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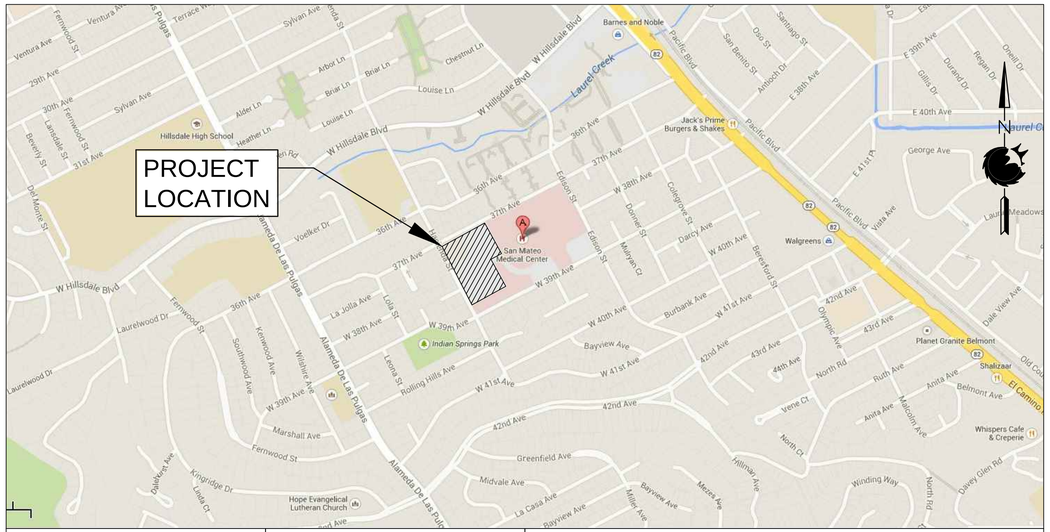
SAN MATEO MEDICAL CENTER

222 W. 39TH AVE

SAN MATEO, CA 94403



PROJECT DEVELOPER

SUNEDISON
600 CLIPPER DRIVE
BELMONT, CA, 94002
(650) 453-5600

PROJECT ENGINEER:
CHRIS THOMAS
cthomas@sunedison.com

SITE CONTACT

SCOPE OF WORK

THE DESIGN PACKAGE PROVIDES STRUCTURAL AND ELECTRICAL DRAWINGS FOR THE INSTALLATION OF A 1,065.9kW DC RATED PHOTOVOLTAIC SYSTEM AT 222 W. 39TH AVE, SAN MATEO, CA 94403.

INTERCONNECT UTILITY:

PACIFIC GAS & ELECTRIC (PG&E)

STRUCTURAL ENGINEER

MARK HARPER, P.E.
HDR ENGINEERING
251 SOUTH LAKE AVE, SUITE 1000
PASADENA, CA 91101
(626) 584-1706

CA PE REG# SE 4387
EXPIRATION: 12/31/2015

ELECTRICAL ENGINEER

JAMES TRAN, P.E.
HDR ENGINEERING
1670 BROADWAY, SUITE 3400
DENVER, CO 80202-4824
(303) 323-9796

CA PE REG# E 20364
EXPIRATION: 6/30/2015

CONTRACTOR

TO BE DETERMINED

PROJECT DESCRIPTION

SYSTEM DESCRIPTION	
MODULE TYPE	MEMC M330 BZC-3Y
MODULE QUANTITY	3,230 MODULES
SYSTEM SIZE (DC)	1,065,900 WATTS
SYSTEM SIZE (AC)	1,000,000 WATTS (MAX)
MOUNTING SYSTEM	M BAR C STRUCTURE
INVERTER	CPS STRING INVERTERS 23kW & 28kW
INVERTER QUANTITY	(20) 23kW & (18)-28kW
TRANSFORMER	(1) 1000kVA
AZIMUTH	135 DEGREES
TILT ANGLE	11.9 DEGREES
MIN. TEMPERATURE	35.6°F MIN (2°C)
MAX. TEMPERATURE	77°F MAX (25°C)

OCCUPANCY CLASSIFICATION:
F-1, MODERATE-HAZARD FACTORY INDUSTRIAL ELECTRICAL GENERATION PLANT

APPLICABLE CODES AND STANDARDS

- INTERNATIONAL BUILDING CODE 2012
- 2011 NATIONAL ELECTRICAL CODE
- CALIFORNIA ELECTRICAL CODE (CEC)
- CALIFORNIA OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT (OSHPD)

SHEET INDEX

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HDR

STAMP:

SAN MATEO MEDICAL CENTER
SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
TITLE SHEET

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/10/14
DRAWN BY:	TTL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
NO SCALE

SHEET NO.:
G.001

Printed: 5/15/2015 11:02 AM
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GENERAL NOTES

1. ALL WORK DETAILED ON THESE PLANS AND PERFORMED UNDER THIS CONTRACT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PROJECT AS SPECIFIED. WHERE APPLICABLE, LOCAL COUNTY STANDARD DETAILS AND SPECIFICATIONS SHALL APPLY. OTHERWISE, CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, 2010 EDITION, SHALL APPLY (IF APPLICABLE).

2. THE CONTRACTOR SHALL ABIDE BY ALL LOCAL, STATE, AND FEDERAL LAWS, RULES AND REGULATIONS WHICH APPLY TO THE CONSTRUCTION OF THESE IMPROVEMENTS, INCLUDING STATE REQUIREMENTS AS REQUIRED.

3. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL POTENTIAL OBSTRUCTIONS INCLUDING ALL UNDERGROUND UTILITIES. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE OWNER OR ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.

4. THE CONTRACTOR SHALL CONTACT LINE LOCATING SERVICE FOR THE LOCATION OF EXISTING UTILITIES TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION.

5. ALL ELECTRICAL, TELEPHONE, CABLE TV, GAS AND OTHER UTILITY LINES, CABLES AND APPURTENANCES ENCOUNTERED DURING CONSTRUCTION THAT REQUIRE RELOCATION SHALL BE COORDINATED WITH THAT UTILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL NECESSARY UTILITY ADJUSTMENTS. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR DELAY OR INCONVENIENCES CAUSED BY UTILITY COMPANY WORK CREWS. THE CONTRACTOR MAY BE REQUIRED TO RESCHEDULE HIS ACTIVITIES TO ALLOW UTILITY CREWS TO PERFORM THEIR REQUIRED WORK.

6. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITY LINES WITHIN THE CONSTRUCTION AREA. ANY DAMAGE TO EXISTING FACILITIES CAUSED BY CONSTRUCTION ACTIVITY SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.

7. OVERNIGHT PARKING OF CONSTRUCTION EQUIPMENT SHALL NOT OBSTRUCT DRIVEWAYS OR DESIGNATED TRAFFIC LANES. THE CONTRACTOR SHALL NOT STORE ANY EQUIPMENT OR MATERIAL WITHIN THE PUBLIC RIGHT-OF-WAY. OVERNIGHT PARKING OF CONSTRUCTION VEHICLES ON PRIVATE PROPERTY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

8. THE CONTRACTOR SHALL OBTAIN ALL THE NECESSARY PERMITS FOR THE PROJECT PRIOR TO COMMENCING CONSTRUCTION (I.E. BARRICADING, TOPSOIL DISTURBANCE, EXCAVATION, STATE STORM WATER, ETC.). BUILDING PERMIT PAID FOR BY OWNER, ALL OTHER PERMITS BY GENERAL CONTRACTOR.

9. OWNER WILL PROVIDE ONE SURVEY POINT ON-SITE WITH BEARING AND ELEVATION. ALL PROPERTY CORNERS DESTROYED DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. ALL PROPERTY CORNERS MUST BE RESET BY A REGISTERED LAND SURVEYOR (IF APPLICABLE.).

10. ALL BARRICADES AND CONSTRUCTION SIGNING SHALL CONFORM TO APPLICABLE SECTION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD), U.S. DEPARTMENT OF TRANSPORTATION, LATEST EDITION.

11. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS CONTROLLING POLLUTION OF THE ENVIRONMENT PRIOR TO THE START OF THE PROJECT CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE AGENCIES RESPONSIBLE FOR AIR, NOISE, AND WATER QUALITY CONTROL REGULATIONS TO DETERMINE THE STANDARDS WHICH SHALL ADHERE DURING CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL OBTAIN, PREPARE, SUBMIT ALL FORMS, APPLICATIONS PERMITS, AND/OR PLANS REQUIRED TO COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS CONTROLLING POLLUTION OF THE ENVIRONMENT.

USA NORTH 811
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811 OR 1-800-227-2600
www.usanorth.org

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HDR

STAMP:

REGISTERED PROFESSIONAL ENGINEER
JAMES T. TRAN
No. E20364
Exp. 6/30/2015
ELECTRICAL
STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
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SHEET TITLE:
GENERAL NOTES

SHEET SIZE:
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24" X 36" (610 x 914)
0 ½" 1"

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DATE:	11/10/14
DRAWN BY:	TTL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
NO SCALE

SHEET NO.:
G.002

N

40 0 40 80

SCALE: 1"=40'

GENERAL NOTES:

1. SITE AERIAL IMAGE IS PROVIDED FOR REFERENCE ONLY, AND SHOULD NOT BE USED FOR SCALING PURPOSES.

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DATE:	11/10/14
DRAWN BY:	TTL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
1:40

SHEET NO.:
G.003

APPLICABLE CODES AND STANDARDS

1) CALIFORNIA BUILDING CODE (2013 CBC)
AND ALL OTHER LOCAL AND STATE AGENCIES HAVING JURISDICTION OVER THIS PROJECT.
2) BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318-11).
3) AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC):
STEEL CONSTRUCTION MANUAL, 14TH EDITION.
4) AMERICAN WELDING SOCIETY (AWS) D1.1-10, D1.3-08, D1.4-05.
5) MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES (ASCE 7-10).
6) STEEL DECK INSTITUTE SPECIFICATIONS AND LOAD TABLES.
7) ASTM MATERIAL STANDARDS AS NOTED.
8) AISI SPECIFICATIONS FOR DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS (AISI S100-07).

DESIGN LOADS

SEISMIC LOAD	
RISK CATEGORY	= II
SEISMIC IMPORTANCE FACTOR, Ie	= 1.0
MAPPED SPECTRAL RESPONSE	
ACCELERATION PARAMETERS, Ss AND S1	= 2.004 AND 0.943
SITE CLASS	= D
DESIGN SPECTRAL RESPONSE	
ACCELERATION PARAMETERS, Sds AND Sd1	= 1.336 AND 0.943
SEISMIC DESIGN CATEGORY	= D

CONSTRUCTION NOTES

MATERIALS OF CONSTRUCTION

1. STRUCTURAL STEEL
1.1. ANGLES, CHANNELS, AND PLATES:
ASTM A36 — Fy = 36 ksi
1.2. HSS RECTANGULAR:
ASTM A500 GR B — Fy = 46 ksi
2. BOLTS:
ASTM A307 — Fu = 60 ksi
ASTM A354 (AS NOTED) — Fu = 150 ksi
ASTM A449 (AS NOTED) — Fu = 120 ksi
3. COLD-FORMED STEEL
ASTM A570 — Fy = 33 ksi (OR 50 ksi AS NOTED)
4. ANCHOR RODS - ASTM F1554 GRADE 36 — Fy = 36 KSI
5. HIGH STRENGTH ANCHOR ROD ASSEMBLY
ANCHOR BOLT - ASTM F1554 GRADE 105
NUTS – GRADE ASTM A563 GRADE D — Fy = 105 KSI
6. NORMAL WT CONCRETE — fc = 3,500 PSI
7. MASONRY — f'm = 1,500 PSI
8. MASONRY GROUT — fc = 2,000 PSI
9. REINFORCING STEEL A615 — Fy = 60 KSI

A. GENERAL CONSTRUCTION NOTES

1. STRUCTURAL DRAWINGS SHOULD NOT BE SCALED. PRINTED DIMENSIONS HAVE PRECEDENCE OVER SCALED DRAWINGS AND LARGE SCALE OVER SMALL.
2. ALL DRAWINGS AND SPECIFICATIONS ARE CONSIDERED TO BE A PART OF THE CONTRACT DOCUMENTS. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE CIVIL, ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR LOCATION AND SIZE OF OPENINGS, BLOCKOUTS, FLOOR DEPRESSIONS, CURBS, DIMENSIONS, ETC. NOT INDICATED ON THE STRUCTURAL DRAWINGS. THE LOCATION AND SIZE OF MECHANICAL AND ELECTRICAL OPENINGS IN SLABS, WALLS AND DECKS SHALL BE COORDINATED BY THE CONTRACTOR. PROVIDE ALL ADDITIONAL FRAMING OR REINFORCING TO ACCOMMODATE OPENINGS AS REQUIRED BY THE APPLICABLE STANDARD DETAILS SHOWN ON THE STRUCTURAL DRAWINGS OR PROVIDED BY THE STRUCTURAL ENGINEER. NO HOLES, NOTCHES, BLOCKOUTS, ETC. ARE ALLOWED IN STRUCTURAL MEMBERS UNLESS DETAILED ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER.
3. THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH EXISTING CONDITIONS. CHECK AND VERIFY EXISTING DIMENSIONS AND TAKE ADDITIONAL MEASUREMENTS AS NEEDED. NOTIFY ARCHITECT OF ANY DISCREPANCY BETWEEN ACTUAL CONDITIONS AND INDICATED CONDITIONS. MODIFICATION OF DETAILS OF CONSTRUCTION SHALL NOT BE MADE WITHOUT WRITTEN APPROVAL OF THE ARCHITECT OR STRUCTURAL ENGINEER.
4. CONTRACTOR SHALL PROVIDE AND BE RESPONSIBLE FOR THE PROTECTION AND REPAIR OF ADJACENT EXISTING SURFACES AND AREAS WHICH MAY BE DAMAGED BY NEW WORK.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE DESIGN AND CONSTRUCTION OF ALL FORMS, SHORING AND TEMPORARY BRACING. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE AND SAFETY OF WORKMEN DURING CONSTRUCTION.
   A. DO NOT PLACE CONSTRUCTION MATERIALS OR OTHER CONSTRUCTION LOADS ON THE STRUCTURE SUCH THAT THE LOADS PLACED EXCEED THE CAPACITY OF THE STRUCTURE.
   B. PROVIDE TEMPORARY BRACING AND GUYING TO PROVIDE STABILITY AND RESIST ALL LOADS TO WHICH THE PARTIALLY COMPLETED STRUCTURE MAY BE SUBJECTED INCLUDING ERECTION EQUIPMENT AND ITS OPERATION. ADEQUACY OF TEMPORARY BRACING AND GUYING FOR THIS PURPOSE IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

B. EXPANSION ANCHORS

1. EXPANSION ANCHORS SHALL BE A SINGLE-END EXPANSION SHIELD ANCHOR WHICH COMPLIES WITH THE DESCRIPTIVE PART OF FEDERAL SPECIFICATION A-A 1923A, TYPE 4, FOR WEDGE ANCHORS. WEDGE ANCHORS SHALL BE HILTI KWIK BOLT TZ. ANCHORS SHALL BE BY HILTI FASTENING SYSTEMS OF TULSA, OK. (ICC ES REPORTS ESR-1917 FOR WEDGE ANCHORS) OR EQUAL.
2. ANCHORS SHALL BE ZINC PLATED UNLESS SPECIFICALLY NOTED AS STAINLESS STEEL ON THE PLAN DETAILS.
3. WHEN DETAILS OF SECTIONS INDICATE EXPANSION ANCHORS BUT NO SIZE, PROVIDE ANCHORS WITH 3/4" (20mm) DIAMETER.
4. PROVIDE THE MINIMUM EMBEDMENT DEPTHS INDICATED IN THE TEST SCHEDULE UNLESS NOTED OTHERWISE.
5. WHEN INSTALLING DRILLED-IN-ANCHORS, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING BARS. WHEN INSTALLING THEM INTO CONCRETE WITH STRESSING TENDONS (POST-TENSIONED OR PRE-TENSIONED), LOCATE THE TENDONS BY USING A NON-DESTRUCTIVE METHOD PRIOR TO INSTALLATION. EXERCISE EXTREME CARE AND CAUTION AND MAINTAIN AT LEAST 1" CLEAR BETWEEN THE TENDON AND THE ANCHOR. CUTTING A TENDON CAN CAUSE COLLAPSE.
6. TEST INSTALLED ANCHORS IN ACCORDANCE WITH THE EXPANSION ANCHOR TEST SCHEDULE AND AS FOLLOWS:
   A. ALL CONCRETE ANCHOR BOLTS OF THE EXPANSION TYPE LOADED EITHER IN PULLOUT OR SHEAR SHALL HAVE 50 PERCENT OF THE BOLTS IN ANY GROUP ARRANGEMENT PROOF TESTED IN TORQUE TO THE TEST TORQUE INDICATED. IF THERE ARE ANY FAILURES, THE IMMEDIATE ADJACENT BOLTS MUST ALSO BE TESTED.
   B. APPLY PROOF TEST LOAD WITHOUT REMOVING THE NUT IF POSSIBLE. IF NOT, REMOVE THE NUT AND INSTALL A THREADED COUPLER NUT TO THE SAME TIGHTNESS OF THE ORIGINAL NUT USING A TORQUE WRENCH AND APPLY LOAD.
C. THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS:
D. TORQUE WRENCH METHOD: THE APPLICABLE TEST TORQUE MUST BE REACHED WITHIN 1/2 TURN OF THE NUT (1/4 TURN FOR 3/8" BOLTS)
E. TESTING SHOULD OCCUR 24 HOURS MINIMUM AFTER INSTALLATION.
F. REACTION LOADS FROM TEST FIXTURES MAY BE APPLIED CLOSE TO THE ANCHOR BEING TESTED PROVIDED THE ANCHOR IS NOT RESTRAINED FROM WITHDRAWING BY THE FIXTURE.
G. TEST EQUIPMENT SHALL BE CALIBRATED BY AN APPROVED TESTING LABORATORY IN ACCORDANCE WITH STANDARD RECOGNIZED PROCEDURES.

WEDGE ANCHOR TEST SCHEDULE
FOR ANCHORS INSTALLED IN SLAB SYSTEM WITH
(2500 PSI MIN. STRENGTH)

ANCHOR DIAMETER	MINIMUM EMBED.***	MIN. EDGE DISTANCE**	TORQUE
3/8"	2 "	10"	25'-#
1/2"	3 1/4"	12"	40'-#
5/8"	4"	12"	60'-#
3/4"	3 3/4"	12"	110'-#

NOTES:
** DISTANCE FROM EDGE OF RIDGE.
*** ANCHORS MAY BE INSTALLED IN RIDGE OR VALLEY. SLAB THICKNESS MUST BE AT LEAST 1.5 TIMES THE EMBEDMENT DEPTH AT THE BOLT CENTERLINE.

C. CONCRETE AND REINFORCING

1. LOCATION OF CONSTRUCTION JOINTS OR POUR JOINTS SHALL BE AS INDICATED ON APPROVED SHOP DRAWINGS.
2. ALL CONCRETE SHALL BE VIBRATED DURING PLACEMENT.
3. PROVIDE 3/4" CHAMFER ON ALL EXPOSED CONCRETE CORNERS.
4. NO STAKES, STEEL OR WOOD, SHALL BE PERMITTED IN ANY CONCRETE POUR. SUSPEND FORMS FROM ABOVE GRADE.
5. ANCHOR RODS, DOWELS, REINFORCING STEEL, INSERTS, ETC., SHALL BE SECURELY TIED IN PLACE PRIOR TO POURING CONCRETE. CONCRETE BLOCKS ONLY SHALL BE USED TO SUPPORT REINFORCING OFF GRADE.
6. SOFT METRIC EQUIVALENT BAR SIZES ARE DEFINED AS FOLLOWS:

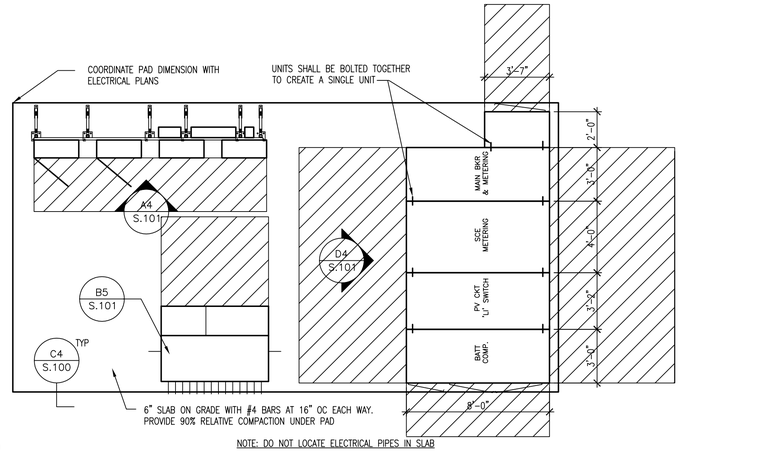
INCH POUND --	EQUIVALENT SOFT METRIC
#3	#10
#4	#13
#5	#16
#6	#19
#7	#22

7. ALL REINFORCEMENT SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH ACI 315.
8. PROVIDE MINIMUM CONCRETE COVERING FOR REINFORCEMENT AS FOLLOWS:

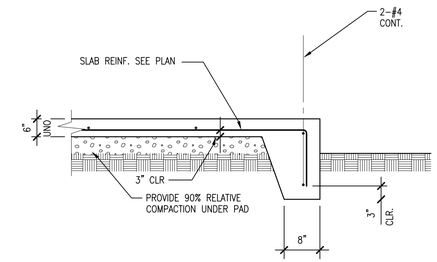
CONDITION	CLEAR COVER
CONCRETE DEPOSITED AGAINST EARTH:	3 IN.
FORMED SURFACES EXPOSED TO WEATHER OR IN CONTACT WITH EARTH:	
REINFORCING BARS NO.6 OR LARGER	2 IN.
REINFORCING BARS LESS THAN NO.6.	1-1/2 IN.
BUILDING INTERIOR SURFACES:	
BEAMS, GIRDERS, AND COLUMNS	1-1/2 IN.
SLABS, WALLS AND JOISTS:	
NO.11 BARS OR SMALLER	3/4 IN.
NO.14 AND NO.18 BARS	1 1/2 IN.

9. PROVIDE DOWELS OF SAME SIZE AND NUMBER FROM ADJACENT POUR, BOTH VERTICALLY AND HORIZONTALLY, TO MATCH TYPICAL REINFORCING SHOWN. LAPS TO BE IN ACCORDANCE WITH THE DEVELOPMENT LENGTH AND LAP SPLICE SCHEDULE. DOWELS SHALL BE CLEANED AFTER POUR.
10. FIELD WELDING OR BENDING OF REINFORCING IS NOT PERMITTED EXCEPT AS INDICATED ON THE DRAWINGS OR AS APPROVED BY THE STRUCTURAL ENGINEER. USE LOW HYDROGEN ELECTRODES GRADE E70 OR E90 AS REQUIRED.
11. NOTIFY STRUCTURAL ENGINEER 48 HOURS MINIMUM PRIOR TO ALL POURS.
12. APPROVED ELECTRICAL CONDUIT MATERIAL CAST WITHIN STRUCTURAL CONCRETE MEMBERS SHALL CONFORM TO THE FOLLOWING:
   A. CONDUIT IN CONCRETE COLUMNS AND SHEAR WALLS:
   INSTALL NO HORIZONTAL CONDUIT AND NO VERTICAL CONDUIT LARGER THAN 3/4" (19 MM), DO NOT INSTALL MULTIPLE CONDUITS IN A SINGLE CONCRETE COLUMN NOR SPACE VERTICAL CONDUITS CLOSER THAN 4-0" ON CENTER IN SHEAR WALLS WITHOUT THE STRUCTURAL ENGINEERS APPROVAL.
   B. CONDUIT IN SLAB ON GRADE:
   DIAMETER OF A SINGLE CONDUIT OR TWO OR MORE VERTICALLY STACKED CONDUITS (INCLUDING CROSSOVERS) SHALL NOT EXCEED 1/3 THE THICKNESS OF THE SLAB. THE OUTSIDE DIMENSION OF TWO OR MORE ADJACENT CONDUITS SHALL NOT EXCEED TWICE THE DEPTH OF THE SLAB AND THE SEPARATION BETWEEN GROUPS OF CONDUITS SHALL NOT BE LESS THAN THE THICKNESS OF THE SLAB.
13. CONTINUOUS REINFORCEMENT IN WALLS AND FOOTINGS MAY BE SPLICED AS REQUIRED, PROVIDED THAT BARS ARE OF THE LONGEST PRACTICAL LENGTH AND ALL SPLICES ARE SHOWN ON THE REINFORCING BAR SHOP DRAWINGS. SPLICES ARE TO BE STAGGERED WHEN POSSIBLE. PROVIDE LAP SPLICES AND DEVELOPMENT LENGTHS IN ACCORDANCE WITH THE DEVELOPMENT LENGTH AND LAP SPLICE SCHEDULE. USE CLASS B LAP SPLICES UNLESS NOTED OTHERWISE.
14. CORING OF SLABS, BEAMS, COLUMNS, OR SHEAR WALLS IS NOT PERMITTED. PROVIDE SLEEVES FOR ALL PENETRATIONS PRIOR TO PLACING CONCRETE.

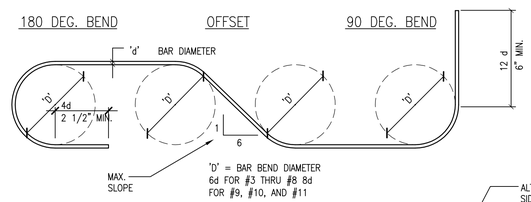
NOTE: EQUIPMENT ANCHORAGE IS PERFORMED ON ASSUMED SIZES AND WEIGHTS. CONTRACTOR TO PROVIDE ACTUAL CUT SHEETS FOR THE PURCHASED UNITS TO BE INSTALLED FOR VERIFICATION OF ALL ANCHORAGE DETAILS.



D3 EQUIPMENT PAD
SCALE: 1/4" = 1'-0"



C4 TYPICAL EDGE OF SLAB SECTION
SCALE: 3/4" = 1'-0"



A3 TYPICAL REBAR REINFORCEMENT
SCALE: 3/4" = 1'-0"

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HDR

STAMP:

REGISTERED PROFESSIONAL ENGINEER MARK F. HARPER No. S4387 Exp.12/31/15 STATE OF CALIFORNIA

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PROJECT NUMBER: CA-13-0322

SHEET TITLE: STRUCTURAL EQUIPMENT PAD AND NOTES

SHEET SIZE: ARCH "D" 24" X 36" (610 x 914)
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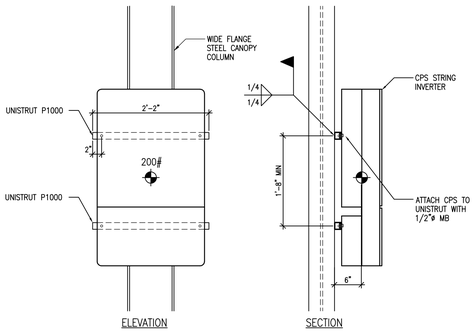
DATE:	11/10/14
DRAWN BY:	VC
ENGINEER:	MH
APPROVED BY:	MH

PROJECT PHASE: ISSUE FOR TENDER

SCALE: 1:20

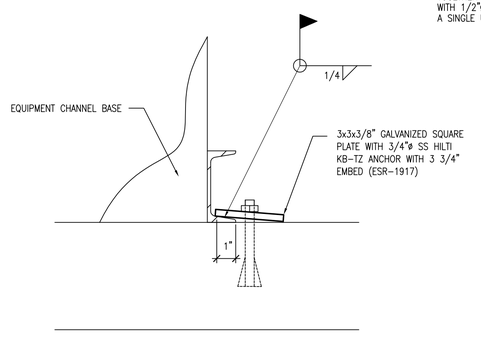
SHEET NO.: S.100

Printed: 5/15/2015 11:09 AM

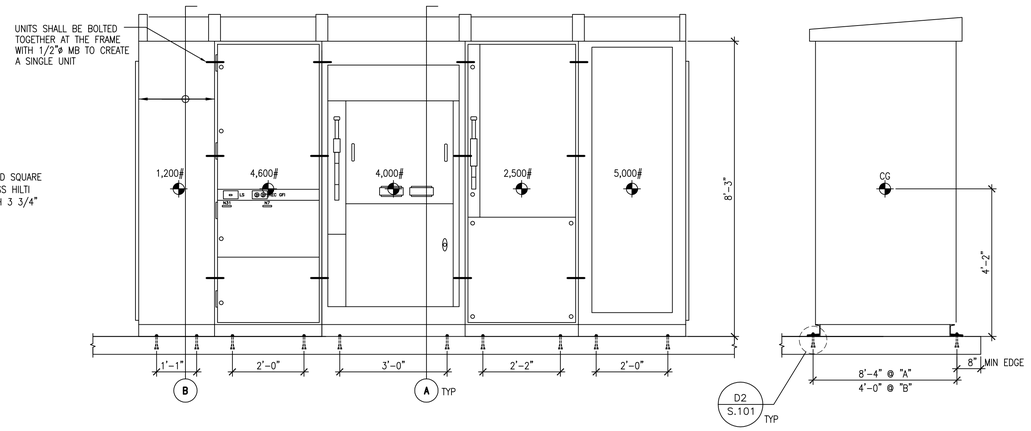


NOTE: ALL UNISTRUT SHALL BE GALVANIZED

D1 CPS ANCHORAGE
SCALE: 1/4" = 1'-0"

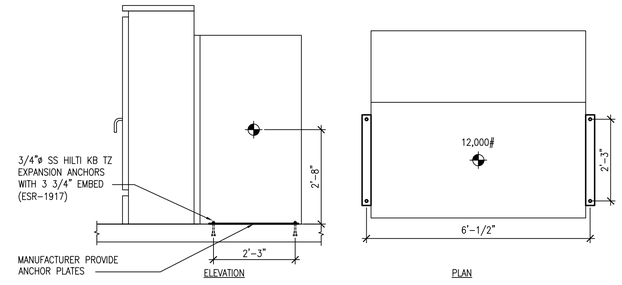


D2 ANCHORAGE DETAIL
SCALE: 3" = 1'-0"

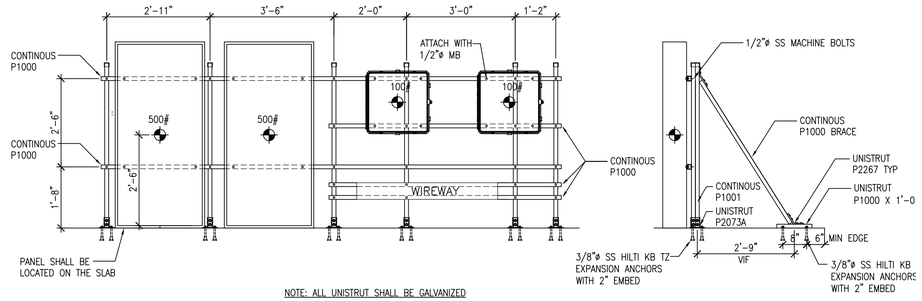


D4 ELECTRICAL EQUIPMENT ELEVATION
SCALE: 1/2" = 1'-0"

NOTE: EQUIPMENT ANCHORAGE IS PERFORMED ON ASSUMED SIZES AND WEIGHTS. CONTRACTOR TO PROVIDE ACTUAL CUT SHEETS FOR THE PURCHASED UNITS TO BE INSTALLED FOR VERIFICATION OF ALL ANCHORAGE DETAILS.



B5 ELECTRICAL TRANSFORMER ELEVATION
SCALE: 1/2" = 1'-0"



NOTE: ALL UNISTRUT SHALL BE GALVANIZED

A4 ELECTRICAL EQUIPMENT ELEVATION 2
SCALE: 1/2" = 1'-0"

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HDR

STAMP:

REGISTERED PROFESSIONAL ENGINEER MARK F. HARDEN No. S4387 Exp.12/31/15 STATE OF CALIFORNIA

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
STRUCTURAL ANCHORAGE DETAILS

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 1"

NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/10/14
DRAWN BY:	VC
ENGINEER:	MH
APPROVED BY:	MH

PROJECT PHASE:
ISSUE FOR TENDER

SCALE:
1:20

SHEET NO.:
S.101

Printed: 5/15/2015 11:09 AM

ELECTRICAL NOTES FOR NEW PHOTOVOLTAIC SYSTEM:

1. THIS PROPOSED SOLAR ELECTRIC SYSTEM IS INTENDED TO OPERATE IN PARALLEL WITH POWER RECEIVED FROM THE UTILITY SERVICE PROVIDER.
2. THE INVERTER FOR THE PROPOSED SOLAR ELECTRIC SYSTEM SHALL BE IDENTIFIED FOR USE IN SOLAR PHOTOVOLTAIC SYSTEMS. ALL EQUIPMENT SHALL BE UL APPROVED.
3. THIS SYSTEM IS INTENDED TO CONNECT TO THE EXISTING FACILITY POWER SYSTEM AT SINGLE POINT, POINT OF COMMON COUPLING (POCC). THIS CONNECTION SHALL BE IN COMPLIANCE WITH THE NEC ARTICLE 705.12 "POINT OF CONNECTION"
4. ALL SOURCE CIRCUITS SHALL HAVE INDIVIDUAL SOURCE CIRCUIT PROTECTION FOR TESTING AND ISOLATION.
5. ALL DISCONNECTING COMBINERS SHALL BE SECURED FROM UNAUTHORIZED/UNQUALIFIED PERSONNEL BY LOCK OR LOCATION
6. ALL DISCONNECTING COMBINERS, PULL/SPLICE BOXES, AND ENCLOSURES SHALL BE LISTED FOR IT'S PURPOSE.
7. EQUIPMENT SHALL BE INSTALLED IN A SECURE AREA. INVERTER PERFORMANCE MAY BE AFFECTED IF INSTALLED IN DIRECT SUNLIGHT.
8. CONDUITS AND CABLES SHALL NOT ENTER THE TOP OF ANY OUTDOOR ENCLOSURE WITHOUT WRITTEN APPROVAL FROM SUNEDISON PROJECT ENGINEER

WIRING AND WIRING METHODS:

ALL WIRING METHODS AND INSTALLATION PRACTICES SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LOCAL STATE CODES, AND OTHER APPLICABLE LOCAL CODES

1. EXPOSED PV SOLAR MODULE WIRING WILL BE PV WIRE OR APPROVED EQUIVALENT, 90 DEGREE C, WET RATED AND UV RESISTANT. ALL EXPOSED CABLES, SUCH AS MODULE LEADS SHALL BE SECURED WITH MECHANICAL OR OTHER APPROVED SUN-LIGHT RESISTANT MEANS. THE USE OF PLASTIC ZIP TIES IS NOT AN APPROVED METHOD SUPPORT OR ATTACH WIRE TO A STRUCTURE .

2. **WIRE COLOR SPECIFICATIONS:**

	AC CONDUCTORS	
	277 / 480 volt	**120 / 208 volt**
Phase A	BROWN	BLACK
Phase B	ORANGE	RED
Phase C	YELLOW	BLUE
Grounded Conductor	GRAY or WHITE	WHITE
Equip. Ground Conductor	GREEN or BARE	GREEN or BARE
Grounding Electrode Conductor	GREEN W/ ORANGE	GREEN W/ ORANGE
	DC CONDUCTORS	
	STD DC NEG GROUNDED INVERTERS OR NEG GROUNDED HALF OF BI-POLAR INVERTERS	STD DC POS GROUNDED INVERTERS OR POS GROUNDED HALF OF BI-POLAR INVERTERS
	DC Negative Grounded	DC Positive Grounded
Ungrounded Conductor**	(+) FROM MODULE Red wire or Black wire with red markings**	(-) FROM MODULE Yellow wire or Black wire with yellow marking**
Grounded Conductor	(-) FROM MODULE White or Gray wire with red marking or black wire with white marking and red marking* (if inverter is mono-polar, red marking can be eliminated)	(+) FROM MODULE White or Gray wire with yellow marking or black wire with white marking and yellow marking* (if inverter is mono-polar, yellow marking can be eliminated)
Grounding Conductor	GREEN or BARE	GREEN or BARE

* Where Black wire is used for grounded conductor, white marking should be primary and color marking should be secondary, only to indicate association with a specific array. White marking should clearly indicate that this is the grounded conductor.
**When using PV wire for a Floating (Ungrounded) system where both + and - of the array are fused be sure to NOT use white conductors, instead use the chart above with the appropriate selection of color to the terminal it lands in the inverter.

3. PV STRING HOME RUNS SHALL BE LABELED ON BOTH ENDS, AT ARRAY AND AT COMBINER. COMBINER OUTPUT CONDUCTORS SHALL BE LABELED AT BOTH ENDS, AT COMBINER AND AT DISCONNECT.
4. LIQUID TIGHT FLEXIBLE METAL CONDUIT IS GENERALLY SUITABLE FOR INSTALLATION IN WET AND DRY LOCATIONS. SHOULD IT BE EMPLOYED, SUPPORTS WILL BE NO MORE 12 INCHES FROM BOXES (JUNCTION BOX, CABINETS, OR CONDUIT FITTING) AND NO MORE THAN 36 INCHES APART (NEC 350.30)
5. THE PHOTOVOLTAIC SOURCE CIRCUITS AND PHOTOVOLTAIC OUTPUT CIRCUITS OF THIS PROPOSED SOLAR SYSTEM SHALL NOT BE CONTAINED IN THE SAME RACEWAY CABLE TRAY, CABLE, OUTLET BOX, JUNCTION BOX, OR SIMILAR FITTING AS FEEDERS OR BRANCH CIRCUITS OF OTHER SYSTEMS UNLESS THE CONDUCTORS OF THE DIFFERENT SYSTEMS ARE SEPARATED BY A PARTITION OR ARE CONNECTED TOGETHER.
6. UNLESS MARKED AS UV RESISTANT, PVC IS NOT APPROVED FOR INSTALLATION IN LOCATIONS SUBJECTED TO DIRECT SUNLIGHT AND SHALL NOT BE EMPLOYED IN ANY SUCH LOCATION.
7. LONG STRAIGHT EXPOSED CONDUIT RUNS, 100 FEET OR MORE, SHALL HAVE EXPANSION FITTINGS INSTALLED PER NEC 300.7(B). EXPANSION FITTINGS SHALL ALSO BE USED WHEN CONDUIT SPANS AN EXPANSION JOINT.
8. FUSES AND WIRES SUBJECT TO TRANSFORMER INRUSH CURRENT SHALL BE SIZED ACCORDINGLY.
9. ALL D.C. MATERIALS SHALL BE UL LISTED FOR 1000V DC. DC EQUIPMENT RATED TO 600V MAY BE USED WITH THE WRITTEN PERMISSION OF SUNEDISON ENGINEERING.
10. WHEN TRANSITIONING UNDERGROUND PVC CONDUIT TO ABOVE GROUND RMC, IMC OR EMT CONDUIT, USE 20 MIL PIPE WRAP TAPE HALF-LAPPED FROM 6" PAST TRANSITION POINT ON PVC TO 6" ABOVE GROUND ON METALLIC CONDUIT. AN EXPANSION JOINT SHALL BE USED IN THE TRANSITION TO ABOVE GROUND CONDUIT WHERE REQUIRED BY NEC 300.5(J).
11. ANY METAL SHAVINGS RESULTING FROM SITE WORK SHALL BE CLEANED FROM ENCLOSURE INTERIORS, TOP SURFACES OF ENCLOSURE, ROOF SURFACE, AND ANY ADDITIONAL AREAS WHERE OXIDATION OR CONDUCTIVE METAL SHAVINGS MAY CAUSE RUST, ELECTRICAL SHORT CIRCUIT OR OTHER DAMAGE.
12. CONDUITS LONGER THAN 200' WITH NEGATIVE SLOPE TOWARD ELECTRICAL EQUIPMENT SHALL HAVE A PULL BOX OR VAULT ADJACENT TO THE ENTRY POINT INTO THE ELECTRICAL EQUIPMENT
13. WHEN TRANSITIONING FROM FREE AIR TO CONDUCTORS IN CONDUIT A LISTED FITTING SHALL BE USED TO PREVENT THE ENTRY OF MOISTURE
14. METALLIC L AND T CONDUIT BODIES SHALL NOT BE USED .
15. ALL COPPER TERMINATION AC AND DC SHALL HAVE KOPR-SHIELD APPLIED
16. MEGGER TESTING SHALL BE PREFORMED AT 1000 VDC FOR ALL AC CIRCUITS 480 V OR BELOW AND DC CIRCUITS 600 V OR BELOW. MEGGER TESTING WILL BE PREFORMED AT 1500 VDC FOR DC CIRCUITS IN 1000 VDC SYSTEMS. A MINIMUM OF 250 MEGAOHMS RESISTANCE TO GROUND IS REQUIRED. DO NOT MEGGER THE SOLAR MODULES AS THEY WILL LIKELY DAMAGE THEIR INTERNAL DIODES.
17. BENDS SHALL NOT DAMAGE THE RACEWAY OR SIGNIFICANTLY CHANGE THE INTERNAL DIAMETER OF RACEWAY
18. SUPPORT CONDUCTORS IN VERTICAL CONDUITS IN ACCORDANCE WITH THE REQUIREMENTS OF NEC 300,19
19. CONNECTORS TO BE TORQUED PER DEVICE LISTING, OR MANUFACTURERS RECOMMENDATIONS. CONNECTORS ARE TO BE MARKED WITH PREEMINENT MARKING PAINT, AFTER TORGUING
20. ALL BARE CU WIRES SHALL BE INSTALLED TO NOT COME INTO CONTACT WITH DISSIMILAR METALS .
21. SPLICES/CONNECTORS SHALL BE INSULATED AND WILL REQUIRE PROJECT ENGINEER APPROVAL. UL LISTED ELECTRICAL TAPE ALONE IS NOT SUITABLE AS THE ONLY INSULATION MEANS. FOLLOW MANUFACTURERS INSTRUCTIONS FOR INSTALLATION, AND APPLICATION OF INSULATING PRODUCT.
22. ALL LV AC WIRING SHALL BE TYPE THWN-2 RATED AT 90 DEGREES C. XHHW-2 IS AN APPROVED ALTERNATE. THIS NOTE WILL BE SUPERCEDED BY ANY INVERTER SPECIFICATIONS REQUIRING LV AC WIRE TO MEET HIGHER VOLTAGE OR INSULATION STANDARDS.
23. USE MEYERS (OR APP EQU) HUB LISTED TO PROVIDE MOISTURE PROTECTION FOR CONDUIT ENTRANCES IN ALL APPLICABLE LOCATIONS AS REQUIRED BY NEC 314.15.
24. PROTECT WIRE FROM SHARP EDGES WITH UV RATED SPIRAL WRAP, EDGE-GUARD, OR SPLIT LOOM.
25. MODULE LEAD CONNECTORS SHALL BE INSTALLED SUCH THAT THEY ARE EASILY ACCESSIBLE AND PROTECTED FROM EXPOSURE TO DIRECT SUNLIGHT OR RAIN. THEY SHALL NOT BE INSTALLED WITHIN TUBING, CONDUIT OR MODULE GAPS
26. THE STRING SOURCE CIRCUIT WIRING NEEDS TO BE SUPPORTED ADEQUATELY IN LENGTHS NOT TO EXCEED 24". THE MODULE TO MODULE INTERCONNECTION LEADS NEED TO BE SUPPORTED AT A MINIMUM OF 12" FROM THE J-BOX AND THE MODULE TO MODULE CONNECTION POINT.
27. POLARIS TAPS AND BLOCKS ARE NOT TO BE USED TO CONNECT CURRENT CARRYING CONDUCTORS.

DAMAGE PROTECTION:

1. THE ELECTRICAL CONTRACTOR SHALL CONSIDER THE WEATHERING OF EQUIPMENT OVER TIME AND ELIMINATE THE POSSIBILITY OF DEGRADATION DUE TO CORROSION, WATER ENTRY AND UV EXPOSURE. AS A RESULT, THE USE OF UNISTRUT OR SIMILAR MOUNTING SYSTEMS IS REQUIRED TO MOUNT ENCLOSURES, PULL BOXES, LOAD CENTERS, FUSE BOXES, OR OTHER EQUIPMENT
2. ALL NEMA 4 BOXES SHALL BE EQUIPPED WITH LISTED DRAIN PLUGS INSTALLED TO ALLOW WATER TO DRAIN. ANY MODIFICATION TO AS-MANUFACTURED EQUIPMENT SHOULD BE DONE IN SUCH A WAY AS TO MAINTAIN ALL LISTED RATINGS.
3. ALL NEMA 3 BOXES SHALL BE EQUIPPED WITH A WEEP HOLE OR LISTED DRAIN PLUGS INSTALLED TO ALLOW WATER TO DRAIN
4. ALL OUTDOOR ENCLOSURES REQUIRE AN APPROVED MEANS OF DRAINAGE AND VENTILATION
5. ALL ELECTRICAL CONDUIT, EQUIPMENT AND COMPONENTS MUST BE ADEQUATELY PROTECTED FROM DAMAGE AND VANDALISM BY THE USE OF BOLLARDS, SHIELDS, GUARDS OR OTHER ACCEPTABLE MEANS.
6. ALL CIRCUIT BREAKERS INSTALLED THAT ARE SUBJECT TO REVERSE POWER FLOW SHALL BE LISTED AND LABELED AS BACKFEED COMPATIBLE

ALUMINUM CONDUCTOR INSTALLATION NOTES:

1. MINIMUM WIRE SIZE FOR CURRENT CARRYING CONDUCTORS WHEN IMPLEMENTING ALUMINUM AS A CONDUCTOR SHALL BE 1/0 AWG STRANDED, COMPACT ELECTRICAL GRADE AA-8000 SERIES ALLOY.
2. ALUMINUM POWER CABLE, WIRE CONNECTORS, AND INSULATING AND CODING TAPE MANUFACTURERS SHALL BE APPROVED BY SUNEDISON PRIOR TO USAGE.
3. WHERE BOLTED CONNECTIONS ARE NOT POSSIBLE, MECHANICAL SCREW STYLE LUGS AND TERMINATIONS ARE APPROVED ONLY WHEN USED IN CONJUNCTION WITH A LISTED COPPER PIGTAIL COMPRESSION ADAPTOR. USE OF A "ONE-SHOT" CRIMPER OR "DIE-LESS CRIMPERS" WILL NOT BE ALLOWED
4. COMPRESSION STYLE LUGS AND TERMINATIONS SHALL BE RATED FOR THE MAXIMUM DC VOLTAGE OF THE SYSTEM.
   - 4.1. MUST BE PRE-FILLED WITH OXIDE INHIBITOR.
   - 4.2. WIRE STRIPPING AND BRUSHING OF CONDUCTOR IN ACCORDANCE WITH VENDOR SPECS IS REQUIRED IMMEDIATELY PRIOR TO LUG INSTALLATION.
   - 4.3. OXIDE INHIBITOR MUST BE APPLIED TO EXPOSED CONDUCTOR IMMEDIATELY AFTER STRIPPING AND BRUSHING AND IMMEDIATELY PRIOR TO INSTALLATION OF THE LUG.
   - 4.4. USE COMPRESSION TOOL LISTED FOR USE WITH SELECTED COMPRESSION CONNECTOR.
   - 4.5. COLD SHRINK SHALL BE APPLIED TO COVER ANY EXPOSED WIRE SURFACE AT THE JUNCTION WHERE THE WIRE MEETS THE TERMINAL.
   - 4.6. ALL CONNECTORS AND CORRESPONDING CRIMPING TOOLS SHALL BE UL LISTED FOR THEIR SPECIFIC APPLICATION.
5. INSULATING AND COLOR CODING TAPE SHALL BE PREMIUM GRADE PRESSURE SENSITIVE VINYL, HEAT/COLD/MOISTURE/SUNLIGHT/ RESISTANT. INSULATING TAPE SHALL BE BLACK AND COLOR CODING TAPE SHALL BE FADE RESISTANT.
6. FOR ALUMINUM MV CONDUCTORS, WHERE USED, THE GUIDELINES IN THIS SECTION PLUS GENERAL REQUIREMENTS FOR MV CONDUCTOR INSTALLATION SHALL APPLY.

GROUNDING:

SEE ELECTRICAL DIAGRAM AND ELECTRICAL DETAILS FOR MORE GROUNDING INFORMATION.

1. ONLY ONE CONNECTION TO DC CIRCUITS AND ONE CONNECTION TO AC CIRCUITS WILL BE USED FOR SYSTEM GROUNDING (NEC 250-21) (REFERENCED TO THE SAME POINT).
2. EQUIPMENT GROUNDING CONDUCTORS AND SYSTEM GROUNDING CONDUCTORS WILL HAVE AS SHORT A DISTANCE TO GROUND AS POSSIBLE AND A MINIMUM NUMBER OF TURNS.
3. NON-CURRENT CARRYING METAL PARTS SHALL BE CHECKED FOR PROPER GROUNDING; NOTING THAT TERMINAL LUGS BOLTED ON AN ENCLOSURE'S FINISHED SURFACE MAY BE INSULATED BECAUSE OF PAINT/FINISH. PAINT/FINISH AT POINT OF CONTACT SHALL BE PROPERLY REMOVED.
4. RACKING COMPONENTS AND STRUCTURAL SUPPORTS MUST BE ELECTRICALLY BONDED TOGETHER BY AN ACCEPTABLE MEANS.
5. MODULES SHALL BE GROUNDED WITH EQUIPMENT GROUNDING CONDUCTORS BONDED TO A LOCATION APPROVED BY THE MANUFACTURER WITH A MEANS OF BONDING LISTED FOR THIS PURPOSE.
6. THE CONNECTION TO THE MODULE OR PANEL OF THIS PROPOSED SOLAR ELECTRIC SYSTEM SHALL BE SO ARRANGED THAT REMOVAL OF A MODULE OR A PANEL FROM THE PHOTOVOLTAIC SOURCE CIRCUIT DOES NOT INTERRUPT A GROUNDED CONDUCTOR TO ANOTHER PHOTOVOLTAIC SOURCE CIRCUIT. SETS OF MODULES INTERCONNECTED AS SYSTEMS RATED AT 50 VOLTS OR LESS WITH OR WITHOUT BLOCKING DIODES, AND HAVING A SINGLE OVER CURRENT DEVICE SHALL BE CONSIDERED AS A SINGLE SOURCE CIRCUIT.
7. GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, INCLUDING BUT NOT LIMITED TO GROUND RODS, GROUNDING LUGS, GROUNDING CLAMPS, ECT.
8. ALL GROUNDING CONNECTIONS SHALL BE RATED FOR DIRECT BURIAL (DB RATED) , CONTRACTOR IS TO SUPPLY DOCUMENTATION PROVING THIS DURING PRODUCT SUBMITTALS
9. ALL EQUIPMENT GROUNDING CONDUCTORS INSTALLED SHOULD BE COPPER ONLY

GROUND FAULT PROTECTION:

1. PHOTOVOLTAIC INVERTERS SHALL BE EQUIPPED WITH D.C. GROUND FAULT PROTECTION TO REDUCE FIRE HAZARDS. INVERTERS ARE ALSO EQUIPPED WITH ANTI-ISLANDING CIRCUITRY

DISCONNECTING MEANS:

1. MEANS SHALL BE PROVIDED TO DISCONNECT ALL CURRENT CARRYING CONDUCTORS OF THE PHOTOVOLTAIC POWER SOURCE FROM ALL OTHER CONDUCTORS EXISTING CONDUCTORS.
2. WHERE A CIRCUIT GROUNDING CONNECTION IS NOT DESIGNED TO BE AUTOMATICALLY INTERRUPTED AS PART OF THE GROUND-FAULT PROTECTION SYSTEM REQUIRED BY SECTION 690-5, A SWITCH OR CIRCUIT BREAKER USED AS A DISCONNECTING MEANS SHALL NOT HAVE A POLE IN THE GROUNDED CONDUCTOR.
3. THE GROUNDED CONDUCTOR MAY HAVE A BOLTED OR TERMINAL DISCONNECTING MEANS TO ALLOW MAINTENANCE OR TROUBLESHOOTING BY QUALIFIED PERSONNEL.
4. UNLESS DISCONNECT IS SERVICING A LINE-SIDE TAP, THE DISCONNECTING MEANS SHALL NOT BE REQUIRED TO BE SUITABLE AS SERVICE EQUIPMENT AND SHALL BE RATED IN ACCORDANCE WITH SECTION 690-17.
5. EQUIPMENT SUCH AS PHOTOVOLTAIC SOURCE CIRCUITS, OVER CURRENT DEVICES, AND BLOCKING DIODES SHALL BE PERMITTED ON THE PHOTOVOLTAIC SIDE OF THE PHOTOVOLTAIC DISCONNECTING MEANS.
6. MEANS SHALL BE PROVIDED TO DISCONNECT EQUIPMENT SUCH AS INVERTERS, BATTERIES, CHARGE CONTROLLERS, AND THE LIKE FROM ALL UNGROUNDED CONDUCTORS OF ALL SOURCES. IF THE EQUIPMENT IS ENERGIZED FROM MORE THAN ONE SOURCE, THE DISCONNECTING MEANS SHALL BE GROUPED AND IDENTIFIED.
7. A SINGLE DISCONNECTING MEANS SHALL BE PERMITTED FOR THE COMBINED A.C. OUTPUT OF ONE OR MORE INVERTERS IN AN INTERACTIVE SYSTEM - PROVIDED EACH INVERTER ASSOCIATED WITH THE DISCONNECT HAS ITS OWN INTERNAL AC DISCONNECT.
8. DISCONNECTING MEANS SHALL BE PROVIDED TO DISCONNECT A FUSE FROM ALL SOURCES OF SUPPLY IF THE FUSE IS ENERGIZED FROM BOTH DIRECTIONS AND IS ACCESSIBLE TO OTHER THAN QUALIFIED PERSONS. SUCH A FUSE IN A PHOTOVOLTAIC SOURCE CIRCUIT SHALL BE CAPABLE OF BEING DISCONNECTED INDEPENDENTLY OF FUSES IN OTHER PHOTOVOLTAIC SOURCE CIRCUITS.
9. ALL DISCONNECTS AND COMBINERS SHALL BE SECURED FROM UNAUTHORIZED AND UNQUALIFIED PERSONNELL BY EITHER LOCK OR LOCATION.

REQUIRED SAFETY SIGNS AND LABELS:

REQUIRED SAFETY SIGNS AND LABELS SHALL BE ETCHED PLACARDS PERMANENTLY ATTACHED BY ADHESIVE, OR OTHER MECHANICAL MEANS. LABELS SHALL COMPLY WITH ARTICLE 690 OF THE NEC OR OTHER APPLICABLE STATE AND LOCAL CODES. SEE LABELS AND MARKING PAGE FOR MORE INFORMATION.

WEAR PPE APPROPRIATE FOR THE HAZARD: INSULATED GLOVES WITH PROTECTORS, INSULATED MATS AND TOOLS

1. ANY SWITCH, FUSES, OR CIRCUIT BREAKERS THAT CAN BE ENERGIZED IN EITHER DIRECTION SHALL BE LABELED AS FOLLOWS:

   WARNING:
   ELECTRICAL SHOCK HAZARD DO NOT TOUCH TERMINALS.
   TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

2. THIS PHOTOVOLTAIC SYSTEM WILL BE EQUIPPED WITH DC DISCONNECTING COMBINERS WHICH WILL BE LABELED AS FOLLOWS:

   PHOTOVOLTAIC
   DISCONNECTING COMBINERS

3. THIS PHOTOVOLTAIC SYSTEM WILL BE EQUIPPED WITH AN A.C. DISCONNECT WHICH WILL BE LABELED AS FOLLOWS:

   PHOTOVOLTAIC
   DISCONNECTING MEANS
   A.C. DISCONNECT

4. A MARKING SPECIFYING THE PHOTOVOLTAIC POWER SOURCE RATED AS FOLLOWS SHALL BE PROVIDED AT AN ACCESSIBLE LOCATION AT THE DISCONNECTION MEANS FOR THE POWER SOURCE:

   OPERATING CURRENT
   OPERATING VOLTAGE
   MAXIMUM SYSTEM VOLTAGE
   SHORT CIRCUIT CURRENT
   COMBINER

MARKINGS:

1. ALL INTERACTIVE SYSTEM POINTS OF INTERCONNECTION WITH OTHER SOURCES SHALL BE MARKED AT AN ACCESSIBLE LOCATION AT THE DISCONNECTION MEANS.
2. A PERMANENT ETCHED PLAQUE OR DIRECTORY SHALL BE PROVIDED IDENTIFYING THE LOCATION OF THE SERVICE DISCONNECTION MEANS AND THE PHOTOVOLTAIC SYSTEM DISCONNECTION MEANS, IF NOT LOCATED AT THE SAME LOCATION.
3. ALL REQUIRED EQUIPMENT SHALL BE UL LISTED AND LABELED ACCORDINGLY

INVERTER NOTES:

1. INVERTERS SHALL BE HANDLED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND DOCUMENTATION. ALL INSTRUCTIONS AND REFERENCE DOCUMENTS SHALL BE REVIEWED AND UNDERSTOOD BY THE CONTRACTOR PRIOR TO HANDLING AND UNPACKING THE EQUIPMENT.
2. CONTRACTOR SHALL INSPECT ALL PACKAGES FOR DAMAGE UPON DELIVERY. ANY DAMAGED PACKAGES SHALL BE OPENED SO THE INVERTER AND EQUIPMENT CAN BE INSPECTED. ANY DAMAGE TO THE PACKAGING OR EQUIPMENT SHALL BE DOCUMENTED AND REPORTED TO THE OWNER IMMEDIATELY. INVERTERS TO BE STORED SHALL BE PROPERLY REPLACED IN THE PACKAGING FOR STORAGE.
3. INVERTERS SHALL BE STORED IN A SECURE AND CLEAN LOCATION PER THE MANUFACTURER'S RECOMMENDATIONS AND DOCUMENTATION. INVERTERS SHALL BE PROTECTED FROM THE HARSH ENVIRONMENT SUCH AS EXCESSIVE HEAT, COLD, MOISTURE, DUST, SNOW, ETC...
4. REFERENCE THE MANUFACTURER'S INSTRUCTIONS FOR UNPACKING THE EQUIPMENT. INVERTERS SHALL BE TRANSPORTED BY MEANS OUTLINED IN THE MANUFACTURER'S DOCUMENTATION ONLY.
5. INVERTERS SHALL BE INSTALLED ON A LEVEL SURFACE. THE INVERTER SHALL BE SECURED TO THE FOUNDATION UTILIZING ALL OF THE PROVIDED MOUNTING POINTS. REFERENCE THE MANUFACTURERS DOCUMENTATION FOR LOCATION AND SIZE OF MOUNTING POINTS.
6. ALL DISCONNECT SWITCHES SHALL BE IN THE OPEN POSITION DURING INSTALLATION AND SHALL REMAIN IN THE OPEN POSITION UNTIL PROPER TESTING, INSPECTION, AND COMMISSIONING HAS BEEN COMPLETED.
7. DO NOT OPEN THE INVERTERS ELECTRICAL CABINETS WHEN IT IS RAINING OR WHEN HUMIDITY EXCEEDS 95%
8. ALL FASTENERS SHALL BE TORQUED PER THE MANUFACTURER'S DOCUMENTATION.
9. IT IS PROHIBITED TO MODIFY THE INVERTER OR INSTALL EQUIPMENT NOT EXPLICITLY RECOMMENDED BY THE MANUFACTURER. DO NOT STORE DOCUMENTS, INSTRUCTIONS, PLANS, OR ANY OTHER FOREIGN MATERIAL NOT INTENDED TO BE PART OF THE SYSTEM INSIDE THE INVERTERS CABINETS.
10. COMPONENTS OF THE INVERTERS MAY BE DAMAGED BY ELECTROSTATIC DISCHARGE (ESD). WHEN HANDLING THE ELECTRICAL COMPONENTS OBSERVE ALL ESD SAFETY REGULATIONS.
11. ALL CONDUCTORS SHALL BE CONNECTED TO THE INVERTER PER THE MANUFACTURERS RECOMMENDATIONS AND DOCUMENTATION MAKING NOTE OF RECOMMENDED TERMINATIONS, TORQUE VALUES, AND BOLT STACK UP DETAILS IF PROVIDED. ALL BUSS BARS, CONDUCTORS, AND TERMINATIONS SHALL BE CLEAN PRIOR TO MAKING THE CONNECTION.
12. PV ARRAY DC GROUNDING CONFIGURATIONS MAY VARY BY MANUFACTURER AND TECHNOLOGY. THE GROUNDING CONFIGURATION SHALL BE NOTED BY THE CONTRACTOR FOR SAFETY AND PROPER INSTALLATION.
13. CONTRACTOR IS TO OBTAIN ALL ELECTRICAL APPROVALS BY THE AUTHORITIES HAVING JURISDICTION, APPROVAL FROM THE UTILITY COMPANY, AND APPROVAL FROM THE OWNER PRIOR TO ENERGIZING ANY INVERTERS.
14. COMMISSIONING, INSPECTION, AND TESTING OF THE INVERTER SHALL BE PROPERLY DOCUMENTED AND SUBMITTED TO THE OWNER PRIOR TO ENERGIZING THE INVERTER.
15. THE CONTRACTOR IS TO ENSURE THAT WORKING CLEARANCES MEET THE REQUIREMENTS OF ALL APPLICABLE CODES AND THE MANUFACTURER'S REQUIREMENTS. ANY DISCREPANCIES SHALL BE REPORTED TO THE OWNER IMMEDIATELY.
16. CONTRACTOR TO FURNISH AND INSTALL TERMINATION LUGS AS REQUIRED. LUGS TO MATCH WITH CABLE TYPE.

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HDR

STAMP:

REGISTERED PROFESSIONAL ENGINEER
JAMES T. TRAN
No. E20364
Exp. 6/30/2015
ELECTRICAL
STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
DC SYSTEM ELECTRICAL NOTES

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
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DATE:	XX/XX/XX
DRAWN BY:	TTL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
NO SCALE

SHEET NO.:
E.100

ELECTRICAL NOTES:

E1. ALL CONDUIT CROSSING EXPANDING AND SEISMIC SEPARATION JOINTS SHALL BE PROVIDED WITH EXPANSION/DEFLECTION FITTINGS. PROVIDE FITTINGS AND FLEXIBLE LIQUID-TIGHT METAL CONDUIT RACEWAYS AS REQUIRED TO ACCOMMODATE BUILDING MOVEMENT.

E2. ALL LIQUID-TIGHT FLEXIBLE METAL CONDUIT (OR EQUIV.) TO BE BONDED TO GROUND AT COUPLINGS ON BOTH ENDS.

E3. CONDUIT ENTRY/CONNECTION TO ELECTRICAL ENCLOSURES SHALL BE SUITABLE FOR GROUNDING AND SHALL BE SEALED AGAINST ENVIRONMENT. CONDUIT SHALL NOT ENTER FROM TOP OF ELECTRICAL EQUIPMENT IN OUTDOOR LOCATIONS WITHOUT SITE-SPECIFIC APPROVAL FROM SUNPOWER.

E4. ALL EMT COUPLINGS TO BE LISTED AS "RAIN TIGHT".

E5. BONDING BUSHINGS TO BE USED ON ALL CONDUIT TERMINATIONS REGARDLESS OF VOLTAGE.

E6. CONDUIT FROM ARRAY TO COMBINER BOX 5 FEET OR SHORTER, SHALL BE LIQUID-TIGHT FLEX.

E7. CONDUIT FROM ARRAY TO COMBINER BOX IN EXCESS OF 5 FEET, SHALL BE 2 FEET LIQUID-TIGHT, WITH EMT FOR THE REMAINDER OF THE RUN.

E8. ONLY RUBBER TYPE CONDUIT SUPPORTS (B LINE DURA BLOCK OR EQUIVALENT) TO BE USED, NO WOODEN SLEEPERS.

E9. GROUND MOUNTED SYSTEMS STRING COMBINERS MUST BE LOCKED SHUT.

E10. NO TOP ENTRY TO OUTDOOR ENCLOSURES PERMITTED WITHOUT WRITTEN EXCEPTION FROM ENGINEER.

E11. GAS PIPING – MAINTAIN 1" SEPARATION FROM GAS PIPES WITH CONDUIT PER AS/NZS 5601. IF SEPARATION UNAVOIDABLE, GAS PIPE MUST BE BONDED TO OUR SYSTEM.

E12. GREEN GROUNDING SCREWS ARE NOT TO BE USED OUTDOORS (OUTSIDE OF BOXES) FOR MODULE OR RACK GROUNDING.

E13. GROUNDING LUGS USED OUTDOORS AND EXPOSED TO THE ENVIRONMENT SHALL BE LISTED FOR THE PURPOSE. ILSCO GBL-4DBT IS ACCEPTABLE. (ILSCO GBL-4 IS NOT LISTED FOR OUTDOOR USE).

E14. NO GREEN INSULATED WIRE USED AS EXPOSED EQUIPMENT GROUND OUTDOORS (OUTSIDE OF BOX). BARE COPPER TO BE USED.

E15. NRTL LISTING REQUIRED FOR CONDITIONS OF USE ON ALL LUGS, FITTINGS, CRIMPS ETC. LISTING TO BE PROVIDED TO ENGINEER UPON REQUEST BY SUB-CONTRACTOR.

E16. CONDUIT EXPANSION FITTINGS/PROVISIONS EXPECTED PER 300.7 (B) OF THE NEC.

E17. ARRAY WIRING ENTERING J-BOX OR ENCLOSURE SHALL HAVE STRAIN RELIEF FITTINGS WHERE APPLICABLE TO DETER STRESSES ON TERMINATIONS OVER TIME.

E18. FITTINGS/CONNECTORS USED FOR ARRAY WIRING ENTERING J-BOXES, SHALL BE SEALED TO PREVENT WATER, INSECTS AND RODENTS FROM ENTERING OVER TIME.

E19. WHERE ELECTRICAL TAPE OR OTHER FORMS OF MARKING ARE USED TO IDENTIFY STRING NUMBERS/PLACEMENT IN ARRAY, SAID MARKING SHALL NOT COVER ANY PORTION OF THE PV CELL ON THE MODULE. TEMPORARY MARKINGS SHALL BE REMOVED PRIOR TO CLOSE OUT.

E20. FOR CONDUIT BODY INSTALLATIONS THE REQUIREMENT OF 314.28 SHALL BE MET. FOR CONDUCTORS LARGER THAN 4/0 CONDUIT BODIES SHALL NOT BE USED. FOR THESE INSTALLATION AN ADEQUATE SIZED PULL BOX IS REQUIRED. MOGUL TYPE ELONGATED CONDUIT BODIES SHALL BE PERMITTED WHERE REQUIREMENTS OF 314.28 ARE MET, AND WHERE REDUCING BUSHING ARE NOT USED. FOR INSTALLATION CONTAINING LARGER THAN 4/0, SUBCONTRACTORS MUST SUBMIT CALC AND CUT-SHEETS TO PROVE THE SELECTED MATERIALS MEET THE CODE REQUIREMENT.

DC WIRE MANAGEMENT NOTES:

1. MODULE TO MODULE WIRE MANAGEMENT:

1.1. CONDUCTORS SHALL BE SECURED TO MODULE FRAMES WITH STAINLESS STEEL WIRE CLIPS OR EQUIVALENT. PLASTIC ZIPS TIES ARE NOT APPROVED.

1.2. WIRE SHALL BE SECURED AND SUPPORTED AT A MINIMUM OF EVERY 4'-0" OR ON EVERY MODULE.

1.3. WIRE SHALL BE SECURED IN A WAY SUCH THAT IT WILL NOT COME INTO CONTACT WITH ANY SHARP EDGES.

1.4. MODULE WIRING SHALL NOT BE UNDER STRAIN AT THE JUNCTION BOX, AND SHELL MEET ALL BENDING RADIUS REQUIREMENTS.

1.5. MODULE TO MODULE CONNECTORS, AND MODULE TO SOURCE CIRCUIT CONNECTORS SHALL BE SECURED OUT OF DIRECT SUNLIGHT.

2. ROW TO ROW WIRE MANAGEMENT:

2.1. MODULE CIRCUITS AND STRING CIRCUITS SHALL BE PROTECTED FROM UV LIGHT AND PHYSICAL DAMAGE BETWEEN ROWS.

2.2. UNLESS OTHERWISE NOTED, THE FOLLOWING ARE SUITABLE TO PROTECT CONDUCTORS BETWEEN ROWS:

2.2.1. EMT, RMC, AND IMC CONDUIT (METAL RACEWAYS MUST USE GROUND BUSHING AND PROTECTIVE BUSHINGS).
2.2.2. UV RESISTANT PVC CONDUIT
2.2.3. UV RESISTANT SPLIT CORRUGATED TUBING (GAPS LESS THAN 3'-0").
2.2.4. UV RESISTANT LIQUID-TIGHT FLEXIBLE NONMETALLIC CONDUIT (ROOF TOP ONLY).

2.3. WIRE SHALL BE BUNDLED SUCH THAT THE NUMBER OF CONDUCTORS IN THE BUNDLE SHALL NOT EXCEED THE DE-RATED AMPACITY OF THE CONDUCTORS.

3. CONDUIT ENTRANCE:

3.1. WHERE SOURCE CIRCUITS ENTER CONDUIT THAT IS ROUTED TO THE COMBINER BOX OR INVERTER, CONDUCTORS MUST PASS THROUGH A WATER TIGHT STRAIN RELIEF SUCH AS THE HAYCO MASTHEAD OR EQUIVALENT.

3.2. SOURCE CIRCUITS SHALL HAVE A "DRIP LOOP" IN THE WIRE BEFORE ENTERING THE CONDUIT.

4. MODULE TO SOURCE CIRCUIT CONNECTORS MUST BE OF THE SAME MAKE AND MODEL AS THE MODULE TO MODULE CONNECTORS. THE CONNECTION TO THE SOURCE CIRCUITS MUST BE PER THE MODULE MANUFACTURER AND CONNECTOR MANUFACTURER INSTRUCTIONS. CONTRACTOR SHALL VERIFY THAT THE STRING CONDUCTOR DIAMETER IS COMPATIBLE WITH THE STRING CIRCUIT HOMERUN CONNECTORS.

5. ALL CRIMP TERMINATIONS SHALL BE 90°C RATED.

GENERAL MEDIUM VOLTAGE NOTES:

1. ELBOWS, BUSHINGS, AND TEST CAPS MUST BE CLEAN AND PROPERLY LUBRICATED.

2. POWER CABLE, ELBOW, AND M.V. TERMINATION DRAINS SHALL BE INSTALLED IN A MANNER THAT WILL ALLOW FOR THE REMOVAL, STANDING OFF, AND/OR LANDING OF ELBOWS WITH MINIMUM BENDING RADIUS PER NEC 300.34.

3. TAPE SHIELD ADAPTER KITS ARE TO BE USED WITH POWER CABLE THAT HAS TAPE SHIELDING.

4. THE MEDIUM-VOLTAGE SYSTEM IS DESIGNED TO BE A 12kV, 3-PHASE, 3-WIRE PLUS GROUND, EFFECTIVELY GROUNDED SYSTEM WHETHER CONNECTED TO THE UTILITY OR ISOLATED FROM IT.

5. ALL MEDIUM VOLTAGE WORK SHALL COMPLY WITH THE LATEST EDITION OF ANSI C2 – NATIONAL ELECTRICAL SAFETY CODE (NESC)

6. MEDIUM VOLTAGE CABLES:

6.1. WHERE MEDIUM VOLTAGE CABLES ARE INSTALLED ALONG ACCESS ROADS, THEY SHALL BE DIRECT BURIED IN CONDUIT, 36" DEPTH.

7. SHOP DRAWINGS SHALL BE SUBMITTED FOR ENGINEER REVIEW AND APPROVED PRIOR TO FABRICATION OR INSTALLATION OF THE FOLLOWING EQUIPMENT:

7.1 QUALIFICATIONS OF TESTING AGENCY
MEDIUM VOLTAGE CABLE
MEDIUM VOLTAGE SWITCHGEAR/SECTIONALIZING CABINET
MEDIUM VOLTAGE SWITCH
DRY TYPE DISTRIBUTION REX TRANSFORMER
DC COMBINER BOXES
DC DISCONNECT SWITCH
LOW VOLTAGE AC BREAKER
LOW VOLTAGE PANELBOARDS

7.2 CONTRACTOR (TESTING AGENCY) TO PERFORM ACCEPTANCE TESTING PER SPECIFICATION SECTION 16080.

8. ALL EQUIPMENT INCLUDING SWITCHGEAR, SECTIONALIZING CABINETS, TRANSFORMERS, ETC. SHALL BE LABELED ON THE FRONT EXTERIOR TO CORRESPOND TO THE IDENTIFICATION SHOWN ON THE DRAWINGS WITH OUTDOOR, REFLECTIVE, ADHESIVE LABELS, BLACK ON YELLOW, MINIMUM 2 INCH HIGH LETTERS.

9. ALL MEDIUM VOLTAGE CABLES SHALL BE LABELED AT EACH END, AT AN ACCESSIBLE POINT INSIDE EQUIPMENT ENCLOSURE, WITH CIRCUIT AND PHASE IDENTIFICATION CORRESPONDING TO THE DRAWINGS. LABELS SHALL BE ENGRAVED AND FILLED STAINLESS STEEL, OR TWO-COLOR ENGRAVED PHENOLIC, SECURED WITH UV-RESISTANT WIRE TIES. LABELS SHALL BE VISIBLE FROM OUTSIDE THE ENCLOSURE WITHOUT REACHING INSIDE OR MOVING CABLES.

10. ARRANGE PHASES IN SWITCHGEAR, SECTIONALIZING CABINETS, ETC., A-B-C FROM LEFT TO RIGHT OR TOP TO BOTTOM AS VIEWED FROM THE FRONT.

11. VERIFY UTILITY PHASE SEQUENCE AND COORDINATE INSTALLATION OF FEEDER CONDUCTORS TO PROVIDE CORRECT PHASE SEQUENCE AT INVERTER SIDE OF STEP-UP TRANSFORMERS.

12. PROVIDE ARC FLASH HAZARD WARNING LABELS COMPLYING WITH ANSI Z535.4 ON ALL EQUIPMENT. LABELS SHALL BE APPLIED ON BOTH INSIDE AND OUTSIDE DOORS OR BARRIERS OF OUTDOOR EQUIPMENT.

13. ALL EQUIPMENT LABELING SHALL COMPLY WITH SUN EDISON REQUIREMENTS.

14. EQUIPMENT AND COMPONENTS SHALL BE LISTED AND LABELED BY A NATIONALLY-RECOGNIZED TESTING LABORATORY (NRTL) SUCH AS UL OR ETL, WHERE SUCH LISTING IS AVAILABLE FOR THE APPLICATION.

15. PROVIDE DANGER, WARNING, AND CAUTION LABELS AS REQUIRED BY NESC, OR OSHA STANDARDS ON EQUIPMENT ENCLOSURES, DOORS, ACCESS PLATES, AND BARRIERS AND LABEL ALL MEDIUM VOLTAGE EQUIPMENT WITH THE OPERATING VOLTAGE.

CONDUITS AND DUCTBANKS:

1. CONDUITS FOR DIRECT-BURIAL OR CONCRETE ENCASEMENT SHALL BE SCHEDULE 40 PVC.

2. ALL MEDIUM VOLTAGE CONDUITS SHALL HAVE MINIMUM 60 INCH RADIUS SWEEPS EXCEPT 36 INCH MINIMUM RADIUS IS REQUIRED FOR VERTICAL SWEEPS UP TO EQUIPMENT.

3. MAINTAIN MINIMUM 6 INCHES OF SPACING HORIZONTALLY AND VERTICALLY AT CROSSINGS BETWEEN MEDIUM VOLTAGE CONDUITS OR DUCTBANKS AND LOW-VOLTAGE OR COMMUNICATIONS CONDUITS.

4. MAINTAIN MINIMUM 4 FOOT SPACING BETWEEN MEDIUM VOLTAGE CONDUITS AND POWER CIRCUITS OF OTHER SYSTEMS WHEN RUN PARALLEL FOR DISTANCES OF OVER 10 PERCENT OF THE RUN OF EITHER CIRCUIT UNLESS THE DUCTBANK SECTIONS INDICATE CLOSER SPACINGS WHICH HAVE BEEN CONSIDERED IN AMPACITY CALCULATIONS.

5. MAINTAIN ALL CONDUIT ENTRIES TO EQUIPMENT WITHIN MANUFACTURER'S DESIGNATED CONDUIT ENTRY SPACE AND ARRANGE CONDUITS TO PERMIT THE MOST DIRECT ROUTING OF CABLES TO TERMINALS AND TO ALLOW ADEQUATE SLACK FOR DISCONNECTION AND PARKING OF LOADBREAK AND DEADBREAK ELBOW CONNECTORS.

6. TOPS OF CONDUIT SHALL BE A MINIMUM OF 4 INCHES ABOVE THE CONCRETE PAD OR GRAVEL BEDDING TO PREVENT INGRESS OF WATER. SEAL ALL CONDUITS TO PREVENT TRANSMISSION OF HUMID AIR BETWEEN INTERIOR AND EXTERIOR OF EQUIPMENT.

7. ALL CONDUITS ENTERING EQUIPMENT TO BE EQUIPPED WITH BELL ENDS TO PREVENT ABRASION.

CONDUIT EXPANSION:

1. THERMAL EXPANSION AND CONTRACTION OF THE CONDUIT: THERMAL EXPANSION OF THE CONDUIT IS SPECIFICALLY ADDRESSED IN THE 2011 NEC AS NOTING THAT EXPANSIONS FITTINGS ARE REQUIRED IN "STRAIGHT RUNS BETWEEN SECURELY MOUNTED ITEMS SUCH AS BOXES, CABINETS, ELBOWS, OR OTHER CONDUIT TERMINATIONS." EXPANSION FITTINGS SHALL BE PROVIDED WHERE THE CALCULATED THERMAL EXPANSION IS 0.25" OR MORE, REGARDLESS OF CONDUIT TYPE.

1.1. WHEN ELECTRICAL METAL TUBING (EMT) IS USED, EXPANSION FITTINGS SUCH AS THE TYPE 'TX' (CATALOG # TX-200) EXPANSION FITTING FOUND IN THE O-Z/GEDNEY CATALOG AT WWW.O-ZGEDNEY.COM ARE TO BE INSTALLED TO ACCOUNT FOR THE MAXIMUM EXPANSION PER RUN OF EMT CONDUIT AS CALCULATED ABOVE.

1.2. IN THE CASE WHERE RIGID METAL CONDUIT (RMC) IS USED INSTEAD OF EMT, EXPANSION FITTINGS SUCH AS THE TYPE 'AX' (CATALOG # AX-200) EXPANSION FITTING FOUND IN THE O-Z/GEDNEY CATALOG AT WWW.O-ZGEDNEY.COM ARE TO BE INSTALLED TO ACCOUNT FOR THE MAXIMUM EXPANSION PER RUN OF RMC CONDUIT AS CALCULATED ABOVE.

1.3. PROVIDE BONDING JUMPER ACROSS ALL EXPANSIONS FITTINGS, O-Z/GEDNEY TYPE 'BJ' OR EQUAL.

1.4. CONTRACTOR TO FURNISH AND INSTALL EXPANSION JOINTS FOR EACH STRAIGHT RUN OF CONDUIT EXCEEDING 20'-0" AND/OR EVERY 75'-0" OF STRAIGHT CONDUIT LENGTH.

2. ACCEPTABLE CONDUIT MOUNTING METHODS: THERMAL EXPANSION AND CONTRACTION OF THE ROOF STRUCTURE REQUIRES THAT CONDUIT BE INSTALLED ON THE ROOF SUCH THAT IT HAS THE FREEDOM TO MOVE IN ANY DIRECTION INDEPENDENT OF THE ROOF STRUCTURE. GREAT CARE MUST BE TAKEN TO ENSURE THAT THE CONDUIT IS NOT RESTRICTED OR FASTENED DOWN SECURELY TO THE ROOF STRUCTURE IN PREVENT CONDUIT CONNECTIONS FROM DISENGAGING AND DAMAGING THE WIRE INSIDE.

2.1. METHOD #1: 2-HOLE CONDUIT STRAP WITH SQUARE WASHERS; STANDARD 2-HOLE CONDUIT STRAPS SUCH AS B3256 HOLD DOWN ANCHOR CLAMP OFFERED BY COPPER B-LINE (CATALOG #B3256-2 THROUGH #B3256-8) IN CONJUNCTION WITH SQUARE WASHERS PLACED IN BETWEEN THE 2-HOLE CONDUIT STRAP AND STRUT RAIL. ALTERNATE MANUFACTURERS HAVE NOT ENDORSED THE SETUP AND SHOULD NOT BE USED WITHOUT PRIOR CONSENT. THE SQUARE WASHERS LIFT THE CONDUIT STRAP ENOUGH TO PROVIDE CLEARANCE BETWEEN THE OUTSIDE EDGE OF THE CONDUIT AND THE INSIDE EDGE OF THE CONDUIT STRAP TO ALLOW THE CONDUIT TO MOVE DURING THERMAL CYCLING. INSTALLER MUST ENSURE EXCESS GALVANIZATION DOES NOT PROHIBIT FREE MOVEMENT OF THE CONDUIT.

2.2. METHOD #2: B2417 PIPE GUIDE; STRUT MOUNTED PIPE GUIDES SUCH AS THOSE OFFERED BY COPPER B-LINE (CATALOG #B2417) CAN BE USED TO ALLOW THE CONDUIT TO MOVE INDEPENDENTLY OF THE ROOF STRUCTURE AND HAVE BEEN FORMALLY ENDORSED BY THE MANUFACTURER AS AN ACCEPTABLE WAY TO MOUNT CONDUIT TO STRUT RAILS THAT ACCOUNTS FOR THERMAL CYCLING. THE STRUT MOUNTED PIPE GUIDES PROVIDE A SMALL AMOUNT OF CLEARANCE BETWEEN THE OUTSIDE EDGE OF THE CONDUIT AND THE INSIDE EDGE OF THE CONDUIT CLAMP/PIPE GUIDE. STANDARD CONDUIT STRAPS AND CONDUIT CLAMPS INSTALLED WITHOUT THE ADDITIONAL WASHERS OR PIPE GUIDES DO NOT ALLOW THE CONDUIT TO MOVE DURING THERMAL CYCLING AND THEREFORE MUST ONLY BE USED ADJACENT TO "MOUNTED ITEMS SUCH AS BOXES, CABINETS, ELBOWS, OR OTHER CONDUIT TERMINATIONS." AS PRESCRIBED BY THE 2011 NEC.

CONDUCTORS:

1. COMPLETELY INSTALL ALL CONDUIT RUNS AND BACKFILL DUCTBANKS BEFORE PULLING CABLE. PULL A FLEXIBLE MANDREL AND BRUSH THROUGH EACH CONDUIT AFTER INSTALLATION. INSTALL A ¼" DIAMETER NYLON PULL ROPE IN ALL SPARE CONDUITS.

2. MEDIUM VOLTAGE CONDUCTORS SHALL BE PULLED USING DIRECT CONNECTION OF PULLING EYES TO THE CONDUCTORS OF EACH CABLE IN THE CIRCUIT OR BY INDIVIDUAL KELLEMS GRIPS APPLIED TO EACH CABLE OF THE CIRCUIT OVER THE INSULATION WITH THE TAPE SHIELDING REMOVED. USE OF KELLEMS GRIPS OVER THE OUTER JACKET OF THE CONDUCTOR OR OVER THE SHIELDING TAPE IS NOT PERMITTED.

3. INSTALL HANDHOLES AS REQUIRED TO MINIMIZE MAXIMUM ALLOWABLE CABLE TENSION PER CABLE MANUFACTURER WHEN PULLING CABLES.

4. SPLICES ARE NOT PERMITTED IN POWER OR CONTROL CONDUCTORS UNLESS INDICATED ON THE DRAWINGS OR APPROVED IN ADVANCE OF INSTALLATION BY ENGINEER.

5. WHERE CONDUCTORS OF DIFFERENT CIRCUITS PASS THROUGH THE SAME MANHOLE, HANDHOLE OR PULLBOX, COVER THE CONDUCTORS OF EACH CIRCUIT WITH ARC-PROOF TAPE, 3M SCOTCH 77 OR EQUIVALENT, SPIRAL WRAPPED HALF-LAPPED AND HELD IN PLACE WITH REVERSE WRAPPED GLASS FIBER TAPE.

6. TERMINATE ALL CONTROL WIRING BETWEEN PIECES OF EQUIPMENT ON FIELD WIRING TERMINAL BOARDS. LABEL ALL CONTROL WIRES WITH TERMINAL BOARD AND TERMINAL NUMBER IDENTIFICATION AT BOTH ENDS.

7. ALL GROUND LOOP AND GROUND GRID CONDUCTORS SHALL BE BARE, STRANDED COPPER, MINIMUM #4/0 AWG OR AS INDICATED. ALL BURIED OR INACCESSIBLE GROUND CONNECTIONS SHALL BE BY EXOTHERMIC (CADWELD) PROCESS AND/OR IRREVERSIBLE CRIMP GROUND CONNECTIONS.

8. ALL MECHANICAL CONNECTIONS OTHER THAN ELBOW CONNECTORS SHALL BE MADE USING UL-LISTED TIN-PLATED COPPER CIRCUMFERENTIAL COMPRESSION LUGS. LUGS SHALL BE LONG-BARREL WITH NEMA TWO-HOLE DRILLING, BURNDY HYLUG MODEL YAZ OR EQUIVALENT CONNECTED WITH HIGH-STRENGTH SILICON BRONZE BUS BOLTS, NUTS AND LOCK WASHERS. LUGS TO MATCH CONDUCTOR TYPE.

9. VERIFY PROPER TORQUE OF ALL BOLTED CONNECTIONS USING A CALIBRATED TORQUE WRENCH AND MARK EACH BOLT HEAD TO INDICATE VERIFICATION IS COMPLETE.

10. CLEAN AND LUBRICATE ALL LOADBREAK AND DEADBREAK BUSHING SURFACES PER MANUFACTURER'S INSTRUCTIONS BEFORE FINAL CONNECTION.

EQUIPMENT:

1. EQUIPMENT AND COMPONENTS SHALL BE LISTED AND LABELED BY A NATIONALLY-RECOGNIZED TESTING LABORATORY (NRTL) SUCH AS UL OR ETL, WHERE SUCH LISTING IS AVAILABLE FOR THE APPLICATION.

2. PROVIDE DANGER, WARNING, AND CAUTION LABELS AS REQUIRED BY NESC, OR OSHA STANDARDS ON EQUIPMENT ENCLOSURES, DOORS, ACCESS PLATES, AND BARRIERS AND LABEL ALL MEDIUM VOLTAGE EQUIPMENT WITH THE OPERATING VOLTAGE.

3. DOORS PROVIDING ACCESS TO PARTS NORMALLY ENERGIZED AT OVER 600V SHALL BE PADLOCKABLE CLOSED. REMOVABLE PANELS PROVIDING ACCESS TO PARTS NORMALLY ENERGIZED AT OVER 600V SHALL REQUIRE TOOLS FOR REMOVAL OR BE PADLOCKABLE CLOSED.

4. MEDIUM VOLTAGE EQUIPMENT INSTALLED OUTSIDE OF FENCES WHERE ACCESSIBLE TO THE PUBLIC SHALL COMPLY WITH NESC REQUIREMENTS FOR TAMPER-PROOF CONSTRUCTION.

5. EQUIPMENT SHALL BE ANCHORED TO CONCRETE PADS OR FOUNDATIONS PER MANUFACTURER'S INSTRUCTIONS USING GALVANIZED STEEL ANCHOR BOLTS EMBEDDED IN PAD OR WITH 6 INCH DEEP EPOXY ANCHOR BOLTS. VERIFY ANCHOR BOLT SIZE PER MANUFACTURER.

6. ALL OPENINGS INTO EQUIPMENT SHALL BE SEALED WITH GALVANIZED STEEL PLATE OR SCREEN TO PREVENT ENTRY OF INSECTS AND RODENTS.

7. CAULK ALONG BOTTOM PERIMETER OF EQUIPMENT MOUNTED ON CONCRETE PADS TO PREVENT WATER ENTRY BETWEEN BOTTOM OF ENCLOSURE AND TOP OF CONCRETE SLAB.

8. PROVIDE 12 INCHES OF CLASS 5 GRAVEL DRAINAGE BEDDING IN THE BOTTOM OF ALL BOTTOM CONDUIT ENTRIES TO OPEN CABLE COMPARTMENTS.

9. ALL CONDUCTORS SHALL BE ROUTED TO MAINTAIN ACCESS TO INDICATORS, VALVES, SAMPLE PORTS, SWITCHES, TAP CHANGES, FUSE WELLS, AND OTHER COMPONENTS AND ACCESSORIES REQUIRING OPERATOR ACCESS.

10. PLACE MICARTA NAMEPLATES WITH MINIMUM 3/4" HIGH LETTERS FOR DISTRIBUTION EQUIPMENT SWITCHGEAR, INVERTERS, TRANSFORMERS, ETC.

11. PROVIDE NEMA 4 ENCLOSURE WHERE AVAILABLE FOR EXTERIOR DC AND LV EQUIPMENT. PROVIDE NEMA 3R ENCLOSURES WHERE NEMA 4 IS NOT AVAILABLE.

TRANSFORMERS:

1. TRANSFORMERS SHALL BE SECURELY BOLTED TO THE EQUIPMENT PAD AND MADE LEVEL. ANY GAPS BETWEEN THE PAD AND BASE OF THE TRANSFORMER MUST BE SEALED.

2. PROPER TORQUE SHALL BE APPLIED TO ALL BUSHINGS AS INDICATED.

3. PROPER LABELING REQUIRED FOR: TRANSFORMER, POWER CABLES, HIGH VOLTAGE COMPARTMENT (STATEMENT OF VOLTAGE), AND TRANSFORMER DOORS (DANGER WARNING).

4. TRANSFORMERS WILL USE CABLE BASEMENTS FOR INCOMING CONDUCTORS.

5. NEMA DRILLED LONG BARREL COMPRESSION LUGS TO BE USED FOR THE LOW VOLTAGE WIRE.

6. PENTA-BOLTS ARE TO BE USED ON BOTH SETS OF DOORS.

7. ALL CONDUCTORS SHALL BE ROUTED TO MAINTAIN ACCESS TO INDICATORS, VALVES, SAMPLE PORTS, SWITCHES, TAP CHANGES, FUSE WELLS, AND OTHER COMPONENTS AND ACCESSORIES REQUIRING OPERATOR ACCESS.

8. LV WIRE SHALL BE ROUTED TO ALLOW ACCESS TO OIL DRAIN VALVE AND OIL SAMPLE PORT.

9. VERIFY THE FOLLOWING:

9.1. FACTORY WIRING DIAGRAM IS ACCURATE

9.2. TRANSFORMER IS LEVEL

9.3. MEDIUM & LOW VOLTAGE CONDUITS ARE SEPARATED AND UNDER THEIR OWN COMPARTMENT

9.4. LOW VOLTAGE WIRE ARE ROUTED SO THAT THERE IS ACCESS TO THE OIL DRAIN VALVE AND OIL SAMPLE PORT

9.5. LOCK OR CONICAL NUTS

9.6. HARDWARE IS THE PROPER LENGTH

10. PROVIDE PADLOCKS ON THE DOORS.

11. PROVIDE 12" OF CLASS 5 GRAVEL DRAINAGE BEDDING UNDER THE GROUND SLEEVE.

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HDR

STAMP:

REGISTERED PROFESSIONAL ENGINEER
JAMES T. TRAN
No. E20364
Exp. 6/30/2015
ELECTRICAL
STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
AC SYSTEM ELECTRICAL NOTES

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

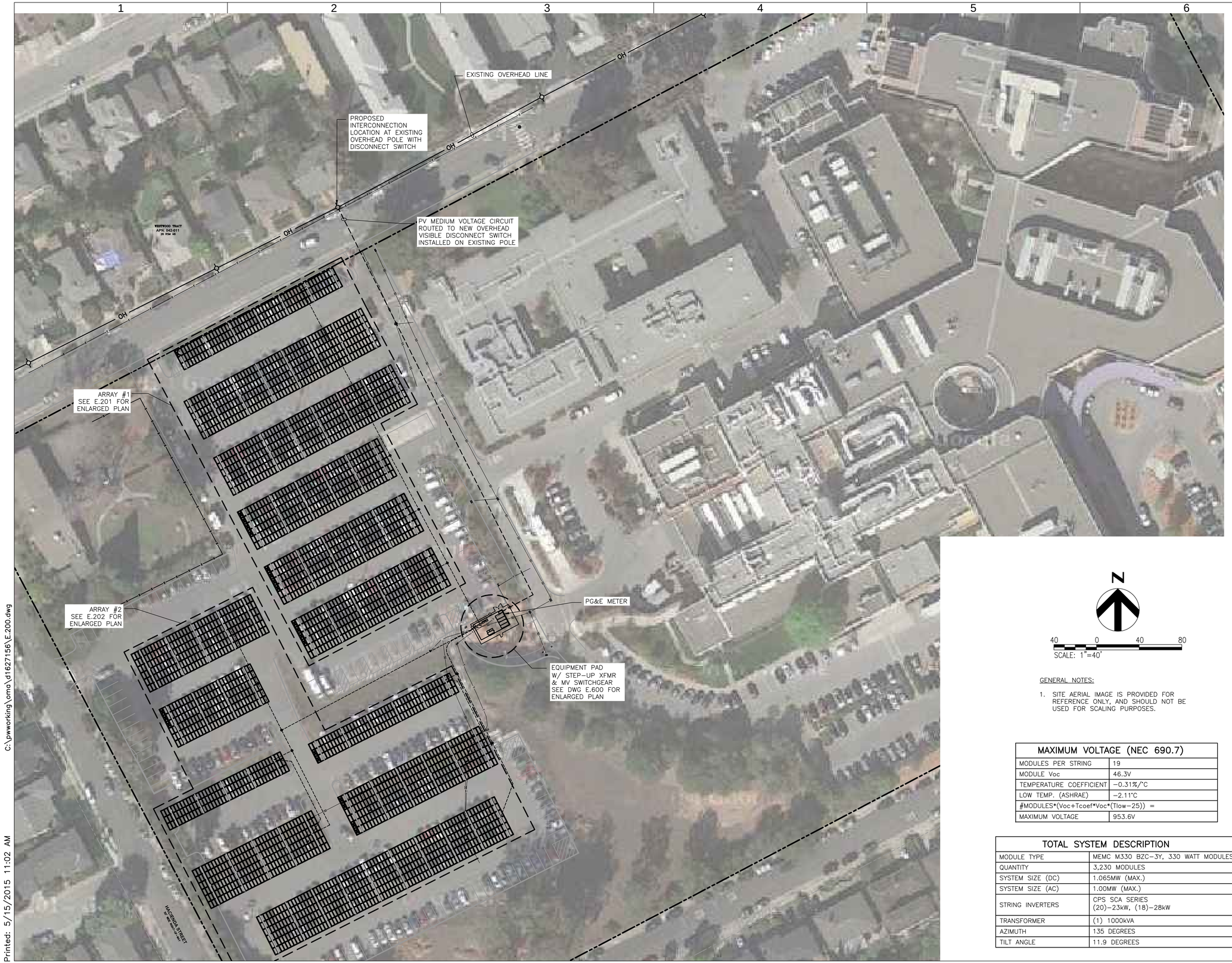
NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/10/14
DRAWN BY:	TTL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
NO SCALE

SHEET NO.:
E.101



GENERAL NOTES:

1. SITE AERIAL IMAGE IS PROVIDED FOR REFERENCE ONLY, AND SHOULD NOT BE USED FOR SCALING PURPOSES.

MAXIMUM VOLTAGE (NEC 690.7)	
MODULES PER STRING	19
MODULE Voc	46.3V
TEMPERATURE COEFFICIENT	−0.31%/°C
LOW TEMP. (ASHRAE)	−2.11°C
#MODULES*(Voc+Tcoef*Voc*(Tlow−25)) =	
MAXIMUM VOLTAGE	953.6V

TOTAL SYSTEM DESCRIPTION	
MODULE TYPE	MEMC M330 BZC−3Y, 330 WATT MODULES
QUANTITY	3,230 MODULES
SYSTEM SIZE (DC)	1.065MW (MAX.)
SYSTEM SIZE (AC)	1.00MW (MAX.)
STRING INVERTERS	CPS SCA SERIES (20)−23kW, (18)−28kW
TRANSFORMER	(1) 1000kVA
AZIMUTH	135 DEGREES
TILT ANGLE	11.9 DEGREES

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STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
OVERALL ELECTRICAL SITE PLAN

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/10/14
DRAWN BY:	TTL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
1:40

SHEET NO.:
E.200

N

20 0 20 40

SCALE: 1"=20'

GENERAL NOTES:

1. SITE AERIAL IMAGE IS PROVIDED FOR REFERENCE ONLY, AND SHOULD NOT BE USED FOR SCALING PURPOSES.
2. ARRAY BLOCKS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL DETERMINE EXACT WIRING BASED ON SITE CONDITIONS.
3. REFER TO GENERAL NOTES AND DC WIRING MANAGEMENT ON SHEET E.100 & E.101 FOR DETAILS.
4. ALL PV PANEL WIRING SHALL BE APPROVED BY SUNEDISON PRIOR TO COMMENCING CONSTRUCTION.
5. CONTRACTOR TO PROVIDE EACH DC CIRCUIT IDENTIFIER AS SPECIFIED. THIS IS TYPICAL ON ALL STRING CIRCUITS. LABEL (+) ON ONE END AND (–) ON OTHER END.
6. CONTRACTOR TO SECURE PV SOURCE CIRCUIT BY INSTALLING P–CLIP AND/OR SUNBUNDLER.
7. STRING INVERTER LOCATIONS TO BE DETERMINED BY PLACEMENT OF STRUCTURAL COLUMNS.

LEGEND: STRING INVERTER IDENTIFIER

#:##:##

- # OF STRINGS
- STRING INVERTER #
- SWITCHBOARD #

I.E.: 1:02:1–4

ARRAY #1 SYSTEM DESCRIPTION	
MODULE TYPE	MEMC–330M, 330W MODULES
QUANTITY	1634 MODULES
SOURCE CIRCUITS	86
STRING INVERTERS	CPS SCA SERIES (9)–23kW, (10)–28kW
AZIMUTH	135 DEGREES
TILT ANGLE	11.9 DEGREES

* THERE ARE 13 SPARE MODULES UNCONNECTED.

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PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
ENLARGED ELECTRICAL SITE PLAN (ARRAY #1)

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

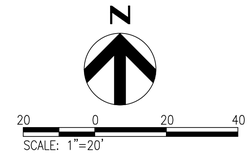
NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/10/14
DRAWN BY:	TTL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

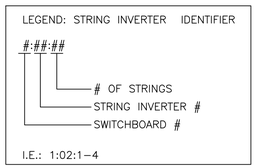
SCALE:
1:20

SHEET NO.:
E.201



GENERAL NOTES:

1. SITE AERIAL IMAGE IS PROVIDED FOR REFERENCE ONLY, AND SHOULD NOT BE USED FOR SCALING PURPOSES.
2. ARRAY BLOCKS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL DETERMINE EXACT WIRING BASED ON SITE CONDITIONS.
3. REFER TO GENERAL NOTES AND DC WIRING MANAGEMENT ON SHEET E.100 & E.101 FOR DETAILS.
4. ALL PV PANEL WIRING SHALL BE APPROVED BY SUNEDISON PRIOR TO COMMENCING CONSTRUCTION.
5. CONTRACTOR TO PROVIDE EACH DC CIRCUIT IDENTIFIER AS SPECIFIED. THIS IS TYPICAL ON ALL STRING CIRCUITS. LABEL (+) ON ONE END AND (–) ON OTHER END.
6. CONTRACTOR TO SECURE PV SOURCE CIRCUIT BY INSTALLING P–CLIP AND/OR SUNBUNDLER.
7. STRING INVERTER LOCATIONS TO BE DETERMINED BY PLACEMENT OF STRUCTURAL COLUMNS.



ARRAY #2 SYSTEM DESCRIPTION	
MODULE TYPE	MEMC–330M, 330W MODULES
QUANTITY	1596 MODULES
SOURCE CIRCUITS	84
STRING INVERTERS	CPS SCA SERIES (11)–23kW, (8)–28kW
AZIMUTH	135 DEGREES
TILT ANGLE	11.9 DEGREES

* THERE ARE 9 SPARE MODULES UNCONNECTED.

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HDR

STAMP:

REGISTERED PROFESSIONAL ENGINEER
JAMES T. TRAN
No. E20364
Exp. 6/30/2015
ELECTRICAL
STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
ENLARGED ELECTRICAL SITE PLAN (ARRAY #2)

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

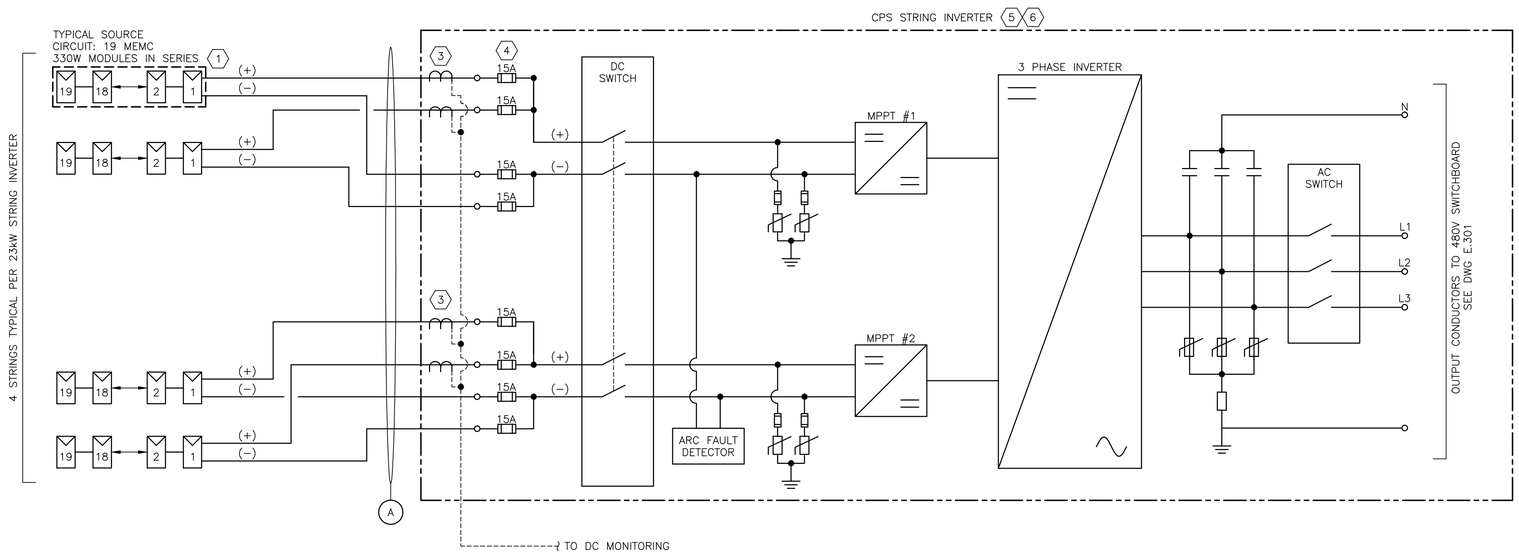
NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/10/14
DRAWN BY:	TTL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

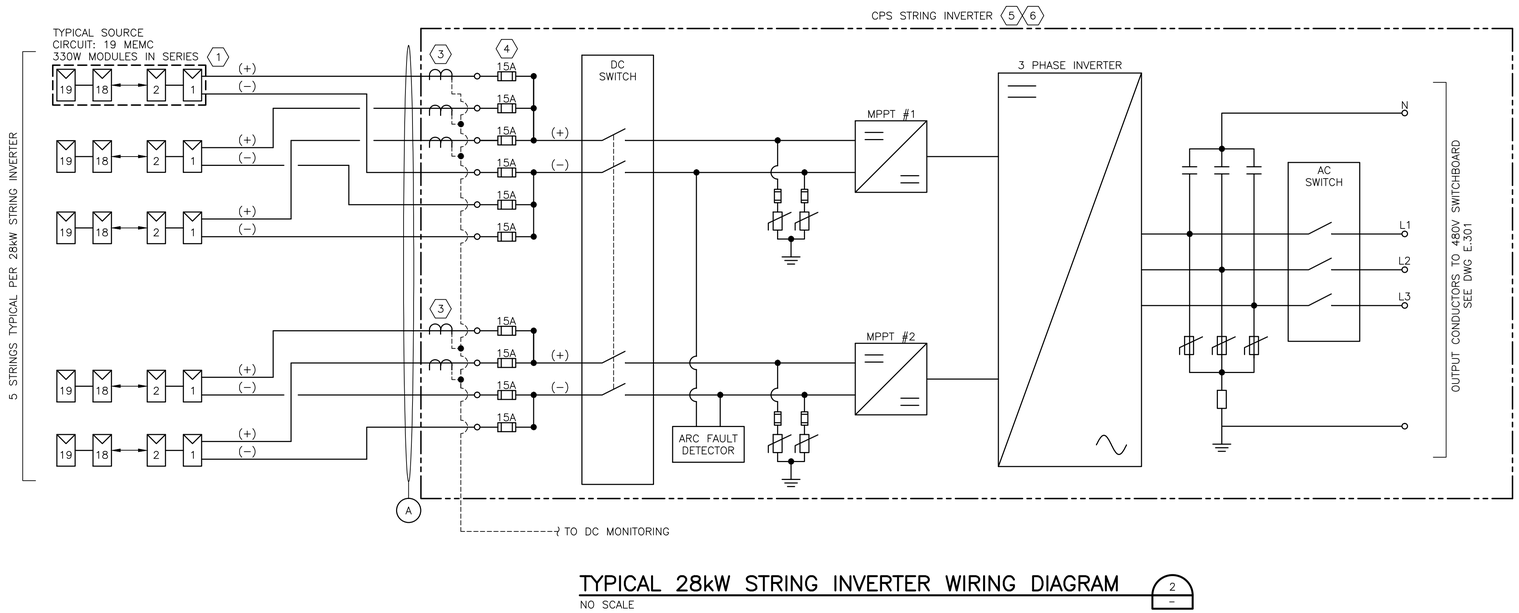
SCALE:
1:20

SHEET NO.:
E.202



TYPICAL 23kW STRING INVERTER WIRING DIAGRAM

NO SCALE



TYPICAL 28kW STRING INVERTER WIRING DIAGRAM

NO SCALE

TYPICAL 23kW BLOCK– TYPICAL OF 20	
MODULE TYPE	MEMC–330M, 330W MODULES
QUANTITY	76 MODULES
SOURCE CIRCUITS	4
STRING INVERTERS	CPS SCA SERIES (1)–23kW
AZIMUTH	135 DEGREES
TILT ANGLE	11.9 DEGREES

TYPICAL 28kW BLOCK – TYPICAL OF 18	
MODULE TYPE	MEMC–330M, 330W MODULES
QUANTITY	95 MODULES
SOURCE CIRCUITS	5
STRING INVERTERS	CPS SCA SERIES (1)–28kW
AZIMUTH	135 DEGREES
TILT ANGLE	11.9 DEGREES

KEYNOTES:

1. MEMC 330W MODULES INCLUDE #10 AWG 1000V OUTDOOR RATED QUICK CONNECTS FOR MODULE STRING CONNECTIONS. DO NOT REMOVE QUICK CONNECTS. MODULES SHALL BE TUV–LISTED TO UL 1741. ENSURE CONNECTORS ARE ALIKE FOR LIKE MATCH WITH MODULE LEADS.
2. INVERTER WITH ANTI–ISLANDING PROTECTION, NEGATIVE GROUNDED SYSTEM, DC GROUND FAULT PROTECTION AND ZONE MONITORING, UL–1741 COMPLIANT.
3. ARRAY ZONE MONITORING.
4. DC FUSES TO BE 15A AT ALL STRING INVERTERS.
5. REFER TO INVERTER MANUAL FOR INSTALLATION REQUIREMENTS.
6. REFER TO E.1100 FOR COMMUNICATION WIRING.

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Exp. 6/30/2015
ELECTRICAL
STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
DC SYSTEM
ONE-LINE DIAGRAM
INVERTER 1

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

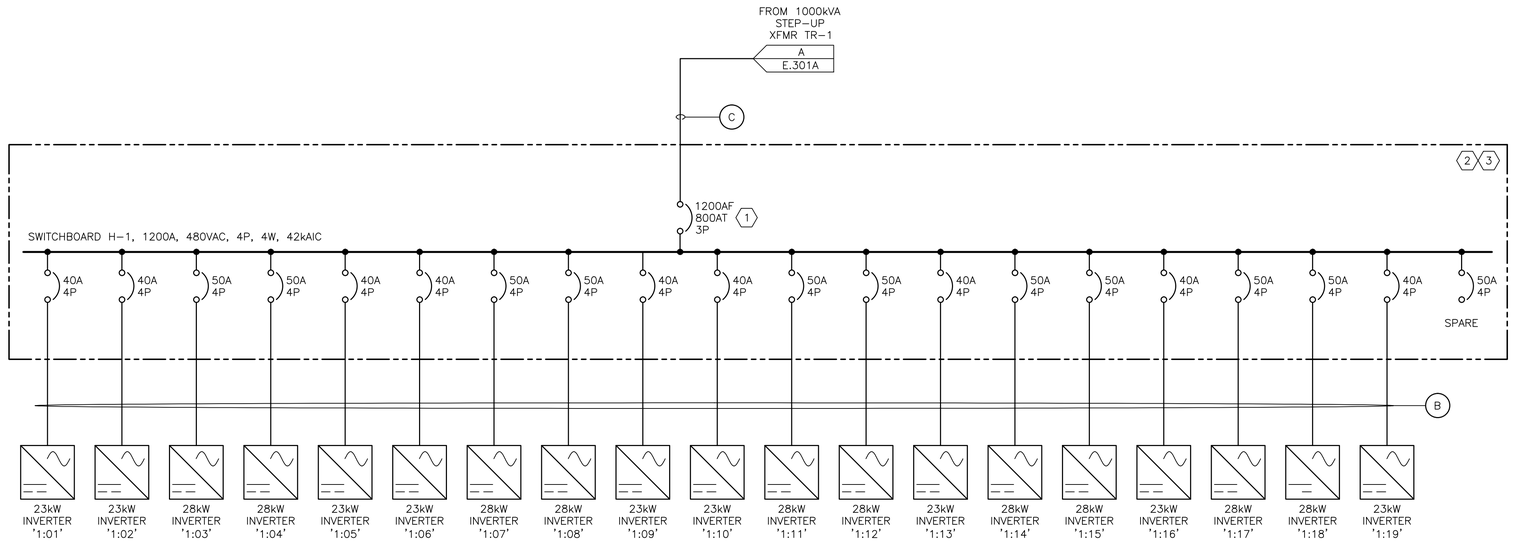
NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	10/20/14
DRAWN BY:	TTL
ENGINEER:	JT
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
NO SCALE

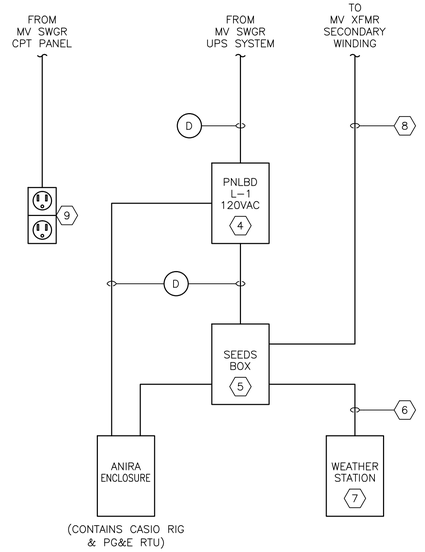
SHEET NO.:
E.300



480V SWITCHBOARD 'H-1' SINGLE-LINE DIAGRAM

NO SCALE

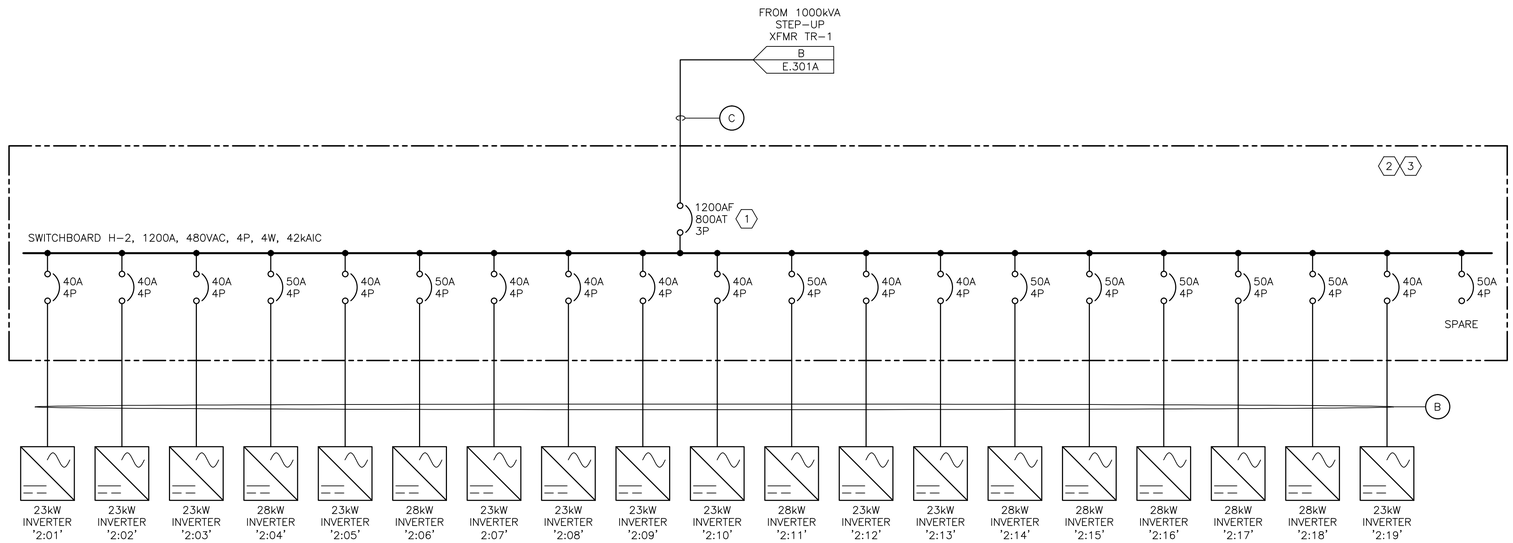
1 E.301



120V PNLBD 'L-1' & SEEDS ONE-LINE

NO SCALE

3 E.301



480V SWITCHBOARD 'H-2' SINGLE-LINE DIAGRAM

NO SCALE

2 E.301

LEGEND:

(#) – CABLE TAG; SEE DWG E.400

GENERAL NOTES:

1. REFER TO E.400 FOR CABLE SCHEDULES.

KEYNOTES:

1. MAIN BREAKER TO HAVE ADJUSTABLE PICK-UPS.
2. ALL BREAKERS ARE RATED BACKFEED CAPABILITY.
3. SWITCHBOARD TO BE RATED FOR OUTDOOR NEMA 3R.
4. FURNISH AND INSTALL 120V PANELBOARD AND FEED FROM THE MEDIUM VOLTAGE SWITCHGEAR UPS. PROVIDE PLACARD "SUPPLIED BY UPS FROM MEDIUM VOLTAGE SWITCHGEAR. DO NOT CONNECT POWER TOOLS TO THIS PANELBOARD".
5. SEEDS COMMUNICATION SYSTEM COMPONENTS FURNISHED BY SUNEDISON, INSTALLED BY CONTRACTOR. REFER TO E.1100 SERIES DRAWINGS FOR CONNECTIONS. 24"X24"X10".
6. FURNISH AND INSTALL CAT5E CABLE AND (2) POWER CONDUCTORS IN (2) SEPARATE CONDUITS.
7. SEE DWG E.1101 FOR WEATHER STATION DETAILS.
8. FURNISH AND INSTALL CONTROL CONDUCTORS AND CONDUIT (TRANSFORMER ALARM CONTACTS) TO SEEDS SYSTEM, 4/C #18 AWG STP IN 1"C.
9. PROVIDE WEATHERPROOF, GFCI DUPLEX RECEPTACLE, AND INSTALL ON UNI-STRUT RACK AT EQUIPMENT PAD.

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No. E20364
Exp. 6/30/2015
ELECTRICAL
STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
SUNED LOW VOLTAGE AC SYSTEM ONE-LINE DIAGRAM

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

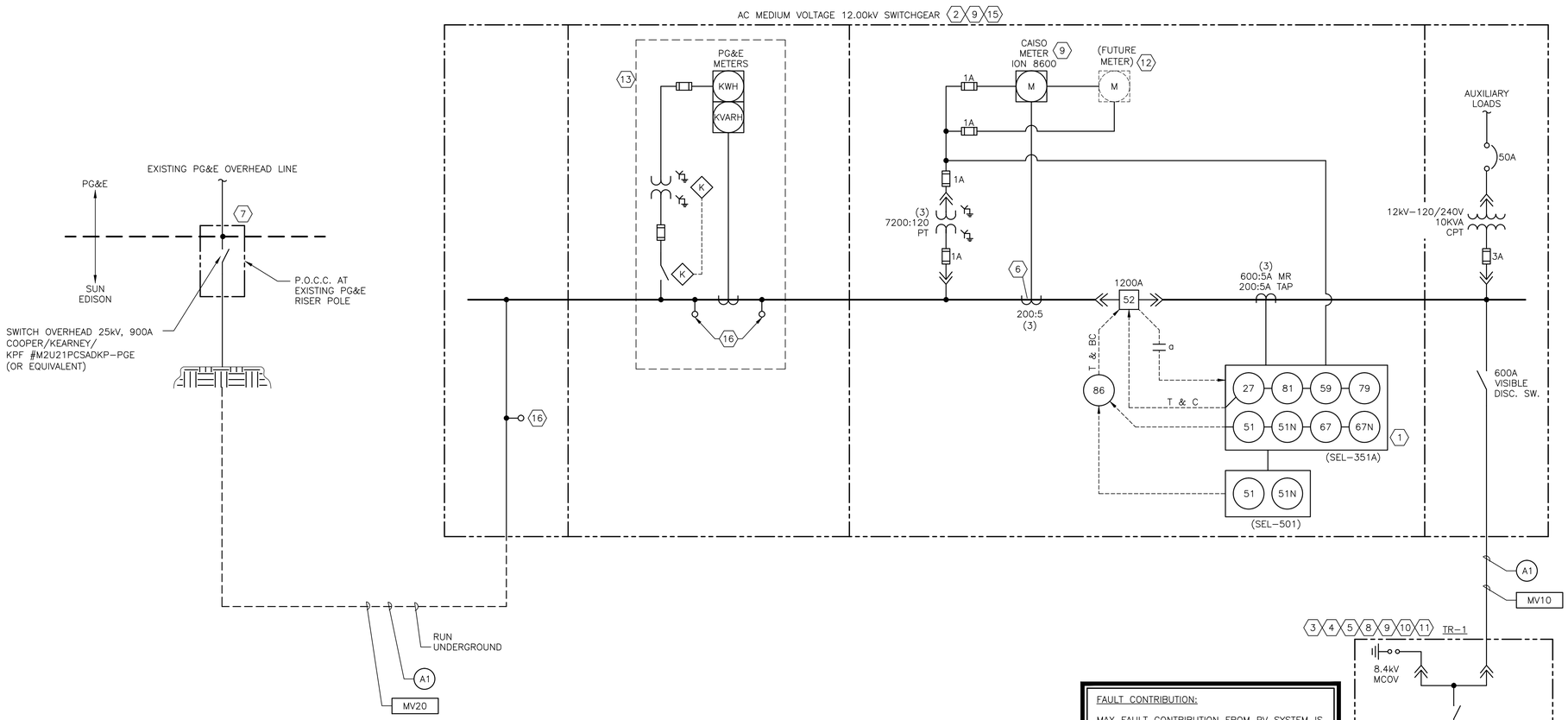
NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	10/20/14
DRAWN BY:	TTL
ENGINEER:	JT
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
NO SCALE

SHEET NO.:
E.301



GENERAL NOTES:

1. ALL SURGE ARRESTORS AT TRANSFORMERS ARE TO BE EXTERNAL, ELBOW CONNECTION.

KEYNOTES:

1. MULTIFUNCTION MICROPROCESSOR BASED PROTECTIVE RELAY.
2. MEDIUM VOLTAGE SWITCHGEAR PER ANSI C37. 15kV CLASS, 1200A, 500MVA, 95KV BIL.
3. TRANSFORMER TO HAVE NOMINAL VOLTAGE OF 12kV.
4. PAD MOUNT TRANSFORMER, THREE PHASE, OIL FILLED, PRIMARY SIDE DISCONNECTING MEANS AND PROTECTIVE FUSING.
5. TRANSFORMER IMPEDANCE TO BE CONFIRMED.
6. RF 1.0 @ 55°C REVENUE GRADE 0.3B – 0.1 CT's
7. LOCKABLE POLE TOP GROUP-OPERATED SWITCH. SWITCH TO CONFORM WITH PG&E APPROVED LIST.
8. 200A LOAD BREAK ELBOWS
9. SUN EDISON TO FURNISH EQUIPMENT, CONTRACTOR TO INSTALL.
10. CONTRACTOR TO INSTALL TRANSFORMER ALARM CONTACTS TO SEEDS SYSTEM.
11. TRANSFORMER MAIN SECONDARY SHALL HAVE MINIMUM OF (6) SETS OF 750kCMIL CABLE CONNECTIONS.
12. PROVISIONS FOR FUTURE METER. VENDOR TO PROVIDE METER SOCKET.
13. PER PG&E REQUIREMENTS. PG&E PROVIDED CT'S, PT'S, AND METER.
14. NOT USED.
15. PROVIDE LABELS AS REQUIRED, SEE DWG E.1020
16. GROUND BALL

TOTAL SYSTEM DESCRIPTION	
MODULE TYPE	MEMC M330M BZC-3Y
QUANTITY	3,230 MODULES
STRING INVERTERS	(20) 23kW & (18) 28kW
INVERTER TYPE	CPS SCA23KTL-DO/US-480V CPS SCA28KTL-DO/US-480V

LEGEND

- TRANSFORMER
- MEDIUM VOLTAGE FUSED CUTOUT SWITCH
- SWITCH
- FUSE
- SURGE ARRESTOR
- 52 DRAW OUT MEDIUM VOLTAGE CIRCUIT BREAKER
- TR-6 TRANSFORMER #
- (X) REFERS TO CABLE SCHEDULE, THIS DRAWING
- MVXX MEDIUM VOLTAGE CABLE IDENTIFICATION NUMER

CABLE SCHEDULE		
MARK	CONDUCTOR	RACEWAY
(A1)	(3) 15kV, 1/0 AWG, AL, 133% INSULATION, EPR, MV-105 WITH FULL CONCENTRIC NEUTRAL.	4" PVC

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STAMP:

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JAMES T. TRAN
No. E20364
Exp. 6/30/2015
ELECTRICAL
STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
SUNED MEDIUM VOLTAGE AC SYSTEM ONE-LINE DIAGRAM

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	10/20/14
DRAWN BY:	TTL
ENGINEER:	JT
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
NO SCALE

SHEET NO.:
E.301A

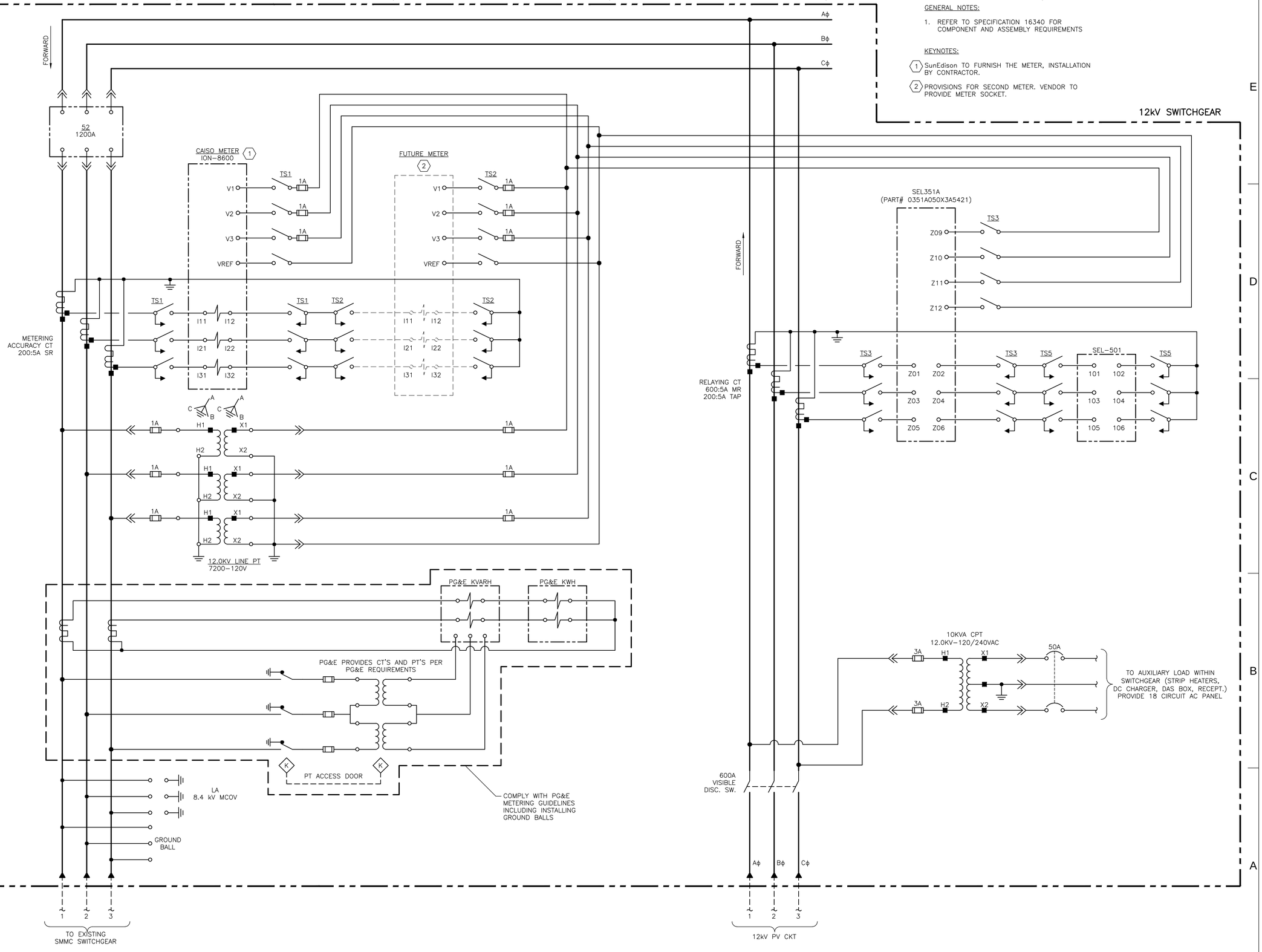
GENERAL NOTES:

1. REFER TO SPECIFICATION 16340 FOR COMPONENT AND ASSEMBLY REQUIREMENTS

KEYNOTES:

(1) SunEdison TO FURNISH THE METER, INSTALLATION BY CONTRACTOR.

(2) PROVISIONS FOR SECOND METER. VENDOR TO PROVIDE METER SOCKET.



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STAMP:

REGISTERED PROFESSIONAL ENGINEER
JAMES T. TRAN
No. E20364
Exp. 6/30/2015
ELECTRICAL
STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
AC SYSTEM
THREE-LINE
DIAGRAM

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

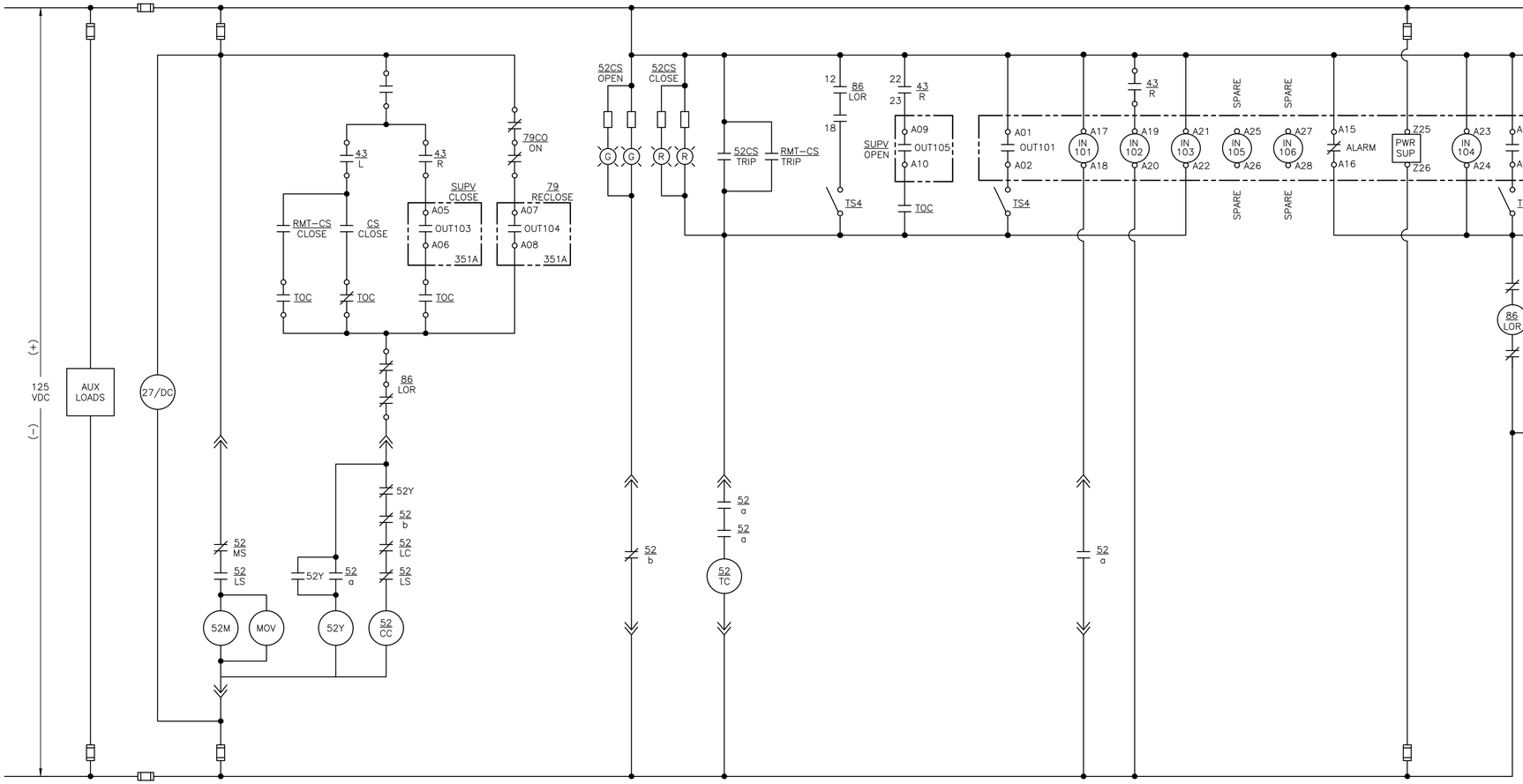
NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/17/14
DRAWN BY:	NT
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

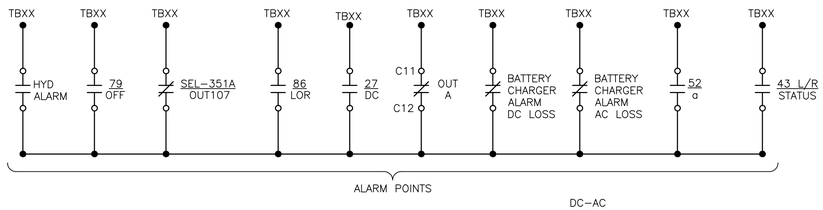
SCALE:
NO SCALE

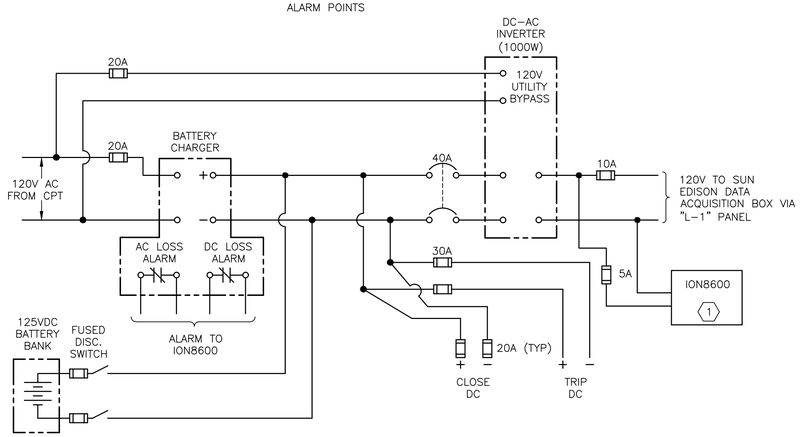
SHEET NO.:
E.302



BREAKER CONTROL SCHEMATIC

NO SCALE





NOTE:

1. WIRE ALL SPARE CONTACTS TO TERMINAL BLOCKS FOR CUSTOMER USE.
2. REFER TO SPECIFICATION 16340 FOR COMPONENT AND ASSEMBLY REQUIREMENTS.
3. REFER TO SWITCHGEAR SHOP DRAWINGS FOR EXACT DETAILS.

KEY NOTES:

(1) PROVIDE NEMA 5-15R DUPLEX RECEPTACLE LOCATED WITHIN 4 FT OF METER SOCKET WITH METER DOOR FULLY OPEN

52CS

DECK	CONTACTS HANDLE END / SPRING RETURN	TRIP	NORM	CLOSE
1	11-12	X		
				X
	15-16	X		
				X
2	21-22	X		
				X
	25-26	X		
				X

86LOR

DECKS	CONTACTS	TRIP	RESET
1	11 - 13		X
	12 - 18	X	
	15 - 17		X
	16 - 14	X	
2	21 - 23		X
	22 - 28	X	
	25 - 27		X
	26 - 24	X	

79CO

DECK	CONTACTS HANDLE END / SPRING RETURN	OFF	ON
1	12 - 11	X	
			X
	16 - 15	X	
			X
2	22 - 21	X	
			X
	26 - 25	X	
			X

43L/R

DECK	CONTACTS HANDLE END	LOCAL	REM
1	12 - 11	X	
			X
	16 - 15	X	
			X
2	22 - 21	X	
			X
	26 - 25	X	
			X
3	32 - 31	X	
			X
	36 - 35	X	
			X

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REGISTERED PROFESSIONAL ENGINEER
JAMES T. TRAN
No. E20364
Exp. 6/30/2015
ELECTRICAL
STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
DC BREAKER CONTROL SCHEMATIC

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

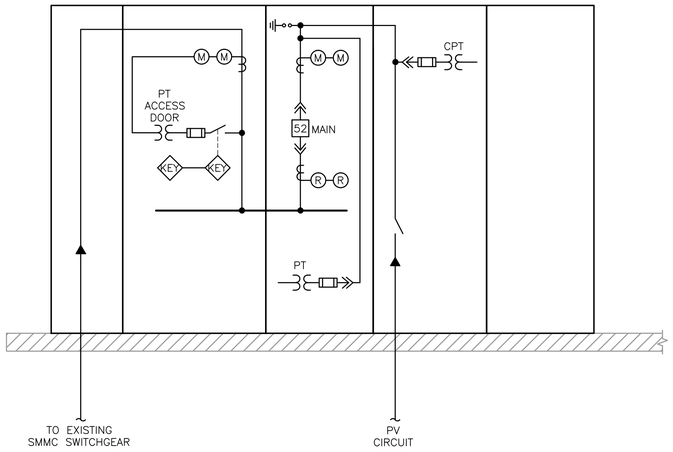
NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/17/14
DRAWN BY:	NT
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
NO SCALE

SHEET NO.:
E.303

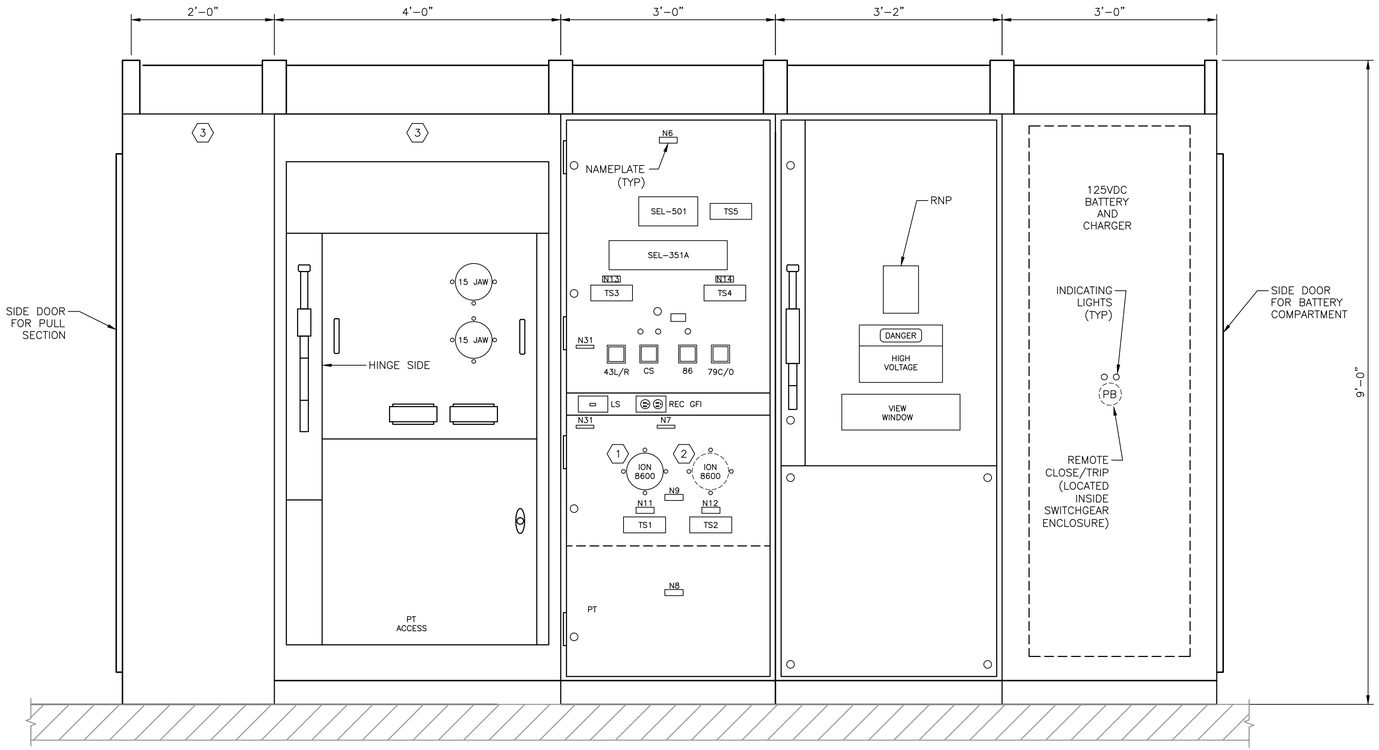


12kV OUTDOOR NON-WALK-IN SWITCHGEAR – RISER DIAGRAM (1)

NOT TO SCALE

SUNEDISON PLACARD (3)

NO SCALE



KEYNOTES:

1. CAISO METER
2. FUTURE METER
3. SECTION TO COMPLY WITH PG&E ESR REQUIREMENTS.

LEGEND

TS – FLEXITEST SWITCH

L/R – LOCAL REMOTE SELECTOR SWITCH

LOR – LOCK OUT RELAY

RL – RED INDICATING LIGHT

GL – GREEN INDICATING LIGHT

CS – BREAKER CONTROL SWITCH

51/SEL351 – SCHWEITZER RELAY 351A

AL – AMBER INDICATOR LIGHT (LOR)

79CO – RECLOSE CUTOFF SWITCH

PB – PUSHBUTTON (TO CLOSE & TRIP BREAKER FROM BATTERY SECTION)

NOTES:

1. OUTER DOORS NOT SHOWN FOR CLARITY.

12kV OUTDOOR NON-WALK-IN SWITCHGEAR – PANEL LAYOUT (2)

1" = 1'-0"

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600 CLIPPER DRIVE
BELMONT, CA 94002
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JAMES T. TRAN
No. E20364
Exp. 6/30/2015
ELECTRICAL
STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
MV SWITCHGEAR RISER & PANEL LAYOUT

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

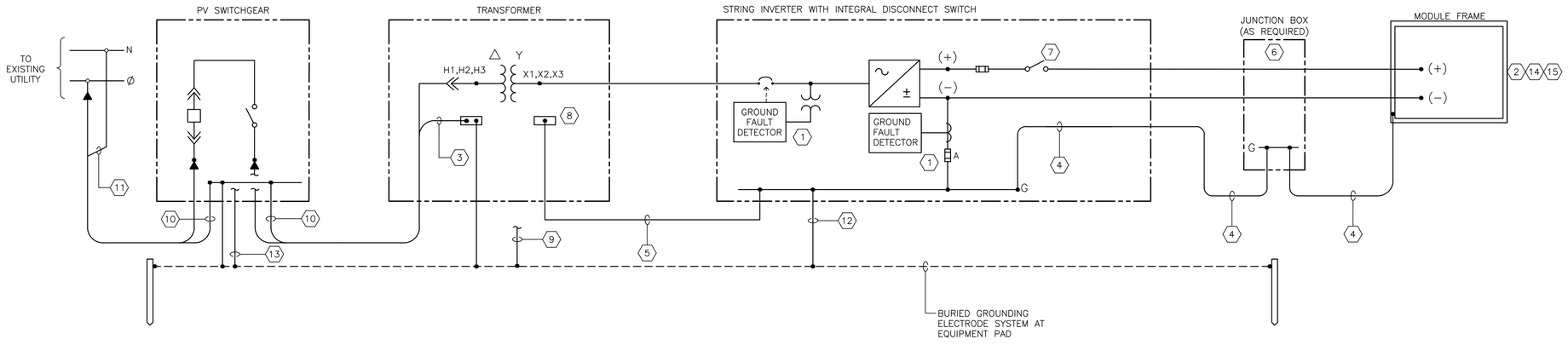
NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/17/14
DRAWN BY:	NT
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
AS NOTED

SHEET NO.:
E.304



PV SYSTEM GROUNDING SCHEMATIC

SCALE: NONE

KEYNOTES:

1. CONFIRM GROUND FAULT DETECTION SCHEME WITH INVERTER MANUFACTURER. REFER TO INVERTER TECHNICAL INFORMATION FOR DETAILS.
2. PROVIDE GROUND TO MODULE FRAME STRUCTURE/RACK PER RACKING MANUFACTURERS RECOMMENDATIONS.
3. MEDIUM VOLTAGE CABLE CONCENTRIC NEUTRAL BONDED TO TRANSFORMER GROUND PAD.
4. EQUIPMENT GROUNDING CONDUCTOR ROUTED WITH D.C CONDUCTORS.
5. EQUIPMENT GROUNDING CONDUCTOR ROUTED WITH AC CIRCUIT CONDUCTORS.
6. PROVIDE GROUND BOND TO ALL METALLIC CONDUITS, PROVIDE BONDING JUMPER TO JUNCTION BOX AND CONDUIT EXPANSION. INSTALL EXTRA CONDUIT FOR GROUNDING JUNCTION BOX.
7. SWITCH OR BREAKER AS SPECIFIED.
8. DO NOT BOND TRANSFORMER XO BUSHING TO GROUND.
9. CONNECTION(S) TO SEPARATELY DERIVED SYSTEM TRANSFORMER NEUTRAL(S) AS REQUIRED.
10. MEDIUM VOLTAGE CABLE CONCENTRIC NEUTRALS BONDED TO SWITCHGEAR GROUND BUS.
11. MEDIUM VOLTAGE CABLE CONCENTRIC NEUTRALS BONDED TO UTILITY NEUTRAL AND POLE GROUND AT RISER POLE.
12. DC GROUNDING ELECTRODE CONDUCTOR PER NEC 690.47(C)(2) AND SIZED PER NEC 250.166.
13. BOND SWITCHGEAR TO GROUND IN LI CABINET ONLY.
14. PROVIDE RACK GROUNDING PER MANUFACTURERS RECOMMENDATIONS.
15. RACKING MANUFACTURER TO PROVIDE UL-2703/3703 CERTIFICATE.

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600 CLIPPER DRIVE
BELMONT, CA 94002
(650) 453-5600
www.sunedison.com

HDR

STAMP:

REGISTERED PROFESSIONAL ENGINEER
JAMES T. TRAN
No. E20364
Exp. 6/30/2015
ELECTRICAL
STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
MV SWITCHGEAR RISER & PANEL LAYOUT

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

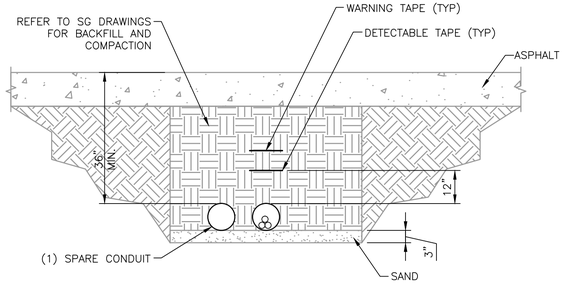
NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/17/14
DRAWN BY:	NT
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
NONE

SHEET NO.:
E.305



MV FEEDER BURIED CONDUIT SECTION (A E.306)

NOT TO SCALE

N

20 0 20 40

SCALE: 1"=20'

GENERAL NOTES:

1. SITE AERIAL IMAGE IS PROVIDED FOR REFERENCE ONLY, AND SHOULD NOT BE USED FOR SCALING PURPOSES.
2. ROUTE SHOWN FOR MEDIUM VOLTAGE CONDUCTORS IS APPROXIMATE. DETERMINE EXACT ROUTE IN THE FIELD. COORDINATE WITH ALL EXISTING SITE UTILITIES.
3. CONTRACTOR TO FURNISH AND INSTALL ALL HANDHOLES ALONG MEDIUM VOLTAGE TRENCH AS REQUIRED TO MINIMIZE CABLE PULLING TENSION.
4. CONTRACTOR SHALL REPATCH ANY EXISTING ROAD SURFACES DISTURBED BY CONSTRUCTION TO IT'S ORIGINAL CONDITION OR BETTER.
5. CONTRACTOR SHALL RESTORE ALL TREES AND GRASS SURFACES DISTURBED BY CONSTRUCTION TO IT'S ORIGINAL CONDITION OR BETTER.

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JAMES T. TRAN
No. E20364
Exp. 6/30/2015
ELECTRICAL
STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER: CA-13-0322

SHEET TITLE: MEDIUM VOLTAGE SITE PLAN

SHEET SIZE: ARCH "D" 24" X 36" (610 x 914)

0 ½" 1"

NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/10/14
DRAWN BY:	TTL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE: ISSUED FOR TENDER

SCALE: 1:20

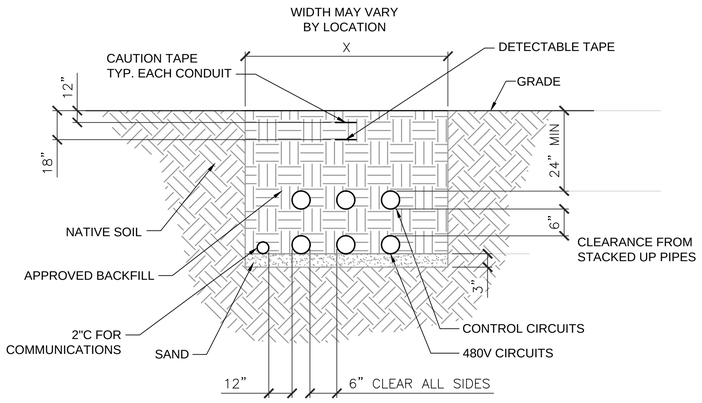
SHEET NO.: E.306

C:\pwworking\oma\d1627156\E.306.dwg

Printed: 5/15/2015 11:04 AM

DO NOT STACK AC CIRCUITS IN THE SAME TRENCH AS DC CIRCUITS
PROVIDE AT LEAST 12 INCHES SEPARATION BETWEEN AC AND DC CIRCUITS

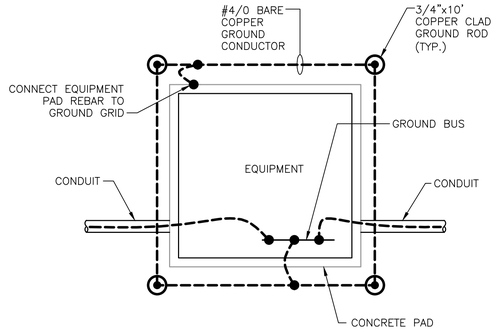
MISCELLANEOUS LOW VOLTAGE AC CIRCUITS:
CIRCUITS UNDER 600 VOLTS & CONTROL CIRCUITS SHALL HAVE 18" COVER
PROVIDE 12" CLEARANCE BETWEEN HIGH AND LOW VOLTAGE CIRCUITS
PROVIDE 6" CLEAR AROUND ALL CIRCUITS
NUMBER OF CIRCUITS VARY BY LOCATION
WIDTH OF TRENCH MAY VARY BY LOCATION



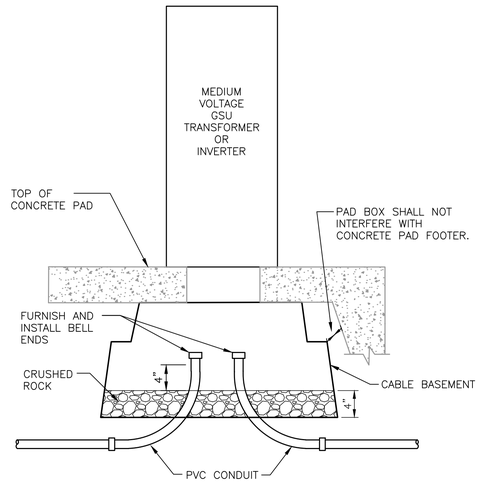
NOTES

1. TRENCH BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, OTHER DELETERIOUS MATTER, AND ALL ROCKS LARGER THAN 3" TO BE SCREENED FROM NATIVE BACKFILL.
2. MINIMUM CONDUIT DEPTH SHALL BE 24" FOR ANY LOCATIONS WHERE VEHICULAR TRAFFIC MAY PASS OVER THE CONDUIT RUNS.
3. ALL WIRING TO BE IN CONDUITS

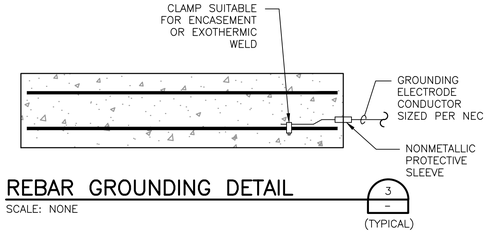
DUCT BANK TRENCHING DETAILS, 600VAC AND BELOW (1)
SCALE: NONE



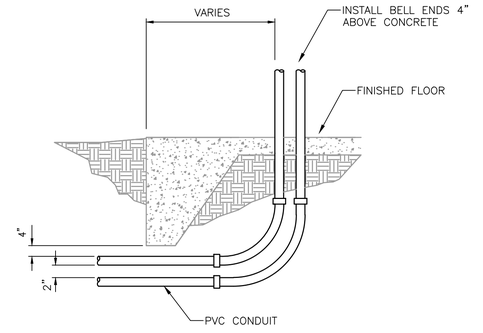
EQUIPMENT GROUNDING DETAIL (2)
1" = 1'-0"
(TYPICAL)



INVERTER/ TRANSFORMER PAD (4)
NOT TO SCALE
(AS REQUIRED)

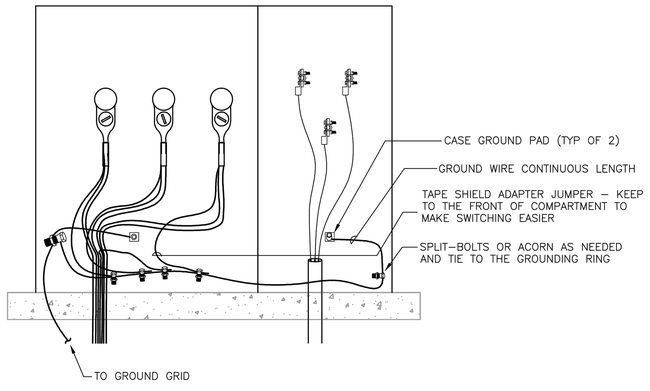


REBAR GROUNDING DETAIL (3)
SCALE: NONE
(TYPICAL)



CABLE ENTRY TO EQUIPMENT (5)
NOT TO SCALE

NOTE: PROVIDE BELL ENDS ON ALL CONDUITS.



MV TRANSFORMER GROUNDING (6)
SCALE: NTS

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JAMES T. TRAN
No. E20364
Exp. 6/30/2015
ELECTRICAL
STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
ELECTRICAL DETAILS

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/10/14
DRAWN BY:	TTL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
AS NOTED

SHEET NO.:
E.309

GENERAL NOTES:

1. DC CABLES ARE SIZED FOR USE WITH SE-F330-BCC MODULES OF UP TO 330W IN POWER RATING.
3. PROPERLY LABEL, IN NUMERICAL ORDER, ALL SOURCE CIRCUITS ENTERING OR TERMINATING IN STRING INVERTERS.
4. PV SOURCE CIRCUIT CONDUCTORS SHALL BE COPPER AND UL-LISTED FOR 1000VDC. CONDUCTORS SHALL BE LABELLED AS USE-2/PV WIRE AND SUNLIGHT RESISTANT. CONDUCTORS SHALL BE FASTENED TO PARKING CANOPY BEAMS WITH P-CLIPS AND/OR SUNBUNDLER.
5. INVERTER OUTPUT CIRCUIT CONDUCTORS SHALL BE 600V COPPER, XHHW-2 WIRE AND SUNLIGHT RESISTANT.
6. CONDUCTOR LENGTHS ARE APPROXIMATE FOR VOLTAGE DROP CALCULATIONS ONLY. CONTRACTOR TO FIELD-VERIFY.
7. REFER TO NOTES ON E.101 FOR CONDUIT INSTALLATION REQUIREMENTS.

A **PV SOURCE CIRCUITS**

	# MODULES IN SERIES	Imp (A)	Vmp (V)	AVERAGE LENGTH TO INVERTER (FT)	VOLTAGE DROP PERCENTAGE	CONDUCTOR (Cu)	EQUIPMENT GROUNDING CONDUCTOR (Cu)	CONDUCTOR TYPE	FUSE RATING	RACEWAY
MEMC F330BCC	19	8.85	708.70	190	0.30%	#10 AWG	#10 AWG	RHW-2/USE-2	15A	PURLIN/1.25"C-PVC/EMT

B **INVERTER OUTPUT CIRCUIT**

IDENTIFIER	# SOURCE CIRCUITS IN PARALLEL	MAXIMUM OUTPUT CURRENT (A)	LENGTH TO SWITCHBOARD (FT)	VOLTAGE DROP PERCENTAGE	CONDUCTOR (Cu)	EQUIPMENT GROUNDING CONDUCTOR (Cu)	CONDUCTOR TYPE	CIRCUIT BREAKER RATING (A)	RACEWAY
Switchboard 1									
1:01	4	32	368	2.39%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
1:02	4	32	474	2.99%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
1:03	5	39	314	2.47%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
1:04	5	39	376	2.90%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
1:05	4	32	441	2.80%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
1:06	4	32	407	2.61%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
1:07	5	39	263	2.12%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
1:08	5	39	319	2.51%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
1:09	4	32	386	2.49%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
1:10	4	32	351	2.29%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
1:11	5	39	240	1.96%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
1:12	5	39	304	2.40%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
1:13	4	32	337	2.21%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
1:14	5	39	183	1.57%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
1:15	5	39	250	2.03%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
1:16	4	32	281	1.90%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
1:17	5	39	126	1.17%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
1:18	5	39	193	1.63%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
1:19	4	32	225	1.57%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
Switchboard 2									
2:01	4	32	340	2.23%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
2:02	4	32	375	2.43%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
2:03	4	32	405	2.60%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
2:04	5	39	317	2.49%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
2:05	4	32	368	2.39%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
2:06	5	39	101	1.00%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
2:07	4	32	172	1.28%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
2:08	4	32	177	1.31%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
2:09	4	32	215	1.52%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
2:10	4	32	255	1.75%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
2:11	5	39	322	2.53%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
2:12	4	32	330	2.17%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
2:13	4	32	397	2.55%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT
2:14	5	39	403	3.09%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
2:15	5	39	238	1.95%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
2:16	5	39	301	2.38%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
2:17	5	39	371	2.87%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
2:18	5	39	432	3.29%	#6 AWG	#10 AWG	XHHW-2	50	1-1/4"C-PVC/EMT
2:19	4	32	335	2.20%	#6 AWG	#10 AWG	XHHW-2	40	1-1/4"C-PVC/EMT

LV AC COLLECTION AND AUXILIARY CIRCUITS

CONDUCTOR LABEL	VOLTAGE (VAC)	PHASES	CURRENT (A)	CURRENT CARRYING CONDUCTOR SIZE (Cu)	NUMBER OF CONDUCTORS PER PHASE	CONDUCTOR TYPE	EQUPMENT GROUNDING CONDUCTOR (Cu)	RACEWAY	NOTES
C	480	3	700	350 kcmil	3	XHHW-2	#3/0 AWG	(3) 4" PVC	SWITCHBOARD OUTPUT
D	120V	1	15	#12 AWG	1	XHHW-2	#12 AWG	(1) 1" PVC	AUXILIARY 120V CIRCUITS

PANELBOARD NO:	UPS PNL L-1				
VOLTAGE:	120	BUS RATING (A):	100	ENCLOSURE:	NEMA 3R
PHASE:	1	MAIN OC DEVICE:	50/1	MOUNTING:	SURFACE
WIRE:	2+GND	INTERRUPTING RATING (KA):	10	LOCATION:	EQUIPMENT PAD
200% NEUTRAL:	NO	SERVICE ENTRANCE LABEL:	NO		

CKT NO.	DESCRIPTION	CONNECTED LOAD (VA) LTS	REC	MECH	MISC	OCP AMPS	P		OCP AMPS	P	CONNECTED LOAD (VA) LTS	REC	MECH	MISC	DESCRIPTION	CKT NO.
1	SEEDS					20	1	A	20	1					ANIRA	2
3	SPARE					15	1	B	15	1					SPARE	4
5								A								6
7								B								8
9								A								10
11								B								12

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HDR

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ELECTRICAL
STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
SCHEDULES

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

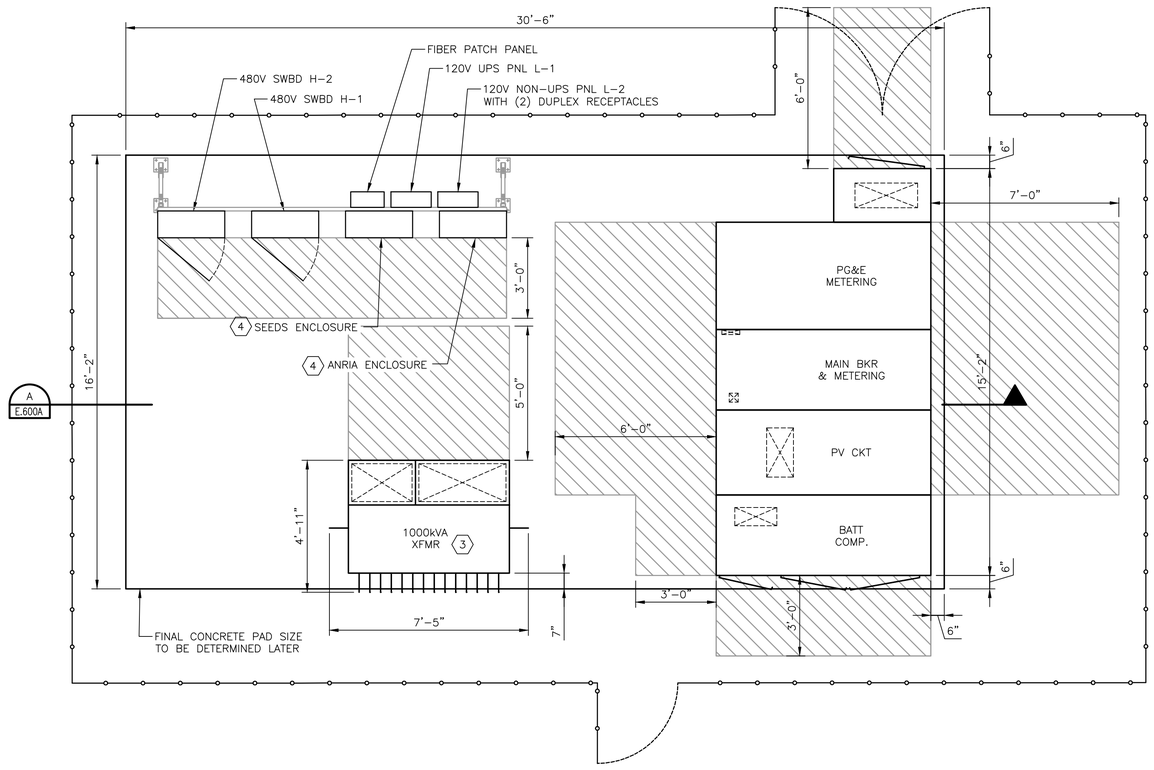
NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/10/14
DRAWN BY:	TTL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
NO SCALE

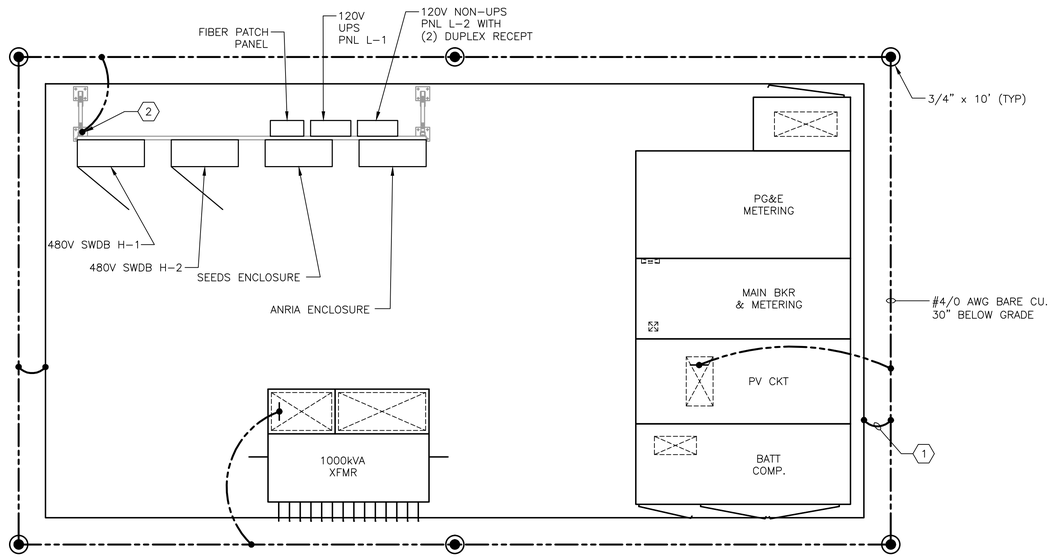
SHEET NO.:
E.400



EQUIPMENT PAD LAYOUT

3/8" = 1'-0"

1 E.600



EQUIPMENT PAD GROUNDING PLAN

3/8" = 1'-0"

2 E.600

LEGEND

- CLEARANCE AREA PER NEC
- CONDUIT STUB-UP AREA

GENERAL NOTES:

1. COORDINATE WITH EQUIPMENT MANUFACTURER FOR EXACT CONCRETE CUT-OUTS.
2. CONFIRM LAYOUT ARRANGEMENT IN FIELD.
3. REFER TO E.1100 SERIES FOR SEEDS WIRING.
4. CONTRACTOR TO LAYOUT ALL CONDUIT ROUTING AS REQUIRED PER ONE-LINE DIAGRAMS AND SEEDS DRAWINGS.
5. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR EQUIPMENT PROVIDED BY OTHERS TO VERIFY REQUIREMENTS PRIOR TO INSTALLATION.
6. CONTRACTOR TO PROVIDE FINAL EQUIPMENT LAYOUT AND ALL CONDUIT STUB-UPS FOR ENGINEER REVIEW PRIOR TO INSTALLATIONS.

KEYNOTES:

1. CONNECT EQUIPMENT PAD REBAR TO GROUND GRID.
2. GROUNDING CONNECTION TO EQUIPMENT MOUNTING RACK.
3. CONTRACTOR TO FURNISH AND INSTALL CABLE BASEMENT (IF REQUIRED).
4. SUN EDISON TO FURNISH, CONTRACTOR TO INSTALL.

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HDR

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STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
EQUIPMENT PAD LAYOUT
1 OF 2

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

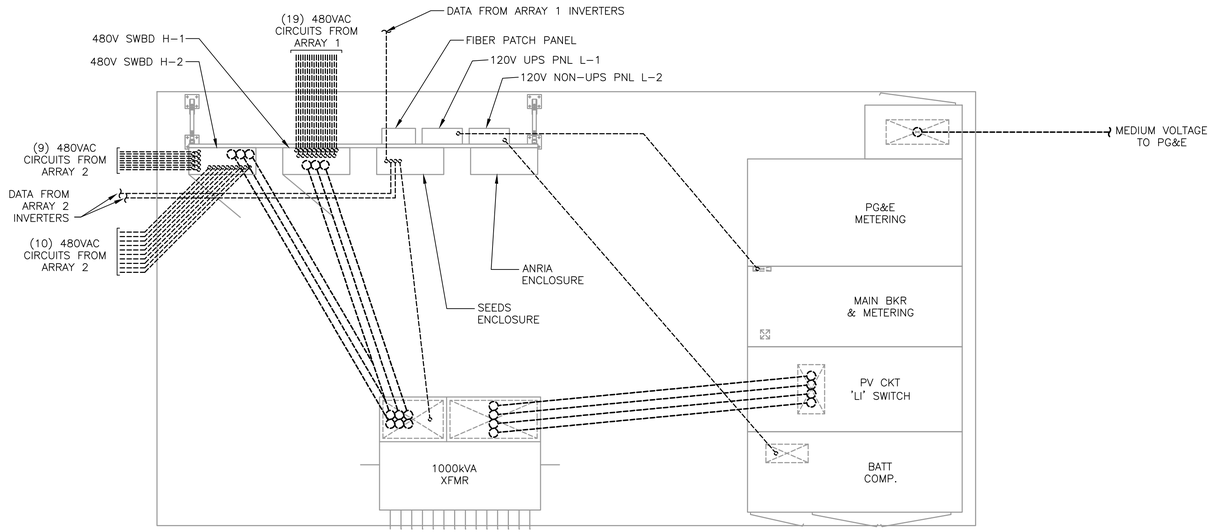
NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/10/14
DRAWN BY:	TTL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
AS NOTED

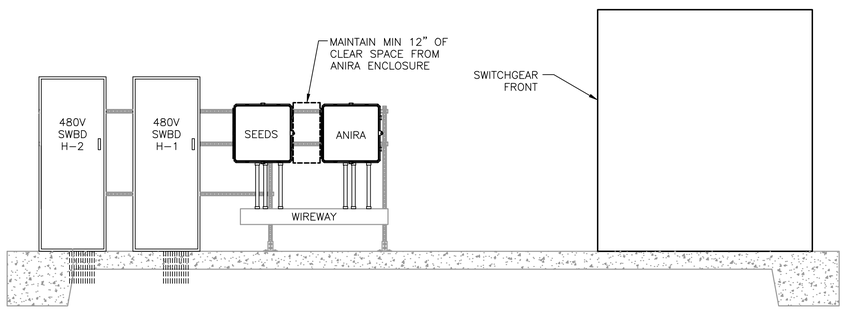
SHEET NO.:
E.600



EQUIPMENT PAD CONDUIT PLAN

3/8" = 1'-0"

1 / E.600A



SECTION

3/8" = 1'-0"

A / E.600A

LEGEND

- CLEARANCE AREA PER NEC
- CONDUIT STUB-UP AREA

GENERAL NOTES:

1. SHADE STRUCTURE NOT SHOWN FOR CLARITY.
2. COORDINATE WITH EQUIPMENT MANUFACTURER FOR EXACT CONCRETE CUT-OUTS.
3. CONFIRM LAYOUT ARRANGEMENT IN FIELD.

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SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
EQUIPMENT PAD LAYOUT
2 OF 2

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

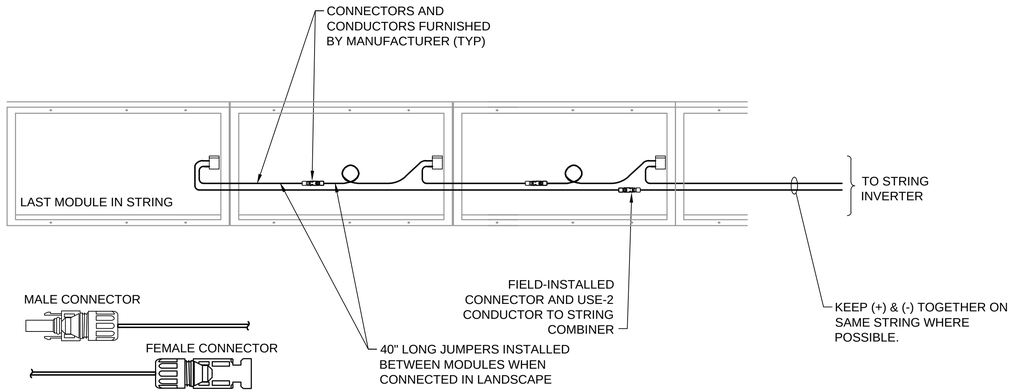
NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/10/14
DRAWN BY:	TTL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
AS NOTED

SHEET NO.:
E.600A



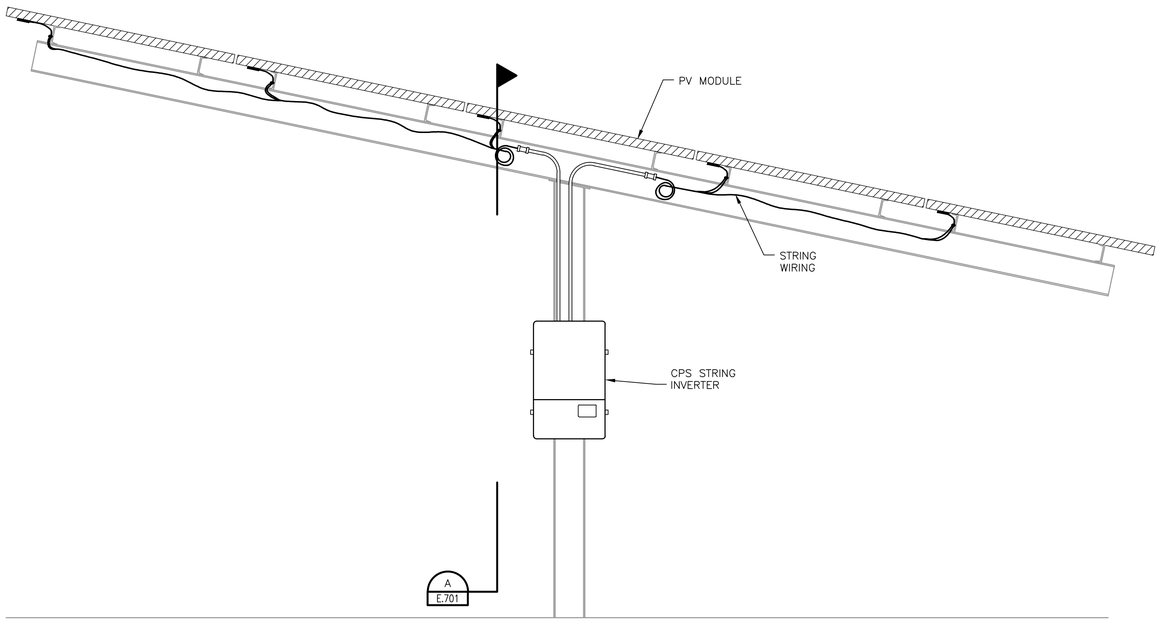
CONNECTORS MUST BE:

1. LOCKING TYPE, RATED TO 1000VDC.
2. COMPATIBLE WITH MANUFACTURER'S SUPPLIED CONNECTORS.
3. CRIMPED ONTO THE SOURCE CIRCUIT WIRE USING PROCEDURE AND TOOLS RECOMMENDED BY MANUFACTURER.
4. DO NOT STRAIN MANUFACTURER INSTALLED MODULE LEADS AT JUNCTION BOX.
5. ENSURE CONNECTOR IS UNDER MODULE, PROTECTED FROM ELEMENTS, NOT IN GAP BETWEEN MODULES.
6. SECURE WIRES BY P-CLIP OR SUNBUNDLER.

CONNECTOR DETAIL

SCALE: NONE

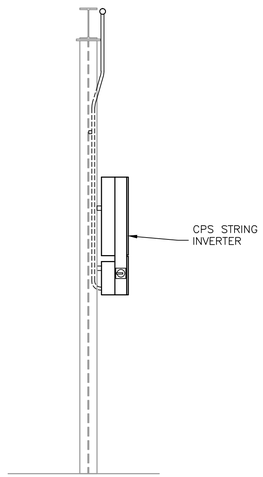
1 / E.701



TYPICAL STRING INVERTER MOUNTING DETAIL

1/2" = 1'-0"

2 / E.701



SECTION

1/2" = 1'-0"

A / E.701

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BELMONT, CA 94002
(650) 453-5600
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HDR

STAMP:

REGISTERED PROFESSIONAL ENGINEER
JAMES T. TRAN
No. E20364
Exp. 6/30/2015
ELECTRICAL
STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
ELECTRICAL DETAILS

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/10/14
DRAWN BY:	NL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
AS NOTED

SHEET NO.:
E.701

MEMC

SunEdison

MEMC SILVANTIS™ M330 MODULE

MEMC is a recognized authority on silicon technology and manufacturing processes developed through more than 50 years of experience. With our vertically-integrated business model, MEMC delivers best-in-class solar modules by continuously leveraging new technology and manufacturing techniques that maximize efficiency, minimize cost, and extend product lifetime.

Our Silvantis™ solar modules address our core strategy to deliver high power energy solutions at the lowest cost per watt.

MEMC Silvantis solar module family continues our tradition of excellence by delivering the highest levels of performance and with over 40 locations worldwide, MEMC is dedicated to providing local, responsive customer service.

16%

HIGH EFFICIENCY – 3 BUSBARS

SILVANTIS M330 modules are built with proprietary Solaicx® p-type CCz process with uniform resistivity and maximum efficiency.

★★★★★

QUALITY

Manufactured in automated, state-of-the-art facilities certified to ISO9001 and ISO14001 for highest industry standards.

1000 V UL

RELIABLE AND ROBUST DESIGN

1000 V UL by CSA, high-quality materials, ARC glass, and high-load capability are part of each module.

KEY FEATURES

- Solaicx CCz and other industry leading p-type Mono-crystalline wafer with high carrier lifetime that enables solar cells to operate at peak efficiency
- Advanced Mono-crystalline cells for higher conversion efficiency
- Textured glass with Anti-Reflective Coating (ARC) for superior energy production
- Positive power tolerance provide increased power output
- Withstands loads up to 5400 Pa as tested to IEC standards
- Non-corroding anodized aluminum frame for ruggedness
- Modules with a range of power output available
- PID free module

QUALITY & SAFETY

- IEC61215 certified by TÜV SÜD to ensure long-term operation in a variety of climates
- IEC61730 certified by TÜV SÜD to ensure electrical safety
- Stringent outgoing quality acceptance criteria benchmarked to industry standards
- UL1703 (1000 V) listed by CSA for Canada and USA
- CE marked and CEC listed

LINEAR WARRANTY INFORMATION

- 10-year limited warranty for materials and workmanship
- 25-year linear power warranty with coverage for power loss greater than 3.5% in the first year and 0.7% degradation per year thereafter
- Backed by MEMC

MODULE FAMILY

SILVANTIS SERIES: MEMC-M305BCC, MEMC-M310BCC, MEMC-M315BCC, MEMC-M320BCC, MEMC-M325BCC, MEMC-M330BCC

TÜV SÜD · C SP US UL-1703 Certified · PV CYCLE

For more information about MEMC SILVANTIS™ Modules, please visit www.memc.com

SILVANTIS™ M330 SOLAR MODULE

MEMC SunEdison

M330 SOLAR MODULE DIMENSIONS mm[inch]

Module Dimensions

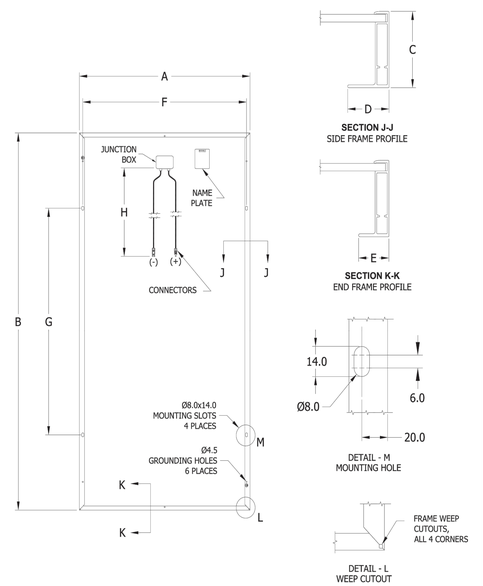
A – 990 [39.0] D – 30 [1.2]
B – 1,976 [77.8] E – 22 [0.9]
C – 50 [2.0]

Cable Length

H – 1,300 [51.2]

Mounting Hole Spacing

F – 950 [37.4] G – 1,188 [46.8]



PHYSICAL PARAMETERS

Module Dimensions (mm)	1,976 x 990 x 50
Module Weight (kg)	22
Cell-Type	Solaicx CCz Mono-crystalline
Number of Cells	72
Frame Material	Anodized Aluminum
Glass (mm)	3.2 Tempered ARC glass

TEMPERATURE COEFFICIENTS AND PARAMETERS*

Nominal Operating Cell Temperature (NOCT) (°C)	48.0 ± 2
Temperature Coefficient of P_{max} (%/°C)	-0.46
Temperature Coefficient of V_{oc} (%/°C)	-0.34
Temperature Coefficient of I_{sc} (%/°C)	0.05
Operating Temperature (°C)	-40 to +85
Maximum System Voltage (V)	1000 (UL & IEC)
Limiting Reverse Current (A)	9.10
Maximum Series Fuse Rating (A)	15
Power Range (W)	-0/+5

Temperature coefficients may vary by ±10%

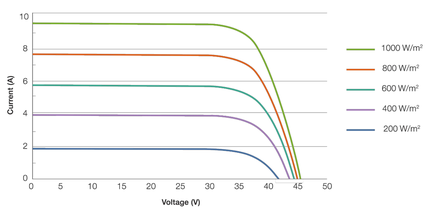
ELECTRICAL CHARACTERISTICS*

Model #	MEMC-M305BCC	MEMC-M310BCC	MEMC-M315BCC	MEMC-M320BCC	MEMC-M325BCC	MEMC-M330BCC
Rated Maximum Power Pmax (W)	305	310	315	320	325	330
Open-Circuit Voltage V_{oc} (V)	45.8	45.9	46.0	46.1	46.2	46.3
Short Circuit Current I_{sc} (A)	9.00	9.02	9.05	9.14	9.19	9.24
Module Efficiency (%)	15.6	15.8	16.1	16.4	16.7	16.9
Maximum Power Point Voltage V_{mpp} (V)	36.8	36.9	37.0	37.1	37.2	37.3
Maximum Power Point Current I_{mpp} (A)	8.29	8.40	8.52	8.68	8.74	8.85

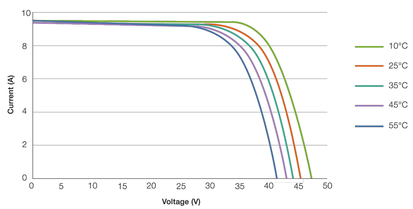
All electrical data at standard test conditions (STC): 1000 W/m², AM1.5, 25°C
Electrical characteristics may vary by ±5% and power by -0/+5W

** Listed specifications are subject to change without prior notice.*

IV CURVES AT MULTIPLE IRRADIANCES* [25°C]



IV CURVES AT MULTIPLE TEMPERATURES* [1000 W/m²]



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STAMP:

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SAN MATEO, CA 94403

PROJECT NUMBER:
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SHEET TITLE:
SPECIFICATION SHEETS

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

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1	ISSUED FOR 90% REVIEW	12/03/14	TL
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3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/10/14
DRAWN BY:	TTL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
NO SCALE

SHEET NO.:
E.900

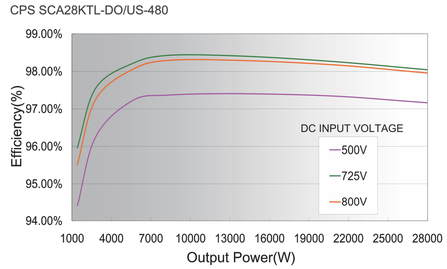
Datasheet

23 & 28KW, 1000Vdc String Inverters for North America

The medium power series of grid-tied, transformerless inverters help to accelerate the use of 1000Vdc and three phase string architecture for commercial and small ground mount utility applications. A NRTL approved, cost effective alternative to central inverters enabling BoS cost savings, high harvest performance and modular design building blocks. These models provide up to 98.4% conversion efficiency and wide operating window of 300-900Vdc and dual MPPT's for maximum cash-flow generation.

Efficiency Curve

CPS SCA28KTL-DO/US-480



CPS SCA23KTL-DO/US-480
CPS SCA28KTL-DO/US-480

■ High Efficiency

- Maximum efficiency of 98.4%, CEC efficiency of 98%
- 3-level technology and enhanced control mechanism to achieve high efficiency over wide load range
- 2 MPPTs to achieve higher system efficiency
- Transformerless design

■ High Reliability

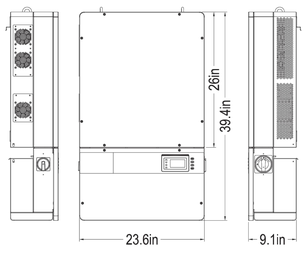
- "Electrolyte-free design" for improved long-term reliability
- Standard warranty: 5 years, extension up to 20 years
- Advanced thermal design, with variable speed fans
- Ground-fault detection and interruption circuit
- ARC-fault detection function (factory enabled option)

C US

This device complies with part 15 of the FCC Rules

■ Broad Adaptability

- NEMA 4 (IP65), outdoor application
- Active power derating, over frequency derating and reactive power adjustable
- Separate wiring box design
- Low voltage ride through
- Integrated DC, AC disconnects
- Wide MPPT range for flexible string sizing
- 1000V Max. DC input voltage for flexible configuration
- 15 - 90 degree installation orientation



Dimensions

Chint Power Systems America
7060 Koll Center Parkway, Suite 318 Pleasanton, CA 94566
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpower.com/na

Technical Data

Model Name	CPS SCA23KTL-DO/US-480	CPS SCA28KTL-DO/US-480
DC Input		
Max. PV Power	31kW	38kW
Nominal DC Input Power	24kW	29kW
Max. DC Input Voltage	1000Vdc	
Operating DC Input Voltage Range	300-900Vdc	
Start-up DC Input Voltage / Power	330V/300W	
Number of MPP Trackers	2	
MPPT Voltage Range*	480-800Vdc	500-800Vdc
Max. Input Current (Imp)	54A (27A per MPPT)	64A (32A per MPPT)
Max. Short Circuit Current (Isc)	82A (41A per MPPT)	96A (48A per MPPT)
Number of DC Inputs	8 inputs, 4 per MPPT	
DC Disconnection Type	Load rated DC switch	
AC Output		
Rated AC Output Power	23kW	28kW
Max. AC Output Power	23kW	28kW
Rated Output Voltage	480Vac	
Output Voltage Range*	422-528Vac	
Grid Connection Type	3Φ/ N / PE	
Max AC Output Current	32A	39A
Rated Output Frequency	60Hz	
Output Frequency Range*	55-66Hz	
Power Factor	>0.99 (±0.8 adjustable)	
Current THD	<3%	
AC Disconnection Type	Load rated AC switch	
System		
Topology	Transformerless	
Max. Efficiency	98.4%	
CEC Efficiency	98.0%	
Stand-by / Night Consumption	<20W / <2W	
Environment		
Protection Degree	NEMA 4	
Cooling	Variable speed cooling fans	
Operating Temperature Range	-13°F to +140°F / - 25°C to +60°C (derating from +113°F / +45°C)	
Operating Humidity	0-95%, non-condensing	
Operating Altitude	13123.4ft / 4000m (derating from 6561.7ft / 2000m)	
Display and Communication		
Display	LCD + LED	
Communication	Standard: RS485 (Modbus)	
Mechanical		
Dimensions (WxHxD)	23.6×39.4×9.1in / 600×1000×230mm	
Weight	122lbs / 55kg	
Orientation	15 - 90 degrees from horizontal	
Safety		
Safety and EMC Standard	UL1741:2010, CSA-C22.2 NO.107.1-01, IEEE1547; FCC PART15	
Grid Standard	IEEE1547: 2003, IEEE1547.1: 2005	

*The "MPPT Voltage Range" is adjustable through LCD operations.

*The "Output Voltage Range" and "Output Frequency Range" may differ according to specific grid standard.

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STAMP:

FOR REFERENCE ONLY

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
SPECIFICATION SHEETS

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/10/14
DRAWN BY:	TTL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
NO SCALE

SHEET NO.:
E.901

GENERAL NOTES FOR LABELS AND MARKINGS:

1. LABELS AND MARKINGS SHALL BE APPLIED TO THE APPROPRIATE COMPONENTS.
2. SOLAR MODULES ARE SUPPLIED FROM THE MANUFACTURER WITH MARKINGS PRE-APPLIED.
3. THE INVERTER IS SUPPLIED FROM THE MANUFACTURER WITH THE APPROPRIATE LABELS AND MARKINGS.
4. TEXT LABELS WILL BE ETCHED WITH WHITE GRAPHICS ONTO 1/16" RED PLASTIC PLACARDS. THE LABEL WILL BE ATTACHED TO THE APPROPRIATE COMPONENT ENCLOSURES IN CONSPICUOUS PLACES USING TWO PART EPOXY. LABEL TO BE WEATHERPROOF AND UV-RESISTANT.
5. PROPERLY LABEL, IN NUMERICAL ORDER, ALL DISCONNECTING COMBINER BOXES, MASTER COMBINER BOXES AND MASTER DISCONNECT
6. PROPERLY LABEL, IN NUMERICAL ORDER, ALL INVERTERS AT INVERTER PADS.

LABEL AND MARKINGS LEGEND:

(A) PROVIDES THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC DISCONNECTING MEANS. THIS PLAQUE SHALL BE APPLIED TO THE MAIN SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC DISCONNECTING MEANS; 1 PER POCC

(B) UTILITY AC DISCONNECT WARNING LABEL WITH SYSTEM SPECIFICATIONS, APPLIED TO ALL PHOTOVOLTAIC DISCONNECTS; 1 PER AC DISCONNECT

(C) DANGER LABEL FOR UTILITY AC DISCONNECT; 1 PER AC DISCONNECT

(D) PHOTOVOLTAIC DISCONNECTING COMBINER BOX GENERIC WARNING LABEL APPLIED TO ALL PHOTOVOLTAIC DCOMBINER BOXES; 1 PER COMBINER BOX

(E) LABEL FOR SYSTEM OWNER'S KWH GENERATION METER

(G) PHOTOVOLTAIC DISCONNECTING COMBINER BOX LABEL APPLIED TO ALL DCOMBINERS

(H) LABEL FOR CHAIN LINK SECURITY FENCE; SPACED EVERY 50 FEET AROUND PERIMETER OF ARRAY; (IF APPLICABLE)

(J) LABEL FOR INVERTERS: 1 PER INVERTER

(K) LABEL FOR SYSTEM COMBINER BOX; 1 PER COMBINER BOX

(L) ARC FLASH WARNING LABEL SHALL BE PLACED ON ALL EQUIPMENT AS REQUIRED BY NEC110.16 AND OTHER APPLICABLE CODES. CONTRACTOR TO DETERMINE EXACT QUANTITIES.

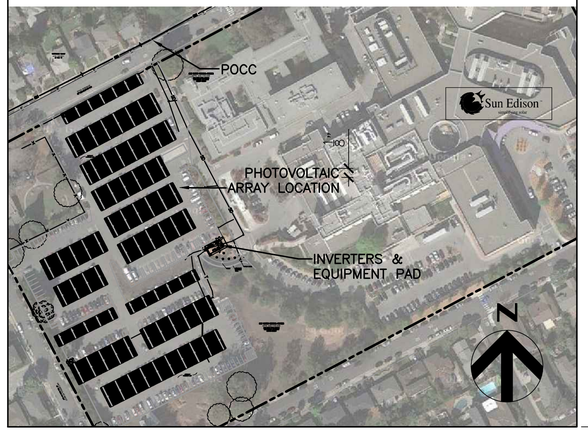
(M) FURNISH AND INSTALL ARC FLASH WARNING LABELS ON ALL 480VAC AND HIGHER EQUIPMENT. SUN EDISON WILL FURNISH ARC FLASH ANALYSIS REPORT FOR EXACT LABEL DESCRIPTION FOR EACH EQUIPMENT.

(N) DC DISCONNECT SWITCH.

(A) 8" x 8"

CAUTION

POWER TO THIS SERVICE IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN



(H) DANGER — 1'–2" x 5"

DANGER

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HIGH VOLTAGE - KEEP AWAY

AUTHORIZED PERSONNEL ONLY

DO NOT Walk or Store Materials on PHOTOVOLTAIC PANELS

(L) WARNING — 5" x 3"

WARNING

Arc Flash and Shock Hazard
Appropriate PPE Required

Flash Hazard Boundary
cal/cm2 Flash Hazard at 18 inches
PPE Level, _____

Shock hazard when Cover is _____
Limited Approach _____
Restricted Approach - _____
Prohibited Approach - _____

Equipment Name: _____

1/16" TYP; 3/8" TYP

(B) PHOTOVOLTAIC AC DISCONNECT — 6" x 3½"

PHOTOVOLTAIC AC DISCONNECT

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WARNING:
ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.

(D) PHOTOVOLTAIC DISCONNECTING STRING COMBINER BOX — 6" x 3½"

PHOTOVOLTAIC DISCONNECTING STRING COMBINER BOX

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WARNING:
FUSES MAY BE ENERGIZED WHEN SOLAR MODULES ARE EXPOSED TO LIGHT

(G) PHOTOVOLTAIC COMBINER BOX DISCONNECT #XXX — 6", TYP. x 3½" TYP

PHOTOVOLTAIC COMBINER BOX DISCONNECT #XXX

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WARNING:
ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.

(C) DANGER — 6½" x 5"

DANGER

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sunedison.com

AC DISCONNECT

HIGH VOLTAGE - KEEP AWAY

AUTHORIZED PERSONNEL ONLY

Turn off inverter prior to operating AC Disconnect

(E) PHOTOVOLTAIC GENERATION METER — 4" x 1"

PHOTOVOLTAIC GENERATION METER

(J) INVERTER #XX — 4" x 1"

INVERTER #XX

(N) DC DISCONNECTING COMBINER INV #XXX — 6", TYP. x 3½" TYP

DC DISCONNECTING COMBINER INV #XXX

Sun Edison simplifying solar

WARNING:
ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.

(M) WARNING — Arc Flash and Shock Hazard

Appropriate PPE Required	
11 inches	Flash Hazard Boundary
0.41 cal/cm^2	Flash Hazard at 18 inches
Category 0	Nonmelting, Flammable Materials with Weight >= 4.5 oz/sq yd
480 VAC	Shock Hazard when cover is removed
00	Glove Class
42 inches	Limited Approach
12 inches	Restricted Approach
1 inches	Prohibited Approach
Location:	**TR A TR3**

(M) DANGER — NO SAFE PPE EXISTS

ENERGIZED WORK PROHIBITED	
233 inches	Flash Hazard Boundary
80 cal/cm^2	Flash Hazard at 18 inches
Dangerous!	No FR Category Found
270 VAC	Shock Hazard when cover is removed
00	Glove Class
42 inches	Limited Approach
Avoid Contact	Restricted Approach
Avoid Contact	Prohibited Approach
Location:	**TR9 SEC**

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BELMONT, CA 94002
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www.sunedison.com

HDR

STAMP:

REGISTERED PROFESSIONAL ENGINEER — JAMES T. TRAN — No. E20364 Exp. 6/30/2015 — ELECTRICAL — STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER: CA-13-0322

SHEET TITLE: LABELS AND MARKINGS 1 OF 2

SHEET SIZE: ARCH "D" 24" X 36" (610 x 914)

NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/17/14
DRAWN BY:	NT
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE: ISSUED FOR TENDER

SCALE: NO SCALE

SHEET NO.: E.1000

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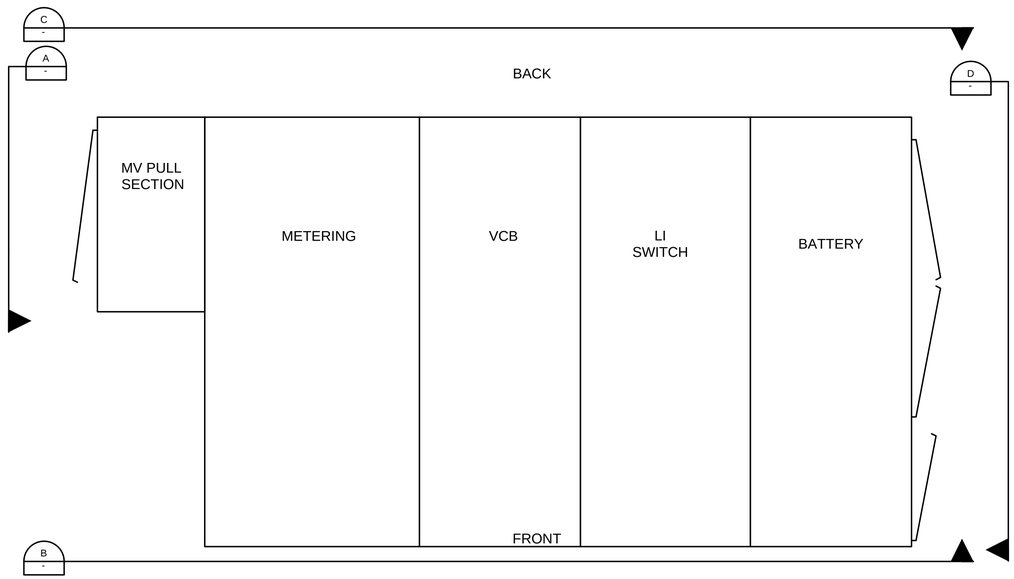
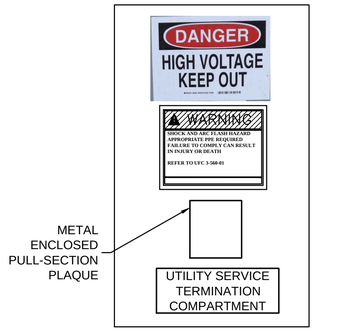
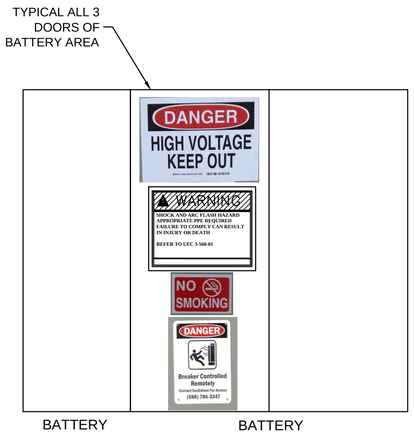


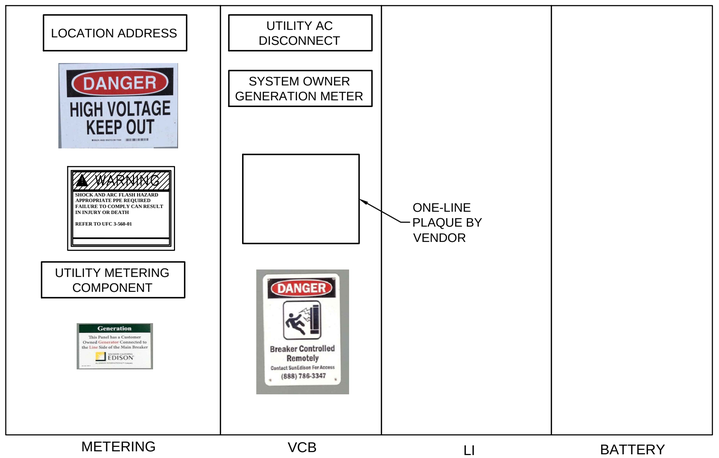
MEDIUM VOLTAGE SWITCHGEAR EQUIPMENT PAD LAYOUT
3/4" = 1'-0"

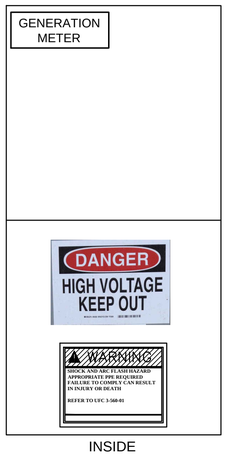


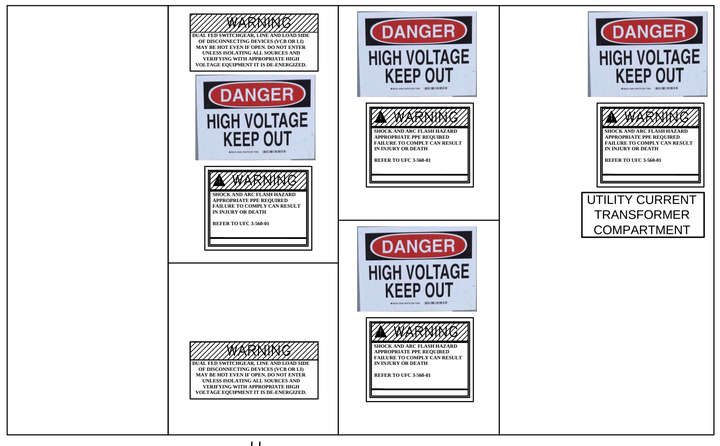
SECTION
3/4" = 1'-0"
A



SECTION
3/4" = 1'-0"
D







SECTION
3/4" = 1'-0"
B

SECTION
3/4" = 1'-0"
C

**CONTRACTOR TO FURNISH AND INSTALL ALL SECTION LABELS AS SHOWN.

SunEdison
simplifying solar

600 CLIPPER DRIVE
BELMONT, CA 94002
(650) 453-5600
www.sunedison.com

HDR

STAMP:
REGISTERED PROFESSIONAL ENGINEER
JAMES T. TRAN
No. E20364
Exp. 6/30/2015
ELECTRICAL
STATE OF CALIFORNIA
05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
MEDIUM VOLTAGE SWITCHGEAR LABELS

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

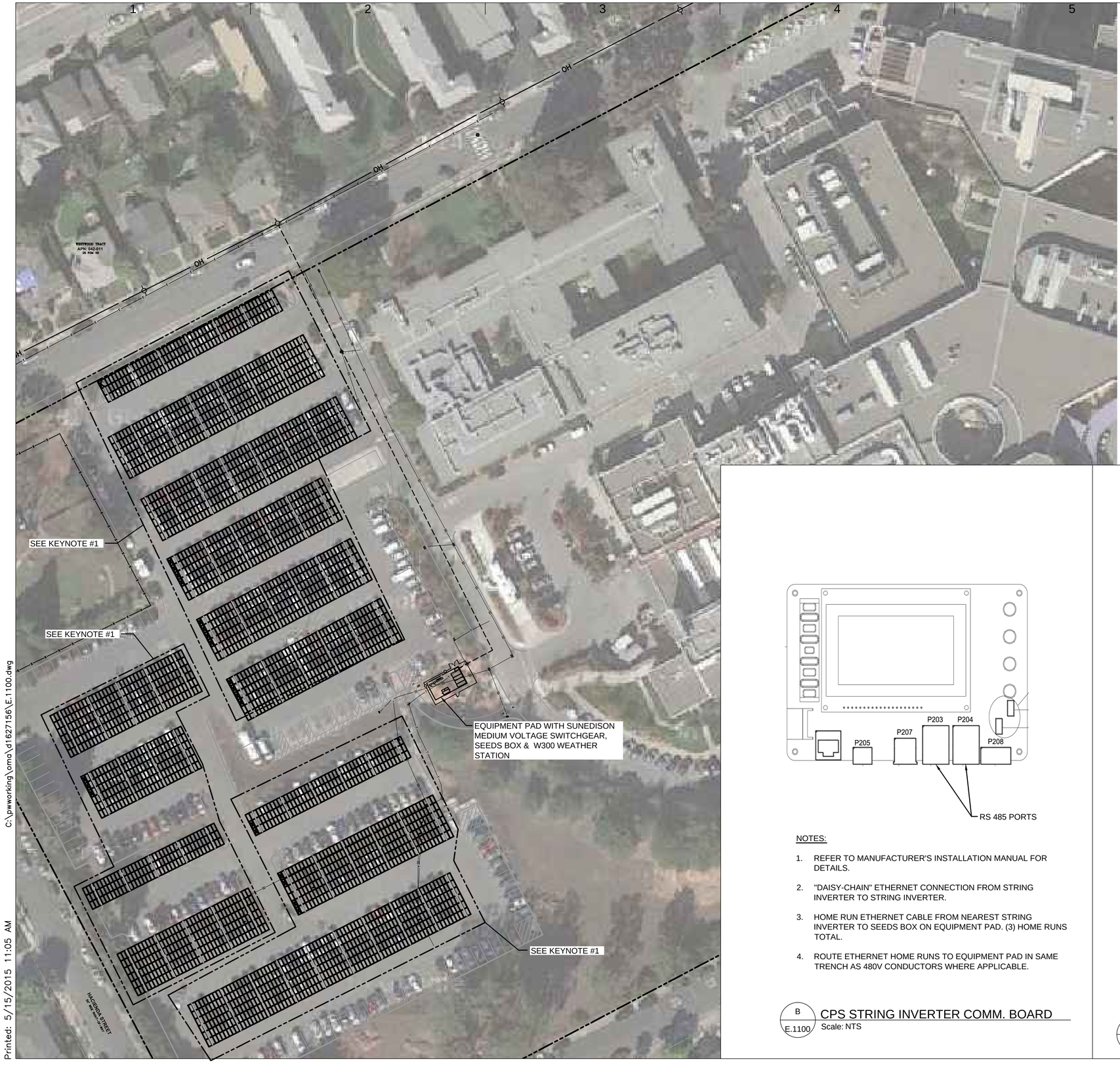
NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	09/16/14
DRAWN BY:	NL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
AS NOTED

SHEET NO.:
E.1020



A E.1100 SEEDS SITE PLAN

Scale: 1"=40'

N

NOTES:

1. SEEDS EQUIPMENT LOCATION TO BE LESS THAN 300'-0" (INCLUDING BUILDING HEIGHT) FROM SEEDS ENCLOSURE ON EQUIPMENT PAD. COORDINATE WITH OWNER FOR EXACT LOCATION.
2. MOUNT SEEDS EQUIPMENT SUCH THAT EQUIPMENT DOES NOT SHADE PV MODULES

KEYNOTES:

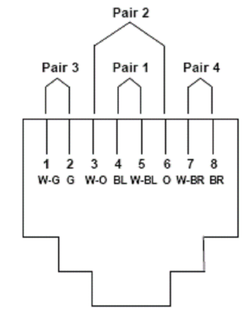
1. STRING INVERTERS INSIDE BOUNDARY SHALL BE NETWORKED. "DAISY-CHAIN" ETHERNET CABLE BETWEEN INVERTERS IN 1"C. ROUTE ETHERNET HOMERUN TO SEEDS BOX FROM INVERTER NEAREST TO THE EQUIPMENT PAD.

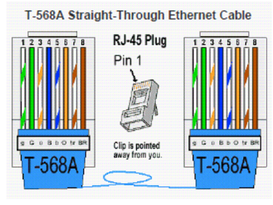
NOTES:

1. REFER TO MANUFACTURER'S INSTALLATION MANUAL FOR DETAILS.
2. "DAISY-CHAIN" ETHERNET CONNECTION FROM STRING INVERTER TO STRING INVERTER.
3. HOME RUN ETHERNET CABLE FROM NEAREST STRING INVERTER TO SEEDS BOX ON EQUIPMENT PAD. (3) HOME RUNS TOTAL.
4. ROUTE ETHERNET HOME RUNS TO EQUIPMENT PAD IN SAME TRENCH AS 480V CONDUCTORS WHERE APPLICABLE.

B E.1100 CPS STRING INVERTER COMM. BOARD

Scale: NTS





COPPER ETHERNET CERTFICATION:

1. ETHERNET CABLES SHALL BE TESTED AND CERTIFIED TO MEET ANSI/TIA/EIA-568-B SPECIFICATION TO 100MHZ.
2. A FIELD TEST REPORT SHALL BE PROVIDED FOR ALL ETHERNET CABLES WHICH IDENTIFIES EACH CABLE, CERTIFIES IT MEETS ANSI/TIA/EIA-568-B TEST SPECIFICATION TO 100MHZ, AND INCLUDES PERTINENT DATA FOR EACH CABLE.

C E.1100 ETHERNET TERMINATION & TESTING

Scale: NTS

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05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
SEEDS SITE PLAN

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

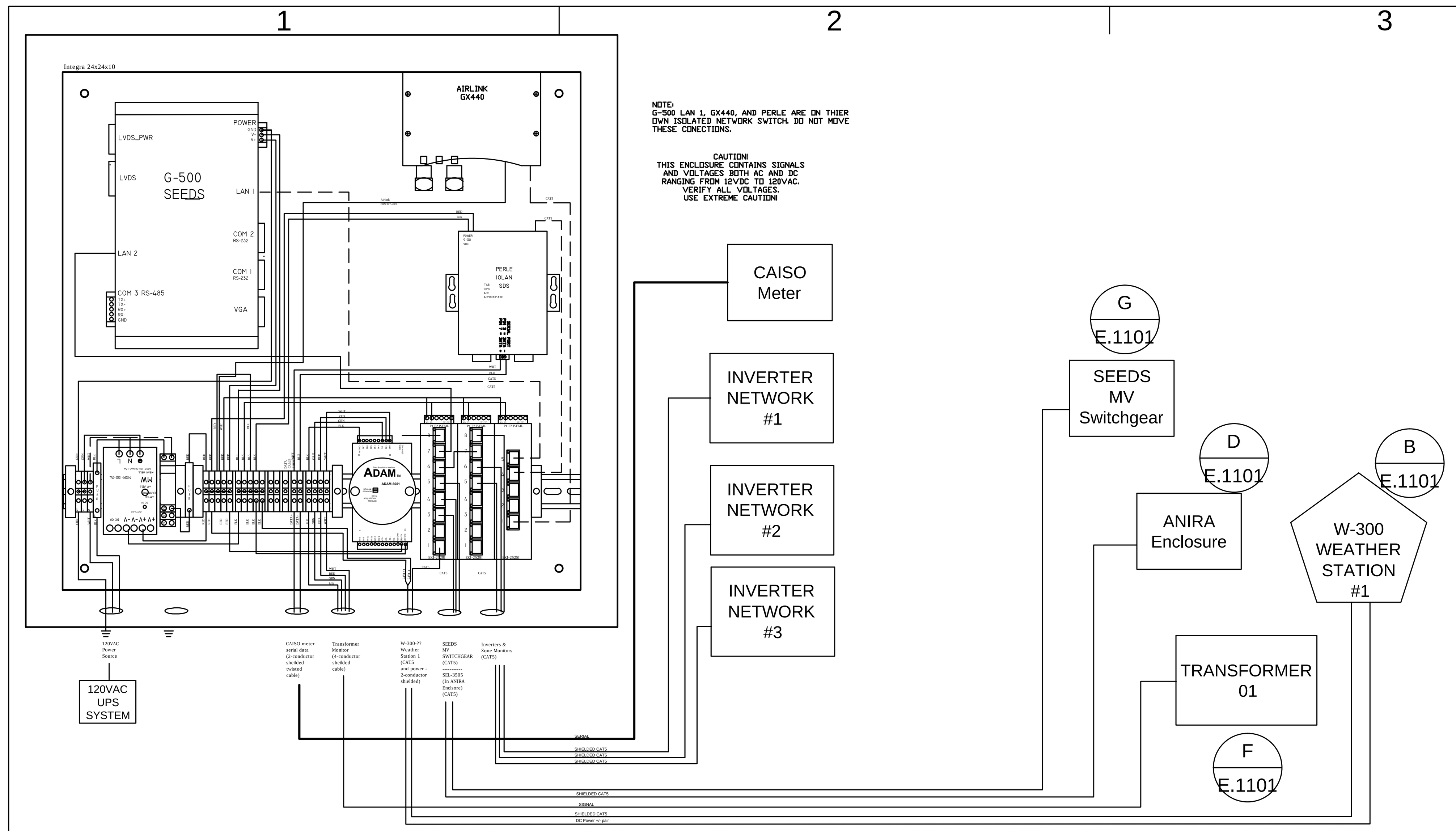
NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/10/14
DRAWN BY:	TL
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
AS NOTED

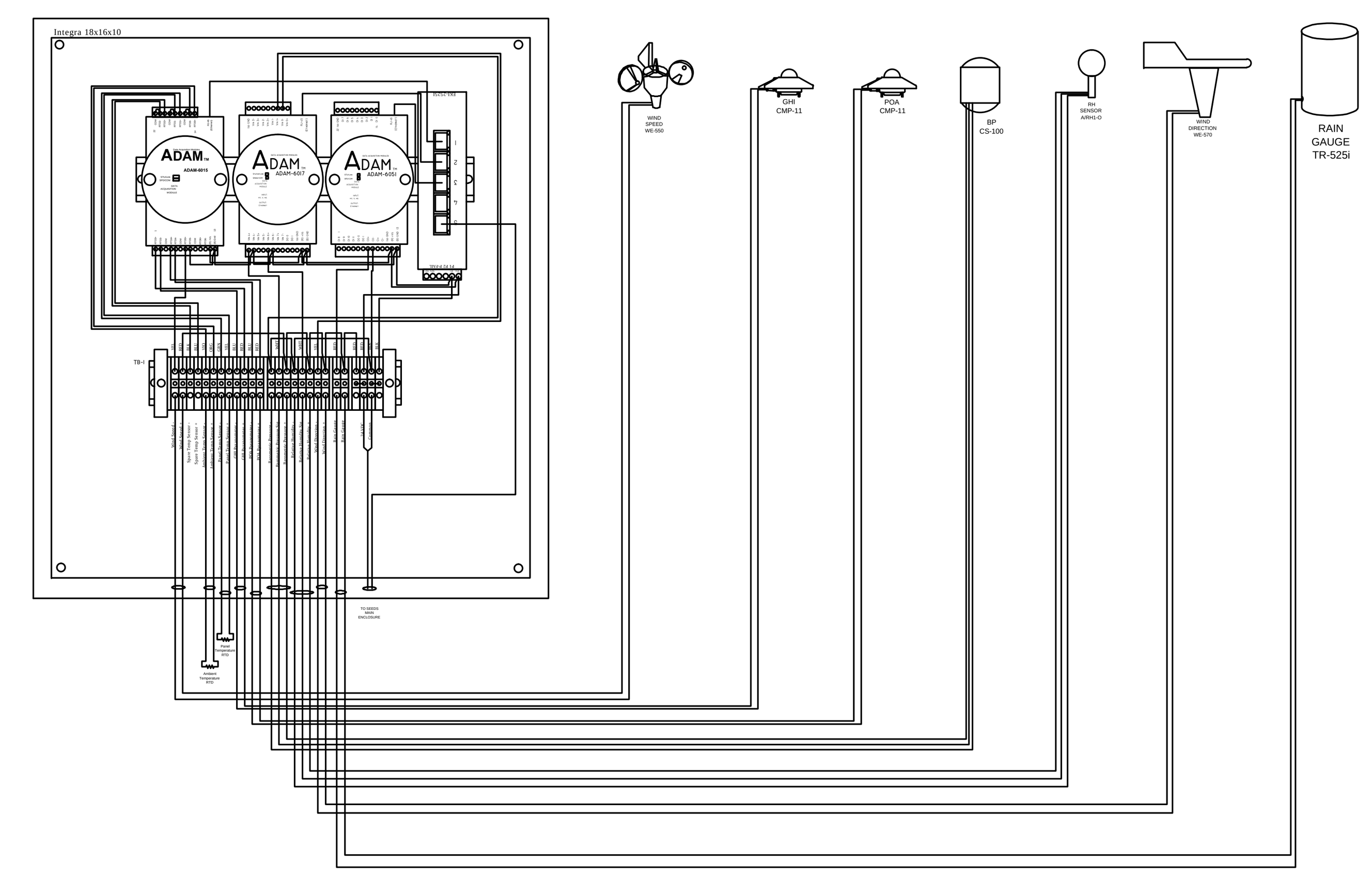
SHEET NO.:
E.1100



A E.1101 — SEEDS MAIN ENCLOSURE - EQIUPMENT PAD

Scale: NTS

Notes:
1. All sensor connections terminate at TB-1.
2. Ethernet connections to switch may be made in any order.
3. Enclosure penetrations must come through the bottom of the enclosure. They may be arranged to suit field conditions.
4. Conduit not required for sensors. Watertight fittings should be used.



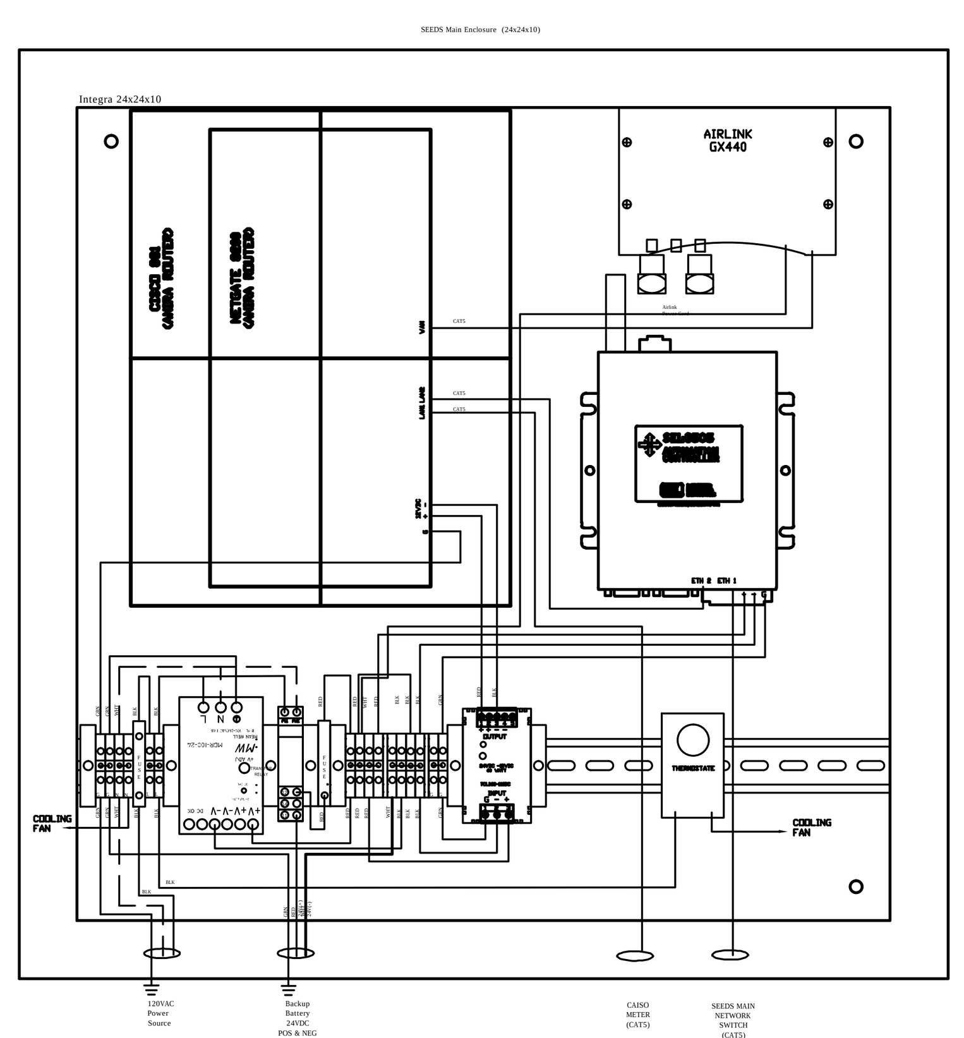
B E.1101 — WEATHER STATION #1

Scale: NTS

C E.1101 — NOT USED

Scale: NTS

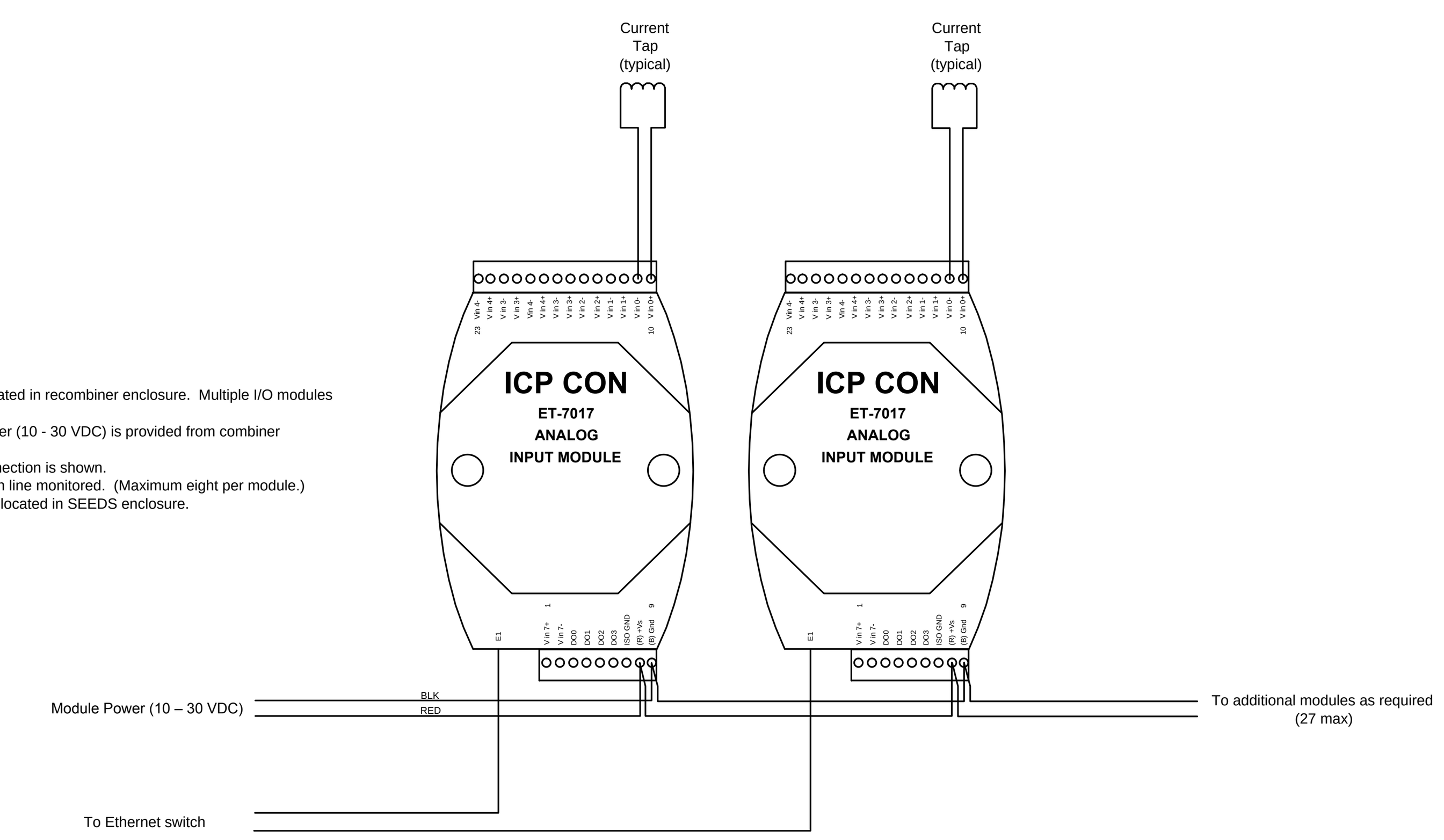
(ANIRA)



D E.1101 — ANIRA ENCLOSURE

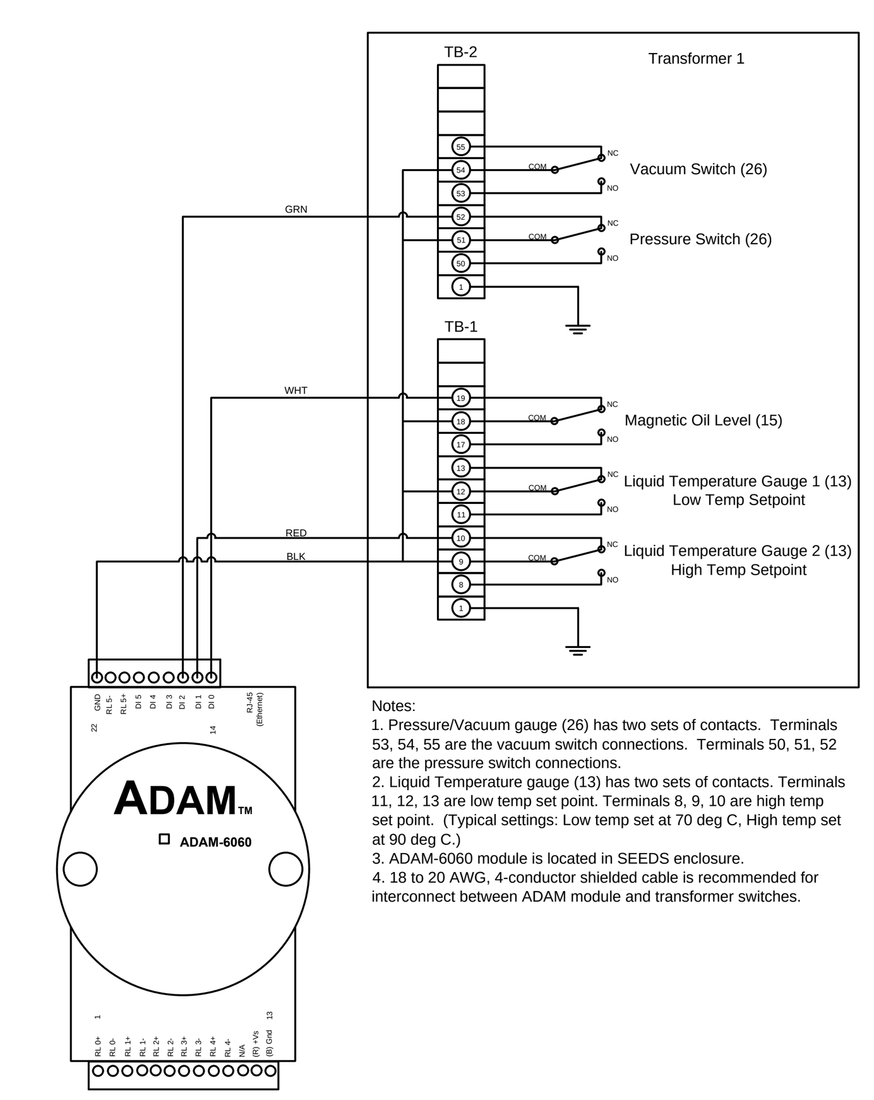
Scale: NTS

Notes:
1. I/O modules located in recombiner enclosure. Multiple I/O modules may be present.
2. I/O module power (10 - 30 VDC) is provided from combiner enclosure.
3. Typical CT connection is shown.
4. One CT for each line monitored. (Maximum eight per module.)
5. Ethernet switch located in SEEDS enclosure.



E E.1101 — Recombiner I/O Module Connection

Scale: NTS

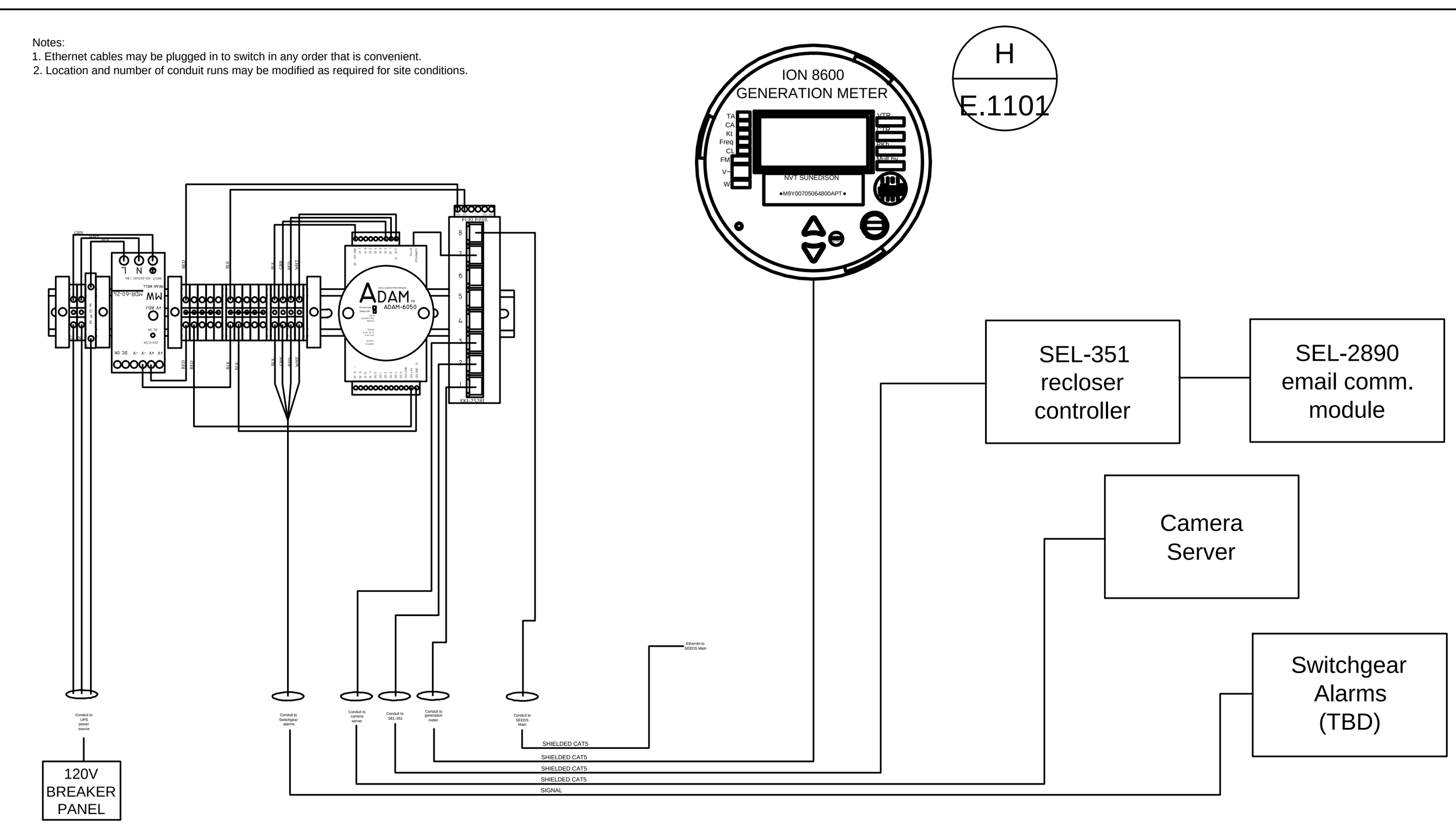


Notes:
1. Pressure/Vacuum gauge (26) has two sets of contacts. Terminals 53, 54, 55 are the vacuum switch connections. Terminals 50, 51, 52 are the pressure switch connections.
2. Liquid Temperature gauge (13) has two sets of contacts. Terminals 11, 12, 13 are low temp set point. Terminals 8, 9, 10 are high temp set point. (Typical settings: Low temp set at 70 deg C, High temp set at 90 deg C.)
3. ADAM-6060 module is located in SEEDS enclosure.
4. 18 to 20 AWG, 4-conductor shielded cable is recommended for interconnect between ADAM module and transformer switches.

F E.1101 — TRANSFORMER MONITOR

Scale: NTS

Notes:
1. Ethernet cables may be plugged in to switch in any order that is convenient.
2. Location and number of conduit runs may be modified as required for site conditions.

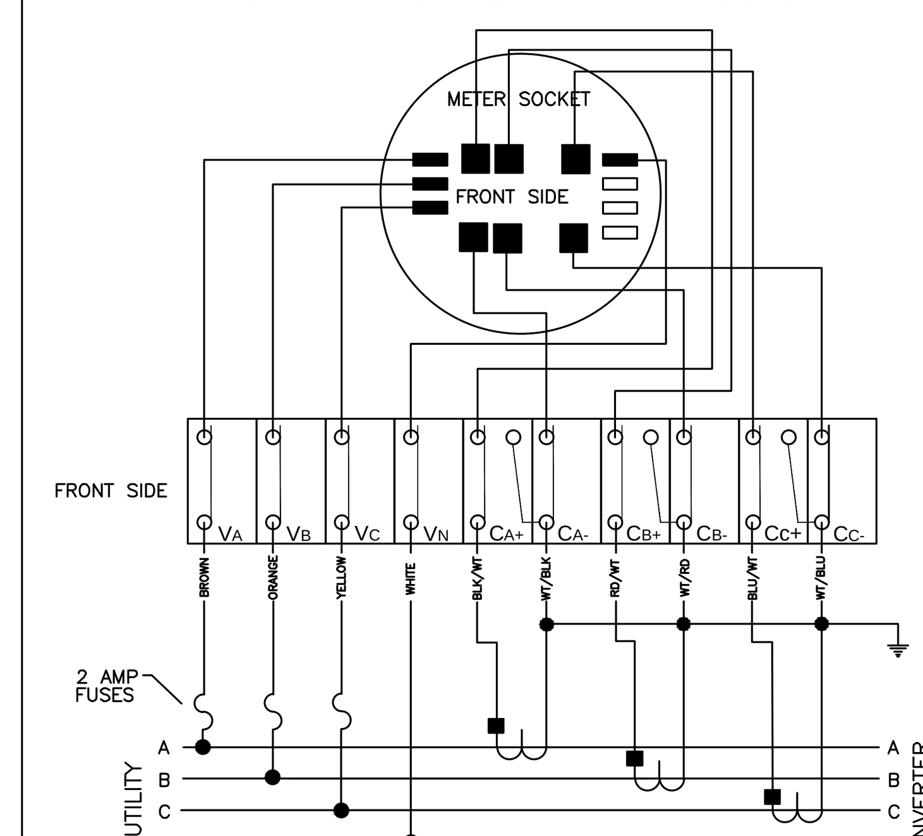


G E.1101 — SEEDS - MV Switchgear

Scale: NTS

NOTES:
1. UNLESS SPECIFIED OTHERWISE, ALL FIBER CONNECTIONS USE ST TERMINATIONS.
2. SEEDS EQUIPMENT PROVIDED BY SUN EDISON. ALL ASSEMBLY, MOUNTING, AND WIRING SHALL BE DONE IN THE FIELD, EXCEPT THE WEATHER STATIONS AND UPS.
   - 2.1. FOR W-300 (E.1101 B), COMPLETE STATION (SENSORS, ADAM UNITS, AND ENCLOSURES) IS PRE-ASSEMBLED. FIELD CONNECTIONS SHALL BE MADE FROM TERMINAL STRIP TO DC POWER AND GATEWAY
   - 2.2. ALL SENSORS USE CONNECTION WIRES PROVIDED BY THE MANUFACTURER. WIRES MAY BE COILED BUT MAY NOT BE EXTENDED.
   - 2.3. SEE E.1102 FOR MOUNTING DETAILS.
3. ALL COMMUNICATION CABLES SHALL BE RATED FOR OUTDOOR/WET LOCATIONS AND/OR DIRECT BURY, AND MUST BE SUNLIGHT RESISTANT WHERE EXPOSED TO SOLAR RADIATION.

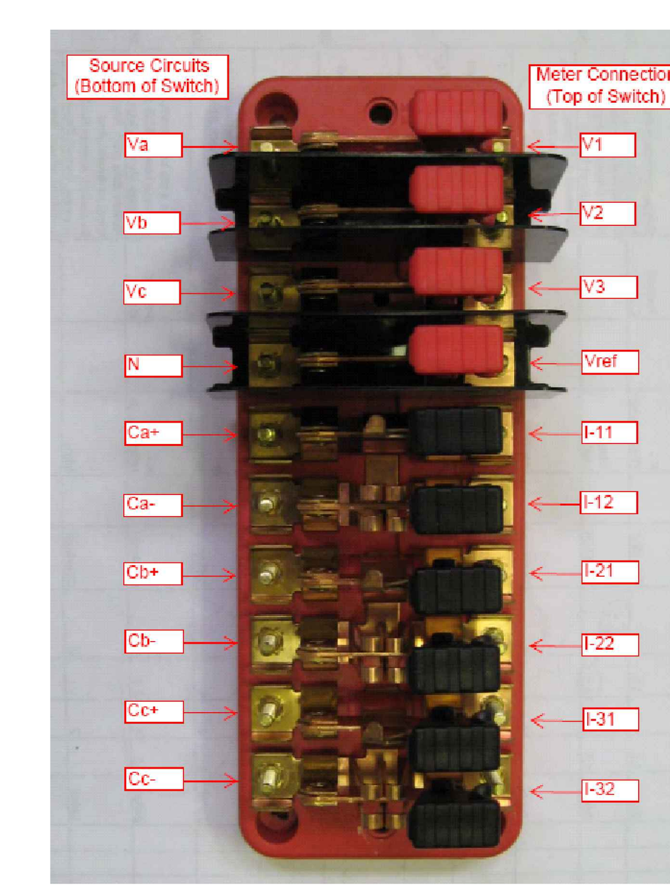
TEST SWITCH TYPE = MILBANK TS10-0109 10 POLE TEST SWITCH



ATTENTION!
Test switch wiring is shown for reference only. More than one switch type is supplied. Field wiring must conform to switch function shown here.
EXERCISE EXTREME CAUTION!

METER WIRING SCHEDULE

METER TERMINAL	LINE	WIRE COLOR	WIRE SIZE
V1	VA	BROWN	AWG #12
V2	VB	ORANGE	AWG #12
V3	VC	YELLOW	AWG #12
VREF	VN	GREEN OR GREY	AWG# 12
I11	CA+	BLK/WT	AWG #10
I21	CB+	RD/WT	AWG #10
I31	CC+	BLU/WT	AWG #10
I12	CA–	WT/BLK	AWG #10
I22	CB–	WT/RD	AWG #10
I32	CC–	WT/BLU	AWG #10



REVISED 08-21-13

STANDALONE METER ENCLOSURE METER WIRING

H E.1101 — GENERATION METER

Scale: NTS

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HDR

STAMP:

REGISTERED PROFESSIONAL ENGINEER — JAMES T. TRAN — No. E20364 — Exp. 6/30/2015 — ELECTRICAL — STATE OF CALIFORNIA

05/14/2015

SAN MATEO MEDICAL CENTER

SAN MATEO COUNTY
222 W. 39th Ave,
SAN MATEO, CA 94403

PROJECT NUMBER: CA-13-0322

SHEET TITLE: METERING AND MONITORING

SHEET SIZE: ARCH "D" 24" X 36" (610 x 914)

0 ½" 1"

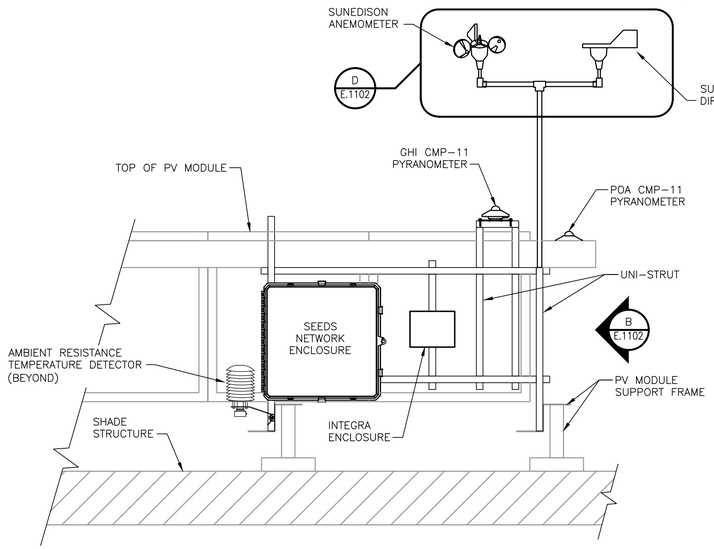
NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE: 11/17/14
DRAWN BY: NT
ENGINEER: AK
APPROVED BY: JT

PROJECT PHASE: ISSUED FOR TENDER

SCALE: NO SCALE

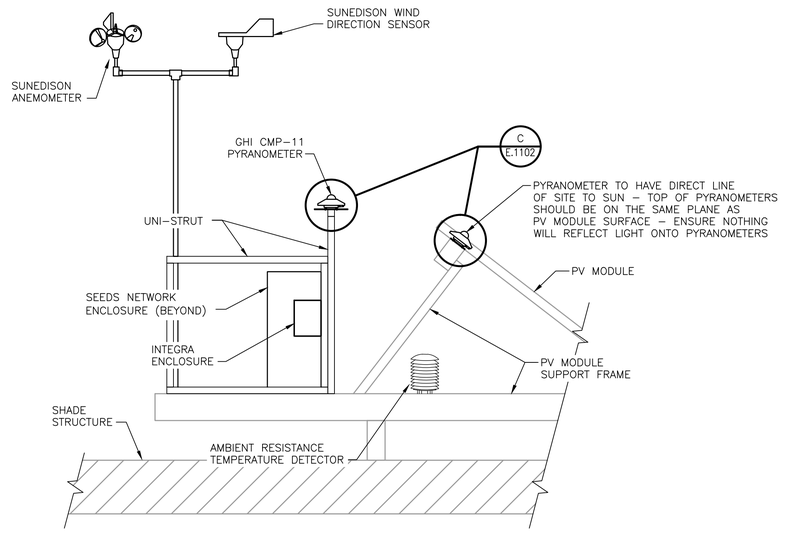
SHEET NO.: E.1101



SEEDS MOUNTING – FRONT ELEVATION

SCALE: NONE

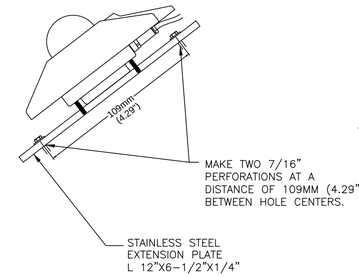
A E.1102



SEEDS MOUNTING – SIDE VIEW

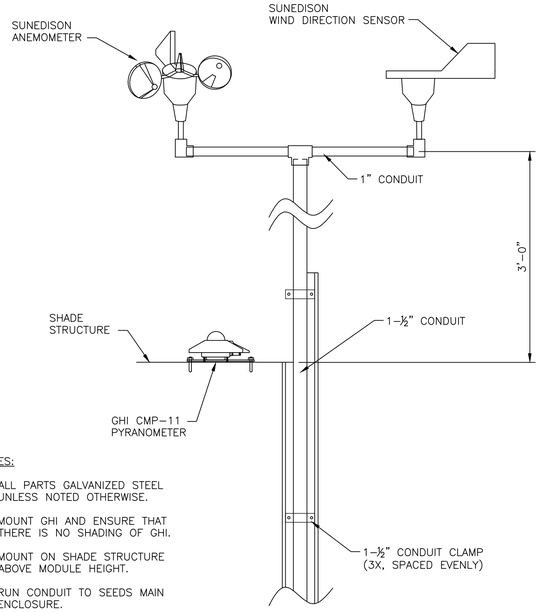
SCALE: NONE

B E.1102



CMP-11 SECTION VIEW

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



NOTES:

1. ALL PARTS GALVANIZED STEEL UNLESS NOTED OTHERWISE.
2. MOUNT GHI AND ENSURE THAT THERE IS NO SHADING OF GHI.
3. MOUNT ON SHADE STRUCTURE ABOVE MODULE HEIGHT.
4. RUN CONDUIT TO SEEDS MAIN ENCLOSURE.
5. GHI CABLES MAY BE EXTENDED USING 18-AWG, 2-CONDUCTOR, TWISTED PAIR, SHIELDED CABLE.

SENSOR DETAIL VIEW

SCALE: NONE

D E.1102

NOTES:

1. CONTRACTOR TO COORDINATE WITH SUNEDISON FOR EXACT WEATHER STATION LOCATION.
2. DETAILS SHOWN ARE REPRESENTATIVE ONLY, EXACT FRAMING AND MOUNTING TO BE DETERMINED AND APPROVED BY SUNEDISON.
3. THESE MONITORING DEVICES ARE MINIMUM, SUNEDISON MAY REQUIRE ADDITIONAL SENSORS.

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SAN MATEO, CA 94403

PROJECT NUMBER:
CA-13-0322

SHEET TITLE:
SEEDS MOUNTING

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

NO.	REVISION	DATE	INIT.
0	ISSUED FOR 50% REVIEW	11/14/14	TL
1	ISSUED FOR 90% REVIEW	12/03/14	TL
2	ISSUED FOR 95% REVIEW	03/06/15	RN
3	ISSUED FOR TENDER	05/14/15	TL

DATE:	11/17/14
DRAWN BY:	NT
ENGINEER:	AK
APPROVED BY:	JT

PROJECT PHASE:
ISSUED FOR TENDER

SCALE:
NO SCALE

SHEET NO.:
E.1102