ADAMSON RESIDENCE 5.76 kW PHOTOVOLTAIC SYSTEM

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) NOTES FOR GROUND MOUNTED SYSTEMS

1. In the case of emergency, call_____at Work Phone #_____or Home Phone #_____.
2. Sediment from areas disturbed by construction shall be retained on site using structural controls to the maximum extent practicable.
3. Stockpiles of soil shall be properly contained to minimize sediment transport from the site to streets, drainage facilities or adjacent properties via runoff, vehicle tacking, or wind.
4. Appropriate BMP's for construction-related materials, wastes, spills shall be implemented to minimize transport from the site to streets, drainage facilities, or adjoining properties by wind or runoff.
5. Runoff from equipment and vehicle washing shall be contained at construction sites unless treated to reduce or remove sediment and other pollutants.
6. All construction contractor and subcontractor personnel are to be made aware or the required best management practices and good housekeeping measures for the project site and any associated construction staging areas.
7. At the end of each day of construction activity all construction debris and waste materials shall be collected and properly disposed in trash or recycle bins.
8. Construction sites shall be maintained in such a condition that an anticipated storm does not carry wastes or pollutants off the site. Discharges of material other than stormwater only when necessary for performance and completion of construction practices and where they do not: cause or contribute to a violation of any water quality standard; cause or threaten to cause pollution, contamination, or nuisance; or contain a hazardous substance in a quantity reportable under Federal Regulations 40 CFR Parts 117 and 302.
9. Potential pollutants include but are not limited to: solid or liquid chemical spills; wastes from paints, stains, sealants, glues, limes, pesticides, herbicides, wood preservatives and solvents; asbestos fibers, paint flakes or stucco fragments; fuels, oils, lubricants, and hydraulic, radiator or battery fluids; fertilizers, vehicle/equipment wash water and concrete wash water; concrete, detergent or floatable wastes; wastes from any engine/equipment steam cleaning or chemical degreasing and superchlorinated potable water line flushing.
During construction, permittee shall dispose of such materials in a specified and controlled temporary area on -site, physically separated from potential stormwater runoff, with ultimate disposal in accordance with local, state and federal requirements.
10. Dewatering of contaminated groundwater, or discharging contaminated soils via surface erosion is prohibited. Dewatering of non-contaminated groundwater requires a National Pollutant Discharge Elimination System Permit from the respective State Regional Water Quality Control Board.
11. Graded areas on the permitted area perimeter must drain away from the face of slopes at the conclusion of each working day. Drainage is to be directed toward desilting facilities.
12. The permittee and contractor shall be responsible and shall take necessary precautions to prevent public trespass onto areas where impounded water creates a hazardous condition.
13. The permittee and contractor shall inspect the erosion control work and insure that the work is in accordance with the approved plans.
14. The permittee shall notify all general contractors, subcontractors, material suppliers, lessees, and property owners: that dumping of chemicals into the storm drain system or the watershed is prohibited.
15. Equipment and workers for emergency work shall be made available at all times during the rainy season. Necessary materials shall be available on site and stockpiled at convenient locations to facilitate rapid construction of temporary devices when rain is imminent.
16. All removable erosion protective devices shall be in place at the end of each working day when the 5-Day Rain Probability Forecast exceeds 40%.
17. Sediments from areas disturbed by construction shall be retained on site using an effective combination of erosion and sediment controls to the maximum extent practicable, and stockpiles of soil shall be properly contaminted to minimize sediment transport from the site to streets, drainage facilities of adjacent properties via runoff, vehicle tracking, or wind.
18. Appropriate BMPs for construction-related materials, wastes, spills or residues shall be implemented and retained on site to minimize transport from the site to streets, drainage facilities, or adjoining property by wind or runoff.

SHEET INDEX

STRUCTURAL ANALYSIS CALCULATIONS
Pool Engineering Inc.
1201 N. Tustin Avenue
Anaheim, CA 92807
Phone: (714) 630-6100
FAX: (714) 630-6100
Email: ghannad.@pooleng.com and DebbieM@pooleng.com

GENERAL ELECTRICAL NOTES

1. EQUIPMENT USED SHALL BE NEW, UNLESS OTHERWISE NOTED.
2. EQUIPMENT USED SHALL BE UL LISTED, UNLESS OTHERWISE NOTED.
3. EQUIPMENT SHALL BE INSTALLED PROVIDING ADEQUATE PHYSICAL WORKING SPACE AROUND THE EQUIPMENT AND SHALL COMPLY WITH NEC.
4. CANADIAN SOLAR MODULES SHALL BE POSITIVELY GROUNDED. GROUNDED (POSITIVE) CONDUCTORS SHALL BE UN-FUSED AND UN-BROKEN FROM THE ARRAY TO THE INVERTER DC TERMINAL. UN-GROUNDED (NEGATIVE) CONDUCTORS SHALL BE FUSED AND/OR SWITCHED.
5. COPPER CONDUCTORS SHALL BE USED AND SHALL HAVE INSULATION RATING 600V, 90°C, UNLESS OTHERWISE NOTED.
6. CONDUCTORS SHALL BE SIZED IN ACCORDANCE TO NEC. CONDUCTORS AMPACITY SHALL BE DE-RATED FOR TEMPERATURE INCREASE, CONDUIT FILL AND VOLTAGE DROP.
7. ALL CONDUCTORS, EXCEPT USE-2, SHALL BE INSTALLED IN APPROVED CONDUITS OR RACEWAY. CONDUITS SHALL BE ADEQUATELY SUPPORTED AS PER NEC.
8. MODULES SHALL BE GROUNDED USING GROUNDING LUG, SUCH AS ILSCO GBL-4DBT OR BURNDY CL50-DB-T, AND STAINLESS STEEL HARDWARE (BOLT, WASHERS, AND NUT). STAR WASHERS SHALL BE USED BETWEEN THE GROUNDING LUG AND THE MODULE FRAME.
9. EXTERNAL DC DISCONNECT SHOWN IS OPTIONAL. HOWEVER, RECOMMENDED.
10. EXPOSED NON-CURRENT CARRYING METAL PARTS SHALL BE GROUNDED AS PER NEC.
11. LOAD SIDE INTER-CONNECTION SHALL COMPLY WITH NEC
12. THIS PROJECT SHALL COMPLY WITH THE 2010 CBC, AND 2010 CEC.

CODE INFORMATION

HOME

OCCUPANCY GROUP	•	R-3/U
TYPE OF CONSTRUCTION	•	V-B
STORIES	•	1
SQ. FT.	•	1,764 FT²

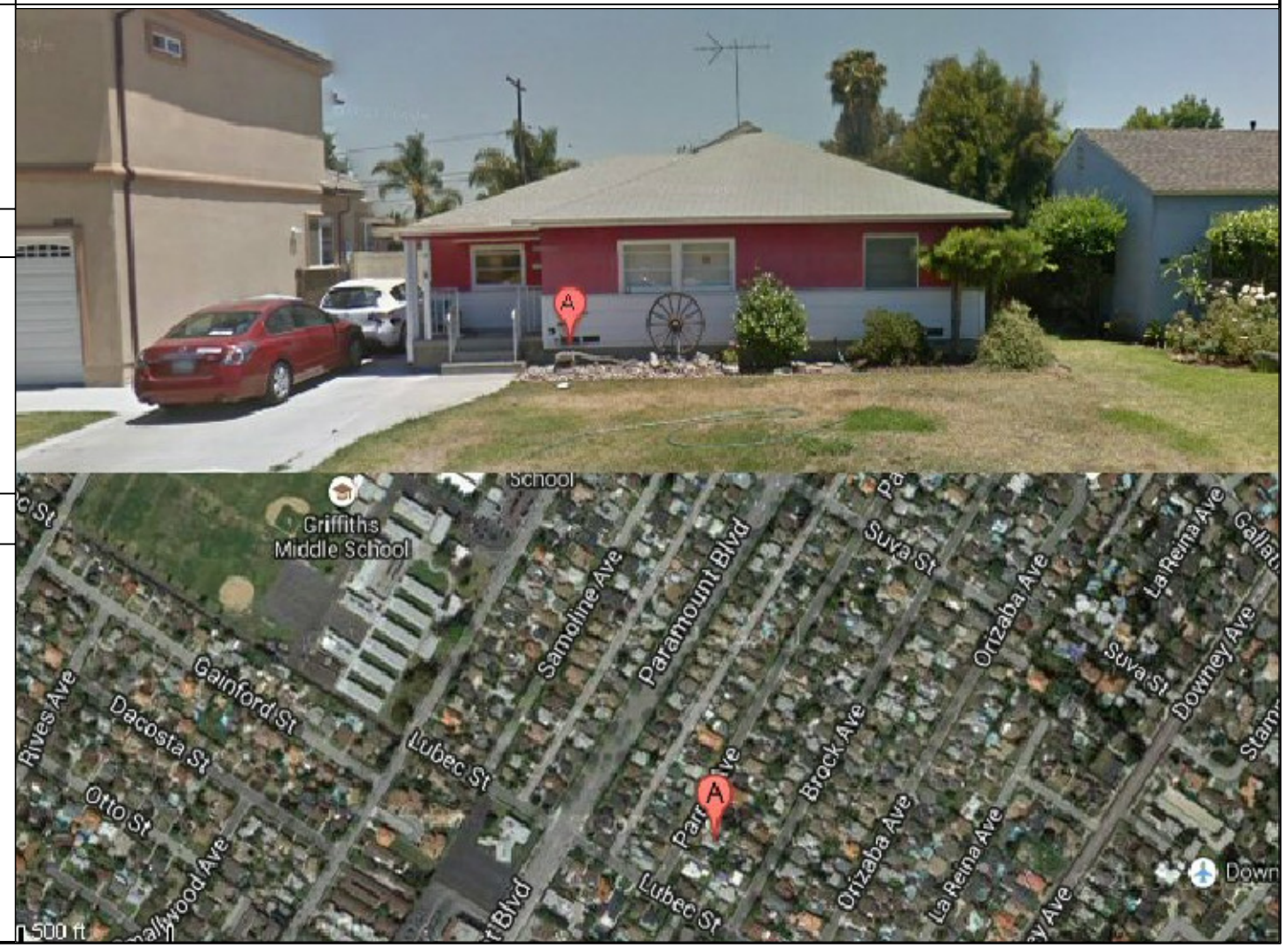
ROOFING INFORMATION

EXISTING ROOF	•	Composite Shingle
RAFTER SIZE	•	2" X 6"
RAFTER SPACING O.C.	•	24"
RAFTER SPAN	•	10'
WIND SPEED	•	85
EXPOSURE CATEGORY	•	B

ARRAY INFORMATION

MODULE WEIGHT	•	44.1 LBS.
MODULE LENGTH	•	64.5"
MODULE WIDTH	•	38.7"
MODULE DEPTH	•	1.57"
TOTAL MODULES	•	24
SUM: MODULE WEIGHT	•	1058.4 LBS.
SUM: MOUNTS AND RAIL WEIGHT	•	96 LBS.
TOTAL INSTALLATION WEIGHT	•	1154.4 LBS.
TOTAL INSTALLATION AREA	•	416 FT²
DISTRIBUTED LOAD	•	2.77 LBS/FT²

VICINITY MAP



RENEWABLE ENERGY ADVANTAGE
CSL #936034 Exp. 7/31/2013 Classes: C7, C10, C46
1659 E. 28th ST. SUITE A
SIGNAL HILL, CA 90755
PH. (888) 416-1415
FAX (888) 416-1415

PROJECT INFORMATION:

ADAMSON
PHOTOVOLTAIC
SOLAR SYSTEM
Job Reference #13-1022

9714 Parrot Avenue
Downey, CA 90240

ISSUE DATE:
11/06/13

REV.:	DATE:	DESCRIPTION:	BY:

CLIENT:
Mark & Julie Adamson
9714 Parrot Avenue
Downey, CA 90240
TEL: (562) 291-8140

DRAWN BY:	CHK.:	APV.:
JS	JS	JS

STAMP:
RENEWABLE ENERGY ADVANTAGE
CSL# 982201 (Exp 3/31/15)
Classes: C7, C10, C46
Signed _____
Nick Vertucci

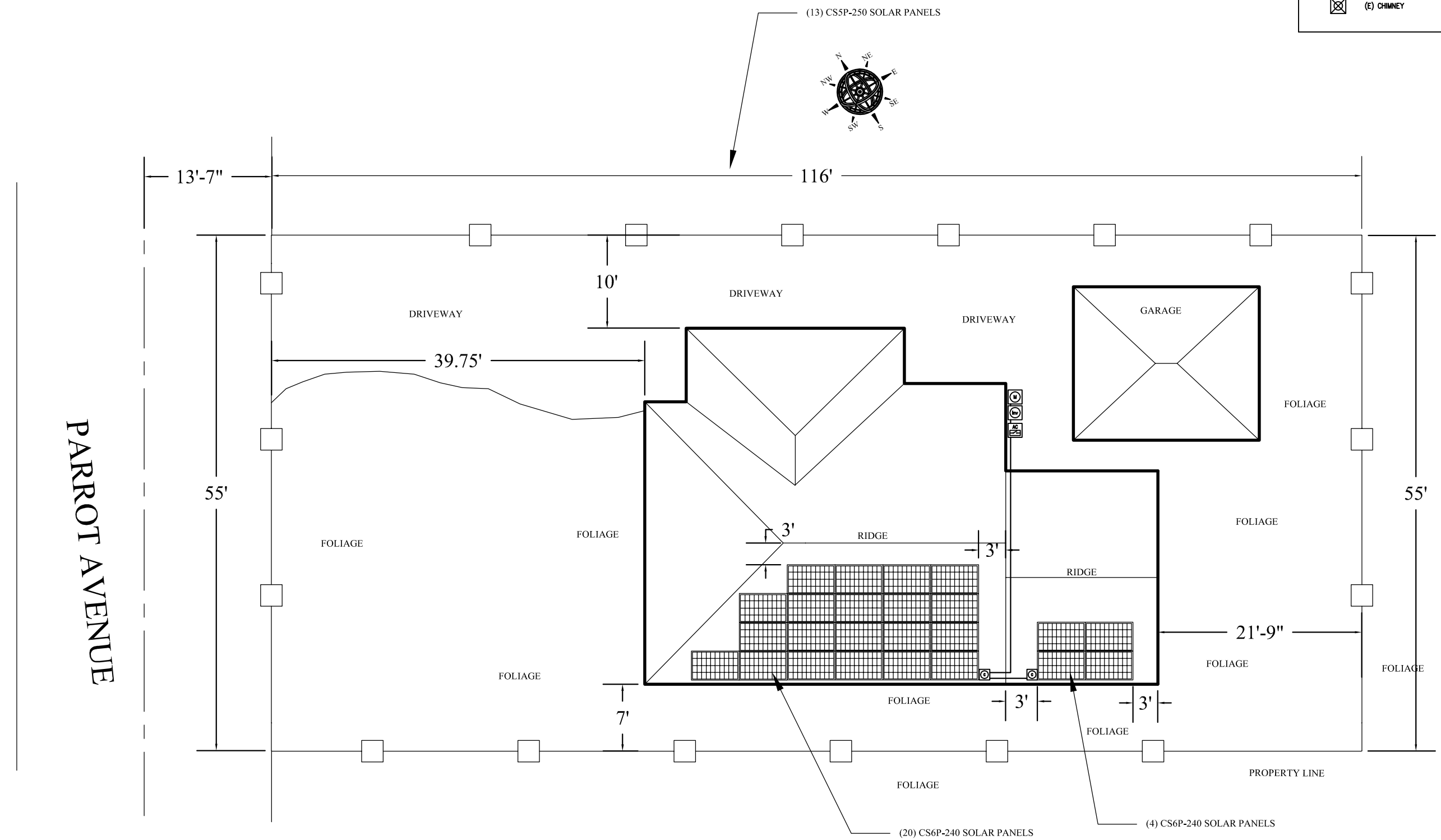
SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
SHEET NUMBER
T-1

NOTE:
1. AREA OCCUPIED BY THE PHOTOVOLTAIC MODULES WILL OCCUPY LESS THAN 50% OF THE TOTAL ROOF SPACE
2. THE APN # FOR THIS PROPERTY IS: # 6361-017-010
3. THE TRACT # IS: 15125
4. COORDINATES: 33.956655, -118.125979
5. SOLAR ENERGY APPURTENANCES ON ROOF ARE TO BE PAINTED SIMILAR COLOR TO EXISTING ROOF SURFACE
6. THE DISCHARGE OF POLLUTANTS TO ANY STORM DRAINAGE SYSTEM IS PROHIBITED. NO SOLID WASTE, PETROLEUM BYPRODUCTS, SOIL PARTICULATE, CONSTRUCTION WASTE MATERIALS, OR WASTEWATER GENERATED ON CONSTRUCTION SITES OR BY CONSTRUCTION ACTIVITIES SHALL BE PLACED, CONVEYED OR DISCHARGED INTO THE STREET, GUTTER OR STORM DRAIN SYSTEM.
7. INSTALLATION CREW TO WORK AROUND PASSIVE VENTS IF POSSIBLE
8. THIS SYSTEM IS GRID-INVERTED VIA A UL-LISTED POWER CONDITIONING INVERTER
9. THIS SYSTEM HAS NO BATTERIES, NO UNINTERUPTABLE POWER SUPPLY (UPS)
10. ALL WORK TO COMPLY WITH 2010 CALIFORNIA BUILDING CODE; 2010 ELECTRICAL CODE [2008 NEC] - ARTICLE 690, ALL MANUFACTURERS' LISTING AND INSTALLATION INSTRUCTIONS.

LEGEND

- (E) UTILITY METER
- GRID-TIED INVERTER
- DC DISCONNECT
- AC DISCONNECT
- JUNCTION/COMBINER BOX
- DISTRIBUTION PANEL
- PHOTOVOLTAIC MODULE
- (E) VENT PIPE
- (E) SKYLIGHT
- (E) CHIMNEY



RENEWABLE ENERGY ADVANTAGE
CSL #936034 Exp. 7/31/2013 Classes: C7, C10, C46
1659 E. 28th ST. SUITE A
SIGNAL HILL, CA 90755
PH. (888) 416-1415
FAX (888) 416-1415

PROJECT INFORMATION:

ADAMSON PHOTOVOLTAIC SOLAR SYSTEM

Job Reference #13-1022

9714 Parrot Avenue
Downey, CA 90240

ISSUE DATE:
11/06/13

REV.:	DATE:	DESCRIPTION:	BY:

CLIENT:

Mark & Julie Adamson
9714 Parrot Avenue
Downey, CA 90240
TEL: (562) 291-8140

DRAWN BY:	CHK.:	APV.:
JS	JS	JS

STAMP:

RENEWABLE ENERGY ADVANTAGE
CSL# 982201 (Exp 3/31/15)
Classes: C7, C10, C46
Signed _____
Nick Vertucci

SHEET TITLE:
SITE PLAN

SHEET NUMBER:
SHEET NUMBER
A-1

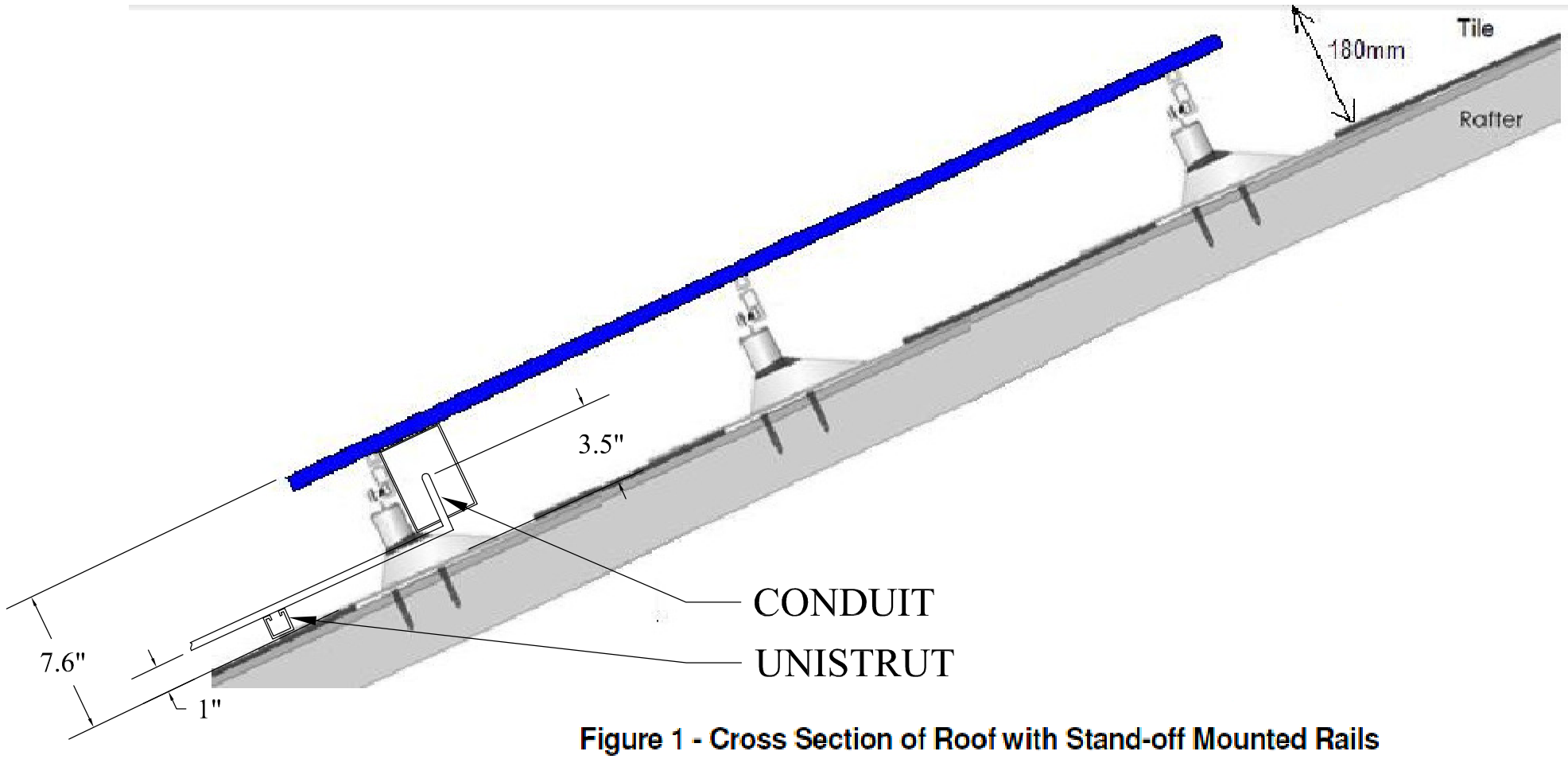


Figure 1 - Cross Section of Roof with Stand-off Mounted Rails

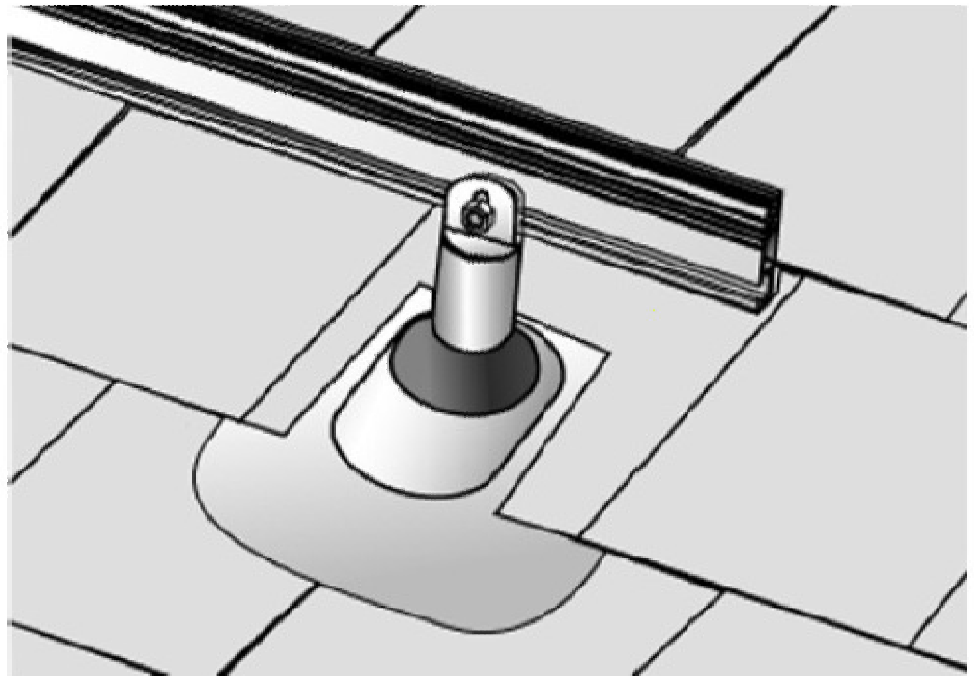


Figure 2 - Diagram of Roof with Stand-off Mounted Rails

LEGEND

- (E) UTILITY METER
- GRID-TIED INVERTER
- DC DISCONNECT
- AC DISCONNECT
- JUNCTION/COMBINER BOX
- DISTRIBUTION PANEL
- PHOTOVOLTAIC MODULE
- (E) VENT PIPE
- (E) SKYLIGHT
- (E) CHIMNEY

RENEWABLE ENERGY ADVANTAGE

CSL #936034 Exp. 7/31/2013 Classes: C7, C10, C46
1659 E. 28th ST. SUITE A
SIGNAL HILL, CA 90755
PH. (888) 416-1415
FAX (888) 416-1415

PROJECT INFORMATION:

ADAMSON
PHOTOVOLTAIC
SOLAR SYSTEM
Job Reference #13-1022

9714 Parrot Avenue
Downey, CA 90240

ISSUE DATE:

11/06/13

REV.:	DATE:	DESCRIPTION:	BY:

CLIENT:

Mark & Julie Adamson
9714 Parrot Avenue
Downey, CA 90240
TEL: (562) 291-8140

DRAWN BY:	CHK.:	APV.:
JS	JS	JS

STAMP:

RENEWABLE ENERGY ADVANTAGE
CSL# 982201 (Exp 3/31/15)
Classes: C7, C10, C46
Signed _____
Nick Vertucci

SHEET TITLE:

ELEVATION

SHEET NUMBER:

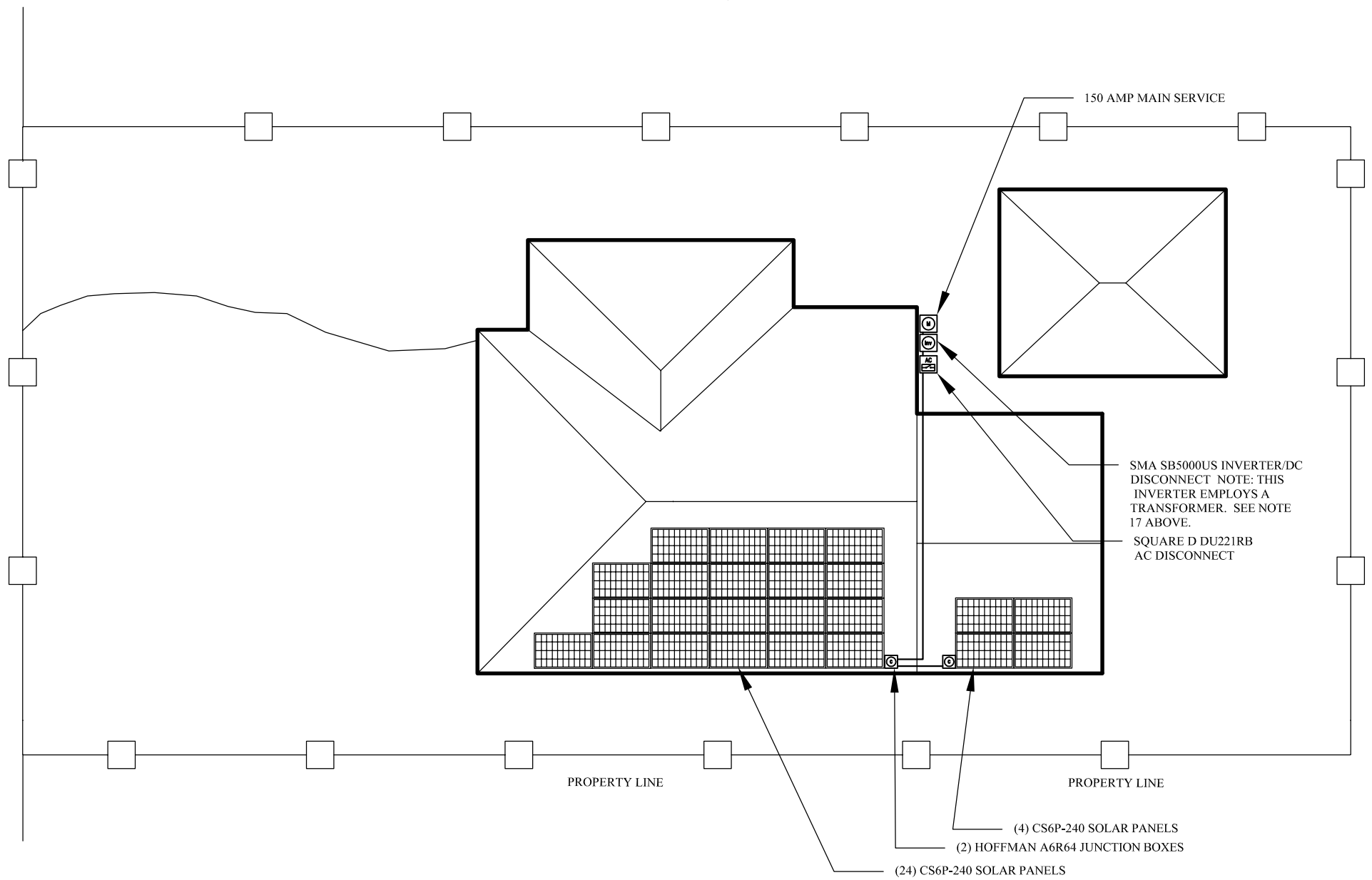
SHEET NUMBER
A-2

Photovoltaic Notes

1. Inspector to verify existing field conditions. Modifications to existing PV systems include verification of existing grounding system, bonding requirements, electrical panel size and over current protection.
2. Pre-inspection shall be required for vertical rack supports and installed per manufacturer's installation instructions.
3. Ladder shall be provided and secured to structure for inspection purposes.
4. All equipment used shall be labeled and listed. No field fabrication of components is permitted.
5. Combining listed components to create a new listed component is not permitted (e.g. placing listed fuse holders or pulls inside a listed junction box does not make a listed combiner box).
6. Combiner box(es) shall be located in a readily accessible location (i.e. not on roof) per Art 6990.14(C)(1).
7. All listed equipment to be installed per manufacturer's installation instructions.
8. Interconnection PV breaker shall be the same brand as service panel.
9. Center grip of disconnects shall be no more than 6'-7" above adjacent floor or grade per Art 240.24(A).
10. Grounding Electrode Conductor (GEC) shall be installed in one continuous length without joint or splice. Splicing shall be permitted only by irreversible compressiontype connectors listed as grounding and bonding equipment or by the exothermic welding process per Art 250.64(C)(1).
11. Ground lugs for grounding roof modules and rails are listed for only a single ground wire.
12. Conductors 8 AWG and larger shall be stranded where installed in raceways and conduit per Art. 310.3.
13. Each end of raceways enclosing the GEC shall be bonded.
14. Electrode grounding system shall be bonded back to service's electrical system per Art. 250.50. AC service shall have a GEC system and be bonded to metallic water piping.
15. New electrodes shall be embedded in direct contact with soil a minimum of 8'-0" feet with 10'-0" x 0.75" diameter rods where attachment is made above grade.
16. Equipment Grounding Conductors (ECG) smaller than 6 AWG shall be protected from physical damage by a raceway or cable armor except where run in hollow spaces of walls of partitions, where not subject to physical damage, or where protected from physical damage per Art 690.47 and Art 250.120(C).
17. Grounding Electrode Conductors (GEC) smaller than 6 AWG shall be protected in rigid metal conduit, intermediate metal conduit, rigid non-metallic conduit, electrical metallic tubing, or cable armor. 6 AWG GEC free from exposure to physical damage shall be permitted to run along surface of building construction without metal covering or protection if securely fastened to construction. 4 AWG GEC shall be protected where exposed from physical damage. Art 250.64(8) Equipment grounding conductors for photovoltaic modules smaller than 6 AWG shall comply with 250.120(C) per 2010 CEC Article 690.46(C) and NEC Article 690.46. Grounding Electrode Conductor (GEC) shall be installed in one continuous length without joint or splice. Splicing shall be permitted only by irreversible compression-type connectors listed as grounding and bonding equipment or by the exothermic welding process per Art 250.64(C)(1).
18. PVC raceways require expansion fittings per Art 352.44 and Table 352.3(8).
19. EMT shall be fastened every 3 feet and within 3 feet of boxes, cabinets and/or terminations per Art 358.30(A) and supported every 3 feet per Art 358.30(8).
20. Source circuits in attic are to run in metallic raceway from roof penetration to the first readily accessible disconnect means per Art 690.31 (E).
21. Conductors shall be listed for wet locations per Art 310.8(C).
22. If the existing grounding electrode cannot be verified, it is the contractor's responsibility to install a supplemental and sufficient grounding electrode.

LEGEND

- (E) UTILITY METER
- GRID-TIED INVERTER
- DC DISCONNECT
- AC DISCONNECT
- JUNCTION/COMBINER BOX
- DISTRIBUTION PANEL
- PHOTOVOLTAIC MODULE
- (E) VENT PIPE
- (E) SKYLIGHT
- (E) CHIMNEY



RENEWABLE ENERGY ADVANTAGE
CSL #936034 Exp. 7/31/2013 Classes: C7, C10, C46
1659 E. 28th ST. SUITE A
SIGNAL HILL, CA 90755
PH. (888) 416-1415
FAX (888) 416-1415

PROJECT INFORMATION:

ADAMSON PHOTOVOLTAIC SOLAR SYSTEM

Job Reference #13-1022

9714 Parrot Avenue
Downey, CA 90240

ISSUE DATE: 11/06/13

REV.:	DATE:	DESCRIPTION:	BY:

CLIENT:

Mark & Julie Adamson
9714 Parrot Avenue
Downey, CA 90240
TEL: (562) 291-8140

DRAWN BY:	CHK.:	APV.:
JS	JS	JS

STAMP:

RENEWABLE ENERGY ADVANTAGE
CSL# 982201 (Exp 3/31/15)
Classes: C7, C10, C46
Signed _____
Nick Vertucci

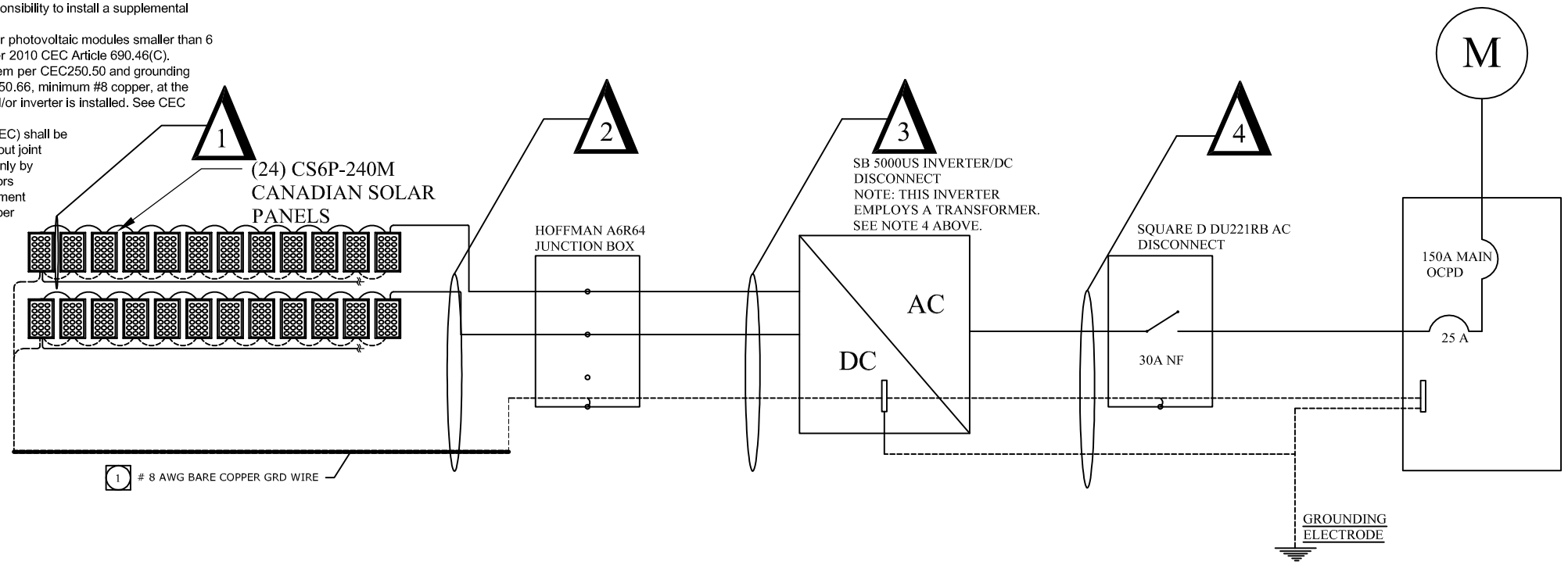
SHEET TITLE:

ELECTRICAL PLOT PLAN

SHEET NUMBER:

SHEET NUMBER
E-1

NOTE:
1. If the existing grounding electrode cannot be verified or is only metallic water piping, it is the contractor's responsibility to install a supplemental grounding electrode.
2. Equipment grounding conductors for photovoltaic modules smaller than 6 AWG shall comply with 250.120(C) per 2010 CEC Article 690.46(C).
3. Provide a grounding electrode system per CEC250.50 and grounding electrode conductor sized per Table 250.66, minimum #8 copper, at the structure on which the PV System and/or inverter is installed. See CEC 690.47.
4. Grounding Electrode Conductor (GEC) shall be installed in one continuous length without joint or splice. Splicing shall be permitted only by irreversible compression-type connectors listed as grounding and bonding equipment or by the exothermic welding process per Art 250.64(C)(1).



PV MODULE SPECS

MODULE MANUFACTURER	CANADIAN SOLAR
MODULE MODEL #	CS6P-240M
MAX POWER-POINT CURRENT (Imp)	7.95 A
MAX POWER-POINT CURRENT (Vmp)	30.2 V
OPEN-CIRCUIT VOLTAGE (Voc)	37.3 V
SHORT-CIRCUIT CURRENT (Isc)	8.46 A
MAXIMUM POWER (Pmax)	240 W
CEC PTC RATING	212 W
PEAK POWER PER UNIT AREA	13.10 W/FT²

INVERTER SPECS

INVERTER MANUFACTURER	SMA
INVERTER MODEL #	SB 5000US
MAX DC VOLT RATING	600 V
MAX POWER @ 40°C	5000 W
NOMINAL AC VOLTAGE	240 V
MAX AC CURRENT	21 A
MAX OCPD	30 A
CEC WEIGHTED EFFICIENCY	95.5% @ 240V

SQUARE D MODEL DU221RB AC DISCONNECT

Number of Poles	2
Terminal Type	Lugs
Type Of Duty	General Duty
Maximum Voltage Rating	240VAC
Wire Size	#14 to #8 AWG (Al/Cu)
Action	Single Throw
Ampere Rating	30A
Approvals	UL Listed File Number E2875
Enclosure Rating	NEMA 3R
Enclosure Type	Rain, Sleet, Ice Proof
Factory Installed Neutral	No
Disconnect Type	Non-Fusible
Mounting Type	Surface

SERVICE PANEL RATINGS

BUS AMP RATING	200A
SERVICE VOLTAGE	120-240
MAIN OCPD RATING	150A
INVERTER OCPD AMP RATING	30A

PV ARRAY INFORMATION

NUMBER OF MODULES IN SERIES	24
NUMBER OF PARALLEL CIRCUITS	1
LOWEST EXPECTED AMBIENT TEMP	30
HIGHEST CONTINUOUS TEMPERATURE	90

MAX SYSTEM VOLTAGE

37.3(VOC)*1.14*12=510.26 VDC

Conduit and Wire Schedule with Junction Boxes

	Circuit Label and Location for Wire and Conduit Schedule	parallel circuits	Max Current	Terminal and Temp DeRating	# CCC per conduit	Conduit Fill DR	Ampacity Required	Wire Size	Conductor Ampacity	Neutral Size	Total Ampacity	OCPD req.	OCPD choice	Conduit Type	Conduit Size	Wire Type	Avg. 1 way Dist.	Voltage Drop
1	Source Circuit (Typ 1 String) to Homerun	1	10.58	0.87	free air	n/a	12.2	10 AWG	55	n/a	55	n/a	n/a	n/a	n/a	USE-2	2	0.11%
2	HomeRun to Junction Box	1	9.94	0.87	free air	n/a	11.4	10 AWG	55	n/a	55	n/a	n/a	n/a	n/a	USE-2	19	0.08%
3	Junction Box to Inverter	1	9.94	0.87	2	1	11.4	10 AWG	40	n/a	40	11.4	15	EMT	3/4"	THWN-2	74	0.76%
4	AC Disconnect to Main Panel	2	19.88	0.96	2	1	20.7	10 AWG	40	n/a	40	20.7	25	EMT	3/4"	THWN-2	3	0.03%

System Voltage Drops

DC-VoltageDrop=	0.19%
AC-VoltageDrop=	0.79%
TOTAL=	0.98%

Grounding System Wiring

8 AWG	BARE-Cu	Module Array Equipment Ground
8 AWG	BARE-Cu	Module Array to Junction Box
8 AWG	BARE-Cu	Junction Box to Inverter
8 AWG	BARE-Cu	Inverter to System/Service Disconnect
8 AWG Ground Electrode Conductors from Inverter and System/Service Disconnect, respectively, to Existing Electrode (3/4" X 10' Ground Rod)		
8 AWG Bond without splice from Main GEC to Solar GEC		

RENEWABLE ENERGY ADVANTAGE
CSL #936034 Exp. 7/31/2013 Classes: C7, C10, C46
1659 E. 28th ST. SUITE A
SIGNAL HILL, CA 90755
PH. (888) 416-1415
FAX (888) 416-1415

PROJECT INFORMATION:

ADAMSON
PHOTOVOLTAIC
SOLAR SYSTEM
Job Reference #13-1022

9714 Parrot Avenue
Downey, CA 90240

ISSUE DATE: 11/06/13

REV.:	DATE:	DESCRIPTION:	BY:

CLIENT:

Mark & Julie Adamson
9714 Parrot Avenue
Downey, CA 90240
TEL: (562) 291-8140

DRAWN BY:	CHK.:	APV.:
JS	JS	JS

STAMP:

RENEWABLE ENERGY ADVANTAGE
CSL# 982201 (Exp 3/31/15)
Classes: C7, C10, C46
Signed _____
Nick Vertucci

SHEET TITLE:

SINGLE LINE DIAGRAM

SHEET NUMBER:

SHEET NUMBER
E-2

A. TO BE INSTALLED ON FACE OF THIS SERVICE METER PANEL

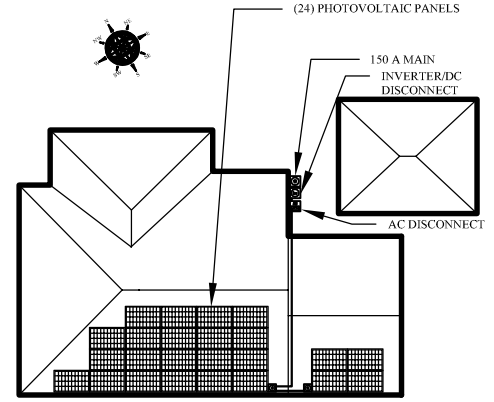
CAUTION
THIS SYSTEM IS FED FROM MULTIPLE SOURCES - GRID AND PHOTOVOLTAIC

WARNING
GRID-TIED PHOTOVOLTAIC SYSTEM CIRCUIT BREAKER IS BACKFED

AC OPERATING CURRENT (cell C29) Amp
AC OPERATING VOLTAGE 240 VAC

M

CAUTION
(Directory - 705.10-Interactive - 690.54)
DUAL POWER SOURCES. SECOND SOURCE IS PHOTOVOLTAIC SYSTEM, WITH DISCONNECT(S) LOCATED AS SHOWN



B. TO BE INSTALLED ON FACE OF INVERTER

(1) SMA SB 5000US

OPERATING CURRENT 20.7 Amp
SHORT CIRCUIT CURRENT 30 Amp
OPERATING VOLTAGE 447.6 Vdc
MAXIMUM SYSTEM VOLTAGE 510 Vdc

WARNING 690.5(C)
ELECTRIC SHOCK HAZARD, IF A GROUND FAULT IS INDICATED, NORMALLY GROUND CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED

CAUTION: SOLAR CIRCUIT

(PV System DC Disconnect 690.53)
RATED MAX POWER-POINT CURRENT - 21 ADC
RATED MAX POWER-POINT VOLTAGE - 600 VDC
MAXIMUM SYSTEM VOLTAGE ---------- 510 VDC
MAXIMUM SHORT CIRCUIT CURRENT - 30 ISC

(Solar Disconnect - 690.14, 690.15, 690.17)
WARNING- ELECTRIC SHOCK HARARD
DO NOT TOUCH TERMINALS! TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

THIS PV SYSTEM DISCONNECT HAS BEEN FIELD WIRED FOR USE IN A POSITIVELY GROUNDED PV SYSTEM

CAUTION: SOLAR CIRCUIT

INVERTER

DC

AC

HOFFMAN A6R64 JUNCTION BOX

DANGER ≤ 600 VOLTS DC

CAUTION: SOLAR CIRCUIT

(1) SQUARE D DU221RB
AC DISCONNECT

(PV System AC Disconnect 690.54)
RATED AC OUTPUT CURRENT 30 AMPS
AC NOMINAL OPERATE VOLTAGE----240 VOLTS

(Solar Disconnect - 690.14, 690.15, 690.17)
WARNING- ELECTRIC SHOCK HAZARD
DO NOT TOUCH TERMINALS! TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

THIS PV SYSTEM DISCONNECT HAS BEEN FIELD WIRED FOR USE IN A POSITIVELY GROUNDED PV SYSTEM

(24) CANADIAN
SOLAR CS6P-240M
SOLAR PANELS

SOLAR ARRAY

NOTE:
MARKING IS REQUIRED ON ALL INTERIOR AND EXTERIOR DC CONDUITS, RACEWAYS, ENCLOSURES, CABLE ASSEMBLIES, AND JUNCTION BOXES TO ALERT THE FIRE SERVICE TO AVOID CUTTING THEM. MARKING SHALL BE PLACED EVERY 10 FEET, AT TURNS AND ABOVE AND/OR BELOW PENETRATIONS, AND AT ALL DC COMBINER AND JUNCTION BOXES.

- MARKING CONTENT: CAUTION: SOLAR CIRCUIT
- RED BACKGROUND
- WHITE LETTERING
- MINIMUM 3/8" LETTER HEIGHT
- ALL CAPITAL LETTERS
- ARIAL OR SIMILAR FONT, NON-BOLD
- UL 969 SHALL BE STANDARD FOR WEATHER RATING. USE REFLECTIVE WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT (DURABLE ADHESIVE MATERIALS MUST MEET THIS REQUIREMENT)

RENEWABLE ENERGY ADVANTAGE
CSL #936034 Exp. 7/31/2013 Classes: C7, C10, C46
1659 E. 28th ST. SUITE A
SIGNAL HILL, CA 90755
PH. (888) 416-1415
FAX (888) 416-1415

PROJECT INFORMATION:

ADAMSON
PHOTOVOLTAIC
SOLAR SYSTEM
Job Reference #13-1022

9714 Parrot Avenue
Downey, CA 90240

ISSUE DATE:
11/06/13

REV.:	DATE:	DESCRIPTION:	BY:

CLIENT:
Mark & Julie Adamson
9714 Parrot Avenue
Downey, CA 90240
TEL: (562) 291-8140

DRAWN BY:	CHK.:	APV.:
JS	JS	JS

STAMP:
RENEWABLE ENERGY ADVANTAGE
CSL# 982201 (Exp 3/31/15)
Classes: C7, C10, C46
Signed _____
Nick Vertucci

SHEET TITLE:
SYSTEM LABELS & NOTES

SHEET NUMBER:
SHEET NUMBER
E-3

AC DISCONNECT

Product Data Sheet

DU221RB
Safety Switch , 30A, Non-Fusible, 2-Pole

SQUARE D by Schneider Electric

List Price $177.00 USD
Availability **Stock Item:** This item is normally stocked in our distribution facility.

Technical Characteristics

Number of Poles	2-Pole
Terminal Type	Lugs
Type of Duty	General Duty
Maximum Voltage Rating	240VAC
Wire Size	#14 to #8 AWG(Al/Cu)
Action	Single Throw
Ampere Rating	30A
Approvals	UL Listed File Number E2875
Enclosure Rating	NEMA 3R
Enclosure Type	Rainproof and Sleet/Ice proof (Indoor/Outdoor)
Factory Installed Neutral	No
Disconnect Type	Non-Fusible
Mounting Type	Surface

Shipping and Ordering

Category	00106 - Safety Switch, General Duty, 30 - 200 Amp, NEMA3R
Discount Schedule	DE1A
Article Number	785901490340
Package Quantity	1
Weight	4.62 lbs.
Availability Code	S
Returnability	Y

As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this document.

Schneider Electric

JUNCTION BOX

Hoffman — Contractor: Type 3R

Screw-Cover Type 3R Boxes and Enclosures

Screw-Cover, Type 3R

Features
- Drip shield top and seam-free sides, front and back
- Slip-on removable cover fastened with plated steel screws along bottom edge
- Handles on larger sizes (see table)
- Embossed mounting holes on back of enclosure
- Knockouts in bottom of 16 and 14 gauge enclosures
- Provision for padlocking
- No gasketing

Specifications
- 16, 14 or 12 gauge galvanized steel

Finish
ANSI 61 gray polyester powder paint finish inside and out over pretreated surfaces.

Industry Standards

UL 50, 50E Listed; Type 3R; File No. E27525
cUL Listed per CSA C22.2 No 94; Type 3R; File No. E27525

NEMA/EEMAC Type 3R
IEC 60529, IP32

Application
Use this enclosure with or without knockouts in outdoor applications as a wiring or junction box.

Accessories
See also Accessories.
Industrial Corrosion Inhibitors
Electric Heater
Grounding Device
Mounting Bracket Kit
Touch-Up Paint
Bulletin: A90S3

Standard Product

Catalog Number	AxBxC in./mm	Body Style	D in./mm	Mounting H in./mm	Mounting J in./mm	Knockout Pattern
A4R44	4.00 x 4.00 x 4.00 102 x 102 x 102	A	— —	1.88 48	2.00 51	B-C
A6R44	6.00 x 4.00 x 4.00 152 x 102 x 102	A	— —	1.88 48	1.06 27	B-C
A12R44	12.00 x 4.00 x 4.00 305 x 102 x 102	A	— —	1.88 48	1.06 27	B-C
A6R64	6.00 x 6.00 x 4.00 152 x 152 x 102	A	— —	2.25 57	1.06 27	B-C-D
A8R64	8.00 x 6.00 x 4.00 203 x 152 x 102	A	— —	2.25 57	1.06 27	B-C-D
A8R84	8.00 x 8.00 x 4.00 203 x 203 x 102	A	— —	2.25 57	1.06 27	F-G-H-I
A10R84	10.00 x 8.00 x 4.00 254 x 203 x 102	A	— —	2.25 57	1.06 27	F-G-H-I
A12R84	12.00 x 8.00 x 4.00 305 x 203 x 102	A	— —	2.25 57	1.06 27	F-G-H-I
A10R104	10.00 x 10.00 x 4.00 254 x 254 x 102	A	— —	2.25 57	1.06 27	C-D-E-F-G
A12R104	12.00 x 10.00 x 4.00 305 x 254 x 102	A	— —	2.25 57	1.06 27	C-D-E-F-G
A12R124	12.00 x 12.00 x 4.00 305 x 305 x 102	A	— —	2.25 57	1.06 27	C-D-E-F-G
A18R124	18.00 x 12.00 x 4.00 457 x 305 x 102	A	— —	2.25 57	1.06 27	C-D-E-F-G
A18R184	18.00 x 18.00 x 4.00 457 x 457 x 102	B	— —	13.00 330	1.12 28	A-B-C-D-E-F-G-H-I
A6R66	6.00 x 6.00 x 6.00 152 x 152 x 152	A	— —	2.25 57	1.06 27	B-C-D
A8R86	8.00 x 8.00 x 6.00 203 x 203 x 152	A	— —	2.25 57	1.06 27	F-G-H-I
A10R86	10.00 x 8.00 x 6.00 254 x 203 x 152	A	— —	2.25 57	1.06 27	F-G-H-I
A10R106	10.00 x 10.00 x 6.00 254 x 254 x 152	A	— —	2.25 57	1.06 27	C-D-E-F-G
A12R86	12.00 x 8.00 x 6.00 305 x 203 x 152	A	— —	2.25 57	1.06 27	F-G-H-I
A12R106	12.00 x 10.00 x 6.00 305 x 254 x 152	A	— —	2.25 57	1.06 27	C-D-E-F-G
A12R126	12.00 x 12.00 x 6.00 305 x 305 x 152	A	— —	2.25 57	1.06 27	C-D-E-F-G
A15R126	15.00 x 12.00 x 6.00 381 x 305 x 152	A	— —	2.25 57	1.06 27	C-D-E-F-G

Pentair Technical Products — Subject to change without notice PH (763) 422-2211 • FX (763) 422-2600 • hoffmanonline.com Spec-00263 D 1

ROOF FLASHING

Oatey® 4700 W. 160th St. Cleveland, OH 44135 PH:800-321-9532 FX:800-321-9535 www.oatey.com
TECHNICAL SPECIFICATION

ALUMINUM BASE NO-CALK® ROOF FLASHINGS

Quality ISO 9001 System — Job Reference

Engineering Specification: Oatey Aluminum Base No-Calk Roof Flashings can be used in commercial and residential applications where a watertight seal for roof penetrations around the plumbing vent pipe is required.

(All dimensions in inches)
- Aluminum Roof Flashing slides over DWV pipe for pitch to 40°
- Made of stamped aluminum
- Non-fading sealing collar
- Approved for Type B installations
- Not for hot-mopped or built-up roofs
- Do not use paint or petroleum based products on rubber collars

✓	Product No.	Description	Length (L)	Width (W)	PACK	CARTON WEIGHT
	12920	1-¼" - 1-½" Aluminum No-Calk Roof Flashing	12-½	9	12	6 lbs.
	12923	1-¼" - 1-½" Aluminum No-Calk Roof Flashing	12-½	9	6	3 lbs.
	12933	2" Aluminum No-Calk Roof Flashing	12-½	9	12	6 lbs.
	12936	2" Aluminum No-Calk Roof Flashing	12-½	9	6	3 lbs.
	12946	3" Aluminum No-Calk Roof Flashing	14-½	11	12	7 lbs.
	12949	3" Aluminum No-Calk Roof Flashing	14-½	11	6	4 lbs.
	12959	4" Aluminum No-Calk Roof Flashing	15	12	12	13 lbs.
	12958	4" Aluminum No-Calk Roof Flashing	15	12	6	6 lbs.
	12836	1-¼" - 1-½" Large Base Aluminum No-Calk Roof Flashing	18	18	12	14 lbs.
	12849	2" Large Base Aluminum No-Calk Roof Flashing	18	18	12	15 lbs.
	12852	3" Large Base Aluminum No-Calk Roof Flashing	18	18	12	20 lbs.
	12865	4" Large Base Aluminum No-Calk Roof Flashing	18	18	12	21 lbs.

UPC IAPMO Listed — NES 653

Data is subject to manufacturing tolerances.

D-2 — Visit www.oatey.com for updates — 7/2008

SONOLASTIC® NP1™

BASF The Chemical Company

Polyurethane joint sealant

DESCRIPTION

Sonolastic NP 1 is a versatile moisture-curing high performance polyurethane sealant with permanent elasticity.

RECOMMENDED FOR

Active, vertical and horizontal interior, exterior joints. Including expansion wall joints, floor and pavement joints, curtain walls, panel walls, precast walls, window frames, structural components, dams, spillways and stormwater drains. Substrates include concrete, masonry, aluminium and wood.

FEATURES AND BENEFITS

- **Joint movement capability ± 35%** Excellent flexibility for keeping moving joints tight
- **Available in pro-pack sausages** Reduces job-site waste, lowers disposal costs
- **Easy to gun and tool** Speeds application and makes neater joints
- **Variety of colours** Matches common substrates
- **Bonds to most construction materials without a primer** Lowers installation costs
- **One component** No mixing, less labour
- **Weather resistant** Long-lasting weathertight seals
- **Wide temperature application range** Suitable for all climates
- **Paintable polyurethane sealant** Best choice for structures that may be repainted
- **Low VOC content** User friendly for applicators
- **Suitable for non-chlorinated water immersion** Potable water approved

COMPLIANCES

- Federal Specification TT-S-00230C, Type II, Class A
- Corps of Engineers CRD-C-541, Type II, Class A
- ASTM C 920, Type S, Grade NS, Class 25, Use NT, M, A, G and I
- Canadian Specification CAN/CGSB-19 13-M87, Classification MCG-2-25-A-N, No.81026
- USDA approved for use in meat and poultry areas
- Canadian approval for use in establishments that handle food
- SWRI validated
- ISO 11600 F-25LM

PERFORMANCE DATA

Property	Test Method	Value (Average)
Movement capability (MAF)	ASTM C 719	± 35%
Tensile strength	ASTM D 412	2.4 MPa
Ultimate elongation at break	ASTM D 412	800%
Hardness at standard conditions (Shore A)	ASTM C 661	25-30
Hardness after heat aging, max. Shore A:50	ASTM C 661	25
Tack-free time (maximum 72 hrs.)	ASTM C 679	Passes
Stain and colour change	ASTM C 510	None
Volatile Organic Compounds (VOC)	SCAQMD Method 304-91	48g/litre
Service temperature range (°C)		-40 to 82
Potable water certified	AS/NZS 4020	$1000 m^2/L$

The above data represents the information typically required to verify performance. For the full and comprehensive list of performance data, refer to "Application Guide & Performance Data for Sonolastic® Polyurethane Sealants" available from your local BASF Construction Chemicals representative.

ESTIMATING DATA

Joint Size (mm)	Metres per litre
5 x 5	40
10 x 10	10
12 x 12	6.95
15 x 7.5	8.88
20 x 10	5.00
25 x 12.5	3.20
30 x 15	2.22

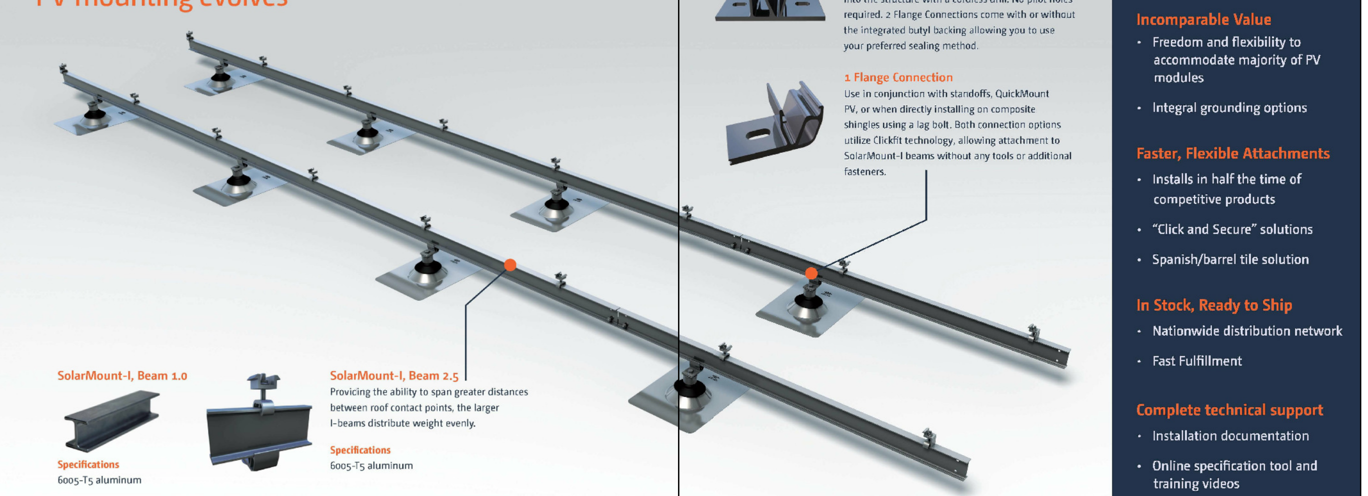
APPLICATION

For information on **joint design, surface preparation** and **priming**, refer to Technical Note 17 "Application Guide & Performance data for Sonolastic Polyurethane Sealants" available from your local BASF Construction Chemicals representative.

Application
- **Sonolastic NP 1** comes ready to use. Apply by professional caulking gun. Do not open sausages until preparatory work has been completed.
- Fill joints from deepest point to the surface by holding a properly sized nozzle against the back of the joint.
- Dry tooling is recommended. DO NOT use soapy water when tooling. Tooling results in the correct bead shape, a neat joint, and maximum adhesion.

SOLAR PANEL RACKING

SolarMount-I™ (Generic Unirac-Like)
PV mounting evolves



2 Flange Connection
Efficiently secure beams to the roof using 3" Concealor screws. Concealor screws can be driven into the structure with a cordless drill. No pilot holes required. 2 Flange Connections come with or without the integrated butyl backing allowing you to use your preferred sealing method.

1 Flange Connection
Use in conjunction with standoffs, QuickMount PV, or when directly installing on composite shingles using a lag bolt. Both connection options utilize Clickfit technology, allowing attachment to SolarMount-I beams without any tools or additional fasteners.

ATTACHMENT OPTIONS
Flexible Components Speed Installation

Standoffs
Unirac's standard standoff design offers more elevation for greater airflow under a finished array. SolarMount-I standoffs are accompanied with all hardware needed including a Single Flange Connection.

Tile Hook
Made from cast aluminum, the tile hook attachment provides SolarMount-I with a cost-effective solution for barrel or Spanish tile roofs. All required lag bolts and hardware are included and 1 Flange Connection. Refer to the tile hook engineering data for max load capabilities.

KEY BENEFITS
of SolarMount-I

Incomparable Value
- Freedom and flexibility to accommodate majority of PV modules
- Integral grounding options

Faster, Flexible Attachments
- Installs in half the time of competitive products
- "Click and Secure" solutions
- Spanish/barrel tile solution

In Stock, Ready to Ship
- Nationwide distribution network
- Fast Fulfillment

Complete technical support
- Installation documentation
- Online specification tool and training videos
- Installation instructions accessible from mobile devices

The design is based on and in compliance with the following codes/standards:
1. 2003 International Building Code, by International Code Council , Inc., 2003.
2. 2006 International Building Code, by International Code Council , Inc., 2006.
3. Aluminum Design Manual: Specifications and Guidelines for Aluminum Structures, by The Aluminum Association, Washington, D.C., 2005.
4. 2007 California Building Code (CBC), based on the 2006 International Building Code, by International Code Council , Inc., 2006.

UNIRAC A HILTI GROUP COMPANY

SB5000US INVERTER/DC DISCONNECT

SUNNY BOY 5000US / 6000US / 7000US / 8000US — SMA

- Highest CEC efficiency in its class
- Integrated load-break rated lockable DC disconnect switch
- Integrated fused series string combiner
- Sealed electronics enclosure & Opticool™
- Comprehensive SMA communications and data collection options
- Ideal for residential or commercial applications
- Sunny Tower compatible
- 10 year standard warranty
- UL 1741/IEEE-1547 compliant

c UL us

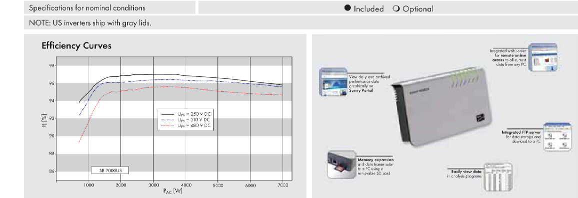
SUNNY BOY 5000US/6000US/7000US / 8000US
The best in their class

Our US series inverters utilize our proven technology and are designed specifically to meet IEEE-1547 requirements. Sunny Boy 6000US, Sunny Boy 7000US and Sunny Boy 8000US are also compatible with the Sunny Tower. Increased efficiency means better performance and shorter payback periods. All four models are field-configurable for positive ground systems making them more versatile than ever. Throughout the world, Sunny Boy is the benchmark for PV inverter performance and reliability.

Technical Data

	SB 5000US	SB 6000US	SB 7000US	SB 8000US
Recommended Maximum PV Power (Module STC)	6250 W	7500 W	8750 W	10000 W
DC Maximum Voltage	600 V	600 V	600 V	600 V
Peak Power Tracking Voltage	250–480 V	250–480 V	250–480 V	300–480 V
DC Maximum Input Current	21 A	25 A	30 A	30 A
Number of Fused String Inputs	3 (inverter), 4 x 20 A (DC disconnect)	3 (inverter), 4 x 20 A (DC disconnect)	3 (inverter), 4 x 20 A (DC disconnect)	3 (inverter), 4 x 20 A (DC disconnect)
PV Start Voltage	300 V	300 V	300 V	365 V
AC Nominal Power	5000 W	6000 W	7000 W	8000 W
AC Maximum Output Power	5000 W	6000 W	7000 W	8000 W
AC Maximum Output Current (@ 208, 240, 277 V)	24 A, 21 A, 18 A	29 A, 25 A, 22 A	34 A, 29 A, 25 A	N/A, 32 A, 29 A
AC Nominal Voltage Range	183 – 229 V @ 208 V 211 – 264 V @ 240 V 244 – 305 V @ 277 V	183 – 229 V @ 208 V 211 – 264 V @ 240 V 244 – 305 V @ 277 V	183 – 229 V @ 208 V 211 – 264 V @ 240 V 244 – 305 V @ 277 V	N/A @ 208 V 211 – 264 V @ 240 V 244 – 305 V @ 277 V
AC Frequency: nominal / range	60 Hz / 59.3 – 60.5 Hz	60 Hz / 59.3 – 60.5 Hz	60 Hz / 59.3 – 60.5 Hz	60 Hz / 59.3 – 60.5 Hz
Power Factor (Nominal)	0.99	0.99	0.99	0.99
Peak Inverter Efficiency	96.8%	97.0%	97.1%	96.5%
CEC Weighted Efficiency	95.5% @ 208 V 95.5% @ 240 V 95.5% @ 277 V	95.5% @ 208 V 95.5% @ 240 V 96.0% @ 277 V	95.5% @ 208 V 96.0% @ 240 V 96.0% @ 277 V	N/A @ 208 V 96.0% @ 240 V 96.0% @ 277 V
Dimensions: W x H x D in inches	18.4 x 24.1 x 9.5	18.4 x 24.1 x 9.5	18.4 x 24.1 x 9.5	18.4 x 24.1 x 9.5
Weight / Shipping Weight	141 lbs / 148 lbs	141 lbs / 148 lbs	141 lbs / 148 lbs	148 lbs / 152 lbs
Ambient Temperature Range	−13 to 113 °F	−13 to 113 °F	−13 to 113 °F	−13 to 113 °F
Power consumption at night	0.1 W	0.1 W	0.1 W	0.1 W
Topology	Low frequency transformer, true sinewave	Low frequency transformer, true sinewave	Low frequency transformer, true sinewave	Low frequency transformer, true sinewave
Cooling Concept	OptiCool™, forced active cooling	OptiCool™, forced active cooling	OptiCool™, forced active cooling	OptiCool™, forced active cooling
Mounting Location: indoor / outdoor (NEMA 3R)	●/●	●/●	●/●	●/●
LCD Display	●	●	●	●
Communication: RS485 / wireless	❍/❍	❍/❍	❍/❍	❍/❍
Warranty: 10 years / 15 years / 20 years	●/❍/❍	●/❍/❍	●/❍/❍	●/❍/❍
Compliance: IEEE-929, IEEE-1547, UL 1741, UL 1998, FCC Part 15 A & B	●	●	●	●
Specifications for nominal conditions	● Included ❍ Optional			

NOTE: US inverters ship with gray lids.



Tel. +1 916 625 0870
Toll Free +1 888 4 SMA USA
www.SMA-America.com

SMA America, LLC

RENEWABLE ENERGY ADVANTAGE

CSL #936034 Exp. 7/31/2013 Classes: C7, C10, C46
1659 E. 28th ST. SUITE A
SIGNAL HILL, CA 90755
PH. (888) 416-1415
FAX (888) 416-1415

PROJECT INFORMATION:

ADAMSON
PHOTOVOLTAIC
SOLAR SYSTEM
Job Reference #13-1022

9714 Parrot Avenue
Downey, CA 90240

ISSUE DATE:
11/06/13

REV.:	DATE:	DESCRIPTION:	BY:

CLIENT:

Mark & Julie Adamson
9714 Parrot Avenue
Downey, CA 90240
TEL: (562) 291-8140

DRAWN BY:	CHK.:	APV.:
JS	JS	JS

STAMP:

RENEWABLE ENERGY ADVANTAGE
CSL# 982201 (Exp 3/31/15)
Classes: C7, C10, C46
Signed ____________
Nick Vertucci

SHEET TITLE:
MANUFACTURER CUT SHEETS

SHEET NUMBER:
SHEET NUMBER
E-4

WEEB GROUNDING WASHER

Wiley Electronics LLC

Washer, Electrical Equipment Bond

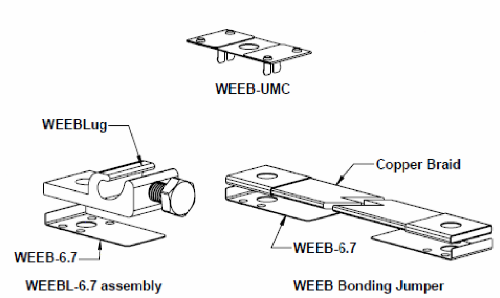
WEEB

Patent Pending

INSTALLATION INSTRUCTIONS

For Unirac Solar Mount only

Please read carefully before installing.



3098177

Products are tested to UL 467
UL standard for safety grounding and bonding equipment

Document Number 104-0404-000010-010

Intertek

AUTHORIZATION TO MARK

This authorizes the application of the Certification Mark(s) shown below to the models described in the Product(s) Covered section when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This authorization also applies to multiple listee model(s) identified on the correlation page of the Listing Report.

This document is the property of Intertek Testing Services and is not transferable. The certification mark(s) may be applied only at the location of the Party Authorized To Apply Mark.

Control Number: 3098177 **Authorized by:** for Michelle Lake
William T. Starr, Certification Manager

This document supersedes all previous Authorizations to Mark for the noted Report Number.

This Authorization to Mark is for the exclusive use of Intertek's Client and is provided pursuant to the Certification agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Authorization to Mark. Only the Client is authorized to permit copying or distribution of this Authorization to Mark and then only in its entirety. Use of Intertek's Certification mark is restricted to the conditions laid out in the agreement and in this Authorization to Mark. Any further use of the Intertek name for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. Initial Factory Assessments and Follow up Services are for the purpose of assuring appropriate usage of the Certification mark in accordance with the agreement, they are not for the purposes of production quality control and do not relieve the Client of their obligations in this respect.

Intertek Testing Services NA Inc.
165 Main Street, Cortland, NY 13045
Telephone 800-345-3851 or 607-753-6711 Fax 607-756-6699

Applicant:	Wiley Electronics, LLC	**Manufacturer:**	Wiley Electronics, LLC
Address:	PO Box 361 Saugerties, NY 12477	**Address:**	PO Box 361 Saugerties, NY 12477
Country:	USA	**Country:**	USA
Contact:	Mr. Brian Wiley	**Contact:**	Mr. Brian Wiley
Phone:	845-247-3852	**Phone:**	845-247-3852
FAX:	845-839-2792	**FAX:**	845-839-2792
Email:		**Email:**	

Party Authorized To Apply Mark: Same as Manufacturer
Report Issuing Office: Cortland, NY

Standard(s):	UL Standard for Safety for Grounding and Bonding Equipment, UL 467, 9th Edition and Grounding and Bonding Equipment, CSA C22.2 #41, 5th Edition, September 2007
Product :	Bonding Devices
Models:	Bonding Devices Model numbers WEEB-9.5, WEEB-9.5NL, WEEB-CL, WEEBL-6.7, WEEBL-8.2, WEEBL-8.0, WEEB-DMC, WEEB-PMC, WEEB-CMC, WEEB-SMC, WEEB-Bonding Jumper-6.7, WEEB-Bonding Jumper-8.0, WEEB-Bonding Jumper-8.2, WEEB-KMC, WEEB-UGC2, WEEB-UMC, WEEB-DPF, WEEB-11.5, WEEBWMC, WEEB-CSG and Double Wedge Solar Giant.

ATM for Report 3096176-002 Page 1 of 1 ATM Issued: 31-July-2009
SD 16.3.10a (10/12/07) Mandatory

CS6P-240 SOLAR PANEL

Fire Energy NEW ENERGY SOLUTIONS

PHOTOVOLTAIC MODULES –MONOCRYSTALLINE

CS6P 220-250M

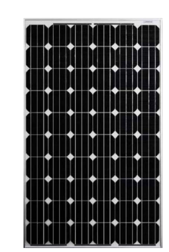
Authorized distributor of CanadianSolar

PRODUCT ADVANTAGE

- Industry leading plus only power tolerance: +5W (+2%)

- 6 years product warranty (materials and workmanship)
- 25 years module power output warranty

- The 1st manufacturer in PV industry certified for ISO:TS16949 in module production since 2003
- ISO 17025 qualified manufacturer owned testing lab, fully complying to IEC, TUV, UL testing standards



PRODUCTS APPLICATION

- On-grid residential roof-tops
- On-grid commercial/industrial roof-tops
- Solar Power stations
- Other on-grid applications

QUALITY CERTIFICATIONS

- IEC 61215, IEC61730,UL 1703, CE
- ISO9001:2008: Standard for quality management systems
- ISO/TS 16949:2009: The automotive quality management system
- QC080000 HSPM: The Certification for Hazardous Substances Regulations

CS6P 220-250M distributed by Fire Energy

Fire Energy NEW ENERGY SOLUTIONS

PHOTOVOLTAIC MODULES –MONOCRYSTALLINE

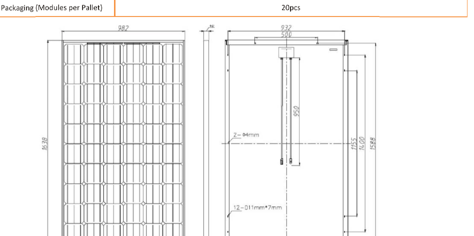
Authorized distributor of CanadianSolar

Electrical Data

		CS6P-220M	CS6P-225M	CS6P-230M	CS6P-235M	CS6P-240M	CS6P-245M	CS6P-250M
Nominal Maximum Power at STC (Pmax)		220W	225W	230W	235W	240W	245W	250W
Optimum Operating Voltage (Vmp)		29.5V	29.7V	29.9V	30.1V	30.2V	30.3V	30.4V
Optimum Operating Current (Imp)		7.45A	7.58A	7.70A	7.82A	7.95A	8.09A	8.22A
Open Circuit Voltage (Voc)		36.9V	37.0V	37.1V	37.2V	37.3V	37.4V	37.5V
Short Circuit current (Isc)		7.97A	8.07A	8.22A	8.34A	8.46A	8.61A	8.74A
Operating Temperature		-40℃ ~+85℃						
Maximum System Voltage		1000V(IEC)/600V(UL)						
Maximum Series Fuse Rating		15A						
Power Tolerance		+5W						
Temperature Coefficient	Pmax	-0.45%/℃						
	Voc	-0.35%/℃						
	Isc	0.060%/℃						
	NOCT	45℃						

Mechanical Data

Cell Type	Mono-crystalline
Cell Arrangement	60 (6 x 10)
Dimensions	1638 x 982 x 40mm(64.5x38.7x1.57in)
Weight	20kg(44.1lbs)
Front Cover	Tempered glass
Frame Material	Anodized aluminum alloy
Standard Packaging (Modules per Pallet)	20pcs



CS6P220-250M distributed by Fire Energy

GROUND LUG AL/CU

3/12/13 Product Detail Page

BGBL-4 : 14-4
AL/CU LAY-IN LUG

ACTIVE

BURNDY
Experience. Technology. Answers.™
www.burndy.com

BURNDY® PRODUCTS

Specifications

Dimensional	
Length (in)	1.07
Height (in)	0.78
Hex Size	Slot
D - in	.62
Pad Width (in)	0.38
E - in	0.47
Other Features	
UPC	78181012485
Conductor(s)	
Aluminum Size (Range)	8 AWG-4 AWG
Copper Solid Size (Range)	14 AWG-4 AWG
Copper Stranded (Range)	14 AWG-4 AWG
Approvals / Certifications	
UL Listed	Y
CSA Certified	Y
ROHS Compatible	Compliant
UL Recognized	N
Industry Standards	UL468A-468B
Physical	
Installation Torque	35
Type of Plating	Tin - Electro Plated
Plated (Yes or No)	Y
Product Material	Aluminum

ecat.burndy.com/Comergent/en/US/adirect/burndy?cmd=DownloadDatasheet 1/1

RENEWABLE ENERGY ADVANTAGE

CSL #936034 Exp. 7/31/2013 Classes: C7, C10, C46
1659 E. 28th ST. SUITE A
SIGNAL HILL, CA 90755
PH. (888) 416-1415
FAX (888) 416-1415

PROJECT INFORMATION:

ADAMSON
PHOTOVOLTAIC
SOLAR SYSTEM
Job Reference #13-1022

9714 Parrot Avenue
Downey, CA 90240

ISSUE DATE: 11/06/13

REV.: DATE: DESCRIPTION: BY:

CLIENT:

Mark & Julie Adamson
9714 Parrot Avenue
Downey, CA 90240
TEL: (562) 291-8140

DRAWN BY:	CHK.:	APV.:
JS	JS	JS

STAMP:

RENEWABLE ENERGY ADVANTAGE

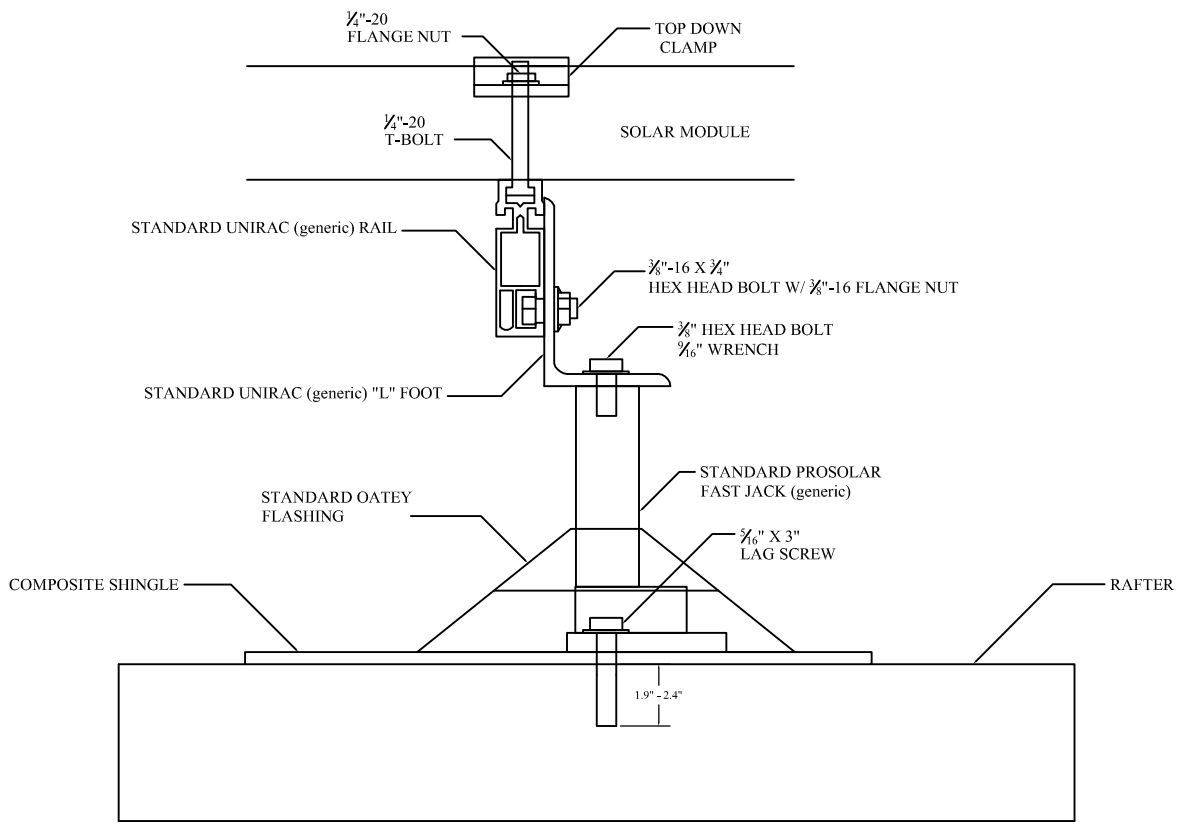
CSL# 982201 (Exp 3/31/15)
Classes: C7, C10, C46
Signed
Nick Vertucci

SHEET TITLE:

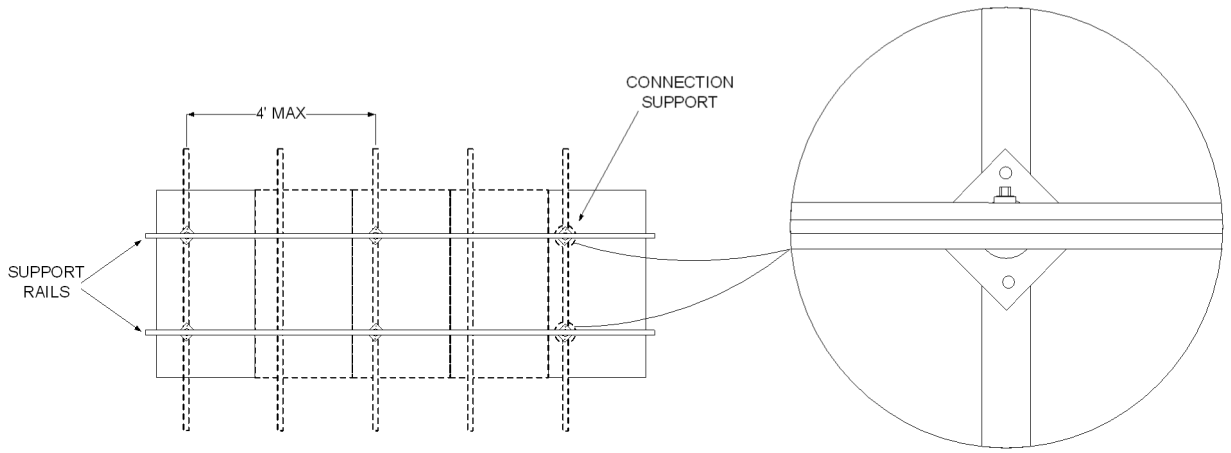
MANUFACTURER CUT SHEETS

SHEET NUMBER:

E-4.1



1 TYP. CONNECTION DETAIL
SCALE: NONE



April 11, 2013

UniRac
1411 Broadway Boulevard NE
Albuquerque, New Mexico 87102-1545
TEL: (505) 242-6411
FAX: (505) 242-6412

PZSE, INC. STRUCTURAL ENGINEERS

REGISTERED PROFESSIONAL ENGINEER PAUL KENNETH ZACHER No. S5572 6-30-15 STRUCTURAL STATE OF CALIFORNIA

Attn.: Engineering Department,

Re: Engineering Certification for UniRac SolarMount I-Series Technical Datasheet

PZSE, Inc.-Structural Engineers has reviewed UniRac's "SolarMount-I Technical Datasheet" published November 2010.

The SolarMount-I Technical Datasheet provides material properties, section properties and allowable loads for beam members and connection hardware. The Technical Datasheet also provides tables for maximum beam spans based on beam type, module size and varying dead, wind, snow, and earthquake loading conditions. All information, data and analysis contained within the Technical Datasheet are based on, and comply with the following:

1. 2009 International Building Code, by International Code Council, Inc., 2009
2. 2010 California Building Code, by California Building Standards Commission, 2011
3. 2010 Aluminum Design Manual: by The Aluminum Association, 2010

This letter certifies that the information, data and analysis contained within UniRac's "SolarMount-I Technical Datasheet" are in compliance with the above codes.

PZSE, Inc.-Structural Engineers

Paul Zacher, SE - President

Page **1** of **1**

8137 Sunset Avenue, Suite 120 • Fair Oaks, CA 95628 • 916.961.3960 • 916.961.3965 f • www.PZSE.com

RENEWABLE ENERGY ADVANTAGE
CSL #936034 Exp. 7/31/2013 Classes: C7, C10, C46
1659 E. 28th ST. SUITE A
SIGNAL HILL, CA 90755
PH. (888) 416-1415
FAX (888) 416-1415

PROJECT INFORMATION:

ADAMSON
PHOTOVOLTAIC
SOLAR SYSTEM
Job Reference #13-1022

9714 Parrot Avenue
Downey, CA 90240

ISSUE DATE:
11/06/13

REV.:	DATE:	DESCRIPTION:	BY:

CLIENT:
Mark & Julie Adamson
9714 Parrot Avenue
Downey, CA 90240
TEL: (562) 291-8140

DRAWN BY:	CHK.:	APV.:
JS	JS	JS

STAMP:
RENEWABLE ENERGY ADVANTAGE
CSL# 982201 (Exp 3/31/15)
Classes: C7, C10, C46
Signed _____
Nick Vertucci

SHEET TITLE:
CONNECTION DETAILS

SHEET NUMBER:
SHEET NUMBER
S-1