Exhibit A

STAG INDUSTRIAL HOLDINGS

40 PEPES FARM ROAD
MILFORD, CT 06460

SYSTEM DESCRIPTION

TOTAL SYSTEM SIZE:	2112 kW DC STC TOTAL
MODULE TYPE:	400W JA SOLAR
QUANTITY:	5280 MODULES
TOTAL STRINGS:	330 STRINGS
MODULES PER STRING:	16
TILT ANGLE:	10.0 DEGREES
AZIMUTH:	143.544 DEGREES

MODULE DESCRIPTION:

MAXIMUM POWER (W):	400 W
OPEN CIRCUIT VOLTAGE (Voc):	49.57 V
MAXIMUM POWER VOLTAGE (Vpm):	42.02 V
SHORT CIRCUIT CURRENT (Isc):	10.14 A
MAXIMUM POWER CURRENT (Ipm):	9.52 A
EFFICIENCY (%):	19.5 %
MAXIMUM SYSTEM VOLTAGE:	1500 VDC

INVERTER DESCRIPTION: CHINT POWER SYSTEMS

TYPE OF INVERTER:	50KW
TOTAL NUMBER OF INV:	30
MODEL NUMBER:	CPS-SCA50KTL
DIMENSIONS:	1000*600*260mm
CONTINUOUS POWER:	50KW
DC PEAK POWER TRACKING RANGE:	480-850V
CEC PEAK EFFICIENCY:	98.5%

RACKING DESCRIPTION:

RACKING MANUFACTURER:	DCE SOLAR
RACKING TYPE:	BALLASTED

PROJECT CONTACTS

PROJECT MANAGER:
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CONSTRUCTION MANAGER:
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ELECTRICAL ENGINEER:
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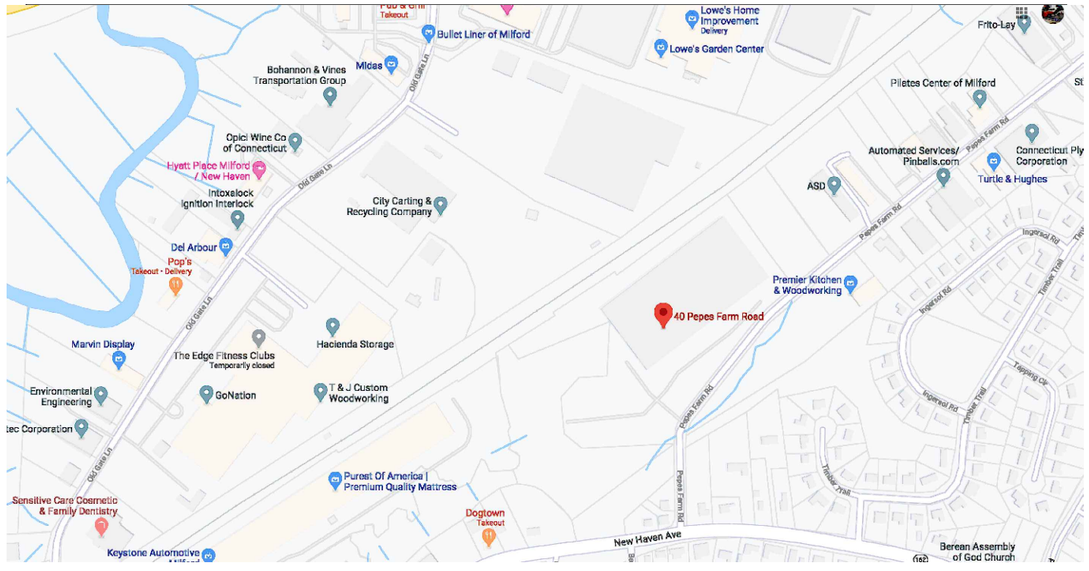
LICENCE#: CT (NO. 17349)

1 AERIAL PHOTO
SCALE: N.T.S.



2 VICINITY MAP
SCALE: N.T.S.

DRAWING LIST

1

DESIGN CRITERIA:

WIND SPEED:	123 MPH EXP.B
GROUND SNOW LOAD:	30 PSF
ROOF SNOW LOAD:	30 PSF

APPLICABLE CODES

2018 CONNECTICUT STATE
BUILDING CODE
ELECTRICAL CODE NFPA 70, 2017 ED,

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DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
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- [ ] RECORD

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G001

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GENERAL NOTES & SPECIFICATIONS:

1. ALL ELECTRICAL WORK TO BE INSTALLED BY A QUALIFIED LICENSED ELECTRICIAN AND APPRENTICES WORKING UNDER THE DIRECT SUPERVISION OF THE LICENSED CONTRACTOR.
2. PERMISSION TO OPERATE THE SYSTEM IS NOT AUTHORIZED UNTIL FINAL INSPECTIONS AND APPROVALS ARE OBTAINED FROM THE LOCAL AUTHORITY HAVING JURISDICTION AND THE LOCAL UTILITY SERVICE PROVIDER.
3. THE METHOD OF ATTACHMENT CREATES A UNIFIED STRUCTURE TO MEET DEAD LOAD, WIND LOAD, AND SEISMIC REQUIREMENTS. SOLAR MODULES WILL BE SECURED TO THE EXISTING ROOF AS SPECIFIED ON THE STRUCTURAL SHEETS. EXISTING ROOF EQUIPMENT WILL NOT BE EFFECTED BY THE PV SYSTEM.
4. ALL FABRICATION AND MANUFACTURING SHALL BE PERFORMED BY CERTIFIED INDIVIDUALS IN APPROVED ASSEMBLY AND FABRICATION SHOPS PRIOR TO COMMENCEMENT OF ANY WORK.THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES NOTED AMONG SITE CONDITIONS, MANUFACTURER RECOMMENDATIONS, OR AUTHORITY HAVING JURISDICTION.
5. THIS PROPOSED SOLAR ELECTRIC POWER IS INTENDED TO OPERATE IN PARALLEL WITH POWER RECEIVED FROM THE UTILITY SERVICE PROVIDER.
6. IF THIS SYSTEMS IS INTENDED TO CONNECT TO THE EXISTING FACILITY POWER SYSTEM AT ONE POINT, POINT OF COMMON COUPLING (POCC). THIS CONNECTION SHALL BE IN COMPLIANCE WITH THE NEC ARTICLE 705.12 'POINT OF CONNECTION'. CONNECTIONS DIRECT TO GRID SHALL BE IN ACCORDANCE TO THE DRAWINGS AND APPLICABLE NEC AND UTILITY CODES.
7. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE AND NATIONAL CODES AND UTILITY COMPANY STANDARDS AS WELL AS THE REQUIREMENTS OF ALL PERMITS OBTAINED.
8. ALL MATERIALS SUPPLIED AND ALL WORK INSTALLED MUST COMPLY WITH OR EXCEED THE MINIMUM REQUIREMENTS SET FORTH BY THE NFPA, NEC, ANY LOCAL CODES AND UTILITY COMPANY REQUIREMENTS.
9. CAUTION SHALL BE TAKEN WHEN MOUNTING ASSOCIATED ELECTRICAL EQUIP. AND MECHANICAL EQUIPMENT SO IT DOES NOT SHADE THE ARRAY AT ANY TIME DAY OR YEAR..
10. EQUIPMENT SHALL BE INSTALLED IN A SECURE AREA.
11. MATERIALS USED OUTDOORS SHALL BE SUNLIGHT/UV RESISTANT.
12. MATERIALS SHALL BE DESIGNED TO WITHSTAND THE TEMPERATURES TO WHICH THEY ARE EXPOSED.
13. ONLY HIGH QUALITY FASTENERS SHALL BE USED (STAINLESS STEEL OR EQUIVALENT).
14. THE PV SYSTEM IS EXPECTED TO BE AS AESTHETICALLY PLEASING AS POSSIBLE AND SHOULD BE CONSTRUCTED WITH GOOD WORKMANSHIP AND CARE.
15. CONTRACTOR SHALL LIMIT HIS USE OF THE PREMISES FOR WORK, INCLUDING STORAGE TO ALLOW FOR OTHER CONTRACTORS WORK, OWNER OCCUPANCY AND PUBLIC USE. IN THE COURSE OF PERFORMING THE WORK, CONTRACTORS SHALL KEEP THE WORK AREA IN A CONDITION SUITABLE FOR THE PERFORMANCE OF THE OWNER'S DAILY FUNCTIONS. THE APPEARANCE OF THESE AREAS WILL BE SUBJECT TO APPROVAL BY OWNER. TAKE ALL PRECAUTIONS NECESSARY TO PROTECT OWNER'S FURNITURE AND EQUIPMENT IN WORK AREAS.
16. CONTRACTOR SHALL MAINTAIN A RECORD SET OF DRAWINGS SHOWING ALL CHANGES DURING THE CONSTRUCTION PROCESS. DELIVER THESE RECORD DRAWINGS TO DYNAMIC ENERGY AT COMPLETION OF PROJECT.
17. FIRESTOPPING
    a. WHERE CONDUITS AND OTHER ELECTRICAL RACEWAYS PASS THROUGH FIRE PARTITIONS, FIRE WALLS OR FLOORS, INSTALL A UL LISTED FIRE-STOP THAT PROVIDES AN EFFECTIVE BARRIER AGAINST THE SPREAD OF FIRE, SMOKE AND GASES. FIRE-STOP MATERIALS SHALL BE PACKED TIGHT, AND COMPLETELY FILL CLEARANCES BETWEEN RACEWAYS AND OPENINGS. FIRE-STOP MATERIALS SHALL CONFORM TO THE FOLLOWING:
        a.1. FIRESTOPPING MATERIAL SHALL MAINTAIN ITS DIMENSION AND INTEGRITY WHILE PREVENTING THE PASSAGE OF FLAME, SMOKE AND GASES UNDER CONSTRUCTIONS OF INSTALLATION AND USE WHEN EXPOSED TO THE ASTM 119 TIME-TEMPERATURE CURVE FOR A TIME PERIOD EQUIVALENT TO THE RATING OF THE ASSEMBLY PENETRATED. COTTON WASTE SHALL NOT IGNITE WHEN PLACED IN CONTACT WITH THE NON-FIRE SIDE DURING THE TEST. FIRESTOPPING MATERIAL SHALL BE NON-COMBUSTIBLE AS DEFINED BY ASTM E136 AND IN ADDITION, FOR INSULATION MATERIALS, MELT POINT SHALL BE A MINIMUM OF 1700 DEGREES FAHRENHEIT FOR 2-HOUR PROTECTION.
        a.2. MATERIALS SHALL BE 3M FIRE BARRIER, THOMAS AND BETTS FLAME SAFE, OR NELSON ELECTRIC FIRESTOP.
18. ALL SOLAR MODULES SHALL BE LISTED 1703. ALL INVERTERS SHALL BE UL LISTED 1741 CERTIFIED. ALL ELECTRICAL COMPONENTS AND MATERIALS SHALL BE LISTED FOR ITS PURPOSE AND INSTALLED IN A WORKMANLIKE MANNER. ALL OUTDOOR EQUIPMENT SHALL MEET APPROPRIATE NEMA STANDARDS.
18. ALL MATERIALS AND EQUIPMENT FOR THE WORK SHALL BE NEW UNLESS OTHERWISE SPECIFIED. ALL MATERIAL SHALL BE SUBJECT TO APPROVAL BY A DYNAMIC ENERGY.

MISCELLANEOUS

1. ALL WASTE MATERIALS SHALL BE COLLECTED AND DISPOSED OF INTO METAL TRASH DUMPSTERS IN THE MATERIALS STORAGE AREA.
2. DUMPSTERS SHALL BE PLACED AWAY FROM STORMWATER CONVEYANCES AND DRAINS AND MEET ALL FEDERAL, STATE, AND MUNICIPAL REGULATIONS.
3. ONLY TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN THE DUMPSTER.
4. NO CONSTRUCTION MATERIALS SHALL BE BURIED ONSITE.
5. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT DISPOSAL OF TRASH AND CONSTRUCTION DEBRIS.
6. ALL HAZARDOUS WASTE MATERIALS SUCH AS OIL FILTERS, PETROLEUM PRODUCTS, PAINT, AND EQUIPMENT MAINTENANCE FLUIDS SHALL BE DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE, AND MUNICIPAL REGULATIONS.
7. WHEN ANY DIRECT OR INDIRECT DAMAGE OR INJURY IS DONE TO PUBLIC OR PRIVATE PROPERTY BY OR ON ACCOUNT OF ANY ACT, OMISSION, NEGLECT, OR MISCONDUCT IN THE EXECUTION OF THE WORK OR IN CONSEQUENCE OF THE NON-EXECUTION THEREOF ON THE PART OF CONTACTOR, SUCH PROPERTY SHALL BE RESTORED AT CONTACTOR EXPENSE TO A CONDITION SIMILAR OR EQUAL TO THAT EXISTING BEFORE SUCH DAMAGE OR INJURY WAS DONE.
8. OWNERS, EMPLOYEES, OR AGENTS OF PUBLIC OR PRIVATE SERVICES LOCATED WITHIN THE PROJECT LIMITS SHALL BE ALLOWED FREE AND FULL ACCESS WITH THE TOOLS, MATERIALS, AND EQUIPMENT NECESSARY TO INSTALL, OPERATE, MAINTAIN, PLACE, REPLACE, RELOCATE, AND REMOVE SERVICE FACILITIES. NO COMPENSATION WILL BE PAID TO CONTACTOR FOR ANY INCONVENIENCE CAUSED BY WORKING WITH THESE PARTIES OR AROUND OR WITH THEIR SERVICES.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES DONE TO SERVICES FROM THE BEGINNING OF CONSTRUCTION TO THE SATISFACTORY COMPLETION OF THE PROJECT, INCLUDING ALL DAMAGES TO WATER SUPPLIES AND SEWAGE SYSTEMS, INCLUDING BUT NOT LIMITED TO DAMAGE TO SPRINGS AND WELLS, SEPTIC TANKS, CESSPOOLS, AND UNDERGROUND PIPES, WHETHER LOCATED WITHIN OR OUTSIDE THE PROJECT RIGHT-OF-WAY OR WHETHER OR NOT SHOWN ON THE PLANS.
10. CONTRACTOR SHALL, WITHOUT CHARGE, REPLACE ANY WORK OR MATERIAL, WHICH DEVELOPS DEFECTS, EXCEPT ORDINARY WEAR AND TEAR, OR FAIL TO PERFORM SATISFACTORILY WITHIN 1 YEAR FROM DATE OF FINAL ACCEPTANCE. THIS PERTAINS TO VENDOR PROVIDED MATERIAL AND WORKMANSHIP.

SCOPE OF WORK:

1. INSTALL EQUIPMENT, CONDUIT, AND WIRING ACCORDING TO DYNAMIC ENERGY'S APPROVED PLANS AND THE PROVIDED MANUFACTURER'S INSTALLATION MANUALS.
2. A COPY OF THE APPROVED PERMIT PLANS SHALL BE AVAILABLE AT THE SITE FOR THE INSPECTOR'S USE DURING FIELD INSPECTION AND POSTED AS DICTATED BY THE AHJ.
3. ALL MATERIALS AND EQUIPMENT FOR THE WORK SHALL BE NEW, UNLESS OTHERWISE SPECIFIED. ALL MATERIAL SHALL BE SUBJECT TO APPROVAL BY DYNAMIC ENERGY.
4. CONTRACTOR SHALL PROVIDE ALL CUTTING, PATCHING, CONDUIT SLEEVES, EXCAVATION, BACKFILL, AND CONCRETE WORK.
    a. REVIEW WITH DYNAMIC ENERGY CONSTRUCTION MANAGER, THE LOCATION AND SIZE OF OPENINGS TO BE CUT INTO EXISTING CONSTRUCTION BEFORE STARTING OF CUTTING WORK.
    b. ALL CUTTING, ROUGH PATCHING AND FINISH PATCHING REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR.
    c. WHERE CONDUITS PASS THROUGH MASONRY OR CONCRETE WALLS, FOUNDATIONS OR FLOORS, THE CONTRACTOR SHALL SET SUCH SLEEVES AS ARE NECESSARY FOR PASSAGE OF THE CONDUITS. SLEEVES SHALL BE SCHEDULE 40 GALVANIZED STEEL OF SUFFICIENT SIZE TO PROVIDE AIR SPACE AROUND THE CONDUIT PASSING THROUGH FOR FIREPROOFING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXACT LOCATION OF SLEEVES PROVIDED UNDER HIS CONTRACT.
    d. CORE DRILL ALL OPENINGS REQUIRED IN EXISTING CONSTRUCTION USING A DRILL STOP FOR INSTALLATION OF EQUIPMENT AND MATERIAL.
    e. PROVIDE ALL EXCAVATION AND BACKFILL REQUIRED FOR WORK OF THIS PROJECT.
5. CONTRACTOR SHALL INSTALL ALL LABELS FOR CONDUITS CABLE TRAY,ETC. AS REQUIRED BY THE CURRENT NEC CODE.
6. CONTRACTOR INITIATED CHANGES SHALL BE SUBMITTED IN WRITING TO THE ENGINEER IN THE FORM OF A DESIGN CHANGE REQUEST FOR INFORMATION PRIOR TO MAKING ANY CHANGES. APPROVED CHANGES SHALL REQUIRE A DRAWING REVISION TO MAINTAIN CONTROL OVER THE ENGINEER APPROVED DESIGN. THE ELECTRICAL CONTRACTOR IS ADVISED THAT ALL DRAWINGS AND COMPONENT MANUALS ARE TO BE UNDERSTOOD PRIOR TO INSTALLATION. THE CONTRACTOR IS ADVISED TO HAVE ALL SWITCHES IN THE 'OFF' POSITION AND FUSES REMOVED PRIOR TO INSTALLATION OF FUSE-BEARING COMPONENTS.
7. PROVIDE ALL CONCRETE REQUIRED FOR WORK OF THIS PROJECT.
8. COMMISIONING OF THE COMPLETED INSTALLATION SHALL BE AS SPECIFIED IN THE CONTRACT AGREEMENT.

ROOF INSTALLATIONS: (WHERE APPLICABLE)

1. ALL FASTENERS SHALL BE CORROSION RESISTANT APPROPRIATE FOR SITE CONDITIONS. CONNECTORS SHALL BE TORQUED PER DEVICE LISTING OR ENGINEERING RECOMMENDATIONS. ALL ROOFING REPAIR MUST MAINTAIN EXISTING CLASS AND TYPE OF ROOF AND ALL WORK SHALL BE IN ACCORDANCE WITH THE ROOFING MANUFACTURER'S INSTALLATION REQUIREMENTS.
2. CABLE AND CONDUIT SHALL BE PROPERLY SUPPORTED , SHALL BE KEPT AT A MINIMUM 1" ABOVE ROOF SURFACE. SHALL NOT BE RUBBING ON ABRASIVE SURFACE I.E. ENDS OF RAILS, SHALL NOT BE PINCHED BETWEEN PANELS AND RAIL.
3. APPROPRIATE PROTECTION SHALL BE USED FOR ALL ROOF PENETRATIONS. CONTRACTORS SHALL HIRE OWNER'S ROOFING CONTRACTOR TO PROVIDE AND SEAL ALL ROOF PENETRATIONS.
4. CONDUITS PASSING THROUGH ROOFS OR OTHER SURFACES EXPOSED TO WEATHER SHALL BE PROPERLY FLASHED AND MADE WATER TIGHT.
5. PV WIRING SHALL BE SUPPORTED EVERY 24" OR AS PRACTICAL AND SHALL NOT TOUCH ANY ROOF SURFACES MANUFACTURED MODULE WIRES MUST BE SUPPORTED UNDER EVERY MODULE WITH STAINLESS STEEL CLIPS OR EQUIVALENT.
6. ALL ROOFTOP CONDUITS SHALL BE SUPPORTED BY THE HARD PLASTIC ROOF CADDY'S WHICH WILL KEEP THE CONDUIT AT A MINIMUM OF 4" ABOVE THE ROOF SURFACE HARD FOAM ROOF CADDY'S SHALL NOT BE USED WITHOUT APPROVAL FROM DYNAMIC ENERGY'S ENGINEER.
7. CONDUIT RUNS ON FLAT ROOFS SHOULD BE BALLASTED WHERE THEY MAY BE SUBJECT TO HIGH WINDS OR SHIFTING DUE TO ICE OR SNOW. THE BALLAST STRUCTURE MUST ALLOW THE CONDUIT TO EXPAND AND CONTRACT. BALLAST SPACING SHALL BE ON 20'-0" INTERVALS MAXIMUM. COORDINATE LOCATIONS WITH DYNAMIC ENERGY CONSTRUCTION MANAGER.
8. CONDUIT RUNS ON SLOPED ROOFS SHOULD BE SECURED IN SIMILAR FASHION AS ABOVE WITHOUT THE USE OF BALLASTING.COORDINATE METHOD AND LOCATIONS WITH DYNAMIC ENERGY CONSTRUCTION MANAGER.
9. CONDUITS RUNS SHALL BE TRANSITIONED TO SEALTITE WHEN RUN ON A ROOFTOP BETWEEN TWO STATIONARY TERMINATION POINTS TO ALLOW FOR EXPANSION AND CONTRACTION. SEALTITE SHALL NOT BE USED IN LENGTHS GREATER THAN 6;.
10. PVC CONDUIT SHALL NOT BE USED IN ANY RUN GREATER THAN 20' ON ROOFTOPS AND MUST HAVE THE ABILITY TO EXPAND AND CONTRACT
    PVC IS GENERALLY USED AS PHYSICAL PROTECTION FOR EXPOSED PV WIRES PVC MUST BE SUPPORTED AT INTERVALS TO PREVENT SAGGING ALLOWING CONTACT WITH ROOF SURFACE.

EXISTING CEILINGS:

11. CONTRACTOR WILL BE RESPONSIBLE TO REMOVE AND REPLCAE EXISTING CEILING TILE AND GRID SYSTEM AFFECTING THE INSTALLATION OF EQUIPMENT AND MATERIAL ABOVE CEILING.
12. DAMAGED TILE SHALL BE BROUGHT TO OWNER'S ATTENTION PRIOR TO REMOVAL. FAILURE TO DO SO SHALL MAKE CONTRACTOR RESPONSIBLE FOR REPLACEMENT OF DAMAGED CEILING TILE AND GRID SYSTEM AT NO COST OF OWNER.
14. CONTRACTOR SHALL BE RESPONSIBLE TO DISCONNECT, REMOVE, REPLACE AND RECONNECT EXISTING LIGHTING FIXTURES,SPEAKERS ETC., IN AFFECTED WORK AREAS UNLESS NOTED OTHERWISE.

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GENERAL & CONSTRUCTION NOTES

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G002

ELECTRICAL:

MODULES:

1. PV MODULE MANUFACTURER'S INSTRUCTIONS SHALL BE CAREFULLY FOLLOWED WHEN HANDLING OR INSTALLING THE MODULES.
2. DO NOT INSTALL DAMAGED MODULES.
3. WHERE PLUG CONNECTORS ARE USED FOR MODULE WIRING, MAKE SURE THAT CONNECTORS ARE FULLY ENGAGED PLUG CONNECTORS MUST BE OF THE SAME MAKE AND MODEL AND LISTED FOR THEIR USE CONNECTORS FROM DIFFERING MANUFACTURERS SHALL NOT BE USED TOGETHER.
4. AT NO TIME IS IT ACCEPTABLE TO WALK ON,SIT ON, REST ON, OR DROP, MODULES. ANY TIME THAT THIS IS DONE THE CONTRACTOR WILL BE RESPONSIBLE FOR REPLACEMENT COST OF THE MODULES.

INVERTERS:

5. ANTI-ISLANDING PROTECTION IS A REQUIREMENT OF UL 1741 AND IS INTENDED TO PREVENT THE OPERATION OF THE PV SYSTEM WHEN THE UTILITY GRID IS NOT OPERATIONAL.
6. THE INVERTER FOR THE PROPOSED ELECTRIC SYSTEM SHALL BE IDENTIFIED FOR USE IN SOLAR PHOTOVOLTIAC SYSTEMS. ALL EQUIPMENT SHALL BE UL APPROVED.

BALANCE OF SYSTEM:

7. ALL SOURCE CIRCUITS SHALL HAVE INDIVIDUAL SOURCE CIRCUIT PROTECTION FOR TESTING AND ISOLATION. ALL COMBINER BOXES SHALL HAVE DISCONNECTING MEANS NEAR THE COMBINER FOR ISOLATION AND TESTING.
8. ALL DISCONNECTS AND COMBINER SHALL BE SECURED FROM UNAUTHORIZED/UNQUALIFIED PERSONNEL BY LOCK OR LOCATION.
9. ALL DISCONNECTS , COMBINERS , PULL/SPLICE BOXES , AND ENCLOSURES SHALL BE LISTED FOR ITS PURPOSE.
10. STRING HOMERUNS SHALL BE PROPERLY LABELED BY NUMBERS AT THE BEGINNING AND END OF EACH CIRCUIT AND AT ALL CONNECTIONS IN HOMERUN.
11. STRING NUMBERS SHALL MATCH CONSTRUCTION DRAWING AND BE IN CORRECT LOCATION IN ARRAY.
12. PV WIRING SHALL BE SUPPORTED EVERY 24" OR AS PRACTICAL AND SHALL NOT TOUCH ANY ROOF SURFACES. MANUFACTURED MODULE WIRES MUST BE SUPPORTED UNDER EVERY MODULE WITH STAINLESS STEEL CLIPS OR EQUIVALENT.
13. ALL CONDUITS AND CABLE TRAYS SHALL BE SUPPORTED AT INTERVALS AS DEFINED IN THE NEC.
14. ONLY HEAVY DUTY UV WIRE TIES WITH EXTREME HIGH AND LOW TEMPERATURE RATINGS SHALL BE USED IN ALL APPLICATIONS.
15. COMBINERS, PULL/SPLICE BOXES, AND ENCLOSURES SHALL BE LISTED FOR ITS PURPOSE.

CONDUIT:

16. PROVIDE EXPANSION FITTINGS IN CONDUIT RUNS PER NEC.
17. MEYERS HUBS SHALL BE USED FOR ANY CONDUIT PENETRATIONS ENTERING THE TOP OF ANY EXTERIOR ENCLOSURE. NEMA 4 ENCLOSURES OR GREATER WILL REQUIRE MEYERS HUB FOR ANY PENETRATION WHENEVER PRACTICAL. CONDUIT ENTRY IN THE BOTTOM, OF ENCLOSURES IS PREFERABLE. MEYERS HUB FITTINGS SHALL BE USED WITH RGS & IMC CONDUIT ONLY TO MAINTAIN GROUNDING AND WATER SEAL.
18. EMT OR GRC CONDUITS SHALL BE USED FOR ALL EXTERIOR APPLICATIONS FOR DC FEEDERS AND AC WIRING.
19. ALL METALLIC CONDUIT SHALL BE BONDED APPROPRIATELY AT ONE END(MINIMUM) AND WHENEVER USED IN CONCENTRIC KNOCK OUTS.
20. ONLY COMPRESSION COUPLINGS AND CONNECTORS APPROVED FOR WET LOCATION SHALL BE USED FOR EMT CONDUIT (EXTERIOR ONLY).
21. BUSHINGS SHALL BE USED AT CONDUIT TERMINATION POINTS PER NEC UNLESS THE CONNECTOR HAS A BUILT IN PLASTIC THROAT.
22. EXTREME CARE MUST BE TAKEN WHEN USING COMPRESSION COUPLINGS AND CONNECTORS TO ASSURE THEY ARE SEATED FULLY AND TIGHTENED SO CONDUIT CANNOT SEPERATE.
23. ALL CONDUIT ENTRIES TO PANELS, SWITCHGEAR, WEATHERHEADS, INVERTERS OR COMBINER BOXES SHALL BE SEALED AS FOLLOWS:

23.1. DUCT SEALANT SHALL BE POLYWATER FST™ FOAM SEALANT. DUCT SEALANT SHALL BE A 2-PART, 98% CLOSED-CELL URETHANE FOAM. IT SHALL REACT AND SET IN 5-10 MINUTES AT 70°F. IT SHALL BE CAPABLE OF SEALING 3/4"-10 CONDUITS WITH MULTIPLE CABLE CONFIGURATIONS. DUCT SEALANT SHALL BE REENTERABLE. IT SHALL BE CAPABLE OF WITHSTANDING TEMPERATURES FROM -40°F TO 200°F; AND BE CHEMICALLY RESISTANT TO GASOLINE, OILS, DILUTE ACIDS AND BASES. DUCT SEALANT SHALL NOT AFFECT THE PHYSICAL OR ELECTRICAL PROPERTIES OF WIRE AND CABLE.

23. 2. DUCT SEALANT SHALL HAVE GOOD ADHESION TO DUCT AND CABLE JACKET SURFACES WITH GOOD STRUCTURAL STRENGTH. IT SHALL HAVE 120-lb COMPRESSIVE STRENGTH (ASTM D1621). DUCT SEALANT SHALL BE CAPABLE OF HOLDING 22FT. WATERHEAD PRESSURE CONTINUOUS OR 90FT. WATERHEAD PRESSURE SHORT-TERM. IT SHALL BLOCK UP TO 5 PSI GAS OR VAPOR CONTINUOUS. IT SHALL MEET NEC CODES FOR RACEWAY SEALS, MEET UL 94 FIRE RATING HBF AND BE UL RECOGNIZED.

WIRE AND TERMINATIONS:

GENERAL

1. ALL WIRE SHALL BE NEW AND CONTRACTOR SHALL PROVIDE THE MANUFACTURED DATE OF WIRE IF REQUESTED.
2. USE ONLY WIRE TYPES SPECIFIED OR AS ALLOWED BY THE NEC.
3. THHN/THWN/THHN-2/THWN-2 SHALL BE USED FOR FEEDER AND BRANCH CIRCUIT CONDUCTORS, UNLESS NOTED. CABLE INSULATION TYPE SHALL BE RATED FOR WET LOCATIONS AND HAVE A TEMPERATURE RATING OF 90°C OR BETTER.
4. PV CABLE , #10 COPPER, STRANDED, NEW 2000 VOLT, SHALL BE USED FOR PV STRING CONDUCTORS UNLESS NOTED. ALL PV WIRES BETWEEN PV MODULES & INVERTERS SHALL BE CONTINUOUS, WITHOUT ADDITIONAL CONNECTORS IN BETWEEN.UNLESS SPECIFIED BY THE ENGINEER.
5. ENSURE WIRE IS CONSISTENT WITH PLANS.
6. ALL WIRING TORQUE MUST BE DONE TO EQUIPMENT MANUFACTURERS SPECIFICATIONS AND MARKED AT EVERY TERMINATION.
7. ALL PHASE CONDUCTORS OF AN AC CIRCUIT OR FEEDER SHALL BE RUN IN THE SAME CONDUIT WHEN USING METAL RACEWAYS TO AVOID INDUCED CURRENTS AND OVERHEATING.
8. ALL AC & DC FEEDER CABLES INCLUDING STRING WIRES SHALL BE TESTED FOR INSULATION INTEGRITY WITH A MEGA OHM METER AT 1000 VOLTS FOR 1 MINUTE INTERVALS AND THE RESULTS MUST BE DOCUMENTED AND PUT IN THE JOB BINDER.
9. UNLESS SPECIFIED ALL WIRING SHALL BE COPPER.
10. ALUMINUM WIRING MAY BE USED WHEN SPECIFIED BUT SHALL NOT BE USED IN SIZES LESS THAN 2 AWG WITHOUT WRITTEN PERMISSION FROM DYNAMIC ENERGY.
11. BUSES, FEEDERS, BRANCH CIRCUIT CONDUCTORS, AND MEDIUM-VOLTAGE CABLES SHALL BE PROPERLY PHASED AND IDENTIFIED THROUGHOUT. INDIVIDUAL CONDUCTORS SHALL BE COLOR CODED AS NOTED BELOW:

CONDUCTOR	120/208V AND MEDIUM VOLTAGE	277/480V	462/800V
PHASE A	BLACK	BROWN	RED
PHASE B	RED	ORANGE	BLUE
PHASE C	BLUE	YELLOW	YELLOW
NEUTRAL	WHITE	GRAY	GRAY
GROUND	GREEN	GREEN	GREEN
ISOLATED GROUND	GREEN / YELLOW	GREEN / YELLOW	GREEN / YELLOW
CONDUCTOR	**DC**		
POSITIVE (+)	RED		
NEGATIVE (-)	BLACK		
GROUNDED CONDUCTOR	WHITE		
EQUIPMENT GROUND	GREEN		

A. BUSES AND CONNECTIONS SHALL BE IDENTIFIED LEFT TO RIGHT, TOP TO BOTTOM, OR FRONT TO REAR; SHALL READ A-B-C; AND SHALL BE COLOR-CODED PER THE TABLE ABOVE.

B. FEEDERS FOR ALL NEW CONSTRUCTION SHALL HAVE COLOR-CODED PHASE IDENTIFICATION AT ALL JUNCTION BOXES AND WHEREVER FEASIBLE, AND SHALL HAVE SOLID (CONTINUOUS) COLOR INSULATION FOR PHASE DESIGNATION.

12. DISSIMILAR METALS (SUCH AS STEEL AND ALUMINIUM) SHALL BE ISOLATED FROM SURFACE TO SURFACE CONTRACT USING NON-CONDUCTIVE SHIMS, WASHERS, OR OTHER METHODS.
13. ALUMINIUM SHALL NOT BE PLACED IN DIRECT CONTACT WITH CONCRETE MATERIALS.
14. PARALLEL CONDUCTORS MAY ONLY BE USED WHEN SPECIFIED, AND MUST ADHERE TO NEC ARTICLE 310.

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03/22/21

WIRE AND TERMINATIONS (CONTINUED):

15. WIRE TERMINATIONS

15.1. SHALL BE HIGH PRESSURE CRIMPS ON ALL ALUMINUM CABLE. CRIMPS MUST BE RATED FOR THE SPECIFIC APPLICATION AND WIRE TYPE UNLESS APPROVED OTHERWISE.

15.2 ANTI-OXIDIZING COMPOUND MUST BE USED ON ALL ALUMINUM TERMINATIONS.

15.3. STRANDED COPPER WIRE 10 AWG & LESS REQUIRES THE USE OF COMPRESSION TYPE TERMINATIONS UNLESS DEVICE IS RATED TO HANDLE THAT SIZE WIRE.

16. WHERE CONDUCTORS SIZE EXCEED THE RATING OF THE EQUIPMENT LUGS THE CONDUCTORS MAY TRANSITION EITHER USING ILSCO CLEAR TAPS OR POWER DISTRIBUTION BLOCKS OR BUTT SPLICES TO CONDUCTORS THAT WILL NOT EXCEED THE RATING OF THE EQUIPMENT LUGS. THE TRANSITION SHALL BE WITHIN 10' - 0" OF LUGS. THE SIZE OF TRANSITIONED CONDUCTORS SHALL BE SIZED TO MEET THE RATING OF THE OVERCURRENT PROTECTION DEVICES.

TRENCHING:

1. ALL TRENCHING SHALL BE DONE IN ACCORDANCE WITH PLANS AS SPECIFIED.
2. ALL TRENCHING SHALL MEET OR EXCEED NEC ARTICLE 300 MINIMUM COVER REQUIREMENTS.

A. DEPTH FROM GROUND LEVEL TO TOP OF CLEAN FILL (SCREENINGS OR EQUIVALENT) 24" BELOW FINISHED GRADE, MINIMUM.

B. SHALL HAVE A MINIMUM OF 4" OF SCREENINGS OR EQUIVALENT UNDER CONDUIT AND A MINIMUM OF 4" ABOVE. DIRECT BURIED WIRE, WHEN ALLOWED, WILL REQUIRE 6" OF SCREENINGS ABOVE AND 6" BELOW.

C. METALLIC TRACER TAPE SHALL BE USED WHICH STATES THE FOLLOWING: "CAUTION: BURIED ELECTRIC LINE BELOW", TAPE SHALL BE LOCATED APPROX. 12" BELOW GRADE.

3. TRENCHES MAY HAVE TO BE LEFT OPEN OVERNIGHT FOR INSPECTION PURPOSES. IF THIS IS THE CASE, PRECAUTIONS MUST BE TAKEN TO ASSURE THAT A PERSON OR OBJECT CAN NOT FALL INTO THE TRENCH. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SECURE THE TRENCH IN SUCH A MANNER TO PREVENT THIS FROM HAPPENING. CONTRACTOR SHOULD BE FAMILIAR WITH OSHA STANDARDS AND EMPLOY THE SAME.
4. TRENCHES WHICH MAY HAVE TO BE LEFT OPEN FOR AN EXTENDED PERIOD OF TIME SHALL FOLLOW # 3 ABOVE AND THE SIDEWALLS SHALL BE SECURED TO PREVENT COLLAPSE. TRENCH TOP SHALL BE COVERED TO PREVENT WATER, SNOW, AND DEBRIS FROM ENTERING AS WELL.
5. PICTURES SHALL BE TAKEN OF ALL PHASES OF THE TRENCHING AND PUT IN JOB BINDER.
6. APPROPRIATE INSPECTIONS SHALL BE MADE BY AHJ BEFORE CLOSING TRENCH.
7. RECORD DRAWINGS SHOWING THE EXACT LOCATION OF TRENCHES SHALL BE DRAWN UP BY CONTRACTOR AND PUT IN JOB BINDER. (ON "MASTER PLAN")
8. FINISH GRADING MUST BE EQUIVALENT TO THE ORIGINAL CONDITION OF THE GROUND PRIOR TO TRENCHING OR SPECIFICATION GIVEN. TRENCH SHALL BE COMPACTED (TAMPED) AT 8" DEPTH INTERVALS, TO ASSURE THAT THE TRENCH DOES NOT ALTER THE GROUND LEVEL INTEGRITY.
9. DO NOT DIG WITHOUT THE PROPER AUTHORIZATION PAPERWORK IN ORDER. CONTRACTOR SHALL OBTAIN THE SERVICES OF AN INDEPENDENT TESTING COMPANY FOR LOCATING AND THE IDENTIFYING OF ALL UNDERGROUND SITE UTILITIES IN THE AREAS OF PROPOSED EXCAVATION AND SHALL BE RESPONSIBLE FOR ANY DAMAGE OF EXISTING SITE UTILITIES OR SIMILAR.

ABBEVIATIONS:

A - AMPS
A.C. (AC) - ACTUATING CURRENT
AFG - ABOVE FINISHED GRADE
AHJ - AUTHORITY HAVING JURISDICTION
AWG - AMERICAN WIRE GAUGE
BFG - BELOW FINISHED GRADE
C - CONDUIT
Co. - COMPANY
D.C. (DC) - DIRECT CURRENT
DISC. - DISCONNECT
EC - ELECTRICAL CONTRACTOR
EMT - ELECTRICAL METALLIC TUBING
EX. - EXTERIOR
F - FURNISHED BY
GRD - GROUND
HV - HIGH VOLTAGE
I - INSTALLED BY
kW - KILOWATTS
kWh - KILOWATTS PER HOUR
LFMC - LIQUIDTIGHT FLEXIBLE METAL CONDUIT
LV - LOW VOLTAGE
MAX. - MAXIMUM
MIN. MINIMUM
MV - MEDIUM VOLTAGE
NEC - NATIONAL ELECTRIC CODE
NFPA - NATIONAL FIRE PROTECTION ASSOCIATION
OH - OVERHEAD LINE
PH - PHASE
PV - PHOTOVOLTAIC
PVC - POLYVINYLCHLORIDE
RGS - RIGID GALVANIZED STEEL
SPD - SURGE PROTECTION DEVICE
TYP. - TYPICAL
UL - UNDERWRITERS LABORATORIES
UV - ULTRA VIOLET
V - VOLTS
W - WATTS
Wi - WIRED BY

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DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV. #	DESCRIPTION	DATE
0	PERMIT SET ISSUED	09-14-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
CONSTRUCTION NOTES (CONTINUED)

DRAWING NUMBER
G003

GROUNDING AND BONDING:

1. ALL MATERIALS REQUIRED FOR A COMPLETE GROUNDING INSTALLATION SHALL BE FURNISHED. GROUNDING COMPONENTS SHALL INCLUDE GROUND RODS, GROUND CONDUCTOR, GROUND BUS, ABOVE AND BELOW GRADE GROUNDING CONNECTIONS, GROUNDING LUGS, AND ANY OTHER HARDWARE REQUIRED FOR A COMPLETE GROUNDING SYSTEM.

2. ALL GROUNDING SHALL BE COMPLIANT WITH NEC AND AS REQUIRED BY IEEE, NEC, NESC AND APPLICABLE LOCAL CODES.

3. SUITABLE GROUNDING FACILITIES SHALL BE FURNISHED ON ELECTRICAL EQUIPMENT NOT SO EQUIPPED. THE GROUNDING FACILITIES SHALL CONSIST OF COMPRESSION TYPE TERMINAL CONNECTORS BOLTED TO THE EQUIPMENT FRAME OR ENCLOSURE.

4. THE CONDUIT SYSTEM IS NOT CONSIDERED TO BE A GROUNDING CONDUCTOR. NO EQUIPMENT GROUNDING CONDUCTOR SHALL BE SMALLER IN SIZE THAN 12 AWG, UNLESS IT IS A PART OF AN ACCEPTABLE CABLE ASSEMBLY.

5. GROUNDING SHALL COMPLY WITH THE NEC AND THE EQUIPMENT MANUFACTURER'S APPROVED TESTED PROCEDURE.

6. ALL ASSOCIATED EQUIPMENT, RACKS, FENCING COMBINERS, INVERTERS AND SIMILAR COMPONENTS SHALL BE ELECTRICALLY BONDED WITH APPROPRIATELY RATED WIRE, LUGS, CRIMPS &CONNECTORS.

7. ALL GROUNDING TERMINATIONS SHALL BE TIGHTENED TO APPROPRIATE TORQUE.

8. EACH ARRAY / ROW OF MODULES SHALL BE BONDED TO EACH OTHER AND THE ASSOCIATED EQUIPMENT GROUND. GROUNDING CONDUCTORS SHALL BE COPPER, SIZED PER NEC AND SHOWN ON THE PLANS.

9. GROUND RODS SHALL BE DRIVEN IN AT EACH COMBINER BOX (GROUND MOUNT ONLY) AND INVERTER. (USE SIZE SPECIFIED)

10. ALL WIRING SHALL BE SECURED UNDER ARRAY SO THERE IS NO HANGING OR DROOPING WIRES. ARRAY GROUNDING WIRES SHOULD BE INSULATED #6 AWG SOLID COPPER WIRE WITH A SUNLIGHT RESISTANT 90 DEGREE RATING (USE-2 OR EQUIVALENT).

11. CAREFUL MODULE LAYOUT SHOULD BE EMPLOYED FOR MOST EFFECTIVE MEANS OF WIRING AND NEAT WORKMANSHIP.

12. PV MODULES SHALL BE PROPERLY GROUNDED. MODULES SHALL BE GROUNDED WITH APPROPRIATE LUGS OR EQUIPMENT GROUNDING WASHERS (WEEBS) ON EACH MODULE AND MOUNTING RAILS TO OBTAIN CONTINUITY.

13. PROVIDE BONDING STRAPS AT ALL EXPANSION FITTINGS ON CABLE TRAYS AND ON RUNS OF CONDUIT THAT REQUIRE AN EXPANSION FITTING.

14. GROUND RODS SHALL BE COPPER CLAD, COLD DRAWN CARBON STEEL, MANUFACTURED IN ACCORDANCE WITH UL 467. THE COPPER CLADDING SHALL BE ELECTROLYTICALLY BONDED TO THE STEEL ROD OR BONDED BY A MOLTEN WELDING PROCESS. INDIVIDUAL GROUND RODS SHALL BE 3/4 INCH DIAMETER AND 10 FEET LONG. STAINLESS STEEL GROUND RODS SHALL BE INSTALLED WHERE SOILS CONDITIONS ARE CONSIDERED TO BE CORROSIVE OR CATHODIC PROTECTION INVOKED FOR PRESERVATION OF MATERIALS. GROUND RODS SHALL BE TYPE ERITECH AS MANUFACTURED BY ERICO, OR EQUIVALENT APPROVED BY THE ENGINEER

15. EXOTHERMAL CONNECTIONS SHALL BE A STANDARD DUTY COPPER MOLTEN WELD CONFORMING TO THE REQUIREMENTS OF IEEE 80. MOLDS AND POWDER CARTRIDGES USED FOR MAKING EXOTHERMAL CONNECTIONS SHALL BE FURNISHED BY THE SAME MANUFACTURER. EXOTHERMAL CONNECTIONS SHALL BE SIMILAR TO TYPE CADWELD AS MANUFACTURED BY ERICO, OR AN EQUIVALENT APPROVED BY SYSTEM OWNER.

16. GROUND LUGS SHALL BE SINGLE HOLE OR TWO HOLE, COMPLIANT WITH NEC BASED ON THE APPLICATION, AND COMPLIANT WITH THE COMMISSIONING CRITERIA FOR DISSIMILAR METALS. COPPER BARS CONFORMING TO THE REQUIREMENTS OF IEEE 837 AND UL 467. GROUND LUGS USED WITH THE EXOTHERMAL WELD PROCESS SHALL BE SIMILAR TO TYPE LA AS MANUFACTURED BY ERICO, OR AN SYSTEM OWNER ACCEPTABLE EQUAL. GROUND LUGS USED WITH THE COMPRESSION PROCESS SHALL BE SIMILAR TO TYPE YGHA AS MANUFACTURED BY BURNDY ELECTRICAL, OR AN SYSTEM OWNER ACCEPTABLE EQUAL.

17. GROUNDING (MEDIUM VOLTAGE AC COLLECTION SYSTEM): A MINIMUM OF 2/0 AWG BARE OR COATED COPPER GROUNDING CONDUCTOR, IN NON-CORROSIVE SOILS, SHALL BE INSTALLED IN THE SAME TRENCH, CONDUIT, OR RACEWAY AS THE AC COLLECTOR SYSTEM CABLES. IN CORROSIVE SOILS, AN APPROPRIATE GROUND (E.G., INSULATED CABLE OR TINNED COPPER GROUNDING CONDUCTOR) SHALL BE USED IN PLACE OF THE BARE COPPER GROUNDING CONDUCTOR.

18. GROUND SYSTEM RESISTANCE MEASUREMENTS:

    18.1. ALL GROUND RESISTANCE MEASUREMENTS SHALL BE MADE WITH THE FALL OF POTENTIAL OR SLOPE METHODS AS DEFINED IN IEEE 81.
    18.2. AFTER CONNECTION OF GROUND RODS TO THE GROUND SYSTEM, CONTRACTOR SHALL OBTAIN A GROUND RESISTANCE MEASUREMENT FROM A SELECTED LOCATION ON THE GROUND GRID, USING METHODS APPROVED BY THE SYSTEM OWNER. THIS DATA SHALL BE OBTAINED, IDENTIFIED AND RECORDED.
    18.3. THE GROUND RESISTANCE MEASUREMENT DATA MAY INDICATE THAT ADDITIONAL GROUND RODS ARE REQUIRED. CONTRACTOR SHALL FURNISH, INSTALL, AND CONNECT ADDITIONAL GROUND RODS AS NECESSARY.

19. GROUNDING COMMISSIONING: SYSTEM GROUNDING CONTRACTOR SHALL ENSURE THAT ALL COMPONENTS ARE PROPERLY GROUNDED ACCORDING TO DESIGN AND SPECIFICATIONS. GROUNDING CONNECTIONS SHALL BE INSPECTED BY AN AHJ OR OTHER INDEPENDENT QUALITY CONTROL INSPECTOR TO VERIFY PROPER INSTALLATION OF ALL COMPRESSION CLAMPS, cad WELDS, AND MECHANICAL CONNECTIONS. THE DC AND AC SYSTEM GROUNDINGS SHALL CONFORM TO ALL APPLICABLE CODES AND STANDARDS. VISUAL INSPECTIONS OF THE GROUNDING SYSTEMS SHALL BE DOCUMENTED IN A REPORT THAT INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING VERIFICATIONS:

    19.1. RACKING POSTS GROUNDED PER SPECIFICATIONS AND CONNECTED TO SYSTEM GRID.
    19.2. ALL CONNECTIONS VISUALLY VERIFIED.
        19.2.1. MECHANICAL ATTACHMENT: ANTI-OXIDATION COATINGS APPLIED, AS REQUIRED.
        19.2.2. LUGS FULLY SEATED.
        19.2.3. WHIP INSTALLED PER MANUFACTURER'S REQUIREMENTS.
        19.2.4. CONNECTIONS TO GROUNDING GRID INSPECTED: CAD WELDS, COMPRESSION CLAMPS.
    19.3. GROUNDING RODS
        19.3.1. RODS SET TO DEPTH PER AHJ.
        19.3.2. CLAMP FULLY ENGAGED.
        19.3.3. WHIP/CABLE FULLY ENGAGED.

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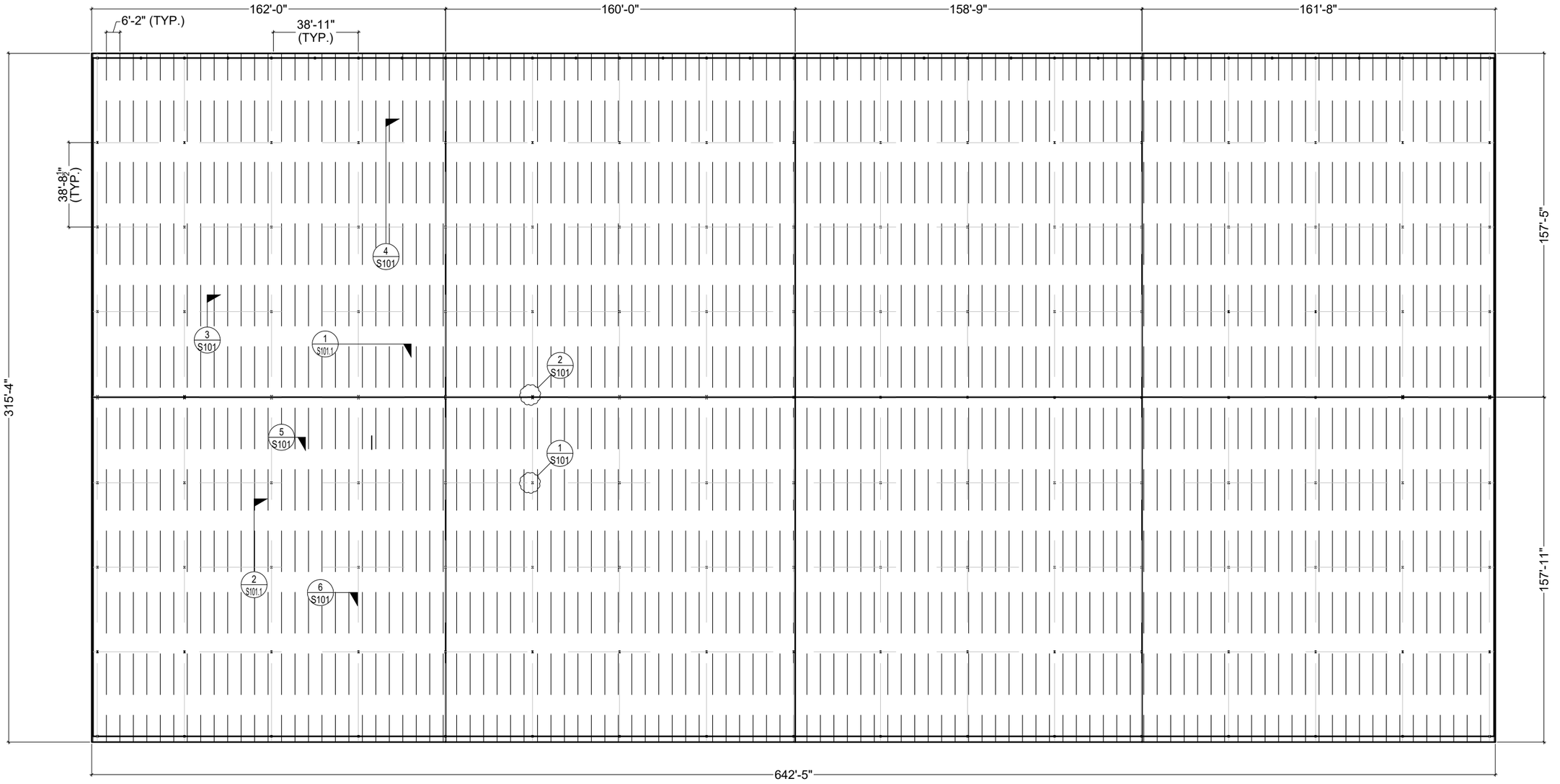
NO. #	DESCRIPTION	DATE
0	PERMIT SET ISSUED	09-15-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
CONSTRUCTION NOTES (CONTINUED)

DRAWING NUMBER
G004



0' 25' 50' 75'

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DRAWING NAME
BUILDING OVERVIEW

DRAWING NUMBER
S100

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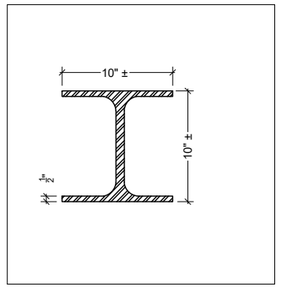

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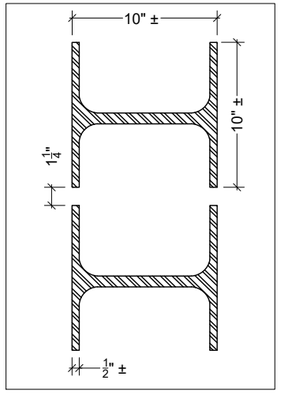

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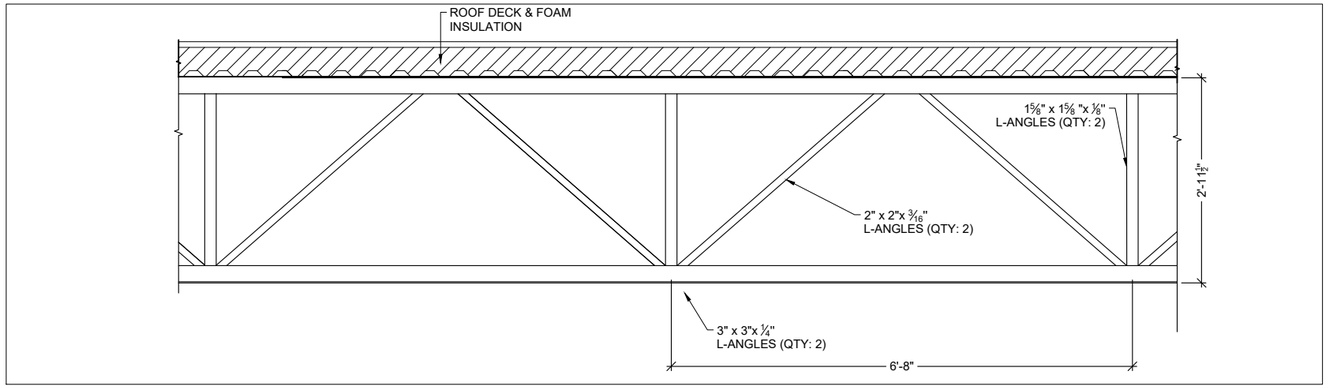

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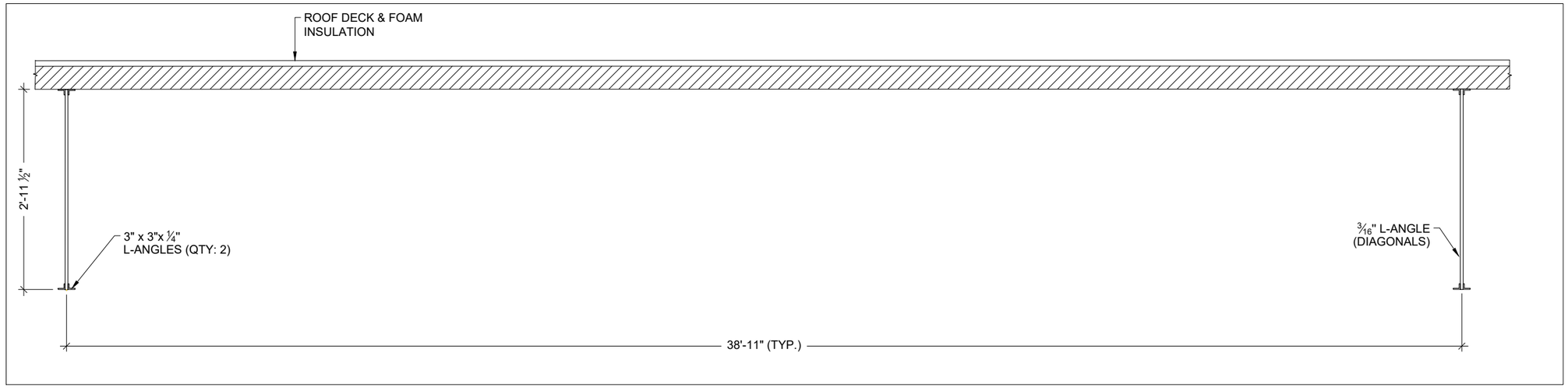
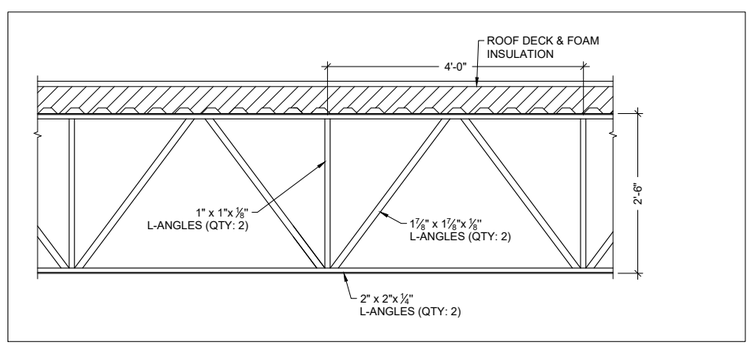
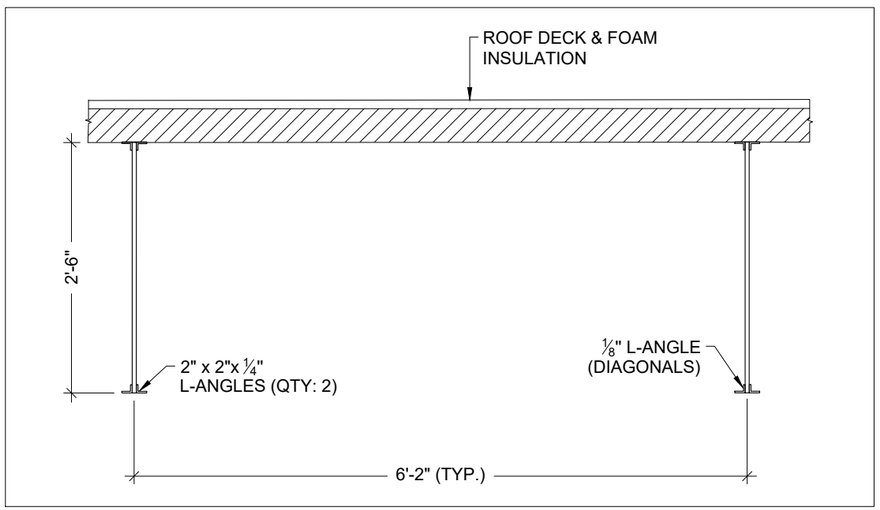


4 S101 EX STEEL DETAIL (SECTION)



5 S101 EX STEEL DETAIL (PURLINS)



6 S101 EX STEEL DETAIL (SECTION)

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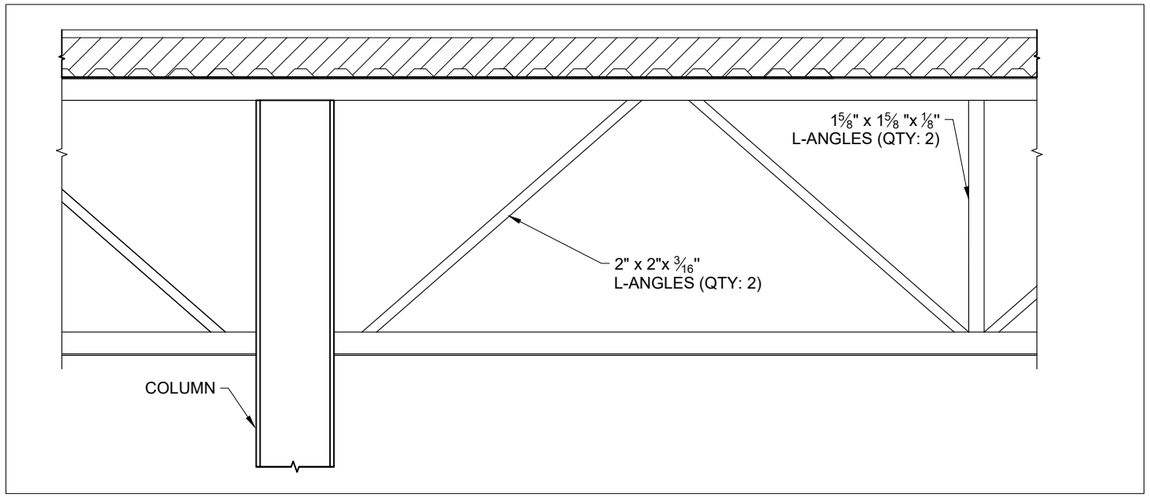
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
EXISTING STRUCTURAL LAYOUT & DETAILS

DRAWING NUMBER
S101



1 S101.1 EX STEEL DETAIL
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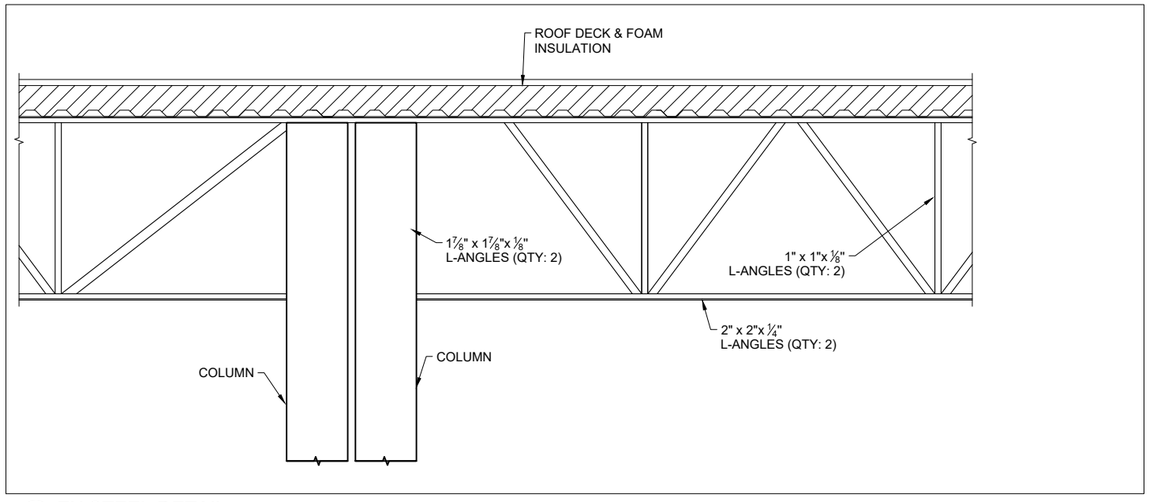

2 S101.1 EX STEEL DETAIL
(PURLIN SECTION)

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0	PERMIT SET ISSUED	09-15-2021
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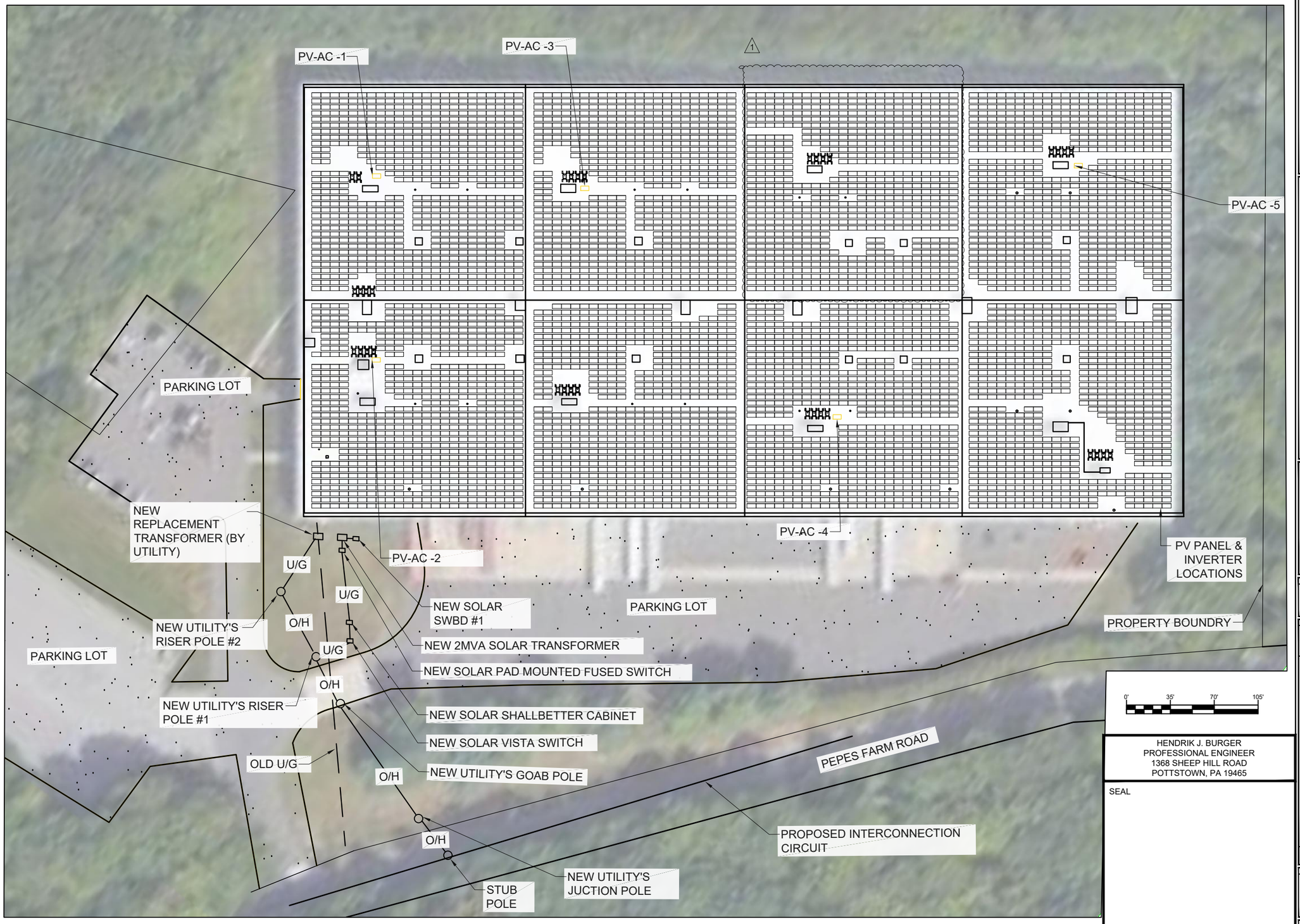

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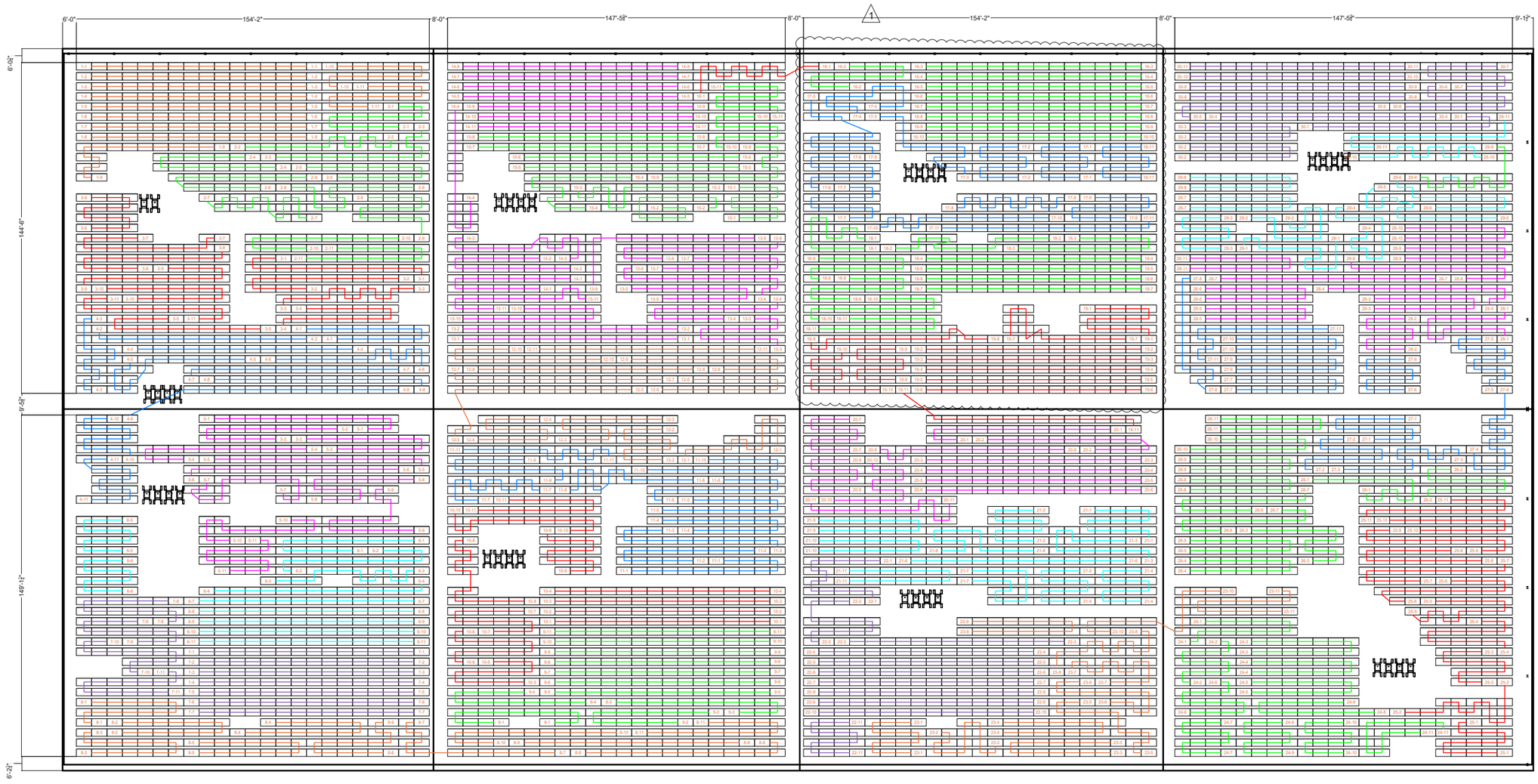
DRAWING NAME

PV PANEL & EQUIPMENT LAYOUT

DRAWING NUMBER

E100



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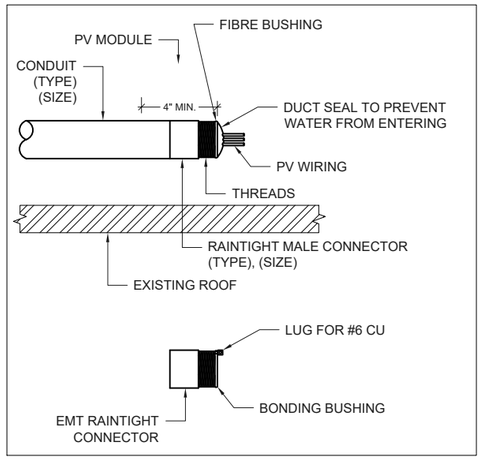
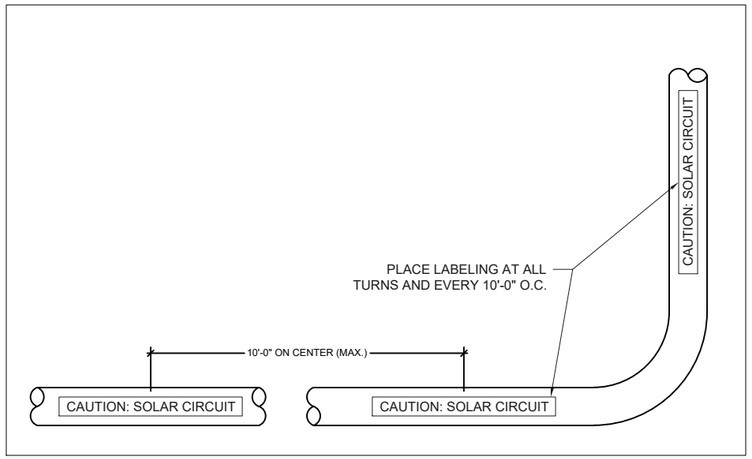
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
PV PANEL & EQUIPMENT LAYOUT

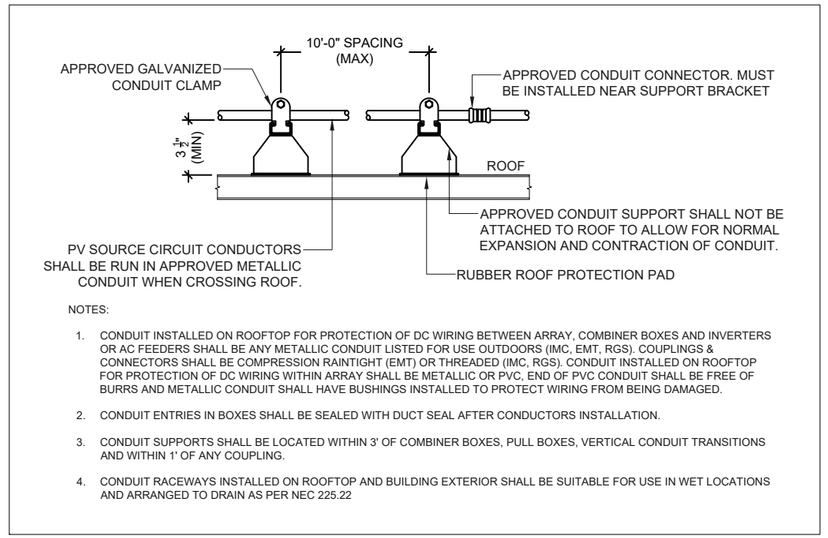
DRAWING NUMBER
E100.1



1 E101 **CONDUIT ROUTING DETAIL**
(UNDER PANEL DETAIL)



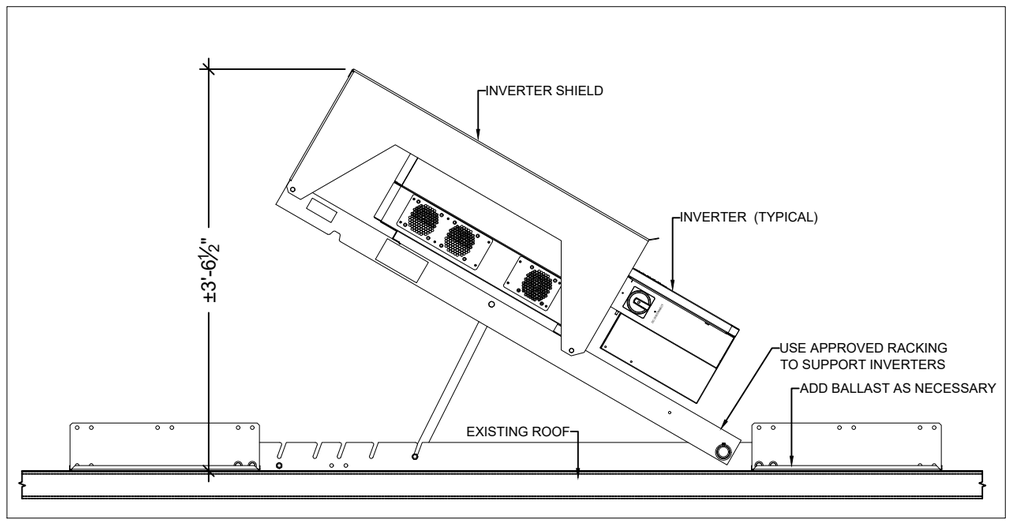
2 E101 **CONDUIT ROUTING DETAIL (TYP.)**
(ON ROOF DETAIL)



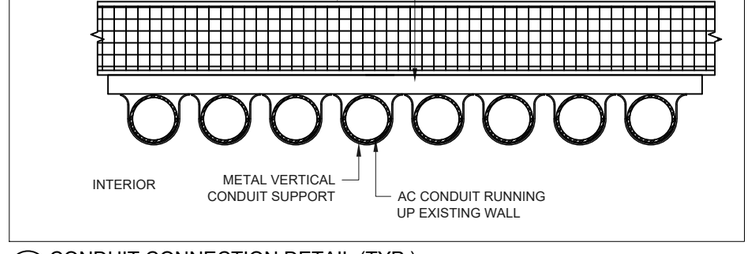
NOTES:

1. CONDUIT INSTALLED ON ROOFTOP FOR PROTECTION OF DC WIRING BETWEEN ARRAY, COMBINER BOXES AND INVERTERS OR AC FEEDERS SHALL BE ANY METALLIC CONDUIT LISTED FOR USE OUTDOORS (IMC, EMT, RGS). COUPLINGS & CONNECTORS SHALL BE COMPRESSION RAINTIGHT (EMT) OR THREADED (IMC, RGS). CONDUIT INSTALLED ON ROOFTOP FOR PROTECTION OF DC WIRING WITHIN ARRAY SHALL BE METALLIC OR PVC, END OF PVC CONDUIT SHALL BE FREE OF BURRS AND METALLIC CONDUIT SHALL HAVE BUSHINGS INSTALLED TO PROTECT WIRING FROM BEING DAMAGED.
2. CONDUIT ENTRIES IN BOXES SHALL BE SEALED WITH DUCT SEAL AFTER CONDUCTORS INSTALLATION.
3. CONDUIT SUPPORTS SHALL BE LOCATED WITHIN 3' OF COMBINER BOXES, PULL BOXES, VERTICAL CONDUIT TRANSITIONS AND WITHIN 1' OF ANY COUPLING.
4. CONDUIT RACEWAYS INSTALLED ON ROOFTOP AND BUILDING EXTERIOR SHALL BE SUITABLE FOR USE IN WET LOCATIONS AND ARRANGED TO DRAIN AS PER NEC 225.22

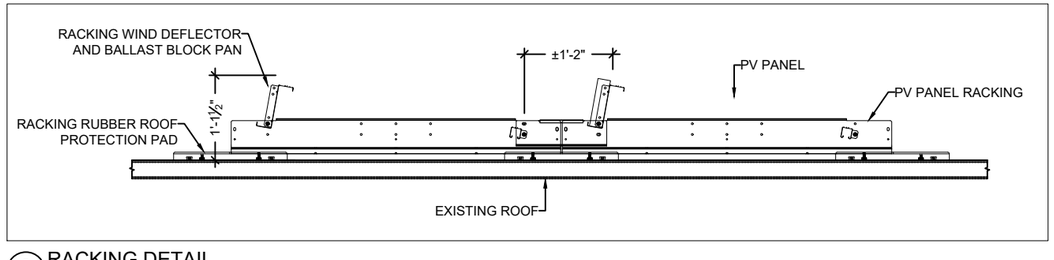
3 E101 **CONDUIT CONNECTION DETAIL (TYP.)**
(ON ROOF DETAIL)



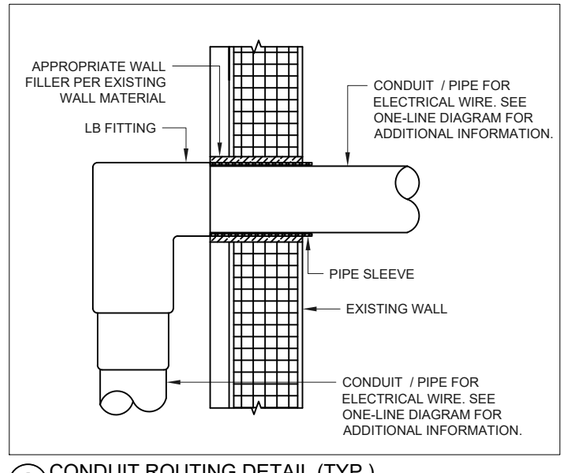
6 E101 **INVERTER RACKING DETAILS (TYP.)**
(ON GROUND LEVEL)



4 E101 **CONDUIT CONNECTION DETAIL (TYP.)**
(WALL CONNECTION DETAIL)



7 E101 **RACKING DETAIL**
(TYPICAL)



5 E101 **CONDUIT ROUTING DETAIL (TYP.)**
(WALL PENETRATION DETAIL)

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1368 SHEEP HILL ROAD
POTTSTOWN, PA 19465

SEAL

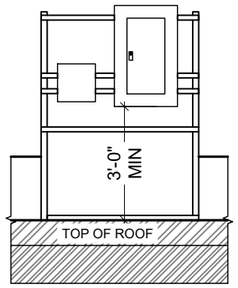
DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV. #	DESCRIPTION:	DATE
0	PERMIT SET ISSUED	09-15-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
INVERTER, RACKING & CONDUIT DETAILS

DRAWING NUMBER
E101

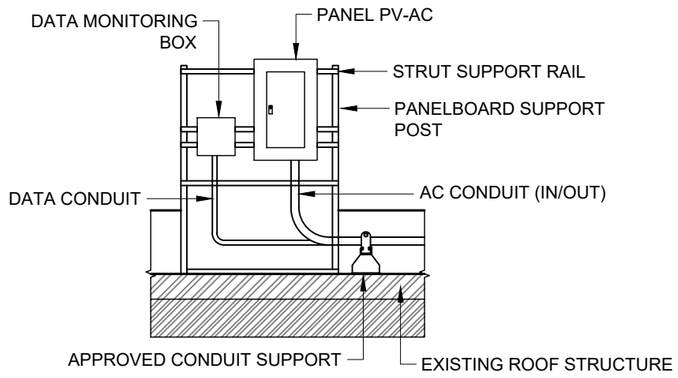
2 LOCATIONS



PANELBOARD STRUCTURAL SUPPORT TO BE DESIGNED BY CONTRACTOR TO ADEQUATELY SUPPORT EQUIPMENT & RESIST LATERAL MOVEMENT DUE TO WIND LOADS. FINAL SIZING TO BE FIELD VERIFIED IN CONJUNCTION WITH PURCHASED EQUIPMENT.

1 E102 SUPPORT RACKING (TYP.)
(FOR PANELBOARD & DATA MONITOR)

2 LOCATIONS



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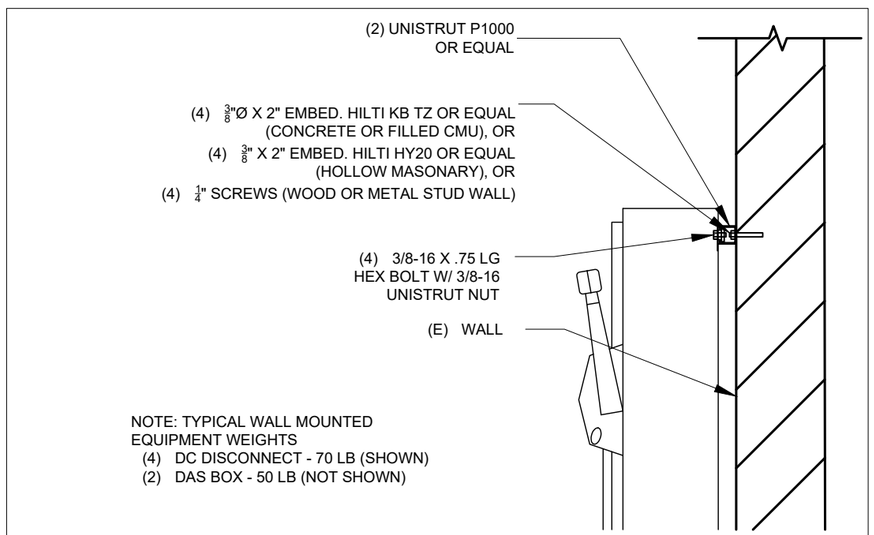
2 E102 SUPPORT RACKING (TYP.)
(FOR PANELBOARD & DATA MONITOR)



3 E102 WALL MOUNTED EQUIPMENT ANCHOR
(FOR PANELBOARD & DATA MONITOR)

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STAG INDUSTRIAL HOLDINGS
40 PEPES FARM ROAD
MILFORD, CT 06460

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DRAWING NAME
PANELBOARD SUPPORT DETAILS

DRAWING NUMBER
E102

10/11/2021 10:30:37 AM

GENERATION SUMMARY

NET OUTPUT: 1500.0 kW
1500.0 kW @ 100% PF = 62.75amps @ 13.8kV

INVERTER'S VOLTAGE RIDE THROUGH SETTINGS		
RIDE-THROUGH VOLTAGE %	OPERATION MODE	RIDE-THROUGH TIME (SECONDS)
V>120	CEASE TO ENERGIZE	N/A
117.5<V<=120	PERMISSIVE OPERATION	0.2
115<=V<=117.5	PERMISSIVE OPERATION	0.5
110<V<115	PERMISSIVE OPERATION	1
88<=V<=110	CONTINUOUS OPERATION	INFINITE
45<=V<0.65	PERMISSIVE OPERATION	0.32
30<V<45	PERMISSIVE OPERATION	0.16
V<30	CEASE TO ENERGIZE	N/A

INVERTER'S FREQUENCY RIDE THROUGH SETTINGS		
FREQUENCY RANGE (HZ)	OPERATION MODE	RIDE-THROUGH TIME (SECONDS)
f>62.0	N/A	N/A
61.2<f<=61.8	MANDATORY OPERATION	299
58.8<=f<=61.2	CONTINUOUS OPERATION	INFINITE
57.0<=f<=58.8	MANDATORY OPERATION	299
f<57.0	N/A	N/A

INVERTER FREQUENCY AND VOLTAGE PROTECTION SETTINGS			
DEVICE	TRIP SETTING	VALUE	TRIP TIME
27-1	50%	139V	1.1 SEC.
27-2	88%	244V	2.00 SEC.
59-1	110%	304V	2.00 SEC.
59-2	120%	332V	0.16 SEC.
81U-1		56.5HZ	0.16 SEC.
81U-2		58.5HZ	300 SEC.
81O-1		61.2HZ	300 SEC.
81O-2		62.0HZ	0.16 SEC.

NOTE:

1. INVERTERS TO BE UL1741 LISTED.
2. SEL 351A RELAY TO TRIP THE MAIN CIRCUIT BREAKER FOR ANSI 27,59,810,814,51C,51 N-C FUNCTIONS RELAY TO TRIP THE MAIN CIRCUIT BREAKER ON RELAY FAILURE OR LOSS OF THE DC SUPPLY VOLTAGE TO RELAY DC SYSTEM TROUBLE, AC SYSTEM TROUBLE(MAX 2 SEC DELAY).
3. E.C. SHALL VERIFY LOCATION/SIZE OF BONDING JUMPER, GROUNDING ELECTRODES AND GROUNDING ELECTRODES CONDUCT AT SERVICE ENTRANCE.
4. THE A.I.C. RATING OF THE PV- AC DISCONNECT SWITCH SHALL BE COORDINATED WITH THE RATING OF THE EXISTING PANEL AND UTILITY COMPANY.
5. COORDINATE METERING REQUIREMENTS WITH UTILITY COMPANY, UTILITY Co. SHALL INSTALL A NET METER.
6. ABB FT-1, OR EQUIVALENT TEST SWITCHES ISOLATING INPUTS AND OUTPUTS OF THE RELAY.
7. CHARGER & 8HR BATTERY BACKUP POWER.
8. UPS/BATTERY CHARGES 120V IN- 120V OUT, 3KVA.
9. DUPLEX RECEPTABLE(GFI) (WEATHER RESISTANT).
10. SURGE PROTECTION DEVICE, 160kA SPD, EATON SPD160 480Y-1-K OR EQUAL.
11. THE INVERTERS ARE EUIPPED WITH RAPID SHUTDOWN TRANSMITTER FOR RAPID SHUTDOWN ACTIVATION OF MODULE LEVEL SHUTDOWN POWER ELECTRONICS (NEC 2017 690.12 RAPID SHUTDOWN COMPLIANT)
12. UI WILL OWN THE PT'S & CT'S - THE CUSTOMER OWNS THE SHALLBETTER CABINET, CONDUITS & FOUNDATION.

FREQUENCY AND VOLTAGE PROTECTION SETTINGS			
DEVICE	TRIP SETTING	VALUE	TRIP TIME
27-1	50%	60V	1.1 SEC.
27-2	88%	106V	2.00 SEC.
59-1	110%	132V	2.00 SEC.
59-2	120%	144V	0.16 SEC.
* 81U-1		56.5HZ	0.16 SEC.
* 81U-2		58.5HZ	300 SEC.
81O		62.0HZ	0.16 SEC.

*SETTINGS INCLUDE BREAKER CLEARING TIME

ONE-LINE DIAGRAM

E200

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DRAWING NAME
ONE-LINE DRAWING

DRAWING NUMBER
E200

10/11/2021 10:29:37 AM

INVERTER FREQUENCY AND VOLTAGE PROTECTION SETTINGS			
DEVICE	TRIP SETTING	VALUE	TRIP TIME
27-1	50%	139V	0.16 SEC.
27-2	88%	244V	2.00 SEC.
59-1	110%	304V	1.00 SEC.
59-2	120%	332V	0.16 SEC.
81U-1		58.5HZ	100 SEC.
81U-2		57.0HZ	0.16 SEC.
81O		60.5HZ	0.16 SEC.

SYMBOL LEGEND

- MEDIUM VOLTAGE GANG OPERATED AIR BREAK SWITCH
- MEDIUM VOLTAGE FUSE CUT-OUT SWITCH
- MEDIUM VOLTAGE CIRCUIT BREAKER
- FUSE
- FUSE
- LV CIRCUIT BREAKER
- POTENTIAL TRANSFORMER
- CURRENT TRANSFORMER
- DISCONNECT SWITCH
- BATTERY
- O/H LINE WOOD POLE
- METERING
- O/H OVERHEAD LINE
- INVERTER
- U/G UNDERGROUND LINE
- WIRE SYMBOL
- DUPLEX RECEPTACLE (GFI)
- 3 PHASE POWER TRANSFORMER (WYE GRD - WYE GRD)
- 3 PHASE POWER TRANSFORMER (DELTA GRD - WYE GRD)
- 4-POSITION T-BLADE SWITCH
- SURGE ARRESTER (MOV)
- GROUND CONNECTION
- GROUND BUSBAR
- NEUTRAL BUSBAR
- PV SOLAR MODULE
- 15KV CLASS 200A LOAD BREAK ELBOW
- TEST BLOCK

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DRAWING NAME
ONE-LINE LEGENDS & SETTINGS

DRAWING NUMBER
E201

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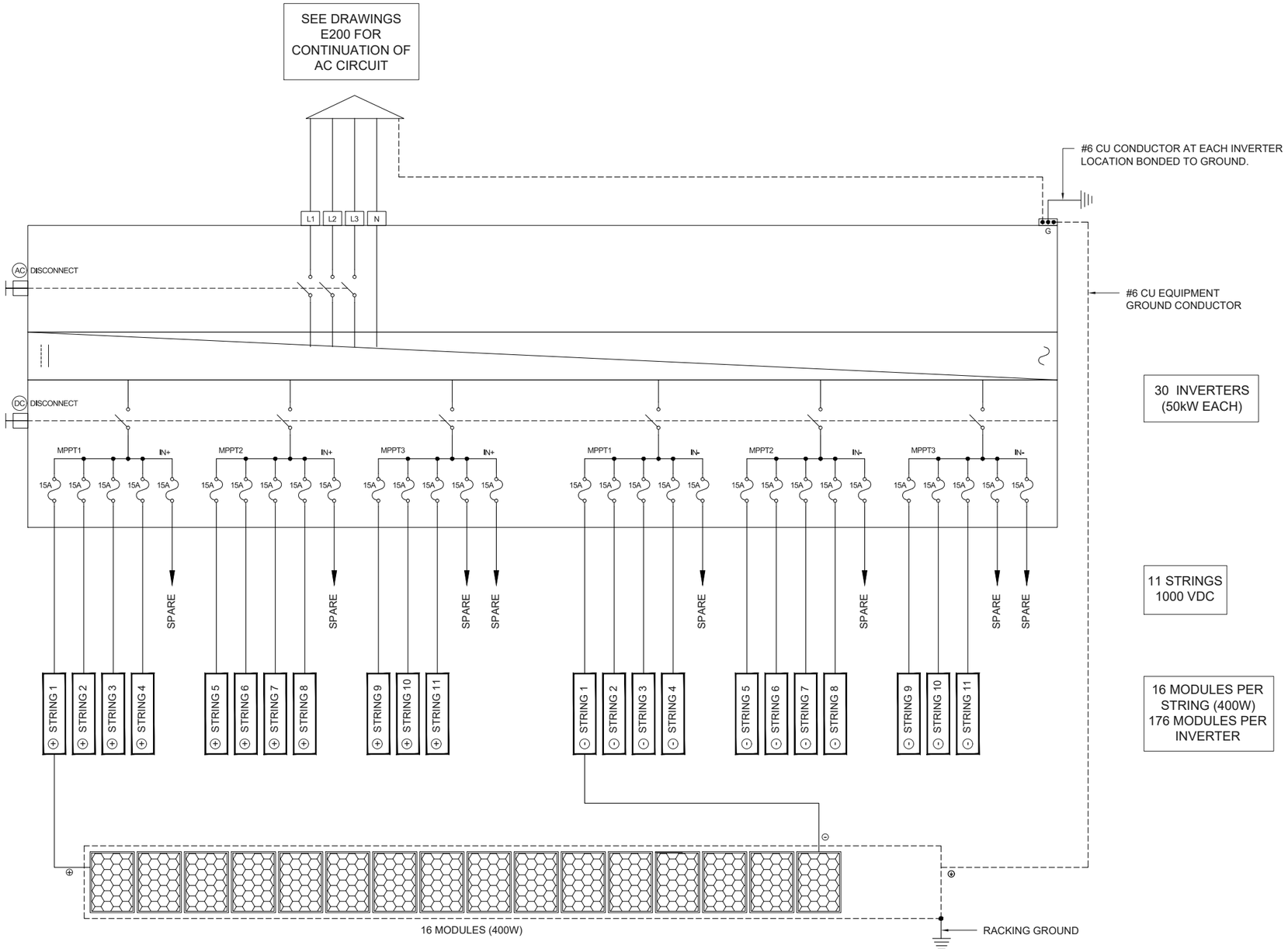
E201 ONE-LINE LEGENDS & SETTINGS



STRING LAYOUT & COMBINING ARCHITECTURE

E202 (FOR 18 PANELS)

NOTE:

PV ARRAY UNGROUNDED AND IN ACCORDANCE WITH NEC 690.35

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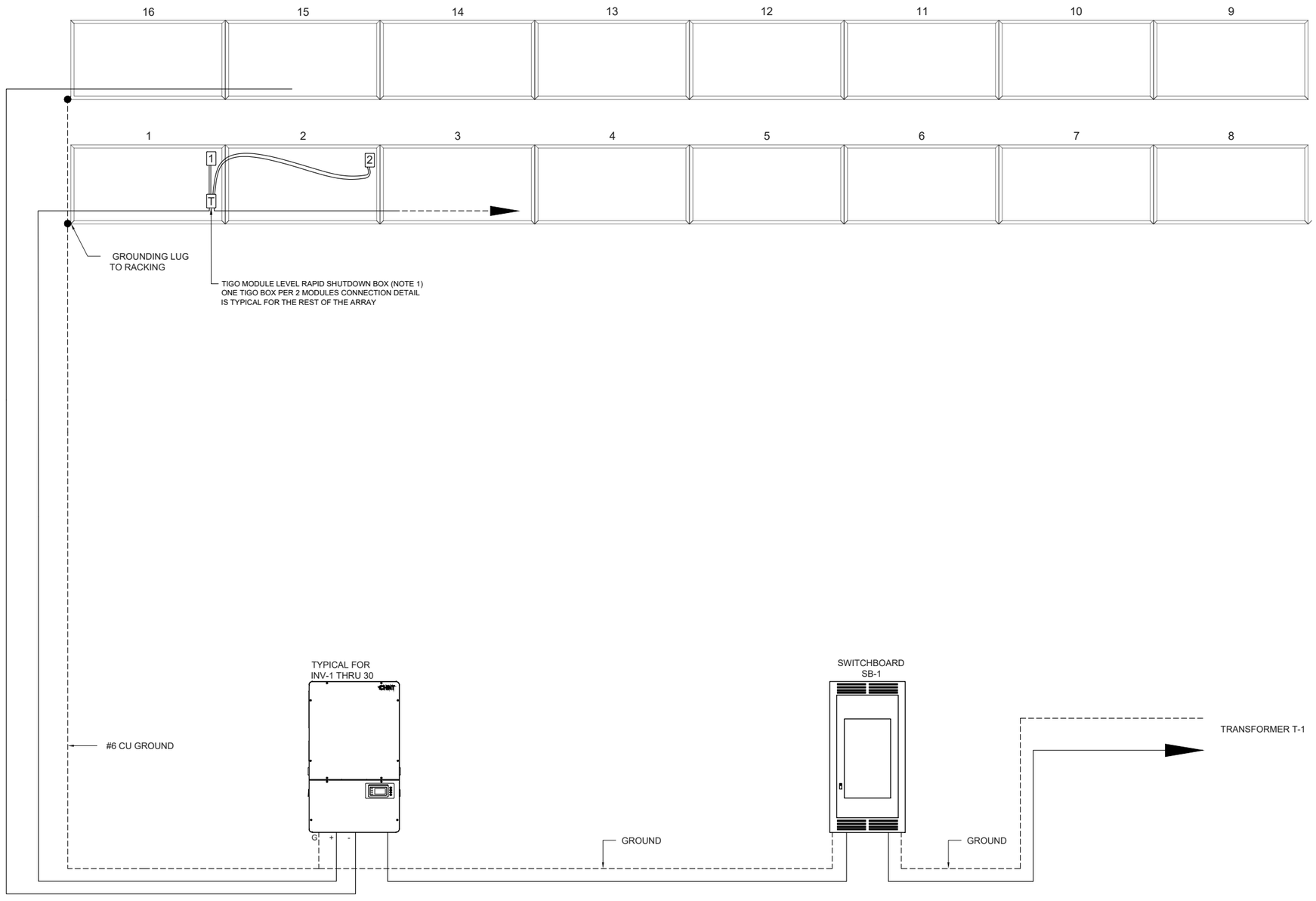
DRAWING NAME
STRING LAYOUT & COMBINING ARCHITECTURE (FOR 16 PANELS)

DRAWING NUMBER
E202

TYPICAL FOR 11 STRINGS OF 16



NOTE 2:

PV WIRE INSTALLATION REQUIREMENT

INSTALLATION BEST PRACTICES FOR
MODULE LEVEL RAPID SHUTDOWN
SHUTDOWN

Recommended ✓	Avoid ✗
Run positives and negatives of strings and home runs together	Do not separately run all positives together and all negatives together
Keep conduit associated with different transmitters as far apart as possible	Running conductors in conduit does not significantly help mitigating potential cross-talk
Cable trays containing conductors from multiple transmitters should be as short as possible	The longer the cable tray the higher chance of experiencing cross talks between transmitters
Once inside a cable tray keep strings (+) and (-) as close as possible to a twisted pair	Keeping the positive and negative conductors of a string apart inside a cable tray is not recommended

NOTE:

1. TIGO TS4-A-2F
2. SEE TIGO MANUFACTURER INSTALLATION REQUIREMENTS

REFERENCE E200 FOR ADDITIONAL INFORMATION

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DRAWING NAME

STRING LAYOUT &
COMBINING ARCHITECTURE
(FOR 15 PANELS)

DRAWING NUMBER

E202.1

INVERTER SCHEDULE

DESIGN	KW OUTPUT	VOLTAGE	PHASE	AC DISC. SW./FU.	DC DISC. SW./FU.	NO. OF DC SUB-COMBINER FUSES	DC FUSE SIZES (UL LISTED FOR USE IN PV SYSTEMS)	DC STRING MONITORING REQ'D (YES/NO)	REMARKS
INV-1 TO 30*	50	480	3	YES	YES	15	20	NO	AFCI PROTECTION

* INVERTERS SHALL BE CPS-SCA50KTL

INVERTER ELECTRICAL CHARACTERISTICS

INVERTER IDENTIFICATION	INV-1 THRU INV-30			
INVERTER SIZE	50 kW			
QUANTITY OF STRINGS	11			
QUANTITY OF MODULES (PER STRING)	16			
OPEN CIRCUIT VOLTAGE (PER STRING)	793.12 V			
MINIMUM AMBIENT TEMPERATURE DESIGN RANGE (°C)	-19.7 °			
TEMPERATURE COFFICIENT (-0.29% / °C, PER MANUFACTURER)	1.216			
MAXIMUM SYSTEM DC VOLTAGE	889.6 V			
SHORT CIRCUIT CURRENT (PER STRING)	10.14 A			
PV SOURCE CIRCUIT MODULE FACTOR [NEC 690.8(A)(1)]	1.25			
MINIMUM PV SOURCE CIRCUIT AMPACITY	12.7 A			
ASHREA DESIGN TEMPERATURES	EXTREME MIN: -15°C			

SYSTEM CONFIGURATION

MINIMUM PHOTOVOLTAIC OUTPUT CIRCUIT AMPACITY	139.4 A			
MAXIMUM PHOTOVOLTAIC SYSTEM DC VOLTAGE	889.6 V			
INPUT PEAK POWER (MODULE Pmax x QUANTITY)	70.4 kW			

LV SWITCHBOARD SB-1

277/480 VOLTS - 3 PHASE - 4 WIRE
PROVIDE 3200 AMP BUS,
BRACED FOR 65,000 AMPS, SYMMETRICAL (MIN.)
(NEMA 3R ENCLOSURE)

DESIGN	FRAME RATING	POLES	TRIP AMPS	VOLTS	REMARKS
1**	3200	3	2500	480	MAIN CIRCUIT BREAKER
2	600	3	600	480	PV-AC1
3	600	3	600	480	PV-AC2
5	600	3	600	480	PV-AC3
6	600	3	600	480	PV-AC4
7	600	3	600	480	PV-AC5
8	100	3	15	480	REFERENCE VOLTAGE
9	100	1	15	480	DAS POWER SUPPLY
10	100	3	30	480	AUX TRFR
11	100	3	-	480	PROVISION

** CIRCUIT BREAKER EQUIPPED WITH LSIG ELECTRONIC TRIP UNIT WITH ARC FLASH MAINTENANCE SWITCH.
*** SPD - SURGE PROTECTOR DEVICE 160KA SPD
EATON SPD160480Y-1-K OR EQUAL

PANEL PV-AC1 THRU PV-AC-5

277/480 VOLTS - 3 PHASE - 4 WIRE
PROVIDE 600 AMP BUS. BRACED FOR 35,000 AMPS SYMMETRICAL (MIN)
(NEMA 3R ENCLOSURE)

DESIGN	FRAME SIZE	POLES	DEM. LOAD (KW)	BREAKER SIZE	REMARKS (TYPICAL FOR 5 PANELS)
0	600	3		-	M.L.O
1	100	3	50	90	INV-1
2	100	3	50	90	INV-2
3	100	3	50	90	INV-3
4	100	3	50	90	INV-4
5	100	3	50	90	INV-5
6	100	3	50	90	INV-6
7	100	3	-	-	PROVISION

NOTE: VERIFY EQUIPMENT LUG SIZE WITH CONDUCTORS PRIOR TO ORDERING

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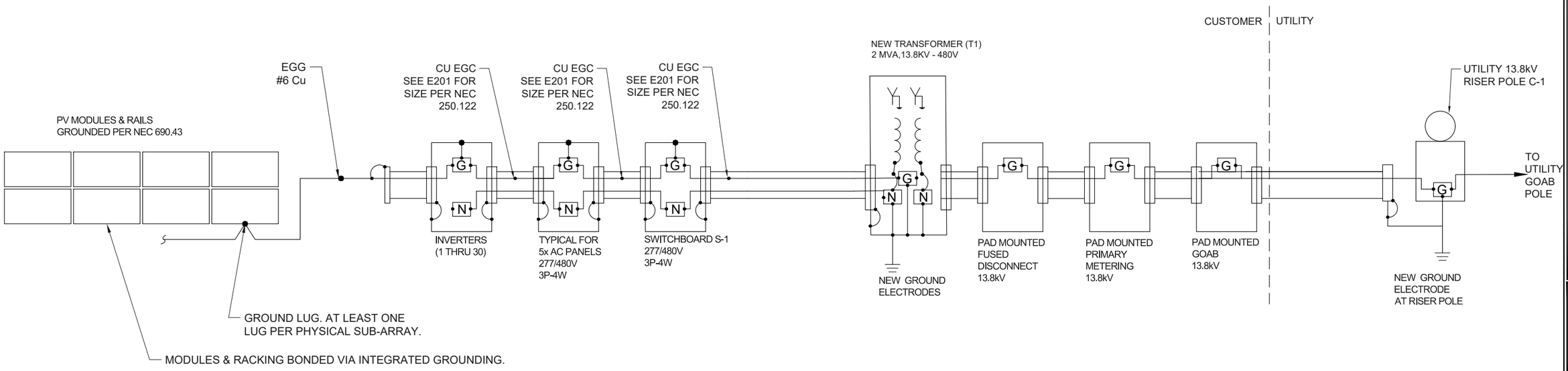
CALCULATIONS & EQUIPMENT SCHEDULE

DRAWING NUMBER
E203



TYPICAL PV-GROUNDING DIAGRAM
E204

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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 50/60kW products ship with either the standard wire-box or the H4 style wire-box, each fully integrated and separable with touch safe fusing, monitoring, and AC and DC disconnect switches. The CPS Flex Gateway enables monitoring, controls and remote product upgrades.

Key Features

- 55 & 66kVA rating allows max rated Active Power @±0.91 PF
- Selectable Max AC Apparent Power of 50/55kVA and 60/66kVA
- NEC 2014/17 compliant & UL listed Arc-Fault circuit protection
- 0-90° Mounting orientation for lay flat roof installs
- Touch safe DC Fuse holders adds convenience and safety
- Optional Flex Gateway enables remote FW upgrades
- Integrated AC & DC disconnect switches
- 3 MPPT's with 5 inputs each for maximum flexibility
- Copper and Aluminum compatible AC connections
- NEMA Type 4X outdoor rated, tough tested enclosure
- UL1741 SA Certified to CA Rule 21
- Separable wire-box design for fast service
- Standard 10 year warranty with extensions to 20 years
- Generous 1.5 DC/AC Inverter Load Ratio

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

50/60kW Standard Wire-box

50/60kW H4 Wire-box

Chint Power Systems America
7060 Koll Center Parkway, Suite 318 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	75kW (30kW per MPPT)	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[1]	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, 2800V_C, 20kA I_{Tn} (8/20μS)	
AC Output		
Rated AC Output Power @ PF>0.99 to ±0.91[2]	50kW	60kW
Max. AC Apparent Power (Selectable)	50/55kVA	60/66kVA
Rated Output Voltage	480Vac	
Output Voltage Range[3]	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[3]	57 - 63Hz	
Power Factor	>0.99 (±0.8 adjustable)	
Current THD @ Rated Load	<3%	
Max. Fault Current Contribution (1 Cycle RMS)	84.1A	
Max. OCPD Rating	110A	125A
AC Disconnection Type	Load rated AC switch	
AC Surge Protection	Type II MOV, 1240V_C, 15kA I_{Tn} (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 speed cooling fans	
Operating Temperature Range[4]	-22°F to +140°F / -30°C to +60°C[4]	
Non-Operating Temperature Range[5]	No low temp minimum to +158°F / +70°C maximum[5]	
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 Flex Gateway (1 per 70 inverters)	
Modbus Data Mapping	CPS	
Remote Diagnostics / FW Upgrade Functions	Standard / (with Flex 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[6]	0 to 90 degrees from horizontal (vertical, angled, or lay flat)[6]	
AC Termination[7]	M8 Stud Type Terminal Block (Wire range: #6 - 3/0AWG CU/AL[7], Lugs not supplied)	
DC Termination	Screw Clamp Fuse Holder (Wire range: #14 - #6AWG CU), Optional H4 (Amphenol)	
Fused String Inputs (5 per MPPT)[8]	15A fuses provided (Fuse values up to 30A acceptable)[8]	
Safety		
Certifications and Standards	UL1741SA-2016, UL1699B, CSA-C22.2 NO.107.1-01, IEEE1547a-2014; FCC PART15	
Selectable Grid Standard and SRD	IEEE1547a-2014, CA Rule 21	
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) See user manual for further information regarding MPPT Voltage Range when operating at non-unity PF.
2) Active Power Derating begins; at PF=±0.91 to ±0.8 when Max AC Apparent Power is set to 55 or 66kVA.
3) The "Output Voltage Range" and "Output Frequency Range" may differ according to the specific grid standard.
4) 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 ≥ 760Vdc.
5) See user manual for further requirements regarding non-operating conditions.
6) Shade Cover accessory required for installation angles of 75 degrees or less.
7) AL requires bi-metallic compression lug or bi-metallic adapter.
8) Fuses values above 20A have additional spacing requirements or require the use of the Y-comb adapter. See user manual for details.

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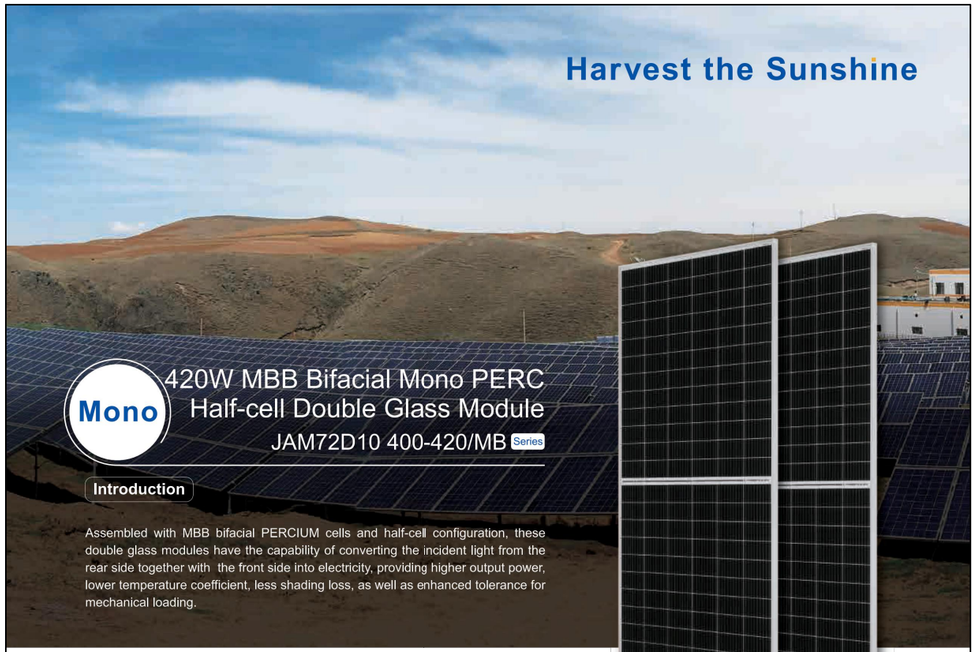
SEAL

DRAWING NAME
INVERTER DETAILS

DRAWING NUMBER
E300



Introduction

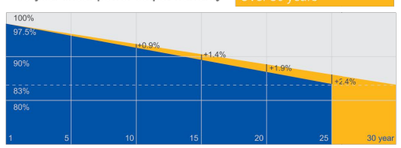
Assembled with MBB bifacial PERCIUM cells and half-cell configuration, these double glass modules have the capability of converting the incident light from the rear side together with the front side into electricity, providing higher output power, lower temperature coefficient, less shading loss, as well as enhanced tolerance for mechanical loading.

- Higher output power
- More reliable, more stable power generation
- Less shading effect
- Lower temperature coefficient

Superior Warranty

- 12-year product warranty
- 30-year linear power output warranty

0.5% Annual Degradation Over 30 years



Additional Value From 30-Year Warranty ■ JA Standard

Comprehensive Certificates

- IEC 61215, IEC 61730, UL 61215, UL 61730
- ISO 9001: 2015 Quality management systems
- ISO 14001: 2015 Environmental management systems
- OHSAS 18001: 2007 Occupational health and safety management systems
- IEC TS 62941: 2016 Terrestrial photovoltaic (PV) modules – Guidelines for increased confidence in PV module design qualification and type approval

JA SOLAR

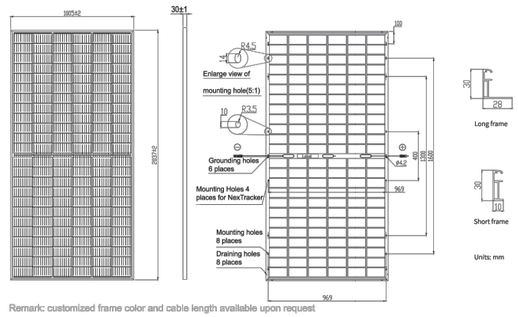
www.jasolar.com

Specifications subject to technical changes and tests.
JA Solar reserves the right of final interpretation.

JA SOLAR

JAM72D10 400-420/MB Series

MECHANICAL DIAGRAMS



Remark: customized frame color and cable length available upon request

SPECIFICATIONS

Cell	Mono
Weight	25.0kg±3%
Dimensions	2037±2mm×1005±2mm×30±1mm
Cable Cross Section Size	4mm²（12AWG）
No. of cells	144(6×24)
Junction Box	IP68, 3 diodes
Connector	QC 4.10-35
Cable Length (Including Connector)	Portrait:300mm(+)/400mm(-); Landscape:1200mm(+)/1200mm(-)
Packaging Configuration	34 Per Pallet
Front Glass/Back Glass	2.0mm/2.0mm

ELECTRICAL PARAMETERS AT STC

TYPE	JAM72D10 -400/MB	JAM72D10 -405/MB	JAM72D10 -410/MB	JAM72D10 -415/MB	JAM72D10 -420/MB
Rated Maximum Power(Pmax) [W]	400	405	410	415	420
Open Circuit Voltage(Voc) [V]	49.57	49.82	50.08	50.35	50.62
Maximum Power Voltage(Vmp) [V]	42.02	42.28	42.54	42.80	43.04
Short Circuit Current(Isc) [A]	10.14	10.20	10.26	10.32	10.37
Maximum Power Current(Imp) [A]	9.52	9.58	9.64	9.70	9.76
Module Efficiency [%]	19.5	19.8	20.0	20.3	20.5
Power Tolerance	0~+5W				
Temperature Coefficient of Isc(α_Isc)	+0.044%/℃				
Temperature Coefficient of Voc(β_Voc)	-0.272%/℃				
Temperature Coefficient of Pmax(γ_Pmp)	-0.354%/℃				
STC	Irradiance 1000W/m², cell temperature 25°C, AM1.5G				

Remark: Electrical data in this catalog do not refer to a single module and they are not part of the offer.They only serve for comparison among different module types.
*Bifaciality=Pmax,rear/Rated Pmax,front

ELECTRICAL CHARACTERISTICS WITH DIFFERENT REAR SIDE POWER GAIN(REFRENCE TO 410W FRONT)

Backside Power Gain	5%	10%	15%	20%	25%
Rated Max Power(Pmax) [W]	431	451	472	492	513
Open Circuit Voltage(Voc) [V]	50.10	50.10	50.10	50.20	50.20
Max Power Voltage(Vmp) [V]	42.55	42.55	42.55	42.65	42.65
Short Circuit Current(Isc) [A]	10.76	11.28	11.79	12.30	12.81
Max Power Current(Imp) [A]	10.12	10.60	11.08	11.54	12.02

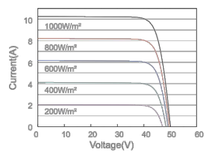
*For NexTracker installations static loading performance: front load measure 2400Pa, while back load measures 1800Pa.

OPERATING CONDITIONS

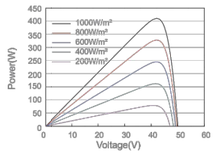
Maximum System Voltage	1500V DC(UL)
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	20A
Maximum Static Load,Front* Maximum Static Load,Back*	5400Pa(112 lb/ft²) 2400Pa(50 lb/ft²)
NOCT	45±2°C
Bifaciality*	70%±5%
Fire Performance	Type 29

CHARACTERISTICS

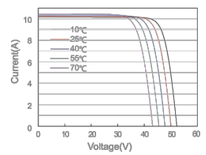
Current-Voltage Curve JAM72D10-410/MB



Power-Voltage Curve JAM72D10-410/MB



Current-Voltage Curve JAM72D10-410/MB



Premium Cells, Premium Modules Version No. : US_EN_20200401A

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DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV. #	DESCRIPTION	DATE
0	PERMIT SET ISSUED	09-15-2021
1	LAYOUT REVISED	09-27-2021

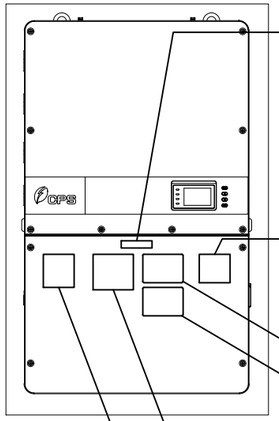
HENDRIK J. BURGER
PROFESSIONAL ENGINEER
1368 SHEEP HILL ROAD
POTTSTOWN, PA 19465

SEAL

DRAWING NAME
MODULE DETAILS

DRAWING NUMBER
E301

GROUND MOUNT INSTALLATION



INVERTER INV-1

PHOTOVOLTAIC SYSTEM
INVERTER AC
DISCONNECT SWITCH

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

AC DISCONNECT RATING:
OPERATING CURRENT: ---- AMPS (FLA)
OPERATING VOLTAGE: ---- VOLTS

⚠WARNING

ELECTRIC SHOCK HAZARD

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

PHOTOVOLTAIC SYSTEM
INVERTER DC
DISCONNECT SWITCH
(PER NEC 690.53)

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

DC DISCONNECT RATING:
MAX. POWER POINT CURRENT: ---- AMPS
MAX. POWER POINT VOLTAGE: ---- VOLTS
SHORT CIRCUIT CURRENT: ---- AMPS
MAX. SYSTEM VOLTAGE: ---- VOLTS

⚠WARNING

Arc Flash and Shock Risks

XX in- Arc Flash Protection Boundary
X.X cal/cm^2- Incident Energy Flash Risk at XX in

Appropriate PPE Required for both Arc Flash and Shock Risks:
Clothing: Arc-rated shirt & pants + arc-rated coverall + arc-rated arc flash suit
Foot Protection: Leather footwear
Safety glasses, electrically rated hard hat with hood and face shield.
Hearing Protection. Arc-rated Gloves

XXX VAC- Shock Risk with covers/doors open
XX in- Limited Approach Boundary
XX in- Restricted Approach Boundary
XX cal/cm^2- Minimum Arc Rating
Shock Risk
XX/XX/XXXX
Bus: INV-01 PROT: FDR INV-1
0001

LOCATION OF EQUIPMENT NAME & REFERENCE NUMBER. PLACARDS MUST BE PLACED ON EQUIPMENT BY THIS DESIGNATION. CALULATIONS ARE SPECIFIC TO EQUIPMENT.

⚠WARNING

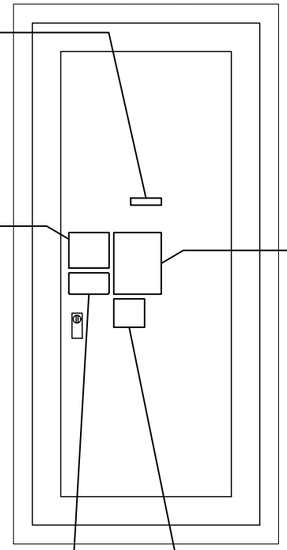
ELECTRIC SHOCK HAZARD

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

1 E400 INVERTER PLACARD LOCATIONS

STANDARD INSTALLATION

PANELBOARD PV-ACX



⚠WARNING

Arc Flash and Shock Risks

XX in- Arc Flash Protection Boundary
X.X cal/cm^2- Incident Energy Flash Risk at XX in

Appropriate PPE Required for both Arc Flash and Shock Risks:
Clothing: Arc-rated shirt & pants + arc-rated coverall + arc-rated arc flash suit
Foot Protection: Leather footwear
Safety glasses, electrically rated hard hat with hood and face shield.
Hearing Protection. Arc-rated Gloves

XXX VAC- Shock Risk with covers/doors open
XX in- Limited Approach Boundary
XX in- Restricted Approach Boundary
XX cal/cm^2- Minimum Arc Rating
Shock Risk
XX/XX/XXXX
Bus: AC-1 Prot: S-1_AC-1 FDR
0003

LOCATION OF EQUIPMENT NAME & REFERENCE NUMBER. PLACARDS MUST BE PLACED ON EQUIPMENT BY THIS DESIGNATION. CALULATIONS ARE SPECIFIC TO EQUIPMENT.

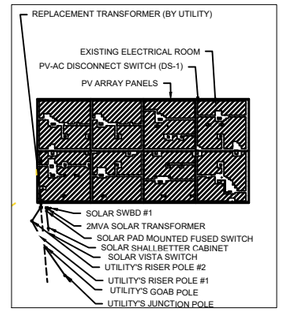
⚠WARNING

ONLY EQUIPMENT ASSOCIATED WITH THE PHOTOVOLTAIC SYSTEM MAY BE CONNECTED TO THIS PANEL

3 E400 PANELBOARD PLACARD LOCATIONS

CAUTION

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

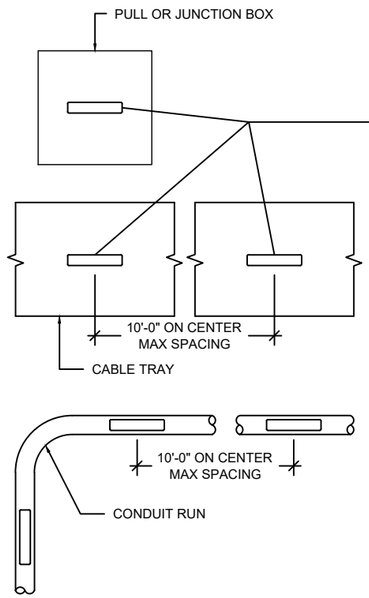


PHOTOVOLTAIC SYSTEM
TOTAL AC
DISCONNECT SWITCH

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

AC DISCONNECT RATING:
OPERATING CURRENT: AMPS AMPS (FLA)
OPERATING VOLTAGEVOLTAGE VOLTS

STANDARD INSTALLATION



WARNING: PHOTOVOLTAIC POWER SOURCE

NOTES:
1. TO BE REFLECTIVE LAMINATED STICKER WITH

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DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV.#	DESCRIPTION:	DATE
0	PERMIT SET ISSUED	09-15-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
EQUIPMENT PLACARD LOCATIONS

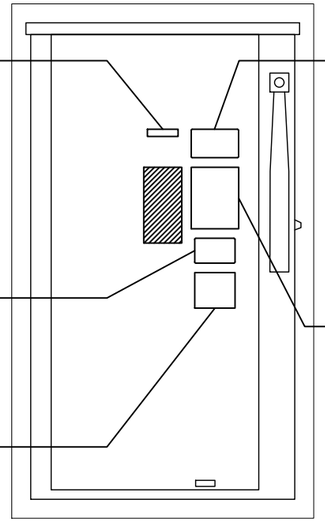
DRAWING NUMBER
E400

HENDRIK J. BURGER
PROFESSIONAL ENGINEER
1368 SHEEP HILL ROAD
POTTSTOWN, PA 19465

SEAL

DISC. SWITCH XXX

STANDARD INSTALLATION



⚠WARNING

ELECTRIC SHOCK HAZARD

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

⚠DANGER

⚠ Arc Flash and Shock Risks ⚠

XX in- Arc Flash Protection Boundary

X.X cal/cm^2- Incident Energy Flash Risk at XX in

Appropriate PPE Required for both Arc Flash and Shock Risks:

Clothing: DO NOT WORK ON LIVE!
Foot Protection: DO NOT WORK ON LIVE!
DO NOT WORK ON LIVE!
DO NOT WORK ON LIVE!

XXX VAC Shock Risk with covers/doors open
XX in- Limited Approach Boundary
XX in- Restricted Approach Boundary — Shock Risk
XX cal/cm^2- Minimum Arc Rating — XX/XX/XXXX
Bus: XXXXXXXX — # XXXX

LOCATION OF EQUIPMENT NAME & REFERENCE NUMBER. PLACARDS MUST BE PLACED ON EQUIPMENT BY THIS DESIGNATION. CALULATIONS ARE SPECIFIC TO EQUIPMENT.

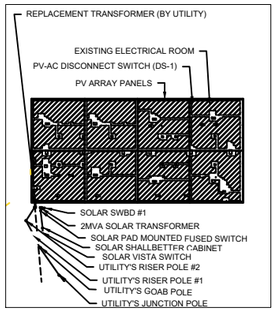
1 E401 DISCONNECT SWITCH
PLACARD LOCATIONS

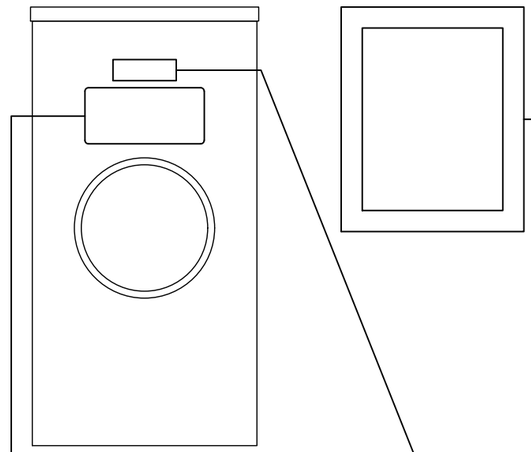
NOTICE

PHOTOVOLTAIC AC SYSTEM DISCONNECT FOR UTILITY OPERATION

CAUTION

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



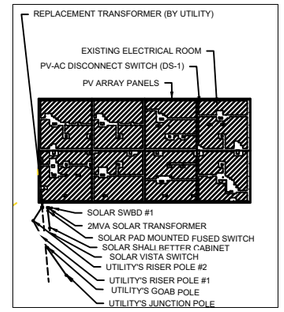


CUSTOMER OWNED PARALLEL GENERATION SAFETY DISCONNECT SWITCH IS LOCATED ADJACENT TO

PHOTOVOLTAIC GENERATION METER
S/N _____

CAUTION

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



NOTES:
1. SITE MAP LABEL MUST BE MOUNTED ON OR ADJACENT TO PHOTOVOLTAIC GENEREATION METER.

2 E401 PHOTOVOLTAIC METER
PLACARD LOCATIONS

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DRAWING ISSUE
- ☐ INTERCONNECTION
- ☒ PERMITTING
- ☐ CONSTRUCTION
- ☐ RECORD

NO. #	DESCRIPTION	DATE
0	PERMIT SET ISSUED	09-14-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
EQUIPMENT PLACARD LOCATIONS

DRAWING NUMBER
E401

HENDRIK J. BURGER
PROFESSIONAL ENGINEER
1368 SHEEP HILL ROAD
POTTSTOWN, PA 19465

SEAL

A

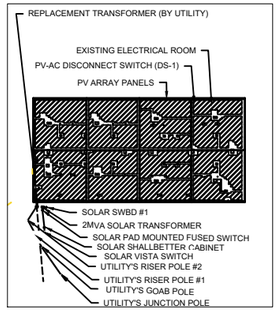
5"

LABEL LOCATION:DISC. SWITCHES PV-AC,UTILITY METER, EXIST. SERVICE MAIN PANEL, PANEL PV-AC, SWITCHBOARD
REQUIRED LABEL QUANTITY:6

6½"

CAUTION

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



(NOTE 1)

B

3¼"

LABEL LOCATION: PAD GOAB
REQUIRED LABEL QUANTITY:1

3"

PHOTOVOLTAIC SYSTEM
TOTAL AC
DISCONNECT SWITCH

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

AC DISCONNECT RATING:
OPERATING CURRENT: 63 AMPS (FLA)
OPERATING VOLTAGE: 13.8KV VOLTS

(NOTE 1)

B1

3¼"

LABEL LOCATION: INVERTER-1 THRU 30 DC COMPARTMENT
REQUIRED LABEL QUANTITY: 30

3"

PHOTOVOLTAIC SYSTEM
INVERTER AC
DISCONNECT SWITCH

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

AC DISCONNECT RATING:
OPERATING CURRENT: 60 AMPS (FLA)
OPERATING VOLTAGE: VOLTS

(NOTE 1)

B2

3¼"

LABEL LOCATION: INVERTER-1 THRU 30 DC COMPARTMENT
REQUIRED LABEL QUANTITY: 30

3½"

PHOTOVOLTAIC SYSTEM
EQUIPMENTTITLE
DISCONNECT SWITCH
(PER NEC 690.53)

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

DC DISCONNECT RATING:
MAX. POWER POINT CURRENT: 103 AMPS
MAX. POWER POINT VOLTAGE: 672 VOLTS
SHORT CIRCUIT CURRENT: 112 AMPS
MAX. SYSTEM VOLTAGE: 890 VOLTS

(NOTE 1)

D

4¼"

LABEL LOCATION: WIREWAY AT INVERTERS, DISC. SWITCH, PANEL PV-AC , ECB
REQUIRED LABEL QUANTITY:10

2⅝"

⚠WARNING

ELECTRIC SHOCK HAZARD

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

E

5"

LABEL LOCATION: DISC. SWITCH PV-AC
REQUIRED LABEL QUANTITY: 1

3"

NOTICE

PHOTOVOLTAIC AC
SYSTEM DISCONNECT
FOR UTILITY OPERATION

(SEE NOTE 2)

F

2¼"

LABEL LOCATION: PV SUB-METER ENCLOSURE
REQUIRED LABEL QUANTITY: 2

¾"

PHOTOVOLTAIC
GENERATION METER
S/N _____

(NOTE 1)

H

4¼"

LABEL LOCATION: PANEL PV-AC
REQUIRED LABEL QUANTITY: 2

2¼"

⚠WARNING

ONLY EQUIPMENT ASSOCIATED WITH THE PHOTOVOLTAIC SYSTEM MAY BE CONNECTED TO THIS PANEL

J

3¼"

LABEL LOCATION: PANEL PV-AC
REQUIRED LABEL QUANTITY: 2

¾"

PANELBOARD PV-ACX

NOTE: ONE LABEL REQUIRED FOR EACH PANEL . USE APPROPRIATE DESIGNATION FOR EACH LABEL. (NOTE 1)

L

3¼"

LABEL LOCATION: DISC SWITCH PV-AC
REQUIRED LABEL QUANTITY: 2

¾"

DISC. SWITCH XXX

NOTE: ONE LABEL REQUIRED FOR EACH DISCONNECT SWITCH . USE APPROPRIATE DESIGNATION FOR EACH LABEL. (NOTE 1)

M

3¼"

LABEL LOCATION: INVERTER -1 THRU 12
REQUIRED LABEL QUANTITY: 12

¾"

INVERTER INV-X

NOTE: ONE LABEL REQUIRED FOR EACH INVERTER . USE APPROPRIATE DESIGNATION FOR EACH LABEL. (NOTE 1)

N

4¼"

LABEL LOCATION: JUNCTION/PULL BOX & INVERTER
REQUIRED LABEL QUANTITY: 20

3"

⚠WARNING

ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED

(PV LABEL 05-104)

O

4¼"

LABEL LOCATION: PV PANEL AC
REQUIRED LABEL QUANTITY: 3

2"

⚠WARNING

DUAL POWER SUPPLY

SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

(PV LABEL 05-211)

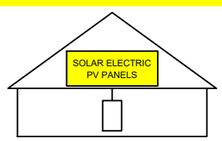
P

3⅝"

LABEL LOCATION: PV PANEL AC
REQUIRED LABEL QUANTITY: 4

5¼"

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN



TURN RAPID SHUTDOWN SWITCH TO THE 'OFF' POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY

(PV LABEL 05-112)

Q

4¼"

LABEL LOCATION: PV PANEL AC
REQUIRED LABEL QUANTITY: 4

1 3/16"

PHOTOVOLTAIC SYSTEM
EQUIPPED WITH
RAPID SHUTDOWN.

(PV LABEL 02-317) (NOTE 1)

R

4"

LABEL LOCATION: PV PANEL AC
REQUIRED LABEL QUANTITY: 1

2"

PHOTOVOLTAIC SYSTEM
⚠ AC DISCONNECT ⚠

OPERATING VOLTAGE 13.8kV VOLTS
OPERATING CURRENT 63 AMPS

(PV LABEL 03-210)

S

4¼"

NOTE: ARC FLASH LABELS PROVIDED BY DYNAMIC ENERGY BASED ON ARC FLASH STUDY RESULTS.

3¾"

⚠DANGER

Arc Flash and Shock Risks

XX in- Arc Flash Protection Boundary

X.X cal/cm^2- Incident Energy Flash Risk at XX in

Appropriate PPE Required for both Arc Flash and Shock Risks:
Clothing: DO NOT WORK ON LIVE!
Foot Protection: DO NOT WORK ON LIVE!
DO NOT WORK ON LIVE!
DO NOT WORK ON LIVE!

XXX VAC- Shock Risk with covers/doors open
XX in- Limited Approach Boundary
XX in- Restricted Approach Boundary — Shock Risk
XX cal/cm^2- Minimum Arc Rating — XX/XX/XXXX
Bus: XXXXXXXX — # XXXX

NOTE: ARC FLASH LABELS PROVIDED BY DYNAMIC ENERGY BASED ON ARC FLASH STUDY RESULTS.

GENERAL NOTES FOR LABELING AND MARKING EQUIPMENT:

1. TEXT LABELS WILL BE ETCHED WITH WHITE GRAPHICS ONTO 1/16" RED PLASTIC PLACARDS. THE LABEL WILL BE ATTACHED TO THE APPROPRIATE COMPONENT ENCLOSURES IN CONSPICUOUS PLACES USING HEAVY DUTY TWO-SIDED TAPE.
2. LABEL WILL BE ETCHED WITH BLACK LETTERS ONTO WHITE PLASTIC PLACARD AND WHITE LETTERS ONTO BLUE PLASTIC PLACARD, AS INDICATED. THE LABEL WILL BE ATTACHED TO THE APPROPRIATE COMPONENT ENCLOSURES IN CONSPICUOUS PLACES USING HEAVY DUTY TWO SIDED TAPE.

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MILFORD, CT 06460

DRAWING ISSUE
- [ ] INTERCONNECTION
- [x] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV. #	DESCRIPTION:	DATE
0	PERMIT SET ISSUED	09-15-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME
EQUIPMENT LABELS

DRAWING NUMBER
E402

HENDRIK J. BURGER
PROFESSIONAL ENGINEER
1368 SHEEP HILL ROAD
POTTSTOWN, PA 19465

SEAL

0' 30' 60' 90'

HENDRIK J. BURGER
PROFESSIONAL ENGINEER
1368 SHEEP HILL ROAD
POTTSTOWN, PA 19465

SEAL

STAG INDUSTRIAL HOLDINGS

40 PEPES FARM ROAD
MILFORD, CT 06460

Dynamic Energy™
1550 LIBERTY RIDGE DRIVE
SUITE 310
WAYNE, PA 19087
PHONE: 877-809-8884
FAX: 610-276-5403
WWW.DYNAMICENERGYUSA.COM

DRAWING ISSUE

- [ ] INTERCONNECTION
- [ ] PERMITTING
- [ ] CONSTRUCTION
- [ ] RECORD

REV. #	DESCRIPTION	DATE
0	PERMIT SET ISSUED	09-15-2021
1	LAYOUT REVISED	09-27-2021

DRAWING NAME

STAGING PLAN

DRAWING NUMBER

E500

10/11/2021 10:30:19 AM

PV-AC -1

PV-AC -3

PV-AC -5

PV-AC -2

PARKING LOT

SOLAR CONDUIT(S) FROM PAD
UP SIDE OF BUILDING TO ROOF.
MODULES AND INVERTERS ON ROOF

NEW SERVICE TRANSFORMER FOR
BUILDING SERVER. EXISTING
TRANSFORMER TO BE REMOVED.
EXISTING SERVICE TO BE REFED
FROM NEW SERVICE TRANSFORMER

5'-0" 5'-0" 5'-0"

12'-0"

12'-8"

PV-AC -4

PV PANEL &
INVERTER
LOCATIONS

NEW TRANSFORMER, SWITCHGEAR AND FUSED DISCONNECT CONCRETE PAD

NEW SOLAR SWBD #1

NEW 2MVA SOLAR TRANSFORMER

NEW PAD MOUNTED FUSED DISCONNECT

NEW PRIMARY METERING CABINET / SOLAR SHALLBETTER CABINET

NEW SOLAR VISTA SWITCH

NEW GRAVEL ACCESS ROAD TO EQUIPMENT

GREEN=NEW UNDERGROUND UTILITY LINES

NEW GRAVEL ACCESS ROAD
TO TRANSFORMER

PARKING LOT

PARKING LOT

PROPERTY BOUNDRY

NEW UTILITY'S RISER POLE

NEW UTILITY'S RISER

12'-0"

NEW UTILITY'S GOAB POLE

RED=NEW OVERHEAD UTILITY LINES

PEPES FARM ROAD

PROPOSED INTERCONNECTION
CIRCUIT

NEW UTILITY'S JUCTION POLE

0' 32' 64' 96'

HENDRIK J. BURGER
PROFESSIONAL ENGINEER
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DRAWING ISSUE
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1	LAYOUT REVISED	09-27-2021

DRAWING NAME
OVERVIEW

DRAWING NUMBER
U1

STAG INDUSTRIAL HOLDINGS
(DYNAMIC ENERGY)

UNITED ILLUMINATING
COMPANY

NEW PAD MOUNTED
PRIMARY METERING
(SHALL BETTER CABINET)
(NOTE 12)

DYNAMIC TO
PROVIDE/INSTALL
UI REVENUE &
GENERATOR METERING
ON BUILDING NEAR UT
VISTA S/GEAR

TRANSFORMER 2000KVA
277/480-7/96/13/8KV
Yg-Yg

M

T

TO PV AC
480V SWITCHBOARD

U/G

U/G

U/G

Yg-Yg

PAD MOUNTED
FUSED DISCONNECT

UI SOLAR VISTA
SWITCH
(PAD BY DYNAMIC)

DYNAMIC INSTALL
(2) 4" CONDUITS IN TRENCH
(PER UI)

NEW RISER
POLE #1

O/H

O/H

NEW RISER
POLE #2

U/G

TO NEW REPLACED
CUSTOMER
TRANSFORMER
(DYNAMIC TO PROVIDE
NEW FOUNDATION) (PER UI)

DYNAMIC TO REMOVE
2X GROUND
CONDUCTORS PER UI

CUSTOMER
MAIN SERVICE
SWITCH

NEW GOAB
POLE

NEW STUB POLE
(ACROSS STREET)

O/H

NEW JUNCTION POLE

O/H

CIRCUIT 3660
SUBSTATION
WOODMOUNT

ONE-LINE DIAGRAM

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DRAWING NAME
OVERVIEW

DRAWING NUMBER
U2

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