

PV SYSTEM DETAILS

ARRAY TYPE: GROUND MOUNT  
 DC SYSTEM SIZE: 1.40 MW DC  
 DC SYSTEM VOLTAGE: 1500 V  
 AC SYSTEM SIZE: 1.00 MW AC @ PF 1.0  
 MODULES: (3456) TRINA TSM-DEG15HC.20 405W  
 INVERTERS: (8) CPS SCH125KTL-DO/US-600  
 RACKING: ARRAY TECHNOLOGIES HORIZONTAL TRACKER  
 AZIMUTH: 180 DEG  
 ARRAY PITCH: SAT (SINGLE AXIS TRACKER)

# SV CSG NORTHFIELD LLC (44.473361, -93.220431)

INSPECTION ITEMS

CONTRACTOR SHALL STRICTLY ADHERE TO THE FOLLOWING CODE STANDARDS UNLESS OTHERWISE NOTED WITHIN THE DRAWING; NEC. 2017, IBC. 2015, IFC. 2015 AND APPLICABLE LOCAL CODES.

**PROGRESS INSPECTIONS:**  
 ROUGH ELECTRIC:  REQUIRED  NOT REQUIRED  
 ROUGH BUILDING:  REQUIRED  NOT REQUIRED

**FINAL INSPECTIONS:**  
 ELECTRIC:  REQUIRED  NOT REQUIRED  
 BUILDING:  REQUIRED  NOT REQUIRED  
 OTHER:  REQUIRED  NOT REQUIRED

CONTRACTOR SHALL BE KNOWLEDGEABLE OF ANY LOCAL AHJ INSPECTIONS REQUIRED NOT LISTED.



65' TO 330TH STREET W  
 CASE #: 04193986  
 SITE LAT: 44.473361  
 SITE LONG: -93.220431  
 POI LAT: 44.471648  
 POI LONG: -93.219834  
 SUBSTATION: NORTHFIELD

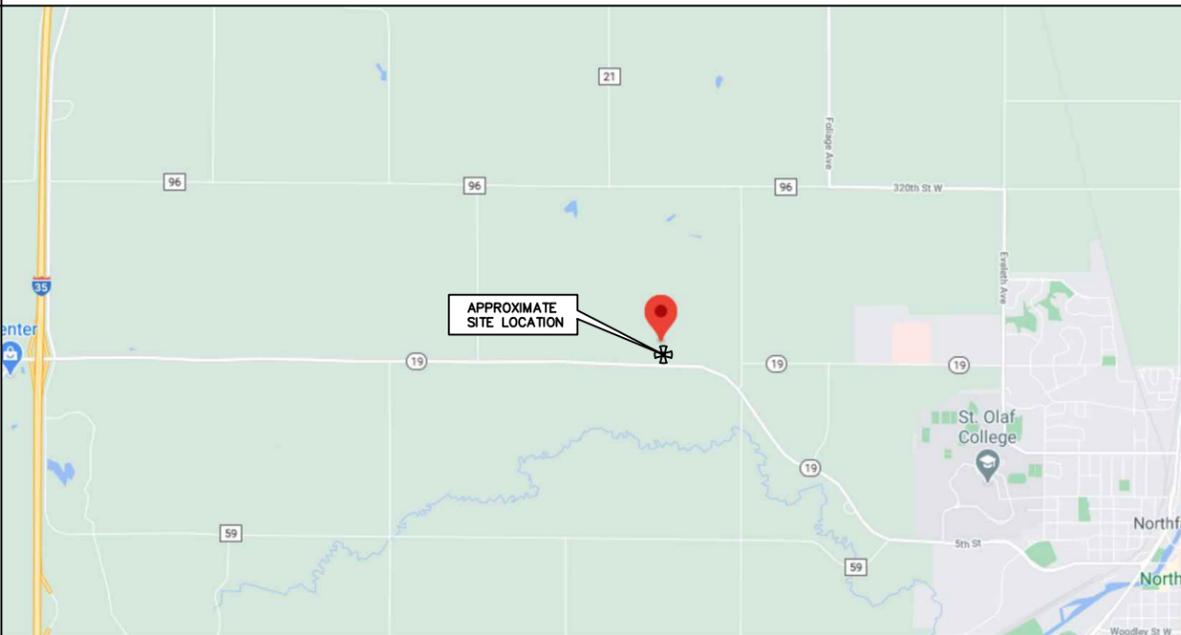
UTILITY CUSTOMER OF RECORD  
 SV CSG NORTHFIELD LLC

GARDEN NAME:  
 PINKMAN SOLAR

SCOPE OF WORK

- CONTRACTOR SHALL ACCEPT, VERIFY AND INSTALL ALL MATERIAL AS LISTED ABOVE AND ON THE B.O.M. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE DEVELOPER IMMEDIATELY.
- ALL EQUIPMENT AND MATERIAL SHALL BE INSTALLED AS PER MANUFACTURES GUIDELINES SET FORTH IN THE INSTRUCTION MANUAL AND AS PER NEC. 110.(D)
- CONTRACTOR SHALL PROVIDE PROTECTIVE MATERIALS TO PREVENT DAMAGE TO EXISTING BUILDINGS OR EQUIPMENT AND PROPOSED BUILDINGS OR EQUIPMENT.
- CONTRACTOR SHALL PERFORM A PRE-CONSTRUCTION SITE WALK AT LEAST 5 DAYS PRIOR TO MOBILIZATION TO CONFIRM SITE CONDITIONS, STAGING AREAS AND ANY OTHER SITE SPECIFIC DETAILS REQUIRED. ANY ISSUES SHALL BE PHOTO DOCUMENTED ALONG WITH A WRITTEN REPORT AND PROVIDED IMMEDIATELY TO THE NECESSARY PARTIES.
- IF DEVELOPER IS NOT CALLED, CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL TESTING/INSPECTION REQUIRED TO APPROVE SITE AT ENGINEERS DISCRETION.
- PRIOR TO FINAL SIGN-OFF THE CONTRACTOR SHALL PROVIDE A LETTER OF COMPLIANCE FOR THE WORK DONE. THE LETTER MUST REFERENCE THAT THE WORK WAS DONE IN ACCORDANCE TO THE DRAWINGS AND IN COMPLIANCE WITH THE BUILDING CODE OF THE APPLICABLE AUTHORITY HAVING JURISDICTION.

LOCATION MAP



NOTES

- THE APPLICANT PROPOSES TO INSTALL PV MODULES AND WEATHER PROOF EQUIPMENT FOR AN UNMANNED FACILITY.
- EQUIPMENT IS UNMANNED AND NOT FOR HUMAN HABITATION, HANDICAP ACCESS IS THEREFORE NOT REQUIRED.
- CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. NON-CONFORMING CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
- INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER AND DEVELOPER FOR REMEDIAL OR CORRECTIVE ACTION.
- DEVELOPMENT AND USE OF THE SITE WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.

DISCLAIMER

IT IS A VIOLATION OF THE LAW FOR ANY PERSON UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT. UNLESS EXPLICITLY AGREED TO BY THE ENGINEER IN WRITING, THE ENGINEER DISCLAIMS ALL LIABILITY ASSOCIATED WITH THE REUSE, ALTERATION OR MODIFICATION OF THE CONTENTS HEREIN.

LICENSED ELECTRICAL ENGINEER certifies that they prepared all the electrical "E" sheets in this drawing set.  
 LICENSED STRUCTURAL ENGINEER certifies that they prepared all of the structural "S" sheets in this drawing set.  
 LICENSED CIVIL ENGINEER certifies that they prepared all of the civil "C" sheets in this drawing set.  
 It should be noted that any plan sheets not identified above have been prepared and certified by others and have been included herein for informational purposes only.

SITE INFORMATION

PROPERTY OWNER: SV CSG NORTHFIELD LLC  
 POWER COMPANY: XCEL

AERIAL MAP



DWG NO:

DRAWING INDEX

T-1.00  
 G-1.00  
 G-2.00  
 PV-1.00  
 E-1.00  
 E-2.00  
 E-3.00

TITLE SHEET  
 GENERAL NOTES  
 GENERAL NOTES  
 ARRAY LAYOUT  
 ONE-LINE DIAGRAM  
 SPEC SHEETS  
 NEC LABELS

T-1.00	TITLE SHEET
G-1.00	GENERAL NOTES
G-2.00	GENERAL NOTES
PV-1.00	ARRAY LAYOUT
E-1.00	ONE-LINE DIAGRAM
E-2.00	SPEC SHEETS
E-3.00	NEC LABELS

F	L		
E	K		
D	J		
C	I		
B	H		
A	4/10/23	G	
REV	DATE	REV	DATE
DRAWN BY: TG		CHECKED BY: RA	
SCALE: AS NOTED		JOB NO: JOB_NO	

SV CSG NORTHFIELD LLC  
 RICE COUNTY  
 (44.473361, -93.220431)

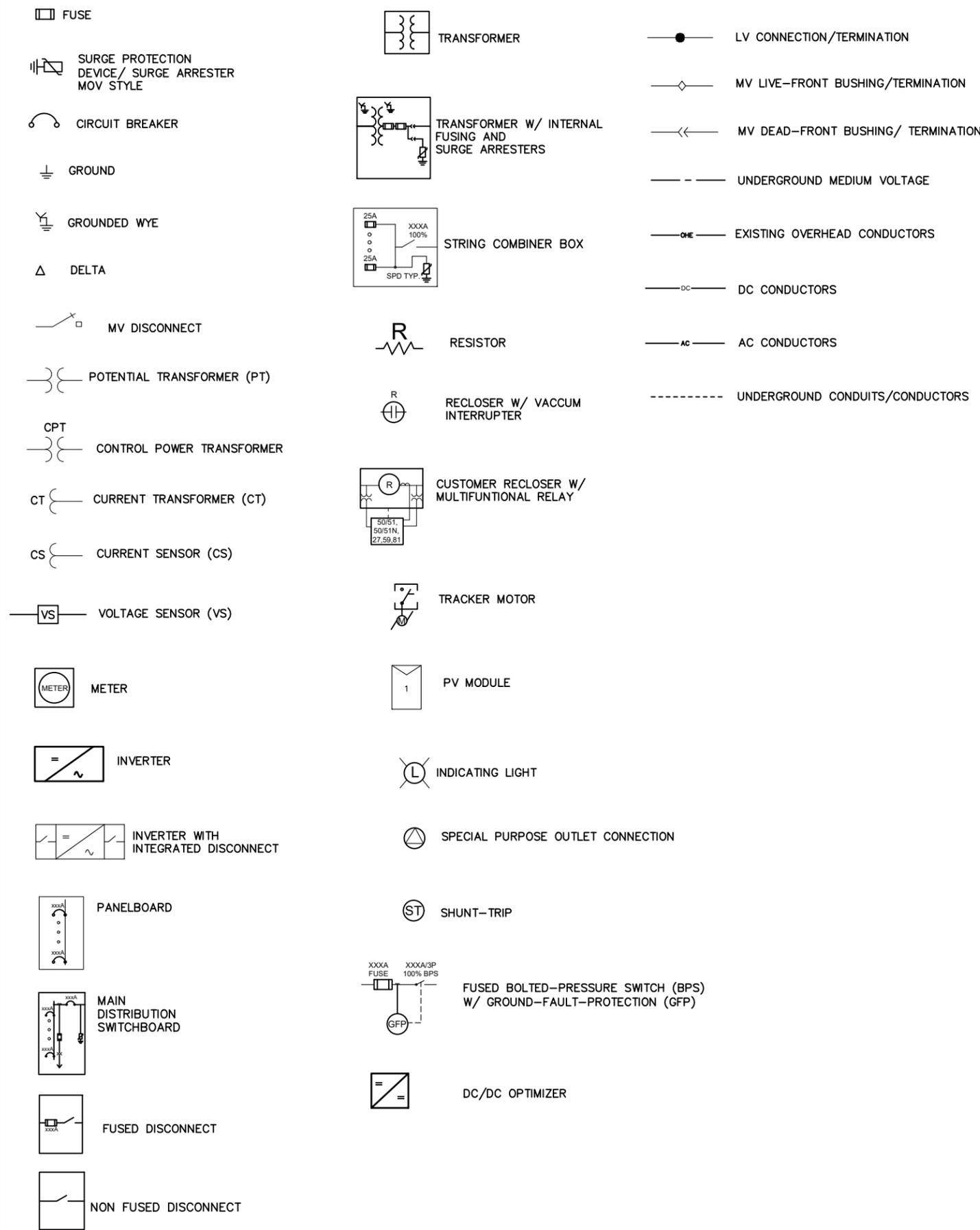
SHEET TITLE  
 TITLE SHEET

DWG. NO.  
**T-1.00**

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS & EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE DEVELOPER OR ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

**SYMBOL LEGEND:**



**GENERAL NOTES:**

**1. GENERAL REQUIREMENTS:**

- THE WORK TO BE DONE UNDER THIS PROJECT INCLUDES PROVIDING ALL EQUIPMENT, MATERIALS, LABOR AND SERVICES NOT INCLUDED IN THE B.O.M, AND PERFORMING ALL OPERATIONS FOR COMPLETE AND OPERATING SYSTEMS. ANY WORK NOT SPECIFICALLY COVERED BUT NECESSARY TO COMPLETE THIS INSTALLATION, SHALL BE PROVIDED. ALL EQUIPMENT AND WIRING TO BE NEW AND PROVIDED UNDER THIS CONTRACT UNLESS OTHERWISE NOTED.
- ENTIRE INSTALLATION, INCLUDING MATERIALS, EQUIPMENT AND WORKMANSHIP, SHALL CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC CODE (NEC) AS WELL AS ALL APPLICABLE LAWS AND REGULATIONS AND REGULATORY BODIES HAVING JURISDICTION OVER THIS WORK:
- THE TERM "FURNISH" SHALL MEAN TO OBTAIN AND SUPPLY TO THE JOB SITE. THE TERM "INSTALL" SHALL MEAN TO FIX IN POSITION AND CONNECT FOR USE. THE TERM "PROVIDE" SHALL MEAN TO FURNISH AND INSTALL. THE TERM "CONTRACTOR" SHALL MEAN ELECTRICAL CONTRACTOR.
- ONLY WRITTEN CHANGES AND/OR MODIFICATIONS APPROVED BY THE ENGINEER, CONSULTING ENGINEER OR OWNER'S REPRESENTATIVE WILL BE RECOGNIZED.
- THE ELECTRICAL CONTRACTOR SHALL SUBMIT, FOR THE ENGINEER'S APPROVAL, DETAILED SHOP DRAWINGS OF ALL EQUIPMENT SPECIFIED.
- CONTRACTOR SHALL COORDINATE WITH SPECIFICATIONS PROVIDED BY OTHER TRADES.
- PROVIDE OPERATING AND MAINTENANCE MANUALS, PER SPECIFICATIONS, AND GIVE INSTRUCTIONS TO USER FOR ALL EQUIPMENT AND SYSTEMS PROVIDED UNDER THIS CONTRACT AFTER ALL ARE CLEANED AND OPERATING.
- KEEP PREMISES FREE FROM RUBBISH. REMOVE ALL ELECTRICAL RUBBISH FROM SITE.
- ALL WORK SHALL BE INSTALLED CONCEALED UNLESS OTHERWISE NOTED.
- THE WORK SHALL INCLUDE ALL PANELS, DEVICES, FEEDERS AND BRANCH CIRCUIT WIRING AS REQUIRED FOR THE DISTRIBUTION SYSTEM INDICATED AND CALLED FOR ON THE DRAWINGS, REQUIRED BY SPECIFICATIONS AND AS NECESSARY FOR COMPLETE FUNCTIONAL SYSTEMS PRESENTED AND INTENDED.
- THE CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR, TOOLS, EQUIPMENT, CONSUMABLES AND SERVICES REQUIRED FOR OBTAINING, DELIVERY, INSTALLATION, CONNECTION, DISCONNECTION, REMOVAL, RELOCATION, REPAIR, REPLACEMENT, TESTING AND COMMISSIONING OF ALL EQUIPMENT AND DEVICES INCLUDED IN OR NECESSARY FOR THE WORK, AS APPLICABLE. THIS INCLUDES SCAFFOLDING, LADDERS, RIGGING, HOISTING, ETC.
- ELECTRICAL WORK SHALL INCLUDE ALL REQUIRED CUTTING, PATCHING AND THE FULL RESTORATION OF WALL AND FLOOR STRUCTURE AND SURFACES. ALL EQUIPMENT, WALLS, FLOORS, ETC., DISTURBED OR DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED TO THE SATISFACTION OF THE OWNER, AT THE CONTRACTORS EXPENSE.
- BEFORE SUBMITTING HIS BID, THE CONTRACTOR SHALL FULLY AQUAINT HIMSELF/HERSELF WITH THE JOB CONDITIONS AND DIFFICULTIES THAT WILL PERTAIN TO THE EXECUTION OF THIS WORK. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE. LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED, WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.
- THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO EXISTING UTILITIES.
- UPON COMPLETION OF THE ELECTRICAL WORK, THE CONTRACTOR SHALL TEST THE COMPLETE ELECTRICAL SYSTEM FOR SHORTS, GROUNDS, AND PROPER OPERATION, IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE.
- UPON COMPLETION OF WORK, THE CONTRACTOR SHALL CLEAN AND ADJUST ALL EQUIPMENT AND LIGHTING AND TEST SYSTEMS TO THE SATISFACTION OF OWNER AND ENGINEER. RESULTS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- THE CONTRACTOR SHALL FIELD VERIFY DIMENSIONS OF FINISHED CONSTRUCTION PRIOR TO FABRICATION AND INSTALLATION OF FIXTURES AND EQUIPMENT.
- EXACT ROUTING OF CONDUITS AND "MC" CABLES SHALL BE DETERMINED IN THE FIELD.
- IF THE OWNER AND/OR HIS REPRESENTATIVE CONSIDERS ANY WORK TO BE INFERIOR, THE RESPECTIVE CONTRACTOR SHALL REPLACE SAME WITH CONTRACT STANDARD WORK WITHOUT ADDITIONAL CHARGE. ALL WORK SHALL BE DONE IN A NEAT, WORKMANLIKE MANNER, LEFT CLEAN AND FREE FROM DEFECTS, AND COMPLETELY OPERABLE.
- THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AS SHOWN ON THE DRAWINGS AND/OR AS SPECIFIED. ALL MATERIALS SHALL BE NEW, AND BEAR THE UL LABEL. ALL WORK SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER.
- DRAWINGS ARE TO BE CONSIDERED DIAGRAMMATIC, AND SHALL BE FOLLOWED AS CLOSELY AS CONDITIONS ALLOW TO COMPLETE THE INTENT OF THE CONTRACT. THE DRAWINGS AND SPECIFICATIONS COMPLIMENT ONE ANOTHER, AND WHAT IS SHOWN ON THE DRAWINGS AND NOT MENTIONED IN THE SPECIFICATIONS, AND VICE VERSA, IS TO BE INCLUDED IN THE SCOPE OF WORK.
- ALL EQUIPMENT CONNECTIONS SHALL BE INSTALLED PER APPLICABLE SEISMIC REQUIRMENTS.
- ENGINEER WILL MAKE A FINAL INSPECTION WITH THE OWNER AND CONTRACTOR AND WILL NOTIFY THE CONTRACTOR IN WRITING OF ALL PARTICULARS IN WHICH THIS INSPECTION REVEALS THAT THE WORK IS INCOMPLETE OR DEFECTIVE. THE CONTRACTOR SHALL IMMEDIATELY TAKE SUCH MEASURES AS ARE NECESSARY TO COMPLETE SUCH WORK OR REMEDY SUCH DEFICIENCIES.
- THE CONTRACTOR SHALL PERFORM ALL EXCAVATION, TRENCHING AND BACKFILL REQUIRED FOR ELECTRICAL WORK. BACKFILL SHALL BE SUITABLE MATERIAL PROPERLY COMPACTED TO 95% DENSITY IN EACH LAYER OF SIX (6) INCH DEPTH. CONDUIT SHALL BE MINIMUM 30" BELOW FINISHED GRADE.

**SUNVEST SOLAR LLC**  
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SV CSG NORTHFIELD LLC  
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SHEET TITLE  
 GENERAL NOTES

DWG. NO.  
**G-1.00**

**GENERAL NOTES:**

**2. PROJECT COORDINATION:**

- 2.1 THE CONTRACTOR SHALL VERIFY FIELD CONDITIONS AT THE SITE AND NOTIFY THE OWNER OF ANY DISCREPANCIES, PRIOR TO COMMENCING WITH THE WORK.
- 2.2 THE CONTRACTOR SHALL REVIEW AND COORDINATE WITH THE DOCUMENTS OF ALL TRADES.
- 2.3 THE CONTRACTOR SHALL FURNISH A SCHEDULE INDICATING HIS PORTION OF TIME, WITHIN THE OVERALL SCHEDULE, REQUIRED TO COMPLETE THE WORK, IN CONJUNCTION WITH ALL TRADES. ALL WORK THAT MAY AFFECT OPERATION OF BUILDING SYSTEMS SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE.
- 2.4 SHUT DOWN OF POWER SHALL BE COORDINATED WITH THE OWNER, ARCHITECT AND PROJECT MANAGER AT LEAST 14 WORKING DAYS PRIOR TO SHUT DOWN. SHUT DOWNS LONGER THAN 2 DAYS SHALL BE COORDINATED WITH THE ABOVE PERSONNEL AT LEAST ONE MONTH IN ADVANCE. TEMPORARY POWER FOR CONSTRUCTION SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR FOR SHUT DOWNS OVER 2 DAYS.
- 2.5 ALL CONDUITS AND DEVICE BOXES SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR, INCLUDING ALL TECHNOLOGY CONDUITS AND BOXES.
- 2.6 EXACT LOCATIONS OF OUTLETS AND EQUIPMENT SHALL BE COORDINATED WITH ARCHITECTURAL AND MILLWORK PLANS. ALL OUTLET AND EQUIPMENT LAYOUTS SHALL BE VERIFIED AND COORDINATED WITH WORK OF OTHER TRADES.
- 2.7 PROVIDE TEMPORARY LIGHTING AND POWER IN ACCORDANCE WITH ARTICLE 305 OF THE NEC. TEMPORARY LIGHTING FIXTURES IN UNFINISHED AREAS SHALL REMAIN CONNECTED UNTIL REMOVAL IS REQUESTED BY THE CONTRACTOR.
- 2.8 THE CONTRACTOR SHALL CONTACT THE BUILDING MANAGER TO OBTAIN A COPY OF THE GENERAL REQUIREMENTS AND/OR CONDITIONS TO BE USED FOR THIS PROJECT.

**3. PROTECTION OF WORK:**

- 3.1 EFFECTIVELY PROTECT ALL MATERIALS AND EQUIPMENT FROM ENVIRONMENTAL AND PHYSICAL DAMAGE UNTIL FINAL ACCEPTANCE. CLOSE AND PROTECT ALL OPENINGS DURING CONSTRUCTION. PROVIDE NEW MATERIALS AND EQUIPMENT TO REPLACE ITEMS DAMAGED.

**4. WARRANTIES:**

- 4.1 ALL MATERIALS AND EQUIPMENT SHALL BE GUARANTEED IN WRITING FOR A MINIMUM OF ONE YEAR AFTER FINAL ACCEPTANCE BY OWNER.
- 4.2 WORKMANSHIP SHALL BE GUARANTEED IN WRITING FOR A MINIMUM OF 5 YEARS AFTER FINAL ACCEPTANCE BY OWNER
- 4.3 OBTAIN AND DELIVER TO THE OWNER'S REPRESENTATIVE ALL GUARANTEES AND CERTIFICATES OF COMPLIANCE.

**5. PERMITS:**

- 5.1 CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS AND INSPECTION FEES FOR ELECTRICAL WORK.

**6. RACEWAYS:**

- 6.1 ALL CONDUIT SHALL BE MINIMUM SIZE OF 1/2" FOR POWER CIRCUITS AND CONTROL CIRCUITS EXCEPT WHERE FLEXIBLE CONDUIT IS CALLED FOR ON PROJECT DOCUMENTS. ALL EXTERIOR EXPOSED CONDUIT SHALL BE PVC. ALL UNDERGROUND, IN SLAB OR UNDER SLAB SHALL BE SCH. 40 PVC. CHANGE TO SCH. 80 PVC CONDUIT BEFORE EXITING OUT OF UNDERGROUND SECTIONS. EMT IS ALLOWED IN INTERIOR DRY LOCATIONS WHERE NOT SUBJECT TO DAMAGE.
- 6.2 ALL FLEXIBLE CONDUIT IN WET OR DRY AREAS SHALL BE LIQUID TIGHT CONDUIT. NONMETALLIC FLEXIBLE CONDUIT IS SPECIFICALLY PROHIBITED.
- 6.3 CONDUIT SHALL BE RUN AT RIGHT ANGLES AND PARALLEL TO BUILDING LINES, SHALL BE NEATLY RACKED AND SECURELY FASTENED. JUNCTION BOXES SHALL BE PROVIDED WHERE REQUIRED TO FACILITATE INSTALLATION OF WIRES.
- 6.4 ALL CONDUIT AND ELECTRICAL EQUIPMENT SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN AN APPROVED MANNER.
- 6.5 ALL EMPTY RACEWAYS SHALL BE FURNISHED WITH A 200 LB. TEST NYLON DRAG LINE.
- 6.6 ARRANGEMENT OF CONDUIT AND EQUIPMENT SHALL BE AS INDICATED, UNLESS MODIFICATION IS REQUIRED TO AVOID INTERFERENCES.
- 6.7 ALL RACEWAY AND WRING SHALL BE CONCEALED IN FINISHED AREAS. RACEWAY IN MECHANICAL ROOMS, BASEMENTS AND CRAWL SPACES MAY BE SURFACE MOUNTED.
- 6.8 FOR CONDUITS CROSSING EXPANSION JOINTS, PROVIDE EXPANSION FITTINGS FOR SIZE 1-1/4", AND LARGER. PROVIDE SECTIONS OF FLEXIBLE CONDUIT WITH GROUNDING JUMPERS FOR SIZES 1" AND SMALLER.
- 6.9 THE CONTRACTOR SHALL SEAL ALL PENETRATIONS THROUGH FIRE RATED WALLS AND FLOORS WITH APPROVED FIRE RATED SEALANT. ALL PENETRATIONS THROUGH ALL WALLS AND FLOORS SHALL BE SEALED. FOR ALL SLAB PENETRATIONS THE METHOD, DEPTHS AND LOCATIONS SHALL BE PRE-APPROVED BY THE BUILDING ENGINEER PRIOR TO THE START OF WORK.
- 6.10 THE CONTRACTOR SHALL INSTALL DETECTABLE UNDERGROUND TAPES FOR THE PROTECTION, LOCATION AND IDENTIFICATION OF UNDERGROUND CONDUIT INSTALLATION.
- 6.11 EXACT ROUTING OF CONDUITS AND CABLES SHALL BE DETERMINED IN FIELD.
- 6.12 ALL PENETRATIONS THROUGH FLOORS SHALL BE FIRE STOPPED AND SEALED WITH APPROVED SEALANT.
- 6.13 ELECTRICAL RACEWAY CONNECTIONS TO VIBRATING EQUIPMENT AND MACHINERY, SHALL BE MADE WITH FLEXIBLE LIQUID TIGHT METALLIC CONDUIT.
- 6.14 SECURE ALL SUPPORTS TO BUILDING STRUCTURE UTILIZING TOGGLE BOLTS IN HOLLOW MASONRY, EXPANSION SHIELDS OR INSERTS IN CONCRETE AND BRICK. MACHINE SCREWS IN METAL, BEAM CLAMPS IN FRAMEWORK AND WOOD SCREWS IN WOOD. NAILS, RAWL PLUGS AND WOOD PLUGS ARE NOT PERMITTED. WHERE REQUIRED BY STRUCTURE, PROVIDE THRU BOLTS AND FISH PLATES. SUPPORT RACEWAY RISERS AT EACH FLOOR LEVEL. RUN EXPOSED RACEWAYS PARALLEL WITH OR AT RIGHT ANGLES TO BUILDING LINES.
- 6.15 DO NOT RUN RACEWAYS CLOSER THAN 6 INCHES WHEN PARALLEL TO HOT WATER OR STEAM PIPES. WHEN CROSSING WATER OR STEAM PIPES CROSS A MINIMUM OF 3 INCHES ABOVE. IF CROSSING BELOW IS UNAVOIDABLE, PROVIDE DRIP SHIELDS EXTENDING 6 INCHES BEYOND THE WATER OR STEAMPIPE. BOXES INSTALLED IN PROXIMITY TO WATER OR STEAM PIPE SHALL BE RATED NEMA 4X.

**7. BOXES:**

- 7.1 INTERIOR JUNCTION BOXES SHALL BE SHEET STEEL. EXTERIOR JUNCTION BOXES SHALL BE NONMETALLIC, WITH SCREW COVERS. BOXES SHALL BE SUPPORTED INDEPENDENTLY OF CONDUITS.

**8. WIRING:**

- 8.1 ALL WIRE SHALL BE MADE OF COPPER WITH INSULATION SUITABLE FOR THE APPLICABLE ENVIROMENT AND VOLTAGE. CONTRACTOR SHALL GET APPROVAL FOR ANY OTHER WIRE TYPE.
- 8.2 UNDER NO CIRCUMSTANCES SHALL FEEDERS BE SPLICED.
- 8.3 ALL ELECTRICAL TERMINAL TEMPERATURE RATINGS ASSUMED TO BE 75° C UNLESS SITE CONDITIONS REQUIRE OTHERWISE.
- 8.4 WIRE SIZES SHALL BE INCREASED WHERE NECESSARY TO LIMIT AC VOLTAGE DROP TO 1.5% TOTAL FROM INVERTER TO POINT OF COMMON COUPLING

**9. GROUNDING:**

- 9.1 PROVIDE A COMPLETE EQUIPMENT GROUND SYSTEM FOR THE ELECTRICAL SYSTEM AS REQUIRED BY ARTICLE 250 AND 690, OF THE NEC, AND AS SPECIFIED HEREIN.
- 9.2 ALL BRANCH CIRCUITS AND FEEDERS FOR POWER WIRING SHALL CONTAIN A COPPER GROUND WIRE. NO FLEXIBLE METAL CONDUIT OF ANY KIND OR LENGTH SHALL BE USED AS THE EQUIPMENT GROUNDING CONDUCTOR.

**10. MECHANICAL SYSTEMS POWER:**

- 10.1 DISCONNECT SWITCHES SHALL BE HEAVY DUTY, QUICK MAKE, QUICK BREAK TYPE, ENCLOSED IN A HEAVY SHEET METAL ENCLOSURE WITH HINGED INTERLOCKING COVER, IN PROPER NEMA RATED ENCLOSURES. FUSED OR NON-FUSED AS REQUIRED. DISCONNECT SWITCHES SHALL BE PROVIDED BY CONTRACTOR, EXCEPT AS NOTED ON DRAWINGS.
- 10.2 THE RATING FOR DISCONNECT SWITCHES SHALL BE THE SAME AS, OR GREATER THAN, THE PROTECTIVE DEVICE SERVING THE EQUIPMENT.
- 10.3 A STRUT FRAME SHALL BE PROVIDED AT ALL LOCATIONS WHERE STRUCTURE WILL NOT ADEQUATELY SUPPORT EQUIPMENT, OR FOR FREESTANDING EQUIPMENT.

**11. PANEL BOARDS:**

- 11.1 PANELBOARDS: SWITCHING UNITS SHALL BE 3 PHASE, 4 WIRE CIRCUIT BREAKER TYPE UNLESS OTHERWISE NOTED. BUS BARS SHALL BE HARD DRAWN COPPER, MINIMUM 98% CONDUCTIVITY, AND SILVER OR TIN-PLATED JOINTS. CABINETS SHALL BE GALVANIZED SHEET STEEL BACK BOX, WITH DOOR AND TRIM AND LAPPED AND WELDED CORNERS. HARDWARE SHALL BE CHROME-PLATED WITH FLUSH LOCK/LATCH HANDLE ASSEMBLY (UP TO 48 IN. HIGH DOORS) OR VAULT HANDLE, LOCK AND 3-POINT CATCH (LARGER THAN 48 IN. HIGH DOORS). HINGES SHALL BE SEMI-CONCEALED, 5-KNUCKLE STEEL WITH NONFRERROUS PINS, 180-DEG OPENING, LOCATED A MAXIMUM 26 IN. ON CENTERS. PROVIDE DOOR-IN-DOOR CONSTRUCTION. MINIMUM GUTTER SPACES FOR LIGHTING PANELS SHALL BE 5- BOTTOM. DIRECTORY HOLDER SHALL BE METAL FRAME WITH CLEAR PLASTIC, TRANSPARENT COVER.
- 11.2 PROVIDE A NEW TYPE WRITTEN CIRCUIT DIRECTORY FOR EACH PANEL AFFECTED BY THIS PROJECT.
- 11.3 WHEREVER POSSIBLE, PANELBOARDS SHALL BE RECESSED IN WALL. SURFACE MOUNTED PANELBOARDS SHALL BE MOUNTED ON A PLYWOOD BACKBOARD. PLYWOOD SHALL BE MOUNTED ON TOP OF GYMSUM BOARD. PLYWOOD SHALL BE PAINTED ON ALL SIDES AND EDGES. COORDINATE WITH OWNER FOR COLOR.
- 11.4 PROVIDE LIGHTNING SURGE PROTECTION FOR MAIN SWITCHBOARD OR MAIN SERVICE PANEL BOARD. PROVIDE GROUNDING OF SURGE DEVICE PER THE NEC.
- 11.5 CONTRACTOR IS RESPONSIBLE FOR BALANCING LOADS ON ALL PHASES AND MAY ALTER ASSIGNMENT OF CIRCUITS FOR BALANCING PHASES.
- 11.6 CIRCUIT SCHEDULES ARE INTENDED TO REPRESENT THE GENERAL WIRING NEEDS OF THE EQUIPMENT SERVICED FROM THE PANEL. THE EXACT CIRCUIT ARRANGEMENT WILL BE DETERMINED BY PANEL SHOP DRAWING AND ARRANGEMENT WILL BE DETERMINED BY PANEL SHOP DRAWING AND PANELS ACTUALLY FURNISHED.

**12. IDENTIFICATION:**

- 12.1 REFER TO NEC LABELS DRAWING FOR LABELING REQUIREMENTS
- 12.2 INSTALL NAMEPLATES ON ALL MAJOR EQUIPMENT, INCLUDE STARTERS, TRANSFORMERS, PANELBOARDS, DISCONNECT SWITCHES AND OTHER ELECTRICAL BOXES AND CABINETS INSTALLED UNDER THIS CONTRACT.
- 12.3 APPLY CABLE/CONDUCTOR IDENTIFICATION MARKERS ON EACH CABLE AND CONDUCTOR IN EACH BOX, ENCLOSURE OR CABINET.

**13. RECORD DRAWINGS:**

- 13.1 THE CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF SHOP DRAWINGS. THE APPROVAL OF SHOP DRAWINGS SHALL ONLY BE CONSTRUED TO APPLY TO THE GENERAL LAYOUT AND CONFORMANCE TO THE DESIGN CONCEPT OF THE PROJECT AND FOR THE COMPLIANCE WITH THE GENERAL REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL RETAIN THE RESPONSIBILITY FOR ANY DEVIATIONS FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
- 13.2 PROVIDE SHOP DRAWINGS FOR THE LIGHTING FIXTURES, PANEL BOARDS, CIRCUIT BREAKERS, WIRING DEVICES, FIRE ALARM DEVICES AND SEALS FOR FIRE AND WATER STOPPING.
- 13.3 DURING CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN A RECORD SET OF INSTALLATION PRINTS. HE SHALL NEATLY AND CLEARLY RECORD ON THESE PRINTS ALL DEVIATIONS FROM THE CONTRACT DRAWINGS IN SIZES, LOCATIONS AND DETAILS.
- 13.4 UPON PROJECT COMPLETION, THE CONTRACTOR SHALL COMPLETE THE MARK UP OF ALL PROJECT DRAWINGS TO RECORD INSTALLED CONDITIONS.
- 13.5 REPRODUCIBLE "RECORD" DRAWINGS PREPARED IN CAD FORMAT SHALL BE PROVIDED AS INSTALLED CONDITIONS OF THE WORK. A FULL SIZE PRINT OUT OF THE "RECORD" DRAWING FILE SHALL BE PROVIDED AFTER COMPLETION OF THE INSTALLATION.
- 13.6 UPON COMPLETION AND ACCEPTANCE OF WORK, THE CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND EQUIPMENT MANUALS AND DEMONSTRATE THE PROPER OPERATIONS AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.



Developing • Finishing • Retail • Support  
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 PINKMAN SOLAR

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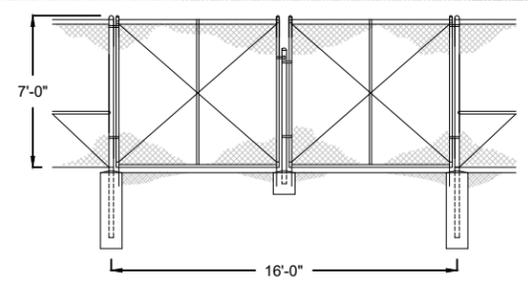
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SV CSG NORTHFIELD LLC  
 RICE COUNTY  
 (44.473361, -93.220431)

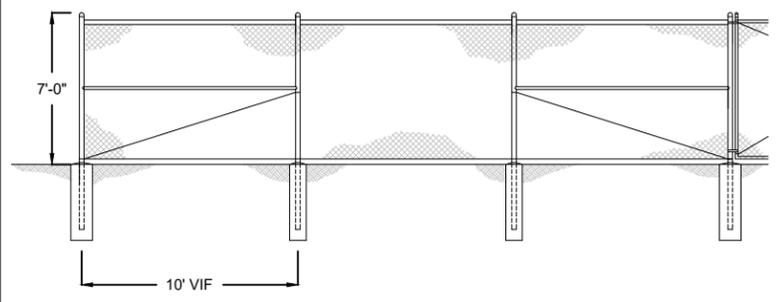
SHEET TITLE  
 GENERAL NOTES

DWG. NO.

**G-2.00**



1 ACCESS GATE DETAIL  
PV-1.00 SCALE: 1/4" + 1'-0"



2 FENCE DETAIL  
PV-1.00 SCALE: 1/4" + 1'-0"

- NOTES:
- 24/7 UNESCORTED KEYLESS ACCESS SHALL BE PROVIDED TO ALL EXCEL ENERGY EQUIPMENT.
  - AC DISCONNECT LOCATION LABEL APPLIED PER LABEL #18. E-3.00
  - ALL ACCESS ROADS 15' MINIMUM WIDTH.
  - DC COMBINERS TO BE PLACED STRATEGICALLY IN THE ARRAY FIELD
  - NO POSITION, DISTANCE OR CLEARANCE CONCERNS OF OVERHEAD ELECTRIC SERVICE LINES AND/OR OTHER UTILITIES IN RELATION TO PV PANELS UNLESS NOTED.

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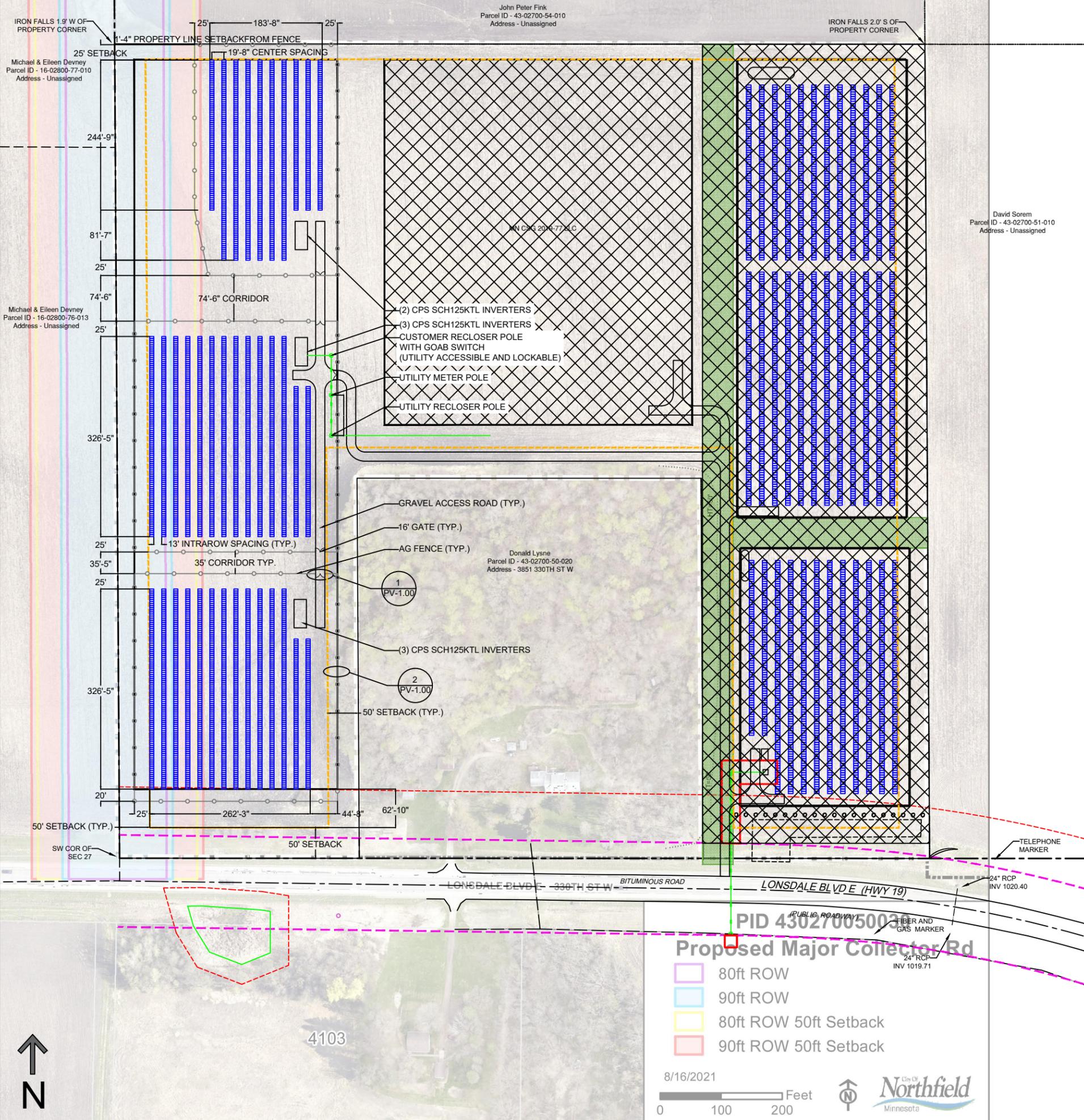
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SV CSG NORTHFIELD LLC  
  
RICE COUNTY  
(44.473361, -93.220431)

SHEET TITLE  
ARRAY LAYOUT

DWG. NO.  
**PV-1.00**



**PV SYSTEM DETAILS**

ARRAY TYPE:	GROUND MOUNT
DC SYSTEM SIZE:	1.40 MW DC
DC SYSTEM VOLTAGE:	1500 V
AC SYSTEM SIZE:	1.00 MW AC @ PF 1.0
MODULES:	(3456) TRINA TSM-DEG15HC.20 405W
INVERTERS:	(8) CPS SCH125KTL-DO/US-600
RACKING:	ARRAY TECHNOLOGIES HORIZONTAL TRACKER
AZIMUTH:	180 DEG
ARRAY PITCH:	SAT (SINGLE AXIS TRACKER)

**Proposed Major Collector Rd**

- 80ft ROW
- 90ft ROW
- 80ft ROW 50ft Setback
- 90ft ROW 50ft Setback

8/16/2021

0 100 200 Feet



65' TO 330TH STREET W  
CASE #: 04193986  
SITE LAT: 44.473361  
SITE LONG: -93.220431  
POI LAT: 44.471648  
POI LONG: -93.219834  
SUBSTATION: NORTHFIELD

UTILITY CUSTOMER OF RECORD  
SV CSG NORTHFIELD LLC

GARDEN NAME:  
PINKMAN SOLAR

**PV SYSTEM DETAILS**

ARRAY TYPE:	GROUND MOUNT
DC SYSTEM SIZE:	1.40 MW DC
DC SYSTEM VOLTAGE:	1500 V
AC SYSTEM SIZE:	1.00 MW AC @ PF 1.0
MODULES	(3456) TRINA TSM-DEG15HC.20 405W
INVERTERS:	(8) CPS SCH125KTL-DO/US-600
RACKING:	ARRAY TECHNOLOGIES HORIZONTAL TRACKER
AZIMUTH:	180 DEG
ARRAY PITCH:	SAT (SINGLE AXIS TRACKER)

- NOTES:
- EQUIPMENT USED SHALL BE UL-LISTED AS PER STANDARDS LISTED BELOW
    - INVERTERS : UL1741-SA
    - MODULES : UL1703
    - RACKING : UL2703 OR 3703
  - THE GROUNDING TRANSFORMER BREAKER SHALL INCLUDE AN AUXILIARY CONTACT. THE SWITCHGEAR MANUAL BREAKER SHALL OPEN WHEN THE AUXILIARY CONTACT INDICATES THAT THE GROUNDING TRANSFORMER BREAKER IS OPEN AND IS NOT CLOSED. THIS INTERLOCK TO BE IMPLEMENTED THROUGH THE GRI RELAY.
  - UTILITY METER 3P, 4W SERVICE. PROVIDE PLACARD: "GENERATION SYSTEM CONNECTED." FINAL SPECIFICATIONS BY XCEL ENERGY. CUSTOMER TO PROVIDE AND INSTALL PER XCEL 'STANDARD FOR ELECTRIC INSTALLATION AND USE' TABLE OF RESPONSIBILITY FOR PM-10. INSTALLATION PER PM-10.
  - POLE MOUNTED RECLOSER. TO FACILITATE LOSS OF PHASE TEST. VOLTAGE SENSING REQUIRED ON BOTH SIDES OF SWITCH. SHALL TRIP THE OTHER PHASES OPEN OVERVOLTAGE DETECTION DURING LOSS OF PHASE TEST. COMMUNICATES STATUS TO THE DAS.
  - 24/7 UNESCORTED KEYLESS ACCESS TO XCEL ENERGY EQUIPMENT
  - UTILITY METER AND UTILITY AC DISCONNECT ACCESSIBLE 24/7, VISIBLE AND LOCKABLE
  - UTILITY AC DISCONNECT WITHIN 10' OF UTILITY METER
  - PV SYSTEM CONNECTED VIA A SECONDARY INTERCONNECTION
  - DESIGN SHALL MEET NATIONAL ELECTRIC CODE (NEC CODES) REQUIREMENTS

**GROUNDING TRANSFORMER SIZING CALCULATIONS**

1 MWac Project

**REQUIREMENT 1**

$kV_{(L-L)}$	0.6	0.35 kV <sub>(L-L)</sub>
$MVA_{GEN}$	1.00	
$Z_{BASE} = kV^2 / MVA_{GEN}$	0.360 Ω	
$X_{0, DG} = 0.6 \times Z_{BASE}$	0.2160	← Ground Source X <sub>0</sub> +/- 10% tolerance

**REQUIREMENT 2**

Verify $X_{0, DG} / R_{0, DG} \geq 4$		
$R_{0, DG}$	0.0442 Ω	(Z <sub>0</sub> = 0.22Ω)
$(0.9 \times X_{0, DG}) / (1.1 \times R_{0, DG})$	4.000	← X <sub>0</sub> /R <sub>0</sub> ratio with 10% tolerance must be greater than or equal to 4

**REQUIREMENT 3**

Assuming voltage imbalance (V <sub>u</sub> ) of	4.0%	
$I_{BASE} = V_{BASE} / Z_{BASE}$	962.3 A	
$I_{OPU} = V_U / Z_0$	0.0667 A	
$I_0 = I_{BASE} \times I_{OPU}$	64.2 A	
$I_{CONT} = 3 \times I_0$	192.5 A	
125% of Maximum Unbalance =	240.6 A	← Continuous Current Min. Rating

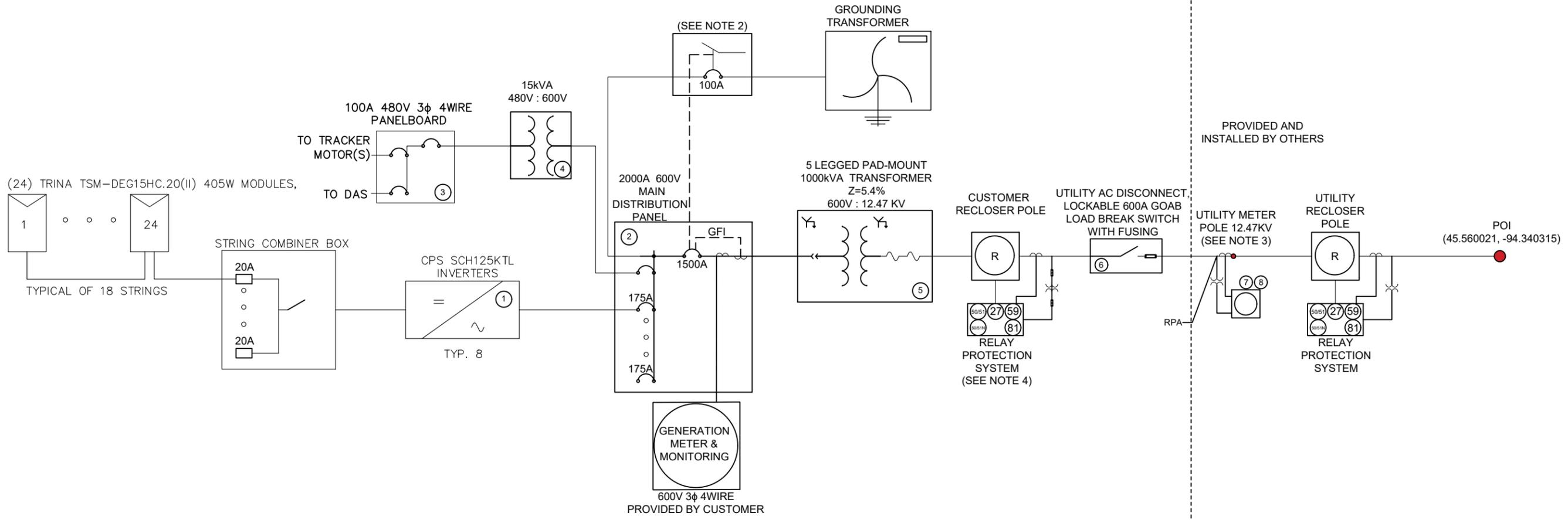
**REQUIREMENT 4**

3PH Fault Current @ POI = TBD	A	
SLG Fault Current @ POI = TBD	A	
Generator (DG) 3PH Fault Current =	962.25 A	
assuming DG short circuit contribution of:	1.0 x FLA	
Utility Z1 = TBD	Ω	
Utility Z0 = TBD	Ω	
Utility + DG Z1 = TBD	Ω	
Utility + DG Z0 = TBD	Ω	
New estimated SLG Fault Current = TBD	A	
Estimated % 3I <sub>0</sub> in DG = TBD		
Estimated Fault Current = TBD	A	
110% of 3I <sub>0</sub> = TBD	A	← 5-Second Withstand Rating

For Westwood Use Only

<b>XFMR RATING</b>	<input type="radio"/> G-wye Delta	<input checked="" type="radio"/> Zig Zag
Xfmr Size $T_{MVA} (I_0 \times kV_{LL})$	48.1 KVA	← Xfmr Size
Xfmr Base Impedance $T_{BASE} (kV^2 / T_{MVA})$	7.48 Ω	
$\sqrt{(R/T_{BASE})^2 + (X/T_{BASE})^2}$	2.947 %	← Transformer %Z

- KEYNOTES:
- INVERTER: CPS SCH125KTL 3-PHASE 600V
  - MAIN DISTRIBUTION PANEL: 2000A 3 PHASE 600V
  - PANELBOARD: 100A 480V 3-PHASE 4 WIRE
  - STEP-UP TRANSFORMER: 3-PHASE 15KVA 480V: 600V
  - 5 LEGGED PAD MOUNT TRANSFORMER: 1000KVA 600V : 12.47KV
  - AC DISCONNECT: 15KV, 3-PHASE, 600A GOAB LOAD BREAK SWITCH WITH FUSING. VISIBLE OPEN TYPE
  - UTILITY METER: 12.47KV, 3 -PHASE
  - AC DISCONNECT LOCATION LABEL APPLIED PER LABEL #18, E-3.00



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SV CSG NORTHFIELD LLC  
  
RICE COUNTY  
(44.473361, -93.220431)

SHEET TITLE  
ONE LINE DIAGRAM

DWG. NO.  
**E-1.00**

# THE DUOMAX<sup>twin</sup>

## BIFACIAL DUAL GLASS 144 HALF-CELL MODULE

**144-Cell**  
MONOCRYSTALLINE MODULE

**380-405W**  
POWER OUTPUT RANGE

**19.7%**  
MAXIMUM EFFICIENCY

**0~+5W**  
POSITIVE POWER TOLERANCE

Founded in 1997, Trina Solar is the world's leading total solution provider for solar energy. With local presence around the globe, Trina Solar is able to provide exceptional service to each customer in each market and deliver our innovative, reliable products with the backing of Trina as a strong, bankable brand. Trina Solar now distributes its PV products to over 100 countries all over the world. We are committed to building strategic, mutually beneficial collaborations with installers, developers, distributors and other partners in driving smart energy together.

### Comprehensive Products and System Certificates

- IEC 61215/IEC 61730/IEC 61634/IEC 62716
- ISO 9001: Quality Management System
- ISO 14001: Environmental Management System
- ISO 14064: Greenhouse Gases Emissions Verification
- OHSA 18001: Occupational Health and Safety Management System



PRODUCT	POWER RANGE
TSM-DEG15HC-20(1)	380-405W

**High power output**

- Up to 405W front power and 19.7% module efficiency with half-cut technology enabling higher BOS savings
- Lower resistance of half-cut cells ensures higher power

**Certified to perform in highly challenging environments**

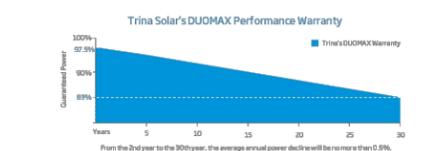
- High PID resistance through cell process and module material control
- Resistant to salt, acid, sand, and ammonia
- Proven to be reliable in high temperature and humidity areas
- Certified to the best fire class A
- Minimizes micro-crack and snail trails
- Certified to 2400 Pa positive load and 2400 Pa negative load

**High energy generation, low LCOE**

- Up to 25% additional power gain from back side, depending on the albedo
- Excellent 3rd party validated IAM and low light performance with cell process and module material optimization
- Low temp coefficient (-0.35%/°C) and NMOI increases energy production
- Better anti-shading performance and lower operating temperature
- Higher power from same installation footprint as standard modules

**Easy to install, wide application**

- Frame design enables compatibility with standard installation methods
- Deployable for ground mounted utility, carports, and agricultural projects
- Safe and easy to transport, handle, and install like normal framed modules



## 100/125kW, 1500Vdc String Inverters for North America



The 100 & 125kW medium power CPS three phase string inverters are designed for ground mount applications. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiency at 99.0% peak and 98.5% CEC, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The CPS 100/125kW products ship with the standard wire-box, each fully integrated and separable with touch safe fusing, monitoring, and AC and DC disconnect switches. The CPS Flex Gateway enables communication, controls and remote product upgrades.

### Key Features

- NEC 2014/17 compliant & UL listed Arc-Fault circuit protection
- Touch safe DC Fuse holders adds convenience and safety
- CPS Flex Gateway enables remote FW upgrades
- Integrated AC & DC disconnect switches
- 1 MPPT with 16 and 20 inputs for maximum flexibility
- Copper and Aluminum compatible AC connections
- NEMA Type 4X outdoor rated, tough tested enclosure
- Advanced Smart-Grid features (CA Rule 21 compatible)
- kVA Headroom yields 100kW @ 0.9PF and 125kW @ 0.95PF
- Generous 1.5 DC/AC Inverter Load Ratio
- Separable wire-box design for fast service
- Standard 10 year warranty with extensions to 20 years



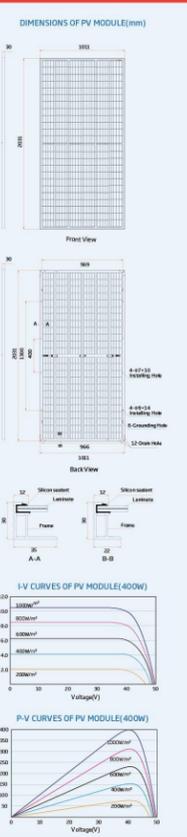
100/125kW Standard Wire-box

100/125kW Centralized Wire-box

CHINT POWER 201803-AKT-NA

7800 Hill Center Parkway, Suite 318 Pleasanton, CA 94566  
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpower.com

## DUOMAX<sup>twin</sup> BIFACIAL DUAL GLASS 144 HALF-CELL MODULE



ELECTRICAL DATA (STC)	380	385	390	395	400	405
Peak Power Watts-P <sub>max</sub> (W) <sup>1</sup>	380	385	390	395	400	405
Power Output Tolerance-P <sub>max</sub> (W)	D +5					
Maximum Power Voltage-V <sub>mp</sub> (V)	40.3	40.4	40.5	40.6	40.7	40.8
Maximum Power Current-I <sub>mp</sub> (A)	9.43	9.53	9.63	9.73	9.83	9.93
Open Circuit Voltage-V <sub>oc</sub> (V)	49.2	49.4	49.6	49.7	49.9	50.1
Short Circuit Current-I <sub>sc</sub> (A)	9.99	10.09	10.19	10.29	10.39	10.49
Module Efficiency - η <sub>m</sub> (%)	18.5	18.7	19.0	19.2	19.5	19.7

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5  
\*Measurement tolerance: ±0.5%

ELECTRICAL DATA (NMOI)	289	292	296	300	304	308
Maximum Power-P <sub>max</sub> (W)	289	292	296	300	304	308
Maximum Power Voltage-V <sub>mp</sub> (V)	38.1	38.2	38.3	38.4	38.6	38.7
Maximum Power Current-I <sub>mp</sub> (A)	7.58	7.65	7.73	7.81	7.88	7.95
Open Circuit Voltage-V <sub>oc</sub> (V)	46.6	46.8	47.0	47.1	47.2	47.4
Short Circuit Current-I <sub>sc</sub> (A)	8.05	8.13	8.21	8.29	8.37	8.45

NMOI: irradiance at 800W/m<sup>2</sup>, Ambient Temperature 25°C, Wind Speed 3m/s

Electrical characteristics with different rear side power gains (referenced specific to 400 Wp front)**	420	440	460	480	500
Maximum Power-P <sub>max</sub> (W)	420	440	460	480	500
Maximum Power Voltage-V <sub>mp</sub> (V)	40.7	40.7	40.7	40.7	40.7
Maximum Power Current-I <sub>mp</sub> (A)	10.32	10.81	11.30	11.80	12.29
Open Circuit Voltage-V <sub>oc</sub> (V)	49.9	50.0	50.0	50.0	50.1
Short Circuit Current-I <sub>sc</sub> (A)	10.91	11.43	11.95	12.47	12.99
P <sub>max</sub> gain	5%	10%	15%	20%	25%
Bifaciality Factor: 70±5%					

MECHANICAL DATA	385
Solar Cells	Monocrystalline
Cell Orientation	1.44 cells (6 × 24)
Module Dimensions	2021 × 1011 × 30 mm (79.99 × 39.80 × 1.18 inches)
Weight	25.8 kg (59.1 lb)
Front Glass	2.0 mm (0.08 inches), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	POE/EVA
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	30 mm (1.18 inches) Anodized Aluminum Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0 mm <sup>2</sup> (0.006 inches <sup>2</sup> ) Portrait: 280/280 mm (11.02/11.02 inches) Landscape: 1900/1900 mm (74.80/74.80 inches)
Connector	Trina TS4

TEMPERATURE RATINGS	MAXIMUM RATINGS
NMOI (Non-Standard Maximum Operating Temperature)	Operational Temperature
Temperature Coefficient of P <sub>max</sub>	Maximum System Voltage
Temperature Coefficient of V <sub>oc</sub>	1500V DC (IEC)
Temperature Coefficient of I <sub>sc</sub>	1500V DC (UL)
	Max Series Fuse Rating
	20A

WARRANTY	PACKAGING CONFIGURATION
12 year Product Workmanship Warranty	Modules per box: 32 pieces
30 year Power Warranty	Modules per 40' container: 672 pieces

(Please refer to product warranty for details)



Model Name	CPS SCA100KTL-DOUS-600	CPS SCA125KTL-DOUS-600
DC Input	150kW	187.5kW
Max. PV Power	1500V	1500V
Max. DC Input Voltage	890-1450Vdc	890-1450Vdc
Operating DC Input Voltage Range	900V / 2500V	900V / 2500V
Start-up DC Input Voltage / Power	1	1
Number of MPP Trackers	870-1300Vdc	870-1300Vdc
MPPT Voltage Range	220A	275A
Max. PV Input Current (I <sub>sc</sub> x 1.25)	16 inputs	20 inputs
Number of DC Inputs	Load rated DC switch	Load rated DC switch
DC Disconnection Type	Type II MOV, Up=2.5kV, In=20kA(8/20us)	Type II MOV, Up=2.5kV, In=20kA(8/20us)
DC Surge Protection	100kW	125kW
AC Output	100kVA (111kVA @ PF=0.9)	125kVA (132kVA @ PF=0.95)
Rated AC Output Power	600Vac	600Vac
Max. AC Output Power <sup>1</sup>	528-660Vac	528-660Vac
Rated Output Voltage	3Φ / PE / N (Neutral optional)	3Φ / PE / N (Neutral optional)
Output Voltage Range <sup>2</sup>	108.8A	127.2A
Grid Connection Type <sup>3</sup>	60Hz	60Hz
Normal AC Output Current @600Vdc	57-63Hz	57-63Hz
Rated Output Frequency	>0.99 (±0.8 adjustable)	>0.99 (±0.8 adjustable)
Output Frequency Range <sup>2</sup>	-3%	-3%
Power Factor	Load rated AC switch (Standard Wire-box only)	Load rated AC switch (Standard Wire-box only)
Current THD	Type II MOV, Up=2.5kV, In=20kA(8/20us)	Type II MOV, Up=2.5kV, In=20kA(8/20us)
AC Disconnection Type	System	System
AC Surge Protection	Transformerless	Transformerless
System	Max. Efficiency	99.0%
Topology	CEC Efficiency	98.5%
Max. Efficiency	Stand-by / Night Consumption	<2W
CEC Efficiency	Environment	Environment
Stand-by / Night Consumption	Enclosure Protection Degree	NEMA Type 4X
Environment	Cooling Method	Variable speed cooling fans
Enclosure Protection Degree	Operating Temperature Range	-22°F to +140°F / -30°C to +60°C (derating from +113°F / +45°C)
Cooling Method	Non-Operating Temperature Range <sup>4</sup>	-40°F to +158°F / -40°C to +70°C maximum <sup>5</sup>
Operating Temperature Range	Operating Humidity	0-100%
Variable speed cooling fans	Operating Altitude	8202ft / 2500m (no derating)
-22°F to +140°F / -30°C to +60°C (derating from +113°F / +45°C)	Audible Noise	<65dBA@1m and 25°C
-40°F to +158°F / -40°C to +70°C maximum <sup>5</sup>	Display and Communication	LED Indicators, WIFI + APP
0-100%	User Interface and Display	Modbus RS485, PLC Option (Standard Wire-box only)
8202ft / 2500m (no derating)	Inverter Monitoring	CPS Flex Gateway (1 per 64 inverters)
<65dBA@1m and 25°C	Site Level Monitoring	SunSpec/CPS
LED Indicators, WIFI + APP	Modbus Data Mapping	Standard
Modbus RS485, PLC Option (Standard Wire-box only)	Remote Diagnostics/FW Upgrade Functions	Standard
CPS Flex Gateway (1 per 64 inverters)	Mechanical	Dimensions (WxHxD)
SunSpec/CPS	Dimensions (WxHxD)	45.28x24.25x9.84in (1150x616x250mm) with Standard Wire-box
Standard	Weight	39.37x24.25x9.84in (1000x616x250mm) with Centralized Wire-box
Standard	Mounting/Installation Angle	Inverter: 121lbs / 55kg; Wire-box: 55lbs / 25kg (standard); 33lbs / 15kg (centralized)
Standard	AC Termination <sup>6</sup>	15-90 degrees from horizontal (vertical, angled)
Standard	DC Termination	MB Stud Type Terminal Block (Wire range: #6-30AWG CUAL <sup>7</sup> , Lugs not supplied)
Standard	Fused String Inputs	Screw Clamp Fuse Holder (Wire range: #12-#8AWG CU) - Standard Wire-box
Standard	Safety	Busbar, MB PEMsets (Wire range: #1AWG - 250kcmil CUAL, Lugs not supplied) - Centralized Wire-box
Standard	Safety and EMC Standard	20A fuses provided (Fuse values of 15/25/30A available)
Standard	UL1741SA-2016 <sup>8</sup> , UL1699B, CSA-C22.2 NO.107.1-01, IEEE1547a-2014, FCC PART15	UL1741SA-2016 <sup>8</sup> , UL1699B, CSA-C22.2 NO.107.1-01, IEEE1547a-2014, FCC PART15
Standard	Grid Standard <sup>9</sup>	IEEE 1547a-2014, CA Rule 21 <sup>10</sup>
Standard	Smart-Grid Features	Voltage-RideThru, Frequency-RideThru, Soft-Start, Volt-Var, Frequency-Watt
Standard	Warranty	Standard
Standard	Standard	10 years
Standard	Extended Terms	15 and 20 years

<sup>1</sup> Max. AC Apparent Power rating valid within MPPT voltage range and temperature range of -30°C to +60°C (22°F to +158°F) for 100kW PF 0.9 and 125kW PF 0.95  
<sup>2</sup> The "Output Voltage Range" and "Output Frequency Range" may differ according to the specific grid standard.  
<sup>3</sup> Wire required provided. Data may not be representative.  
<sup>4</sup> See user manual for further requirements regarding non-operating conditions.  
<sup>5</sup> IUL requires thermally stable components to be installed adjacent.  
<sup>6</sup> Certification Pending.



CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.  
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Version number: TSM\_DEG15HC\_EN\_2020\_A www.trinasolar.com



Developing • Renewable • Realistic  
N27 W24025 PAUL CT. SUITE 100  
PEWAUKEE, WI 53072  
PHONE: (262)-547-1200  
WWW.SUNVEST.COM

65' TO 330TH STREET W  
CASE #: 04193986  
SITE LAT: 44.473361  
SITE LONG: -93.220431  
POI LAT: 44.471648  
POI LONG: -93.219834  
SUBSTATION: NORTHFIELD

UTILITY CUSTOMER OF RECORD  
SV CSG NORTHFIELD LLC

GARDEN NAME:  
PINKMAN SOLAR

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SV CSG NORTHFIELD LLC

RICE COUNTY  
(44.473361, -93.220431)

SHEET TITLE  
SPEC SHEETS

DWG. NO.  
**E-2.00**

65' TO 330TH STREET W  
CASE #: 04193986  
SITE LAT: 44.473361  
SITE LONG: -93.220431  
POI LAT: 44.471648  
POI LONG: -93.219834  
SUBSTATION: NORTHFIELD

UTILITY CUSTOMER OF RECORD  
SV CSG NORTHFIELD LLC

GARDEN NAME:  
PINKMAN SOLAR

**WARNING**

THIS PANEL HAS SECONDARY POWER SOURCE FROM PHOTOVOLTAIC SYSTEM  
TURN-OFF PHOTOVOLTAIC SYSTEM BREAKER PRIOR TO SERVICING PANEL.

MAX AC OUTPUT CURRENT: AMPS  
MAX AC OUTPUT VOLTAGE: VOLTS

LABEL #1 PLACE AT POINT OF INTERCONNECTION

**WARNING**

DUAL POWER SUPPLY

SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

LABEL #2 PLACE AT POINT OF INTERCONNECTION

**WARNING**

SOLAR GENERATOR UTILITY LOCKABLE AC DISCONNECT SWITCH

AUTHORIZED PERSONNEL ONLY  
HIGH VOLTAGE- KEEP AWAY

LABEL #3 PLACE AT UTILITY LOCKABLE DISCONNECT

**WARNING**

POTENTIAL ARC FLASH HAZARD

LABEL #4 PLACE AT PV SWITCHBOARD

**WARNING**

TURN OFF AC DISCONNECT PRIOR TO WORKING INSIDE PANEL

AUTHORIZED PERSONNEL ONLY  
HIGH VOLTAGE- KEEP AWAY

LABEL #5 PLACE AT AC COMBINER PANEL

**WARNING**

POWER METER AND AC DISCONNECT  
TURN OFF INVERTER PRIOR TO OPERATING AC DISCONNECT

AUTHORIZED PERSONNEL ONLY  
HIGH VOLTAGE- KEEP AWAY

LABEL #6 PLACE AT AC DISCONNECT

**WARNING**

ELECTRIC SHOCK HAZARD

IF GROUND FAULT IS INDICATED ALL NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED

LABEL #7 PLACE AT INVERTERS

**CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED**

LABEL #8 PLACE ON DC DISCONNECTS AND INVERTERS

**CAUTION: SOLAR CIRCUIT**

LABEL #9 PLACE ON CONDUIT, JUNCTION BOXES AND COMBINER BOXES AT EVERY 10'

**WARNING**

DC JUNCTION BOX

LABEL #10 PLACE ON DC JUNCTION BOXES

**WARNING**

PV ARRAY DC DISCONNECT

-ELECTRICAL SHOCK HAZARD-  
-DO NOT TOUCH TERMINALS-

TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

MAXIMUM CURRENT: A  
OPERATING VOLTAGE: Vdc

LABEL #11 PLACE ON DC DISCONNECTS

**WARNING**

ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS  
TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL #12 PLACE ON DC DISCONNECTS AND AC DISCONNECTS

**WARNING**

PULL BOX

AUTHORIZED PERSONNEL ONLY  
HIGH VOLTAGE- KEEP AWAY

LABEL #13 PLACE AT PULL BOXES

INV-01

LABEL #14 PLACE AT INVERTERS

ACB-01

LABEL #15 PLACE AT INVERTERS

D-01

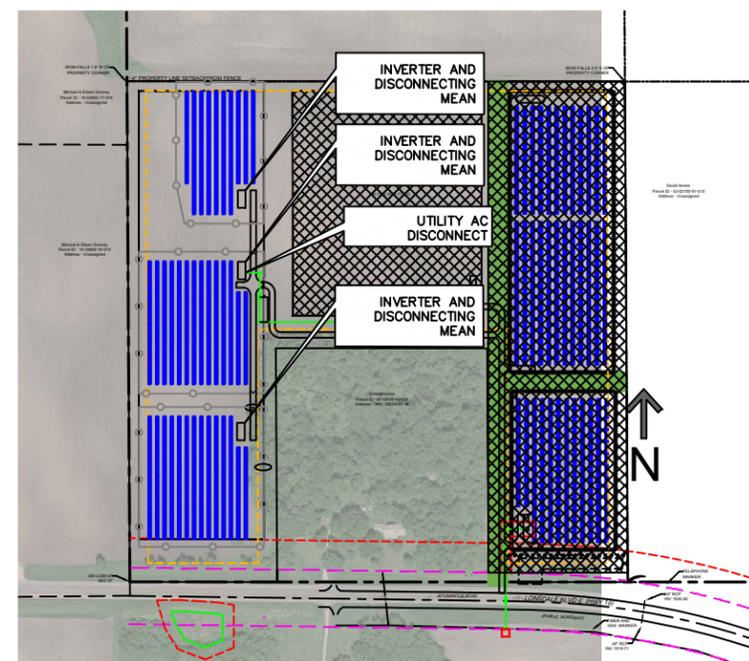
LABEL #16 PLACE AT SYSTEM DISCONNECT

M-01

LABEL #17 PLACE AT SYSTEM METER CABINET

**CAUTION**

POWER TO THIS SITE IS SUPPLIED BY MULTIPLE SOURCES: DISCONNECT LOCATIONS ARE SHOWN BELOW



NORTHFIELD  
MAP OF PHOTOVOLTAIC POWER SOURCES  
DISCONNECTING MEANS

SITE DISCONNECT LOCATION PLACECARD

**NOTES:**

- DESIGN SHALL MEET NATIONAL ELECTRIC CODE (NEC CODES) REQUIREMENTS
- LABELS SHALL BE COMPLIANT WITH NEC 690

**SHEET NOTES:**

- SYSTEM LABELS SHALL BE PERMANENTLY ATTACHED BY MECHANICAL MEANS OR SECURED WITH UV-RESISTANT ADHESIVE.
- MATERIALS USED IN THE CONSTRUCTION OF THE LABELS SHALL BE UV RESISTANT.
- ELECTRICAL EQUIPMENT, SUCH AS SWITCHBOARDS, PANELBOARDS, INDUSTRIAL CONTROL PANELS, METER SOCKET ENCLOSURES, AND MOTOR CONTROL CENTERS, THAT ARE IN OTHER THAN SWELLING OCCUPANCIES, AND ARE LIKELY TO REQUIRE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE WHILE ENERGIZED SHALL BE FIELD MARKED TO WARN QUALIFIED PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS. THE MARKING SHALL BE LOCATED SO AS TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE OF THE EQUIPMENT. (CEC 110.16)
- ALL INTERACTIVE SYSTEM(S) POINTS OF INTERCONNECTION WITH OTHER SOURCES SHALL BE MARKED AT AN ACCESSIBLE LOCATION AT THE DISCONNECTING MEANS AS A POWER SOURCE AND WITH THE RATED AC OUTPUT CURRENT AND THE NOMINAL OPERATING AC VOLTAGE. (CEC 690.54)

**KEYED NOTES:**

- PROVIDE 9"X3" ENGLISH/SPANISH ELECTRICAL WARNING SIGN AT EACH OF THE SITE ENTRANCES AND EVERY 200' ALONG THE FENCE.
- PROVIDE SITE DISCONNECT LOCATION PLACECARD AT EACH OF THE SITE ENTRANCES. MARK "YOU ARE HERE" AT EACH OF THE LOCATIONS ON THE MAP

LICENSED ELECTRICAL ENGINEER certifies that they prepared all the electrical "E" sheets in this drawing set.  
LICENSED STRUCTURAL ENGINEER certifies that they prepared all of the structural "S" sheets in this drawing set.  
LICENSED CIVIL ENGINEER certifies that they prepared all of the civil "C" sheets in this drawing set.  
It should be noted that any plan sheets not identified above have been prepared and certified by others and have been included herein for informational purposes only.

F	L		
E	K		
D	J		
C	I		
B	H		
A	G		
REV	DATE	REV	DATE
DRAWN BY: TG	CHECKED BY: RA		
SCALE: AS NOTED	JOB NO: JOB_NO		

SV CSG NORTHFIELD LLC

RICE COUNTY  
(44.473361, -93.220431)

SHEET TITLE  
NEC LABELS

DWG. NO.  
**E-3.00**