So what are the components of a solar power system?

The Panels

PV (photovoltaic) panels are the most common type of panel, especially for residential installations. They are made from three layers:

* **The N-Layer** – silicon that is mixed with phosphorus

* **The P/N Junction** – pure silicon

* **The P-Layer** – silicon that is mixed with boron

When sunlight strikes the N-Layer, it knocks electrons loose. These electrons pass through the P/N junction (which is a one-way junction) into the P-Layer. This creates an electrical field that then drives the electrons that have been "knocked off" from the silicon, creating an electric current.

The Inverter

If you know your physics, then you will know that the electric current that is generated in this way is direct current (DC), which is like the electricity stored in batteries. However, mains electricity is alternating current (AC) where the flow of electricity changes direction 50 times a second. To make the electricity supplied by solar power suitable for use in domestic homes, a device is needed that converts DC current to AC current, and this device is called an inverter.

An inverter works in a very simple way, using a series of switches which are known as "solid state switches" that "flips" the DC current backwards and forwards 50 times a second, to create the AC current.

The Distributor

The distributor is the device that distributes the AC power created by the inverter to the grid, and sometimes to both the home in which the solar power system has been installed and the grid. The output from the inverter is fed to a dedicated breaker in your house's electric panel, and then through to your home. If you are creating more power then you are using, then some of the power flows backwards and into the grid, and you receive a credit from your utilities company. If your system is not supplying enough energy for your home, then the shortfall is made up as usual by your utilities company.

SUMMARY:

These are the basic components of any solar energy system and as you can see, solar power is not a complex energy system – the cells create DC current, the inverter changes it to AC current, and the distributor controls the way in which power is distributed between your business and your utilities supplier.

December 14, 2018

What are the solar panel types?

Monocrystalline panels are the most efficient type. Uniformly black, they are long-lasting and perform better in low-light conditions, which makes them a little more expensive.
NOTE: A.D.E. has ordered this type of solar panel for CCHD solar project. See data below.

Polycrystalline panels are the simplest to manufacture and therefore the cheapest. They can suffer in high-temperature climates and are slightly less efficient than their monocrystalline counterparts (although typically not enough for the average homeowner to worry about). They are bright blue and really stand out on a roof.

Thin-film panels, while growing in popularity, are the least efficient of all and require more installation and hardware costs. That said, they are light and flexible enough to be transformed into individual solar-powered roof shingles — very much an indication of what to expect from solar in the future.

Do I have to live somewhere sunny?
It's true that solar panels won't be producing at capacity when they aren't receiving direct sunlight.

However, a cloudy season doesn't totally eliminate the value of solar energy.
Standard grade solar panels actually operate more efficiently in slightly cooler temperatures, as they produce about 1 percent less electricity for every 4°F temperature increase above 77°F

CSUN Mono-crystalline Modules

i) QSAR I & II

Features:
a) Cell type: Monocrystalline
b) Module efficiency: up to 16.63%
c) Average power rating: up to 320 Wp
d) No of Cells: 60 or 72 cells (156*156 mm each)
Models: QSAR I CSUN 320-72M, QSAR II CSUN 320-72M, QSAR I CSUN 270-60M and QSAR II CSUN 270-60M.

ii) Standard Mono Series, The Energizer

Features:
a) Cell type: Monocrystalline

b) Module efficiency: up to 16.06%

c) Average power rating: up to 300 Wp

d) No of Cells: 60 or 72 cells (156*156 mm each)

Crescent City Harbor District Phase 1
101 Citizens Dock Rd, Crescent City, CA 95531
SOLAR ELECTRIC SYSTEM PROJECT - 370.875kW DC STC RATING /

VICINITY MAP:

PROJECT LOCATION

PROJECT SCOPE:

SOLAR ELECTRIC SYSTEM

THIS PROJECT ENTAILS THE INSTALLATION OF A PHOTOVOLTAIC SYSTEM AT Crescent City Harbor District Phase 1 THE SYSTEM WILL NOT BE A NET ELECTRICITY EXPORTER TO THE UTILITY GRID.
THIS INSTALLATION CONSISTS OF A NEW CARPORT PHOTOVOLTAIC (PV) SYSTEM. THE PV SYSTEM IS STATIC MOUNTED.

THIS SYSTEM WILL BE INTERCONNECTED TO AND WILL BE OPERATED IN PARALLEL WITH THE PP&L ELECTRIC GRID PER THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND UTILITY INTERCONNECT AGREEMENT

CONDITIONS OF APPROVAL:

1. ALL CONSTRUCTION SHALL OCCUR BETWEEN THE HOURS OF 7AM & 7PM, EXCEPT FOR THE PURPOSE OF EMERGENCIES.

SYSTEM SPECIFICATIONS:

TOTAL SYSTEM SIZE: 346.150 kW DC, 312.983 kW ACcec
(989) SOLAR MODULES, CSUN375-72MH, 375W
(9) SOLAREDGE INVERTERS, SE33.3KUS[480V][S11]

DRAWING INDEX

Sheet #	Sheet Name
T101	Title Sheet
T102	Notes
A101	Site Layout
A102	Array Layout 1&2
E101	Wiring Layout
E201	Single Line Diagram / Details
E301	Signage / Spec Sheets
E302	Spec Sheets

PERMITTING / PLANNING NOTES:

1. THIS PV SYSTEM INSTALLATION IS SUBJECT TO INSPECTION BY THE AUTHORITY HAVING JURISDICTION AND RENEWABLE ENERGY PARTNERS

2. THIS PROJECT SHALL CONFORM TO THE FOLLOWING CODE VERSIONS:
2016 CALIFORNIA BUILDING CODE (CBC 2016)
2016 CALIFORNIA ELECTRIC CODE (CEC 2016)
2016 CALIFORNIA FIRE CODE (CFC 2016)
AUTHORITY HAVING JURISDICTION

3. SOLAR EDGE INVERTERS & OPTIMIZERS COMPLY WITH 690.12 RAPID SHUTDOWN REQUIREMENTS

4. IRON RIDGE RACKING IS UL2703 APPROVED FOR INTEGRATED GROUNDING AND FIRE CLASS A RATED

PROJECT ADDRESS

PROJECT LOCATION

AERIAL PHOTO:

ARRAY LOCATIONS

PROJECT TEAM:

SITE CONTACT:

Crescent City Harbor District
ADDRESS: 101 Citizens Dock Rd, Crescent City, CA 95531
PHONE: (707) 464-6174

CONTRACTOR:

AMERICAN DIVERSIFIED ENERGY
711 W 17TH St, Suite D-5
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Crescent City Harbor District Phase 1
101 Citizens Dock Rd, Crescent City, CA 95531

No.	Description	Date
1	Module Rev.	10/22/18

AMERICAN DIVERSIFIED ENERGY

Title Sheet

T101

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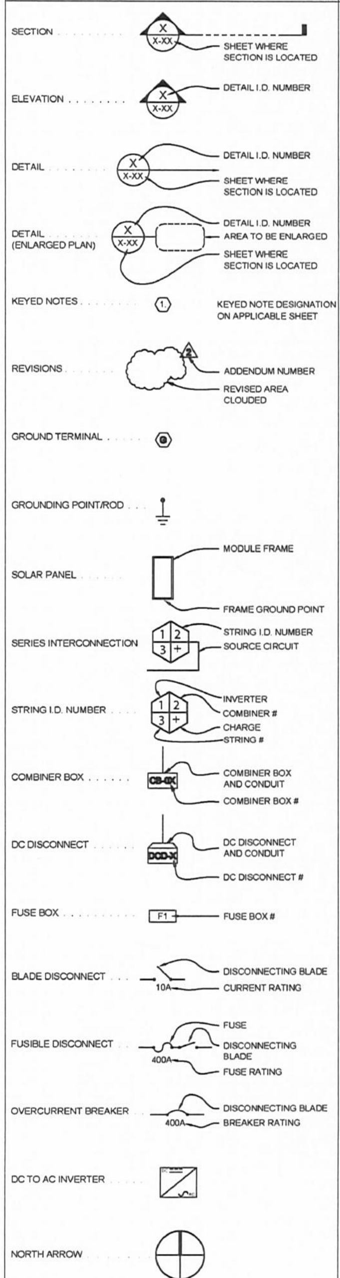
SYMBOLS



NOTES

ELECTRICAL NOTES:

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 FOR NUMBER, POLARITY OF PHASE

E2. THE LAYOUT, OF CONDUIT SHOWN IN THESE PLANS IS INDICATIVE ONLY. CONTRACTOR SHALL ROUTE AND LOCATE THE CONDUITS TO SUIT SITE CONDITIONS BUT SHALL NOT EXCEED THE MAXIMUM CONDUCTOR LENGTHS IDENTIFIED ON THE WIRE SCHEDULE. CONTRACTOR WILL COORDINATE ALL CHANGES IN WIRING AND CONDUIT WITH THE ENGINEER.

E3. BENDS SHALL NOT DAMAGE THE RACEWAY OR SIGNIFICANTLY CHANGE THE INTERNAL DIAMETER OF RACEWAYS (NO KINKS).

E4. SUPPORT CONDUCTORS IN VERTICAL CONDUITS IN ACCORDANCE WITH REQUIREMENTS IN NEC 300.19

E5. INSTALL ALL WIRING MATERIALS IN A NEAT WORKMANLIKE MANNER. USE GOOD TRADE PRACTICE. AS REQUIRED BY CHAPTER 3 OF THE NEC *AND* ANSI/NECA 1-2000 'STANDARD PRACTICES FOR GOOD WORKMANSHIP IN ELECTRICAL CONTRACTING'.

E6. INSTALL CONDUIT TO MAINTAIN PROPER CLEARANCES AND IN A NEAT INCONSPICUOUS MANNER. RUN PARALLEL AND AT RIGHT ANGLES TO STRUCTURAL MEMBERS OR OTHER CONDUITS. PROVIDE BOXES, FITTINGS AND BENDS FOR CHANGES IN DIRECTION. FASTEN CONDUIT SECURELY IN PLACE. CONDUCTORS' INSULATION IT IS BEING USED WITH. IT IS

E7. SUPPORT CONDUIT USING STEEL PIPE STRAPS OAE, LAY-IN ADJUSTABLE HANGERS, CLEVIS HANGERS OR SPLIT-HANGERS. HANGER SPACING SHALL BE INSTALLED PER NEC REQUIREMENTS FOR THE TYPE OF CONDUIT BEING INSTALLED. USE APPROVED BEAM CLAMPS FOR CONNECTION TO STRUCTURAL MEMBERS.

E8. PROVIDE PULL, JUNCTION OR CHRISTY BOXES WHERE REQUIRED TO FACILITATE THE INSTALLATION OF WIRING IN ADDITION TO THOSE ON THE DRAWINGS. BENDS IN CONDUITS BETWEEN PULL BOXES SHALL NOT EXCEED THE EQUIVALENT OF FOUR 90 DEGREE BENDS

E9. WHEN FIELD CUTTING IS REQUIRED, THE CONDUIT SHALL BE CUT SQUARE AND DEBURRED.

E10. CONDUIT SIZES NOT SPECIFIED SHOULD CONFORM TO NEC SPECIFICATIONS, TO INCLUDE FILL FACTOR AND DERATING FOR NUMBER OF CONDUCTORS WITH A MINIMUM CONDUIT SIZE BEING 3/4"

E11. THE WIRING MINIMUM SIZE SHALL BE #12 AWG.

E12. SAFETY REGULATION (LOCK OUT - TAG OUT, ETC.) IS THE FULL RESPONSIBILITY OF THE CONTRACTOR DURING CONSTRUCTION.

E13. THE WIRING SIZE IS BASED ON THE ESTIMATED CONDUIT ROUTING SHOWN IN THIS DRAWING PACKAGE. SHOULD THE CONDUITS LENGTH INCREASE DUE TO LOCATION OF SOURCE AND/OR ROUTING THE CONDUITS AND THE CONDUCTORS MAY NEED BE RESIZED. PLEASE CONTACT THE ENGINEER PRIOR TO MAKING ANY FIELD CHANGES.

E14. ALL WIRING IN CONDUIT SHALL BE THWN-2 FOR 90 DEGREE CELSIUS APPLICATIONS. USE BARE COPPER FOR GROUND FOR ALL EXTERNAL GROUNDING. USE2/RHW-2/PV WIRE OR APPROVED EQUIVALENT SHALL BE USED FOR ALL EXPOSED OR HOMERUN WIRING.

E15. FOR INTER CONNECTION VIA BUS TAP:

OVERCURRENT PROTECTION (SWITCHING DEVICE AND MEANS OF DISCONNECT) MUST BE LOCATED PER NEC 240.21

A. THE CONDUCTORS SHALL BE CRIMPED WITH A CRIMP-ON TERMINAL LUG, MANUFACTURED BY ILSCO, BURNDY, OAE. THE TERMINAL LUG SHALL HAVE IDENTIFICATION OR COLOR CODING TO MATCH THE CONDUCTOR SIZE. TERMINAL LUGS SHALL HAVE LONG BARRELS TO PROVIDE 2 CRIMPS PER TERMINAL LUG PER CONDUCTOR.

B. CRIMPED TERMINAL LUGS SHALL BE CONSTRUCTED OF PURE COPPER AND TIN PLATED FOR HIGH CONDUCTIVITY AND RATED FOR 600V AT 90 DEGREES CELSIUS.

C. THE CRIMP MUST BE MADE WITH THE MANUFACTURER'S APPROVED TOOL DEVICE TO ACHIEVE THE PROPER CRIMP CONNECTION.

D. USE STAINLESS STEEL HARDWARE WITH THE FASTENER TORQUED TO MANUFACTURER'S RECOMMENDATIONS ON ALL THREE PHASES TO COMPLY WITH ARTICLE 110.14 OF THE 2016 NEC.

E. 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, USE A 90 DEGREE CRIMP-ON LUG MANUFACTURED BY ILSCO, BURNDY, OAE. 90 DEGREE CRIMP-ON LUG MUST BE INSTALLED WITH RATED INSULATION THAT MEETS OR EXCEEDS THE CONDUCTORS' INSULATION IT IS BEING USED WITH. IT IS RECOMMENDED THAT ACCEPTABLE CLEARANCES ARE MAINTAINED WITH THIS BUS TAP FOR SAFE, CONTINUOUS OPERATION.

F. FOLLOW MANUFACTURER'S GUIDELINES, OR THE APPLICABLE AHJ, FOR MODIFICATION OF BUS BAR(S).

E16. ALL CONDUITS SHALL BE FREE OF ANY OBSTRUCTIONS AND PROPERLY SECURED BEFORE WIRE IS PULLED.

E17. ELECTRICAL CONTRACTOR TO PROVIDE SIGNAGE TO ALL ELECTRIC BOXES, JUNCTION BOXES, PULL BOXES, DC DISCONNECTS, CONDUIT RUNS, AC DISCONNECTS, SUB PANELS, AND MAIN SERVICES PER NEC ARTICLE 690.

E18. MEGGER TESTING: MEGGER (INSULATION) TEST ALL CONDUCTORS AT 1,000V TO 5 MEGAOHMS BETWEEN THE CONDUCTOR UNDER TEST AND GROUND WIRE. CONDUCT TEST AFTER WIRE IS PULLED THROUGH THE CONDUIT BUT BEFORE TERMINATING TO THE MODULES, COMBINERS, DISCONNECTS OR INVERTS. **DO NOT MEGGER THE SOLAR MODULES, AS THIS WILL LIKELY DAMAGE THEIR INTERNAL DIODES. MEGGERING IS INTENDED FOR ALL CONDUCTORS INSTALLED BY THE ELECTRICAL CONTRACTOR.** MEGGER TESTING OF CONDUCTORS BEYOND THE POINT OF COMMON COUPLING (POCC) IS THE SOLE RESPONSIBILITY OF THE UTILITY PROVIDING SERVICE.

E19. ALL UNDERGROUND ELECTRICAL WORK SHALL BE DONE WITH CARE. LOCATE EXISTING UTILITIES, IRRIGATION LINES AND OTHERS BEFORE COMMENCING UNDERGROUND WORK. CONTACT UNDERGROUND SERVICE ALERT (USA) WITHIN 48 HOURS OF ANY UNDERGROUND WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UNDERGROUND WORK PERFORMED.

MODULE INSTALLATION NOTES:

M1. REFER TO THE MODULE MANUAL FOR MORE DETAILS ON RIGGING, UNPACKING HANDLING, PLANNING, AND INSTALLATION.

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.

M3. NEVER LEAVE A MODULE UNSUPPORTED OR UNSECURED. THE CONTRACTOR IS RESPONSIBLE FOR ALL MATERIAL HANDLING ON THE JOBSITE.

SOLAR ARRAY COMMISSIONING:

C1. BEFORE CLOSING DISCONNECTS OR ATTEMPTING TO ENERGIZE THE INVERTERS, THE FOLLOWING COMMISSIONING PROCEDURE SHALL BE COMPLETED:

A. CHECK THE OPEN CIRCUIT VOLTAGE (VOC) AND POLARITY (+/-) OF EACH SOURCE CIRCUIT. RECORD THE VALUES ON THE COMMISSIONING RECORD DOCUMENTS

B. CHECK THE SHORT CIRCUIT CURRENT (ISC) FOR EACH SOURCE CIRCUIT RECORD THE VALUES ON COMMISSIONING RECORD DOCUMENTS

C. CHECK THAT ALL FUSES, DISCONNECTS AND OTHER BALANCE OF SYSTEM COMPONENTS ARE RATED FOR600VDC AND THE APPROPRIATE CURRENT CAPACITY.

D. COMPLETE A VISUAL INSPECTION OF ALL THE MODULES TO CHECK FOR BROKEN GLASS, FRAYED WIRES, EXPOSED CONDUCTORS AND ANY OTHER PROBLEMS THAT MAY CAUSE A FAULT.

E. PRIOR TO INSTALLATION ALL FUSES SHALL BE TESTED FOR CONTINUITY.

INVERTER COMMISSIONING:

IC1. THIS CHECKLIST MUST BE COMPLETED BY THE CONTRACTOR PRIOR TO COMMISSIONING:

A. CHECK THAT THE INVERTER IS PROPERLY GROUNDED, AS DESCRIBED BY THE MANUFACTURER AND THESE INSTRUCTIONS.

B. CHECK THE INVERTER DC INPUT VOLTAGE (VOC) FROM THE SOLAR ARRAY FOR PROPER POLAR, INSIDE THE INVERTER CABINET.

C. CHECK DC INPUT VOLTAGE (VOC) IS WITHIN THE PROPER RANGE IN THE INVERTER CABINET AS DEFINED BY THE INVERTER RATING LABEL AND ACCOMPANIED MANUAL

D. CHECK AC INPUT VOLTAGE IS IN THE PROPER PHASE SEQUENCE (CLOCKWISE) IF APPLICABLE

E. CHECK THAT THE AC GRID VOLTAGE, AT THE INVERTER AC TERMINALS, IS WITHIN THE PROPER RANGE DEFINED BY THE INVERTER RATING LABEL AND ACCOMPANIED MANUAL.

F. FOLLOW START-UP SEQUENCE IN MANUFACTURER'S OPERATION AND MAINTENANCE MANUAL

G. VERIFY THAT ALL CONDUCTOR TERMINATION AND FASTENER TORQUE MEET LISTED SPECIFICATIONS.

ADDITIONAL SOLAR-360 INSTALLATION STANDARDS

S1. NFPA 70 (NEC) AND IBC, OR LOCAL CODES AS REQUIRED. COMPLIANCE FOR INSTALLATION AND WORKMANSHIP.

S2. LABEL EQUIPMENT WITH PERMANENT WEATHERPROOF LABELS. COMPLY WITH NEC ART. 690.7, 690.17, AND 690.53 ESPECIALLY. LABEL UTILITY DISCONNECT AND SOLAR METER.

S3. IDENTIFY BOTH ENDS OF WIRES WITH PERMANENT WIRE MARKERS.

S4. THE POINT OF CONNECTION SHALL COMPLY WITH NFPA 70 ARTICLE 690.64(B)(2).

S5. LIMIT TOTAL VOLTAGE DROP TO LESS THAN 3%, INCLUDING ALL DC AND AC CIRCUITS (PROVIDE CALCULATIONS FOR WORST CIRCUIT). PREFERRED IS 2% DC AND 1% AC.

S6. INSTALLATION OF ALL COMPONENTS COMPLETED IS WORKMANLIKE MANNER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

S7. USE 90°C OR HIGHER WET RATED WIRE FOR ALL EXTERIOR CONDUITS, WITH APPROPRIATE DERATINGS FOR TEMPERATURE AND OTHER FACTORS.

S8. FUSES AND WIRES BETWEEN TRANSFORMER AND POINT OF INTERCONNECTION SIZED FOR TRANSFORMER IN-RUSH CURRENT (OCCURS DAILY DUE TO NIGHT-TIME DISCONNECT)

S9. ALL DC MATERIALS (FUSES, EQUIPMENT, CONNECTORS, WIRES, ETC.) TO BE UL LISTED FOR 600VDC OR 1000VDC WHERE APPLICABLE.

S10. ALL DISCONNECTS AND COMBINERS TO BE SECURED FROM UNAUTHORIZED/UNQUALIFIED PERSONNEL. (MAY BE WITH LOCK OR LOCATION) AND ALL SOURCES L.O.T.O. BEFORE COMMISSIONING.

S11. ALL EXPOSED CABLES, SUCH AS MODULE LEADS, TO BE SECURED WITH UV RATED PLASTIC OR OTHER APPROVED SUNLIGHT RESISTANT MEANS WITH A 25 YEAR LIFE.

S12. ALL FASTENERS TO BE UV RESISTANT PLASTIC AND ASSEMBLED TO ISOLATE COPPER CONDUCTORS FROM DIRECT CONTACT WITH ALUMINUM COMPONENTS.

S13. STRUCTURES AND SYSTEM LAYOUT MUST ACCOMMODATE EASY ACCESS FOR TROUBLESHOOTING AND MAINTENANCE.

S14. NO WIRE NUTS SHALL BE USED IN SYSTEM CONNECTION POINTS.

S15. CONNECTORS TO BE TORQUED PER DEVICE LISTING AFTER TREATING THREADS WITH ANTIOXIDANT OR ANTI SEIZE. CAMMED OUT SET SCREWS SHALL BE REPLACED. HEX OR SQUARE DRIVE SOCKET HEAD SCREWS ARE RECOMMENDED.

S16. SPLIT BOLTS/SPLICES/CONNECTORS SHALL BE INSULATED WITH APPROVED MEANS. UL LISTED ELECTRICAL TAPE ALONE IS NOT SUITABLE AS THE ONLY INSULATION MEANS. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR APPLICATION OF INSULATING PRODUCT.

S17. STRUCTURE FINISH TO BE CONSISTENT WITH 25 YEAR DESIGN LIFE WITH MINIMAL MAINTENANCE. ACCEPTABLE UNISTRUT FINISHES ARE THOSE COATING WITH DEMONSTRATED 25 YEAR LIFE.

S18. ANODIZED ALUMINUM. HOT DIPPED GALVANIZED STEEL, AND STAINLESS STEEL ARE ACCEPTABLE MATERIALS. ALL OTHER FINISHES REQUIRE JUSTIFICATION WITH DETAILS ON MAINTENANCE REQUIREMENT DURING THE 25 YEAR LIFE.

S19. ALL FIELD WELDS OR CUT SURFACES REQUIRE FIELD TOUCH-UP TO MAINTAIN FINISH COATING. CUT GALVANIZED/ZINC COVERED SURFACES SHALL BE COATED WITH A COLD ZINC PRODUCT APPLIED IN AN APPROVED MANNER.

S20. ALL WELDING TO BE COMPLETED BY WELDERS CERTIFIED AND CURRENT IN THE TYPE OF WELDING BEING COMPLETED.

S21. ALL ELECTRICAL WORK TO BE COMPLETED BY QUALIFIED ELECTRICIANS OR APPRENTICES WORKING UNDER THE DIRECT SUPERVISION OF A QUALIFIED ELECTRICIAN EQUIVALENT IN EXPERIENCE TO A JOURNEYMAN OR MASTER ELECTRICIAN.

S22. STRUCTURE MUST ALLOW FOR UNRESTRICTED AIRFLOW AROUND MODULES AND THE MODULE FRAME.

S23. PULL/SPLICE BOXES SHALL BE LISTED FOR PURPOSE AND INSTALLED IN A WORKMANLIKE MANNER. DIRECT BURIAL RATED CONNECTORS SHALL BE USED FOR CONDUCTORS.

S24. GROUNDING SYSTEM WILL USE LISTED COMPONENTS INCLUDING GROUND RODS, GROUNDING LUGS/CLAMPS, AND OTHER DEVICES RATED FOR DIRECT BURIAL WHEN EXPOSED TO THE ELEMENTS.

S25. MODULES SHALL BE GROUNDED WITH EQUIPMENT GROUNDING CONDUCTOR USING THE LISTED MEANS AS DESCRIBED IN THE MODULE INSTALLATION MANUAL. MECHANICAL CONNECTORS SHALL BE RATED FOR DIRECT BURIAL.

S26. CONCRETE SHALL BE CURED FOR A MINIMUM OF SEVEN (7) DAYS BEFORE LOADING, UNLESS THE RESPONSIBLE CHARGE ENGINEER CERTIFIES LOADING BEFORE INITIAL CURE, OR SPECIFIES A LONGER CURE TIME.

S27. TOP ENTRY CONDUITS WILL BE ROUTED SO WATER BUILDUP DOES NOT FALL ON ELECTRICAL/ELECTRONIC EQUIPMENT.

S28. ALL CONDUIT ENTRY AND EXITS FROM ENCLOSURES WILL BE SEALED WITH MATERIAL LISTED FOR PURPOSE SUCH AS FIRE STOP OR DUCT SEAL.

S29. FIELD ASSEMBLY OF MC CABLES WILL BE EXECUTED BY CERTIFIED PERSONNEL ACCORDING TO MANUFACTURER'S GUIDELINES.

S30. OTHER NEARBY UTILITY SERVICES WILL BE SECURED BEYOND THE BOUNDARY OF THE MODULES OR SUPPORT STRUCTURE AS REQUIRED BY APPLICABLE CODE(S). A MINIMUM CLEARANCE OF 7.5CM (3") IS REQUIRED WITH APPROVAL OF THE ENGINEER

S31. CIRCUIT COMBINERS SHALL BE LISTED TO UL 1741 AND APPROPRIATE FOR THE INSTALLATION DESIGN AND LOCATION

S32. PER NEC STANDARD COLORS FOR WIRE SHALL BE USED. WHITE FOR THE GROUNDED CONDUCTOR, GREEN FOR EQUIPMENT GROUND, AND ALL OTHER COLORS NEEDED FOR PHASING.

ABBREVIATIONS

AC	ALTERNATING CURRENT
APPROX	APPROXIMATE
AWG	AMERICAN WIRE GUAGE
CL	CENTER LINE
CB	COMBINER BOX
DC	DIRECT CURRENT
DI	DROP INLET
DISC	DISCONNECT
EMT	ELECTRICAL METALLIC TUBING
(E)	(EXISTING)
EL	ELEVATION
EQ	EQUAL
ID	INSIDE DIAMETER
JB	JUNCTION BOX
MCB	MAIN COMBINER BOX
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
(N)	(NEW)
OAE	OR APPROVED EQUAL
OC	ON CENTER
OD	OUTSIDE DIAMETER
POCC	POINT OF COMMON COUPLING
PV	PHOTOVOLTAIC
PL	PROPERTY LINE
SD	STORM DRAIN
SF	SQUARE FOOT/FEET
SIM	SIMILAR
TBD	TO BE DETERMINED
TOF	TOP OF FOOTING
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VIF	VERIFY IN FIELD
XFMR	TRANSFORMER

AMERICAN Diversified Energy

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Crescent City Harbor District
Phase 1
101 Citizens Dock Rd,
Crescent City, CA 95531

No.	Description	Date

AMERICAN DIVERSIFIED ENERGY

Notes

T102

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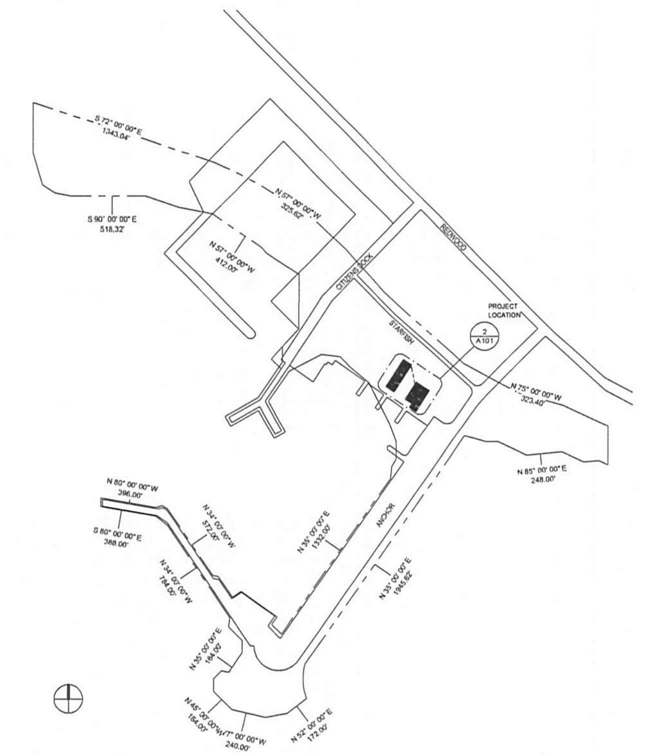
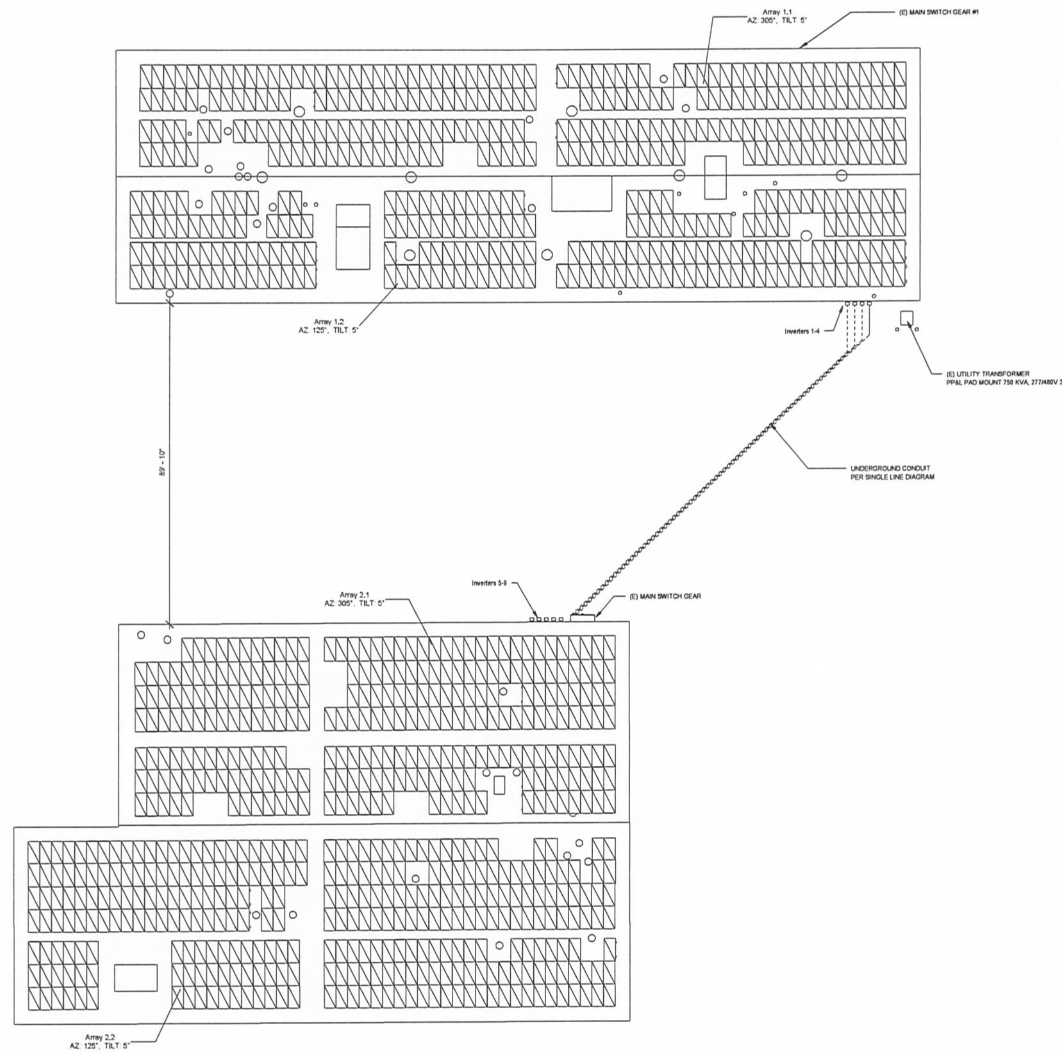

S 72° 00' 00" E
1343.04'
S 90° 00' 00" E
518.32'
N 57° 00' 00" W
325.62'
N 57° 00' 00" W
412.00'
CITIZENS DOCK
REDWOOD
STARFISH
PROJECT LOCATION
2
A101
N 75° 00' 00" W
323.40'
N 85° 00' 00" E
248.00'
N 80° 00' 00" W
396.00'
S 80° 00' 00" E
368.00'
N 34° 00' 00" W
572.00'
N 34° 00' 00" W
184.00'
N 35° 00' 00" E
1332.00'
ANCHOR
N 35° 00' 00" E
1945.82'
N 35° 00' 00" E
164.00'
N 45° 00' 00" W
184.00'
N 7° 00' 00" W
240.00'
N 52° 00' 00" E
172.00'

① Site Layout
1" = 400'-0"


Array 1.1
AZ: 305°, TILT: 5°
(E) MAIN SWITCH GEAR #1
Array 1.2
AZ: 125°, TILT: 5°
Inverters 1-4
(E) UTILITY TRANSFORMER
PP&L PAD MOUNT 750 KVA, 277/480V 3P
89' - 10"
UNDERGROUND CONDUIT
PER SINGLE LINE DIAGRAM
Inverters 5-9
(E) MAIN SWITCH GEAR
Array 2.1
AZ: 305°, TILT: 5°
Array 2.2
AZ: 125°, TILT: 5°

② Site Layout - Callout 1
1/16" = 1'-0"

AMERICAN Diversified Energy
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AMERICAN DIVERSIFIED ENERGY

X___________

Array Name	Tilt°	Azimuth	Module Count
Array 1.1	5	305	230
Array 1.2	5	125	201
Array 2.1	5	305	255
Array 2.2	5	125	303
Grand total			989

Crescent City
Harbor District
Phase 1
101 Citizens Dock Rd,
Crescent City, CA 95531

No.	Description	Date

AMERICAN DIVERSIFIED ENERGY

Site Layout

A101

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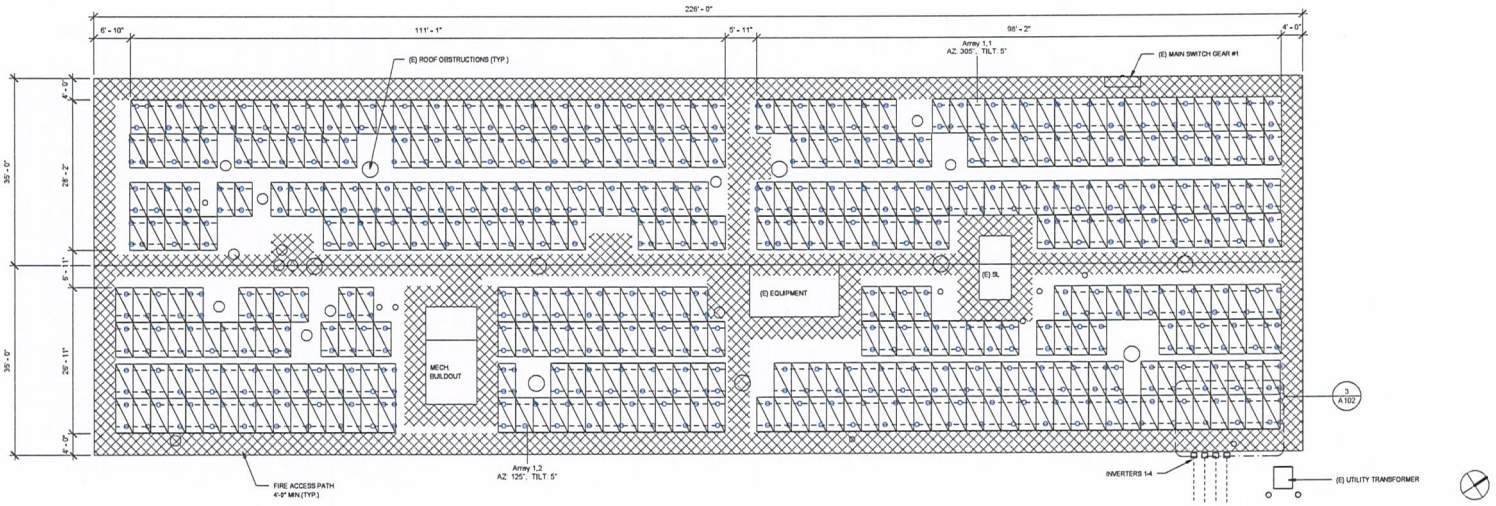
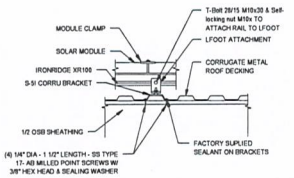
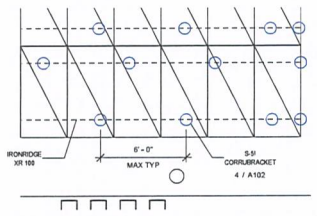
To scale on 24x36 paper



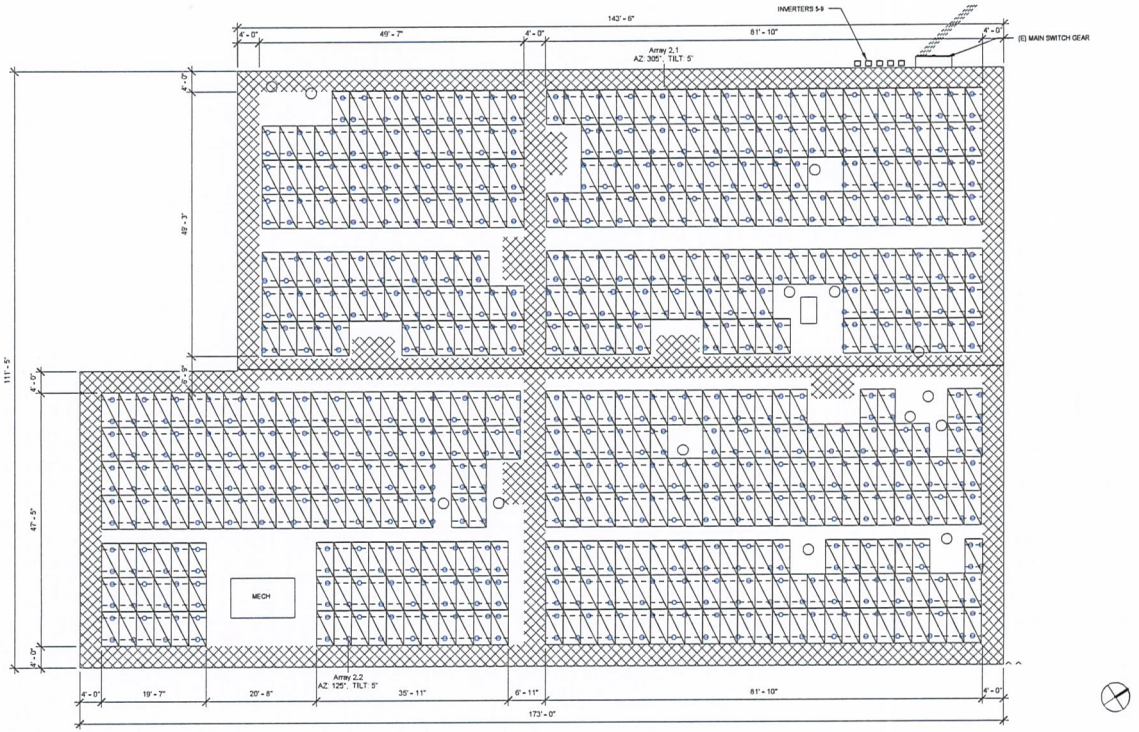
2 Array 1 Layout
3/32" = 1'-0"



4 Roof Standoff - S-5! Corru Bracket
1 1/2" = 1'-0"



3 Typical Attachment Layout
1/4" = 1'-0"



1 Array 2 Layout
3/32" = 1'-0"

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X_____

Array Name	Tilt°	Azimuth	Module Count
Array 1.1	5	305	230
Array 1.2	5	125	201
Array 2.1	5	305	255
Array 2.2	5	125	303
Grand total			989

Crescent City Harbor District Phase 1
101 Citizens Dock Rd.
Crescent City, CA 95531

No.	Description	Date

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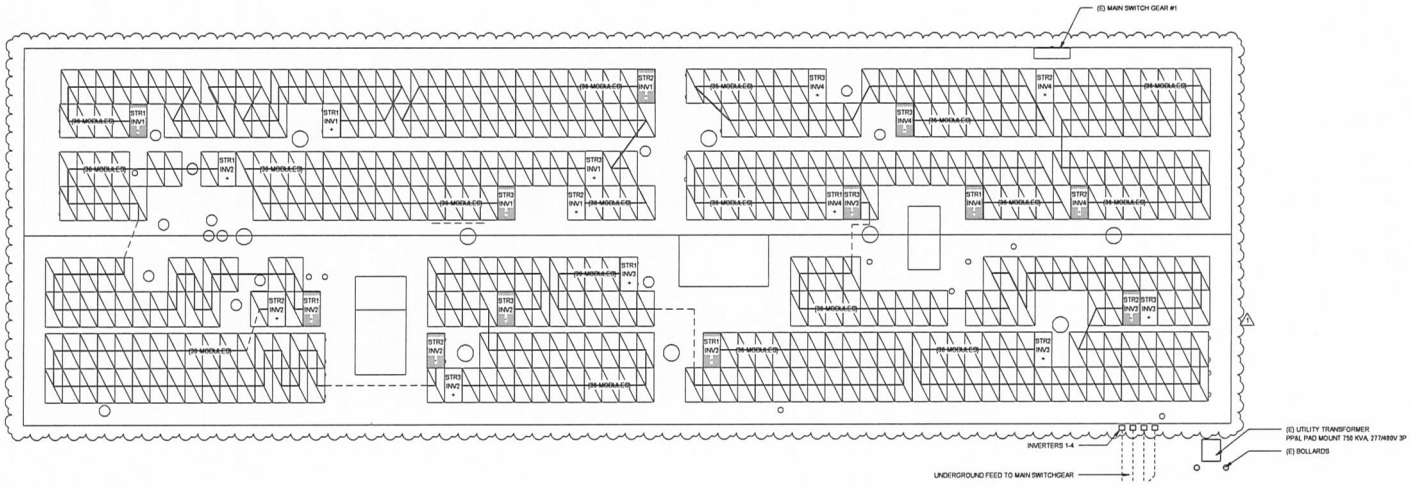
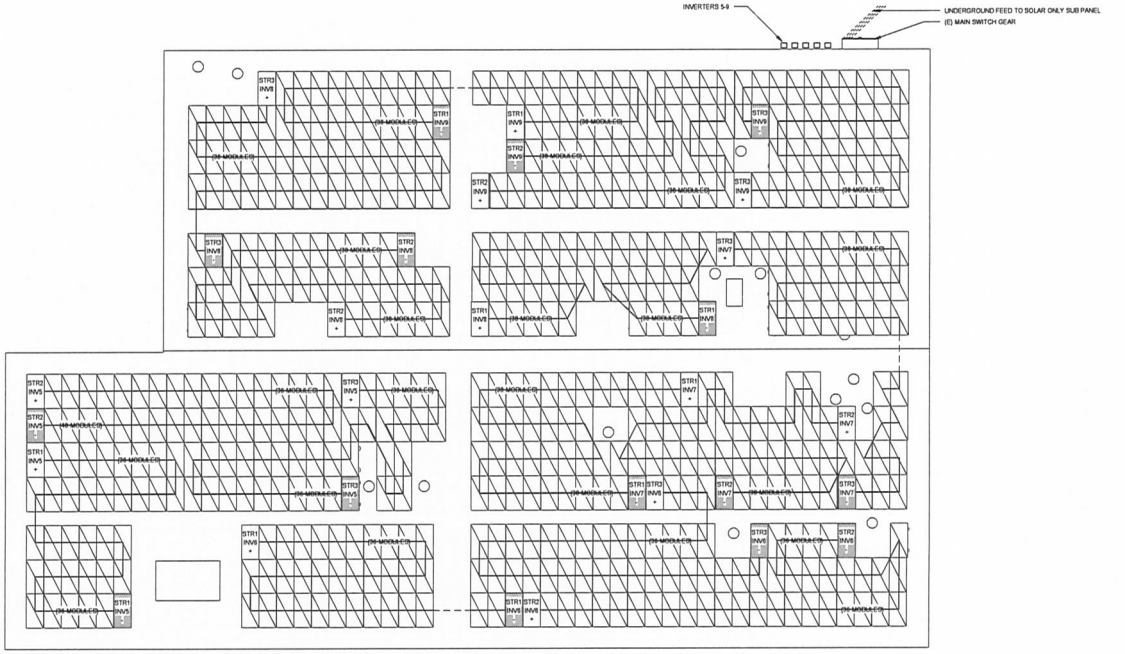
Array Layout 1&2

A102

10/22/2018 9:54:02 AM
To scale on 24x36 paper



1 Array 1 Layout Wiring
3/32" = 1'-0"



2 Array 2 Wiring Layout
3/32" = 1'-0"

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X

Array Name	Tilt°	Azimuth	Module Count
Array 1.1	5	305	230
Array 1.2	5	125	201
Array 2.1	5	305	255
Array 2.2	5	125	303
Grand total			989

Crescent City
Harbor District
Phase 1
101 Citizens Dock Rd,
Crescent City, CA 95531

No.	Description	Date
1	Module Rev	10/22/18

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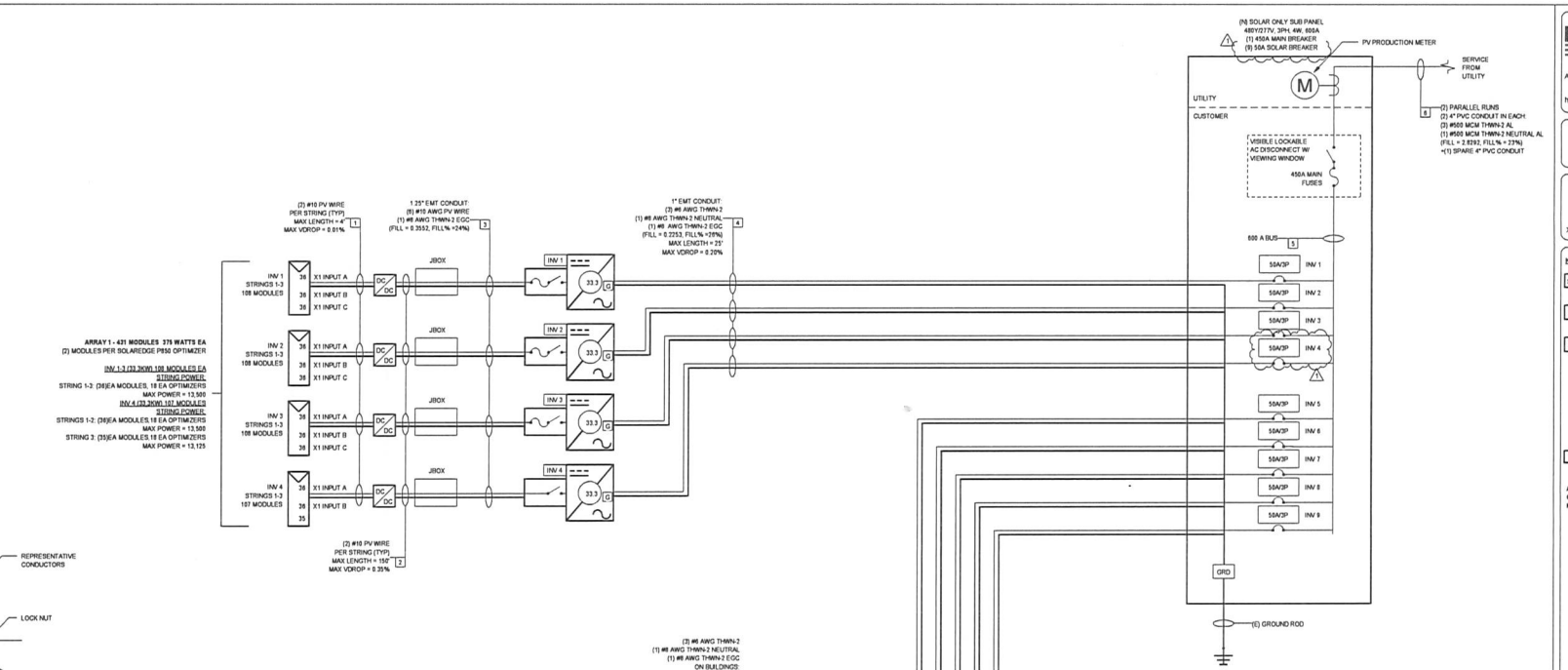
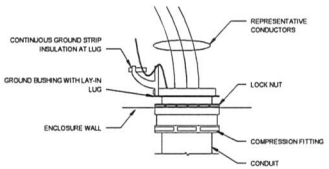
Wiring Layout

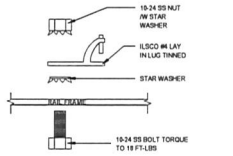
E101

10/22/2018 9:54:03 AM
To scale on 24x36 paper





4 Detail Grounding Conduit Body1
6" = 1'-0"



3 Detail Grounding Lay-in Lug
6" = 1'-0"

TAG #	MAX CURRENT	WIRE TYPE	AWG	CONDUIT SIZE	NEC TABLE 310.15(B)(16) RATING @ 90°C	CURRENT CARRYING CONDUCTORS IN CONDUIT	CONDUIT FILL ADJUSTMENT	TEMPERATURE ADJUSTMENT ASHRAE 2% CRESCENT CITY FAA AI= 18°C ROOF = 18°C + 22°C = 40°C	TOTAL WIRE ADJUSTMENT	TERMINAL RATING PER NEC 310.15(B)(16)
1	9.82A X 125% X 125% = 15.3A	PV WIRE	#10	FREE AIR	40A	NA	NA	91% @ 40°C ROOF	40A X 100% X 91% = 36.4A ≥ 15.3A	60°C @ 30A ≥ 15.3A
2	15A MAX X 125% = 18.8A	PV WIRE	#10	FREE AIR	40A	NA	NA	91% @ 40°C ROOF	40A X 100% X 91% = 36.4A ≥ 18.8A	60°C @ 30A ≥ 18.8A
3	15A MAX X 125% = 18.8A	PV WIRE	#10	1" EMT	40A	6	80% @ 4-6	91% @ 40°C ROOF	40A X 80% X 91% = 29.1A ≥ 18.8A	60°C @ 30A ≥ 18.8A
4	40A MAX X 125% = 50A	THWN-2	#6	1" EMT	75A	3	100% @ 1-3	108% @ 18°C AMBIENT	75A X 100% X 108% = 81A ≥ 50A	60°C @ 55A ≥ 50A
5	360A MAX X 125% = 450A	BUSSING	600A	NA	600A	NA	NA	108% @ 18°C AMBIENT	600A X 100% X 108% = 648A ≥ 450A	NA
6	600A/2 PARALLEL = 300A	THWN-2	#500 MCM AL	4" PVC	350A	3	100% @ 1-3	108% @ 18°C AMBIENT	350A X 100% X 108% = 378A ≥ 300A	75°C @ 310A ≥ 300A

2 Single Line Diagram Carports
12" = 1'-0"

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X

KEY:
SUB (N) SOLAR ONLY SUB PANEL 480V, 3PH, 3W, 225A
INV (N) INVERTER SOLAREDGE 33.3 kW
INV (N) INVERTER SOLAREDGE 20 kW
RUN NUMBER SEE 3/E301 FOR WIRE SIZE CALC

ASHRAE - CRESCENT CITY FAA AI:
COLD DESIGN TEMP = -1°C
HOT DESIGN TEMP = 18°C

Crescent City Harbor District Phase 1
101 Citizens Dock Rd, Crescent City, CA 95531

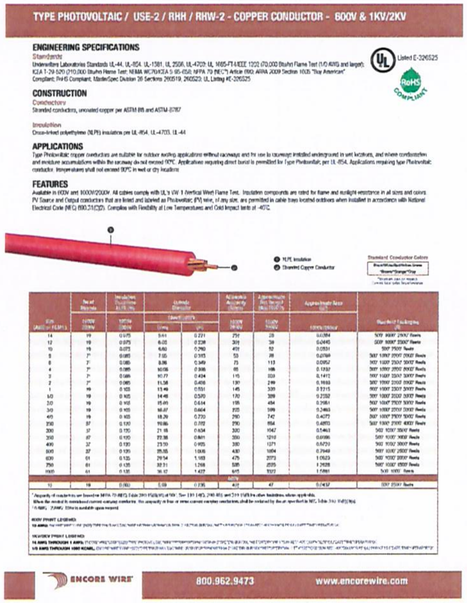
No.	Description	Date
1	Module Rev	10/22/18

AMERICAN DIVERSIFIED ENERGY

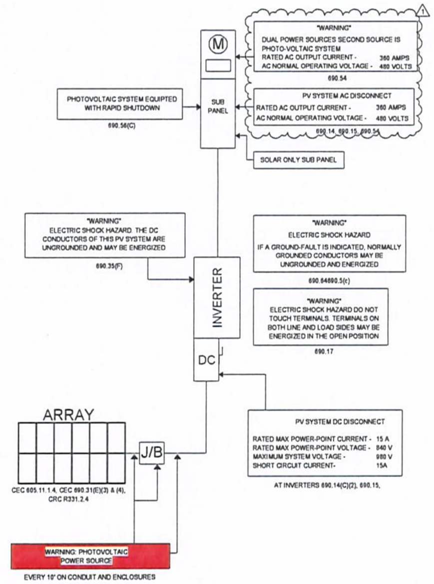
Single Line Diagram / Details

E201

10/22/2018 9:54:05 AM
To scale on 24x36 paper

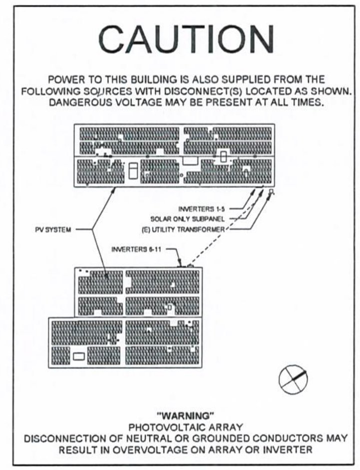


4 Spec Sheet-Wire PV
12" = 1'-0"

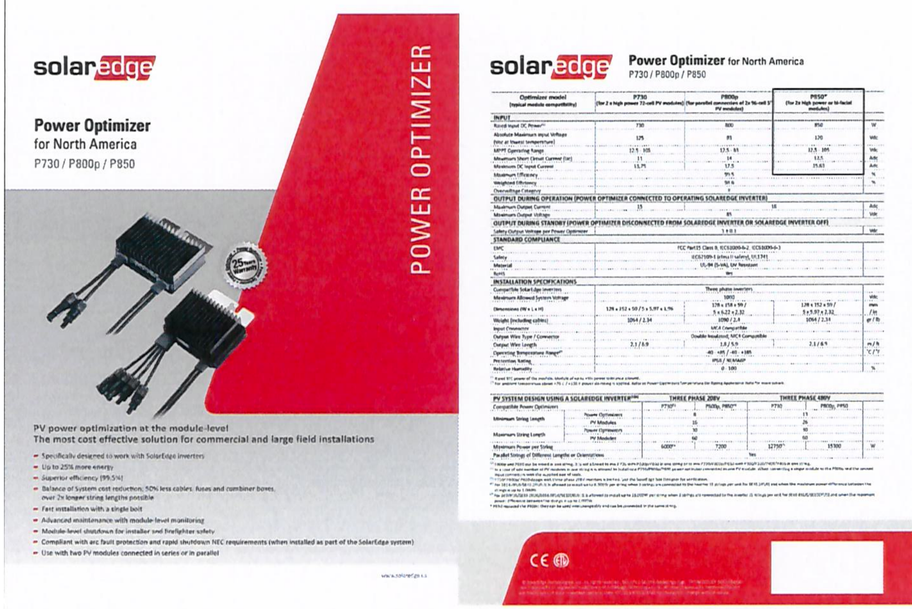

"WARNING"
DUAL POWER SOURCES SECOND SOURCE IS PHOTO-VOLTAIC SYSTEM
RATED AC OUTPUT CURRENT - 360 AMPS
AC NORMAL OPERATING VOLTAGE - 480 VOLTS
690.54
PV SYSTEM AC DISCONNECT
RATED AC OUTPUT CURRENT - 360 AMPS
AC NORMAL OPERATING VOLTAGE - 480 VOLTS
690.14, 690.15, 690.54
PHOTOVOLTAIC SYSTEM EQUIPTED WITH RAPID SHUTDOWN
690.56(C)
M
SUB PANEL
SOLAR ONLY SUB PANEL
"WARNING"
ELECTRIC SHOCK HAZARD. THE DC CONDUCTORS OF THIS PV SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED
690.35(F)
INVERTER
"WARNING"
ELECTRIC SHOCK HAZARD
IF A GROUND-FAULT IS INDICATED, NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED
690.84690.5(c)
"WARNING"
ELECTRIC SHOCK HAZARD DO NOT TOUCH TERMINALS. TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
690.17
DC
ARRAY
J/B
CEC 605.11.1.4, CEC 690.31(E)(3) & (4), CRC R331.2.4
PV SYSTEM DC DISCONNECT
RATED MAX POWER-POINT CURRENT - 15 A
RATED MAX POWER-POINT VOLTAGE - 840 V
MAXIMUM SYSTEM VOLTAGE - 980 V
SHORT CIRCUIT CURRENT- 15A
AT INVERTERS 690.14(C)(2), 690.15,
WARNING: PHOTOVOLTAIC POWER SOURCE
EVERY 10' ON CONDUIT AND ENCLOSURES

1 Signage System 1
12" = 1'-0"

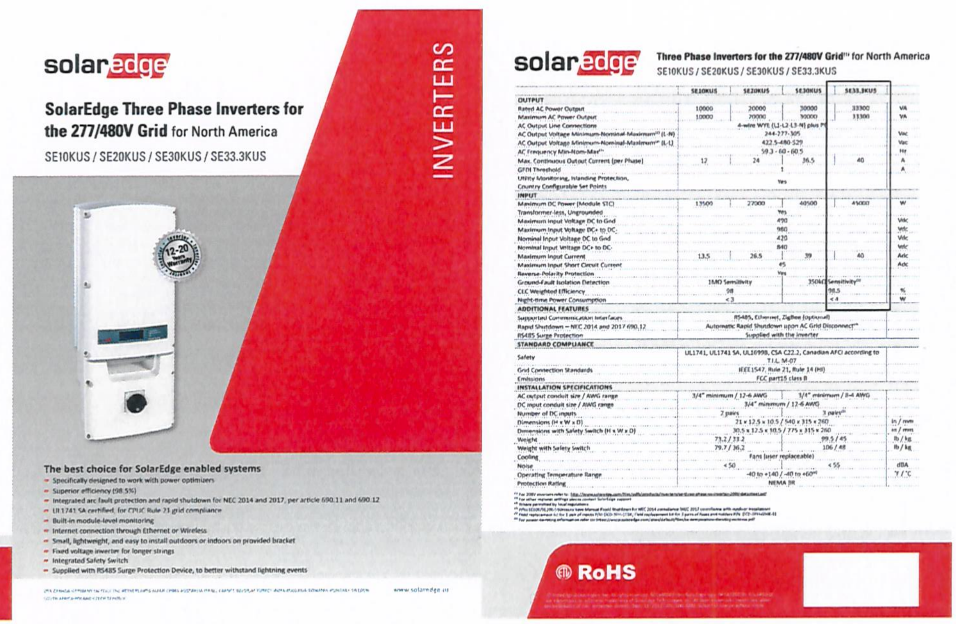
NOTES
1. CEC ARTICLES 690 AND 705 AND CRC SECTION R331 MARKINGS SHOWN HEREON
2. ALL MARKINGS SHALL CONSIST OF THE FOLLOWING:
A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING
B. RED BACKGROUND COLOR WITH WHITE TEXT AND LINE WORK
C. ARIAL FONT
3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATIONS SPECIFIED
4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT USING POP-RIVETS OR SCREWS


CAUTION
POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECT(S) LOCATED AS SHOWN. DANGEROUS VOLTAGE MAY BE PRESENT AT ALL TIMES.
INVERTERS 1-5
SOLAR ONLY SUBPANEL
(E) UTILITY TRANSFORMER
PV SYSTEM
INVERTERS 6-11
"WARNING"
PHOTOVOLTAIC ARRAY
DISCONNECTION OF NEUTRAL OR GROUNDED CONDUCTORS MAY RESULT IN OVERVOLTAGE ON ARRAY OR INVERTER

6"X8" TYP - CEC 705.10


solaredge
Power Optimizer
for North America
P730 / P800p / P850
POWER OPTIMIZER
PV power optimization at the module-level
The most cost effective solution for commercial and large field installations
Power Optimizer for North America
P730 / P800p / P850

2 Spec Sheet SolarEdge Optimizer
12" = 1'-0"


solaredge
SolarEdge Three Phase Inverters for the 277/480V Grid for North America
SE10KUS / SE20KUS / SE30KUS / SE33.3KUS
INVERTERS
The best choice for SolarEdge enabled systems
Three Phase Inverters for the 277/480V Grid for North America
SE10KUS / SE20KUS / SE30KUS / SE33.3KUS
RoHS

3 Spec Sheet Solaredge Inverters
12" = 1'-0"

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AMERICAN DIVERSIFIED ENERGY

X________________

Sign and Markings Format:
(1) White lettering on red background
(2) Minimum 3/8 - inch letter height
(3) All letters to be capitalized
(4) Arial or similar font, non-bold
(5) Signage - permanent reflective weather resistant material suitable for the environment

Crescent City
Harbor District
Phase 1
101 Citizens Dock Rd,
Crescent City, CA 95531

No.	Description	Date
1	Module Rev	10/22/18

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Signage / Spec Sheets

E301

10/22/2018 9:54:28 AM
To scale on 24x36 paper

Tech Brief

XR Rail Family

The XR Rail Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads, while minimizing material costs. Depending on your location, there is an XR Rail to match.

XR10

XR10 is a sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves 6 foot spans, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear anodized finish
- Internal splices available

XR100

XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 8 feet.

- 8' spanning capability
- Heavy load capability
- Clear & black anodized finish
- Internal splices available

XR1000

XR1000 is a heavyweight among solar mounting rails. It's built to handle extreme climates and spans 12 feet or more for commercial applications.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish
- Internal splices available

Rail Selection

The following table was prepared in compliance with applicable engineering codes and standards. Values are based on the following criteria: ASCE 7-10, Roof Zone 1, Exposure B, Roof Slope of 7 to 27 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed span tables and certifications.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	100						
	120						
	140	XR10		XR100		XR1000	
	160						
10-20	100						
	120						
	140						
	160						
30	100						
	160						
40	100						
	160						
50-70	160						
80-90	160						

Tech Brief

IRONRIDGE XR Rail Family

Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.

Force-Stabilizing Curve

Sloped roofs generate both vertical and lateral forces on mounting rails which can cause them to bend and twist. The curved shape of XR Rails is specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

Compatible with Flat & Pitched Roofs

XR Rails are compatible with FlashFoot and other pitched roof attachments.

IronRidge offers a range of tilt leg options for flat roof mounting applications.

Corrosion-Resistant Materials

All XR Rails are made of marine-grade aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.

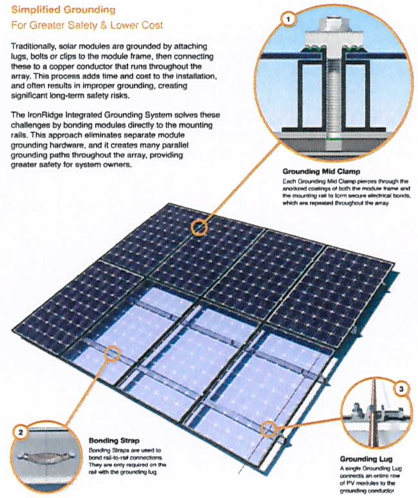
Tech Brief

IRONRIDGE Integrated Grounding System

Simplified Grounding
For Greater Safety & Lower Cost

Traditionally, solar modules are grounded by attaching lugs, bolts or clips to the module frame, then connecting these to a copper conductor that runs throughout the array. This process adds time and cost to the installation, and often results in improper grounding, creating significant long-term safety risks.

The IronRidge Integrated Grounding System solves these challenges by bonding modules directly to the mounting rails. This approach eliminates separate module grounding hardware, and it creates many parallel grounding paths throughout the array, providing greater safety for system owners.



1 Grounding Mid Clamp
Each Grounding Mid Clamp pierces through the anodized coatings of both the module frame and the mounting rail to form secure electrical bonds, which are repeated throughout the array.

2 Bonding Strap
Bonding Straps are used to bond rail-to-rail connections. They are only required on the rail with the grounding lug.

3 Grounding Lug
A single Grounding Lug connects an entire row of PV modules to the grounding conductor.

Tech Brief

IRONRIDGE Class A Fire Rating

Background

All roofing products are tested and classified for their ability to resist fire.

Recently, these fire resistance standards were expanded to include solar equipment as part of the roof system. Specifically, this requires the modules, mounting hardware and roof covering to be tested together as a system to ensure they achieve the same fire rating as the original roof covering.

Adoption of these new requirements will begin in California in 2015 and extend to the rest of the country in 2016.

IronRidge Certification

In August 2014, IronRidge was the first company to receive a Class A Fire Rating—the highest possible rating—from Intertek Group plc., a Nationally Recognized Testing Laboratory.

IronRidge Roof Mount products were tested on flat and sloped roofs in accordance with the new UL 1703 & UL 2703 test standards. The testing evaluated the system's ability to resist flame spread, burning material and structural damage to the roof.

Refer to the table below to determine the requirements for achieving a Class A Fire Rating on your next project.

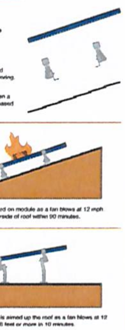
Fire Testing Process

Test Setup

Solar Modules
Solar modules are given a Type classification based on their materials and construction.

Mounting System
Mounting is tested as part of a system that includes type-tested modules and fire-rated roof covering.

Roof Covering
Roof covering products are given a Fire Class Rating of A, B or C based on their tested fire resistance.



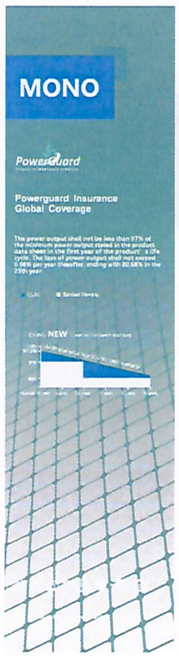
Burning Brand Test
A burning wooden block is placed on module as a fan blows at 12 mph. Flame cannot be seen on underside of roof within 90 minutes.

Spread of Flame Test
Flame at southern edge of roof is aimed up the roof as a fan blows at 12 mph. The flame cannot spread 6 feet or more in 10 minutes.

Roof Slope	Mount	Module	Fire Rating*
Steep Slope (≥ 9.5 degrees)	Flush	Type 1, 2, & 3	Class A
	Tilt	Type 1 & 2	Class A
Low Slope (< 9.5 degrees)	Flush	Type 1, 2, & 3	Class A
	Tilt	Type 1, 2, & 3	Class A

*Class A rated PV systems can be installed on Class A, B, and C roofs

② Spec Sheet Iron Ridge Railing
12" = 1'-0"



CSUN energy for today

CSUN375-72MH

The Large Scale Project Solution

CSUN375-72MH CSUN370-72MH CSUN365-72MH
CSUN360-72MH CSUN355-72MH

19.36% Module efficiency

375W Highest power output

10years Material & Workmanship warranty

25years Linear power output warranty

- PID-free
- World class mono efficiency
- Tighter porduct performance distribution and current sorting reduces the mismatch power loss in system operation
- Positive tolerance offer
- Good temperature coefficient enables higher output in high temperature regions
- Excellent performance under low light conditions
- Certified for salt/ammonia corrosion resistance
- Load certificates: wind to 2400Pa and snow to 5400Pa

- China Sunergy Co., Ltd. designs, manufactures and delivers high efficient solar cells and modules to the world from its production centers based in China, Turkey, South Korea and Vietnam.
- Founded in 2004, China Sunergy is well known for its advanced solar cell technology reliable product quality and excellent customer service.
- As one of leading PV enterprises, China Sunergy has delivered more than 4.0GW of solar products to residential, commercial, utility and off-grid projects all around the world.

- Note:
All specifications, warranties, certifications about module of "CSUN" series also apply to that of "SST".

All information and data are subject to change without notice.

Right 2018

Electrical characteristics at Standard Test Conditions(STC)

Module Type	CSUN375-72MH	CSUN370-72MH	CSUN365-72MH	CSUN360-72MH	CSUN355-72MH
Maximum Power - Pmax (W)	375	370	365	360	355
Open Circuit Voltage - Voc (V)	47.6	47.5	47.4	47.3	47.1
Short Circuit Current - Isc (A)	9.99	9.90	9.79	9.67	9.57
Maximum Power Voltage - Vmpp (V)	39.0	38.9	38.8	38.6	38.4
Maximum Power Current - Impp (A)	9.60	9.52	9.41	9.33	9.24
Module Efficiency	19.36%	19.11%	18.85%	18.59%	18.33%

Standard Test Conditions (STC): Irradiance 1,000 W/m²; AM 1,5; module temperature 25°C, Tolerance of Pmpp: 0~+3%.
Measuring uncertainty of power: ±3%. Certified in accordance with IEC 61215, IEC 61730-1/2 and UL 1703.

Electrical Characteristics at Normal Operating Cell Temperature(NOCT)

Module Type	CSUN375-72MH	CSUN370-72MH	CSUN365-72MH	CSUN360-72MH	CSUN355-72MH
Maximum Power - Pmax (W)	277	274	270	267	263
Open Circuit Voltage - Voc (V)	44.1	44.0	43.9	43.8	43.6
Short Circuit Current - Isc (A)	8.05	7.98	7.89	7.8	7.72
Maximum Power Voltage - Vmpp (V)	36.5	36.4	36.3	36.3	36.1
Maximum Power Current - Impp (A)	7.60	7.51	7.41	7.36	7.29

Normal Operating Cell Temperature((NOCT) : Irradiance 800W/wind speed 1 m/s ; cell temperature 45°C; ambient temperature 20°C.
Measuring uncertainty of power: ±3%. Certified in accordance with IEC 61215, IEC 61730-1/2 and UL 1703.

Temperature Characteristics

NOCT	45°C (±2°C)
Voltage Temperature Coefficient	-0.29%/K
Current Temperature Coefficient	+0.05%/K
Power Temperature Coefficient	-0.39%/K

Maximum Ratings

Maximum System Voltage (V)	1500
Series Fuse Rating (A)	20

Material Characteristics

Dimensions	1956×990×40mm (L×W×H)
Weight	22.0kg
Frame	Anodized aluminum profile
Front Glass	White toughened safety glass, 3.2 mm
Cell Encapsulation	EVA (Ethylene-Vinyl-Acetate)
Back Sheet	Composite film
Cells	6×12 pieces monocrystalline solar cells series strings (156.75×156.75mm)
Junction Box	Rated current≥13A, IP≥67, TUV&UL
Cable&Connector	Length 900 mm, 1×4 mm², compatible film MC4

Packaging

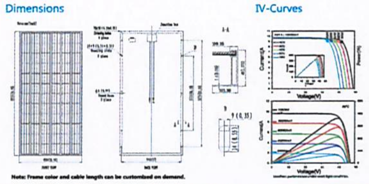
Dimensions(L×W×H)	1990×1120×1120mm
Container20'	260
Container40'	624
Container40'HC	684

System Design

Temperature Range	-40 °C to + 85 °C
Withstanding Hail	Maximum diameter of 25 mm with impact speed of 23 ms⁻¹
Maximum Surface Load	5,400 Pa
Application class	class A
Safety class	class II

Dimensions

IV-Curves



Note: Frame color and cable length can be customized on demand.

③ Spec Sheet Module
12" = 1'-0"

S-5!®
The Right Way!

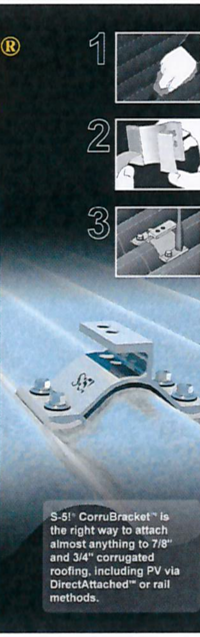
The right way to attach almost anything to metal roofs!

CorruBracket™

CorruBracket™ can be used to mount almost anything to corrugated metal roofing and is compatible with 7/8" and 3/4" corrugated roofing. No messy sealants to apply! No chance for leaks! The CorruBracket comes with factory-applied butyl sealant already in the base, and the S-5!® patented reservoir conceals the sealant, preventing UV degradation.

Installation is simple! CorruBracket is mounted directly into the supporting structure of the roof, i.e. roof decking, wood or steel purlins, or trusses. No surface preparation is necessary; simply wipe away excess oils and debris, peel the release paper, align, and apply. Secure through the pre-punched holes using the appropriate screws for the supporting structure.

CorruBracket is so strong, it will even support heavy-duty applications like snow retention. For corrugated profiles, the CorruBracket is the perfect match for our ColorGard® snow retention system. CorruBracket is economical and facilitates quick and easy installation.



S-5!® CorruBracket™ is the right way to attach almost anything to 7/8" and 3/4" corrugated roofing, including PV via DirectAttached™ or rail methods.

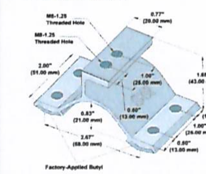
S-5!® The Right Way!

CorruBracket™ is extremely versatile. It can be used for almost any attachment need on 7/8" and 3/4" corrugated metal roofing. No messy sealants to apply. The factory-applied butyl sealant waterproofs and makes installation a snap!

Each **CorruBracket™** comes with factory-applied butyl sealant in the base. CorruBracket is compatible with most common metal roofing materials. For design assistance, ask your distributor, or use our web-based calculator at **www.S-5.com** for job-specific system engineering and design of your next snow retention project. Also, please visit our website for more information including CAD details, metallurgical compatibilities and specifications.

The CorruBracket has been tested for load-to-failure results on wood decking, and metal and wood purlins. The independent lab test data found at www.S-5.com can be used for load-critical designs and applications. S-5!® holding strength is unmatched in the industry.

CorruBracket™



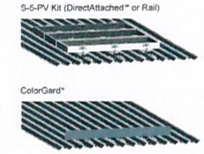
Please note: All measurements are rounded to the second decimal place. Contact your distributor for information about hardware requirements.

Example Profile

Example Applications

S-5-PV Kit (DirectAttached™ or Rail)

ColorGard®



S-5!® Warning! Please use this product responsibly!

Products are protected by multiple U.S. and foreign patents. For published data regarding holding strength, bolt torque, patents and trademarks visit the S-5! website at www.S-5.com.

Distributed by

① Spec Sheet S-5! Corru Bracket
12" = 1'-0"

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711 W 17TH St, Suite D-5
Costa Mesa, CA 92627
http://americandiversifiedenergy.com
949-258-9842

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AMERICAN DIVERSIFIED ENERGY

X

Crescent City
Harbor District
Phase 1
101 Citizens Dock Rd,
Crescent City, CA 95531

No.	Description	Date

AMERICAN DIVERSIFIED ENERGY

Spec Sheets

E302

10/22/2018 9:55:21 AM
To scale on 24x36 paper

Crescent City Harbor District Phase 2
101 Citizens Dock Rd, Crescent City, CA 95531
SOLAR ELECTRIC SYSTEM PROJECT - 423.00kW DC STC RATING / ____kW AC CEC RATING

VICINITY MAP:

PROJECT LOCATION

PROJECT SCOPE:

SOLAR ELECTRIC SYSTEM

THIS PROJECT ENTAILS THE INSTALLATION OF A PHOTOVOLTAIC SYSTEM AT Crescent City Harbor District Phase 2 THE SYSTEM WILL NOT BE A NET ELECTRICITY EXPORTER TO THE UTILITY GRID.
THIS INSTALLATION CONSISTS OF A NEW CARPORT PHOTOVOLTAIC (PV) SYSTEM. THE PV SYSTEM IS STATIC MOUNTED.

THIS SYSTEM WILL BE INTERCONNECTED TO AND WILL BE OPERATED IN PARALLEL WITH THE PP&L ELECTRIC GRID PER THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND UTILITY INTERCONNECT AGREEMENT

CONDITIONS OF APPROVAL:

1. ALL CONSTRUCTION SHALL OCCUR BETWEEN THE HOURS OF 7AM & 7PM, EXCEPT FOR THE PURPOSE OF EMERGENCIES.

SYSTEM SPECIFICATIONS:

TOTAL SYSTEM SIZE: 423.000 kW DC, ____ kW ACcec

(1128) CSUN375-72MH, 375W
(8) SOLAREDGE INVERTERS, SE33.3KUS
(3) SOLAREDGE INVERTERS, SE20KUS

DRAWING INDEX

Sheet #	Sheet Name
T101	Title Sheet
T102	Notes
A101	Site/Array Layouts
E101	Electrical Layout
E102	Wiring Layout
E201	Single Line Diagram / Details
E301	Signage / Spec Sheets

PERMITTING / PLANNING NOTES:

1. THIS PV SYSTEM INSTALLATION IS SUBJECT TO INSPECTION BY THE AUTHORITY HAVING JURISDICTION AND RENEWABLE ENERGY PARTNERS

2. THIS PROJECT SHALL CONFORM TO THE FOLLOWING CODE VERSIONS:
2016 CALIFORNIA BUILDING CODE (CBC 2016)
2016 CALIFORNIA ELECTRIC CODE (CEC 2016)
2016 CALIFORNIA FIRE CODE (CFC 2016)
AUTHORITY HAVING JURISDICTION

3. SOLAR EDGE INVERTERS & OPTIMIZERS COMPLY WITH 690.12 RAPID SHUTDOWN REQUIREMENTS

PROJECT ADDRESS

PROJECT LOCATION

AERIAL PHOTO:

ARRAY LOCATIONS

PROJECT TEAM:

SITE CONTACT:

Crescent City Harbor District
ADDRESS: 101 Citizens Dock Rd, Crescent City, CA 95531
PHONE: (707) 464-6174

CONTRACTOR:

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Crescent City Harbor District Phase 2
101 Citizens Dock Rd, Crescent City, CA 95531

No.	Description	Date

AMERICAN DIVERSIFIED ENERGY

Title Sheet

T101

12/5/2018 9:56:37 AM
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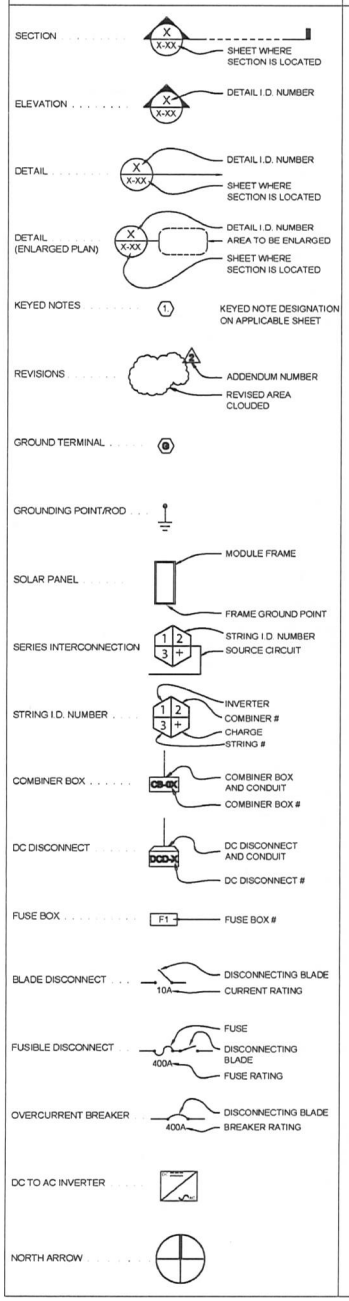
SYMBOLS



NOTES

ELECTRICAL NOTES:

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 FOR NUMBER, POLARITY OF PHASE

E2. THE LAYOUT, OF CONDUIT SHOWN IN THESE PLANS IS INDICATIVE ONLY. CONTRACTOR SHALL ROUTE AND LOCATE THE CONDUITS TO SUIT SITE CONDITIONS BUT SHALL NOT EXCEED THE MAXIMUM CONDUCTOR LENGTHS IDENTIFIED ON THE WIRE SCHEDULE. CONTRACTOR WILL COORDINATE ALL CHANGES IN WIRING AND CONDUIT WITH THE ENGINEER.

E3. BENDS SHALL NOT DAMAGE THE RACEWAY OR SIGNIFICANTLY CHANGE THE INTERNAL DIAMETER OF RACEWAYS (NO KINKS).

E4. SUPPORT CONDUCTORS IN VERTICAL CONDUITS IN ACCORDANCE WITH REQUIREMENTS IN NEC 300.19

E5. INSTALL ALL WIRING MATERIALS IN A NEAT WORKMANLIKE MANNER. USE GOOD TRADE PRACTICE. AS REQUIRED BY CHAPTER 3 OF THE NEC *AND* ANSI/NECA 1-2000 'STANDARD PRACTICES FOR GOOD WORKMANSHIP IN ELECTRICAL CONTRACTING'.

E6. INSTALL CONDUIT TO MAINTAIN PROPER CLEARANCES AND IN A NEAT INCONSPICUOUS MANNER. RUN PARALLEL AND AT RIGHT ANGLES TO STRUCTURAL MEMBERS OR OTHER CONDUITS. PROVIDE BOXES, FITTINGS AND BENDS FOR CHANGES IN DIRECTION. FASTEN CONDUIT SECURELY IN PLACE. CONDUCTORS' INSULATION IT IS BEING USED WITH. IT IS

E7. SUPPORT CONDUIT USING STEEL PIPE STRAPS OAE, LAY-IN ADJUSTABLE HANGERS, CLEVIS HANGERS OR SPLIT-HANGERS. HANGER SPACING SHALL BE INSTALLED PER NEC REQUIREMENTS FOR THE TYPE OF CONDUIT BEING INSTALLED. USE APPROVED BEAM CLAMPS FOR CONNECTION TO STRUCTURAL MEMBERS.

E8. PROVIDE PULL, JUNCTION OR CHRISTY BOXES WHERE REQUIRED TO FACILITATE THE INSTALLATION OF WIRING IN ADDITION TO THOSE ON THE DRAWINGS. BENDS IN CONDUITS BETWEEN PULL BOXES SHALL NOT EXCEED THE EQUIVALENT OF FOUR 90 DEGREE BENDS

E9. WHEN FIELD CUTTING IS REQUIRED, THE CONDUIT SHALL BE CUT SQUARE AND DEBURRED.

E10. CONDUIT SIZES NOT SPECIFIED SHOULD CONFORM TO NEC SPECIFICATIONS, TO INCLUDE FILL FACTOR AND DERATING FOR NUMBER OF CONDUCTORS WITH A MINIMUM CONDUIT SIZE BEING 3/4"

E11. THE WIRING MINIMUM SIZE SHALL BE #12 AWG.

E12. SAFETY REGULATION (LOCK OUT - TAG OUT, ETC.) IS THE FULL RESPONSIBILITY OF THE CONTRACTOR DURING CONSTRUCTION.

E13. THE WIRING SIZE IS BASED ON THE ESTIMATED CONDUIT ROUTING SHOWN IN THIS DRAWING PACKAGE. SHOULD THE CONDUITS LENGTH INCREASE DUE TO LOCATION OF SOURCE AND/OR ROUTING THE CONDUITS AND THE CONDUCTORS MAY NEED BE RESIZED. PLEASE CONTACT THE ENGINEER PRIOR TO MAKING ANY FIELD CHANGES.

E14. ALL WIRING IN CONDUIT SHALL BE THWN-2 FOR 90 DEGREE CELSIUS APPLICATIONS. USE BARE COPPER FOR GROUND FOR ALL EXTERNAL GROUNDING. USE2/RHW-2/PV WIRE OR APPROVED EQUIVALENT SHALL BE USED FOR ALL EXPOSED OR HOMERUN WIRING.

E15. FOR INTER CONNECTION VIA BUS TAP:

OVERCURRENT PROTECTION (SWITCHING DEVICE AND MEANS OF DISCONNECT) MUST BE LOCATED PER NEC 240.21

A. THE CONDUCTORS SHALL BE CRIMPED WITH A CRIMP-ON TERMINAL LUG, MANUFACTURED BY ILSCO, BURNDY, OAE. THE TERMINAL LUG SHALL HAVE IDENTIFICATION OR COLOR CODING TO MATCH THE CONDUCTOR SIZE. TERMINAL LUGS SHALL HAVE LONG BARRELS TO PROVIDE 2 CRIMPS PER TERMINAL LUG PER CONDUCTOR.

B. CRIMPED TERMINAL LUGS SHALL BE CONSTRUCTED OF PURE COPPER AND TIN PLATED FOR HIGH CONDUCTIVITY AND RATED FOR 600V AT 90 DEGREES CELSIUS.

C. THE CRIMP MUST BE MADE WITH THE MANUFACTURER'S APPROVED TOOL DEVICE TO ACHIEVE THE PROPER CRIMP CONNECTION.

D. USE STAINLESS STEEL HARDWARE WITH THE FASTENER TORQUED TO MANUFACTURER'S RECOMMENDATIONS ON ALL THREE PHASES TO COMPLY WITH ARTICLE 110.14 OF THE 2016 NEC.

E. 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, USE A 90 DEGREE CRIMP-ON LUG MANUFACTURED BY ILSCO, BURNDY, OAE. 90 DEGREE CRIMP-ON LUG MUST BE INSTALLED WITH RATED INSULATION THAT MEETS OR EXCEEDS THE CONDUCTORS' INSULATION IT IS BEING USED WITH. IT IS RECOMMENDED THAT ACCEPTABLE CLEARANCES ARE MAINTAINED WITH THIS BUS TAP FOR SAFE, CONTINUOUS OPERATION.

F. FOLLOW MANUFACTURER'S GUIDELINES, OR THE APPLICABLE AHJ, FOR MODIFICATION OF BUS BAR(S).

E16. ALL CONDUITS SHALL BE FREE OF ANY OBSTRUCTIONS AND PROPERLY SECURED BEFORE WIRE IS PULLED.

E17. ELECTRICAL CONTRACTOR TO PROVIDE SIGNAGE TO ALL ELECTRIC BOXES, JUNCTION BOXES, PULL BOXES, DC DISCONNECTS, CONDUIT RUNS, AC DISCONNECTS, SUB PANELS, AND MAIN SERVICES PER NEC ARTICLE 690.

E18. MEGGER TESTING: MEGGER (INSULATION) TEST ALL CONDUCTORS AT 1,000V TO 5 MEGAOHMS BETWEEN THE CONDUCTOR UNDER TEST AND GROUND WIRE. CONDUCT TEST AFTER WIRE IS PULLED THROUGH THE CONDUIT BUT BEFORE TERMINATING TO THE MODULES, COMBINERS, DISCONNECTS OR INVERTS. **DO NOT MEGGER THE SOLAR MODULES, AS THIS WILL LIKELY DAMAGE THEIR INTERNAL DIODES. MEGGERING IS INTENDED FOR ALL CONDUCTORS INSTALLED BY THE ELECTRICAL CONTRACTOR.** MEGGER TESTING OF CONDUCTORS BEYOND THE POINT OF COMMON COUPLING (POCC) IS THE SOLE RESPONSIBILITY OF THE UTILITY PROVIDING SERVICE.

E19. ALL UNDERGROUND ELECTRICAL WORK SHALL BE DONE WITH CARE. LOCATE EXISTING UTILITIES, IRRIGATION LINES AND OTHERS BEFORE COMMENCING UNDERGROUND WORK. CONTACT UNDERGROUND SERVICE ALERT (USA) WITHIN 48 HOURS OF ANY UNDERGROUND WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UNDERGROUND WORK PERFORMED.

MODULE INSTALLATION NOTES:

M1. REFER TO THE MODULE MANUAL FOR MORE DETAILS ON RIGGING, UNPACKING HANDLING, PLANNING, AND INSTALLATION.

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.

M3. NEVER LEAVE A MODULE UNSUPPORTED OR UNSECURED. THE CONTRACTOR IS RESPONSIBLE FOR ALL MATERIAL HANDLING ON THE JOBSITE.

SOLAR ARRAY COMMISSIONING:

C1. BEFORE CLOSING DISCONNECTS OR ATTEMPTING TO ENERGIZE THE INVERTERS, THE FOLLOWING COMMISSIONING PROCEDURE SHALL BE COMPLETED:

A. CHECK THE OPEN CIRCUIT VOLTAGE (VOC) AND POLARITY (+/-) OF EACH SOURCE CIRCUIT. RECORD THE VALUES ON THE COMMISSIONING RECORD DOCUMENTS

B. CHECK THE SHORT CIRCUIT CURRENT (ISC) FOR EACH SOURCE CIRCUIT RECORD THE VALUES ON COMMISSIONING RECORD DOCUMENTS

C. CHECK THAT ALL FUSES, DISCONNECTS AND OTHER BALANCE OF SYSTEM COMPONENTS ARE RATED FOR600VDC AND THE APPROPRIATE CURRENT CAPACITY.

D. COMPLETE A VISUAL INSPECTION OF ALL THE MODULES TO CHECK FOR BROKEN GLASS, FRAYED WIRES, EXPOSED CONDUCTORS AND ANY OTHER PROBLEMS THAT MAY CAUSE A FAULT.

E. PRIOR TO INSTALLATION ALL FUSES SHALL BE TESTED FOR CONTINUITY.

INVERTER COMMISSIONING:

IC1. THIS CHECKLIST MUST BE COMPLETED BY THE CONTRACTOR PRIOR TO COMMISSIONING:

A. CHECK THAT THE INVERTER IS PROPERLY GROUNDED, AS DESCRIBED BY THE MANUFACTURER AND THESE INSTRUCTIONS.

B. CHECK THE INVERTER DC INPUT VOLTAGE (VOC) FROM THE SOLAR ARRAY FOR PROPER POLAR, INSIDE THE INVERTER CABINET.

C. CHECK DC INPUT VOLTAGE (VOC) IS WITHIN THE PROPER RANGE IN THE INVERTER CABINET AS DEFINED BY THE INVERTER RATING LABEL AND ACCOMPANIED MANUAL

D. CHECK AC INPUT VOLTAGE IS IN THE PROPER PHASE SEQUENCE (CLOCKWISE) IF APPLICABLE

E. CHECK THAT THE AC GRID VOLTAGE, AT THE INVERTER AC TERMINALS, IS WITHIN THE PROPER RANGE DEFINED BY THE INVERTER RATING LABEL AND ACCOMPANIED MANUAL.

F. FOLLOW START-UP SEQUENCE IN MANUFACTURER'S OPERATION AND MAINTENANCE MANUAL

G. VERIFY THAT ALL CONDUCTOR TERMINATION AND FASTENER TORQUE MEET LISTED SPECIFICATIONS.

ADDITIONAL SOLAR-360 INSTALLATION STANDARDS

S1. NFPA 70 (NEC) AND IBC, OR LOCAL CODES AS REQUIRED. COMPLIANCE FOR INSTALLATION AND WORKMANSHIP.

S2. LABEL EQUIPMENT WITH PERMANENT WEATHERPROOF LABELS. COMPLY WITH NEC ART. 690.7, 690.17, AND 690.53 ESPECIALLY. LABEL UTILITY DISCONNECT AND SOLAR METER.

S3. IDENTIFY BOTH ENDS OF WIRES WITH PERMANENT WIRE MARKERS.

S4. THE POINT OF CONNECTION SHALL COMPLY WITH NFPA 70 ARTICLE 690.64(B)(2).

S5. LIMIT TOTAL VOLTAGE DROP TO LESS THAN 3%, INCLUDING ALL DC AND AC CIRCUITS (PROVIDE CALCULATIONS FOR WORST CIRCUIT). PREFERRED IS 2% DC AND 1% AC.

S6. INSTALLATION OF ALL COMPONENTS COMPLETED IS WORKMANLIKE MANNER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

S7. USE 90°C OR HIGHER WET RATED WIRE FOR ALL EXTERIOR CONDUITS, WITH APPROPRIATE DERATINGS FOR TEMPERATURE AND OTHER FACTORS.

S8. FUSES AND WIRES BETWEEN TRANSFORMER AND POINT OF INTERCONNECTION SIZED FOR TRANSFORMER IN-RUSH CURRENT (OCCURS DAILY DUE TO NIGHT-TIME DISCONNECT)

S9. ALL DC MATERIALS (FUSES, EQUIPMENT, CONNECTORS, WIRES, ETC.) TO BE UL LISTED FOR 600VDC OR 1000VDC WHERE APPLICABLE.

S10. ALL DISCONNECTS AND COMBINERS TO BE SECURED FROM UNAUTHORIZED/UNQUALIFIED PERSONNEL. (MAY BE WITH LOCK OR LOCATION) AND ALL SOURCES L.O.T.O. BEFORE COMMISSIONING.

S11. ALL EXPOSED CABLES, SUCH AS MODULE LEADS, TO BE SECURED WITH UV RATED PLASTIC OR OTHER APPROVED SUNLIGHT RESISTANT MEANS WITH A 25 YEAR LIFE.

S12. ALL FASTENERS TO BE UV RESISTANT PLASTIC AND ASSEMBLED TO ISOLATE COPPER CONDUCTORS FROM DIRECT CONTACT WITH ALUMINUM COMPONENTS.

S13. STRUCTURES AND SYSTEM LAYOUT MUST ACCOMMODATE EASY ACCESS FOR TROUBLESHOOTING AND MAINTENANCE.

S14. NO WIRE NUTS SHALL BE USED IN SYSTEM CONNECTION POINTS.

S15. CONNECTORS TO BE TORQUED PER DEVICE LISTING AFTER TREATING THREADS WITH ANTIOXIDANT OR ANTI SEIZE. CAMMED OUT SET SCREWS SHALL BE REPLACED. HEX OR SQUARE DRIVE SOCKET HEAD SCREWS ARE RECOMMENDED.

S16. SPLIT BOLTS/SPLICES/CONNECTORS SHALL BE INSULATED WITH APPROVED MEANS. UL LISTED ELECTRICAL TAPE ALONE IS NOT SUITABLE AS THE ONLY INSULATION MEANS. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR APPLICATION OF INSULATING PRODUCT.

S17. STRUCTURE FINISH TO BE CONSISTENT WITH 25 YEAR DESIGN LIFE WITH MINIMAL MAINTENANCE. ACCEPTABLE UNISTRUT FINISHES ARE THOSE COATING WITH DEMONSTRATED 25 YEAR LIFE.

S18. ANODIZED ALUMINUM. HOT DIPPED GALVANIZED STEEL, AND STAINLESS STEEL ARE ACCEPTABLE MATERIALS. ALL OTHER FINISHES REQUIRE JUSTIFICATION WITH DETAILS ON MAINTENANCE REQUIREMENT DURING THE 25 YEAR LIFE.

S19. ALL FIELD WELDS OR CUT SURFACES REQUIRE FIELD TOUCH-UP TO MAINTAIN FINISH COATING. CUT GALVANIZED/ZINC COVERED SURFACES SHALL BE COATED WITH A COLD ZINC PRODUCT APPLIED IN AN APPROVED MANNER.

S20. ALL WELDING TO BE COMPLETED BY WELDERS CERTIFIED AND CURRENT IN THE TYPE OF WELDING BEING COMPLETED.

S21. ALL ELECTRICAL WORK TO BE COMPLETED BY QUALIFIED ELECTRICIANS OR APPRENTICES WORKING UNDER THE DIRECT SUPERVISION OF A QUALIFIED ELECTRICIAN EQUIVALENT IN EXPERIENCE TO A JOURNEYMAN OR MASTER ELECTRICIAN.

S22. STRUCTURE MUST ALLOW FOR UNRESTRICTED AIRFLOW AROUND MODULES AND THE MODULE FRAME.

S23. PULL/SPLICE BOXES SHALL BE LISTED FOR PURPOSE AND INSTALLED IN A WORKMANLIKE MANNER. DIRECT BURIAL RATED CONNECTORS SHALL BE USED FOR CONDUCTORS.

S24. GROUNDING SYSTEM WILL USE LISTED COMPONENTS INCLUDING GROUND RODS, GROUNDING LUGS/CLAMPS, AND OTHER DEVICES RATED FOR DIRECT BURIAL WHEN EXPOSED TO THE ELEMENTS.

S25. MODULES SHALL BE GROUNDED WITH EQUIPMENT GROUNDING CONDUCTOR USING THE LISTED MEANS AS DESCRIBED IN THE MODULE INSTALLATION MANUAL. MECHANICAL CONNECTORS SHALL BE RATED FOR DIRECT BURIAL.

S26. CONCRETE SHALL BE CURED FOR A MINIMUM OF SEVEN (7) DAYS BEFORE LOADING, UNLESS THE RESPONSIBLE CHARGE ENGINEER CERTIFIES LOADING BEFORE INITIAL CURE, OR SPECIFIES A LONGER CURE TIME.

S27. TOP ENTRY CONDUITS WILL BE ROUTED SO WATER BUILDUP DOES NOT FALL ON ELECTRICAL/ELECTRONIC EQUIPMENT.

S28. ALL CONDUIT ENTRY AND EXITS FROM ENCLOSURES WILL BE SEALED WITH MATERIAL LISTED FOR PURPOSE SUCH AS FIRE STOP OR DUCT SEAL.

S29. FIELD ASSEMBLY OF MC CABLES WILL BE EXECUTED BY CERTIFIED PERSONNEL ACCORDING TO MANUFACTURER'S GUIDELINES.

S30. OTHER NEARBY UTILITY SERVICES WILL BE SECURED BEYOND THE BOUNDARY OF THE MODULES OR SUPPORT STRUCTURE AS REQUIRED BY APPLICABLE CODE(S). A MINIMUM CLEARANCE OF 7.5CM (3") IS REQUIRED WITH APPROVAL OF THE ENGINEER

S31. CIRCUIT COMBINERS SHALL BE LISTED TO UL 1741 AND APPROPRIATE FOR THE INSTALLATION DESIGN AND LOCATION

S32. PER NEC STANDARD COLORS FOR WIRE SHALL BE USED. WHITE FOR THE GROUNDED CONDUCTOR, GREEN FOR EQUIPMENT GROUND, AND ALL OTHER COLORS NEEDED FOR PHASING.

ABBREVIATIONS

AC	ALTERNATING CURRENT
APPROX	APPROXIMATE
AWG	AMERICAN WIRE GUAGE
CL	CENTER LINE
CB	COMBINER BOX
DC	DIRECT CURRENT
DI	DROP INLET
DISC	DISCONNECT
EMT	ELECTRICAL METALLIC TUBING
(E)	(EXISTING)
EL	ELEVATION
EQ	EQUAL
ID	INSIDE DIAMETER
JB	JUNCTION BOX
MCB	MAIN COMBINER BOX
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
(N)	(NEW)
OAE	OR APPROVED EQUAL
OC	ON CENTER
OD	OUTSIDE DIAMETER
POCC	POINT OF COMMON COUPLING
PV	PHOTOVOLTAIC
PL	PROPERTY LINE
SD	STORM DRAIN
SF	SQUARE FOOT/FEET
SIM	SIMILAR
TBD	TO BE DETERMINED
TOF	TOP OF FOOTING
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VIF	VERIFY IN FIELD
XFMR	TRANSFORMER

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X_____

Crescent City Harbor District Phase 2
101 Citizens Dock Rd,
Crescent City, CA 95531

No.	Description	Date

AMERICAN DIVERSIFIED ENERGY

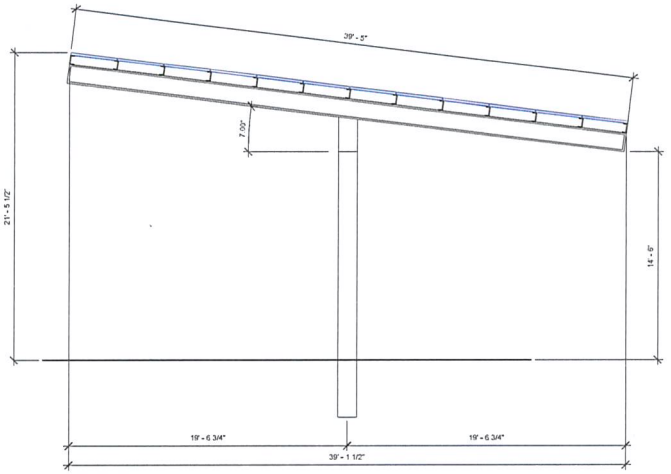
Notes

T102

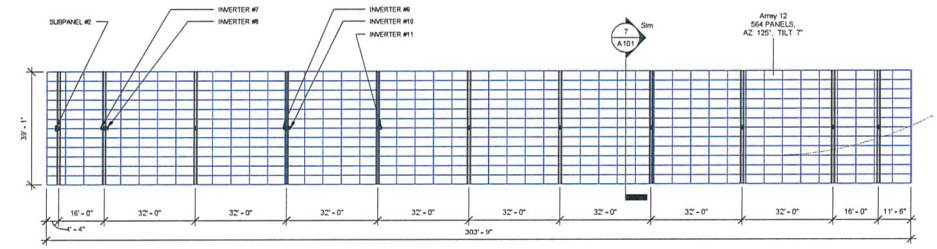
12/5/2018 9:57:41 AM

To scale on 24x36 paper

1 Site Layout
1" = 300'-0"



7 Array 11 Section
1/4" = 1'-0"



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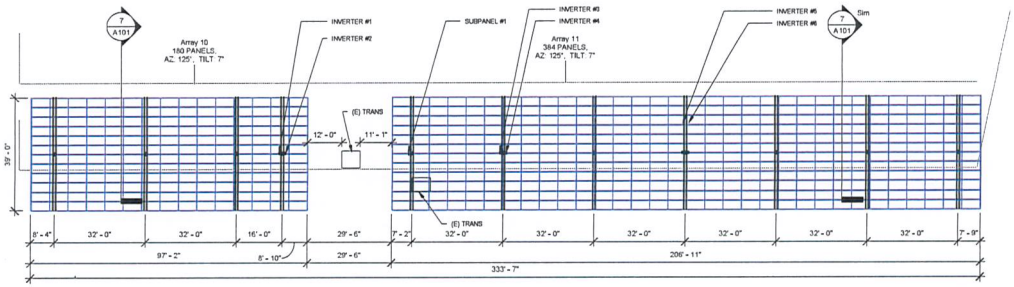

2 Array 11
1" = 20'-0"

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X

Panel Count

Array #	Panel Count	Azimuth	Tilt°
Array 10	180	125	7
Array 11	384	125	7
Array 12	564	125	7
Total:	1128		

Crescent City Harbor District Phase 2
101 Citizens Dock Rd,
Crescent City, CA 95531

No.	Description	Date

AMERICAN DIVERSIFIED ENERGY

Site/Array Layouts

A101

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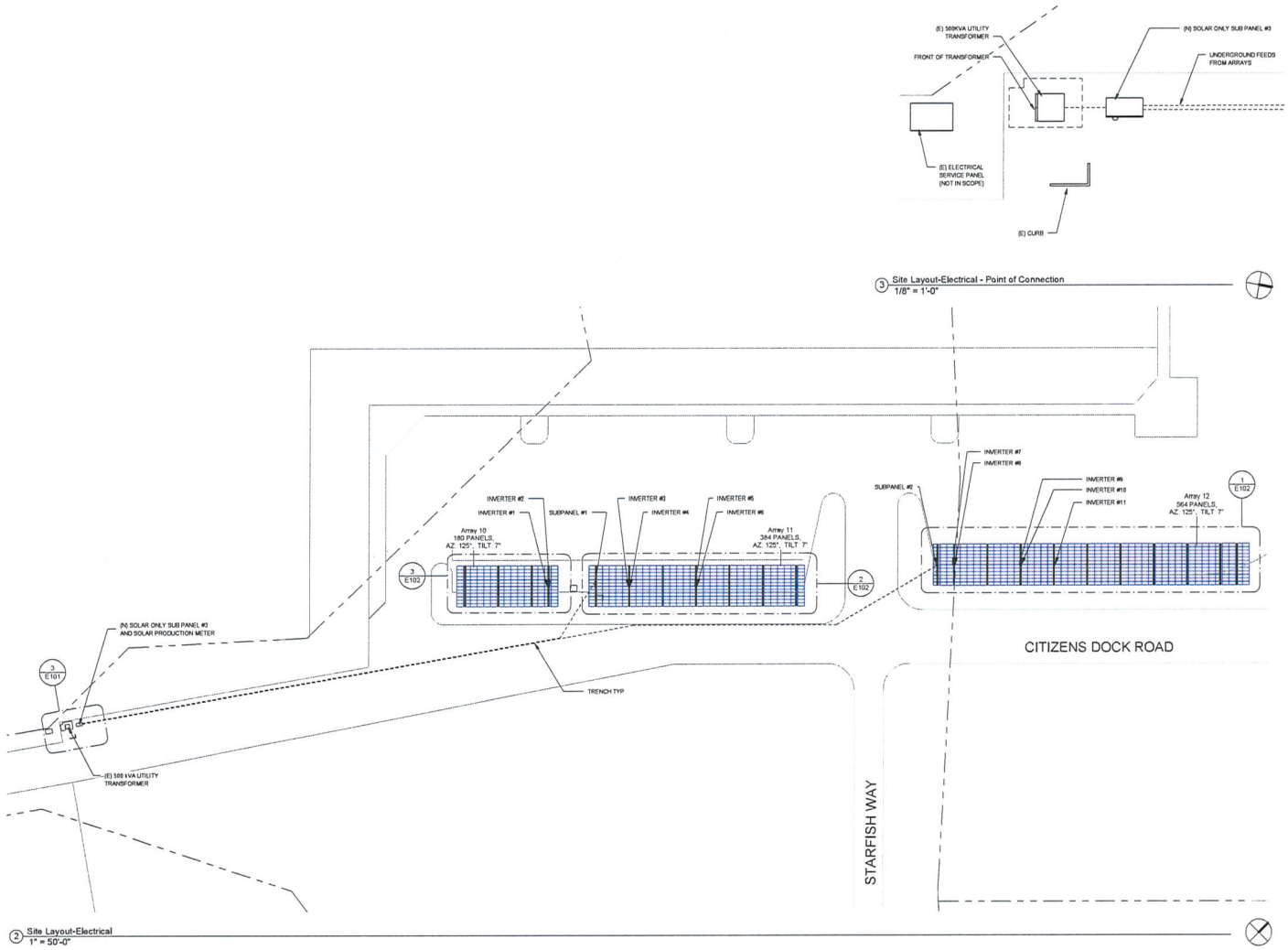
To scale on 24x36 paper



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Panel Count			
Array #	Panel Count	Azimuth	Tilt°
Array 10	180	125	7
Array 11	384	125	7
Array 12	564	125	7
Total:	1128		

Crescent City Harbor District Phase 2
101 Citizens Dock Rd,
Crescent City, CA 95531

No.	Description	Date

AMERICAN DIVERSIFIED ENERGY

Electrical Layout

E101

12/5/2018 9:56:10 AM
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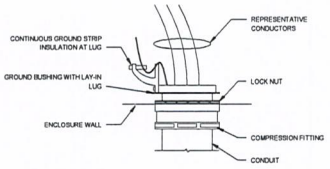
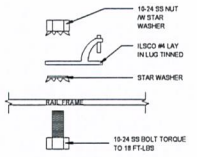
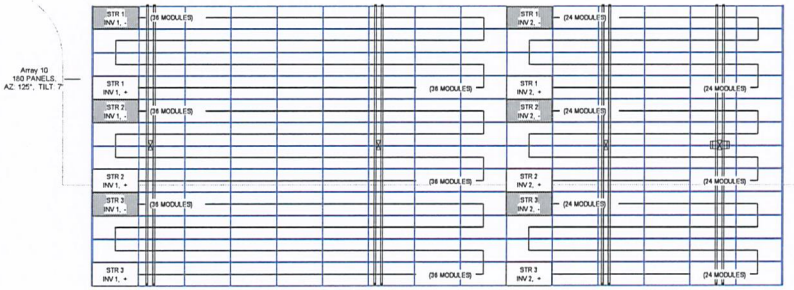


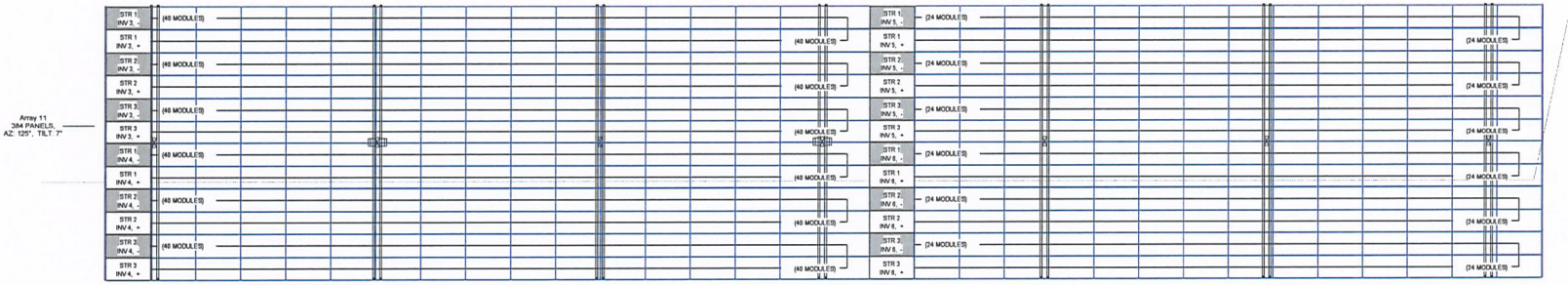
4 Detail Grounding Conduit Body1
6" = 1'-0"



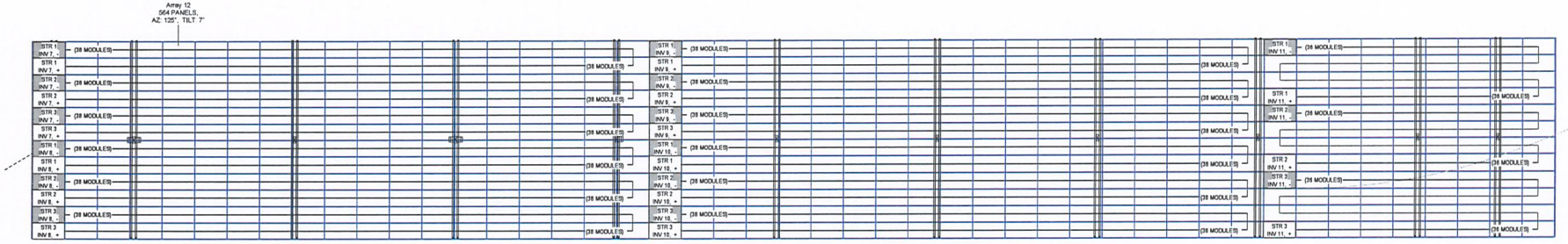
5 Detail Grounding Lay-in Lug
6" = 1'-0"



3 Array 10 Wiring Layout
1/8" = 1'-0"



2 Array 11 Wiring Layout
1/8" = 1'-0"



1 Array 12 Wiring Layout
1" = 10'-0"

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X

Panel Count

Array #	Panel Count	Azimuth	Tilt°
Array 10	160	125	7
Array 11	384	125	7
Array 12	564	125	7
Total:	1128		

Crescent City
Harbor District
Phase 2
101 Citizens Dock Rd,
Crescent City, CA 95531

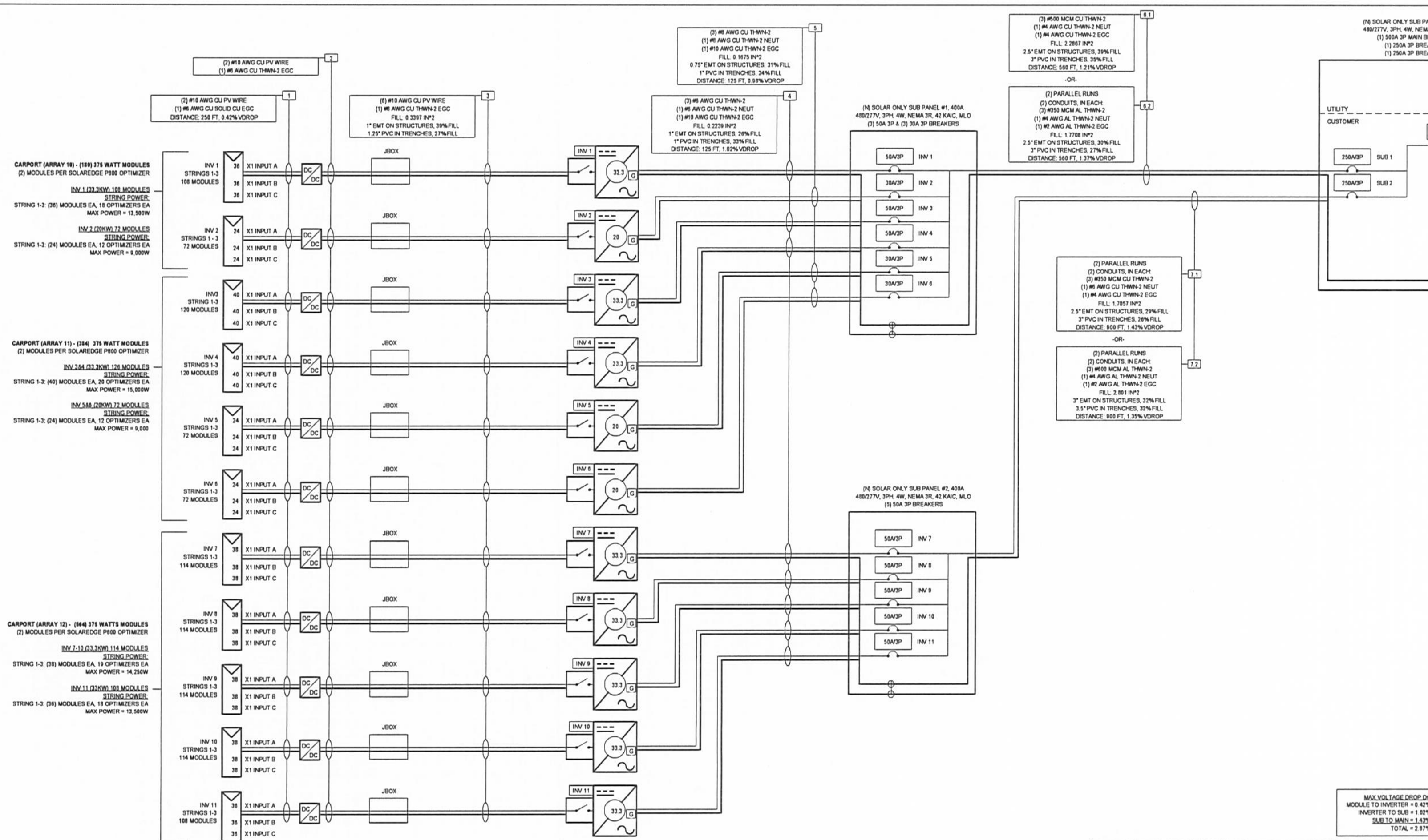
No.	Description	Date

AMERICAN DIVERSIFIED ENERGY

Wiring Layout

E102

12/5/2018 9:56:11 AM
To scale on 24x36 paper



MAX VOLTAGE DROP DC
MODULE TO INVERTER = 0.42%
INVERTER TO SUB = 1.02%
SUB TO MAIN = 1.43%
TOTAL = 2.87%

NOTES:
1. PROVIDE CONTINUOUS PATH FOR GROUND CONDUCTOR FROM THE INVERTER TO THE EXISTING MAIN SERVICE SWITCHBOARD GROUND BUS. GROUNDING ELECTRODE CONDUCTOR TO SERVE AS EQUIPMENT GROUND. PROVIDE LAY-IN LUGS TO BOND ALL EQUIPMENT ALONG THIS PATH TO THE GROUNDING ELECTRODE CONDUCTOR TO ALLOW FOR CONTINUOUS RUN.

PROJECT TOTAL MODULES
(1128) SOLAR MODULES
CSUN375-72, 375W
TOTAL SYSTEM SIZE: 423.000 kW DC, ___ kW ACcec

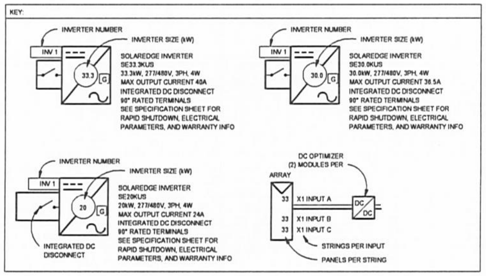
PANEL SPECS:
CSUN375-72, 375W
MODULE AMPERAGE: 9.60 IMP, 9.99 ISC
MODULE VOLTAGE: 39.0 VMP, 47.6 VOC
PTC RATING: ___W
TEMP. COEFFICIENTS OF Voc: -0.29%/K

INVERTER SPECS:
SOLAREDGE
SE33.3KUS [480V] [SI1]
33.3 kW, 480V, 3PH, 4W, NEMA 3R
MAX OUTPUT CURRENT 40A
CEC EFFECIENCY: 98.5%

SOLAREDGE
SE20KUS [480V] [SI1]
20 kW, 480V, 3PH, 4W, NEMA 3R
MAX OUTPUT CURRENT 24A
CEC EFFECIENCY: 98.5%

SEE SPEC SHEET FOR ELECTRICAL PARAMETERS AND WARRANTY INFO

KEY:



				WIRING CHART												WIRE RATING CHART					TERMINATION...		VOLTAGE DROP CHART			
Callout #	Amps Isc	NEC Mult	Amps Max	Parallel Runs	Number Conductors	Size Conductor	Conductor Matl	Insulation Conductor	Size Neutral	Size Ground	Conduit Qty	Wire Temp Rating	Wire Amb Temp	Wire Roof Temp	Wire Temp Total	Conductors Current Carrying	Parallel Runs	Wire Amp Rating	Wire Temp Derate	Wire Conductor Derate	Derated Wire Rating <= Amps Max	Term Temp Rating	Term Amp Rating >=Amps Max	Vdrop Amps Imp	Vdrop Vmp	Vdrop Distance	Vdrop Percent
1	9.99	1.56	16	1	2	#10 AWG	CU	PV WIRE	NA	#6 AWG	1	90	18	0	18	2	1	40	1.08	1	1 X 40A X 1.08 X 1 = 43 >= 16	60	30 >=16	9.6	1404	250	0.42
2	18	1.25	23	1	2	#10 AWG	CU	PV WIRE	NA	#6 AWG	1	90	18	0	18	2	1	40	1.08	1	1 X 40A X 1.08 X 1 = 43 >= 23	60	30 >=23	18	1000	0	0
3	18	1.25	23	1	6	#10 AWG	CU	PV WIRE	NA	#8 AWG	1	90	18	0	18	6	1	40	1.08	0.8	1 X 40A X 1.08 X 0.8 = 35 >= 23	60	30 >=23	18	1000	0	0
4	40	1.25	50	1	3	#6 AWG	CU	THWN-2	#6 AWG	#10 AWG	1	90	18	0	18	3	1	75	1.08	1	1 X 75A X 1.08 X 1 = 81 >= 50	60	55 >=50	40	480	125	1.02
5	24	1.25	30	1	3	#8 AWG	CU	THWN-2	#8 AWG	#10 AWG	1	90	18	0	18	3	1	55	1.08	1	1 X 55A X 1.08 X 1 = 59 >= 30	60	40 >=30	24	480	125	0.98
6.1	192	1.25	240	1	3	#500 MCM	CU	THWN-2	#4 AWG	#4 AWG	1	90	18	0	18	3	1	430	1.08	1	1 X 430A X 1.08 X 1 = 464 >= 240	75	380 >=240	192	480	560	1.21
6.2	192	1.25	240	2	3	#350 MCM	AL	THWN-2	#4 AWG	#2 AWG	2	90	18	0	18	3	2	560	1.08	1	2 X 560A X 1.08 X 1 = 1210 >= 240	75	500 >=240	192	480	560	1.37
7.1	200	1.25	250	2	3	#350 MCM	CU	THWN-2	#6 AWG	#4 AWG	2	90	18	0	18	3	2	700	1.08	1	2 X 700A X 1.08 X 1 = 1512 >= 250	75	620 >=250	200	480	900	1.43
7.2	200	1.25	250	2	3	#600 MCM	AL	THWN-2	#4 AWG	#2 AWG	2	90	18	0	18	3	2	770	1.08	1	2 X 770A X 1.08 X 1 = 1663 >= 250	75	680 >=250	200	480	900	1.35

① Single Line Diagram Carports
12" = 1'-0"

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KEY:
▣ RUN NUMBER
SEE WIRE SIZE CALC CHART

ASHRAE - CRESCENT CITY FAA AI:
COLD DESIGN TEMP = -1°C
HOT DESIGN TEMP = 18°C

Crescent City
Harbor District
Phase 2
101 Citizens Dock Rd,
Crescent City, CA 95531

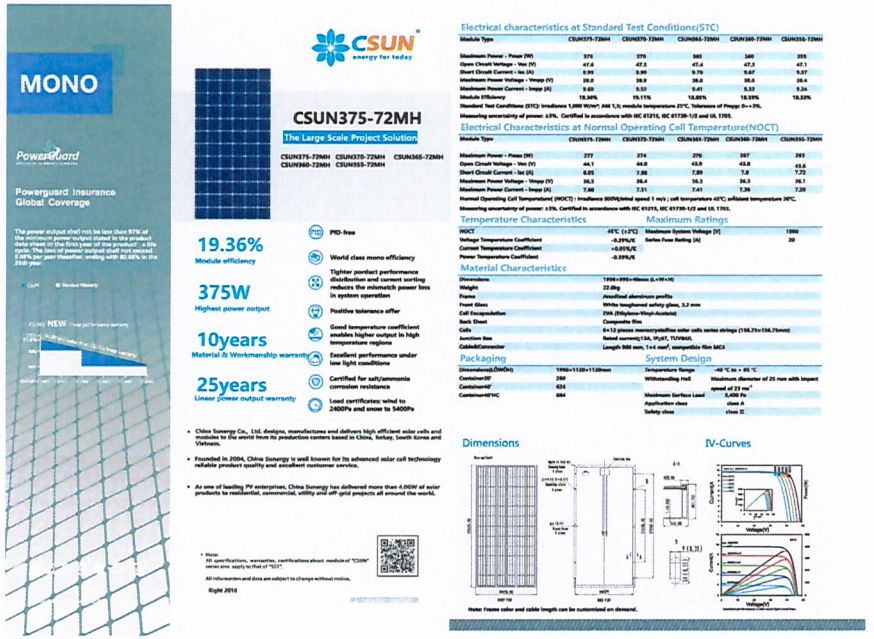
No.	Description	Date

AMERICAN DIVERSIFIED ENERGY

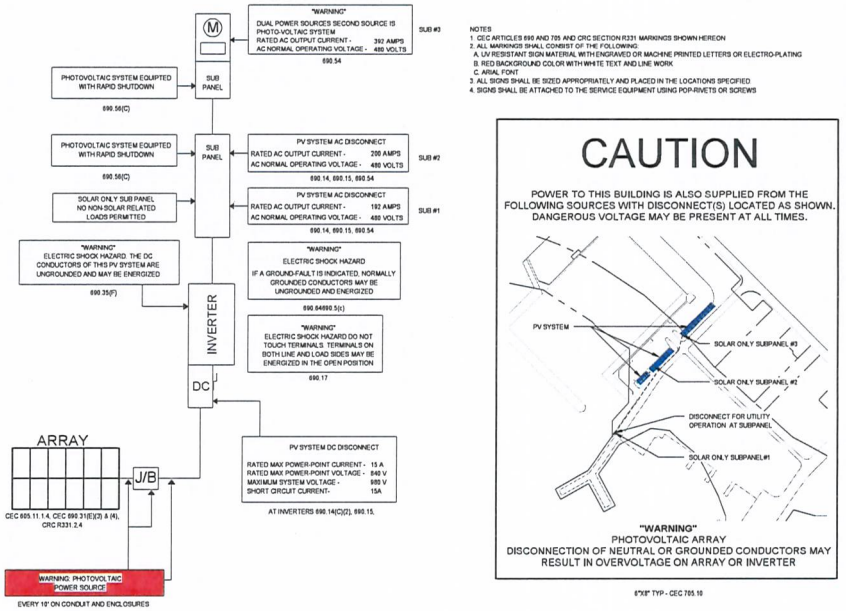
Single Line
Diagram / Details

E201

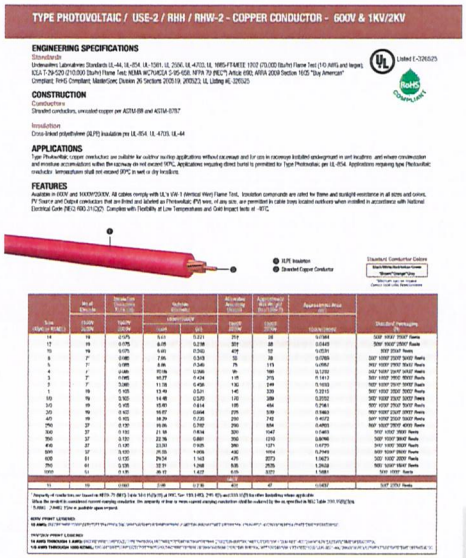
12/5/2018 9:56:13 AM
To scale on 24x36 paper



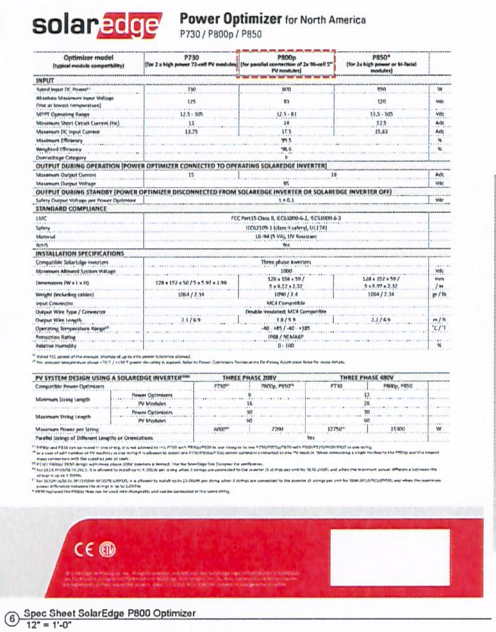
5 Spec Sheet Module CSUN 375
12" = 1'-0"



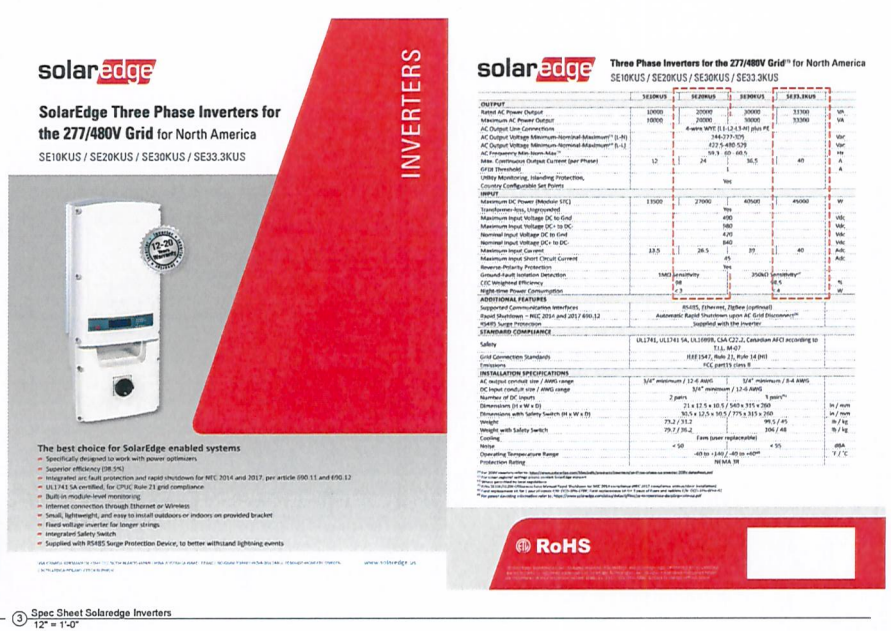
1 Signage System 1
12" = 1'-0"



4 Spec Sheet-Wire PV
12" = 1'-0"



6 Spec Sheet SolarEdge P800 Optimizer
12" = 1'-0"



3 Spec Sheet Solaredge Inverters
12" = 1'-0"

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Sign and Markings Format:
(1) White lettering on red background
(2) Minimum 3/8 - inch letter height
(3) All letters to be capitalized
(4) Arial or similar font, non-bold
(5) Signage - permanent reflective weather resistant material suitable for the environment

Crescent City Harbor District Phase 2
101 Citizens Dock Rd, Crescent City, CA 95531

No.	Description	Date

AMERICAN DIVERSIFIED ENERGY

Signage / Spec Sheets

E301

12/5/2018 9:56:36 AM
To scale on 24x36 paper

Crescent City Harbor District Phase 3
101 Citizens Dock Rd, Crescent City, CA 95531
SOLAR ELECTRIC SYSTEM PROJECT - 219.750kW DC STC RATING / ____kW AC CEC RATING

VICINITY MAP:

PROJECT LOCATION

PROJECT SCOPE:

SOLAR ELECTRIC SYSTEM

THIS PROJECT ENTAILS THE INSTALLATION OF A PHOTOVOLTAIC SYSTEM AT Crescent City Harbor District Phase 3 THE SYSTEM WILL NOT BE A NET ELECTRICITY EXPORTER TO THE UTILITY GRID.
THIS INSTALLATION CONSISTS OF A NEW CARPORT PHOTOVOLTAIC (PV) SYSTEM, THE PV SYSTEM IS STATIC MOUNTED.

THIS SYSTEM WILL BE INTERCONNECTED TO AND WILL BE OPERATED IN PARALLEL WITH THE PP&L ELECTRIC GRID PER THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND UTILITY INTERCONNECT AGREEMENT

CONDITIONS OF APPROVAL:

1. ALL CONSTRUCTION SHALL OCCUR BETWEEN THE HOURS OF 7AM & 7PM, EXCEPT FOR THE PURPOSE OF EMERGENCIES.

PROJECT TOTAL MODULES
586 SOLAR MODULES
CSUN375-72MH, 375W
TOTAL SYSTEM SIZE: 219.750 kW DC, ____ kW ACcec

POINT OF CONNECTION #1
514 SOLAR MODULES
CSUN375-72MH, 375W
TOTAL SYSTEM SIZE: 192.750 kW DC, ____ kW ACcec

POINT OF CONNECTION #2
72 SOLAR MODULES
CSUN375-72MH, 375W
TOTAL SYSTEM SIZE: 27.000 kW DC, ____ kW ACcec

DRAWING INDEX

Sheet #	Sheet Name
T101	Title Sheet
T102	Notes
A101	Site Layout
A102	Array Layout 1&2
E101	Electrical Site Layout
E102	Wiring Layout
E201	Single Line
E301	Signage
E302	Spec Sheets
E303	Spec Sheets
E304	Spec Sheets

PERMITTING / PLANNING NOTES:

1. THIS PV SYSTEM INSTALLATION IS SUBJECT TO INSPECTION BY THE AUTHORITY HAVING JURISDICTION AND RENEWABLE ENERGY PARTNERS

2. THIS PROJECT SHALL CONFORM TO THE FOLLOWING CODE VERSIONS:
2016 CALIFORNIA BUILDING CODE (CBC 2016)
2016 CALIFORNIA ELECTRIC CODE (CEC 2016)
2016 CALIFORNIA FIRE CODE (CFC 2016)
AUTHORITY HAVING JURISDICTION

3. SOLAR EDGE INVERTERS & OPTIMIZERS COMPLY WITH 690.12 RAPID SHUTDOWN REQUIREMENTS

4. IRON RIDGE RACKING IS UL2703 APPROVED FOR INTEGRATED GROUNDING AND FIRE CLASS A RATED

PROJECT ADDRESS

PROJECT LOCATION

AERIAL PHOTO:

ARRAY LOCATIONS

PROJECT TEAM:

SITE CONTACT:

Crescent City Harbor District
ADDRESS: 101 Citizens Dock Rd, Crescent City, CA 95531
PHONE: (707) 464-6174

CONTRACTOR:

AMERICAN DIVERSIFIED ENERGY
711 W 17TH St, Suite D-5
Costa Mesa, CA 92627
TEL: 949-258-9842

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X_____

Crescent City Harbor District Phase 3
101 Citizens Dock Rd, Crescent City, CA 95531

No.	Description	Date

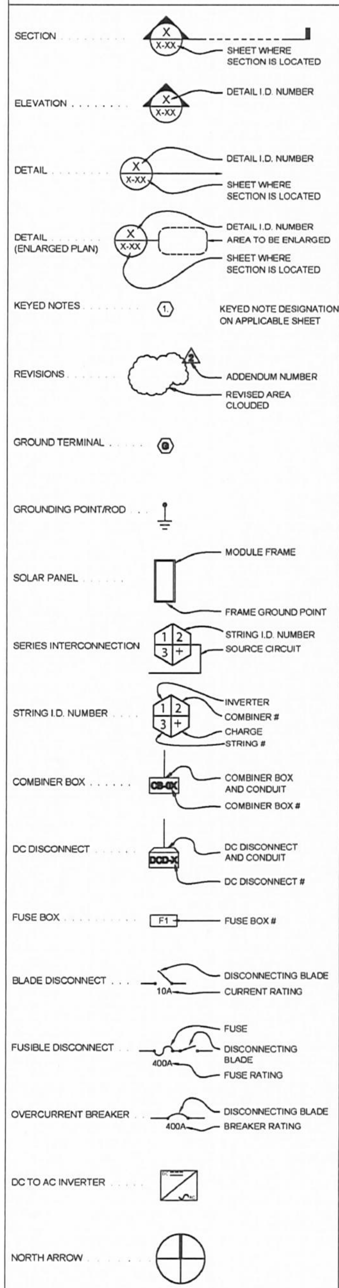
AMERICAN DIVERSIFIED ENERGY

Title Sheet

T101

12/7/2018 3:26:29 PM
To scale on 24x36 paper

SYMBOLS



NOTES

ELECTRICAL NOTES:

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 FOR NUMBER, POLARITY OF PHASE

E2. THE LAYOUT, OF CONDUIT SHOWN IN THESE PLANS IS INDICATIVE ONLY. CONTRACTOR SHALL ROUTE AND LOCATE THE CONDUITS TO SUIT SITE CONDITIONS BUT SHALL NOT EXCEED THE MAXIMUM CONDUCTOR LENGTHS IDENTIFIED ON THE WIRE SCHEDULE. CONTRACTOR WILL COORDINATE ALL CHANGES IN WIRING AND CONDUIT WITH THE ENGINEER.

E3. BENDS SHALL NOT DAMAGE THE RACEWAY OR SIGNIFICANTLY CHANGE THE INTERNAL DIAMETER OF RACEWAYS (NO KINKS).

E4. SUPPORT CONDUCTORS IN VERTICAL CONDUITS IN ACCORDANCE WITH REQUIREMENTS IN NEC 300.19

E5. INSTALL ALL WIRING MATERIALS IN A NEAT WORKMANLIKE MANNER. USE GOOD TRADE PRACTICE. AS REQUIRED BY CHAPTER 3 OF THE NEC *AND* ANSI/NECA 1-2000 'STANDARD PRACTICES FOR GOOD WORKMANSHIP IN ELECTRICAL CONTRACTING'.

E6. INSTALL CONDUIT TO MAINTAIN PROPER CLEARANCES AND IN A NEAT INCONSPICUOUS MANNER. RUN PARALLEL AND AT RIGHT ANGLES TO STRUCTURAL MEMBERS OR OTHER CONDUITS. PROVIDE BOXES, FITTINGS AND BENDS FOR CHANGES IN DIRECTION. FASTEN CONDUIT SECURELY IN PLACE. CONDUCTORS' INSULATION IT IS BEING USED WITH. IT IS

E7. SUPPORT CONDUIT USING STEEL PIPE STRAPS OAE, LAY-IN ADJUSTABLE HANGERS, CLEVIS HANGERS OR SPLIT-HANGERS. HANGER SPACING SHALL BE INSTALLED PER NEC REQUIREMENTS FOR THE TYPE OF CONDUIT BEING INSTALLED. USE APPROVED BEAM CLAMPS FOR CONNECTION TO STRUCTURAL MEMBERS.

E8. PROVIDE PULL, JUNCTION OR CHRISTY BOXES WHERE REQUIRED TO FACILITATE THE INSTALLATION OF WIRING IN ADDITION TO THOSE ON THE DRAWINGS. BENDS IN CONDUITS BETWEEN PULL BOXES SHALL NOT EXCEED THE EQUIVALENT OF FOUR 90 DEGREE BENDS

E9. WHEN FIELD CUTTING IS REQUIRED, THE CONDUIT SHALL BE CUT SQUARE AND DEBURRED.

E10. CONDUIT SIZES NOT SPECIFIED SHOULD CONFORM TO NEC SPECIFICATIONS, TO INCLUDE FILL FACTOR AND DERATING FOR NUMBER OF CONDUCTORS WITH A MINIMUM CONDUIT SIZE BEING 3/4"

E11. THE WIRING MINIMUM SIZE SHALL BE #12 AWG.

E12. SAFETY REGULATION (LOCK OUT - TAG OUT, ETC.) IS THE FULL RESPONSIBILITY OF THE CONTRACTOR DURING CONSTRUCTION.

E13. THE WIRING SIZE IS BASED ON THE ESTIMATED CONDUIT ROUTING SHOWN IN THIS DRAWING PACKAGE. SHOULD THE CONDUITS LENGTH INCREASE DUE TO LOCATION OF SOURCE AND/OR ROUTING THE CONDUITS AND THE CONDUCTORS MAY NEED BE RESIZED. PLEASE CONTACT THE ENGINEER PRIOR TO MAKING ANY FIELD CHANGES.

E14. ALL WIRING IN CONDUIT SHALL BE THWN-2 FOR 90 DEGREE CELSIUS APPLICATIONS. USE BARE COPPER FOR GROUND FOR ALL EXTERNAL GROUNDING. USE2/RHW-2/PV WIRE OR APPROVED EQUIVALENT SHALL BE USED FOR ALL EXPOSED OR HOMERUN WIRING.

E15. FOR INTER CONNECTION VIA BUS TAP:

OVERCURRENT PROTECTION (SWITCHING DEVICE AND MEANS OF DISCONNECT) MUST BE LOCATED PER NEC 240.21

A. THE CONDUCTORS SHALL BE CRIMPED WITH A CRIMP-ON TERMINAL LUG, MANUFACTURED BY ILSCO, BURNDY, OAE. THE TERMINAL LUG SHALL HAVE IDENTIFICATON OR COLOR CODING TO MATCH THE CONDUCTOR SIZE. TERMINAL LUGS SHALL HAVE LONG BARRELS TO PROVIDE 2 CRIMPS PER TERMINAL LUG PER CONDUCTOR.

B. CRIMPED TERMINAL LUGS SHALL BE CONSTRUCTED OF PURE COPPER AND TIN PLATED FOR HIGH CONDUCTIVITY AND RATED FOR 600V AT 90 DEGREES CELSIUS.

C. THE CRIMP MUST BE MADE WITH THE MANUFACTURER'S APPROVED TOOL DEVICE TO ACHIEVE THE PROPER CRIMP CONNECTION.

D. USE STAINLESS STEEL HARDWARE WITH THE FASTENER TORQUED TO MANUFACTURER'S RECOMMENDATIONS ON ALL THREE PHASES TO COMPLY WITH ARTICLE 110.14 OF THE 2016 NEC.

E. 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, USE A 90 DEGREE CRIMP-ON LUG MANUFACTURED BY ILSCO, BURNDY, OAE. 90 DEGREE CRIMP-ON LUG MUST BE INSTALLED WITH RATED INSULATION THAT MEETS OR EXCEEDS THE CONDUCTORS' INSULATION IT IS BEING USED WITH. IT IS RECOMMENDED THAT ACCEPTABLE CLEARANCES ARE MAINTAINED WITH THIS BUS TAP FOR SAFE, CONTINUOUS OPERATION.

F. FOLLOW MANUFACTURER'S GUIDELINES, OR THE APPLICABLE AHJ, FOR MODIFICATION OF BUS BAR(S).

E16. ALL CONDUITS SHALL BE FREE OF ANY OBSTRUCTIONS AND PROPERLY SECURED BEFORE WIRE IS PULLED.

E17. ELECTRICAL CONTRACTOR TO PROVIDE SIGNAGE TO ALL ELECTRIC BOXES, JUNCTION BOXES, PULL BOXES, DC DISCONNECTS, CONDUIT RUNS, AC DISCONNECTS, SUB PANELS, AND MAIN SERVICES PER NEC ARTICLE 690.

E18. MEGGER TESTING: MEGGER (INSULATION) TEST ALL CONDUCTORS AT 1,000V TO 5 MEGAOHMS BETWEEN THE CONDUCTOR UNDER TEST AND GROUND WIRE. CONDUCT TEST AFTER WIRE IS PULLED THROUGH THE CONDUIT BUT BEFORE TERMINATING TO THE MODULES, COMBINERS, DISCONNECTS OR INVERTS. **DO NOT MEGGER THE SOLAR MODULES, AS THIS WILL LIKELY DAMAGE THEIR INTERNAL DIODES. MEGGERING IS INTENDED FOR ALL CONDUCTORS INSTALLED BY THE ELECTRICAL CONTRACTOR.** MEGGER TESTING OF CONDUCTORS BEYOND THE POINT OF COMMON COUPLING (POCC) IS THE SOLE RESPONSIBILITY OF THE UTILITY PROVIDING SERVICE.

E19. ALL UNDERGROUND ELECTRICAL WORK SHALL BE DONE WITH CARE. LOCATE EXISTING UTILITIES, IRRIGATION LINES AND OTHERS BEFORE COMMENCING UNDERGROUND WORK. CONTACT UNDERGROUND SERVICE ALERT (USA) WITHIN 48 HOURS OF ANY UNDERGROUND WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UNDERGROUND WORK PERFORMED.

MODULE INSTALLATION NOTES:

M1. REFER TO THE MODULE MANUAL FOR MORE DETAILS ON RIGGING, UNPACKING HANDLING, PLANNING, AND INSTALLATION.

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.

M3. NEVER LEAVE A MODULE UNSUPPORTED OR UNSECURED. THE CONTRACTOR IS RESPONSIBLE FOR ALL MATERIAL HANDLING ON THE JOBSITE.

SOLAR ARRAY COMMISSIONING:

C1. BEFORE CLOSING DISCONNECTS OR ATTEMPTING TO ENERGIZE THE INVERTERS, THE FOLLOWING COMMISSIONING PROCEDURE SHALL BE COMPLETED:

A. CHECK THE OPEN CIRCUIT VOLTAGE (VOC) AND POLARITY (+/-) OF EACH SOURCE CIRCUIT. RECORD THE VALUES ON THE COMMISSIONING RECORD DOCUMENTS

B. CHECK THE SHORT CIRCUIT CURRENT (ISC) FOR EACH SOURCE CIRCUIT RECORD THE VALUES ON COMMISSIONING RECORD DOCUMENTS

C. CHECK THAT ALL FUSES, DISCONNECTS AND OTHER BALANCE OF SYSTEM COMPONENTS ARE RATED FOR600VDC AND THE APPROPRIATE CURRENT CAPACITY.

D. COMPLETE A VISUAL INSPECTION OF ALL THE MODULES TO CHECK FOR BROKEN GLASS, FRAYED WIRES, EXPOSED CONDUCTORS AND ANY OTHER PROBLEMS THAT MAY CAUSE A FAULT.

E. PRIOR TO INSTALLATION ALL FUSES SHALL BE TESTED FOR CONTINUITY.

INVERTER COMMISSIONING:

IC1. THIS CHECKLIST MUST BE COMPLETED BY THE CONTRACTOR PRIOR TO COMMISSIONING:

A. CHECK THAT THE INVERTER IS PROPERLY GROUNDED, AS DESCRIBED BY THE MANUFACTURER AND THESE INSTRUCTIONS.

B. CHECK THE INVERTER DC INPUT VOLTAGE (VOC) FROM THE SOLAR ARRAY FOR PROPER POLAR, INSIDE THE INVERTER CABINET.

C. CHECK DC INPUT VOLTAGE (VOC) IS WITHIN THE PROPER RANGE IN THE INVERTER CABINET AS DEFINED BY THE INVERTER RATING LABEL AND ACCOMPANIED MANUAL

D. CHECK AC INPUT VOLTAGE IS IN THE PROPER PHASE SEQUENCE (CLOCKWISE) IF APPLICABLE

E. CHECK THAT THE AC GRID VOLTAGE, AT THE INVERTER AC TERMINALS, IS WITHIN THE PROPER RANGE DEFINED BY THE INVERTER RATING LABEL AND ACCOMPANIED MANUAL.

F. FOLLOW START-UP SEQUENCE IN MANUFACTURER'S OPERATION AND MAINTENANCE MANUAL

G. VERIFY THAT ALL CONDUCTOR TERMINATION AND FASTENER TORQUE MEET LISTED SPECIFICATIONS.

ADDITIONAL SOLAR-360 INSTALLATION STANDARDS

S1. NFPA 70 (NEC) AND IBC, OR LOCAL CODES AS REQUIRED. COMPLIANCE FOR INSTALLATION AND WORKMANSHIP.

S2. LABEL EQUIPMENT WITH PERMANENT WEATHERPROOF LABELS. COMPLY WITH NEC ART. 690.7, 690.17, AND 690.53 ESPECIALLY. LABEL UTILITY DISCONNECT AND SOLAR METER.

S3. IDENTIFY BOTH ENDS OF WIRES WITH PERMANENT WIRE MARKERS.

S4. THE POINT OF CONNECTION SHALL COMPLY WITH NFPA 70 ARTICLE 690.64(B)(2).

S5. LIMIT TOTAL VOLTAGE DROP TO LESS THAN 3%, INCLUDING ALL DC AND AC CIRCUITS (PROVIDE CALCULATIONS FOR WORST CIRCUIT). PREFERRED IS 2% DC AND 1% AC.

S6. INSTALLATION OF ALL COMPONENTS COMPLETED IS WORKMANLIKE MANNER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

S7. USE 90°C OR HIGHER WET RATED WIRE FOR ALL EXTERIOR CONDUITS, WITH APPROPRIATE DERATINGS FOR TEMPERATURE AND OTHER FACTORS.

S8. FUSES AND WIRES BETWEEN TRANSFORMER AND POINT OF INTERCONNECTION SIZED FOR TRANSFORMER IN-RUSH CURRENT (OCCURS DAILY DUE TO NIGHT-TIME DISCONNECT)

S9. ALL DC MATERIALS (FUSES, EQUIPMENT, CONNECTORS, WIRES, ETC.) TO BE UL LISTED FOR 600VDC OR 1000VDC WHERE APPLICABLE.

S10. ALL DISCONNECTS AND COMBINERS TO BE SECURED FROM UNAUTHORIZED/UNQUALIFIED PERSONNEL. (MAY BE WITH LOCK OR LOCATION) AND ALL SOURCES L.O.T.O. BEFORE COMMISSIONING.

S11. ALL EXPOSED CABLES, SUCH AS MODULE LEADS, TO BE SECURED WITH UV RATED PLASTIC OR OTHER APPROVED SUNLIGHT RESISTANT MEANS WITH A 25 YEAR LIFE.

S12. ALL FASTENERS TO BE UV RESISTANT PLASTIC AND ASSEMBLED TO ISOLATE COPPER CONDUCTORS FROM DIRECT CONTACT WITH ALUMINUM COMPONENTS.

S13. STRUCTURES AND SYSTEM LAYOUT MUST ACCOMMODATE EASY ACCESS FOR TROUBLESHOOTING AND MAINTENANCE.

S14. NO WIRE NUTS SHALL BE USED IN SYSTEM CONNECTION POINTS.

S15. CONNECTORS TO BE TORQUED PER DEVICE LISTING AFTER TREATING THREADS WITH ANTIOXIDANT OR ANTI SEIZE. CAMMED OUT SET SCREWS SHALL BE REPLACED. HEX OR SQUARE DRIVE SOCKET HEAD SCREWS ARE RECOMMENDED.

S16. SPLIT BOLTS/SPLICES/CONNECTORS SHALL BE INSULATED WITH APPROVED MEANS. UL LISTED ELECTRICAL TAPE ALONE IS NOT SUITABLE AS THE ONLY INSULATION MEANS. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR APPLICATION OF INSULATING PRODUCT.

S17. STRUCTURE FINISH TO BE CONSISTENT WITH 25 YEAR DESIGN LIFE WITH MINIMAL MAINTENANCE. ACCEPTABLE UNISTRUT FINISHES ARE THOSE COATING WITH DEMONSTRATED 25 YEAR LIFE.

S18. ANODIZED ALUMINUM. HOT DIPPED GALVANIZED STEEL, AND STAINLESS STEEL ARE ACCEPTABLE MATERIALS. ALL OTHER FINISHES REQUIRE JUSTIFICATION WITH DETAILS ON MAINTENANCE REQUIREMENT DURING THE 25 YEAR LIFE.

S19. ALL FIELD WELDS OR CUT SURFACES REQUIRE FIELD TOUCH-UP TO MAINTAIN FINISH COATING. CUT GALVANIZED/ZINC COVERED SURFACES SHALL BE COATED WITH A COLD ZINC PRODUCT APPLIED IN AN APPROVED MANNER.

S20. ALL WELDING TO BE COMPLETED BY WELDERS CERTIFIED AND CURRENT IN THE TYPE OF WELDING BEING COMPLETED.

S21. ALL ELECTRICAL WORK TO BE COMPLETED BY QUALIFIED ELECTRICIANS OR APPRENTICES WORKING UNDER THE DIRECT SUPERVISION OF A QUALIFIED ELECTRICIAN EQUIVALENT IN EXPERIENCE TO A JOURNEYMAN OR MASTER ELECTRICIAN.

S22. STRUCTURE MUST ALLOW FOR UNRESTRICTED AIRFLOW AROUND MODULES AND THE MODULE FRAME.

S23. PULL/SPLICE BOXES SHALL BE LISTED FOR PURPOSE AND INSTALLED IN A WORKMANLIKE MANNER. DIRECT BURIAL RATED CONNECTORS SHALL BE USED FOR CONDUCTORS.

S24. GROUNDING SYSTEM WILL USE LISTED COMPONENTS INCLUDING GROUND RODS, GROUNDING LUGS/CLAMPS, AND OTHER DEVICES RATED FOR DIRECT BURIAL WHEN EXPOSED TO THE ELEMENTS.

S25. MODULES SHALL BE GROUNDED WITH EQUIPMENT GROUNDING CONDUCTOR USING THE LISTED MEANS AS DESCRIBED IN THE MODULE INSTALLATION MANUAL. MECHANICAL CONNECTORS SHALL BE RATED FOR DIRECT BURIAL.

S26. CONCRETE SHALL BE CURED FOR A MINIMUM OF SEVEN (7) DAYS BEFORE LOADING, UNLESS THE RESPONSIBLE CHARGE ENGINEER CERTIFIES LOADING BEFORE INITIAL CURE, OR SPECIFIES A LONGER CURE TIME.

S27. TOP ENTRY CONDUITS WILL BE ROUTED SO WATER BUILDUP DOES NOT FALL ON ELECTRICAL/ELECTRONIC EQUIPMENT.

S28. ALL CONDUIT ENTRY AND EXITS FROM ENCLOSURES WILL BE SEALED WITH MATERIAL LISTED FOR PURPOSE SUCH AS FIRE STOP OR DUCT SEAL.

S29. FIELD ASSEMBLY OF MC CABLES WILL BE EXECUTED BY CERTIFIED PERSONNEL ACCORDING TO MANUFACTURER'S GUIDELINES.

S30. OTHER NEARBY UTILITY SERVICES WILL BE SECURED BEYOND THE BOUNDARY OF THE MODULES OR SUPPORT STRUCTURE AS REQUIRED BY APPLICABLE CODE(S). A MINIMUM CLEARANCE OF 7.5CM (3") IS REQUIRED WITH APPROVAL OF THE ENGINEER

S31. CIRCUIT COMBINERS SHALL BE LISTED TO UL 1741 AND APPROPRIATE FOR THE INSTALLATION DESIGN AND LOCATION

S32. PER NEC STANDARD COLORS FOR WIRE SHALL BE USED. WHITE FOR THE GROUNDED CONDUCTOR, GREEN FOR EQUIPMENT GROUND, AND ALL OTHER COLORS NEEDED FOR PHASING.

ABBREVIATIONS

AC	ALTERNATING CURRENT
APPROX	APPROXIMATE
AWG	AMERICAN WIRE GUAGE
CL	CENTER LINE
CB	COMBINER BOX
DC	DIRECT CURRENT
DI	DROP INLET
DISC	DISCONNECT
EMT	ELECTRICAL METALLIC TUBING
(E)	(EXISTING)
EL	ELEVATION
EQ	EQUAL
ID	INSIDE DIAMETER
JB	JUNCTION BOX
MCB	MAIN COMBINER BOX
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
(N)	(NEW)
OAE	OR APPROVED EQUAL
OC	ON CENTER
OD	OUTSIDE DIAMETER
POCC	POINT OF COMMON COUPLING
PV	PHOTOVOLTAIC
PL	PROPERTY LINE
SD	STORM DRAIN
SF	SQUARE FOOT/FEET
SIM	SIMILAR
TBD	TO BE DETERMINED
TOF	TOP OF FOOTING
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VIF	VERIFY IN FIELD
XFMR	TRANSFORMER

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Crescent City
Harbor District
Phase 3
101 Citizens Dock Rd,
Crescent City, CA 95531

No.	Description	Date

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Notes

T102

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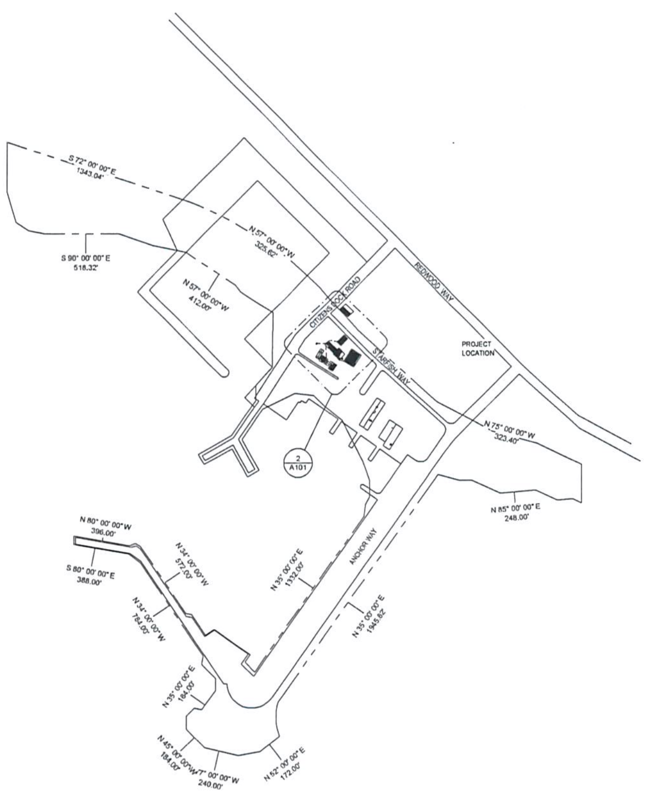
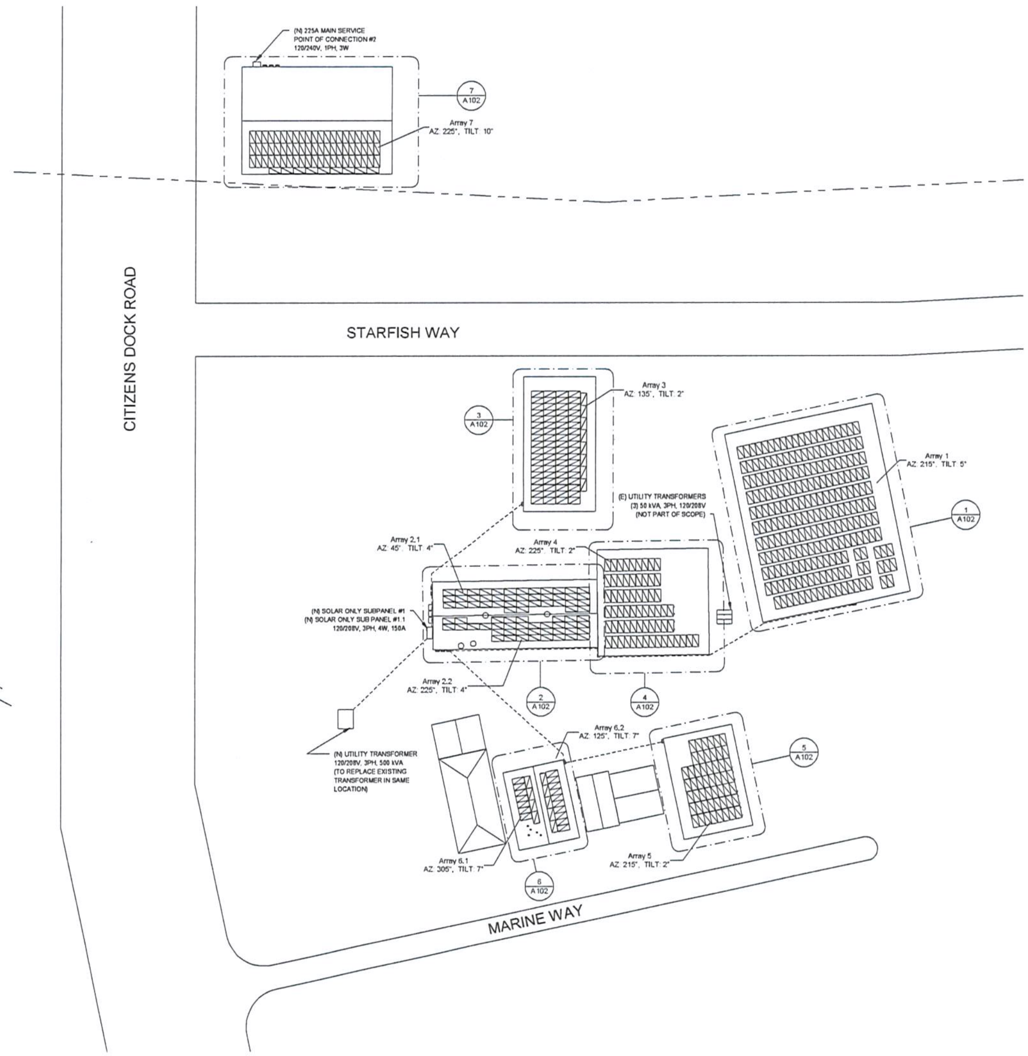
To scale on 24x36 paper


S 72° 00' 00" E
1343.04'
S 90° 00' 00" E
518.32'
N 57° 00' 00" W
325.62'
N 57° 00' 00" W
412.00'
CITIZENS DOCK ROAD
REDWOOD WAY
STARFISH WAY
PROJECT LOCATION
N 75° 00' 00" W
323.40'
N 85° 00' 00" E
248.00'
2
A101
ANCHOR WAY
N 35° 00' 00" E
1332.00'
N 35° 00' 00" E
1945.82'
N 80° 00' 00" W
396.00'
S 80° 00' 00" E
388.00'
N 34° 00' 00" W
572.00'
N 34° 00' 00" W
784.00'
N 35° 00' 00" E
184.00'
N 45° 00' 00" W
184.00'
N 7° 00' 00" W
240.00'
N 52° 00' 00" E
172.00'

① Site Layout
1" = 400'-0"


(N) 225A MAIN SERVICE
POINT OF CONNECTION #2
120/240V, 1PH, 3W
7
A102
Array 7
AZ: 225°, TILT: 10°
CITIZENS DOCK ROAD
STARFISH WAY
Array 3
AZ: 135°, TILT: 2°
3
A102
Array 1
AZ: 215°, TILT: 5°
1
A102
(E) UTILITY TRANSFORMERS
(3) 50 kVA, 3PH, 120/208V
(NOT PART OF SCOPE)
Array 2.1
AZ: 45°, TILT: 4°
Array 4
AZ: 225°, TILT: 2°
(N) SOLAR ONLY SUBPANEL #1
(N) SOLAR ONLY SUB PANEL #1.1
120/208V, 3PH, 4W, 150A
Array 2.2
AZ: 225°, TILT: 4°
2
A102
4
A102
(N) UTILITY TRANSFORMER
120/208V, 3PH, 500 kVA
(TO REPLACE EXISTING
TRANSFORMER IN SAME
LOCATION)
Array 6.2
AZ: 125°, TILT: 7°
5
A102
Array 6.1
AZ: 305°, TILT: 7°
6
A102
Array 5
AZ: 215°, TILT: 2°
MARINE WAY

② Site Layout - Callout 1
1" = 30'-0"

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Array Name	Tilt°	Azimuth	Module Count
Array 1	5	215	216
Array 2.1	4	45	40
Array 2.2	4	225	36
Array 3	2	135	80
Array 4	2	225	64
Array 5	2	215	52
Array 6.1	7	305	11
Array 6.2	7	125	15
Array 7	10	225	72
Grand total			586

Crescent City Harbor District Phase 3

101 Citizens Dock Rd,
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Site Layout

A101

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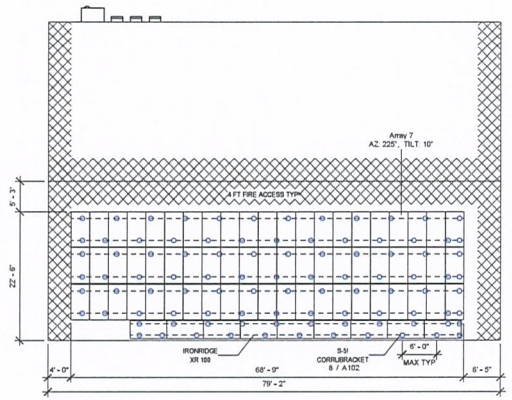
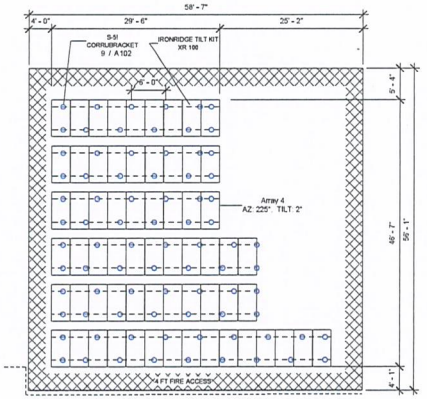
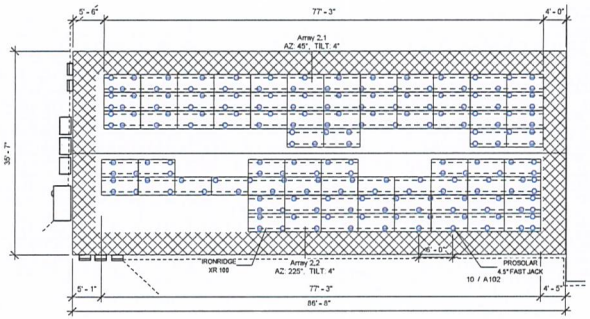


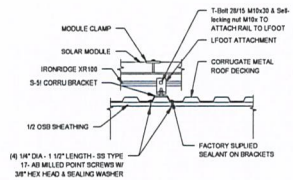
7 Array 9 Layout
1" = 10'-0"



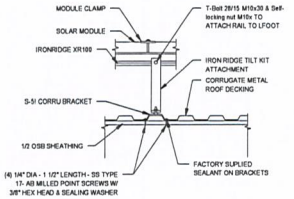
4 Array 4 Layout
1" = 10'-0"



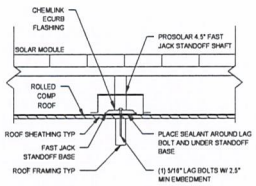
2 Array 2 Layout
1" = 10'-0"



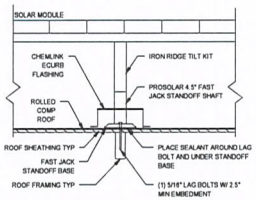
8 Roof Standoff - S-5! Corru Bracket
1 1/2" = 1'-0"



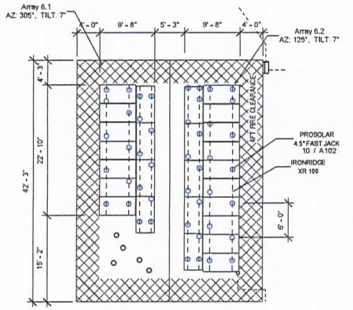
9 Roof Standoff - S-5! Corru Bracket Tilt
1 1/2" = 1'-0"



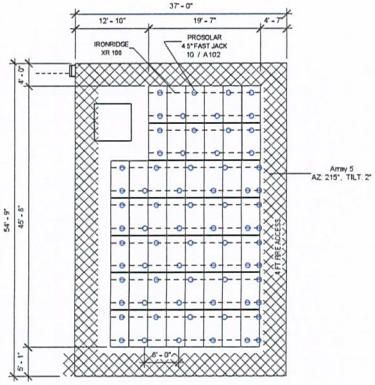
10 Roof Standoff - Fast Jack Chem Curb
1 1/2" = 1'-0"



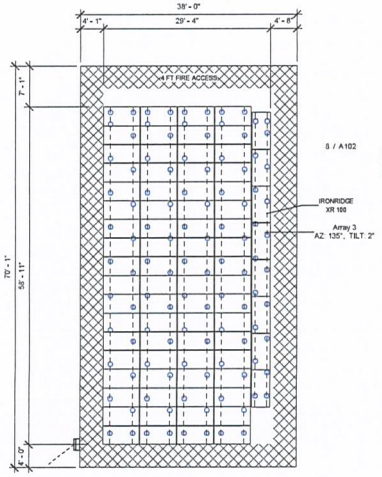
11 Roof Standoff - Fast Jack Chem Curb Tilt
1 1/2" = 1'-0"



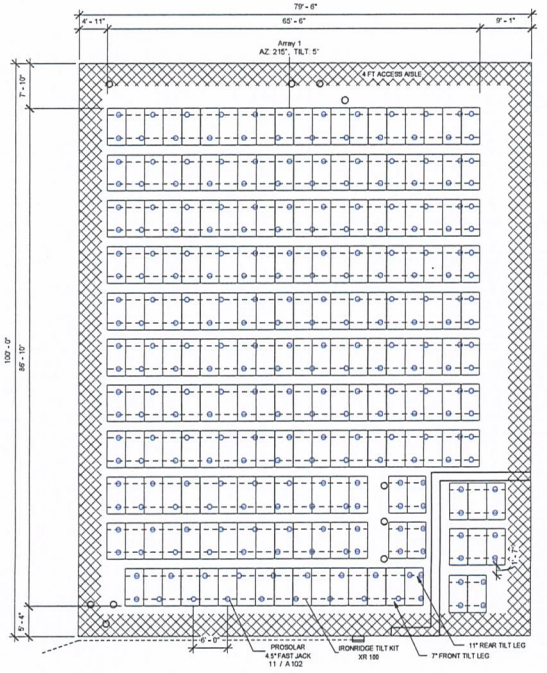
6 Array 6 Layout
1" = 10'-0"



5 Array 5 Layout
1" = 10'-0"



3 Array 3 Layout
1" = 10'-0"



1 Array 1 Layout
1" = 10'-0"

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X_____

Array Name	Tilt°	Azimuth	Module Count
Array 1	5	215	216
Array 2.1	4	45	40
Array 2.2	4	225	36
Array 3	2	135	80
Array 4	2	225	64
Array 5	2	215	52
Array 6.1	7	305	11
Array 6.2	7	125	15
Array 7	10	225	72
Grand total			586

Crescent City
Harbor District
Phase 3
101 Citizens Dock Rd.
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No.	Description	Date

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Array Layout 1&2

A102

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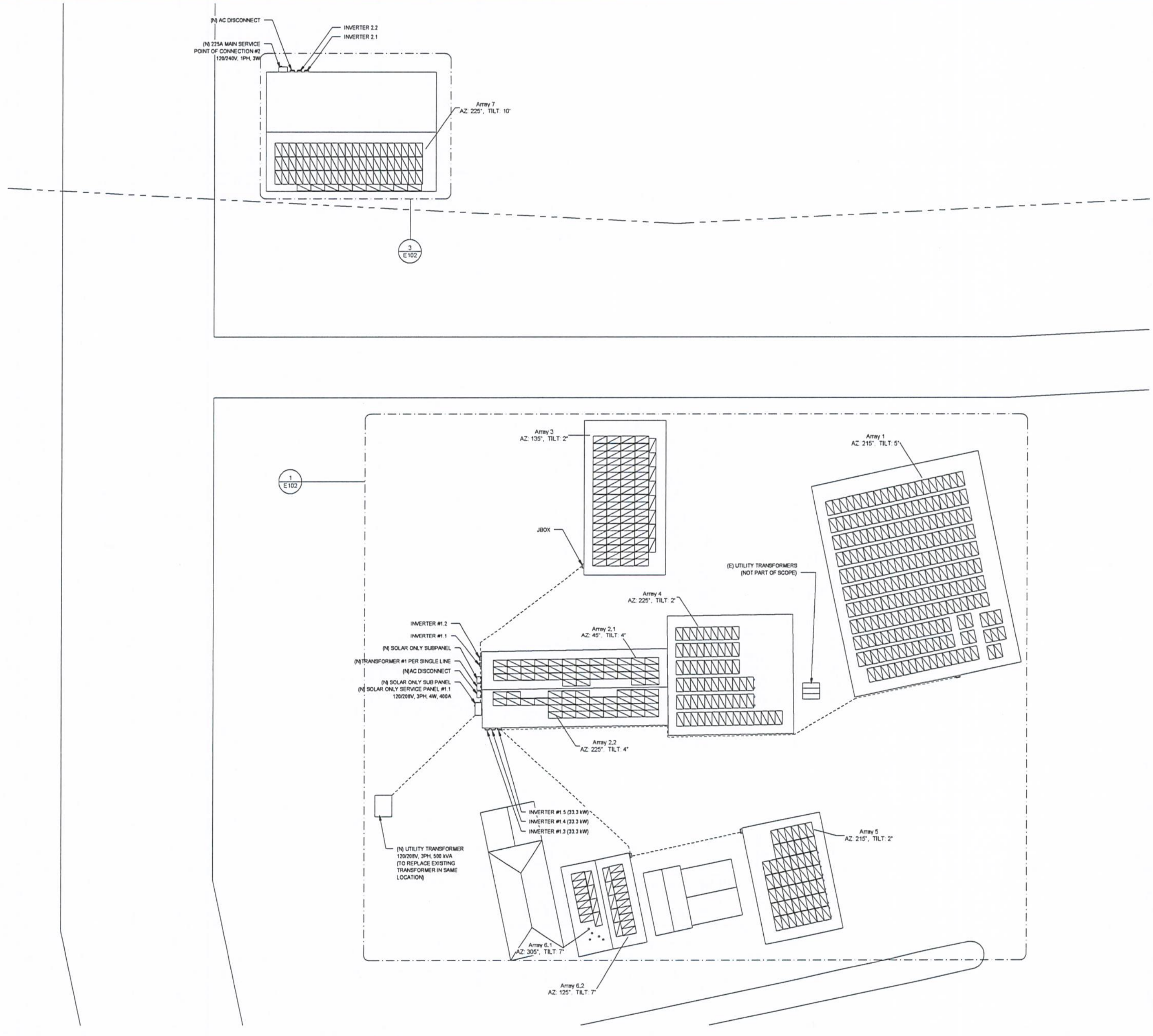
(N) AC DISCONNECT
(N) 225A MAIN SERVICE POINT OF CONNECTION #2 120/240V, 1PH, 3W
INVERTER 2.2
INVERTER 2.1
Array 7 AZ: 225°, TILT: 10°
3 E102
1 E102
Array 3 AZ: 135°, TILT: 2°
JBOX
Array 1 AZ: 215°, TILT: 5°
(E) UTILITY TRANSFORMERS (NOT PART OF SCOPE)
Array 4 AZ: 225°, TILT: 2°
Array 2.1 AZ: 45°, TILT: 4°
INVERTER #1.2
INVERTER #1.1
(N) SOLAR ONLY SUBPANEL
(N) TRANSFORMER #1 PER SINGLE LINE
(N) AC DISCONNECT
(N) SOLAR ONLY SUB PANEL
(N) SOLAR ONLY SERVICE PANEL #1.1 120/208V, 3PH, 4W, 400A
Array 2.2 AZ: 225°, TILT: 4°
INVERTER #1.5 (33.3 kW)
INVERTER #1.4 (33.3 kW)
INVERTER #1.3 (33.3 kW)
(N) UTILITY TRANSFORMER 120/208V, 3PH, 500 kVA (TO REPLACE EXISTING TRANSFORMER IN SAME LOCATION)
Array 5 AZ: 215°, TILT: 2°
Array 6.1 AZ: 305°, TILT: 7°
Array 6.2 AZ: 125°, TILT: 7°

1 Electrical Site Layout
3/64" = 1'-0"

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X________________

Array Name	Tilt°	Azimuth	Module Count
Array 1	5	215	216
Array 2.1	4	45	40
Array 2.2	4	225	36
Array 3	2	135	80
Array 4	2	225	64
Array 5	2	215	52
Array 6.1	7	305	11
Array 6.2	7	125	15
Array 7	10	225	72
Grand total			586

Crescent City Harbor District Phase 3

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No.	Description	Date

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Electrical Site Layout

E101

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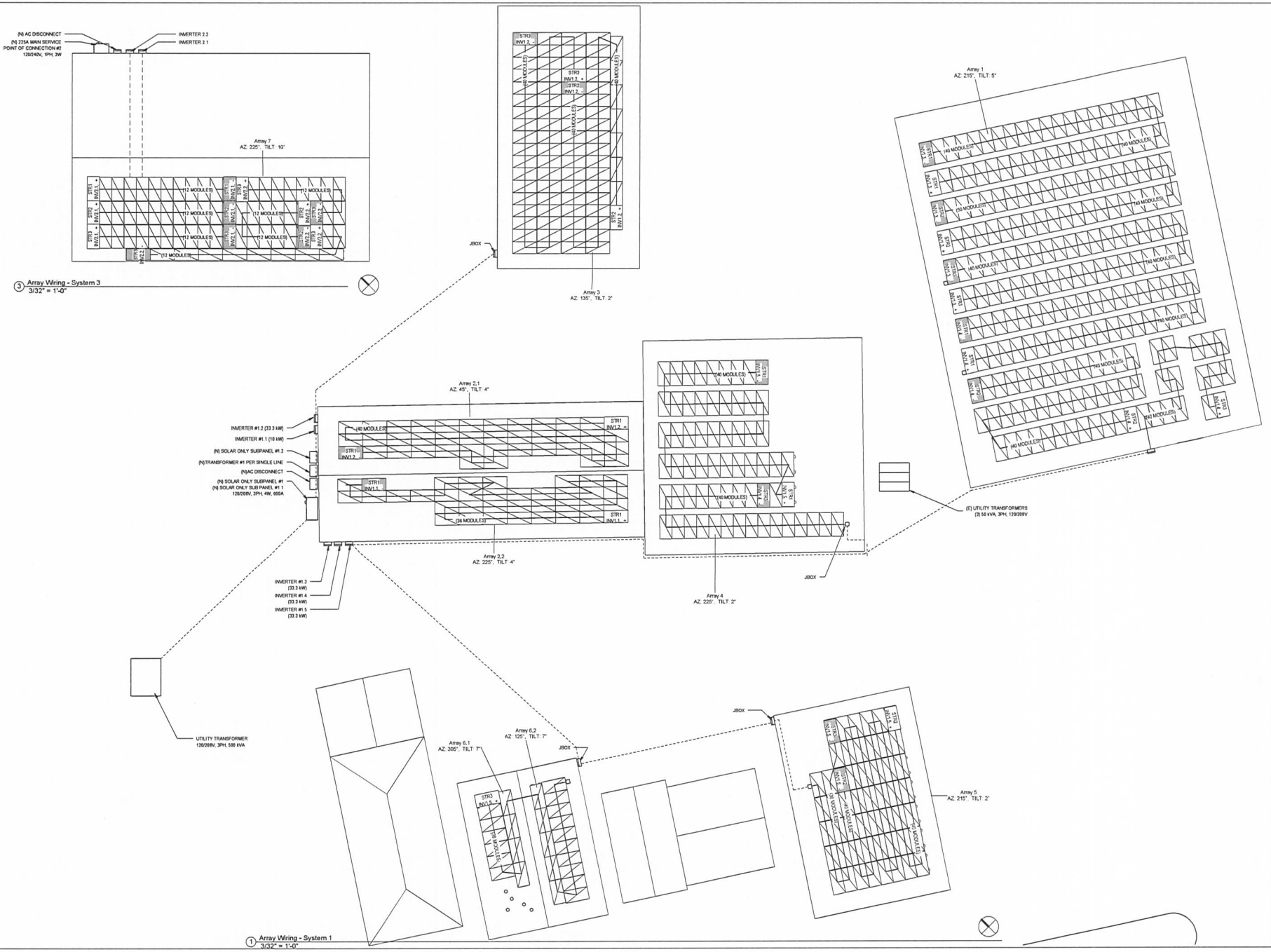

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X

Array Name	Tilt°	Azimuth	Module Count
Array 1	5	215	216
Array 2.1	4	45	40
Array 2.2	4	225	36
Array 3	2	135	80
Array 4	2	225	64
Array 5	2	215	52
Array 6.1	7	305	11
Array 6.2	7	125	15
Array 7	10	225	72
Grand total			586

Crescent City Harbor District Phase 3

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No.	Description	Date

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Wiring Layout

E102

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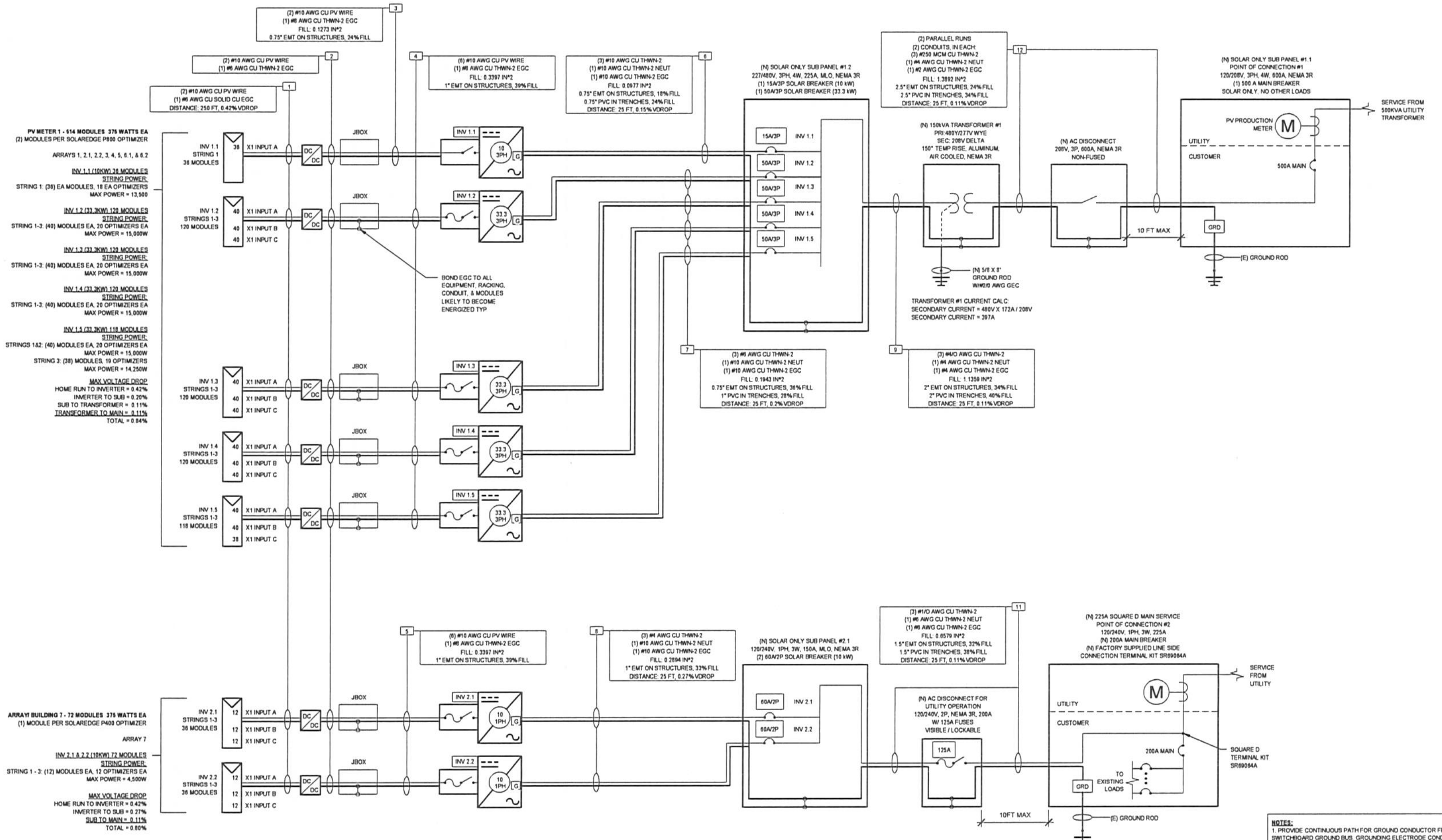
To scale on 24x36 paper


(2) #10 AWG CU PV WIRE
(1) #8 AWG CU THWN-2 EGC
FILL: 0.1273 IN^2
0.75" EMT ON STRUCTURES, 24% FILL
(2) #10 AWG CU PV WIRE
(1) #6 AWG CU THWN-2 EGC
(2) #10 AWG CU PV WIRE
(1) #6 AWG CU SOLID CU EGC
DISTANCE: 250 FT, 0.42% VDROP
(6) #10 AWG CU PV WIRE
(1) #8 AWG CU THWN-2 EGC
FILL: 0.3397 IN^2
1" EMT ON STRUCTURES, 39% FILL
PV METER 1 - 514 MODULES 375 WATTS EA
(2) MODULES PER SOLAREDGE P800 OPTIMIZER
ARRAYS 1, 2.1, 2.2, 3, 4, 5, 6.1, & 6.2
INV 1.1 (10KW) 36 MODULES
STRING POWER:
STRING 1: (36) EA MODULES, 18 EA OPTIMIZERS
MAX POWER = 13,500
INV 1.2 (33.3KW) 120 MODULES
STRING POWER:
STRING 1-3: (40) MODULES EA, 20 OPTIMIZERS EA
MAX POWER = 15,000W
INV 1.3 (33.3KW) 120 MODULES
STRING POWER:
STRING 1-3: (40) MODULES EA, 20 OPTIMIZERS EA
MAX POWER = 15,000W
INV 1.4 (33.3KW) 120 MODULES
STRING POWER:
STRING 1-3: (40) MODULES EA, 20 OPTIMIZERS EA
MAX POWER = 15,000W
INV 1.5 (33.3KW) 118 MODULES
STRING POWER:
STRINGS 1&2: (40) MODULES EA, 20 OPTIMIZERS EA
MAX POWER = 15,000W
STRING 3: (38) MODULES, 19 OPTIMIZERS
MAX POWER = 14,250W
MAX VOLTAGE DROP
HOME RUN TO INVERTER = 0.42%
INVERTER TO SUB = 0.20%
SUB TO TRANSFORMER = 0.11%
TRANSFORMER TO MAIN = 0.11%
TOTAL = 0.84%
INV 1.1
STRING 1
36 MODULES
INV 1.2
STRINGS 1-3
120 MODULES
INV 1.3
STRINGS 1-3
120 MODULES
INV 1.4
STRINGS 1-3
120 MODULES
INV 1.5
STRINGS 1-3
118 MODULES
X1 INPUT A
X1 INPUT B
X1 INPUT C
DC/DC
JBOX
BOND EGC TO ALL EQUIPMENT, RACKING, CONDUIT, & MODULES LIKELY TO BECOME ENERGIZED TYP
(3) #10 AWG CU THWN-2
(1) #10 AWG CU THWN-2 NEUT
(1) #10 AWG CU THWN-2 EGC
FILL: 0.0977 IN^2
0.75" EMT ON STRUCTURES, 18% FILL
0.75" PVC IN TRENCHES, 24% FILL
DISTANCE: 25 FT, 0.15% VDROP
(N) SOLAR ONLY SUB PANEL #1.2
227/480V, 3PH, 4W, 225A, MLO, NEMA 3R
(1) 15A/3P SOLAR BREAKER (10 kW)
(1) 50A/3P SOLAR BREAKER (33.3 kW)
15A/3P INV 1.1
50A/3P INV 1.2
50A/3P INV 1.3
50A/3P INV 1.4
50A/3P INV 1.5
(3) #6 AWG CU THWN-2
(1) #10 AWG CU THWN-2 NEUT
(1) #10 AWG CU THWN-2 EGC
FILL: 0.1943 IN^2
0.75" EMT ON STRUCTURES, 36% FILL
1" PVC IN TRENCHES, 28% FILL
DISTANCE: 25 FT, 0.2% VDROP
(2) PARALLEL RUNS
(2) CONDUITS, IN EACH:
(3) #250 MCM CU THWN-2
(1) #4 AWG CU THWN-2 NEUT
(1) #2 AWG CU THWN-2 EGC
FILL: 1.3892 IN^2
2.5" EMT ON STRUCTURES, 24% FILL
2.5" PVC IN TRENCHES, 34% FILL
DISTANCE: 25 FT, 0.11% VDROP
(N) 150kVA TRANSFORMER #1
PRI:480Y/277V WYE
SEC: 208V DELTA
150° TEMP RISE, ALUMINUM,
AIR COOLED, NEMA 3R
(N) 5/8 X 8' GROUND ROD W/#2/0 AWG GEC
TRANSFORMER #1 CURRENT CALC:
SECONDARY CURRENT = 480V X 172A / 208V
SECONDARY CURRENT = 397A
(3) #4/O AWG CU THWN-2
(1) #4 AWG CU THWN-2 NEUT
(1) #4 AWG CU THWN-2 EGC
FILL: 1.1359 IN^2
2" EMT ON STRUCTURES, 34% FILL
2" PVC IN TRENCHES, 40% FILL
DISTANCE: 25 FT, 0.11% VDROP
(N) AC DISCONNECT
208V, 3P, 600A, NEMA 3R
NON-FUSED
10 FT MAX
(N) SOLAR ONLY SUB PANEL #1.1
POINT OF CONNECTION #1
120/208V, 3PH, 4W, 600A, NEMA 3R
(1) 500 A MAIN BREAKER
SOLAR ONLY, NO OTHER LOADS
PV PRODUCTION METER
UTILITY
CUSTOMER
500A MAIN
GRD
(E) GROUND ROD
SERVICE FROM 500KVA UTILITY TRANSFORMER
ARRAY BUILDING 7 - 72 MODULES 375 WATTS EA
(1) MODULE PER SOLAREDGE P400 OPTIMIZER
ARRAY 7
INV 2.1 & 2.2 (10KW) 72 MODULES
STRING POWER:
STRING 1 - 3: (12) MODULES EA, 12 OPTIMIZERS EA
MAX POWER = 4,500W
MAX VOLTAGE DROP
HOME RUN TO INVERTER = 0.42%
INVERTER TO SUB = 0.27%
SUB TO MAIN = 0.11%
TOTAL = 0.80%
INV 2.1
STRINGS 1-3
36 MODULES
INV 2.2
STRINGS 1-3
36 MODULES
(6) #10 AWG CU PV WIRE
(1) #8 AWG CU THWN-2 EGC
FILL: 0.3397 IN^2
1" EMT ON STRUCTURES, 39% FILL
(3) #4 AWG CU THWN-2
(1) #10 AWG CU THWN-2 NEUT
(1) #10 AWG CU THWN-2 EGC
FILL: 0.2894 IN^2
1" EMT ON STRUCTURES, 33% FILL
DISTANCE: 25 FT, 0.27% VDROP
(N) SOLAR ONLY SUB PANEL #2.1
120/240V, 1PH, 3W, 150A, MLO, NEMA 3R
(2) 60A/2P SOLAR BREAKER (10 kW)
60A/2P INV 2.1
60A/2P INV 2.2
(3) #1/O AWG CU THWN-2
(1) #6 AWG CU THWN-2 NEUT
(1) #6 AWG CU THWN-2 EGC
FILL: 0.6579 IN^2
1.5" EMT ON STRUCTURES, 32% FILL
1.5" PVC IN TRENCHES, 38% FILL
DISTANCE: 25 FT, 0.11% VDROP
(N) AC DISCONNECT FOR UTILITY OPERATION
120/240V, 2P, NEMA 3R, 200A
W/ 125A FUSES
VISIBLE / LOCKABLE
125A
10FT MAX
(N) 225A SQUARE D MAIN SERVICE
POINT OF CONNECTION #2
120/240V, 1PH, 3W, 225A
(N) 200A MAIN BREAKER
(N) FACTORY SUPPLIED LINE SIDE CONNECTION TERMINAL KIT SR69064A
SERVICE FROM UTILITY
200A MAIN
TO EXISTING LOADS
SQUARE D TERMINAL KIT SR69064A
(E) GROUND ROD

PROJECT TOTAL MODULES
586 SOLAR MODULES
CSUN375-72MH, 375W
TOTAL SYSTEM SIZE: 219.750 kW DC, _____ kW ACcec

POINT OF CONNECTION #1
514 SOLAR MODULES
CSUN375-72MH, 375W
TOTAL SYSTEM SIZE: 192.750 kW DC, _____ kW ACcec

POINT OF CONNECTION #2
72 SOLAR MODULES
CSUN375-72MH, 375W
TOTAL SYSTEM SIZE: 27.000 kW DC, ___ kW ACcec

PANEL SPECS:
CSUN375-72MH, 375W
MODULE AMPERAGE: 9.60 IMP, 9.99 ISC
MODULE VOLTAGE: 39.0 VMP, 47.6 VOC
CEC RATING: _____W
TEMP. COEFFICIENTS OF Voc: -0.29%/K

INVERTER SPECS:
SOLAREDGE, SE10KUS [480V][SI1]
10 kW, 480/277V, 3PH, 4W, NEMA 3R
MAX OUTPUT CURRENT 12A
MAX OPTIMIZER STRING POWER: 12,750W
CEC EFFECIENCY: 98%

SOLAREDGE, SE33.3KUS [480V][SI1]
33.3 kW, 480/277V, 3PH, 4W, NEMA 3R
MAX OUTPUT CURRENT 40A
MAX OPTIMIZER STRING POWER: 15,000W
CEC EFFECIENCY: 98.5%

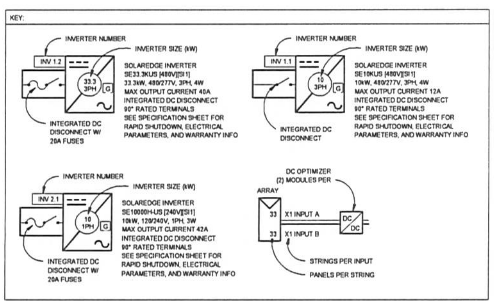
SOLAREDGE, SE10000H-US [240V][SI1]
10 kW, 120/240V, 1PH, 3W, NEMA 3R
MAX OUTPUT CURRENT 42A
MAX OPTIMIZER STRING POWER: 6,000W
CEC EFFECIENCY: 99%

SEE SPEC SHEET FOR ELECTRICAL PARAMETERS AND WARRANTY INFO

ASHRAE 2% TEMPERATURE
CRESCENT CITY FAA AI
HIGH TEMP 2% AVG: 18°C
EXTREME MIN: -1°C

NOTES:
1. PROVIDE CONTINUOUS PATH FOR GROUND CONDUCTOR FROM THE INVERTER TO THE EXISTING MAIN SERVICE SWITCHBOARD GROUND BUS. GROUNDING ELECTRODE CONDUCTOR TO SERVE AS EQUIPMENT GROUND. PROVIDE LAY-IN LUGS TO BOND ALL EQUIPMENT ALONG THIS PATH TO THE GROUNDING ELECTRODE CONDUCTOR TO ALLOW FOR CONTINUOUS RUN.

KEY:


INVERTER NUMBER
INVERTER SIZE (kW)
INV 1.2
33.3 3PH
SOLAREDGE INVERTER
SE33.3KUS [480V][SI1]
33.3kW, 480/277V, 3PH, 4W
MAX OUTPUT CURRENT 40A
INTEGRATED DC DISCONNECT
90° RATED TERMINALS
SEE SPECIFICATION SHEET FOR RAPID SHUTDOWN, ELECTRICAL PARAMETERS, AND WARRANTY INFO
INTEGRATED DC DISCONNECT W/ 20A FUSES
INV 1.1
10 3PH
SOLAREDGE INVERTER
SE10KUS [480V][SI1]
10kW, 480/277V, 3PH, 4W
MAX OUTPUT CURRENT 12A
INTEGRATED DC DISCONNECT
90° RATED TERMINALS
SEE SPECIFICATION SHEET FOR RAPID SHUTDOWN, ELECTRICAL PARAMETERS, AND WARRANTY INFO
INTEGRATED DC DISCONNECT
INV 2.1
10 1PH
SOLAREDGE INVERTER
SE10000H-US [240V][SI1]
10kW, 120/240V, 1PH, 3W
MAX OUTPUT CURRENT 42A
INTEGRATED DC DISCONNECT
90° RATED TERMINALS
SEE SPECIFICATION SHEET FOR RAPID SHUTDOWN, ELECTRICAL PARAMETERS, AND WARRANTY INFO
INTEGRATED DC DISCONNECT W/ 20A FUSES
DC OPTIMIZER
(2) MODULES PER
ARRAY
X1 INPUT A
X1 INPUT B
STRINGS PER INPUT
PANELS PER STRING

WIRING CHART																	WIRE RATING CHART					TERMINATION...		VOLTAGE DROP CHART			
Callout #	Amps Isc	NEC Mult	Amps Max	Parallel Runs	Number Conductors	Size Conductor	Conductor Matl	Insulation Conductor	Size Neutral	Size Ground	Conduit Qty	Wire Temp Rating	Wire Amb Temp	Wire Roof Temp	Wire Temp Total	Conductors Current Carrying	Parallel Runs	Wire Amp Rating	Wire Temp Derate	Wire Conductor Derate	Derated Wire Rating <= Amps Max	Term Temp Rating	Term Amp Rating >=Amps Max	Vdrop Amps Imp	Vdrop Vmp	Vdrop Distance	Vdrop Percent
1	9.99	1.56	16	1	2	#10 AWG	CU	PV WIRE	NA	#6 AWG	1	90	18	17	35	2	1	40	0.96	1	1 X 40A X 0.96 X 1 = 38 >= 16	60	30 >=16	9.6	1404	250	0.42
2	18	1.25	23	1	2	#10 AWG	CU	PV WIRE	NA	#6 AWG	1	90	18	17	35	2	1	40	0.96	1	1 X 40A X 0.96 X 1 = 38 >= 23	60	30 >=23	18	1000	0	0
3	18	1.25	23	1	2	#10 AWG	CU	PV WIRE	NA	#8 AWG	1	90	18	17	35	2	1	40	0.96	1	1 X 40A X 0.96 X 1 = 38 >= 23	60	30 >=23	18	1000	0	0
4	18	1.25	23	1	6	#10 AWG	CU	PV WIRE	NA	#8 AWG	1	90	18	0	18	6	1	40	1.08	0.8	1 X 40A X 1.08 X 0.8 = 35 >= 23	60	30 >=23	18	1000	0	0
5	18	1.25	23	1	6	#10 AWG	CU	PV WIRE	NA	#8 AWG	1	90	18	0	18	6	1	40	1.08	0.8	1 X 40A X 1.08 X 0.8 = 35 >= 23	60	30 >=23	18	1000	0	0
6	12	1.25	15	1	3	#10 AWG	CU	THWN-2	#10 AWG	#10 AWG	1	90	18	0	18	3	1	40	1.08	1	1 X 40A X 1.08 X 1 = 43 >= 15	60	30 >=15	12	480	25	0.15
7	40	1.25	50	1	3	#6 AWG	CU	THWN-2	#10 AWG	#10 AWG	1	90	18	0	18	3	1	75	1.08	1	1 X 75A X 1.08 X 1 = 81 >= 50	60	55 >=50	40	480	25	0.2
8	42	1.25	53	1	3	#4 AWG	CU	THWN-2	#10 AWG	#10 AWG	1	90	18	0	18	3	1	95	1.08	1	1 X 95A X 1.08 X 1 = 103 >= 53	60	70 >=53	42	240	25	0.27
9	172	1.25	215	1	3	#4/O AWG	CU	THWN-2	#4 AWG	#4 AWG	1	90	18	0	18	3	1	260	1.08	1	1 X 260A X 1.08 X 1 = 281 >= 215	75	230 >=215	172	480	25	0.11
11	84	1.25	105	1	3	#1/O AWG	CU	THWN-2	#6 AWG	#6 AWG	1	90	18	0	18	3	1	170	1.08	1	1 X 170A X 1.08 X 1 = 184 >= 105	75	150 >=105	84	480	25	0.11
12	397	1.25	496	2	3	#250 MCM	CU	THWN-2	#4 AWG	#2 AWG	2	90	18	0	18	3	2	580	1.08	1	2 X 580A X 1.08 X 1 = 1253 >= 496	75	510 >=496	397	480	25	0.11

① Single Line Diagram PVM-2
12" = 1'-0"

AMERICAN Diversified Energy
AMERICAN DIVERSIFIED ENERGY
711 W 17TH St, Suite D-5
Costa Mesa, CA 92627
http://americandiversifiedenergy.com
949-258-9842

AMERICAN DIVERSIFIED ENERGY

X

Crescent City
Harbor District
Phase 3
101 Citizens Dock Rd,
Crescent City, CA 95531

No.	Description	Date

AMERICAN DIVERSIFIED ENERGY

Single Line

E201

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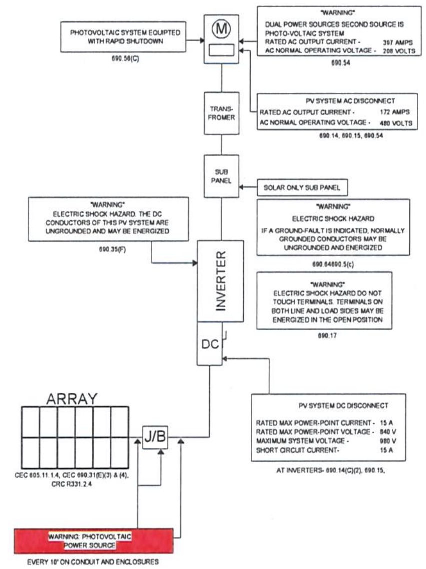
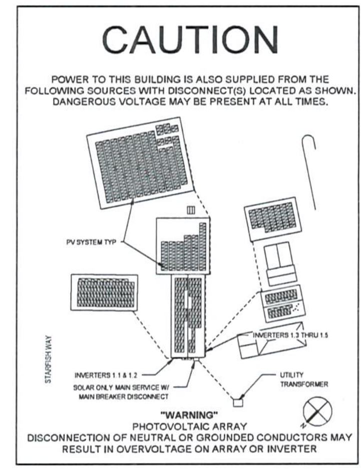
To scale on 24x36 paper

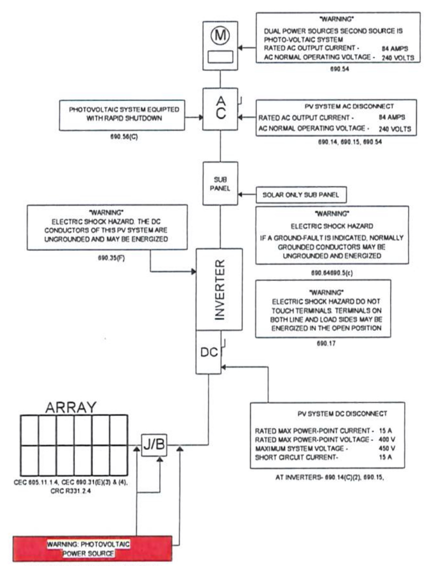

PHOTOVOLTAIC SYSTEM EQUIPTED WITH RAPID SHUTDOWN
690.56(C)
M
"WARNING"
DUAL POWER SOURCES SECOND SOURCE IS PHOTO-VOLTAIC SYSTEM
RATED AC OUTPUT CURRENT - 397 AMPS
AC NORMAL OPERATING VOLTAGE - 208 VOLTS
690.54
TRANS-FROMER
PV SYSTEM AC DISCONNECT
RATED AC OUTPUT CURRENT - 172 AMPS
AC NORMAL OPERATING VOLTAGE - 480 VOLTS
690.14, 690.15, 690.54
SUB PANEL
SOLAR ONLY SUB PANEL
"WARNING"
ELECTRIC SHOCK HAZARD. THE DC CONDUCTORS OF THIS PV SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED
690.35(F)
INVERTER
"WARNING"
ELECTRIC SHOCK HAZARD
IF A GROUND-FAULT IS INDICATED, NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED
690.64690.5(c)
"WARNING"
ELECTRIC SHOCK HAZARD DO NOT TOUCH TERMINALS. TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
690.17
DC
ARRAY
J/B
PV SYSTEM DC DISCONNECT
RATED MAX POWER-POINT CURRENT - 15 A
RATED MAX POWER-POINT VOLTAGE - 840 V
MAXIMUM SYSTEM VOLTAGE - 980 V
SHORT CIRCUIT CURRENT- 15 A
AT INVERTERS- 690.14(C)(2), 690.15,
CEC 605.11.1.4, CEC 690.31(E)(3) & (4), CRC R331.2.4
WARNING: PHOTOVOLTAIC POWER SOURCE
EVERY 10' ON CONDUIT AND ENCLOSURES

NOTES
1. CEC ARTICLES 690 AND 705 AND CRC SECTION R331 MARKINGS SHOWN HEREON
2. ALL MARKINGS SHALL CONSIST OF THE FOLLOWING:
A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING
B. RED BACKGROUND COLOR WITH WHITE TEXT AND LINE WORK
C. ARIAL FONT
3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATIONS SPECIFIED.
4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT USING POP-RIVETS OR SCREWS

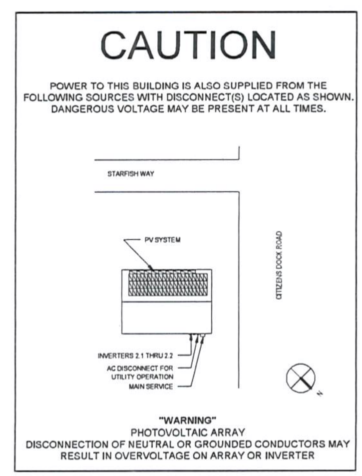

CAUTION
POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECT(S) LOCATED AS SHOWN. DANGEROUS VOLTAGE MAY BE PRESENT AT ALL TIMES.
PV SYSTEM TYP
INVERTERS 1.3 THRU 1.5
STARFISH WAY
INVERTERS 1.1 & 1.2
SOLAR ONLY MAIN SERVICE W/ MAIN BREAKER DISCONNECT
UTILITY TRANSFORMER
"WARNING"
PHOTOVOLTAIC ARRAY
DISCONNECTION OF NEUTRAL OR GROUNDED CONDUCTORS MAY RESULT IN OVERVOLTAGE ON ARRAY OR INVERTER

6"X8" TYP - CEC 705.10

(1) Signage System 1
12" = 1'-0"


M
"WARNING"
DUAL POWER SOURCES SECOND SOURCE IS PHOTO-VOLTAIC SYSTEM
RATED AC OUTPUT CURRENT - 84 AMPS
AC NORMAL OPERATING VOLTAGE - 240 VOLTS
690.54
PHOTOVOLTAIC SYSTEM EQUIPTED WITH RAPID SHUTDOWN
690.56(C)
A C
PV SYSTEM AC DISCONNECT
RATED AC OUTPUT CURRENT - 84 AMPS
AC NORMAL OPERATING VOLTAGE - 240 VOLTS
690.14, 690.15, 690.54
SUB PANEL
SOLAR ONLY SUB PANEL
"WARNING"
ELECTRIC SHOCK HAZARD. THE DC CONDUCTORS OF THIS PV SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED
690.35(F)
INVERTER
"WARNING"
ELECTRIC SHOCK HAZARD
IF A GROUND-FAULT IS INDICATED, NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED
690.64690.5(c)
"WARNING"
ELECTRIC SHOCK HAZARD DO NOT TOUCH TERMINALS. TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
690.17
DC
ARRAY
J/B
PV SYSTEM DC DISCONNECT
RATED MAX POWER-POINT CURRENT - 15 A
RATED MAX POWER-POINT VOLTAGE - 400 V
MAXIMUM SYSTEM VOLTAGE - 450 V
SHORT CIRCUIT CURRENT- 15 A
AT INVERTERS- 690.14(C)(2), 690.15,
CEC 605.11.1.4, CEC 690.31(E)(3) & (4), CRC R331.2.4
WARNING: PHOTOVOLTAIC POWER SOURCE
EVERY 10' ON CONDUIT AND ENCLOSURES

NOTES
1. CEC ARTICLES 690 AND 705 AND CRC SECTION R331 MARKINGS SHOWN HEREON
2. ALL MARKINGS SHALL CONSIST OF THE FOLLOWING:
A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING
B. RED BACKGROUND COLOR WITH WHITE TEXT AND LINE WORK
C. ARIAL FONT
3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATIONS SPECIFIED.
4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT USING POP-RIVETS OR SCREWS


CAUTION
POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECT(S) LOCATED AS SHOWN. DANGEROUS VOLTAGE MAY BE PRESENT AT ALL TIMES.
STARFISH WAY
PV SYSTEM
CITIZENS DOCK ROAD
INVERTERS 2.1 THRU 2.2
AC DISCONNECT FOR UTILITY OPERATION
MAIN SERVICE
"WARNING"
PHOTOVOLTAIC ARRAY
DISCONNECTION OF NEUTRAL OR GROUNDED CONDUCTORS MAY RESULT IN OVERVOLTAGE ON ARRAY OR INVERTER

6"X8" TYP - CEC 705.10

(2) Signage System 3
12" = 1'-0"

AMERICAN DIVERSIFIED ENERGY
711 W 17TH St, Suite D-5
Costa Mesa, CA 92627
http://americandiversifiedenergy.com
949-258-9842

AMERICAN DIVERSIFIED ENERGY

X____________________

Crescent City
Harbor District
Phase 3
101 Citizens Dock Rd,
Crescent City, CA 95531

No.	Description	Date

AMERICAN DIVERSIFIED ENERGY

Signage

E301

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To scale on 24x36 paper

Tech Brief

XR Rail Family

The XR Rail Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads, while minimizing material costs. Depending on your location, there is an XR Rail to match.

XR10

XR10 is a sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves 6 foot spans, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear anodized finish
- Internal splices available

XR100

XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 8 feet.

- 8' spanning capability
- Heavy load capability
- Clear & black anodized finish
- Internal splices available

XR1000

XR1000 is a heavyweight among solar mounting rails. It's built to handle extreme climates and spans 12 feet or more for commercial applications.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish
- Internal splices available

Rail Selection

The following table was prepared in compliance with applicable engineering codes and standards. Values are based on the following criteria: ASCE 7-10, Roof Zone 1, Exposure B, Roof Slope of 7 to 27 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed span tables and certifications.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	100						
	120						
	140	XR10		XR100		XR1000	
	160						
10-20	100						
	120						
	140						
	160						
30	100						
	160						
40	100						
	160						
50-70	160						
80-90	160						

Tech Brief

IRONRIDGE — XR Rail Family

Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.

Force-Stabilizing Curve

Sloped roofs generate both vertical and lateral forces on mounting rails which can cause them to bend and twist. The curved shape of XR Rails is specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

Compatible with Flat & Pitched Roofs

XR Rails are compatible with FlashFoot and other pitched roof attachments.

IronRidge offers a range of tilt leg options for flat roof mounting applications.

Corrosion-Resistant Materials

All XR Rails are made of marine-grade aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.

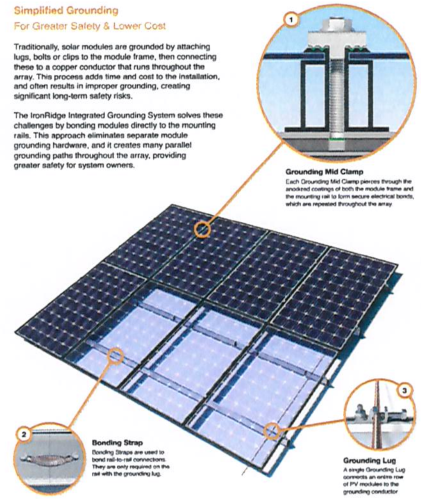
Tech Brief

IRONRIDGE — Integrated Grounding System

Simplified Grounding
For Greater Safety & Lower Cost

Traditionally, solar modules are grounded by attaching lugs, bolts or clips to the module frame, then connecting these to a copper conductor that runs throughout the array. This process adds time and cost to the installation, and often results in improper grounding, creating significant long-term safety risks.

The IronRidge Integrated Grounding System solves these challenges by bonding modules directly to the mounting rails. This approach eliminates separate module grounding hardware, and it creates many parallel grounding paths throughout the array, providing greater safety for system owners.



1 Grounding Mid Clamp

Each Grounding Mid Clamp pierces through the anodized coatings of both the module frame and the mounting rail to form secure electrical bonds, which are repeated throughout the array.

2 Bonding Strap

Bonding Straps are used to bond rail-to-rail connections. They are only required on the rail with the grounding lug.

3 Grounding Lug

A single Grounding Lug connects an entire row of PV modules to the grounding conductor.

Tech Brief

IRONRIDGE — Class A Fire Rating

Background

All roofing products are tested and classified for their ability to resist fire.

Recently, these fire resistance standards were expanded to include solar equipment as part of the roof system. Specifically, this requires the modules, mounting hardware and roof covering to be tested together as a system to ensure they achieve the same fire rating as the original roof covering.

Adoption of these new requirements will begin in California in 2015 and extend to the rest of the country in 2016.

IronRidge Certification

In August 2014, IronRidge was the first company to receive a Class A Fire Rating—the highest possible rating—from Intertek Group plc., a Nationally Recognized Testing Laboratory.

IronRidge Roof Mount products were tested on flat and sloped roofs in accordance with the new UL 1703 & UL 2703 test standards. The testing evaluated the system's ability to resist flame spread, burning material and structural damage to the roof.

Refer to the table below to determine the requirements for achieving a Class A Fire Rating on your next project.

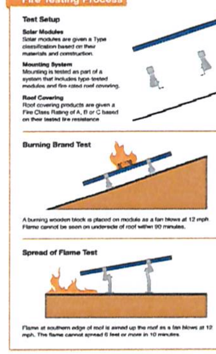
Fire Testing Process

Test Setup

Solar Modules
Solar modules are given a Type classification based on their materials and construction.

Mounting System
Mounting is tested as part of a system that includes type-tested modules and fire rated roof covering.

Roof Covering
Roof covering products are given a Fire Class Rating of A, B or C based on their tested fire resistance.



Burning Brand Test

A burning wooden block is placed on module as a fan blows at 12 mph. Flame cannot be seen on underside of roof within 90 minutes.

Spread of Flame Test

Flame at southern edge of roof is aimed up the roof as a fan blows at 12 mph. The flame cannot spread 6 feet or more in 10 minutes.

Roof Slope	Mount	Module	Fire Rating*
Steep Slope (≥ 9.5 degrees)	Flush	Type 1, 2, & 3	Class A
	Tilt	Type 1 & 2	Class A
Low Slope (< 9.5 degrees)	Flush	Type 1, 2, & 3	Class A
	Tilt	Type 1, 2, & 3	Class A

*Class A rated PV systems can be installed on Class A, B, and C roofs.

② Spec Sheet Iron Ridge Railing
12" = 1'-0"

FastJack® + CHEMLINK POLYMER INNOVATION

The FastJack® / ChemLink™ combination is waterproof and compatible with most roof types, making it the go-to flat roof solar and other rooftop equipment mounting solution for today's contractors.

Featuring:

FastJack® E-Series
ChemLink 3" E-Curb
ChemLink 1-Part Filler
ChemLink M-1 Sealant

Waterproof | Low Cost | High Quality | Easy-to-Install

ProSolar®

③ Spec Sheet Ecurb
12" = 1'-0"

LOW COST + EASY TO INSTALL

FastJack® Commercial E-Series

1. 4-1/2" Commercial FastJack E-Series (P/N: CFJE-450-18)
2. 6" Commercial FastJack E-Series (P/N: CFJE-600-18)
3. 8" Commercial FastJack E-Series (P/N: CFJE-800-18)
4. 10" Commercial FastJack E-Series (P/N: CFJE-1000-18)
5. 12" Commercial FastJack E-Series (P/N: CFJE-1200-18)

Includes: 1-1/4" OD Solid Aluminum post with 3/8" Top Threaded, 2" E-base. Hardware sold separately.
Packaged 18 per box

FastJack® Residential E-Series

1. 3" FastJack E-Series (P/N: FJE-300-18)
2. 4-1/2" FastJack E-Series (P/N: FJE-450-18)
3. 6" FastJack E-Series (P/N: FJE-600-18)

Includes: 1" OD Solid Aluminum Post and 1.5" OD E-base, 5/16" x 3-1/2" Lag screw, 3/8" SS Washer, and 3/8" x 3/4" SS Hex Bolt
Packaged 18 per box

1-Part and M1 Ratios

CFJE:
(1) Tube 1-Part for (2) E-Curbs
(1) Pouch 1-Part for (12) E-Curbs
(1) Tube M-1 for (3) E-Curbs

FJE:
(2) Tubes 1-Part for (3) E-Curbs
(1) Pouch 1-Part for (10) E-Curbs
(1) Tube M-1 for (3) E-Curbs

ProSolar®

CHEMLINK POLYMER INNOVATION

1. ChemLink 1-Part Pouch (P/N: A-ChemLink 1-Part Pouch)
2. ChemLink 1-Part 10.1oz Tube (P/N: A-ChemLink 1-Part)
3. ChemLink M-1 10.1oz Tube (P/N: A-ChemLink M-1)
4. ChemLink E-Curb (P/N: A-ChemLink 3" E-Curb)
Round, 3" diameter, does not include M-1 adhesive/sealant or 1-Part sealant

ChemLink Products Sold Individually and In Crate/Boxed Quantities

S-5!® The Right Way!

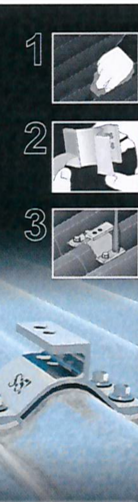
The right way to attach almost anything to metal roofs!

CorruBracket™

CorruBracket™ can be used to mount almost anything to corrugated metal roofing and is compatible with 7/8" and 3/4" corrugated roofing. No messy sealants to apply! No chance for leaks! The CorruBracket comes with factory-applied butyl sealant already in the base, and the S-5!® patented reservoir conceals the sealant, preventing UV degredation.

Installation is simple! CorruBracket is mounted directly into the supporting structure of the roof, i.e. roof decking, wood or steel purlins, or trusses. No surface preparation is necessary; simply wipe away excess oils and debris, peel the release paper, align, and apply. Secure through the pre-punched holes using the appropriate screws for the supporting structure.

CorruBracket is so strong, it will even support heavy-duty applications like snow retention. For corrugated profiles, the CorruBracket is the perfect match for our ColorGard® snow retention system. CorruBracket is economical and facilitates quick and easy installation.



S-5!® CorruBracket™ is the right way to attach almost anything to 7/8" and 3/4" corrugated roofing, including PV via DirectAttached™ or rail methods.

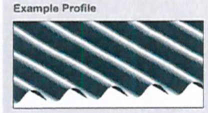
S-5!® The Right Way!

CorruBracket™ is extremely versatile. It can be used for almost any attachment need on 7/8" and 3/4" corrugated metal roofing. No messy sealants to apply. The factory-applied butyl sealant waterproofs and makes installation a snap!

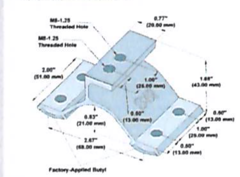
Each **CorruBracket™** comes with factory-applied butyl sealant in the base. CorruBracket is compatible with most common metal roofing materials. For design assistance, ask your distributor, or use our web-based calculator at **www.S-5.com** for job-specific system engineering and design of your next snow retention project. Also, please visit our website for more information including CAD details, metallurgical compatibilities and specifications.

The CorruBracket has been tested for load-to-failure results on wood decking, and metal and wood purlins. The independent lab test data found at www.S-5.com can be used for load-critical designs and applications. S-5!® holding strength is unmatched in the industry.

Example Profile



CorruBracket™

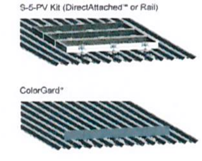


Please note: All measurements are rounded to the second decimal place. Contact your distributor for information about hardware requirements.

Example Applications

S-5-PV Kit (DirectAttached™ or Rail)

ColorGard®



S-5!® Warning! Please use this product responsibly!

Products are protected by multiple U.S. and foreign patents. For published data regarding holding strength, bolt torque, patents and trademarks visit the S-5! website at www.S-5.com.

Distributed by

① Spec Sheet S-5! Corru Bracket
12" = 1'-0"

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http://americandiversifiedenergy.com
949-258-9842

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Crescent City, CA 95531

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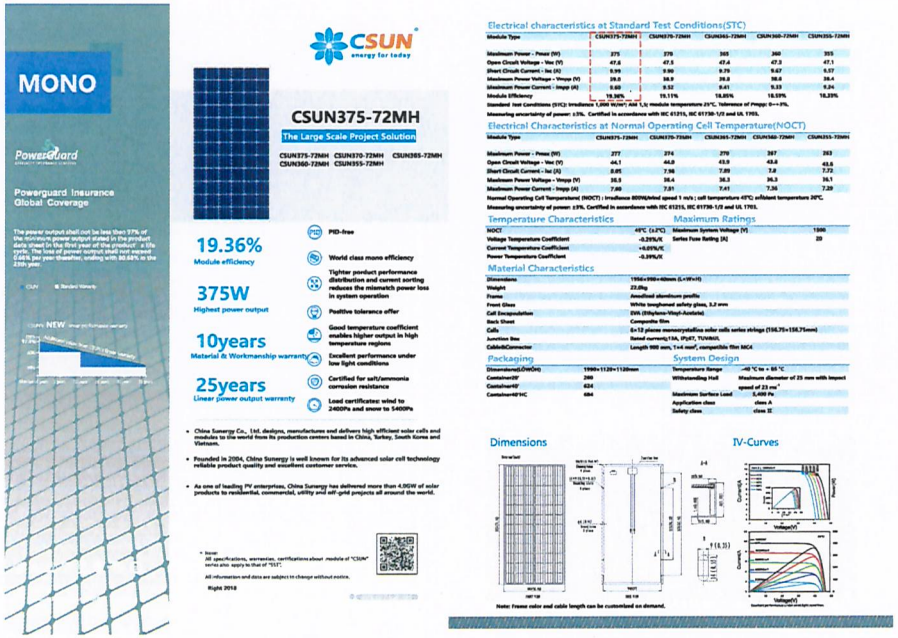
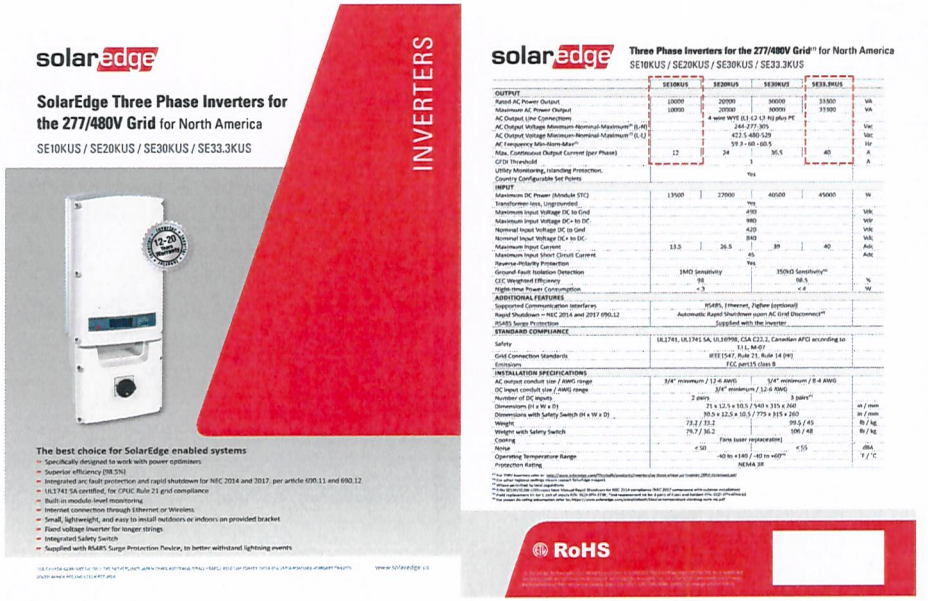
Spec Sheets

E302

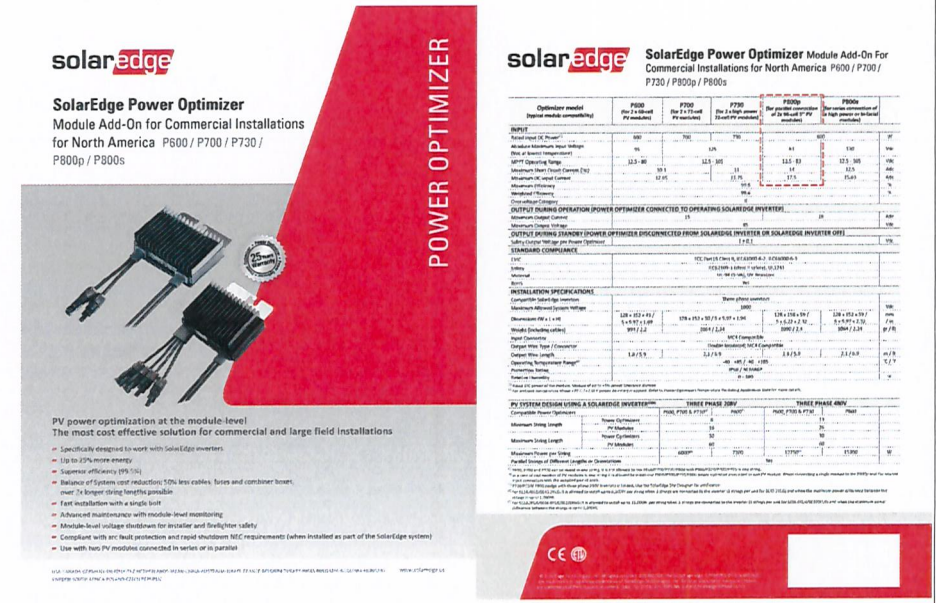
12/7/2018 3:24:54 PM
To scale on 24x36 paper



1 Spec Sheet CSUN 375W
12" = 1'-0"



2 Spec Sheet Solaredge 3 Phase Inverters
12" = 1'-0"



3 Spec Sheet SolarEdge 3 Phase Optimizer
12" = 1'-0"

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E303

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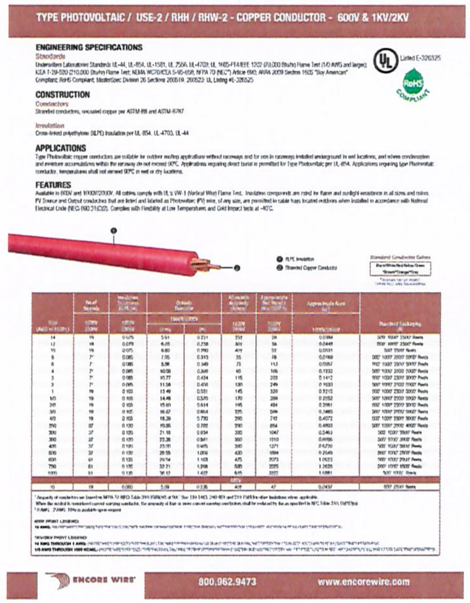
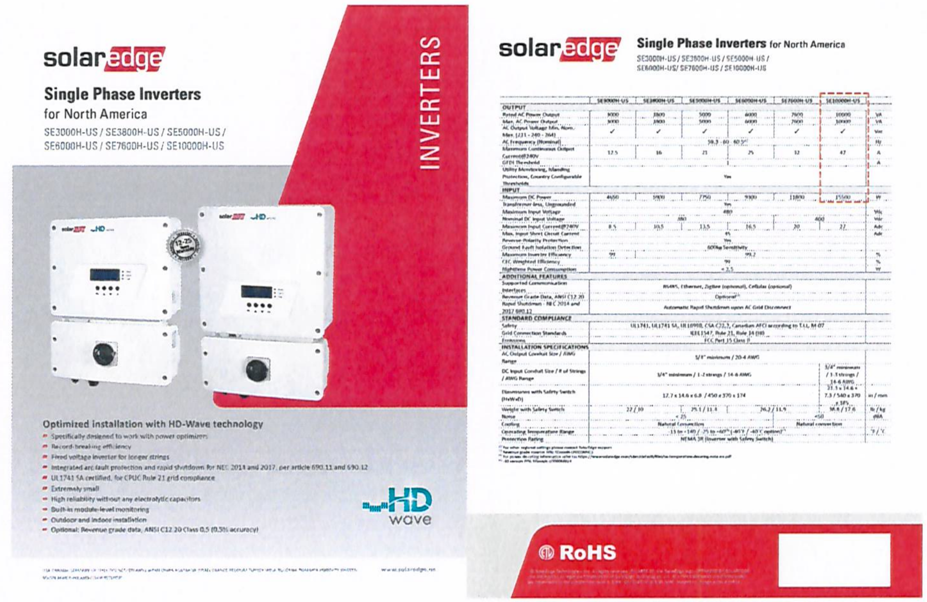
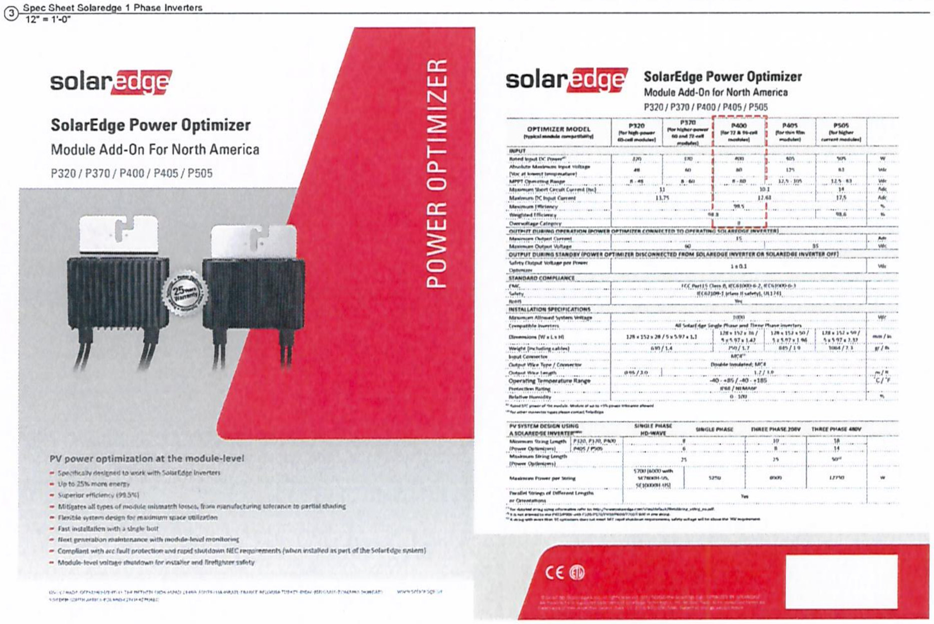


② Spec Sheet-Wire PV
12" = 1'-0"


solaredge
Single Phase Inverters
for North America
SE3000H-US / SE3800H-US / SE5000H-US /
SE6000H-US / SE7600H-US / SE10000H-US
INVERTERS
Optimized installation with HD-Wave technology
HD wave
solaredge
Single Phase Inverters for North America
RoHS

③ Spec Sheet Solaredge 1 Phase Inverters
12" = 1'-0"


solaredge
SolarEdge Power Optimizer
Module Add-On For North America
P320 / P370 / P400 / P405 / P505
POWER OPTIMIZER
PV power optimization at the module-level
solaredge
SolarEdge Power Optimizer
Module Add-On for North America
P320 / P370 / P400 / P405 / P505

① Spec Sheet SolarEdge 1 Phase Optimizer
12" = 1'-0"

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Spec Sheets

E304

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