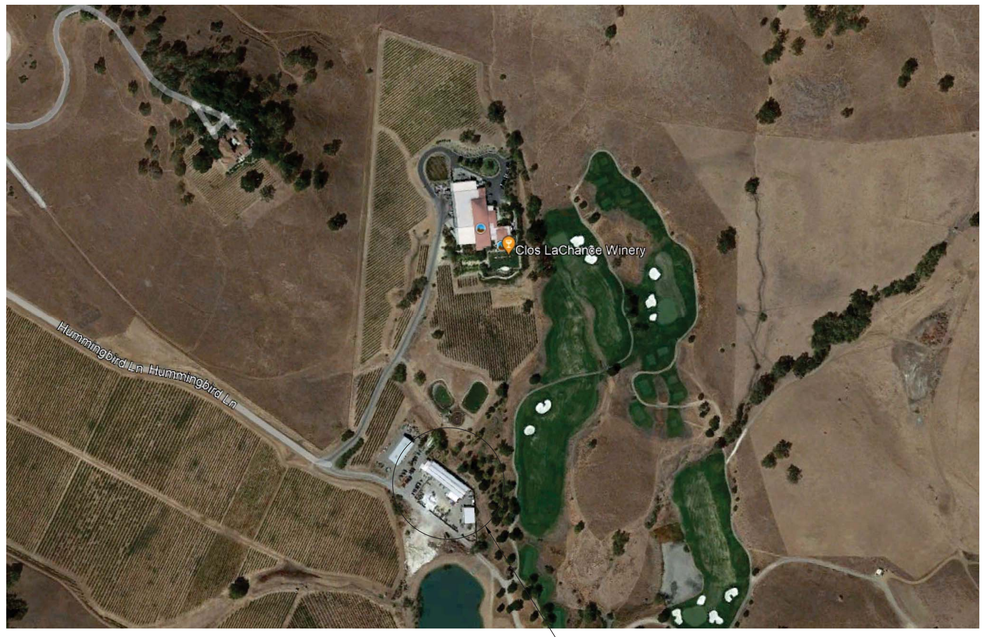
PHOTOVOLTAIC SYSTEM - CORDEVALLE GOLF COURSE
1005 HIGHLAND AVENUE, SAN MARTIN, CA 95046

Vicinity Map:



Contact Info:

GENERAL CONTRACTOR:
SOLAR TECHNOLOGIES
23 LAS COLINAS LN., SUITE NO. 106
SAN JOSE, CA 95119

ELECTRICAL ENGINEER:
NATRON RESOURCES INC.
1480 MORAGA ROAD, SUITE C #229
MORAGA, CA 94556

OWNER:
CORDEVALLE GOLF COURSE
1005 HIGHLAND AVENUE
SAN MARTIN, CA 95046

CODE REFERENCES:

1. 2022 CALIFORNIA ELECTRICAL CODE (CEC) .
2. 2022 CALIFORNIA FIRE CODE (CFC).
3. 2022 CALIFORNIA BUILDING CODE (CBC).
4. 2022 CALIFORNIA GREEN BUILDING CODE (GBC).

Table of Contents:

SCOPE OF WORK:

THIS IS A COMMERCIAL SOLAR ROOFTOP AND GROUND MOUNT SYSTEM. ALL ELECTRICITY GENERATED IS FOR CONSUMPTION ON SITE.

SYSTEM ELECTRICAL CONNECTION TO MAIN ELECTRICAL SERVICE IS AT 480Y/277V SWITCHGEAR.

PERMIT SHALL INCLUDE LABOR OF INSTALLING PANELS, RUNNING OF ELECTRICAL CONDUITS, INSTALLATION OF NEW ELECTRICAL EQUIPMENT AND ELECTRICAL CONNECTION TO EXISTING BUILDING SERVICE.

NO BATTERIES REQUIRED AS PART OF THIS PROJECT SCOPE.

System Specifications:

SYSTEM SIZE:	326.2 KWDC, 268 KWAC;
MODULES DETAILS:	(659) TRINA SOLAR TSM-495DEG18MC.20(II) (495 W)
INVERTER DETAILS:	(2) CHINT POWER CPS SCA50KTL-DO/US-480 [480V] (3) CHINT POWER CPS SCA36KTL-DO/US-480 [480V] (1) CHINT POWER CPS SCA60KTL-DO/US-480 [480V]
ARRAY SQUARE FOOTAGE	17,092.90
ARRAY WEIGHT (LBS)	43,757.60
CONSTRUCTION TYPE	COMMERCIAL
ASHRAE STATION	SALINAS MUNICIPAL AP
ASHRAE 2% HIGH DESIGN TEMP. DB	25
ASHRAE MIN MEAN EXTREME ANNUAL DB	-1

PROJECT TITLE:
CORDEVALLE GOLF COURSE
1005 HIGHLAND AVENUE,
SAN MARTIN, CA 95046
APN: 77920006

ENGINEER'S STAMP
REGISTERED PROFESSIONAL ENGINEER
JEFFREY H. HAILEY
Lic. No. 19459
Exp. 08/30/2023
ELECTRICAL
STATE OF CALIFORNIA

SOLAR TECHNOLOGIES
CLEAN ENERGY SOLUTIONS
23 LAS COLINAS LN. SUITE NO. 106
SAN JOSE, CA 95119
JOB NUMBER: 11866

REVISIONS

#	DATE	ISSUE
A	25-JUL-22	FOR SUBMITTAL
B	24-FEB-23	FOR RE-SUBMITTAL
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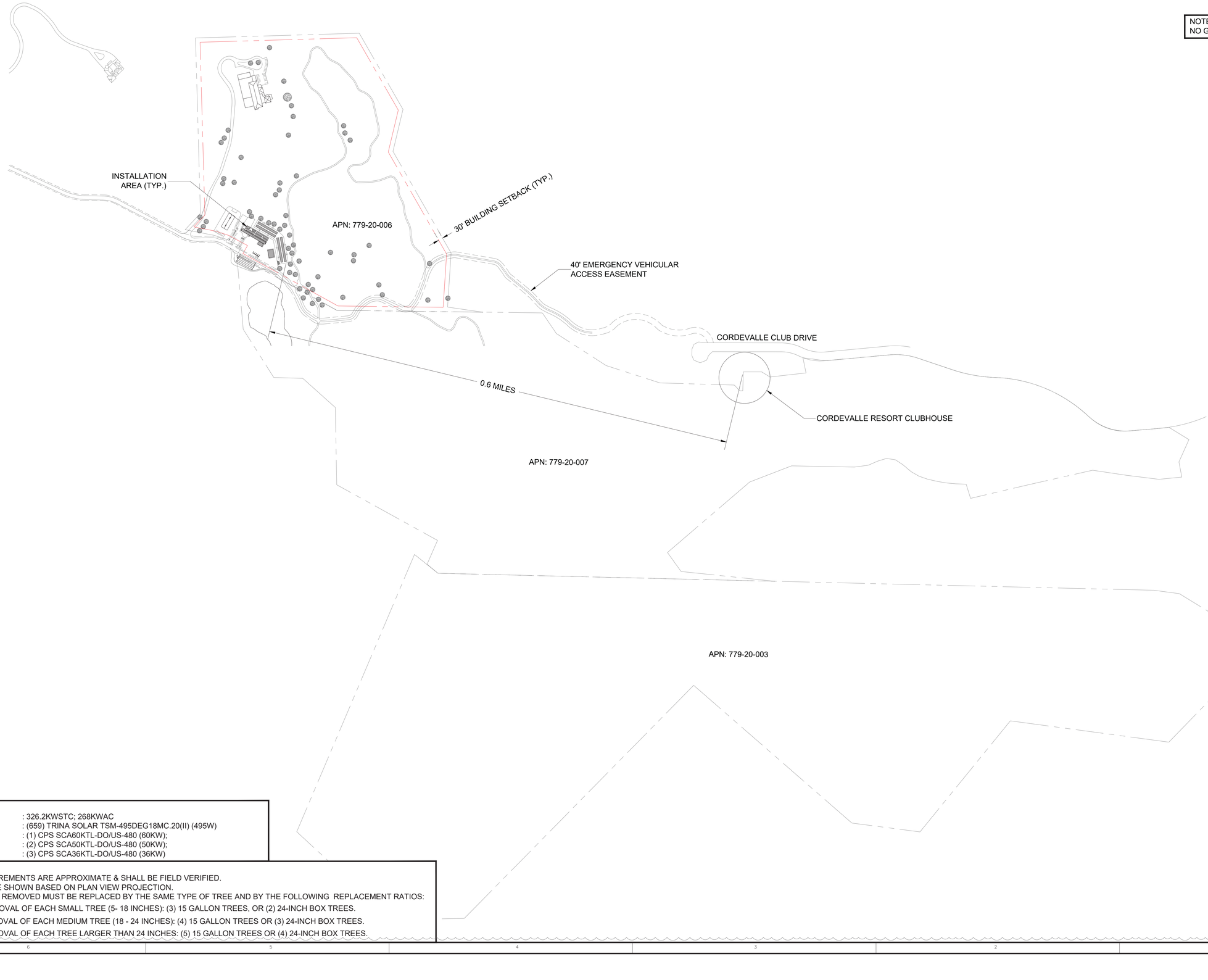
DRAWN BY:	HK, AJ
CHECKED BY:	VJ
APPROVED BY:	JHA

SCALE: NTS

SHEET TITLE: TITLE PAGE

SHEET #: T



NOTE:
NO GRADING PROPOSED

SYSTEM INFO:

SYSTEM SIZE	: 326.2KWSTC; 268KWAC
PANEL USED	: (659) TRINA SOLAR TSM-495DEG18MC.20(II) (495W)
TYPE OF INVERTER	: (1) CPS SCA60KTL-DO/US-480 (60KW);
	: (2) CPS SCA50KTL-DO/US-480 (50KW);
	: (3) CPS SCA36KTL-DO/US-480 (36KW)

NOTES:
1. ALL SITE MEASUREMENTS ARE APPROXIMATE & SHALL BE FIELD VERIFIED.
2. DIMENSIONS ARE SHOWN BASED ON PLAN VIEW PROJECTION.
3. ANY TREE TO BE REMOVED MUST BE REPLACED BY THE SAME TYPE OF TREE AND BY THE FOLLOWING REPLACEMENT RATIOS:
   A. FOR THE REMOVAL OF EACH SMALL TREE (5- 18 INCHES): (3) 15 GALLON TREES, OR (2) 24-INCH BOX TREES.
   B. FOR THE REMOVAL OF EACH MEDIUM TREE (18 - 24 INCHES): (4) 15 GALLON TREES OR (3) 24-INCH BOX TREES.
   C. FOR THE REMOVAL OF EACH TREE LARGER THAN 24 INCHES: (5) 15 GALLON TREES OR (4) 24-INCH BOX TREES.

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JEFFREY H. ANGLE
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1"= 300'-0"

SHEET TITLE:
OVERALL SITE PLAN

SHEET #:
A.1.0

N

1113.12'

PROPERTY LINE

30' BUILDING SETBACK (TYP.)

1192.17'

1283'-8"

596.95'

292.74'

30' BUILDING SETBACK (TYP.)

796.07'

NOTE:
NO GRADING PROPOSED

HUMMINGBIRD LANE

SHORTEST DISTANCE FROM ELECTRICAL EQUIPMENT TO PROPERTY LINE

TREE TO BE REMOVED
SEE NOTE #3

(N) SOLAR PANELBOARD "SPNLBD-1"
(N) SERVICE RATED UTILITY LOCKABLE FUSED AC DISCONNECT "ACDS-1"
(E) MAIN SWITCH BOARD "MS" LOCATION (ON SOUTH-WEST WALL IN ELECTRICAL AREA)
E.F
E.5.1

HUMMINGBIRD LANE

152.03'

191'-3"

10'

149'-11"

203.60'

88.95'

111.53'

98'-11"

97'-1"

73'-6"

18'-9"

62.26'

168'-2"

56'-5"

65'-10"

87'-3"

40'-5"

ROOFTOP INSTALLATION AREA (TYP.)

(E) SEPTIC TANK & LEECH FIELD

GROUND MOUNT INSTALLATION AREA (TYP.)

1198'

775.69'

367.85'

40' EMERGENCY VEHICULAR ACCESS EASEMENT

993.81'

243.51'

0 90' 180'

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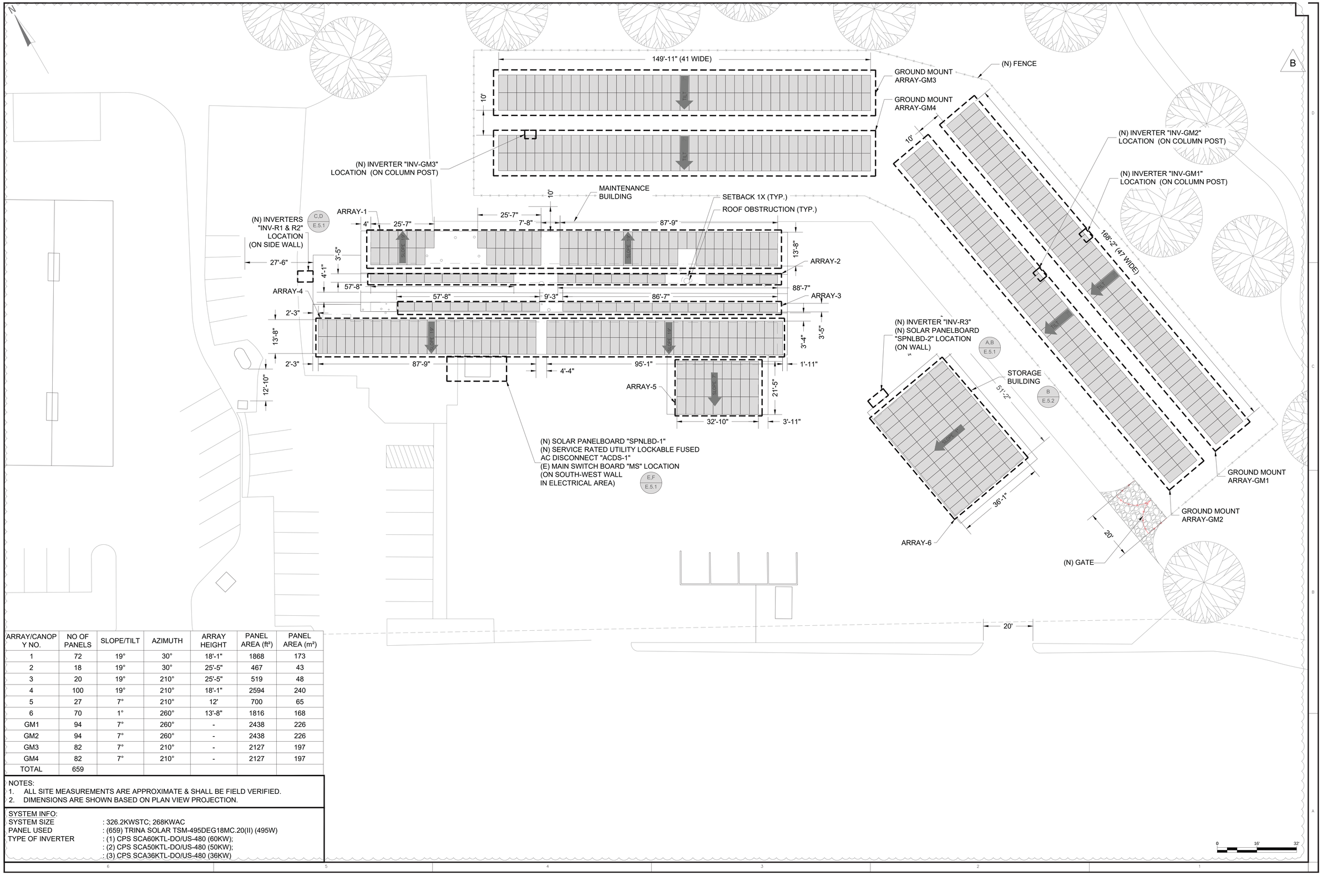
SITE PLAN

SHEET #:
A.1.1



ARRAY/CANOPY NO.	NO OF PANELS	SLOPE/TILT	AZIMUTH	ARRAY HEIGHT	PANEL AREA (ft²)	PANEL AREA (m²)
1	72	19°	30°	18'-1"	1868	173
2	18	19°	30°	25'-5"	467	43
3	20	19°	210°	25'-5"	519	48
4	100	19°	210°	18'-1"	2594	240
5	27	7°	210°	12'	700	65
6	70	1°	260°	13'-8"	1816	168
GM1	94	7°	260°	-	2438	226
GM2	94	7°	260°	-	2438	226
GM3	82	7°	210°	-	2127	197
GM4	82	7°	210°	-	2127	197
TOTAL	659					

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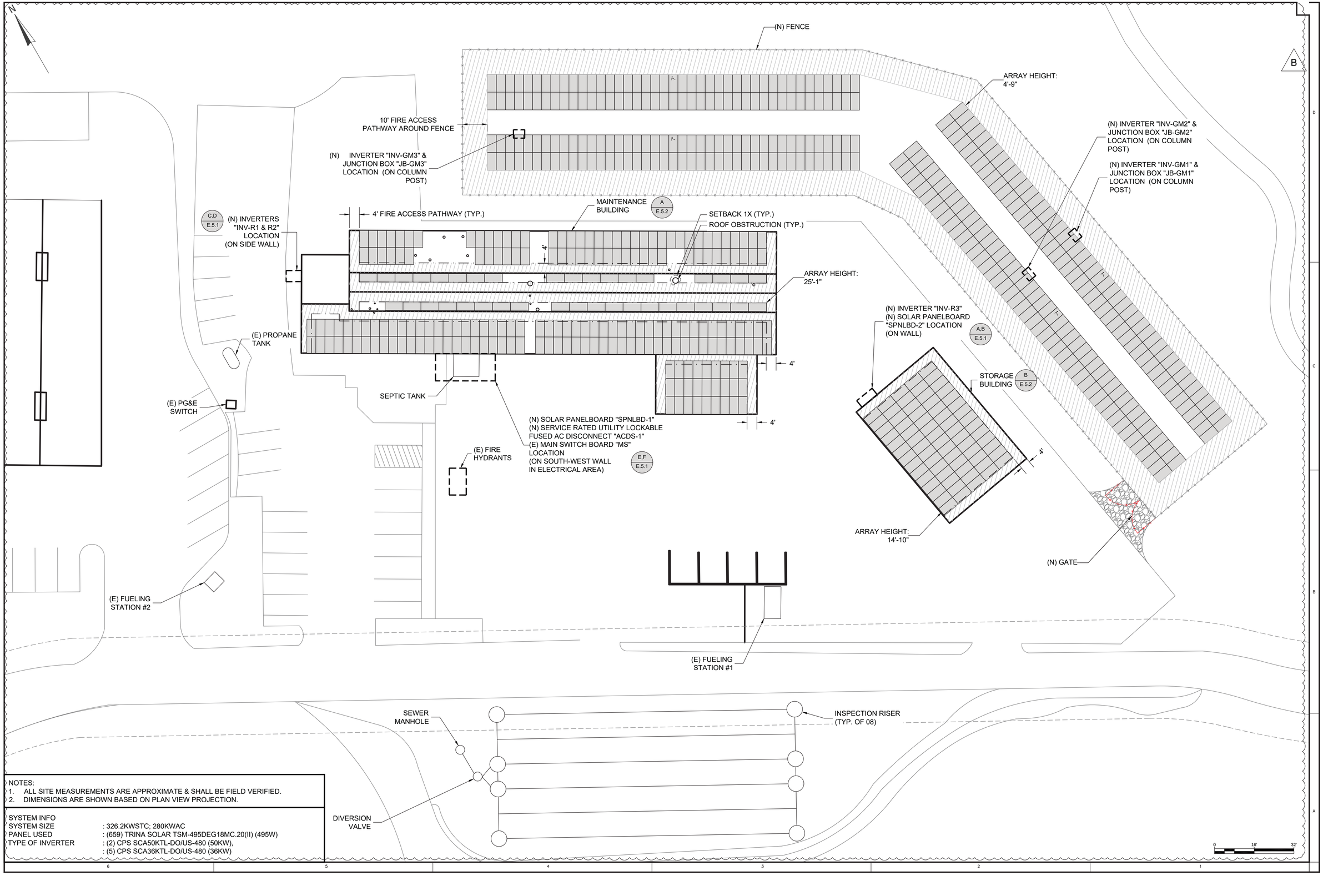
SCALE: 1"=16'-0"

SHEET TITLE: ARRAY PLAN

SHEET #: A.2.1



NOTES:
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SYSTEM INFO	
SYSTEM SIZE	: 326.2KWSTC; 280KWAC
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TYPE OF INVERTER	: (2) CPS SCA50KTL-DO/US-480 (50KW),
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SCALE: 1"= 16'-0"

SHEET TITLE:
FIRE ACCESS PLAN

SHEET #: A.2.2

N

GROUND MOUNT ARRAY-GM3

GROUND MOUNT ARRAY-GM4

(N) INVERTER "INV-GM3" & JUNCTION BOX "JB-GM3" LOCATION (ON COLUMN POST)

(N) INVERTER "INV-GM2" & JUNCTION BOX "JB-GM2" LOCATION (ON COLUMN POST)

(N) INVERTER "INV-GM1" & JUNCTION BOX "JB-GM1" LOCATION (ON COLUMN POST)

MAINTENANCE BUILDING — A / E.5.2

(N) INVERTERS "INV-R1 & R2" LOCATION (ON SIDE WALL) — C,D / E.5.1

(E) PROPANE TANK

12'-10"

21'-2"

163'-11"

(N) INVERTER "INV-R3" (N) SOLAR PANELBOARD "SPNLBD-2" LOCATION (ON WALL) — A,B / E.5.1

STORAGE BUILDING — B / E.5.2

(E) PG&E SWITCH

PG&E SECONDARY

PG&E TRANSFORMER

DATA CONDUIT

(E) FIRE HYDRANTS

(N) SOLAR PANELBOARD "SPNLBD-1" (N) SERVICE RATED UTILITY LOCKABLE FUSED AC DISCONNECT "ACDS-1" (E) MAIN SWITCH BOARD "MS" LOCATION (ON SOUTH-WEST WALL IN ELECTRICAL AREA) — E,F / E.5.1

GROUND MOUNT ARRAY-GM1

GROUND MOUNT ARRAY-GM2

SEWER PIPE

308'-6"

PG&E PRIMARY

CONCRETE PULL BOX

LIGHT POLE

(E) FUELING STATION #2

(E) FUELING STATION #1

CONCRETE PULL BOX FOR ELEC. GATE OPERATOR COIL WIRES & TERMINATE WITH SUBMERSIBLE WIRE NUTS

TELEPHONE SPLICE BOX (PROPOSED LOCATION)

SEWER MANHOLE

INSPECTION RISER (TYP. OF 08)

SWALE

ROUTE, INSTALL & TERMINATE TO SUIT ELEC. CO. & TEL. CO.

LEECH FIELD

BEGIN SWALE

DIVERSION VALVE

GRADING LIMIT LINE

TOE OF SLOPE

TOP OF SLOPE

0 16' 32'

6 5 4 3 2 1

A B C D

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SHEET TITLE: UNDERGROUND LOCATE PLAN

SHEET #: A.2.3

GENERAL ELECTRICAL NOTES FOR PHOTOVOLTAIC SYSTEM

THIS PHOTOVOLTAIC INSTALLATION SHALL BE IN ACCORDANCE WITH THE 2017 EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND LOCAL ELECTRICAL CODES CURRENTLY BEING ENFORCED BY THE AUTHORITY HAVING JURISDICTION (AHJ), PARTICULARLY ARTICLE 690, SOLAR PHOTOVOLTAIC (DC) SYSTEMS.

1. SOLAR CONTRACTOR
   - 1.1. THE SOLAR PV INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
   - 1.2. PV MODULE MUST BE UL1703 CERTIFIED.
   - 1.3. INVERTERS, MOTOR GENERATORS, PV MODULES, PV PANELS, AC MODULES, DC COMBINERS, DC-TO-DC CONVERTERS, AND CHARGE CONTROLLERS INTENDED FOR USE IN PV SYSTEMS SHALL BE LISTED OR FIELD LABELED FOR THE PV APPLICATION. (NEC 690.4 (D))
   - 1.4. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS.
   - 1.5. MAX DC VOLTAGE IS CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC, UNLESS NOT AVAILABLE.
   - 1.6. ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE.
   - 1.7. CONDUIT POINT OF PENETRATION FROM EXTERIOR TO INTERIOR TO BE INSTALLED AND SEALED WITH A SUITABLE SEALING COMPOUND.

2. EQUIPMENT LOCATIONS
   - 2.1. CONDUCTORS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY NEC 690.31 (A) AND NEC 310.15 (B)(2)(C).
   - 2.2. ADDITIONAL AC DISCONNECTS SHALL BE PROVIDED WHERE THE INVERTER IS NOT ADJACENT TO THE UTILITY AC DISCONNECT, OR NOT WITHIN SIGHT OF THE UTILITY AC DISCONNECT.
   - 2.3. ALL INSTALLED EQUIPMENT SHALL BE ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.
   - 2.4. PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT SHALL BE PROVIDED AS PER SECTION NEC 110.26, 110.31 AND 110.34.
   - 2.5. ALL COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE AND SHALL BE RATED FOR OUTDOOR USAGE WHERE REQUIRED.

3. DC SYSTEM VOLTAGE PER 690.7
   - 3.1. PV SYSTEM DC CIRCUITS ON OR IN ONE- AND TWO-FAMILY DWELLINGS SHALL BE PERMITTED TO HAVE A MAXIMUM VOLTAGE OF 600 VOLTS OR LESS.
   - 3.2. PV SYSTEM DC CIRCUITS ON OR IN OTHER TYPES OF BUILDINGS SHALL BE PERMITTED TO HAVE A MAXIMUM VOLTAGE OF 1000 VOLTS OR LESS.
   - 3.3. WHERE NOT LOCATED ON OR IN BUILDINGS, MAXIMUM VOLTAGE OF 1500 VOLTS IS PERMITTED.

4. WIRING METHODS
   - 4.1. NONMETALLIC-SHEATHED CABLE SHALL BE SECURED BY STAPLES, CABLE TIES, STRAPS, HANGERS OR SIMILAR FITTINGS AT INTERVALS THAT DO NOT EXCEED 4.5 FEET. (NEC 334.30)
   - 4.2. CABLES SHALL BE SECURED WITHIN 12 INCHES OF EVERY CABLE ENTRY INTO ENCLOSURES SUCH AS OUTLET BOXES, JUNCTION BOXES, CABINETS, OR FITTINGS. (NEC 334.30)
   - 4.3. EXPOSED SINGLE CONDUCTORS, WHERE SUBJECT TO PHYSICAL DAMAGE, MUST BE PROTECTED. (NEC 300.4 & NEC 690.31(A))
   - 4.4. CONDUCTORS INSTALLED NEAR MODULES SHALL BE RATED FOR 90°C . (NEC 310.15(A)(3))
   - 4.5. PV CIRCUIT AND PREMISES WIRING SHALL BE SEPARATED.
   - 4.6. PV SYSTEM CONDUCTORS SHALL BE SEPARATED, IDENTIFIED AND GROUPED PER NEC 690.31(B).
   - 4.7. DC CONDUCTORS INSIDE A BUILDING SHALL BE IN A METAL RACEWAY OR MC METAL-CLAD CABLE THAT COMPLIES WITH 250.118(10), OR METAL ENCLOSURES. (NEC 690.31(G))
   - 4.8. WHERE RACEWAYS OR CABLES ARE EXPOSED TO DIRECT SUNLIGHT ON OR ABOVE ROOFTOPS, RACEWAYS OR CABLES SHALL BE AT MINIMUM HEIGHT OF 7/8 IN. (NEC 310.15(B)(3)(C).
   - 4.9. ALL CONDUIT SIZES AND TYPES, SHALL BE LISTED FOR ITS PURPOSE AND APPROVED FOR THE SITE APPLICATIONS.
   - 4.10. RIGID CONDUIT (AND/OR NIPPLES) MUST HAVE A PULL BUSHING TO PROTECT WIRES.
   - 4.11. FOR DC SINGLE-CONDUCTOR CABLE TYPE USE-2 AND SINGLE CONDUCTOR CABLE LISTED AND IDENTIFIED AS PHOTOVOLTAIC (PV) WIRE SHALL BE PERMITTED IN EXPOSED OUTDOOR LOCATIONS IN PV SOURCE CIRCUITS WITHIN THE PV ARRAY. PV WIRE SHALL BE INSTALLED IN ACCORDANCE WITH 338.10(B)(4)(B) AND 334.30. (NEC 690.31(C)(1))
   - 4.12. USE-2 IS NOT INDOOR RATED PER NEC 338.12(B)(1).
   - 4.13. ALL CONDUCTORS ARE SIZED PER NEC 690.8 AND OCPDs ARE SIZED PER 690.9.
   - 4.14. PV SYSTEM DC CIRCUIT AND INVERTER OUTPUT CONDUCTORS AND EQUIPMENT SHALL BE PROTECTED AGAINST OVERCURRENT. EXCEPT WHEN THE SHORT-CIRCUIT CURRENTS FROM ALL SOURCES DO NOT EXCEED THE AMPACITY OF THE CONDUCTORS AND THE MAXIMUM OCPD SIZE RATING SPECIFIED FOR THE PV MODULE OR DC-TO-DC CONVERTER. (NEC 690.9(A))
   - 4.15. FOR UNDERGROUND CONDUCTOR INSTALLATIONS, THE BURIAL DEPTH SHALL BE SELECTED PER NEC TABLE 300.5. WARNING TAPE SHALL BE PLACED ABOVE UNDERGROUND CONDUIT AND CONDUCTORS IN TRENCH.
   - 4.16. UNGROUNDED PV SYSTEM SHOULD NOT HAVE WHITE OR GRAY COLORED DC PV CONDUCTORS. ONLY SOLIDLY GROUNDED PV SYSTEM CIRCUIT CONDUCTORS, IN ACCORDANCE WITH 690.41(A)(5), SHALL BE MARKED IN ACCORDANCE WITH 200.6. (NEC 690.31(B)(1))
   - 4.17. ALUMINUM AND COPPER-CLAD ALUMINUM CONDUCTORS SHOULD NOT BE PLACED IN DIRECT CONTACT WITH CONCRETE OR EARTH. (NEC 250.120(B))
   - 4.18. TOP CONDUIT ENTRY FOR OUTDOOR ENCLOSURES MUST BE AVOIDED. IF NECESSARY, CONNECTION ABOVE LIVE PARTS MUST BE MADE WATERTIGHT AND BE LISTED FOR THE PURPOSE.

5. BONDING AND GROUNDING
   - 5.1. SYSTEMS WITH A GROUND-FAULT PROTECTIVE DEVICE IN ACCORDANCE WITH 690.41(B) SHALL HAVE ANY CURRENT-CARRYING CONDUCTOR-TO-GROUND CONNECTION MADE BY THE GROUND-FAULT PROTECTIVE DEVICE. FOR SOLIDLY GROUNDED PV SYSTEMS, THE DC CIRCUIT GROUNDING CONNECTION SHALL BE MADE AT ANY SINGLE POINT ON THE PV OUTPUT CIRCUIT. (NEC 690.42)
   - 5.2. RACKING SYSTEMS SHALL BE LISTED FOR THE PURPOSE. BONDING AND GROUNDING MUST BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, THAT ARE LISTED AND APPROVED, USING THE SUPPLIED HARDWARE OR LISTED EQUIPMENT SPECIFIED IN THE INSTRUCTIONS AND IDENTIFIED FOR THE ENVIRONMENT. (NEC 690.43 & 110.3(B))
   - 5.3. EQUIPMENT GROUNDING CONDUCTORS FOR PV SOURCE CIRCUITS SHALL BE SIZED ACCORDING TO TABLE 250.122 AND SHALL NOT BE SMALLER THAN #14 AWG WHEN NOT EXPOSED TO PHYSICAL DAMAGE. IF EXPOSED TO PHYSICAL DAMAGE THEN EGC SHALL NOT BE SMALLER THAN #6 AWG. (NEC 690.45 & 250.120(C))
   - 5.4. AC AND DC GROUNDING ELECTRODE CONDUCTORS SHALL BE PROPERLY CONNECTED AS REQUIRED BY CODE. SEPARATE ELECTRODES, IF USED, SHALL BE BONDED TOGETHER. (NEC 690.47, 250.50 & 250.58)
   - 5.5. A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH NEC 690.47, NEC 250.52 AND NEC 250.166 SHALL BE PROVIDED.
   - 5.6. PROPERLY SIZED EQUIPMENT GROUNDING CONDUCTOR SHALL BE ROUTED WITH THE CIRCUIT CONDUCTORS. (NEC 690.45, 250.134(B) & 300.3(B))
   - 5.7. THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE BETWEEN THE GROUNDING ELECTRODE AND THE PANEL (OR INVERTER) IF SMALLER THAN #6 AWG COPPER WIRE PER NEC 250.64B.
   - 5.8. THE GROUNDING ELECTRODE CONDUCTOR SHALL BE CONTINUOUS PER NEC 250.64C.
   - 5.9. BONDING FITTINGS SHALL BE USED ON CONCENTRIC/ECCENTRIC KNOCKOUTS WITH METAL CONDUITS FOR CIRCUITS OVER 250 VOLTS. (NEC 250.97) (SEE ALSO EXCEPTIONS 1 THROUGH 4)
   - 5.10. BONDING FITTINGS SHALL BE USED FOR FERROUS METAL CONDUITS ENCLOSING GROUNDING ELECTRODE CONDUCTORS. (NEC 250.64(E))
   - 5.11. ENCLOSURES SHALL BE PROPERLY PREPARED WITH REMOVAL OF PAINT/FINISH AS APPROPRIATE WHEN GROUNDING EQUIPMENT WITH TERMINATION GROUNDING LUGS.
   - 5.12. GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THE PURPOSE, AND GROUNDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR DIRECT BURIAL.
   - 5.13. ALL CONDUIT BETWEEN THE UTILITY AC DISCONNECT AND THE POINT OF CONNECTION SHALL HAVE GROUNDED BUSHINGS AT BOTH ENDS.
   - 5.14. EXPOSED NON-CURRENT CARRYING METAL PARTS OF MODULE FRAMES, EQUIPMENTS, AND CONDUCTOR ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.136(A) REGARDLESS OF VOLTAGE. (NEC 690.43)
   - 5.15. MODULES SHALL BE LISTED FOR THE PURPOSE. BONDING AND GROUNDING MUST BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, USING THE SUPPLIED HARDWARE OR LISTED EQUIPMENT SPECIFIED IN THE INSTRUCTIONS AND IDENTIFIED FOR THE ENVIRONMENT. (NEC 690.43 & 110.3(B))
   - 5.16. THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDED CONDUCTOR TO ANOTHER MODULE.

6. OVERCURRENT PROTECTION
   - 6.1. OVERCURRENT PROTECTION DEVICES (OCPD) IN THE DC CIRCUITS SHALL BE LISTED FOR DC OPERATION. (NEC 110.3(A), (B) & 690.9(C))
   - 6.2. UNGROUNDED PV SYSTEM REQUIRES OCPD ON ONLY ONE POLARITY. OCPD TO BE USED ONE EITHER POSITIVE TERMINALS OR NEGATIVE TERMINALS PER NEC 690.9(C).

7. ELECTRICAL CONNECTIONS
   - 7.1. CRIMP TERMINALS SHALL BE LISTED AND INSTALLED USING A LISTED TOOL SPECIFIED FOR USE IN CRIMPING THOSE SPECIFIC CRIMPS. (NEC 110.3(B) & 110.14)
   - 7.2. PRESSURE TERMINALS SHALL BE LISTED FOR THE ENVIRONMENT AND TIGHTENED TO MANUFACTURER RECOMMENDED TORQUE SPECIFICATIONS. (NEC 110.11, 110.3(B) & 110.14)
   - 7.3. CONNECTORS MUST BE LISTED FOR THE VOLTAGE OF THE SYSTEM AND HAVE APPROPRIATE TEMPERATURE AND AMPACITY. (NEC 110.3(B) & 110.14)
   - 7.4. POWER DISTRIBUTION BLOCKS SHALL BE LISTED. (NEC 690.4(B) & NEC 314.28(E))
   - 7.5. TERMINALS CONTAINING MORE THAN ONE CONDUCTOR SHALL BE LISTED FOR MULTIPLE CONDUCTORS. (NEC 110.14(A) & 110.3(B))
   - 7.6. CONNECTORS AND TERMINALS USED OTHER THAN CLASS B AND C STRANDED CONDUCTORS (FINE STRANDED CONDUCTORS) SHALL BE LISTED AND IDENTIFIED FOR USE WITH SPECIFIC CONDUCTOR CLASS OR CLASSES. (NEC 110.14(A) & 110.3(B))
   - 7.7. CONNECTORS THAT ARE READILY ACCESSIBLE AND OPERATING AT OVER 30 VOLTS REQUIRE A TOOL FOR OPENING. (NEC 690.33(C))

8. INVERTERS
   - 8.1. INVERTERS SHALL BE LISTED TO UL 1741. (NEC 690.4(B)) NOTE: GRID-TIED SYSTEM INVERTERS NEED TO BE IDENTIFIED FOR USE IN INTERACTIVE POWER SYSTEMS.
   - 8.2. PHOTOVOLTAIC INVERTERS SHALL BE EQUIPPED WITH DC GROUND FAULT PROTECTION AND ARC FAULT CIRCUIT PROTECTION TO REDUCE FIRE HAZARDS. (NEC 690.41, NEC 690.11)
   - 8.3. GRID INTERACTIVE INVERTERS SHALL BE EQUIPPED WITH ANTI-ISLANDING CIRCUITRY.(NEC 705.40)

9. SIGNS AND LABELS
   - 9.1. ALL INTERIOR AND EXTERIOR DC CONDUIT, ENCLOSURES, RACEWAYS, CABLE ASSEMBLIES, JUNCTION BOXES, COMBINER BOXES AND DISCONNECTS SHALL BE MARKED ACCORDING TO NEC 690.31(G)(3), & 690.53.
   - 9.2. THE MARKINGS ON THE CONDUITS, RACEWAYS AND CABLE ASSEMBLIES SHALL BE AT EVERY 10 FEET, WITHIN ONE FOOT OF ALL TURNS OR BENDS AND WITHIN ONE FOOT ABOVE AND BELOW ALL PENETRATIONS OF ROOF/CEILING ASSEMBLIES, WALLS AND BARRIERS. (NEC 690.31(G)(4))
   - 9.3. THE MARKINGS SAY "WARNING: PHOTOVOLTAIC POWER SOURCE" AND HAVE 3/8-INCH (9.5 MM) MINIMUM-SIZED WHITE LETTERS ON A RED BACKGROUND. THE SIGNS SHALL BE MADE OF REFLECTIVE WEATHER RESISTANT MATERIAL. (NEC 690.31 (G)(3) & (NEC 690.31(G)(4))
   - 9.4. WHERE PV CIRCUITS ARE EMBEDDED IN BUILT-UP, LAMINATE OR MEMBRANE ROOFING MATERIALS IN ROOF AREAS NOT COVERED BY PV MODULES AND ASSOCIATED EQUIPMENT, THE LOCATION OF CIRCUITS SHALL BE CLEARLY MARKED. (NEC 690.31(G)(1))
   - 9.5. ALTERNATE POWER SOURCE PLACARD SHALL BE PLASTIC, ENGRAVED IN A CONTRASTING COLOR TO THE PLAQUE. THIS PLAQUE WILL BE ATTACHED USING AN APPROVED METHOD. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC.

10. DISCONNECT NOTES
    - 10.1. AC DISCONNECT MUST BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH.
    - 10.2. DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING LIVE ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).
    - 10.3. THE PV SYSTEM DISCONNECTING MEANS SHALL BE INSTALLED AT A READILY ACCESSIBLE LOCATION PER (NEC 690.13(A)).
    - 10.4. FOR DC SIDE OF UNGROUNDED PV SYSTEM, DISCONNECTING MEANS ARE REQUIRED ON BOTH LEGS OF PV CIRCUIT FOR UNGROUNDED SYSTEM PER NEC 690.15.
    - 10.5. DISCONNECTS USED IN DC CIRCUITS SHALL BE LISTED FOR DC OPERATION AND LOCATED AS ALLOWED BY THE AHJ. (NEC 110.3)
    - 10.6. WHERE CONNECTORS ARE USED AS DISCONNECTING MEANS, THEY SHALL BE USED IN ACCORDANCE WITH NEC 690.33(E).

11. TERMINAL NOTES
    - 11.1. ALL TERMINALS SHALL BE RATED FOR ATLEAST 75C.
    - 11.2. ALL TERMINALS SHALL BE DUAL RATED FOR USE WITH COPPER AND ALUMINUM.

12. MODULE CONNECTORS NOTES:
    - 12.1. IDENTICAL CONNECTORS FROM THE SAME MANUFACTURER AND OF THE SAME TYPE MUST BE USED ON MODULE AND ON THE OTHER SIDE OF THE CONNECTION. CROSS-MATING ANY CONNECTOR MUST BE A UL APPROVED CONNECTION.

13. PROTECTION NOTES
    - 13.1. GROUND FAULT PROTECTION IN ACCORDANCE WITH NEC 230.95 AND NEC 705.32
    - 13.2. ALL EQUIPMENT TO BE RATED FOR BACKFEEDING. CIRCUIT BREAKERS WHICH ARE CLEARLY MARKED "LINE" AND "LOAD" ARE NOT SUITABLE FOR BACKFEED.
    - 13.3. INSTALLER SHALL BE RESPONSIBLE FOR VERIFYING THAT ALL BREAKERS ARE SUITABLE FOR BACKFEED AND THAT IF GFP IS PRESENT ON MAIN SERVICE DISCONNECT THAN ALL SOLAR FEEDERS, CONNECTED TO MAIN BUS, SHALL HAVE GFP PER NEC 215.10 & NEC 705.32 EXCEPTION.
    - 13.4. ARC-FAULT CIRCUIT PROTECTION:PHOTOVOLTAIC SYSTEMS OPERATING AT 80 VOLTS DC OR GREATER BETWEEN ANY TWO CONDUCTORS SHALL BE PROTECTED BY A LISTED PV ARC-FAULT CIRCUIT INTERRUPTER OR OTHER SYSTEM COMPONENTS LISTED TO PROVIDE EQUIVALENT PROTECTION. FOR PV SYSTEMS NOT INSTALLED ON OR IN BUILDINGS, PV OUTPUT CIRCUITS AND DC-TO-DC CONVERTER OUTPUT CIRCUITS THAT ARE DIRECT BURIED OR INSTALLED IN METALLIC RACEWAYS ARE PERMITTED WITHOUT ARC-FAULT CIRCUIT PROTECTION. (NEC 690.11)
    - 13.5. RAPID SHUTDOWN:PV SYSTEM CIRCUITS INSTALLED ON OR IN BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION TO REDUCE SHOCK HAZARD FOR EMERGENCY RESPONDERS IN ACCORDANCE WITH 690.12(A) THROUGH (D).
    - 13.6. WHERE THE SOLAR SERVICE SWITCH OVERCURRENT PROTECTION IS LOCATED MORE THAN 10 FT FROM THE POINT OF UTILITY SERVICE CONNECTION, CABLE LIMITERS FOR EACH UNGROUNDED CONDUCTOR SHALL BE INSTALLED AT THE POINT OF SERVICE INTERCONNECTION.

14. DATA MONITORING NOTES
    - 14.1. INVERTERS MAY HAVE DATA ACQUISITION SYSTEM BUILT INTO THEM OR IT CAN BE ADDED VIA OPTIONAL COMPONENTS. PLEASE CHECK WHILE ORDERING IF OPTIONAL DAS COMPONENTS NEEDS TO BE ORDERED SEPARATELY

FIRE SAFETY REQUIREMENTS

IFC 1204.4 GROUND-MOUNTED PHOTOVOLTAIC PANEL SYSTEMS.
GROUND-MOUNTED PHOTOVOLTAIC PANEL SYSTEMS SHALL COMPLY WITH SECTION IFC 1204.1 AND THIS SECTION. SETBACK REQUIREMENTS SHALL NOT APPLY TO GROUND-MOUNTED, FREE-STANDING PHOTOVOLTAIC A CLEAR, BRUSH-FREE AREA OF 10 FEET SHALL BE REQUIRED FOR GROUND-MOUNTED PHOTOVOLTAIC ARRAYS.

FIRE SAFETY REQUIREMENTS

IBC 1505.9 ROOFTOP MOUNTED PHOTOVOLTAIC PANEL SYSTEMS.
ROOFTOP RACK-MOUNTED PHOTOVOLTAIC PANEL SYSTEMS SHALL BE TESTED, LISTED AND IDENTIFIED WITH A FIRE CLASSIFICATION IN ACCORDANCE WITH UL 1703 AND UL 2703. THE FIRE CLASSIFICATION SHALL COMPLY WITH TABLE 1505.1 BASED ON THE TYPE OF CONSTRUCTION OF THE BUILDING.

IFC 1204.2 ACCESS AND PATHWAYS.
ROOF ACCESS, PATHWAYS, AND SPACING REQUIREMENTS SHALL BE PROVIDED IN ACCORDANCE WITH SECTIONS IFC 1204.2.1 THROUGH IFC 1204.3.3. PATHWAYS SHALL BE OVER AREAS CAPABLE OF SUPPORTING FIRE FIGHTERS ACCESSING THE ROOF. PATHWAYS SHALL BE LOCATED IN AREAS WITH MINIMAL OBSTRUCTIONS, SUCH AS VENT PIPES, CONDUIT OR MECHANICAL EQUIPMENT.

IFC 1204.2.1 SOLAR PHOTOVOLTAIC SYSTEMS FOR GROUP R-3 BUILDINGS.
SOLAR PHOTOVOLTAIC SYSTEMS FOR GROUP R-3 BUILDINGS SHALL COMPLY WITH SECTIONS IFC 1204.2.1.1 THROUGH IFC 1204.2.1.3.
EXCEPTIONS:
2. THESE REQUIREMENTS SHALL NOT APPLY TO ROOFS WITH SLOPES OF 2 UNITS VERTICAL IN 12 UNITS HORIZONTAL OR LESS.

IFC 1204.2.1.1 PATHWAYS TO RIDGE.
NOT FEWER THAN TWO 36- INCH-WIDE (914 MM) PATHWAYS ON SEPARATE ROOF PLANES, FROM LOWEST ROOF EDGE TO RIDGE, SHALL BE PROVIDED ON ALL BUILDINGS. NOT FEWER THAN ONE PATHWAY SHALL BE PROVIDED ON THE STREET OR DRIVEWAY SIDE OF THE ROOF.
FOR EACH ROOF PLANE WITH A PHOTOVOLTAIC ARRAY, NOT FEWER THAN ONE 36-INCH-WIDE (914 MM) PATHWAY FROM LOWEST ROOF EDGE TO RIDGE SHALL BE PROVIDED ON THE SAME ROOF PLANE AS THE PHOTOVOLTAIC ARRAY, ON AN ADJACENT ROOF PLANE OR STRADDLING THE SAME AND ADJACENT ROOF PLANES.

IFC 1204.2.1.2 SETBACKS AT RIDGE.
FOR PHOTOVOLTAIC ARRAYS OCCUPYING 33 PERCENT OR LESS OF THE PLAN VIEW TOTAL ROOF AREA, A SETBACK OF NOT LESS THAN 18 INCHES (457 MM) WIDE IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE. FOR PHOTOVOLTAIC ARRAYS OCCUPYING MORE THAN 33 PERCENT OF THE PLAN VIEW TOTAL ROOF AREA, A SETBACK OF NOT LESS THAN 36 INCHES (457 MM) WIDE IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE.

IFC 1204.2.1.3 ALTERNATIVE SETBACKS AT RIDGE.
WHERE AN AUTOMATIC SPRINKLER SYSTEM IS INSTALLED WITHIN THE DWELLING IN ACCORDANCE WITH SECTION 903.3.1.3, SETBACKS AT THE RIDGE SHALL CONFORM TO ONE OF THE FOLLOWING:
1. FOR PHOTOVOLTAIC ARRAYS OCCUPYING 66 PERCENT OR LESS OF THE PLAN VIEW TOTAL ROOF AREA, A SETBACK OF NOT LESS THAN 18 INCHES (457 MM) WIDE IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE.
2. FOR PHOTOVOLTAIC ARRAYS OCCUPYING MORE THAN 66 PERCENT OF THE PLAN VIEW TOTAL ROOF AREA, A SETBACK OF NOT LESS THAN 36 INCHES (914 MM) WIDE IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE.

IFC 1204.2.2 EMERGENCY ESCAPE AND RESCUE OPENINGS.
PANELS AND MODULES INSTALLED ON GROUP R-3 BUILDINGS SHALL NOT BE PLACED ON THE PORTION OF A ROOF THAT IS BELOW AN EMERGENCY ESCAPE AND RESCUE OPENING. A PATHWAY OF NOT LESS THAN 36 INCHES (914 MM) WIDE SHALL BE PROVIDED TO THE EMERGENCY ESCAPE AND RESCUE OPENING.

IFC 1204.5 BUILDINGS WITH RAPID SHUTDOWN.
BUILDINGS WITH RAPID SHUTDOWN SOLAR PHOTOVOLTAIC SYSTEMS SHALL HAVE PERMANENT
LABELS IN ACCORDANCE WITH SECTIONS IFC 1204.5.1 THROUGH IFC 1204.5.3.

PROVIDING FIREPROOFING OF INTERIOR PENETRATIONS TO MAINTAIN EXISITNG FIRE RATING OF SPACES AND ROOMS.

705.12 POINT OF INTERCONNECTION
(A) SUPPLY SIDE

AN ELECTRIC POWER PRODUCTION SOURCE SHALL BE PERMITTED TO BE CONNECTED TO THE SUPPLY SIDE OF THE SERVICE DISCONNECTING MEANS IF THE SUM OF THE RATINGS OF ALL OCPDS CONNECTED TO POWER PRODUCTION SOURCES DOES NOT EXCEED THE RATING OF THE SERVICE AS SERVICE CONDUCTORS ARE RATED FOR CERTAIN AMPACITY WHICH IS USUALLY SAME AS THE SERVICE RATING.

CAUTION:
1. CHECK THAT YOU HAVE SPACE BETWEEN MAIN BREAKER AND UTILITY METER TO MAKE LINE SIDE TAP.
2. CABLE LIMITERS MAY BE REQUIRED PER NOTE 13.6 OF PROTECTION NOTES.

NOTE TO CONTRACTOR:
CONTRACTOR HAS THE FULL RESPONSIBILITY TO CHECK AND VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK. ANY WORK STARTED BEFORE CONSULTATION AND ACCEPTANCE BY THE ENGINEER SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBJECT TO CORRECTION BY THEM WITHOUT ADDITIONAL COMPENSATION.

STANDARD SYMBOL LEGEND

(N) NEW
(E) EXISTING

PROJECT TITLE:
CORDEVALLE GOLF COURSE
1005 HIGHLAND AVENUE,
SAN MARTIN, CA 95046
APN: 77920006

ENGINEER'S STAMP

REGISTERED PROFESSIONAL ENGINEER
JEFFREY H. ANGLE
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ELECTRICAL NOTES

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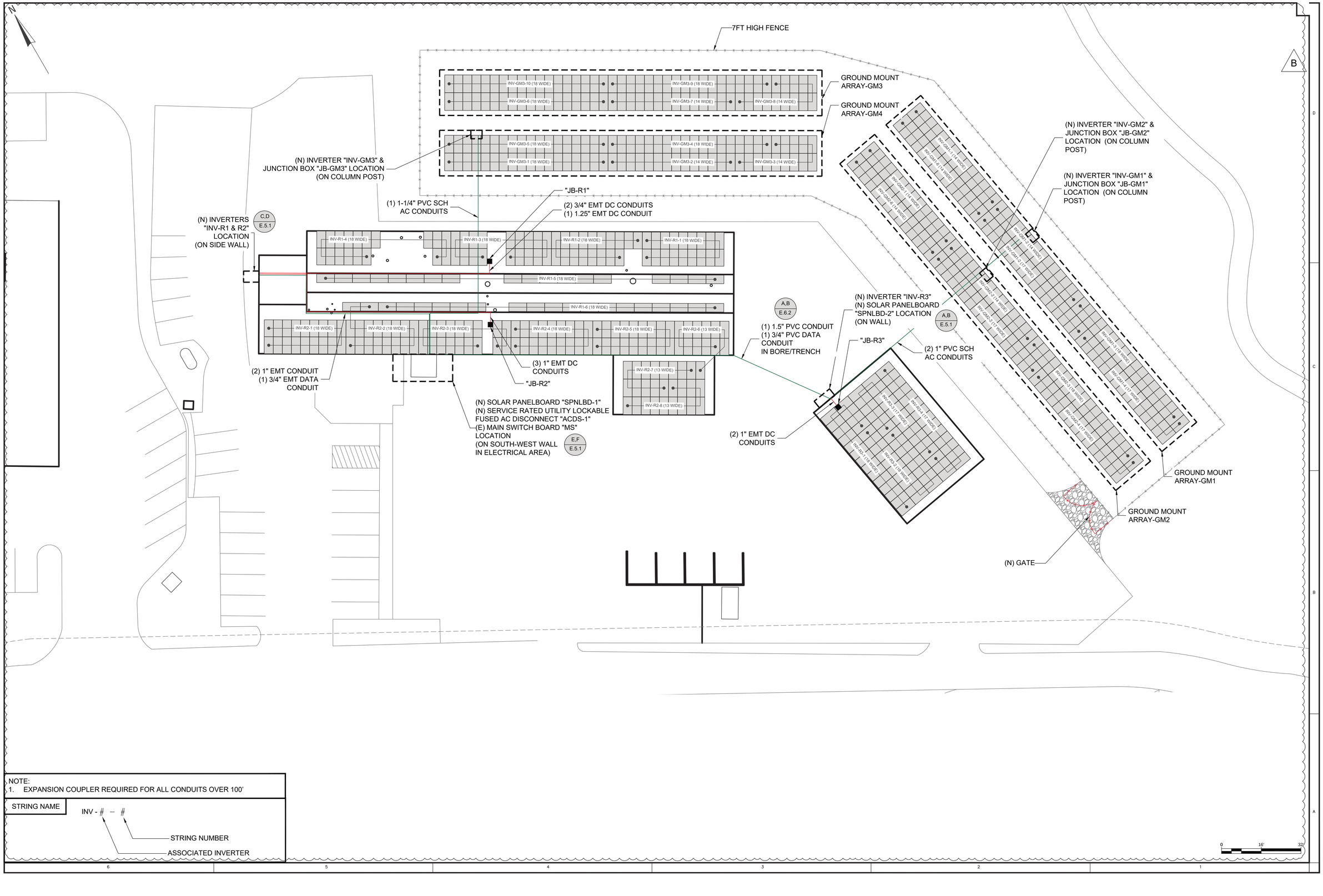
E.0.1



NOTE:
1. EXPANSION COUPLER REQUIRED FOR ALL CONDUITS OVER 100'

STRING NAME

INV - # – #

STRING NUMBER

ASSOCIATED INVERTER

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ELECTRICAL SITE PLAN

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E.1.1

(2) CPS SCA36KTL-DO/US-480 (36KW) [480V]
(1) CPS SCA60KTL-DO/US-480 (60KW) [480V] INVERTERS
174.24KWSTC, 132KWAC
CEC-AC RATING: 160.86KW
352 MODULES, TRINA SOLAR TSM-495DEG18MC.20(II) (495W)
14 MODULES PER STRING, 10 STRINGS
STRING VOLTAGE: 566.2V VMP HIGH TEMP., 764.9V VOC MAX,
17 MODULES PER STRING, 04 STRINGS
STRING VOLTAGE: 687.6V VMP HIGH TEMP., 928.8V VOC MAX,
18 MODULES PER STRING, 08 STRINGS
STRING VOLTAGE: 728.0V VMP HIGH TEMP., 983.4V VOC MAX,
STRING AMPERAGE: 11.51A IMP, 12.90A ISC

GROUND MOUNT ARRAY-GM1 (94 MODULES)	GROUND MOUNT ARRAY-GM2 (94 MODULES)	GROUND MOUNT ARRAY-GM3(82 MODULES) & GM4 (82 MODULES)
03 STRINGS OF 14 MODULES 02 STRINGS OF 17 MODULES 01 STRINGS OF 18 MODULES	03 STRINGS OF 14 MODULES 02 STRINGS OF 17 MODULES 01 STRINGS OF 18 MODULES	03 STRINGS OF 18 MODULES 03 STRINGS OF 18 MODULES 04 STRINGS OF 14 MODULES

DC0.X
(1) - 3/4" EMT OR FREE AIR
2 - #12 AWG, CU-PV WIRE (1000V)
1 - #10 AWG, CU-THWN-2

"JB-GM1"
"JB-GM2"
"JB-GM3"

DC1.3
(1) - 1" EMT
6 - #12 AWG, CU-PV WIRE (1000V)
1 - #10 AWG, CU-THWN-2

DC1.4
(1) - 1-1/4" EMT
8 - #12 AWG, CU-PV WIRE (1000V)
1 - #10 AWG, CU-THWN-2

"INV-GM1"
"INV-GM2"
"INV-GM3"

(N) CHINT POWER INVERTER
CPS SCA36KTL-DO/US-480
(36KW)
DC LUGS-
#14 AWG (MIN.)
-#6 AWG (MAX.) (CU)
AC LUGS-
#14 AWG (MIN.)
-#1/0 AWG (MAX.) (CU/AL)
MAX. OUTPUT CURRENT: 43.5A
(TYPICAL OF 02)

RS485 RS485 RS485 RS485 RS485 RS485 RS485 RS485 RS485 RS485 RS485 RS485 RS485 RS485 RS485 RS485 RS485 RS485

(N) CHINT POWER INVERTER
CPS SCA60KTL-DO/US-480
(60KW)
RAPID SHUTDOWN WIRE-BOX
DC LUGS-
#14 AWG (MIN.)
-#6 AWG (MAX.) (CU)
AC LUGS-
#6 AWG (MIN.)
-#3/0 AWG (MAX.) (CU/AL)
MAX. OUTPUT CURRENT: 72.2A

ON COLUMN POST
IN TRENCH

ON COLUMN POST
IN TRENCH

FROM "INV-R3"

AC1.1
(1) - 1" PVC SCH 40 OR EMT
3 - #6 AWG, CU-THWN-2
0 - #NO NEUTRAL
1 - #8 AWG, CU-THWN-2 EGC

AC1.2
(1) - 1" PVC SCH 40 OR EMT
3 - #6 AWG, CU-THWN-2
0 - #NO NEUTRAL
1 - #8 AWG, CU-THWN-2 EGC

AC1.3
(1) - 1-1/4" PVC SCH 40
3 - #3 AWG, CU-THWN-2
0 - #NO NEUTRAL
1 - #6 AWG, CU-THWN-2 EGC

ON WALL

(N) SOLAR PANELBOARD
"SPNLBD-2"
225A, 480Y/277V, 3ø, 4W,
14KAIC
NEMA 3R
(75C RATED BREAKER)
SEE NOTE #1 & #3

70A 3P | 70A 3P | 70A 3P
70A+70A+70A=210A

(N) MAIN SWITCHBOARD "MS"
600A BUSBAR, 480Y/277V, 3ø, 4W, 65KAIC

(E) MAIN BREAKER 600A

(E) METER #1010611755

TO UTILITY

(E) LOADS | (E) LOADS | (E) LOADS | (E) LOADS

ON WALL
ON WALL NEAR ELECTRICAL AREA

ON CANOPY POLE
ON WALL NEAR ELECTRICAL AREA

AC1.7
(1) - 2" PVC SCH 40
3 - #2/0 AWG, CU-THWN-2
0 - #NO NEUTRAL
1 - #6 AWG, CU-THWN-2 EGC

SEE NOTE #5

FROM "INV-R1"
FROM "INV-R2"
TO DAS

(N) SOLAR PANELBOARD
"SPNLBD-1"
600A, 480Y/277V, 3ø, 4W,
65KAIC
NEMA 3R
(75C RATED BREAKER)
SEE NOTE #1 & 3

200A 3P | 110A 3P | 90A 3P | 90A 3P | 15A 1P
200A+110A+90A+90A+15A=505A

AC1.8
(2) - 2-1/2" EMT OR EMT
3 - #4/0 AWG, CU-THWN-2
1 - #4/0 AWG, CU-THWN-2 NEUTRAL
1 - #2 AWG, CU-THWN-2 EGC

AC1.9
(2) - 2-1/2" EMT OR EMT
3 - #4/0 AWG, CU-THWN-2
1 - #4/0 AWG, CU-THWN-2 NEUTRAL
1 - #1/0 AWG, CU-THWN-2 GEC

"ACDS-1"
(N) SERVICE RATED UTILITY LOCKABLE
FUSED AC DISCONNECT
GE TH3366R
DISCONNECT: 600A
FUSE: 450A
TERMINAL LUGS:
(2) #4 AWG (MIN); #500 MCM (MAX),
CU OR AL

NOTES:
1. THIS EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES, EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE, SHALL NOT EXCEED AMPACITY OF BUSBAR.
2. INSTALLER SHALL BE RESPONSIBLE FOR VERIFYING THAT ALL BACKFED BREAKERS ARE SUITABLE FOR THE APPLICATION AND THAT IF GFP IS PRESENT ALL SOLAR FEEDERS SHALL HAVE GFP PER 705.32.
3. PROVIDE ADD ALTERNATE PRICING FOR AN INTERNAL SURGE PROTECTIVE DEVICE PROVIDED BY THE PANEL MANUFACTURER. SPD SHALL INCLUDE AN INTEGRAL DISCONNECT AND OVERCURRENT PROTECTIVE DEVICE.
4. USE PVC UNDER TRENCH/BORE.
5. PROVIDE PERMANENTLY INSTALLED PADLOCK PROVISION

	VOLTAGE	NO. OF INVERTERS	FAULT CURRENT PER INVERTER (A)	TOTAL FAULT CURRENT (A)
CPS SCA50KTL-DO/US-480 [480V] (50KW)	480Y/277V	2	64.1	128.2
CPS SCA60KTL-DO/US-480 [480V] (60KW)	480Y/277V	1	64.1	64.1
CPS SCA36KTL-DO/US-480 [480V] (36KW)	480Y/277V	3	73.2	219.6
			TOTAL FAULT CURRENT (A)	411.9

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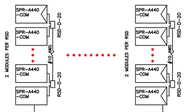
GROUND MOUNT SINGLE LINE DIAGRAM

SHEET #:
E.2.1

(2) CPS SCA50KTL-DO/US-480 (50KW) [480V],
(1) CPS SCA36KTL-DO/US-480 (36KW) [480V] INVERTERS
151.96KWSTC, 136KWAC
CEC-AC RATING: 140.66KW
307 MODULES, TRINA SOLAR TSM-495DEG18MC.20(II) (495W)
156 RAPID SHUTDOWN APS RSD-D-20
13 MODULES PER STRING, 03 STRINGS
STRING VOLTAGE: 525.8V VMP HIGH TEMP., 710.2V VOC MAX,
17 MODULES PER STRING, 02 STRINGS
STRING VOLTAGE: 687.6V VMP HIGH TEMP., 928.8V VOC MAX,
18 MODULES PER STRING, 13 STRINGS
STRING VOLTAGE: 728.0V VMP HIGH TEMP., 983.4V VOC MAX,
STRING AMPERAGE: 11.51A IMP, 12.90A ISC

ROOFTOP ARRAY-1, 2 & 3 (108 MODULES)	ROOFTOP ARRAY-4 & 5 (129 MODULES)	ROOFTOP ARRAY-6 (70 MODULES)
06 STRINGS OF 18 MODULES	05 STRINGS OF 18 MODULES 03 STRINGS OF 13 MODULES	02 STRINGS OF 18 MODULES 02 STRINGS OF 17 MODULES



DC0.X
(1) - 3/4" EMT OR FREE AIR
2 - #12 AWG, CU-PV WIRE (1000V)
1 - #10 AWG, CU-THWN-2

"JB-R1" "JB-R2" "JB-R3"

DC1.1
(1) - 3/4" EMT
2 - #12 AWG, CU-PV WIRE (1000V)
1 - #10 AWG, CU-THWN-2

DC1.4
(1) - 1-1/4" EMT
8 - #12 AWG, CU-PV WIRE (1000V)
1 - #10 AWG, CU-THWN-2

DC1.3
(1) - 1" EMT
6 - #12 AWG, CU-PV WIRE (1000V)
1 - #10 AWG, CU-THWN-2

DC1.2
(1) - 1" EMT
4 - #12 AWG, CU-PV WIRE (1000V)
1 - #10 AWG, CU-THWN-2

"INV-R1"

(N) CHINT POWER INVERTER
CPS SCA50KTL-DO/US-480
(50KW)
RSS TRANMITTER WITH STANDARD
WIRE BOX
DC LUGS-
#14 AWG (MIN.)
-#6 AWG (MAX.) (CU)
AC LUGS-
#6 AWG (MIN.)
-#3/0 AWG (MAX.) (CU/AL)
MAX. OUTPUT CURRENT: 60.2A
(TYPICAL OF 02)

"INV-R2"

"INV-R3"

(N) CHINT POWER INVERTER
CPS SCA36KTL-DO/US-480
(36KW)
DC LUGS-
#14 AWG (MIN.)
-#6 AWG (MAX.) (CU)
AC LUGS-
#14 AWG (MIN.)
-#1/0 AWG (MAX.) (CU/AL)
MAX. OUTPUT CURRENT: 43.5A

RS485 RS485 RS485 RS485 RS485 RS485 RS485 RS485 RS485 RS485 RS485 RS485 TO DAS

FROM "INV-C1" RS485 RS485 RS485 RS485 TO DAS

ON ROOF WALL
ON WALL NEAR ELECTRICAL AREA

ON ROOF WALL
ON CANOPY POLE

AC1.4
(1) - 1" EMT OR EMT
3 - #4 AWG, CU-THWN-2
0 - #NO NEUTRAL
1 - #8 AWG, CU-THWN-2 EGC

TO "SPNLBD-1"

AC1.5
(1) - 1" EMT
3 - #4 AWG, CU-THWN-2
0 - #NO NEUTRAL
1 - #8 AWG, CU-THWN-2 EGC

TO "SPNLBD-1"

ON WALL NEAR ELECTRICAL AREA
ON CANOPY POLE

AC1.6
(1) - 3/4" EMT
3 - #6 AWG, CU-THWN-2
0 - #NO NEUTRAL
1 - #8 AWG, CU-THWN-2 EGC

TO "SPNLBD-2"

TRINA SOLAR
TSM-495DEG18MC.20(II)

APS
RSD-D-20

13-18 MODULES IN STRING

7 TO 9 RAPID SHUTDOWN IN STRING

TO "JUNCTION BOX"

NOTES:
1. THIS EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES, EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE, SHALL NOT EXCEED AMPACITY OF BUSBAR.
2. INSTALLER SHALL BE RESPONSIBLE FOR VERIFYING THAT ALL BACKFED BREAKERS ARE SUITABLE FOR THE APPLICATION AND THAT IF GFP IS PRESENT ALL SOLAR FEEDERS SHALL HAVE GFP PER 705.32.
3. PROVIDE ADD ALTERNATE PRICING FOR AN INTERNAL SURGE PROTECTIVE DEVICE PROVIDED BY THE PANEL MANUFACTURER. SPD SHALL INCLUDE AN INTEGRAL DISCONNECT AND OVERCURRENT PROTECTIVE DEVICE.

PROJECT TITLE:
CORDEVALLE GOLF COURSE
1005 HIGHLAND AVENUE,
SAN MARTIN, CA 95046
APN: 77920006

ENGINEER'S STAMP
REGISTERED PROFESSIONAL ENGINEER
JEFFREY H. ANGLE
Lic. No. 19459
Exp. 06/30/2023
ELECTRICAL
STATE OF CALIFORNIA

SOLAR TECHNOLOGIES
CLEAN ENERGY SOLUTIONS
23 LAS COLINAS LN, SUITE NO. 106
SAN JOSE, CA 95119
JOB NUMBER: 11866

#	DATE	ISSUE
A	29-JUL-22	FOR SUBMITTAL
B	24-FEB-23	FOR RE-SUBMITTAL
C	20-MAR-23	FOR RE-SUBMITTAL

REVISIONS

PAPER SIZE:	ARCH D
DRAWN BY:	HK, AJ
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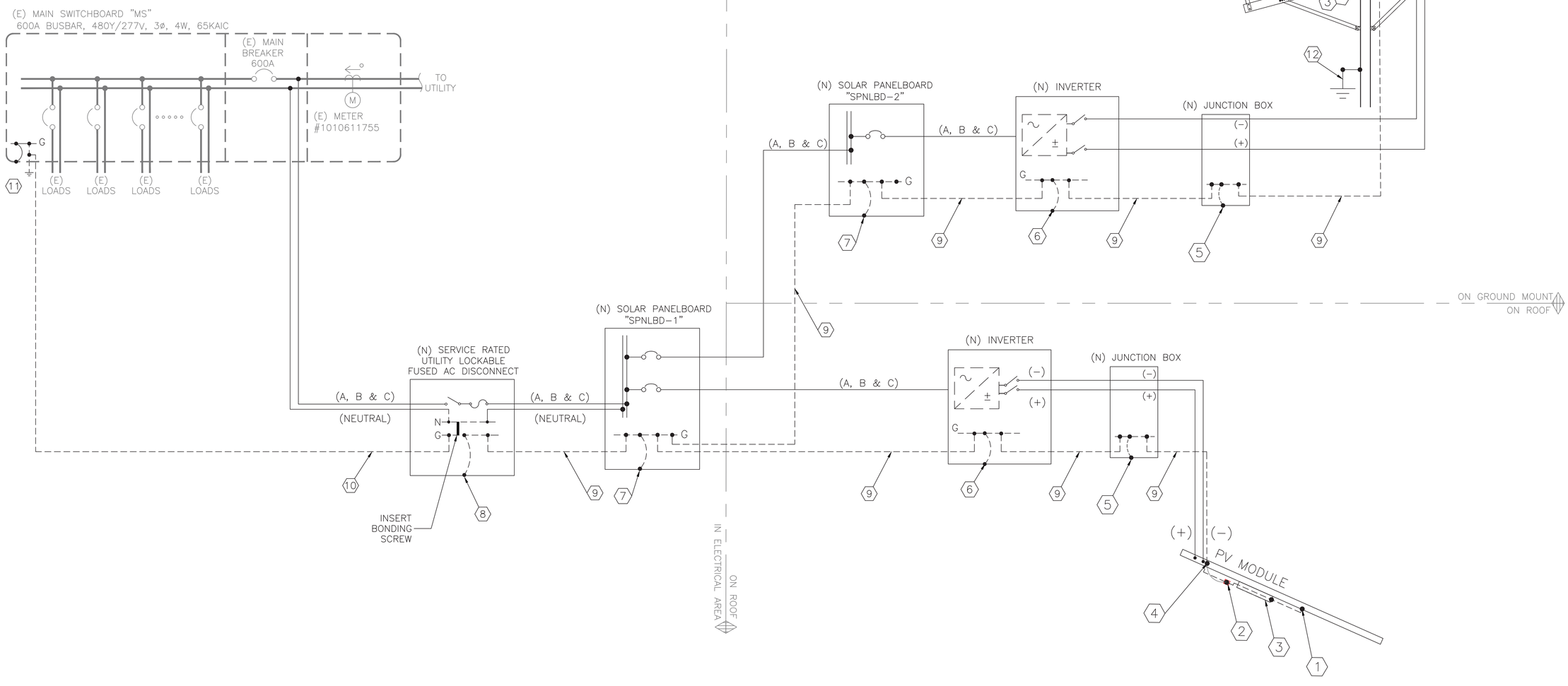
SCALE: NTS

SHEET TITLE: ROOFTOP SINGLE LINE DIAGRAM

SHEET #: E.2.2



KEYED NOTE	CONNECTION	COMPONENT
1	PV MODULE TO GROUNDING LUG	659 MODULES, TRINA SOLAR TSM–495DEG18MC.20(II) (495W)
2	RAPID SHUTDOWN TO GROUNDING LUG	156 RAPID SHUTDOWN APS RSD–D–20
3	RACKING TO GROUNDING LUG	6AWG BARE COPPER
4	EGC & BONDING JUMPER FROM GROUNDED TO OTHER UNGROUNDED SUB–ARRAYS	
5	JUNCTION BOX TO GROUNDING LUG	
6	INVERTER TO GROUNDING LUG	(02) CPS SCA50KTL–DO/US–480 [480V] (50KW), (05) CPS SCA36KTL–DO/US–480 [480V] (36KW) INVERTERS
7	SOLAR PANELBOARD TO GROUNDING LUG	(1) SOLAR PANELBOARD "SPNLBD–1" 600A BUS, 480/277V, 3Ø, 4W, (1) SOLAR PANELBOARD "SPNLBD–2" 225A BUS, 480/277V, 3Ø, 4W,
8	SERVICE RATED UTILITY LOCKABLE AC DISCONNECT TO GROUNDING LUG	(1) GE TH3366R AC DISCONNECT 600A, FUSE: 450A,
9	EGC RUNNING WITH CURRENT CARRYING CONDUCTORS	
10	GEC RUNNING WITH CURRENT CARRYING CONDUCTORS	
11	EXISTING GROUNDING SYSTEM	
12	NEW GROUNDING ROD	5/8"X 8' LONG COPPER CLAD GROUND ROD, CONNECTED WITH #6 AWG CU–BARE GEC

PROJECT TITLE:

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SCALE: NTS

SHEET TITLE: GROUNDING SINGLE LINE DIAGRAM

SHEET #: E.3.1

TABLE B1: DC OUTPUT CIRCUIT CONDUCTOR AND CONDUIT IDENTIFICATION

INITIAL CONDUCTOR LOCATION	FINAL CONDUCTOR LOCATION	# STRINGS IN COMBINER BOX IN PARALLEL	RACEWAY NAME	CIRCUIT ID	RACEWAY SIZE OR DIRECT BURIAL	# OF PARALLEL CIRCUITS	# OF CONDUCTORS IN RACEWAY OR BURIAL BUNDLE	% OF MAX CONDUIT FILL	310.15(B)(2)(a) Temp Correction Factor	310.15(B)(3)(a) Fill Adjustment Factor	690.8 (A)(1) and (B)(1) Adjustment Factors	Isc	DESIGN LINE CURRENT	TERMINAL TEMP LIMIT	TEMP LIMIT AMPACITY 30C AMB	OCPD	MINIMUM CORRECTED AMPACITY	CONDUCTOR CORRECTED AMPACITY	ONE WAY LENGTH (FT)	VOLTAGE DROP %	CURRENT CARRYING CONDUCTOR TYPE AND SIZE (AWG)	EQUIPMENT GROUNDING CONDUCTOR SIZE (AWG)	NOTES - FREE AIR WHERE PV WIRE IS PROTECTED FROM PHYSICAL DAMAGE.
ST-X	JB-X	1	DC0.X	DC0.X-1	3/4" EMT	1	3	52%	1.04	1.00	1.56	13	20	Cu-90C	30	N/A	16	31	175	1.52%	2 - #12 AWG, CU-PV WIRE (1000V)	1 - #10 AWG, CU-THWN-2	FREE-AIR OR 3/4" EMT MIN
JB-X	INV-X	1	DC1.1	DC1.1-1	3/4" EMT	1	3	52%	1.04	1.00	1.56	13	20	Cu-90C	30	20	16	31	150	1.30%	2 - #12 AWG, CU-PV WIRE (1000V)	1 - #10 AWG, CU-THWN-2	FREE-AIR OR 3/4" EMT MIN
JB-X	INV-X	1	DC1.2	DC1.2-1	1" EMT	1	5	58%	1.04	0.80	1.56	13	20	Cu-90C	30	20	16	25	150	1.30%	2 - #12 AWG, CU-PV WIRE (1000V)	1 - #10 AWG, CU-THWN-2	FREE-AIR OR 3/4" EMT MIN
JB-X	INV-X	1		DC1.2-2								13	20		30	20	16	25		1.30%	2 - #12 AWG, CU-PV WIRE (1000V)		FREE-AIR OR 3/4" EMT MIN
JB-X	INV-X	1	DC1.3	DC1.3-1	1" EMT	1	7	83%	1.04	0.80	1.56	13	20	Cu-90C	30	20	16	25	150	1.30%	2 - #12 AWG, CU-PV WIRE (1000V)	1 - #10 AWG, CU-THWN-2	FREE-AIR OR 3/4" EMT MIN
JB-X	INV-X	1		DC1.3-2								13	20		30	20	16	25		1.30%	2 - #12 AWG, CU-PV WIRE (1000V)		FREE-AIR OR 3/4" EMT MIN
JB-X	INV-X	1		DC1.3-3								13	20		30	20	16	25		1.30%	2 - #12 AWG, CU-PV WIRE (1000V)		FREE-AIR OR 3/4" EMT MIN
JB-X	INV-X	1	DC1.4	DC1.4-1	1-1/4" EMT	1	9	63%	1.04	0.70	1.56	13	20	Cu-90C	30	20	16	22	150	1.30%	2 - #12 AWG, CU-PV WIRE (1000V)	1 - #10 AWG, CU-THWN-2	FREE-AIR OR 3/4" EMT MIN
JB-X	INV-X	1		DC1.4-2								13	20		30	20	16	22		1.30%	2 - #12 AWG, CU-PV WIRE (1000V)		FREE-AIR OR 3/4" EMT MIN
JB-X	INV-X	1		DC1.4-3								13	20		30	20	16	22		1.30%	2 - #12 AWG, CU-PV WIRE (1000V)		FREE-AIR OR 3/4" EMT MIN
JB-X	INV-X	1		DC1.4-4								13	20		30	20	16	22		1.30%	2 - #12 AWG, CU-PV WIRE (1000V)		FREE-AIR OR 3/4" EMT MIN

TABLE C1: AC OUTPUT CIRCUIT CONDUCTOR AND CONDUIT IDENTIFICATION

INITIAL CONDUCTOR LOCATION	FINAL CONDUCTOR LOCATION	RACEWAY NAME	CIRCUIT ID	RACEWAY SIZE OR DIRECT BURIAL	# OF PARALLEL CIRCUITS	# OF CONDUCTORS IN RACEWAY OR BURIAL BUNDLE	% OF MAX CONDUIT FILL	310.15(B)(2)(a) Temp Correction Factor	310.15(B)(3)(a) Fill Adjustment Factor	690.8 (A)(3) Adjustment Factor	OPERATING LINE CURRENT	DESIGN LINE CURRENT	TERMINAL TEMP LIMIT	TEMP LIMIT AMPACITY 30C AMB	OCPD	MINIMUM CORRECTED AMPACITY	CONDUCTOR CORRECTED AMPACITY	ONE WAY LENGTH (FT)	VOLTAGE DROP %	CURRENT CARRYING CONDUCTOR TYPE AND SIZE	NEUTRAL WIRE TYPE AND SIZE	GROUNDING CONDUCTOR SIZE (AWG)	NOTES
INV-GM1	SPNLBD-2	AC1.1	AC1.1-1	1" PVC SCH 40	1	4	57%	1.04	1.00	1.25	44	54	Cu-75C	65	70	54	78	110	0.85%	3 - #6 AWG, CU-THWN-2	0 - #NO NEUTRAL	1 - #8 AWG, CU-THWN-2	EGC
INV-GM2	SPNLBD-2	AC1.2	AC1.2-1	1" PVC SCH 40	1	4	57%	1.04	1.00	1.25	44	54	Cu-75C	65	70	54	78	100	0.77%	3 - #6 AWG, CU-THWN-2	0 - #NO NEUTRAL	1 - #8 AWG, CU-THWN-2	EGC
INV-GM3	SPNLBD-1	AC1.3	AC1.3-1	1-1/4" PVC SCH 40	1	4	59%	1.04	1.00	1.25	72	90	Cu-75C	100	110	90	120	180	1.15%	3 - #3 AWG, CU-THWN-2	0 - #NO NEUTRAL	1 - #6 AWG, CU-THWN-2	EGC
INV-R1	SPNLBD-1	AC1.4	AC1.4-1	1" EMT	1	4	82%	1.04	1.00	1.25	60	75	Cu-75C	85	90	75	99	160	1.07%	3 - #4 AWG, CU-THWN-2	0 - #NO NEUTRAL	1 - #8 AWG, CU-THWN-2	EGC
INV-R2	SPNLBD-1	AC1.5	AC1.5-1	1" EMT	1	4	82%	1.04	1.00	1.25	60	75	Cu-75C	85	90	75	99	160	1.07%	3 - #4 AWG, CU-THWN-2	0 - #NO NEUTRAL	1 - #8 AWG, CU-THWN-2	EGC
INV-R3	SPNLBD-2	AC1.6	AC1.6-1	3/4" EMT	1	4	89%	1.04	1.00	1.25	44	54	Cu-75C	65	70	54	78	10	0.08%	3 - #6 AWG, CU-THWN-2	0 - #NO NEUTRAL	1 - #8 AWG, CU-THWN-2	EGC
SPNLBD-2	SPNLBD-1	AC1.7	AC1.7-1	2" PVC SCH 40	1	4	55%	1.04	1.00	1.25	131	163	Cu-75C	175	200	163	203	200	0.91%	3 - #2/0 AWG, CU-THWN-2	0 - #NO NEUTRAL	1 - #6 AWG, CU-THWN-2	EGC
SPNLBD-1	ACDS-1	AC1.8	AC1.8-1	2-1/2" EMT	2	5	60%	1.04	1.00	1.25	323	404	Cu-75C	460	450	404	541	10	0.04%	3 - #4/0 AWG, CU-THWN-2	1 - #4/0 AWG, CU-THWN-2	1 - #2 AWG, CU-THWN-2	EGC
ACDS-1	MS	AC1.9	AC1.9-1	2-1/2" EMT	2	5	63%	1.04	1.00	1.25	323	404	Cu-75C	460	N/A	404	541	10	0.04%	3 - #4/0 AWG, CU-THWN-2	1 - #4/0 AWG, CU-THWN-2	1 - #1/0 AWG, CU-THWN-2	GEC

DC CONDUITS	DC VOLTAGE DROP	DESIGN LINE CURRENT	MINIMUM CORRECTED AMPACITY	CONDUIT FILL	CONDUCTOR CORRECTED AMPACITY
CONDUIT NAME	(2*ONE WAY LENGTH*RESISTANCE PER 1000FT*PHASE CURRENT Imp/1000 FT/STRING VOLTAGE/# WIRES PER PHASE)= VOLTAGE DROP IN CONDUIT	ISC*1.56	ISC*1.25	100*(TOTAL CONDUCTOR AREA)/((CONDUIT AREA)*(PERCENT ALLOWED FILL)) = PERCENT MAXIMUM FILL	CONDUCTOR AMPACITY AT 30C * CONDUCTOR PER PHASE * TEMP. CORRECTION FACTOR * FILL ADJUSTMENT FACTOR = CONDUCTOR CORRECTED AMPACITY
DC0.X	(2 * 175 * 1.98 * 11.5102224/ 1000FT /728.01 / 1) = 1.52%	(12.9 * 1.56) = 20.16	(12.9 * 1.25) = 16.13	100 * 0.11 / (0.53 * 0.4) = 52%	(30 * 1 * 1.04 * 1) = 31.2

	INV-GM1	INV-GM2	INV-GM3	INV-R1	INV-R2	INV-R3
TOTAL AC VOLTAGE DROP	1.83%	1.75%	1.22%	1.14%	1.14%	1.06%
TOTAL DC VOLTAGE DROP	2.82%					
TOTAL VOLTAGE DROP	4.64%	4.57%	4.04%	3.96%	3.96%	3.87%

AC CONDUITS (For 3-Phase system)	3 PHASE AC VOLTAGE DROP	DESIGN LINE CURRENT	MINIMUM CORRECTED AMPACITY	CONDUIT FILL	CONDUCTOR CORRECTED AMPACITY
CONDUIT NAME	1.732*ONE WAY LENGTH*RESISTANCE PER 1000FT*PHASE CURRENT/1000 FT/OPERATING VOLTAGE/# WIRES PER PHASE) = VOLTAGE DROP IN CONDUIT	OPERATING CURRENT*1.25	OPERATING CURRENT*1.25	100*(TOTAL CONDUCTOR AREA)/((CONDUIT AREA)*(PERCENT ALLOWED FILL)) = PERCENT MAXIMUM FILL	CONDUCTOR AMPACITY AT 30C * CONDUCTOR PER PHASE * TEMP. CORRECTION FACTOR * FILL ADJUSTMENT FACTOR = CONDUCTOR CORRECTED AMPACITY
AC1.1	(1.732*110 * 0.491 * 44 / 1000FT / 480 / 1)=0.85%	(43.5 * 1.25) = 54.38	(43.5 * 1.25) = 54.38	100 * 0.19 / (0.83 * 0.4) = 57%	(75*1*1.04*1) = 78

STRING VOC CALCULATION - TSM-495DEG18MC.20(II)	
PANEL VOC, 25C	51.3
NUMBER IN SERIES	18
STRING VOC STC	923.4
DESIGN LOW, (ASHRAE) C	-1
TEMP COEFFICIENT, %/C	-0.25%
PANEL VOC * NUMBER IN SERIES * (1 - (25 - DESIGN LOW TEMP)* VOC TEMP COEFFICIENT) = MAX VOC AT DESIGN LOW	
(51.3 * 18 * (1-(25-(-1)* (-0.0025)) = 983.42	

STRING VOC CALCULATION - TSM-495DEG18MC.20(II)	
PANEL VOC, 25C	51.3
NUMBER IN SERIES	17
STRING VOC STC	872.1
DESIGN LOW, (ASHRAE) C	-1
TEMP COEFFICIENT, %/C	-0.25%
PANEL VOC * NUMBER IN SERIES * (1 - (25 - DESIGN LOW TEMP)* VOC TEMP COEFFICIENT) = MAX VOC AT DESIGN LOW	
(51.3 * 17 * (1-(25-(-1)* (-0.0025)) = 928.79	

STRING VOC CALCULATION - TSM-495DEG18MC.20(II)	
PANEL VOC, 25C	51.3
NUMBER IN SERIES	14
STRING VOC STC	718.2
DESIGN LOW, (ASHRAE) C	-1
TEMP COEFFICIENT, %/C	-0.25%
PANEL VOC * NUMBER IN SERIES * (1 - (25 - DESIGN LOW TEMP)* VOC TEMP COEFFICIENT) = MAX VOC AT DESIGN LOW	
(51.3 * 14 * (1-(25-(-1)* (-0.0025)) = 764.88	

STRING VOC CALCULATION - TSM-495DEG18MC.20(II)	
PANEL VOC, 25C	51.3
NUMBER IN SERIES	13
STRING VOC STC	666.9
DESIGN LOW, (ASHRAE) C	-1
TEMP COEFFICIENT, %/C	-0.25%
PANEL VOC * NUMBER IN SERIES * (1 - (25 - DESIGN LOW TEMP)* VOC TEMP COEFFICIENT) = MAX VOC AT DESIGN LOW	
(51.3 * 13 * (1-(25-(-1)* (-0.0025)) = 710.25	

WIRING METHOD

INVERTER WIRING (AC1.5)

OUTPUT OF CPS SCA50KTL-DO/US-480 [480V] (50KW) INVERTER

125% X 60.2A (INVERTER OUTPUT CURRENT FROM SPEC SHEET) = 1.25 X 60.2A = 75.25A (CONTINUOUS CURRENT)
125% X 60.2A = 1.25 X 60.2A = 75.25A ≤ 80A (OVERCURRENT DEVICE)

AMBIENT SITE TEMPERATURE = 25°C

CONDUCTORS ON THE ROOF THAT ARE INSTALLED IN RACEWAYS EXPOSED TO DIRECT SUNLIGHT ARE DERATED IN ACCORDANCE WITH CEC 310.15(B)(3)(c) AND TABLE 310.15(B)(3)(c) BASED ON THE HEIGHT OF THE CONDUIT ABOVE THE ROOF (N/A)
DESIGN CONDUIT TEMPERATURE = 25°C

ADJUSTMENT FACTOR FOR CONDUIT FILL (CEC TABLE 310.15(B)(3)(a)) = 1.0

AMBIENT TEMPERATURE CORRECTION FACTOR BASED ON 30°C (TABLE 310.15(B)(2)(a)) = 21°C-25°C @ 90°C
TEMPERATURE RATING OF CONDUCTOR IS 1.04
WITH 80A MINIMUM BREAKER, SELECT #4 AWG, CU-THWN-2 (90°C COLUMN)

FROM TABLE 310.15(B)(16), AMPACITY OF CONDUCTOR AT 90° IS 95A x 1.04 TEMP. DERATE FACTOR = 99A

THIS IS GREATER THAN CONTINUOUS CURRENT OF 75.25A – OK
CAN BE PROTECTED BY A 90A BREAKER – OK

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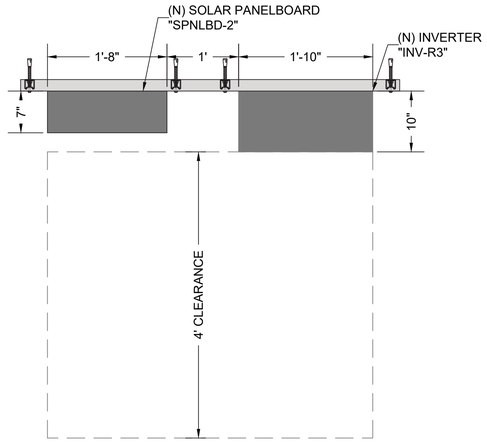
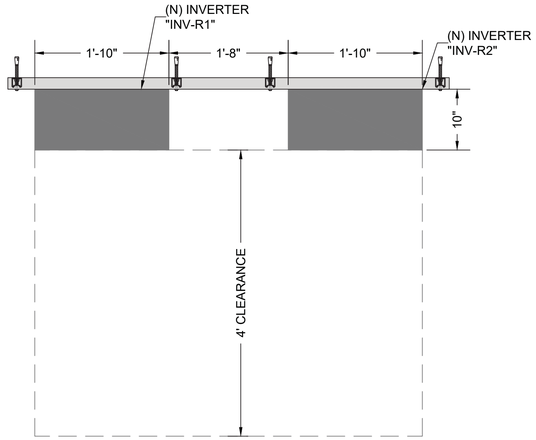
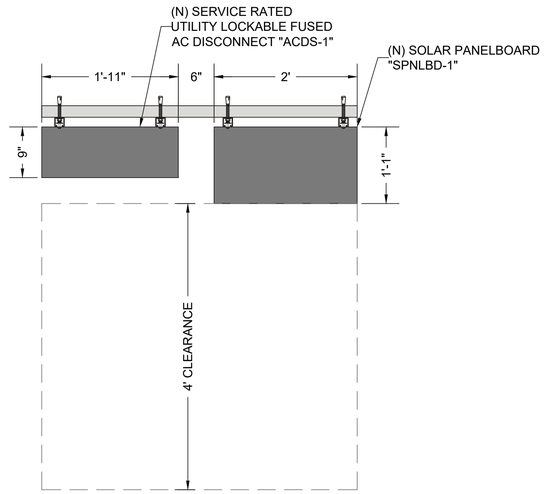
SHEET #: E.4.1



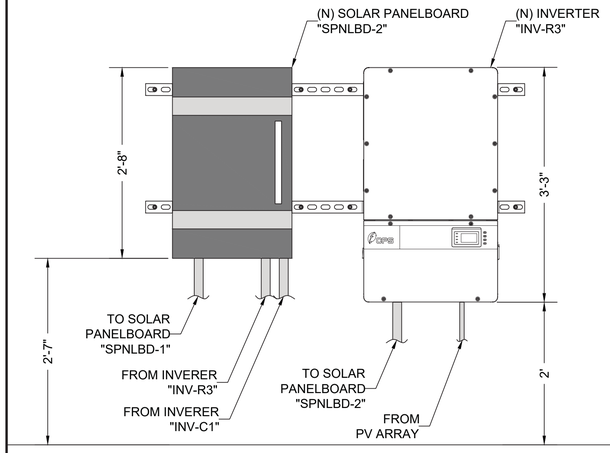
A EQUIPMENT LAYOUT PLAN (ON MAINTENANCE SHED WALL)
SCALE: 1"=1'-0"



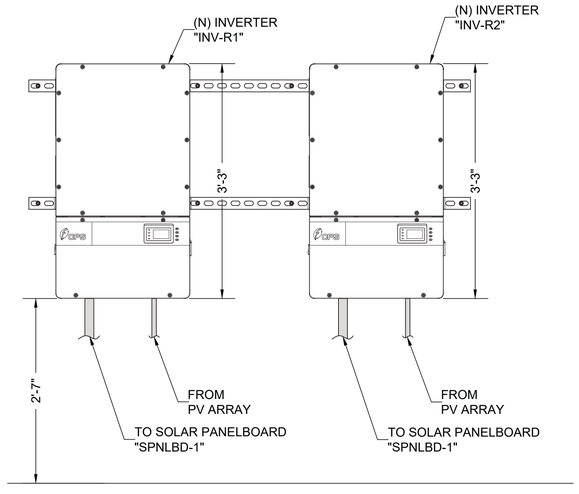
C EQUIPMENT LAYOUT PLAN (ON MAINTENANCE BUILDING WALL)
SCALE: 1"=1'-0"



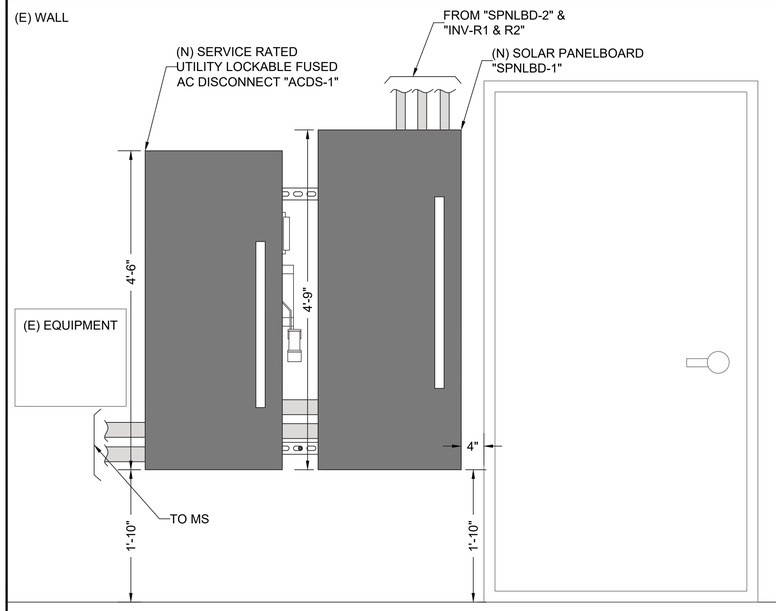
E EQUIPMENT LAYOUT PLAN (ON MAINTENANCE BUILDING WALL)
SCALE: 1"=1'-0"



B EQUIPMENT ELEVATION (ON MAINTENANCE SHED WALL)
SCALE: 1"=1'-0"



D EQUIPMENT ELEVATION (ON MAINTENANCE BUILDING WALL)
SCALE: 1"=1'-0"



F EQUIPMENT ELEVATION (ON MAINTENANCE BUILDING WALL)
SCALE: 1"=1'-0"

PROJECT TITLE:

CORDEVALLE GOLF COURSE
1005 HIGHLAND AVENUE,
SAN MARTIN, CA 95046
APN: 77920006

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REGISTERED PROFESSIONAL ENGINEER
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Electrical
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SOLAR TECHNOLOGIES
CLEAN ENERGY SOLUTIONS
23 LAS COLINAS LN. SUITE NO. 106
SAN JOSE, CA 95119
JOB NUMBER: 11866

REVISIONS		
	DATE	ISSUE
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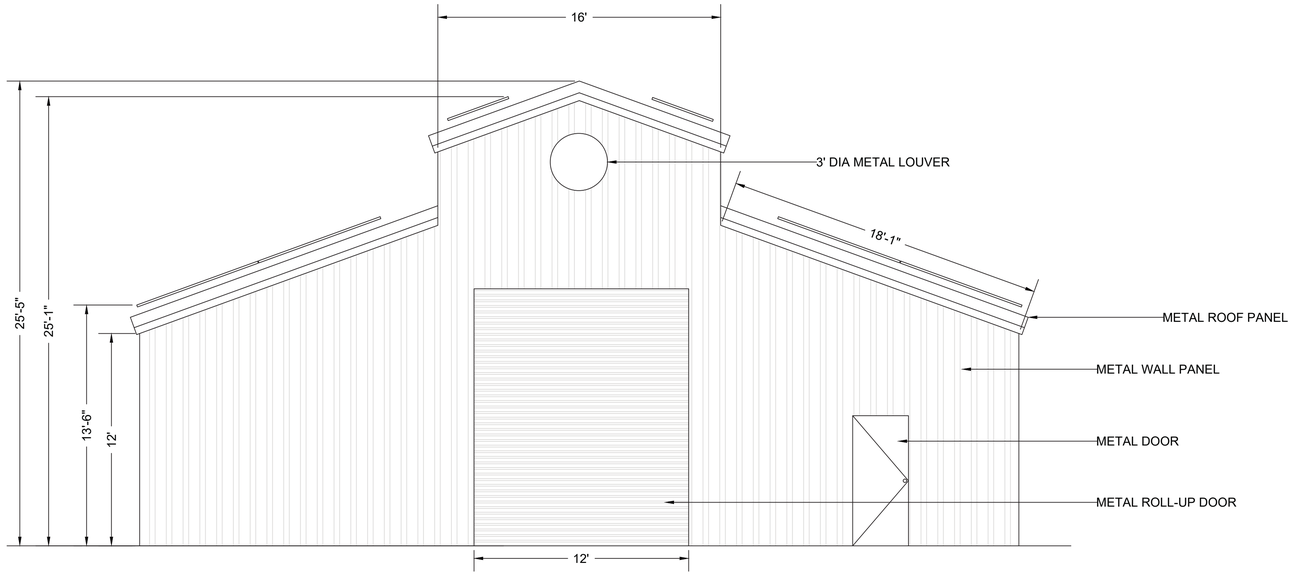
B	24-FEB-23	FOR RE-SUBMITTAL
C	20-MAR-23	FOR RE-SUBMITTAL

PAPER SIZE:	ARCH D
DRAWN BY:	HK, AJ
CHECKED BY:	VJ
APPROVED BY:	JHA

SCALE:
1"= 1'-0"

SHEET TITLE:
EQUIPMENT LAYOUT PLAN

SHEET #:
E.5.1

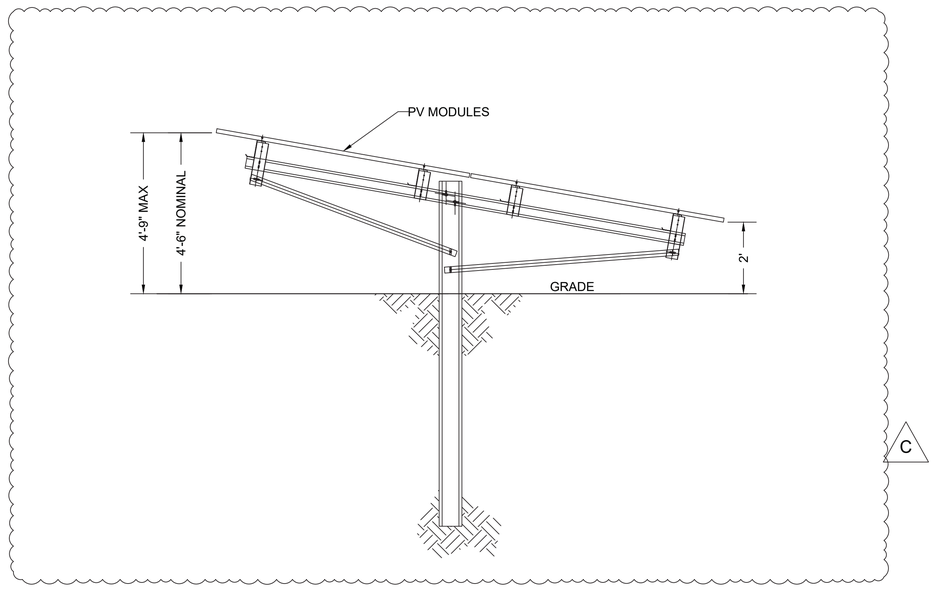


A MAINTENANCE BUILDING EAST ELEVATION
SCALE: 1"=4'-0"

0 4' 8'

B STORAGE BUILDING SOUTH ELEVATION
SCALE: 1"=4'-0"

0 4' 8'



C GROUND MOUNT SIDE ELEVATION
SCALE: 1"=2'-0"

0 2' 4'

PROJECT TITLE:

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1005 HIGHLAND AVENUE,
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APPROVED BY:	JHA

SCALE:
1"= 1'-0"

SHEET TITLE:
BUILDING ELEVATIONS

SHEET #:
E.5.2

6 5 4 3 2 1

D C B A

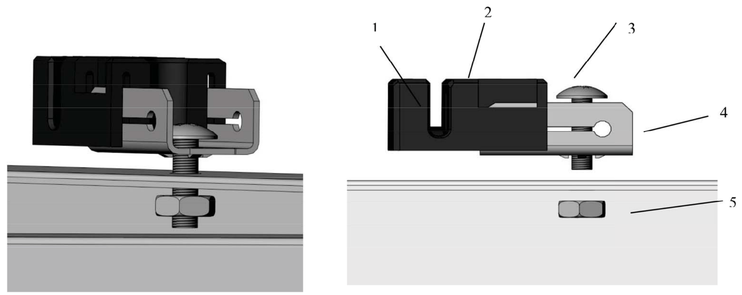
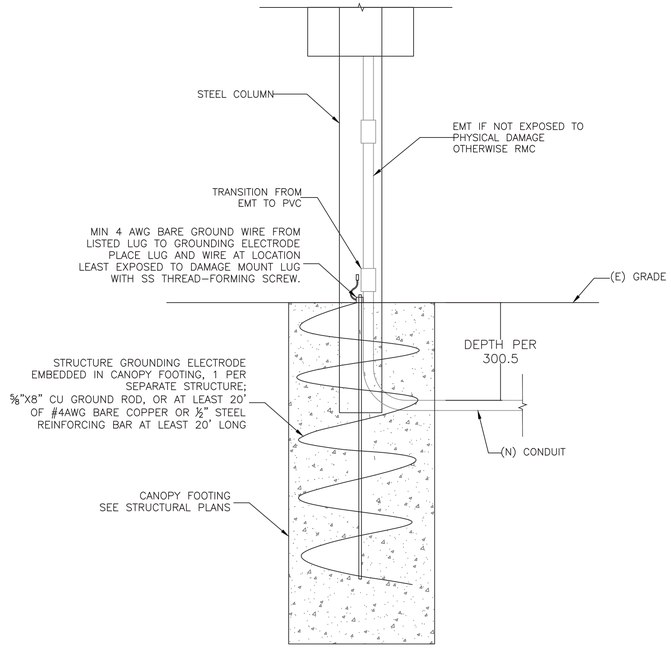


Figure 5. Tyco grounding bolt # 1954381-2
(Not applicable for TRINAMOUNT module series)

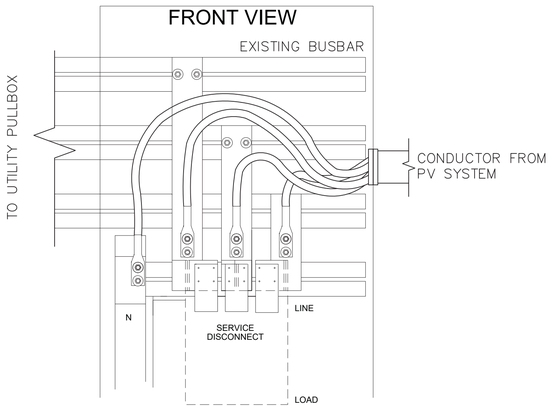
1) Wire slot (available for 0.006 to 0.025in^2 cable)
2) Slider
3) Bolt
4) Base
5) Nut

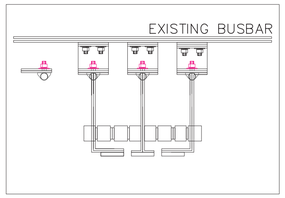
- Tyco grounding hardware comes in a package that includes the grounding bolt, mounting and grounding hex nut.
- Electrical contact is made by penetrating the anodized coating of the aluminum frame, and tightening the mounting hex nut (come with the star washer) to the proper torque of 25lbf.in.
- Grounding wire size (6 to 12 AWG solid bare copper) should be selected and installed underneath the wire binding bolt.
- The wire binding bolt should be tightened to the proper torque of 45lbf.in.
- The Tyco grounding bolt is only listed for use with 6 to 12 AWG bare solid copper wire.

A MODULE GROUNDING DETAIL
SCALE: NTS



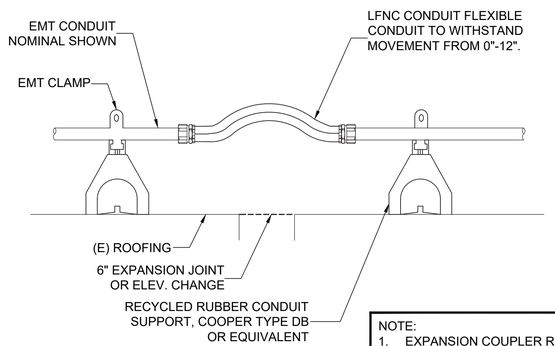
B CANOPY GROUNDING AND CONDUIT TRANSITION DETAIL
SCALE: NTS





NOTE:
1. POCC MADE ON THE LINE SIDE OF MAIN SERVICE DISCONNECT AND LOAD SIDE OF UTILITY CURRENT TRANSFORMERS.
2. USE EXISTING BOLTS OR EXISTING HOLES IN BUS BAR. USE NSI GL SERIES LUGS WITH PEEP HOLE FOR INSPECTION OR EQUIVALENT.
3. GRADE 5 HARDWARE SHALL BE USED. CRIMP LUG BARRELS PER MANUFACTURER RECOMMENDATIONS.
4. TORQUE BOLTS TO 375 INCH POUNDS.
5. THE DESIGN OF THE TAPS APPLIES NEC BENDING SPACES AS INDICATED IN TABLES 312.6(A) & 312.6(B)

C POCC DETAIL
SCALE: NTS



D CONDUIT DETAIL AT EXPANSION JOINT
SCALE: NTS

NOTE:
1. EXPANSION COUPLER REQUIRED FOR ALL CONDUITS OVER 100'

CORDEVALLE GOLF COURSE
SOLAR TECHNOLOGIES

Available Fault Current Calculation

Ver: 2016
jmp1dls@comcast.net

Utility Fault Current 65,000 amperes
I = kVA x 1000 = trans. FLA
E x 1.732

I_{sca} = **trans. FLA x 100 x PF** / **transformer Z**
I_{sca} = ampere short-circuit current RMS symmetrical.

kVA = 0
E = 480
trans. FLA = 0
PF =
Z =
I_{sca} = 0 amperes

Point to Point Method
Three Phase 480/277
Length (distance) FEET
(ASC)
'f ' factor = 1.732 x L x I / N x C x E L-N
conductors per phase
Phase conductor constant
Volt Line to Line
Neutral conductor constant
Volt Line to Neutral
Multiplier **M = 1 / 1 + f**
Line to Line
Line to Neutral
Aluminum in Nonmetallic Raceway

L = 0
I_{sca} = 65,000
N = 2
C = 28,779 **Phase Conductor** 1000 kcmil
E L-L = **480** Volt
f = 0.000
C = 22,796 **Neutral Conductor** 350 kcmil
E L-N = **277** Volt
f = 0.000
M = 1.000
M = 1.000

Fault Current at Service Equipment
I_{sca} x M = fault current at terminals of main disconnect **L-L** = **65,000 amperes**
I_{sca} x M = fault current at terminals of main disconnect **L-N** = **65,000 amperes**

Fault Current from MS to "SPNLBD-1"
Copper in Metal Raceway
Three Phase
Three Phase Feeder
Length (distance) L = 20
(ASC) I_{sca} = 65,000 Phase 65,000 Neutral
'f ' factor = 1.732 x L x I / N x C x E L-N
conductors per phase N = 2
Phase conductor constant C = 15,082 **Phase Conductor** 4/0
Volt Line to Line E L-L = **480** Volt
f = 0.156
Neutral conductor constant C = 12,004 **Neutral Conductor** 1/0
Volt Line to Neutral E L-N = **277** Volt
Multiplier f = 0.339
M = 1 / 1 + f
Line to Line M = 0.865
Line to Neutral M = 0.747

Isca x M = fault current at terminal of the panel L-L = 56,252 amperes
Isca x M = fault current at terminal of the panel L-N = 48,559 amperes
Calculation does not include motor contribution

Branch Circuit Fault from "SPNLBD-1" to "SPNLBD-2"
Copper in Metal Raceway
Three Phase
Three Phase Branch
Length (distance) L = 200
(ASC) I_{sca} = 56,252 Phase 48,559 Neutral
'f ' factor = 1.732 x L x I / N x C x E L-N
conductors per phase N = 1
Phase conductor constant C = 10,755 **Phase Conductor** 2/0
Volt Line to Line E L-L = **480** Volt
f = 3.775
Neutral conductor constant C = 5,378 **Neutral Conductor** AWG
Volt Line to Neutral E L-N = **277** Volt
Multiplier f = 11.292
M = 1 / 1 + f
Line to Line M = 0.209
Line to Neutral M = 0.081

Isca x M = fault current at terminal of the panel L-L = 11,782 amperes
Isca x M = fault current at terminal of the panel L-N = 3,950 amperes
Calculation does not include motor contribution

E FAULT CURRENT CALCULATION-1
SCALE: NTS

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CHECKED BY: VJ
APPROVED BY: JHA

SCALE: NTS

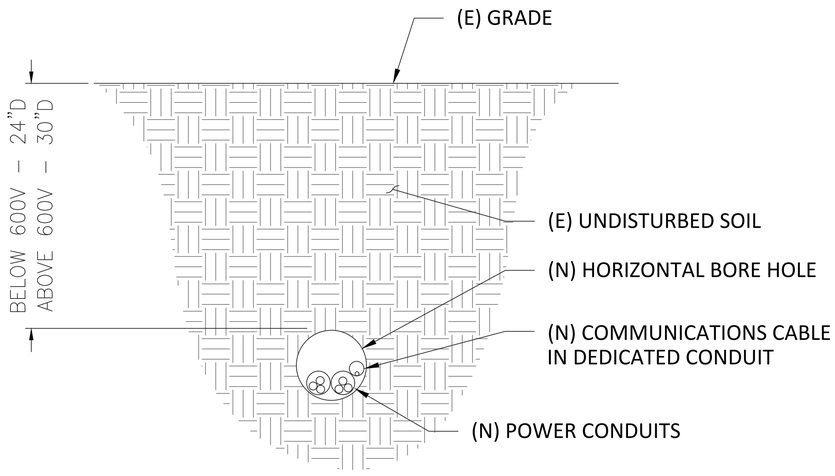
SHEET TITLE:
ELECTRICAL DETAILS-1

SHEET #:
E.6.1

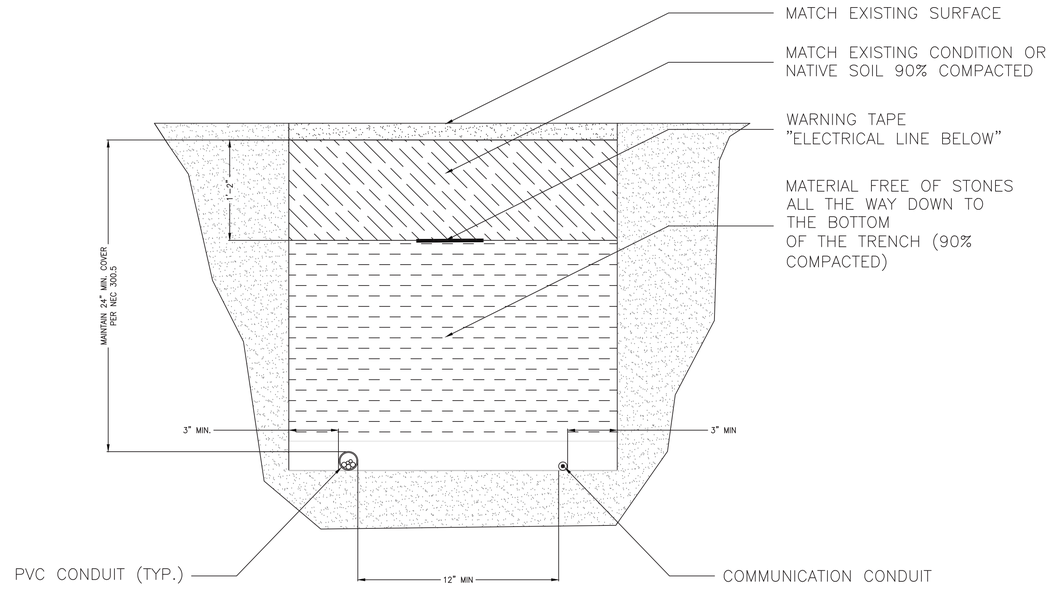
6 5 4 3 2 1
D C B A

HORIZONTAL BORING NOTES:

1. SLURRY BACKFILL ALL THE BORE PITS AND POTHOLES UNDER PAVEMENT AND SIDEWALKS.
2. CONDUIT SHALL BE HDPE.
3. A SINGLE BORE CASING SHALL NOT HAVE MORE THAN 2 POWER CONDUITS.



A TYPICAL BORE DETAIL
SCALE: NTS



NOTE: KEEP MIN. 3" SEPARATION AMONG ALL POWER CONDUITS & 12" FROM DAS TO POWER CONDUIT.

B TYPICAL TRENCH DETAIL
SCALE: NTS

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APPROVED BY:	JHA

SCALE: NTS

SHEET TITLE:
ELECTRICAL DETAILS–2

SHEET #:
E.6.2

1 EMT / CONDUIT RACEWAYS, JUNCTION BOXES

*(REFLECTIVE MATERIAL REQUIRED)

WARNING: PHOTOVOLTAIC POWER SOURCE

PER NEC 690.31(G)(3) & (4)

WARNING

PHOTOVOLTAIC POWER SOURCE

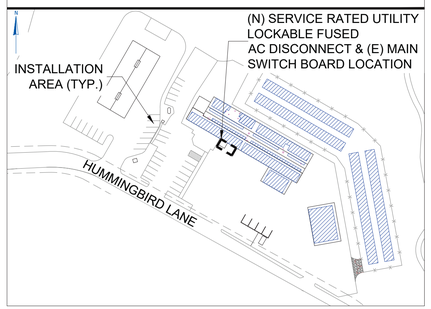
DO NOT REMOVE UNLESS REPLACED IN EXACT LOCATION - PV POWER CIRCUIT DIRECTLY BELOW

PER NEC 690.31(G)(1) - WHERE CIRCUITS ARE EMBEDDED IN BUILT-UP, LAMINATE, OR MEMBRANE ROOFING MATERIALS IN ROOF AREAS NOT COVERED BY PV MODULES AND ASSOCIATED EQUIPMENT.

2 BUILDING / STRUCTURE

CAUTION

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



PER NEC 690.56(B) & 705.10

3 PHOTOVOLTAIC SYSTEM AC DISCONNECT

MAIN PHOTOVOLTAIC SYSTEM AC DISCONNECT

PER NEC 690.13(B)

WARNING

ELECTRICAL SHOCK HAZARD

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

PER NEC 690.13(B)

PHOTOVOLTAIC AC DISCONNECT

RATED AC OUTPUT CURRENT: 323 A

NOMINAL OPERATING AC VOLTAGE: 480V

PER NEC 690.54

WARNING

POWER SOURCE OUTPUT CONNECTION

DO NOT RELOCATE THIS OVERCURRENT DEVICE.

PER NEC 705.12(B)(2)(3)(b)

WARNING

DUAL POWER SOURCE

SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

PER NEC 705.12(B)(3)

SOLAR POWER SYSTEM EQUIPPED WITH RAPID SHUTDOWN

PER NEC 690.56(C)(3)

4 SOLAR PANELBOARD/SWITCHBOARD

WARNING

THIS EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE SHALL NOT EXCEED AMPACITY OF BUSBAR.

PER NEC 705.12(B)(2)(3)(c)

DEDICATED PHOTOVOLTAIC SYSTEM COMBINER PANEL NO LOAD SHALL BE ADDED TO THIS PANEL

PER NEC 705.12(B)(2)(3)(c)

5 MAIN SERVICE DISCONNECT

WARNING

ARC-FLASH AND SHOCK HAZARD

APPROPRIATE PPE REQUIRED

PER NEC ARTICLE 110.16(A) AND NFPA 70E ARTICLE 130.5(C)(1),(2),(3)

LABELING REQUIREMENTS FOR ARTICLE 110.16, 690 & 705.12

NEC 110.21 B) Field-Applied Hazard Markings.

Where caution, warning, or danger signs or labels are required by this Code, the labels shall meet the following requirements:

1) The marking shall warn of the hazards using effective words, colors, symbols, or any combination thereof.
   Informational Note: ANSI Z535.4-2011, Product Safety Signs and Labels, provides guidelines for suitable font sizes, words, colors, symbols, and location requirements for labels.
2) The label shall be permanently affixed to the equipment or wiring method and shall not be handwritten.
   Exception to (2): Portions of labels or markings that are variable, or that could be subject to changes, shall be permitted to be handwritten and shall be legible.
3) The label shall be of sufficient durability to withstand the environment involved.
   Informational Note: ANSI Z535.4-2011, Product Safety Signs and Labels, provides guidelines for the design and durability of safety signs and labels for application to electrical equipment.

NEC 110.16 Arc Flash:

(A) General -
Electrical equipment, such as switchboards, switchgear, panelboards, industrial control panels, meter socket enclosures, and motor control centers, that is in other than dwelling units, and is likely to require examination, adjustment, servicing, or maintenance while energized, shall be field or factory marked to warn qualified persons of potential electric arc flash hazards. The marking shall meet the requirements in 110.21(B) and shall be located so as to be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment.

(B) Service Equipment
In other than dwelling units, in addition to the requirements in (A), a permanent label shall be field or factory applied to service equipment rated 1200 amps or more. The label shall meet the requirements of 110.21(B) and contain the following information.

1. Nominal system voltage
2. Available fault current at the service overcurrent protective devices.
3. The clearing time of service overcurrent protective devices based on the available fault current at the service equipment.
4. The date the label was applied.

Exception: Service equipment labeling shall not be required if an arc flash label is applied in accordance with acceptable industry practice.

NEC 690.13(B)
Each PV system disconnecting means shall plainly indicate whether in the open (off) or closed (on) position and be permanently marked "PV SYSTEM DISCONNECT" or equivalent. Additional markings shall be permitted based upon the specific system configuration. For PV system disconnecting means where the line and load terminals may be energized in the open position, the device shall be marked with the following words or equivalent.

NEC 690.31(G)(1)
Where circuits are embedded in build up, laminate or membrane roofing materials not covered by PV modules and associated equipment, the location of the circuits shall be clearly marked.

NEC 690.31(G)(3) & (4)
PV dc system circuit labels shall appear on every section of the wiring system that is separated by enclosures, walls, partitions, ceilings, or floors. Spacing between labels or markings, or between a label and a marking, shall not be more than 3 m (10 ft). Labels required in this section shall be suitable for the environment where they are installed.

NEC 690.53
A permanent label for the dc PV power source indicating items (1) through (3) shall be provided by the installer at dc PV system disconnecting means and at each dc equipment disconnecting means required by 690.15. Where a disconnecting means has more than one dc PV power source, the values in 690.53 (1) through (3) shall be specified for each source.

NEC 690.54
All interactive system(s) points of interconnection with other sources shall be marked as an accessible location at the disconnecting means as a power source and with the rated ac output current and the nominal operating ac voltage.

NEC 690.56(B)
Plaques or directories shall be installed in accordance with 705.10.

NEC 690.56(C)(1)(a)
For PV systems that shut down the array and conductors leaving the array shall be labeled accordingly.

NEC 690.56(C)(3)
A rapid shutdown switch shall have a label located on or no more than 1 meter (3 ft) from the switch that includes the following wording.

NEC 705.10
A permanent plaque or directory, denoting the location of all electric power source disconnecting means on or in the premises, shall be installed at each service equipment location and at the location(s) of the system disconnect(s) for all electric power production sources capable of being interconnected. Also see 690.4(d) One sign required for each PV system.

NEC 705.12(B)(2)(3)(b)
Where two sources, one a primary power source and the other another power source, are located at opposite ends of a busbar that contains loads, the sum of 125 percent of the power source(s) output circuit current and the rating of the overcurrent device protecting the busbar shall not exceed
120 percent of the ampacity of the busbar. A permanent warning label shall be applied to the distribution equipment adjacent to the back-fed breaker from the power source that displays the following or equivalent wording.

NEC 705.12(B)(2)(3)(c)
The sum of the ampere ratings of all overcurrent devices on panelboards, both load and supply devices, excluding the rating of the overcurrent device protecting the busbar, shall not exceed the ampacity of the busbar. The rating of the overcurrent device protecting the busbar shall not exceed the rating of the busbar. Permanent warning labels shall be applied to distribution equipment displaying the following or equivalent wording.

NEC 705.12(B)(3)
Equipment containing overcurrent devices in circuits supplying power to a busbar or conductor supplied from multiple sources shall be marked to indicate the presence of all sources. Circuits if backfed shall be suitable for such operations.

SIGNAGE NOTES:

1. SIGNAGE SHALL BE WEATHER RESISTANT. UL 969 SHALL BE USED AS A STANDARD FOR WEATHER RATING.
2. ALL SIGNAGE SHALL HAVE ALL CAPITAL LETTERS WITH MINIMUM 3/8" LETTER HEIGHT FOR HEADERS & 1/4" FOR REST OF THE TEXT. TEXT WITH RED BACKGROUND TO BE OF 3/8" HEIGHT
3. DO NOT USE SCREWS FOR SIGNAGE ATTACHMENT, USE ONLY PERMANENT ADHESIVE.

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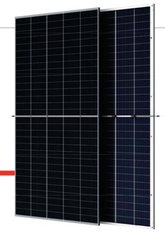
SHEET TITLE: LABELS & MARKINGS

SHEET #: E.7.1

Mono Multi Solutions

THE Vertex

BIFACIAL DUAL GLASS MONOCRYSTALLINE MODULE



500W+
MAXIMUM POWER OUTPUT

21.0%
MAXIMUM EFFICIENCY

0~+5W
POSITIVE POWER TOLERANCE

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

Comprehensive Products and System Certificates

IEC61215/IEC61730/IEC61701/IEC62716/UL1703
ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO14064: Greenhouse Gases Emissions Verification
OHSAS18001: Occupational Health and Safety Management System

PRODUCTS TSM-DEG18MC.20(II) | POWER RANGE 475-505W

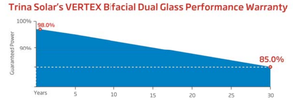
High customer value
- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance of System) cost, shorter payback time
- Lowest guaranteed first year and annual degradation; extended 30-year warranty
- Designed for compatibility with existing mainstream system components
- Higher return on Investment

High power up to 505W
- Large area cells based on 210mm silicon wafers and 1/3-cut cell technology
- Up to 21.0% module effic ency with high density interconnect technology
- Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection

High reliability
- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load
- Certificated to fire class A

High energy yield
- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certi icates
- The unique design provides optimized energy production under inter-row shading conditions
- Lower temperature coefficient (-0.35%) and operating temperature
- Up to 25% additional power gain from back side depending on albedo

Trina Solar's VERTEX Bifacial Dual Glass Performance Warranty

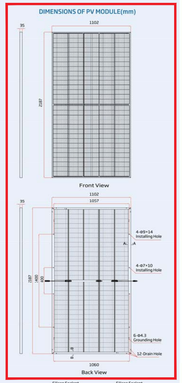


Trinasolar

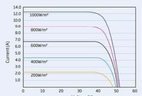
Vertex

BIFACIAL DUAL GLASS MONOCRYSTALLINE MODULE

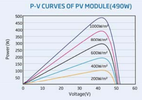
DIMENSIONS OF PV MODULE(mm)



I-V CURVES OF PV MODULE(490 W)



P-V CURVES OF PV MODULE(490W)



ELECTRICAL DATA (STC)

Peak Power Watts-P_{MAX} (Wp)*	475	480	485	490	495	500	505
Power Tolerance-P_{MAX} (W)				0 ~ +5			
Maximum Power Voltage-V_{MPP} (V)	41.9	42.2	42.5	42.8	43.1	43.4	43.7
Maximum Power Current-I_{MPP} (A)	11.34	11.38	11.42	11.45	11.49	11.53	11.56
Open Circuit Voltage-V_{OC} (V)	50.5	50.7	50.9	51.1	51.3	51.5	51.7
Short Circuit Current-I_{SC} (A)	11.93	11.97	12.01	12.05	12.09	12.13	12.17
Module Efficiency η_m (%)	19.7	19.9	20.1	20.3	20.5	20.7	21.0

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
*Measuring tolerance: ± 3%.

Electrical characteristics with different power bin (reference to 10% Irradiance ratio)

Total Equivalent power -P_{MAX} (Wp)	508	514	519	524	530	535	540
Maximum Power Voltage-V_{MPP} (V)	41.9	42.2	42.5	42.8	43.1	43.4	43.7
Maximum Power Current-I_{MPP} (A)	12.13	12.18	12.22	12.24	12.29	12.34	12.37
Open Circuit Voltage-V_{OC} (V)	50.5	50.7	50.9	51.1	51.3	51.5	51.7
Short Circuit Current-I_{SC} (A)	12.77	12.81	12.85	12.89	12.94	12.98	13.02
Irradiance ratio (rear/front)				10%			

ELECTRICAL DATA (NMOT)

Maximum Power-P_{MAX} (Wp)	360	363	367	371	374	378	382
Maximum Power Voltage-V_{MPP} (V)	39.5	39.8	40.0	40.2	40.5	40.8	41.0
Maximum Power Current-I_{MPP} (A)	9.09	9.13	9.18	9.21	9.25	9.28	9.33
Open Circuit Voltage-V_{OC} (V)	47.7	47.9	48.1	48.3	48.5	48.7	48.8
Short Circuit Current-I_{SC} (A)	9.61	9.64	9.67	9.70	9.73	9.77	9.80

NMOT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	150 cells
Module Dimensions	2187×1102×35 mm (86.10×43.39×1.38 inches)
Weight	30.1 kg (66.4 lb)
Front Glass	2.0 mm (0.08 inches), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	POE/EVA
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	35mm(1.38 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm² (0.006 inches²), Portrait: 280/280 mm(11.02/11.02 inches) Landscape: 2800/2000 mm(78.74/78.74 inches)
Connector	MC4 EVO2 / T4*

*Please refer to regional datasheet for specified connector.

TEMPERATURE RATINGS

NMOT(Nominal Module Operating Temperature)	41°C (±3°C)
Temperature Coefficient of P_{MAX}	- 0.35%/°C
Temperature Coefficient of V_{OC}	- 0.25%/°C
Temperature Coefficient of I_{SC}	0.04%/°C

(Do not connect Fuse In Combiner Box with two or more strings in parallel connection)

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC (IEC)
Max Series Fuse Rating	25A

WARRANTY

12 year Product Workmanship Warranty
30 year Power Warranty
2% first year degradation
0.45% Annual Power Attenuation
(Please refer to product warranty for details)

PACKAGING CONFIGURATION

Modules per box: 30 pieces
Modules per 40' container: 600 pieces

CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

Version number: TSM_EN_2020_A
www.trinasolar.com

Trinasolar

CPS

Datasheet

50/60kW, 1000Vdc String Inverters for North America

The 50 & 60kW (55 & 66kVA) medium power CPS three phase string inverters are designed for ground mount, large rooftop and carport applications. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiency at 98.8% peak and 98.5% CEC, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The CPS 50/60KTL products ship with either the Standard wire-box or the Rapid Shutdown wire-box, each fully integrated and separable with touch safe fusing, monitoring, and AC and DC disconnect switches. The integrated PLC transmitter in the Rapid Shutdown wire-box enables PVRSS certified module-level rapid shutdown when used with the Tigo TS4-F/TS4-A-F/TS4-A-2F products and APS RSD-S-PLC/RSD-D products. The CPS FlexOM Gateway enables monitoring, controls and remote product upgrades.

CPS SCA50KTL-DO/US-480
CPS SCA60KTL-DO/US-480

Key Features

- NEC 2017/2020 PVRSS Certified Rapid Shutdown
- 55 & 66kVA rating allows max rated Active Power @±0.91PF
- Selectable Max AC Apparent Power of 50/55kVA and 60/66kVA
- NEC 2014/17 compliant & UL listed Arc-Fault circuit protection
- 15-90° Mounting orientation for low profile roof installs
- Optional FlexOM Gateway enables remote FW upgrades
- Integrated AC & DC disconnect switches
- 3 MPPT's with 5 inputs each for maximum flexibility
- NEMA Type 4X outdoor rated, tough tested enclosure
- UL1741 SA Certified to CA Rule 21, including SA8 through SA18
- Separable wire-box design for fast service
- Standard 10 year warranty with extensions to 20 years

50/60KTL Standard Wire-box

50/60KTL Rapid Shutdown Wire-box

Tigo Enhanced APsmart

Chint Power Systems America
6800 Koll Center Parkway, Suite 235 Pleasanton, CA 94566
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com

CPS

Technical Data

Model Name	CPS SCA50KTL-DO/US-480 / CPS SCA60KTL-DO/US-480
DC Input	
Max. PV Power	90kW (33kW per MPPT)
Max. DC Input Voltage	1000Vdc
Operating DC Input Voltage Range	200-950Vdc
Start-up DC Input Voltage / Power	330V / 80W
Number of MPP Trackers	3
MPPT Voltage Range @ PF>0.99	480-850Vdc / 540-850Vdc
Max. PV Short-Circuit Current (Isc x 1.25)	204A (68A per MPPT)
Number of DC Inputs	15 inputs, 5 per MPPT
DC Disconnection Type	Load-rated DC switch
DC Surge Protection	Type II MOV, 2830V_{DC}, 20kA I_{TM} (8/20μS)
AC Output	
Rated AC Output Power @ PF>0.99 to ±0.91[1]	50kW / 60kW
Max. AC Apparent Power (Selectable)	50/55kVA / 60/66kVA
Rated Output Voltage	480Vac
Output Voltage Range[2]	422 - 528Vac
Grid Connection Type	3Φ / PE / N (Neutral optional)
Max. AC Output Current @480Vac	60.2/66.2A / 72.2/79.4A
Rated Output Frequency	60Hz
Output Frequency Range[2]	57 - 63Hz
Power Factor	>0.99 (±0.8 adjustable)
Current THD @ Rated Load	<3%
Max. Fault Current Contribution (1 Cycle RMS)	64.1A (1.06/0.88 PU)
Max. OCPD Rating	110A / 125A
AC Disconnection Type	Load-break rated AC switch
AC Surge Protection	Type II MOV, 1240V_{DC}, 15kA I_{TM} (8/20μS)
System and Performance	
Topology	Transformerless
Max. Efficiency	98.8%
CEC Efficiency	98.5%
Stand-by / Night Consumption	<1W
Environment	
Enclosure Protection Degree	NEMA Type 4X
Cooling Method	Variable seed cooling fans
Operating Temperature Range[3]	-22°F to +140°F / - 30°C to +60°C
Non-Operating Temperature Range[4]	No low temp minimum to +158°F / +70°C maximum
Operating Humidity	0 to 100%
Operating Altitude	13,123.4ft / 4000m (derating from 9842.5ft / 3000m)
Audible Noise	<60dBA @ 1m and 25°C
Display and Communication	
User Interface and Display	LCD+LED
Inverter Monitoring	SunSpec Modbus RS485
Site Level Monitoring	CPS FlexOM Gateway (1 per 32 inverters)
Modbus Data Mapping	CPS
Remote Diagnostics / FW Upgrade Functions	Standard / (wth FlexOM Gateway)
Mechanical	
Dimensions (HxWxD)	39.4 x 23.6 x 10.24in. (1000 x 600 x 260mm)
Weight	Inverter: 123.5lbs/56kg; Wire-box: 33lbs/15kg
Mounting / Installation Angle[5]	15 to 90 degrees from horizontal (vertical or angled)
AC Termination	M8 Stud Type Terminal Block (Wire range: #6 - 3/0AWG CU/AL, Lugs not supplied)
DC Termination[6]	Screw Clamp, Neg. Busbar (RSD version[8]) Wire range: #14 - #6AWG CU
Fused String Inputs (5 per MPPT)[7]	RSD[8] and Standard Wire-box: 20A fuses provided (Fuse values up to 30A acceptable)
Safety	
Certifications and Standards	UL1741-SA Ed. 2, UL1699B, CSA-C22.2 NO.107.1-01, IEEE1547a-2014; FCC PART15
Selectable Grid Standard	IEEE 1547a-2014, CA Rule 21, ISO-NE
Smart-Grid Features	Volt-RideThru, Freq-RideThru, Ramp-Rate, Specified-PF, Volt-VAr, Freq-Watt, Volt-Watt
Warranty	
Standard	10 years
Extended Terms	15 and 20 years

1) Active Power Derating begins; at PF=±0.91 to ±0.8 when Max AC Apparent Power is set to 55 or 66kVA.
2) The "Output Voltage Range" and "Output Frequency Range" may differ according to the specific grid standard.
3) Active Power Derating begins; at 40°C when PF=±0.9 and MPPT Vmin, at 45°C when PF=1 and MPPT Vmin and at 50°C when PF=1 and MPPT V ≥ 700Vdc.
4) See user manual for further requirements regarding non-operating conditions.
5) Shade Cover accessory required for installation angles of 75 degrees or less.
6) RSD wire-box only includes fuses/fuseholders on the positive polarity, compliant with NEC 2017, 690.9 (C).
7) Fuse values above 20A have additional spacing requirements or require the use of the Y-Comb Terminal Block. See user manual for details.

PROJECT TITLE:

CORDEVALLE GOLF COURSE
1005 HIGHLAND AVENUE,
SAN MARTIN, CA 95046
APN: 77920006

ENGINEER'S STAMP

REGISTERED PROFESSIONAL ENGINEER
JEFFREY H. ANDLER
Lic. No. 19459
Exp: 06/30/2023
ELECTRICAL
STATE OF CALIFORNIA

SOLAR TECHNOLOGIES
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23 LAS COLINAS LN, SUITE NO. 106
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JOB NUMBER: 11866

REVISIONS			
#	DATE	ISSUE	
A	29-JUL-22	FOR SUBMITTAL	
B	24-FEB-23	FOR RE-SUBMITTAL	
C	20-MAR-23	FOR RE-SUBMITTAL	

PAPER SIZE:	ARCH D
DRAWN BY:	HK, AJ
CHECKED BY:	VJ
APPROVED BY:	JHA

SCALE: NTS

SHEET TITLE: SPEC SHEETS

SHEET #: E.8.1

CPS

Technical Data

Model Name	CPS SCA36KTL-DO/US-480
DC Input	
Max. PV Power	54kW (27kW per MPPT)
Max. DC Input Voltage	1000Vdc
Operating DC Input Voltage Range	240-950Vdc
Start-up DC Input Voltage / Power	320V / 80W
Number of MPP Trackers	2
MPPT Voltage Range	540-800Vdc
Max. PV Short-Circuit Current (Isc x 1.25)	125A (62.5A per MPPT)
Number of DC Inputs	10 inputs, 5 per MPPT
DC Disconnection Type	Load rated DC switch
DC Surge Protection	Type II MOV, 2000V_{DC}, 10kA I_{TM} (8/20μS)
AC Output	
Rated AC Output Power	36kW
Max. AC Apparent Power	36kVA
Rated Output Voltage	480Vac
Output Voltage Range[1]	422 - 528Vac
Grid Connection Type	3Φ / PE / N (Neutral optional)
Max. AC Output Current @480Vac	43.5A
Rated Output Frequency	60Hz
Output Frequency Range[2]	57 - 63Hz
Power Factor	>0.99 (±0.8 adjustable)
Current THD @ Rated Load	<3%
Max. Fault Current Contribution (1 Cycle RMS)	73.2A
AC Disconnection Type	Load rated AC switch
AC Surge Protection	Type II MOV, 1500V_{DC}, 10kA I_{TM} (8/20μS)
System and Performance	
Topology	Transformerless
Max. Efficiency	98.5%
CEC Efficiency	98.0%
Stand-by / Night Consumption	<1W
Environment	
Enclosure Protection Degree	NEMA Type 4X
Cooling Method	Variable speed cooling fans
Operating Temperature Range	-22°F to +140°F / - 30°C to +60°C (derating from +113°F / +45°C)
Non-Operating Temperature Range[3]	No low temp minimum to +158°F / +70°C maximum
Operating Humidity	0 to 100%
Operating Altitude	13,123.4ft / 4000m (derating from 6561.7ft / 2000m)
Audible Noise	<50dBA @ 1m and 25°C
Display and Communication	
User Interface and Display	LCD+LED
Inverter Monitoring	Modbus RS485
Site Level Monitoring	CPS Flex Gateway (1 per 32 inverters)
Modbus Data Mapping	CPS
Remote Diagnostics / FW Upgrade Functions	Standard / (with Flex Gateway)
Mechanical	
Dimensions (HxWxD)	Inverter: 26 x 23.6 x 9.1in. (660 x 600 x 230mm); Wire-box 13.4 x 23.6 x 9.1in. (340 x 600 x 230mm)
Weight	Inverter: 121lbs/55kg; Wire-box: 24lbs/11kg
Mounting / Installation Angle[4]	15 to 90 degrees from horizontal (vertical or angled)[4]
AC Termination	Screw Clamp Terminal Block (Wire range: #14 - 1/0AWG CU/AL)
DC Termination	Screw Clamp Fuse Holder (Wire range: #14 - #6AWG CU)
Fused String Inputs (5 per MPPT)[4]	15A fuses provided (Fuse values up to 30A acceptable)[4]
Safety	
Certifications and Standards	UL1741SA-2016, UL1699B, CSA-C22.2 NO.107.1-01, IEEE1547; FCC PART15
Selectable Grid Standard	IEEE 1547-2003, CA Rule 21, ISO-NE
Smart-Grid Features	Voltage-RideThru, Frequency-RideThru, Soft-Start, Volt-Var, Frequency-Watt, Volt-Watt
Warranty	
Standard	10 years
Extended Terms	15 and 20 years

1) The "Output Voltage Range" and "Output Frequency Range" may differ according to the specific grid standard.
2) See user manual for further requirements regarding non-operating conditions.
3) Shade Cover accessory required for installation angles of 75 degrees or less.
4) Fuse values above 20A have additional spacing requirements. See user manual for further details.

Industrial Solutions

Representative Image

Catalog No. TH3366R

Description: 600A 3P HD N3R 600V FUSIBLE

UPC No 783164009187

Home > Switches & Disconnects > Disconnect & Safety Switches > Safety Switches > Heavy Duty

Designed for commercial and industrial applications where safety, high performance and continuity of service are essential. Listed to UL standard 98 enclosed and dead front switches. Suitable for use as service equipment when installed in accordance with the National Electrical Code. Certified to CSA standard 22.2 no. 4-04 enclosed and dead front switches. Meets or exceeds NEMA KS1 standard for enclosed switches, type HD. Fusible and non-fusible switches available (consult BuyLog for interrupt ratings). Quick-make, quick-break mechanism. 60/75 C conductor rating. Full cover interlocks. TH3366R

Descriptors

Category	Heavy Duty
GO Schedule	S1

Specifications

Voltage	600 AC
Amperage	600 A
Poles	3
Wires	3
Fusing	Fusible
Enclosure	NEMA 3R (Outdoor)
Options	None
Wire Range (Cu/Al)	(2) 4-500
240 Vac, NEC Std, 3-ph	75.0 hp
240 Vac, Time Delay, 3-ph	200.0 hp
480 Vac, NEC Std, 3-ph	150.0 hp
480 Vac, Time Delay, 3-ph	400.0 hp
600 Vac, NEC Std, 3-ph	200.0 hp
600 Vac, Time Delay, 3-ph	500.0 hp
250 Vdc	50.0 hp
GSA Compliance	Yes

Classifications

cUL Listed	Yes
UL Listed	Yes

Dimensions

Height	53.5 in
Depth	8.5 in
Width	23.0 in
Weight	136.0 lb

by ABB

Created on: 03/23/2022

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Catalog No. TH3366R
Page No. 1

APsmart

Raising the bar in innovative DC MLPE solar power systems

RSD-D

- Meets NEC 2017 & 2020 (690.12) requirements
- Executes rapid shutdown of system when Transmitter-PLC signal is absent
- Meets SunSpec requirements
- Dual-input channel

RSD-D meets SunSpec requirements, maintaining normal function by continually receiving a heartbeat signal from the APsmart Transmitter. The RSD-D executes rapid system shutdown when the Transmitter signal is absent. Users can manually execute rapid shutdown using Transmitter breaker switch.

> RSD-D TECHNICAL DATA

MODEL	RSD-D-15	RSD-D-20
INPUT DATA (DC)		
Range of Input Operating Voltage	8-65V Per Channel	
Maximum Cont. Input Current (Imax)	15A Per Channel	20A Per Channel
Maximum Short Circuit Current (Isc)	25A	
OUTPUT DATA (DC)		
Range of Output Operating Voltage	16-130V	
Maximum Cont. Output Current	15A	20A
Maximum System Voltage	1000V/1500V	
Maximum Series Fuse Rating	30A	
MECHANICAL DATA		
Operating Ambient Temperature Range	-40 °F to +167 °F (-40 °C to + 75 °C)	
Dimensions (without cable & connectors)	5.5" x 2" x 3.8"(140 mm x 50.6 mm x 20 mm)	
Cable Length	Input 500mm/Output 2200mm	
Cable Cross Section Size	1UV:4mm²/UL:12AWG	
Connector	Stäubli MC4 PV-KBT4&KST4 or Customize	
Enclosure Rating	NEMA Type 6P/IP68	
Over temperature protection	Yes	
FEATURES & COMPLIANCE		
Communication Compliance	PLC	
Safety Compliance	NEC 2017 & 2020 (690.12); UL1741; CSA C22.2 No. 330-17; IEC/EN62109-1	
EMC Compliance	FCC Part15; ICES-003	

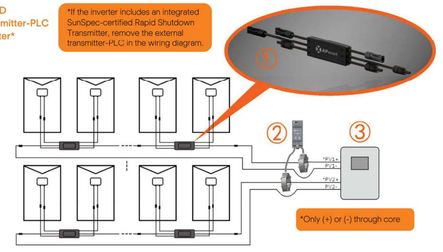
Rev1.6 2021-12-14

APsmart

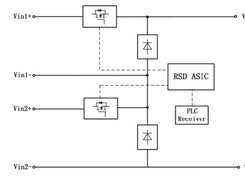
> RSD-D WIRING DIAGRAM

① RSD-D
② Transmitter-PLC
③ Inverter*

*If the inverter includes an integrated SunSpec-certified Rapid Shutdown Transmitter, remove the external transmitter-PLC in the wiring diagram.



> WORKING SCHEMATIC DIAGRAM



ORDERING INFORMATION	
426101	1500V UL/1000V TUV, 15A, 2.2m cable, Stäubli MC4 PV-KBT4&KST4
446101	1500V UL/1000V TUV, 20A, 2.2m cable, Stäubli MC4 PV-KBT4&KST4
4261xx*	15A, 2.2m cable, Customize connector
4461xx*	20A, 2.2m cable, Customize connector

*please see the RSD Series Ordering Information

APsmart
600 Ericksen Ave NE, Suite 200 Seattle, WA 98110 | +1-737-218-8486 | +1-866-374-8538 | support@APsmartGlobal.com | APsmartGlobal.com

Rev1.6 2021-12-14

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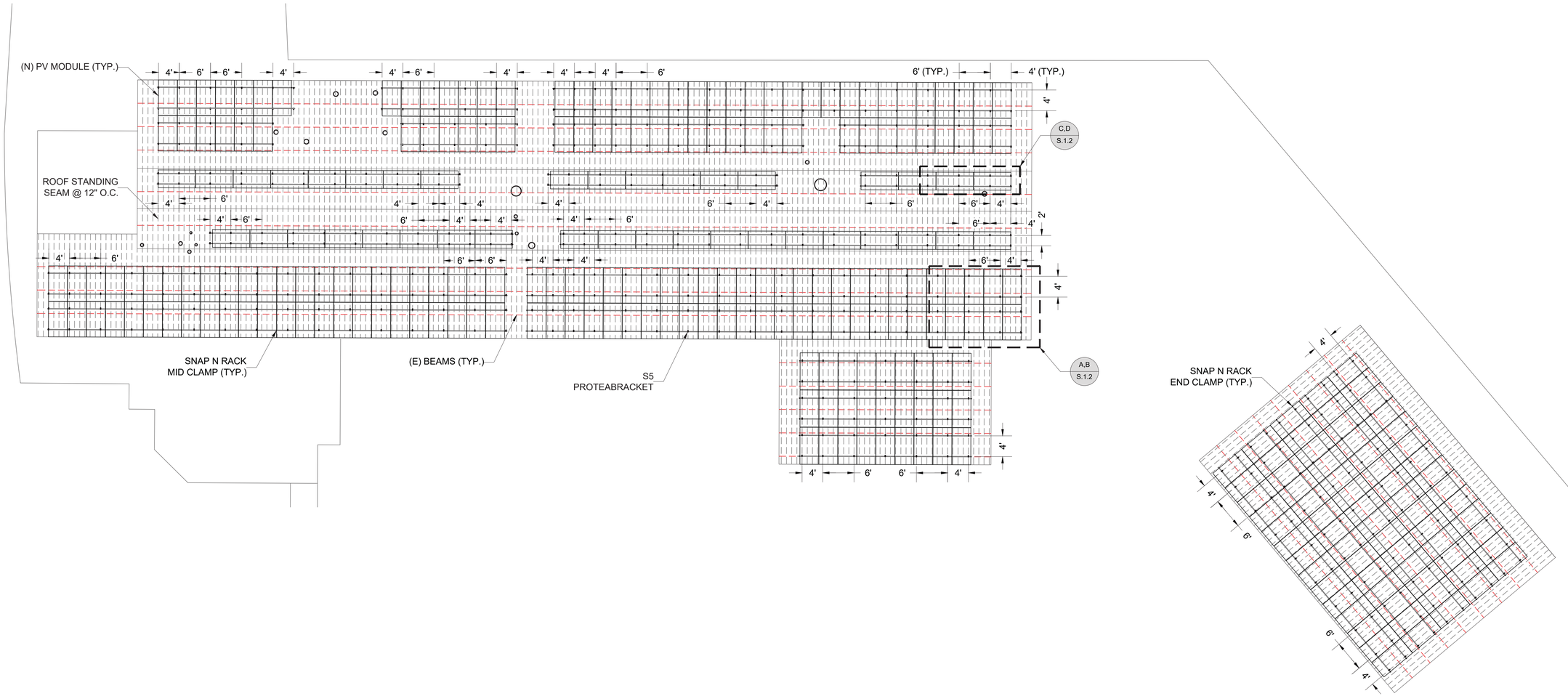

A FRAMING PLAN
SCALE: 1"=8'-0"

NOTES:

1.	SNAP N RACK MID CLAMP:	564
2.	SNAP N RACK END CLAMP:	96
3.	S5 PROTEABRACKET:	500

0 10' 20'

PROJECT TITLE:

CORDEVALLE GOLF COURSE
1005 HIGHLAND AVENUE,
SAN MARTIN, CA 95046
APN: 77920006

ENGINEER'S STAMP

REGISTERED PROFESSIONAL ENGINEER
ALI HAJIHASSANI
C 84486
CIVIL
STATE OF CALIFORNIA
EXP. 09/30/2023

SOLAR TECHNOLOGIES
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JOB NUMBER: 11866

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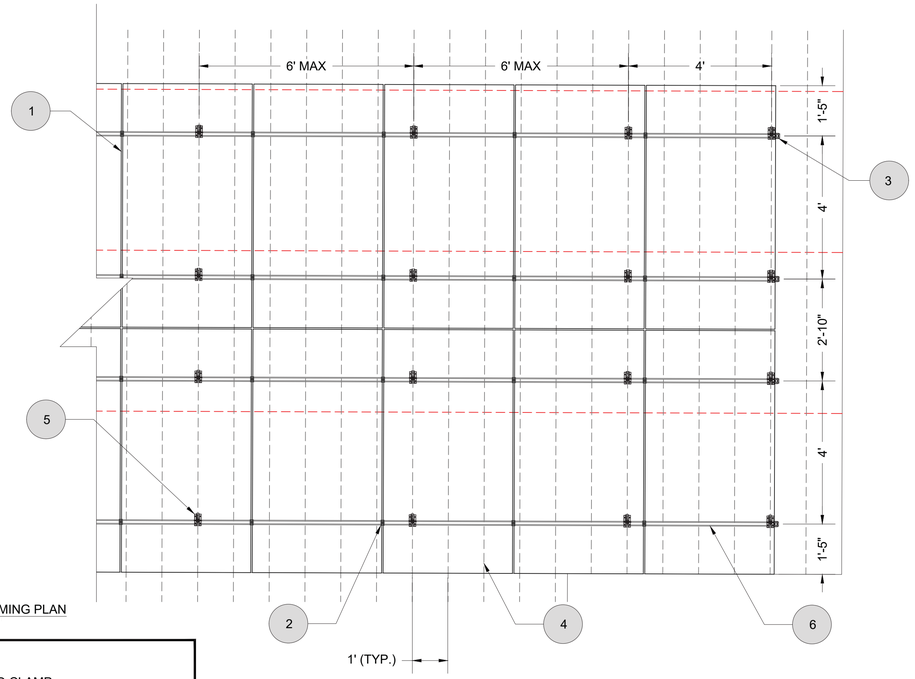
APPROVED BY:	JHA

SCALE: VARIES

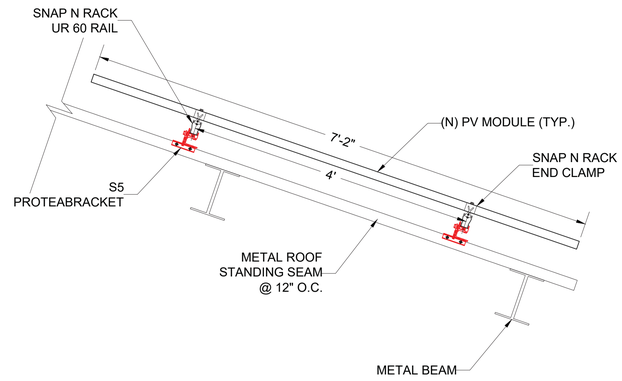
SHEET TITLE: ROOF FRAMING PLAN

SHEET #: S.1.1

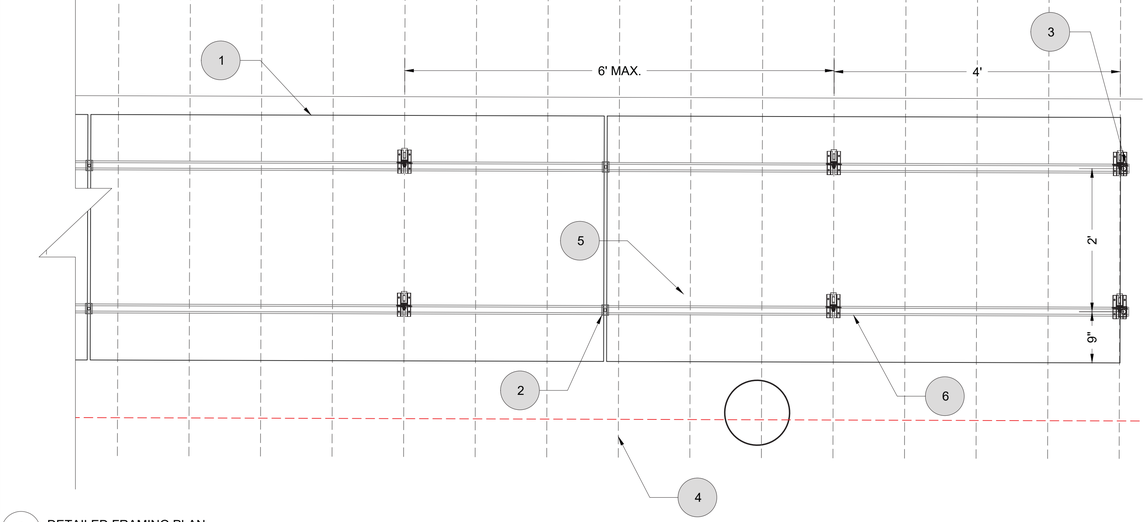


A DETAILED FRAMING PLAN
SCALE: 1"=2'-0"

NOTES:
1. PV MODULE.
2. SNAP N RACK MID CLAMP.
3. SNAP N RACK END CLAMP
4. ROOF STANDING SEAM @ 12" O.C.
5. S5 PROTEABRACKET
6. SNAPNRACK, UR-60 RAIL

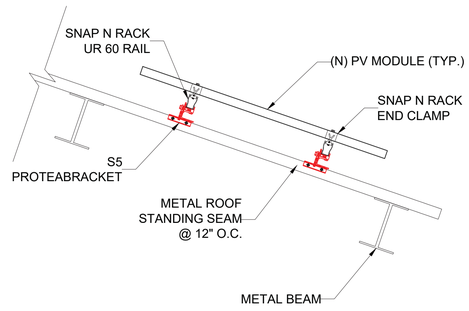


B SIDE ELEVATION
SCALE: 1"=1/2'-0"



C DETAILED FRAMING PLAN
SCALE: 1"=1'-0"

NOTES:
1. PV MODULE.
2. SNAP N RACK MID CLAMP.
3. SNAP N RACK END CLAMP
4. ROOF STANDING SEAM @ 12" O.C.
5. S5 PROTEABRACKET
6. SNAPNRACK, UR-60 RAIL



D SIDE ELEVATION
SCALE: 1"=1/2'-0"

PROJECT TITLE:
CORDEVALLE GOLF COURSE
1005 HIGHLAND AVENUE,
SAN MARTIN, CA 95046
APN: 77920006

ENGINEER'S STAMP
REGISTERED PROFESSIONAL ENGINEER
ALI HAJIHASSANI
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SCALE: VARIES

SHEET TITLE:
STRUCTURAL DETAILS

SHEET #:
S.1.2

S-5!®

The Right Way!

ProteaBracket™

ProteaBracket™

ProteaBracket™ is the most versatile standing seam metal roof attachment solution on the market, fitting most trapezoidal sheet profiles with and without intermediate insulation. It features an adjustable attachment base and multiple solar module attachment options (illustrated on back) to accommodate varying widths and heights. There are no messy sealants to apply and no chance for leaks; the ProteaBracket comes with factory-applied, adhesive rubber sealant to ensure quick installation and a weather-proof fit.

Installation is simple! The ProteaBracket is mounted directly onto the crown of the panel, straddling the profile. No surface preparation is necessary; simply wipe away excess oil and debris, align, and apply. Secure ProteaBracket through its pre-punched holes, using the hardened drill point S-5!® screws.

ProteaBracket is the perfect match for our S-5-PV Kit and spares you the hassle of cold-bridging! For a solar attachment solution that is both economical and easy to use, choose ProteaBracket.*

*When ProteaBracket is used in conjunction with the S-5-PV Kit, an additional nut is required during installation.

The right way to attach almost anything to metal roofs!

S-5!® ProteaBracket™ is a versatile bracket that adjusts easily to most trapezoidal roof profiles.

888-825-3432 | www.S-5.com

S-5!®

The Right Way!

ProteaBracket™ is the perfect solar attachment solution for most trapezoidal exposed-fastened metal roof profiles! No messy sealants to apply. The factory-applied adhesive rubber sealant weather-proofs and makes installation easy!

Each **ProteaBracket™** comes with a factory-applied, adhesive rubber sealant on the base. A structural A2 stainless steel bimetal attachment bracket, ProteaBracket is compatible with most common metal roofing materials. All four pre-punched holes must be used to achieve tested strength. Mounting hardware is furnished with the ProteaBracket. For design assistance, ask your distributor, or visit **www.S-5.com** for the independent lab test data that can be used for load-critical designs and applications. Also, please visit our website for more information including metallurgical compatibilities and specifications. S-5!® holding strength is unmatched in the industry.

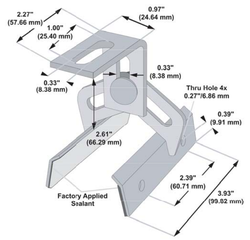
Multiple Attachment Options:

Side Rail Option

Top Rail Option

S-5-PV Kit Option

ProteaBracket™



Please note: All measurements are rounded to the second decimal place.

Example Applications

S-5-PV Kit demonstrated with a ProteaBracket on a trapezoidal profile.

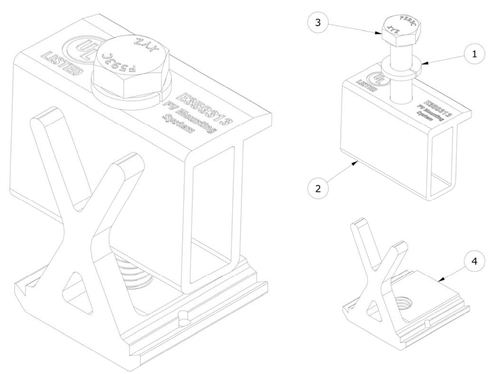
Example Profile

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

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

Distributed by

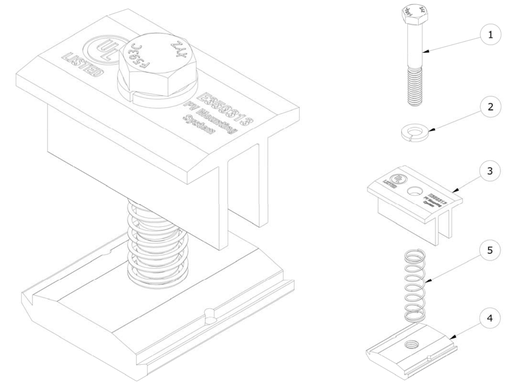
DESCRIPTION:	DRAWN BY:	SnapNrack Solar Mounting Solutions
SNAPNRACK, BONDING ADJUSTABLE END CLAMP	M.Watkins	595 MARKET STREET, 29TH FLOOR • SAN FRANCISCO, CA 94105 USA PHONE (415) 580-6900 • FAX (415) 580-6902
PART NUMBER(S): 242-02065, 242-02066, 242-02067, 242-02068	REVISION: A	THE INFORMATION IN THIS DRAWING IS CONFIDENTIAL AND PROPRIETARY. ANY REPRODUCTION, DISCLOSURE, OR USE THEREOF IS PROHIBITED WITHOUT THE WRITTEN CONSENT OF SUNRUN SOUTH LLC.



PARTS LIST		
ITEM	QTY	DESCRIPTION
1	1	5/16IN SS SPLIT LOCK WASHER
2	1	SNAPNRACK, BONDING ADJUSTABLE END CLAMP TOP, CLEAR / BLACK
3	1	5/16IN-18 SS HCS BOLT, LENGTH VARIES, CLEAR / BLACK
4	1	SNAPNRACK, BONDING ADJUSTABLE END CLAMP BASE, CLEAR / BLACK

MATERIALS:	6000 SERIES ALUMINUM, STAINLESS STEEL	OPTIONS:
DESIGN LOAD (LBS):	800	CLEAR / BLACK ANODIZED
ULTIMATE LOAD (LBS):	2400	
TORQUE SPECIFICATION:	10+ LB-FT	
CERTIFICATION:	UL 2703, FILE E359313	
WEIGHT (LBS):	0.17 - 0.19	

DESCRIPTION:	DRAWN BY:	SnapNrack Solar Mounting Solutions
SNAPNRACK, BONDING MID CLAMP	D.Ryan	595 MARKET STREET, 29TH FLOOR • SAN FRANCISCO, CA 94105 USA PHONE (415) 580-6900 • FAX (415) 580-6902
PART NUMBER(S): 242-02050, 242-02051, 242-02052, 242-02053, 242-02054, 242-02055, 242-02056, 242-02057	REVISION: A	THE INFORMATION IN THIS DRAWING IS CONFIDENTIAL AND PROPRIETARY. ANY REPRODUCTION, DISCLOSURE, OR USE THEREOF IS PROHIBITED WITHOUT THE WRITTEN CONSENT OF SUNRUN SOUTH LLC.

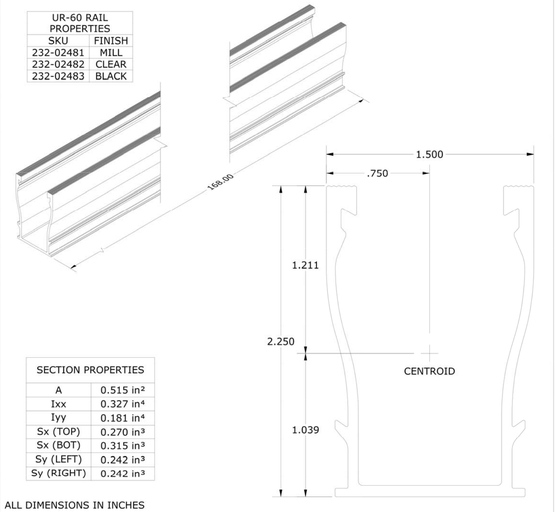


PARTS LIST		
ITEM	QTY	DESCRIPTION
1	1	5/16IN-18 SS HCS BOLT, LENGTH VARIES, CLEAR / BLACK
2	1	5/16IN SS SPLIT LOCK WASHER, CLEAR / BLACK
3	1	SNAPNRACK, BONDING MID CLAMP, CLEAR / BLACK
4	1	SNAPNRACK, BONDING CHANNEL NUT
5	1	SNAPNRACK, MID CLAMP SPRING, SS

MATERIALS:	6000 SERIES ALUMINUM, STAINLESS STEEL	OPTIONS:
DESIGN LOAD (LBS):	800	CLEAR / BLACK ANODIZED
ULTIMATE LOAD (LBS):	2400	
TORQUE SPECIFICATION:	10+ LB-FT	
CERTIFICATION:	UL 2703, FILE E359313	
WEIGHT (LBS):	0.16 - 0.18	

DESCRIPTION:	DRAWN BY:	SnapNrack Solar Mounting Solutions
SNAPNRACK, UR-60 RAIL	mwatkins	595 MARKET STREET, 29TH FLOOR • SAN FRANCISCO, CA 94105 USA PHONE (415) 580-6900 • FAX (415) 580-6902
PART NUMBER(S): 232-02481, 232-02482, 232-02483	REVISION: A	THE INFORMATION IN THIS DRAWING IS CONFIDENTIAL AND PROPRIETARY. ANY REPRODUCTION, DISCLOSURE, OR USE THEREOF IS PROHIBITED WITHOUT THE WRITTEN CONSENT OF SUNRUN SOUTH LLC.

UR-60 RAIL PROPERTIES	
SKU	FINISH
232-02481	MILL
232-02482	CLEAR
232-02483	BLACK

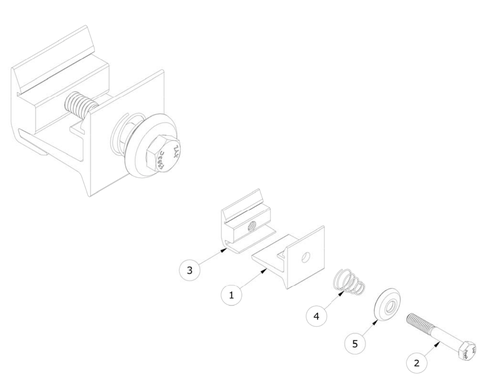


SECTION PROPERTIES	
A	0.515 in²
Ixx	0.327 in⁴
Iyy	0.181 in⁴
Sx (TOP)	0.270 in³
Sx (BOT)	0.315 in³
Sy (LEFT)	0.242 in³
Sy (RIGHT)	0.242 in³

ALL DIMENSIONS IN INCHES

MATERIALS:	6000 SERIES ALUMINUM	OPTIONS:
DESIGN LOAD (LBS):	N/A	CLEAR / BLACK ANODIZED
ULTIMATE LOAD (LBS):	N/A	MILL FINISH
TORQUE SPECIFICATION:	N/A LB-FT	BUNDLES OF 120
CERTIFICATION:	UL 2703, FILE E359313	BOXES OF 8
WEIGHT (LBS):	8.46	

DESCRIPTION:	DRAWN BY:	SnapNrack Solar Mounting Solutions
SNAPNRACK, ULTRA RAIL MOUNTING HARDWARE	mwatkins	595 MARKET STREET, 29TH FLOOR • SAN FRANCISCO, CA 94105 USA PHONE (415) 580-6900 • FAX (415) 580-6902
PART NUMBER(S): 242-01229	REVISION: A	THE INFORMATION IN THIS DRAWING IS CONFIDENTIAL AND PROPRIETARY. ANY REPRODUCTION, DISCLOSURE, OR USE THEREOF IS PROHIBITED WITHOUT THE WRITTEN CONSENT OF SUNRUN SOUTH LLC.



PARTS LIST		
ITEM	QTY	DESCRIPTION
1	1	SNAPNRACK, ULTRA RAIL MOUNT THRU PRC, SILVER
2	1	5/16IN-18 X 2-1/4IN SS HCS BOLT
3	1	SNAPNRACK, ULTRA RAIL MOUNT TAPPED PRC, SILVER
4	1	SNAPNRACK, ULTRA RAIL MOUNT SPRING, SS
5	1	SNAPNRACK, ULTRA RAIL MOUNT SPRING CAGE, 6061-T6 AL

MATERIALS:	6000 SERIES ALUMINUM, STAINLESS STEEL	OPTIONS:
DESIGN LOAD (LBS):	N/A	
ULTIMATE LOAD (LBS):	N/A	
TORQUE SPECIFICATION:	12 LB-FT	
CERTIFICATION:	UL 2703, FILE E359313	
WEIGHT (LBS):	0.19	

PROJECT TITLE:

CORDEVALLE GOLF COURSE
1005 HIGHLAND AVENUE,
SAN MARTIN, CA 95046
APN: 77920006

ENGINEER'S STAMP

REGISTERED PROFESSIONAL ENGINEER
ALI HAJIHASHEMI
C 84486
CIVIL
STATE OF CALIFORNIA
EXP. 09/30/2023

SOLAR TECHNOLOGIES
CLEAN ENERGY SOLUTIONS
SUITE NO. 106, 23 LAS COLINAS LN.
SAN JOSE, CA 95119
JOB NUMBER: 118661

#	DATE	ISSUE	REVISIONS

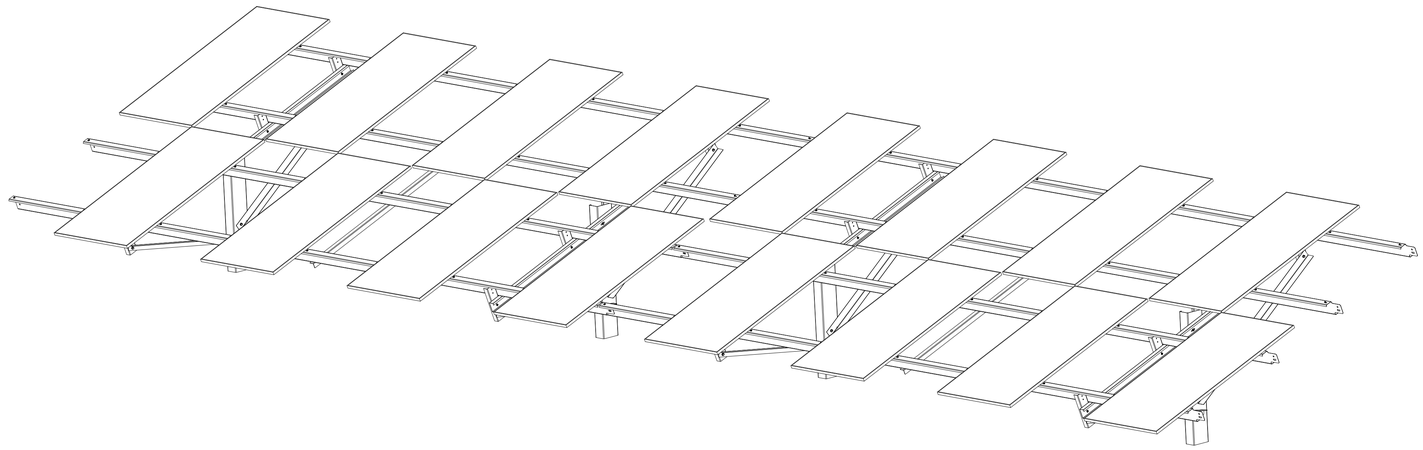
PAPER SIZE: ARCH D
DRAWN BY: HK
CHECKED BY: VJ
APPROVED BY: JHA

SCALE: NTS

SHEET TITLE: STRUCTURAL SPEC SHEETS

SHEET #: S.2.1

OMCO SOLAR CHOICE™
GROUND MOUNTED SOLAR STRUCTURES
FOR
TEICHERT ENERGY



DRAWING NUMBER	DRAWING DESCRIPTION
OS1.0	COVER SHEET
OS1.1	GENERAL STRUCTURAL NOTES
OS1.2	FOUNDATIONS
OS2.0	GENERAL LAYOUT
OS2.1	TYPICAL SECTIONS
OS2.2	FRAMING PLANS
OS3.0	DETAILS AND SECTIONS
OS3.1	STRUCTURAL DETAILS

OMCO SOLAR
A SYSTEM OF OMCO HOLDINGS

REGISTERED PROFESSIONAL ENGINEER
STEVEN JOHN KAISER
No. 87848
Exp. 6/30/24
CIVIL
STATE OF CALIFORNIA
1/5/23

CHOICE GROUND MOUNT
CORDEVALLE
1 CORDEVALLE DRIVE
SAN MARIN, CALIFORNIA 95046

REV	DATE	DRAWN	CHECK	RELEASE DESCRIPTION
00	01/19/23	JDL		INITIAL RELEASE

PROJECT NAME:
CORDEVALLE

PROJECT NUMBER
3806627570

DRAWING NAME:
COVER SHEET

DRAWING NUMBER:
OS1.0

OMCO SOLAR
4550 W. WATKINS ST.
PHOENIX, AZ 85043
www.omcosolar.com

GENERAL STRUCTURAL NOTES:

1. THE TERM "CONTRACTOR" AS REFERRED IN THIS DOCUMENT SHALL MEAN TEICHERT ENERGY. THE TERM "PROJECT OWNER" AS REFERRED TO IN THIS DOCUMENT SHALL MEAN CRODEVALLE.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW THE APPROVED STAMPED CONSTRUCTION DOCUMENT IN ITS ENTIRETY PRIOR TO BIDDING THE PROJECT, START OF FABRICATION, ORDERING HARDWARE & MISCELLANEOUS STEEL, START OF CONSTRUCTION AND ASSEMBLY.
3. IF A CONFLICT BETWEEN DRAWING DETAILS, SECTIONS, PLANS AND NOTES IS DISCOVERED, NOTIFY OMCO SOLAR IMMEDIATELY IN WRITING FOR CLARIFICATION AND/OR FOR APPROPRIATE RESPONSE PRIOR TO PROCEEDING WITH CONSTRUCTION AND/OR ASSEMBLY OF THE RACKING SYSTEM.
4. IN THE EVENT A DRAWING DISCREPANCY AND/OR DISCREPANCIES IN MATERIAL RECEIVED IS ENCOUNTERED OR DISCOVERED, NOTIFY OMCO SOLAR IMMEDIATELY IN WRITING FOR CLARIFICATION AND/OR FOR APPROPRIATE RESPONSE PRIOR TO PROCEEDING WITH CONSTRUCTION AND/OR ASSEMBLY OF THE RACKING SYSTEM.
5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE ALL CONSTRUCTION WORK, RACKING ASSEMBLIES AND INSTALLATIONS ARE IN ACCORDANCE WITH THE LATEST APPROVED STAMPED CONSTRUCTION DOCUMENTS.
6. MEANS AND METHOD OF INSTALLATION, ASSEMBLY AND CONSTRUCTION SEQUENCES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
7. IT IS THE RESPONSIBILITY OF THE CONTRACTOR/INSTALLER TO ENSURE PROPER TECHNIQUES ARE EMPLOYED AND TEMPORARY SHORING AND BRACING ARE PROVIDED FROM START TO COMPLETION OF THE PROJECT CONSTRUCTION PER APPROVED STAMPED CONSTRUCTION DOCUMENTS.
8. ANY WORK COMPLETED DEVIATING FROM THE CONSTRUCTION DOCUMENT SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE ALL LATEST DRAWINGS ARE USED AND DISTRIBUTED TO ALL INVOLVED IN THE PROJECT AND SUBCONTRACTORS.
10. THE PROJECT OWNER SHALL TAKE ALL NECESSARY MEASURES TO PREVENT SOIL EROSIONS, WATER PONDING AND FLOODING AROUND PILES OR IN THE VICINITY.
11. UNLESS SHOWN, DETAILED OR NOTED IN THE CONSTRUCTION DOCUMENT, ANY FIELD MODIFICATIONS, DRILLING, FABRICATION, REPAIRS, DEVIATION AND ADJUSTMENTS IS PROHIBITED WITHOUT THE WRITTEN APPROVAL OF OMCO SOLAR.
12. WHERE MEMBER CORROSION PROTECTION IS COMPROMISED DURING STAGING, FIELD HANDLING, CONSTRUCTION, ASSEMBLY, ETC. CONTRACTOR SHALL REPAIR THE DAMAGE PER APPROVED FIELD REPAIR RECOMMENDATIONS PER OMCO SOLAR'S INSTALLATION MANUAL(S).
13. NOTIFY OMCO SOLAR IMMEDIATELY OF ANY FIELD ISSUES THAT MAY BE ENCOUNTERED DUE TO ARISE RELATING TO STRUCTURAL DAMAGE AND/OR CONSTRUCTION CHALLENGES DUE TO INCORRECT INFORMATION.
14. THE CONSTRUCTION AND FOUNDATION REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED BUILDING CODES AND STANDARDS AND THE LOCAL BUILDING DEPARTMENT "AUTHORITY HAVING JURISDICTIONS" AMENDMENTS.
15. IT IS THE OWNER'S RESPONSIBILITY TO ORDER ANY SPARE PARTS FOR THE PURPOSE OF REPAIRS OR REPLACEMENT AFTER PROJECT COMPLETION AT THE OWNER'S EXPENSE.
16. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT SAFE WORKING CONDITIONS EXIST AND SAFE CONSTRUCTION TECHNIQUES ARE FOLLOWED AND ALL NECESSARY PRECAUTIONS ARE IN PLACE, ADDRESSED AND RESPECTED BY ALL PARTIES INVOLVED WITH THE CONSTRUCTION OF THE PROJECT AT ALL TIMES FROM START TO COMPLETION OF THE PROJECT.
17. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL DIMENSIONS, COORDINATE ALL FIELD CONDITIONS WITH THE APPROVED STAMPED CONSTRUCTION DOCUMENTS PRIOR TO PROCEEDING WITH THE PROJECT CONSTRUCTION.
18. IT IS THE RESPONSIBILITY OF THE PROJECT OWNER TO NOTIFY THE CONTRACTOR OF ANY INVESTIGATIONS RELATED TO ANY KNOWN OBSTRUCTION OR UNANTICIPATED SITE CONDITIONS THAT MAY ALTER THE GROUND MOUNT STRUCTURE DESIGN OR MAY HAVE AN ADVERSE EFFECT ON THE PROJECT CONSTRUCTION.
19. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THE CORRECT SOLAR MODULES ARE PROVIDED AND ASSEMBLED PER MODULE MANUFACTURER'S INSTALLATION MANUAL, THIS SET OF DRAWINGS, AND LATEST OMCO SOLAR CHOICE INSTALLATION MANUAL PROVIDED.
20. FIELD CUTTING OR WELDING OF COLD-FORM STRUCTURAL ELEMENTS IS NOT REQUIRED NOR PERMITTED WITHOUT THE WRITTEN APPROVAL BY OMCO SOLAR. IN ANY EVENT WHERE FIELD CUTTING AND/OR WELDING IS NECESSARY OR DESIRED, IT IS CRITICAL THAT OMCO SOLAR BE NOTIFIED IMMEDIATELY IN WRITING PRIOR TO FIELD CUTTING OR WELDING.

DESIGN CODES, DATA & CRITERIA

THE SOLAR STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH CALIFORNIA BUILDING CODE (CBC) 2018 AND ASCE 7-16.

COLD FORMED STEEL DESIGN STRUCTURAL ELEMENTS SHALL BE PER AISI NORTH AMERICAN SPECIFICATION FOR DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS 2012 EDITION

FOR STRUCTURE OCCUPANCY AND RISK CATEGORY: I

WIND:

BASIC WIND SPEED (3 SECOND GUST): 100 MPH

WIND EXPOSURE CATEGORY: C

WIND TUNNEL TEST AND WIND LOAD ANALYSIS REPORT: PER CPP PROJECT 9795

WIND DESIGN PRESSURES: VARIES WITH MEMBERS AND COMPONENTS

SEISMIC:

SEISMIC IMPORTANCE FACTOR, I: = 1.00

MAPPED SPECTRAL RESPONSE ACCELERATIONS, SDS: = 1.00g, SD1: = 0.676g

SEISMIC DESIGN CATEGORY: = D

BASIC SEISMIC-FORCE-RESISTING SYSTEMS: = CANTILEVER COLUMN

SEISMIC SHEAR AT BEAM TO TILT: = 199 LBS

SEISMIC RESPONSE COEFFICIENT Cs: = 0.80

SEISMIC DESIGN BASE SHEAR: V = 1.59 KIPS

SITE CLASS: D

RESPONSE MODIFICATION COEFFICIENTS: R = 1.25

ANALYSIS PROCEDURE USED: EQUIVALENT LATERAL FORCE PROCEDURE

SNOW:

GROUND SNOW LOAD (Pg): = 0 PSF

SNOW EXPOSURE FACTOR (Ce): = N/A

SNOW LOAD IMPORTANCE FACTOR (I): = N/A

THERMAL FACTOR (Ct): = N/A

SLOPE FACTOR (Cs): = N/A

FLAT ROOF SNOW LOAD (Pf): = 0 PSF

DESIGN SNOW LOAD(Ps): = 0 PSF

DEAD LOAD:

MODULE: = 2.56 PSF

LIVE LOAD:

GROUND MOUNTED: = 0 PSF

REFERENCE CODES AND STANDARDS (SHALL BE LATEST U.N.O)

ASME - AMERICAN SOCIETY OF MECHANICAL ENGINEERS

ANSI - AMERICAN NATIONAL STANDARD INSTITUTE

ASTM - AMERICAN SOCIETY FOR TESTING AND MATERIALS

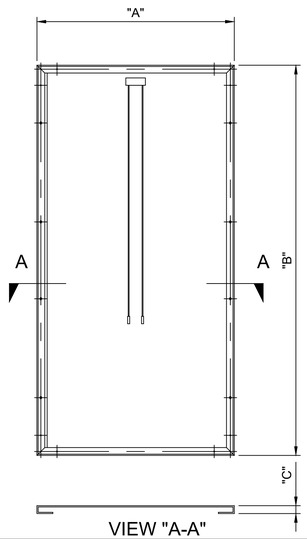
ASCE - AMERICAN SOCIETY OF CIVIL ENGINEERS

AISC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION

AISI - AMERICAN IRON AND STEEL INSTITUTE

IBC - INTERNATIONAL BUILDING CODE

SOLAR MODULE SPECIFICATIONS



VIEW "A-A"

DIMENSIONS

DESCRIPTION	"A"	"B"	"C"	WEIGHT
TSM-DEG18MC.20(II)	43.39" [1102mm]	86.10" [2187mm]	1.38" [35mm]	66.4 LB [30.1KG]

NOTE: MODULE INSTALLATION SHALL BE PER MODULE MANUFACTURERS REQUIREMENTS.

MATERIAL SPECIFICATION NOTES:

1. COLD-FORMED STEEL: ASTM A653-17 SS OR HSLAS - MIN. YIELD AND TENSILESTRENGTHS SHOWN ON FRAMING PLANS.
2. STEEL PLATES SHALL BE PER ASTM A36, 36 KSI STEEL.
3. MATERIAL GALVANIZATION MINIMUMS: POSTS/PILES - G235
   HARDWARE - 15 MICRON
   ALL OTHER STEEL - G90
4. M8 FASTENERS: DIN933 CLASS 8.8.
5. FLANGE HEAD: HEX RIV NUT, OPEN END, STEEL THREAD PROOF LOAD MEETS CLASS 8 PER ISO 898-02.
6. M8, M10 AND M12 FLAT WASHERS: DIN125A AND/OR 3/8", 7/16" AND 1/2" USS F436 THRU-HARDENED.
7. M10 AND M12 FASTENERS: DIN933/931 CLASS 8.8.
8. M10 AND M12 HEX NUT: DIN934 CLASS 8.
9. ROUND PIPES SHALL BE PER ASTM A513-15 TYPE 1a, 1b OR 2.
10. MODULE CLAMPS SHALL BE ALUMINUM 6063-T6.
11. CLAMP SPACER SHALL BE ALUMINUM ASTM B221.

ABBREVIATIONS:

Assembly	ASS'Y
Authority Having Jurisdiction	AHJ
Back to Back	B/B
Beam	BM
Beam End	BE
Bearing	BRG
Between Centers	BC
Bolt Circle	BTC
Both Faces	BFS
Both Sides	BS
Bracket	BRKT
Cap Screw	CAP SCR
Cantilever	CANT'L
Connection Bracket Long	CBL
Connection Bracket Short	CBS
Center	CTR
Centerline	C.L.
Center to Center	C/C
Circular	CIR
Clear	CLR
Clockwise	CW
Configuration	CONFIG
Connection	Conn
Construction Package	CP
Continuous	CONT
Counterclockwise	CCW
Decimal	DEC
Deep/Depth	DP
Detail	DTL
Diagonal Brace Lower/Upper	DBL, DBU
Dimension	DIM
Distance	DIST
Double	DBLE
Drawing	DWG
Each	EA
East/West Rack Beam Top, Mid, Low	E/W RBT E/W RBM E/W RBL
Elevation	ELEV
End to End	E/E
Equal	EQL
Equally spaced	EQLSP
Elevation	ELEV
Existing	EX.
Exterior	EXT
Face to Face	F/F
Fastener	FSTNR
Field Fast	F.F.
Fillet	FIL
Gage	GA
Ground Mount	GM
Hexagonal	HEX
Horizontal	HORIZ
Hot Dipped Galvnization	HDG
Inch	IN
Inside diameter	ID
Interior	INT
Kilo Pounds	kips
Kilowatt	kW
Lateral Brace	LB
Left hand	LH
Length	L
Lock Nut	LN
Lockwasher	LKWASH
Long	LG
Material	MATL
Maximum	MAX
Mega Watts	MW
Micrometer	um
Millimeter	mm
Minimum	MIN
Module	MOD
Module Clamp	MC
Module Rail	MR
Multiple	MULT
North/South	NS
Not To Scale	NTS
Number	NO
On Center	OC
Outside Diameter	OD
Outside Face	OF
Overall	OA
Perpendicular	PERP
Photovoltaics	PV
Places	PLCS
Post/Pile	P
Point	PT
Pounds	LBS
Pounds per Square Foot	PSF
Quantity	QTY
Radial	RDL
Radius	RAD
Rectangle	RECT
Reference Line	REFL
Required	REQD
Right Hand	RH
Round	RND
Screw	SCR
Scope of Work	SOW
Section	SECT
Set screw	SSCR
Sheet	SHT.
Similar	SIM,
Single	SGL
Sleeve	SLV
Slotted	SLTD
Socket	SKT
Socket head	SCH
Square	SQ
Square Meters	SQM
Standard	STD
Steel	STL
Surface	SURF
Thick	THK
Thread	TRD
Through	THRU
Tilt Bracket	TB
To Be Determined	TBD
Top Of	T.O.
Typical	TYP
Unless Noted Otherwise	UNO
Vertical	VERT
Watt	WT
Wire Management	WM
Work Point	W.P.

OMCO SOLAR

REGISTERED PROFESSIONAL ENGINEER
STEVEN JOHN BAUER
No. 87848
Exp. 6/30/24
CIVIL
STATE OF CALIFORNIA
1/31/23

CHOICE GROUND MOUNT
CORDEVALLE
1 CORDEVALLE DRIVE
SAN MARIN, CALIFORNIA 95046

REV	DATE	DRAWN	CHECK	RELEASE DESCRIPTION
00	01/19/23	JDL		INITIAL RELEASE

PROJECT NAME:
CORDEVALLE

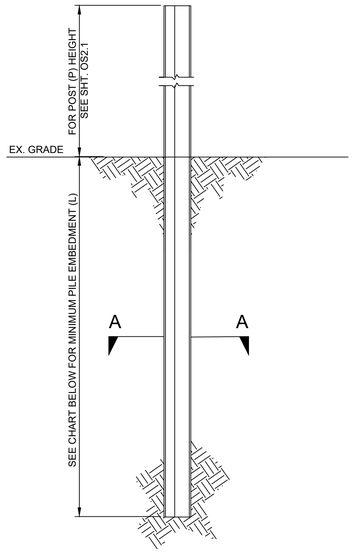
PROJECT NUMBER
3806627570

DRAWING NAME:
GENERAL NOTES

DRAWING NUMBER:
OS1.1

OMCO SOLAR
4550 W. WATKINS ST.
PHOENIX, AZ 85043
www.omcosolar.com

FOUNDATION INSTALLATION



VIEW "A-A"

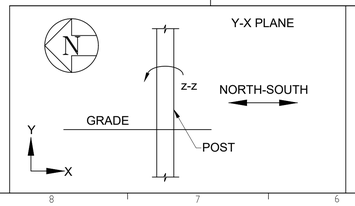
TYPICAL DRIVEN PILE (PD) — 1 / -

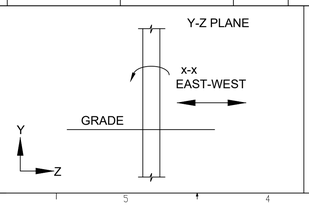
FOUNDATION NOTES

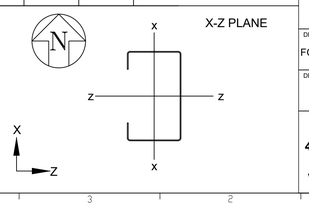
1. THE FOUNDATION DESIGN OF POST/PILES SHALL BE PER THE LOCAL AHJ ADOPTED BUILDING CODE, PILE REACTIONS AND/OR LOAD TESTING REPORTS PROVIDED. FOUNDATION DESIGN SHALL BE PER THE GOVERNING PILE REACTIONS RESULTING FROM THE STRUCTURAL ANALYSIS UTILIZING THE SPECIFIC PROJECT DESIGN MODULE, WIND LOADS, SNOW, AND SEISMIC LOAD SPECIFIED IN THIS SET. SEE TABLE THIS SHEET FOR POST REACTION AT GRADE AND MINIMUM EMBEDMENT REQUIREMENTS.
2. IT IS CRITICAL FOR PILES TO BE INSTALLED IN THE PROPER ORIENTATION AND LOCATION. REFERENCE LATEST OMCO CHOICE INSTALLATION MANUAL PROVIDED FOR ALL PILE INSTALLATION TOLERANCES, FOR ORIENTATION AND LOCATION.
3. TRENCHING OR EXCAVATION IN THE VICINITY OF PILE FOUNDATIONS SHALL SATISFY THE MINIMUM CLEARANCES NOTED BELOW BETWEEN EDGE OF TRENCH AND PILE.
   EAST-WEST TRENCHING = 60"
   NORTH-SOUTH TRENCHING = 36"
4. ALL CIVIL DESIGN, SITE LAYOUT, AND ASSOCIATED WORK SHALL BE DESIGNED, APPROVED, AND INSTALLED BY OTHERS.
5. PILES NOT DRIVEN TO THE SPECIFIED EMBEDMENT DEPTH SHALL BE REDESIGNED AND/OR MODIFIED AT THE CONTRACTOR'S EXPENSE. REDESIGN SHALL BE APPROVED AND/OR PROVIDED BY OMCO SOLAR.
6. IN THE EVENT OF ENCOUNTERING PILE REFUSAL, NOTIFY OMCO SOLAR IMMEDIATELY PRIOR TO MAKING ANY FIELD ADJUSTMENTS OR MODIFICATIONS.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INFORM THE ENGINEER OF RECORD IF FIELD CONDITIONS AND SOIL CONDITIONS ARE NOT PER THE GEOTECHNICAL REPORT OR APPROVED STAMPED CONSTRUCTION DOCUMENTS.
8. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW THE RECOMMENDATIONS PROVIDED IN THIS APPROVED CONSTRUCTION DOCUMENTS AND THE SITE GEOTECHNICAL REPORTS.
9. PILE SHALL NOT BE DRIVEN OR SET IN LOW POINTS WHERE WATER WILL BE ACCUMULATING OR PONDING.
10. DRIVEN PILE FOUNDATION DESIGN PER GEOTECHNICAL REPORT #404295001 BY NINYO & MOORE, DATED 6/7/2022.

NOTE: FOR PILE LOAD TESTING VALUES ON THE MAX POST REACTIONS AT GRADE TABLE SHALL BE MULTIPLIED BY THE APPROPRIATE SAFETY FACTORS AS FOLLOWS: FOR UPLIFT MULTIPLY POST REACTIONS BY 2.0, FOR DOWNFORCE MULTIPLY POST REACTIONS BY 1.65 AND FOR LATERAL MULTIPLY THE MOMENT BY 1.65 AND DIVIDE BY TESTING LOAD APPLICATION HEIGHT. TESTING SHALL BE PERFORMED PER ASTM D3689, D3966, AND D1143 STANDARDS.

MAX. POST REACTION AT GRADE							PILE SPECS
STRUCTURE IDENTIFIER	UPLIFT (KIPS) Y (-)	DOWN (KIPS) Y (+)	SHEAR (KIPS)		MOMENT (KIP-FT)		PD
			N-S	E-W	Z	X	L
E7	1.38	2.64	0.31	0.02	2.72	0.08	6'-6"
E10	1.95	3.29	0.44	0.07	5.66	0.30	9'-9"







OMCO SOLAR
A SYSTEM BY OMCO HOLDINGS

REGISTERED PROFESSIONAL ENGINEER
STEVEN JOHN BAUER
No. 87848
Exp. 6/30/24
CIVIL
STATE OF CALIFORNIA
1/5/23

CHOICE GROUND MOUNT
CORDEVALLE
1 CORDEVALLE DRIVE
SAN MARIN, CALIFORNIA 95046

REV	DATE	DRAWN	CHECK	RELEASE DESCRIPTION
00	01/19/23	JDL		INITIAL RELEASE

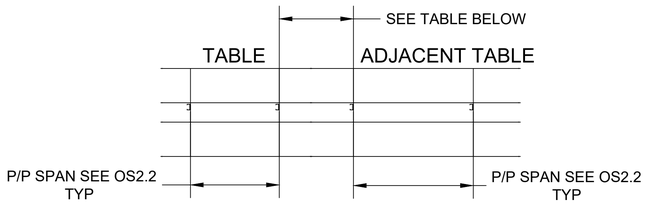
PROJECT NAME:
CORDEVALLE

PROJECT NUMBER
3806627570

DRAWING NAME:
FOUNDATION INSTALLATION

DRAWING NUMBER:
OS1.2

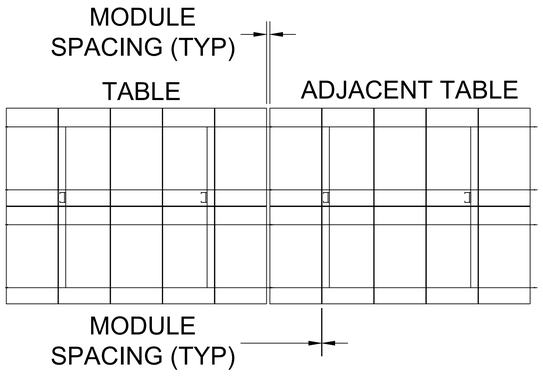
OMCO SOLAR
4550 W. WATKINS ST.
PHOENIX, AZ 85043
www.omcosolar.com



ADJACENT TABLE PILE SPACING EXAMPLE
(NTS)

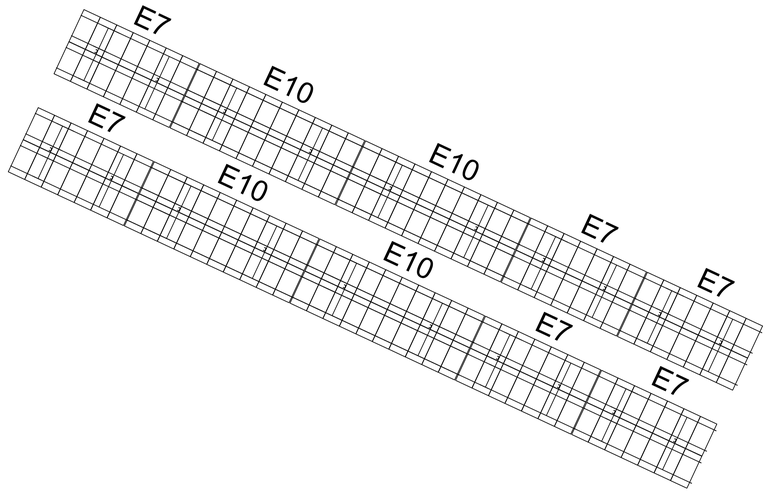
Table	2x7	2x10
2x7	146.63	
2x10	179.30	211.97

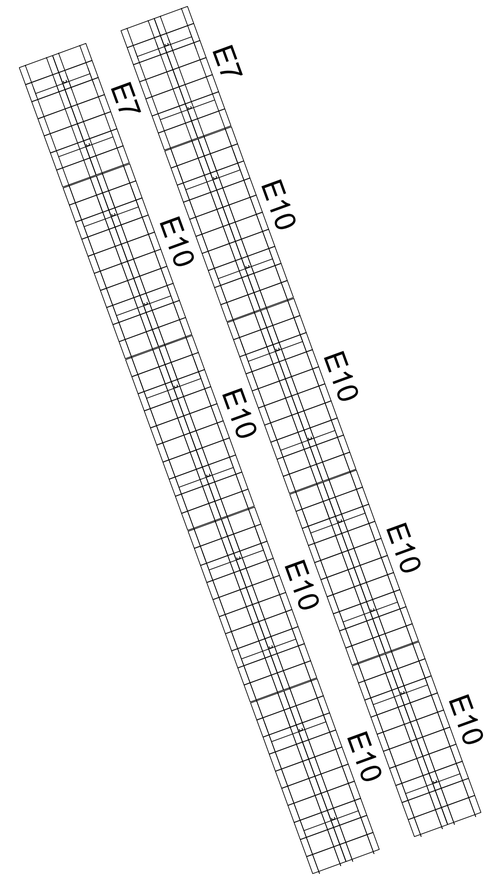
TABLE TO ADJACENT TABLE PILE SPACING
NOTE: ALL DIMENSIONS IN INCHES



END MOD/END MOD	MOD/MOD
2.57"	0.39"

ADJACENT TABLE MODULE SPACING EXAMPLE AND SCHEDULE
(NTS)





OVERALL STRUCTURE LAYOUT PLAN
(NTS)

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SAN MARIN, CALIFORNIA 95046

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00	01/19/23	JDL		INITIAL RELEASE

PROJECT NAME:
CORDEVALLE

PROJECT NUMBER
3806627570

DRAWING NAME:
GENERAL LAYOUT

DRAWING NUMBER:
OS2.0

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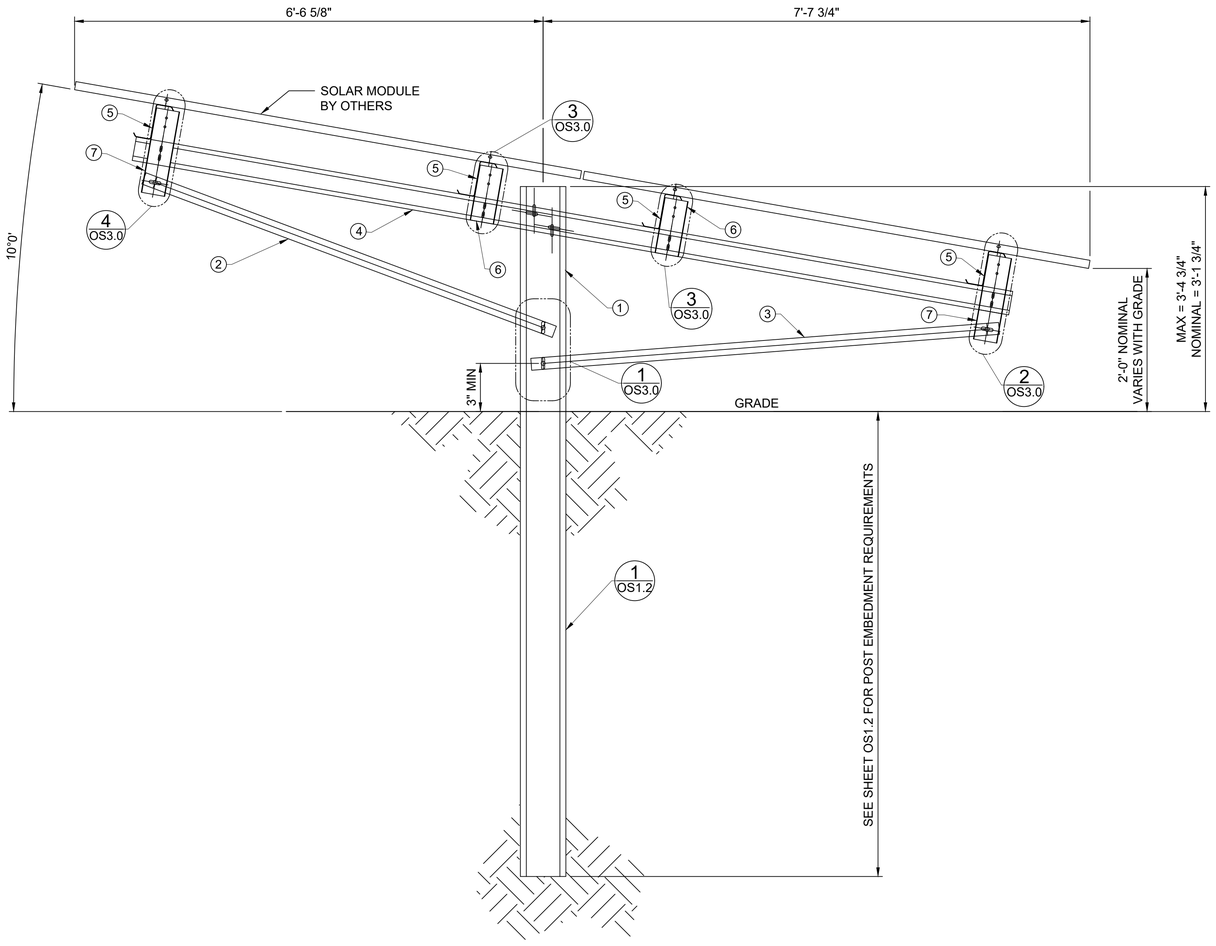
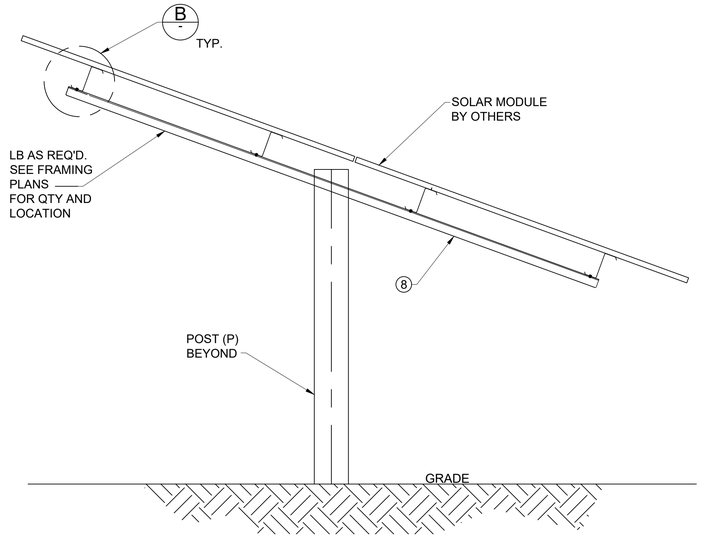
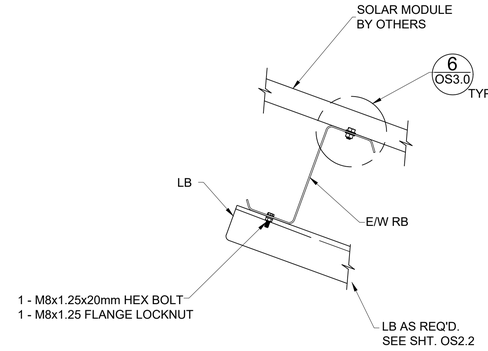


TYP. SECTION AT POST (A)
(NTS)



SECTION AT LB (C)



E/W RB TO LB CONNECTION (B)
TYP.

COMPONENTS

ITEM NO.	DESCRIPTION	MARK
1	POST	P
2	DIAGONAL BRACE UPPER	DBU
3	DIAGONAL BRACE LOWER	DBL
4	TILT BRACKET	TB
5	EAST/WEST RACK BEAM	E/W RB
6	"U" CONNECTOR BRACKET SHORT	CBS
7	"U" CONNECTOR BRACKET LONG	CBL
8	LATERAL BRACE	LB

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PROJECT NAME: CORDEVALLE

PROJECT NUMBER 3806627570

DRAWING NAME: TYPICAL SECTIONS

DRAWING NUMBER: OS2.1

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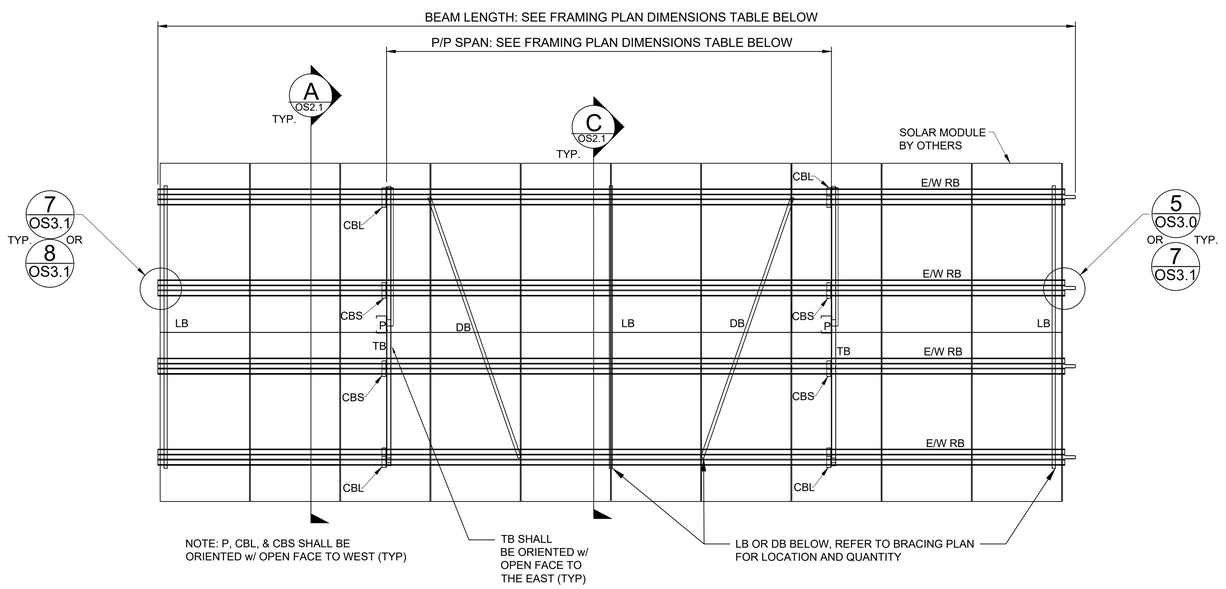
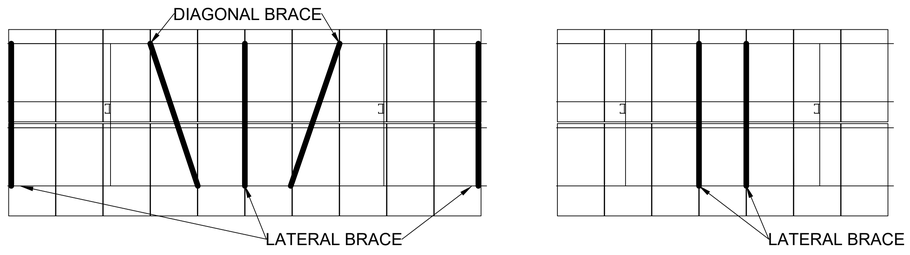
NOTE: 10 MODULE WIDE TABLE SHOWN FOR FRAMING SCHEDULE PURPOSE.



FRAMING PLANS
(NTS)

TABLE	BEAM LENGTH	P/P SPAN
E7	312.25"	162"
E10	443.59"	228"

FRAMING PLAN DIMENSIONS



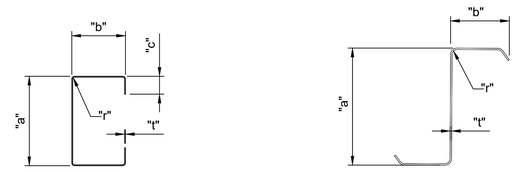
BRACING PLANS
(NTS)

BRACE PLAN NOTES:
- AT LATERAL BRACES ATTACH TO ALL FOUR RACK BEAMS
- AT DIAGONAL BRACES ATTACH TO ONLY THE MOST NORTH AND MOST SOUTH RACK BEAMS
- ALL BRACING MUST BE INSTALLED AND AT FINAL TORQUE WITH STRUCTURE SQUARE PRIOR TO MODULE INSTALLATION

FRAMING SCHEDULE

E7, E10								
MARK	MEMBERS	DIMENSIONS					Fy (ksi)	Fu (ksi)
		"a"	"b"	"c"	"t"	"r"		
P	POST	7.63"	4.5"	1"	0.112"	0.27"	57	70
DBU	DIAGONAL BRACE UPPER	2"	2"	-	0.092"	0.13"	57	70
DBL	DIAGONAL BRACE LOWER	2"	2"	-	0.092"	0.13"	57	70
TB	TILT BRACKET	4"	3"	1"	0.055"	0.06"	80	90
E/W RB	EAST/WEST RACK BEAM	6"	3"	-	0.055"	0.25"	80	90
CBS	CONNECTOR BRACKET SHORT	4"	2"	-	0.092"	0.13"	50	60
CBL	CONNECTOR BRACKET LONG	4"	2"	-	0.092"	0.13"	50	60
DB	DIAGONAL BRACE	1"	-	-	0.055"	0.05"	80	90
LB	LATERAL BRACE	1"	-	-	0.055"	0.05"	80	90

MEMBER PROFILES



REGISTERED PROFESSIONAL ENGINEER
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1 CORDEVALLE DRIVE
SAN MARIN, CALIFORNIA 95046

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PROJECT NAME:
CORDEVALLE

PROJECT NUMBER
3806627570

DRAWING NAME:
FRAMING PLANS

DRAWING NUMBER:
OS2.2

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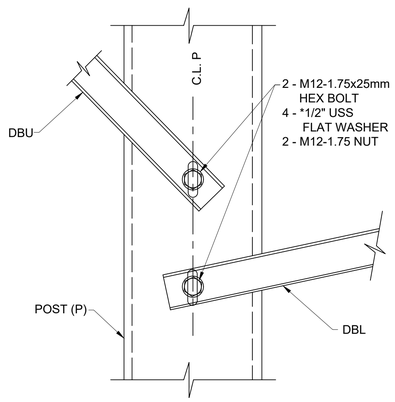
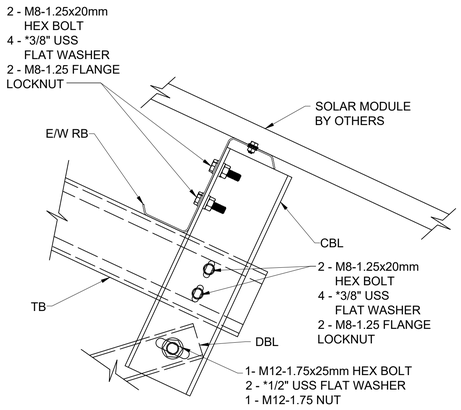


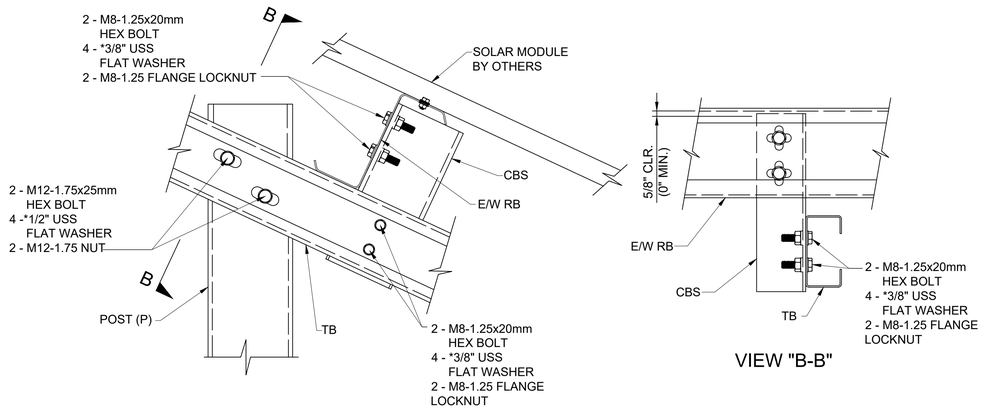
DBU & DBL TO POST
*SEE NOTE

1
-



TB TO CBL E/W RB TO CBL
DBL TO CBL *SEE NOTE

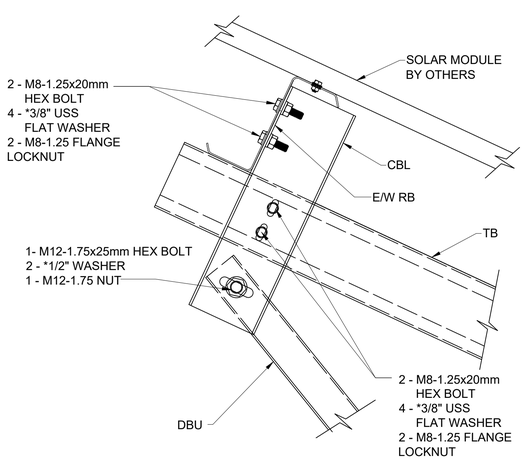
2
-



VIEW "B-B"

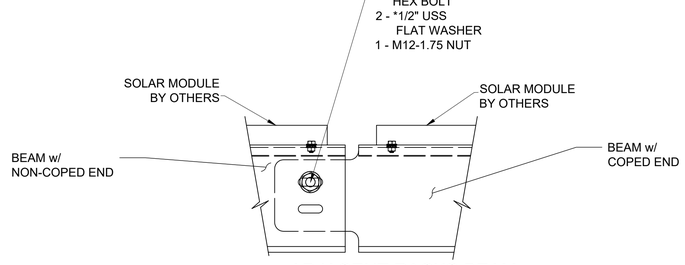
TB TO POST TB TO CBS
E/W RB TO CBS *SEE NOTE

3
-



TB TO CBL E/W RB TO CBL
DBL TO CBL *SEE NOTE

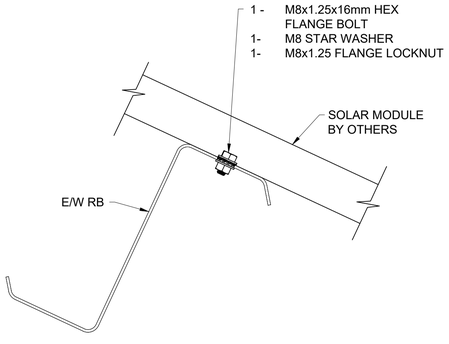
4
-



ADJACENT RACKS BEAM
ENDS BOLTED CONNECTION

BEAM TO BEAM CONNECTION.
NOTE: AT NON-STRUCTURAL RACK BEAM TO RACK BEAM, CONNECTIONS ONLY SINGLE BOLT IS REQUIRED FOR ELECTRICAL BONDING
*SEE NOTE

5
-



E/W RB TO MODULE

6
-

		HOLE DIA./SLOT SPEC (in/mm)		
DETAIL	CONN DESC.	BOLT SIZE	HOLE DIA. / SLOT DIA. - OVERALL LENGTH	
1	DBU & DBL TO POST	M12-1.75x25mm	DBU & DLB 0.512"-0.512"	POST 0.531"-2.00"
2	TB TO CBL	M8-1.25x20mm	CBL 0.354/8.99	TB 0.354"-1.00"
	E/W RB TO CBL	M8-1.25x20mm	CBL 0.354/8.99	E/W RB 0.354"-RADIUS SLOTS
	DBL TO CBL	M12-1.75x25mm	DBU & DLB 0.512"-0.512"	CBL 0.531"-2.00"
3	TB TO POST	M12-1.75x25mm	TB 0.531"-2.00"	POST 0.531"-2.00"
	E/W RB TO CBS	M8-1.25x20mm	CBS 0.354/8.99	E/W RB 0.354"-RADIUS SLOTS
	TB TO CBS	M8-1.25x20mm	TB 0.354"-1.00"	CBS 0.354/8.99
4	TB TO CBL	M8-1.25x20mm	CBL 0.354/8.99	TB 0.354"-1.00"
	E/W RB TO CBL	M8-1.25x20mm	CBL 0.354/8.99	E/W RB 0.354"-RADIUS SLOTS
	DBL TO CBL	M12-1.75x25mm	DBU & DLB 0.512"-0.512"	CBL 0.531"-2.00"
5	E/W RB TO E/W RB	M12-1.75x25mm	E/W RB 0.531"-1.50"	E/W RB 0.531"-1.25"
6	E/W RB TO MOD	M8-1.25x16mm	E/W RB 0.354"-1.75"	MODULE 0.354"-0.551"

TORQUE REQUIREMENTS - UNLESS OTHERWISE NOTED	
CONNECTION TYPE	TORQUE
M6 CONNECTIONS	6.6 ft-lb (9 N-m)
M8 CONNECTIONS	16 ft-lb (22 N-m)
M10 CONNECTIONS	32 ft-lb (43 N-m)
M12 CONNECTIONS	55 ft-lb (75 N-m)

*NOTE: AT - 3/8", 7/16" AND 1/2" USS "OVERSIZED" FLAT WASHER, USE "OVERSIZED" THRU-HARDENED HIGH STRENGTH PER ASTM F436 (HRC 38 TO 45)

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CORDEVALLE
1 CORDEVALLE DRIVE
SAN MARIN, CALIFORNIA 95046

REV	DATE	DRAWN	CHECK	RELEASE DESCRIPTION
00	01/19/23	JDL		INITIAL RELEASE

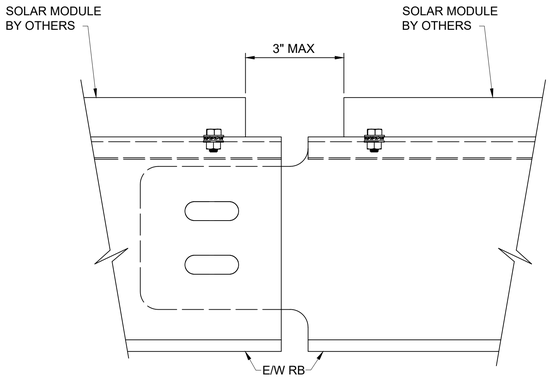
PROJECT NAME:
CORDEVALLE

PROJECT NUMBER
3806627570

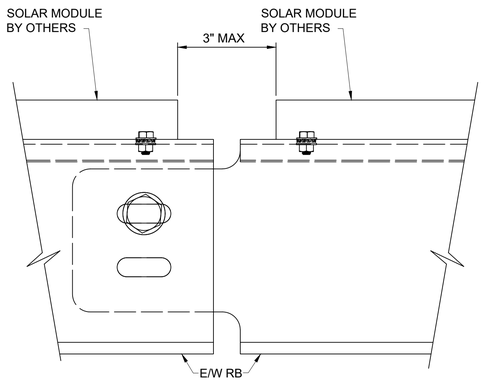
DRAWING NAME:
STRUCTURAL DETAILS

DRAWING NUMBER:
OS3.0

OMCO SOLAR
4550 W. WATKINS ST.
PHOENIX, AZ 85043
www.omcosolar.com

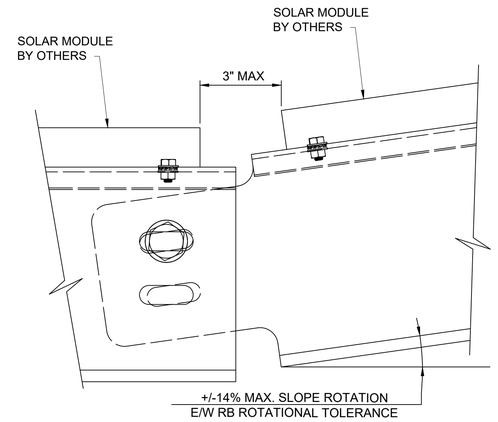


STRUCTURE SEPARATION SPACING

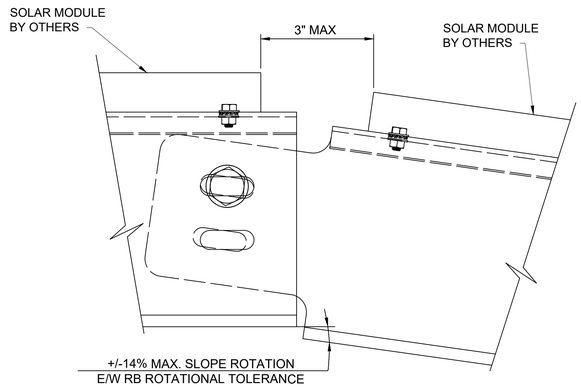


RACK BEAM TO RACK BEAM
(CONNECTED)

ADJACENT E/W RACK BEAM DESIGN SPACING 7 -



RACK BEAM TO RACK BEAM (VALLEY CONNECTION)



RACK BEAM TO RACK BEAM (HILL CONNECTION)

ADJACENT E/W RACK BEAM ARTICULATION 8 -

*EXCEPTION: WHERE ALL TABLES ARE END TABLES, 3" MAX DOES NOT APPLY

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DRAWING NAME:
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