance • Protective cover over exposed power connections • Certified to UL1741 and CSA C107.1 • Tested according to IEEE 1547 including IEEE C62.41.2

**Grid Interface**  
Output transformer for galvanic isolation and to match the inverter output voltage to the grid • High-speed anti-islanding algorithm.

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**INVERTER**

**SATCON** **POWERGATE<sup>®</sup> PLUS**  
North American 3kW Photovoltaic Inverter

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**INVERTER**

**SMA**

SB 5000US / SB 6000US / SB 7000US

- Certified to the new UL 1741/IEEE 1547
- 10 yr. standard warranty
- Highest CEC efficiency in its class
- Integrated load-break rated AC and DC disconnect switch
- Integrated fused series string combiner
- Sealed electronics enclosure & Optical
- Comprehensive SMA communications and data collection options
- Ideal for residential or commercial applications
- Sunny Boy<sup>™</sup> compatible

**Sunny Boy 5000 / 6000 / 7000**  
The best in their class.

SMA is proud to introduce our new line of inverters updated with our latest technology and designed specifically to meet the new IEEE 1547 requirements. The SB6000US and SB7000US are also compatible with SMA's new Sunny Boy<sup>™</sup> increased efficiency string inverter. Better performance and shorter payback periods. All these models use field-configurable for problem solved systems making them more versatile than ever. With over 500,000 installed, Sunny Boy has become the benchmark for PV inverter performance and reliability throughout the world.

UL US

**SATCON** **POWERGATE<sup>®</sup> PLUS**  
North American 3kW Photovoltaic Inverter

Monitoring  
Optional monitoring when supplied with SatCon's proprietary PV View<sup>™</sup> Plus monitoring system (details supplied in separate bulletin) • Compatible with third party monitoring systems (consult factory for details).

**Specifications:**

PARAMETER	SB 5000US	SB 6000US	SB 7000US
Rated Power (DC)	3000W	3600W	4200W
Rated Maximum Power	3300W	3960W	4620W
Maximum DC Voltage	600V	600V	600V
Maximum DC Current	5.5A	6.6A	7.7A
Maximum AC Output Power	3000W	3600W	4200W
Maximum AC Current	13.6A	16.3A	19.0A
Maximum AC Voltage	240V	240V	240V
Efficiency (at 1000W)	96.5%	96.5%	96.5%
Efficiency (at 2000W)	97.5%	97.5%	97.5%
Efficiency (at 3000W)	98.0%	98.0%	98.0%
Standby Loss (at 24°C)	1.0W	1.0W	1.0W
Temperature Range	-25°C to 55°C	-25°C to 55°C	-25°C to 55°C
Operating Voltage Range	150V to 600V	150V to 600V	150V to 600V
Operating Current Range	0A to 5.5A	0A to 6.6A	0A to 7.7A
Operating Power Range	0W to 3300W	0W to 3960W	0W to 4620W
Operating Voltage Range	120V to 240V	120V to 240V	120V to 240V
Operating Current Range	0A to 13.6A	0A to 16.3A	0A to 19.0A
Operating Power Range	0W to 3000W	0W to 3600W	0W to 4200W
Operating Voltage Range	120V to 240V	120V to 240V	120V to 240V
Operating Current Range	0A to 13.6A	0A to 16.3A	0A to 19.0A
Operating Power Range	0W to 3000W	0W to 3600W	0W to 4200W

Specifications are subject to change without notice. Contact SatCon Power Systems for complete details.

SatCon Power Systems Phone: +1 805.838.4882 Ext. 2 Email: PV@SatCon.com

**SATCON** **POWERGATE<sup>®</sup> PLUS**  
North American 3kW Photovoltaic Inverter

Monitoring  
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Efficiency (at 3000W)	98.0%	98.0%	98.0%
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Temperature Range	-25°C to 55°C	-25°C to 55°C	-25°C to 55°C
Operating Voltage Range	150V to 600V	150V to 600V	150V to 600V
Operating Current Range	0A to 5.5A	0A to 6.6A	0A to 7.7A
Operating Power Range	0W to 3300W	0W to 3960W	0W to 4620W
Operating Voltage Range	120V to 240V	120V to 240V	120V to 240V
Operating Current Range	0A to 13.6A	0A to 16.3A	0A to 19.0A
Operating Power Range	0W to 3000W	0W to 3600W	0W to 4200W
Operating Voltage Range	120V to 240V	120V to 240V	120V to 240V
Operating Current Range	0A to 13.6A	0A to 16.3A	0A to 19.0A
Operating Power Range	0W to 3000W	0W to 3600W	0W to 4200W

Specifications are subject to change without notice. Contact SatCon Power Systems for complete details.

SatCon Power Systems Phone: +1 805.838.4882 Ext. 2 Email: PV@SatCon.com

Technical Data  
Sunny Boy 5000 / 6000 / 7000

PARAMETER	SB 5000US	SB 6000US	SB 7000US
Rated Power (DC)	3000W	3600W	4200W
Rated Maximum Power	3300W	3960W	4620W
Maximum DC Voltage	600V	600V	600V
Maximum DC Current	5.5A	6.6A	7.7A
Maximum AC Output Power	3000W	3600W	4200W
Maximum AC Current	13.6A	16.3A	19.0A
Maximum AC Voltage	240V	240V	240V
Efficiency (at 1000W)	96.5%	96.5%	96.5%
Efficiency (at 2000W)	97.5%	97.5%	97.5%
Efficiency (at 3000W)	98.0%	98.0%	98.0%
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Temperature Range	-25°C to 55°C	-25°C to 55°C	-25°C to 55°C
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Operating Voltage Range	120V to 240V	120V to 240V	120V to 240V
Operating Current Range	0A to 13.6A	0A to 16.3A	0A to 19.0A
Operating Power Range	0W to 3000W	0W to 3600W	0W to 4200W

www.sma-america.com  
Phone: 800-275-4929  
Email: PV@SMAUSA.com

SMA America, Inc.

**NOTES:**  
1. NONE.

**AS BUILT**

REV. NO.	DESCRIPTION	DATE	BY
D	AS BUILT	09.02.08	JCN
A	FOR SUBMITTAL	02.29.08	JTG

**EI Solutions<sup>™</sup>**  
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www.eisvp.com

**Orange Terrace Library**

PROJECT: SOLAR PHOTOVOLTAIC SYSTEM

DRAWING: EQUIPMENT SPECIFICATIONS

PROJ. MGR. PROJ. ENGR. SCALE: AS NOTED

DRAWING NO. **E-300**

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