



150 E. GAY STREET, 24<sup>TH</sup> FLOOR  
COLUMBUS, OH 43215-3192  
TELEPHONE: (614) 744-2570  
FACSIMILE: (844) 670-6009  
<http://www.dickinsonwright.com>

CHRISTINE M.T. PIRIK  
CPirik@dickinsonwright.com  
(614) 591-5461

May 4, 2021

Ms. Tanowa Troupe, Secretary  
Ohio Power Siting Board  
Docketing Division  
180 East Broad Street, 11<sup>th</sup> Floor  
Columbus, OH 43215

**Re: Case Nos. 18-1360-EL-BGN**

In the Matter of the Applications of Hardin Solar Energy II LLC for a Certificate of Environmental Compatibility and Public Need to Construct a Solar-Powered Electric Generation Facility in Hardin County, Ohio.

**Compliance with Condition 3 - Engineering Drawings**

Dear Ms. Troupe:

Hardin Solar Energy II LLC ("Applicant") is certified to construct a solar-powered electric generation facility in Hardin County, Ohio, in accordance with the orders issued by the Ohio Power Siting Board ("OPSB") in the above-referenced case.

At this time, the Applicant is filing notice that it has provided the OPSB Staff with a set of detailed engineering drawings in hard copy and as geographically-referenced electronic data. This information is being provided in compliance with Condition 3 of the OPSB's May 16, 2019 Order in Case No. 18-1360-EL-BGN.

We are available, at your convenience, to answer any questions you may have.

Respectfully submitted,

/s/ Christine M.T. Pirik

Christine M.T. Pirik (0029759)

William V. Vorys (0093479)

Matthew C. McDonnell (0090164)

Dickinson Wright PLLC

150 East Gay Street, Suite 2400

Columbus, Ohio 43215

Phone: (614) 591-5461

Email: [cpirik@dickinsonwright.com](mailto:cpirik@dickinsonwright.com)

[wvorys@dickinsonwright.com](mailto:wvorys@dickinsonwright.com)

[mmcdonnell@dickinsonwright.com](mailto:mmcdonnell@dickinsonwright.com)

***Attorneys for Hardin Solar Energy II LLC***

cc: Jim O'Dell

4820-4873-9560 v1 [39579-24]



LEGEND AND SYMBOLS

| STANDARD ABBREVIATIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  | ELECTRICAL LEGEND                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  | LAYOUT LINETYPES & SYMBOLS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | NAMING CONVENTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | CALLOUTS                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <div><div>LOCATION CODES</div><div><div>B</div><div>POWER BLOCK (INVERTER SKID)</div></div><div><div>MSS</div><div>MAIN SUBSTATION</div></div><div><div>EQUIPMENT CODES</div><div><div>AAT</div><div>AMBIENT AIR TEMPERATURE</div></div><div><div>ANE</div><div>ANEMOMETER</div></div><div><div>ATS</div><div>AUTOMATIC TRANSFER SWITCH</div></div><div><div>BAT</div><div>BATTERY</div></div><div><div>BUS</div><div>BUS CONDUCTOR</div></div><div><div>CBK</div><div>CIRCUIT BREAKER</div></div><div><div>CBL</div><div>CABLE</div></div><div><div>CHGR</div><div>BATTERY CHARGER</div></div><div><div>CLM</div><div>CELLULAR MODEM</div></div><div><div>CMB</div><div>COMBINER BOX</div></div><div><div>CMT</div><div>CHECK METER</div></div><div><div>CNT</div><div>CONDUIT</div></div><div><div>CPC</div><div>CAPACITOR BANK</div></div><div><div>CT</div><div>CURRENT TRANSFORMER</div></div><div><div>DAM</div><div>DATA ACQUISITION MODULE</div></div><div><div>DAS</div><div>DATA ACQUISITION SYSTEM</div></div><div><div>DCI</div><div>COMBINER INPUT AT</div></div><div><div>DCA</div><div>AC DISCONNECT</div></div><div><div>DCD</div><div>DC DISCONNECT</div></div><div><div>DCF</div><div>FUSED DISCONNECT</div></div><div><div>DCH</div><div>HIGH VOLTAGE DISCONNECT</div></div><div><div>DCM</div><div>MEDIUM VOLTAGE DISCONNECT</div></div><div><div>GND</div><div>GROUND CONDUCTOR</div></div><div><div>GSW</div><div>GANG-OPERATED SWITCH</div></div><div><div>HPY</div><div>HORIZONTAL PYRANOMETER</div></div><div><div>INS</div><div>INSULATOR</div></div><div><div>INV</div><div>INVERTER (POWER CONVERSION UNIT)</div></div><div><div>JBM</div><div>MEDIUM VOLTAGE JUNCTION</div></div><div><div>JMP</div><div>JUMPER CONDUCTOR</div></div><div><div>LAR</div><div>LIGHTNING ARRESTOR</div></div><div><div>LBD</div><div>LOAD BREAK DISCONNECT</div></div><div><div>MBR</div><div>MAIN BREAKER</div></div><div><div>MET</div><div>METERING STATION</div></div><div><div>MPNL</div><div>METER PANEL</div></div><div><div>MTR</div><div>METER</div></div><div><div>NDS</div><div>NIGHTTIME DISCONNECT SWITCH</div></div><div><div>OHC</div><div>OVERHEAD CONDUCTOR</div></div><div><div>PAP</div><div>PLANE OF ARRAY</div></div><div><div>PEN</div><div>ROOF PENETRATION</div></div><div><div>PIL</div><div>SUPPORT PILE</div></div><div><div>PLC</div><div>PROGRAMMABLE LOGIC CONTROLLER</div></div><div><div>PLS</div><div>STEEL POLE</div></div><div><div>PLW</div><div>WOOD POLE</div></div><div><div>PNL</div><div>POWER PANEL</div></div><div><div>RCB</div><div>RECOMBINER BOX</div></div><div><div>RCT</div><div>REACTOR</div></div><div><div>REL</div><div>RELAY</div></div><div><div>RMT</div><div>REVENUE METER</div></div><div><div>RTU</div><div>RTU</div></div><div><div>SA</div><div>SURGE ARRESTER</div></div><div><div>SC</div><div>SEPARABLE CONNECTOR</div></div><div><div>STL</div><div>STRUCTURAL STEEL</div></div><div><div>SWF</div><div>FUSED SWITCH</div></div><div><div>TM</div><div>TRACKER MOTOR</div></div></div></div> |  | <div><div>SCHEMATIC LINETYPES &amp; SYMBOLS</div><div><div>CIRCUIT BREAKER</div><div>FUSE</div><div>DISCONNECT SWITCH</div><div>GROUP OPERATED SWITCH</div><div>FUSED DISCONNECT SWITCH</div><div>MCOV ELBOW SURGE ARRESTER</div><div>SURGE ARRESTER</div><div>GROUND</div><div>POTENTIAL TRANSFORMER</div><div>CURRENT TRANSFORMER (CT) (SHOWING POLARITY)</div><div>MULTI-RATIO CT (SHOWING POLARITY)</div><div>CAPACITOR</div><div>METER</div><div>TRANSFORMER</div><div>CONTACT BLOCK N.O. (NORMALLY OPEN)</div><div>CONTACT BLOCK N.C. (NORMALLY CLOSED)</div><div>SOLAR MODULE</div><div>OPEN AIR TERMINATION</div><div>LINE REACTOR</div><div>DEAD BREAK CONNECTION</div><div>FAULT INDICATOR</div><div>2-WAY JUNCTION BOX</div><div>3-WAY JUNCTION BOX</div><div>4-WAY JUNCTION BOX</div><div>GROUND CONNECTION</div><div>GROUND FAULT DETECTION INTERRUPTER</div><div>ARMORED CABLE GROUNDING KIT</div><div>MOTOR OPERATED SWITCH</div><div>EQUIPMENT ON TABLE</div><div>PROPOSED UNDERGROUND GROUNDED SPLICE</div><div>SKID WITH INTEGRATED MV SWITCHGEAR</div><div>SKID WITH FUSED MV SWITCH</div><div>SKID WITH FUSE</div><div>FIBER OPTIC CABLE</div></div></div> |  | <div><div>LAYOUT LINETYPES &amp; SYMBOLS</div><div><div>WATER LINE</div><div>GAS LINE</div><div>OVER-HEAD POWER LINE</div><div>EXISTING UNDERGROUND ELECTRICAL</div><div>WETLAND</div><div>PROJECT BOUNDARY</div><div>BUILDABLE BOUNDARY</div><div>FENCE</div><div>ROAD</div><div>MV FEEDER 1</div><div>MV FEEDER 2</div><div>MV FEEDER 3</div><div>MV FEEDER 4</div><div>MV FEEDER 5</div><div>MV FEEDER 6</div><div>INVERTER BLOCK BOUNDARY</div><div>CAB LINE</div><div>MOTOR DRIVE LINE / CABLE (IF APPLICABLE)</div><div>COMBINER BOUNDARY</div><div>DC TRENCH</div><div>COMM. CIRCUITS TRENCH</div><div>3-STRING TRACKER</div><div>2-STRING TRACKER</div><div>MOD1</div><div>MOD2</div><div>MOD3</div><div>MOD4</div><div>MOD5</div><div>MOD6</div><div>MOD7</div><div>MOD8</div><div>TRANSFORMER INVERTER SKID</div><div>TRACKER MOTOR</div><div>BORE</div><div>LOAD BREAK DISCONNECT (LBD)</div><div>MET STATION</div><div>SOILING STATION</div><div>POA SENSOR</div><div>RTD SENSOR</div><div>ALBEDOMETER WITH 30FT CLEARANCE RADIUS</div><div>GATE GROUNDING - DETAIL A: E-D600-01</div><div>LINE GROUNDING - DETAIL B: E-D600-01</div><div>CORNER GROUNDING - DETAIL C: E-D600-01</div></div></div> |  | <div><div>NAMING CONVENTIONS</div><div><div>LOAD BREAK DISCONNECT</div><div>POWER BLOCK<br/>INVERTER #</div><div>INVERTER #</div><div>IDENTIFIER</div><div>NAME</div><div>INVERTER</div><div>B##/INV#</div><div>POWER BLOCK<br/>FEEDER #</div><div>IDENTIFIER</div><div>NAME</div><div>INVERTER STEP-UP TRANSFORMER</div><div>B##/##/XFMR#</div><div>POWER BLOCK<br/>FEEDER #</div><div>IDENTIFIER</div><div>NAME</div><div>DC CIRCUIT</div><div>DC B#/LBD#-INV#</div><div>POWER TYPE</div><div>BLOCK #</div><div>LBD #</div><div>INVERTER INPUT #</div><div>DC TRENCH</div><div>T##</div><div>TRENCH</div><div>CIRCUIT #</div><div>MEDIUM VOLTAGE CIRCUIT</div><div>MV35##/SUB-#</div><div>CIRCUIT TYPE AND<br/>VOLTAGE RATING</div><div>FEEDER ID</div><div>TO</div><div>FROM</div><div>FIBER CIRCUIT</div><div>FS ##/SUB-#</div><div>CIRCUIT TYPE</div><div>FEEDER ID</div><div>TO</div><div>FROM</div></div></div> |  | <div><div>CALLOUTS</div><div><div>A</div><div>DETAIL SHEET SHOWING DETAIL (IF 1/2 CURRENT SHEET)</div><div>#</div><div>REVISION</div><div>#</div><div>ITEM ON BILL OF MATERIAL</div><div>#</div><div>KEYED NOTE</div><div>A</div><div>SECTION / ELEVATION SHEET SHOWING DETAIL (IF 1/2 CURRENT SHEET)</div><div>A</div><div>SCALE: N.T.S.</div><div>DETAIL TITLE</div><div>NORTH</div><div>NORTH ARROW</div></div></div> |  |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  | C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |                                                                                                                                                                                                                                                                                                                                                                                                                          |  |







DRAWING INDEX

| DRAWING NO.     | REV | DESCRIPTION/TITLE                                  | DATE       |
|-----------------|-----|----------------------------------------------------|------------|
| H2SP-E-D000     | C   | COVER SHEET                                        | 04/29/2021 |
| H2SP-E-D000     | C   | DRAWING INDEX                                      | 04/29/2021 |
| H2SP-E-D000-01  | C   | LEGEND & SYMBOLS                                   | 04/29/2021 |
| H2SP-E-D000-02  | C   | GENERAL NOTES                                      | 04/29/2021 |
| H2SP-E-D100-02  | C   | OVERALL SITE PLAN                                  | 04/29/2021 |
| H2SP-E-D300-01  | B   | OVERALL DC SITE PLAN                               | 04/29/2021 |
| H2SP-E-D300-02  | C   | DC SINGLE LINE DIAGRAM                             | 04/29/2021 |
| H2SP-E-D300-03  | C   | DC QUANTITIES                                      | 04/29/2021 |
| H2SP-E-D301-01  | A   | DC LAYOUT AND CABLE SCHEDULE - PB1                 | 04/29/2021 |
| H2SP-E-D301-02  | A   | DC LAYOUT AND CABLE SCHEDULE - PB2                 | 04/29/2021 |
| H2SP-E-D301-03  | A   | DC LAYOUT AND CABLE SCHEDULE - PB3                 | 04/29/2021 |
| H2SP-E-D301-04  | A   | DC LAYOUT AND CABLE SCHEDULE - PB4                 | 04/29/2021 |
| H2SP-E-D301-05  | A   | DC LAYOUT AND CABLE SCHEDULE - PB5                 | 04/29/2021 |
| H2SP-E-D301-06  | B   | DC LAYOUT AND CABLE SCHEDULE - PB6                 | 04/29/2021 |
| H2SP-E-D301-07  | A   | DC LAYOUT AND CABLE SCHEDULE - PB7                 | 04/29/2021 |
| H2SP-E-D301-08  | A   | DC LAYOUT AND CABLE SCHEDULE - PB8                 | 04/29/2021 |
| H2SP-E-D301-09  | A   | DC LAYOUT AND CABLE SCHEDULE - PB9                 | 04/29/2021 |
| H2SP-E-D301-10  | A   | DC LAYOUT AND CABLE SCHEDULE - PB10                | 04/29/2021 |
| H2SP-E-D301-11  | A   | DC LAYOUT AND CABLE SCHEDULE - PB11                | 04/29/2021 |
| H2SP-E-D301-12  | A   | DC LAYOUT AND CABLE SCHEDULE - PB12                | 04/29/2021 |
| H2SP-E-D301-13  | A   | DC LAYOUT AND CABLE SCHEDULE - PB13                | 04/29/2021 |
| H2SP-E-D301-14  | A   | DC LAYOUT AND CABLE SCHEDULE - PB14                | 04/29/2021 |
| H2SP-E-D301-15  | A   | DC LAYOUT AND CABLE SCHEDULE - PB15                | 04/29/2021 |
| H2SP-E-D301-16  | A   | DC LAYOUT AND CABLE SCHEDULE - PB16                | 04/29/2021 |
| H2SP-E-D301-17  | A   | DC LAYOUT AND CABLE SCHEDULE - PB17                | 04/29/2021 |
| H2SP-E-D301-18  | A   | DC LAYOUT AND CABLE SCHEDULE - PB18                | 04/29/2021 |
| H2SP-E-D301-19  | A   | DC LAYOUT AND CABLE SCHEDULE - PB19                | 04/29/2021 |
| H2SP-E-D301-20  | A   | DC LAYOUT AND CABLE SCHEDULE - PB20                | 04/29/2021 |
| H2SP-E-D301-21  | A   | DC LAYOUT AND CABLE SCHEDULE - PB21                | 04/29/2021 |
| H2SP-E-D301-22  | A   | DC LAYOUT AND CABLE SCHEDULE - PB22                | 04/29/2021 |
| H2SP-E-D301-23  | A   | DC LAYOUT AND CABLE SCHEDULE - PB23                | 04/29/2021 |
| H2SP-E-D301-24  | A   | DC LAYOUT AND CABLE SCHEDULE - PB24                | 04/29/2021 |
| H2SP-E-D301-25  | A   | DC LAYOUT AND CABLE SCHEDULE - PB25                | 04/29/2021 |
| H2SP-E-D301-26  | B   | DC LAYOUT AND CABLE SCHEDULE - PB26                | 04/29/2021 |
| H2SP-E-D301-27  | A   | DC LAYOUT AND CABLE SCHEDULE - PB27                | 04/29/2021 |
| H2SP-E-D301-28  | A   | DC LAYOUT AND CABLE SCHEDULE - PB28                | 04/29/2021 |
| H2SP-E-D301-29  | A   | DC LAYOUT AND CABLE SCHEDULE - PB29                | 04/29/2021 |
| H2SP-E-D301-30  | A   | DC LAYOUT AND CABLE SCHEDULE - PB30                | 04/29/2021 |
| H2SP-E-D301-31  | A   | DC LAYOUT AND CABLE SCHEDULE - PB31                | 04/29/2021 |
| H2SP-E-D301-32  | A   | DC LAYOUT AND CABLE SCHEDULE - PB32                | 04/29/2021 |
| H2SP-E-D301-33  | B   | DC LAYOUT AND CABLE SCHEDULE - PB33                | 04/29/2021 |
| H2SP-E-D301-34  | A   | DC LAYOUT AND CABLE SCHEDULE - PB34                | 04/29/2021 |
| H2SP-E-D301-35  | A   | DC LAYOUT AND CABLE SCHEDULE - PB35                | 04/29/2021 |
| H2SP-E-D301-36  | C   | DC LAYOUT AND CABLE SCHEDULE - PB36                | 04/29/2021 |
| H2SP-E-D301-37  | A   | DC LAYOUT AND CABLE SCHEDULE - PB37                | 04/29/2021 |
| H2SP-E-D301-38  | A   | DC LAYOUT AND CABLE SCHEDULE - PB38                | 04/29/2021 |
| H2SP-E-D301-39  | B   | DC LAYOUT AND CABLE SCHEDULE - PB39                | 04/29/2021 |
| H2SP-E-D301-40  | A   | DC LAYOUT AND CABLE SCHEDULE - PB40                | 04/29/2021 |
| H2SP-E-D302-01  | C   | SOLAR MODULE AND TRACKER TABLE LAYOUT              | 04/29/2021 |
| H2SP-E-D303-01  | B   | DC SUBARRAY CONFIGURATION                          | 04/29/2021 |
| H2SP-E-D303-02  | A   | STRING HARNESS WIRING                              | 04/29/2021 |
| H2SP-E-D303-03  | A   | SOLAR MODULE AND STRINGING INSTALLATION DETAILS    | 04/29/2021 |
| H2SP-E-D304-01  | A   | BLOCK WIRING TOP VIEW                              | 04/29/2021 |
| H2SP-E-D304-02  | B   | CAB / BLA / LBD ELEVATIONS & DETAILS               | 04/29/2021 |
| H2SP-E-D304-03  | A   | CAB / BLA / LBD DETAILS                            | 04/29/2021 |
| H2SP-E-D304-04  | A   | CAB GROUNDING DETAILS                              | 04/29/2021 |
| H2SP-E-D305-01  | C   | DC TRENCH DETAILS                                  | 04/29/2021 |
| H2SP-E-D400-01A | B   | OVERALL AC SITE PLAN                               | 04/29/2021 |
| H2SP-E-D400-02  | C   | AC SINGLE LINE DIAGRAM                             | 04/29/2021 |
| H2SP-E-D400-03  | C   | AC CABLE SCHEDULE AND QUANTITIES                   | 04/29/2021 |
| H2SP-E-D400-04  | A   | AC SITE PLAN - FEEDERS 1, 2, & 3                   | 04/29/2021 |
| H2SP-E-D400-05  | A   | AC SITE PLAN - FEEDERS 4 & 5                       | 04/29/2021 |
| H2SP-E-D400-06  | A   | AC SITE PLAN - FEEDER 6                            | 04/29/2021 |
| H2SP-E-D401-01  | A   | INVERTER / XFMR SKID SINGLE LINE CONNECTION DETAIL | 04/29/2021 |
| H2SP-E-D401-02  | A   | INVERTER SKID LAYOUT                               | 04/29/2021 |
| H2SP-E-D401-03  | A   | INVERTER SKID CONDUIT AND GROUNDING PLAN           | 04/29/2021 |
| H2SP-E-D401-04  | A   | INVERTER SKID DC CONNECTION DETAILS                | 04/29/2021 |
| H2SP-E-D401-05  | A   | TERMINATION DETAILS                                | 04/29/2021 |
| H2SP-E-D402-01  | B   | AC JUNCTION BOX DETAILS                            | 04/29/2021 |
| H2SP-E-D403-03  | B   | AC CABLE SPLICE DETAILS                            | 04/29/2021 |
| H2SP-E-D403-01  | C   | AC TRENCH DETAILS                                  | 04/29/2021 |
| H2SP-E-D403-02  | A   | AC CROSSINGS AND BORING DETAILS                    | 04/29/2021 |
| H2SP-E-D600-02  | B   | FIBER SINGLE LINE DIAGRAM                          | 04/29/2021 |
| H2SP-E-D600-03  | B   | FIBER AND COMMUNICATION QUANTITIES                 | 04/29/2021 |
| H2SP-E-D603-01  | A   | SPLICE BOX ENCLOSURE & U.G. HANDHOLE DETAILS       | 04/29/2021 |

| DRAWING NO.    | REV | DESCRIPTION/TITLE                    | DATE       |
|----------------|-----|--------------------------------------|------------|
| H2SP-E-VO01-01 | C   | SOLAR MODULE DATA SHEET              | 04/29/2021 |
| H2SP-E-VO02-01 | A   | TRACKER DATA SHEET                   | 04/29/2021 |
| H2SP-E-VO02-02 | A   | TRACKER DATA SHEET                   | 04/29/2021 |
| H2SP-E-VO03-01 | A   | BLA AND HARNESS DATA SHEET           | 04/29/2021 |
| H2SP-E-VO03-02 | A   | LBD DATA SHEET                       | 04/29/2021 |
| H2SP-E-VO03-03 | A   | CAB HANGER DATA SHEET                | 04/29/2021 |
| H2SP-E-VO03-04 | A   | CAB BRACKET DATA SHEET               | 04/29/2021 |
| H2SP-E-VO04-01 | C   | INVERTER DATA SHEET                  | 04/29/2021 |
| H2SP-E-VO05-01 | A   | MV ACCESSORIES - T-BODY              | 04/29/2021 |
| H2SP-E-VO05-02 | A   | MV ACCESSORIES - FAULT INDICATOR     | 04/29/2021 |
| H2SP-E-VO05-03 | A   | MV ACCESSORIES - ARRESTOR            | 04/29/2021 |
| H2SP-E-VO05-04 | A   | MV ACCESSORIES - SUBSTATION TERMINAL | 04/29/2021 |
| H2SP-E-D600-01 | A   | GENERAL INSTALLATION DETAILS         | 04/29/2021 |
| H2SP-E-D600-02 | A   | FENCE GROUNDING PLAN                 | 04/29/2021 |
| H2SP-E-D600-03 | A   | FENCE GROUNDING DETAILS              | 04/29/2021 |
| H2SP-E-D600-04 | A   | SIGNAGE & LABELS                     | 04/29/2021 |
| H2SP-E-D600-05 | A   | SIGNAGE & LABELS DETAIL              | 04/29/2021 |



RRC POWER & ENERGY, LLC  
7591 SW MOHAWK ST.  
TUALATIN, OR 97062  
PHONE: (503) 342-4064  
www.RRCcompanies.com

**CONFIDENTIAL**  
THIS DRAWING IS THE PROPERTY  
OF RRC POWER & ENERGY, LLC, AND  
INVENERGY, LLC. NO REPRODUCTION  
MAY BE MADE IN WHOLE OR IN PART  
WITHOUT WRITTEN CONSENT.

PREPARED FOR:



**PRELIMINARY**  
NOT FOR CONSTRUCTION

| C                         | 04/29/2021 | ISSUED FOR REVIEW - 60% |
|---------------------------|------------|-------------------------|
| B                         | 03/05/2021 | ISSUED FOR REVIEW - 30% |
| A                         | 02/05/2021 | ISSUED FOR REVIEW - 10% |
| REV                       | DATE       | ISSUE DESCRIPTION       |
| APPROVED BY: S. MOSER     |            |                         |
| CHECKED BY: T. A. CARROLL |            |                         |
| DESIGNED BY: D. OLDS      |            |                         |
| DRAWN BY: D. OLDS         |            |                         |



PROJECT NUMBER: EE2011066

DRAWING NAME:

HARDIN II  
SOLAR PROJECT

DRAWING INDEX

| DRAWING No. | REVISION |
|-------------|----------|
| H2SP-E-D000 | C        |

CAD FILE: H2SP-E-0000 DRAWING INDEX











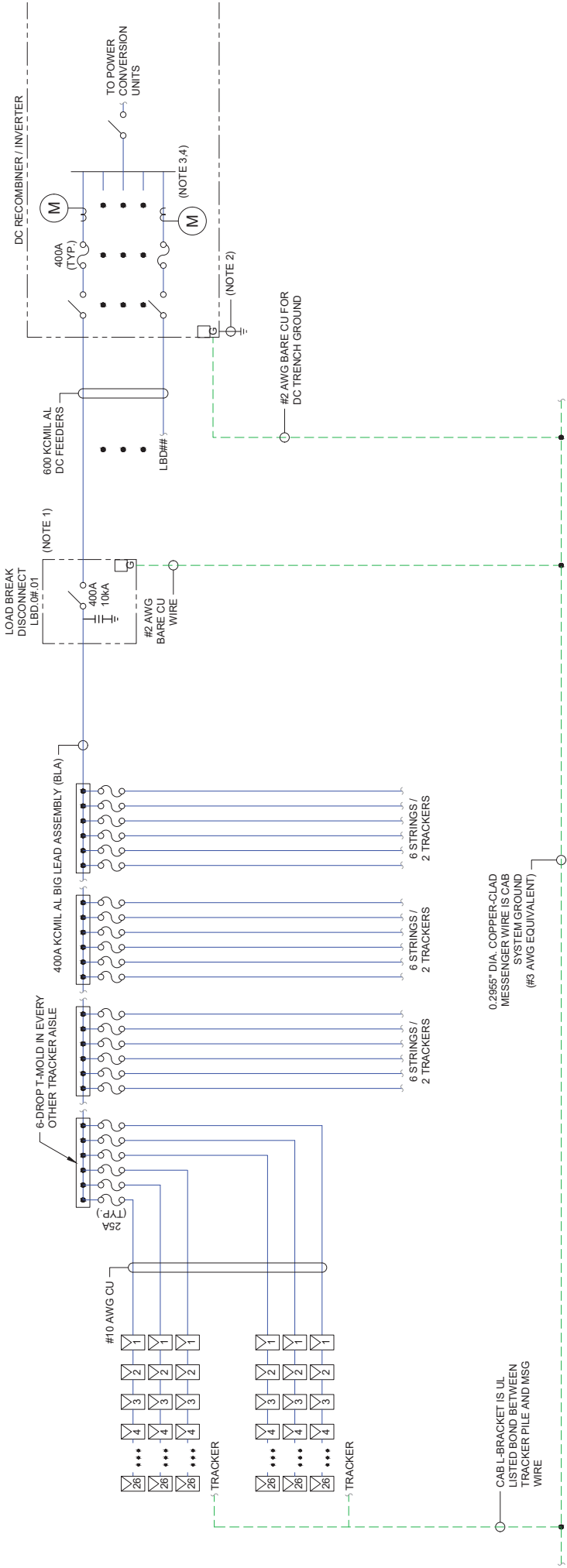
| DESCRIPTION                           | VALUE                   |
|---------------------------------------|-------------------------|
| MODULES                               |                         |
| MANUFACTURER                          | LONGI                   |
| TECHNOLOGY                            | SILICON                 |
| CELLS                                 | 144 (72 HALF CELLS X 2) |
| FRAME                                 | ANODIZED AL ALLOY       |
| CONNECTOR                             | LRS                     |
| TEMPERATURE COEFF. - ISC              | 0.050%                  |
| TEMPERATURE COEFF. - VOC              | -0.284%                 |
| TEMPERATURE COEFF. - P <sub>MAX</sub> | -0.350%                 |
| MAXIMUM FUSE RATING                   | 30.0 A                  |
| NOMINAL OPERATING CELL TEMP. (NOCT)   | 45 ± 2                  |

|                                                                          |             |
|--------------------------------------------------------------------------|-------------|
| MODULE #1 (PHYSICAL DESIGN)**                                            |             |
| MAX. POWER (P <sub>max</sub> )                                           | 72-HBD-540M |
| OPEN CIRCUIT VOLTAGE (V <sub>oc</sub> )*                                 | 538.5 V     |
| OPEN CIRCUIT VOLTAGE (V <sub>oc</sub> )*                                 | 48.5 V      |
| SHORT CIRCUIT CURRENT (I <sub>sc</sub> )*                                | 13.85 A     |
| MAX. POWER VOLTAGE (V <sub>mp</sub> )*                                   | 41.7 V      |
| MAX. POWER CURRENT (I <sub>mp</sub> )*                                   | 12.97 A     |
| MODULE #2 (ELECTRICAL DESIGN)                                            |             |
| MAX. POWER (P <sub>max</sub> )                                           | 72-HBD-565M |
| OPEN CIRCUIT VOLTAGE (V <sub>oc</sub> )*                                 | 565.0 W     |
| OPEN CIRCUIT VOLTAGE (V <sub>oc</sub> )*                                 | 50.3 V      |
| SHORT CIRCUIT CURRENT (I <sub>sc</sub> )*                                | 14.16 A     |
| MAX. POWER VOLTAGE (V <sub>mp</sub> )*                                   | 42.4 V      |
| MAX. POWER CURRENT (I <sub>mp</sub> )*                                   | 13.33 A     |
| * ALL VOLTAGE AND CURRENT VALUES LISTED ABOVE ARE FRONT SIDE ONLY AT STC |             |
| ** PHYSICAL DC DESIGN IS BASED OFF OF A 538.5 W MODULE AVERAGE.          |             |

|                     |                     |
|---------------------|---------------------|
| TRACKER             |                     |
| MANUFACTURER        | NEXTRACKER          |
| MODEL               | HORIZON             |
| TABLE CONFIGURATION | SINGLE AXIS TRACKER |
| MODULE ORIENTATION  | 1X PORTRAIT         |
| TILT ANGLE          | ± 60°               |
| AISLE SPACING       | 15.03 FT            |

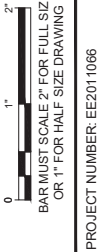
|                                          |                  |
|------------------------------------------|------------------|
| STRING WIRING                            |                  |
| MANUFACTURER                             | SHOALS           |
| SINGLE STRING HARNESS                    | #10 AWG CU       |
| IN-LINE FUSES POSITIVE COMPONENT HARNESS |                  |
| LOAD BREAK DISCONNECT                    |                  |
| MANUFACTURER                             | SHOALS           |
| DISCONNECT                               | LOAD BREAK       |
| RATED VOLTAGE                            | 1,500 V          |
| RATED CURRENT                            | 400A, 100% RATED |

- NOTES
1. THIS DC SINGLE LINE DIAGRAM PROVIDES DETAIL FOR A SINGLE LBD/BLA GROUP.
  2. BUSBAR IN DC RECOMBINER SHALL BE BONDED TO SKID GROUND RING.
  3. THE DC NEGATIVE CONDUCTORS ARE FUNCTIONALLY GROUND AT THE INVERTER IN COMPLIANCE WITH NEC 690.41(A)(1).
  4. THE INVERTERS INCLUDE GROUND FAULT DETECTION INTERRUPTION THAT MEETS THE REQUIREMENTS OF NEC 690.41(B)(1) & (2).
  5. REFER TO E-D401-01 FOR FULL INVERTER SINGLE LINE DIAGRAM.
  6. AFTER PLANT ENERGIZATION, OPEN ASSOCIATED LOAD BREAK DISCONNECT PRIOR TO DISCONNECTING INDIVIDUAL STRINGS FOR MAINTENANCE.



PRELIMINARY  
NOT FOR CONSTRUCTION

|                           |            |                         |
|---------------------------|------------|-------------------------|
| C                         | 04/28/2021 | ISSUED FOR REVIEW - 60% |
| B                         | 03/05/2021 | ISSUED FOR REVIEW - 30% |
| A                         | 02/05/2021 | ISSUED FOR REVIEW - 10% |
| REV                       | DATE       | ISSUE DESCRIPTION       |
| APPROVED BY: S. MOSER     |            |                         |
| CHECKED BY: T. A. CARROLL |            |                         |
| DESIGNED BY: D. OLDS      |            |                         |
| DRAWN BY: D. OLDS         |            |                         |
| SCALE: N.T.S.             |            |                         |



PROJECT NUMBER: EE2011066  
DRAWING NAME:

HARDIN II  
SOLAR PROJECT

DC SINGLE LINE  
DIAGRAM

|                |          |
|----------------|----------|
| DRAWING No.    | REVISION |
| H2SP-E-D300-02 | C        |

CAD FILE: H2SP-E0300-02 DC SINGLE LINE DIAGRAM

- NOTES:
1. EXAMPLES PROVIDED USING LARGEST EXPECTED MODULE BIN CLASS OR "WORST-CASE SCENARIO"
  2. STRING SIZING IS DETERMINED USING NREL SYSTEM ADVISORY MODEL AS ALLOWED PER NEC2017 690.7(A). MODEL INCORPORATES EQUIPMENT SPECIFICATIONS AND HISTORICAL CLIMATE DATA. REFER TO BASIS OF DESIGN FOR FURTHER DETAILS.
  3. STC VALUES ARE PER MODULE DATASHEET FOR FRONT SIDE. BIFACIAL GAIN HAS NEGLIGIBLE IMPACT ON MODULE VOLTAGE.
  4. MODELED CURRENT IS DETERMINED BY SIMULATING A POWER BLOCK IN NREL'S SYSTEM ADVISORY MODEL AND ACCOUNTS FOR HISTORICAL WEATHER DATA INCLUDING IRRADIANCE, TEMPERATURE AND ALBEDO (BIFACIAL GAIN).
  5. MAX CURRENT INCLUDES A 10% BUFFER TO COMPENSATE FOR MODELLING UNCERTAINTY.
  6. FUSE SIZING CURRENT = I<sub>max</sub> + CONTINUOUS CURRENT DERATE.
  7. EGC REQUIREMENT PER NEC2017 TABLE 250.122 IS #3 AWG CU OR EQUIVALENT. DC TRENCH GROUND SIZED AT #2 AWG CU TO ACCOUNT FOR CORROSION OVER TIME.
  8. CABLE TEMPERATURE IS BASED ON ASHRAE 0.4% MAXIMUM DB. DERATE IS PER NEC2017 TABLE 310.15(B)(2)(g).
  9. MULTICONDUCTOR DERATE PER NEC2017 EQUATION 310.60 (C)(4)
  10. CONDUCTOR SIZING CURRENT IS SIZED PER 690.8 (B) TO CARRY NOT LESS THAN THE HIGER OF 690.8 (b)(1) OR 690.8 (B)(2) : MAX CURRENT+ CONTINUOUS CURRENT DERATE OR 690.8 (B)(2) MAX CURRENT+ TEMPERATURE DERATE + MULTICONDUCTOR DERATE.
  11. CABLE SIZING FOR THE ABOVE GROUND BLA AND HOMERUN IS BASED ON NEC2017 TABLE 310.15(B)(20) @ 90°C. AMPACITY. STRING HARNESS CABLE SIZING IS BASED ON NEC2017 TABLE 310.15(B)(16) @ 90°C.
  12. DC HOMERUN FEEDERS MAY BE UPSIZED DUE TO UNDERGROUND PERFORMANCE PER C/MA/CP ANALYSIS OR TO IMPROVE VOLTAGE DROP.



RRC POWER & ENERGY, LLC

7591 SW MOHAWK ST,

TUALATIN, OR 97062

PHONE: (503) 342-4064

www.RRCcompanies.com

**CONFIDENTIAL**  
THIS DRAWING IS THE PROPERTY  
OF RRC POWER & ENERGY, LLC, AND  
INVENERGY, LLC. NO REPRODUCTION  
MAY BE MADE IN WHOLE OR IN PART  
WITHOUT WRITTEN CONSENT.

PREPARED FOR:



**PRELIMINARY**  
NOT FOR CONSTRUCTION



PROJECT NUMBER: EE2011066

DRAWING NAME:

**HARDIN II**  
**SOLAR PROJECT**

DC QUANTITIES

|                |          |
|----------------|----------|
| DRAWING No.    | REVISION |
| H2SP-E-D300-03 | C        |

CAD FILE: H2SP-E-0300-03 DC QUANTITIES

| BLOCK NO.   | QTY OF<br>INVERTERS | 3 STRING<br>TRACKERS | 2 STRING<br>TRACKERS | STRINGS | QTY OF<br>MODULES | DC CAPACITY<br>(KW DC) (NOTE<br>10) | BLOCK<br>NAME/PLATE @<br>POI (KW AC) | POI DC : AC<br>RATIO | # OF LBDS | ESTIMATED<br>LENGTH OF 600<br>KCMIL<br>(FT, NOTE 1, 2) | AVERAGE<br>VOLTAGE DROP<br>(NOTE 7) | DC TRENCH<br>(FT) | E/W CAB<br>SYSTEM (FT) | CAB HANGERS<br>(EA, NOTE 4) | 3/4" X 10"<br>GROUND<br>RODS (NOTE<br>6) | CU #2 AWG (FT,<br>NOTE 5) | CU #10 AWG (FT,<br>NOTE 6) |
|-------------|---------------------|----------------------|----------------------|---------|-------------------|-------------------------------------|--------------------------------------|----------------------|-----------|--------------------------------------------------------|-------------------------------------|-------------------|------------------------|-----------------------------|------------------------------------------|---------------------------|----------------------------|
| 1           | 5                   | 116                  | 6                    | 360     | 9,360             | 5,040                               | 3,750                                | 1,344                | 21        | 24,083                                                 | 1.28%                               | 874               | 2,736                  | 1,095                       | 25                                       | 1,504                     | 144                        |
| 2           | 5                   | 78                   | 62                   | 358     | 9,308             | 5,012                               | 3,750                                | 1,337                | 25        | 48,346                                                 | 1.54%                               | 2,483             | 3,140                  | 1,256                       | 29                                       | 3,233                     | 144                        |
| 3           | 5                   | 119                  | 0                    | 357     | 9,282             | 4,988                               | 3,750                                | 1,333                | 21        | 21,002                                                 | 1.18%                               | 730               | 2,669                  | 1,068                       | 25                                       | 1,360                     | 144                        |
| 4           | 5                   | 106                  | 17                   | 352     | 9,152             | 4,928                               | 3,750                                | 1,314                | 22        | 23,166                                                 | 1.16%                               | 1,032             | 2,759                  | 1,104                       | 26                                       | 1,892                     | 144                        |
| 5           | 5                   | 91                   | 40                   | 353     | 9,178             | 4,942                               | 3,750                                | 1,318                | 22        | 21,841                                                 | 1.14%                               | 730               | 2,938                  | 1,175                       | 26                                       | 1,390                     | 144                        |
| 6           | 5                   | 117                  | 4                    | 359     | 9,334             | 5,026                               | 3,750                                | 1,340                | 24        | 30,612                                                 | 1.23%                               | 2,001             | 2,714                  | 1,086                       | 28                                       | 2,721                     | 144                        |
| 7           | 5                   | 109                  | 15                   | 357     | 9,282             | 4,988                               | 3,750                                | 1,333                | 23        | 35,041                                                 | 1.42%                               | 1,517             | 2,781                  | 1,113                       | 27                                       | 2,307                     | 144                        |
| 8           | 5                   | 111                  | 10                   | 353     | 9,178             | 4,942                               | 3,750                                | 1,318                | 21        | 23,527                                                 | 1.25%                               | 1,149             | 2,714                  | 1,086                       | 25                                       | 1,779                     | 144                        |
| 9           | 5                   | 116                  | 4                    | 356     | 9,256             | 4,984                               | 3,750                                | 1,329                | 21        | 21,671                                                 | 1.20%                               | 759               | 2,692                  | 1,077                       | 25                                       | 1,389                     | 144                        |
| 10          | 5                   | 116                  | 4                    | 356     | 9,256             | 4,984                               | 3,750                                | 1,329                | 21        | 22,698                                                 | 1.23%                               | 818               | 2,692                  | 1,077                       | 25                                       | 1,448                     | 144                        |
| 11          | 5                   | 88                   | 46                   | 356     | 9,256             | 4,984                               | 3,750                                | 1,329                | 21        | 23,054                                                 | 1.23%                               | 765               | 3,006                  | 1,202                       | 25                                       | 1,395                     | 144                        |
| 12          | 5                   | 85                   | 49                   | 353     | 9,178             | 4,942                               | 3,750                                | 1,318                | 22        | 25,923                                                 | 1.23%                               | 794               | 3,006                  | 1,202                       | 26                                       | 1,454                     | 144                        |
| 13          | 5                   | 114                  | 6                    | 354     | 9,204             | 4,956                               | 3,750                                | 1,322                | 21        | 24,638                                                 | 1.28%                               | 803               | 2,692                  | 1,077                       | 25                                       | 1,433                     | 144                        |
| 14          | 5                   | 113                  | 7                    | 353     | 9,178             | 4,942                               | 3,750                                | 1,318                | 22        | 29,077                                                 | 1.32%                               | 1,094             | 2,692                  | 1,077                       | 26                                       | 1,754                     | 144                        |
| 15          | 5                   | 116                  | 4                    | 356     | 9,256             | 4,984                               | 3,750                                | 1,329                | 21        | 22,767                                                 | 1.24%                               | 829               | 2,692                  | 1,077                       | 25                                       | 1,459                     | 144                        |
| 16          | 5                   | 117                  | 4                    | 359     | 9,334             | 5,026                               | 3,750                                | 1,340                | 20        | 21,217                                                 | 1.27%                               | 769               | 2,714                  | 1,086                       | 24                                       | 1,369                     | 144                        |
| 17          | 5                   | 117                  | 4                    | 359     | 9,334             | 5,026                               | 3,750                                | 1,340                | 21        | 24,660                                                 | 1.30%                               | 879               | 2,714                  | 1,086                       | 25                                       | 1,509                     | 144                        |
| 18          | 5                   | 107                  | 17                   | 355     | 9,230             | 4,970                               | 3,750                                | 1,325                | 23        | 32,408                                                 | 1.33%                               | 2,312             | 2,781                  | 1,113                       | 27                                       | 3,002                     | 144                        |
| 19          | 5                   | 116                  | 4                    | 356     | 9,256             | 4,984                               | 3,750                                | 1,329                | 21        | 22,522                                                 | 1.25%                               | 1,347             | 2,692                  | 1,077                       | 25                                       | 1,977                     | 144                        |
| 20          | 5                   | 116                  | 3                    | 354     | 9,204             | 4,956                               | 3,750                                | 1,322                | 23        | 26,555                                                 | 1.20%                               | 1,486             | 2,669                  | 1,068                       | 27                                       | 2,176                     | 144                        |
| 21          | 5                   | 111                  | 11                   | 355     | 9,230             | 4,970                               | 3,750                                | 1,325                | 22        | 24,932                                                 | 1.22%                               | 1,341             | 2,736                  | 1,095                       | 26                                       | 2,001                     | 144                        |
| 22          | 5                   | 117                  | 4                    | 359     | 9,334             | 5,026                               | 3,750                                | 1,340                | 21        | 22,944                                                 | 1.24%                               | 1,309             | 2,714                  | 1,086                       | 25                                       | 1,939                     | 144                        |
| 23          | 5                   | 114                  | 8                    | 358     | 9,308             | 5,012                               | 3,750                                | 1,337                | 21        | 22,333                                                 | 1.22%                               | 1,718             | 2,736                  | 1,095                       | 25                                       | 2,348                     | 144                        |
| 24          | 5                   | 116                  | 4                    | 356     | 9,256             | 4,984                               | 3,750                                | 1,329                | 21        | 22,522                                                 | 1.25%                               | 1,347             | 2,692                  | 1,077                       | 25                                       | 1,977                     | 144                        |
| 25          | 5                   | 116                  | 4                    | 356     | 9,256             | 4,984                               | 3,750                                | 1,329                | 21        | 22,522                                                 | 1.25%                               | 1,347             | 2,692                  | 1,077                       | 25                                       | 1,977                     | 144                        |
| 26          | 5                   | 116                  | 4                    | 356     | 9,256             | 4,984                               | 3,750                                | 1,329                | 21        | 22,522                                                 | 1.25%                               | 1,347             | 2,692                  | 1,077                       | 25                                       | 1,977                     | 144                        |
| 27          | 5                   | 116                  | 4                    | 356     | 9,256             | 4,984                               | 3,750                                | 1,329                | 21        | 22,522                                                 | 1.25%                               | 1,347             | 2,692                  | 1,077                       | 25                                       | 1,977                     | 144                        |
| 28          | 5                   | 115                  | 4                    | 353     | 9,178             | 4,942                               | 3,750                                | 1,318                | 22        | 25,725                                                 | 1.25%                               | 1,334             | 2,669                  | 1,068                       | 26                                       | 1,994                     | 144                        |
| 29          | 5                   | 102                  | 24                   | 354     | 9,204             | 4,956                               | 3,750                                | 1,322                | 21        | 23,166                                                 | 1.23%                               | 1,146             | 2,826                  | 1,130                       | 25                                       | 1,776                     | 144                        |
| 30          | 5                   | 113                  | 9                    | 357     | 9,282             | 4,988                               | 3,750                                | 1,333                | 20        | 21,202                                                 | 1.26%                               | 789               | 2,736                  | 1,095                       | 24                                       | 1,389                     | 144                        |
| 31          | 5                   | 105                  | 20                   | 355     | 9,230             | 4,970                               | 3,750                                | 1,325                | 22        | 31,643                                                 | 1.40%                               | 1,649             | 2,804                  | 1,122                       | 26                                       | 2,309                     | 144                        |
| 32          | 5                   | 101                  | 29                   | 361     | 9,366             | 5,054                               | 3,750                                | 1,348                | 22        | 28,711                                                 | 1.36%                               | 1,417             | 2,916                  | 1,166                       | 26                                       | 2,077                     | 144                        |
| 33          | 5                   | 81                   | 53                   | 349     | 9,074             | 4,886                               | 3,750                                | 1,303                | 24        | 44,031                                                 | 1.47%                               | 2,431             | 3,006                  | 1,202                       | 28                                       | 3,151                     | 144                        |
| 34          | 5                   | 116                  | 4                    | 356     | 9,256             | 4,984                               | 3,750                                | 1,329                | 21        | 22,698                                                 | 1.23%                               | 821               | 2,692                  | 1,077                       | 25                                       | 1,451                     | 144                        |
| 35          | 5                   | 116                  | 4                    | 356     | 9,256             | 4,984                               | 3,750                                | 1,329                | 21        | 22,698                                                 | 1.23%                               | 821               | 2,692                  | 1,077                       | 25                                       | 1,451                     | 144                        |
| 36          | 5                   | 92                   | 39                   | 354     | 9,204             | 4,956                               | 3,750                                | 1,322                | 20        | 20,672                                                 | 1.23%                               | 709               | 2,938                  | 1,175                       | 24                                       | 1,309                     | 144                        |
| 37          | 5                   | 116                  | 4                    | 356     | 9,256             | 4,984                               | 3,750                                | 1,329                | 21        | 22,698                                                 | 1.23%                               | 821               | 2,692                  | 1,077                       | 25                                       | 1,451                     | 144                        |
| 38          | 5                   | 116                  | 4                    | 356     | 9,256             | 4,984                               | 3,750                                | 1,329                | 20        | 21,163                                                 | 1.26%                               | 787               | 2,692                  | 1,077                       | 24                                       | 1,387                     | 144                        |
| 39          | 5                   | 116                  | 4                    | 356     | 9,256             | 4,984                               | 3,750                                | 1,329                | 21        | 22,698                                                 | 1.23%                               | 821               | 2,692                  | 1,077                       | 25                                       | 1,451                     | 144                        |
| 40          | 5                   | 113                  | 9                    | 357     | 9,282             | 4,988                               | 3,750                                | 1,333                | 21        | 23,292                                                 | 1.24%                               | 787               | 2,736                  | 1,095                       | 25                                       | 1,417                     | 144                        |
| SITE TOTAL: |                     |                      |                      |         |                   |                                     |                                      |                      |           |                                                        |                                     |                   |                        |                             |                                          | 73,160                    | 5,774                      |

- NOTES:
- CABLE ORDER LENGTHS INCLUDE CIRCUIT LENGTH FOR BOTH POSITIVE AND NEGATIVE CONDUCTORS PLUS 5% OVERAGE. ALL MATERIAL QUANTITIES SHALL BE FIELD VERIFIED BY CONTRACTOR.
  - DESIGN IS PRELIMINARY IN NATURE AND IS ONLY FOR ESTIMATING PURPOSES.
  - CAB NUMBERS ARE BASED ON 30 IN SPACING BETWEEN HANGERS
  - REFER TO E-V03-03 FOR CAB HANGER PART NUMBER AND DETAILS.
  - CU #2 AWG RUN IN DC TRENCHES, AND FROM RACKING. CAB MESSENGER WIRE USED AS GROUND FOR ABOVE GROUND HOMERUNS.
  - CU #10 AWG LENGTH AROUND INVERTER SKID. TAKE OFF INCLUDES 40 LNFT FOR JUMPERS FROM GROUND RINGS TO SKID AND BUSBARS.
  - CALCULATIONS INCLUDE AVERAGE VOLTAGE DROP IN HARNESSSES & HOMERUNS TO INVERTER.
  - ONE GROUND ROD AT EACH CORNER OF INVERTER GROUNDING RING AND AT EACH LBD PILE. PROJECT OWNER TO CONFIRM IF LBD GROUND ROD CAN BE REMOVED.
  - DC BLOCK DESIGN IS COMPLETE FOR EACH BLOCK BUT MAY CONTINUE TO DEVELOP AND OPTIMIZE THROUGH IFC DRAWING SET.
  - DC CAPACITY IS BASED ON A 538.5 W/MODULE AVERAGE.







































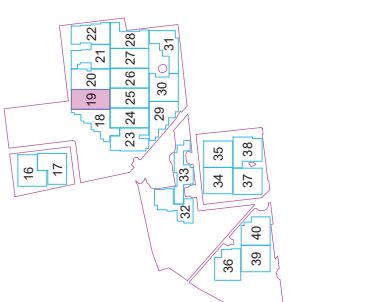
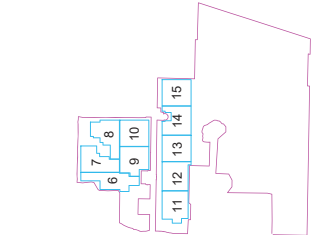
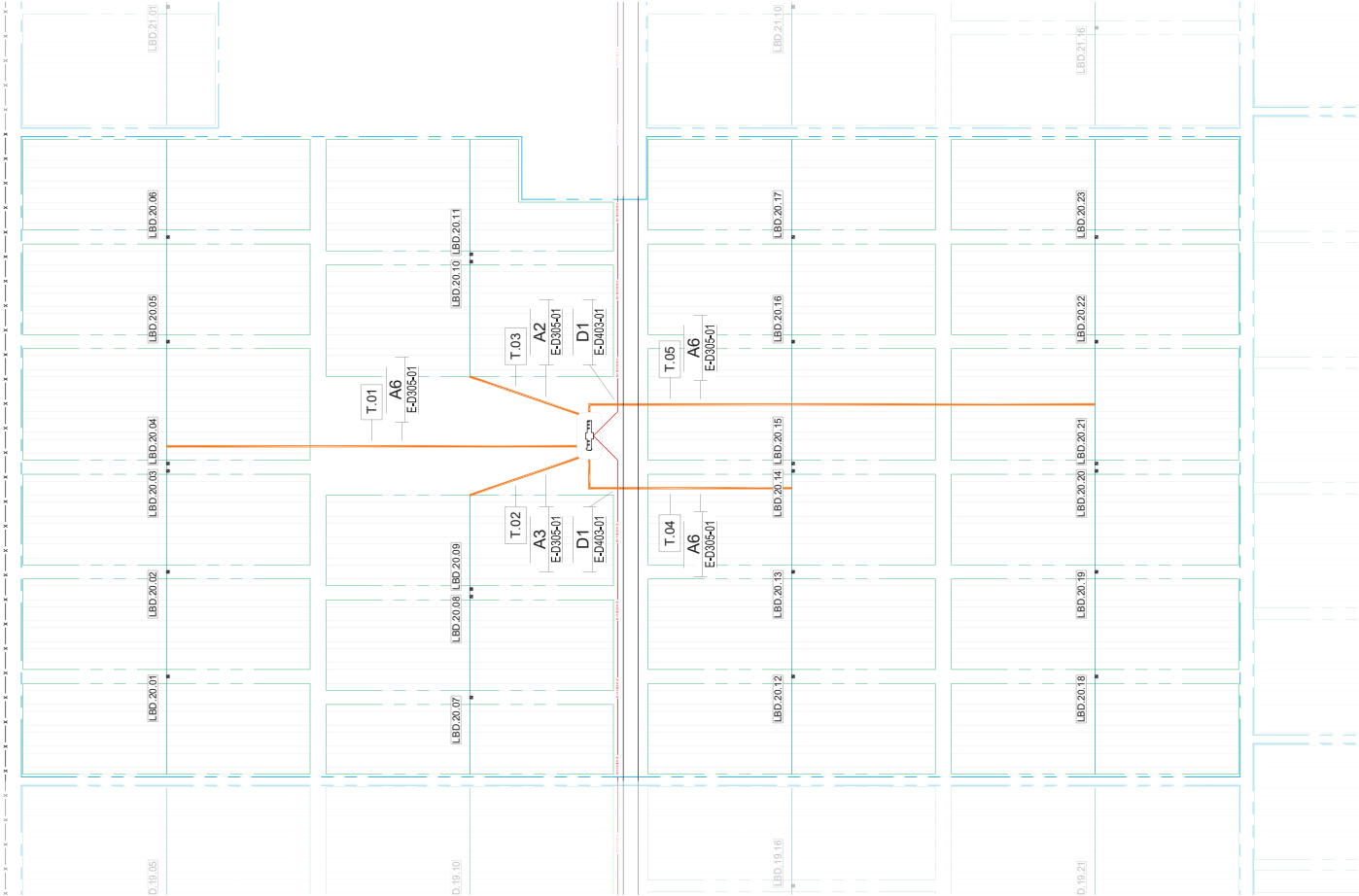












KEY PLAN

| BLOCK INFORMATION          |          |
|----------------------------|----------|
| BLOCK NUMBER               | 19       |
| NO. OF STRINGS             | 356      |
| MODULE QUANTITY            | 9,258    |
| ARRAY BLOCK STC DC POWER   | 4,984 kW |
| POI DC:AC RATIO            | 1.33     |
| NO. LOAD BREAK DISCONNECTS | 21       |
| LN FT OF DC TRENCH         | 1,347    |
| LN FT OF CAB MSG WIRE      | 2,692    |

DC CIRCUIT NAMING CONVENTION:



NOTES

1. REFER TO H2SP-E-D300-02 FOR EXPLANATION OF CABLE AND FUSE SIZING.
2. ALL DC CABLE TO BE 2KV PV WIRE.
3. ALL DC CABLE LENGTHS INCLUDE POSITIVE AND NEGATIVE CABLES. CABLES TO BE 10' MINUS AN EXTRA 50' FOR HORIZONTAL AND VERTICAL ADDER, PLUS A 5% ORDERING BUFFER.
4. MAX AND AVG VOLTAGE DROP \* - W/STRING\* INCLUDES THE COMBINED VOLTAGE DROP OF THE HARNESS, B/LA AND HOMERUNS. REFER TO ENERGY LOSS STUDY FOR DETAILED CALCULATIONS.
5. MODULE POWER IS BASED OFF OF MODULE BIN CLASS OF 565W. PHYSICAL BLOCK DESIGN ASSUMES A MODULE WATTAGE OF 540W.

| CIRCUIT ID       | DC TERM AT INVERTER | U.G. TRENCH | MODULE POWER RATING (5) | # PARALLEL STRINGS | Imp [A] | Isc [A] | MAX CURRENT [A] (1) | FUSE SIZE [A] (1) | CONDUCTOR SIZE (1,2) | 1-WAY CIRCUIT LENGTH [FT] | 2-WAY CABLE ORDER LENGTH [FT] (3) | STRING Vmp [V] (4) | MAX VOLTAGE DROP W/ STRING [V] (4) | % MAX VOLTAGE DROP W/ STRING (4) | AVG VOLTAGE DROP W/ STRING (4) | % AVG VOLTAGE DROP W/ STRING (4) |
|------------------|---------------------|-------------|-------------------------|--------------------|---------|---------|---------------------|-------------------|----------------------|---------------------------|-----------------------------------|--------------------|------------------------------------|----------------------------------|--------------------------------|----------------------------------|
| DC.B19.LBD1-INV  | 1                   | 1           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 856                       | 1798                              | 1082.9             | 20.2                               | 1.87%                            | 19.6                           | 1.81%                            |
| DC.B19.LBD2-INV  | 1                   | 1           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 722                       | 1515                              | 1082.9             | 17.9                               | 1.66%                            | 17.4                           | 1.60%                            |
| DC.B19.LBD3-INV  | 1                   | 1           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 628                       | 1319                              | 1082.9             | 16.4                               | 1.51%                            | 15.8                           | 1.46%                            |
| DC.B19.LBD4-INV  | 1                   | 1           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 636                       | 1335                              | 1082.9             | 16.5                               | 1.52%                            | 15.9                           | 1.47%                            |
| DC.B19.LBD5-INV  | 1                   | 1           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 766                       | 1610                              | 1082.9             | 18.7                               | 1.73%                            | 18.1                           | 1.67%                            |
| DC.B19.LBD6-INV  | 4                   | 2           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 451                       | 947                               | 1082.9             | 13.4                               | 1.24%                            | 12.8                           | 1.19%                            |
| DC.B19.LBD7-INV  | 5                   | 2           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 313                       | 657                               | 1082.9             | 11.1                               | 1.03%                            | 10.5                           | 0.97%                            |
| DC.B19.LBD8-INV  | 5                   | 2           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 398                       | 837                               | 1082.9             | 12.5                               | 1.16%                            | 12.0                           | 1.10%                            |
| DC.B19.LBD9-INV  | 5                   | 2           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 406                       | 853                               | 1082.9             | 12.7                               | 1.17%                            | 12.1                           | 1.12%                            |
| DC.B19.LBD10-INV | 5                   | 2           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 537                       | 1128                              | 1082.9             | 14.9                               | 1.37%                            | 14.3                           | 1.32%                            |
| DC.B19.LBD11-INV | 3                   | 3           | 538.5 W                 | 15                 | 194.6   | 207.8   | 243.0               | 400               | 600 KCMIL            | 385                       | 830                               | 1082.9             | 11.3                               | 1.04%                            | 10.7                           | 0.99%                            |
| DC.B19.LBD12-INV | 3                   | 3           | 538.5 W                 | 15                 | 194.6   | 207.8   | 243.0               | 400               | 600 KCMIL            | 283                       | 594                               | 1082.9             | 9.7                                | 0.90%                            | 9.2                            | 0.85%                            |
| DC.B19.LBD13-INV | 4                   | 3           | 538.5 W                 | 13                 | 168.6   | 180.1   | 210.6               | 400               | 600 KCMIL            | 204                       | 428                               | 1082.9             | 8.2                                | 0.76%                            | 7.7                            | 0.71%                            |
| DC.B19.LBD14-INV | 4                   | 3           | 538.5 W                 | 13                 | 168.6   | 180.1   | 210.6               | 400               | 600 KCMIL            | 212                       | 445                               | 1082.9             | 8.3                                | 0.77%                            | 7.8                            | 0.72%                            |
| DC.B19.LBD15-INV | 4                   | 3           | 538.5 W                 | 15                 | 194.6   | 207.8   | 243.0               | 400               | 600 KCMIL            | 320                       | 672                               | 1082.9             | 10.2                               | 0.95%                            | 9.7                            | 0.89%                            |
| DC.B19.LBD16-INV | 3                   | 3           | 538.5 W                 | 15                 | 194.6   | 207.8   | 243.0               | 400               | 600 KCMIL            | 440                       | 924                               | 1082.9             | 11.9                               | 1.10%                            | 11.3                           | 1.05%                            |
| DC.B19.LBD17-INV | 2                   | 4           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 766                       | 1609                              | 1082.9             | 18.7                               | 1.73%                            | 18.1                           | 1.67%                            |
| DC.B19.LBD18-INV | 2                   | 4           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 632                       | 1326                              | 1082.9             | 16.4                               | 1.52%                            | 15.9                           | 1.47%                            |
| DC.B19.LBD19-INV | 3                   | 4           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 538                       | 1129                              | 1082.9             | 14.9                               | 1.37%                            | 14.3                           | 1.32%                            |
| DC.B19.LBD20-INV | 2                   | 4           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 546                       | 1146                              | 1082.9             | 15.0                               | 1.39%                            | 14.4                           | 1.33%                            |
| DC.B19.LBD21-INV | 2                   | 4           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 677                       | 1421                              | 1082.9             | 17.2                               | 1.59%                            | 16.6                           | 1.54%                            |
| ---              | ---                 | ---         | ---                     | ---                | ---     | ---     | ---                 | ---               | ---                  | ---                       | ---                               | ---                | ---                                | ---                              | ---                            | ---                              |
| ---              | ---                 | ---         | ---                     | ---                | ---     | ---     | ---                 | ---               | ---                  | ---                       | ---                               | ---                | ---                                | ---                              | ---                            | ---                              |
| ---              | ---                 | ---         | ---                     | ---                | ---     | ---     | ---                 | ---               | ---                  | ---                       | ---                               | ---                | ---                                | ---                              | ---                            | ---                              |
| ---              | ---                 | ---         | ---                     | ---                | ---     | ---     | ---                 | ---               | ---                  | ---                       | ---                               | ---                | ---                                | ---                              | ---                            | ---                              |
| TOTAL            |                     |             |                         | 356                |         |         |                     |                   |                      |                           | 22,522                            |                    |                                    | 1.87%                            | AVERAGE                        | 1.25%                            |
| TOTAL            |                     |             |                         |                    |         |         |                     |                   |                      |                           |                                   |                    |                                    |                                  |                                |                                  |



RRC POWER & ENERGY, LLC

7591 SW MOHAWK ST,  
TUALATIN, OR 97062  
PHONE: (503) 342-4064  
www.RRCcompanies.com

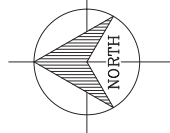
CONFIDENTIAL

THIS DRAWING IS THE PROPERTY OF RRC POWER & ENERGY, LLC, AND INVENERGY, LLC. NO REPRODUCTION MAY BE MADE IN WHOLE OR IN PART WITHOUT WRITTEN CONSENT.

PREPARED FOR:

Invenergy

res



F.F.ELIMINAF.Y

N T F F. N:TFU TI N

REV

DATE

ISSUE DESCRIPTION

A

04/29/2021

ISSUED FOR REVIEW - 60%

CHECKED BY:

DESIGNED BY:

DRAWN BY:

S. MOSER

T. A. CARROLL

D. OLDS

SCALE: 1" = 100'



BAR MUST SCALE 2" FOR FULL SIZE OR 1" FOR HALF SIZE DRAWING

PROJECT NUMBER: EE2011066

DRAWING NAME:

HARDIN II

SOLAR PROJECT

LAYOUT AND CABLE SCHEDULE - PB19

DRAWING No.

REVISION

H2SP-E-D301-19

A

CAD FILE: H2SP-E-D301-20 LAYOUT AND CABLE SCHEDULE - PB1-20

LAST SAVED BY: DERRICKLODLS ON 4/29/2021 9:29:52 AM  
R:\OPERATIONS\OPT\SOLAR\PROJECTS\HARDIN II\EE2011066\08-ELEC AND BESS\03-DWG\H2SP-E-D301-190 LAYOUT AND CABLE SCHEDULE - PB1-20.DWG





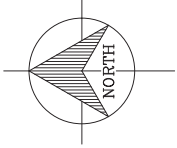


RRC POWER & ENERGY, LLC

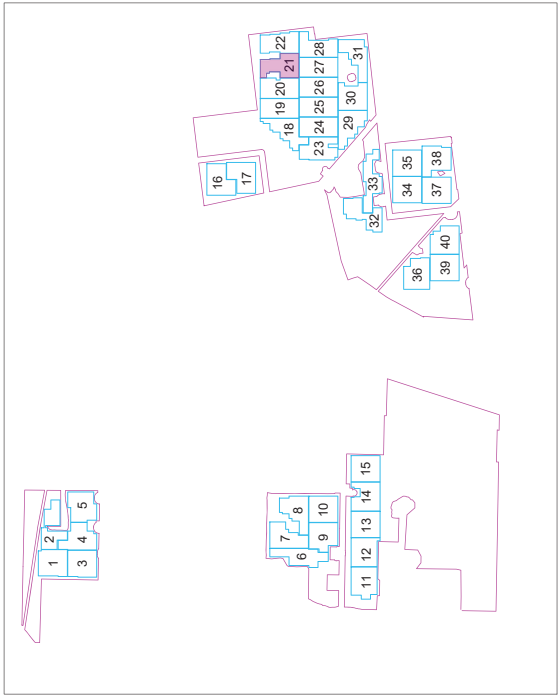
7591 SW MOHAWK ST,  
TUALATIN, OR 97062  
PHONE: (503) 342-4064  
www.RRCcompanies.com

**CONFIDENTIAL**  
THIS DRAWING IS THE PROPERTY  
OF RRC POWER & ENERGY, LLC, AND  
INVENERGY, LLC. NO REPRODUCTION  
MAY BE MADE IN WHOLE OR IN PART  
WITHOUT WRITTEN CONSENT.

PREPARED FOR:



F.F.ELIMINAF.Y  
N T F F . N : T F U T I N



KEY PLAN

| BLOCK INFORMATION          |          |  |  |
|----------------------------|----------|--|--|
| BLOCK NUMBER               | 21       |  |  |
| NO. OF STRINGS             | 355      |  |  |
| MODULE QUANTITY            | 9,230    |  |  |
| ARRAY BLOCK STD DC POWER   | 4,970 kW |  |  |
| POI DC:AC RATIO            | 1.33     |  |  |
| NO. LOAD BREAK DISCONNECTS | 22       |  |  |
| LN FT OF DC TRENCH         | 1,341    |  |  |
| LN FT OF CAB MSG WIRE      | 2,736    |  |  |



NOTES

1. REFER TO H2SP-E-D300-02 FOR EXPLANATION OF CABLE AND FUSE SIZING.
2. SIZING: CABLE TO BE 2KV PV WIRE
3. ALL DC CABLES MUST INCLUDE POSITIVE AND NEGATIVE CABLES. CABLE ORDER LENGTHS INCLUDE EXTRA 50' FOR HORIZONTAL AND VERTICAL LAYOUTS. INCLUDE EXTRA 50' FOR ORDERING BUFFER.
4. ORDER PLUS A 5% ORDERING BUFFER.
5. MAX AND AVG VOLTAGE DROP \* - WSTRING\* INCLUDES THE COMBINED VOLTAGE DROP OF THE HARNESS, BJA, AND HOMERUNS. REFER TO ENERGY LOSS STUDY FOR DETAILED CALCULATIONS.
6. MODULE POWER IS BASED OFF OF MODULE BIN CLASS OF 565W.
7. PHYSICAL BLOCK DESIGN ASSUMES A MODULE WATTAGE OF 538.5 W.

| CIRCUIT ID       | DC TERM AT INVERTER | U.G. TRENCH | MODULE POWER RATING (5) | # PARALLEL STRINGS | Imp [A] | Isc [A] | MAX CURRENT [A] (1) | FUSE SIZE [A] (1) | CONDUCTOR SIZE (1,2) | 1-WAY CIRCUIT LENGTH [FT] | 2-WAY CABLE ORDER LENGTH [FT] (3) | STRING Vmp [V] (4) | MAX VOLTAGE DROP W/ STRING [V] (4) | AVG VOLTAGE DROP W/ STRING [V] (4) | % AVG VD STRING (4) |
|------------------|---------------------|-------------|-------------------------|--------------------|---------|---------|---------------------|-------------------|----------------------|---------------------------|-----------------------------------|--------------------|------------------------------------|------------------------------------|---------------------|
| DC B21 LBD1-INV  | 1                   | 1           | 538.5 W                 | 12                 | 155.6   | 166.2   | 194.4               | 400               | 600 KCMIL            | 867                       | 1820                              | 1082.9             | 14.5                               | 14.3                               | 1.32%               |
| DC B21 LBD2-INV  | 1                   | 1           | 538.5 W                 | 14                 | 181.6   | 193.9   | 226.8               | 400               | 600 KCMIL            | 755                       | 1585                              | 1082.9             | 15.6                               | 15.0                               | 1.39%               |
| DC B21 LBD3-INV  | 5                   | 1           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 620                       | 1302                              | 1082.9             | 16.2                               | 15.0                               | 1.45%               |
| DC B21 LBD4-INV  | 5                   | 1           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 612                       | 1285                              | 1082.9             | 16.1                               | 1.49%                              | 1.44%               |
| DC B21 LBD5-INV  | 5                   | 1           | 538.5 W                 | 15                 | 194.6   | 207.8   | 243.0               | 400               | 600 KCMIL            | 706                       | 1482                              | 1082.9             | 15.6                               | 1.44%                              | 1.39%               |
| DC B21 LBD6-INV  | 2                   | 1           | 538.5 W                 | 15                 | 194.6   | 207.8   | 243.0               | 400               | 600 KCMIL            | 434                       | 912                               | 1082.9             | 11.8                               | 1.09%                              | 1.13                |
| DC B21 LBD7-INV  | 1                   | 1           | 538.5 W                 | 15                 | 194.6   | 207.8   | 243.0               | 400               | 600 KCMIL            | 322                       | 677                               | 1082.9             | 10.3                               | 0.95%                              | 9.7                 |
| DC B21 LBD8-INV  | 1                   | 1           | 538.5 W                 | 15                 | 194.6   | 207.8   | 243.0               | 400               | 600 KCMIL            | 314                       | 660                               | 1082.9             | 10.2                               | 0.94%                              | 9.6                 |
| DC B21 LBD9-INV  | 1                   | 1           | 538.5 W                 | 15                 | 194.6   | 207.8   | 243.0               | 400               | 600 KCMIL            | 388                       | 810                               | 1082.9             | 11.2                               | 1.03%                              | 10.6                |
| DC B21 LBD10-INV | 5                   | 2           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 432                       | 907                               | 1082.9             | 13.1                               | 1.21%                              | 12.5                |
| DC B21 LBD11-INV | 5                   | 2           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 297                       | 624                               | 1082.9             | 10.8                               | 1.00%                              | 10.3                |
| DC B21 LBD12-INV | 4                   | 2           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 226                       | 475                               | 1082.9             | 9.7                                | 0.89%                              | 9.1                 |
| DC B21 LBD13-INV | 4                   | 2           | 538.5 W                 | 17                 | 220.5   | 235.5   | 275.4               | 400               | 600 KCMIL            | 234                       | 492                               | 1082.9             | 9.6                                | 0.88%                              | 9.0                 |
| DC B21 LBD14-INV | 4                   | 2           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 365                       | 766                               | 1082.9             | 12.0                               | 1.11%                              | 11.4                |
| DC B21 LBD15-INV | 4                   | 2           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 499                       | 1049                              | 1082.9             | 14.2                               | 1.31%                              | 13.7                |
| DC B21 LBD16-INV | 3                   | 3           | 538.5 W                 | 15                 | 194.6   | 207.8   | 243.0               | 400               | 600 KCMIL            | 856                       | 1797                              | 1082.9             | 17.7                               | 1.64%                              | 17.2                |
| DC B21 LBD17-INV | 3                   | 3           | 538.5 W                 | 15                 | 194.6   | 207.8   | 243.0               | 400               | 600 KCMIL            | 744                       | 1562                              | 1082.9             | 16.2                               | 1.49%                              | 15.6                |
| DC B21 LBD18-INV | 3                   | 3           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 609                       | 1279                              | 1082.9             | 16.1                               | 1.48%                              | 15.5                |
| DC B21 LBD19-INV | 2                   | 3           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 560                       | 1177                              | 1082.9             | 15.3                               | 1.41%                              | 14.7                |
| DC B21 LBD20-INV | 2                   | 3           | 538.5 W                 | 15                 | 194.6   | 207.8   | 243.0               | 400               | 600 KCMIL            | 568                       | 1194                              | 1082.9             | 13.7                               | 1.27%                              | 13.1                |
| DC B21 LBD21-INV | 2                   | 3           | 538.5 W                 | 15                 | 194.6   | 207.8   | 243.0               | 400               | 600 KCMIL            | 677                       | 1421                              | 1082.9             | 15.2                               | 1.41%                              | 14.6                |
| DC B21 LBD22-INV | 3                   | 3           | 538.5 W                 | 15                 | 194.6   | 207.8   | 243.0               | 400               | 600 KCMIL            | 789                       | 1656                              | 1082.9             | 16.8                               | 1.55%                              | 16.2                |
| ---              | ---                 | ---         | ---                     | ---                | ---     | ---     | ---                 | ---               | ---                  | ---                       | ---                               | ---                | ---                                | ---                                | ---                 |
| ---              | ---                 | ---         | ---                     | ---                | ---     | ---     | ---                 | ---               | ---                  | ---                       | ---                               | ---                | ---                                | ---                                | ---                 |
| ---              | ---                 | ---         | ---                     | ---                | ---     | ---     | ---                 | ---               | ---                  | ---                       | ---                               | ---                | ---                                | ---                                | ---                 |
| TOTAL            |                     |             |                         | 355                |         |         |                     |                   |                      | TOTAL                     | 24,932                            |                    |                                    | AVERAGE                            | 1.22%               |























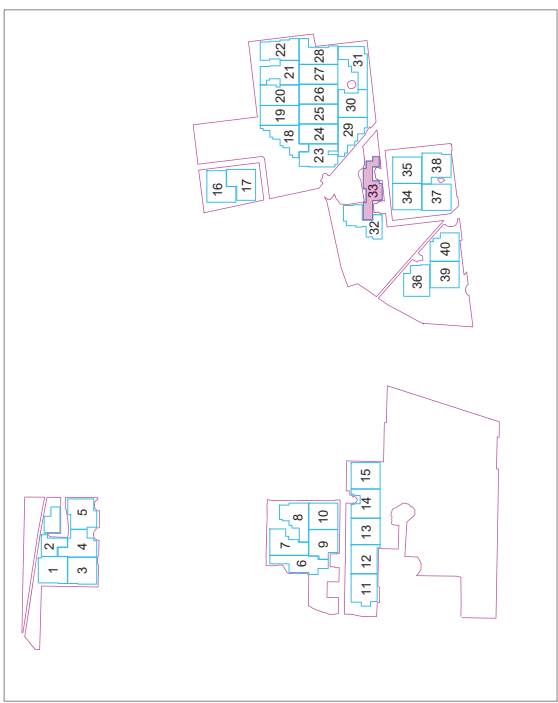






| 1                |                     |             | 2                       |                    |         | 3       |                     |                   | 4                    |                           |                                   | 5              |                                    |                     |                                |          |
|------------------|---------------------|-------------|-------------------------|--------------------|---------|---------|---------------------|-------------------|----------------------|---------------------------|-----------------------------------|----------------|------------------------------------|---------------------|--------------------------------|----------|
| CIRCUIT ID       | DC TERM AT INVERTER | U.G. TRENCH | MODULE POWER RATING (5) | # PARALLEL STRINGS | Imp [A] | Isc [A] | MAX CURRENT [A] (1) | FUSE SIZE [A] (1) | CONDUCTOR SIZE (1,2) | 1-WAY CIRCUIT LENGTH [FT] | 2-WAY CABLE ORDER LENGTH [FT] (3) | STRING Vmp [V] | MAX VOLTAGE DROP W/ STRING [V] (4) | % MAX VD STRING (4) | AVG VOLTAGE DROP W/ STRING (4) | % AVG VD |
| DC.B33.LBD1-INV  | 5                   | 1           | 538.5 W                 | 12                 | 155.6   | 166.2   | 194.4               | 400               | 600 KCMIL            | 1222                      | 2637                              | 1082.9         | 18.5                               | 1.71%               | 18.3                           | 1.69%    |
| DC.B33.LBD2-INV  | 5                   | 1           | 538.5 W                 | 12                 | 155.6   | 166.2   | 194.4               | 400               | 600 KCMIL            | 1133                      | 2378                              | 1082.9         | 17.5                               | 1.61%               | 17.3                           | 1.59%    |
| DC.B33.LBD3-INV  | 5                   | 1           | 538.5 W                 | 12                 | 155.6   | 166.2   | 194.4               | 400               | 600 KCMIL            | 1043                      | 2190                              | 1082.9         | 16.5                               | 1.52%               | 16.3                           | 1.50%    |
| DC.B33.LBD4-INV  | 5                   | 1           | 538.5 W                 | 15                 | 194.6   | 207.8   | 243.0               | 400               | 600 KCMIL            | 931                       | 1954                              | 1082.9         | 18.8                               | 1.73%               | 18.2                           | 1.68%    |
| DC.B33.LBD5-INV  | 4                   | 1           | 538.5 W                 | 15                 | 194.6   | 207.8   | 243.0               | 400               | 600 KCMIL            | 705                       | 1479                              | 1082.9         | 15.6                               | 1.44%               | 15.0                           | 1.39%    |
| DC.B33.LBD6-INV  | 4                   | 1           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 547                       | 1150                              | 1082.9         | 15.0                               | 1.39%               | 14.5                           | 1.34%    |
| DC.B33.LBD7-INV  | 4                   | 3           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 346                       | 726                               | 1082.9         | 11.7                               | 1.08%               | 11.1                           | 1.02%    |
| DC.B33.LBD8-INV  | 2                   | 3           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 837                       | 1758                              | 1082.9         | 19.9                               | 1.84%               | 19.3                           | 1.78%    |
| DC.B33.LBD9-INV  | 2                   | 3           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 706                       | 1484                              | 1082.9         | 17.7                               | 1.63%               | 17.1                           | 1.58%    |
| DC.B33.LBD10-INV | 1                   | 2           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 696                       | 1462                              | 1082.9         | 17.5                               | 1.62%               | 16.9                           | 1.57%    |
| DC.B33.LBD11-INV | 3                   | 2           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 570                       | 1198                              | 1082.9         | 15.4                               | 1.42%               | 14.8                           | 1.37%    |
| DC.B33.LBD12-INV | 2                   | 2           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 658                       | 1381                              | 1082.9         | 16.9                               | 1.56%               | 16.3                           | 1.51%    |
| DC.B33.LBD13-INV | 2                   | 2           | 538.5 W                 | 15                 | 194.6   | 207.8   | 243.0               | 400               | 600 KCMIL            | 792                       | 1664                              | 1082.9         | 16.8                               | 1.55%               | 16.3                           | 1.50%    |
| DC.B33.LBD14-INV | 2                   | 2           | 538.5 W                 | 14                 | 181.6   | 193.9   | 226.8               | 400               | 600 KCMIL            | 904                       | 1899                              | 1082.9         | 17.6                               | 1.62%               | 17.0                           | 1.57%    |
| DC.B33.LBD15-INV | 3                   | 2           | 538.5 W                 | 16                 | 207.5   | 221.6   | 259.2               | 400               | 600 KCMIL            | 1041                      | 2187                              | 1082.9         | 21.4                               | 1.97%               | 20.8                           | 1.92%    |
| DC.B33.LBD16-INV | 4                   | 3           | 538.5 W                 | 12                 | 155.6   | 166.2   | 194.4               | 400               | 600 KCMIL            | 738                       | 1550                              | 1082.9         | 13.1                               | 1.21%               | 12.9                           | 1.19%    |
| DC.B33.LBD17-INV | 4                   | 3           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 603                       | 1267                              | 1082.9         | 16.0                               | 1.47%               | 15.4                           | 1.42%    |
| DC.B33.LBD18-INV | 3                   | 3           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 548                       | 1151                              | 1082.9         | 15.0                               | 1.39%               | 14.5                           | 1.34%    |
| DC.B33.LBD19-INV | 3                   | 3           | 538.5 W                 | 18                 | 233.5   | 249.3   | 291.6               | 400               | 600 KCMIL            | 556                       | 1168                              | 1082.9         | 15.2                               | 1.40%               | 14.6                           | 1.35%    |
| DC.B33.LBD20-INV | 3                   | 3           | 538.5 W                 | 14                 | 181.6   | 193.9   | 226.8               | 400               | 600 KCMIL            | 687                       | 1442                              | 1082.9         | 14.7                               | 1.36%               | 14.2                           | 1.31%    |
| DC.B33.LBD21-INV | 1                   | 4           | 538.5 W                 | 8                  | 103.8   | 110.8   | 129.6               | 400               | 600 KCMIL            | 1355                      | 2845                              | 1082.9         | 15.2                               | 1.40%               | 14.9                           | 1.38%    |
| DC.B33.LBD22-INV | 1                   | 4           | 538.5 W                 | 8                  | 103.8   | 110.8   | 129.6               | 400               | 600 KCMIL            | 1363                      | 2862                              | 1082.9         | 15.2                               | 1.41%               | 15.0                           | 1.38%    |
| DC.B33.LBD23-INV | 1                   | 4           | 538.5 W                 | 8                  | 103.8   | 110.8   | 129.6               | 400               | 600 KCMIL            | 1448                      | 3042                              | 1082.9         | 15.9                               | 1.47%               | 15.6                           | 1.44%    |
| DC.B33.LBD24-INV | 1                   | 4           | 538.5 W                 | 8                  | 103.8   | 110.8   | 129.6               | 400               | 600 KCMIL            | 1538                      | 3220                              | 1082.9         | 16.5                               | 1.53%               | 16.3                           | 1.50%    |
| ---              |                     |             |                         |                    |         |         |                     |                   |                      |                           |                                   |                |                                    |                     |                                |          |
| ---              |                     |             |                         |                    |         |         |                     |                   |                      |                           |                                   |                |                                    |                     |                                |          |
|                  |                     |             | TOTAL                   | 349                |         |         |                     |                   |                      | TOTAL                     | 44,031                            |                | MAXIMUM                            | 1.97%               | AVERAGE                        | 1.47%    |

KEY PLAN



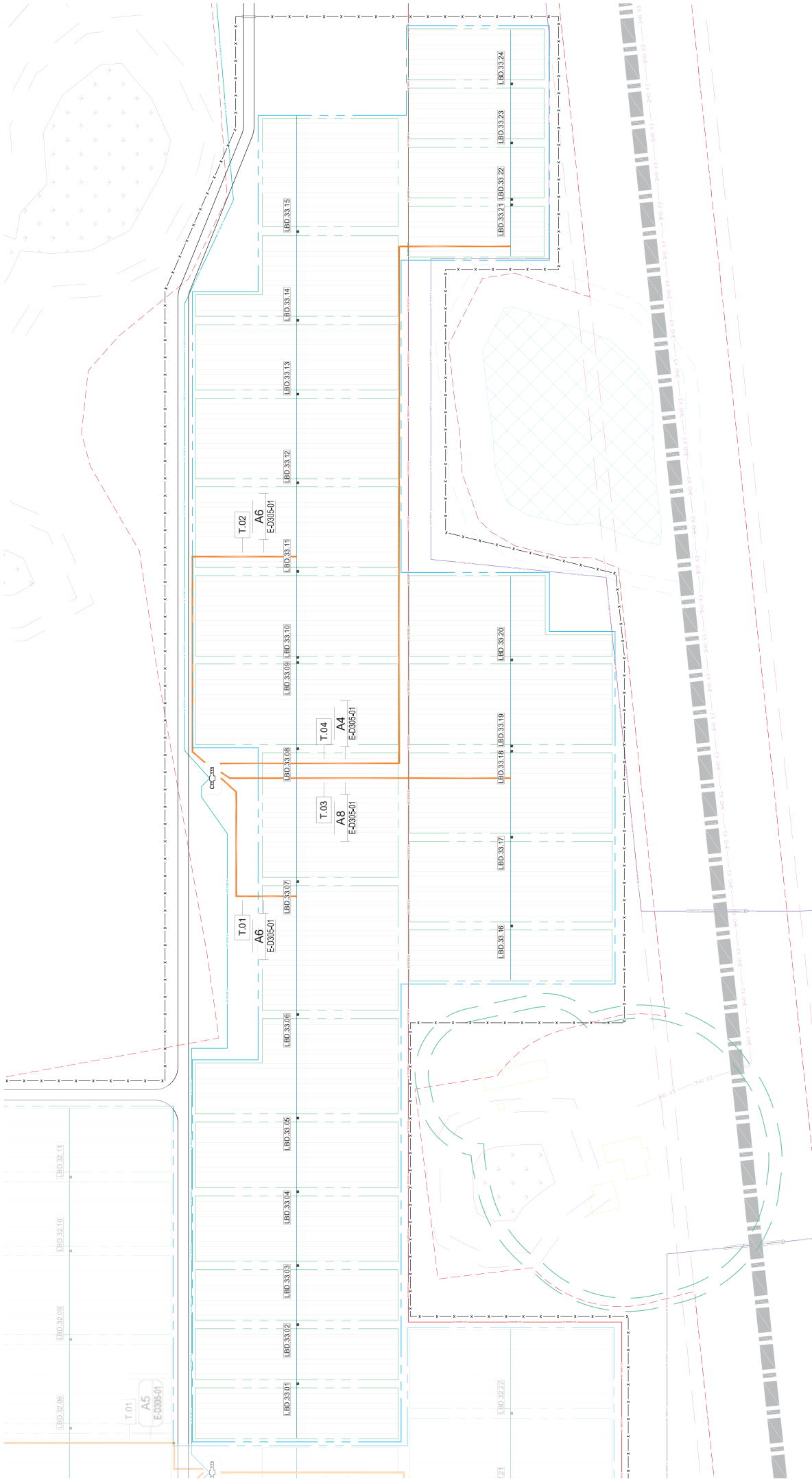
KEY PLAN

| BLOCK INFORMATION          |          |
|----------------------------|----------|
| BLOCK NUMBER               | 33       |
| NO. OF STRINGS             | 349      |
| MODULE QUANTITY            | 9,074    |
| ARRAY BLOCK STC DC POWER   | 4,886 kW |
| POI DC:AC RATIO            | 1.30     |
| NO. LOAD BREAK DISCONNECTS | 24       |
| LN FT OF DC TRENCH         | 2,431    |
| LN FT OF CAB MSG WIRE      | 3,006    |



## NOTES

1. REFER TO H2SP-E-D300-02 FOR EXPLANATION OF CABLE AND FUSE SIZING.
2. ALL DC CABLE TO BE 2KV PV WIRE.
3. ALL DC CABLES MUST INCLUDE POSITIVE AND NEGATIVE CABLES. LENGTHS INCLUDE EXTRA 50' FOR HORIZONTAL AND VERTICAL ADDER, PLUS A 5% ORDERING BUFFER.
4. MAX AND AVG VOLTAGE DROP \* - WSTRING\* INCLUDES THE COMBINED VOLTAGE DROP OF THE HARNESS, BJA, AND HOMERUNS. REFER TO ENERGY LOSS STUDY FOR DETAILED CALCULATIONS.
5. MODULE POWER IS BASED OFF OF MODULE BIN CLASS OF 569W. PHYSICAL BLOCK DESIGN ASSUMES A MODULE WATTAGE OF 538.5 W.





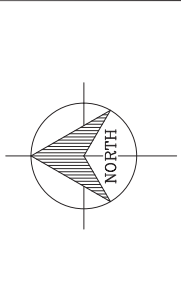
RRC POWER & ENERGY, LLC  
7591 SW MOHAWK ST,  
TUALATIN, OR 97062  
PHONE: (503) 342-4064  
www.RRCcompanies.com

**CONFIDENTIAL**

THIS DRAWING IS THE PROPERTY OF RRC POWER & ENERGY, LLC, AND INVENERGY, LLC. NO REPRODUCTION MAY BE MADE IN WHOLE OR IN PART WITHOUT WRITTEN CONSENT.

PREPARED FOR:





F.F.ELIMINAF.Y  
N T F F. N:TFU TI N

| REV | DATE       | ISSUE DESCRIPTION       |
|-----|------------|-------------------------|
| B   | 04/29/2021 | ISSUED FOR REVIEW - 60% |
| A   | 03/05/2021 | ISSUED FOR REVIEW - 30% |

APPROVED BY: S. MOSER  
CHECKED BY: T. A. CARROLL  
DESIGNED BY: D. OLDS  
DRAWN BY: D. OLDS

SCALE: 1" = 100'

0 1" 2"  
BARS MUST SCALE 2" FOR FULL SIZE  
OR 1" FOR HALF SIZE DRAWING

PROJECT NUMBER: EE2011066

DRAWING NAME:

HARDIN II

SOLAR PROJECT

LAYOUT AND CABLE  
SCHEDULE - PB33

DRAWING No.

H2SP-E-D301-33

REVISION

B

CADFILE: SCHEDULE - PB21-40





















**CONFIDENTIAL**  
THIS DRAWING IS THE PROPERTY  
OF RRC POWER & ENERGY, LLC, AND  
INVENENERGY, LLC. NO REPRODUCTION  
MAY BE MADE IN WHOLE OR IN PART  
WITHOUT WRITTEN CONSENT.

PREPARED FOR:



**PRELIMINARY**  
**NOT FOR CONSTRUCTION**

[illegible]

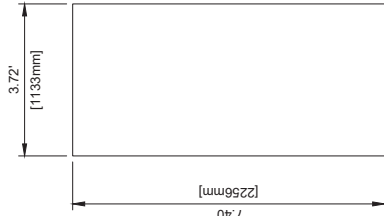
PROJECT NUMBER: EE2011066

DRAWING NAME:

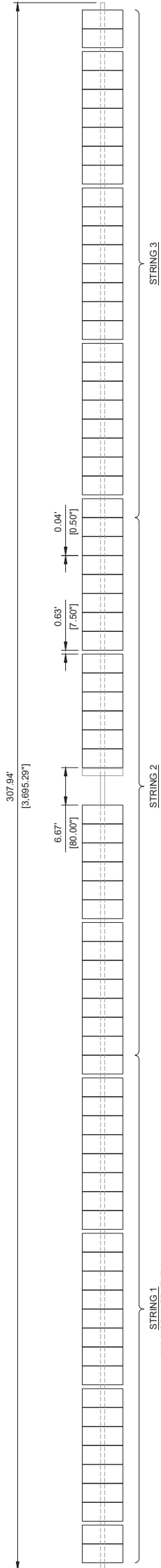
HARDIN II  
SOLAR PROJECT

## POLAR MODULE AND TRACKER TABLE LAYOUT

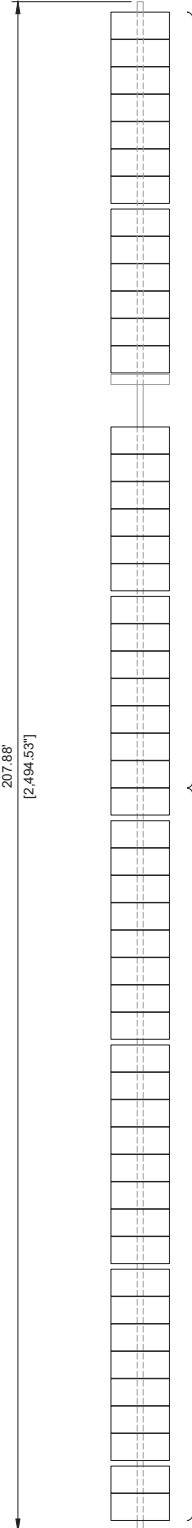
|                                                     |          |
|-----------------------------------------------------|----------|
| DRAWING No.                                         | REVISION |
| H2SP-E-D302-01                                      | C        |
| H2SP-ED302-01 SOLAR MODULE AND TRACKER TABLE LAYOUT |          |



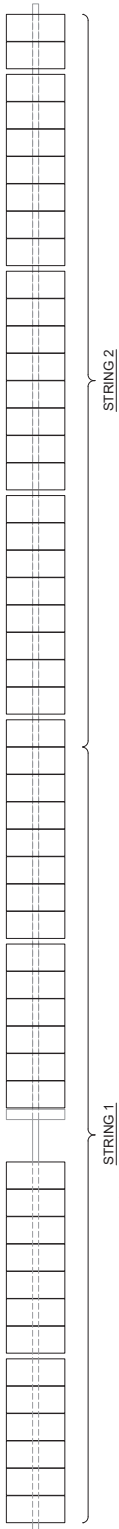
A 72-CELL SOLAR MODULE DETAIL - 540-565W  
SCALE: N.T.S



B1 LR5 TRACKER ROW DETAIL - 78 MODULES  
SCALE: N.T.S.



B2 LR5 TRACKER ROW DETAIL - 52 MODULES - ALIGNED NORTH  
SCALE: N.T.S.



B3
•

LR5 TRACKER ROW DETAIL - 52 MODULES - ALIGNED SOUTH

SCALE: N.T.S







**CONFIDENTIAL**

THIS DRAWING IS THE PROPERTY  
OF RRC POWER & ENERGY, LLC, AND  
INVENERGY, LLC. NO REPRODUCTION  
MAY BE MADE IN WHOLE OR IN PART  
WITHOUT WRITTEN CONSENT.

PREPARED FOR:

Invenery



**PRELIMINARY**  
**NOT FOR CONSTRUCTION**

| REV | DATE       | ISSUE DESCRIPTION       |
|-----|------------|-------------------------|
| A   | 04/29/2021 | ISSUED FOR REVIEW - 60% |

E: N.T.S.

0 1" 2"

BAR MUST SCALE 2" FOR FULL SIZE OR 1" FOR HALF SIZE DRAWING

PROJECT NUMBER: EE2011066

DRAWING NAME:

HARDIN II

# SOLAR PROJECT

## STRING HARNESS WIRING

DRAWING No.

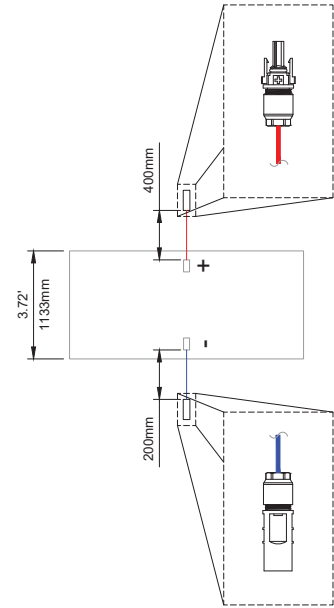
H2SP-E-D303-02

CADFILE: H2SP-E-D303-02 STRING HARNESS WIRING

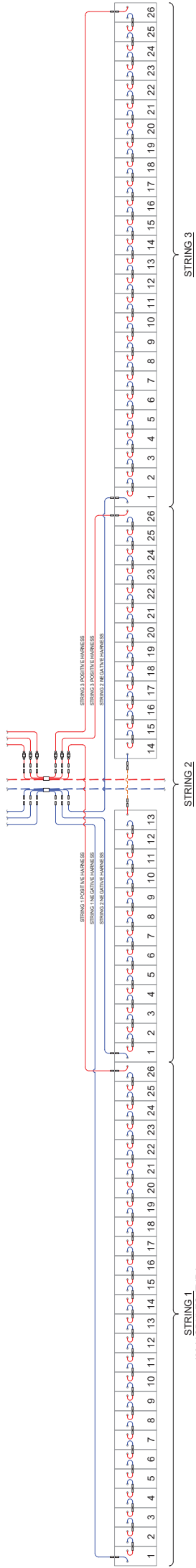
## NOTES

1. DETAIL ON THIS DRAWING SHOWS "TOP VIEW AND ORIENTATION OF MODULE JUNCTION BOXES IS AS IF VIEW IS LOOKING THROUGH MODULE. REPRESENTATION IS NOT AS IF LOOKING UP FROM BELOW.
2. DRAWING IS INTENDED TO REPRESENT STRING AND HARNESS CONFIGURATION AND DOES NOT PROVIDE DIRECTION ON WIRE MANAGEMENT. SEE SHEET E-D300-03 FOR WIRE MANAGEMENT DETAILS.
3. CONTRACTOR TO VERIFY CONNECTOR TYPE.

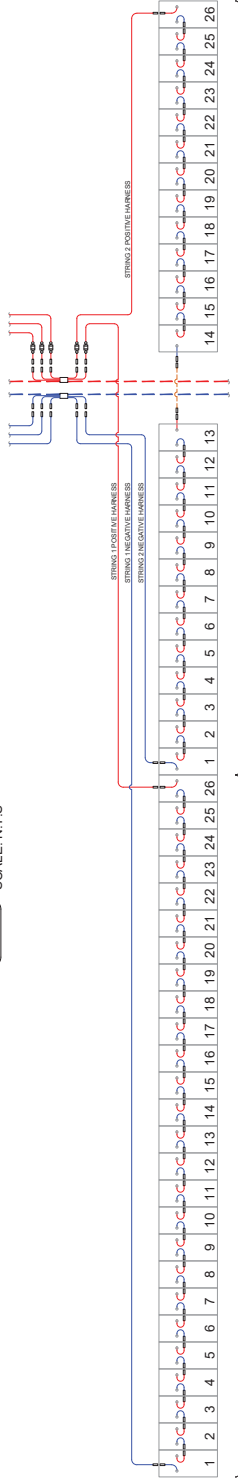
## LEGEND



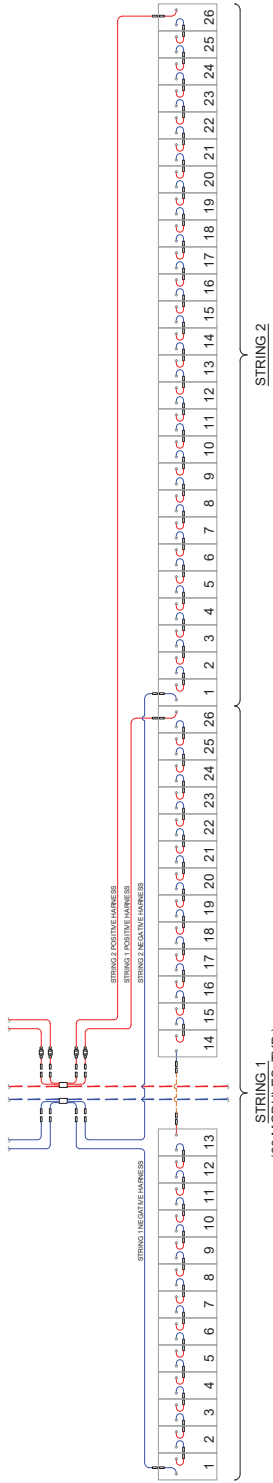
|   |                                        |
|---|----------------------------------------|
| A | MODULE JBOX ARRANGEMENT AND CONNECTORS |
| . | SCALE: N.T.S                           |



|    |                                                          |
|----|----------------------------------------------------------|
| B1 | SINGLE STRING HARNESSES / 3-STRING TRACKER CONFIGURATION |
| .  | SCALE: N.T.S                                             |



B2 TRACKER ROW DETAIL - 52 MODULES - ALIGNED NORTH  
SCALE: N.T.S

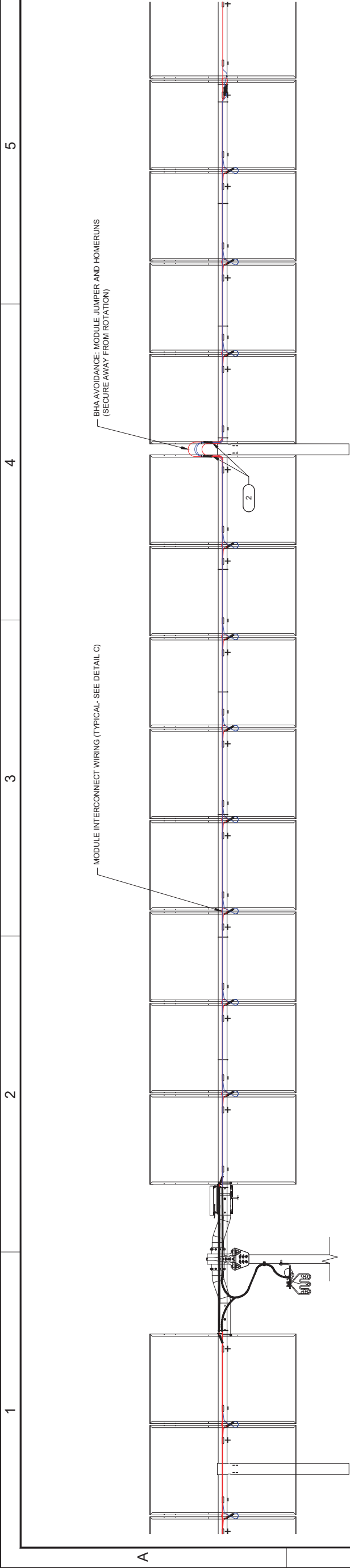


B3

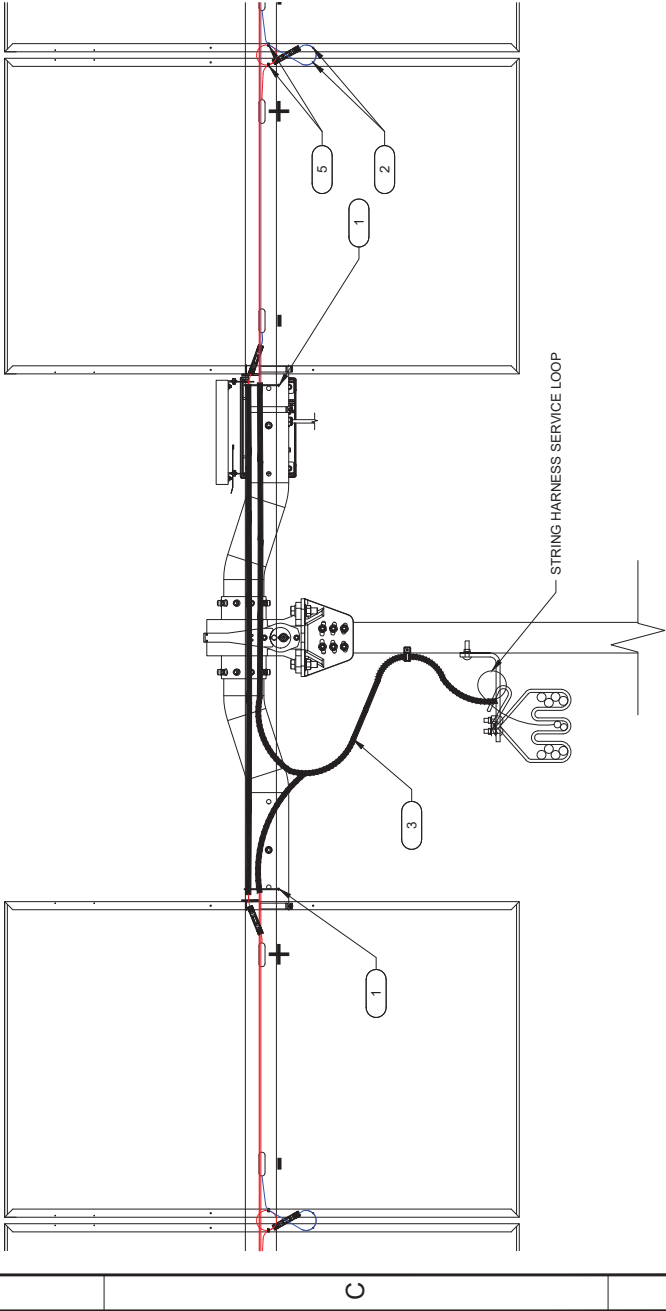
TRACKER ROW DETAIL - 52 MODULES - ALIGNED SOUTH

SCALE: N.T.S





A STRING WIRING AND HARNESS INSTALLATION DETAIL  
SCALE: N.T.S.



B MID-TRACKER HARNESS DROP-IN DETAIL  
SCALE: N.T.S.

| ITEM | QTY                  | MANUFACTURER    | CATALOG NUMBER | DESCRIPTION               |
|------|----------------------|-----------------|----------------|---------------------------|
| 1    | EVERY 4-1/2 FEET     | HELLERMAN TYTON | CT             | 18" SOLAR TIES            |
| 2    | 1 PER MOD & 2 PER HR | HELLERMAN TYTON | 157-00268      | OVAL FIR TREE CABLE TIE   |
| 3    | 14 EA                | BY CONTRACTOR   | TBD            | 1'-1/4" SPLTL LOOM        |
| 4    | -                    | -               | -              | NOT USED                  |
| 5    | 1 PER MODULE         | HELLERMAN TYTON | 151-02189      | 90 DEGREE METAL EDGE CLIP |

NOTES

- ADHERE TO MANUFACTURER'S BENDING RADIUS REQUIREMENT AND 2017 NEC SECTION 300.34 CONDUCTOR BEND RADIUS.
- WIRE MANAGEMENT MATERIALS AND QUANTITIES ARE RECOMMENDED AND MAY CHANGE DURING CONSTRUCTION.
- ALL WORK SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER PER THE ANSI APPROVED NECA 1-2010 OR LATEST VERSION.
- ALL CABLE MANAGEMENT PARTS AND PIECES SHALL BE UV STABILIZED.
- ALL CABLE TIES UL LISTED, UV RESISTANT WITH PROVEN DESIGN LIFE THAT MEETS THE REQUIREMENT OF THE PROJECT.
- CABLE MANAGEMENT FOR BIFACIAL MODULES SHALL MINIMIZE SHADING FROM THE WIRES AND SHALL GET APPROVAL FROM ALL OWNER, INVESTOR AND EOR.
- CABLES SHALL BE SUPPORTED WITHIN 12 INCHES OF THE MODULE BACKSIDE JUNCTION BOX AS PER NEC CODE.
- TENSION ON THE CABLES SHALL NOT EXCEED THE MAXIMUM TENSION OF THE JUNCTION BOX OR CONNECTOR.
- CABLE SHALL BE MANAGED IN A WAY TO AVOID THE DAMAGE TO THE CABLE INSULATION CONSIDERING THE FULL TRACKER MOTION OR WIND MOVEMENT.
- CABLE LOOPS SHALL BE INCLUDED FOR ALL TRACKER MOVEMENT TO THE FULL EXTENSION. CABLE PROTECTION SHALL BE INCLUDED AS REQUIRED TO AVOID INSULATION DAMAGE.
- CONTRACTOR SHALL IMPLEMENT ALL DC WIRE MANAGEMENT DETAILS AT ONE END OR CORNER GROUP TO BE KNOWN AS THE "GOLDEN GROUP", WHICH WILL BE UTILIZED AS THE STANDARD FOR ALL CABLE MANAGEMENT ACROSS THE SITE. AFTER INSTALLATION OF THE GOLDEN GROUP THE CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FROM THE EOR, OWNER AND ANY OTHER INSPECTING PARTIES PRIOR TO INSTALLING THE DC CABLE MANAGEMENT THROUGHOUT THE PROJECT SITE.
- ALL DRAWINGS REPRESENTING CABLE MANAGEMENT FROM STRINGING WIRE ARE FOR REFERENCE AS A MINIMUM AND THE FINAL "GOLDEN GROUP", AFTER APPROVAL FROM ALL PARTIES, SHALL BE THE FINAL APPROVED DESIGN.
- ALL CABLE MANAGEMENT PARTS AND TIES SHALL BE SUBMITTED FOR APPROVAL FROM OWNER, INVESTOR AND EOR.



RRC POWER & ENERGY, LLC  
7591 SW MOHAWK ST,  
TUALATIN, OR 97062  
PHONE: (503) 342-4064  
www.RRCcompanies.com

**CONFIDENTIAL**

THIS DRAWING IS THE PROPERTY OF RRC POWER & ENERGY, LLC, AND INVENERGY, LLC. NO REPRODUCTION MAY BE MADE IN WHOLE OR IN PART WITHOUT WRITTEN CONSENT.

PREPARED FOR:



PRELIMINARY  
NOT FOR CONSTRUCTION

| REV | DATE       | ISSUE DESCRIPTION         |
|-----|------------|---------------------------|
| A   | 04/29/2021 | ISSUED FOR REVIEW - 60%   |
|     |            | APPROVED BY: S. MOSER     |
|     |            | CHECKED BY: T. A. CARROLL |
|     |            | DESIGNED BY: D. OLDS      |
|     |            | DRAWN BY: D. OLDS         |

SCALE: N.T.S.



BAR MUST SCALE 2" FOR FULL SIZE OR 1" FOR HALF SIZE DRAWING

PROJECT NUMBER: EE2011066

DRAWING NAME:  
HARDIN II  
SOLAR PROJECT

SOLAR MODULE AND  
STRINGING  
INSTALLATION DETAILS

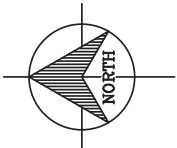
|                                                                |          |
|----------------------------------------------------------------|----------|
| DRAWING No.                                                    | REVISION |
| H2SP-E-D303-03                                                 | A        |
| H2SP-E-D303-03 SOLAR MODULE AND STRINGING INSTALLATION DETAILS |          |



**CONFIDENTIAL**

THIS DRAWING IS THE PROPERTY  
OF RRC POWER & ENERGY, LLC, AND  
INVENENERGY, LLC. NO REPRODUCTION  
MAY BE MADE IN WHOLE OR IN PART  
WITHOUT WRITTEN CONSENT.

PREPARED FOR:

FF,ELIMINAF,Y  
N T F F : N T F F T I N[illegible]

PROJECT NUMBER: EE2011066

DRAWING NAME:

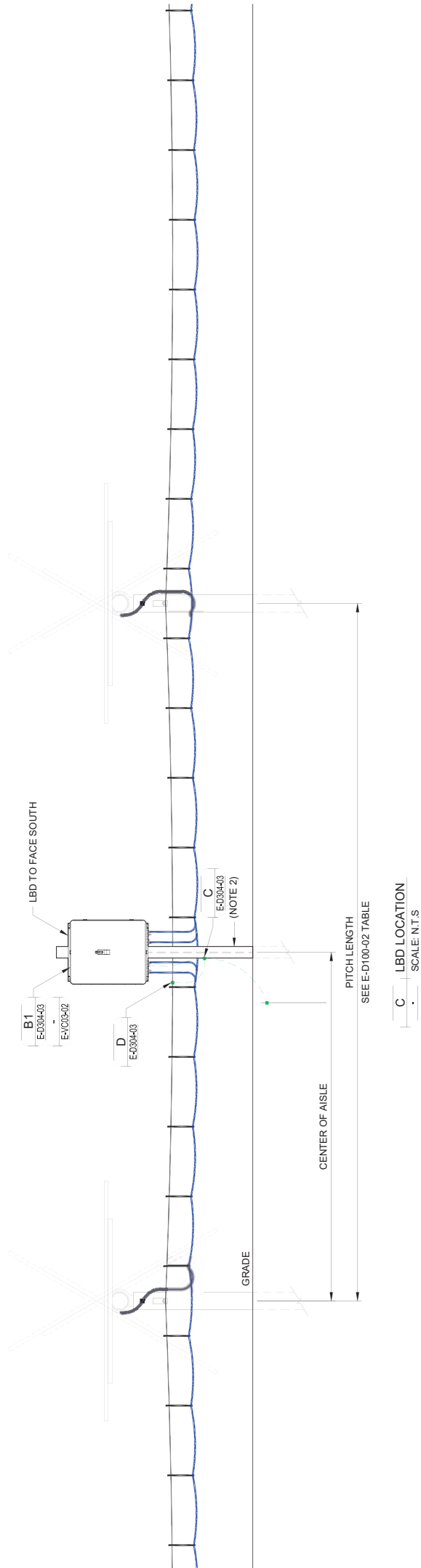
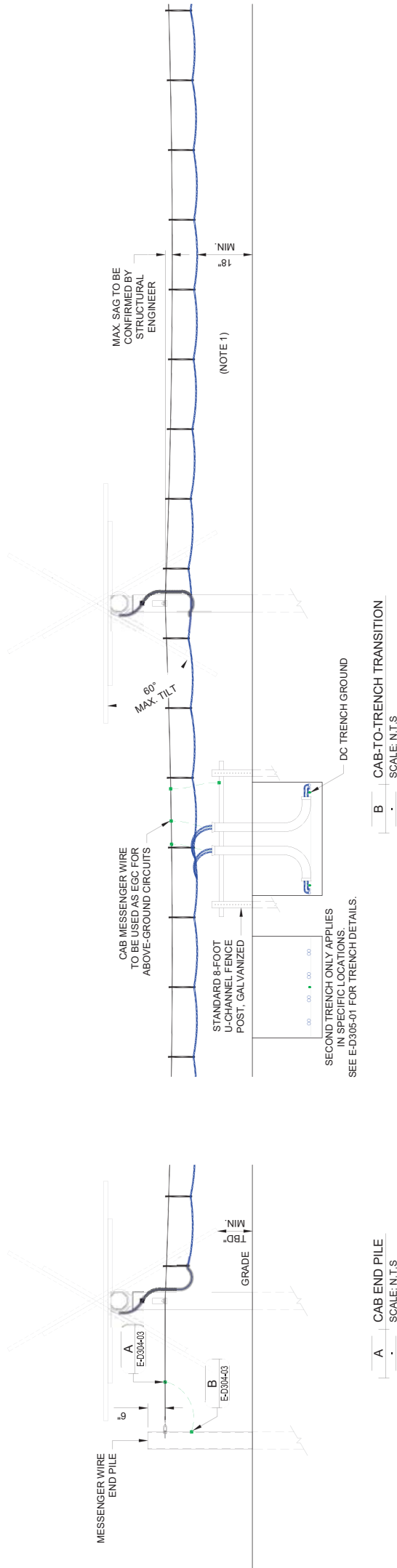
## HARDIN II SOLAR PROJECT

CAB-BLA-LBD  
ELEVATIONS & DETAILS

|                                                             |          |
|-------------------------------------------------------------|----------|
| DRAWING No.                                                 | REVISION |
| 12SP-E-D304-02                                              | B        |
| H2SP-E-D304-02 CAB-BLA-LBD ELEVATIONS<br>CADFILE: & DETAILS |          |

## NOTES

1. DETAILS ARE NOT TO SCALE FOR PROJECT SPECIFIC EQUIPMENT. KEY DIMENSIONS ARE TO BE SHOWN TO REPRESENT MINIMUM AND MAXIMUM CLEARANCES BETWEEN EQUIPMENT. HOWEVER, THE RELATIONSHIP OF COMPONENTS VIEWED IN THE FIELD MADE VARY FROM HOW VISUALLY REPRESENTED THIS DRAWING.
2. GROUND ROD TO BE INSTALLED AT EACH LBD PILE. OWNER TO CONFIRMING GROUND ROD MAY BE REMOVED AND LBD PILE MAY SERVE AS GROUNDING ELECTRODE.
3. CUT ENDS OF METAL; E.G. UNISTRUT MUST BE PAINTED WITH ZINC-RICH PAINT.
4. SEAL ALL CONDUIT WITH APPROVED FOAM DUCT SEALANT SUCH AS POLYWATER.
5. THE CABLE MANAGEMENT SHALL BE HIGH IMPACT RESISTANT, HEAT STABILIZED, AND UV STABILIZED.
6. ALTERNATE CABLE MANAGEMENT METHODS MAY BE USED WITH THE FOLLOWING CONDITIONS:
  - a. 1. CABLES ARE PROTECTED AGAINST SHARP EDGES THAT COULD DAMAGE INSULATION. PROVIDE PROTECTION AS REQUIRED.
  2. WIRES SHALL BE INSTALLED AND MANAGED PER THE NEC ARTICLE 110.12.
  3. APPLY ILSCO DE-OX-Z SERIES OR APPROVED EQUIVALENT TO CONDUCTOR.
  4. WIRE BRUSH GALVANIZATION TO PROPERLY BOND UNISTRUT.
  5. ALL MATERIAL QUANTITIES SHALL BE VERIFIED BY CONTRACTOR.
  6. ADHERE TO MANUFACTURER'S BENDING RADIUS REQUIREMENT AND 2014 NEC SECTION 300.34 CONDUCTOR BEND RADIUS.
  7. DIMENSION MAY VARY WHERE PILE IS LOCATED WITH AN LBD AND ALONGSIDE A NORTH-SOUTH ROAD. REFER TO PILE LOT PLAN FOR FINAL LOCATIONS.





















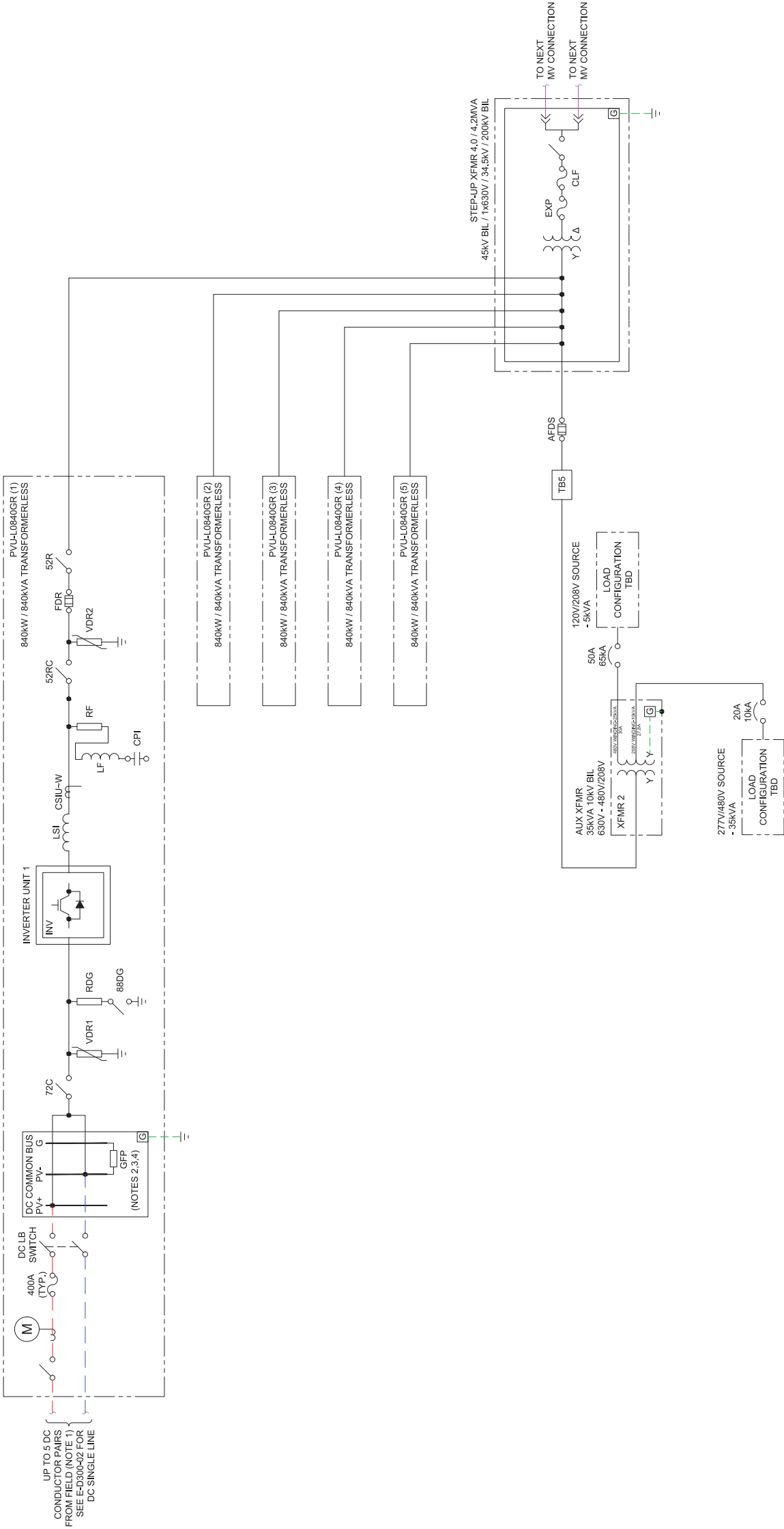






NOTES

- 1. FIELD CONDUCTORS SHOWN REPRESENT A SINGLE DC CIRCUIT. UP TO (8) DC CIRCUITS MAY ENTER A SINGLE DC RECOMBINER.
- 2. BUSBAR IN DC RECOMBINER SHALL BE BONDED TO SKID GROUND RING.
- 3. THE DC NEGATIVE CONDUCTORS ARE FUNCTIONALLY GROUND AT THE INVERTER IN COMPLIANCE WITH NEC 690.41(A)(1).
- 4. THE INVERTERS INCLUDE GROUND FAULT DETECTION INTERRUPTION THAT MEETS THE REQUIREMENTS OF NEC 690.41(B)(1) & (2).
- 5. MV GROUND TERMINATES AT THE MV BUS BAR IN TRANSFORMER CABINET, REFER TO E-D401-03 AND E-D401-04 FOR CONNECTION DETAILS.



RRC POWER & ENERGY, LLC  
7591 SW MOHAWK ST,  
TUALATIN, OR 97062  
PHONE: (503) 342-4064  
www.RRCcompanies.com

CONFIDENTIAL

THIS DRAWING IS THE PROPERTY  
OF RRC POWER & ENERGY, LLC, AND  
INVENERGY, LLC. NO REPRODUCTION  
MAY BE MADE IN WHOLE OR IN PART  
WITHOUT WRITTEN CONSENT.

PREPARED FOR:



PRELIMINARY  
NOT FOR CONSTRUCTION

| REV | DATE       | ISSUED FOR REVIEW - 60%   | ISSUE DESCRIPTION     |
|-----|------------|---------------------------|-----------------------|
| A   | 04/29/2021 | ISSUED FOR REVIEW - 60%   | APPROVED BY: S. MOSER |
|     |            | CHECKED BY: T. A. CARROLL | DESIGNED BY: D. OLDS  |
|     |            | DRAWN BY: D. OLDS         |                       |

SCALE N.T.S.



BAR MUST SCALE 2" FOR FULL SIZE  
OR 1" FOR HALF SIZE DRAWING

PROJECT NUMBER: EE2011066

DRAWING NAME:

HARDIN II

SOLAR PROJECT

INVERTER - XFMR SKID  
SINGLE LINE CONN.  
DETAIL

| DRAWING No.    | REVISION |
|----------------|----------|
| H2SP-E-D401-01 | A        |

CAD FILE: H2SP-E-D401-00 INVERTER SKID DETAILS

NOTES

- 1. AUX RACK WILL ALWAYS FACE TOWARD ACCESS ROAD.
- 2. PILE LOCATIONS PENDING FINALIZATION OF STRUCTURAL DESIGN.
- 3. MAXIMUM SKID HEIGHT MAY VARY PENDING STRUCTURAL DESIGN AND/OR SITE-SPECIFIC HIGH WATER LEVEL.
- 4. SKID SHOULD BE BONDED TO GROUND RING ON OPPOSITE SIDES USING EQUIPMENT GROUNDING PAD ON SKID FRAME. SEE SHEET E-D401-05 FOR FURTHER DETAILS.

A



RRC POWER & ENERGY, LLC

7591 SW MOHAWK ST,

TUALATIN, OR 97062

PHONE: (503) 342-4064

www.RRCcompanies.com

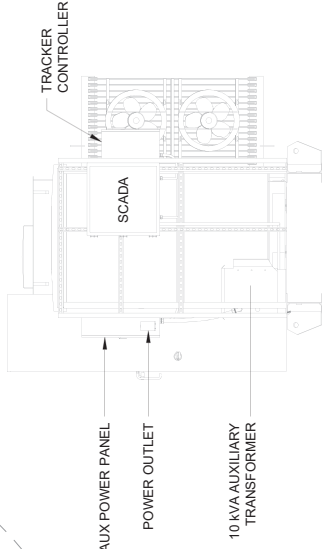
CONFIDENTIAL

THIS DRAWING IS THE PROPERTY OF RRC POWER & ENERGY, LLC, AND INVENERGY, LLC. NO REPRODUCTION MAY BE MADE IN WHOLE OR IN PART WITHOUT WRITTEN CONSENT.

PREPARED FOR:

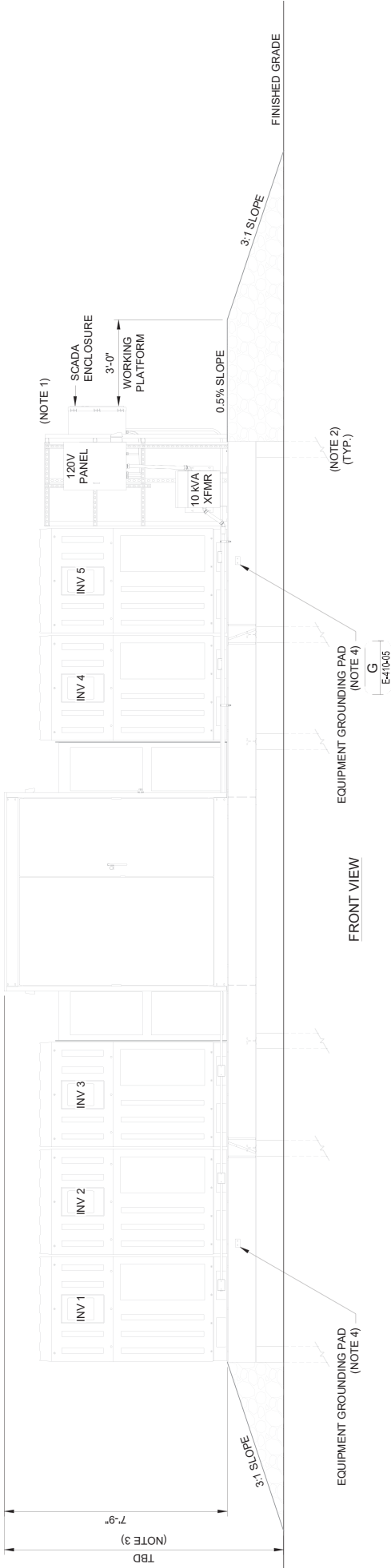


B



A-A COMM. EQUIPMENT WALL  
SCALE: N.T.S.

C



FRONT VIEW

D

PROJECT NUMBER: EE2011066  
DRAWING NAME:  
HARDIN II  
SOLAR PROJECT

INVERTER SKID LAYOUT

|                |          |
|----------------|----------|
| DRAWING No.    | REVISION |
| H2SP-E-D401-02 | A        |

CADFILE: H2SP-E-D401-00 INVERTER SKID DETAILS

| 1    |          | 2                       |                | 3                                                                                               |  | 4 |  | 5 |  |
|------|----------|-------------------------|----------------|-------------------------------------------------------------------------------------------------|--|---|--|---|--|
| ITEM | QTY      | MANUFACTURER            | CATALOG NUMBER | DESCRIPTION                                                                                     |  |   |  |   |  |
| 1    | AS REQ'D | BY CONTRACTOR           | -              | 1", CONDUIT, SCHEDULE 40, PVC, 10'                                                              |  |   |  |   |  |
| 2    | AS REQ'D | BY CONTRACTOR           | -              | 1", BELL END, SCHEDULE 40, PVC, CONDUIT FITTING                                                 |  |   |  |   |  |
| 3    | AS REQ'D | BY CONTRACTOR           | -              | 1", 90° ELBOW, SCHEDULE 40, PVC, CONDUIT FITTING, 24" RADIUS                                    |  |   |  |   |  |
| 4    | AS REQ'D | BY CONTRACTOR           | -              | 1", TERMINAL ADAPTER, SCHEDULE 40, PVC, CONDUIT FITTING                                         |  |   |  |   |  |
| 5    | AS REQ'D | BY CONTRACTOR           | -              | 1", INSULATING BUSHING, SCHEDULE 40, PVC, CONDUIT FITTING                                       |  |   |  |   |  |
| 6    | AS REQ'D | BY CONTRACTOR           | -              | 1", LOCK NUT, FOR TERMINAL ADAPTER, CONDUIT FITTING                                             |  |   |  |   |  |
| 7    | AS REQ'D | BY CONTRACTOR           | -              | 2", CONDUIT, SCHEDULE 40, PVC 10'                                                               |  |   |  |   |  |
| 8    | AS REQ'D | BY CONTRACTOR           | -              | 2", BELL END, SCHEDULE 40, PVC, CONDUIT FITTING                                                 |  |   |  |   |  |
| 9    | AS REQ'D | BY CONTRACTOR           | -              | 2", 90° ELBOW, SCHEDULE 40, PVC, CONDUIT FITTING, 24" RADIUS                                    |  |   |  |   |  |
| 10   | AS REQ'D | BY CONTRACTOR           | -              | 2", TERMINAL ADAPTER, SCHEDULE 40, PVC, CONDUIT FITTING                                         |  |   |  |   |  |
| 11   | AS REQ'D | BY CONTRACTOR           | -              | 2", INSULATING BUSHING, SCHEDULE 40, PVC, CONDUIT FITTING                                       |  |   |  |   |  |
| 12   | AS REQ'D | BY CONTRACTOR           | -              | 2", LOCK NUT, FOR TERMINAL ADAPTER, CONDUIT FITTING                                             |  |   |  |   |  |
| 13   | AS REQ'D | BY CONTRACTOR           | -              | 3", CONDUIT, SCHEDULE 40, PVC, 10'                                                              |  |   |  |   |  |
| 14   | AS REQ'D | BY CONTRACTOR           | -              | 3", BELL END, SCHEDULE 40, PVC, CONDUIT FITTING                                                 |  |   |  |   |  |
| 15   | AS REQ'D | BY CONTRACTOR           | -              | 3", 90° ELBOW, SCHEDULE 40, PVC, CONDUIT FITTING, 36" RADIUS                                    |  |   |  |   |  |
| 16   | AS REQ'D | HEYCO                   | M4524          | HEYCO-TITE LIQUIT TIGHT CORDGRIP OR EQUIVALENT                                                  |  |   |  |   |  |
| 17   | AS REQ'D | BY CONTRACTOR           | -              | RODENT-RESISTANT BRAIDED SLEEVING                                                               |  |   |  |   |  |
| 18   | AS REQ'D | BY CONTRACTOR           | -              | 6", CONDUIT, SCHEDULE 40, PVC, 10'                                                              |  |   |  |   |  |
| 19   | AS REQ'D | BY CONTRACTOR           | -              | 6", BELL END, SCHEDULE 40, PVC, CONDUIT FITTING                                                 |  |   |  |   |  |
| 20   | AS REQ'D | BY CONTRACTOR           | -              | 6", 90° ELBOW, SCHEDULE 40, PVC, CONDUIT FITTING, 48" RADIUS                                    |  |   |  |   |  |
| 21   | AS REQ'D | BY CONTRACTOR           | -              | 8", CONDUIT, SCHEDULE 40, PVC, 10'                                                              |  |   |  |   |  |
| 22   | AS REQ'D | BY CONTRACTOR           | -              | 8", BELL END, SCHEDULE 40, PVC, CONDUIT FITTING                                                 |  |   |  |   |  |
| 23   | AS REQ'D | BY CONTRACTOR           | -              | 8", 90° ELBOW, SCHEDULE 80, PVC, CONDUIT FITTING, 36" BEND RADIUS, 48" RADIUS                   |  |   |  |   |  |
| 24   | 6 EA     | BURNDY                  | YGH2C29C29     | CONNECTOR, COMPRESSION, RUN: 3/0 AWG TO 250 KCMIL (1/2" or 5/8" ROD), TAP: 3/0 AWG TO 250 KCMIL |  |   |  |   |  |
| 25   | 4 EA     | BURNDY                  | YGLR29C34      | CONNECTOR, COMPRESSION, RUN: GROUND ROD (3/4"), TAP: #2 AWG TO 250 KCMIL                        |  |   |  |   |  |
| 26   | 4 EA     | BURNDY                  | YGH2C29C26     | CONNECTOR, COMPRESSION, RUN: 3/0 AWG TO 250 KCMIL (1/2" or 5/8" ROD), TAP: #6 AWG TO #2/0 AWG   |  |   |  |   |  |
| 27   | 25 EA    | BURNDY                  | YGH2C22        | CONNECTOR, COMPRESSION, RUN: #6 AWG TO #2 AWG (1/4" ROD), TAP: #6 AWG TO #2 AWG                 |  |   |  |   |  |
| 28   | 25 EA    | BURNDY                  | YA2CA3         | #2 AWG, COMPRESSION TERMINAL, 1 HOLE, 3/8" STUD, ALUMINUM / COPPER CONDUCTORS                   |  |   |  |   |  |
| 29   | 1 EA     | BURNDY                  | YA2BL4         | 4/0 AWG, COMPRESSION TERMINAL, 1 HOLE, 3/8" STUD, COPPER CONDUCTOR                              |  |   |  |   |  |
| 30   | 2 EA     | BURNDY                  | YA2BA5         | 4/0 AWG, COMPRESSION TERMINAL, 2 HOLE, 1/2" STUD, ALUMINUM / COPPER CONDUCTORS                  |  |   |  |   |  |
| 31   | 4 EA     | ERICO                   | 613400         | ROD, GROUND, 3/4" x 10', COPPER - BONDED, POINTED                                               |  |   |  |   |  |
| 32   | AS REQ'D | BY CONTRACTOR           | -              | #2 AWG, CONDUCTOR, GROUND, COPPER                                                               |  |   |  |   |  |
| 33   | AS REQ'D | BY CONTRACTOR           | -              | 7-#7 AWG, CONDUCTOR, GROUND, COPPER CLAD, 40% CONDUCTIVITY                                      |  |   |  |   |  |
| 34   | AS REQ'D | BY CONTRACTOR           | -              | 4/0 AWG, CONDUCTOR, GROUND, COPPER                                                              |  |   |  |   |  |
| 35   | 1 EA     | OLDCASTLE PRECAST, INC. | G03BOX         | 10" DIA. 12" DEPTH, GROUNDWELL, GROUND, TRAFFIC VALVE BOX                                       |  |   |  |   |  |
| 36   | 1 EA     | OLDCASTLE PRECAST, INC. | G03CLD         | 8-7/8" DIA., GROUNDWELL, GROUND, CAST IRON LID                                                  |  |   |  |   |  |

NOTES

1.

MV FEEDER MAY ENTER ON EITHER SIDE OF THE SKID DEPENDING ON BLOCK CONFIGURATION AND CABLE ROUTE.

2.

CONDUIT QUANTITY AND ARRANGEMENT AT EACH SKID WILL DIFFER FROM QUANTITY AND ARRANGEMENT SHOWN. REFER TO DC BLOCK DESIGN TO PLAN CABLE ROUTING AND CONDUIT ARRANGEMENT FOR EACH POWER BLOCK.

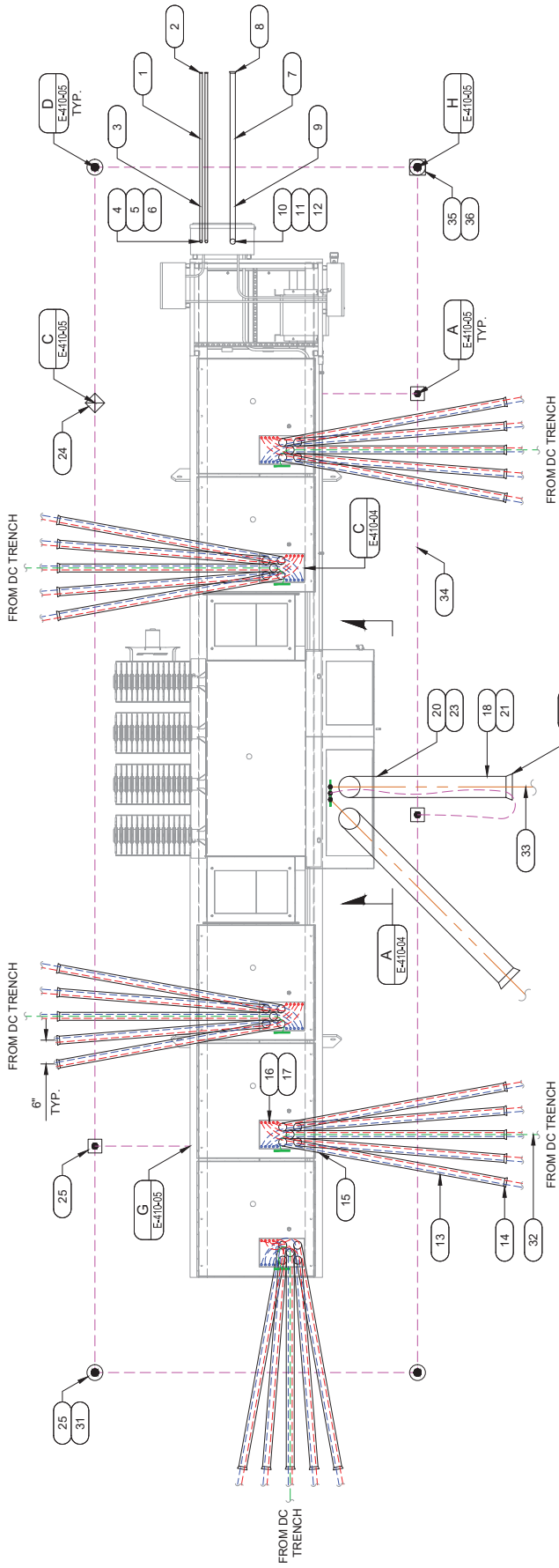
3.

DC CONDUIT GROUPS MAY ENTER ON THE SAME SIDE OF THE SKID, IF NECESSARY, AFTER MAINTAINING THE SAME SPACING. IF NECESSARY, CONDUIT GROUPS ARE ENTERING ON THE SAME SIDE, MAINTAIN A SPACING OF 1'-6" BETWEEN EACH GROUP OF 5 CONDUITS.

4.

DC CONDUIT TO EXTEND FROM INVERTER TO WHERE TRENCH ROUTES BETWEEN TRACKER ROWS. LENGTH OF CONDUIT WILL VARY BY BLOCK.

- NOTES
1. MV FEEDER MAY ENTER ON EITHER SIDE OF THE SKID DEPENDING ON BLOCK CONFIGURATION AND CABLE ROUTE.
  2. CONDUIT QUANTITY AND ARRANGEMENT AT EACH SKID WILL DIFFER FROM QUANTITY AND ARRANGEMENT SHOWN. REFER TO DC BLOCK DESIGN TO PLAN CABLE ROUTING AND CONDUIT ARRANGEMENT FOR EACH POWER BLOCK.
  3. DC CONDUIT GROUPS MAY ENTER ON THE SAME SIDE OF THE SKID, IF NECESSARY. RATHER THAN ALTERNATED ON EACH SIDE, AS SHOWN. IF CONDUIT GROUPS ARE ENTERING ON THE SAME SIDE, MAINTAIN A SPACING OF 1'-6" BETWEEN EACH GROUP OF 5 CONDUITS.
  4. DC CONDUIT TO EXTEND FROM INVERTER TO WHERE TRENCH ROUTES BETWEEN TRACKER ROWS. LENGTH OF CONDUIT WILL VARY BY BLOCK.





RRC POWER & ENERGY, LLC

7591 SW MOHAWK ST,

TUALATIN, OR 97062

PHONE: (503) 342-4064

www.RRCcompanies.com

CONFIDENTIAL

THIS DRAWING IS THE PROPERTY OF RRC POWER & ENERGY, LLC, AND INVENERY, LLC. NO REPRODUCTION MAY BE MADE IN WHOLE OR IN PART WITHOUT WRITTEN CONSENT.

PREPARED FOR:

Invenery

res

PRELIMINARY

NOT FOR CONSTRUCTION

|                                                                                    |            |                           |
|------------------------------------------------------------------------------------|------------|---------------------------|
| REV                                                                                | DATE       | ISSUED FOR REVIEW - 60%   |
| A                                                                                  | 04/29/2021 | ISSUE DESCRIPTION         |
|                                                                                    |            | APPROVED BY: S. MOSER     |
|                                                                                    |            | CHECKED BY: T. A. CARROLL |
|                                                                                    |            | DESIGNED BY: D. OLDS      |
|                                                                                    |            | DRAWN BY: D. OLDS         |
| SCALE: N.T.S.                                                                      |            |                           |
|  |            |                           |
| BARMUST SCALE 2" FOR FULL SIZE OR 1" FOR HALF SIZE DRAWING                         |            |                           |
| PROJECT NUMBER: EE2011066                                                          |            |                           |
| DRAWING NAME:                                                                      |            |                           |
| HARDIN II                                                                          |            |                           |
| SOLAR PROJECT                                                                      |            |                           |
| INVERTER SKID                                                                      |            |                           |
| CONDUIT & GROUNDING                                                                |            |                           |
| PLAN                                                                               |            |                           |
| DRAWING No.                                                                        | REVISION   |                           |
| H2SP-E-D401-03                                                                     | A          |                           |
| CADFILE: H2SP-E-D401-00 INVERTER SKID DETAILS                                      |            |                           |





**CONFIDENTIAL**  
THIS DRAWING IS THE PROPERTY  
OF RRC POWER & ENERGY, LLC, AND  
ENERGY, LLC. NO REPRODUCTION  
MAY BE MADE IN WHOLE OR IN PART  
WITHOUT WRITTEN CONSENT

PREPARED FOR:



**PRELIMINARY**  
**NOT FOR CONSTRUCTION**

|                           |                          |
|---------------------------|--------------------------|
| 04/29/2021                | ISSUED FOR REVIEW - 60%  |
| <b>DATE</b>               | <b>ISSUE DESCRIPTION</b> |
| APPROVED BY: S. MOSER     |                          |
| CHECKED BY: T. A. CARROLL |                          |
| SIGNED BY: D. OLDS        |                          |
| AWN BY: D. OLDS           |                          |



OBJECT NUMBER: EE2011066

DRAWING NAME:

HARDIN II  
SOLAR PROJECT

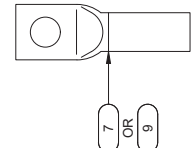
## TERMINATION DETAILS

|                            |               |
|----------------------------|---------------|
| DRAWING No.<br>P-E-D401-05 | REVISION<br>A |
|----------------------------|---------------|

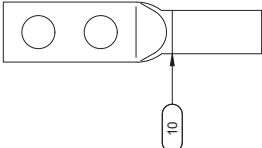
PROFILE: H2SP-E-D401-00 INVERTER SKID DETAILS

OTES

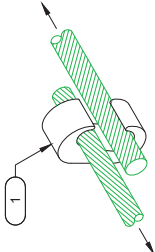
- REFER TO GROUNDING HARDWARE DATASHEETS TO CONFIRM COMPATIBLE CRIMPING TOOLS.



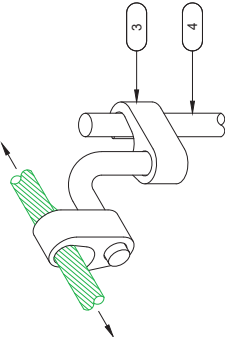
E ONE-HOLE LUG TERMINATION  
SCALE: N.T.S



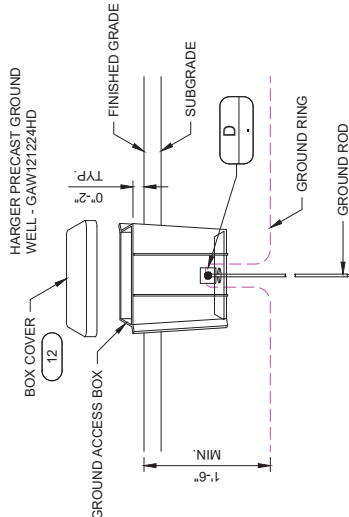
F TWO-HOLE LUG TERMINATION  
· SCALE: N.T.S



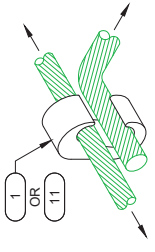
C CLOSED GROUND CONNECTION  
SCALE: N.T.S



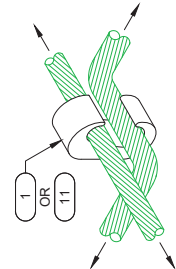
D GROUND ROD CONNECTION  
SCALE: N.T.S



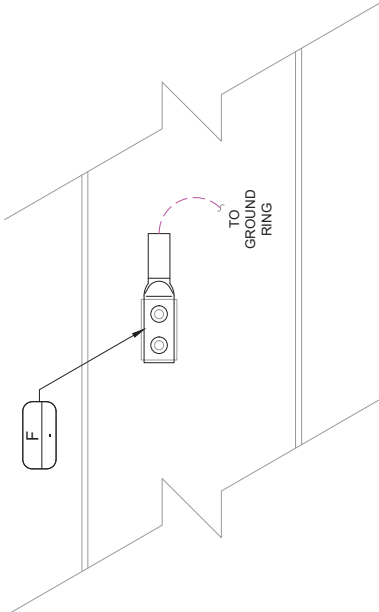
|   |                    |
|---|--------------------|
| H | GROUND WELL DETAIL |
| . | SCALE: N.T.S       |



A TEE GROUND CONNECTION  
SCALE: N.T.S



**B** CROSS GROUND CONNECTION  
SCALE: N.T.S

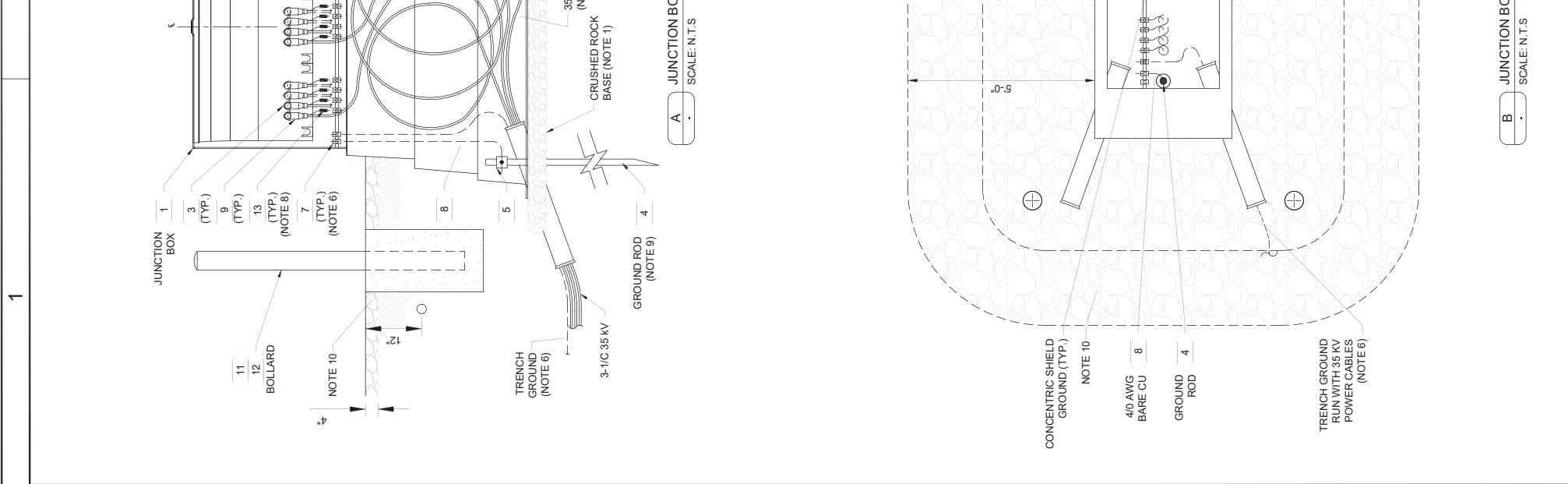
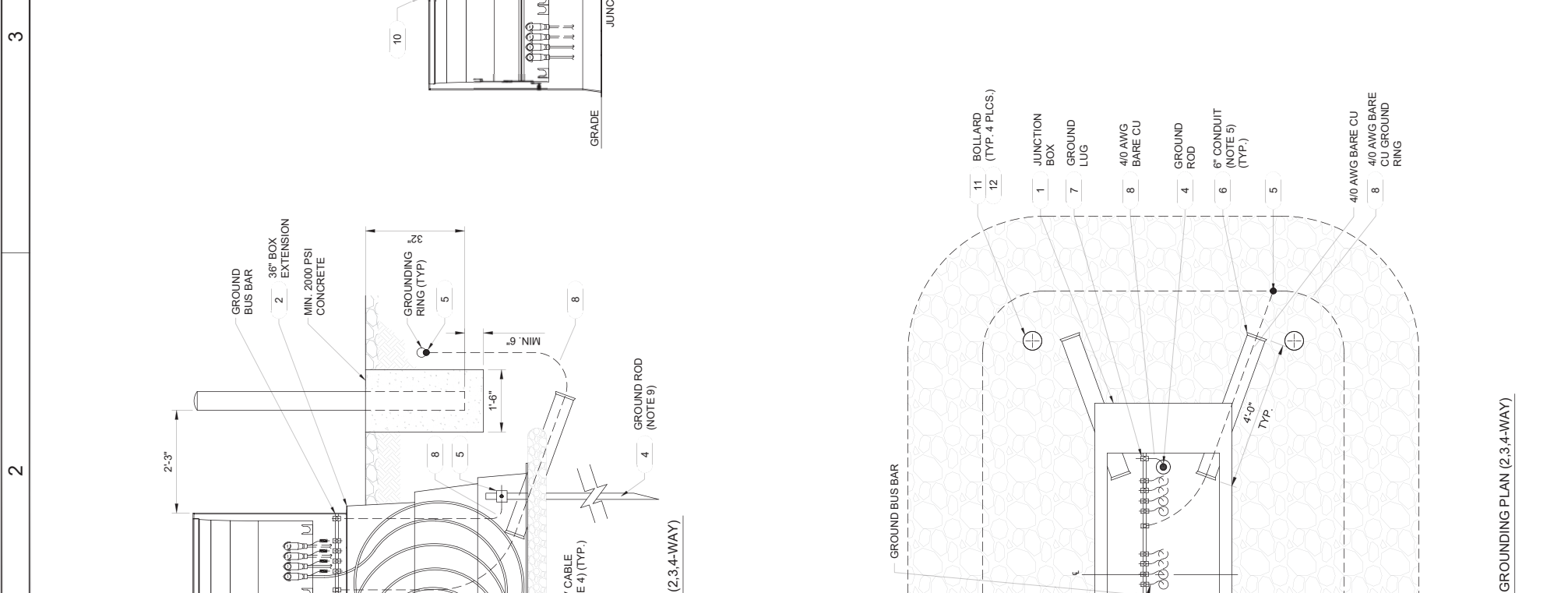
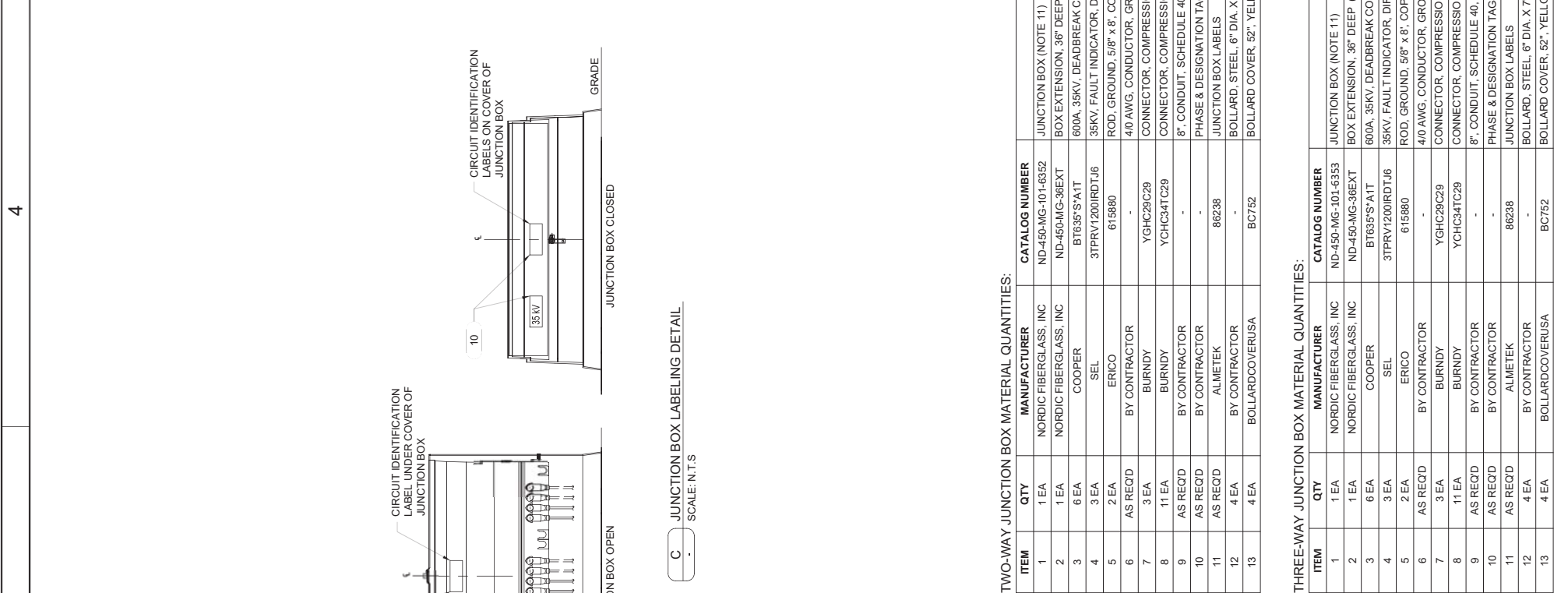


G SKID-TO-GROUND-RING CONNECTION  
· SCALE: N.T.S

| ITEM | QTY      | MANUFACTURER  | CATALOG NUMBER | DESCRIPTION                                                                                     |
|------|----------|---------------|----------------|-------------------------------------------------------------------------------------------------|
| 1    | AS REQ'D | BURNDY        | YGHC28C29      | CONNECTOR, COMPRESSION, RUN: 3/0 AWG TO 250 KCMIL (1/2" or 5/8" ROD), TAP: 3/0 AWG TO 250 KCMIL |
| 2    | AS REQ'D | BY CONTRACTOR | -              | 4/0 AWG, CONDUCTOR, GROUND, COPPER                                                              |
| 3    | AS REQ'D | BURNDY        | YGLR28C34      | CONNECTOR, COMPRESSION, RUN: GROUND ROD (3/4"), TAP: #2 AWG TO 250 KCMIL                        |
| 4    | AS REQ'D | ERCO          | 613400         | ROD, GROUND, 3/4" x 10', COPPER- BONDED, POINTED                                                |
| 5    | AS REQ'D | BURNDY        | YGHC28C29      | CONNECTOR, COMPRESSION, RUN: 3/0 AWG TO 250 KCMIL (1/2" or 5/8" ROD), TAP: 3/0 AWG TO 250 KCMIL |
| 6    | AS REQ'D | BY CONTRACTOR | -              | #2 AWG, CONDUCTOR, GROUND, COPPER                                                               |
| 7    | AS REQ'D | BURNDY        | YA2CA3         | #2 AWG, COMPRESSION TERMINAL, 1 HOLE, 3/8" STUD, ALUMINUM / COPPER CONDUCTORS                   |
| 8    | AS REQ'D | BY CONTRACTOR | -              | 7-#6 AWG, CONDUCTOR, GROUND, COPPER CLAD, 40% CONDUCTIVITY                                      |
| 9    | AS REQ'D | BURNDY        | YA28L4         | 4/0 AWG, COMPRESSION TERMINAL, 1 HOLE, 3/8" STUD, COPPER CONDUCTOR                              |
| 10   | AS REQ'D | BURNDY        | YA28A5         | 4/0 AWG, COMPRESSION TERMINAL, 2 HOLE, 1/2" STUD, ALUMINUM / COPPER CONDUCTORS                  |
| 11   | AS REQ'D | BURNDY        | YGH2C2         | CONNECTOR, COMPRESSION, RUN: #6 AWG TO #2 AWG (1/4" ROD), TAP: #6 AWG TO #2 AWG                 |
| 12   | AS REQ'D | HARGER        | GAW121212HD    | GROUND TEST ACCESS WELL                                                                         |

D

OPERATIONS\OP1\SOLAR\PROJECTS\HARDIN I\EE2011066\08-ELEC AND BESS\03-DWG\H2SP-E-D401-00 INVERTER SKID DETAILS.DWG









RRC POWER & ENERGY, LLC

7591 SW MOHAWK ST,  
TUALATIN, OR 97062  
PHONE: (503) 342-4064  
www.RRCcompanies.com

**CONFIDENTIAL**  
THIS DRAWING IS THE PROPERTY  
OF RRC POWER & ENERGY, LLC, AND  
INVENERGY, LLC. NO REPRODUCTION  
MAY BE MADE IN WHOLE OR IN PART  
WITHOUT WRITTEN CONSENT.

PREPARED FOR:



**PRELIMINARY**  
NOT FOR CONSTRUCTION

|     |            |                           |
|-----|------------|---------------------------|
| A   | 04/29/2021 | ISSUED FOR REVIEW - 60%   |
| REV | DATE       | ISSUE DESCRIPTION         |
|     |            | APPROVED BY: S. MOSER     |
|     |            | CHECKED BY: T. A. CARROLL |
|     |            | DESIGNED BY: D. OLDS      |
|     |            | DRAWN BY: D. OLDS         |



PROJECT NUMBER: EE2011066

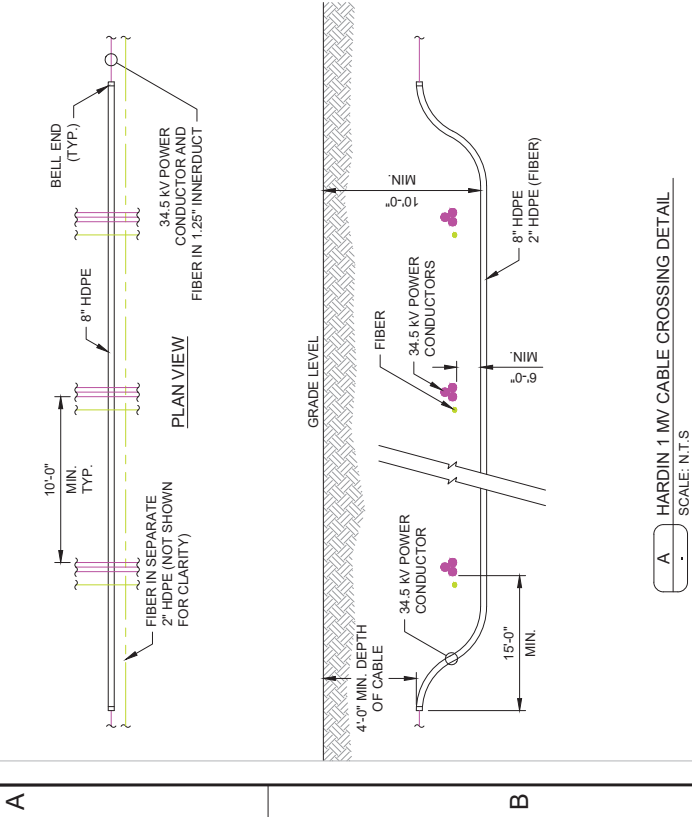
DRAWING NAME:

**HARDIN II**  
**SOLAR PROJECT**

**AC CROSSINGS AND  
BORING DETAILS**

|                |          |
|----------------|----------|
| DRAWING No.    | REVISION |
| H2SP-E-D403-02 | A        |

CADFILE: H2SP-E-D403-02 AC CROSSINGS AND BORING DETAILS



| MV UNDERGROUND BORE SCHEDULE |           |                    |             |            |                      |
|------------------------------|-----------|--------------------|-------------|------------|----------------------|
| BORE ID                      | FEEDER ID | CIRCUIT ID         | BORE LENGTH | CABLE SIZE | MINIMUM CONDUIT SIZE |
| 1                            | 1         | MV35.1.SUB-34      | 82 FT       | 1250       | 8"                   |
| 2                            | 1         | MV35.1.SUB-34      | 94 FT       | 1250       | 8"                   |
| 3                            | 1         | MV35.1.34-30       | 94 FT       | 1000       | 8"                   |
| 4                            | 1         | MV35.1.34-30       | 85 FT       | 1000       | 8"                   |
| 5                            | 2         | MV35.2.SUB-29      | 87 FT       | 1250       | 8"                   |
| 6                            | 2         | MV35.2.SUB-29      | 85 FT       | 1250       | 8"                   |
| 7                            | 3         | MV35.3.SUB-32      | 95 FT       | 1250       | 8"                   |
| 8                            | 3         | MV35.3.33-23       | 85 FT       | 500        | 8"                   |
| 9                            | 3         | MV35.3.18-17       | 140 FT      | 4/0        | 6"                   |
| 10                           | 3         | MV35.3.18-17       | 67 FT       | 4/0        | 6"                   |
| 11                           | 4         | MV35.4.SUB-JB4-1   | 130 FT      | 1250       | 8"                   |
| 12                           | 4         | MV35.4.SUB-JB4-1   | 310 FT      | 1250       | 8"                   |
| 13                           | 4         | MV35.4.JB4-1-10    | 95 FT       | 1250       | 8"                   |
| 14                           | 4         | MV35.4.8-JB4-2     | 125 FT      | 1000       | 8"                   |
| 15                           | 4         | MV35.4.JB4-2-5     | 115 FT      | 1000       | 8"                   |
| 16                           | 5         | MV35.5.SUB-JB5-1   | 130 FT      | 1250       | 8"                   |
| 17                           | 5         | MV35.5.SUB-JB5-1   | 310 FT      | 1250       | 8"                   |
| 18                           | 5         | MV35.5.11-9        | 95 FT       | 4/0        | 6"                   |
| 19                           | 6         | MV35.6.JB6-1-JB6-2 | 130 FT      | 4/0        | 6"                   |
| 20                           | 6         | MV35.6.JB6-1-JB6-2 | 310 FT      | 4/0        | 6"                   |
| 21                           | 6         | MV35.6.40-37       | 125 FT      | 4/0        | 6"                   |
| Total:                       |           |                    | 2,789 FT    |            |                      |









## NOTES

1. THE NUMBER OF SPLICES SHOULD BE MINIMIZED.
2. COIL MINIMUM 50 FEET FIBER OPTIC CABLE SERVICE LOOP IN SPLICE BOX.
3. ALL FIBER CABLES MUST BE LABELLED WITHIN 12" OF TERMINATION WITH CABLE/WIRE DESTINATION.
4. CONTRACTOR SHALL LOCATE SPLICE BOXES INSIDE PROPERTY'S FENCED AREA.
5. GPS COORDINATES SHALL BE TAKEN FOR ALL LOCATIONS PER FIELD INSTALLATION.
6. WHERE SPLICE BOXES ARE BURIED, MARKER BALLS ARE USED. SEE FIBER ROUTING ON E-500-01



**CONFIDENTIAL**

THIS DRAWING IS THE PROPERTY  
OF RRC POWER & ENERGY, LLC, AND  
INVENENERGY, LLC. NO REPRODUCTION  
MAY BE MADE IN WHOLE OR IN PART  
WITHOUT WRITTEN CONSENT.

PREPARED FOR:



**PRELIMINARY**  
**NOT FOR CONSTRUCTION**

|                           |            |                         |
|---------------------------|------------|-------------------------|
| A                         | 04/29/2021 | ISSUED FOR REVIEW - 60% |
| REV                       | DATE       | ISSUE DESCRIPTION       |
| APPROVED BY: S. MOSER     |            |                         |
| CHECKED BY: T. A. CARROLL |            |                         |
| DESIGNED BY: D. OLDS      |            |                         |
| DRAWN BY: D. OLDS         |            |                         |
| SCALE: N.T.S.             |            |                         |



PROJECT NUMBER: EE2011066

DRAWING NAME:

HARDIN II

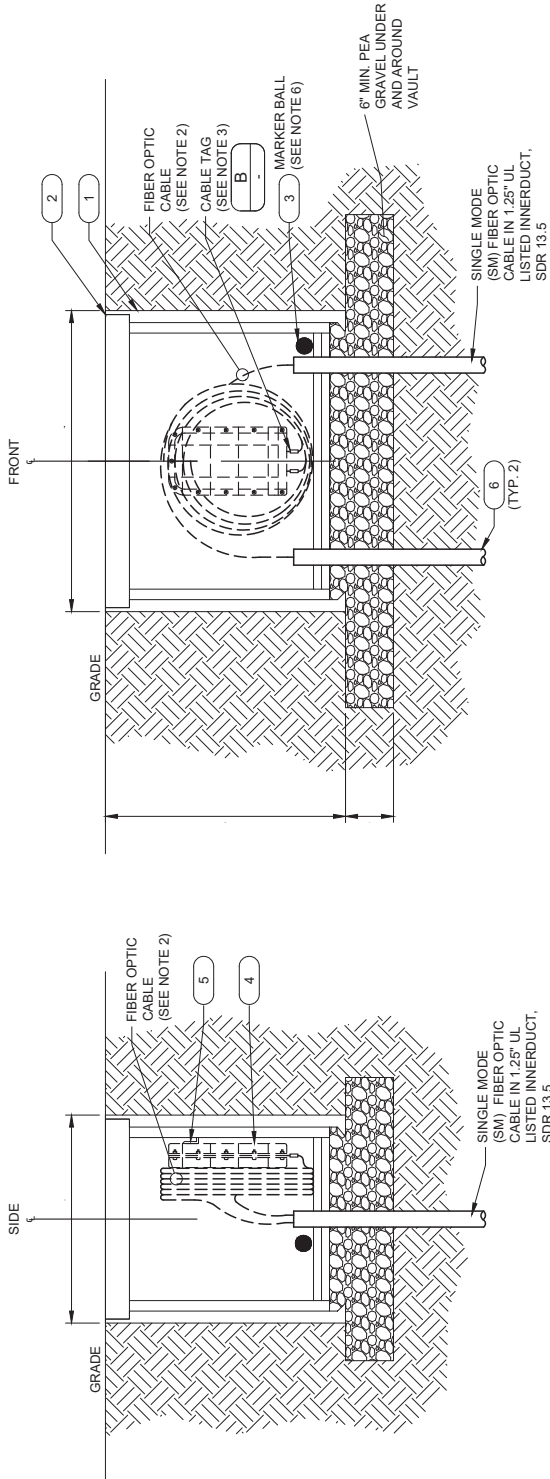
# SOLAR PROJECT

SPlice BOX  
ENClosure & U.G.  
HANDHole DETAILS

DRAWING No.

H2SP-E-D503-01

**CADFILE:** H2SP-ED503-01 SPLICE B  
U.G. HANDHOLE DETAILS



A UNDERGROUND SPLICE BOX DETAIL  
BELOW GRADE  
SCALE: N.T.S.

XXXX

|   |                  |
|---|------------------|
| B | CABLE TAG DETAIL |
| - | SCALE: N.T.S.    |

| ITEM | QTY  | MANUFACTURER            | CATALOG NUMBER | DESCRIPTION                                                |
|------|------|-------------------------|----------------|------------------------------------------------------------|
| 1    | 1 EA | QUAZITE                 | PQ42436BB30    | 24X36X30D, ENCLOSURE, OPEN BOTTOM, GASKETED, 2 MOUSE HOLES |
| 2    | 1 EA | QUAZITE                 | PG2436HG00     | COVER, HEAVY DUTY, GASKETED, 2 BOLTS                       |
| 3    | 1 EA | 3M                      | 1422XR/ID      | MARKER BALL, STANDARD                                      |
| 4    | 1 EA | PREFORMED LINE PRODUCTS | 8006671        | FIBER OPTIC SPLICE ENCLOSURE (COVOTE RUNT)                 |
| 5    | 1 EA | PREFORMED LINE PRODUCTS | 8003523        | ENCLOSURE MOUNT BRACKET                                    |
| 6    | 2 FT | BY CONTRACTOR           | -              | 1.25" UL LISTED HDPE INNERDUCT, SDR 13.5                   |

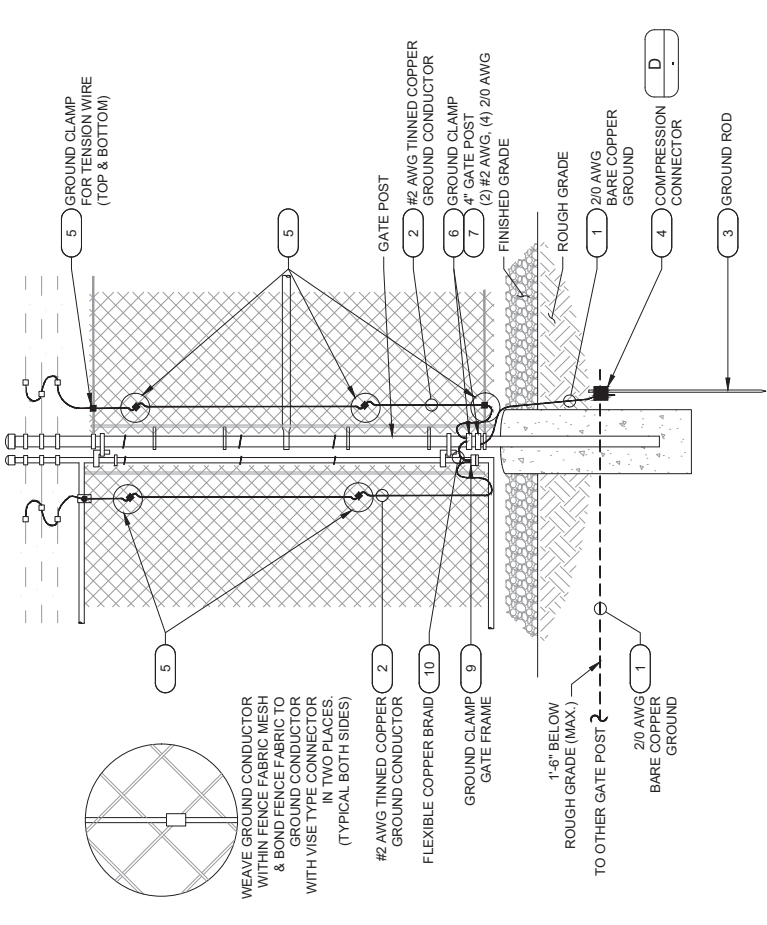






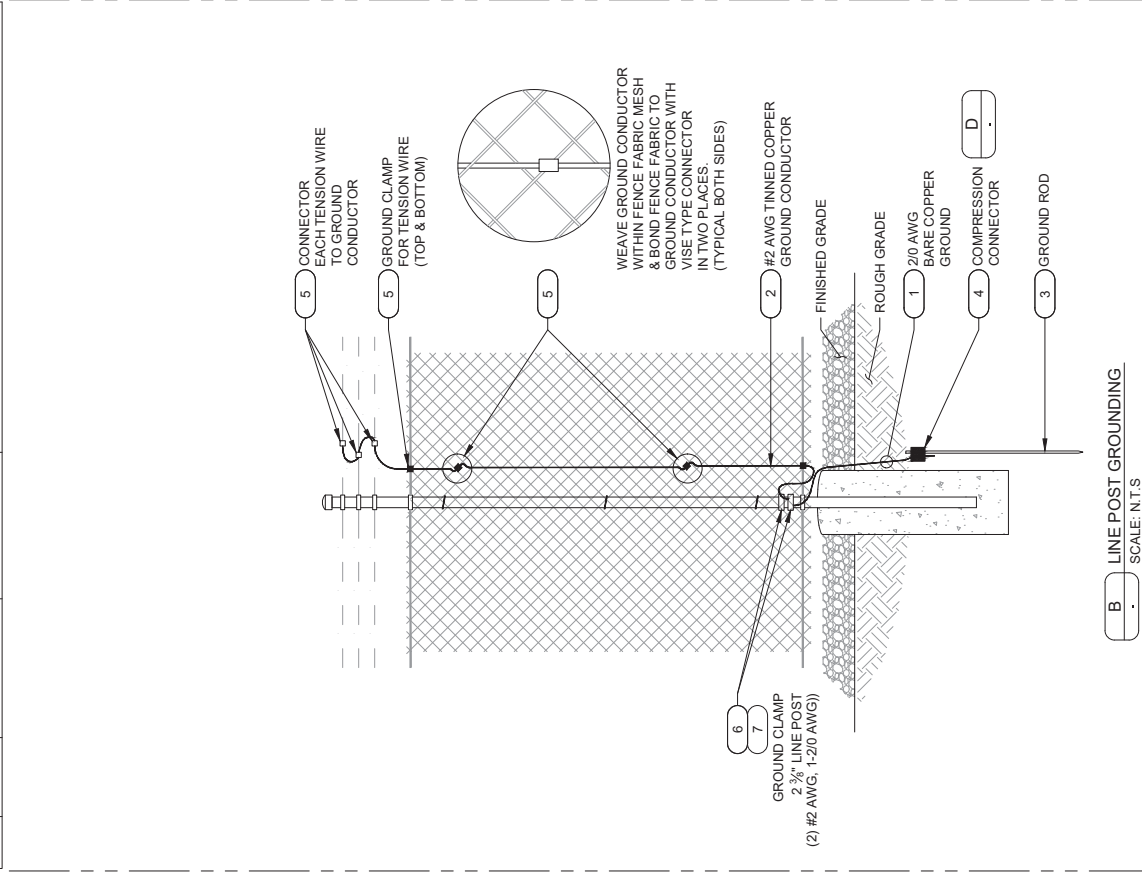
| ITEM | QTY     | MANUFACTURER  | CATALOG NUMBER | DESCRIPTION                                                                                        |
|------|---------|---------------|----------------|----------------------------------------------------------------------------------------------------|
| 1    | AS REQD | BY CONTRACTOR | -              | 2/0 AWG. CONDUCTOR, GROUND, COPPER                                                                 |
| 2    | AS REQD | BY CONTRACTOR | -              | #2 AWG. CONDUCTOR, GROUND, TINNED COPPER                                                           |
| 3    | 2 EA    | ERICO         | 615880         | ROD, GROUND, 5/8" x 8', COPPER CLAD                                                                |
| 4    | 2 EA    | BURNDY        | YGLR29C58      | CONNECTOR, COMPRESSION, RUN; GROUND ROD (5/8"), TAP: #2 AWG TO 250 KCMIL                           |
| 5    | 2 EA    | BURNDY        | YGHC2C2        | CONNECTOR, COMPRESSION, RUN; #6 AWG TO #2 AWG (1/4" ROD), TAP: #6 AWG TO #2 AWG                    |
| 6    | 24 EA   | FARGO         | GC-5002        | CONNECTOR, COMPRESSION, VICE, BRONZE                                                               |
| 7    | 4 EA    | BURNDY        | GD2226         | CONNECTOR, GROUNDING, FENCE, GATE/CORNER POST (4" TO 4 1/2" O.D. - (2) #4 AWG CU - (2) 2/0 AWG CU) |
| 8    | 2 EA    | BURNDY        | GAR2229        | CONNECTOR, GROUNDING, FENCE, GATE/CORNER POST (4" TO 4 1/2" O.D. - 20 AWG -250 KCMIL CU)           |
| 9    | 2 EA    | BURNDY        | GAR1829        | CONNECTOR, GROUNDING, FENCE, LINE/RAIL POST (2 TO 2 3/8" O.D. - 20 AWG - KCMIL CU)                 |
| 10   | 2 EA    | BURNDY        | GD1826         | CONNECTOR, GROUNDING, FENCE, LINE/RAIL POST (2 TO 2 3/8" O.D. - (2) #4 AWG CU - (2) 2/0 AWG CU)    |
| 11   | 2 EA    | BURNDY        | BE12N          | 12" FLEXIBLE BRAID, 1/2" STUD HOLE                                                                 |

A



C

| ITEM | QTY     | MANUFACTURER  | CATALOG NUMBER | DESCRIPTION                                                                         |
|------|---------|---------------|----------------|-------------------------------------------------------------------------------------|
| 1    | AS REQD | BY CONTRACTOR | -              | 2/0 AWG. CONDUCTOR, GROUND, COPPER                                                  |
| 2    | AS REQD | BY CONTRACTOR | -              | #2 AWG. CONDUCTOR, GROUND, TINNED COPPER                                            |
| 3    | 1 EA    | ERICO         | 615880         | ROD, GROUND, 5/8" x 8', COPPER CLAD                                                 |
| 4    | 1 EA    | BURNDY        | YGLR29C58      | CONNECTOR, COMPRESSION, RUN; GROUND ROD (5/8"), TAP: #2 AWG TO 250 KCMIL            |
| 5    | 7 EA    | FARGO         | GC-5002        | CONNECTOR, COMPRESSION, VICE, BRONZE                                                |
| 6    | 1 EA    | BURNDY        | GAR1829        | CONNECTOR, GROUNDING, FENCE, LINE/RAIL POST (2 TO 2 3/8" O.D. - 20 AWG - KCMIL CU)  |
| 7    | 1 EA    | BURNDY        | GAR1826        | CONNECTOR, GROUNDING, FENCE, LINE/RAIL POST (2 TO 2 3/8" O.D. - #4 AWG - 20 AWG CU) |



B LINE POST GROUNDING

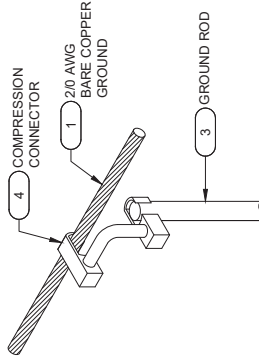
SCALE: N.T.S.

NOTE: PART NUMBERS ASSUME 2-3/8" LINE POSTS. USE EQUIVALENT PARTS IF POSTS ARE A DIFFERENT SIZE.

NOTES

1. FENCE AND GATES CROSSING OR PARALLEL TO AND WITHIN TRANSMISSION RIGHT-OF-WAY SHALL BE GROUNDED AS SPECIFIED BELOW:

- ALL GATES INCLUDING THOSE THAT RUN PARALLEL SHALL BE GROUNDED IN ACCORDANCE WITH DETAIL A. ALL GATE SECTIONS SHALL BE CONNECTED VIA A CONDUCTOR RUN BETWEEN THE GATE POSTS.
- FENCES LONGER THAN 20 FEET PARALLEL AND WITHIN RIGHT-OF-WAY SHALL BE GROUNDED AT A MINIMUM OF TWO LOCATIONS WITH A MAXIMUM SEPARATION OF 160 FEET BETWEEN GROUNDS AS SHOWN IN DETAIL B.
- ALL FENCE CORNERS THAT RUN PARALLEL TO TRANSMISSION RIGHT-OF-WAY SHALL BE GROUNDED IN ACCORDANCE WITH DETAIL C. ALL GATE SECTIONS SHALL BE CONNECTED VIA A CONDUCTOR RUN BETWEEN THE GATE POSTS.
- INSTALL 5/8" INCH DIAMETER COPPER CLAD ROD OR RODS TO OBTAIN A DRIVEN GROUND OF 25 OHMS OR LESS RESISTANCE. THE TOP OF THE DRIVEN GROUND SHALL BE 6 INCHES BELOW THE GROUND LINE.
- IF A FENCE HAS NO TOP RAIL, BOND TO TOP WIRE OF FENCE WITH AL-CU PARALLEL GROOVE CLAMP FOR ALUMINUM OR GALVANIZED FENCES. INSERT A SHORT PIECE OF ALUMINUM WIRE IN ONE SIDE OF CLAMP IF FENCE IS TOO SMALL.
- ALL GATES ON THE PROJECT SHALL BE GROUNDED. GROUNDING SHALL FOLLOW DETAIL A.



D SINGLE CABLE GROUND CONNECTION AT GROUND ROD

SCALE: N.T.S.



RRC POWER & ENERGY, LLC  
7591 SW MOHAWK ST,  
TUALATIN, OR 97062  
PHONE: (503) 342-4064  
www.RRCcompanies.com

CONFIDENTIAL

THIS DRAWING IS THE PROPERTY  
OF RRC POWER & ENERGY, LLC, AND  
INVENERY, LLC. NO REPRODUCTION  
MAY BE MADE IN WHOLE OR IN PART  
WITHOUT WRITTEN CONSENT.

PREPARED FOR:



PRELIMINARY  
NOT FOR CONSTRUCTION

|              |               |                         |
|--------------|---------------|-------------------------|
| REV          | DATE          | ISSUE DESCRIPTION       |
| A            | 04/29/2021    | ISSUED FOR REVIEW - 60% |
| APPROVED BY: | S. MOSER      |                         |
| CHECKED BY:  | T. A. CARROLL |                         |
| DESIGNED BY: | D. OLDS       |                         |
| DRAWN BY:    | D. OLDS       |                         |
| SCALE:       | N.T.S.        |                         |



PROJECT NUMBER: EE2011066

DRAWING NAME:

HARDIN II  
SOLAR PROJECT

FENCE GROUNDING  
DETAILS

|                                                 |          |
|-------------------------------------------------|----------|
| DRAWING No.                                     | REVISION |
| H2SP-E-D600-03                                  | A        |
| CADFILE: I2SP-EJ0803-03 FENCE GROUNDING DETAILS |          |























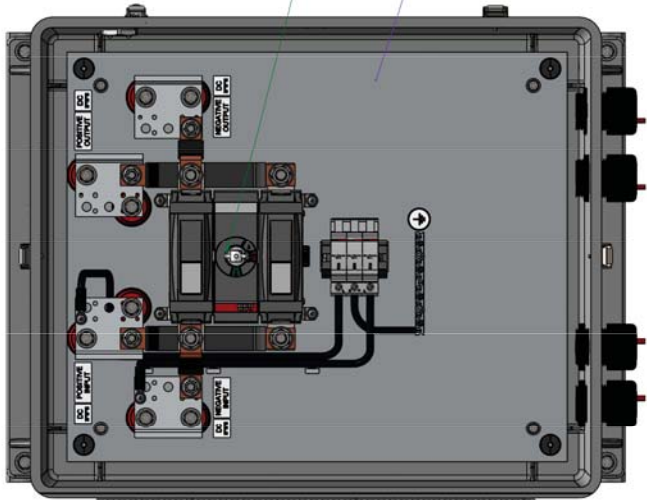
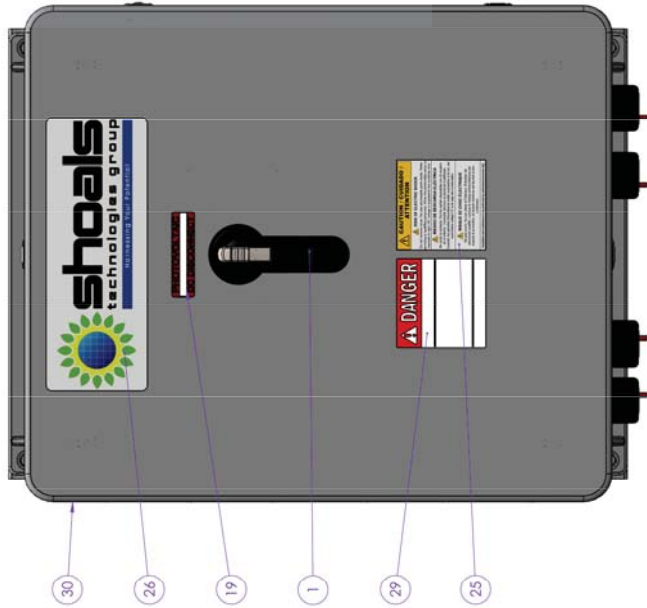
A

CONFIDENTIAL & PROPRIETARY PROPERTY OF SHOALS TECHNOLOGIES GROUP, LLC.

| REV. | CHANGE # | DESCRIPTION     | DATE      | APPROVED     |
|------|----------|-----------------|-----------|--------------|
| -01  |          | INITIAL RELEASE | 7/15/2019 | S. GREENWELL |

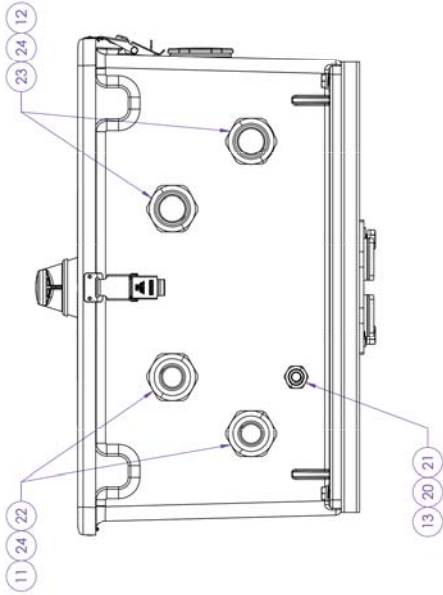
TORQUE BREATHER VENT  
TO 45 IN-LBS (5Nm)

SEE NEXT SHEET  
FOR DETAILS

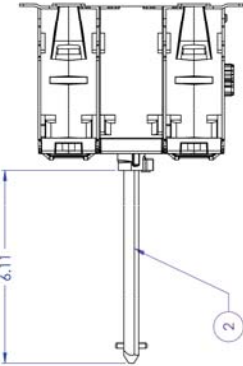


TORQUE SET SCREW  
TO 11IN-LBS. (1.2Nm)  
USE BLUE LOCITITE

B



SET SHAFT TO THIS DIMENSION FROM  
TOP COLLAR OF DISCONNECT SWITCH



NOTE: SECURE (4) HWKT-1213-214-01  
TO INSIDE OF ENCLOSURE FOR SHIPPING

| ELECTRICAL SPECIFICATIONS  |              |
|----------------------------|--------------|
| RATED OUTPUT CURRENT       | 400A         |
| RATED INPUT CURRENT        | 400A         |
| MAX. SHORT CIRCUIT CURRENT | 320A         |
| MAX. SYSTEM VOLTAGE        | 1500VDC      |
| MAX. NO. OF INPUT CIRCUITS | 1            |
| MAX. AMBIENT TEMP. RATING  | 50° C        |
| ENCLOSURE RATING           | NEMA TYPE 4X |
| SHORT CIRCUIT WITHSTAND    | 10kA         |
| TERMINAL RATING            | 90° C        |

MAX. WIRE SIZE:  
(1) 750MCM / (2) 600MCM

| GLAND | LOCKNUT | WIRE SIZE (O.D.)                   | GLAND TORQUE         | LOCKNUT TORQUE         |
|-------|---------|------------------------------------|----------------------|------------------------|
| M4524 | M9144   | 22.2 mm - 32 mm [0.874" - 1.260"]  | 155 IN-LBS (17.5 Nm) | 135 IN-LBS. (15.25 Nm) |
| M4522 | M9144   | 20 mm - 25.9 mm [0.787" - 1.020"]  | 155 IN-LBS (17.5 Nm) | 135 IN-LBS. (15.25 Nm) |
| M3231 | 8463    | 4.3 mm - 11.4 mm [0.169" - 0.449"] | 55 IN-LBS (6.2 Nm)   | 45 IN-LBS. (5 Nm)      |

CONFIDENTIAL & PROPRIETARY PROPERTY OF SHOALS TECHNOLOGIES GROUP, LLC.

CONFIDENTIAL & PROPRIETARY PROPERTY OF SHOALS TECHNOLOGIES GROUP, LLC.

| ITEM | PART NUMBER                | Revision | DESCRIPTION                                           | Quantity |
|------|----------------------------|----------|-------------------------------------------------------|----------|
| 1    | QHB12512BH                 |          | STAINLESS STEEL HOOK                                  | 1        |
| 2    | OXPT12X250                 |          | 250mm SHAFT EXTENSION                                 | 1        |
| 3    | CHNT-1213-2-WO             |          | 1/2-13 CHANNEL NUT, 3/8" THICK WITH NO SPRING, 316 SS | 2        |
| 4    | CHNT-1213-2-WO             |          | 1/2-13 CHANNEL NUT, 3/8" THICK WITH NO SPRING, 316 SS | 2        |
| 5    | FLW013                     |          | 5/16" LARGE FLAT WASHER, 18-8 STAINLESS STEEL         | 2        |
| 6    | FLW013                     |          | 5/16" LARGE FLAT WASHER, 18-8 STAINLESS STEEL         | 2        |
| 7    | HKC3381-6-11-4-SS          |          | 3/8" x 1/4" x 11-4" HEX HEAD                          | 2        |
| 8    | HKC3381-6-11-4-SS          |          | 3/8" x 1/4" x 11-4" HEX HEAD                          | 2        |
| 9    | SPW008                     |          | 3/8" SPLIT LOCK WASHER, 18-8 STAINLESS STEEL          | 4        |
| 10   | SPW008                     |          | 3/8" SPLIT LOCK WASHER, 18-8 STAINLESS STEEL          | 4        |
| 11   | L-14X                      |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 12   | L-14X                      |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 13   | L-14X                      |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 14   | B5224-20 HDG               |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 15   | MS-54071                   |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 16   | ELB-18-8-1/4-11-4          |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 17   | M1051-0010                 |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 18   | PMF220542                  |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 19   | 594-00238                  |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 20   | 8463                       |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 21   | N3231                      |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 22   | N4524                      |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 23   | N4524                      |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 24   | N9144                      |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 25   | EFS-CAUTION LABEL          |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 26   | SHOALS LOGO 12x4.5         |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 27   | BP-STG DCD-01 CAIRBND0-DVA |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 28   | BP-STG DCD-01 CAIRBND0-DVA |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 29   | BP-STG DCD-01 CAIRBND0-DVA |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |
| 30   | DWG7112420                 |          | 20" LONG 13/16" x 1/4" GALVANIZED STRUT               | 2        |

400A / 1500VDC NEC 2017 LOAD BREAK  
DISCONNECT BOX

DATE: 7/15/2019  
DRAWN BY: S. GREENWELL  
CHECKED BY: S. GREENWELL  
APPROVED BY: S. GREENWELL

SCALE: 1/8" = 1'-0"  
1/4" = 1'-0"  
3/8" = 1'-0"  
1/2" = 1'-0"  
3/4" = 1'-0"  
1" = 1'-0"

REVISIONS

| REV. | DESCRIPTION     | DATE      |
|------|-----------------|-----------|
| 1    | INITIAL RELEASE | 7/15/2019 |

| REV. | DATE       | ISSUE DESCRIPTION                                                                                                          |
|------|------------|----------------------------------------------------------------------------------------------------------------------------|
| A    | 04/29/2021 | ISSUED FOR REVIEW - 60%<br>APPROVED BY: S. MOSER<br>CHECKED BY: T. A. CARROLL<br>DESIGNED BY: D. OLDS<br>DRAWN BY: D. OLDS |

SCALE: N.T.S.

0 1" 2"

BAR MUST SCALE 2" FOR FULL SIZE  
OR 1" FOR HALF SIZE DRAWING

PROJECT NUMBER: EE2011066

DRAWING NAME:

HARDIN II  
SOLAR PROJECT

LBD DATA SHEET

| DRAWING No.    | REVISION |
|----------------|----------|
| H2SP-E-VC03-02 | A        |

CAD FILE: H2SP-E-VC03-02 LBD DATA SHEET

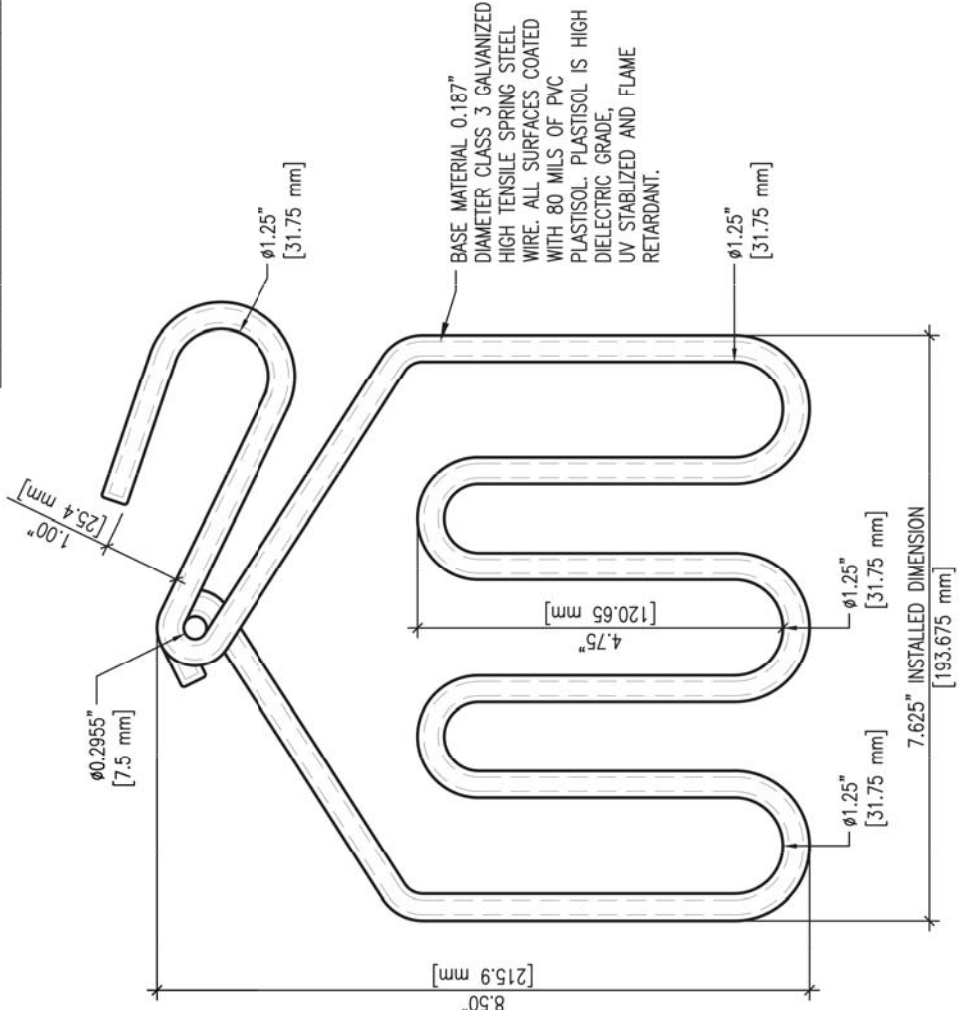




Cambria County Association for the Blind & Handicapped

# CAB 9822 Datasheet

|             |  |                                              |  |      |  |          |                          |     |  |
|-------------|--|----------------------------------------------|--|------|--|----------|--------------------------|-----|--|
| DESCRIPTION |  | CAB 3-Carrier: 1.25"-1.25"-1.25"             |  | Rev. |  | Date     | Revision Description     | By  |  |
| MATERIAL    |  | CAB #9130 0.187" GALV Class 3 CHO Steel Wire |  | A    |  | 8/29/18  | Initial Drawing          | KLR |  |
|             |  |                                              |  | B    |  | 9/18/18  | Administrative Changes   | KLR |  |
|             |  |                                              |  | C    |  | 11/14/18 | Administrative Changes   | BLM |  |
|             |  |                                              |  |      |  | 5/6/19   | Added Working Load Limit | KLR |  |



NOTES:  
1.) SCALE: 1:2 (HALF SIZE)  
2.) OVERALL DIMENSIONS +/- 3/4"  
3.) WORKING LOAD LIMIT: 100 lbs (45 kg)

Covered by one or more of the following U.S. Patent NOS: 10,063,039 B2; D826,399 S; 9,722,405; D-796,307; D-798,138; D-806,240; 9,800,028 Other patent(s) pending.  
Consent to use these diagrams/files is contingent upon credit being given to source, e.g. CAB Products. [www.cabproducts.com/patents](http://www.cabproducts.com/patents)

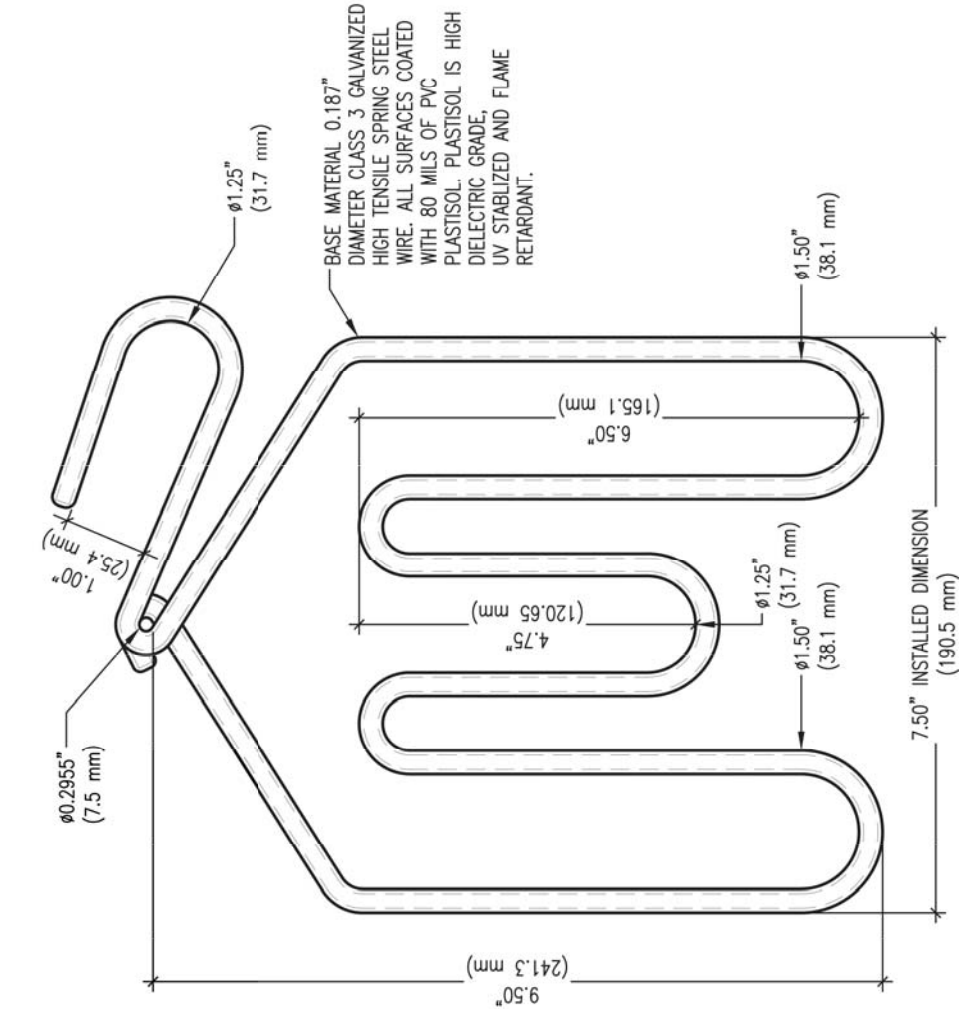
|                         |               |
|-------------------------|---------------|
| CAB SOLAR               |               |
| CABLE MANAGEMENT SYSTEM |               |
| DATE: November 14, 2018 | Rev.          |
| Size: A                 | Drawn By: KLR |
| Size: A                 | Drawn By: C   |



Cambria County Association for the Blind & Handicapped

# CAB 9918 Datasheet

|             |  |                                              |  |      |  |         |                      |     |  |
|-------------|--|----------------------------------------------|--|------|--|---------|----------------------|-----|--|
| DESCRIPTION |  | CAB 3-Carrier: 1.5"-1.25"-1.5"               |  | Rev. |  | Date    | Revision Description | By  |  |
| MATERIAL    |  | CAB #9130 0.187" GALV Class 3 CHO Steel Wire |  | A    |  | 7/11/19 | Initial Drawing      | KLR |  |
|             |  |                                              |  |      |  | 7/11/19 | Dimension Change     | KLR |  |



NOTES:  
1.) SCALE: 1:2 (HALF SIZE)  
2.) OVERALL DIMENSIONS +/- 3/4"  
3.) WORKING LOAD LIMIT: -

Covered by one or more of the following U.S. Patent NOS: 10,063,039 B2; D826,399 S; 9,722,405; D-796,307; D-798,138; D-806,240; 9,800,028 Other patent(s) pending.  
Consent to use these diagrams/files is contingent upon credit being given to source, e.g. CAB Products. [www.cabproducts.com/patents](http://www.cabproducts.com/patents)

|                         |               |
|-------------------------|---------------|
| CAB SOLAR               |               |
| CABLE MANAGEMENT SYSTEM |               |
| DATE: July 1, 2019      | Rev.          |
| Size: A                 | Drawn By: KLR |
| Size: A                 | Drawn By: A   |



RRC POWER & ENERGY, LLC  
7591 SW MOHAWK ST.  
TUALATIN, OR 97062  
PHONE: (503) 342-4064  
[www.RRCcompanies.com](http://www.RRCcompanies.com)

**CONFIDENTIAL**  
THIS DRAWING IS THE PROPERTY  
OF RRC POWER & ENERGY, LLC, AND  
INVENERGY, LLC. NO REPRODUCTION  
MAY BE MADE IN WHOLE OR IN PART  
WITHOUT WRITTEN CONSENT.

PREPARED FOR:



F.F.ELIMINAF.Y  
N T F F . N : T F U T I N

|              |               |                         |
|--------------|---------------|-------------------------|
| REV          | DATE          | ISSUED FOR REVIEW - 60% |
| APPROVED BY: | S. MOSER      | ISSUE DESCRIPTION       |
| CHECKED BY:  | T. A. CARROLL |                         |
| DESIGNED BY: | D. OLDS       |                         |
| DRAWN BY:    | D. OLDS       |                         |

SCALE N.T.S.  
0 1" 2"  
BARS MUST SCALE 2" FOR FULL SIZE  
OR 1" FOR HALF SIZE DRAWING

PROJECT NUMBER: EE2011066  
DRAWING NAME:  
HARDIN II  
SOLAR PROJECT

## CAB HANGER DATA SHEET

|                |          |
|----------------|----------|
| DRAWING No.    | REVISION |
| H2SP-E-VC03-03 | A        |

CAD FILE: H2SP-E-VC03-03 CAB HANGER DATA SHEET

### NOTES

- 9822 HANGERS TO BE USED ACROSS SITE. IN SELECT LOCATIONS, THE 9918 HANGER MAY BE USED TO SUPPORT UP TO SIX DC HOMERUNS ON A SINGLE CAB SEGMENT TO REDUCE LOSSES. REFER TO DC BLOCK SITE PLANS FOR LOCATION OF 9918 HANGERS.

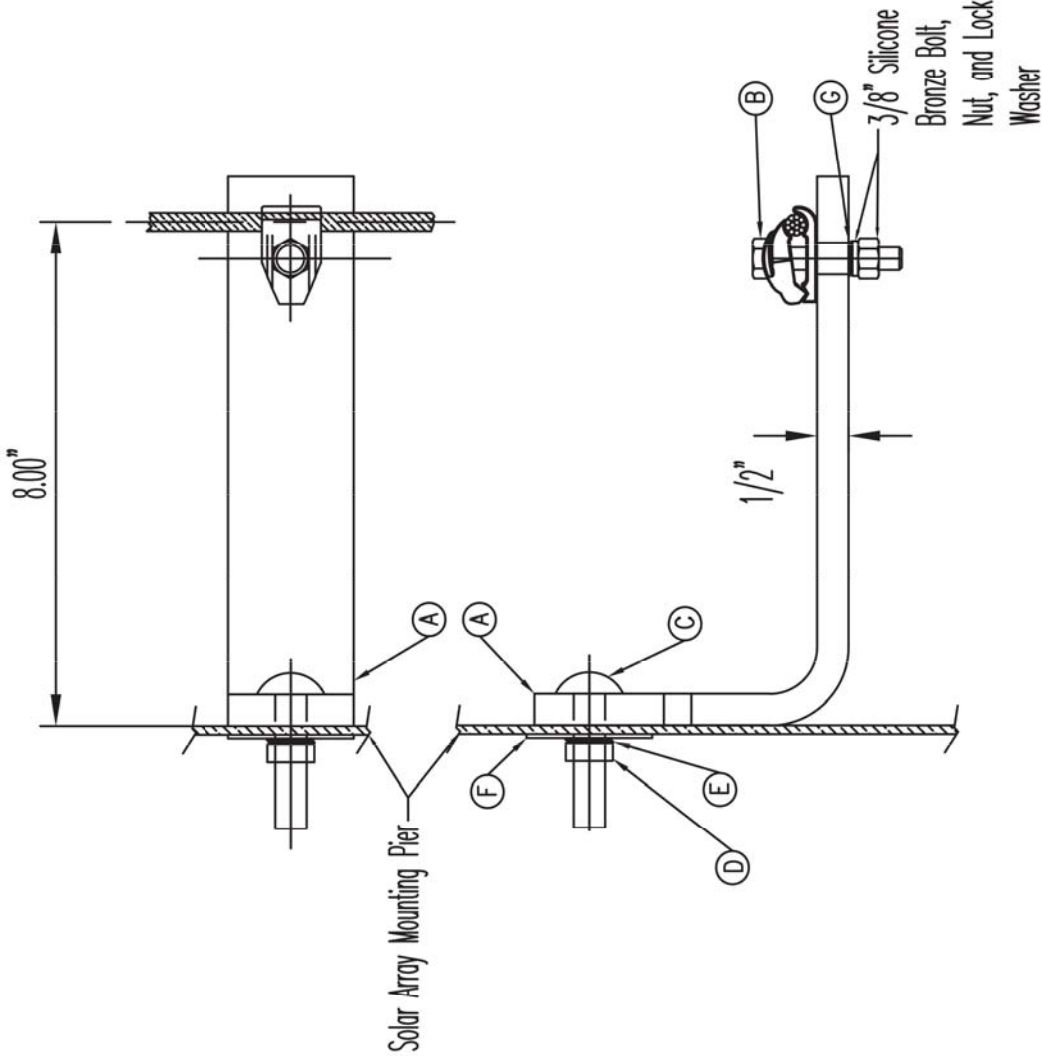


# CAB 9705 Datasheet

|             |                                           |
|-------------|-------------------------------------------|
| DESCRIPTION | CAB Mid Pier L Bracket Kit 8" X 2" X 1/2" |
| MATERIAL    | See detail below                          |

| BILL OF MATERIAL FOR CAB 9705<br>MID PIER L BRACKET KIT 8" MESSENGER |                                                 |
|----------------------------------------------------------------------|-------------------------------------------------|
| ITEM                                                                 | DESCRIPTION                                     |
| A                                                                    | CAB 9715 GALVANIZED L BRACKET                   |
| B                                                                    | CAB 9714 TIN PLATED COPPER-ALLOY CLAMP KIT      |
| C                                                                    | CAB 9270 1/2"-13 X 2" GALV. STEEL CARRIAGE BOLT |
| D                                                                    | CAB 9271 1/2"-13 GALV. STEEL HEX NUT            |
| E                                                                    | CAB 9272 1/2" GALV. STEEL SPLIT LOCK WASHER     |
| F                                                                    | CAB 9310 2" X 2" GALV. STEEL FLAT WASHER        |
| G                                                                    | CAB 9716 3/8" STAINLESS STEEL STAR LOCK WASHER  |

ALL PARTS GALVANIZED ASTM A153 UNLESS OTHERWISE NOTED



Consent to use these diagrams/files is contingent upon credit being given to source, e.g. CAB Products. Patent(s) Pending.

WORKING LOAD LIMIT: 600lb

| Size | Drawing/Part Number | Rev. |
|------|---------------------|------|
| A    | CAB 9705            | —    |



RRC POWER & ENERGY, LLC  
7591 SW MOHAWK ST.  
TUALATIN, OR 97062  
PHONE: (503) 342-4064  
www.RRCcompanies.com

**CONFIDENTIAL**  
THIS DRAWING IS THE PROPERTY  
OF RRC POWER & ENERGY, LLC, AND  
INVENERGY, LLC. NO REPRODUCTION  
MAY BE MADE IN WHOLE OR IN PART  
WITHOUT WRITTEN CONSENT.

PREPARED FOR:



FFELIMINAF.Y  
N T F 6 N T F U T I N

| REV | DATE       | ISSUE DESCRIPTION         |
|-----|------------|---------------------------|
| A   | 04/29/2021 | ISSUED FOR REVIEW - 60%   |
|     |            | APPROVED BY: S. MOSER     |
|     |            | CHECKED BY: T. A. CARROLL |
|     |            | DESIGNED BY: D. OLDS      |
|     |            | DRAWN BY: D. OLDS         |



PROJECT NUMBER: EE2011066

DRAWING NAME:

HARDIN II  
SOLAR PROJECT

CAB BRACKET DATA  
SHEET

|                                                    |          |
|----------------------------------------------------|----------|
| DRAWING No.                                        | REVISION |
| H2SP-E-VC03-04                                     | A        |
| H2SP-E-VC03-04 CAB BRACKET DATA<br>CAD FILE: SHEET |          |





**TMEIC**  
*We drive industry*

**Solar Ware Ninja™**

## Multiple Configurations for Maximum Flexibility

TMEIC's Solar Ware Ninja is the latest evolution of the highly successful Solar Ware family of inverters, joining over 14GW of TMEIC's globally installed photovoltaic inverters. Continuing the legacy of high efficiency, cutting-edge features, and unmatched reliability, the new Ninja modular inverter system is the culmination of input from utilities, developers, and technicians.

The Ninja is a global product, performing the duties of both generation and energy storage. The modular system introduces multiple layers of flexibility to allow designers an almost unlimited number of options for every project. The advanced controls system is packed with features to meet not only today's smart inverter requirements, but also new requirements as they are introduced. Like the award-winning Samurai series of inverters, the Ninja utilizes the same highly reliable IGBT based power conversion system.



### TMEIC is Bankable

- Stable, with multi billion \$USD revenue
  - Diversified, with decades of power electronics experience in a variety of heavy industries, including metals, oil & gas, mining, and container cranes industries
  - Manufacturing in the US and several other locations
- ### TMEIC is Reliable
- Over 14GW of PV and ESS inverters globally
  - Own exclusive use of Mitsubishi Electric's 3 level NPS technology
  - Industry leading fleet availability
- ### TMEIC is Support
- Award winning service
  - 24/7 US based hot line
  - Over 30 years PV inverter manufacturing and R&D experience
  - Comprehensive customer training programs
  - Authorized Service Provider program available



**TMEIC**  
*We drive industry*

**Solar Ware Ninja™**

| Type                          |                                   | PV-PCS          |                                                                                                                                             |                 |
|-------------------------------|-----------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|                               |                                   | PVU-L0800GR     | PVU-L0840GR                                                                                                                                 | PVU-L0880GR     |
| Output side (AC)              | Rated Power@25°C                  | 800kW           | 840kW                                                                                                                                       | 880kW           |
|                               | Rated Power@50°C                  | 730kW           | 765kW                                                                                                                                       | 800kW           |
|                               | Rated Voltage                     | 600V ±10%, -12% | 630V +10%, -12%                                                                                                                             | 660V +10%, -12% |
|                               | Rated Frequency                   |                 | 50Hz / 60Hz (+0.5Hz, -0.7Hz)                                                                                                                |                 |
|                               | Rated Power Factor                |                 | >0.99                                                                                                                                       |                 |
| Input side (DC)               | Reactive Capability               | +/- 421 kVAR    | +/- 442 kVAR                                                                                                                                | +/- 464 kVAR    |
|                               | Rated Current                     |                 | 702 Arms @50 °C                                                                                                                             |                 |
|                               | Maximum Current                   |                 | 770 Arms @25 °C                                                                                                                             |                 |
|                               | Maximum Efficiency                |                 | 98.9% *tentative                                                                                                                            |                 |
|                               | CEC Efficiency                    |                 | 98.5% *tentative                                                                                                                            |                 |
| Environ. Conditions           | Maximum Voltage                   |                 | 1500 Vdc                                                                                                                                    |                 |
|                               | MPPT Operation Range              | 875-1300VDC     | 915-1300VDC                                                                                                                                 | 960-1300VDC     |
|                               | Ingress Protection Ratings        |                 | IP54 / NEMA3R                                                                                                                               |                 |
|                               | Installation                      |                 | Outdoor                                                                                                                                     |                 |
|                               | Ambient Temperature Range         |                 | -25° to 50°C                                                                                                                                |                 |
| Protective Functions          | Maximum Altitude                  |                 | >2000 m power derating (Max. 4000m)                                                                                                         |                 |
|                               | Input (DC) Side                   |                 | DC Protection: Fuses Ground Fault, DC Reverse Current, Over Voltage, Over Current                                                           |                 |
|                               | Grid (AC) Side                    |                 | AC Protection: MCCB and Fuse Anti-islanding, Over/Under Voltage, Over/Under Frequency, Over Current                                         |                 |
|                               | Grid Assistance                   |                 | Reactive/Active Power Control, Power Factor Control, Fault Ride Through (optional)                                                          |                 |
|                               | Harmonic Distortion of AC Current |                 | ≤ 3% THD (at rated power)                                                                                                                   |                 |
| Communication                 |                                   |                 | Modbus/TCP                                                                                                                                  |                 |
| Fault Analysis                |                                   |                 | Fault Event Log, Waveform Acquisition via memory card                                                                                       |                 |
| Compliance                    |                                   |                 | UL1741, UL1745A / IEEE1547 / NEC2017 / IEC62109-1,2 / IEC61000-6-2,4 / IEC61727, IEC62116 / IEC61400, BDEW / IEC61683 / IEC60068 *Tentative |                 |
| Cooling Method                |                                   |                 | Forced Air Cooling                                                                                                                          |                 |
| Number of Inputs              |                                   |                 | Standard 6 inputs for PV (maximum 8 per inverter)                                                                                           |                 |
| Standard Control Power Supply |                                   |                 | Control Power Supply from Inverter output and Capacitor backup circuit (3 sec. compensation)                                                |                 |
| Weight                        |                                   |                 | <1000kgs *Tentative                                                                                                                         |                 |
| Dimensions (H x W x D)        |                                   |                 | 1100 X 1100 X 1900 mm (L x W x H)                                                                                                           |                 |
| Floor Space                   |                                   |                 | 1875.5 sq. in. (1.21 m²)                                                                                                                    |                 |
| Color                         |                                   |                 | Cabinet: Sand White #Dic583                                                                                                                 |                 |



**RRC**

RRC POWER & ENERGY, LLC  
7591 SW MOHAWK ST.  
TUALATIN, OR 97062  
PHONE: (503) 342-4064  
www.RRCcompanies.com

**CONFIDENTIAL**  
THIS DRAWING IS THE PROPERTY OF RRC POWER & ENERGY, LLC, AND INVENRGY, LLC. NO REPRODUCTION MAY BE MADE IN WHOLE OR IN PART WITHOUT WRITTEN CONSENT.

PREPARED FOR:





F.F.ELIMINAF.Y  
N T F F N T F T I N

## Customizable Block

Up to 6 Ninja units on the same skid. Able to combine PV and ESS inverters in the same lineup. A skid controller will manage output of the Ninja power station.

- Fully Modular design means:
  - Completely independent inverters for increased availability
  - Individual MPPT for greater energy yield
  - Latest generation of Smart Inverter controls platform
  - Multiple output options with various MPPT ranges
- DC Zone monitoring is standard
- UL or IEC certified global design
- PV or Energy Storage (bi-directional)
- Outdoor rated enclosure



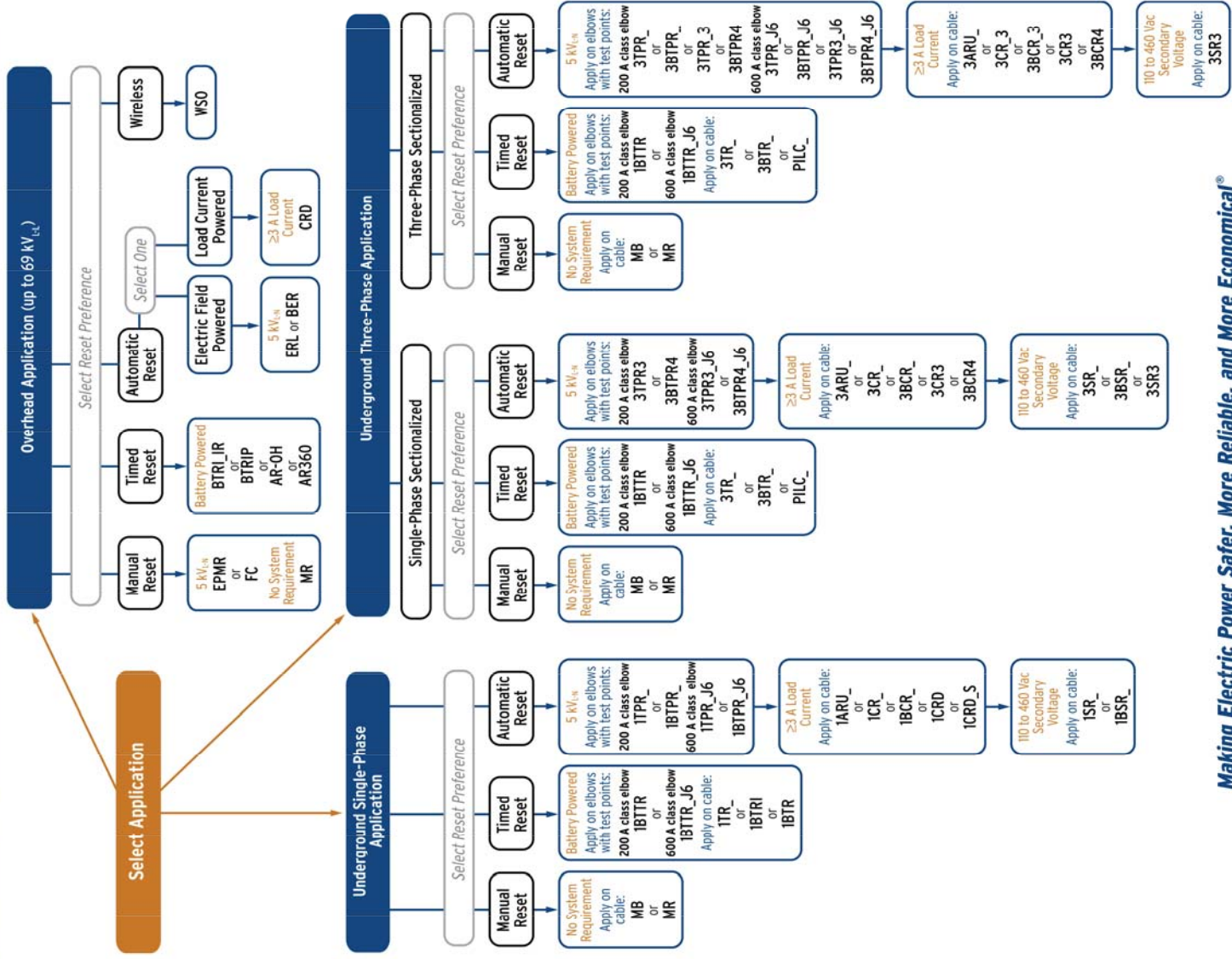




A



# Fault Indicator Selection Guide



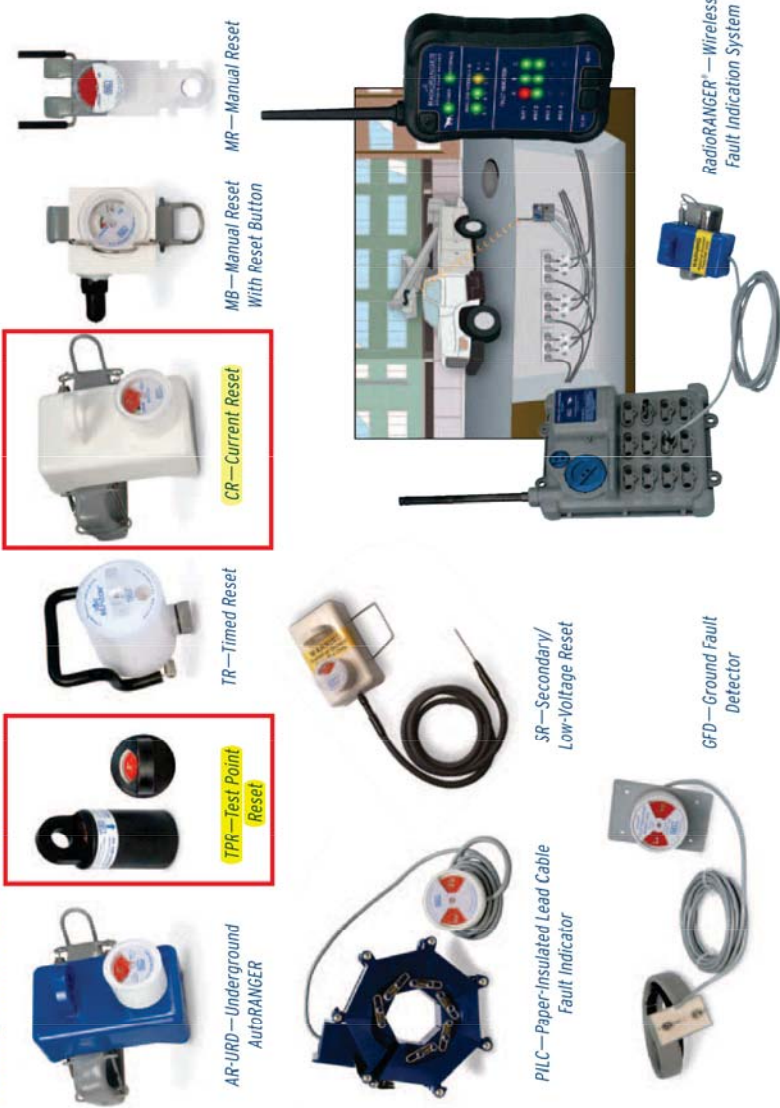
**Making Electric Power Safer, More Reliable, and More Economical®**

## SEL Fault Indicators

### Overhead Fault Indicators



### Underground Fault Indicators



450 Enterprise Way • Lake Zurich, IL 60047 USA  
Tel: +1.847.362.8304 • Fax: +1.847.362.8396 • [www.selinc.com](http://www.selinc.com) • [info@selinc.com](mailto:info@selinc.com)  
© 2010-2011 by Schweitzer Engineering Laboratories, Inc. All rights reserved. PF00220 • 20100209

**SEL** FAULT INDICATOR AND SENSOR DIVISION

450 Enterprise Way • Lake Zurich, IL 60047 USA  
Tel: +1.847.362.8304 • Fax: +1.847.362.8396 • [www.selinc.com](http://www.selinc.com) • [info@selinc.com](mailto:info@selinc.com)  
© 2010-2011 by Schweitzer Engineering Laboratories, Inc. All rights reserved. PF00220 • 20100209



RRC POWER & ENERGY, LLC  
7591 SW MOHAWK ST.  
TUALATIN, OR 97062  
PHONE: (503) 342-4064  
[www.RRCcompanies.com](http://www.RRCcompanies.com)

**CONFIDENTIAL**  
THIS DRAWING IS THE PROPERTY  
OF RRC POWER & ENERGY, LLC, AND  
INVENERY, LLC. NO REPRODUCTION  
MAY BE MADE IN WHOLE OR IN PART  
WITHOUT WRITTEN CONSENT.

PREPARED FOR:

**Invenery**



**F.F.ELIMINAF.Y**  
N T F F . N : T F U T I N

| REV | DATE       | ISSUE DESCRIPTION         |
|-----|------------|---------------------------|
| A   | 04/29/2021 | ISSUED FOR REVIEW - 60%   |
|     |            | APPROVED BY: S. MOSER     |
|     |            | CHECKED BY: T. A. CARROLL |
|     |            | DESIGNED BY: D. OLDS      |
|     |            | DRAWN BY: D. OLDS         |

SCALE: N.T.S.  
0 1" 2"  
BAR MUST SCALE 2" FOR FULL SIZE  
OR 1" FOR HALF SIZE DRAWING

PROJECT NUMBER: EE2011066  
DRAWING NAME:  
**HARDIN II**  
**SOLAR PROJECT**

**MV ACCESSORIES -  
FAULT INDICATOR**

|                     |          |
|---------------------|----------|
| DRAWING No.         | REVISION |
| H2SP-E-VC05-02      | A        |
| CAD FILE: INDICATOR |          |



RRC

RRC POWER & ENERGY, LLC

7591 SW MOHAWK ST,

TUALATIN, OR 97062

PHONE: (503) 342-4064

www.RRCcompanies.com

**CONFIDENTIAL**

THIS DRAWING IS THE PROPERTY OF RRC POWER & ENERGY, LLC, AND INVENERGY, LLC. NO REPRODUCTION MAY BE MADE IN WHOLE OR IN PART WITHOUT WRITTEN CONSENT.

PREPARED FOR:

Invenergy

res

## Surge Arresters

**COOPER** Power Systems

**M.O.V.E. DirectConnect Elbow Arrester**

Electrical Apparatus

235-101



Figure 1  
M.O.V.E. DirectConnect Elbow Arresters with threaded adapters shown from left to right: 30 kV and 27 kV.

**GENERAL**

The M.O.V.E. DirectConnect Elbow Arrester combines metal (zinc) oxide varistor technology in a premolded rubber elbow to provide overvoltage system protection in an insulated, fully shielded, submersible, deadfront device.

The arrester housing interface conforms to IEEE Std 386™ standard – Separable Insulated Connector Systems. The arrester housing is molded of EPDM insulating rubber, and the copper alloy probe and probe retainer are connected to the MOV block slack via welded flexible plated copper leads. This ensures that the column cannot be damaged during installation and that a reliable current path to the MOV blocks is maintained.

M.O.V.E. DirectConnect Elbow Arresters are designed for use in systems in pad-mounted transformer enclosures and other installations to provide shielded deadfront arrester protection. They are designed for use

with 600 A 35 kV Class deadbreak interfaces that conform to IEEE Std 386™ standard to limit overvoltages to acceptable levels, protect equipment and extend cable life.

### CONSTRUCTION

The rubber body is constructed of high quality precision molded peroxide-cured EPDM insulation and semi-conductive materials.

The copper alloy probe and probe retainer are connected to the MOV block slack via welded flexible plated copper leads. This ensures that the column cannot be damaged during installation and that a reliable current path to the MOV blocks is maintained. The MOV blocks are mounted on disks bonded together with high-conductivity, silver-loaded epoxy to yield the most reliable electrical connection and eliminate air voids. The

#4 AWG flexible copper ground lead, which reliably carries current to ground during voltage surges, is attached to the housing by a brass magnetoformed end cap. The brass end cap provides a light, weatherproof seal.

### OPERATION

Installing a M.O.V.E. DirectConnect Elbow Arrester at the point of a radial distribution system provides excellent overvoltage protection.

M.O.V.E. DirectConnect Elbow Arrester

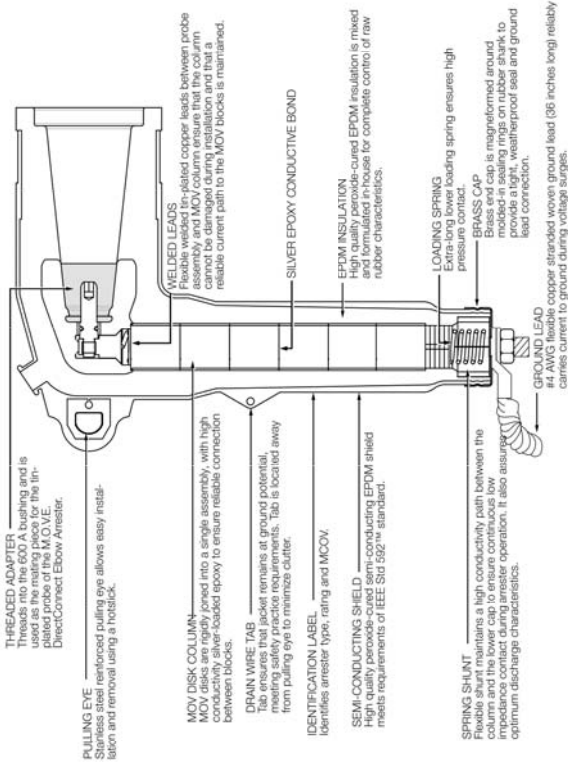


Figure 2  
Cutaway illustration shows 35 kV Class M.O.V.E. DirectConnect Elbow Arrester.

### STANDARDS

The M.O.V.E. DirectConnect Elbow Arrester complies with the latest revisions of IEEE Std C62.11™ standard "IEEE Standard for Metal Oxide Surge Arresters for AC Power Circuits" and IEEE Std 386™ standard "Separable Insulated Connectors for Power Distribution Systems Above 600 Volts."

### INSTALLATION

All Cooper M.O.V.E. DirectConnect Elbow Arresters must be installed on or removed from de-energized systems. No special tools are required. An adapter is threaded into the 600 A apparatus bushing. The M.O.V.E. then is placed on the 600 A apparatus bushing using a hoiststick. Refer to Installation Instruction Sheet S235-100-1 for more details.

**PRODUCTION TESTS**

Tests conducted in accordance with IEEE Std 386™ standard:

- Periodic Dissection
- MOV Blocks:
  - Voltage at 1 mA
  - Batch Life Test
- Arrester Assembly:
  - Voltage at 1 mA
  - Periodic X-ray Analysis

Tests conducted in accordance with Cooper Power Systems requirements:

**TABLE 1**  
Electrical Ratings and Characteristics

| Duty Cycle Voltage Rating (kV) | Equivalent Front-of-Front-of-Front (kV crest)* | MCOV (kV) | Maximum Discharge Voltage (kV crest) 8/20 µs Current Wave |
|--------------------------------|------------------------------------------------|-----------|-----------------------------------------------------------|
| 27                             | 22.0                                           | 105.0     | 75.0                                                      |
| 30                             | 24.4                                           | 112.0     | 82.0                                                      |
|                                |                                                |           | 87.4                                                      |
|                                |                                                |           | 91.8                                                      |
|                                |                                                |           | 100.0                                                     |
|                                |                                                |           | 115.0                                                     |

\* Equivalent front-of-wave voltage is the expected discharge voltage of the arrester when tested with a 5 kA current surge cresting in 0.5 µs.

### PROTECTIVE CHARACTERISTICS

The protective characteristics of the M.O.V.E. DirectConnect Elbow Arrester is shown in Table 1.

### TEMPORARY OVERVOLTAGE (TOV) CAPABILITY

The Temporary Overvoltage (TOV) Capability of the M.O.V.E. DirectConnect Elbow Arrester is shown in Figure 3.

### PERFORMANCE TEST

The M.O.V.E. DirectConnect Elbow Arrester consistently withstands the following design tests as described by IEEE Std C62.11™ standard:

- **Duty Cycle:**
    - 22 current surges of 5 kA crest 8/20 µs waveshape.
  - **High-Current, Short-Duration Discharge:**
    - 2 current surges of 40 kA crest 4/10 µs waveshape.
  - **Low-Current, Long-Duration Discharge:**
    - 20 current surges of 75 A crest 2000 µs rectangular wave duration.
- Following each of these tests, the arresters remain thermally stable as verified by:
- Continually decreasing power values during a thirty minute power monitoring period.
  - No evidence of physical or electrical deterioration.

### STANDARDS

The M.O.V.E. DirectConnect Elbow Arrester complies with the latest revisions of IEEE Std C62.11™ standard "IEEE Standard for Metal Oxide Surge Arresters for AC Power Circuits" and IEEE Standard 386™ "Separable Insulated Connectors for Power Distribution Systems Above 600 Volts."

235-101

TABLE 2  
Commonly Applied Voltage Ratings of M.O.V.E. DirectConnect Elbow Arrester

| System Voltage (V rms) | Maximum Voltage Range B | 4-Wire Multigrounded Neutral Wye | 3-Wire Low Impedance Grounded | Data and 3-Wire High Impedance Grounded |
|------------------------|-------------------------|----------------------------------|-------------------------------|-----------------------------------------|
| Nominal Voltage        |                         |                                  |                               |                                         |
| 24.94 Y/14.4           | 26.4 Y/15.24            | 18 (15.3)/21 (17.0) <sup>2</sup> | 27 (22.0)                     | –                                       |
| 27.6 Y/15.93           | 29.25 Y/16.89           | 21 (17.0)/24 (19.5) <sup>2</sup> | 30 (24.4)                     | –                                       |
| 34.5 Y/19.92           | 36.51 Y/21.1            | 27 (22.0)                        | –                             | –                                       |

1. Line-to-ground fault duration not to exceed 30 minutes. For longer durations, contact the factory for proper rating.

2. Selection of Cooper M.O.V.E. Arrester with a higher rated MCOV rating may improve the probability of surge clearing in systems not protected with MOV arresters at the rear poles.

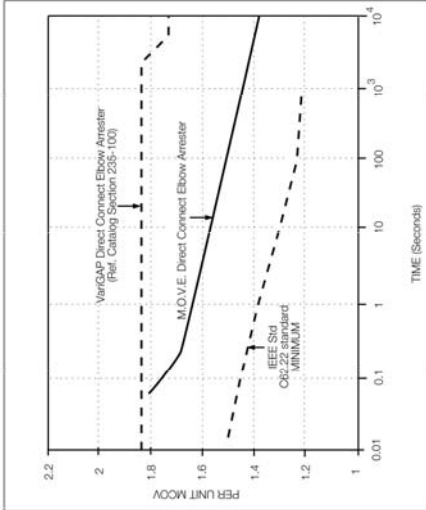


Figure 3.  
Temporary overvoltage curve. No prior duty at 85 °C ambient.





**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

**5/4/2021 9:06:25 AM**

**in**

**Case No(s). 18-1360-EL-BGN**

Summary: Notice - Compliance with Condition 3 - Engineering Drawings electronically filed by Christine M.T. Pirik on behalf of Hardin Solar Energy II LLC